4. Ball Screw Support Bearings
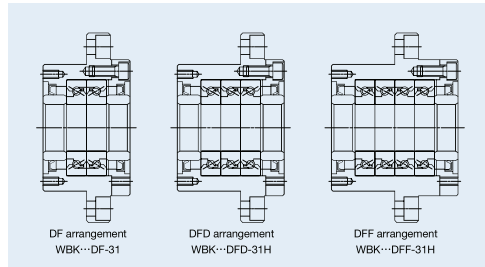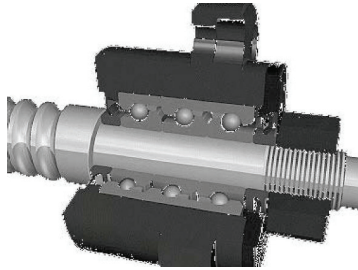
Ball Screw Support Units

This unit for ball screw support in heavy-load and machine tool applications features NSKTAC C Series high-accuracy, high-rigidity angular contact thrust ball bearings. Three types of arrangement are available, as shown below.
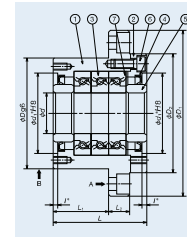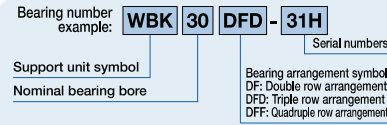
Features

● The dust-resistant unit allows the user to easily design the support side of the ball screw.

● Preload-controlled and ready-mounted bearings eliminate the need for on-site mounting of bearings.

DF arrangement
WBK⋯DF-31

DFD arrangement
WBK⋯DFD-31H

DFF arrangement
WBK⋯DFF-31H

Numbering system of support units

Bearing number example: WBK 30 DFD - 31H

Serial numbers

Support unit symbol

Nominal bearing bore

Bearing arrangement symbol
DF: Double row arrangement
DFD: Triple row arrangement
DFF: Quadruple row arrangement

Components of support unit

Part No.	Name of Part	Quantities
①	Housing	1
②	Retaining cover	1
③	Angular contact thrust ball bearings for Ball Screw Support	1 set
④	Dust seal	2
⑤	Collar	2
⑥	Preload securing bolt	6 or 8
⑦	Shim	1 set
⑧	Locknut	1

Dimension of bearing seat

Lock nut

Section X-X

Bearing bore d≦30

Bearing bore d≧35

1. Use datum faces A and B to mount the support unit to a machine base.
2. Do not try to disassemble the NSK Support Unit because its preload is adjusted with high precision and the components ①, ②, ③, ④, ⑥ and ⑦ are integrated into a single piece.
3. The bearings are prepacked with grease.
4. Locknut ⑧ is designed specifically for ball screws with its perpendicularities controlled against the triangular thread of the screw. Tighten the set screws to prevent loosening of the locknut.

  The locknut is also available separately. For further information on angular contact thrust ball bearings for ball screw support (NSKTAC C Series), please refer to Page 144.

Support Unit Numbers	Support Unit Parts (mm)																
	d	D	D_1	D_2	L	L_1	L_2	A	W	X	Y	Z	d_1*	$l*$	$V*$	$P*$	$Q*$
WBK17DF-31H	17	70	106	72	60	32	15	80	88	9	14	8.5	45	3	58	M5	10
WBK20DF-31H	20	70	106	72	60	32	15	80	88	9	14	8.5	45	3	58	M5	10
WBK25DF-31H	25	85	130	90	66	33	18	100	110	11	17.5	11	57	4	70	M6	12
WBK25DFD-31H	25	85	130	90	81	48	18	100	110	11	17.5	11	57	4	70	M6	12
WBK30DF-31H	30	85	130	90	66	33	18	100	110	11	17.5	11	57	4	70	M6	12
WBK30DFD-31H	30	85	130	90	81	48	18	100	110	11	17.5	11	57	4	70	M6	12
WBK35DF-31H	35	95	142	102	66	33	18	106	121	11	17.5	11	69	4	80	M6	12
WBK35DFD-31H	35	95	142	102	81	48	18	106	121	11	17.5	11	69	4	80	M6	12
WBK35DFF-31H	35	95	142	102	96	48	18	106	121	11	17.5	11	69	4	80	M6	12
WBK40DF-31H	40	95	142	102	66	33	18	106	121	11	17.5	11	69	4	80	M6	12
WBK40DFD-31H	40	95	142	102	81	48	18	106	121	11	17.5	11	69	4	80	M6	12
WBK40DFF-31H	40	95	142	102	96	48	18	106	121	11	17.5	11	69	4	80	M6	12

