Ball Screw Support Bearings

TAB/TAF Series

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TAB Series Ball screw support bearings are used in high accuracy and high-speed precision machine tools, precision measuring machines, robots, and other machines that have built in precision feed actuators.

Nomenclature of Bearing Numbers

30 TAB 06 DB -2LR /GM P4

- **Bore dimension (mm)**
- **Bearing type**
- **Outside diameter value**
  Outside diameter divided by 10
- **Mounting code**
  U : Flush ground (single)
  DU : Flush ground (duplex)
  DB : Back-to-back
  DF : Face-to-face
- **Seal code**
  (No code) : Open type
  -2LR : With two contact seals
  -2NK : With two non-contact seals
- **Preload and other class codes**
  /GM : Medium preload (standard)
- **Tolerance class code**
  P4 : JIS Class 4 (standard)

Features

- Resin cage and more balls than previous ball bearings for greater rigidity.
- Combination bearings are provided with preset preloads, eliminating the need for troublesome installation adjustment using shims and torque measurements.
- A contact angle of 60° and has the ability to handle radial and axial loads creates a compact bearing.
- The seal type provides a choice between contact seal and non-contact seal to suit specific applications.

Contact Angle

The contact angle is 60°.

Cage

A ball guided polyamide resin cage is provided as standard.

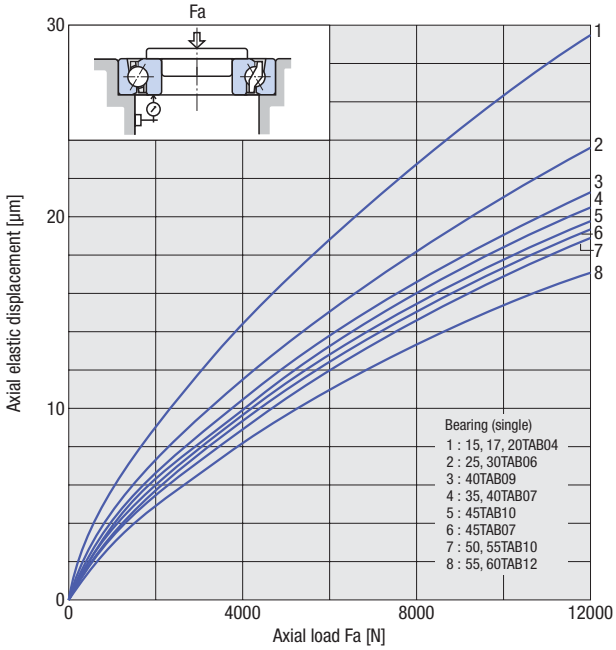
Accuracy

JIS Class 4 is standard. See page 10 for details.

Preload

Medium preload as standard. See page 20 for details.

Axial Load and Axial Displacement



TAF Series

Though hydraulic actuators were widely used in the past in high load drive devices like injection molding machines, the use of electric drives (ball screw drives) in such applications is becoming more common. The TAF Series are special bearings designed to support high-load drive ball screws.

Nomenclature of Bearing Numbers

25 TAF 06 DF /GM P5

- **Tolerance class code**
  P5 : JIS Class 5 (standard)
- **Preload and other class codes**
  /GM : Medium preload (standard)
- **Mounting code**
  DB : Back-to-back
  DF : Face-to-face
  DT : Tandem
- **Outside diameter value**
  Outside diameter divided by 10 (with some exceptions)
- **Bearing type**
- **Bore dimension (mm)**

Features

- A large-diameter ball and large contact angle provides the high thrust load capacity needed for the high loads of the ball screw used in injection molding machines.
- A one-piece molded cage that combines both greater accuracy and strength, and the ability to withstand repeated high-speed switching between forward and reverse.

Contact Angle

A contact angle of 50° up to a nominal bore of 80 mm, and 55° for a nominal bore of 100 mm or greater.

Accuracy

JIS Class 5 is standard. See page 11 for details.

