



Expertise – Passion – Automation



Product overview

One single supplier for your automation needs

Product overview

Dear Customer:

We put in your hands a summary of SMC's solutions for several of your automation needs. A guide for you to be able to do a first product selection; to see what best suits you.

Simple, comprehensive, with easy codes to make the product selection smooth, effortless.

Main solutions from basic pneumatics to more sophisticated electric products, through an extensive range of ionizers and thermo control solutions.

Everything we've got for you at your disposal in the following pages.

And if any questions arise remember that our online Digital Catalogue is open 24/7 and your SMC Sales Engineer will always be glad to give you a hand.

- 365 Series.
- All lines of product represented: Air preparation, actuators, valves, vacuum, ...
- Main technical Info to allow a first product selection.
- Stock Info.
- QR Codes.

All to ease your job: a first review in a simple way.

Introduction

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Valves

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Actuators

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Piping equipment

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Process valves

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Vacuum

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Electric actuators

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Others

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How to use this catalogue

Simplicity & easiness for you

A few simple indications to guide you through SMC's Product overview





How to use this catalogue



QR Codes

Look for the QR Codes to access additional product information through your smart phone. Quickly & comfortably.

Product indications

- **New Products** – Symbol for all New Products launched to the market in the past 2 years 
- **Energy efficiency** – Symbol for those products that save energy and more importantly save money 
- **Enhanced products** – These are improved versions of existing products. Products that our engineers have made more compact, lighter, with improved materials... 
- **Range extensions** – This includes products that incorporate added features: to cover more of your applications: New sizes, more mounting options, further communication protocols... 
- **Highlighted products** – Marked with blue boxes in the Index.

Which type of information is included?

- Main technical product features
- Main product benefits
- Part number level information
- Main technical specifications
- Mounting accessories information & the standard stock
- Accessories information & the standard stock
- Auto switch information & the standard stock.

NOTE: This is meant to be a catalogue for a first product selection.
For detailed technical end product information please go to SMC's online Product Catalogue or contact your sales engineer.

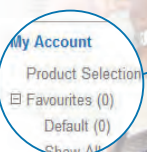
24/7 in the internet. SMC's digital catalogue

Do you want access to SMC anywhere and at any time?

SMC's Product Catalogue never closes. Our online platform is open 24/7 for you to be able to:

Personal product library

You can save the chosen SMC Solutions in your own library.



Search & select

12,000 basic models, 700,000 variations, available online for you to find the exact solution for your needs.



Configure

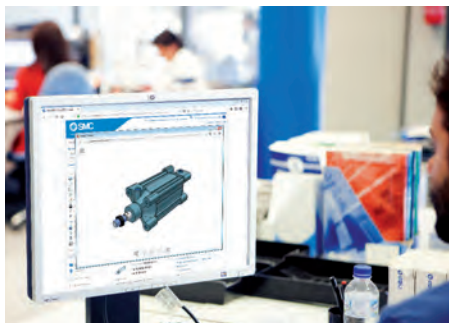
Interactive How to order to help you find the exact model that fits your requirements.



Information on standard stock items and related products

Find your distributor

Easy to find map with location, address and contact details to find the distributor nearest to your area.



Download any required documentation

- 3D CAD – Any drawing you might need for your design purposes accessible in a quick and easy way
- Technical Documentation – IMMs, Operation Manuals, CE Conformity, product catalogues etc. All the technical documents you might need available for you at a click.



Ask SMC

If any question of any type arises, in a couple of minutes you can send us an e-mail and one of the SMC support team will happily help you out.



SMC Online

Another way to be close to you.

"Coming together is a beginning. Keeping together is progress. Working together is success." – Henry Ford.

That is why at SMC we have built up the biggest Sales Engineers Network in the market, so we always have the possibility of standing shoulder to shoulder with you to find the most appropriate solution for your automation needs.

However, we are aware that you do not always need us there, by your side. There are some moments in the purchasing or in the designing process, or just for simpler requirements, which are not dependent on direct individual assistance.

This is why we have developed our online platform, as an extra way to be close to you; so you are able to find everything you require, whenever and wherever: all product information accessible at a click 24/7.

But remember, your sales engineers and our technical support teams behind them will always be happy to work closely with you, to work together to achieve your success.



Are you one of those people who never gets separated from your smartphone

If you are included in this statistic: "one third of Europeans use the Internet on mobile devices" (Eurostat), we recommend our Mobile Digital Catalogue. All the features of the online Digital Catalogue listed above accessed directly on your mobile phone.

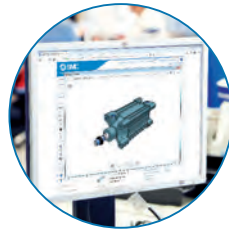
Flexibility for your own comfort...

Need help with the design of your customized SMC solutions

We have an extensive range of Configurators and Selectors, ready either online or to download in your PC.

Size it up for cylinders, valves, air line equipment, process valves or for your whole pneumatic system.

Designing can get very lonely; we want to be there...



What's going on

Become a member of our local Facebook and Youtube communities to be filled in on anything and everything that is happening within the industry and why not to let us know your thoughts and opinions?

Your opinion matters to us...



How this benefits you?

- Available 24 hours a day, 365 days a year
- One-stop solution – all the information you need brought together in one place
- Fast
- Reliable – eliminates any sort of mistake. The model you will get through our Product Configuration will be always the correct one.

What's the point if you don't get a benefit?!

...and then what?!

But remember, this only tops up our commitment towards ONE-ON-ONE RELATIONSHIPS

SMC boasts the largest global sales network: a sales force of over 4,800 to maintain close contact with you. Your Sales Engineer will be glad to assist you at all times with your business projects or any day-to-day issue.

Let's keep in touch...

Our commitment to you goes beyond the traditional, commercial transaction

We also strive to offer you the services that will increase the quality and efficiency of your process and raise your cost-efficiency.

Just ask us about our services for you



Energy efficiency activities

Do you want to reduce your energy consumption and operating costs?

There are so many different reasons that drive all of us to start conducting good energy practices that it is difficult to disregard for any longer.

CO₂ effects on global warming, progressively restrictive European environmental laws and the increasing and constant pressure to minimize costs as the only way to maintain competitive advantages in our respective markets.

These are the ways we propose for you to increase your competitiveness:

- Energy efficiency activities
- Energy/Activity - Energy efficiency
- Leak detection service
- Full range of energy efficiency products
- Energy efficiency assessment tools
- Energy efficiency software.

Go to page 16 for more detailed information.

Air quality management support

Are you really aware of the importance of having high-quality air in your system?

In short, impurities in your compressed air can easily end up in your final product thereby diminishing its quality. With nearly 60 years of experience in compressed air we can assist you in eliminating pollutants such as oil, water, scale or rust, to ensure you get the air quality you require.

With our support in Air Quality Management, you will benefit from:

- Optimized performance due to less downtime
- Reduction of your maintenance hours
- The increased lifetime of your system.

Ad-hoc training

Because we want you to take the best decisions

And a good decision is based on knowledge.

Education and Training is the premise of progress, the road to success. Conscious of this, we put our experts at your disposal to ensure that your staff has the necessary knowledge to take the best decisions.

The best part is that we can customize the training solution for you. Ad-hoc training means:

- On-site training on your premises or training courses at local SMC Training Centers.
- Practical hands-on training sessions or
- Theoretical classes for: Sizing & calculating, or related to a specific technology area: pneumatics, electronics, vacuum technology, energy efficiency, etc.

By qualifying your staff you will also benefit from the appropriate maintenance of your facilities.



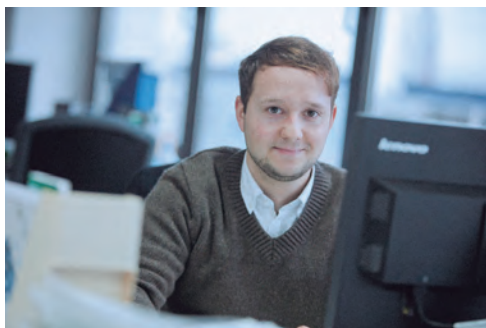
Bottleneck checks

Let's guarantee production flows

To tackle the problem from the root, we provide you with assistance in examining which elements are likely to cause a breakdown, frequent maintenance stops or quality issues.

The benefits for you are:

- The increased lifetime of the equipment
- Safe operation.



e-procurement

Time to apply innovation; technology applied to the processes

The New Technologies put at our disposal, offer a set of advantages that can also certainly be applied to the processes. It is time to be innovative in our processes and benefit from the competitive advantages that this will bring.

It is as simple as using electronic interfaces that will save you time. By eliminating orders by fax, e-mail or telephone, a high degree of order accuracy is ensured with the added safeguard of electronic order confirmation.

Having efficiency in your processes will mean a direct reduction in the procurement costs and less capital outlay.

Tailor-made logistics solutions

Stock management can be a real headache, we can find the option that best fits you

Both we and our distributors have the capabilities to guarantee a constant global supply and the immediate availability of spare parts to help you reduce capital outlay. Among the options we have for you are the following:

- Consignment stock
- C-part management
- Kits preparation
- Emergency delivery
- Just-in-time delivery
- Re-usable packaging.

With this you will benefit from a consistent supply and the immediate availability of spare parts.

Our commitment to you

SMC: Continuing to pursue worldwide customer satisfaction and support automation.

We contribute with our expertise and passion to find the best possible solution for you.



EXPERTISE

- ▶ **Since 1959** we have had our customers' trust.
- ▶ Our experts are always at your disposal to find **the best solution for you**.
- ▶ With a team of **1,500 experienced engineering** employees to provide quick solutions for our customers' specific needs.
- ▶ **5 worldwide Technical Centres** Japan, China, US, UK & Germany.

AUTOMATION

- ▶ Your Automation solutions provider **12,000** basic models with over **700,000** variations.
- ▶ Covering main product families – **basic pneumatics, electric actuators, vacuum & sensing solutions, ionizers or thermo-chillers.**
- ▶ For the main **automation industries.**
- ▶ Solutions delivered to you when you need them – **SMC's fast-track delivery service:** over **30,000** products can be sent to you within **48 to 72 hours**, depending on the destination.

To confirm, please contact zasales@smcza.co.za

- ▶ **500** sales offices in **83** countries (29 in Europe).

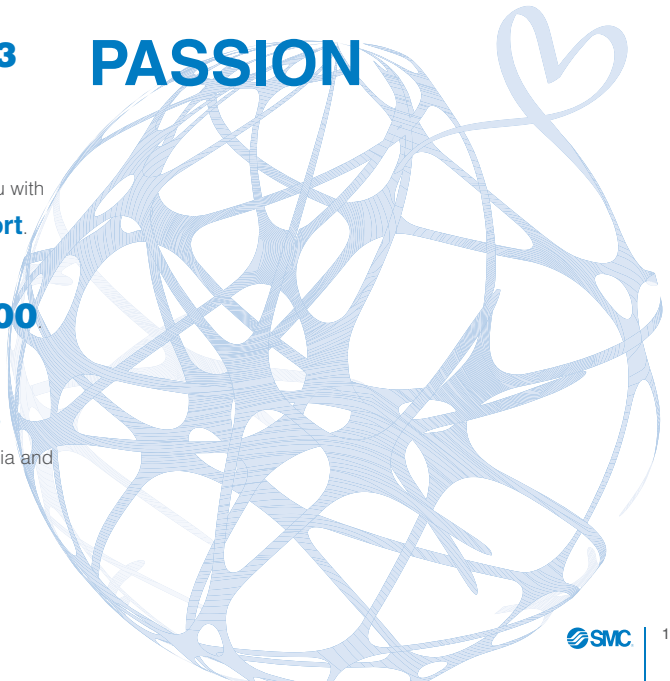
- ▶ By your side, ready to provide you with the **best technical support.**

- ▶ With a sales force of over **8,300**.

- ▶ **36** production centres

6 in Japan, 13 in Europe, 12 in Asia and 5 in America.

PASSION



SMC's Didactic Essence

SMC International Training is the educational division of SMC Corporation.

Our target is to meet automated industry's requirements in the didactic field. We offer companies and educational centers a wide range of products and solutions designed to develop the professional skills required by today's and tomorrow's technical experts.



Join us on the ascent through the different levels of the “Automation Pyramid”

Since the beginning of industrialization, the automation of manufacturing and production processes has been constantly evolving. This evolution has been made possible due to the integration in classic technologies, such as mechanics and electricity, of more modern ones such as electronics, computer science, communications, etc.

This integration of technologies is well represented by the “Automation Pyramid”, which includes the five technological levels which can be considered in an industrial environment. The technologies interrelate, both within each level and between the different levels, by using industrial communications.

With our product range you can reach the different levels of the pyramid to obtain the exact skills your job needs.

Technologies

- Programmable controllers
- Continuous processes
- Electric motors
- Motion control
- Manipulators
- Pneumatics
- Sensors
- M.E.S.
- E.R.P.
- Industrial communications
- Identification systems
- Electrical panel
- Artificial vision
- SCADA/HMI
- Hydraulics
- Robotics
- Vacuum.





The training system for **Industry 4.0**

Digitalization is changing our lives. The way we work, relate with each other and consume are different and companies need to adapt to that reality.

Companies must adapt themselves to that reality and they need highly qualified experts able to interact with factories and intelligent machines, to respond to the needs of customers.

Composed of up to 14 stations, the **SIF-400** training system simulates a highly automated smart factory, including **Industry 4.0** technologies, advanced manufacturing concepts and the reality of the connected enterprise.

Technologies

- Connected and open system
- Plug & Play
- Flexible
- Modular
- Real process
- Management software
- IIoT (Industrial Internet of Things)
- Ideal for academics and research.

Relevant items and technologies: Industrial controllers, web services, Ethernet communication, industrial management system, OPC-UA, RFID, BCR, NFC and QR identification systems, distributed input and output, energy efficiency, HMI, electric actuators, collaborative robot, safety, SCARA robot, augmented reality, artificial vision, IO-Link smart devices, indoor autonomous vehicle...

SIF-400: Designed to help develop the skills required by **Industry 4.0**

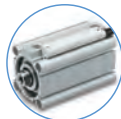
IO-Link Regulator



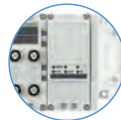
IO-Link Fieldbus system



IO-Link Sensor



Fieldbus wireless system



This is our product range to get you fully qualified

Products to get knowledge E-Learning courses

There is a portfolio available with 13 different eLEARNING courses intended for users to acquire the theoretical knowledge in the relevant technologies; covering areas such as pneumatics, hydraulics or robotics. All courses are fully interactive and their only requirement is to have an internet connection; whenever and wherever you please.

Under the name of eLEARNING-200, our courses are aimed at anyone interested in achieving the required knowledge in automation technologies.

Our products for skill development

Our didactic equipment consists of 18 different training families that will allow skills development in mechatronics, industrial automation and Industry 4.0 technologies. Each system emulates a real industrial environment, using state-of-the-art technologies and components.



Automation simulator software

autoSIM-200 is a software for training in automation technologies. With this software it is possible to:

- Design and simulate pneumatic, hydraulic, electric and electronic circuits
- Program virtual PLC
- Design, monitor and control 3D processes
- Connect with some of our training systems.

Training systems for pneumatics & electro-pneumatics

For the Pneumatics and Electro-Pneumatics Training there are 2 units: PNEUMATE-200 and PNEUTRAINER-400. Both have different options and compositions, which make them very adaptable solutions.

As a complement to these systems, and / or to be trained in more specific topics:

- VAC-200 for vacuum technology
- ENS-200 Energy efficiency trainer in compressed air installations.



Training systems for hydraulics & electro-hydraulics

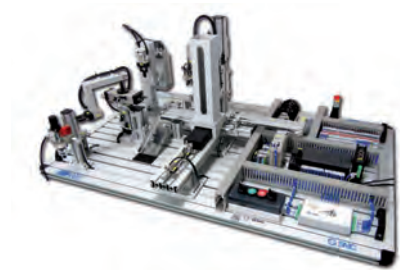
Two training systems to cover Hydraulics and Electro-Hydraulics: HYDROMODEL-200 and HYDROTRAINER-200.

The difference between them is based on the components:

- HYDROTRAINER-200 components are completely industrial
- HYDROMODEL-200 components are transparent methacrylate bodies with industrial parts inside, so it is possible to see how they work.

Both solutions also offer different compositions to adapt to different requirements.





Handling systems

This category includes various product families: MAP-200, AUTOMATE-200 or LOG-200.

Each of these training systems is focussed on different technologies and skills to provide you with the most suitable solution:

- Troubleshooting
- Installation and assembly
- Programming PLCs & SCADA
- Electrical actuators and handling systems
- Etc.

Industrial process control

IPC-200 emulates liquid production and a bottling plant and it includes the technologies used in continuous process industry.

IPC-200 main system features are:

- Open and closed loop control of pressure, flow, temperature and level
- Up to 3 stations: Production, bottling and palletizing
- Main technologies: Continuous Processes, PLCs, Industrial Communications, Motion Control, SCADA.



Flexible assembly systems

To learn about Flexible Assembly Systems we have: MAS-200, FAS-200 or FMS-200. Their main features are:

- Emulation of a real industrial assembly process
- All their stations are autonomous, but they can be combined to form a complete manufacturing cell
- They include a wide number of technologies including robotics, artificial vision systems, PLCs and SCADA.

Highly automated systems

HAS-200 is a training system that reproduces a highly automated factory with the capability of full production management.

HAS-200's main features are:

- You can reach the top of the "Automation Pyramid" working with technologies such as E.R.P or M.E.S (Manufacturing Execution System)
- It is a fully modular system consisting of up to 11 workstations, which can work independently or fully integrated
- It includes a Manufacturing Execution System which is formed by multiple software applications such as: Order & Dispatcher, Inventory Tracking & WIP, Statistical Process Control, Maintenance Management, Alarm Summary, Overall Equipment Efficiency (OEE) Estimations, etc.

And, to top it off, we incorporate a complete certification program endorsed by the SMC Competence Centre.



Check out all the information at www.smctraining.com

Energy efficiency

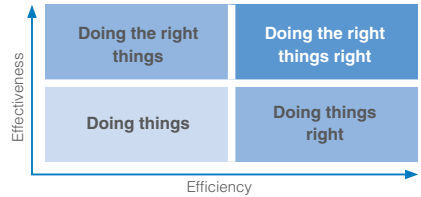
Energise your efficiency

Transform energy into a boost for your competitiveness

At SMC we are fully committed to different energy efficiency activities addressed at assisting our customers in reducing their bills and why not, making our modest contribution to global sustainability. We have accomplished different levels of actions in our customers' factories, always dedicated to increasing their productivity and, as the ultimate goal, their competitiveness.

Doing the right things right

Productivity is, in fact, a major decisive factor in economic growth and responsible for most of the technological advances of this era. But, what is productivity? We can conclude that, narrowly related with efficiency, productivity is nothing more than "DOING THE RIGHT THINGS RIGHT".



What does ISO 50001 involve?

In recent years we have seen how legislation has become more restrictive in terms of energy efficiency. Many governments are actively pushing it through new EU directives.

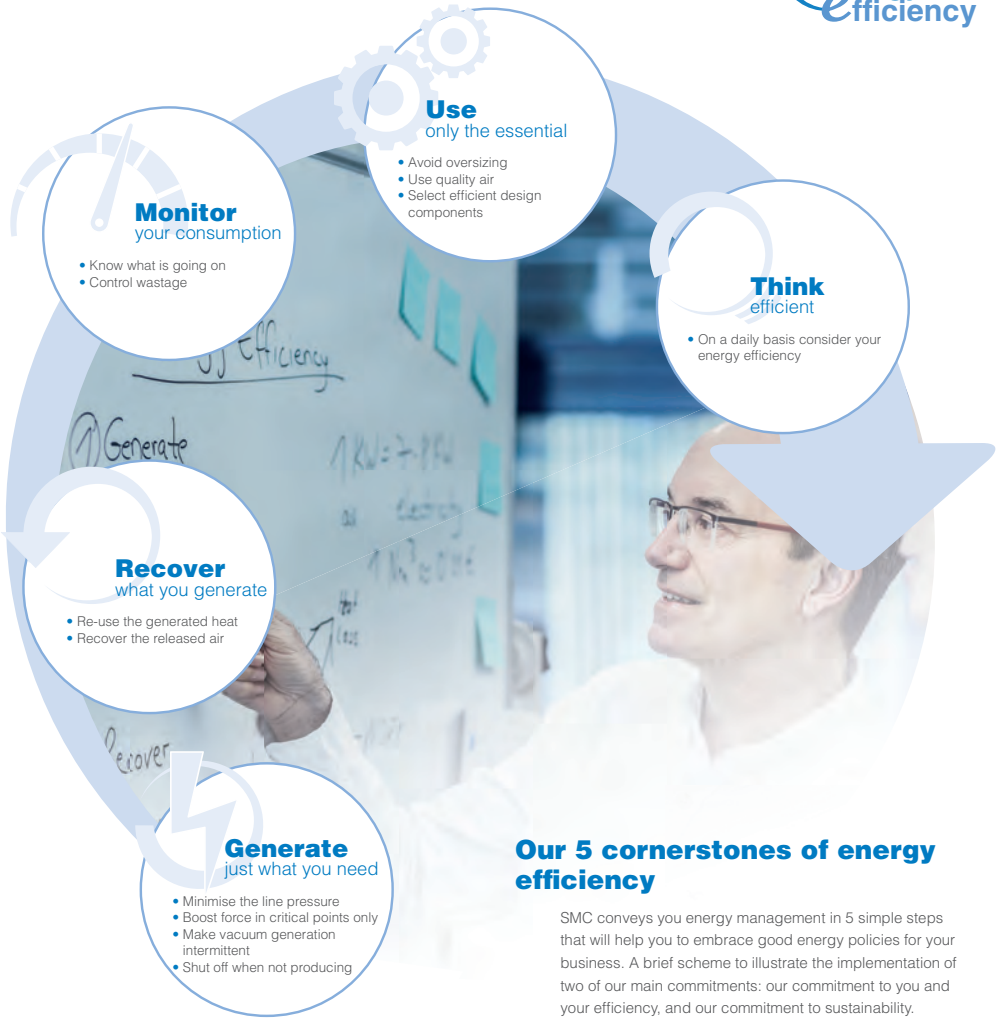
ISO 50001 is the path increasingly taken by more companies, primarily because the emphasis is on continuous improvement, rather than on externally imposed targets. We are delighted to accompany our customers through this process.



Breathe new life into the world

Leaving business objectives, efficiency or income statements aside for a moment, sustainability is really the move towards a better future for us and our planet.

SMC is fully committed to sustainable growth and works with this in mind every day. And, we are fully aware that we are on the right track. By 2030 we will be 31 % more efficient than we are today, as energy demand has started to grow slower than the economy.



Our 5 cornerstones of energy efficiency

SMC conveys you energy management in 5 simple steps that will help you to embrace good energy policies for your business. A brief scheme to illustrate the implementation of two of our main commitments: our commitment to you and your efficiency, and our commitment to sustainability.

Let's go towards energy efficiency together, we count on worldwide teams of specialists ready to support you.

Energy efficiency

Time is gold – Software and online tools

We reckon your time is too precious to be spent doing endless manual calculations. That is why we have developed a software with several online tools so they can carry out that tedious work for you.

All of them have a user-friendly interface which, in just a few steps, will provide the desired calculations. Besides, they ensure that potential errors are avoided.

Check them out so you can see how much money you'll save when you start using SMC's energy efficient solutions. User-friendly, question-based and, more importantly, with clear results.

Our list of e-Tools for you include:

Machine assessment

For each of the different areas (solenoids, air blow, actuators, etc.) this tool provides the savings in euros and their ROI.

Factory assessment

By answering a simple set of questions you'll discover your factory's saving potential. It's as simple as it seems.

Energy efficiency software

Partial calculations such as air consumption, cost of air, cost of a leak or pressure drops, are now as easily done by downloading this software from our website.

Simple saving calculators

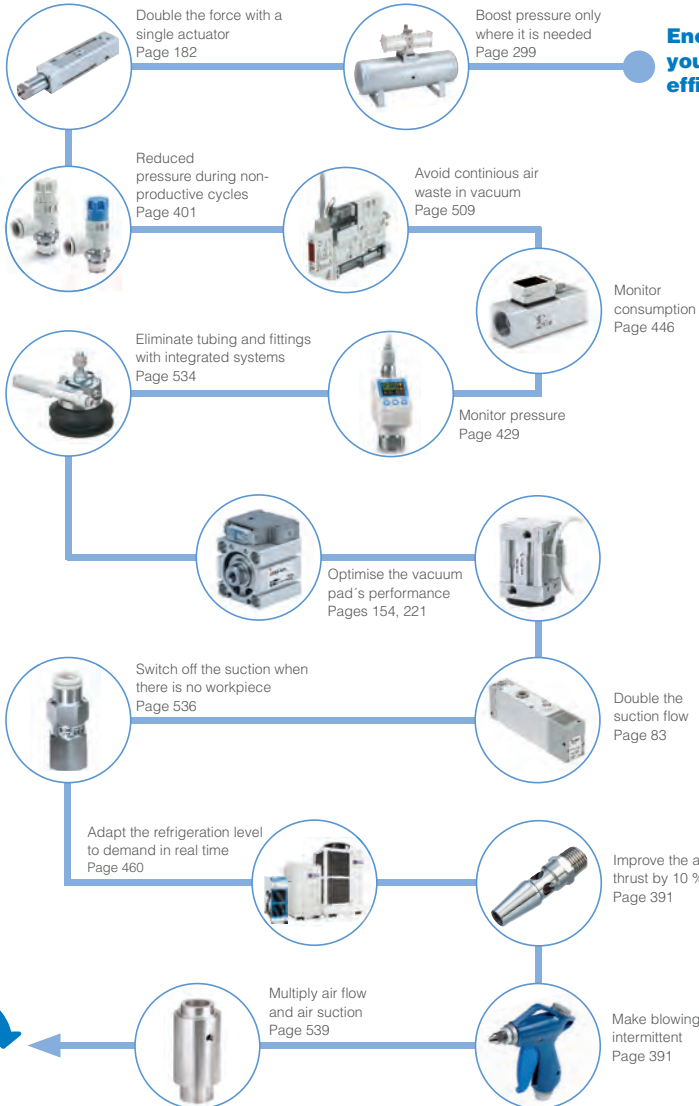
Check the savings you'll achieve by using:

- Energy saving valve VXE Series
- Blow gun VMG Series
- Air saving speed controllers ASR, ASQ Series.

Ready to start?
Visit our webpage and start your calculations

Find some of our highlighted energy-efficient products throughout this document and discover how much we can do for you:

**Energise
your
efficiency**



Valves

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4/5 Port solenoid valves

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3 Port solenoid valves

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Serial transmission

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Air operated valves

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Mechanical and hand valves

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Logic valves

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Multi regulator valves

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Silencers and exhaust cleaners

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Pneumatics 4/5 port Solenoid valves

Optimum size for driving air cylinders

Main valve seal method	Series	Flow characteristics A, B→E (2 position/Single)	Applicable cylinder Speed: 100 mm/s or less																Power consumption [W]	Connection size	
			Cv factor	Ø 6	Ø 10	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63	Ø 80	Ø 100	Ø 125	Ø 140	Ø 160	Thread piping [Rc]		One-touch fittings [Ø] Applicable tubing size [mm]	
Rubber seal	SJ	0.04 to 0.12	SJ2000 ● SJ3000 ●												0.55/0.4 (0.23/0.15) ^{*1}	M3, M5	2, 4, 6				
	SY	0.27 to 1.6	SY3000 ● SY5000 ● SY7000 ●												0.35 (0.1) ^{*1}	M5, 1/8, 1/4, 1/2	2, 3, 2, 4, 6, 8, 10, 12				
	SV	0.28 to 1.6	SV1000 ● SV2000 ● SV3000 SV4000 ●												0.6	1/8, 1/4, 3/8, 1/2	3, 2, 4, 6, 8, 10, 12				
	SYJ	0.12 to 0.74	SYJ3000 ● SYJ5000 ● SYJ7000 ●												0.35 (0.1) ^{*1}	M3, M5, 1/8, 1/4	4, 6, 8				
	S0700	0.08 to 0.10	S0700 ●												0.35	M3, M5	2, 3, 2, 4				
	VQC	0.21 to 4.4	VQC1000 ● VQC2000 ● VQC4000 ● VQC5000 ●												0.95, 0.4	M5, 1/4, 3/8, 1/2	3, 2, 4, 6, 8, 10, 12				
	SQ	0.19 to 0.71	SQ1000 ● SQ2000 ●												0.95, 0.4	M5	3, 2, 4, 6, 8				
	VQ7	1.4 to 3.3	VQ7-6 ● VQ7-8 ●												1	1/4, 3/8, 1/2, 3/4	6, 8, 10, 12				
	VQD	0.07	VQD1000 ●												3.2 (2.4) ^{*1}	M5	4				
	EVS	1.4 to 4.4	EVS7-6 ● EVS7-8 ● EVS7-10 ●												1.8	1/4, 3/8, 1/2, 3/4	—				
Metal seal	SY	0.24 to 1.1	SY3000 ● SY5000 ● SY7000 ●												0.35 (0.1) ^{*1}	M5, 1/8, 1/4, 1/2	2, 3, 2, 4, 6, 8, 10, 12				
	VQC	0.18 to 3.4	VQC1000 ● VQC2000 ● VQC4000 ● VQC5000 ●												0.95, 0.4	M5, 1/4, 3/8, 1/2	3, 2, 4, 6, 8, 10, 12				
	SQ	0.14 to 0.57	SQ1000 ● SQ2000 ●												0.95, 0.4	M5	3, 2, 4, 6, 8				
	VQ7	1.1 to 3	VQ7-6 ● VQ7-8 ●												1	1/4, 3/8, 1/2, 3/4	6, 8, 10, 12				
	EVS	1.1 to 4.0	EVS7-6 ● EVS7-8 ● EVS7-10 ●												1.8	1/4, 3/8, 1/2, 3/4	—				

* 1: () stands for power saving circuit.

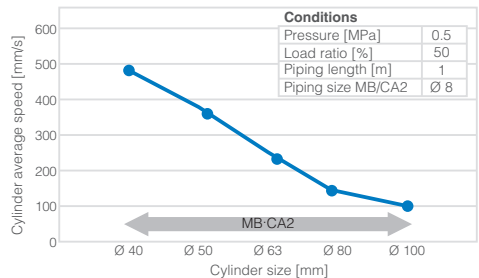
Conditions

- Pressure: 0.5 MPa
- Piping length: 1 m
- Load ratio: 50 %
- Stroke: 200 mm
- Speed: **100 mm/s** or less

Size of air cylinder and its speed

Example 1) Using the VQC2000 series (Cv 0.80), the average speed of air cylinder is obtained under the below condition for driving cylinders ranged Ø 40 to Ø 100.

Base mounted/Vertical, upward actuation



For details about the respective condition, make use of the SMC's Model Selection Program for air cylinder driving system for your reference.

Pneumatics 4/5 port Solenoid valves

Optimum size for driving air cylinders

Main valve seal method	Series	Flow characteristics A, B→E (2 position/ Single)	Applicable cylinder Speed: 300 mm/s or less													Power consumption [W]	Connection size	
			Cv factor	Ø 6	Ø 10	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63	Ø 80	Ø 100	Ø 125		Ø 140	Ø 160
Rubber seal	SJ	0.04 to 0.12	SJ2000 ● SJ3000 ●													0.55/0.4 (0.23/0.15) ^{*1}	M3, M5	2, 4, 6
	SY	0.27 to 1.6	SY3000 ● SY5000 ● SY7000 ●													0.35 (0.1) ^{*1}	M5, 1/8, 1/4, 1/2	2, 3, 2, 4, 6, 8, 10, 12
	SV	0.28 to 1.6	SV1000 ● SV2000 ● SV3000 ● SV4000 ●													0.6	1/8, 1/4, 3/8, 1/2	3, 2, 4, 6, 8, 10, 12
	SYJ	0.12 to 0.74	SYJ3000 ● SYJ5000 ● SYJ7000 ●													0.35 (0.1) ^{*1}	M3, M5, 1/8, 1/4	4, 6, 8
	S0700	0.08 to 0.10	S0700 ●													0.35	M3, M5	2, 3, 2, 4
	VQC	0.21 to 4.4	VQC1000 ● VQC2000 ● VQC4000 ● VQC5000 ●													0.95, 0.4	M5, 1/4, 3/8, 1/2	3, 2, 4, 6, 8, 10, 12
	SQ	0.19 to 0.71	SQ1000 ● SQ2000 ●													0.95, 0.4	M5	3, 2, 4, 6, 8
	VQ7	1.4 to 3.3	VQ7-6 ● VQ7-8 ●													1	1/4, 3/8, 1/2, 3/4	6, 8, 10, 12
	VQD	0.07	VQD1000 ●													3.2 (2.4) ^{*1}	M5	4
EVS	1.4 to 4.4	EVS7-6 ● EVS7-8 ● EVS7-10 ●													1.8	1/4, 3/8, 1/2, 3/4	—	
Metal seal	SY	0.24 to 1.1	SY3000 ● SY5000 ● SY7000 ●													0.35 (0.1) ^{*1}	M5, 1/8, 1/4, 1/2	2, 3, 2, 4, 6, 8, 10, 12
	VQC	0.18 to 3.4	VQC1000 ● VQC2000 ● VQC4000 ● VQC5000 ●													0.95, 0.4	M5, 1/4, 3/8, 1/2	3, 2, 4, 6, 8, 10, 12
	SQ	0.14 to 0.57	SQ1000 ● SQ2000 ●													0.95, 0.4	M5	3, 2, 4, 6, 8
	VQ7	1.1 to 3	VQ7-6 ● VQ7-8 ●													1	1/4, 3/8, 1/2, 3/4	6, 8, 10, 12
	EVS	1.1 to 4.0	EVS7-6 ● EVS7-8 ● EVS7-10 ●													1.8	1/4, 3/8, 1/2, 3/4	—

* 1: () stands for power saving circuit.

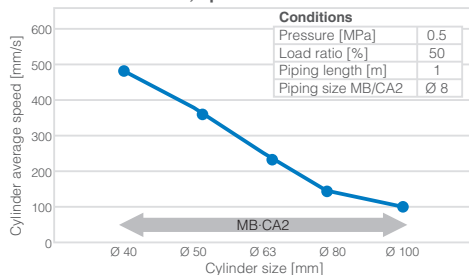
Conditions

- Pressure: 0.5 MPa
- Piping length: 1 m
- Load ratio: 50 %
- Stroke: 200 mm
- Speed: **300 mm/s** or less

Size of air cylinder and its speed

Example 1) Using the VQC2000 series (Cv 0.80), the average speed of air cylinder is obtained under the below condition for driving cylinders ranged Ø 40 to Ø 100.

Base mounted/Vertical, upward actuation



For details about the respective condition, make use of the SMC's Model Selection Program for air cylinder driving system for your reference.

Pneumatics 4/5 port Solenoid valves

Optimum size for driving air cylinders

Main valve seal method	Series	Flow characteristics A, B→E (2 position/ Single)	Applicable cylinder Speed: 500 mm/s or less													Power consumption [W]	Connection size	
			Cv factor	Ø 6	Ø 10	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63	Ø 80	Ø 100	Ø 125		Ø 140	Ø 160
Rubber seal	SJ	0.04 to 0.12	● SJ3000													0.55/0.4 (0.23/0.15) ^{*1}	M3, M5	2, 4, 6
	SY	0.27 to 1.6	● SY3000 ● SY5000 ● SY7000													0.35 (0.1) ^{*1}	M5, 1/8, 1/4, 1/2	2, 3, 2, 4, 6, 8, 10, 12
	SV	0.28 to 1.6	● SV1000 ● SV2000 ● SV3000 ● SV4000													0.6	1/8, 1/4, 3/8, 1/2	3, 2, 4, 6, 8, 10, 12
	SYJ	0.12 to 0.74	● SYJ5000 ● SYJ7000													0.35 (0.1) ^{*1}	M3, M5, 1/8, 1/4	4, 6, 8
	S0700	0.08 to 0.10	● S0700													0.35	M3, M5	2, 3, 2, 4
	VQC	0.21 to 4.4	● VQC1000 ● VQC2000 ● VQC4000 ● VQC5000													0.95, 0.4	M5, 1/4, 3/8, 1/2	3, 2, 4, 6, 8, 10, 12
	SQ	0.19 to 0.71	● SQ1000 ● SQ2000													0.95, 0.4	M5	3, 2, 4, 6, 8
	VQ7	1.4 to 3.3	● VQ7-6 ● VQ7-8													1	1/4, 3/8, 1/2, 3/4	6, 8, 10, 12
	VQD	0.07	● VQD1000													3.2 (2.4) ^{*1}	M5	4
	EVS	1.4 to 4.4	● EVS7-6 ● EVS7-8 ● EVS7-10													1.8	1/4, 3/8, 1/2, 3/4	—
Metal seal	SY	0.24 to 1.1	● SY3000 ● SY5000 ● SY7000													0.35 (0.1) ^{*1}	M5, 1/8, 1/4, 1/2	2, 3, 2, 4, 6, 8, 10, 12
	VQC	0.18 to 3.4	● VQC1000 ● VQC2000 ● VQC4000 ● VQC5000													0.95, 0.4	M5, 1/4, 3/8, 1/2	3, 2, 4, 6, 8, 10, 12
	SQ	0.14 to 0.57	● SQ1000 ● SQ2000													0.95, 0.4	M5	3, 2, 4, 6, 8
	VQ7	1.1 to 3	● VQ7-6 ● VQ7-8													1	1/4, 3/8, 1/2, 3/4	6, 8, 10, 12
	EVS	1.1 to 4.0	● EVS7-6 ● EVS7-8 ● EVS7-10													1.8	1/4, 3/8, 1/2, 3/4	—

* 1: () stands for power saving circuit.

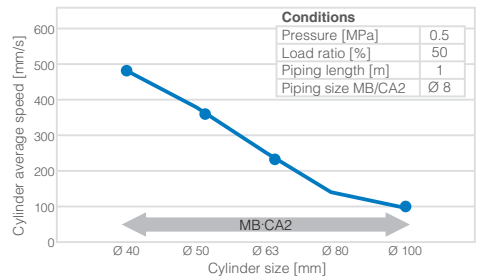
Conditions

- Pressure: 0.5 MPa
- Piping length: 1 m
- Load ratio: 50 %
- Stroke: 200 mm
- Speed: 500 mm/s or less

Size of air cylinder and its speed

Example 1) Using the VQC2000 series (Cv 0.80), the average speed of air cylinder is obtained under the below condition for driving cylinders ranged Ø 40 to Ø 100.

Base mounted/Vertical, upward actuation



For details about the respective condition, make use of the SMC's Model Selection Program for air cylinder driving system for your reference.

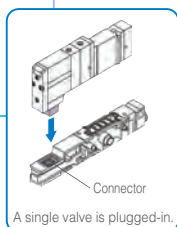
Pneumatics 4/5 port Manifold

Points for
selection

Description

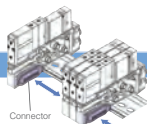
Point 1

Reduced
wiring
type



Wiring inside the manifold

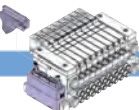
Connector connection manifold



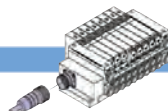
D-sub connector



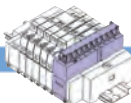
Flat ribbon cable



Multi-connector



Terminal block



Terminal box



Serial transmission



Centralized wiring with
external device

Wired individually inside the
manifold.
Connector connection

Point 2

Space
saving
type

A single valve is plugged-in.
Direct wiring is possible.

Height direction

Low profile cassette type



Around the valve

Single side solenoid type



Point 3

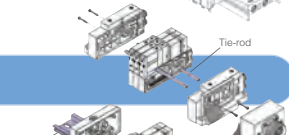
Stations
changeable
type

A single valve is plugged-in.
Direct wiring is possible.

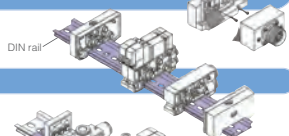
Number of stations

Tie-rod type manifold

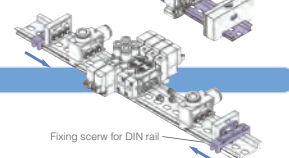
Metal joint type



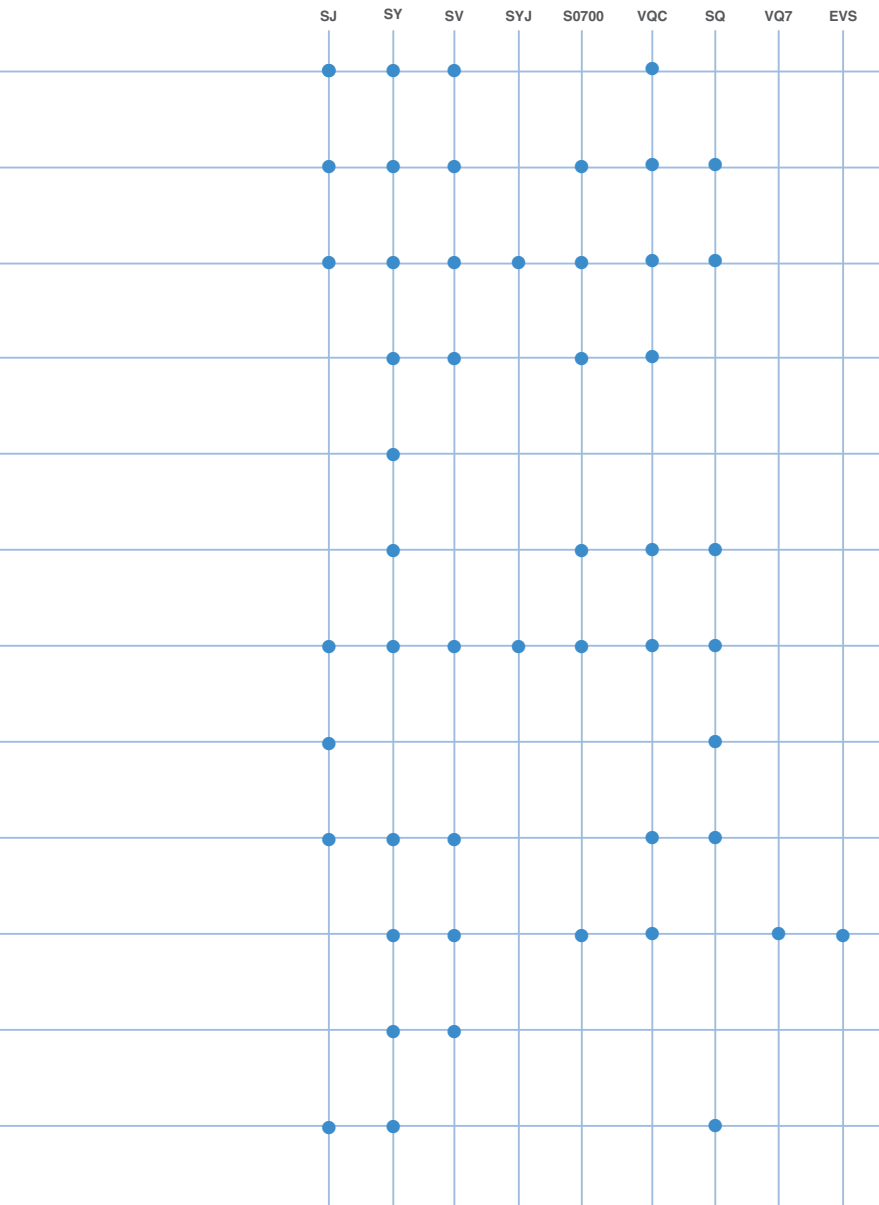
DIN rail type manifold



Cassette type manifold

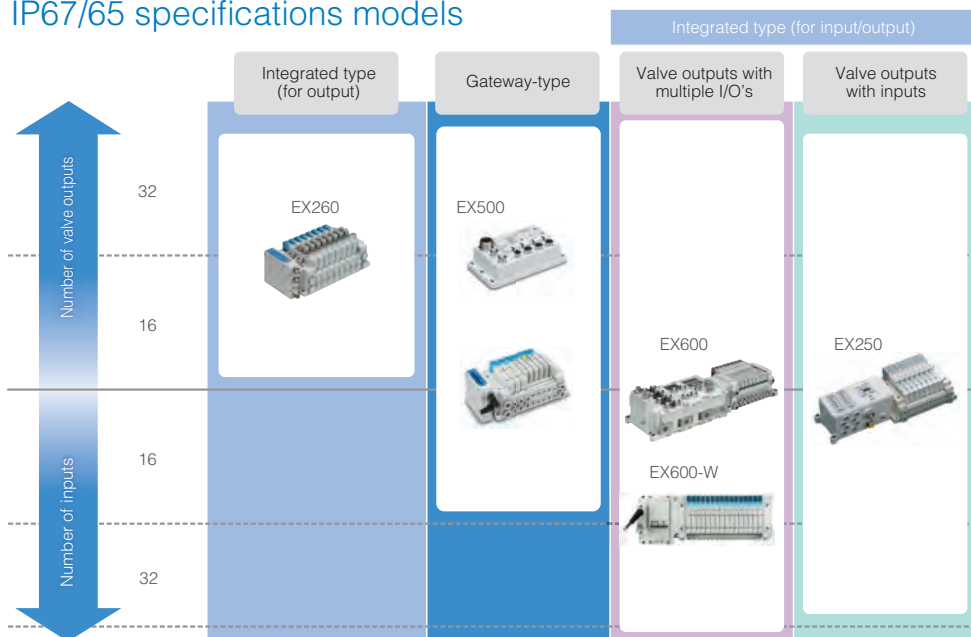


Compliant Series



Fieldbus system variations

IP67/65 specifications models



SI unit series		EX260	EX500	EX600	EX250
Open network	PROFINET	●	● ¹⁾	● ³⁾	
	EtherCAT®	●		●	
	EtherNet/IP™		● ¹⁾	● ³⁾	●
	Ethernet POWERLINK	●			
	PROFIBUS DP	●	● ²⁾	●	●
	DeviceNet™	●	● ²⁾	●	●
	CC-Link	●		●	●
	AS-Interface				●
	CANopen				●
IO-Link	●				

Applicable valve series			EX260	EX500	EX600	EX250
SY (Plug-in connector connecting base)	3000	●	●	●	●	●
	5000	●	●	●	●	●
	7000	●	●	●	●	●
S0700 (Stacking base)	0700	●	●	●	●	●
	1000	●	●	●	●	●
	2000	●	●	●	●	●
	3000	●	●	●	●	●
SV	4000	●	●	●	●	●
	1000	●	●	●	●	●
	2000	●	●	●	●	●
VQC	4000	●	●	●	●	●
	5000	●	●	●	●	●
	1000	●	●	●	●	●

1) Only for 128 points gateway decentralised system

2) Only for 64 points gateway decentralised system

3) EX600-W wireless type, only available in PROFINET and EtherNet/IP™ types

4/5 Port solenoid valves



**4 port solenoid valve, cassette type
connector type manifold**
SJ2000/3000 Series p.38



5 port solenoid valve, manifold type
SY3000/5000/7000 Series p.40



5 port solenoid valve, plug-in sub-plate
SY3000/5000/7000 Series p.45



**5 port solenoid valve, body ported,
bar stock type, individual wiring**
SY3000/5000/7000/9000 Series p.47



**5 port solenoid valve, base
mounted. Manifold type,
stacking type, individual wiring**
SY3000/5000/7000/9000 Series p.49



5 port solenoid valve, cassette type
SY3060/5060/7060 Series p.51



5 port solenoid valve
SV1000/2000/3000/4000 Series p.53



5 port solenoid valve, base mounted
SYJ3000 Series p.55



5 port solenoid valve
VF1000/3000/5000 Series p.56



**5 port solenoid valve, compact pilot
type**
S0700 Series p.57



**5 port solenoid valve, connector type
manifold. Metal seal/Rubber seal**
VQC1000/2000 Series p.59



**5 port solenoid valve, connector type
manifold. Metal seal/Rubber seal**
VQC4000/5000 Series p.60



**5 port solenoid valve
Metal seal/Rubber seal**
SQ1000/2000 Series p.61



**ISO standard solenoid valve,
compliant with ISO 5599/1**
VQ7-6/VQ7-8 Series p.62



**ISO standard solenoid valve,
compliant with ISO 5599/1**
EVS7-6/8 Series p.63



**ISO standard solenoid valve,
compliant with ISO 5599/1**
EVS7-6/8/10 Series p.64



**ISO/CNOMO standard solenoid
valve, compliant with ISO 5599/1**
EVS7-6/8/10 Series p.65



**ISO standard solenoid valve,
compliant with ISO 15407-1
and VDMA 24563**
EVS1-01/02 Series p.66



**5 port ISO 15407-2 valve
Size 01, 02, plug-in type**
VSR8/VSS8 Series p.67

3 Port solenoid valves



3 port solenoid valve, air pilot type
SYJ300 Series p.68



3 port solenoid valve
VP(A)300/500/700 Series p.69



3 port solenoid valve, safety standard ISO 13849-1
VP/VG Series p.70



Dual residual pressure release valve with soft start-up function
VP-X555/X585 Series p.71



3 port solenoid valve unit, super compact manifold type
VV061 Series p.72



3 port solenoid valve, direct operated
V100 Series p.72



3 port solenoid valve, super compact
S070 Series p.73



3 port solenoid valve, directly operated
VT•VO307/317 Series p.74



3 port 3 position valve
VEX3 Series p.75



Serial transmission



Fieldbus system, integrated type (for output)
EX260 Series p.76



Fieldbus system, integrated type (for input/output)
EX250 Series p.77



Fieldbus system, integrated type (for input/output)
EX600 Series p.78



Fieldbus wireless system
EX600-W Series p.80



Fieldbus system, gateway type
EX500 Series p.81



Air operated valves



Pneumatically operated 5 port valve
SYA3000/5000/7000 Series p.83



Pneumatically operated 5 port valve
SYJA5000/7000 Series p.83



Pneumatically operated 5 port valve
EVSA7-6/8 Series p.84



Pneumatically operated 3 port valve
SYJA500/700 Series p.85

Mechanical and hand valves

Mechanical valves



Micro mechanically operated 3 port valve
VM1000 Series p.85



Mechanically operated 3 port valve
VM100 Series p.86



Mechanically operated 3 port valve
VM200 Series p.87



Mechanically operated 3 port valve
EVM400 Series p.88



Mechanically operated 3 port valve
EVM800 Series p.88



Mechanically/Manually operated 5 port valve
EVZM500 Series p.89



Mechanically operated 5 port valve
EVFM300 Series p.90

Hand valves



Two hand control valve
VR51 Series p.91



3 port manually operated valve, finger valve
VHK Series p.91



Manually operated 4 port valve, hand valve
VH Series p.92



Pressure relief 3 port valve
VHS Series p.92

Logic valves



Shuttle valve, metal type
VR1210/1220 Series p.93



Shuttle valve plastic with one-touch fittings
VR1210F/1220F Series p.93



AND logic valve
VR1211F Series p.93

Multi regulator valves



Power valve
VEX1/VEX3 Series p.94

Silencers and exhaust cleaners



Silencer compact resin type
AN Series p.95



Silencer BC sintered body type
AN Series p.95



Silencer metal body type
AN□□00 Series p.96



Silencer 40 dB (A): High noise reduction type
ANA1 Series p.96



Silencer, high pressure operation: Up to 5 MPa
VCHN3/4 Series p.97



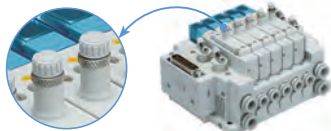
Exhaust cleaner
AMC Series p.97

Our highlighted product for you

5 port solenoid valve SY3000/5000/7000 Series



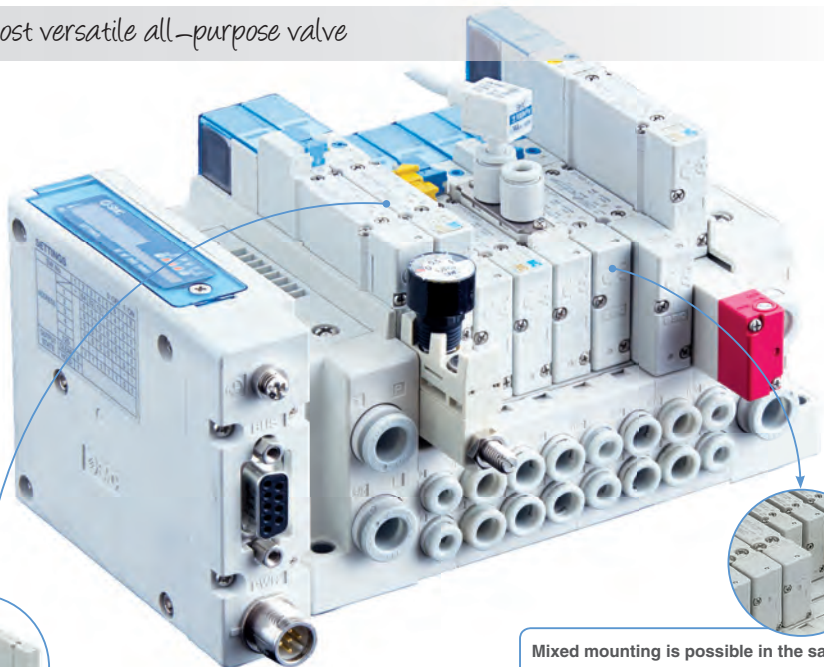
For more details
go to page 40



Vacuum release valve with restrictor

This allows control of both vacuum suction and release with a single valve unit, and prevents the workpieces from blowing-off thanks to gentle expulsion.

The most versatile all-purpose valve



Compact size and high flow

Outstanding flow characteristics while maintaining compact size – As narrow as 10 mm wide (SY3000)

Simple and quick valve replacement.



Mixed mounting is possible in the same manifold

Different sizes (SY3000/5000 or SY5000/7000) can be mixed.

► Remarkable flexibility in design

Integration of wiring, piping and operation on one side

Bottom ported available

Flexible piping – direction, size and type of piping can be changed. Possible to mount the piping on top, on the side and mixed

► Back pressure check valve

This prevents cylinder malfunction caused by the exhaust from other valves.

3 port solenoid valve direct operated poppet type

VT307 Series



For more details
go to page 74



Power consumption

- Standard type 4 W
(Existing product: 4.8 W)
- Energy efficiency type: 1.8 W
(Existing product 2 W)

A poppet valve directly designed to reduce costs

► **Types**

Body ported type



Manifold type



► **A single valve with various valve function**

(Universal porting type)

- N.C. valve
- N.O. valve
- Divider valve
- Selector valve
- etc.

► **A variety of valve options**

- Continuous duty type
- Energy efficiency type
- Vacuum specification type
- Energy efficiency type + Vacuum specification type
- * Based on SMC test conditions

► **Vacuum specifications type**

For vacuum applications up to -101.2 kPa

► **Low concentration ozone resistant**

Rubber seal material: HNBR for main valve.

Our highlighted product for you

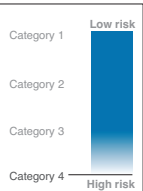
Dual residual pressure release valve with soft start-up function

VP-X555/585 Series



For more details go to page 71

Safety Standards ISO 13849-1 compliant
Categories 3 and 4



Dual pressure release valves - redundant system

By having two valves the correct functioning of the whole system is ensured even if one of the valves fails to operate.

Detection of main valve position

The detecting function of the main valve position detects a mismatch between the input signal and valve operation.

Smoothly safe

Integrated soft start-up function

It gradually increases the initial pressure of the pneumatic system, thus allowing a smoother start-up.

Selectable operation, check valve and safety limit switch

- Operation: internal pilot, external pilot
- Limit switch: OMRON, Rockwell Automation.



OMRON



Rockwell Automation

Fieldbus system

EX260 Series



For more details
go to page 77

Valve output system

Output device for driving 5 port solenoid valves
Applicable valve series: SY, SV, S0700, VQC.

The cost-effective solution for your communications



Internal terminal resistor

ON/OFF switching is possible with an internal
terminating resistor.
(Only available for PROFIBUS-DP and CC-Link)



SPEEDCON connectors compatibility

Just insert and rotate 1/2 turn – quick
connection with reduced installation
and start times.

- ▶ **Daisy-chain communication & compact size**
Product equipment size reduction – space savings
- ▶ **Wiring and piping from the same direction is possible**
- ▶ **IP67 enclosure protection**
- ▶ **Compatible protocols**



Our highlighted product for you

Fieldbus system

EX600 Series



For more details
go to page 79

► Centralised multipoint fieldbus system for digital and analogue I/O

- Up to 9 I/O units, either digital or analogue, can be connected in any order
- Possible to connect various input and output devices to the digital/analogue I/O units.

Self-diagnosis function and LED display

- Possible to ascertain the maintenance period and identify the parts that require maintenance
- In combination with the **Handheld terminal**, it allows setting parameters and monitoring I/O signals.



Increase the capabilities of your communications

Dual port SI unit (EtherNet/IP™)

- DLR topology
- Supports QuickConnect™ function
- Built-in web server function

► Joint type connection method plus SPEEDCON compatible connectors

► IP67 enclosure protection

► Applicable valve series: SY, SV, S0700, VQC

► Compatible protocols



DeviceNet CC-Link

EtherNet/IP EtherCAT

Fieldbus wireless system

EX600-W Series



For more details
go to page 78

Wireless master unit

- One unit to control the entire wireless network
- EtherNet/IP™ and PROFINET compatible
- Max. 1280 inputs/1280 outputs
- Up to 127 slaves (31 for PROFINET) can be connected to one master unit.

► Suitable for any application

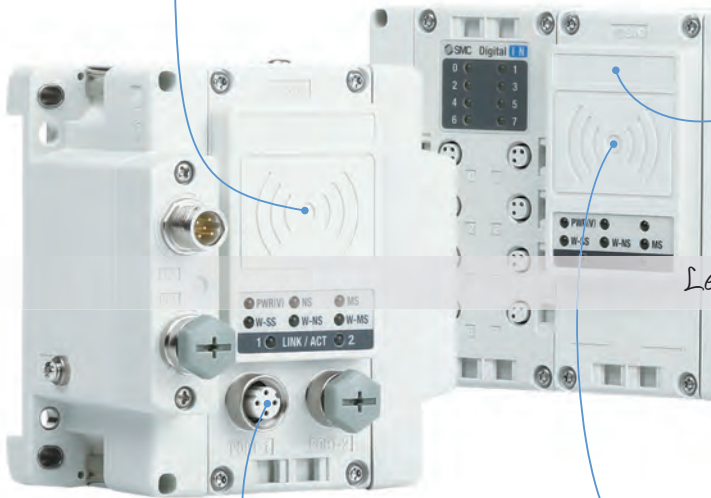
Ideal for welding environments, tool changes in robot arms or rotary/indexing tables

► Simple layout modification & quick connection

► Applicable valve series: SY, SV, S0700, VQC.

Wireless slave unit

Management of analogue, digital and pneumatic product.



Less is definitely more

Decentralised system, point-to-multipoint communication

Only one IP address for managing the complete wireless system.

Wireless system, noise resistant

- Less cables & connectors, less installation & maintenance, less breakage & disconnection risk
- Radio wave propagation in the 2.4 GHz ISM frequency band
- Frequency hopping - every 5 ms
- Data encryption
- Wireless communication range: 10 metres.

4/5 port solenoid valves

4 port solenoid valve, cassette type connector type manifold

SJ2000/3000 Series



- 3 port (also 2 port) in standard design, for valve functions N.C., N.O.
- Card-edge type connector
- 7.5/10 mm width
- Power savings: 0.15 W consumption (SJ3000 with power saving circuit)
- Power supply shut-off switch for discharge of each valve individually
- SJ2000/SJ3000 can be mounted together
- Ø 2 One-touch fitting connection possible
- Manifold serial wiring variations: EX180 DeviceNet™ compliant (16, 32 outputs), EX180 CC-Link compliant (32 outputs)
- Manifold parallel wiring variations: D-sub connector, flat ribbon cable (10/20/26 pins)
- A maximum of 32 solenoids per manifold
- Easy attach/detach of the SI unit and wiring by the connector
- Easy in maintenance.

Type of actuation	Part number solenoid valve	Flow [l/min]	Operating pressure range [MPa]	Port size A/B	Port size P/E	Voltage	Circuits symbols
2 Position single	SJ2160-5CU-C2 ●	40	0.15 ~ 0.7	Ø 2	Ø 8	24 VDC	
	SJ3160-5CU-C2	41					
	SJ2160-5CU-C4 ●	83					
	SJ3160-5CU-C4 ●	105					
	SJ3160-5CU-C6 ●	128					
	SJ2160-5CU-M3	54					
2 Position double	SJ3160-5CU-M5	105	0.1 ~ 0.7	Ø 2	Ø 8	24 VDC	
	SJ2260-5CU-C2	40					
	SJ3260-5CU-C2	41					
	SJ2260-5CU-C4 ●	83					
	SJ3260-5CU-C4	105					
	SJ3260-5CU-C6 ●	128					
	SJ2260-5CU-M3	54					
	SJ3260-5CU-M5	105					

Other types of actuation, voltages, plug connectors and port sizes available on request.

Solenoid variations

Part number	Description
SJ2□60-5CU-C2 ●	Valve dedicated for centralised wiring with light/surge voltage suppressor (non-polar type); and with no power saving <input type="checkbox"/> 1: 2 position single solenoid <input type="checkbox"/> 2: 2 position double solenoid <input type="checkbox"/> 3: 3 position closed centre <input type="checkbox"/> 4: 3 position exhaust centre <input type="checkbox"/> 5: 3 position pressure centre <input type="checkbox"/> A: dual 3 port valve N.C./N.C. <input type="checkbox"/> B: dual 3 port valve N.O./N.O. <input type="checkbox"/> C: dual 3 port valve N.C./N.O.
SJ2160R-5CU-C2	SJ2000 valve with external pilot
SJ2160K-5CU-C2	SJ2000 valve with built-in back pressure check valve
SJ2160T-5CU-C2	SJ2000 valve with power saving circuit
SJ2160-5CZ-C2	SJ2000 valve with light/surge voltage suppressor (polar type)
SJ2160-5MZ-C2	SJ2000 valve with individual wiring (connector and 300 mm length wiring cable)
SJ2160-5MNZ-C2	SJ2000 valve with individual wiring (connector without wiring cable)
SJ2160-5MOZ-C2	SJ2000 valve with individual wiring (no connector, no wiring cable)
SJ2160-5CZJ-C2 ●	SJ2000 valve with shut-off switch for individual disconnection
SJ2160-5CUD-C2 ●	SJ2000 valve with manual override locking switch
SJ3A6-5CU-P	SJ3000 vacuum release valve with restrictor, with plug (M-5P)
SJ2160-5CUF-C2	SJ2000 valve with slide locking type
SJ2160-5FZ-C2	SJ2000 valve dedicated for centralised wiring, cable type

Modular manifold SJ2000, SJ3000

No.	Description	Part number	Notes
1	Internal pilot	SJ3000-50-1A-□●	□□: Reference for one-touch fittings C6: Ø 6 straight C8: Ø 8 straight L6: Ø 6 elbow upward entry L8: Ø 8 elbow upward entry B6: Ø 6 elbow downward entry B8: Ø 8 elbow (All are touch fittings)
	Internal pilot/built-in silencer	SJ3000-50-1AS-□●	
	External pilot	SJ3000-50-1AR-□●	
	External pilot/built-in silencer	SJ3000-50-1ARS-□	
	For different pressure, internal pilot	SJ3000-50-3A-□●	
	For different pressure, internal pilot/built-in silencer	SJ3000-50-3AS-□	
2	End block assembly	SJ3000-53-1A●	—
3	DIN rail	VZ1000-11-1-□●	□: reference for length
4	For D-sub connector	SJ3000-42-1A-□●	□: 1 connector upward □: 2 connector lateral
	For flat ribbon cable 26 pins	SJ3000-42-2A-□	
	For flat ribbon cable 16 pins	SJ3000-42-3A-□●	
	For flat ribbon cable 10 pins	SJ3000-42-4A-□	
	For serial wiring, EX180	SJ3000-42-20A	
5	DeviceNet™, 32 points	EX180-SDN5	T-branch type
	DeviceNet™, 32 points	EX180-SDN5A	Straight type
	DeviceNet™, 16 points	EX180-SDN6	T-branch type
	DeviceNet™, 16 points	EX180-SDN6A	Straight type
6	SUP/EXH block disk assembly	SJ3000-44-1A●	—

Manifolds

Type	Part number	Description
Connector type	SS5J□-60SD0-■U	Serial transmission (EX180), no SI unit
	SS5J3-M60SD0-■U	Serial transmission (EX180), no SI unit, mixed SJ2000/3000 mounting
	SS5J□-60FD1-■U	D-sub connector (25 pins)
	SS5J□-60PD1-■U	Flat ribbon cable (26 pins)
	SS5J3-V60FD1-■U	D-sub connector, vacuum release with restrictor
	SS5J□-60S6BND-■U	Serial transmission Gateway type (EX510)
Cable type	SS5J□-60LFD1-■U	D-sub connector (25 pins)
	SS5J□-60LPD1-■U	Flat ribbon cable (26 pins)
	SS5J3-V60LFD1-■U	D-sub connector, vacuum release with restrictor

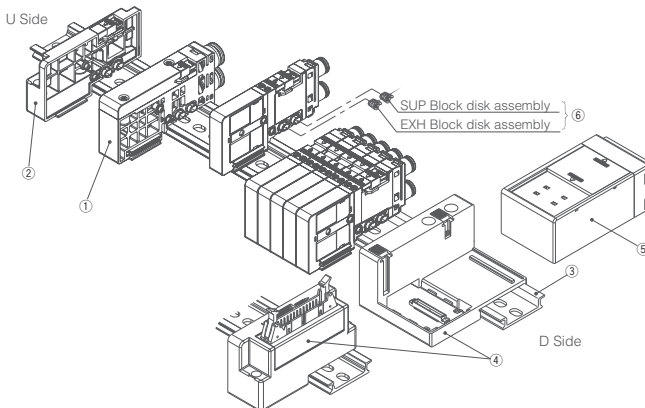
□ 2: for SJ2000

□ 3: for SJ3000

■ Number of stations.

Other kit types available on request.

SI units ordered separately.



Our highlighted product for you

5 port solenoid valve, manifold type

SY3000/5000/7000 Series





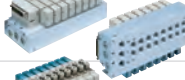

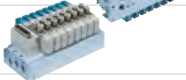

- Energy efficiency: 0.1 W with power saving circuit, 0.35 W standard
- Space saving: 10 mm width (SY3000)
Top, bottom, side ported available
- Wiring, piping and operation are integrated in one side
- Direction, size and type of the piping can be changed
- Applicable to various types of serial wiring
- Slide manual override provides better visibility
- Vacuum release valve with restrictor - allows control of both vacuum suction and release with a single valve unit.

Type of actuation	Part number solenoid valve	Seal type	Operating pressure range [MPa]	Voltage	Circuits symbols
2 position single	SY3100-5U1 ●	Rubber	0.15 ~ 0.7	24 VDC	(A)4 2(B)
	SY5100-5U1 ●				(EA)531 (EB) (P)
	SY7100-5U1 ●				(EA)531 (EB) (P)
	SY3101-5U1 ●	Metal	0.1 ~ 0.7		(A)4 2(B)
	SY5101-5U1 ●				(EA)51 3(EB) (P)
2 position double	SY3200-5U1 ●	Rubber	0.1 ~ 0.7	24 VDC	(A)4 2(B)
	SY5200-5U1 ●				(EA)51 3(EB) (P)
	SY7200-5U1 ●				(EA)51 3(EB) (P)
	SY3201-5U1 ●	Metal	0.1 ~ 0.7		(A)4 2(B)
	SY5201-5U1 ●				(EA)51 3(EB) (P)
3 position closed centre	SY3300-5U1 ●	Rubber	0.2 ~ 0.7	24 VDC	(A)4 2(B)
	SY5300-5U1 ●				(EA)51 3(EB) (P)
	SY7300-5U1 ●				(EA)51 3(EB) (P)
	SY3301-5U1 ●	Metal	0.1 ~ 0.7		(A)4 2(B)
	SY5301-5U1 ●				(EA)51 3(EB) (P)
3 position exhaust centre	SY3400-5U1 ●	Rubber	0.2 ~ 0.7	24 VDC	(A)4 2(B)
	SY5400-5U1 ●				(EA)51 3(EB) (P)
	SY7400-5U1 ●				(EA)51 3(EB) (P)
	SY3401-5U1 ●	Metal	0.1 ~ 0.7		(A)4 2(B)
	SY5401-5U1 ●				(EA)51 3(EB) (P)
3 position pressure centre	SY3500-5U1 ●	Rubber	0.2 ~ 0.7	24 VDC	(A)4 2(B)
	SY5500-5U1 ●				(EA)51 3(EB) (P)
	SY7500-5U1 ●				(EA)51 3(EB) (P)
	SY3501-5U1 ●	Metal	0.1 ~ 0.7		(A)4 2(B)
	SY5501-5U1 ●				(EA)51 3(EB) (P)
Dual 3 port valve NC/NC	SY3A00-5U1 ●	Rubber	0.15 ~ 0.7	24 VDC	4(A) 2(B)
	SY5A00-5U1 ●				5(EA) 1(P) 3(EB)
	SY7A00-5U1 ●				5(EA) 1(P) 3(EB)
Dual 3 port valve NO/NO	SY3B00-5U1 ●	Rubber	0.15 ~ 0.7	24 VDC	4(A) 2(B)
	SY5B00-5U1 ●				5(EA) 1(P) 3(EB)
	SY7B00-5U1 ●				5(EA) 1(P) 3(EB)
Dual 3 port valve NC+NO	SY3C00-5U1 ●	Rubber	0.15 ~ 0.7	24 VDC	4(A) 2(B)
	SY5C00-5U1 ●				5(EA) 1(P) 3(EB)
	SY7C00-5U1 ●				5(EA) 1(P) 3(EB)

Vacuum release valve with restrictor 

Part number	Description
SY3A0R-5U1	SY3000, vacuum release valve with restrictor, side/bottom ported
SY5A0R-5U1	SY5000, vacuum release valve with restrictor, side/bottom ported
SY3A3R-5U1-C6	SY3000, vacuum release valve with restrictor, top ported, Ø 6 one-touch fitting
SY5A3R-5U1-C8	SY5000, vacuum release valve with restrictor, top ported, Ø 8 one-touch fitting

Manifold variations

	Plug-in metal base		Plug-in connector connecting base	
Side ported	 Type 50 □	Side ported	 Type 10 □	
Bottom ported	 Type 51 □	Bottom ported	 Type 11 □	
Top ported	 Type 52 □	Top ported	 Type 12 □	



For complete units (valves and manifold) please use our Valve Configurator online (available at www.smc.eu)

Flow characteristics, metal base

Model	Port size		Flow [l/min]	
	1, 5, 3 (P, EA, EB)	4, 2 (A, B)	Rubber seal	Metal seal
SS5Y3-50 (Side ported)	1/8	Ø 6	262	209
SS5Y3-51 (Bottom ported)	1/8	Ø 6	307	241
SS5Y3-52 (Top ported)	1/8	Ø 6	278	256
SS5Y5-50 (Side ported)	1/4	Ø 8	653	527
SS5Y5-51 (Bottom ported)	1/4	Ø 8	709	595
SS5Y5-52 (Top ported)	1/4	Ø 8	645	568
SS5Y7-50 (Side ported)	3/8	Ø 10	948	780
SS5Y7-51 (Bottom ported)	3/8	Ø 10	1070	863
SS5Y7-52 (Top ported)	3/8	Ø 10	1123	843

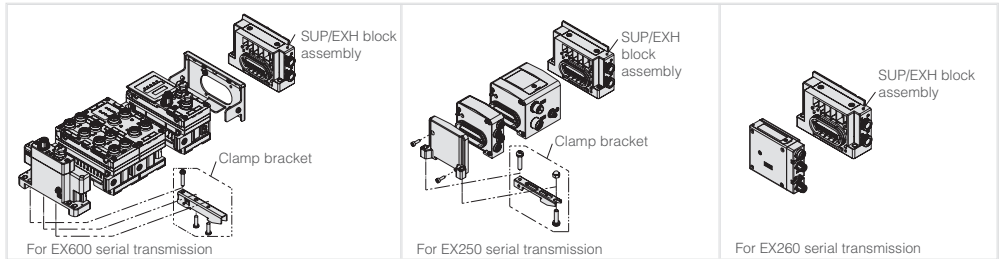
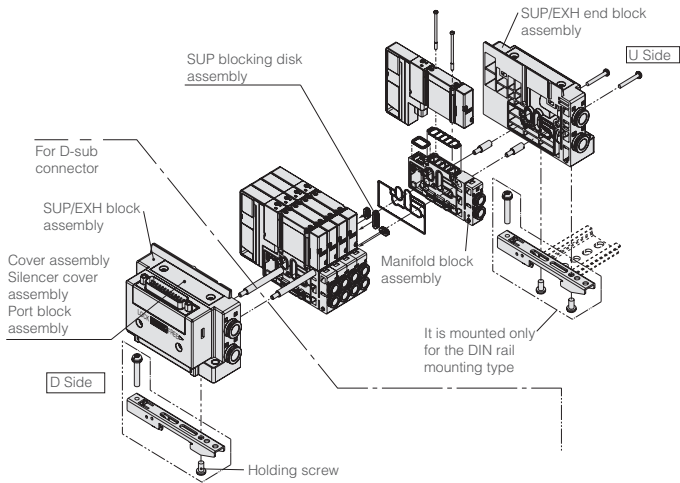
1) The value is for manifold base with 5 stations and individually operated 2-position type.

Flow characteristics, resin base

Model	Port size		Flow [l/min]	
	1, 3/5 (P, E)	4, 2 (A, B)	Rubber seal	Metal seal
SS5Y3-10 (Side ported)	Ø 8	Ø 6	356	286
SS5Y3-12 (Top ported)	Ø 8	Ø 6	303	281
SS5Y5-10 (Side ported)	Ø 10	Ø 8	839	662
SS5Y5-11 (Bottom ported)	Ø 10	Ø 8	834	690
SS5Y5-12 (Top ported)	Ø 10	Ø 8	699	616
SS5Y7-10 (Side ported)	Ø 12	Ø 12	1511	1020
SS5Y7-11 (Bottom ported)	Ø 12	Ø 12	1529	1078
SS5Y7-12 (Top ported)	Ø 12	Ø 12	1433	939

1) The value is for manifold base with 5 stations and individually operated 2-position type.

Manifold, resin base: Exploded view



Note: Consult SMC for detailed information

Manifolds

Resin base, Ttype 10 side ported. P, E port entry both sides

Part number	<input type="checkbox"/> Stocked options	Description
SS5Y3-10F1-□B-C4 ●	03, 04, 05, 06, 07, 08, 09, 10, 11, 12	Manifold for SY3000 for <input type="checkbox"/> stations. D-sub connector. Internal pilot. Port A/B (one-touch fitting) 4 mm
SS5Y3-10F1-□BR-C4		Manifold for SY3000 for <input type="checkbox"/> stations. D-sub connector. External pilot. Port A/B (one-touch fitting) 4 mm
SS5Y3-10F1-□B-C6 ●		Manifold for SY3000 for <input type="checkbox"/> stations. D-sub connector. Internal pilot. Port A/B (one-touch fitting) 6 mm
SS5Y3-10F1-□BR-C6		Manifold for SY3000 for <input type="checkbox"/> stations. D-sub connector. External pilot. Port A/B (one-touch fitting) 6 mm
SS5Y5-10F1-□B-C4 ●		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. Internal pilot. Port A/B (one-touch fitting) 4 mm
SS5Y5-10F1-□BR-C4		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. External pilot. Port A/B (one-touch fitting) 4 mm
SS5Y5-10F1-□B-C6 ●		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. Internal pilot. Port A/B (one-touch fitting) 6 mm
SS5Y5-10F1-□BR-C6		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. External pilot. Port A/B (one-touch fitting) 6 mm
SS5Y5-10F1-□B-C8 ●		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. Internal pilot. Port A/B (one-touch fitting) 8 mm
SS5Y5-10F1-□BR-C8		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. External pilot. Port A/B (one-touch fitting) 8 mm
SS5Y7-10F1-□B-C10	—	Manifold for SY7000 for <input type="checkbox"/> stations. D-sub connector. Internal pilot. Port A/B (one-touch fitting) 10 mm
SS5Y7-10F1-□BR-C10		Manifold for SY7000 for <input type="checkbox"/> stations. D-sub connector. External pilot. Port A/B (one-touch fitting) 10 mm
SS5Y7-10F1-□B-C12		Manifold for SY7000 for <input type="checkbox"/> stations. D-sub connector. Internal pilot. Port A/B (one-touch fitting) 12 mm
SS5Y7-10F1-□BR-C12		Manifold for SY7000 for <input type="checkbox"/> stations. D-sub connector. External pilot. Port A/B (one-touch fitting) 12 mm

N° of stations: 02 to 12 (all double wiring), to 24 (specified layout)

Manifolds for serial transmission (without SI unit)

Resin base, type 10 side ported. P, E port entry both sides

Part number	<input type="checkbox"/> Stocked options	Description
SS5Y3-10S60-□B-C4 ●	04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16	Manifold for SY3000 for <input type="checkbox"/> stations. Serial transmission (EX600). Internal pilot. Port A/B (one-touch fitting) 4 mm
SS5Y3-10S60-□J-C4 ●		Manifold for SY3000 for <input type="checkbox"/> stations. Serial transmission (EX600). External pilot. Port A/B (one-touch fitting) 4 mm
SS5Y3-10S60-□B-C6 ●		Manifold for SY3000 for <input type="checkbox"/> stations. Serial transmission (EX600). Internal pilot. Port A/B (one-touch fitting) 6 mm
SS5Y3-10S60-□J-C6 ●		Manifold for SY3000 for <input type="checkbox"/> stations. Serial transmission (EX600). External pilot. Port A/B (one-touch fitting) 6 mm
SS5Y5-10S60-□B-C4 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX600). Internal pilot. Port A/B (one-touch fitting) 4 mm
SS5Y5-10S60-□J-C4 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX600). External pilot. Port A/B (one-touch fitting) 4 mm
SS5Y5-10S60-□B-C6 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX600). Internal pilot. Port A/B (one-touch fitting) 6 mm
SS5Y5-10S60-□J-C6 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX600). External pilot. Port A/B (one-touch fitting) 6 mm
SS5Y5-10S60-□B-C8 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX600). Internal pilot. Port A/B (one-touch fitting) 8 mm
SS5Y5-10S60-□J-C8 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX600). External pilot. Port A/B (one-touch fitting) 8 mm
SS5Y7-10S60-□B-C10	—	Manifold for SY7000 for <input type="checkbox"/> stations. Serial transmission (EX600). Internal pilot. Port A/B (one-touch fitting) 10 mm
SS5Y7-10S60-□J-C10		Manifold for SY7000 for <input type="checkbox"/> stations. Serial transmission (EX600). External pilot. Port A/B (one-touch fitting) 10 mm
SS5Y7-10S60-□B-C12		Manifold for SY7000 for <input type="checkbox"/> stations. Serial transmission (EX600). Internal pilot. Port A/B (one-touch fitting) 12 mm
SS5Y7-10S60-□J-C12		Manifold for SY7000 for <input type="checkbox"/> stations. Serial transmission (EX600). External pilot. Port A/B (one-touch fitting) 12 mm

N° of stations: 02 to 16 (all double wiring), to 24 (specified layout)

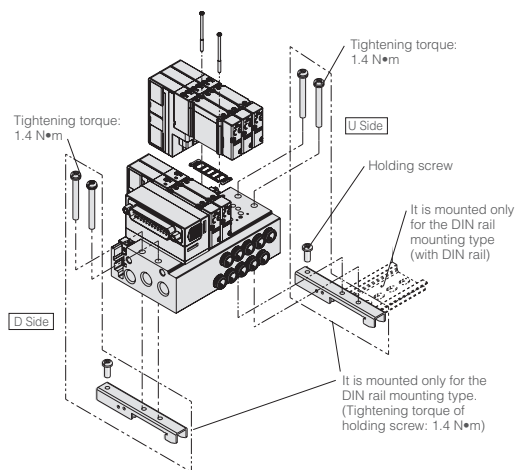
Manifolds for serial transmission (without SI unit)

Resin base, type 10 side ported. P, E port entry both sides

Part number	<input type="checkbox"/> Stocked options	Description
SS5Y3-10S0-□B-C4 ●	04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16	Manifold for SY3000 for <input type="checkbox"/> stations. Serial transmission (EX250/EX260). Internal pilot. Port A/B (one-touch fitting) 4 mm
SS5Y3-10S0-□J-C4 ●		Manifold for SY3000 for <input type="checkbox"/> stations. Serial transmission (EX250). External pilot. Port A/B (one-touch fitting) 4 mm
SS5Y3-10S0-□B-C6 ●		Manifold for SY3000 for <input type="checkbox"/> stations. Serial transmission (EX250/EX260). Internal pilot. Port A/B (one-touch fitting) 6 mm
SS5Y3-10S0-□J-C6 ●		Manifold for SY3000 for <input type="checkbox"/> stations. Serial transmission (EX250). External pilot. Port A/B (one-touch fitting) 6 mm
SS5Y5-10S0-□B-C4 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX250/EX260). Internal pilot. Port A/B (one-touch fitting) 4 mm
SS5Y5-10S0-□J-C4 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX250). External pilot. Port A/B (one-touch fitting) 4 mm
SS5Y5-10S0-□B-C6 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX250/EX260). Internal pilot. Port A/B (one-touch fitting) 6 mm
SS5Y5-10S0-□J-C6 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX250). External pilot. Port A/B (one-touch fitting) 6 mm
SS5Y5-10S0-□B-C8 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX250/EX260). Internal pilot. Port A/B (one-touch fitting) 8 mm
SS5Y5-10S0-□J-C8 ●		Manifold for SY5000 for <input type="checkbox"/> stations. Serial transmission (EX250). External pilot. Port A/B (one-touch fitting) 8 mm
SS5Y7-10S0-□B-C10	—	Manifold for SY7000 for <input type="checkbox"/> stations. Serial transmission (EX250/EX260). Internal pilot. Port A/B (one-touch fitting) 10 mm
SS5Y7-10S0-□J-C10		Manifold for SY7000 for <input type="checkbox"/> stations. Serial transmission (EX250). External pilot. Port A/B (one-touch fitting) 10 mm
SS5Y7-10S0-□B-C12		Manifold for SY7000 for <input type="checkbox"/> stations. Serial transmission (EX250/EX260). Internal pilot. Port A/B (one-touch fitting) 12 mm
SS5Y7-10S0-□J-C12		Manifold for SY7000 for <input type="checkbox"/> stations. Serial transmission (EX250). External pilot. Port A/B (one-touch fitting) 12 mm

N° of stations: 02 to 16 (all double wiring), to 24 (specified layout)

Manifold, metal base: Exploded view



Manifolds

Metal base, type 51 bottom ported. P, E port entry D side

Part number	<input type="checkbox"/> Stocked options	Description
SS5Y3-51F1- <input type="checkbox"/> D-KC4F ●	03, 04, 05, 06, 07, 08, 09, 10, 11, 12	Manifold for SY3000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 4 mm
SS5Y3-51F1- <input type="checkbox"/> D-KC6F ●		Manifold for SY3000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 6 mm
SS5Y5-51F1- <input type="checkbox"/> D-KC4F ●		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 4 mm
SS5Y5-51F1- <input type="checkbox"/> D-KC6F ●		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 6 mm
SS5Y5-51F1- <input type="checkbox"/> D-KC8F ●		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 8 mm
SS5Y7-51F1- <input type="checkbox"/> D-KC10F ●		Manifold for SY7000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 10 mm
SS5Y7-51F1- <input type="checkbox"/> D-KC12F ●	—	Manifold for SY7000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 12 mm

N° of stations: 02 to 12 (all double wiring)

Metal base, type 50 side ported. P, E port entry both sides

Part number	<input type="checkbox"/> Stocked options	Description
SS5Y3-50F1- <input type="checkbox"/> B-KC4F ●	03, 04, 05, 06, 07, 08, 09, 10, 11, 12	Manifold for SY3000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 4 mm
SS5Y3-50F1- <input type="checkbox"/> B-KC6F ●		Manifold for SY3000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 6 mm
SS5Y5-50F1- <input type="checkbox"/> B-KC4F ●		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 4 mm
SS5Y5-50F1- <input type="checkbox"/> B-KC6F ●		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 6 mm
SS5Y5-50F1- <input type="checkbox"/> B-KC8F ●		Manifold for SY5000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 8 mm
SS5Y7-50F1- <input type="checkbox"/> B-KC10F ●		Manifold for SY7000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 10 mm
SS5Y7-50F1- <input type="checkbox"/> B-KC12F ●	—	Manifold for SY7000 for <input type="checkbox"/> stations. D-sub connector. Port A/B (one-touch fitting) 12 mm

N° of stations: 02 to 12 (all double wiring)

5 port solenoid valve, plug-in sub-plate

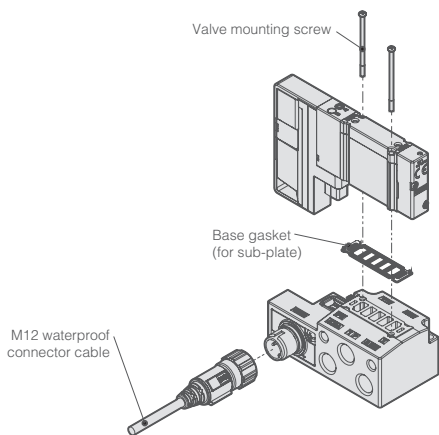
SY3000/5000/7000 Series



- Possible to be used independently
- Energy efficiency:
0.1 W with power saving circuit
0.35 W standard
- Space saving:
10 mm width (SY3000)
Top, bottom, side ported available
- Size SY7000 available.
- Easy attach/detach and wiring - M12 waterproof connector type
- IP67 enclosure.

Type of actuation	Part number solenoid valve	Seal type	Operating pressure range [MPa]	Port size A/B	Voltage	Circuit symbols
2 position single	SY3100-5U1-WO-01F	Rubber	0.15 ~ 0.7	G 1/8	24 VDC	
	SY5100-5U1-WO-02F			G 1/4		
	SY7100-5U1-WO-03F			G 3/8		
	SY3101-5U1-WO-01F	Metal		G 1/8		
	SY5101-5U1-WO-02F			G 1/4		
	SY7101-5U1-WO-03F			G 3/8		
2 position double	SY3200-5U1-WO-01F	Rubber	0.1 ~ 0.7	G 1/8	24 VDC	
	SY5200-5U1-WO-02F			G 1/4		
	SY7200-5U1-WO-03F			G 3/8		
	SY3201-5U1-WO-01F	Metal		G 1/8		
	SY5201-5U1-WO-02F			G 1/4		
	SY7201-5U1-WO-03F			G 3/8		
3 position closed centre	SY3300-5U1-WO-01F	Rubber	0.2 ~ 0.7	G 1/8	24 VDC	
	SY5300-5U1-WO-02F			G 1/4		
	SY7300-5U1-WO-03F			G 3/8		
	SY3301-5U1-WO-01F	Metal		G 1/8		
	SY5301-5U1-WO-02F			G 1/4		
	SY7301-5U1-WO-03F			G 3/8		
3 position exhaust centre	SY3400-5U1-WO-01F	Rubber	0.2 ~ 0.7	G 1/8	24 VDC	
	SY5400-5U1-WO-02F			G 1/4		
	SY7400-5U1-WO-03F			G 3/8		
	SY3401-5U1-WO-01F	Metal		G 1/8		
	SY5401-5U1-WO-02F			G 1/4		
	SY7401-5U1-WO-03F			G 3/8		
3 position pressure centre	SY3500-5U1-WO-01F	Rubber	0.2 ~ 0.7	G 1/8	24 VDC	
	SY5500-5U1-WO-02F			G 1/4		
	SY7500-5U1-WO-03F			G 3/8		
	SY3501-5U1-WO-01F	Metal		G 1/8		
	SY5501-5U1-WO-02F			G 1/4		
	SY7501-5U1-WO-03F			G 3/8		
Dual 3 port valve NC/NC	SY3A00-5U1-WO-01F	Rubber	0.15 ~ 0.7	G 1/8	24 VDC	
	SY5A00-5U1-WO-02F			G 1/4		
	SY7A00-5U1-WO-03F			G 3/8		
Dual 3 port valve NO/NO	SY3B00-5U1-WO-01F	Rubber	0.15 ~ 0.7	G 1/8	24 VDC	
	SY5B00-5U1-WO-02F			G 1/4		
	SY7B00-5U1-WO-03F			G 3/8		
Dual 3 port valve NC+NO	SY3C00-5U1-WO-01F	Rubber	0.15 ~ 0.7	G 1/8	24 VDC	
	SY5C00-5U1-WO-02F			G 1/4		
	SY7C00-5U1-WO-03F			G 3/8		

Other voltages port sizes and wiring specifications on request.



Flow characteristics

Model	Sub-plate piping location	Port size		Rubber seal			Metal seal		
		(P, E)	(A, B)	C	b	Flow [l/min]	C	b	Flow [l/min]
SY3000	Side ported	01	01	1.8	0.27	449	1.4	0.14	325
	Bottom ported	01	01	1.7	0.23	414	1.3	0.13	300
	Top ported	01	Ø 6	1.3	0.34	339	1.2	0.22	291
SY5000	Side ported	02	02	4.2	0.21	1012	3.2	0.13	738
	Bottom ported	02	02	4.0	0.19	953	3.0	0.12	688
	Top ported	02	Ø 8	2.9	0.29	733	2.6	0.23	634
SY7000	Side ported	03	03	6.5	0.24	1593	4.9	0.10	1044
	Bottom ported	03	03	6.4	0.22	1551	4.9	0.10	1044
	Top ported	03	Ø 12	5.4	0.30	1373	4.7	0.18	947

1) The value is for individually operated 2-position type.

Accessories

SY30M-27-1-WO-01F ●	Sub-plate for single unit, SY3000
SY50M-27-1-WO-02F	Sub-plate for single unit, SY5000
SY70M-27-1-WO-03F	Sub-plate for single unit, SY7000
SY30M-11-1A ●	Base gasket, SY3000 (10 pcs.)
SY50M-11-1A	Base gasket, SY5000 (10 pcs.)
SY70M-11-1A	Base gasket, SY7000 (10 pcs.)
ZS-37-L	M12 waterproof connector cable, 300 mm
ZS-37-N	M12 waterproof connector cable, 1000 mm

5 port solenoid valve, body ported bar stock type; Individual wiring

SY3000/5000/7000/9000 Series



- Superior service life - at least 50 m. switching cycles
- Pilot air model available
- Body ported type
- With changeable fittings set for port A and B
- Low power consumption 0.35 W with 24 VDC
- Can be directly controlled by SPS
- 10 ms response time
- Plug combinations: 2 pin plug model with light/surge voltage suppressor integrated into plug body (miswiring protection) DIN connector for IP65 (only with valve sizes 5000/7000/9000).

Type of actuation	Part number solenoid valve	Flow [l/min]	Operating pressure range [MPa]	For electrical entry at 24 VDC	A/B port size (Stock)	Circuits symbols
2 position single	SY3120-5LOU-□-Q	193	0.15 ~ 0.7	2 pin plug connector	C6 ●, M5 ●	
	SY5120-5LOU-□-Q	533		DIN plug connector	C6F ●, 01F ●	
	SY5120-5YO-□-Q	852		2 pin plug connector	C8F ●, 02F ●	
	SY7120-5LOU-□-Q			DIN plug connector	C8F ●, 02F ●	
	SY9120-5LOU-□-Q	2048		2 pin plug connector	C10F ●, 03F ●	
	SY9120-5YO-□-Q			DIN plug connector	C10F ●, 03F ●	
2 position double	SY3220-5LOU-□-Q	193	0.1 ~ 0.7	2 pin plug connector	C6 ●, M5 ●	
	SY5220-5LOU-□-Q	533		DIN plug connector	C6F ●, 01F ●	
	SY7220-5LOU-□-Q	852		2 pin plug connector	C8F ●, 02F ●	
	SY7220-5YO-□-Q			DIN plug connector	C8F ●, 02F ●	
	SY9220-5LOU-□-Q	2048		2 pin plug connector	C10F ●, 03F ●	
	SY9220-5YO-□-Q			DIN plug connector	C10F ●, 03F ●	
3 position closed centre	SY3320-5LOU-□-Q	233	0.2 ~ 0.7	2 pin plug connector	C6 ●, M5 P	
	SY5320-5LOU-□-Q	412		DIN plug connector	C6F ●, 01F ●	
	SY5320-5YO-□-Q	637		2 pin plug connector	C8F ●, 02F ●	
	SY7320-5LOU-□-Q			DIN plug connector	C8F ●, 02F ●	
	SY9320-5LOU-□-Q	1612		2 pin plug connector	C10F ●, 03F ●	
	SY9320-5YO-□-Q			DIN plug connector	C10F ●, 03F ●	
3 position exhaust centre	SY3420-5LOU-□-Q	167	0.2 ~ 0.7	2 pin plug connector	C6 ●, M5 ●	
	SY5420-5LOU-□-Q	472		DIN plug connector	C6F ●, 01F ●	
	SY5420-5YO-□-Q	718		2 pin plug connector	C8F ●, 02F ●	
	SY7420-5LOU-□-Q			DIN plug connector	C8F ●, 02F ●	
	SY9420-5LOU-□-Q	2178		2 pin plug connector	C10F ●, 03F ●	
	SY9420-5YO-□-Q			DIN plug connector	C10F ●, 03F ●	
3 position pressure centre	SY3520-5LOU-□-Q	201	0.2 ~ 0.7	2 pin plug connector	C6 ●, M5 P	
	SY5520-5LOU-□-Q	441		DIN plug connector	C6F ●, 01F ●	
	SY5520-5YO-□-Q	829		2 pin plug connector	C8F ●, 02F ●	
	SY7520-5LOU-□-Q			DIN plug connector	C8F ●, 02F ●	
	SY9520-5LOU-□-Q	1592		2 pin plug connector	C10F ●, 03F ●	
	SY9520-5YO-□-Q			DIN plug connector	C10F ●, 03F ●	

□ A/B port; M5: M5 x 0.8
 C6/C6F: Ø 6 mm
 C8F: Ø 8 mm
 C10F: Ø 10 mm
 01F: G 1/8
 02F: G 1/4
 03F: G 3/8



Manifolds

Part number	Stocked options	Description
SS5Y3-20-□-00F-Q ●	02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12	Manifold for SY3000 for □ stations. Port size G 1/8
SS5Y5-20-□-00F-Q ●	02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 20	Manifold for SY5000 for □ stations. Port size G 1/4
SS5Y7-20-□-00F-Q ●	02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12	Manifold for SY7000 for □ stations. Port size G 1/4
SS5Y9-23-□-00F-Q ●	02, 03, 04, 05, 06, 07, 08	Manifold for SY9000 for □ stations. Port size G 3/8

□ N° of stations: 02 to 20

Accessories

Part number	Description
SY3000-26-19A-Q ●	Blanking plate with screws and gasket for SY3000
SY5000-26-1A-Q	Blanking plate with screws and gasket for SY5000
SY7000-26-1A-Q ●	Blanking plate with screws and gasket for SY7000
SY9000-26-1A-Q ●	Blanking plate with screws and gasket for SY9000
SX3000-16-1A ●	Side bracket assembly with mounting screws for SY3000
SX5000-16-1A ●	Side bracket assembly with mounting screws for SY5000
SX7000-16-1A ●	Side bracket assembly with mounting screws for SY7000

SY9000 has no bracket.

Accessory • Plug connection with cable

Cable	Cable L= 0.6 m	Cable L= 1 m	Cable L= 2 m	Cable L= 3 m
Without cover	SY100-30-4A-6 ●	SY100-30-4A-10 ●	SY100-30-4A-20 ●	SY100-30-4A-30 ●
With cover	SY100-68-A-6 ●	SY100-68-A-10 ●	SY100-68-A-20 ●	SY100-68-A-30 ●

Accessory • DIN connector

With indicator light and 24 VDC protective circuit	Without indicator light without protective circuit
SY100-82-3-05 ●	SY100-82-1 ●

Accessory • Replacement fittings



A/B Port size	SY3000	SY5000	SY7000	SY9000
One-touch fitting Ø 4	SY3000-6A-C4 ●	SY5000-6A-C4 ●	—	—
One-touch fitting Ø 6	SY3000-6A-C6 ●	SY5000-6A-C6 ●	—	—
One-touch fitting Ø 8	—	SY5000-6A-C8 ●	SY7000-6A-C8 ●	SY9000-6A-C8 ●
One-touch fitting Ø 10	—	—	SY7000-6A-C10 ●	SY9000-6A-C10
One-touch fitting Ø 12	—	—	—	SY9000-6A-C12 ●
M5 thread	SY3000-6A-M5 ●	—	—	—
G 1/8	—	SY5000-6A-01F ●	—	—
G 1/4	—	—	SY7000-6A-02F ●	SY9000-6A-02F
G 3/8	—	—	—	SY9000-6A-03F ●

For other accessories (gaskets, silencers, etc) please contact SMC.

5 port solenoid valve, base mounted. Manifold type, stacking type, individual wiring

SY3000/5000/7000/9000 Series



- Body design for base mounting
- Low power consumption 0.35 W with 24 VDC (With indicator light: 0.4 W)
- Can be directly controlled by PLC
- 35 ms response type (2 position with light/surge voltage suppressor)
- 2 pin miniature socket protects against miswiring
- Long service life of at least 50 million switching cycles.

Type of actuation	Part number solenoid valve	Operating pressure range [MPa]	Electrical entry at 24 VDC	Circuits symbols		
2 position single	SY3140-5LOU-Q ●	0.15 ~ 0.7	2 pin socket (without connector)			
	SY5140-5LOU-Q ●					
	SY7140-5LOU-Q ●					
	SY9140-5LOU-Q ●					
2 position double	SY3240-5LOU-Q ●	0.1 ~ 0.7		2 pin socket (without connector)		
	SY5240-5LOU-Q ●					
	SY7240-5LOU-Q ●					
	SY9240-5LOU-Q ●					
3 position closed centre	SY3340-5LOU-Q ●	0.2 ~ 0.7			2 pin socket (without connector)	
	SY5340-5LOU-Q ●					
	SY7340-5LOU-Q ●					
	SY9340-5LOU-Q ●					
3 position exhaust centre	SY3440-5LOU-Q ●	0.2 ~ 0.7	2 pin socket (without connector)			
	SY5440-5LOU-Q ●					
	SY7440-5LOU-Q ●					
	SY9440-5LOU-Q ●					
3 position pressure centre	SY3540-5LOU-Q ●	0.2 ~ 0.7		2 pin socket (without connector)		
	SY5540-5LOU-Q ●					
	SY7540-5LOU-Q ●					
	SY9540-5LOU-Q ●					

Other voltages, plug connectors and port sizes available on request.

Solenoid variations

Part number	Description
SY#□40-5YO-Q ●	Electrical entry at 24 VDC: DIN plug connector (without connector cable)
SY#□0-5SWAOU-Q	Electrical entry at 24 VDC: M8 connector (without connector cable)

* Size of valve: 3 for SY3000, 5 for SY5000, 7 for SY7000, 9 for SY9000

□ Type of actuation: 1, 2, 3, 4, 5 (see previous table)

DIN terminal has no polarity

M8 connector conforming to IEC60947-5-2.

Manifolds

Type of actuation	Description
SS5Y3-41-□-M5F-Q ●	SY3000 manifold for □ stations, compact style. Port size M5 thread port
SS5Y3-41-□-C4F-Q ●	SY3000 manifold for □ stations, compact style. Port size Ø 4 (one-touch fitting)
SS5Y3-41-□-C6F-Q ●	SY3000 manifold for □ stations, compact style. Port size Ø 6 (one-touch fitting)
SS5Y5-41-□-01F-Q ●	SY5000 manifold for □ stations, compact style. Port size G 1/8
SS5Y5-41-□-C6F-Q ●	SY5000 manifold for □ stations, compact style. Port size Ø 6 (one-touch fitting)
SS5Y5-41-□-C8F-Q ●	SY5000 manifold for □ stations, compact style. Port size Ø 8 (one-touch fitting)
SS5Y3-42-□-01F-Q ●	SY3000 manifold for □ stations, compact style. Port size G 1/8
SS5Y3-42-□-C4F-Q ●	SY3000 manifold for □ stations, compact style. Port size Ø 4 (one-touch fitting)
SS5Y5-42-□-02F-Q ●	SY5000 manifold for □ stations, compact style. Port size G 1/4
SS5Y5-42-□-C6F-Q ●	SY5000 manifold for □ stations, compact style. Port size Ø 6 (one-touch fitting)
SS5Y5-42-□-C8F-Q ●	SY5000 manifold for □ stations, compact style. Port size Ø 8 (one-touch fitting)
SS5Y7-42-□-02F-Q ●	SY7000 manifold for □ stations, compact style. Port size G 1/4
SS5Y7-42-□-C10F-Q ●	SY7000 manifold for □ stations, compact style. Port size Ø 10 (one-touch fitting)
SS5Y9-43-□-B-03F-Q ●	SY9000 manifold for □ stations, compact style. Port size G 3/8
SS5Y9-43-□-B-C12-Q ●	SY9000 manifold for □ stations, compact style. Port size Ø 12 (one-touch fitting)

□ N° of stations: 02 to 20

Accessories

SY3000-26-9A-Q ●	SY3000, blanking plate with gasket and screws
SY5000-26-20A-Q ●	SY5000, blanking plate with gasket and screws
SY7000-26-22A-Q ●	SY7000, blanking plate with gasket and screws
SY9000-26-2A-Q ●	SY9000, blanking plate with gasket and screws

Accessory plug connection with cable

(LOU, MOU)	Cable L= 0.6 m	Cable L= 1 m	Cable L= 2 m	Cable L= 3 m
Without cover	SY100-30-4A-6 ●	SY100-30-4A-10 ●	SY100-30-4A-20 ●	SY100-30-4A-30 ●
With cover	SY100-68-A-6 ●	SY100-68-A-10 ●	SY100-68-A-20 ●	SY100-68-A-30 ●

Accessory • DIN connector

With indicator light and 24 VDC protective circuit	Without indicator light without protective circuit
SY100-82-3-05 ●	SY100-82-1 ●

5 port solenoid valve, cassette type

SY3060/5060/7060 Series



- Valve block easy to expand and disassemble
- Reduced cost through a combination of valve and manifold
- Valve width 10.5/16/19 mm
- Minimal weight means it can be mounted directly to the consumer
- 0.35 W power consumption (with indicator light: 0.4 W)
- Can be directly controlled by PLC
- 10 ms response time (SY3000)
- New gasket provides superior condensate resistance
- Manual override non-locking type as standard
- Replacement fittings mean cylinder ports are easy to change
- Minimum operating life of 50 million switching cycles
- Common exhaust type pilot air, individual SUP/EXH block assembly, SUP/EXH passage block
- Modern design.

Type of actuation	Part number solenoid valve	A/B Port size (stock)	Operating pressure range [MPa]	Port size A/B	Voltage	For electrical entry at 24 VDC	Circuits symbols
2 position single	SY3160-5LOU-□-Q	C6, M5 ●	0.15 ~ 0.7	Ø 6 mm	24 VDC		
	SY3160-5MOU-□-Q	C6 ●, M5 ●					
	SY5160-5LOU-□-Q	C6 ●, 01F ●		Ø 8 mm			
	SY5160-5MOU-□-Q	C6 ●, 01F ●					
	SY7160-5LOU-□-Q	C8 ●, 02F ●					
2 position double	SY3260-5LOU-□-Q	C6 ●, M5 ●	0.1 ~ 0.7	Ø 6 mm	24 VDC	LOU: bipolar 2 pin plug connector with indicator light and surge voltage suppressor (lead wire entry direction to side)	
SY3260-5MOU-□-Q	C6 ●, M5 ●						
SY5260-5LOU-□-Q	C6 ●, 01F ●	Ø 8 mm					
SY5260-5MOU-□-Q	C6 ●, 01F ●						
SY7260-5LOU-□-Q	C8 ●, 02F ●						
3 position closed centre	SY3360-5LOU-□-Q	C6 ●, M5 ●	0.2 ~ 0.7	Ø 6 mm	24 VDC		
SY3360-5MOU-□-Q	C6 ●, M5 ●						
SY5360-5LOU-□-Q	C6 ●, 01F ●	Ø 8 mm					
SY5360-5MOU-□-Q	C6 ●, 01F ●						
SY7360-5LOU-□-Q	C8 ●, 02F ●						
3 position exhaust centre	SY3460-5LOU-□-Q	C6 ●, M5 ●	0.2 ~ 0.7	Ø 6 mm	24 VDC	MOU: bipolar 2 pin plug connector with indicator light and surge voltage suppressor (lead wire entry direction ABOVE)	
SY3460-5MOU-□-Q	C6 ●, M5 ●						
SY5460-5LOU-□-Q	C6 ●, 01F ●	Ø 8 mm					
SY5460-5MOU-□-Q	C6 ●, 01F ●						
SY7460-5LOU-□-Q	C8 ●, 02F ●						
3 position pressure centre	SY3560-5LOU-□-Q	C6 ●, M5 ●	0.2 ~ 0.7	Ø 6 mm	24 VDC		
SY3560-5MOU-□-Q	C6 ●, M5 ●						
SY5560-5LOU-□-Q	C6 ●, 01F ●	Ø 8 mm					
SY5560-5MOU-□-Q	C6 ●, 01F ●						
SY7560-5LOU-□-Q	C8 ●, 02F ●						
	SY7560-5MOU-□-Q	C8, 02F ●					

□ A/B port; M5: M5 x 0.8

C6: Ø 6 mm

C8: Ø 8 mm

01F: G 1/8

02F: G 1/4

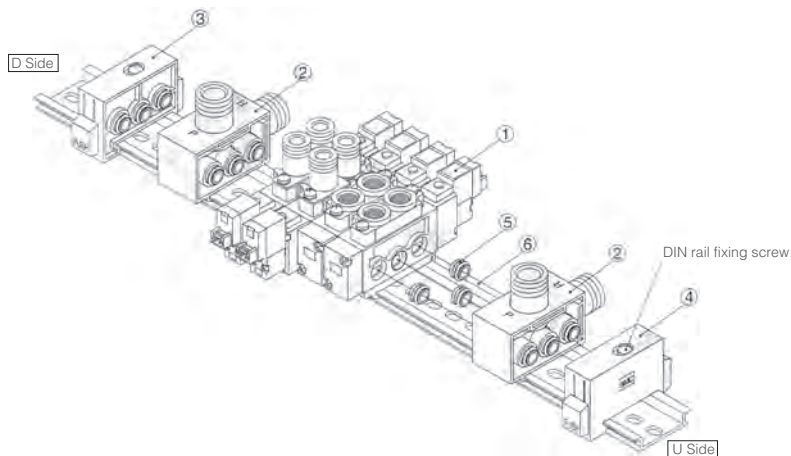
Other voltages, plug connectors and port sizes available on request.

Flow characteristics

Model	A/B Port size	Flow [l/min]
SS5Y3-60-Q	Ø 6 mm, M5	189
SS5Y5-60-Q	Ø 6 mm, G 1/8	469
SS5Y7-60-Q	Ø 8 mm, G 1/4	947

1) Flow valves are for manifolds base with 5 stations and individually operated 2 position type.

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.



Modular manifold

No.	Item	SY3060	SY5060	SY7060
1	Valves		see table on previous page	
2	Supply station	SY3000-55-1A-Q ●	SY5000-55-1A-Q ●	SY7000-75-1A-Q ●
3	End plate D side	SY3000-56-1A-Q ●	SY5000-56-1A-Q ●	SY7000-56-1A-Q ●
4	End plate U side	SY3000-56-1B-Q ●	SY5000-56-1B-Q ●	SY7000-56-1B-Q ●
5	Bushing assembly	SY3000-52-5A ●	SY5000-52-3A ●	SY7000-70-1A ●
6	Aluminium DIN rail	VZ1000-11-1-□ ●	VZ1000-11-1-□ ●	VZ1000-11-4-□ ●
7	Additional SUP block assembly	SY3000-54-1C-Q ●	SY5000-54-1C-Q ●	SY7000-54-1C-Q ●
8	Additional EXH block assembly	SY3000-55-1B-Q ●	SY5000-55-1B-Q ●	SY7000-55-1B-Q ●
9	SUP/EXH blocking disc	SY3000-52-6A ●	SY5000-52-4A ●	SY7000-70-2A ●
10	Silencer for EXH channel	AN15-C08 ●	AN20-C10 ●	AN30-C12 ●

□ reference for DIN rail length

Accessories • Plug connection with cable

(LOU, MOU)	Cable L= 0.6 m	Cable L= 1 m	Cable L= 2 m	Cable L= 3 m
Without cover	SY100-30-4A-6 ●	SY100-30-4A-10 ●	SY100-30-4A-20 ●	SY100-30-4A-30 ●
With cover	SY100-68-A-6 ●	SY100-68-A-10 ●	SY100-68-A-20 ●	SY100-68-A-30 ●

Accessories • Port block assembly

SY3000-6A-C6 ●	For SY3060 ●
SY5000-6A-C6 ●	For SY5060 ●
SY7000-6A-C8 ●	For SY7060 ●



5 port solenoid valve

SV1000/2000/3000/4000 Series



- Internal wiring
- Easy to install
- Valves easily assembled/disassembled
- Small, compact design
- Push-in fittings standard
- Minimal, 10 ms. response times
- Low power consumption, 0.6 W
- Superior service life - at least 50 million switching cycles.

Type of actuation	Part number solenoid valve	Operating pressure range [MPa]	Voltage	Circuits symbols
2 position single	SV1100-5FU ●	0.15 ~ 0.7	24 VDC	
	SV2100-5FU ●			
	SV3100-5FU ●			
	SV4100-5FU ●			
2 position double	SV1200-5FU ●	0.1 ~ 0.7	24 VDC	
	SV2200-5FU ●			
	SV3200-5FU ●			
	SV4200-5FU ●			
3 position closed centre	SV1300-5FU ●	0.2 ~ 0.7	24 VDC	
	SV2300-5FU ●			
	SV3300-5FU ●			
	SV4300-5FU ●			
3 position exhaust centre	SV1400-5FU ●	0.2 ~ 0.7	24 VDC	
	SV2400-5FU ●			
	SV3400-5FU ●			
	SV4400-5FU ●			
3 position pressure centre	SV1500-5FU ●	0.2 ~ 0.7	24 VDC	
	SV2500-5FU ●			
	SV3500-5FU ●			
	SV4500-5FU ●			
4 position dual 3 port NC/NC	SV1A00-5FU ●	0.15 ~ 0.7	24 VDC	
	SV2A00-5FU ●			
4 position dual 3 port NO/NO	SV1B00-5FU ●	0.15 ~ 0.7	24 VDC	
	SV2B00-5FU ●			
4 position dual 3 port NC/NO	SV1C00-5FU ●	0.15 ~ 0.7	24 VDC	
	SV2C00-5FU ●			

Flow characteristics

Model	Flow [l/min]
SS5V1-16	236
SS5V2-16	640
SS5V1-10	289
SS5V2-10	568
SS5V3-10	1036
SS5V4-10	1658

1) Flow valves are for manifolds base with 5 stations and individually operated 2 position type.



For complete units (valves and manifold) please use our Valve Configurator online (available at www.smc.eu)

Accessory • Replacement fittings for A/B

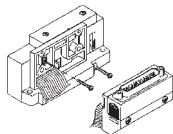
One-touch fitting	SV1000	SV2000	SV3000	SV4000
Ø 3.2 mm	VVQ1000-50A-C3	—	—	—
Ø 4 mm	VVQ1000-50A-C4	VVQ1000-51A-C4	—	—
Ø 6 mm	VVQ1000-50A-C6	VVQ1000-51A-C6	VVQ2000-51A-C6	—
Ø 8 mm	—	VVQ1000-51A-C8	VVQ2000-51A-C8	VVQ4000-50B-C8
Ø 10 mm	—	—	VVQ2000-51A-C10	VVQ4000-50B-C10
Ø 12 mm	—	—	—	VVQ4000-50B-C12

Manifolds

Part number	<input type="checkbox"/> Applicable stations	<input type="checkbox"/> Stocked options	Description
SS5V1-10FD1-□B-C6 ●	02 to 11 (double wiring)	04, 08, 10	Manifold for SV1000 for □ stations. D-sub connector. Port A/B 6 mm
SS5V2-10FD1-□B-C8 ●		04, 08, 10	Manifold for SV2000 for □ stations. D-sub connector. Port A/B 8 mm
SS5V3-10FD1-□B-C8 ●	02 to 20 (specified layout)	06, 07, 08, 09	Manifold for SV3000 for □ stations. D-sub connector. Port A/B 8 mm
SS5V4-10FD1-□B-C10		—	Manifold for SV4000 for □ stations. D-sub connector. Port A/B 10 mm
SS5V1-W10CD-□B-C6 ●	02 to 12 (double wiring)	04	Manifold for SV1000 for □ stations. Circular connector. Port A/B 6 mm
SS5V2-W10CD-□B-C8 ●		03, 06, 09, 10	Manifold for SV2000 for □ stations. Circular connector. Port A/B 8 mm
SS5V3-W10CD-□B-C8	02 to 20 (specified layout)	—	Manifold for SV3000 for □ stations. Circular connector. Port A/B 8 mm
SS5V4-W10CD-□B-C10		—	Manifold for SV4000 for □ stations. Circular connector. Port A/B 10 mm
SS5V1-W10S10D-□B-C6 ●	02 to 16 (double wiring) 02 to 20 (specified layout)	04, 08, 10, 12, 13, 16	Manifold for SV1000 for □ stations. Serial transmission (EX250/EX260) without SI unit. Port A/B 6 mm
SS5V2-W10S10D-□B-C8		—	Manifold for SV2000 for □ stations. Serial transmission (EX250/EX260) without SI unit. Port A/B 8 mm
SS5V3-W10S10D-□B-C8		—	Manifold for SV3000 for □ stations. Serial transmission (EX250/EX260) without SI unit. Port A/B 8 mm

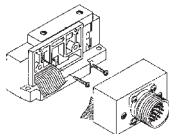
□ N° of stations

Other kit types available on request.
SI units ordered separately



Accessories • D sub connector with cable

GVVZS3000-21A-2	L= 3 m
GVVZS3000-21A-3	L= 5 m
GVVZS3000-21A-4	L= 8 m



Accessories • Circular plug with cable

GAXT100-MC26-015	L= 1.5 m
GAXT100-MC26-030	L= 3 m
GAXT100-MC26-050	L= 5 m

5 port solenoid valve, base mounted

SYJ3000 Series



- Micro design
- Common exhaust for pilot and main valve
- Rubber seal
- Low power consumption 0.35 W. (with indicator light: 0.4 W)
- Minimum service life of 30 million switching cycles
- Manual override non-locking type as standard
- Minimal switching times of only 15 ms.

Type of actuation	Part number solenoid valve	Flow [l/min]	Operating pressure range [MPa]	Voltage	Electrical entry at 24 VDC	Circuits symbols
2 position single	SYJ3143-5LOU-Q ● SYJ3143-5WAOU-Q ●	122	0.15 ~ 0.7	24 VDC	LO: L plug connector (without connector)	
2 position double	SYJ3243-5LOU-Q ● SYJ3243-5WAOU-Q ●		0.1 ~ 0.7			
3 position closed centre	SYJ3343-5LOU-Q ● SYJ3343-5WAOU-Q		0.2 ~ 0.7			
3 position exhaust centre	SYJ3443-5LOU-Q ● SYJ3443-5WAOU-Q ●	164	0.2 ~ 0.7		WAO: M8 connector (without connector cable)	
3 position pressure centre	SYJ3543-5LOU-Q ● SYJ3543-5WAOU-Q	160				

M8 connector conforming to IEC60947-5-2

Other voltages, electrical entries and sizes on request

Manifolds

Part number	Description
SS5YJ3-S41-02-M5F-Q ●	Manifold for 2 valves. Port M5
SS5YJ3-S41-03-M5F-Q ●	Manifold for 3 valves. Port M5
SS5YJ3-S41-04-M5F-Q ●	Manifold for 4 valves. Port M5
SS5YJ3-S41-05-M5F-Q ●	Manifold for 5 valves. Port M5
SS5YJ3-S41-06-M5F-Q ●	Manifold for 6 valves. Port M5
SS5YJ3-S41-07-M5F-Q ●	Manifold for 7 valves. Port M5
SS5YJ3-S41-08-M5F-Q ●	Manifold for 8 valves. Port M5
SS5YJ3-S41-09-M5F-Q ●	Manifold for 9 valves. Port M5
SS5YJ3-S41-10-M5F-Q ●	Manifold for 10 valves. Port M5
SS5YJ3-S41-12-M5F-Q ●	Manifold for 12 valves. Port M5

Body ported manifold and other port sizes on request.

Accessories

Part number	Description
SYJ3000-22-1-Q	Sub-plate. M5 x 0.8 port
SYJ3000-21-2A-Q	Blanking plate

Accessories • Plug connection with cable

Cable	Cable L= 0.6 m	Cable L= 1 m	Cable L= 2 m	Cable L= 3 m
Without cover	SY100-30-4A-6 ●	SY100-30-4A-10 ●	SY100-30-4A-20 ●	SY100-30-4A-30 ●
With cover	SY100-68-A-6 ●	SY100-68-A-10 ●	SY100-68-A-20 ●	SY100-68-A-30 ●

5 port solenoid valve

VF1000/3000/5000 Series



- Enclosure IP65 (splash proof)
- Base mounted valve also available
- Power saving circuit available
- Other electrical entries available
- High pressure type (1 MPa) available
- Also 230 VAC available
- Noise reduction and reduced apparent power (1.55 VA) with a full-wave rectifier.

Part number	Function	Flow [l/min]	Operating pressure range [MPa]	Port size	Voltage	Electrical entry and manual override <input type="checkbox"/>	Circuit symbols
VF1120-5□1-01F ●	2-position single	184	0,15 to 0,7	G 1/8	24 VDC	<input type="checkbox"/> YOD, DU	
VF3133-5□1-01F ●	2-position single	805	0,15 ~ 0,7	G 1/8		<input type="checkbox"/> YOD, DU	
VF3133-5□1-02F ●	2-position single	1058	0,15 ~ 0,7	G 1/4		<input type="checkbox"/> YOD, DU	
VF5123-5□1-02F ●	2-position single	2021	0,15 ~ 0,7	G 1/4		<input type="checkbox"/> YOD, DU	
VF5123-5□1-03F ●	2-position single	2466	0,15 ~ 0,7	G 3/8		<input type="checkbox"/> YOD, DU	
VF1220-5□1-01F	2-position double	185	0,1 ~ 0,7	G 1/8		<input type="checkbox"/> YOD, DU	
VF3233-5□1-01F ●	2-position double	805	0,1 ~ 0,7	G 1/8		<input type="checkbox"/> YOD, DU	
VF3233-5□1-02F ●	2-position double	1058	0,1 ~ 0,7	G 1/4		<input type="checkbox"/> YOD, DU	
VF5223-5□1-02F ●	2-position double	2021	0,1 ~ 0,7	G 1/4		<input type="checkbox"/> YOD, DU	
VF5223-5□1-03F ●	2-position double	2466	0,1 ~ 0,7	G 3/8		<input type="checkbox"/> YOD, DU	
VF3333-5□1-01F ●	3-position closed centre	614	0,15 ~ 0,7	G 1/8		<input type="checkbox"/> YOD, DU	
VF3333-5□1-02F ●	3-position closed centre	678	0,15 ~ 0,7	G 1/4		<input type="checkbox"/> YOD, DU	
VF5323-5□1-02F	3-position closed centre	1907	0,15 ~ 0,7	G 1/4		<input type="checkbox"/> YOD, DU	
VF5323-5□1-03F ●	3-position closed centre	2086	0,15 ~ 0,7	G 3/8		<input type="checkbox"/> YOD, DU	
VF3433-5□1-01F ●	3-position exhaust centre	692	0,15 ~ 0,7	G 1/8		<input type="checkbox"/> YOD, DU	
VF3433-5□1-02F ●	3-position exhaust centre	828	0,15 ~ 0,7	G 1/4		<input type="checkbox"/> YOD, DU	
VF5423-5□1-02F	3-position exhaust centre	1960	0,15 ~ 0,7	G 1/4	<input type="checkbox"/> YOD, DU		
VF5423-5□1-03F ●	3-position exhaust centre	2258	0,15 ~ 0,7	G 3/8	<input type="checkbox"/> YOD, DU		
VF3533-5□1-01F	3-position pressure centre	828	0,15 ~ 0,7	G 1/8	<input type="checkbox"/> YOD, DU		
VF3533-5□1-02F	3-position pressure centre	1465	0,15 ~ 0,7	G 1/4	<input type="checkbox"/> YOD, DU		
VF5523-5□1-02F	3-position pressure centre	2016	0,15 ~ 0,7	G 1/4	<input type="checkbox"/> YOD, DU		
VF5523-5□1-03F	3-position pressure centre	2704	0,15 ~ 0,7	G 3/8	<input type="checkbox"/> YOD, DU		

- YOD: DIN terminal without connector and push-turn locking slotted type.
DU: DIN terminal with connector and with light/surge voltage suppressor (non-polar).
Other voltages, plug connectors and port sizes available on request.
IP65 version available upon request.
Base mounted type available upon request.

Manifolds

Part number	<input type="checkbox"/> Applicable stations	<input type="checkbox"/> Socked options	Description
VV5F1-30□1-00F	2 to 20	—	Manifold for VF1000 for <input type="checkbox"/> stations. Body ported type. Port size G 1/8
VV5F3-30□1-00F ●	2 to 20	02, 03, 04, 05, 06, 07, 08, 09, 10	Manifold for VF3000 for <input type="checkbox"/> stations. Body ported type. Port size G 1/4
VV5F5-20□1-00F ●	2 to 10	02, 03, 04, 05, 06	Manifold for VF5000 for <input type="checkbox"/> stations. Body ported type. Port size G 3/8
VV5F5-21□1-00F	2 to 15	—	Manifold for VF5000 for <input type="checkbox"/> stations. Body ported type. Port size G 1/2

5 port solenoid valve, compact pilot type

S0700 Series



- Compact design with high flow capacity (cylinder driving size: up to Ø 32)
- Power consumption: 0.35 W
- Applicable to various types of serial wiring
- Variations:
 - Base mounted: plug lead type, plug-in type, slim compact type
 - Body ported: plug lead type, either single unit or manifold bar base.

Series		Type of actuation	Part number solenoid valve	Operating pressure range [MPa]	Flow [l/min]	Voltage	Circuits symbols
Base mounted	Slim compact type	2 position single	S0711-5	0.2 ~ 0.7	105	24 VDC	
	Plug-in type		S0710-5 ●				
	Plug lead type ¹⁾		S0715-5MO ●				
Body ported	Plug lead type, single unit ¹⁾	2 position double	S0716-5MO-C4	0.2 ~ 0.7	174	24 VDC	
	Plug lead type, manifold bar base ¹⁾		S0712-5MO-C4				
	Plug lead type, manifold bar base ¹⁾		S0720-5				
Base mounted	Slim compact type	2 position double	S0720-5	0.2 ~ 0.7	105	24 VDC	
	Plug-in type		S0725-5MO ●				
	Plug lead type ¹⁾		S0726-5MO-C4				
Body ported	Plug lead type, single unit ¹⁾	3 position closed centre	S0726-5MO-C4	0.2 ~ 0.7	174	24 VDC	
	Plug lead type, manifold bar base ¹⁾		S0722-5MO-C4				
	Plug lead type, manifold bar base ¹⁾		S0735-5MO				
Base mounted	Plug lead type ¹⁾	3 position closed centre	S0735-5MO	0.2 ~ 0.7	73	24 VDC	
	Plug lead type, single unit ¹⁾		S0736-5MO-C4				
	Plug lead type, manifold bar base ¹⁾		S0732-5MO-C4				
Body ported	Plug lead type, single unit ¹⁾	4 position N.C. + N.C.	S0732-5MO-C4	0.2 ~ 0.7	144	24 VDC	
	Plug lead type, manifold bar base ¹⁾		S07A1-5				
	Plug lead type, manifold bar base ¹⁾		S07A0-5 ●				
Base mounted	Slim compact type	4 position N.C. + N.C.	S07A0-5 ●	0.2 ~ 0.7	89	24 VDC	
	Plug-in type		S07A5-5MO ●				
	Plug lead type ¹⁾		S07A6-5MO-C4				
Body ported	Plug lead type, single unit ¹⁾	4 position N.O. + N.O.	S07A6-5MO-C4	0.2 ~ 0.7	157	24 VDC	
	Plug lead type, manifold bar base ¹⁾		S07A2-5MO-C4				
	Plug lead type, manifold bar base ¹⁾		S07B1-5				
Base mounted	Slim compact type	4 position N.O. + N.O.	S07B1-5	0.2 ~ 0.7	89	24 VDC	
	Plug-in type		S07B0-5 ●				
	Plug lead type ¹⁾		S07B5-5MO ●				
Body ported	Plug lead type, single unit ¹⁾	4 position N.C. + N.C.	S07B5-5MO ●	0.2 ~ 0.7	157	24 VDC	
	Plug lead type, manifold bar base ¹⁾		S07B6-5MO-C4				
	Plug lead type, manifold bar base ¹⁾		S07C1-5				
Base mounted	Slim compact type	4 position N.C. + N.C.	S07C1-5	0.2 ~ 0.7	89	24 VDC	
	Plug-in type		S07C0-5 ●				
	Plug lead type ¹⁾		S07C5-5MO				
Body ported	Plug lead type, single unit ¹⁾	4 position N.C. + N.C.	S07C5-5MO	0.2 ~ 0.7	157	24 VDC	
	Plug lead type, manifold bar base ¹⁾		S07C6-5MO-C4				
	Plug lead type, manifold bar base ¹⁾		S07C2-5MO-C4				
Body ported	Plug lead type, manifold bar base ¹⁾	4 position N.C. + N.C.	S07C2-5MO-C4	0.2 ~ 0.7	154	24 VDC	
	Plug lead type, manifold bar base ¹⁾		S07C6-5MO-C4				
	Plug lead type, manifold bar base ¹⁾		S07C2-5MO-C4				

1) M-type plug connector, without lead wire (with light/surge voltage suppressor).

Solenoid variations

Part number			Description
Base mounted	Body ported, single unit	Body ported, manifold bar base	
S07□5-5G ●	S07□6-5G-C4	S07□2-5G-C4	Plug lead, 24 VDC valve with grommet electrical entry and without sub-plate
S07□5R-5G ¹⁾	S07□6R-5G-C4 ¹⁾	S07□2R-5G-C4 ¹⁾	Plug lead, 24 VDC valve with external pilot and grommet electrical entry
S07□5-6G	S07□6-6G-C4	S07□2-6G-C4	Plug lead, 24 VDC valve with grommet electrical entry
S07□5-5M	S07□6-5M-C4	S07□2-5M-C4	Plug lead, 24 VDC valve with M plug connector for electrical entry
S07□5-5G-M5	—	—	Plug lead, 24 VDC valve with grommet electrical entry and sub-plate

□ Type of actuation: 1, 2, 3, A, B, C (see previous table)

1) External pilot not compatible with dual 3-port valves.

Manifolds

Type	Part number	Max. number of stations ¹⁾	<input type="checkbox"/> Stocked options	Description
Base mounted, slim compact	SS0751-<input type="checkbox"/>C4SBN	16	—	S kit: Serial transmission (EX510)
	SS0751-<input type="checkbox"/>C4SD0	32	—	S kit: Serial transmission (EX180), no SI unit
	SS0751-<input type="checkbox"/>C4FD0	24	—	F kit: D-Sub connector (25P) no cable
Base mounted, plug-in	SS0750-<input type="checkbox"/>C4SD0	24 (16) ²⁾	—	S kit: Serial transmission (EX250/EX260/EX600/EX500), no SI unit
	SS0750-<input type="checkbox"/>C4FD0 ●	24	04, 08, 12	F kit: D-Sub connector (25P) no cable
	SS0750-<input type="checkbox"/>C4MD0	24	—	M kit: Circular connector (26P), no cable
Base mounted, plug-lead	SS0755-SAN<input type="checkbox"/>C4	16	—	S kit: Serial transmission (EX510)
	SS0755-<input type="checkbox"/>C4FC ●	20	04, 05, 06, 07, 08, 10, 12	C kit: Lead wire, 8.5 manifold pitch, G thread type
Body ported, plug-lead	SS0752-<input type="checkbox"/>C	20	—	C kit: lead wire, 7.5 manifold pitch

: N° of stations

Other kit types available on request

SI units ordered separately. Please refer to pages 76 to 81.

1) Maximum stations in the case of mixed single and double wiring (special wiring specifications).

2) () value for EX500.

5 port solenoid valve, connector type manifold

Metal seal/Rubber seal

VQC1000/2000 Series



- Power saving:
 - Standard: 0.4 W
 - High-pressure type: 0.95 W
- Compact and high flow
- A wide variety of prepackaged wiring configurations
- Applicable to EX600 and other types of serial wiring
- IP67 enclosure compatible.



For complete units (valves and manifold) please use our Valve Configurator online (available at www.smc.eu)

Type of actuation	Part number solenoid valve	Type	Flow [l/min]	Operating pressure range [MPa]	Suitable cylinder bore size [mm]	Voltage	Circuit symbols			
2 position single	VQC1101N-51	Rubber seal	204	0.15 ~ 0.7	up to Ø 50	24 VDC				
	VQC1100N-51	Metal seal	163	0.1 ~ 0.7						
	VQC2101N-51	Rubber seal	552	0.15 ~ 0.7	up to Ø 80					
	VQC2100N-51	Metal seal	466	0.1 ~ 0.7						
2 position double	VQC1201N-51	Rubber seal	204	0.1 ~ 0.7	up to Ø 50		24 VDC			
	VQC1200N-51	Metal seal	163	0.1 ~ 0.7						
	VQC2201N-51	Rubber seal	552	0.1 ~ 0.7	up to Ø 80					
	VQC2200N-51	Metal seal	466	0.1 ~ 0.7						
3 position closed centre	VQC1301N-51	Rubber seal	168	0.2 ~ 0.7	up to Ø 50			24 VDC		
	VQC1300N-51	Metal seal	158	0.1 ~ 0.7						
	VQC2301N-51	Rubber seal	502	0.2 ~ 0.7	up to Ø 80					
	VQC2300N-51	Metal seal	466	0.1 ~ 0.7						
3 position exhaust centre	VQC1401N-51	Rubber seal	168	0.2 ~ 0.7	up to Ø 50	24 VDC				
	VQC1400N-51	Metal seal	158	0.1 ~ 0.7						
	VQC2401N-51	Rubber seal	502	0.2 ~ 0.7	up to Ø 80					
	VQC2400N-51	Metal seal	466	0.1 ~ 0.7						
3 position pressure centre	VQC1501N-51	Rubber seal	204	0.2 ~ 0.7	up to Ø 50		24 VDC			
	VQC1500N-51	Metal seal	163	0.1 ~ 0.7						
	VQC2501N-51	Rubber seal	804	0.2 ~ 0.7	up to Ø 80					
	VQC2500N-51	Metal seal	565	0.1 ~ 0.7						
Dual 3 port valve NC/NC	VQC1A01N-51	Rubber seal	168	0.15 ~ 0.7	up to Ø 50			24 VDC		
	VQC2A01N-51	Rubber seal	452	0.15 ~ 0.7	up to Ø 80					
Dual 3 port valve NO/NO	VQC1B01N-51	Rubber seal	168	0.15 ~ 0.7	up to Ø 50				24 VDC	
	VQC2B01N-51	Rubber seal	452	0.15 ~ 0.7	up to Ø 80					
Dual 3 port valve NC+NO	VQC1C01N-51	Rubber seal	168	0.15 ~ 0.7	up to Ø 50	24 VDC				
	VQC2C01N-51	Rubber seal	452	0.15 ~ 0.7	up to Ø 80					

Manifolds

Part number	□ Stocked options	Description
VV5QC11-□ C6FD0	04, 06, 10	Manifold for VQC1000 for □ stations. D-sub connector without cable, Port Ø ¹⁾
VV5QC21-□ C8FD0	04, 06, 08, 10, 12	Manifold for VQC2000 for □ stations. D-sub connector without cable, Port Ø ¹⁾
VV5QC11-□ C6SD0	02, 03, 04, 05, 06, 08, 10, 12	Manifold for VQC1000 for □ stations. Serial transmission EX500, EX250 or EX260, Port Ø ¹⁾
VV5QC21-□ C8SD0	02, 04, 06, 08, 10, 12	Manifold for VQC2000 for □ stations. Serial transmission EX500, EX250 or EX260, Port Ø ¹⁾

□ N° of stations: 01 to 12 (the maximum number depending on the electrical entry)

¹⁾ 6 for VQC1000; Ø 6 mm with A/B

8 for VQC2000; Ø 8 mm with A/B

SI units ordered separately. Please refer to pages 76 to 81

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

5 port solenoid valve, connector type manifold

Metal seal/Rubber seal

VQC4000/5000 Series



- Compact and large flow capacity
- Power consumption
 - Standard: 0.95 W
 - Low wattage type: 0.4 W
- A wide variety of prepackaged wiring configurations
- IP67 enclosure compatible.



For complete units (valves and manifold) please use our Valve Configurator online (available at www.smc.eu)

Type of actuation	Part number solenoid valve	Type	Flow [l/min]	Operating pressure range [Mpa]	Suitable cylinder bore size [mm]	Voltage	Circuits symbols	
2 position single	VQC4101-51 ●	Rubber seal	2002	0.2 ~ 1.0	up to Ø 160	24 VDC		
	VQC4100-51 ●	Metal seal	1477	0.15 ~ 1.0				
	VQC5101-51	Rubber seal	4148	0.2 ~ 1.0	up to Ø 180			
	VQC5100-51	Metal seal	2782	0.1 ~ 1.0				
2 position double	VQC4201-51 ●	Rubber seal	2002	0.15 ~ 1.0	up to Ø 160		24 VDC	
	VQC4200-51 ●	Metal seal	1477	0.15 ~ 1.0				
	VQC5201-51	Rubber seal	4148	0.15 ~ 1.0	up to Ø 180			
	VQC5200-51	Metal seal	2782	0.1 ~ 1.0				
3 position closed centre	VQC4301-51 ●	Rubber seal	1827	0.2 ~ 1.0	up to Ø 160	24 VDC		
	VQC4300-51	Metal seal	1438	0.15 ~ 1.0				
	VQC5301-51	Rubber seal	3111	0.2 ~ 1.0	up to Ø 180			
	VQC5300-51	Metal seal	2696	0.15 ~ 1.0				
3 position exhaust centre	VQC4401-51 ●	Rubber seal	1877	0.2 ~ 1.0	up to Ø 160		24 VDC	
	VQC4400-51	Metal seal	1469	0.15 ~ 1.0				
	VQC5401-51	Rubber seal	3781	0.2 ~ 1.0	up to Ø 180			
	VQC5400-51	Metal seal	2767	0.15 ~ 1.0				
3 position pressure centre	VQC4501-51	Rubber seal	1877	0.2 ~ 1.0	up to Ø 160	24 VDC		
	VQC4500-51	Metal seal	1469	0.15 ~ 1.0				
	VQC5501-51	Rubber seal	3348	0.2 ~ 1.0	up to Ø 180			
	VQC5500-51	Metal seal	3824	0.15 ~ 1.0				
3 position double check	VQC4601-51	Rubber seal	606	0.2 ~ 1.0	up to Ø 160		24 VDC	
	VQC4600-51	Metal seal	584	0.15 ~ 1.0				
	VQC5601-51	Rubber seal	1796	0.2 ~ 1.0	up to Ø 180			
	VQC5600-51	Metal seal	1731	0.15 ~ 1.0				

Manifolds

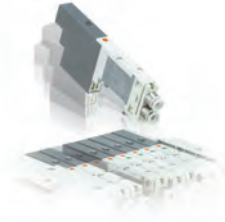
Part number	Stocked options	Description
VV5QC41-□03FFD0	—	Manifold for VQC4000 for □ stations. D-sub connector without cable. Port 3/8, G thread type
VV5QC51-□04FFD0	—	Manifold for VQC5000 for □ stations. D-sub connector without cable. Port 1/2, G thread type
VV5QC41-□03FSD0 ●	04, 06, 08, 10, 12	Manifold for VQC4000 for □ stations. Serial transmission EX250. Port 3/8, G thread type
VV5QC51-□04FSD0	—	Manifold for VQC5000 for □ stations. Serial transmission EX250, EX500, EX260. Port 1/2, G thread type
VV5QC41-□03FSD0A	—	Manifold for VQC4000 for □ stations. Serial transmission EX500, EX260. Port 3/8, G thread type
VV5QC41-□03FSD060	—	Manifold for VQC4000 for □ stations. Serial transmission EX600. Port 3/8, G thread type
VV5QC51-□04FSD60	—	Manifold for VQC5000 for □ stations. Serial transmission EX600. Port 1/2, G thread type

□ No. of stations: 01 to 16 for VQC4000, 01 to 12 for VQC5000 (the maximum number depending on the electrical entry)
 SI units ordered separately. Please refer to pages 76 to 82.

5 port solenoid valve

Metal seal/Rubber seal

SQ1000/2000 Series



- Reduced power consumption
- Easy replaceable fittings
- Easy maintenance when adding/decreasing the number of valve stations - no need to rewire
- Fast response (new) type
- High-pressure type - 1 MPa
- 4 position dual 3 port valves available
- Metal and rubber seal types available.

Type of actuation	Part number solenoid valve	A,B port (Stock)	Type	Flow [l/min]	Operating pressure range [MPa]	Voltage	Circuit symbols
2 position single	SQ1130N-51-□-Q ●	C3, C4, C6, M5	(Metal seal)	141	0.1 ~ 0.7	24 VDC	
	SQ1131N-51-□-Q ●	C3, C4, C6, M5	(Rubber seal)	189	0.15 ~ 0.7		
	SQ2130N-51-□-Q ●	C4, C6, C8	(Metal seal)	518	0.1 ~ 0.7		
	SQ2131N-51-□-Q ●	C4, C6, C8	(Rubber seal)	542	0.15 ~ 0.7		
2 position double	SQ1230DN-51-□-Q	C3, C4, C6, M5	(Metal seal)	141	0.1 ~ 0.7	24 VDC	
	SQ1231DN-51-□-Q ●	C3, C4, C6, M5	(Rubber seal)	189	0.1 ~ 0.7		
	SQ2230DN-51-□-Q ●	C4, C6, C8	(Metal seal)	518	0.1 ~ 0.7		
	SQ2231DN-51-□-Q ●	C4, C6, C8	(Rubber seal)	542	0.1 ~ 0.7		
3 position closed centre	SQ1330N-51-□-Q	C3, C4, C6, M5	(Metal seal)	133	0.1 ~ 0.7	24 VDC	
	SQ1331N-51-□-Q ●	C3, C4, C6, M5	(Rubber seal)	153	0.2 ~ 0.7		
	SQ2330N-51-□-Q ●	C4, C6, C8	(Metal seal)	448	0.1 ~ 0.7		
	SQ2331N-51-□-Q ●	C4, C6, C8	(Rubber seal)	448	0.2 ~ 0.7		
3 position exhaust centre	SQ1430N-51-□-Q	C3, C4, C6, M5	(Metal seal)	133	0.1 ~ 0.7	24 VDC	
	SQ1431N-51-□-Q ●	C3, C4, C6, M5	(Rubber seal)	153	0.2 ~ 0.7		
	SQ2430N-51-□-Q ●	C4, C6, C8	(Metal seal)	448	0.1 ~ 0.7		
	SQ2431N-51-□-Q ●	C4, C6, C8	(Rubber seal)	448	0.2 ~ 0.7		
3 position pressure centre	SQ1530N-51-□-Q	C3, C4, C6, M5	(Metal seal)	142	0.1 ~ 0.7	24 VDC	
	SQ1531N-51-□-Q	C3, C4, C6, M5	(Rubber seal)	190	0.2 ~ 0.7		
	SQ2530N-51-□-Q	C4, C6, C8	(Metal seal)	542	0.1 ~ 0.7		
	SQ2531N-51-□-Q ●	C4, C6, C8	(Rubber seal)	589	0.2 ~ 0.7		
Dual 3 port valve NC/NC	SQ1A31N-51-□-Q ●	C3, C4, C6, M5	(Rubber seal)	148	0.15 ~ 0.7	24 VDC	
	SQ2A31N-51-□-Q ●	C4, C6, C8	(Rubber seal)	353	0.15 ~ 0.7		
Dual 3 port valve NO/NO	SQ1B31N-51-□-Q ●	C3, C4, C6, M5	(Rubber seal)	148	0.15 ~ 0.7	24 VDC	
	SQ2B31N-51-□-Q ●	C4, C6, C8	(Rubber seal)	353	0.15 ~ 0.7		
Dual 3 port valve NC+NO	SQ1C31N-51-□-Q ●	C3, C4, C6, M5	(Rubber seal)	148	0.15 ~ 0.7	24 VDC	
	SQ2C31N-51-□-Q ●	C4, C6, C8	(Rubber seal)	353	0.15 ~ 0.7		

□ A,B port

Manifolds

SS5Q13-□FD0-D-Q ●	Manifold for SQ1000 for □ stations, D-sub connector without cable, DIN rail mounting type
SS5Q23-□FD0-D-Q ●	Manifold for SQ2000 for □ stations, D-sub connector without cable, DIN rail mounting type

□ N° of stations: 02 to 12 (double wiring).

Other kit types and serial transmission units on request.

ISO standard solenoid valve, compliant with ISO 5599/1

VQ7-6/VQ7-8 Series



- Mounting to ISO 5599/1 sizes 1 and 2
- Electrical connection via DIN plug connector or cable with M12 plug connector
- Superior flow capacity
- Enclosure IP65
- Rubber and metal seals available
- Small, compact design, up to 13 % smaller.

Type of actuation	Part number solenoid valve	Connector	Type	Flow [l/min]	Operating pressure range [MPa]	Voltage
2 position single	VQ7-6-FG-S-3ZR□-Q ●	-, O, SC	ISO1 rubber seal	1369	0.2 ~ 1.0	24 VDC
	VQ7-6-FG-S-3Z□-Q ●	-, O, SC	ISO1 metal seal	1181	0.15 ~ 1.0	
	VQ7-8-FG-S-3ZR□-Q ●	-, O, SC	ISO2 rubber seal	3244	0.2 ~ 1.0	
	VQ7-8-FG-S-3Z□-Q ●	-, O, SC	ISO2 metal seal	2941	0.15 ~ 1.0	
2 position double	VQ7-6-FG-D-3ZR□-Q ●	-, O, SC	ISO1 rubber seal	1369	0.15 ~ 1.0	24 VDC
	VQ7-6-FG-D-3Z□-Q ●	-, O, SC	ISO1 metal seal	1181	0.15 ~ 1.0	
	VQ7-8-FG-D-3ZR□-Q ●	-, O, SC	ISO2 rubber seal	3244	0.15 ~ 1.0	
	VQ7-8-FG-D-3Z□-Q ●	-, O, SC	ISO2 metal seal	2941	0.15 ~ 1.0	
3 position closed centre	VQ7-6-FHG-D-3ZR□-Q ●	-, O, SC	ISO1 rubber seal	1341	0.2 ~ 1.0	24 VDC
	VQ7-6-FHG-D-3Z□-Q ●	-, O, SC	ISO1 metal seal	1181	0.2 ~ 1.0	
	VQ7-8-FHG-D-3ZR□-Q ●	-, O, SC	ISO2 rubber seal	2745	0.2 ~ 1.0	
	VQ7-8-FHG-D-3Z□-Q ●	-, O, SC	ISO2 metal seal	2451	0.2 ~ 1.0	
3 position exhaust centre	VQ7-6-FJG-D-3ZR□-Q ●	-, O, SC	ISO1 rubber seal	1413	0.2 ~ 1.0	24 VDC
	VQ7-6-FJG-D-3Z□-Q ●	-, O, SC	ISO1 metal seal	1181	0.2 ~ 1.0	
	VQ7-8-FJG-D-3ZR□-Q ●	-, O, SC	ISO2 rubber seal	3244	0.2 ~ 1.0	
	VQ7-8-FJG-D-3Z□-Q ●	-, O, SC	ISO2 metal seal	2395	0.2 ~ 1.0	
3 position pressure centre	VQ7-6-FIG-D-3ZR□-Q ●	-, O, SC	ISO1 rubber seal	1326	0.2 ~ 1.0	24 VDC
	VQ7-6-FIG-D-3Z□-Q ●	-, O, SC	ISO1 metal seal	1168	0.2 ~ 1.0	
	VQ7-8-FIG-D-3ZR□-Q ●	-, O, SC	ISO2 rubber seal	3032	0.2 ~ 1.0	
	VQ7-8-FIG-D-3Z□-Q ●	-, O, SC	ISO2 metal seal	2712	0.2 ~ 1.0	
3 position exhaust centre with check valve	VQ7-6-FPG-D-3ZR□-Q ●	-, O, SC	ISO1 rubber seal	730	0.2 ~ 1.0	24 VDC
	VQ7-6-FPG-D-3Z□-Q ●	-, O, SC	ISO1 metal seal	704	0.2 ~ 1.0	
	VQ7-8-FPG-D-3ZR□-Q ●	-, O, SC	ISO2 rubber seal	1747	0.2 ~ 1.0	
	VQ7-8-FPG-D-3Z□-Q ●	-, O, SC	ISO2 metal seal	1677	0.2 ~ 1.0	

Other voltages, plug connectors and port sizes available on request

Nothing (-): DIN terminal block (with connector)

□ O: DIN terminal block (without connector)

SC: with cable and M12 plug connector

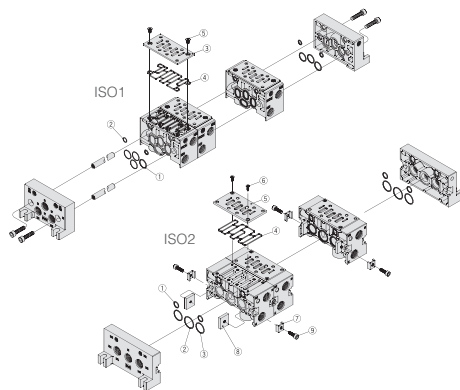
Modular manifold

Item		ISO1	ISO2
End plate assembly	U Side	G 3/8 EAXT502-LA-03 ●	—
		G 1/2 —	EAXT512-LA-04 ●
	D Side	G 3/8 EAXT502-RA-03 ●	—
		G 1/2 —	EAXT512-RA-04 ●
Manifold block assembly	G 1/4 EAXT502-1A-A02 ●	—	
	G 3/8 EAXT502-1A-A03 ●	EAXT512-1A-A03 ●	
	G 1/2 —	EAXT512-1A-A04 ●	
Tension bolt		AXT502-34-□	—

□ N° of stations: 02 to 10

Accessories • Sub-plate

	ISO1	ISO2
G 1/4	EVS7-1-A02F ●	—
G 3/8	EVS7-1-A03F ●	EVS7-2-A03F ●
G 1/2	—	EVS7-2-A04F ●
G 3/4	—	EVS7-2-A06F ●



ISO standard solenoid valve, compliant with ISO 5599/1

EVS7-6/8 Series



- Mounting to ISO 5099/1, sizes 1 and 2
- DIN Connector
- Broad range of accessories: Speed controller, dual pressure system, etc.
- IP40 enclosure protection.

Type of actuation	Part number solenoid valve	Type	Flow [l/min]	Operating pressure range [MPa]	Voltage
2 position single	EVS7-6-FG-S-3Z-Q	Size 1, metal seal	1181	0.1 ~ 1.0	24 VDC
	EVS7-8-FG-S-3Z-Q	Size 2, metal seal	2941		
2 position double	EVS7-6-FG-D-3Z-Q	Size 1, metal seal	1181		
	EVS7-8-FG-D-3Z-Q	Size 2, metal seal	2941		
3 position closed centre	EVS7-6-FHG-D-3Z-Q	Size 1, metal seal	1181		
	EVS7-8-FHG-D-3Z-Q	Size 2, metal seal	2451		
3 position pilot check	EVS7-6-FPG-D-3Z-Q	Size 1, metal seal	704		
	EVS7-8-FPG-D-3Z-Q	Size 2, metal seal	1677		
3 position exhaust centre	EVS7-6-FJG-D-3Z-Q	Size 1, metal seal	1181		
	EVS7-8-FJG-D-3Z-Q	Size 2, metal seal	2395		
3 position pressure centre	EVS7-6-FIG-D-3Z-Q	Size 1, metal seal	1168		
	EVS7-8-FIG-D-3Z-Q	Size 2, metal seal	2712		

1) Other voltages upon request.

2) Valve is supplied with DIN connector.

Single sub-plates

Part number	Type
EVS7-1-A02F ●	Size 1, side-ported G 1/4
EVS7-1-A03F ●	Size 1, side-ported G 3/8
EVS7-2-A03F ●	Size 2, side-ported G 3/8
EVS7-2-A04F ●	Size 2, side-ported G 1/2
EVS7-2-A06F ●	Size 2, side-ported G 3/4

1) Bottom-ported also available

Manifold

Part number	Type
VV71□-03R-03DSB-Q	Manifold for □ stations; size 1; 2/4 ports: size 3/8 (right side); 1/3/5 ports: size 3/8 (down size), with silencer box
VV72□-04R-06DSB-Q	Manifold for □ stations; size 2; 2/4 ports: size 1/2 (right side); 1/3/5 ports: size 3/4 (down size), with silencer box

ISO standard solenoid valve, compliant with ISO 5599/1

EVS7-6/8/10 Series



- Mounting to ISO 5599/1, sizes 1.2 and 3
- M12 connector for easy wiring
- Compact body, lightweight
- Large flow capacity
- IP65 splash proof rating.

Type of actuation	Part number solenoid valve	Type	Flow [l/min]	Operating pressure range [MPa]	Voltage
2 position single	EVS7-6-FG-S-3ZRM0-Q ●	Size 1, rubber seal	1153	0.1 ~ 1.0	24 VDC
	EVS7-6-FG-S-3ZM0-Q ●	Size 1, metal seal	931		
	EVS7-8-FG-S-3ZRM0-Q ●	Size 2, rubber seal	2941		
	EVS7-8-FG-S-3ZM0-Q ●	Size 2, metal seal	2369		
	EVS7-10-FG-S-3ZRM0-Q ●	Size 3, rubber seal	3832		
2 position double	EVS7-10-FG-S-3ZM0-Q ●	Size 3, metal seal	2952	0.1 ~ 1.0	24 VDC
	EVS7-6-FG-D-3ZRM0-Q ●	Size 1, rubber seal	1153		
	EVS7-6-FG-D-3ZM0-Q ●	Size 1, metal seal	931		
	EVS7-8-FG-D-3ZRM0-Q ●	Size 2, rubber seal	2941		
	EVS7-8-FG-D-3ZM0-Q ●	Size 2, metal seal	2369		
3 position closed centre	EVS7-10-FG-D-3ZRM0-Q ●	Size 3, rubber seal	3832	0.1 ~ 1.0	24 VDC
	EVS7-10-FG-D-3ZM0-Q ●	Size 3, metal seal	2952		
	EVS7-6-FHG-D-3ZRM0-Q ●	Size 1, rubber seal	1153		
	EVS7-6-FHG-D-3ZM0-Q ●	Size 1, metal seal	931		
	EVS7-8-FHG-D-3ZRM0-Q ●	Size 2, rubber seal	2712		
3 position exhaust centre	EVS7-8-FHG-D-3ZM0-Q ●	Size 2, metal seal	2511	0.1 ~ 1.0	24 VDC
	EVS7-10-FHG-D-3ZRM0-Q ●	Size 3, rubber seal	3593		
	EVS7-10-FHG-D-3ZM0-Q ●	Size 3, metal seal	2952		
	EVS7-6-FJG-D-3ZRM0-Q ●	Size 1, rubber seal	1125		
	EVS7-6-FJG-D-3ZM0-Q ●	Size 1, metal seal	931		
3 position pressure centre	EVS7-8-FJG-D-3ZRM0-Q ●	Size 2, rubber seal	2729	0.1 ~ 1.0	24 VDC
	EVS7-8-FJG-D-3ZM0-Q ●	Size 2, metal seal	2343		
	EVS7-10-FJG-D-3ZRM0-Q ●	Size 3, rubber seal	3832		
	EVS7-10-FJG-D-3ZM0-Q ●	Size 3, metal seal	2952		
	EVS7-6-FIG-D-3ZRM0-Q ●	Size 1, rubber seal	1305		
3 position exhaust centre	EVS7-6-FIG-D-3ZM0-Q ●	Size 1, metal seal	931	0.1 ~ 1.0	24 VDC
	EVS7-8-FIG-D-3ZRM0-Q ●	Size 2, rubber seal	3244		
	EVS7-8-FIG-D-3ZM0-Q ●	Size 2, metal seal	2481		
	EVS7-10-FIG-D-3ZRM0-Q ●	Size 3, rubber seal	3593		
	EVS7-10-FIG-D-3ZM0-Q ●	Size 3, metal seal	2952		

1) Other voltages, upon request.

Single sub-bases

EVS7-1-A02F ●	Size 1, side-ported G 1/4
EVS7-1-A03F ●	Size 1, side-ported G 3/8
EVS7-2-A03F ●	Size 2, side-ported G 3/8
EVS7-2-A04F ●	Size 2, side-ported G 1/2
EVS7-2-A06F ●	Size 2, side-ported G 3/4
EVS7-3-A06F ●	Size 3, side-ported G 3/4
EVS7-3-A10F ●	Size 3, side-ported G 1

1) Bottom ported also available

Accessories

VV71□-03R-03DSB ●	Manifold for □ stations; size 1; 2/4 ports: size 3/8 (right side); 1/3/5 ports: size 3/8 (down size), with silencer box
VV72□-04R-06DSB ●	Manifold for □ stations; size 2; 2/4 ports: size 1/2 (right side); 1/3/5 ports: size 3/4 (down size), with silencer box

ISO/CNOMO standard solenoid valve, compliant with ISO 5599/1

EVS7-6/8/10 Series



- Mounting to ISO 5599/1, sizes 1.2 and 3
- Solenoid interface conforms to CNOMO (CNOMO 06-05-10 interface for cable plug DIN 43650)
- Sub-plates ISO•VDMA
- IP65 splash proof rating
- Fast response, long life, with large flow capacity.

Type of actuation	Part number solenoid valve	Connector	Type	Flow [l/min]	Operating pressure range [MPa]	Voltage
2 position single	EVS7-6-FG-S-3CV□-Q ●	-, O	Size 1, metal seal	931	0.1 ~ 1.0	24 VDC
	EVS7-8-FG-S-3CV□-Q ●	-, O	Size 2, metal seal	2369		
	EVS7-10-FG-S-3CV□-Q ●	-, O	Size 3, metal seal	2952		
2 position double	EVS7-6-FG-D-3CV□-Q ●	-, O	Size 1, metal seal	931	0.1 ~ 1.0	24 VDC
	EVS7-8-FG-D-3CV□-Q ●	-, O	Size 2, metal seal	2369		
	EVS7-10-FG-D-3CV□-Q ●	-, O	Size 3, metal seal	2952		
3 position closed centre	EVS7-6-FHG-D-3CV□-Q ●	-, O	Size 1, metal seal	931	0.1 ~ 1.0	24 VDC
	EVS7-8-FHG-D-3CV□-Q ●	-, O	Size 2, metal seal	2511		
	EVS7-10-FHG-D-3CV□-Q ●	-, O	Size 3, metal seal	2952		
3 position exhaust centre	EVS7-6-FJG-D-3CV□-Q ●	-, O	Size 1, metal seal	931	0.1 ~ 1.0	24 VDC
	EVS7-8-FJG-D-3CV□-Q ●	-, O	Size 2, metal seal	2343		
	EVS7-10-FJG-D-3CV□-Q ●	-, O	Size 3, metal seal	2952		
3 position pressure centre	EVS7-6-FIG-D-3CV□-Q ●	-, O	Size 1, metal seal	931	0.1 ~ 1.0	24 VDC
	EVS7-8-FIG-D-3CV□-Q ●	-, O	Size 2, metal seal	2481		
	EVS7-10-FIG-D-3CV□-Q ●	-, O	Size 3, metal seal	2952		

1) Other voltages, upon request.

□ -: With connector

O: Without connector

ISO standard solenoid valve, compliant with ISO 15407-1 and VDMA 24563

EVS1-01/02 Series



- Mounting to ISO 15407-1, sizes 1 and 2
- With M8/M12 connectors for easy wiring:
Size 01: M12 (5 pin)
Size 02: M8 (4 pin)
- IP65 splash proof rating
- Lightweight, with large flow capacity.

Type of actuation	Part number solenoid valve	Type	Flow [l/min] (PRA/B)	Operating pressure range [MPa]	Voltage
2 position single	EVS1-01-FG-S-3ZRMO-Q ●	Size 1, rubber seal	904	0.15 ~ 1.0	24 VDC
	EVS1-01-FG-S-3ZMO-Q	Size 1, metal seal	704	0.1 ~ 1.0	
	EVS1-02-FG-S-3ZRMO-Q ●	Size 2, rubber seal	527	0.15 ~ 1.0	
	EVS1-02-FG-S-3ZMO-Q	Size 2, metal seal	341	0.1 ~ 1.0	
2 position double	EVS1-01-FG-D-3ZRMO-Q	Size 1, rubber seal	904	0.1 ~ 1.0	24 VDC
	EVS1-01-FG-D-3ZMO-Q ●	Size 1, metal seal	704		
	EVS1-02-FG-D-3ZRMO-Q ●	Size 2, rubber seal	527		
	EVS1-02-FG-D-3ZMO-Q	Size 2, metal seal	741		
3 position closed centre	EVS1-01-FHG-D-3ZRMO-Q ●	Size 1, rubber seal	835	0.2 ~ 1.0	24 VDC
	EVS1-01-FHG-D-3ZMO-Q	Size 1, metal seal	704	0.15 ~ 1.0	
	EVS1-02-FHG-D-3ZRMO-Q	Size 2, rubber seal	527	0.2 ~ 1.0	
	EVS1-02-FHG-D-3ZMO-Q	Size 2, metal seal	341	0.15 ~ 1.0	
3 position exhaust centre	EVS1-01-FJG-D-3ZRMO-Q ●	Size 1, rubber seal	769	0.2 ~ 1.0	24 VDC
	EVS1-01-FJG-D-3ZMO-Q	Size 1, metal seal	613	0.15 ~ 1.0	
	EVS1-02-FJG-D-3ZRMO-Q ●	Size 2, rubber seal	469	0.2 ~ 1.0	
	EVS1-02-FJG-D-3ZMO-Q	Size 2, metal seal	295	0.15 ~ 1.0	
3 position pressure centre	EVS1-01-FIG-D-3ZRMO-Q ●	Size 1, rubber seal	1085	0.2 ~ 1.0	24 VDC
	EVS1-01-FIG-D-3ZMO-Q	Size 1, metal seal	727	0.15 ~ 1.0	
	EVS1-02-FIG-D-3ZRMO-Q	Size 2, rubber seal	527	0.2 ~ 1.0	
	EVS1-02-FIG-D-3ZMO-Q	Size 2, metal seal	363	0.15 ~ 1.0	

Other voltages, upon request.

Sub-plates

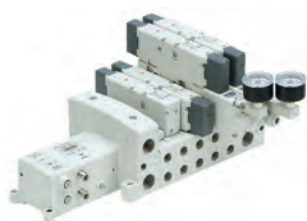
VS1-01-A01F ●	Size 1, side-ported G 1/8
VS1-01-A02F ●	Size 1, side-ported G 1/4
VS1-02-A01F	Size 2, side-ported G 1/8

5 port ISO 15407-2 valve

Size 01, 02, plug-in type

VSR8-2/VSS8-2 Series

VSR8-4/VSS8-4 Series



- Conforming to ISO 15407-2
- 2 sizes:
 - 18 mm: VSR8-2/VSS8-2
 - 26 mm: VSR8-4/VSS8-4
- Compact and high flow
- IP65 enclosure
- Outstanding high-speed response and long service life
- Applicable to EX250, EX500, EX600 serial transmission.

Type of actuation	Part number solenoid valve	Type	Flow [l/min]	Operating pressure range [MPa]	Voltage
2 position single	VSR8-2-FG-S-3VZ-Q	Rubber seal	527	0.15 ~ 1.0	24 VDC
	VSS8-2-FG-S-3VZ-Q	Metal seal	341	0.1 ~ 1.0	
	VSR8-4-FG-S-3VZ-Q ●	Rubber seal	904	0.15 ~ 1.0	
	VSS8-4-FG-S-3VZ-Q	Metal seal	704	0.1 ~ 1.0	
2 position double	VSR8-2-FG-D-3VZ-Q	Rubber seal	527	0.1 ~ 1.0	24 VDC
	VSS8-2-FG-D-3VZ-Q	Metal seal	341		
	VSR8-4-FG-D-3VZ-Q	Rubber seal	904		
	VSS8-4-FG-D-3VZ-Q	Metal seal	704		
3 position closed centre	VSR8-2-FHG-D-3VZ-Q	Rubber seal	527	0.2 ~ 1.0	24 VDC
	VSS8-2-FHG-D-3VZ-Q	Metal seal	341		
	VSR8-4-FHG-D-3VZ-Q	Rubber seal	835	0.2 ~ 1.0	
	VSS8-4-FHG-D-3VZ-Q	Metal seal	704	0.15 ~ 1.0	
3 position exhaust centre	VSR8-2-FJG-D-3VZ-Q	Rubber seal	469	0.2 ~ 1.0	24 VDC
	VSS8-2-FJG-D-3VZ-Q	Metal seal	295		
	VSR8-4-FJG-D-3VZ-Q	Rubber seal	769	0.2 ~ 1.0	
	VSS8-4-FJG-D-3VZ-Q	Metal seal	613	0.15 ~ 1.0	
3 position pressure centre	VSR8-2-FIG-D-3VZ-Q	Rubber seal	527	0.2 ~ 1.0	24 VDC
	VSS8-2-FIG-D-3VZ-Q	Metal seal	363		
	VSR8-4-FIG-D-3VZ-Q	Rubber seal	1085	0.2 ~ 1.0	
	VSS8-4-FIG-D-3VZ-Q	Metal seal	727	0.15 ~ 1.0	

4-position dual 3-port valves and other voltages available upon request.

Manifold variations

Part number	Description
VV801■-01F-□-W1-Q	Without SI/input block, kit designation □, ■ stations
VV802■-02F-□-W1-Q	
VV802■03F-□-W1-Q	

Bottom ported port sizes available upon request.

□ Kit designation

Kit	Max. No. of stations/solenoids	Kit type, electrical entry and cable length
FD0	12 / 24	D-sub connector kit (25P) without cable
PDO	12 / 24	Flat ribbon cable kit (26P) without cable
SD60	12 / 24	Serial kit without SI unit (for EX600)
SD0	12 / 24	Serial kit without SI unit (for EX250)
SD0	8 / 16	Serial kit without SI unit (for EX500)

Other kit types available on request.

SI units ordered separately. Please refer to pages 76 to 82.

3 port solenoid valve

3 port solenoid valve, air pilot type

SYJ300 Series



- Micro design
- Plate valve style
- N.C. (N.O. upon request)
- Power consumption 0.4 W with LED
- Manual override non-locking style as standard
- Minimum service life of 30 million switching cycles.

Type of actuation	Part number solenoid valve	Voltage	Mounting	Operating pressure range [Mpa]	Flow [l/min]	Circuit symbol
3 port N.C.	SYJ314M-5LOU-Q ●	24V DC	Base mounted (to manifold)	0.15 – 0.7	98	
	SYJ314M-5G-Q ●					

Body ported style and other voltages upon request

Manifolds

SS3YJ3-S42-02-M5F-Q ●	Manifold for 2 valves, M5 port
SS3YJ3-S42-03-M5F-Q ●	Manifold for 3 valves, M5 port
SS3YJ3-S42-04-M5F-Q ●	Manifold for 4 valves, M5 port
SS3YJ3-S42-05-M5F-Q ●	Manifold for 5 valves, M5 port
SS3YJ3-S42-06-M5F-Q ●	Manifold for 6 valves, M5 port
SS3YJ3-S42-08-M5F-Q ●	Manifold for 8 valves, M5 port
SS3YJ3-S42-10-M5F-Q ●	Manifold for 10 valves, M5 port

Accessories

SYJ300-9-1-Q ●	Sub-plate
SYJ300-10-7A-Q ●	Blanking plate

Accessories • Plug connection with cable

Cable	Cable L= 0.6 m	Cable L= 1 m	Cable L= 2 m	Cable L= 3 m
Without cover	SY100-30-4A-6 ●	SY100-30-4A-10 ●	SY100-30-4A-20 ●	SY100-30-4A-30 ●
With cover	SY100-68-A-6 ●	SY100-68-A-10 ●	SY100-68-A-20 ●	SY100-68-A-30 ●

3 port solenoid valve

VP(A)300/500/700 Series



- 2 types:
 - Pilot poppet type: VP300/500/700
 - Air operated type: VPA300/500/700
- Reduced power consumption:
 - 0.55 w: With power saving circuit
 - 1.55 w: Standard
- Noise reduction.
- Longer life expectancy: 50 million cycles or more.
- Built-in strainer in the pilot valve: unexpected troubles due to foreign matter can be prevented.

Pilot poppet type

Part number	Type of actuation	Pilot type	Port	Operating pressure range	Flow [l/min]	Electrical entry	Voltage	Circuit symbol
VP342-4□1-02FA ●	N.C.	Internal	G 1/4	-100 kPa ~ 0.7 MPa	1023	□: D = Din terminal, with connector Y = Din (EN175301-803) terminal, with connector YO = Din (EN175301-803) terminal, without connector DZ = Din terminal, with connector and light / surge voltage suppressor YZ = Din (EN175301-803) terminal, with connector and light / surge voltage suppressor	220 VAC	
VP342R-4□1-02FA ●		External					24 VDC	
VP342-5□1-02FA ●		Internal					220 VAC	
VP342R-5□1-02FA ●		External						
VP542-4□1-03FA ●		Internal	G 3/8		2132	24 VDC		
VP542R-4□1-03FA ●		External						
VP542-5□1-03FA ●		Internal	G 1/2		3707	220 VAC		
VP542R-5□1-03FA ●		External						
VP742-4□1-04FA ●		Internal	G 1/2	3707	24 VDC			
VP742R-4□1-04FA ●		External						
VP742-5□1-04FA ●		Internal						
VP742R-5□1-04FA ●		External						

Air operated type

Part number	Type of actuation	Port	Flow [l/min]	Operating pressure range	Circuit symbol
VPA342-1-02FA ●	N.C.	G 1/4	1023	0.2 ~ 1.0 MPa	
VPA342V-1-02FA ●				-100 kPa ~ 0.2 MPa	
VPA542-1-03FA ●		G 3/8	2132	0.2 ~ 1.0 MPa	
VPA542V-1-03FA ●				-100 kPa ~ 0.2 MPa	
VPA742-1-04FA ●		G 1/2	3707	0.2 ~ 1.0 MPa	
VPA742V-1-04FA ●				-100 kPa ~ 0.2 MPa	

3 port Solenoid Valve, Safety Standard ISO 13849-1

VP/VG Series



Single Residual pressure release valve - 3 port solenoid valve

VP542-X536/VP742-X536 Series



- Safety Standards ISO 13849-1 for Category 2.
This product is designed to be used as a component in a Category 2 safety system.
The single unit alone cannot be considered as a Category 2 safety system.
- Valve position energised/de-energised can be detected.
The detecting function of the main valve is available to detect error in the input signal and valve operation.

