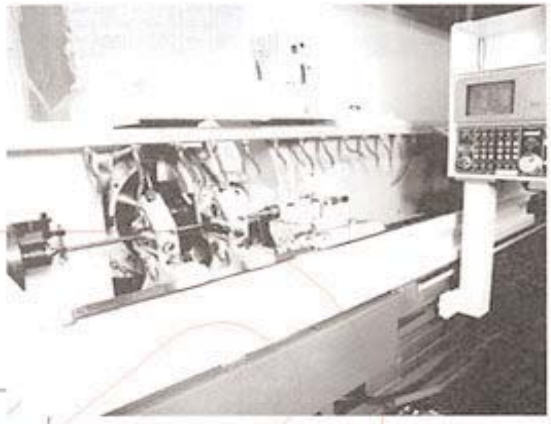
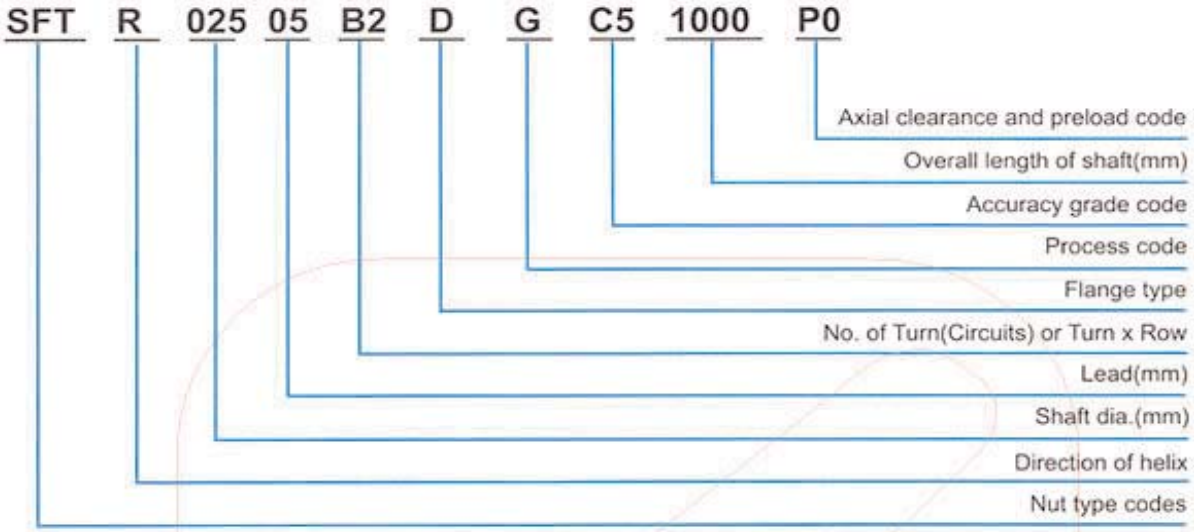
Ball Screw



High Precision

CNC Production Equipment

5.1 The Model Code of Ball Screw



Nut type codes

S	S :	Single nut	F	F :	With flange	T	T :	T type nut
							I :	I type nut
	D :	Double nut		C :	Without flange		D :	D type nut
							E :	E type nut
							K :	K type nut
							U :	U DIN nut

(SFI · DFI · SFT · DFT · SFE · SFK)

Direction of helix		No. of Turn (Circuits) or Turn x Row			Flange type	
R :	Right	Turn	T:	1	N:	Not cutting
L :	Left		A:	1.5 (or 1.7)	S:	Single cutting
			B:	2.5	D:	Double cutting
			C:	3.5		

ex : (B2=2.5x2)

Process code		Accuracy grade code							Axial clearance and preload code				
G:	Ground	C0	C1	C2	C3	C5	C7	C10	P0	P1	P2	P3	P4
F:	Rolled												

5.2 Technical Information

Mean Travel Deviation (± E) and Travel Varition(e) (JIS B 1192)

unit: μm

Travel Length (mm) Over	incl	Grade C0 ±E	C0 e	C1 ±E	C1 e	C2 ±E	C2 e	C3 ±E	C3 e	C5 ±E	C5 e	C7 e300	C10 e300
	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	30	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	±50 / 300mm	±210 / 300mm
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		
3150	4000			30	18	44	25	60	35	115	65		
4000	5000					52	30	72	41	140	77		
5000	6300					65	36	90	50	170	93		
6300	8000							110	60	210	115		
8000	10000									260	140		
10000	12500									320	170		

Variation per 300mm (e300)and Wobble Error (e2π)(JIS B 1192)

unit: μm

Grade	C0	C1	C2	C3	C5	C7	C10
e_{300}	3.5	5	7	8	18	50	210
$e_{2\pi}$	2.5	4	5	6	8		

Combination of Accuracy Grade, Preload and Axial Play

Grade	P0	P1	P2	P3	P4
Axial Play	Yes	No	No	No	No
Preload	No	No	Light	Medium	Heavy

Guidelines for selecting Accuracy, Preload, Axial Play, Nut and Screw shaft.

Accuracy	Preload and Axial Play	Nut Type	Screw shaft Type
C10	P0(With Axial Play)	Single Nut	Rolled screw shaft
C7	Rolled : P0 Ground :P1	Rolled : single nut Ground : According to ABBA Catalogues	Rolled or Ground
C5	P1 or P2(Standard)	Ground : According to ABBA Catalogues	Ground screw shaft with lead error inspection certificate
C3	P1 or P2(Standard) or P3	Ground : According to ABBA Catalogues	Ground screw shaft with lead error inspection certificate

Axial Play (P0) Clearance in the Axial Direction of the Rolled and Ground Ball Screw

Screw Shaft OD	Rolled Ball Screw Clearance in the Axial Direction(max.)	Ground Ball Screw Clearance in the Axial Direction (max.)
04-14 miniature ball screw	0.05	0.015
15-40 middle size of ball screw	0.08	0.025
50-100 big size of ball screw	0.12	0.05

unit:mm

Spring Force of Light Preload (P2)

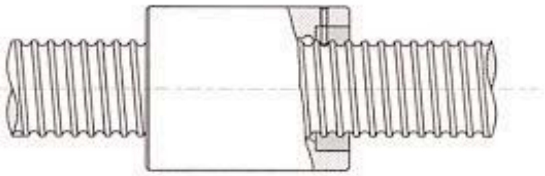
Model No.	Single Nut (kg)	Double Nut (kg)
1605	0.1~0.3	0.3~0.6
2005	0.1~0.3	0.3~0.6
2505	0.2~0.5	0.3~0.6
3205	0.2~0.5	0.5~0.8
4005	0.2~0.5	0.5~0.8
2510	0.2~0.5	0.5~0.8
3210	0.3~0.6	0.5~0.8
4010	0.3~0.6	0.5~0.8
5010	0.3~0.6	0.8~1.2
6310	0.6~1.0	0.8~1.2
8010	0.6~1.0	0.8~1.2

Cautions About Use of Ball Screws

Lubrication

Adequate lubrication must be provided when ball screw is used, insufficient lubrication will result in contact of metal, which in turn leads to increase of friction and friction loss, thus cause failure or shortening of service life.

Lubricants applied to ball screws can be divided into 2 types,namely lubricating oil and consistent grease. In general speaking, in respect of maintenance, consistent grease will lead to increase of dynamic friction torque linearly along with increase of rotating speed, hence oil lubrication is deemed the better way when speed exceeds 3-5 m/min; however, don't forget the fact that there have been examples that using grease has been capable of achieving speed of 10 m/min, with respect to the equipment.



Inspection of lubrication and interval of refill

Method	Interval	Check Item	Replenish or Change Interval
Auto. Intermittent oil supply	Weekly	Oil level, contamination	Add at each check, as required depending on tank level
Grease	initially 2-3 months	Contamination on entry of chip	Replenish yearly or according to the inspection results
Oil bath	Daily	Oil level	To be determined according to consumption

Contaminant Prevention

Any foreign matter or water, if allowed to enter the ball screw, may increase friction and cause damage.

For example, the entry of chips or cutting oil may be expected with machine tools depending on the work environment. Where entry of foreign matter is anticipated, use a bellows or telescopic cover as shown in Fig. 5.1, to cover the screw shaft completely.

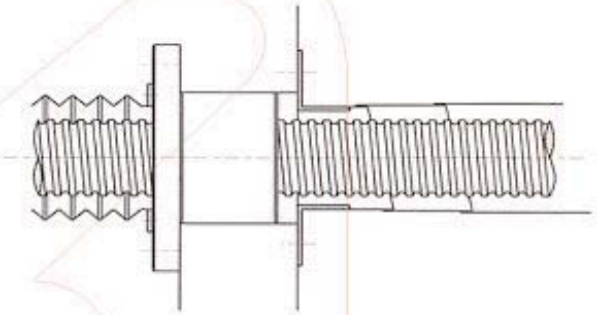


Fig. 5.1 Dust proof Method by Telescopic Cover and Bellows

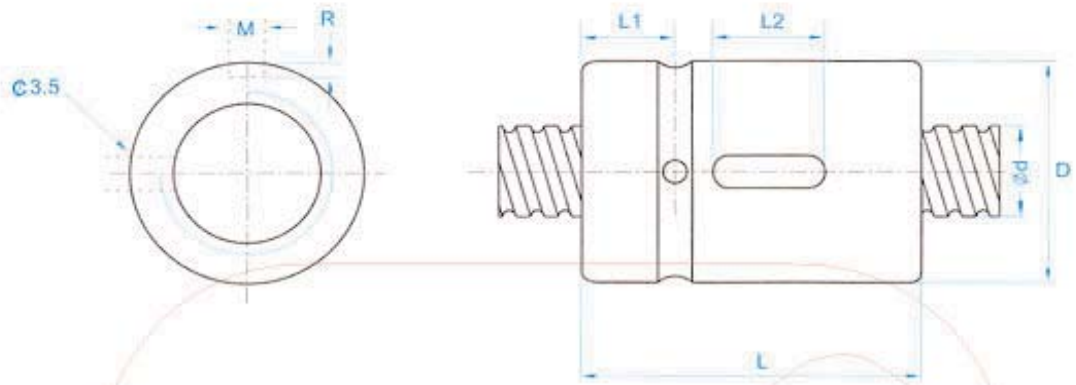
Ball Screw Selection Procedure

Ground & Rolled

直徑 \ 導程	1	2	2.5	3	4	5	5.08	6	8	10	12	15	16	20	24	25	32	40	50	64
4	□△																			
6	□△	△																		
8	□△	□△	□△																	
10		□△			□△															
12		□△	△		□△	□△				△										
14		□△		△	△															
15										△				△						
16		△			□△	□△				□△			□△				△			
20		△			□△	□△	△			□△				□△				△		
25		△	△	△	□△	□△	△	□△	□△	□△	△			△		□△			△	
28						△		△	△	△	△									
32					□△	□△	△	□△	□△	□△	□△		△	△			□△			△
36										△	△		△	△						
38															△					
40						□△	△		△	□△	△		△	△	△			□△		
45										△										
50						△			△	□△	△		△	□△					□△	
63										□△				□△				△		
80										□△				□△				△		
100														□△		△				

