

# Ball Screw Support Bearings Made of EP-Steel

Meeting the needs of the machine tool industry by offering:

- Super long life with NSK's new high-purity EP-steel
- Extra-high precision and rigidity





***EP-steel angular contact ball screw support bearings provide an excellent standardized solution for machine tool feed applications. Their superiority over conventional bearing arrangements is demonstrated by the following outstanding features:***

## *Super long life*

The use of EP-steel provides an operating life three times longer than that of conventional bearing materials.

## *High rigidity*

An increased number of balls and a 60-degree contact angle mean higher rigidity.

## *Low starting torque*

Higher precision rotation is achieved with low driving power because the starting torque is lower than that of tapered or cylindrical roller bearings.

## *Easy preload adjustment*

Bearing preload is adjusted to the optimum value at manufacture. Universal bearings (symbol SU) will give the specified preload in DB or DF mounting and when mounted in tandem will share load equally.

## *Simple design of surrounding parts*

Since NSK ball screw support bearings will support axial and radial loads, the design of the housing and shaft is simpler than that which is necessary for the combined use of thrust and radial bearings.

## *Easy handling*

The bearings are easy to handle owing to the incorporation of non-separable inner/outer rings. Bearings prepacked with standard grease are available.

## *New polyamide cage*

A newly developed polyamide cage is utilized to obtain higher precision rotation.

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TAC B Nominal contact angle: 60°

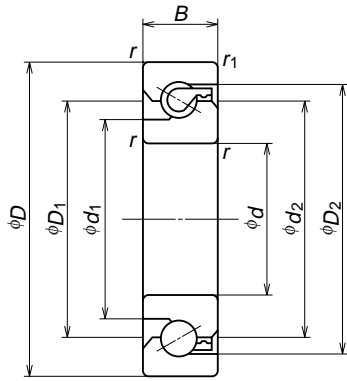


Table 1 Dimensions

Bearing number	Boundary dimensions (mm)					Reference dimensions (mm)			
	$d$	$D$	$B$	$r$	$r_1$	$d_1$	$d_2$	$D_1$	$D_2$
17 TAC 47B	17	47	15	1	0.6	27.2	34	34	39.6
20 TAC 47B	20	47	15	1	0.6	27.2	34	34	39.6
25 TAC 62B	25	62	16	1	0.6	37	46	45	50.7
30 TAC 62B	30	62	15	1	0.6	39.5	47	47	53.2
35 TAC 72B	35	72	15	1	0.6	47	55	55	60.7
40 TAC 72B	40	72	15	1	0.6	49	57	57	62.7
40 TAC 90B		90	20	1	0.6	57	68	68	77.2
45 TAC 75B	45	75	15	1	0.6	54	62	62	67.7
45 TAC 100B		100	20	1	0.6	64	75	75	84.2
50 TAC 100B	50	100	20	1	0.6	67.5	79	79	87.7
55 TAC 100B	55	100	20	1	0.6	67.5	79	79	87.7
55 TAC 120B		120	20	1	0.6	82	93	93	102.2
60 TAC 120B	60	120	20	1	0.6	82	93	93	102.2

Table 2 Preload, spring constant and starting torque (preload symbol: C10)

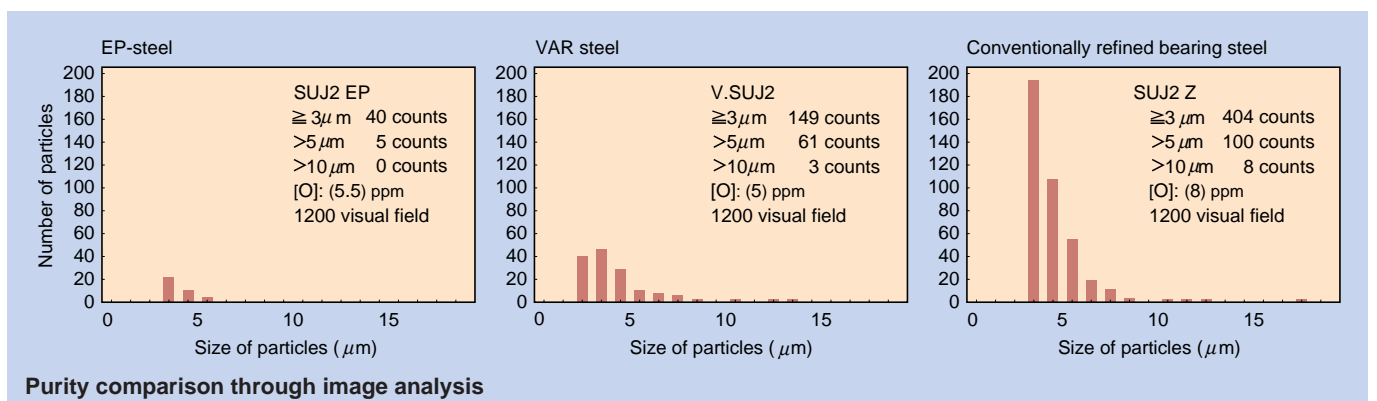
Bearing number	Duplex combinations (DF)			Triplex combinations (DFD)			Quadruplex combinations (DFF)		
	Preload $N$	Axial spring constant $N/\mu m$	Starting torque <sup>(1)</sup> $N \cdot m$	Preload $N$	Axial spring constant $N/\mu m$	Starting torque <sup>(1)</sup> $N \cdot m$	Preload $N$	Axial spring constant $N/\mu m$	Starting torque <sup>(1)</sup> $N \cdot m$
17 TAC 47B	2 150	750	0.14	2 950	1 080	0.20	4 300	1 470	0.29
20 TAC 47B	2 150	750	0.14	2 950	1 080	0.20	4 300	1 470	0.29
25 TAC 62B	3 150	1 000	0.23	4 300	1 470	0.31	6 250	1 960	0.46
30 TAC 62B	3 350	1 030	0.24	4 500	1 520	0.33	6 650	2 010	0.49
35 TAC 72B	3 800	1 180	0.28	5 200	1 710	0.37	7 650	2 350	0.55
40 TAC 72B	3 900	1 230	0.28	5 300	1 810	0.38	7 850	2 400	0.57
40 TAC 90B	5 000	1 320	0.48	6 750	1 960	0.65	10 300	2 650	0.96
45 TAC 75B	4 100	1 270	0.29	5 600	1 910	0.40	8 250	2 550	0.59
45 TAC 100B	5 900	1 520	0.58	8 050	2 210	0.78	11 800	3 000	1.16
50 TAC 100B	6 100	1 570	0.60	8 250	2 300	0.80	12 300	3 100	1.18
55 TAC 100B	6 100	1 570	0.60	8 250	2 300	0.80	12 300	3 100	1.18
55 TAC 120B	6 650	1 760	0.64	9 100	2 650	0.86	13 200	3 550	1.27
60 TAC 120B	6 650	1 760	0.64	9 100	2 650	0.86	13 200	3 550	1.27

Note (1): The starting torque figures given are for grease lubrication. If oil is used, increase these figures by 40 percent.  
Please consult with NSK for combinations other than the ones shown here.

## Purity of EP-Steel

NSK is at the forefront of bearing steel development and has newly developed a technique for evaluating nonmetallic inclusions that shorten rolling fatigue life. The high purity of EP-steel is the result of the introduction of this technique into steel manufacturing technology.

EP-steel has fewer large-sized particles than Vacuum Arc Remelted (VAR) or conventionally refined bearing steel (see graphs below).



Purity comparison through image analysis



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