

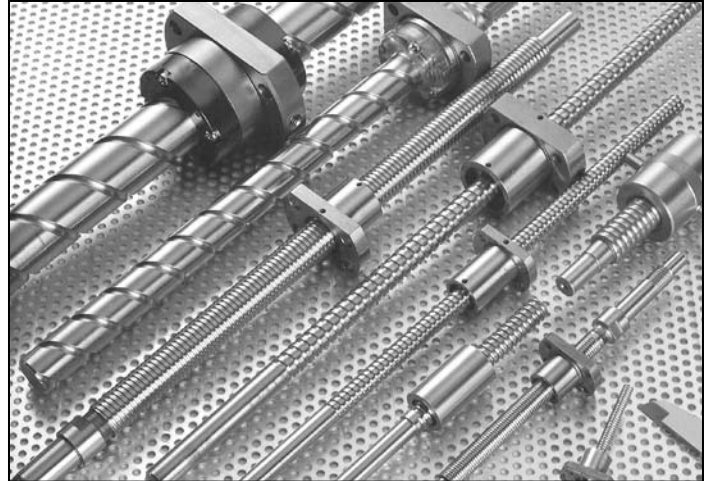
PRECISION BALL SCREWS



SMI / Comtop carries an extensive line of ground and precision rolled ball screws. Shaft diameters range from 4mm to 100mm. Lead varies from 1mm to 64mm depending on the shaft diameter.

Our ball screws have high mechanical efficiency, smooth rotation, high accuracy, easy maintenance and long predictable life. Time tested and industrially proven to meet your requirements.

Contact SMI for custom end machining or for special requirements. Stainless steel, double nuts, support units, and shaft diameters above 80mm to 100mm are available upon request. Special sizes (i.e. 9x2.5mm) are not included in this catalog and are RFQ only. New shaft diameters, leads & types are continually being developed & will be updated on our website.



GROUND & ROLLED BALL SCREW SIZES

Unit: mm

Shaft Dia.	Lead																				
	1	2	2.5	3	4	5	5.08	6	8	10	12	15	16	20	24	25	32	40	50	60	64
4	■																				
6	■																				
8	■	■	●						●	●											
9			●								●										
10		■			●					●		●									
12		■	●	●	●	●		●			●										
14		■		●																	
15						●				●											
16		●			■	■				●			■				●				
19		●																			
20		●			■	■				●				■				●			
25		●	●		●	■		●		■						●			●		
28								●	●	●											
32			●		●	■		●	●	■	●			●			■				●
36										●	●										
38																●					
40						■	●		●	■	●		●	●	●			■			
50									●	■	●		●	●					●		
63										●				●				●			
80										●				●				●			
100																●					

■ Ground & Rolled ● Ground Only

MOTION COMPONENTS

ACCURACY

LEAD / TRAVEL ACCURACY

- Lead accuracy of SMI / Comptop ball screws (grades C0 to C5) is specified in 4 basic terms (E, e, e₃₀₀, e_{2π}). They are defined in Figure A. Tolerance deviation (± E) and variation (e) of accumulated reference travel are shown in Tables 1 and 2.
- Accumulated travel deviations for grades C7 and C10 are specified only by the allowable value per 300mm measured within any portion of the thread length. They are 0.05mm for C7 and 0.21mm for C10.

