

Precision, Caged Ball Screw



Models SBN, SBK, SDA, HBN and SBKH

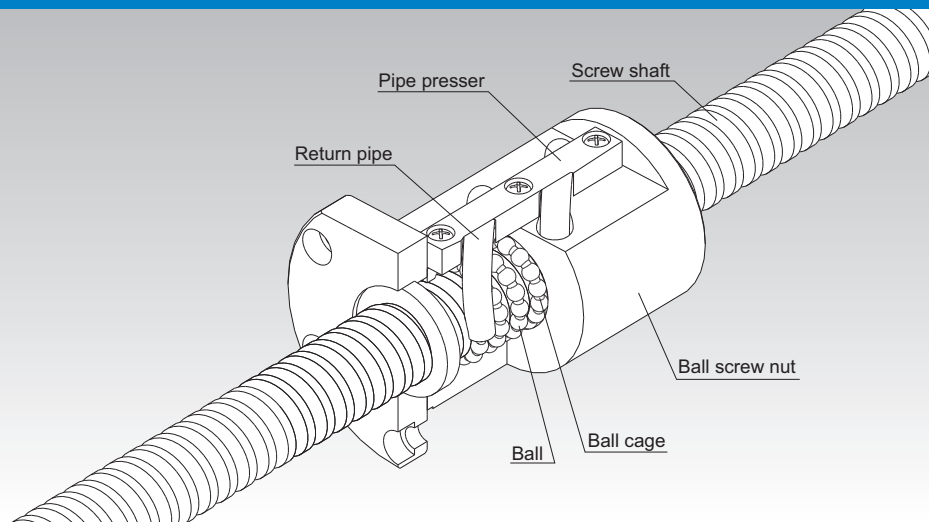


Fig.1 Structure of High-Speed Ball Screw with Ball Cage Model SBN

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Structure and Features

The use of a ball cage in the Ball Screw with the Ball Cage eliminates collision and friction between balls and increases the grease retention. This makes it possible to achieve a low noise, a low torque fluctuation and a long-term maintenance-free operation.

In addition, this Ball Screw is superbly capable of responding to the high speed because of an ideal ball recirculation structure, a strengthened circulation path and an adoption of the ball cage.

Ball Cage Effect

[Low Noise, Acceptable Running Sound]

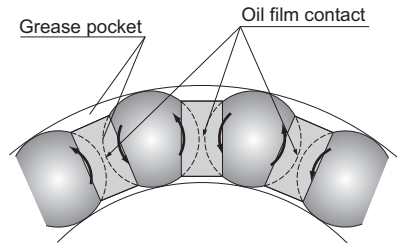
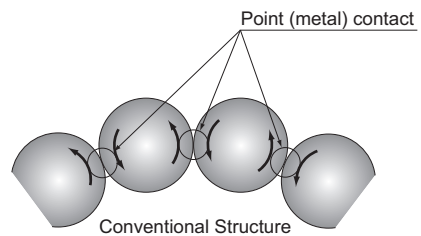
The use of the ball cage eliminates the collision noise between the balls. Additionally, as balls are picked up in the tangential direction, the collision noise from the ball circulation has also been eliminated.

[Long-term Maintenance-free Operation]

The friction between the balls has been eliminated, and the grease retention has been improved through the provision of grease pockets. As a result, the long-term maintenance-free operation (i.e., lubrication is unnecessary over a long period) is achieved.

[Smooth Motion]

The use of a ball cage eliminates the friction between the balls and minimizes the torque fluctuation, thus allowing the smooth motion to be achieved.



Structure of the Ball Screw with Ball Cage

[Low Noise]

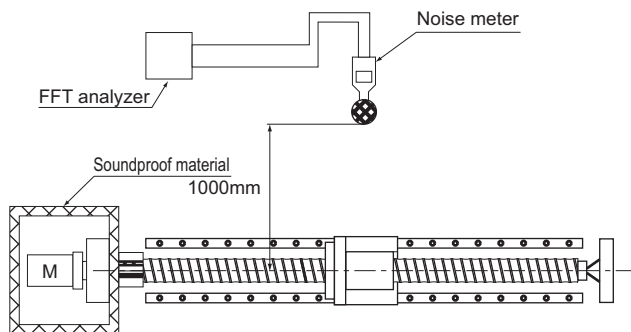
● Noise Level Data

Since the balls in the Ball Screw with the Ball Cage do not collide with each other, they do not produce a metallic sound and a low noise level is achieved.

■ Noise Measurement

[Conditions]

Item	Description
Sample	High load ball screw with ball cage HBN3210-5 Conventional type: model BNF3210-5
Stroke	600mm
Lubrication	Grease lubrication (lithium-based grease containing extreme pressure agent)



Noise measurement instrument

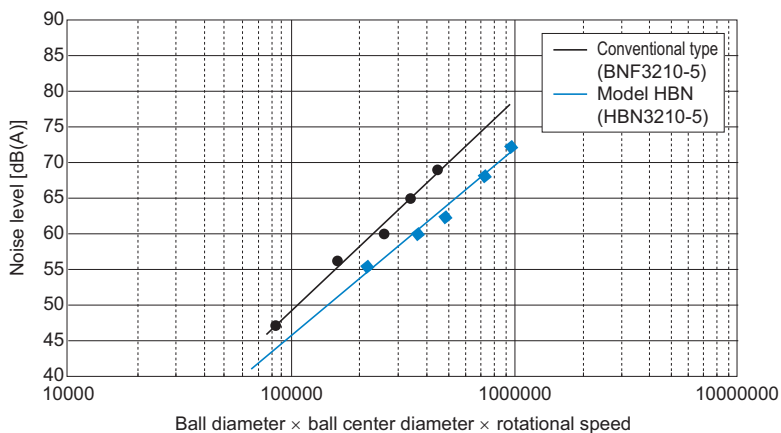


Fig.2 Ball Screw Noise Level

[Long-term Maintenance-free Operation]

● High speed, Load-bearing Capacity

Thanks to the ball circulating method supporting high speed and the caged ball technology, the Ball Screw with Ball Cage excels in high speed and load-bearing capacity.

■ High Speed Durability Test

[Test conditions]

Item	Description
Sample	High Speed Ball Screw with Ball Cage SBN3210-7
Speed	3900(min ⁻¹)(DN value*: 130,000)
Stroke	400mm
Lubricant	THK AFG Grease
Quantity	12cm ³ (lubricated every 1000km)
Applied load	1.73kN
Acceleration	1G

* DN value: Ball center-to-center diameter x revolutions per minute

[Test result]

Shows no deviation after running 10,000 km.

■ Load Bearing Test

[Test conditions]

Item	Description
Sample	High Speed Ball Screw with Ball Cage SBN3210-7
Speed	1500(min ⁻¹)(DN value*: 50,000)
Stroke	300mm
Lubricant	THK AFG Grease
Quantity	12cm ³
Applied load	17.3kN(0.5Ca)
Acceleration	0.5G

[Test result]

Shows no deviation after running a distance 2.5 times the calculated service life.

[Smooth Motion]

● Low Torque Fluctuation

The caged ball technology allows smoother motion than the conventional type to be achieved, thus to reduce torque fluctuation.

[Conditions]

Item	Description
Shaft diameter/lead	32/10mm
Shaft rotational speed	60min ⁻¹

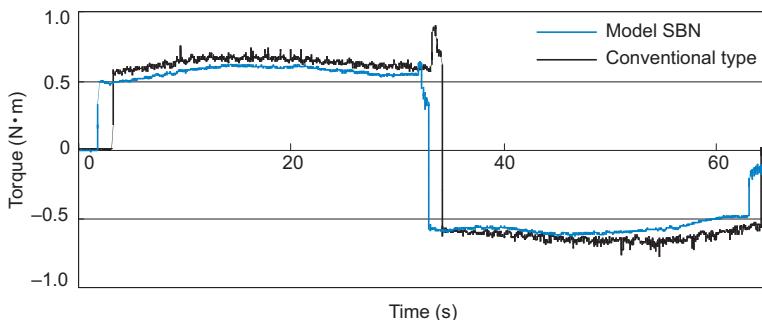


Fig.3 Torque Fluctuation Data

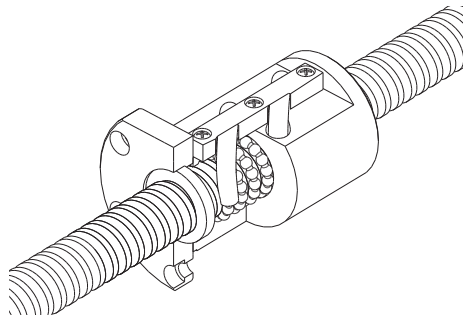
Types and Features

[Preload Type]

Model SBN

Model SBN has a circulation structure where balls are picked up in the tangential direction and is provided with a strengthened circulation path, thus to achieve a DN value of 130,000.

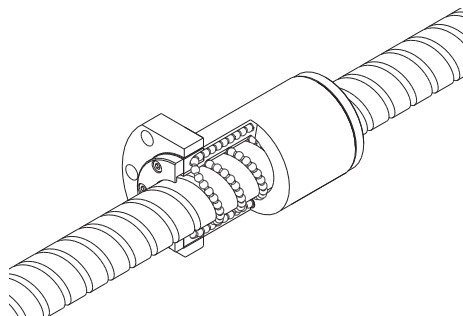
Specification Table⇒ **A15-70**



Model SBK

As a result of adopting the offset preloading method, which shifts two rows of grooves of the ball screw nut, a compact structure is achieved.

Specification Table⇒ **A15-74**

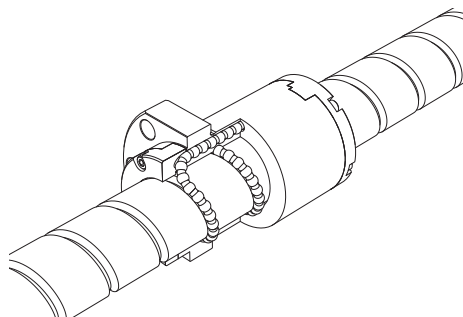


[No Preload Type]

Model SDA

Model SDA achieves an ideal ball circulation structure and a significantly compact body by using newly developed end cap and R piece.

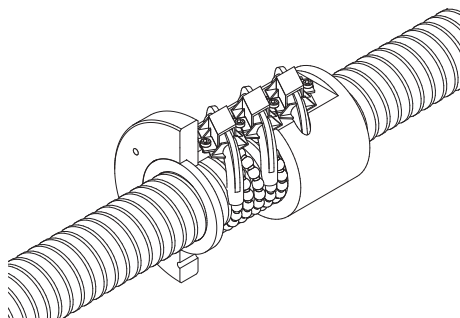
Specification Table⇒ **A15-78**



Model HBN

With the optimal design for high loads, this Ball Screw model achieves a rated load more than twice the conventional type.

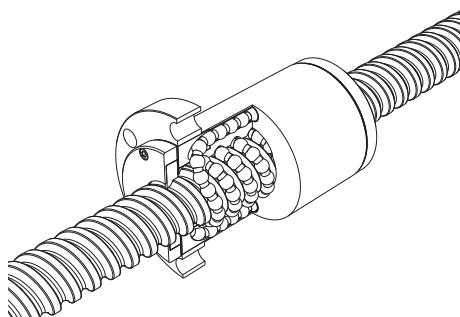
Specification Table⇒ **A15-80**



Model SBKH

Model SBKH is a ball screw that achieves a high load carrying capacity and is capable of high-speed operation (92 m/min at a maximum).

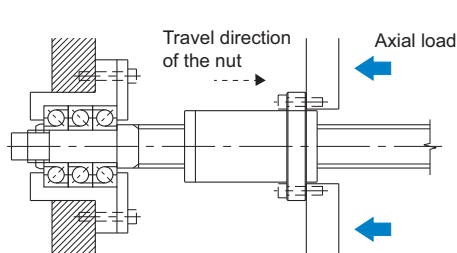
Specification Table⇒ **A15-82**



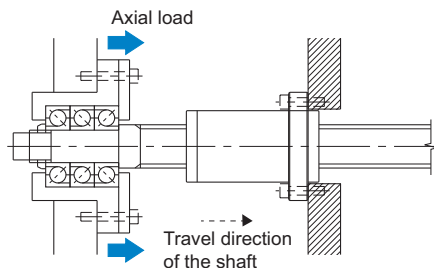
Examples of Assembling Models HBN and SBKH

If using model HBN or SBKH under a large load, arrange the nut flange and the fixed-side support unit in relation to the loading direction as indicated in the figure below while taking into account the load balance of the balls. In addition, while HBN or SBKH is operating, be sure not to apply a tensile load to the bolts. If you intend to use HBN or SBKH in configurations other than below, contact THK.

[Examples of Recommended Assembly of Models HBN and SBKH]

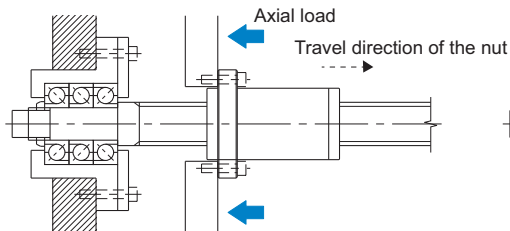


Good example (with the nut moving)

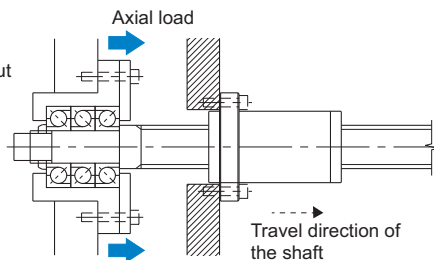


Good example (with the shaft moving)

[Examples of Un-recommended Assembly of Models HBN and SBKH]

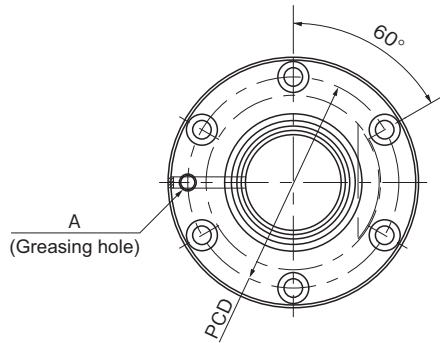


Bad example (with the nut moving)



Bad example (with the shaft moving)

Model SBN



Model No.	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _{0a} kN	
SBN 1604-5	16	4	16.5	13.8	1×2.5	5.3	8	281
SBN 1605-5	16	5	16.75	13.2	1×2.5	9.2	12.9	309
SBN 2004-5	20	4	20.5	17.8	1×2.5	5.9	10.1	335
SBN 2005-5	20	5	20.75	17.2	1×2.5	10.3	16.2	370
SBN 2504-5	25	4	25.5	22.8	1×2.5	6.4	12.7	400
SBN 2505-5	25	5	25.75	22.2	1×2.5	11.3	20.3	442
SBN 2506-5	25	6	26	21.4	1×2.5	15.4	25.4	457
SBN 2805-5	28	5	28.75	25.2	1×2.5	11.8	22.8	483
SBN 2806-5	28	6	29	24.4	1×2.5	16.2	28.5	499
SBN 3205-5	32	5	32.75	29.2	1×2.5	12.6	26.1	536
SBN 3206-5	32	6	33	28.4	1×2.5	17.2	32.7	555

Note) With model SBN, the raising of both ends of the thread groove is not available. When designing your system this way, contact THK.

Axial Clearance

Unit: mm

Clearance symbol	G0
Axial Clearance	0 or less

Model number coding

SBN1604-5 QZ RR G0 +1200L C5

Model Number

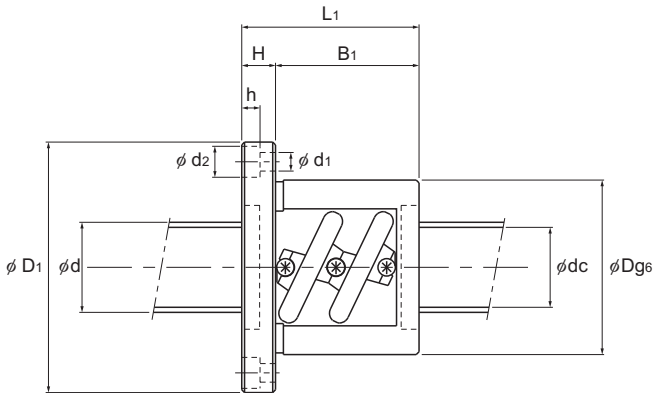
Seal symbol (*1)

Accuracy symbol (*2)

With QZ Lubricator
(no symbol if the model
is without a QZ Lubricator)

Overall screw shaft length (in mm)
Symbol for Clearance in the axial direction
(G0 for all SBN variations)

(*1) See **A15-352**. (*2) See **A15-12**.



Unit: mm

	Nut dimensions							Screw shaft inertial moment/mm ⁴ kg·cm ² /mm	Nut mass kg	Shaft mass kg/m	
	Outer diameter D _{g6}	Flange diameter D ₁	Overall length L ₁	H	B ₁	PCD	d ₁ × d ₂ × h				Greasing hole A
	36	59	53	11	42	47	5.5 × 9.5 × 5.5	M6 × 1	5.05 × 10 ⁻⁴	0.42	1.35
	40	60	56	10	46	50	4.5 × 8 × 4.5	M6 × 1	5.05 × 10 ⁻⁴	0.50	1.25
	40	63	53	11	42	51	5.5 × 9.5 × 5.5	M6 × 1	1.23 × 10 ⁻³	0.48	2.18
	44	67	56	11	45	55	5.5 × 9.5 × 5.5	M6 × 1	1.23 × 10 ⁻³	0.61	2.06
	46	69	48	11	37	57	5.5 × 9.5 × 5.5	M6 × 1	3.01 × 10 ⁻³	0.55	3.50
	50	73	55	11	44	61	5.5 × 9.5 × 5.5	M6 × 1	3.01 × 10 ⁻³	0.72	3.35
	53	76	62	11	51	64	5.5 × 9.5 × 5.5	M6 × 1	3.01 × 10 ⁻³	0.90	3.19
	55	85	59	12	47	69	6.6 × 11 × 6.5	M6 × 1	4.74 × 10 ⁻³	0.98	4.27
	59	89	63	12	51	73	6.6 × 11 × 6.5	M6 × 1	4.74 × 10 ⁻³	1.19	4.33
	58	85	56	12	44	71	6.6 × 11 × 6.5	M6 × 1	8.08 × 10 ⁻³	0.96	5.67
	62	89	63	12	51	75	6.6 × 11 × 6.5	M6 × 1	8.08 × 10 ⁻³	1.22	6.31

Note) The rigidity values in the table represent the spring constants obtained from the load and the elastic deformation when providing a preload 10% of the basic dynamic load rating (Ca) and applying an axial load three times greater than the preload.

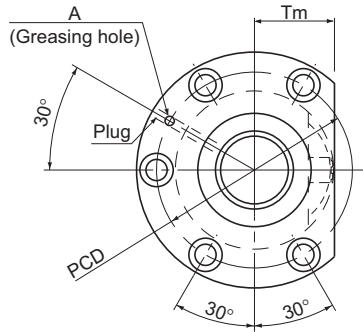
These values do not include the rigidity of the components related to mounting the ball screw nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the applied preload (Fa₀) is not 0.1 Ca, the rigidity value (K_v) is obtained from the following equation.

$$K_v = K \left(\frac{Fa_0}{0.1Ca} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model SBN



Model No.	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _{0a} kN	
○ SBN 3210-7	32	10	33.75	26.4	1×3.5	43	73.1	836.7
○ SBN 3212-5	32	12	34	26.1	1×2.5	37.4	58.7	612.2
○ SBN 3610-7	36	10	37.75	30.4	1×3.5	45.6	82.3	920.9
○ SBN 3612-7	36	12	38	30.1	1×3.5	53.2	92.6	934.5
○ SBN 3616-5	36	16	38	30.1	1×2.5	39.7	66.4	676
○ SBN 4012-5	40	12	42	34.1	1×2.5	42	73.6	735.4
○ SBN 4016-5	40	16	42	34.1	1×2.5	41.9	73.8	736.6
○ SBN 4512-5	45	12	47	39.2	1×2.5	44.4	82.9	809.1
○ SBN 4516-5	45	16	47	39.2	1×2.5	44.3	83.1	810.1
○ SBN 5012-5	50	12	52	44.1	1×2.5	46.6	92.2	880.9
○ SBN 5016-5	50	16	52	44.1	1×2.5	46.6	92.4	881.7
○ SBN 5020-5	50	20	52	44.1	1×2.5	46.5	92.6	882.8

Note) With model SBN, the raising of both ends of the thread groove is not available. When designing your system this way, contact THK.

Those models marked with ○ can be attached with QZ Lubricator or the wiper ring. For dimensions of the ball screw nut with either accessory being attached, see [A15-360](#).

Axial Clearance

Unit: mm

Clearance symbol	G0
Axial Clearance	0 or less

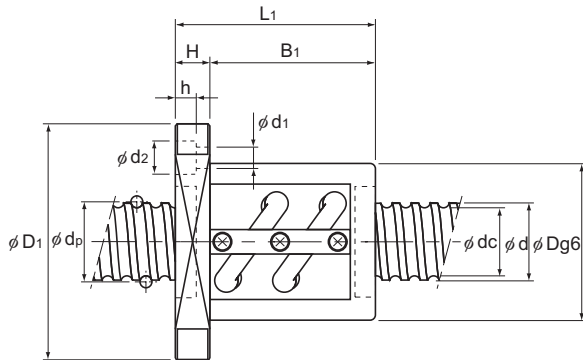
Model number coding

SBN4012-5 RR G0 +1400L C5

Model number Seal symbol (*1) Overall screw shaft length (in mm) Accuracy symbol (*2)

Symbol for Clearance in the axial direction
(G0 for all SBN variations)

(*1) See [A15-352](#). (*2) See [A15-12](#).



Unit: mm

	Nut dimensions									Screw shaft inertial moment/mm ³ kg·cm ² /mm	Nut mass kg	Shaft mass kg/m
	Outer diameter D	Flange diameter D ₁	Overall length L ₁	H	B ₁	PCD	d ₁ × d ₂ × h	Tm	Greasing hole A			
	74	108	120	15	105	90	9 × 14 × 8.5	38	M6	8.08 × 10 ⁻³	3.1	3.6
	76	121	117	18	99	98	11 × 17.5 × 11	39	M6	8.08 × 10 ⁻³	3.7	3.5
	77	120	123	18	105	98	11 × 17.5 × 11	40	M6	1.29 × 10 ⁻²	3.8	5.0
	81	124	140	18	122	102	11 × 17.5 × 11	42	M6	1.29 × 10 ⁻²	4.7	4.8
	81	124	140	18	122	102	11 × 17.5 × 11	42	M6	1.29 × 10 ⁻²	4.7	5.6
	84	126	119	18	101	104	11 × 17.5 × 11	43	M6	1.97 × 10 ⁻²	4.2	6.4
	84	126	144	18	126	104	11 × 17.5 × 11	43	M6	1.97 × 10 ⁻²	4.9	7.3
	90	130	119	18	101	110	11 × 17.5 × 11	46	PT 1/8	3.16 × 10 ⁻²	4.6	8.6
	90	130	140	18	122	110	11 × 17.5 × 11	46	PT 1/8	3.16 × 10 ⁻²	5.3	9.6
	95	141	119	22	97	117	14 × 20 × 13	48	PT 1/8	4.82 × 10 ⁻²	5.3	11.1
	95	141	143	22	121	117	14 × 20 × 13	48	PT 1/8	4.82 × 10 ⁻²	6.1	12.2
	95	141	169	22	147	117	14 × 20 × 13	48	PT 1/8	4.82 × 10 ⁻²	7.0	12.8

Note) The rigidity values in the table represent the spring constants obtained from the load and the elastic deformation when providing a preload 10% of the basic dynamic load rating (Ca) and applying an axial load three times greater than the preload.