Part number	Pilot type	Port	Operating pressure range [MPa]	Average B10d	Electrical entry	Voltage
VP542-5DZ1-03F-M-X536 ●	Internal pilot	G 3/8	0.25 to 0.7 Mpa	10,000,000 cycles	D = Din terminal, with connector Y = Din (EN175301-803) terminal, with connector	24 VDC
VP742-5DZ1-04F-M-X536 ●		G 1/2				
VP542R-5YZ1-03F-M-X536 ●	External pilot	G 3/8				
VP742R-5YZ1-04F-M-X536 ●		G 1/2				

Dual residual pressure release valve - 3 port solenoid valve

VP544-X538/VP744-X538 Series



- Safety Standards ISO 13849-1 for Category 3 and 4
This product is designed to be used as a component in a Category 3, 4 safety system.
The single unit alone cannot be considered as a Category 3, 4 safety system
- Valve position energised/de-energised can be detected
- Redundancy
Valve has 2 stations, so if one of them fails to operate, residual pressure is released by the remaining valve
- Modular connection to FRL unit.

Part number	Pilot type	Port	Operating pressure range [MPa]	Average B10d	Electrical entry	Voltage
VP544-5DZ1-03F-M-X538 ●	Internal pilot	G 3/8	0.25 to 0.7 Mpa	10,000,000 cycles	D = Din terminal, with connector.	24 VDC
VP744-5DZ1-04F-M-X538 ●		G 1/2				
VP544R-5DZ1-03F-M-X538 ●	External pilot	G 3/8				
VP744R-5DZ1-04F-M-X538 ●		G 1/2				

Dual residual pressure release valve - 3 port solenoid valve

VG342-X87 Series



- Safety Standard ISO 13849-1 for Category 3 and 4, compliant with performance level. This product is designed to be used as a component in a Category 3, 4 safety system. The single unit alone cannot be considered as a Category 3, 4 safety system.
- Valve position energised/de-energised can be detected.
- Redundancy
Valve has 2 stations, so if one of them fails to operate, residual pressure is released by the remaining valve.
- Modular connection to FRL unit.

Part number	Pilot type	Port	Operating pressure range [MPa]	Average B10d	Electrical entry	Voltage
VG342R-5DZ-06F-X87 ●	External pilot	G 3/4	0.25 to 0.7 Mpa	900,000 cycles	D = Din terminal, with connector.	24 VDC

Our highlighted product for you

Dual residual pressure release valve with soft start-up function



VP-X555/X585 Series



- Safety Standards ISO 13849-1 for Category 3 and 4:
 - This product is designed to be used as a component in a Category 3, 4 safety system
 - The single unit alone cannot be considered as a Category 3, 4 safety system
- With soft start-up function
- Valve position energised/de-energised can be detected
- Redundancy:
 - Valve has 2 stations, so if one of them fails to operate, residual pressure is released by the remaining valve
- Modular connection to FRL unit.

Part number		Pilot type	Port	Electrical entry	Voltage
Maximum operating pressure: 0.7 MPa	Maximum operating pressure: 1.0 MPa				
VP544-5YZ1-03F-X555	VP544-5YZ1-03F-X585	Internal pilot	G 3/8	Y=DIN terminal (EN 175301-803)	24 VDC
VP544R-5YZ1-03F-X555	VP544R-5YZ1-03F-X585	External pilot			
VP544-5YZ1-03F-M-X555 ●	VP544-5YZ1-03F-M-X585	Internal pilot			
VP544R-5YZ1-03F-M-X555	VP544R-5YZ1-03F-M-X585	External pilot	G 1/2		
VP744-5YZ1-04F-X555	VP744-5YZ1-04F-X585	Internal pilot			
VP744R-5YZ1-04F-X555	VP744R-5YZ1-04F-X585	External pilot			
VP744-5YZ1-04F-M-X555 ●	VP744-5YZ1-04F-M-X585	Internal pilot			
VP744R-5YZ1-04F-M-X555 ●	VP744R-5YZ1-04F-M-X585	External pilot			

3 port solenoid valve unit super compact, manifold type

VV061 Series



- Compact direct operated 3 port solenoid valve. Unit manifold type.
- Compact and lightweight: 6 mm width, 4 g weight.
- Selectable options: power saving circuit, barb/one-touch fittings, connector cables, and bracket/panel mounting.

Part number	Port size	Operating pressure [MPa]	Voltage	Details
VV061□40-5NH	Barb fitting (applicable tubing Ø 4 / Ø 2.5)	0.0 to 0.7 MPa	24 VDC	Standard (with light/surge voltage suppressor) -COM
VV061□40-5NTH				With power-saving circuit -COM
VV061□40-5NL				Standard (with light/surge voltage suppressor) -COM
VV061□40-5NTL	With power-saving circuit -COM			
VV061□C2-5NH	Ø 2 one-touch fitting	0.0 to 0.7 MPa		Standard (with light/surge voltage suppressor) -COM
VV061□C2-5NTH				With power-saving circuit -COM
VV061□C2-5NL			Standard (with light/surge voltage suppressor) -COM	
VV061□C2-5NTL			With power-saving circuit -COM	

□ N° of stations 04: 4 stations, 08: 8 stations

* No cables nor brackets included

Accessories

PV060-80-2A	Bracket for 4 stations manifold
PV060-80-1A	Bracket for 8 stations manifold
PV060-40-4A	Connector cable for 4 stations, 300 mm

PV060-40-4A-10	Connector cable for 4 stations, 1000 mm
PV060-40-3A	Connector cable for 8 stations, 300 mm
PV060-40-3A-10	Connector cable for 8 stations, 1000 mm

3 port solenoid valve, direct operated

V100 Series



- Power consumption 0.4 W. With power saving circuit 0.1 W.
- Coil temperature rise: only 1 °C (with power saving circuit).
- Indicator light/surge voltage suppressor integrated in the connector body.
- Valve width 10.5 mm.

Type of actuation	Part number	Voltage	Operating pressure range [MPa]	Electrical entry	Flow [l/min]	Circuit symbol
3 port N.C.	V114-5LOU ●	24 VDC	0 ~ 0.7	L Plug Connector	8.4	
	V114-5MOU ●			M Plug Connector		
	V114-5G ●			Grommet		

N.O. and other voltages upon request

Type of actuation	Part number	Voltage	Operating pressure range [MPa]	Electrical entry	Flow [l/min]	Circuit symbol
3 port N.O.	V124-5LOU ●	24 VDC	0 ~ 0.7	L Plug Connector	14.1	
	V124-5MOU ●			M Plug Connector		
	V124-5G ●			Grommet		

N.O. and other voltages upon request

Manifolds

VV100-S41-02-M5 ●	Manifold for 2 valves. M5 port
VV100-S41-03-M5 ●	Manifold for 3 valves. M5 port
VV100-S41-04-M5 ●	Manifold for 4 valves. M5 port
VV100-S41-05-M5 ●	Manifold for 5 valves. M5 port
VV100-S41-06-M5 ●	Manifold for 6 valves. M5 port
VV100-S41-08-M5 ●	Manifold for 8 valves. M5 port

VV100-S41-10-M5 ●	Manifold for 10 valves. M5 port
VV100-S41-12-M5 ●	Manifold for 12 valves. M5 port
VV100-S41-14-M5 ●	Manifold for 14 valves. M5 port
VV100-S41-16-M5 ●	Manifold for 16 valves. M5 port
VV100-S41-18-M5 ●	Manifold for 18 valves. M5 port
VV100-S41-20-M5 ●	Manifold for 20 valves. M5 port

Accessories

V100-74-1 ●	Sub-plate with M5 thread
V100-77-1A ●	Blanking plate

3 port solenoid valve, super compact

S070 Series



- Compact direct operated 3 port solenoid valve
- Compact and lightweight: 7 mm width, 5 g weight
- Selectable single/manifold use:
 - Single unit
 - Base mounted manifold (bar/separable base)
 - Body ported manifold (stacking type).

Part number	<input type="checkbox"/> Power consumption, flow and operating pressure	Type	Port size	Electrical entry	Voltage	
S070B-5□G ●	B, D, F	Base mounted with screws	Without sub-plate	Grommet	24 VDC	
S070B-5□C ●	B, D, F			Plug lead with connector and lead wire		
S070A-5□G	B, D, F	Base mounted with clips	—	Grommet		
S070A-5□C ●	B, D, F			Plug lead with connector and lead wire		
S070C-5□G-32 ●	B, D, F	Body ported	Barb fitting (Ø 3.18 / Ø 2)	Grommet		
S070C-5□C-32 ●	B, D, F			Plug lead with connector and lead wire		
S070M-5□G-32	B, D, F	Body ported stacking manifold	Barb fitting (Ø 3.18 / Ø 2)	Grommet		
S070M-5□C-32	B, D, F			Plug lead with connector and lead wire		
S070M-5□G-40 ●	B, D, F			Barb fitting (Ø 4 / Ø 2.5)		Grommet
S070M-5□C-40	B, D, F					Plug lead with connector and lead wire

Power consumption, flow specification and operating pressure:

B : 0.35 W, 7.6 l/min and 0.3 MPa

D : 0.5 W, 7.6 l/min and 0.5 MPa

F : 0.1 W (power saving circuit), 3.8 l/min and 0.3 MPa

Manifolds

Part number	<input type="checkbox"/> Stocked options	Description
SS073A01-□C ●	02, 05, 07, 08, 12	Base mounted manifold, stacking type, barb fittings (Ø 3.18/Ø 2)
SS073A02-□C	—	Base mounted manifold, stacking type, barb fittings (Ø 4/Ø 2.5)
SS073B01-□C ●	02, 04, 05, 06, 12	Base mounted manifold, bar type, M5 female thread
SS073M01-□C	—	Body ported manifold, stacking type, barb fittings (Ø 3.18/Ø 2)
SS073M02-□C	—	Body ported manifold, stacking type, barb fittings (Ø 4/Ø 2.5)

N° of stations: 02 to 20

Accessories

S070-14A	Plug connector assembly (plug lead), 150 mm cable
S070-14A-3	Plug connector assembly (plug lead), 300 mm cable
S070-14A-10	Plug connector assembly (plug lead), 1000 mm cable
S070-S-M3	Sub-plate (base mounted), M3 port size
S070-S-M5	Sub-plate (base mounted), M5 port size

Our highlighted product for you

3 port solenoid valve, directly operated

VT•VO307/317 Series



- Direct operated poppet type, body ported type
- 1 valve - 6 functions, N.C., N.O., distribution valve, option valve
- 2 bore sizes G 1/8, G 1/4
- Optional model for vacuum
- Connector with enclosure IP65, also with indicator light and surge voltage suppressor.

Part number	Function	Voltage	Max. Operating pressure [MPa]	Flow [l/min]	Port size	Circuit symbol
VT307-4DO1-01F-Q ●	3/2 N.O. N.C.	220 VAC	0.7	186	G 1/8	
VT307-4DO1-02F-Q ●					G 1/4	
VT307-5DO1-01F-Q ●		24 VDC			G 1/8	
VT307-5DO1-02F-Q ●					G 1/4	
VT317-4DO-02F-Q ●		220 VAC	0.9	595		
VT317-5DO-02F-Q ●		24 VDC				
VO307-4DO1-Q ●		220 VAC	0.7	85	Mounting on manifold base	
VO307-5DO1-Q ●		24 VDC				

Vacuum specification (-0.1 to 0.1 MPa) type also available, place a "V" after 307 or 317 if you want to order it.

Manifolds for VO307

EVV307-01-022-01F-F ●	Manifold for 2 valves. G 1/8 port
EVV307-01-032-01F-F ●	Manifold for 3 valves. G 1/8 port
EVV307-01-042-01F-F ●	Manifold for 4 valves. G 1/8 port
EVV307-01-062-01F-F ●	Manifold for 6 valves. G 1/8 port
EVV307-01-082-01F-F ●	Manifold for 8 valves. G 1/8 port
EVV307-01-102-01F-F ●	Manifold for 10 valves. G 1/8 port

Accessories

DXT152-25-1A ●	Mounting bracket for VT307
DXT060-51-13A ●	Blanking plate for manifold

3 port 3 position valve

VEX3 Series



- Pilot solenoid or air operated options
- Body ported, base mounted or manifold operated
- Intermediate stopping of cylinders up to Ø 125 is possible
- Acceleration or deceleration is also possible
- Maximum flow rate: 3113 l/min [ANR]
- Reduced power consumption: 1 W (1.1 W with indicator light)
- 4 Manual override options
 - Non-locking push type
 - Locking slotted type (for Grommet/Plug connector)
 - Push-turn locking slotted type (for DIN terminal)
 - Push-turn locking lever type (for DIN terminal)

Part number	Mounting type	Operation type	Port size	Operating pressure range [MPa]	Flow [l/min] ¹⁾ 1P→2A	Rated voltage	Electrical entry	Light/surge voltage suppressor	Manual override	Circuit symbol				
VEX3121-01F5DZ1	Body ported	External pilot operated	G 1/8	-101.2 kPa to 1.0	572	24 VDC	DIN terminal with connector	With light and surge voltage suppressor	Non-locking push type					
VEX3121-02F5DZ1			G 1/4		919									
VEX3321-02F5DZ1			G 1/4		1084									
VEX3321-03F5DZ1			G 3/8		2198									
VEX3321-04F5DZ1		G 1/2	2610											
VEX3122-01F5DZ1		Internal pilot operated	G 1/8	572										
VEX3122-02F5DZ1			G 1/4	919										
VEX3322-02F5DZ1			G 1/4	1084										
VEX3322-03F5DZ1			G 3/8	2198										
VEX3322-04F5DZ1		G 1/2	2610											
VEX3120-01F1		Air operated	G 1/8	-101.2 kPa to 1.0	572					—	—	—	—	
VEX3120-02F1			G 1/4		919									
VEX3320-02F1	G 1/4		1084											
VEX3320-03F1	G 3/8		2198											
VEX3320-04F1	G 1/2	2610												
VEX3221-01F5DZ1	Base mounted	External pilot operated	G 1/8	-101.2 kPa to 1.0	861	24 VDC	DIN terminal with connector	With light and surge voltage suppressor	Non-locking push type					
VEX3221-02F5DZ1			G 1/4		1029									
VEX3421-02F5DZ1			G 1/4		2114									
VEX3421-03F5DZ1			G 3/8		2977									
VEX3421-04F5DZ1		G 1/2	3113											
VEX3222-01F5DZ1		Internal pilot operated	G 1/8	0.2 to 0.7	861									
VEX3222-02F5DZ1			G 1/4		1029									
VEX3422-02F5DZ1			G 1/4		2114									
VEX3422-03F5DZ1			G 3/8		2977									
VEX3422-04F5DZ1		G 1/2	3113											
VEX3220-01F1		Air operated	G 1/8	-101.2 kPa to 1.0	861					—	—	—	—	
VEX3220-02F1			G 1/4		1029									
VEX3420-02F1	G 1/4		2114											
VEX3420-03F1	G 3/8		2977											
VEX3420-04F1	G 1/2	3113												

1) These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

Accessories

Part number	Model	Description
VEX1-18-1A ●	VEX312	Bracket (With bolt and washer)
VEX1-18-2A	VEX312	Foot bracket (With bolt and washer)
VEX3-32-2A	VEX332	
AN120-M5 ●	VEX3	Pilot exhaust (PE) silencer ¹⁾

1) Only with solenoid.

Serial transmission

Our highlighted product for you

Fieldbus system, integrated type (for output)

EX260 Series



- Centralised & compact fieldbus system
- Valve output system for driving 5 port solenoid valves
- IP67 enclosure protection
- SPEEDCON connectors compatible
- Wiring and piping possible from the same direction
- Daisy-chain communication
- Internal terminal resistor (only available for PROFIBUS-DP and CC-Link)
- Applicable valve series: SY, S0700, VQC, SV.

Part number	Protocol	Number of outputs	SI unit output polarity	Communication connector	Enclosure protection
EX260-SEN1 ●	EtherNet/IP™	32	Source/PNP	M12	IP67
EX260-SEN3 ●		16			
EX260-SPN1 ●	PROFINET	32			
EX260-SPN3 ●		16			
EX260-SEC1 ●	EtherCAT®	32			
EX260-SEC3 ●		16			
EX260-SDN1 ●	DeviceNet™	32			
EX260-SDN3 ●		16			
EX260-SPR1 ●	PROFIBUS DP	32			
EX260-SPR3 ●		16			
EX260-SPR5 ●		32			
EX260-SPR7 ●		16			
EX260-SMJ1	CC-Link	32		D-Sub	IP40
EX260-SMJ3		16			
EX260-SPL1	POWERLINK	32		M12	IP67
EX260-SPL3		16			
EX260-SL1-X210	IO-Link	32			

Accessories

Part number	Description	
EX500-AP010-S ●	Power supply cable (for SI unit) for EtherNet/IP™, PROFINET, EtherCAT®, PROFIBUS DP, DeviceNet™, Ethernet POWERLINK	Straight connector, 1 m
EX500-AP050-S ●		Straight connector, 5 m
EX500-AP010-A ●		Angled connector, 1 m
EX500-AP050-A ●		Angled connector, 5 m
EX9-AC030-1 ●	Power supply cable (for SI unit) for CC-Link	Straight connector, 3 m
EX9-AC050-1 ●		Straight connector, 5 m
PCA-1446566 ●	Communication cable (plug) for EtherNet/IP™, PROFINET, EtherCAT®, Ethernet POWERLINK	M12 SPEEDCON connector, 5 m
PCA-1567717 ●	Communication cable (plug) for CC-Link	
PCA-1557646 ●	Communication cable (plug) for DeviceNet™	
PCA-1557691 ●	Communication cable (plug) for PROFIBUS DP	
EX9-AC020EN-PSRJ ●	Communication cable with connector for EtherNet/IP™, PROFINET, EtherCAT®, Ethernet POWERLINK	M12 – RJ-45 connector, 2 m
EX9-AC050EN-PSRJ ●		M12 – RJ-45 connector, 3 m
EX9-AWTS ●	Seal cap (10 pcs.)	For M12 connector socket
EX9-OET1 ●	Output block, internal power supply method (for low-wattage load)	
EX9-OEP1 ●	Output block, integrated power supply method (for high-wattage load)	
EX9-PE1 ●	Power block	
EX9-EA03 ●	End plate	

Fieldbus system, integrated type (for input/output)

EX250 Series



- Centralised fieldbus system
- Valve output system for driving 5 port solenoid valves and I/O
- 32 inputs/32 outputs module
- IP67 enclosure protection
- Output units available for external use (EX9)
- Applicable valve series: SY, S0700, VQC, SV.

SI units

Part number	Protocol	Number of inputs/outputs	SI unit output polarity	Communication connector	Enclosure protection
EX250-SCA1A ●	CANopen	32/32	PNP	M12 (5 pins)	IP67
EX250-SPR1 ●	PROFIBUS DP				
EX250-SDN1 ●	DeviceNet™				
EX250-SEN1 ●	EtherNet/IP™				
EX250-SAS3 ●	AS-Interface			8/8 (2 power supply systems)	
EX250-SAS5 ●				4/4 (2 power supply systems)	
EX250-SAS7 ●				8/8 (1 power supply system)	
EX250-SAS9 ●		4/4 (1 power supply system)			
EX250-SMJ2 ●	CC-Link	32/32	NPN		

Input/output blocks

Part number	Description	Number of inputs/outputs	Connector	Enclosure protection
EX250-IE1 ●	Input block	2/-	M12 (5 pins)	IP67
EX250-IE2 ●		4/-		
EX250-IE3 ●			M8 (3 pins)	
EX9-OET1 ●	Output block, PNP specification	-/2	M12 (5 pins)	
EX9-OEP1 ●	For low-wattage load For high-wattage load			

Accessories

Part number	Description		
EX9-PE1 ●	Power block		
EX250-EA1 ●	End plate	Input side	Direct mounting
EX9-EA03 ●		Output side	
PCA-1557688 ●	Communication cable for PROFIBUS DP		M12 SPEEDCON connector, socket, 5 m
PCA-1557691 ●	Communication cable for DeviceNet™		M12 SPEEDCON connector, socket, 5 m
PCA-1557633 ●	Communication cable for DeviceNet™		M12 SPEEDCON connector, plug, 5 m
PCA-1557646 ●	Communication cable for DeviceNet™		M12 SPEEDCON connector, plug, 5 m
EX9-AC020EN-PSRJ ●	Communication cable for EtherNet/IP™		M12 - RJ-45 connector, 2 m
EX9-AC050EN-PSRJ ●	Communication cable for EtherNet/IP™		M12 - RJ-45 connector, 5 m
PCA-1567720 ●	Communication cable for CC-Link		M12 SPEEDCON connector, socket, 5 m
PCA-1567717 ●	Communication cable for CC-Link		M12 SPEEDCON connector, plug, 5 m
EX500-AWES ●	Seal cap (10 units), male plug		For M8 connector
EX500-AWTS ●	Seal cap (10 units), male plug		For M12 connector
EX500-AWTP ●	Seal cap, female plug		For M12 connector

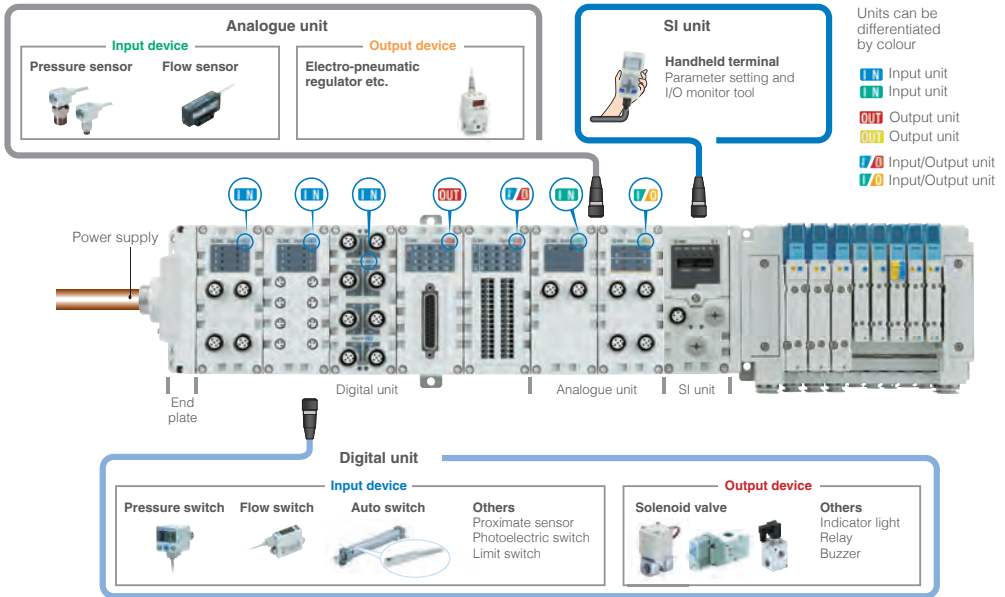
Our highlighted product for you

Fieldbus system, integrated type (for input/output)

EX600 Series



- Centralised & compact fieldbus system
- Valve output system for driving 5 port solenoid valves
- Up to 9 input/output units either digital or analogue, can be connected in any order
- Up to IP67 enclosure protection
- Dual port SI unit for EtherNet/IP™ that allows for DLR topology
- QuickConnect™ function
- Web server function
- Self diagnosis function
- Handheld terminal
- Applicable valve series: SY, S0700, VQC, SV.



SI units

Part number	Type of unit / Description	No. of inputs/outputs	Polarity	Communication connector	Enclosure protection
EX600-SEN1	SI unit, EtherNet/IP™ (1 port)	- / 32	PNP	M12 connector (5 pins)	IP67
EX600-SEN3	SI unit, EtherNet/IP™ (2 ports)				
EX600-SPN1	SI unit, PROFINET				
EX600-SEC1	SI unit, EtherCAT®				
EX600-SDN1A	SI unit, DeviceNet™				
EX600-SPR1A	SI unit PROFIBUS DP				
EX600-SMJ1	SI unit CC-Link				

Input/Output units

Part number	Type of unit/Description	No. of inputs/outputs	Polarity	Communication connector	Enclosure protection
EX600-DXPB ●	Digital input unit	8 / –	PNP	M12 connector (5 pins)	IP67
EX600-DXPC ●				M8 connector (3 pins)	
EX600-DXPC1 ●		M12 connector (5 pins)		IP40	
EX600-DXPD ●					D-sub connector (25 pins)
EX600-DXPE ¹⁾ ●	16 / –	– / 8		Spring type terminal block (32 pins)	IP67
EX600-DXPF ¹⁾ ●				M12 connector (5 pins)	
EX600-DYPB ●	Digital output unit	– / 16		D-sub connector (25 pins)	IP40
EX600-DYPE ¹⁾ ●				Spring type terminal block (32 pins)	
EX600-DYPF ¹⁾ ●		8 / 8	–	D-sub connector (25 pins)	
EX600-DMPE ¹⁾ ●	Spring type terminal block (32 pins)				
EX600-DMPF ¹⁾ ●	Digital input/output unit	8 / 8	–	M12 connector (5 pins)	IP67
EX600-AXA ●	Analogue input unit	2 / – channels	–	M12 connector (5 pins)	IP67
EX600-AYA ¹⁾ ●	Analogue output unit	– / 2 channels			
EX600-AMB ¹⁾ ●	Analogue input/output unit	2 / 2 channels			

1) This element cannot communicate with the handheld terminal.

End plates

Part number	Mounting position	Type	Power supply connector	Enclosure protection
EX600-ED2 ●	D side	IN	M12 connector (5 pins) B-coded	IP67
EX600-ED3 ●			7/8 inch (5 pins)	
EX600-ED4		IN/OUT	Power in: M12 (4 pins) A-coded ¹⁾	
EX600-ED5			Power out: M12 (5 pins) A-coded ¹⁾	

1) The pin layout for EX600-ED4 and EX600-ED5 pin connector is different.

Accessories

Part number	Description	
EX600-HT1A ●	Handheld terminal, no cable	
EX600-ZMA2 ●	End plate bracket	General use, except for SY Series
EX600-ZMA3 ●		Specialised for SY Series
EX600-ZMV1 ●	Valve plate	General use, except for SY Series
EX600-ZMV2 ●		Specialised for SY Series
EX600-ZMB1 ●	Reinforcing brace	For direct mounting
EX600-ZMB2 ●		For DIN rail mounting
EX500-AWES ●	Seal cap	For M8 connector
EX500-AWTS ●		For M12 connector
EX600-AC010-1 ●	Handheld terminal cable	1 m long
EX600-AC030-1 ●		3 m long
PCA-1564927 ●	Power cable with M12 connector	Straight connector, 2 m
PCA-1564930 ●		Straight connector, 6 m
PCA-1564943 ●		Angled connector, 2 m
PCA-1564969 ●		Angled connector, 6 m
PCA-1558810 ●	Power cable with 7/8 inch connector	Straight connector, 2 m
PCA-1558823 ●		Straight connector, 6 m
PCA-1558836 ●		Angled connector, 2 m
PCA-1558849 ●		Angled connector, 6 m
PCA-1446566 ●	Communication cable for SI unit compatible with EtherNet/IP™, PROFINET, EtherCAT®	M12 SPEEDCON connector, 5 m
EX9-AC020EN-PSRJ ●		M12 – RJ-45 connector, 2 m
EX9-AC050EN-PSRJ ●	Communication cable for SI unit compatible with PROFIBUS DP	M12 – RJ-45 connector, 5 m
PCA-1557688 ●		M12 SPEEDCON connector, socket, 5 m
PCA-1557691 ●		M12 SPEEDCON connector, plug, 5 m
PCA-1557633 ●		M12 SPEEDCON connector, socket, 5 m
PCA-1557646 ●	Communication cable for SI unit compatible with DeviceNet™	M12 SPEEDCON connector, plug, 5 m
PCA-1567720 ●		M12 SPEEDCON connector, socket, 5 m
PCA-1567717 ●	Communication cable for SI unit compatible with CC-Link	M12 SPEEDCON connector, plug, 5 m

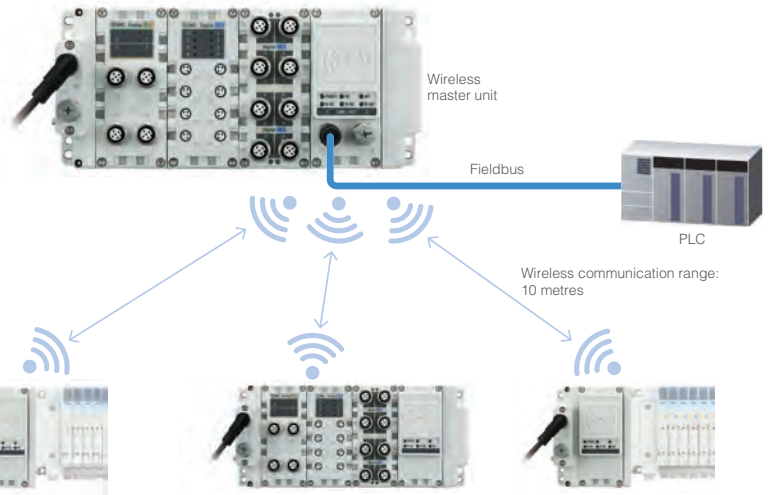
Our highlighted product for you

Fieldbus wireless system

EX600-W Series



- Decentralised & compact fieldbus system with two SI units:
 - Wireless master unit - one unit to control the entire wireless network:
 - Maximum 1280 inputs / 1280 outputs
 - Up to 127 slaves for EtherNet/IP™ (31 for PROFINET) can be connected to one master
 - Wireless slave unit
- Point-to-multipoint communication - only one IP address for managing the complete wireless system
- Noise resistant - suitable for welding environments
- Management of analogue, digital and pneumatic product
- Interchangeability maintained with EX600 series
- Same general features as EX600 series
- Applicable valve series: SY, SV, S0700, VQC.



SI units

Part number	Description	Protocol	Type	Enclosure
EX600-WEN1	Wireless master unit	EtherNet/IP™	PNP	IP67
EX600-WPN1		PROFINET		
EX600-WSV1	Wireless slave unit	—		

Input/Output units

Part number	Description	No. inputs/outputs	Connector	Enclosure
EX600-DXPB ●	Digital input unit, PNP	8/-	M12 connector (5 pins), 4 pcs.	IP67
EX600-DXPC ●			M8 connector (3 pins), 8 pcs.	
EX600-DXPC1 ●			M8 connector (3 pins)	
EX600-DXPD ●		16/-	M12 connector (5 pins), 8 pcs.	IP40
EX600-DXPE ●			D-sub connector (25 pins)	
EX600-DXPF ●			Spring type terminal block (32 pins)	
EX600-DYPB ●	Digital output unit, PNP	-8	M12 connector (5 pins), 4 pcs.	IP67
EX600-DYPE ●		-16	D-sub connector (25 pins)	
EX600-DYPF ●		-16	Spring type terminal block (32 pins)	
EX600-DMPE ●	Digital input/output unit, PNP	8/8	D-sub connector (25 pins)	IP40
EX600-DMPF ●			Spring type terminal block (32 pins)	
EX600-AXA ●	Analogue input unit	2/-	M12 connector (5 pins), 2 pcs.	IP67
EX600-AYA ●	Analogue output unit	-2	M12 connector (5 pins), 2 pcs.	
EX600-AMB ●	Analogue input/output unit	2/2	M12 connector (5 pins), 4 pcs.	

End plates

Part number	Mounting position	Type	Power supply connector	Enclosure
EX600-ED2 ●	D side	IN	M12 (5 pins) B-coded	IP67
EX600-ED3 ●			7/8 inch (5 pins)	
EX600-ED4		IN/OUT	Power in: M12 (4 pins) A-coded ¹⁾	
EX600-ED5			Power out: M12 (5 pins) A-coded ¹⁾	
EX600-EU1	U side	—	—	

1) The pin layout for EX600-ED4 and EX600-ED5 pin connector is different.

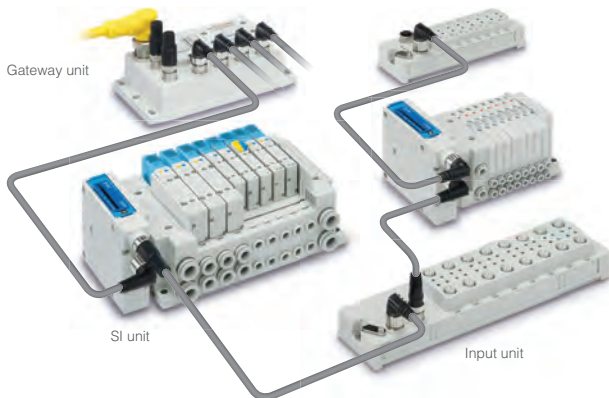
Fieldbus system, gateway type



EX500 Series



- Decentralised fieldbus system
- Valve output system for driving 5 port solenoid valves
- Up to 128 digital inputs/output, up to 16 valve manifolds and input unit connections
- Output units available for external use (EX9)
- IP65/IP67 enclosure protection
- Web server function
- Fixed I/O mapping
- Management of different power supplies
- Applicable valve series: SY, S0700, VQC, SV.



128 points gateway decentralised system

Part number	Type of unit / Description	No. of inputs/ outputs	Polarity	Communication connector	Enclosure protection
EX500-GEN2	Gateway unit, EtherNet/IP™	128 / 128	—	M12 connector (5 pins)	IP65
EX500-GPN2	Gateway unit, PROFINET				
EX500-S103	SI unit	– / 32 ¹⁾	PNP	M12 connector (8 pins)	IP67
EX500-DXPA	Input unit			M8 connector (3 pins)	
EX500-DXPB				M12 connector (5 pins)	

1) Number of outputs can be 16 or 32, switched by a built-in setting switch.

64 points gateway decentralised system

Part number	Type of unit / Description	No. of inputs/ outputs	Polarity	Communication connector	Enclosure protection
EX500-GDN1	Gateway unit, DeviceNet™	64 / 64	–	M12 connector (5 pins)	IP65
EX500-GPR1A	Gateway unit, PROFIBUS DP				
EX500-S001	SI unit for SV valve series	– / 16	NPN	M12 connector (8 pins)	IP67
EX500-Q101	SI unit for SY/S0700/VQC valve series		PNP		
EX500-IB1	Input unit	16 / –	–	M8 connector (3 pins) M12 connector (4 pins) M8 connector (3 pins)	IP65
EX500-IE1	Input block, 2 inputs	2 / –	PNP		
EX500-IE3					
EX500-IE5	Input block, 8 inputs	8 / –	NPN		
EX500-IE6					

Accessories

Part number	Description	
EX9-OET1	Output block, for low-wattage load, PNP specification	
EX9-PE1	Power block	
EX9-EA03	End plate	
EX500-AC010-SSPS	Branch cable	Straight connectors, 1 m
EX500-AC050-SSPS		Straight connectors, 5 m
EX500-AC010-SAPA		Angled connectors, 1 m
EX500-AC050-SAPA		Angled connectors, 5 m
PCA-1415999	Power supply cable for EtherNet/IP™	Straight connector, 2 m
PCA-1415996		Straight connector, 6 m
PCA-1416000		Angled connector, 2 m
PCA-1415997		Angled connector, 6 m
PCA-1558810		Straight connector, 2 m
PCA-1558823		Straight connector, 6 m
PCA-1558836		Angled connector, 2 m
PCA-1558849	Angled connector, 6 m	
EX500-AP010-S	Power cable with connector, for SI unit (64 points)	Straight connector, 1 m
EX500-AP050-S		Straight connector, 5 m
EX500-AP010-A		Angled connector, 1 m
EX500-AP050-A		Angled connector, 5 m
PCA-1446566		M12 SPEEDCON connector, 5 m
EX9-AC020EN-PSRJ	Communication cable for EtherNet/IP™, PROFINET	M12 – RJ-45 connector, 2 m
EX9-AC050EN-PSRJ		M12 – RJ-45 connector, 5 m
EX500-AC010-DN	Communication cable for DeviceNet™	M12 connector, 1 m
EX500-AC050-DN		M12 connector, 5 m
PCA-1557633	Communication cable for PROFIBUS DP	M12 SPEEDCON connector, socket, 5 m
PCA-1557688		M12 SPEEDCON connector, socket, 5m
PCA-1557691		M12 SPEEDCON connector, plug, 5 m
PCA-1557743	Connector for output block wiring	Cable O.D.: 3.5 to 6.0 mm
PCA-1557756		Cable O.D.: 4.0 to 8.0 mm
EX500-AWES	Seal caps (10 units), male plug	For M8 connector
EX500-AWTS		For M12 connector
EX500-AWTP	Seal cap, female plug	For M12 connector

Air operated valves

Pneumatically operated 5 port valve SYA3000/5000/7000 Series



- 3 sizes, SYA7000 standard
- Choose base or body ported models
- Long service life
- Can be used with SY solenoid valves on manifold
- 5 port function on request.

Size SYA7000 - Standard

Part number	Circuit symbol	Type of actuation	Port size A and B	Operating pressure range [MPa]	Flow [l/min]	
SYA7120-02F ●		Single	G 1/4	0.15 ~ 0.7	999	
SYA7120-C8 ●			Ø 8		852	
SYA7120-C10 ●			Ø 10		942	
SYA7220-02F ●		Double	G 1/4	0.1 ~ 0.7	999	
SYA7220-C8 ●			Ø 8		852	
SYA7220-C10 ●			Ø 10		942	
SYA7320-02F ●		5 port closed centre	G 1/4	0.2 ~ 0.7	742	
SYA7420-02F ●					5 port exhaust centre	893
SYA7520-02F ●					5 port pressure centre	1048

Manifolds available on request.

Pneumatically operated 5 port valve SYJA5000/7000 Series



- 2 standard sizes
- Compact design
- Lightweight
- Base and body ported valves available.

Part number	Circuit symbol	Type of actuation	Port size	Operating pressure range [MPa]	Flow [l/min]
SYJA5120-M5 ●		Single	M5	0.15 ~ 0.7	129
SYJA7120-01F ●			G 1/8		626
SYJA5220-M5 ●		Double	M5	0.1 ~ 0.7	129
SYJA7220-01F ●			G 1/8		626

SYJA3000 on request, M5 and M3 ported.

Manifolds available on request

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

Pneumatically operated 5 port valve

EVSA7-6 (ISO1) Series

EVSA7-8 (ISO2) Series



- ISO-standardised
- Types: sub-plate or manifold
- Compatible with solenoid valves of series EVS7
- Superior flow capacity
- Valves made with lapped metal seal for harsh operation conditions
- Long service life.

EVSA7-6 ISO1 Series

Part number	Circuit symbol	Type of actuation	Flow [l/min]	Operating pressure range [MPa]	
EVSA7-6-FG-S-2 ●		5 Number of ports	1181	0 ~ 1.0	
EVSA7-6-FG-D-2 ●					Single
EVSA7-6-FHG-D-2 ●					Double
EVSA7-6-FPG-D-2			Closed centre		704
EVSA7-6-FJG-D-2 ●			Pilot check		1181
EVSA7-6-FIG-D-2			Exhaust centre		1168
		Pressurised centre			

EVSA7-8 ISO2 Series

Part number	Circuit symbol	Type of actuation	Flow [l/min]	Operating pressure range [MPa]	
EVSA7-8-FG-S-2 ●		5 Number of ports	2941	0 ~ 1.0	
EVSA7-8-FG-D-2 ●					Single
EVSA7-8-FHG-D-2 ●			Double		2451
EVSA7-8-FPG-D-2			Closed centre		1677
EVSA7-8-FJG-D-2 ●			Pilot check		2395
EVSA7-8-FIG-D-2			Exhaust centre		2712
		Pressurised centre			

Modular manifold

Item		ISO1	ISO2
End plate assembly	Left end plate	G 3/8 EAXT502-LA-03 ●	—
		G 1/2 —	EAXT512-LA-04 ●
	Right end plate	G 3/8 EAXT502-RA-03 ●	—
		G 1/2 —	EAXT512-RA-04 ●
Manifold block assembly	G 1/4 EAXT502-1A-A02 ●	—	
	G 3/8 EAXT502-1A-A03 ●	EAXT512-1A-A03 ●	
	G 1/2 —	EAXT512-1A-A04 ●	

Accessories • Sub-plate

	ISO1	ISO2
G 1/4	EVS7-1-A02F ●	—
G 3/8	EVS7-1-A03F ●	EVS7-2-A03F ●
G 1/2	—	EVS7-2-A04F ●
G 3/4	—	EVS7-2-A06F ●

Pneumatically operated 3 port valve

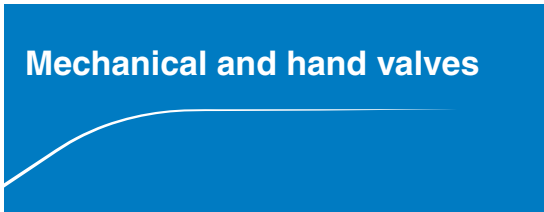
SYJA500/700 Series



- 2 standard sizes
- Base and body ported valves available
- Compact design.

Part number	Circuit symbol	Switching function	Port size	Operating pressure range [MPa]	Flow [l/min]
SYJA512-M5 ●		N.C.	M5	0.15 ~ 0.7	150
SYJA712-01F ●			G 1/8		779
SYJA522-M5 ●		N.O.	M5		186
SYJA722-01F ●			G 1/8		724

SYJA300 on request, M5 and M3 ported.
Manifolds available on request



Micro mechanically operated 3 port valve

VM1000 Series



Part number	Circuit symbol	Actuation	Flow [l/min]	Operating pressure range [MPa]
VM1000-4N-00 ●		Basic valve	47	0 ~ 0.8
VM1000-4N-01 ●		Roller lever		
VM1000-4N-02 ●		One way roller lever		
VM1000-4N-08 ●		Toggle lever		
VM1000-4N-32R ●		Red push button		
VM1000-4N-32B ●		Black push button		

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green.
Stocked items and product information could be subject to change without prior notice.

Mechanically operated 3 port valve

VM100 Series



- Threaded port G 1/8
- Limit switch and manual switch type mounted with a basic valve using a modular stacking system
- Exchangeable actuations available
- Available also as 2 port valve
- Robust poppet valve design.

Part number	Circuit symbol	Actuation	Part number actuation	Flow [l/min]	Operating pressure range [MPa]	
VM130-F01-00A ●		Basic valve		143	-0,1 ~ 1	
VM131-F01-01SA ●		Roller lever				
VM131-F01-02SA ●		One way roller lever				
VM130-F01-08A ●		Toggle lever				VM-08B
VM130-F01-30BA ●		Black/Red/Green (mushroom) push button				VM-30AB
VM130-F01-30RA ●						VM-30AR
VM130-F01-30GA ●						VM-30AG
VM130-F01-33A ●		Push button (flush)				VM-33A
VM130-F01-34BA ●		Black twist selector 2 position				VM-34AB
VM130-F01-36A ●		Key selector				VM-36A
VM151-F01-35BA ●		Black twist selector 3 position		—		

Mechanically operated 3 port valve

VM200 Series



- Threaded port G 1/4
- Limit switch, manual switch and foot pedal type mounted with a basic valve using a modular stacking system
- Minimal force to operate
- Exchangeable actuations
- Available also as 2 port solenoid valve
- Robust poppet valve design.

Part number	Circuit symbol	Actuation		Part number actuation	Flow [l/min]	Operating pressure range [MPa]
VM230-F02-00A ●		Basic valve		—	1007	0 ~ 1
VM230-F02-01SA ●		Roller lever		VM-01AS		
VM230-F02-02SA ●		One way roller lever		VM-02AS		
VM230-F02-08A ●		Toggle lever		VM-08A		
VM230-F02-30BA ●		Black (mushroom) push button		VM-30AB		
VM230-F02-30RA ●		Red (mushroom) push button		VM-30AR		
VM230-F02-30GA ●		Green (mushroom) push button		VM-30AG		
VM230-F02-33A ●		Push button (flush)		VM-33A		
VM230-F02-34BA ●		Black twist selector 2 position		VM-34AB		
VM230-F02-35BA ●		Black twist selector 3 position		—		
VM230-F02-36A ●		Key selector		VM-36A		
VM230-F02-40A ●		Foot pedal 2 position		—		

Mechanically operated 3 port valve

EVM400 Series



- 3 port switching valve, port size G 1/8
- Robust poppet valve design
- Limit switch and manual switch mounted with a basic valve using a modular stacking system
- Superior flow capacity for a low height
- N.C. and N.O. version available.

Part number	Circuit symbol	Actuation	Flow [l/min]	Operating pressure range [MPa]
EVM430-F01-00 ●		Basic valve	335	0 ~ 1.0
EVM430-F01-00 ● +VM-01AS ●		Roller lever		
EVM430-F01-00 ● +VM-02AS ●		One way roller lever		
EVM430-F01-00 ● +VM-08A ●		Toggle lever		
EVM430-F01-00 ● +VM-30AB ●		Black (mushroom) push button		
EVM430-F01-00 ● +VM-30AR ●		Red (mushroom) push button		
EVM430-F01-00 ● +VM-33A ●		Push button (flash)		
EVM430-F01-00 ● +VM-34AB ●		Black twist selector		
EVM430-F01-00 ● +VM-36A ●		Twist selector with key		

Mechanically operated 3 port valve

EVM800 Series



- Port thread G 1/8
- Either N.O. or N.C. models
- Robust, compact design
- Adjustable operating lever.

Part number	Circuit symbol	Actuation	Flow [l/min]	Operating pressure range [MPa]
EVM830-F01-00		Basic valve	335	0 ~ 1.0
EVM830-F01-01 ●		Roller lever		
EVM830-F01-13 ●		Adjustable roller lever		
EVM830-F01-14 ●		Adjustable rod lever		

Mechanically/Manually operated 5 port valve

EVZM500 Series



- 5 port switching valve, port size G 1/8, valve seal design with pneumatic pilot
- Limit switch and manual switch types mounted with a basic valve via stacking system
- Superior flow capacity at a compact size
- Valve width 18 mm.

Part number	Circuit symbol	Actuation	Flow [l/min]	Operating pressure range [MPa]
EVZM550-F01-00 ●		Basic valve	626	0.15 – 0.7
EVZM550-F01-00 ● +VM-01CS ●		Roller lever		
EVZM550-F01-00 ● +VM-02CS ●		One way roller lever		
EVZM550-F01-00 ● +VM-08C ●		Toggle lever		
EVZM550-F01-00 ● +VM-30CB ●		Black (mushroom) push button		
EVZM550-F01-00 ● +VM-30CR ●		Red (mushroom) push button		
EVZM550-F01-00 ● +VM-33C ●		Push button (flash)		
EVZM550-F01-00 ● +VM-34CB ●		Twist selector black		
EVZM550-F01-00 ● +VM-36C ●		Twist selector with Key		

Mechanically operated 5 port valve

EVFM300 Series



- 5 port switching valve, port size G 1/4, valve seal design with pneumatic pilot
- Pneumatic pilot means minimal force required to operate
- Superior flow capacity for a compact size
- Valve width 26.4 mm.

Part number	Circuit symbol	Actuation	Flow [l/min]	Operating pressure range [MPa]
EVFM350-F02-00 ●		Basic valve	1058	0.15 ~ 1
EVFM350-F02-01S ●		Roller lever		
EVFM350-F02-02S ●		One way roller lever		
EVFM350-F02-08 ●		Toggle lever		
EVFM350-F02-30B ●		Black (mushroom) push button		
EVFM350-F02-30R ●		Red (mushroom) push button		
EVFM350-F02-33 ●		Push button (flash)		
EVFM350-F02-34B ●		Twist selector black		
EVFM350-F02-36		Twist selector with Key		

Two hand control valve

VR51 Series



- Equipment having a safety circuit: two handed operation
- An output is available through synchronised, two-handed operation
- Certified to type IIIA of EN574
- Interchangeable with XT92-67□

Part number	Connection piping size		Operating pressure range [MPa]
	VR51-C06 ●	Metric size	
VR51-C07	Inch size	Flame resistant one-touch fitting Ø 1/4	

Accessories	Part number
Silencer	AN101-01 ●




Option	Part number
Bracket	VR51B ●

3 port manually operated valve, finger valve

VHK Series



- Switch valve, compact design with 2 or 3 port function
- Sizes from Ø 4-12 mm with superior flow capacity
- Being made of lightweight plastic, and having integral hose connections, it can be mounted directly in the piping (push in)
- Body with mounting holes.

Part number	Circuit symbol	Operating pressure range [MPa]	Port size		Mounting bracket	
VHK3-04F-04F ●	 Two position	1	 Push-in port size	Ø 4	VHK-B1A	
VHK3-06F-06F ●				Ø 6		
VHK3-08F-08F ●				Ø 8		
VHK3-10F-10F ●				Ø 10		
VHK3-12F-12F ●			 Thread port size	1	M5 x 0,8 Rc 1/8 Rc 1/4 Rc 3/8 Rc 1/2	VHK-B2A
VHK3-M5-M5 ●						VHK-B1A
VHK3-01S-01S ●						VHK-B1A
VHK3-02S-02S ●						VHK-B2A
VHK3-03S-03S ●						
VHK3-04S-04S ●						

2 port function on request

Other thread and push-in combinations on request

Manually operated 4 port valve, hand valve

VH Series



- Robust, 4 port manual lever valve, reliable round seal design
- Variety of port sizes
- Body for panel assembly or direct mounting
- Stepless and crack adjustment of the flow from zero to the maximum via the lever's rotation angle
- Pressure or exhaust centre for both cylinders
- The cylinder may be positioned at the valve's centre.

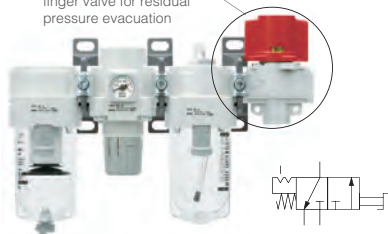
Part number	Circuit symbol	Type of actuation	Operating pressure range [MPa]	Port size G	Flow [l/min]
VH212-F02 ●		2 position	1	1/4	592
VH312-F03 ●				3/8	1578
VH412-F04 ●				1/2	4315
VH412-F06 ●				3/4	4537
VH210-F02 ●		3 position closed centre	1	1/4	592
VH310-F03 ●				3/8	1578
VH410-F04 ●				1/2	4315
VH410-F06 ●				3/4	4537
VH600-F06				3/4	14499
VH600-F10 ●				1	15189
VH211-F02 ●		3 position exhaust centre	1	1/4	592
VH311-F03 ●				3/8	1578
VH411-F04 ●				1/2	4315
VH411-F06				3/4	4537

Pressure relief 3 port valve

VHS Series



3 port manually operated finger valve for residual pressure evacuation



- To be used as stacking manifold or as single device
- Used to bleed the entire compressed air circuit
- Can be upgraded with a silencer.

Part number	Port size IN, OUT	Port size exhaust	Effective flow [Cv] IN → OUT (OUT → EXH)	Adequate for modular F.R.L.
VHS20-F01 □ ●	G 1/8	G 1/8	0.65 (0.69)	20
VHS20-F02 □ ●	G 1/4	G 1/8	0.88 (0.84)	20
VHS30-F03 □ ●	G 3/8	G 1/4	2.3 (1.9)	30
VHS40-F04 □ ●	G 1/2	G 3/8	3.8 (3.6)	40
VHS40-F06 □ ●	G 3/4	G 1/2	5.0 (4.8)	40-F06
VHS50-F06 □ ●	G 3/4	G 1/2	6.4 (5.9)	50 • 60
VHS50-F10 □ ●	G 1	G 1/2	8.6 (6.4)	50 • 60

□: Add suffix A at the end of part number for handle material flame resistant PB7.
 Add suffix B at the end of part number for handle material aluminium.

Logic valves

Shuttle valve, metal type

VR1210/1220 Series



- For pneumatic controls
- Two input signals, one output signal
- Port sizes 1/8 and 1/4.

Metal type with female thread

Part number	Port size	Flow [l/min]	Circuit symbol
VR1210-F01 ●	G 1/8	311	
VR1220-F02 ●	G 1/4	695	

Shuttle valve plastic with one-touch fittings

VR1210F/1220F Series



- For pneumatic controls
- Two input signals, one output signal
- Port sizes 1/8 and 1/4.

Plastic with one touch fittings

Part number	Tube size [mm]	Flow [l/min]	Circuit symbol
VR1210F-23 ●	3.2	123	
VR1210F-04 ●	4.0	173	
VR1220F-06 ●	6.0	345	
VR1220F-08 ●	8.0	518	

AND logic valve

VR1211F Series



- For pneumatic controls
- Simple, push-in mounting
- Rotates through 360°.

Part number	Tube size [mm]	Flow [l/min]	Circuit symbol
VR1211F-23	3.2	74	
VR1211F-04 ●	4.0	99	
VR1211F-06 ●	6.0	123	

Multi regulator valves

Power valve

VEX1/VEX3 Series



VEX1



VEX3

- Extensive size variations, port sizes 1/8 to 2"
- VEX1: 3 port large capacity poppet exhausting regulator equipped with a relief port the same size as the connection port
Large capacity exhaust regulator
- VEX3: 3 port, 3 position valve. 3 position valve suitable for intermediate and emergency stop of large size cylinder.

VEX1, regulator valve

Part number	Operation	Port			Max. operating pressure [MPa]	Set pressure range [MPa]	Maximum flow [l/min]
		P	A	R			
EVEX1100-02F ●	Air operated		G 1/4		1	0.05 to 0.9	2500
EVEX1300-02F ●			G 1/4				5000
EVEX1300-04F ●			G 1/2				5000
EVEX1500-04F ●			G 1/2				10000
EVEX1500-06F ●			G 3/4				10000
EVEX1700-10F ●		G 1		G 1 1/4			20000
EVEX1700-12F ●			G 1 1/4				20000
EVEX1900-20F ●			G 2				40000

VEX3, 3 position valve

Part number	Operation	Port			Set pressure range [MPa]	Flow [l/min]
		P	A	R		
EVEX3120-02F	Air operated		G 1/4		Low vacuum to 1.0	1374
EVEX3320-02F			G 1/4			1963
EVEX3320-04F ●			G 1/2			3827
EVEX3500-04F			G 1/2			7066
EVEX3500-06F			G 3/4			8735
EVEX3700-10F		G 1		G 1 1/4		16685
EVEX3700-12F			G 1 1/4			17667
EVEX3900-20F			G 2			36315

Silencers and exhaust cleaners

Silencer compact resin type

AN Series



- Compact, Lightweight
- Noise reduction: 30 dB(A)
- Connection method:
 - M thread, R thread type
 - One-touch fitting connection type.

Male thread

Part number	Circuit symbol	Connection	Effective area [mm ² (Cv)]	Noise reduction [dB(A)]	Weight [g]
AN05-M5 ●		M5 x 0.8	5 (0.3)	30	0.5
AN10-01 ●		R 1/8	10 (0.6)		1
AN15-02 ●		R 1/4	15 (0.9)		2.5
AN20-02 ●			35 (2.0)		4
AN30-03 ●		R 3/8	60 (3.5)		5.5
AN40-04 ●		R 1/2	90 (5.3)		8.5

One-touch fitting

Part number	Circuit symbol	Connection	Effective area [mm ² (Cv)]	Noise reduction [dB(A)]	Weight [g]
AN10-C06 ●		Ø 6	7 (0.4)	30	1
AN15-C08 ●		Ø 8	20 (1.2)		1.4
AN20-C10 ●		Ø 10	30 (1.8)		3.5
AN30-C12 ●		Ø 12	41 (2.4)		5

Silencer BC sintered body type

AN Series



- For threads M3 • M5 • Rc 1/8
- Made from sintered bronze.

Part number	Circuit symbol	Thread connection	Effective area [mm ² (Cv)]	Noise reduction [dB(A)]	Weight [g]
AN120-M3 ●		M3	1 (0.06)	13	1
AN120-M5 ●		M5	5 (0.29)	18	3.4
AN101-01 ●		Rc 1/8	20 (1.2)	16	8.3
AN110-01 ●		Rc 1/8	35 (2.0)	21	17

Silencer metal body type

AN□00 Series



- For threads 3/4 ~ 2
- Noise reduction up to -30 dB(A).

Part number	Circuit symbol	Thread connection	Effective area [mm ² (Cv)]	Noise reduction [dB(A)]	Weight [g]
AN500-06 ●		R 3/4	160 (9.4)	30	165
AN600-10 ●		R 1	270 (15.9)		220
AN700-12 ●		R 1 1/4	440 (25.9)		435
AN800-14 ●		R 1 1/2	590 (34.7)		510
AN900-20 ●		R 2	960 (56.5)		740

Silencer 40 dB (A): High noise reduction type

ANA1 Series



- For thread or one-touch fitting
- Noise reduction 40 dB(A).

Part number	Circuit symbol	Thread connection	Effective area [mm ² (Cv)]	Noise reduction [dB(A)]	Weight [g]
ANA1-01 ●		R 1/8	10 (0.6)	40	4
ANA1-02 ●		R 1/4	15 (0.9)		14
ANA1-03 ●		R 3/8	35 (2.0)		22
ANA1-04 ●		R 1/2	60 (3.5)		36
ANA1-06 ●		R 3/4	90 (5.3)		110
ANA1-10 ●		R 1	160 (9.4)		180
ANA1-C08 ●		Ø 8 mm	11 (0.6)		5
ANA1-C10 ●		Ø 10 mm	15 (0.9)		13
ANA1-C12 ●		Ø 12 mm	33 (1.9)		19

Series ANB1 with larger area and noise level reduction by 38 db (A) on request.

Silencer; High pressure operation: Up to 5 MPa

VCHN3/4 Series



- Suitable for air and inert gas
- Standard integrated relief valve
- Materials: Die-casted Aluminium / Stainless steel / Resin / Steel Plate
- VCHNF: With freeze reduction option.

Part number	Max.Operating pressure [MPa]	Connection	Effective area [mm ²]	Noise reduction [dB(A)]	Weight [g]
VCHN3-06 ●	5.0 (Solenoid valve inlet pressure)	R 3/4	200	35 ¹⁾	590
VCHN3-10 ●		R 1	280		605
VCHN4-10		R 1	280		665
VCHN4-12 ●		R 1 1/4	370		765
VCHN4-14 ●		R 1 1/2	370		790
VCHNF3-06		R 3/4	160		710
VCHNF3-10		R 1	180		725
VCHNF4-10		R 1	180		810
VCHNF4-12 ●		R 1 1/4	320		910
VCHNF4-14 ●		R 1 1/2	320		935

1) At supply pressure of 4.0 MPa, back pressure of 2.0 MPa.

Exhaust cleaner

AMC Series



- Connection threads R 3/8 ~ 2
- Combination of filter and silencer
- Noise reduction 35 dB(A)
- Filter separation rate up to 99.9 %
- Model with female thread available on request.

Part number	Circuit symbol	Thread connection	Max. flow [l/min]	Noise reduction [dB(A)]	Separation rate
AMC310-03 ●		R 3/8	300	35	99.9 % R.D.
AMC510-06 ●		R 3/4	1.000		
AMC610-10 ●		R 1	3.000		
AMC810-14 ●		R 1 1/2	6.000		
AMC910-20 ●		R 2	10.000		

Mounting bracket

310 Series	510 Series	610 Series
BE30 ●	BE50 ●	BE60 ●

Actuators



Standard air cylinders

Page 100



Compact cylinders

Page 101



Combination cylinders

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Specialty cylinders

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Cylinders with lock

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Rotary actuators

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Air grippers

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Shock absorbers & floating joints

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Auto switch guide

Page 108

Others

Basic characteristics.....Page 226

Theoretical force tables.....Page 232

Simple specials and made to order specifications.....Page 235

Standard air cylinders



Air cylinder
CJ1 Series



Pin cylinder
CJP Series



Pin cylinder
CJP2 Series



Air cylinder
CJ2 Series



**ISO/CETOP/DIN standard [ISO 6432]
Round crimped body cylinder**
C85 Series



Air cylinder
CM2 Series



Air cylinder, short type
CM3 Series



Air cylinder
C76 Series



Air cylinder
CG1 Series



Air cylinder, short type
CG3 Series



**ISO standard [ISO 15552]
Profile tube cylinder**
CP96 Series



**ISO standard [ISO 15552]
Round tube cylinder**
C96 Series



**ISO standard [ISO 6431]
Round tube – Large bore cylinder**
C95 Series

	Bore size [mm]																Maximum stroke [mm] ¹⁾	Page					
	2.5	4	6	8	10	12	15	16	20	25	32	40	50	63	80	100			125	160	200	250	
	•	•																				20	122
			•	•		•		•														15	122
			•	•		•			•													40	123
			•			•			•													200	124
				•	•	•		•	•	•												300	126
									•	•	•	•										2000	128
									•	•	•	•										300	130
											•	•										1000	131
											•	•	•	•	•	•	•					1500	132
											•	•	•	•	•	•	•					300	134
												•	•	•	•	•	•					2000	136
												•	•	•	•	•	•					2000	138
																	•	•	•			2400	139

1) The maximum stroke changes depending on the bore size.

Combination cylinders



Mini free mount cylinder
CUJ Series



Free mount cylinder
CU/CUK Series



Free mount cylinder for vacuum
ZCUK Series



Compact cylinder, compact type
CQS Series



Compact cylinder
CQ2 Series



Compact cylinder
JCQ Series



**ISO Standard [ISO 21287]
compact cylinder**
C55 Series



Compact cylinder, with air cushion
RQ Series



Compact cylinder, guide rod type
CQM Series



Compact cylinder, plate type
CQU Series



**Plate cylinder with elliptical piston
design**
MU Series



**Compact cylinder with solenoid
valve**
CVQ Series



**Compact cylinder, with solenoid
valve/Guide rod type**
CVQM Series



Bore size [mm]														Maximum stroke [mm] ¹⁾	Page			
4	6	8	10	12	16	20	25	32	40	50	63	80	100			125	160	200
•	•	•	•	•	•	•											20	140
	•		•		•	•	•	•	•								100	141
			•		•	•	•	•									50	141
					•	•	•	•									300	142
						•	•	•	•	•	•	•	•	•	•	•	300	143
						•	•	•	•	•	•	•	•	•	•		50	147
							•	•	•	•	•	•	•	•			150	148
							•	•	•	•	•	•	•				100	150
						•	•	•	•	•	•	•	•				100	151
							•	•	•	•							300	152
								•	•	•	•						300	153
									•	•	•	•					100	154
										•	•	•	•				100	155

1) The maximum stroke changes depending on the bore size.

Compact cylinders

Slide tables



Compact cylinder with linear guide
MXZ Series



Compact slide table
MXH Series



Slide table with precision guide
MXS Series



Air slide table
MXQ Series



Slide table reversible type
MXQR Series



Low profile slide table
MXF Series



Slide table with precision guide
MXW Series



Precision slide table with linear guide
MXP Series



Slide table, long stroke type
MXY Series

Bore size [mm]							Maximum stroke [mm] ¹⁾	Page
6	8	10	12	16	20	25		
			•	•	•	•	50	156
•		•		•	•		60	156
•	•		•	•	•	•	150	157
•	•		•	•	•	•	150	158
•	•		•	•	•	•	150	160
		•	•	•	•		100	161
		•	•	•	•	•	300	162
•	•	•	•	•			30	163
•	•		•				400	163

1) The maximum stroke changes depending on the bore size.

Combination cylinders

Mechanically jointed rodless cylinders



Mechanically jointed, rodless cylinder, basic type

MY1B Series



Mechanically jointed, rodless cylinder, linear guide type

MY1H Series



Mechanically jointed, rodless cylinder, slide bearing guide type

MY1M Series



Mechanically jointed, rodless cylinder, with protective covering

MY1□W Series



Mechanically jointed, rodless cylinder

MY1C Series



Mechanically jointed, rodless cylinder, low profile design

MY2C/H/HT Series



Mechanically jointed, rodless cylinder, short type

MY3A/B/M Series

Bore size [mm]										Maximum stroke [mm] ¹⁾	Page
10	16	20	25	32	40	50	63	80	100		
●	●	●	●	●	●	●	●	●	●	5000	164
●	●	●	●	●	●					1500	165
	●	●	●	●	●	●	●			5000	166
	●	●	●	●	●	●	●			3000	167
	●	●	●	●	●	●	●			3000	168
	●		●		●					5000	169
	●	●	●	●	●	●	●			3000	170

1) The maximum stroke changes depending on the bore size.

Magnetically coupled rodless cylinders



Rodless cylinder, basic and direct mount types

CY3B/CY3R Series



Magnetic rodless cylinder, slider type (Slide bearing)

CY1S Series



Magnetic rodless cylinder, linear guide type

CY1H/CY1HT Series



Magnetic rodless cylinder, low profile guide type

CY1F Series



Rodless cylinder for clean rooms and vacuum chambers

CYP/CYV Series

Bore size [mm]								Maximum stroke [mm] ¹⁾	Page
6	10	15	20	25	32	40	50		
●	●	●	●	●	●	●	●	5000	172
●	●	●	●	●	●	●		1500	172
	●	●	●	●	●			1500	173
	●	●		●				1200	173
		●				●		700	174

1) The maximum stroke changes depending on the bore size.

Combinations cylinders

Guide cylinders



Miniature guide rod cylinder
MGJ Series



Compact guide cylinder, basic type
MGP Series



Compact guide cylinder
JMGP Series



Compact guide cylinder, wide type
MGPW Series



Guide cylinder
MGG Series



Guide table
MGF Series

Bore size [mm]											Maximum stroke [mm] ¹⁾	Page			
6	8	10	12	15	16	20	25	32	40	50			63	80	100
●		●												20	174
			●		●	●	●	●	●	●	●	●	●	400	175
			●		●	●	●	●	●	●	●	●	●	200	177
						●	●	●	●	●				200	178
						●	●	●	●	●	●	●	●	1300	179
									●	●			●	100	179

1) The maximum stroke changes depending on the bore size.

Precision cylinders



Precision cylinder
MTS Series

Bore size [mm]											Maximum stroke [mm] ¹⁾	Page			
6	8	10	12	15	16	20	25	32	40	50			63	80	100
	●		●		●	●	●	●	●					200	180

1) The maximum stroke changes depending on the bore size.

Dual rod cylinders



Dual-rod cylinder: Compact type
CXSJ Series



Dual-rod cylinder
CXS Series

Bore size [mm]											Maximum stroke [mm] ¹⁾	Page			
6	8	10	12	15	16	20	25	32	40	50			63	80	100
●		●		●		●	●	●						200	180
●		●		●		●	●	●						200	181

1) The maximum stroke changes depending on the bore size.

Specialty cylinders



Double power cylinder
MGZ/MGZR Series p.182



3 position cylinder
RZQ Series p.183



Sine rodless cylinder
REA Series p.184



Sine rodless high speed cylinder
REB Series p.185



Low speed cylinder
C□X Series p.186



Smooth cylinder
C□Y Series p.188



Compact metal-seal low friction cylinder
MQQ/MQM Series p.190



High power cylinder
RHC Series p.191



Hydraulic cylinder
CH Series p.191



Rotary clamp cylinder
MK/MK2T Series p.192



Clamp cylinder
CK1 Series p.193



Stopper cylinder
RSQ Series p.194



Heavy duty, stopper cylinder
RSH/RS2H Series p.195



Escapement
MIW/MIS Series p.196



Stainless steel cylinder
CJ5/CG5 Series p.197



Centring unit
MACM Series p.197



Cylinders with lock



Cylinder with end lock
p.198



Cylinder with lock
p.199



Cylinder with lock
MWB Series p.200



Rotary actuators



Rotary table, vane type
MSUB Series p.201



Mini rotary actuator
CRJ Series p.201



Rotary actuator, vane type
CRB1/CRB2 Series p.202



Rotary actuator, free mount, vane type
CRBU2 Series p.204



Rotary actuator rack and pinion type
CRA1 Series p.206



Compact rotary actuator
CRQ2 Series p.207



Rotary table, rack and pinion type
MSQ Series p.208



3-Position rotary table
MSZ Series p.210



Rotary actuator
MRQ Series p.210



Rotary gripper
MRHQ Series p.211

Air grippers

Parallel style air grippers



Parallel air gripper
MHZA2/MHZ2 Series p.211



Air gripper wide type
MHL2 Series p.212



Parallel air gripper with dust cover
MHZAJ2/MHZJ2 Series p.213



Low profile air gripper
MHF2 Series p.213



Wide type parallel style air gripper
MHL2 Series p.214



Rotary actuated air gripper, 2 fingers
MHR2 Series p.214



Rotary actuated air gripper, 3 fingers
MHR3 Series p.215



Wedge cam operation slide guide air gripper
MHK2/MHKL2 Series p.215



2, 3, 4 finger air gripper
MHS2/3/4 Series p.216



3 finger parallel air gripper with long opening/closing stroke
MHSL3 Series p.217



3 finger parallel air gripper with dust cover
MHSJ3 Series p.217



3 finger parallel air gripper through hole type
MHSH3 Series p.218

Angular style air grippers



2 finger angular air gripper
MHC2/MHCA2/MHCM2 Series p.218



Toggle air gripper
MHT2 Series p.219



180° angular air gripper, cam type
MHY2 Series p.219



180° angular air gripper, rack and pinion type
MHW2 Series p.220

Rotary grippers



Rotary gripper
MRHQ Series p.220

Magnetic grippers



Magnetic gripper
MHM-X6400 Series p.221



Shock absorbers & floating joints



Shock absorber, soft type
RJ Series p.222



Shock absorber, basic type
RB/RBC Series p.223



Shock absorber, short type
RBQ/RBQC Series p.223



Floating joint, standard type
JA Series p.224



Floating joint, lightweight type
JC Series p.224



Floating joint
JT Series p.225



Auto switch guide



Auto switch guide
p.244



**Direct mounting style
Rectangular groove**
p.246



**Direct mounting style
Rectangular groove**
p.247



Rail mounting style
p.248



Tie-rod mounting style
p.250



Band mounting style
p.251



Auto switch specifications
p.253



D-M9N(V)/D-M9B(V)
p.254



D-M9NW(V)/D-M9PW(V)/D-M9BW(V)
p.255



D-M9NA(V)/D-M9PA(V)/D-M9BA(V)
p.256



D-M9N-746/D-M9P-746/D-M9B-746
p.257



D-M9K
p.258



D-M9□J
p.260



D-M9□PC with pre-wired connector
p.261



D-M9PSAPC-595
p.262



Other available auto switches
p.263



D-A93
p.264



D-A93V
p.264



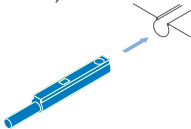
D-P3DWA
p.265



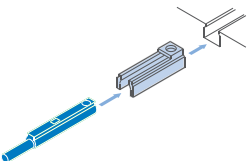
D-P3DWASC
p.266



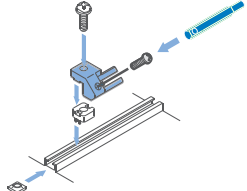
Direct (Round Groove)



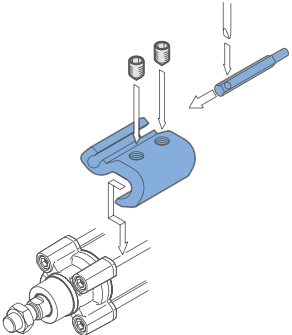
Direct (Rectangular Groove)



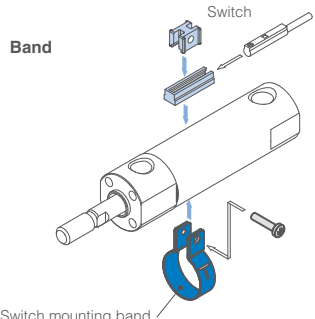
Rail



Tie rod

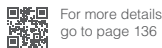


Band



Our highlighted product for you

ISO 1552 cylinder CP96 Series



For more details
go to page 136

► End of stroke air cushion provides smooth operation

Piston rod lurching has been eliminated at the end of the stroke positions by means of a floating seal mechanism.

The ISO cylinder that adapts to you



Minimum piston rod deflection enhances the accuracy levels of your machine

Deflection of the piston rod has been reduced by increasing the precision of the bushing and piston rod, and reducing the tolerances.

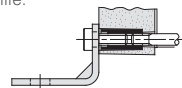


The easy adjustment of the cushion valve allows optimum control of air cushion

Since the adjustment of the cushion valve is performed with a hexagon wrench key, even fine control can be easily accomplished. Furthermore, the cushion valve has been recessed so that it does not protrude from the cover.

Improved mounting accuracy ensures a secure position of the cylinder during machine operation

High accuracy covers and tie rod nuts simplify the mounting process and also extend cylinder life.



► Maximum flexibility for auto-switch mounting

CNOMO and circular grooves are set on all four sides. Auto-switches can slide in the round grooves with no need for accessories.



Compact guide cylinder JMGP Series



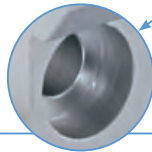
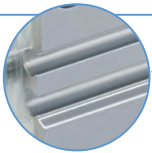
For more details
go to page 177

► Compact and lightweight

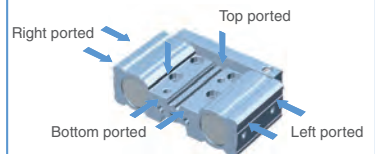
Fit for purpose – Maximum efficiency



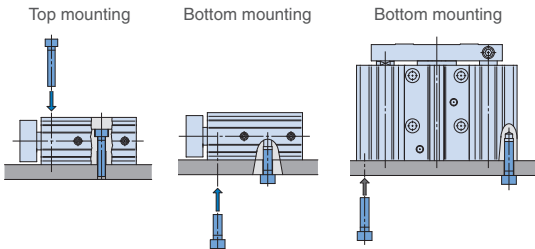
Auto switches
can be mounted
directly without the
need to use auto
switch brackets



Piping is possible in 4 directions



3 mounting options



Our highlighted product for you

Compact cylinder

JCQ Series



For more details
go to page 147

► Compact and lightweight

Auto switches can be mounted
directly without the need to use
auto switch brackets

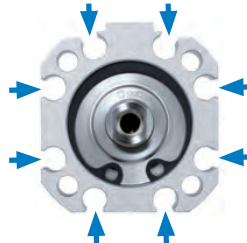
Fit for purpose – Maximum efficiency



Auto switches do not protrude
beyond the body of the cylinder



Auto switches can be
mounted on 4 surfaces



Air slide table

MXQ Series



For more details
go to page 158



Packed with features, simply the best



Reduced in height and weight with thinner table

- Thin table made of the special stainless steel
- Durable material with the same strength as the existing model.

▶ Reduced in height 10 % reduction

27 mm¹⁾ (Conventional model: 30 mm)
(MXQ12A vs. conventional MXQ12)

▶ Product weight 22 % reduction

298 g¹⁾ (Conventional model: 380 g)
(MXQ12A-30ZN vs. conventional MXQ12-30)

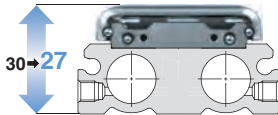
▶ Allowable kinetic energy 64 % improvement

0.09 J (Conventional model: 0.055 J)

1) Comparison between the double ported type and existing MXQ12-30 (without adjuster).

▶ Double ported type MXQ□A

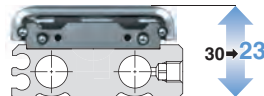
Increase flexibility of wiring and piping with piping ports and auto switch mounting grooves on both sides.



For MXQ12A

▶ Low thrust with high rigidity type MXQ□B

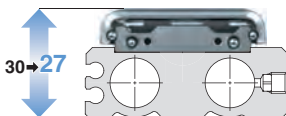
Combination with a cylinder of one bore size smaller increases rigidity according to thrust. Possible to reduce in height.



For MXQ8B

▶ Single side ported type MXQ□C

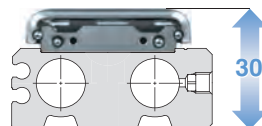
Better visibility for auto switches. Indicator LED can be checked from one side when used with short stroke.



For MXQ12C

▶ Height interchangeable type MXQ□

Height interchangeable as the existing MXQ series.



For MXQ12

Our highlighted product for you

Rotary actuator CRB2 Series



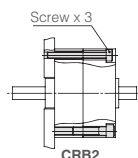
For more details
go to page 202

Many combinations available!



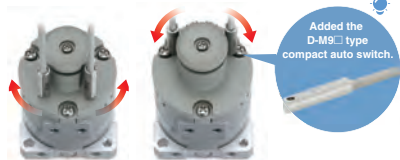
Direct mounting

The rotary actuator body can be mounted directly. Not possible for size 10 to 40 with unit(s).



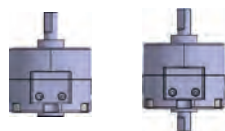
► The mounting position of the auto switch can be set freely

The switch can be fixed in the desired position in the circumferential direction.



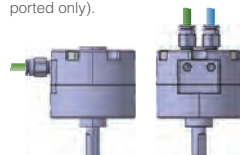
Two shaft options available

Single shaft Double shaft



Connecting port location: Side ported or axial ported

The port location can be selected according to the application (Size 10 to 40 with unit(s) are side ported only).



With auto switch unit



With angle adjuster unit

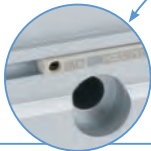


With auto switch unit
+
With angle adjuster unit

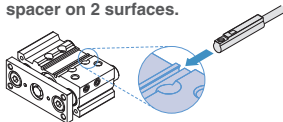
Compact guide cylinder, basic type MGP Series

For more details
go to page 175

Weight reduced with a shorter guide rod and thinner plate

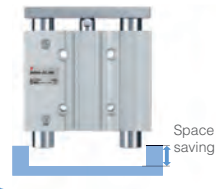


Round type auto switches can be mounted directly without spacer on 2 surfaces.



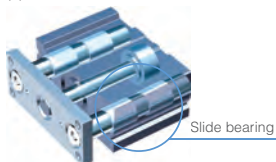
Guide rod shortened

Space required between the bottom of the cylinder body and your equipment is reduced.

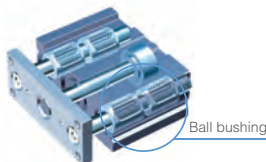


► 3 types of bearing can be selected.

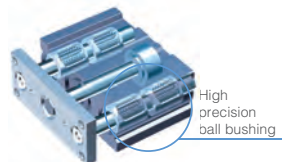
– SLIDE BEARING MGPM Series
Suitable for lateral load applications such as a stopper where shock is applied.



– BALL BUSHING MGPL Series
Smooth operation suitable for pusher and lifter.



– HIGH PRECISION BALL BUSHING MGPA Series. Suitable for minimising plate displacement.



Our highlighted product for you

Magnetic gripper MHM-X6400 Series

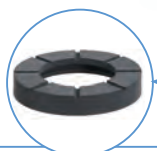
For more details
go to page 221



Performs optimally, where others don't



Auto switches can be mounted on 4 surfaces



Holding force can be adjusted with a bumper with 3 types of thicknesses

- 6 mm
- 7 mm
- 8 mm



Mountable on 3 surfaces



- ▶ Holding force up to 120 N
- ▶ Holds workpieces even when air is shut off
- ▶ Residual holding force 0.3 N or less

- ▶ MHM performs optimally in applications where vacuum pads or grippers are not performing efficiently, e.g. due to porous or uneven surfaces.



Compact cylinder with linear guide

MXZ Series

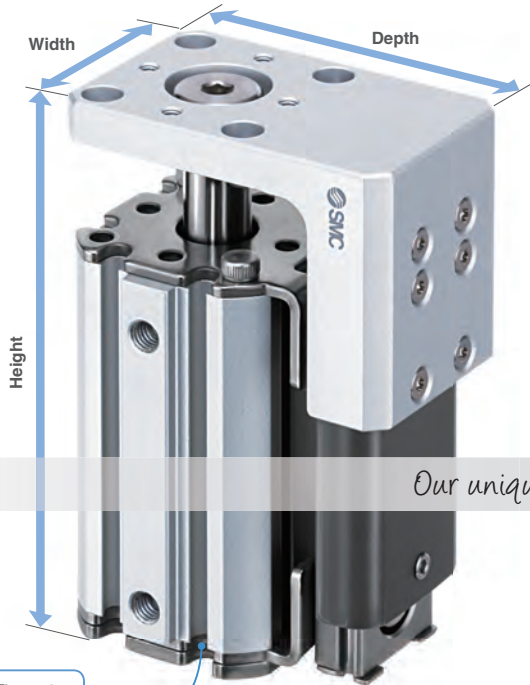
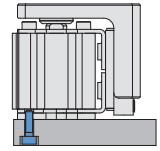
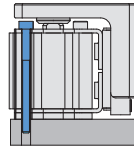


For more details go to page 156

Two mounting styles are possible through the head cover

Through-hole mounting

Tap mounting



Our unique combination

Compact auto switches (D-M9□) can be directly mounted on 3 surfaces without accessories



Port location is selectable when ordering the product

► A linear guide is integrated into the cylinder

The linear guide provides accuracy and ensures linearity when transferring workpieces. It is able to withstand lateral loads.

► MXZ uses the body of our JCQ, the compact version of a compact cylinder

Ø	Width [mm]	Height ¹⁾ [mm]	Depth [mm]
12	23	44	37.4
16	26	45	40.9
20	30	49.5	49.4
25	33.5	54	57.4

1) When stroke is 10 mm.

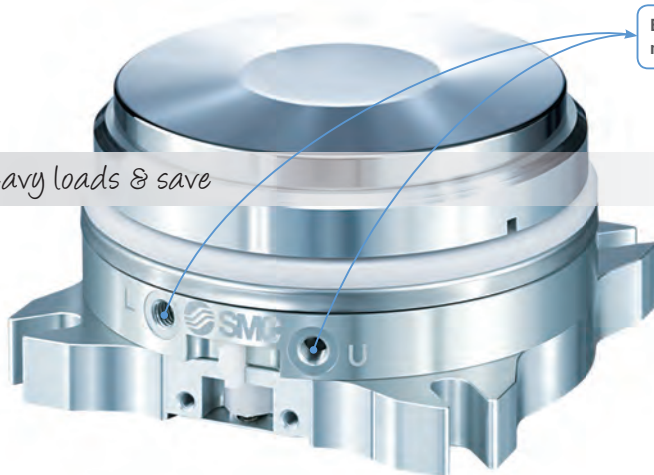
Our highlighted product for you

Centring unit MACM Series



For more details
go to page 197

► 4 types of table material can be selected

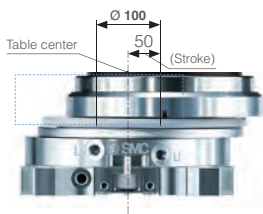


Convey heavy loads & save

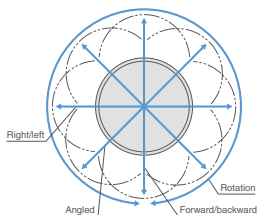
Built-in air locking
mechanism

- Heavy workpieces can be aligned and positioned with small cylinders
- Max. allowable load weight up to 1000 kg
- External photo sensor can be mounted

► Table centre movable range up to Ø 100 mm



Workpieces can be moved in any
direction and even rotated 360°
Centring accuracy ±1 mm or less.



Standard cylinder ISO 6432

Round crimped body cylinder

C85 Series

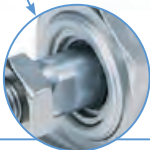


For more details
go to page 126

A clean profile for dusty environments



Foot



Unique rod packing design that **PREVENTS THE ENTRY OF DUST** and its effectiveness of the seal is such that it is suitable for use in dusty environments, regardless of whether the environments are at high or low temperatures, or if you need to move slowly or work in explosive atmospheres.

► FLEXIBILITY for auto-switch mounting

Band



Rail



► Cushion

- Rubber cushion as standard.
- Adjustable air cushion from bore 10 mm.

► WIDE RANGE of mounting accessories as:

Single knuckle joint



Double knuckle joint




Floating joint



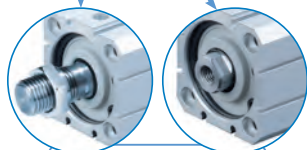
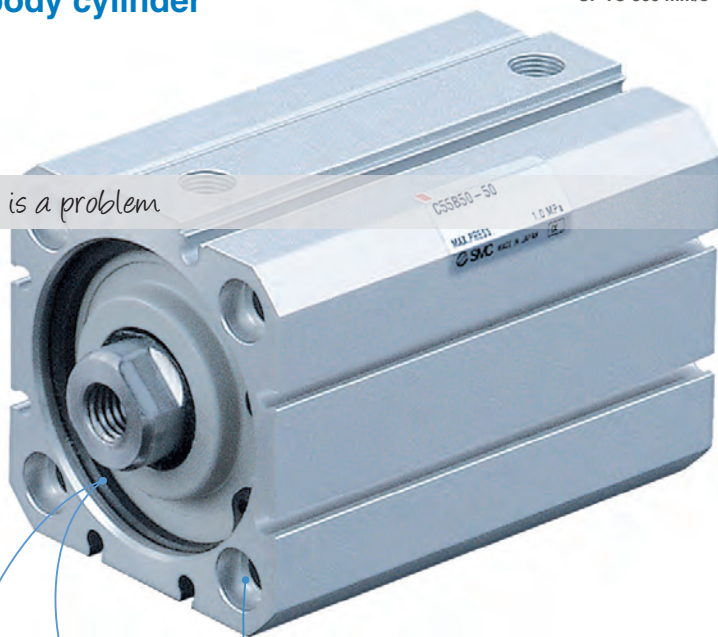
Our highlighted product for you

Standard cylinder ISO 21287 Compact body cylinder C55 Series

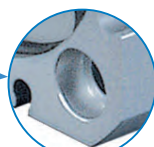
▶ Operating piston speed
UP TO 500 mm/s

 For more details
go to page 148

When space is a problem



**FEMALE AND MALE
rod threads available**



**TAPPED BODY WITH THROUGH
HOLES for easy mounting**

▶ **It is possible to mount small auto switches
on 4 SURFACES**

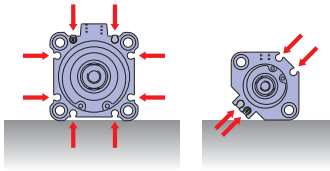
Auto switches can be mounted on any of
the 4 surfaces, depending on the installation
conditions. Improved flexibility of system
design.



Compact cylinder CQ2 Series

For more details
go to page 143

Auto switch MOUNTING RAIL REMOVED
A round slot for mounting small auto switches is provided on 4 SURFACES



► **NO PROTRUSION of auto switch**

- Prevention of damage to auto switch.
- Sleeves cannot get caught in the auto switch and its mounting rail

► **Improved ease of work and safety**

- Reduction in labour for design
There is no need to check for interference with a machine, because the outer dimensions of the cylinder do not change when the auto switch is mounted.

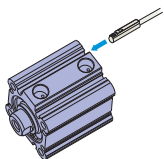
► **Can mount small auto switches on 4 SURFACES**

- Auto switches can be mounted on any of the 4 surfaces, depending on the installation conditions. (Ø 12 to Ø 25: 2 surfaces)
- Improved flexibility of system design.

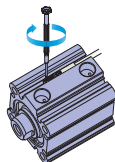


► **Reduction in labour for WORK**

- Reduction in number of components
- No loss of components.



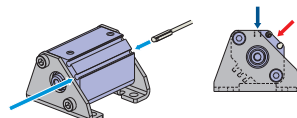
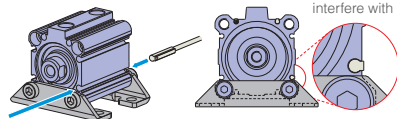
Insert the auto switch.



Fix the auto switch.

► **Reduction in labour for DESIGN**

- The auto switch can be replaced with the foot brackets mounted.



Standard air cylinders

Air cylinder

CJ1 Series



- Compact design
- Easy mounting
- For sensitive force applications.

Part number	Bore size [mm]	Stroke length [mm]	Theoretical output [N] 1)	Spring force [N]	Tube connection size [mm]
CJ1B2-5SU4 ●	2.5	5	1.81	0.64	2.5 x 4 mm
CJ1B2-10SU4 ●		10			
CJ1B4-5SU4 ●	4	5	4.52	1.47	
CJ1B4-10SU4 ●		10			
CJ1B4-15SU4 ●		15			
CJ1B4-20SU4 ●		20			

1) at 0.6 MPa

Pin cylinder

CJP Series



- Compact round design, thread continuous over the whole body
- Panel or plug mounting possible.

Part number	Bore size [mm]	Stroke length [mm]	Theoretical output [N] 1)	Spring force [N]	Tube connection nipple [mm]
CJPB4-5 ●	4	5	6.00	1.00	M3
CJPB4-10 ●		10			
CJPB4-15 ●		15			
CJPB6-5H6 ●	6	5	15.9	1.42	Outside 6 mm
CJPB6-10H6 ●		10			
CJPB6-15H6 ●		15			
CJPB10-5H6 ●	10	5	49.0	2.45	
CJPB10-10H6 ●		10			
CJPB10-15H6 ●		15			
CJPB15-5H6 ●	15	5	113	4.41	
CJPB15-10H6 ●		10			
CJPB15-15H6 ●		15			

1) at 0.7 MPa.

Plug-mounting on request.

Accessories

Bore size [mm]	Ø 4	Ø 6	Ø 10	Ø 15
Mounting nut	SNPS-004	SNPS-006	SNPS-010	SNPS-015
Rod end nut	NTJ-004	NTP-006	NTP-010	NTP-015

Hose nipple dedicated for panel mount type (with fixed orifice)

Applicable tubing	Part number
For Ø 4/Ø 2.5 tubing	CJ-5H-4
For Ø 4/Ø 6 tubing	CJ-5H-6

Pin cylinder

CJP2 Series



- Double acting, single rod
- Small and light
 - Full length shortened by 6 to 9.5 mm compared with Series CJP
 - Weight reduced by 55 to 65 % compared with Series CJP.
- Auto switch can be integrated into body.

Double-acting, rubber cushion, built-in magnet

Part number	Bore size [mm]	Stroke length [mm]	Thread connection	Possible auto switches
CDJP2B4-□D ●	4	5, 10, 15	M3	Reed: D-A93L 3 wire solid state: NPN: D-M9NL/PNP: D-M9PL 2 wire solid state: D-M9BL
CDJP2B6-□D ●	6	5, 10, 15, 20, 25	M3	
CDJP2B10-□D ●	10	5, 10, 15, 20, 25, 30,	M3	
CDJP2B16-□D ●	16	35, 40	M5	

□ Stroke length

Accessories

Bore size [mm]	Ø 6	Ø 10	Ø 16
Flange	CP-F006A	CP-F010A	CP-F016A
Foot	CP-L006A	CP-L010A	CP-L016A
Trunnion (with pin)	CP-T006A	CP-T010A	CP-T016A
Single knuckle joint	I-P006A	I-P010A	I-P016A
Double knuckle joint	Y-P006A	Y-P010A	Y-P016A

Air cylinder

CJ2 Series



- Fine adjustment of the auto switch position
- Transparent auto switch bracket
- Many head covers and mounting brackets available as standard
- Wear ring mounted to the piston.



Single acting
CJ2-Z Series



Non-rotating rod
CJ2K-Z Series



Built-in speed controller
CJ2Z-Z Series



Direct mount
CJ2R-Z Series



With end lock
CBJ2 Series



Smooth cylinder
CJ2Y-Z Series



Low speed
CJ2X-Z Series



Double acting - Rubber cushion

Part number	Bore size [mm]	Standard strokes [mm]	Rod end thread	Port size	Operating pressure [MPa]
C□J2B06-■Z	6	15, 30, 45, 60	M3 x 0.5	M5 x 0.8	0.12-0.7
C□J2B10-■Z ●	10	15, 30, 45, 60, 75, 100, 125, 150	M4 x 0.7		0.06 - 0.7
C□J2B16-■Z ●	16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200	M5 x 0.8		

■: Insert required stroke

□: Insert "D" if magnetic version is required. When inserting D add a "-A" for rail mounting or "-B" for band mounting.

W: Double rod also available, place a "W" after C□M2 if you want to order it.

Double acting - Air cushion

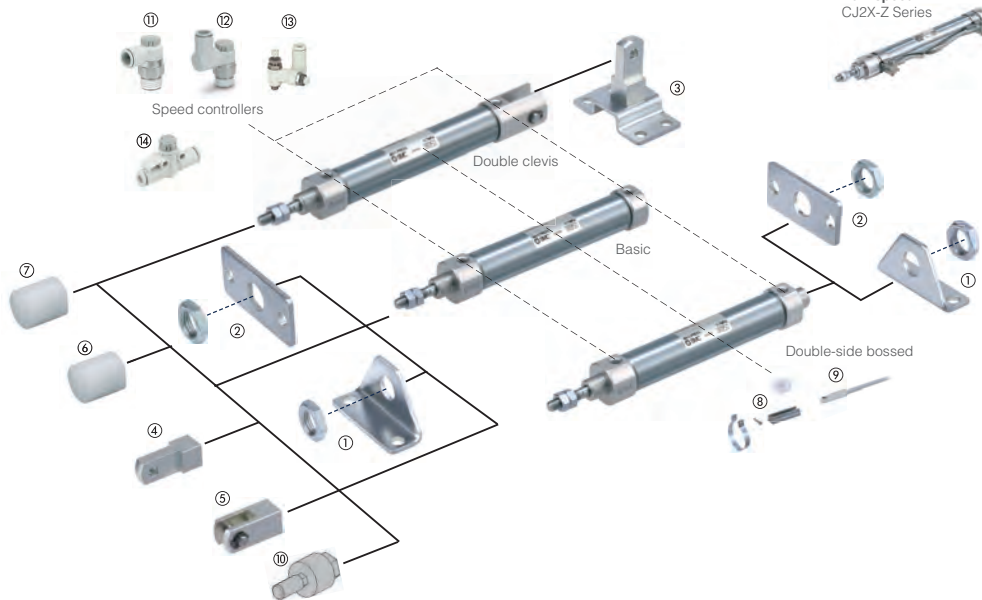
Part number	Bore size [mm]	Standard strokes [mm]	Rod end thread	Port size	Operating pressure [MPa]
C□J2B10-■AZ	10	15, 30, 45, 60, 75, 100, 125, 150	M4 x 0.7	M5 x 0.8	0.1 - 0.7
C□J2B16-■AZ	16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200	M5 x 0.8		

■: Insert required stroke

□: Insert "D" if magnetic version is required. When inserting D add a "-A" for rail mounting or "-B" for band mounting.

W: Double rod also available, place a "W" after C□M2 if you want to order it.

CJ2 - Accessories/Related products



Mounting brackets									
Bore size [mm]	①	②	③	④	⑤	⑥	⑦	⑧	⑩
	Foot	Flange	T-bracket ¹⁾	Single knuckle joint	Double knuckle joint ²⁾	Rod end cap (Flat type)	Rod end cap (Round type)	Auto switch mounting brackets	Floating joint for male thread
6	CJ-L006C	CJ-F006C	—	—	—	CJ-CF006	CJ-CR006	BJ6-006	JA06-3-050
10	CJ-L010C	CJ-F010C	CJ-T010C	I-J010C	Y-J010C	CJ-CF010	CJ-CR010	BJ6-010	JA10-4-070
16	CJ-L016C	CJ-F016C	CJ-T016C	I-J016C	Y-J016C	CJ-CF016	CJ-CR016	BJ6-016	JA15-5-080

1) T-bracket is used with double clevis (D). Double clevis is only available for Ø 10 and Ø 16.

2) A knuckle pin and retaining rings are included.

⑨		
Solid state auto switch - Diagnostic indication (2-colour display)		
Part number	Wiring	Cable
D-M9NWL	3-wire (NPN)	3 m
D-M9PWL	3-wire (PNP)	
D-M9BWL	2-wire	

Port size	Bore size [mm]	Ø tube	⑪	⑫	⑬	⑭
			Speed controller elbow type	Speed controller universal type	Dual speed controller	Speed controller in-line type
M5 x 0.8	06	3.2	AS1201F-M5-23A	AS1301F-M5-23A	—	AS1002F-23A
	10	4	AS1201F-M5-04A	AS1301F-M5-04A	ASD230F-M5-04	AS1002F-04A
	16	6	AS1201F-M5-06A	AS1301F-M5-06A	ASD230F-M5-06	AS1002F-06A

Reed auto switch		
Part number	Wiring	Cable
D-A96L	3-wire (NPN equivalent)	3 m
D-A93L	2-wire	

Our highlighted product for you

ISO/CETOP/DIN Standard [ISO 6432] Round crimped body cylinder

C85 Series



- Single or double acting
- Cylinders with adjustable cushion from Ø 10 mm
- Cylinder body made from corrosion resistant materials
- Two options for autoswitch mounting possible using band or rail
- Special seals fitted as standard for oil-free operation and band low friction type.

Standard cylinder, double-acting, built-in magnet, rubber bumper

Cylinder Ø [mm]	Standard strokes [mm]	Max. stroke [mm]	Part number with		Circuit symbol
			Auto switch mounting style		
			Band mounting		
8	10, 25, 40, 50, 80, 100	200	CD85N8-□-B ●		
10			CD85N10-□-B ●		
12	10, 25, 40, 50, 80, 100, 125, 160, 200	400	CD85N12-□-B ●		
16			CD85N16-□-B ●		
20	10, 25, 40, 50, 80, 100, 125, 160, 200, 250, 300	1000	CD85N20-□-B ●		
25			CD85N25-□-B ●		

□: Stroke length

Non-rotating, double-acting, built-in magnet

Cylinder Ø [mm]	Standard strokes [mm]	Max. stroke [mm]	Part number with		Circuit symbol
			Auto switch mounting style		
			Band mounting		
8	10, 25, 40, 50, 80, 100	100	CD85KN8-□-B		
10			CD85KN10-□-B		
12	10, 25, 40, 50, 80, 100, 125, 160, 200	200	CD85KN12-□-B		
16			CD85KN16-□-B		
20	10, 25, 40, 50, 80, 100, 125, 160, 200, 250, 300	1000	CD85KN20-□-B		
25			CD85KN25-□-B		

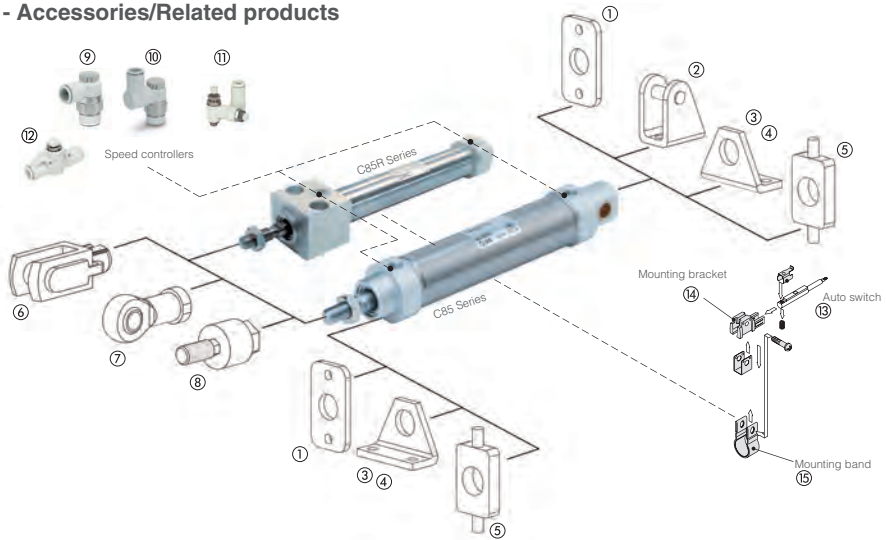
□: Stroke length
Ø 8, 10 and 16 on request

Standard cylinder, double-acting, built-in magnet, air cushion

Cylinder Ø [mm]	Standard strokes [mm]	Max. stroke [mm]	Part number with		Circuit symbol
			Auto switch mounting style		
			Band mounting		
10	10, 25, 40, 50, 80, 100	400	CD85N10-□-C-B ●		
12			CD85N12-□-C-B ●		
16	10, 25, 40, 50, 80, 100, 125, 160, 200	1000	CD85N16-□-C-B ●		
20			CD85N20-□-C-B ●		
25	CD85N25-□-C-B ●				

A wide variety of different designs is available, such as double piston rods, alternative cylinder head cover designs, without magnet, single-acting, etc.

C85 - Accessories/Related products



Bore size [mm]	①	②	③	④	⑤	⑥	⑦	⑧
	Front/rear flange	Clevis	Foot ¹⁾ (1pc)	Foot (2 pcs)	Front/rear trunnion	Rod clevis (ISO8140) (Supplied with bolt and safety device)	Piston rod ball joint (ISO8139)	Floating joint
8	C85F10	C85C10	C85L10A	C85L10B	C85T10	GKM4-8	KJ4D	JA10-4-070
10	C85F16	C85C16	C85L16A	C85L16B	C85T16	GKM6-12	KJ6D	JA15-6-100
12	C85F25	C85C25	C85L25A	C85L25B	C85T25	GKM8-16	KJ8D	JA20-8-125
16	C85F25	C85C25	C85L25A	C85L25B	C85T25	GKM10-20	KJ10D	JA30-10-125

1) 2 pcs with mounting nut 1 pc.

Bore size [mm]	⑫	
	Speed controller in-line type	
	Ø tube	Part number
8	3.2	AS1002F-23
	4	AS1002F-04
	6	AS1002F-06
10	3.2	AS1002F-23
	4	AS2002F-04
	6	AS2052F-06
	8	AS2052F-08
12	4	AS2002F-04
	6	AS2052F-06
	8	AS2052F-08
16	4	AS2002F-04
	6	AS2052F-06
	8	AS2052F-08

Bore size [mm]	Ø tube	⑨	⑩	⑪
		Speed controller elbow type	Speed controller universal type	Dual speed controller
		Part number	Part number	Part number
8	3.2	AS1201F-M5-23A	AS1301F-M5-23A	—
10	4	AS1201F-M5-04A	AS1301F-M5-04A	ASD230F-M5-04
12	6	AS1201F-M5-06A	AS1301F-M5-06A	ASD230F-M5-06
20	3.2	AS2201F-01-23SA	AS2301F-01-23SA	—
	4	AS2201F-01-04SA	AS2301F-01-04SA	—
	6	AS2201F-01-06SA	AS2301F-01-06SA	ASD330F-01-06S
	8	AS2201F-01-08SA	AS2301F-01-08SA	ASD330F-01-08S
	10	AS2201F-01-10SA	—	—

⑬		
Auto Switch		
Solid state type - 2 colour indication		
Part number	Wiring	Cable
D-M9BWL	2-wire	3 m
D-M9PWL	3-wire PNP	3 m
D-M9PWSAPC	M8-3pin PNP	0.5 m

Reed type		
Part number	Wiring	Cable
D-A93L	2-wire	3 m
D-A93SAPC	M8-3pin	0.5 m

⑭	⑮
Auto switch mounting bracket	Auto switch mounting band
BJ3-1	BJ2-008
	BJ2-010
	BJ2-012
	BJ2-016
	BM2-020
	BM2-025

Air cylinder

CM2 Series



- Fine adjustment of the auto switch position
- Transparent auto switch bracket
- Male and female rod end available as standard
- Many mounting brackets available.

Double acting - Rubber cushion

Part number	Bore size [mm]	Standard strokes [mm]	Male rod end thread	Port size	Operating pressure [MPa]
C□M2B20-■Z	20	25, 50, 75, 100, 125, 150, 200, 250, 300	M8 x 1.25	Rc 1/8	0.05 - 1.0
C□M2B25-■Z	25		M10 x 1.25		
C□M2B32-■Z	32		M14 x 1.5	Rc 1/4	
C□M2B40-■Z	40				

Double acting - Air cushion

Part number	Bore size [mm]	Standard strokes [mm]	Male rod end thread	Port size	Operating pressure [MPa]
C□M2B20-■AZ	20	25, 50, 75, 100, 125, 150, 200, 250, 300	M8 x 1.25	Rc 1/8	0.05 - 1.0
C□M2B25-■AZ	25		M10 x 1.25		
C□M2B32-■AZ	32		M14 x 1.5	Rc 1/4	
C□M2B40-■AZ	40				

■: Insert required stroke

□: Insert "D" if magnetic version is required

F: Female thread also available, place a "F" after the stroke if you want to order it

W: Double rod also available, place a "W" after C□M2 if you want to order it.

Single acting
CM2-Z Series



Non-rotating rod
CM2K-Z Series



Direct mount
CM2R-Z Series



Centralised piping
CM2□P Series



With end lock
CBM2 Series



Water resistant
CM2□R Series



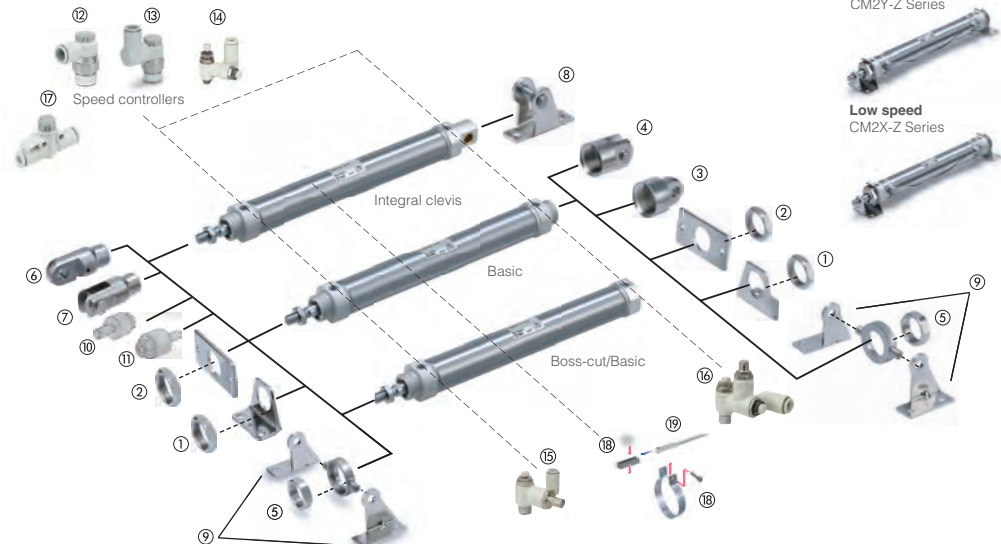
Smooth cylinder
CM2Y-Z Series



Low speed
CM2X-Z Series



CM2 - Accessories/Related products



Mounting bracket											
Bore size [mm]	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
		Foot (2 feet, 1 mounting nut) ¹⁾	Flange (1 flange)	Single clevis (1 single clevis, 3 liners) ²⁾	Double clevis (with pin) 1 double clevis, 3 liners, 1 clevis pin, 2 retaining rings ^{2) 3)}	Trunnion (with nut) 1 trunnion, 1 trunnion nut	Single knuckle joint (1 single knuckle joint) (For male thread)	Double knuckle joint (1 double knuckle joint, 1 clevis pin, 2 retaining rings) (For male thread)	Clevis pivot bracket for integral clevis (1 clevis pivot bracket, 1 clevis pin, 2 retaining rings)	Pivot bracket for trunnion (2 pivot brackets 1 of each type)	Floating joint for male thread
20	CM-L020B	CM-F020B	CM-C020B	CM-D020B	CM-T020B	I-020B	Y-020B	CM-E020B	CM-B020	JA20-8-125	JB16-4-070
25	CM-L032B	CM-F032B	CM-C032B	CM-D032B	CM-T032B	I-032B	Y-032B	CM-E020B	CM-B032	JA30-10-125	JB20-5-080
32	CM-L032B	CM-F032B	CM-C032B	CM-D032B	CM-T032B	I-032B	Y-032B	CM-E032B	CM-B032	JA30-10-125	JB25-6-100
40	CM-L040B	CM-F040B	CM-C040B	CM-D040B	CM-T040B	I-040B	Y-040B	CM-E032B	CM-B040	JA40-14-150	JB40-8-125

1) Order 2 feet per cylinder

2) 3 liners are included with a clevis bracket for adjusting the mounting angle

3) A clevis pin and retaining rings (split pins for Ø 40) are included.

Port size	Bore size [mm]	Ø tube	⑫	⑬	⑭	⑮	⑯	⑰
			Speed controller elbow type	Speed controller universal type	Dual speed controller	Air saving valve Pressure valve	Air saving valve Flow valve	Speed controller in-line type
1/8	20, 25, 32	3.2	AS2201F-01-23SA	AS2301F-01-23SA	—	—	—	—
		4	AS2201F-01-04SA	AS2301F-01-04SA	—	—	—	AS2002F-04A
		6	AS2201F-01-06SA	AS2301F-01-06SA	ASD330F-01-06S	—	—	AS2002F-06A
		8	AS2201F-01-08SA	AS2301F-01-08SA	ASD330F-01-08S	—	—	—
		10	AS2201F-01-10SA	—	—	—	—	—
1/4	40	3.2	AS2201F-02-23SA	—	—	—	—	—
		4	AS2201F-02-04SA	AS2301F-02-04SA	—	—	—	—
		6	AS2201F-02-06SA	AS2301F-02-06SA	ASD530F-02-06S	ASR530F-02-06S	ASQ530F-02-06S	AS2052F-06A
		8	AS2201F-02-08SA	AS2301F-02-08SA	ASD530F-02-08S	ASR530F-02-08S	ASQ530F-02-08S	AS2052F-08A
		10	AS2201F-02-10SA	AS2301F-02-10SA	ASD530F-02-10S	ASR530F-02-10S	ASQ530F-02-10S	—
		12	AS3201F-02-12SA	AS3301F-02-12SA	ASD530F-02-12S	ASR530F-02-12S	ASQ530F-02-12S	—

Bore size [mm]	⑱
	Auto switch mounting bracket
20	BM5-020
25	BM5-025
32	BM5-032
40	BM5-040

⑲		
Solid state auto switch - Diagnostic indication (2-colour display)		
Part number	Wiring	Cable
D-M9NWL	3 wire (NPN)	3 m
D-M9PWL	3 wire (PNP)	
D-M9BWL	2 wire	

Reed auto switch		
Part number	Wiring	Cable
D-A96L	3-wire (NPN equivalent)	3 m
D-A93L	2 wire	

Air cylinder, short type

CM3 Series



- Compact with a new construction
- Minimised with shorter total length
- Space saving; contributes to down sizing of equipment.

Standard: Double acting, single rod

Part number	Bore size [mm]	Standard strokes [mm]	Rod end thread	Port size	Operating pressure [MPa]
C■M3B20-■	20	25, 50, 75, 100, 125, 150, 200, 250, 300	M8 x 1.25	M5	0.05 - 0.7
C■M3B25-■	25		M10 x 1.25	M5	
C□M3B32-■	32		M10 x 1.25	Rc 1/8	
C□M3B40-■	40		M14 x 1.5	Rc 1/8	

■: Insert required stroke

□: Insert "D" if magnetic version is required

Mounting brackets

Diameter	Ø 20	Ø 25, 32	Ø 40
Foot	CM-L020B	CM-L032B	CM-L040B
Flange	CM-F020B	CM-F032B	CM-F040B
Single clevis	CM-C020B	CM-C032B	CM-C040B
Double clevis	CM-D020B	CM-D032B	CM-D040B
Trunion	CM3-T020B	CM3-T032B	CM3-T040B

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour PNP	D-M9PWL
3 wire solid state/2 colour NPN	D-M9NWL

Air cylinder

C76 Series



- Single or double acting
- Cushion with rubber bumper or adjustable air cushion
- Connection between piston and piston rod by crimp connection designed for increased dynamic loadings
- Cylinder body made from corrosion resistant material
- Auto switch mounting in two options by band or rail.

Standard cylinder, double-acting built-in magnet, rubber bumper

Bore size [mm]	Standard strokes [mm]	Part number with		Circuit symbol
		Auto switch mounting style		
		Band mounting		
32	10, 25, 40, 50, 80, 100, 125, 160, 200, 250, 300 (max. 1000)	CD76E32-□-B		
40		CD76E40-□-B		

□: Stroke length

Double-acting, non-rotating, built-in magnet

Bore size [mm]	Standard strokes [mm]	Part number with		Circuit symbol
		Auto switch mounting style		
		Band mounting		
32	10, 25, 40, 50, 80, 100, 125, 160, 200, 250, 300 (max. 1000)	CD76KE32-□-B		
40		CD76KE40-□-B		

□: Stroke length

Double-acting, adjustable cushion, built-in magnet

Bore size [mm]	Standard strokes [mm]	Part number with		Circuit symbol
		Auto switch mounting style		
		Band mounting		
32	40, 50, 80, 100, 125, 160, 200, 250, 300 (max. 1000)	CD76E32-□-C-B		
40		CD76E40-□-C-B		

□: Stroke length

A wide variety of different designs is available, such as double piston rods, alternative cylinder head cover designs, without magnet, single-acting, etc.

Possible auto-switches

Reed	D-A93L
3 wire solid state/2 colour PNP	D-M9PWL
3 wire solid state/2 colour NPN	D-M9NWL

Accessories

Bore size [mm]	Foot or Flange	Foot or flanges + 1 nut	Trunnion	Clevis	Single knuckle joint	Double knuckle joint	Floating joint
32	C76F32A	C76F32B	C76T32	C76C32	KJ10DA	GKM10-20	JA25-10-150
40	C76F40A	C76F40B	C76T40	C76C40	KJ12DA	GKM12-24A	JA40-12-175

Air cylinder

CG1 Series



- Clean line
- A substantial reduction in overall length compared to tie rod designed cylinders
- Male and female rod end available as standard.

Double acting - Rubber cushion

Part number	Bore size [mm]	Standard strokes [mm]	Male rod end thread	Port size	Operating pressure [MPa]
C□G1BN20-■Z ●	20	25, 50, 75, 100, 125, 150, 200, 250, 300	M8 x 1.25	Rc 1/8	0.05 - 1.0
C□G1BN25-■Z ●	25		M10 x 1.25		
C□G1BN32-■Z ●	32			M14 x 1.5	
C□G1BN40-■Z ●	40		M18 x 1.5		
C□G1BN50-■Z ●	50			M22 x 1.5	
C□G1BN63-■Z ●	63		Rc 3/8		
C□G1BN80-■Z	80			Rc 1/2	
C□G1BN100-■Z	100	M26 x 1.5	Rc 1/2		



Single acting
CG1 Series



Non-rotating rod
CG1K Series



Direct mount
CG1R Series



With end lock
CBG1 Series



Water resistant
CG1□ Series

Double acting - Air cushion

Part number	Bore size [mm]	Standard strokes [mm]	Male rod end thread	Port size	Operating pressure [MPa]
C□G1BA20-■Z	20	25, 50, 75, 100, 125, 150, 200, 250, 300	M8 x 1.25	M5 x 0.8	0.05 - 1.0
C□G1BA25-■Z	25		M10 x 1.25		
C□G1BA32-■Z	32			M14 x 1.5	
C□G1BA40-■Z	40		M18 x 1.5		
C□G1BA50-■Z	50			Rc 1/4	
C□G1BA63-■Z	63		Rc 3/8		
C□G1BA80-■Z	80			Rc 1/2	
C□G1BA100-■Z	100	M26 x 1.5	Rc 1/2		

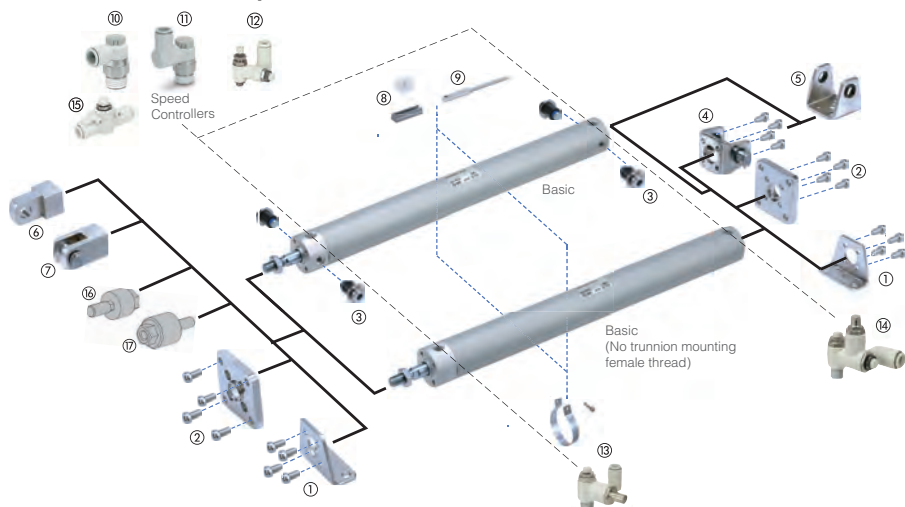
■: Insert required stroke

□: Insert "D" if magnetic version is required

W: Double rod also available, place a "W" after C□G1 if you want to order it

F: Female thread also available, place a "F" before the "Z" if you want to order it.

CG1 - Accessories/Related products



Mounting brackets ¹⁾										
Bore size [mm]	①	②	③	④	⑤	⑥	⑦	⑧	⑩	⑪
	Axial foot (foot 4 mounting bolts) ⁶⁾	Flange (1 flange, 4 mounting bolts)	Trunnion pin (2 trunnion pins, 2 trunnion bolts, 2 flat washers)	Clevis (1 clevis, 4 mounting bolts, 1 clevis pin, 2 retaining rings) ²⁾	Pivot bracket (1 pivot bracket) ³⁾	Single Knuckle joint (For male thread) ⁴⁾	Double Knuckle joint (A knuckle pin and retaining rings are included) (For male thread) ⁴⁾	Auto switch mounting brackets	Floating joint for male thread ⁴⁾	Floating joint for female thread ⁵⁾
20	CG-L020	CG-F020	CG-T020	CG-D020	CG-020-24A	I-G02	Y-G02	BMA3-020	JA20-8-125	JB16-4-070
25	CG-L025	CG-F025	CG-T025	CG-D025	CG-025-24A	I-G03	Y-G03	BMA3-025	JA30-10-125	JB20-5-080
32	CG-L032	CG-F032	CG-T032	CG-D032	CG-032-24A	I-G03	Y-G03	BMA3-032	JA30-10-125	JB25-6-100
40	CG-L040	CG-F040	CG-T040	CG-D040	CG-040-24A	I-G04	Y-G04	BMA3-040	JA40-14-150	JB40-8-125
50	CG-L050	CG-F050	CG-T050	CG-D050	CG-050-24A	I-G05	Y-G05	BMA3-050	JA63-18-150	JB63-10-150
63	CG-L063	CG-F063	CG-T063	CG-D063	CG-063-24A	I-G05	Y-G05	BMA3-063	JA63-18-150	JB63-10-150
80	CG-L080	CG-F080	—	CG-D080	CG-080-24A ²⁾	I-G08	Y-G08	BA-10	JA80-22-150	—
100	CG-L100	CG-F100	—	CG-D100	CG-100-24A ²⁾	I-G10	Y-G10	BA-10	JA100-26-150	—

1) Mounting brackets are not available in Direct Mount type

2) Not available in Double Rod types

3) Can be combined with the trunnion pin and the clevis

4) No bracket is provided for the female rod end

5) No bracket is provided for the male rod end

6) Order 2 feet per cylinder.

⑨			
Solid state auto switch - Diagnostic indication (2-colour display)			
Ø 20 to Ø 63	Ø 80, Ø 100	Wiring	Cable
D-M9NWL	D-G59WL	3-wire (NPN)	3 m
D-M9PWL	D-G5PWL	3-wire (PNP)	
D-M9BWL	D-K59WL	2-wire	

Reed auto switch			
Ø 20 to Ø 63	Ø 80, Ø 100	Wiring	Cable
D-A96L	—	3-wire (NPN) equivalent	3 m
D-A93L	D-B54L	2-wire	

CG1-Z Speed controllers

Port size	Bore size [mm]	Ø tube	⑩	⑪	⑫	⑬	⑭	⑮
			Speed controller elbow type	Speed controller type	Dual speed controller	Air saving valve Pressure valve	Air saving valve Flow valve	Speed controller in-line type
M5 x 0.8 (only in air cushion)	20, 25	3,2	AS1201F-M5-23A	AS1301F-M5-23A	—	—	—	AS1002F-23
		4	AS1201F-M5-04A	AS1301F-M5-04A	ASD230F-M5-04	—	—	AS1002F-04
		6	AS1201F-M5-06A	AS1301F-M5-06A	ASD230F-M5-06	—	—	AS1002F-06
1/8	20, 25, 32, 40	3,2	AS2201F-01-23SA	AS2301F-01-23SA	—	—	—	—
		4	AS2201F-01-04SA	AS2301F-01-04SA	—	—	—	AS2002F-04
		6	AS2201F-01-06SA	AS2301F-01-06SA	ASD330F-01-06S	—	—	AS2002F-06
		8	AS2201F-01-08SA	AS2301F-01-08SA	ASD330F-01-08S	—	—	—
		10	AS2201F-01-10SA	—	—	—	—	—
1/4	50	3,2	AS2201F-02-23SA	—	—	—	—	—
		4	AS2201F-02-04SA	AS2301F-02-04SA	—	—	—	—
		6	AS2201F-02-06SA	AS2301F-02-06SA	ASD530F-02-06S	ASR530F-02-06S	ASQ530F-02-06S	AS2052F-06
		8	AS2201F-02-08SA	AS2301F-02-08SA	ASD530F-02-08S	ASR530F-02-08S	ASQ530F-02-08S	AS2052F-08
		10	AS2201F-02-10SA	AS2301F-02-10SA	ASD530F-02-10S	ASR530F-02-10S	ASQ530F-02-10S	—
1/4	63	12	AS3201F-02-12SA	AS3301F-02-12SA	ASD530F-02-12S	ASR530F-02-12S	ASQ530F-02-12S	—
		3,2	AS2201F-02-23SA	—	—	—	—	—
		4	AS2201F-02-04SA	AS2301F-02-04SA	—	—	—	—
		6	AS2201F-02-06SA	AS2301F-02-06SA	ASD530F-02-06S	ASR530F-02-06S	ASQ530F-02-06S	—
		8	AS2201F-02-08SA	AS2301F-02-08SA	ASD530F-02-08S	ASR530F-02-08S	ASQ530F-02-08S	—
3/8	80	10	AS2201F-02-10SA	AS2301F-02-10SA	ASD530F-02-10S	ASR530F-02-10S	ASQ530F-02-10S	—
		12	AS3201F-02-12SA	AS3301F-02-12SA	ASD530F-02-12S	ASR530F-02-12S	ASQ530F-02-12S	—
		6	AS3201F-03-06SA	AS3301F-03-06SA	ASD530F-03-06S	ASR530F-03-06S	ASQ530F-03-06S	AS3002F-06
		8	AS3201F-03-08SA	AS3301F-03-08SA	ASD530F-03-08S	ASR530F-03-08S	ASQ530F-03-08S	AS3002F-08
		10	AS3201F-03-10SA	AS3301F-03-10SA	ASD530F-03-10S	ASR630F-03-10S	ASQ630F-03-10S	AS3002F-10
1/2	100	12	AS3201F-03-12SA	AS3301F-03-12SA	ASD530F-03-12S	ASR630F-03-12S	ASQ630F-03-12S	AS3002F-12
		10	AS4201F-04-10SA	AS4301F-04-10SA	ASD630F-04-10S	ASR630F-04-10S	ASQ630F-04-10S	AS4002F-10
		12	AS4201F-04-12SA	AS4301F-04-12SA	ASD630F-04-12S	ASR630F-04-12S	ASQ630F-04-12S	AS4002F-12

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

Air cylinder, short type

CG3 Series



- Space saving
- Light weight, similar operating performance than the CG1
- Female rod end available as standard.

Double acting - Single rod

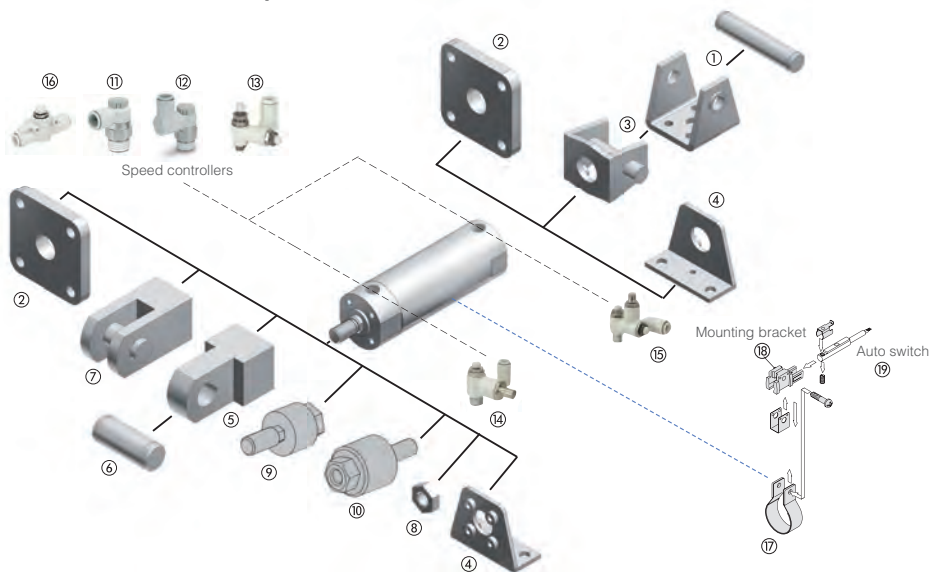
Part number	Bore size [mm]	Standard strokes [mm]	Male rod end thread	Port size	Operating pressure [MPa]	
C□G3BN20-■	20	25, 50, 75, 100, 125, 150, 200	M8 x 1.25	M5 x 0.8	0.05 - 0.7	
C□G3BN25-■	25		M10 x 1.25	Rc 1/8		
C□G3BN32-■	32					
C□G3BN40-■	40		M14 x 1.5			
C□G3BN50-■	50		25, 50, 75, 100, 125, 150, 200, 250, 300	M18 x 1.5		Rc 1/4
C□G3BN63-■	63			M22 x 1.5		Rc 3/8
C□G3BN80-■	80					
C□G3BN100-■	100			M26 x 1.5		

■: Insert required stroke

□: Insert "D" if magnetic version is required

F: Female thread also available, place a "F" after the stroke if you want to order it.

CG3 - Accessories/Related products



Mounting brackets										
Bore size [mm]	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
	Pivoting bracket (1 pivot bracket)	Flange (1 flange, 4 mounting bolts)	Clevis (1 Clevis, 4 mounting bolts, 1 clevis pin, 2 retaining rings)	Foot (foot, 4 mounting bolts) 1)	Single Knuckle joint (For male thread)	Knuckle Pin (Retaining rings are included)	Double knuckle joint (A knuckle pin and retaining rings are included) (For male thread)	Rod end nut (For male thread) (For male thread)	Floating joint for male thread	Floating joint for female thread
20	CG-020-24A	CG3-F020	CG-D020	CG-L020	I-G02	IY-G02	Y-G02	NT-02G3	JA20-8-125	JB16-4-070
25	CG-025-24A	CG3-F025	CG-D025	CG-L025	I-G03	IY-G03	Y-G03	NT-03G3	JA30-10-125	JB20-5-080
32	CG-032-24A	CG-F032	CG-D032	CG-L032	I-G03	IY-G03	Y-G03	NT-03G3	JA30-10-125	JB25-6-100
40	CG-040-24A	CG3-F040	CG3-D040	CG3-L040	I-G04	IY-G04	Y-G04	NT-04G3	JA40-14-150	JB40-8-125
50	CG-050-24A	CG-F050	CG-D050	CG-L050	I-G05	IY-G05	Y-G05	NT-05G3	JA63-18-150	JB63-10-150
63	CG-063-24A	CG-F063	CG-D063	CG-L063	I-G05	IY-G05	Y-G05	NT-05G3	JA63-18-150	JB63-10-150
80	CG-080-24A	CG-F100	CG-D080	CG-L080	I-G08	IY-G08	Y-G08	NT-08G3	JA80-22-150	—
100	CG-100-24A	CG-F100	CG-D0100	CG-L100	I-G10	IY-G10	Y-G10	NT-10G3	JA100-26-150	—

1) Order 2 feet per cylinder

Port size	Bore size [mm]	Ø tube	⑪	⑫	⑬	⑭	⑮	⑯
			Speed controller elbow type	Speed controller universal type	Dual speed controller	Air saving valve Pressure valve	Air saving valve Flow valve	Speed controller in-line type
M5 x 0.8	20, 25	3,2	AS1201F-M5-23A	AS1301F-M5-23A	—	—	—	AS1002F-23
		4	AS1201F-M5-04A	AS1301F-M5-04A	ASD230F-M5-04	—	—	AS1002F-04
		6	AS1201F-M5-06A	AS1301F-M5-06A	ASD230F-M5-06	—	—	AS1002F-06
1/8	32, 40	3,2	AS2201F-01-23SA	AS2301F-01-23SA	—	—	—	—
		4	AS2201F-01-04SA	AS2301F-01-04SA	—	—	—	AS2002F-04
		6	AS2201F-01-06SA	AS2301F-01-06SA	ASD330F-01-06S	—	—	AS2002F-06
		8	AS2201F-01-08SA	AS2301F-01-08SA	ASD330F-01-08S	—	—	—
		10	AS2201F-01-10SA	—	—	—	—	—
1/4	50	3,2	AS2201F-02-23SA	—	—	—	—	—
		4	AS2201F-02-04SA	AS2301F-02-04SA	—	—	—	—
		6	AS2201F-02-06SA	AS2301F-02-06SA	ASD530F-02-06S	ASR530F-02-06S	ASQ530F-02-06S	AS2052F-06
		8	AS2201F-02-08SA	AS2301F-02-08SA	ASD530F-02-08S	ASR530F-02-08S	ASQ530F-02-08S	AS2052F-08
		10	AS2201F-02-10SA	AS2301F-02-10SA	ASD530F-02-10S	ASR530F-02-10S	ASQ530F-02-10S	—
1/4	63	12	AS3201F-02-12SA	AS3301F-02-12SA	ASD530F-02-12S	ASR530F-02-12S	ASQ530F-02-12S	—
		3,2	AS2201F-02-23SA	—	—	—	—	—
		4	AS2201F-02-04SA	AS2301F-02-04SA	—	—	—	—
		6	AS2201F-02-06SA	AS2301F-02-06SA	ASD530F-02-06S	ASR530F-02-06S	ASQ530F-02-06S	—
		8	AS2201F-02-08SA	AS2301F-02-08SA	ASD530F-02-08S	ASR530F-02-08S	ASQ530F-02-08S	—
1/4	80	10	AS2201F-02-10SA	AS2301F-02-10SA	ASD530F-02-10S	ASR530F-02-10S	ASQ530F-02-10S	—
		12	AS3201F-02-12SA	AS3301F-02-12SA	ASD530F-02-12S	ASR530F-02-12S	ASQ530F-02-12S	—
		6	AS3201F-02-06SA	AS3301F-02-06SA	ASD530F-02-06S	ASR530F-02-06S	ASQ530F-02-06S	—
		8	AS3201F-02-08SA	AS3301F-02-08SA	ASD530F-02-08S	ASR530F-02-08S	ASQ530F-02-08S	—
		10	AS3201F-02-10SA	AS3301F-02-10SA	ASD530F-02-10S	ASR530F-02-10S	ASQ530F-02-10S	—
3/8	100	12	AS3201F-02-12SA	AS3301F-02-12SA	ASD530F-02-12S	ASR530F-02-12S	ASQ530F-02-12S	—
		6	—	—	ASD530F-03-06S	ASR530F-03-06S	ASQ530F-03-06S	—
		8	—	—	ASD530F-03-08S	ASR530F-03-08S	ASQ530F-03-08S	—
		10	—	—	ASD530F-03-10S	ASR630F-03-10S	ASQ630F-03-10S	—
		12	—	—	ASD530F-03-12S	ASR630F-03-12S	ASQ630F-03-12S	—

Bore size [mm]	⑰	⑱
	Auto switch mounting band	Auto switch mounting bracket
20	BMA2-020	BJ3-1
25	BMA2-025	
32	BMA2-032	
40	BMA2-040	
50	BMA2-050	
63	BMA2-063	
80	BA-08	
100	BA-10	

⑲			
Solid state auto switch - Diagnostic indication (2 colour display)			
Ø 20 to Ø 63	Ø 80, Ø 100	Wiring	Cable
D-M9NWL	D-G59WL	3 wire (NPN)	3 m
D-M9PWL	D-G5PWL	3 wire (PNP)	
D-M9BWL	D-K59WL	2-wire	
Reed auto switch			
Ø 20 to Ø 63	Ø 80, Ø 100	Wiring	Cable
D-A96L	—	3 wire (NPN) equivalent	3 m
D-A93L	D-B54L	2 wire	

Our highlighted product for you

ISO 15552 cylinder

CP96 Series



- Bumper cushion + Air cushion on both ends (only for Ø 32 to Ø 100)
- Cycle time shortened
- Integrated tie-rods
- Bore sizes Ø 32-125 mm
- Easy adjustment of the cushion valve
- End of stroke air cushion provides smooth operation
- Minimum piston rod deflection
- Improved mounting accuracy
- Maximum flexibility for auto-switch mounting.

Customer benefits

- High flexibility as many versions and options were added to the standard type
- Wide range of mounting accessories – It is possible to mount the cylinders practically everywhere
- Reduction in installation labour thanks to easy adjustment of the cushion valve and the flexibility for auto switch mounting.

Other types available

- Double rod: CP96W
- Non rotating: CP96K
- ATEX compliant: 55-CP96

Other design variations, such as, for example dual stroke cylinders, heat resistant cylinders, etc. are available.

Part number	Bore size [mm]	□ Standard strokes [mm]
CP96SDB32-□C ●	32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500
CP96SDB40-□C ●	40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500
CP96SDB50-□C ●	50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600
CP96SDB63-□C ●	63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600
CP96SDB80-□C ●	80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800
CP96SDB100-□C ●	100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800
CP96SDB125-□ ●	125	Made to order

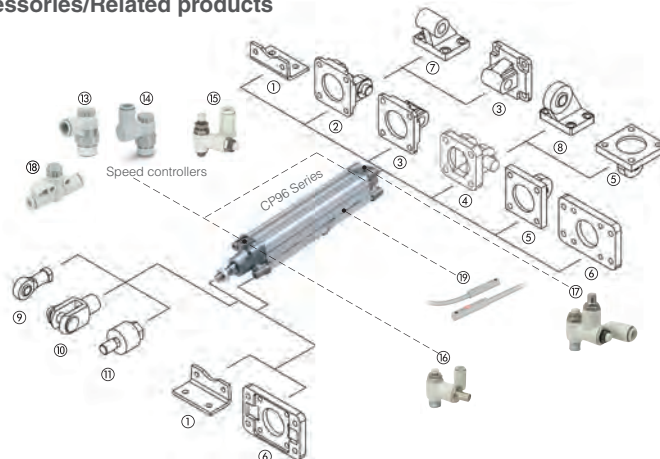
□: Stroke length

W: Double rod available, place "W" after the stroke if you want to order it

K: Non rotating available, place "K" after CP96 if you want to order it.

Bore size [mm]	Piston rod Ø [mm]	Rod end thread	Port size	Operating pressure range	Cylinder speed
32	12	M10 x .25	G 1/8	0.05–1 MPa	50 – 1.000 mm/s
40	16	M12 x 1.25	G 1/4		
50	20	M16 x 1.5	G 1/4		
63	20	M16 x 1.5	G 3/8		
80	25	M20 x 1.5	G 3/8		
100	25	M20 x 1.5	G 1/2		
125	32	M27 x 2	G 1/2		50 – 700 mm/s

CP96 - Accessories/Related products



Bore size [mm]	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
	Axial Foot (Supplied with two pieces and 4 screws)	Double clevis (Corresponds to E accessory) (Supplied with bolt, safety device and 4 screws)	Single clevis (Supplied with 4 screws)	Double clevis pivot bracket (for ES accessory) (Supplied with bolt, safety device and 4 screws)	Single clevis with ball joint (Supplied with 4 screws)	Rod flange (Supplied with 4 screws)	Pivot bracket	Clevis pivot bracket with ball joint	Rod end (ISO 8139)	Rod clevis (ISO 8140) (Supplied with bolt and safety device)	Floating joint	Auto switch mounting bracket (C96 only)
32	L5032	D5032	C5032	DS5032	CS5032	F5032	E5032	ES5032	KJ10D	GKM10-20	JA30-10-125	BMB5-032
40	L5040	D5040	C5040	DS5040	CS5040	F5040	E5040	ES5040	KJ12D	GKM12-24	JA40-12-125	
50	L5050	D5050	C5050	DS5050	CS5050	F5050	E5050	ES5050	KJ16D	GKM16-32	JA50-16-150	BA7-040
63	L5063	D5063	C5063	DS5063	CS5063	F5063	E5063	ES5063	KJ16D	GKM16-32	JA50-16-150	
80	L5080	D5080	C5080	DS5080	CS5080	F5080	E5080	ES5080	KJ20D	GKM20-40	JAH50-20-150	BA7-063
100	L5100	D5100	C5100	DS5100	CS5100	F5100	E5100	ES5100	KJ20D	GKM20-40	JAH50-20-150	
125	L5125	D5125	C5125	DS5125	CS5125	F5125	E5125	ES5125	KJ27D	GKM30-54	JA125-27-200	

Bore size [mm]	Ø tube	⑬	⑭	⑮	⑯	⑰
		Speed controller elbow type	Speed controller universal type	Dual speed controller	Air saving valve pressure type	Air saving valve flow type
		Part number	Part number	Part number	Part number	Part number
32	3.2	AS2201F-01-23SA	AS2301F-01-23SA	—	—	—
	4	AS2201F-01-04SA	AS2301F-01-04SA			
	6	AS2201F-01-06SA	AS2301F-01-06SA			
	8	AS2201F-01-08SA	AS2301F-01-08SA			
40, 50	4	AS2201F-02-04SA	AS2301F-02-04SA	—	—	—
	6	AS2201F-02-06SA	AS2301F-02-06SA			
	8	AS2201F-02-08SA	AS2301F-02-08SA			
	10	AS2201F-02-10SA	AS2301F-02-10SA			
63, 80	12	AS3201F-02-12SA	AS3301F-02-12SA	ASD530F-02-12S	ASR530F-02-12S	ASQ530F-02-12S
	6	AS3201F-03-06SA	AS3301F-03-06SA	ASD530F-03-06S	ASR530F-03-06S	ASQ530F-03-06S
	8	AS3201F-03-08SA	AS3301F-03-08SA	ASD530F-03-08S	ASR530F-03-08S	ASQ530F-03-08S
	10	AS3201F-03-10SA	AS3301F-03-10SA	ASD530F-03-10S	ASR530F-03-10S	ASQ530F-03-10S
100, 125	12	AS3201F-03-12SA	AS3301F-03-12SA	ASD530F-03-12S	ASR530F-03-12S	ASQ530F-03-12S
	10	AS4201F-04-10SA	AS4301F-04-10SA	ASD630F-04-10S	ASR630F-04-10S	ASQ630F-04-10S
	12	AS4201F-04-12SA	AS4301F-04-12SA	ASD630F-04-12S	ASR630F-04-12S	ASQ630F-04-12S

Bore size [mm]	⑱	
	Speed controller in-line type	
	Ø tube	Part number ¹⁾
32	4	AS2002F-04A
	6	AS2052F-06A
	8	AS2052F-08A
40, 50	6	AS3002F-06A
	8	AS3002F-08A
	10	AS3002F-10A
	12	AS3002F-12A
63	6	AS3002F-06A
	8	AS3002F-08A
	10	AS4002F-10A
	12	AS4002F-12A
80, 100, 125	10	AS4002F-10A
	12	AS4002F-12A

⑲		
Auto switch		
Solid state type - 2 colour indication		
Part number	Wiring	Cable
D-M9BWL	2 wire	3 m
D-M9PWL	3 wire PNP	3 m
D-M9PWSAPC	M8-3pin PNP	0.5 m

Reed type		
Part number	Wiring	Cable
D-A93L	2 wire	3 m
D-A93SAPC	M8-3pin	0.5 m

1) Ø 125: Can also use a large flow in-line type speed controller: AS420-04

ISO 1552 cylinder

C96 Series



- Bumper cushion + Air cushion on both ends (only for Ø 32 to Ø 100)
- Cycle time shortened
- Tie rod design with standard outside
- Bore sizes Ø 32-125 mm
- Easy adjustment of the cushion valve
- End of stroke air cushion provides smooth operation
- Minimum piston rod deflection
- Improved mounting accuracy
- Maximum flexibility for auto-switch mounting.

- Other types available
- Double rod: C96W
 - Non-rotating: C96K
 - Smooth cylinder: C96Y
 - ATEX compliant: 55-C96

Other design variations, such as, for example dual stroke cylinders, heat and cold resistant cylinders, centre trunnion, etc. are available.

Customer benefits

- High flexibility as many versions and options were added to the standard type
- Wide range of mounting accessories – It is possible to mount the cylinders practically everywhere
- Reduction in installation labour thanks to easy adjustment of the cushion valve and the flexibility for auto switch mounting.

Part number	Bore size [mm]	Standard strokes [mm]
C96SDB32-□C ●	32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500
C96SDB40-□C ●	40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500
C96SDB50-□C ●	50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600
C96SDB63-□C ●	63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600
C96SDB80-□C ●	80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800
C96SDB100-□C ●	100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800
C96SDB125-□	125	Made to order

□: Stroke length

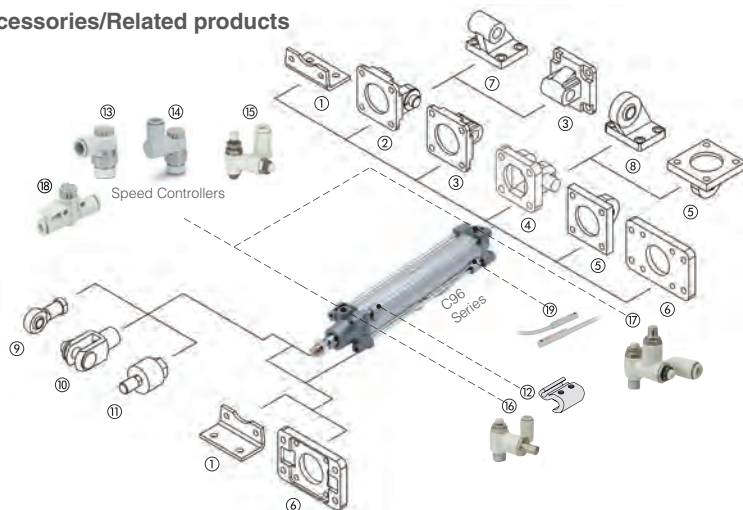
W: Double rod available, place "W" after the stroke if you want to order it

K: Non rotating available, place "K" after C96 if you want to order it

Y: Smooth cylinder available, place "Y" after C96 if you want to order it.

Bore size [mm]	Piston rod Ø [mm]	Rod end thread	Port size	Operating pressure range	Cylinder speed
32	12	M10 x 1.25	G 1/8	0.05 ~ 1 MPa	50 ~ 1.000 mm/s
40	16	M12 x 1.25	G 1/4		
50	20	M16 x 1.5	G 1/4		
63	20	M16 x 1.5	G 3/8		
80	25	M20 x 1.5	G 3/8		
100	25	M20 x 1.5	G 1/2		
125	32	M27 x 2	G 1/2		50 ~ 700 mm/s

C96 - Accessories/Related products



Note) For part numbers, go to previous page.

ISO Standard [ISO6431] Round tube - large bore cylinder

C95 Series



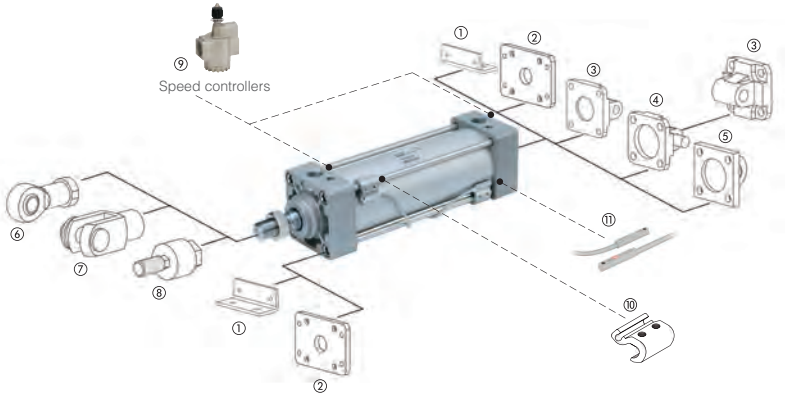
- Standard VDMA cylinders in tie-rod design with standard outside dimensions according to VDMA 24562
- Standard fixings
- Bore sizes Ø 160 – 250 mm
- Standard mounting brackets for all mounting options
- Centre trunnion version available
- Non-lube operation
- SMC piston gasket achieves considerably reduced friction, which increases the efficiency and extends the service life
- Auto switch mounting by tie-rod or band mounting
- Autoswitches can be supplied as reed switches or solid state switches
- ATEX Compliant version available.

Part number	Bore size [mm]	Maximum strokes [mm]
C95SDB160-□ ●	160	1600
C95SDB200-□ ●	200	2000
C95SDB250-□	250	2400

□: Stroke length

Bore size [mm]	Piston rod Ø [mm]	Rod end thread	Port size	Operating pressure range	Cylinder speed
160	40	M36 x 2	G 3/4	0.05 ~ 1 MPa	50 ~ 500 mm/s
200	40	M36 x 2	G 3/4		
250	50	M42 x 2	G 1		

C95 - Accessories/Related products



Bore size [mm]	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
	Foot (Supplied with two pieces and 4 screws)	Flange (Supplied with 4 screws)	Single rear clevis (Supplied with 4 screws)	Double rear clevis (Supplied with bolt, safety device and 4 screws)	Male head end clevis with ball joint (Supplied with 4 screws)	Piston rod ball joint (ISO 8139)	Rod clevis (ISO 8140) (Supplied with bolt and safety device)	Floating joint	Speed controller Large flow in-line type	Auto switch mounting bracket
160	L5160	F5160	C5160	D5160	CS160	KJ36D	GKM35-54	JA160-36-200	AS500-06	BS5-160
200	L5200	F5200	C5200	D5200	CS200	KJ36D	GKM35-54	JA160-36-200	AS500-06	BS5-160
250	L5250	F5250	C5250	D5250	CS250	KJ42D	GKM40-84	-	AS600-10	BT-20

Bore size [mm]	⑩					
	Solid state 2-colour indication auto-switch			Reed auto-switch		
	2 wire	3 wire PNP	M8-3 pin PNP	2 wire	M8-3 pin	
	3 m cable	3 m cable	0.5 m cable	3 m cable	0.5 m cable	
160, 200	D-M9BWL	D-M9PWL	D-M9PWSAPC	D-A93L	D-A93SAPC	
250	D-J59WL	D-F5PWL	D-F5PWSAPC	D-A54L	-	

Combinations cylinders

Mini-free mount cylinder

CUJ Series



- Significantly reduced dimensions compared to Series CU
- ~ 64 % reduced overall length
- ~ 70 % reduced volume
- Simple maintenance, since piston rod cover is removable.

Standard cylinder, double-acting, without auto switch

Part number	Bore size [mm]	Stroke length [mm]	Port thread	Auto switch
CUJB4-□D ●	4	4, 6, 8, 10, 15, 20	M3	—
CUJB6-□D ●	6	4, 6, 8, 10, 15, 20, 25, 30		
CUJB8-□D ●	8	4, 6, 8, 10, 15, 20, 25, 30		
CUJB10-□D ●	10	4, 6, 8, 10, 15, 20, 25, 30		
CUJB12-□D ●	12	5, 10, 15, 20, 25, 30		
CUJB16-□D ●	16			
CUJB20-□D ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5	

Standard cylinder, double-acting, with auto switch

Part number	Bore size [mm]	Stroke length [mm]	Port thread	Auto switch
CDUJB4-□D	4	4, 6, 8, 10, 15, 20	M3	3-wire solid state NPN: D-F8NL PNP: D-F8PL 2 wire solid state D-F8BL
CDUJB6-□D ●	6	4, 6, 8, 10, 15, 20, 25, 30		
CDUJB8-□D ●	8	4, 6, 8, 10, 15, 20, 25, 30		
CDUJB10-□D ●	10	4, 6, 8, 10, 15, 20, 25, 30		
CDUJB12-□D ●	12	5, 10, 15, 20, 25, 30		
CDUJB16-□D ●	16			
CDUJB20-□D ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5	

□: Stroke length

Single acting: please use "S" instead of "D", e.g. CDUJB10-10S

Not all strokes can be provided

With rod end thread: Use "M" e.g.: CDUJB10-10DM.

Free mount cylinder

CU/CUK Series



• Auto switch can be integrated in the body.

Standard

Part number	Bore size [mm]	Stroke length [mm]	Rod end thread	Port size	Possible auto switches
CDU6-□D ●	6	5, 10, 15, 20, 25, 30, 40, 50, 60	M3	M5	Reed D-A93L 3 wire solid state: NPN: D-M9NL PNP: D-M9PL 2 wire solid state: D-M9BL
CDU10-□D ●	10		M4		
CDU16-□D ●	16		M5		
CDU20-□D ●	20		M6		
CDU25-□D ●	25		M8		
CDU32TF-□D ●	32	5, 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100	M10	G 1/8	

□: Stroke length

Non-rotation rod

Part number	Bore size [mm]	Stroke length [mm]	Rod end thread	Port size	Possible auto switches
CDUK6-□D ●	6	5, 10, 15, 20, 25, 30, 40, 50, 60	M3	M5	Reed D-A93L 3 wire solid state: NPN: D-M9NL PNP: D-M9PL 2 wire solid state: D-M9BL
CDUK10-□D ●	10		M4		
CDUK16-□D ●	16		M5		
CDUK20-□D ●	20		M6		
CDUK25-□D ●	25		M8		
CDUK32-□D ●	32	5, 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100	M10	G 1/8	

□: Stroke length

Free mount cylinder for vacuum

ZCUK Series



- Direct mounting of the suction pads on the hollow, double piston rod
- Fixed vacuum port at the rear end of the cylinder
- No interfering tubes around the work piece
- No moving hoses
- Non-rotating piston rod
- Miniature auto switches in standard design
- Compact design, smooth outside surface means simple installation.

Part number	Bore size [mm]	Stroke [mm]	Rod end thread	Port size	Possible suction pads
ZCDUKC10-□D ●	10	5, 10, 15, 20, 25, 30	M4	M5	See section vacuum
ZCDUKC16-□D ●	16		M5		
ZCDUKC20-□D ●	20		M6		
ZCDUKC25-□D ●	25	5, 10, 15, 20, 25, 30, 40, 50	M8	G 1/8	
ZCDUKC32TF-□D ●	32		M10		

□: Stroke length

Possible auto switches

Reed	D-A93L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Compact cylinder, compact type

CQS Series



- Ø 12, Ø 16, Ø 20, Ø 25 mm
- Flexible auto switch mounting on 3 or 4 sides
- Auto switch fully integrated in the body
- Square-section body style ensures full flexibility in design projects
- Through-hole/Both ends tapped common (Standard)
- A wide variety of mounting options is available.

Standard cylinder, double-acting, without auto switch

Part number	Bore size [mm]	Stroke length [mm]	Long stroke [mm]	Port sizes	Circuit symbol
CQSB12-□D ●	12	5, 10, 15, 20, 25, 30	35, 40, 45, 50, 75, 100, 125, 150, 175, 200	M5	
CQSB16-□D ●	16				
CQSB20-□D ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	75, 100, 125, 150, 175, 200	M5	
CQSB25-□D ●	25				

□: Stroke length

Standard cylinder, double-acting, with auto switch

Part number	Bore size [mm]	Stroke length [mm]	Long stroke [mm]	Port sizes	Circuit symbol
CDQSB12-□D ●	12	5, 10, 15, 20, 25, 30	35, 40, 45, 50, 75, 100, 125, 150, 175, 200	M5	
CDQSB16-□D ●	16				
CDQSB20-□D ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	75, 100, 125, 150, 175, 200	M5	
CDQSB25-□D ●	25				

□: Stroke length

Mounting bracket part number

Bore size [mm]	Foot ¹⁾	Compact foot ¹⁾	Flange	Double clevis ²⁾	Double clevis pivot bracket
12	CQS-L012	CQS-LC012	CQS-F012	CQS-D012	CQ-C012
16	CQS-L016	CQS-LC016	CQS-F016	CQS-D016	CQ-C016
20	CQS-L020	CQS-LC020	CQS-F020	CQS-D020	CQ-C020
25	CQS-L025	CQS-LC025	CQS-F025	CQS-D025	CQ-C025

1) 2 pcs. per cylinder should be ordered when foot and compact foot brackets are required

2) Package for double clevis contains clevis pin and snap ring

Note: Each package contains the following parts:

Foot, Flange: Body mounting bolt

Double clevis: Clevis pin, C shape snap ring for axis, body mounting bolt.

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Anti-lateral load type

CQS□S Series

- The permissible load at the piston rod end, in this version, is twice that of the simple CQS series. The wear ring and bumper are standard on this type.

Example:

Compact cylinder Ø 12, Stroke 20 mm, built-in magnet, double-acting, elastic rubber bumper

CDQSB12-20DC

Our highlighted product for you

Compact cylinder

CQ2 Series



- Compact length cylinder
- Bore sizes Ø 12 – 200 mm
- Stroke range 5 – 300 mm
- Can mount small auto switches on 4 surfaces without the need to use auto switch brackets.

Standard cylinder, double-acting single rod, without auto switch

Part number	Bore size [mm]	Stroke [mm]	Port size	Symbol	
CQ2B12-□D ●	12	5, 10, 15, 20, 25, 30	M5		
CQ2B16-□D ●	16				
CQ2B20-□D ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5		
CQ2B25-□D ●	25				
CQ2B32TF-□DZ ●	32				
CQ2B40TF-□DZ ●	40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	M5 ¹⁾ /G 1/8		
CQ2B50TF-□DZ ●	50		G 1/8		
CQ2B63TF-□DZ ●	63		10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100		G 1/4
CQ2B80TF-□DZ ●	80				G 3/8
CQ2B100TF-□DZ ●	100	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300	G 3/8		
CQ2B125TF-□DCZ ●	125				
CQ2B140TF-□DCZ	140		G 3/8		
CQ2B160TF-□DCZ	160		G 1/2		
CQ2B180TF-□DCZ	180				
CQ2B200TF-□DCZ	200				

□: Stroke length

1) With 5 mm stroke

M: Male rod option, add at the end of the reference, e.g.: CQ2B12-5DM
CQ2B32TF-5DMZ


Standard cylinder, double-acting single rod, with auto switch

Part number	Bore size [mm]	Stroke [mm]	Port size	Symbol	
CDQ2B12-□DZ ●	12	5, 10, 15, 20, 25, 30	M5		
CDQ2B16-□DZ ●	16				
CDQ2B20-□DZ ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5		
CDQ2B25-□DZ ●	25				
CDQ2B32TF-□DZ ●	32				
CDQ2B40TF-□DZ ●	40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	G 1/8		
CDQ2B50TF-□DZ ●	50		G 1/8		
CDQ2B63TF-□DZ ●	63		10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100		G 1/4
CDQ2B80TF-□DZ ●	80				G 3/8
CDQ2B100TF-□DZ ●	100	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300	G 3/8		
CDQ2B125TF-□DCZ	125				
CDQ2B140TF-□DCZ	140		G 3/8		
CDQ2B160TF-□DCZ ●	160		G 1/2		
CDQ2B180TF-□DCZ	180				
CDQ2B200TF-□DCZ ●	200				

□: Stroke length

M: Male rod option, add at the end of the reference, e.g.: CDQ2B12-5DMZ

Standard cylinder, double-acting double rod, with auto switch

Part number	Bore size [mm]	Stroke [mm]	Port size	Symbol
CDQ2WB12-□DZ	12	5, 10, 15, 20, 25, 30	M5	
CDQ2WB16-□DZ ●	16			
CDQ2WB20-□DZ ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5	
CDQ2WB25-□DZ ●	25			
CDQ2WB32TF-□DZ ●	32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	G 1/8	
CDQ2WB40TF-□DZ ●	40		G 1/8	
CDQ2WB50TF-□DZ ●	50		G 1/4	
CDQ2WB63TF-□DZ ●	63			
CDQ2WB80TF-□DZ ●	80		G 3/8	
CDQ2WB100TF-□DZ	100			
CDQ2WB125TF-□DCZ	125	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300	G 3/8	
CDQ2WB140TF-□DCZ	140			
CDQ2WB160TF-□DCZ	160		G 1/2	
CDQ2WB180TF-□DCZ	180			
CDQ2WB200TF-□DCZ	200			



□: Stroke length

Longer strokes on request

Type without magnet: without D, e.g.: CQ2WB12-5DZ

M: Male rod option, add at the end of the reference, e.g.: CDQ2WB12-5DMZ

Standard cylinder, single acting, spring return/spring-extend, without auto switch

Part number	Bore size [mm]	Stroke [mm]	Port size	Symbol	
CQ2B12-□■	12	5, 10	M5	 S (spring return)	
CQ2B16-□■	16				
CQ2B20-□■	20	5, 10	M5		
CQ2B25-□■	25				
CQ2B32TF-□■Z ●	32	5, 10	M5 1/2 G 1/8		
CQ2B40TF-□■Z ●	40		G 1/8		
CQ2B50TF-□■Z ●	50	10, 20	G 1/4		 T (spring extended)

□: Stroke length

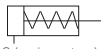

■: Action: S (spring return) or T (spring extended)

1) with 5 mm stroke

M: Male rod option, add at the end of the reference, e.g.: CQ2B12-5SM

CQ2B32TF-5TMZ

Standard cylinder, single acting, spring return/spring-extend, with auto switch

Part number	Bore size [mm]	Stroke [mm]	Port size	Symbol	
CDQ2B12-□■ ●	12	5, 10	M5	 S (spring return)	
CDQ2B16-□■	16				
CDQ2B20-□■ ●	20	5, 10	M5		
CDQ2B25-□■ ●	25				
CDQ2B32TF-□■Z ●	32	5, 10	M5 1/2 G 1/8		
CDQ2B40TF-□■Z	40		G 1/8		
CDQ2B50TF-□■Z	50	10, 20	G 1/4		 T (spring extended)

□: Stroke length

■: Action: S (spring return) or T (spring extended)

1) with 5 mm stroke

M: Male rod option, add at the end of the reference, e.g.: CDQ2B12-5SM

CDQ2B32TF-5TMZ

Non-rotating cylinder, double-acting single rod, with auto switch

Part number	Bore size [mm]	Stroke [mm]	Port size	Symbol
CDQ2KB12-□DCZ ●	12	5, 10, 15, 20, 25, 30	M5	
CDQ2KB16-□DZ ●	16			
CDQ2KB20-□DZ ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5	
CDQ2KB25-□DZ	25			
CDQ2KB32-□DZ ●	32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	G 1/8	
CDQ2KB40-□DZ ●	40			
CDQ2KB50-□DZ ●	50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	G 1/4	
CDQ2KB63-□DZ ●	63			

□: Stroke length

Type without magnet: without D, e.g.: CQ2KB12-5DCZ

M: Male rod option, add at the end of the reference, e.g.: CDQ2KB16-5DMZ

Axial piping (Centralised piping type)
CQP2 Series



Anti-lateral load
CQ2□□S Series



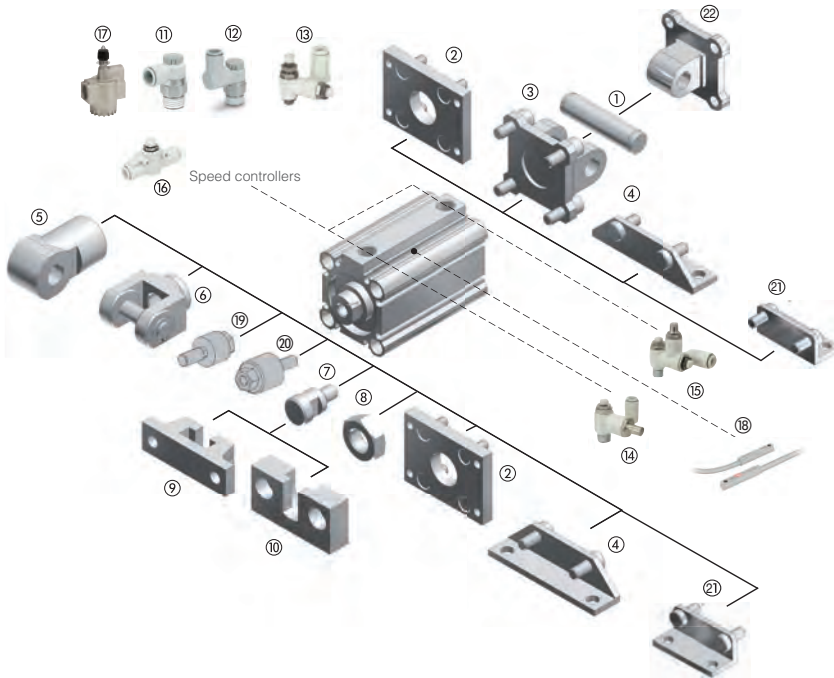
With end lock
CBQ2 Series



Water resistant
CQ2□R/CQ2□V Series



CQ2 - Accessories/Related products



Bore size [mm]		①	②	③	④	⑤	⑥	⑦	⑧				
		Knuckle pin (Retaining rings for axis are included)	Flange (Supplied with body mounting bolts)	Double clevis 3) (Supplied with clevis pin, retaining rings for axis and body mounting bolts)	Foot 1) (Supplied with body mounting bolts)	Compact foot 1) (Supplied with body mounting bolts)	Single knuckle joint (for male thread)	Double Knuckle joint (for male thread) (Knuckle pin and retaining rings are included)	Joint (for female thread)	Rod end nut (for male thread)			
12	Without switch	IY-G012	CQ-F012	CQ-D012	CQ-L012	CQ-LC012	I-G012	Y-G012	—	NTJ-015A			
	With switch				CQ-LZ12	CQ-LCZ12							
16	Without switch	IY-J015	CQ-F016	CQ-D016	CQ-L016	CQ-LC016	I-Z015A	Y-Z015A	—	NT-015A			
	With switch				CQ-LZ16	CQ-LCZ16							
20	Without switch	IY-G02	CQ-F020	CQ-D020	CQ-L020	CQ-LC020	I-G02	Y-G02	—	NT-02			
	With switch				CQ-LZ20	CQ-LCZ20							
25	Without switch	IY-G03	CQ-F025	CQ-D025	CQ-L025	CQ-LC025	I-G03	Y-G03	—	NT-03			
	With switch				CQ-LZ25	CQ-LCZ25							
32 ⁴⁾	IY-G04	CQ-F032	CQ-D032	CQ-L032	CQ-LC032	I-G04	Y-G04	YU-03	NT-04				
40										CQ-F040	CQ-D040	CQ-L040	CQ-LC040
50										CQ-F050	CQ-D050	CQ-L050	CQ-LC050
63 ²⁾										CQ-F063	CQ-D063	CQ-L063	CQ-LC063
80 ²⁾	IY-G08	CQ-F080	CQ-D080	CQ-L080	CQ-LC080	I-G08	Y-G08	YU-08	NT-08				
100 ²⁾	IY-G10	CQ-F100	CQ-D100	CQ-L100	CQ-LC100	I-G10	Y-G10	YU-10	NT-10				

Bore size [mm]	⑨	⑩	⑪	⑫	⑬
	Type A mounting bracket for joint	Type B mounting bracket for joint	Floating joint for male thread	Floating joint for female thread	Double clevis pivot bracket
12	—	—	JA15-5-080	JB12-3-050	CQ-C012
16	—	—	JA15-6-100	JB16-4-070	CQ-C016
20	—	—	JA20-8-125	JB20-5-080	CQ-C020
25	—	—	JA30-10-125	JB25-6-100	CQ-C025
32 ⁴⁾	YA-03	YB-03	JA40-14-150	JB40-8-125	CQ-C032
40					CQ-C040
50	YA-05	YB-05	JA63-18-150	JB63-10-150	CQ-C050
63 ²⁾					CQ-C063
80 ²⁾	YA-08	YB-08	JA80-22-150	JB80-16-200	CQ-C080
100 ²⁾	YA-10	YB-10	JA100-26-150	JB100-20-250	CQ-C100

1) Order two pieces per cylinder except in Ø 12 to Ø 25 of the standard type with switch, that you should order only 1 piece per cylinder because in this case a part number is a set of two foot brackets

2) Not applicable to single acting types

3) Not applicable to double acting, double rod types

4) Not applicable to non-rotating single rod type.

Port size	Bore size [mm]	Ø tube	⑭	⑮
			Air saving valve pressure valve	Air saving valve flow valve
			Part number	Part number
3/8	100, 125, 140, 160	6	ASR530F-03-06S	ASQ530F-03-06S
		8	ASR530F-03-08S	ASQ530F-03-08S
		10	ASR630F-03-10S	ASQ630F-03-10S
		12	ASR630F-03-12S	ASQ630F-03-12S
1/2	180, 200	10	ASR630F-04-10S	ASQ630F-04-10S
		12	ASR630F-04-12S	ASQ630F-04-12S

Port size	Bore size [mm]	⑰
		Speed controller large flow in-line type
3/8	100, 125, 140	AS420-03
3/8	160	—
1/2	180, 200	—

⑱		
Auto Switch, Solid state 2 colour indication		
Part number	Wiring	Cable
D-M9BWL	2 wire	3 m
D-M9PWL	3 wire PNP	3 m
D-M9PWSAPC	M8-3 Pin PNP	0.5 m

Reed type		
Part number	Wiring	Cable
D-A93L	2 wire	3 m
D-A93SAPC	M8-3Pin	0.5 m

Port size	Bore size [mm]	Ø tube	⑪	⑫	⑬	⑭	⑮	⑯
			Speed controller elbow type	Speed controller universal type	Dual speed controller	Air saving valve pressure valve	Air saving valve flow valve	Speed controller in-line type
			Part number	Part number	Part number	Part number	Part number	Part number
M5 x 0.8	12, 16, 20, 25	3.2	AS1201F-M5-23A	AS1301F-M5-23A	—	—	—	AS1002F-23
		4	AS1201F-M5-04A	AS1301F-M5-04A	ASD230F-M5-04	—	—	AS1002F-04
		6	AS1201F-M5-06A	AS1301F-M5-06A	ASD230F-M5-06	—	—	AS1002F-06
1/8	32*, 40	3.2	AS2201F-01-23SA	AS2301F-01-23SA	—	—	—	—
		4	AS2201F-01-04SA	AS2301F-01-04SA	—	—	—	AS2002F-04
		6	AS2201F-01-06SA	AS2301F-01-06SA	ASD330F-01-06S	—	—	AS2002F-06
		8	AS2201F-01-08SA	AS2301F-01-08SA	ASD330F-01-08S	—	—	—
		10	AS2201F-01-10SA	—	—	—	—	—
1/4	50	3.2	AS2201F-02-23SA	—	—	—	—	—
		4	AS2201F-02-04SA	AS2301F-02-04SA	—	—	—	—
		6	AS2201F-02-06SA	AS2301F-02-06SA	ASD530F-02-06S	ASR530F-02-06S	ASQ530F-02-06S	AS2052F-06
		8	AS2201F-02-08SA	AS2301F-02-08SA	ASD530F-02-08S	ASR530F-02-08S	ASQ530F-02-08S	AS2052F-08
		10	AS2201F-02-10SA	AS2301F-02-10SA	ASD530F-02-10S	ASR530F-02-10S	ASQ530F-02-10S	—
1/4	63	12	AS3201F-02-12SA	AS3301F-02-12SA	ASD530F-02-12S	ASR530F-02-12S	ASQ530F-02-12S	—
		6	AS3201F-02-06SA	AS3301F-02-06SA	ASD530F-02-06S	ASR530F-02-06S	ASQ530F-02-06S	—
		8	AS3201F-02-08SA	AS3301F-02-08SA	ASD530F-02-08S	ASR530F-02-08S	ASQ530F-02-08S	—
		10	AS3201F-02-10SA	AS3301F-02-10SA	ASD530F-02-10S	ASR530F-02-10S	ASQ530F-02-10S	—
		12	AS3201F-02-12SA	AS3301F-02-12SA	ASD530F-02-12S	ASR530F-02-12S	ASQ530F-02-12S	—
3/8	80	6	AS3201F-03-06SA	AS3301F-03-06SA	ASD530F-03-06S	ASR530F-03-06S	ASQ530F-03-06S	AS3002F-06
		8	AS3201F-03-08SA	AS3301F-03-08SA	ASD530F-03-08S	ASR530F-03-08S	ASQ530F-03-08S	AS3002F-08
		10	AS3201F-03-10SA	AS3301F-03-10SA	ASD530F-03-10S	ASR630F-03-10S	ASQ630F-03-10S	AS3002F-10
		12	AS3201F-03-12SA	AS3301F-03-12SA	ASD530F-03-12S	ASR630F-03-12S	ASQ630F-03-12S	AS3002F-12

Cylinders with 32 mm bore and 5 mm stroke, without auto switch in standard and non-rotating types have a port size of M5.
Contact SMC for appropriated speed controllers.

