Quest

Ball Screw Support Bearings

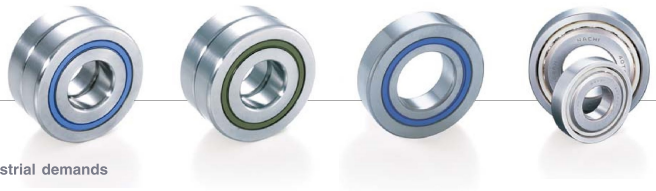
NACHI

Open Type Sealed Type

Ball Screw Support Bearings

NACHI High Precision and High Rigidity

Ball Screw Support Bearings have the ability to achieve high precision and high performance on your applications



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NACHI Ball Screw Support Bearings have been improved to exceed new industrial demands for high precision and high speed requirements.
NACHI TAB type ball screw support bearings support precision actuators in a wide range of applications such as machine tools, precision measuring equipment, and robot technologies.

Features

High Axial Rigidity
Greater number of balls with polyamide cage achieves significantly increased rigidity compared with conventional angular contact ball bearing.

Simple and Compact
The 60˚ contact angles allows the bearing to simultaneously carry the thrust load and certain amount of radial load. This characteristic allows you to have a simple and compact design.

High Capacity and Low Noise
The use of large balls results in higher bearing capacity beyond what NACHI adopted with the poly-amide cage combined with the high performance, quiet operating, grease to achieve low noise.

Energy Saving
Superior seal designs offer low starting and running torque; minimizing power loss.

Easy Assembly
Initial bearing preloading provides for ease of assembly by eliminating complex assembly adjustment.

Line up contact and non-contact design seals.

Proper Seal Type is Arailable Corresponding to Various Applications.
Seal types inclede contact type, excelling in sealibility, and non-contact type for decreasing torque loss and temperature rise. Can select the best seal type corresponding to application needs.

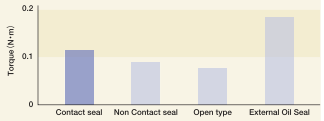
Compatible Dimensions with Current Bearings
Boundary dimensions are compatible with current open bearing enabling interchangeability with existing applications.

Universal Ground Set Combinations (Flush Ground)
Universal ground set combination bearings are also available with a stuffix U. This permits the use of random combinations where two or more bearings are mounted.

Pre Pack Grease
Bearings are prepacked with high performance grease eliminating the need for additional grease packing during assembly.

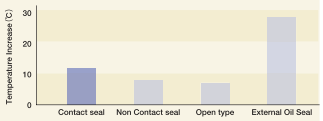
Performance

■Running Torque



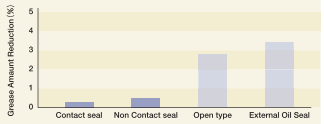
Running torque of contact type seal is 30% reduced, compare with external oil seal.

■Temperature Increase



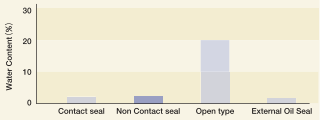
Temperature increase of contact type seal is half, compare with external oil seal.

■Grease Amount Reduction



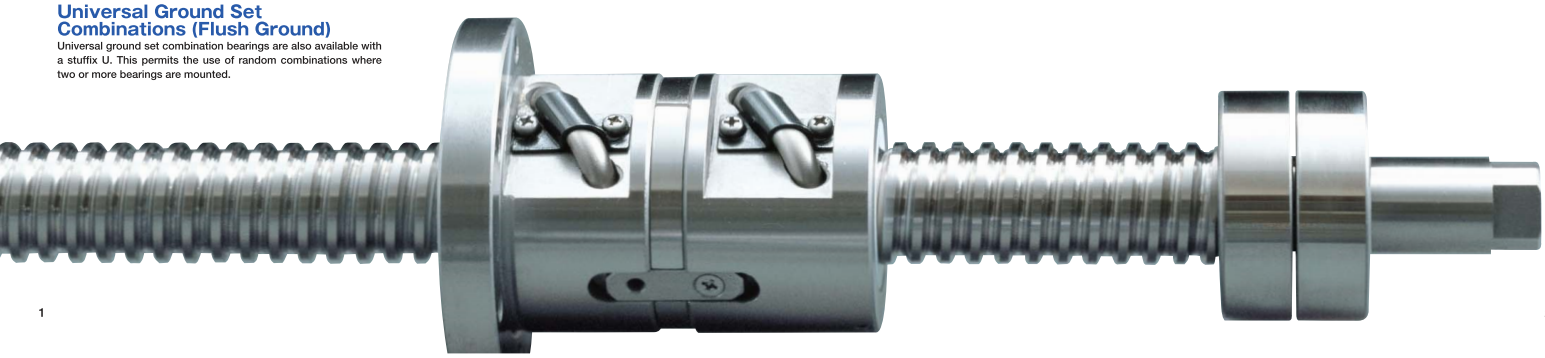
Contact/Non-contact type seal have good grease keeping capability.

