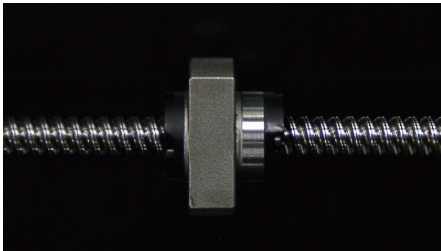
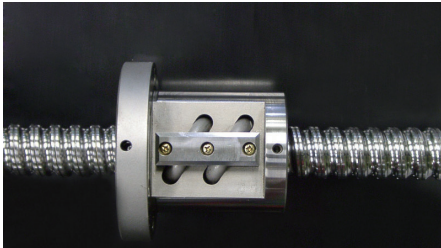


2. TSUBAKI NAKASHIMA precision ball screw designing and standard dimension

(1) Precision ball screw FB series



Please refer to P.A. 51 – P. A63 for the series size table.

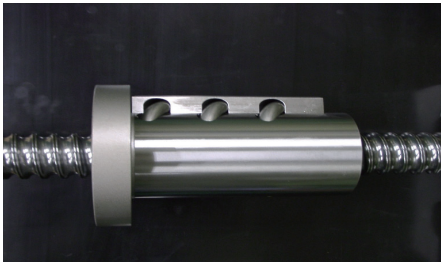
Please refer the shape of the standard ball nut of each model.

The ball nuts can be produced in other configuration than given in this catalogue.

Please instruct us the shape of supporting part of screw axis according to the usage.

When the contact area on the fixed bearing side is not enough, the collar can be installed by shrinkage fit, therefore please instruct it according to the usage.

(2) Precision ball screw HN FB series



Please refer to P. A55 – P. A56 for the series size table.

Please refer to the shape of the standard ball nut of each model.

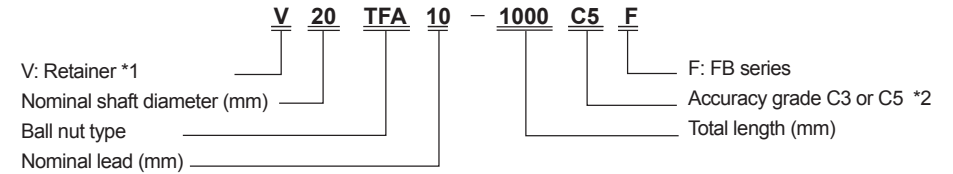
The ball nuts can be produced in other configuration than given in this catalogue.

Please instruct us the shape of supporting part of screw axis according to the usage.

When the contact area on the fixed bearing side is not enough, the collar can be installed by shrinkage fit, therefore please instruct it according to the usage.

FB series designing

For inquiries and order, please use this ordering code.



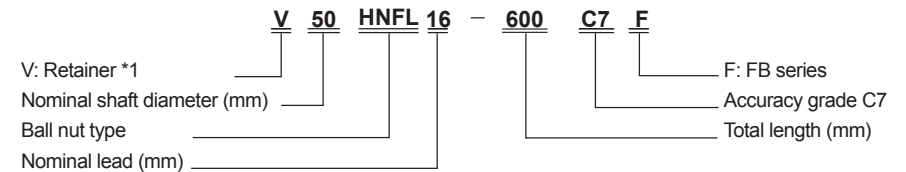
*1 V: with retainers C: with ceramic balls

*2 C7 and C10 accuracy grade is also available.

Please also inform the symbol of axial clearance with the above-mentioned ordering code (Refer to the axial clearance of the ball screw on P.A28.)

HN · FB series designing

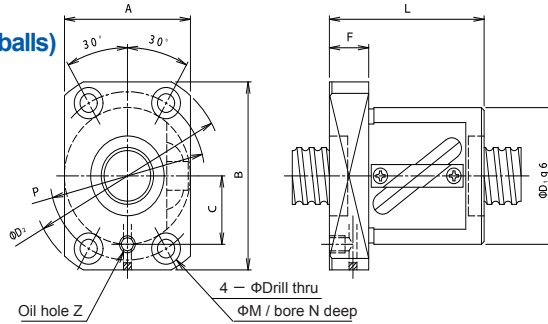
Use this ordering code when inquiring and ordering.



The standard axial clearance Q5 is 0.05mm or less.