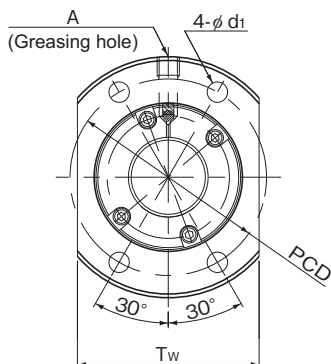
These values do not include the rigidity of the components related to mounting the ball screw nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the applied preload (Fa₀) is not 0.1 Ca, the rigidity value (K_v) is obtained from the following equation.

$$K_v = K \left(\frac{F_{a0}}{0.1C_a} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model SBK



Model No.	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _{0a} kN	
SBK 1520-3.6	15	20	15.75	12.2	1×1.8	5.8	7.8	178
SBK 1616-3.6	16	16	16.65	13.5	1×1.8	4.6	6.4	182
SBK 2010-5.6	20	10	20.75	17.2	1×2.8	10.7	17.3	353
SBK 2020-3.6	20	20	20.75	17.2	1×1.8	7	10.5	229
SBK 2030-3.6	20	30	20.75	17.2	1×1.8	6.9	11.2	236
SBK 2520-3.6	25	20	26	21.5	1×1.8	11	16.9	292
SBK 2525-3.6	25	25	26	21.5	1×1.8	10.8	16.9	290
SBK 3220-5.6	32	20	33.25	27.9	1×2.8	23.6	41.1	565
SBK 3232-5.6	32	32	33.25	27.9	1×2.8	23.1	41.8	567

Axial Clearance

Unit: mm

Clearance symbol	G0
Axial Clearance	0 or less

Model number coding

SBK2525-3.6 QZ G0 +1200L C5

Model Number

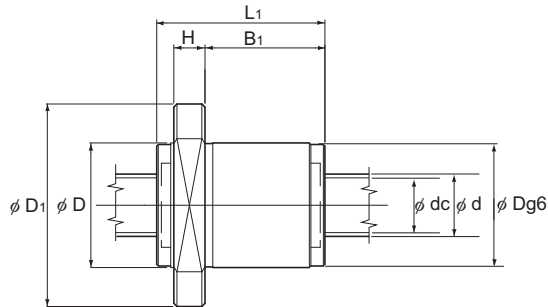
Overall screw shaft length (in mm)

Accuracy symbol (*1)

Symbol for clearance in the axial direction (G0 for all SBK variations)

With QZ Lubricator (no symbol if the model is without a QZ Lubricator)

(*1) See **A15-12**.



Unit: mm

	Nut dimensions									Screw shaft inertial moment/mm kg·cm ² /mm	Nut mass kg	Shaft mass kg/m	Maximum permissible rotation speed min ⁻¹
	Outer diameter D	Flange diameter D ₁	Overall length L ₁	H	B ₁	PCD	d ₁	T _w	Greasing hole A				
	38	62	54	10	38.5	49	5.5	39	M6	3.9 × 10 ⁻⁴	0.41	1.27	5000
	33	54	45	10	29.5	43	4.5	38	M6	5.05 × 10 ⁻⁴	0.25	1.46	
	40	65	45	10	29.5	53	5.5	49	M6	1.23 × 10 ⁻³	0.37	2.18	
	40	65	54	10	38.5	53	5.5	49	M6	1.23 × 10 ⁻³	0.43	2.32	
	40	65	71	10	55.5	53	5.5	49	M6	1.23 × 10 ⁻³	0.55	2.36	
	47	74	57	12	38	60	6.6	56	M6	3.01 × 10 ⁻³	0.59	3.58	
	47	74	68	12	49	60	6.6	56	M6	3.01 × 10 ⁻³	0.69	3.63	
	58	92	82	15	58	74	9	68	M6	8.08 × 10 ⁻³	1.23	5.82	3900
	58	92	118	15	94	74	9	68	M6	8.08 × 10 ⁻³	1.70	5.99	

Note) The rigidity values in the table represent the spring constants obtained from the load and the elastic deformation when providing a preload 10% of the basic dynamic load rating (Ca) and applying an axial load three times greater than the preload.

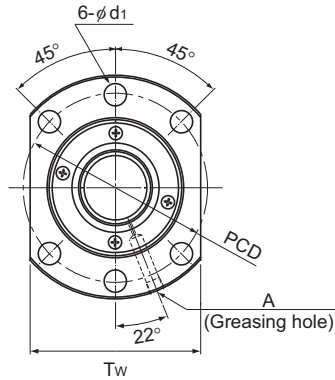
These values do not include the rigidity of the components related to mounting the ball screw nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the applied preload (Fa₀) is not 0.1 Ca, the rigidity value (K_s) is obtained from the following equation.

$$K_s = K \left(\frac{Fa_0}{0.1Ca} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model SBK



Model No.	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _a kN	
SBK 3620-7.6	36	20	37.75	30.4	1×3.8	48.5	85	870
SBK 3636-5.6	36	36	37.75	31.4	1×2.8	36.6	64.7	460
SBK 4020-7.6	40	20	42	34.1	1×3.8	59.7	112.7	970
SBK 4030-7.6	40	30	42	34.1	1×3.8	59.2	107.5	970
SBK 4040-5.6	40	40	42	34.9	1×2.8	44.8	80.3	520
SBK 5020-7.6	50	20	52	44.1	1×3.8	66.8	141.9	1170
SBK 5030-7.6	50	30	52	44.1	1×3.8	66.5	135	1170
SBK 5036-7.6	50	36	52	44.1	1×3.8	65.9	135	1170
SBK 5050-5.6	50	50	52	44.9	1×2.8	50.3	102.4	630
SBK 5520-7.6	55	20	57	49.1	1×3.8	69.8	156.4	1250
SBK 5530-7.6	55	30	57	49.1	1×3.8	69.2	147	1250
SBK 5536-7.6	55	36	57	49.1	1×3.8	69.1	148.7	1260

Note) With model SBK, the raising of both ends of the thread groove is not available. When designing your system this way, contact THK.

Axial Clearance

Unit: mm

Clearance symbol	G0
Axial Clearance	0 or less

Model number coding

SBK3620-7.6 RR G0 +1500L C5

Model number

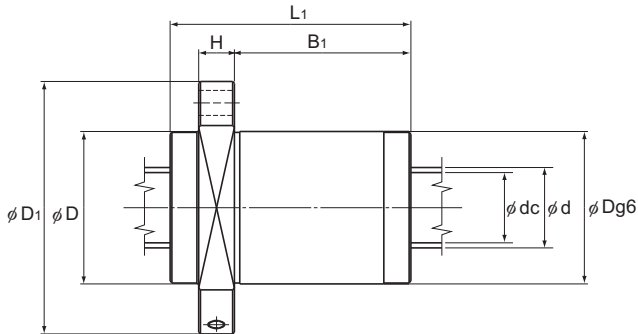
Seal symbol (*1)

Overall screw shaft length (in mm)

Accuracy symbol (*2)

Symbol for clearance in the axial direction (G0 for all SBK variations)

(*1) See **A15-352**. (*2) See **A15-12**.



Unit: mm

	Nut dimensions									Screw shaft inertial moment/mm ²	Nut mass	Shaft mass
	Outer diameter	Flange diameter	Overall length	H	B ₁	PCD	d _i	T _w	Greasing hole			
	D	D ₁	L ₁	H	B ₁	PCD	d _i	T _w	A	kg·cm ² /mm	kg	kg/m
	73	114	110	18	81	93	11	86	PT 1/8	1.29×10 ⁻²	3.4	5.0
	73	114	134	18	105	93	11	86	PT 1/8	1.29×10 ⁻²	3.37	7.43
	80	136	110	20	79	112	14	103	PT 1/8	1.97×10 ⁻²	4.5	5.7
	80	136	148	20	117	112	14	103	PT 1/8	1.97×10 ⁻²	5.6	7.0
	80	136	146	20	115	112	14	103	PT 1/8	1.97×10 ⁻²	4.74	9.16
	90	146	110	22	77	122	14	110	PT 1/8	4.82×10 ⁻²	5.3	10.2
	90	146	149	22	116	122	14	110	PT 1/8	4.82×10 ⁻²	6.6	11.9
	90	146	172	22	139	122	14	110	PT 1/8	4.82×10 ⁻²	7.4	12.5
	90	146	175	22	142	122	14	110	PT 1/8	4.82×10 ⁻²	6.46	14.72
	96	152	110	22	77	128	14	114	PT 1/8	7.05×10 ⁻²	5.7	13.0
	96	152	149	22	116	128	14	114	PT 1/8	7.05×10 ⁻²	7.2	14.8
	96	152	172	22	139	128	14	114	PT 1/8	7.05×10 ⁻²	8.1	15.5

Note) The rigidity values in the table represent the spring constants obtained from the load and the elastic deformation when providing a preload 10% of the basic dynamic load rating (Ca) and applying an axial load three times greater than the preload.

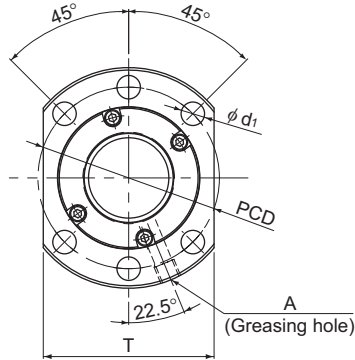
These values do not include the rigidity of the components related to mounting the ball screw nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the applied preload (Fa₀) is not 0.1 Ca, the rigidity value (K_N) is obtained from the following equation.

$$K_N = K \left(\frac{F_{a0}}{0.1 C_a} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model SDA



Model No.	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Screw shaft Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _{0a} kN	
★ ☆ SDA 1510-2.8	15	10	15.5	13.1	1×2.8	5.5	7.8	144
SDA 1520-3.6	15	20	15.5	13.1	2×1.8	6.4	10.3	183
SDA 1530-3.6	15	30	15.5	13.1	2×1.8	6.1	8.9	190
SDA 1610-2.8	16	10	16.5	14.1	1×2.8	5.6	8.2	150
SDA 1616-2.8	16	16	16.5	14.1	1×2.8	5.5	8.4	152
☆ SDA 2020-2.8	20	20	20.75	17.1	1×2.8	10.9	17.6	207
SDA 2030-1.8	20	30	20.75	17.1	1×1.8	7.0	11.5	135
☆ SDA 2040-1.8	20	40	20.75	17.1	1×1.8	6.8	9.9	141
☆ SDA 2060-1.6	20	60	20.75	17.1	2×0.8	5.4	9.7	128
SDA 2520-2.8	25	20	25.75	22.1	1×2.8	12.1	21.6	245
SDA 2525-2.8	25	25	25.75	22.1	1×2.8	12.0	22.0	246
SDA 2530-1.8	25	30	25.75	22.1	1×1.8	8.2	14.5	164
SDA 2550-1.8	25	50	25.75	22.1	1×1.8	7.6	12.6	170

Note) If desiring to shape both ends of the screw shaft to have a larger diameter than the outer diameter of the screw shaft, contact THK.

★: The outer diameter dimension complies with "lead: 5 or less" of DIN standard 69051.

☆: Labyrinth seal is standard (other models come standard without labyrinth seal).

Axial Clearance

Unit: mm

Clearance symbol	G0
Axial Clearance	0 or less

Model number coding

SDA2520-2.8 QZ RR G0 +830L C3

Model Number

Accuracy symbol (*2)

Overall screw shaft length (in mm)

With QZ Lubricator

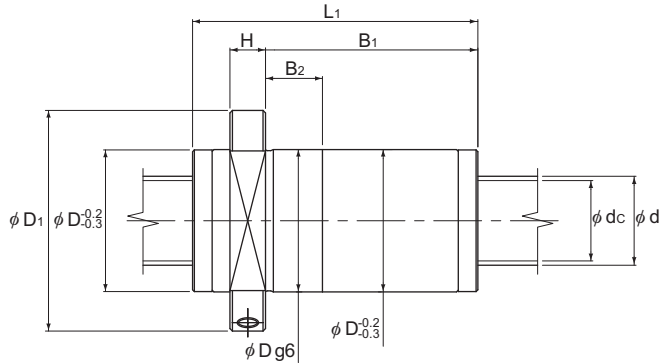
(no symbol if the model is without QZ Lubricator)

Symbol for clearance in the axial direction (G0 for all SDA variations)

Seal symbol(*1) (RR: labyrinth seal on both sides; WW: wiper ring on both sides)

(*1) See **A15-352**. (*2) See **A15-12**.

Precision, Caged Ball Screw



Unit: mm

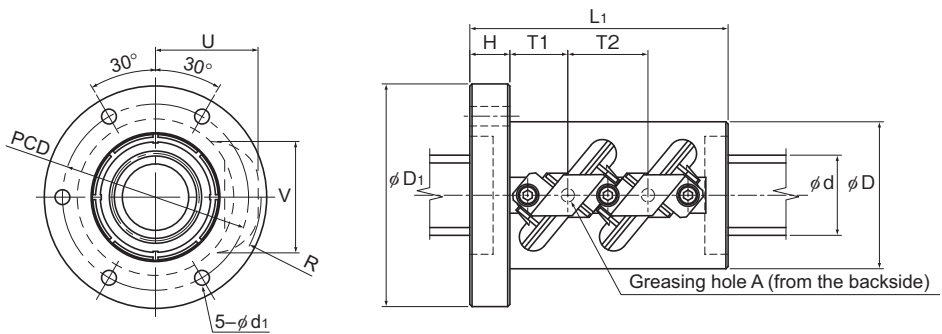
	Nut dimensions										Screw shaft inertial moment/mm kg·cm ² /mm	Nut mass kg	Shaft mass kg/m	Maximum permissible rotation speed min ⁻¹
	Outer diameter D	Flange diameter D ₁	Overall length L ₁	H	B ₁	B ₂	PCD	d ₁	T	Greasing hole A				
	28	48	35.3	10	16.8	10	38	5.5	40	M6	3.9 × 10 ⁻⁴	0.16	1.32	5000
	28	48	44.6		25.1	10	38	5.5	40		3.9 × 10 ⁻⁴	0.18	1.35	
	28	48	64.9		43.9	10	38	5.5	40		3.9 × 10 ⁻⁴	0.24	1.33	
	28	48	35.4		16.9	12.9	38	5.5	40		5.05 × 10 ⁻⁴	0.15	1.50	
	28	48	51.9		33.4	10	38	5.5	40		5.05 × 10 ⁻⁴	0.20	1.49	
	36	58	65.8		45.3	12	47	6.6	44		1.23 × 10 ⁻³	0.35	2.39	
	36	58	65.2		43.7	12	47	6.6	44		1.23 × 10 ⁻³	0.34	2.40	
	36	58	85.5		61	12	47	6.6	44		1.23 × 10 ⁻³	0.43	2.37	
	36	58	66.3		40.3	12	47	6.6	44		1.23 × 10 ⁻³	0.31	2.40	
	40	62	66.4		45.9	16	51	6.6	48		3.01 × 10 ⁻³	0.39	3.75	
	40	62	80.2		59.7	16	51	6.6	48		3.01 × 10 ⁻³	0.46	3.76	
	40	62	65.1		44.1	16	51	6.6	48		3.01 × 10 ⁻³	0.37	3.77	
	40	62	105.4		80.4	16	51	6.6	48		3.01 × 10 ⁻³	0.58	3.79	

Note) The rigidity values (K) in the table represent spring constants each obtained from the load and the elastic deformation under an axial load representing 30% of the basic dynamic load rating (Ca).
These values do not include the rigidity of the components related to mounting the ball screw nut. Therefore, it is normally appropriate to regard roughly 80% of the rigidity value (K) in the table as the actual value.
If the axial load (Fa) is not 0.3 Ca, the rigidity value (K_v) is obtained from the following equation.

$$K_v = K \left(\frac{F_a}{0.3C_a} \right)^3$$

K: Rigidity value in the dimensional table.

Model HBN



Models HBN3210 to 3612

Model No.	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Permissible load* F _P kN	Rigidity K N/μm
						Ca kN	C _{0a} kN		
HBN 3210-5	32	10	34	26	2×2.5	102.9	191.3	31.9	1077
HBN 3610-5	36	10	38	30	2×2.5	108.2	220.4	33.5	1176
HBN 3612-5	36	12	38.4	29	2×2.5	141.1	267.7	43.7	1207
HBN 4010-7.5	40	10	42	34	3×2.5	162.6	336	50.4	1910
HBN 4012-7.5	40	12	42.4	33	3×2.5	212.4	441.6	65.8	1922
HBN 5010-7.5	50	10	52	44	3×2.5	179.1	462.7	55.5	2279
HBN 5012-7.5	50	12	52.4	43	3×2.5	235.7	572.2	73.1	2345
HBN 5016-7.5	50	16	53	39.6	3×2.5	379.6	820.9	117.7	2392
HBN 6316-7.5	63	16	66	52.6	3×2.5	427.1	1043.8	132.4	2898
HBN 6316-10.5	63	16	66	52.6	3×3.5	577.1	1461.3	178.9	4029
HBN 6320-7.5	63	20	66.5	49.6	3×2.5	578.8	1283.1	179.4	3030

Note) The permissible load F_P* indicates the maxim axial load that the Ball Screw can receive.

This model is capable of achieving a longer service life than the conventional Ball Screw under a high load.

Axial Clearance

Unit: mm

Clearance symbol	G2
Axial Clearance	0 to 0.02

Model number coding

HBN3210-5 RR G2 +1200L C7

Model number Seal symbol (*1)

Accuracy symbol (*2)

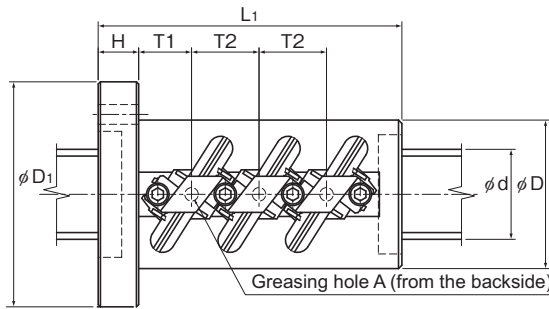
Overall screw shaft length (in mm)

Symbol for clearance in the axial direction

(For the axial clearance, this model has clearance G2 as standard.)

Other clearance is also available at your request. Contact THK for details.)

(*1) See **A15-352**. (*2) See **A15-12**.



Models HBN4010 to 6320

Unit: mm

	Nut dimensions											Screw shaft inertial moment/mm ² kg·cm ² /mm	Nut mass kg	Shaft mass kg/m	
	Outer diameter D	Flange diameter D ₁	Overall length L ₁	H	PCD	d ₁	T1	T2	U _{MAX}	V _{MAX}	R _{MAX}				Greasing hole A
	58	85	98	15	71	6.6	22	30	43	46	43.5	M6	8.08 × 10 ⁻³	1.8	5.26
	62	89	98	15	75	6.6	22	30	45	50	46	M6	1.29 × 10 ⁻²	1.9	6.79
	66	100	116	18	82	9	26	36	49	52.5	50	M6	1.29 × 10 ⁻²	2.8	6.55
	66	100	135	18	82	9	23.5	30	46.5	54	48	M6	1.97 × 10 ⁻²	2.9	8.52
	70	104	152	18	86	9	26	36	51	56	52	M6	1.97 × 10 ⁻²	3.7	5.24
	78	112	135	18	94	9	23.5	30	52	63.5	54.5	M6	4.82 × 10 ⁻²	3.7	13.7
	80	114	152	18	96	9	26	36	56	66	58.5	M6	4.82 × 10 ⁻²	4.4	13.34
	95	135	211	28	113	9	37.5	48	64.5	69.6	65.2	PT 1/8	4.82 × 10 ⁻²	10.0	12.1
	105	139	211	28	122	9	37.5	48	70.5	82	72.5	PT 1/8	1.21 × 10 ⁻¹	10.6	20.2
	105	139	259	28	122	9	53.5	64	70.5	82	73	PT 1/8	1.21 × 10 ⁻¹	17.4	20.2
	117	157	252	32	137	11	44	60	79	86.5	80	PT 1/8	1.21 × 10 ⁻¹	17.2	19.13

Note) The rigidity values in the table represent the spring constants obtained from the load and the elastic deformation when providing an axial load, 30% of the basic dynamic load rating (Ca).

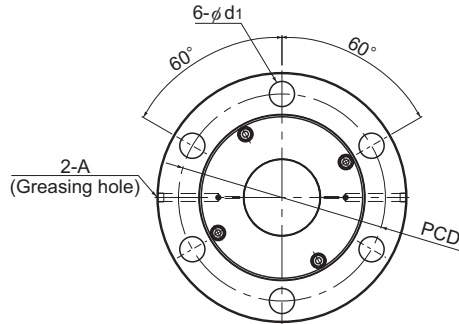
These values do not include the rigidity of the components related to mounting the ball screw nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the axial load (Fa) is not 0.3 Ca, the rigidity value (K_n) is obtained from the following equation.

$$K_n = K \left(\frac{Fa}{0.3Ca} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model SBKH



Model No.	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Screw shaft Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Permissible load* Fp kN	Rigidity K N/μm
						Ca kN	C _{0a} kN		
SBKH 6332-3.8	63	32	66.5	49.8	1×3.8	304	631	88	1435
SBKH 6340-7.6	63	40	66.0	52.6	2×3.8	413	967	135	2723
SBKH 8050-7.6	80	50	84.0	63.6	2×3.8	777	1788	250	3402
SBKH 8060-7.6	80	60	84.0	63.6	2×3.8	780	1824	255	3452
SBKH 10050-7.6	100	50	104.0	83.6	2×3.8	876	2401	336	4098
SBKH 10060-7.6	100	60	104.0	83.6	2×3.8	880	2294	321	4149
SBKH 12060-7.6	120	60	124.0	103.6	2×3.8	962	2941	411	4809

Note) The permissible load F_p^* indicates the maximum axial load that the Ball Screw can receive.
If desiring both ends of the screw shaft to be larger than the screw shaft diameter, contact THK.