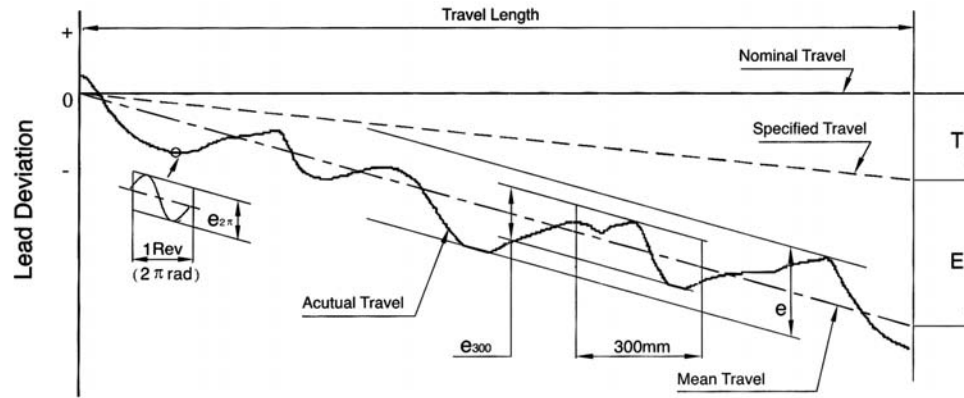


Fig. A Diagram of Lead Accuracy

Definition of Terms for Lead Accuracy

Term	Symbol	Definition	Table
Travel Compensation	T	Travel compensation is the difference between specified and nominal travel within the useful travel. A slightly smaller value compared to the nominal travel is often selected by the customer to compensate for an expected elongation caused by temperature rise or external load. Therefore "T" is usually a negative value. If no compensation is needed, specified travel is the same as nominal travel.	
Actual Travel		Actual travel is the axial displacement of the nut relative to the screw shaft.	
Mean Travel		Mean travel is the linear best fit line of actual. This could be obtained by the least squares method. This line represents the tendency of actual travel.	
Mean Travel Deviation	E	Mean travel deviation is the difference between mean travel and specified travel within the travel length.	1
Travel Variation		Travel variations is the band of 2 lines drawn parallel to the mean travel, on the plus and minus side.	
	e	Maximum width of variation over the travel length.	1
	e ₃₀₀	Actual width of variation for the length of 30mm taken anywhere within the travel length.	2
	e _{2π}	Wobble error, actual width of variation for one revolution (2 π radian).	2

Table 1 Mean Travel Deviation (± E) and Travel Variation (e) JIS B 1192

Unit: μm

Grade		C0	C1	C2	C3	C5	C7	C10							
Travel Length (mm)	Over	Incl.	± E	e	± E	e	± E	e	± E	e	± E	e	± 50 / 300mm	± 210 / 300mm	
		100	3	3	3.5	5	5	7	8	8	18	18			
		100	200	3.5	3	4.5	5	7	7	10	8	20			18
		200	315	4	3.5	6	5	8	7	12	8	23			18
		315	400	5	3.5	7	5	9	7	13	10	25			20
		400	500	6	4	8	5	10	7	15	10	27			20
		500	630	6	4	9	6	11	8	16	12	60			23
		630	800	7	5	10	7	13	9	18	13	35			25
		800	1000	8	6	11	8	15	10	21	15	40			27
		1000	1250	9	6	13	9	18	11	24	16	46			30
		1250	1600	11	7	15	10	21	13	29	18	54			35
		1600	2000			18	11	25	15	35	21	65			40
	2000	2500			22	13	30	18	41	24	77	46			
	2500	3150			26	15	36	21	50	29	93	54			

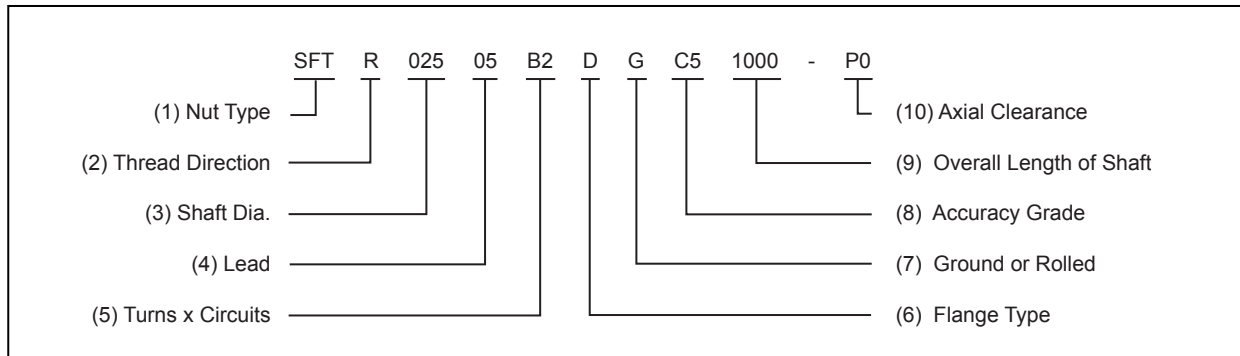
Table 2 Variation / 300mm & Wobble Error (e_{2π}) Unit: μm