FB series standard dimension TXF type (Preloaded by over-size balls)

4 faces notched flange



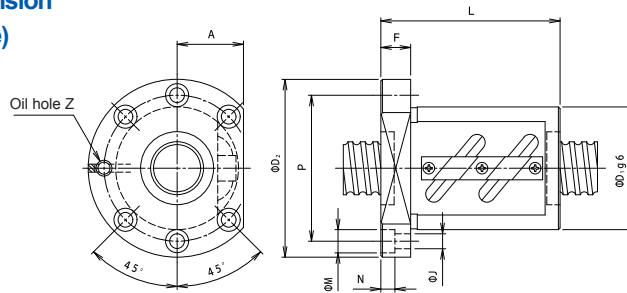
Lead l	Model No.	Screw dia. d_o	Root dia. d_r	Ball dia. D_w	Ball circle dia. D_{pw}	Effective turns m	Basic rated dynamic load(N) C_a	Basic rated static load(N) C_o	Axial stiffness (N/ μ m) K
5	12TXFA5	12	9.5	3.175	12.8	2.5×1	3880	4890	90
	15TXFA5	15	12.5	3.175	15.8	2.5×1	4250	5820	110
	20TXFA5	20	17.5	3.175	20.8	2.5×1	5190	8490	150
10	12TXFA10	12	10.1	2.381	12.6	2.5×1	2440	3390	90
	15TXFA10	15	12.5	3.175	15.8	2.5×1	4170	5820	110
	20TXFA10	20	16.4	4.763	21.3	2.5×1	8840	12900	160
15	15TXFU15	15	12.5	3.175	15.8	1.5×1	2850	3990	70
20	15TXFU20	15	12.5	3.175	15.8	1.5×1	2730	3990	70
	20TXFUS20	20	17.5	3.175	20.8	1.5×2	5440	8740	150

NOTE 1 : Stiffness shown in the table indicates theoretical elastic deformation at ball contact area when axial load of about three times of preload amount is operated under condition of preloaded with 5% amount of rated dynamic load C_a . Stiffness of ball nut comes to be about 80% of applied stiffness

Nut dimension												Model No.
D_1	D_2	L	F	P	J	M	N	A	B	C	Z	
32	52	42	12	42	4.5	8.0	4.5	32	43	15	M6×1	12TXFA5
34	58	46	11	45	6.0	9.5	5.5	34	49	17	M6×1	15TXFA5
46	74	51	15	59	6.6	11	6.5	46	66	24	M6×1	20TXFA5
30	50	49	12	40	4.5	8.0	5.5	30	42	15	M6×1	12TXFA10
34	58	51	11	45	6.0	9.5	5.5	34	49	17	M6×1	15TXFA10
48	74	59	15	59	6.6	11	6.5	48	66	24	M6×1	20TXFA10
34	58	53	11	45	6.0	9.5	5.5	34	49	17	M6×1	15TXFU15
34	58	66	11	45	6.0	9.5	5.5	34	49	17	M6×1	15TXFU20
46	74	70	15	59	6.6	11	6.5	46	66	24	M6×1	20TXFUS20

FB series standard dimension TIF type (Integral nut type)

1 face notched flange



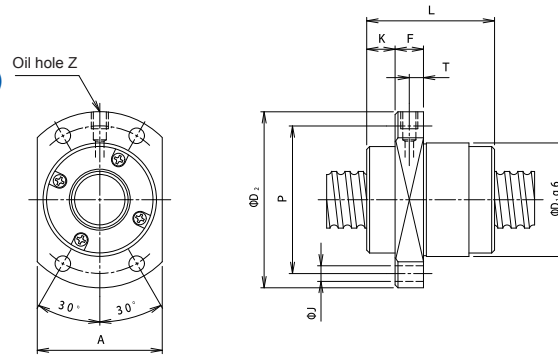
Lead l	Model No.	Screw dia. d_0	Root dia. d_r	Ball dia. D_w	Ball circle dia. D_{pw}	Effective turns m	Basic rated dynamic load(N) C_a	Basic rated static load(N) C_0	Axial stiffness (N/ μ m) K
5	25TIFC5	25	22.5	3.175	25.8	2.5×1	9170	21400	440
6	32TIFC6	32	28.9	3.969	33.0	2.5×1	13900	34900	570
8	32TIFC8	32	28.4	4.763	33.3	2.5×1	18000	42100	590
10	25TIFJ10	25	21.4	4.763	26.3	1.5×1	10100	19200	270
	28TIFC10	28	24.4	4.763	29.3	2.5×1	16600	36100	510
	32TIFC10	32	27.1	6.35	33.8	2.5×1	25500	53500	580
	40TIFC10	40	35.1	6.35	41.8	2.5×1	28600	67900	710
12	28TIFJ12	28	24.4	3.969	29.0	1.5×1	8470	18400	300
	32TIFC12	32	27.1	6.35	33.8	2.5×1	25400	53500	580
	40TIFC12	40	35.1	6.35	41.8	2.5×1	28600	67900	710
16	32TIFJ16	32	27.1	6.35	33.8	1.5×1	16300	32100	340
20	36TIFJ20	36	31.1	6.35	37.8	1.5×1	17200	36400	380
	40TIFC20	40	35.1	6.35	41.8	2.5×1	28300	67900	700