□ means both of ground and rolled ball screw are available △ means ground ball screw only

5.3 SCI



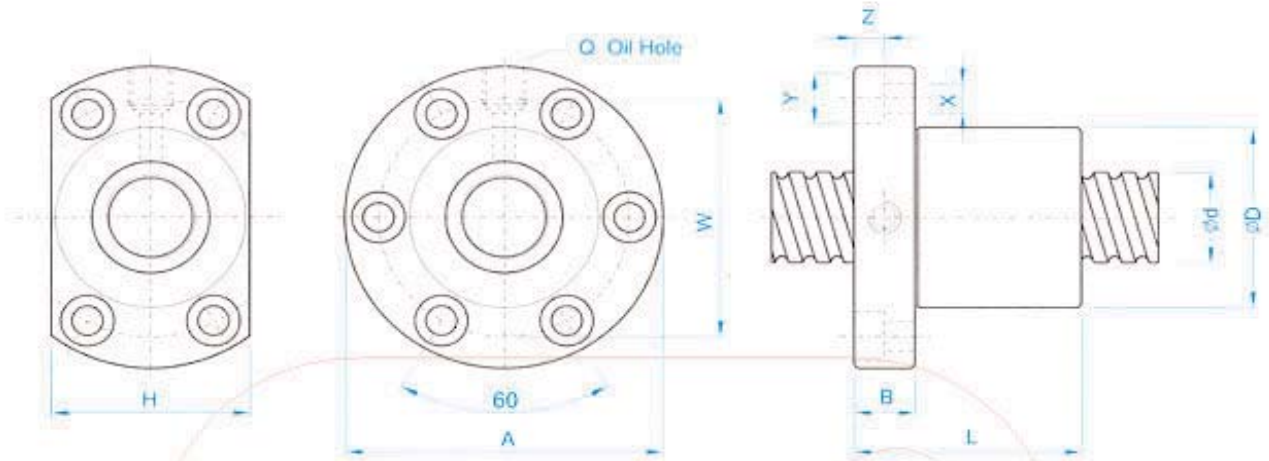
Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

	Model No.	Dimensions												
		d	l	Da	D	L	L1	L2	M	R	n	Ca	Coa	K
	SCI01604	16	4	2.381	30	40	9	15	3	1.5	4	626	1254	22
★	SCI01605		5	3.175	30	45	9	20	5	3	4	888	1525	22
	SCI02004	20	4	2.381	34	40	9	15	3	1.5	4	693	1584	27
★	SCI02005		5	3.175	34	45	9	20	5	3	4	999	1995	27
	SCI02504	25	4	2.381	40	40	9	15	3	1.5	4	775	2046	33
★	SCI02505		5	3.175	40	45	9	20	5	3	4	1119	2581	34
	SCI02510		10	4.762	46	85	13	30	5	3	4	1903	3695	35
	SCI03204	32	4	2.381	46	40	9	15	3	1.5	4	868	2640	43
★	SCI03205		5	3.175	46	45	9	20	5	3	4	1264	3403	43
	SCI03210		10	6.35	54	85	13	30	5	3	4	3093	6102	45
★	SCI04005	40	5	3.175	56	45	9	20	5	3	4	1407	4342	53
★	SCI04010		10	6.35	62	85	13	30	5	3	4	3480	7979	55
	SCI05010	50	10	6.35	72	85	13	30	5	3	4	3898	10326	68
★	SCI06310	63	10	6.35	85	85	13	30	6	3.5	4	4402	13611	84
★	SCI08010	80	10	6.35	105	85	13	30	8	4.5	4	4900	17366	106

Note:with sign ★can produce left helix

5.4 SFI



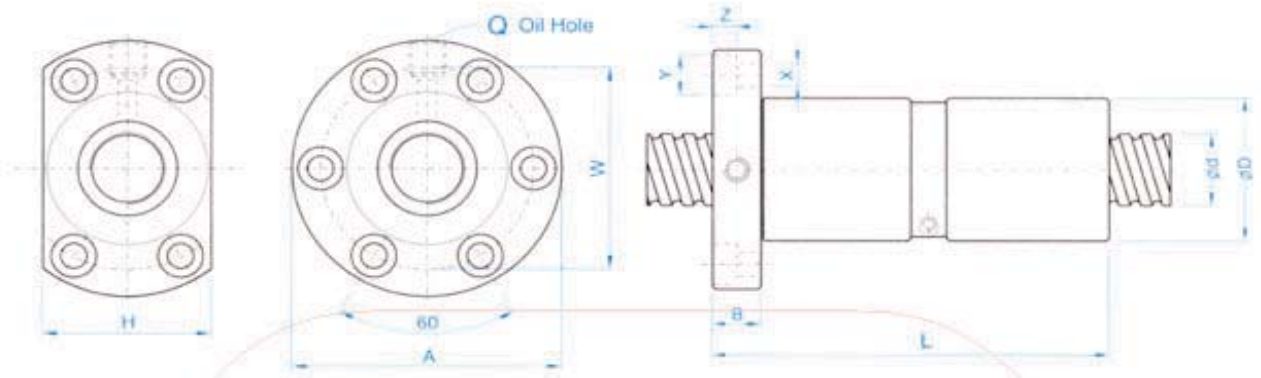
Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kgf/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

Model No.	Dimensions																
	d	l	Da	D	A	B	L	W	H	X	Y	Z	Q	n	Ca	Coa	K
★ SFI01604-4	16	4	2.381	30	49	10	45	39	34	4.5	8	4.5	M6	4	625	1254	22
★ SFI01605-4		5	3.175	30	49	10	50	39	34	4.5	8	4.5	M6	4	888	1525	22
★ SFI01610-3		10	3.175	34	58	10	57	45	34	5.5	9.5	5.5	M6	3	716	1232	17
SFI02004-4	20	4	2.381	34	57	11	46	45	40	5.5	9.5	5.5	M6	4	693	1584	27
★ SFI02005-4		5	3.175	34	57	11	51	45	40	5.5	9.5	5.5	M6	4	999	1995	27
★ SFI0205T-4		5.08	3.175	34	57	11	51	45	40	5.5	9.5	5.5	M6	4	999	1995	27
★ SFI02504-4	25	4	2.381	40	63	11	46	51	46	5.5	9.5	5.5	M6	4	775	2046	33
★ SFI02505-4		5	3.175	40	63	11	51	51	46	5.5	9.5	5.5	M8	4	1119	2581	34
SFI02510-4		10	4.762	46	72	12	85	58	52	6.5	11	6.5	M6	4	1903	3953	35
SFI03204-4	32	4	2.381	46	72	12	47	58	52	6.5	11	6.5	M6	4	868	2640	43
★ SFI03205-4		5	3.175	46	72	12	52	58	52	6.5	11	6.5	M8	4	1264	3403	43
★ SFI03210-4		10	6.35	54	88	15	90	70	62	9	14	8.5	M8	4	3093	6102	44
★ SFI04005-4	40	5	3.175	56	90	15	55	72	64	9	14	8.5	M8	4	1407	4342	53
★ SFI04010-4		10	6.35	62	104	18	93	82	70	11	17.5	11	M8	4	3480	7979	55
SFI05010-4	50	10	6.35	72	114	18	93	92	82	11	17.5	11	M8	4	3898	10326	68
★ SFI06310-4	63	10	6.35	85	131	22	98	107	95	14	20	13	M8	4	4402	13611	84
★ SFI08010-4	80	10	6.35	105	150	22	98	127	115	14	20	13	M8	4	4900	17366	106

Note:with sign ★can produce left helix

5.5 DFI



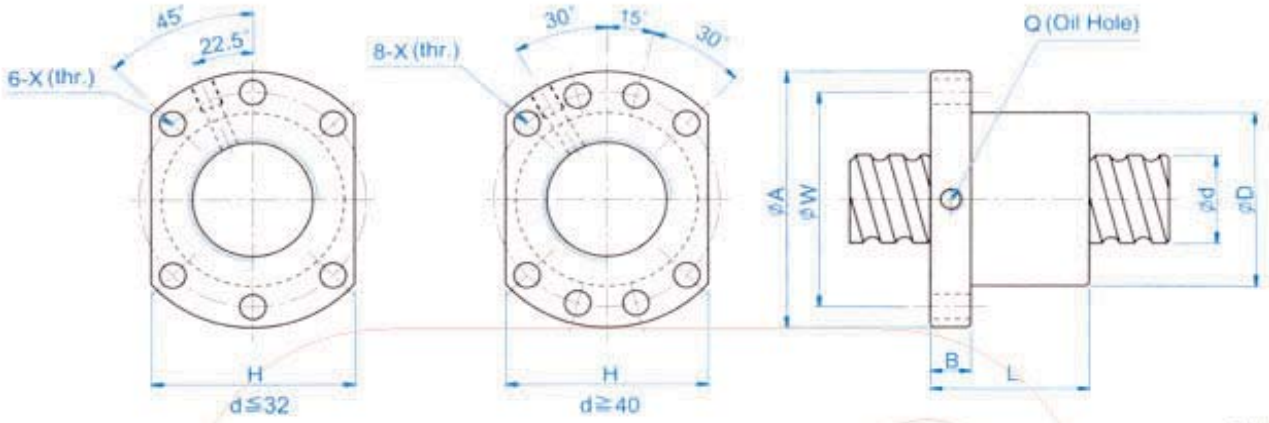
Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kgf/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

	Model No.	Dimensions																
		d	l	Da	D	A	B	L	W	H	X	Y	Z	Q	n	Ca	Coa	K
★	DFI01604-4	16	4	2.381	30	49	10	80	39	34	4.5	8	4.5	M6	4	625	1254	42
★	DFI01605-4		5	3.175	30	49	10	100	39	34	4.5	8	4.5	M6	4	888	1525	43
	DFI02004-4	20	4	2.381	34	57	11	80	45	40	5.5	9.5	5.5	M6	4	693	1584	53
★	DFI02005-4		5	3.175	34	57	11	101	45	40	5.5	9.5	5.5	M6	4	999	1995	53
	DFI02504-4	25	4	2.381	40	63	11	80	51	46	5.5	9.5	5.5	M6	4	775	2046	65
★	DFI02505-4		5	3.175	40	63	11	101	51	46	5.5	9.5	5.5	M8	4	1119	2581	66
★	DFI02510-4		10	4.762	46	72	12	145	58	52	6.5	11	6.5	M6	4	1903	3695	67
	DFI03204-4	32	4	2.381	46	72	12	80	58	52	6.5	11	6.5	M6	4	868	2640	83
★	DFI03205-4		5	3.175	46	72	12	102	58	52	6.5	11	6.5	M8	4	1264	3403	84
★	DFI03210-4		10	6.35	54	88	15	162	70	62	9	14	8.5	M8	4	3093	6102	86
★	DFI04005-4	40	5	3.175	56	90	15	105	72	64	9	14	8.5	M8	4	1407	4342	104
★	DFI04010-4		10	6.35	62	104	18	165	82	70	11	17.5	11	M8	4	3480	7979	106
	DFI05010-4	50	10	6.35	72	114	18	171	92	82	11	17.5	11	M8	4	3898	10326	132
★	DFI06310-4	63	10	6.35	85	131	22	182	107	95	14	20	13	M8	4	4402	13611	165
★	DFI08010-4	80	10	6.35	105	150	22	182	127	115	14	20	13	M8	4	4900	17366	207