■Water Resistance



Water resistance performance of non-contact type seal is same as external oil seal.

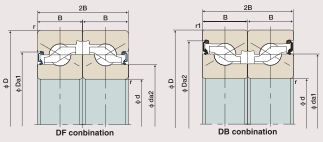
Test Conditions･･･●Tested Bearings:20TAB04DF (DB) -2LR -2NK ●Temperature:Room Temperature ●Speed:1800min⁻¹ ●Grease:Multemp PS2



Dimensional Table

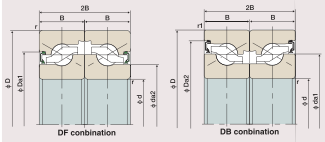
Quest

●With contact type seal (2LR)



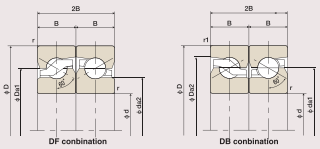
(Seals are outside only for combination bearings)

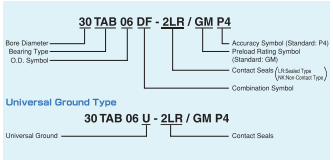
●With non-contact type seal (2NK)



(Seals are outside only for combination bearings)

●Open Type





Dynamic Equivalent Axial Load

Pa=XFr+YFa

No. of Bearing in set		2		3			4			
Brgs Loaded Axial Load		1	2	1	2	3	1	2	3	4
Fa/Fr≦e	X	1.9	—	1.43	2.33	—	1.17	2.33	2.53	—
	Y	0.54	—	0.77	0.35	—	0.89	0.35	0.26	—
Fa/Fr>e	X	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	Y	1	1	1	1	1	1	1	1	1

e = 2.17

1N = 1/9.8kgf

Bearing No.			Boundaly Dimensions (mm)						Basic Dynamic Load Rating (2)		Permissible Thrust Load (3)	Limiting Speed (rpm) Grease Lubrication		Starting Torque (N·cm) Grease Lubrication	Abutment and Fillet Dimensions (mm)								Mass (kg) (1pc.) (Ref.)
															Sealed Type				Open Type				
Contact Type	Non-Contact Type	Open Type	d	D	B	2B	r (min)	r1 (min)	Ca (N)		Coa (N)	Sealed Type	Open Type	Open Type Non-Contact Type	da1	da2	Da1	Da2	da1	da2	Da1	Da2	
15TAB04DF (DB) -2LR	15TAB04DF (DB) -2NK	15TAB04DF (DB)	15	47	15	30	1 (1)	0.6	25,900		32,000	4,400	6,300	15	33.7	26.8	35	41.9	33.7	26.8	33.5	41	0.14
17TAB04DF (DB) -2LR	17TAB04DF (DB) -2NK	17TAB04DF (DB)	17	47	15	30	1	0.6	25,900		32,000	4,400	6,300	15	33.7	26.8	35	41.9	33.7	26.8	33.5	41	0.13
20TAB04DF (DB) -2LR	20TAB04DF (DB) -2NK	20TAB04DF (DB)	20	47	15	30	1	0.6	25,900		32,000	4,400	6,300	15	33.7	26.8	35	41.9	33.7	26.8	33.5	41	0.12
25TAB06DF (DB) -2LR	25TAB06DF (DB) -2NK	25TAB06DF (DB)	25	62	15	30	1	0.6	29,900		46,400	3,250	4,650	20	46.2	39.7	47.5	54.9	46.2	39.7	46	53.4	0.24
30TAB06DF (DB) -2LR	30TAB06DF (DB) -2NK	30TAB06DF (DB)	30	62	15	30	1	0.6	29,900		46,400	3,250	4,650	20	46.2	39.7	47.5	54.9	46.2	39.7	46	53.4	0.21
35TAB07DF (DB) -2LR	35TAB07DF (DB) -2NK	35TAB07DF (DB)	35	72	15	30	1	0.6	32,500		54,300	2,600	3,750	25	56.2	49.7	57.5	64.9	56.2	49.7	56	63.4	0.29
40TAB07DF (DB) -2LR	40TAB07DF (DB) -2NK	40TAB07DF (DB)	40	72	15	30	1	0.6	32,500		54,300	2,600	3,750	25	56.2	49.7	57.5	64.9	56.2	49.7	56	63.4	0.26
40TAB09DF (DB) -2LR	40TAB09DF (DB) -2NK	40TAB09DF (DB)	40	90	20	40	1	0.6	65,000		101,000	2,200	3,150	30	67.2	57.2	68.5	79.9	67.2	57.2	67	78.4	0.62
		45TAB07DF (DB)	45	75	15	30	1	0.6	33,500		595,000		3,400	50					61.7	55.2	61.5	68.9	0.25
		45TAB10DF (DB)	45	100	20	40	1	0.6	68,000		113,000		2,850	60					74.2	64.2	74	85.4	0.79
		50TAB10DF (DB)	50	100	20	40	1	0.6	69,500		119,000		2,700	65					78.2	68.2	78	89.4	0.72
		55TAB10DF (DB)	55	100	20	40	1	0.6	69,500		119,000		2,700	65					78.2	68.2	78	89.4	0.65
		55TAB12DF (DB)	55	120	20	40	1	0.6	73,000		137,000		2,300	70					92.2	82.2	92	103.4	1.15
		60TAB12DF (DB)	60	120	20	40	1	0.6	73,000		137,000		2,300	70					92.2	82.2	92	103.4	1.08