Axial Clearance

Unit: mm

Clearance symbol	G1	G2	G3
Axial Clearance	0 to 0.01	0 to 0.02	0 to 0.05

Model number coding

SBKH8050-7.6 RR G2 +1200L C7

Model Number

Accuracy symbol (*2)

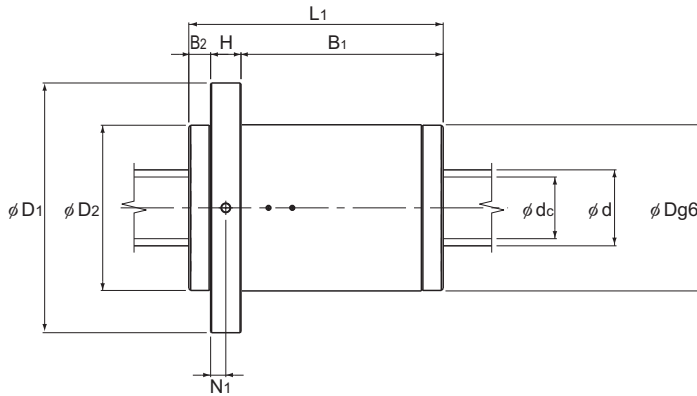
Overall screw shaft length (in mm)

Axial clearance symbol
(clearance in the axial direction must be: G1, G2 or G3.
Clearance G0 and GT are not supported.)

Seal symbol(*1)

(RR: labyrinth seal on both sides)

(*1) See **A15-352**. (*2) See **A15-12**.



Unit: mm

	Nut dimensions											Screw shaft inertial moment/mm kg·cm ² /mm	Nut mass kg	Shaft mass*1 kg/m
	Outer diameter D	Flange diameter D ₁	Cap diameter D ₂	Overall length L ₁	H	B ₁	B ₂	PCD	d _i	N ₁	Greasing hole A			
	140	205	(140)	190	28	143	(19)	173	22	14	PT1/8	1.21 × 10 ⁻¹	17.2	21.0
	127	191	(127)	209	30	163	(16)	159	22	15	PT1/8	1.21 × 10 ⁻¹	15.5	21.0
	175	253	(175)	268	32	213	(23)	214	26	16	PT1/8	3.16 × 10 ⁻¹	36.9	31.3
	175	253	(175)	306	40	243	(23)	214	26	20	PT1/8	3.16 × 10 ⁻¹	43.5	32.5
	195	273	(195)	269	40	206	(23)	234	26	20	PT1/8	7.71 × 10 ⁻¹	44.5	51.3
	195	273	(195)	307	40	244	(23)	234	26	20	PT1/8	7.71 × 10 ⁻¹	50.5	52.9
	210	288	(210)	308	45	240	(23)	249	26	22.5	PT1/8	1.60	53.7	78.1

Note1) There will be no dimensional change after the seal is attached.

Note2) The rigidity values (K) in the table represent spring constants each obtained from the load and the elastic deformation under an axial load representing 30% of the basic dynamic load rating (Ca).

These values do not include the rigidity of the components related to mounting the ball screw nut. Therefore, it is normally appropriate to regard roughly 80% of the rigidity value (K) in the table as the actual value.

If the axial load (Fa) is not 0.3 Ca, the rigidity value (K_N) is obtained from the following equation.

$$K_N = K \left(\frac{F_a}{0.3C_a} \right)^3$$

K: Rigidity value in the dimensional table.

DIN Standard compliant Ball Screw (DIN69051)

Models EBA, EBB, EBC, EPA, EPB and EPC

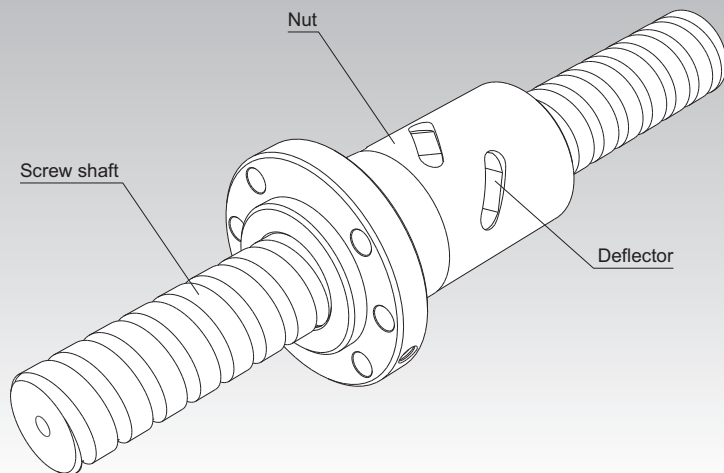


Fig.1 DIN Standard (DIN69051) Compliant Precision Ball Screw

Point of Selection **A15-8**

Options **A15-352**

Model No. **A15-369**

Precautions on Use **A15-374**

Accessories for Lubrication **A24-1**

Mounting Procedure and Maintenance **B15-104**

Lead Angle Accuracy **A15-11**

Accuracy of the Mounting Surface **A15-14**

Axial Clearance **A15-19**

Maximum Length of the Screw Shaft **A15-24**

DN Value **A15-33**

Support Unit **A15-316**

Recommended Shapes of Shaft Ends **A15-324**

Dimensions of Each Model with an Option Attached **A15-360**

DIN Standard compliant Ball Screw (DIN69051)

Structure and Features

In the DIN standard compliant Ball Screw, balls under a load roll in the raceway cut between the screw shaft and the nut while receiving the axial load, travel along the groove of a deflector embedded inside the nut to the adjacent raceway, and then circulate back to the loaded area. Thus, the balls perform infinite rolling motion.

Two types of nuts are available: model EB of oversized-ball preload type or non-preloaded type, and model EP of offset preloaded type.

[Compact]

This Ball Screw is compactly built. Because of an internal circulation system using deflectors, the outer diameter of the nut is 70 to 80% of the conventional double nut and the overall nut length is only 60 to 80% of the return pipe nut.

[Compliant with a DIN standard]

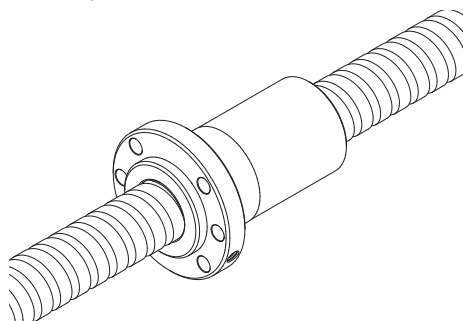
The nut flange shape, mounting holes and rated load are compliant with DIN69051.

Types and Features

Models EPA/EBA

[Flange shape: round-flange type]

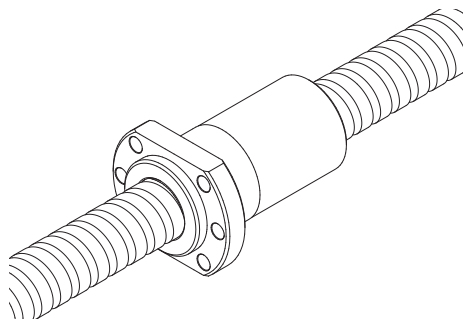
Specification Table⇒ [A15-94](#)/[A15-88](#)



Models EPB/EBB

[Flange shape: type with two cut faces]

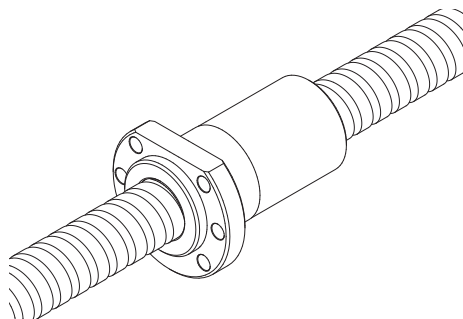
Specification Table⇒ [A15-96](#)/[A15-90](#)



Models EPC/EBC

[Flange shape: type with one cut face]

Specification Table⇒ [A15-98](#)/[A15-92](#)



DIN Standard compliant Ball Screw (DIN69051)

Accuracy Standards

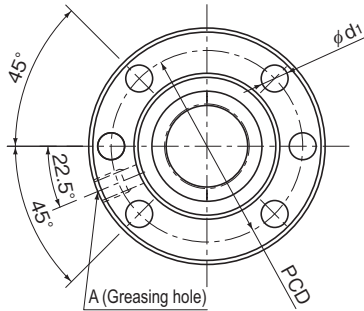
The accuracy of DIN standard compliant Ball Screw is controlled in accordance with ISO standard (ISO3408-3) and JIS standard (JIS B1192-1997). C, Cp and Ct grades are defined for this Ball Screw series.

Grade C (see page **A15-11**)

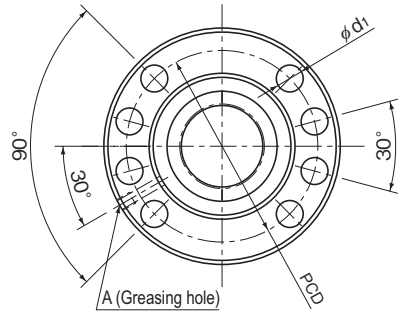
Grade Cp, Ct (see ISO 3408-3)

Grade	0	1	2	3	5	7
C	○	○	○	○	○	○
Cp	—	—	—	○	○	—
Ct	—	—	—	○	○	○

Model EBA (Dimensional Table of Model EBA Oversized-ball preload type or non-preloaded type)



Hole type 1
(Model EBA1605 to 3210)



Hole type 2
(Model EBA4005 to 6320)

Model No.	Screw shaft outer diameter d	Lead ℓ	Ball diameter Da	Ball center-to-center diameter dp	Thread minor diameter ds	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm
							Ca* kN	Ca kN	
EBA 1605-4	16	5	3.175	16.75	13.1	4×1	11.9	17.4	210
EBA 2005-3	20	5	3.175	20.75	17.1	3×1	10.6	17.3	200
EBA 2505-3	25	5	3.175	25.75	22.1	3×1	12.1	22.6	250
EBA 2510-3	25	10	3.969	26	21.6	3×1	15.9	27	250
EBA 2510-4	25	10	3.969	26	21.6	4×1	20.9	37.6	330
EBA 3205-3	32	5	3.175	32.75	29.2	3×1	13.9	30.2	300
EBA 3205-4	32	5	3.175	32.75	29.2	4×1	17.8	40.3	400
EBA 3205-6	32	5	3.175	32.75	29.2	6×1	25.1	60.4	600
EBA 3210-3	32	10	6.35	33.75	26.4	3×1	32.1	52.2	300
EBA 3210-4	32	10	6.35	33.75	26.4	4×1	41.3	69.7	390
EBA 4005-6	40	5	3.175	40.75	37.1	6×1	26.6	77.5	716
EBA 4010-3	40	10	6.35	41.75	34.4	3×1	37.3	69.3	380
EBA 4010-4	40	10	6.35	41.75	34.4	4×1	47.6	92.4	500
EBA 4020-3	40	20	6.35	41.75	34.7	3×1	36.8	69.3	750
EBA 5010-4	50	10	6.35	51.75	44.4	4×1	54.3	120.5	610
EBA 5020-3	50	20	7.938	52.25	43.6	3×1	55.3	108.8	470
EBA 6310-6	63	10	6.35	64.75	57.7	6×1	87.9	242.1	1140
EBA 6320-3	63	20	9.525	65.7	56.0	3×1	104.4	229.3	1470

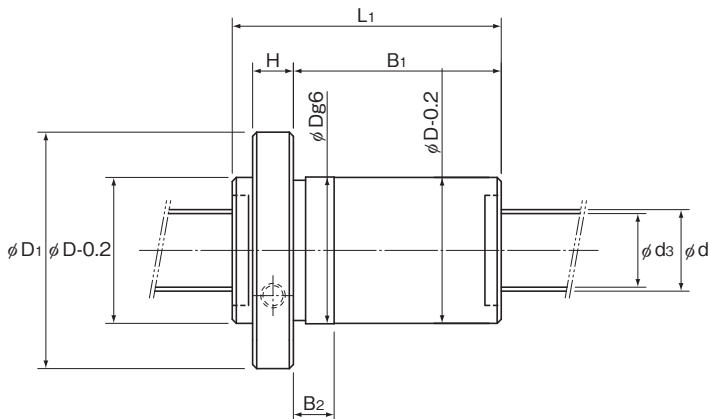
Note) ★ Basic Dynamic Load Rating(Ca) of the accuracy C7 and Ct7 is 0.9Ca.

Model number coding

EB A 20 05 -6 QZ RR G0 +650L C3

Shaft diameter: A
 Number of turns: 20
 Lead: 05
 Clearance symbol: -6
 Seal symbol (RR : Labyrinth seal, WW : Wiper ring.): QZ
 Accuracy symbol: RR
 Ball screw shaft length (mm): G0
 With QZ Lubricator (no symbol without QZ Lubricator): +650L
 Flange shape: C3
 Nut type: oversized-ball preload type or non-preloaded type

DIN Standard compliant Ball Screw (DIN69051)



Unit: mm

Nut dimensions											
Outer diameter	Flange diameter	Overall length					Hole type	PCD	d ₁	Tw	Greasing hole
D	D ₁	L ₁	H	B ₁	B ₂						A
28	48	55	10	40	12		1	38	5.5	20	M6×1
36	58	50	10	35	12		1	47	6.6	22	M6×1
40	62	50	10	35	12		1	51	6.6	24	M6×1
40	62	80	10	65	18		1	51	6.6	24	M6×1
40	62	85	10	70	18		1	51	6.6	24	M6×1
50	80	52	12	35	12		1	65	9	31	M6×1
50	80	57	12	40	12		1	65	9	31	M6×1
50	80	67	12	50	12		1	65	9	31	M6×1
50	80	82	12	65	18		1	65	9	31	M6×1
50	80	94	12	77	18		1	65	9	31	M6×1
63	93	70	14	51	12		2	78	9	35	M8×1
63	93	84	14	65	18		2	78	9	35	M8×1
63	93	94	14	75	18		2	78	9	35	M8×1
63	93	129	14	105	25		2	78	9	35	M8×1
75	110	96	16	75	18		2	93	11	42.5	M8×1
75	110	134	16	108	27		2	93	11	42.5	M8×1
90	125	119	18	96	18		2	108	11	47.5	M8×1
95	135	136	18	108	27		2	115	13.5	50	M8×1

Note) The rigidity values in the table represent spring constants each obtained from the load and the Elastic Deformation finish when providing an axial load 24% of the basic dynamic load rating (Ca).

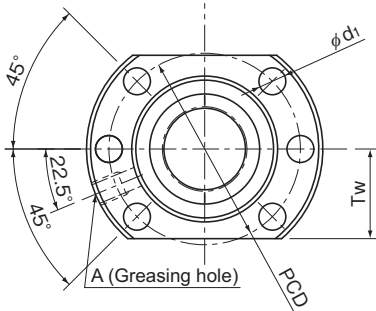
These values do not include the rigidity of the components related to mounting the nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the axial load (Fa) is not 0.24 Ca, the rigidity value (K_N) is obtained from the following equation.

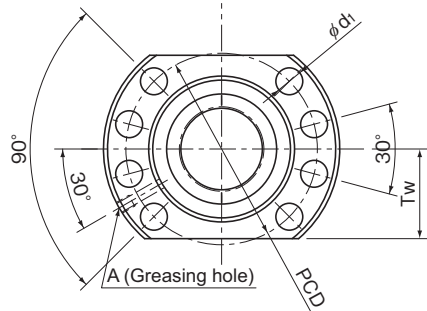
$$K_N = K \left(\frac{F_a}{0.24 C_a} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model EBB (Dimensional Table of Model EBB Oversized-ball preload type or non-preloaded type)



Hole type 1
(Model EBB1605 to 3210)



Hole type 2
(Model EBB4005 to 6320)

Model No.	Screw shaft outer diameter d	Lead l	Ball diameter Da	Ball center-to-center diameter dp	Thread minor diameter ds	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm
							Ca*	Ca	
							kN	kN	
EBB 1605-4	16	5	3.175	16.75	13.1	4×1	11.9	17.4	210
EBB 2005-3	20	5	3.175	20.75	17.1	3×1	10.6	17.3	200
EBB 2505-3	25	5	3.175	25.75	22.1	3×1	12.1	22.6	250
EBB 2510-3	25	10	3.969	26	21.6	3×1	15.9	27	250
EBB 2510-4	25	10	3.969	26	21.6	4×1	20.9	37.6	330
EBB 3205-3	32	5	3.175	32.75	29.2	3×1	13.9	30.2	300
EBB 3205-4	32	5	3.175	32.75	29.2	4×1	17.8	40.3	400
EBB 3205-6	32	5	3.175	32.75	29.2	6×1	25.1	60.4	600
EBB 3210-3	32	10	6.35	33.75	26.4	3×1	32.1	52.2	300
EBB 3210-4	32	10	6.35	33.75	26.4	4×1	41.3	69.7	390
EBB 4005-6	40	5	3.175	40.75	37.1	6×1	26.6	77.5	716
EBB 4010-3	40	10	6.35	41.75	34.4	3×1	37.3	69.3	380
EBB 4010-4	40	10	6.35	41.75	34.4	4×1	47.6	92.4	500
EBB 4020-3	40	20	6.35	41.75	34.7	3×1	36.8	69.3	750
EBB 5010-4	50	10	6.35	51.75	44.4	4×1	54.3	120.5	610
EBB 5020-3	50	20	7.938	52.25	43.6	3×1	55.3	108.8	470
EBB 6310-6	63	10	6.35	64.75	57.7	6×1	87.9	242.1	1140
EBB 6320-3	63	20	9.525	65.7	56.0	3×1	104.4	229.3	1470

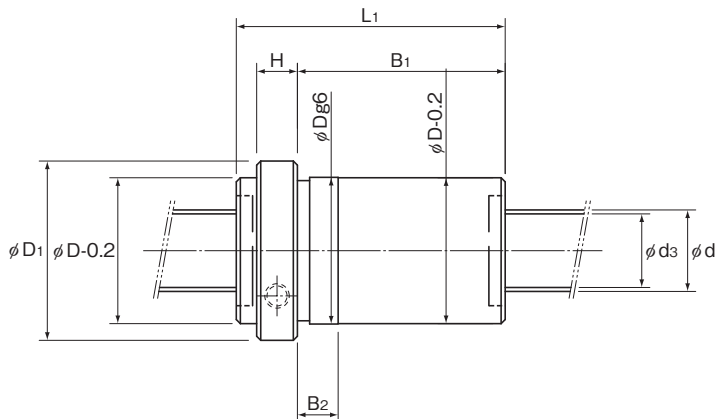
Note) ★ Basic Dynamic Load Rating(Ca) of the accuracy C7 and Ct7 is 0.9Ca.

Model number coding

EB B 20 05 -6 QZ RR G0 +650L C3

Shaft diameter: 20
 Number of turns: 05
 Lead: 6
 Clearance symbol: RR
 Accuracy symbol: G0
 Ball screw shaft length (mm): +650L
 Seal symbol (RR : Labyrinth seal, WW : Wiper ring.): RR
 With QZ Lubricator (no symbol without QZ Lubricator)
 Flange shape: A: round; B: double chamfered; C: single chamfered
 Nut type: oversized-ball preload type or non-preloaded type

DIN Standard compliant Ball Screw (DIN69051)



Unit: mm

Nut dimensions											
Outer diameter	Flange diameter	Overall length					Hole type	PCD	d ₁	Tw	Greasing hole
D	D ₁	L ₁	H	B ₁	B ₂						A
28	48	55	10	40	12		1	38	5.5	20	M6×1
36	58	50	10	35	12		1	47	6.6	22	M6×1
40	62	50	10	35	12		1	51	6.6	24	M6×1
40	62	80	10	65	18		1	51	6.6	24	M6×1
40	62	85	10	70	18		1	51	6.6	24	M6×1
50	80	52	12	35	12		1	65	9	31	M6×1
50	80	57	12	40	12		1	65	9	31	M6×1
50	80	67	12	50	12		1	65	9	31	M6×1
50	80	82	12	65	18		1	65	9	31	M6×1
50	80	94	12	77	18		1	65	9	31	M6×1
63	93	70	14	51	12		2	78	9	35	M8×1
63	93	84	14	65	18		2	78	9	35	M8×1
63	93	94	14	75	18		2	78	9	35	M8×1
63	93	129	14	105	25		2	78	9	35	M8×1
75	110	96	16	75	18		2	93	11	42.5	M8×1
75	110	134	16	108	27		2	93	11	42.5	M8×1
90	125	119	18	96	18		2	108	11	47.5	M8×1
95	135	136	18	108	27		2	115	13.5	50	M8×1

Note) The rigidity values in the table represent spring constants each obtained from the load and the Elastic Deformation finish when providing an axial load 24% of the basic dynamic load rating (Ca).

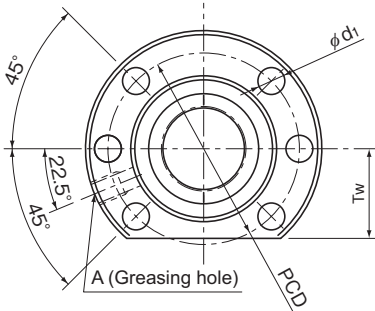
These values do not include the rigidity of the components related to mounting the nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the axial load (Fa) is not 0.24 Ca, the rigidity value (K_N) is obtained from the following equation.

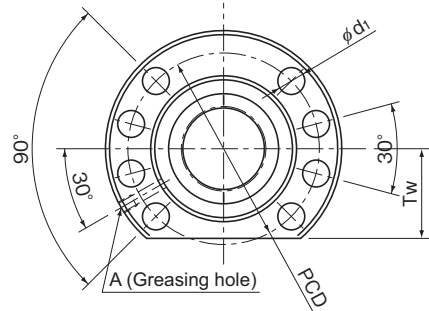
$$K_N = K \left(\frac{F_a}{0.24 C_a} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model EBC (Dimensional Table of Model EBC Oversized-ball preload type or non-preloaded type)



Hole type 1
(Model EBC1605 to 3210)



Hole type 2
(Model EBC4005 to 6320)

Model No.	Screw shaft outer diameter d	Lead ℓ	Ball diameter Da	Ball center-to-center diameter dp	Thread minor diameter ds	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm
							Ca*	Ca	
							kN	kN	
EBC 1605-4	16	5	3.175	16.75	13.1	4×1	11.9	17.4	210
EBC 2005-3	20	5	3.175	20.75	17.1	3×1	10.6	17.3	200
EBC 2505-3	25	5	3.175	25.75	22.1	3×1	12.1	22.6	250
EBC 2510-3	25	10	3.969	26	21.6	3×1	15.9	27	250
EBC 2510-4	25	10	3.969	26	21.6	4×1	20.9	37.6	330
EBC 3205-3	32	5	3.175	32.75	29.2	3×1	13.9	30.2	300
EBC 3205-4	32	5	3.175	32.75	29.2	4×1	17.8	40.3	400
EBC 3205-6	32	5	3.175	32.75	29.2	6×1	25.1	60.4	600
EBC 3210-3	32	10	6.35	33.75	26.4	3×1	32.1	52.2	300
EBC 3210-4	32	10	6.35	33.75	26.4	4×1	41.3	69.7	390
EBC 4005-6	40	5	3.175	40.75	37.1	6×1	26.6	77.5	716
EBC 4010-3	40	10	6.35	41.75	34.4	3×1	37.3	69.3	380
EBC 4010-4	40	10	6.35	41.75	34.4	4×1	47.6	92.4	500
EBC 4020-3	40	20	6.35	41.75	34.7	3×1	36.8	69.3	750
EBC 5010-4	50	10	6.35	51.75	44.4	4×1	54.3	120.5	610
EBC 5020-3	50	20	7.938	52.25	43.6	3×1	55.3	108.8	470
EBC 6310-6	63	10	6.35	64.75	57.7	6×1	87.9	242.1	1140
EBC 6320-3	63	20	9.525	65.7	56.0	3×1	104.4	229.3	1470

Note) ★ Basic Dynamic Load Rating(Ca) of the accuracy C7 and Ct7 is 0.9Ca.