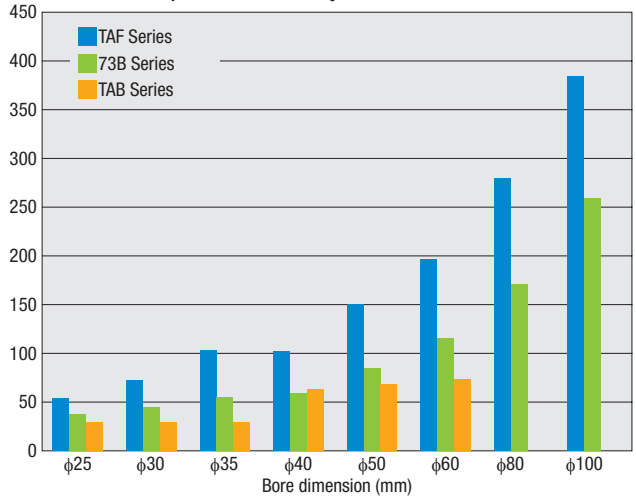
Preload

Medium preload as standard. See page 20 for details.

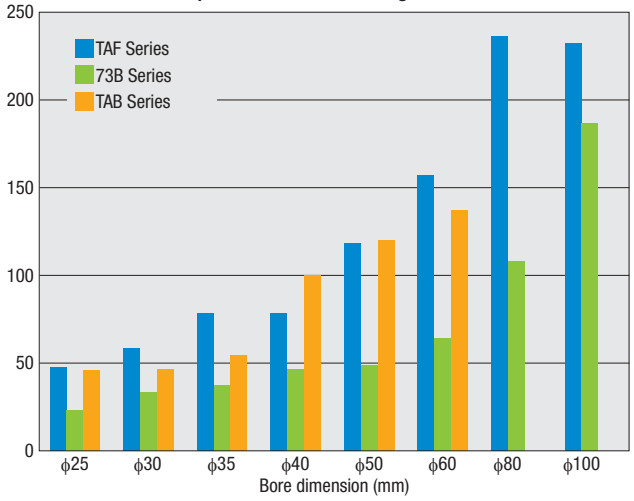
Cage

A ball guide polyamide resin cage is provided as standard. Some sizes come with a machined brass cage.

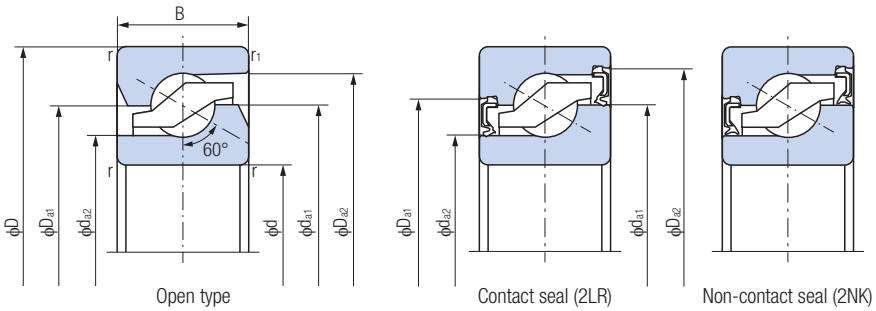
Comparison of Basic Dynamic Axial Loads



Comparison of Axial Limiting Loads



Ball Screw Support Bearing TAB Series



Open type　　Contact seal (2LR)　　Non-contact seal (2NK)