Nut dimension										Model No.
D_1	D_2	L	F	P	J	M	N	A	Z	
50	73	55	11	61	5.5	9.5	5.5	28	M6×1	25TIFC5
62	89	63	12	75	6.6	11	6.5	34	M6×1	32TIFC6
66	100	82	15	82	9	14	8.5	38	M6×1	32TIFC8
58	85	79	15	71	6.6	11	6.5	32	M6×1	25TIFJ10
60	94	97	15	76	9	14	8.5	36	M6×1	28TIFC10
74	108	100	15	90	9	14	8.5	41	M6×1	32TIFC10
82	124	103	18	102	11	17.5	11	47	PT1/8	40TIFC10
58	92	83	15	74	9	14	8.5	36	M6×1	28TIFJ12
74	108	117	18	90	9	14	8.5	41	M6×1	32TIFC12
82	124	117	18	102	11	17.5	11	47	PT1/8	40TIFC12
74	108	108	18	90	9	14	8.5	41	M6×1	32TIFJ16
78	123	121	18	101	11	17.5	11	47	M6×1	36TIFJ20
82	124	161	18	102	11	17.5	11	47	PT1/8	40TIFC20

NOTE 1 : Stiffness shown in the table indicates theoretical elastic deformation at ball contact area when axial load of about three times of preload amount is operated under condition of preloaded with 10% amount of rated dynamic load C_a .
Stiffness of ball nut comes to be about 80% of applied stiffness

FB series standard dimension EF type (Over-size ball preload)

2 faces notched flange



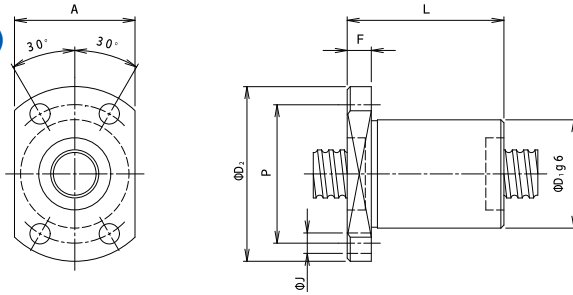
Lead ℓ	Model No.	Screw dia. d_o	Root dia. d_r	Ball dia. D_w	Ball circle dia. D_{pw}	Effective turns m	Basic rated dynamic load(N) C_a	Basic rated static load(N) C_o	Axial stiffness (N/ μ m) K
6	8EF3D6	8	6.6	1.588	8.3	2.7×2	3200	5390	160
12	8EF2D12	8	6.6	1.588	8.3	1.7×2	2200	3300	100
25	25EF2D25	25	21.9	3.969	26.0	1.7×2	14500	32900	500
30	15EF1D30	15	12.5	3.175	15.8	0.7×2	3900	6360	140
32	16EF1Q32	16	13.7	2.778	16.6	0.7×4	5800	10800	280
32	32EF2D32	32	28.4	4.763	33.3	1.7×2	20500	49900	620
40	20EF1Q40	20	17.5	3.175	20.8	0.7×4	8370	17300	360
50	50EF2D50	50	44.0	7.938	52.2	1.7×2	50600	131000	950
60	20EF1Q60	20	17.5	3.175	20.8	0.7×4	7480	19400	370