Note:with sign ★can produce left helix

5.6 SFU(DIN 69051 FORM B)



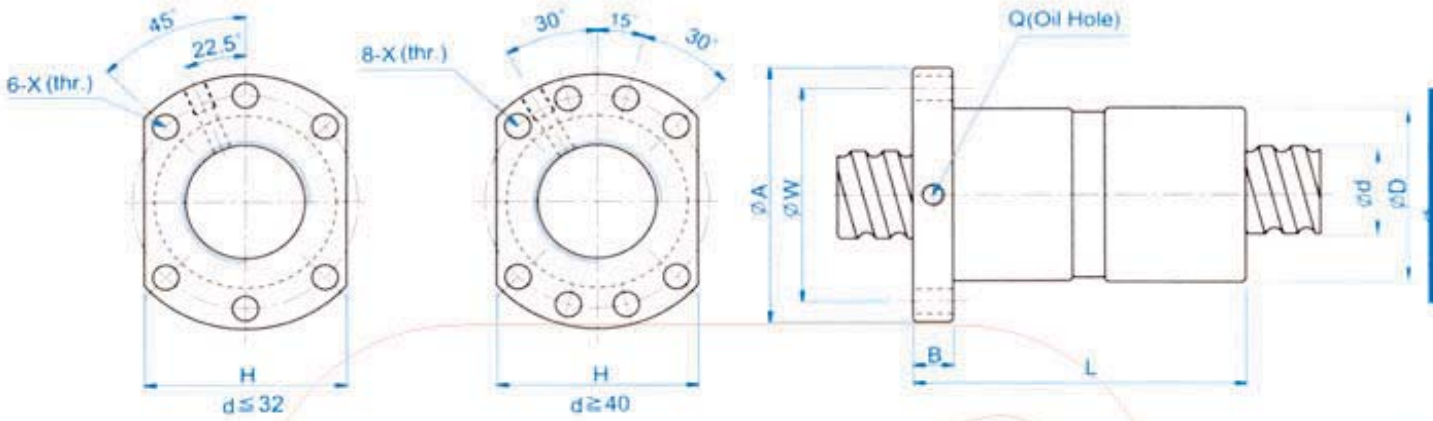
Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

	Model No.	Dimensions														
		d	l	Da	D	A	B	L	W	X	H	Q	n	Ca	Coa	K
★	SFU01604-4	16	4	2.381	28	48	10	40	38	5.5	40	M6	4	625	1254	22
★	SFU01605-4		5	3.175	28	48	10	50	38	5.5	40	M6	4	888	1525	22
★	SFU01610-3		10	3.175	28	48	10	57	38	5.5	40	M6	3	716	1232	17
	SFU02004-4	20	4	2.381	36	58	10	42	47	6.6	44	M6	4	693	1534	27
★	SFU02005-4		5	3.175	36	58	10	51	47	6.6	44	M6	4	999	1995	27
	SFU02504-4	25	4	2.381	40	62	10	42	51	6.6	48	M6	4	775	2046	33
★	SFU02505-4		5	3.175	40	62	10	51	51	6.6	48	M6	4	1119	2581	34
	SFU02506-4		6	3.969	40	62	10	54	51	6.6	48	M6	4	1494	3117	34
	SFU02508-4		8	4.762	40	62	10	63	51	6.6	48	M6	4	1903	3695	35
★	SFU02510-4		10	4.762	40	62	12	85	51	6.6	48	M6	4	1903	3695	35
	SFU03204-4	32	4	2.381	50	80	12	44	65	9	62	M6	4	868	2640	43
★	SFU03205-4		5	3.175	50	80	12	52	65	9	62	M6	4	1264	3403	43
	SFU03206-4		6	3.969	50	80	12	57	65	9	62	M6	4	1706	4217	43
	SFU03208-4		8	4.762	50	80	12	65	65	9	62	M6	4	2177	5015	44
★	SFU03210-4		10	6.350	50	80	12	90	65	9	62	M6	4	3093	6102	44
★	SFU04005-4	40	5	3.175	63	93	14	55	78	9	70	M8	4	1407	4342	53
	SFU04006-4		6	3.969	63	93	14	60	78	9	70	M6	4	1889	5318	54
	SFU04008-4		8	4.762	63	93	14	67	78	9	70	M6	4	2413	6335	54
★	SFU04010-4		10	6.350	63	93	14	93	78	9	70	M8	4	3480	7979	55
	SFU05010-4	50	10	6.350	75	110	16	93	93	11	85	M8	4	3898	10326	68
★	SFU05020-4		20	7.144	75	110	16	138	93	11	85	M8	4	4621	11881	68
★	SFU06310-4	63	10	6.350	90	125	18	98	108	11	95	M8	4	4402	13611	84
	SFU06320-4		20	9.525	95	135	20	149	115	13.5	100	M8	4	7401	19009	86
★	SFU08010-4	80	10	6.350	105	145	20	98	125	13.5	110	M8	4	4900	17366	106
	SFU08020-4		20	9.525	125	165	25	154	145	13.5	130	M8	4	8403	25345	108
	SFU10020-4	96	20	12.7	150	202	30	180	170	17.5	155	M8	4	9405	32737	134

Note:with sign ★can produce left helix

5.7 DFU (DIN 69051 FORM B)



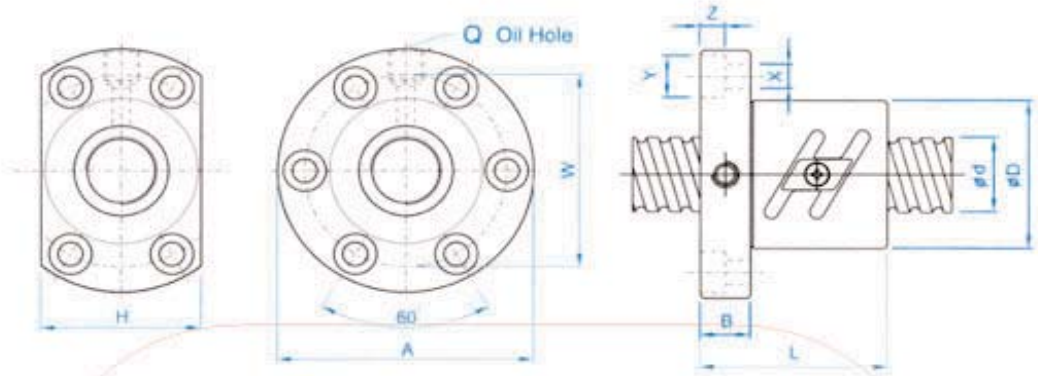
Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

Model No.	Dimensions														
	d	l	Da	D	A	B	L	W	X	H	Q	n	Ca	Coa	K
★ DFU01604-4	16	4	2.381	28	48	10	80	38	5.5	40	M6	4	625	1254	42
★ DFU01605-4		5	3.175	28	48	10	100	38	5.5	40	M6	4	888	1525	43
★ DFU01610-3		10	3.175	28	48	10	118	38	5.5	40	M6	3	716	1232	32
DFU02004-4	20	4	2.381	36	58	10	80	47	6.6	44	M6	4	693	1534	53
★ DFU02005-4		5	3.175	36	58	10	101	47	6.6	44	M6	4	999	1995	53
DFU02504-4	25	4	2.381	40	62	10	80	51	6.6	48	M6	4	775	2046	65
★ DFU02505-4		5	3.175	40	62	10	101	51	6.6	48	M6	4	1119	2581	66
DFU02506-4		6	3.969	40	62	10	105	51	6.6	48	M6	4	1494	3117	67
DFU02508-4		8	4.762	40	62	10	120	51	6.6	48	M6	4	1903	3695	67
★ DFU02510-4		10	4.762	40	62	12	145	51	6.6	48	M6	4	1903	3695	67
DFU03204-4	32	4	2.381	50	80	12	80	65	9	62	M6	4	868	2640	83
★ DFU03205-4		5	3.175	50	80	12	102	65	9	62	M6	4	1264	3403	84
DFU03206-4		6	3.969	50	80	12	105	65	9	62	M6	4	1706	4217	84
DFU03208-4		8	4.762	50	80	12	122	65	9	62	M6	4	2177	5015	85
★ DFU03210-4		10	6.350	50	80	12	162	65	9	62	M6	4	3093	6102	86
★ DFU04005-4	40	5	3.175	63	93	14	105	78	9	70	M8	4	1407	4342	104
DFU04006-4		6	3.969	63	93	14	108	78	9	70	M6	4	1889	5318	104
DFU04008-4		8	4.762	63	93	14	132	78	9	70	M6	4	2413	6335	105
★ DFU04010-4		10	6.350	63	93	14	165	78	9	70	M8	4	3480	7979	106
DFU05010-4	50	10	6.350	75	110	16	171	93	11	85	M8	4	3898	10326	132
★ DFU05020-4		20	7.144	75	110	16	280	93	11	85	M8	4	4621	11881	132
★ DFU06310-4	63	10	6.350	90	125	18	182	108	11	95	M8	4	4402	13611	165
DFU06320-4		20	9.525	95	135	20	290	115	13.5	100	M8	4	7401	19009	167
★ DFU08010-4	80	10	6.350	105	145	20	182	125	13.5	110	M8	4	4900	17366	207
DFU08020-4		20	9.525	125	165	25	295	145	13.5	130	M8	4	8403	25345	210
DFU10020-4	96	20	12.7	150	202	30	340	170	17.5	155	M8	4	9405	32737	261