Bearing no.	Boundary dimensions (mm)					Basic dynamic load rating [2] Ca (kN)	Axial limiting load [3] (kN)
	d	D	B	r (Min)	r1 (Min)		
15TAB04	15	47	15	1[1]	0.6	25.9	32.0
15TAB04-2NK	15	47	15	1[1]	0.6	25.9	32.0
15TAB04-2LR	15	47	15	1[1]	0.6	25.9	32.0
17TAB04	17	47	15	1	0.6	25.9	32.0
17TAB04-2NK	17	47	15	1	0.6	25.9	32.0
17TAB04-2LR	17	47	15	1	0.6	25.9	32.0
20TAB04	20	47	15	1	0.6	25.9	32.0
20TAB04-2NK	20	47	15	1	0.6	25.9	32.0
20TAB04-2LR	20	47	15	1	0.6	25.9	32.0
25TAB06	25	62	15	1	0.6	29.9	46.4
25TAB06-2NK	25	62	15	1	0.6	29.9	46.4
25TAB06-2LR	25	62	15	1	0.6	29.9	46.4
30TAB06	30	62	15	1	0.6	29.9	46.4
30TAB06-2NK	30	62	15	1	0.6	29.9	46.4
30TAB06-2LR	30	62	15	1	0.6	29.9	46.4
35TAB07	35	72	15	1	0.6	32.5	54.3
35TAB07-2NK	35	72	15	1	0.6	32.5	54.3
35TAB07-2LR	35	72	15	1	0.6	32.5	54.3
40TAB07	40	72	15	1	0.6	32.5	54.3
40TAB07-2NK	40	72	15	1	0.6	32.5	54.3
40TAB07-2LR	40	72	15	1	0.6	32.5	54.3
40TAB09	40	90	20	1	0.6	65.0	101
40TAB09-2NK	40	90	20	1	0.6	65.0	101
40TAB09-2LR	40	90	20	1	0.6	65.0	101
45TAB07	45	75	15	1	0.6	33.5	59.5
45TAB10	45	100	20	1	0.6	68.0	113
50TAB10	50	100	20	1	0.6	69.5	119
55TAB10	55	100	20	1	0.6	69.5	119
55TAB12	55	120	20	1	0.6	73.0	137
60TAB12	60	120	20	1	0.6	73.0	137

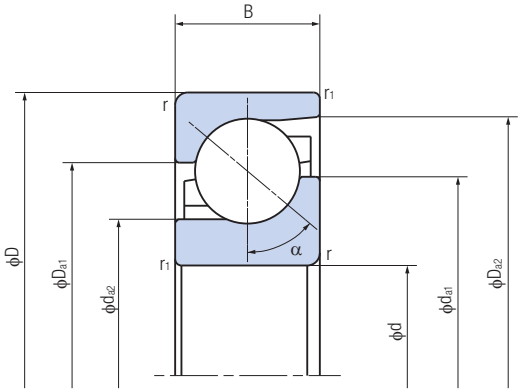
Note (1) Minimum r for inner ring bore is 0.6.
(2) When the axial load is on a 2-row or 3-row arrangement, the values in the table should be multiplied by 1.62 and 2.16 respectively.
(3) When the axial load is on a 2-row or 3-row arrangement, the values in the table should be multiplied by 2 and 3 respectively.
(4) Rotation speed limit for medium preload (preload code GM).

Dynamic equivalent axial load Pa=X Fr+Y Fa

No. of bearings in set		2		3			4			
Number of rows receiving axial load		1 row	2 rows	1 row	2 rows	3 rows	1 row	2 rows	3 rows	4 rows
Fa/Fr ≤ 2.17	X	1.90	—	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 > 2.17	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

Rotation speed limit [4] (rpm)		Reference dimensions (mm)				Mass (kg) (Reference)	Bearing no.
Grease lubrication	Oil lubrication	da_1	da_2	Da_1	Da_2		
6300	8000	33.7	26.8	33.5	41	0.14	**15TAB04**
6300	—	33.7	26.8	35	41.9	0.14	**15TAB04-2NK**
6300	—	33.7	26.8	35	41.9	0.14	**15TAB04-2LR**
6300	8000	33.7	26.8	33.5	41	0.13	**17TAB04**
6300	—	33.7	26.8	35	41.9	0.13	**17TAB04-2NK**
6300	—	33.7	26.8	35	41.9	0.13	**17TAB04-2LR**
6300	8000	33.7	26.8	33.5	41	0.12	**20TAB04**
6300	—	33.7	26.8	35	41.9	0.12	**20TAB04-2NK**
6300	—	33.7	26.8	35	41.9	0.12	**20TAB04-2LR**
4650	6000	46.2	39.7	46	53.4	0.24	**25TAB06**
4650	—	46.2	39.7	47.5	54.9	0.24	**25TAB06-2NK**
4650	—	46.2	39.7	47.5	54.9	0.24	**25TAB06-2LR**
4650	6000	46.2	39.7	46	53.4	0.21	**30TAB06**
4650	—	46.2	39.7	47.5	54.9	0.21	**30TAB06-2NK**
4650	—	46.2	39.7	47.5	54.9	0.21	**30TAB06-2LR**
3750	5000	56.2	49.7	56	63.4	0.29	**35TAB07**
3750	—	56.2	49.7	57.5	64.9	0.29	**35TAB07-2NK**
3750	—	56.2	49.7	57.5	64.9	0.29	**35TAB07-2LR**
3750	5000	56.2	49.7	56	63.4	0.26	**40TAB07**
3750	—	56.2	49.7	57.5	64.9	0.26	**40TAB07-2NK**
3750	—	56.2	49.7	57.5	64.9	0.26	**40TAB07-2LR**
3150	4000	67.2	57.2	67	78.4	0.62	**40TAB09**
3150	—	67.2	57.2	68.5	79.9	0.62	**40TAB09-2NK**
3150	—	67.2	57.2	68.5	79.9	0.62	**40TAB09-2LR**
3400	4500	61.7	55.2	61.5	68.9	0.25	**45TAB07**
2850	3500	74.2	64.2	74	85.4	0.79	**45TAB10**
2700	3500	78.2	68.2	78	89.4	0.72	**50TAB10**
2700	3500	78.2	68.2	78	89.4	0.95	**55TAB10**
2300	3000	92.2	82.2	92	103.4	1.15	**55TAB12**
2300	3000	92.2	82.2	92	103.4	1.08	**60TAB12**

