14 PMI Rolled BallScrews

14.1Introduction to Rolled Ballscrew

The production of the PMI rolled ballscrews has adopted a manufacturing process and equipment unlike other manufacturers. Combining advanced skills and the Bad D□ben digital electric screw thread rolling machine, we adhere to a strict quality control policy at every stage of production, from the selection of ballscrew material and rolled processing to induction hardening heat treatment and post production. We are committed to providing clients with products of the best quality.

The combination of rolled ballscrews and ground nuts has replaced the traditional ACME screws and trapezoidal screws. This makes for a smoother operation while lowering friction and backlash. Moreover, the new technology has the advantage of faster production speed and lower prices.

We employ the most advanced digital electric screw thread rolling machine. During the manufacturing process, the oil cylinders on the two axes of the thread rolling dies employ a servo hydraulic system for the correction of oil pressure and positioning precision.

We employ Germany-imported Bad D□ben roller in order to maintain the stability of the thread rolling machine and the quality of the rolled product.

14.2 Features of the PMI Rolled Ballscrew

High Precision Rolled Nuts

The manufacturing process of rolled nuts is identical to that of ground nuts. Surface hardening treatment and internal thread grinding ensure durability and smoothness.

Nuts are Interchangeable

Without preload and within the maximum permissible axial play, different types of nuts can be **used on the same screw.**

14.3 Lead Accuracy of Rolled Screws (e_{300})

According to ISO 3408-3, the definition of lead accuracy for **PMI rolled ballscrews is as follows:** Within the effective thread length, the permissible value of accumulated lead deviation in random **300mm. As shown in table 14.1:**

Table 14.1 Lead Accuracy

e_{300} (Within the effective thread length, the permissible value of accumulated lead **deviation in random 300mm)**

Unit: μm

Grade	C5	C7	C8	C10
ISO, DIN	23	52		210
JIS	18	50		210
PMI	23	50	100	210

ep(Within the effective thread length, the permissible value of accumulated lead deviation) **Unit:** μm

Grade	C5	C7	C8	C10
PMI	ep=(lu/300)×e_{300} lu: Effective thread length (Unit: mm)			

Unit: μm

e_{300} Grade / Measured length	C5	C7	C8	C10
0~100	20	44	84	178
101~200	22	48	92	194
201~315	25	50	100	210

P.S. Please contact us for PMI C5 and C6 requirements.

14.4 Reference Table of the Nominal Outer Diameter and Lead of the PMI's Rolled Screw Shaft

PMI rolled ballscrews offer a variety of specifications, lead accuracies, and maximum rolling length, as shown in table 14.2~14.3:

Table 14.2 Specifications of Rolled Ballscrews

Screw nominal outer diameter Ø	Lead										Maximum rolled ballscrew length
	4	5	5.08	6	10	16	20	25	32	40	
12	●	●									1500
14	●	●									3000
15		●			●	●					3000
16	●	●			●	●					3000
20	●	●			●		●				3000
25	●	●/○	●/○		●			●			6000
28		●		●							6000
32		●/○	●/○		●		●		●		6000
36					●						6000
38					●		●			●	6000
40		●			●		●			●	6000
50					●						6000

● : right-hand thread ○ : left-hand thread

P.S. Rolled ballscrews are limited in length and accuracy, please contact us for other requirements.

Table 14.3 Lead Accuracy and Maximum Rolled Length

Screw nominal outer diameter Ø(mm)	Lead Accuracy Grade (e_{300}) Maximum Rolling Length (mm)			
	C5	C7	C8	C10
12	1500	1500	1500	1500
14	1500	3000	3000	3000
15	2000	3000	3000	3000
16	2000	3000	3000	3000
20	2000	3000	3000	3000
25	3000	6000	6000	6000
28				
32				
36				
38				
40				
50				

14.5 Axial Play

The maximum axial play under normal non-preload condition, as shown in table 14.4

Table 14.4 Maximum Axial Play

Screw O.D. Ød (mm)	6~32	36~50
Maximum Axial Play (mm)	0.04	0.07

PMI rolled ballscrews can eliminate axial play by preloading. Please contact our sales representatives if preloading is required.

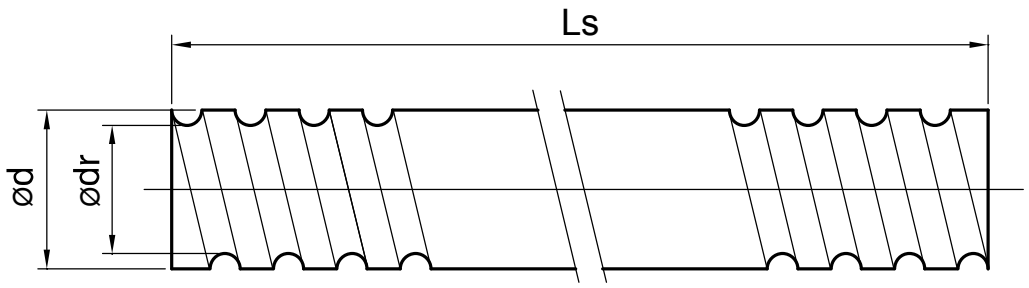
14.6 Materials and Hardness

Standard material and surface hardness for PMI rolled screw, as shown in table 14.5

Table 14.5

Denomination	Material	Heat Treatment	Hardness (HRC)
Rolled screw	S55C/Equivalent	Induction hardening	58~62
Nuts	SCM420H/Equivalent	Carburized hardening	58~62

14.7 Types and Dimensions of Rolled Screw Shaft



Unit:mm

SCREW SIZE			Lead Accuracy Grade	Thread Direction	Number of Threads	Maximum Rolling Length	Screw Number
O.D.	LEAD	BALL DIA.		L: Left / R: Right			
12	4	2.381	C6,C7,C8,C10	R	1	1500	R1204A
	5	2.000		R	1		R1205Z
14	4	2.381		R	1	3000	R1404A
	5	3.175		R	1		R1405B
15	5	3		R	1	3000	R1505V
	10	3		R	2		2R1510V
	10	3.175		R	2		2R1510B
	16	3		R	2		2R1516V
16	4	2.381		R	1	3000	R1604A
	5	3.175		R	1		R1605B
	10	3.175		R	2		2R1610B
	16	3.175		R	2		2R1616B
20	4	2.381		R	1	6000	R2004A
	5	3.175		R	1		R2005B
	10	4.762		R	1		R2010D
	20	3.175		R	2		2R2020B

Unit:mm

SCREW SIZE			Lead Accuracy Grade	Thread Direction	Number of Threads	Maximum Rolling Length	Screw Number
O.D.	LEAD	BALL DIA.		L: Left / R: Right			
25	4	2.381	C6,C7,C8,C10	R	1	6000	R2504A
	5	3.175		R/L	1		R(L)2505B
	5.08	3.175		R/L	1		R(L)25I5B
	10	3.175		R	2		2R2510B
	10	4.762		R	1		R2510D
	10	6.350		R	1		R2510F
	25	3.175		R	4		2R2525B
	25	3.969		R	4		4R2525C
28	5	3.175		R	1		R2805B
	6	3.175		R	1		R2806B
32	5	3.175		R/L	1		R(L)3205B
	5.08	3.175		R/L	1		R(L)32I5B
	10	3.969		R	1		R3210C
	10	6.350		R	1		R3210F
	20	3.969		R	2		2R3220C
	20	6.350		R	2		2R3220F
	32	3.969		R	4		4R3232C
	32	4.762		R	4		4R3232D
36	10	6.350		R	1		R3610F
38	10	6.350		R	1		R3810F
	20	6.350		R	2		2R3820F
	40	6.350		R	4		4R3840F
40	5	3.175		R	1		R4005B
	10	6.350		R	1		R4010F
	20	6.350		R	2		2R4020F
	40	6.350		R	4		4R4040F
50	10	6.350		R	1		R5010F