Note:with sign ★can produce left helix

5.8 SFT

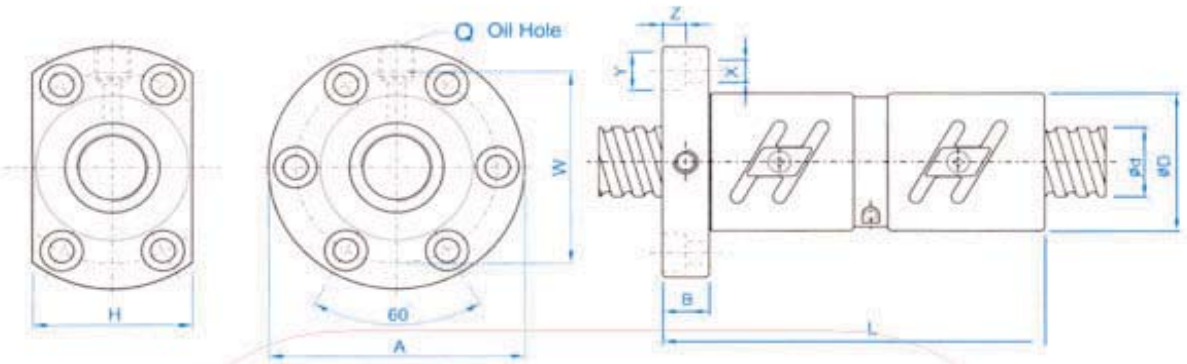


Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

Model No.	Dimensions																
	d	l	Da	D	A	B	L	W	H	X	Y	Z	Q	n	Ca	Coa	K
SFT02005-5	20	5	3.175	44	67	11	57	55	52	5.5	9.5	5.5	M6	2.5x2	1211	2493	34
SFT02505-5	25	5	3.175	50	73	11	55	61	52	5.5	9.5	5.5	M8	2.5x2	1356	3227	42
SFT02510-2.5		10	6.350	68	102	15	70	84	82	9	14	8.5	M8	2.5x1	1839	299	22
SFT03205-5	32	5	3.175	58	85	12	56	71	64	6.6	11	6.5	M8	2.5x2	1532	4254	54
SFT03206-5		6	3.969	62	89	12	65	75	68	6.6	11	6.5	M8	2.5x2	2067	5272	54
SFT03208-5		8	4.762	66	100	15	82	82	76	9	14	8.5	M8	2.5x2	2638	6269	54
SFT03210-5		10	6.350	74	108	15	96	90	82	9	14	9	M8	2.5x2	3747	7627	55
SFT03220-2.5		20	6.350	74	108	16	100	90	82	9	14	8.5	M8	2.5x1	2133	4107	28
SFT04005-5	40	5	3.175	67	101	15	59	83	72	9	14	8.5	M8	2.5x2	1705	5427	67
SFT04010-5		10	6.350	82	124	18	100	102	94	11	17.5	11	M8	2.5x2	4216	9974	68
SFT04020-2.5		20	6.350	82	124	18	100	102	90	11	17.5	11	M8	2.5x1	2382	5280	34
SFT05010-5	50	10	6.350	93	135	18	103	113	98	11	17.5	11	M8	2.5x2	4723	12907	84
SFT05020-2.5		20	9.525	105	152	28	121	128	110	14	20	13	M8	2.5x1	4425	9240	43
SFT06310-5	63	10	6.350	108	154	22	105	130	110	14	20	13	M8	2.5x2	5333	17014	105
SFT06320-2.5		20	9.525	122	180	28	127	150	130	18	26	18	M8	2.5x1	4942	11881	54
SFT08010-5	80	10	6.350	130	176	22	105	152	132	14	20	13	M8	2.5x2	5937	21708	133
SFT08020-5		20	9.525	143	204	28	180	172	148	18	26	18	M8	2.5x2	10181	31681	135
SFT08020-7.5		20	9.525	143	204	28	240	172	148	18	26	18	M8	2.5x3	14429	47522	202

5.9 DFT

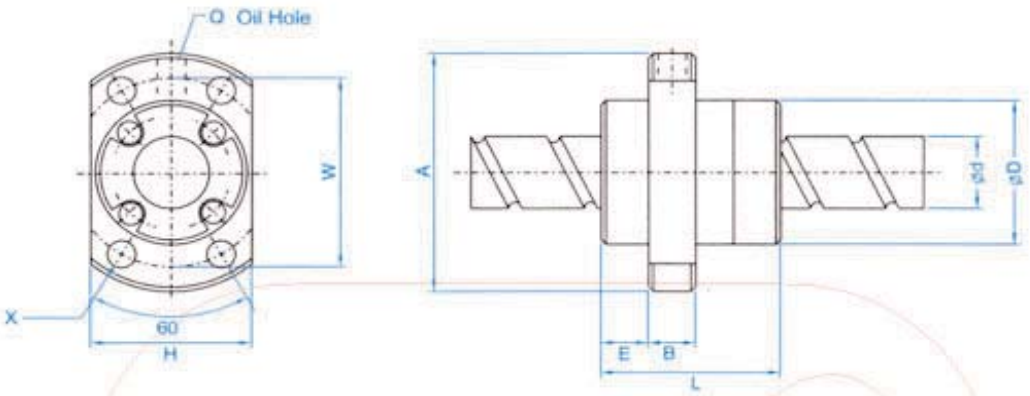


Unit: mm

l : Lead	Da : Ball Dia	n : Number of Circuits	K : Stiffness(Kg/μm)	Ca : Basic dynamic Rating Load (Kgf)	Coa : Basic Static Rating Load(Kgf)

Model No.	Dimensions																
	d	l	Da	D	A	B	L	W	H	X	Y	Z	Q	n	Ca	Coa	K
DFT02005-5	20	5	3.175	44	67	11	105	55	52	5.5	9.5	5.5	M6	2.5x2	1211	2493	67
DFT02505-5	25	5	3.175	50	73	11	105	61	52	5.5	9.5	5.5	M8	2.5x2	1356	3227	82
DFT02510-2.5		10	6.350	68	102	15	130	84	82	9	14	8.5	M8	2.5x1	1839	2933	43
DFT03205-5	32	5	3.175	58	85	12	106	71	64	6.6	11	6.5	M8	2.5x2	1532	4254	104
DFT03206-5		6	3.969	62	89	12	123	75	68	6.6	11	6.5	M8	2.5x2	2067	5272	105
DFT03208-5		8	4.762	66	100	15	154	82	76	9	14	8.5	M8	2.5x2	2638	6269	106
DFT03210-5		10	6.350	74	108	16	187	90	82	9	14	8.5	M8	2.5x2	3747	7627	108
DFT03220-2.5		20	6.350	74	108	16	198	90	82	9	14	8.5	M8	2.5x1	2133	4107	54
DFT04005-5	40	5	3.175	67	101	15	109	83	72	9	14	8.5	M8	2.5x2	1705	5427	130
DFT04010-5		10	6.350	82	124	18	188	102	94	11	17.5	11	M8	2.5x2	4216	9974	133
DFT04020-2.5		20	6.350	82	124	18	200	102	90	11	17.5	11	M8	2.5x1	2382	5280	67
DFT05010-5	50	10	6.350	93	135	18	193	113	98	11	17.5	11	M8	2.5x2	4723	12907	165
DFT05020-2.5		20	9.525	105	152	28	225	128	110	14	20	13	M8	2.5x1	4425	9240	84
DFT06310-5	63	10	6.350	108	154	22	197	130	110	14	20	13	M8	2.5x2	5333	17014	206
DFT08010-5	80	10	6.350	130	176	22	195	152	132	14	20	13	M8	2.5x2	5937	21708	259
DFT08020-5		20	9.525	143	204	28	340	172	148	18	26	18	M8	2.5x2	10181	31681	263

5.10 SFE



Unit: mm

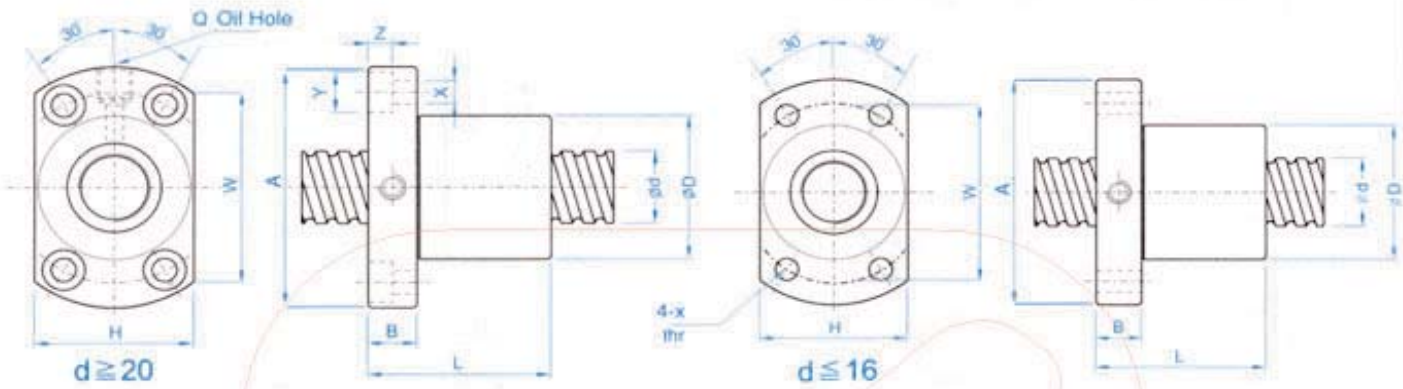
l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

Model No.	Dimensions															
	d	l	Da	D	A	E	B	L	X	W	H	Q	n	Ca	Coa	K
SFE01616-3	16	16	2.778	32	53	9.6	10	38	4.5	42	34	M6	1.7x2	683	1298	19
SFE01616-6		16	2.778	32	53	9.6	10	38	4.5	42	34	M6	1.7x4	1240	2596	38
SFE02020-3	20	20	3.175	39	62	11.5	10	47	5.5	50	41	M6	1.7x2	891	1795	23
SFE02020-6		20	3.175	39	62	11.5	10	47	5.5	50	41	M6	1.7x4	1617	3591	46
SFE02525-3	25	25	3.969	47	74	13	12	57	6.6	60	49	M6	1.7x2	1332	2805	29
SFE02525-6		25	3.969	47	74	13	12	57	6.6	60	49	M6	1.7x4	1843	3514	38
SFE03232-3	32	32	4.762	58	92	16	12	71	9	74	60	M6	1.7x2	1936	4487	37
SFE03232-6		32	4.762	58	92	16	12	71	9	74	60	M6	1.7x4	3514	8975	74
SFE04040-3	40	40	6.350	73	114	19	15	89	11	93	75	M6	1.7x2	3103	7181	46
SFE04040-6		40	6.350	73	114	19	15	89	11	93	75	M6	1.7x4	5632	14362	93
SFE05050-3	50	50	7.938	90	135	21.5	20	107	14	112	92	M6	1.7x2	4638	11222	58
SFE05050-6		50	7.938	90	135	21.5	20	107	14	112	92	M6	1.7x4	8418	22444	116

Note 1:"-3" means 2starts, "-6" means 4 start.