Grade	C0	C1	C2	C3	C5	C7	C10
e ₃₀₀	3.5	5	7	8	18	50	210
e _{2π}	2.5	4	5	6	8	-	-

Table 3 Combination of Accuracy & Axial Play

Grade	P0	P1	P2	P3	P4
Axial Play	50μm max.	0	Light Pre-load	Med. Pre-load	Heavy Pre-load

Part Number System



(1) Nut Type Codes

S: S: Single Nut
D: Double Nut

F: F: With Flange
C: Without Flange

T: T: T type nut
I: I: I type nut
D: D type nut
E: E type nut
K: K type nut
U: DIN nut

(2) Thread Direction

R: Right L: Left

(3) Shaft Diameter (mm)

(4) Lead (mm)

(5) Turns x Circuits

T: 1 A: 1.5 or 1.7 B: 2.5 C: 3.5
Example: B2 = 2.5 x 2

(6) Flange Type

N: Round S: Single Flat D: Double Flats

(7) Thread Type

G: Ground R: Rolled

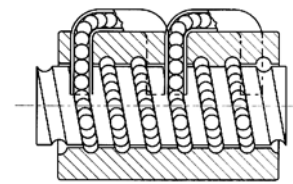
(8) Accuracy Grade (see table below)

C0, C1, C2, C3, C5, C7, C10

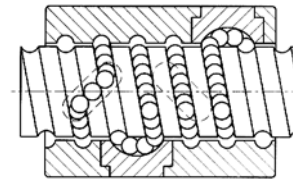
(9) Overall Length of Shaft (mm)

(10) Axial Clearance (see table below)