Model number coding

EB C 20 05 -6 QZ RR G0 +650L C3

Shaft diameter Number of turns Clearance symbol Accuracy symbol

Lead

Ball screw shaft length (mm)

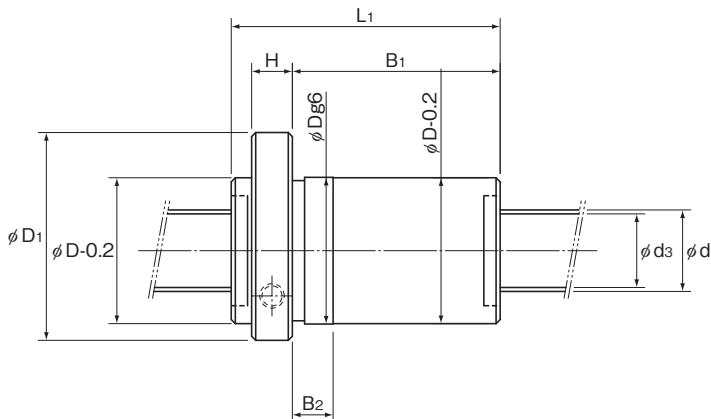
Seal symbol (RR : Labyrinth seal, WW : Wiper ring.)

With QZ Lubricator (no symbol without QZ Lubricator)

Flange shape: A: round; B: double chamfered; C: single chamfered

Nut type: oversized-ball preload type or non-preloaded type

DIN Standard compliant Ball Screw (DIN69051)



Unit: mm

Nut dimensions											
Outer diameter	Flange diameter	Overall length					Hole type	PCD	d ₁	Tw	Greasing hole
D	D ₁	L ₁	H	B ₁	B ₂						A
28	48	55	10	40	12		1	38	5.5	20	M6×1
36	58	50	10	35	12		1	47	6.6	22	M6×1
40	62	50	10	35	12		1	51	6.6	24	M6×1
40	62	80	10	65	18		1	51	6.6	24	M6×1
40	62	85	10	70	18		1	51	6.6	24	M6×1
50	80	52	12	35	12		1	65	9	31	M6×1
50	80	57	12	40	12		1	65	9	31	M6×1
50	80	67	12	50	12		1	65	9	31	M6×1
50	80	82	12	65	18		1	65	9	31	M6×1
50	80	94	12	77	18		1	65	9	31	M6×1
63	93	70	14	51	12		2	78	9	35	M8×1
63	93	84	14	65	18		2	78	9	35	M8×1
63	93	94	14	75	18		2	78	9	35	M8×1
63	93	129	14	105	25		2	78	9	35	M8×1
75	110	96	16	75	18		2	93	11	42.5	M8×1
75	110	134	16	108	27		2	93	11	42.5	M8×1
90	125	119	18	96	18		2	108	11	47.5	M8×1
95	135	136	18	108	27		2	115	13.5	50	M8×1

Note) The rigidity values in the table represent spring constants each obtained from the load and the Elastic Deformation finish when providing an axial load 24% of the basic dynamic load rating (Ca).

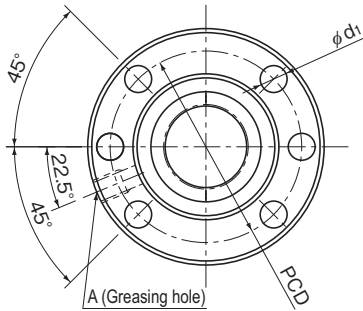
These values do not include the rigidity of the components related to mounting the nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the axial load (Fa) is not 0.24 Ca, the rigidity value (K_w) is obtained from the following equation.

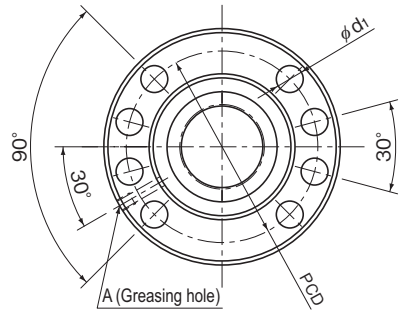
$$K_w = K \left(\frac{F_a}{0.24 C_a} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model EPA (Offset Preload Type)



Hole type 1
(Model EPA1605 to 3210)



Hole type 2
(Model EPA4005 to 6310)

Model No.	Screw shaft outer diameter d	Lead ℓ	Ball diameter Da	Ball center-to-center diameter dp	Thread minor diameter d _s	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm
							Ca* kN	C _a kN	
EPA 1605-6	16	5	3.175	16.75	13.1	3×1	9.3	13.1	317
EPA 2005-6	20	5	3.175	20.75	17.1	3×1	10.6	17.3	310
EPA 2505-6	25	5	3.175	25.75	22.1	3×1	12.1	22.6	490
EPA 2510-4	25	10	3.969	26	21.6	2×1	11.3	18	330
EPA 3205-6	32	5	3.175	32.75	29.2	3×1	13.9	30.2	620
EPA 3205-8	32	5	3.175	32.75	29.2	4×1	17.8	40.3	810
EPA 3210-6	32	10	6.35	33.75	26.4	3×1	32.1	52.2	600
EPA 4005-6	40	5	3.175	40.75	37.1	3×1	15.4	38.8	298
EPA 4010-6	40	10	6.35	41.75	34.7	3×1	37.3	69.3	750
EPA 4010-8	40	10	6.35	41.75	34.7	4×1	47.6	92.4	1000
EPA 5010-8	50	10	6.35	51.75	44.4	4×1	54.3	120.5	1230
EPA 6310-8	63	10	6.35	64.75	57.7	4×1	61.9	160.7	1550

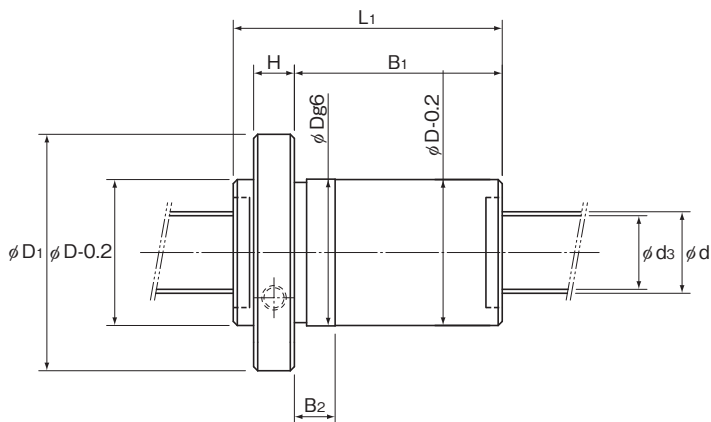
Note) ★ Basic Dynamic Load Rating(Ca) of the accuracy C7 and Ct7 is 0.9Ca.

Model number coding

EP A 20 05 -6 QZ RR G0 +650L C3

EP: Flange shape: A: round; B: double chamfered; C: single chamfered
 A: Shaft diameter
 20: Number of turns
 05: Lead
 -6: Ball screw shaft length (mm)
 QZ: Seal symbol (RR: Labyrinth seal, WW: Wiper ring.)
 RR: With QZ Lubricator (no symbol without QZ Lubricator)
 G0: Clearance symbol
 +650L: Accuracy symbol
 C3: Nut type: offset preloaded type

DIN Standard compliant Ball Screw (DIN69051)



Unit: mm

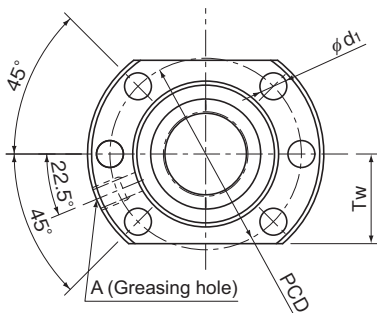
Nut dimensions											
Outer diameter	Flange diameter	Overall length	H	B ₁	B ₂	Hole type	PCD	d ₁	Tw	Greasing hole	A
D	D ₁	L ₁									
28	48	65	10	50	12	1	38	5.5	20	M6×1	
36	58	66	10	51	12	1	47	6.6	22	M6×1	
40	62	66	10	51	12	1	51	6.6	24	M6×1	
40	62	85	10	70	18	1	51	6.6	24	M6×1	
50	80	67	12	50	12	1	65	9	31	M6×1	
50	80	78	12	61	12	1	65	9	31	M6×1	
50	80	112	12	95	18	1	65	9	31	M6×1	
63	93	70	14	51	12	2	78	9	35	M8×1	
63	93	114	14	95	18	2	78	9	35	M8×1	
63	93	138	14	119	18	2	78	9	35	M8×1	
75	110	140	16	119	18	2	93	11	42.5	M8×1	
90	125	142	18	119	18	2	108	11	47.5	M8×1	

Note) The rigidity values in the table represent spring constants each obtained from the load and the elastic deformation when providing a preload 8% of the basic dynamic load rating (Ca) and applying an axial load three times greater than the preload. These values do not include the rigidity of the components related to mounting the nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.
If the applied preload (Fa0) is not 0.08 Ca, the rigidity value (K_n) is obtained from the following equation.

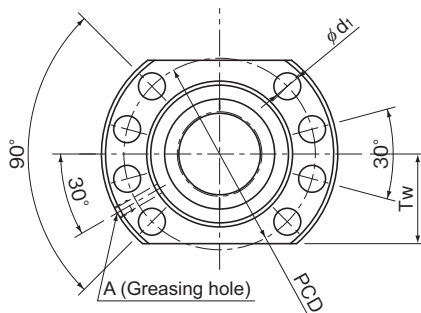
$$K_n = K \left(\frac{Fa_0}{0.08Ca} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model EPB (Offset Preload Type)



Hole type 1
(Model EPB1605 to 3210)



Hole type 2
(Model EPB4005 to 6310)

Model No.	Screw shaft outer diameter d	Lead ℓ	Ball diameter D_a	Ball center-to-center diameter d_p	Thread minor diameter d_s	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/ μ m
							Ca* kN	C _a kN	
EPB 1605-6	16	5	3.175	16.75	13.1	3×1	9.3	13.1	317
EPB 2005-6	20	5	3.175	20.75	17.1	3×1	10.6	17.3	310
EPB 2505-6	25	5	3.175	25.75	22.1	3×1	12.1	22.6	490
EPB 2510-4	25	10	3.969	26	21.6	2×1	11.3	18	330
EPB 3205-6	32	5	3.175	32.75	29.2	3×1	13.9	30.2	620
EPB 3205-8	32	5	3.175	32.75	29.2	4×1	17.8	40.3	810
EPB 3210-6	32	10	6.35	33.75	26.4	3×1	32.1	52.2	600
EPB 4005-6	40	5	3.175	40.75	37.1	3×1	15.4	38.8	298
EPB 4010-6	40	10	6.35	41.75	34.7	3×1	37.3	69.3	750
EPB 4010-8	40	10	6.35	41.75	34.7	4×1	47.6	92.4	1000
EPB 5010-8	50	10	6.35	51.75	44.4	4×1	54.3	120.5	1230
EPB 6310-8	63	10	6.35	64.75	57.7	4×1	61.9	160.7	1550

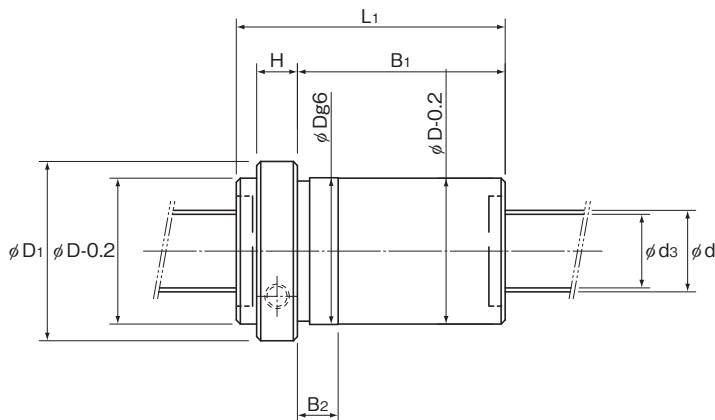
Note) ★ Basic Dynamic Load Rating(Ca) of the accuracy C7 and Ct7 is 0.9Ca.

Model number coding

EP B 20 05 -6 QZ RR G0 +650L C3

EP: Flange shape: A: round; B: double chamfered; C: single chamfered
 B: Shaft diameter
 20: Lead
 05: Number of turns
 -6: Ball screw shaft length (mm)
 QZ: Seal symbol (RR: Labyrinth seal, WW: Wiper ring.)
 RR: With QZ Lubricator (no symbol without QZ Lubricator)
 G0: Clearance symbol
 +650L: Accuracy symbol
 C3: Nut type: offset preloaded type

DIN Standard compliant Ball Screw (DIN69051)



Unit: mm

Nut dimensions											
Outer diameter	Flange diameter	Overall length	H	B ₁	B ₂	Hole type	PCD	d ₁	Tw	Greasing hole	A
D	D ₁	L ₁									
28	48	65	10	50	12	1	38	5.5	20	M6×1	
36	58	66	10	51	12	1	47	6.6	22	M6×1	
40	62	66	10	51	12	1	51	6.6	24	M6×1	
40	62	85	10	70	18	1	51	6.6	24	M6×1	
50	80	67	12	50	12	1	65	9	31	M6×1	
50	80	78	12	61	12	1	65	9	31	M6×1	
50	80	112	12	95	18	1	65	9	31	M6×1	
63	93	70	14	51	12	2	78	9	35	M8×1	
63	93	114	14	95	18	2	78	9	35	M8×1	
63	93	138	14	119	18	2	78	9	35	M8×1	
75	110	140	16	119	18	2	93	11	42.5	M8×1	
90	125	142	18	119	18	2	108	11	47.5	M8×1	

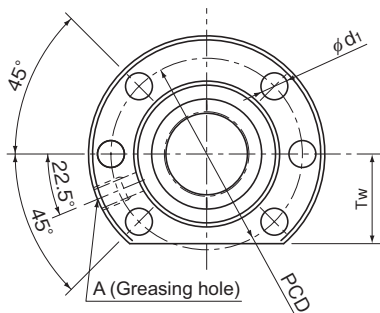
Note) The rigidity values in the table represent spring constants each obtained from the load and the elastic deformation when providing a preload 8% of the basic dynamic load rating (Ca) and applying an axial load three times greater than the preload. These values do not include the rigidity of the components related to mounting the nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the applied preload (Fa0) is not 0.08 Ca, the rigidity value (K_n) is obtained from the following equation.

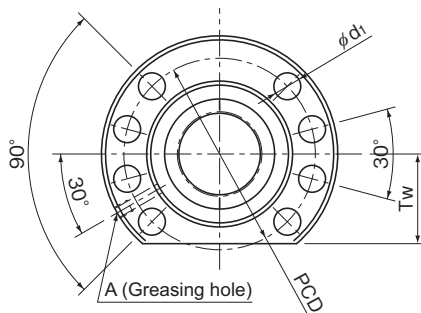
$$K_n = K \left(\frac{Fa0}{0.08Ca} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model EPC (Offset Preload Type)



Hole type 1
(Model EPC1605 to 3210)



Hole type 2
(Model EPC4005 to 6310)

Model No.	Screw shaft outer diameter d	Lead l	Ball diameter Da	Ball center-to-center diameter dp	Thread minor diameter ds	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/ μ m
							Ca* kN	C.a kN	
EPC 1605-6	16	5	3.175	16.75	13.1	3×1	9.3	13.1	317
EPC 2005-6	20	5	3.175	20.75	17.1	3×1	10.6	17.3	310
EPC 2505-6	25	5	3.175	25.75	22.1	3×1	12.1	22.6	490
EPC 2510-4	25	10	3.969	26	21.6	2×1	11.3	18	330
EPC 3205-6	32	5	3.175	32.75	29.2	3×1	13.9	30.2	620
EPC 3205-8	32	5	3.175	32.75	29.2	4×1	17.8	40.3	810
EPC 3210-6	32	10	6.35	33.75	26.4	3×1	32.1	52.2	600
EPC 4005-6	40	5	3.175	40.75	37.1	3×1	15.4	38.8	298
EPC 4010-6	40	10	6.35	41.75	34.7	3×1	37.3	69.3	750
EPC 4010-8	40	10	6.35	41.75	34.7	4×1	47.6	92.4	1000
EPC 5010-8	50	10	6.35	51.75	44.4	4×1	54.3	120.5	1230
EPC 6310-8	63	10	6.35	64.75	57.7	4×1	61.9	160.7	1550

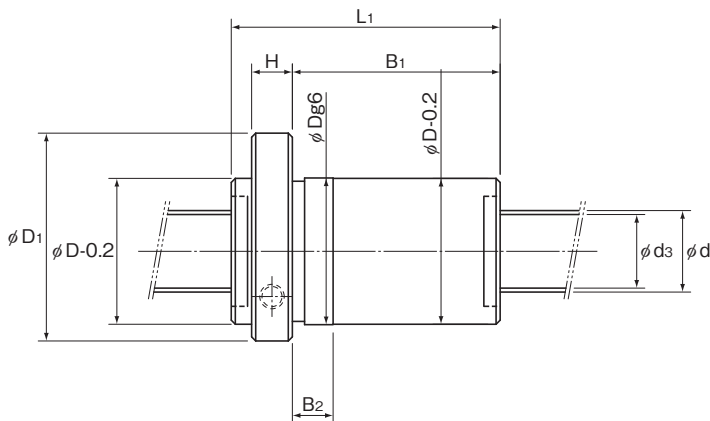
Note) ★ Basic Dynamic Load Rating(Ca) of the accuracy C7 and Ct7 is 0.9Ca.

Model number coding

EP C 20 05 -6 QZ RR G0 +650L C3

EP: Flange shape: A: round; B: double chamfered; C: single chamfered
 C: Nut type: offset preloaded type
 20: Shaft diameter
 05: Lead
 -6: Number of turns
 QZ: With QZ Lubricator (no symbol without QZ Lubricator)
 RR: Seal symbol (RR : Labyrinth seal, WW : Wiper ring.)
 G0: Clearance symbol
 +650L: Ball screw shaft length (mm)
 C3: Accuracy symbol

DIN Standard compliant Ball Screw (DIN69051)



Unit: mm

Nut dimensions											
Outer diameter	Flange diameter	Overall length	H	B ₁	B ₂	Hole type	PCD	d ₁	Tw	Greasing hole	A
D	D ₁	L ₁									
28	48	65	10	50	12	1	38	5.5	20	M6×1	
36	58	66	10	51	12	1	47	6.6	22	M6×1	
40	62	66	10	51	12	1	51	6.6	24	M6×1	
40	62	85	10	70	18	1	51	6.6	24	M6×1	
50	80	67	12	50	12	1	65	9	31	M6×1	
50	80	78	12	61	12	1	65	9	31	M6×1	
50	80	112	12	95	18	1	65	9	31	M6×1	
63	93	70	14	51	12	2	78	9	35	M8×1	
63	93	114	14	95	18	2	78	9	35	M8×1	
63	93	138	14	119	18	2	78	9	35	M8×1	
75	110	140	16	119	18	2	93	11	42.5	M8×1	
90	125	142	18	119	18	2	108	11	47.5	M8×1	

Note) The rigidity values in the table represent spring constants each obtained from the load and the elastic deformation when providing a preload 8% of the basic dynamic load rating (Ca) and applying an axial load three times greater than the preload. These values do not include the rigidity of the components related to mounting the nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

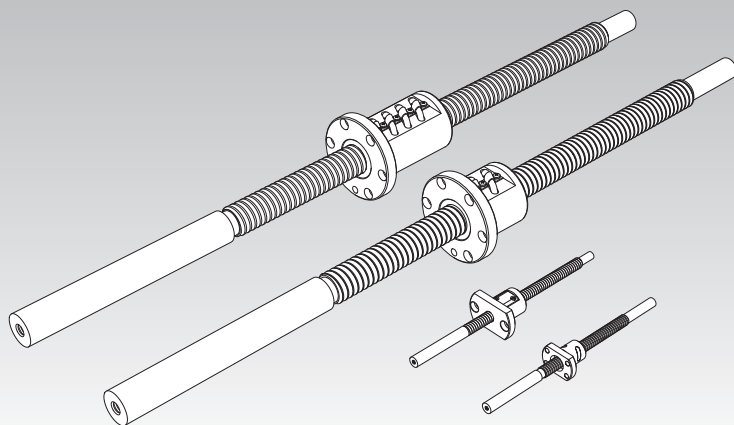
If the applied preload (Fa0) is not 0.08 Ca, the rigidity value (K_n) is obtained from the following equation.

$$K_n = K \left(\frac{Fa0}{0.08Ca} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Unfinished Shaft Ends Precision Ball Screw

Standard Stock Models BIF, MDK, MBF and BNF



Point of Selection **A15-8**

Options **A15-352**

Model No. **A15-369**

Precautions on Use **A15-374**

Accessories for Lubrication **A24-1**

Mounting Procedure and Maintenance **B15-104**

Lead Angle Accuracy **A15-11**

Accuracy of the Mounting Surface **A15-14**

Axial clearance **A15-104**

DN Value **A15-33**

Support Unit **A15-316**

Recommended Shapes of Shaft Ends **A15-324**

Structure and Features

This type of Ball Screw is mass manufactured by cutting the standardized screw shafts of Precision Ball Screws to regular lengths. Additional machining of the shaft ends can easily be performed.

To meet various intended purposes, THK offers several Ball Screw models with different types of nuts: the single-nut type (model BNF), the offset preload-nut type (model BIF) and the miniature Ball Screw (models MDK and MBF).

[Contamination Protection]

Nuts of the following model numbers are attached with a labyrinth seal.

- All variations of models BNF and BIF
- Model MDK0802/1002/1202/1402/1404/1405

When dust or other foreign material may enter the Ball Screw, it is necessary to use a contamination protection device (e.g., bellows) to completely protect the screw shaft.

[Lubrication]

The ball screw nuts are supplied with lithium soap-group grease with shipments.

(Models MDK and MBF are applied only with an anti-rust oil.)

[Additional Machining of the Shaft End]

Since only the effective thread of the screw shaft is surface treated with induction-hardening (all variations of models BNF and BIF; model MDK 1405) or carburizing (all variations of model MBF; model MDK0401 to 1404), the shaft ends can additionally be machined easily either by grinding or milling.

In addition, since both ends of the screw shaft have a center hole, they can be cylindrically ground.