Order Code:

4 R 15 10 A -1500 -C7

- Lead Accuracy Grade
- Custom Length of Screw (*mm*)
- Ball Diameter(*mm*)(A: 2.381 B: 3.175 C: 3.969 D: 4.762 F: 6.35 Z: 2.0 V: 3.0)
- Lead (*mm*)
- Screw Nominal O.D. (*mm*)
- Thread Direction (R: Right L: Left)
- Number of Threads (N/A for single thread screws)

14.8 Nut Types of Rolled Ballscrew

Standard Models:

FSIN

FSIW

FSDN

FSKW

FSDW

Optional Models：

FSWW

FSVW

RSVW

SSVW

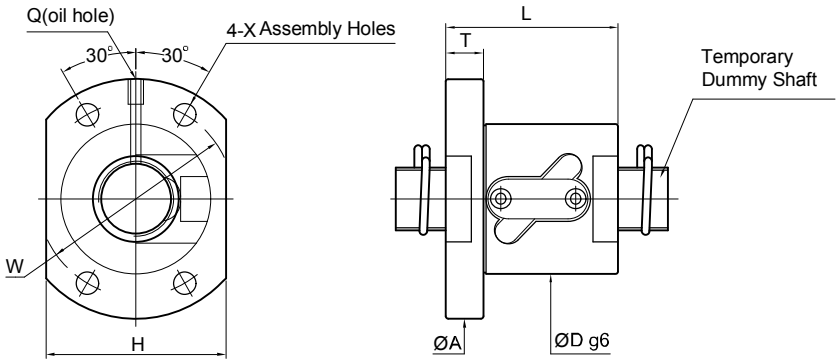
FSBW

Order Code:

R F S D N 25 05 A 4T

- 4T — Effective Turns
- A — **Ball Diameter(*mm*)(A:2.381 B:3.175 C:3.969 D:4.762 F:6.35 V:3.0)**
- 05 — **Lead(*mm*)**
- 25 — **Screw nominal O.D.(*mm*)**
- N — **N:European Standard Model**
- D — **Ball Circulation Type** D：End Deflctor Series / I：**Internal Ball Circulation Nuts** / W：**Immersion type** / V：**Extrusive type** / K：**End Cap Series**
- S — **Single Nut**
- F — Type of Nuts(F:with flange R:without flange S:square nut)
- R — **Thread Direction(R: Right L:Left)**

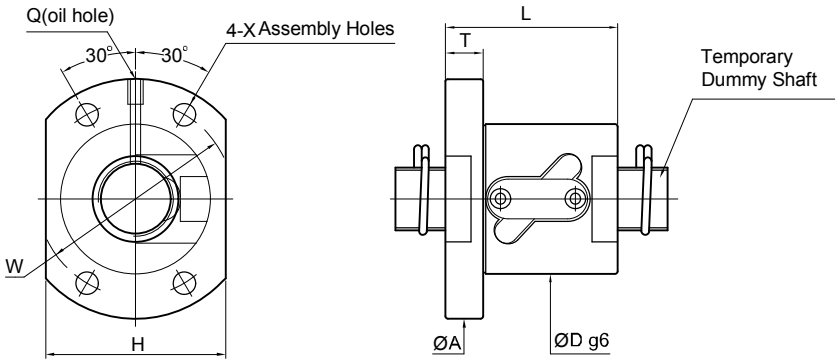
FSWW



Unit: mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION									
								Flange				Assembly Hole	Oil Hole	STIFFNESS	Nut Model NO.
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	A	T	W	H	X	Q	kgf/μm	
12	4	2.381	2.5x1	285	533	30	40	52	10	40	31	4.5	M6x1P	9	FSWW1204A-2.5P
	5	2	2.5x1	270	350	26	40	47	10	37	30	4.5	M6x1P	8.2	FSWW1205Z-2.5P
14	4	2.381	3.5x1	500	1100	35	42	57	10	45	40	4.5	M6x1P	15	FSWW1404A-3.5P
	5	3.175	2.5x1	515	990	40	40	57	10	45	40	4.5	M6x1P	11	FSWW1405B-2.5P
15	10	3.175	2.5x1	440	680	34	55	57	10	45	34	5.5	M6x1P	12	FSWW1510B-2.5P
16	4	2.381	1.5x2	540	1260	34	44	57	11	45	34	5.5	M6x1P	15	FSWW1604A-3.0P
			2.5x1	460	1050		41							13	FSWW1604A-2.5P
			3.5x1	610	1470		42							17	FSWW1604A-3.5P
	5	3.175	1.5x2	640	1370	40	45	63	11	51	42	5.5	M6x1P	15	FSWW1605B-3.0P
			2.5x1	550	1140		41							13	FSWW1605B-2.5P
			2.5x2	1000	2280		56							23	FSWW1605B-5.0P
			3.5x1	730	1600		46							17	FSWW1605B-3.5P
	10	3.175	2.5x1	550	990	40	56	63	11	51	42	5.5	M6x1P	13	FSWW1610B-2.5P
20	4	2.381	1.5x2	740	1870	40	45	67	11	55	52	5.5	M6x1P	19	FSWW2004A-3.0P
			2.5x1	630	1560		42							16	FSWW2004A-2.5P
			2.5x2	1140	3120		56							30	FSWW2004A-5.0P
			3.5x1	840	2180		46							22	FSWW2004A-3.5P
	5	3.175	1.5x2	730	1740	44	45	67	11	55	52	5.5	M6x1P	18	FSWW2005B-3.0P
			2.5x1	625	1450		42							15	FSWW2005B-2.5P
			2.5x2	1130	2900		56							28	FSWW2005B-5.0P
			3.5x1	830	2030		46							20	FSWW2005B-3.5P
	10	4.762	2.5x1	1100	2200	52	61	82	12	67	64	6.6	M6x1P	16	FSWW2010D-2.5P