Our highlighted product for you

Compact cylinder JCQ Series



- Compact and lightweight
- Strokes up to 50 mm
- Bore sizes Ø: 12-100 mm
- Round type auto switches can be mounted directly
- Auto switches can be mounted on 4 surfaces
- Auto switches do not protrude beyond the body of the cylinder.

Part number	Bore size [mm]	Stroke [mm]	Port size
JC□Q12-■●	Ø 12	5, 10, 15, 20, 25, 30	M3
JC□Q16-■●	Ø 16	5, 10, 15, 20, 25, 30	
JC□Q20-■●	Ø 20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5
JC□Q25-■●	Ø 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	
JC□Q32-■●	Ø 32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	
JC□Q40-■●	Ø 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	
JC□Q50TF-■●	Ø 50	10, 15, 20, 25, 30, 35, 40, 45, 50	G 1/8
JC□Q63TF-■●	Ø 63	10, 15, 20, 25, 30, 35, 40, 45, 50	
JC□Q80TF-■●	Ø 80	10, 15, 20, 25, 30, 35, 40, 45, 50	G 1/4
JC□Q100TF-■●	Ø 100	10, 15, 20, 25, 30, 35, 40, 45, 50	

■: Insert required stroke.
□: Insert "D" if magnetic version is required.

Our highlighted product for you

ISO Standard [ISO 21287], compact cylinder

C55 Series



- Bore sizes: Ø 20 to Ø 100 mm
- It is possible to mount small auto switches on 4 surfaces.

Standard cylinder, double-acting, without auto switch

Part number	Bore size [mm]	Stroke [mm]	Port size	Symbol
C55B20-□	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125, 150	M5	
C55B25-□	25		M5	
C55B32-□	32		G 1/8	
C55B40-□	40		G 1/8	
C55B50-□	50		G 1/8	
C55B63-□	63	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125	G 1/8	
C55B80-□	80		G 1/8	
C55B100-□	100		G 1/8	

□: Male rod option, add at the end of the reference, e.g.: CD55B20-50M

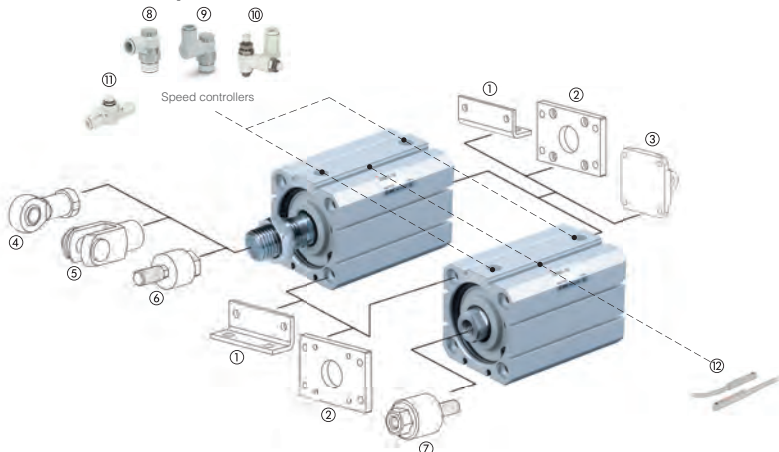
Standard cylinder, double-acting, with auto switch

Part number	Bore size [mm]	Stroke [mm]	Port size	Symbol
CD55B20-□	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125, 150	M5	
CD55B25-□	25		M5	
CD55B32-□	32		G 1/8	
CD55B40-□	40		G 1/8	
CD55B50-□	50		G 1/8	
CD55B63-□	63	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125	G 1/8	
CD55B80-□	80		G 1/8	
CD55B100-□	100		G 1/8	

□: Stroke length

1) Other strokes, please consult SMC.

C55 - Accessories/Related products



Bore size [mm]	①	②	③	④	⑤	⑥	⑦
	Foot (Supplied with 2 pieces and 4 screws)	Flange (Supplied with 4 screws)	Single clevis (Supplied with 4 screws)	Piston rod ball joint (ISO 8139)	Rod clevis (ISO 8140) (Supplied with bolt and safety device)	Floating joint for male thread	Floating joint for female thread
20	C55-L020	C55-F020	C55-C020	KJ8D	GKM8-16	JA20-8-125	JB25-6-100
25	C55-L025	C55-F025	C55-C025	KJ8D	GKM8-16	JA20-8-125	JB25-6-100
32	C55-L032	C55-F032	C55-C032	KJ10D	GKM10-20	JA30-10-125	JB40-8-125
40	C55-L040	C55-F040	C55-C040	KJ10D	GKM10-20	JA30-10-125	JB40-8-125
50	C55-L050	C55-F050	C55-C050	KJ12D	GKM12-24	JA40-12-125	JB63-10-150
63	C55-L063	C55-F063	C55-C063	KJ12D	GKM12-24	JA40-12-125	JB63-10-150
80	C55-L080	C55-F080	C55-C080	KJ16D	GKM16-32	JA50-16-150	—
100	C55-L100	C55-F100	C55-C100	KJ16D	GKM16-32	JA50-16-150	—

Bore size [mm]	⑧		⑨		⑩	
	Speed controller elbow type		Speed controller universal type		Dual speed controller	
	Ø tube	Part number	Ø tube	Part number	Ø tube	Part number
20, 25	3.2	AS1201F-M5-23A	3.2	AS1301F-M5-23A	3.2	—
	4	AS1201F-M5-04A	4	AS1301F-M5-04A	4	ASD230F-M5-04
	6	AS1201F-M5-06A	6	AS1301F-M5-06A	6	ASD230F-M5-06
32, 40	3.2	AS2201F-01-23SA	3.2	AS2301F-01-23SA	3.2	—
	4	AS2201F-01-04SA	4	AS2301F-01-04SA	4	—
	6	AS2201F-01-06SA	6	AS2301F-01-06SA	6	ASD330F-01-06S
	8	AS2201F-01-08SA	8	AS2301F-01-08SA	8	ASD330F-01-08S
	10	AS2201F-01-10SA	10	—	10	—
50, 63, 80, 100	—	—	—	—	—	—

Bore size [mm]	⑪	
	Speed controller in-line type	
	Ø tube	Part number
20	3.2	AS1002F-23
	4	AS2002F-04
	6	AS2052F-06
	8	AS2052F-08
25, 32	4	AS2002F-04
	6	AS2052F-06
	8	AS2052F-08
40, 50	6	AS3002F-06
	8	AS3002F-08
	10	AS3002F-10
	12	AS3002F-12
63	6	AS3002F-06
	8	AS3002F-08
	10	AS4002F-10
	12	AS4002F-12
80, 100	10	AS4002F-10
	12	AS4002F-12

⑫		
Auto switch		
Solid state type - 2 colour indication		
Part number	Wiring	Cable
D-M9BWL	2 wire	3 m
D-M9PWL	3 wire PNP	3 m
D-M9PWSAPC	M8-3 pin PNP	0.5 m

Reed type		
Part number	Wiring	Cable
D-A93L	2 wire	3 m
D-A93SAPC	M8-3 pin	0.5 m

Compact cylinder with air cushion

RQ Series



- Uses a unique air cushion mechanism with no cushion ring
- Noise reduction and improvement in repeatability
- Wide size variations from $\varnothing 20$ to $\varnothing 100$
- Minimal extended dimensions from + 2.5 mm to 13 mm
- Nearly three times the allowable kinetic energy
- Interchangeable mounting for CQ2 and CQS.

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Foot ¹⁾	Flange	Double clevis	Compact foot ¹⁾
RDQB20-□ ●	20	15, 20, 25, 30, 40, 50	M5	CQS-L020	CQS-F020	CQS-D020	CQS-LC020
RDQB25-□ ●	25			CQS-L025	CQS-F025	CQS-D025	CQS-LC025
RDQB32TF-□ ●	32	20, 25, 30, 40, 50, 75, 100	G 1/8	CQ-L032	CQ-F032	CQ-D032	CQS-LC032
RDQB40TF-□ ●	40			CQ-L040	CQ-F040	CQ-D040	CQS-LC040
RDQB50TF-□ ●	50	30, 40, 50, 75, 100	G 1/4	CQ-L050	CQ-F050	CQ-D050	CQS-LC050
RDQB63TF-□ ●	63			CQ-L063	CQ-F063	CQ-D063	CQS-LC063
RDQB80TF-□ ●	80	40, 50, 75, 100	G 3/8	CQ-L080	CQ-F080	CQ-D080	CQS-LC080
RDQB100TF-□	100			CQ-L0100	CQ-F0100	CQ-D100	CQS-LC100

□: Stroke length

1) 2 pcs per cylinder should be ordered when foot and compact foot brackets are required.

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Compact cylinder, guide rod type

CQM Series



- Ø 12, Ø 16, Ø 20, Ø 25, Ø 32, Ø 40, Ø 50, Ø 63, Ø 80, Ø 100 mm
- Lateral Load Resisting 2–4 times (Compared to compact cylinder series CQ)
- Non-rotating accuracy $\pm 0.2^\circ$ or less
- Load can be directly mounted
- Compatible mounting dimensions with the series CQS, CQ2.

Standard cylinder, double-acting, without auto switch

Part number	Bore size [mm]	Stroke length [mm]	Port size	Symbol
CQMB12-□ ●	12	5, 10, 15, 20, 25, 30	M5	
CQMB16-□ ●	16		M5	
CQMB20-□ ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5	
CQMB25-□ ●	25		M5	
CQMB32-□ ●	32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	M5 ¹⁾ ; G 1/8	
CQMB40TF-□	40		G 1/8	
CQMB50TF-□	50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	G 1/4	
CQMB63TF-□	63		G 1/4	
CQMB80TF-□	80		G 3/8	
CQMB100TF-□	100		G 3/8	

1) With 5 mm stroke.

Standard cylinder, double-acting, with auto switch

Part number	Bore size [mm]	Stroke length [mm]	Port size	Symbol
CDQMB12-□ ●	12	5, 10, 15, 20, 25, 30	M5	
CDQMB16-□ ●	16		M5	
CDQMB20-□ ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5	
CDQMB25-□ ●	25		M5	
CDQMB32TF-□ ●	32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	G 1/8	
CDQMB40TF-□ ●	40		G 1/8	
CDQMB50TF-□ ●	50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	G 1/4	
CDQMB63TF-□ ●	63		G 1/4	
CDQMB80TF-□ ●	80		G 3/8	
CDQMB100TF-□	100		G 3/8	

□: Stroke length

1) Others strokes, please consult SMC.

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Compact cylinder, plate type

CQU Series



- Double acting, single rod
- Width: Reduced by up to 40 % (compared with SMC CQ2 Series)
- Total length: Reduced by up to 15 % (compared with SMC MU series with 30 stroke)
- Auto switch can be mounted from 4 directions.

Standard cylinder, double-acting, without auto switch

Part number	Bore size [mm]	Stroke length [mm]
CQUB20-□ ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
CQUB25-□ ●	25	
CQUB32-□ ●	32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
CQUB40-□ ●	40	

□: Stroke length

Standard cylinder, double-acting, without auto switch

Mounting brackets		Ø 20	Ø 25	Ø 32	Ø 40
Vertical foot	Rod end	CQU-LR20	CQU-L25	CQU-L32	CQU-L40
	Head end	CQU-LH20			
Lateral foot	Rod end	CQU-MR20	CQU-M25	CQU-M32	CQU-M40
	Head end	CQU-MH20			
Double clevis		CQU-D20	CQU-D25	CQU-D32	CQU-D40

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Plate cylinder with elliptical piston design

MU Series



- Cylinder with elliptical piston means piston rod cannot rotate and the thickness is reduced
- It is possible to mount small auto switches in 4 directions. No stick-out. Easy mounting
- Piston rod end with either male or female thread.

Standard

Part number	Bore size [mm]	Stroke length [mm]	Port size	Symbol
MDUB25-□DZ ●	25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75 100, 125, 150, 175 200, 250, 300	M5	
MDUB32-□DZ ●	32		R 1/8	
MDUB40-□DZ ●	40		R 1/8	
MDUB50-□DZ ●	50		R 1/4	
MDUB63-□DZ	63		R 1/4	

Double rod style

Part number	Bore size [mm]	Stroke length [mm]	Port size	Symbol
MDUWB25-□DZ	25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75 100, 125, 150, 175 200, 250, 300	M5	
MDUWB32-□DZ	32		R 1/8	
MDUWB40-□DZ	40		R 1/8	
MDUWB50-□DZ	50		R 1/4	
MDUWB63-□DZ	63		R 1/4	

□: Stroke length

With piston rod end male thread: Use "M" e.g.: MDUB25-50DMZ.

Mounting brackets

Diameter	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63
Foot	MU-L02	MU-L03	MU-L04	MU-L05	MU-L06
Flange	MU-F02	MU-F03	MU-F04	MU-F05	MU-F06
Single clevis	MU-C02	MU-C03	MU-C04	MU-C05	MU-C06
Double clevis	MU-D02	MU-D03	MU-D04	MU-D05	MU-D06

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Compact cylinder with solenoid valve



- Ø 32, Ø 40, Ø 50, Ø 63 mm
- Labour saving
- Energy saving, low air consumption
- Space saving
- Selectable piping direction.

CVQ Series



Part number	Bore size [mm]	Strokes [mm]	Port size	Voltage	Circuit symbol
CVQB32-□-5MO ●	32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	M5 x 0.8	24 VDC	
CVQB40-□-5MO ●	40		M5 x 0.8		
CVQB50-□-5MOF	50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	G 1/8		
CVQB63-□-5MOF	63		G 1/8		

□: Stroke length

1) Others strokes, please consult SMC

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Accessories

Bore size [mm]	Foot ¹⁾	Flange	Double clevis
32	CVQ-L032	CVQ-F032	CVQ-D032
40	CVQ-L040	CVQ-F040	CVQ-D040
50	CQ-L050	CQ-F050	CVQ-D050
63	CVQ-L063	CVQ-F063	CVQ-D063

1) Order two foot brackets per cylinder.

Parts belonging to each bracket are as follows.

Foot, flange: Body mounting screws.

Double clevis: Clevis pin, C-type retaining ring for shaft, body mounting screws.

Accessories

Description	Part number	Applicable bore size [mm]
Single knuckle joint	I-G04	32, 40
	I-G05	50, 63
Double knuckle joint ¹⁾	Y-G04	32, 40
	Y-G05	50, 63
Knuckle pin	IY-G04	32, 40
	IY-G05	50, 63
Rod end nut	NT-04	32, 40
	NT-05	50, 63
Joint	YU-03	32, 40
	YU-05	50, 60
A Type mounting bracket	YA-03	32, 40
	YA-05	50, 63
B Type mounting bracket	YB-03	32, 40
	YB-05	50, 63

1) Knuckle pin and retaining ring are included

Compact cylinder with solenoid valve/Guide rod type

CVQM Series



- \varnothing 32, \varnothing 40, \varnothing 50, \varnothing 63 mm
- Labour saving
- Energy saving, low air consumption
- Space saving
- Guide rod configuration with improved lateral load resistance and non-rotating accuracy.

Part number	Bore size [mm]	Strokes [mm]	Port size	Voltage	Circuit symbol
CVQM32-□-5MO ●	32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	M5 x 0.8	24 VDC	
CVQM40-□-5MO ●	40		M5 x 0.8		
CVQM50-□-5MOF ●	50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	G 1/8		
CVQM63-□-5MOF ●	63		G 1/8		

□: Stroke length

1) Others strokes, please consult SMC

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Compact cylinders

Our highlighted product for you

Compact cylinder with linear guide

MXZ Series



- Height: 49.5 mm, width: 30 mm (Ø 20, stroke 10 mm)
- Design and assembly time is reduced due to integration of a linear guide to the cylinder
- Rubber bumper
- Port location selectable
- Direct mounting of auto switches on 3 surfaces (for Ø 20, Ø 25).

Part number	Bore size [mm]	Stroke [mm]	Port size
MXZ12-□	12	5, 10, 15, 20, 25, 30	M3
MXZ16-□	16		
MXZ20-□ ●	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	M5
MXZ25-□ ●	25		

□: Insert required stroke

Possible auto switches

3 wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2 wire solid state/2 colour	D-M9BWL

Compact slide table

MXH Series



- Sizes Ø 6 – 20 mm, strokes up to 60 mm
- Combination of guide unit and actuator
- Improved moment absorption, excellent guide accuracy
- Compact body design
- Universal mounting option as a result of tapped and through holes on the slide and the body
- Auto switch for stroke end detection with LED can be integrated in the body
- Compared to MXU series, allowable moment is approximately 6 times improved.

Part number	Bore size [mm]	Strokes [mm]	Port size	Cylinder speed
MXH6-□Z ●	6	5, 10, 15, 20, 25, 30, 40, 50, 60	M5 x 0.8	50 ~ 500 mm/sec
MXH10-□Z ●	10			
MXH16-□Z ●	16			
MXH20-□Z ●	20			

□: Stroke

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Slide table with precision guide

MXS Series



- Sizes \varnothing 6–25 mm, strokes max. 150 mm
- Combination of guide unit and dual-rod actuator
- Heavy-duty cam follower guide without backlash
- Stroke adjustment possible at both end positions, each 0–5 mm (0-15, 0-25 mm)
- Cushion by rubber bumpers or shock-absorber
- Universal mounting option (tapped and through holes) on the slide and in the body
- Stoppers can be fitted on the right or left side of the body (symmetric type)
- Auto switch for stroke end detection with LED can be integrated in the body.

Standard version is without stroke setting units

Part number	Bore size [mm]	Standard strokes [mm]	Port size	Stroke adjustment range optional
MXS6-□ ●	6	10, 20, 30, 40, 50	M3	0 - 5 mm 0 - 15 mm 0 - 25 mm
MXS8-□ ●	8	10, 20, 30, 40, 50, 75	M5	
MXS12-□ ●	12	10, 20, 30, 40, 50, 75, 100		
MXS16-□ ●	16	10, 20, 30, 40, 50, 75, 100, 125	G 1/8	
MXS20-□ ●	20	10, 20, 30, 40, 50, 75,		
MXS25-□ ●	25	100, 125, 150		

□: Stroke

Stroke adjustment units



①

A	With rubber stopper
B	With shock-absorbers (except \varnothing 6 mm)

②

S	Extension stroke adjustment
T	Retraction stroke adjustment

③ Bore size

6	6 mm
8	8 mm
12	12 mm
16	16 mm
20	20 mm
25	25 mm

A wide variety of options and designs is available.

④

—	Standard MXS
L	Mirror-image MXS

⑤ Setting Range per side for version A

—	0 - 5 mm
X11	0 - 15 mm
X12 1)	0 - 25 mm

1) Not available for \varnothing 6 mm X11 and X12 are not available for shock absorber type.

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Our highlighted product for you

Air slide table MXQ Series



- 1 Guide - 4 bodies
- Combined guide unit and double piston actuator
- Innovative table construction allows compact size with high rigidity
- Various stroke adjusters available: metal stopper with bumper, shock absorber, metal stopper and rubber stopper
- Slide made from hardened stainless steel
- Centre positioning of stroke adjuster
- Integrated linear guide for high load capacity and guide accuracy.

Double ported type

Part number	Bore size [mm]	Double ported type: A	Standard strokes [mm]	Port size
MXQ6A-□Z ●	6		10, 20, 30, 40, 50	M5
MXQ8A-□Z ●	8		10, 20, 30, 40, 50, 75	
MXQ12A-□Z ●	12		10, 20, 30, 40, 50, 75, 100	
MXQ16A-□Z ●	16		10, 20, 30, 40, 50, 75, 100, 125	
MXQ20A-□Z ●	20			
MXQ25A-□Z ●	25			

□: Insert required stroke.

Low thrust with high rigidity type

Part number	Bore size [mm]	Standard type: B	Symmetric type: BL	Standard strokes [mm]	Port size		
MXQ6B-□Z ●	6			10, 20, 30, 40, 50, 75	M5		
MXQ8B-□Z ●	8			10, 20, 30, 40, 50, 75, 100			
MXQ12B-□Z ●	12			10, 20, 30, 40, 50, 75, 100, 125			
MXQ16B-□Z ●	16						10, 20, 30, 40, 50, 75, 100, 125, 150
MXQ20B-□Z ●	20						

□: Insert required stroke.

L: Symetric type available, place "L" after "B" in sizes 6 to 12 if you want to order it.

Single side ported type

Part number	Bore size [mm]	Standard type: C	Symmetric type: CL	Standard strokes [mm]	Port size
MXQ8C-□Z ●	8			10, 20, 30, 40, 50, 75	M5
MXQ12C-□Z ●	12			10, 20, 30, 40, 50, 75, 100	

□: Insert required stroke

L: Symetric type available, place "L" after "C" if you want to order it.

Height interchangeable type

Part number	Bore size [mm]	Standard type: —	Symmetric type: L	Standard strokes [mm]	Port size		
MXQ6-□Z ●	6			10, 20, 30, 40, 50	M5		
MXQ8-□Z ●	8			10, 20, 30, 40, 50, 75			
MXQ12-□Z ●	12			10, 20, 30, 40, 50, 75, 100			
MXQ16-□Z ●	16						10, 20, 30, 40, 50, 75, 100, 125
MXQ20-□Z ●	20						
MXQ25-□Z ●	25						

□: Insert required stroke

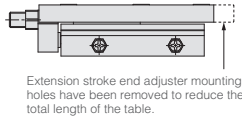
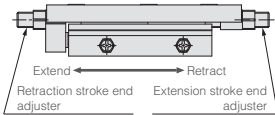
L: Symetric type available, place "L" after the bore size in sizes 6 to 12 if you want to order it.

Possible auto switches

3-wire solid state auto switch/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state auto switch/2 colour	D-M9BWL
3-wire reed auto switch	D-A96
2-wire reed auto switch	D-A93, D-A90

Adjuster mounting position

Shorter total length type



Common adjuster options

Applicable model		Metal stopper with bumper		
		Extension stroke end	Retraction stroke end	Metal stopper with bumper only ¹⁾
MXQ8(A,C)	—	MXQA-CS8	MXQA-CT8	MXQA-A887
MXQ12(A,C)	—	MXQA-CS12	MXQA-CT12	MXQA-A1287
MXQ16(A)	—	MXQA-CS16	MXQA-CT16	MXQA-A1687
MXQ20(A)	—	MXQA-CS20	MXQA-CT20	MXQA-A2087
MXQ25(A)	—	MXQA-CS25	MXQA-CT25	MXQA-A2587
—	MXQ8B	MXQB-CS8	MXQB-CT8	MXQB-A887
—	MXQ12B	MXQB-CS12	MXQB-CT12	MXQB-A1287
—	MXQ16B	MXQB-CS16	MXQB-CT16	MXQB-A1687
—	MXQ20B	MXQB-CS20	MXQB-CT20	MXQB-A2087

1) Metal stopper with bumper only: a single unit stopper without stopper block, adjustment nut and hexagon socket head cap screw.

Applicable model	Rubber Stopper			Shock Absorber (RJ)		
	Extension stroke end	Retraction stroke end	Rubber stopper only	Extension stroke end	Retraction stroke end	Shock absorber only
MXQ6 (A)	MXQA-AS8	MXQA-AT8	MXQA-A827	MXQA-JS8	MXQA-JT8	RJ0603N
MXQ6B						
MXQ8 (A,C)						
MXQ12 (A,C)	MXQA-AS12	MXQA-AT12	MXQA-A1227	MXQA-JS12	MXQA-JT12	RJ0805N
MXQ8B						
MXQ16 (A)						
MXQ12B	MXQA-AS16	MXQA-AT16	MXQA-A1627	MXQA-JS16	MXQA-JT16	RJ1006N
MXQ16 (A)						
MXQ20 (A)						
MXQ16B	MXQA-AS20	MXQA-AT20	MXQA-A2027	MXQA-JS20	MXQA-JT20P ¹⁾	RJ1007HN
MXQ20 (A)						
MXQ25 (A)						
MXQ20B	MXQA-AS25	MXQA-AT25	MXQA-A2527	MXQA-JS25	MXQA-JT25	RJ1410N

1) Since the retraction stroke end shock absorber of the MXQ20(A) and MXQ16B has a different thread size from the thread of the product, use the mounting plate to mount the shock absorber. This makes the part number to be different from other sizes. (The part number has a suffix "P").

Applicable model	Metal stopper		
	Extension stroke end	Retraction stroke end	Metal stopper only ¹⁾
MXQ6 (A)	MXQA-DS8	MXQA-DT8	MXQA-A838
MXQ6B			
MXQ8 (A,C)			
MXQ12 (A,C)	MXQA-DS12	MXQA-DT12	MXQA-A1238
MXQ8B			
MXQ16 (A)			
MXQ12B	MXQA-DS16	MXQA-DT16	MXQA-A1638
MXQ16 (A)			
MXQ20 (A)			
MXQ16B	MXQA-DS20	MXQA-DT20	MXQA-A2038
MXQ20 (A)			
MXQ25 (A)			
MXQ20B	MXQA-DS25	MXQA-DT25	MXQA-A2538

1) Metal stopper only: a single unit of the stopper without stopper block, adjustment nut, or hexagon socket flat countersunk head cap screw.

Slide table reversible type

MXQR Series



- Sizes 6 - 25 mm
- Strokes up to 150 mm
- A wide variety of designs are available as options
- Piping and adjuster positions can be changed on site to suit the installation conditions
- Integration of the guide rail and the table.

Part number	Bore size [mm]	Standard strokes [mm]	Port size	Stroke adjustment range
MXQR6-□	6	10, 20, 30, 40, 50	M5 x 0.8	0 ~ 5 mm 0 ~ 15 mm 0 ~ 25 mm
MXQR8-□	8	10, 20, 30, 40, 50, 75		
MXQR12-□	12	10, 20, 30, 40, 50, 75, 100		
MXQR16-□	16	10, 20, 30, 40, 50, 75, 100, 125		
MXQR20TF-□	20	10, 20, 30, 40, 50, 75, 100, 125, 150	G 1/8	
MXQR25TF-□	25			

□: Stroke

Stroke adjustment units

MXQR- -
 ① ② ③ ④

①

A	With rubber stopper
B	With shock-absorbers (except Ø 6 mm)
C	With metal stopper
J ¹⁾	With shock absorber RJ short stroke type

1) Not available for Ø 6 mm

②

S	Extension stroke adjustment
T	Retraction stroke adjustment

③ **Bore size**

6	6 mm
8	8 mm
12	12 mm
16	16 mm
20	20 mm
25	25 mm

④ **Setting range**

—	0 - 5 mm
X11 ²⁾	0 - 15 mm
X12 ²⁾³⁾	0 - 25 mm

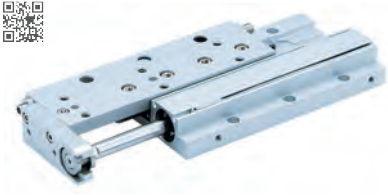
2) Not available for Ø 6 mm
 3) X11 and X12 are not available for shock absorber type.

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Low profile slide table

MXF Series



- Sizes Ø 8 – 20 mm, Strokes up to 100 mm
- Combination of guide unit and actuator (small profile design)
- Cam follower guide without backlash
- Universal mounting option (tapped and through holes) on the slide and in the body
- Stroke adjustment on both sides
- Auto switch with LED and 2-wire design can be integrated in the body.

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Stroke adjustment range
MXF8-□ ●	8	10, 20, 30	M3	0 ~ 5 mm both sides
MXF12-□ ●	12	20, 30, 50	M5	
MXF16-□ ●	16	30, 50, 75		
MXF20-□ ●	20	30, 50, 75, 100		

□: Stroke length

Stroke adjusting units

MXF-A 8 27- X11

①

②

① Applicable cylinder bore size

8	8 mm
12	12 mm
16	16 mm
20	20 mm

② Adjustable range

—	5 mm	Standard
X11 ¹⁾	15 mm	Option
X12 ¹⁾²⁾	25 mm	Option

1) -X11 and -X12 are not available as built-in product.

2) -X12 (Adjustable range 25 mm) is not available for series MXF8/MXF12.

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Slide table with precision guide

MXW Series



- Sizes Ø 8 – 25 mm. Strokes up to 300 mm
- Combination of guide unit and dual-rod actuator
- Recirculating ball bearing guide without backlash
- Stroke adjustment at both end positions each 0 – 5 mm
- Universal mounting option (tapped and through holes) on the slide and body.
- Auto switch with LED and 2 – wire design can be integrated in the body.

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Stroke adjustment range
MXW8-□■●	8	25, 50, 75, 100, 125, 150	M5	5 mm both sides
MXW12-□■●	12	50, 75, 100, 125, 150		
MXW16-□■●	16	75, 100, 125, 150, 175, 200		
MXW20-□■●	20	100, 125, 150, 175, 200, 225, 250	G 1/8	
MXW25-□■●	25	100, 125, 150, 175, 200, 225, 250, 275, 300		

□: Stroke length

■: Stopper: - : Rubber stopper

B : Shock-absorber

Stroke adjusting units

MXW-A 8 12- X11

①

②

① Applicable cylinder bore size

8	8 mm
12	12 mm
16	16 mm
20	20 mm
25	25 mm

② Adjustable range

—	5 mm	Standard
X11 ²⁾	15 mm	Option

1) The above model number is one adjuster bolt assembly only.

2) The air slide table already assembled with -X11 adjuster bolt assembly is not available.

Accessories (Shock absorbers)

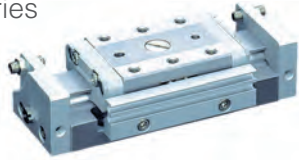
Shock absorber model	RB0805-X552	RB0806-X552	RB1007-X552	RB1412-X552	RB2015-X552
Suitable slide table	MXW8	MXW12	MXW16	MXW20	MXW25

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Precision slide table with linear guide

MXP Series



- Sizes $\varnothing 6 - 16$ mm, strokes 5-30 mm
- Mini compact slide unit with precise ball bearing linear guides
- Cylinder function double-acting
- Stroke adjustment in both end MXP positions (as standard)
- Auto switch for stroke end detection with LED can be integrated into the body (except MXPJ6)
- Shock absorber on both sides available (except MXP6, MXP8).

Miniature slide

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Stroke setting range	Stoppers
MXPJ6-□●	6	5, 10	M3	—	—

□: Stroke length

Standard design

Part number	Bore size [mm]	Standard Stroke [mm]	Port size	Stroke setting range	Stoppers
MXP6-□■●	6	5, 10	M3	One side only	Rubber stopper, shock-absorber (except $\varnothing 6$, $\varnothing 8$) metal stoppers
MXP8-□■●	8	10, 20	M5	Both sides	
MXP10-□■●	10	10, 20			
MXP12-□■●	12	15, 25			
MXP16-□■●	16	20, 30			

□: Stroke length

■: Stoppers: -: Elastic

B: Shock-absorber

C: Metal stoppers

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Accessories/Shock absorber

Shock absorber model	RB0805	RB0806
Applicable slide table	MXP10/12	MXP16

Slide table, long, stroke type

MX Y Series



- Magnetically coupled rodless cylinder with high-precision recirculating ball bearing
- Extremely compact dimensions
- Long stroke up to 400 mm, at $\varnothing 12$ mm possible
- Stroke adjustment and auto switch rail as standard.

Standard design

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Stroke adjustment range
MX Y6-□■●	6	50, 100, 150, 200	Centralised on one side M5	Rubber and metal: 0 - 5 mm Shock-absorber at $\varnothing 12$: 0 - 15 mm
MX Y8-□■●	8	50, 100, 150, 200, 250, 300		
MX Y12-□■●	12	50, 100, 150, 200, 250, 300, 350, 400		

□: Stroke length

■: Stoppers: -: rubber stopper

C: metal stopper

B: Shock-absorber only available for $\varnothing 12$ mm

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Accessories/Shock absorber

Applicable size	Shock absorber model
MX Y12	RB0806

Combination cylinders

Mechanically jointed, rodless cylinder, basic type

MY1B Series



- Sizes Ø 10 – 100 mm, Strokes up to 5000 mm
- Guide slide for vertical loading and longitudinal moments
- Reduced length as compared to piston rod cylinders with the same stroke
- Force-efficient power transmission between piston and slide
- Resin seal belt reduces leakage
- Steel dust seal band with resin cover provides optimum protection of the sealing track
- Stroke adjusting unit combined with shock-absorbers and/or adjusters
- Piping ports either on one side or both sides.

Part number	Bore size [mm]	Standard stroke ¹⁾ [mm]	Port size	Cushion
MY1B10G-□	10	100, 200, 300, 400, 500, 600,	M5	Rubber bumper
MY1B16G-□	16	700, 800, 900, 1000, 1200,		
MY1B20G-□	20	1400, 1600, 1800, 2000		
MY1B25TFG-□Z	25	100, 200, 300, 400, 500, 600,	Front/Slide/Back port: G 1/8, Bottom port: Ø 5	Adjustable air cushion
MY1B32TFG-□Z	32	700, 800, 900, 1000, 1200,	Front/Slide/Back port: G 1/8, Bottom port: Ø 6	
MY1B40TFG-□Z	40	1400, 1600, 1800, 2000	Front/Slide/Back port: G 1/4, Bottom port: Ø 8	
MY1B50G-□	50	100, 200, 300, 400, 500, 600,	G 3/8	
MY1B63G-□	63			
MY1B80G-□	80			
MY1B100G-□	100	1400, 1600, 1800, 2000	G 1/2	

□: Stroke length

1) Suffix -XB11 in part number for strokes > 2000 mm. Maximum stroke is 5000 mm, except in Ø 10 and Ø 16, which is 3000 mm.

Stroke adjustment units

Bore size [mm]		Ø 10	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40
Type	Left	MY-A10A1	MY-A16A1	MY-A20A1	MY-A25A1	MY-A32A1	MY-A40A1
A unit (With adjusting bolt)	Right	MY-A10A2	MY-A16A2	MY-A20A2	MY-A25A2	MY-A32A2	MY-A40A2
L unit (Low load shock absorber + adjusting bolt)	Left	—	—	MY-A20L1	MY-A25L1	MY-A32L1	MY-A40L1
	Right	—	—	MY-A20L2	MY-A25L2	MY-A32L2	MY-A40L2
H unit (High load shock absorber + adjusting bolt)	Left	MY-A10H1	—	MY-A20H1	MY-A25H1	MY-A32H1	MY-A40H1
	Right	MY-A10H2	—	MY-A20H2	MY-A25H2	MY-A32H2	MY-A40H2

Shock-absorbers for L and H units

Ø [mm]	10	20	25	32	40
Type L	—	RB0806	RB1007	RB1412	RB1412
Type H	RB0805	RB1007	RB1412	RB2015	RB2015



Unit A



Unit L



Unit H



Side support mounting



Floating bracket mounting

Accessories

Size [mm]	Side supports type A (Through hole)	Type (Tapped hole)	Mounting with floating bracket
10	MY-S10A	MY-S10B	MY-J10
16	MY-S16A	MY-S16B	MY-J16
20	MY-S20A	MY-S20B	MY-J20
25	MY-S25A	MY-S25B	MY-J25
32	MY-S25A	MY-S25B	MY-J32
40	MY-S32A	MY-S32B	MY-J40
50	MY-S32A	MY-S32B	MY-J50
63	MY-S50A	MY-S50B	MY-J63
80	MY-S63A	MY-S63B	MY-J80
100	MY-S63A	MY-S63B	MY-J100

Possible auto switches

Ø 10 • 16 • 20 • 25 • 32 • 40 • 63 • 80 • 100 mm

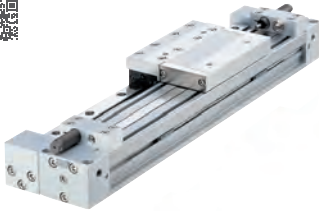
Reed	D-A93L
3-wire, solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Ø 50 mm

Reed	D-Z73L, D-Z80L
3-wire, solid state	NPN: D-Y59AL, PNP: D-Y7PL
2-wire solid state	D-Y59BL

Mechanically jointed, rodless cylinder, linear guide type

MY1H Series



- Sizes: 10 – 40 mm
- Strokes up to 1500 mm
- Slide table design: Recirculating linear guides
- For all loading directions, and for the accommodation of longitudinal and lateral moments
- Reduced length as compared to piston rod cylinders with the same stroke
- Force-efficient power transmission between piston and slide
- Resin seal belt reduces leakage
- Steel dust seal band with resin cover provides optimum protection of the sealing track
- Stroke adjusting unit combined with shock absorbers and adjusting bolts
- Piping port either on one side or both sides
- Auto switch for stroke end detection and intermediate stroke detection can be integrated in the body.

Part number	Bore size [mm]	Standard stroke ¹⁾ [mm]	Port size	Cushion
MY1H10G-□ ●	10	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600 (max.1000 for Ø 16 and Ø 20)	M5	Rubber bumper
MY1H16G-□ ●	16			Adjustable air cushion
MY1H20G-□ ●	20			
MY1H25TFG-□□ ●	25	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600 (max.1500)	Front/Side/Back port: G 1/8 Bottom port: G 1/16	Adjustable air cushion
MY1H32TFG-□□ ●	32			
MY1H40TFG-□□ ●	40		Front/Side/Back port: G 1/4 Bottom port: G 1/8	

□: Stroke length

1) Add “-XB10” to the end of the part number for non-standard strokes from 51 to 599. Also when exceeding 600 mm stroke, specify “-XB11” at the end of the part number (except Ø 10).

Stroke adjustment units

Type		Bore size [mm]	Ø 10	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40
Unit A (With adjusting bolt)	Left		MYH-A10A1	MYH-A16A1	MYH-A20A1	MYH-A25A1	MYH-A32A1	MYH-A40A1
	Right		MYH-A10A2	MYH-A16A2	MYH-A20A2	MYH-A25A2	MYH-A32A2	MYH-A40A2
Unit L (Low load shock absorber + adjusting bolt)	Left		—	—	MYH-A20L1	MYH-A25L1	MYH-A32L1	MYH-A40L1
	Right		—	—	MYH-A20L2	MYH-A25L2	MYH-A32L2	MYH-A40L2
Unit H (High load shock absorber + adjusting bolt)	Left		MYH-A10H1	—	MYH-A20H1	MYH-A25H1	MYH-A32H1	MYH-A40H1
	Right		MYH-A10H2	—	MYH-A20H2	MYH-A25H2	MYH-A32H2	MYH-A40H2

Shock-absorbers for L and H units

Bore size [mm]	Ø 10	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40
L Unit	—	RB0806		RB1007	RB1412	
H Unit	RB0805	—	RB1007	RB1412	RB2015	

1) MY1H16 is not available with H unit.

MY1H10 is not available with A and L units.

Side supports

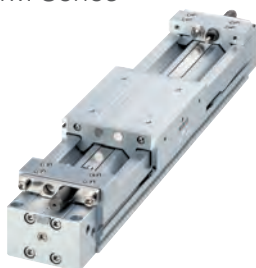
Bore size [mm]	Ø 10	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40
Type A (Through hole)	MY-S10A	MY-S16A	MY-S20A	MY-S25A	MY-S32A	MY-S40A
Type B (Tapped hole)	MY-S10B	MY-S16B	MY-S20B	MY-S25B	MY-S32B	MY-S40B

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	PNP: D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Mechanically jointed, rodless cylinder, slide bearing guide type

MY1M Series



- Sizes Ø 16 – 63 mm, strokes up to 5000 mm
- Slide with four slide bearing rails for all loading directions, in addition to accommodation of longitudinal and lateral moments
- Reduced length as compared to piston rod cylinders with the same stroke
- Force-efficient power transmission between piston and slide
- Resin seal belt reduces leakage
- Steel dust seal band with resin cover provides optimum protection of the sealing track
- Stroke adjustment unit combined with shock-absorbers and/or adjusting bolts
- Piping port either on one side or both sides
- Auto switch for stroke end detection and intermediate stroke detection can be integrated in the body.

Part number	Bore size [mm]	Standard stroke ¹⁾ [mm]	Port size	Cushion
MY1M16G-□ ●	16	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000	M5	Adjustable air cushion
MY1M20G-□ ●	20			
EMY1M25G-□ ●	25	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000	G 1/8	
EMY1M32G-□ ●	32		G 1/4	
EMY1M40G-□ ●	40		G 3/8	
EMY1M50G-□	50	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000	G 3/8	
EMY1M63G-□	63			

□: Stroke length

1) Suffix -XB11 in part number for strokes >2000 mm. Maximum stroke is 5000 mm, except in Ø 16, which is 3000 mm

Stroke adjustment units

Bore size [mm]	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63
Unit A (With adjusting bolt)	MYM-A16A	MYM-A20A	MYM-A25A	MYM-A32A	MYM-A40A	MYM-A50A	MYM-A63A
Unit L (Low load shock absorber + adjusting bolt)	MYM-A16L	MYM-A20L	MYM-A25L	MYM-A32L	MYM-A40L	MYM-A50L	MYM-A63L
Unit H (High load shock absorber + adjusting bolt)	—	MYM-A20H	MYM-A25H	MYM-A32H	MYM-A40H	MYM-A50H	MYM-A63H

Side supports

Size [mm]	Type A (Through hole)	Type B (Tapped hole)
16	MY-S16A	MY-S16B
20	MY-S20A	MY-S20B
25	MY-S25A	MY-S25B
32	MY-S32A	MY-S32B
40, 50	MY-S40A	MY-S40B
63	MY-S63A	MY-S63B

Possible auto switches

Ø 10 • 16 • 20 • 50 • 63 mm

Reed	D-A93L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Ø 25 • 32 • 40 mm

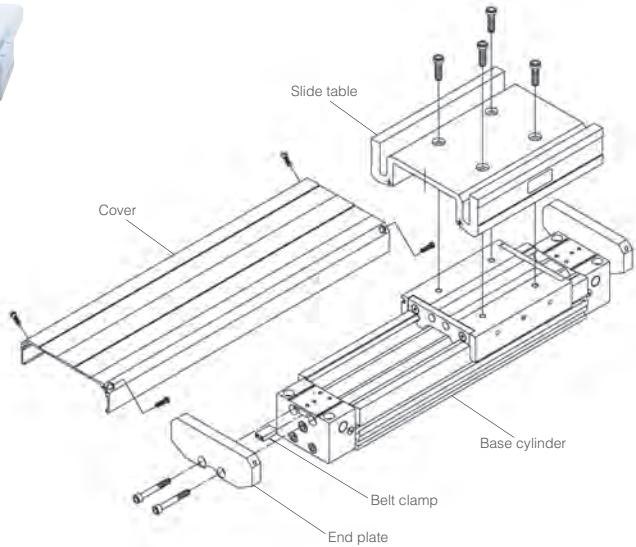
Reed	D-Z73L, D-Z80L
3-wire, solid state	NPN: D-Y59AL, PNP:D-Y7PL
2-wire solid state	D-Y59BL

Mechanically jointed, rodless cylinder with protective covering

MY1□W Series

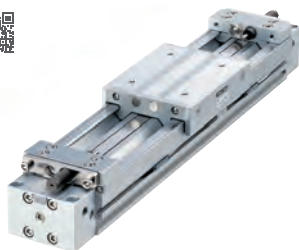


- Can be supplied for cylinder series MY1M and MY1C
- Provides optimum protection against coarse contaminants
- Protective cover can be retro-fitted to standard cylinders
- Can be supplied for \varnothing 16, 20, 25, 32, 40, 50 and 63 mm.



Mechanically jointed, rodless cylinder

MY1C Series



- Sizes: 16 – 63 mm
- Strokes up to 5000 mm
- Slide table design: With cam follower guides
- For all loading directions, and for the accommodation of longitudinal and lateral moments
- Reduced length as compared to piston rod cylinders with the same stroke
- Force-efficient power transmission between piston and slide
- Resin seal belt reduces leakage
- Steel dust seal band with resin cover provides optimum protection of the sealing track
- Stroke adjusting unit combined with shock absorbers and adjusting bolts
- Piping port either on one side or both sides
- Auto switch for stroke end detection and intermediate stroke detection can be integrated in the body.

Part number	Bore size [mm]	Standard stroke ¹⁾ [mm]	Port size	Cushion
MY1C16G-□	16	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000	M5	Adjustable air cushion
MY1C20G-□	20			
MY1C25G-□	25	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000	G 1/8	
MY1C32G-□	32		G 1/4	
MY1C40G-□	40		G 3/8	
MY1C50G-□	50	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000		
MY1C63G-□	63			

□: Stroke length

1) Suffix -XB11 in part number for strokes >2000 mm. Maximum stroke is 5000 mm, except in Ø 16, which is 3000 mm

Stroke adjustment units

Bore size [mm]	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63
Unit A (With adjusting bolt)	MYM-A16A	MYM-A20A	MYM-A25A	MYM-A32A	MYM-A40A	MYM-A50A	MYM-A63A
Unit L (Low load shock absorber + adjusting bolt)	MYM-A16L	MYM-A20L	MYM-A25L	MYM-A32L	MYM-A40L	MYM-A50L	MYM-A63L
Unit H (High load shock absorber + adjusting bolt)	—	MYM-A20H	MYM-A25H	MYM-A32H	MYM-A40H	MYM-A50H	MYM-A63H

Shock-absorbers for L and H units

Bore size [mm]	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63
L Unit	RB0806		RB1007	RB1412		RB2015	
H Unit	—	RB1007	RB1412	RB2015		RB2725	

1) MY1C16 is not available with H unit.

Side supports

Bore size [mm]	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40, Ø 50	Ø 63
Type A (Through hole)	MY-S16A	MY-S20A	MY-S25A	MY-S32A	MY-S40A	MY-S63A
Type B (Tapped hole)	MY-S16B	MY-S20B	MY-S25B	MY-S32B	MY-S40B	MY-S63B

Possible auto switches

Reed	Ø 16 to Ø 32, Ø 50, Ø 63 mm: D-A93L, D-A90L, Ø 40 mm: D-Z73L, D-Z80L
3-wire, solid state	Ø 16 to Ø 32, Ø 50, Ø 63 mm: D-M9PWL, Ø 40 mm: D-Y7PL
2-wire solid state	Ø 16 to Ø 32, Ø 50, Ø 63 mm: D-M9BWL, Ø 40 mm: D-Y59BL

Mechanically jointed, rodless cylinder, low profile design

MY2C/H/HT Series

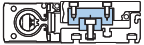


- Compact, extremely flat design
- Height reduction by 30 % compared to MY1
- Bore sizes 16, 25 and 40 mm
- Increased load and moment capacity are possible
- Available either with one (MY2H) or two (MY2HT) linear guides
- Cylinder can be replaced without removing the work piece
- MY2C: Cam follower guides
- MY2H/HT: Linear guides.

MY2C



MY2H



MY2HT



Part number	Bore size [mm]	Standard stroke ¹⁾ [mm]	Number of guides	Moments M1/M2/M3 [N•m]	Port size	Cushion	
MY2C16G-□	16	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000 max. Ø 16: 3000, max. Ø 25/40: 5000	—	5/4/3,5	M5	Adjustable Cushion	
MY2C25TFG-□	25			13/14/10	G 1/8		
MY2C40TFG-□	40			45/33/28	G 1/4		
MY2H16G-□ ●	16	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600 max. Ø 16: 1000, Ø 25/40: 1500 ²⁾	1	7/6/7	M5		
MY2H25TFG-□ ●	25			28/26/26	G 1/8		
MY2H40TFG-□	40			60/50/60	G 1/4		
MY2HT16G-□ ●	16			46/55/46	2	100/120/100	M5
MY2HT25TFG-□ ●	25					200/220/200	G 1/8
MY2HT40TFG-□	40					G 1/4	

□: Stroke length

1) Suffix "-XB11" in part number for strokes > 2000 mm in MY2C and > 600 mm in MY2H and MY2HT.

2) Add "-XB10" to the end of the part number for non-standard strokes from 51 to 599.

Stroke adjusting unit

Bore size [mm]		Ø 16	Ø 25	Ø 40
MY2C	L	MY2H-A16L	MY2H-A25L	MY2C-A40L
	H	—	MY2H-A25H	MY2C-A40H
MY2H	L	MY2H-A16L	MY2H-A25L	MY2H-A40L
	H	MY2H-A16H	MY2H-A25H	MY2H-A40H
MY2HT	L	MY2HT-A16L	MY2HT-A25L	MY2HT-A40L
	H	MY2HT-A16H	MY2HT-A25H	MY2HT-A40H

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
2 wire solid state/2 colour - NPN	D-M9NWL

Mechanically jointed, rodless cylinder, short type

MY3A/3B/3M Series



- Sizes Ø 16, 20, 25, 32, 40, 50, 63 mm, Strokes up to 3000 mm
- High functionality with reduced height and length:
 - Height reduced by 36 % at the maximum
 - Overall length reduced by 140 mm at the maximum
 - Weight reduced by 53 % at the maximum (Comparison with Series MY1B)
- Stroke adjusting unit combined with shock absorbers and adjusting
- Piping ports either on one side or both sides.

Short style cylinder (rubber bumper)

Part number	Bore size [mm]	Standard stroke [mm] ¹⁾	Port size	Cushion
MY3A16-□ ●	16	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000 (max. 3.000)	M5	Rubber bumper
MY3A20TF-□	20		M5	
MY3A25TF-□ ●	25		G 1/8	
MY3A32TF-□	32		G 1/8	
MY3A40TF-□ ●	40		G 1/4	
MY3A50TF-□	50		G 3/8	
MY3A63TF-□	63	G 3/8		

Part number	Bore size [mm]	Standard stroke [mm] ¹⁾	Port size	Cushion
MY3B16-□ ●	16	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000 (max. 3.000)	M5	Adjustable air cushion
MY3B20TF-□	20		M5	
MY3B25TF-□ ●	25		G 1/8	
MY3B32TF-□	32	G 1/8		
MY3B40TF-□ ●	40	G 1/4		
MY3B50TF-□	50	G 3/8		
MY3B63TF-□	63	G 3/8		

Part number	Bore size [mm]	Standard stroke [mm] ¹⁾	Port size	Cushion
MY3M16-□ ●	16	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000 (max. 3.000)	M5	Adjustable air cushion
MY3M25TF-□ ●	25		G 1/8	
MY3M40TF-□ ●	40		G 1/4	
MY3M63TF-□	63		G 3/8	

□: Stroke length

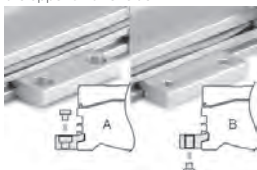
1) Suffix -XB11* in part number for strokes > 2000 mm

Stroke adjustment unit



Side supports

The cylinder tube can be fixed from the upper or lower side.



Floating bracket

Easy connection with external guide. Vertical and lateral mounting is possible.



Stroke adjustment unit for MY3B and MY3M models

Type		Bore size [mm]		Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63
		Left	Right							
L Unit	Left	MY3□-A16L1	MY3B-A20L1	MY3□-A25L1	MY3B-A32L1	MY3□-A40L1	MY3B-A50L1	MY3□-A63L1		
	Right	MY3□-A16L2	MY3B-A20L2	MY3□-A25L2	MY3B-A32L2	MY3□-A40L2	MY3B-A50L2	MY3□-A63L2		
H Unit	Left	MY3□-A16H1	MY3B-A20H1	MY3□-A25H1	MY3B-A32H1	MY3□-A40H1	MY3B-A50H1	MY3□-A63H1		
	Right	MY3□-A16H2	MY3B-A20H2	MY3□-A25H2	MY3B-A32H2	MY3□-A40H2	MY3B-A50H2	MY3□-A63H2		

□ B = MY3B, M = MY3M

Side supports

Ø [mm]	Type A	Type B
16	MY-S16A	MY-S16B
20	MY-S20A	MY-S20B
25	MY-S25A	MY-S25B
32, 40	MY-S32A	MY-S32B
50, 63	MY-S40A	MY-S40B

Mounting with floating bracket (MY3A and MY3B)

Ø [mm]	Part No.
16	MYAJ16
20	MYAJ20
25	MYAJ25
32	MYAJ32
40	MYAJ40
50	MYAJ50
63	MYAJ63

Shock-absorbers for L and H units

Bore size [mm]	16, 20	25, 32	40, 50	63
Type L	RB0806	RB1007	RB1412	RB2015
Type H	RB1007	RB1412	RB2015	RB2725

Unit L: Low load shock-absorber and adjusting bolt

Unit H: High load shock-absorber and adjusting bolt

Possible auto switches, Ø 10 • 16 • 20 mm

Reed	D-A93L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Rodless cylinder, basic and direct mount types

CY3B/CY3R Series



- Sizes Ø 6 – 63 mm, Strokes up to 5000 mm
- Magnetically coupled rodless cylinder field
- Reduced length as compared to piston rod cylinders with the same stroke length
- Reduced radial dimensions
- Tube with square slide.

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Cushion
CY3■6-□●	6	50, 100, 150, 200	M3	Rubber bumper
CY3■10-□●	10	50, 100, 150, 200, 250, 300	M5	
CY3■15-□●	15	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 600		
CY3■20TF-□●	20	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	G 1/8	
CY3■25TF-□●	25			
CY3■32TF-□	32			
CY3■40TF-□●	40	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000	G 1/4	
CY3■50TF-□	50			
CY3■63TF-□	63			

□: Stroke length

■ B: Standard, R: Additional slide guide

Possible auto switches (for CY3R)

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Magnetic rodless cylinder slider type (Slide bearing)

CY1S Series



- Lube retainers are installed on the internal and external surface of the cylinder tube to improve retention of lubrication
- Double-side piping and centralised piping types are available
- 3 adjuster types: bumper bolt, shock absorber and metal adjustment bolt are available
- Auto switch mounting rail fitted as standard.

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Cushion
CY1S6-□Z	6	50, 100, 150, 200	M5	Standard rubber optional: shock absorber
CY1S10-□Z	10	50, 100, 150, 200, 250, 300		
CY1S15-□Z●	15	50, 100, 150, 200, 250, 300, 350, 400, 450, 500		
CY1S20TF-□Z	20	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	G 1/8	
CY1S25TF-□Z	25	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800		
CY1S32TF-□Z	32	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800		
CY1S40TF-□Z	40	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000	G 1/4	

□: Insert required stroke.

Centralised piping type also available, place a "G" after CY1S if you want to order it.

Possible auto switches

Reed	D-A93L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Accessories (Shock absorbers)

Bore size [mm]	Part number
6	RJ0604
10	RJ0806H
15	RJ0806L
20	RJ1007L
25	RJ1412L
32	RJ2015H
40	RJ2015L

Magnetic rodless cylinder linear guide type

CY1H/CY1HT Series



- Sizes Ø 10 – 25 mm, 32 mm with CY1HT, strokes up to 1500 mm
- Enclosed design with one (CY1H) or two (CY1HT) high precision guide
- For increased load absorption at extremely high precision
- Auto switch can be integrated in the body
- Pre-machined mounting holes in the slide.

Part number	Bore size [mm]	Nº of guides	Standard stroke [mm]	Port size	Cushion
CY1H10-□●	10	1	100, 200, 300	M5	Standard: elastic
CY1H15-□●	15	1	100, 200, 300, 400, 500		
CY1H20-□●	20	1	100, 200, 300, 400, 500, 600	Rc 1/8	Optional: shock absorber
CY1H25-□●	25	1	100, 200, 300, 400, 500, 600, 800		
CY1HT25-□●	25	2	100, 200, 300, 400, 500,		
CY1HT32-□●	32	2	600, 800, 1000		

□: Stroke length

Accessories/Shock absorber

Cylinder size	Part number
10	RB0805
15	RB0806
20	RB1006
25	RB1411
32	RB2015

Possible auto switch

Reed	D-Z73L, D-Z80L
3-wire, solid state	PNP-D-Y7PL
2-wire solid state	D-Y59BL

Magnetic rodless cylinder low profile guide type

CY1F Series



- Sizes Ø 10, 15 and 25 mm
- Magnetically coupled rodless cylinder with lateral guide, resulting in extremely low profile
- Drive cylinder can be removed from the slide without the use of tools
- Adjustable stroke ends
- Slide with integrated shock-absorber.

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Cushion
CY1F10R-□●	10	50, 100, 150, 200, 250, 300	Centralized on one side M5	Shock absorber on both sides in the slide
CY1F15R-□●	15	50, 100, 150, 200, 250, 300, 350, 400, 450, 500		
CY1F25FR-□■	25	100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600	G 1/8	

□: Insert required stroke.

■: Stopper: -: Standard 2 mm adjustable
A: Extended 25 mm adjustable

Stroke adjustment bolts

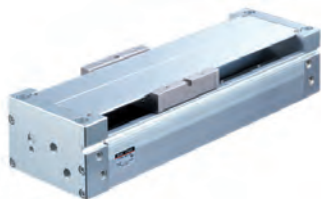
Bore size	Standard	extended 25 mm
10, 15	CYF-S10	CYF-L10
25	CYF-S25	CYF-L25

Possible auto switches

Reed	D-A90L, D-A93L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Rodless cylinder for clean rooms and vacuum chambers

CYP/CYV Series



- Internally-controlled start-up and deceleration behaviour produces a sinusoidal motion, ensuring jolt-free operation
- No particle generation, since slide runs without contact with the cylinder tubing
- CYP: - For Clean Room
 - No suction vacuum necessary
 - 1/20 of the particle generation compared to 12-CY3B-Series
 - Fitted and double-packaged under clean room conditions.
- CYV: - For use in vacuum chambers
 - Particle generation (on average, 0,1 Particles/Cycle)
 - Leakage $1.3 \times 10^{-7} \text{ Pa} \cdot \text{m}^3/\text{s}$
 - Seals separate vacuum and atmosphere
 - Operation conditions: Atmospheres up to $1.3 \times 10^{-4} \text{ Pa}$ (ABS).

Part number	Bore size [mm]	Standard stroke [mm]	Stroke adjustment	Operating pressure [MPa]
CYP□-■	15, 32	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700	On both sides: ± 1 mm	0.05 ~ 0,3
CYV□-■	15, 32		On both sides: -2 ~ 0 mm	

□: Diameter

■: Stroke length

Possible auto switches (for CYP)

Reed	D-Z93L
3 wire solid state/2 colour - PNP	D-Y7PWL
3 wire solid state/2 colour - NPN	D-Y7NWL

Miniature guide rod cylinder

MGJ Series



- Sizes Ø 6, 10 mm, strokes up to 20 mm
- Non-rotating accuracy: $\pm 0.1^\circ$
- Two auto switches can be mounted even for 5 mm strokes
- Integral wiring/piping to one direction

Part number	Bore size [mm]	Standard stroke [mm] ¹⁾	Port size	Cushion
MGJ6-□ ●	6	5, 10, 15	M3	Rubber bumper (at both ends)
MGJ10-□ ●	10	5, 10, 15, 20		

□: Stroke length

1) Intermediate stroke (by the 1 mm stroke) available, consult SMC.

Minimum stroke for auto switch mounting is 4 mm.

Possible auto switch

3-wire solid state	NPN: D-F8NL, PNP:D-F8PL
2-wire solid state	D-F8BL



Our highlighted product for you

Compact guide cylinder, basic type

MGP Series



- 3 types of bearing
- 4 mounting possibilities
- Piping connection possible from 2 sides
- Rubber cushion
- Auto switches can be mounted directly on 2 surfaces
- Weight reduced.

Possible auto switches

Reed	D-A93L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

Standard cylinder with slide bearing

Part number	Bore size [mm]	Standard stroke [mm]	Port size
MGPM12-□Z ●	12	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250	M5
MGPM16-□Z ●	16	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250	
MGPM20TF-□Z ●	20	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	G 1/8
MGPM25TF-□Z ●	25	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	
MGPM32TF-□Z ●	32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	
MGPM40TF-□Z ●	40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	G 1/4
MGPM50TF-□Z ●	50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	
MGPM63TF-□Z ●	63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	G 3/8
MGPM80TF-□Z ●	80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	
MGPM100TF-□Z ●	100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	

□: Insert required stroke

Standard cylinder with ball bushing

Part number	Bore size [mm]	Standard stroke [mm]	Port size
MGPL12-□Z ●	12	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250	M5
MGPL16-□Z ●	16	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250	
MGPL20TF-□Z ●	20	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	G 1/8
MGPL25TF-□Z ●	25	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	
MGPL32TF-□Z ●	32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	
MGPL40TF-□Z ●	40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	G 1/4
MGPL50TF-□Z ●	50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	
MGPL63TF-□Z ●	63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	G 3/8
MGPL80TF-□Z ●	80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	
MGPL100TF-□Z ●	100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	

□: Insert required stroke

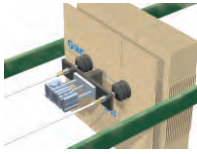
Standard cylinder with high precision ball bushing

Part number	Bore size [mm]	Standard stroke [mm]	Port size
MGPA12-□Z	12	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250	M5
MGPA16-□Z	16		
MGPA20TF-□Z	20	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	G 1/8
MGPA25TF-□Z	25		
MGPA32TF-□Z	32		
MGPA40TF-□Z	40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	G 1/4
MGPA50TF-□Z	50		
MGPA63TF-□Z	63		
MGPA80TF-□Z	80		
MGPA100TF-□Z	100		

□: Insert required stroke

Compact guide cylinder with air cushion

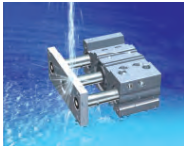
MGP□-□A Series



- The air cushion is standardised
- This compact guide cylinder has an adjustable cushion to reduce noise generation and vibration. This allows more than three times as much kinetic energy to be absorbed as compared with rubber bumper cushion.

Water resistant cylinders

MGPM□^R Series



- Ideal for use in a machine tool environment exposed to coolants. Applicable for use in an environment with water splashing such as food processing and car wash equipment, etc.

Heavy duty guide rod cylinder with improved load resistance

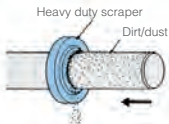
MGPS Series



- Lateral load resistance: 10 % increase
- Eccentric load resistance: 25 % increase
- Impact load resistance: 140 % increase.

Compact guide cylinder with heavy duty scraper

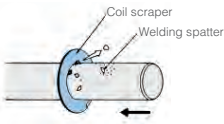
MGP-XC4 Series



- The stiff lip scrapes off dust and dirt which stick to the rod.

Compact guide cylinder with coil scraper

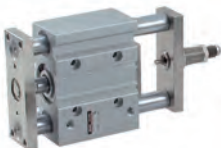
MGP-XC35 Series



- The thin ring shaped phosphor bronze plate scrapes off welding spatter, etc. which sticks to the rod.

Compact guide cylinder with shock absorber

MGP-XC69 Series



- Extended stroke can be adjusted by adjustment screw.
- Extended stroke adjustment:
 - Ø 12 to Ø 25: 15 mm
 - Ø 32 to Ø 63: 25 mm
 - Ø 80, Ø 100: 30 mm

Our highlighted product for you

Compact guide cylinder JMGP Series



- Compact and lightweight
- Piping is possible in 4 directions
- 3 mounting options
- Strokes up to 200 mm
- Bore sizes Ø: 12-100 mm
- Bumper cushion.

Part number	Bore size [mm]	Stroke [mm]	Port size
JMGPM12-□ ●	Ø 12 (Ø 10 x 2)	10, 20, 30, 50, 100	M3
JMGPM16-□ ●	Ø 16 (Ø 12 x 2)		
JMGPM20-□ ●	Ø 20 (Ø 16 x 2)	20, 30, 50, 100, 150	M5
JMGPM25-□ ●	Ø 25 (Ø 20 x 2)		
JMGPM32-□ ●	Ø 32 (Ø 25 x 2)	20, 30, 50, 100, 150	G 1/8
JMGPM40TF-□ ●	Ø 40 (Ø 32 x 2)		
JMGPM50TF-□ ●	Ø 50 (Ø 40 x 2)	25, 50, 100, 150, 200	G 1/4
JMGPM63TF-□ ●	Ø 63 (Ø 45 x 2)		
JMGPM80TF-□ ●	Ø 80 (Ø 56 x 2)	25, 50, 100, 150, 200	G 1/4
JMGPM100TF-□	Ø 100 (Ø 71 x 2)		

□: Stroke, length

Compact guide cylinder, wide type

MGPW Series



- Tripled moment absorption by doubling the guide pitch
- 3 types of bearing
- 3 mounting possibilities
- Option: side ported piping connector
- Rubber cushion
- Auto switches can be mounted directly on 2 surfaces
- Equivalent weight to the basic type.

Slide bearing

Part number	Bore size [mm]	Standard stroke [mm]	Port size
MGPWM20TF-□	20	25, 50, 75, 100, 125, 150, 175, 200	G 1/8
MGPWM25TF-□ ●	25		
MGPWM32TF-□ ●	32		
MGPWM40TF-□ ●	40		
MGPWM50TF-□	50		G 1/4
MGPWM63TF-□	63		

□: Stroke length

Ball bushing

Part number	Bore size [mm]	Standard stroke [mm]	Port size
MGPWL20TF-□	20	25, 50, 75, 100, 125, 150, 175, 200	G 1/8
MGPWL25TF-□	25		
MGPWL32TF-□	32		
MGPWL40TF-□	40		
MGPWL50TF-□	50		G 1/4
MGPWL63TF-□	63		

□: Stroke length

High precision ball bushing

Part number	Bore size [mm]	Standard stroke [mm]	Port size
MGPWA20TF-□	20	25, 50, 75, 100, 125, 150, 175, 200	G 1/8
MGPWA25TF-□	25		
MGPWA32TF-□	32		
MGPWA40TF-□	40		
MGPWA50TF-□	50		G 1/4
MGPWA63TF-□	63		

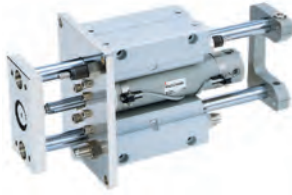
□: Stroke length

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Guide cylinder

MGG Series



- Bore sizes Ø 20 – 100 mm, strokes up to max. 1300 mm
- High quality guide unit with standard round cylinder
- Guide rod bearing with either slide or ball bushing bearing
- Large diameter guide rods with long support bearing for high lateral load resistance and non-rotating precision
- Integrated shock-absorber and adjustment bolts to allow effective cushion of large mass forces
- Body mounting possible on all sides
- Simple stroke adjustment by moving the rear plate
- Integrated grease port as standard.

Part number	Bore size [mm]	Standard stroke [mm] ¹⁾	Port size	Cushion	
				Cylinder	Guide
MGG■B20-□●	20	75, 100, 125, 150, 200	Rc 1/8	Rubber bumper	Shock absorber (2 pcs.)
MGG■B25-□●	25				
MGG■B32-□●	32				
MGG■B40-□●	40		Rc 1/4		
MGG■B50-□●	50				
MGG■B63-□	63				
MGG■B80-□	80	75, 100, 125, 150, 200, 250, 300	Rc 3/8		
MGG■B100-□	100		Rc 1/2		

□: Insert required stroke

■: M: Slide bush guide bearing

L: Ball bush guide bearing

1) Longer strokes available on request

Accessories/Shock absorber

Shock absorber model	Applicable guide cylinder
RB1007	MGG□□20
RB1412	MGG□□25,32
RB2015	MGG□□40, 50,63
RB2725	MGG□□80,100

Possible auto switches

Bore sizes	Ø 20 - Ø 63	Ø 80 - Ø 100
Reed	D-A93L	D-B54L
3 wire solid state/2 colour - PNP	D-M9PWL	D-G5PWL
3 wire solid state/2 colour - NPN	D-M9NWL	D-G59WL

Guide table

MGF Series



- Bore sizes Ø 40, 63 and 100 mm, strokes from 30 – 100 mm
- Compact stroke table to accommodate eccentric loads; with built-in non-rotating mechanism
- Cylinder function double-acting
- Low height with respect to stroke
- Rubber bumper cushion
- Autoswitch for stroke end detection can be integrated into body contour.

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Cushion
MGF40TF-□●	40	30, 50, 75, 100	G 1/8	Rubber bumper
MGF63TF-□●	63		G 1/4	
MGF100TF-□●	100		G 1/4	

□: Stroke length

Possible auto switches

Reed	D-Z73L, D-Z80L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Precision cylinder

MTS Series



- Sizes Ø 8 – 40 mm, Standard strokes up to 200 mm
- Cylinders with high quality recirculating ball bearing on the piston rod for improved repeatability and non-rotating accuracy
- Double-acting cylinder function, with air cushion at both ends
- Mounting possibilities on all four body sides and the front with reduced deflection
- Auto switch for stroke end detection can be integrated in the body profile
- End lock, stroke adjustment units are available as options.

Part number	Bore size [mm]	Standard stroke [mm]	Port size	Cushion
MTS8-□	8	5, 10, 15, 20, 25, 30	M3	Rubber bumper
MTS12-□ (M) ●	12	25, 50, 75, 100	M5	Air Cushion
MTS16-□ (M) ●	16			
MTS20-□ (M) ●	20			
MTS25-□ (M) ●	25			
MTS32TF-□ (M)	32	25, 50, 75, 100, 125, 150, 175, 200	G 1/8	
MTS40TF-□ (M) ●	40			

□: Stroke length

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour	NPN: D-M9NWL, PNP:D-M9PWL
2-wire solid state/2 colour	D-M9BWL

* MTS with end lock and stroke adjustment mechanism on request.

Dual-rod cylinder: compact type

CXSJ Series



- Improved auto switch mounting possible from 4 sides
- Profiles reduced by approx. 30 % and weight reduced by approx. 40 % in comparison with conventional cylinders
- With either slide bearings or ball bushing bearings.

Part number	Bore size [mm]	Standard strokes [mm] adjustable 5 mm	Port size	Guide	Auto switch
CXSJM6-□ ●	6	10, 20, 30, 40, 50	M3	Slide bearing	Reed: D-A93L, D-A90L 2-wire solid state D-M9BL 3 wire PNP solid state D-M9PL
CXSJM10-□ ●	10	10, 20, 30, 40, 50, 75	M5		
CXSJM15-□ ●	15	10, 20, 30, 40, 50, 75, 100	M5		
CXSJM20-□ ●	20	10, 20, 30, 40, 50, 75, 100	M5		
CXSJM25-□	25	10, 20, 30, 40, 50, 75, 100	M5		
CXSJM32-□	32		G 1/8		
CXSJL6-□	6	10, 20, 30, 40, 50	M3	Ball bushing bearing	
CXSJL10-□	10	10, 20, 30, 40, 50, 75	M5		
CXSJL15-□	15	10, 20, 30, 40, 50, 75, 100	M5		
CXSJL20-□	20		M5		
CXSJL25-□	25		M5		
CXSJL32-□	32		G 1/8		

□: Stroke length

Dual-rod cylinder

CXS Series



- Sizes \varnothing 6 – 32 mm
- Guide cylinder with small body profile
- Guide piston rod with slide or ball bushing bearings
- Air connections can be located in two alternative positions
- Auto switch can be integrated into body
- Cushion bolts fitted as standard
- Stroke adjustment in the range of 5 mm with cylinder retracted.

Slide bush guides

Part number	Bore size [mm]	Standard strokes [mm]	Port size	Stroke adjustment range
CXSM6-□ ●	6	10, 20, 30, 40, 50	M5	0 ~ -5 mm
CXSM10-□ ●	10	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 75	M5	
CXSM15-□ ●	15	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 75, 80, 90, 100		
CXSM20-□ ●	20			
CXSM25TF-□ ●	25			
CXSM32TF-□ ●	32			

□: Stroke length

Ball bush guides

Part number	Bore size [mm]	Standard strokes [mm]	Port size	Stroke adjustment range
CXSL6-□ ●	6	10, 20, 30, 40, 50	M5	0 ~ -5 mm
CXSL10-□ ●	10	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 75	M5	
CXSL15-□ ●	15	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 75, 80, 90, 100		
CXSL20-□ ●	20			
CXSL25-□ ●	25			
CXSL32-□ ●	32			

□: Stroke length

Possible auto switch

Reed	D-Z73L, D-Z80L
3-wire, solid state	NPN: D-Y59AL, PNP: D-Y7PL
2-wire solid state	D-Y59BL

Dual-rod cylinder with air cushion

CXS□□A Series



* Piston- \varnothing 20, 25, and 32 mm can be supplied with adjustable endpoint damping.

Dual-rod cylinder with end lock

CXS□□R Series



* Piston- \varnothing 6, 10, 15, 20, 25, and 32 mm can be supplied with end lock.

Dual-rod cylinder with double rod

CXSW Series



* Piston- \varnothing 6, 10, 15, 20, 25, and 32 mm can be supplied with double rod.

Specialty cylinders

Double power cylinder MGZ/MGZR Series



- Double-acting double power cylinder
- Highly loadable as a result of integrated slide bearing
- Non-rotating rod (MGZ) - by slide bearing with built-in non-rotating mechanism
- Double extension output power by "piston in piston construction"
- Approx. 30 % reduced overall length compared with standard cylinders in tandem arrangement
- Moment absorption is the same as guide cylinders (e.g. MGP), but with a 40 % reduced overall width
- Improved non-rotating accuracy: $\pm 0,3^\circ$
- Optimum design by the use of profile tube, auto switch can be integrated in grooves
- Simple piping connection via 2 ports, resulting from internal air channels
- Pre-cut mounting threads in cylinder covers and piston rod
- Series MGZ with end lock available.

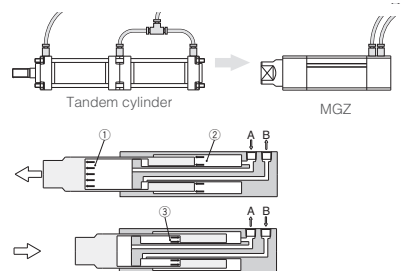
Part number	Bore size [mm]	Standard stroke [mm]	Theoretical output, extension stroke [N] at 0,6 MPa	Cushion	Type	Port size	
MGZ20-□ ●	20	75, 100, 125, 150, 175, 200, 250, 300	436	Rubber bumper	With non-rotating mechanism	M5	
MGZ25TF-□	25		651			G 1/8	
MGZ32TF-□ ●	32		973			G 1/8	
MGZ40TF-□ ●	40		1520			G 1/4	
MGZ50TF-□	50		2309			G 3/8	
MGZ63TF-□ ●	63		3567		Without non-rotating mechanism	M5	
MGZ80TF-□	80		5829			G 1/8	
MGZR20-□	20		Long stroke version up to 1000 mm available (800 mm for Ø 20, Ø 25)			436	G 1/8
MGZR25TF-□	25					651	G 1/8
MGZR32TF-□	32					973	G 1/4
MGZR40TF-□	40	1520		G 3/8			
MGZR50TF-□	50	2309					
MGZR63TF-□	63	3567					
MGZR80TF-□	80	5829					

□: Stroke length

Mounting elements such as foot brackets, flanges on request

Possible auto switches

Reed	D-A93L, D-A90L
3-wire solid state/2 colour - PNP	D-M9PWL
2-wire solid state/2 colour	D-M9BWL



Accessories

Bore size [mm]	20	25	32	40	50	63	80
Foot	MGZ-L02	MGZ-L25	MGZ-L03	MGZ-L04	MGZ-L05	MGZ-L06	MGZ-L08
Flange	MGZ-F02	MGZ-F25	MGZ-F03	MGZ-F04	MGZ-F05	MGZ-F06	MGZ-F08
Double clevis ^{1) 2)}	MGZ-D02	MGZ-D25	MGZ-D03	MGZ-D04	MGZ-D05	MGZ-D06	MGZ-D08
Double clevis bracket	MB-B03	MB-B03	MB-B05	MB-B05	MB-B08	MB-B08	MB-B12
Floating joint	JB40-8-125		JB63-10-150	JB80-16-200	JB100-20-250		JB140-22-250

1) Only for MGZR

2) Double clevis bracket is provided with clevis pins and cotter pins.

3 position cylinder

RZQ Series



- First-stage stroke can be specified without changing the overall length
- ± 0.02 or less repeatability in intermediate stop positioning
- First-stage stroke can be freely specified
- Wide variations in mounting.

Part number	Bore size [mm]	Standard stroke [mm]	Port size
RZQA32TF-□-■	32	Full stroke: 25, 50, 75, 100, 125, 150, 175, 200, 250, 300 First-stage stroke: 5 mm to "full stroke" -1 mm	G 1/8
RZQA40TF-□-■	40		
RZQA50TF-□-■	50		G 1/4
RZQA63TF-□-■	63		

□: Full stroke

■: First-stage stroke

Accessories

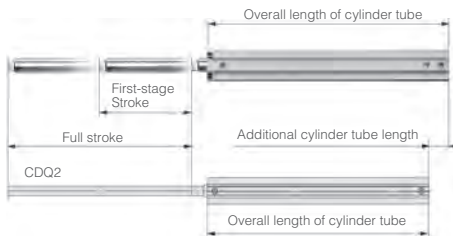
Bore size [mm]	32	40	50	63
Foot 1)	RZQ-L032	RZQ-L040	RZQ-L050	RZQ-L063
Flange	RZQ-F032	RZQ-F040	RZQ-F050	RZQ-F063
Double clevis	RZQ-D032	RZQ-D040	RZQ-D050	RZQ-D063
Floating joint	JB40-8-125	JB63-10-150		JB80-16-200

1) When ordering foot brackets, order two pieces per cylinder.

Possible auto switch

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

- 2-stage stroke enabled with a small increase in length



Sine rodless cylinder

REA Series



- 6 design variants:
 REA: Basic type
 REAR: Basic type with auto switch
 REAS/REAL: Slider type with 2 slide or ball bushing bearing rod guides
 REAH: With a high precision guide rail
 REAHT: With 2 high precision guide rails
- Internally-controlled start-up and deceleration behaviour to achieve a sinusoidal movement, there by ensuring jolt-free operation.

Part number	Bore size [mm]	Standard stroke ¹⁾ [mm]	N° of guides
REA□-■	25, 32	200, 250, 300, 350, 400, 450, 500, 600, 700, 800	—
	40, 50, 63	200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000	—
REAR□-■R	10	150, 200, 250, 300	—
	15	150, 200, 250, 300, 350, 400, 450, 500	2
EAS□-■	20, 25, 32	200, 250, 300, 350, 400, 450, 500, 600, 700, 800	2
REAL□-■	40	200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000	2
REAH□-■	10	150, 200, 300	1
	15	150, 200, 300, 400, 500	
	20	200, 300, 400, 500, 600	
	25	200, 300, 400, 500, 600, 800	
REAHT□-■	25, 32	200, 300, 400, 500, 600, 800, 1000	2

□: Diameter.

■: Stroke length

1) Diameter-specific stroke limitations possible

Possible auto switches (for REAR)

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Possible auto switches (for REAL and REAS)

Reed	D-A73HL
3 wire solid state/2 colour - PNP	D-F7PWL
3 wire solid state/2 colour - NPN	D-F79WL

Possible auto switches (for REAH and REAHT)

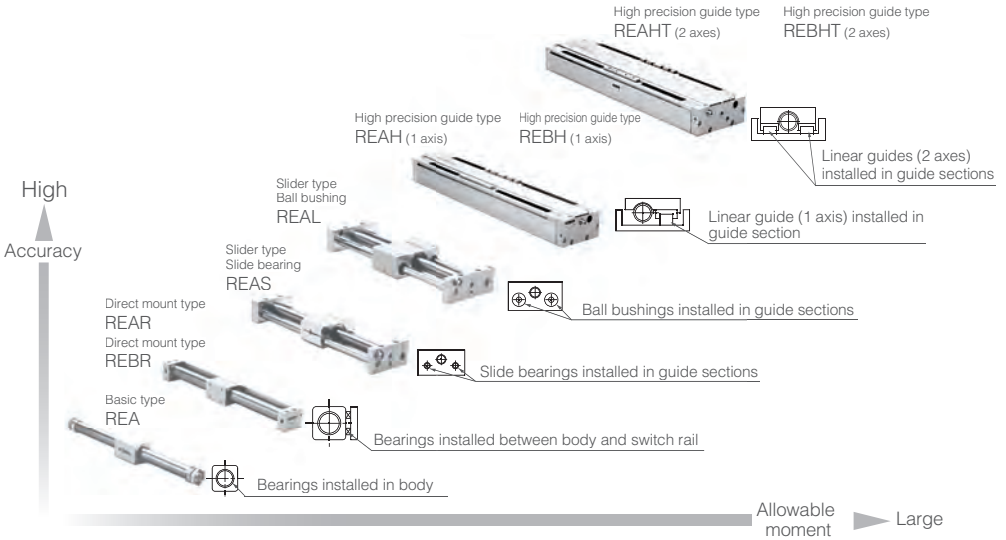
Reed	D-Z73L
3 wire solid state/2 colour - PNP	D-Y7PWL
3 wire solid state/2 colour - NPN	D-Y7NWL

Sine rodless high speed cylinder

REB Series



- Expansion of the sine-cylinder series
- Max. speed 600 mm/sec
- REBR: With \varnothing 15, 25, 32 mm
- REBH: With \varnothing 15, 25 mm
- REBHT: With \varnothing 25, 32 mm
- Max. strokes: \varnothing 15: 750 mm
 \varnothing 25, 32: 1500 mm



Low speed cylinder

C□X Series



- Improved low friction characteristics
- Uniform piston operation from 0,5 mm/s, no stick and slip effect
- No lurching guaranteed, even after long standstill times.

Part number	Bore size [mm]	Standard strokes [mm]	Operating pressure [MPa]	Piston speed [mm/s]
CDJ2XB□-■Z	10	15, 30, 45, 60, 75, 100, 125, 150	0.06 ~ 0.7	1 ~ 300
	16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200		
CDUX□-■D	10, 16	5, 10, 15, 20, 25, 30	0.06 ~ 0.7	1 ~ 300
	20, 25, 32	5, 10, 15, 20, 25, 30, 40, 50	0.05 ~ 0.7	0.5 ~ 300
CDQSXB□-■D	12, 16	5, 10, 15, 20, 25, 30	0.03 ~ 1.0	1 ~ 300
	20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50		
CDQ2XB□TF-■D	32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	0.025 ~ 1.0	0.5 ~ 300
	50, 63, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	0.01 ~ 1.0	
CDM2XB□TF-■Z	20, 25, 32, 40	25, 50, 75, 100, 125, 150, 200, 250, 300	0.025 ~ 1.0	0.5 ~ 300

□: Bore size

■: Stroke Length

Version without magnet, with rubber dumper, mounting brackets auto switch on request.

CM2X accessories

Bore size [mm]	20	25	32	40
Axial foot ¹⁾	CM-L020B	CM-L032B		CM-L040B
Flange type	CM-F020B	CM-F032B		CM-F040B
Single clevis	CM-C020B	CM-C032B		CM-C040B
Double clevis with pins ²⁾	CM-D020B	CM-D032B		CM-D040B
Trunnion (with nuts)	CM-T020B	CM-T032B		CM-T040B
Single knuckle joint	I-020B	I-032B		I-040B
Double knuckle joint ²⁾	Y-020B	Y-032B		Y-040B
Clevis pivot bracket (For CM2XE) 2) 3)	CM-E020B			CM-E032B

1) When ordering foot brackets, order two pieces per cylinder.

2) Clevis pin and retaining ring (cotter pin for Ø 40) are attached.

3) It cannot be used for single clevis style (CM2C) and double clevis style (CM2D).

4) Clevis bracket pins and retaining rings are included.

Possible auto switches

(for CJ2X, CUX, CQSX, CQ2X and CM2X)

Reed	D-A93L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

CQ2X accessories

Bore size [mm]	32	40	50	63	80	100
Foot type ¹⁾	CQ-L032	CQ-L040	CQ-L050	CQ-L063	CQ-L080	CQ-L100
Flange type	CQ-F032	CQ-F040	CQ-F050	CQ-F063	CQ-F080	CQ-F100
Double clevis type ²⁾	CQ-D032	CQ-D040	CQ-D050	CQ-D063	CQ-D080	CQ-D100
Single knuckle joint	I-G04	I-G04	I-G05	I-G05	I-G08	I-G10
Double knuckle joint ³⁾	Y-G04	Y-G04	Y-G05	Y-G05	Y-G08	Y-G10
Knuckle pin ⁴⁾	IY-G04	IY-G04	IY-G05	IY-G05	IY-G08	IY-G10
Joint part number	YU-03	YU-03	YU-05	YU-05	YU-08	YU-10
Type A mounting bracket for joint	YA-03	YA-03	YA-05	YA-05	YA-08	YA-10
Type B mounting bracket for joint	YB-03	YB-03	YB-05	YB-05	YB-08	YB-10

- 1) When ordering foot brackets, order two pieces per cylinder.
 2) For the double clevis type, clevis pins and snap ring are packaged together.
 3) Knuckle pin and retaining ring are attached.
 4) Type C retaining rings for axis are included.

CJ2X accessories

Bore size [mm]	10	16
Foot bracket	CJ-L010C	CJ-L016C
Flange bracket	CJ-F010C	CJ-F016C
T-bracket ¹⁾	CJ-T010C	CJ-T016C
Single knuckle joint	I-J010C	I-J016C
Double knuckle joint ²⁾	Y-J010C	Y-J016C
Knuckle pin	CD-J010	IY-J015
Rod end cap flat type	CJ-CF010	CJ-CF016
Rod end cap round type	CJ-CR010	CJ-CR016

- 1) T-bracket is applicable to double clevis type (D).
 2) Knuckle pin and retaining ring are shipped together.

CQSX accessories

Bore size [mm]	12	16	20	25
Foot type ¹⁾	CQS-L012	CQS-L016	CQS-L020	CQS-L025
Flange type	CQS-F012	CQS-F016	CQS-F020	CQS-F025
Double clevis type	CQS-D012	CQS-D016	CQS-D020	CQS-D 025
Single knuckle joint	I-G012	I-Z015A	I-G02	I-G03
Double knuckle joint ²⁾	Y-G012	Y-Z015A	Y-G02	Y-G03

- 1) When ordering foot brackets, order two pieces per cylinder.
 2) Knuckle joint and retaining ring are included

Smooth cylinder

C□Y Series



- 0.03 MPa minimum operating pressure 0.01 to 0.03 MPa precision regulator (e.g. Series IR).
- Smooth operation with less sticking and slipping. Stable operation possible even at a low speed of 5 mm/s (measurement based on JIS B8377)
- Sliding resistance: Bi-directional low friction operation possible. Pressing force can be controlled regardless of its direction.

Part number	Bore size [mm]	Standard strokes [mm]	Operating pressure [MPa]	Piston speed [mm/s]
CDQSYB-□-■DC	12, 16,	5, 10, 15, 20, 25, 30	0.03 ~ 0.7	5 ~ 500
	20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	0.02 ~ 0.7	
CDQ2YB-□TF-■DCZ	32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	0.02 ~ 0.7	
	50, 63, 80, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	0.01 ~ 0.7	
CDA2YB-□TF-■Z	40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	0.01 ~ 0.7	
	50, 63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600		
	80, 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700		
CDM2YB-□TF-■Z	20, 25, 32, 40	25, 50, 75, 100, 125, 150, 200, 250, 300	0.02 ~ 0.7	
CDG1YB-□TF-■Z	20	25, 50, 75, 100, 125, 150, 200	0.02 ~ 0.7	
	25, 32, 40	25, 50, 75, 100, 125, 150, 200, 250, 300	0.01 ~ 0.7	
	50, 63, 80, 100			

□: Bore size

■: Stroke length

Version without magnet, with rubber dumper, mounting brackets autoswitch on request.

Possible auto switches

(For CQSY, CQ2Y, CA2Y, CM2Y and CG1Y Ø 20 to Ø 63)

Reed	D-A93L ¹⁾
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

1) Not available in CA2Y Ø 50, use D-A54L instead.

Possible auto switches

(For CG1Y Ø 80 and Ø 100)

Reed	D-B54L
3 wire solid state/2 colour - PNP	D-G5PWL
3 wire solid state/2 colour - NPN	D-G59WL

CQSY accessories

Bore size [mm]	12	16	20	25
Foot type ¹⁾	CQS-L012	CQS-L016	CQS-L020	CQS-L025
Flange type	CQ-F012	CQ-F016	CQ-F020	CQ-F025
Double clevis	CQS-D012	CQS-D016	CQS-D020	CQS-D025
Single knuckle joint	I-G012	I-Z015A	I-G02	I-G03
Double knuckle joint ²⁾	Y-G012	Y-Z015A	Y-G02	Y-G03

1) When ordering foot brackets, order two pieces per cylinder.

2) Knuckle pin and retaining ring are included.

CQZY accessories

Bore size [mm]	32	40	50	63	80	100
Foot type ¹⁾	CQ-L032	CQ-L040	CQ-L050	CQ-L063	CQ-L080	CQ-L100
Flange type	CQ-F032	CQ-F040	CQ-F050	CQ-F063	CQ-F080	CQ-F100
Double clevis	CQ-D032	CQ-D040	CQ-D050	CQ-D063	CQ-D080	CQ-D100
Single knuckle joint	I-G04	I-G04	I-G05	I-G05	I-G08	I-G10
Double knuckle joint ²⁾	Y-G04	Y-G04	Y-G05	Y-G05	Y-G08	Y-G10
Joint part no.	YU-03	YU-03	YU-05	YU-05	YU-08	YU-10
Type A mounting bracket for joint	YA-03	YA-03	YA-05	YA-05	YA-08	YA-10
Type B mounting bracket for joint	YB-03	YB-03	YB-05	YB-05	YB-08	YB-10

1) When ordering foot brackets, order two pieces per cylinder.

2) Knuckle pin and retaining ring are included

CA2Y accessories

Bore size [mm]	40	50	63	80	100
Axial foot ¹⁾	CA2-L04	CA2-L05	CA2-L06	CA2-L08	CA2-L10
Flange type	CA2-F04	CA2-F05	CA2-F06	CA2-F08	CA2-F10
Single clevis	CA2-C04	CA2-C05	CA2-C06	CA2-C08	CA2-C10
Double clevis ²⁾	CA2-D04	CA2-D05	CA2-D06	CA2-D08	CA2-D10
Trunnion mounting bracket ³⁾	CA2-S04	CA2-S04	CA2-S06	MB-S10	MB-S10
Double clevis bracket	CA2-B04	CA2-B05	CA2-B06	CA2-B08	CA2-B10
Knuckle pin ⁴⁾	CDP-3A	CDP-3A	CDP-3A	CDP-5A	CDP-6A
Y Type double knuckle joint ⁵⁾	Y-04D	Y-05D	Y-05D	Y-08D	Y-10D
Single knuckle joint	I-04A	I-05A	I-05A	I-08A	I-10A

- 1) When axial foot bracket are used, two pieces should be ordered for each cylinder.
- 2) Double clevis type is packed with clevis pin, flat washer and cotter pin.
- 3) When the trunnion brackets are specified, two pieces should be ordered for each cylinder.
- 4) Cotter pins and flat washerers are shipped with the product.
- 5) Knuckle pins, cotter pins and flat washerers are shipped with the product.

CM2Y accessories

Mounting bracket	Minimum order	Bore size [mm]			Description (when ordering a minimum number)
		20	25, 32	40	
Axial foot ¹⁾	2	CM-L020B	CM-L032B	CM-L040B	Foot 2 pcs. Mounting nut 1 pc.
Flange type	1	CM-F020B	CM-F032B	CM-F040B	Flange 1 pc. Mounting nut 1 pc.
Single clevis ²⁾	1	CM-C020B	CM-C032B	CM-C040B	Single clevis 1pc. Liner 3 pcs.
Double clevis (with pin) ²⁾³⁾	1	CM-D020B	CM-D032B	CM-D040B	Double clevis 1 pc. Liner 3 pcs. Clevis pin 1pc., Retaining ring 2 pcs.
Trunnion (with nut)	1	CM-T020B	CM-T032B	CM-T040B	Trunnion 1 pc., Trunnion nut 1 pc.
Single knuckle joint	1	I-020B	I-032B	I-032B	—
Double knuckle joint ³⁾	1	Y-020B	Y-032B	Y-040B	—

- 1) When ordering foot brackets, order two pieces per cylinder.
- 2) Three liners are included in the clevis bracket for adjusting an angle when mounting it.
- 3) Clevis pins and retaining rings (cotter pins for Ø 40) are included.

CG1Y accessories

Mounting bracket	Minimum order	Bore size [mm]								Description
		20	25	32	40	50	63	80	100	
Foot type	2 ¹⁾	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063	CG-L080	CG-L100	Foot 2 pcs., Bracket mounting bolt 8 pcs.
Flange type	1	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063	CG-F080	CG-F100	Flange 1 pc. Bracket mounting bolt 4 pcs.
Trunnion pin	1	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063	—	—	Trunnion pin 2 pcs. Trunnion pivot bracket 2 pcs, Flat washer 2 pcs
Clevis	1	CG-D020	CG-D025	CG-D032	CG-D040	CG-D050	CG-D063	CG-D080	CG-D100	Clevis 1 pc. Bracket mounting bolt 4 pcs. Clevis pin 1pc., Retaining ring 2 pcs.
Pivot bracket	1	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A	CG-050-24A	CG-063-24A	CG-080-24A	CG-100-24A	Pivot bracket x1
Single knuckle joint	1	I-G02	I-G03	I-G03	I-G04	I-G05	I-G05	I-G08	I-G10	—
Double knuckle joint ²⁾	1	Y-G02	Y-G03	Y-G03	Y-G04	Y-G05	Y-G05	Y-G08	Y-G10	—
Knuckle pin ²⁾	1	IY-G02	IY-G03	IY-G03	IY-G04	IY-G05	IY-G05	IY-G08	IY-G10	—

- 1) Order two foot brackets per cylinder.
- 2) Knuckle pin and retaining ring are shipped together.

Compact metal-seal, low friction cylinder

MQQ/MQM Series



- Minimal friction as a result of metal seals and floating bearing of the mechanism
- Low breakaway pressure of 0.005 MPa
- Uniform, smooth operation, even at 0.3 mm/s
- Extended service life, 100 million cycles or 10.000 km
- High speed version up to 3 m/s
- Increased lateral load resistance as a result of integrated ball guides (in the version L).

Part number	Bore size [mm]	Standard strokes [mm]	Operating pressure [MPa]	Speed [mm/s]
MQQT□-■D ●	10	10, 20, 30, 40	0.005 ~ 0.5	0.3 ~ 300
	16, 20	10, 20, 30, 40, 50, 60		
	25, 30, 40	10, 20, 30, 40, 50, 75, 100		
MQQLB□-■D ●	10	10, 20, 30, 40	0.005 ~ 0.7	0.5 ~ 500
	16, 20	10, 20, 30, 40, 50, 60		
	25, 30, 40	10, 20, 30, 40, 50, 75, 100		
MQMLB□-■D ●	6	15, 30, 45, 60	0.02 ~ 0.7	0.5 ~ 1000
	10, 16, 20, 25	15, 30, 45, 60, 75, 100	0.005 ~ 0.7	
MQMLB□-H-■D ●	10, 16, 20, 25	15, 30, 45, 60, 75, 100	0.01 ~ 0.7	5 ~ 3000

□: Bore size

■: Stroke length

MQQ accessories

Mounting brackets

Bore size [mm]	10	16	20	25	30	40
Foot ¹⁾	CQS-L016	CQS-L020	CQS-L025	MQ-L032	MQ-L040	CQ-L050
Flange	CQS-F016	CQS-F020	CQS-F025	MQ-F032	MQ-F040	CQ-F050
Double clevis	CQS-D016	CQS-D020	CQS-D025	MQ-D032	MQ-D040	MQ-D050
Rod end thread adapter (with nut)	MQ10-M	MQ16-M	MQ20-M	MQ25-M	MQ28-M	MQ28-M

1) When ordering foot brackets, order two pieces per cylinder.

MQM accessories

Mounting brackets

Bore size [mm]	6	10	16	20	25
Foot ¹⁾	CJK-L016B	MQM-L010	MQM-L016	CM-L020B	CM-L032B
Flange	CJK-F016B		CLJ-F016B	CM-F020B	CM-F032B
Single clevis	—	—	—	CM-C020B	CM-C032B
Double clevis (with pin) ²⁾	—	—	—	CM-D020B	CM-D032B
T-bracket ³⁾	CJ-T010B		CJ-T016B	—	—

1) Two foot brackets and one mounting nut are included.

2) Clevis pin and snap ring are included in package.

3) T-bracket is applicable to the double clevis type (D).

High-power cylinder

RHC Series



- High-speed special cylinder up to 3000 mm/s
- 8 Sizes, Ø 20 to Ø 100 mm
- Maximum stroke 1500 mm
- Integrated cushion adjustment and long cushion strokes ensure smooth operation and absorbing capacity a high kinetic energy.

Part number	Bore size [mm]	Standard strokes [mm]	Max. stroke [mm]	Max. energy absorption [J]	Effective cushion stroke [mm]
RHCB20-□ ●	20	250 - 700	1500	7	Both sides 80
RHCB25-□ ●	25			12	
RHCB32-□ ●	32			21	
RHCB40-□ ●	40	250 - 1000		33	
RHCB50-□ ●	50			47	
RHCB63-□ ●	63			84	
RHCB80-□ ●	80	250 - 1400		127	
RHCB100-□	100	250 - 1500		196	

□: Stroke Length

Accessories

Mounting bracket

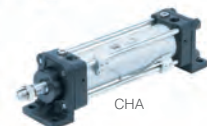
Bore size [mm]	20	25	32	40	50	63	80	100
Foot type	RHC-L020	RHC-L025	RHC-L032	RHC-L040	RHC-L050	RHC-L063	RHC-L080	RHC-L100
Flange	RHC-F020	RHC-F025	RHC-F032	RHC-F040	RHC-F050	RHC-F063	RHC-F080	RHC-F100

Possible auto switches

Bore sizes	Ø 20 - Ø 63	Ø 80 - Ø 100
Reed	D-A93L	D-B54L
3 wire solid state/2 colour - PNP	D-M9PWL	D-G5PWL
3 wire solid state/2 colour - NPN	D-M9NWL	D-G5NWL

Hydraulic cylinder

CH Series



- Light and compact body.
- Auto switch can be mounted.
- A wide range of operating pressures, bore sizes, and standard strokes make wide selections possible.

Type	Series	Nominal pressure [MPa]	Bore size [mm]
Compact	CHQ	3.5	20, 32, 40, 50, 63, 80, 100
	CHK	10, 16	20, 25, 32, 40, 50, 63, 80, 100
Round	CHN	7	20, 25, 32, 40
	CHM	3.5	20, 25, 32, 40
Tie-rod	CHS	10, 16	32, 40, 50, 63, 80, 100
	CH2	3.5, 7, 14	32, 40, 50, 63, 80, 100
	CHA	3.5	40, 50, 63, 80, 100, 125, 160

Rotary clamp cylinder

MK/MK2T Series



MK



MK2T

- Bore sizes 12 - 63 mm
- Strokes max. 50 mm
- Rotary movement either clockwise or counterclockwise.
- Clamping force up to max. theoretical value of 1400 N.



Combined linear and rotary movement

MK standard

Part number	Bore size [mm]	Clamp stroke [mm]	Port sizes	Cushion
MKB12-□■Z ●	12	10, 20, 30	M5	Rubber bumper
MKB16-□■Z ●	16			
MKB20-□■Z ●	20			
MKB25-□■Z ●	25			
MKB32TF-□■Z ●	32	10, 20, 30, 50	G 1/8	
MKB40TF-□■Z ●	40			
MKB50TF-□■Z ●	50		G 1/4	
MKB63TF-□■Z ●	63			

MK2T: Double guide type

Part number	Bore size [mm]	Clamp stroke [mm]	Port sizes	Cushion
MK2TB20-□■N ●	20	10, 20	M5	Rubber bumper
MK2TB25-□■N ●	25			
MK2TB32TF-□■N ●	32		G 1/8	
MK2TB40TF-□■N ●	40			
MK2TB50TF-□■N ●	50	20, 50	G 1/4	
MK2TB63TF-□■N ●	63			

□: Clamp stroke

■ L: Counter-clockwise rotation

R: Clockwise rotation

Possible auto switches

Reed	D-A90L, D-A93L
3-wire, solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2-wire solid state/2 colour	D-M9BWL

MK accessories

Bore size [mm]	12	16	20	25	32	40	50	63	Accessories
Arm	MK-A012Z	MK-A016Z	MK-A020Z		MK-A032Z		MK-A050Z		Clamp bolt, hexagon socket head cap screw, hexagon nut, spring washer
Flange	CQS-F012	CQS-F016	MKZ-F020	MKZ-F025	MK2T-F032	MK2T-F040	MK2T-F050	MK2T-F063	Hexagon socket head cap screw

MK2T accessories

Bore size [mm]	20	25	32	40	50	63	Accessories
Arm	MK-A020		MK-A032		MK-A050	MK2T-A063	Clamp bolt, hexagon socket head cap screw, hexagon nut, spring washer
Flange	CQS-F020	CQS-F025	MK2T-F032	MK2T-F040	MK2T-F050	MK2T-F063	Hexagon socket head cap screw

Clamp cylinder

CK1 Series



- Magnetic field resistant auto switches are mountable from 3 directions
- Built-in speed controller
- Flexible Air Cushion as it can be selected in one or both ends and adjusted as needed
- Clevis width: 16.5 mm and 19.5 mm
- Piping ports are located on 3 surfaces.

Built-in standard magnet type	Built-in strong magnet type	Without magnet	Bore size [mm]	Standard strokes [mm]	Clevis width [mm]	Port size	Operating pressure [MPa]	Piston speed [mm/s]
CKG1A40TF-□Z	CKP1A40TF-□Z	CK1A40TF-□Z	40	50,75,100,125,150	16.5	G 1/4	0.05 to 1.0	50 to 500
CKG1A50TF-□Z	CKP1A50TF-□Z	CK1A50TF-□Z	50	50,75,100,125,150,200				
CKG1A63TF-□Z	CKP1A63TF-□Z	CK1A63TF-□Z	63	50,75,100,125,150,200				
CKG1B40TF-□Z	CKP1B40TF-□Z	CK1B40TF-□Z	40	50,75,100,125,150	19.5			
CKG1B50TF-□Z	CKP1B50TF-□Z	CK1B50TF-□Z	50	50,75,100,125,150,200				
CKG1B63TF-□Z	CKP1B63TF-□Z	CK1B63TF-□Z	63	50,75,100,125,150,200				

□: Insert required stroke

-X1515: With air cushion on both ends. Place "-X1515" at the end of the part number if you want to order it.

Accessories

Description	Part number	
	CK□1A	CK□1B
Single knuckle joint	M6 without tap	CKB-I04
	M6 with tap	CKB-IA04
Double knuckle joint (A knuckle pin, cotter pins, flat washers are equipped as a standard)	M6 without tap	CKA-Y04
	M6 with tap	CKA-YA04
Limit switch mounting base		CK-B04
Dog fitting ¹⁾		CK-D04
Foot		CK-L04
Pedestal	Stroke 75	CKA-K075
	Stroke 100	CKA-K100
	Stroke 150	CKA-K150

1) When you attach a dog fitting, be sure to use a knuckle joint, M6 with tap

Possible magnetic field resistant auto switches

2 wire solid state auto switch	CKG1
2-colour indication- 0.3 m lead wire	D-P4DWSE
2-colour indication- 3 m lead wire	D-P4DWL

2 wire reed auto switch	CKP1
2-colour indication- 0.3 m lead wire	D-P79WSE
1-colour indication- 3 m lead wire	D-P74L

Stopper cylinder

RSQ Series



- Up to 90 kg of transferred object, with speed of up to 30 m/min
- Bore sizes Ø 12 – 50 mm, strokes max. 30 mm
- Compact auto switches can be mounted on 4 faces
- Various rod end configurations to be selected according to each application
- Double-acting , single acting.

Round bar version, double acting

Part number	Bore size [mm]	Standard strokes [mm]	Port sizes	Cushion
RSDQB12-10D■	12	10	M5 x 0.8	Rubber bumper
RSDQB16-□D■Z	16	10, 15		
RSDQB20-□D■Z	20	10, 15, 20	R 1/8	
RSDQB32-□D■Z	32	10, 15, 20		
RSDQB40-□D■Z	40	20, 25, 30		
RSDQB50-□D■Z	50	20, 25, 30		

□: Stroke Length

■: Version: - : Round bar type

R: Roller type

Lever version, double acting

Part number	Bore size [mm]	Standard strokes [mm]	Port size	Cushion
RSDQB32-□DLZ	32	10, 15, 20	R 1/8	Rubber bumper
RSDQB40-□DLZ	40	20, 25, 30		
RSDQB50-□DLZ	50	20, 25, 30		

Possible auto switches

Reed	D-A93L, D-A90L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Heavy duty, stopper cylinder

RSH/RS2H Series



- Bore sizes: $\varnothing 20 - 80$ mm, strokes 15 – 40 mm
- Heavy duty stopper cylinder with integrated shock-absorber for gently stopping of the load via roller lever
- Compact size and stable mounting flange
- Double-acting, single-acting spring extended (safety function)
- Lock mechanism on the roller lever prevents the load from rebounding after braking
- Stroke end detection by auto switch
- Lever detection switch as an option.

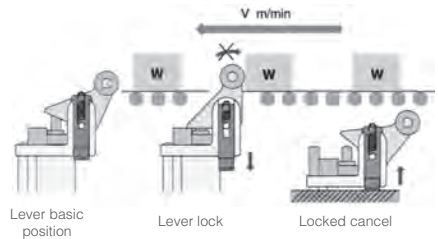
Double-acting with steel roller, lock mechanism

Part number	Bore size [mm]	Standard strokes [mm]	Port sizes	Cushion
RSH20-15DM-D ●	20	15	M5	Adjustable shock absorber
RSH32-20DM-D ●	32	20	G 1/8	
RS2H50TF-30DM-D	50	30		
RS2H63TF-30DM-D	63	30	G 1/4	
RS2H80TF-40DM-D	80	40		

Other roller materials and variations available on request.

Possible auto switches

Reed	D-A93L (not possible in $\varnothing 20$ and $\varnothing 32$)
3-wire, solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2-wire solid state/2 colour	D-M9BWL



Escapement

MIW/MIS Series



- Alternatively in single finger (MIS) or double finger (MIW) type
- Extended service life, since the piston and finger have a floating connection, avoiding moment loads on the seals, etc
- 3 different finger designs
- Sequential operation of both fingers with the MIW
- Optional stroke adjustment, scrapers possible.

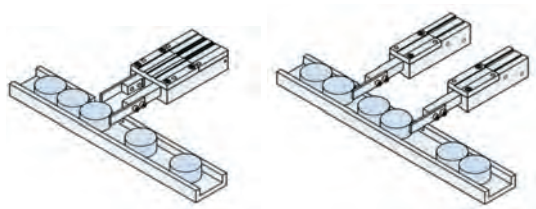
MIS - Single finger type

Part number	Bore size [mm]	Finger strokes [mm]	Operating pressure [MPa]	N° of fingers	Auto switch
MIS8-□D ●	8	10, 20	0.2 – 0.7	1	3-wire solid state NPN: D-M9NL 3-wire solid state PNP: D-M9PL 2-wire solid state: D-M9BL
MIS12-□D ●	12	10, 20, 30			
MIS20-□D ●	20	10, 20, 30			
MIS25-□D ●	25	30, 50			
MIS32TF-□D ●	32	30, 50			

□: Stroke Length

MIW - Double finger type

Part number	Bore size [mm]	Finger stroke [mm]	Operating pressure [MPa]	N° of fingers	Auto switch
MIW8-8D ●	8	8	0.2 – 0.7	2	3-wire solid state NPN: D-M9NL 3-wire solid state PNP: D-M9PL 2-wire solid state: D-M9BL
MIW12-12D ●	12	12			
MIW20-20D ●	20	20			
MIW25-25D ●	25	25			
MIW32TF-32D ●	32	32			



Stainless steel cylinder

CJ5/CG5 Series



- SUS304 - stainless steel
- Special scrapers provide optimum piston rod sealing
- Seals either NBR or FKM
- FDA approved grease suitable for food processing applications
- CG5 can be disassembled, therefore maintenance-friendly.

Built-in magnet, NBR seals

Part number	Bore size [mm]	Standard strokes [mm]	Operating pressure [MPa]	Water resistant auto switches - solid state - 2 colour
CDJ5B□SR-■-B ●	10	15, 30, 45, 60, 75, 100, 125, 150	0.1 ~ 0.7	3-wire (PNP): D-M9 PAL 3-wire (NPN): D-M9 NAL 2-wire: D-M9 BAL
	16	15, 30, 45, 60, 75, 100, 125, 150, for Ø 16: 175, 200		
CDG5BN□SR-■-B ●	20	25, 50, 75, 100, 125, 150, 200	0.05 ~ 1.0	D-G5BAL
	25, 32, 40, 50, 63, 80, 100	25, 50, 75, 100, 125, 150, 200, 250, 300		

- : Bore size
■: Stroke length

On request: without magnet, FKM seals, long stroke version

Cylinder mounting

Series	CDJ5		CG5
Ø [mm]	10	16	20, 25, 32, 40, 50, 63, 80, 100
Foot type	CJ-L016SUS	CJK-L016SUS	CG-L0 □ SUS
Flange type	CJ-F016SUS	CJK-F016SUS	CG-F0 □ SUS

- : Enter the bore size

Our highlighted product for you

Centring unit

MACM Series

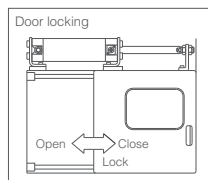
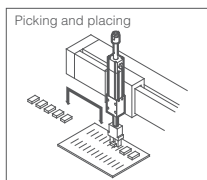


- Heavy workpieces can be aligned and positioned with small cylinders
- Max. allowable load weight up to 1000 kg
- Workpieces can be moved in any direction and even rotated 360°
- Built-in air locking mechanism
- External photo sensor can be mounted
- 4 types of table material can be selected
- Table centre movable range up to Ø 100 mm.

Part number	Max. allowable load weight [kN]	Stroke [mm]	Table centre movable range [mm]	Centring accuracy [mm]	Table material
MACM2-12SPV-X131	2	12	Ø 24	±1 or less	Stainless steel (cut finish)
MACM4-20SPV-X131	4	20	Ø 40		
MACM6-30SPV-X131	6	30	Ø 60		
MACM10-50SPV-X131	10	50	Ø 100		
MACM2-12GPV-X131	2	12	Ø 24		Stainless steel (Polished finish)
MACM4-20GPV-X131	4	20	Ø 40		
MACM6-30GPV-X131	6	30	Ø 60		
MACM10-50GPV-X131	10	50	Ø 100		
MACM2-12UPV-X131	2	12	Ø 24		Ultra high molecular weight polyethylene
MACM4-20UPV-X131	4	20	Ø 40		
MACM6-30UPV-X131	6	30	Ø 60		
MACM10-50UPV-X131	10	50	Ø 100		
MACM2-12NPV-X131	2	12	Ø 24		Cast nylon
MACM4-20NPV-X131	4	20	Ø 40		
MACM6-30NPV-X131	6	30	Ø 60		
MACM10-50NPV-X131	10	50	Ø 100		

Cylinders with end lock

- Mechanical locking of the piston rod at the stroke ends
- Separate compressed air supply not required
- Manually releasable
- For either retraction or extension direction (both directions on request).



CBJ2 Series



Bore size	Locking position
Ø 16	Both ends

CBM2 Series



Bore size	Locking position
Ø 20 to Ø 40	Both ends

CBG1 Series



Bore size	Locking position
Ø 20 to Ø 100	Both ends

CBA2 Series



Bore size	Locking position
Ø 40 to Ø 100	Both ends

MBB Series



Bore size	Locking position
Ø 32 to Ø 100	Both ends

CBQ2 Series



Bore size	Locking position
Ø 20 to Ø 100	Both ends

MGG Series



Bore size	Locking position
Ø 20 to Ø 100	Both ends

MGP Series



Bore size	Locking position
Ø 20 to Ø 100	Both ends

CXS Series



Bore size	Locking position
Ø 6, Ø 10, Ø 15, Ø 20 to Ø 32	Retraction end

CXW Series



Bore size	Locking position
Ø 10, Ø 16 to Ø 32	Retraction end

MGZ Series



Bore size	Locking position
Ø 40, 50, 63	Extension end

MTS Series



Bore size	Locking position
Ø 12, Ø 16 to Ø 40	Retraction end

MXQ Series



Bore size	Locking position
Ø 6, Ø 8, Ø 12, Ø 16 to Ø 25	Retraction end

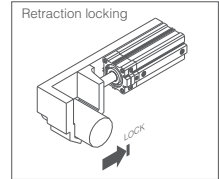
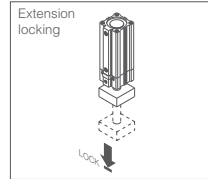
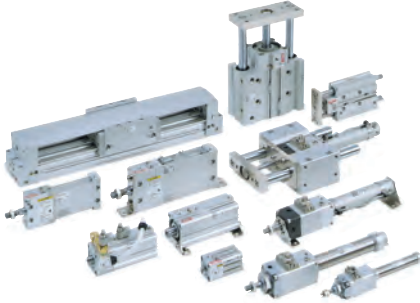
CS1 Series

Made to Order
(-X1347)

Bore size	Locking position
Ø 125, Ø 140, Ø 160	Both ends

Cylinders with lock

- Mechanical lock mechanism
- Can be locked at any position within the entire stroke
- Locking is possible at any desired position
- Able to easily accommodate changes in work piece thickness
- It is the best for the emergency stop and the fall prevention, etc
- The stop at the middle position is possible (CLQ Series/MLGP Series is excluded)
- Series from $\varnothing 16$ to $\varnothing 250$ mm available.



CLJ2 Series



Bore size	Locking direction
$\varnothing 16$	Both directions

CLM2 Series



Bore size	Locking direction
$\varnothing 20$ to $\varnothing 40$	Both directions

CNG Series



Bore size	Locking direction
$\varnothing 20$ to $\varnothing 40$	Both directions

CNA2 Series



Bore size	Locking direction
$\varnothing 40$ to $\varnothing 100$	Both directions

MNB Series



Bore size	Locking direction
$\varnothing 32$ to $\varnothing 100$	Both directions

CNS Series



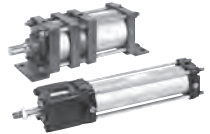
Bore size	Locking direction
$\varnothing 125$ to $\varnothing 160$	Both directions

CLS Series



Bore size	Locking direction
$\varnothing 125$ to $\varnothing 250$	Both directions

CL1 Series



Bore size	Locking direction
$\varnothing 40$ to $\varnothing 160$	One direction

CLQ Series



Bore size	Locking direction
$\varnothing 20$ to $\varnothing 100$	One direction

RLQ Series



Bore size	Locking direction
$\varnothing 32$ to $\varnothing 63$	One direction

MLU Series



Bore size	Locking direction
$\varnothing 25$ to $\varnothing 50$	One direction

MLGP Series



Bore size	Locking direction
$\varnothing 20$ to $\varnothing 63$	One direction

MLGC Series



Bore size	Locking direction
$\varnothing 20$ to $\varnothing 40$	Both directions

CLK2 Series



Bore size	Locking direction
$\varnothing 32$ to $\varnothing 63$	One direction

ML1C Series



Bore size	Locking direction
$\varnothing 25$ to $\varnothing 40$	Both directions

MWB Series



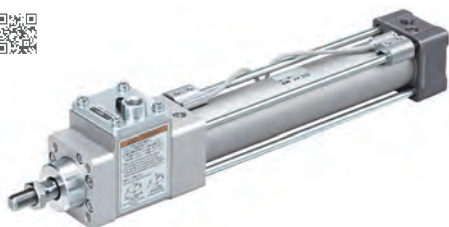
Bore size	Locking direction
$\varnothing 32$ to $\varnothing 100$	Both directions

Cylinder with lock

MWB Series



- Lock can be manually operated
- Separate construction of lock unit and cylinder
- Bore sizes (mm): 32, 40, 50, 63, 80, 100
- Strokes up to 2500 mm
- Air cushion/rubber bumper selectable
- Locking unit can be ordered separately.



Single rod. Air cushion. Built-in magnet

Part Number	Bore size [mm]	Stroke [mm]	Port size
MDWBB32TF-□	32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	G 1/8
MDWBB40TF-□	40		G 1/4
MDWBB50TF-□	50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600	G 1/4
MDWBB63TF-□	63		G 3/8
MDWBB80TF-□	80		G 3/8
MDWBB100TF-□	100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	G 1/2

□: Insert required stroke.

Double rod. Air cushion. Built-in magnet

Part Number	Bore size [mm]	Stroke [mm]	Port size
MDWBWB32TF-□	32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	G 1/8
MDWBWB40TF-□	40		G 1/4
MDWBWB50TF-□	50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600	G 1/4
MDWBWB63TF-□	63		G 3/8
MDWBWB80TF-□	80		G 3/8
MDWBWB100TF-□	100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	G 1/2

□: Insert required stroke.

Lock unit. Without rod

Part Number	Bore size [mm]	Port size	Part Number	Bore size [mm]	Port size
MDWBB32TF-UT	32	G 1/4	MDWBB63TF-UT	63	G 1/8
MDWBB40TF-UT	40		MDWBB80TF-UT	80	
MDWBB50TF-UT	50		MDWBB100TF-UT	100	

Possible auto switches

Reed	D-A93L, D-A90L
3 wire solid state/2 colour - PNP	D-M9PWL
3 wire solid state/2 colour - NPN	D-M9NWL

Rotary table, vane type MSUB Series



- Sizes 1, 3, 7, 20, rotary angle 90° or 180°
- Compact rotary table, vane with ball bearing rotary plate
- Both end positions adjustable by ±5°
- Double vane type with rotary angle 90° for higher torque
- Rotary plate bearing allows high axial and lateral loads, and supports moments
- Rotary plate with groove for centre pin for the stable mounting of attachments
- Auto switch for detection of the end position mounted on a compact body.

Part number	Size	Rotation angle	Allowable torque [N•m]	Allowable kinetic energy [J]	Thread connection
MSUB1-90S ●	1	90°	0.11	0.005	M3
MSUB1-180S ●		180°			
MSUB3-90S ●	3	90°	0.31	0.013	M5
MSUB3-180S ●		180°			
MSUB7-90S ●	7	90°	0.69	0.032	
MSUB7-180S ●		180°			
MSUB20-90S ●	20	90°	1.78	0.056	
MSUB20-180S ●		180°			

* At 0.5 MPa

Possible auto switches

Size	1, 3	7, 20
Reed	D-93AL	D-R731L + D-R732L
3 wire solid state PNP	D-S9P1L + D-S9P2L	D-S7P1L + D-S7P2L
3 wire solid state NPN	D-S9N1L + D-S9N2L	D-S7N1L + D-S7N2L

Accessories

Item	Auto switch unit
MSUB1-...	P211070-1
MSUB3-...	P211090-1
MSUB7-...	P211060-1
MSUB20-...	P211080-1

Mini rotary actuator CRJ Series



- Compact design, narrow body
- Patented design, no backlash
- Large diameter output shaft and large roller bearing for high rigidity
- Option with external stoppers, adjustable ±5°, can also be retro-fitted.

Round bar version

Part number	Size	Rotation angle	Allowable torque [N•m]	Allowable kinetic energy [mJ]	Angle adjustment	Auto switch
CRJB□-■ ●	05, 1	90°, 100°, 180°, 190°	05: 0,042	05: 0,25; 1: 0,40	—	2-wire solid state D-M9BL
CRJU□-■ ●	05, 1	90°, 180°	1: 0,095	05: 1,0; 1: 2,0	Both-ended ±5°	

□: Size

■: Rotation angle

External stoppers

For type	CRJU05-90	CRJU05-180	CRJU1-90	CRJU1-180
Part number	P531010-1	P531010-2	P531020-1	P531020-2

Please note: If you fit CRJB actuators with external stoppers, you must use the 100° version to achieve a CRJU with 90°, or the 190° version for the CRJU with 180°.

Possible auto switches

3 wire solid state PNP - axial cable	D-M9PL
3 wire solid state NPN - axial cable	D-M9NL
2 wire solid state - axial cable	D-M9BL

Our highlighted product for you

Rotary actuator, vane type CRB1/CRB2 Series



- D-M9 type compact auto switch can be selected
- Possible to add angle adjusted unit (sizes 10 to 40)
- Sizes 10, 15, 20, 30 and 40 with fixed rotary angles 90°, 180°, 270° or rotary angle stepless adjustable up to 240°
- Simple design means long service life
- No back lash in the end position
- Double vane type with rotary angle 90° and 100° for higher torque (optional)
- Easy readjust of: auto switch bearing body and adjustable rotary stops
- Free mount rotary actuator available (sizes 10 to 40).



CRB2 (Ø 10 • 15 • 20 • 30 • 40)

CRB1 (Ø 50 • 63 • 80 • 100)

Double shaft with single vane

Part number	Size	Rotation angle	Effective rotational torque [N•m] ¹⁾	Allowable kinetic energy [J]	Thread connection
CRB2BW10-90SZ ●	10	90°	0.18	0.00015	M3
CRB2BW10-180SZ ●		180°			
CRB2BW10-270SZ ●		270°			
CRB2BW15-90SZ ●	15	90°	0.46	0.001	
CRB2BW15-180SZ ●		180°			
CRB2BW15-270SZ ●		270°			
CRB2BW20-90SZ ●	20	90°	0.99	0.003	M5
CRB2BW20-180SZ ●		180°			
CRB2BW20-270SZ ●		270°			
CRB2BW30-90SZ ●	30	90°	2.58	0.02	
CRB2BW30-180SZ ●		180°			
CRB2BW30-270SZ ●		270°			
CRB2BW40-90SZ ●	40	90°	5.38	0.04	G 1/8
CRB2BW40-180SZ ●		180°			
CRB2BW40-270SZ ●		270°			
CRB1BW50-90S-XF ●	50	90°	8.14	0.082	
CRB1BW50-180S-XF ●		180°			
CRB1BW50-270S-XF ●		270°			
CRB1BW63-90S-XF ●	63	90°	15.5	0.12	G 1/4
CRB1BW63-180S-XF ●		180°			
CRB1BW63-270S-XF ●		270°			
CRB1BW80-90S-XF ●	80	90°	25.7	0.398	
CRB1BW80-180S-XF ●		180°			
CRB1BW80-270S-XF ●		270°			
CRB1BW100-90S-XF ●	100	90°	51.2	0.6	
CRB1BW100-180S-XF ●		180°			
CRB1BW100-270S-XF ●		270°			

1) Eff. rotational torque at 0.7 MPa

D: Built-in magnet available, place "D" after "C" in sizes 50 to 100 if you want to order it.

Auto switch, angle adjuster and joint unit part number

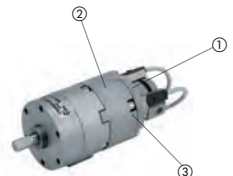
Size	①	②	③
	Auto switch unit part no. ^{1,2)}	Angle adjuster unit part no. ¹⁾	Joint unit part no. ³⁾
10	P611070-1	P811010-3	P211070-10
15	P611090-1	P811020-3	P211090-10
20	P611060-1	P811030-3	P211060-10
30	P611080-1	P811040-3	P211080-10
40	P611010-1	P811050-3 ⁴⁾	P211010-10

1) Each unit can be retrofitted to the rotary actuator

2) Auto switch unit can be ordered separately if the rotary actuator with auto switch is required after the product being delivered. Since the auto switch will not be included, please order separately

3) Joint unit is required to retrofit the angle adjuster unit to a rotary actuator with auto switch or to retrofit the auto switch unit to a rotary actuator with angle adjuster

4) P811050-5 in case of unit part number for D-M9□.



Flange

Part number	Size
P211070-2	10
P211090-2	15
P211060-2	20
P211080-2	30

Foot bracket

Part number	Size
P411020-5	50
P411030-5	63
P411040-5	80
P411050-5	100

Auto switches

Part number	Size	Type	Wiring	Cable	Voltage
D-M9P1L+D-M9P2L ¹⁾	10, 15	Solid state	3-wire (PNP)	3 m	24 VDC
D-M9N1L+D-M9N2L ¹⁾			3-wire (NPN)		
D-93AL ¹⁾		Reed	2-wire		
D-M9P1L+D-M9P2L ¹⁾	20, 30, 40, 50, 63, 80, 100	Solid state	3-wire (PNP)		
D-M9N1L+D-M9N2L ¹⁾			3-wire (NPN)		
D-R731L+D-R732L ¹⁾		Reed	2-wire		

1) Left handed and right handed switches are needed so order one of each part number.

Rotary actuator, free mount, vane type

CRBU2 Series



- D-M9 type compact auto switch can be selected
- Rotating angle: 90°, 180°, 270°
- Reduced weight
- Many variations of shaft-end shape (6 types)
- Port location can be selected: Side or axial ported
- Auto switch can be fixed at any position in the circumferential direction
- Many mounting variations.

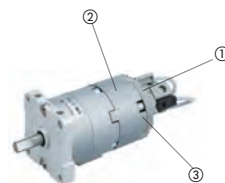


Double shaft with single vane

Part number	Size	Rotation angle	Effective rotational torque [Nm] (at 0.5 MPa)	Allowable kinetic energy [J]	Thread connection
CDRBU2W10-90SZ	10	90°	0.18	0.00015	M3
CDRBU2W10-180SZ		180°			
CDRBU2W10-270SZ		270°			
CDRBU2W15-90SZ	15	90°	0.46	0.001	
CDRBU2W15-180SZ		180°			
CDRBU2W15-270SZ		270°			
CDRBU2W20-90SZ ●	20	90°	0.99	0.003	M5
CDRBU2W20-180SZ		180°			
CDRBU2W20-270SZ		270°			
CDRBU2W30-90SZ	30	90°	2.58	0.02	
CDRBU2W30-180SZ ●		180°			
CDRBU2W30-270SZ		270°			
CDRBU2W40-90SZ	40	90°	5.38	0.04	
CDRBU2W40-180SZ		180°			
CDRBU2W40-270SZ		270°			

Auto switch, angle adjuster and joint unit part number

Size	①	②	③
	Auto Switch Unit part no. ^{1,2)}	Angle Adjuster Unit part no. ¹⁾	Joint Unit part no. ³⁾
10	P611070-1	P811010-3	P211070-10
15	P611090-1	P811020-3	P211090-10
20	P611060-1	P811030-3	P211060-10
30	P611080-1	P811040-3	P211080-10
40	P611010-1	P811050-3 ⁴⁾	P211010-10



- 1) Each unit can be retrofitted to the rotary actuator
- 2) Auto switch unit can be ordered separately if the rotary actuator with auto switch is required after the product being delivered. Since the auto switch will not be included, please order separately
- 3) Joint unit is required to retrofit the angle adjuster unit to a rotary actuator with auto switch or to retrofit the auto switch unit to a rotary actuator with angle adjuster
- 4) P811050-5 in case of unit part number for for D-M9□.

Flange

Part number	Size
P211070-2	10
P211090-2	15
P211060-2	20
P211080-2	30

Foot bracket

Part number	Size
P411020-5	50
P411030-5	63
P411040-5	80
P411050-5	100

Auto switches

Part number	Size	Type	Wiring	Cable	Voltage
D-M9P1L+D-M9P2L ¹⁾	10, 15	Solid state	3-wire (PNP)	3 m	24 VDC
D-M9N1L+D-M9N2L ¹⁾			3-wire (NPN)		
D-93AL ¹⁾		Reed	2-wire		
D-M9P1L+D-M9P2L ¹⁾	20, 30, 40, 50, 63, 80, 100	Solid state	3-wire (PNP)		
D-M9N1L+D-M9N2L ¹⁾			3-wire (NPN)		
D-R731L+D-R732L ¹⁾		Reed	2-wire		

1) Left handed and right handed switches are needed so order one of each part number.

Rotary actuator, rack and pinion type

CRA1 Series



- Sizes Ø 30 – 100 mm, rotation angle 90° or 180°
- Single and double shaft types available
- Standard model has auto switch for end position detection
- Angle adjusted type available, (Ø 50 to Ø 100)
- Air-hydro type available, (Ø 50 to Ø 100)

Double shaft with built in magnet

Part number	Bore size [mm]	Rotation angle	Effective rotational torque [$N\cdot m$] ¹⁾	Allowable kinetic energy [J]	Port size	Cushion
CDRA1BW30-90Z ●	30	90°	3.82	0.01	M5	None
CDRA1BW30-180Z ●		180°				
CDRA1BW50TF-90CZ ●	50	90°	18.5	0.98	G 1/8	Air Cushion
CDRA1BW50TF-180CZ ●		180°				
CDRA1BW63TF-90CZ ●	63	90°	34.4	1.50		
CDRA1BW63TF-180CZ ●		180°				
CDRA1BW80TF-90CZ ●	80	90°	63.4	2.00	G 1/4	
CDRA1BW80TF-180CZ ●		180°				
CDRA1BW100TF-90CZ	100	90°	149	2.90	G 3/8	
CDRA1BW100TF-180CZ ●		180°				

1) At 1.0 MPa

U: Angle adjusted type available in sizes 50 to 100, place "U" after W if you want to order it.

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2 wire solid state/2 colour	D-M9BWL

Foot bracket part number

Foot Bracket	Size
CRA1L30-Y-1Z	30
CRA1L50-Y-1Z	50
CRA1L63-Y-1Z	63
CRA1L80-Y-1Z	80
CRA1L100-Y-1Z	100

Compact rotary actuator

CRQ2 Series



- Sizes 10, 15, 20, 30 and 40
- Compact rotary actuator, rack and pinion type with double piston drive
- Rotational angle adjustable $\pm 5^\circ$
- Stoppers fitted with dampers
- Double piston drive allows end position free from backlash
- Auto switch for querying end position detection can be integrated into body profile.

Part number	Size	Rotation angle	Effective torque [N•m]	Allowable kinetic energy [mJ]	Cushion	Thread connection
CDRQ2BW10-90 ●	10	90°	0.3	0.25	Rubber bumper	M5
CDRQ2BW10-180 ●		180°	0.3	0.25		
CDRQ2BW10-360		360°	0.3	0.25		
CDRQ2BW15-90 ●	15	90°	0.75	0.39		
CDRQ2BW15-180 ●		180°	0.75	0.39		
CDRQ2BW15-360		360°	0.75	0.39		
CDRQ2BW20TF-90C ●	20	90°	1.8	120	Air cushion	G 1/8
CDRQ2BW20TF-180C ●		180°	1.8	120		
CDRQ2BW20TF-360C		360°	1.8	120		
CDRQ2BW30TF-90C ●	30	90°	3.1	250		
CDRQ2BW30TF-180C ●		180°	3.1	250		
CDRQ2BW30TF-360C		360°	3.1	250		
CDRQ2BW40TF-90C ●	40	90°	5.3	400		
CDRQ2BW40TF-180C ●		180°	5.3	400		
CDRQ2BW40TF-360C		360°	5.3	400		

* At 0.5 MPa

Possible auto switches

Reed	D-A93L, D-A90L
3 wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2 wire solid state/2 colour	D-M9BWL

Rotary table, rack and pinion type

MSQ Series



- These rotary actuators are a complete combination of double piston drive plus rotary plate, with all the benefits that can be included in such a compact unit
- Prefabricated fixing and adjustment pin holes for simply and quickly mounting the actuator, and adding components to the rotary plate
- The through holes in the plate permit e.g. pneumatic tubes or electric cables to be passed through, so that no messy external wiring is needed
- The rotary plate with ball-bearings provides accuracy and enables greater loads to be supported
- Arranged centrally on one side is the air supply and the angle adjustment for the end positions, steplessly adjustable from 0 to 190 degrees using adjustment screws or shock absorbers. Grooved markings and the scaled rotary plate allow a rapid adjustment of the actuator
- The auto switches can be fully integrated into the body.

Part number	Size	Rotation angle	Effective torque ¹⁾ [N•m]	Allowable kinetic energy [J]	Cushion	Thread connection
MSQB1A ●	1	0~190°	0.10	0.001	None	M3
MSQB2A ●	2		0.21	0.0015		
MSQB3A ●	3		0.35	0.002		
MSQB7A ●	7		0.67	0.006		
MSQB10A	10		1.07	0.007		
MSQB20A ●	20		2.20	0.025	Rubber bumper	M5
MSQB30A ●	30		3.19	0.048		
MSQB50A ●	50		5.57	0.081		
MSQB70A ●	70		8.15	0.24		
MSQB100A	100		12.2	0.32		
MSQB200A ●	200		23.8	0.56	Internal shock absorber	Rc 1/8
MSQB10R ●	10		1.07	0.039		
MSQB20R ●	20		2.20	0.116		
MSQB30R ●	30		3.19	0.116		
MSQB50R ●	50		5.57	0.294		
MSQB70R ●	70		8.15	1.1		
MSQB100R	100		12.2	1.6		
MSQB200R ●	200		23.8	2.9		

1) At 0.6 MPa.

Possible auto switches

Reed ¹⁾	D-A90L, D-A93L
3 wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2 wire solid state/2 colour	D-M9BWL

1) Not for MSQB1A to MSQB7A

Double piston drive with rotary plate and external shock absorbers

MSQ□L, MSQ□H Series



- Sizes: 10, 20, 30 and 50
- 4-10 times more admissible kinetic energy compared to internal shock absorber type
- Reduced length
- Symmetrical types available.

Part number	Size	Rotation angle	Allowable kinetic energy [J]	Cushion	Thread connection
MSQB10L2 ●	10	180°	0.161	External shock absorber	M5
MSQB10L3 ●		90°			
MSQB20L2 ●	20	180°	0.574		
MSQB20L3 ●		90°			
MSQB30L2 ●	30	180°	0.805		
MSQB30L3 ●		90°			
MSQB50L2 ●	50	180°	1.310		Rc 1/8
MSQB50L3 ●		90°			
MSQB10H2 ●	10	180°	0.231		M5
MSQB10H3 ●		90°			
MSQB20H2 ●	20	180°	1.06		
MSQB20H3 ●		90°			
MSQB30H2 ●	30	180°	1.21		
MSQB30H3 ●		90°			
MSQB50H2 ●	50	180°	1.82	Rc 1/8	
MSQB50H3 ●		90°			

High precision rotary table

MSQA Series



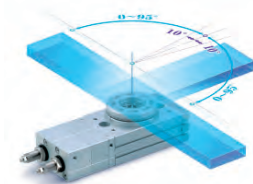
- Sizes: 1, 2, 3, 7, 10, 20, 30 and 50
- Double row precision ball bearing and dimensional tolerances made in H8/h8
- Movement in direction of tables radial thrust: 0.01 mm or less.

3-position rotary table

MSZ Series



- Stop position adjustment range
 - From centre: $\pm 10^\circ$
 - Rotation range: 0 to 95°
- Can be operated by a single valve
- High precision type available.



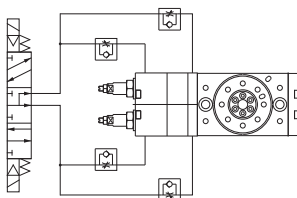
Part number	Size	Rotation angle	Effective torque [N•m] ¹⁾	Allowable kinetic energy [mJ]	Cushion	Thread connection
MSZB10A ●	10	0~190°	1	7	None	M5
MSZB20A ●	20		2	25		
MSZB30A ●	30		3	48		
MSZB50A ●	50		5	81		

1) At 0.6 MPa

Possible auto switches

Reed	D-A90L, D-A93L
3 wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2 wire solid state/2 colour	D-M9BWL

Controllable with one 3-position solenoid valve



Rotary cylinder

MRQ Series



- Size $\varnothing 32, 40$ mm, linear stroke to 100 mm, rotary angle 90° or 180°
- Unit has combination of stroke and rotary movement
- Stroke and rotary movement can be controlled separately
- Pneumatic cushioning for linear movement
- Rotary movement adjustable in both end positions ($\pm 5^\circ$)
- Linear and rotary movement with end position detection using standard auto switch.

Round bar version

Part number	Bore size [mm]	Rotation angle	Effective torque ¹⁾ [N•m]	Allowable kinetic energy [J]	Stroke length [mm]	Thread connection
MRQBS32-□CA ●	32	90°	1.1	0.023	10, 20, 25, 30, 40, 50, 75, 100	G 1/8
MRQBS32-□CB ●		180°				
MRQBS40-□CA ●	40	90°	2.1	0.028		
MRQBS40-□CB ●		180°				

□: Stroke length

1) At 0.5 MPa

Possible auto switches

Reed	D-A73HL
3 wire solid state/2 colour - PNP	D-F7PWL
3 wire solid state/2 colour - NPN	D-F79WL

Accessories/Flange

Part No.	Size
P317010-7	32
P317020-7	40

Rotary gripper

MRHQ Series



- Ø 10, 16, 20, 25
- Compact combination of gripping and rotating function
- Simple piping/wiring from one side
- Length approx. 20 % shorter compared to previous product-combination with adapter plate
- Rotation angles of 90° and 180° are available
- The standard model with magnets allows the retrofitting of auto switches
- Both and positions adjustable by ±5°.

Part number	Rotary actuator			Gripper		Thread connection
	Rotation angle	Angle adjustment	Allowable kinetic energy [J]	Cylinder bore [mm]	Opening/Closing stroke [mm]	
MRHQ10D-90S-N ●	90°	±10°	0.0046	10	4	M5
MRHQ10D-180S-N ●	180°					
MRHQ16D-90S-N ●	90°	±10°	0.014	16	6	
MRHQ16D-180S-N ●	180°					
MRHQ20D-90S-N ●	90°	±10°	0.034	20	10	
MRHQ20D-180S-N ●	180°					
MRHQ25D-90S-N ●	90°	±10°	0.074	25	14	
MRHQ25D-180S-N ●	180°					

Single acting gripper optional

Possible auto switches (for rotary actuators)

3 wire solid state	NPN: D-M9NL-746, PNP: D-M9PL-746
2 wire solid state	D-M9BL-746

Possible auto switches (for gripper)

3 wire solid state	NPN: D-M9NVL, PNP: D-M9PVL
2 wire solid state	D-M9BVL

Air grippers

Parallel air gripper

MHZ2/MHZ Series



- Ø 6, 10, 16, 20, 25, 32, 40
- New mini gripper size Ø 6
- High repeatability ±0,01 mm.

See next page for characteristics table.

Action		Part number	Bore size [mm]	Gripping force [N] ¹⁾	Opening/Closing stroke [mm]	Possible auto switches
Double acting		MHZA2-6D ●	6	3.3 (6.1) ²⁾	4	Without auto switch
Single acting (N.O.)		MHZA2-6S ●	6	1.9	4	
Single acting (N.C.)		MHZA2-6C	6	3.7	4	
Double acting		MHZ2-6D ●	6	3.3 (6.1) ²⁾	4	
		MHZ2-10D ●	10	11 (17) ²⁾	4	3 wire solid state/2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/2 colour D-M9BWL
		MHZ2-16D ●	16	34 (45) ²⁾	6	
		MHZ2-20D ●	20	42 (66) ²⁾	10	
		MHZ2-25D ●	25	65 (104) ²⁾	14	
		MHZ2-32D ●	32	158 (193) ²⁾	22	
		MHZ2-40D ●	40	254 (318) ²⁾	30	
Single acting	Normally open	MHZ2-6S ●	6	1.9	4	
		MHZ2-10S ●	10	7.1	4	
		MHZ2-16S ●	16	27	6	
		MHZ2-20S ●	20	33	10	
		MHZ2-25S ●	25	45	14	
	Normally closed	MHZ2-32S ●	32	131	22	
		MHZ2-40S ●	40	217	30	
		MHZ2-6C ●	6	(3.7) ²⁾	4	
		MHZ2-10C ●	10	(13) ²⁾	4	
		MHZ2-16C ●	16	(38) ²⁾	6	
		MHZ2-20C ●	20	(57) ²⁾	10	
		MHZ2-25C ●	25	(83) ²⁾	14	
		MHZ2-32C ●	32	(161) ²⁾	22	
		MHZ2-40C ●	40	(267) ²⁾	30	

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm, at centre of stroke.

2) Value in () for internal gripping.

Air gripper, wide type

MHZL2 Series



- Ø 10, 16, 20, 25.
- Nearly double the standard stroke.

Action		Part number	Bore size [mm]	Gripping force [N] ¹⁾	Opening/Closing stroke [mm]	Possible auto switches
Double acting long stroke		MHZL2-10D ●	10	11 (17) ²⁾	8	3 wire solid state/2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/2 colour D-M9BWL
		MHZL2-16D ●	16	34 (45) ²⁾	12	
		MHZL2-20D ●	20	42 (66) ²⁾	18	
		MHZL2-25D ●	25	65 (104) ²⁾	22	
Single acting	Normally open	MHZL2-10S ●	10	7.1	8	
		MHZL2-16S ●	16	27	12	
		MHZL2-20S ●	20	33	18	
		MHZL2-25S ●	25	45	22	
	Normally closed	MHZL2-10C ●	10	(13) ²⁾	8	
		MHZL2-16C ●	16	(38) ²⁾	12	
		MHZL2-20C ●	20	(57) ²⁾	18	
		MHZL2-25C ●	25	(85) ²⁾	22	

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm, at centre of stroke.

2) Value in () for internal gripping.

Parallel air gripper with dust cover

MHZAJ2/MHZJ2 Series



- Ø 6, 10, 16, 20, 25
- Applicable in assembly lines, machine tool, etc
- Dust tight, drip proof construction
- Dust cover material selectable.

Action	Part number	Bore size [mm]	Gripping force [N] ¹⁾	Opening/Closing stroke [mm]	Possible auto switches	Dust cover material	
Double acting	MHZAJ2-6D	6	3.3 (6.1) ²⁾	4	Without auto switch	Chloroprene rubber (CR)	
Single acting (N.O.)	MHZAJ2-6S	6	1.9	4			
Single acting (N.C.)	MHZAJ2-6C	6	3.7	4			
Double acting	MHZJ2-6D ●	6	3.3 (6.1) ²⁾	4	3 wire solid state/2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/2 colour D-M9BWL		
	MHZJ2-10D ●	10	9.8 (17) ²⁾	4			
	MHZJ2-16D ●	16	30 (40) ²⁾	6			
	MHZJ2-20D ●	20	42 (66) ²⁾	10			
	MHZJ2-25D ●	25	65 (104) ²⁾	14			
Single acting	Normally open	MHZJ2-6S	6	1.9			4
		MHZJ2-10S ●	10	6.3			4
		MHZJ2-16S	16	24			6
		MHZJ2-20S ●	20	28			10
		MHZJ2-25S ●	25	45			14
	Normally closed	MHZJ2-6C	6	(3.7) ²⁾			4
		MHZJ2-10C	10	(12) ²⁾			4
		MHZJ2-16C	16	(31) ²⁾		6	
		MHZJ2-20C	20	(56) ²⁾		10	
		MHZJ2-25C	25	(83) ²⁾		14	

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm, at centre of stroke.

2) Value in () for internal gripping.

Low profile air gripper

MHF2 Series



- Sizes: Ø 8, 12, 16, 20 mm
- Repeatability up to: ± 0.05 mm
- Low profile means minimal mounting space needed
- Choose from 3 different finger strokes
- High precision linear guide
- Double acting.

Action	Part number	Bore size [mm]	Gripping force [N] ¹⁾	Opening/Closing stroke [mm]	Possible auto switches
Short stroke	MHF2-8D ●	8	19	8	3 wire solid state/2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/2 colour D-M9BWL
	MHF2-12D ●	12	48	12	
	MHF2-16D ●	16	90	16	
	MHF2-20D ●	20	141	20	
Medium stroke	MHF2-8D1 ●	8	19	16	
	MHF2-12D1 ●	12	48	24	
	MHF2-16D1 ●	16	90	32	
	MHF2-20D1 ●	20	141	40	
Long stroke	MHF2-8D2 ●	8	19	32	
	MHF2-12D2 ●	12	48	48	
	MHF2-16D2 ●	16	90	64	
	MHF2-20D2 ●	20	141	80	

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm, at centre of stroke.

Wide type parallel style air gripper

MHL2 Series



- Sizes Ø 10, 16, 20, 25, 32, 40 mm
- 3 gripper strokes are possible for each size
- Synchronised gripper movement via rack pinion
- Repeatability ± 0.1 mm
- Compact auto switches can be directly mounted without accessories
- A scraper with a dust lip is adopted for all rod rotating parts.

Stroke	Part number	Bore size [mm]	Gripping force [N] ¹⁾	Effective opening/Closing stroke [mm]			Possible auto switch
				L2-L1	L1	L2	
Short stroke	MHL2-10DZ ●	10	14	20	56	76	3 wire solid state/ 2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/ 2 colour D-M9BWL
	MHL2-16DZ ●	16	45	30	68	98	
	MHL2-20DZ ●	20	74	40	82	122	
	MHL2-25DZ ●	25	131	50	100	150	
	MHL2-32D ●	32	228	70	150	220	
	MHL2-40D ●	40	396	100	188	288	
Medium stroke	MHL2-10D1Z ●	10	14	40	78	118	
	MHL2-16D1Z ●	16	45	60	110	170	
	MHL2-20D1Z ●	20	74	80	142	222	
	MHL2-25D1Z ●	25	131	100	182	282	
	MHL2-32D1 ●	32	228	120	198	318	
	MHL2-40D1 ●	40	396	160	246	406	
Long stroke	MHL2-10D2Z ●	10	14	60	96	156	
	MHL2-16D2Z ●	16	45	80	130	210	
	MHL2-20D2Z ●	20	74	100	162	262	
	MHL2-25D2Z ●	25	131	120	200	320	
	MHL2-32D2 ●	32	228	160	242	402	
	MHL2-40D2 ●	40	396	200	286	486	

1) Values based on pressure of 0.5 MPa, gripping point L=40 mm, at centre of stroke.

Rotary actuated air gripper, 2 fingers

MHR2/MDHR2 Series



- Ø 10, 15, 20, 30.
- Model has parallel gripper movement for external and internal gripping
- Gripper finger movement guided with precision by cross roller bearing
- Driven by vane type rotary actuator
- 4 sizes for handling smaller components
- Double acting
- Repeatability of ± 0.01 mm
- Auto switch for end position detection can be integrated into the body (Ø 15 to Ø 30).

Action	Part number	Bore size [mm]	Gripping force [N] ¹⁾	Opening/Closing stroke [mm]	Possible auto switches
Double acting without magnet	MHR2-10R ●	10	12 (12)	6	Without auto switch
	MHR2-15R ●	15	24 (25)	8	
	MHR2-20R ●	20	33 (34)	12	
	MHR2-30R ●	30	58 (59)	18	
Double acting with magnet	MDHR2-10R ●	10	12 (12)	6	3 wire solid state NPN: D-M9NL PNP: D-M9PL 2 wire solid state D-M9BL
	MDHR2-15R ●	15	24 (25)	8	
	MDHR2-20R ●	20	33 (34)	12	
	MDHR2-30R ●	30	58 (59)	18	

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm, at centre of stroke.
Value in () for internal gripping.

Rotary actuated air gripper, 3 fingers

MHR3/MDHR3 Series



- Ø 10, 15
- Driven by vane type rotary actuator
- 2 sizes for handling small components
- Gripper movement guided with precision by cross roller bearing
- Repeatability of ±0.01 mm
- Low profile, all types of mounting options
- Auto switch for end position detection can be integrated into the body.

Action	Part number	Bore size [mm]	Gripping force [N] ¹⁾	Opening/Closing stroke [mm]	Possible auto switches
Double acting without magnet	MHR3-10R ●	10	7 (6.5)	6	Without auto switch
	MHR3-15R ●	15	13 (12)	8	
Double acting with magnet	MDHR3-10R ●	10	7 (6.5)	6	3 wire solid state NPN: D-M9NL PNP: D-M9PL 2 wire solid state D-M9BL
	MDHR3-15R ●	15	13 (12)	8	

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm, at centre of stroke.
Value in () for internal gripping.

Wedge cam operation slide guide air gripper

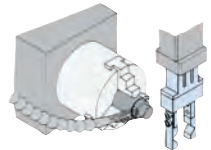
MHK2/MHKL2 Series



- Ø 12, 16, 20, 25
- Gripper fingers have robust slide bearing
- Elastic guide cover in 3 different materials as protection against soiling by dust, chips, liquids, etc
- 2 series: MHK2 standard, MHKL2 larger finger opening stroke.

Standard

Action	Part number	Bore size [mm]	Gripping force [N] external (internal) ¹⁾	Opening/Closing stroke [mm]	Possible auto switches	
Double acting	MHK2-12D ●	12	15 (16)	4	3 wire solid state NPN: D-M9NL PNP: D-M9PL 2 wire solid state D-M9BL	
	MHK2-16D ●	16	31 (36)	6		
	MHK2-20D ●	20	46 (56)	10		
	MHK2-25D ●	25	80 (86)	14		
Single acting	Normally open	MHK2-12S ●	12	9		4
		MHK2-16S ●	16	23		6
		MHK2-20S ●	20	34		10
		MHK2-25S ●	25	58		14
	Normally closed	MHK2-12C ●	12	(12)		4
		MHK2-16C ●	16	(25)		6
		MHK2-20C ●	20	(44)	10	
		MHK2-25C ●	25	(73)	14	



Long opening stroke

Action	Part number	Bore size [mm]	Gripping force [N] external (internal) ¹⁾	Opening/Closing stroke [mm]	Possible auto switches	
Double acting	MHKL2-12D ●	12	14 (16)	11	3 wire solid state NPN: D-M9NL PNP: D-M9PL 2 wire solid state D-M9BL	
	MHKL2-16D ●	16	27 (30)	14		
	MHKL2-20D ●	20	45 (53)	18		
	MHKL2-25D ●	25	79 (90)	22		
Single acting	Normally open	MHKL2-12S ●	12	9		11
		MHKL2-16S ●	16	17		14
		MHKL2-20S ●	20	32		18
		MHKL2-25S ●	25	53		22
	Normally closed	MHKL2-12C ●	12	(11)		11
		MHKL2-16C ●	16	(22)		14
		MHKL2-20C ●	20	(40)	18	
		MHKL2-25C ●	25	(63)	22	

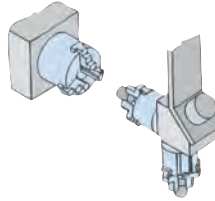
1) Values based on pressure of 0.5 MPa, gripping point L=20 mm, at centre of stroke.
Value in () for internal gripping.

2, 3, 4 finger air gripper

MHS2/MHS3/MHS4 Series



- Ø 16, 20, 25, 32, 40, 50, 63 (2 and 4 finger)
- Ø 16, 20, 25, 32, 40, 50, 63, 80, 100, 125 (3 finger)
- For internal and external gripping
- Repeatability ± 0.01 mm
- Auto switch can be integrated into body.



Action	Part number	Bore size [mm]	Gripping force [N] ¹⁾ external (internal)	Opening/closing stroke (dia.) [mm]	Possible auto switches
Double acting 2 finger	MHS2-16D ●	16	21 (23)	4	3 wire solid state/2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/2 colour D-M9BWL
	MHS2-20D ●	20	37 (42)	4	
	MHS2-25D ●	25	63 (71)	6	
	MHS2-32D ●	32	111 (123)	8	
	MHS2-40D ●	40	177 (195)	8	
	MHS2-50D ●	50	280 (306)	12	
Double acting 3 finger	MHS2-63D ●	63	502 (537)	16	
	MHS3-16D ●	16	14 (16)	4	
	MHS3-20D ●	20	25 (28)	4	
	MHS3-25D ●	25	42 (47)	6	
	MHS3-32D ●	32	74 (82)	8	
	MHS3-40D ●	40	118 (130)	8	
	MHS3-50D ●	50	187 (204)	12	
	MHS3-63D ●	63	335 (359)	16	
Double acting 4 finger	MHS3-80D ●	80	500 (525)	20	
	MHS3-100D ●	100	750 (780)	24	
	MHS3-125D ●	125	1270 (1320)	32	
	MHS4-16D ●	16	10 (12)	4	
	MHS4-20D ●	20	19 (21)	4	
	MHS4-25D ●	25	31 (35)	6	
	MHS4-32D ●	32	55 (61)	8	
Double acting 4 finger	MHS4-40D ●	40	88 (97)	8	
	MHS4-50D ●	50	140 (153)	12	
	MHS4-63D ●	63	251 (268)	16	

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm (Ø 16 to Ø 25), L= 30 mm (Ø 32 to Ø 63), L= 50 mm (Ø 80 to Ø 125), value in () for internal gripping.

3 finger parallel air gripper with long opening/Closing stroke

MHSL3 Series



- Ø 16, 20, 25, 32, 40, 50, 63, 80, 100, 125
- Opening/closing stroke over double the standard - MHS3 series
- Same mounting holes as MHS3, so interchangeable (lengths and Ø differ)
- Repeatability ±0.01 mm.

Action	Part number	Bore size [mm]	Gripping force [N] ¹⁾		Opening/Closing stroke (dia.) [mm]	Possible auto switches
			External	Internal		
Double acting 3 finger	MHSL3-16D ●	16	14	16	10	3 wire solid state NPN: D-M9NL PNP: D-M9PL 2 wire solid state D-M9BL
	MHSL3-20D ●	20	25	28	10	
	MHSL3-25D ●	25	42	47	12	
	MHSL3-32D ●	32	74	82	16	
	MHSL3-40D ●	40	118	130	20	
	MHSL3-50D ●	50	187	204	28	
	MHSL3-63D ●	63	335	359	32	
	MHSL3-80D ●	80	500	525	40	
	MHSL3-100D ●	100	750	780	48	
MHSL3-125D	125	1270	1320	64		

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm (Ø 16 to Ø 25), L= 30 mm (Ø 32 to Ø 63), L= 50 mm (Ø 80 to Ø 125)

3 finger parallel air gripper with dust cover

MHSJ3 Series



Action	Part number	Bore size [mm]	Gripping force [N] ¹⁾		Opening/Closing stroke (dia.) [mm]
			External gripping	Internal gripping	
3 finger parallel gripper	MHSJ3-16D ●	16	9	16	4
	MHSJ3-20D ●	20	21	28	4
	MHSJ3-25D ●	25	36	47	6
	MHSJ3-32D ●	32	62	82	8
	MHSJ3-40D	40	97	130	8
	MHSJ3-50D ●	50	155	204	12
	MHSJ3-63D ●	63	280	359	16
	MHSJ3-80D ●	80	400	525	20

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm (Ø 16 to Ø 25), L= 30 mm (Ø 32 to Ø 63), L= 50 mm (Ø 80).

Possible auto switches

3 wire solid state/2 colour PNP	D-M9PWL
3 wire solid state/2 colour NPN	D-M9NWL

Dust cover

—	Chloroprene rubber (CR) standard
F	Fluoro rubber (FKM)
S	Silicone rubber (SI)

Depending on the cover's material, the order code is after the model number.

3 finger parallel air gripper through hole type

MHSH3 Series



- Through holes are standard, cover cap and centre pusher can be attached individually
- Centre pusher can be operated pneumatically or using spring force
- Dust cover cap same as MHSJ3.

Possible auto switches

3 wire solid state/2 colour PNP	D-M9PWL
3 wire solid state/2 colour NPN	D-M9NWL

Action	Part number	Bore size [mm]	Gripping force [N] ¹⁾ External gripping	Gripping force [N] ¹⁾ Internal gripping	Opening/Closing stroke (dia.) [mm]
3 finger parallel gripper	MHSH3-16D ●	16	9	15	4
	MHSH3-20D ●	20	21	26	4
	MHSH3-25D ●	25	36	45	6
	MHSH□3-32D	32	62	77	8
	MHSH□3-40D	40	97	118	8
	MHSH□3-50D	50	155	187	12
	MHSH□3-63D	63	280	329	16
	MHSH□3-80D	80	400	490	20

□ J...for version with dust cover.

1) Values based on pressure of 0.5 MPa, gripping point L=20 mm (Ø 16 to Ø 25), L = 30 mm (Ø 32 to Ø 63), L= 50 mm (Ø 80).

2 finger angular air gripper

MHC2 Series



- Ø 10, 16, 20, 25
- Repeatability ± 0.01 mm
- Compact body design
- Auto switch can be integrated into body.

Action	Part number	Bore size [mm]	Gripping moment per finger [Nm] ¹⁾	Opening/Closing angle	Possible auto switches
Double acting	MHC2-10D ●	10	0.1	+30° ~ -10°	3 wire solid state/2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/2 colour D-M9BWL
	MHC2-16D ●	16	0.39		
	MHC2-20D ●	20	0.70		
	MHC2-25D ●	25	1.36		
Single acting (normally open)	MHC2-10S ●	10	0.07		
	MHC2-16S ●	16	0.31		
	MHC2-20S ●	20	0.54		
	MHC2-25S ●	25	1.08		

1) Per finger at 0.5 MPa

2 finger angular air gripper

MHC2/MHCA2/MHCM2 Series



- Angular style air gripper Series MHC now also available in Ø 6 size
- Series MHCM2 now available for further miniaturization.

Action	Part number	Bore size [mm]	Gripping moment per finger [Nm] ¹⁾	Opening/Closing angle	Possible auto switches
Double acting	MHC2-6D ●	6	0.038	+30° ~ -10°	(Perp., In-line) 3 wire solid state NPN: M9NV, M9N PNP: M9PV, M9P 2 wire solid state M9BV, M9B
Single acting (normally open)	MHC2-6S	6	0.024		
Double acting	MHCA2-6D ●	6	0.038	+30° ~ -10°	Without auto switch
Single acting (normally open)	MHCA2-6S	6	0.024		
	MHCM2-7S ●	7	0.017	+20° ~ -7°	

1) Per finger at 0.5 MPa

Toggle type air gripper

MHT2 Series



- The toggle mechanism holds workpiece even when pressure drops.

Action	Part number	Bore size [mm]	Gripping moment per finger [Nm] ¹⁾	Opening/Closing angle	Possible auto switches
Double acting	MHT2-32TFDZ ●	32	12.4	+28° ~ -3°	Reed: D-A93L 3 wire solid state/2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/2 colour D-M9BWL
	MHT2-40TFDZ ●	40	36	+27° ~ -3°	
	MHT2-50TFDZ ●	50	63	+23° ~ -2°	
	MHT2-63TFDZ ●	63	106	+23° ~ -2°	

1) Per finger at 0.5 MPa

180° angular air gripper, cam type

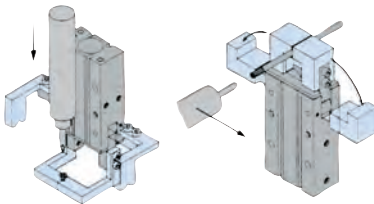
MHY2 Series



- Synchronous rotary movement via crank drive with large holding moment
- Auto switch can be integrated into body.

Action	Part number	Bore size [mm]	Gripping moment per finger [Nm] ¹⁾	Opening/Closing angle	Possible auto switches
Double acting 180° opening angle	MHY2-10D ●	10	0.16	+180° ~ -3°	3 wire solid state/2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/2 colour D-M9BWL
	MHY2-16D ●	16	0.54	+180° ~ -3°	
	MHY2-20D ●	20	1.10	+180° ~ -3°	
	MHY2-25D ●	25	2.28	+180° ~ -3°	

1) Per finger at 0.5 MPa



180° angular air gripper, rack and pinion type

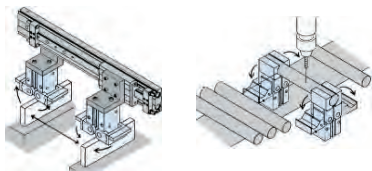
MHW2 Series



- Robust, rack and pinion actuator for synchronous rotary movements of the gripper fingers
- Auto switch can be integrated into body
- Insensitive to dirt as body is almost completely enclosed.

Action	Part number	Bore size [mm]	Gripping moment per finger [Nm] ¹⁾	Opening/Closing angle	Possible auto switches
Double acting 180° opening angle	MHW2-20D ●	20	0.30	+180° ~ -5°	3 wire solid state/2 colour NPN: D-M9NWL PNP: D-M9PWL 2 wire solid state/2 colour D-M9BWL
	MHW2-25D ●	25	0.73	+180° ~ -6°	
	MHW2-32D ●	32	1.61	+180° ~ -5°	
	MHW2-40D ●	40	3.70	+180° ~ -5°	
	MHW2-50D ●	50	8.27	+180° ~ -4°	

1) Per finger at 0.5 MPa



Rotary gripper

MRHQ Series



- Ø 10, 16, 20, 25
- Compact combination of gripping and rotating function
- Simple piping/wiring from one side
- Length approx. 20 % shorter compared to previous product-combination with adapter plate
- Rotation angles of 90° and 180° are available
- The standard model with magnets allows the retrofitting of auto switches
- Both and positions adjustable by ±5°.

Part number	Rotary actuator			Gripper		Thread connection
	Rotation angle	Angle adjustment	Allowable kinetic energy [J]	Cylinder bore [mm]	Opening/Closing stroke [mm]	
MRHQ10D-90S-N ●	90°	±10°	0.0046	10	4	M5
MRHQ10D-180S-N ●	180°					
MRHQ16D-90S-N ●	90°	±10°	0.014	16	6	
MRHQ16D-180S-N ●	180°					
MRHQ20D-90S-N ●	90°	±10°	0.034	20	10	
MRHQ20D-180S-N ●	180°					
MRHQ25D-90S-N ●	90°	±10°	0.074	25	14	
MRHQ25D-180S-N ●	180°					

Single acting gripper optional

Possible auto switches (for rotary actuators)

3 wire solid state	NPN: D-M9NL-746, PNP: D-M9PL-746
2 wire solid state	D-M9BL-746

Possible auto switches (for gripper)

3 wire solid state	NPN: D-M9NVL, PNP: D-M9PVL
2 wire solid state	D-M9BVL

Our highlighted product for you

Magnetic gripper MHM-X6400 Series



- Holding force up to 120 N
- Holds workpieces even when air is shut off
- Residual holding force 0.3 N or less
- Holding force can be adjusted changing the bumper
- Bumper is made of fluororubber
- Mountable on 3 surfaces
- Auto switches can be mounted.

Part number	Thread port	Holding force ¹⁾
MHM-32D1-X6400 ●	R 1/8	80 N
MHM-32D2-X6400		50 N
MHM-32D3-X6400		30 N

1) Workpiece thickness: 6 mm

Possible auto switches

Solid state switch	D-M9BV
	D-M9NV
	D-M9PV
Solid state switch (2-colour indication)	D-M9BWW
	D-M9NWW
	D-M9PWW
Solid state switch Water resistant (2-colour indication)	D-M9BAV
	D-M9NAV
	D-M9PAV
Magnetic field resistant 2-colour indication type Solid state auto switch	D-P3DWA
	D-P3DWASC
	D-P3DWASE

Bumper order number

Model	Holding force
MHM-A3201-1-X6400	80 N
MHM-A3201-2-X6400	50 N
MHM-A3201-3-X6400	30 N

Shock absorbers & floating joints

Shock absorber, soft type

RJ Series

M8•M10•M14•M20•M27



- Stops transported objects softly
- Suitable for softly stopping light objects or objects transferred at low speeds
- 30 % reduced absorption time (compared with SMC RB series)
- Mounting interchangeable with the RB series
- Maximum operating cycles 10 million cycles.

Standard

Part number	Thread on the body	Strokes [mm]	Max. energy absorption [J]	Max. operation [cycles/min]	Collision speed [m/s]
RJ0604 ●	M6 x 0.75	4	0.5	80	0.05 to 1
RJ0806H ●	M8 x 1.0	6	1	80	0.05 to 2
RJ0806L ●	M8 x 1.0	6	1	80	0.05 to 1
RJ1007H ●	M10 x 1.0	7	3	70	0.05 to 2
RJ1007L ●	M10 x 1.0	7	3	70	0.05 to 1
RJ1412H ●	M14 x 1.5	12	10	45	0.05 to 2
RJ1412L ●	M14 x 1.5	12	10	45	0.05 to 1
RJ2015H ●	M20 x 1.5	15	30	25	0.05 to 2
RJ2015L ●	M20 x 1.5	15	30	25	0.05 to 1
RJ2725H ●	M27 x 1.5	25	70	10	0.05 to 1.5
RJ2725L ●	M27 x 1.5	25	70	10	0.05 to 1
RJ0805 ●	M8 x 1.0	5	0.5	80	0.05 to 1
RJ1006 ●	M10 x 1.0	6	1.5	70	0.05 to 1
RJ1410 ●	M14 x 1.5	10	3.7	45	0.05 to 1

With cap

Part number	Thread on the body	Strokes [mm]	Max. energy absorption [J]	Max. operation [cycles/min]	Collision speed [m/s]
RJ0806HU ●	M8 x 1.0	6	1	80	0.05 to 2
RJ0806LU ●	M8 x 1.0	6	1	80	0.05 to 1
RJ1007HU ●	M10 x 1.0	7	3	70	0.05 to 2
RJ1007LU ●	M10 x 1.0	7	3	70	0.05 to 1
RJ1412HU ●	M14 x 1.5	12	10	45	0.05 to 2
RJ1412LU ●	M14 x 1.5	12	10	45	0.05 to 1
RJ2015HU ●	M20 x 1.5	15	30	25	0.05 to 2
RJ2015LU ●	M20 x 1.5	15	30	25	0.05 to 1
RJ2725HU ●	M27 x 1.5	25	70	10	0.05 to 1.5
RJ2725LU ●	M27 x 1.5	25	70	10	0.05 to 1
RJ0805U ●	M8 x 1.0	5	0.5	80	0.05 to 1
RJ1006U ●	M10 x 1.0	6	1.5	70	0.05 to 1
RJ1410U ●	M14 x 1.5	10	3.7	45	0.05 to 1

Shock absorber, basic type

RB/RBC Series

M6•M8•M10•M14•M20•M27



- Component for stroke end damping with optimum effect
- Increased efficiency by use of hydraulic principle resulting in minimum dimensions
- Automatic adjustment system for each size allows a wide range of applications
- Impact speed up to max. 5 m/s
- The ring area on the front can also be used as a mechanical stop to a certain extent.