Note (1) r (min) = 0.6 for inner ring.
(2) When bearing sets carry axial load with two or three rows, the numbers should be multiplied by 1.64 or 2.16.
(3) When bearing sets carry axial load with two or three rows, the numbers should be multiplied by 2 or 3.

Tolerances for Inner Ring

Unit:μm=0.001mm

Nominal Bearing Bore Diameter (mm)		Single Plane Mean Bore Diameter Variation Δ_{dmp}, Δ_{ds}				Bore Diameter Variation in a Single Radial Plane V_{dp}		Mean Bore Diameter Variation V_{dmp}		Deviation of a Single Inner Ring Witdth (or a Single Outer Ring Width) Δ_{BS} (Δ_{CS})				Width Deviation V_{BS} of Inner Ring V_{BS}		Radial Runout of Assembled Bearing Inner Ring K_{ia}		Side Face Runout Sd with Reference to Bore S_d		Side Face Runout with Reference to Raceway of Assembled Bearing Inner Ring S_{ia} and of Assembled Bearing Outer Ring S_{ea}		Nominal Bearing Bore Diameter (mm)	
		P5		P4		P5	P4	P5	P4	P5		P4		P5	P4	P5	P4	P5	P4	P5	P4		
Over	Incl.	High	Low	High	Low	(Max)	(Max)	(Max)	(Max)	High	Low	High	Low	(Max)	(Max)	(Max)	(Max)	(Max)	(Max)	(Max)	(Max)	Over	Incl.
10	18	0	−5	0	−4	4	3	3	2	0	−80	0	−80	5	2.5	4	2.5	7	3	4	2	10	18
18	30	0	−6	0	−5	5	4	3	2.5	0	−120	0	−120	5	2.5	4	3	8	4	5	2.5	18	30
30	50	0	−8	0	−6	6	5	4	3	0	−120	0	−120	5	3	5	4	8	4	6	2.5	30	50
50	80	0	−9	0	−7	7	5	5	3.5	0	−150	0	−150	6	4	5	4	8	5	7	2.5	50	80

Note (1) These deviations are for single bearing. For combination bearings, multiply these values by row number.

Tolerances for Outer Ring

Unit:μm=0.001mm

Nominal Bearing Outside Diameter (mm)		Single Plane Mean Outside Diameter Variation of Outer Ring Δ_{Dmp}, Δ_{DS}				Outside Diameter Variation in a Single Radial Plane V_{Dp}		Mean Outside Diameter Variation V_{Dmp}		Width Deviation Vcs of Outer Ring V_{CS}		Radial Runout of Assembled Bearing Outer Ring K_{ea}		Outside Inclination of Outer Ring S_D		Nominal Bearing Outside Diameter (mm)	
		P5		P4		P5	P4	P5	P4	P5	P4	P5	P4	P5	P4		
Over	Incl.	High	Low	High	Low	(Max)	(Max)	(Max)	(Max)	(Max)	(Max)	(Max)	(Max)	(Max)	(Max)	Over	Incl.
30	50	0	−7	0	−6	5	5	4	3	5	2.5	7	5	8	4	30	50
50	80	0	−9	0	−7	7	5	5	3.5	6	3	8	5	8	4	50	80
80	120	0	−10	0	−8	8	6	5	4	8	4	10	6	9	5	80	120

Shaft and Housing Tolerance

①For the fit, refer to the following table.