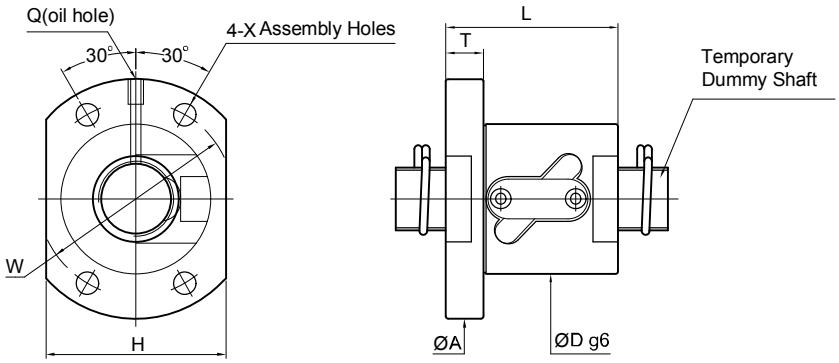
FSWW



Unit: mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION									
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	Flange A	T	W	H	Assembly Hole X	Oil Hole Q	STIFFNESS kgf/μm	Nut Model NO.
25	4	2.381	1.5x2	980	2640	46	44	69	11	57	52	5.5	M6x1P	24	FSWW2504A-3.0P
			2.5x1	840	2200		40							20	FSWW2504A-2.5P
			2.5x2	1520	4400		49							38	FSWW2504A-5.0P
			3.5x1	1120	3080		42							27	FSWW2504A-3.5P
	5	3.175	1.5x2	840	2200	50	45	73	11	61	56	6.6	M6x1P	21	FSWW2505B-3.0P
			2.5x1	720	1830		41							18	FSWW2505B-2.5P
			2.5x2	1120	3710		56							37	FSWW2505B-5.0P
			3.5x1	960	2560		46							24	FSWW2505B-3.5P
	10	4.762	1.5x2	1490	3340	58	71	85	15	71	64	6.6	M6x1P	23	FSWW2510D-3.0P
			2.5x1	1270	2780		65							20	FSWW2510D-2.5P
			3.5x1	1700	3890		75							27	FSWW2510D-3.5P
	10	6.35	2.5x1	1720	3590	60	69	96	15	78	72	9	M6x1P	21	FSWW2510F-2.5P
			2.5x2	3200	7170		97							40	FSWW2510F-5.0P
28	5	3.175	1.5x2	910	2470	55	46	83	12	69	62	6.6	M8x1P	21	FSWW2805B-3.0P
			2.5x1	780	2060		42							18	FSWW2805B-2.5P
			2.5x2	1410	4120		56							33	FSWW2805B-5.0P
			3.5x1	1040	2880		47							24	FSWW2805B-3.5P
32	5	3.175	1.5x2	990	2830	58	47	85	12	71	64	6.6	M8x1P	26	FSWW3205B-3.0P
			2.5x1	850	2360		43							22	FSWW3205B-2.5P
			2.5x2	1540	4720		57							41	FSWW3205B-5.0P
			2.5x3	2180	7080		72							59	FSWW3205B-7.5P
			3.5x1	1130	3300		47							29	FSWW3205B-3.5P
	10	6.35	1.5x2	2260	5620	67	78	103	15	85	78	9	M6x1P	29	FSWW3210F-3.0P
			2.5x1	1930	4680		69							25	FSWW3210F-2.5P
			2.5x2	3130	9410		97							49	FSWW3210F-5.0P
			3.5x1	2580	6550		78							33	FSWW3210F-3.5P

FSWW



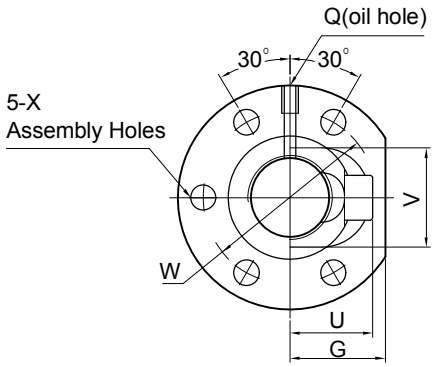
SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION									
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	Flange A	Flange T	Flange W	Flange H	Assembly Hole X	Oil Hole Q	STIFFNESS kgf/μm	Nut Model NO.
36	10	6.35	1.5x2	2170	6480	70	81	110	17	90	82	11	M6x1P	30	FSWW3610F-3.0P
			2.5x2	3370	10800		99							29	FSWW3610F-5.0P
			3.5x1	2480	7560		81							35	FSWW3610F-3.5P
40	5	3.175	1.5x2	1180	3560	67	54	101	15	83	78	9	M8x1P	37	FSWW4005B-3.0P
			2.5x1	1010	2970		48							32	FSWW4005B-2.5P
			2.5x2	1830	5940		60							60	FSWW4005B-5.0P
			2.5x3	2600	8910		75							87	FSWW4005B-7.5P
			3.5x1	1350	4160		50							43	FSWW4005B-3.5P
	10	6.35	1.5x2	2270	7200	76	81	116	17	96	88	11	M6x1P	39	FSWW4010F-3.0P
			2.5x1	1940	6000		71							34	FSWW4010F-2.5P
			2.5x2	3520	12000		100							59	FSWW4010F-5.0P
			3.5x1	2590	8400		81							45	FSWW4010F-3.5P
50	10	6.35	1.5x2	2510	9000	88	81	128	18	108	100	11	M6x1P	31	FSWW5010F-3.0P
			2.5x1	2150	7500		71							39	FSWW5010F-2.5P
			2.5x2	3900	15000		101							72	FSWW5010F-5.0P
			2.5x3	5520	22500		131							105	FSWW5010F-7.5P
			3.5x1	2870	10500		81							53	FSWW5010F-3.5P
			3.5x2	4940	21000		126							98	FSWW5010F-7.0P

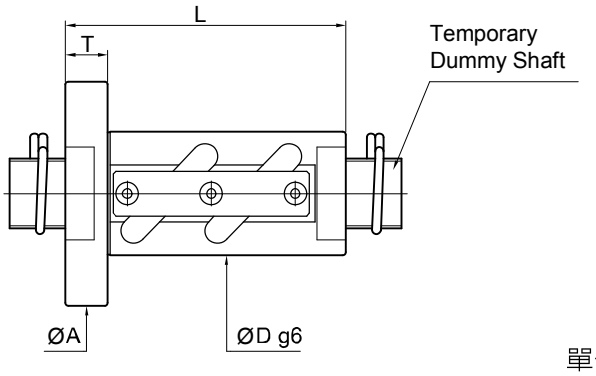
Note:

Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread grooves and balls while axial load is 30% dynamic load rating.