Standard

Part number	Thread on the body	Strokes [mm]	Max. energy absorption [J]	Max. operation [cycles/min]	Max. impact speed [m/s]
RB0604 ●	M6 x 0.75	4	0.5	80	1
RB0806 ●	M8 x 1	6	2.94	80	5
RB1007 ●	M10 x 1	7	5.88	70	
RB1412 ●	M14 x 1.5	12	19.6	45	
RB2015 ●	M20 x 1.5	15	58.8	25	
RB2725 ●	M27 x 1.5	25	147	10	

With cap

Part number	Thread on the body	Strokes [mm]	Max. energy absorption [J]	Max. operation [cycles/min]	Max. impact speed [m/s]
RBC0806 ●	M8 x 1	6	2.94	80	5
RBC1007 ●	M10 x 1	7	5.88	70	
RBC1412 ●	M14 x 1.5	12	19.6	45	
RBC2015 ●	M20 x 1.5	15	58.8	25	
RBC2725 ●	M27 x 1.5	25	147	10	

Shock absorber, short type

RBQ/RBQC Series

M16•M20•M25•M30•M32



- New design principle (external plunger) enables a high space efficiency with minimum dimensions
- Automatic adjustment
- Ideal mounting options and adjustment with continuous male thread on the body
- Impact speed max. 3 m/s
- Stopper with either metallic or with rubber cap with the same mounting dimensions
- Enclosed system produces increased operational security and is maintenance free.

Metal stopper

Part number	Thread on the body	Strokes [mm]	Max. energy absorption [J]	Max. operation [cycles/min]	Max. impact speed [m/s]
RBQ1604 ●	M16 x 1.5	4	1.96	60	3
RBQ2007 ●	M20 x 1.5	7	11.8	60	
RBQ2508 ●	M25 x 1.5	8	19.6	45	
RBQ3009 ●	M30 x 1.5	8,5	33.3	45	
RBQ3213 ●	M32 x 1.5	13	49	30	

Rubber stopper

Part number	Thread on the body	Strokes [mm]	Max. energy absorption [J]	Max. operation [cycles/min]	Max. impact speed [m/s]
RBQC1604 ●	M16 x 1.5	4	1.96	60	3
RBQC2007 ●	M20 x 1.5	7	11.8	60	
RBQC2508 ●	M25 x 1.5	8	19.6	45	
RBQC3009 ●	M30 x 1.5	8,5	33.3	45	
RBQC3213 ●	M32 x 1.5	13	49	30	

Floating joint, standard type

JA Series



- Compact and light weight
- Compensates for both angular and eccentric misalignment
- Reduces mounting time of actuator
- Long life - dust tight cover
- Do not use for rotation because of non-rotating shaft coupling.

Standard

Part number	Applicable cylinder bore size [mm]	Applicable cylinder nominal thread size	Maximum operating tensile and compressive force [N]	Allowable eccentricity [Umm]	Rotating angle	Operating pressure
JA6-3-050 ●	6	M3	19	0.5	±5°	1 MPa or less (Air cylinder) 3.5 MPa or less (Hydraulic cylinder)
JA10-4-070 ●	10	M4	54	0.5		
JA15-5-080 ●	10/15	M5	123	0.5		
JA15-6-100 ●	15	M6	123	0.5		
JA20-8-125 ●	20	M8	1100	0.5		
JA30-10-125 ●	25/30	M10 x 1.25	2500	0.5		
JA40-14-150 ●	40	M14 x 1.5	6000	0.75		
JA63-18-150 ●	50/63	M18 x 1.5	11000	1		
JA80-22-150 ●	80	M22 x 1.5	18000	1.25		
JA100-26-150 ●	100	M26 x 1.5	28000	2		
JA140-30-150 ●	125/140	M30 x 1.5	54000	2.5		
JA160-36-150 ●	160	M36 x 1.5	71000	3		

Floating joint, light weight type

JC Series



- Compact and lightweight
- Compensates for both angular and eccentric misalignment
- Long life - dust tight cover.

Standard/Thread nominal size

Part number	Applicable cylinder bore size [mm]	Applicable cylinder nominal thread size	Max. operating tensile and compressive force [N]	Allowable eccentricity [Umm]	Rotating angle	Operating pressure
			Basic style			
JC20-8-125 ●	20	M8 x 1.25	300	0.5	±5°	1 MPa or less
JC30-10-125 ●	25/32	M10 x 1.25	800	0.5		
JC40-14-150 ●	40	M14 x 1.5	1250	0.75		
JC63-18-150 ●	50/63	M18 x 1.5	3100	1		

Semi-standard/Thread nominal size

Part number	Applicable cylinder bore size [mm]	Applicable cylinder nominal thread size	Max. operating tensile and compressive force [N]	Allowable eccentricity [Umm]	Rotating angle	Operating pressure
			Basic style			
JC20-8-100	20	M8 x 1	300	0.5	±5°	1 MPa or less
JC25-10-150	25	M10 x 1.5	800	0.5		
JC32-10-100	32	M10 x 1	800	0.5		
JC40-12-125	32/40	M12 x 1.25	1250	0.75		
JC40-12-150	40	M12 x 1.5	1250	0.75		
JC40-12-175	32/40	M12 x 1.75	1250	0.75		
JC50-16-150	50	M16 x 1.5	3100	1		
JC63-16-200	50/63	M16 x 2	3100	1		

Floating joint

JT Series



- Compact and lightweight
- Applicable cylinder bore sizes (mm) $\varnothing 20 \sim \varnothing 40$
- Rotating angle $\pm 2^\circ$
- Allowable eccentricity up to 0.75 mm
- Allowable axial force up to 880 N.

Part number	Applicable cylinder bore size [mm]	Nominal thread size
JT20	20	M8
JT32	25	M10
	32	M10
JT40	40	M14

Basic characteristics of air cylinders

The basic characteristics of air cylinders are as shown below.

Use the figures in the table below as a guide for model selection since they may be different depending on a model or bore size. For details, refer to the individual actuator's catalogue.

1 Bore size selection

Use the table below as a guide for selecting a bore size.

Bore size [mm]	Maximum stroke [mm]	Transfer load [kg]						Allowable rod end lateral load [N]	
		0.1	1	10	100	1000	(kg)	With rod retracted	With max. rod extended
2.5	Up to 10	0.2						—	—
4	Up to 20	0.6						—	—
6	Up to 60	1.4						0.2	0.05
8	Up to 400	2.5						0.4	0.05
10		3.8						0.7	0.08
12		5.5						1.2	0.15
16		9.8						2.0	0.2
20		15						5.0	1.0
25	Up to 1500	24						7.0	1.5
32		39						10	2
40		62						18	3
50		96						30	4
63		153						45	5
80	Up to 1600	246						70	8
100		385						100	10
125		601						250	25
160		985						400	40
180		1246						500	45
200	Up to 2000	1539						600	55
250	Up to 2400	2404						1000	100
300		3462						1200	150

2 Minimum operating pressure

Bore size [mm]	6	10	16	20	25	32	40	50	63	80	100	125	160	180	200
Standard cylinder	0.12	0.06					0.05								
Low friction cylinder		0.03		0.025						0.01		0.005			
Metal seal cylinder (High speed, low friction)	0.02	0.005													

* Consult with SMC for figures other than those shown in this table.

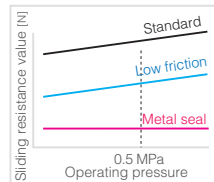
Sliding resistance of a cylinder varies depending on the operating pressure.

Sliding resistance values at 0.5 MPa are shown in the table below.

(Guide value)

Standard cylinder	19 to 102 N (Ø 40 to Ø 100)
Low friction cylinder	8 to 40 N (Ø 40 to Ø 100)
Metal seal cylinder	0.05 to 0.2 N (Ø 6 to Ø 40)

* Contact SMC regarding the bore sizes which do not have a resistance value shown.

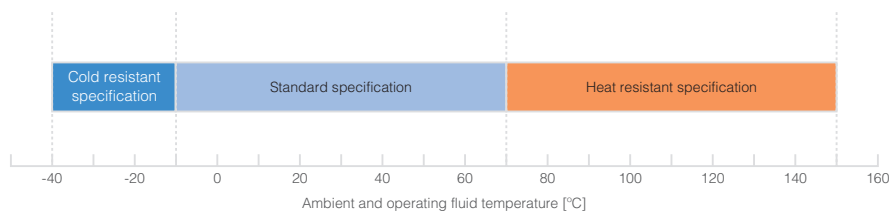


3 Cylinder speed

Bore size [mm]	6	10	16	20	25	32	40	50	63	80	100	125	160	180	200	
Standard cylinder	50 to 750						50 to 1000						50 to 500			
Low speed cylinder	—	1 to 300		0.5 to 300						—						
High power cylinder (High speed)	—			50 to 3000						—						
Metal seal cylinder	0.5 to 3000 (Ø 6: Up to 1000)					—										

* Consult with SMC for figures other than those shown in this table.

4 Ambient and operating fluid temperature



* For the selection of a piston speed and an operating pressure with cold or heat resistant specification and an auto switch, refer to the following pages.

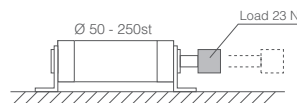
5 Service life

This cylinder service life data is based on the service life test conducted under the test conditions shown below. This does not guarantee the service life under the customers' operating conditions.

Traveling distance	8000 km running (16 million reciprocating cycles)
Condition of cylinder	Operation condition: Good
	External air leakage: 5 cm ³ /min. ANR or less
	Seals: No problem in operation although there is slight friction.
	Piston rod: No abnormal change

Test Condition

Cylinder tested	Air cylinder/CA2 series
Bore size	50 mm
Stroke	250 mm
Operating direction	Horizontal
Operating pressure	0.7 MPa
Cylinder speed	650 mm/s
Operating frequency	65 complete cycles/min
Ambient temperature	Room temperature
Rod end load	23 N
Operating air supply	Using Air filter/AF and Mist Separator/AM
Lubrication	Non-lube (Initial lubrication by grease)
Air cushion	Adequately used



Others

Regarding the service life for other models, clean series, water resistant cylinder and oil-free (using white vaseline), consult with SMC.

Basic characteristics of rodless cylinders

A performance comparison between a magnet and mechanically joint type rodless cylinder is shown below.

Use the figures in the table below as a guide for model selection since they may be different depending on a model or bore size. For details, refer to the individual actuator's catalogue.

1 Bore size and stroke

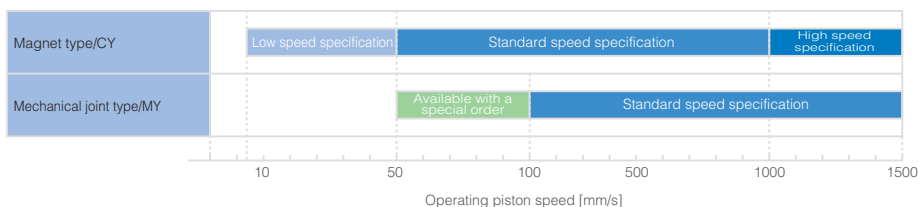
Manufacturable maximum stroke is shown below.

	Bore size [mm]										
	6	10	15(16)	20	25	32	40	50	63	80	100
Magnet type/CY*	300	500	1000	1500	3000			5000		—	
Mechanical joint type/MY	—	3000		5000							

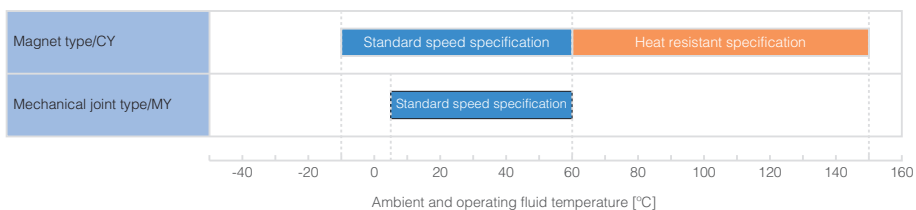
* The maximum stroke for cylinders with a magnet is compatible with CY3B.

Mechanical joint type rodless cylinders: Those shown in the table exclude the linear guide type.

2 Operating piston speed



3 Ambient and operating fluid temperature



4 Operating pressure

The minimum operating pressure is shown below.

	Bore size [mm]										
	6	10	15(16)	20	25	32	40	50	63	80	100
Magnet type/CY	0.16	0.16	0.16	0.15	0.14	0.12		—			
Mechanical joint type/MY	—	0.2	0.1(0.15)								

The maximum operating pressure is shown below.

Magnet type rodless cylinder: 0.7 MPa

Mechanical joint type rodless cylinder: 0.8 MPa

5 Function comparison

Comparison by function is shown below.

	Magnet type rodless cylinder/CY	Mechanical joint type rodless cylinder/MY
With guide variation	<ul style="list-style-type: none"> • Basic • Slide bearing • Ball bushing bearing • Linear guide 	<ul style="list-style-type: none"> • Basic • Slide bearing (made of resin) • Cam follower guide • Linear guide
Clean Series	12-Series Clean rodless cylinder/CYP (Special grease)	—
Improved water resistance	—	With protective cover/MY1CW, MY1MW
Intermediate stop	Using 3 position solenoid valve (all ports blocked)	With lock/ML1C
Cushion	Rubber bumper Shock absorber Sign rodless cylinder/REA, REB	Rubber bumper Air cushion Shock absorber
Air-hydro specification	○	—

6 Service life

This cylinder service life data is based on the service life test conducted under the test conditions shown below. This does not guarantee the service life under the customers' operating conditions.

	Magnet type rodless cylinder/CY	Mechanical joint type rodless cylinder/MY
Traveling distance	3500 km	3000 km
Condition of cylinder	<ul style="list-style-type: none"> • Operation condition: Good • External air leakage: 1 cc/min or less • Interior air leakage: 1 cc/min or less • External appearance: Lubricated condition is good and there are no flaws on it. • Minimum operating pressure: Equivalent to the initial value 	<ul style="list-style-type: none"> • Operation condition: Good • Dust seal band: No peeling off, bulging or cracks • Air leakage: Equivalent to the initial value • Minimum operating pressure: Equivalent to the initial value • Air cushion: Good

Test Condition

	Magnet type rodless cylinder	Mechanical joint type rodless cylinder
Cylinder tested	CY3B Series	MY1B Series
Bore size	50 mm	
Stroke	500 mm	
Operating direction	Horizontal	Horizontal wall mounting
Operating pressure	0.5 MPa	
Average piston speed	500 mm/s	
Operating frequency	20 c.p.m	
Ambient temperature	Room temperature	
Load mass	1.2 kg	9 kg
Lubrication	Non-lube (Initial lubrication by grease)	

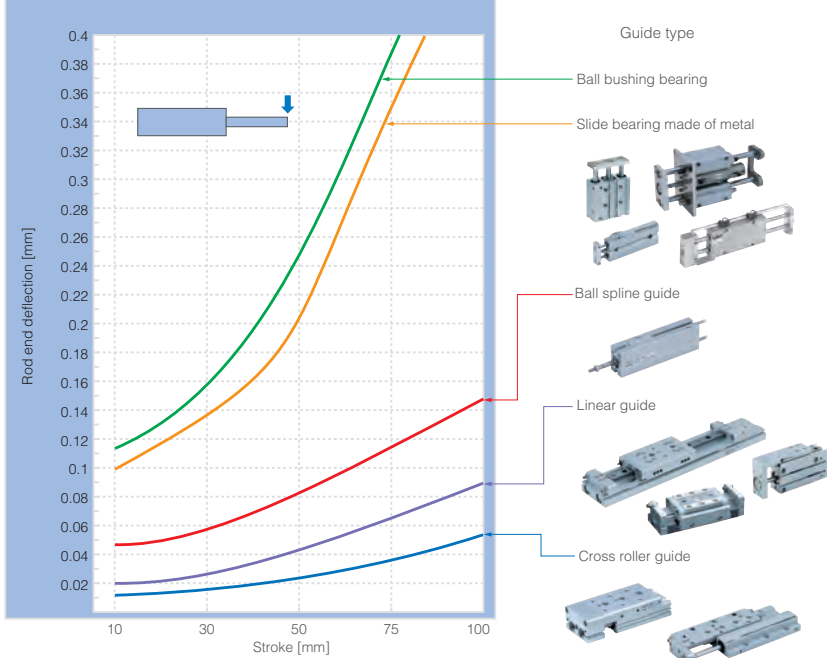
Basic characteristics of cylinders with guide

A performance comparison of cylinders with different types of mounting guides is shown below.

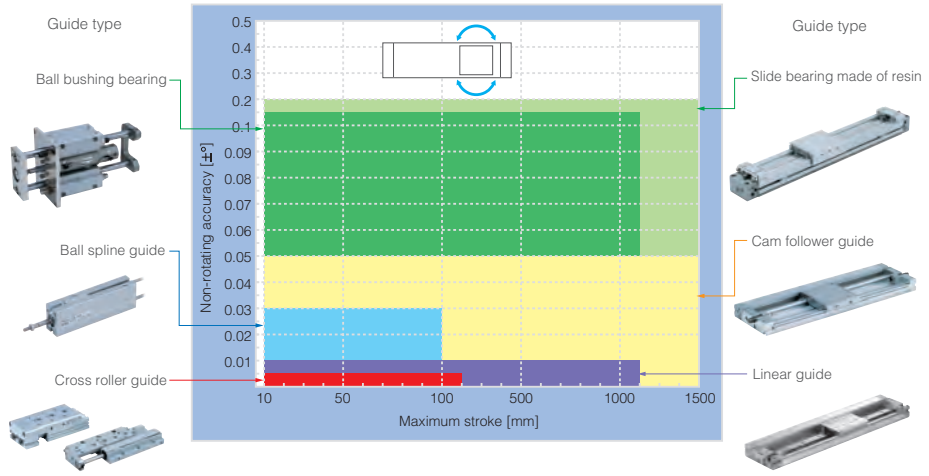
Use the figures in the table below as a guide for model selection since they may be different depending on a model or bore size. For details, refer to the individual actuator's catalogue.

1 Accuracy

- 1) Deflection amount at the table or rod end (When the maximum load is applied to the stroke extension end.)
Below graph shows only the tendency since it may be different depending on a model or bore size.

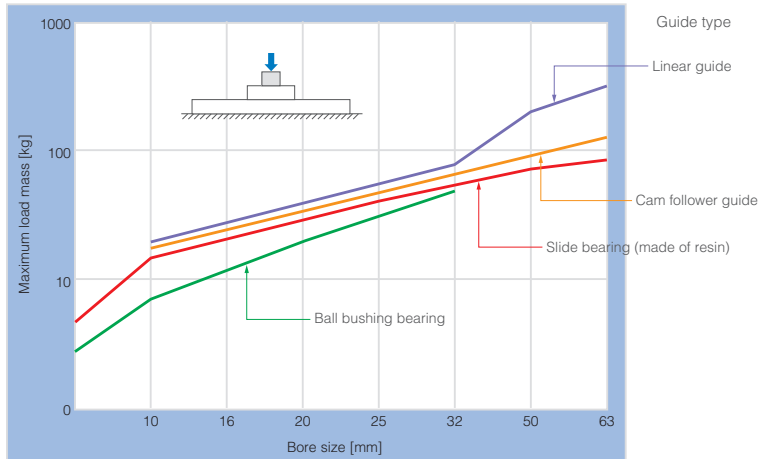


- 2) Non-rotating accuracy at the table or rod end
Below graph shows only the tendency since it may be different depending on a model or bore size.



2 Load mass

Below graph shows only the tendency since it may be different depending on a model or bore size.



* The figures will change depending on the operating speed and the amount of overhang.
For details, refer to pages described to each product model selection.

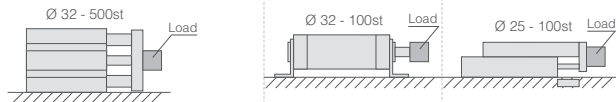
3 Service life

This cylinder service life data is based on the service life test conducted under the test conditions shown below.
This does not guarantee the service life under the customers' operating conditions.

Guide type	Slide bearing (Copper alloy)	Ball bushing bearing	Ball spline guide	Linear guide
Cylinder for test	MGGM	MGGL	MTS	MXQ
Traveling distance (number of complete cycles)	3000 km (3 million cycles)		2000 km (10 million cycles)	2000 km (10 million cycles)
Non-rotating accuracy	0.03 mm or less 0.04		0.05	0.005 mm or less

* The figures of non-rotating accuracy is measured when 50 % of the allowable torque is applied.

* It is the same as the lubrication.



Test condition

Guide type	Slide bearing (Copper alloy)	Ball bushing bearing	Ball spline guide	Linear guide
Cylinder for test	MGGM	MGGL	MTS	MXQ
Bore size	Ø 32		Ø 32	Ø 25
Stroke	500 mm		100 mm	100 mm
Operating direction	Horizontal		Horizontal	Vertical, downward
Average piston speed	800 mm/s		800 mm/s	350 mm/s
Operating frequency	18 complete cycles/min		29 complete cycles/min	60 complete cycles/min
Load mass	2.8 kg		4.3 kg	3.8 kg
Lubrication	Non-lube (Initial lubrication by grease)			

Others

Regarding the other models, consult with SMC.

Theoretical force tables



Note: The theoretical force of a cylinder = pressure x effective area. Please allow suitable load factors when selecting cylinders for applications. Information given here is only applicable to double acting cylinders. All figures quoted in these tables are in Newtons and are rounded to the nearest integer.

Theoretical force table 1

Applicable series:

C76, C85, C95, C96, CG1, CG3, CJ2, CM2, CM3, CP96, MGG, MXH (0.7 MPa max pressure), MXF (0.7 MPa max pressure).

Note, where more than one rod size is given, please check dimension page to confirm applicable rod diameter.

[N]

Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
6	3	OUT	28	6	8	11	14	17	20	-	-	-
		IN	21	4	6	8	11	13	15	-	-	-
8	4	OUT	50	10	15	20	25	30	35	40	45	50
		IN	38	8	11	15	19	23	26	30	34	38
10	4	OUT	79	16	24	31	39	47	55	63	71	79
		IN	66	13	20	26	33	40	46	53	59	66
12	6	OUT	113	23	34	45	57	68	79	90	102	113
		IN	85	17	25	34	42	51	59	68	76	85
16	5	OUT	201	40	60	80	101	121	141	161	181	201
		IN	181	36	54	73	91	109	127	145	163	181
	6	OUT	201	40	60	80	101	121	141	161	181	201
		IN	173	35	52	69	86	104	121	138	156	173
	8	OUT	201	40	60	80	101	121	141	-	-	-
		IN	151	30	45	60	75	90	106	-	-	-
20	8	OUT	314	63	94	126	157	188	220	251	283	314
		IN	264	53	79	106	132	158	185	211	238	264
	10	OUT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	141	165	188	212	236
25	10	OUT	491	98	147	196	246	295	344	393	442	491
		IN	412	82	124	165	206	247	288	330	371	412
32	12	OUT	804	161	241	322	402	482	563	643	724	804
		IN	691	138	207	276	346	415	484	553	622	691
40	14	OUT	1260	252	378	504	630	756	882	1010	1130	1260
		IN	1100	220	330	440	550	660	770	880	990	1100
	16	OUT	1260	252	378	504	630	756	882	1010	1130	1260
		IN	1060	212	318	424	530	636	742	848	954	1060
50	20	OUT	1960	392	588	784	980	1180	1370	1570	1760	1960
		IN	1650	330	495	660	825	990	1160	1320	1490	1650
63	20	OUT	3120	624	936	1250	1560	1870	2180	2500	2810	3120
		IN	2800	560	840	1120	1400	1680	1960	2240	2520	2800
80	25	OUT	5030	1010	1510	2010	2520	3020	3520	4020	4530	5030
		IN	4540	908	1360	1820	2270	2720	3180	3630	4090	4540
100	25	OUT	7850	1570	2360	3140	3930	4710	5500	6280	7070	7850
		IN	7360	1480	2210	2950	3680	4420	5160	5890	6630	7360
125	32	OUT	12300	2460	3690	4920	6150	7380	8610	9840	11100	12300
		IN	11470	2300	3450	4590	5740	6890	8030	9180	10330	11470
140	36	OUT	15400	3080	4620	6160	7700	9240	10800	12300	13900	15400
		IN	14400	2880	4320	5760	7200	8640	10100	11500	13000	14400
160	40	OUT	20100	4020	6030	8040	10100	12100	14100	16100	18100	20100
		IN	18800	3760	5640	7520	9400	11300	13200	15000	16900	18800
180	45	OUT	25400	5080	7620	10200	12700	15200	17800	20300	22900	25400
		IN	23900	4780	7170	9560	12000	14300	16700	19100	21500	23900
200	50	OUT	31400	6280	9420	12600	15700	18800	22000	25100	28300	31400
		IN	30150	6030	9050	12060	15080	18090	21110	24120	27140	30150
250	60	OUT	49100	9820	14700	19600	24600	29500	34400	39300	44200	49100
		IN	46300	9260	13900	18500	23200	27800	32400	37000	41700	46300

Theoretical force table 2

Applicable series: C55, CQ2, CQM, CQS, MGP
(Outstroke force only)

[N]

Bore size [mm]	Operating direction	Operating pressure [MPa]			
		0.3	0.5	0.7	0.7
12	IN	25	42	59	
	OUT	34	57	79	
16	IN	45	75	106	
	OUT	60	101	141	
20	IN	71	118	165	
	OUT	94	157	220	
25	IN	113	189	264	
	OUT	147	245	344	
32	IN	181	302	422	
	OUT	241	402	563	
40	IN	317	528	739	
	OUT	377	628	880	

[N]

Bore size [mm]	Operating direction	Operating pressure [MPa]		
		0.3	0.5	0.7
50	IN	495	825	1150
	OUT	589	982	1370
63	IN	841	1400	1960
	OUT	935	1560	2180
80	IN	1360	2270	3170
	OUT	1510	2510	3520
100	IN	2140	3570	5000
	OUT	2360	3930	5500
125	IN	3376	5627	7878
	OUT	3682	6136	8590
140	IN	4313	7188	10063
	OUT	4618	7697	10776
160	IN	5655	9425	13195
	OUT	6032	10053	14074
180	IN	7257	12095	16933
	OUT	7634	12724	17813
200	IN	9048	15080	21112
	OUT	9425	15708	21991

Theoretical force table 3

Applicable series:

MY1B, MY1C, MY1H, MY1M, MY2, MY3

[N]

Bore size [mm]	Piston area [mm ²]	Operating pressure [MPa]						
		0.2	0.3	0.4	0.5	0.6	0.7	0.8
10	78	15	23	31	39	46	54	62
16	200	40	60	80	100	120	140	160
20	314	62	94	125	157	188	219	251
25	490	98	147	196	245	294	343	392
32	804	161	241	322	402	483	563	643
40	1256	251	377	502	628	754	879	1005
50	1962	392	588	784	981	1177	1373	1569
63	3115	623	934	1246	1557	1869	2180	2492
80	5024	1004	1507	2009	2512	3014	3516	4019
100	7850	1570	2355	3140	3925	4710	5495	6280

Theoretical force table 5

Applicable series: CUJ

[N]

Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]		
				0.3	0.5	0.7
4	2	OUT	13	4	6	9
		IN	9	3	5	7
6	4	OUT	28	8	14	20
		IN	16	5	8	11
8	5	OUT	50	15	25	35
		IN	31	9	15	21
10	6	OUT	79	24	39	55
		IN	50	15	25	35
12	6	OUT	113	34	57	79
		IN	85	25	42	59
16	8	OUT	201	60	101	141
		IN	151	45	75	106
20	10	OUT	314	94	157	220
		IN	236	71	118	165

Theoretical force table 4

Applicable series: MXQ, MXS, MXW

[N]

Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]						
				0.2	0.3	0.4	0.5	0.6	0.7	
6	3	OUT	57	11	17	23	29	34	40	
		IN	42	8	13	17	21	25	29	
8	4	OUT	101	20	30	40	51	61	71	
		IN	75	15	23	30	38	45	53	
12	6	OUT	226	45	68	90	113	136	158	
		IN	170	34	51	68	85	102	119	
16	8	OUT	402	80	121	161	201	241	281	
		IN (MXS, MXW)	302	60	91	121	151	181	211	
20	6	IN (MXQ)	346	69	104	138	173	207	242	
		OUT	628	126	188	251	314	377	440	
20	10	IN (MXS, MXW)	471	94	141	188	236	283	330	
		IN (MXQ)	528	106	158	211	264	317	369	
25	12	OUT	982	196	295	393	491	589	687	
		IN (MXS, MXW)	756	151	227	302	378	454	529	
25	10	IN (MXQ)	825	165	247	330	412	495	577	

Theoretical force table 6

Applicable series: MXP

[N]

Bore size [mm]	Piston area [mm ²]	Operating pressure [MPa]						
		0.2	0.3	0.4	0.5	0.6	0.7	
6	28	6	8	11	14	17	20	
8	50	10	15	20	25	30	35	
10	79	16	24	32	40	47	55	
12	113	23	34	45	57	68	79	
16	201	40	60	80	101	121	141	

Theoretical force table 7

Applicable series: MXY

[N]

Bore size [mm]	Piston area [mm ²]	Operating pressure [MPa]				
		0.2	0.3	0.4	0.5	0.55
6	28	6	8	11	14	15
8	50	10	15	20	25	28
12	113	23	34	45	57	62

Theoretical force table 8

Applicable series: MU

[N]

Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]					
				0.2	0.3	0.4	0.5	0.6	0.7
25	12	OUT	491	98	147	196	246	295	344
		IN	378	76	113	151	189	227	265
32	14	OUT	804	161	241	322	402	482	563
		IN	650	130	195	260	325	390	455
40	16	OUT	1257	251	377	503	629	754	880
		IN	1056	211	317	422	528	634	739
50	20	OUT	1963	393	589	785	982	1178	1374
		IN	1649	330	495	660	824	989	1154
63	20	OUT	3117	623	935	1247	1559	1870	2182
		IN	2803	561	841	1121	1402	1682	1962

Theoretical force table 9

Applicable series: MGF, MGZ, MGZR, MTS

Note, please take care to select correct table for each product.

MGF

[N]

Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
40	25	OUT	1256	251	376	502	628	753	879	1004	1130	1256
		IN	765	153	229	306	382	459	535	612	688	765
63	36	OUT	3117	623	935	1246	1558	1870	2182	2493	2805	3117
		IN	2099	419	629	839	1049	1259	1469	1679	1889	2099
100	36	OUT	7853	1570	2356	3141	3926	4711	5497	6282	7067	7853
		IN	6835	1367	2050	2734	3417	4101	4784	5468	6151	6835

MGZ, MGZR


[N]

Model	Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]								
					0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
MGZ/R20	20 x 25	10	OUT	726	145	218	290	363	436	508	581	653	726
			IN	236	47	71	94	118	141	165	189	212	236
MGZ/R25	25 x 30	12	OUT	1085	217	326	434	543	651	760	868	977	1085
			IN	378	76	113	151	189	227	265	302	340	378
MGZ/R32	36 x 32	16	OUT	1621	324	486	648	811	973	1135	1297	1459	1621
			IN	603	121	181	241	302	362	422	482	543	603
MGZ/R40	45 x 40	20	OUT	2533	507	760	1013	1267	1520	1773	2026	2280	2533
			IN	942	188	283	377	471	565	659	754	848	942
MGZ/R50	55 x 50	25	OUT	3848	770	1154	1539	1924	2309	2694	3078	3463	3848
			IN	1473	295	442	589	737	884	1031	1178	1326	1473
MGZ/R63	68 x 63	32	OUT	5945	1189	1784	2378	2973	3567	4162	4756	5351	5945
			IN	2313	463	694	925	1157	1388	1619	1850	2082	2313
MGZ/R80	87 x 80	40	OUT	9715	1943	2915	3886	4858	5829	6801	7772	8744	9715
			IN	3770	754	1131	1508	1885	2262	2639	3016	3393	3770

MTS

[N]

Bore size [mm]	Operating direction	Piston area [mm ²]	Operating pressure [MPa]					
			0.2	0.3	0.4	0.5	0.6	0.7
8	OUT	50	10	15	20	25	30	35
	IN	37	8	11	15	19	22	26
12	OUT	113	23	34	45	57	68	79
	IN	84	17	25	34	42	50	59
16	OUT	201	40	60	80	101	121	141
	IN	150	30	45	60	75	90	105
20	OUT	314	63	94	126	157	188	220
	IN	235	47	71	94	118	141	165
25	OUT	490	98	147	196	245	294	343
	IN	358	72	107	143	179	215	251
32	OUT	804	161	241	322	402	482	563
	IN	603	121	181	241	302	362	422
40	OUT	1,256	251	377	502	628	754	879
	IN	942	188	283	377	471	565	659

 Caution Do not apply a load that is 50 % or more of the theoretical output.

Simple specials

- XA0 to XA38**: Change of rod and shape.
- XC14**: Change of trunnion bracket mounting position.
- XC79**: Tapped hole, drilled hole, pinned hole machined additionally.

Applicable series

Series	XA	XC14	XC79
C76	XA0 to XA30		
C85	XA0 to XA30		
C96	XA0 to XA30	●	
CG1	XA0 to XA30		
CG1Y	XA0 to XA30		
CG5-S	XA0 to XA30		
CJ2	XA0/XA1/XA10/XA11		
CJP2	XA0/XA1/XA10/XA11		
CM2	XA0 to XA30		
CM2Y	XA0 to XA30		
CP96	XA0 to XA30		
CQ2	XA1 to XA23, XA26 to XA30		
CQS	XA1/XA2/XA6/XA7/XA11/XA17/XA18		
CUJ	XA0/XA1/XA2/XA6/XA7/XA10/XA11/XA17/XA18		
MGF			●
MGG			●
MGP	XA1/XA6/XA17/XA21		●
MXH			●
RQ	XA1 to XA23, XA26 to XA30		
RSQ	XA1/XA3/XA6/XA7/XA8/XA10/XA11/XA13/XA17/XA18/XA19/XA32/XA33/XA34/XA35/XA36/XA37/XA38		

Change of rod end shape (-XA0 to -XA38)

<p>Symbol : A0</p>	<p>Symbol : A1</p>	<p>Symbol : A2</p>	<p>Symbol : A3</p>	<p>Symbol : A4</p>
<p>Symbol : A5</p>	<p>Symbol : A6</p>	<p>Symbol : A7</p>	<p>Symbol : A8</p>	<p>Symbol : A9</p>
<p>Symbol : A10</p>	<p>Symbol : A11</p>	<p>Symbol : A12</p>	<p>Symbol : A13</p>	<p>Symbol : A14</p>
<p>Symbol : A15</p>	<p>Symbol : A16</p>	<p>Symbol : A17</p>	<p>Symbol : A18</p>	<p>Symbol : A19</p>
<p>Symbol : A20</p>	<p>Symbol : A21</p>	<p>Symbol : A22</p>	<p>Symbol : A23</p>	<p>Symbol : A24</p>
<p>Symbol : A25</p>	<p>Symbol : A26</p>	<p>Symbol : A27</p>	<p>Symbol : A28</p>	<p>Symbol : A29</p>
<p>Symbol : A30</p>	<p>Symbol : A32</p> <p>Standard length</p>	<p>Symbol : A33</p> <p>Standard length</p>	<p>Symbol : A34</p> <p>Standard length</p>	<p>Symbol : A35</p> <p>Standard length</p>
<p>Symbol : A36</p> <p>Standard length</p>	<p>Symbol : A37</p> <p>Standard length</p>	<p>Symbol : A38</p> <p>Standard length</p>		

Note) These images are attached as reference and could be slightly different in some actuators.

Made to order, common specifications

-X1439	Auto switch T-Slot mounting
-XB6	Heat resistant cylinder (-10 to 150 °C)
-XB7	Cold resistant cylinder (-40 to 70 °C)
-XB9	Low speed cylinder (10 to 50 mm/s)
-XB10	Intermediate stroke (Using exclusive body)
-XB10A	Intermediate stroke (Spacer-installed type)
-XB11	Long stroke type
-XB12	External stainless steel cylinder
-XB13	Low speed cylinder (5 to 50 mm/s)
-XB14	Cylinder with heat resistant auto switch
-XB19	High speed type
-XB20	Stroke adjustment unit with adjustment bolt
-XB22	Shock absorber soft type series RJ type
XC2(A)	Rod End Length Extended 10 mm
-XC3	Special port location
-XC4	With heavy duty scraper
-XC5	Heat resistant cylinder (-10 to 110 °C)
-XC6	Made of stainless steel
-XC7	Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC11	Dual stroke cylinder/Single rod type
-XC12	Tandem cylinder
-XC13	Auto switch rail mounting style
-XC17	Pin cylinder with rod quenched
-XC19	Intermediate stroke (Spacer type)
-XC20	Head cover axial port
-XC22	Fluororubber seals
-XC24	With magnet shielding plate
-XC25	No fixed throttle of connection port
-XC26	With split pins for double clevis pin/double knuckle joint pin and flat washers
-XC27	Double clevis and double knuckle joint pins made of stainless steel
-XC29	Double knuckle joint with spring pin
-XC34	Non-rotating plate with workpiece mounting screw (No extended part on the rod end)
-XC35	With coil scraper
-XC36	With boss in rod side
-XC37	Larger throttle diameter of connection port
-XC38	Vacuum (Rod through-hole)
-XC42	Built-in shock absorber in head cover side
-XC51	With hose nipple
-XC52	Mounting nut with set screw
-XC56	With knock pin holes
-XC57	Rodless cylinder with floating joint
-XC65	Made of stainless steel (Combination of -XC7 and -XC68)
-XC67	Dust seal band NBR lining specifications
-XC68	Made of stainless steel (with hard chrome plated piston rod)
-XC69	Series MGP with shock absorber
-XC71	Helical insert thread specifications
-XC72	Without built-in auto switch magnet
-XC73	Built-in cylinder with lock (CDNG)
-XC74	With front plate for MGG cylinder
-XC82	Bottom mounting style
-XC83	Built-in cylinder with lock (MDNB)
-XC85	Grease for food processing equipment
-XC88	Spatter resistant coil scraper, Lube-retainer, grease for welding (Piston rod: Stainless steel 304)
-XC89	Spatter resistant coil scraper, Lube-retainer, grease for welding (Piston rod: S45C)
-XC91	Spatter resistant coil scraper, Grease for welding (Rod parts: S45C)
-XC92	Dust resistant actuator
-XC93	With greater water resistance + stable lubrication function
-X144	Symmetrical port position
-X446	PTFE grease
-X773	Short pitch mounting
-X867	Side porting type (Plug location changed)

Applicable series for made to orders from X1439 to XB22

Series	X144	X446	X773	X867	X1439	XB6	XB7	XB9	XB10	XB10A	XB11	XB12	XB13	XB14	XB19	XB20	XB22	XC65	XC88	XC89	XC91	
C55	●				●																	
C76						●	●	●														
C85						●	●	●														
C96						●	●												●	●	●	
CG1		●				●	●	●					●									
CG5-S						●																
CJ2		●	●			●	●	●					●									
CJP2						●	●															
CM2		●				●	●	●				●										
CM2Y																						
CP96						●													●	●	●	
CQ2						●	●	●	●	●			●	●								
CQS						●	●	●	●				●									
CU						●	●	●					●									
CUJ						●																
CUK						●	●	●					●									
CXS						●					●		●		●							
CXSJ						●							●									
CY1F									●		●											
CY1H/HT																						●
CY1S								●					●									●
CY3B						●		●			●		●									
MGG						●							●									●
MGP	●			●		●			●				●							●	●	●
MK						●																
MXH													●									
MY1B											●											●
MY1M											●											●
MY1C											●											●
MY1H									●		●											●
MY2C											●											●
MY2H/HT									●		●					●						●
MY3A											●											
MY3B											●											●
MY3M											●											●
REA											●											
REAH/HT									●													

Applicable series for made to orders from XC2(A) to XC19

Series	X144	X446	X773	X867	XC2(A)	XC3	XC4	XC5	XC6	XC7	XC8	XC9	XC10	XC11	XC12	XC13	XC17	XC19	XC65	XC88	XC89	XC91
C76							●		●										●	●	●	
C85							●		●													
C96							●			●			●	●								
CG1		●					●		●		●	●	●	●	●	●						
CG1Y									●													
CJ2		●	●			●					●	●	●	●								
CJP																	●					
CJP2																		●				
CM2		●				●	●	●	●		●	●	●	●	●	●						
CM2Y						●			●							●						
CP96							●			●			●	●					●	●	●	
CQ2					●		●		●		●	●	●	●								
CQS									●		●	●	●	●								
CU																			●			
CUK																			●			
CXS										●									●			
CXSJ										●									●			
MGG							●		●		●	●		●		●						
MGP	●			●			●		●		●	●						●		●	●	●
MTS											●											
MXH						●												●				
RHC						●			●													
RQ							●															
RSQ						●																

Applicable series for made to orders from XC20 to XC52

Series	X144	X446	X773	X867	XC20	XC22	XC24	XC25	XC26	XC27	XC29	XC34	XC35	XC36	XC37	XC38	XC42	XC51	XC52	XC65	XC88	XC89	XC91
C96						•							•							•	•	•	
CG1		•			•	•				•	•		•		•		•						
CG1Y					•																		
CJ2		•	•			•												•					
CJP						•																	
CJP2						•																	
CM2		•			•	•		•		•	•		•			•			•				
CM2Y					•																		
CP96						•							•							•	•	•	
CQ2									•	•			•	•									
CQS									•	•				•									
CU						•																	
CUK						•						•											
CXS						•																	
CXSJ						•																	
CY3B							•																
MGG						•							•		•								
MGP	•			•		•							•								•	•	•
MTS																•							
MXH						•																	
REA							•																
RQ													•										

Applicable series for made to orders from XC56 to XC93

Series	X144	X446	X773	X867	XC56	XC57	XC65	XC67	XC68	XC69	XC71	XC72	XC73	XC74	XC82	XC83	XC85	XC88	XC89	XC91	XC92	XC93
C96							●		●									●	●			
CG1		●															●					
CM2		●															●				●	
CP96							●		●									●	●			
CQ2		●	●														●				●	
CQS																	●				●	
CY3B						●																
CY3R						●																
MGG					●						●	●	●	●		●						
MGP	●			●						●					●		●	●	●	●	●	●
MGPW					●																	
MY1B								●														
MY1M								●														
MY1C					●			●														
MY1H					●			●														
REA						●																
REAR						●																
RHC																						●

Made to order, common specifications, air grippers

-X4	Heat resistance (−10 to 100 °C)
-X5	Fluororubber seal
-X7	Closing direction spring assist
-X12	Opening direction spring assist
-X28	With an adjuster for closing stroke adjustment
-X32	Grease change for rotary actuated part
-X39	With grease nipple
-X41	Grooves for auto switch on both sides
-X46	With flow control
-X50	Without magnet
-X51	MHQ2/MHQG2 Compatible flat finger type
-X53	Ethylene propylene rubber seal (EPDM)
-X56	Axial ported
-X63	Fluorine grease
-X64	Finger: Side tapped
-X65	Finger: Through-holes in opening/Closing directions
-X77	Dust cover adhesion -X77A (Dust cover adhesion) -X77B (Dust cover adhesion/Finger part only)
-X78	Dust cover caulking -X78A (Dust cover caulking) -X78B (Dust cover caulking/Finger part only)
-X79 (A)	Grease for food processing machines
-X81	Anti-corrosive treatment of finger -X81A (Special black chromium treatment is made on only the finger.) -X81B (Special black chromium treatment is made on the finger and guide.)
-X83	With an adjustable opening/Closing finger positioning

Applicable series

Series	X4	X5	X7	X12	X28	X32	X39	X41	X46	X50	X51	X53	X56	X63	X64	X65	X77	X78	X79(A)	X81	X83
MHC2	•	•								•		•	• ¹⁾	•	•	•			•	•	
MHCA2	•	•										•	•	•	•	•			•	•	
MHCM2	•	•											•	•					•	•	
MHF2	•	•								•		•		•					•	•	•
MHK2	•	•	•	•			•	•		•		•		•	•	•	•	•	•		
MHKL2	•	•	•	•			•	•		•		•		•	•	•	•	•	•		
MHL2	•	•			•					•		•		•					•		
MHR2						•								•							
MHR3						•								•							
MHS	•	•								•		•	• ²⁾	•					•		
MHSH	•	•								•		•	•	•					•		
MHSJ	•	•								•		•	•				•	•	•		
MHSL	•	•								•		•	• ²⁾	•					•		
MHT2	•	•								•				•							
MHW2	•	•								•		•		•					•		
MHY2	•	•								•		•		•					•	•	
MHZ2	•	•	•	•					•	•	•	•	• ¹⁾	•					•	•	
MHZA2	•	•		•								•	•	•					•	•	
MHZAJ2	•	•		•								•	•	•	•	•			•	•	
MHZJ2	•	•	•	•						•		•	• ¹⁾	•	•	•	•	•	•	•	
MHZL2	•	•	•	•						•		•	•	•	•	•	•	•	•	•	

1) Ø 10, 16, 20, 25 only

2) Ø 16, 20, 25, 32, 40, 50, 63 only.

Auto switches



Auto switch guide

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Direct mounting style, round groove

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Direct mounting style, rectangular groove

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Rail mounting style

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Tie-rod mounting style

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Band mounting style

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Auto switch specifications

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D-M9N(V)/M9P(V)/M9B(V)

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D-M9NW(V)/M9PW(V)/M9BW(V)

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D-M9NA(V)/D-M9PA(V)/D-M9BA(V)

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D-M9N-746/D-M9P-746/D-M9B-746

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D-M9K

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D-M9□J

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D-M9□PC with pre-wired connector

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D-M9PSAPC-595

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Other available auto switches

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D-P3DWA

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D-P3DWASC/D-P3

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Auto switch guide

Select an auto switch model according with the series and mounting style.

Series *	Size	Mounting style						Auto switch mounting style	Page No.
		Direct (round groove)	Direct (rectangular groove)	Direct (for rotary actuators)	Rail	Tie rod	Band		
C55	20 to 100						Direct (Round groove)	245	
C76	32, 40						Band	250	
C85	8 to 25						Band	250	
C95	160 to 250						Tie rod	247	
C96	32 to 125						Tie rod	247	
CG1	20 to 100						Band	250	
CG1Y	20 to 100						Band	250	
CG3	20 to 100						Band	250	
CG5-S	20 to 100						Band	250	
CJ2	10, 16						Rail and band	247, 250	
CJ2X	10, 16						Band	250	
CJP2	4, 6, 10, 16						Direct (Round groove)	245	
CJ5-S	10, 16						Band	250	
CKG1	40 to 63						Rail and band	247, 250	
CM2	20 to 40						Band	250	
CM2X	20 to 40						Band	250	
CM2Y	20 to 40						Band	250	
CM3	20 to 40						Band	250	
CP96	32 to 125						Direct (Round groove)	245	
CQ2	12 to 200						Direct (Round groove)	245	
CQ2X	32 to 100						Direct (Round groove)	245	
CQ2Y	32 to 100						Direct (Round groove)	245	
CQM	12 to 100						Direct (Round groove)	245	
CQS	12 to 25						Direct (Round groove)	245	
CQSX	12 to 25						Direct (Round groove)	245	
CQSY	12 to 25						Direct (Round groove)	245	
CQU	20 to 40						Direct (Round groove)	245	
CRA1	30 to 100						Direct (Round groove)	246	
CRB1	50 to 100						Direct (Round groove)	246	
CRB2	10 to 40						Direct (Round groove)	246	
CRBU2	10 to 40						Direct (Round groove)	245	
CRJ	0.5, 1						Direct (Round groove)	245	
CRQ2	10 to 40						Direct (Round groove)	245	
CU	6 to 32						Direct (Round groove)	245	
CUX	10 to 32						Direct (Round groove)	245	
CVQ	32 to 63						Direct (Round groove)	245	
CVQM	32 to 63						Direct (Round groove)	245	
CXS	6 to 32						Direct (Rectangular groove)	246	
CXSJ	6 to 32						Direct (Round groove)	245	
CY1F	10, 15, 25						Direct (Round groove)	245	
CY1H/HT	10 to 32						Direct (Rectangular groove)	246	
CY1S	6 to 40						Rail	247	
CY3R	6 to 20						Direct (Round groove)	245	
	25 to 63						Direct (Rectangular groove)	246	
CYP	15, 32						Direct (Rectangular groove)	246	
JCQ	12 to 100						Direct (Round groove)	245	
JMGP	12 to 100						Direct (Round groove)	245	
LEJ	40, 63						Direct (Round groove)	245	
LEL	25						Rail	247	
LEM	25, 32						Direct (Round groove)	245	
LEY	16 to 32						Direct (Round groove)	245	
LEYG	25, 32						Direct (Round groove)	245	
LZB	3, 5 (= Ø 16, Ø 25)						Band	250	
LZC	3, 5 (= Ø 16, Ø 25)						Direct (Round groove)	245	
MHR2	10 to 30						Direct (Round groove)	245	
MHR3	10, 15						Direct (Round groove)	245	
MGF	40, 63, 100						Direct (Rectangular groove)	246	
MGG	20 to 100						Band	250	
MGP	12 to 100						Direct (Round groove)	245	
MGPW	20 to 63						Direct (Round groove)	245	
	20, 25, 32						Direct (Round groove)	245	
MGZ(R)	40 to 80						Direct (Rectangular groove)	246	

* The basic cylinder series is shown here. To use auto switches the magnetic version must be specified, unless a magnet for auto switches is standard. Eg. for CQ2 cylinders CDQ2 must be specified. See individual catalogue sections for details.

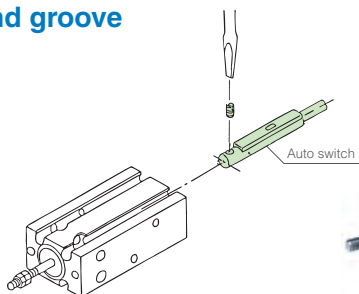
Series *	Size	Direct (Round groove)	Direct (Rectangular groove)	Direct (for rotary actuators)	Rail	Tie rod	Band	Auto switch mounting style	Page No.
MHC2	10 to 25							Direct (Rectangular groove)	246
	6							Direct (Round groove)	245
MHF2	8 to 20							Direct (Round groove)	245
MHK2	12 to 25							Direct (Round groove)	245
MHL2	10 to 40							Direct (Round groove)	246
MHS	16 to 25							Direct (Round groove)	245
	32 to 125							Direct (Rectangular groove)	246
MHSH	16 to 80							Direct (Round groove)	245
MHSJ	16 to 80							Direct (Round groove)	245
MHSL	16 to 25							Direct (Round groove)	245
	32 to 125							Direct (Rectangular groove)	246
MHT2	32 to 63							Direct (Round groove)	245
MHW2	20 to 50							Direct (Rectangular groove)	246
MHY2	10 to 25							Direct (Round groove)	245
MHZ2	6, 16 to 40							Direct (Round groove)	245
	10							Direct (Rectangular groove)	246
MHZJ2	6 to 25							Direct (Round groove)	245
MHZL2	16 to 25							Direct (Round groove)	245
	10							Direct (Rectangular groove)	246
MIW/MIS	8 to 32							Direct (Round groove)	245
MK	12 to 63							Direct (Round groove)	245
MK2T	12 to 63							Direct (Round groove)	245
MRHQ	10 to 25							Rotation unit: Direct (Round groove)	245
	10 to 25							Gripper unit: Direct (Rectangular groove)	246
MSQ	1 to 7							Direct (Round groove)	245
	10 to 200							Direct (Round groove)	245
MSZ	10 to 50							Direct (Round groove)	245
MTS	8 to 40							Direct (Round groove)	245
MU	25 to 63							Direct (Rectangular groove)	246
MXF	8 to 20							Direct (Round groove)	245
MXH	6 to 20							Direct (Round groove)	245
MXP	6 to 16							Direct (Round groove)	245
MXQ	6 to 25							Direct (Round groove)	245
MXQR	6 to 25							Direct (Round groove)	245
MXS	6 to 25							Direct (Round groove)	245
MXW	8 to 25							Direct (Round groove)	245
MXY	6 to 12							Direct (Round groove)	245
MXZ	12 to 25							Direct (Round groove)	245
MY1□□	10, 16, 20							Direct (Round groove)	245
	25 to 100							Direct (Rectangular groove)	246
MY2	16, 25, 40							Direct (Round groove)	245
MY3A/3B/3M	16 to 63							Direct (Round groove)	245
REAH/HT	10 to 32							Direct (Rectangular groove)	246
REAR	10, 15, 20							Direct (Round groove)	245
	25, 32, 40							Direct (Rectangular groove)	246
RHC	20 to 100							Band	250
RQ	20 to 100							Direct (Round groove)	245
RS2H	50 to 80							Direct (Round groove)	245
RSH	20 to 32							Direct (Rectangular groove)	246
RSQ	12, 16, 20, 32 to 50							Direct (Round groove)	245
RZQ	32 to 63							Direct (Round groove)	245
ZCUK	10 to 32							Direct (Round groove)	245

* The basic cylinder series is shown here. To use auto switches the magnetic version must be specified, unless a magnet for auto switches is standard. Eg. for C.Q2 cylinders CDQ2 must be specified. See individual catalogue sections for details.

Direct mounting style round groove



D-M9□



Applicable auto switch/Direct mounting

Applicable series		Reed switch type		Solid state switch type			Description
		24 VDC 2-wire	24 VDC 3-wire (PNP)	24 VDC 3-wire (NPN)	24 VDC Diagnostic indication (2-colour indication) 3-wire (PNP)	24 VDC Diagnostic indication (2-colour indication) 3-wire (NPN)	
C55	MHK2 ¹⁾	D-A93L ●	D-M9PL ●	D-M9NL ●	D-M9PWL ●	D-M9NWL ●	<ul style="list-style-type: none"> Lead wire length = 3 m, consult SMC for other length.
CJP2	MHL2						
CP96	MHR2 ¹⁾						
CQ2	MHR3 ¹⁾ MHS (Ø 16 - 25) ¹⁾						
CQ2X	MHS1 ¹⁾						
CQ2Y ⁴⁾	MHSJ ¹⁾						
COM	MHSL (Ø 16 - 25) ¹⁾						
COS	MHT2						
CQ5X	MHY2 ¹⁾						
CQ5Y	MHZ2 ¹⁾ (Ø 6, Ø 16 - 40)						
COU	MHZJ2 ¹⁾						
CRA1	MHZL2 (Ø 16 - 25)						
CRB1	MW/MIS ¹⁾						
CRB2	MK						
CRBU2	MK2T						
CRJ ¹⁾	MRHQ (rotation unit) ³⁾						
CRQ2	MSQ (1 - 7) ¹⁾						
CU	MSQ (10 - 200)						
CUX	MSZ						
CVQ	MTS						
CVQM	MXF						
CXSJ	MXH						
CY1F	IXP						
CY3R (Ø 6-20)	IXQ						
JCQ	MXQR						
JMGP	MXS						
LEJ ¹⁾	MXW						
LEMB ^{1) 2)}	MXY						
LEMC/HHT ¹⁾	MXZ						
LEY ¹⁾	MY1□ (Ø 10 - 20)						
LEVY ¹⁾	MY2						
LZC ¹⁾	MY3 ²⁾						
MHL2	REAR (Ø 10 - 20)						
MGP	RQ						
MGPW	RSQ						
MGZR (Ø 20 - 32) ²⁾	RSQ (Ø 12, Ø 32 - 50)						
MHC2 (Ø 6) ¹⁾	RZQ						
MHF2 ¹⁾	RS2H						
	ZCUK						
							<ul style="list-style-type: none"> Auto switch with pre-wired connector (M8-3pin). Lead wire length = 0.5 m, consult SMC for other length.

Since there are other applicable auto switches than those listed, refer to each series catalogue for details.

1) Only solid state switches can be used. In MHC2-6, 2 - colour indication auto switches can not be used.

2) Bracket BMY3-016 is also required.

3) In MRHQ, 2 types of auto-switches are used, one to verify rotation and other to verify opening/closing of the gripper.

In both types a switch mounting unit is required.

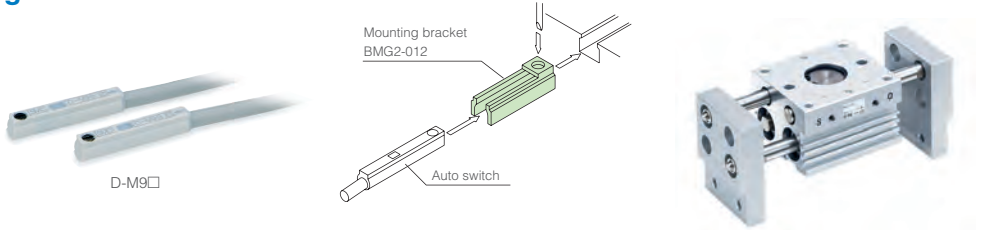
- Ø 10: P407090-1

- Ø 16 to Ø 25: P407060-1


The auto-switch model to verify rotation is D-M9*L-746.

4) In Ø 32 to 50, brackets BQ-2 and BQ2-012 ● are also required.

Direct mounting style rectangular groove

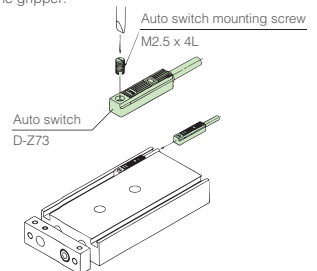


Applicable auto switch/Direct mounting + mounting bracket (BMG2-012)

Applicable series	Reed switch type	Solid state switch type				Description
	24 VDC 2-wire	24 VDC 3-wire (PNP)	24 VDC 3-wire (NPN)	24 VDC Diagnostic indication (2-colour indication) 3-wire (PNP)	24 VDC Diagnostic indication (2-colour indication) 3-wire (NPN)	
CY3R (Ø 25 ~ 63) MGF ¹⁾ MGZ/R (Ø 40 ~ 80) 2) MHC2 (Ø 10 ~ 25) ³⁾ MHS (Ø 32 ~ 125) ³⁾ MHSL (Ø 32 ~ 125) ³⁾ MHW2 ³⁾ MHZ2 (Ø 10) ³⁾ MHZL2 (Ø 10) ³⁾ MRHQ (Gripper unit) ⁴⁾ MU ⁵⁾ MY1□ (Ø 25 ~ 100) ³⁾ REAR (Ø 25 ~ 40) RSH	D-A93L ● + BMG2-012 ●	D-M9PL ● + BMG2-012 ●	D-M9NL ● + BMG2-012 ●	D-M9PWL ● + BMG2-012 ●	D-M9NWL ● + BMG2-012 ●	<ul style="list-style-type: none"> Lead wire length = 3 m, consult SMC for other length.
	—	D-M9PSAPC ● + BMG2-012 ●	D-M9NSAPC ● + BMG2-012 ●	D-M9PWSAPC ● + BMG2-012 ●	D-M9NWSAPC ● + BMG2-012 ●	<ul style="list-style-type: none"> Auto switch with pre-wired connector (M8-3pin). Lead wire length = 0.5 m, consult SMC for other length. 

Since there are other applicable auto switches than those listed, refer to each series catalogue for details.

- 1) Only solid state switches can be used.
- 2) Bracket BMP1-032 is also required.
- 3) Solid state switches must be used for all MY1 types and bore sizes. MY1B (Ø 50), MY1M (Ø 25 to Ø 40), MY1C (Ø 40), MY1CW (Ø 40) and MY1MW (Ø 25, Ø 40) use different switches, see separate table below. The mounting bracket required for MY1H (Ø 25, Ø 40) is BMY3-016.
- 4) In MRHQ, 2-types of auto-switches are used, one to verify rotation and other to verify opening/closing of the gripper. In both types a switch mounting unit is required.
 - Ø 10: P407090-1
 - Ø 16 to Ø 25: P407060-1
 The auto switch for gripper opening and closing is D-M9□VL.
- 5) The mounting bracket required for MU is MUZ-025.



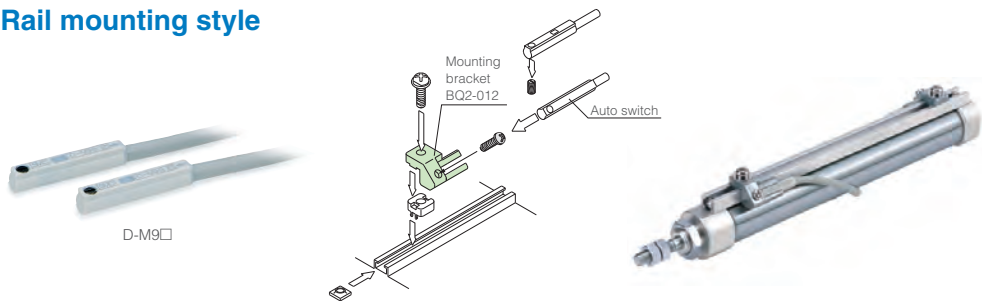
Applicable auto switch/Direct mounting

Applicable series		Reed switch type	Description
		24 VDC, 2-wire	
CXS (Ø 6 to Ø 32)	MY1CW (Ø 40)	D-Z73L ●	<ul style="list-style-type: none"> Lead wire length = 3 m, consult SMC for other length.
CY1H	MY1HT (Ø 50, Ø 63)		
CY1HT	MY1M (Ø 25 to Ø 40)		
CYP	MY1MW (Ø 25, Ø 40) ¹⁾		
MY1B (Ø 50)	REAH		
MY1C (Ø 40)	REAH		


Since there are other applicable auto switches than those listed, refer to each series catalogue for details.

- 1) Separate switch spacers (BMP1-032) are required for retrofitting of auto-switches.

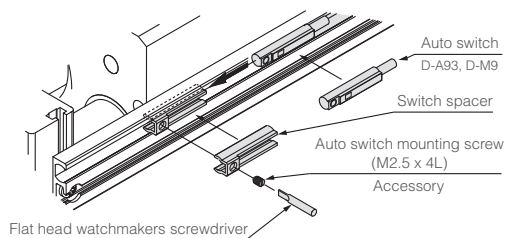
Rail mounting style



Applicable auto switch/Rail mounting + mounting bracket (BQ2-012)

Applicable series	Reed switch type	Solid state switch type				Description
	24 VDC 2-wire	24 VDC 3-wire (PNP)	24 VDC 3-wire (NPN)	24 VDC Diagnostic indication (2-colour indication) 3-wire (PNP)	24 VDC Diagnostic indication (2-colour indication) 3-wire (NPN)	
CJ2 (Ø 10, 16)	D-A93L ● + BQ2-012 ●	D-M9PL ● + BQ2-012 ●	D-M9NL ● + BQ2-012 ●	D-M9PWL ● + BQ2-012 ●	D-M9NWL ● + BQ2-012 ●	<ul style="list-style-type: none"> Lead wire length = 3 m, consult SMC for other length.
	—	D-M9PSAPC ● + BQ2-012 ●	D-M9NSAPC ● + BQ2-012 ●	D-M9PWSAPC ● + BQ2-012 ●	D-M9NWSAPC ● + BQ2-012 ●	<ul style="list-style-type: none"> Auto switch with pre-wired connector (M8-3pin). Lead wire length = 0.5 m, consult SMC for other length. 

Since there are other applicable auto switches than those listed, refer to each series catalogue for details.



Applicable auto switch/Rail mounting

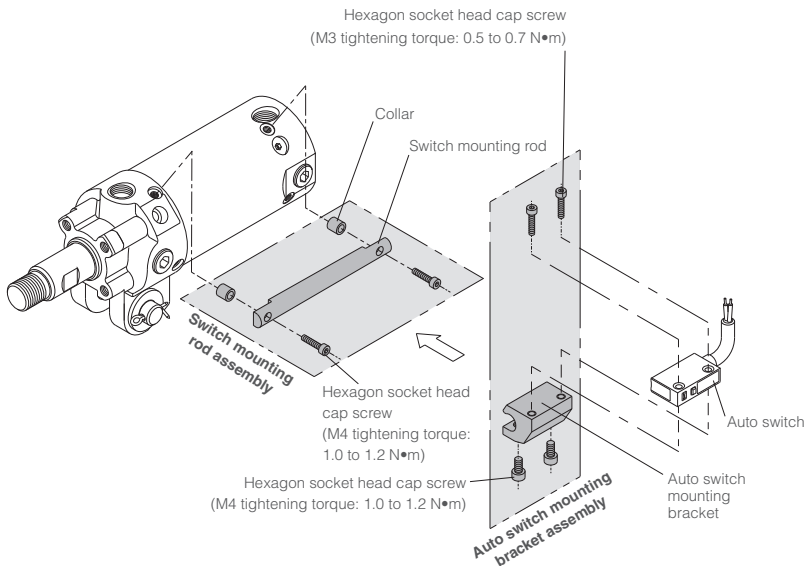
Applicable series	Reed switch type	Solid state switch type				Description
	24 VDC 2-wire	24 VDC 3-wire (PNP)	24 VDC 3-wire (NPN)	24 VDC Diagnostic indication (2-colour indication) 3-wire (PNP)	24 VDC Diagnostic indication (2-colour indication) 3-wire (NPN)	
CY1S	D-A93L ● + BMY3-016 ●	D-M9PL ● + BMY3-016 ●	D-M9NL ● + BMY3-016 ●	D-M9PWL ● + BMY3-016 ●	D-M9NWL ● + BMY3-016 ●	<ul style="list-style-type: none"> Lead wire length = 3 m, consult SMC for other length.
	—	D-M9PSAPC ● + BMY3-016 ●	D-M9NSAPC ● + BMY3-016 ●	D-M9PWSAPC ● + BMY3-016 ●	D-M9NWSAPC ● + BMY3-016 ●	<ul style="list-style-type: none"> With pre-wired connector (M8-3pin) Lead wire length = 0.5 m Consult SMC for other length.
LEL	—	D-M9PL ●	D-M9NL ●	D-M9PWL ●	D-M9NWL ●	<ul style="list-style-type: none"> With lead wire length = 3 m Consult SMC for other length.
	—	D-M9PSAPC ●	D-M9NSAPC ●	D-M9PWSAPC ●	D-M9NWSAPC ●	<ul style="list-style-type: none"> With pre-wired connector (M8-3pin). Lead wire length = 0.5 m Consult SMC for other length.

Since there are other applicable auto switches than those listed, refer to each series catalogue for details.

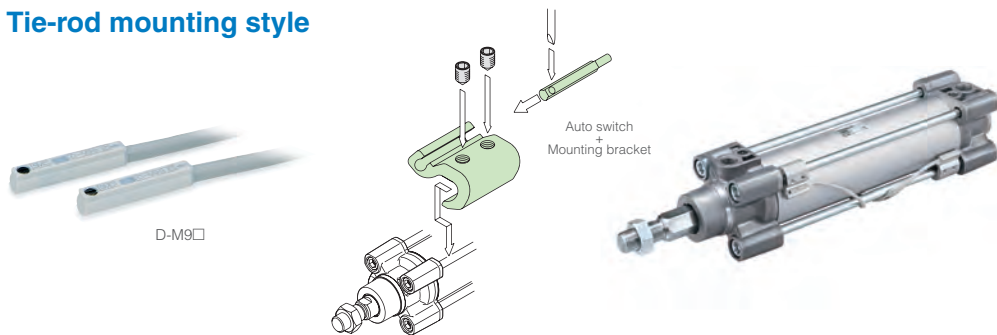
Applicable auto switch/Rail mounting + mounting bracket

Applicable series	Stroke [mm]	Solid state switch type	
		24 VDC (2-colour indication) 2-wire, 0.3 m lead wire	24 VDC (2-colour indication) 2-wire, 3 m lead wire
CKG1	50	D-P3DWASE + CKG40-RZ050+BK7-040S	D-P3DWAL + CKG40-RZ050+BK7-040S
	75	D-P3DWASE + CKG40-RZ075+BK7-040S	D-P3DWAL + CKG40-RZ075+BK7-040S
	100	D-P3DWASE + CKG40-RZ100+BK7-040S	D-P3DWAL + CKG40-RZ100+BK7-040S
	125	D-P3DWASE + CKG40-RZ125+BK1T-040	D-P3DWAL + CKG40-RZ125+BK7-040S
	150	D-P3DWASE + CKG40-RZ150+BK7-040S	D-P3DWAL + CKG40-RZ150+BK7-040S
	200	D-P3DWASE + CKG40-RZ200+BK7-040S	D-P3DWAL + CKG40-RZ200+BK7-040S


Since there are other applicable auto switches than those listed, refer to each series catalogue for details.



Tie-rod mounting style



Applicable auto switch/Tie-rod mounting + mounting bracket

Applicable series	Bore size [mm]	Reed switch type	Solid state switch type				Auto switch with pre-wired connector
		24 VDC 2-wire	24 VDC 3-wire (PNP)	24 VDC 3-wire (NPN)	24 VDC Diagnostic indication (2-colour indication) 3-wire (FNP)	24 VDC Diagnostic indication (2-colour indication) 3-wire (NPN)	
C95 (Ø 160 to 200) ¹⁾ C96 (Ø 32 to 125)	32, 40	D-A93L + BMB5-032	D-M9PL + BMB5-032	D-M9NL + BMB5-032	D-M9PWL + BMB5-032	DD-M9NWL + BMB5-032	 <p>24 VDC 3-wire (PNP): D-M9PSAPC</p> <p>24 VDC 3-wire (NPN): D-M9NSAPC</p> <p>24 VDC Diagnostic indication (2-colour indication) 3-wire (PNP): D-M9PWSAPC</p> <p>M8-3 pin</p> <p>• Lead wire length = 0.5 m, consult SMC for other length.</p>
	50, 63	D-A93L + BA7-040	D-M9PL + BA7-040	D-M9NL + BA7-040	D-M9PWL + BA7-040	D-M9NWL + BA7-040	
	80, 100	D-A93L + BA7-063	D-M9PL + BA7-063	D-M9NL + BA7-063	D-M9PWL + BA7-063	D-M9NWL + BA7-063	
	125	D-A93L + BA7-080	D-M9PL + BA7-080	D-M9NL + BA7-080	D-M9PWL + BA7-080	D-M9NWL + BA7-080	
	160, 200	D-A93L + BS5-160	D-M9PL + BS5-160	D-M9NL + BS5-160	D-M9PWL + BS5-160	D-M9NWL + BS5-160	

Lead wire length = 3 m, consult SMC for other length.

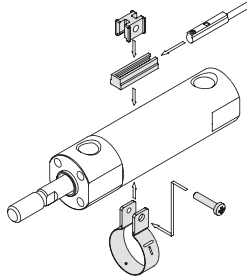
Since there are other applicable auto switches than those listed, refer to each series catalogue for details.

1) See separate table for C95 with 250 mm bore size.


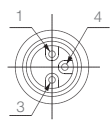
Band mounting style



D-M9□



Applicable auto switch/Band mounting + mounting bracket

Applicable series	Bore size [mm]	Reed switch type		Solid state switch type				Auto switch with pre-wired connector
		24 VDC 2-wire	24 VDC 3-wire (PNP)	24 VDC 3-wire (NPN)	24 VDC Diagnostic indication (2-colour indication) 3-wire (PNP)	24 VDC Diagnostic indication (2-colour indication) 3-wire (NPN)		
C85 (Ø 8 to 16) ¹⁾ CJ2 (Ø 10, Ø 16) CJ2X (Ø 10, Ø 16)	6	D-A93L + BJ6-006	D-M9PL + BJ6-0066	D-M9NL + BJ6-006	D-M9PWL + BJ6-006	D-M9NWL + BJ6-006	 24 VDC 3-wire (PNP): D-M9PSAPC 24 VDC 3-wire (NPN): D-M9NSAPC	
	8	—	D-M9PL + BJ6-008	D-M9NL + BJ6-008	D-M9PWL + BJ6-008	D-M9NWL + BJ6-008		
	10	D-A93L + BJ6-010	D-M9PL + BJ6-010	D-M9NL + BJ6-010	D-M9PWL + BJ6-010	D-M9NWL + BJ6-010		
	12	—	D-M9PL + BJ6-012	D-M9NL + BJ6-012	D-M9PWL + BJ6-012	D-M9NWL + BJ6-012		
	16	D-A93L + BJ6-016	D-M9PL + BJ6-016	D-M9NL + BJ6-016	D-M9PWL + BJ6-016	D-M9NWL + BJ6-016		
C76 (Ø 32, 40) C85 (Ø 20, 25) CM2 (Ø 20 to 40) CM2X (Ø 20 to Ø 40) CM2Y (Ø 20 to Ø 40) CM3 (Ø 20 to 40)	20	D-A93L + BM5-020	D-M9PL + BM5-020	D-M9NL + BM5-020	D-M9PWL + BM5-020	D-M9NWL + BM5-020	24 VDC Diagnostic indication (2-colour indication) 3-wire (PNP): D-M9PWSAPC  M8-3 pin	
	25	D-A93L + BM5-025	D-M9PL + BM5-025	D-M9NL + BM5-025	D-M9PWL + BM5-025	D-M9NWL + BM5-025		
	32	D-A93L + BM5-032	D-M9PL + BM5-032	D-M9NL + BM5-032	D-M9PWL + BM5-032	D-M9NWL + BM5-032		
	40	D-A93L + BM5-040	D-M9PL + BM5-040	D-M9NL + BM5-040	D-M9PWL + BM5-040	D-M9NWL + BM5-040		
CG1 (Ø 20 to 63) ²⁾ CG1Y (Ø 20 to 63) CG3 (Ø 20 to 63) ²⁾ MGG (Ø 20 to 63) ²⁾ RHC (Ø 20 to 63) ²⁾	20	D-A93L + BMA3-020	D-M9PL + BMA3-020	D-M9NL + BMA3-020	D-M9PWL + BMA3-020	D-M9NWL + BMA3-020	• Lead wire length = 0.5 m, consult SMC for other length.	
	25	D-A93L + BMA3-025	D-M9PL + BMA3-025	D-M9NL + BMA3-025	D-M9PWL + BMA3-025	D-M9NWL + BMA3-025		
	32	D-A93L + BMA3-032	D-M9PL + BMA3-032	D-M9NL + BMA3-032	D-M9PWL + BMA3-032	D-M9NWL + BMA3-032		
	40	D-A93L + BMA3-040	D-M9PL + BMA3-040	D-M9NL + BMA3-040	D-M9PWL + BMA3-040	D-M9NWL + BMA3-040		
	50	D-A93L + BMA3-050	D-M9PL + BMA3-050	D-M9NL + BMA3-050	D-M9PWL + BMA3-050	D-M9NWL + BMA3-050		
	63	D-A93L + BMA3-063	D-M9PL + BMA3-063	D-M9NL + BMA3-063	D-M9PWL + BMA3-063	D-M9NWL + BMA3-063		

Lead wire length = 3 m, consult SMC for other length.

Since there are other applicable auto switches than those listed, refer to each series catalogue for details.

1) Ø 8 to Ø 12, solid state switches only can be used.

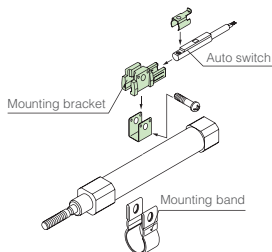
2) See separate table for CG1, CG3, MGG and RHC with 80 and 100 mm bore size.

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green.
Stocked items and product information could be subject to change without prior notice.

Band mounting style



D-M9□



Applicable auto switch/Band mounting + mounting bracket

Applicable Series	Bore size [mm]	Reed switch type		Solid state switch type			Auto switch with pre-wired connector
		24 VDC 2-wire	24 VDC 3-wire (PNP)	24 VDC 3-wire (NPN)	24 VDC Diagnostic indication (2-colour indication) 3-wire (PNP)	24 VDC Diagnostic indication (2-colour indication) 3-wire (NPN)	
C85 (Ø 8 to 16) ¹⁾ CJ2 (Ø 10, Ø 16) CJ2X (Ø 10, Ø 16)	6	D-A93L ● + BJ3-1 ● + BJ2-006 ●	D-M9PL ● + BJ3-1 ● + BJ2-006 ●	D-M9NL ● + BJ3-1 ● + BJ2-006 ●	D-M9PWL ● + BJ3-1 P ● BJ2-006 ●	D-M9NWL ● + BJ3-1 ● + BJ2-006 ●	 24 VDC 3-wire (PNP): D-M9PSAPC 24 VDC 3-wire (NPN): D-M9NSAPC 24 VDC Diagnostic indication (2-colour indication) 3-wire (PNP): D-M9PWSAPC • Lead wire length = 0.5 m, consult SMC for other length.
	8	—	D-M9PL ● + BJ3-1 ● + BJ2-008 ●	D-M9NL ● + BJ3-1 ● + BJ2-008 ●	D-M9PWL ● + BJ3-1 ● + BJ2-008 ●	D-M9NWL ● + BJ3-1 ● + BJ2-008 ●	
	10	D-A93L ● + BJ3-1 ● + BJ2-010 ●	D-M9PL ● + BJ3-1 ● + BJ2-010 ●	D-M9NL ● + BJ3-1 ● + BJ2-010 ●	D-M9PWL ● + BJ3-1 ● + BJ2-010 ●	D-M9NWL ● + BJ3-1 ● + BJ2-010 ●	
	12	—	D-M9PL ● + BJ3-1 ● + BJ2-012 ●	D-M9NL ● + BJ3-1 ● + BJ2-012 ●	D-M9PWL ● + BJ3-1 ● + BJ2-012 ●	D-M9NWL ● + BJ3-1 ● + BJ2-012 ●	
	16	D-A93L ● + BJ3-1 ● + BJ2-016 ●	D-M9PL ● + BJ3-1 ● + BJ2-016 ●	D-M9NL ● + BJ3-1 ● + BJ2-016 ●	D-M9PWL ● + BJ3-1 ● + BJ2-016 ●	D-M9NWL ● + BJ3-1 ● + BJ2-016 ●	
C76 (Ø 32, 40) C85 (Ø 20, 25) CM2 (Ø 20 to 40) CM2X (Ø 20 to Ø 40) CM2Y (Ø 20 to Ø 40) CM3 (Ø 20 to 40)	20	D-A93L ● + BJ3-1 ● + BM2-020 ●	D-M9PL ● + BJ3-1 ● + BM2-020 ●	D-M9NL ● + BJ3-1 ● + BM2-020 ●	D-M9PWL ● + BJ3-1 ● + BM2-020 ●	D-M9NWL ● + BJ3-1 ● + BM2-020 ●	
	25	D-A93L ● + BJ3-1 ● + BM2-025 ●	D-M9PL ● + BJ3-1 ● + BM2-025 ●	D-M9NL ● + BJ3-1 ● + BM2-025 ●	D-M9PWL ● + BJ3-1 ● + BM2-025 ●	D-M9NWL ● + BJ3-1 ● + BM2-025 ●	
	32	D-A93L ● + BJ3-1 ● + BM2-032 ●	D-M9PL ● + BJ3-1 ● + BM2-032 ●	D-M9NL ● + BJ3-1 ● + BM2-032 ●	D-M9PWL ● + BJ3-1 ● + BM2-032 ●	D-M9NWL ● + BJ3-1 ● + BM2-032 ●	
	40	D-A93L ● + BJ3-1 ● + BM2-040 ●	D-M9PL ● + BJ3-1 ● + BM2-040 ●	D-M9NL ● + BJ3-1 ● + BM2-040 ●	D-M9PWL ● + BJ3-1 ● + BM2-040 ●	D-M9NWL ● + BJ3-1 ● + BM2-040 ●	
CG1 (Ø 20 to 63) ²⁾ CG1Y (Ø 20 to 63) CG3 (Ø 20 to 63) ²⁾ MG G (Ø 20 to 63) ²⁾ RHC (Ø 20 to 63) ²⁾	20	D-A93L ● + BJ3-1 ● + BMA2-020 ●	D-M9PL ● + BJ3-1 ● + BMA2-020 ●	D-M9NL ● + BJ3-1 ● + BMA2-020 ●	D-M9PWL ● + BJ3-1 ● + BMA2-020 ●	D-M9NWL ● + BJ3-1 ● + BMA2-020 ●	
	25	D-A93L ● + BJ3-1 ● + BMA2-025 ●	D-M9PL ● + BJ3-1 ● + BMA2-025 ●	D-M9NL ● + BJ3-1 ● + BMA2-025 ●	D-M9PWL ● + BJ3-1 ● + BMA2-025 ●	D-M9NWL ● + BJ3-1 ● + BMA2-025 ●	
	32	D-A93L ● + BJ3-1 ● + BMA2-032 ●	D-M9PL ● + BJ3-1 ● + BMA2-032 ●	D-M9NL ● + BJ3-1 ● + BMA2-032 ●	D-M9PWL ● + BJ3-1 ● + BMA2-032 ●	D-M9NWL ● + BJ3-1 ● + BMA2-032 ●	
	40	D-A93L ● + BJ3-1 ● + BMA2-040 ●	D-M9PL ● + BJ3-1 ● + BMA2-040 ●	D-M9NL ● + BJ3-1 ● + BMA2-040 ●	D-M9PWL ● + BJ3-1 ● + BMA2-040 ●	D-M9NWL ● + BJ3-1 ● + BMA2-040 ●	
	50	D-A93L ● + BJ3-1 ● + BMA2-050 ●	D-M9PL ● + BJ3-1 ● + BMA2-050 ●	D-M9NL ● + BJ3-1 ● + BMA2-050 ●	D-M9PWL ● + BJ3-1 ● + BMA2-050 ●	D-M9NWL ● + BJ3-1 ● + BMA2-050 ●	
	63	D-A93L ● + BJ3-1 ● + BMA2-063 ●	D-M9PL ● + BJ3-1 ● + BMA2-063 ●	D-M9NL ● + BJ3-1 ● + BMA2-063 ●	D-M9PWL ● + BJ3-1 ● + BMA2-063 ●	D-M9NWL ● + BJ3-1 ● + BMA2-063 ●	
LZB	3 (= Ø 16)	—	D-M9PL ● + BJ3-1 ● + BM2-025 ●	D-M9NL ● + BJ3-1 ● + BM2-025 ●	D-M9PWL ● + BJ3-1 ● + BM2-025 ●	D-M9NWL ● + BJ3-1 P + BM2-025 ●	
	5 (= Ø 25)	—	D-M9PL ● + BJ3-1 ● + L1ZB45-0318 ●	D-M9NL ● + BJ3-1 ● + L1ZB45-0318 ●	D-M9PWL ● + BJ3-1 ● + L1ZB45-0318 ●	D-M9NWL ● + BJ3-1 ● + L1ZB45-0318 ●	

Lead wire length = 3 m, consult SMC for other length.

Since there are other applicable auto switches than those listed, refer to each series catalogue for details.

1) Ø 8 to Ø 12, solid state switches only can be used.

2) See separate table for CG1, CG3, MG G and RHC with 80 and 100 mm bore size.

Water resistant 2-colour indication type. Solid state switch for stainless steel cylinders CJ5-S Series

Auto switch model	Mounting bracket no.	
	Ø 10	Ø 16
3 wire (PNP): D-M9PAL ● 3 wire (NPN): D-M9NAL 2 wire: D-M9BAL ●	BJ2-010S ● + BJ4-1	BJ2-016S + BJ4-1

Auto switch common specifications

Specifications

Type	Reed switch	Solid state switch
Leakage current	None	3-wire: 100 µA or less 2-wire: 0.8 mA or less
Operating time	1.2 ms	1 ms or less ¹⁾
Impact resistance	300 m/s ²	1000 m/s ² ²⁾
Insulation resistance	50 MΩ or more at 500 VDC measured via megohmmeter (between lead wire and case)	
Withstand voltage	1500 VAC for 1 minute (between lead wire and case)	1000 VAC for 1 minute (between lead wire and case)
Ambient temperature	-10 to 60 °C	
Enclosure	IEC60529 standard IP67	

- 1) Excluding the magnetic field resistant 2-color indication solid state auto switch (D-P3DWA)
2) The operating time for (D-P3DWA) is 40 ms or less, 980 m/s² for the trimmer type sensor section, 98 m/s² for the amplifier section.

How to order (for D-M9□)

D-M9 P W V L

- ① ② ③ ④

① Wiring and output

N	3 wire, NPN
P	3 wire, PNP
B	2 wire

③ Wiring entry

—	In-line
V	Perpendicular

② Colour indication

—	Standard (1 colore)
W	Bicolore
A	Bicolore, resistente all'acqua

④ Lead wire length

—	0.5 m
M ¹⁾	1 m
L	3 m
Z	5 m

- 1) For 1 m (M), available with D-M9□(V) only.

How to order (Except D-M9□)

D-A93 L

- ①

① Lead wire length

—	0.5 m
L	3 m
Z	5 m

Applicable wire stripper

When the cable sheath is stripped, confirm the stripping direction. The insulator may be split or damaged depending on the direction. (D-M9□(V) only)



Recommended tool

Model name	Model no.
Wire stripper	D-M9N-SWY

* Stripper for a round cable (Ø 2.0) can be used for a 2-wire type cable.

Contact protection boxes: CD-P11, CD-P12

<Applicable switch model>

D-Z73, D-93A, D-A93(V)

The auto switches above do not have a built-in contact protection circuit. Therefore, please use a contact protection box with the switch for any of the following cases:

- ① Where the operation load is an inductive load.
- ② Where the wiring length to load is greater than 5 m.
- ③ Where the load voltage is 100 VAC or 200 VAC.

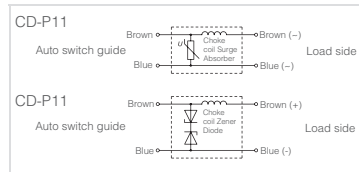
Specifications

Part no.	CD-P11 ●	CD-P12 ●
Load voltage	100 VAC 200 VAC	24 VDC
Maximum load current	25 mA 12.5 mA	50 mA

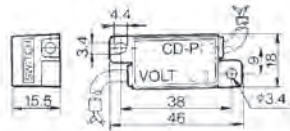
* Lead wire length Switch connection side 0.5 m
Load connection side 0.5 m



Internal circuit



Dimensions



Connection

To connect a switch unit to a contact protection box, connect the lead wire from the side of the contact protection box marked SWITCH to the lead wire coming out of the switch unit. Keep the switch as close as possible to the contact protection box, with a lead wire length of no more than 1 metre.

Solid state switch: Direct mounting

D-M9N(V)/D-M9P(V)/D-M9B(V) Series



Grommet

- 2-wire load current is reduced (2.5 to 40 mA)
- Lead free
- UL certified lead cable is used
- Flexibility is 1.5 times greater than the conventional model (SMC comparison)
- Using flexible cable as standard spec.

Auto switch specifications

PLC: Programmable logic controller

D-M9□/D-M9□V (With indicator light)						
Auto switch part no.	D-M9N ●	D-M9NV ●	D-M9P ●	D-M9PV ●	D-M9B ●	D-M9BV ●
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN			PNP		—
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when ON.					

Lead wires

Oil proof heavy-duty vinyl cable: Ø 2.7 x 3.2 ellipse

D-M9B(V) 0.15 mm2 x 2 cores

D-M9N(V), D-M9P(V) 0.15 mm2 x 3 cores

1) Refer to catalogue for details of solid state switch with pre-wired connector.

2) Refer to catalogue for solid state switch common specifications and for lead wire lengths.

Operating precautions

Fix the switch with the existing screw installed on the switch body. The switch may be damaged if a screw other than the one supplied, is used.

Weight

Unit:g

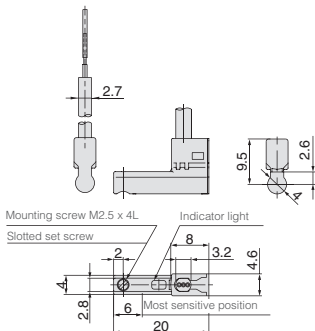
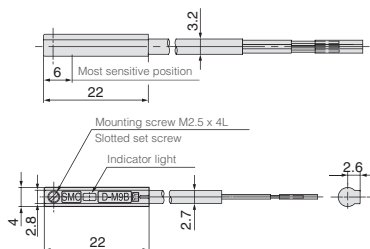
Auto switch part number		D-M9N(V) ●	D-M9P(V) ●	D-M9B(V) ●
Lead wire length [m]	0.5	8	8	7
	3	41	41	38
	5	68	68	63

Dimensions

D-M9□

D-M9□V

Unit: mm



2-Colour indication solid state auto switch: Direct mounting

D-M9NW(V)/D-M9PW(V)/D-M9BW(V)

Series



Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- RoHS compliant
- UL certified lead cable is used.
- Flexibility is 1.5 times greater than the conventional model (SMC comparison).
- Using flexible cable as standard spec.
- The optimum operating position can be determined by the colour of the light. (Red → Green → Red)

Auto switch specifications

PLC: Programmable logic controller

D-M9□W/D-M9□WV (With indicator light)						
Auto switch part no.	D-M9NW ●	D-M9NWV ●	D-M9PW ●	D-M9PWV ●	D-M9BW ●	D-M9BWV ●
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 µA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating range Red LED illuminates. Proper operating range Green LED illuminates.					

Lead wires

Oil proof heavy-duty vinyl cable: Ø 2.7 x 3.2 ellipse

D-M9BW(V) 0.15 mm² x 2 cores

D-M9NW(V), D-M9PW(V) 0.15 mm² x 3 cores

1) Refer to catalogue for details of solid state switch with pre-wired connector.

2) Refer to catalogue for solid state switch common specifications and for lead wire lengths.

Weight

Unit:g

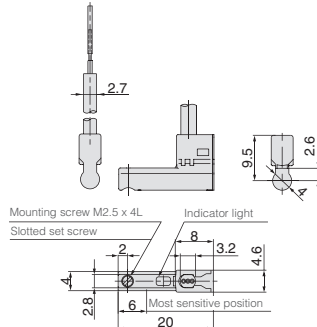
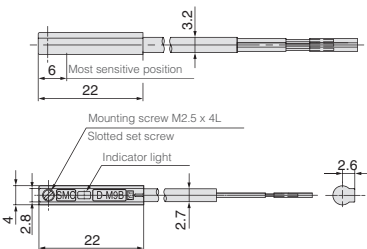
Auto switch part number		D-M9NW(V) ●	D-M9PW(V) ●	D-M9BW(V) ●
Lead wire length [m]	0.5	8	8	7
	1	14	14	13
	3	41	41	38
	5	68	68	63

Dimensions

D-M9□

D-M9□V

Unit: mm



Water resistant 2-colour indication solid state auto switch: Direct mounting

D-M9NA(V)/D-M9PA(V)/D-M9BA(V)

Series



Grommet

- Water (coolant) resistant type
- 2-wire load current is reduced (2.5 to 40 mA)
- The optimum operating position can be determined by the colour of the light. (Red → Green → Red)
- Using flexible cable as standard specification.

Auto switch specifications

PLC: Programmable logic controller

D-M9□A(V) (With indicator light)						
Auto switch part no.	D-M9NA ●	D-M9NAV ●	D-M9PA ●	D-M9PAV ●	D-M9BA ●	D-M9BAV ●
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN			PNP		—
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less			—	24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating range Red LED illuminates. Proper operating range Green LED illuminates.					

Most sensitive position 63.22.842.6222.7746 Indicator light mounting screw M2.5 x 4L

Slotted set screw

Oil proof heavy-duty vinyl cable: $\varnothing 2.7 \times 3.2$ ellipse
 D-M9BA(V) 0.15 mm² x 2 cores
 D-M9NA(V), D-M9PA(V) 0.15 mm² x 3 cores

- 1) Refer to catalogue for solid state switch common specifications.
- 2) Refer to catalogue for lead wire lengths.

Precautions

Fix the auto switch with the set screw attached to the auto switch body. The auto switch may be damaged if an unspecified screw is used.

Weight

Unit:g

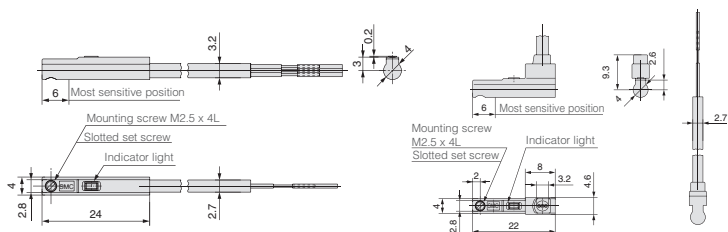
Auto switch part number		D-M9NA(V)	D-M9PA(V)	D-M9BA(V)
Lead wire length [m]	0.5	8	8	7
	1	14	14	13
	3	41	41	38
	5	68	68	63

Dimensions

D-M9□A

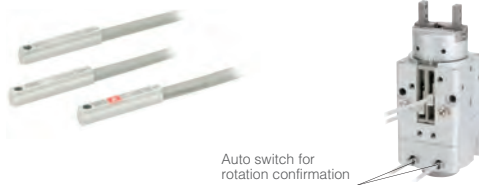
D-M9□AV

Unit: mm



Solid state auto switch for rotation verification

D-M9N-746/D-M9P-746/D-M9B-746
Series



Grommet

- Reduce the 2-wire load current (2.5 to 40 mA)
- Use a flexible cord as a standard.

Auto switch specifications

PLC: Programmable logic controller

D-M9□□-746 (With indicator light)			
Auto switch part no.	D-M9N-746	D-M9P-746	D-M9B-746
Electrical entry direction	Lateral		
Wiring type	3-wire		2-wire
Output type	NPN Type	PNP Type	—
Applicable load	IC circuit, Relay, for PLC		24 VDC relay, for PLC
Power supply voltage	5, 12, 24 VDC(4.5 to 28V)		—
Current consumption	10 mA or less		—
Load voltage	28 VDC or less	—	24 VDC (10 to 28 VDC)
Load current	40mA or less		2.5 to 40mA
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)		4 V or less
Leakage current	100 μA or less at 24 VDC		0.8 mA or less
Indicator light	Red LED illuminates when turned ON.		

Lead wire: Oil proof heavy-duty vinyl cord

2.7 x 3.2 ellipse, 0.15 mm², 2 cores (D-M9B), 3 cores (D-M9N, D-M9P)

Lead length symbols: 0.5 m (Example) D-M9N-746

3 m (Example) D-M9NL-746

5 m (Example) D-M9NZ-746

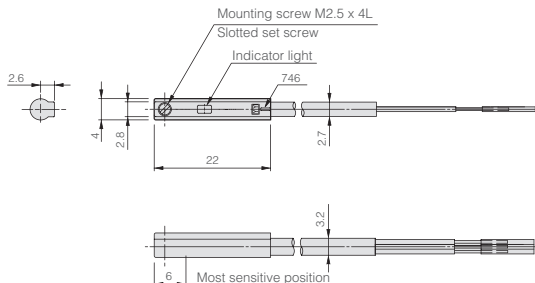
Weight

Unit:g

Auto switch part number	D-M9N-746	D-M9P-746	D-M9B-746
Lead wire length [m]	0.5	8	7
	3	41	38
	5	68	63

Dimensions

D-M9N-746/D-M9P-746/D-M9B-746



Trimmer auto switch: Direct mounting

D-M9K Series



Sensor unit specifications

Auto switch model	D-M9K ●
Mounting	Direct mounting (Round groove)
Applicable amplifier unit	D-RNK, D-RPK
Indicator lamp	Red lights ON at sensitive position. Green lights ON at optimum detecting position.
Electrical entry	Grommet
Impact resistance	980 m/s ²
Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between lead wire and case
Withstand voltage	1000 VAC for 1 minute (between lead wire and case)
Ambient temperature	-10 to 60 °C
Enclosure	IP67
Weight (with connector)	55 g

Oilproof heavy-duty cable specifications

Auto switch model		D-M9K ●	D-Y7K ●	D-F7K ●
Sheath	Outside diameter [mm]		∅ 3.5	
Insulator	Number of cores		4 cores (Brown/Blue/Black/White)	
	Outside diameter [mm]		∅ 1.0	
Conductor	Effective area [mm ²]		0.15 (AWG26)	
	Strand diameter [mm]		∅ 0.08	
Minimum bending radius [mm] (Reference value)			21	

Amplifier unit specifications (with sensor unit)

PLC: Programmable logic controller

Model		D-RNK ●	D-RPK ●
Applicable sensor unit		D-M9K	
Application		For relay and PLC	
Power supply voltage		12 to 24 VDC	
Current consumption		40 mA or less	
Output specification		NPN open collector 2 outputs	PNP open collector 2 outputs
Load voltage		28 VDC or less	—
Load current		80 mA or less/1 output	
Internal voltage drop		1.5 V or less	
Leakage current		100 μA or less/1 output	
Response time		1 ms or less	
Indicator lamp		READY: Red lights ON when the piston position detected (with sensor unit). OUT1: Green lights ON when turned ON. OUT2: Orange lights ON when turned ON.	
Electrical entry	Connection to sensor	e-con connector	
	Power supply/output cable	Grommet	
Impact resistance		98 m/s ²	
Insulation resistance		50 MΩ or more (500 VDC measured via megohmmeter) between lead wire and case	
Withstand voltage		1000 VAC for 1 minute (between lead wire and case)	
Ambient temperature		-10 to 60 °C	
Enclosure		IP40	
Weight		70 g	

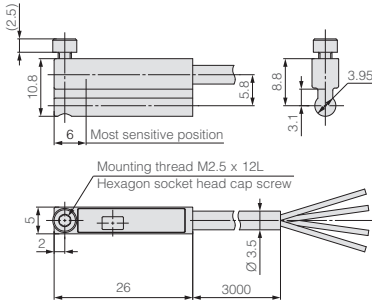
Oilproof heavy-duty cable specifications

Model		D-RNK ●	D-RPK ●
Sheath	Outside diameter [mm]		∅ 3.5
Insulator	Number of cores		4 cores (Brown/Blue/Black/White)
	Outside diameter [mm]		∅ 1.0
Conductor	Effective area [mm ²]		0.15 (AWG26)
	Strand diameter [mm]		∅ 0.08
Minimum bending radius [mm] (Reference value)			21

Dimensions [mm]

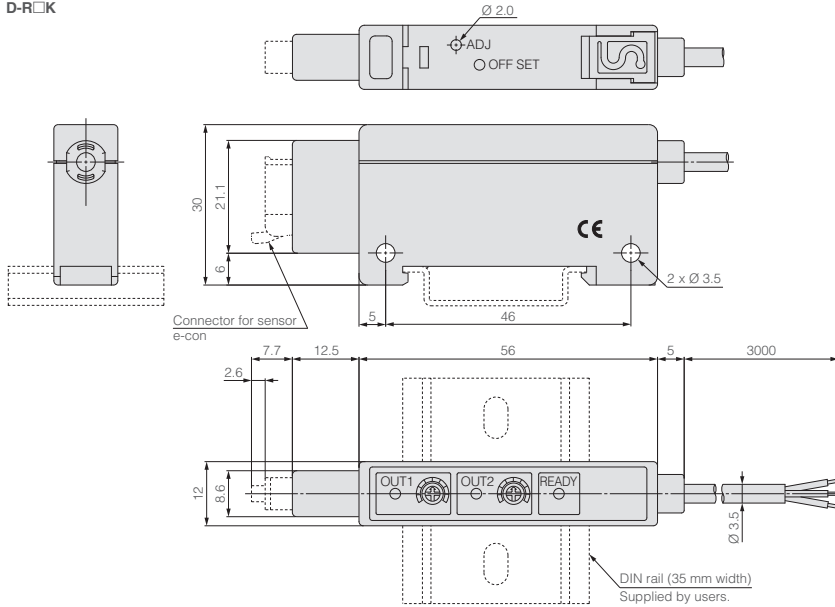
Sensor unit

D-M9K



Amplifier unit

D-□K



Heat resistant 2-colour indicator solid state auto switch



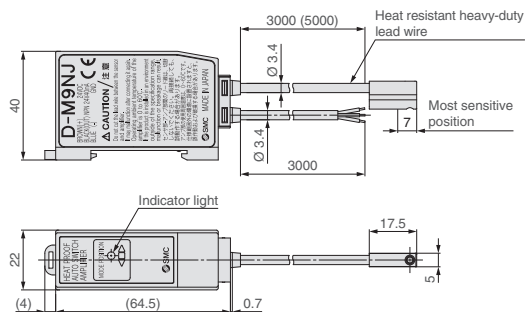
D-M9□J Series



Specifications

D-M9NJ, D-M9PJ (With indicator light)		
Auto switch model	D-M9NJ	D-M9PJ
Output type	NPN	PNP
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)	
Current consumption	25 mA or less	
Load voltage	28 VDC or less	—
Load current	40 mA or less	
Internal voltage drop	0.8 V or less	
Leakage current	100 μ A or less at 24 VDC	
Indicator light	Operating range Red LED lights up. Optimum operating range Green LED lights up.	
Ambient temperature	Sensor section: 0 to 150 °C Amplifier section: 0 to 60 °C	
Impact resistance	Sensor section: 1000 m/s ² Amplifier section: 300 m/s ²	

Dimensions



Solid state auto switch with pre-wired connector

D-M9□PC Series



With pre-wired connector

- Eliminates the harnessing work by cable with connector specifications
- Adopts global standardized connector (IEC947-5-2)
- IP67 construction.

Connector specifications

Connector model	M8-3 pin	M8-4 pin	M12-4 pin
Pin arrangement			
Conformed standard	JIS C 4524, JIS C 4525, IEC 947-5-2, NECA 0402		
Impact resistance	300 m/s ²		
Enclosure	IP67 (IEC60529 standard)		
Insulation resistance	100 MΩ or more at 500 VDC		
Withstand voltage	1500 VAC 1 minute (between contacts), Leak current 1 mA or less		

How to order

D-M9 **P** **W** **V** **S** **A** PC
 ① ② ③ ④ ⑤

① Wiring and output

N	3 wire, NPN
P	3 wire, PNP
B	2 wire

② Colour indication

—	Standard (1-colour)
W ¹⁾	2-colour

1) Not available with 3 m cable length.

③ Wiring entry

—	In-line
V ¹⁾	Perpendicular

1) Not available with 3 m cable length.

④ Cable length

S	0.5 m
M	1 m
L	3 m

⑤ Connector model

A	M8-3 pin
B ¹⁾	M8- 4 pin
D ¹⁾	M12- 4 pin

1) Not available with 3 m cable length.

Connector pin arrangement

Sensor type	Colour distinction of lead wire				Meaning of contact number			
	1 pin	2 pin	3 pin	4 pin	1 pin	2 pin	3 pin	4 pin
DC 2-wire type	Brown	—	—	Blue	OUT (+)	—	—	OUT (-)
DC 3-wire type	Brown	—	Blue	Black	DC (+)	—	DC (-)	OUT

Weight

M8 connector type:

Unit: g

Auto switch part number	D-M9N□APC		D-M9B□APC	D-M9N□BPC		D-M9B□BPC
	D-M9P□APC			D-M9P□BPC		
Lead wire length [m]	0.5	11	11	11	11	11
	1	18	18	18	18	18
	3	46	46	—	—	—

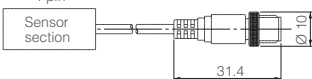
M12 connector type

Unit: g

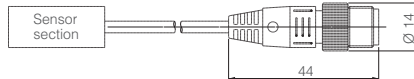
Auto switch part number	D-M9N□DPC		D-M9B□DPC
	D-M9P□DPC		
Lead wire length [m]	0.5	19	18
	1	26	25

Dimensions

M8 - 3 pin
4 pin



M12-4 pin



● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

Solid state auto switch with pre-wired connector



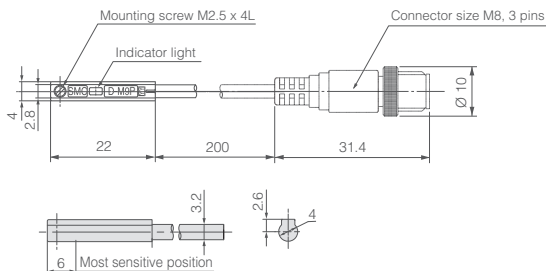
D-M9PSAPC-595 Series



Specifications

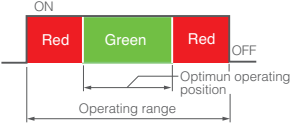
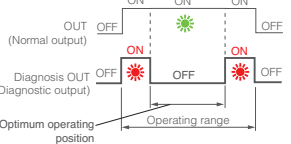
Auto switch model	D-M9PSAPC-595
Output type	PNP
Power supply voltage	4.5 to 28 VDC
Current consumption	10 mA or less
Load voltage	—
Load current	40 mA or less
Internal voltage drop	0.8 V or less
Leakage current	100 μ A or less
Indicator light	Red LED illuminates when ON
Ambient temperature	-10 to 60 °C
Impact resistance	Switch: 1000 m/s ² Connector: 300 m/s ²

Dimensions



Also available switches

Since there are other applicable auto switches than listed, refer to Best Pneumatics catalogue for details.

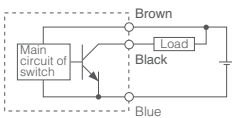
<p>2 colour indication</p>	<p>Without indicator</p>	<p>With diagnostic output</p>
<p>Optimum operating position seen at a glance.</p> 	<p>For light free environments.</p> <p>Operating range: wide-area detection type</p> <p>Operating range: 35 to 50 mm</p>	<p>Displacement of the detecting position is detected at the PLC side.</p> 
<p>With timer (with OFF delay timer)</p> <p>Can detect an intermediate position of a high-speed cylinder.</p>	<p>Resistant to strong magnetic fields</p> <p>For use in environments where AC current is 16,000A or more.</p>	<p>Water, oil resistant</p> <p>For water, coolant splash environments.</p> <p>Heat resistant</p> <p>For use in environments of 150 °C, 130 °C, 120 °C.</p>

Before operation

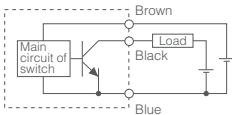
Auto switches connection and example

Basic wiring

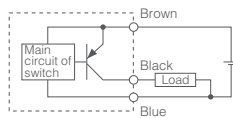
Solid state 3-wire, NPN



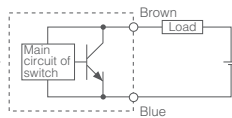
(Power supply for switch and load are separate)



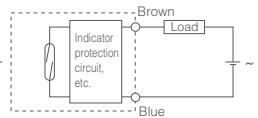
Solid state 3-wire, PNP



Solid state 2-wire

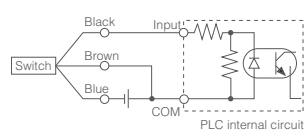


Reed switch 2-wire

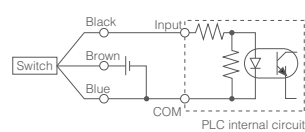


Example of connection with PLC (Programmable logic controller)

Sink input specifications 3-wire, NPN

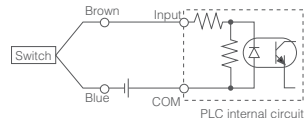


Source input specifications 3-wire, PNP

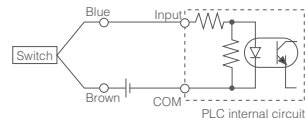


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

2-wire



2-wire



Reed auto switch/Direct mounting

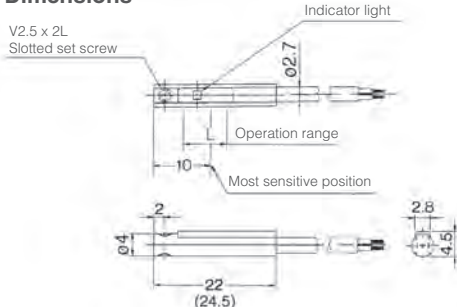
D-A93 Series



Grommet



Dimensions



Specifications

D-A93/D-A96 (With indicator light)

Auto switch model number	D-A93 ●		
Electrical entry	In-line		
Application	Relay/PLC		
Load voltage	24 VDC		100 VAC
Max. load current and range	5 to 40 mA		5 to 20 mA
Contact protection circuit	None		
Internal voltage drop	≤ 2.4 V (up to 20 mA) / ≤ 3V (up to 40 mA)		
Indicator light	ON: When red light emitting diode		

Lead wire — Oilproof vinyl heavy insulation cable, Ø 2.7, 0.18 mm² X 2 cores (Brown, Blue), 0.5 m

Reed auto switch/Direct mounting

D-A93V Series

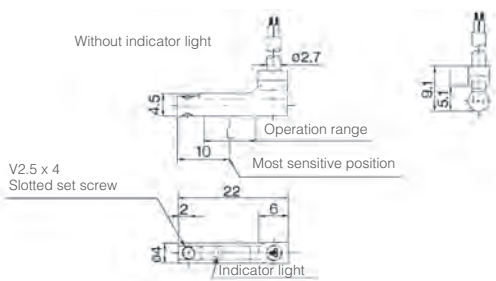


Grommet

Electrical entry: Perpendicular



Dimensions



Specifications

D-A93V (With indicator light)

Auto switch model number	D-A93V ●		
Electrical entry	Perpendicular		
Application	Relay/PLC		
Load voltage	24 VDC		100 VAC
Max. load current and range	5 to 40 mA		5 to 20 mA
Contact protection circuit	None		
Internal voltage drop	2.7 V or less		
Indicator light	ON: When red light emitting diode		

Lead wire — Oil proof vinyl heavy insulation cable, Ø 2.7, 0.18 mm² X 2 cores (Brown, Blue), 0.5 m

Magnetic field resistant 2-colour indicator solid state auto switch



D-P3DWA Series



Specifications

PLC: Programmable logic controller

D-P3DWA (With indicator light)	
Auto switch model	D-P3DWA/ D-P3DWA/L/ D-P3DWA/Z ●
Applicable load	24 VDC relay, PLC
Load voltage	24 VDC
Load current	6 to 40 mA
Internal voltage drop	5 V or less
Leakage current	1 mA or less at 24 VDC
Operating time	40 ms or less
Indicator light	Operating range Red LED illuminates Proper operating range Green LED illuminates

Oilproof heavy-duty lead wire specifications

Auto switch model		D-P3DWA ●
Sheath	Outside diameter [mm]	Ø 4.8
Insulator	Number of cores	2 cores (Brown/Blue)
	Outside diameter [mm]	Ø 1.52
Conductor	Effective area [mm ²]	0.5
	Strand diameter [mm]	Ø 0.08
Minimum bending radius [mm] (Reference values)		29

Impact resistance – Switch: 1000 m/s²

Insulation resistance – 50 MΩ or more at 500 VDC Mega (between lead wire and case)

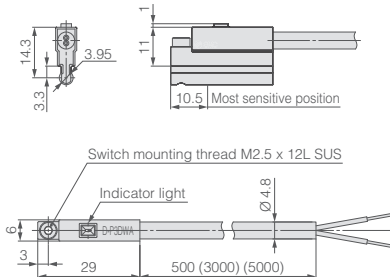
Withstand voltage – 1000 VAC for 1 minute (between lead wire and case)

Ambient temperature – -10 to 60 °C

Enclosure – IEC60529 standard IP67

Polarity: Non-polar

Dimensions



Magnetic field resistant 2-colour indicator solid state auto switch



D-P3DWASC/D-P3DWASE Series

(Electrical entry: Pre-wired connector)



Specifications

PLC: Programmable Logic Controller

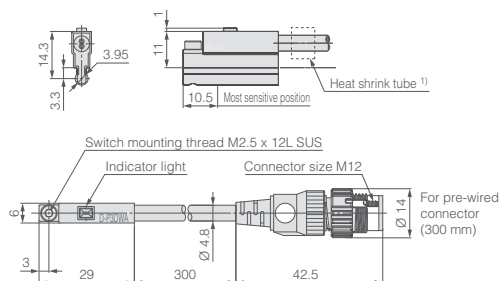
D-P3DWASC/E (With indicator light)	
Auto switch model	D-P3DWASC
Applicable load	24 VDC relay, PLC
Load voltage	24 VDC
Load current	6 to 40 mA
Internal voltage drop	5 V or less
Leakage current	1 mA or less at 24 VDC
Operating time	40 ms or less
Indicator light	Operating range Red LED illuminates Proper operating range Green LED illuminates

Oilproof heavy-duty lead wire specifications

Auto switch model		D-P3DWASC	D-P3DWASE ●
Sheath	Outside diameter [mm]	Ø 4.8	
Insulator	Number of cores	2 cores	
	Outside diameter [mm]	Ø 1.52	
Conductor	Effective area [mm ²]	0.5	
	Strand diameter [mm]	Ø 0.08	
Minimum bending radius [mm] (Reference values)		29	

Impact resistance – Switch: 1000 m/s², Connector: 300 m/s²
 Insulation resistance – 50 MΩ or more at 500 VDC Mega (between lead wire and case)
 Withstand voltage – 1000 VAC for 1 minute (between lead wire and case)
 Ambient temperature – -10 to 60 °C
 Enclosure – IEC60529 standard IP67
 Polarity: Non-polar

Dimensions



1) A white colour heat shrink tube is attached to the D-P3DWASE type only.

Air preparation



Air line

Page 268



Pressure control equipment

Page 269



Pressure gauges

Page 269



Lubrication equipment

Page 269



Air dryers

Page 270



Compressed air preparation filters

Page 270



Water separators

Page 270



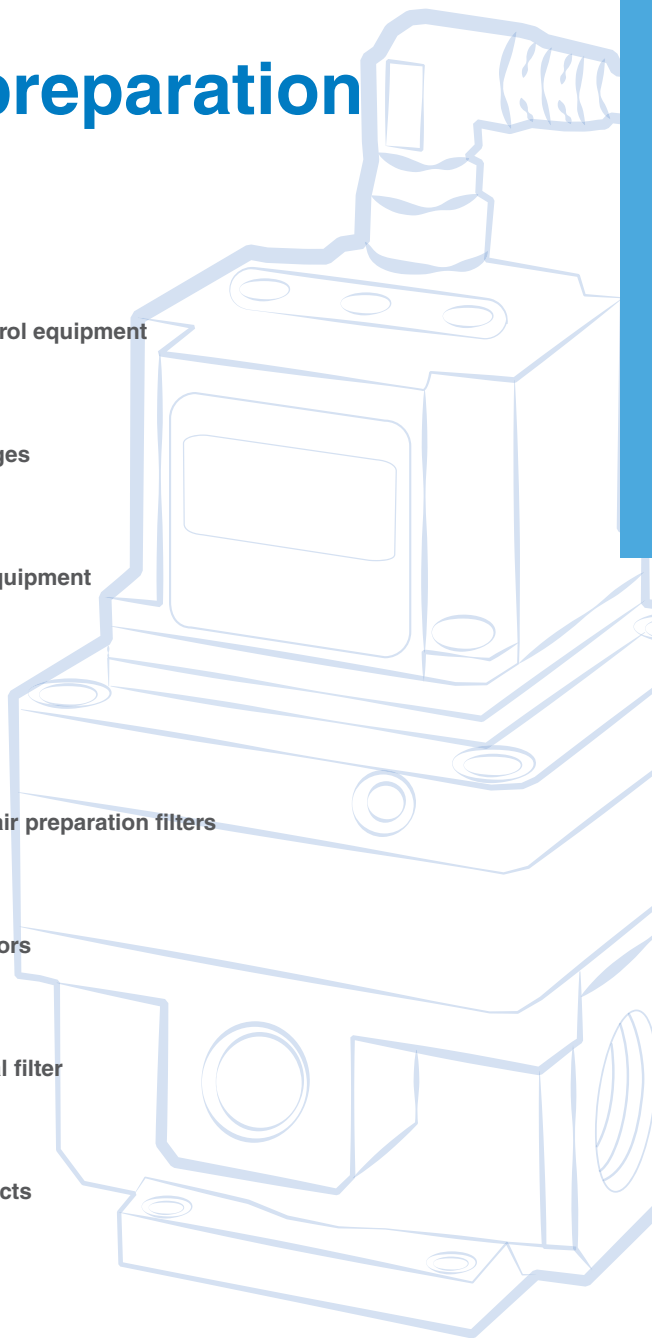
Odour removal filter

Page 270



Related products

Page 270



Air line



Air filter + Regulator + Lubricator
AC Series p.276



Filter-regulator + Lubricator
ACCA Series p.277



Air filter
AF Series p.278



Micro filter
AFM-A Series p.279



Sub micro filter
AFD-A Series p.279



Air regulator
AR Series p.280



Regulator with backflow function
ARCK Series p.280



Direct operated precision regulator
ARP Series p.281



Lubricator
AL Series p.281



Filter regulator
AW Series p.282



Filter regulator with backflow function
AWCK Series p.283



Regulator/Filter regulator
ARG/AWG Series p.284



Digital pressure switch
ISE35 Series p.285



Modular adapter
E210/310/410 Series p.285



Attachments
Y, E, AKM Series p.286



Pressure switch/Reed switch type
IS10M/E Series p.287



Pressure relief 3 port valve
VHS Series p.287



Residual pressure relief 3 port solenoid valve
VP517 Series p.288



Soft start-up valve
AV-A Series p.289



Large flow air filter
AF800/900 Series p.290

Pressure control equipment



Miniature regulator
ARJ Series p.290



Miniature regulator
ARJ310 Series p.291



Pilot operated pressure regulator
EAR Series p.291



Regulator for 2.0 MPa
ARX20 Series p.292



Compact manifold regulator
ARM5 Series p.292



Modular regulator
ARM10/11 Series p.293



Precision regulator
IR1000/2000/3000-A Series p.293



Regulator
IR1200/2200/3200-A Series p.294



Direct operated regulator (Relieving type)
VCHR30/40 Series p.294



Compact electro-pneumatic regulator
ITV0000 Series p.295



Electro-pneumatic regulator
ITV1000/2000/3000 Series p.296



Electro-pneumatic regulator Fieldbus compatibility
ITV1000/2000/3000 Series p.297



High pressure electro-pneumatic regulator
ITVX Series p.297



High pressure electro-pneumatic regulator, 3.0 MPa
ITVH Series p.298



Booster regulator
VBA Series p.299

Pressure gauges



Pressure gauge
G□ Series p.300



Pressure gauge with limit indicator
G36-L/G46-L Series p.300

Lubrication equipment



Large flow lubricator
AL800/900 Series p.301



D.P. lube unit
ALDU600/900 Series p.301



Booster lube
ALB900 Series p.302



Mist spray unit
LMU Series p.302



Mixing valve
LMV Series p.303



Impulse lubricator
ALI Series p.303

Air dryers



Refrigeration air dryer
IDFA Series p.304



Membrane air dryer
IDG Series p.305



Thermo-dryer
IDH Series p.306

Water separator



Water separator
AMG Series p.310

Odour removal filter



Odour removal
AMF Series p.311

Compressed air preparation filters



Main line filter
AFF Series p.306



Main line filter
AFF□ Series p.307



Mist separator
AM Series p.307



Mist separator
AM□ Series p.307



Micro-mist separator
AMD Series p.308



Micro-mist separator
AMD□ Series p.308



Micro-mist separator with prefilter
AMH Series p.309



Super mist separator
AME Series p.309

Related products



Heavy duty auto drain
ADH4000 Series p.311



Clean exhaust filter
SFE Series p.312



Auto drain valve
AD402-A Series p.312




Our highlighted product for you

Modular F.R.L. units


AC Series




For more details
go to page 276



Square embedded
type pressure
gauge




Round type
pressure gauge



Digital pressure
switch

Selection of pressure gauges

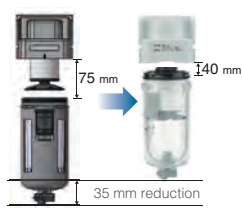


Easy replacement of the element
The element and the bowl are in one place
Replacement can be done in hand.



Lightweight and better resistance to rust or corrosion

► **Reduced required maintenance space**
* For AF40
Max. 46 % reduction




Better visibility & safer
The bowl is covered with a transparent bowl guard!

- The inside is visible from 360°
- The bowl is completely protected from the environment. Safety improved
- * Body size: 30 or more.

Modular connection type
► **Residual pressure relief 3 port solenoid valve**
(VP500/700 Series)



► **Pressure relief 3 port valve**
(VHS Series)



Our highlighted product for you

Residual pressure relief 3 port solenoid valve VP517/717 Series



For more details
go to page 288

IP65 enclosure

- Dust-tight
- Water-jet proof.

Low power consumption of DC type: 0.35 W

Usable under continuous
energisation.

The modular way to set air free

IN

OUT

Selectable flow direction

"Left to right" or "Right to left".

Allows for space saving and
reduced piping labour



Modular connection type for
connecting to F.R.L. units.

EHX

► Internal pilot. Operating pressure range:

- Standard: 0.2 to 0.7 MPa
- High-pressure type: 0.2 to 1 MPa.

► Applicable air combination

	AC25-A	AC30-A	AC40-A
VP500	●	●	
VP700			●

Soft start-up valve

AV-A Series



For more details
go to page 289

Modular connection
for connecting to
F.R.L. units.



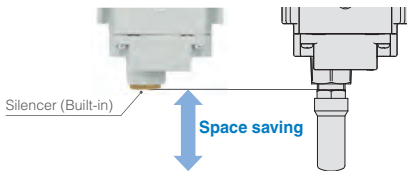
- ▶ **Power consumption reduced by up to 80 %**
(0.35 W with DC type)
- ▶ **Prevents air leakage** when the main valve is switched
(The main valve stays closed except during rapid supply conditions)
- ▶ **Rapid supply time reduced** by up to 50 %
- ▶ **Larger flow rate capacity** by up to 2.2 times
- ▶ **Exhaust time reduced** by up to 55 %.

Smooth in your consumption

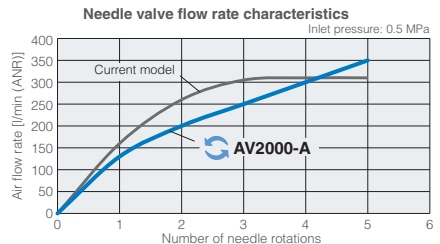
Built-in silencer

Built-in silencer
(Option)

When the silencer is
mounted afterward:



Better relationship between the needle rotations and the air flow.



Our highlighted product for you

Electro-pneumatic regulator ITV Series

For more details
go to page 296

Stepless control of air pressure proportional to an electrical signal



ITV3000 Series
Maximum flow rate 4000 l/min (ANR)
- Set pressure: 0.6 MPa
- Supply pressure: 1.0 MPa



ITV2000 Series
Maximum flow rate 1500 l/min (ANR)
Set pressure: 0.6 MPa
Supply pressure: 1.0 MPa



ITV1000 Series
Maximum flow rate 200 l/min (ANR)
Set pressure: 0.6 MPa
Supply pressure: 1.0 MPa
Grease-free specification (wetted parts)



► **Added fieldbus compliant specifications**
Reduced wiring. Applicable Fieldbus protocols

CC-Link DeviceNet PROFINET

► Added **RS-232C** specification to serial communications!

► **Sensitivity:** Within 0.2 % (F.S.)

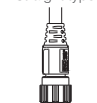
► **Linearity:** Within ± 1 % (F.S.)

► **Hysteresis:** Within 0.5 % (F.S.)

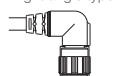
► **IP65**

► **Cable connections in 2 directions**

Straight type



Right angle type



Refrigerated air dryer

IDFA Series



For more details
go to page 304

High performance, reliable and trouble free compressed air treatment



Standard IDFA□E Series

- Air flow capacity Increased by 40 % at max. (SMC comparison)
- Power consumption Reduced by 40 % at max. (SMC comparison).

Large size IDFA□F Series

Tolerant of high temperature environment!

Can be used with ambient temperature 45 °C at max. and inlet air temperature 60 °C at max., making it top of its class in the industry for the large air-cooled type.

- ▶ Employs a heat exchanger made of high corrosion-resistant stainless steel.
- ▶ Stable outlet dew point with a minimum pressure drop across the dryer.
- ▶ Power supply voltage: Simple-phase 230 VAC
* IDFA□E only.
- ▶ Reduction of exhaust heat achieves down sizing and energy saving operation of the air conditioner!
* IDFA□F only.

- ▶ Power supply voltage: Three-phase 400 VAC
* IDFA□F only.
- ▶ Energy saving design: Reduces exhaust heat from dryer by 25 % at max.
Suppresses ambient temperature increase
Secondary heater reduces the load to the condenser, and reduces exhaust heat from dryer by 25 % at max. (comparison with other SMC products)
* IDFA□F only.

Our highlighted product for you

Air filter + Regulator + Lubricator

AC Series



- New and existing modular types can be connected
- Reduced time for mounting
- Interchangeable with the previous model
- Transparent bowl protection for a better visibility and security
- Bowl variations: polycarbonate, nylon, metal and metal with level gauge
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C
- High and low temperature, high pressure and other options available.

Manual drain

Part number	□ Gauge	Flow [Nl/min]	Port size	Set pressure [MPa]	Filtration degree [µm]	Symbol
AC10-M5□-A	- , G	75	M5	0.05 ~ 0.7	5	
AC20-F01□-B ●	- , G, E	300	G 1/8	0.05 ~ 0.85		
AC20-F02□-B ●	- , G, E		G 1/4			
AC30-F03□-B ●	- , G, E	1400	G 3/8			
AC40-F04□-B ●	- , G, E	2000	G 1/2			
AC40-F06□-B	- , G, E	1800	G 3/4			
AC50-F06□-B ●	- , G, E	2800	G 3/4			
AC60-F10□-B ●	- , G, E	4000	G 1			

Flow information at 0.6 MPa and 0.1 MPa pressure drop

□: Add suffix G for round gauge added or suffix E for square gauge added (square gauge not available for size 10)

Nothing (-), no gauge.

Automatic drain

Part number	□ Gauge	Flow [Nl/min]	Port size	Set pressure [MPa]	Filtration degree [µm]	Drain type	Symbol
AC10-M5C□-A	- , G	75	M5	0.05 ~ 0.7	5	Normally closed	
AC20-F01C□-B	- , G, E	300	G 1/8	0.05 ~ 0.85			
AC20-F02C□-B ●	- , G, E		G 1/4				
AC30-F03D□-B ●	- , G, E	1400	G 3/8				
AC40-F04D□-B ●	- , G, E	2000	G 1/2				
AC40-F06D□-B	- , G, E	1800	G 3/4				
AC50-F06D□-B ●	- , G, E	2800	G 3/4				
AC60-F10D□-B ●	- , G, E	4000	G 1				
							Normally open

Flow information at 0.6 MPa and 0.1 MPa pressure drop

□: Add suffix G for round gauge added or suffix E for square gauge added (square gauge not available for size 10)

Nothing (-), no gauge.

Filter-regulator + Lubricator

AC□□A Series



- New and existing modular types can be connected
- Reduced time for mounting
- Interchangeable with the previous model
- Transparent bowl protection for a better visibility and security
- Bowl variations: Polycarbonate, Nylon, Metal and Metal with level gauge
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Manual drain

Part number	□ Gauge	Flow [Nl/min]	Port size	Set pressure [MPa]	Filtration degree [µm]	Symbol
AC10A-M5□-A	-, G	75	M5	0.05 ~ 0.7	5	
AC20A-F01□-B ●	-, G, E	300	G 1/8	0.05 ~ 0.85		
AC20A-F02□-B ●	-, G, E		G 1/4			
AC30A-F03□-B ●	-, G, E	1400	G 3/8			
AC40A-F04□-B ●	-, G, E	2000	G 1/2			
AC40A-F06□-B ●	-, G, E	1800	G 3/4			
AC50A-F06□-B	-, G, E	2800	G 3/4			
AC60A-F10□-B ●	-, G, E	4000	G 1			

Flow information at 0.6 MPa and 0.1 MPa pressure drop

□: Add suffix G for round gauge added or suffix E for square gauge added (square gauge not available for size 10)

Nothing (-), no gauge.

Automatic drain

Part number	□ Gauge	Flow [Nl/min]	Port size	Set pressure [MPa]	Filtration degree [µm]	Drain type	Symbol
AC10A-M5C□-A	-, G	75	M5	0.05 ~ 0.7	5	Normally closed	
AC20A-F01C□-B	-, G, E	300	G 1/8	0.05 ~ 0.85			
AC20A-F02C□-B ●	-, G, E		G 1/4				
AC30A-F03D□-B ●	-, G, E	1400	G 3/8				
AC40A-F04D□-B ●	-, G, E	2000	G 1/2			Normally open	
AC40A-F06D□-B ●	-, G, E	1800	G 3/4				
AC50A-F06D□-B	-, G, E	2800	G 3/4				
AC60A-F10D□-B ●	-, G, E	4000	G 1				

Flow information at 0.6 MPa and 0.1 MPa pressure drop

□: Add suffix G for round gauge added or suffix E for square gauge added (square gauge not available for size 10)

Nothing (-), no gauge.

Air filter

AF Series



- To be used as stacking manifold or as single device
- Convenient maintenance of the filter element
- Interchangeable with the previous model
- Transparent bowl protection for a better visibility and security
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Manual drain

Part number	Flow [Nl/min]	Port size	Bowl capacity [cm ³]	Filtration degree [µm]	Symbol
AF10-M5-A ●	200	M5	2.5	5	
AF20-F01-A ●	1500	G 1/8	8		
AF20-F02-A ●		G 1/4			
AF30-F03-A ●	3150	G 3/8	25		
AF40-F04-A ●	5200	G 1/2	45		
AF40-F06-A ●	6000	G 3/4			
AF50-F06-A ●	11000	G 3/4			
AF60-F10-A ●	13000	G 1			

Flow information at 0.6 MPa and 0.1 MPa pressure drop.

Automatic drain

Part number	Flow [Nl/min]	Port size	Bowl capacity [cm ³]	Drain type	Filtration degree [µm]	Symbol
AF10-M5C-A ●	200	M5	2.5	Normally closed	5	
AF20-F01C-A ●	1500	G 1/8	8			
AF20-F02C-A ●		G 1/4				
AF30-F03D-A ●	3150	G 3/8	25	Normally open		
AF40-F04D-A ●	5200	G 1/2	45			
AF40-F06D-A ●	6000	G 3/4				
AF50-F06D-A ●	11000	G 3/4	45			
AF60-F10D-A ●	13000	G 1	45			

Flow information at 0.6 MPa and 0.1 MPa pressure drop.

Accessories

Series	10 Series	20 Series	30 Series	40-F04 Series	40-F06 Series	50 Series	60 Series
Filter element	AF10P-060S	AF20P-060S	AF30P-060S	AF40P-060S	AF40P-060S	AF50P-060S	AF60P-060S
Bracket assembly	—	AF22P-050AS	AF32P-050AS	AF42P-050AS	AF42P-070AS	AF52P-050AS	

Micro filter AFM-A Series



- Filtration degree 0.3 μm
- To be used as stacking manifold or as single device
- Oil mist removal rate of 99,9 %
- Filter element can be changed easily and quickly
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Part number	Flow [Nl/min]	Port size	Drain type	Filtration degree [μm]	Oil mist removal rate [%]	Symbol
AFM20-F01-C ●	200	G 1/8	Automatic N.C.	0.3	99.9	
AFM20-F02-C ●		G 1/4				
AFM30-F03D-A ●	450	G 3/8	Automatic N.O.			
AFM40-F04D-A ●		G 1/2				
AFM40-F06D-A ●	1100	G 3/4	Automatic N.O.			
AFM20-F01-A ●		G 1/8				
AFM20-F02-A ●	200	G 1/4	Manual			
AFM30-F03-A ●		G 3/8				
AFM40-F04-A ●	1100	G 1/2	Manual			
AFM40-F06-A ●		G 3/4				

Flow information at 0.7 MPa and 0.01 MPa pressure drop.

Accessories

Series	20 Series	30 Series	40-F04 Series	40-F06 Series
Filter element	AFM20P-060AS	AFM30P-060AS	AFM40P-060AS	AFM40P-060AS
Bracket assembly	AF22P-050AS	AF32P-050AS	AF42P-050AS	AF42P-070AS

Sub micro filter AFD-A Series



- Filtration degree 0.01 μm
- To be used as stacking manifold or as single device
- Oil mist removal rate of 99,9%
- Filter element can be changed easily and quickly
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Part number	Flow [Nl/min]	Port size	Drain type	Filtration degree [μm]	Oil mist removal rate [%]	Symbol
AFD20-F01-C ●	120	G 1/8	Automatic N.C.	0.01	99.99	
AFD20-F02-C ●		G 1/4				
AFD30-F03D-A ●	240	G 3/8	Automatic N.O.			
AFD40-F04D-A ●		G 1/2				
AFD40-F06D-A ●	600	G 3/4	Automatic N.O.			
AFD20-F01-A ●		G 1/8				
AFD20-F02-A ●	240	G 1/4	Manual			
AFD30-F03-A ●		G 3/8				
AFD40-F04-A ●	600	G 1/2	Manual			
AFD40-F06-A ●		G 3/4				

Flow information at 0.7 MPa and 0.01 MPa pressure drop.

Accessories

Series	20 Series	30 Series	40-F04 Series	40-F06 Series
Filter element	AFD20P-060AS	AFD30P-060AS	AFD40P-060AS	AFD40P-060AS
Bracket assembly	AF22P-050AS	AF32P-050AS	AF42P-050AS	AF42P-070AS

Air regulator

AR Series



- In stacking manifold or as single device
- Panel mounting possible
- Option: pressure regulation range 0,02 ~ 0,2 MPa
- Membrane-type regulator with secondary ventilation
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Part number	□ Gauge	Port size	Port size pressure gauge	Set pressure [MPa]	Symbol
AR10-M5□-A ●	- , G	M5	G 1/16	0.05 ~ 0.7	
AR20-F01□-B ●	- , G, E	G 1/8	G 1/8	0.05 ~ 0.85	
AR20-F02□-B ●	- , G, E	G 1/4			
AR30-F03□-B ●	- , G, E	G 3/8			
AR40-F04□-B ●	- , G, E	G 1/2			
AR40-F06□-B ●	- , G, E	G 3/4			
AR50-F06□-B ●	- , G, E	G 3/4			
AR60-F10□-B ●	- , G, E	G 1	G 1/8	0.02 ~ 0.2	
AR10-M5□-1-A ●	- , G	M5			
AR20-F01□-1-B ●	- , G, E	G 1/8			
AR20-F02□-1-B ●	- , G, E	G 1/4			
AR30-F03□-1-B ●	- , G, E	G 3/8			
AR40-F04□-1-B ●	- , G, E	G 1/2			
AR40-F06□-1-B ●	- , G, E	G 3/4			

□: Add suffix G for round gauge added or suffix E for square gauge added (square gauge not available for size 10)
Nothing (-), no gauge.

Bracket assembly

10 Series	20 Series	30 Series	40 Series	50 Series	60 Series
AR12P-270AS	AR23P-270AS	AR33P-270AS	AR43P-270AS	AR52P-270AS	AR62P-270AS

Regulator with backflow function

AR□K Series



- In stacking manifold or as single device
- Dual pressure control for cylinder easily achieved
- Panel mounting possible
- Membrane-type regulator with secondary ventilation
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Part number	□ Gauge	Port size	Port size pressure gauge	Set pressure [MPa]	Symbol
AR20K-F01□-B ●	- , G, E	G 1/8	G 1/8	0.05 ~ 0.85	
AR20K-F02□-B ●	- , G, E	G 1/4			
AR30K-F02□-B ●	- , G, E	G 1/4			
AR30K-F03□-B ●	- , G, E	G 3/8			
AR40K-F03□-B ●	- , G, E	G 3/8			
AR40K-F04□-B ●	- , G, E	G 1/2			
AR40K-F06□-B ●	- , G, E	G 3/4			
AR50K-F06□-B ●	- , G, E	G 3/4			
AR60K-F10□-B ●	- , G, E	G 1			

□: Add suffix G for round gauge added or suffix E for square gauge added
Nothing (-), no gauge.

Bracket Assembly

20 Series	30 Series	40 Series	50 Series	60 Series
AR23P-270AS	AR33P-270AS	AR43P-270AS	AR52P-270AS	AR62P-270AS

Direct operated precision regulator

ARP Series



- In stacking manifold or as single device
- Panel mounting possible
- Sensitivity max. 0.2 % F.S.
- Air consumption 0.8 l/min at 0.3 MPa
- Max. operating pressure 0.7 MPa
- Temperature range -5 to 60 °C (50 °C with digital pressure switch).

Part number	□ Gauge	Port size	Port size pressure gauge	Set pressure [MPa]	Sensitivity
ARP20-F01●	-, G, E	G 1/8	G 1/8	0.005 ~ 0.4	Within 0.2 % F.S.
ARP20-F02●	-, G, E	G 1/4			
ARP30-F03●	-, G, E	G 3/8	G 1/4		
ARP40-F04●	-, G, E	G 1/2			

□: Add suffix G at the end of reference for round gauge added or suffix E for square gauge added
Nothing (-), no gauge.

Bracket assembly

20 Series	30 Series	40 Series
AR20P-270AS	AR30P-270AS	AR40P-270AS

Lubricator

AL Series



- Lubricator to enrich the pressure air with lubricant
- Precise oil quantity adjustment with scale
- Transparent bowl protection for a better visibility and security
- Interchangeable with the previous model
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Manual drain

Part number	Port size	Bowl capacity [cm ³]	Recommended lubricant	Symbol
AL10-M5-A●	M5	7	Class 1 Turbine oil ISO VG32	
AL20-F01-A●	G 1/8	25		
AL20-F02-A●	G 1/4			
AL30-F02-A●	G 1/4	55		
AL30-F03-A●	G 3/8			
AL40-F03-A●	G 3/8	135		
AL40-F04-A●	G 1/2			
AL40-F06-A●	G 3/4			
AL50-F06-A●	G 3/4			
AL50-F10-A●	G 1			
AL60-F10-A●	G 1			

Accessories

Series	10 Series	20 Series	30 Series	40 Series	40-F06 Series	50 Series	60 Series
Bracket assembly	—	AF22P-050AS	AF32P-050AS	AF42P-050AS	AF42P-070AS	—	AF52P-050AS

Filter regulator

AW Series



- Transparent bowl protection for a better visibility and security
- Convenient maintenance of the filter element
- Filter-regulator units are space-saving and require less piping installation labour
- Selection of pressure gauges available: Square embedded type, round type and digital pressure switch
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Manual drain

Part number	□ Gauge	Flow [Nl/min]	Port size	Port-size pressure gauge	Set pressure [MPa]	Filtration degree [µm]	Symbol
AW10-M5□-A ●	- , G	110	M5	G 1/16	0.05 to 0.7	5	
AW20-F01□-B ●	- , G, E	500	G 1/8	G 1/8	0.05 ~ 0.85		
AW20-F02□-B ●	- , G, E		G 1/4				
AW30-F02□-B ●	- , G, E	1300	G 1/4				
AW30-F03□-B ●	- , G, E		G 3/8				
AW40-F04□-B ●	- , G, E		G 1/2				
AW40-F06□-B ●	- , G, E	2400	G 3/4				
AW60-F06□-B ●	- , G, E		G 3/4				
AW60-F10□-B ●	- , G, E	7600	G 1				

Flow information at 0.6 MPa and 0.1MPa pressure drop

□: Add suffix G for round gauge added or suffix E for square gauge added (square gauge not available for size 10)

Nothing (-), no gauge.

Automatic drain

Part number	□ Gauge	Flow [Nl/min]	Port size	Port-size pressure gauge	Set pressure [MPa]	Filtration degree [µm]	Drain type	Symbol
AW10-M5C□-A ●	- , G	110	M5	G 1/16	0.05 to 0.7	5	Normally closed	
AW20-F01C□-B ●	- , G, E	500	G 1/8	G 1/8	0.05 ~ 0.85			
AW20-F02C□-B ●	- , G, E		G 1/4					
AW30-F02D□-B ●	- , G, E	1300	G 1/4					
AW30-F03D□-B ●	- , G, E		G 3/8					
AW40-F04D□-B ●	- , G, E		G 1/2					
AW40-F06D□-B ●	- , G, E	2400	G 3/4					
AW60-F06D□-B ●	- , G, E		G 3/4					
AW60-F10D□-B ●	- , G, E	7600	G 1					

Flow information at 0.6 MPa and 0.1MPa pressure drop

□: Add suffix G for round gauge added or suffix E for square gauge added (square gauge not available for size 10)

Nothing (-), no gauge.

Accessories

Series	10 Series	20 Series	30 Series	40 Series	60 Series
Filter element	AF10P-060S	AF20P-060S	AF30P-060S	AF40P-060S	AW60P-060S
Bracket assembly	AR12P-270AS	AR23P-270AS	AR33P-270AS	AR43P-270AS	AW62P-270AS

Filter regulator with backflow function

AW□K Series



- With a mechanism to exhaust the air pressure in the outlet side reliably and quickly
- Transparent bowl protection for a better visibility and security
- Convenient maintenance of the filter element
- Filter-regulator units are space-saving and require less piping installation labour
- Selection of pressure gauges available: Square embedded type, round type and digital pressure switch
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Manual drain

Part number	□ Gauge	Flow [Nl/min]	Port size	Port-size pressure gauge	Set pressure [MPa]	Filtration degree [µm]	Symbol
AW20K-F01□-B	- , G, E	500	G 1/8	G 1/8	0.05 ~ 0.85	5	
AW20K-F02□-B ●	- , G, E		G 1/4				
AW30K-F02□-B	- , G, E	G 1/4					
AW30K-F03□-B ●	- , G, E	G 3/8					
AW40K-F04□-B ●	- , G, E	1800	G 1/2				
AW40K-F06□-B	- , G, E	2400	G 3/4				
AW60K-F06□-B	- , G, E	7600	G 3/4				
AW60K-F10□-B	- , G, E		G 1				

Flow information at 0.6 MPa and 0.1MPa pressure drop

□: Add suffix G for round gauge added or suffix E for square gauge added (square gauge not available for size 10)

Nothing (-), no gauge.

Automatic drain

Part number	□ Gauge	Flow [Nl/min]	Port size	Port-size pressure gauge	Set pressure [MPa]	Filtration degree [µm]	Drain type	Symbol
AW20K-F01□-B	- , G, E	500	G 1/8	G 1/8	0.05 ~ 0.85	5	Normally closed	
AW20K-F02□-B ●	- , G, E		G 1/4					
AW30K-F02□-B	- , G, E	G 1/4						
AW30K-F03□-B ●	- , G, E	1300	G 3/8					
AW40K-F04□-B ●	- , G, E	1800	G 1/2					
AW40K-F06□-B	- , G, E	2400	G 3/4					
AW60K-F06□-B	- , G, E	7600	G 3/4					
AW60K-F10□-B ●	- , G, E		G 1					

Flow information at 0.6 MPa and 0.1MPa pressure drop

□: Add suffix G for round gauge added or suffix E for square gauge added (square gauge not available for size 10)

Nothing (-), no gauge.

Accessories

Series	20 Series	30 Series	40 Series	60 Series
Filter element	AF20P-060S	AF30P-060S	AF40P-060S	AW60P-060S
Bracket assembly	AR23P-270AS	AR33P-270AS	AR43P-270AS	AW62P-270AS

Regulator/Filter regulator

Regulator with Built-in Pressure Gauge (ARG)



Filter Regulator with Built-in Pressure Gauge (AWG)

ARG/AWG Series



- Visibility of pressure gauge is improved in various installation places
- Space saving, Labour saving: Panel-cut for pressure gauge is not necessary
- Installation and removal of pressure gauge cover is possible with one-touch
- Pressure gauge anti-revolving mechanism
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Manual drain

Part number	Port size	Set pressure range [MPa]	Symbol
ARG20-F01G1H ●	G 1/8	0.05 to 0.85	 
ARG20-F02G1H ●	G 1/4		
ARG30-F02G1H ●	G 1/4		
ARG30-F03G1H ●	G 3/8		
ARG40-F04G1H ●	G 1/2		
AWG20-F01G1H	G 1/8		
AWG20-F02G1H	G 1/4		
AWG30-F02G1H ●	G 1/4		
AWG30-F03G1H	G 3/8		
AWG40-F04G1H	G 1/2		

Accessories

Series	20 Series	30 Series	40 Series
Bracket assembly	ARG20P-270AS	ARG30P-270AS	ARG40P-270AS

Digital pressure switch

ISE35 Series

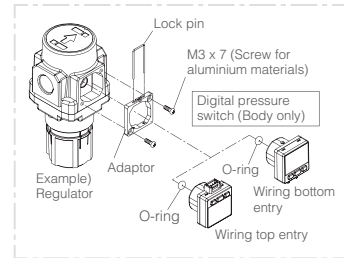


- Built-in pressure switch for AR/AW/ARM and AC series
- Switch replaceable
- 2 Colour display
- Enclosure: IP40.

Part number	□: Wiring entry ■: Accessories	Pressure range [MPa]	Switch output	Power supply voltage
ISE35-□-65-L■●	N-A, N-B, R-A, R-B	0 to 1	PNP open collector 1 output	12 to 24 VDC

- : N = Wiring bottom entry
 R = Wiring top entry
 ■: A = With accessories (AR/AW series)
 B = With accessories (ARM10/11 series)

Digital pressure switch details



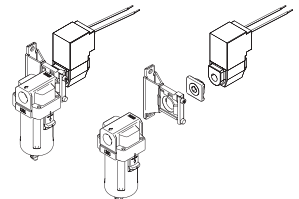
Modular adapter

E210/310/410 Series



- Can be connected to existing products such as 2 port valves as well as F.R.L. Unit
- Can be freely rotated, thus allowing a wide selection of mounting directions
- Can be connected to existing products of different size
- Can be connected/disconnected without rotation
- Fittings, tube, etc. are not required for connection.

Part number	Port size	Piping I.D.	Fluid	Max. operating pressure
E210-U01	1/8	Ø 6	Air	1.0 MPa
E210-U02	1/4	Ø 8		
E310-U02	1/4	Ø 8		
E310-U03	3/8	Ø 10		
E410-U02	1/4	Ø 8		
E410-U03	3/8	Ø 10		
E410-U04	1/2	Ø 12		



Ex.: Filter + 2 port valve

Attachments

Spacer



Type
Y□00-A

Model type Y□00T	Applicable model
Y100-A ●	10
Y200-A ●	20
Y300-A ●	30
Y400-A ●	40
Y500-A ●	40-F06
Y600-A ●	50 • 60

Spacer with bracket



Type
Y□00T-A

Model type Y□00T	Applicable model
Y100T-A ●	10
Y200T-A ●	20
Y300T-A ●	30
Y400T-A ●	40
Y500T-A ●	40-F06
Y600T-A ●	50 • 60

Cross Interface

- Pipings are possible in all 4 directions.



Model	Port size	Applicable model
Y14-M5-A ●	M5	10
Y24-F01-A ●	G 1/8	20
Y24-F02-A ●	G 1/4	20
Y34-F01-A ●	G 1/8	30
Y34-F02-A ●	G 1/4	30
Y44-F02-A ●	G 1/4	40
Y44-F03-A ●	G 3/8	40
Y54-F03-A ●	G 3/8	40-F06
Y54-F04-A ●	G 1/2	40-F06

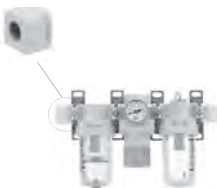
T-interface

- Using a T-interface facilitates the redirection of air flow.



Piping adapter

- A piping adapter allows installation/removal of the component without removing the piping and thus makes maintenance easier.



Check valve

- A check valve with intermediate air release port can be easily installed to prevent a back flow of lubricant when redirecting the air flow and releasing the air on the outlet side of the regulator.



Model	Port size	Applicable model
Y110-M5-A ●	M5	10
Y210-F01-A ●	G 1/8	20
Y210-F02-A ●	G 1/4	20
Y310-F02-A ●	G 1/4	30
Y410-F03-A ●	G 3/8	40
Y510-F03-A ●	G 3/8	40-F06
Y610-F04-A ●	G 1/2	50 • 60

Model	Port size	Applicable model
E100-M5-A ●	M5	10
E200-F01-A ●	G 1/8	20
E200-F02-A ●	G 1/4	20
E300-F02-A ●	G 1/4	30
E300-F03-A ●	G 3/8	30
E400-F04-A ●	G 1/2	40
E400-F06-A ●	G 3/4	40
E500-F06-A ●	G 3/4	40-F06
E600-F06-A ●	G 3/4	50 • 60
E600-F10-A ●	G 1	50 • 60

Model	Port size	Applicable model
AKM2000-F01-A ●	G 1/8	20
AKM2000-F02-A ●	G 1/4	20
AKM3000-F02-A ●	G 1/4	30
AKM4000-F03-A ●	G 3/8	40

Pressure switch/Reed switch type

IS10M/E Series



Type M



Type E

Part number	Port size	Applicable model
IS10E-20F01-6L-A ●	G 1/8	AC20□
IS10E-20F02-6L-A ●	G 1/4	AR20□, AW20□ AWM20, AWD20
IS10E-20F03-6L-A	G 3/8	
IS10E-30F02-6L-A ●	G 1/4	AC25□, AC30□
IS10E-30F03-6L-A ●	G 3/8	AR25□, AR30□, AW30□ AWM30, AWD30
IS10E-30F04-6L-A	G 1/2	
IS10E-40F02-6L-A	G 1/4	
IS10E-40F03-6L-A	G 3/8	AC40□
IS10E-40F04-6L-A ●	G 1/2	AR40□, AW40□ AWM40, AWD40
IS10E-40F06-6L-A	G 3/4	

Set pressure range: 0.1~0.6 MPa. Lead wire length 3 m
Max. operating pressure 0.7 MPa.

Part number	Applicable model
IS10M-20-6L-A ●	AC20□
IS10M-30-6L-A ●	AC25□, AC30□
IS10M-40-6L-A ●	AC40□
IS10M-50-6L-A	AC40□-06
IS10M-60-6L-A	AC50□, AC55□, AC60□

Set pressure range: 0.1~0.6 MPa. Lead wire length 3 m
Max. operating pressure 0.7 MPa.

M:

- For assembly between two devices (not possible directly behind AV and AW)

E:

- For assembly at the end of a maintenance unit
- Lighter and smaller
- Function: N.O.
- Power consumption 2W/A
- Temperature range -5 to 60 °C.



Type E



Type M

Pressure relief 3 port valve

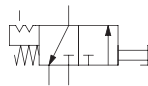
VHS Series



3 port manually operated
finger valve for residual
pressure evacuation



- To be used as stacking manifold or as single device
- Used to bleed the entire compressed air circuit
- Can be upgraded with a silencer
- Operating pressure range 0.1 to 1.0 MPa
- Temperature range -5 to 60 °C.



Part number	Port size IN, OUT	Port size exhaust	Effective flow [Cv] IN→OUT (OUT→EXH)	Adequate for series
VHS20-F01 ●	G 1/8	G 1/8	0.65 (0.69)	20
VHS20-F02 ●	G 1/4	G 1/8	0.88 (0.84)	20
VHS30-F03 ●	G 3/8	G 1/4	2.3 (1.9)	30
VHS40-F04 ●	G 1/2	G 3/8	3.8 (3.6)	40
VHS40-F06 ●	G 3/4	G 1/2	5.0 (4.8)	40-F06
VHS50-F06 ●	G 3/4	G 1/2	6.4 (5.9)	50 • 60
VHS50-F10 ●	G 1	G 1/2	8.6 (6.4)	50 • 60

□ : Add suffix A at the end of part number for handle material flame resistant PB7
Add suffix B at the end of part number for handle material aluminium.

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green.
Stocked items and product information could be subject to change without prior notice.

Our highlighted product for you

Residual pressure relief 3 port solenoid valve

VP517/717 Series



- Modular connection type for connecting to F.R.L. units
- Power consumption: 0.35 W (DC type)
- Maximum flow rate: 3149 l/min [ANR]
- Internal pilot operating pressure range: 0.2 to 1 MPa
- Selectable flow direction: "Left to right" or "Right to left"
- IP65 enclosure.

Part number	Flow [l/min] ¹⁾ 1P→2A (2A→3R)	Operating pressure range [MPa]	Voltage	Electrical entry	Light/surge voltage suppressor	Manual override	Applicable air combination	Circuit symbol		
VP517Y-5YO1 ●	2040 (1911)	0.2 to 0.7	24 VDC	Type Y (DIN (EN175301-803(C)) terminal without connector)	—	Non-locking push type	AC25, AC30			
VP517KY-5YO1 ●									AC40	
VP717Y-5YO1 ●	3149 (3056)	0.2 to 0.7					Type Y (DIN (EN175301-803(C)) terminal with connector)			With light/surge voltage suppressor
VP717KY-5YO1 ●									AC40	
VP517Y-5YZ1	2040 (1911)	0.2 to 0.7		Type D (DIN terminal with connector)	—		AC25, AC30			
VP517KY-5YZ1									AC40	
VP717Y-5YZ1	3149 (3056)	0.2 to 0.7		Type D (DIN terminal with connector)	—		AC25, AC30			
VP717KY-5YZ1									AC40	
VP517Y-5DZ1	2040 (1911)	0.2 to 0.7		Type D (DIN terminal with connector)	—		AC25, AC30			
VP517KY-5DZ1									AC40	
VP717Y-5DZ1	3149 (3056)	0.2 to 0.7	Type D (DIN terminal with connector)	—	AC25, AC30					
VP717KY-5DZ1						AC40				

1) These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

Accessories

Part number	Model	Description
Y300-A ●	VP517	Spacer
Y400-A ●	VP717	
Y300T-A ●	VP517	Spacer with bracket
Y400T-A ●	VP717	
E300-□03-A ●	VP517	Piping Adapter (Port size 3/8)
E400-□04-A ●	VP717	Piping Adapter (Port size 1/2)
AN30-03 ●	VP517	Compact resin type silencer (Port size 3/8)
AN40-04 ●	VP717	Compact resin type silencer (Port size 1/2)
AN302-03 ●	VP517	High noise reduction type silencer (Port size 3/8)
AN402-04 ●	VP717	High noise reduction type silencer (Port size 1/2)

□: in model numbers indicates a pipe thread type. No indication is necessary for Rc; however, indicate N for NPT, and F for G.

Our highlighted product for you

Soft start-up valve AV-A Series



- Maximum flow rate: 11908 l/min [ANR]
- Power consumption: 0.35 W (12/24 VDC)
- Rapid supply time reduced by up to 50 %
- Exhaust time reduced by up to 55 %
- Modular connection type for connecting to F.R.L. units
- Selectable flow direction: "Left to right" or "Right to left"
- IP65 enclosure (DIN terminal).

Part number	Port size 1(P), 2(A)	Flow [l/min] ¹⁾ 1P→2A (2A→3R)	Operating pressure range [MPa]	Voltage	Electrical entry	Light/surge voltage suppressor	Manual override	Applicable air combination	Circuit symbol
AV2000-F02-5YOB-A ●	G 1/4	2433 (2504)	0.2 to 1.0	24 VDC	Type Y (DIN terminal without connector)	—	Push-turn locking slotted type	AC20	
AV3000-F03-5YOB-A ●	G 3/8	3269 (2660)						AC25, AC30	
AV4000-F04-5YOB-A ●	G 1/2	4945 (3100)						AC40	
AV5000-F06-5YOB-A ●	G 3/4	11908 (8199)						AC50, AC55	
AV5000-F10-5YOB-A ●	G 1	10778 (8199)			AC60				
AV2000-F02-5YZB-A ●	G 1/4	2433 (2504)			Type Y (DIN terminal with connector)	With light/ surge voltage suppressor		AC20	
AV3000-F03-5YZB-A ●	G 3/8	3269 (2660)						AC25, AC30	
AV4000-F04-5YZB-A ●	G 1/2	4945 (3100)						AC40	
AV5000-F06-5YZB-A ●	G 3/4	11908 (8199)						AC50, AC55	
AV5000-F10-5YZB-A ●	G 1	10778 (8199)			AC60				
AV2000-F02-5DZB-A ●	G 1/4	2433 (2504)			Type D (DIN terminal with connector)	With light/ surge voltage suppressor		AC20	
AV3000-F03-5DZB-A ●	G 3/8	3269 (2660)						AC25, AC30	
AV4000-F04-5DZB-A ●	G 1/2	4945 (3100)						AC40	
AV5000-F06-5DZB-A ●	G 3/4	11908 (8199)						AC50, AC55	
AV5000-F10-5DZB-A ●	G 1	10778 (8199)			AC60				

¹⁾ These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

Accessories

Part number	Model	Description
Y200-A ●	AV2000-A	Spacer
Y300-A ●	AV3000-A	
Y400-A ●	AV4000-A	
Y600-A ●	AV5000-A	
Y200T-A ●	AV2000-A	Spacer with bracket
Y300T-A ●	AV3000-A	
Y400T-A ●	AV4000-A	
Y600T-A ●	AV5000-A	
AV22P-210AS	AV2000-A	Bracket assembly
AV32P-210AS	AV3000-A	
AV42P-210AS	AV4000-A	
AV52P-210AS	AV5000-A	
VHS30PW-190AS ●	AV2000-A	Silencer assembly
VHS40PW-190AS ●	AV3000-A	
VHS40PW-190-06AS	AV4000-A	
AV52P-250AS	AV5000-A	
G36-10-□01 ●	AV2000-A	Pressure gauge
	AV3000-A	
	AV4000-A	
	AV5000-A	

□: of the pressure gauge part number will indicate the connecting screw type. No indication is necessary for R; however, indicate N for NPT. Please contact SMC regarding the pressure gauge supply for psi unit specifications.

Large flow air filter

AF800/900 Series



- Superior flow capacity
- Filtration degree 5 µm (2, 10, 20, 40, 70, 100 µm on request)
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C
- Automatic drain.

Part number	Port size	Flow [l/min]	Bowl capacity
AF811-F14 ●	G1 1/2	8000	180 cm ³
AF911-F20 ●	G 2	15000	

* at 0.7 MPa set pressure

Pressure control equipment

Miniature regulator

ARJ Series



- Piston-type regulator, relieving type
- Panel mounted
- Type ARJ1020F, can be fitted to manifold (max. 10 pieces)
- Max. operating pressure 0.8 MPa
- Temperature range -5 to 60 °C.

Part number	Port size		Set pressure range [MPa]	Circuit symbol
	IN	OUT		
ARJ1020F-M5-04 ●	M5	Ø 4 mm tube	0.1 to 0.7	
ARJ1020F-M5-06 ●	M5	Ø 6 mm tube	0.1 to 0.7	
ARJ210-M5 ●	R 1/8, M5	M5	0.2 to 0.7	

Valve manifold for ARJ1020F

4 stations	6 stations	10 stations
ARJM10-4	ARJM10-6	ARJM10-10

Miniature regulator

ARJ310 Series



- With either threaded or one touch fitting at the outlet
- Over double the flow capacity compared with ARJ210
- Max. operating pressure 0.8 MPa
- Temperature range -5 to 60 °C
- ARJ310-01: 500 l/min
- ARJ310F-01-04: 190 l/min
- ARJ310F-01-06: 415 l/min.

Part number	Port size		Set pressure range [MPa]	Circuit symbol
	IN	OUT		
ARJ310-01 ●	R 1/8, M5	Rc 1/8	0.2 to 0.7	
ARJ310F-01-04 ●	R 1/8, M5	∅ 4 mm tube	0.2 to 0.7	
ARJ310F-01-06 ●	R 1/8, M5	∅ 6 mm tube	0.2 to 0.7	

Pilot operated pressure regulator

EAR Series



- Pilot operated pressure regulator
- Superior flow capacity and control precision
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C
- Port size up to 2".

Part number	Port size	Port size pressure gauge	Circuit symbol
EAR425-F04 ●	G 1/2	G 1/4	
EAR625-F06 ●	G 3/4		
EAR625-F10 ●	G 1		
EAR825-F14 ●	G 1 1/2		
EAR925-F20 ●	G 2		

* at 0.7 MPa

Part number	Port size	Port size pressure gauge	Circuit symbol
EAR435-F04 ●	G 1/2	G 1/4	
EAR635-F06 ●	G 3/4		
EAR635-F10 ●	G 1		
EAR835-F14 ●	G 1 1/2		
EAR935-F20 ●	G 2		

* at 0.2 MPa

Regulator for 2.0 MPa

ARX20 Series



- Compact design. 35 x 35 x 80 mm
- Practical, 3 outlets available
- Simple operation, ergonomic design
- Ideal for regulating: e.g. discharge pressure for small compressors or the pressure in air blowing applications
- Max. operating pressure 2.0 MPa
- Temperature range -5 to 60 °C.

Part number	Set pressure range [MPa]	Max. operating pressure [MPa]	Port size
ARX20-F01 ●	0.05 to 0.85	2.0	G 1/8
ARX21-F01 ●	0.05 to 0.30		G 1/4
ARX20-F02 ●	0.05 to 0.85		
ARX21-F02 ●	0.05 to 0.30		

Assembly materials

Mounting bracket	Panel mounting nut
1348112	1348110A

Compact manifold regulator

ARM5 Series



- 2 mounting types are available:
 - Direct mount
 - DIN rail mount
- Backflow function is equipped as standard
- Individual or centralised supply type
- Integrated pressure gauge available
- Width 14 mm
- Max. operating pressure 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Type	Port size		Set pressure range [MPa]
		IN [mm]	OUT [mm]	
ARM5SA-06-A ●	Single device with pressure gauge	4	4	0.05 ~ 0.7
ARM5SA-08-A ●		6	6	
ARM5SA-06 ●	Single device without pressure gauge	4	4	
ARM5SA-08 ●		6	6	

Modular regulator

ARM10/11 Series



- Available as single device or stacked on DIN rails (common or individual supply)
- 3 different control positions possible
- Integrated, replaceable one-touch fittings
- Broad range of accessories available (e.g.: 3 port shut-off valve, pressure switch,...)
- Flow from 150 to 300 l/min
- Max. operating pressure 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size		Set pressure range [MPa]	Accessories	Circuit symbol
	IN	OUT			
ARM10-06G ●	Ø 4 mm straight	Ø 4 mm straight	0.05 to 0.07	G: with pressure gauge BG: with bracket, pressure gauge and panel nut GP: with pressure gauge and panel nut	
ARM10-06BG ●					
ARM10-06GP ●					
ARM10-18G ●	Ø 4 mm elbow	Ø 4 mm elbow			
ARM10-18BG ●					
ARM10-18GP ●					
ARM10-08G ●	Ø 6 mm straight	Ø 6 mm straight			
ARM10-08BG ●					
ARM10-08GP ●					
ARM10-20G ●	Ø 6 mm elbow	Ø 6 mm elbow			
ARM10-20BG ●					
ARM10-20GP ●					

Low pressure type (0.05 to 0.35 MPa) available on request
Manifold variations available on request.

Accessories

Part number	Description
GC3-4A-X2101 ●	Pressure gauge, 0.0 to 0.4 MPa indication range

Precision regulator

IR1000/2000/3000-A Series



- Setting sensitivity within 0.2 % of full span; repeatability within ±0.5 % of full span
- Air consumption: 1 l/min (ANR) or less
- Maximum flow range: 5000 l/min (ANR)
- Port sizes: from 1/8 to 1/2
- Standard options: bracket; pressure gauge, hexagon panel nut, digital pressure switch.

Part number	Set pressure range	Port size	Setting sensitivity	Repeatability	Circuit symbol
IR1000-F01-A ●	0.005 ~ 0.2 MPa	G 1/8	within 0.2 % of full span	within ±0.5 % of full span	
IR1010-F01-A ●	0.01 ~ 0.4 MPa				
IR1020-F01-A ●	0.01 ~ 0.8MPa				
IR2000-F02-A ●	0.005 ~ 0.2 MPa	G 1/4			
IR2010-F02-A ●	0.01 ~ 0.4 MPa				
IR2020-F02-A ●	0.01 ~ 0.8 MPa				
IR3000-F03-A ●	0.01 ~ 0.2 MPa	G 3/8			
IR3010-F03-A ●	0.01 ~ 0.4 MPa				
IR3020-F03-A ●	0.01 ~ 0.8 MPa				
IR3000-F04-A ●	0.01 ~ 0.2 MPa	G 1/2			
IR3010-F04-A ●	0.01 ~ 0.4 MPa				
IR3020-F04-A ●	0.01 ~ 0.8 MPa				

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green.
Stocked items and product information could be subject to change without prior notice.

Regulator

IR1200/2200/3200-A Series



- Repeatability: within $\pm 1\%$ of full span
- Air consumption: bleed air "0"
- Maximum flow range: 5000 l/min (ANR)
- Port sizes: from 1/8 to 1/2
- Standard options: bracket; pressure gauge, hexagon panel nut, digital pressure switch.

Part number	Set pressure range	Port size	Repeatability	Circuit symbol
IR1200-F01-A	0.02 ~ 0.2 MPa	G 1/8	within $\pm 1\%$ of full span	
IR1210-F01-A	0.02 ~ 0.4 MPa			
IR1220-F01-A	0.02 ~ 0.8 MPa			
IR2200-F02-A	0.02 ~ 0.2 MPa	G 1/4		
IR2210-F02-A	0.02 ~ 0.4 MPa			
IR2220-F02-A	0.02 ~ 0.8 MPa			
IR3200-F03-A	0.02 ~ 0.2 MPa	G 3/8		
IR3210-F03-A	0.02 ~ 0.4 MPa			
IR3220-F03-A	0.02 ~ 0.8 MPa			
IR3200-F04-A	0.02 ~ 0.2 MPa	G 1/2		
IR3210-F04-A	0.02 ~ 0.4 MPa			
IR3220-F04-A	0.02 ~ 0.8 MPa			

Direct operated regulator (Relieving type)

High pressure operation: up to 6.0 MPa

VCHR30/40 Series



- Suitable for Air
- Body material: Aluminium
- Seal material: Polyurethane elastomer
- Temperature range -5 to 60 °C.

Part number	Regulating pressure range [MPa]	Max. operating pressure [MPa]	Port size
VCHR30-06G ●	0.5 to 5.0	6.0	G 3/4
VCHR30-10G ●			G 1
VCHR40-10G ●			G 1
VCHR40-14G ●			G 1 1/2

Compact electro-pneumatic regulator

ITV0000 Series



- Stepless control of air pressure proportional to an electrical signal
- Compact and lightweight
- Can be used alone or stacked with DIN rails
- Integrated one-touch fittings
- With error indicator LED
- High speed response: 0.1 s (without load)
- High stability
- Max. operating pressure 1.0 MPa (2.0 MPa for model with set pressure range 0.001~ 0.1 MPa)
- Enclosure IP65.

Type	Part number	Input signal	Output signal	Set pressure range	Port size	Flow [Nl/min]
As single device	ITV0010-0N ●	4 - 20 mA	Analogue 1 - 5 VDC	0.001~0.1 MPa	Push In for Ø 4 mm tube	3.5
	ITV0010-3N ●	0 - 10 VDC				0.001~0.5 MPa
	ITV0030-0N ●	4 - 20 mA		0.001~0.9 MPa		
	ITV0030-3N ●	0 - 10 VDC				-1.0 ~ 100 KPa
	ITV0050-0N ●	4 - 20 mA		0.001~0.1 MPa		
	ITV0050-3N ●	0 - 10 VDC				0.001~0.5 MPa
For block mounting	ITV0090-0N ●	4 - 20 mA		0.001~0.9 MPa	6.0	
	ITV0090-3N ●	0 - 10 VDC				-1.0 ~ 100 KPa
	ITV0010-0MN ●	4 - 20 mA		0.001~0.1 MPa	6.0	
	ITV0010-3MN ●	0 - 10 VDC				0.001~0.5 MPa
	ITV0030-0MN ●	4 - 20 mA		0.001~0.9 MPa	6.0	
	ITV0030-3MN ●	0 - 10 VDC				-1.0 ~ 100 KPa
	ITV0090-0MN ●	4 - 20 mA	0.001~0.9 MPa	6.0		
	ITV0090-3MN ●	0 - 10 VDC			-1.0 ~ 100 KPa	2.0

Accessories

Lead wire straight 3 m	M8-4DSX3MG4
Lead wire elbow 2 m	P398000-501-2
Flat bracket	P39800022
U bracket	P39800023
Manifold for 2 -10 stations	IITV00 - ■ ■ Number of stations

Our highlighted product for you

Electro-pneumatic regulator

ITV1000/2000/3000 Series



- Stepless control of air pressure proportional to an electrical signal
- Compact and lightweight
- 2 monitor outputs:
 - Analogue 1-5 VDC/4-20 mA
 - PNP/NPN switch output
- Cable connections in 2 directions
- Non-grease model: ITV1000
- Max. operating pressure 1.0 MPa
(2.0 MPa for model with set pressure range 0.001– 0.1 MPa)
- Enclosure IP65.