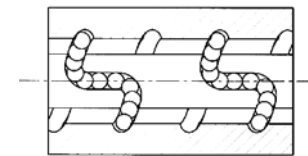
P0, P1, P2, P3, P4



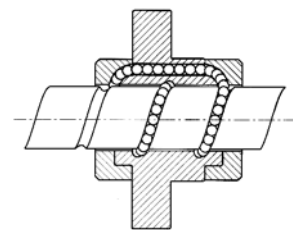
Type T Nut



Type I Nut



Type K Nut



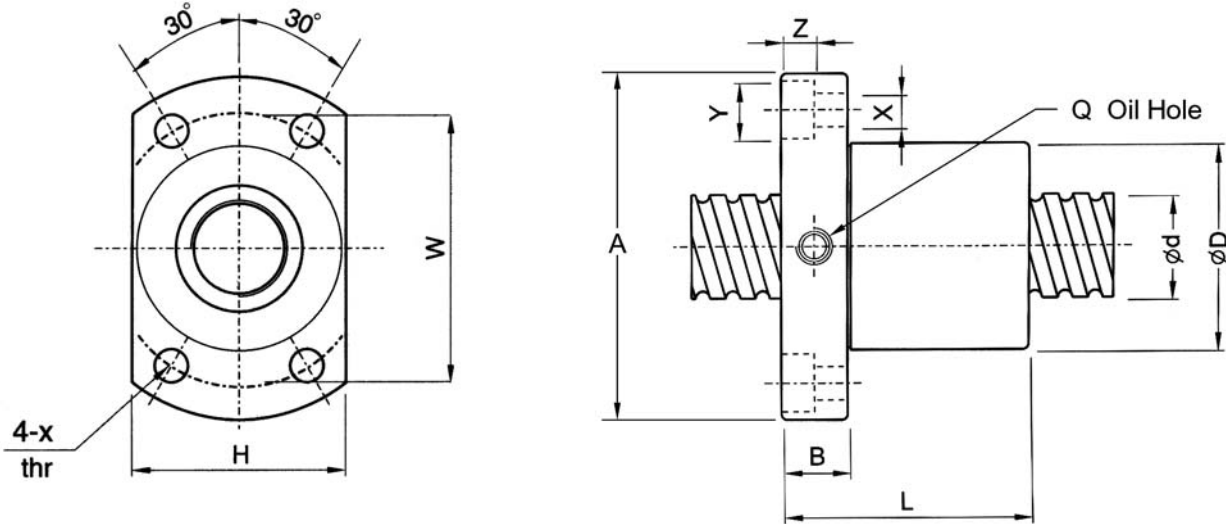
Type E Nut

Mean travel deviation based on 300mm of travel Unit: μm

Grade	C0	C1	C2	C3	C5	C7	C10
$\pm E$	4	6	8	12	23	50	210

Axial Clearance	P0	P1	P2	P3	P4
Designations	50 μm max.	0	Light Pre-load	Med. Pre-load	Heavy Pre-load

SFK SERIES



Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	H	X	Y	Z	Q	Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)
SFK0401 *	4	1	0.8	10	20	3	12	15	14	2.9	-	-	-	2	42	51
SFK0601 *	6	1	0.8	12	24	3.5	15	18	16	3.4	-	-	-	3	73	121
SFK0801 *	8	1	0.8	14	27	4	16	21	18	3.4	-	-	-	4	93	173
SFK0802 *	8	2	1.2	14	27	4	16	21	18	3.4	-	-	-	3	135	225
SFK082.5 *	8	2.5	1.2	16	29	4	26	23	20	3.4	-	-	-	3	177	278
SFK1002 *	10	2	1.2	18	35	5	28	27	22	4.5	-	-	-	3	185	305
SFK1004 *	10	4	2.0	26	46	10	34	36	28	4.5	-	-	-	3	395	590
SFK1202 *	12	2	1.2	20	37	5	28	29	24	4.5	-	-	-	4	173	317
SFK1204 *	12	4	2.5	24	40	6	28	32	25	3.5	6	3.5	-	3	454	722
SFK1205 *	12	5	2.5	22	37	8	39	29	24	4.5	-	-	-	3	619	883
SFK1402 *	14	2	1.2	21	40	6	23	31	26	5.5	-	-	-	4	287	633
SFK1602	16	2	1.2	25	43	10	40	35	29	5.5	-	-	-	4	253	670
SFK1604 *	16	4	2.381	30	49	10	45	39	34	4.5	8	4.5	M6	4	640	1340
SFK2002	20	2	1.2	50	80	15	55	65	68	6.5	10.5	6	M6	6	397	1269
SFK2004	20	4	2.381	34	57	11	46	45	40	5.5	9.5	5.5	M6	4	670	1480
SFK2502	25	2	1.2	50	80	13	43	65	68	6.5	10.5	6	M6	5	375	1331
SFK2503	25	3	2.381	40	63	11	51	51	48	5.5	9.5	5.5	M6	6	1100	3076
SFK2504 *	25	4	2.381	40	63	11	46	51	46	5.5	9.5	5.5	M6	4	760	1950
SFK2510 *	25	10	6.35	46	72	12	85	58	52	6.5	11	6.5	M6	4	2350	6690
SFK3204	32	4	2.381	46	72	12	47	58	52	6.5	11	6.5	M6	4	860	3050