FSVW

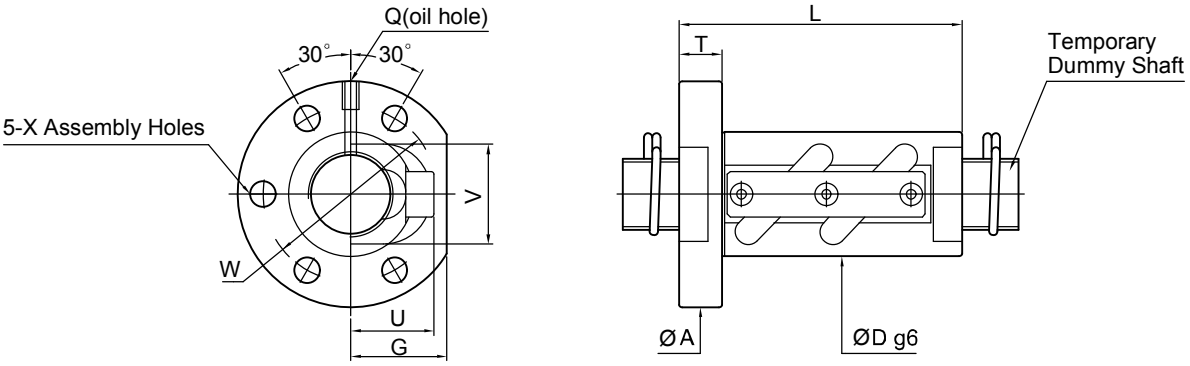




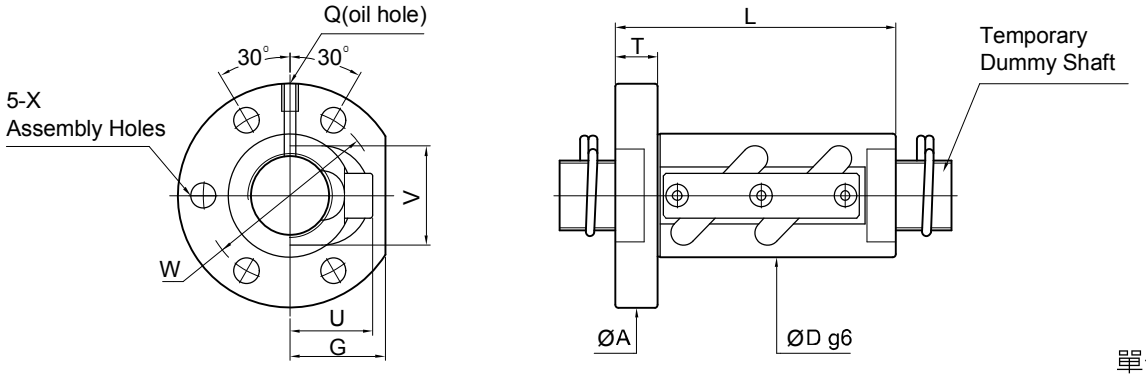
單位:mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION											
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	Flange A	Flange T	Flange W	Flange H	Return tube U	Return tube V	Assembly Hole X	Oil Hole Q	STIFFNESS kgf/μm	Nut Model NO.
14	4	2.381	3.5x1	500	1100	25	42	55	10	40	19	19	21	4.5	M6x1P	15	FSVW1404A-3.5P
	5	3.175	2.5x1	515	990	30	43	50	10	40	22	22	21	4.5	M6x1P	11	FSVW1405B-2.5P
16	5	3.175	1.5x2	540	1260	34	50	54	12	41	24	20	23	5.5	M6x1P	15	FSVW1605B-3.0P
			2.5x1	550	1140		43									13	FSVW1605B-2.5P
			2.5x2	1000	2280		60									23	FSVW1605B-5.0P
			3.5x1	730	1600		50									17	FSVW1605B-3.5P
20	5	3.175	1.5x2	730	1740	40	50	60	12	50	28	22	27	4.5	M6x1P	18	FSVW2005B-3.0P
			2.5x1	625	1450		43									15	FSVW2005B-2.5P
			2.5x2	1130	2900		60									28	FSVW2005B-5.0P
			3.5x1	830	2030		50									20	FSVW2005B-3.5P
	10	4.762	2.5x1	1100	2200	40	60	67	12	53	30	30	30	6.6	M6x1P	16	FSVW2010-2.5P
25	5	3.175	2.5x1	720	1830	42	45	71	12	57	28	26	32	6.6	M6x1P	18	FSVW2505B-2.5P
			2.5x2	1120	3710		60									37	FSVW2505B-5.0P
	10	4.762	1.5x2	1480	3340	45	75	72	16	58	34	29	34	6.6	M6x1P	23	FSVW2510D-3.0P
			2.5x1	1270	2780		65									20	FSVW2510D-2.5P
			3.5x1	1690	3900		75									27	FSVW2510D-3.5P
	10	6.35	2.5x1	1720	3590	44	68	79	15	62	34	29	37	9	M6x1P	21	FSVW2510F-2.5P
			2.5x2	3200	7170		98									40	FSVW2510F-5.0P
28	5	3.175	1.5x2	910	2470	44	50	70	12	56	28	28	34	6.6	M6x1P	21	FSVW2805B-3.0P
			2.5x1	780	2060		45									18	FSVW2805B-2.5P
			2.5x2	1410	4120		60									33	FSVW2805B-5.0P
			3.5x1	1040	2880		50									24	FSVW2805B-3.5P

FSVW



SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION											
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	Flange A	Flange T	Flange W	Flange H	Return tube U	Return tube V	Assembly Hole X	Oil Hole Q	STIFFNESS kgf/μm	Nut Model NO.
32	5	3.175	1.5x2	990	2830	50	50	76	12	63	36	30	38	6.6	M6x1P	26	FSVW3205B-3.0P
			2.5x1	850	2360		45									22	FSVW3205B-2.5P
			2.5x2	1540	4720		60									41	FSVW3205B-5.0P
			2.5x3	2180	7080		75									59	FSVW3205B-7.5P
			3.5x1	1130	3300		50									29	FSVW3205B-3.5P
	10	6.35	1.5x2	2260	5620	55	78	97	18	75	39	37	44	11	M6x1P	29	FSVW3210F-3.0P
			2.5x1	1930	4680		72									25	FSVW3210F-2.5P
			2.5x2	3130	9410		101									49	FSVW3210F-5.0P
			3.5x1	2580	6550		78									33	FSVW3210F-3.5P
36	10	6.35	1.5x2	2170	6480	60	82	105	18	80	42	40	49	11	M6x1P	30	FSVW3610F-3.0P
			2.5x1	1860	5400		70									29	FSVW3610F-2.5P
			2.5x2	3370	10800		98									55	FSVW3610F-5.0P
			3.5x1	2480	7560		82									35	FSVW3610F-3.5P
40	5	3.175	1.5x2	1180	3560	58	55	92	16	72	42	34	46	9	M8x1P	45	FSVW4005B-3.0P
			2.5x1	1010	2970		50									45	FSVW4005B-2.5P
			2.5x2	1830	5940		65									60	FSVW4005B-5.0P
			2.5x3	2600	8910		80									87	FSVW4005B-7.5P
			3.5x1	1350	4160		55									43	FSVW4005B-3.5P
	10	6.35	1.5x2	2270	7200	65	82	106	18	85	44	42	52	11	PT1/8×	39	FSVW4010F-3.0P
			2.5x1	1940	6000		72									34	FSVW4010F-2.5P
			2.5x2	3520	12000		102									59	FSVW4010F-5.0P
			3.5x1	2590	8400		82									45	FSVW4010F-3.5P
			3.5x2	4450	16800		123	114	20	90		44	52	14	M6x1P	81	FSVW4010F-7.0P



單位:mm

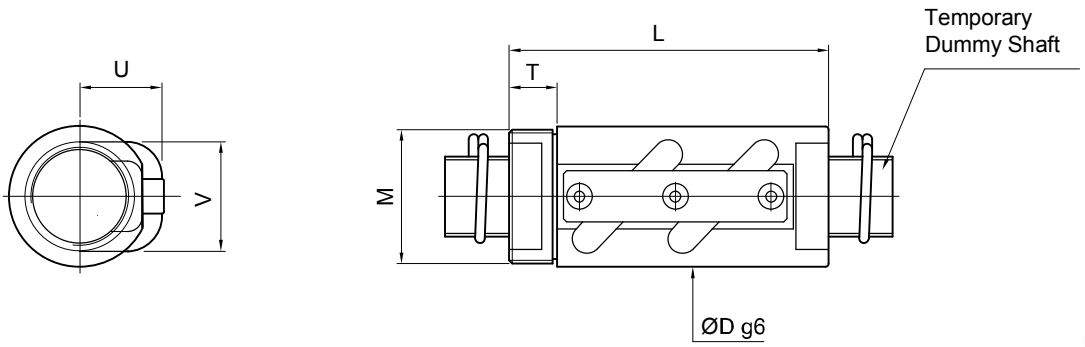
SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION											
O.D.	LEAD			Dynamic (1×10^6 REV.) Ca	Static Co	O.D. D	Length L	Flange A	Flange T	Flange W	Flange H	Return tube U	Return tube V	Assembly Hole X	Oil Hole Q	STIFFNESS kgf/μm	Nut Model NO.
50	10	6.35	1.5x2	2510	9000		84									31	FSVW5010F-3.0P
			2.5x1	2150	7500		74									39	FSVW5010F-2.5P
			2.5x2	3890	15000	78	104	119	18	98	52	48	62	11	PT1/8×	73	FSVW5010F-5.0P
			2.5x3	5510	22500		134									105	FSVW5010F-7.5P
			3.5x1	2870	10500		84									53	FSVW5010F-3.5P
			3.5x2	4940	21000	80	125	138	22	110		52		18	M6x1P	98	FSVW5010F-7.0P