Part number *	Input signal/Output signal	Set pressure range [MPa]	Port size	Circuit symbol
ITV1010-01F2N ●	4–20 mA/analogue 1–5 VDC	0.005–0.1	G 1/4	
ITV1010-03F2N ●	4–20 mA/PNP			
ITV1010-31F2N ●	0–10 VDC/analogue 1–5 VDC			
ITV1010-33F2N ●	0–10 VDC/PNP			
ITV1030-01F2N ●	4–20 mA/analogue 1–5 VDC	0.005–0.5	G 1/4	
ITV1030-03F2N ●	4–20 mA/PNP			
ITV1030-31F2N ●	0–10 VDC/analogue 1–5 VDC			
ITV1030-33F2N ●	0–10 VDC/PNP			
ITV1050-01F2N ●	4–20 mA/analogue 1–5 VDC	0.005–0.9	G 1/4	
ITV1050-03F2N ●	4–20 mA/PNP			
ITV1050-31F2N ●	0–10 VDC / analogue 1–5 VDC			
ITV1050-33F2N ●	0–10 VDC/PNP			
ITV2010-01F3N ●	4–20 mA/analogue 1–5 VDC	0.005–0.1	G 3/8	
ITV2010-03F3N ●	4–20 mA/PNP			
ITV2010-31F3N ●	0–10 VDC/analogue 1–5 VDC			
ITV2010-33F3N ●	0–10 VDC/PNP			
ITV2030-01F3N ●	4–20 mA/analogue 1–5 VDC	0.005–0.5	G 3/8	
ITV2030-03F3N ●	4–20 mA/PNP			
ITV2030-31F3N ●	0–10 VDC/analogue 1–5 VDC			
ITV2030-33F3N ●	0–10 VDC/PNP			
ITV2050-01F3N ●	4–20 mA/analogue 1–5 VDC	0.005–0.9	G 3/8	
ITV2050-03F3N ●	4–20 mA/PNP			
ITV2050-31F3N ●	0–10 VDC/analogue 1–5 VDC			
ITV2050-33F3N ●	0–10 VDC/PNP			
ITV3010-01F4N ●	4–20 mA/analogue 1–5 VDC	0.005–0.1	G 1/2	
ITV3010-03F4N ●	4–20 mA/PNP			
ITV3010-31F4N ●	0–10 VDC/analogue 1–5 VDC			
ITV3010-33F4N ●	0–10 VDC/PNP			
ITV3030-01F4N ●	4–20 mA/analogue 1–5 VDC	0.005–0.5	G 1/2	
ITV3030-03F4N ●	4–20 mA/PNP			
ITV3030-31F4N ●	0–10 VDC/analogue 1–5 VDC			
ITV3030-33F4N ●	0–10 VDC/PNP			
ITV3050-01F4N ●	4–20 mA/analogue 1–5 VDC	0.005–0.9	G 1/2	
ITV3050-03F4N ●	4–20 mA/PNP			
ITV3050-31F4N ●	0–10 VDC/analogue 1–5 VDC			
ITV3050-33F4N ●	0–10 VDC/PNP			

* other styles available

Accessories

Part number	Description
P398020-500-3	Connection cable with plug, straight
P398020-501-3	Connection cable with plug, elbow

Electro-pneumatic regulator Fieldbus compatibility

ITV1000/2000/3000 Series



- Fieldbus compatibility added to series ITV1000/2000/3000 specifications
- Reduced wiring
- Now with RS-232C serial communications capability
- Max. operating pressure 1.0 MPa (2.0 MPa for model with set pressure range 0.001~ 0.1 MPa)
- Enclosure IP65.

Part number		Cable connector
1 ITV20□0-DE■ 3	Power	P398020-500-3 (Straight)
		P398020-501-3 (Right angle)
	Communication	PCA-1557633 (Socket type)
		PCA-1557646 (Plug type)
1 ITV20□0-PR■ 3	Power	P398020-500-3 (Straight)
		P398020-501-3 (Right angle)
	Communication	PCA-1557688 (Socket type)
		PCA-1557691 (Plug type)
1 ITV20□0-RC■ 3	Power	P398020-500-3 (Straight)
		P398020-501-3 (Right angle)
	Communication	P398020-502-3 (Straight)
		P398020-503-3 (Right angle)
1 ITV20□0-CC■ 3	Power	P398020-500-3 (Straight)
		P398020-501-3 (Right angle)
	Communication	PCA-1567720 (Socket type)
		PCA-1567717 (Plug type)

Part number	Description
ITV10□0-■□□	Control signal ■:
ITV20□0-■□□	CC: CC-Link
	DE: DeviceNet™
ITV30□0-■□□	PR: PROFIBUS DP
	RC: RS-232C Communication

Communication cable (other than RS-232C) should be obtained separately. Consult SMC.

High pressure electro-pneumatic regulator

ITVX Series



- 5.0 MPa maximum supply pressure
- Maximum flow rate: 3000 l/min [ANR]
- Power consumption: 3W or less
- Fluid: Air, N₂, O₂, Ar
- Wetted parts: Fluorine grease

Part number	Input signal/Output signal	Set pressure range [MPa]	Port size	Circuit symbol
ITVX2030-01F3N ●	4~20 mA/analogue 1~5 VDC	0.01~3.0	G 3/8	
ITVX2030-03F3N ●	4~20 mA/PNP			
ITVX2030-04F3N ●	4~20 mA/4~20 mA			
ITVX2030-31F3N ●	0~10 VDC/analogue 1~5 VDC			
ITVX2030-33F3N ●	0~10 VDC/PNP			

Accessories

Part number	Description
P398020-600	Flat bracket assembly (including mounting screws)
P398020-601	L-bracket assembly (including mounting screws)
P398020-500-3	Power cable connector, straight type 3 m
P398020-501-3	Power cable connector, right angle type 3 m

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

High pressure electro-pneumatic regulator, 3.0 MPa

ITVH Series



- Maximum supply pressure: 3.0 MPa
- Set pressure range: 0.2 to 2.0 MPa
- Maximum flow rate: 3000 l/min [ANR]
- 2 monitor outputs:
 - Analogue 1-5 VDC / 4-20 mA
 - PNP/NPN switch output
- Power consumption: 3 W or less
- Linearity: ± 1 % F.S. or less
- Hysteresis: 1 % F.S. or less
- Repeatability: ± 1 % F.S. or less
- Parts in contact with fluid: Fluorine grease.

Part number	Input signal/ Output signal	Set pressure range [MPa]	Port size	Circuit symbol
ITVH2020-01F3N	4~20 mA/analogue 1 ~ 5 VDC	0.2 to 2.0	G 3/8	
ITVH2020-03F3N	4 ~ 20 mA / PNP			
ITVH2020-04F3N	4 ~ 20 mA/4 ~ 20 mA			
ITVH2020-31F3N	0 ~ 10 VDC/analogue 1 ~ 5 VDC			
ITVH2020-33F3N	0 ~ 10 VDC/PNP			

Accessories

Part number	Description
P398020-600	Flat bracket assembly (including mounting screws)
P398020-601 ●	L-bracket assembly (including mounting screws)
P398020-500-3 ●	Power cable connector, straight type 3 m
P398020-501-3 ●	Power cable connector, right angle type 3 m

Booster regulator

VBA Series



- Increases the main circuit pressure by up 4 times
- No cooling required
- Easy installation (simple, insert the unit in the airline)
- No other energy source required (no power supply)
- Operating temperature: 2~50 °C
- Input pressure: 0.1~1 MPa
- Mounting position: horizontal.

Part number	Output range [MPa]	Flow [l/min]	Port size	Pressure ratio	Circuit symbol
VBA11A-F02 ●	0.2 to 2.0	70	G 1/4	max. 4 : 1	
VBA10A-F02 ●		230			
VBA20A-F03 ●	0.2 to 1.0	1000	G 3/8	max. 2 : 1	
VBA22A-F03					
VBA40A-F04 ●	0.2 to 1.0	1900	G 1/2		
VBA42A-F04					
VBA43A-F04 ●	0.2 to 1.6	1600			

Accessories

Model	VBA10A-F02	VBA11A-F02	VBA20A-F03	VBA22A-F03	VBA40A-F04 VBA42A-F04	VBA43A-F04
Pressure gauge	G27-20-01		G36-10-01	KT-VBA22A-7	G36-10-01	G27-20-01
Silencer	AN20-02		AN30-03		AN40-04	
High noise reduction silencer	ANA1-02		ANA1-03		ANA1-04	
Air tank	VBAT05AF-SV-Q VBAT10AF-SV-Q		VBAT10AF-SV-Q VBAT20AF-RV-Q VBAT38AF-RV-Q		VBAT20AF-RV-Q VBAT38AF-RV-Q	

Pressure gauges

Pressure gauge

G□ Series

- With limit indicator.



Part number	Pressure range [MPa]	Connection thread	Outside diameter [mm]
G15-10-01 ●	0 to 1.0	R 1/8, M5 (Female thread)	Ø 15
G27-10-R1 ●	0 to 1.0	R 1/16	Ø 26
G36-2-01 ●	0 to 0.2	R 1/8	Ø 37.5
G36-4-01 ●	0 to 0.4		
G36-7-01 ●	0 to 0.7		
G36-10-01 ●	0 to 1.0		
G46-2-01 ●	0 to 0.2		
G46-10-01 ●	0 to 1.0	R 1/8	Ø 42.5
G46-15-01 ●	0 to 1.5		
G46-2-02 ●	0 to 0.2		
G46-10-02 ●	0 to 1.0	R 1/4	
G46-15-02 ●	0 to 1.5		
G46-2-01-C ●	0 to 0.2	R 1/8	Ø 42.5 (For panel mount)
G46-10-01-C ●	0 to 1.0		
G46-2-02-C ●	0 to 0.2	R 1/4	
G46-10-02-C ●	0 to 1.0		

Pressure gauge with limit indicator

Colour zone type

G36-L/G46-L□ Series

- Red and green zones offer improved visibility of pressure control range
- The indicator adjusts to highlight preferred range.



Part number	□ Clear cover material	Pressure range [MPa]	Connection thread	Outside diameter [mm]
G36-2-01-L□ ●	-, N	0 to 0.2	R 1/8	Ø 37.5
G36-4-01-L□ ●	-, N	0 to 0.4		
G36-10-01-L□ ●	-, N	0 to 1.0		
G46-2-01-L□ ●	-, N	0 to 0.2	R 1/8	Ø 42.5
G46-4-01-L□ ●	-, N	0 to 0.4		
G46-10-01-L□ ●	-, N	0 to 1.0		
G46-2-02-L□ ●	-, N	0 to 0.2	R 1/4	
G46-4-02-L□ ●	-, N	0 to 0.4		
G46-10-02-L□ ●	-, N	0 to 1.0		

□: Nothing
 (-): Polycarbonate
 N: Nylon

Lubrication equipment

Large flow lubricator

AL800/900 Series



- Individual lubrication
- Large flow type
- Max. operating pressure 1.0 MPa
- Temperature range -5 to 60 °C.

Part number	Port size	Min. operating flow [Nl/min]	Bowl capacity	Recommended lubricant
AL800-F14 ●	G 1 1/2	650	380 cm ³	ISO VG32
EAL900-F20 ●	G 2	1800		

* Conditions: inlet pressure 7 bar.

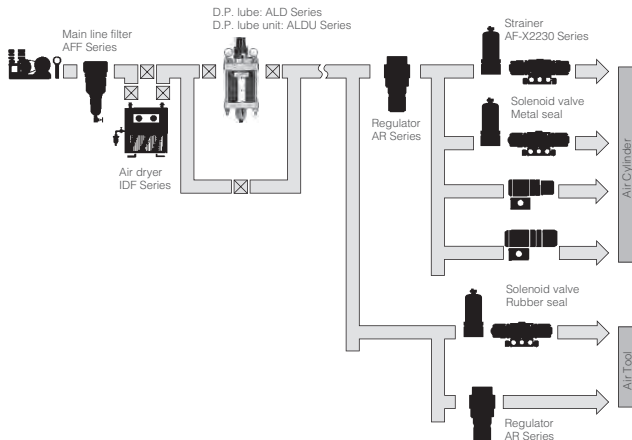
D.P. Lube unit

ALDU600/900 Series



- Creates a quality oil mist using adjustable differential pressure
- Oil consumption only approx. 10% compared to ordinary lubes
- Minimal environmental damage
- Operating pressure range 0.15 to 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size	Lube flow [Nl/min]	Amount in bowl
EALDU600-10 ●	Rc 1	90 to 6000	2 L
EALDU900-20 ●	Rc 2	250 to 15000	5 L



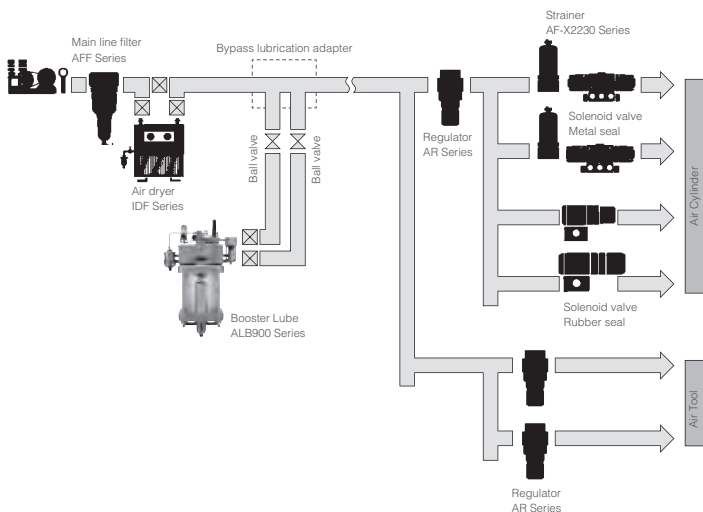
Booster lube

ALB900 Series



- No pressure loss in main flow
- Low energy costs
- Oil consumption only approx. 10 % compared to ordinary lubes
- Minimal environmental damage
- Operating pressure range 0.4 to 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size	Rated flow range [Nl/min]	Amount in bowl
ALB900-00-14	IN: Rc 1/4 OUT: Rc 1/2	5000 to 60000	5 L



Mist spray unit

LMU Series



- ON/OFF control unit with oil tank
- Manual or automatic operation
- Tank filling without disconnection
- Oil level sensor.

Part number	Air blow circuit	Rated voltage	Float switch	Inlet air pressure [MPa]	Oil tank set pressure range [MPa]
LMU100-53-Q	Available	24 VDC	Yes	0.1 to 1.0	0.05 to 0.2
LMU100-50-Q			No		
LMU200-53-Q ●	Not available		Yes		
LMU200-50-Q			No		

Mixing valve

LMV Series



- Mixing valve
- Ambient and fluid temperature: 5 to 60 °C
- Flexible or rigid nozzle
- Nozzle tubing length: 200, 250, 300, 350 mm.



Part number	Nozzle tubing length [mm]	Air blow circuit	Nozzle tubing construction	Inlet air pressure [MPa]	Ambient and fluid temperature [°C]
LMV110-20 ●	200	Available	Flexible tubing	0.3	5 to 60
LMV110-35	350				
LMV210-20 ●	200	Not available			
LMV210-35 ●	350	Not available			
LMV120-20	200	Available	Copper tubing		
LMV120-35	350	Available			
LMV220-20 ●	200	Not available			
LMV220-35	350				

Impulse lubricator

ALI Series



- Directly supplies a constant amount of oil just before the lubrication point
- Ambient and fluid temperature: 5 to 60 °C
- Oil viscosity: 2 to 460 cst (40 °C)
- Max. Number of stations: 10.



Impulse lubricator

Part number	Port size	Operating pressure range [MPa]	Oil feeding volume [cm ³]	Pressure range for oil [MPa]	Oil supply pressure
ALIP1000-01 ●	1/8	0.25 to 0.7	0 to 0.04	0 to 0.4	No pressurized / Pressurized
ALIP1100-01 ●				0.15 to 0.4	Pressurized

Impulse lubricator manifold

Part number	Port size	Operating pressure range [MPa]	Oil feeding volume [cm ³]	Pressure range for oil [MPa]	Oil supply pressure	Number of stations
ALIM1000-□	1/8	0.25 to 0.7	0 to 0.04	0 to 0.4	No pressurized/ Pressurized	2, 3, 4, 5, 6, 7, 8, 9, 10
ALIM1100-□				0.15 to 0.4	Pressurized	

□: Number of stations

Our highlighted product for you

Refrigeration air dryer

IDFA Series



- State of the art design ensures a constant 3 °C pressure dew point
- High efficiency heat exchanger
- Environmentally ozone friendly R134a and R407C refrigerant
- Conforms to stringent ISO 8573-1 standards (-, 4, -)
- Simple control system, incorporating an easy to read evaporator gauge
- Stainless steel heat exchanger providing long life and low pressure drops
- Compact design for ease of installation
- Ø 10 mm One-touch condensate drain port.

Part number	3 °C	7 °C	10 °C	3 °C	7 °C	10 °C
	l/min			m³/h		
IDFA3E-23 ●	200	250	280	12	15	17
IDFA4E-23 ●	400	510	560	24	31	34
IDFA6E-23-K ●	600	765	840	36	46	50
IDFA8E-23-K ●	1080	1375	1515	65	83	91
IDFA11E-23-K ●	1330	1690	1865	80	101	112
IDFA15EI-23-K ●	2000	2540	2800	120	152	168
IDFA22E-23-K ●	3030	3850	4235	182	231	254
IDFA37E-23-K ●	4550	5780	6360	273	347	382
IDFA55E-23-L ●	6500	7200	8500	390	432	510
IDFA75E-23-L ●	11000	12000	13700	660	720	822
IDFA100F-40 ●	14335	17335	20500	860	1050	1230
IDFA125F-40 ●	18335	22000	25835	1100	1320	1550
IDFA150F-40 ●	22335	28165	32000	1340	1640	1920

1) The standard condition (ANR) is under the conditions of 20 °C at atmospheric pressure and relative humidity of 65 %.

2) The performance data for pressure dew point is in accordance with the following operating conditions from ISO 7183: Inlet air pressure: 7 bar; Inlet air temperature: 35 °C (saturated); Cooling air temperature: 25 °C.

Standard specifications		IDFA3E-23	IDFA4E-23	IDFA6E-23-K	IDFA8E-23-K	IDFA11E-23-K	IDFA15EI-23-K	IDFA22E-23-K	IDFA37E-23-K	IDFA55E-23-L	IDFA75E-23-L	IDFA100F-40	IDFA125F-40	IDFA150F-40
Rated conditions	Inlet air pressure [bar]	7 bar												
	Inlet air temperature	35 °C												
	Ambient temperature	25 °C												
Operating ranges	Inlet air pressure [bar]	1,5–10 bar												
	Inlet air temperature	5–50 °C											5–60 °C	
	Ambient temperature	2–40 °C (Relative Humidity of 85 % or less)											2–45 °C	
Air inlet/outlet port connection		Rc 3/8	Rc 1/2	Rc 3/4		Rc 1	R 1	R 1 1/2	R 2		R 2	R 2 1/2	DIN flange 80	
Drain connection [mm]		10											1/2	
Electrical Spec.	Power source	AC230 V (50 Hz)											Three-phase 400 VAC	
	Rated current [A]	1.2	1.2	1.2	1.4	2.7	3.0	4.3	4.3	5.4	7.9	4.5	5.3	5.9
Refrigerant		HFC134a						HFC407c						
Dimensions	Height [mm]	470	495	495	565	565	578	623	623	800	900	1276	1276	1332
	Width [mm]	266	270	270	270	270	300	290	290	470	470	670	700	950
	Depth [mm]	390	435	435	465	465	603	775	855	855	855	1120	1120	1290
Weight [kg]		18	22	23	27	28	46	54	62	100	116	245	270	350

Membrane air dryer

IDG Series



- Ideal dryer with high functional reliability
- Application as single device or for integration in existing air preparation devices-combinations
- No external energy supply required
- Non-fluorocarbon
- The air is exchanged in the membrane and the air moisture is released via the purge air directly to the atmosphere
- Operating pressure range 0.3 to 0.85 (1.0 MPa in case of IDG30~100)
- Temperature range -5 to 55 °C (50 °C in case of IDG30~100).

Part number	Port size	Purge [l/min]	Outlet flow [l/min]	Applicable series	Atmospheric dew point [°C]
IDG1-F02 ●	G 1/4	2.5	10	—	-20
IDG3-F01	G 1/8	6	25	AC20	-15
IDG3H-F01	G 1/8	3	25		-20
IDG5-F02 ●	G 1/4	12	50		-15
IDG5H-F02 ●	G 1/4	6	50		-20
IDG10-F02 ●	G 1/4	25	100	AC30	-15
IDG10H-F02 ●	G 1/4	11	100		-20
IDG20-F02 ●	G 1/4	50	200		-15
IDG20H-F02	G 1/4	22	200	AC40	-20
IDG30A-F03 ●	G 3/8	60	300		-15
IDG30HA-F03	G 3/8	29	300		-40
IDG30LA-F03 ●	G 3/8	18	75		-20
IDG50A-F03 ●	G 3/8	86	500		-15
IDG50HA-F03	G 3/8	50	500		-40
IDG50LA-F03 ●	G 3/8	25	110		-20
IDG60-F04 ●	G 1/2	125	600	AMH350C	-15
IDG60H-F04	G 1/2	65	600	AC40	-40
IDG60LA-F04	G 1/2	54	170		-60
IDG60SA-F04	G 1/2	25	50	AMH450C	-20
IDG75-F04	G 1/2	150	750		-15
IDG75H-F04	G 1/2	80	750	AC40	-40
IDG75LA-F04	G 1/2	68	240		-60
IDG75SA-F04	G 1/2	40	100		-20
IDG100-F04 ●	G 1/2	190	1000	AMH450C	-15
IDG100H-F04	G 1/2	110	1000		-40
IDG100LA-F04	G 1/2	100	300	AC40	-60
IDG100SA-F04	G 1/2	80	150		-20

1) Rated conditions are 0.7 MPa of inlet air pressure and 25 °C of inlet air temperature.

Bracket assembly

Sizes	3	5	10	20	30	50	60	75	100
Mounting	BM59	BM59	BM61	BM63	BM64	BM64	BM65	BM65	BM65

Thermo-dryer

With air temperature adjustment function

IDH Series



- Supply compressed air with stable conditions of temperature, dew point, pressure and cleanliness
- All in one integrated unit:
 - Outlet air temperature adjustment range: 15 to 30 °C
 - Outlet air temperature stability: ± 0.1 °C
 - Outlet air set pressure range: 0.15 to 0.85 MPa
 - Outlet air pressure dew point: 10 °C
 - Nominal filtration rating: 0.01 μm
- Remote operation, stop and error signal outputs
- Control temperature failure alarm
- Operating pressure range 0.3 to 1.0 MPa
- Ambient temperature range 15 to 35 °C.

Part number	Temperature control method	Air flow capacity [l/min (ANR)]	Port size	Outlet air temperature adjustment range [°C]	Outlet air temperature stability [°C]	Filter nominal filtration rating
IDHA4-23	Heater operation	100 to 500	Rc 3/8	15 to 30 ¹⁾	± 0.1 ²⁾	0.01 μm (99.9 % filtration efficiency)
IDHA6-23	PID control	200 to 800	Rc 1/2			

1) Possible to extend depending on the conditions

2) Performance when the operation of each part is stable without fluctuations in operating conditions and power supply.

Compressed air preparation filters

Main line filter

AFF Series



- Series AFF is mounted to main piping to remove impurities like oil, water and particles in compressed air
- Fluid: compressed air
- Filtration rating: 3 μm (filtration efficiency: 99 %)
- Automatic drain standard (different versions possible)
- Modular connection
- Operating pressure range 0.1 to 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size	Rated flow [l/min]	Rated flow [m ³ /h]	Spare filter element
AFF2C-F02D	G 1/4	300	18	AFF-EL2B
AFF4C-F03D ●	G 3/8	750	45	AFF-EL4B
AFF8C-F04D ●	G 1/2	1500	90	AFF-EL8B
AFF11C-F06D ●	G 3/4	2200	132	AFF-E11B

Main line filter

AFF□D Series



- AFF series main line filter removes both water droplets and solid particles
- Fluid: compressed air
- Filtration rating: 1 μm (filtration efficiency: 99 %)
- Automatic drain standard
- Temperature range -5 to 60 °C (No freezing)
- Water droplet removal ratio: 99 %
- An element service indicator is fitted as standard.

Part number	Port size	Rated flow [m ³ /min]	Spare filter element	Max. operating pressure [MPa]
AFF70D-F10	G 1	7	AFF-EL70D	1
AFF80D-F14	G 1 1/2	11	AFF-EL80D	
AFF90D-F20	G 2	14.5	AFF-EL90D	
AFF70D-F10-H	G 1	7	AFF-EL70D	1.6
AFF80D-F14-H	G 1 1/2	11	AFF-EL80D	
AFF90D-F20-H	G 2	14.5	AFF-EL90D	

Mist separator

AM Series



- Fluid: compressed air
- Filtration rating: 0.3 μm (filtration efficiency: 99.9 %)
- Automatic drain standard (different versions possible)
- Modular connection
- Operating pressure range 0.1 to 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size	Rated flow [l/min]	Rated flow [m ³ /h]	Spare filter element
AM150C-F02D ●	G 1/4	300	18	AM-EL150
AM250C-F03D	G 3/8	750	45	AM-EL250
AM350C-F04D ●	G 1/2	1500	90	AM-EL350
AM450C-F06D ●	G 3/4	2200	132	AM-EL450

Mist separator

AM□D Series



- Fluid: compressed air
- Filtration rating: 0.1 μm (filtration efficiency: 95 %)
- Automatic drain standard
- Temperature range -5 to 60 °C (No freezing)
- Oil mist density at outlet: 1 mg/m³ or less
- An element service indicator is fitted as standard.

Part number	Port size	Rated flow [m ³ /min]	Spare filter element	Max. operating pressure [MPa]
AM70D-F10	G 1	7	AM-EL70D	1
AM80D-F14	G 1 1/2	11	AM-EL80D	
AM90D-F20	G 2	14.5	AM-EL90D	
AM70D-F10-H	G 1	7	AM-EL70D	1.6
AM80D-F14-H	G 1 1/2	11	AM-EL80D	
AM90D-F20-H	G 2	14.5	AM-EL90D	

Micro-mist separator

AMD Series



- Fluid: compressed air
- Filtration rating: 0.01 μm (filtration efficiency: 99.9 %)
- Automatic drain standard (different versions possible)
- Modular connection
- Operating pressure range 0.1 to 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size	Rated flow [l/min]	Rated flow [m ³ /h]	Spare filter element
AMD150C-F02D	G 1/4	200	12	AMD-EL150
AMD250C-F03D ●	G 3/8	500	30	AMD-EL250
AMD350C-F04D ●	G 1/2	1000	60	AMD-EL350
AMD450C-F06D ●	G 3/4	2000	120	AMD-EL450

Micro-mist separator

AMD□□ Series



- Fluid: compressed air
- Filtration rating: 0.01 μm (filtration efficiency: 99.9 %)
- Automatic drain standard
- Temperature range -5 to 60 °C (No freezing)
- Oil mist density at outlet: 0.1 mg/m³ or less
- An element service indicator is fitted as standard.

Part number	Port size	Rated flow [m ³ /min]	Spare filter element	Max. operating pressure [MPa]
AMD70D-F10	G 1	7	AMD-EL70D	1
AMD80D-F14	G 1 1/2	11	AMD-EL80D	
AMD90D-F20	G 2	14.5	AMD-EL90D	
AMD70D-F10-H	G 1	7	AMD-EL70D	1,6
AMD80D-F14-H	G 1 1/2	11	AMD-EL80D	
AMD90D-F20-H	G 2	14.5	AMD-EL90D	

Micro-mist separator with prefilter

AMH Series



- The conventional pneumatic pressure line AM + AMD series have been integrated to achieve a reduction in installation space, savings in piping installation labour, and reduced costs
- Fluid: Compressed air
- Filtration rating: 0.01 μm (Filtration efficiency: 99.9 %)
- With element service indicator
- Automatic drain standard (different versions possible)
- Modular connection (AMH150C to 550C)
- Operating pressure range 0.1 to 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size	Rated flow [l/min]	Rated flow [m ³ /h]	Spare filter element
AMH150C-F02D-T	G 1/4	200	12	AMH-EL150
AMH250C-F03D-T ●	G 3/8	500	30	AMH-EL250
AMH350C-F04D-T ●	G 1/2	1000	60	AMH-EL350
AMH450C-F06D-T ●	G 3/4	2000	120	AMH-EL450
AMH550C-F10D-T	G 1	3700	222	AMH-EL550
AMH650-F14D-T	G 1 1/2	6000	360	AMH-EL650
AMH850-F20D-T	G 2	12000	720	AMH-EL850

Super mist separator

AME Series

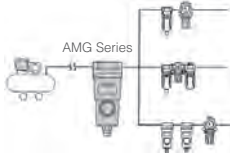


- Due to its special configuration, series AME indicates the life of the filter element by a colour change. Accordingly, the replacing time can be judged visually (a red colour indicates the replacing time)
- Filtration rating: 0.01 μm (Filtration efficiency: 99.9 %)
- Modular connection (AME150C to 550C)
- Operating pressure range 0.05 to 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size	Rated flow [l/min]	Rated flow [m ³ /h]	Spare filter element
AME150C-F02 ●	G 1/4	200	12	AME-EL150
AME250C-F03 ●	G 3/8	500	30	AME-EL250
AME350C-F04 ●	G 1/2	1000	60	AME-EL350
AME450C-F06 ●	G 3/4	2000	120	AME-EL450
AME550C-F10 ●	G 1	3700	222	AME-EL550
AME650-F14	G 1 1/2	6000	360	AME-EL650
AME850-F20	G 2	12000	720	AME-EL850

Water separator

Water separator AMG Series



- Fluid: Compressed air
- Water separation rate 99 %
- Standard automatic drain
- Lower pressure drop
- Modular connection (AMG150C to 550C)
- Operating pressure range 0.1 to 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size	Rated flow [l/min]	Spare filter element
AMG150C-F01C ● *	G 1/8	300	AMG-EL150
AMG250C-F02D ●	G 1/4	750	AMG-EL250
AMG350C-F03D ●	G 3/8	1500	AMG-EL350
AMG350C-F04D ●	G 1/2	1500	AMG-EL350
AMG450C-F04D ●	G 1/2	2200	AMG-EL450
AMG550C-F06D ●	G 3/4	3500	AMG-EL550
AMG650-F10D ●	G 1	6000	AMG-EL650
AMG650-F14D ●	G 1 1/2	6000	AMG-EL650
AMG850-F20D ●	G 2	12000	AMG-EL850

* Operating pressure range 0.15 to 1.0 MPa.

Odour removal filter

Odour removal

AMF Series



- Active carbon filter for filtering odours
- Fluid: Compressed air
- Filtration rating: 0.01 µm (Filtration efficiency: 99.9 %)
- Modular connection (AMF150C to 550C)
- Operating pressure range 0.05 to 1.0 MPa
- Temperature range 5 to 60 °C.

Part number	Port size	Rated flow [l/min]	Rated flow [m³/h]	Spare filter element
AMF150C-F02 ●	G 1/4	200	12	AMF-EL150
AMF250C-F03 ●	G 3/8	500	30	AMF-EL250
AMF350C-F04 ●	G 1/2	1000	60	AMF-EL350
AMF450C-F06 ●	G 3/4	2000	120	AMF-EL450
AMF550C-F10 ●	G 1	3700	222	AMF-EL550
AMF650-F14	G 1 1/2	6000	360	AMF-EL650
AMF850-F20	G 2	12000	720	AMF-EL850

Related products

Heavy duty auto drain

ADH4000 Series



- Suitable for dirty water drain
- Easy maintenance
- No need for electric power and no waste of air.



Part number	Port size	Port size drain	Condensate quantity	Bracket set
ADH4000-F04 ●	G 1/2	G 1/2	400 cc/min	BM58

Clean exhaust filter

SFE Series



- High precision filtration:
 - Cleanliness class: 4. ISO 14644-1
 - Filtration rating: 0.01 μm
 - Filtration efficiency: 99.99 %
- Includes silencer function. Noise reduction: 30 dB or more
- 3 mounting variations:
 - Male thread type
 - Plug-in type
 - One-touch fitting type
- Bracket available
- Flow capacity: from 3 to 200 l/min.

Part number	Port type	Port size	Max. flow capacity [l/min (ANR)]	Filtration rating ¹⁾ [μm]	Noise reduction [dB] ¹⁾	Differential pressure proof ²⁾ (Maximum operating pressure) [MPa]
SFE11 ●	Male thread	M5 x 0.8	3	0.01 (Trapping efficiency 99.99 %)	30	0.1
SFE42 ●		R 1/8	65			
SFE52 ●		R 1/4	130			
SFE53 ●			200			
SFE73 ●	Plug-in	\varnothing 4	30			
SFE3A ●		\varnothing 6	65			
SFE4B ●		\varnothing 8	130			
SFE5C ●		\varnothing 10	200			
SFE7D ●	One-touch fitting	\varnothing 4	30			
SFE3F ●		\varnothing 6	65			
SFE4G ●		\varnothing 8	130			
SFE5H ●		\varnothing 10	200			
SFE7J ●						

1) Based on SMC's measuring conditions

2) Pressure applied to SFE, and not supply pressure to the equipment that SFE is mounted to (e.g. solenoid valve, cylinder).

Accessories

Part number	Model	Description
SFE-BR3	SFE3	Bracket
SFE-BR4	SFE4	Bracket
SFE-BR5	SFE5	Bracket
SFE-BR7	SFE7	Bracket

Auto drain valve

AD402-A Series



- Drain type: float type
- Fluid: compressed air
- Operating pressure: from 0.1 to 1.0 MPa
- Bowl material: polycarbonate, metal, nylon
- Drain discharge: max. 100 cm³/cycle
- Maintenance: one-touch mounting, without using a tool.

Part number	Port size	Port size drain	Auto drain valve type
AD402-F02D-A	G 1/4	G 3/8	Normally open
AD402-F03D-A	G 3/8		
AD402-F04D-A	G 1/2		
AD402-F02C-A	G 1/4		Normally closed
AD402-F03C-A	G 3/8		
AD402-F04C-A	G 1/2		

Piping equipment



Fitting

Page 314



Tubing

Page 315



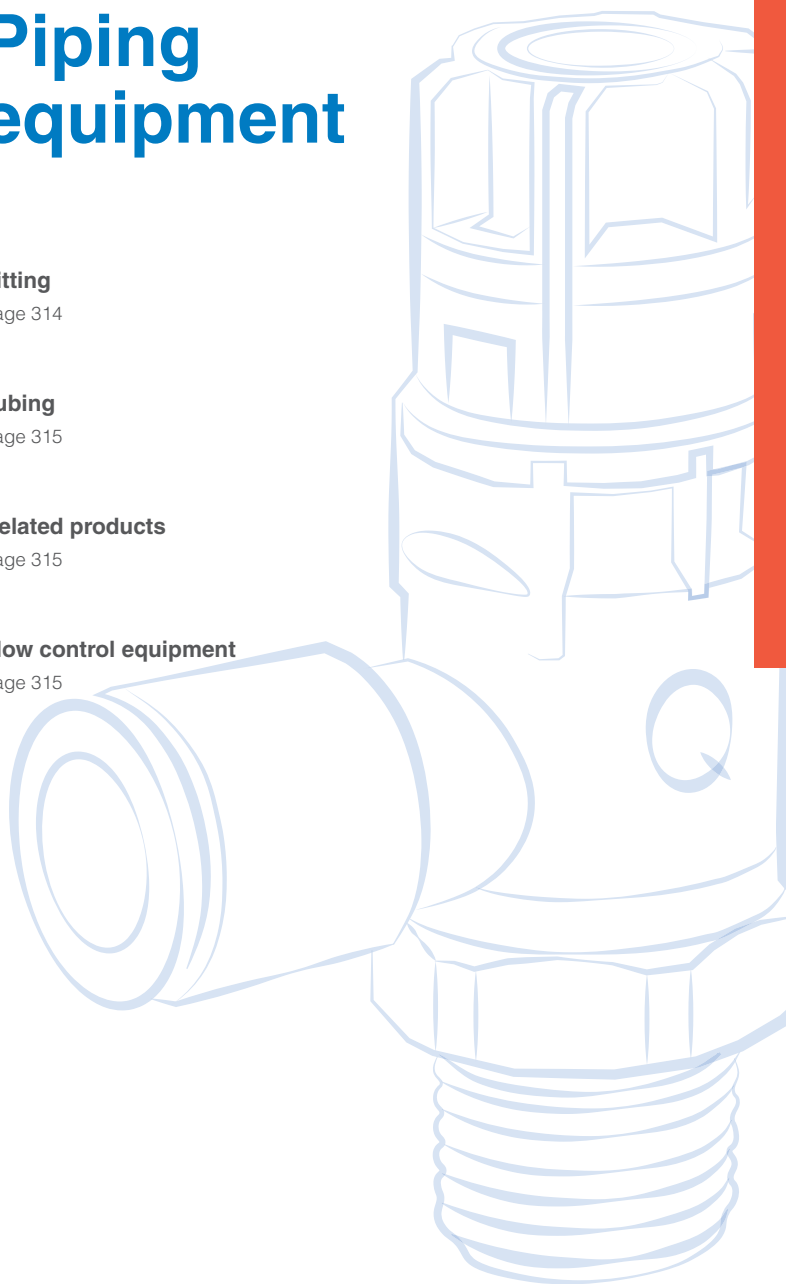
Related products

Page 315



Flow control equipment

Page 315



Fitting



One-touch fittings

KQ2 Series p.324



One-touch fittings oval type

KQ2 Series p.341



Metal one-touch fittings

KQB2 Series p.351



Rotary one-touch fittings

KS Series p.355



Rotary one-touch fittings high speed

KX Series p.355



One-touch fittings manifold

KM Series p.356



Miniature fittings

M Series p.357



Insert fittings

H•DL•DT Series p.358



Self-seal fittings

KC Series p.359



S couplers

KK Series p.360



S couplers

KK130 Series p.361



Round multi-connector

DMK Series p.362



Rectangular multi-connector

KDM Series p.362



FR one-touch fittings equivalent to UL-94 standard V-0

KR Series p.363



Antistatic one-touch fittings

KA Series p.364



Stainless steel 316 one-touch fittings

KQG2 Series p.366



Stainless fittings

KG Series p.369



Stainless steel 316 insert fittings

KFG2 Series p.370



Miniature fittings, stainless steel

MS Series p.372



Rotary joint for compressed air

MQR Series p.373

Tubing



Nylon tubing

T Series p.374



Soft nylon tubing

TS Series p.375



Polyurethane flat tubing

TU Series p.376



Hard polyurethane tubing

TUH Series p.379



Wear resistant tubing

TUZ Series p.380

Tubing



**Polyurethane coil tubing
1, 2 or 3 cores**
TCU Series p.381



Polyurethane flat tubing
TFU Series p.382



**FR double layer tubing
equivalent to UL-94 standard V-0**
TRBU Series p.383



FR three-layer polyurethane tubing
TRTU Series p.384



2-Layer soft fluoropolymer tubing
TQ Series p.385



Antistatic polyurethane tubing
TAU Series p.386



**Fluoropolymer tubing (PFA)
metric size**
TLM Series p.387



Moisture control tube
IDK Series p.389 



FEP tubing (Fluoropolymer)
TH Series p.390

Related products



Multi tube holder
TM Series p.391



Tube cutter
TK-1•2•3•6 Series p.391



Tube releasing tool
TG Series p.391



Blow gun
VMG Series p.392 



Air nozzles
KN Series p.392 

Flow control equipment




**Speed controller, elbow
and universal type**
AS•1F•A Series p.393



Speed controller with indicator
AS•FS Series p.394 



**Speed controller with indicator,
in line type**
AS•2FS Series p.395 



Speed controller, in line type
AS•2F Series p.396



Speed controller, in line type
AS•2F-A Series p.397 



Holder for speed controller
TMH Series p.398

Flow control equipment



Dual type speed controller
ASD•F Series p.398



Speed controller
EAS Series p.398



Speed controller. Straight type
EAS Series p.399



Speed controller. Stainless steel
AS•FG Series p.399



Stainless steel controller (Elbow type)
ASG Series p.400



Speed controller, flat head screwdriver adjusting
AS•F-D Series p.400



Speed controller, flat head screwdriver adjusting, in line type
AS•F-D Series p.401



Speed controller with pilot check valve
ASP•F Series p.401



Air saving speed controller
AS-R/AS-Q Series p.402



Air saving valve
ASR/ASQ Series p.403



Metering valve with silencer
ASN2 Series p.404



Speed controller, all metal exterior
AS-X737 Series p.404



Speed exhaust controller
ASV Series p.405



Quick exhaust valve
AQ Series p.405



Quick exhaust valve, straight type
AQ240/340 Series p.406



Shuttle valve. Metal type
VR1210/1220 Series p.406



Shuttle valve Plastic with one-touch fittings
VR1210F/1220F Series p.406



AND Valve
VR1211F Series p.407



Check valve with one-touch fitting/thread
AKH/AKB Series p.407



Check valve
AK Series p.408



Optical indicator pneumatic
VR3100/3110 Series p.408



Our highlighted product for you

One-touch fittings KQ2 Series



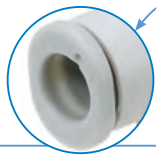
For more details
go to page 324



New!
Oval type release
button added!

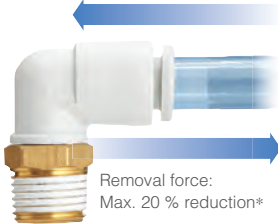


The perfect fit for your pneumatic connections



Easy and quick assembly improve improved tube insertion/removal.

Insertion force: Max. 30 % reduction

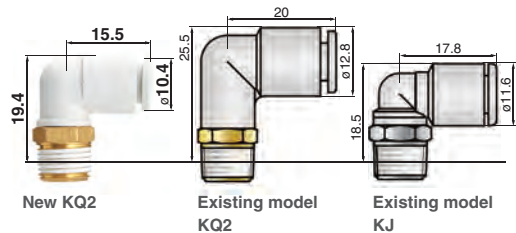


Removal force:
Max. 20 % reduction*

* Tube pulling out strength is ensured
to be equivalent to existing model.

► Compact and lightweight

- Dimensions: height direction: 24 % shorter*
- Dimensions: horizontal direction: 23 % shorter*
- Weight: 57 % lighter*



* Existing model KQ2 series Male elbow/Applicable tubing
O.D.: Ø 6/Connection thread: R 1/8

► 3 series in 1 – consolidation of KJ, KQ and KQ2

► Extensive product range for maximum design flexibility

- 51 body type models
- 3 seal methods: sealant, gasket seal, face seal

- 3 surface treatments: brass (no plating), brass + electroless nickel plated, stainless steel 303



Gasket seal



Sealant



Face seal



Brass



Nickel



Stainless steel

Our highlighted product for you

Metal one-touch fittings

KQB2/KQG2 Series



For more details
go to page 351



The most versatile fitting



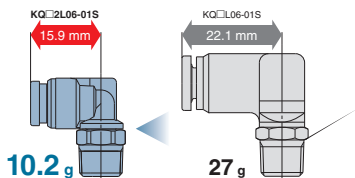
Material

- Metal parts:
Series KQG2: **Stainless steel 316**
Series KQB2: **Stainless steel 304, 316**;
Electroless nickel plated (Brass parts)
- Seal parts: Special FKM

► Compact and light

- Dimensions: Approx. 30 % down
- Weight: Approx. 62 % down.

* Comparison with KQCL06-01S.



► Fluid temperature: -5 to 150 °C

KQG2 Series can be used with steam.

► Grease free

► Extensive possible applications

The body and sealing materials permit the use in a wide variety of applications.

► Wide configuration variation: **17 Models**

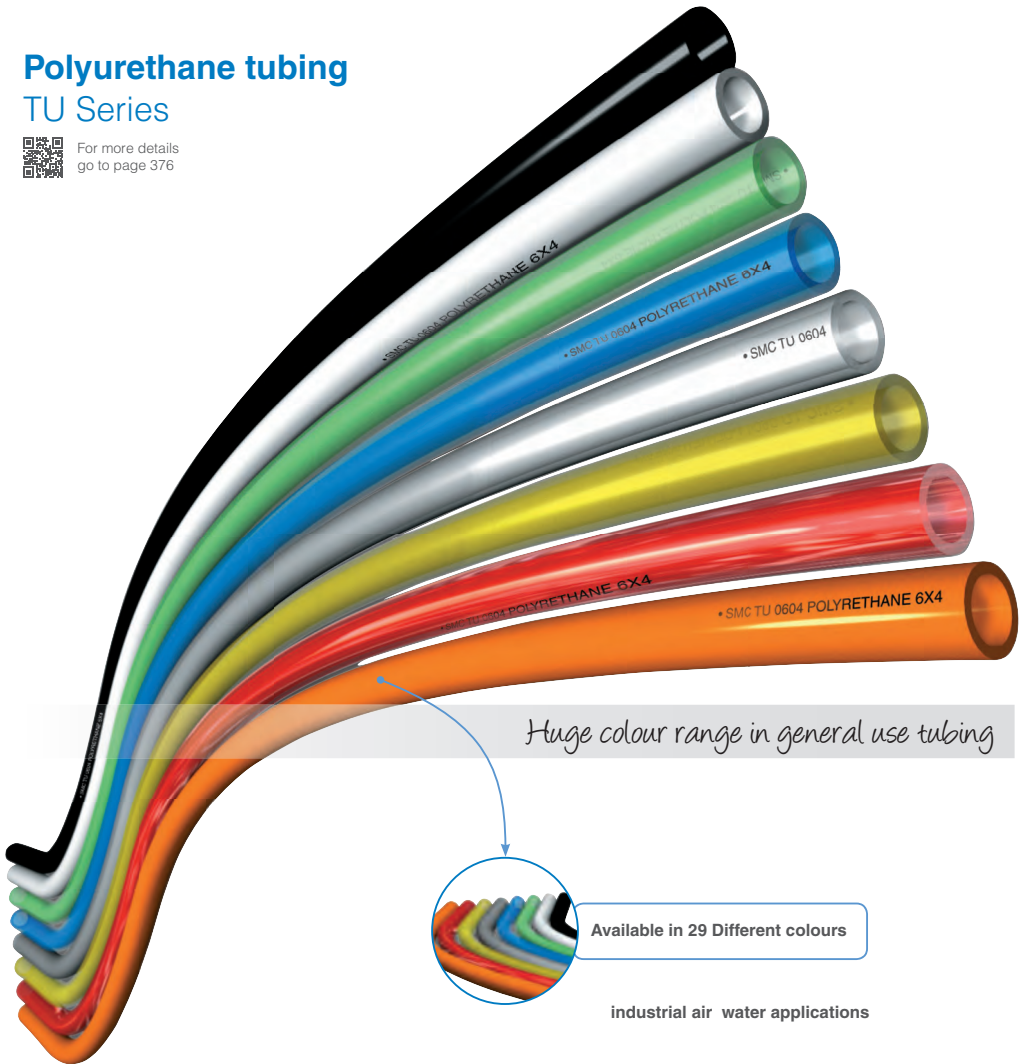
► Applicable tube material: **FEP • PFA • Nylon**
• **Soft nylon • Polyurethane • Polyolefin**

Polyurethane tubing

TU Series



For more details
go to page 376



Huge colour range in general use tubing

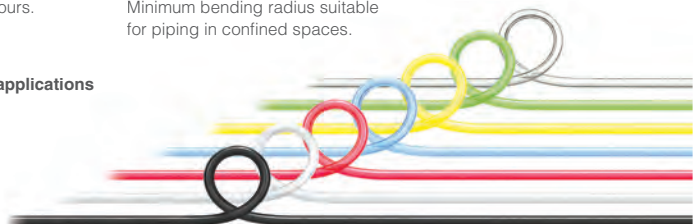
Available in 29 Different colours

industrial air water applications

▶ Tubing sizes **2 mm to 16 mm O.D.**
20 and 100 m rolls available for all colours.

▶ Good flexibility
Minimum bending radius suitable
for piping in confined spaces.

▶ For general **industrial air** and **water applications**



Our highlighted product for you

Technical tubing

TU Series

For more details
go to page 376



The best tubing for any application

IDK Series



For more details
go to page 387



Condensation – our unique **IDK** tubing is the ideal solution for small size pneumatic equipment that is prone to corrosion or operational breakdown, as it diffuses water vapour from inside the piping thus avoiding water condensation and problems caused by the drop of the dew point.

TH Series



For more details
go to page 388



Chemicals and high temperatures – the **TH** can cope with the toughest environments and is ideal for the Food, Semiconductor, Life Science, Automotive and Machine Tool industries. Due to its high chemical and heat resistance, it is able to support severe conditions, besides; it can withstand higher operating pressure.

TAU Series



For more details
go to page 385



Static electricity – the **TAU** offers the perfect solution to avoid static charge and thanks to its flexibility, is perfect to use in difficult-to-reach places.

TUZ Series



For more details
to page 379



Wear or sliding motion abrasion – our **TUZ** is the answer. Incredibly flexible and designed to fit into confined spaces, this tubing is extremely hard wearing.

TRTU Series



For more details
go to page 383



Spot or arc welding – also unique in the market, our **TRTU** can withstand even the harshest of sparks! It is a flame resistant three layer polyurethane tube with an aluminium middle layer that is designed to cope with the harsh realities of the arc welding process.

Speed controller with one-touch fitting. Elbow type

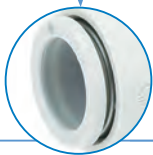
AS Series



For more details go to page 392



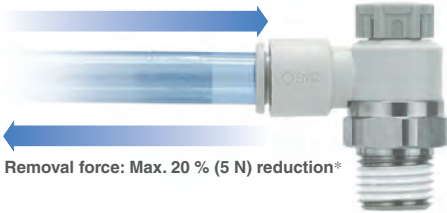
Reduces labour time!



Improved tube insertion/removal

Reduced labour time, easy assembly and maintenance.

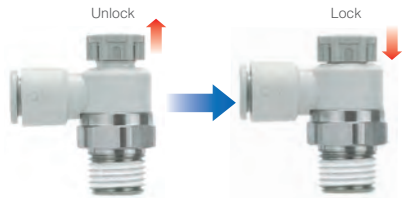
Insertion force: Max. 30 % (8 N) reduction



* Tube pulling out strength is ensured to be equivalent to existing model

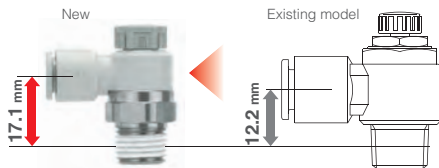
Push-lock type

Easy to lock



► More space beneath the tube.

Easier installation/removal of the tube.



AS22□1F-02-□SA

AS22□1F-02-□

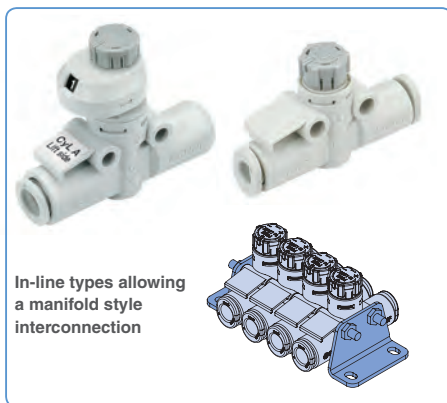
► High resistance to corrosion

PBT thermoplastic and electroless nickel plated body.

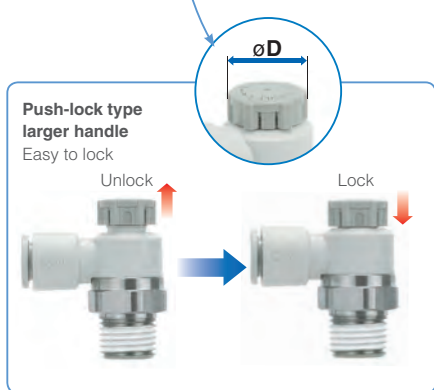
Our highlighted product for you

Push-lock type speed controllers AS-A & AS-FS Series

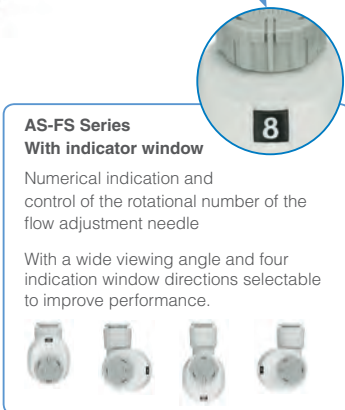
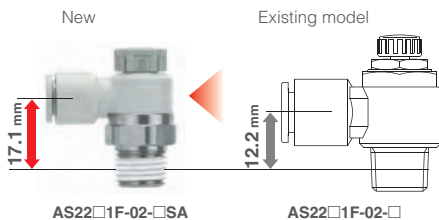
For more details go to page 392



Control the speed of your cylinder. Easier. Faster



► **More space beneath the tube.**
Easier installation/removal of the tube.

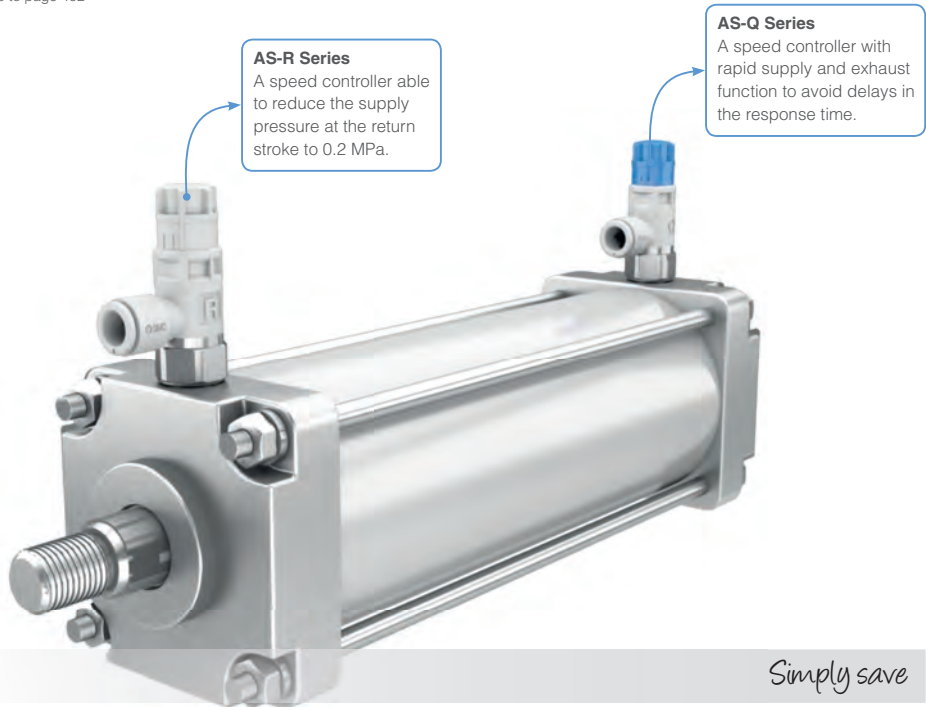


Air saving speed controllers

AS-R & AS-Q Series



For more details go to page 402



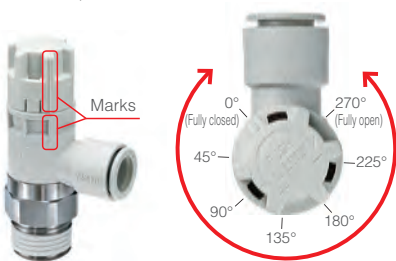
AS-R Series
A speed controller able to reduce the supply pressure at the return stroke to 0.2 MPa.

AS-Q Series
A speed controller with rapid supply and exhaust function to avoid delays in the response time.

Simply save

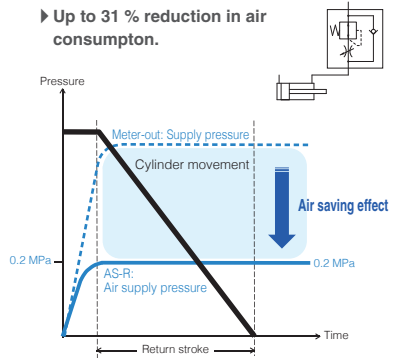
► Simplified operation elements

The function of a regulator and speed controller are combined in a compact unit.



Only the cylinder speed is adjusted through a push-lock type handle, which is adjusted by one rotation (270°) with marks every 45° to ensure reproducibility of the set flow.

► Up to 31 % reduction in air consumption.



Our highlighted product for you

One-touch fittings

KQ2 Series



Tube O.D.: Ø 2 • 3.2 • 4 • 6 • 8 • 10 • 12 • 16 mm
Thread: M3 • M6 • M5 • R1/8 • 1/4 • 3/8 • 1/2



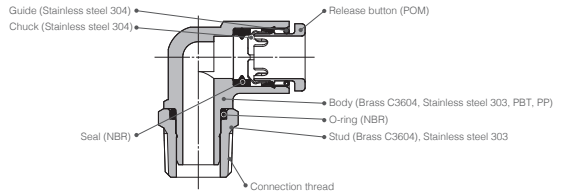
- Stainless steel option available
- Wide pressure range - Low vacuum to 10 Bar (1.0 MPa) pressure
- Wide range of tube systems (2 mm - 16 mm O.D. tube)
- Widest range of configuration available
- Improved tube insertion/removal
- Compact and lightweight
- Suitable for air and water.

Customer benefits

- Flexibility, useful in more applications!
- Easier assembly and lower labour costs
- Easier use in confined spaces
- Maximum design flexibility thanks to product variations and wide range of diameters.

Related products


TU Series - Polyurethane tubing - page 376
T Series - Nylon tubing - page 374
TH Series - Fluoropolymer (FEP) tubing - page 388
TLM Series - Fluoropolymer (PFA) tubing - page 386
TS Series - Soft nylon tubing - page 375



Male connector (Sealant) KQ2H	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2H23-01AS ●	KQ2H23-01NS ●	—	1/8	Ø 3.2
	KQ2H23-02AS ●	KQ2H23-02NS ●	—	1/4	
	KQ2H04-01AS ●	KQ2H04-01NS ●	KQ2H04-01GS1 *	1/8	Ø 4
	KQ2H04-02AS ●	KQ2H04-02NS ●	KQ2H04-02GS1 *	1/4	
	KQ2H06-01AS ●	KQ2H06-01NS ●	KQ2H06-01GS1 *	1/8	Ø 6
	KQ2H06-02AS ●	KQ2H06-02NS ●	KQ2H06-02GS1 *	1/4	
	KQ2H06-03AS ●	KQ2H06-03NS ●	KQ2H06-03GS1 *	3/8	Ø 8
	KQ2H08-01AS ●	KQ2H08-01NS ●	KQ2H08-01GS	1/8	
	KQ2H08-02AS ●	KQ2H08-02NS ●	KQ2H08-02GS	1/4	
	KQ2H08-03AS ●	KQ2H08-03NS ●	KQ2H08-03GS	3/8	Ø 10
	KQ2H10-01AS ●	KQ2H10-01NS ●	KQ2H10-01GS	1/8	
	KQ2H10-02AS ●	KQ2H10-02NS ●	KQ2H10-02GS	1/4	
	KQ2H10-03AS ●	KQ2H10-03NS ●	KQ2H10-03GS	3/8	Ø 12
	KQ2H10-04AS ●	KQ2H10-04NS ●	KQ2H10-04GS	1/2	
	KQ2H12-02AS ●	KQ2H12-02NS ●	KQ2H12-02GS	1/4	Ø 16
	KQ2H12-03AS ●	KQ2H12-03NS ●	KQ2H12-03GS	3/8	
	KQ2H12-04AS ●	KQ2H12-04NS ●	KQ2H12-04GS	1/2	Ø 16
	KQ2H16-02AS ●	KQ2H16-02NS ●	—	1/4	
	KQ2H16-03AS ●	KQ2H16-03NS ●	KQ2H16-03GS	3/8	Ø 16
	KQ2H16-04AS ●	KQ2H16-04NS ●	KQ2H16-04GS	1/2	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

* With oval release button

Male connector (Gasket seal) KQ2H	Part number type A, G	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2H02-M3G ●	—	—	M3 x 0.5	Ø 2
	KQ2H02-M5A	KQ2H02-M5N ●	—	M5 x 0.8	
	KQ2H23-M3G ●	—	—	M3 x 0.5	Ø 3.2
	KQ2H23-M5A ●	KQ2H23-M5N ●	—	M5 x 0.8	
	KQ2H04-M3G ●	—	—	M3 x 0.5	Ø 4
	KQ2H04-M5A ●	KQ2H04-M5N ●	KQ2H04-M5G1 *	M5 x 0.8	
	KQ2H04-M6A ●	KQ2H04-M6N	—	M6 x 1.0	
	KQ2H06-M5A ●	KQ2H06-M5N ●	KQ2H06-M5G1 *	M5 x 0.8	
	KQ2H06-M6A ●	KQ2H06-M6N	—	M6 x 1.0	Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

* With oval release button

Male elbow (Gasket seal) KQ2L	Part number type A, G	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2L02-M3G ●	—	—	M3 x 0.5	Ø 2
	KQ2L02-M5A	KQ2L02-M5N ●	—	M5 x 0.8	
	KQ2L23-M3G ●	—	—	M3 x 0.5	Ø 3.2
	KQ2L23-M5A ●	KQ2L23-M5N ●	—	M5 x 0.8	
	KQ2L04-M3G ●	—	—	M3 x 0.5	Ø 4
	KQ2L04-M5A ●	KQ2L04-M5N ●	KQ2L04-M5G1 *	M5 x 0.8	
	KQ2L04-M6A ●	KQ2L04-M6N	—	M6 x 1.0	
	KQ2L06-M5A ●	KQ2L06-M5N ●	KQ2L06-M5G1 *	M5 x 0.8	
	KQ2L06-M6A ●	KQ2L06-M6N ●	—	M6 x 1.0	Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

* With oval release button

Male elbow (Sealant) KQ2L	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2L23-01AS ●	KQ2L23-01NS ●	—	1/8	Ø 3.2
	KQ2L23-02AS ●	KQ2L23-02NS	—	1/4	
	KQ2L04-01AS ●	KQ2L04-01NS ●	KQ2L04-01GS1 *	1/8	Ø 4
	KQ2L04-02AS ●	KQ2L04-02NS ●	KQ2L04-02GS1 *	1/4	
	KQ2L06-01AS ●	KQ2L06-01NS ●	KQ2L06-01GS1 *	1/8	Ø 6
	KQ2L06-02AS ●	KQ2L06-02NS ●	KQ2L06-02GS1 *	1/4	
	KQ2L06-03AS ●	KQ2L06-03NS ●	KQ2L06-03GS1 *	3/8	Ø 8
	KQ2L08-01AS ●	KQ2L08-01NS ●	KQ2L08-01GS	1/8	
	KQ2L08-02AS ●	KQ2L08-02NS ●	KQ2L08-02GS	1/4	
	KQ2L08-03AS ●	KQ2L08-03NS ●	KQ2L08-03GS	3/8	
	KQ2L10-01AS ●	KQ2L10-01NS ●	KQ2L10-01GS	1/8	Ø 10
	KQ2L10-02AS ●	KQ2L10-02NS ●	KQ2L10-02GS	1/4	
	KQ2L10-03AS ●	KQ2L10-03NS ●	KQ2L10-03GS	3/8	Ø 12
	KQ2L10-04AS ●	KQ2L10-04NS ●	KQ2L10-04GS	1/2	
	KQ2L12-02AS ●	KQ2L12-02NS ●	KQ2L12-02GS	1/4	Ø 16
	KQ2L12-03AS ●	KQ2L12-03NS ●	KQ2L12-03GS	3/8	
	KQ2L12-04AS ●	KQ2L12-04NS ●	KQ2L12-04GS	1/2	Ø 16
	KQ2L16-02AS ●	KQ2L16-02NS	—	1/4	
	KQ2L16-03AS ●	KQ2L16-03NS ●	KQ2L16-03GS	3/8	
	KQ2L16-04AS ●	KQ2L16-04NS ●	KQ2L16-04GS	1/2	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

* With oval release button


45° male elbow (Gasket seal) KQ2K	Part number type A	Part number type N	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2K04-M5A ●	KQ2K04-M5N	M5 x 0.8	Ø 4
	KQ2K04-M6A	KQ2K04-M6N	M6 x 1.0	
	KQ2K06-M5A ●	KQ2K06-M5N	M5 x 0.8	Ø 6
	KQ2K06-M6A	KQ2K06-M6N	M6 x 1.0	

A: Brass, N: Brass + Electroless nickel plated

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green.
Stocked items and product information could be subject to change without prior notice.


45° male elbow (Sealant) KQ2K	Part number type A	Part number type N	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2K04-01AS ●	KQ2K04-01NS	1/8	Ø 4
	KQ2K04-02AS ●	KQ2K04-02NS	1/4	
	KQ2K06-01AS ●	KQ2K06-01NS ●	1/8	Ø 6
	KQ2K06-02AS ●	KQ2K06-02NS	1/4	
	KQ2K06-03AS ●	KQ2K06-03NS	3/8	Ø 8
	KQ2K08-01AS ●	KQ2K08-01NS	1/8	
	KQ2K08-02AS ●	KQ2K08-02NS	1/4	
	KQ2K08-03AS ●	KQ2K08-03NS	3/8	
	KQ2K10-01AS ●	KQ2K10-01NS	1/8	Ø 10
	KQ2K10-02AS ●	KQ2K10-02NS ●	1/4	
	KQ2K10-03AS ●	KQ2K10-03NS	3/8	
	KQ2K10-04AS ●	KQ2K10-04NS	1/2	
	KQ2K12-02AS ●	KQ2K12-02NS	1/4	Ø 12
	KQ2K12-03AS ●	KQ2K12-03NS	3/8	
	KQ2K12-04AS ●	KQ2K12-04NS	1/2	
	KQ2K16-02AS ●	KQ2K16-02NS	1/4	Ø 16
	KQ2K16-03AS ●	KQ2K16-03NS	3/8	
	KQ2K16-04AS ●	KQ2K16-04NS	1/2	

A: Brass, N: Brass + Electroless nickel plated

Extended male elbow (Gasket seal) KQ2W	Part number type A, G	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2W02-M3G ●	—	—	M3 x 0.5	Ø 2
	KQ2W02-M5A	KQ2W02-M5N ●	—	M5 x 0.8	
	KQ2W23-M3G	—	—	M3 x 0.5	Ø 3.2
	KQ2W23-M5A ●	KQ2W23-M5N	—	M5 x 0.8	
	KQ2W04-M3G ●	—	—	M3 x 0.5	Ø 4
	KQ2W04-M5A ●	KQ2W04-M5N ●	KQ2W04-M5G1 *	M5 x 0.8	
	KQ2W06-M5A ●	KQ2W06-M5N ●	KQ2W06-M5G1 *		Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

* With Oval release button


Extended male elbow (Sealant) KQ2W	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2W23-01AS	KQ2W23-01NS	—	1/8	Ø 3.2
	KQ2W23-02AS	KQ2W23-02NS	—	1/4	
	KQ2W04-01AS ●	KQ2W04-01NS ●	KQ2W04-01GS1 *	1/8	Ø 4
	KQ2W04-02AS ●	KQ2W04-02NS	KQ2W04-02GS1 *	1/4	
	KQ2W06-01AS ●	KQ2W06-01NS ●	KQ2W06-01GS1 *	1/8	Ø 6
	KQ2W06-02AS ●	KQ2W06-02NS	KQ2W06-02GS1 *	1/4	
	KQ2W06-03AS ●	KQ2W06-03NS	KQ2W06-03GS1 *	3/8	
	KQ2W08-01AS ●	KQ2W08-01NS	KQ2W08-01GS	1/8	
	KQ2W08-02AS ●	KQ2W08-02NS	KQ2W08-02GS	1/4	Ø 8
	KQ2W08-03AS ●	KQ2W08-03NS	KQ2W08-03GS	3/8	
	KQ2W10-02AS ●	KQ2W10-02NS	KQ2W10-02GS	1/4	Ø 10
	KQ2W10-03AS ●	KQ2W10-03NS	KQ2W10-03GS	3/8	
	KQ2W10-04AS ●	KQ2W10-04NS	KQ2W10-04GS	1/2	
	KQ2W12-02AS ●	KQ2W12-02NS	KQ2W12-02GS	1/4	
	KQ2W12-03AS ●	KQ2W12-03NS	KQ2W12-03GS	3/8	Ø 12
	KQ2W12-04AS ●	KQ2W12-04NS	KQ2W12-04GS	1/2	
	KQ2W16-02AS ●	KQ2W16-02NS	—	1/4	Ø 16
	KQ2W16-03AS ●	KQ2W16-03NS	—	3/8	
	KQ2W16-04AS ●	KQ2W16-04NS	—	1/2	

A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303


* With Oval release button

Hexagon socket head male connector (Gasket seal) KQ2S	Part number type A, G	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2S02-M3G ●	—	—	M3 x 0.5	Ø 2
	KQ2S23-M3G ●	—	—		
	KQ2S23-M5A ●	KQ2S23-M5N ●	—	M5 x 0.8	Ø 3.2
	KQ2S04-M3G ●	—	—	M3 x 0.5	Ø 4
	KQ2S04-M5A ●	KQ2S04-M5N ●	KQ2S04-M5G1 *	M5 x 0.8	
	KQ2S04-M6A ●	KQ2S04-M6N ●	—	M6 x 1.0	
	KQ2S06-M5A ●	KQ2S06-M5N ●	KQ2S06-M5G1 *	M5 x 0.8	
	KQ2S06-M6A ●	KQ2S06-M6N ●	—	M6 x 1.0	Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303
* With Oval release button

Hexagon socket head male connector (Sealant) KQ2S	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2S04-01AS ●	KQ2S04-01NS ●	KQ2S04-01GS1 *	1/8	Ø 4
	KQ2S06-01AS ●	KQ2S06-01NS ●	KQ2S06-01GS1 *		
	KQ2S06-02AS ●	KQ2S06-02NS ●	KQ2S06-02GS1 *	1/4	Ø 6
	KQ2S08-01AS ●	KQ2S08-01NS ●	KQ2S08-01GS	1/8	
	KQ2S08-02AS ●	KQ2S08-02NS ●	KQ2S08-02GS	1/4	Ø 8
	KQ2S08-03AS ●	KQ2S08-03NS ●	KQ2S08-03GS	3/8	
	KQ2S10-01AS ●	KQ2S10-01NS ●	KQ2S10-01GS	1/8	Ø 10
	KQ2S10-02AS ●	KQ2S10-02NS ●	KQ2S10-02GS	1/4	
	KQ2S10-03AS ●	KQ2S10-03NS ●	KQ2S10-03GS	3/8	
	KQ2S10-04AS ●	KQ2S10-04NS ●	KQ2S10-04GS	1/2	
	KQ2S12-02AS ●	KQ2S12-02NS ●	KQ2S12-02GS	1/4	Ø 12
	KQ2S12-03AS ●	KQ2S12-03NS ●	KQ2S12-03GS	3/8	
	KQ2S12-04AS ●	KQ2S12-04NS ●	KQ2S12-04GS	1/2	
	KQ2S16-02AS ●	KQ2S16-02NS ●	—	1/4	
	KQ2S16-03AS ●	KQ2S16-03NS ●	—	3/8	
	KQ2S16-04AS ●	KQ2S16-04NS ●	—	1/2	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303
* With Oval release button

Universal male elbow (Gasket seal) KQ2V	Part number type A	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2V04-M5A ●	KQ2V04-M5N ●	KQ2V04-M5G1 *	M5 x 0.8	Ø 4
	KQ2V06-M5A ●	KQ2V06-M5N ●	KQ2V06-M5G1 *		Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303
* With Oval release button.

Universal male elbow (Sealant) KQ2V	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2V04-01AS ●	KQ2V04-01NS ●	KQ2V04-01GS1 *	1/8	Ø 4
	KQ2V06-01AS ●	KQ2V06-01NS ●	KQ2V06-01GS1 *		
	KQ2V06-02AS ●	KQ2V06-02NS ●	KQ2V06-02GS1 *	1/4	Ø 6
	KQ2V08-01AS ●	KQ2V08-01NS ●	KQ2V08-01GS	1/8	
	KQ2V08-02AS ●	KQ2V08-02NS ●	KQ2V08-02GS	1/4	Ø 8
	KQ2V08-03AS ●	KQ2V08-03NS ●	KQ2V08-03GS	3/8	
	KQ2V10-02AS ●	KQ2V10-02NS ●	KQ2V10-02GS	1/4	Ø 10
	KQ2V10-03AS ●	KQ2V10-03NS ●	KQ2V10-03GS	3/8	
	KQ2V12-03AS ●	KQ2V12-03NS ●	KQ2V12-03GS	3/8	Ø 12
	KQ2V12-04AS ●	KQ2V12-04NS ●	KQ2V12-04GS	1/2	
	KQ2V16-03AS ●	KQ2V16-03NS ●	—	3/8	Ø 16
	KQ2V16-04AS ●	KQ2V16-04NS ●	—	1/2	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303
* With Oval release button.

Hexagon socket head universal male elbow (Gasket seal) KQ2VS	Part number type A	Part number type N	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2VS04-M5A ●	KQ2VS04-M5N	M5 x 0.8	Ø 4
	KQ2VS06-M5A ●	KQ2VS06-M5N		Ø 6

A: Brass, N: Brass + Electroless nickel plated


Hexagon socket head universal male elbow (Sealant) KQ2VS	Part number type A	Part number type N	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2VS04-01AS ●	KQ2VS04-01NS	1/8	4
	KQ2VS06-01AS ●	KQ2VS06-01NS		Ø 6
	KQ2VS06-02AS ●	KQ2VS06-02NS	1/4	
	KQ2VS08-01AS ●	KQ2VS08-01NS ●	1/8	Ø 10
	KQ2VS08-02AS ●	KQ2VS08-02NS	1/4	
	KQ2VS08-03AS ●	KQ2VS08-03NS	3/8	Ø 10
	KQ2VS10-02AS ●	KQ2VS10-02NS ●	1/4	
	KQ2VS10-03AS ●	KQ2VS10-03NS	3/8	Ø 12
	KQ2VS12-03AS ●	KQ2VS12-03NS		
	KQ2VS12-04AS ●	KQ2VS12-04NS		

A: Brass, N: Brass + Electroless nickel plated

Male branch tee (Gasket seal) KQ2T	Part number type A, G	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2T02-M3G ●	—	—	M3 x 0.5	Ø 2
	KQ2T02-M5A	KQ2T02-M5N ●	—	M5 x 0.8	
	KQ2T23-M3G	—	—	M3 x 0.5	Ø 3.2
	KQ2T23-M5A ●	KQ2T23-M5N ●	—	M5 x 0.8	
	KQ2T04-M3G ●	—	—	M3 x 0.5	Ø 4
	KQ2T04-M5A ●	KQ2T04-M5N ●	KQ2T04-M5G1 *	M5 x 0.8	
	KQ2T04-M6A	KQ2T04-M6N	—	M6 x 1.0	Ø 6
	KQ2T06-M5A ●	KQ2T06-M5N ●	KQ2T06-M5G1 *	M5 x 0.8	
	KQ2T06-M6A	KQ2T06-M6N	—	M6 x 1.0	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

* With Oval release button.

Male branch tee (Sealant) KQ2T	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2T23-01AS	KQ2T23-01NS	—	1/8	Ø 3.2
	KQ2T23-02AS ●	KQ2T23-02NS	—	1/4	
	KQ2T04-01AS ●	KQ2T04-01NS ●	KQ2T04-01GS1 *	1/8	Ø 4
	KQ2T04-02AS ●	KQ2T04-02NS	KQ2T04-02GS1 *	1/4	
	KQ2T06-01AS ●	KQ2T06-01NS ●	KQ2T06-01GS1 *	1/8	Ø 6
	KQ2T06-02AS ●	KQ2T06-02NS ●	KQ2T06-02GS1 *	1/4	
	KQ2T06-03AS ●	KQ2T06-03NS	KQ2T06-03GS1 *	3/8	Ø 8
	KQ2T08-01AS ●	KQ2T08-01NS ●	KQ2T08-01GS	1/8	
	KQ2T08-02AS ●	KQ2T08-02NS ●	KQ2T08-02GS	1/4	Ø 10
	KQ2T08-03AS ●	KQ2T08-03NS	KQ2T08-03GS	3/8	
	KQ2T10-01AS ●	KQ2T10-01NS	KQ2T10-01GS	1/8	Ø 12
	KQ2T10-02AS ●	KQ2T10-02NS	KQ2T10-02GS	1/4	
	KQ2T10-03AS ●	KQ2T10-03NS	KQ2T10-03GS	3/8	Ø 16
	KQ2T10-04AS ●	KQ2T10-04NS	KQ2T10-04GS	1/2	
	KQ2T12-02AS ●	KQ2T12-02NS	KQ2T12-02GS	1/4	Ø 12
	KQ2T12-03AS ●	KQ2T12-03NS	KQ2T12-03GS	3/8	
	KQ2T12-04AS ●	KQ2T12-04NS	KQ2T12-04GS	1/2	Ø 16
	KQ2T16-02AS	KQ2T16-02NS	—	1/4	
	KQ2T16-03AS ●	KQ2T16-03NS	KQ2T16-03GS	3/8	Ø 16
	KQ2T16-04AS ●	KQ2T16-04NS	KQ2T16-04GS	1/2	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

* With Oval release button.

Male run tee (Gasket seal) KQ2Y	Part number type A, G	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2Y02-M3G ●	—	—	M3 x 0.5	Ø 2
	KQ2Y02-M5A	KQ2Y02-M5N	—	M5 x 0.8	
	KQ2Y23-M3G ●	—	—	M3 x 0.5	Ø 3.2
	KQ2Y23-M5A ●	KQ2Y23-M5N ●	—	M5 x 0.8	
	KQ2Y04-M3G ●	—	—	M3 x 0.5	Ø 4
	KQ2Y04-M5A ●	KQ2Y04-M5N ●	KQ2Y04-M5G1 *	M5 x 0.8	
	KQ2Y04-M6A	KQ2Y04-M6N	—	M6 x 1.0	Ø 6
	KQ2Y06-M5A ●	KQ2Y06-M5N ●	KQ2Y06-M5G1 *	M5 x 0.8	
KQ2Y06-M6A	KQ2Y06-M6N	—	M6 x 1.0		


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

* With Oval release button.


Male run tee (Sealant) KQ2Y	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2Y23-01AS	KQ2Y23-01NS ●	—	1/8	Ø 3.2
	KQ2Y23-02AS	KQ2Y23-02NS	—	1/4	
	KQ2Y04-01AS ●	KQ2Y04-01NS ●	KQ2Y04-01GS1 *	1/8	Ø 4
	KQ2Y04-02AS ●	KQ2Y04-02NS	KQ2Y04-02GS1 *	1/4	
	KQ2Y06-01AS ●	KQ2Y06-01NS ●	KQ2Y06-01GS1 *	1/8	Ø 6
	KQ2Y06-02AS ●	KQ2Y06-02NS	KQ2Y06-02GS1 *	1/4	
	KQ2Y06-03AS ●	KQ2Y06-03NS	KQ2Y06-03GS1 *	3/8	Ø 8
	KQ2Y08-01AS ●	KQ2Y08-01NS	KQ2Y08-01GS	1/8	
	KQ2Y08-02AS ●	KQ2Y08-02NS	KQ2Y08-02GS	1/4	Ø 10
	KQ2Y08-03AS ●	KQ2Y08-03NS	KQ2Y08-03GS	3/8	
	KQ2Y10-01AS ●	KQ2Y10-01NS	KQ2Y10-01GS	1/8	Ø 12
	KQ2Y10-02AS ●	KQ2Y10-02NS ●	KQ2Y10-02GS	1/4	
	KQ2Y10-03AS ●	KQ2Y10-03NS	KQ2Y10-03GS	3/8	Ø 16
	KQ2Y10-04AS ●	KQ2Y10-04NS	KQ2Y10-04GS	1/2	
	KQ2Y12-02AS ●	KQ2Y12-02NS	KQ2Y12-02GS	1/4	Ø 12
	KQ2Y12-03AS ●	KQ2Y12-03NS	KQ2Y12-03GS	3/8	
	KQ2Y12-04AS ●	KQ2Y12-04NS	KQ2Y12-04GS	1/2	Ø 16
	KQ2Y16-02AS	KQ2Y16-02NS	—	1/4	
	KQ2Y16-03AS ●	KQ2Y16-03NS	KQ2Y16-03GS	3/8	Ø 16
	KQ2Y16-04AS ●	KQ2Y16-04NS	KQ2Y16-04GS	1/2	

A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303


* With Oval release button.

Branch "Y" (Gasket seal) KQ2U	Part number type A	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2U23-M5A	KQ2U23-M5N ●	—	M5 x 0.8	Ø 3.2
	KQ2U04-M5A ●	KQ2U04-M5N ●	KQ2U04-M5G		
	KQ2U04-M6A	KQ2U04-M6N	—	M6 x 1.0	Ø 4
	KQ2U06-M5A ●	KQ2U06-M5N ●	KQ2U06-M5G	M5 x 0.8	
	KQ2U06-M6A	KQ2U06-M6N	—	M6 x 1.0	Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Branch "Y" (Sealant) KQ2U	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2U23-01AS	KQ2U23-01NS ●	—	1/8	Ø 3.2
	KQ2U23-02AS	KQ2U23-02NS	—	1/4	
	KQ2U04-01AS ●	KQ2U04-01NS ●	KQ2U04-01GS	1/8	Ø 4
	KQ2U04-02AS ●	KQ2U04-02NS	KQ2U04-02GS	1/4	
	KQ2U06-01AS ●	KQ2U06-01NS ●	KQ2U06-01GS	1/8	Ø 6
	KQ2U06-02AS ●	KQ2U06-02NS	KQ2U06-02GS	1/4	
	KQ2U06-03AS ●	KQ2U06-03NS	KQ2U06-03GS	3/8	Ø 8
	KQ2U08-01AS ●	KQ2U08-01NS	KQ2U08-01GS	1/8	
	KQ2U08-02AS ●	KQ2U08-02NS	KQ2U08-02GS	1/4	Ø 10
	KQ2U08-03AS ●	KQ2U08-03NS	KQ2U08-03GS	3/8	
	KQ2U10-02AS ●	KQ2U10-02NS	KQ2U10-02GS	1/4	Ø 12
	KQ2U10-03AS ●	KQ2U10-03NS	KQ2U10-03GS	3/8	
	KQ2U10-04AS ●	KQ2U10-04NS	KQ2U10-04GS	1/2	Ø 16
	KQ2U12-02AS ●	KQ2U12-02NS	KQ2U12-02GS	1/4	
	KQ2U12-03AS ●	KQ2U12-03NS	KQ2U12-03GS	3/8	Ø 12
	KQ2U12-04AS ●	KQ2U12-04NS	KQ2U12-04GS	1/2	
	KQ2U16-02AS	KQ2U16-02NS	—	1/4	Ø 16
	KQ2U16-03AS	KQ2U16-03NS	—	3/8	
	KQ2U16-04AS ●	KQ2U16-04NS	—	1/2	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Double universal male elbow (Sealant) KQ2VD	Part number type A	Part number type N	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2VD04-01AS ●	KQ2VD04-01NS	1/8	Ø 4
	KQ2VD04-02AS ●	KQ2VD04-02NS	1/4	
	KQ2VD04-03AS ●	KQ2VD04-03NS	3/8	Ø 6
	KQ2VD06-01AS ●	KQ2VD06-01NS ●	1/8	
	KQ2VD06-02AS ●	KQ2VD06-02NS	1/4	Ø 8
	KQ2VD06-03AS ●	KQ2VD06-03NS	3/8	
	KQ2VD08-01AS ●	KQ2VD08-01NS	1/8	Ø 10
	KQ2VD08-02AS ●	KQ2VD08-02NS	1/4	
	KQ2VD08-03AS ●	KQ2VD08-03NS	3/8	Ø 12
	KQ2VD08-04AS ●	KQ2VD08-04NS	1/2	
	KQ2VD10-02AS ●	KQ2VD10-02NS	1/4	Ø 16
	KQ2VD10-03AS ●	KQ2VD10-03NS	3/8	
	KQ2VD10-04AS ●	KQ2VD10-04NS	1/2	
	KQ2VD12-02AS ●	KQ2VD12-02NS	1/4	Ø 12
	KQ2VD12-03AS ●	KQ2VD12-03NS	3/8	
	KQ2VD12-04AS ●	KQ2VD12-04NS	1/2	


A: Brass, N: Brass + Electroless nickel plated.

Triple universal male elbow (Sealant) KQ2VT	Part number type A	Part number type N	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2VT04-01AS ●	KQ2VT04-01NS	1/8	Ø 4
	KQ2VT04-02AS ●	KQ2VT04-02NS	1/4	
	KQ2VT04-03AS ●	KQ2VT04-03NS	3/8	Ø 6
	KQ2VT06-01AS ●	KQ2VT06-01NS	1/8	
	KQ2VT06-02AS ●	KQ2VT06-02NS	1/4	Ø 8
	KQ2VT06-03AS ●	KQ2VT06-03NS	3/8	
	KQ2VT08-01AS ●	KQ2VT08-01NS	1/8	Ø 10
	KQ2VT08-02AS ●	KQ2VT08-02NS	1/4	
	KQ2VT08-03AS ●	KQ2VT08-03NS	3/8	Ø 12
	KQ2VT08-04AS ●	KQ2VT08-04NS	1/2	
	KQ2VT10-02AS ●	KQ2VT10-02NS	1/4	Ø 16
	KQ2VT10-03AS ●	KQ2VT10-03NS ●	3/8	
	KQ2VT10-04AS ●	KQ2VT10-04NS	1/2	
	KQ2VT12-02AS ●	KQ2VT12-02NS	1/4	Ø 12
	KQ2VT12-03AS ●	KQ2VT12-03NS	3/8	
	KQ2VT12-04AS ●	KQ2VT12-04NS	1/2	


A: Brass, N: Brass + Electroless nickel plated.

Branch universal male elbow (Gasket seal) KQ2Z	Part number type A	Part number type N	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2Z04-M5A ●	KQ2Z04-M5N	M5 x 0.8	Ø 4


A: Brass, N: Brass + Electroless nickel plated.

Branch universal male elbow (Sealant) KQ2Z	Part number type A	Part number type N	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2Z04-01AS ●	KQ2Z04-01NS	1/8	Ø 4
	KQ2Z06-01AS ●	KQ2Z06-01NS		
	KQ2Z06-02AS ●	KQ2Z06-02NS	1/4	Ø 6
	KQ2Z06-03AS ●	KQ2Z06-03NS	3/8	
	KQ2Z08-01AS ●	KQ2Z08-01NS	1/8	Ø 8
	KQ2Z08-02AS ●	KQ2Z08-02NS	1/4	
	KQ2Z08-03AS ●	KQ2Z08-03NS	3/8	Ø 10
	KQ2Z10-02AS ●	KQ2Z10-02NS	1/4	
	KQ2Z10-03AS ●	KQ2Z10-03NS	3/8	Ø 12
	KQ2Z12-03AS ●	KQ2Z12-03NS		
	KQ2Z12-04AS ●	KQ2Z12-04NS	1/2	


A: Brass, N: Brass + Electroless nickel plated.

Double branch "Y" (Sealant) KQ2UD	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2UD04-01AS ●	KQ2UD04-01NS	KQ2UD04-01GS	1/8	Ø 4
	KQ2UD04-02AS ●	KQ2UD04-02NS	KQ2UD04-02GS	1/4	
	KQ2UD06-01AS ●	KQ2UD06-01NS	KQ2UD06-01GS	1/8	Ø 6
	KQ2UD06-02AS ●	KQ2UD06-02NS	KQ2UD06-02GS	1/4	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Male branch elbow (Gasket seal) KQ2LU	Part number type A	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2LU04-M5A ●	KQ2LU04-M5N ●	KQ2LU04-M5G	M5 x 0.8	Ø 4
	KQ2LU04-M6A	KQ2LU04-M6N	—	M6 x 1.0	
	KQ2LU06-M5A ●	KQ2LU06-M5N	KQ2LU06-M5G	M5 x 0.8	Ø 6
	KQ2LU06-M6A	KQ2LU06-M6N	—	M6 x 0.8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Male branch elbow (Sealant) KQ2LU	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2LU04-01AS ●	KQ2LU04-01NS	KQ2LU04-01GS	1/8	Ø 4
	KQ2LU04-02AS	KQ2LU04-02NS	KQ2LU04-02GS	1/4	
	KQ2LU06-01AS ●	KQ2LU06-01NS	KQ2LU06-01GS	1/8	
	KQ2LU06-02AS ●	KQ2LU06-02NS	KQ2LU06-02GS	1/4	Ø 6
	KQ2LU06-03AS	KQ2LU06-03NS	KQ2LU06-03GS	3/8	
	KQ2LU08-01AS ●	KQ2LU08-01NS	KQ2LU08-01GS	1/8	
	KQ2LU08-02AS ●	KQ2LU08-02NS	KQ2LU08-02GS	1/4	Ø 8
	KQ2LU08-03AS ●	KQ2LU08-03NS	KQ2LU08-03GS	3/8	
	KQ2LU10-02AS ●	KQ2LU10-02NS	KQ2LU10-02GS	1/4	
	KQ2LU10-03AS ●	KQ2LU10-03NS	KQ2LU10-03GS	3/8	Ø 10
	KQ2LU10-04AS ●	KQ2LU10-04NS	KQ2LU10-04GS	1/2	
	KQ2LU12-02AS ●	KQ2LU12-02NS	KQ2LU12-02GS	1/4	
	KQ2LU12-03AS ●	KQ2LU12-03NS	KQ2LU12-03GS	3/8	Ø 12
	KQ2LU12-04AS ●	KQ2LU12-04NS	KQ2LU12-04GS	1/2	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Double branch universal male elbow (Sealant) KQ2ZD	Part number type A	Part number type N	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2ZD04-01AS ●	KQ2ZD04-01NS	1/8	Ø 4
	KQ2ZD04-02AS ●	KQ2ZD04-02NS	1/4	
	KQ2ZD04-03AS ●	KQ2ZD04-03NS	3/8	
	KQ2ZD06-01AS ●	KQ2ZD06-01NS	1/8	Ø 6
	KQ2ZD06-02AS ●	KQ2ZD06-02NS	1/4	
	KQ2ZD06-03AS ●	KQ2ZD06-03NS	3/8	
	KQ2ZD08-01AS ●	KQ2ZD08-01NS	1/8	Ø 8
	KQ2ZD08-02AS ●	KQ2ZD08-02NS	1/4	
	KQ2ZD08-03AS ●	KQ2ZD08-03NS	3/8	
	KQ2ZD08-04AS ●	KQ2ZD08-04NS	1/2	Ø 10
	KQ2ZD10-02AS ●	KQ2ZD10-02NS	1/4	
	KQ2ZD10-03AS ●	KQ2ZD10-03NS	3/8	
	KQ2ZD10-04AS ●	KQ2ZD10-04NS	1/2	Ø 12
	KQ2ZD12-02AS ●	KQ2ZD12-02NS	1/4	
	KQ2ZD12-03AS ●	KQ2ZD12-03NS	3/8	
	KQ2ZD12-04AS ●	KQ2ZD12-04NS	1/2	


A: Brass, N: Brass + Electroless nickel plated.

Triple branch universal male elbow (Sealant) KQ2ZT	Part number type A	Part number type N	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2ZT04-01AS ●	KQ2ZT04-01NS	1/8	Ø 4
	KQ2ZT04-02AS ●	KQ2ZT04-02NS	1/4	
	KQ2ZT04-03AS ●	KQ2ZT04-03NS	3/8	
	KQ2ZT06-01AS ●	KQ2ZT06-01NS	1/8	Ø 6
	KQ2ZT06-02AS ●	KQ2ZT06-02NS	1/4	
	KQ2ZT06-03AS ●	KQ2ZT06-03NS	3/8	
	KQ2ZT08-01AS	KQ2ZT08-01NS	1/8	Ø 8
	KQ2ZT08-02AS ●	KQ2ZT08-02NS	1/4	
	KQ2ZT08-03AS ●	KQ2ZT08-03NS	3/8	
	KQ2ZT08-04AS ●	KQ2ZT08-04NS	1/2	Ø 10
	KQ2ZT10-02AS ●	KQ2ZT10-02NS	1/4	
	KQ2ZT10-03AS ●	KQ2ZT10-03NS	3/8	
	KQ2ZT10-04AS ●	KQ2ZT10-04NS	1/2	Ø 12
	KQ2ZT12-02AS ●	KQ2ZT12-02NS	1/4	
	KQ2ZT12-03AS ●	KQ2ZT12-03NS	3/8	
	KQ2ZT12-04AS ●	KQ2ZT12-04NS	1/2	


A: Brass, N: Brass + Electroless nickel plated.


Male delta union (Gasket seal) KQ2D	Part number type A	Part number type N	Part number type G	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2D04-M5A ●	KQ2D04-M5N	KQ2D04-M5G1 *	M5 x 0.8	Ø 4
	KQ2D04-M6A	KQ2D04-M6N	—	M6 x 1.0	
	KQ2D06-M5A ●	KQ2D06-M5N	KQ2D06-M5G1 *	M5 x 0.8	Ø 6
	KQ2D06-M6A	KQ2D06-M6N	—	M6 x 0.8	

A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303
* With Oval release button.

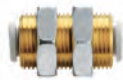
Male delta union (Sealant) KQ2D	Part number type A	Part number type N	Part number type G	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2D04-01AS ●	KQ2D04-01NS	KQ2D04-01GS1 *	1/8	Ø 4
	KQ2D04-02AS	KQ2D04-02NS	KQ2D04-02GS1 *	1/4	
	KQ2D06-01AS ●	KQ2D06-01NS	KQ2D06-01GS1 *	1/8	
	KQ2D06-02AS ●	KQ2D06-02NS	KQ2D06-02GS1 *	1/4	Ø 6
	KQ2D06-03AS	KQ2D06-03NS	KQ2D06-03GS1 *	3/8	
	KQ2D08-01AS ●	KQ2D08-01NS	KQ2D08-01GS	1/8	
	KQ2D08-02AS ●	KQ2D08-02NS	KQ2D08-02GS	1/4	Ø 8
	KQ2D08-03AS ●	KQ2D08-03NS	KQ2D08-03GS	3/8	
	KQ2D10-02AS ●	KQ2D10-02NS	KQ2D10-02GS	1/4	
	KQ2D10-03AS ●	KQ2D10-03NS	KQ2D10-03GS	3/8	Ø 10
	KQ2D10-04AS ●	KQ2D10-04NS	KQ2D10-04GS	1/2	
	KQ2D12-02AS	KQ2D12-02NS	KQ2D12-02GS	1/4	
	KQ2D12-03AS ●	KQ2D12-03NS	KQ2D12-03GS	3/8	Ø 12
	KQ2D12-04AS ●	KQ2D12-04NS	KQ2D12-04GS	1/2	

A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303
* With Oval release button.

Straight union KQ2H	Part number	Applicable tubing O.D. [mm]
	KQ2H02-00A ●	Ø 2
	KQ2H23-00A ●	Ø 3.2
	KQ2H04-00A ●	Ø 4
	KQ2H06-00A ●	Ø 6
	KQ2H08-00A ●	Ø 8
	KQ2H10-00A ●	Ø 10
	KQ2H12-00A ●	Ø 12
	KQ2H16-00A ●	Ø 16


Bulkhead male elbow KQ2LE	Part number type A	Part number type N	Applicable tubing O.D. [mm]
	KQ2LE04-00A ●	KQ2LE04-00N	Ø 4
	KQ2LE06-00A ●	KQ2LE06-00N ●	Ø 6
	KQ2LE08-00A ●	KQ2LE08-00N ●	Ø 8
	KQ2LE10-00A ●	KQ2LE10-00N	Ø 10
	KQ2LE12-00A ●	KQ2LE12-00N	Ø 12

A: Brass, N: Brass + Electroless nickel plated.


Bulkhead union (Interchangeable with KQ) KQ2E	Part number type A	Part number type N	Part number type G	Applicable tubing O.D. [mm]
	KQ2E23-00A ●	KQ2E23-00N	—	Ø 3.2
	KQ2E04-00A ●	KQ2E04-00N ●	KQ2E04-00G1 *	Ø 4
	KQ2E06-00A ●	KQ2E06-00N ●	KQ2E06-00G1 *	Ø 6
	KQ2E08-00A ●	KQ2E08-00N ●	KQ2E08-00G	Ø 8
	KQ2E10-00A ●	KQ2E10-00N ●	KQ2E10-00G	Ø 10
	KQ2E12-00A ●	KQ2E12-00N ●	KQ2E12-00G	Ø 12
	KQ2E16-00A ●	KQ2E16-00N	KQ2E16-00G	Ø 16


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303
* With Oval release button.


● Stocked items. ● Partly stocked items, the stocked options are highlighted in green.
Stocked items and product information could be subject to change without prior notice.


Bulkhead union (Interchangeable with KJ) KQ2E	Part number type A	Part number type N	Applicable tubing O.D. [mm]
	KQ2E02-00AJ	KQ2E02-00NJ ●	Ø 2
	KQ2E23-00AJ	KQ2E23-00NJ ●	Ø 3.2
	KQ2E04-00AJ ●	KQ2E04-00NJ ●	Ø 4
	KQ2E06-00AJ ●	KQ2E06-00NJ ●	Ø 6


A: Brass, N: Brass + Electroless nickel plated.


Union tee KQ2T	Part number	Applicable tubing O.D. [mm]
	KQ2T02-00A ●	Ø 2
	KQ2T23-00A ●	Ø 3.2
	KQ2T04-00A ●	Ø 4
	KQ2T06-00A ●	Ø 6
	KQ2T08-00A ●	Ø 8
	KQ2T10-00A ●	Ø 10
	KQ2T12-00A ●	Ø 12
	KQ2T16-00A ●	Ø 16


Union elbow KQ2L	Part number	Applicable tubing O.D. [mm]
	KQ2L23-00A ●	Ø 3.2
	KQ2L04-00A ●	Ø 4
	KQ2L06-00A ●	Ø 6
	KQ2L08-00A ●	Ø 8
	KQ2L10-00A ●	Ø 10
	KQ2L12-00A ●	Ø 12
	KQ2L16-00A ●	Ø 16


Union "Y" KQ2U	Part number	Applicable tubing O.D. [mm]
	KQ2U02-00A ●	Ø 2
	KQ2U23-00A ●	Ø 3.2
	KQ2U04-00A ●	Ø 4
	KQ2U06-00A ●	Ø 6
	KQ2U08-00A ●	Ø 8
	KQ2U10-00A ●	Ø 10
	KQ2U12-00A ●	Ø 12
	KQ2U16-00A ●	Ø 16


Different diameter straight, KQ2H	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2H02-23A ●	Ø 2	Ø 3.2
	KQ2H02-04A ●		
	KQ2H23-04A ●	Ø 3.2	Ø 4
	KQ2H23-06A ●		
	KQ2H04-06A ●		
	KQ2H06-08A ●	Ø 6	Ø 8
	KQ2H08-10A ●		
	KQ2H10-12A ●	Ø 10	Ø 12
	KQ2H12-16A ●		


Different diameter tee KQ2T	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2T23-04A ●	Ø 3.2	Ø 4
	KQ2T04-06A ●	Ø 4	Ø 6
	KQ2T06-08A ●	Ø 6	Ø 8
	KQ2T08-10A ●	Ø 8	Ø 10
	KQ2T10-12A ●	Ø 10	Ø 12
	KQ2T12-16A ●	Ø 12	Ø 16


Branch union elbow KQ2LU	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2LU04-00A ●	Ø 4	
	KQ2LU06-00A ●	Ø 6	
	KQ2LU08-00A ●	Ø 8	
	KQ2LU10-00A ●	Ø 10	
	KQ2LU12-00A ●	Ø 12	

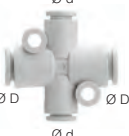
Delta union KQ2D	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2D04-00A ●	Ø 4	
	KQ2D06-00A ●	Ø 6	
	KQ2D08-00A ●	Ø 8	
	KQ2D10-00A ●	Ø 10	
	KQ2D12-00A ●	Ø 12	

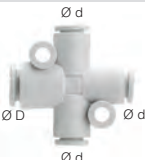
Different diameter tee KQ2T	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
 Ø d Ø D	KQ2T06-04A ●	Ø 4	Ø 6
	KQ2T08-06A ●	Ø 6	Ø 8
	KQ2T10-08A ●	Ø 8	Ø 10
	KQ2T12-10A ●	Ø 10	Ø 12


Different diameter union "Y" KQ2U	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
 Ø d Ø d Ø D	KQ2U02-23A	Ø 2	Ø 3.2
	KQ2U02-04A		Ø 4
	KQ2U23-04A ●	Ø 3.2	Ø 4
	KQ2U04-06A ●	Ø 4	Ø 6
	KQ2U06-08A ●	Ø 6	Ø 8
	KQ2U08-10A ●	Ø 8	Ø 10
	KQ2U10-12A ●	Ø 10	Ø 12
	KQ2U12-16A ●	Ø 12	Ø 16


Cross KQ2TW	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2TW04-00A ●	Ø 4	
	KQ2TW06-00A ●	Ø 6	
	KQ2TW08-00A ●	Ø 8	
	KQ2TW10-00A ●	Ø 10	
	KQ2TW12-00A ●	Ø 12	


Different diameter double union "Y", KQ2UD	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
 Ø d	KQ2UD04-06A ●	Ø 4	Ø 6
	KQ2UD06-08A ●	Ø 6	Ø 8


Different diameter cross KQ2TX	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
 Ø d Ø D	KQ2TX06-08A ●	Ø 6	Ø 8
	KQ2TX08-10A ●	Ø 8	Ø 10
	KQ2TX10-12A ●	Ø 10	Ø 12


Different diameter cross KQ2TY	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2TY06-08A ●	Ø 6	Ø 8
	KQ2TY08-10A ●	Ø 8	Ø 10
	KQ2TY10-12A ●	Ø 10	Ø 12


Plug-in elbow KQ2L	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2L23-99A ●	Ø 3.2	Ø 3.2
	KQ2L04-99A ●	Ø 4	Ø 4
	KQ2L06-99A ●	Ø 6	Ø 6
	KQ2L08-99A ●	Ø 8	Ø 8
	KQ2L10-99A ●	Ø 10	Ø 10
	KQ2L12-99A ●	Ø 12	Ø 12
	KQ2L16-99A ●	Ø 16	Ø 16


Plug-in "Y" KQ2U	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2U23-99A ●	Ø 3.2	Ø 3.2
	KQ2U04-99A ●	Ø 4	Ø 4
	KQ2U06-99A ●	Ø 6	Ø 6
	KQ2U08-99A ●	Ø 8	Ø 8
	KQ2U10-99A ●	Ø 10	Ø 10
	KQ2U12-99A ●	Ø 12	Ø 12
	KQ2U16-99A ●	Ø 16	Ø 16


Extended plug-in elbow KQ2W	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2W23-99A ●	Ø 3.2	Ø 3.2
	KQ2W04-99A ●	Ø 4	Ø 4
	KQ2W06-99A ●	Ø 6	Ø 6
	KQ2W08-99A ●	Ø 8	Ø 8
	KQ2W10-99A ●	Ø 10	Ø 10
	KQ2W12-99A ●	Ø 12	Ø 12

Reducer elbow KQ2L	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2L23-04A ●	Ø 4	Ø 3.2
	KQ2L23-06A ●		
	KQ2L04-06A ●	Ø 6	Ø 4
	KQ2L04-08A ●		
	KQ2L06-08A ●	Ø 8	Ø 6
	KQ2L06-10A ●		
	KQ2L08-10A ●	Ø 10	Ø 8
	KQ2L08-12A ●		
	KQ2L10-12A ●	Ø 12	Ø 10
	KQ2L12-16A ●		
	Ø 16	Ø 12	

Plug-in reducer KQ2R	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2R02-04A ●	Ø 4	Ø 2
	KQ2R23-04A ●		
	KQ2R23-06A ●		
	KQ2R04-06A ●	Ø 6	Ø 3.2
	KQ2R04-08A ●		
	KQ2R04-10A ●	Ø 8	Ø 4
	KQ2R06-04A ●		
	KQ2R06-08A ●	Ø 10	Ø 6
	KQ2R06-10A ●		
	KQ2R06-12A ●	Ø 12	Ø 8
	KQ2R08-10A ●		
	KQ2R08-12A ●	Ø 16	Ø 10
	KQ2R10-12A ●		
	KQ2R10-16A ●	Ø 12	Ø 12
KQ2R12-16A ●			


Different diameter plug-in "Y" KQ2X	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2X23-04A ●	Ø 4	Ø 3.2
	KQ2X04-06A ●	Ø 6	Ø 4
	KQ2X06-08A ●	Ø 8	Ø 6
	KQ2X08-10A ●	Ø 10	Ø 8
	KQ2X10-12A ●	Ø 12	Ø 10

Plug-in "Y" KQ2XD	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2XD04-06A ●	Ø 6	Ø 4
	KQ2XD06-08A ●	Ø 8	Ø 6

Female elbow KQ2LF	Part number	Part number	Connecting thread M/Rc	Applicable tubing O.D. [mm]
	KQ2LF04-M5A ●	KQ2LF04-M5N	M5 x 0.8	Ø 4
	KQ2LF04-M6A ●	KQ2LF04-M6N	M6 x 1.0	
	KQ2LF04-01A ●	KQ2LF04-01N ●	1/8	
	KQ2LF04-02A ●	KQ2LF04-02N	1/4	Ø 6
	KQ2LF06-M5A ●	KQ2LF06-M5N	M5 x 0.8	
	KQ2LF06-M6A ●	KQ2LF06-M6N	M6 x 1.0	
	KQ2LF06-01A ●	KQ2LF06-01N	1/8	Ø 8
	KQ2LF06-02A ●	KQ2LF06-02N ●	1/4	
	KQ2LF06-03A ●	KQ2LF06-03N	3/8	
	KQ2LF08-01A ●	KQ2LF08-01N	1/8	Ø 10
	KQ2LF08-02A ●	KQ2LF08-02N	1/4	
	KQ2LF08-03A ●	KQ2LF08-03N	3/8	
	KQ2LF10-02A ●	KQ2LF10-02N	1/4	Ø 12
	KQ2LF10-03A ●	KQ2LF10-03N	3/8	
	KQ2LF10-04A ●	KQ2LF10-04N	1/2	
	KQ2LF12-02A ●	KQ2LF12-02N	1/4	Ø 12
	KQ2LF12-03A ●	KQ2LF12-03N	3/8	
	KQ2LF12-04A ●	KQ2LF12-04N	1/2	


A: Brass, N: Brass + Electroless nickel plated.

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

Female connector KQ2F	Part number type A	Part number type N	Part number type G	Connecting thread M/Rc	Applicable tubing O.D. [mm]
	KQ2F23-M3A	KQ2F23-M3N	—	M3 x 0.5	Ø 3.2
	KQ2F23-M5A	KQ2F23-M5N ●	—	M5 x 0.8	
	KQ2F04-M3A	KQ2F04-M3N ●	—	M3 x 0.5	Ø 4
	KQ2F04-M5A	KQ2F04-M5N ●	—	M5 x 0.8	
	KQ2F04-01A ●	KQ2F04-01N	KQ2F04-01G1 *	1/8	
	KQ2F04-02A ●	KQ2F04-02N	KQ2F04-02G1 *	1/4	
	KQ2F06-M5A ●	KQ2F06-M5N ●	—	M5 x 0.8	Ø 6
	KQ2F06-01A ●	KQ2F06-01N ●	KQ2F06-01G1 *	1/8	
	KQ2F06-02A ●	KQ2F06-02N	KQ2F06-02G1 *	1/4	
	KQ2F06-03A ●	KQ2F06-03N	KQ2F06-03G1 *	3/8	
	KQ2F08-01A ●	KQ2F08-01N	KQ2F08-01G	1/8	Ø 8
	KQ2F08-02A ●	KQ2F08-02N ●	KQ2F08-02G	1/4	
	KQ2F08-03A ●	KQ2F08-03N	KQ2F08-03G	3/8	
	KQ2F10-02A ●	KQ2F10-02N	KQ2F10-02G	1/4	
	KQ2F10-03A ●	KQ2F10-03N	KQ2F10-03G	3/8	Ø 10
	KQ2F12-02A ●	KQ2F12-02N	KQ2F12-02G	1/4	
	KQ2F12-03A ●	KQ2F12-03N	KQ2F12-03G	3/8	Ø 12
	KQ2F12-04A ●	KQ2F12-04N	KQ2F12-04G	1/2	
	KQ2F16-03A ●	KQ2F16-03N	—	3/8	Ø 16
	KQ2F16-04A ●	KQ2F16-04N	—	1/2	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

* With Oval release button.


Bulkhead connector KQ2E	Part number type A	Part number type N	Part number type G	Connecting thread Rc	Applicable tubing O.D. [mm]
	KQ2E23-02A ●	KQ2E23-02N	—	1/4	Ø 3.2
	KQ2E04-01A ●	KQ2E04-01N	KQ2E04-01G1 *	1/8	Ø 4
	KQ2E04-02A ●	KQ2E04-02N	KQ2E04-02G1 *	1/4	
	KQ2E06-01A ●	KQ2E06-01N ●	KQ2E06-01G1 *	1/8	Ø 6
	KQ2E06-02A ●	KQ2E06-02N ●	KQ2E06-02G1 *	1/4	
	KQ2E06-03A ●	KQ2E06-03N	KQ2E06-03G1 *	3/8	
	KQ2E08-01A ●	KQ2E08-01N	KQ2E08-01G	1/8	
	KQ2E08-02A ●	KQ2E08-02N	KQ2E08-02G	1/4	Ø 8
	KQ2E08-03A ●	KQ2E08-03N	KQ2E08-03G	3/8	
	KQ2E10-02A ●	KQ2E10-02N	KQ2E10-02G	1/4	Ø 10
	KQ2E10-03A ●	KQ2E10-03N	KQ2E10-03G	3/8	
	KQ2E12-03A ●	KQ2E12-03N	KQ2E12-03G	3/8	Ø 12
	KQ2E12-04A ●	KQ2E12-04N	KQ2E12-04G	1/2	
	KQ2E16-03A ●	KQ2E16-03N	KQ2E16-03G	3/8	Ø 16
	KQ2E16-04A ●	KQ2E16-04N	KQ2E16-04G	1/2	

A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303


* With Oval release button.

Universal Female elbow (Gasket seal) KQ2VF	Part number type A	Part number type N	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2VF04-M5A ●	KQ2VF04-M5N	M5 x 0.8	Ø 4
	KQ2VF06-M5A ●	KQ2VF06-M5N	M5 x 0.8	Ø 6


A: Brass, N: Brass + Electroless nickel plated.

Universal female elbow (Sealant) KQ2VF	Part number type A	Part number type N	Connecting thread R, Rc	Applicable tubing O.D. [mm]
	KQ2VF04-01AS ●	KQ2VF04-01NS	1/8	Ø 4
	KQ2VF06-01AS ●	KQ2VF06-01NS		
	KQ2VF06-02AS ●	KQ2VF06-02NS	1/4	Ø 6
	KQ2VF08-01AS ●	KQ2VF08-01NS	1/8	
	KQ2VF08-02AS ●	KQ2VF08-02NS ●	1/4	Ø 8
	KQ2VF08-03AS ●	KQ2VF08-03NS	3/8	
	KQ2VF10-02AS ●	KQ2VF10-02NS	1/4	Ø 10
	KQ2VF10-03AS ●	KQ2VF10-03NS	3/8	
	KQ2VF12-03AS ●	KQ2VF12-03NS		1/2
	KQ2VF12-04AS ●	KQ2VF12-04NS		


A: Brass, N: Brass + Electroless nickel plated.


Branch universal female elbow (Gasket seal) KQ2ZF	Part number type A	Part number type N	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2ZF04-M5A ●	KQ2ZF04-M5N	M5 x 0.8	Ø 4


A: Brass, N: Brass + Electroless nickel plated.


Branch universal female elbow (Sealant) KQ2ZF	Part number type A	Part number type N	Connecting thread R, Rc	Applicable tubing O.D. [mm]
	KQ2ZF04-01AS ●	KQ2ZF04-01NS	1/8	Ø 4
	KQ2ZF06-01AS ●	KQ2ZF06-01NS		
	KQ2ZF06-02AS ●	KQ2ZF06-02NS	1/4	Ø 6
	KQ2ZF08-01AS ●	KQ2ZF08-01NS	1/8	
	KQ2ZF08-02AS ●	KQ2ZF08-02NS	1/4	Ø 8
	KQ2ZF10-02AS ●	KQ2ZF10-02NS		
	KQ2ZF10-03AS ●	KQ2ZF10-03NS	3/8	Ø 10
	KQ2ZF12-03AS ●	KQ2ZF12-03NS		
	KQ2ZF12-04AS ●	KQ2ZF12-04NS	1/2	Ø 12

A: Brass, N: Brass + Electroless nickel plated.

Plug KQ2P	Part number	Applicable tubing O.D. [mm]
	KJP-02	Ø 2
	KQ2P-23 ●	Ø 3.2
	KQ2P-04 ●	Ø 4
	KQ2P-06 ●	Ø 6
	KQ2P-08 ●	Ø 8
	KQ2P-10 ●	Ø 10
	KQ2P-12 ●	Ø 12
	KQ2P-16 ●	Ø 16

Tube cap KQ2C	Part number	Applicable tubing O.D. [mm]
	KQ2C04-00A ●	Ø 4
	KQ2C06-00A ●	Ø 6
	KQ2C08-00A ●	Ø 8
	KQ2C10-00A ●	Ø 10
	KQ2C12-00A ●	Ø 12
	KQ2C16-00A ●	Ø 16

Nipple KQ2N	Part number	Applicable tubing O.D. [mm]
	KQ2N04-99 ●	Ø 4
	KQ2N06-99 ●	Ø 6
	KQ2N08-99 ●	Ø 8
	KQ2N10-99 ●	Ø 10
	KQ2N12-99 ●	Ø 12
	KQ2N16-99 ●	Ø 16

Reducer nipple KQ2N	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2N04-06 ●	Ø 4	Ø 6
	KQ2N06-08 ●	Ø 6	Ø 8
	KQ2N08-10 ●	Ø 8	Ø 10
	KQ2N10-12 ●	Ø 10	Ø 12
	KQ2N12-16 ●	Ø 12	Ø 16

Adapter (Gasket seal) KQ2N	Part number	Part number	Connecting thread M	Applicable tubing O.D. [mm]
	KQ2N04-M5A ●	KQ2N04-M5N		M5 x 0.8
KQ2N06-M5A ●	KQ2N06-M5N	Ø 6		

A: Brass, N: Brass + Electroless nickel plated.

Adapter (Sealant) KQ2N	Part number	Part number	Connecting thread R	Applicable tubing O.D. [mm]
	KQ2N04-01AS ●	KQ2N04-01NS		1/8
KQ2N06-01AS ●	KQ2N06-01NS ●	1/4	Ø 6	
KQ2N06-02AS ●	KQ2N06-02NS ●		3/8	Ø 8
KQ2N08-02AS ●	KQ2N08-02NS	Ø 10		Ø 10
KQ2N08-03AS ●	KQ2N08-03NS			
KQ2N10-03AS ●	KQ2N10-03NS			

A: Brass, N: Brass + Electroless nickel plated.

One-touch fittings oval type

KQ2 Series

Tube O.D.: 3.2 • 4 • 6 mm

Thread: M3 • M5 • M6 • R1/8 • 1/4 • 3/8



New!
Oval type release button added!



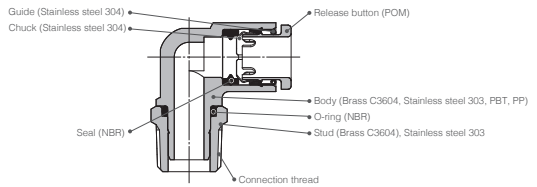
- Oval type release button added
- Wide pressure range - Low vacuum to 10 Bar (1.0 MPa) pressure
- Wide range of tube systems (2 mm - 16 mm O.D. tube)
- Improved tube insertion/removal.
- Compact and lightweight.
- Suitable for air and water.

Customer benefits

- Easy detachment
- Easier assembly and lower labour costs
- Easier use in confined spaces
- Maximum design flexibility thanks to product variations and wide range of diameters.

Related Products

TU Series - Polyurethane tubing - page 376
T Series - Nylon tubing - page 374
TH Series - Fluoropolymer (FEP) tubing - page 388
TLM Series - Fluoropolymer (PFA) tubing - page 386
TS Series - Soft nylon tubing - page 375




Male connector (Gasket seal) KQ2H	Part number type A, G	Part number type N	Part number type G	Connection thread M	Applicable tubing O.D. [mm]
	KQ2H23-M3G1	—	—	M3 x 0.5	Ø 3.2
	KQ2H23-M5A1	KQ2H23-M5N1	—	M5 x 0.8	
	KQ2H04-M3G1	—	—	M3 x 0.5	
	KQ2H04-M5A1	KQ2H04-M5N1	KQ2H04-M5G1	M5 x 0.8	Ø 4
	KQ2H04-M6A1	KQ2H04-M6N1	—	M6 x 1.0	
	KQ2H06-M5A1	KQ2H06-M5N1	KQ2H06-M5G1	M5 x 0.8	
KQ2H06-M6A1	KQ2H06-M6N1	—	M6 x 1.0	Ø 6	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Male connector (Sealant) KQ2H	Part number type A	Part number type N	Part number type G	Connection thread R	Applicable tubing O.D. [mm]
	KQ2H23-01AS1	KQ2H23-01NS1	—	1/8	Ø 3.2
	KQ2H23-02AS1	KQ2H23-02NS1	—	1/4	
	KQ2H04-01AS1	KQ2H04-01NS1	KQ2H04-01GS1	1/8	Ø 4
	KQ2H04-02AS1	KQ2H04-02NS1	KQ2H04-02GS1	1/4	
	KQ2H06-01AS1	KQ2H06-01NS1	KQ2H06-01GS1	1/8	Ø 6
	KQ2H06-02AS1	KQ2H06-02NS1	KQ2H06-02GS1	1/4	
	KQ2H06-03AS1	KQ2H06-03NS1	KQ2H06-03GS1	3/8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Male elbow (Gasket seal) KQ2L	Part number type A, G	Part number type N	Part number type G	Connection thread M	Applicable tubing O.D. [mm]
	KQ2L23-M3G1	—	—	M3 x 0.5	Ø 3.2
	KQ2L23-M5A1	KQ2L23-M5N1	—	M5 x 0.8	
	KQ2L04-M3G1	—	—	M3 x 0.5	Ø 4
	KQ2L04-M5A1	KQ2L04-M5N1	KQ2L04-M5G1	M5 x 0.8	
	KQ2L04-M6A1	KQ2L04-M6N1	—	M6 x 1.0	Ø 6
	KQ2L06-M5A1	KQ2L06-M5N1	KQ2L06-M5G1	M5 x 0.8	
	KQ2L06-M6A1	KQ2L06-M6N1	—	M6 x 1.0	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Male elbow (Sealant) KQ2L	Part number type A	Part number type N	Part number type G	Connection thread R	Applicable tubing O.D. [mm]
	KQ2L23-01AS1	KQ2L23-01NS1	—	1/8	Ø 3.2
	KQ2L23-02AS1	KQ2L23-02NS1	—	1/4	
	KQ2L04-01AS1	KQ2L04-01NS1	KQ2L04-01GS1	1/8	Ø 4
	KQ2L04-02AS1	KQ2L04-02NS1	KQ2L04-02GS1	1/4	
	KQ2L06-01AS1	KQ2L06-01NS1	KQ2L06-01GS1	1/8	Ø 6
	KQ2L06-02AS1	KQ2L06-02NS1	KQ2L06-02GS1	1/4	
	KQ2L06-03AS1	KQ2L06-03NS1	KQ2L06-03GS1	3/8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

45° Male elbow (Gasket seal) KQ2K	Part number type A	Part number type N	Connection thread M	Applicable tubing O.D. [mm]
	KQ2K04-M5A1	KQ2K04-M5N1	M5 x 0.8	Ø 4
	KQ2K04-M6A1	KQ2K04-M6N1	M6 x 1.0	
	KQ2K06-M5A1	KQ2K06-M5N1	M5 x 0.8	Ø 6
	KQ2K06-M6A1	KQ2K06-M6N1	M6 x 1.0	


A: Brass, N: Brass + Electroless nickel plated

Male elbow (Sealant) KQ2K	Part number type A	Part number type N	Connection thread R	Applicable tubing O.D. [mm]
	KQ2K04-01AS1	KQ2K04-01NS1	1/8	Ø 4
	KQ2K04-02AS1	KQ2K04-02NS1	1/4	
	KQ2K06-01AS1	KQ2K06-01NS1	1/8	Ø 6
	KQ2K06-02AS1	KQ2K06-02NS1	1/4	
	KQ2K06-03AS1	KQ2K06-03NS1	3/8	


A: Brass, N: Brass + Electroless nickel plated

Extended male elbow (Gasket seal) KQ2W	Part number type A, G	Part number type N	Part number type G	Connection thread M	Applicable tubing O.D. [mm]
	KQ2W23-M3G1	—	—	M3 x 0.5	Ø 3.2
	KQ2W23-M5A1	KQ2W23-M5N1	KQ2W23-M5G1	M5 x 0.8	
	KQ2W04-M3G1	—	—	M3 x 0.5	Ø 4
	KQ2W04-M5A1	KQ2W04-M5N1	KQ2W04-M5G1	M5 x 0.8	
	KQ2W06-M5A1	KQ2W06-M5N1	KQ2W06-M5G1	M5 x 0.8	Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Extended male elbow (Sealant) KQ2W	Part number type A	Part number type N	Part number type G	Connection thread R	Applicable tubing O.D. [mm]
	KQ2W23-01AS1	KQ2W23-01NS1	—	1/8	Ø 3.2
	KQ2W23-02AS1	KQ2W23-02NS1	—	1/4	
	KQ2W04-01AS1	KQ2W04-01NS1	KQ2W04-01GS1	1/8	
	KQ2W04-02AS1	KQ2W04-02NS1	KQ2W04-02GS1	1/4	Ø 4
	KQ2W06-01AS1	KQ2W06-01NS1	KQ2W06-01GS1	1/8	
	KQ2W06-02AS1	KQ2W06-02NS1	KQ2W06-02GS1	1/4	Ø 6
	KQ2W06-03AS1	KQ2W06-03NS1	KQ2W06-03GS1	3/8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Hexagon socket head male connector (Gasket seal) KQ2S	Part number type A, G	Part number type N	Part number type G	Connection thread M	Applicable tubing O.D. [mm]
	KQ2S23-M3G1	—	—	M3 x 0.5	Ø 3.2
	KQ2S23-M5A1	KQ2S23-M5N1	—	M5 x 0.8	
	KQ2S04-M3G1	—	—	M3 x 0.5	Ø 4
	KQ2S04-M5A1	KQ2S04-M5N1	KQ2S04-M5G1	M5 x 0.8	
	KQ2S04-M6A1	KQ2S04-M6N1	—	M6 x 1.0	
	KQ2S06-M5A1	KQ2S06-M5N1	KQ2W06-02GS1	M5 x 0.8	Ø 6
	KQ2S06-M6A1	KQ2S06-M6N1	—	M6 x 1.0	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Hexagon socket head male connector (Sealant) KQ2S	Part number type A	Part number type N	Part number type G	Connection thread R	Applicable tubing O.D. [mm]
	KQ2S04-01AS1	KQ2S04-01NS1	KQ2S04-01GS1	1/8	Ø 4
	KQ2S06-01AS1	KQ2S06-01NS1	KQ2S06-01GS1	1/8	
	KQ2S06-02AS1	KQ2S06-02NS1	KQ2S06-02GS1	1/4	Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Universal male elbow (Gasket seal) KQ2V	Part number type A	Part number type N	Part number type G	Connection thread M	Applicable tubing O.D. [mm]
	KQ2V04-M5A1	KQ2V04-M5N1	KQ2V04-M5G1	M5 x 0.8	Ø 4
	KQ2V06-M5A1	KQ2V06-M5N1	KQ2V06-M5G1	M5 x 0.8	Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Universal male elbow (Sealant) KQ2V	Part number type A	Part number type N	Part number type G	Connection thread R	Applicable tubing O.D. [mm]
	KQ2V04-01AS1	KQ2V04-01NS1	KQ2V04-01GS1	1/8	Ø 4
	KQ2V06-01AS1	KQ2V06-01NS1	KQ2V06-01GS1	1/8	
	KQ2V06-02AS1	KQ2V06-02NS1	KQ2V06-02GS1	1/4	Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Hexagon socket head universal male elbow (Gasket seal) KQ2VS	Part number type A	Part number type N	Connection thread M	Applicable tubing O.D. [mm]
	KQ2VS04-M5A1	KQ2VS04-M5N1	M5 x 0.8	Ø 4
	KQ2VS06-M5A1	KQ2VS06-M5N1	M5 x 0.8	Ø 6


A: Brass, N: Brass + Electroless nickel plated

Hexagon socket head universal male elbow (Sealant) KQ2VS	Part number type A	Part number type N	Connection thread R	Applicable tubing O.D. [mm]
	KQ2VS04-01AS1	KQ2VS04-01NS1	1/8	Ø 4
	KQ2VS06-01AS1	KQ2VS06-01NS1	1/8	
	KQ2VS06-02AS1	KQ2VS06-02NS1	1/4	Ø 6


A: Brass, N: Brass + Electroless nickel plated

Male branch tee (Gasket seal) KQ2T	Part number type A, G	Part number type N	Part number type G	Connection thread M	Applicable tubing O.D. [mm]
	KQ2T23-M3G1	—	—	M3 x 0.5	Ø 3.2
	KQ2T23-M5A1	KQ2T23-M5N1	—	M5 x 0.8	
	KQ2T04-M3G1	—	—	M3 x 0.5	Ø 4
	KQ2T04-M5A1	KQ2T04-M5N1	KQ2T04-M5G1	M5 x 0.8	
	KQ2T04-M6A1	KQ2T04-M6N1	—	M6 x 1.0	Ø 6
	KQ2T06-M5A1	KQ2T06-M5N1	KQ2T06-M5G1	M5 x 0.8	
KQ2T06-M6A1	KQ2T06-M6N1	—	M6 x 1.0		


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Male branch tee (Sealant) KQ2T	Part number type A	Part number type N	Part number type G	Connection thread R	Applicable tubing O.D. [mm]
	KQ2T23-01AS1	KQ2T23-01NS1	—	1/8	Ø 3.2
	KQ2T23-02AS1	KQ2T23-02NS1	—	1/4	
	KQ2T04-01AS1	KQ2T04-01NS1	KQ2T04-01GS1	1/8	Ø 4
	KQ2T04-02AS1	KQ2T04-02NS1	KQ2T04-02GS1	1/4	
	KQ2T06-01AS1	KQ2T06-01NS1	KQ2T06-01GS1	1/8	Ø 6
	KQ2T06-02AS1	KQ2T06-02NS1	KQ2T06-02GS1	1/4	
	KQ2T06-03AS1	KQ2T06-03NS1	KQ2T06-03GS1	3/8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Male run tee (Gasket seal) KQ2Y	Part number type A, G	Part number type N	Part number type G	Connection thread M	Applicable tubing O.D. [mm]
	KQ2Y23-M3G1	—	—	M3 x 0.5	Ø 3.2
	KQ2Y23-M5A1	KQ2Y23-M5N1	—	M5 x 0.8	
	KQ2Y04-M3G1	—	—	M3 x 0.5	Ø 4
	KQ2Y04-M5A1	KQ2Y04-M5N1	KQ2Y04-M5G1	M5 x 0.8	
	KQ2Y04-M6A1	KQ2Y04-M6N1	—	M6 x 1.0	Ø 6
	KQ2Y06-M5A1	KQ2Y06-M5N1	KQ2Y06-M5G1	M5 x 0.8	
	KQ2Y06-M6A1	KQ2Y06-M6N1	—	M6 x 1.0	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Male run tee (Sealant) KQ2Y	Part number type A	Part number type N	Part number type G	Connection thread R	Applicable tubing O.D. [mm]
	KQ2Y23-01AS1	KQ2Y23-01NS1	—	1/8	Ø 3.2
	KQ2Y23-02AS1	KQ2Y23-02NS1	—	1/4	
	KQ2Y04-01AS1	KQ2Y04-01NS1	KQ2Y04-01GS1	1/8	Ø 4
	KQ2Y04-02AS1	KQ2Y04-02NS1	KQ2Y04-02GS1	1/4	
	KQ2Y06-01AS1	KQ2Y06-01NS1	KQ2Y06-01GS1	1/8	Ø 6
	KQ2Y06-02AS1	KQ2Y06-02NS1	KQ2Y06-02GS1	1/4	
	KQ2Y06-03AS1	KQ2Y06-03NS1	KQ2Y06-03GS1	3/8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Double universal male elbow (Sealant) KQ2VD	Part number type A	Part number type N	Connection thread R	Applicable tubing O.D. [mm]
	KQ2VD04-01AS1	KQ2VD04-01NS1	1/8	Ø 4
	KQ2VD04-02AS1	KQ2VD04-02NS1	1/4	
	KQ2VD04-03AS1	KQ2VD04-03NS1	3/8	
	KQ2VD06-01AS1	KQ2VD06-01NS1	1/8	Ø 6
	KQ2VD06-02AS1	KQ2VD06-02NS1	1/4	
	KQ2VD06-03AS1	KQ2VD06-03NS1	3/8	


A: Brass, N: Brass + Electroless nickel plated

Triple universal male elbow (Sealant) KQ2VT	Part number type A	Part number type N	Connection thread R	Applicable tubing O.D. [mm]
	KQ2VT04-01AS1	KQ2VD04-01NS1	1/8	Ø 4
	KQ2VT04-02AS1	KQ2VD04-02NS1	1/4	
	KQ2VT04-03AS1	KQ2VD04-03NS1	3/8	
	KQ2VT06-01AS1	KQ2VD06-01NS1	1/8	Ø 6
	KQ2VT06-02AS1	KQ2VD06-02NS1	1/4	
	KQ2VT06-03AS1	KQ2VD06-03NS1	3/8	


A: Brass, N: Brass + Electroless nickel plated

Male delta union (Gasket seal) KQ2D	Part number type A	Part number type N	Part number type G	Connection thread M	Applicable tubing O.D. [mm]
	KQ2D04-M5A1	KQ2D04-M5N1	KQ2D04-M5G1	M5 x 0.8	Ø 4
	KQ2D04-M6A1	KQ2D04-M6N1	—	M6 x 1.0	
	KQ2D06-M5A1	KQ2D06-M5N1	KQ2D06-M5G1	M5 x 0.8	Ø 6
	KQ2D06-M6A1	KQ2D06-M6N1	—	M6 x 0.8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Male delta union (Sealant) KQ2D	Part number type A	Part number type N	Part number type G	Connection thread R	Applicable tubing O.D. [mm]
	KQ2D04-01AS1	KQ2D04-01NS1	KQ2D04-01GS1	1/8	Ø 4
	KQ2D04-02AS1	KQ2D04-02NS1	KQ2D04-02GS1	1/4	
	KQ2D06-01AS1	KQ2D06-01NS1	KQ2D06-01GS1	1/8	Ø 6
	KQ2D06-02AS1	KQ2D06-02NS1	KQ2D06-02GS1	1/4	
	KQ2D06-03AS1	KQ2D06-03NS1	KQ2D06-03GS1	3/8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303


Bulkhead male elbow KQ2LE	Part number type A	Part number type N	Applicable tubing O.D. [mm]
	KQ2LE04-00A1	KQ2LE04-00N1	Ø 4
	KQ2LE06-00A1	KQ2LE06-00N1	Ø 6


A: Brass, N: Brass + Electroless nickel plated


Bulkhead union (Interchangeable with KQ) KQ2E	Part number type A	Part number type N	Part number type G	Applicable tubing O.D. [mm]
	KQ2E23-00A1	KQ2E23-00N1	—	Ø 3.2
	KQ2E04-00A1	KQ2E04-00N1	KQ2E04-00G1	Ø 4
	KQ2E06-00A1	KQ2E06-00N1	KQ2E06-00G1	Ø 6


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303


Straight union KQ2H	Part number	Applicable tubing O.D. [mm]
	KQ2H23-00A1	Ø 3.2
	KQ2H04-00A1	Ø 4
	KQ2H06-00A1	Ø 6


Union elbow KQ2L	Part number	Applicable tubing O.D. [mm]
	KQ2L23-00A1	Ø 3.2
	KQ2L04-00A1	Ø 4
	KQ2L06-00A1	Ø 6


Union tee KQ2T	Part number	Applicable tubing O.D. [mm]
	KQ2T23-00A1	Ø 3.2
	KQ2T04-00A1	Ø 4
	KQ2T06-00A1	Ø 6

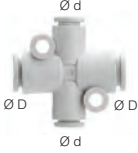
Different diameter straight, KQ2H	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2H02-23A1	Ø 2	Ø 3.2
	KQ2H02-04A1	Ø 2	Ø 4
	KQ2H23-04A1	Ø 3.2	Ø 4
	KQ2H23-06A1	Ø 3.2	Ø 6
	KQ2H04-06A1	Ø 4	Ø 6
	KQ2H06-08A1	Ø 6	Ø 8

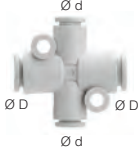
Different diameter tee KQ2T	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2T23-04A1	Ø 3.2	Ø 4
	KQ2T04-06A1	Ø 4	Ø 6
	KQ2T06-08A1	Ø 6	Ø 8

Different diameter tee KQ2T	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2T06-04A1	Ø 4	Ø 6
	KQ2T08-06A1	Ø 6	Ø 8

Delta union KQ2D	Part number	Applicable tubing O.D. [mm]	
		Ø 4	Ø 6
	KQ2D04-00A1	Ø 4	
	KQ2D06-00A1	Ø 6	

Cross KQ2TW	Part number	Applicable tubing O.D. [mm]	
		Ø 4	Ø 6
	KQ2TW04-00A1	Ø 4	
	KQ2TW06-00A1	Ø 6	


Different diameter cross KQ2TX	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2TX06-08A1	Ø 6	Ø 8


Different diameter cross KQ2TY	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2TY06-08A1	Ø 6	Ø 8

Plug-in elbow KQ2L	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2L23-99A1	Ø 3.2	Ø 3.2
	KQ2L04-99A1	Ø 4	Ø 4
	KQ2L06-99A1	Ø 6	Ø 6


Extended plug-in elbow KQ2W	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2W23-99A1	Ø 3.2	Ø 3.2
	KQ2W04-99A1	Ø 4	Ø 4
	KQ2W06-99A1	Ø 6	Ø 6

Reducer elbow KQ2L	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2L23-04A1	Ø 4	Ø 3.2
	KQ2L23-06A1	Ø 6	
	KQ2L04-06A1	Ø 6	Ø 4
	KQ2L04-08A1	Ø 8	
	KQ2L06-08A1	Ø 8	Ø 6
	KQ2L06-10A1	Ø 10	


Plug-in reducer KQ2R	Part number	Fitting size	Applicable tubing O.D. [mm]
	KQ2R23-04A1	Ø 4	Ø 3.2
	KQ2R23-06A1	Ø 6	
	KQ2R04-06A1	Ø 6	
	KQ2R04-08A1	Ø 8	Ø 4
	KQ2R04-10A1	Ø 10	
	KQ2R06-04A1	Ø 4	
	KQ2R06-08A1	Ø 8	Ø 6
	KQ2R06-10A1	Ø 10	
	KQ2R06-12A1	Ø 12	

Female elbow KQ2LF	Part number type A	Part number type N	Connection thread M, Rc	Applicable tubing O.D. [mm]
	KQ2LF04-M5A1	KQ2LF04-M5N1	M5 x 0.8	Ø 4
	KQ2LF04-M6A1	KQ2LF04-M6N1	M6 x 1.0	
	KQ2LF04-01A1	KQ2LF04-01N1	1/8	
	KQ2LF04-02A1	KQ2LF04-02N1	1/4	
	KQ2LF06-M5A1	KQ2LF06-M5N1	M5 x 0.8	Ø 6
	KQ2LF06-M6A1	KQ2LF06-M6N1	M6 x 1.0	
	KQ2LF06-01A1	KQ2LF06-01N1	1/8	
	KQ2LF06-02A1	KQ2LF06-02N1	1/4	
	KQ2LF06-03A1	KQ2LF06-03N1	3/8	


A: Brass, N: Brass + Electroless nickel plated

Female connector KQ2F	Part number type A	Part number type N	Part number type G	Connection thread M, Rc	Applicable tubing O.D. [mm]
	KQ2F23-M3A1	KQ2F23-M3N1	—	M3 x 0.5	Ø 3.2
	KQ2F23-M5A1	KQ2F23-M5N1	—	M5 x 0.8	
	KQ2F04-M3A1	KQ2F04-M3N1	—	M3 x 0.5	Ø 4
	KQ2F04-M5A1	KQ2F04-M5N1	—	M5 x 0.8	
	KQ2F04-01A1	KQ2F04-01N1	KQ2F04-01G1	1/8	
	KQ2F04-02A1	KQ2F04-02N1	KQ2F04-02G1	1/4	
	KQ2F06-M5A1	KQ2F06-M5N1	—	M5 x 0.8	Ø 6
	KQ2F06-01A1	KQ2F06-01N1	KQ2F06-01G1	1/8	
	KQ2F06-02A1	KQ2F06-02N1	KQ2F06-02G1	1/4	
	KQ2F06-03A1	KQ2F06-03N1	KQ2F06-03G1	3/8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303

Bulkhead connector KQ2E	Part number type A	Part number type N	Part number type G	Connection thread Rc	Applicable tubing O.D. [mm]
	KQ2E23-02A1	KQ2E23-02N1	—	1/4	Ø 3.2
	KQ2E04-01A1	KQ2E04-01N1	KQ2E04-01G1	1/8	Ø 4
	KQ2E04-02A1	KQ2E04-02N1	KQ2E04-02G1	1/4	
	KQ2E06-01A1	KQ2E06-01N1	KQ2E06-01G1	1/8	Ø 6
	KQ2E06-02A1	KQ2E06-02N1	KQ2E06-02G1	1/4	
	KQ2E06-03A1	KQ2E06-03N1	KQ2E06-03G1	3/8	


A: Brass, N: Brass + Electroless nickel plated, G: Stainless steel 303


Universal female elbow (Gasket seal) KQ2VF	Part number type A	Part number type N	Connection thread M	Applicable tubing O.D. [mm]
	KQ2VF04-M5A1	KQ2VF04-M5N1	M5 x 0.8	Ø 4
	KQ2VF06-M5A1	KQ2VF06-M5N1	M5 x 0.8	Ø 6


A: Brass, N: Brass + Electroless nickel plated


Universal female elbow (Sealant) KQ2VF	Part number type A	Part number type N	Connection thread Rc, R	Applicable tubing O.D. [mm]
	KQ2VF04-01AS1	KQ2VF04-01NS1	1/8	Ø 4
	KQ2VF06-01AS1	KQ2VF06-01NS1	1/8	Ø 6
	KQ2VF06-02AS1	KQ2VF06-02NS1	1/4	Ø 6


A: Brass, N: Brass + Electroless nickel plated

Plug KQ2P	Part number	Applicable fitting size Ø d [mm]
	KJP-02	Ø 2
	KQ2P-23	Ø 3.2
	KQ2P-04	Ø 4
	KQ2P-06	Ø 6
	KQ2P-08	Ø 8
	KQ2P-10	Ø 10
	KQ2P-12	Ø 12
	KQ2P-16	Ø 16


Tube cap KQ2C	Part number	Applicable tubing O.D. [mm]
	KQ2C04-00A1	Ø 4
	KQ2C06-00A1	Ø 6

Nipple KQ2N	Part number	Applicable fitting size Ø D [mm]
	KQ2N04-99	Ø 4
	KQ2N06-99	Ø 6
	KQ2N08-99	Ø 8
	KQ2N10-99	Ø 10
	KQ2N12-99	Ø 12
	KQ2N16-99	Ø 16

Reducer nipple KQ2N	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KQ2N04-06	Ø 4	Ø 6
	KQ2N06-08	Ø 6	Ø 8
	KQ2N08-10	Ø 8	Ø 10
	KQ2N10-12	Ø 10	Ø 12
	KQ2N12-16	Ø 12	Ø 16

Adapter (Gasket seal) KQ2N	Part number type A	Part number type N	Connection thread M	Applicable tubing O.D. [mm]
	KQ2N04-M5A	KQ2N04-M5N	M5 x 0.8	Ø 4
	KQ2N06-M5A	KQ2N06-M5N		Ø 6

A: Brass, N: Brass + Electroless nickel plated

Adapter (Sealant) KQ2N	Part number type A	Part number type N	Connection thread R	Applicable tubing O.D. [mm]
	KQ2N04-01AS	KQ2N04-01NS	1/8	Ø 4
	KQ2N06-01AS	KQ2N06-01NS	1/8	
	KQ2N06-02AS	KQ2N06-02NS	1/4	Ø 6
	KQ2N08-02AS	KQ2N08-02NS	1/4	
	KQ2N08-03AS	KQ2N08-03NS	3/8	Ø 8
	KQ2N10-03AS	KQ2N10-03NS	3/8	

A: Brass, N: Brass + Electroless nickel plated

Our highlighted product for you

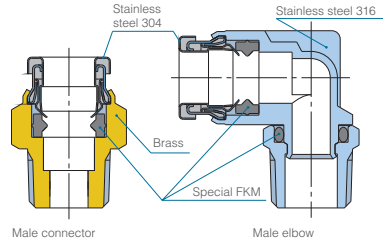
Metal one-touch fittings

KQB2 Series

Tube O.D.: Ø 3.2 • 4 • 6 • 8 • 10 • 12 • 16 mm
Thread: M5 • R, G, 1/8 • 1/4 • 3/8 • 1/2



- Material:
Metal parts: Stainless steel 304, 316, C3604, brass
Seal parts: Special FKM
- Can be used with air, water
- Operating fluid temperature: -5 to 150 °C
- Grease-free
- Applicable tubing material: FEP, PFA, nylon, soft nylon, polyurethane, polyolefin.




Customer Benefits


- Good aging thanks to brass parts that are electroless nickel plated.
- Wide assortment of applications due to the fluid temperature range and the grease-free specification.
- Easy to use in confined spaces.


Related products

TU Series - Polyurethane tubing - page 376
T Series - Nylon tubing - page 374
TH Series - Fluoropolymer (FEP) tubing - page 388
TLM Series - Fluoropolymer (PFA) tubing - page 386

Male connector KQB2H		
	Ø D	R
Part number	R	Ø D
KQB2H23-M5	M5*	3.2
KQB2H23-01S	R 1/8	
KQB2H23-02S	R 1/4	4
KQB2H04-M5	M5*	
KQB2H04-01S	R 1/8	
KQB2H04-02S	R 1/4	6
KQB2H06-M5	M5*	
KQB2H06-01S	R 1/8	
KQB2H06-02S	R 1/4	8
KQB2H06-03S	R 3/8	
KQB2H08-01S	R 1/8	10
KQB2H08-02S	R 1/4	
KQB2H08-03S	R 3/8	12
KQB2H10-01S	R 1/8	
KQB2H10-02S	R 1/4	16
KQB2H10-03S	R 3/8	
KQB2H10-04S	R 1/2	16
KQB2H12-02S	R 1/4	
KQB2H12-03S	R 3/8	
KQB2H12-04S	R 1/2	
KQB2H16-03S	R 3/8	
KQB2H16-04S	R 1/2	

* with gasket.

Male connector KQB2H		
	Ø D	G
Part number	G	Ø D
KQB2H04-G01	G 1/8	4
KQB2H04-G02	G 1/4	
KQB2H06-G01	G 1/8	6
KQB2H06-G02	G 1/4	
KQB2H06-G03	G 3/8	8
KQB2H08-G01	G 1/8	
KQB2H08-G02	G 1/4	10
KQB2H08-G03	G 3/8	
KQB2H10-G01	G 1/8	12
KQB2H10-G02	G 1/4	
KQB2H10-G03	G 3/8	16
KQB2H10-G04	G 1/2	
KQB2H12-G02	G 1/4	
KQB2H12-G03	G 3/8	
KQB2H12-G04	G 1/2	
KQB2H16-G03	G 3/8	
KQB2H16-G04	G 1/2	

Hexagon socket head male connector KQB2S		
	Ø D	R
Part number	R	Ø D
KQB2S23-M5	M5*	3.2
KQB2S04-M5		
KQB2S04-01S	R 1/8	4
KQB2S06-M5	M5*	
KQB2S06-01S	R 1/8	6
KQB2S06-02S	R 1/4	
KQB2S08-01S	R 1/8	8
KQB2S08-02S	R 1/4	
KQB2S08-03S	R 3/8	10
KQB2S10-01S	R 1/8	
KQB2S10-02S	R 1/4	12
KQB2S10-03S	R 3/8	
KQB2S10-04S	R 1/2	16
KQB2S12-02S	R 1/4	
KQB2S12-03S	R 3/8	
KQB2S12-04S	R 1/2	
KQB2S16-03S	R 3/8	
KQB2S16-04S	R 1/2	

* with gasket.

Hexagon socket head male connector
KQB2S



Part number	G	$\varnothing D$
KQB2S04-G01 ●	G 1/8	4
KQB2S06-G01 ●		
KQB2S06-G02 ●	G 1/4	6
KQB2S08-G01 ●	G 1/8	
KQB2S08-G02 ●	G 1/4	8
KQB2S08-G03 ●	G 3/8	
KQB2S10-G01 ●	G 1/8	10
KQB2S10-G02 ●	G 1/4	
KQB2S10-G03 ●	G 3/8	
KQB2S10-G04 ●	G 1/2	
KQB2S12-G02 ●	G 1/4	12
KQB2S12-G03 ●	G 3/8	
KQB2S12-G04 ●	G 1/2	
KQB2S16-G03 ●	G 3/8	
KQB2S16-G04 ●	G 1/2	16

Straight union
KQB2H



Part number	$\varnothing D$
KQB2H23-00 ●	3.2
KQB2H04-00 ●	4
KQB2H06-00 ●	6
KQB2H08-00 ●	8
KQB2H10-00 ●	10
KQB2H12-00 ●	12
KQB2H16-00 ●	16

Different diameter straight
KQB2H



Part number	$\varnothing d$	$\varnothing D$
KQB2H23-04 ●	3.2	4
KQB2H04-06 ●	4	6
KQB2H06-08 ●	6	8
KQB2H08-10 ●	8	10
KQB2H10-12 ●	10	12
KQB2H12-16 ●	12	16

Union elbow
KQB2L



Part number	$\varnothing D$
KQB2L23-00 ●	3.2
KQB2L04-00 ●	4
KQB2L06-00 ●	6
KQB2L08-00 ●	8
KQB2L10-00 ●	10
KQB2L12-00 ●	12
KQB2L16-00 ●	16

Bulkhead union
KQB2E



Part number	$\varnothing D$
KQB2E23-00 ●	3.2
KQB2E04-00 ●	4
KQB2E06-00 ●	6
KQB2E08-00 ●	8
KQB2E10-00 ●	10
KQB2E12-00 ●	12
KQB2E16-00 ●	16

Male elbow
KQB2L



Part number	R	$\varnothing D$
KQB2L23-M5 ●	M5*	3.2
KQB2L23-01S	R 1/8	
KQB2L23-02S	R 1/4	4
KQB2L04-M5 ●	M5*	
KQB2L04-01S ●	R 1/8	6
KQB2L04-02S ●	R 1/4	
KQB2L06-M5 ●	M5*	8
KQB2L06-01S ●	R 1/8	
KQB2L06-02S ●	R 1/4	10
KQB2L06-03S ●	R 3/8	
KQB2L08-01S ●	R 1/8	12
KQB2L08-02S ●	R 1/4	
KQB2L08-03S ●	R 3/8	16
KQB2L10-01S ●	R 1/8	
KQB2L10-02S ●	R 1/4	10
KQB2L10-03S ●	R 3/8	
KQB2L10-04S ●	R 1/2	12
KQB2L12-02S ●	R 1/4	
KQB2L12-03S ●	R 3/8	16
KQB2L12-04S ●	R 1/2	
KQB2L16-03S ●	R 3/8	16
KQB2L16-04S ●	R 1/2	

Male elbow
KQB2L



Part number	G	$\varnothing D$
KQB2L04-G01 ●	G 1/8	4
KQB2L04-G02 ●	G 1/4	
KQB2L06-G01 ●	G 1/8	6
KQB2L06-G02 ●	G 1/4	
KQB2L06-G03 ●	G 3/8	8
KQB2L08-G01 ●	G 1/8	
KQB2L08-G02 ●	G 1/4	10
KQB2L08-G03 ●	G 3/8	
KQB2L10-G01 ●	G 1/8	12
KQB2L10-G02 ●	G 1/4	
KQB2L10-G03 ●	G 3/8	16
KQB2L12-G03 ●	G 3/8	
KQB2L12-G04 ●	G 1/2	16
KQB2L16-G03 ●	G 3/8	
KQB2L16-G04 ●	G 1/2	

Male branch tee
KQB2T



Part number	R	$\varnothing D$
KQB2T23-M5 ●	M5*	3.2
KQB2T23-01S	R 1/8	
KQB2T23-02S	R 1/4	4
KQB2T04-M5 ●	M5*	
KQB2T04-01S ●	R 1/8	6
KQB2T04-02S	R 1/4	
KQB2T06-M5 ●	M5*	8
KQB2T06-01S ●	R 1/8	
KQB2T06-02S ●	R 1/4	10
KQB2T06-03S ●	R 3/8	
KQB2T08-01S ●	R 1/8	12
KQB2T08-02S ●	R 1/4	
KQB2T10-01S ●	R 1/8	16
KQB2T10-02S ●	R 1/4	
KQB2T10-03S ●	R 3/8	16
KQB2T10-04S ●	R 1/2	
KQB2T12-02S ●	R 1/4	12
KQB2T12-03S ●	R 3/8	
KQB2T12-04S ●	R 1/2	16
KQB2T16-03S ●	R 3/8	
KQB2T16-04S ●	R 1/2	

* with gasket.

* with gasket.

Male branch tee
KQB2T



Part number	G	Ø D
KQB2T04-G01 ●	G 1/8	4
KQB2T04-G02 ●	G 1/4	
KQB2T06-G01 ●	G 1/8	6
KQB2T06-G02 ●	G 1/4	
KQB2T06-G03 ●	G 3/8	8
KQB2T08-G01 ●	G 1/8	
KQB2T08-G02 ●	G 1/4	10
KQB2T08-G03 ●	G 3/8	
KQB2T10-G01 ●	G 1/8	12
KQB2T10-G02 ●	G 1/4	
KQB2T10-G03 ●	G 3/8	16
KQB2T10-G04 ●	G 1/2	
KQB2T12-G02 ●	G 1/4	12
KQB2T12-G03 ●	G 3/8	
KQB2T12-G04 ●	G 1/2	16
KQB2T16-G03 ●	G 3/8	
KQB2T16-G04 ●	G 1/2	

Extended male elbow
KQB2W



Part number	R	Ø D
KQB2W23-M5 ●	M5*	3.2
KQB2W23-01S	R 1/8	
KQB2W23-02S	R 1/4	4
KQB2W04-M5 ●	M5*	
KQB2W04-01S	R 1/8	6
KQB2W04-02S	R 1/4	
KQB2W06-M5 ●	M5*	8
KQB2W06-01S ●	R 1/8	
KQB2W06-02S ●	R 1/4	10
KQB2W06-03S	R 3/8	
KQB2W08-01S	R 1/8	12
KQB2W08-02S	R 1/4	
KQB2W08-03S	R 3/8	16
KQB2W10-02S	R 1/4	
KQB2W10-03S	R 3/8	12
KQB2W10-04S	R 1/2	
KQB2W12-02S	R 1/4	16
KQB2W12-03S	R 3/8	
KQB2W12-04S	R 1/2	
KQB2W16-03S	R 3/8	
KQB2W16-04S	R 1/2	

* with gasket.

Extended male elbow
KQB2W



Part number	G	Ø D
KQB2W04-G01 ●	G 1/8	4
KQB2W04-G02 ●	G 1/4	
KQB2W06-G01 ●	G 1/8	6
KQB2W06-G02 ●	G 1/4	
KQB2W06-G03 ●	G 3/8	8
KQB2W08-G01 ●	G 1/8	
KQB2W08-G02 ●	G 1/4	10
KQB2W08-G03 ●	G 3/8	
KQB2W10-G02 ●	G 1/4	12
KQB2W10-G03 ●	G 3/8	
KQB2W10-G04 ●	G 1/2	16
KQB2W12-G02 ●	G 1/4	
KQB2W12-G03 ●	G 3/8	
KQB2W12-G04 ●	G 1/2	
KQB2W16-G03 ●	G 3/8	
KQB2W16-G04 ●	G 1/2	

Bulkhead connector
KQB2E



Part number	Rc	Ø D
KQB2E23-02	Rc 1/4	3.2
KQB2E04-01	Rc 1/8	4
KQB2E04-02	Rc 1/4	
KQB2E06-01	Rc 1/8	6
KQB2E06-02	Rc 1/4	
KQB2E06-03	Rc 3/8	8
KQB2E08-01	Rc 1/8	
KQB2E08-02	Rc 1/4	10
KQB2E08-03	Rc 3/8	
KQB2E10-02	Rc 1/4	12
KQB2E10-03	Rc 3/8	
KQB2E12-03	Rc 3/8	16
KQB2E12-04	Rc 1/2	
KQB2E16-03	Rc 3/8	
KQB2E16-04	Rc 1/2	

Bulkhead connector
KQB2E



Part number	G	Ø D
KQB2E04-G01 ●	G 1/8	4
KQB2E04-G02 ●	G 1/4	
KQB2E06-G01 ●	G 1/8	6
KQB2E06-G02 ●	G 1/4	
KQB2E06-G03 ●	G 3/8	8
KQB2E08-G01 ●	G 1/8	
KQB2E08-G02 ●	G 1/4	10
KQB2E08-G03 ●	G 3/8	
KQB2E10-G02 ●	G 1/4	12
KQB2E10-G03 ●	G 3/8	
KQB2E12-G03 ●	G 3/8	16
KQB2E12-G04 ●	G 1/2	
KQB2E16-G03 ●	G 3/8	
KQB2E16-G04 ●	G 1/2	

Female connector
KQB2F



Part number	Rc	Ø D
KQB2F23-01	Rc 1/8	3.2
KQB2F04-01		4
KQB2F04-02	Rc 1/4	
KQB2F06-01	Rc 1/8	8
KQB2F06-02	Rc 1/4	
KQB2F06-03	Rc 3/8	12
KQB2F08-01	Rc 1/8	
KQB2F08-02 ●	Rc 1/4	
KQB2F08-03 ●	Rc 3/8	
KQB2F10-02	Rc 1/4	10
KQB2F10-03	Rc 3/8	
KQB2F12-02	Rc 1/4	12
KQB2F12-03	Rc 3/8	
KQB2F12-04	Rc 1/2	16
KQB2F16-03	Rc 3/8	
KQB2F16-04	Rc 1/2	

Female connector
KQB2F



Part number	G	Ø D
KQB2F04-G01 ●	G 1/8	4
KQB2F04-G02 ●	G 1/4	
KQB2F06-G01 ●	G 1/8	6
KQB2F06-G02 ●	G 1/4	
KQB2F06-G03 ●	G 3/8	8
KQB2F08-G01 ●	G 1/8	
KQB2F08-G02 ●	G 1/4	10
KQB2F08-G03 ●	G 3/8	
KQB2F10-G02 ●	G 1/4	12
KQB2F10-G03 ●	G 3/8	
KQB2F12-G02 ●	G 1/4	16
KQB2F12-G04 ●	G 1/2	
KQB2F16-G03 ●	G 3/8	16
KQB2F16-G04 ●	G 1/2	

Union tee
KQB2T



Part number	Ø D
KQB2T23-00 ●	3.2
KQB2T04-00 ●	4
KQB2T06-00 ●	6
KQB2T08-00 ●	8
KQB2T10-00 ●	10
KQB2T12-00 ●	12
KQB2T16-00 ●	16

Different diameter tee
KQB2T



Part number	Ø d	Ø D
KQB2T23-04 ●	3.2	4
KQB2T04-06 ●	4	6
KQB2T06-08 ●	6	8
KQB2T08-10 ●	8	10
KQB2T10-12 ●	10	12
KQB2T12-16 ●	12	16

Plug-in reducer
KQB2R



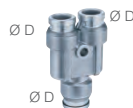
Part number	Ø d	Ø D
KQB2R23-04	3.2	4
KQB2R04-06	4	6
KQB2R06-08	6	8
KQB2R08-10	8	10
KQB2R10-12	10	12
KQB2R12-16	12	16

Plug
KQB2P



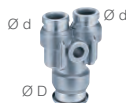
Part number	Ø D
KQB2P-23 ●	3.2
KQB2P-04 ●	4
KQB2P-06 ●	6
KQB2P-08 ●	8
KQB2P-10 ●	10
KQB2P-12 ●	12
KQB2P-16 ●	16

Union "Y"
KQB2U



Part number	Ø D
KQB2U23-00 ●	3.2
KQB2U04-00 ●	4
KQB2U06-00 ●	6
KQB2U08-00 ●	8
KQB2U10-00 ●	10
KQB2U12-00 ●	12
KQB2U16-00 ●	16

Different diameter union "Y"
KQB2U



Part number	Ø d	Ø D
KQB2U23-04	3.2	4
KQB2U04-06	4	6
KQB2U06-08	6	8
KQB2U08-10	8	10
KQB2U10-12	10	12
KQB2U12-16	12	16

Rotary one-touch fittings

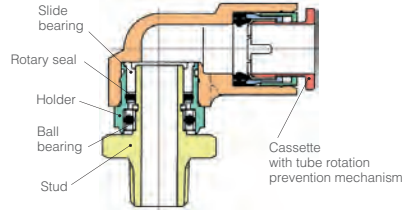
KS Series

Tube O.D.: $\varnothing 4 \bullet 6 \bullet 8 \bullet 10 \bullet 12$ mm

Thread: M5 • M6 • R 1/8 • 1/4 • 3/8 • 1/2



- For vacuum and compressed air
- Operating pressure range -100 KPa to 1 MPa
- For speeds up to 500 r.p.m



Male connector
KSH



Part number	R	Ø D
KSH04-M5 ●	M5*	4
KSH04-M6 ●	M6*	
KSH04-01S ●	R 1/8	
KSH06-M5 ●	M5*	
KSH06-M6 ●	M6*	
KSH06-01S ●	R 1/8	
KSH06-02S ●	R 1/4	
KSH08-01S ●	R 1/8	8
KSH08-02S ●	R 1/4	
KSH08-03S ●	R 3/8	
KSH10-02S ●	R 1/4	
KSH10-03S ●	R 3/8	
KSH10-04S ●	R 1/2	
KSH12-03S ●	R 3/8	12
KSH12-04S ●	R 1/2	

* with gasket.

Male elbow
KSL



Part number	R	Ø D
KSL04-M5 ●	M5*	4
KSL04-M6 ●	M6*	
KSL04-01S ●	R 1/8	
KSL06-M5 ●	M5*	
KSL06-M6 ●	M6*	
KSL06-01S ●	R 1/8	
KSL06-02S ●	R 1/4	
KSL08-01S ●	R 1/8	8
KSL08-02S ●	R 1/4	
KSL08-03S ●	R 3/8	
KSL10-02S ●	R 1/4	
KSL10-03S ●	R 3/8	
KSL10-04S ●	R 1/2	
KSL12-03S ●	R 3/8	12
KSL12-04S ●	R 1/2	

* with gasket.

Rotary one-touch fittings high speed

KX Series



- Same construction as KS, but speeds up to 1500 r.p.m
- Multiple bearings.

One-touch fittings manifold

KM Series

One-touch fitting: $\varnothing 4 \bullet 6 \bullet 8$ mm



• Operating pressure range -100 kPa to 1 MPa.

One-touch fitting manifold, 10 ports
KM11•12

With threaded connection

Part number	R	Ø D
KM12-04-02-10 ●	Rc 1/4	4
KM12-06-02-10 ●		6
KM12-08-03-10 ●	Rc 3/8	8

With one-touch fitting

Part number	Ø D	Ø d
KM11-04-08-10 ●	8	4
KM11-06-10-10 ●	10	6
KM11-08-12-10 ●	12	8

One-touch fitting manifold, 6 ports
KM11•12

With threaded connection

Part number	R	Ø D
KM12-04-02-6 ●	Rc 1/4	4
KM12-06-02-6 ●		6
KM12-08-03-6 ●	Rc 3/8	8

With one-touch fitting

Part number	Ø D	Ø d
KM11-04-08-6 ●	8	4
KM11-06-10-6 ●	10	6
KM11-08-12-6 ●	12	8

One-touch connection manifold, 3 ports
KM13

Part number	Ø D	Ø d
KM13-04-06-3 ●	6	4
KM13-04-08-3 ●		8
KM13-06-08-3 ●	10	
KM13-08-10-3 ●		


Miniature fittings

• Max. operating pressure 1 MPa.


M Series

Thread: M3 • M5 • R 1/8




Barb fitting		
	Ø D	
R		
Part number	R	Ø D
M-3AU-2 ●	M3*	2
M-5AU-2 ●	M5*	
M-3AU-4 ●	M3*	4
M-5AU-4 ●	M5*	
M-5AU-6 ●	M5*	6
M-01AU-4 ●		4
M-01AU-6 ●	R 1/8	6


* with gasket.

Hose nipple		
	Ø D	
R		
Part number	R	Ø D
M-5H-4 ●	M5*	4
M-5H-6 ●		6
M-01H-4 ●	R 1/8	4
M-01H-6 ●		6


* with gasket.

Barb elbow		
	Ø D	
R		
Part number	R	Ø D
M-3ALU-2 ●	M3*	2
M-5ALU-2 ●	M5*	2
M-3ALU-4 ●	M3*	4
M-5ALU-4 ●	M5*	4
M-5ALU-6 ●		6


* with gasket.

Hose elbow		
	Ø D	
R		
Part number	R	Ø D
M-5HL-4 ●	M5*	4
M-5HL-6 ●		6


* with gasket.

Universal elbow		
	R	R
Part number	R	R
M-3UL ●	M3*	M3
M-5UL ●	M5*	M5


* with gasket.

Universal tee		
	R	R
Part number	R	R
M-3UT ●	M3*	M3
M-5UT ●	M5*	M5


* with gasket.

Nipple		
	R	R
Part number	R	R
M-3N ●	M3*	M3*
M-5N ●	M5*	M5*


* with gasket.


Universal nipple		
	R	R
Part number	R	R
M-5UN ●	M5*	M5*


* with gasket.

Extension fitting		
	R	
Part number	R	R
M-5J ●	M5*	M5


* with gasket.


Bushing		
	R	R1
Part number	R	R1
M-5B ●	M5	R 1/8

Bulkhead union		
	R	R1
Part number	R	R1
M-5E ●	M5	M5
M-5ER ●		Rc 1/8

Plug	
	R
Part number	R
M-3P ●	M3*
M-5P ●	M5*

* with gasket.

Manifold		
	Rc	R1
Part number	Rc	R1
M-5M ●	Rc 1/8	M5

Gasket		
		
Part number	Ø D	Thickness
M-3G ●	5	0.4
M-5G1 ●	7	0.5
M-5GH ●		2

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

Barb one-touch



Part number	Ø d	Ø D
M-32F-2	2	3.2
M-04F-2 ●		4

Plug-in reducer



Part number	Ø d	Ø D
M-32R-2	2	3.2
M-04R-2 ●		4

Insert fittings

H•DL•DT Series

Tube: O.D.: Ø 4 • 6 • 8 • 10 • 12 mm

Thread: R 1/8 • 1/4 • 3/8 • 1/2



- Applicable for nylon, soft nylon and soft copper piping
- Max. operating pressure 1 MPa.

Ferrule
S

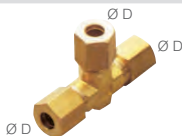
Part number	Ø
S-04	4
S-06	6
S-08	8
S-10	10
S-12	12

Male connector
H



Part number	R	Ø D
H04-01S ●	R 1/8	4
H04-02S ●	R 1/4	
H06-01S ●	R 1/8	6
H06-02S ●	R 1/4	
H06-03S ●	R 3/8	8
H08-01S ●	R 1/8	
H08-02S ●	R 1/4	10
H08-03S ●	R 3/8	
H10-02S ●	R 1/4	10
H10-03S ●	R 3/8	
H10-04S ●	R 1/2	12
H12-02S ●	R 1/4	
H12-03S ●	R 3/8	12
H12-04S ●	R 1/2	

Union tee
DT



Part number	Ø D	Ø D
DT04-00 ●	4	4
DT06-00 ●	6	6
DT08-00 ●	8	8
DT10-00 ●	10	10
DT12-00 ●	12	12

Male elbow
DL



Part number	R	Ø D
DL04-01S ●	R 1/8	4
DL04-02S	R 1/4	
DL06-01S ●	R 1/8	6
DL06-02S ●	R 1/4	
DL06-03S ●	R 3/8	8
DL08-01S ●	R 1/8	
DL08-02S ●	R 1/4	10
DL08-03S ●	R 3/8	
DL10-02S ●	R 1/4	10
DL10-03S ●	R 3/8	
DL10-04S	R 1/2	12
DL12-02S	R 1/4	
DL12-03S	R 3/8	12
DL12-04S	R 1/2	

Self-seal fittings

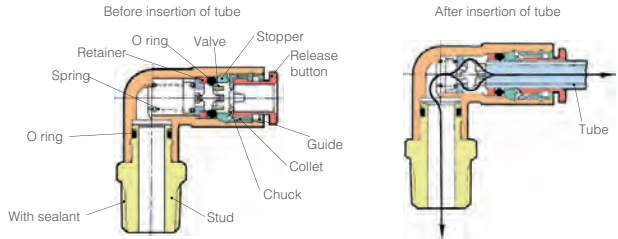
KC Series

Tube: O.D.: Ø 4 • 6 • 8 • 10 • 12 mm

Thread: M5 • R 1/8 • 1/4 • 3/8 • 1/2



- Prevents the release of air when the hose is disconnected
- Max. operating pressure 1 MPa.



Male connector KCH			
Part number	R	Ø D	
KCH04-M5	M5*	4	
KCH04-01S	R 1/8		
KCH06-M5	M5*	6	
KCH06-01S	R 1/8		
KCH06-02S	R 1/4	8	
KCH08-01S	R 1/8		
KCH08-02S	R 1/4	10	
KCH08-03S	R 3/8		
KCH10-02S	R 1/4	12	
KCH10-03S	R 3/8		
KCH12-03S	R 3/8		
KCH12-04S	R 1/2		

* with gasket.