Note 2: ABBA standard nuts do not have wipers, if required, please advise.

5.11 SFK



Unit: mm

l : Lead	Da : Ball Dia	n : Number of Circuits	K : Stiffness(Kg/μm)	Ca : Basic dynamic Rating Load (Kgf)	Coa : Basic Static Rating Load(Kgf)

Model No.	Dimensions																
	d	l	Da	D	A	B	L	W	H	X	Y	Z	Q	n	Ca	Coa	K
SFK00401	4	1	0.8	10	20	3	12	15	14	2.9	—	—	—	2	41	49	3
SFK00601	6	1	0.8	12	24	3.5	15	18	16	3.4	—	—	—	3	72	117	7
SFK00801	8	1	0.8	14	27	4	16	21	18	3.4	—	—	—	4	106	216	11
SFK00802		2	1.2	14	27	4	16	21	18	3.4	—	—	—	3	142	239	8
SFK0082.5		2.5	1.2	16	29	4	26	23	20	3.4	—	—	—	3	142	239	8
SFK01002	10	2	1.2	18	35	5	28	27	22	4.5	—	—	—	3	158	302	10
SFK01004		4	2	26	46	10	34	36	28	4.5	—	—	—	3	302	454	10
SFK01202	12	2	1.2	20	37	5	28	29	24	4.5	—	—	—	4	219	486	16
SFK01204		4	2.5	24	40	6	28	32	25	3.5	—	—	—	3	451	709	13
SFK01205		5	2.5	22	37	8	39	29	24	4.5	—	—	—	3	451	709	13
SFK01402	14	2	1.2	21	40	6	23	31	26	5.5	—	—	—	4	235	570	19
SFK01602	16	2	1.2	25	43	10	40	35	29	5.5	—	—	—	4	250	654	21
SFK02002	20	2	1.2	50	80	15	55	65	68	6.5	10.5	6	M6	6	395	1257	40
SFK02502	25	2	1.2	50	80	13	43	65	68	6.5	10.5	6	M6	5	374	1320	41
SFK02503		3	2.381	40	63	11	51	51	48	5.5	9.5	5.5	M6	6	1099	3065	50

Note:1 Nuts do not have wipers from ø4 to ø6.

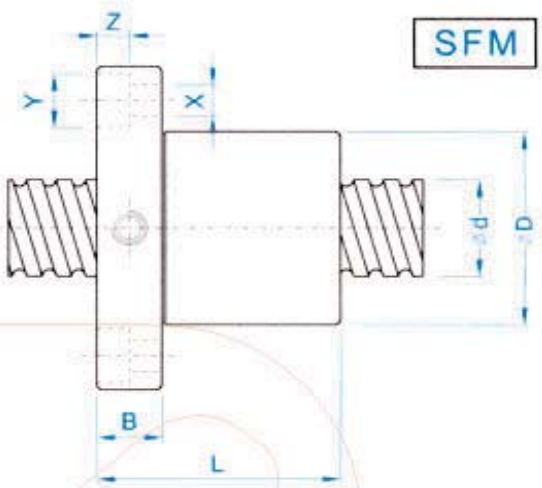
Note:2 ABBA Standard nuts are without wipers, if required, please advise.

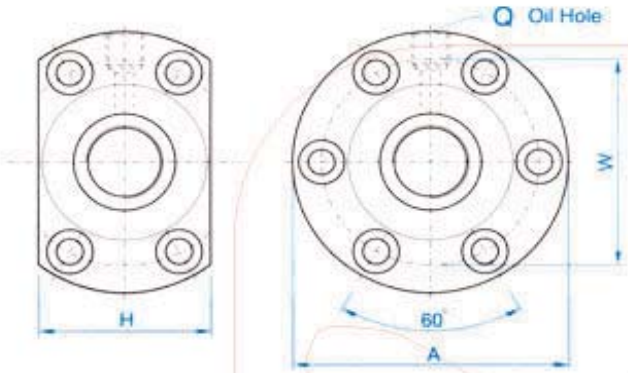
Note:3 Nuts do not have oil hole from ø4 to ø16.

5.12 SFM&DFM

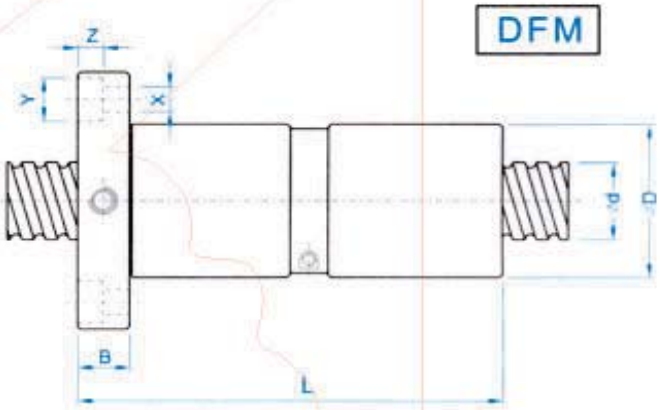
Used for Milling Machine Only

SFM





DFM



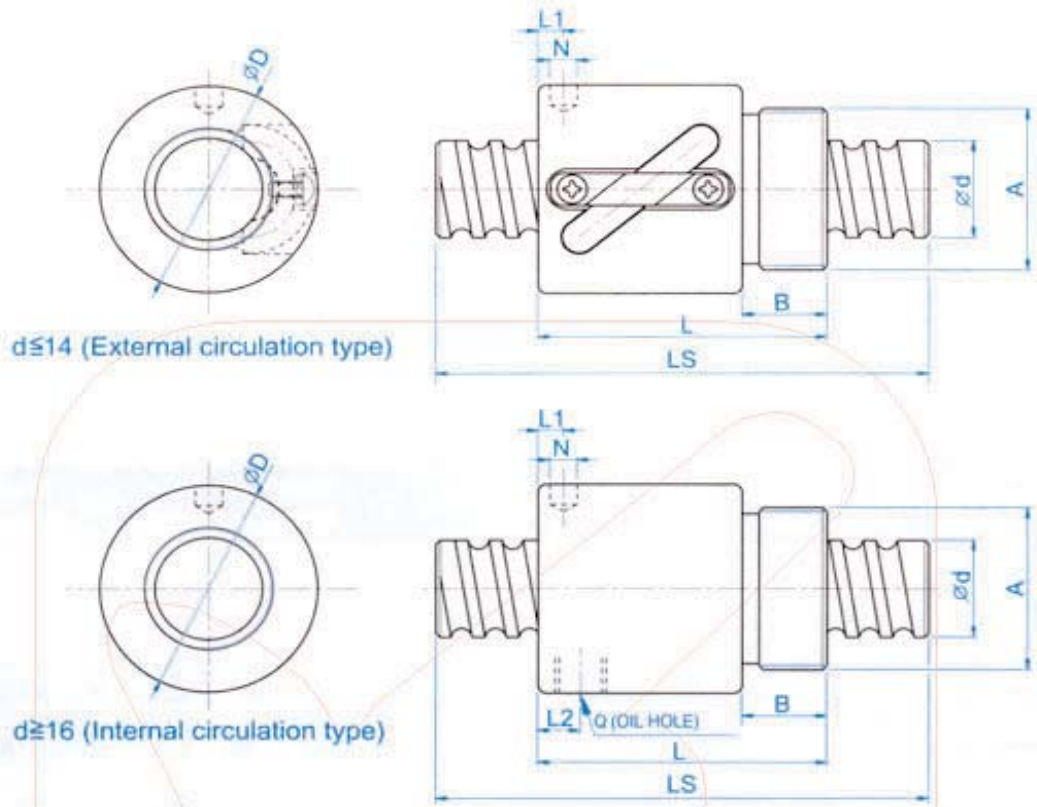
Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

	Model No.	Dimensions																
		d	l	Da	D	A	B	L	W	H	X	Y	Z	Q	n	Ca	Coa	K
★	SFM03205-4	32	5	3.175	48	74	12	52	60	60	6.5	11	6.5	M8	4	1264	3403	43
★	SFM0325T-4	32	5.08	3.175	48	74	12	53	60	60	6.5	11	6.5	M8	4	1264	3403	43
★	DFM03205-4	32	5	3.175	48	74	12	102	60	60	6.5	11	6.5	M8	4	1264	3403	84
★	DFM0325T-4	32	5.08	3.175	48	74	12	104	60	60	6.5	11	6.5	M8	4	1264	3403	84

Note:with sign ★can produce left helix

6.1 BSH Rolled Ball Screw for Stock



Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

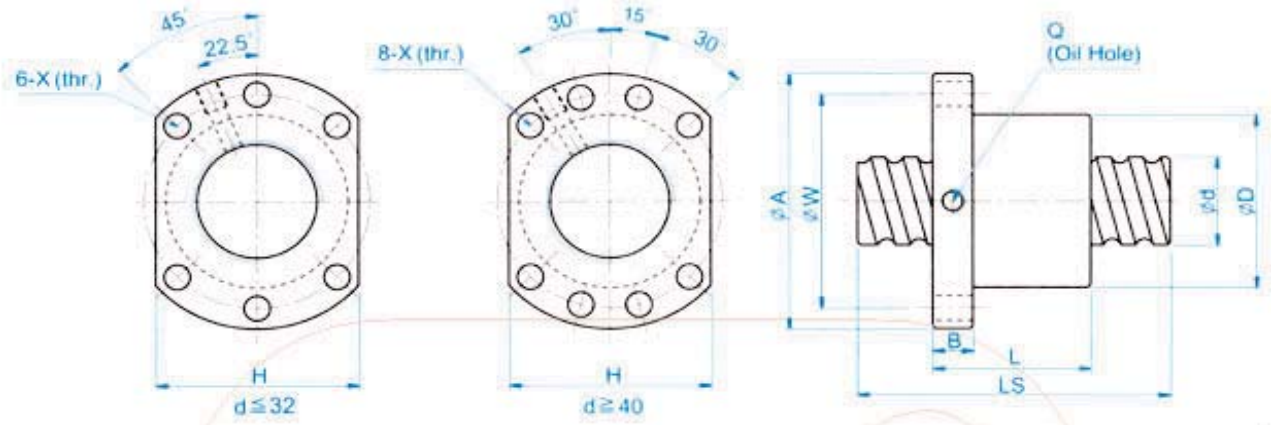
Model No.	Dimensions														
	d	l	Da	D	A	B	L	L1	N	L2	Q	n	Ca	Coa	Ls
BSHR0082.5B1FC10	8	2.5	1.2	17.5	M15x1P	7.5	23.5	10	3	-	M3	2.5x1	151	232	1200
BSHR01002C1FC10	10	2	1.2	19.5	M17x1P	7.5	22	3	3.2	-	M4	3.5x1	222	400	1200
BSHR01004B1FC10		4	2	25	M20x1P	10	34	3	3	-	M4	2.5x1	337	492	1200
BSHR01204C1FC10	12	4	2.5	25.5	M20x1P	10	34	13	3	-	M3	3.5x1	425	738	1800
BSHR01205C1FC10		5	2.5	25.5	M20x1P	10	39	16.25	3	-	M4	3.5x1	650	992	1800
BSHR01404C1FC10	14	4	2.381	32.1	M25x1.5P	10	35	13	3	-	M5	3.5x1	318	485	1800
BSHR01604T3FC10	16	4	2.381	29	M22x1.5P	8	32	4	3.2	-	M5	1x3	491	952	3000
BSHR01605T3FC10		5	3.175	32.5	M26x1.5P	12	42	19.25	3	-	M5	1x3	716	1230	3000
BSHR02005T3FC10	20	5	3.175	38	M35x1.5P	15	45	20.3	3	-	M6	1x3	799	1577	3000
BSHR02505T4FC10	25	5	3.175	43	M40x1.5P	19	69	32.11	3	8	M6	1x4	1280	3110	6000