Ball Screw Support Bearing TAF Series



Bearing no.	Boundary dimensions (mm)					Contact angle α (°)	Basic dynamic load rating (1) Ca (kN)	Axial limiting load (2) (kN)
	d	D	B	r (Min)	r1 (Min)			
25TAF06	25	62	17	1.1	0.6	50	56.0	47.5
30TAF07	30	72	19	1.1	0.6	50	74.0	58.0
35TAF09	35	90	23	1.5	1	50	103	77.0
40TAF09	40	90	23	1.5	1	50	103	77.0
40TAF11	40	110	27	2	1	50	152	118
45TAF11	45	110	27	2	1	50	152	118
50TAF11	50	110	27	2	1	50	152	118
60TAF13	60	130	31	2.1	1.1	50	196	157
60TAF17	60	170	39	2.1	1.1	50	279	238
80TAF17	80	170	39	2.1	1.1	50	279	238
100TAF21	100	215	47	3	1.1	55	385	234
120TAF03	120	260	55	3	1.1	55	445	380

Note (1) When the axial load is on a 2-row or 3-row arrangement, the values in the table should be multiplied by 1.62 and 2.16 respectively.
(2) When the axial load is on a 2-row or 3-row arrangement, the values in the table should be multiplied by 2 and 3 respectively.
(3) Use at 80% or less of the allowable axial load is recommended.
(4) Rotation speed limit for medium preload (preload code GM).

Dynamic equivalent axial load Pa=X Fr+Y Fa

Contact angle 50°

No. of bearings in set		2	
Number of rows receiving axial load		1 row	2 rows
Fa/Fr ≤ 1.49	X	1.37	—
	Y	0.57	—
Fa/Fr > 1.49	X	0.73	0.73
	Y	1	1

Contact angle 55°

No. of bearings in set		2	
Number of rows receiving axial load		1 row	2 rows
Fa/Fr ≤ 1.79	X	1.60	—
	Y	0.56	—
Fa/Fr > 1.79	X	0.81	0.81
	Y	1	1

Rotation speed limit [4] (rpm) Grease lubrication	Reference dimensions (mm)				Mass (kg) (Reference)	Bearing no.
	da_1	da_2	Da_1	Da_2		
4500	42.9	32.7	44.9	56.6	0.237	**25TAF06**
3800	49.8	38.6	53	65.9	0.357	**30TAF07**
3000	63.2	49.7	67.7	82.3	0.709	**35TAF09**
3000	63.2	49.7	67.7	82.3	0.655	**40TAF09**
2500	77.6	60.3	83.4	101.1	1.28	**40TAF11**
2500	77.6	60.3	83.4	101.1	1.21	**45TAF11**
2500	77.6	60.3	83.4	101.1	1.13	**50TAF11**
2100	92.4	72.9	98.9	119.7	1.79	**60TAF13**
1500	121.1	97.2	130.3	155.8	4.48	**60TAF17**
1500	121.1	97.2	130.3	155.8	3.80	**80TAF17**
1200	152.3	123.4	164.1	194.7	7.41	**100TAF21**
1000	186.2	151.1	193.8	228.4	14.8	**120TAF03**

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