Shaft Fit	h5
Housing Fit	H6

②For the squareness of a shoulder, refer to the following table.

Dimensions of Shaft Diameter and Housing Bore Diameter (mm)		Squareness (μm)
Over	Incl.	
—	80	4
80	120	5

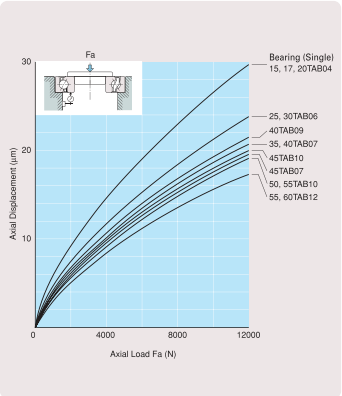
Preload and Axial Spring Constant

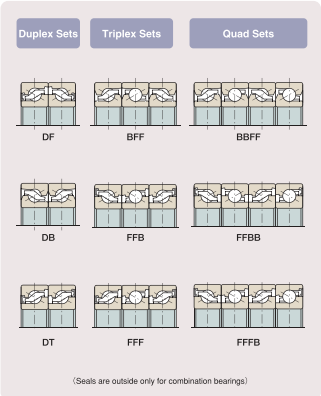
1N = 1/9.8kgf

Bearing No.	Preload M (N)				Axial Spring Constant (N/μm)			
	DF DB	BFF FFB	BBFF FFBB	BFFF FFFB	DF DB	BFF FFB	BBFF FFBB	BFFF FFFB
15TAB04	2,160	2,940	4,310	3,430	735	1,080	1,470	1,320
17TAB04	2,160	2,940	4,310	3,430	735	1,080	1,470	1,320
20TAB04	2,160	2,940	4,310	3,430	735	1,080	1,470	1,320
25TAB06	3,330	4,510	6,670	5,200	981	1,470	1,960	1,910
30TAB06	3,330	4,510	6,670	5,200	981	1,470	1,960	1,910
35TAB07	3,920	5,300	7,840	6,180	1,230	1,770	2,350	2,300
40TAB07	3,920	5,300	7,840	6,180	1,230	1,770	2,350	2,300
40TAB09	5,200	7,060	10,400	8,140	1,320	1,910	2,550	2,500
45TAB07	4,120	5,590	8,240	6,470	1,270	1,910	2,550	2,500
45TAB10	5,980	8,140	12,000	9,410	1,470	2,160	2,890	2,790
50TAB10	6,280	8,530	12,600	9,810	1,520	2,260	3,040	2,940
55TAB10	6,280	8,530	12,600	9,810	1,520	2,260	3,040	2,940
55TAB12	7,060	9,610	14,100	11,100	1,770	2,550	3,480	3,380
60TAB12	7,060	9,610	14,100	11,100	1,770	2,550	3,480	3,380

Basic Dynamic Load Rating

Bearing No.	In Case of Single Row	In Case of Double Rows	In Case of Triple Rows
	Single Brg., DF,DB	DT,BFF, FFB,BBFF, FFBB	FFF,BFFF, FFFB
15TAB04	25,900	42,000	56,000
17TAB04	25,900	42,000	56,000
20TAB04	25,900	42,000	56,000
25TAB06	29,900	48,500	64,500
30TAB06	29,900	48,500	64,500
35TAB07	32,500	53,000	70,000
40TAB07	32,500	53,000	70,000
40TAB09	65,000	105,000	140,000
45TAB07	33,500	54,500	72,500
45TAB10	68,000	111,000	147,000
50TAB10	69,500	113,000	150,000
55TAB10	69,500	113,000	150,000
55TAB12	73,000	119,000	158,000
60TAB12	73,000	119,000	158,000





Quest

The new NACHI brand "Quest" in Japanese means "Tankyu (in pursuit)" of high performance and reliability. A brand new high performance bearing by NACHI for industrial machinery use. Concentration of material, machining, and lubrication technology of NACHI-Fujikoshi, NACHI offers world's top class quality meeting all demands in bearing like rigidity, durability, quietness and environmental burden.

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