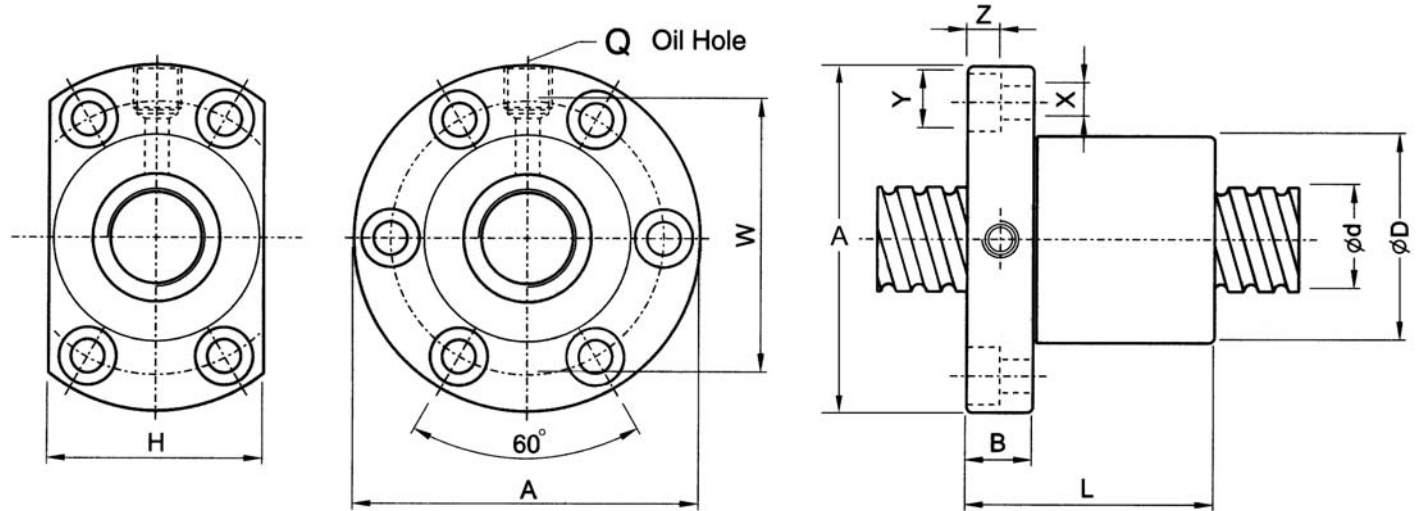
* Left-hand threads available

Refer to size chart for available rolled sizes

PRECISION BALL SCREWS



SFD & SFI SERIES



SFD

Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	H	X	Y	Z	Q	Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / μ m)
SFD1604	16	4	2.381	30	49	10	45	39	34	4.5	8	4.5	M6	4	640	1340	16
SFD2004	20	4	2.381	34	57	11	46	45	40	5.5	9.5	5.5	M6	4	670	1480	25
SFD2504	25	4	2.381	40	63	11	46	51	46	5.5	9.5	5.5	M6	4	760	1950	31
SFD2510	25	10	6.350	46	72	12	85	58	52	6.5	11	6.5	M6	4	2350	6690	45
SFD3204	32	4	2.381	46	72	12	47	58	52	6.5	11	6.5	M6	4	860	3050	40

SFI

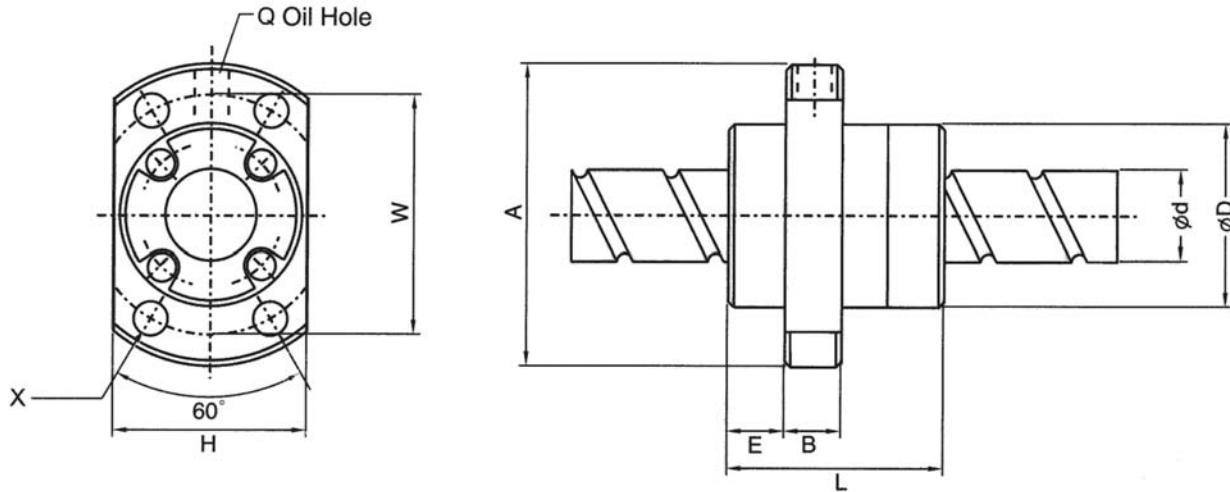
Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	H	X	Y	Z	Q	Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / μ m)
SFI1605-4	16	5	3.175	30	49	10	50	39	34	4.5	8	4.5	M6	4	780	1790	20
SFI1610-3 *	16	10	3.175	34	58	10	57	45	34	5.5	9.5	5.5	M6	3	833	1249	15
SFI2005-4 *	20	5	3.175	34	57	11	51	45	40	5.5	9.5	5.5	M6	4	1130	2380	25
SFI2005T *	20	5.08	3.175	34	57	11	51	45	40	5.5	9.5	5.5	M6	4	1130	2380	25
SFI2505-4 *	25	5	3.175	40	63	11	51	51	46	5.5	9.5	5.5	M8	4	1280	3110	35
SFI3205-4 *	32	5	3.175	46	72	12	52	58	52	6.5	11	6.5	M8	4	1450	4150	40
SFI3210-4	32	10	6.35	54	88	15	90	70	62	9	14	8.5	M8	4	3390	7170	40
SFI4005-4 *	40	5	3.175	56	90	15	55	72	64	9	14	8.5	M8	4	1610	5330	49
SFI4010-4	40	10	6.35	62	104	18	93	82	70	11	17.5	11	M8	4	3910	9520	50
SFI5010-4	50	10	6.35	72	114	18	93	92	82	11	17.5	11	M8	4	4450	12500	65
SFI6310-4 *	63	10	6.35	85	131	22	98	107	95	14	20	13	M8	4	5070	16600	80
SFI8010-4 *	80	10	6.35	105	150	22	98	127	115	14	20	13	M8	4	5620	21300	90