Note:

Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread **grooves and balls while axial load is 30× dynamic load rating.**

RSVW



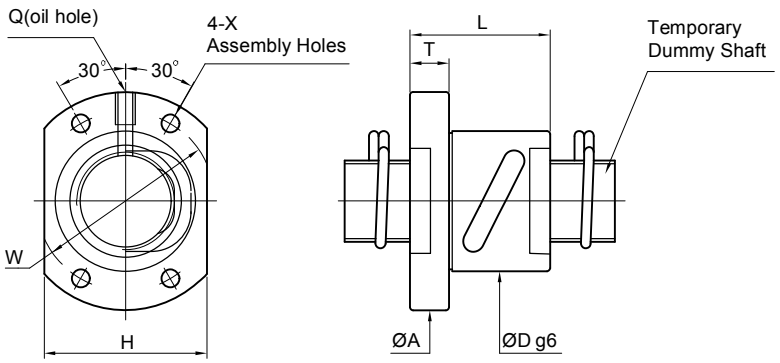
Unit: mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION							
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	Flange M	T	Return tube U	V	STIFFNESS kgf/μm	Nut Model NO.
14	4	2.381	3.5×1	500	1100	25	42	M24×1.0P	10	19	21	15	RSVW1404-3.5P
	5	3.175	2.5×1	515	990	30	43	M26×1.5P	10	22	21	11	RSVW1405-2.5P
20	5	3.175	2.5×1	625	1450	40	43	M36×1.5P	12	28	27	15	RSVW1605-2.5P
25	5	3.175	2.5×1	720	1830	42	48	M40×1.5P	15	28	32	18	RSVW2505-2.5P
			2.5×2	1120	3710		63					37	RSVW2505-5.0P
	10	6.350	2.5×1	1720	3590	44	68	M42×1.5P	15	34	37	21	RSVW2510-2.5P
			2.5×2	3200	7170		98					40	RSVW2510-5.0P
32	10	6.350	2.5×1	1930	4680	55	72	M50×1.5P	18	39	44	25	RSVW3210-2.5P
			2.5×2	3130	9410		101					49	RSVW3210-5.0P
40	10	6.350	3.5×2	4450	16800	65	128	M60×2.0P	25	44	52	81	RSVW4010-7.0P
50	10	6.350	3.5×2	4940	21000	80	143	M75×2.0P	40	52	62	98	RSVW5010-7.0P

Note:

Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread **grooves and balls while axial load is 30× dynamic load rating.**



Unit: mm

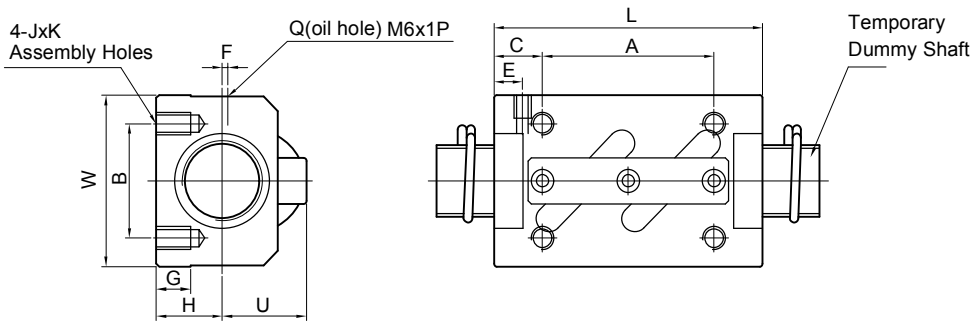
SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION									
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	Flange A	Flange T	Flange W	Flange H	Assembly Hole X	Oil Hole Q	STIFFNESS kgf/μm	Nut Model NO.
12	5	2.000	2.5×1	270	350	26	40	47	10	37	30	4.5	M6×1P	8.2	FSBW1205-2.5P
14	4	2.381	3.5×1	500	1100	31	40	50	10	40	37	4.5	M6×1P	15	FSBW1404-3.5P
	5	3.175	2.5×1	515	990	32	40	50	10	40	38	4.5	M6×1P	11	FSBW1405-2.5P
16	5	3.175	2.5×1	570	1130	34	40	54	10	44	40	4.5	M6×1P	13	FSBW1605-2.5P
20	4	2.381	2.5×1	415	850	40	41	59	10	50	46	4.5	M6×1P	14	FSBW2004-2.5P
	5	3.175	2.5×1	620	1450	40	40	59	10	50	46	4.5	M6×1P	16	FSBW2005-2.5P
25	4	2.381	2.5×1	450	980	43	41	67	10	55	50	4.5	M6×1P	17	FSBW2504-2.5P
	5	3.175	2.5×1	720	1830	43	40	67	10	55	50	5.5	M6×1P	18	FSBW2505-2.5P

Note:

Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread **grooves and balls while axial load is 30× dynamic load rating.**

SSVW



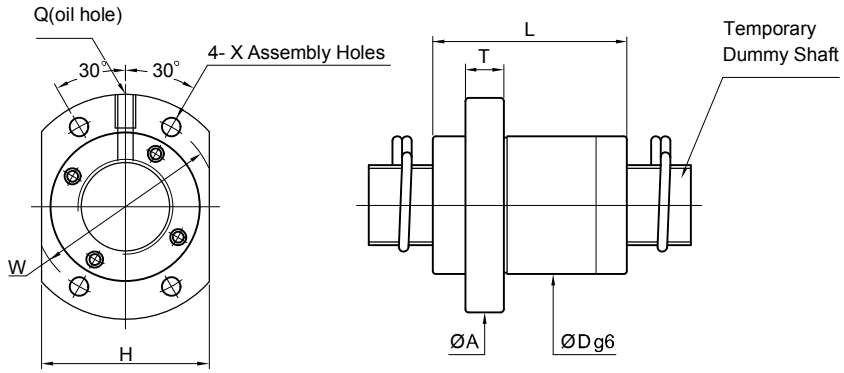
Unit: mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION												
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	Length L	Width W	Height H	Assembly Hole A	B	C	J×K	Position of Oil Hole E	F	Height from Reference Surface G	U	STIFFNESS kgf/μm	Nut Model NO.
14	4	2.381	3.5×1	500	1110	35	34	13	22	26	6.5	M4×7	6	2	6	18	15	SSVW1404-3.5P
	5	3.175	2.5×1	515	990	35	34	13	22	26	6.5	M4×7	6	2	6	18	11	SSVW1405-2.5P
16	5	3.175	2.5×1	590	1210	35	42	16	22	32	6.5	M5×8	6	2	8	21	13	SSVW1605-2.5P
20	5	3.175	2.5×1	625	1450	35	48	17	22	35	6.5	M6×10	6	3	9.15	22	15	SSVW2005-2.5P
	10	4.762	2.5×1	1100	2220	58	48	18	35	35	11.5	M6×10	10	2	9.5	25	16	SSVW2010-2.5P
25	5	3.175	2.5×1	720	1830	35	60	20	22	40	6.5	M8×12	7	5	9.5	25	18	SSVW2505-2.5P
	10	6.350	2.5×2	3240	7170	94	60	23	60	40	17	M8×12	10	-	10	30	40	SSVW2510-5.0P
28	6	3.175	2.5×2	1380	4140	67	60	22	40	40	13.5	M8×12	8	5	10	27	39	SSVW2806-5.0P
32	10	6.350	2.5×1	1930	4680	64	70	26	45	50	9.5	M8×12	10	-	12	36	25	SSVW3210-2.5P
			2.5×2	3130	9410	94			60		17						49	SSVW3210-5.0P