Male elbow KCL			
Part number	R	Ø D	
KCL04-M5	M5*	4	
KCL04-01S	R 1/8		
KCL06-M5	M5*	6	
KCL06-01S	R 1/8		
KCL06-02S	R 1/4	8	
KCL08-01S	R 1/8		
KCL08-02S	R 1/4	10	
KCL08-03S	R 3/8		
KCL10-02S	R 1/4	12	
KCL10-03S	R 3/8		
KCL12-03S	R 3/8		
KCL12-04S	R 1/2		

* with gasket.

Union tee KCT			
Part number	Ø D	Ø D	
KCT04-00	4	4	
KCT06-00	6	6	
KCT08-00	8	8	
KCT10-00	10	10	
KCT12-00	12	12	

Union "Y" KCU			
Part number	Ø D	Ø D	
KCU04-00	4	4	
KCU06-00	6	6	
KCU08-00	8	8	
KCU10-00	10	10	
KCU12-00	12	12	

Check adaptor KCJ			
Part number	Ø D	Ø D	
KCJ04-99	4	4	
KCJ06-99	6	6	
KCJ08-99	8	8	
KCJ10-99	10	10	
KCJ12-99	12	12	

Bulkhead union KCE			
Part number	Ø D	Ø D	
KCE04-00	4	4	
KCE06-00	6	6	
KCE08-00	8	8	
KCE10-00	10	10	
KCE12-00	12	12	

Bulkhead female union KCE			
Part number	Rc	Ø D	
KCE04-02	Rc 1/4	4	
KCE06-02		6	
KCE08-03		8	
KCE10-03	Rc 3/8	10	
KCE12-03		12	

Straight union KCH			
Part number	R	Ø D	
KCH04-00	4	4	
KCH06-00	6	6	
KCH08-00	8	8	
KCH10-00	10	10	
KCH12-00	12	12	

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green.
Stocked items and product information could be subject to change without prior notice.

S Couplers

KK Series



- Large effective sectional area
- Light weight
- One-touch fitting available as standard
- Lock ring: shock absorbent PBT
- Suitable for air and water
- Operating pressure range: KK3: -90 KPa to 1 MPa
KK4/6: 0 to 1 MPa

Plug (P)



Male thread type	Part number	R	Size
	KK3P-01MS ●	R 1/8	1/8
	KK3P-02MS ●	R 1/4	
	KK3P-03MS ●	R 3/8	
	KK4P-01MS ●	R 1/8	1/4
	KK4P-02MS ●	R 1/4	
	KK4P-03MS ●	R 3/8	
	KK4P-04MS ●	R 1/2	1/2
	KK6P-03MS ●	R 3/8	
	KK6P-04MS ●	R 1/2	
KK6P-06MS ●	R 3/4		

Socket (S)



Male thread type	Part number	R	Size
	KK3S-01MS ●	R 1/8	1/8
	KK3S-02MS ●	R 1/4	
	KK3S-03MS ●	R 3/8	
	KK4S-01MS ●	R 1/8	1/4
	KK4S-02MS ●	R 1/4	
	KK4S-03MS ●	R 3/8	
	KK4S-04MS ●	R 1/2	1/2
	KK6S-03MS ●	R 3/8	
	KK6S-04MS ●	R 1/2	
	KK6S-06MS ●	R 3/4	

Female thread type	Part number	Rc	Size
	KK3P-01F ●	Rc 1/8	1/8
	KK3P-02F ●	Rc 1/4	
	KK3P-03F ●	Rc 3/8	
	KK4P-02F ●	Rc 1/4	1/4
	KK4P-03F ●	Rc 3/8	
	KK6P-03F ●	Rc 3/8	
	KK6P-04F ●	Rc 1/2	1/2

Female thread type	Part number	Rc	Size
	KK3S-01F ●	Rc 1/8	1/8
	KK3S-02F ●	Rc 1/4	
	KK3S-03F ●	Rc 3/8	
	KK4S-02F ●	Rc 1/4	1/4
	KK4S-03F ●	Rc 3/8	
	KK6S-03F ●	Rc 3/8	
	KK6S-04F ●	Rc 1/2	1/2

Straight type with one-touch fitting	Part number	Ø O.D.	Size
	KK3P-04H ●	4	1/8
	KK3P-06H ●	6	
	KK3P-08H ●	8	
	KK3P-10H ●	10	1/4
	KK4P-06H ●	6	
	KK4P-08H ●	8	
	KK4P-10H ●	10	1/2
	KK4P-12H ●	12	
	KK6P-12H ●	12	
	KK6P-16H ●	16	

Straight type with one-touch fitting	Part number	Ø O.D.	Size
	KK3S-04H ●	4	1/8
	KK3S-06H ●	6	
	KK3S-08H ●	8	
	KK3S-10H ●	10	1/4
	KK4S-06H ●	6	
	KK4S-08H ●	8	
	KK4S-10H ●	10	1/2
	KK4S-12H ●	12	
	KK6S-12H ●	12	
	KK6S-16H ●	16	

Elbow type with one-touch fitting	Part number	Ø O.D.	Size
	KK3P-04L ●	4	1/8
	KK3P-06L ●	6	
	KK3P-08L ●	8	
	KK3P-10L ●	10	1/4
	KK4P-06L ●	6	
	KK4P-08L ●	8	
	KK4P-10L ●	10	1/2
	KK4P-12L ●	12	
	KK6P-12L ●	12	
	KK6P-16L ●	16	

Elbow type with one-touch fitting	Part number	Ø O.D.	Size
	KK3S-04L ●	4	1/8
	KK3S-06L ●	6	
	KK3S-08L ●	8	
	KK3S-10L ●	10	1/4
	KK4S-06L ●	6	
	KK4S-08L ●	8	
	KK4S-10L ●	10	1/2
	KK4S-12L ●	12	
	KK6S-12L ●	12	
	KK6S-16L ●	16	

S Couplers

KK130 Series



- Energy saving and cost reduction by pressure loss reduction
- Compact and Lightweight
- High strength. Outer parts of steel
- Easy attachment and removal: Plug insertion force reduced
- One-touch fitting available as standard
- Sleeve lock mechanism available as semi-standard
- Suitable for air
- Operating pressure range 0 to 1.5 MPa
(One-touch fitting type 0 to 1.0 MPa).

Plug (P)

Male thread type	Part number	R
	KK130P-01MS ●	R 1/8
	KK130P-02MS ●	R 1/4
	KK130P-03MS ●	R 3/8
	KK130P-04MS ●	R 1/2

Female thread type	Part number	Rc
	KK130P-01F ●	Rc 1/8
	KK130P-02F ●	Rc 1/4
	KK130P-03F ●	Rc 3/8
	KK130P-04F ●	Rc 1/2

Barb fitting type (for rubber hose)	Part number	Ø
	KK130P-07B	6 (1/4)
	KK130P-09B	8 (1/4)
	KK130P-11B	9 (3/8)
	KK130P-13B	12 (1/2)

Nut fitting type (for fiber reinforced urethane hose)	Part number	Applicable hose I.D./O.D.
	KK130P-50N	5/8
	KK130P-60N	6/9
	KK130P-65N	6.5/10
	KK130P-80N	8/12
	KK130P-85N	8.5/12.5
	KK130P-110N	11/16

One-touch fitting type	Part number	Applicable tube O.D.
	KK130P-06H ●	6
	KK130P-08H ●	8
	KK130P-10H ●	10
	KK130P-12H ●	12

Socket (S)

Male thread type	Part number	R
	KK130S-01MS ●	R 1/8
	KK130S-02MS ●	R 1/4
	KK130S-03MS ●	R 3/8
	KK130S-04MS ●	R 1/2

Female thread type	Part number	Rc
	KK130S-01F ●	Rc 1/8
	KK130S-02F ●	Rc 1/4
	KK130S-03F ●	Rc 3/8
	KK130S-04F ●	Rc 1/2

Barb fitting type (for rubber hose)	Part number	Ø
	KK130S-07B	6 (1/4)
	KK130S-09B	8 (1/4)
	KK130S-11B	9 (3/8)
	KK130S-13B	12 (1/2)

Nut fitting type (for fiber reinforced urethane hose)	Part number	Applicable hose I.D./O.D.
	KK130S-50N	5/8
	KK130S-60N	6/9
	KK130S-65N	6.5/10
	KK130S-80N	8/12
	KK130S-85N	8.5/12.5
	KK130S-110N	11/16

One-touch fitting type	Part number	Applicable tube O.D.
	KK130S-06H ●	6
	KK130S-08H ●	8
	KK130S-10H ●	10
	KK130S-12H ●	12

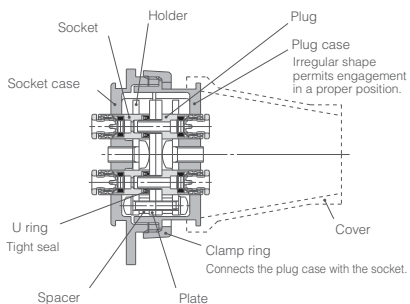
Round multi-connector

DMK Series

One-touch fitting: $\varnothing 3.2 \bullet 4 \text{ mm}$



• Max. operating pressure 1 MPa.

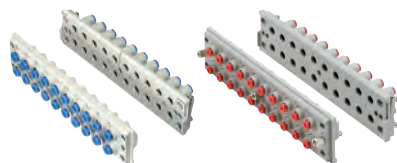


Multi-connector	Part number		Number of connecting tubes	Cover part no. (Optional)
	Plug side only	Socket side only		
DMK6-23	DMK6P-23 ●	DMK6S-23	6	DMK-C-6 ●
DMK6-04 ●	DMK6P-04 ●	DMK6S-04 ●		
DMK12-23	DMK12P-23	DMK12S-23	12	DMK-C-12 ●
DMK12-04 ●	DMK12P-04 ●	DMK12S-04 ●		

Rectangular multi-connector

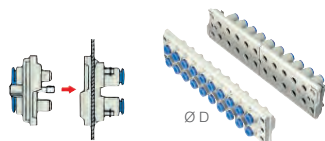
KDM Series

One-touch fitting: $\varnothing 3.2 \bullet 4 \bullet 6 \bullet 8 \text{ mm}$



• Operating pressure range -100 KPa to 1 MPa.

Rectangular multi-connector 10 or 20 ports
KDM



Part number	$\varnothing D$	Number of connecting tubes
KDM10-23 ●	3.2	10
KDM10-04 ●	4	
KDM10-06 ●	6	
KDM10-08 ●	8	
KDM20-23	3.2	20
KDM20-04 ●	4	
KDM20-06 ●	6	
KDM20-08 ●	8	

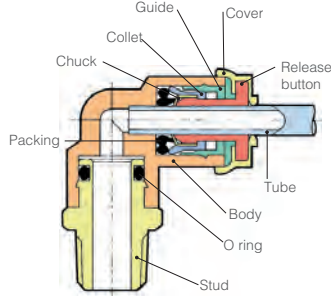
FR one-touch fittings equivalent to UL-94 standard V-0

KR Series

Tube: O.D.: $\varnothing 6 \bullet 8 \bullet 10 \bullet 12$ mm
Thread: R 1/8 • 1/4 • 3/8 • 1/2



- One-touch fittings with extreme flame-resistant properties, ideally suited for applications such as welding
- The covers are ordered separately
- Suitable for air and water
- Operating pressure range -100 KPa to 1 MPa.



Male connector
KRH



Part number	R	$\varnothing D$
KRH06-01S ●	1/8	6
KRH06-02S ●	1/4	
KRH06-03S ●	3/8	
KRH08-01S ●	1/8	8
KRH08-02S ●	1/4	
KRH08-03S ●	3/8	
KRH10-01S ●	1/8	10
KRH10-02S ●	1/4	
KRH10-03S ●	3/8	
KRH10-04S ●	1/2	12
KRH12-02S ●	1/4	
KRH12-03S ●	3/8	
KRH12-04S ●	1/2	

Supplied without covers.

Male elbow
KRL



Part number	R	$\varnothing D$
KRL06-01S ●	1/8	6
KRL06-02S ●	1/4	
KRL06-03S ●	3/8	
KRL08-01S ●	1/8	8
KRL08-02S ●	1/4	
KRL08-03S ●	3/8	
KRL10-01S ●	1/8	10
KRL10-02S ●	1/4	
KRL10-03S ●	3/8	
KRL10-04S ●	1/2	12
KRL12-02S ●	1/4	
KRL12-03S ●	3/8	
KRL12-04S ●	1/2	

Supplied without covers.

Union tee
KRT



Part number	$\varnothing D$	$\varnothing D$
KRT06-00 ●	6	6
KRT08-00 ●	8	8
KRT10-00 ●	10	10
KRT12-00 ●	12	12

Supplied without covers.

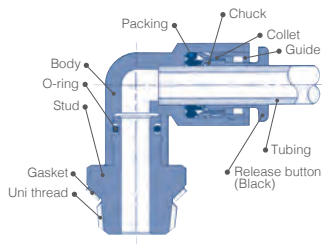
Cover	
Part number	$\varnothing D$
KR-06C ●	6
KR-08C ●	8
KR-10C ●	10
KR-12C ●	12

Antistatic one-touch fittings

KA Series

Tube: O.D.: Ø 3.2 • 4 • 6 • 8 • 10 • 12 mm

Thread: M5 • M6 • Uni1/8 • 1/4 • 3/8 • 1/2





- Flame resistant (Equivalent to UL-94 Standards V-0).
- Surface resistance 10^4 to $10^7 \Omega$
- Conductive resin is used for the body sealant of fittings.
- Compatible with vacuum pressure (-100 kPa).
- Can be used for copper-free applications.
- Applicable for Antistatic Soft Nylon, Antistatic Polyurethane.
- Operating pressure range -100 KPa to 1 MPa.



Male connector KAH	Part number	Connecting thread	Applicable tubing O.D. [mm]
	KAH23-M5 ●	M5 x 0.8	3.2
	KAH23-M6	M6 x 1	
	KAH23-U01	Uni 1/8	
	KAH04-M5 ●	M5 x 0.8	4
	KAH04-M6	M6 x 1	
	KAH04-U01 ●	Uni 1/8	
	KAH04-U02	Uni 1/4	
	KAH06-M5 ●	M5 x 0.8	
	KAH06-M6	M6 x 1	
	KAH06-U01 ●	Uni 1/8	6
	KAH06-U02 ●	Uni 1/4	
	KAH06-U03	Uni 3/8	
	KAH08-U01 ●	Uni 1/8	
	KAH08-U02 ●	Uni 1/4	
	KAH08-U03	Uni 3/8	
	KAH10-U01 ●	Uni 1/8	8
	KAH10-U02 ●	Uni 1/4	
	KAH10-U03	Uni 3/8	
	KAH10-U04	Uni 1/2	
	KAH12-U02 ●	Uni 1/4	10
	KAH12-U03 ●	Uni 3/8	
	KAH12-U04 ●	Uni 1/2	
	KAH12-U04 ●	Uni 1/2	



Male Branch Tee KAT	Part number	Connecting thread	Applicable tubing O.D. [mm]
	KAT23-M5	M5 x 0.8	3.2
	KAT23-M6	M6 x 1	
	KAT23-U01	Uni 1/8	
	KAT04-M5	M5 x 0.8	4
	KAT04-M6	M6 x 1	
	KAT04-U01	Uni 1/8	
	KAT04-U02	Uni 1/4	
	KAT06-M5	M5 x 0.8	
	KAT06-M6	M6 x 1	
	KAT06-U01	Uni 1/8	6
	KAT06-U02	Uni 1/4	
	KAT06-U03	Uni 3/8	
	KAT08-U01	Uni 1/8	
	KAT08-U02	Uni 1/4	
	KAT08-U03	Uni 3/8	
	KAT10-U01	Uni 1/8	8
	KAT10-U02	Uni 1/4	
	KAT10-U03	Uni 3/8	
	KAT10-U04	Uni 1/2	
	KAT12-U02	Uni 1/4	10
	KAT12-U03	Uni 3/8	
	KAT12-U04	Uni 1/2	
	KAT12-U04	Uni 1/2	


Straight union KAH	Part number	Applicable tubing O.D. [mm]
	KAH23-00	3.2
	KAH04-00 ●	4
	KAH06-00 ●	6
	KAH08-00 ●	8
	KAH10-00	10
	KAH12-00	12


Different diameter straight KAH	Part number	Applicable tubing O.D. [mm]	
		Ø d	Ø D
	KAH23-04	3.2	4
	KAH04-06 ●	4	6
	KAH06-08 ●	6	8
	KAH08-10	8	10
	KAH10-12	10	12


Male elbow KAL	Part number	Connecting thread	Applicable tubing O.D. [mm]	
 M5, M6	KAL23-M5 ●	M5 x 0.8	3.2	
	KAL23-M6	M6 x 1		
	KAL23-U01	Uni 1/8		
	 UNI thread	KAL04-M5 ●	M5 x 0.8	4
		KAL04-M6	M6 x 1	
		KAL04-U01 ●	Uni 1/8	
		KAL04-U02 ●	Uni 1/4	
		KAL06-M5 ●	M5 x 0.8	
		KAL06-M6	M6 x 1	
	<td>KAL06-U01 ●</td> <td>Uni 1/8</td> <td rowspan="6">6</td>	KAL06-U01 ●	Uni 1/8	6
		KAL06-U02 ●	Uni 1/4	
		KAL06-U03	Uni 3/8	
KAL08-U01 ●		Uni 1/8		
KAL08-U02 ●		Uni 1/4		
KAL08-U03 ●		Uni 3/8		
<td>KAL10-U01</td> <td>Uni 1/8</td> <td rowspan="6">10</td>	KAL10-U01	Uni 1/8	10	
	KAL10-U02	Uni 1/4		
	KAL10-U03	Uni 3/8		
	KAL10-U04	Uni 1/2		
	KAL12-U02	Uni 1/4		
	KAL12-U03	Uni 3/8		
KAL12-U04	Uni 1/2	12		


Male run tee KAY	Part number	Connecting thread	Applicable tubing O.D. [mm]	
 M5, M6	KAY23-M5	M5 x 0.8	3.2	
	KAY23-M6	M6 x 1		
	KAY23-U01	Uni 1/8		
	 UNI thread	KAY04-M5	M5 x 0.8	4
		KAY04-M6	M6 x 1	
		KAY04-U01	Uni 1/8	
		KAY04-U02	Uni 1/4	
		KAY06-M5	M5 x 0.8	
		KAY06-M6	M6 x 1	
	<td>KAY06-U01</td> <td>Uni 1/8</td> <td rowspan="6">6</td>	KAY06-U01	Uni 1/8	6
		KAY06-U02	Uni 1/4	
		KAY06-U03	Uni 3/8	
KAY08-U01		Uni 1/8		
KAY08-U02		Uni 1/4		
KAY08-U03		Uni 3/8		
<td>KAY10-U01</td> <td>Uni 1/8</td> <td rowspan="6">10</td>	KAY10-U01	Uni 1/8	10	
	KAY10-U02	Uni 1/4		
	KAY10-U03	Uni 3/8		
	KAY10-U04	Uni 1/2		
	KAY12-U02	Uni 1/4		
	KAY12-U03	Uni 3/8		
KAY12-U04	Uni 1/2	12		

Union "Y" KAU	Part number	Connecting thread	Applicable tubing O.D. [mm]	
 M5, M6	KAU23-M5	M5 x 0.8	3.2	
	KAU23-M6	M6 x 1		
	KAU23-U01	Uni 1/8		
	 UNI thread	KAU04-M5	M5 x 0.8	4
		KAU04-M6	M6 x 1	
		KAU04-U01	Uni 1/8	
		KAU04-U02	Uni 1/4	
		KAU06-M5	M5 x 0.8	
		KAU06-M6	M6 x 1	
	<td>KAU06-U01</td> <td>Uni 1/8</td> <td rowspan="6">6</td>	KAU06-U01	Uni 1/8	6
		KAU06-U02	Uni 1/4	
		KAU06-U03	Uni 3/8	
KAU08-U01		Uni 1/8		
KAU08-U02		Uni 1/4		
KAU08-U03		Uni 3/8		
<td>KAU10-U01</td> <td>Uni 1/8</td> <td rowspan="6">10</td>	KAU10-U01	Uni 1/8	10	
	KAU10-U02	Uni 1/4		
	KAU10-U03	Uni 3/8		
	KAU10-U04	Uni 1/2		
	KAU12-U02	Uni 1/4		
	KAU12-U03	Uni 3/8		
KAU12-U04	Uni 1/2	12		

Branch tee KAT	Part number	Applicable tubing O.D. [mm]
	KAT23-00	3.2
	KAT04-00 ●	4
	KAT06-00 ●	6
	KAT08-00 ●	8
	KAT10-00	10
	KAT12-00	12

Union "Y" KAU	Part number	Applicable tubing O.D. [mm]
	KAU23-00	3.2
	KAU04-00 ●	4
	KAU06-00 ●	6
	KAU08-00	8
	KAU10-00	10
	KAU12-00	12

Union elbow KAL	Part number	Applicable tubing O.D. [mm]
	KAL23-00	3.2
	KAL04-00	4
	KAL06-00	6
	KAL08-00	8
	KAL10-00	10
	KAL12-00	12

Plug-in reducer KAR	Part number	Fitting size	Applicable tubing O.D. [mm]
	KAR23-04	4	3.2
	KAR04-06 ●	6	4
	KAR04-08	8	
	KAR04-10	10	
	KAR06-08	8	6
	KAR06-10	10	
	KAR06-12	12	
	KAR08-10	10	8
	KAR08-12	12	
	KAR10-12	12	

Stainless steel 316 one-touch fittings

KQG2 Series

Tube O.D.: Ø 3.2 • 4 • 6 • 8 • 10 • 12 • 16 mm

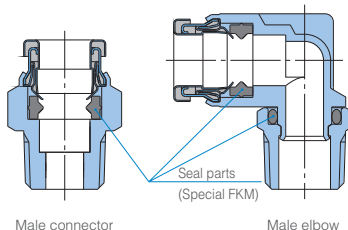
Thread: M5 • R1/8 • 1/4 • 3/8 • 1/2



Customer benefits


- High corrosion resistance thanks to all the external parts are constructed from stainless steel 316.
- Wide assortment of applications due to the fluid temperature range and the grease-free specification.
- Easier use in confined spaces.

- Material:
 - Metal parts: Stainless steel 316
 - Seal parts: Special FKM
- Can be used with air, water and steam
- Operating fluid temperature: -5 to 150 °C
- Grease-free
- Applicable tubing material: FEP, PFA, nylon, soft nylon, polyurethane, polyolefin
- Operating pressure range -100 kPa to 1 MPa.




Related products


TU Series - Polyurethane tubing - page 376
T Series - Nylon tubing - page 374
TH Series - Fluoropolymer (FEP) tubing - page 388
TLM Series - Fluoropolymer (PFA) tubing - page 386

Male connector KQG2H			
	Ø D		
	R		
Part number	R	Ø D	
KQG2H23-M5	M5*	3.2	
KQG2H23-01S	R 1/8		
KQG2H23-02S	R 1/4		
KQG2H04-M5	M5*	4	
KQG2H04-01S	R 1/8		
KQG2H04-02S	R 1/4		
KQG2H06-M5	M5*	6	
KQG2H06-01S	R 1/8		
KQG2H06-02S	R 1/4		
KQG2H06-03S	R 3/8	8	
KQG2H08-01S	R 1/8		
KQG2H08-02S	R 1/4		
KQG2H08-03S	R 3/8	10	
KQG2H10-01S	R 1/8		
KQG2H10-02S	R 1/4		
KQG2H10-03S	R 3/8	12	
KQG2H12-01S	R 1/8		
KQG2H12-02S	R 1/4		
KQG2H12-03S	R 3/8	16	
KQG2H12-04S	R 1/2		
KQG2H16-03S	R 3/8		
KQG2H16-04S	R 1/2		

* with gasket.

Hexagon socket head male connector KQG2S			
	Ø D		
	R		
Part number	R	Ø D	
KQG2S23-M5	M5*	3.2	
KQG2S04-M5	M5*	4	
KQG2S04-01S	R 1/8		
KQG2S06-M5	M5*	6	
KQG2S06-01S	R 1/8		
KQG2S06-02S	R 1/4	8	
KQG2S08-01S	R 1/8		
KQG2S08-02S	R 1/4	10	
KQG2S10-02S	R 1/4		
KQG2S10-03S	R 3/8	12	
KQG2S10-01S	R 1/8		
KQG2S10-04S	R 1/2	16	
KQG2S12-02S	R 1/4		
KQG2S12-03S	R 3/8		
KQG2S12-04S	R 1/2		
KQG2S16-03S	R 3/8		
KQG2S16-04S	R 1/2		

* with gasket.

Male elbow KQG2L			
	Ø D		
	R		
Part number	R	Ø D	
KQG2L23-M5	M5*	3.2	
KQG2L23-01S	R 1/8		
KQG2L23-02S	R 1/4		
KQG2L04-M5	M5*	4	
KQG2L04-01S	R 1/8		
KQG2L04-02S	R 1/4		
KQG2L06-M5	M5*	6	
KQG2L06-01S	R 1/8		
KQG2L06-02S	R 1/4		
KQG2L06-03S	R 3/8	8	
KQG2L08-01S	R 1/8		
KQG2L08-02S	R 1/4		
KQG2L08-03S	R 3/8	10	
KQG2L10-01S	R 1/8		
KQG2L10-02S	R 1/4		
KQG2L10-03S	R 3/8	12	
KQG2L10-04S	R 1/2		
KQG2L12-02S	R 1/4		
KQG2L12-03S	R 3/8	16	
KQG2L12-04S	R 1/2		
KQG2L16-03S	R 3/8		
KQG2L16-04S	R 1/2		

* with gasket.

Male branch tee KQG2T



Part number	R	Ø D
KQG2T23-M5	M5*	3.2
KQG2T23-01S	R 1/8	
KQG2T23-02S	R 1/4	
KQG2T04-M5	M5*	4
KQG2T04-01S	R 1/8	
KQG2T04-02S	R 1/4	
KQG2T06-M5	M5*	6
KQG2T06-01S	R 1/8	
KQG2T06-02S	R 1/4	
KQG2T06-03S	R 3/8	8
KQG2T08-01S	R 1/8	
KQG2T08-02S	R 1/4	
KQG2T08-03S	R 3/8	10
KQG2T10-01S	R 1/8	
KQG2T10-02S	R 1/4	
KQG2T10-03S	R 3/8	12
KQG2T10-04S	R 1/2	
KQG2T12-02S	R 1/4	
KQG2T12-03S	R 3/8	16
KQG2T12-04S	R 1/2	
KQG2T16-03S	R 3/8	
KQG2T16-04S	R 1/2	

* with gasket.

Straight union
KQG2H



Part number	Ø D
KQG2H23-00	3.2
KQG2H04-00	4
KQG2H06-00	6
KQG2H08-00	8
KQG2H10-00	10
KQG2H12-00	12
KQG2H16-00	16

Different diameter straight
KQG2H



Part number	Ø d	Ø D
KQG2H23-04	3.2	4
KQG2H04-06	4	6
KQG2H06-08	6	8
KQG2H08-10	8	10
KQG2H10-12	10	12
KQG2H12-16	12	16

Union elbow
KQG2L



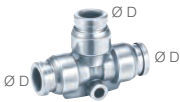
Part number	Ø D
KQG2L23-00	3.2
KQG2L04-00	4
KQG2L06-00	6
KQG2L08-00	8
KQG2L10-00	10
KQG2L12-00	12
KQG2L16-00	16

Bulkhead union
KQG2E



Part number	Ø D
KQG2E23-00	3.2
KQG2E04-00	4
KQG2E06-00	6
KQG2E08-00	8
KQG2E10-00	10
KQG2E12-00	12
KQG2E16-00	16

Union tee
KQG2T



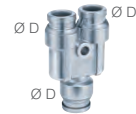
Part number	Ø D
KQG2T23-00	3.2
KQG2T04-00	4
KQG2T06-00	6
KQG2T08-00	8
KQG2T10-00	10
KQG2T12-00	12
KQG2T16-00	16

Different diameter tee
KQG2T



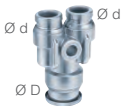
Part number	Ø d	Ø D
KQG2T23-04	3.2	4
KQG2T04-06	4	6
KQG2T06-08	6	8
KQG2T08-10	8	10
KQG2T10-12	10	12
KQG2T12-16	12	16

Union "Y"
KQG2U



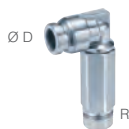
Part number	Ø D
KQG2U23-00	3.2
KQG2U04-00	4
KQG2U06-00	6
KQG2U08-00	8
KQG2U10-00	10
KQG2U12-00	12
KQG2U16-00 P	16

Different diameter union "Y"
KQG2U



Part number	Ø d	Ø D
KQG2U23-04	3.2	4
KQG2U04-06	4	6
KQG2U06-08	6	8
KQG2U08-10	8	10
KQG2U10-12	10	12
KQG2U12-16	12	16

Extended male elbow
KQG2W



Part number	R	Ø D
KQG2W23-M5	M5*	3.2
KQG2W23-01S	R 1/8	
KQG2W23-02S	R 1/4	
KQG2W04-M5	M5*	4
KQG2W04-01S	R 1/8	
KQG2W04-02S	R 1/4	
KQG2W06-M5	M5*	6
KQG2W06-01S	R 1/8	
KQG2W06-02S	R 1/4	
KQG2W06-03S	R 3/8	8
KQG2W08-01S	R 1/8	
KQG2W08-02S	R 1/4	
KQG2W08-03S	R 3/8	10
KQG2W10-02S	R 1/4	
KQG2W10-03S	R 3/8	
KQG2W10-04S	R 1/2	12
KQG2W12-02S	R 1/4	
KQG2W12-03S	R 3/8	
KQG2W12-04S	R 1/2	16
KQG2W16-03S	R 3/8	
KQG2W16-04S	R 1/2	

* with gasket.

Bulkhead connector
KQG2E



Part number	Rc	Ø D
KQG2E23-02	Rc 1/4	3.2
KQG2E04-01	Rc 1/8	4
KQG2E04-02	Rc 1/4	
KQG2E06-01	Rc 1/8	6
KQG2E06-02	Rc 1/4	
KQG2E06-03	Rc 3/8	8
KQG2E08-01	Rc 1/8	
KQG2E08-02	Rc 1/4	10
KQG2E08-03	Rc 3/8	
KQG2E10-02	Rc 1/4	12
KQG2E10-03	Rc 3/8	
KQG2E12-03	Rc 3/8	16
KQG2E12-04	Rc 1/2	
KQG2E16-03	Rc 3/8	16
KQG2E16-04	Rc 1/2	

Female connector
KQG2F



Part number	Rc	Ø D
KQG2F23-01	Rc 1/8	3.2
KQG2F04-01		4
KQG2F04-02	Rc 1/4	
KQG2F06-01	Rc 1/8	8
KQG2F06-02	Rc 1/4	
KQG2F06-03	Rc 3/8	12
KQG2F08-01	Rc 1/8	
KQG2F08-02	Rc 1/4	16
KQG2F08-03	Rc 3/8	
KQG2F10-02	Rc 1/4	16
KQG2F10-03	Rc 3/8	
KQG2F12-02	Rc 1/4	16
KQG2F12-03	Rc 3/8	
KQG2F12-04	Rc 1/2	16
KQG2F16-03	Rc 3/8	
KQG2F16-04	Rc 1/2	16

Plug-in reducer
KQG2R



Part number	Ø d	Ø D
KQG2R23-04	3.2	4
KQG2R04-06	4	6
KQG2R06-08	6	8
KQG2R08-10	8	10
KQG2R10-12	10	12
KQG2R12-16	12	16

Plug
KQG2P



Part number	Ø D
KQG2P-23	3.2
KQG2P-04	4
KQG2P-06	6
KQG2P-08	8
KQG2P-10	10
KQG2P-12	12
KQG2P-16	16

Stainless fittings

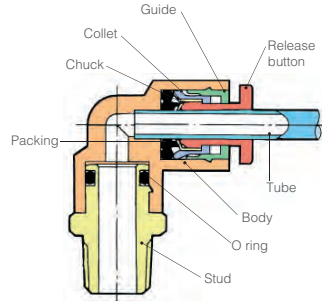
KG Series

Tube O.D.: Ø 4 • 6 • 8 • 10 • 12 • 16 mm

Thread: M5 • R 1/8 • 1/4 • 3/8 • 1/2



- Corrosion resistant
- SUS303 stainless steel
- Ideally suited for the food industry, etc
- Suitable for air and water
- Operating pressure range: -100 KPa to 1 MPa.



Male connector KGH			
Part number	R	Ø D	
KGH04-M5	M5*	4	
KGH04-01S	R 1/8		
KGH04-02S	R 1/4		
KGH06-M5	M5*	6	
KGH06-01S	R 1/8		
KGH06-02S	R 1/4		
KGH06-03S	R 3/8	8	
KGH08-01S	R 1/8		
KGH08-02S	R 1/4		
KGH08-03S	R 3/8	10	
KGH10-01S	R 1/8		
KGH10-02S	R 1/4		
KGH10-03S	R 3/8	12	
KGH10-04S	R 1/2		
KGH12-02S	R 1/4		
KGH12-03S	R 3/8	16	
KGH12-04S	R 1/2		
KGH16-03S	R 3/8		
KGH16-04S	R 1/2		

* with gasket.

Hexagon socket head male connector KGS			
Part number	R	Ø D	
KGS04-M5	M5*	4	
KGS04-01S	R 1/8		
KGS06-M5	M5*		
KGS06-01S	R 1/8	6	
KGS06-02S	R 1/4		
KGS08-01S	R 1/8		
KGS08-02S	R 1/4	8	
KGS08-03S	R 3/8		
KGS10-01S	R 1/8		
KGS10-02S	R 1/4	10	
KGS10-03S	R 3/8		
KGS10-04S	R 1/2		
KGS12-02S	R 1/4	12	
KGS12-03S	R 3/8		
KGS12-04S	R 1/2		

* with gasket.

Union tee KGT			
Part number	Ø D	Ø D	
KGT04-00	4	4	4
KGT06-00	6	6	6
KGT08-00	8	8	8
KGT10-00	10	10	10
KGT12-00	12	12	12
KGT16-00	16	16	16

Male elbow KGL			
Part number	R	Ø D	
KGL04-M5	M5*	4	
KGL04-01S	R 1/8		
KGL04-02S	R 1/4		
KGL06-M5	M5*	6	
KGL06-01S	R 1/8		
KGL06-02S	R 1/4		
KGL06-03S	R 3/8	8	
KGL08-01S	R 1/8		
KGL08-02S	R 1/4		
KGL08-03S	R 3/8	10	
KGL10-01S	R 1/8		
KGL10-02S	R 1/4		
KGL10-03S	R 3/8	12	
KGL10-04S	R 1/2		
KGL12-02S	R 1/4		
KGL12-03S	R 3/8	16	
KGL12-04S	R 1/2		
KGL16-03S	R 3/8		
KGL16-04S	R 1/2		

* with gasket.

Stainless steel 316 insert fittings

KFG2 Series

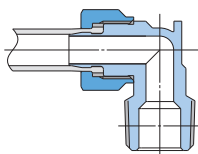
Tube O.D.: Ø 4 • 6 • 8 • 10 • 12 • 16 mm

Thread: R 1/8 • 1/4 • 3/8 • 1/2



- Material: Stainless Steel 316
- Operating fluid temperature - 65 to 260 °C
- Can be used with steam
- Grease-free
- Applicable tubing material: FEP, PFA, modified PTFE nylon, soft nylon, polyolefin, polyurethane, soft polyurethane, hard polyurethane, soft polyolefin, antistatic soft nylon, antistatic polyurethane
- Swivel elbow rotary seal: Special FKM
- Operating pressure range -100 KPa to 1 MPa.

Sleeveless sealing structure makes replacement parts for maintenance unnecessary.



Male connector
KFG2H



Part number	R	Ø D	I.D.
KFG2H0425-01S	1/8	4	2.5
KFG2H0425-02S	1/4		
KFG2H0403-01S	1/8		3
KFG2H0403-02S	1/4		
KFG2H0604-01S	1/8	6	4
KFG2H0604-02S	1/4		
KFG2H0806-01S	1/8	8	6
KFG2H0806-02S	1/4		
KFG2H0806-03S	3/8		7.5
KFG2H1075-02S	1/4		
KFG2H1075-03S	3/8	10	8
KFG2H1075-04S	1/2		
KFG2H1008-02S	1/4		9
KFG2H1209-04S	1/2		
KFG2H1210-02S	1/4	12	10
KFG2H1210-03S	3/8		
KFG2H1210-04S	1/2		13
KFG2H1613-03S	3/8		
KFG2H1613-04S	1/2	16	13

Male elbow
KFG2L



Part number	R	Ø D	I.D.
KFG2L0425-01S	1/8	4	2.5
KFG2L0425-02S	1/4		
KFG2L0403-01S	1/8		3
KFG2L0403-02S	1/4		
KFG2L0604-01S	1/8	6	4
KFG2L0604-02S	1/4		
KFG2L0806-01S	1/8	8	6
KFG2L0806-02S	1/4		
KFG2L0806-03S	3/8		7.5
KFG2L1075-02S	1/4		
KFG2L1075-03S	3/8	10	8
KFG2L1075-04S	1/2		
KFG2L1008-02S	1/4		9
KFG2L1209-04S	1/2		
KFG2L1210-02S	1/4	12	10
KFG2L1210-03S	3/8		
KFG2L1210-04S	1/2		13
KFG2L1613-03S	3/8		
KFG2L1613-04S	1/2	16	13

Male branch tee
KFG2T



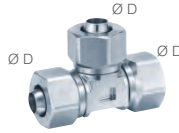
Part number	R	Ø D	I.D.
KFG2T0425-01S	1/8	4	2.5
KFG2T0425-02S	1/4		
KFG2T0403-01S	1/8		3
KFG2T0403-02S	1/4		
KFG2T0604-01S	1/8	6	4
KFG2T0604-02S	1/4		
KFG2T0806-01S	1/8	8	6
KFG2T0806-02S	1/4		
KFG2T0806-03S	3/8		7.5
KFG2T1075-02S	1/4		
KFG2T1075-03S	3/8	10	8
KFG2T1075-04S	1/2		
KFG2T1008-02S	1/4		9
KFG2T1209-04S	1/2		
KFG2T1210-02S	1/4	12	10
KFG2T1210-03S	3/8		
KFG2T1210-04S	1/2		13
KFG2T1613-03S	3/8		
KFG2T1613-04S	1/2	16	13

Straight union
KFG2H



Part number	R Ø D	I.D.
KFG2H0425-00 ●	4	2.5
KFG2H0403-00 ●		3
KFG2H0604-00 ●	6	4
KFG2H0806-00 ●	8	6
KFG2H1075-00 ●	10	7.5
KFG2H1008-00 ●		8
KFG2H1209-00 ●	12	9
KFG2H1210-00 ●		10
KFG2H1613-00 ●	16	13

Union tee
KFG2T



Part number	Ø D	I.D.
KFG2T0425-00 ●	4	2.5
KFG2T0403-00 ●		3
KFG2T0604-00 ●	6	4
KFG2T0806-00 ●	8	6
KFG2T1075-00 ●	10	7.5
KFG2T1008-00 ●		8
KFG2T1209-00 ●	12	9
KFG2T1210-00 ●		10
KFG2T1613-00 ●	16	13

Bulkhead union
KFG2E



Part number	Ø D	I.D.
KFG2E0425-00 ●	4	2.5
KFG2E0403-00 ●		3
KFG2E0604-00 ●	6	4
KFG2E0806-00 ●	8	6
KFG2E1075-00 ●	10	7.5
KFG2E1008-00 ●		8
KFG2E1209-00 ●	12	9
KFG2E1210-00 ●		10
KFG2E1613-00 ●	16	13

Union elbow
KFG2L



Part number	Ø D	I.D.
KFG2L0425-00 ●	4	2.5
KFG2L0403-00 ●		3
KFG2L0604-00 ●	6	4
KFG2L0806-00 ●	8	6
KFG2L1075-00 ●	10	7.5
KFG2L1008-00 ●		8
KFG2L1209-00 ●	12	9
KFG2L1210-00 ●		10
KFG2L1613-00 ●	16	13

Swivel elbow
KFG2V



Part number	R	Ø D	I.D.
KFG2V0425-01S ●	1/8	4	2.5
KFG2V0425-02S ●	1/4		
KFG2V0403-01S ●	1/8		3
KFG2V0403-02S ●	1/4	6	4
KFG2V0604-01S ●	1/8		
KFG2V0604-02S ●	1/4		6
KFG2V0806-01S ●	1/8	8	6
KFG2V0806-02S ●	1/4		
KFG2V0806-03S ●	3/8		8
KFG2V1075-02S ●	1/4	10	7.5
KFG2V1075-03S ●	3/8		
KFG2V1075-04S ●	1/2		10
KFG2V1008-02S ●	1/4	12	8
KFG2V1008-03S ●	3/8		
KFG2V1008-04S ●	1/2		12
KFG2V1209-02S ●	1/4	16	9
KFG2V1209-03S ●	3/8		
KFG2V1209-04S ●	1/2		16
KFG2V1210-02S ●	1/4	10	10
KFG2V1210-03S ●	3/8		
KFG2V1210-04S ●	1/2		10
KFG2V1613-03S ●	3/8	16	13
KFG2V1613-04S ●	1/2		

Swivel elbow and with sealant types: -5 to 150 °C.

Female connector
KFG2F



Part number	R	Ø D	I.D.
KFG2F0425-02 ●	1/4	4	2.5
KFG2F0403-02 ●			3
KFG2F0604-02 ●		6	4
KFG2F0806-03 ●	3/8	8	6
KFG2F1075-03 ●			10
KFG2F1008-03 ●		8	
KFG2F1209-03 ●	12	12	9
KFG2F1210-03 ●			10
KFG2F1613-04 ●		1/2	16

Union nut
KFG2N



Part number	Ø D
KFG2N-04 ●	4
KFG2N-06 ●	6
KFG2N-08 ●	8
KFG2N-10 ●	10
KFG2N-12 ●	12
KFG2N-16 ●	16

Miniature fittings, stainless steel


• Max. operating pressure 1.5 MPa (depending on used tubing material).

MS Series

Connection thread M5




Barb fitting



Part number	R	Ø D	
		I.D.	O.D.
MS-5AU-3 ●	M5*	2.18	3.18
MS-5AU-4 ●		2.5	4
MS-5AU-6 ●		4	6

* with gasket.

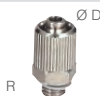
Barb elbow



Part number	R	Ø D	
		I.D.	O.D.
MS-5ALHU-3 ●	M5*	2.18	3.18
MS-5ALHU-4 ●		2.5	4
MS-5ALHU-6 ●		4	6

* with gasket.


Hose nipple



Part number	R	Ø D	
		I.D.	O.D.
MS-5H-4 ●	M5*	2.5	4
MS-5H-6 ●		4	6

* with gasket.


Hose elbow



Part number	R	Ø D	
		I.D.	O.D.
MS-5HLH-4 ●	M5*	2.5	4
MS-5HLH-6 ●		4	6

* with gasket.


Universal elbow



Part number	R	R
MS-5UL ●	M5*	M5

* with gasket.


Universal tee



Part number	R	R	R
MS-5UT ●	M5*	M5	M5


* with gasket.

Bushing



Part number	R	R1
MS-5B ●	R 1/8	M5


Extension fitting



Part number	R	R
MS-5J ●	M5*	M5

* with gasket.


Universal nipple



Part number	R	R
MS-5UN ●	M5*	M5*

* with gasket.


Plug



Part number	R
MS-5P ●	M5*

* with gasket.

Nipple



Part number	R	R
MS-5N ●	M5*	M5*

* with gasket.

Rotary joint for compressed air

MQR Series



- Metallic seals, up to 1 billion rotations
- 6 styles from 1 to 16 circuits
- Suitable up to max. 3000 r.p.m.
- Low torque
- High rigidity as a result of double shaft bearing, (MQR1 only one bearing).

Part number	Number of circuits	Operating pressure [MPa]	Max. speed [rev/min]	Torque [Nm]
MQR1-M5 ●	1	-100 kPa to 1,0 MPa	3000	0.003
MQR2-M5 ●	2		2000	0.03
MQR4-M5 ●	4		1500	0.05
MQR8-M5 ●	8		900	0.1
MQR12-M5 ●	12		600	0.2
MQR16-M5 ●	16		200	0.5

Tubing

Nylon tubing

T Series

Ø : 3.2 • 4 • 6 • 8 • 10 • 12 • 16 mm.



How to order

T0425 B - 100

① ② ③

① Tubing model

Model	O.D. x I.D. [mm]
TIA01	3.2 x 2.2
T0425	4 x 2.5
T0604	6 x 4
T0806	8 x 6
T1075	10 x 7.5
T1209	12 x 9
T1613	16 x 13

1) TIA01, Ø 16 only available in black or white

② Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

1) Other colours available on request

③ Length per roll

Symbol	Length
20	20 m - reel
100	100 m - reel

1) TIA only 20 m, T1613□ - 100 is reel

Specification

Model	TIA01	T0425	T0403	T0604	T0645	T0806	T1075	T1209	T1613
O.D. [mm]	3.18	4	4	6	6	8	10	12	16
I.D. [mm]	2.18	2.5	3	4	4.5	6	7.5	9	13
Max. operating pressure [MPa] 20 °C or less	2.3	3.3	2.0	3.0	2.0	2.0	2.0	2.0	1.6
Min. bending radius [mm]	15	13	20	24	30	40	50	60	100
Fluid	Air/Water								
Operating temperature	-40 to +100 °C, Water: 0 to 70 °C (No freezing)								
Material	Nylon 12								
Applicable fittings	One-touch fittings, insert fittings, self-align fittings, miniature fittings								

Stocked items

T	Roll length [m]	Available colours
T0425	20, 100	B, BU, G, R, W, Y
T0604		
T0806		
T1075		
T1209		
T1613		B, W

Soft nylon tubing

TS Series

Ø : 3.2 • 4 • 6 • 8 • 10 • 12 • 16 mm.



How to order

TS0425 B - 100

① ② ③

① Tubing model

Model	O.D. x I.D. [mm]
TISA01	3.2 x 2.2
TS0425	4 x 2.5
TS0604	6 x 4
TS0806	8 x 6
TS1075	10 x 7.5
TS1209	12 x 9
TS1612	16 x 13

1) TISA01, Ø 16 only available in black or white

② Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

1) Other colours available on request

③ Length per roll

Symbol	Length
20	20 m - roll
100	100 m - reel

1) TISA only 20 m, T1612□ - 100 is reel

Specification

Model	TISA01	TS0425	TS0604	TS0806	TS1075	TS1209	TS1612
O.D. [mm]	3.18	4	6	8	10	12	16
I.D. [mm]	2.18	2.5	4	6	7.5	9	12
Max. operating pressure [MPa] 20 °C or less	1.3	2.0	1.7	1.3	1.3	1.3	1.3
Min. bending radius [mm]	18	15	23	45	55	65	90
Fluid	Air/Water						
Operating temperature	-40 to +100 °C, Water: 0 to +50 °C (No freezing)						
Material	Nylon 12						
Applicable fittings	One-touch fittings, insert fittings, self-align fittings, miniature fittings						

Stocked items

TS	Roll length [m]	Available colours
TS0425	20, 100	B, BU, G, R, W, Y
TS0604		
TS0806		
TS1075		
TS1209		
TS1613		
		B, W

Our highlighted product for you

Polyurethane tubing

TU Series

Ø : 2 • 4 • 6 • 8 • 10 • 12 • 16 mm.



Customer benefits

- Maximum design and customize flexibility thanks to wide range of colours
- Easy use in narrow spaces due to the flexibility.

Related products

TM Series - Multi-tube holder - page 391
TK Series - Tube cutter - page 391
TG Series - Tube releasing tool - page 391

TU 0425 B - 100
① ② ③

① Tubing model

Symbol	O.D. x I.D.
TU0212	Ø 2 x Ø 1.2
TU0425	Ø 4 x Ø 2.5
TU0604	Ø 6 x Ø 4
TU0805	Ø 8 x Ø 5
TU1065	Ø 10 x Ø 6.5
TU1208	Ø 12 x Ø 8
TU1610	Ø 16 x Ø 10

1) Ø 2 only available in black, blue, white, red, yellow, green and clear.
Ø 16 only available in black, blue, white and clear.

② Colour

Symbol	Colour	Symbol	Colour
B	Black	GR1	Dark green
W	White	GR2	Grey
R	Red	P1	Light grey
BU1	Blue	P2	Neon pink
Y	Yellow	P3	Solid purple
G	Green	P4	Clear purple
GR	Clear	R1	Solid red
YR	Orange	R2	Clear red
BU1	Solid blue	S1	Silver
BU2	Clear blue	Y1	Solid yellow
BU3	Medium blue	Y2	Clear yellow
BR	Brown	Y3	Neon yellow
G1	Solid green	YR1	Clear orange
G2	Clear green	YR2	Neon orange
G3	Neon green		

③ Length per roll

Symbol	Length
20	20 m roll
100	100 m roll

1) TU1610□ - 100 is reel

Specifications

Model	TU012	TU0425	TU0604	TU0805	TU1065	TU1208	TU1610
O.D. [mm]	2	4	6	8	10	12	16
I.D. [mm]	1.2	2.5	4	5	6.5	8	10
Max. operating pressure at 20 °C [MPa]	0.8						
Min. bending radius [mm]	4	10	15	20	27	35	45
Fluid	Air/Water						
Operating temperature	-20 to +60 °C (Water: 0 to 40 °C) (No freezing)						
Material	Polyurethane						
Applicable fittings	One-touch fittings, insert fittings, self-align fittings, miniature fittings						

Stocked items

TS	Roll length [m]	Available colours
TU0212	20	B, BU, C, G, R, W, Y
TU0425	20, 100	B, BU, C, G, R, S1, W, Y, YR
TU0604	20, 100	B, BU, BU1, BU3, C, G, R, S1, W, Y, YR
TU0805	20, 100	B, BU, BU1, BU3, C, G, GR1, R, S1, W, Y, YR
TU1065	20, 100	B, BU, BU1, BU3, C, G, R, S1, W, Y, YR
TU1208	20, 100	B, BU, C, G, R, S1, W, Y
TU1610	20	B, BU, C, W
	100	B, BU,

Our highlighted product for you

Polyurethane flat tubing

TU Series

Ø : 2 • 4 • 6 • 8 • 10 • 12 mm



- Multi-core, multi-colour specification
- Number of cores : 2, 3, 4, 5, 6
- 8 colour variations
- Compact piping possible.

Roll

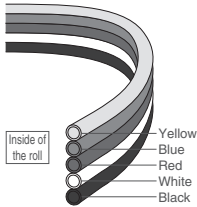
Tube length per roll: **1, 2, 3, 4, 5, 10, 20 m**

TU **0425** - **12345** **A** - **X172**

① ② ③ ④

① Tubing model

Symbol	O.D. x I.D.
0604	Ø 6 x Ø 4
0805	Ø 8 x Ø 5
1065	Ø 10 x Ø 6.5
1208	Ø 12 x Ø 8



② Colour ¹⁾

Symbol	Colour	Symbol	Colour
1	Black	5	Yellow
2	White	6	Green
3	Red	7	Clear
4	Blue	8	Orange ²⁾

1) Colours of the example (12345)

2) Except TU0212

③ Tube length per roll [m]

Symbol	Length	Symbol	Length
A	1	E	5
B	2	F	10
C	3	G	20
D	4		

④ Multi-core, multi-colour specification

Symbol	Number of cores
X169	2 cores
X170	3 cores
X171	4 cores
X172	5 cores
X204	6 cores

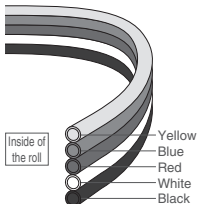
Tube length per roll: **50 m**

TU **0425** - **12345** **H** - **X172**

① ② ③ ④

① Tubing model

Symbol	O.D. x I.D.
0425	Ø 4 x Ø 2.5
0604	Ø 6 x Ø 4
0805	Ø 8 x Ø 5
1065	Ø 10 x Ø 6.5
1208	Ø 12 x Ø 8



② Colour ¹⁾

Symbol	Colour	Symbol	Colour
1	Black	5	Yellow
2	White	6	Green
3	Red	7	Clear
4	Blue	8	Orange

1) Colours of the example (12345)

③ Tube length per roll [m]

Symbol	Length
H	50

④ Multi-core, multi-colour specification

Symbol	Number of cores	Applicable tubing O.D.				
		Ø 4	Ø 6	Ø 8	Ø 10	Ø 12
X169	2 cores	●	●	●	●	●
X170	3 cores	●	●	●	●	
X171	4 cores	●	●	●		
X172	5 cores	●	●	●		
X204	6 cores	●	●			

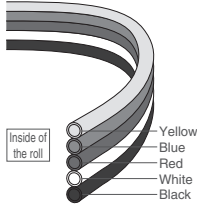
Tube length per roll: 100 m

TU 0425 - 12345 J - X172

① ② ③ ④

① Tubing model

Symbol	O.D. x I.D.
0425	Ø 4 x Ø 2.5
0604	Ø 6 x Ø 4
0805	Ø 8 x Ø 5



② Colour ¹⁾

Symbol	Colour	Symbol	Colour
1	Black	5	Yellow
2	White	6	Green
3	Red	7	Clear
4	Blue	8	Orange

1) Colours of the example (12345)

③ Tube length per roll [m]

Symbol	Length
J	100

④ Multi-core, multi-colour specification

Symbol	Number of cores	Applicable tubing O.D.		
		Ø 4	Ø 6	Ø 8
X169	2 cores	●	●	●
X170	3 cores	●	●	
X171	4 cores	●	●	
X172	5 cores	●	●	
X204	6 cores	●		

Specifications

Model	TU0212	TU0425	TU0604	TU0805	TU1065	TU1208
Tubing O.D. [mm]	2	4	6	8	10	12
Tubing I.D. [mm]	1.2	2.5	4	5	6.5	8
Number of cores ¹⁾	2 Cores	X169				
	3 Cores	X170				
	4 Cores	X171				
	5 Cores	X172				
	6 Cores	X204				
Fluid	Air					
Max. operating pressure at 20 °C	0.8 Mpa					
Applicable fittings	One-touch fitting, insert fitting, miniature fitting					
Min. bending radius [mm]	4	10	15	20	27	35
Operating temperature -20 to +60 °C	-20 to +60 °C					
Material	Polyurethane					

1) Refer to "How to Order" for the combination of tubing size and the number of cores.

Hard polyurethane tubing

TUH Series

∅ : 4 • 6 • 8 • 10 • 12 mm



- High pressure type available (up to 1 MPa operating pressure)
- Maximum effective area increased nearly 44 % (higher flow rate)
- 4 colour variations (translucent, red, blue and black).

How to order

TUH0604 B - 20

① ② ③

① Tubing model

Model	O.D. x I.D. [mm]
TUH0428	4 x 2.8
TUH0644	6 x 4.4
TUH0858	8 x 5.8
TUH1073	10 x 7.3
TUH1288	12 x 8.8
TUH0425	4 x 2.5
TUH0604	6 x 4
TUH0805	8 x 5
TUH1065	10 x 6.5
TUH1208	12 x 8

② Colour indication

Symbol	Colour
B	Black
W	White
BU	Blue
N	Translucent

③ Length per roll

Symbol	Length
20	20 m - roll
100	100 m - reel

Specification

Standard	Model	TUH0428	TUH0644	TUH0858	TUH1073	TUH1288
	O.D. ∅ [mm]	4	6	8	10	12
I.D. ∅ [mm]	2.8	4.4	5.8	7.3	8.8	
High pressure	Model	TUH0425	TUH0604	TUH0805	TUH1065	TUH1208
	O.D. ∅ [mm]	4	6	8	10	12
I.D. ∅ [mm]	2.5	4	5	6.5	8	
Fluid		Air ¹⁾				
Max. operating pressure [MPa]	Standard type	0.8 MPa (at 20 °C)				
	High pressure type	1.0 MPa (at 20 °C)				
Min. bending radius [mm]	Standard type	10	18	24	30	36
	High pressure type	10	15	20	27	35
Operating temperature		-20 to 60 °C (No freezing)				
Material		Polyurethane				

1) Consult SMC regarding other fluids.
Water cannot be used because of occurrence of hydrolysis.

Stocked items

TUH	Roll length [m]	Available colours
TUH0428	20, 100	B, BU, N, W
TUH0644		
TUH0858		
TUH1073		
TUH1288		
TUH0425		
TUH0604		
TUH0805		
TUH1065		
TUH1208		

Wear resistant tubing

TUZ Series

Ø : 4 • 6 • 8 • 10 • 12 mm



- Abrasion: Aprox. 1/3 (compared with SMC polyurethane tubing TU series)
- 6-colour variations.

Customer benefits

- Tubing longer life in dynamic tube installations as it is a wear resistant tubing
- Piping labour hours can be reduced due to its high flexibility to fit into narrow piping spaces.

Applicable fittings

KQ2 Series - One-touch fittings - page 324
KQG2 Series - SUS 316 one-touch fittings - page 365
KFG2 Series - SUS 316 Insert fittings - page 370
M Series - Miniature fittings - page 357
MS Series - SUS 316 miniature fittings - page 372

How to order

TUZ0425 BU - 20

① ② ③

① Tubing model

Model	O.D. x I.D. [mm]
TUZ0425	4 x 2,5
TUZ0604	6 x 4
TUZ0805	8 x 5
TUZ1065	10 x 6,5
TUZ1208	12 x 8

② Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

③ Length per roll

Symbol	Length
20	20 m - roll
100	100 m - reel

Specification

Model	TUZ0425	TUZ0604	TUZ0805	TUZ1065	TUZ1208
O.D. [mm]	4	6	8	10	12
I.D. [mm]	2,5	4	5	6,5	8
Min. bending radius [mm]	10	15	20	27	35
Operating pressure	0.8 MPa (at 20 °C) 0.4 MPa (at 60 °C)				
Temperature range	-20 to +60 °C				
Material	Special polyurethane				

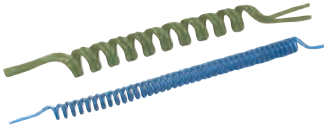
Stocked items

TUZ		Tubing O.D. [mm]					
Colours (□)		Length	Ø 4	Ø 6	Ø 8	Ø 10	Ø 12
B: Black W: White R: Red	BU: Blue Y: Yellow G: Green	20 m roll	TUZ0425□-20	TUZ0604□-20	TUZ0805□-20	TUZ1065□-20	TUZ1208□-20
		100 m roll	TUZ0425□-100	TUZ0604□-100	TUZ0805□-100	TUZ1065□-100	TUZ1208□-100

Polyurethane coil tubing 1, 2 or 3 cores

TCU Series

Ø : 4 • 6 • 8 mm



- For flexible tubing
- Compact piping possible.

Specifications

Model	TCU 0425B-1	TCU 0425B-2	TCU 0425B-3	TCU 0604B-1	TCU 0604B-2	TCU 0604B-3	TCU 0805B-1
Number of cores	1 core	2 cores	3 cores	1 core	2 cores	3 cores	1 core
Tubing O.D. [mm]	4			6			8
Tubing I.D. [mm]	2.5			4			5
Fluid	Air						
Max. operating pressure (at 20 °C)	0.8 MPa						
Operating temperature	-20 to +60 °C						
Material	Polyurethane						
Colour	Black						
Applicable fittings	One-touch fittings, insert fittings, miniature fittings						

Stocked items

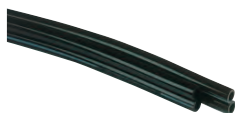
Part number	O.D. [mm]	I.D. [mm]	No. of cores
TCU0425B-1 ●	4	2.5	1
TCU0604B-1 ●	6	4	
TCU0805B-1 ●	8	5	
TCU0425B-2 ●	4	2.5	2
TCU0604B-2 ●	6	4	
TCU0425B-3 ●	4	2.5	3
TCU0604B-3 ●	6	4	

1) Other Ø on request.

Polyurethane flat tubing

TFU Series

Ø : 4 • 6 • 8 mm



- Compact piping possible
- With line markings for piping differentiation.

How to order

TFU0425 B - 2

① ②

① Colour

Symbol	Colour
B	Black

② N° of tubes

Symbol	Tubes
2	2 tubes
3	3 tubes

Specifications

Model	TFU 0425B-2	TFU 0425B-3	TFU 0604B-2	TFU 0604B-3	TFU 0805B-2	TFU 0805B-3
Number of cores	2 cores	3 cores	2 cores	3 cores	2 cores	3 cores
Tubing O.D. [mm]	4		6		8	
Tubing I.D. [mm]	2.5		4		5	
Fluid	Air					
Max. operating pressure (at 20 °C)	0.8 MPa					
Operating temperature	-20 to +60 °C (No freezing)					
Material	Polyurethane					
Colour	Black					
Min. bending radius [mm]	10		15		20	
Tube length per roll [m]	10					
Applicable fittings	One-touch fittings, insert fittings, miniature fittings					

Stocked items

Part number	O.D. [mm]	I.D. [mm]	No. of cores
TFU0425B-2 ●	4	2.5	2
TFU0604B-2 ●	6	4	
TFU0805B-2 ●	8	5	
TFU0425B-3 ●	4	2.5	3
TFU0604B-3 ●	6	4	
TFU0805B-3 ●	8	5	

1) 4-fold or more and other Ø on request.

2) Roll length 10 m

FR double layer tubing equivalent to UL-94 standard V-0

TRBU Series

Ø : 6 • 8 • 10 • 12 mm



- Double layer design
- Available in various colours.

How to order

TRBU0604 B - 100

① ② ③

① Tubing model

Model	Inner tubing O.D. x I.D. [mm]
TRBU0604	6 x 4
TRBU0805	8 x 5
TRBU1065	10 x 6,5
TRBU1208	12 x 8

② Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

③ Length per roll

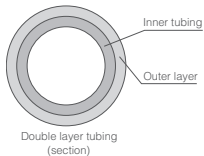
Symbol	Length
20	20 m - roll
100	100 m - reel

1) Inner tubing is always black.

Specifications

Fluid	Air/Water			
Max. operating pressure (at 20 °C)	0.8 MPa			
Min. bending radius [mm]	15	20	27	35
Ambient and fluid temperature	-20 to +60 °C, Water: 0 to 40 °C (No freezing)			
Material	Inner tubing	Polyurethane		
	Outer layer	Polyolefin (Equivalent to UL-94 standard V-0)		
Recommended fittings	FR One-touch fittings: KR-W2 Series			

1) The colour of all inner tubing is black.



Stocked items

TRBU	Length [m]	Available colours
TRBU0604	20	B, BU, R, W, Y
	100	B, BU, G, R, W
TRBU0805	20	B, BU
	100	B, BU
TRBU1065	20, 100	B, BU, G, R, W, Y
	20	B, BU, G, R, Y
TRBU1208	20	B, BU
	100	B, BU

Related products:
Tube stripper
TKS Series



FR three-layer polyurethane tubing

TRTU Series

Ø : 6 • 8 • 10 • 12 mm



- Flame resistant (Equivalent to UL-94 Standard V-0)
- Spatter resistance is improved by installing an aluminium layer between the outer layer and the inner tube
- Special tool for stripping off the outer layer (part no.: YS-100).

Customer benefits

- Increases tubing life expectancy
- Less stops for maintenance as it is a flame resistant three-layer polyurethane tubing that has a superior weld spatter resistance
- Increases savings.

Applicable fittings

KR Series - Flame resistant fittings - page 363

KQB2 Series - Metal one-touch fittings - page 351

How to order

TRTU1065 BU - 20

① ② ③

① Tubing model

Model	Inner tubing O.D. x I.D. [mm]
TRTU0604	6 x 4
TRTU0805	8 x 5
TRTU1065	10 x 6.5
TRTU1208	12 x 8

② Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

③ Length per roll

Symbol	Length
20	20 m - roll
100	100 m - reel

Specifications

Model	TRTU0604	TRTU0805	TRTU1065	TRTU1208
Inner tubing O.D. [mm]	6	8	10	12
Inner tubing I.D. [mm]	4	5	6.5	8
Outer layer thickness [mm]	1	1	1	1
Min. bending radius [mm]	50	60	70	80
Operating pressure	0.8 MPa (at 20 °C) / 0.65 MPa (at 40 °C) / 0.5 MPa (at 60 °C)			
Temperature range	-20 °C to +60 °C / Water: 0 to 40 °C (No freezing)			
Material	Inner tubing: Polyurethane Middle layer: Aluminium laminated film Outer layer: Polyolefin (Equivalent to UL-94 standard V-0)			

Stocked items

TRTU	Tubing O.D. [mm]			
	Ø 6	Ø 8	Ø 10	Ø 12
Black - 20 m roll	TRTU0604B-20 ●	TRTU0805B-20 ●	TRTU1065B-20 ●	TRTU1208B-20 ●
Blue - 20 m roll	TRTU0604BU-20 ●	TRTU0805BU-20 ●	TRTU1065BU-20 ●	TRTU1208BU-20 ●
Black- 100 m reel	TRTU0604B-100 ●	TRTU0805B-100 ●	—	—

2-Layer soft fluoropolymer tubing

TQ Series

Ø : 4 • 6 • 8 • 10 • 12 mm



- 2-layer structure:
 - Outer layer: special nylon resin
 - Inner layer: special fluoropolymer
- Wearing of outer layer tube reduced to 1/30 (comparison with series TL, fluoropolymer tubing)
- Internal smoothness equivalent to Ra 0.02 µm
- Flexible
- Light weight
- Max. operating pressure 1 MPa.

How to order

TQ0425 - 20

①

②

① Tubing model

Model	O.D. x I.D. [mm]
TQ0425	4 x 2.5
TQ0604	6 x 4
TQ0806	8 x 6
TQ1008	10 x 8
TQ1209	12 x 9

② Length per roll

Symbol	Length
20	20 m
100	100 m

Specification

Model	TQ0425	TQ0604	TQ0806	TQ1008	TQ1209
O.D. [mm]	4	6	8	10	12
I.D. [mm]	2.5	4	6	8	9
Max. operating pressure [MPa] (at 20 °C)	2.0	1.9	1.5	1.1	1.2
Min. bending radius (tube close bend radius) [mm]	5	9	26	42	37
Fluid temperature (fixed usage)	Air, inert gas: -20 to 100 °C, water, solvent: 0 to 70 °C (No freezing)				
Material	Inner layer: Special fluoropolymer, outer layer: Special nylon resin				
Applicable fittings	Insert fittings KF, KFG2, VCK series Miniature fittings M, MS series (Hose nipple type) Fluoropolymer fittings LQ1, LQ3 series				

1) Minimum bending radius (tube close bend radius) is not guaranteed
Use the product with the bending radius that is larger than these valves.

Stocked items

TQ	Tubing O.D. [mm]				
	Ø 4	Ø 6	Ø 8	Ø 10	Ø 12
Black - 20 m roll	TQ0425-20 ●	TQ0604-20 ●	TQ0806-20 ●	TQ1008-20 ●	TQ1209-20 ●

Antistatic polyurethane tubing

TAU Series

Ø : 3.2 • 4 • 6 • 8 • 10 • 12 mm



- For pneumatic piping system requiring antistatic measures
- Flexible.

Customer benefits

- Prevents static charge
- Thanks to its high flexibility it can be used in hard-to reach areas.

Applicable fittings

KA Series - Antistatic one-touch fittings - page 364

How to order

TAU1065 B - 20

① ② ③

① Tubing model

Model	O.D. x I.D. [mm]
TAU3220	3,2 x 2
TAU0425	4 x 2,5
TAU0604	6 x 4
TAU0805	8 x 5
TAU1065	10 x 6,5
TAU1208	12 x 8

② Colour indication

Symbol	Colour
B	Black

③ Length per roll

Symbol	Length
20	20 m - roll
100	100 m - reel

Specifications

Model	TAU3220	TAU0425	TAU0604	TAU0805	TAU1065	TAU1208
O.D. [mm]	3,2	4	6	8	10	12
I.D. [mm]	2	2,5	4	5	6,5	8
Max. operating pressure (at 20 °C) ¹⁾	0,9 MPa					
Min. bending radius [mm] ²⁾	10	10	15	20	27	35
Operating temperature	0 to 40 °C					
Material	Conductive polyurethane					
Surface resistance	10 ⁴ to 10 ⁷ Ω					

1) Refer to the burst pressure characteristics and operating pressure curve for other temperatures

Avoid abnormal temperature rises due to adiabatic compression

2) The value at a temperature of 20 °C.

Stocked items

TAU	Tubing O.D. [mm]					
	Ø 3,2	Ø 4	Ø 6	Ø 8	Ø 10	Ø 12
Black - 20 m roll	TAU3220B-20 ●	TAU0425B-20 ●	TAU0604B-20 ●	TAU0805B-20 ●	TAU1065B-20 ●	TAU1208B-20 ●
Black- 100 m reel	TAU3220B-100 ●	TAU0425B-100 ●	TAU0604B-100 ●	—	—	—

Fluoropolymer tubing (PFA) metric size

TLM Series

Ø : 2 • 3 • 4 • 6 • 8 • 10 • 12 • 16 • 19 • 25 mm



- Chemically compatible with more than 250 fluids
- Compatible with the §177-1550 elution test approved by the United States FDA
- Max. operating temperature: 260 °C
- 13 size variations (metric size)
- 4 Colour variations
- A simple and visual solution to the maintenance works.

How to order

TLM0425 N - 20

① ② ③

① Tubing model

Model	O.D. x I.D. [mm]
TLM0201	2 x 1
TLM0302	3 x 2
TLM0425	4 x 2.5
TLM0403	4 x 3
TLM0604	6 x 4
TLM0806	8 x 6
TLM1075	10 x 7.5
TLM1008	10 x 8
TLM1209	12 x 9
TLM1210	12 x 10
TLM1613	16 x 13
TLM1916	19 x 16
TLM2522	25 x 22

② Colour indication

Symbol	Colour
N	Translucent
R	Red (Translucent)
BU	Blue (Translucent)
B	Black (Opaque)

③ Length per roll

Symbol	Type	Length
10	Roll	10 m
20		20 m
50		50 m
100		100 m
2S	Straight	2 m

1) Refer to the previous table as the tubing length differs depending on each size.

Specifications

Model		TLM0201	TLM0302	TLM0425	TLM0403	TLM0604	TLM0806	TLM1075	TLM1008	TLM1209	TLM1210	TLM1613	TLM1916	TLM2522
Tubing size		Ø 2 x Ø 1	Ø 3 x Ø 2	Ø 4 x Ø 2.5	Ø 4 x Ø 3	Ø 6 x Ø 4	Ø 8 x Ø 6	Ø 10 x Ø 7.5	Ø 10 x Ø 8	Ø 12 x Ø 9	Ø 12 x Ø 10	Ø 16 x Ø 13	Ø 19 x Ø 16	Ø 25 x Ø 22
O.D. [mm]		2	3	4	4	6	8	10	10	12	12	16	19	25
I.D. [mm]		1	2	2.5	3	4	6	7.5	8	9	10	13	16	22
Length per roll	Colour	Symbol												
	10 m	Translucent	N	●	●	●	●	●	●	●	●	●	●	●
Roll	20 m	Translucent	N	●	●	●	●	●	●	●	●	●	●	●
		Red (Translucent)	R	●	●	●	●	●	●	●	●	●	●	●
		Blue (Translucent)	BU	●	●	●	●	●	●	●	●	●	●	●
		Black (Opaque)	B	●	●	●	●	●	●	●	●	●	●	●
		50 m	Translucent	N	●	●	●	●	●	●	●	●	●	●
Straight	100 m	Translucent	N	●	●	●	●	●	●	●	●	●	●	●
	2 m	Translucent	N	●	●	●	●	●	●	●	●	●	●	●
Fluid and applicable fittings		Fittings: Fluoropolymer fittings LQ1, LQ2, LQ3 Fittings: One-touch fittings KQ2, KQG2, clean one-touch fittings KP, KP□ insert fittings KF, KFG2, miniature fittings M, MS (Hose nipple type)												
Max. operating pressure [MPa]		Refer to the max. operating pressure table												
Min. bending radius		10	20	20	35	35	60	95	100	100	130	160	220	400
Max. operating temperature		260 °C												
Material		PFA (Tetrafluoroethylene perfluoroalkoxy vinyl ether copolymer)												

1) Inch size also available as TLM series.

Model	Max. operating pressure [MPa]			
	20 °C	100 °C	200 °C	260 °C
TLM0201	2.3	1.1	0.55	0.3
TLM0425	1.7	0.9	0.45	0.23
TLM0302	1.5	0.7	0.35	0.2
TLM0604				
TLM0403				
TLM0806	1	0.5	0.25	0.15
TLM1075				
TLM1209				
TLM1008				
TLM1613	0.7	0.35	0.17	0.11
TLM1210				
TLM1916	0.6	0.3	0.15	0.1
TLM2522				
	0.4	0.2	0.1	0.05

1) Inch size also available as TILM series.

Stocked items

TLM	Tubing O.D. [mm]				
	Ø 4	Ø 6	Ø 8	Ø 10	Ø 12
Translucent- 20 m roll	TLM0425N-20 ●	TLM0604N-20 ●	TLM0806N-20 ●	TLM1008N-20 ●	TLM1210N-20 ●
Translucent- 100 m roll	—	TLM0604N-100 ●	—	—	—

Moisture control tube

IDK Series

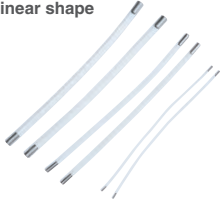
∅ : 2 • 4 • 6 mm



Customer benefits

- Longer life of other pneumatic equipment thanks to prevention of corrosion
- Prevents operational failure of small actuators, air grippers and pilot operated valves due to condensation.

Linear shape



IDK 02 - 100
① ②

① Tubing model

Symbol	O.D.
02	2 mm
04	4 mm
06	6 mm

② Nominal tube length

Symbol	Nominal length
100	100 mm
200	200 mm

Applicable fittings

KQ2 Series - One-touch Fittings - page 324

IDK-C1 Series

∅ : 4 • 6 mm



Coil shape



IDK 04 - 100 - C1
① ②

① Tubing model

Symbol	O.D.
04	4 mm
06	6 mm

② Nominal tube length

Symbol	Nominal length
100	100 mm
200	200 mm

Part number for a set of 2 tubes

Applicable fittings

KQ2 Series - One-touch fittings - page 324

- Prevents condensation in piping for small cylinders/air grippers
- Diffuses water vapour in the piping to the outside
- Suitable for applications where cylinders do not rotate.

Specifications

Model	IDK02	IDK04	IDK06
O.D. [mm]	2	4	6
I.D. [mm]	1,2	2,5	4
Min. bending radius [mm]	10	20	40
Max. operating pressure	0,7 MPa		
Operating temperature	0 to 60 °C (No freezing)		
Material	Fluoropolymer		

Stocked items

IDK	Tubing O.D. [mm]		
	∅ 3.2	∅ 4	∅ 6
Nominal length - 100 mm	IDK02-100 ●	IDK04-100 ●	IDK06-100 ●
Nominal length - 200 mm	IDK02-200 ●	IDK04-200 ●	IDK06-200 ●

- Reduces IDK buckling of moving part

Specifications

Model	IDK04-□-C1	IDK06-□-C1
O.D. [mm]	4	6
I.D. [mm]	2.5	4
Max. operating pressure	0,7 MPa	
Operating temperature	0 to 60 °C (No freezing)	
Tube effective length [mm]	100, 200	
Material	Fluoropolymer	

Stocked items

IDK-C1	Tubing O.D. [mm]	
	∅ 4	∅ 6
Nominal length - 100 mm	IDK04-100-C1 ●	IDK06-100-C1
Nominal length - 200 mm	IDK04-200-C1	IDK06-200-C1

FEP tubing (Fluoropolymer)

TH Series

Ø : 4 • 6 • 8 • 10 • 12 mm



- Heat resistance: 200 °C
- 4 Colour variations: translucent, black, red, blue
- Certified to current Food Sanitation Legislation.

Customer benefits

- It can be used in extreme conditions as it has a high chemical and heat resistance as well as allowing higher operating pressure
- Compatible with the §177-1550 dissolution test approved by FDA (Food and Drug Administration).

Applicable fittings

KQ2 Series - One-touch fittings - page 324
KQG2 Series - SUS 316 one-touch fittings - page 365
KFG2 Series - SUS 316 insert fittings - page 370
M Series- Miniature fittings - page 357
MS Series - SUS 316 miniature fittings - page 372

How to order

TH0425 N 100

① ② ③

① Tubing model

Model	O.D. x I.D. [mm]
TH0402	4 x 2
TH0425	4 x 2.5
TH0604	6 x 4
TH0806	8 x 6
TH1075	10 x 7.5
TH1008	10 x 8
TH1209	12 x 9
TH1210	12 x 10

② Colour indication

Symbol	Colour
N	Translucent
R	Red (Translucent)
BU	Blue (Translucent)
B	Black (Opaque)

③ Length per roll

Symbol	Length
20	20 m
100	100 m

1) 100 m roll is available with translucent (colour indication: N) only.

Specifications

Model		TH0402	TH0425	TH0604	TH0806	TH1075	TH1008	TH1209	TH1210
O.D. [mm]		4		6	8	10		12	
I.D. [mm]		2	2.5	4	6	7.5	8	9	10
Fluid		Air, Water, Inert gas							
Max. operating pressure [MPa]	20 °C	2.3	1.7	1.5	1		0.7	1	0.7
	100 °C	0.85	0.6	0.55	0.4		0.25	0.4	0.25
	200 °C	0.4	0.3	0.3	0.2		0.1	0.2	0.1
Min. bending radius [mm]		15	20	35	60	95	100		130
Operating temperature		Air, inert gas: -20 to 200 °C Water: 0 to 100 °C (No freezing)							
Material		FEP (Fluorinated ethylene propylene resin)							

1) Consult the specific catalogue for more detailed information.

Stocked items

TH	Tubing O.D. [mm]			
	Ø 4	Ø 6	Ø 8	Ø 10
Translucent - 20 m roll	TH0425N-20 ●	TH0604N-20 ●	TH0806N-20 ●	TH1008N-20 ●
Red (Translucent) - 20 m roll	TH0425R-20 ●	TH0604R-20 ●	TH0806R-20 ●	TH1008R-20 ●
Blue (Translucent) - 20 m roll	TH0425BU-20 ●	TH0604BU-20 ●	TH0806BU-20 ●	TH1008BU-20 ●
Black (Opaque) - 20 m roll	TH0425B-20 ●	TH0604B-20 ●	TH0806B-20 ●	TH1008B-20 ●

Multi tube holder

TM Series



• Flame resistant equivalent to UL94 standard V-0.

Part number	Ø	No. of tubes
TM-04 ●	4	12
TM-06 ●	6	
TM-08 ●	8	8
TM-10 ●	10	6
TM-12 ●	12	

Tube cutter

TK-1•2•3•6 Series



Part number	max. Ø
TK-1 ●	to 13
TK-2 ●	to 18
TK-3 ●	to 12
TK-6 ●	to 16

Tube releasing tool

TG Series



Part number	Ø tube
TG-1 ●	Ø 4, Ø 6
TG-2 ●	Ø 1/8 • Ø 1/4

Blow gun

VMG Series



- Ergonomically designed body with patented valve design and KN nozzles produces considerably reduction in pressure losses
- 20 % reduction in power consumption with the SMC "Blow gun" + "S coupler" + "Coil tube"
- 2 connection options
- Minimum actuation force required.

Part number	Piping direction	Port thread	Colour	Operating pressure [MPa]
VMG11BU-F02 ●	Bottom	G 1/4	Blue	0 - 1.0
VMG11BU-F03 ●		G 3/8		
VMG11W-F02 ●		G 1/4	White	
VMG11W-F03 ●		G 3/8		
VMG12BU-F02 ●	Top	G 1/4	Blue	
VMG12BU-F03 ●		G 3/8		
VMG12W-F02 ●		G 1/4	White	
VMG12W-F03 ●		G 3/8		

Air nozzles

KN Series



Male thread nozzle



High efficiency nozzle



Long copper pipe nozzle



- Wide range of various blow nozzles
- Designed for use with compressed air and cutting oils.

Part number	Nozzle-Ø [mm]	Piping thread
KN-R02-100 ●	1	R 1/4
KN-R02-150 ●	1.5	
KN-R02-200 ●	2	
KN-R02-250 ●	2,5	

Part number	Nozzle-Ø [mm]	Piping thread
KNH-R02-100 ●	1	R 1/4
KNH-R02-150 ●	1.5	
KNH-R02-200 ●	2	

Part number	Nozzle-Ø [mm]	O.D. [mm]	Length [mm]
KNL3-06-150 ●	1,5	6	300
KNL3-06-200 ●	2		
KNL6-06-150 ●	1,5		600
KNL6-06-200 ●	2		

Flow control equipment

Our highlighted product for you

Speed controller, elbow and universal type

AS•1F•A Series



- Push lock type. Large handle
- 4 sizes
- Suitable for polyurethane and nylon tubes
- 360° rotation
- Precise adjustment using special throttle pin shape and fine thread
- Easy mounting
- Teflon-coated connection thread (gasket for M3, M5)
- Also available with G-thread
- Optional: Inlet air speed controller.

Customer benefits

- Easy adjustment and locking - larger handle and new push-lock type
- Reduced labour time, easy assembly and maintenance - improved insertion and removal of tube and higher position of the tube connection
- High resistance to corrosion - PBT thermoplastic and electroless nickel plated body.

Related products

TU Series - Polyurethane tubing - page 376
T Series - Nylon tubing - page 374
TH Series - Fluoropolymer (FEP) tubing - page 388
TLM Series - Fluoropolymer (PFA) tubing - page 386

With thread and one-touch fitting, push-lock type

Part number		Port size	Tube Ø [mm]	Flow [l/min]	Circuit symbol
Elbow type	Universal type				
AS1201F-M3-02 ●	—	M3	2	20	
AS1201F-M3-23 ●	AS1301F-M3-23		3.2		
AS1201F-M3-04 ●	AS1301F-M3-04 ●		4		
AS1201F-M5-02A ●	—	M5	2	70	
AS1201F-M5-23A ●	AS1301F-M5-23A ●		3.2		
AS1201F-M5-04A ●	AS1301F-M5-04A ●		4		
AS1201F-M5-06A ●	AS1301F-M5-06A ●	6	110		
AS2201F-01-23SA ●	AS2301F-01-23SA	R 1/8	3.2	145	
AS2201F-01-04SA ●	AS2301F-01-04SA ●		4	250	
AS2201F-01-06SA ●	AS2301F-01-06SA ●		6	290	
AS2201F-01-08SA ●	AS2301F-01-08SA ●		8		
AS2201F-01-10SA ●	—	10	325		
AS2201F-02-04SA ●	AS2301F-02-04SA ●	R 1/4	4	470	
AS2201F-02-06SA ●	AS2301F-02-06SA ●		6		
AS2201F-02-08SA ●	AS2301F-02-08SA ●		8		
AS2201F-02-10SA ●	AS2301F-02-10SA ●		10		
AS3201F-03-06SA ●	AS3301F-03-06SA ●	R 3/8	6	760	
AS3201F-03-08SA ●	AS3301F-03-08SA ●		8	860	
AS3201F-03-10SA ●	AS3301F-03-10SA ●		10	1190	
AS3201F-03-12SA ●	AS3301F-03-12SA ●		12		
AS4201F-04-10SA ●	AS4301F-04-10SA ●	R 1/2	10	1580	
AS4201F-04-12SA ●	AS4301F-04-12SA ●		12	1760	
AS4201F-04-16SA ●	—		16		

1) Port M3 without push lock.

Our highlighted product for you

Speed controller with indicator



AS-FS Series



- Indicator window with numerical indication of handle rotation for flow rater
- Elbow and universal types
- Large push-lock type handle
- 4 indicator window directions available
- Models: electroless nickel plating, stainless steel type, G thread (face seal) type, Uni thread type
- Tubing sizes: from $\varnothing 2$ to $\varnothing 16$
- Port sizes: from M5 to 1/2.

Elbow type, meter-out control type

Part number	Port size	Tube \varnothing [mm]	Flow \varnothing [l/min]	Circuit symbol
AS1201FS-M5-02 ●	M5	2	70	
AS1201FS-M5-23 ●		3.2		
AS1201FS-M5-04 ●		4		
AS1201FS-M5-06 ●		6		
AS2201FS-01-23S	R 1/8	3.2	145	
AS2201FS-01-04S ●		4	250	
AS2201FS-01-06S ●		6	290	
AS2201FS-01-08S ●		8		
AS2201FS-01-10S ●	10			
AS2201FS-02-04S ●	R 1/4	4	325	
AS2201FS-02-06S ●		6	470	
AS2201FS-02-08S ●		8	500	
AS2201FS-02-10S ●		10		
AS3201FS-03-06S ●	R 3/8	6	760	
AS3201FS-03-08S ●		8	860	
AS3201FS-03-10S ●		10	1190	
AS3201FS-03-12S ●		12		
AS4201FS-04-10S ●	R 1/2	10	1580	
AS4201FS-04-12S ●		12	1760	
AS4201FS-04-16S		16		

Meter-in control or universal types available on request
Other models, port sizes and seal methods available on request

Our highlighted product for you

Speed controller with indicator, in line type



AS-2FS Series



- Numerical indication of handle rotation for flow rate with 4 selectable different indicator window orientations
- Large push-lock type handle to ease adjustment and locking
- 4 mounting options: Direct, holder, L-bracket, DIN-rail
- Index plate to incorporate an identification label
- Applicable tube material: Nylon, soft nylon, polyurethane
- Applicable tubing O.D.: Ø 3.2 to Ø 12.

Part number	Tube Ø [mm]	Flow Ø [l/min]	Circuit symbol
AS1002FS-23	3.2	72	
AS1002FS-04 ●	4	76	
AS1002FS-06 ●	6	82	
AS2002FS-04 ●	4	96	
AS2002FS-06 ●	6	144	
AS2052FS-06	6	240	
AS2052FS-08 ●	8	305	
AS3002FS-06	6	295	
AS3002FS-08 ●	8	431	
AS3002FS-10 ●	10	647	
AS3002FS-12	12	790	
AS4002FS-10 ●	10	636	
AS4002FS-12	12	982	

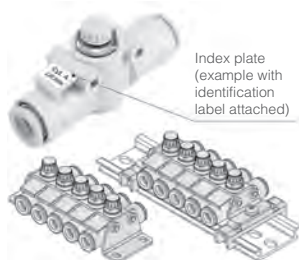
Options

Adapter for direct mounting	DIN rail mounting bracket (2 units)	L-Bracket (2 units)	Applicable model
AS-10A1	AS-10D	AS-10L	AS1002FS□
AS-20A1	AS-20D	AS-20L	AS2002FS□
AS-25A1	AS-25D	AS-25L	AS2052FS□
AS-30A1	AS-30D	AS-30L	AS3002FS□
—	AS-40D	AS-40L	AS4002FS□

- 1) AS4002FS can be mounted without the adapter
- 2) Prepare DIN rail by user

Speed controller, in line type

AS-2F Series



- It is possible to identify the product when multiple controllers are mounted and identify the flow direction by attaching an identification label
- Max. operating pressure 1 MPa (0.7 MPa in case of AS1002F-02).

Part number	Tube Ø [mm]	Flow ¹⁾ [l/min]	Circuit symbol
AS1002F-02 ●	2	20	
AS1002F-23 ●	3.2	100	
AS1002F-04 ●	4		
AS1002F-06 ●	6		
AS2002F-04 ●	4		
AS2002F-06 ●	6	230	
AS2052F-06 ●		290	
AS2052F-08 ●	8	460	
AS3002F-08 ●		660	
AS3002F-10 ●	10	920	
AS4002F-10 ●			
AS4002F-12 ●	12	1390	

1) At 0.5 MPa set pressure.

Options

Part number L - bracket	DIN rail mounting bracket	Applicable series
AS-12L	—	AS1002F-02
AS-10L ●	AS-10D ●	AS1002F
AS-20L ●	AS-20D ●	AS2002F
AS-25L ●	AS-25D	AS2052F
AS-30L ●	AS-30D	AS3002F
AS-40L	AS-40D	AS4002F

Our highlighted product for you

Speed controller, in line type AS-2F-A Series



- Large push-lock type handle to ease adjustment and locking
- 4 mounting options: Direct, holder, L-bracket, DIN-rail
- Index plate to incorporate an identification label
- Applicable tube material: Nylon, soft nylon, polyurethane
- Applicable tubing O.D.: Ø 3.2 to Ø 12.

Part number	Tube Ø [mm]	Flow Ø [l/min]	Circuit symbol
AS1002F-23A	3.2	72	
AS1002F-04A ●	4	76	
AS1002F-06A ●	6	82	
AS2002F-04A ●	4	96	
AS2002F-06A ●	6	144	
AS2052F-06A	6	240	
AS2052F-08A ●	8	305	
AS3002F-06A	6	295	
AS3002F-08A ●	8	431	
AS3002F-10A ●	10	647	
AS3002F-12A	12	790	
AS4002F-10A	10	636	
AS4002F-12A	12	982	

Options

DIN rail mounting bracket (2 units)	L-Bracket (2 units)	Applicable model
AS-10D	AS-10L	AS1002FS□
AS-20D	AS-20L	AS2002FS□
AS-25D	AS-25L	AS2052FS□
AS-30D	AS-30L	AS3002FS□
AS-40D	AS-40L	AS4002FS□

* Prepare DIN rail by user

Holder for speed controller

TMH Series



One side



3 sides for panel mounting



Stacked

Part number	Tube diameter				
	AS100 $\frac{1}{2}$ F	AS200 $\frac{1}{2}$ F	AS205 $\frac{1}{2}$ F	AS300 $\frac{1}{2}$ F	AS400 $\frac{1}{2}$ F
TMH-23J ●	Ø 3.2	—	—	—	—
TMH-04J ●	Ø 4	Ø 4	—	—	—
TMH-06J ●	Ø 6	Ø 6	—	—	—
TMH-06 ●	—	—	Ø 6	—	—
TMH-07 ●	—	—	—	Ø 6	—
TMH-08 ●	—	—	Ø 8	Ø 8	—
TMH-10 ●	—	—	—	Ø 10	Ø 10
TMH-12 ●	—	—	—	Ø 12	—
TMH-13	—	—	—	—	Ø 12

Dual type speed controller

ASD•F Series



- Meter-in, meter-out combined in one body
- Plug-in connection rotates 360°
- Max. operating pressure 1 MPa.

Part number	Thread port	Tube Ø [mm]	Flow ¹⁾ [l/min]	Circuit symbol
ASD230F-M5-04 ●	M5	4	75	
ASD330F-01-06S ●	R 1/8	6	175	
ASD430F-02-06S ●			295	
ASD430F-02-08S ●	R 1/4	8	350	
ASD530F-03-08S ●	R 3/8	10	600	
ASD530F-03-10S ●			700	
ASD630F-04-12S ●			1300	

1) At 0.5 MPa set pressure.

Speed controller

EAS Metal Series



- 4 sizes
- 360° rotation
- Precise adjustment using throttle pin shape and fine thread
- Easy to mount
- Lock nut used to fix the setting
- Max. operating pressure 1 MPa (0.7 MPa in case of AS1200-M3).

Part number	Port size	Flow ¹⁾ [l/min]	Circuit symbol (Meter-out type control)
AS1200-M3 ●	M3	20	
AS1200-M5 ●	M5	105	
EAS2200-F01-S ●	G 1/8	230	
EAS2200-F02-S ●	G 1/4	460	
EAS3200-F03-S ●	G 3/8	920	
EAS4200-F04-S ●	G 1/2	1700	

1) At 0.5 MPa set pressure.

2) The male thread is R thread.

Speed controller. Straight type

EAS Metal Series



- 4 sizes
- Superior flow capacity
- Fine thread for precise adjustment
- Easy to mount
- Max. operating pressure 1 MPa (0.7 MPa in case of AS1000).

Standard

Part number	Port size	Flow ¹⁾ [l/min]	Circuit symbol
AS1000-M3 ●	M3	20	
AS1000-M5 ●	M5	80	
EAS2000-F01 ●	G 1/8	250	
EAS2000-F02 ●	G 1/4	250	
EAS3000-F03 ●	G 3/8	810	
EAS4000-F04 ●	G 1/2	1670	

1) At 0.5 MPa set pressure.

For superior flow capacity

Part number	Port size	Flow ¹⁾ [l/min]	Circuit symbol
EAS500-F06 ●	G 3/4	8100	
EAS600-F10 ●	G 1	16900	
EAS800-F12 ●	G 1 1/4	38500	
EAS900-F14 ●	G 1 1/2	47500	
EAS900-F20 ●	G 2	60800	

1) At 0.5 MPa set pressure.

Speed controller. Stainless steel

AS•FG Series



- Stainless steel screw connection (SUS303)
- Max. operating pressure 1 MPa.

Part number	Port size	Tube Ø [mm]	Flow ¹⁾ [l/min]	Circuit symbol
AS1201FG-M5-04 ●	M5	4	100	
AS1201FG-M5-06 ●		6		
AS2201FG-01-04S ●	R 1/8	4	180	
AS2201FG-01-06S ●		6		
AS2201FG-01-08S ●		8		
AS2201FG-02-06S ●	R 1/4	6	390	
AS2201FG-02-08S ●		8		
AS3201FG-03-08S ●	R 3/8	8	790	
AS3201FG-03-10S ●		10		
AS4201FG-04-10S ●	R 1/2	10	1580	
AS4201FG-04-12S ●		12		

1) At 0.5 MPa set pressure.

Other combination upon request.

Stainless steel controller (Elbow type)

ASG Series



- SUS316 and special FKM construction to improve the resistance to corrosion
- Elbow design to allow the rotation of the tubing connection ports and suit installation to air cylinders
- Meter-in and meter-out type control
- One-touch fittings and 5 body sizes
- Applicable tubing: FEP, PFA, nylon, soft nylon, polyurethane and polyolefin
- Conforms to food sanitation laws
- Max. operating pressure 1 MPa.

Part number	Port size	Tube Ø [mm]	Flow ¹⁾ [l/min]	Circuit symbol (Meter-out type control)
ASG220F-M5-04 ●	M5	4	100	
ASG220F-M5-06 ●		6		
ASG320F-01-04S ●	R 1/8	4	180	
ASG320F-01-06S ●		6		
ASG320F-01-08S ●		8		
ASG420F-02-06S ●	R 1/4	6	390	
ASG420F-02-08S ●		8		
ASG420F-02-10S ●		10		
ASG520F-03-08S ●	R 3/8	8	790	
ASG520F-03-10S ●		10		
ASG520F-03-12S ●		12		
ASG620F-04-12S ●	R 1/2	12	1580	

1) Measured at 0.5 MPa and 20 °C.

2) Meter-in control option also available.

Speed controller, flat head screwdriver adjusting

AS•F-D Series



Universal type

Elbow type

- Flat set screw, to be operated only with a screwdriver
- Plug-in connection
- Sealant male thread from R 1/8, gasket for M5
- Max. operating pressure 1 MPa.

Speed controller with flash set screw D version AS□F

Part number		Port size	Tube Ø [mm]	Flow ¹⁾ [l/min]
Elbow type	Universal type			
AS1201F-M5-23D ●	AS1301F-M5-23D	M5	3.2	100
AS1201F-M5-04D ●	AS1301F-M5-04D ●		4	
AS1201F-M5-06D ●	AS1301F-M5-06D ●		6	
AS2201F-01-06SD ●	AS2301F-01-06SD ●	R 1/8	8	230
AS2201F-01-08SD ●	AS2301F-01-08SD ●		6	
AS2201F-02-06SD ●	AS2301F-02-06SD ●		8	
AS2201F-02-08SD ●	AS2301F-02-08SD ●	R 1/4	6	390
AS3201F-02-06SD ●	AS3301F-02-06SD ●		8	
AS3201F-02-08SD ●	AS3301F-02-08SD ●		10	
AS3201F-02-10SD ●	AS3301F-02-10SD ●	R 3/8	6	660
AS3201F-03-06SD ●	AS3301F-03-06SD ●		8	
AS3201F-03-08SD ●	AS3301F-03-08SD ●		10	
AS3201F-03-10SD ●	AS3301F-03-10SD ●			920

1) At 0.5 MPa set pressure.

Speed controller, flat head screwdriver adjusting, in line type

AS•F-D Series



• Max. operating pressure 1 MPa.

Speed controller with flash set screw D version AS□001F

Part number Straight type	Tube Ø [mm]	Flow [l/min] ¹⁾
AS1001F-23D ●	3.2	100
AS1001F-04D ●	4	
AS2001F-06D ●	6	230
AS2051F-06D ●		290
AS2051F-08D ●	8	460
AS3001F-08D ●		660
AS3001F-10D ●	10	920

1) At 0.5 MPa set pressure.

Speed controller with pilot check valve

ASP•F Series

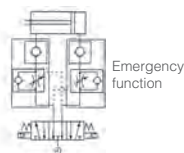


- 2 pneumatic functions in one valve – speed controller and pilot check valve
- Pilot check valve pressure 50 % of operating pressure (over 0.1 MPa)
- Mounted directly to actuator
- 360° rotation
- Max. operating pressure 1 MPa.

Part number	Port size	Port size Pilot air	Tube Ø [mm]	Flow ¹⁾ [l/min]	Circuit symbol	
ASP330F-01-06S ●	R 1/8	M5	6	180		
ASP330F-01-08S ●			8			
ASP430F-F02-06S ●	R 1/4	G 1/8	6	330		
ASP430F-F02-08S ●			8	350		
ASP530F-F03-08S ●	R 3/8		G 1/8	8		600
ASP530F-F03-10S ●				10		750
ASP630F-F04-10S ●	R 1/2	G 1/4	10	1100		
ASP630F-F04-12S ●			12	1190		

1) At 0.5 MPa set pressure.

Enables speed control and temporary intermediate stopping with cylinders



Our highlighted product for you

Air saving speed controller

AS-R & AS-Q Series



- Air consumption can be reduced by up to 31 %
- Same mounting and operation as a standard speed controller
- No delay in the response time with rapid supply and exhaust function
- Push-lock type handle
- Applicable tubing O.D.: Ø 6 to Ø 12
- Thread types: R, G, NPT.

AS-R Series

Part number	Maximum flow rate [l/min]	Port size	Tube Ø [mm]
AS22R-G01-06	88	G 1/8	Ø 6
AS22R-G01-08			Ø 8
AS22R-G02-06		G 1/4	Ø 6
AS22R-G02-08			Ø 8
AS32R-G02-08	200	G 1/4	Ø 8
AS32R-G03-08			Ø 8
AS32R-G03-10		G 3/8	Ø 10
AS42R-G03-10			Ø 10
AS42R-G03-12	375	G 3/8	Ø 12
AS42R-G04-10			Ø 10
AS42R-G04-12		G 1/2	Ø 12
AS42R-G04-12			Ø 12

AS-Q Series

Part number	Maximum flow rate [l/min]	Port size	Tube Ø [mm]
AS22Q-G02-06	66	G 1/4	Ø 6
AS22Q-G02-08			Ø 8
AS32Q-G02-06	250	G 1/4	Ø 6
AS32Q-G02-08			Ø 8
AS32Q-G03-08		G 3/8	Ø 8
AS32Q-G03-10			Ø 10
AS42Q-G03-10	335	G 3/8	Ø 10
AS42Q-G03-12			Ø 12
AS42Q-G04-10		G 1/2	Ø 10
AS42Q-G04-12			Ø 12

Air saving valve

ASR Series (Pressure valve)

ASQ Series (Flow valve)



- 40 % reduction in air consumption (Cuts air consumption by operating the return stroke at a reduced pressure)
- Max. operating pressure 1 MPa
- Variable set pressure range ASR (0.1 to 0.3 MPa).

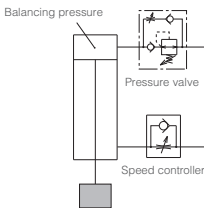
Part number		Port size	Applicable tubing O.D. [mm]			
Pressure valve	Flow valve		6*	8*	10	12
ASR430F-02-□S ●	ASQ430F-02-□S ●	R 1/4	●	●	●	
ASR530F-02-□S ●	ASQ530F-02-□S ●		●	●	●	●
ASR530F-03-□S ●	ASQ530F-03-□S ●	R 3/8	●	●	●	●
ASR630F-03-□S ●	ASQ630F-03-□S ●				●	●
ASR630F-04-□S ●	ASQ630F-04-□S ●	R 1/2			●	●

□: Add applicable tubing O.D. [mm].

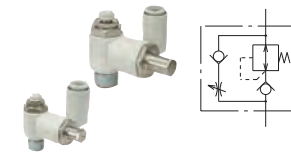
* For tubing O.D. 6 mm, add (06), for tubing O.D. 8 mm, add (08).

Other applications

- Jerk prevention in vertical operation of the cylinder.

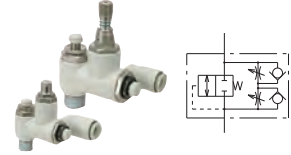


Pressure valve/ASR Series



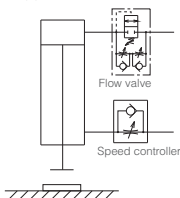
Regulator with check valve and flow control valve integrated into a single construction

Flow valve/ASQ Series

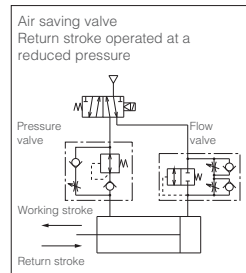
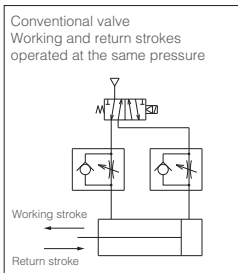


Pilot valve and two-way flow control valve integrated into a single construction

- Quick air charge at the end of stroke for press applications.



Cuts air consumption by operating the return stroke at a reduced pressure



Metering valve with silencer

ASN2 Series



- Exhaust air noise reduction over 20 dB
- Simple speed reduction for cylinder
- Mounted directly to valve exhaust
- Operating pressure range 0 to 1 MPa.

Part number	Port size	Effective area [mm ²]	Circuit symbol
ASN2-M5 ●	M5	1.8	
ASN2-01-S ●	R 1/8	3.6	
ASN2-02-S ●	R 1/4	6.5	
ASN2-03-S ●	R 3/8	16.6	
ASN2-04-S ●	R 1/2	24.5	

Speed controller, all metal exterior

AS-X737 Series



- Metallic exterior
- Spatter cover can be used
- Port sizes: R 1/8, R 1/4 and R 3/8
- Applicable tubing O.D.: Ø 6, Ø 8 and Ø 10
- Ambient and fluid temperature: -5 to 60 °C

Part number	Thread port	Tube Ø [mm]	Flow [l/min]	Control type
AS2201-01-F06S-X737 ●	R 1/8	6	230	Meter-out
AS2201-01-F08S-X737 ●	R 1/8	8		
AS2201-02-F06S-X737 ●	R 1/4	6	390	
AS2201-02-F08S-X737 ●	R 1/4	8	460	
AS2201-02-F10S-X737 ●	R 1/4	10		
AS3201-03-F08S-X737 ●	R 3/8	8	790	
AS3201-03-F10S-X737 ●	R 3/8	10	920	

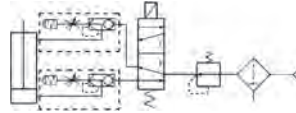
Speed exhaust controller

ASV Series



- 3 pneumatic functions in one compact design
- Flame resistant equivalent to UL94 standard v-0 (for ASV3□, ASV4□ and ASV5□)
- Simple, economical mounting
- Size M3 - 1/2"
- Integral 4 - 12 mm plug connection
- Max. operating pressure 1 MPa.

Cylinder with ASV



Part number	Port size	Tube Ø [mm]	Effective area [mm ²]		Circuit symbol
			IN → OUT	OUT → Exh	
ASV120F-M3-04 ●	M3	4	0.3	0.3	
ASV220F-M5-04 ●	M5		1.3	1.3	
ASV220F-M5-06 ●	R 1/8	6	7	8	
ASV310F-01-06S ●		8			
ASV410F-02-08S ●	R 1/4	10	13.5	14	
ASV410F-02-10S ●					
ASV510F-03-10S ●	R 3/8	12	27	29	
ASV510F-04-12S ●	R 1/2				

Quick exhaust valve

AQ Series



- Large exhaust capacity
- Port thread M5-3/4"
- Superior flow capacity
- Max. operating pressure 1 MPa (0.7 MPa in case of AQ15□).

Part number	Port size	Effective area [mm ²]		Circuit symbol
		IN → OUT	OUT → Exh.	
AQ1500-M5 ●	M5 x 0.8	2	2.8	
EAQ1510-F01 ●	G 1/8	4	5.8	
EAQ2000-F01 ●	G 1/8	25	25	
EAQ2000-F02 ●	G 1/4	35	40	
EAQ3000-F03 ●	G 3/8	60	70	
EAQ5000-F04 ●	G 1/2	105	115	
EAQ5000-F06 ●	G 3/4	135	180	

Quick exhaust valve, straight type

AQ240/340 Series



- Direct or common exhaust
- Simple, economical assembly by the user
- Built-in one touch fitting
- Suitable for nylon and polyurethane tubing
- Light weight
- Max. operating pressure 1 MPa.

Exhaust via silencer

Part number	Tube Ø [mm]	Effective area [mm ²]		Circuit symbol
		IN → OUT	OUT → Exh.	
AQ240F-04-00 ●	4	1.7	2.5	
AQ240F-06-00 ●	6	2.4	2.7	
AQ340F-06-00 ●		4	4	

Common exhaust

Part number	Tube Ø [mm]	Effective area [mm ²]		Circuit symbol
		IN → OUT	OUT → Exh.	
AQ240F-04-04 ●	4	1.7	2.5	
AQ240F-06-06 ●	6	2.4	2.7	
AQ340F-06-06 ●		4	4	

Shuttle valve. Metal type

VR1210/1220 Series



- Max. operating pressure 1 MPa.

Metal type with female thread

Part number	Port size	Flow [l/min]	Circuit symbol
VR1210-F01 ●	G 1/8	311	
VR1220-F02 ●	G 1/4	695	

Shuttle valve. Plastic with one-touch fittings

VR1210F/1220F Series



- Max. operating pressure 1 MPa.

Plastic with one touch fittings

Part number	Tube Ø [mm]	Flow [l/min]	Circuit symbol
VR1210F-23 ●	3.2	123	
VR1210F-04 ●	4.0	173	
VR1220F-06 ●	6.0	345	
VR1220F-08 ●	8.0	518	

AND Valve

VR1211F Series



- For pneumatic controls
- Simple, push-in mounting
- Rotates through 360°
- Max. operating pressure 1 MPa.

Part number	Tube Ø [mm]	Flow [l/min]	Circuit symbol
VR1211F-23	3.2	74	
VR1211F-04 ●	4.0	99	
VR1211F-06 ●	6.0	123	

Check valve with one-touch fitting/thread

AKH/AKB Series



- Select from 3 designs
- One-touch fitting both sides
- Male thread/female thread
- Male thread/one-touch fitting
- Low cracking pressure (0.005 MPa)
- Operating pressure range -100 KPa to 1 MPa.

One-touch fitting both sides

Part number	Tube Ø [mm]	Effective area [mm ²]	Circuit symbol
AKH04-00 ●	4	2.8	
AKH06-00 ●	6	6.5	
AKH08-00 ●	8	14	
AKH10-00 ●	10	24	
AKH12-00 ●	12	34	

Male thread/one-touch fitting

Part number	Connection thread	Tube Ø [mm]	Effective area [mm ²]	Circuit symbol
AKH04 □-M5 ●	M5	4	2.8	
AKH04 □-01S ●	R 1/8			
AKH06 □-M5 ●	M5	6	6.5	
AKH06 □-01S ●	R 1/8			
AKH06 □-02S ●	R 1/4			
AKH08 □-01S ●	R 1/8	8	14	
AKH08 □-02S ●	R 1/4			
AKH08 □-03S ●	R 3/8			
AKH10 □-02S ●	R 1/4	10	24	
AKH10 □-03S ●	R 3/8			
AKH10 □-04S ●	R 1/2			
AKH12 □-03S ●	R 3/8	12	34	
AKH12 □-04S ●	R 1/2			

□: Flow direction A or B.

Male thread/female thread

Part number	Port size	Effective area [mm ²]	Circuit symbol
AKB01 □-01S ●	R 1/8, Rc 1/8	6.5	
AKB02 □-02S ●	R 1/4, Rc 1/4	14	
AKB03 □-03S ●	R 3/8, Rc 3/8	24	
AKB04 □-04S ●	R 1/2, Rc 1/2	34	

□: Flow direction A or B.

Check valve

AK Series



- Superior flow capacity
- Low cracking pressure: 0.02 MPa
- Port size from 1/8 to 1
- Max. operating pressure 1 MPa.

Part number	Port size	Effective area [mm ²]	Circuit symbol
EAK2000-F01 ●	G 1/8	25	
EAK2000-F02 ●	G 1/4	27.5	
EAK4000-F02 ●		47	
EAK4000-F03 ●	G 3/8	85	
EAK4000-F04 ●	G 1/2	95	
EAK6000-F06 ●	G 3/4	200	
EAK6000-F10 ●	G 1	230	

Optical indicator pneumatic

VR3100/3110 Series



VR3010

VR3110

- Optical pressure indication for monitoring pressure
- Port size Rc 1/8
- Operating pressure range 0.1 to 0.8 MPa (0.15 to 1 MPa in case of VR3110).

Part number	Optical indication colour	Port size	Circuit symbol
VR3100-01R ●	Red painted	Rc 1/8	
VR3100-01G ●	Green		
VR3100-01O ●	Orange		
VR3110-01R ●	Red painted	R 1/8	
VR3110-01G ●	Green		

Instrumentation

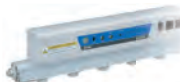
Product selection guide

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Sensors & switches

Page 412



Ionizers

Page 414



Positioners

Page 414



Thermo-chiller

Page 415



Thermo-con

Page 415



Process pump

Page 415



Digital pressure switches with integrated display

Series	Model	Fluid	Rated pressure range [Pa]						Piping	Display	Switch output		Analogue output		Enclosure
			-100 k	0 100 k	300 k	1 M	2 M	5 M 10 M			15 M	1-Output	2-Output	1 to 5 V	
	ZSE10	Air	[Bar chart showing ranges: 0-100k, 0-300k, 0-1M, 0-2M, 0-5M, 0-10M, 0-15M]						M5 (female) R 1/8	Red	○	○	○	—	IP40
	ZSE10F		M5 (female) R 1/8, Ø 4, Ø 6, Ø 5/32	Red/Green	○	○	○	○	IP40						
	ISE10			Red/Green	○	○	○	○							
	ZSE30A	Air	[Bar chart showing ranges: 0-100k, 0-300k, 0-1M, 0-2M, 0-5M, 0-10M, 0-15M]						M5 (female) R 1/8, Ø 4, Ø 6, Ø 5/32	Red/Green	○	○	○	○	IP40
	ZSE30AF		M5 female thread, R1/8, NPT1/8	3-Screen Display, Orange, Red/Green	○	—	—	—	IP40						
	ISE30A			Red/Green	○	○	○	○							
	ZSE20		M5 female thread, R1/8, NPT1/8	3-Screen Display, Orange, Red/Green	○	○	○	○	IP65						
	ZSE20F			Red/Green	—	○	○	○							
	ISE20			Red/Green	○	○	○	○							
	ZSE20A			Red/Green	○	○	○	○							
	ZSE20AF	Air	[Bar chart showing ranges: 0-100k, 0-300k, 0-1M, 0-2M, 0-5M, 0-10M, 0-15M]						M5 (female) R 1/8, Ø 4, Ø 6, Ø 5/32	Red/Green	—	○	○	○	IP65
	ISE20A		M5 female thread, R1/8, NPT1/8	3-Screen Display, Orange, Red/Green	○	○	○	○	IP65						
	ZSE20BF			Red/Green	○	○	○	○							
	ISE20B		M5 female thread, R1/8, NPT1/8	3-Screen Display, Orange, Red/Green	○	—	IO-Link	○	IP65						
	ZSE20B-L			Red/Green	○	—	IO-Link	○							
	ZSE20BF-L			Red/Green	○	—	IO-Link	○							
ISE20B-L	Red/Green	○		—	IO-Link	○									
	ISE70	Air	[Bar chart showing ranges: 0-100k, 0-300k, 0-1M, 0-2M, 0-5M, 0-10M, 0-15M]						M5 (female) R 1/8, Ø 4, Ø 6, Ø 5/32	Red/Green	—	○	○	○	IP65
	ISE71		M5 female thread, R1/8, NPT1/8	3-Screen Display, Orange, Red/Green	○	○	○	○	IP65						
	ISE70G			Red/Green	○	○	○	○							
	ISE75G		M5 female thread, R1/8, NPT1/8	3-Screen Display, Orange, Red/Green	○	—	IO-Link	○	IP65						
	ISE76G			Red/Green	○	—	IO-Link	○							
	ISE77G			Red/Green	○	—	IO-Link	○							
ISE70	Red/Green	○		—	IO-Link	○									
	ISE70	Liquids	[Bar chart showing ranges: 0-100k, 0-300k, 0-1M, 0-2M, 0-5M, 0-10M, 0-15M]						Rc1/4, NPT1/4, G1/4	3-Screen Display, Orange, Red/Green	○	○	IO-Link	○	IP67
	ZSE80		M5 (female) R 1/4, G 1/4 Rc 1/8, URJ 1/4, TSJ 1/4	Red/ Green	○	○	○	○	IP65						
	ZSE80F			Red/ Green	○	○	○	○							
	ISE80		M5 (female) R 1/4, G 1/4 Rc 1/8, URJ 1/4, TSJ 1/4	3-Screen Display, Orange, Red/Green	○	○	○	○	IP65						
	ISE80H			Red/ Green	○	○	○	○							
	ZSE20C			Red/ Green	○	○	○	○							
	ZSE20CF			Red/ Green	○	○	○	○							
	ISE20C			Red/ Green	○	○	○	○							
	ISE20CH			Red/ Green	○	○	○	○							
	ZSE20C			Red/ Green	○	○	○	○							
ISE20CH	Red/ Green	○		○	○	○									

Digital pressure switches with remoted display

Series	Model	Fluid	Rated pressure range [Pa]						Piping	Display	Switch output		Analogue output		Enclosure	
			-100 k	0 100 k	300 k	1 M	2 M	5 M 10 M			15 M	1-Output	2-Output	1 to 5 V		4 to 20 mA
	PSE530	Air	[Bar chart showing ranges: 0-100k, 0-300k, 0-1M, 0-2M, 0-5M, 0-10M, 0-15M]						M5 Ø 6 Ø 1/4	PSE200 PSE300	—	—	○	—	IP40	
	PSE531		M5, R 1/8 NPT 1/8 Ø 4, Ø 6	PSE200	—	—	○	—	IP40							
	PSE532			PSE300	—	—	○	—								
	PSE533		PSE300	—	—	○	—									
	PSE540	Air	[Bar chart showing ranges: 0-100k, 0-300k, 0-1M, 0-2M, 0-5M, 0-10M, 0-15M]						M3, M5, R 1/8 NPT 1/8 Ø 4, Ø 6	PSE200 PSE300	—	—	○	—	IP40	
	PSE541		Resin pipe (applicable to Ø 4 tubing)	PSE200	—	—	○	○	IP40							
	PSE543			PSE300	—	—	○	○								
	PSE550	Air	Rated differential pressure range: 0 to 2 kPa						Resin pipe (applicable to Ø 4 tubing)	PSE300	—	—	○	○	IP40	
	PSE560	Liquids	[Bar chart showing ranges: 0-100k, 0-300k, 0-1M, 0-2M, 0-5M, 0-10M, 0-15M]						R 1/8 R 1/4 NPT 1/8 NPT 1/4 URJ 1/4 TSJ 1/4	PSE200 PSE300	—	—	○	○		IP65
	PSE561		M12	PSE200	—	—	○	○	IP65							
	PSE563			PSE300	—	—	○	○								
	PSE564		PSE300	—	—	○	○	IP65								
	PSE573			—	—	○	○									
	PSE574			—	—	○	○									
	PSE570			—	—	○	○									
	PSE575			—	—	○	○									
	PSE576			—	—	○	○									
PSE577	—			—	○	○										
PSE575	—	—		○	○											
	PSE200	4 Channels digital pressure sensor controller							Red	5 switch outputs	—	—	—	IP65/IP40		
	PSE300	1 Channel digital pressure sensor controller							Red / Green	2 switch outputs	○	○	—		IP40	
	PSE300AC	1 Channel digital pressure sensor monitor							3-Screen Display, Orange, Red/ Green	○	○	—	—			IP65

Digital flow switches

Series	Model	Fluid	Flow range [l/min]								Piping	Display	Switch output			Analogue output		Enclosure					
			0	1	5	10	20	50	100	200			600	3000	6000	12000	1-Output		2-Output	4-Output	1 to 5 V	4 to 20 mA	
	PFM710	Dry air, N ₂ , Ar, CO ₂ (Note1)	[Bar chart: 0-10]								1/8, C4, C6	Integrated	○	○	—	○ ²⁾	○ ³⁾	IP40					
	PFM510		[Bar chart: 0-10]								1/8, C6, C8, N7	PFM3	—	—	—								
	PFM725		[Bar chart: 0-20]									1/8, C6, C8, N7	Integrated	○	○				—				
	PFM525		[Bar chart: 0-20]								PFM3		—	—	—								
	PFM750		[Bar chart: 0-50]								1/8, C6, C8, N7	Integrated	○	○	—								
	PFM550		[Bar chart: 0-50]									PFM3	—	—	—								
	PFM711		[Bar chart: 0-100]								1/4, C6, C8, N7	Integrated	○	○	—								
	PFM511		[Bar chart: 0-100]									PFM3	—	—	—								
	PFM30□		Remote monitor for PFM5 models with analogue voltage output (1 to 5 V)										Red / Green	—	○				—	○	○	IP40	
	PFM31□		Remote monitor for PFM5 models with analogue current output (4 to 20 mA)										Red / Green	—	○				—	○	○		
	PFMB7201	Air, N ₂	[Bar chart: 0-10]								1/4, C8	Integrated	○	○	—	○	○	IP40					
	PFMB7501		[Bar chart: 0-20]								1/2	Integrated	○	○	—								
	PFMB7102		[Bar chart: 0-50]									Integrated	○	○	—								
	PF2A710	Dry air, N ₂	[Bar chart: 0-10]								1/8, 1/4	Integrated	—	○	—	—	—	IP65					
	PF2A510		[Bar chart: 0-10]									PF2A30	—	—	—				○	○			
	PF2A750		[Bar chart: 0-20]								1/8, 1/4	Integrated	—	○	—	—	—						
	PF2A550		[Bar chart: 0-20]									PF2A30	—	—	—	○	○						
	PF2A711		[Bar chart: 0-50]								3/8	Integrated	—	○	—	—	—						
	PF2A511		[Bar chart: 0-50]									PF2A31	—	—	—	○	○						
	PF2A721		[Bar chart: 0-100]								1/2	Integrated	—	○	—	—	—						
	PF2A521		[Bar chart: 0-100]									PF2A31	—	—	—	○	○						
	PF2A751		[Bar chart: 0-200]								1/2	Integrated	—	○	—	—	—						
	PF2A551		[Bar chart: 0-200]									PF2A31	—	—	—	○	○						
	PF3A703H		[Bar chart: 0-600]								1	Integrated	—	—	—	○	○						
	PF3A706H		[Bar chart: 0-3000]								1 1/2												
	PF3A712H		[Bar chart: 0-6000]								2	Integrated	—	—	—	○	○						
	PF3G300		Remote monitor for PF2A510 and PF2A550 models										3-Screen Display, Orange, Red/Green	○	○	—	○		○	IP40			
PF2A30	Remote monitor for PF2A510 and PF2A550 models										Red	—	○	—	—	IP40							
PF2A31	Remote monitor for PF2A511, PF2A521 and PF2A551 models										Red (channels) / Orange (values)	—	○	—	—		—						
PF2A20	Remote 4-channel flow monitor for PF2A Series										Red (channels) / Orange (values)	—	—	○	—	—							
	PF2D504	Deionised water and chemicals	[Bar chart: 0-10]								3/8	PF2D30	—	—	—	○	○	IP65					
	PF2D520		[Bar chart: 0-20]								1/2												
	PF2D540		[Bar chart: 0-50]								3/4												
	PF2D30		Remote monitor for PF2D Series																Red	—	○	—	—
PF2D20	Remote 4 channel flow monitor for PF2D Series										Red (channels) / Orange (values)	—	—	○	—	—	IP65 (front face) IP40 (rest)						
	PF3W704	Water	[Bar chart: 0-10]								3/8	Integrated	○	○	—	○	○	IP65					
	PF3W504		[Bar chart: 0-10]								3/8, 1/2	PF3W30							○	○			
	PF3W720		[Bar chart: 0-20]									3/8, 1/2							Integrated	○	○		
	PF3W520		[Bar chart: 0-20]								PF3W30								○	○			
	PF3W740		[Bar chart: 0-50]								1/2, 3/4	Integrated							○	○	—	○	○
	PF3W540		[Bar chart: 0-50]									PF3W30							○	○	—	○	○
	PF3W711		[Bar chart: 0-100]								3/4, 1	Integrated							○	○	—	○	○
	PF3W511		[Bar chart: 0-100]									PF3W30							○	○	—	○	○
	PF3W721		[Bar chart: 0-200]								1 1/4, 1 1/2	Integrated							○	○	—	○	○
	PF3W521		[Bar chart: 0-200]									PF3W30							○	○	—	○	○
PF3W30	Remote monitor for PF3W										Red/Green	○	○	—	○	○	IP40						

1) For CO₂, flow range is half the indicated.

2) Only available if display selected is PFM30□.

3) Only available if display selected is PFM31□.

Sensors & Switches

Digital pressure switches (Self-contained type)



Digital pressure switch
ZSE10/ISE10 Series p.425



High-precision digital pressure switch
ZSE20□(F)/ISE20□ Series p.426



2-Colour display high-precision digital pressure switch
ZSE30A/ISE30A Series p.427



2-Colour display high-precision digital pressure switch
ZSE40A/ISE40A Series p.428



High-precision digital pressure switch with IO-link
ISE7□/7□G Series p.429



2-Colour display digital pressure switch for general fluids
ZSE80/ISE80 Series p.430



Pressure or vacuum switch
PS1000/1100/1200 Series p.431



2-Colour display digital gap checker
ISA3 Series p.432



Air catch sensor
ISA2 Series p.432

Digital pressure switches (Separate type)



Vacuum and positive pressure sensor
PSE530 Series p.433



Micro vacuum and pressure sensor
PSE540 Series p.433



Low differential pressure sensor
PSE550 Series p.434



Pressure sensor for general purpose fluids
PSE560 Series p.434



Pressure sensor for general fluids
PSE570 Series p.435



Monitors



Pressure monitor
PSE200/300 Series p.436



Sensor monitor
PSE300AC Series p.437



Digital flow monitor
PFG300 Series p.437



Mechanical pressure switches



Pressure switch/Reed, switch
IS10 Series p.438



Mechanical style pressure
IS3000 Series p.438

Electronical pressure switches



Electronic pressure switch
ISE2 Series p.439



Electronic vacuum switch
ZSE1 Series p.439

Digital flow switches



2-Colour display flow switch
PFM Series p.440



Digital flow switch
PFMB Series p.441



Digital flow switch
PFMC Series p.442



Flow sensor and voltage monitor
PFMV Series p.442



Digital flow switch for air
PF2A Series p.443



3-Colour display digital flow switch for water
PF3W Series p.444



Digital flow switch for large flow
PF3A7□ Series p.446



Digital flow switch for water IO-link compatible
PF3W7□-X445 Serie p.446



Digital flow switch for deionised water & chemicals
PF2D Series p.447



2-Colour display digital flow switch Electromagnetic type
LFE Series p.447



Ionizers



Bar type ionizer
IZS40/41/42 Series p.448



Separate controller bar type ionizer
IZT40/41/42 Series p.450



Nozzle type ionizer
IZN10E Series p.452



Fan type ionizer
IZF10/10R Series p.453



Fan type ionizer
IZF21/31 Series p.454



Electrostatic sensor
IZD10 Series p.454



Electrostatic sensor monitor
IZE11 Series p.455



Handheld electrostatic meter
IZH10 Series p.455



Desktop duster box
ZVB Series p.456



Positioners



Electro-pneumatic positioner
IP8000/8100 Series p.457



Smart positioner
IP8101/8001 Series p.457

Thermo-chiller



Circulating fluid temperature controller, thermo-chiller compact type

HRS Series p.458



Circulating fluid temperature controller, thermo-chiller, standard type

HRS090 Series p.459



Circulating fluid temperature controller, thermo-chiller standard type

HRS100/150 Series p.459



Circulating fluid temperature controller, thermo-chiller basic type

HRSE Series p.460



Circulating fluid temperature controller, thermo-chiller, inverter type

HRSH Series p.460



Thermo-con



Peltier-type chiller, thermo-con/ rack mount type

HECR Series p.461



Process pump



Process pump

PA3000/5000 Series p.462



Process pump with pulsation attenuator

PAX1000 Series p.462



Compact process pump (Diaphragm pump)

PB Series p.462

Our highlighted product for you

High-precision digital pressure switch ZSE20(F)□/ISE20□ Series

For more details
go to page 426

▶ Selectable delay time:

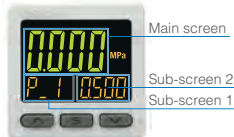
- Fastest 1.5 ms or less. Also 20, 100, 500, 1000, 2000 or 5000 ms selectable

▶ Compact and lightweight

- 32 g to 51 g.

3-screen display

It can display simultaneously the current pressure and another selectable value (set value, hysteresis value, bottom value or peak value).



IO-Link

- Higher control of the applications
- Cost-effective: plug&play, minimum hardware and programming costs
- Integral communication, from sensors to actuators
- Noise immunity.

More & quicker information at your disposal



3 setting modes (without IO-Link output):

3-Step setting mode (+ snapshot). Press the button to modify:

- Threshold value [P_1]
- Hysteresis value [H_1]

Simple setting mode. Press 1-3 seconds to modify:

- Delay time [dt1]

Function selection (detailed setting) mode.

Press 3-5 seconds to modify:

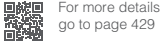
- Output mode [oUt1]
- Selection of normal or reversed [lot]
- Display colour selection [CoL]
- Others.

Peak and bottom values are maintained even if the power supply is cut.



High-precision digital pressure switch with IO-Link

ISE7□/7□G Series



For more details
go to page 429

► NPN/PNP switch function

Both NPN and PNP are available.
The number of stock items can be reduced

► IP67 enclosure

Guarantee yourself endurance

► Angled display

Good visibility from various mounting positions.



M12 connector
M12 connector for power with a strain relief.

Sub-screen 2
Label

Main screen
Current pressure value.



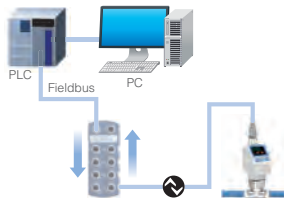
Rotating display
336°

Sub-screen 1
Set value, Peak value,
Hysteresis value, others.

Obtain more

► Enjoy IO-Link advantages

- Remote configuration
- Diagnosis
- Reduce wiring
- Easy sensor replacement
- Tamper free.



► Diagnosis items - with IO-Link

- Internal product malfunction
- Outside of zero-clear range
- Outside of rated pressure range
- Upper temperature limit exceeded inside the product.

Our highlighted product for you

2-Colour display digital flow switch

PFM/PFMB Series



For more details go to page 440/441



Wide range of flow measurement with one product



2-colour display
Irregular value at a glance

► Reversed display mode

When the switch is used upside down, the orientation of the display can be rotated to make it easier to read.



► Repeatability: ± 1 % F.S. or less

► Grease-free

► **Flow adjustment valve** integrated available.
Reduced piping and space saving

► Response time: **either 50 msec., 0.5 sec. 0.1 sec., 1 sec. or 2 sec. can be chosen**

► Wide flow rate range: **10, 25, 50, 100, 200, 500, 1000 l/min**

Digital flow switch for water

PF3W Series

For more details go to page 444



A temperature and flow sensor in one device



▶ Rotable display

Display can be rotated in increments of 45° to suit the installation conditions. Easy operation, improved visibility. Counterclockwise 90°
Clockwise 225°.



▶ Fluid temperature: 0 to 90 °C

▶ Ethylene glycol aqueous solution can be used.

▶ PVC piping type

Applicable fluid: Deionized water, chemical, etc.
Integrated type and remote type available.



Temperature sensor

Display range: -10 to 110 °C

(Temperature sensor alone)

Minimum setting unit: 1°C

Analogue output: **Current output/Voltage output**

▶ Remote type

- Remote sensor unit with indicator

Visually check status of via sensor via indicator.



- 3 colour display digital flow monitor

- Can copy to up to 10 switches simultaneously.
- Reducing setting labour.
- Minimising risk of mistakes in setting.



Our highlighted product for you

Digital flow switch for large flow PF3A7□H Series



For more details
go to page 446



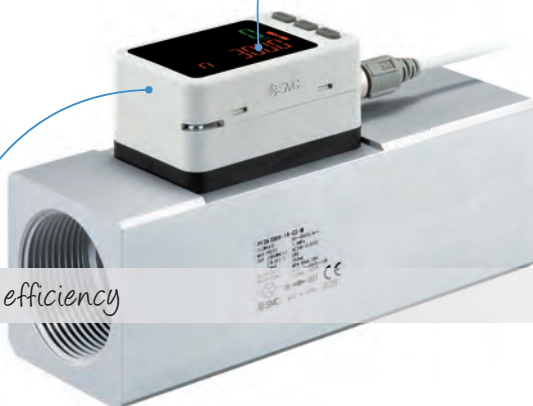
► Flow ratio 100:1

Wide range of flow measurement
with one product.

Analogue output gives more and detailed information of the application performance

The external input can reset the accumulated value,
peak value and bottom value without manipulation.

AC 17470 HI 1500 Ln PF3A



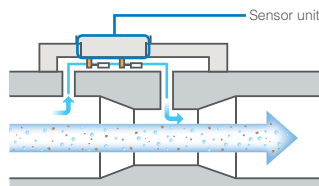
Helping your efficiency

More information at a glance

Due to the 3-colour and 3-label screen display the operator can easily take notes and do the setting while checking the measured value. Moreover, the display adapts to the installation rotating 90° or reversing.




► **Extended Life** – Improved drainage and resistance to foreign matter. Reduced pressure loss maintenance-free fluid passage. The aluminium structure of the body is sturdy and tough.




Separate controller bar type ionizer

IZT40/41/42 Series

 For more details go to page 450

- ▶ **AC ion discharge (IZT40/41)**
Rapid neutralisation of static electricity, as fast as 0.1 s
- ▶ **Dual AC ion discharge (IZT42)**
 - Potential amplitude of 25 V or less
 - Deionisation does not affect semiconductors
- ▶ **Air supply port is selectable**
Right side/left side/both sides
- ▶ **Auto balance function (IZT41/42).**

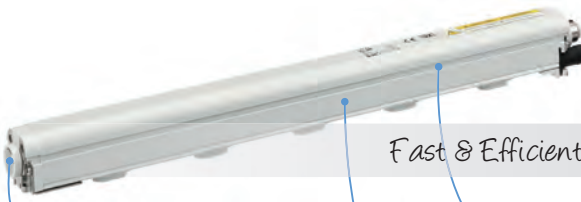
Multiple alarms, functions and LED display (IZT41/42)



Ion balance display

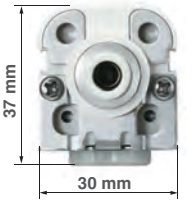
High-voltage abnormality detection

Maintenance detection



Fast & Efficient static removal wherever you want

Compact design




37 mm

30 mm

Separate controller and bar

- Bar can be mounted in a limited space
- Easily monitor and adjust bars installed in a place which cannot be accessed.

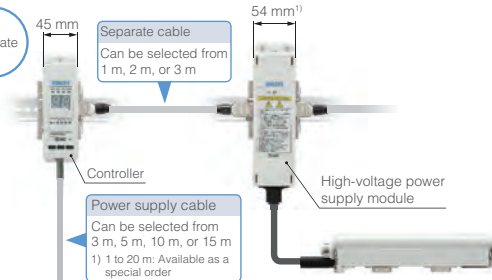
Bar length: 160 to 2500 mm (Standard)
3040 mm (Available as a special order)



High-voltage cable length: 1 m/2 m/3 m

▶ **Up to 4 bars can be connected to one controller**

Separate



45 mm

Separate cable
Can be selected from 1 m, 2 m, or 3 m

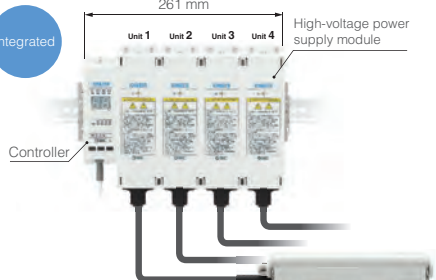
Controller

54 mm¹⁾

High-voltage power supply module

Power supply cable
Can be selected from 3 m, 5 m, 10 m, or 15 m
1) 1 to 20 m: Available as a special order

Integrated



261 mm


Unit 1 Unit 2 Unit 3 Unit 4

High-voltage power supply module

Controller

Our highlighted product for you

Fan type ionizer IZF21/31 Series

 For more details
go to page 454

- ▶ **Ion balance:** ± 5 V
- ▶ **Effective electricity elimination distance:**
50 to 1600 mm.

Optional filter



Fast static removal in your hands



Automatic cleaning function



Emitter

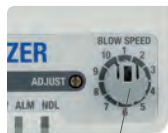
Contamination of the emitters can be detected



NDL lights up when contamination of the emitters is detected.

Flow rate adjustment function

- IZF21: up to 1800 l/min
- IZF31: up to 4400 l/min



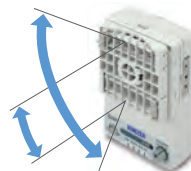
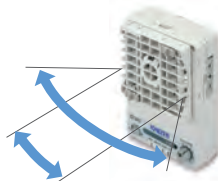
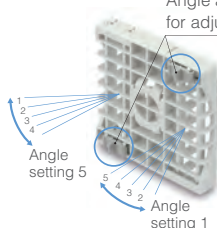
Flow rate adjustment dial

- ▶ **Extensive static neutralisation area can be covered with adjustable louver**

Angle adjustment trimmer for adjustable louver

Adjustable in 5-stages from wide to narrow angle

90-degree rotation mounting available (Adjustable in a vertical direction)



Thermo-chiller. Compact type

HRS Series



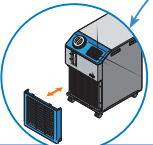
For more details
go to page 458

As easy way to control the fluid temperature



Self diagnosis function and check display

35 types of alarm codes
Alarm codes notify when to check the pump and fan motor.



Easy maintenance

Dustproof filter Integrated with the grill of the front panel. Mounting and removal can be done easily.

► Compact

Fits neatly under a laboratory work bench

► Light-weight

Only 40 kg (69 kg for HRS050)

► Large cooling capacity

With several available cooling capacity ranges:
1100 W/1700 W/2100 W/2600 W/4700 W/4900 W (50 Hz).


► Space saving

Installation close to a wall is possible on both sides.
(Not available for HRS030/050/060 and option G).



Our highlighted product for you

Thermo-con/rack mount type HECR Series

 For more details
go to page 461

► Highly accurate temperature control due to peltier device

Impressive temperature stability: ± 0.01 to 0.03 °C

► Stackable and compact

Perfect to stack in a 19-inch (482.6 mm) rack. Height reduction of approx. 55 % and volume reduction by 36 % (comparison between HECR002 and HEC002)

► Low-noise and vibration design

Between 48 and 55 dB. Structure without compressor makes it less prone to vibrate. When the cooling load is low the fan rotations decrease. Suitable for putting all the required equipment in the same working-room

► Water-cooled type

Reduces the amount of exhaust heat by 90 %

► Set temperature range: 10 to 60 °C

► 14 alarms

Several types of alarm codes and conditions can be displayed. Also, it can generate relay output for upper/lower temperature limit alarm and output cutoff alarm.

► Easy interaction. Simple operation.



- 1) Turn the power ON
- 2) Press the **SEL** key, and adjust the temperature setting with the **▼▲** keys
- 3) Press the **RET** key to complete.

Great temperature stability for standard mounting

Fluid fill port

Fluid can be supplied without removing the product from the rack.

Circulating fluid volume can be checked

Power switch

Drain pan

Drain pan is equipped to avoid any risk of fluid leakage over equipment mounted in a lower rack.

Sensors and switches

Digital pressure switch

ZSE10/ISE10 Series



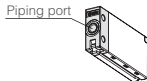
- Reduced in depth: 9.8 mm
- 3 styles:
ZSE10: Vacuum pressure
ZSE10F: Compound pressure
ISE10: Positive pressure
- Can copy up to 10 switches simultaneously
- 3-step setting; copy function
- Analogue output: 1 - 5 V
- Switch output: 2 NPN/PNP or 1 PNP/NPN
- Multi-angle indicator
- Piping is possible from two directions
- Mounting: direct mounting, panel mounting, DIN rail mounting
- Enclosure IP40.

Part number	Rated pressure range	Connection port	Switch output	Voltage
ISE10-M5-B-G ●	Positive pressure: -0.1~1.0MPa	M5 female, side/rear ported (also available with R 1/8 and NPT 1/8)	2 PNP	12~24 VDC
ISE10-M5-E-G			PNP + (1-5 V)	
ISE10-M5R-B-G*			2 PNP	
ISE10-M5R-E-G*			PNP + (1-5 V)	
ZSE10-M5-B-G ●	Vacuum pressure 0 ~ -101 kPa		2 PNP	
ZSE10-M5-E-G			PNP + (1-5 V)	
ZSE10-M5R-B-G*			2 PNP	
ZSE10-M5R-E-G*			PNP + (1-5 V)	
ZSE10F-M5-B-G ●	Vacuum + low pressure -100 ~ +100 kPa		2 PNP	
ZSE10F-M5-E-G			PNP + (1-5 V)	
ZSE10F-M5R-B-G*			2 PNP	
ZSE10F-M5R-E-G*			PNP + (1-5 V)	

NPN options available upon request.

* Rear ported

M5 female thread/side ported

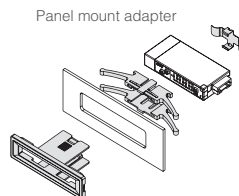


M5 female thread/Rear ported



Mounting accessories

Part number	Description
ZS-39-B	Panel mount adapter
ZS-39-R	DIN rail adapter
ZS-39-5G	Lead wire with connector (with connector cover) (5 cores, 2 m)



Our highlighted product for you

High-precision digital pressure switch

ZSE20□(F)/ISE20□ Series



- 3-screen, 3-colour display
- Applicable fluid: air, non-corrosive gas, non-flammable gas, or general fluids
- Pressure ranges: from -0.1 to 2 MPa
- Repeatability: $\pm 0.2\%$ F.S. ± 1 digit
- Output: NPN/PNP, Analogue (Voltage/Current), IO-Link
- Select response time: from less than 1.5 ms to 5 s
- IP40 or IP65
- Consumption: 35 mA or less.

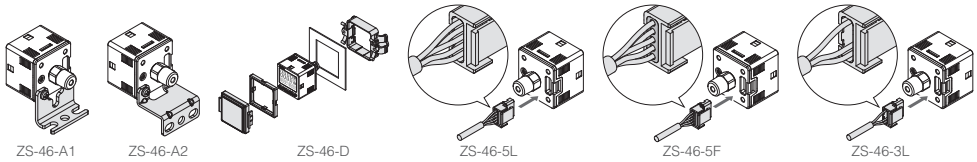


Model	Part number	Rated pressure range	Piping	Output	Applicable fluid	Enclosure
	ISE20-P-01-L ¹⁾	-0.1 to 1 MPa	R1/8 Piping adapter	PNP open collector 1 output	Air, non-corrosive gas, non-flammable gas	IP40
	ZSE20-P-01-L ¹⁾	0 to -101 kPa				
	ZSE20F-P-01	-100 to 100 kPa				
	ISE20A-T-01	-0.1 to 1 MPa				
	ZSE20AF-T-01	-100 to 100 kPa				
	ZSE20A-T-01	0 to -101 kPa				
	ISE20A-V-01	-0.1 to 1 MPa	R1/8 Piping adapter	PNP open collector 2 outputs + Analogue voltage output ¹⁾	Air, non-corrosive gas, non-flammable gas	IP40
	ZSE20AF-V-01	-100 to 100 kPa				
	ZSE20A-V-01	0 to -101 kPa				
	ISE20B-T-01	-0.1 to 1 MPa				
	ZSE20BF-T-01	-100 to 100 kPa				
	ZSE20B-T-01	0 to -101 kPa				
	ISE20B-V-01	-0.1 to 1 MPa	R1/4 (M5 female thread)	PNP open collector 2 outputs + Analogue current output ¹⁾	Fluid that will not corrode stainless steel 630 and 304	IP65
	ZSE20BF-V-01	-100 to 100 kPa				
	ISE20C-T-02	-0.1 to 1 MPa				
	ISE20CH-T-02	-0.1 to 2 MPa				
	ZSE20CF-T-02	-100 to 100 kPa				
	ZSE20C-T-02	0 to -101 kPa				
	ISE20C-V-02	-0.1 to 1 MPa	R1/8 Piping adapter	PNP open collector 2 outputs + Analogue voltage output ¹⁾	Air, non-corrosive gas, non-flammable gas	IP65
	ISE20CH-V-02	-0.1 to 2 MPa				
	ZSE20CF-V-02	-100 to 100 kPa				
	ZSE20C-V-02	0 to -101 kPa				
	ISE20B-L-01	0 to 1 MPa				
	ZSE20BF-L-01	-100 to 100 kPa				
ZSE20B-L-01	0 to -100 kPa					

1) With lead wire with connector

Accessories

Part number	Description	Model	Part number	Description	Model
ZS-46-A1	Bracket A - Tapping screw: Nominal size 3 x 8 L	All	ZS-46-5L	Lead wire with connector (5-core, 2 m lead wire)	Z/ISE20A
ZS-46-A2	Bracket B - Tapping screw: Nominal size 3 x 8 L	Z/ISE20, Z/ISE20A, Z/ISE20B	ZS-46-5F	Lead wire with connector (5-core, 2 m, Waterproof)	Z/ISE20B, Z/ISE20C
ZS-46-D	Panel mount adapter + Front protection cover (Rear ported)	All	ZS-46-N1	R1/8 piping adapter	Z/ISE20, Z/ISE20A, Z/ISE20B
ZS-46-3L	Lead wire with connector (3-core, 2 m, Non-waterproof)	Z/ISE20	ZS-46-N2	NPT1/8 piping adapter	
ZS-46-5LM12	Lead Wire M12 Connector. Non-waterproof	Z/ISE20, Z/ISE20A			
ZS-46-5FM12	Lead Wire M12 Connector. Waterproof	Z/ISE20B(-L), Z/ISE20C			



2-Colour display high-precision digital pressure switch

Adjustable vacuum, positive and compound
ZSE30A/ISE30A Series



- 3 styles:
ZSE30A: Vacuum pressure
ZSE30AF: Compound pressure
ISE30A: Positive pressure
- Enclosure IP40
- Large, easy-to-read display
- 2 colour (green/red) display
- Easy operation: 3-step setting and copy function
- Analogue output: 4–20 mA or 1–5 V
- Switch output: 2 PNP/NPN or 1 PNP/NPN
- With straight and elbow one-touch fittings.

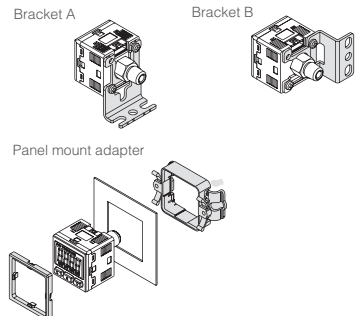
Part number	Rated pressure range	Connection port	Switch output	Voltage
ISE30A-01-B-G ●	Positive Pressure: -0.1~1.0MPa	Male: R 1/8 Female: M5	2 PNP	12~24 VDC
ISE30A-01-F-G ●			PNP + (2.4-20 mA)	
ZSE30A-01-B-G ●	Vacuum Pressure: 0 ~ -101 kPa		2 PNP	
ZSE30A-01-F-G ●			PNP + (4-20 mA)	
ZSE30AF-01-B-G ●	Vacuum + Low Pressure: -100 ~ +100 kPa		2 PNP	
ZSE30AF-01-F-G ●			PNP + (4-20 mA)	

NPN options available upon request.

1) Also available with Ø 4 or Ø 6 mm one-touch fitting.

Mounting accessories

Part number	Description
ZS-38-A1	Bracket A
ZS-38-A2	Bracket B
ZS-27-C	Panel mount adapter
ZS-38-3G	Lead wire with connector cover (3 cores, for 1 output, 2 m)
ZS-38-4G	Lead wire with connector cover (4 cores, for 2 outputs, 2 m)
ZS-38-U	Lead wire unit with connector for copying



2-Colour display high-precision digital pressure switch

Adjustable Vacuum, Positive and Compound

ZSE40A/ISE40A Series



- 3 styles:
 - ZSE40A: Vacuum
 - ISE40A: Positive pressure
 - ZSE40AF: Vacuum & low pressure combination
- Enclosure IP65
- Easy handling, space saving
- 2 colour (green/red) display
- Easy operation: 3 step setting and copy function.
- Analogue output: 4–20 mA or 1–5 V
- Switch output: 2 PNP/NPN
- M8 connector type available.

Part number	Rated pressure range	Connection port ¹⁾	Switch output	Voltage
ISE40A-01-T ●	Positive pressure: -0.1~1.0MPa	Male: R 1/8 Female: M5	2 PNP + (0.6-5 V)	12~24 VDC
ISE40A-01-V ●			PNP + (2.4-20 mA)	
ISE40A-01-Y ●			2 PNP	
ISE40A-01-P-L ²⁾ ●			1 PNP	
ZSE40A-01-T ●	Vacuum pressure: 0 ~ -101.3 kPa		2 PNP + (1-5 V)	
ZSE40A-01-V ●			PNP + (4-20 mA)	
ZSE40A-01-Y ●			2 PNP	
ZSE40A-01-P-L ²⁾ ●			1 PNP	
ZSE40AF-01-T ●	Vacuum + Low pressure: -100 ~ +100 kPa		2 PNP + (1-5 V)	
ZSE40AF-01-V ●			PNP + (4-20 mA)	
ZSE40AF-01-Y ●		2 PNP		

NPN options available upon request.

1) Also available with Ø 4 or Ø 6 mm one-touch fitting (not for M8 connector type).

2) M8 connector type.

Mounting accessories

Part number	Description
ZS-24-A	Bracket A (with 2 mounting screws each of M3 x 5L and M4 x 5L)
ZS-24-B	Bracket B (with 2 mounting screws M4 x 5L)
ZS-24-D	Bracket D (with 2 mounting screws each of M3 x 5L and M4 x 5L)

Bracket A



Bracket B



Bracket C



Our highlighted product for you

High-precision digital pressure switch with IO-link



ISE7□/7□G Series



- Applicable fluid: Air and general fluids
- Pressure ranges: from 0 to 10 MPa
- Repeatability: ± 0.5 % F.S. or less
- Output: IO-Link and NPN/PNP
- Selectable response times
- IP67
- Consumption: 35 mA or less.

Part number	Rated pressure range	Applicable fluid	Piping	Output	Response time
ISE70-F02-L2 ●	0 to 1 MPa	Air, non-corrosive gas, non-flammable gas	G 1/4 ¹⁾	IO-Link: Switch output 1 + Switch output 2 (Switch output: NPN or PNP switching type)	1.5 ms or less, variable from 0 to 60 s/0.01 s increments
ISE71-F02-L2	0 to 1.6 MPa				
ISE70G-F02-L2	0 to 1 MPa	Liquid or gas that will not corrode materials of parts in contact with fluid			
ISE75G-F02-L2	0 to 2 MPa				
ISE76G-F02-L2	0 to 5 MPa				
ISE77G-F02-L2 ●	0 to 10 MPa				

1) ISO 1179-1 compliant

Accessories

Part number	Description	
ZS-31-B	Lead wire with M12 connector: Straight Lead wire length: 5 m	
ZS-31-C	Lead wire with M12 connector: Right-angled Lead wire length: 5 m	
ZS-50-A	Interchangeable with ISE70 on ISE75(H) With 2 mounting screws (M4 x 6L)	
ZS-50-B	With 2 mounting screws (M4 x 6L)	

2-Colour display digital pressure switch for general fluids

ZSE80/ISE80 Series



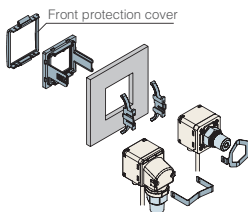
- 4 Rated pressure range: 0.0 to -101.0 kPa; -100.0 to 100.0 kPa; -0.100 to 1.000 MPa; -0.100 to 2.00 MPa
- Stainless diaphragm (Oil-free single-layer diaphragm structure)
Sensor parts: Stainless steel 630
Fitting parts: Stainless steel 304
- Choice of VCR® or Swagelok® fitting is available
- For use with water, hydraulic fluid, silicon oil, lubricant, fluorocarbon, argon, ammonia, carbon dioxide, air-containing drainage and nitrogen
- Enclosure IP65
- Outputs: analogue (1-5 V, 4-20 mA), 1/2 x PNP/NPN

Part number	Rated pressure range	Port size	Piping direction	Switch output	Voltage
ISE80-02-B ●	-0.1 to 1 MPa	R 1/4	Rear ported	PNP open collector 2 outputs	12-24 VDC
ISE80-02L-B ●			Bottom ported		
ISE80-F02-B ●		Rear ported			
ISE80H-02-B ●	R 1/4	Rear ported			
ISE80H-02L-B ●		Bottom ported			
ZSE80-A2-B ●	0 to -101 kPa	URJ 1/4	Rear ported		
ZSE80-A2L-B ●			Bottom ported		
ZSE80F-02-B ●	-100 to 100 kPa	R 1/4	Rear ported		
ZSE80F-A2-B ●		URJ 1/4			

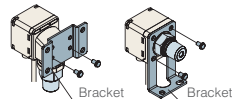
Option

Option	Piping direction	Part number
Bracket	Rear ported	ZS-24-A
	Rear ported	ZS-24-D
	Bottom ported	ZS-35-A
Panel mount	Rear ported	ZS-35-C
	Bottom ported	ZS-35-B
Panel mount + Front protection cover	Rear ported	ZS-35-F
	Bottom ported	ZS-35-E

Panel mount



Bracket mount



Pressure or vacuum switch

PS1000/1100/1200 Series

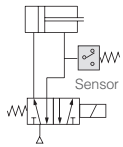


- LED switch point display
- Miniature design
- For mounting directly to one-touch fittings
- Piezo sensor gives long service life
- Can be plugged straight into a \varnothing 6 mm one-touch fitting
- Enclosure IP40.

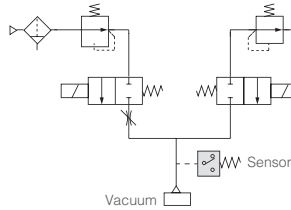
Part number	Operating pressure range	Switch point [MPa]	Switch output	Voltage
PS1000-R06L-Q ●	-0,1 to 1,0 Mpa	-0,1 to 0,45	Pressure \geq Switch point: ON	12~24 VDC
PS1100-R06L-Q ●		-0,1 to 0,40	Pressure \leq Switch point: ON	
PS1200-R06L-Q ●	-100 to 500 kPa	-100 to 0 kPa		

* with 3 m cable

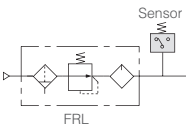
Pressure control on actuator



Suction monitoring



Pressure monitoring FRL



2-Colour display digital gap checker

ISA3 Series



- Visualization with digital display: Two displays enable various information to be checked
- Easy setting by the digital display: 3 step setting (Snap shot function)
- Withstand pressure 0.6 MPa (Improved 3 times compared with the series ISA2)
- Detection principle without exhaust air:
 - Exhaust noise: Zero
 - 60 % reduction of air consumption
- Measures against clogging:
 - Reducing the number of internal orifices from 3 to 1
 - A larger orifice area. Orifice rate ratio 68 % increase
- Manifold available with or without unit control
 - IP67
- Centralised lead wire
- 2 outputs type has been added.

Part number	Type	Rated distance range [mm]	Port size	Operating pressure range [kPa]	Output specification	Voltage
ISA3-GFP-1N ●	1 station with straight cable Without control unit	0.02 to 0.15	G 1/8	100 to 200	1 PNP	24 VDC
ISA3-HFP-1N ●		0.05 to 0.30				
ISA3-FFP-1N ●		0.01 to 0.03				

Accessories

Part number	Description
ISA-14	Bracket
ISA-12-C	Threaded plug with seal (G 1/8)
ISA-5-□	DIN rail (□ number of stations)
ZS-31-C	Cable with connector (right angle 5 m)
ISA-19-□ ●	Centralised lead wire (□ number of stations)

Air catch sensor

ISA2 Series



- Stable detection of 0.01 to 0.5 mm clearance
- Plug connectors (Centralised wiring)
- Modular construction, (Requires less man hours to wire)
- Repetition accuracy 0.01 mm or less
- Minimum operating pressure 30 kPa (ISA2-G).

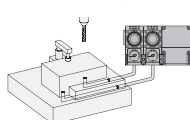
Controller Unit for 1 sensor

Part number	Type	Rated distance range [mm]	Port size	Operating pressure range [kPa]	Output specification	Voltage
ISA2-GFE25 ●	1 station with pressure gauge and straight cable Without terminal block box	0.01 to 0.25	G 1/8	30 to 200	1 PNP	12~24 VDC
ISA2-HFE25 ●		0.03 to 0.5		50 to 200		

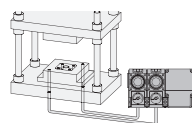
Mounting accessories

Part number	Description
ISA-4-A	Bracket
ISA-5-1	DIN rail for 1 station
ISA-9-A	DIN rail mounting bracket
ISA-8-B	Cable with connector (right angle 5 m)

To check the work piece position on the reference plane



Position check of metal mold



Vacuum and positive pressure sensor

PSE530 Series



- Sensor and controller separate
- IP40
- Simple electr. connection using plug
- Controller unit: PSE200/PSE300.

Measuring sensor for compressed air

Part number	Connection thread	Pressure range	Output signal
PSE530-M5 ●	M5	0 ~ 1 MPa	Analogue 1 ~ 5 V
PSE531-M5 ●		0 ~ -101 kPa	
PSE532-M5 ●		0 ~ 101 kPa	
PSE533-M5 ●		-101 ~ 101 kPa	

Micro vacuum and pressure sensor

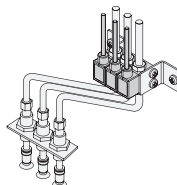
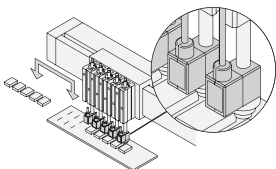
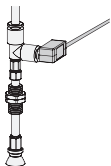
PSE540 Series



- 2 styles:
PSE541: Vacuum pressure (0 ~ -101 kPa)
PSE543: Compound pressure (-100 ~ 101kPa)
- Micro design, e.g. 9.6 x 20.8 x 18 mm
- Minimal weight, e.g. 1.9 g
- 1 ms response time
- Controller unit: PSE200/PSE300 (7 different connection types PSE300).

Compressed air micro sensor

Part number	Connection type	Pressure range	Output signal
PSE541-M3	M3 male	Low pressure and vacuum: 0 ~ -101 kPa	Analogue 1 ~ 5 V
PSE541-M5 ●	M5 male		
PSE541-01 ●	Male R 1/8, female M5		
PSE541-R04 ●	Ø 4 mm reducer		
PSE541-R06 ●	Ø 6 mm reducer		
PSE541-IM5 ●	M5 female thread		
PSE541-IM5H	M5 female, with mounting holes	Low pressure and vacuum: -100 ~ +100 kPa	
PSE543-M3 ●	M3 male		
PSE543-M5 ●	M5 male		
PSE543-01 ●	Male R 1/8, female M5		
PSE543-R04 ●	Ø 4 mm reducer		
PSE543-R06 ●	Ø 6 mm reducer		
PSE543-IM5 ●	M5 female thread		
PSE543-IM5H	M5 female, with mounting holes		



Low differential pressure sensor

PSE550 Series



- Rated differential pressure range: 0 to 2 kPa
- Accuracy: $\pm 1\%$ F.S.
- Proof pressure: 65 kPa
- Analogue output: 4 to 20 mA DC, 1 to 5 VDC
- Enclosure IP40
- Controller Unit: PSE300.

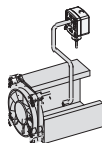
Part number	Output signal	Pressure range	Voltage
PSE550 ●	Voltage output type 1 to 5 V	-50 to 50 kPa ¹⁾	12 ~ 24 VDC
PSE550-28 ●	Current output type 4 to 20 mA		

1) Can detect differential pressure from 0 to 2 kPa within the range of -50 to 50 kPa.

Mounting accessories

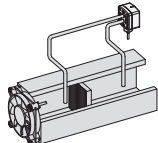
Part number	Description
ZS-30-A	Bracket
ZS-28-C	Connector for PSE300

Flow control



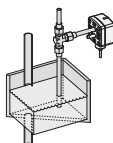
Can control air flow by monitoring the flow rate inside the duct.

Filter clogging monitoring



Can control air flow by monitoring the flow rate inside the duct.

Liquid level detection



Can control air flow by monitoring the flow rate inside the duct.

Pressure sensor for general purpose fluids

PSE560 Series



- Wetted material SUS316L
- Copper-free, fluorine free
- Oil-free (single diaphragm)
- Enclosure IP65
- Controller unit: PSE200/PSE300.

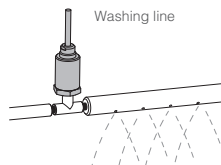
Part number	Port Sizes in Stock	Pressure range	Output signal	Voltage
PSE560-□ ●	01, 02, N01, N02, A2	Positive pressure (0 to 1 MPa)	Voltage output type 1 to 5 V	12 ~ 24 VDC
PSE560-□-28 ●	01, 02, C01, A2	Positive pressure (0 to 1 MPa)	Current output type 4 to 20 mA	
PSE561-□ ●	01	Vacuum (0 to -101 kPa)	Voltage output type 1 to 5 V	
PSE561-□-28 ●	01, 02	Vacuum (0 to -101 kPa)	Current output type 4 to 20 mA	
PSE563-□ ●	01, 02	Compound pressure (-100 to 100 kPa)	Voltage output type 1 to 5 V	
PSE563-□-28 ●	01, 02	Compound pressure (-100 to 100 kPa)	Current output type 4 to 20 mA	
PSE564-□ ●	01, 02	Positive pressure (0 to 500 kPa)	Voltage output type 1 to 5 V	
PSE564-□-28 ●	01, 02	Positive pressure (0 to 500 kPa)	Current output type 4 to 20 mA	

□ Port size

01	R 1/8 (with M5 female thread)
02	R 1/4 (with M5 female thread)

C01	Rc 1/8
A2	URJ 1/4
B2	TSJ 1/4

N01	NPT 1/8 (with M5 female thread)
N02	NPT 1/4 (with M5 female thread)



Pressure sensor for general fluids

PSE57□ Series



- Rated pressure ranges: 0 to 1 MPa, -100 to 100 kPa, 0 to 500 kPa, 0 to 2 MPa, 0 to 5 MPa, 0 to 10 MPa
- Applicable fluids: gas or liquid that will not attack or corrode materials of parts in contact with fluid
- Proof pressure: 3 times higher than the rated pressure
- Withstand voltage: 500 VAC
- M12 connector for wiring
- Enclosure: IP65.

Part Number	Port Size	Pressure range	Output signal	Voltage
PSE570-□ ●	01, 02	Positive pressure [0 to 1 MPa]	Voltage output type 1 to 5 V	12 ~ 24 VDC
PSE570-□-28 ●			Current output type 4 to 20 mA	
PSE573-□	01, 02	Compound pressure [-100 to 100 kPa]	Voltage output type 1 to 5 V	
PSE573-□-28			Current output type 4 to 20 mA	
PSE574-□ ●	01, 02	Positive pressure [0 to 500 kPa]	Voltage output type 1 to 5 V	
PSE574-□-28 ●			Current output type 4 to 20 mA	
PSE575-□	02	Positive pressure [0 to 2 MPa]	Voltage output type 1 to 5 V	
PSE575-□-28			Current output type 4 to 20 mA	
PSE576-□		Positive pressure [0 to 5 MPa]	Voltage output type 1 to 5 V	
PSE576-□-28			Current output type 4 to 20 mA	
PSE577-□		Positive pressure [0 to 10 MPa]	Voltage output type 1 to 5 V	
PSE577-□-28	Current output type 4 to 20 mA			

□ Port sizes

01	R 1/8 (with M5 female thread)
02	R 1/4 (with M5 female thread)

Pressure monitor

PSE200/300 Series



PSE200:

- 4 channels digital pressure sensor controller
- Applicable to PSE530/540/560 series

PSE300:

- 1 channel digital pressure sensor controller
- Applicable to PSE530/540/550/560 series.

Controller unit for 1 sensor

Part number	Input	Switch output	Response time	Mounting
PSE303-LC ●	Voltage	2 x PNP + analogue 1 to 5 V	1 ms	Panel mounting
PSE304-LC ●	Voltage	2 x PNP + analogue 4 to 20 mA		
PSE313-LC	Current	2 x PNP + analogue 1 to 5 V		
PSE314-LC	Current	2 x PNP + analogue 4 to 20 mA		

NPN options and auto-shift input available upon request.

DIN rail mounting available upon request.

Including supply cable and sensor connector.

Accessories

Part number	Description
ZS-28-B	Bracket for PSE300
ZS-27-C	Panel mount adapter for PSE300
ZS-27-D	Panel mount adapter + protective front cover for PSE300

Controller unit for 4 sensors

Part number	Input	Switch output	Response time	Mounting
PSE201-4C ●	Voltage	PNP: 5 outputs	5 ms	Panel mounting

Including 4 sensor connector.

Accessories

Part number	Description
ZS-26-J	Sensor cable with plug
ZS-26-01	Protective cover for PSE201
ZS-26-B	Panel mounting adapter for PSE201
ZS-28-C	Sensor connector

Sensor monitor

PSE300AC Series



- Accepts 1-5 VDC or 4-20 mA sensor input signal
- Input Range Selection (for Pressure/ Flow rate)
- Response time: 1 ms or less
- NPN/ PNP Switch Function
- M12 connector
- Enclosure: IP65.

Part number	Input	Switch output	Response time	Unit specification
PSE300AC-AB	Voltage	2 output	1 ms or less (with anti-chattering function:	With unit selection function
PSE310AC-AB	Current	(NPN or PNP switching type)	20, 100, 500, 1000, 2000, 5000 ms)	

Accessories

Part number	Description
ZS-31-B	Power supply/ output lead wire - Straight type 5 m
ZS-31-C	Power supply/ output lead wire - Right angle type 5 m
PCA-1557743	Assembly type connector

Digital flow monitor

PF300 Series



- 3-screen, 3-colour display
- Applicable series: PF3A7#H, PFMB, PFMC
- Outputs: 2 outputs, NPN/PNP and analogue (voltage/current)
- IP40
- Copy function: copy master monitor settings to slaves
- External input: reset parameters remotely
- Repeatability: $\pm 0.1\%$ F.S.
- Consumption: 25 mA or less.

Part number	Input	Switch output	Time ³⁾	Unit specification
PF300-RT	Voltage input	2 outputs (NPN/PNP switching type) + Analogue voltage output ¹⁾²⁾	3 ms or less. Select from 0.00, 0.05 to 0.1 s, 0.1 to 1.0 s, 1 to 10 s, 20 s, 30 s, 40 s, 50 s, or 60 s	With unit selection function
PF300-SV		2 outputs (NPN/PNP switching type) + Analogue current output ²⁾		
PF310-RT	Current input	2 outputs (NPN/PNP switching type) + Analogue voltage output ¹⁾²⁾		
PF310-SV		2 outputs (NPN/PNP switching type) + Analogue current output ²⁾		

1) Can switch between 1 to 5 V and 0 to 10 V

2) Can be switched to external input or copy function

3) Value without digital filter (at 0 ms).

Options/Part numbers

When only optional parts are required, order with the part numbers listed below.

Part number	Option	number	Note
ZS-28-C-1	Sensor connector		For PFMB
ZS-28-CA-4	Sensor connector		For PFMC, PF3A7□H
ZS-46-A1	Bracket A (Vertical mounting)		Tapping screw: Nominal size 3 x 8 L (2 pcs.)
ZS-46-A2	Bracket B (Horizontal mounting)		Tapping screw: Nominal size 3 x 8 L (2 pcs.)
ZS-46-B	Panel mount adapter		
ZS-46-D	Panel mount adapter + Front protection cover		
ZS-46-5L	Power supply/output connection lead wire		5-core, 2 m
ZS-27-01	Front protection cover		

Pressure switch/Reed switch

IS10 Series



- Types:
 - Standard: IS10
 - With spacer: IS10M
 - With piping adapter: IS10E
- Compact design and lightweight
- Can be connected to modular type F.R.L. units
- Set pressure range: 0.1 to 0.6 MPa.

Standard

Part number	Thread type	Pressure range	Cable length	Voltage
IS10-01S-6L ●	R 1/8	0.1 ~ 0.6 MPa	3 m	24 VAC/DC or less 48 VAC/DC 100 VAC/DC

Mechanical style pressure

IS3000 Series



- Easy electrical wiring (wide space)
- Wide calibration range (0.1 to 0.7 MPa)
- High frequency operation and long service life:
 - High frequency: 1 cycle/sec
 - Long service life: 10 million cycles.

Standard

Part number	Port thread	Pressure range	Hysteresis [MPa]	Min. applicable load
IS3000-02 ●	Rc 1/4	0.1 ~ 0.7 MPa	0.05 or less	5 VDC, 160 mA
IS3100	Gasket piping			
IS3010-02	Rc 1/4			
IS3110	Gasket piping			5 VDC, 1 mA

Electronic pressure switch

ISE2 Series



- Small, compact design
- Response time 5 ms or less
- Indicator light
- Choose grommet type or plug.

Standard

Part number	Connection thread	Pressure range	Switch output	Hysteresis	Voltage	Wiring
ISE2-01-55CN ●	R 1/8	0 ~ 1 MPa	PNP	< 3 % F.S.	12 ~ 24 VDC	Without connector
ISE2-01-55L ●						Grommet type (Lead wire 3 m)

NPN options available upon request.

Plug with 3 m cable	ZS-10-5A-30
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Electronic vacuum switch

ZSE1 Series



- Response time 5 ms or less
- Indicator light
- Grommet type or plug connection
- Adjustable hysteresis
- Repeatability ± 1 % F.S.

Standard

Part number	Connection thread	Pressure range	Switch output	Hysteresis	Voltage	Wiring
ZSE1-01-55CN ●	R 1/8	-101 ~ 0 KPa	PNP	~1 – 10 % adjustable	12~24 VDC	Without connector
ZSE1-01-55L ●						Grommet type (Lead wire 3 m)

NPN options available upon request.