* Left-hand threads available

Refer to size chart for available rolled sizes

SFE SERIES



Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	E	B	L	X	W	H	Q	Turns x Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / μ m)
SFE1616-3	16	16	2.778	32	53	15	10	38	4.5	42	34	M6	1.7x2	650	1280	19
SFE1616-6			2.778	32	53	15	10	38	4.5	42	34	M6	1.7x4	1180	2550	36
SFE1632-3		32	3.175	34	55	10.5	10	34	5.5	45	36	M6	0.7x2	410	680	21
SFE1632-6			3.175	34	55	10.5	10	34	5.5	45	36	M6	0.7x4	820	1360	41
SFE2020-3	20	20	3.175	39	62	11.5	10	47	5.5	50	41	M6	1.7x2	980	2140	25
SFE2020-6			3.175	39	62	11.5	10	47	5.5	50	41	M6	1.7x4	1780	4280	49
SFE2040-3		40	3.175	38	58	11	10	41	5.5	48	40	M6	0.7x2	455	880	25
SFE2040-6			3.175	38	58	11	10	41	5.5	48	40	M6	0.7x4	910	1760	49
SFE2525-3	25	25	3.969	47	74	13	12	57	6.6	60	49	M6	1.7x2	1470	3350	31
SFE2525-6			3.969	47	74	13	12	57	6.6	60	49	M6	1.7x4	2660	6690	60
SFE2550-3		50	3.969	46	70	13	12	50	6.6	58	48	M6	0.7x2	685	1380	31
SFE2550-6			3.969	46	70	13	12	50	6.6	58	48	M6	0.7x4	1370	2760	60
SFE3232-3	32	32	4.762	58	92	16	12	71	9	74	60	M6	1.7x2	2140	5260	40
SFE3232-6			4.762	58	92	16	12	71	9	74	60	M6	1.7x4	3890	10500	76
SFE3264-3		64	4.762	58	92	15.5	12	62	9	74	60	M6	0.7x2	1000	2130	40
SFE3264-6			4.762	58	92	15.5	12	62	9	74	60	M6	0.7x4	2000	4260	77
SFE4040-3	40	40	6.350	73	114	19	15	89	11	93	75	M6	1.7x2	3410	8820	49
SFE4040-6			6.350	73	114	19	15	89	11	93	75	M6	1.7x4	6200	17600	95
SFE5050-3	50	50	7.938	90	135	21.5	20	107	14	112	92	M6	1.7x2	5100	13800	60
SFE5050-6			7.938	90	135	21.5	20	107	14	112	92	M6	1.7x4	7260	27600	117