BSH	R	016	05	T4	F
1	2	3	4	5	6

1. Nut Model no.
2. Right Hand
3. Shaft Dia. (mm)
4. Lead (mm)
5. Circuit no.
6. Rolled

Note: Both C7 and C10 accuracy are available for Rolled Ball Screws

6.2 SFU Rolled Ball Screw for Stock



Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

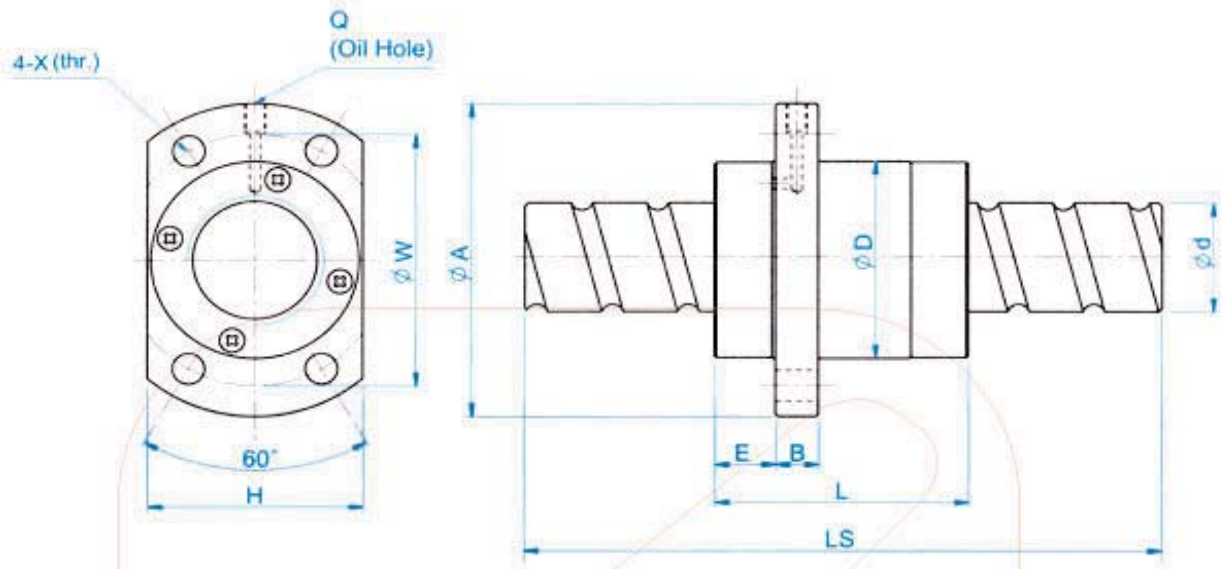
Model No.	Dimensions														
	d	l	Da	D	A	B	L	W	X	H	Q	n	Ca	Coa	Ls
SFUR01605T4DFC10	16	5	3.175	28	48	10	50	38	5.5	40	M6	4	888	1525	3000
SFUR01610T3DFC10		10	3.175	28	48	10	57	38	5.5	40	M6	3	716	1232	3000
SFUR02005T4DFC10	20	5	3.175	36	58	10	51	47	6.6	44	M6	4	999	1995	3000
SFUR02505T4DFC10	25	5	3.175	40	62	10	51	51	6.6	48	M6	4	1119	2581	6000
SFUR02510T4DFC10		10	4.762	40	62	12	85	51	6.6	48	M6	4	1903	3695	6000
SFUR03205T4DFC10	32	5	3.175	50	80	12	52	65	9	62	M6	4	1264	3403	6000
SFUR03210T4DFC10		10	6.350	50	80	12	90	65	9	62	M6	4	3093	6102	6000
SFUR04005T4DFC10	40	5	3.175	63	93	14	55	78	9	70	M8	4	1407	4342	6000
SFUR04010T4DFC10		10	6.350	63	93	14	93	78	9	70	M8	4	3480	7979	6000
SFUR05010T4DFC10	50	10	6.350	75	110	16	93	93	11	85	M8	4	3898	10326	6000
SFUR05020T4DFC10		20	7.144	75	110	16	138	93	11	85	M8	4	4621	11881	6000
SFUR06310T4DFC10	63	10	6.350	90	125	18	98	108	11	95	M8	4	4402	13611	7500
SFUR06320T4DFC10		20	9.525	95	135	20	149	115	13.5	100	M8	4	7401	19009	7500
SFUR08010T4DFC10	80	10	6.350	105	145	20	98	125	13.5	110	M8	4	4900	17366	9000
SFUR08020T4DFC10		20	9.525	125	165	25	154	145	13.5	130	M8	4	8403	25345	9000
SFUR10020T4DFC10	96	20	12.7	150	202	30	180	170	17.5	155	M8	4	9405	32737	10000

SFU	R	050	10	T4	D	F
1	2	3	4	5	6	7

1. Nut Model no.
2. Right Hand
3. Shaft Dia. (mm)
4. Lead (mm)
5. Circuit no.
6. Flange Type
7. Rolled

Note:Both C7 and C10 accuracy are available for Rolled Ball Screws

6.3 SFE Rolled Ball Screw for Stock



Unit: mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

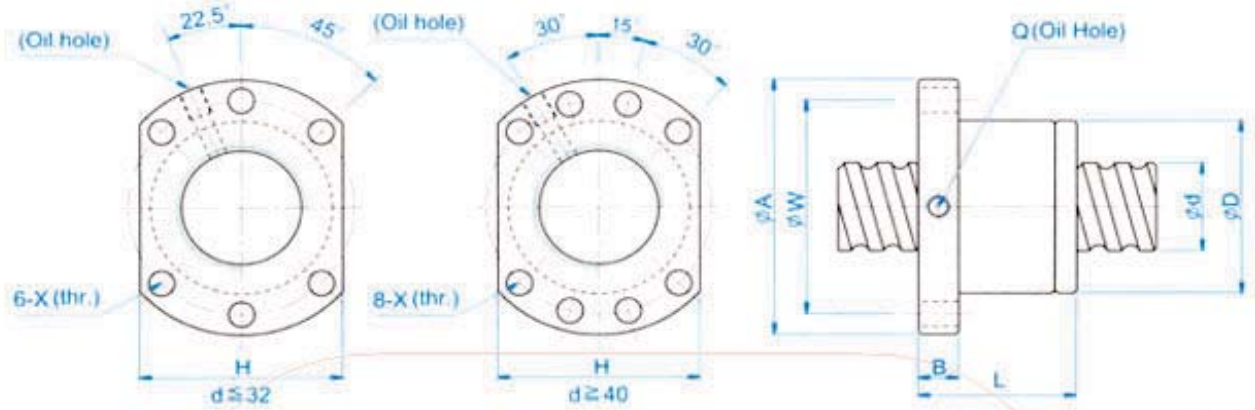
Model No.	Dimensions															
	d	l	Da	D	A	E	B	L	W	X	H	Q	n	Ca	Coa	Ls
SFER01616A2DFC10	16	16	2.778	32	53	10.1	10	38	42	4.5	34	M6	1.7x2	683	1298	3000
SFER01616A4DFC10		16	2.778	32	53	10.1	10	38	42	4.5	34	M6	1.7x4	1240	2596	3000
SFER02020A2DFC10	20	20	3.175	39	62	11.5	10	47	50	5.5	41	M6	1.7x2	891	1795	3000
SFER02020A4DFC10		20	3.175	39	62	11.5	10	47	50	5.5	41	M6	1.7x4	1617	3591	3000
SFER02525A2DFC10	25	25	3.969	47	74	13	12	57	60	6.6	49	M6	1.7x2	1332	2805	6000
SFER02525A4DFC10		25	3.969	47	74	13	12	57	60	6.6	49	M6	1.7x4	1843	3514	6000
SFER03232A2DFC10	32	32	4.762	58	92	16	12	71	74	9	60	M6	1.7x2	1936	4887	6000
SFER03232A4DFC10		32	4.762	58	92	16	12	71	74	9	60	M6	1.7x4	3514	8975	6000
SFER04040A2DFC10	40	40	6.350	73	114	19	15	89	93	11	75	M6	1.7x2	3103	7181	6000
SFER04040A4DFC10		40	6.350	73	114	19	15	89	93	11	75	M6	1.7x4	5632	14362	6000
SFER05050A2DFC10	50	50	7.938	90	135	21.5	20	107	112	14	92	M6	1.7x2	4638	11222	6000
SFER05050A4DFC10		50	7.938	90	135	21.5	20	107	112	14	92	M6	1.7x4	8418	22444	6000

SFE	R	025	25	A2	D	F
1	2	3	4	5	6	7

1. Nut Model no.
2. Right Hand
3. Shaft Dia. (mm)
4. Lead (mm)
5. Circuit no.
6. Flange Type
7. Rolled

Note:Both C7 and C10 accuracy are available for Rolled Ball Screws

7.1 SFS (DIN 69051 FORM B) High Speed Ball Screw Series

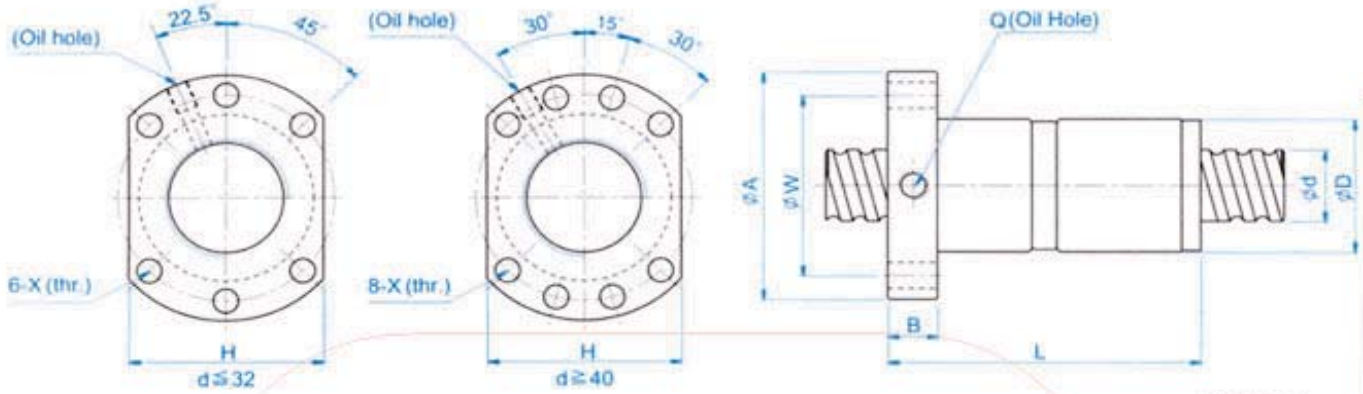


Unit : mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/㎛ m) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