Plug with 3 m cable	ZS-20-5A-30
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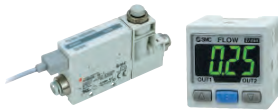
Our highlighted product for you

2-colour display flow switch

PFM Series



Integrated type



Remote type

- For air, N₂, Ar and CO₂
- A digital flow switch that uses MEMS sensor for detecting the flow
- Compact size
- Improved visibility with two colour display indication
- Two piping directions are possible
- Integrated flow adjustment valve is available as option
- Multiple mounting combinations.

Integrated type (without adjustment flow valve)

Part number	Port size	Flow rate Dry air, N ₂ , Ar	Flow rate CO ₂	Output specification	Voltage	Operating pressure range		
PFM710-C4-B ●	Ø 4 one-touch fitting	0.2 to 10 l/min	0.2 to 5 l/min	2 PNP	24 VDC	-100 kPa to 750 kPa		
PFM710-C4-E				PNP + (1 - 5V)				
PFM710-C4-F				PNP + (4 - 20 mA)				
PFM725-C6-B ●	Ø 6 one-touch fitting	0.5 to 25 l/min	0.5 to 12,5 l/min	2 PNP				
PFM725-C6-E				PNP + (1 - 5V)				
PFM725-C6-F ●				PNP + (4 - 20 mA)				
PFM750-C6-B ●				1 to 50 l/min			1 to 25 l/min	2 PNP
PFM750-C6-E ●								PNP + (1 - 5V)
PFM750-C6-F ●								PNP + (4 - 20 mA)
PFM711-C8-B ●	Ø 8 one-touch fitting	2 to 100 l/min	2 to 50 l/min	2 PNP				
PFM711-C8-E				PNP + (1 - 5V)				
PFM711-C8-F ●				PNP + (4 - 20 mA)				

Remote type (without adjustment flow valve)

Part number	Port size	Flow rate Dry air, N ₂ , Ar	Flow rate CO ₂	Output specification	Voltage	Operating pressure range			
PFM510-C4-1	Ø 4 one-touch fitting	0.2 to 10 l/min	0.2 to 5 l/min	1 - 5V	24 VDC	-100 kPa to 750 kPa			
PFM510-C4-2				4 - 20 mA					
PFM525-C6-1				Ø 6 one-touch fitting			0.5 to 25 l/min	0.5 to 12,5 l/min	1 - 5V
PFM525-C6-2	4 - 20 mA								
PFM550-C6-1	1 to 50 l/min	1 to 25 l/min	1 - 5V						
PFM550-C6-2			4 - 20 mA						
PFM511-C8-1			Ø 8 one-touch fitting						2 to 100 l/min
PFM511-C8-2	4 - 20 mA								

Accessories

Part number	Description	Part number	Description
ZS-33-M	Bracket (for "without adjustment flow valve")	ZS-28-B	Bracket
ZS-33-J	Panel mount adapter (for "without adjustment flow valve")	ZS-27-C	Panel mount adapter
ZS-33-R*	DIN rail mounting bracket, *=number of stations (1 to 5)	ZS-27-D	Panel mount adapter + front protective cover

Flow sensor monitor

Part number	Input specification	Output specification	Voltage	Note
PFM313-LF	Current input	2 PNP + 1 to 5 V outputs	24 VDC	With power/ output connector included
PFM314-LF		2 PNP + 4 to 20 mA outputs		

Our highlighted product for you

Digital flow switch

PFMB Series



- 2-colour digital flow switch for dry air and N₂
- Large flow rates, up to 2000 l/min
- Wide measuring range, rangeability: 100:1
- Quick response: highest speed 0.05 s
- Compact
- Flip vertical option to adjust display's orientation
- Flow adjustment valve is integrated as option (only for PFMB7201 type)
- Use of by-pass structure, which reduces the contact of moist air and foreign matter with the sensor.

Part number	Flow adjustment valve	Port size	Flow rate [l/min]	Output specification	Voltage	Operating pressure range	
PFMB7102-F04-B ●	None	G 1/2	10 to 1000 l/min	2 PNP	12 to 24 V DC ±10 %	0 to 0.8 Mpa	
PFMB7102-F04-E ●				PNP + Analogue 1 to 5 V			
PFMB7102-F04-F ●		PNP + Analogue 4 to 20 mA					
PFMB7201-C8-B ●		Ø 8 (5/16") One-touch fitting		2 PNP			
PFMB7201-C8-E ●				PNP + Analogue 1 to 5 V			
PFMB7201-C8-F ●		PNP + Analogue 4 to 20 Ma					
PFMB7201-02-B ●		Rc 1/4		2 PNP			
PFMB7201-02-E ●				PNP + Analogue 1 to 5 V			
PFMB7201-02-F ●		PNP + Analogue 4 to 20 mA					
PFMB7201-F02-B ●		G 1/4		2 PNP			
PFMB7201-F02-E ●	PNP + Analogue 1 to 5 V						
PFMB7201-F02-F ●	PNP + Analogue 4 to 20 mA						
PFMB7201S-C8-B ●	Yes	Ø 8 (5/16") One-touch fitting	2 to 200 l/min	2 PNP	12 to 24 V DC ±10 %	0 to 0.75 Mpa	
PFMB7201S-C8-E ●				PNP + Analogue 1 to 5 V			
PFMB7201S-C8-F ●		PNP + Analogue 4 to 20 mA					
PFMB7201S-02-B ●		2 PNP					
PFMB7201S-02-E ●		PNP + Analogue 1 to 5 V					
PFMB7201S-02-F ●		PNP + Analogue 4 to 20 mA					
PFMB7201S-F02-B ●		Rc 1/4		2 PNP			
PFMB7201S-F02-E ●				PNP + Analogue 1 to 5 V			
PFMB7201S-F02-F ●		PNP + Analogue 4 to 20 mA					
PFMB7201S-F02-F ●		G 1/4		2 PNP			
PFMB7201S-F02-F ●	PNP + Analogue 1 to 5 V						
PFMB7202-F06-B ●	None	G 3/4	20 to 2000 l/min	PNP + Analogue 4 to 20 mA	12 to 24 V DC ±10 %	0 to 0.8 Mpa	
PFMB7202-F06-E ●				2 PNP			
PFMB7202-F06-F ●		PNP + Analogue 1 to 5 V					
PFMB7501-F04-B ●		G 1/2		5 to 500 l/min			PNP + Analogue 4 to 20 mA
PFMB7501-F04-E ●							2 PNP
PFMB7501-F04-F ●		PNP + Analogue 1 to 5 V					
PFMB7501-F04-F ●		PNP + Analogue 4 to 20 mA					

Accessories

Part number	Description
ZS-33-M	Bracket for PFMB7201
ZS-42-C	Bracket for PFMB7501/7102
ZS-33-J	Panel mount adapter for PFMB7201
ZS-42-D	Bracket for PFMB7202

Digital flow switch

PFMC Series



- 3-colour digital flow switch for dry air and N₂, with enclosure IP65
- Large flow rates, up to 2000 l/min
- Wide measuring range, with rangeability: 100:1
- Quick response: highest speed 0.05 s
- Compact
- Display can be rotated 360° to suit installation
- M8 standard connector.

Part number	Flow rate [l/min]	Port size	Output specification	Voltage	Operating pressure range
PFMC7501-F04-B ●	5 to 500 l/min	G 1/2	2 PNP	12 to 24 VDC ±10 %	0 to 0.8 Mpa
PFMC7501-F04-E ●			PNP+Analogue (1 to 5 V)		
PFMC7501-F04-F ●			PNP+Analogue (4 to 20 mA)		
PFMC7102-F04-B ●	10 to 1000 l/min	G 1/2	2 PNP		
PFMC7102-F04-E ●			PNP+Analogue (1 to 5 V)		
PFMC7102-F04-F ●			PNP+Analogue (4 to 20 mA)		
PFMC7202-F06-B ●	20 to 2000 l/min	G 3/4	2 PNP	12 to 24 VDC ±10 %	0 to 0.8 Mpa
PFMC7202-F06-E ●			PNP+Analogue (1 to 5 V)		
PFMC7202-F06-F ●			PNP+Analogue (4 to 20 mA)		

Accessories

Part number	Description
ZS-40-A	Lead wire and M8 connector. Length: 3 m
ZS-42-A	Bracket. Mounting screw for PFMC7501/7102 (M3 x 5, 2 pcs.)
ZS-42-B	Bracket. Mounting screw for PFMC7202 (M3 x 5, 2 pcs.)

Flow sensor and voltage monitor

PFMV Series



PFMV5

PFMV3

- Suction check of very small workpieces
- PFMV5: Flow sensor
- PFMV3: Voltage monitor for PFMV5
- Reduced piping space
- Response speed: 5 ms or less
- Applicable fluid: dry, air, N₂.

Flow sensor

Part number	Port size	Rated flow range [l/min]	Output specification	Voltage
PFMV505-1 ●	M5 x 0.8	0.0 to 0.5	Analogue output (1 - 5 V)	12 - 24 VDC
PFMV510-1 ●		0.0 to 1.0		
PFMV530-1 ●		0.0 to 3.0		
PFMV505F-1		-0.5 to 0.5		
PFMV510F-1		-1.0 to 1.0		
PFMV530F-1		-3.0 to 3.0		

Voltage monitor

Part number	Applicable sensor	Output specification	Voltage
PFMV303-M	PFMV5□□-1 (voltage input)	2 PNP + (1 - 5 V)	12 - 24 VDC
PFMV304-M ●		2 PNP + (4 - 20 mA)	
PFMV305-M		2 PNP + auto shift input	

Accessories

Part number	Description
ZS-28-A	Power supply/output connector (2 m)
ZS-28-B	Bracket
ZS-28-C	Sensor connector
ZS-27-C	Panel mount adapter
ZS-27-D	Panel mount adapter + front protective cover

Digital flow switch for air

PF2A Series



- For dry air and N₂
- Simple, LED display readout
- Either integrated or remote combination of sensor and display
- Key pad for simple adjustments
- 2 independent outputs/switch points
- No mechanically moving parts, so longer service life.

Integrated display type

Part number	Port size	Flow rate [l/min]	Min. set unit [l/min]	Switch outputs	Supply voltage	Operating pressure range
PF2A710-F01-67N	G 1/8	1 ~ 10	0.1	2 PNP	12 ~ 24 VDC	-50 kPa ~ 0.5 MPa
PF2A710-F02-67N ●	G 1/4	1 ~ 10				
PF2A750-F01-67N	G 1/8	5 ~ 50	0.5			
PF2A750-F02-67N ●	G 1/4	5 ~ 50				
PF2A711-F03-67N ●	G 3/8	10 ~ 100	1			
PF2A721-F03-67N ●	G 3/8	20 ~ 200	2			
PF2A751-F04-67N ●	G 1/2	50 ~ 500	5	PNP + (4 ~ 20 mA)	24 VDC	-50 kPa ~ 0.75 MPa
PF2A703H-F10-69N ●	G 1	150 ~ 3000	5			
PF2A706H-F14-69N ●	G1 1/2	300 ~ 6000	10			
PF2A712H-F20-69N ●	G 2	600 ~ 12000				

1) Lead wire with M12 connector is not included.

Remote type sensor unit

Part number	Port size	Flow rate [l/min]	Type	Switch outputs	Supply voltage	Operating pressure range
PF2A510-F01N	G 1/8	1 ~ 10	Measuring sensor	—	12 ~ 24 VDC	-50 kPa ~ 0.5 MPa
PF2A510-F02N ●	G 1/4	1 ~ 10				
PF2A550-F01N	G 1/8	5 ~ 50				
PF2A550-F02N ●	G 1/4	5 ~ 50				
PF2A511-F03N ●	G 3/8	10 ~ 100				
PF2A521-F03N ●	G 3/8	20 ~ 200				
PF2A551-F04N ●	G 1/2	50 ~ 500	Display	2 PNP	—	
PF2A301-A ●	—	1 ~ 50				
PF2A311-A ●	—	10 ~ 500				

1) Lead wire with M12 connector is not included.

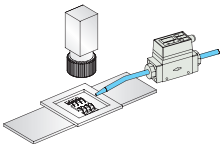
2) NPN option available upon request.

Accessory cable/plug with ferrite core

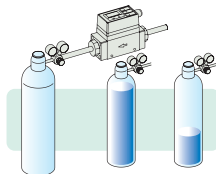
Straight	P398010-12
Elbow	P398010-13

Application examples

Monitoring an N₂ flow



Gas filling



Our highlighted product for you

3-Colour display digital flow switch for water

PF3W Series



- Integrated temperature sensor
- Space saving, reduced piping space
- 3 colour/2 screen integrated display
- Rotatable display: easy operation, improved visibility
- Two models: integrated type and remote type
- PVC piping type: for deionised water, chemical, etc (Viscosity 3 mPas or less)
- Integrated flow adjustment valve Up to 40 l/min
- Enclosure IP65.

Integrated type

Part number	Port size	Flow rate [l/min]	Output specification	Voltage
Integrated type				
PF3W704-F03-BN-M ●	G 3/8	0.5 to 4	2 PNP	12 ~ 24 VDC
PF3W704-F03-BTN-M ●			PNP + (1 - 5V)	
PF3W704-F03-EN-M ●				
PF3W704-F03-ETN-M ●				
PF3W704-F03-FN-M ●				
PF3W704-F03-FTN-M ●	G 1/2	2 to 16	2 PNP	
PF3W720-F04-BN-M ●			PNP + (1 - 5V)	
PF3W720-F04-BTN-M ●				
PF3W720-F04-EN-M ●				
PF3W720-F04-ETN-M ●				
PF3W720-F04-FN-M ●	G 3/4	5 to 40	PNP + (4-20 mA)	
PF3W740-F06-BN-M ●			2 PNP	
PF3W740-F06-BTN-M ●				
PF3W740-F06-EN-M ●				
PF3W740-F06-ETN-M ●				
PF3W740-F06-FN-M ●	G 1	10 to 100	PNP + (1 - 5V)	
PF3W711-F10-BN-M ●			PNP + (4-20 mA)	
PF3W711-F10-BTN-M ●				
PF3W711-F10-EN-M				
PF3W711-F10-ETN-M				
PF3W711-F10-FN-M	G 1 1/2	50 to 250	PNP + (4-20 mA)	
PF3W711-F10-FTN-M			2 PNP	
PF3W721-F14-BN-M ●				
PF3W721-F14-BTN-M ●				
PF3W721-F14-EN-M ●				PNP + (1 - 5V)
PF3W721-F14-ETN-M ●				
PF3W721-F14-FN-M ●				
PF3W721-F14-FTN-M ●	PNP + (4-20 mA)			

- 1) Part numbers with "T" include temperature sensor.
- 2) Lead wire with M8 connector is not included.
- 3) NPN option available upon request.

Remote type

Part number	Port size	Flow rate [l/min]	Output specification	Voltage
Remote type				
PF3W504-F03-1N	G 3/8	0.5 to 4	(1 - 5V)	12 ~ 24 VDC
PF3W504-F03-2N			(4-20 mA)	
PF3W504-F03-1TN			2 (1 - 5V)	
PF3W520-F04-1N	G 1/2	2 to 16	(1 - 5V)	
PF3W520-F04-2N			(4-20 mA)	
PF3W520-F04-1TN			2 (1 - 5V)	
PF3W540-F06-1N	G 3/4	5 to 40	(1 - 5V)	
PF3W540-F06-2N			(4-20 mA)	
PF3W540-F06-1TN			2 (1 - 5V)	
PF3W511-F10-1N	G 1	10 to 100	(1 - 5V)	
PF3W511-F10-2N			(4-20 mA)	
PF3W511-F10-1TN			2 (1 - 5V)	
PF3W521-F14-1N	G 1 1/2	50 to 250	(1 - 5V)	
PF3W521-F14-2N			(4-20 mA)	
PF3W521-F14-1TN			2 (1 - 5V)	

- 1) Part numbers with "T" include temperature sensor.
 2) Lead wire with M8 connector is not included.
 3) NPN option available upon request.

Digital flow monitor for PVC piping: Integrated type

Part number	Port size	Rated flow range [l/min]	Output specification	Voltage
PF3W711-U25-BN-M ●	25A (32 mm O.D.)	10 to 100	2 PNP	12 ~ 24 VDC
PF3W711-U25-EN-M			PNP + (1 - 5V)	
PF3W711-U25-FN-M			PNP + (4 - 20 mA)	
PF3W721-U30-BN-M	30A (38 mm O.D.)	30 to 250	2 PNP	
PF3W721-U30-EN-M			PNP + (1 - 5V)	
PF3W721-U30-FN-M			PNP + (4 - 20 mA)	

Remote type

Part number	Port size	Rated flow range [l/min]	Output specification	Voltage
PF3W511-U25-1N	25A (32 mm O.D.)	10 to 100	(1 - 5V)	12 ~ 24 VDC
PF3W511-U25-2N			(4 - 20 mA)	
PF3W521-U30-1N	30A (38 mm O.D.)	30 to 250	(1 - 5V)	
PF3W521-U30-2N			(4 - 20 mA)	

- 1) Lead wire with M8 connector is not included.

Digital flow monitor for PF3W series

Part number	Output specification	Voltage
PF3W30B-M	2 PNP	12 ~ 24 VDC
PF3W30E-M	PNP + (1 - 5V)	
PF3W30F-M	PNP + (4 - 20 mA)	

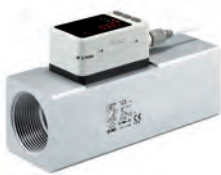
Accessories

Part number	Description
ZS-40-K	Bracket (with 4 tapping screws, 3 x 8, for PF3W704/720/504/520)
ZS-40-L	Bracket (with 4 tapping screws, 3 x 8, for PF3W740/540)
ZS-40-M	Bracket (with 4 tapping screws, 4 x 10, for PF3W711/511)
ZS-40-A	Lead wire (3 m) with M8 connector

Our highlighted product for you

Digital flow switch for large flow

PF3A70□H Series



- Applicable fluid: Air and N₂
- 3-colour 2-line information display
- Flow ratio: 100:1
- Repeatability: ±1.0 % F.S.
- Outputs: NPN/PNP and analogue/External input
- IP65.

Part number	Flow rate [l/min]	Port size	Output specification	Lead wire
PF3A703H-F10-ES ●	30 to 3000	G 1	PNP + Analogue Voltage/External input	With lead wire and M12 connector (3 m)
PF3A703H-F10-FS ●	30 to 3000			Without lead wire and M12 connector
PF3A703H-F10-FSN ●	30 to 3000			Without lead wire and M12 connector
PF3A706H-F14-FS ●	60 to 6000	G 1 1/2	PNP + Analogue current/External input	With lead wire and M12 connector (3 m)
PF3A706H-F14-FSN ●	60 to 6000			Without lead wire and M12 connector
PF3A712H-F20-FS ●	120 to 12000	G 2		With lead wire and M12 connector (3 m)
PF3A712H-F20-FSN ●	120 to 12000			Without lead wire and M12 connector

Accessories

Part number	Description
ZS-37-A	Lead wire and M12 connector. 3 m length

Digital flow switch for water IO-link compatible

PF3W70□-X445 Series



- Applicable fluid: Water and ethylene glycol aqueous solution
- 3-colour 2-screen display
- Flow ranges: from 0.5 to 40 l/min
- Flow ratio: 8:1
- Repeatability: ±2 % F.S.
- Output: 1 output, NPN/PNP or IO-Link
- IP65
- In-built temperature sensor (–10 to 110 °C)
- Consumption: 50 mA or less.

Part number	Flow rate [l/min]	Port size	Output specification	Voltage
PF3W704-F03-LTN-M-X445	0.5 to 4 L/min	G 3/8	IO-Link: Switch output	12 to 24 VDC (when used as switch output device) 18 to 30 VDC (when used as an IO-Link device)
PF3W720-F04-LTN-M-X445	2 to 16 L/min	G 1/2		
PF3W740-F06-LTN-M-X445	5 to 40 L/min	G 3/4		

Accessories

Part number	Description
ZS-40-M12M8-A	M12-M8 conversion lead wire (0.1 m)
ZS-37-A	Lead wire with M12 connector (3 m)
ZS-40-M12M8-A	Lead wire with M8 connector (3 m)

Digital flow switch for deionised water & chemicals

PF2D Series



1 sensor display unit
PF2D30 Series



4-channel flow monitor
PF2D200 Series



• A single controller can monitor the flow rate of 4 different sensors.

- Dust generation of 3 particles/cc or less (average number)
- Karman vortex eliminates moving parts and allows low dust generation
- Swept flow characteristics
- Tapered side seal minimises dead volume to reduce accumulation of liquid pool
- Body and Sensor: New PFA
- Tube: Super PFA
- Three type of flow range:
0.4 ~ 4 l/min (PF2D504)
1.8 ~ 20 l/min (PF2D520)
4.0 ~ 40 l/min (PF2D540)

Part number	Port size [inch]	Flow rate [l/min]	Type	Output specification	Voltage
PF2D504-11-1 ●	3/8	0.4 to 4	Sensor unit	1 - 5 V	12 ~ 24 VDC
PF2D504-11-2 ●				4 - 20 mA	
PF2D520-13-1 ●	1/2	1.8 to 20		1 - 5 V	
PF2D520-13-2 ●				4 - 20 mA	
PF2D540-19-1 ●	3/4	4 to 40		1 - 5 V	
PF2D540-19-2 ●				4 - 20 mA	
PF2D301-A ●	—	4 to 40	Monitor unit	2 PNP	24 VDC
PF2D201-A	—		4 PNP		

2-Colour display digital flow switch

Electromagnetic type

LFE Series



- Applicable fluid: water, water-soluble coolant or any fluids with electric conductivity of 5 µS/cm or more which do not corrode the fluid contact materials
- Smooth fluid passage and no obstacles or moving parts in the fluid path
- Very low pressure loss (0.02 MPa or less)
- Construction without electrodes immersed in the fluid
- Good rangeability, 40:1 and flow range up to 200 l/min
- Backflow can be detected and the flow direction can be changed after installation.

Integrated display type

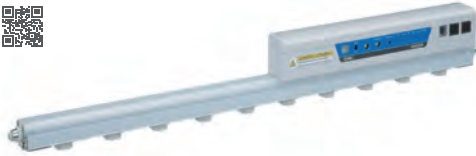
Part number	Type	Port size	Flow rate [l/min]	Output specification	Voltage	Parts material in contact with fluid
LFE1B4F1 ●	Integrated display type Without lead wire	G 1/2	0.5 to 20	2 PNP	24 VDC	PPS, FKM, C37 (Brass)
LFE1C4F1 ●				NPN + (1 - 5 V)		
LFE1D4F1 ●				NPN + (4 - 20 mA)		
LFE2B6F1 ●		G 3/4	2.5 to 100	2 PNP		
LFE2C6F1 ●				NPN + (1 - 5 V)		
LFE2D6F1 ●				NPN + (4 - 20 mA)		
LFE3B8F1 ●		G 1	5 to 200	2 PNP		
LFE3C8F1 ●				NPN + (1 - 5 V)		
LFE3D8F1 ●				NPN + (4 - 20 mA)		

Accessories

Part number	Description
LFE-1-A3 ●	Lead wire with M12 connector

Ionizers

Bar type ionizer IZS40/41/42 Series



- Standard type Series IZS40
 - Simple operation: Only power ON/OFF required
- Feedback sensor type Series IZS41
 - Feedback sensor enables the rapid elimination of static electricity
 - Energy saving run mode
 - Continuous neutralization run mode
- Dual AC type Series IZS42
 - Reduced potential amplitude: 25 V or less
- Reduction of adjustment and maintenance time using an auto balance sensor:
 - Built-in type (Standard): The sensor is installed within the ionizer body and may be mounted anywhere
 - High accuracy type (Option): "Ion balance adjustment at external signal input" or "Ion balance adjustment at any time" can be selectable
- Setting ionizer with remote control
 - Can recognize and control up to 16 ionizers through address setting
- Low maintenance electrode cartridges
- Transition wiring may be used.

Part number	Characteristics	Bar length [mm]	Input signal	Output signal	Operating range [mm]
IZS40-340-06B ●	Plug & Play	340	—	—	50 – 2000
IZS40-400-06B ●		400			
IZS40-460-06B ●		460			
IZS40-580-06B ●		580			
IZS40-640-06B ●		640			
IZS40-820-06B ●		820			
IZS40-1120-06B ●		1120			
IZS40-1300-06B ●		1300			
IZS40-1600-08B ●		1600			
IZS40-1900-08B ●		1900			
IZS41-340P-06B ●	Applicable for feedback sensor	340	2 x PNP	2 x PNP	50 – 2000
IZS41-400P-06B ●		400			
IZS41-460P-06B ●		460			
IZS41-580P-06B ●		580			
IZS41-640P-06B ●		640			
IZS41-820P-06B ●		820			
IZS41-1120P-06B ●		1120			
IZS41-1300P-06B ●		1300			
IZS41-1600P-08B ●		1600			
IZS41-1900P-08B ●		1900			
IZS42-340P-06B ●	Dual AC-modus	340	2 x PNP	2 x PNP	50 – 2000
IZS42-400P-06B ●		400			
IZS42-460P-06B ●		460			
IZS42-580P-06B ●		580			
IZS42-640P-06B ●		640			
IZS42-820P-06B ●		820			
IZS42-1120P-06B ●		1120			
IZS42-1300P-06B ●		1300			
IZS42-1600P-08B ●		1600			
IZS42-1900P-08B ●		1900			

* Incl. 3 m power supply cable and bracket.

Accessories

Part number	Description
IZS30-M2 ●	Electrode needle cleaning kit
IZS41-RC ●	Remote control
IZS41-CF02 ●	Transition wiring cable (2 m)
IZS40-NT ●	High speed de-ionizing cartridge (tungsten)
IZS40-NJ ●	Energy saving - type de-ionizing cartridge (tungsten)
IZS40-E3 ●	Electrode cartridge drop prevention cover for 3 electrodes
IZS40-E4 ●	Electrode cartridge drop prevention cover for 4 electrodes
IZS40-E5 ●	Electrode cartridge drop prevention cover for 5 electrodes
IZF10-CG2EU	AC Adapter for IZS40
IZS41-CG2EU	AC Adapter for IZS41/42

Brackets

End bracket	IZS40-BE ●
Intermediate bracket	IZS40-BM ●

Sensor

Feedback sensor	IZS31-DF ●
Auto balance sensor	IZS31-DG ●

Our highlighted product for you

Separate controller bar type ionizer





IZT40/41/42 Series



- Standard type IZT40 Series: Simple operation: Can be controlled by powering the ionizer ON
- AC Type IZT41 Series: Rapid neutralisation of static electricity, as fast as 0.1 s
- Dual AC type IZT42 Series: Reduced potential amplitude: 25 V or less
- Ion balance: Within ± 30 V
- Separate controller and bar:
 - Bar can be mounted in a limited space
 - Easily monitor and adjust bars installed in a place which cannot be accessed
- Up to 4 bars can be connected to one controller
- Compact design (Height x Width): 37 mm x 30 mm
- Multiple alarms, functions and LED display (IZT41/42)
- Low maintenance electrode cartridges.

Part number	Model	Bar length [mm]	One-touch fitting	Emitter cartridge type/ Emitter material	High-voltage cable length [m]	Applied voltage [V]	Effective static neutralisation range [mm]	Input/ Output specification	
IZT40-16-06B	Standard	160	Ø 6 Straight	High speed de-ionising cartridge/Tungsten					
IZT40-22-06B		220							
IZT40-34-06B		340							
IZT40-40-06B		400							
IZT40-46-06B		460							
IZT40-58-06B		580							
IZT40-64-06B		640	Ø 8 Straight						
IZT40-82-06B		820							
IZT40-112-06B		1120							
IZT40-130-06B		1300							
IZT40-160-08B		1600							
IZT40-190-08B		1900							
IZT40-232-08B		2320	Ø 10 Straight						
IZT40-250-08B		2500							
IZT41-16P-06B	AC	160	Ø 6 Straight		High speed de-ionising cartridge/Tungsten	3	± 7000	50 to 2000	PNP
IZT41-22P-06B		220							
IZT41-34P-06B		340							
IZT41-40P-06B		400							
IZT41-46P-06B		460							
IZT41-58P-06B		580							
IZT41-64P-06B		640	Ø 8 Straight						
IZT41-82P-06B		820							
IZT41-112P-06B		1120							
IZT41-130P-06B		1300							
IZT41-160P-08B		1600							
IZT41-190P-08B		1900							
IZT41-232P-08B		2320	Ø 10 Straight						
IZT41-250P-08B		2500							
IZT42-16P-06B	Dual AC	160	Ø 6 Straight	High speed de-ionising cartridge/Tungsten					PNP
IZT42-22P-06B		220							
IZT42-34P-06B		340							
IZT42-40P-06B		400							
IZT42-46P-06B		460							
IZT42-58P-06B		580							
IZT42-64P-06B		640	Ø 8 Straight						
IZT42-82P-06B		820							
IZT42-112P-06B		1120							
IZT42-130P-06B		1300							
IZT42-160P-08B		1600							
IZT42-190P-08B		1900							
IZT42-232P-08B		2320	Ø 10 Straight						
IZT42-250P-08B		2500							

Accessories

Part number	Description	Model
IZT40-ND	High speed de-ionizing cartridge	Tungsten
IZT40-NE		Silicon
IZT40-NL	Energy saving type de-ionizing cartridge	Tungsten
IZT40-NM		Silicon
IZT40-BE1	End bracket 1	
IZT40-BE2	End bracket 2	
IZT40-BM1	Intermediate bracket 1	
IZT40-BM2	Intermediate bracket 2	
IZT40-B1	DIN rail mounting bracket for controller	
IZT40-B2 (IZT40/41)	DIN rail mounting bracket for high-voltage power supply module	
IZT40-B3 (IZT42)		
IZT40-CG2	AC adapter without AC cord	
IZT40-CG2EU	AC adapter with AC cord	
IZT40-CF1	Separate cable	1 m
IZT40-CF2		2 m
IZT40-CF3		3 m
IZT40-CP3	Power supply cable	3 m
IZT40-CP5		5 m
IZT40-CP10		10 m
IZT40-CP15		15 m
IZS30-M2 ●	Cleaning kit	

Nozzle type ionizer

IZN10E Series



- Different nozzles to adapt several applications: IZN10E (standard type) and IZN10E-X367 (with right angles and 360° rotation):
 - Energy saving static electricity elimination nozzle
 - High flow static electricity elimination nozzle
- Offset voltage (ion balance): ± 10 V (Energy saving), ± 15 V (Large flow)
- Compact and slim design
- With built-in power supply substrate
- Easy maintenance: electrode needle contamination detector with easy replacement of the cartridge
- Mounting variations: direct mount, bracket mount
- External switch input function (2 inputs). Switch output: PNP/NPN.

Part number	Nozzle type	Port size	Offset voltage [V]	Input/Output specification	Effective static neutralisation range [mm]	Power supply voltage	Ion generation method
IZN10E-01P06	Energy saving	Ø 6	Within ± 10	PNP	20 to 500	24 VDC ± 10 %	Corona discharge type
IZN10E-02P06	High flow rate		Within ± 15				
IZN10E-11P06	Female threads for piping (interchangeable nozzle variations)		Depending on nozzle variation ¹⁾				
IZN10E-01P06-X367	Energy saving with right angles		Within ± 10				
IZN10E-02P06-X367	High flow rate with right angles		Within ± 30				

1) For more information please consult SMC.

Nozzle variations

Part number	Description	Model
IZN10-G-X198 ●	Circular diffusion nozzle	
IZN10-G-X199 ●	Flat diffusion nozzle	
IZN10-G-□-X216 ●	Bar nozzle (straight type)	
IZN10-G-X278	Circumferential jet bar nozzle (straight type)	
IZN10-G-□-X205	Bender tube nozzle	
IZN10-G-□-X226	Long nozzle	

□ For bar length [mm]: 100, 200, 300, 400, 500 and 600.

Accessories

Part number	Description
IZN10-B1 ●	L-bracket
IZN10-B2 ●	Pivoting bracket
IZN10-B3 ●	DIN rail mounting bracket
IZN10E-CP	Power supply cable (3 m)
IZN10E-CPZ	Power supply cable (10 m)
IZN10E-CG2-P	AC Adapter without AC cord (PNP Input/Output specification)
IZN10E-CG2EU-P	AC Adapter with AC cord (PNP Input/Output specification)
IZS30-M2 ●	Cleaning kit

Fan type ionizer IZF10/10R Series



- Offset voltage (ion balance): Within ± 13 V
- Compact design (Depth x Width x Height): 39 mm x 80 mm x 110 mm
- Weight: 280 g (IZF10), 260 g (IZF10R)
- 2 types of fans available (IZF10):
 - Fast deionising type: 1.5 seconds deionising time
 - Low noise type: 48 dB(A)
- Alarm functions: high-voltage error, electrode needle contamination detector
- Flow rate adjustment function (IZF10R)

Part number	Max. air flow [l/min]	Input/Output specifications	Power supply	Options/Accessories
IZF10-P ●	660	PNP output	With power supply cable (3 m)	—
IZF10-P-B				With bracket
IZF10R-P	—			
IZF10R-P-B	With bracket			

Accessories

Part number	Model	Description
IZF10-CG2 ●	IZF10	AC adapter (without AC cable)
IZF10R-CG2	IZF10R	
IZF10-CG2EU	IZF10	AC adapter (with AC cable)
IZF10R-CG2EU	IZF10R	
IZF10-CP ●	IZF10	Power supply cable (3 m)
IZF10R-CP	IZF10R	
IZF10-CPZ ●	IZF10	Power supply cable (10 m)
IZF10R-CPZ	IZF10R	
ZS-28-C ●	IZF10	e-con connector
IZF10-A1 ●	IZF10	Cartridge case
IZF10R-A1	IZF10R	
IZF10-B1 ●	IZF10/IZF10R	Bracket
IS30-M2 ●	IZF10/IZF10R	Cleaning kit
IS30-M1 ●	IZF10/IZF10R	Adjustment screwdriver

Our highlighted product for you

Fan type ionizer

IZF21/31 Series



- Offset voltage (ion balance): ± 5 V
- Extensive and rapid static neutralisation:
 - IZF21: up to 1800 l/min (flow rate), as little as 1.0 s (discharge time)
 - IZF31: up to 4400 l/min (flow rate), as little as 0.5 s (discharge time)
- An optional adjustable louver allows for adjusting the static neutralisation area
- Improved performance and easier maintenance through several functions and features
- Modular, compact and slim design - 40 mm thickness.

Part number	Max. air flow [l/min]	Input/Output specifications	Power supply	Options/Accessories
IZF21-P ●	1800	PNP input/output	With power supply cable (3 m)	—
IZF21-P-B ●				With bracket
IZF31-P ●	4400			—
IZF31-P-B ●				With bracket

Accessories

Part number	Model	Description
IZF21-CG2 ●	IZF21/IZF31	AC adapter (without AC cable)
IZF21-CG2EU	IZF21/IZF31	AC adapter (with AC cable)
IZS41-CP ●	IZF21/IZF31	Power supply cable (3 m)
IZS41-CPZ ●	IZF21/IZF31	Power supply cable (10 m)
IZF21-NT ●	IZF21	Emitter cartridge
IZF31-NT ●	IZF31	
IZF21-HW ●	IZF21	Adjustable louver
IZF31-HW ●	IZF31	
IZF21-HS ●	IZF21	Automatic cleaning unit
IZF31-HS ●	IZF31	
IZF21-FU ●	IZF21	Air suction side filter: filter + filter holder
IZF31-FU ●	IZF31	
IZF21-B1 ●	IZF21	Bracket
IZF31-B1 ●	IZF31	
IZS30-M2 ●	IZF21/IZF31	Cleaning kit
IZS30-M1 ●	IZF21/IZF31	Adjustment screwdriver

Electrostatic sensor

IZD10 Series



- Potential measurement:
 - ± 20 kV (detected at a 50 mm distance)
 - ± 0.4 kV (detected at a 25 mm distance)
- Detects the electrostatic potential and outputs an analogue voltage
- Small and easy to mount.

Part number	Potential measurement	Output voltage
IZD10-110 ●	± 0.4 kV	1 to 5 V
IZD10-510 ●	± 20 kV	1 to 5 V

Electrostatic sensor monitor

IZE11 Series



- Output: switch output x 2 + Analogue output (1 to 5 V, 4 to 20 mA)
- 2-colour display (red and green)
- Display accuracy: $\pm 0.5\%$ F.S. ± 1 digit or less
- Detection distance correction function (adjustable in 1 mm increments)
- Supports two types of sensors
- Connection by connector:
 - Connector for power supply/output
 - E-con connector: Connector to sensor.

Part number	Input/Output	Connector cable for power supply/output	Connector for sensor connection
IZE112-LC ●	2 PNP + (1-5 V)	Yes	Yes
IZE113-LC ●	2 PNP + (4-20 mA)	Yes	Yes

Option

Part number	Description
ZS-28-A ●	Connector cable for power supply/output (2 m)
ZS-28-B ●	Bracket
ZS-28-C ●	Connector for sensor connection
ZS-27-C ●	Panel mount adapter
ZS-27-D ●	Panel mount adapter + Front protective cover

Handheld electrostatic meter

IZH10 Series



- Easy to use
- Compact and lightweight
- Rated charge amount range: ± 20.0 kV
- Functions:
 - Peak and bottom display function
 - Zero clear function
 - Auto power-off function
 - Low battery indication
 - Backlight

Part number	Option
IZH10 ●	None
IZH10-H ●	High-voltage measuring handle

Accessories

Part number	Description
IZH-A-01 ●	Ground wire, 1.5 m
IZH-B-01 ●	Soft case
IZH-C-01 ●	High-voltage measuring handle

Desktop duster box

ZVB Series



- Integration of three processes – static neutralisation, dust removal and dust collection – in a single box by using nozzle type ionizers:
 - Efficient static neutralisation with a diffusion-type nozzle
 - Dust removal with dedicated nozzles for the air blow
 - Dust collection with a maintenance-free pneumatic dust collector
- Ion balance: ± 10 V
- Use of emitters that are easy to remove, replace and clean
- Optional photoelectric sensor reflecting plate for automatic workpiece detection.

Part number	Static neutralisation space [mm] (width x depth)	Dimensions [mm] (width x depth)	Dust collector: exhaust flow rate [l/min]	Air consumption [l/min]	Ionizer: no. of mounted units
ZVB20-B	202 x 212	210 x 297	410 to 1580	420 ¹⁾	1
ZVB40-B	392 x 298	400 x 384	820 to 3160	800 ²⁾	2

1) When supply pressure to the dust collector is set to 0.3 MPa and additional air blow supply pressure to 0.2 MPa

2) When supply pressure to the dust collector is set to 0.4 MPa and additional air blow supply pressure to 0.2 MPa

Accessories

Part number	Model	Description
ZVB-D3A	ZVB20/ZVB40	3 m exhaust duct hose
ZVB-D1A	ZVB20/ZVB40	1 m exhaust duct hose
ZVB-P1A	ZVB20/ZVB40	Dust collecting bag
ZVB-AC1	ZVB20/ZVB40	AC adapter (without AC cable)
ZVB-AC1EU	ZVB20/ZVB40	AC adapter (with AC cable)
IZN10-NT-X325	ZVB20/ZVB40	Emitter
ZVB-N10A	ZVB20/ZVB40	Additional air blow nozzle
ZVB-V20A	ZVB20	Suction slope
ZVB-V40A	ZVB40	
AS2001F-06D-X678	ZVB20/ZVB40	Air blow adjustment needle valve

Positioners

Electro-pneumatic positioner IP8000/8100 Series



- Vibration resistance: No resonances 5 to 200 Hz
- Enclosure: JISF8007 IP65 (Conforms to IEC 60529)
- Monitoring function (Opening current transmission 4 to 20 mA DC, Accessory J, JR)
- ATEX intrinsically safe explosion-proof construction is available II 2 G Ex ib IIC T5/T6 (Special specification: -X14).

Model	Type	Function	Supply air pressure [MPa]	Stroke
IP8000-030-Q ●	Lever type feedback	Single/double action	0.14 - 0.7	10 - 85 mm
IP8100-000-H-Q ¹⁾ ●	Rotary type	Single/double action	0.14 - 0.7	60° - 100°

1) Without pressure gauge.

Smart positioner IP8001/8101 Series



- HART transmission function
- Explosion-proof construction/ATEX intrinsically safe explosion-proof construction II 1G Ex ia II CT4/T5/T6 Ga
- Supply air pressure: 0.3 to 0.7 MPa
- Applicable actuator rotation angle: 60 to 100° (Rotary type)
- Enclosure: JISF8007 IP65 (Conforms to IEC 60529)
- Auto calibration
- Dual wire input
- Monitor output and software alarm
- Variety of parameter setting functions and displayable control condition
- Interchangeable mounting with IP8000/8100.

Part number	Type	ATEX compliant	Specifications
IP8101-030-Q	Smart rotary type	No	Basic type
IP8101-032-Q			With output (alarm + analogue outputs)
IP8101-033-Q			With HART transmission mode
52-IP8101-034-M		Yes	Intrinsically safe explosion-proof constr. + Output + HART transmission mode
IP8001-030-Q	Smart lever type	No	Basic type
IP8001-032-Q			With output (alarm + analogue outputs)
IP8001-033-Q			With HART transmission mode
52-IP8001-034-M			Intrinsically safe explosion-proof constr. + Output + HART transmission mode

Accessories (Lever type)

Fork lever assembly M	P368010-24
Fork lever assembly S	P368010-25

Thermo-chiller

Our highlighted product for you

Circulating fluid temperature controller, thermo-chiller compact type

HRS Series



- Temperature stability: ± 0.1 °C
- Temperature range setting: 5 to 40 °C
- Lightweight 43 to 73 kg
- Easy maintenance: tool-less maintenance of filter
- Self diagnosis function and check display
- Convenient functions:
 - Timer operation function
 - Low tank level detecting function
 - Power failure auto-restart function
 - Anti-freezing operation function
- Communication function: RS232C, RS485 and contact I/Os as standard
- HRS030 and HRS060 models available.

Part number	Cooling method	Cooling/heating capacity (50 Hz)	Pipe thread type	Power supply		
HRS012-AF-20 ●	Air-cooled refrigeration	1100 W/530 W	G (with PT-G conversion fitting set)	Single-phase 200 to 230 VAC (50/60 Hz)		
HRS018-AF-20 ●		1700 W/530 W				
HRS024-AF-20 ●		2100 W/530 W				
HRS030-AF-20 ●		2600 W/600 W				
HRS050-AF-20 ●		4700 W/1100 W				
HRS060-AF-20 ●		4900 W/1000 W				
HRS012-WF-20 ●	Water-cooled refrigeration	1100 W/530 W			G (with PT-G conversion fitting set)	Single-phase 200 to 230 VAC (50/60 Hz)
HRS018-WF-20 ●		1700 W/530 W				
HRS024-WF-20 ●		2100 W/530 W				
HRS030-WF-20 ●		2600 W/400 W				
HRS050-WF-20 ●		4700 W/1000 W				
HRS060-WF-20 ●		4900 W/1000 W				

Circulating fluid temperature controller, thermo-chiller, standard type

HRS090 Series



- Temperature stability: ± 0.5 °C
- Temperature range setting: 5 to 35 °C
- Lightweight 136 kg
- Easy maintenance: tool-less maintenance of filter
- Self diagnosis function and check display
- Convenient functions:
 - Timer operation function
 - Unit conversion function
 - Power failure auto-restart function
 - Anti-freezing operation function
- Communication function: RS232C, RS485 and contact I/Os as standard.

Part number	Cooling method	Cooling/heating capacity (50 Hz)	Pipe thread type	Power supply
HRS090-AF-40 ●	Air-cooled refrigeration	8000 W/1700 W	G (with RC-G conversion fitting)	3-phase 380 to 415 VAC (50/60 Hz)
HRS090-WF-40	Water-cooled refrigeration	9000 W/1700 W		3-phase 380 to 415 VAC (50/60 Hz)

Circulating fluid temperature controller, thermo-chiller standard type

HRS100/150 Series



- Temperature stability: ± 1.0 °C
- Temperature range setting: 5 to 35 °C
- Outdoor installation: IPX4
- Heating function available even with no heater
- Self diagnosis function and check display
- Convenient functions:
 - Timer operation function
 - Warming-up function
 - Power failure auto-restart function
 - Anti-freezing operation function
- Communication function: RS232C, RS485 and contact I/Os as standard.

Part number	Cooling method	Cooling/heating capacity (50 Hz)	Pipe thread type	Power supply
HRS100-AF-40 ●	Air-cooled refrigeration	9000 W/1700 W	G (with RC-G conversion fitting)	3-phase 380 to 415 VAC (50/60 Hz)
HRS150-AF-40 ●		13000 W/2500 W		
HRS100-WF-20	Water-cooled refrigeration	10000 W/1700 W		3-phase 380 to 415 VAC (50/60 Hz)
HRS150-WF-20		14000 W/2500 W		

Circulating fluid temperature controller, thermo-chiller basic type

HRSE Series



- Temperature stability: ± 2.0 °C
- Temperature range setting: 10 to 30 °C
- Energy saving by triple control
- Lightweight 35 kg
- Self diagnosis function and check display
- 2-step operation
- Maintenance free magnet pump.

Part number	Cooling method	Cooling capacity	Port size	Power supply
HRSE012-A-23 ●	Air-cooled refrigeration	1000 W (50 Hz)	Rc 1/2	Single-phase 230 VAC (50/60 Hz)
HRSE018-A-23 ●		1400 W (50 Hz)		
HRSE024-A-23 ●		1900 W (50 Hz)		

Circulating fluid temperature controller, thermo-chiller, inverter type

HRSH Series



- Temperature stability: ± 0.1 °C
- Temperature range setting: 5 to 35 °C (5 to 40 °C for HRSH090)
- Energy saving by triple inverter
- Outdoor installation: IPX4 (Except for HRSH090)
- Self diagnosis function and check display
- Convenient functions:
 - Timer operation function
 - Unit conversion function
 - Power failure auto-restart function
 - Anti-freezing operation function
- Communication function: RS232C, RS485 and contact I/Os as standard.

Part number	Cooling method	Cooling/heating capacity	Pipe thread type	Power supply
HRSH090-AF-20-S	Air-cooled refrigeration	9500 W/2500 W	G (with RC-G conversion fitting)	3-phase 200 (50 Hz), 3-phase 200 to 230 VAC (60 Hz)
HRSH090-AF-40 ●		9500 W/2500 W		3-phase, 380 to 415 VAC (50/60 Hz)
HRSH100-AF-20-S		10500 W/2500 W		3-phase, 200 (50 Hz), 3-phase 200 to 230 VAC (60 Hz)
HRSH150-AF-20-S		15700 W/3000 W		
HRSH200-AF-20-S		20500 W/5500 W		
HRSH250-AF-20-S		25000 W/7500 W		
HRSH300-AF-20-S		25000 W/7500 W		
HRSH100-AF-40 ●		10500 W/2500 W		
HRSH150-AF-40 ●		15700 W/3000 W		
HRSH200-AF-40 ●		20500 W/5500 W		
HRSH250-AF-40 ●		25000 W/7500 W		3-phase, 200 (50 Hz), 3-phase 200 to 230 VAC (60 Hz)
HRSH300-AF-40		25000 W/7500 W		
HRSH090-WF-20-S		11000 W/2500 W		
HRSH090-WF-40	11000 W/2500 W			
HRSH100-WF-20-S	11500 W/2500 W	3-phase, 200 (50 Hz), 3-phase 200 to 230 VAC (60 Hz)		
HRSH150-WF-20-S	15700 W/3500 W			
HRSH200-WF-20-S	20600 W/4000 W			
HRSH250-WF-20-S	24000 W/7200 W			
HRSH100-WF-40	11500 W/2500 W		3-phase, 380 to 415 VAC (50/60 Hz)	
HRSH150-WF-40	15700 W/3500 W			
HRSH200-WF-40	20600 W/4000 W			
HRSH250-WF-40	24000 W/7200 W			

Our highlighted product for you

Peltier-type chiller, thermo-con/ rack mount type



HECR Series



- Temperature stability: ± 0.01 °C to 0.03 °C
- Temperature range setting: 10 to 60 °C
- Mountable in a 19-inch rack
- Self diagnosis function and check display
- It is easy to start up in 3 steps and to control, with 14 different alarm codes
- Maintenance free magnet pump
- Communication function: RS232C and RS485.

Part number	Radiating method	Cooling/heating capacity	Power supply	Option	Port Size
HECR002-A5-F ●	Air-cooled	200 W/600 W (Tap Water)	Single-phase 100 to 240 VAC (50/60 Hz)	With flow switch	Rc 1/4
HECR004-A5-F		400 W/1000 W (Tap Water)			
HECR006-A5-F		510 W/1200 W (Tap Water)			
HECR008-A5-F ●		800 W/1400 W (Tap Water)			
HECR010-A2-F ●		1000 W/ 2000 W (Tap Water)	Single-phase 200 to 240 VAC (50/60 Hz)	High pressure pump mounted	Rc 3/8
HECR010-A2-P	With flow switch and high pressure pump mounted				
HECR010-A2-FP					
HECR008-W5-F	Water-cooled	800 W/ 1400 W (Tap Water)	Single-phase 100 to 240 VAC (50/60 Hz)	With flow switch	Rc 3/8
HECR012-W2-F		1200 W/ 2000 W (Tap Water)			
HECR012-W2-P			With flow switch and high pressure pump mounted		
HECR012-W2-FP					

Process pump

Process pump PA3000/5000 Series



- Compact, large capacity diaphragm type pump (PA3000: Up to 20 l/min, PA5000 up to 45 l/min)
- Compatible with a wide variety of fluids
- Easy adjustment of discharge pressure and flow rate with adjustment of the pilot air pressure
- Self-priming type makes priming unnecessary.

Part number	Type of actuation	Port size	Material		Discharge rate [l/min] ¹⁾	Average discharge pressure [MPa]	Pilot air pressure [MPa]		
			Body wetted areas	Diaphragm					
PA3120-F03 ●	Automatically operated type (internal switching type)	G 3/8	Aluminium	NBR	1 to 20	0 to 0.6	0.2 to 0.7		
PA3110-F03 ●			Stainless steel	PTFE					
PA3210-F03 ●		G 1/2	Aluminium	NBR	5 to 45				
PA5120-F04 ●			Stainless steel	PTFE					
PA5110-F04 ●		G 3/4	Aluminium	NBR	5 to 45				
PA5210-F04 ●			Stainless steel	PTFE					
PA5120-F06 ●									
PA5110-F06 ●									
PA5210-F06 ●									

1) The values are for normal temperatures and when the transferred fluid is fresh water.

Process pump with pulsation attenuator

PAX1000 Series



- Prevents spraying of discharge and foaming in tank
- Space-saving design eliminates separate piping with built-in pulsation attenuator
- Compatible with a wide variety of fluids.

Part number	Type of actuation	Port size	Material		Discharge rate [l/min] ¹⁾	Average discharge pressure [MPa]	Pilot air pressure [MPa]
			Body wetted areas	Diaphragm			
PAX1112-F02	Automatically operated type (internal switching type)	G 1/4	Aluminium	PTFE	0.5 to 10	0 to 0.6	0.2 to 0.7
PAX1212-F02			Stainless steel				
PAX1112-F03 ●		G 3/8	Aluminium				
PAX1212-F03 ●			Stainless steel				

1) The values are for normal temperatures and when the transferred fluid is fresh water.

Compact process pump (Diaphragm pump)

PB Series



- Suitable for transferring and collecting a wide range of fluids
- Built-in solenoid valve or air operated (external switching type)
- Easy to adjust the flow rate by the frequency of ON/OFF of the solenoid valve
- Discharge 8 to 2000 ml/min. (for air operated type up to 1000 ml/min)
- Weight 0.11kg (PB1013A/Air-operated type without foot).

Part number	Type of actuation	Port size	Wetted parts	Discharge ¹⁾ [mL/min]	Average discharge pressure [MPa]	Pilot air pressure [MPa]
PB1011A-F01 ●	Built-in solenoid valve	G 1/8	Polypropylene (PP), stainless steel (SUS316), PTFE, FKM	8 to 2000	0 to 0.6	0.2 to 0.7
PB1013A-F01 ●	Air operated			8 to 1000 ²⁾		
PB1313A-F01 ●			New PFA, PTFE	8 to 1000	0 to 0.4	0.2 to 0.5

1) The values given for discharge and suction head are for no piping. Values will depend on piping conditions.

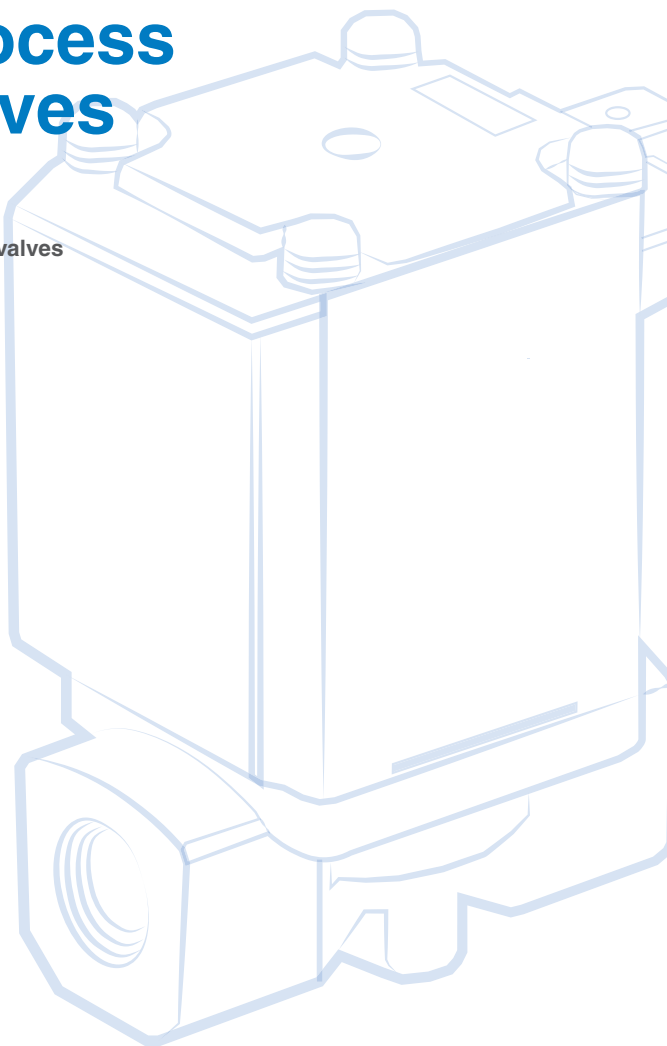
2) Applicable up to 2000 ml/min by using a solenoid valve with a large Cv value (Cv value of 0.5 or more).

Process valves



Process valves

Page 464



Process valves



Direct operated 2 port solenoid valve for general use

VX2 Series p.472



2 Port solenoid valve with built-in y-strainer

VXK Series p.473



Pilot operated 2 port solenoid valve

VXD Series p.473



Zero differential pressure type pilot operated 2 port solenoid valve

VXZ Series p.474



Zero differential pressure type pilot operated 2 port solenoid valve for steam

VXS Series p.475



**Angle seat valve
Air operated type**

VXB Series p.476



2 Port solenoid valve energy saving type

VXE Series p.477



2 Port solenoid valve for high pressure, pilot operated diaphragm type

VXH Series p.477



**2 Port solenoid valve
Air operated valve for dust collector**

VXFA/VXF Series p.478



3 Port solenoid valve directly operated poppet

VX3 Series p.478



2 Port valve, air operated

VXA2 Series p.479



2 Port valve, air operated

VXA3 Series p.479



**2/3 Port solenoid valve
High pressure operation range:
0.5 to 5.0 Mpa**

VCH41/42/410 Series p.480



**Check valve
High pressure operation range:
0.05 to 5.0 MPa**

VCHC40 Series p.480



Compact direct operated 2 port solenoid valve

VDW10/20 Series p.481



3 Port solenoid valve directly operated poppet

VDW200/300 Series p.481



**Compact / lightweight
2 Port solenoid valve**

VDW30/40-XF Series p.482



2 Port solenoid valve specific pilot operated for dry air

VQ20/30 Series p.482



High speed 2 port valve

SX10 Series p.483



**Compact proportional solenoid valve
Flow rate smoothly controlled by electric current adjustment**

PVQ Series p.483



Compact direct operated 2/3 port solenoid valve for chemicals liquids

LVM Series p.484



2/3 Port media separated valve

LVMK Series p.484



2 Port valve air operated for air and air-hydro circuit control

VNA Series p.485



2 Port valve air operated for general use

VNB Series p.485



Coolant valve

SGC/SGCA Series p.486



High pressure coolant valve

SGH/SGHA Series p.487

**2 Port valve air operated for steam**

VND Series p.488

**2 Port air operated, high purity chemical valve integral fitting type**

LVC Series p.488

**2 Port air operated, high purity chemical valve threaded type**

LVA Series p.489

**2 Port manually operated high purity chemical valve**

LVH Series p.489

**2 Port air operated, high purity chemical valve compact type**

LVD Series p.490

**2 Port air operated high purity chemical valve
Non-metallic exterior**

LVQ Series p.490

Our highlighted product for you

Direct operated 2 port solenoid valve

VX2 Series

For more details go to page 472



Air



Medium vacuum



Water



Oil



Steam

* Can be used with heated water

► Large flow rate

Flow rate: 20 % more flow* (size 1)

► Compact

Height: 10 % smaller* (size 1)

► Lightweight

Weight: 30 % lighter* (size 1, aluminium body)

► Flame resistance UL94V-0 conformed

* Comparison with SMC conventional model.

► IP65 degree of protection

Electrical entry "Faston" type terminal is IP40

► Low noise construction

Metal noise reduced by the rubber bumper

► Improved armature durability

► Power consumption

DC/Class B, N.C. valve:

- 4.5 W (size 1)

- 7 W (size 2)

- 10.5 W (size 3).



A more complete solution for medium flow demands

Body material

Air

- Aluminium, resin

Water/oil/medium vacuum/steam

- C37 (brass), stainless steel.



Piping variations

Thread piping,
(G 1/8 to G 1/2)

One-touch fitting
(Ø 6 to Ø 12 mm)



Pilot operated 2 port solenoid valve

VXD Series



Air



Water



Oil



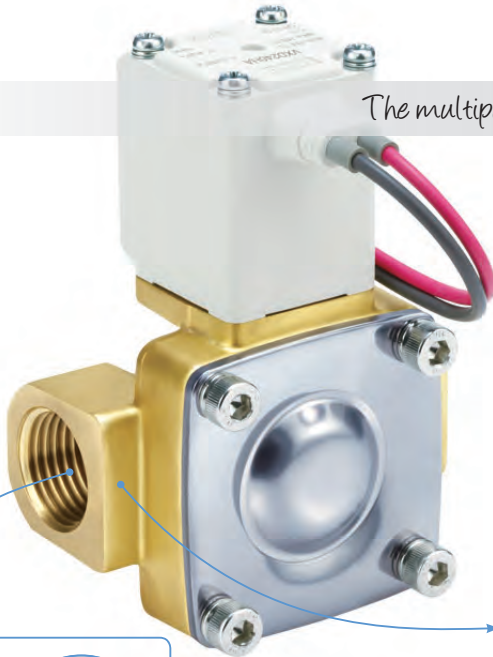
Heated water
(99 °C)



High temperature oil
(99 °C)



For more details go to page 473



The multipurpose compact fluid valve

Body material

Air

- Aluminium (VXD2₃)
- Resin (VXD2₁)
- (C37) brass
- Stainless steel (VXD2₄ to 2₆)

Water/oil/heated water/high temperature oil

- (C37) Brass
- Stainless steel (VXD2₃ to 2₆)



Piping variations

- | | |
|---------------------------------|--|
| Thread piping
(G 1/4 to G 1) | One-touch fitting
(Ø 10 to Ø 12 mm) |
|---------------------------------|--|

► Compact

Height: approx. 7 % smaller* (7 mm)
(VXD24)

► Lightweight

Weight: 20 % lighter* (90 g)
(VXD23 resin body)

► Flame resistance UL94V-0 conformed

* Comparison with SMC conventional model.

► IP65 degree of protection

Electrical entry "Faston" type terminal is IP40

► Low noise construction

Impact noise reduced by the rubber buffer

► Improved armature durability

► Power consumption

- 4.5 W (VXD23 to 25)
- 7 W (VXD26).

Our highlighted product for you

Zero differential pressure type pilot operated 2 port solenoid valve

VXZ Series



Air



Water



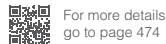
Oil



Heated water
(99 °C)



High temperature
oil (99 °C)



For more details
go to page 474

► Compact

Height: approx. 4 % smaller* (4 mm)
(VXZ24, C37 (brass) body)

► Lightweight

Weight: 27 % lighter* (150 g)
(VXZ23, resin body)

► Can be used at 0 m hydraulic head!

Min. operating pressure differential: 0 MPa

► Flame resistance UL94V-0 conformed

► IP65 degree of protection

Electrical entry "Faston" type terminal is IP40

► Low noise construction

Impact noise reduced by the rubber buffer

► Improved armature durability

* Comparison with SMC conventional model.



When the application requires zero differential pressure

Body material

Air

- Aluminium, resin. (VXZ23)

Water/oil/air/heated water/high temperature oil

- C37 (Brass), stainless steel.



Piping variations

Thread piping
(G 1/4 to G 1)

One-touch fitting
(Ø 10 to Ø 12 mm)



Angle seat valve Air operated type VXB Series



Air



Water



Heated water
(99 °C)



Steam
* Can be used with heated water



For more details go to page 476



Pilot port location
Can be placed in 3 of its 4 sides



With Indicator

It will live up to your expectations

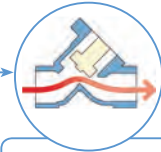
Body material

Bronze, stainless steel 316L equivalent

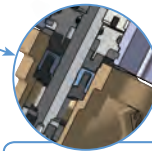


Port size:

3/8, 1/2, 3/4



Low pressure loss



Special construction:

- A **protective seal** prevents foreign particles from getting inside when the valve is open
- A **resin scraper** functions during the main valve stroke as a guide and prevents foreign particles from getting in
- **Squeeze seal** with scraper function added to shut off fluid leakage
- A **guide bushing** gives smooth shaft movement, prevents misalignment and lengthens the squeeze seal life.

► Long service life:

- Air: 5 million cycles
- Steam: 3 million cycles

► High sealing, minimal leakage:

- Minimal internal air leakage: **10 cm³/min or less** (significantly better tightness than any PTFE sealed valve)
- High sealing thanks to a rubber seal made of a **special FKM**

► Insulated adapter type

- Available for high temperature fluids.

Our highlighted product for you

Compact direct operated 2 port solenoid valve

VDW Series



Air



Medium vacuum



Water



For more details go to page 481

A basic, compact and light solution

Body material

Air

- Aluminium, resin (PPS)

Medium vacuum

- Brass, stainless steel

Water

- Resin (PPS), brass, stainless steel.



Piping variations

Thread piping
(M5 to G 1/8)

One-touch fitting
(Ø 4 to Ø 6 mm)



► **Flame resistance UL94V-0 conformed**

► **IP65 degree of protection**

► Seal material

- NBR (Air, water)
- FKM (Medium vacuum)

► Low noise construction

Metal noise reduced by the rubber damper

► Improved armature durability

► Power consumption

- 2.5 W (Size 1)
- 3 W (Size 2).

Lightweight

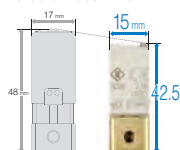
100g **80g**

Conventional Brass body (Size 2)

New Aluminium/Resin (PPS) body (Size 2)

Compact

Conventional model **New**

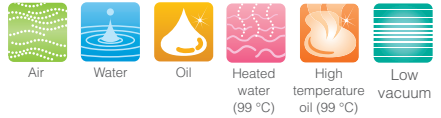


(Compared with Size 1, Brass/Stainless steel body)

2 Port valve for flow control

VNB Series

For more details go to page 485



► Many variations

Normally closed, normally open and C.O. (double acting) are available

► Port sizes

From G 1/8 to G 2

► Robust poppet construction

- Much more robust and reliable than solenoids
- The best option for treating viscous fluids or slightly dirty such as soluble oils
- Capable of retaining reverse pressure

► A wide variety of fluids

Proper selection with body and sealing materials permits application with a wide variety of fluids such as air, water, oil, gas and vacuum

► Seal material

NBR, FKM, EPR.



The most versatile solution for large flow

Process valves

Our highlighted product for you

Direct operated 2 port solenoid valve for general use

VX2 Series



- Range of two port valves for air, medium vacuum and fluids
- Body materials: Aluminium, resin, brass and stainless steel
- Piping variations: Thread and one-touch fitting
- Low power consumption & low-noise construction
- N.C., N.O. options
- Oil free option available
- Fluid temperature up to 60 °C (high temperature version available)
- Ambient temperature -20 to 60 °C.

Fluid	Part number	Valve type	Max. operating pressure differential [MPa]	Cv	Kv [m ³ /h]	Orifice diameter [mm]	Port size	Body/seal material	Voltage	Electrical entry
Air	VX210HG ●	N.C.	1.0	0.23	0.20	2	Ø 6 mm	PBT resin/ NBR	24 VDC	DIN terminal (with surge voltage suppressor)
	VX210JG ●		0.6	0.35	0.30	3	Ø 6 mm			
	VX210MG ●		0.6	0.41	0.35	3	Ø 8 mm			
	VX220HG ●		1.0	0.47	0.40	4	Ø 8 mm			
	VX230HG ●		1.0	0.70	0.60	5	Ø 10 mm			
Water	VX212AGAXB ●		1.0	0.23	0.20	2	G 1/8	Brass/NBR		
	VX212EGAXB ●		0.6	0.42	0.36	3	G 1/4			
	VX222AGAXB ●		1.0	0.63	0.54	4	G 1/4			
	VX232DGAXB ●		1.0	0.75	0.64	5	G 3/8			
Vacuum (oil free)	VX214FGAXB ●		0.2 ¹⁾	0.62	0.53	5	G 1/4	Brass/FKM		
	VX224EGAXB ●		0.15 ¹⁾	1.08	0.93	7	G 3/8			
	VX234GGA ●		0.1 ¹⁾	2.21	1.90	10	G 1/2			
DI water/ gas	VX212HGKXB ●		1.0	0.23	0.20	2	G 1/8	SUS/FKM (Oil free)		
	VX212MGKXB ●		0.6	0.42	0.36	3	G 1/4			
	VX222HGKXB ●		1.0	0.63	0.54	4	G 1/4			
	VX232LGKXB ●	1.0	0.75	0.64	5	G 3/8				

1) Pressurized port 1. Used with vacuum: 0.1 Pa-abs to atmospheric pressure

2) For other voltages replace G by L (230 VAC) or Z1V (24 VAC) in the part numbers above.

2 port solenoid valve with built-in y-strainer

VXK Series



- For air, water, oil, steam
- Space saving and reduced piping labour
- Built-in Y-strainer, 100 mesh, stainless steel
- The element can be replaced without removing piping
- N.C./N.O. options
- Low noise construction
- Enclosure: IP65.

Part number	Valve type	Cv [Nl/min]	Kv [m³/h]	Max. operating pressure differential [MPa]	Orifice diameter [mm]	Port size	Body/seal material	Voltage	Electrical entry
VXK2110-01F-5DO1 ●	N.C.	0.17	0.15	1.5	2	G 1/8	Brass/NBR	24 VDC	DIN terminal (without connector with gasket)
VXK2110-01F-JDOR1 ●								230 VAC ¹⁾	
VXK2120-01F-5DO1 ●		24 VDC							
VXK2120-01F-JDOR1 ●		230 VAC ¹⁾							
VXK2220-02F-5DO1 ●		0.33	0.28	1.5	3	G 1/4		24 VDC	
VXK2220-02F-JDOR1 ●								230 VAC ¹⁾	
VXK2230-02F-5DO1 ●		0.61	0.54	0.35	4.5	G 3/8		24 VDC	
VXK2230-02F-JDOR1 ●								230 VAC ¹⁾	
VXK2320-03F-5DO1 ●		0.33	0.28	0.3	3	G 3/8		24 VDC	
VXK2320-03F-JDOR1 ●								230 VAC ¹⁾	
VXK2330-03F-5DO1 ●	24 VDC								
VXK2330-03F-JDOR1 ●	230 VAC ¹⁾								

1) With built-in full wave rectifier.

Our highlighted product for you

Pilot operated 2 port solenoid valve

VXD Series



- Body materials: aluminium, resin, brass and stainless steel
- Piping variations: thread and one-touch fitting
- Low-noise construction
- N.C., N.O. options
- Oil free option available
- Fluid temperature up to 60 °C (high temperature version available)
- Ambient temperature -20 to 60 °C.

Fluid	Part number	Valve type	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]	Cv	Kv [m³/h]	Orifice diameter [mm]	Port size	Body/seal material	Voltage	Electrical entry	
Air	VXD230DG ●	N.C.	0.02	13.0	1.3	1.12	10	Ø 10 mm	PBT resin/ NBR	24 VDC	DIN terminal (with surge voltage suppressor)	
	VXD230FG ●				0.7	1.5	1.29	10				Ø 12 mm
Water	VXD232AGA ●				0.5	1.9	1.63	10	G 1/4			Brass/NBR
	VXD242GGA ●				1.0	4.5	3.86	15	G 3/8			
	VXD242HGA ●				1.0	5.5	4.72	15	G 1/2			
	VXD252LGA ●				1.0	9.5	8.15	20	G 3/4			
	VXD262NGA ●				1.0	13.0	11.15	25	G 1			
	VXD232DGK ●				0.5	1.9	1.63	10	G 1/4			
DI Water/ gas	VXD242JGK ●				1.0	4.5	3.86	15	G 3/8			
	VXD242KGK ●				1.0	5.5	4.72	15	G 1/2			
	VXD252MGK ●	1.0	9.5	8.15	20	G 3/4						
	VXD262PGK ●	1.0	13.0	11.15	25	G 1						

1) For other voltages replace G by L (230 VAC) or Z1V (24 VAC) in the part numbers above.

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

Our highlighted product for you

Zero differential pressure type pilot operated 2 port solenoid valve

VXZ Series



- Body materials: Aluminium, resin, brass and stainless steel
- Piping variations: Thread and one-touch fitting
- Low-noise construction
- N.C., N.O. options
- Oil free option available
- Fluid temperature up to 60 °C (high temperature version available)
- Ambient temperature -20 to 60 °C.

Fluid	Part number	Valve type	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]	Cv	Kv [m³/h]	Orifice diameter [mm]	Port size	Body/seal material	Voltage	Electrical entry
Air	VXZ230CG ●	N.C.	0	0.7	1.7	1.46	10	Ø 10 mm	PBT resin/ NBR	24 VDC	DIN terminal (with surge suppressor)
	VXZ230EG ●			0.7	2.0	1.72	10	Ø 12 mm			
Water	VXZ232AGA ●			0.7	1.9	1.63	10	G 1/4	Brass/NBR		
	VXZ232BGA ●			0.7	2.4	2.06	10	G 3/8			
	VXZ242FGA ●			0.7	5.3	4.55	15	G 1/2			
	VXZ252HGA ●			1.0	9.2	7.89	20	G 3/4			
	VXZ262KGA ●			1.0	10.2	8.75	25	G 1			
	VXZ232CGK ●			0.7	1.9	1.63	10	G 1/4			
DI Water/ gas	VXZ232DGK ●			0.7	2.4	2.06	10	G 3/8	SUS/FKM (oil free)		
	VXZ242GGK ●			0.7	5.3	4.55	15	G 1/2			
	VXZ252JGK ●			1.0	9.2	7.89	20	G 3/4			
	VXZ262LGK ●			1.0	10.2	8.75	25	G 1			

1) For other voltages replace G by L (230 VAC) or Z1V (24 VAC) in the part numbers above.

Zero differential pressure type pilot operated 2 port solenoid valve for steam

VXS Series



- Body materials: Brass and stainless steel
- Low-noise construction
- N.C. options
- Oil free option available
- Fluids: Steam and heated water
- Fluid temperature up to 183 °C (heated water: 99 °C)
- Ambient temperature -20 to 60 °C.

Fluid	Part number	Valve type	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]	Cv	Kv [m ³ /h]	Orifice diameter [mm]	Port size	Body/seal material	Voltage	Electrical entry
Steam and heated water	VXS235AGA ●	N.C.	0	1.0	2.4	2.1	10	G 1/4	Brass/ FKM	24 VDC	DIN terminal (With surge voltage suppressor)
	VXS235BGA ●				2.8	2.4	10	G 3/8			
	VXS245FGA ●				5.3	4.6	15	G 1/2			
	VXS255HGA ●				9.2	7.9	20	G 3/4			
	VXS265KGA ●				12	10.4	25	G 1	SUS/FKM		
	VXS235CGA ●				2.4	2.1	10	G 1/4			
	VXS235DGA ●				2.8	2.4	10	G 3/8			
	VXS245GGA ●				5.3	4.6	15	G 1/2			
	VXS255JGA ●				9.2	7.9	20	G 3/4			
VXS265LGA ●	12	10.4	25	G 1							

1) For other voltages replace G by L (230 VAC) or Z1V (24 VAC) in the part numbers above.

Our highlighted product for you

Angle seat valve Air operated type

VXB Series



- Low pressure loss due to angle seat structure
- Reduced leakage with rubber seal
- Long service life: 3 million cycles (steam), 5 million cycles (air)
- Low leakage: 10 cm³/min or less
- Space saving: Height 100 mm
- Body material: Stainless steel 316L equivalent, bronze.

Fluid	Part number	Valve type	Max. operating pressure differential [MPa]	Cv	Kv [m ³ /h]	Orifice diameter [mm]	Port size	Body/seal material
Steam, water and air	VXB215AA <input type="checkbox"/> ●	N.C.	1.0	3.5	3	11	G 3/8	Brass/FKM
	VXB215BA <input type="checkbox"/> ●		0.6	5.4	4.6	14	G 1/2	
	VXB215CA <input type="checkbox"/> ●		0.4	7.6	6.5	18	G 3/4	
	VXB215DA <input type="checkbox"/> ●		1.0	3.5	3	11	G 3/8	SUS/FKM
	VXB215EA <input type="checkbox"/> ●		0.6	5.4	4.6	14	G 1/2	
	VXB215FA <input type="checkbox"/> ●		0.4	7.6	6.5	18	G 3/4	
	VXB215AHA <input type="checkbox"/> ●		1.6	3.5	3	11	G 3/8	Brass/FKM
	VXB215BHA <input type="checkbox"/> ●		1.2	5.4	4.6	14	G 1/2	
	VXB215CHA <input type="checkbox"/> ●		0.6	7.6	6.5	18	G 3/4	
	VXB215DHA <input type="checkbox"/> ●		1.6	3.5	3	11	G 3/8	SUS/FKM
	VXB215EHA <input type="checkbox"/> ●		1.2	5.4	4.6	14	G 1/2	
	VXB215FHA <input type="checkbox"/> ●		0.6	7.6	6.5	18	G 3/4	

: Insert "L" if indicator option is required.

2 port solenoid valve energy saving type

VXE Series



- Energy saving type of the VX2, VXD2 and VXZ2 2 port solenoid valve series (replaceable coil)
- Power consumption when holding reduced to 1/3
- Coil heat reduction
- For various fluids and variety of sizes
- Applicable voltages: 24 and 12 VDC.

Part number	Valve type	Max. operating pressure differential [MPa] ¹⁾	Cv	Kv [m ³ /h]	Port size	Body/seal material	Rated voltage + electrical entry
VXE2 Series Direct operated type							
VXE2110-01F-5DO1 ●	N.C.	1.5	0.18	0.15	G 1/8	Brass/NBR	24 VDC, for DIN terminal (without connector, with gasket), with built-in surge voltage suppressor circuit
VXE2120-02F-5DO1 ●		0.5	0.33	0.28	G 1/4		
VXE2330-02F-5DO1 ●		0.9	0.61	0.52			
VXE2230-03F-5DO1 ●		0.35	0.61	0.52	G 3/8		
VXE2330-03F-5DO1 ●		0.9	0.61	0.52			
VXE2360-04F-5DO1 ●		0.07	2.20	1.86			
VXD2 Series Pilot operated type							
VXED2130-02F-5DO1 ●	N.C.	0.5	1.9	1.63	G 1/4	Brass/NBR	24 VDC, for DIN terminal (without connector, with gasket), with built-in surge voltage suppressor circuit
VXED2140-03F-5DO1 ●			4.5	3.86	G 3/8		
VXED2140-04F-5DO1 ●		1.0	5.5	4.71	G 1/2		
VXED2150-06F-5DO1 ●			9.5	8.14	G 3/4		
VXED2260-10F-5DO1 ●			13	11.14	G 1		
VXEZ2 Series Zero differential pressure pilot operated type							
VXEZ2230-02F-5DO1 ●	N.C.	0.7	1.9	1.63	G 1/4	Brass/NBR	24 VDC, for DIN terminal (without connector, with gasket), with built-in surge voltage suppressor circuit
VXEZ2230-03F-5DO1 ●			2.40	2.06	G 3/8		
VXEZ2240-04F-5DO1 ●			5.3	4.54	G 1/2		
VXEZ2350-06F-5DO1 ●		1.0	9.2	7.88	G 3/4		
VXEZ2360-10F-5DO1 ●		1.0	12	10.28	G 1		

1) Values for water

2 port solenoid valve for high pressure Pilot operated diaphragm type

VXH Series



- High pressure applications (2 MPa)
- Body material: Brass
- Seal material: NBR
- Other voltages available (AC).

These models are suitable for air, water, steam and oil (1.5 MPa)

Part number	Valve type	Cv	Kv [m ³ /h]	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa]	Port size	Body/seal material	Voltage	Electrical entry
VXH2230-02-4D-Q	2 N.C.	2.0	1.64	0.05	2.0	Rc 1/4	Brass/NBR	220 VAC	DIN Terminal
VXH2230-03-4D-Q		2.3	2.07			Rc 3/8			
VXH2230-04-4D-Q		2.3	2.07			Rc 1/2			

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

2 port solenoid valve

Air operated valve for dust collector

VXF/VXFA Series



- Wide range of piping options: direct piping, flange, flange mounting and through hole mounting
- Port sizes from 3/4" to 4" and orifices from 22 to 100 mm
- Quick discharge of the bags - large orifice sizes and large discharge flow rates
- High speed response - double diaphragm structure
- Low minimum operating pressure: 0.03 MPa (sizes 21 to 23) and 0.1 MPa (sizes 24 to 28)
- Controller for operation with VXF valves available
- Applicable for high temperature up to 100 °C.

Part number	Valve type	Max. operating pressure differential [MPa]	Cv	Kv [m ³ /h]	Orifice diameter [mm]	Port size	Body/Diaphragm assembly material	Fluid temperature	Voltage	Electrical entry
Solenoid valve type										
VXF21AAGA	N.C.	0.7	9.5	8.14	22	G 3/4	Aluminium/NBR POM	Max. 60 °C	24 VDC	DIN terminal (With surge voltage suppressor)
VXF22AAGA			18	15.43	28	G 1				
VXF23AAGA			45	38.57	44	G 1 1/2				
VXF24AAGA			64	54.85	53	G 2				
VXF25AAGA			100	85.70	70	G 2 1/2				
VXF26AAGA			155	132.84	80	G 3				

1) For other voltages replace G by L (230 VAC) or Z1V (24 VAC) in the part numbers above.

Air operated type										
VXFA21AAA	N.C.	0.7	9.5	8.14	22	G 3/4	Aluminium/NBR POM	Max. 60 °C		
VXFA22AAA			18	15.43	28	G 1				
VXFA23AAA			45	38.57	44	G 1 1/2				
VXFA24AAA			64	54.85	53	G 2				
VXFA25AAA			100	85.70	70	G 2 1/2				
VXFA26AAA			155	132.84	80	G 3				

3 port solenoid valve directly operated poppet

VX3 Series



- Low power consumption
- Enclosure IP65
- Low-noise construction
- Good maintenance performance
- Can be mounted on manifold
- Body materials: brass or stainless steel
- Seal materials: NBR, FKM, EPDM or PTFE
- Other voltages available (AC, DC).

These models are suitable for water, oil, low vacuum and air ¹⁾

Part number	Valve type	Cv	Kv [m ³ /h]	Max. operating pressure differential [MPa]	Port size	Body/Seal material	Voltage	Electrical entry	
VX3114-01F-5D1 ●	C.O.	0.08	0.07	0.7	G 1/8	Brass/NBR	24 VDC	DIN Terminal	
VX3114-02F-5D1		0.08	0.07	0.7	G 1/4				
VX3224-02F-5D1 ●		0.19	0.16	0.7					
VX3324-02F-5D1		0.19	0.16	1					
VX3334-03F-5D1		0.33	0.28	0.6	G 3/8				
VX3114V-01F-5D1		0.08	0.07	0.7	G 1/8				Brass/FKM (non-leak)
VX3124V-01F-5D1		0.16	0.14	0.4					
VX3234V-02F-5D1		0.33	0.28	0.3					
VX3344V-02F-5D1		0.5	0.43	0.3					
VX3344V-03F-5D1		0.5	0.43	0.3		G 3/8			

1) For steam and medium vacuum applications, please select the suitable materials from the catalogue.

C.O.: Bi-directional normally open that can also be used normally closed.

2 port valve, air operated

VXA2 Series



- For high viscosity fluids (500 cSt)
- Easy to disassemble and reassemble in a short time
- Direction of pilot port can be easily changed
- Body material: brass or stainless steel
- Seal material: NBR, EPDM or FKM.

These models are suitable for air, inert gas, low vacuum and water ¹⁾

Part number	Valve type	Q [Nl/min]	Kv [m ³ /h]	Max. operating pressure differential [MPa]	Port size	Body/Seal material
VXA2120-01F-1 ●	2 N.C.	135	0.28	1	G 1/8	Brass/NBR
VXA2130-01F-1		250	0.54	0.5		
VXA2230-02F-1 ●		250	0.54	1	G 1/4	
VXA2240-02F-1 ●		450	0.93	0.6		
VXA2240-03F-1 ●		450	0.93	0.6	G 3/8	
VXA2120V-01F-1 ●		135	0.28	1		
VXA2130V-02F-1 ●		250	0.54	0.5	G 1/8	Brass/FKM (non-leak)
VXA2230V-01F-1		250	0.54	1		
VXA2240V-02F-1 ●		450	0.93	0.6	G 1/4	
VXA2240V-03F-1		450	0.93	0.6		

1) For oil and medium vacuum applications, please select the suitable materials from the catalogue.

2 port valve, air operated

VXA3 Series



- For high viscosity fluids (500 cSt)
- Easy to disassemble and reassemble in a short time
- Free take off direction pilot port
- Body material: Brass or stainless steel
- Seal material: NBR, EPDM or FKM.

These models are suitable for air, inert gas, low vacuum and water ¹⁾

Part number	Valve type	Q [Nl/min]	Kv [m ³ /h]	Max. operating pressure differential [MPa]	Port size	Body/seal material
VXA3114-01F ●	3 C.O.	75	0.07	1	G 1/8	Brass/NBR
VXA3124-01F		148	0.14	0.5		
VXA3134-02F		196	0.29	0.3	G 1/4	
VXA3234-02F		271	0.32	0.6		
VXA3244-03F		383	0.43	0.3	G 3/8	
VXA3114V-01F		75	0.07	1		
VXA3124V-01F		148	0.14	0.5	G 1/8	Brass/FKM (non-leak)
VXA3134V-02F		196	0.29	0.3		
VXA3234V-02F		271	0.32	0.6	G 1/4	
VXA3244V-03F		383	0.43	0.3		

1) For oil and medium vacuum applications, please select the suitable materials from the catalogue.

C.O.: Bi-directional normally open that can also be used normally closed.

2/3 port solenoid valve

High pressure operation range:

0.5 to 5.0 Mpa

VCH41/42/410 Series



- Energy saving: Low power consumption
- Enclosure splash proof (equivalent to IP65)
- Body material: Brass/aluminium
- Seal material: Polyurethane elastomer
- Other voltages available (AC, DC)
- Thread type: Conforming to ISO 1179-1 on the pneumatic/hydraulic G thread.

These models are suitable for air and inert gas

Part number	Valve type	Q [Nl/min]	Operating pressure range [MPa]	Port size	Body/Seal material	Voltage	Electrical entry
VCH41-5D-06G-Q ●	2 N.C.	3821	0.5 to 5.0	G 3/4	Brass/Polyurethane elastomer	24 VDC	DIN Terminal
VCH41-5D-10G-Q				G 1			
VCH42-5D-06G-Q ●	2 N.O.			G 3/4			
VCH42-5D-10G-Q				G 1			

Part number	Valve type	Q [Nl/min]	Operating pressure range [MPa]	Port size	Body/Seal material	Voltage	Electrical entry
VCH410-5D-04G-Q	3 N.C.	1→2: 4961	0.5 to 5.0	G 1/2	Aluminium/Polyurethane elastomer	24 VDC	DIN Terminal
VCH410-5D-06G-Q ●		2→3: 5457		G 3/4			
VCH410-5D-10G-Q ●		1→2: 5819		G 1			
		2→3: 6348					

Check valve

High pressure operation range:

0.05 to 5.0 MPa

VCHC40 Series



- Body material: Brass
- Seal material: Polyurethane elastomer
- Thread type: Conforming to ISO 1179-1 on the pneumatic/hydraulic G thread.

These models are suitable for air and inert gas

Part number	Symbol	Q [Nl/min]	Operating pressure range [MPa]	Port size	Body/seal material
VCHC40-06G ●		6525	0.05 to 5.0	G 3/4	Brass/polyurethane elastomer
VCHC40-10G				G 1	

Our highlighted product for you

Compact direct operated 2 port solenoid valve

VDW10/20 Series



- Ultra compact 2 port valves for air, vacuum and fluids
- Body materials: Aluminium, resin, brass and stainless steel
- Piping variations: Thread and one-touch fitting
- Low weight
- IP65 enclosure
- Oil free option available
- Fluid temperature 1 to 50 °C (for water)
- Ambient temperature -10 to 50 °C.

Fluid	Part number	Valve type	Max. operating pressure differential [MPa]	Cv	Kv [m ³ /h]	Orifice diameter [mm]	Port size	Body/seal material	Voltage	Electrical entry	
Air	VDW10AA ●	N.C.	0.9	0.04	0.03	1	M5	PPS resin/ NBR	24 VDC	Grommet ²⁾	
	VDW10EA ●						Ø 4 mm				
	VDW20DA ●						Ø 4 mm				
	VDW20GA ●						Ø 6 mm				
Water	VDW12GA ●		0.9	0.04	0.03	1	M5				Brass/NBR
	VDW12HA ●		0.4	0.07	0.06	1.6	M5				
	VDW22NAA ●		0.7	0.07	0.06	1.6	G 1/8				
	VDW22PAA ●		0.4	0.18	0.15	2.3	G 1/8				
Vacuum (oil free)	VDW14HA ●		0.4 ¹⁾	0.07	0.06	1.6	M5	Brass/FKM			
	VDW24WAA ●		0.2 ¹⁾	0.30	0.26	3.2	G 1/8	SUS/FKM (oil free)			
DI water/ gas	VDW22UAM ●		0.7	0.07	0.06	1.6	G 1/8				
	VDW22VAM ●		0.4	0.18	0.15	2.3	G 1/8				

1) Pressurized port 1. Used with vacuum: 0.1 Pa abs to atmospheric pressure.

2) Standard lead wire length: 300 mm

3 port solenoid valve directly operated poppet

VDW200/300 Series



- Compact and lightweight
- Improved durability
- Highly compact valve owing to its mold coil design
- Built-in rectifier for the AC specification
- Body material: Brass or stainless steel
- Seal material: NBR or FKM
- Other voltages available (AC, DC).

These models are suitable for water, deionised water (industry use), air and low vacuum

Part number	Valve type	Q [Nl/min]	Kv [m ³ /h]	Max. operating pressure differential [MPa]	Port size	Body/seal material	Voltage	Electrical entry	
VDW250-5G-1-M5-Q ●	3 C.O.	16	0.03	0.9	M5	Brass/NBR	24 VDC	Grommet ¹⁾	
VDW250-5G-2-01F-Q ●		33	0.07	0.7	G 1/8				
VDW350-5G-2-01F-Q ●		66	0.14	0.8					
VDW350-5G-3-02F-Q ●		115	0.24	0.4	G 1/4				
VDW250-5G-1-M5-H-Q ●		16	0.03	0.9	M5				SUS/FKM
VDW250-5G-2-01F-H-Q ●		33	0.07	0.7	G 1/8				
VDW350-5G-2-01F-H-Q ●		66	0.14	0.8					
VDW350-5G-3-01F-H-Q ●		115	0.24	0.4					

1) Standard lead wire length: 300 mm

C.O.: Bi-directional normally open that can also be used normally closed.

● Stocked items. ● Partly stocked items, the stocked options are highlighted in green. Stocked items and product information could be subject to change without prior notice.

Compact / lightweight 2 port solenoid valve

VDW30/40-XF Series



- For air, water
- Compact/Lightweight resin body (PPS)
Weight: 120 g (VDW30-XF)
- Power consumption:
 - 3 W (Standard)
 - 0.5 W (With power-saving circuit)
- Piping labour reduced:
 - One-touch fitting body
 - Quick fastener body
- Enclosure: IP65.

Part number	Valve type	Cv	Max. operating pressure differential [MPa]	Port size One-touch fitting Ø [mm]	Body/seal material	Voltage	Electrical entry
			Pressure port 1				
VDW31-5G-1-C4-XF	2/2 N.C.	0.09	0.6	4	PPS/NBR	24 VDC	Grommet ¹⁾
VDW31-5G-3-C6-XF		0.28	0.1	6			
VDW41-5GE-4-C8-XF		0.61	0.1 (with power-saving circuit)	8			
VDW31-6G-1-C4-XF		0.09	0.6	4		12 VDC	
VDW31-6G-3-C6-XF		0.28	0.1	6			
VDW41-6GE-4-C8-XF		0.61	0.1 (with power-saving circuit)	8			

1) Standard lead wire length: 300 mm.

2 port solenoid valve specific pilot operated for dry air

VQ20/30 Series



- High frequency operation
- Compact and lightweight
- Long operating life
- Easy piping with one-touch fittings
- Enclosure IP65
- Single and manifold body type options available
- Full wave rectifier and power-saving circuit options available
- Body material: Resin (PBT)
- Seal material: NBR
- Other voltages available (AC, DC).

These models are suitable for dry air, air and inert gas

Part number	Valve type	Q [Nl/min]	Max. operating pressure differential [MPa]	Min. operating pressure differential [MPa]	Tube connection Ø [mm]	Body/seal material	Voltage	Electrical entry
VQ21A1-5YO-C6-Q ●	2 N.C.	393	0.6	0.01	6	Resin/NBR	24 VDC	DIN terminal without connector
VQ21A1-5YO-C8-Q ●		491			8			
VQ31A1-5YO-C10-Q ●		785	10					
VQ31A1-5YO-C12-Q ●		981	12					

High speed 2 port valve

SX10 Series



- High speed response times: ON at 0.45 ms, OFF at 0.4 ms
- High frequency rates: Up to 1200 Hz
- Long life service: More than 5000 million cycles
- Filter attached.

Quick disconnect type Part number	Screw mount type Part number ¹⁾	Flow rate [l/min] [at 24 VDC, 0.25 MPa]	Min. operating pressure differential [MPa]	Max. operating pressure differential [MPa] [at 24 VDC]	Power consumption [W]	Max. operating frequency [Hz] [at 24 VDC, 0.25 MPa]	Lead wire (grommet) length [mm]		
SX12F-AH ●	SX11F-AH ●	50	0.15	0.7	80	1200	500		
SX12F-BH ●	SX11F-BH ●			0.7	40	1000			
SX12F-CH ●	SX11F-CH ●			0.7	10	550			
SX12F-DH ●	SX11F-DH ●			0.6	4	350			
SX12F-EH ●	SX11F-EH ●	100		0.7	80	650		500	
SX12F-FH ●	SX11F-FH ●			0.7	40	550			
SX12F-GH ●	SX11F-GH ●			0.6	10	300			
SX12F-HH ●	SX11F-HH ●			0.4	4	200			
SX12F-JH ●	SX11F-JH ●	150		0.7	80	600			500
SX12F-KH ●	SX11F-KH ●			0.7	40	500			
SX12F-LH ●	SX11F-LH ●			0.4	10	250			
SX12F-MH ●	SX11F-MH ●			0.25	4	150			

1) Two mounting screws (M3 x 0.5) and a gasket are included (packaged together)

2) For other lead wire lengths replace H by G (300 mm) or J (1000 mm) in the part numbers above.

Compact proportional solenoid valve

Flow rate smoothly controlled by electric current adjustment

PVQ Series



- Compact format
- Service life of 25 million cycles (based on SMC test conditions)
- Low leakage
- Operation noise during opening/closing of the valve reduced
- Base mounted and body ported configurations
- Body material: Brass or stainless steel (only PVQ30)
- Seal material: FKM
- Other voltages available (DC).

These models are suitable for air and inert gas. Vacuum applications possible

Part number	Valve type	Flow rate [Nl/min]	Max. operating pressure differential [MPa]	Port size	Body type	Body/Seal material	Voltage	Electrical entry				
PVQ13-5L-03-M5-A ●	2 N.C.	0 to 5	0.7	M5	Base mounted	Brass/FKM	24 VDC	L Plug Connector				
PVQ13-5L-04-M5-A ●		0 to 6	0.45									
PVQ13-5L-06-M5-A ●			0.2									
PVQ13-5L-08-M5-A ●		0 to 5	0.1									
PVQ31-5G-16-01F ●		2 N.C.	0 to 100	0.7	G 1/8			Body ported	Brass/FKM	24 VDC	Grommet ¹⁾	
PVQ31-5G-23-01F				0.35								
PVQ31-5G-40-01F ●				0 to 75								0.12
PVQ33-5G-16-01F ●				0 to 100								0.7
PVQ33-5G-23-01F ●			0 to 75	0.35	Base mounted							
PVQ33-5G-40-01F ●				0.12								

1) Standard lead wire length: 300 mm.

Compact direct operated 2/3 port solenoid valve for chemicals liquids

LVM Series



- Direct operated diaphragm type valve
- Valve chamber volume up to 20 µl or less
- Compactness (width: 13 mm) and lightweight (30 g or less)
- Energy saving: Low power consumption (1-1.5 W)
- Body ported and base mounted valve options
- Wetted parts material: PEEK or PFA, EPDM, FKM, or Kalrez®.

Suitable for air, water, pure water, diluent, cleaning solvent

Part number	Valve type	Cv factor	Operating pressure range [MPa]	Orifice diameter [mm]	Body type	Body/diaphragm material	Voltage
LVM11-5B-Q	2/2 N.C.	0.04	0 to 0.25 MPa	1.5	Body ported (M5 x 0.8)	PEEK/FKM	24 VDC
LVM10R1-5B-Q		0.03	-75 kPa to 0.25 MPa	1.4	Body ported (Tubing type)		
LVM10R3-5B-Q					Base mounted		
LVM10R6-5B-Q ●							
LVM105R-5B-Q ●	3 Universal						

2/3 port media separated valve



LVMK Series



- Fluid separation structure
- 2 models: Base mounted and body ported
- Low particle generation
- Oil free and metal free
- Minimal dead space
- Flow rate adjustment not required for 3 port valve.

Suitable for air, water, deionized water, diluent, cleaning fluid

Part number	Valve type	Cv factor	Operating pressure range [MPa]	Orifice diameter [mm]	Body type	Piping direction	Body/diaphragm material	Voltage
LVMK23-5K	2/2 N.C.	0.065	-90 kPa to 0,2 MPa	2 mm	Base mounted	—	PPS/FKM	24 VDC
LVMK23-5J							PPS/EPDM	
LVMK205-5J							PPS/FKM	
LVMK205-5K	3 Universal	0.065	-90 kPa to 0,2 MPa	2 mm	Body ported	Bottom ported	PPS/EPDM	24 VDC
LVMK202-5J						Side ported	PPS/FKM	
LVMK202-5K							PPS/EPDM	
LVMK207-5K								
LVMK207-5J								

2 port valve air operated for air and air-hydro circuit control

VNA Series



- The balanced poppet permits normal and reverse flow
- Operation from 0 MPa is possible
- Body material: Aluminium
- Seal material: NBR, EPR or FKM.

These models are suitable for compressed air, air-hydro circuit control

(Ar, He, N₂, CO₂, turbine oil, Freon® 11, 113, 114 and hydraulic fluids up to 99 °C)

Part number	Valve type	Q [Nl/min]	Kv [m³/h]	Operating pressure range [MPa]	Port size	Body/seal material
EVNA101A-F6A	2 N.C.	687	0.62	0 to 1.0	G 1/8	Aluminium/NBR
EVNA101A-F8A ●		1276	1.10		G 1/4	
EVNA101A-F10A ●		1963	1.68		G 3/8	
EVNA201A-F10A		3730	3.36		G 1/2	
EVNA201A-F15A ●		4908	4.32		G 3/4	
EVNA301A-F20A ●		7852	6.45		G 1	
EVNA401A-F25A		11778	10.32		G 1 1/4	
EVNA501A-F32A		17667	15.36		G 1 1/2	
EVNA601A-F40A		27482	24.00		G 2	
EVNA701A-F50A ●		42204	36.96			

Our highlighted product for you

2 port valve air operated for general use

VNB Series



- A wide variety of suitable fluids, due to body and seal options
- Robust poppet construction
- N.C., N.O., C.O. options
- External pilot solenoid option
- Fluid temperature up to 60 °C (high temperature version available)
- Ambient temperature -5 to 60 °C.

Part number	Valve Type	Q [Nl/min]	Kv [m³/h]	Operating pressure range [MPa]	Port size	Body/seal material
EVNB104A-F8A ●	2 N.C.	982	0.94	Low vacuum to 1.0	G 1/4	Bronze/NBR
EVNB104A-F10A ●		1276	0.94		G 3/8	
EVNB204A-F15A ●		2945	2.23		G 1/2	
EVNB304A-F20A ●		4908	4.63		G 3/4	
EVNB404A-F25A ●		6871	6.01		G 1	
EVNB604A-F40A ●		10797	16.30		G 1 1/2	
EVNB704A-F50A ●		18649	24.88		G 2	
EVNB201A-F10A ●		28464	3.43		G 3/8	
EVNB201A-F15A ●		4908	4.12	G 1/2		
EVNB301A-F20A ●		7852	6.35	G 3/4		
EVNB401A-F25A ●		11778	10.30	G 1		
EVNB601A-F40A ●		27482	24.02	G 1 1/2		
EVNB701A-F50A ●		42204	36.89	G 2		

Coolant valve

SGC/SGCA Series



- Coolant valve suitable for cutting oils and coolants for machines
- 0.5, 1 and 1.6 MPa operating pressure ranges available
- Extended service life up to 5 million cycles due to enhanced construction
- With auto switches to verify if the valve is open or closed (SGC2, 3, 4 only)
- Body material: Cast iron
- Seal material: NBR or FKM
- Other voltages available (AC, DC)
- SGC5, 6 and 7 series available.

External pilot solenoid

Part number	Valve type	Kv [m ³ /h]	Operating pressure range [MPa]	Port size	Body/seal material	Voltage	Electrical entry	Pilot valve	
SGC221A-10G15Y-5D	2 N.C.	4.1	0 to 1	G 1/2	Cast iron / NBR	24 VDC	DIN Terminal	0.35 W type (V116)	
SGC321A-10G20Y-5D		6.1		G 3/4					
SGC421A-10G25Y-5D		9.4		G 1					
SGC521A-10G32Y-5D		17.1		G 1 1/4					
SGC621A-10G40Y-5D		25.7		G 1 1/2					
SGC721A-10G50Y-5D		41.1		G 2					
SGC521A-10G32H-5D		17.1		G 1 1/4					1.8 W type (VO307)
SGC621A-10G40H-5D		25.7		G 1 1/2					
SGC721A-10G50H-5D		41.1		G 2					

Air operated

Part number	Valve type	Kv [m ³ /h]	Operating pressure range [MPa]	Port size	Body/seal material
SGCA221A-10G10	2 N.C.	3	0 to 1	G 3/8	Cast iron / NBR
SGCA221A-10G15		4.1		G 1/2	
SGCA321A-10G20		6.1		G 3/4	
SGCA421A-10G25		9.4		G 1	
SGCA521A-10G32		17.1		G 1 1/4	
SGCA621A-10G40		25.7		G 1 1/2	
SGCA721A-10G50		41.1		G 2	

Applicable auto-switches

Part number	Electrical entry	Special function	Wiring (output)
D-M9PL	3 m wire with grommet	—	3-wire (PNP)
D-M9PSAPC	0,5 m with M8 connector	—	3-wire (PNP)
D-M9BAL	3 m wire with grommet	Water resistant (2-colour display)	2-wire

High pressure coolant valve

SGH/SGHA Series



SGH

SGHA

- For high speed grinding or continuous drilling operations
- Coolant valve for high pressure coolant that is ideal for lubrication, metal chips blowing and cooling
- Service life: 3 million cycles
- Power consumption: 0.35 W (24 VDC)
- N.C./N.O. options
- Water hammer: Reduced by 20 % (compared to existing model, 2-port VNH series)
- 3-port dual pressure type is standardised
- Seal material: NBR or FKM
- Enclosure: IP65.

External pilot solenoid

Part number	Valve type	Kv [m ³ /h]		Operating pressure range [MPa]	Port size	Body/seal material	Voltage	Electrical entry
		1 → 2	1 → 3					
SGH121A-70G10Y-5D	2/2 N.C.	1.54	—	0 to 7	G 3/8	Cast iron / NBR	24 VDC	DIN Terminal
SGH221A-70G15Y-5D		2.32	—		G 1/2			
SGH321A-70G20Y-5D		4.03	—		G 3/4			
SGH421A-70G25Y-5D		5.58	—		G 1			
SGH130A-30G10Y-5D	3/2	1.8	1.97	0 to 3	G 3/8			
SGH230A-30G15Y-5D		1.97	2.57		G 1/2			
SGH330A-30G20Y-5D		3.26	3.26		G 3/4			
SGH430A-30G25Y-5D		4.8	4.98		G 1			
SGH130A-70G10Y-5D		0.94	0.86	0 to 7	G 3/8			
SGH230A-70G15Y-5D		1.63	1.72		G 1/2			
SGH330A-70G20Y-5D		2.83	2.32		G 3/4			
SGH430A-70G25Y-5D		3.69	3		G 1			

Air operated

Part number	Valve type	Kv [m ³ /h]		Operating pressure range [MPa]	Port size	Body/seal material
		1 → 2	1 → 3			
SGHA121A-70G10	2/2 N.C.	1.54	—	0 to 7	G 3/8	Cast iron / NBR
SGHA221A-70G15		2.32	—		G 1/2	
SGHA321A-70G20		4.03	—		G 3/4	
SGHA421A-70G25		5.58	—		G 1	
SGHA130A-30G10	3/2	1.8	1.97	0 to 3	G 3/8	
SGHA230A-30G15		1.97	2.57		G 1/2	
SGHA330A-30G20		3.26	3.26		G 3/4	
SGHA430A-30G25		4.8	4.98		G 1	
SGHA130A-70G10		0.94	0.86	0 to 7	G 3/8	
SGHA230A-70G15		1.63	1.72		G 1/2	
SGHA330A-70G20		2.83	2.32		G 3/4	
SGHA430A-70G25		3.69	3		G 1	

2 port valve air operated for steam

VND Series



- PTFE seal for steam related applications
- With operation confirmation indicator
- Body material: Bronze or stainless steel
- Seal material: PTFE.

These models are suitable for steam up to 180 °C

Part number	Valve type	Q [Nl/min]	Kv [m ³ /h]	Operating pressure range [MPa]	Port size	Body/Seal material
EVND104D-F8A-L ●	2 N.C.	982	0.86	0 to 0.97	G 1/4	Bronze / PTFE
EVND200D-F15A-L ●		4930	4.32		G 1/2	
EVND300D-F20A-L ●		7361	6.45		G 3/4	
EVND400D-F25A-L ●		11778	10.32		G 1	
EVND500D-F32A-L ●		17530	15.36		G 1 1/4	
EVND600D-F40A-L ●		27391	24.00		G 1 1/2	
EVND700D-F50A-L ●		42182	36.96		G 2	

2 port air operated, high purity chemical valve integral fitting type

LVC Series (Clean wet series)



- Integral fitting construction: Hyper Fitting® series used
- Minimal internal dead volume
- Piston damper to minimise particle generation
- PTFE diaphragm to prevent micro-bubble generation
- New PFA body provides outstanding corrosion resistance
- Excellent back-pressure resistance and service life
- 3 port valve version available
- Wetted parts material: PFA (body), PTFE (diaphragm)
- Also available with flow rate adjustment, bypass and suck back function.

Compatible with high purity chemicals and deionised water (semiconductor industry)

Part number	Valve type	Q [Nl/min]	Kv [m ³ /h]	Operating pressure range [MPa]	Tubing O.D. [mm]	Body/diaphragm material
LVC20-S06 ●	2 N.C.	344	0.30	0 to 0.5	6	PFA/PTFE
LVC30-S10 ●		1669	1.46		10	
LVC40-S12		2454	2.15		12	
LVC50-S19		5889	5.16	0 to 0.4	19	
LVC60-S25		7852	6.88		25	

2 port air operated, high purity chemical valve threaded type

LVA Series (Clean wet series)



- Minimal internal dead volume
- Piston damper to minimise particle generation
- PTFE diaphragm to prevent micro-bubble generation
- New PFA body provides outstanding corrosion resistance
- Excellent back-pressure resistance and service life
- 3 port valve version available
- Wetted parts material: PFA, stainless steel or PPS (body), NBR, EPDM or PTFE (diaphragm)
- Also available with flow rate adjustment and valve position indicator.

Compatible with high purity chemicals and deionised water (semiconductor industry)

Part number	Valve type	Q [Nl/min]	Kv [m ³ /h]	Operating pressure range [MPa]	Port size	Body/diaphragm material
LVA10-01F-A	2 N.C.	69	0.06	0 to 0.5	G 1/8	Stainless Steel / PTFE
LVA20-02F-A ●		344	0.30		G 1/4	
LVA30-03F-A ●		1669	1.46		G 3/8	
LVA40-04F-A ●		3239	2.84		G 1/2	
LVA50-06F-A		5889	5.16	0 to 0.4	G 3/4	
LVA60-10F-A		7852	6.88		G 1	
LVA10-01F-B		69	0.06	0 to 0.5	G 1/8	PPS / PTFE
LVA20-02F-B ●		344	0.30		G 1/4	
LVA30-03F-B ●		1669	1.46		G 3/8	
LVA40-04F-B ●		3239	2.84		G 1/2	
LVA50-06F-B ●	5889	5.16	0 to 0.4		G 3/4	

2 port manually operated high purity chemical valve

LVH Series (Clean wet series)



- Locking and non-locking types available
- Integral fitting type/threaded type
- Wide range of valve variations available
- Wetted parts materials: PFA, stainless steel, or PPS (body); PTFE (diaphragm).

Compatible with high purity chemicals and deionised water (semiconductor industry)

Part number	Valve type	Q [Nl/min]	Kv [m ³ /h]	Operating pressure range [MPa]	Tubing O.D. [mm]	Body/diaphragm material
LVH20-S06	2 N.C.	344	0.30	0 to 0.5	6	PFA/PTFE
LVH30-S10		1669	1.46		10	
LVH40-S12		2454	2.15		12	

2 port air operated, high purity chemical valve compact type

LVD Series (Clean wet series)



- Compact valve: Dimension across inlet/outlet ports reduced by up to 25 %
- Minimal internal dead volume
- Integral fitting construction: Hyper Fitting® Series
- Piston damper to minimise particle generation
- Piping from 4 directions possible
- Wide range of valve variations available
- Wetted parts materials: PFA / PTFE
- Also available with flow rate adjustment, bypass and suck back function.

Compatible with high purity chemicals and deionised water (semiconductor industry)

Part number	Valve type	Q [Nl/min]	Kv [m³/h]	Operating pressure range [MPa]	Tubing O.D. [mm]	Body/diaphragm material
LVD10-S03	2 N.C.	88	0.08	0 to 0.5	3	PFA/PTFE
LVD10-S04 ●		88	0.08		4	
LVD20-S06		344	0.30		6	
LVD30-S10		1276	1.12	0 to 0.3	10	
LVD40-S12		1865	1.63		12	
LVD50-S19		4908	4.30		19	

2 port air operated high purity chemical valve

Non-metallic exterior

LVQ Series (Clean wet series)



- Non-metallic construction without metal screws
- New PFA body, PTFE diaphragm and PVDF actuator section
- Minimal internal dead volume
- Integral fitting construction: Hyper Fitting® Series
- Piston damper to minimise particle generation
- Piping from 8 directions possible
- Space saving: reduction in dimensions
- Wetted parts materials: PFA / PTFE
- Also available with flow rate adjustment, bypass, valve position indicator and suck back function.

Compatible with high purity chemicals and deionised water (semiconductor industry)

Part number	Valve type	Q [Nl/min]	Kv [m³/h]	Operating pressure range	Tubing O.D. [mm]	Body/diaphragm material
LVQ20-S06	2 N.C.	344	0.30	-98 kPa to 0.5 MPa	6	PFA/PTFE
LVQ30-S10		1276	1.12		10	
LVQ40-S12		1865	1.63		12	
LVQ50-S19		4908	4.30	-98 kPa to 0.4 MPa	19	
LVQ60-S25		7852	6.88		25	

Vacuum

Vacuum equipment

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Vacuum selection guide

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Vacuum ejectors

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Air suction filters

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Vacuum pads

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Vacuum valve

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Free mount cylinder

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Drain separator

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Regulator

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Vacuum system peripherals & related products

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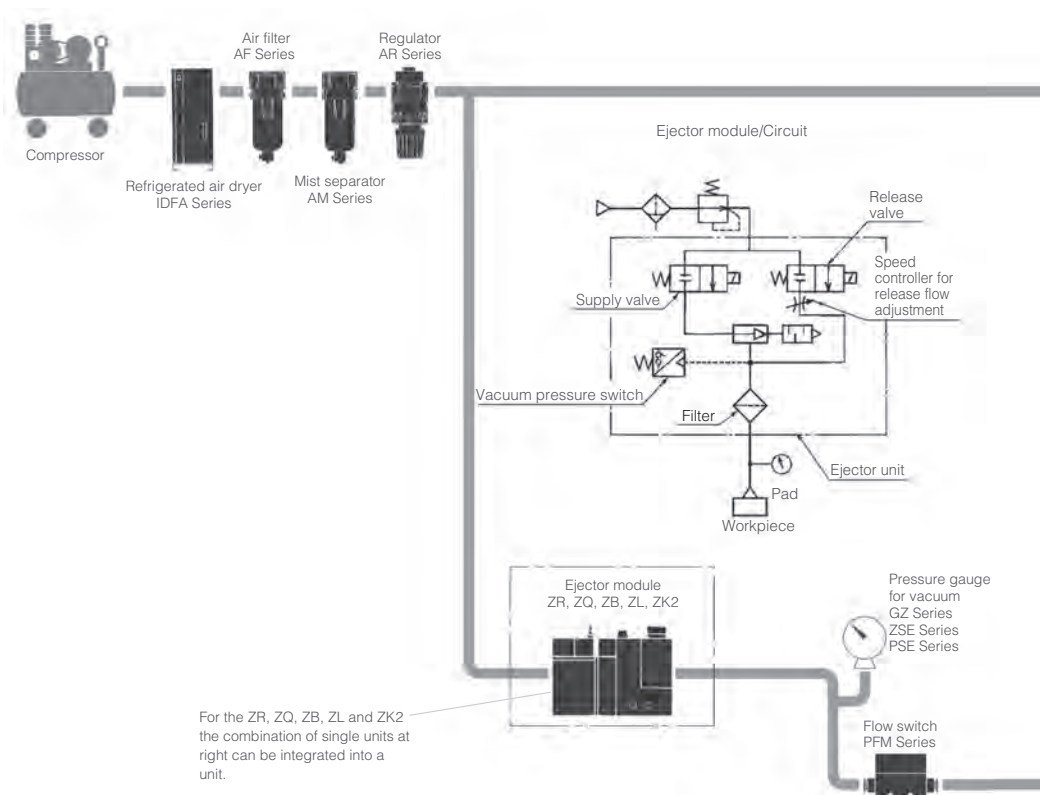
Vacuum equipment

Choose options

Absorption Transfer System by Ejector

Ejector Module System

Equipment (ejector supply valve, vacuum release valve, throttle valve, vacuum pressure switch, and filter) that is needed for the ejector absorption transfer system has been integrated to achieve efficient assembly work and a compact design.



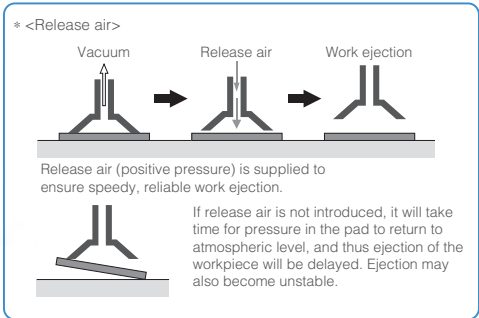
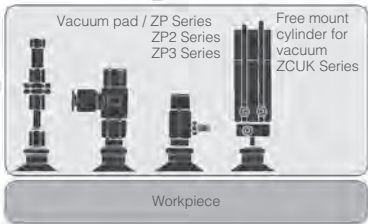
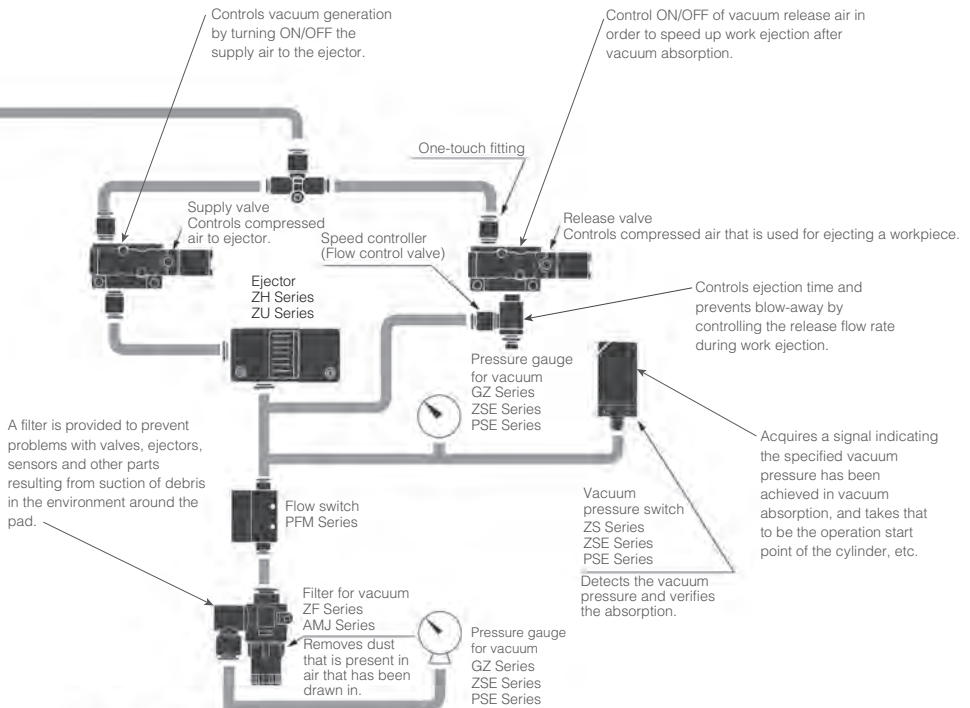
When applying absorption through a line nozzle, a flow switch may be more effective than a pressure switch.



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Single Unit System

Equipment such as an ejector is configured as an individual unit. Thus, it is possible to create a flexible system configuration in which the circuit composition and the mounting locations can be selected as desired.

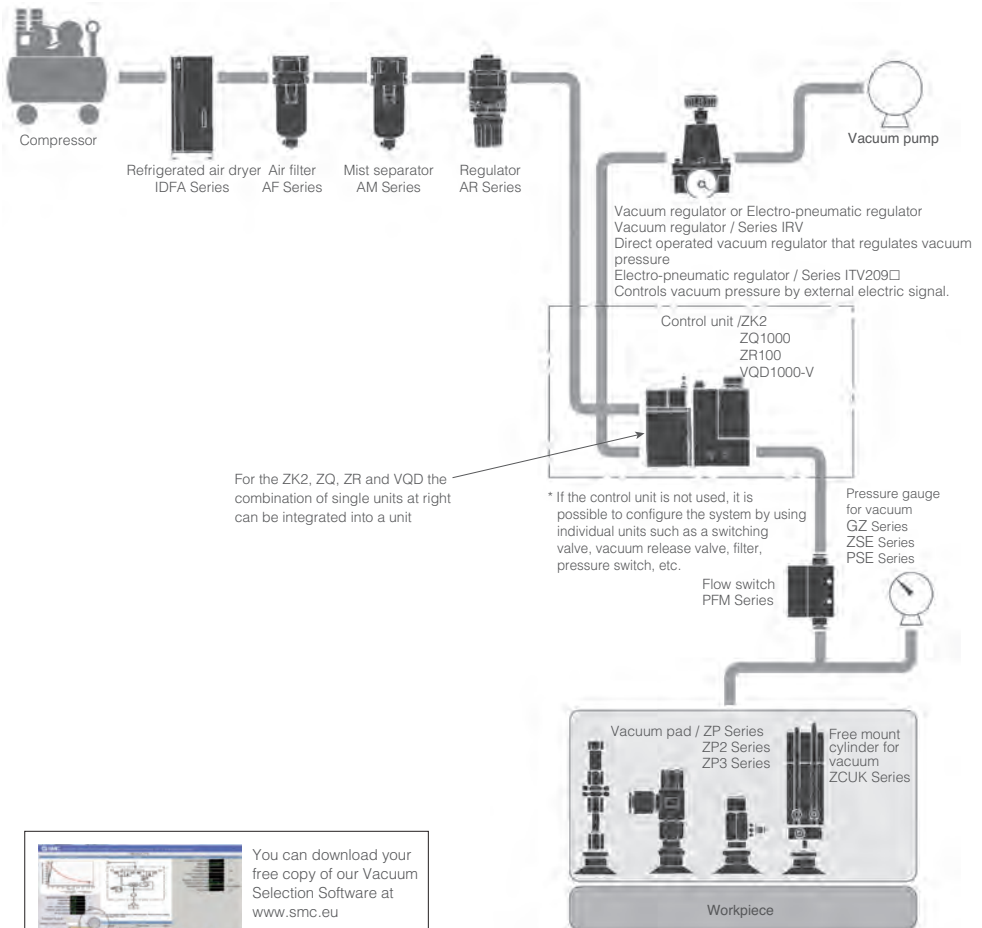


Vacuum equipment

Choose options

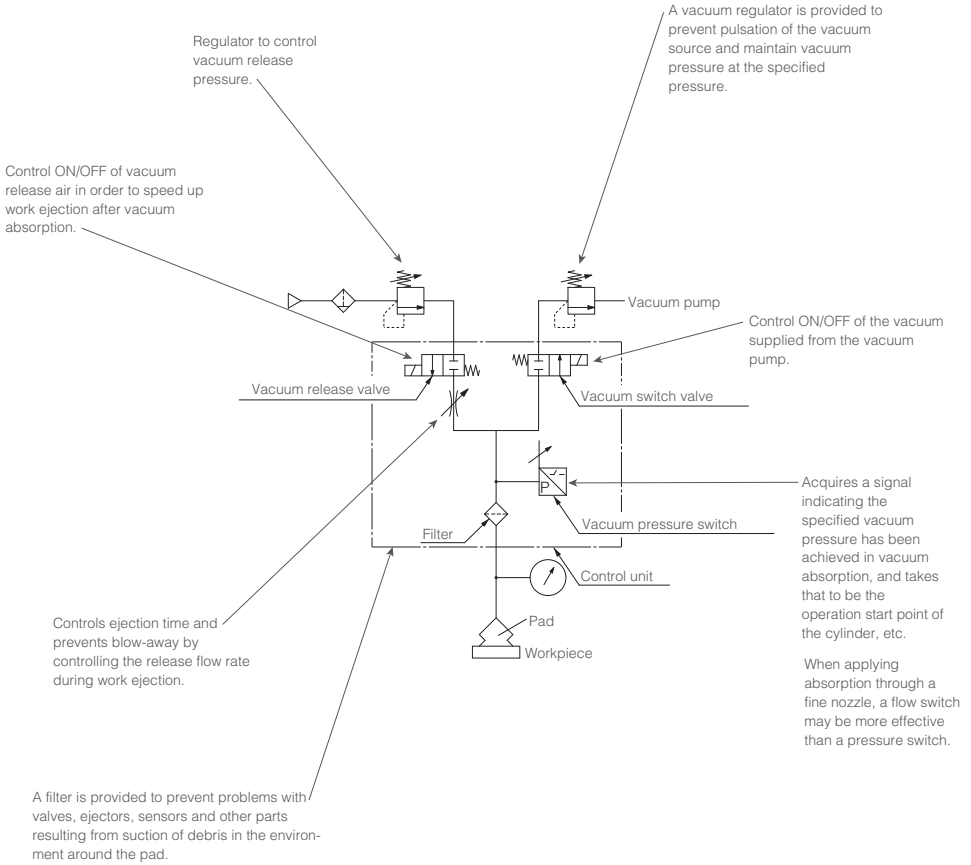
Absorption Transfer System for Vacuum Pump

Equipment (vacuum switching valve, vacuum release valve, throttle valve, vacuum pressure switch, and filter) that is needed for controlling the vacuum pressure has been integrated to achieve efficient assembly work and a compact design.



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Control unit/Circuit







You can download your free copy of our Vacuum Selection Software at www.smc.eu

Vacuum equipment

Select a product with a nozzle diameter corresponding to the pad diameter.

Ejector System

Main applicable work type (Reference)	Handlers/Mounters				Semiconductors/Electronic components			Automobiles/Machine tools/Packaging machinery/Food processing machinery				Machine tools/Sheet metal/Woodworking machinery/Packaging machinery				
Series	ZB Series				ZQ Series			ZK2 Series				ZL Series				
Applicable workpiece (Reference)	Ultra-small				Small			Small/Medium (Large leakage)				Large (Large leakage)				
Features	Small and lightweight, so it can be installed near the hand. Enables speedy absorption and release.				Modular type (Equipment can be selected and combined as necessary.)			Digital pressure switch with an energy saving function is mounted. Suction flow is increased by the two-stage ejector. Both the single unit and manifold are applicable to reduced-wiring. Valve with a self-holding function ensures power saving. Can also accommodate a pump system.				Suction flow rate increased by a 3-stage diffuser construction. Functions such as a digital vacuum switch or a vacuum pressure gauge can be selected.				
Appearance																
Single unit/Width [mm]	10				10			15				36	40			
Single unit/Weight [g]	46				109			81				450	700			
Nozzle diameter [mm]	0.3	0.4	0.5	0.6	0.5	0.7	1.0	0.7	1.0	1.2	1.5	1.2	1.2 x 2			
Max. suction flow rate [l/min (ANR)]	2	3.5	4.5	7	5	10	22	29	44	61	67	100	200			
Air consumption [l/min (ANR)]	3.5	6.5	10	18	14	23	46	24	40	58	90	63	126			
Tube diameter [mm] or port size	2, 3, 2, 4				M5, 3, 2, 4, 6			6, 8				12	Rc 3/4			
Guideline for applicable pad diameters [mm] ¹⁾	2	●	●	●	●	●	●	●	●	●	●	●	●			
	4	●	●	●	●	●	●	●	●	●	●	●	●			
	6	●	●	●	●	●	●	●	●	●	●	●	●			
	8	●	●	●	●	●	●	●	●	●	●	●	●			
	10		●	●	●	●	●	●	●	●	●	●	●			
	13			●	●	●	●	●	●	●	●	●	●			
	16				●	●	●	●	●	●	●	●	●			
	20					●	●	●	●	●	●	●	●			
	25						●	●	●	●	●	●	●			
	32							●	●	●	●	●	●			
	40								●	●	●	●	●			
	50									●	●	●	●			
	63										●	●	●			
	80											●	●			
	100												●			
125													●			
150														●		
200															●	
250																●
Valve compatible			●				●				●		●			
Filter compatible			●				●				●		●			
Silencer compatible			●				●				●		●			
Manifold compatible			●				●				●		●			
Pressure switch compatible			●				●				●		●			
Digital pressure switch compatible			●				●				●		●			
Pressure voltage output compatible			●				●				●		●			
Built-in air tank for release																


Vacuum equipment

C. choose the ejector

Select a product with a Cv value corresponding to the pad diameter.

- 1) Applicable pad diameter is the value under the fixed conditions below. Use values as a guideline.
 Applicable pad diameter calculation conditions: Less than 1 sec with (1) margin rate of 1/2.5
 (2) maximum suction flow rate applied for each product (3) 1 m with applicable piping size


Vacuum pump system

Main applicable work type (Reference)	Handlers/ Mounters	Semiconductors/ Electronic components		Liquid crystals/ Automobiles/ Machine tools	Handlers/Mounters
Series	ZB Series	ZQ Series	ZK2 Series	ZR Series	VQD1000-V Series
Applicable workpiece (Reference)	Ultra-Small	Small	Small	Medium/Large	Small
Shape	Modular type (Equipment can be selected and combined as necessary.)				Has built-in release air tank to prevent blow away of small, lightweight work-pieces during ejection
Appearance					
Single unit/Width [mm]	10	10	15	31	23
Single unit/Weight [g]	46	109	83		
Cv value	0.025	0.11	0.09	0.45	0.08
Max. suction flow rate [l/min (ANR)]	—	—	—	—	—
Air consumption [l/min (ANR)]	—	—	—	—	—
Tube diameter [mm] or port size	M5	M5	6.8	Rc 1/8	M5
Guideline for applicable pad diameters [mm] ¹⁾	2	●	●	●	●
	4	●	●	●	●
	6	●	●	●	●
	8	●	●	●	●
	10	●	●	●	●
	13	●	●	●	●
	16	●	●	●	●
	20	●	●	●	●
	25		●	●	●
	32		●	●	●
	40		●	●	●
	50				●
	63				●
	80				●
	100				●
	125				●
150				●	
200					
250					
Valve compatible	●	●	●	●	●
Filter compatible	●	●	●	●	
Silencer compatible	●	●	●	●	
Manifold compatible	●	●	●	●	●
Pressure switch compatible			●	●	
Digital pressure switch compatible	●	●	●	●	
Pressure voltage output compatible	●	●		●	
Built-in air tank for release					●

Vacuum selection guide

Selecting a vacuum system

1) Find the vacuum pad size.

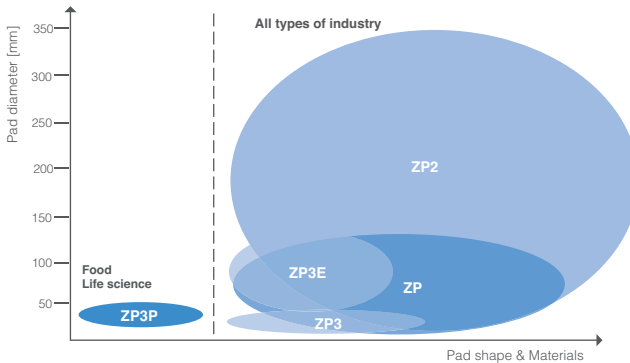
The total area of vacuum pads for a horizontal lift () can be easily calculated from this equation which includes a safety factor.

Where W = Lifting force [N]
 P = Vacuum pressure [kPa]
 S = Pad area [cm²]

$$\frac{40W}{P} = S$$

For most vacuum applications, assume a vacuum pressure of (-) 80 kPa.

Vacuum pad range



The area (Scm) is the pad area required. This can be made up by one pad or several smaller pads - depending on the object to be lifted. The shape of the pad (flat, bellows, ribbed etc) is chosen, then the stem style (plain, buffer, etc). For single pads, the area is shown below in the table.

Pad diameter (Ø 2 to Ø 50)

Pad dia [mm]	Ø 2	Ø 4	Ø 6	Ø 8	Ø 10	Ø 13	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50
Pad area [cm ²]	0.03	0.13	0.28	0.50	0.79	1.3	2.0	3.1	4.9	8.0	12.6	19.6






Pad diameter (Ø 63 to Ø 340)





Pad dia [mm]	Ø 63	Ø 80	Ø 100	Ø 125	Ø 150	Ø 250	Ø 300	Ø 340
Pad area [cm ²]	31.2	50.2	78.5	122.7	176.7	490.6	706.5	907.5

Oval pad (2 x 4 to 8 x 30)

Pad dia [mm]	2 x 4	3.5 x 7	4 x 10	5 x 10	6 x 10	4 x 20	5 x 20	6 x 20	8 x 20	4 x 30	5 x 30	6 x 30	8 x 30
Pad area [cm ²]	0.07	0.21	0.36	0.44	0.52	0.76	0.94	1.12	1.46	1.16	1.44	1.72	2.26

Pad type

Pad form	Application
Flat 	To be used when absorption surface of work is flat and not deformed.
Flat with ribs 	To be used when work is likely to deform or in the case of releasing work certainly.
Deep 	To be used when work is curved shape.
Bellows 	To be used when there is not enough space to install buffer or absorption surface of work is slanted.
Oval 	To be used when work has limited absorption surface or long in length and work is required to locate precisely.

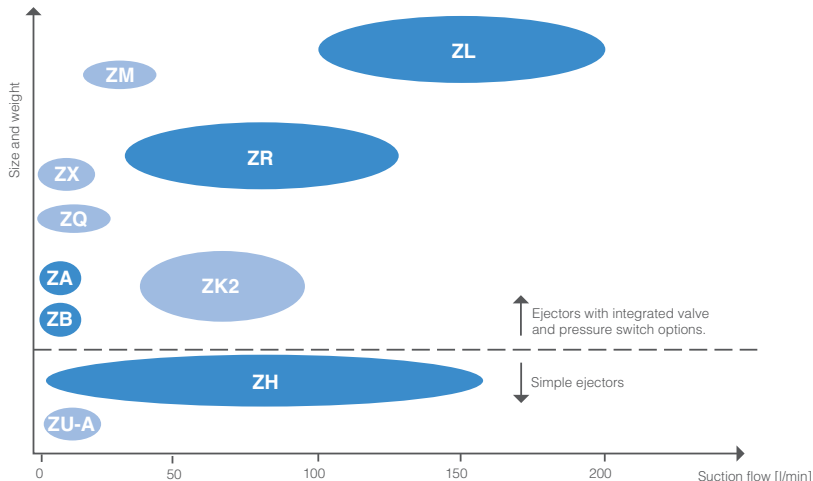
Pad form	Application
Ball joint type 	To be used when absorption surface of work is not horizontal.
Buffer 	To be used when work height is not even or cushioning toward work is required.
Large size 	To be used when work is heavy weight.
Conductive pad 	As one of the countermeasures against the static electricity, rubber material with reduced resistance is used. For antistatic measures.

Vacuum selection guide

2) Choose the ejector

Two things influence the choice, is a simple ejector suitable (ZU or ZH type), which will be smaller and lighter or are integrated control valves and vacuum switches required? The other factor is suction flow, a higher suction flow will evacuate a system faster, but the ejector will be larger and will consume more air.

Vacuum ejector choices



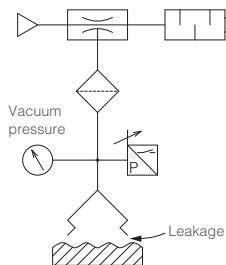
SMC vacuum ejectors produce a vacuum around -80 kPa, most ranges include a variant with lower vacuum levels (eg: -50 kPa).

3) Specify the rest of the system

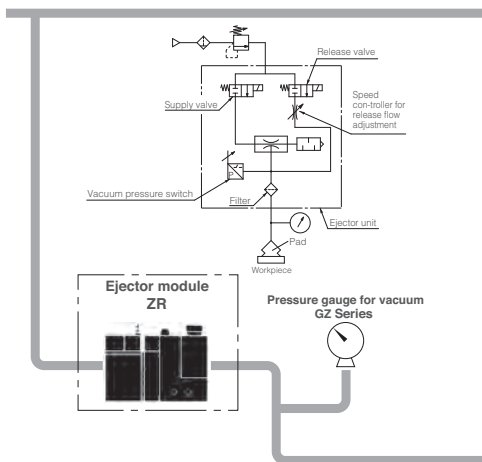
When pad(s) and ejector have been selected, the rest of the system can be specified. If dirt and liquid may be picked up by the pad, a ZF filter or AMJ separator should be put into the system to protect the ejector. The valves to control compressed air and vacuum, fittings and tubing can also be specified.

Typical circuit

Simple ejector circuit (eg: ZH)



Integrated ejector circuit (eg: ZR)



Vacuum ejectors



Vacuum unit

ZK2 Series p.509



Space saving vacuum ejector & vacuum pump system

ZQ Series p.510



Compact vacuum unit

ZB Series p.511



Ejector system, stackable vacuum

ZR Series p.512



Multistage ejector

ZL Series p.513



Body ported type vacuum ejector

ZH Series p.514



In-line type vacuum ejector

ZU□A Series p.515



Vacuum pads



Vacuum pads

ZP□ Series p.518



Flat type vacuum pad

ZP3P Series p.533



Vacuum pad with ejector

ZHP Series p.534



Non-contact gripper

XT661 Series p.538



Air suction filters



Air suction filter

ZFA Series p.515



Air suction filter with one-touch fittings

ZFB Series p.516



In-line air filter

ZFC Series p.516



Vacuum filter

AFJ Series p.517



Vacuum valve



Vacuum saving valve

ZP2V Series

p.536



Free mount cylinder



Compact cylinder for vacuum applications

ZCUK Series

p.537

Drain separator



Water separator for vacuum

AMJ Series

p.537

Regulator



Vacuum regulator

IRV10/20 Series

p.538

Vacuum system peripherals & related products



Air amplifier
ZH-X185 Series p.539



2-colour display digital flow switch
PFM Series p.540



Electric vacuum switch
ZSE1 Series p.541



Adjustable vacuum pressure switch with display
ZSE40A Series p.541



Adjustable vacuum and positive pressure switch with display
ZSE30A Series p.542



Vacuum and pressure sensor with controller unit
PSE530/200 Series p.542



Micro vacuum and pressure sensor with controller unit
PSE540/300 Series p.543



Pressure or vacuum switch
PS1000/1100/1200 Series p.544



Pressure gauge for vacuum
GZ46 Series p.544



Electronic vacuum regulator
ITV0090/2090 Series p.545



Check valve
AK Series p.546



Vacuum release unit
VQD1000-V Series p.546

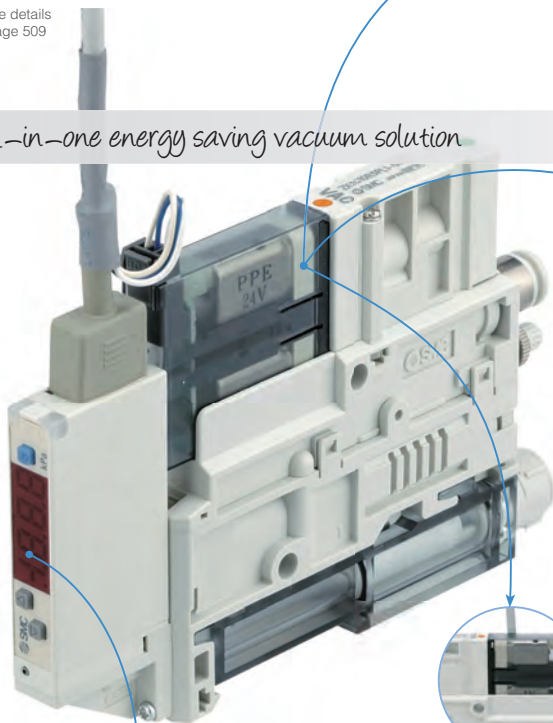
Our highlighted product for you

Vacuum unit ZK2 Series



For more details
go to page 509

The all-in-one energy saving vacuum solution



Power saving pilot valve

Supply and release valve are low power consumption type (**0.35 W**)



Supply valve: Self-holding type (Dual 2 port valve)

Even if there is a voltage drop, the vacuum is maintained as long as there is supply air.

- 1- The vacuum is maintained during power failure as long as air is supplied. This can prevent the workpiece from being dropped.
- 2- The unit turns on by instantaneous energizing (minimum 20 ms). Continuous energizing is not necessary. This can reduce the power consumption.

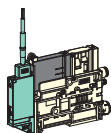


Linked type supply and release valves operation

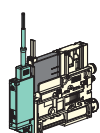
The self-holding type supply valve will be turned off by turning on the release valve. It is not necessary to send a signal to stop the vacuum, which simplifies the wiring and programming. (Conventional double solenoid and latching type require a signal to stop the vacuum).



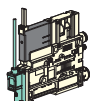
Variations



With digital pressure switch for vacuum with energy saving function



Digital pressure switch for vacuum



Pressure sensor

► More efficient ejector

Suction flow **50 % increased**
Air consumption **30 % reduced**
(Compared to other SMC single stage ejectors)

► Compact/lightweight

Volume 88 cm³ **28 % reduced**
Weight 81 g **59 % reduced**

► Energy-saving ejector

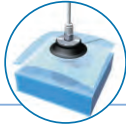
Air consumption **90 % reduced**
Digital pressure switch for vacuum with energy saving function cuts supply air when the pressure reaches the desired vacuum.

Vacuum pads

ZP Series

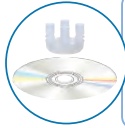


For more details
go to page 518



Flat/thin flat

- Flat: for adsorption of general workpieces; and for adsorption of workpieces with flat and not deformed surface.
- Thin flat: for a workpiece which is likely to deform. Wrinkling or deformation during adsorption is reduced.
- For sheets of vinyl



Vacuum pad for transferring disks

- For adsorbing circular components like CD and DVD
- Bellows mechanism is realised in the pad to dampen the impact to the work.



Vacuum saving valve

- Can restrict the reduction of vacuum pressure even when there is no workpiece
- No need for switching operation when changing workpieces
- Multiple vacuum pads can be operated by one ejector
- When the workpieces have different shapes, the control circuit can be simplified
- For energy saving applications!



Bellows

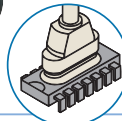
- For use where there is no space for the buffer (spring type).
- For adsorption of workpieces with inclined surface.

Broad range of designs, shapes, sizes and materials



Flat with rib

- When surface is likely to deform.
- For releasing a workpiece certainly.



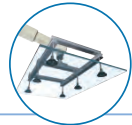
Oval pad

- For workpieces with limitation on the adsorption surface.
- For rectangular workpieces!



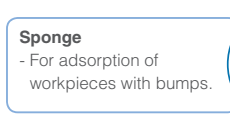
Deep

- To be used when work is curved shape.



Mark-free

- For use where adsorption marks must not be left on workpieces.

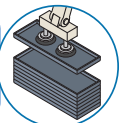


Sponge

- For adsorption of workpieces with bumps.

Heavy duty

- For heavy or large workpieces



Compact/short/nozzle pad

- For adsorption of small components such as IC chips.
- Compact, space-saving.



Long stroke buffer

- To be used when work height is not even or cushioning toward work is required.

Mark-free cyclone pad XT661

- Workpiece with uneven and/or viscous surface.
- Workpiece sensitive to scars or suction traces.
- Workpiece with holes.
- Thin / porous workpiece

Ball joint

- To be used when adsorption surface of work is not horizontal.

Vacuum pad for fixing panel

- For adsorbing and fixing the stage of panels or glass circuit board etc.
- Bellows mechanism allows complete contact with curved work surface.

Our highlighted product for you

Vacuum pad ZP3P Series



For more details
go to page 533

Sealing design: Thin and soft skirt

Better adsorbing performance for film-wrapped workpieces:

- Better sealing, reduced leakage (stable adsorption)
- Better grip when adsorbing a workpiece.

Stopper in the centre of the pad

Reduction of wrinkles made on thin workpieces (film, vinyl, etc.).



Introduce adaptability in your handling

Blue coloured pad

Easy to distinguish the vacuum pad by colour during contamination inspection.

► Silicone rubber compliant with the FDA 21CFR§177.2600 elution test

Rubber material has no effect on the human body.

► Mounting flexibility and versatility to adapt to any application

Configurable with an adapter (7 types) or buffer (non-rotating and rotating, 10 or 20 mm stroke).

Vacuum pad with ejector

ZHP Series



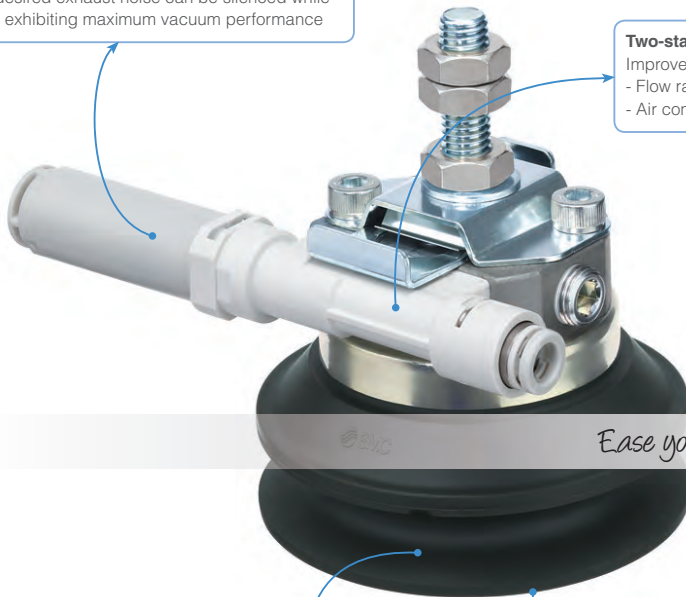
For more details
go to page 534

Ejector silencer

By dispersing the exhaust in all directions, undesired exhaust noise can be silenced while still exhibiting maximum vacuum performance

Two-stage ejector

Improved vacuum generating efficiency:
- Flow rate increased by 50 %
- Air consumption reduced by 30 %



Ease your vacuum generation

Vacuum ejector and pad are integrated in a single compact unit

- Pad diameters: \varnothing 63, \varnothing 80
- Pad forms: bellows type with groove; flat type with groove
- Pad material: NBR, silicone rubber, urethane rubber, FKM
- Nozzle size [mm]: \varnothing 0.7, \varnothing 1.0, \varnothing 1.2, \varnothing 1.5

Strainer that prevents foreign matter from entering



► Lock-plate structure enables easy and one-touch replacement of the pad

► 3 port locations available in the adapted pad, allowing for variety of connections, such as vacuum release, vacuum pressure sensor and piping

Our highlighted product for you

Air amplifier ZH-X185 Series

For more details
go to page 539

Complete combination of blowing and suction without any maintenance

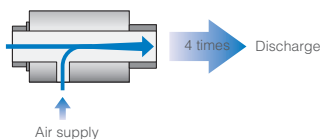


A simple, light, cost effective tool that takes energy from a small volume of compressed air to produce high velocity, high volume, low pressure output airflow

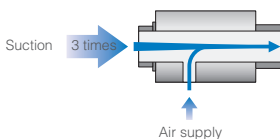
► The Air Amplifier uses the Coanda effect, the phenomena in which a jet flow attaches itself to a nearby surface and remains attached when the surfaces curves away from the initial jet direction. Using a small amount of compressed air as their power source, Air Amplifiers pull in large volumes of surrounding air to produce high volume, high velocity outlet flow.

► For one unit of air you feed into the device, it creates **OUTPUT FLOW 4 TIMES GREATER**

Blowing is possible at a flow rate quadruple that of the supplied air.



Suctioning is possible at a flow rate triple the supplied air.



Our highlighted product for you

Vacuum unit ZK2 Series



- Energy saving switch turns off supply valve when vacuum level is reached reducing air consumption. Vacuum level is kept by check valve. Supply valve is turned on again when the vacuum lowers to the set pressure
- Two-stage ejector reduces air consumption and increases suction flow rate
- Supply valve with self-holding function
- Interlink between supply valve and release valve
- In case of combination of supply valve and release valve: R
- High-noise reduction silencer:
 - Noise: As low as 46 dB
 - Suction flow rate: Improved by up to approx. 20 %

Ejector module - Single units (N.C. supply valve, N.C. release valve, 24 VDC)

Part number	Exhaust type	Nozzle Ø [mm]	Vacuum (V) port size	Switch output	Switch pressure range [kPa]	Max. suction flow [l/min (ANR)]	Max. vacuum pressure
ZK2A07K5CL-08 ●	Silencer exhaust	0.7	Ø 8 One-touch fitting	2 PNP	0 to -101	29	-91 kPa
ZK2A10K5CL-08 ●		1.0				44	
ZK2A12K5CL-08 ●		1.2				61	
ZK2A15K5CL-08		1.5				67	
ZK2G07K5CL-08	High-noise reduction silencer exhaust	0.7				32	
ZK2G10K5CL-08		1.0				48	
ZK2G12K5CL-08		1.2				70	
ZK2G15K5CL-08		1.5				80	

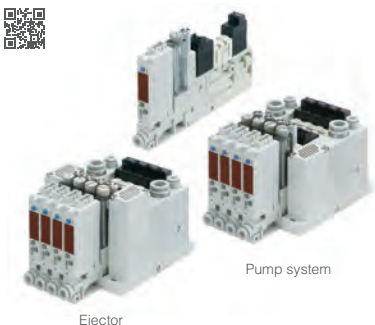
Ejector module - Single units (N.C. supply valve, N.C. release valve, 24 VDC) with energy saving vacuum switch

Part number	Exhaust type	Nozzle Ø [mm]	Vacuum (V) port size	Switch output	Switch pressure range [kPa]	Max. suction flow [l/min (ANR)]	Max. vacuum pressure
ZK2A07K5RW-08	Silencer exhaust	0.7	Ø 8 One-touch fitting	1 PNP	-100 to 100	29	-91 kPa
ZK2A10K5RW-08		1.0				44	
ZK2A12K5RW-08 ●		1.2				61	
ZK2A15K5RW-08 ●		1.5				67	
ZK2G07K5RW-08	High-noise reduction silencer exhaust	0.7				32	
ZK2G10K5RW-08		1.0				48	
ZK2G12K5RW-08		1.2				70	
ZK2G15K5RW-08		1.5				80	

1) Other sizes, options, manifold and vacuum pump system versions available upon request

Space saving vacuum ejector & vacuum pump system

ZQ Series



Ejector

Pump system

- Single unit with vacuum pressure switch and suction filter
- Width 10 mm
- Easy-to-use vacuum pressure switch:
 - Digital vacuum pressure switch LED with display
 - Push button type provides easy operation
 - Copy function
- 2 NPN/PNP outputs
- With one-touch fitting.

Ejector system

Part number	Nozzle Ø [mm]	Suction cap. [l/min]	Vacuum pressure switch	Switch output	Voltage
ZQ1051U-K15LO-F-Q	0.5	14	—	—	24 VDC
ZQ1051U-K15LO-EB-Q			0 ~ -101 kPa	2 PNP	
ZQ1051U-K15LO-EE-Q				1 PNP + (1-5 V)	
ZQ1051U-K15LO-FB-Q			100 ~ -100 kPa	2 PNP	
ZQ1051U-K15LO-FE-Q				1 PNP + (1-5 V)	
ZQ1071U-K15LO-F-Q	0.7	23	—	—	
ZQ1071U-K15LO-EB-Q			0 ~ -101 kPa	2 PNP	
ZQ1071U-K15LO-EE-Q				1 PNP + (1-5 V)	
ZQ1071U-K15LO-FB-Q			100 ~ -100 kPa	2 PNP	
ZQ1071U-K15LO-FE-Q				1 PNP + (1-5 V)	
ZQ1101U-K15LO-F-Q	1.0	46	—	—	
ZQ1101U-K15LO-EB-Q			0 ~ -101 kPa	2 PNP	
ZQ1101U-K15LO-EE-Q				1 PNP + (1-5 V)	
ZQ1101U-K15LO-FB-Q			100 ~ -100 kPa	2 PNP	
ZQ1101U-K15LO-FE-Q				1 PNP + (1-5 V)	

Vacuum pump system

Part number	Vacuum pressure	Switch output	Voltage
ZQ1000U-K15LO-F-Q	—	—	24 VDC
ZQ1000U-K15LO-EB-Q	0 ~ -101 kPa	2 PNP	
ZQ1000U-K15LO-EE-Q		1 PNP + (1-5 V)	
ZQ1000U-K15LO-FB-Q	100 ~ 100 kPa	2 PNP	
ZQ1000U-K15LO-FE-Q		1 PNP + (1-5 V)	

Common parts

Solenoid valve	VQ110-5LO-Q ●	
Valve connector assembly	AXT661-14A-10 ●	
Vacuum pressure switch	0 ~ -101 kPa, 2 PNP	ZQ1-ZSEB-0-A ●
	0 ~ -101 kPa, 1 PNP + (1-5 V)	ZQ1-ZSEE-0-A
	-100 ~ 100 kPa, 2 PNP	ZQ1-ZSFB-0-A
	-100 ~ 100 kPa, 1 PNP + (1-5 V)	ZQ1-ZSFE-0-A

Compact vacuum unit

ZB Series



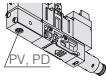
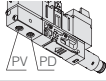
Manifold unit



Single unit

- Compact and lightweight: can be mounted on moving parts
- High speed absorption: direct operated supply valve and reduction of internal volume
- Energy saving design: lower supply pressure
- Digital vacuum switch with copy function available as option.

Single units (N.C. supply valve, N.C. release valve, 24 VDC)

Part number	Nozzle Ø [mm]	Port specification	Port		Suction cap. [l/min]	Max. Vacuum pressure
			Air (PV, PD)	Vacuum [V]		
ZB0411-K15L-C4 ●	0.4	 PV, PD	M5 thread depth 4	Ø 4 mm	3.5	-90 kPa
ZB0611-K15L-C4 ●	0.6				7	
ZB0421-K15L-C4 ●	0.4	 PV, PD			3.5	
ZB0621-K15L-C4 ●	0.6				7	

1) Models with digital vacuum switch available upon request.

2) Manifold versions available upon request.

Ejector system, stackable vacuum

ZR Series



- Vacuum unit specially for heavy work pieces of up to 5 kg
- Allows both manifold mounting and mounting as an individual device
- Modular design
- Compact and light (plastic body).

Ejector system

Ejector unit, standard

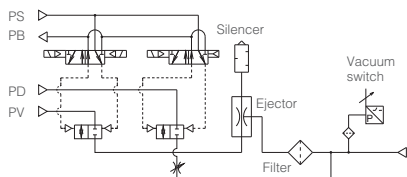
Part number	Nozzle Ø [mm]	Switch output	Suction cap. [l/min]	Max. Vacuum pressure	Voltage/Solenoid valve	
ZR115S1-K15LOZ-E55CN-Q	1.5	PNP	54	-84 kPa	24 VDC	Double
ZR115S1-K25LOZ-E55CN-Q						Single
ZR120S1-K15LOZ-E55CN-Q	2.0	PNP	84	-84 kPa		Double
ZR120S1-K25LOZ-E55CN-Q						Single

Ejector unit, superior suction capacity

Part number	Nozzle Ø [mm]	Switch output	Suction cap. [l/min]	Max. Vacuum pressure	Voltage/Solenoid valve	
ZR120L1-K15LOZ-E55CN-Q	2.0	PNP	105	-53 kPa	24 VDC	Double
ZR120L1-K25LOZ-E55CN-Q						Single

Valve connector assembly

Cable L= 0.6 m	Cable L= 1 m	Cable L= 2 m	Cable L= 3 m
SY100-30-4A-6	SY100-30-4A-10	SY100-30-4A-20	SY100-30-4A-30



Connection cable for vacuum switch

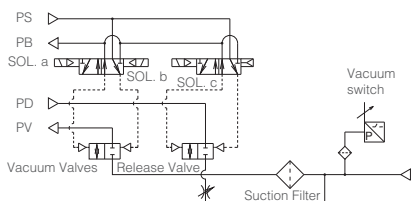
3 m
ZS-10-5A-30

Vacuum pump system, valve unit with vacuum switch

Part number	Switch output	Voltage/Solenoid valve	
ZR100-K15LOZ-E55CN-Q	PNP	24 VDC	
ZR100-K25LOZ-E55CN-Q		Single	

Valve connector assembly

Cable L= 0.6 m	Cable L= 1 m	Cable L= 2 m	Cable L= 3 m
SY100-30-4A-6	SY100-30-4A-10	SY100-30-4A-20	SY100-30-4A-30



Connection cable for vacuum switch

3 m
ZS-10-5A-30

Multistage ejector

ZL Series



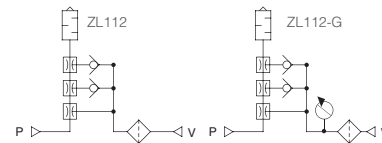
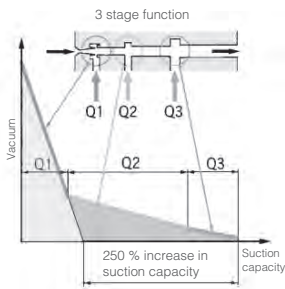
- Compact design
- 3 different types:
 - Ejector + vacuum switch
 - Ejector + vacuum gauge
 - Only ejector
- Vacuum built by 3 stage ejector therefore less air consumption, by the nozzle
- Nozzle diameter 1.2 mm
- Suction capacity 100 l/min or 200 l/min with ZL212
- Different ways of fixing to body.

Part number	Nozzle Ø [mm]	Type	Switch output	Suction cap. [l/min]	Max. Vacuum Pressure
ZL112-Q ●	1.2	Standard	—	100	-84 kPa
ZL112-G-Q ●		Standard with vacuum pressure gauge	—		
ZL112-DPL-Q ●		Standard with vacuum switch	PNP		
ZL112-DNL-Q ●			NPN		
ZL112-DEL-Q			PNP + (1-5V)		
ZL112-K15LOZ-DBL-Q ●		Standard with vacuum switch and control valves	2 PNP		
ZL112-K15LOZ-DAL-Q			2 NPN		
ZL112-K15LOZ-DEL-Q	PNP + (1-5V)				
ZL212-Q ●	Standard		—	200	-84 kPa
ZL212-G-Q ●	Standard with vacuum pressure gauge	—			
ZL212-DPL-Q ●	Standard with vacuum switch	PNP			
ZL212-DNL-Q ●		NPN			
ZL212-DEL-Q		PNP + (1-5V)			

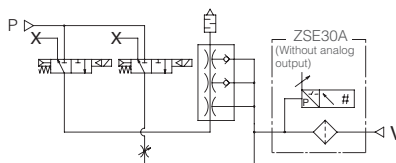
1) Bracket is included.

Valve connector assembly

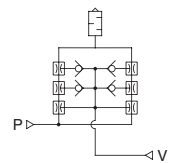
Cable	Cable L= 0,6 m	Cable L= 1 m	Cable L= 2 m	Cable L= 3 m
Without casing	SY100-30-4A-6 ●	SY100-30-4A-10 ●	SY100-30-4A-20 ●	SY100-30-4A-30 ●



ZL112-K15LOZ-E



ZL212



Body ported type vacuum ejector

ZH Series



- Compact and lightweight
- Nozzle size [mm]: Ø 0.5, Ø 0.7, Ø 1, Ø 1.3, Ø 1.5, Ø 1.8, Ø 2
- Many piping variations. One-touch and screw-in combinations to choose
- Direct or standard bracket mounting options
- L-bracket or DIN rail mounting options
- Easy identification of product type, different release button colour
- Silencer available.

Part number	Nozzle size Ø [mm]	Port			Maximum suction flow rate [l/min (ANR)]	Vacuum pressure reached [kPa]	Air consumption [l/min(ANR)]	Accessories				
		SUP.	VAC.	EXH.								
ZH05DSA-06-06-06 ●	0.5	Ø 6	Ø 6	Ø 6	6	-90	13	Standard bracket				
ZH05DLA-06-06-06					13	-48						
ZH07DSA-06-06-06 ●	12				-90							
ZH07DLA-06-06-06	28			-48								
ZH10DSA-06-06-08 ●	1			Ø 8	Ø 8	26	-90		52			
ZH10DLA-06-06-08 ●						52	-48					
ZH13DSA-08-10-10 ●	1.3	Ø 8	Ø 10	Ø 10	40	-90	84					
ZH13DLA-08-10-10 ●					78	-48						
ZH15DSA-08-10-10	1.5				Ø 10	Ø 10	58		-90	113		
ZH15DLA-08-10-10							78		-66			
ZH18DSA-10-12-12	1.8				Ø 10	Ø 12	Ø 12		76	-90	162	
ZH18DLA-10-12-12									128	-66		
ZH20DSA-10-12-12	2	Ø 12	Ø 12	90					-90	196		
ZH20DLA-10-12-12				155					-66			
ZH05DSA-01-01-01	0.5	Rc 1/8	Rc 1/8	Rc 1/8					6	-90	13	
ZH05DLA-01-01-01									13	-48		
ZH07DSA-01-01-01	0.7				Rc 1/8	Rc 1/8	12		-90	27		
ZH07DLA-01-01-01							28		-48			
ZH10DSA-01-01-01 ●							1	Rc 1/8	Rc 1/8		26	-90
ZH10DLA-01-01-01											52	-48
ZH13DSA-01-02-02 ●	1.3				Rc 1/4	Rc 1/4	40	-90	84			
ZH13DLA-01-02-02							78	-48				
ZH15DSA-02-03-03 ●	1.5				Rc 1/4	Rc 3/8	Rc 3/8	58	-90	113		
ZH15DLA-02-03-03								78	-66			
ZH18DSA-03-03-03 ●	1.8				Rc 3/8	Rc 3/8	Rc 3/8	76	-90	162		
ZH18DLA-03-03-03 ●								128	-66			
ZH20DSA-03-04-04 ●	2	Rc 3/8	Rc 1/2	Rc 1/2	90	-90	196					
ZH20DLA-03-04-04 ●					155	-66						

Accessories

Part number	Model	Description	Applicable thread size
AS-10L ●	ZH05/07/10D□A	L-Bracket	M3
AS-25L ●	ZH13/15D□A		M4
AS-30L ●	ZH18/20D□A		
AS-10D ●	ZH05/07/10D□A	DIN rail mounting bracket	M3
AS-25D	ZH13/15D□A		M4
AS-30D	ZH18/20D□A		

Air suction filters

In-line type vacuum ejector

ZU□A Series



- Compact and lightweight:
 - O.D.: \varnothing 10.4
 - Weight: 3.9 g
 - Overall length: 52 mm
- Vacuum pressure reached:
 - Type L: -48 kPa
 - Type S: -90 kPa
- Piping variations:
 - Screw-in connections: Rc 1/8
 - Oval type one-touch fitting: \varnothing 6 mm

Part number	Nozzle size \varnothing [mm]	Vacuum pressure reached [kPa]	Maximum suction flow rate [l/min(ANR)]	Air consumption [l/min(ANR)]	Port size	Weight [g]	Circuit symbol
ZU05SA ●	0.5	-90	7	14	\varnothing 6 One-touch fitting	3.9	
ZU05SA01					Rc 1/8 female thread	18.6	
ZU05LA ●		-48	13		\varnothing 6 One-touch fitting	3.9	
ZU05LA01					Rc 1/8 female thread	18.6	
ZU07SA ●	0.7	-90	11	28	\varnothing 6 One-touch fitting	4.3	
ZU07SA01					Rc 1/8 female thread	19.1	
ZU07LA ●		-48	16		\varnothing 6 One-touch fitting	4.3	
ZU07LA01					Rc 1/8 female thread	19.1	

Air suction filter

ZFA Series



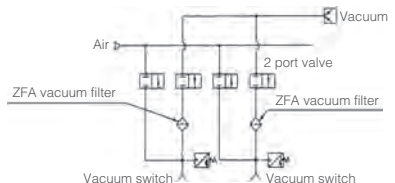
- Filters intake air before the vacuum ejector
- Large filter element increases service life
- Light, compact design
- Stackable
- Filter element replaced quickly and easily.

Part number	Port	Flow [l/min]	Vacuum release pressure	Filtration accuracy	Circuit symbol
ZFA100-F01 ●	G 1/8	50	Max. 0.5 MPa (Unable to hold when pressurized)	30 μ m (Filtration efficiency 95 %)	
ZFA200-F02 ●	G 1/4	200			

Accessories

Part number	ZFA100	ZFA200
Replacement filter	EJ001H-030N ●	EJ101H-030N ●
Mounting bracket	BP-1H-1A ●	BP-1H-2A ●

Application with vacuum pump



Air suction filter with one-touch fittings

ZFB Series

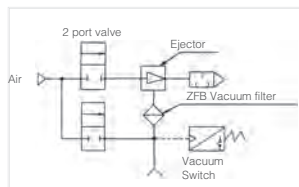


- 360° rotation
- Prevents soiling in the vacuum ejector
- Integrated one-touch fittings for simple mounting
- Filter element quickly replaced
- Transparent polycarbonate permits visual checking of soiling level.

Part number	Port Ø [mm]	Flow [l/min]	Vacuum release pressure	Filtration accuracy	Circuit symbol
ZFB100-04 ●	4	10	Max. 0.5 MPa (Unable to hold when pressurized)	30 µm (Filtration efficiency 95 %)	
ZFB100-06 ●	6	20			
ZFB200-06 ●	6	30			
ZFB200-08 ●	8	50			
ZFB300-08 ●	8	75			
ZFB300-10 ●	10	75			

Replacement filter element

Model	ZFB100	ZFB200	ZFB300
Part number	I-34S-A ●	I-35S-A ●	I-36S-A ●



In-line air filter

ZFC Series



- Compact and lightweight design in plastic
- Bayonet socket simplifies filter element replacement
- Simple mounting via one-touch fittings
- Transparent filter case.

Part number	Port Ø [mm]	Flow [l/min]		Filtration rating [µm]	Max. operating pressure	Circuit symbol
		Vacuum pressure	Positive pressure			
ZFC11	2	2	15	5	-100 kPa to 1.0 MPa (at 20 °C)	
ZFC12	3.2	5	45			
ZFC32 ●		7	50			
ZFC33 ●	4	10	80			
ZFC53 ●		100				
ZFC54 ●	6	20	200			
ZFC74 ●		30	250			
ZFC75 ●	8	70	450			
ZFC76 ●	10	80	550			
ZFC77 ●	12	100	650			

Accessories

Model	Filter white element: 5 µm (Spare element 10 pcs.)	Filter blue element: 5 µm (1 pc.)	Filter white element: 10 µm (1 pc.)	Bracket
ZFC1	ZFC-EL-1	ZFC-EL019	ZFC-EL021	ZFC-BR001
ZFC3	ZFC-EL-2	ZFC-EL020	ZFC-EL022	ZFC-BR002
ZFC5	ZFC-EL-3 ●	ZFC-EL015	ZFC-EL017	ZFC-BR003
ZFC7	ZFC-EL-4 ●	ZFC-EL016	ZFC-EL018	ZFC-BR004

Vacuum filter

AFJ Series



- Fluid: Air
- 2 models: large flow type or water drop removal type
- Selectable filtration rating: 5 µm, 40 µm (washable) and 80 µm (washable)
- Large flow capacity: Max. 660 l/min (ANR)
- Transparent double layer bowl construction:
 - Better environmental resistance by not exposing the pressurised inner bowl to corrosive chemicals or oil splashes
 - 360° visibility – total visibility from any angle
- Selectable bowl material, either polycarbonate or nylon
- Modular connection with standard SMC product.

Part number	Type	Body size	Port size	Bowl material	Nominal filtration rating [µm]	Recommended flow rate [l/min (ANR)]	Operating pressure range
AFJ20-F02-5-T ●	Large flow type AFJ-T series	20	G 1/4	Polycarbonate	5	140	-100 to 0 kPa
AFJ20-F02-40-T ●					40		
AFJ20-F02-80-T					80		
AFJ30-F03-5-T		30	G 3/8		5	250	
AFJ30-F03-40-T					40	380	
AFJ30-F03-80-T					80		
AFJ40-F04-5-T		40	G 1/2		5	440	
AFJ40-F04-40-T ●					40	660	
AFJ40-F04-80-T					80		
AFJ20-F02-5-S	Water drop removal type AFJ-S series	20	G 1/4		5	100	
AFJ20-F02-40-S ●					40	130	
AFJ20-F02-80-S					80		
AFJ30-F03-5-S ●		30	G 3/8		5	230	
AFJ30-F03-40-S					40	340	
AFJ30-F03-80-S					80		
AFJ40-F04-5-S		40	G 1/2		5	370	
AFJ40-F04-40-S					40	500	
AFJ40-F04-80-S					80		

Accessories

Part number	Model	Description	Material		
AF20P-060S ●	AFJ20	Filter element	Non-woven fabric		
AF30P-060S ●	AFJ30			5 µm	
AF40P-060S ●	AFJ40				
AF22P-820S	AFJ20		40 µm	PA	
AF32P-820S	AFJ30				
AF42P-820S	AFJ40				
AF22P-830S	AFJ20				80 µm
AF32P-830S	AFJ30				
AF42P-830S	AFJ40				
AF22P-050AS ●	AFJ20	Bracket assembly ¹⁾	—		
AF32P-050AS ●	AFJ30				
AF42P-050AS ●	AFJ40				
C2SJ	AFJ20	Bowl assembly ²⁾	Polycarbonate		
C3SJ	AFJ30				
C4SJ	AFJ40				

1) Assembly of a bracket and 2 mounting screws

2) Bowl assembly includes the bowl O-ring

Please consult with SMC separately for psi and °F unit display specifications

Bowl assembly for the AFJ30 and AFJ40 models comes with a bowl guard (Material: Polycarbonate).

Vacuum pads

Flat type vacuum pad ZPT Series



• Material:

- NBR (Nitrile rubber): Good oil resistance, abrasion resistance, and aging resistance. Colour: Black
- Silicone rubber: Excellent heat resistance and cold resistance (-30 °C to 200 °C). Colour: White

• Pad style:

- Flat: To be used when adsorption surface of workpiece is flat and not deformed
- Flat with rib: To be used when workpiece is likely to deform or in the case of releasing work certainly
- Heavy-duty: Reinforced pad to prevent deformation when transferring heavy or large workpieces

• Applications:

- NBR (Nitrile rubber): Transfer of general workpieces, corrugated board, veneer plate, iron plate and others
- Silicone rubber: Semiconductor, removing from die-casting, thin workpieces, food processor.