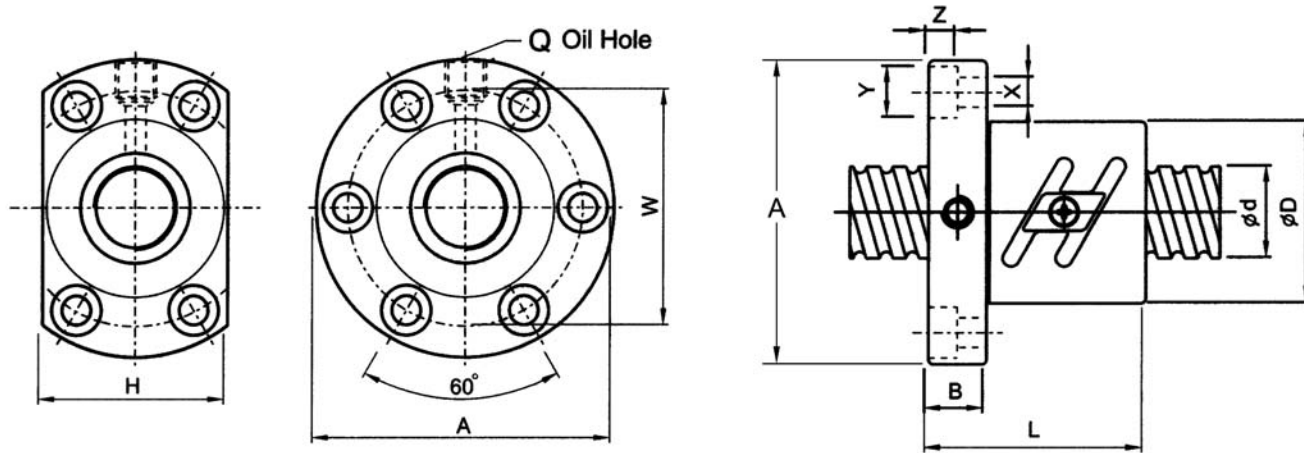
Note: "-3" refers to 2 starts, "-6" refers to 4 starts.