Surface hardness of the effect thread : HRC58 to 64

Hardness of the screw shaft ends

All variation of models BNF and BIF; model MDK 1405 : HRC22 to 27

All variations of model MBF; model MDK0401 to 1404 : HRC35 or below

THK has standardized the shapes of the screw shaft ends in order to allow speedy estimation and manufacturing of the Ball Screws.

The shapes of shaft ends are divided into those allowing the standard support units to be used (symbols H, K and J) and those compliant with JIS B 1192-1997 (symbols A, B and C). See **A15-324** for details.

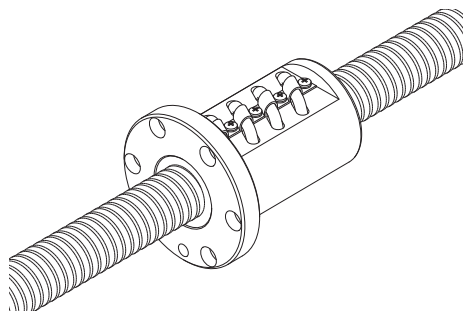
Types and Features

[Preload Type]

Model BIF

The right and left screws are provided with a phase in the middle of the ball screw nut, and an axial clearance is set at a below-zero value (under a preload). This compact model is capable of a smooth motion.

Specification Table⇒ **A15-116**

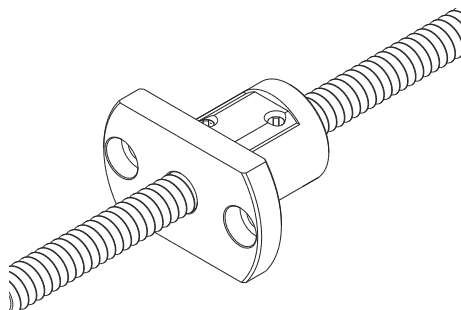


[No Preload Type]

Models MDK and MBF

A miniature type with a screw shaft diameter of $\phi 4$ to $\phi 14$ mm and a lead of 1 to 5mm.

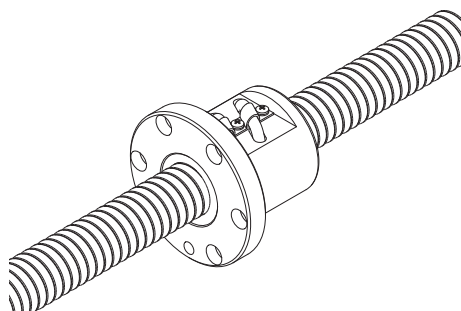
Specification Table⇒ **A15-106**





Model BNF

The simplest type with a single ball screw nut. It is designed to be mounted using the bolt holes drilled on the flange.

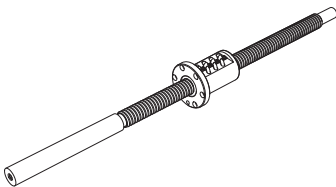
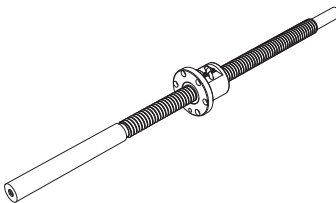
Specification Table⇒ **A15-116**



Nut Types and Axial Clearance

Screw shaft outer diameter (mm)	ϕ 4 to 14			
Nut type	Model MDK		Model MBF	
	 No preload type		 No preload type	
Accuracy grades	C3, C5	C7	C3, C5	C7
Axial clearance (mm)	0.005 or less (GT)	0.02 or less (G2)	0.005 or less (GT)	0.02 or less (G2)

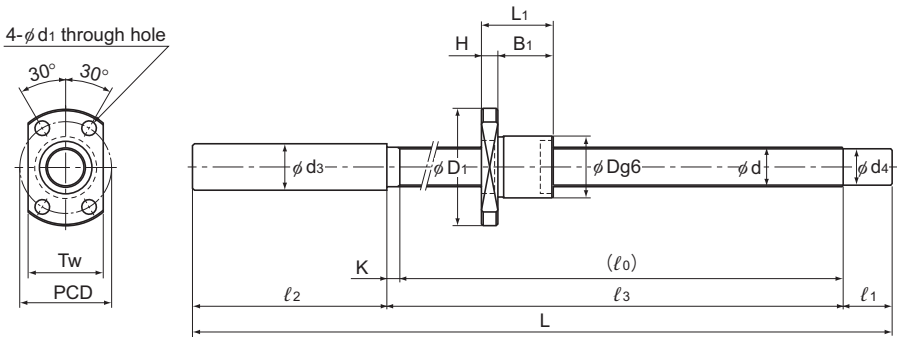
Note) The symbols in the parentheses indicate axial clearance symbols.

Screw shaft out diameter (mm)	ϕ 16 to 50			
Nut type	Model BIF		Model BNF	
	 Preload Type		 No preload type	
Accuracy grades	C5	C7	C5	C7
Axial clearance (mm)	0 or less (G0)	0 or less (G0)	0.01 or less (G1)	0.02 or less (G2)

Note1) The symbols in the parentheses indicate axial clearance symbols.

Note2) Symbol "Ca" for preload indicates the basic dynamic load rating.

Unfinished Shaft Ends



Model MDK

Model No.	Ball screw specifications							Nut			
	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Outer diameter D	Flange diameter D ₁	Overall length L ₁	Nut height H
						Ca kN	C _{0a} kN				
MDK 0401-3	4	1	4.15	3.4	3×1	0.29	0.42	9	19	13	3
MBF 0401-3.7	4	1	4.15	3.3	1×3.7	0.59	0.93	11	24	18	4
MDK 0601-3	6	1	6.2	5.3	3×1	0.54	0.94	11	23	14.5	3.5
MBF 0601-3.7	6	1	6.15	5.3	1×3.7	0.74	1.5	13	30	21	5

Note) Models MDK/MBF 0401 and 0601 are not provided with a labyrinth seal.

Model number coding

MDK0401-3 GT +95L C5 A

Model number

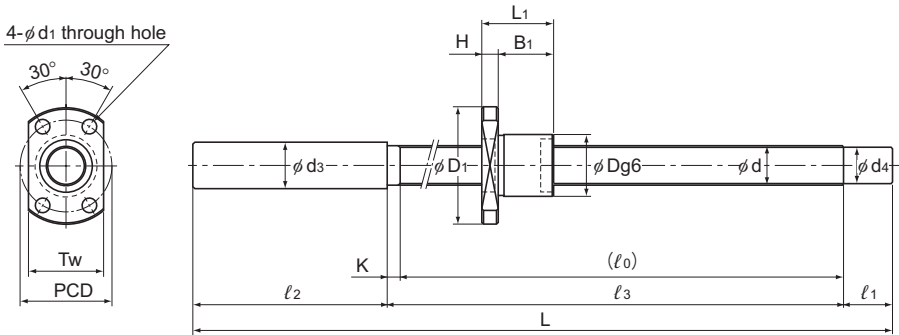
Overall screw shaft length (in mm)

Symbol for standard-stock type (A: with unfinished shaft ends)

Symbol for clearance in the axial direction (*1) Accuracy symbol (*2)

(*1) See **A15-19**. (*2) See **A15-12**.

Unfinished Shaft Ends



Model MDK

Model No.	Ball screw specifications							Nut			
	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Outer diameter D	Flange diameter D ₁	Overall length L ₁	Nut height H
						Ca kN	C _{0a} kN				
MDK 0801-3	8	1	8.2	7.3	3×1	0.64	1.4	13	26	15	4
MDK 0802-3	8	2	8.3	7	3×1	1.4	2.3	15	28	22	5
MBF 0802-3.7	8	2	8.3	6.6	1×3.7	2.5	4.2	20	40	28	6

Note) Model MDK 0801 is not provided with a labyrinth seal.

Model number coding

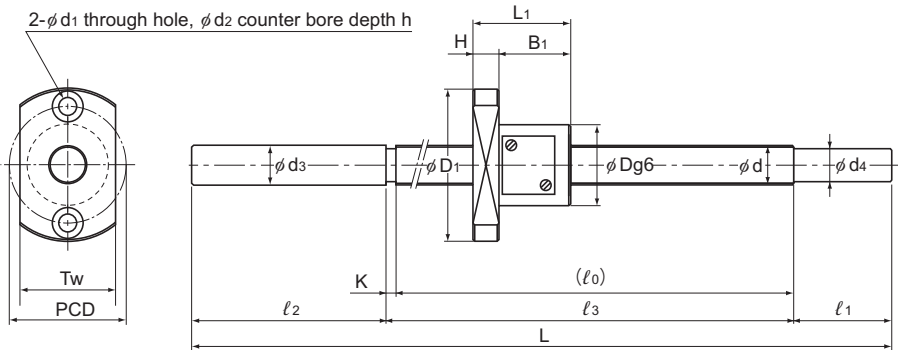
MBF0802-3.7 RR GT +218L C5 A

Model number Seal symbol (*1) Overall screw shaft length (in mm) Symbol for standard-stock type (A: with unfinished shaft ends)

Symbol for clearance in the axial direction (*2) Accuracy symbol (*3)

(*1) See **A15-352**. (*2) See **A15-19**. (*3) See **A15-12**.

Unfinished Shaft Ends Precision Ball Screw

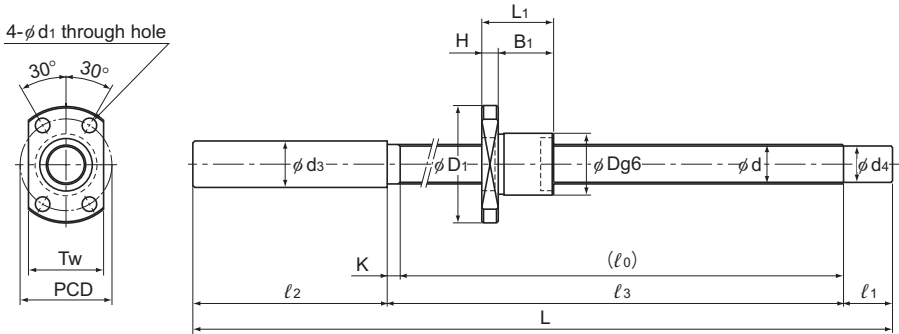


Model MBF

Unit: mm

Dimensions							Screw shaft dimensions							Nut mass kg	Shaft mass kg/m	
B ₁	PCD	d ₁	d ₂	h	T _w	Standard-stock symbol	Overall length L	l ₀	l ₁	l ₂	l ₃	d ₃	d ₄			K
11	20	3.4	—	—	17	A	130	67	15	45	70	10.2	7.3	3	0.02	0.29
							160	97	15	45	100	10.2	7.3	3	0.02	0.29
							190	127	15	45	130	10.2	7.3	3	0.02	0.29
							240	177	15	45	180	10.2	7.3	3	0.02	0.29
17	22	3.4	—	—	19	A	140	76	15	45	80	10.2	7	4	0.04	0.27
							170	106	15	45	110	10.2	7	4	0.04	0.27
							200	136	15	45	140	10.2	7	4	0.04	0.27
							250	186	15	45	190	10.2	7	4	0.04	0.27
22	30	4.5	8	4	24	A	168	85	25	55	88	8.3	6.2	3	0.1	0.19
							193	110	25	55	113	8.3	6.2	3	0.1	0.19
							218	135	25	55	138	8.3	6.2	3	0.1	0.19

Unfinished Shaft Ends



Model MDK

Model No.	Ball screw specifications							Nut			
	Screw shaft outer diameter	Lead	Ball center-to-center diameter	Thread minor diameter	No. of loaded circuits	Basic load rating		Outer diameter	Flange diameter	Overall length	Nut
						Ca	Coa				
d	Ph	dp	dc	Rows X turns	kN	kN	D	D ₁	L ₁	H	
MDK 1002-3	10	2	10.3	9	3×1	1.5	2.9	17	34	22	5
MBF 1002-3.7	10	2	10.3	8.6	1×3.7	2.8	5.3	23	43	28	6
MDK 1202-3	12	2	12.3	11	3×1	1.7	3.6	19	36	22	5
MBF 1202-3.7	12	2	12.3	10.6	1×3.7	3	6.5	25	47	30	8

Model number coding

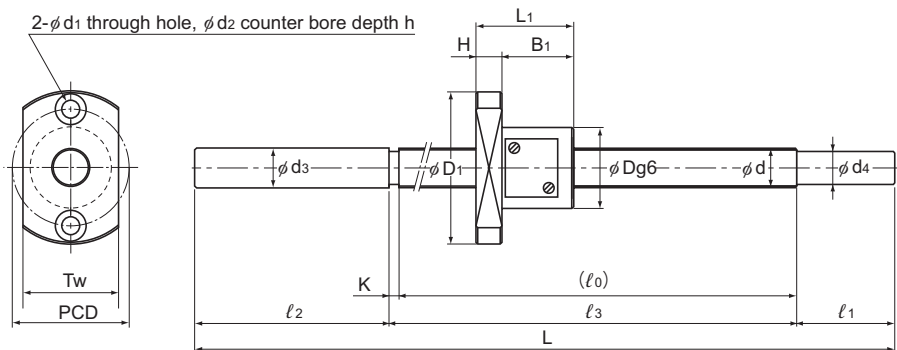
MDK1202-3 RR GT +165L C5 A

Model number Seal symbol (*1) Overall screw shaft length (in mm) Symbol for standard-stock type (A: with unfinished shaft ends)

Symbol for clearance in the axial direction (*2) Accuracy symbol (*3)

(*1) See **A15-352**. (*2) See **A15-19**. (*3) See **A15-12**.

Unfinished Shaft Ends Precision Ball Screw



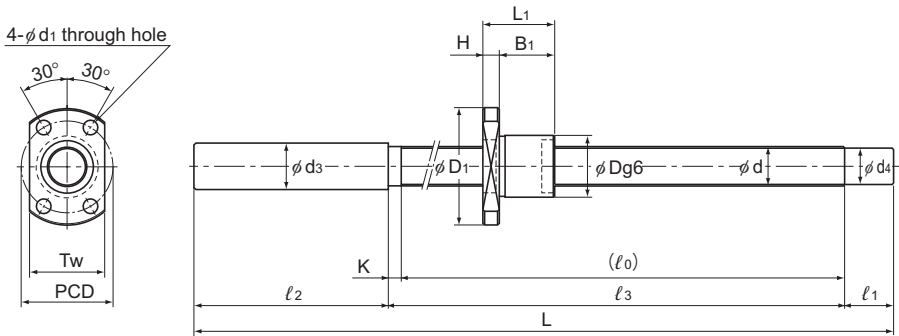
Model MBF

Unit: mm

Dimensions							Screw shaft dimensions							Nut mass kg	Shaft mass kg/m	
B ₁	PCD	d ₁	d ₂	h	Tw	Standard-stock symbol	Overall length L	l ₀	l ₁	l ₂	l ₃	d ₃	d ₄			K
17	26	4.5	—	—	21	A	160	86	15	55	90	12.2	9	4	0.05	0.47
							210	136	15	55	140	12.2	9	4	0.05	0.47
							260	186	15	55	190	12.2	9	4	0.05	0.47
							310	236	15	55	240	12.2	9	4	0.05	0.47
22	33	4.5	8	4	27	A	183	95	25	60	98	10.3	8.2	3	0.11	0.36
							223	135	25	60	138	10.3	8.2	3	0.11	0.36
							273	185	25	60	188	10.3	8.2	3	0.11	0.36
17	28	4.5	—	—	23	A	165	86	15	60	90	14.2	11	4	0.05	0.71
							215	136	15	60	140	14.2	11	4	0.05	0.71
							265	186	15	60	190	14.2	11	4	0.05	0.71
							315	236	15	60	240	14.2	11	4	0.05	0.71
22	36	5.5	9.5	5.5	29	A	210	117	30	60	120	12.3	10.2	3	0.15	0.58
							235	142	30	60	145	12.3	10.2	3	0.15	0.58
							285	192	30	60	195	12.3	10.2	3	0.15	0.58

Ball Screw

Unfinished Shaft Ends



Model MDK

Model No.	Ball screw specifications						Nut				
	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Outer diameter D	Flange diameter D ₁	Overall length L ₁	Nut height H
						Ca kN	C _a kN				
MDK 1402-3	14	2	14.3	13	3×1	1.8	4.3	21	40	23	6
MBF 1402-3.7	14	2	14.3	12.6	1×3.7	3.3	7.5	26	48	30	8

Model number coding

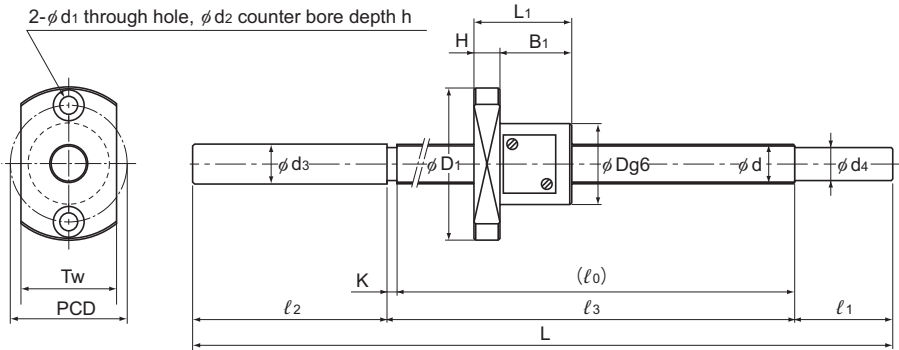
MBF1402-3.7 RR GT +245L C3 A

Model number Seal symbol (*1) Overall screw shaft length (in mm) Symbol for standard-stock type (A: with unfinished shaft ends)

Symbol for clearance in the axial direction (*2) Accuracy symbol (*3)

(*1) See **A15-352**. (*2) See **A15-19**. (*3) See **A15-12**.

Unfinished Shaft Ends Precision Ball Screw



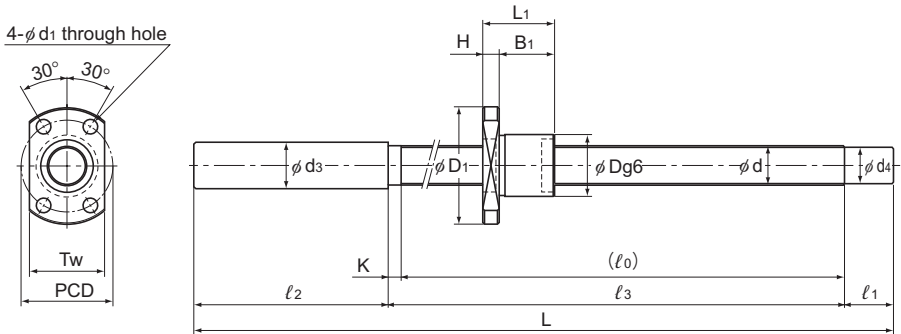
Model MBF

Unit: mm

Dimensions							Screw shaft dimensions											Nut mass kg	Shaft mass kg/m
B_1	PCD	d_1	d_2	h	T_w	Standard-stock symbol	Overall length L	ℓ_0	ℓ_1	ℓ_2	ℓ_3	d_3	d_4	K	kg	kg/m			
17	31	5.5	—	—	26	A	175	86	25	60	90	15.2	13	4	0.07	1.0			
							225	136	25	60	140	15.2	13	4	0.07	1.0			
							275	186	25	60	190	15.2	13	4	0.07	1.0			
							325	236	25	60	240	15.2	13	4	0.07	1.0			
							425	336	25	60	340	15.2	13	4	0.07	1.0			
22	37	5.5	9.5	5.5	32	A	205	102	40	60	105	14.3	12.2	3	0.16	0.85			
							245	142	40	60	145	14.3	12.2	3	0.16	0.85			
							295	192	40	60	195	14.3	12.2	3	0.16	0.85			
							345	242	40	60	245	14.3	12.2	3	0.16	0.85			

Ball Screw

Unfinished Shaft Ends



Model MDK

Model No.	Ball screw specifications							Nut			
	Screw shaft outer diameter	Lead	Ball center-to-center diameter	Thread minor diameter	No. of loaded circuits	Basic load rating		Outer diameter	Flange diameter	Overall length	Nut
						Ca	C _{0a}				
d	Ph	dp	dc	Rows X turns	kN	kN	D	D ₁	L ₁	H	
MDK 1404-3	14	4	14.65	12.2	3×1	4.2	7.6	26	45	33	6
MBF 1404-3.7	14	4	14.3	11.8	1×3.7	5.7	11.1	30	54	38	8
MDK 1405-3	14	5	14.75	11.2	3×1	7	11.6	26	45	42	10

Model number coding

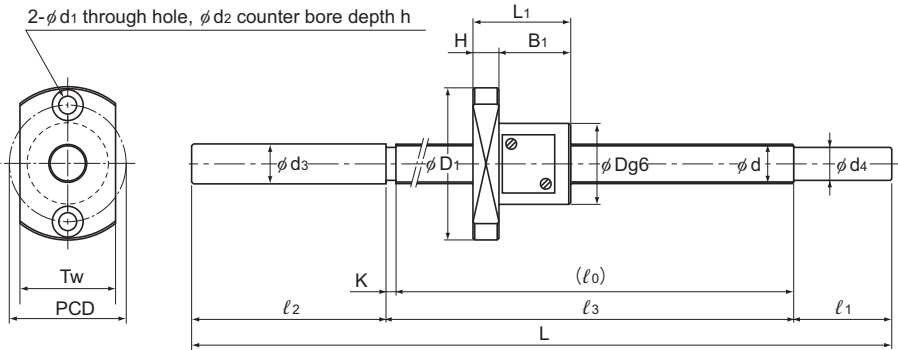
MDK1404-3 RR G2 +240L C7 A

Model number Seal symbol (*1) Overall screw shaft length (in mm) Symbol for standard-stock type (A: with unfinished shaft ends)

Symbol for clearance in the axial direction (*2) Accuracy symbol (*3)

(*1) See **A15-352**. (*2) See **A15-19**. (*3) See **A15-12**.