(¹) Rigidity: Rigidity values in the table are theoretical values calculated from elastic displacement between grooves and steel balls.
(²) Starting torque: The values indicate starting torque of preloaded bearings, not including seal torque.
(³) Tolerance of shaft outer diameter at bearing seat; h5 Class is recommended for the shaft outer diameter at the support unit's bearing seat.
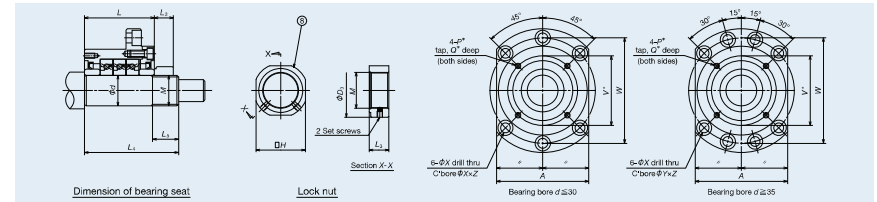
Basic Dynamic Load Rating Ca [N]	Limiting axial load [N]	Preload [N]	Axial Rigidity [N/μm]	Starting Torque [N·cm]	Locknut					Bearing seat for unit [mm]			Limiting Speeds [min⁻¹]	Mass [kg]
					Reference Dimensions [mm]				Tightening torque [N·cm] (Ref.)					
					M	H	D_3	L_3		d	L_4	L_5		
23 000	26 600	1 450	630	14	M17×1.0	32	37	18	4 100	17	81	23	6 900	1.9
23 000	26 600	1 450	630	14	M20×1.0	36	40	18	4 500	20	81	23	6 900	1.9
29 900	40 500	2 280	850	21	M25×1.5	41	45	20	8 500	25	89	26	5 200	3.1
48 500	81 500	3 100	1 250	28	M25×1.5	41	45	20	8 500	25	89	26	5 200	3.4
30 500	43 000	2 400	890	23	M30×1.5	46	50	20	10 100	30	89	26	4 900	3.0
50 000	86 000	3 260	1 310	30	M30×1.5	46	50	20	10 100	30	89	26	4 900	3.3
32 500	50 000	2 750	1 030	27	M35×1.5	50	55	22	13 800	35	92	30	4 100	3.4
53 000	100 000	3 740	1 500	34	M35×1.5	50	55	22	13 800	35	107	30	4 100	4.3
53 000	100 000	5 490	2 060	43	M35×1.5	50	55	22	13 800	35	122	30	4 100	5.0
33 500	52 000	2 860	1 080	28	M40×1.5	55	60	22	15 500	40	92	30	4 100	3.6
54 000	104 000	3 900	1 590	36	M40×1.5	55	60	22	15 500	40	107	30	4 100	4.2
54 000	104 000	5 730	2 150	46	M40×1.5	55	60	22	15 500	40	122	30	4 100	4.7

(⁴) Dimensions marked with * : The spigot and screw parts marked with * are used for mounting a seal unit for the NSK standard hollow ball screw shaft as well as for mounting a dust cover and damper.
(⁵) As bearings are prepacked with grease, the unit can be used immediately as is.
(⁶) To calculate permissible axial load, multiply limiting axial load by 0.7.

B/S Support

Ball Screw Support Units