Male thread

Pad Ø [mm]	Pad style	Part number				Vacuum inlet	Mounting thread size	
		Material: NBR		Material: Silicone rubber				
		Vacuum pad	With adapter	Vacuum pad	With adapter			
2	Flat	ZP02UN ●	ZPT02UN-A5 ●	ZP02US ●	ZPT02US-A5 ●	M5 x 0.8	—	
4		ZP04UN ●	ZPT04UN-A5 ●	ZP04US ●	ZPT04US-A5 ●			
6		ZP06UN ●	ZPT06UN-A5 ●	ZP06US ●	ZPT06US-A5 ●			
8		ZP08UN ●	ZPT08UN-A5 ●	ZP08US ●	ZPT08US-A5 ●			
10		ZP10UN ●	ZPT10UN-A5 ●	ZP10US ●	ZPT10US-A5 ●			
13		ZP13UN ●	ZPT13UN-A5 ●	ZP13US ●	ZPT13US-A5 ●			
16		ZP16UN ●	ZPT16UN-A5 ●	ZP16US ●	ZPT16US-A5 ●	M6 x 1		
20		ZP20UN ●	ZPT20UN-A6 ●	ZP20US ●	ZPT20US-A6 ●			
25		ZP25UN ●	ZPT25UN-A6 ●	ZP25US ●	ZPT25US-A6 ●			
32		ZP32UN ●	ZPT32UN-A6 ●	ZP32US ●	ZPT32US-A6 ●			
40		ZP40UN ●	ZPT40UN-A6 ●	ZP40US ●	ZPT40US-A6 ●			
50		ZP50UN ●	ZPT50UN-A6 ●	ZP50US ●	ZPT50US-A6 ●			
10		Flat with rib	ZP10CN ●	ZPT10CN-A5 ●	ZP10CS ●	ZPT10CS-A5 ●		M5 x 0.8
13			ZP13CN ●	ZPT13CN-A5 ●	ZP13CS ●	ZPT13CS-A5 ●		
16			ZP16CN ●	ZPT16CN-A5 ●	ZP16CS ●	ZPT16CS-A5 ●		
20			ZP20CN ●	ZPT20CN-A6 ●	ZP20CS ●	ZPT20CS-A6 ●		M6 x 1
25	ZP25CN ●		ZPT25CN-A6 ●	ZP25CS ●	ZPT25CS-A6 ●			
32	ZP32CN ●		ZPT32CN-A8 ●	ZP32CS ●	ZPT32CS-A8 ●			
40	ZP40CN ●		ZPT40CN-A8 ●	ZP40CS ●	ZPT40CS-A8 ●	M8 x 1.25		
50	ZP50CN ●		ZPT50CN-A8 ●	ZP50CS ●	ZPT50CS-A8 ●			
40	ZP40HN ●		ZPT40HN-A14 ●	ZP40HS ●	ZPT40HS-A14 ●			
50	ZP50HN ●		ZPT50HN-A14 ●	ZP50HS ●	ZPT50HS-A14 ●			
63	Heavy-duty	ZP63HN ●	ZPT63HN-A16 ●	ZP63HS ●	ZPT63HS-A16 ●	M14 x 1		
80		ZP80HN ●	ZPT80HN-A16 ●	ZP80HS ●	ZPT80HS-A16 ●			
100		ZP100HN ●	ZPT100HN-A16 ●	ZP100HS ●	ZPT100HS-A16 ●	Rc 1/8		
125		ZP125HN ●	ZPT125HN-A16 ●	ZP125HS ●	ZPT125HS-A16 ●			

Female thread

Pad Ø [mm]	Pad style	Part number				Vacuum inlet	Part number		Vacuum inlet	Mounting thread size						
		Material: NBR		Material: Silicone rubber			Buffer assembly									
		Vacuum pad	With adapter	Vacuum pad	With adapter		Rotating	Non-rotating								
2	Flat	ZP02UN ●	ZPT02UN-B5 ●	ZP02US ●	ZPT02US-B5 ●	M5 x 0.8	ZPB2J10-B5 ● ZPB2J20-B5 ● ZPB2J30-B5 ● ZPB2J40-B5 ● ZPB2J50-B5 ●	ZPB2K10-B5 ● ZPB2K20-B5 ● ZPB2K30-B5 ● ZPB2K40-B5 ● ZPB2K50-B5 ●	M5 x 0.8 M10	M10 x 1						
4		ZP04UN ●	ZPT04UN-B5 ●	ZP04US ●	ZPT04US-B5 ●											
6		ZP06UN ●	ZPT06UN-B5 ●	ZP06US ●	ZPT06US-B5 ●											
8		ZP08UN ●	ZPT08UN-B5 ●	ZP08US ●	ZPT08US-B5 ●											
10		ZP10UN ●	ZPT10UN-B5 ●	ZP10US ●	ZPT10US-B5 ●											
13		ZP13UN ●	ZPT13UN-B5 ●	ZP13US ●	ZPT13US-B5 ●											
16		ZP16UN ●	ZPT16UN-B5 ●	ZP16US ●	ZPT16US-B5 ●											
20		ZP20UN ●	ZPT20UN-B5 ●	ZP20US ●	ZPT20US-B5 ●											
25		ZP25UN ●	ZPT25UN-B5 ●	ZP25US ●	ZPT25US-B5 ●											
32		ZP32UN ●	ZPT32UN-B5 ●	ZP32US ●	ZPT32US-B5 ●											
40		ZP40UN ●	ZPT40UN-B8 ●	ZP40US ●	ZPT40US-B8 ●						M8 x 1.25	ZPB3J10-B01 ● ZPB3J20-B01 ● ZPB3J30-B01 ● ZPB3J50-B01 ●	ZPB3K10-B01 ● ZPB3K20-B01 ● ZPB3K30-B01 ● ZPB3K50-B01 ●	Rc 1/8	M14 x 1	
50		ZP50UN ●	ZPT50UN-B8 ●	ZP50US ●	ZPT50US-B8 ●											
10	Flat with rib	ZP10CN ●	ZPT10CN-B5 ●	ZP10CS ●	ZPT10CS-B5 ●	M5 x 0.8	ZPB2J10-B5 ● ZPB2J20-B5 ● ZPB2J30-B5 ● ZPB2J40-B5 ● ZPB2J50-B5 ●	ZPB2K10-B5 ● ZPB2K20-B5 ● ZPB2K30-B5 ● ZPB2K40-B5 ● ZPB2K50-B5 ●	M5 x 0.8 M10	M10 x 1						
13		ZP13CN ●	ZPT13CN-B5 ●	ZP13CS ●	ZPT13CS-B5 ●											
16		ZP16CN ●	ZPT16CN-B5 ●	ZP16CS ●	ZPT16CS-B5 ●											
20		ZP20CN ●	ZPT20CN-B5 ●	ZP20CS ●	ZPT20CS-B5 ●											
25		ZP25CN ●	ZPT25CN-B8 ●	ZP25CS ●	ZPT25CS-B8 ●											
32		ZP32CN ●	ZPT32CN-B8 ●	ZP32CS ●	ZPT32CS-B8 ●	M8 x 1.25	ZPB3J10-B01 ● ZPB3J20-B01 ● ZPB3J30-B01 ● ZPB3J50-B01 ●	ZPB3K10-B01 ● ZPB3K20-B01 ● ZPB3K30-B01 ● ZPB3K50-B01 ●	Rc 1/8	M14 x 1						
40		ZP40CN ●	ZPT40CN-B8 ●	ZP40CS ●	ZPT40CS-B8 ●											
50		ZP50CN ●	ZPT50CN-B8 ●	ZP50CS ●	ZPT50CS-B8 ●											
40		Heavy-duty	ZP40HN ●	ZPT40HN-B8 ●	ZP40HS ●						ZPT40HS-B8 ●	Rc 1/8	—	ZPB-T1J25-B01 ZPB-T1J50-B01 ZPB-T1J75-B01	Rc 1/8	M18 X 1.5
50			ZP50HN ●	ZPT50HN-B8 ●	ZP50HS ●						ZPT50HS-B8 ●					
63	ZP63HN ●		ZPT63HN-B8 ●	ZP63HS ●	ZPT63HS-B8 ●											
80	ZP80HN ●		ZPT80HN-B8 ●	ZP80HS ●	ZPT80HS-B8 ●											
100	ZP100HN ●		ZPT100HN-B12 ●	ZP100HS ●	ZPT100HS-B12 ●											
125	ZP125HN ●		ZPT125HN-B12 ●	ZP125HS ●	ZPT125HS-B12 ●											
							ZPB-T3J25-B01 ZPB-T3J50-B01 ZPB-T3J75-B01 ZPB-T3J100-B01			M22 X 1.5						

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Bellows type vacuum pad

ZPT Series



• Material:

- NBR (Nitrile rubber): Good oil resistance, abrasion resistance, and aging resistance. Colour: Black
- Silicone rubber: Excellent heat resistance and cold resistance (-30 °C to 200 °C). Colour: White

• Pad style:

- Deep: To be used when workpiece is curved shape
- Bellows: To be used when there is not enough space to install buffer or adsorption surface of workpiece is slanted

• Applications:

- NBR (Nitrile rubber): Transfer of general workpieces, corrugated board, veneer plate, iron plate and others
- Silicone rubber: Semiconductor, removing from die-casting, thin workpieces, food processor.

Male thread

Pad Ø [mm]	Pad style	Part number				Vacuum inlet	Mounting thread size
		Material: NBR		Material: Silicone rubber			
		Vacuum pad	With adapter	Vacuum pad	With adapter		
10	Deep	ZP10DN ●	ZPT10DN-A5	ZP10DS ●	ZPT10DS-A5	M5 x 0.8	—
16		ZP16DN ●	ZPT16DN-A5	ZP16DS ●	ZPT16DS-A5		
25		ZP25DN ●	ZPT25DN-A6 ●	ZP25DS ●	ZPT25DS-A6	M6 x 1	
40	ZP40DN ●	ZPT40DN-A6 ●	ZP40DS ●	ZPT40DS-A6	M5 x 0.8		
6	ZP06BN ●	ZPT06BN-A5 ●	ZP06BS ●	ZPT06BS-A5 ●			
8	ZP08BN ●	ZPT08BN-A5 ●	ZP08BS ●	ZPT08BS-A5 ●			
10	ZP10BN ●	ZPT10BN-A5 ●	ZP10BS ●	ZPT10BS-A5 ●			
13	ZP13BN ●	ZPT13BN-A5	ZP13BS ●	ZPT13BS-A5 ●			
16	ZP16BN ●	ZPT16BN-A5 ●	ZP16BS ●	ZPT16BS-A5 ●			
20	ZP20BN ●	ZPT20BN-A6 ●	ZP20BS ●	ZPT20BS-A6 ●	M6 x 1		
25	ZP25BN ●	ZPT25BN-A6 ●	ZP25BS ●	ZPT25BS-A6			
32	ZP32BN ●	ZPT32BN-A6 ●	ZP32BS ●	ZPT32BS-A6			
40	ZP40BN ●	ZPT40BN-A6	ZP40BS ●	ZPT40BS-A6			
50	ZP50BN ●	ZPT50BN-A6	ZP50BS ●	ZPT50BS-A6			
40	ZP40HBN ●	ZPT40HBN-A14 ●	ZP40HBS ●	ZPT40HBS-A14		Rc 1/8	
50	ZP50HBN ●	ZPT50HBN-A14 ●	ZP50HBS	ZPT50HBS-A14			
63	ZP63HBN ●	ZPT63HBN-A16 ●	ZP63HBS	ZPT63HBS-A16 ●			
80	ZP80HBN ●	ZPT80HBN-A16 ●	ZP80HBS ●	ZPT80HBS-A16			
100	ZP100HBN ●	ZPT100HBN-A16 ●	ZP100HBS	ZPT100HBS-A16			
125	ZP125HBN ●	ZPT125HBN-A16 ●	ZP125HBS	ZPT125HBS-A16			

Female thread

Pad Ø [mm]	Pad style	Part number				Vacuum inlet	Part number		Vacuum inlet	Mounting thread size		
		Material: NBR		Material: Silicone rubber			Buffer assembly					
		Vacuum pad	With adapter	Vacuum pad	With adapter		Rotating	Non-rotating				
10	Deep	ZP10DN ●	ZPT10DN-B5 ●	ZP10DS ●	ZPT10DS-B5 ●	M5 x 0.8	ZPB2J10-B5 ●	ZPB2K10-B5 ●	M5 x 0.8 M10	M10 x 1		
16		ZP16DN ●	ZPT16DN-B5 ●	ZP16DS ●	ZPT16DS-B5 ●		ZPB2J20-B5 ●	ZPB2K20-B5 ●				
25		ZP25DN ●	ZPT25DN-B5 ●	ZP25DS ●	ZPT25DS-B5 ●		ZPB2J30-B5 ●	ZPB2K30-B5 ●			ZPB2J40-B5 ●	ZPB2K40-B5 ●
40		ZP40DN ●	ZPT40DN-B8 ●	ZP40DS ●	ZPT40DS-B8 ●	M8 x 1.25	ZPB3J10-B01 ●	ZPB3K10-B01 ●	Rc 1/8	M14 x 1		
6	Bellows	ZP06BN ●	ZPT06BN-B5 ●	ZP06BS ●	ZPT06BS-B5 ●	M5 x 0.8	ZPB2J10-B5 ● ZPB2J20-B5 ● ZPB2J30-B5 ● ZPB2J40-B5 ● ZPB2J50-B5 ●	ZPB2K10-B5 ● ZPB2K20-B5 ● ZPB2K30-B5 ● ZPB2K40-B5 ● ZPB2K50-B5 ●	M5 x 0.8 M10	M10 x 1		
8		ZP08BN ●	ZPT08BN-B5 ●	ZP08BS ●	ZPT08BS-B5 ●							
10		ZP10BN ●	ZPT10BN-B5 ●	ZP10BS ●	ZPT10BS-B5 ●							
13		ZP13BN ●	ZPT13BN-B5 ●	ZP13BS ●	ZPT13BS-B5 ●							
16		ZP16BN ●	ZPT16BN-B5 ●	ZP16BS ●	ZPT16BS-B5 ●							
20		ZP20BN ●	ZPT20BN-B5 ●	ZP20BS ●	ZPT20BS-B5 ●							
25		ZP25BN ●	ZPT25BN-B5 ●	ZP25BS ●	ZPT25BS-B5 ●							
32		ZP32BN ●	ZPT32BN-B5 ●	ZP32BS ●	ZPT32BS-B5 ●							
40	ZP40BN ●	ZPT40BN-B8 ●	ZP40BS ●	ZPT40BS-B8 ●	M8 x 1.25	ZPB3J10-B01 ●	ZPB3K10-B01 ●	Rc 1/8	M14 x 1			
50	ZP50BN ●	ZPT50BN-B8 ●	ZP50BS ●	ZPT50BS-B8 ●		ZPB3J20-B01 ●	ZPB3K20-B01 ●			ZPB3J30-B01 ●	ZPB3K30-B01 ●	ZPB3J50-B01 ●
40	Large size bellows	ZP40HBN ●	ZPT40HBN-B10 ●	ZP40HBS ●	ZPT40HBS-B10 ●	M10	—	ZPB-T1J25-B01	Rc 1/8	M18 X 1.5		
50		ZP50HBN ●	ZPT50HBN-B10 ●	ZP50HBS ●	ZPT50HBS-B10 ●			ZPB-T1J50-B01			ZPB-T1J75-B01	
63		ZP63HBN ●	ZPT63HBN-B12 ●	ZP63HBS ●	ZPT63HBS-B12 ●	ZPB-T2J25-B01		ZPB-T2J50-B01			ZPB-T2J75-B01	
80		ZP80HBN ●	ZPT80HBN-B12 ●	ZP80HBS ●	ZPT80HBS-B12 ●	ZPB-T3J25-B01		ZPB-T3J50-B01			ZPB-T3J75-B01	M22 X 1.5
100		ZP100HBN ●	ZPT100HBN-B12 ●	ZP100HBS ●	ZPT100HBS-B12 ●	M12		ZPB-T3J25-B01			ZPB-T3J50-B01	
125	ZP125HBN ●	ZPT125HBN-B12 ●	ZP125HBS ●	ZPT125HBS-B12 ●								

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Flat type vacuum pad

ZP2/ZP3/ZP3E Series



• Material:

- NBR (Nitrile rubber): Good oil resistance, abrasion resistance, and aging resistance. Colour: Black
- Silicone rubber: Excellent heat resistance and cold resistance (-30 °C to 200 °C). Colour: White

• Pad style:

- Nozzle: For adsorption of small pieces (such as IC chips)
- Flat: To be used when adsorption surface of workpiece is flat and not deformed
- Flat with rib/groove: To be used when workpiece is likely to deform or in the case of releasing work certainly

• Applications:

- NBR (Nitrile rubber): Transfer of general workpieces, corrugated board, veneer plate, iron plate and others
- Silicone rubber: Semiconductor, removing from die-casting, thin workpieces, food processor.

Male thread

Pad Ø [mm]	Pad style	Part number				Mounting thread size	Vacuum inlet	Part number			
		Material: NBR		Material: Silicone rubber				Buffer assembly			
		Vacuum pad	With adapter	Vacuum pad	With adapter						
0.8	Nozzle	ZP2-08ANN ●	ZP2-T08ANN-A5	ZP2-08ANS ●	ZP2-T08ANS-A5	M5 x 0.8	—	—			
1.1		ZP2-11ANN ●	ZP2-T11ANN-A5	ZP2-11ANS ●	ZP2-T11ANS-A5						
2		ZP2-B02MUN ●	ZP2-TB02MUN-A3	ZP2-B02MUS ●	ZP2-TB02MUS-A3						
3.5	Flat	ZP2-B035MUN ●	ZP2-TB035MUN-A3	ZP2-B035MUS ●	ZP2-TB035MUS-A3	M3 x 0.5	—	—			
4		ZP2-B04MUN ●	ZP2-TB04MUN-A3	ZP2-B04MUS ●	ZP2-TB04MUS-A3						
5		ZP2-B05MUN ●	ZP2-TB05MUN-A3	ZP2-B05MUS ●	ZP2-TB05MUS-A3						
6		ZP2-B06MUN ●	ZP2-TB06MUN-H5	ZP2-B06MUS ●	ZP2-TB06MUS-H5						
8		ZP2-B08MUN ●	ZP2-TB08MUN-H5	ZP2-B08MUS ●	ZP2-TB08MUS-H5	M5 x 0.8					
10		ZP2-B10MUN ●	ZP2-TB10MUN-H5	ZP2-B10MUS ●	ZP2-TB10MUS-H5						
15		ZP2-B15MUN ●	ZP2-TB15MUN-H5	ZP2-B15MUS ●	ZP2-TB15MUS-H5	M5 x 0.8					
10		ZP2-B10MTN ●	ZP2-TB10MTN-H5	ZP2-B10MTS ●	ZP2-TB10MTS-H5						
15		ZP2-B15MTN ●	ZP2-TB15MTN-H5	ZP2-B15MTS ●	ZP2-TB15MTS-H5						
20		ZP2-B20MTN ●	ZP2-TB20MTN-H5	ZP2-B20MTS ●	ZP2-TB20MTS-H5						
25	ZP2-B25MTN ●	ZP2-TB25MTN-H5	ZP2-B25MTS ●	ZP2-TB25MTS-H5							
30	ZP2-B30MTN ●	ZP2-TB30MTN-H5	ZP2-B30MTS ●	ZP2-TB30MTS-H5							
1.5	Flat	ZP3-015UN	ZP3-T015UN-A3	ZP3-015US	ZP3-T015US-A3	M3 x 0.5	—	—			
2		ZP3-02UN	ZP3-T02UN-A3	ZP3-02US	ZP3-T02US-A3						
3.5		ZP3-035UN	ZP3-T035UN-A3	ZP3-035US ●	ZP3-T035US-A3						
4	Flat with groove	ZP3-04UMN	ZP3-T04UMN-A5	ZP3-04UMS	ZP3-T04UMS-A5	M5 x 0.8	—	—			
6		ZP3-06UMN	ZP3-T06UMN-A5	ZP3-06UMS	ZP3-T06UMS-A5						
8		ZP3-08UMN	ZP3-T08UMN-A5	ZP3-08UMS	ZP3-T08UMS-A5						
10		ZP3-10UMN	ZP3-T10UMN-A5	ZP3-10UMS	ZP3-T10UMS-A5						
13		ZP3-13UMN	ZP3-T13UMN-A5	ZP3-13UMS	ZP3-T13UMS-A5						
16		ZP3-16UMN	ZP3-T16UMN-A5	ZP3-16UMS	ZP3-T16UMS-A5						
32		ZP3E-32UMN	ZP3E-T32UMN-AL14	ZP3E-32UMS	ZP3E-T32UMS-AL14				M14 x 1	Rc 1/8	ZP3EB-T1JB10 ZP3EB-T1JB30 ZP3EB-T1JB50
40		ZP3E-40UMN	ZP3E-T40UMN-AL14	ZP3E-40UMS	ZP3E-T40UMS-AL14						
50	ZP3E-50UMN	ZP3E-T50UMN-AL14	ZP3E-50UMS	ZP3E-T50UMS-AL14	M16 x 1.5	ZP3EB-T2JB10 ZP3EB-T2JB30 ZP3EB-T2JB50					
63	ZP3E-63UMN	ZP3E-T63UMN-AL16	ZP3E-63UMS	ZP3E-T63UMS-AL16							
80	ZP3E-80UMN	ZP3E-T80UMN-AL16	ZP3E-80UMS	ZP3E-T80UMS-AL16							
100	ZP3E-100UMN	ZP3E-T100UMN-AL16	ZP3E-100UMS	ZP3E-T100UMS-AL16							
125	ZP3E-125UMN	ZP3E-T125UMN-AL16	ZP3E-125UMS	ZP3E-T125UMS-AL16							

Female thread

Pad Ø [mm]	Pad style	Part number				Mounting thread size	Part number	
		Material: NBR		Material: Silicone rubber			Buffer assembly	
		Vacuum pad	With adapter	Vacuum pad	With adapter		Rotating	Non-rotating
6	Flat	ZP2-B06MUN ●	ZP2-TB06MUN-B5	ZP2-B06MUS ●	ZP2-TB06MUS-B5	M5 x 0.8	ZP3B-T2AJ3-B5	ZP3B-T2AK3-B5
8		ZP2-B08MUN ●	ZP2-TB08MUN-B5	ZP2-B08MUS ●	ZP2-TB08MUS-B5		ZP3B-T2AJ6-B5	ZP3B-T2AK6-B5
10		ZP2-B10MUN ●	ZP2-TB10MUN-B5	ZP2-B10MUS ●	ZP2-TB10MUS-B5		ZP3B-T2AJ10-B5	ZP3B-T2AK10-B5
15		ZP2-B15MUN ●	ZP2-TB15MUN-B5	ZP2-B15MUS ●	ZP2-TB15MUS-B5		ZP3B-T2BJ3-B5	ZP3B-T2BK3-B5
10	Flat with rib	ZP2-B10MTN ●	ZP2-TB10MTN-B5	ZP2-B10MTS ●	ZP2-TB10MTS-B5	M5 x 0.8	ZP3B-T2BJ6-B5	ZP3B-T2BK6-B5
15		ZP2-B15MTN ●	ZP2-TB15MTN-B5	ZP2-B15MTS ●	ZP2-TB15MTS-B5		ZP3B-T2BJ10-B5	ZP3B-T2BK10-B5
1.5	Flat	ZP3-015UN	ZP3-T015UN-B3	ZP3-015US	ZP3-T015US-B3	M3 x 0.5	ZP3B-T1J3-B3 ZP3B-T1J6-B3	ZP3B-T1K6-B3 ZP3B-T1K6-B3
2		ZP3-02UN	ZP3-T02UN-B3	ZP3-02US	ZP3-T02US-B3			
3.5		ZP3-035UN	ZP3-T035UN-B3	ZP3-035US ●	ZP3-T035US-B3			
4	Flat with groove	ZP3-04UMN	ZP3-T04UMN-B5	ZP3-04UMS	ZP3-T04UMS-B5	M5 x 0.8	ZP3B-T2AJ3-B5 ZP3B-T2AJ6-B5 ZP3B-T2AJ10-B5	ZP3B-T2AK3-B5 ZP3B-T2AK6-B5 ZP3B-T2AK10-B5
6		ZP3-06UMN	ZP3-T06UMN-B5	ZP3-06UMS	ZP3-T06UMS-B5			
8		ZP3-08UMN	ZP3-T08UMN-B5	ZP3-08UMS	ZP3-T08UMS-B5			
10		ZP3-10UMN	ZP3-T10UMN-B5	ZP3-10UMS	ZP3-T10UMS-B5			
13		ZP3-13UMN	ZP3-T13UMN-B5	ZP3-13UMS	ZP3-T13UMS-B5			
16		ZP3-16UMN	ZP3-T16UMN-B5	ZP3-16UMS	ZP3-T16UMS-B5			
32		ZP3E-32UMN	ZP3E-T32UMN-B10	ZP3E-32UMS	ZP3E-T32UMS-B10			
40		ZP3E-40UMN	ZP3E-T40UMN-B10	ZP3E-40UMS	ZP3E-T40UMS-B10			
50	Flat with groove	ZP3E-50UMN	ZP3E-T50UMN-B10	ZP3E-50UMS	ZP3E-T50UMS-B10	M10 x 1.5	See options in ZP3E Series catalogue	
63		ZP3E-63UMN	ZP3E-T63UMN-B18	ZP3E-63UMS	ZP3E-T63UMS-B18			
80		ZP3E-80UMN	ZP3E-T80UMN-B18	ZP3E-80UMS	ZP3E-T80UMS-B18			
100		ZP3E-100UMN	ZP3E-T100UMN-B18	ZP3E-100UMS	ZP3E-T100UMS-B18			
125		ZP3E-125UMN	ZP3E-T125UMN-B18	ZP3E-125UMS	ZP3E-T125UMS-B18			
					M18 x 1.5			

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Flat type vacuum pad with ball joint

ZP2/ZP3E Series



• Material:

- NBR (Nitrile rubber): Good oil resistance, abrasion resistance, and aging resistance. Colour: Black
- Silicone rubber: Excellent heat resistance and cold resistance (-30 °C to 200 °C). Colour: White

• Pad style:

- Flat with rib/groove: To be used when workpiece is likely to deform or in the case of releasing work certainly
- Heavy-duty: Reinforced pad to prevent deformation when transferring heavy or large workpieces

• Ball joint:

- To be used when adsorption surface of workpiece is not horizontal

• Applications:

- NBR (Nitrile rubber): Transfer of general workpieces, corrugated board, veneer plate, iron plate and others
- Silicone rubber: Semiconductor, removing from die-casting, thin workpieces, food processor.

Male thread

Pad Ø [mm]	Pad style	Part number				Mounting thread size	Vacuum inlet	Part number Buffer assembly
		Material: NBR		Material: Silicone rubber				
		Vacuum pad	With adapter	Vacuum pad	With adapter			
40	Flat with rib (Heavy-duty)	ZP40HN ●	ZP2-TF40HN	ZP40HS ●	ZP2-TF40HS	M14 x 1	Rc 1/8	ZP2B-TF1JB25 ZP2B-TF1JB50 ZP2B-TF1JB75
50		ZP50HN ●	ZP2-TF50HN	ZP50HS ●	ZP2-TF50HS	M16 x 1.5		ZP2B-TF2JB25 ZP2B-TF2JB50 ZP2B-TF2JB75 ZP2B-TF2JB100
63		ZP63HN ●	ZP2-TF63HN	ZP63HS ●	ZP2-TF63HS			ZP2B-TF3JB25 ZP2B-TF3JB50 ZP2B-TF3JB75 ZP2B-TF3JB100
80		ZP80HN ●	ZP2-TF80HN	ZP80HS ●	ZP2-TF80HS			ZP2B-TF4JB25 ZP2B-TF4JB50 ZP2B-TF4JB75 ZP2B-TF4JB100
100		ZP100HN ●	ZP2-TF100HN	ZP100HS ●	ZP2-TF100HS			ZP2B-TF5JB25 ZP2B-TF5JB50 ZP2B-TF5JB75 ZP2B-TF5JB100
125		ZP125HN ●	ZP2-TF125HN	ZP125HS ●	ZP2-TF125HS			
32	Flat with groove	ZP3E-32UMN	ZP3E-TF32UMN-AL14	ZP3E-32UMS	ZP3E-TF32UMS-AL14	M14 x 1	Rc 1/8	ZP3EU-TF1JB10 ZP3EU-TF1JB30 ZP3EU-TF1JB50
40		ZP3E-40UMN	ZP3E-TF40UMN-AL14	ZP3E-40UMS	ZP3E-TF40UMS-AL14			ZP3EU-TF2JB10 ZP3EU-TF2JB30 ZP3EU-TF2JB50
50		ZP3E-50UMN	ZP3E-TF50UMN-AL14	ZP3E-50UMS	ZP3E-TF50UMS-AL14			ZP3EU-TF3JB10 ZP3EU-TF3JB30 ZP3EU-TF3JB50
63		ZP3E-63UMN	ZP3E-TF63UMN-AL16	ZP3E-63UMS	ZP3E-TF63UMS-AL16	M16 x 1.5		ZP3EU-TF4JB10 ZP3EU-TF4JB30 ZP3EU-TF4JB50
80		ZP3E-80UMN	ZP3E-TF80UMN-AL16	ZP3E-80UMS	ZP3E-TF80UMS-AL16			ZP3EU-TF5JB10 ZP3EU-TF5JB30 ZP3EU-TF5JB50
100		ZP3E-100UMN	ZP3E-TF100UMN-AL16	ZP3E-100UMS	ZP3E-TF100UMS-AL16			ZP3EU-TF6JB10 ZP3EU-TF6JB30 ZP3EU-TF6JB50
125		ZP3E-125UMN	ZP3E-TF125UMN-AL16	ZP3E-125UMS	ZP3E-TF125UMS-AL16			

Female thread

Pad Ø [mm]	Pad style	Part number				Mounting thread size	Part number Buffer assembly
		Material: NBR		Material: Silicone rubber			
		Vacuum pad	With adapter	Vacuum pad	With adapter		
32	Flat with groove	ZP3E-32UMN	ZP3E-TF32UMN-B8	ZP3E-32UMS	ZP3E-TF32UMS-B8	M8 x 1.25	See options in ZP3E Series catalogue
40		ZP3E-40UMN	ZP3E-TF40UMN-B8	ZP3E-40UMS	ZP3E-TF40UMS-B8		
50		ZP3E-50UMN	ZP3E-TF50UMN-B8	ZP3E-50UMS	ZP3E-TF50UMS-B8		
63		ZP3E-63UMN	ZP3E-TF63UMN-B12	ZP3E-63UMS	ZP3E-TF63UMS-B12	M12 x 1.75	
80		ZP3E-80UMN	ZP3E-TF80UMN-B12	ZP3E-80UMS	ZP3E-TF80UMS-B12		
100		ZP3E-100UMN	ZP3E-TF100UMN-B12	ZP3E-100UMS	ZP3E-TF100UMS-B12		
125		ZP3E-125UMN	ZP3E-TF125UMN-B12	ZP3E-125UMS	ZP3E-TF125UMS-B12		

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Bellows type vacuum pad

ZP2/ZP3/ZP3E Series



- **Material:**
 - NBR (Nitrile rubber): Good oil resistance, abrasion resistance, and aging resistance. Colour: Black
 - Silicone rubber: Excellent heat resistance and cold resistance (-30 °C to 200 °C). Colour: White
- **Pad style:**
 - Bellows/Bellows type with groove: To be used when there is not enough space to install buffer or adsorption surface of workpiece is slanted
- **Applications:**
 - NBR (Nitrile rubber): Transfer of general workpieces, corrugated board, veneer plate, iron plate and others
 - Silicone rubber: Semiconductor, removing from die-casting, thin workpieces, food processor.

Male thread

Pad Ø [mm]	Pad style	Part number				Mounting thread size	Vacuum inlet	Part number	
		Material: NBR		Material: Silicone rubber				Buffer assembly	Part number
		Vacuum pad	With adapter	Vacuum pad	With adapter				
4	Bellows	ZP2-B04MBN ●	ZP2-TB04MBN-A3	ZP2-B04MBS ●	ZP2-TB04MBS-A3 ●	M3 x 0.5	Rc 1/8	—	
6		ZP2-B06MBN ●	ZP2-TB06MBN-H5	ZP2-B06MBS ●	ZP2-TB06MBS-H5				
8		ZP2-B08MBN ●	ZP2-TB08MBN-H5 ●	ZP2-B08MBS ●	ZP2-TB08MBS-H5				
10		ZP2-B10MBN ●	ZP2-TB10MBN-H5	ZP2-B10MBS ●	ZP2-TB10MBS-H5				
15		ZP2-B15MBN ●	ZP2-TB15MBN-H5	ZP2-B15MBS ●	ZP2-TB15MBS-H5 ●				
20	ZP2-B20MBN ●	ZP2-TB20MBN-H5 ●	ZP2-B20MBS ●	ZP2-TB20MBS-H5 ●					
4	Bellows	ZP3-04BN	ZP3-T04BN-A5	ZP3-04BS	ZP3-T04BS-A5	M5 x 0.8	Rc 1/8	—	
6		ZP3-06BN	ZP3-T06BN-A5	ZP3-06BS	ZP3-T06BS-A5				
8		ZP3-08BN	ZP3-T08BN-A5	ZP3-08BS	ZP3-T08BS-A5				
10		ZP3-10BN	ZP3-T10BN-A5	ZP3-10BS	ZP3-T10BS-A5				
13		ZP3-13BN	ZP3-T13BN-A5	ZP3-13BS	ZP3-T13BS-A5				
16	ZP3-16BN	ZP3-T16BN-A5	ZP3-16BS	ZP3-T16BS-A5					
32	Bellows type with groove	ZP3E-32BMN	ZP3E-T32BMN-AL14	ZP3E-32BMS	ZP3E-T32BMS-AL14	M14 x 1	Rc 1/8	—	ZP3EB-T1JB10 ZP3EB-T1JB30 ZP3EB-T1JB50
40		ZP3E-40BMN	ZP3E-T40BMN-AL14	ZP3E-40BMS	ZP3E-T40BMS-AL14				
50		ZP3E-50BMN	ZP3E-T50BMN-AL14	ZP3E-50BMS	ZP3E-T50BMS-AL14				
63		ZP3E-63BMN	ZP3E-T63BMN-AL16	ZP3E-63BMS	ZP3E-T63BMS-AL16				
80		ZP3E-80BMN	ZP3E-T80BMN-AL16	ZP3E-80BMS	ZP3E-T80BMS-AL16				
100	ZP3E-100BMN	ZP3E-T100BMN-AL16	ZP3E-100BMS	ZP3E-T100BMS-AL16	M16 x 1.5			ZP3EB-T2JB10 ZP3EB-T2JB30 ZP3EB-T2JB50	
125	ZP3E-125BMN	ZP3E-T125BMN-AL16	ZP3E-125BMS	ZP3E-T125BMS-AL16					

Female thread

Pad Ø [mm]	Pad style	Part number				Mounting thread size	Part number		
		Material: NBR		Material: Silicone rubber			Buffer assembly		
		Vacuum pad	With adapter	Vacuum pad	With adapter		Rotating	Non-rotating	
6	Bellows	ZP2-B04MBN ●	ZP2-TB06MBN-B5	ZP2-B04MBS ●	ZP2-TB06MBS-B5	M5 x 0.8	ZP3B-T2AJ3-B5	ZP3B-T2BK3-B5	
8		ZP2-B08MBN ●	ZP2-TB08MBN-B5	ZP2-B08MBS ●	ZP2-TB08MBS-B5		ZP3B-T2AJ6-B5	ZP3B-T2BK6-B5	
4	Bellows	ZP3-04BN	ZP3-T04BN-B5	ZP3-04BS	ZP3-T04BS-B5	M5 x 0.8	ZP3B-T2AJ10-B5	ZP3B-T2BK10-B5	
6		ZP3-06BN	ZP3-T06BN-B5	ZP3-06BS	ZP3-T06BS-B5		ZP3B-T2AJ3-B5	ZP3B-T2AK3-B5	
8		ZP3-08BN	ZP3-T08BN-B5	ZP3-08BS	ZP3-T08BS-B5		ZP3B-T2AJ6-B5	ZP3B-T2AK6-B5	
10		ZP3-10BN	ZP3-T10BN-B5	ZP3-10BS	ZP3-T10BS-B5		ZP3B-T2AJ10-B5	ZP3B-T2AK10-B5	
13		ZP3-13BN	ZP3-T13BN-B5	ZP3-13BS	ZP3-T13BS-B5		ZP3B-T2BJ3-B5	ZP3B-T2BK3-B5	
16	ZP3-16BN	ZP3-T16BN-B5	ZP3-16BS	ZP3-T16BS-B5	ZP3B-T2BJ6-B5	ZP3B-T2BK6-B5			
32	Bellows type with groove	ZP3E-32BMN	ZP3E-T32BMN-B10	ZP3E-32BMS	ZP3E-T32BMS-B10	M10 x 1.5	ZP3B-T2BJ10-B5	ZP3B-T2BK10-B5	
40		ZP3E-40BMN	ZP3E-T40BMN-B10	ZP3E-40BMS	ZP3E-T40BMS-B10		See options in ZP3E Series catalogue		
50		ZP3E-50BMN	ZP3E-T50BMN-B10	ZP3E-50BMS	ZP3E-T50BMS-B10				
63		ZP3E-63BMN	ZP3E-T63BMN-B18	ZP3E-63BMS	ZP3E-T63BMS-B18				
80		ZP3E-80BMN	ZP3E-T80BMN-B18	ZP3E-80BMS	ZP3E-T80BMS-B18				
100	ZP3E-100BMN	ZP3E-T100BMN-B18	ZP3E-100BMS	ZP3E-T100BMS-B18					
125	ZP3E-125BMN	ZP3E-T125BMN-B18	ZP3E-125BMS	ZP3E-T125BMS-B18					

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Bellows type vacuum pad with ball joint

ZP2/ZP3E Series



• Material:

- NBR (Nitrile rubber): Good oil resistance, abrasion resistance, and aging resistance. Colour: Black
- Silicone rubber: Excellent heat resistance and cold resistance (-30 °C to 200 °C). Colour: White

• Pad style:

- Bellows/Bellows type with groove: To be used when there is not enough space to install buffer or adsorption surface of workpiece is slanted

• Ball joint:

- To be used when adsorption surface of workpiece is not horizontal

• Applications:

- NBR (Nitrile rubber): Transfer of general workpieces, corrugated board, veneer plate, iron plate and others
- Silicone rubber: Semiconductor, removing from die-casting, thin workpieces, food processor.

Male thread

Pad Ø [mm]	Pad style	Part number				Mounting thread size	Vacuum inlet	Part number
		Material: NBR		Material: Silicone rubber				
		Vacuum pad	With adapter	Vacuum pad	With adapter			
40	Bellows	ZP40HBN ●	ZP2-TF40HBN	ZP40HBS ●	ZP2-TF40HBS	M14 x 1	Rc 1/8	ZP2B-TF1JB25
50		ZP50HBN ●	ZP2-TF50HBN	ZP50HBS	ZP2-TF50HBS			ZP2B-TF1JB50
63		ZP63HBN ●	ZP2-TF63HBN	ZP63HBS	ZP2-TF63HBS			ZP2B-TF1JB75
80		ZP80HBN ●	ZP2-TF80HBN	ZP80HBS ●	ZP2-TF80HBS	ZP2B-TF2JB100		
100		ZP100HBN ●	ZP2-TF100HBN	ZP100HBS	ZP2-TF100HBS	ZP2B-TF3JB25		
125		ZP125HBN ●	ZP2-TF125HBN	ZP125HBS	ZP2-TF125HBS	ZP2B-TF3JB75		
								ZP2B-TF3JB100
32	Bellows type with groove	ZP3E-32BMN	ZP3E-TF32BMN-AL14	ZP3E-32BMS	ZP3E-TF32BMS-AL14	M14 x 1	Rc 1/8	ZP3EU-TF1JB10
40		ZP3E-40BMN	ZP3E-TF40BMN-AL14	ZP3E-40BMS	ZP3E-TF40BMS-AL14			ZP3EU-TF1JB30
50		ZP3E-50BMN	ZP3E-TF50BMN-AL14	ZP3E-50BMS	ZP3E-TF50BMS-AL14			ZP3EU-TF2JB10
63		ZP3E-63BMN	ZP3E-TF63BMN-AL16	ZP3E-63BMS	ZP3E-TF63BMS-AL16	ZP3EU-TF2JB30		
80		ZP3E-80BMN	ZP3E-TF80BMN-AL16	ZP3E-80BMS	ZP3E-TF80BMS-AL16	ZP3EU-TF2JB50		
100		ZP3E-100BMN	ZP3E-TF100BMN-AL16	ZP3E-100BMS	ZP3E-TF100BMS-AL16	ZP3EU-TF4JB10		
								ZP3EU-TF4JB30
125		ZP3E-125BMN	ZP3E-TF125BMN-AL16	ZP3E-125BMS	ZP3E-TF125BMS-AL16	M16 x 1.5		ZP3EU-TF4JB50
								ZP3EU-TF5JB30
								ZP3EU-TF5JB50

Female thread

Pad Ø [mm]	Pad style	Part number				Mounting thread size	Part number
		Material: NBR		Material: Silicone rubber			
		Vacuum pad	With adapter	Vacuum pad	With adapter		
32	Bellows type with groove	ZP3E-32BMN	ZP3E-TF32BMN-B8	ZP3E-32BMNS	ZP3E-TF32BMS-B8	M8 x 1.25	See options in ZP3E Series catalogue
40		ZP3E-40BMN	ZP3E-TF40BMN-B8	ZP3E-40BMNS	ZP3E-TF40BMS-B8		
50		ZP3E-50BMN	ZP3E-TF50BMN-B8	ZP3E-50BMNS	ZP3E-TF50BMS-B8		
63		ZP3E-63BMN	ZP3E-TF63BMN-B12	ZP3E-63BMNS	ZP3E-TF63BMS-B12	M12 x 1.75	
80		ZP3E-80BMN	ZP3E-TF80BMN-B12	ZP3E-80BMNS	ZP3E-TF80BMS-B12		
100		ZP3E-100BMN	ZP3E-TF100BMN-B12	ZP3E-100BMNS	ZP3E-TF100BMS-B12		
125		ZP3E-125BMN	ZP3E-TF125BMN-B12	ZP3E-125BMNS	ZP3E-TF125BMS-B12		

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

4.5-stage bellows pad

ZP2 Series



Material:

- Silicone rubber: Excellent heat resistance and cold resistance (-30 °C to 200 °C). Colour: White

Pad style:

- To be used when there is not enough space to install buffer or adsorption surface of workpiece is slanted

Applications:

- For adsorbing workpieces flowing at high speeds. Semiconductor, removing from die-casting, thin workpieces, food processor.

Pad Ø [mm]	Part number		Mounting thread size	Vacuum inlet
	Vacuum pad	With adapter		
15	ZP2-B15ZJS	ZP2-TB15ZJS-AL12-06 ●	M12 x 1	Ø 6
20	ZP2-B20ZJS	ZP2-TB20ZJS-AL12-06 ●		
30	ZP2-B30ZJS	ZP2-TB30ZJS-AL14-06 ●		
40	ZP2-40ZJS ●	ZP2-T40ZJS-AL14-06 ●	M14 x 1	
46	ZP2-46ZJS ●	ZP2-T46ZJS-AL14-06 ●		

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Oval type vacuum pad

ZP2 Series



Material:

- NBR (Nitrile rubber): Good oil resistance, abrasion resistance, and aging resistance. Colour: Black
- Silicone rubber: Excellent heat resistance and cold resistance (-30 °C to 200 °C). Colour: White

Pad style:

- Oval: To be used when workpiece has limited adsorption surface or long in length and work is required to locate precisely

Applications:

- NBR (Nitrile rubber): Transfer of general workpieces, corrugated board, veneer plate, iron plate and others
- Silicone rubber: Semiconductor, removing from die-casting, thin workpieces, food processor.

Female thread

Pad Ø [mm]	Pad style	Part number				Vacuum inlet	Part number Buffer assembly
		Material: NBR		Material: Silicone rubber			
		Vacuum pad	With adapter	Vacuum pad	With adapter		
3.5 x 7	Oval	ZP2-3507WN ●	ZP2-T3507WN-B5	ZP2-3507WS ●	ZP2-T3507WS-B5	M5 x 0.8	ZPB2K10-B5 ● ZPB2K20-B5 ● ZPB2K30-B5 ● ZPB2K40-B5 ● ZPB2K50-B5 ●
4 x 10		ZP2-4010WN ●	ZP2-T4010WN-B5	ZP2-4010WS ●	ZP2-T4010WS-B5		
5 x 10		ZP2-5010WN ●	ZP2-T5010WN-B5	ZP2-5010WS ●	ZP2-T5010WS-B5		
6 x 10		ZP2-6010WN ●	ZP2-T6010WN-B5	ZP2-6010WS ●	ZP2-T6010WS-B5		
4 x 20		ZP2-4020WN ●	ZP2-T4020WN-B5	ZP2-4020WS ●	ZP2-T4020WS-B5		
5 x 20		ZP2-5020WN ●	ZP2-T5020WN-B5	ZP2-5020WS ●	ZP2-T5020WS-B5		
6 x 20		ZP2-6020WN ●	ZP2-T6020WN-B5	ZP2-6020WS ●	ZP2-T6020WS-B5		
8 x 20		ZP2-8020WN ●	ZP2-T8020WN-B5	ZP2-8020WS ●	ZP2-T8020WS-B5		
4 x 30		ZP2-4030WN ●	ZP2-T4030WN-B5	ZP2-4030WS ●	ZP2-T4030WS-B5		
5 x 30		ZP2-5030WN ●	ZP2-T5030WN-B5	ZP2-5030WS ●	ZP2-T5030WS-B5		
6 x 30		ZP2-6030WN ●	ZP2-T6030WN-B5	ZP2-6030WS ●	ZP2-T6030WS-B5		
8 x 30		ZP2-8030WN ●	ZP2-T8030WN-B5	ZP2-8030WS ●	ZP2-T8030WS-B5		

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Mark-free flat type vacuum pad

ZP2 Series



• Material:

- Mark-free NBR with stuck fluororesin (Fluororesin sheet is baked into the pad adsorption surface): Good oil resistance, abrasion resistance, and aging resistance. Does not leave adsorption marks on workpieces. Prevents the transfer of rubber constituents Colour: Black

• Pad style:

- Flat with rib: To be used when workpiece is likely to deform or in the case of releasing work certainly

• Applications:

- Transfer of semiconductors, glass, solar cells, semi-finished parts, or any other workpiece that is sensitive to being marked in handling, etc.

Male thread

Pad Ø [mm]	Pad style	Part number		Mounting thread size	Part number
		Material: NBR			
		Vacuum pad	With adapter		
40	Flat with rib	ZP2-40HNT	ZP2A-TF1	M14 x 1	ZP2B-TF1JB25 ZP2B-TF1JB50 ZP2B-TF1JB75
50		ZP2-50HNT			
63		ZP2-63HNT	ZP2A-TF2	M16 x 1.5	ZP2B-TF2JB25 ZP2B-TF2JB50 ZP2B-TF2JB75 ZP2B-TF2JB100
80		ZP2-80HNT			
100		ZP2-100HNT	ZP2A-TF3	M16 x 1.5	ZP2B-TF3JB25 ZP2B-TF3JB50 ZP2B-TF3JB75 ZP2B-TF3JB100
125		ZP2-125HNT			

Female thread

Pad Ø [mm]	Pad style	Part number		Mounting thread size	Part number
		Material: NBR			
		Vacuum pad	With adapter		
40	Flat with rib	ZP2-40HNT	ZPA-T1-B8 ZPA-T1-B10	M8 x 1.25 M10 x 1.5	See options in ZP2 Series catalogue
50		ZP2-50HNT			
63		ZP2-63HNT	ZPA-T2-B8 ZPA-T2-B10 ZPA-T2-B12 ZPA-T2-B16	M8 x 1.25 M10 x 1.5 M12 x 1.75 M16 x 1.5	
80		ZP2-80HNT			
100		ZP2-100HNT	ZPA-T3-B12 ZPA-T3-B16	M12 x 1.75 M16 x 1.5	
125		ZP2-125HNT			

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Mark-free flat type vacuum pad

ZP2/ZP3E Series



Material:

- Mark-free NBR (Halogenated NBR): Good oil resistance, abrasion resistance, and aging resistance. Does not leave adsorption marks on workpieces. Colour: Black

Pad style:

- Flat: To be used when adsorption surface of workpiece is flat and not deformed
- Flat with rib/groove: To be used when workpiece is likely to deform or in the case of releasing work certainly
- Heavy-duty: Reinforced pad to prevent deformation when transferring heavy or large workpieces

Applications:

- Transfer of semiconductors, glass, solar cells, semi-finished parts, or any other workpiece that is sensitive to being marked in handling, etc.

Male thread

Pad Ø [mm]	Pad style	Part number		Mounting thread size	Vacuum inlet	Part number Buffer assembly	
		Material: NBR					
		Vacuum pad	With adapter				
4	Flat	ZP2-04UCL		M5 x 0.8 M6 x 1	—	See options in ZP2 Series catalogue	
6		ZP2-06UCL	ZPT1-A5 ● ZPT1-A6 ●				
8		ZP2-08UCL					
10		ZP2-10UCL ●					
12		ZP2-12UCL	ZPT2-A5 ● ZPT2-A6 ●				
16		ZP2-16UCL ●					
25		ZP2-25UCL	ZPT3-A6 ● ZPT3-A8 ●				
32		ZP2-32UCL					
40		ZP2-40UCL	ZPT4-A6 ● ZPT4-A8 ●				
50		ZP2-50UCL					
40	Flat with rib (Heavy-duty)	ZP2-40HCL	ZP2A-TF1	M14 x 1	—	ZP2B-TF1JB25 ZP2B-TF1JB50 ZP2B-TF1JB75	
50		ZP2-50HCL					
63		ZP2-63HCL	ZP2A-TF2	M16 x 1.5		ZP2B-TF2JB25 ZP2B-TF2JB50 ZP2B-TF2JB75 ZP2B-TF2JB100	
80		ZP2-80HCL					
100		ZP2-100HCL	ZP2A-TF3				ZP2B-TF3JB25 ZP2B-TF3JB50 ZP2B-TF3JB75 ZP2B-TF3JB100
125		ZP2-125HCL					
32	Flat type with groove	ZP3E-32UMCL	ZP3E-T32UMCL-AL14	M14 x 1	Rc 1/8	ZP3EB-T1JB10 ZP3EB-T1JB30 ZP3EB-T1JB50	
40		ZP3E-40UMCL	ZP3E-T40UMCL-AL14				
50		ZP3E-50UMCL	ZP3E-T50UMCL-AL14				
63		ZP3E-63UMCL	ZP3E-T63UMCL-AL16	M16 x 1.5		ZP3EB-T2JB10 ZP3EB-T2JB30 ZP3EB-T2JB50	
80		ZP3E-80UMCL	ZP3E-T80UMCL-AL16				
100		ZP3E-100UMCL	ZP3E-T100UMCL-AL16				
125		ZP3E-125UMCL	ZP3E-T125UMCL-AL16				

Female thread

Pad Ø [mm]	Pad style	Part number		Mounting thread size	Part number Buffer assembly
		Material: NBR			
		Vacuum pad	With adapter		
4	Flat	ZP2-04UCL	ZPT1-B4 ZPT1-B5 ●	M4 x 0.7 M5 x 0.8	See options in ZP2 Series catalogue
6		ZP2-06UCL			
8		ZP2-08UCL			
10		ZP2-10UCL ●	ZPT2-B5 ● ZPT2-B6 ●	M5 x 0.8 M6 x 1	
12		ZP2-12UCL			
16		ZP2-16UCL ●			
25		ZP2-25UCL	ZPT3-B5 ● ZPT3-B6 ● ZPT3-B8 ●	M5 x 0.8 M6 x 1 M8 x 1.25	
32		ZP2-32UCL			
40		ZP2-40UCL	ZPT4-B6 ● ZPT4-B8 ●	M6 x 1 M8 x 1.25	
50		ZP2-50UCL			
40		Flat with rib (Heavy-duty)	ZP2-40HCL	ZPA-T1-B8 ZPA-T1-B10	
50	ZP2-50HCL				
63	ZP2-63HCL		ZPA-T2-B8 ZPA-T2-B10 ZPA-T2-B12 ZPA-T2-B16	M8 x 1.25 M10 x 1.5 M12 x 1.75 M16 x 1.5	
80	ZP2-80HCL				
100	ZP2-100HCL		ZPA-T3-B12 ZPA-T3-B16	M12 x 1.75 M16 x 1.5	
125	ZP2-125HCL				
32	Flat type with groove	ZP3E-32UMCL	ZP3E-T32UMCL-B10	M10 x 1.5	See options in ZP3E Series catalogue
40		ZP3E-40UMCL	ZP3E-T40UMCL-B10		
50		ZP3E-50UMCL	ZP3E-T50UMCL-B10		
63		ZP3E-63UMCL	ZP3E-T63UMCL-B18	M18 x 1.5	
80		ZP3E-80UMCL	ZP3E-T80UMCL-B18		
100		ZP3E-100UMCL	ZP3E-T100UMCL-B18		
125		ZP3E-125UMCL	ZP3E-T125UMCL-B18		

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Mark-free bellows type vacuum pad

ZP3E Series



Material:

- Mark-free NBR (Halogenated NBR): Good oil resistance, abrasion resistance, and aging resistance. Does not leave adsorption marks on workpieces. Colour: Black

Pad style:

- Bellows type with groove: To be used when there is not enough space to install buffer or adsorption surface of workpiece is slanted

Applications:

- Transfer of semiconductors, glass, solar cells, semi-finished parts, or any other workpiece that is sensitive to being marked in handling, etc.

Male thread

Pad Ø [mm]	Pad style	Part number		Mounting thread size	Vacuum inlet	Part number	
		Material: NBR				Buffer assembly	
		Vacuum pad	With adapter				
32	Bellows type with groove	ZP3E-32BMCL	ZP3E-T32BMCL-AL14	M14 x 1	Rc 1/8	ZP3EB-T1JB10	ZP3EB-T1JB30 ZP3EB-T1JB50
40		ZP3E-40BMCL	ZP3E-T40BMCL-AL14				
50		ZP3E-50BMCL	ZP3E-T50BMCL-AL14				
63		ZP3E-63BMCL	ZP3E-T63BMCL-AL16	M16 x 1.5		ZP3EB-T2JB10	
80		ZP3E-80BMCL	ZP3E-T80BMCL-AL16			ZP3EB-T2JB30	
100		ZP3E-100BMCL	ZP3E-T100BMCL-AL16			ZP3EB-T2JB50	
125		ZP3E-125BMCL	ZP3E-T125BMCL-AL16				

Female thread

Pad Ø [mm]	Pad style	Part number		Mounting thread size	Part number	
		Material: NBR			Buffer assembly	
		Vacuum pad	With adapter			
32	Bellows type with groove	ZP3E-32BMCL	ZP3E-T32BMCL-B10	M10 x 1.5	See options in ZP3E Series catalogue	
40		ZP3E-40BMCL	ZP3E-T40BMCL-B10			
50		ZP3E-50BMCL	ZP3E-T50BMCL-B10			
63		ZP3E-63BMCL	ZP3E-T63BMCL-B18	M18 x 1.5		
80		ZP3E-80BMCL	ZP3E-T80BMCL-B18			
100		ZP3E-100BMCL	ZP3E-T100BMCL-B18			
125		ZP3E-125BMCL	ZP3E-T125BMCL-B18			

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Mark-free bellows type vacuum pad

ZPT/ZP2 Series



• Material:

- Mark-free NBR with PEEK resin attached: Good oil resistance, abrasion resistance, and aging resistance. Does not leave adsorption marks on workpieces. Prevents the transfer of rubber constituents. Colour: White ring on black body

• Pad style:

- Bellows: To be used when there is not enough space to install buffer or adsorption surface of workpiece is slanted

• Applications:

- Transfer of semiconductors, glass, solar cells, semi-finished parts, or any other workpiece that is sensitive to being marked in handling, etc.

Male thread

Pad Ø [mm]	Pad style	Part number		Mounting thread size	Vacuum inlet	Part number
		Material: NBR				Buffer assembly
		With adapter	Resin attachment			
6	Bellows	ZPT06BN-A5 ●	ZP2-06KP	M10 x 1	M5 x 0.8	—
8		ZPT08BN-A5 ●	ZP2-08KP			
10		ZPT10BN-A5 ●	ZP2-10KP ●			
13		ZPT13BN-A6 ●	ZP2-13KP			
16		ZPT16BN-A6 ●	ZP2-16KP		M6 x 1	
20		ZPT20BN-A6 ●	ZP2-20KP			
25		ZPT25BN-A6 ●	ZP2-25KP			
32		ZPT32BN-A6 ●	ZP2-32KP			

Female thread

Pad Ø [mm]	Pad style	Part number		Mounting thread size	Vacuum inlet	Part number
		Material: NBR				Buffer assembly
		With adapter	Resin attachment			
6	Bellows	ZPT06BN-B5 ●	ZP2-06KP	M10 x 1	M5 x 0.8	ZPB2J10-B5 ● ZPB2J20-B5 ● ZPB2J30-B5 ● ZPB2J40-B5 ● ZPB2J50-B5 ●
8		ZPT08BN-B5 ●	ZP2-08KP			
10		ZPT10BN-B5 ●	ZP2-10KP ●			
13		ZPT13BN-B5 ●	ZP2-13KP			
16		ZPT16BN-B5 ●	ZP2-16KP			
20		ZPT20BN-B5 ●	ZP2-20KP			
25		ZPT25BN-B5 ●	ZP2-25KP			
32		ZPT32BN-B5 ●	ZP2-32KP			

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Our highlighted product for you

Flat type vacuum pad

ZP3P Series



- **Material:** Silicone rubber compliant with the FDA 21CFR§177.2600 elution test. Colour: Blue. Easy to distinguish by colour during contamination inspection
- **Pad style:** Good for film packaging applications where the shape of the workpiece changes easily from being lifted. Reduced leakage: Sealing skirt design, better sealing performance even for thin films. Reduction of wrinkles made on thin workpieces (film, vinyl, etc.) during adsorption
- **Applications:** Food/beverage, medical/pharmaceutical and packaging industries.

Male thread

Pad Ø [mm]	Part number			Mounting thread size
	Vacuum pad	With adapter	Buffer assembly	
20	ZP3P-20PTSF	ZP3P-T20PTSF-A5	—	M5 x 0.8
		ZP3P-T20PTSF-AG1 ●		G 1/8
25	ZP3P-25PTSF	ZP3P-T25PTSF-A5		M5 x 0.8
		ZP3P-T25PTSF-AG1 ●		G 1/8
35	ZP3P-35PTSF	ZP3P-T35PTSF-AG2 ●		G 1/4
		ZP3P-T35PTSF-AG3		G 3/8
50	ZP3P-50PTSF	ZP3P-T50PTSF-AG2 ●	G 1/4	
		ZP3P-T50PTSF-AG3	G 3/8	

Female thread

Pad Ø [mm]	Part number			Mounting thread size
	Vacuum pad	With adapter	Buffer assembly	
20	ZP3P-20PTSF	ZP3P-T20PTSF-B5	ZPB2K10-B5 ●	M5 x 0.8
			ZPB2J10-B5 ●	G 1/8
25	ZP3P-25PTSF	ZP3P-T25PTSF-B5 ●	ZPB2K20-B5 ●	M5 x 0.8
			ZPB2J20-B5 ●	G 1/8
35	ZP3P-35PTSF	ZP3P-T35PTSF-B8	ZPB3K10-B01 ●	M8 x 1.25
			ZPB3J10-B01 ●	G 3/8
50	ZP3P-50PTSF	ZP3P-T50PTSF-B8	ZPB3K20-B01 ●	M8 x 1.25
			ZPB3J20-B01 ●	G 3/8

1) This catalogue includes the most common product options. Other options and materials available, consult with SMC.

Our highlighted product for you

Vacuum pad with ejector

ZHP Series



- Vacuum ejector and pad are integrated in a single compact unit
- Lock-plate structure enables easy and one-touch replacement of the pad
- More efficient two-stage ejector mounted, with improved vacuum generating efficiency
- By placing a silencer in the release, the exhaust is discharged directly to atmosphere, thus reducing noise and minimising clogging
- 3 port locations available in the adapted pad, allowing for variety of connections, such as vacuum release, vacuum pressure sensor and piping
- Daisy-chain piping possible thanks to the existence of 3 port locations.

Pad Ø [mm]	Pad form	Part number	Pad material	Mounting		Ejector/Nozzle nominal size [mm]	Supply (P) port	Exhaust release	Circuit symbol	
				Thread	Size					
63	Bellows type with groove	ZHP63BMNB-07C6S	NBR (Black)	Male	M10	Ø 0.7	Ø 6 One-touch fitting	Silencer exhaust		
	Flat type with groove	ZHP63UMNB-07C6S								
	Bellows type with groove	ZHP63BMNB-10C6S								
	Flat type with groove	ZHP63UMNB-10C6S								
80	Bellows type with groove	ZHP80BMNB-12C6S				Ø 1.0				
	Flat type with groove	ZHP80UMNB-12C6S								
	Bellows type with groove	ZHP80BMNB-15C6S								Ø 1.2
	Flat type with groove	ZHP80UMNB-15C6S								
63	Bellows type with groove	ZHP63BMSB-07C6S	Silicone rubber (White)	Male	M10	Ø 0.7	Ø 6 One-touch fitting	Silencer exhaust		
	Flat type with groove	ZHP63UMSB-07C6S								
	Bellows type with groove	ZHP63BMSB-10C6S								
	Flat type with groove	ZHP63UMSB-10C6S								
80	Bellows type with groove	ZHP80BMSB-12C6S				Ø 1.0				
	Flat type with groove	ZHP80UMSB-12C6S								
	Bellows type with groove	ZHP80BMSB-15C6S							Ø 1.2	
	Flat type with groove	ZHP80UMSB-15C6S								
63	Bellows type with groove	ZHP63BMUB-07C6S	Urethane rubber (Brown)	Male	M10	Ø 0.7	Ø 6 One-touch fitting	Silencer exhaust		
	Flat type with groove	ZHP63UMUB-07C6S								
	Bellows type with groove	ZHP63BMUB-10C6S								
	Flat type with groove	ZHP63UMUB-10C6S								
80	Bellows type with groove	ZHP80BMUB-12C6S				Ø 1.0				
	Flat type with groove	ZHP80UMUB-12C6S								
	Bellows type with groove	ZHP80BMUB-15C6S							Ø 1.2	
	Flat type with groove	ZHP80UMUB-15C6S								
80	Bellows type with groove	ZHP80BMUB-12C6S	Ø 1.5							
	Flat type with groove	ZHP80UMUB-12C6S								
	Bellows type with groove	ZHP80BMUB-15C6S								
	Flat type with groove	ZHP80UMUB-15C6S								

Accessories

Part number	Model	Description			
ZP3E-63BMN	ZHP63	Pad form: Bellows type with groove	Pad material: NBR		
ZP3E-80BMN	ZHP80				
ZP3E-63BMS	ZHP63			Pad material: Silicone rubber	
ZP3E-80BMS	ZHP80				
ZP3E-63BMU	ZHP63		Pad material: Urethane rubber		
ZP3E-80BMU	ZHP80				
ZP3E-63UMN	ZHP63			Pad form: Flat type with groove	Pad material: NBR
ZP3E-80UMN	ZHP80				
ZP3E-63UMS	ZHP63	Pad material: Silicone rubber			
ZP3E-80UMS	ZHP80				
ZP3E-63UMU	ZHP63		Pad material: Urethane rubber		
ZP3E-80UMU	ZHP80				

Non-contact gripper

XT661 Series



Cyclone type



Low profile
cyclone type



Bernoulli type

- Two working principles result in two gripper types:
 - **Cyclone type**
High lifting force - up to 44 N - with low air consumption
 - **Bernoulli type**
Reduction of rotation load due to no directionality of whirlwind air
- Wide size range: from Ø 20 to Ø 150
- Compact and lightweight (low profile cyclone type)
- Maximum workpiece suction distance: 10 mm
- Grease free
- Possible to be disassembled and cleaned the inside
- Easy suction detection of a workpiece via a sensor

Type	Part number	Outer body diameter [mm]	Operating pressure	Piping port size
Cyclone type	XT661-2A-R ●	Ø 20	0.01 ~ 0.5 MPa	M5 X 0.8
	XT661-2A-L ●			
	XT661-4A-R ●	Ø 40		
	XT661-4A-L ●			
	XT661-6A-R ●			
	XT661-6A-L ●			
	XT661-8A-R	Ø 80		Rc 1/8
	XT661-8A-L			
	XT661-10A-R			
XT661-10A-L				
Low profile cyclone type	XT661-2A-R-X260	Ø 20	0.01 ~ 0.5 MPa	Ø 1.6
	XT661-2A-L-X260			
	XT661-3A-L-X260	Ø 25		
	XT661-3A-R-X260			
Bernoulli type	XT661-4C-X321	Ø 39	0.01 ~ 0.4 MPa	M5 x 0.8
	XT661-6C-X321	Ø 59		
	XT661-8C-X321	Ø 79		
	XT661-10C-X321	Ø 99		Rc 1/8
	XT661-120E-X322	Ø 120		
	XT661-150E-X322	Ø 150		

Accessories • Bernoulli type

XT661-120E-3A-X322	Guide assembly (4 units needed for one gripper)
MXQ-A627	Adjustment bolt assembly (4 units needed for one gripper)

1) Only for XT661-120E-X322 and XT661-150E-X322

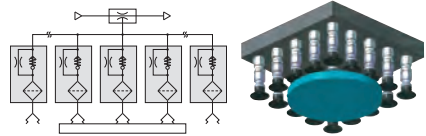
Vacuum valve

Vacuum saving valve

ZP2V Series



- Can avoid the loss of pressure even when there is no workpiece
- No need of switching operation when changing workpieces
- When the workpieces have different shapes, the control circuit can be simplified
- With one-touch fitting, male thread and female thread types available.



Part number	Port				Thread size		Detail drawing
	0.3	0.5	0.7	1.0	Pad size	Vacuum generator size	
ZP2V-A5-□ ●	○	○	○	-	M5		Vacuum generator side Female thread
ZP2V-A8-□ ●	-	○	○	○	M8		
ZP2V-AG1-□ ●	-	○	○	○	G 1/8		Male thread Pad side
ZP2V-B5-□ ●	○	○	○	-	M5		Vacuum generator side Male thread
ZP2V-B6-□ ●	○	○	○	-	M6		
ZP2V-BG1-□ ●	-	○	○	○	G 1/8		Female thread Pad side
ZP2V-A5A5-□	○	○	○	-	M5		Vacuum generator side Male thread
ZP2V-AG1AG1-□	-	○	○	○	G 1/8		
ZP2V-B5B5-□	○	○	○	-	M5		Vacuum generator side Female thread
ZP2V-BG1BG1-□	-	○	○	○	G 1/8		
ZP2V-A5W4-□	○	○	○	-	M5		Vacuum generator side One-touch fitting
ZP2V-AG1W6-□	-	○	○	○	G 1/8		
ZP2V-B5W4-□	○	○	○	-	M5	Ø 4	Vacuum generator side One-touch fitting
ZP2V-BG1W6-□	-	○	○	○	G 1/8	Ø 6	
ZP2V-W4-□	○	○	○	-	Ø 4		Vacuum generator side One-touch fitting
ZP2V-W6-□	-	○	○	○	Ø 6		

□: Fixed orifice size, 03 → 0.3, 05 → 0.5, 07 → 0.7, 10 → 1.0

Compact cylinder for vacuum applications

ZCUK Series



- Sizes Ø 10 - 32 mm
- Suction pads mounted directly to the hollow double piston rod
- Non rotating piston rod is standard
- Vacuum pads from Ø 2 to 50 mm
- Auto switch for end position detection with LED in 2 wire type, can be mounted on 2 sides.

Part number	Piston Ø [mm]	Standard stroke lengths [mm]	Piston rod thread	Port size
ZCDUKC10-□D ●	10	5, 10, 15, 20, 25, 30	M4	M5
ZCDUKC16-□D ●	16		M5	
ZCDUKC20-□D ●	20		M6	
ZCDUKC25-□D ●	25	5, 10, 15, 20, 25, 30, 40, 50	M8	
ZCDUKC32-□D ●	32		M10	G 1/8

□: Stroke length

Possible auto switches

Reed	D-A93L ●
3-wire, solid state	NPN: D-M9NL ●, PNP: D-M9PL ●
2-wire solid state	D-M9BL ●

Drain separator

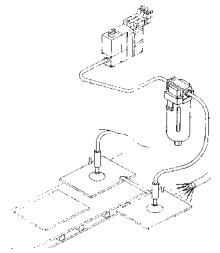
Water separator for vacuum

AMJ Series



- Fluid: Air
- At least 90 % of the water that is sucked in is removed
- Manual discharge mechanism
- Bayonet socket simplifies filter element replacement
- Bowl protection standard.

Part number	Port size	Flow [l/min]	Operating pressure		Circuit symbol
			min.	max.	
AMJ3000-F02 ●	G 1/4	200	-0.1 MPa	1.0 MPa	
AMJ3000-F03 ●	G 3/8				
AMJ4000-F03 ●	G 3/8				
AMJ4000-F04 ●	G 1/2				
AMJ5000-F06 ●	G 3/4				
AMJ5000-F10 ●	G 1				



Regulator

Vacuum regulator

IRV10/20 Series



- Standard and single sided connections (elbow, straight)
- Integrated digital pressure switch for panel mounting (IRV-X1)
- Easy to attach/detach the pressure gauge or digital pressure switch due to attachment by clip
- Built-in one-touch fittings.

Part number	Pressure range	Tubing O. D.	Operation temperature range	Connection
IRV10-C06 ●	-100 ~ -1.3 kPa	Ø 6	+5° ~ +60 °C	Standard connections
IRV10-C08 ●		Ø 8		
IRV20-C06 ●		Ø 6		
IRV20-C08 ●		Ø 8		
IRV20-C10 ●		Ø 10		Single sided connections
IRV10A-C06 ●		Ø 6		
IRV10A-C08 ●		Ø 8		
IRV20A-C06 ●		Ø 6		
IRV20A-C08 ●		Ø 8		
IRV20A-C10 ●		Ø 10		

Accessories

	IRV10(A)	IRV20(A)
Bracket assembly	P601010-17 ●	P601020-17 ●
Bottom bracket assembly	P601010-14 ●	P601020-14 ●
Pressure gauge assembly	P601010-12	P601020-12 ●
Digital switch assembly	P601010-13□	

* Consult SMC for more information.

Vacuum system peripherals & related products

Our highlighted product for you

Air amplifier

ZH-X185 Series



- Energy efficiency - 1:4
- A blow flow rate 4 times the supply air.
- A vacuum flow rate 3 times the supply air.
- Compact design, simple & lightweight.
- Large passage diameter available for suction of machining chips, particles, etc.
- Instant on-off control.
- Air driven - no electrical supply required. Maintenance free.
- It is a flow amplifier not a pressure booster
- It can replace electrical fans.

Part number	Passage diameter [mm]	Supply pressure range [MPa]	Suction flow rate at 5 bar [l/min]	Vacuum pressure at 5 bar supply [kPa]	Discharge flow at 5 bar supply [l/min]	Air consumption at 5 bar supply [l/min]	Weight [g]
ZH10-B-X185 ●	13	0 to 0.7	520	-6	700	180	110
ZH20-B-X185 ●	21.6		1200		1600	400	430
ZH30-B-X185 ●	30		2300		3000	700	970
ZH40-B-X185 ●	42		3400		4700	1300	2000

1) Bracket is included.

2-colour display digital flow switch

PFM Series



- For air, N₂, Ar and CO₂
- A digital flow switch that uses MEMS sensor for detecting the flow
- Compact size
- Improved visibility with two colour display indication
- Two piping directions are possible
- Integrated flow adjustment valve is available as option
- Multiple mounting combinations.

Integrated type

Part number	Port size	Flow rate dry air, N ₂ , Ar	Flow rate CO ₂	Output specification	Voltage	Operating pressure range
PFM710-C4-B ●	Ø 4 one-touch fitting	0.2 to 10 l/min	0.2 to 5 l/min	2 PNP	24 VDC	-100 kPa to 750 kPa
PFM710-C4-E				PNP + (1 - 5V)		
PFM710-C4-F				PNP + (4-20 mA)		
PFM725-C6-B ●	Ø 6 one-touch fitting	0.5 to 25 l/min	0.5 to 12,5 l/min	2 PNP		
PFM725-C6-E				PNP + (1 - 5V)		
PFM725-C6-F ●				PNP + (4-20 mA)		
PFM750-C6-B ●	Ø 6 one-touch fitting	1 to 50 l/min	1 to 25 l/min	2 PNP		
PFM750-C6-E ●				PNP + (1 - 5V)		
PFM750-C6-F ●				PNP + (4-20 mA)		
PFM711-C8-B ●	Ø 8 one-touch fitting	2 to 100 l/min	2 to 50 l/min	2 PNP		
PFM711-C8-E ●				PNP + (1 - 5V)		
PFM711-C8-F ●				PNP + (4-20 mA)		

Remote type

PFM510-C4-1	Ø 4 one-touch fitting	0.2 to 10 l/min	0.2 to 5 l/min	1 - 5V	24 VDC	-100 kPa to 750 kPa
PFM510-C4-2				4-20 mA		
PFM525-C6-1	Ø 6 one-touch fitting	0.5 to 25 l/min	0.5 to 12,5 l/min	1 - 5V		
PFM525-C6-2				4-20 mA		
PFM550-C6-1	Ø 6 one-touch fitting	1 to 50 l/min	1 to 25 l/min	1 - 5V		
PFM550-C6-2				4-20 mA		
PFM511-C8-1	Ø 8 one-touch fitting	2 to 100 l/min	2 to 50 l/min	1 - 5V		
PFM511-C8-2				4-20 mA		

Accessories

Bracket (for "without adjustment flow valve")	ZS-33-M ●
Panel mount adapter (for "without adjustment flow valve")	ZS-33-J ●
DIN rail mounting bracket * =number of stations (1 to 5)	ZS-33-R* ●

Flow sensor monitor

Part number	Input specification	Output specification	Voltage	Note
PFM313-LF	Current input	2 PNP + 1 to 5 V outputs	24 VDC	With power/ output connector included
PFM314-LF		2 PNP + 4 to 20 mA outputs		

Accessories

Bracket	ZS-28-B ●
Panel mount adapter	ZS-27-C ●
Panel mount adapter + front protective cover	ZS-27-D ●

Electric vacuum switch

ZSE1 Series



- Response time 5 ms or less
- LED switch point display
- Option of grommet style or plug connection
- Adjustable hysteresis
- Repeatability ± 1 % F.S.

Part number	Thread connection	Switch point	Switch output	Hysteresis	Voltage
ZSE1-01-15L ●	R 1/8	-101 - 0 KPa	NPN, 3 m cable (grommet)	~1 - 10 % adjustable	12 ~ 24 VDC
ZSE1-01-55L ●			PNP, 3 m cable (grommet)		
ZSE1-01-55CN ●			PNP, without plug		

Plug with 3 m cable	ZS-20-5A-30 ●
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Adjustable vacuum pressure switch with display

ZSE40A Series



- 2 styles:
 - ZSE40A: vacuum
 - ZSE40AF: vacuum & low pressure combination
- Enclosure IP65
- Easy handling, space saving
- 2 colour (green/red) display
- Easy operation: 3 step setting and copy function
- Analogue output: 4-20 mA or 1.5 V
- Switch output: 2 PNP/NPN
- M8 connector type available.

Part number	Rated pressure range	Connection port ¹⁾	Switch output	Voltage
ZSE40A-01-T ●	Vacuum Pressure 0 ~ -101.3 kPa	Male: R 1/8 Female: M5	2 PNP + (1-5 V)	12 ~ 24 VDC
ZSE40A-01-V ●			PNP + (4-20 mA)	
ZSE40A-01-Y ●			2 PNP	
ZSE40A-01-P-L ²⁾ ●	1 PNP			
ZSE40AF-01-T ●	Vacuum + Low Pressure -100 ~ +100 kPa		2 PNP + (1-5 V)	
ZSE40AF-01-V ●			PNP + (4-20 mA)	
ZSE40AF-01-Y ●		2 PNP		

NPN options available upon request.

1) Also available with $\varnothing 4$ or $\varnothing 6$ mm one-touch fitting. (Not for M8 connector type)

2) M8 connector type.

Mounting accessories

Bracket A (with 2 mounting screws each of M3 x 5L and M4 x 5L)	ZS-24-A ●
Bracket B (with 2 mounting screws M4 x 5L)	ZS-24-B ●
Bracket D (with 2 mounting screws each of M3 x 5L and M4 x 5L)	ZS-24-D ●

Adjustable vacuum and positive pressure switch with display

ZSE30A Series



- 2 styles:
 - ZSE30A: Vacuum pressure
 - ZSE30AF: Compound pressure
- Enclosure IP40
- Large, easy-to-read display
- 2 colour (green/red) display
- Easy operation: 3-step setting and copy display
- Analogue output: 4 - 20 mA or 1 - 5 V
- Switch output: 2 PNP/NPN or 1 PNP/NPN
- With straight and elbow one-touch fittings.

Part number	Switch point	Connection port	Switch output	Voltage
ZSE30A-01-B-G ●	Vacuum pressure 0 ~ -101 kPa	Male: R 1/8 Female: M5 (also available with Ø 4 or 6 mm push-in fitting)	2 PNP	12 ~ 24 VDC
ZSE30A-01-F-G ●			PNP + (4-20 mA)	
ZSE30AF-01-B-G ●	Vacuum + Low pressure -100 ~ +100 kPa		2 PNP	
ZSE30AF-01-F-G ●			PNP + (4-20 mA)	

NPN options available upon request.

Mounting accessories

Bracket A	ZS-38-A1 ●
Bracket B	ZS-38-A2 ●
Bracket D	ZS-38-A3 ●
Panel mount adapter	ZS-27-C ●
Lead wire with connector cover (3 cores, for 1 output, 2 m)	ZS-38-3G ●
Lead wire with connector cover (4 cores, for 2 outputs, 2 m)	ZS-38-4G ●

Vacuum and pressure sensor with controller unit

PSE530/200 Series



- Sensor and controller separate
- PSE530:
 - IP40
 - Simple electr. connection using plug
 - Minimal response times
- PSE200:
 - Controller for 4 sensor inputs
 - Automatic sensor recognition
 - Auto shift function.

Measuring sensor for compressed air

Part number	Connection thread	Pressure range	Output signal
PSE531-M5 ●	M5	0 ~ -101 kPa	Analogue 1~ 5 V
PSE533-M5 ●		-101 ~ 101 kPa	

Controller unit

Part number	Switch output	Mounting	Response time	Note
PSE201-4C ●	PNP, 80 mA	Panel mounting	5 ms	With 4 sensor connectors

Accessories

Sensor cable with plug	ZS-26-J ●
Protective cover for PSE201	ZS-26-01 ●
Panel mounting adapter for PSE201	ZS-26-B ●
Sensor connector	ZS-28-C ●

Micro vacuum and pressure sensor with controller unit

PSE540/300 Series



PSE540

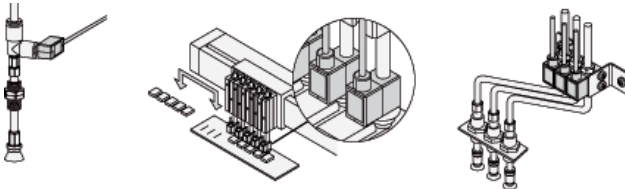
- Micro design, e.g. 9.6 x 20.8 x 18 mm
- Minimal weight, e.g. 3.2 g
- 7 different connection types PSE300
- 1 ms response time
- Analogue output.

Compressed air micro sensor

Part number	Connection thread	Pressure range	Output signal
PSE541-M3	M3 male	Low pressure and vacuum: 0 ~ -101 kPa	Analogue 1 ~ 5 V
PSE541-M5 ●	M5 male		
PSE541-01 ●	Male R 1/8, female M5		
PSE541-R04 ●	Ø 4 mm reducer		
PSE541-R06 ●	Ø 6 mm reducer		
PSE541-IM5 ●	M5 female thread		
PSE541-IM5H	M5 female, with mounting holes	Low pressure and vacuum: -100 ~ +100 kPa	
PSE543-M3 ●	M3 male		
PSE543-M5 ●	M5 male		
PSE543-01 ●	Male R1/8, female M5		
PSE543-R04 ●	Ø 4 mm reducer		
PSE543-R06 ●	Ø 6 mm reducer		
PSE543-IM5 ●	M5 female thread		
PSE543-IM5H	M5 female, with mounting holes		

Controller unit

Part number	Switch output	Response time	Note
PSE303-LC ●	2 PNP + (1 - 5 V)	1 ms	Incl. supply cable, end sensor plug



Pressure or vacuum switch

PS1000/1100/1200 Series

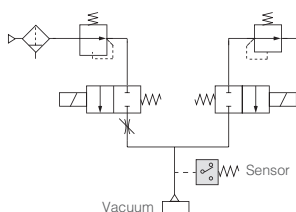


- LED switch point display
- Miniature design
- For mounting directly to one-touch fittings
- Piezo sensor gives long service life
- Can be plugged straight into a \varnothing 6 mm one-touch fitting
- Enclosure IP40.

Part number	Operating pressure range	Switch point [MPa]	Switch output	Voltage
PS1000-R06L-Q ●	-0,1 - 1,0 Mpa	-0,1 - 0,45	Pressure \geq switch point: ON	12 ~ 24 VDC
PS1100-R06L-Q ●		-0,1 - 0,40	Pressure \leq switch point: ON	
PS1200-R06L-Q ●	-100 to 500 kPa	-100 to 0 kPa	Pressure \leq Switch point: ON	

With 3 m cable

Suction monitoring



Pressure gauge for vacuum

GZ46 Series



- 1/8 or 1/4 port on rear side
- Also available for panel mounting.

Part number	Mounting	Display	Port size	Diameter
GZ46-K-01 ●	Direct	-100 KPa ~ 0 kPa	R 1/8	42.5 mm
GZ46-K-01-C ●	Panel mounting			
GZ46-K-02 ●	Direct		R 1/4	
GZ46-K-02-C ●	Panel mounting			

Electronic vacuum regulator

ITV0090/2090 Series



- 2 types:
 - ITV2090: Standard
 - ITV0090: Compact
- Vacuum can be steplessly regulated
- Compact and lightweight
- ITV2090: Fieldbus compatibility:
 - Reduced wiring
 - RS-232C serial communications
- ITV0090:
 - Built-in one-touch fittings
 - With error indication LED
 - High speed response: 0.1 s
 - High stability
- Enclosure IP65.

Part number	Control signal	Output signal	Operation voltage	Port thread	Pressure range	Flow [l/min]
ITV2090-01F2N5 ●	4 ~ 20 mA/DC	Analogue 1 - 5 VDC	24 VDC	G 1/4	-1.3 ~ -80 KPa	130
ITV2090-03F2N5 ●		PNP, 30 mA				
ITV2090-31F2N5 ●	Analogue 1 - 5 VDC					
ITV2090-33F2N5 ●	PNP, 30 mA					
ITV0090-0N	4 ~ 20 mA/DC	Analogue 1 - 5 VDC		One-touch fittings Ø 4	-1 ~ -100 KPa	2
ITV0090-3N ●	0 ~ 10 VDC	Analogue 1 - 5 VDC				

Part number	Description
ITV2090-■F2N	Control signal ■: DE: DeviceNet™ PR: PROFIBUS DP RC: RS-232C Communication

Part number	Cable connector	
ITV2090-0 ITV2090-3	—	P398020-500-3 (Straight) P398020-501-3 (Right angle)
ITV2090-DE	Power	P398020-504-3 (Straight) P398020-505-3 (Right angle)
	Communication	PCA-1557633 (Socket type) PCA-1557646 (Plug type)
ITV2090-PR	Power	P398020-500-3 (Straight) P398020-501-3 (Right angle)
	Communication	PCA-1557688 (Socket type) PCA-1557691 (Plug type)
ITV2090-RC	Power	P398020-500-3 (Straight) P398020-501-3 (Right angle)
	Communication	P398020-502-3 (Straight) P398020-503-3 (Right angle)
ITV0090-0 ITV0090-3	—	M8-4DSX3MG4 (Straight) P398000-501-2 (Right angle)

Check valve

AK Series



AK

- Superior flow capacity
- Low cracking pressure : 0.02 MPa
- Port size from 1/8 to 1

AKH/AKB

- Select from 3 designs
- One-touch fitting both sides
- Male thread/female thread
- Male thread/one-touch fitting
- Low cracking pressure.

Type	Series	Port size	Applicable tubing O.D.		
			Metric size	Inch size	
Check valve	In-line type	AK2000/4000/6000	1/8 to 1	—	—
	Straight type	AKH	—	Ø 4 to Ø 12	Ø 5/32 to Ø 1/2
	Male connector type		M5 to 1/2	Ø 4 to Ø 12	Ø 5/32 to Ø 1/2
	Bushing type	AKB	1/8 to 1/2	—	—

Vacuum release unit

VQD1000-V Series



Model	Suction flow rate [l/min]	Vacuum use
VQD1000-V	16	-101.2 KPa

Electric actuators



Electric actuators

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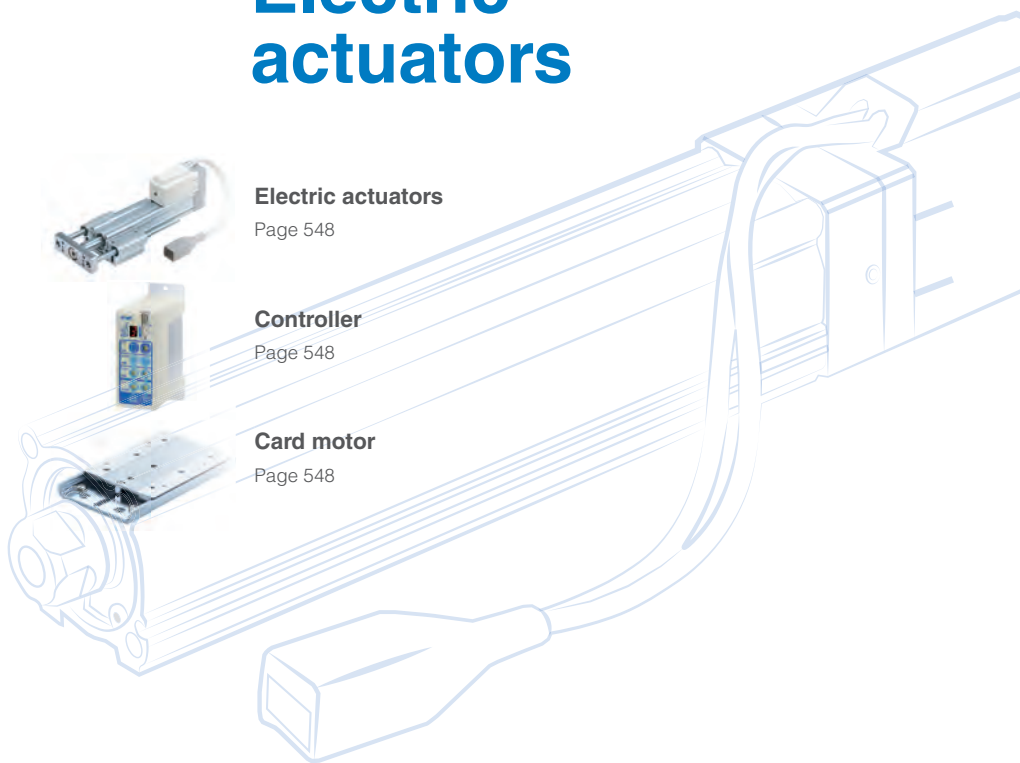
Controller

Page 548



Card motor

Page 548



Electric actuators

Electric actuators



Electric actuator slider type
LEF Series p.551



Electric actuator slider type, high rigidity
LEJ Series p.553



Electric actuator guide rod slider
LEL Series p.553



Electric actuator slider type, low profile
LEM Series p.554



Electric actuator rod type
LEY Series p.555



Guide rod type electric actuator
LEYG Series p.556



Electric slide table
LES Series p.557



Electric actuator miniature type
LEP Series p.558



Electric rotary table
LER Series p.558



Electric gripper
LEH Series p.559



Electric actuators - Motorless type
LEF/LEJ/LEY(G) Series p.560



Controllers



Step data input type controller
LECP6/A6 Series p.563



Programless controller
LECP1 Series p.563



Programless controller, with stroke study
LECP2 Series p.563



Pulse input type controller
LECPA Series p.563



Multi-Axis step motor controller
JXC92/JXC□3 Series p.564



Step motor controller
JXC□1 Series p.565



Fieldbus-compatible gateway unit
LEC-G Series p.565



AC servo motor driver
LECS Series p.567



AC servo motor driver, MECHATROLINK compatible
LECY Series p.567



Card motor



Card motor
LAT3 Series p.568



Card motor controller
LATCA Series p.568



Our highlighted product for you

Step motor controller JXC91/E1/P1/D1/L1 Series



For more details
go to page 565

Broader & safer control

Direct operation of electric actuators through a fieldbus or industrial Ethernet network

Simplified control systems and wiring

- Applicable fieldbus protocols

EtherNet/IP EtherCAT DeviceNet



- 10/100 Mbps high-speed communication for JXC91/E1/P1, up to 500 kbps for JXCD1, 230.4 kbps for JXCL1
- Real time operation.

Compatible electric actuators:
LEF, LEL, LEM, LEY/LEYG,
LES, LEP, LER, LEH.



Dual port connection, IN and OUT

No loss of communication despite having a disconnected location: this allows for linear topology or Device Level Ring (DLR) topology (not for JXCL1 and JXCD1)

- Less wiring
- Good recovery after disconnection
- Easy identification of disconnected spot.

IO-Link

IO-Link compatible type, JXCL1

- Higher control of the applications
- Cost-effective: plug&play, minimum hardware and programming costs
- Integral communication, from sensors to actuators
- Noise immunity.



Our highlighted product for you

Multi-Axis step motor controller

JXC73/83/92/93 Series



For more details
go to page 564

Multiply your control

2 models for communicating

- JXC92/93, EtherNet/IP™ type - direct connection to a fieldbus network
- JXC73/83, parallel I/O type.



JXC92



JXC93



JXC73/83

Direct operation of up to 4 electric actuators only with one controller, for either single or multiple axes

- 4-axis (3-axis for JXC92) operation can be set collectively in one step
- 4-axis (3-axis for JXC92) speed tuning control.

Step data input with maximum 2048 points

- Absolute/relative position coordinates instructions
- Positioning/pushing operation



Approximation to linear and circular interpolation for XYZ and XY axes respectively

Reduction in the amount of equipment and wiring

Compatible electric actuators: LEF, LEY/LEYG, LES, LEP, LER, LEH.

Electric actuator slider type

LEF Series



- Simple installation: possible to mount the main body without removing the external cover
- Two transmission options: belt drive (LEFB); ball screw drive (LEFS)
- Motor mounting direction can be selected
- Optional non-magnetising type lock mechanism for the motor
- High-precision type, LEFSH
- Support guide type, LEFG.



LEFS

Ball screw drive

LEFB

Belt drive

Drive method	Specifications	Series	Stroke [mm]	Workload [kg]		Speed [mm/s] ¹⁾	Screw lead [mm]	Positioning repeatability [mm]	Controller series	
				Horizontal	Vertical					
Ball screw drive	Step motor (Servo/24 VDC)	LEFS16	50 to 500	14 [9]	2	10 to 700 [500]	10	±0.02 (±0.015)	LECP6, LECP1, LECPA, JXC□1, JXC92, JXC□3	
				15 [10]	4	5 to 360 [250]	5	±0.02		
				12 [10]	0.5	20 to 1100 [1000]	20	±0.02		
		LEFS25	50 to 800	25 [20]	7.5	12 to 750 [500]	12	±0.02 (±0.015)		
				30 [20]	15	6 to 400 [250]	6	±0.02		
				20 [15]	4	24 to 1200 [1200]	24	±0.02		
		LEFS32	50 to 1000	45 [40]	10	16 to 800 [500]	16	±0.02 (±0.015)		
				50 [45]	20	8 to 520 [250]	8	±0.02		
	LEFS40	150 to 1200	25 [20]	2	30 to 1200 [500]	30	±0.02			
			55 [50]		20 to 1000 [500]	20	±0.02			
			65 [60]		23	10 to 300 [250]	10	±0.02 (±0.015)		
	Servo motor (24 VDC)	LEFS16A	50 to 500	7	2	10 to 700	10	±0.02 (±0.015)	LECA6	
				10	4	5 to 360	5	±0.02		
		LEFS25A	50 to 800	5	1	20 to 1100	20	±0.02		
				11	2.5	12 to 750	12	±0.02 (±0.015)		
				18	5	6 to 400	6	±0.02 (±0.015)		
AC Servo motor (100/200/400 W)		LEFS25	50 to 800	10	4	max. 1500	20	±0.02 (±0.01)		LECSA, LECSB, LECS, LECS, LECS-T, LECYU, LECYM
				20	8	max. 900	12			
				15	max. 450	6				
	LEFS32	50 to 1000	30	5	max. 1500	24				
			40	10	max. 1000	16				
			45	20	max. 500	8				
LEFS40	150 to 1200	30	7	max. 1500	30					
		50	15	max. 1000	20					
		60	30	max. 500	10					
Belt drive	Step motor (Servo/24 VDC)	LEFB16	300 to 1000	1 [1]	—	48 to 1100	48	±0.08	LECP6, LECP1, LECPA, JXC□1, JXC92, JXC□3	
				10 [5]		48 to 1400				
				19 [14]		48 to 1500				
	Servo motor (24 VDC)	LEFB16A	300 to 1000	1	—	5 to 2000	—	—	LECA6	
				2						
	AC Servo motor (100/200/400 W)	LEFB25A	300 to 2000	5	—	max. 2000	54	±0.06	LECSA, LECSB, LECS, LECS, LECS-T, LECYU, LECYM	
				15						
		LEFB32	300 to 2500	15						
				25						

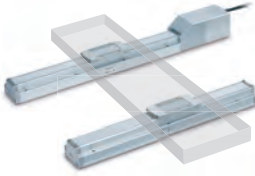
* [] Indicates value when "LECPA, JXC92, JXC□3 controller" is selected.

* { } Indicates value when "high precision slider type electric actuator LEFSH" is selected.

1) Maximum value depends on stroke range.

Support guide

LEFG Series



- Designed to support workpieces with significant overhang
- Standard equipped seal bands prevent grease from splashing and external foreign matter from entering
- Easy assembly thanks to same dimensions as the LEF series body.

Type	Specifications	Series	Stroke [mm]
Ball screw drive	Step motor (Servo/24 VDC) Servo motor (24 VDC) AC Servo motor	LEFG16-S	50 to 500
		LEFG25-S	50 to 800
		LEFG32-S	50 to 1000
		LEFG40-S	150 to 1200
Belt drive	Step motor (Servo/24 VDC) Servo motor (24 VDC)	LEFG16-BT	300 to 1000
		LEFG25-BT	300 to 2000
		LEFG32-BT	
	AC Servo motor	LEFG25-BS	300 to 2500
		LEFG32-BS	
		LEFG40-BS	

Electric actuator slider type, high rigidity

LEJ Series



- Low profile and low centre of gravity (62 mm height)
- Double axis linear guide construction provides high-precision and high rigidity
- Even further improved position repeatability and lost motion with high-precision type
- Dustproof construction, as it is equipped with seal band as standard
- Maximum acceleration/deceleration: 20000 mm/s²
- High precision type, LEJSH
- Standard auto-switches can be mounted.

Ball screw drive

LEJS Series



Belt drive

LEJB Series



- Suitable for repeatable accurate positioning.
- Suitable for long-stroke high-speed and light-load transfer.

Drive method	Specifications	Series	Stroke [mm]	Workload [kg]		Max. speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]	Controller series
				Horizontal	Vertical				
Ball screw drive	AC Servo motor (100/200 W)	LEJS40	200 to 1200	15	3	1800	24	±0.02 [±0.01]	LECSA, LECSB, LECSA, LECSB, LECSA, LECSB, LECSA-T, LECSYU, LECSYM
				30	5	1200	16		
				55	10	600	8		
		LEJS63	300 to 1500	30	6	1800	30		
				45	10	1200	20		
				85	20	600	10		
Belt drive	LEJB40	200 to 2000	20 [10]	—	2000	27	±0.04		
			LEJB63	300 to 3000	30	—			3000

* { } Indicates value when "high precision type" is selected

* [] Indicates value when the stroke exceeds 1000.

Possible auto switches

3 wire solid state/2 colour – PNP	D-M9PWL
3 wire solid state/2 colour – NPN	D-M9NWL

Electric actuator guide rod slider

LEL Series



- Low-profile electric actuator (48 mm height); no interference with motor even with large workpieces
- Compatible with sliding bearing and ball bushing bearing:
 - Sliding bearing: reduced noise, 60 dB or less
 - Ball bushing bearing: high-speed transport – 1000 mm/s – suitable for moment loads
- Optional non-magnetising type lock mechanism for the motor
- Manual override screw for adjustment operation
- Adjustable position, speed and positioning
- Standard auto-switches can be mounted.

Drive method	Series	Bearing	Stroke [mm]	Workload (horizontal) [kg]	Speed [mm/s]	Equivalent lead [mm]	Positioning repeatability [mm]	Controller series
Step motor (Servo/24 VDC)	LEL25M	Sliding bearing	100 to 1000	3	48 to 500	48	±0.08	LECP6, LECP1, JXC□1
	LEL25L	Ball bushing bearing		5	48 to 1000			

Possible auto switches

3 wire solid state/2 colour – PNP	D-M9PWL
3 wire solid state/2 colour – NPN	D-M9NWL

Electric actuator slider type, low profile

LEM Series



- Low profile and low centre of gravity
- Selectable guide mechanism, step motor mounting direction and control method:
 - Guide mechanism: LEMB, LEMC, LEMH, LEMHT
 - Motor mounting direction: top/bottom, right/left
- The drive unit and guide unit are separable (not LEMB)
- Standard auto-switches can be mounted.

Basic type

LEMB Series



- Light load transfer
- Easy connection to an external guide with floating bracket option
- Long stroke.

Cam follower guide type

LEMC Series



- Workpiece direct mounting
- Long stroke.

Linear guide single axis type

LEMH Series



- Workpiece direct mounting
- Provide more moment resistance than the cam follower guide type
- High speed transfer.

Linear guide single axis type

LEMHY Series



- Workpiece direct mounting
- Provide more moment resistance than the linear guide single axis type
- High speed transfer.

Drive method	Specifications	Series	Stroke [mm]	Workload (horizontal) [kg]	Speed [mm/s]	Max. Acceleration/ deceleration [mm/s ²] ¹⁾	Screw lead [mm]	Positioning repeatability [mm]	Controller series
Belt drive	Step motor (Servo/24 V DC)	LEMB25	50 to 2000	6 (10)	48 to 1000	20000	48	±0.08	LECP6, LEEP1, LEEP2, JXC□1
		LEMB32		11 (20)					
		LEMC25		10					
		LEMC32		20					
		LEMH25	50 to 1000	10	48 to 2000				
		LEMH32	50 to 1500	20					
		LEMHT25	50 to 1000	10					
		LEMHT32	50 to 1500	20					

* () When combined with external guide.

1) The acceleration/deceleration is dependent on the work load.

Possible auto switches

3 wire solid state/2 colour – PNP	D-M9PWL
3 wire solid state/2 colour – NPN	D-M9NWL

Electric actuator rod type

LEY Series



Parallel motor



In-line motor



- Ball screw drive actuator with selectable motor (servo motor, step motor)
- Standard auto-switches can be mounted
- Mounting flexibility: three position for direct mounting and three types of mounting brackets, plus rod end brackets
- Selectable motor mounting direction
- Optional non-magnetising type lock mechanism for the motor
- Reduced actuator height by in-line motor mounting, in-line motor type LEY□D
- High-precision rod type electric actuator, LEYH(D).

Specifications	Series	Stroke [mm]	Pushing force [N]	Workload [kg]		Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]	Controller series
				Horizontal	Vertical				
Step motor (Servo/24 VDC)	LEY16□	30 to 300	14 to 38	6 [4]	2	15 to 500	10	±0.02	LECP6, LECP1, LECPA, JXC□1, JXC92, JXC□3
			27 to 74	17 [11]	4	8 to 250	5		
			51 to 141	30 [20]	8	4 to 125	2.5		
	LEY25□	30 to 400	63 to 122	20 [12]	8	18 to 500	12		
			126 to 238	40 [30]	16	9 to 250	6		
			232 to 452	60 [30]	30	5 to 125	3		
	LEY32□	30 to 500	80 to 189	30 [20]	11	24 to 500	16		
			156 to 370	45 [40]	22	12 to 300 [250]	8		
			296 to 707	60 [40]	43	6 to 150 [125]	4		
			132 to 283	50 [30]	13	24 to 500 [300]	16		
	LEY40□	30 to 500	266 to 553	60 [60]	27	12 to 350 [150]	8		
			562 to 1058	80 [60]	53	6 to 175 [75]	4		
16 to 30			3	2	1 to 500	10			
Servo motor (24 VDC)	LEY16□A	30 to 300	30 to 58	6	4	1 to 250	5	±0.02	LECA6
			57 to 111	12	8	1 to 125	2.5		
			18 to 35	7	3	2 to 500	12		
	LEY25□A	30 to 400	37 to 72	15	6	1 to 250	6		
			66 to 130	30	12	1 to 125	3		
			65 to 131	18	8	max. 900	12		
AC Servo motor (100/200 W)	LEY(H)25□	30 to 500	127 to 255	50	16	max. 450	6	±0.02 (±0.01)	LECSA, LECSB, LECSC, LECSA, LECSS-T, LECYU, LECYM
			242 to 485			30	max. 225		
	79 (98) to 157(197)		30	9 (12)	max. 1200 (1000)	20 (16)			
	154 (192) to 308 (385)		60	19 (24)	max. 600 (500)	10 (8)			
294 (368) to 588 (736)	37 (46)	max. 300 (250)		5 (4)					
AC Servo motor (400 W)	LEY(H)63□	100 to 800	156 to 521	40	19	max. 1000	20	±0.02 (±0.01)	LECSA, LECSB, LECSC, LECSA, LECSS-T, LECYU, LECYM
			304 to 1012	70	38	max. 500	10		
			573 to 1910	80	72	max. 250	5		
			1003 to 3343 ¹⁾	200 ¹⁾	115 ¹⁾	max. 70 ¹⁾	2.86 ¹⁾		

* () indicates value when "in-line type" is selected

* [] indicates value when "LECPA, JXC92, JXC□3 controller" is selected

* { } indicates value when "high-precision slider type electric actuator LEYH" is selected

1) Not available for in-line motor type.

Possible auto switches

3 wire solid state/2 colour – PNP	D-M9PWL
3 wire solid state/2 colour – NPN	D-M9NWL

Guide rod type electric actuator



LEYG Series



Parallel motor



In-line motor

- Two compact and integrated guide rods provide lateral load resistance and high non-rotating accuracy
- Compatible with sliding bearing and ball bushing bearing
- Selectable motor mounting direction
- Optional non-magnetising type lock mechanism for the motor
- High-precision guide rod type LEYHG
- Reduced actuator height by in-line motor mounting, in-line motor type LEYG□□
- Standard auto-switches can be mounted.

Specifications	Series	Stroke [mm]	Pushing force [N]	Workload [kg]		Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]	Controller series			
				Horizontal	Vertical							
Step motor (Servo/24 VDC)	LEYG16□	30 to 200	14 to 38	6 [4]	1.5	15 to 500	10	±0.02	LECP6, LECP1, LECPA, JXC□1, JXC92, JXC□3			
			27 to 74	17 [11]	3.5	8 to 250	5					
			51 to 141	30 [20]	7.5	4 to 125	2.5					
	LEYG25□		63 to 122	20 [12]	7	18 to 500	12					
			126 to 238	40 [30]	15	9 to 250	6					
			232 to 452	60 [30]	29	5 to 125	3					
	LEYG32□		30 to 300	80 to 189	30 [20]	9	24 to 500			16		
				156 to 370	45 [40]	20	12 to 300 [250]			8		
				296 to 707	60 [40]	41	6 to 150 [125]			4		
				132 to 283	50 [30]	11	24 to 500 [300]			16		
LEYG40□	266 to 553	60 [60]		25	12 to 350 [150]	8						
	562 to 1058	80 [60]		51	6 to 175 [75]	4						
	16 to 30	3		1.5	1 to 500	10						
Servo motor (24 VDC)	LEYG16□A	30 to 200		30 to 58	6	3.5	1 to 250	5	±0.02	LECA6		
				57 to 111	12	7.5	1 to 125	2.5				
				18 to 35	7	2	2 to 500	12				
	LEYG25□A		37 to 72	15	5	1 to 250	6					
			66 to 130	30	11	1 to 125	3					
AC Servo motor (100/200 W)	LEY(H)G25□		30 to 300	65 to 131	18	7	max. 900	12			±0.02 [±0.01]	LECSA, LECSB, LECS, LECSS, LECSS-T, LECYU, LECYM
				127 to 255	50	15	max. 450	6				
				242 to 485		29	max. 225	3				
	LEY(H)G32□			79 (98) to 157(197)	30	7 (10)	max. 1200 (1000)	20 (16)				
				154 (192) to 308 (385)			60	17 (22)				
		294 (368) to 588 (736)		35 (44)	max. 300 (250)	5 (4)						

- * () Indicates value when "in-line type" is selected
- * [] Indicates value when "LECPA, JXC92, JXC□3 controller" is selected
- * { } Indicates value when "high-precision rod type electric actuator LEYHG" is selected.

Possible auto switches

3 wire solid state/2 colour – PNP	D-M9PWL
3 wire solid state/2 colour – NPN	D-M9NWL

Electric slide table

LES Series



- High rigidity type LESH□ available
- Reduced cycle time: maximum acceleration 5000 mm/s²; maximum speed 400 mm/s
- Easy and flexible mounting of the table, with selectable motor:
 - Step motor (servo/24 VDC): ideal for high load transfer at a low speed and pushing operation
 - Servo motor (24 VDC): stable at high speed and suitable for silent operations
- Optional dustproof specification, IP5X equivalent.

Basic type

LESR/LESHR Series



- Compact and space saving by built-in motor.

Symmetrical type

LESL/LESHL Series



- Compact and space saving by built-in motor
- The locations of the table and cable are opposite those of the basic type.

In-line motor type

LESD/LESHD Series



- Reduced width and height by in-line motor mounting.

Specifications	Series	Stroke [mm]	Pushing force [N]	Workload [kg]		Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]	Controller series	
				Horizontal	Vertical					
Compact type	Step motor (Servo/24 VDC)	LES8□	6 to 15	1	0.5	10 to 200	4	±0.05	LECP6, LECP1, LECPA, JXC□1, JXC92, JXC□3	
			4 to 10		0.25	20 to 400	8			
		LES16□	30, 50, 75, 100	3	3	10 to 200	5			
	LES25□	30, 50, 75, 100, 125, 150	5	15 to 35	1.5	20 to 400	10			
				77 to 180	5	10 to 200	8			
	Servo motor (24 VDC)	LES8□A	30, 50, 75	43 to 100	1	2.5	20 to 400			16
				7.5 to 11		1	1 to 200		4	
		LES16□A	30, 50, 75, 100	3	5 to 7.5	0.5	1 to 400		8	
					17.5 to 35	3	1 to 200		5	
LES25□A ¹⁾		30, 50, 75, 100, 125, 150	5	10 to 20	1.5	1 to 400	10			
				31 to 62	4	1 to 200	8			
19 to 38	2	1 to 400	16							
High rigidity type	Step motor (Servo/24 VDC)	LESH8□	6 to 15	2	0.5	10 to 200	4	LECP6, LECP1, LECPA, JXC□1, JXC92, JXC□3		
			4 to 10		1	0.25	20 to 400		8	
		LESH16□	50, 100	8	23.5 to 55	2	10 to 200		5	
					15 to 35	5	1		20 to 400	10
	LESH25□	50, 100, 150	12	77 to 180	4	10 to 150	8			
				43 to 100	8	2	20 to 400		16	
	Servo motor (24 VDC)	LESH8□A	50, 75	7.5 to 11	2	0.5	1 to 200		4	
				5 to 7.5		1	0.25		1 to 400	8
		LESH16□A	50, 100	5	17.5 to 35	2	1 to 200		5	
					10 to 20	2.5	1		1 to 400	10
		LESH25□A ¹⁾	50, 100, 150	6	31 to 62	2.5	1 to 150		8	
					19 to 38	4	1.5		1 to 400	16

1) Not available for in-line motor type.

Electric actuator miniature type

LEP Series



LEPY
Rod type



LEPS
Slide table type

- Palm-sized electric actuators, compact and lightweight
- Motor type selectable:
 - High pushing force type – basic type
 - Compact and lightweight motor type (size 10 only)
- Manual override screw for adjustment operation
- Possible to set position, speed and force (64 points).

Specifications	Type	Series	Stroke [mm]	Screw lead [mm]	Pushing force [N]		Max. Workload (horizontal) [Kg]		Max. Workload (vertical) [Kg]		Speed (horizontal) [mm/s]		Positioning repeatability [mm]	Controller series
					Basic	Compact	Basic	Compact	Basic	Compact	Basic	Compact		
Step motor (Servo/24 VDC)	Miniature rod type	LEPY6	25, 50 75	4	14 to 20	—	2.0	—	0.5	—	10 to 150	—	±0.05	LECP6, LECP1, LECPA, JXC□1, JXC92, JXC□3
				8	7 to 10	—	1.0	—	0.25	—	20 to 300 (250)	—		
		LEPY10		5	25 to 50	24 to 40	6.0	4.0	1.5	—	10 to 200	—		
				10	12.5 to 25	12 to 20	3.0	2.0	1.0	—	20 to 350 (250)	—		
	Miniature slide table type	LEPS6	25, 50	4	14 to 20	—	1.0	—	0.5	—	10 to 150	—		
				8	7 to 10	—	0.75	—	0.25	—	20 to 300 (250)	—		
		LEPS10		5	25 to 50	24 to 40	2.0	—	1.5	—	10 to 200	—		
				10	12.5 to 25	12 to 20	1.5	—	1.0	—	20 to 350 (250)	—		

* () Indicates value when stroke is 25 mm.

Electric rotary table

LER Series



- Adjustable speed, acceleration and position (up to 64 positioning points)
- Easy setting operation and installation
- Selectable rotation angles, with continuous rotation model available: 90°, 180°, 320° (310° for LER10), 360°
- Maximum acceleration 3000 °/s², maximum speed 420 °/s.

Specifications	Series	Rotating torque [N·m]		Speed [°/s]		Positioning repeatability [°]		Controller series ¹⁾
		Basic	High torque	Basic	High torque	Basic	High torque	
Step motor (Servo/24 V DC)	LER10	0.22	0.32	30 to 420	20 to 280	±0.05 [±0.01] (±0.05)		LECP6, LECP1, LECPA, JXC□1, JXC92, JXC□3
	LER30	0.8	1.2			±0.05 [±0.01] (±0.03)		
	LER50	6.6	10					

* [] Indicates value when an external stopper is used

* () Indicates value when "high-precision type" is selected

1) LECPA, LECP1, JXC92, JXC□3: not available for 360° rotation angle.

Electric gripper

LEH Series



- Drop prevention function (self-lock mechanism) is provided
- Energy saving: power consumption reduced by self-lock mechanism
- Gripping check function is provided.

2 finger electric gripper

LEHZ Series



- Extremely compact and lightweight, with various gripping forces.

2 finger electric gripper with dust cover

LEHZJ Series



- Sealed-construction dust cover, equivalent to IP50
- 3 selectable cover materials for the fingers.

2 finger long-stroke electric gripper

LEHF Series



- Possible to hold various types of workpieces due to long stroke.

3 finger electric gripper

LEHS Series



- Suitable for holding round workpieces.

Specifications	Series	Opening/closing stroke both sides [mm]	Gripping force [N]		Opening/closing speed [mm/s]	Pushing speed [mm/s]	Repeatability [mm]	Controller series
			Basic	Compact				
Step motor (Servo/24 VDC)	LEHZ10	4	6 to 14	2 to 6	5 to 80	5 to 50	±0.02	LECP6, LECP1, LECPA, JXC□1, JXC92, JXC□3
	LEHZ16	6		3 to 8				
	LEHZ20	10	16 to 40	11 to 28	5 to 100	5 to 50		
	LEHZ25	14						
	LEHZ32	22	52 to 130	—	5 to 120	5 to 50		
	LEHZ40	30	84 to 210	—				
	LEHZJ10	4	6 to 14	3 to 6	5 to 80	5 to 50		
	LEHZJ16	6		4 to 8				
	LEHZJ20	10	16 to 40	11 to 28	5 to 100	5 to 50		
	LEHZJ25	14						
	LEHF10	16 (32)	3 to 7		5 to 80	5 to 20	±0.05	
	LEHF20	24 (48)	11 to 28					
	LEHF32	32 (64)	48 to 120		5 to 100	5 to 30		
	LEHF40	40 (80)	72 to 180					
	LEHS10	4	2.2 to 5.5	1.4 to 3.5	5 to 70	5 to 50	±0.02	
LEHS20	6	9 to 22	7 to 17	5 to 80	5 to 50			
LEHS32	8	36 to 90	—	5 to 100	5 to 50			
LEHS40	12	52 to 130	—	5 to 120	5 to 50			

* () Indicates value when "long stroke" is selected

Electric actuators - Motorless type



LEF/LEJ/LEY(G) Series



- Compatible with 100/200/400 W motors of main manufacturers:
 - OMRON Corporation
 - SIEMENS AG
 - Beckhoff Automation GmbH
 - YASKAWA Electric Corporation
 - Panasonic Corporation
 - Delta Electronics, Inc.
 - FANUC Corporation
 - FASTECH Co., Ltd.
 - FUJI ELECTRIC CO., LTD.
 - KEYENCE Corporation
 - Mitsubishi Electric Corporation
 - NIDEC SANKYO Corporation
 - Rockwell Automation, Inc. (Allen-Bradley)
 - SANYO DENKI CO., LTD.
 - ORIENTAL MOTOR Co., Ltd.
- Available series with no motor attached: LEFS/LEFB, LEJS, LEY/LEYG
- Standard auto-switches can be mounted (except in LEFS/LEFB Series).

Slider type

LEFS/LEFB Series



Drive method	Series	Stroke [mm]	Workload [kg]		Max. Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]
			Horizontal	Vertical			
Ball screw drive	LEFS25	50 to 800	10	4	1500	20	±0.02 (±0.01)
			20	8	900	12	
			15	450	6		
	LEFS32	50 to 1000	30	5	1500	24	
			40	10	1000	16	
			45	20	500	8	
LEFS40	150 to 1200	30	7	1500	30		
		50	15	1000	20		
		60	30	500	10		
Belt drive	LEFB25	300 to 2000	5	—	2000	54	±0.06
	LEFB32	300 to 2500	15				
	LEFB40	300 to 3000	25				

* () Indicates value when "high-precision type" is selected.

High rigidity slider type

LEJS Series



Drive method	Series	Stroke [mm]	Workload [kg]		Max. Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]
			Horizontal	Vertical			
Ball screw drive	LEJS40	200 to 1200	15	3	1800	24	±0.02 (±0.01)
			30	5	1200	16	
			55	10	600	8	
	LEJS63	300 to 1500	30	6	1800	30	
			45	10	1200	20	
			85	20	600	10	

* () Indicates value when "high-precision type" is selected.

Rod type

LEY Series



Series	Motor mounting position	Stroke [mm]	Pushing force [N]	Workload [kg]		Max. Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]
				Horizontal	Vertical			
LEY25	Top/parallel In-line	30 to 400	65 to 131	18	8	900	12	±0.02 (±0.01)
			127 to 255	50	16	450	6	
			242 to 485		30	225	3	
LEY32	Top/parallel	30 to 500	79 to 157	30	9	1200	16	
			154 to 308	60	19	600	8	
			294 to 588		37	300	4	
	In-line		98 to 197	30	12	1000	16	
			192 to 385	60	24	500	8	
			368 to 736		46	250	4	
LEY63	Top/parallel	100 to 800	156 to 521	40	19	1000	20	
			304 to 1012	70	38	500	10	
			573 to 1910	80	72	250	5	
			1003 to 3343	200	115	70	2.86	
	In-line		156 to 521	40	19	1000	20	
			304 to 1012	70	38	500	10	
			573 to 1910	80	72	250	5	

* () Indicates value when "high-precision type" is selected.

Guide rod type

LEYG Series



Series	Motor mounting position	Stroke [mm]	Pushing force [N]	Workload [kg]		Max. Speed [mm/s]	Screw lead [mm]	Positioning repeatability [mm]
				Horizontal	Vertical			
LEYG25	Top In-line	30 to 300	65 to 131	18	7	900	12	±0.02 (±0.01)
			127 to 255	50	15	450	6	
			242 to 485		29	225	3	
LEYG32	Top	30 to 300	79 to 157	30	7	1200	20	
			154 to 308	60	17	600	10	
			294 to 588		35	300	5	
	In-line		98 to 197	30	10	1000	16	
			192 to 385	60	22	500	8	
			368 to 736		44	250	4	

* () Indicates value when "high-precision type" is selected.

Possible auto switches

3 wire solid state / 2 colour - PNP	D-M9PWL
3 wire solid state / 2 colour - NPN	D-M9NWL

Controller & drivers



	Compatible motor	Control method	Compatible encoder		Compatible option		
			Type	Resolution	Teaching box	Network gateway unit	Blank controller ¹⁾
Controller (24 VDC) LECP6 	Step 24 VDC	Positioning (64 points)	Incremental	800	✓	✓	✓
Controller (24 VDC) LECA6 	Servo 24 VDC				✓	✓	✓
Programless controller (24 VDC) LECP1 	Step 24 VDC	Positioning (14 points)			✗	✗	✗
Programless controller, with stroke study (24 VDC) LECP2 		Positioning (14 points) ²⁾			✗	✗	✗
Pulse input type step motor driver (24 VDC) LECPA 		Pulse input			✓	✗	✓
4 Axis controller (24 VDC) JXC73/83 		Positioning (2048 points)			✗	✗	✗
3 Axis controller (24 VDC) JXC92 	Positioning (2048 points) ³⁾	✗			✗	✗	
4 Axis controller (24 VDC) JXC93 	Positioning (2048 points) ³⁾	✗			✗	✗	
Direct input type step motor controller (24 VDC) JXC91/E1/P1/D1/L1 		Positioning (64 points) & Network direct input ⁴⁾	✓	✗	✓		

1) A blank controller is a controller to which the customer can write the data of the actuator it is to be combined and used with

Refer to catalogue of each controller/driver series for more information

2) 2 stroke end points plus 12 intermediate points

3) Communication protocol: EtherNet/IP™

4) Communication protocols: EtherCAT®, EtherNet/IP™, PROFINET, DeviceNet™, IO-Link.

Step data input type controller

LEC Series



LEC6
Step motor (Servo/24 VDC)



LECA6
Servo motor (24 VDC)

- Two types: to control step motor (LEC6) and servo motor (LECA6)
- LEC6 compatible with actuators series: LEF, LEL, LEM, LEY/LEYG, LES, LEP, LER, LEH LECA6 compatible with actuators series: LEF, LEY/LEYG, LES
- 64 points positioning
- Software or teaching box for programming the parameters.

Programless controller

LECP1 Series



- Compatible with actuators series: LEF, LEL, LEM, LEY/LEYG, LES, LEP, LER, LEH
- 14 points positioning
- Speed and acceleration: 16-level adjustment via switches
- No software to put into operation (control panel setting).

Programless controller, with stroke study

LECP2 Series



- Specialised for LEM series
- 14 points positioning: 2 stroke end points + 12 intermediate points positioning
- Speed and acceleration: 16-level adjustment via switches
- No software to put into operation (control panel setting).

Pulse input type controller

LECPA Series



- Compatible with actuators series: LEF, LEY/LEYG, LES, LEP, LER, LEH
- Type activated controller by pulse signals, capable of positioning at any position
- Software or teaching box for setting data.

Our highlighted product for you

Multi-axis step motor controller



JXC73/83/92/93 Series



JXC73/83
Parallel I/O type



JXC92
EtherNet/IP



JXC93
EtherNet/IP

- Compatible with actuators series: LEF, LEY/LEYG, LES, LEP, LER, LEH
- Step data input with maximum 2048 points:
 - Absolute/relative position coordinates instructions
 - Positioning/pushing operation
- Approximation to linear and circular interpolation for XYZ and XY axes respectively
- Direct operation of up to 4 electric actuators only with one controller, for either single or multiple axes:
 - JXC92:
 - 3-axis operation can be set collectively in one step
 - 3-axis speed tuning control
 - JXC73/83/93:
 - 4-axis operation can be set collectively in one step
 - 4-axis speed tuning control
- Software or teaching box for setting data (teaching box not for JXC92 and JXC93).

Our highlighted product for you

Step motor controller

JXC91/E1/P1/D1/L1 Series



JXC91

EtherNet/IP



JXCE1

EtherCAT



JXCP1

PROFINET



JXCD1

DeviceNet



JXCL1

IO-Link

- Compatible with actuators series: LEF, LEY/LEYG, LES, LEP, LER, LEH, LEL, LEM
- Direct operation through a fieldbus or industrial Ethernet network:
 - 10/100 Mbps high-speed communication for JXC91/E1/P1, up to 500 kbps for JXCD1, 230.4 kbps for JXCL1
 - Real time operation
- Dual port connection, IN and OUT, that allows for linear topology or Device Level Ring (DLR) topology (not for JXCL1 and JXCD1):
 - Less wiring
 - Good recovery after disconnection
 - Easy identification of disconnected spot
- IO-Link compatible type, JXCL1:
 - Higher control of the applications
 - Cost-effective: Plug & play, minimum hardware and programming costs
 - Integral communication, from sensors to actuators
 - Noise immunity
- Software or teaching box for setting data.

Fieldbus-compatible gateway unit

LEC-G Series



LEC-GEN1

EtherNet/IP



LEC-GPR1

PROFINET



LEC-GDN1

DeviceNet



LEC-GMJ2

CC-Link V2

- Allows connection of LEC6/LECA6 controllers to fieldbus networks:
 - LEC controllers are processed from the PLC through the LEC-G
 - Up to 12 LEC controllers are connectable via serial communication RS485.
- Compatible actuators: LEF, LEY/LEYG, LES, LEP, LER, LEH, LEL, LEM
- Three operation modes:
 - Step data input mode – the actuator uses preset step data of the controller (parallel I/O)
 - Numerical data input mode – the actuator uses values, such as position and speed, sent directly from the PLC
 - Step data writing mode – the actuator uses editable step data of the controller (parallel I/O) that can be changed through the gateway unit.

AC servo motor drivers

	Compatible motor	Control method	Compatible encoder		Setting/graph/monitor method
			Type	Resolution	
Pulse/Positioning 100/200/400 W (100/200 VAC) LECSA 	AC servo	Positioning (max. 7 points) & Pulse input	Incremental	131072 (17-bit)	Digital I/O signal or pulse signal input through PLC (setup software – MR configurator2™)
Pulse 100/200/400 W (100/200 VAC) LECSB 		Pulse input			
CC-Link 100/200/400 W (100/200 VAC) LECS 		Positioning (max. 255 points) & Network direct input (CC-Link)	Absolute	262144 (18-bit)	PLC (CC-Link master unit) (setup software – MR configurator2™)
SSCNET III 100/200/400 W (100/200 VAC) LECSS 		Network direct input (SSCNET III) ¹⁾			
SSCNET III/H 100/200/400 W (200 VAC) LECSS-T 		Network direct input (SSCNET III/H) ^{1, 2)}			
MECHATROLINK-II 100/200/400 W (200 VAC) LECYM 		Network direct input (MECHATROLINK-II) ²⁾	1048576 (20-bit)	PLC (positioning unit/Motion controller) (setup software – MR configurator2™)	
MECHATROLINK-III 100/200/400 W (200 VAC) LECYU 		Network direct input (MECHATROLINK-III) ²⁾			PLC (positioning unit/Motion controller) (setup software – SigmaWin+™)

1) High-speed optical communication

2) STO (Safe Torque Off) safety function available.

AC servo motor driver



LECS Series



LECSA/LECSB
Pulse input type



LECSB
CC-Link V2



LECSB
SSCNET III



LECSB-T
SSCNET III/H

- Compatible with actuators series: LEF, LEJ, LEY/LEYG
- With display setting function.

LECSA Series – Pulse input type or positioning type, for incremental encoder

- Positioning type, with up to 7 positioning points by point table

LECSB Series – Pulse input type, for absolute encoder

- 10/6 parallel inputs/outputs

LECSB Series – CC-Link direct input type, for absolute encoder

- Suitable for multipoint positioning, being possible to set position data/speed data and operation start/stop

LECSB Series – SSCNET III type, for absolute encoder

- Optimum for interpolation and with enhanced noise resistance by using the fiber optics for communication

LECSB-T Series – SSCNET III/H type, for absolute encoder

- Optical communication protocol with STO – Safe Torque Off – function (in accordance with IEC61800-5-2) and homing done by z-phase, ideal for machines with axis motion.

AC servo motor driver, MECHATROLINK compatible



LECY Series



LECYM
MECHATROLINK - II



LECYU
MECHATROLINK - III

- Compatible with actuators series: LEF, LEJ, LEY/LEYG
- Position control, speed control and torque control can be achieved
- STO – Safe Torque Off – function in accordance with IEC61800-5-2
- Homing can be performed by mechanical end stop
- Lock cable integrated with motor cable.

LECYM Series – MECHATROLINK-II type

- Number of connectable drivers: 30 units
- Maximum communication speed 10 Mbps, minimum communication cycle 250 μ s.

LECYU Series – MECHATROLINK-III type

- Number of connectable drivers: 62 units
- Maximum communication speed 100 Mbps, minimum communication cycle 125 μ s.

Card motor

LAT3 Series



- 3 functions in 1 unit
- Compact design – 9 mm thickness – and lightweight – from 130 to 360 g
- Easy programming by Cycle Time Entry Method:
Operation setting is completed by only introducing 3 parameters:
target position + positioning time + workload
- Modbus serial communication compatible.

Series	Stroke [mm]	Sensor (optical linear encoder)	Linear motor	Linear guide	Pushing	Positioning repeatability	Pushing measurement	Maximum load mass [g]		Maximum speed [mm/s]
		Resolution [μm]	Type		Instantaneous max. thrust [N]	Accuracy [μm]		Horizontal	Vertical ¹⁾	
LAT3	10, 20, 30	30	Moving magnet type linear motor	Linear guide with circulating balls	5.2 up to 6	±90	±100	1000	100 (50)	400
LAT3F	10, 20, 30, 50	1.25				±5	±10		—	
LAT3M	50	5				±20	±40		—	

* () indicates value when 30 mm is selected.

1) Vertical is not possible when 50 mm stroke is selected.

Card motor controller

LATCA Series



- Direct and remote control of LAT3 card motor
- 3 types of input signals to work with:
 - Step Data Input: I/O for general, with 15 step data and 6/4 parallel I/O
 - Pulse Input: With 4 step data and 6/4 parallel I/O
 - Serial Input (based on Step Data Input): Allows the connection in series of up to 16 controllers via RS485
- Automatic calculation of speed, acceleration and deceleration with Cycle Time Entry method.

Compatible motor	Operation method	Parallel inputs/outputs	Position & speed setting method	Compatible encoder type
Moving magnet type linear motor	Step data input	6 inputs/4 outputs	Software	Incremental
	Pulse input		Inputted pulse	
	Serial input		Software or inputted data	



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Safety instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution", "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

- *1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
- ISO 4413: Hydraulic fluid power – General rules relating to systems.
- IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
- ISO 10218-1: Manipulating industrial robots - Safety.
- etc.

 **Caution:** Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

 **Warning:** Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 **Danger:** Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Warning

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Warning

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "limited warranty and Disclaimer" and "Compliance Requirements". Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.
 - *2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.



Safety Instructions

Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.



Common precautions

Be sure to read before handling.

For detailed precautions on every series, refer to main catalogue.

Selection

Warning

1. Confirm the specifications.

Products represented in this catalog are designed for use in compressed air applications only (including vacuum), unless otherwise indicated.

Do not use the product outside their design parameters.

Please contact SMC when using the products in applications other than compressed air (including vacuum).

Mounting

Warning

1. Instruction manual

Install the products and operate them only after reading the instruction manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.

2. Securing the space for maintenance

When installing the products, please allow access for maintenance.

3. Tightening torque

When installing the products, please follow the listed torque specifications.

Piping

Warning

1. Before piping

Make sure that all debris, cutting oil, dust, etc. are removed from the piping.

2. Wrapping of pipe tape

When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not get inside the piping. Also, when the pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

Air supply

Warning

1. Operating fluid

Please consult with SMC when using the product in applications other than compressed air (including vacuum).

Regarding products for general fluid, please ask SMC about applicable fluids.

2. Install an air dryer, aftercooler, etc.

Excessive condensate in a compressed air system may cause valves and other pneumatic equipment to malfunction.

Installation of an air dryer, after cooler etc. is recommended.

3. Drain flushing

If condensate in the drain bowl is not emptied on a regular basis, the bowl will over flow and allow the condensate to enter the compressed air lines.

If the drain bowl is difficult to check and remove, it is recommended that a drain bowl with the auto-drain option be installed.

For compressed air quality, refer to "Air Preparation Equipment" catalog.

4. Use clean air

If the compressed air supply is contaminated with chemicals, synthetic materials, corrosive gas, etc., it may lead to break down or malfunction.

Operating environment

Warning

1. Do not use in environments where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.

2. Do not expose the product to direct sunlight for an extended period of time.

3. Do not use in a place subject to heavy vibrations and/or shocks.

4. Do not mount the product in locations where it is exposed to radiant heat.

Maintenance

Warning

1. Maintenance procedures are outlined in the operation manual.

Not following proper procedures could cause the product to malfunction and could lead to damage to the equipment or machine.

2. Maintenance work

If handled improperly, compressed air can be dangerous.

Assembly, handling and repair of pneumatic systems should be performed by qualified personnel only.

3. Drain flushing

Remove drainage from air filters regularly. (Refer to the specifications.)

4. Shut-down before maintenance

Before attempting any kind of maintenance make sure the supply pressure is shut off and all residual air pressure is released from the system to be worked on.

5. Start-up after maintenance and inspection

Apply operating pressure and power to the equipment and check for proper operation and possible air leaks. If operation is abnormal, please verify product set-up parameters.

6. Do not make any modifications to be product.

Do not take the product apart.

Common pneumatics symbols

	Supply of compressed air (1 or P)		Valve control, solenoid pilot valve
	Exhaust (3, 5 or E, R)		2/2 valve, normally closed, monostable, push button-controlled with spring return
	Silencer		3/2 valve, normally closed, monostable, pressure-controlled with spring return
	Filter with manual water drain		3/2 valve, normally closed
	Filter with automatic water drain		3/2 valve, normally open
	Pressure regulator with secondary exhaust		5/2 valve, bistable
	Lubricator		5/2 valve, monostable
	FRL – filter/regulator/lubricator-assembly		5/3 valve, closed centre
	Check valve		5/3 valve, open centre
	Flow controller		5/3 valve, pressurized centre
	Adjustable flow controller		Double 3/2 valve, normally closed/normally closed
	Adjustable speed controller		Double 3/2 valve, normally open/normally open
	OR valve		Double 3/2 valve, normally closed/normally open
	AND valve		Single acting cylinder with spring return
	Quick exhaust valve		Double acting cylinder
	Valve control, general symbol		Double acting cylinder with magnetic piston for sensors
	Valve control, roll		Double acting cylinder with adjustable cushioning at both end positions
	Valve control, spring		Double acting cylinder with magnetic piston for sensors and adjustable cushioning at both end positions
	Valve control, push button		Rotary actuator
	Valve control, pilot valve		
	Valve control, direct acting solenoid		

Numbering of connections

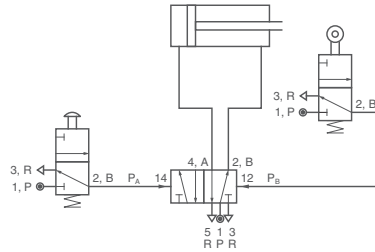
Explanation of how the different connections on the pneumatic components are named

Port number:

- 1 (P)** Inlet, usually related to mains air supply.
- 2 (B)** Outlet to consumers.
- 3 (R, E)** Drain exhaust.
- 4 (A)** Outlet to consumers.
- 5 (R, E)** Drain exhaust.

- 10** Connection for impulse that closes the valve. Only 3/2 N.O.
- 12** Connection for impulse that combines inlet 1 with outlet 2.
- 14** Connection for impulse that combines inlet 1 with outlet 4.

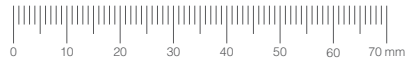
- Single digit even numbers indicates the outlet.
- Single digit odd numbers (except 1) indicate exhaust.
- Double digits indicating controlling connections.



Other definitions exist depending on the brand.

Thread sizes

Thread designation		Thread designation	Inside diameter
M3	—	3 mm	2.5 mm
M5	—	5 mm	4.2 mm
1/8"	01 R 6	9.7 mm	8.6 mm
1/4"	02 R 8	13.2 mm	11.4 mm
3/8"	03 R 10	16.7 mm	15 mm
1/2"	04 R 15	21 mm	18.6 mm
3/4"	06 R 20	26.4 mm	24.1 mm
1"	10 R 25	33.2 mm	30.3 mm
1 1/4"	12 R 32	41.9 mm	39.8 mm
1 1/2"	14 R 40	47.8 mm	44.8 mm
2"	20 R 50	59.6 mm	56.7 mm



SMC's part number provides information on the thread. In chapter 10 you will find KQ2 fittings. The last positions in the order number indicate the type of thread. Here you can see what they stand for:

- U01** UNI-thread. Fits tapered, NPT, straight threads. Disc for sealing.
- O1S** Taper thread. Also fits straight thread. Sprayed PTFE on the threads to seal.
- G01** Straight thread. Disc for sealing.
- M3/M5** Metric thread. Disc for sealing.



Expressions and definitions

A short glossary of common terms and definitions in pneumatics

Cylinders

Double acting cylinder Where the piston movement in both directions occurs through the influence of pressurized medium.

Single acting cylinder Where the piston movement in one direction is done by the influence of pressurized medium and in the other direction by some other force (spring).

Cylinder end cover The end caps that limit the piston movement in the cylinder.

Piston rod The part that is firmly connected to the piston and passes through one end or both ends.

Extension When the piston rod moves out of the cylinder.

Retraction When the piston rod moves into the cylinder.

Extended When the piston rod is in its outer end position.

Retracted When the piston rod is in its inner end position.

Plus chamber The cylinder chamber, which when pressurized generates extension.

Minus chamber The cylinder chamber, which when pressurized generates retraction.

Valves

2/2 valve Valve with an inlet and an outlet, can assume two different positions.

3/2 valve Valve with an inlet, an outlet and an exhaust, can assume two different positions.

5/2 valve Valve with one inlet, two outlets and two exhausts, can assume two different positions.

5/3 valve Valve with one inlet, two outlets and two exhausts, can assume three different positions.

Normally closed valve (N.C.) If the valve is not activated, the connection between inlet and outlet is closed.

Normally open valve (N.O.) If the valve is not activated, the connection between inlet and outlet is open.

Bistable valve Missing spring and remains in position until it is activated. Has two stable positions and "memory".

Monostable valve Has a spring and returns to its home position when it is not activated.

Directional control valve Valve that can control the flow of alternate routes, or open and close the flow path.

Flow control valve Valve that can regulate the flow volume.

Pressure control valve Valve that can regulate the pressure.

Direct operated The valve is direct activated by hand, foot, or by mechanical means.

Pilot operated The valve is indirect activated by compressed air through amplifying a manual, mechanical or electrical signal to the valve stem or spool. A small and easily adjustable valve controls the major valve.

SI units and designations

The SI system is based on seven basic units that can be combined to derived units. Here are the units that are common in pneumatics

In Europe, the SI system is used since a long time, and it is introduced in more than one hundred countries worldwide. The abbreviation "SI" is French and is read *Système International d'Unités* – that is "The International System of Units".

Prefix

In the SI system, the units are made larger or smaller by using a prefix to indicate orders of magnitude. Common prefixes are found in the table on the right.

Exponent	Connection thread	Prefix	Symbol
10 ⁻⁶	0.000 001	micro-	μ
10 ⁻³	0.001	milli-	m
10 ⁻²	0.01	centi-	c
10 ⁻¹	0.1	deci-	d
10 ¹	10	deca-	da
10 ²	100	hecto-	h
10 ³	1 000	kilo-	k
10 ⁶	1 000 000	mega-	M

Units for pressure

Pressure in pascal (bar is an older term used less and less).
 1 bar = 100 000 Pa (pascal) = 100 kPa (kilopascal) = 0.1 MPa (megapascal).

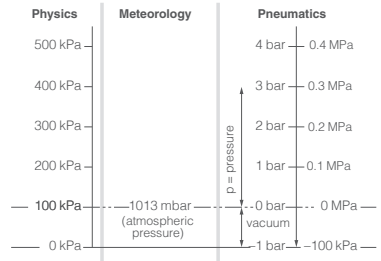
Pressure in physics

In physics, used absolute pressure (*p abs*), which means that the scale begins with zero point at absolute vacuum.

Pressure in pneumatics

In pneumatics a scale is used where zero is at atmospheric pressure and -100 kPa at absolute vacuum. This is how we define air pressure in this product overview.

Air in the normal state is usually denoted by an n after the device (for example In for normal liters). Normal air has an atmospheric pressure, is 20 °C and has a relative humidity of 65 %. Popularly known as "air in the room environment".



Quantity	Symbol	Unit symbol	Unit name	Comments
Basic units				
Mass	m	kg	Kilogram	
Length	s	m	Meter	
Time	t	s	Second	
Derived units				
Area	A	m ²	Square meter	
Volume	V	m ³	Cubic meter	
Velocity	v	m/s	Meter per second	
Acceleration	a	m/s ²	Meter per second squared	
Inertia	J	kgm ²	Kilogram square meter	
Force	F	N	Newton	= kg · m/s ²
Weight	G	N	Newton	= kg · 9.82
Energy (work)	W	J	Joule (= newtonmeter)	= kg · m ² /s ²
Moment	M	Nm	Newtonmeter	
Effect	P	W	Watt	= J/s = Nm/s
Derived units related to compressed air				
Pressure	p	Pa	Pascal	= N/m ²
Standard volume	V _n	m ³	Normal cubic meter	
Volume flow	Q _n	m ³ /s	Normal cubic meter per second	

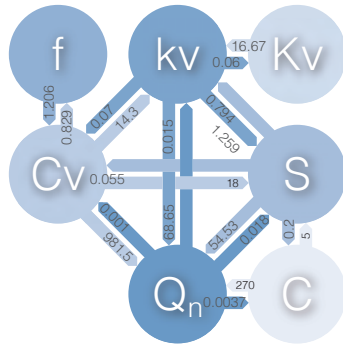
Units for flow

Comparison and conversion between different international flow units

In order to determine if a valve has sufficient output for a given application, requires more than knowing the maximum flow. You must also know how a value is measured in order to use it in the actual case.

A valve flow performance depends not only on the dimensions and geometry of the valve body. The following variables are significant:

- The pressure at the output port
- The pressure drop across the valve
- The relationship between this pressure and the primary pressure.
- The temperature



In all cases, based on a data flow performance on the so-called normal volume. It is the volume of air occupied at atmospheric pressure, 20 °C and relative humidity of 65 % (normal air). This volume is frequently given in l_n , resp Nm^3 . Since newton (N) has been introduced as a unit of force, this writing is no longer correct. Since liter is not an SI unit, volume should be given in dm^3_n , and since that unit is unnecessarily complicated, we have chosen l_n for simplicity.

	S mm ²	kv dm ³ /min	Kv m ³ /h	Cv USG/min	f gal/min	Q _n l _n /min
S	1	0.794	0.048	0.055	0.046	54.53
kv	1.259	1	0.06	0.07	0.058	68.65
Kv	20.979	16.667	1	1.166	1.035	1 144
Cv	18	14.3	0.858	1	0.829	981.5
f	21.7	17.243	0.967	1.206	1	1 184

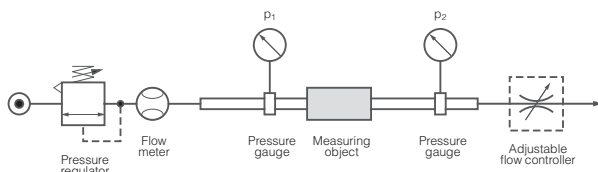
In the adjacent chart is shown the international use of the units and their interrelationships. The arrows pointing to another unit states the conversion factor.

Q_n – normal flow rate

To roughly indicate flow, volume is currently used, i.e. the flow that the valve is performing at a primary pressure of 6 bar and 1 bar pressure drop across the valve. It is only a rough indication, because the measurement methods and conditions may vary from make to make.

S – equivalent flow area

The value of S in mm² is the flow area (holes) in a measuring instrument that provides the same pressure drop as a valve or a system of components at the same output. SMC specifies this value for each component. It is measured with air as a medium and can be converted to other units, such as kv or Cv factor.



C value

C value (conductance) is the unit that ISO and the current standard uses to indicate flow. One way to find out a product's C value is dividing the product's maximum flow rate (Q) with the absolute inlet pressure (P1a). The unit is liter/second/bar. $Q = C \cdot 270$. The factor 270 will vary depending on the product's b value.

b value

A product's b value is obtained by dividing the absolute outlet pressure (P2a) with the absolute inlet pressure (P1a), at the crossing between the upper and lower critical flow. The value is a number less than 1 and is without a unit as it indicates a relationship. The larger the number, the greater the flow. Two products can have the same C value but different b value. This means that the products have the same maximum flow rate (Q), but different pressure drops in, for example, half the flow.

kv value

Metric measurements in "normal liters per minute". This measurement is based on measurements of water. When a liter of water each minute passes with a pressure drop of 1 bar is defined q value to 1. There is thus a pure and dimensionless correlation factor.

Kv value

As the kv value above, however, expressed in m/h, a measure that meets the SI standard.

Cv factor

As the above value but based on the Anglo-Saxon system of measurement. It is related to US gallons (USG) per minute at a pressure drop of 1 psi (0.07 bar) and a temperature of 60 °F (15.6 °C).

f factor

As Cv factor but in Imperial gallons (gal) per minute.

Dimensioning

Get help to calculate the cylinder size that is best suited for each task

Cylinder force can be determined by using the table or the following formulas below to calculate the theoretical cylinder power:

$$F = P \cdot A \quad A = \frac{\pi \cdot d^2}{4}$$

- F = Force [N]
- P = Pressure [MPa]
- d = Cylinder bore [mm]
- A = Area [mm²]

At retraction, the force is lower because the rod reduces the available piston area.

Load rating should be around 70 % for ordinary cylinder movements and around 50 % for slow moving. Check available pressure (as a basic rule, SMC uses the column for 0.5 MPa).

Example: For cylinder force 1 000 N, choose cylinder bore 63 mm: 1 000 (force) ÷ 0.7 (maximum load rate 70 %) = 1 428, the next higher cylinder force in the column for 0.5 MPa is 1 559 N corresponding bore 63.

Calculation of theoretical cylinder force

Nominal cylinder bore	Piston rod diameter	Operation	Effective piston area [cm ²]	Pressure [MPa], cylinder force in newton [N]								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
6 mm	3 mm	Extens.	0.28	6	8	11	14	17	20	—	—	
		Retract.	0.21	4	6	8	11	13	15	—	—	
10 mm	4 mm	Extens.	0.79	16	24	31	39	47	55	—	—	
		Retract.	0.66	13	20	26	33	40	46	—	—	
12 mm	6 mm	Extens.	1.13	23	34	45	57	68	79	90	102	113
		Retract.	0.85	17	25	34	42	51	59	68	76	85
16 mm	6 mm	Extens.	2.01	40	60	80	101	121	141	161	181	201
		Retract.	1.73	35	52	69	86	104	121	138	155	173
20 mm	8 mm	Extens.	3.14	63	94	126	157	188	220	251	283	314
		Retract.	2.64	53	79	106	132	158	185	211	238	264
25 mm	10 mm	Extens.	4.91	98	147	196	245	295	344	393	442	491
		Retract.	4.12	82	124	165	206	247	289	330	371	412
32 mm	12 mm	Extens.	8.04	161	241	322	402	483	563	643	724	804
		Retract.	6.91	138	207	276	346	415	484	553	622	691
40 mm	16 mm	Extens.	12.57	251	377	503	628	754	880	1005	1131	1257
		Retract.	10.58	211	317	422	528	633	739	844	950	1056
50 mm	20 mm	Extens.	19.63	393	589	785	982	1178	1374	1571	1767	1963
		Retract.	16.49	330	495	660	825	990	1155	1319	1484	1649
63 mm	20 mm	Extens.	31.17	623	935	1247	1559	1870	2182	2494	2806	3117
		Retract.	28.03	561	841	1121	1402	1682	1962	2242	2523	2803
80 mm	25 mm	Extens.	50.27	1005	1508	2011	2514	3016	3519	4022	4522	5027
		Retract.	45.36	907	1361	1814	2268	2722	3175	3629	4082	4536
100 mm	30 mm	Extens.	78.53	1571	2356	3141	3927	4712	5497	6282	7068	7853
		Retract.	71.47	1429	2144	2859	3574	4288	5003	5718	6432	7147
125 mm	32 mm	Extens.	123	2450	3680	4910	6150	7360	8590	9820	11040	12270
		Retract.	115	2294	3441	4588	5735	6882	8029	9176	10323	11470
140 mm	36 mm	Extens.	154	3080	4620	6160	7700	9240	10800	12300	13900	15400
		Retract.	144	2880	4320	5760	7200	8640	10100	11500	13000	14400
160 mm	40 mm	Extens.	201	4020	6030	8040	10050	12060	14070	16080	18100	20110
		Retract.	189	3770	5650	7540	9420	11310	13190	15080	16960	18858
180 mm	45 mm	Extens.	254	5080	7620	10200	12700	15200	17800	20300	22900	25400
		Retract.	239	4780	7170	9560	12000	14300	16700	19100	21500	23900
200 mm	50 mm	Extens.	314	6280	9420	12600	15700	18800	22000	25100	28300	31400
		Retract.	295	5900	8850	11800	14800	17700	20700	23600	26600	29500
250 mm	60 mm	Extens.	491	9820	14700	19600	24600	29500	34400	39300	44200	49100
		Retract.	463	9260	13900	18500	23200	27800	32400	37000	41700	46300
300 mm	70 mm	Extens.	707	14100	21200	28300	35400	42400	49500	56600	63600	70700
		Retract.	668	13400	20000	26700	33400	40100	46800	53400	60100	66800

Flow in tubing and fittings

A simple quick reference sheet to calculate the air flow in tubes of varying lengths and dimensions

The table below shows the air flow in the different tube sizes and lengths. The upper value is only the tubing and lower is the tubing with a straight KQ2H fitting at one end and a KQ2L elbow fitting at the other end.

The flow (Q_v) is given in l_v/min . i.e.: IN = 0,6 MPa and OUT = 0,5 MPa.

Note! If you choose tubing with the same flow as the selected valve, flow is reduced to 71 % of valve capacity.

Tubing (outer/inner diam.)	0.5 m	1 m	2 m	5 m
3.2 mm/2 mm with Fittings	76 61	54 48	35 33	27 26
4 mm/2.5 mm with Fittings	134 98	101 82	61 56	48 45
6 mm/4 mm with Fittings	424 314	333 272	209 191	165 156
8 mm/5 mm with Fittings	722 473	581 426	374 321	297 268
8 mm/6 mm with Fittings	1105 700	906 641	596 498	476 422
10 mm/8 mm with Fittings	2156 1083	1826 1056	1251 958	1012 879
12 mm/9 mm with Fittings	2780 1662	2387 1565	1666 1419	1355 1276

Example: A VZ3000-valve (196 l_v/min) with 3 meters of tube, diameter 6 mm/4 mm (191 l_v/min with fittings), provides a flow of about 140 l_v/min .

Serial connection w. same flow rates	Serial connection w. diff. flow rates	Parallel connection
1 + 1 \Rightarrow 71 %	2 + 1 \Rightarrow 89 %	1 + 1 \Rightarrow 2
1 + 1 + 1 \Rightarrow 58 %	3 + 1 \Rightarrow 95 %	1 + 2 \Rightarrow 3
1 + 1 + 1 + 1 \Rightarrow 50 %	4 + 1 \Rightarrow 97 %	1 + 3 \Rightarrow 4

Example: If two components with the same flow (1) are serially connected, the flow is reduced to 71 % of what a component normal has.

Serial connection

$$\frac{1}{S^2} = \frac{1}{S_1^2} + \frac{1}{S_2^2} + \frac{1}{S_n^2}$$

Parallel connection

$$S = S_1 + S_2 + S_n$$

Average air consumption

How to calculate the average air consumption of cylinders and air lines.

You need to know the average air consumption to determine the compressor size and running cost. Here we show how to use the charts on this Page to calculate the average air consumption of cylinders and air lines.

Single stroke (extension or retraction)



Double stroke = cycle (extension and retraction)



Example:

- Cylinder bore: 50 mm
- Stroke: 600 mm
- Working pressure: 0.5 MPa
- Work cycles: 5 cycles per minute
- Air tubing inner diameter: 6 mm
- Air tubing length: 2 m

Air consumption of cylinder

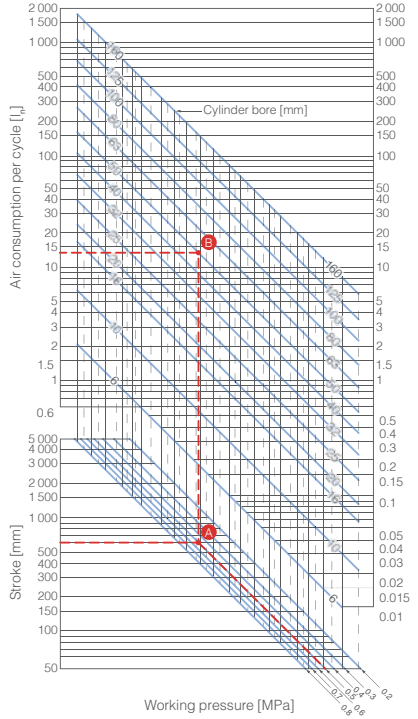
1. Use chart 1 and find the point where the working pressure line (0.5 MPa) crosses the stroke line (600 mm). See point A.
2. From point A, go straight up until you cross the bore line (50 mm). See point B.
3. From there, go horizontally to the right or the left and find air consumption per cycle (Q_c) = 13 l_a.
4. Since there are five working cycles per minute, multiply the air consumption per cycle (Q_c) with 5 to get the actual average air consumption (Q_v).

$$Q_v = Q_c \cdot \text{number of cycles per minute}$$

$$Q_v = 13 \text{ l}_a/\text{min} \cdot 5$$

$$Q_v = 65 \text{ l}_a/\text{min}$$

Chart 1 – cylinder air consumption per cycle



Air consumption for air tubing

- Use chart 2 and find the point where the working pressure line (0.5 MPa) crosses the line for air tubing length (2 m). See point C.
- From point C, go straight up until you cross the line for air tubing inner diameter (6 mm). See point D.
- From there, go horizontally to the right or the left and find air consumption per cycle (Q_c) = 0.56 l_c .
- Since there are five working cycles per minute, multiply the air consumption per cycle (Q_c) with 5 to get the actual average air consumption (Q_v).

$$Q_v = Q_c \cdot \text{number of cycles per minute}$$

$$Q_v = 0.56 \text{ l}_c/\text{min} \cdot 5$$

$$Q_v = 2.8 \text{ l}_c/\text{min}$$

Total air consumption

The total average air consumption (Q) for the cylinder and air line is obtained by adding the two Q_v values.

$$Q = Q_v \text{ cylinder} + Q_v \text{ air tubing}$$

$$Q = 65 \text{ l}_c/\text{min} + 2.8 \text{ l}_c/\text{min}$$

$$Q = 67.8 \text{ l}_c/\text{min}$$

Formulas

The average air consumption can also be calculated by the following formulas:

Average air consumption for cylinder

$$Q = \frac{D^2 \cdot \pi \cdot v \cdot (p + 0.1) \cdot 60}{10^6}$$

Average air consumption for air tubing

$$Q = \frac{ID^2 \cdot \pi \cdot 4 \cdot L \cdot p \cdot n}{10^6}$$

Q = Air consumption [l_c/min]

D = Cylinder bore [mm]

H = Stroke [mm]

ID = Air tubing inner diameter [mm]

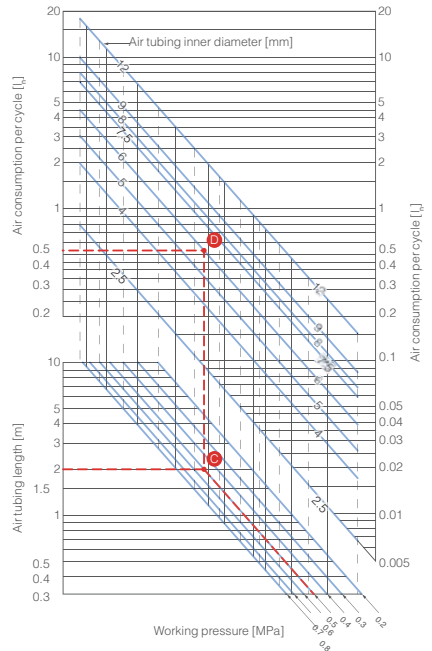
L = Air tubing length [mm]

p = Working pressure [MPa]

n = Number of single strokes per minute

Air consumption – or flow – indicated in normal liters per minute (l_c/min). 1 normal liter is 1 dm^3 air at "room environment" (normal atmospheric pressure, temperature 20 °C and a relative humidity of 65 %).

Chart 2 – air tubing air consumption per cycle



Maximum air flow

How to calculate the maximum air flow in cylinders and air tubing

It is necessary to know the maximum air flow in order to determine the size of the FRL, valves, tubings, and more. If the components are too small, the maximum/required cylinder speed is not achieved.

Here we show how to use the chart on this Page to calculate the maximum air flow for a cylinder.

Example:

- Cylinder bore: 63 mm
- Average piston speed: 355 mm/s
- Working pressure: 0.6 MPa

Maximum air flow for cylinder

- Determine the maximum piston speed by multiplying the average speed of 1.41.

$$v_{max} = v_{average} \cdot 1.41$$

$$v_{max} = 355 \text{ mm/s} \cdot 1.41 = 500 \text{ mm/s}$$

- Use chart 3 and find the point where the working pressure line (0.6 MPa) crosses the line for maximum piston speed (500 mm/s). See point E.
- From point E, go straight up until you cross the cylinder bore line (63 mm). See point F.
- From point F, go horizontally left or right and find the maximum air flow (Q) = 620 l_v/min.

Formulas

The maximum air flow can also be calculated using the following formulas:

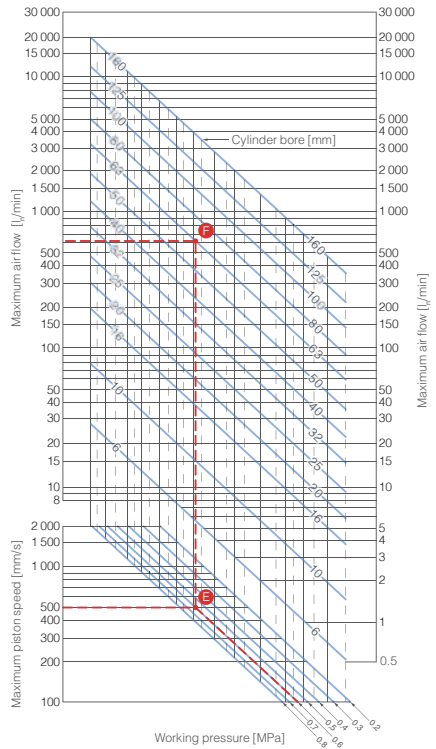
Maximum air flow for cylinder

$$Q = \frac{\pi \cdot ID^2 \cdot v_1 \cdot p \cdot 60}{10^5}$$

Maximum air flow for air tubing

$$Q = \frac{\pi \cdot ID^2 \cdot v \cdot (p + 0.1) \cdot 60}{10^5}$$

Chart 3 – cylinder maximum air flow



- Q = Air flow [l_v/min]
- D = Cylinder bore [mm]
- ID = Air tubing inner diameter [mm]
- p = Working pressure [MPa]
- v = Max. speed = average speed · 1.41 [mm/s]
- v₁ = Max. speed of air movement in tubing

Quick selection for choosing right flow

If you do not make an estimate of cylinder air consumption by the methods shown on previous Pages, the following speed selection table provide benchmarks for dimensioning

The table below shows the maximum air flow (in normal liters per minute [l_v/min]) a cylinder needs. This value depends on the cylinder piston diameter and operating speed.

The table is applicable at a pressure of 0.5 MPa and the rate used is the maximum speed/end speed.

$$v_{\text{max}} = v_{\text{average}} \cdot 1.4$$

Example:

A cylinder with a bore of 32 mm is moving at max. 300 mm/s. According to the table, the cylinder needs a flow of 90 normal liters per minute.

Should you choose a suitable filter, regulator, valve and tubing you can not select these components with a flow rate of about 90 normal liters per minute. If you do, the pressure drop is too large, and the flow into the cylinder

is halved. Any components before the cylinder is like a long chain, producing constrictions and losses.

As a general rule you can say that the pressure drop is max. 0.03 MPa of each component. To get the right flow to the

cylinder, each component must handle much more in flow. A rough guideline is that each component shall have four times greater flow than the cylinder needs.

Since $4 \cdot 90$ is 360, the filter, the regulator and all the other components should have a flow of about 400 normal liters per minute.

The beginning of chapter 4 contains tables that can also be useful when dimensioning.

Air flow requirement for cylinder – l_v/min , at a pressure of 0.5 MPa

Bore [mm]	Maximum cylinder speed [mm/s]									
	100	200	300	400	500	600	700	800	900	1000
20	10	30	40	50	60	70	80	90	100	120
25	20	40	60	70	90	110	130	140	160	180
32	30	60	90	120	150	180	210	230	260	290
40	50	90	140	180	230	270	320	370	410	460
50	70	140	210	280	360	430	500	570	640	710
63	110	230	340	450	560	680	790	900	1 010	1 130
80	180	360	550	730	910	1 090	1 270	1 450	1 630	1 810
100	290	570	850	1 130	1 420	1 700	1 980	2 260	2 550	2 830
125	440	880	1 320	1 770	2 210	2 650	3 090	3 530	3 970	4 420
140	550	1 110	1 660	2 220	2 770	3 320	3 880	4 430	4 990	5 540
160	720	1 450	2 170	2 890	3 620	4 340	5 060	5 790	6 510	7 230
180	920	1 830	2 750	3 660	4 580	5 490	6 410	7 320	8 240	9 160
200	1 130	2 260	3 390	4 520	5 650	6 780	7 910	9 040	10 170	11 300
250	1 770	3 530	5 300	7 070	8 830	10 600	12 360	14 130	15 900	17 660
300	2 540	5 090	7 630	10 170	12 720	15 260	17 800	20 350	22 890	25 430

Lifting force of vacuum pads

How to calculate the theoretical lifting force of vacuum pads at different vacuum

To be able to choose the correct dimensions on the vacuum pads, you should know the different vacuum pads theoretical lifting force at different vacuum levels. Here we present formulas and a table that you can use as a basis for your calculations.

Formulas

Vacuum in kPa

$$F = P \cdot A \cdot \frac{1}{t} \div 10$$

$$P = \text{Vacuum (kPa)}$$

Vacuum in mmHg

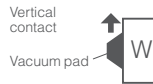
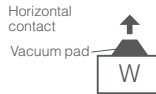
$$F = P \div 760 \cdot A \cdot \frac{1}{t} \cdot 10.13$$

$$P = \text{Vacuum (mmHg)}$$

F = Lifting force with safety factor [N]

A = Pad area [cm²]

t = Safety factor (horizontal contact surface: 2-4; vertical contact surface: 4-8)



As a complement to these formulas, you can find the lifting force at different vacuum in the table below.

Note! The values you get from the table should be multiplied by $\frac{1}{t}$ as in the above formulas.

Calculation of theoretical lifting force

Vacuum pad diameter		2 mm	4 mm	6 mm	10 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm
Vacuum pad area [cm ²]		0.031	0.126	0.238	0.785	2.01	3.14	4.91	8.04	12.6	19.6
Vacuum	-86 kPa -650 mmHg	0.27 N	1.09 N	2.45 N	6.8 N	17.4 N	27.2 N	42.5 N	69.7 N	109.2 N	169.8 N
	-80 kPa -600 mmHg	0.25 N	0.98 N	2.26 N	6.3 N	16.1 N	25.1 N	39.3 N	64.3 N	100.8 N	156.7 N
	-73 kPa -550 mmHg	0.23 N	0.92 N	2.07 N	5.8 N	14.7 N	23 N	36 N	58.9 N	92.4 N	143.7 N
	-66 kPa -500 mmHg	0.21 N	0.84 N	1.89 N	5.2 N	13.4 N	20.9 N	32.7 N	53.6 N	84 N	130.6 N
	-60 kPa -450 mmHg	0.19 N	0.76 N	1.7 N	4.7 N	12.1 N	18.8 N	29.5 N	48.2 N	75.6 N	117.6 N
	-53 kPa -400 mmHg	0.17 N	0.67 N	1.51 N	4.2 N	10.7 N	16.7 N	26.2 N	42.9 N	67.2 N	104.5 N
	-46 kPa -350 mmHg	0.14 N	0.59 N	1.32 N	3.7 N	9.4 N	14.6 N	22.9 N	37.5 N	58.8 N	91.5 N
-40 kPa -300 mmHg	0.12 N	0.5 N	1.13 N	3.14 N	8 N	12.6 N	19.9 N	32.1 N	50.4 N	78.4 N	

$$100 \text{ kPa} = 0.1 \text{ MPa} = 1 \text{ bar} = 1000 \text{ mbar}$$

Evacuation time of vacuum pads

How to calculate evacuation time for vacuum pads, and choosing ejector and tubing

Here we show, using formulas and charts, how to calculate how long it takes for a vacuum pad to achieve the desired vacuum level.

Calculation of evacuation time

Average suction flow in ejector

$$Q_1 = 0.4 \cdot Q_{\max}$$

Tubing maximum flow

$$Q_2 = S \cdot 11.1$$

Tubing volume between ejector and vacuum pad

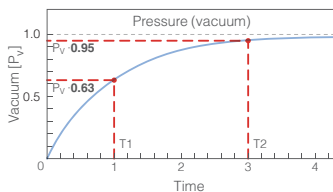
$$V = 1 \div 1000 \cdot \pi \div 4 \cdot D^2 \cdot L$$

Evacuation time

$$T1 = V \cdot 60 \div Q$$

$$T2 = 3 \cdot T1$$

Q_{\max} = Ejector's maximum suction flow (l/min), see the technical data



S = Tubing equivalent cross-sectional area (mm²), see chart 4

V = Tubing volume (l) between ejector and vacuum pad

T1 = Time (s) to reach 63 % of maximum vacuum level (P_v)

T2 = Time (s) to reach 95 % of maximum vacuum level (P_v)

Q = The lowest of Q₁ and Q₂

Example:

Ejector: ZH10BS-06-06

Max. vacuum (P_v): -88 kPa

Max. suction flow (Q_{max}): 24 l/min

Tubing length (L): 1 m

Tubing inner diameter (D): 6 mm

Vacuum pad diameter: 10 mm

Necessary vacuum: 63 % of P_v, no leakage

1. Calculate ejector's average suction flow (Q₁) by multiplying the maximum suction flow by 0.4.

$$Q_1 = 0.4 \cdot 24 \text{ l/min} = 9.6 \text{ l/min}$$

2. Calculate maximum tubing flow (Q₂) by finding the tubing's equivalent cross-sectional area (S) in chart 4 and multiplying this by 11.1.

$$Q_2 = 18 \cdot 11.1 = 198 \text{ l/min}$$

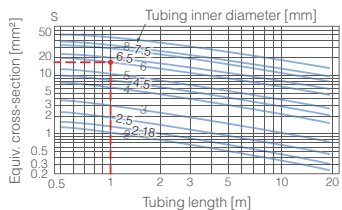
3. Calculate tubing volume between ejector and pad.

$$V = 1 \div 1000 \cdot \pi \div 4 \cdot 6^2 \cdot 1 = 0.028 \text{ l}$$

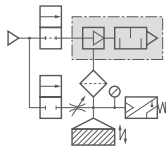
4. Calculate evacuation time. Since Q₁ is lower than Q₂ this means Q = Q₁ i.e. 9.6 l/min. The time to reach 63 % of max. vacuum equals:

$$T1 = 0.028 \cdot 60 \div 9.6 = 0.18 \text{ s}$$

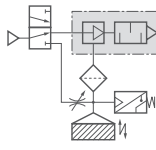
Chart 4 – tubing equivalent cross-sectional area



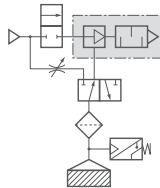
Connection examples



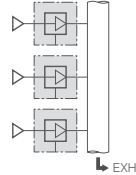
Individual control of ejector and release



Switching between vacuum and release



Switching between vacuum and release – on suction side



Common exhaust

Instructions

Supply connection (supply): Dimension supply line, valves and connections considering the ejector's air consumption (see technical data).

Vacuum ejector (vac): The tubing between ejector and vacuum pad should be as short as possible. Filters should be installed for use in dusty environment (dust).

Ejector exhaust connection (exh): *Type B* – Do not block the silencer. *Type D* – do not connect longer tubing that 0.5 meter (= pressure < 5 kPa).

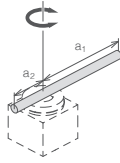
Number of vacuum pads: One vacuum pad per ejector for maximum safety.

Mass moment of inertia

When dimensioning a rotary actuator you must, in addition to necessary torque, also consider the load's mass moment of inertia. For your aid, please find the formulas below (dimensions in meters)

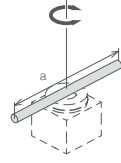
1. Thin axle, excentrically suspended

$$J = m_1 \cdot \frac{a_1^2}{3} + m_2 \cdot \frac{a_2^2}{3}$$



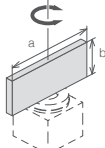
2. Thin axle, centered suspension

$$J = m \cdot \frac{a^2}{12}$$



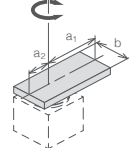
3. Thin rectangular plate, on edge and centered

$$J = m \cdot \frac{a^2}{12}$$



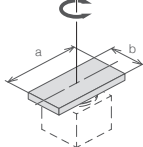
4. Thin rectangular plate, lying down and excentrically suspended

$$J = m_1 \cdot \frac{4a_1^2 + b^2}{12} + m_2 \cdot \frac{4a_2^2 + b^2}{12}$$



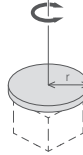
5. Thin rectangular plate, lying down and centered

$$J = m \cdot \frac{a^2 + b^2}{12}$$



6. Thin disc, lying down and centered

$$J = m \cdot \frac{r^2}{2}$$



7. Sphere (ball), centered

$$J = m \cdot \frac{2r^2}{5}$$



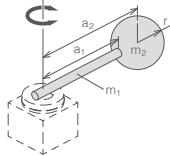
8. Thin disc, on edge and centered

$$J = m \cdot \frac{r^2}{4}$$



9. Thin axle with mass

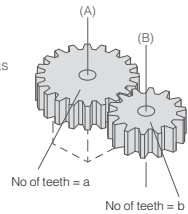
$$J = m_1 \cdot \frac{a_1^2}{3} + m_2 \cdot a_2^2 + K$$



10. Transmission

First calculate mass moment of inertia for gears A and B (as in case 6) and then:

$$J = \left(\frac{a}{b}\right)^2 J_B + J_A$$



When m_2 is spherical, K equals, as in case 7:
If the axle is carrying a disc, calculate K as in case 6 or 8.

$$K = m \cdot \frac{2r^2}{5}$$

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