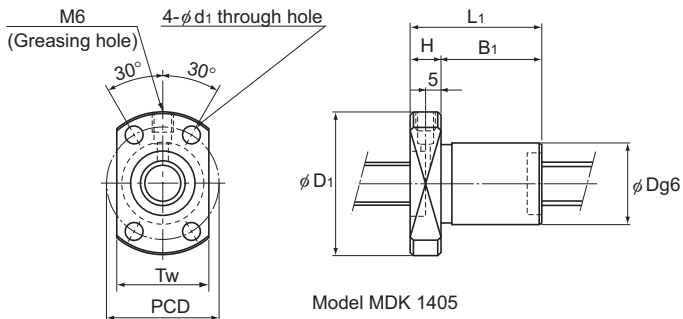
Unfinished Shaft Ends Precision Ball Screw



Model MBF

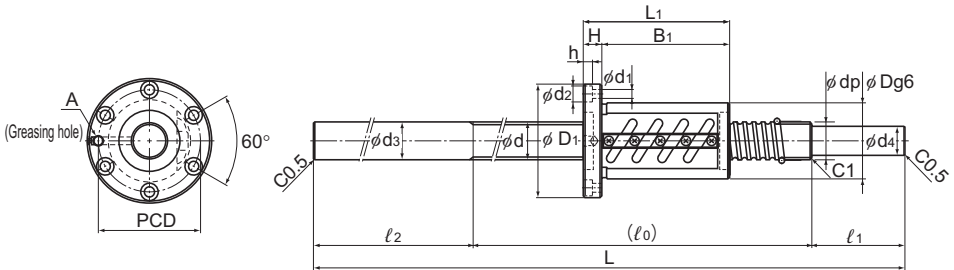
Unit: mm

Dimensions							Screw shaft dimensions							Nut mass kg	Shaft mass kg/m	
B ₁	PCD	d ₁	d ₂	h	Tw	Standard-stock symbol	Overall length L	l ₀	l ₁	l ₂	l ₃	d ₃	d ₄			K
27	36	5.5	—	—	28		A	240	150	25	60	155	15.2	11.9	5	0.14
						290		200	25	60	205	15.2	11.9	5	0.14	0.8
						340		250	25	60	255	15.2	11.9	5	0.14	0.8
						440		350	25	60	355	15.2	11.9	5	0.14	0.8
						540		450	25	60	455	15.2	11.9	5	0.14	0.8
30	42	5.5	9.5	5.5	34	A	233	129	40	60	133	14.3	11.2	4	0.25	1.2
							293	189	40	60	193	14.3	11.2	4	0.25	1.2
							353	249	40	60	253	14.3	11.2	4	0.25	1.2
							413	309	40	60	313	14.3	11.2	4	0.25	1.2
32	36	5.5	—	—	28	A	250	160	25	60	165	14	11.2	5	0.19	1.2
							300	210	25	60	215	14	11.2	5	0.19	1.2
							350	260	25	60	265	14	11.2	5	0.19	1.2
							450	360	25	60	365	14	11.2	5	0.19	1.2
							550	460	25	60	465	14	11.2	5	0.19	1.2



Model MDK 1405

Unfinished Shaft Ends



Model BIF

Model No.	Ball screw specifications							Nut			
	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Outer diameter D	Flange diameter D ₁	Overall length L ₁	Mass kg
						Ca kN	C _{0a} kN				
BNF 1605-2.5 BIF 1605-5	16	5	16.75	13.2	1×2.5	7.4	13.9	40	60	41 56	0.37 0.56
BNF 1810-2.5 BIF 1810-3	18	10	18.8	15.5	1×2.5 1×1.5	7.8 5.1	15.9 9.6	42	65	69 75	0.67 0.75
BNF 2005-5 BIF 2005-5	20	5	20.75	17.2	2×2.5 1×2.5	15.1 8.3	35 17.4	44	67	56 56	0.57 0.57

Model number coding

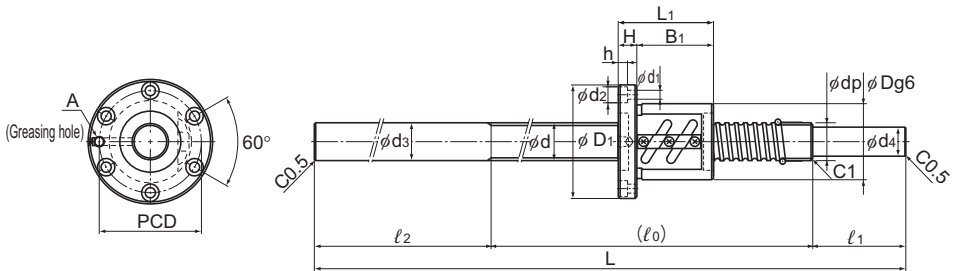
BIF2005-5 RR G0 +610L C5 A

Model number Seal symbol (*1) Overall screw shaft length (in mm) Symbol for standard-stock type (symbol A or B)

Symbol for clearance in the axial direction (*2) Accuracy symbol (*3)

(*1) See **A15-352**. (*2) See **A15-19**. (*3) See **A15-12**.

Unfinished Shaft Ends Precision Ball Screw



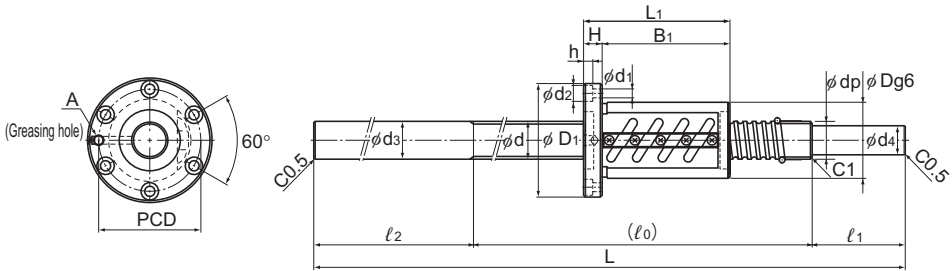
Model BNF

Unit: mm

Dimensions								Screw shaft dimensions							Shaft mass kg/m
H	B ₁	PCD	d ₁	d ₂	h	Greasing hole A	Standard-stock symbol	Overall length L	l ₀	l ₁	l ₂	d ₃	d ₄		
10	31 46	50	4.5	8	4.5	M6	A	410	200	50	160	16	12.8	0.92	
								510	300	50	160	16	12.8	0.92	
								610	400	50	160	16	12.8	0.92	
								710	500	50	160	16	12.8	1.25	
12	57 63	53	5.5	9.5	5.5	M6	A	410	200	50	160	18	15.3	1.62	
								510	300	50	160	18	15.3	1.62	
								610	400	50	160	18	15.3	1.62	
								710	500	50	160	18	15.3	1.62	
								810	600	50	160	18	15.3	1.62	
11	45 45	55	5.5	9.5	5.5	M6	A	410	200	50	160	20	15.3	1.65	
								510	300	50	160	20	15.3	1.65	
								610	400	50	160	20	15.3	1.65	
								710	500	50	160	20	15.3	1.65	
							B	810	600	50	160	20	16.8	1.65	
								1010	800	50	160	20	16.8	1.65	
								610	300	50	260	20	16.8	1.65	
								710	400	50	260	20	16.8	1.65	

Ball Screw

Unfinished Shaft Ends



Model BIF

Model No.	Ball screw specifications							Nut			
	Screw shaft outer diameter d	Lead Ph	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Outer diameter D	Flange diameter D ₁	Overall length L ₁	Mass kg
						Ca kN	C ₀ a kN				
BNF 2505-5 BIF 2505-5	25	5	25.75	22.2	2×2.5 1×2.5	16.7 9.2	44 22	50	73	55 55	0.75 0.75
BNF 2510A-2.5 BIF 2510A-5	25	10	26.3	21.4	1×2.5	15.8	33	58	85	70 100	1.43 1.87

Model number coding

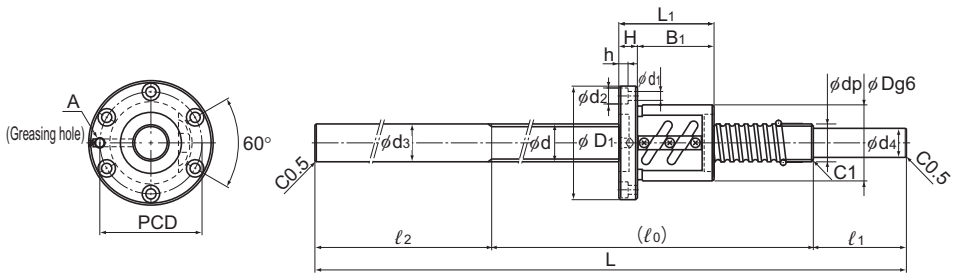
BIF2505-5 RR G0 +720L C5 B

Model number Seal symbol (*1) Overall screw shaft length (in mm) Symbol for standard-stock type (symbol A or B)

Symbol for clearance in the axial direction (*2) Accuracy symbol (*3)

(*1) See **A15-352**. (*2) See **A15-19**. (*3) See **A15-12**.

Unfinished Shaft Ends Precision Ball Screw



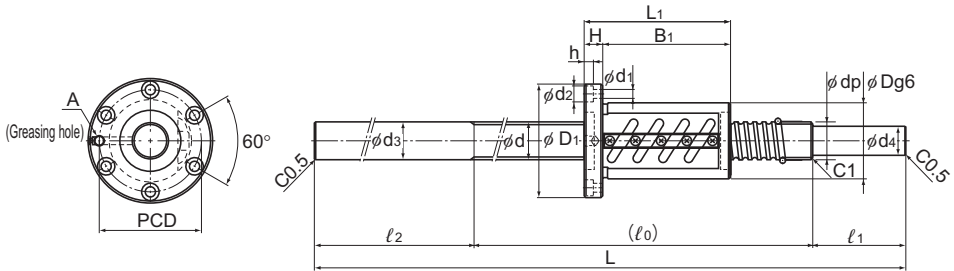
Model BNF

Unit: mm

Dimensions								Screw shaft dimensions							Shaft mass kg/m
H	B ₁	PCD	d ₁	d ₂	h	Greasing hole A	Standard-stock symbol	Overall length L	l ₀	l ₁	l ₂	d ₃	d ₄		
11	44 44	61	5.5	9.5	5.5	M6		A	520	300	60	160	25	20.3	
								620	400	60	160	25	20.3	2.84	
								720	500	60	160	25	20.3	2.84	
								820	600	60	160	25	20.3	2.84	
								1020	800	60	160	25	21.8	2.84	
								1220	1000	60	160	25	21.8	2.84	
								1420	1200	60	160	25	21.8	2.84	
							B	720	400	60	260	25	21.8	2.84	
								820	500	60	260	25	21.8	2.84	
18	52 82	71	6.6	11	6.5	M6	A	620	400	60	160	25	20.3	2.68	
								820	600	60	160	25	20.3	2.68	
								1020	800	60	160	25	20.3	2.68	
								1220	1000	60	160	25	20.3	2.68	
								1420	1200	60	160	25	20.3	2.68	

Ball Screw

Unfinished Shaft Ends



Model BIF

Model No.	Ball screw specifications							Nut			
	Screw shaft outer diameter	Lead	Ball center-to-center diameter	Thread minor diameter	No. of loaded circuits	Basic load rating		Outer diameter	Flange diameter	Overall length	Mass
						Ca	C _{0a}				
d	Ph	dp	dc	Rows x turns	kN	kN	D	D ₁	L ₁	kg	
BNF 2806-5 BIF 2806-5 BIF 2806-10	28	6	28.75	25.2	2×2.5 1×2.5 2×2.5	17.5 9.6 17.5	49.4 24.6 49.4	55	85	68 68 104	1.13 1.0 1.57
BNF 3205-5 BIF 3205-5 BIF 3205-10	32	5	32.75	29.2	2×2.5 1×2.5 2×2.5	18.5 10.2 18.5	56.4 28.1 56.4	58	85	56 56 86	0.93 0.87 1.32

Model number coding

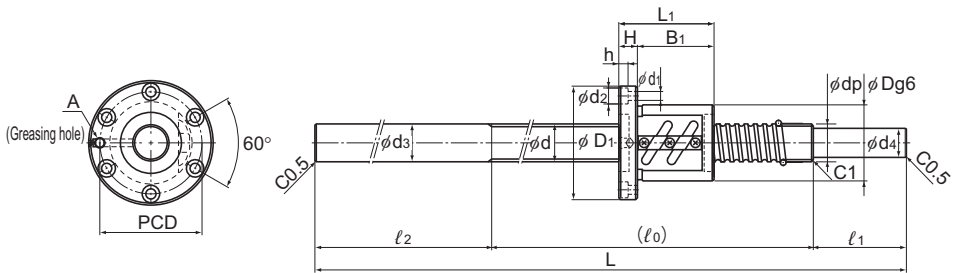
BIF2806-10 RR G0 +1020L C5 A

Model number Seal symbol (*1) Overall screw shaft length (in mm) Symbol for standard-stock type (symbol A or B)

Symbol for clearance in the axial direction (*2) Accuracy symbol (*3)

(*1) See **A15-352**. (*2) See **A15-19**. (*3) See **A15-12**.

Unfinished Shaft Ends Precision Ball Screw



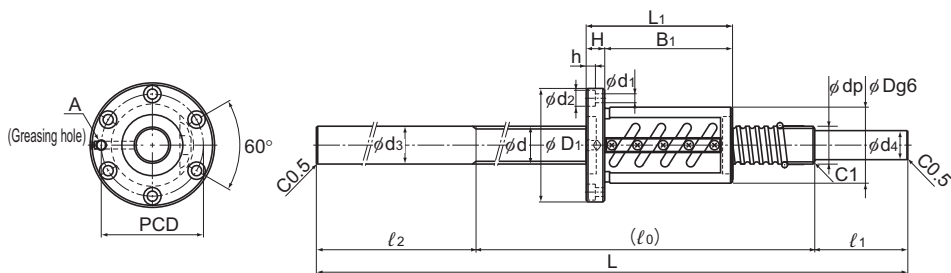
Model BNF

Unit: mm

Dimensions								Screw shaft dimensions							Shaft mass kg/m
H	B ₁	PCD	d ₁	d ₂	h	Greasing hole A	Standard-stock symbol	Overall length L	l ₀	l ₁	l ₂	d ₃	d ₄		
12	56 56 92	69	6.6	11	6.5	M6		A	520	300	60	160	28	20.3	
								620	400	60	160	28	20.3	3.89	
								720	500	60	160	28	20.3	3.89	
								920	700	60	160	28	20.3	3.89	
								1020	800	60	160	28	24.8	3.89	
								1220	1000	60	160	28	24.8	3.89	
								1420	1200	60	160	28	24.8	3.89	
							B	720	400	70	250	28	24.8	3.89	
								920	500	70	350	28	24.8	3.89	
								1100	700	70	330	28	24.8	3.89	
12	44 44 74	71	6.6	11	6.5	M6	A	730	500	70	160	32	25.3	5.03	
								930	700	70	160	32	25.3	5.03	
								1230	1000	70	160	32	25.3	5.03	
								1430	1200	70	160	32	25.3	5.03	
								1630	1400	70	160	32	27.8	5.03	
								1830	1600	70	160	32	27.8	5.03	

Ball Screw

Unfinished Shaft Ends



Model BIF

Model No.	Ball screw specifications							Nut			
	Screw shaft outer diameter	Lead	Ball center-to-center diameter	Thread minor diameter	No. of loaded circuits	Basic load rating		Outer diameter	Flange diameter	Overall length	Mass
						Ca	C _{0a}				
d	Ph	dp	dc	Rows X turns	kN	kN	D	D ₁	L ₁	kg	
BNF 3206-5	32	6	33	28.4	2×2.5	25.2	70.4	62	89	63	1.2
BIF 3206-5					1×2.5	13.9	35.2			63	1.2
BIF 3206-10					2×2.5	25.2	70.4			99	1.76
BNF 3210A-5	32	10	33.75	26.4	2×2.5	47.2	112.7	74	108	100	2.8
BIF 3210A-5					1×2.5	26.1	56.2			100	2.8

Model number coding

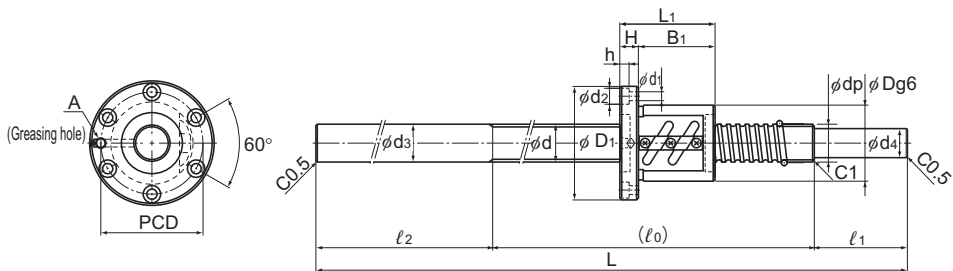
BIF3206-10 RR G0 +1100L C5 B

Model number Seal symbol (*1) Overall screw shaft length (in mm) Symbol for standard-stock type (symbol A or B)

Symbol for clearance in the axial direction (*2) Accuracy symbol (*3)

(*1) See **A15-352**. (*2) See **A15-19**. (*3) See **A15-12**.

Unfinished Shaft Ends Precision Ball Screw



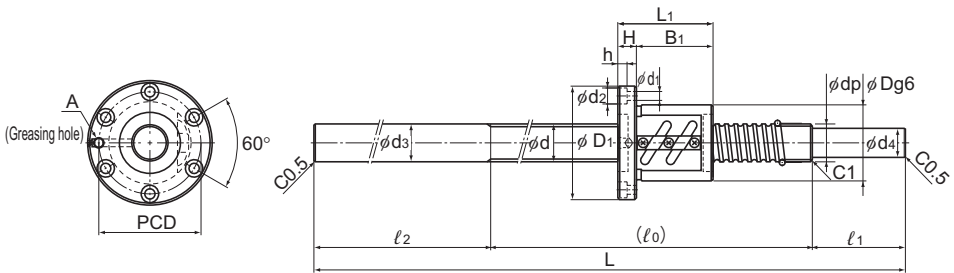
Model BNF

Unit: mm

Dimensions								Screw shaft dimensions							Shaft mass kg/m
H	B ₁	PCD	d ₁	d ₂	h	Greasing hole A	Standard- stock symbol	Overall length L	l ₀	l ₁	l ₂	d ₃	d ₄		
12	51 51 87	75	6.6	11	6.5	M6		A	730	500	70	160	32	25.3	
							930		700	70	160	32	25.3	4.63	
							1230		1000	70	160	32	25.3	4.63	
							1430		1200	70	160	32	25.3	4.63	
							1630		1400	70	160	32	27.8	4.63	
							1830		1600	70	160	32	27.8	4.63	
							B	930	500	70	360	32	27.8	4.63	
								1100	700	70	330	32	27.8	4.63	
								1430	1000	70	360	32	27.8	4.63	
15	85 85	90	9	14	8.5	M6	A	730	500	70	160	32	25.3	3.66	
								930	700	70	160	32	25.3	3.66	
								1430	1200	70	160	32	25.3	3.66	
								1830	1600	70	160	32	25.3	3.66	

Ball Screw

Unfinished Shaft Ends Precision Ball Screw



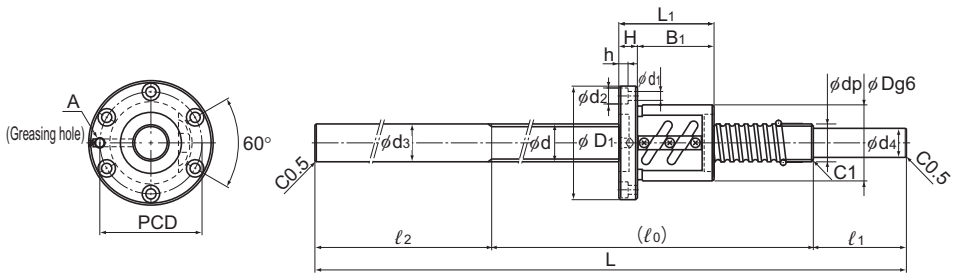
Model BNF

Unit: mm

Dimensions								Screw shaft dimensions							Shaft mass kg/m
H	B ₁	PCD	d ₁	d ₂	h	Greasing hole A	Standard-stock symbol	Overall length L	l ₀	l ₁	l ₂	d ₃	d ₄		
18	93 93 153	98	11	17.5	11	M6		A	730	500	70	160	36	30.3	
								930	700	70	160	36	30.3	5.03	
								1430	1200	70	160	36	30.3	5.03	
								1830	1600	70	160	36	30.3	5.03	
							B	930	500	100	330	36	30.3	5.03	
								1100	700	100	300	36	30.3	5.03	
								1830	1200	100	530	36	30.3	5.03	
18	85 85 145	102	11	17.5	11	M6	A	1230	1000	70	160	40	30.3	6.59	
								1730	1500	70	160	40	30.3	6.59	
								2030	1800	70	160	40	30.3	6.59	
								2230	2000	70	160	40	30.3	6.59	

Ball Screw

Unfinished Shaft Ends Precision Ball Screw



Model BNF

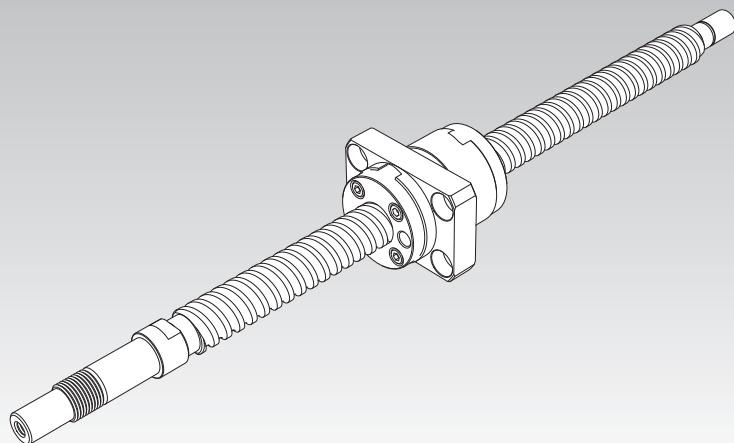
Unit: mm

Dimensions								Screw shaft dimensions							Shaft mass kg/m
H	B ₁	PCD	d ₁	d ₂	h	Greasing hole A	Standard-stock symbol	Overall length L	l ₀	l ₁	l ₂	d ₃	d ₄		
18	101 101 173	104	11	17.5	11	M6		A	1230	1000	70	160	40	30.3	
								1730	1500	70	160	40	30.3	6.39	
								2030	1800	70	160	40	30.3	6.39	
								2230	2000	70	160	40	30.3	6.39	
								1730	1200	100	430	40	33.8	6.39	
								2030	1200	100	730	40	33.8	6.39	
18	85 85 145	113	11	17.5	11	PT 1/8	A	1300	1000	100	200	50	40.3	11.36	
								1800	1500	100	200	50	40.3	11.36	
								2300	2000	100	200	50	40.3	11.36	
								2800	2500	100	200	50	40.3	11.36	

Ball Screw

Finished Shaft Ends Precision Ball Screw

Standard Stock Model BNK



Point of Selection	A15-8
Options	A15-352
Model No.	A15-369
Precautions on Use	A15-374
Accessories for Lubrication	A24-1
Mounting Procedure and Maintenance	B15-104
Lead Angle Accuracy	A15-11
Accuracy of the Mounting Surface	A15-14
DN Value	A15-33
Support Unit	A15-316
Nut Bracket	A15-346
Dimensions of Each Model with an Option Attached	A15-360

Features

To meet the space-saving requirement, this type of Ball Screw has a standardized screw shaft and a ball screw nut. The ends of the screw shaft are standardized to fit the corresponding support unit. The shaft support method with models BNK0401, 0501 and 0601 is “fixed-free,” while other models use the “fixed-supported” method with the shaft directly coupled with the motor.

Screw shafts and nuts are compactly designed. When a support unit and a nut bracket are combined with a Ball Screw, the assembly can be mounted on your machine as it is. Thus, a high-accuracy feed mechanism can easily be achieved.