NOTE 1 : Stiffness shown in the table indicates theoretical elastic deformation at ball contact area when axial load of about three times of preload amount is operated under condition of preloaded with 5% amount of rated dynamic load C_a . Stiffness of ball nut comes to be about 80% of applied stiffness

Nut dimension									Model No.
D_1	D_2	L	K	F	P	J	A	Z	
18	31	24	5	9	25	3.4	18	—	8EF3D6
18	31	27	5	9	25	3.4	18	—	8EF2D12
47	74	81	11	12	60	6.6	49	M6×1	25EF2D25
32	53	34	6	10	43	5.5	33	M6×1	15EF1D30
35	56	37	9	10	44	4.5	38	M6×1	16EF1Q32
58	92	76	16	15	74	9	68	M6×1	32EF2D32
40	62	45	10	10	50	5.5	44	M6×1	20EF1Q40
90	135	118	25	22	112	14	100	PT1/8	50EF2D50
37	57	54	8	10	47	5.5	38	M6×1	20EF1Q60

FB series standard dimension MF type (Over-size ball preload)

2 faces notched flange



Lead l	Model No.	Screw dia. d_0	Root dia. d_r	Ball dia. D_w	Ball circle dia. D_{pw}	Effective turns m	Basic rated dynamic load(N) C_a	Basic rated static load(N) C_0	Axial stiffness (N/ μm) K
2	8MF3S2	8	6.6	1.588	8.3	1×3	1700	2300	70
	10MF3S2	10	8.6	1.588	10.3	1×3	1900	3100	90

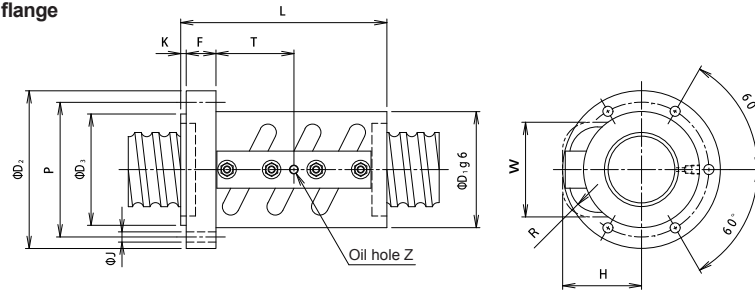
NOTE 1 : Stiffness shown in the table indicates theoretical elastic deformation at ball contact area when axial load of about three times of preload amount is operated under condition of preloaded with 5% amount of rated dynamic load C_a . Stiffness of ball nut comes to be about 80% of applied stiffness

Nut dimension							Model No.
D_1	D_2	L	F	P	J	A	
18	29	26	4	23	3.4	20	8MF3S2
20	36	28	5	28	4.5	22	10MF3S2

FB series standard dimension

TXF type (Preloaded by over-size balls)

4 faces notched flange



Lead l	Model No.	Screw dia. d_0	Root dia. d_r	Ball dia. D_w	Ball circle dia. D_{pw}	Effective turns m	Basic rated dynamic load(kN) C_a	Basic rated static load(kN) C_o
16	50HNFL16	50	40.5	12.7	53.6	2.5×3	273	737
	55HNFL16	55	45.5	12.7	58.6	2.5×3	285	800
	63HNFL16	63	53.5	12.7	66.6	2.5×3	307	924
	63HNFO16					2.5×4	393	1230
	100HNFL16	100	90.5	12.7	103.6	2.5×3	381	1480
	100HNFP16					3.5×3	509	2070

Nut dimension													Model No.
D_1	D_2	D_3	L	K	F	T	P	J	W	H	R	Z	
95	129	85	218	6	28	84	112	9	72	70	30	PT1/8	50HNFL16
98	132	92	218	6	28	84	115	9	77	72	30	PT1/8	55HNFL16
105	139	100	218	6	28	84	122	9	85	75	30	PT1/8	63HNFL16
			266			100							63HNFO16
146	190	140	226	10	32	84	168	13.5	122	95	30	PT1/8	100HNFL16
			274			100							100HNFP16

NOTE 1 : Stiffness shown in the table indicates theoretical elastic deformation at ball contact area when axial load of about three times of preload amount is operated under condition of preloaded with 5% amount of rated dynamic load C_a . Stiffness of ball nut comes to be about 80% of applied stiffness