Model No.	Dimensions														
	d	l	Da	D	A	B	L	W	H	X	Q	n	Ca	Coa	K
SFS01605-3.8		5	2.778	28	48	10	38	38	40	5.5	M6*1P	3.8*1	771	1536	20
SFS01610-2.8		10	2.778	28	48	10	47	38	40	5.5	M6*1P	2.8*1	593	1132	14
SFS01616-1.8	15	16	2.778	28	48	10	45	38	40	5.5	M6*1P	1.8*1	406	728	9
SFS01616-2.8		16	2.778	28	48	10	61	38	40	5.5	M6*1P	2.8*1	593	1132	14
SFS01620-1.8		20	2.778	28	48	10	57	38	40	5.5	M6*1P	1.8*1	415	768	9
SFS02005-3.8		5	3.175	36	58	10	40	47	44	6.6	M6*1P	3.8*1	1027	2229	26
SFS02010-3.8	20	10	3.175	36	58	10	60	47	44	6.6	M6*1P	3.8*1	1049	2341	26
SFS02020-1.8		20	3.175	36	58	11	57	47	44	6.6	M6*1P	1.8*1	552	1109	12
SFS02020-2.8		20	3.175	36	58	11	77	47	44	6.6	M6*1P	2.8*1	807	1725	19
SFS02505-3.8		5	3.175	40	62	10	40	51	48	6.6	M6*1P	3.8*1	1133	2787	32
SFS02510-3.8	25	10	3.175	40	62	12	62	51	48	6.6	M6*1P	3.8*1	1133	2787	32
SFS02525-1.8		25	3.175	40	62	12	70	51	48	6.6	M6*1P	1.8*1	606	1373	15
SFS02525-2.8		25	3.175	40	62	12	95	51	48	6.6	M6*1P	2.8*1	887	2136	24
SFS03205-3.8	32	5	3.175	50	80	12	42	65	62	9	M6*1P	3.8*1	1263	3567	41
SFS03210-3.8		10	3.969	50	80	13	62	65	62	9	M6*1P	3.8*1	1693	4355	40
SFS03220-2.8	31	20	3.969	50	80	12	80	65	62	9	M6*1P	2.8*1	1325	3337	29
SFS03232-1.8		32	3.969	50	80	13	84	65	62	9	M6*1P	1.8*1	906	2146	19
SFS03232-2.8		32	3.969	50	80	13	116	65	62	9	M6*1P	2.8*1	1325	3337	29
SFS04005-3.8	40	5	3.175	63	93	15	45	78	70	9	M8*1P	3.8*1	1393	4459	51
SFS04010-3.8		10	6.35	63	93	14	63	78	70	9	M8*1P	3.8*1	3497	8472	49
SFS04020-2.8	38	20	6.35	63	93	14	82	78	70	9	M8*1P	2.8*1	2751	6571	36
SFS04040-1.8		40	6.35	63	93	14	105	78	70	9	M8*1P	1.8*1	1881	4224	23
SFS04040-2.8		40	6.35	63	93	14	145	78	70	9	M8*1P	2.8*1	2751	6571	36
SFS05005-3.8	50	5	3.175	75	110	15	45	93	85	11	M8*1P	3.8*1	1537	5574	63
SFS05010-3.8		10	6.35	75	110	18	68	93	85	11	M8*1P	3.8*1	3875	10701	62
SFS05020-3.8	48	20	6.35	75	110	18	108	93	85	11	M8*1P	3.8*1	3946	11147	62
SFS05050-1.8		50	6.35	75	110	18	125	93	85	11	M8*1P	1.8*1	2111	5491	29
SFS05050-2.8		50	6.35	75	110	18	175	93	85	11	M8*1P	2.8*1	3087	8542	45
SFS06310-3.8	61	10	6.35	90	125	18	70	108	95	11	M8*1P	3.8*1	4147	12484	78
SFS06320-3.8		20	7.144	95	135	20	116	115	100	13.5	M8*1P	3.8*1	4878	14109	78
SFS08010-3.8	77	10	6.35	105	145	20	70	125	110	13.5	M8*1P	3.8*1	4632	16052	97
SFS08020-3.8		20	9.525	125	165	25	120	145	130	13.5	M8*1P	3.8*1	7891	23074	99
SFS10020-3.8	96	20	12.7	150	202	30	124	176	155	17.5	M8*1P	3.8*1	12725	37454	123

7.2 DFS (DIN 69051 FORM B) High Speed Ball Screw Series

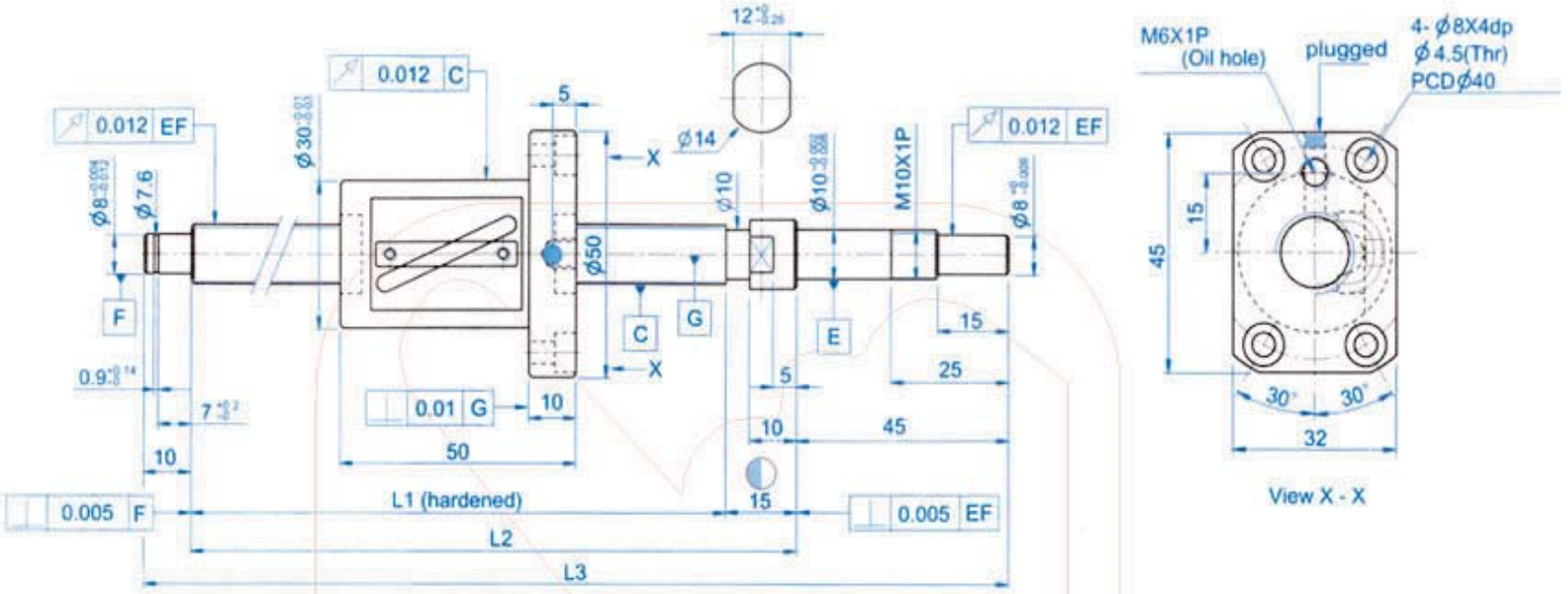


Unit : mm

l : Lead Da : Ball Dia n : Number of Circuits K : Stiffness(Kg/μm) Ca : Basic dynamic Rating Load (Kgf) Coa : Basic Static Rating Load(Kgf)

Model No.	Dimensions														
	d	l	Da	D	A	B	L	W	H	X	Q	n	Ca	Coa	K
DFS01605-3.8	15	5	2.778	28	48	10	73	38	40	5.5	M6*1P	3.8*1	771	1536	39
DFS01610-2.8		10	2.778	28	48	10	97	38	40	5.5	M6*1P	2.8*1	593	1132	29
DFS02005-3.8	20	5	3.175	36	58	10	75	47	44	6.6	M6*1P	3.8*1	1027	2229	52
DFS02010-3.8		10	3.175	36	58	10	120	47	44	6.6	M6*1P	3.8*1	1049	2341	52
DFS02505-3.8	25	5	3.175	40	62	10	75	51	48	6.6	M6*1P	3.8*1	1133	2787	64
DFS02510-3.8		10	3.175	40	62	12	122	51	48	6.6	M6*1P	3.8*1	1133	2787	64
DFS03205-3.8	32	5	3.175	50	80	12	82	65	62	9	M6*1P	3.8*1	1263	3567	81
DFS03210-3.8	31	10	3.969	50	80	13	122	65	62	9	M6*1P	3.8*1	1693	4355	80
DFS03220-2.8		20	3.969	50	80	12	160	65	62	9	M6*1P	2.8*1	1325	3337	59
DFS04005-3.8	40	5	3.175	63	93	15	85	78	70	9	M8*1P	3.8*1	1393	4459	101
DFS04010-3.8	38	10	6.35	63	93	14	123	78	70	9	M8*1P	3.8*1	3497	8472	99
DFS04020-2.8		20	6.35	63	93	14	162	78	70	9	M8*1P	2.8*1	2751	6571	73
DFS05005-3.8	50	5	3.175	75	110	15	85	93	85	11	M8*1P	3.8*1	1537	5574	126
DFS05010-3.8	48	10	6.35	75	110	18	138	93	85	11	M8*1P	3.8*1	3875	10701	123
DFS05020-3.8		20	6.35	75	110	18	228	93	85	11	M8*1P	3.8*1	3946	11147	123
DFS06310-3.8	61	10	6.35	90	125	18	140	108	95	11	M8*1P	3.8*1	4147	12485	155
DFS06320-3.8		20	7.144	95	135	20	236	115	100	13.5	M8*1P	3.8*1	4878	14109	156
DFS08010-3.8	77	10	6.35	105	145	20	140	125	110	13.5	M8*1P	3.8*1	4632	16052	195
DFS08020-3.8		20	9.525	125	165	25	240	145	130	13.5	M8*1P	3.8*1	7891	23075	197
DFS10020-3.8	96	20	12.7	150	202	30	244	176	155	17.5	M8*1P	3.8*1	12725	37454	247