[Contamination Protection and Lubrication]

Each ball screw nut contains a right amount of grease. In addition, the ball nuts of model BNK0802 or higher contain a labyrinth seal (with models BNK1510, BNK1520, BNK1616, BNK2020 and BNK2520, the end cap also serves as a labyrinth seal).

When foreign material may enter the screw nut, it is necessary to use a dust-prevention device (e.g., bellows) to completely protect the screw shaft.

Types and Features

Model BNK

For this model, screw shafts with a diameter $\phi 4$ to $\phi 25$ mm and a lead 1 to 20 mm are available as the standard.

Specification Table⇒ **A15-132**

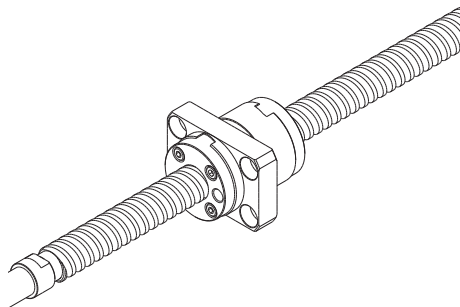


Table of Ball Screw Types with Finished Shaft Ends and the Corresponding Support Units and Nut Brackets

Model No.		BNK																							
		0401		0501		0601		0801		0802		0810		1002		1004		1010							
Accuracy grades		C3, C5, C7		C3, C5, C7		C3, C5, C7		C3, C5, C7		C3, C5, C7		C5, C7		C3, C5, C7		C3, C5, C7		C5, C7							
Axial clearance ^{Note}		G0	GT	G2	G0	GT	G2	G0	GT	G2	G0	GT	G2	—	GT	G2	G0	GT	G2	G0	GT	G2			
Stroke (mm)	20	●			●																				
	30																								
	40	●			●			●		●															
	50																●		●						
	60																								
	70	●			●			●		●															
	100							●		●				●		●		●		●					
	120																								
	150									●				●		●		●		●					
	170																								
	200													●		●		●		●					
	250													●		●		●		●					
	300													●		●		●		●					
	350																								
	400																								
	450																								
	500																								
	550																								
	600																								
	700																								
800																									
900																									
1000																									
1100																									
1200																									
1400																									
1600																									
Support unit: square on fixed side		EK4			EK4			EK5			EK6			EK6			EK6			EK8			EK10		EK10
		—			—			—			—			—			—			—			BK10		BK10
Support unit: round on fixed side		FK4			FK4			FK5			FK6			FK6			FK6			FK8			FK10		FK10
		—			—			—			—			—			—			—			—		—
Support unit: square on supported side		—			—			—			EF6			EF6			EF6			EF8			EF10		EF10
		—			—			—			—			—			—			—			—		—
Support unit: round on supported side		—			—			—			FF6			FF6			FF6			FF6			FF10		FF10
		—			—			—			—			—			—			—			—		—
Nut bracket		—			—			—			—			—			—			—			MC1004		MC1004

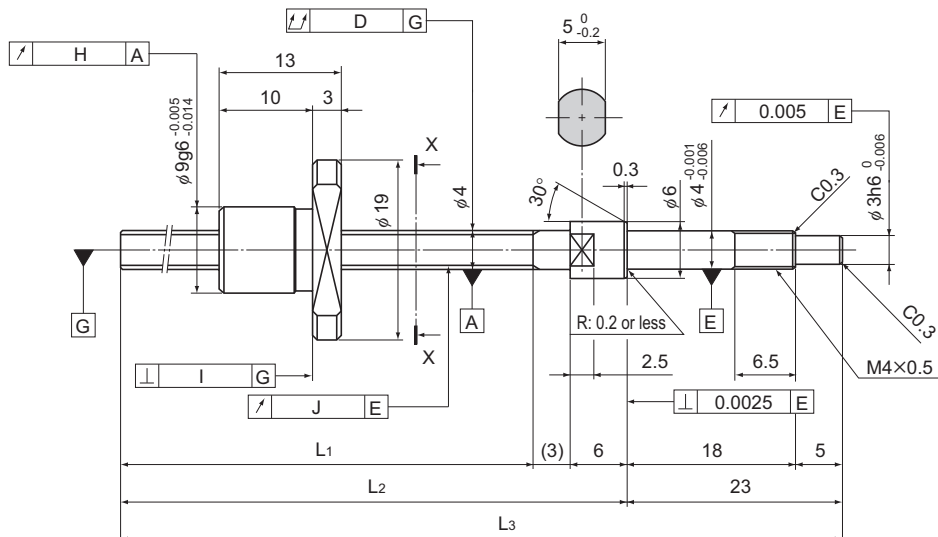
Note) Axial clearance: G0: 0 or less

GT: 0.005 mm or less

G2: 0.02 mm or less

For details of the support unit and the nut bracket, see **A15-316** onward and **A15-346** onward, respectively.

BNK0401-3 Shaft diameter: 4; lead: 1



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 0401-3G0+77LC3Y	20	45	54	77
BNK 0401-3G0+77LC5Y				
BNK 0401-3G2+77LC7Y				
BNK 0401-3G0+97LC3Y	40	65	74	97
BNK 0401-3G0+97LC5Y				
BNK 0401-3G2+97LC7Y				
BNK 0401-3G0+127LC3Y	70	95	104	127
BNK 0401-3G0+127LC5Y				
BNK 0401-3G2+127LC7Y				

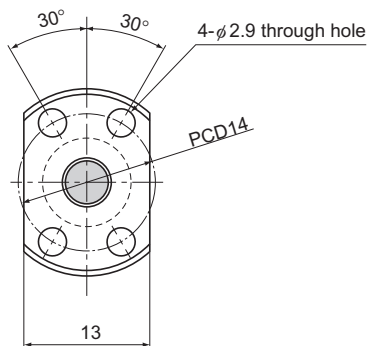
Note) A stainless steel type is also available for model BNK0401. When placing an order, add symbol "M" to the end of the model number.

(Example) BNK0401-3G0+77LC3Y M

Symbol for stainless steel type

For accuracy grades C3 and C5, clearance GT is also available as standard.

Finished Shaft Ends Precision Ball Screw



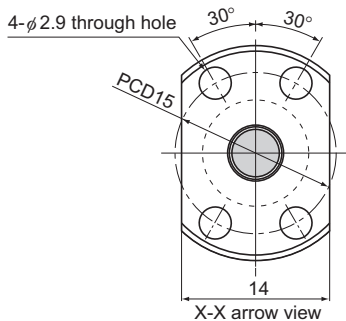
X-X arrow view

Ball Screw Specifications			
Lead (mm)	1		
BCD (mm)	4.15		
Thread minor diameter (mm)	3.4		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1 turn \times 3 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	0.29	0.29	0.29
Basic static load rating C_{0a} (kN)	0.42	0.42	0.42
Preload torque (N-m)	to 9.8×10^{-3}	—	—
Spacer ball	None	None	None
Rigidity value (N/ μ m)	35		
Circulation method	Deflector		

Unit: mm

	Runout of the screw shaft axis D	Runout of the nut circumference H	Flange perpendicularity I	Runout of the thread groove surface J	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	0.015	0.009	0.008	0.008	± 0.008	0.008	0.01	0.07
	0.025	0.012	0.01	0.01	± 0.018	0.018	0.01	0.07
	0.035	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.01	0.07
	0.02	0.009	0.008	0.008	± 0.008	0.008	0.01	0.07
	0.025	0.012	0.01	0.01	± 0.018	0.018	0.01	0.07
	0.035	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.01	0.07
	0.025	0.009	0.008	0.008	± 0.008	0.008	0.01	0.07
	0.035	0.012	0.01	0.01	± 0.018	0.018	0.01	0.07
	0.05	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.01	0.07

Ball Screw

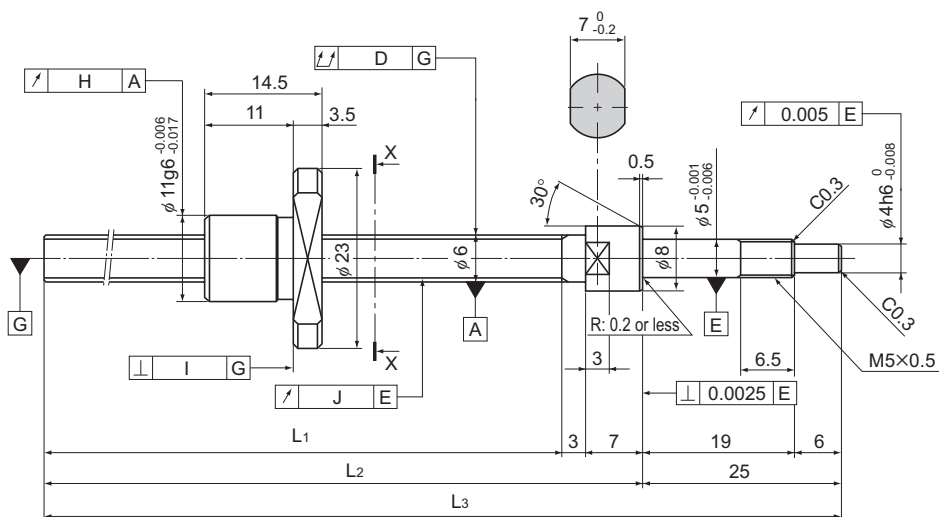


Ball Screw Specifications			
Lead (mm)	1		
BCD (mm)	5.15		
Thread minor diameter (mm)	4.4		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1 turn × 3 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	0.32	0.32	0.32
Basic static load rating C_{0a} (kN)	0.55	0.55	0.55
Preload torque (N-m)	to 9.8×10^3	—	—
Spacer ball	None	None	None
Rigidity value (N/ μ m)	47		
Circulation method	Deflector		

Unit: mm

	Runout of the screw shaft axis D	Runout of the nut circumference H	Flange perpendicularity I	Runout of the thread groove surface J	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	0.015	0.009	0.008	0.008	± 0.008	0.008	0.012	0.11
	0.025	0.012	0.01	0.01	± 0.018	0.018	0.012	0.11
	0.035	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.012	0.11
	0.02	0.009	0.008	0.008	± 0.008	0.008	0.012	0.11
	0.025	0.012	0.01	0.01	± 0.018	0.018	0.012	0.11
	0.035	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.012	0.11
	0.025	0.009	0.008	0.008	± 0.008	0.008	0.012	0.11
	0.035	0.012	0.01	0.01	± 0.018	0.018	0.012	0.11
	0.05	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.012	0.11

BNK0601-3 Shaft diameter: 6; lead: 1



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 0601-3G0+100LC3Y	40	65	75	100
BNK 0601-3G0+100LC5Y				
BNK 0601-3G2+100LC7Y				
BNK 0601-3G0+130LC3Y	70	95	105	130
BNK 0601-3G0+130LC5Y				
BNK 0601-3G2+130LC7Y				
BNK 0601-3G0+160LC3Y	100	125	135	160
BNK 0601-3G0+160LC5Y				
BNK 0601-3G2+160LC7Y				

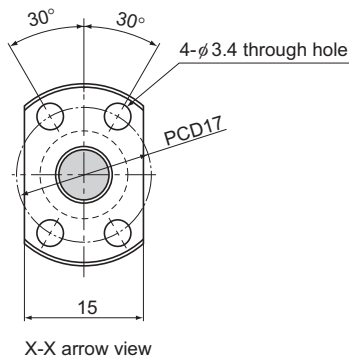
Note) A stainless steel type is also available for model BNK0601. When placing an order, add symbol "M" to the end of the model number.

(Example) BNK0601-3G0+100LC3Y M

Symbol for stainless steel type

For accuracy grades C3 and C5, clearance GT is also available as standard.

Finished Shaft Ends Precision Ball Screw



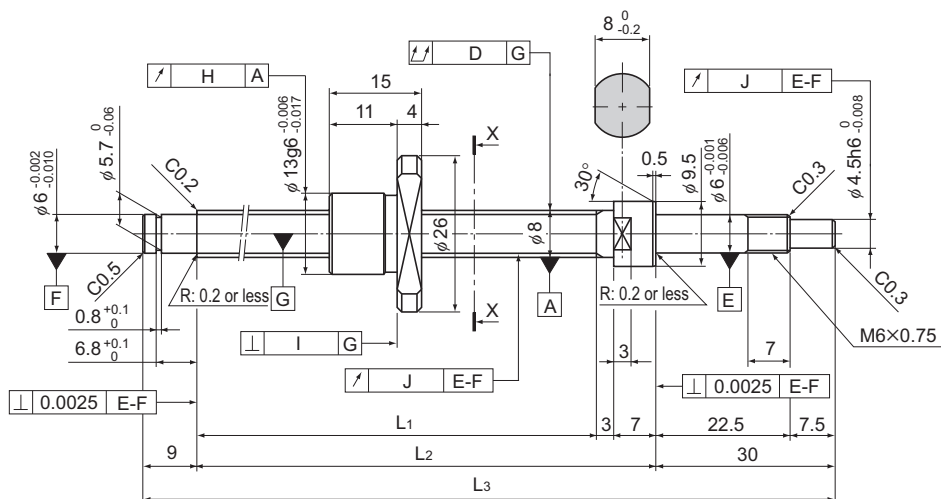
Ball Screw Specifications			
Lead (mm)	1		
BCD (mm)	6.2		
Thread minor diameter (mm)	5.3		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1 turn × 3 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	0.54	0.54	0.54
Basic static load rating C_{0a} (kN)	0.94	0.94	0.94
Preload torque (N-m)	to 1.3×10^2	—	—
Spacer ball	None	None	None
Rigidity value (N/ μ m)	60		
Circulation method	Deflector		

Unit: mm

	Runout of the screw shaft axis D	Runout of the nut circumference H	Flange perpendicularity I	Runout of the thread groove surface J	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	0.015	0.009	0.008	0.008	± 0.008	0.008	0.017	0.14
	0.025	0.012	0.01	0.01	± 0.018	0.018	0.017	0.14
	0.035	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.017	0.14
	0.02	0.009	0.008	0.008	± 0.008	0.008	0.017	0.14
	0.035	0.012	0.01	0.01	± 0.018	0.018	0.017	0.14
	0.05	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.017	0.14
	0.025	0.009	0.008	0.008	± 0.01	0.008	0.017	0.14
	0.035	0.012	0.01	0.01	± 0.02	0.018	0.017	0.14
	0.05	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.017	0.14

Ball Screw

BNK0801-3 Shaft diameter: 8; lead: 1



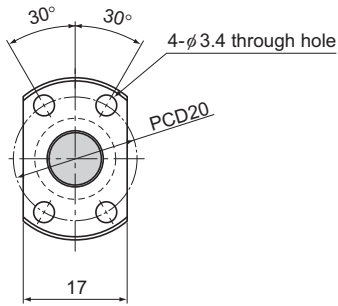
Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 0801-3G0+115LC3Y	40	66	76	115
BNK 0801-3G0+115LC5Y				
BNK 0801-3G2+115LC7Y				
BNK 0801-3G0+145LC3Y	70	96	106	145
BNK 0801-3G0+145LC5Y				
BNK 0801-3G2+145LC7Y				
BNK 0801-3G0+175LC3Y	100	126	136	175
BNK 0801-3G0+175LC5Y				
BNK 0801-3G2+175LC7Y				
BNK 0801-3G0+225LC3Y	150	176	186	225
BNK 0801-3G0+225LC5Y				
BNK 0801-3G2+225LC7Y				

Note) A stainless steel type is also available for model BNK0801. When placing an order, add symbol "M" to the end of the model number.

(Example) BNK0801-3G0+115LC3Y M

Symbol for stainless steel type

For accuracy grades C3 and C5, clearance GT is also available as standard.



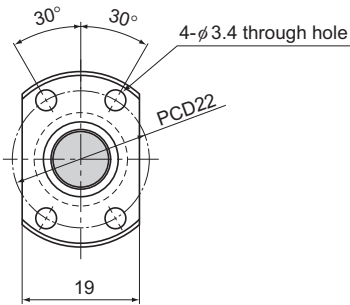
X-X arrow view

Ball Screw Specifications			
Lead (mm)	1		
BCD (mm)	8.2		
Thread minor diameter (mm)	7.3		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1 turn × 3 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	0.64	0.64	0.64
Basic static load rating C_{0a} (kN)	1.4	1.4	1.4
Preload torque (N-m)	to 1.8×10^2	—	—
Spacer ball	None	None	None
Rigidity value (N/ μ m)	80		
Circulation method	Deflector		

Unit: mm

	Runout of the screw shaft axis D	Runout of the nut circumference H	Flange perpendicularity I	Runout of the thread groove surface J	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	0.025	0.009	0.008	0.008	± 0.008	0.008	0.024	0.29
	0.025	0.012	0.01	0.01	± 0.018	0.018	0.024	0.29
	0.035	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.024	0.29
	0.03	0.009	0.008	0.008	± 0.008	0.008	0.024	0.29
	0.035	0.012	0.01	0.01	± 0.018	0.018	0.024	0.29
	0.05	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.024	0.29
	0.03	0.009	0.008	0.008	± 0.01	0.008	0.024	0.29
	0.035	0.012	0.01	0.01	± 0.02	0.018	0.024	0.29
	0.05	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.024	0.29
	0.035	0.009	0.008	0.008	± 0.01	0.008	0.024	0.29
	0.05	0.012	0.01	0.01	± 0.02	0.018	0.024	0.29
	0.065	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.024	0.29

Finished Shaft Ends Precision Ball Screw



X-X arrow view

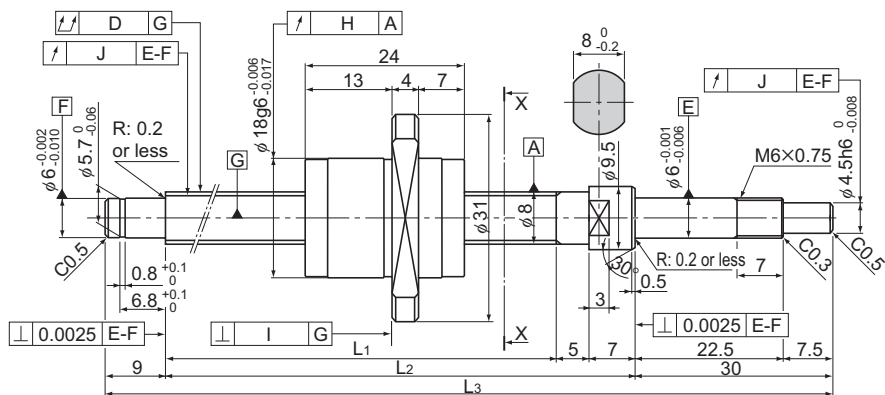
Ball Screw Specifications			
Lead (mm)	2		
BCD (mm)	8.3		
Thread minor diameter (mm)	7		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1 turn × 3 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	1.4	1.4	1.4
Basic static load rating C_{0a} (kN)	2.3	2.3	2.3
Preload torque (N-m)	to 2×10^2	—	—
Spacer ball	None	None	None
Rigidity value (N/ μ m)	100		
Circulation method	Deflector		

Unit: mm

	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.025	0.009	0.008	0.008	± 0.008	0.008	0.034	0.27
	0.025	0.012	0.01	0.01	± 0.018	0.018	0.034	0.27
	0.035	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.034	0.27
	0.03	0.009	0.008	0.008	± 0.01	0.008	0.034	0.27
	0.035	0.012	0.01	0.01	± 0.02	0.018	0.034	0.27
	0.05	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.034	0.27
	0.03	0.009	0.008	0.008	± 0.01	0.008	0.034	0.27
	0.035	0.012	0.01	0.01	± 0.02	0.018	0.034	0.27
	0.05	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.034	0.27
	0.035	0.009	0.008	0.008	± 0.01	0.008	0.034	0.27
	0.05	0.012	0.01	0.01	± 0.02	0.018	0.034	0.27
	0.065	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.034	0.27

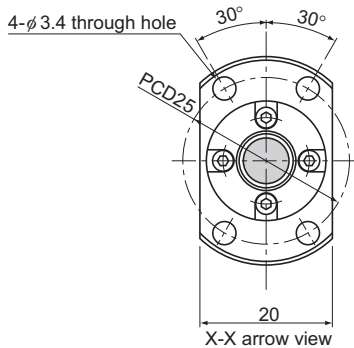
Ball Screw

BNK0810-3 Shaft diameter: 8; lead: 10



Model No.	Stroke	Screw shaft length		
		L_1	L_2	L_3
BNK 0810-3GT+205LC5Y	100	154	166	205
BNK 0810-3G2+205LC7Y				
BNK 0810-3GT+255LC5Y	150	204	216	255
BNK 0810-3G2+255LC7Y				
BNK 0810-3GT+305LC5Y	200	254	266	305
BNK 0810-3G2+305LC7Y				
BNK 0810-3GT+355LC5Y	250	304	316	355
BNK 0810-3G2+355LC7Y				
BNK 0810-3GT+405LC5Y	300	354	366	405
BNK 0810-3G2+405LC7Y				

Finished Shaft Ends Precision Ball Screw

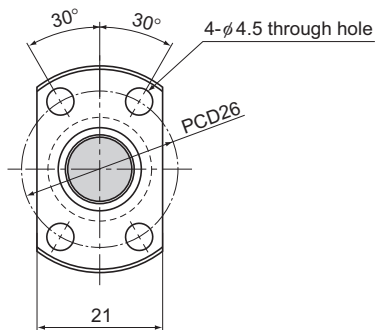


Ball Screw Specifications		
Lead (mm)	10	
BCD (mm)	8.4	
Thread minor diameter (mm)	6.7	
Threading direction, No. of threaded grooves	Rightward, 2	
No. of circuits	1.5 turns × 2 rows	
Clearance symbol	GT	G2
Axial clearance (mm)	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	2.16	2.16
Basic static load rating C_{0a} (kN)	3.82	3.82
Preload torque (N-m)	—	—
Spacer ball	None	None
Rigidity value (N/μm)	100	
Circulation method	End cap	

Unit: mm

	Runout of the screw shaft axis D	Runout of the nut circumference H	Flange perpendicularity I	Runout of the thread groove surface J	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	0.05	0.012	0.01	0.01	±0.02	0.018	0.049	0.30
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.049	0.30
	0.05	0.012	0.01	0.01	±0.023	0.018	0.049	0.30
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.049	0.30
	0.05	0.012	0.01	0.01	±0.023	0.018	0.049	0.30
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.049	0.30
	0.06	0.012	0.01	0.01	±0.023	0.018	0.049	0.30
	0.075	0.02	0.014	0.014	Travel distance: ±0.05/300		0.049	0.30
	0.07	0.012	0.01	0.01	±0.025	0.018	0.049	0.30
	0.09	0.02	0.014	0.014	Travel distance: ±0.05/300		0.049	0.30