Note:

Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread **grooves and balls while axial load is 30× dynamic load rating.**



Unit: mm

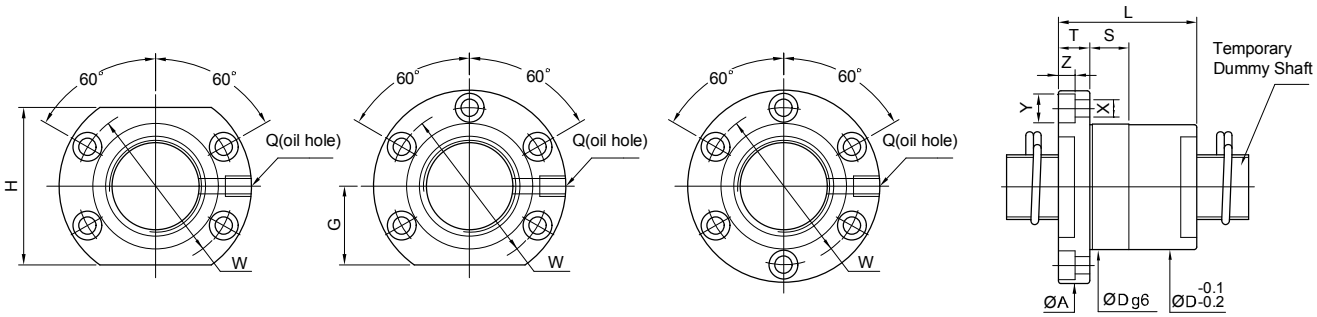
SCREW SIZE		BALL DIA.	EFFECTIVE TURNS circuit × row	BASIC RATE LOAD (kgf)		BALLNUT DIMENSION									
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	Flange A	Flange T	Flange W	Flange H	Assembly Hole X	Oil Hole Q	STIFFNESS kgf/μm	Nut Model NO.
15	10	3.175	2.8×2	1000	2570	34	44	57	10	45	40	5.5	M6×1P	26	FSKW1510-5.6P
16	16	3.175	1.8×1	330	640	32	38	53	10	42	38	4.5	M6×1P	9	FSKW1616-1.8P
20	20	3.175	1.8×2	780	2280	39	52	62	10	50	46	5.5	M6×1P	21	FSKW2020-3.6P
25	25	3.969	1.8×2	1230	3570	47	62	74	12	60	56	6.6	M6×1P	27	FSKW2525-3.6P
			1.8×4	2230	7140									52	FSKW2525-7.2P
32	32	4.762	1.8×2	1760	5500	58	78	92	15	74	68	9	M6×1P	33	FSKW3232-3.6P
			1.8×4	3200	11000									65	FSKW3232-7.2P
40	40	6.350	1.8×2	2870	9170	73	95	114	17	93	84	11	M6×1P	42	FSKW4040-3.6P
			1.8×4	5220	18340									81	FSKW4040-7.2P

Note:

Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread **grooves and balls while axial load is 30× dynamic load rating.**

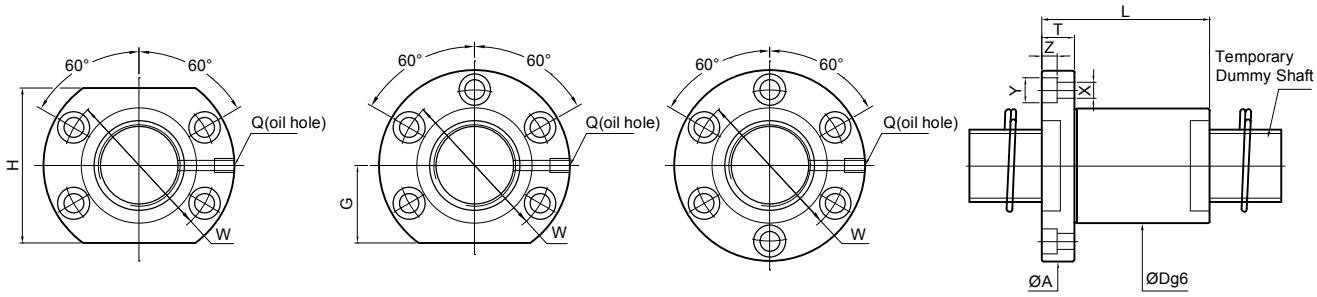
FSIW



Unit: mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION												
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	Flange A	T	W	G	H	Assembly Hole X	Y	Z	Oil Hole Q	STIFFNESS kgf/μm	Nut Model NO.
14	4	2.381	3	310	670	26	42	46	10	36	20	40	4.5	8	4.5	M6x1P	12	FSIW1404A-3.0P
			4	400	890		47										18	FSIW1404A-4.0P
16	4	2.381	3	320	760	28	42	48.5	10	39	20	40	4.5	8	4.5	M6x1P	13	FSIW1604A-3.0P
	5	3.175	3	570	1030	30	42	49	10	39	20	40	4.5	8	4.5	M6x1P	17	FSIW1605B-3.0P
		3.175	4	730	1370		49										19	FSIW1605B-4.0P
20	4	2.381	4	450	1270	34	44	60	12	48	22	44	5.5	9.5	5.5	M6x1P	19	FSIW2004A-4.0P
	5	3.175	3	650	1420	34	47	57	12	45	20	40	5.5	9.5	5.5	M6x1P	17	FSIW2005B-3.0P
			4	830	1890		53										21	FSIW2005B-4.0P
			6	1180	2840		62										32	FSIW2005B-6.0P
25	4	2.381	3	380	1195	40	40	63	12	51	22	44	5.5	9.5	5.5	M8x1P	17	FSIW250A4-3.0P
	5	3.175	3	730	1820	40	47	63.5	12	51	22	44	5.5	9.5	5.5	M8x1P	20	FSIW2505B-3.0P
			4	940	2420		53										26	FSIW2505B-4.0P
			5	1140	3030		57										32	FSIW2505B-5.0P
	10	4.762	3	1215	2660	42	80	68.5	15	55	26	52	6.6	11	6.5	M8x1P	22	FSIW2510D-3.0P
			4	1550	3540		85										28	FSIW2510D-4.0P
			5	1880	4430		91										34	FSIW251D0-5.0P
28	6	3.175	3	770	2180	43	50	68	12	55	26	52	6.6	11	6.5	M8x1P	22	FSIW2806B-3.0P
32	5	3.175	3	820	2540	48	47	73.5	12	60	30	60	6.6	11	6.5	M8x1P	24	FSIW3205B-3.0P
			4	1050	3390		53										32	FSIW3205B-4.0P
			6	1490	5090		62										46	FSIW3205B-6.0P
	10	6.35	3	1960	4410	50	80	88	16	70	34	68	9	14	8.5	M8x1P	28	FSIW3210F-3.0P
			4	2510	5880	54	90										34	FSIW3210F-4.0P
36	10	6.35	3	2010	5150	58	78	98	18	77	36	72	11	17.5	11	M8x1P	30	FSIW3610F-3.0P
			4	2570	6870		89										39	FSIW3610F-4.0P