8.1 SFTR01210 Ground Ball Screw with end machining



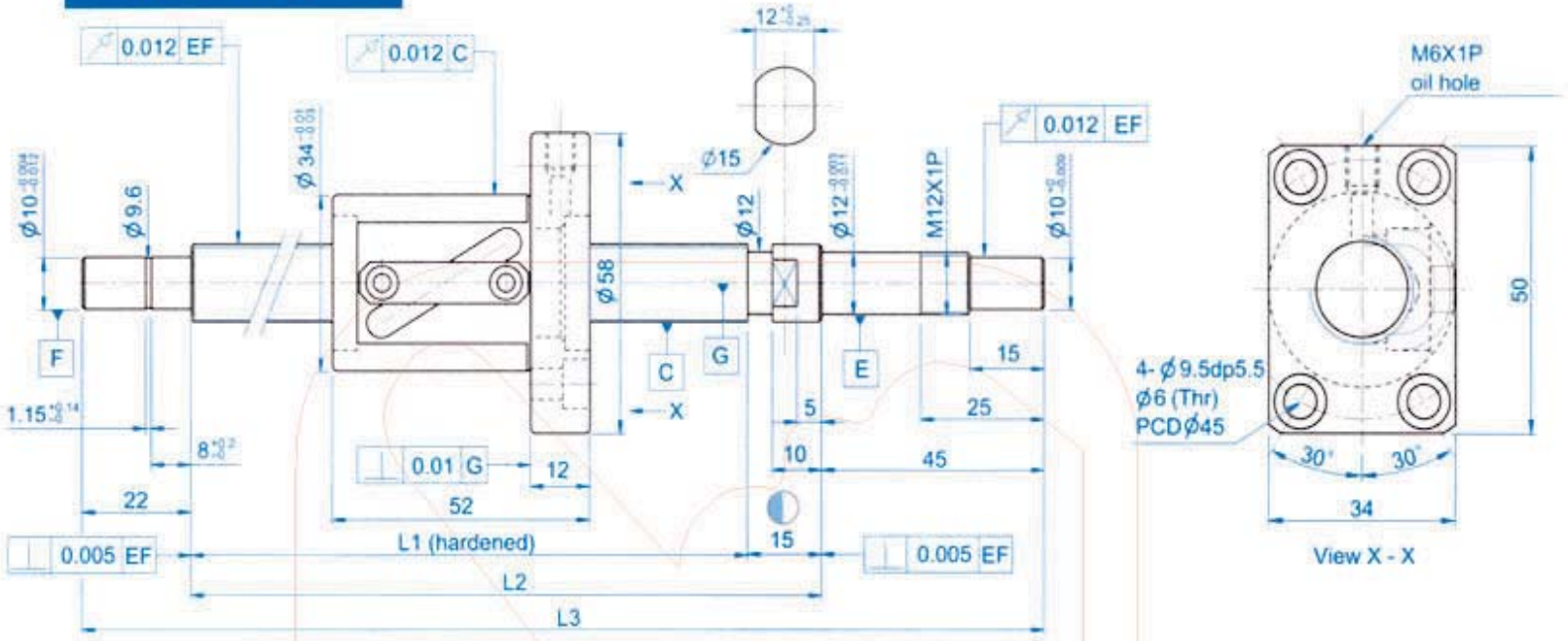
Unit : mm

Ball center dia.	12.85
Ball dia.	2.5
Lead	10
Number of turns	2.5*1
Lead angle	13.91°
Helix dir.	R
Spring force	0.1~0.2Kg
Preload	25 kgf
Dynamic (Ca)	501 kgf
Static (Coa)	756 kgf
Grade	C5

Max. Travel	Ball Screw No.	Screw Shaft Length(mm)			Shaft Runout
		L1	L2	L3	⊥
100	SFTR01210B1DGC5-230-P2	160	175	230	0.035
150	SFTR01210B1DGC5-280-P2	210	225	280	0.035
250	SFTR01210B1DGC5-380-P2	310	325	380	0.050
350	SFTR01210B1DGC5-480-P2	410	425	480	0.060
450	SFTR01210B1DGC5-580-P2	510	525	580	0.075

Finished Ball Screw

Finished Ball Screw



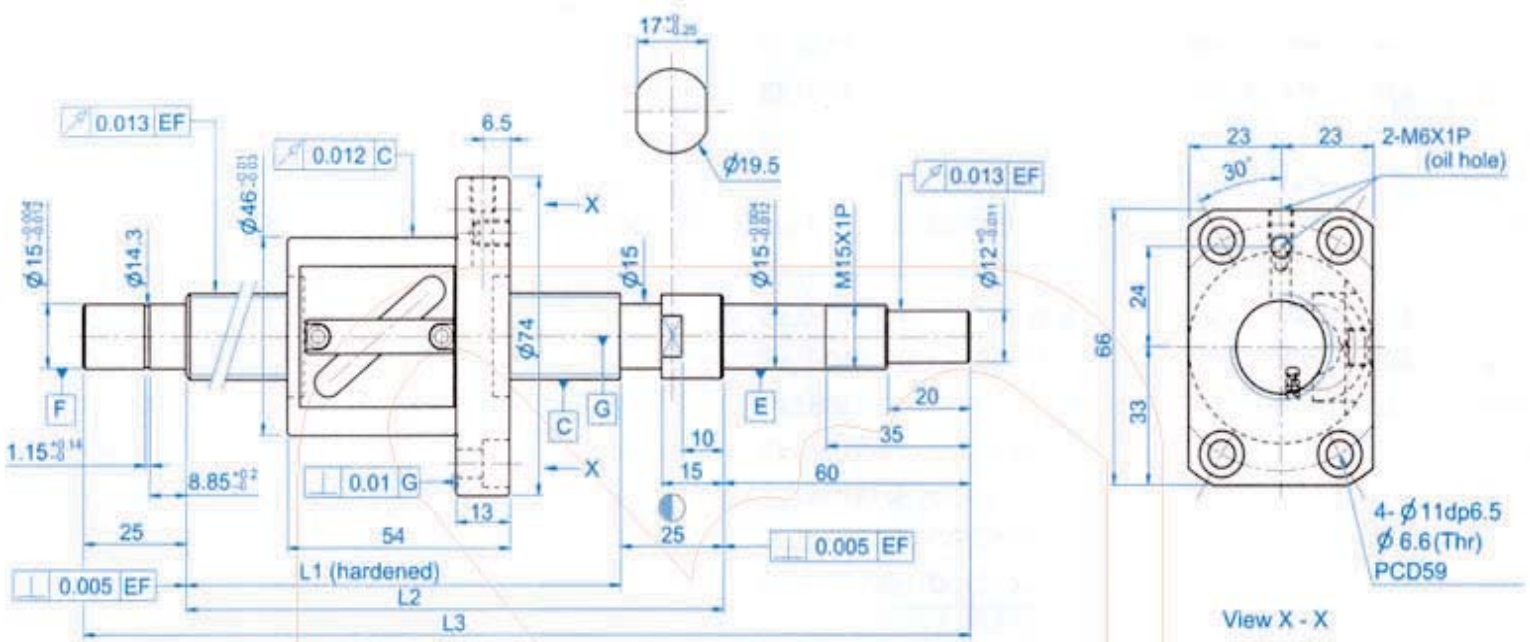
Ball center dia.	15.5
Ball dia.	3.175
Lead	10
Number of turns	2.5*1
Lead angle	11.2°
Helix dir.	R
Spring force	0.1~0.3Kg
Preload	38 kgf
Dynamic (Ca)	750 kgf
Static (Coa)	1148 kgf
Grade	C5

Unit : mm

Max. Travel	Ball Screw No.	Screw Shaft Length(mm)			Shaft Runout
		L1	L2	L3	U
100	SFTR01510B1DGC5-271-P2	189	204	271	0.025
150	SFTR01510B1DGC5-321-P2	239	254	321	0.035
200	SFTR01510B1DGC5-371-P2	289	304	371	0.035
250	SFTR01510B1DGC5-421-P2	339	354	421	0.040
300	SFTR01510B1DGC5-471-P2	389	404	471	0.040
350	SFTR01510B1DGC5-521-P2	439	454	521	0.050
400	SFTR01510B1DGC5-571-P2	489	504	571	0.050
450	SFTR01510B1DGC5-621-P2	539	554	621	0.050
500	SFTR01510B1DGC5-671-P2	589	604	671	0.065
550	SFTR01510B1DGC5-721-P2	639	654	721	0.065
600	SFTR01510B1DGC5-771-P2	689	704	771	0.065
700	SFTR01510B1DGC5-871-P2	789	804	871	0.085
800	SFTR01510B1DGC5-971-P2	889	904	971	0.085
1000	SFTR01510B1DGC5-1171-P2	1089	1104	1171	0.110

8.3 SFTR02010

Ground Ball Screw with end machining



Ball center dia.	21.35
Ball dia.	3.969
Lead	10
Number of turns	2.5*1
Lead angle	8.48°
Helix dir.	R
Spring force	0.1~0.3Kg
Preload	43 kgf
Dynamic (Ca)	1146 kgf
Static (Coa)	1958 kgf
Grade	C5

Unit : mm

Max. Travel	Ball Screw No.	Screw Shaft Length(mm)			Shaft Runout
		L1	L2	L3	U
200	SFTR02010B1DGC5-399-P2	289	314	399	0.035
300	SFTR02010B1DGC5-499-P2	389	414	499	0.040
400	SFTR02010B1DGC5-599-P2	489	514	599	0.050
500	SFTR02010B1DGC5-699-P2	589	614	699	0.065
600	SFTR02010B1DGC5-799-P2	689	714	799	0.065
700	SFTR02010B1DGC5-899-P2	789	814	899	0.085
800	SFTR02010B1DGC5-999-P2	889	914	999	0.085
900	SFTR02010B1DGC5-1099-P2	989	1014	1099	0.110
1000	SFTR02010B1DGC5-1199-P2	1089	1114	1199	0.110
1100	SFTR02010B1DGC5-1299-P2	1189	1214	1299	0.150
1200	SFTR02010B1DGC5-1399-P2	1289	1314	1399	0.150

Finished Ball Screw