Refer to size chart for available rolled sizes

PRECISION BALL SCREWS



SFT SERIES

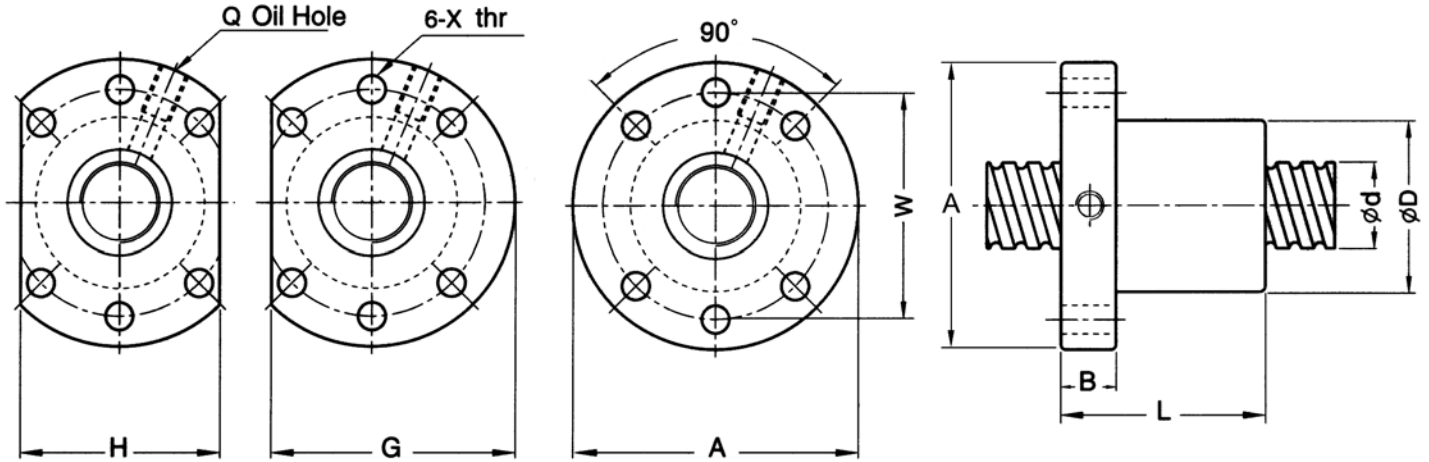


Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	H	X	Y	Z	Q	Turns x Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / μ m)
SFT2505-5	25	5	3.175	50	73	11	55	61	52	5.5	9.5	5.5	M8	2.5x2	1690	4460	46
SFT2510-2.5	25	10	6.350	68	102	15	70	84	82	9	14	8.5	M8	2.5x1	2440	4730	26
SFT3205-5	32	5	3.175	58	85	12	56	71	64	6.6	11	6.5	M8	2.5x2	1880	5720	55
SFT3206-5	32	6	3.969	62	89	12	65	75	68	6.6	11	6.5	M8	2.5x2	2520	7080	56
SFT3208-5	32	8	4.762	66	100	15	82	82	76	9	14	8.5	M8	2.5x2	3230	8360	58
SFT3210-5	32	10	6.350	74	108	15	96	90	82	9	14	8.5	M8	2.5x2	4820	11500	63
SFT3220-2.5	32	20	6.350	74	108	16	100	90	82	9	14	8.5	M8	2.5x1	2680	6020	30
SFT4005-5	40	5	3.175	67	101	15	59	83	72	9	14	8.5	M8	2.5x2	2026	7200	66
SFT4010-5	40	10	6.350	82	124	18	100	102	94	11	17.5	11	M8	2.5x2	5300	14000	72
SFT4020-2.5	40	20	6.350	82	124	18	100	102	94	11	17.5	11	M8	2.5x1	2970	7370	38
SFT5010-5	50	10	6.350	93	135	18	103	113	98	11	17.5	11	M8	2.5x2	5940	18000	89
SFT5020-2.5	50	20	9.525	105	152	28	121	128	110	14	20	13	M8	2.5x1	7400	18700	45
SFT6310-5	63	10	6.350	108	154	22	105	130	110	14	20	13	M8	2.5x2	6550	22700	107
SFT6320-2.5	63	20	9.525	122	180	28	127	150	130	18	26	18	M8	2.5x1	8110	23200	73
SFT8010-5	80	10	6.350	130	176	22	105	152	132	14	20	13	M8	2.5x2	7200	28900	129
SFT8020-5	80	20	9.525	143	204	28	180	172	148	18	26	18	M8	2.5x2	16700	60100	175
SFT8020-7.5	80	20	9.525	143	204	28	240	172	148	18	26	18	M8	2.5x3	23500	89100	252

All SFT sizes available in left-hand threads
Refer to size chart for available rolled sizes

SFU SERIES



Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	X	G	H	Q	Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / µm)
SFU1605-4	16	5	3.175	28	48	10	50	38	5.5	44	40	M6	4	780	1790	20
SFU2005-4 *	20	5	3.175	36	58	10	51	47	6.6	51	44	M6	4	1130	2380	25
SFU2505-4 *	25	5	3.175	40	62	10	51	51	6.6	55	48	M6	4	1280	3110	35
SFU3205-4 *	32	5	3.175	50	80	12	52	65	9	71	62	M6	4	1450	4150	40
SFU3210-4	32	10	6.350	50	80	12	90	65	9	71	62	M6	4	3390	7170	40
SFU4005-4 *	40	5	3.175	63	93	14	55	78	9	81.5	70	M8	4	1610	5330	49
SFU4010-4	40	10	6.350	63	93	14	93	78	9	81.5	70	M8	4	3910	9520	50
SFU5010-4	50	10	6.350	75	110	16	93	93	11	97.5	85	M8	4	4450	12500	65
SFU6310-4 *	63	10	6.350	90	125	18	98	108	11	110	95	M8	4	5070	16600	80
SFU8010-4 *	80	10	6.350	105	145	20	98	125	14	127.5	110	M8	4	5620	21300	90

* Left-hand threads available

Refer to size chart for available rolled sizes