FSIW



Unit: mm

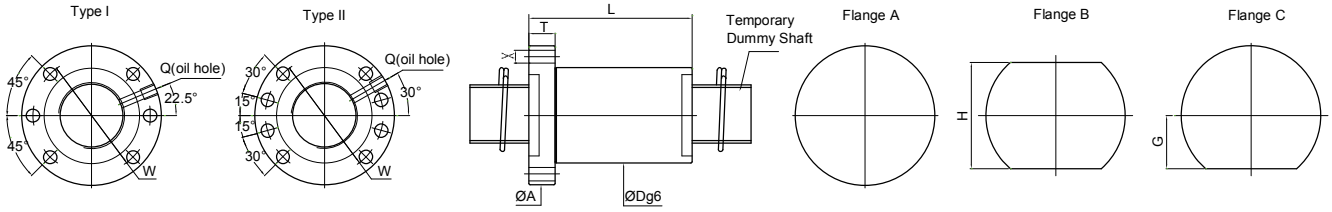
SCREW SIZE		BALL DIA.	EFFECTIVE TURNS	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION											
O.D.	LEAD			Dynamic (1×10⁶ REV.) Ca	Static Co	O.D. D	Length L	Flange A	T	W	G	H	Assembly Hole X	Y	Z	Oil Hole Q	STIFFNESS kgf/μm	Nut Model NO.
40	5	3.175	4	1180	4390	55	56	88.5	16	72	29	58	15	9	14	M8x1P	38	FSIW4005B-4.0P
			5	1430	5490		61										46	FSIW4005B-5.0P
			6	1670	6590		65										55	FSIW4005B-6.0P
	10	6.35	3	2050	5900	64	83	106	18	84	43	86	11	17.5	11	M8x1P	33	FSIW4010F-3.0P
			4	2630	7860		93										41	FSIW4010F-4.0P
			5	3190	9830		99										52	FSIW4010F-5.0P
50	10	6.35	3	2160	7720	74	83	116	18	94	42	84	11	17.5	11	M8x1P	39	FSIW5010F-3.0P
			4	2770	10290		93										50	FSIW5010F-4.0P
			5	3360	12860		99										62	FSIW5010F-5.0P
			6	3920	15440		114										73	FSIW5010F-6.0P

Note:

Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread **grooves and balls while axial load is 30□ dynamic load rating.**

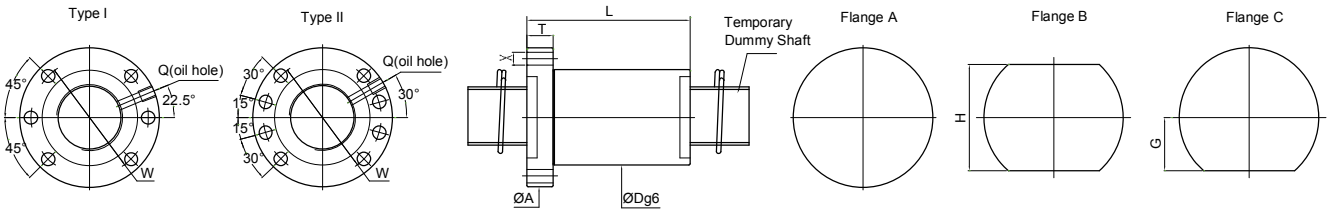
FSDW



Unit: mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS	MODIFIED LOAD CAPACITY(kgf)		BALLNUT DIMENSION											
				Dynamic ($1\boxtimes10^6$ REV.)	Static	O.D.	Length	Flange						Oil Hole	Assembly Hole	STIFFNESS	Nut Model NO.
O.D.	LEAD			Cam	Coam	D	L	A	T	W	G	H	TYPE	Q	X	kgf/μm	
12	4	2.381	3	410	990	24	28	44	10	34	16	32	I	M6x1P	4.5	13	FSDW1204A-3.0P
14	4	2.381	3	460	1210	26	28	46	10	36	17	34	I	M6x1P	4.5	14	FSDW1404A-3.0P
			4	590	1610		32	48								18	FSDW1404A-4.0P
	5	3.175	3	550	1260	29	32	51	10	39	18.5	37	I	M6x1P	5.5	14	FSDW1405B-3.0P
15	10	3.175	3	560	1340	29	47	51	10	39	18.5	37	I	M6x1P	5.5	15	FSDW1510B-3.0P
16	5	3.175	3	600	1460	29	35	51	10	39	18.5	37	I	M6x1P	5.5	16	FSDW1605B-3.0P
	10	3.175	3	580	1440	29	50	51	10	39	18.5	37	I	M6x1P	5.5	15	FSDW1610B-3.0P
	16	3.175	2	400	950	29	51	51	10	39	16	32	I	M6x1P	5.5	11	FSDW1616B-2.0P
20	4	2.381	3	520	1660	32	28	53	10	43	21.5	43	I	M6x1P	4.5	18	FSDW2004A-3.0P
	5	3.175	3	670	1860	36	35	62	12	49	19	38	I	M6x1P	5.5	19	FSDW2005B-3.0P
			4	870	2480		40									24	FSDW2005B-4.0P
	10	4.762	3	1320	3390	40	52	62	12	51	24	48	I	M6x1P	6.6	21	FSDW2010D-3.0P
	20	3.175	2	450	1200	36	56	62	12	49	19	38	I	M6x1P	6.6	13	FSDW2020B-2.0P
25	4	2.381	3	580	2120	37	28	62	12	50	24	48	I	M6x1P	6.6	21	FSDW2504A-3.0P
	5	3.175	3	740	2350	40	36	62	12	51	24	48	I	M6x1P	6.6	21	FSDW2505B-3.0P
			4	960	3190		41									28	FSDW2505B-4.0P
			5	1180	4030		46									35	FSDW2505B-5.0P
	10	4.762	4	1920	5700	45	63	65	15	54	25.5	51	I	M6x1P	6.6	32	FSDW2510D-4.0P
		6.35	3	2130	5570	51	58	87	16	72	34.5	69	I	M8x1P	9	27	FSDW2510F-3.0P
			5	3380	9550		78									42	FSDW2510F-5.0P
	25	3.969	2	780	2260	43	71	64	12	51	24	48	I	M6x1P	6.6	16	FSDW2525C-2.0P
28	5	3.175	5	1240	4530	43	48	65	12	51	24	48	I	M8x1P	6.6	38	FSDW2805B-5.0P
32	5	3.175	4	1080	4130	50	41	87	16	72	34.5	69	I	M8x1P	9	34	FSDW3205B-4.0P
	10	6.35	3	2410	7020	57	58	87	16	72	34.5	69	I	M8x1P	9	32	FSDW3210F-3.0P
			5	3820	12030		78									50	FSDW3210F-5.0P
	32	4.762	2	1100	3420	53	90	87	16	72	34.5	69	I	M8x1P	9	20	FSDW3232D-2.0P

FSDW



Unit: mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS	MODIFIED LOAD CAPACITY(kgf)		BALLNUT DIMENSION										
O.D.	LEAD			Dynamic (1×10^6 REV.) Cam	Static Coam	O.D. D	Length L	Flange A	T	W	G	H	TYPE	Oil Hole Q	Assembly Hole X	STIFFNESS kgf/μm	Nut Model NO.
36	10	6.35	3	2560	8250	70	58	108	17	90	36	82	I	M6x1P	11	52	FSDW3610F-3.0P
			5	3970	13750	61	78	91	18	76	34	68	II	M6x1P	9	55	FSDW3610F-5.0P
40	5	3.175	4	1180	5200	60	42	91	18	76	34	68	II	M8x1P	9	40	FSDW4005B-4.0P
	10	6.35	5	4290	15290	65	78	95	18	80	36	72	II	M8x1P	9	59	FSDW4010F-5.0P
	20	6.35	4	3480	11990	65	110	98	18	83	37	74	I	M8x1P	11	48	FSDW4020F-4.0P
	40		2	1810	5770											25	FSDW4040F-2.0P
50	10	6.35	5	4780	19360	75	78	118	18	100	46	92	II	M8x1P	11	70	FSDW5010F-5.0P

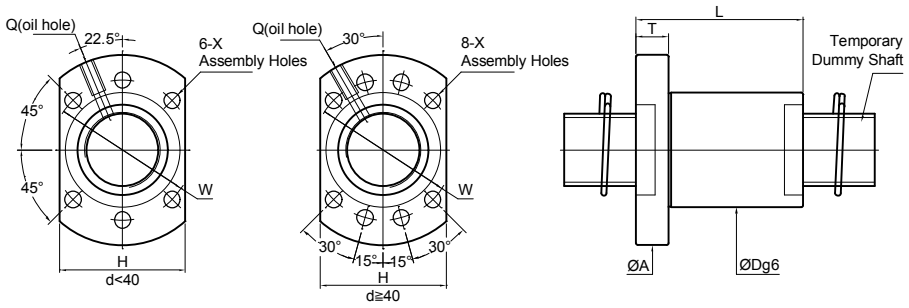
Note:

1.Cam and Coam represent the enhanced dynamic- and static load. Their calcultions referred to the standard of ISO-3408-5.

2. Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread **grooves and balls while axial load is 30% dynamic load rating.**

FSIN



Unit: mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION										
O.D.	LEAD			Dynamic (1×10⁶ REV.) Cam	Static Coam	O.D. D	Length L	Flange A	Flange T	Flange W	Flange G	Flange H	Oil Hole Q	Assembly Hole X	STIFFNESS kgf/μm	Nut Model NO.
16	5	3.175	3	1050	2200	28	42	48	10	38	20	40	M6×1P	5.5	17	FSIN1605B-3.0P
20	5	3.175	3	1200	2780	36	44	58	12	47	22	44	M6×1P	6.5	24	FSIN2005B-3.0P
			4	1530	3720		50								25	FSIN2005B-4.0P
25	5	3.175	3	1320	3540	40	44	62	12	51	24	48	M6×1P	6.5	28	FSIN2505B-3.0P
			4	1700	4720		50								37	FSIN2505B-4.0P
	10	4.762	4	2810	6610		85	62	12	51	24	48	M6×1P	6.5	32	FSIN2510D-4.0P
32	5	3.175	3	1470	4560	50	47	80	12	65	31	62	M6×1P	9	37	FSIN3205B-3.0P
			4	1900	6090		50								50	FSIN3205B-4.0P
			6	2690	9150		66								69	FSIN3205B-6.0P
	10	6.35	3	3680	8750	50	74	80	12	65	31	62	M6×1P	9	39	FSIN3210F-3.0P
			4	4720	11670		80								50	FSIN3210F-4.0P
40	5	3.175	4	2090	7670	63	54	93	15	78	35	70	M8×1P	9	52	FSIN4005B-4.0P
			6	2940	11510		66								77	FSIN4005B-6.0P
	10	6.35	3	4140	11130		74								46	FSIN4010F-3.0P
			4	5310	14850		82								60	FSIN4010F-4.0P
50	10	6.35	3	4610	14090	75	78	110	18	93	42.5	85	M8×1P	11	54	FSIN5010F-3.0P
			4	5890	18780		88								70	FSIN5010F-4.0P
			6	8350	28170		106								103	FSIN5010F-6.0P

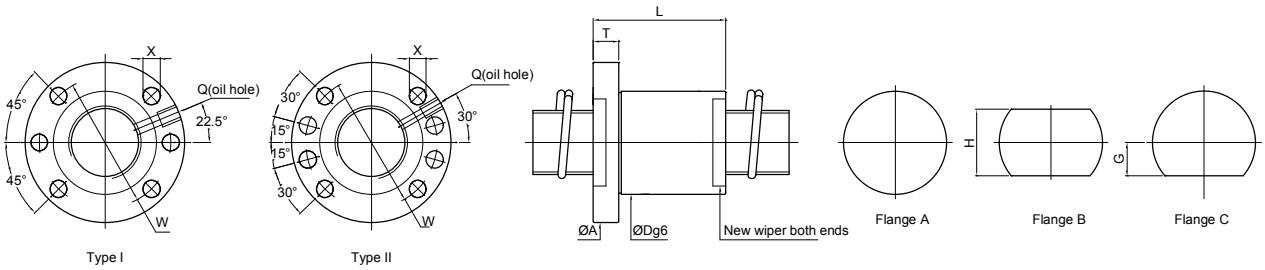
Note:

1.Cam and Coam represent the enhanced dynamic- and static load. Their calcultions referred to the standard of DIN 69051.

2. Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread **grooves and balls while axial load is 30% dynamic load rating.**

FSDN



單位:mm

SCREW SIZE		BALL DIA.	EFFECTIVE TURNS	BASIC RATE LOAD(kgf)		BALLNUT DIMENSION										
O.D.	LEAD			Dynamic (1×10^6 REV.) Cam	Static Coam	O.D. D	Length L	Flange A	Flange T	Flange W	Flange G	Flange H	Oil Hole Q	Assembly Hole X	STIFFNESS kgf/μm	Nut Model NO.
15	5	3	4	1210	2130	28	39	48	10	38	20	40	M6×1P	5.5	22	FSDN1605V-4.0P
	10		3	950	1650	28	47	48	10	38	20	40	M6×1P	5.5	17	FSDN1605V-3.0P
	16		3	910	1600	28	64	48	10	38	20	40	M6×1P	5.5	17	FSDN1605V-3.0P
20	5	3.175	4	1570	3270	36	40	58	10	47	22	44	M6×1P	6.6	28	FSDN2005B-4.0P
	20		4	1460	3120	36	58	58	10	47	22	44	M6×1P	6.6	28	FSDN2020B-4.0P
25	5	3.175	5	2130	5230	40	46	62	10	51	24	48	M6×1P	6.6	41	FSDN2505B-5.0P
	10		4	1740	4120	40	60	62	10	51	24	48	M6×1P	6.6	33	FSDN2510B-4.0P
	25		4	1610	3900	40	68	62	10	51	24	48	M6×1P	6.6	33	FSDN2525B-4.0P
32	5	3.175	6	2800	8190	50	53	80	12	65	31	62	M6×1P	9	59	FSDN3205B-6.0P
	10	3.969	5	3240	8480	50	73	80	12	65	31	62	M6×1P	9	52	FSDN3210C-5.0P
	20		4	2600	6640	50	101	80	12	65	31	62	M6×1P	9	42	FSDN3220C-4.0P
	32		4	2460	6340	50	84	80	12	65	31	62	M6×1P	9	41	FSDN3232C-4.0P
38	10	6.35	5	6500	15610	63	78	93	15	78	35	70	M8×1P	9	64	FSDN3810F-5.0P
	20		4	5250	12240	63	107	93	15	78	35	70	M8×1P	9	52	FSDN3820F-4.0P
	40		4	4940	11770	63	104	93	15	78	35	70	M8×1P	9	51	FSDN3840F-4.0P

Note:

1.Cam and Coam represent the enhanced dynamic- and static load. Their calcultions referred to the standard of DIN 69051.

2. Stiffness of nut:

Stiffness values listed above are derived from theoretical formula to the elastic deformation between thread **grooves and balls while axial load is 30% dynamic load rating.**