Finished Shaft Ends Precision Ball Screw



X-X arrow view

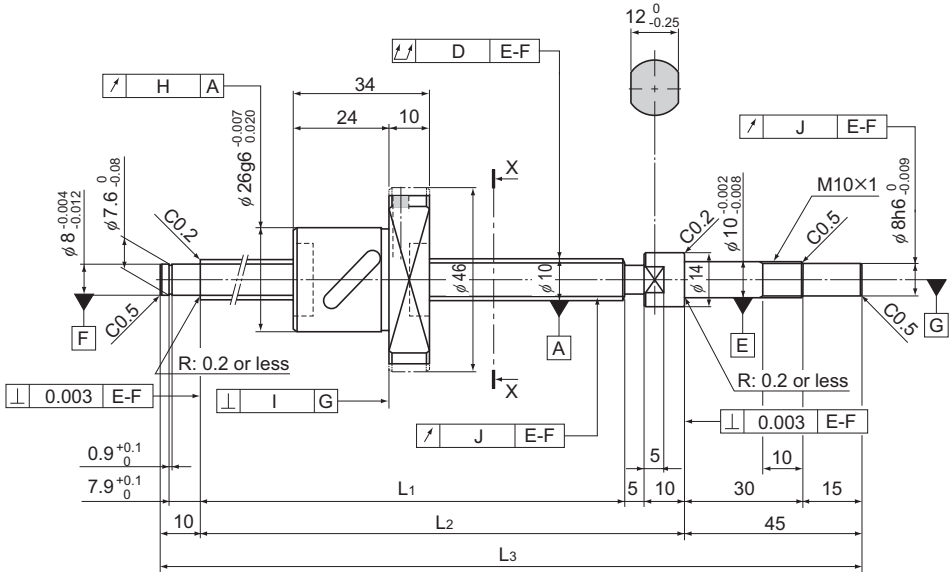
Ball Screw Specifications			
Lead (mm)	2		
BCD (mm)	10.3		
Thread minor diameter (mm)	9		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1 turn × 3 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	1.5	1.5	1.5
Basic static load rating C_{0a} (kN)	2.9	2.9	2.9
Preload torque (N-m)	to 2.5×10^2	—	—
Spacer ball	None	None	None
Rigidity value (N/μm)	100		
Circulation method	Deflector		

Unit: mm

	Runout of the screw shaft axis D	Runout of the nut circumference H	Flange perpendicularity I	Runout of the thread groove surface J	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	0.02	0.009	0.008	0.007	±0.008	0.008	0.045	0.47
	0.035	0.012	0.01	0.011	±0.018	0.018	0.045	0.47
	0.04	0.02	0.014	0.014	Travel distance: ±0.05/300		0.045	0.47
	0.03	0.009	0.008	0.007	±0.01	0.008	0.045	0.47
	0.035	0.012	0.01	0.011	±0.02	0.018	0.045	0.47
	0.04	0.02	0.014	0.014	Travel distance: ±0.05/300		0.045	0.47
	0.03	0.009	0.008	0.007	±0.01	0.008	0.045	0.47
	0.04	0.012	0.01	0.011	±0.02	0.018	0.045	0.47
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.045	0.47
	0.03	0.009	0.008	0.007	±0.012	0.008	0.045	0.47
	0.04	0.012	0.01	0.011	±0.023	0.018	0.045	0.47
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.045	0.47

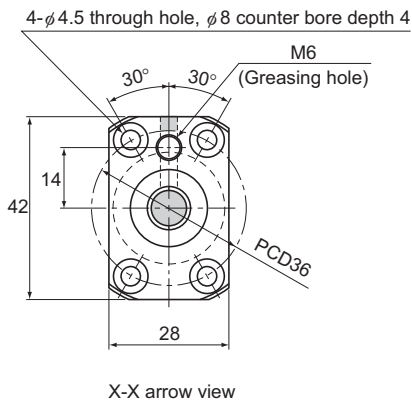
Ball Screw

BNK1004-2.5 Shaft diameter: 10; lead: 4



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1004-2.5RRG0+180LC3Y	50	110	125	180
BNK 1004-2.5RRG0+180LC5Y				
BNK 1004-2.5RRG2+180LC7Y				
BNK 1004-2.5RRG0+230LC3Y	100	160	175	230
BNK 1004-2.5RRG0+230LC5Y				
BNK 1004-2.5RRG2+230LC7Y				
BNK 1004-2.5RRG0+280LC3Y	150	210	225	280
BNK 1004-2.5RRG0+280LC5Y				
BNK 1004-2.5RRG2+280LC7Y				
BNK 1004-2.5RRG0+330LC3Y	200	260	275	330
BNK 1004-2.5RRG0+330LC5Y				
BNK 1004-2.5RRG2+330LC7Y				
BNK 1004-2.5RRG0+380LC3Y	250	310	325	380
BNK 1004-2.5RRG0+380LC5Y				
BNK 1004-2.5RRG2+380LC7Y				

Note) For accuracy grades C3 and C5, clearance GT is also available as standard.

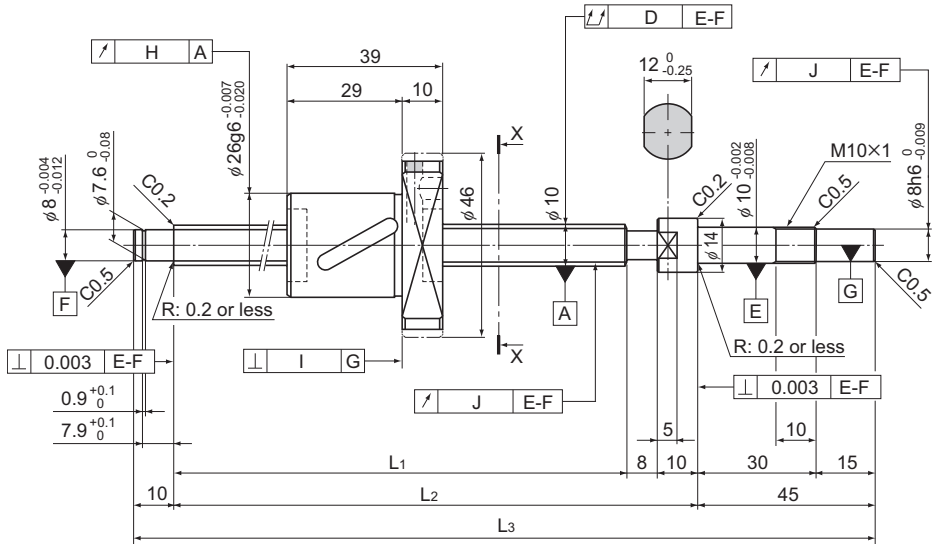


Ball Screw Specifications			
Lead (mm)	4		
BCD (mm)	10.5		
Thread minor diameter (mm)	7.8		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	2.5 turns × 1 row		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	2.1	3.4	3.4
Basic static load rating C_{0a} (kN)	2.7	5.4	5.4
Preload torque (N-m)	9.8×10^{-3} to 4.9×10^{-2}	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/μm)	50	100	
Circulation method	Return pipe		

Unit: mm

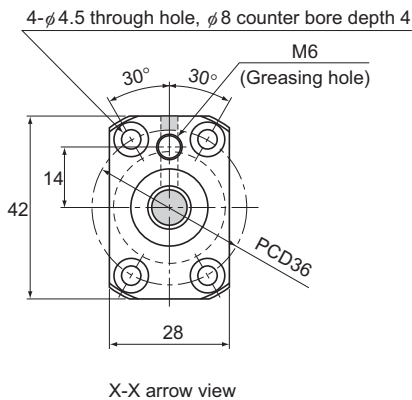
	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.02	0.009	0.008	0.008	±0.01	0.008	0.15	0.32
	0.035	0.012	0.01	0.011	±0.02	0.018	0.15	0.32
	0.04	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	0.32
	0.03	0.009	0.008	0.008	±0.01	0.008	0.15	0.32
	0.04	0.012	0.01	0.011	±0.02	0.018	0.15	0.32
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	0.32
	0.03	0.009	0.008	0.008	±0.012	0.008	0.15	0.32
	0.04	0.012	0.01	0.011	±0.023	0.018	0.15	0.32
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	0.32
	0.04	0.009	0.008	0.008	±0.012	0.008	0.15	0.32
	0.05	0.012	0.01	0.011	±0.023	0.018	0.15	0.32
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	0.32
	0.04	0.009	0.008	0.008	±0.012	0.008	0.15	0.32
	0.05	0.012	0.01	0.011	±0.023	0.018	0.15	0.32
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	0.32

BNK1010-1.5 Shaft diameter: 10; lead: 10



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1010-1.5RRG0+240LC5Y	100	167	185	240
BNK 1010-1.5RRG2+240LC7Y				
BNK 1010-1.5RRG0+290LC5Y	150	217	235	290
BNK 1010-1.5RRG2+290LC7Y				
BNK 1010-1.5RRG0+340LC5Y	200	267	285	340
BNK 1010-1.5RRG2+340LC7Y				
BNK 1010-1.5RRG0+390LC5Y	250	317	335	390
BNK 1010-1.5RRG2+390LC7Y				
BNK 1010-1.5RRG0+440LC5Y	300	367	385	440
BNK 1010-1.5RRG2+440LC7Y				

Note) For accuracy grade C5, clearance GT is also standardized.

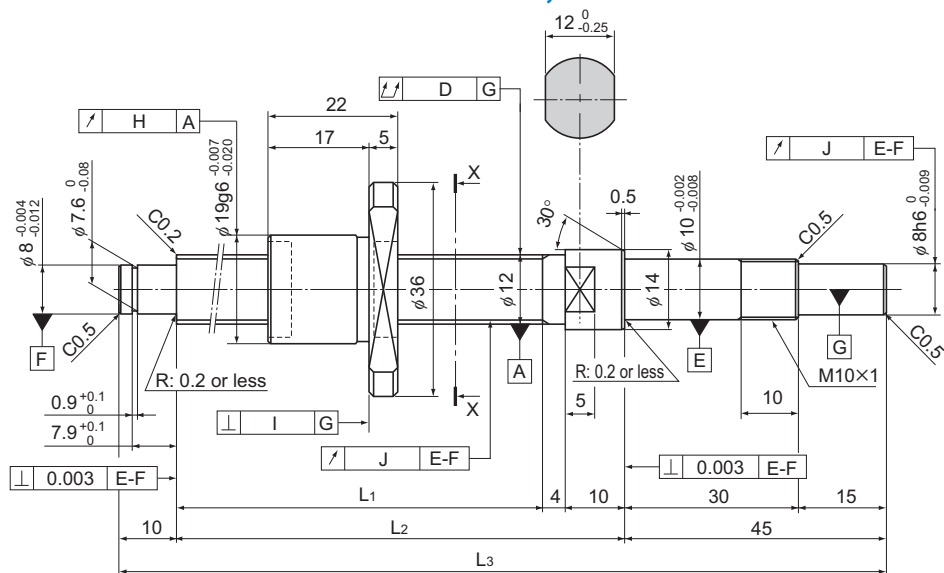


Ball Screw Specifications			
Lead (mm)	10		
BCD (mm)	10.5		
Thread minor diameter (mm)	7.8		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1.5 turns × 1 row		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating Ca (kN)	1.3	2.1	2.1
Basic static load rating C _{0a} (kN)	1.6	3.1	3.1
Preload torque (N-m)	9.8 × 10 ³ to 4.9 × 10 ²	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/μm)	70	140	
Circulation method	Return pipe		

Unit: mm

	Runout of the screw shaft axis D	Runout of the nut circumference H	Flange perpendicularity I	Runout of the thread groove surface J	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	0.04	0.012	0.01	0.011	±0.02	0.018	0.17	0.5
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.17	0.5
	0.04	0.012	0.01	0.011	±0.023	0.018	0.17	0.5
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.17	0.5
	0.05	0.012	0.01	0.011	±0.023	0.018	0.17	0.5
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.17	0.5
	0.05	0.012	0.01	0.011	±0.025	0.02	0.17	0.5
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.17	0.5
	0.065	0.012	0.01	0.011	±0.025	0.02	0.17	0.5
	0.08	0.02	0.014	0.014	Travel distance: ±0.05/300		0.17	0.5

BNK1202-3 Shaft diameter: 12; lead: 2



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1202-3RRG0+154LC3Y	50	85	99	154
BNK 1202-3RRG0+154LC5Y				
BNK 1202-3RRG2+154LC7Y				
BNK 1202-3RRG0+204LC3Y	100	135	149	204
BNK 1202-3RRG0+204LC5Y				
BNK 1202-3RRG2+204LC7Y				
BNK 1202-3RRG0+254LC3Y	150	185	199	254
BNK 1202-3RRG0+254LC5Y				
BNK 1202-3RRG2+254LC7Y				
BNK 1202-3RRG0+304LC3Y	200	235	249	304
BNK 1202-3RRG0+304LC5Y				
BNK 1202-3RRG2+304LC7Y				
BNK 1202-3RRG0+354LC3Y	250	285	299	354
BNK 1202-3RRG0+354LC5Y				
BNK 1202-3RRG2+354LC7Y				

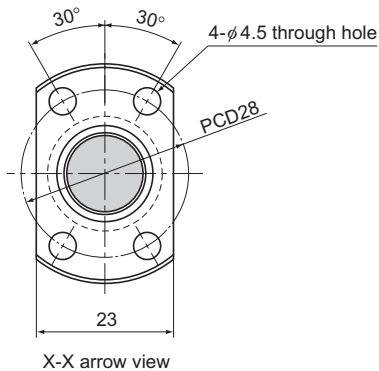
Note) A stainless steel type is also available for model BNK1202. When placing an order, add symbol "M" to the end of the model number.

(Example) BNK1202-3RRG0+154LC3Y M

Symbol for stainless steel type

For accuracy grades C3 and C5, clearance GT is also available as standard.

Finished Shaft Ends Precision Ball Screw

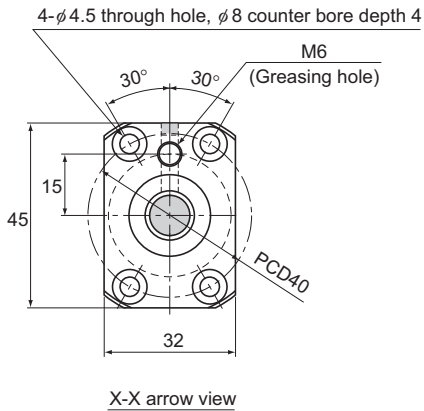


Ball Screw Specifications			
Lead (mm)	2		
BCD (mm)	12.3		
Thread minor diameter (mm)	11		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1 turn × 3 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	1.7	1.7	1.7
Basic static load rating C_{0a} (kN)	3.6	3.6	3.6
Preload torque (N-m)	4.0×10^3 to 3.4×10^2	—	—
Spacer ball	None	None	None
Rigidity value (N/μm)	120		
Circulation method	Deflector		

Unit: mm

	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.02	0.01	0.008	0.007	±0.008	0.008	0.05	0.71
	0.035	0.012	0.01	0.011	±0.018	0.018	0.05	0.71
	0.04	0.02	0.014	0.014	Travel distance: ±0.05/300		0.05	0.71
	0.03	0.01	0.008	0.007	±0.01	0.008	0.05	0.71
	0.04	0.012	0.01	0.011	±0.02	0.018	0.05	0.71
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.05	0.71
	0.03	0.01	0.008	0.007	±0.01	0.008	0.05	0.71
	0.04	0.012	0.01	0.011	±0.02	0.018	0.05	0.71
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.05	0.71
	0.04	0.01	0.008	0.007	±0.012	0.008	0.05	0.71
	0.05	0.012	0.01	0.011	±0.023	0.018	0.05	0.71
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.05	0.71
	0.04	0.01	0.008	0.007	±0.012	0.008	0.05	0.71
	0.05	0.012	0.01	0.011	±0.023	0.018	0.05	0.71
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.05	0.71

Finished Shaft Ends Precision Ball Screw



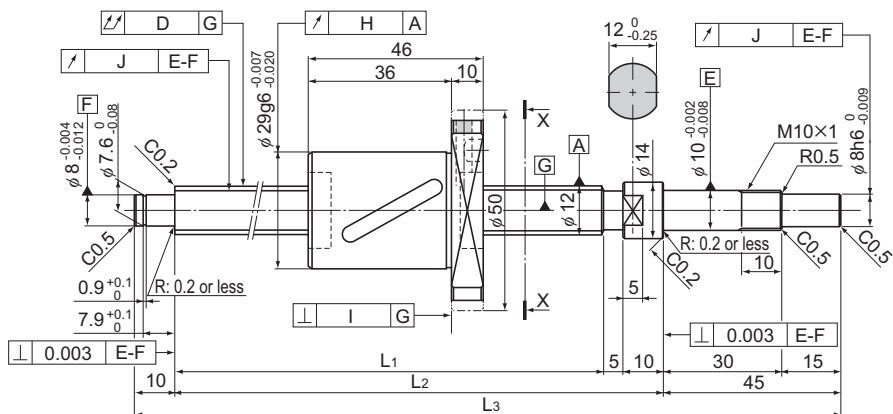
Ball Screw Specifications			
Lead (mm)	5		
BCD (mm)	12.3		
Thread minor diameter (mm)	9.6		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	2.5 turns × 1 row		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	2.3	3.7	3.7
Basic static load rating C_{0a} (kN)	3.2	6.4	6.4
Preload torque (N-m)	9.8×10^3 to 4.9×10^2	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/μm)	60	120	
Circulation method	Return pipe		

Unit: mm

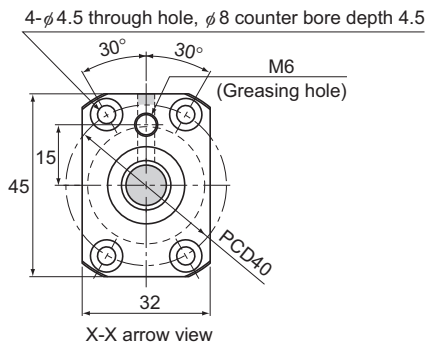
	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.02	0.009	0.008	0.008	±0.01	0.008	0.22	0.61
	0.035	0.012	0.01	0.011	±0.02	0.018	0.22	0.61
	0.04	0.02	0.014	0.014	Travel distance: ±0.05/300		0.22	0.61
	0.03	0.009	0.008	0.008	±0.01	0.008	0.22	0.61
	0.04	0.012	0.01	0.011	±0.02	0.018	0.22	0.61
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.22	0.61
	0.03	0.009	0.008	0.008	±0.012	0.008	0.22	0.61
	0.04	0.012	0.01	0.011	±0.023	0.018	0.22	0.61
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.22	0.61
	0.04	0.009	0.008	0.008	±0.012	0.008	0.22	0.61
	0.05	0.012	0.01	0.011	±0.023	0.018	0.22	0.61
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.22	0.61
	0.04	0.009	0.008	0.008	±0.012	0.008	0.22	0.61
	0.05	0.012	0.01	0.011	±0.023	0.018	0.22	0.61
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300		0.22	0.61

Ball Screw

BNK1208-2.6 Shaft diameter: 12; lead: 8



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1208-2.6RRG2+180LC7Y	50	110	125	180
BNK 1208-2.6RRG2+230LC7Y	100	160	175	230
BNK 1208-2.6RRG2+280LC7Y	150	210	225	280
BNK 1208-2.6RRG2+330LC7Y	200	260	275	330
BNK 1208-2.6RRG2+380LC7Y	250	310	325	380

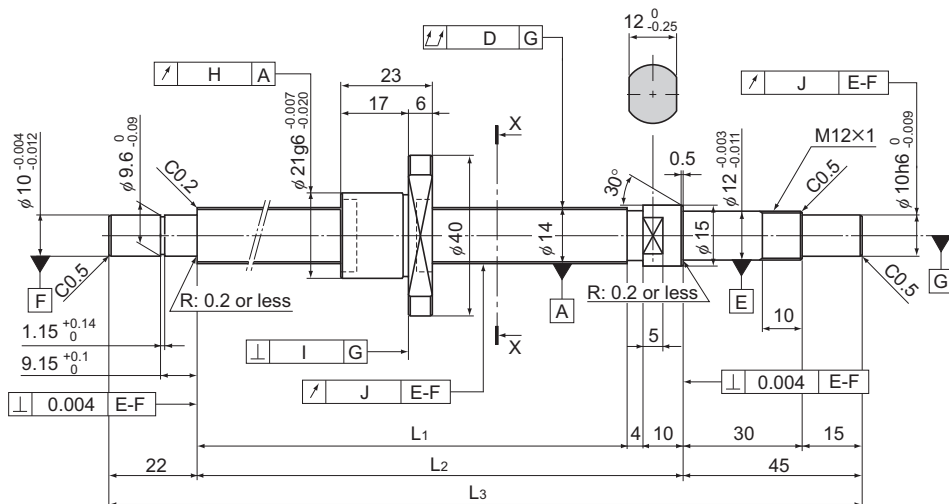


Ball Screw Specifications	
Lead (mm)	8
BCD (mm)	12.65
Thread minor diameter (mm)	9.7
Threading direction, No. of threaded grooves	Rightward, 1
No. of circuits	2.6 turns × 1 row
Clearance symbol	G2
Axial clearance (mm)	0.02 or less
Basic dynamic load rating C_a (kN)	4.7
Basic static load rating C_{0a} (kN)	7.5
Preload torque (N-m)	—
Spacer ball	None
Rigidity value (N/μm)	127
Circulation method	Return pipe

Unit: mm

	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy	Nut mass	Shaft mass
	D	H	I	J		kg	kg/m
	0.04	0.02	0.014	0.014	Travel distance: ±0.05/300	0.269	0.64
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300	0.269	0.64
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300	0.269	0.64
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300	0.269	0.64
	0.065	0.02	0.014	0.014	Travel distance: ±0.05/300	0.269	0.64

BNK1402-3 Shaft diameter: 14; lead: 2



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1402-3RRG0+166LC3Y	50	85	99	166
BNK 1402-3RRG0+166LC5Y				
BNK 1402-3RRG2+166LC7Y				
BNK 1402-3RRG0+216LC3Y	100	135	149	216
BNK 1402-3RRG0+216LC5Y				
BNK 1402-3RRG2+216LC7Y				
BNK 1402-3RRG0+266LC3Y	150	185	199	266
BNK 1402-3RRG0+266LC5Y				
BNK 1402-3RRG2+266LC7Y				
BNK 1402-3RRG0+316LC3Y	200	235	249	316
BNK 1402-3RRG0+316LC5Y				
BNK 1402-3RRG2+316LC7Y				
BNK 1402-3RRG0+416LC3Y	300	335	349	416
BNK 1402-3RRG0+416LC5Y				
BNK 1402-3RRG2+416LC7Y				

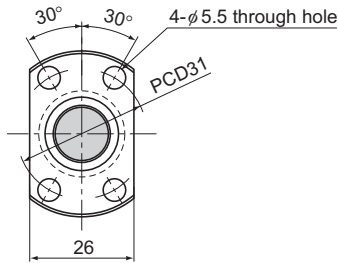
Note) A stainless steel type is also available for model BNK1402. When placing an order, add symbol "M" to the end of the model number.

(Example) BNK1402-3RRG0+166LC3Y M

Symbol for stainless steel type

For accuracy grades C3 and C5, clearance GT is also available as standard.

Finished Shaft Ends Precision Ball Screw



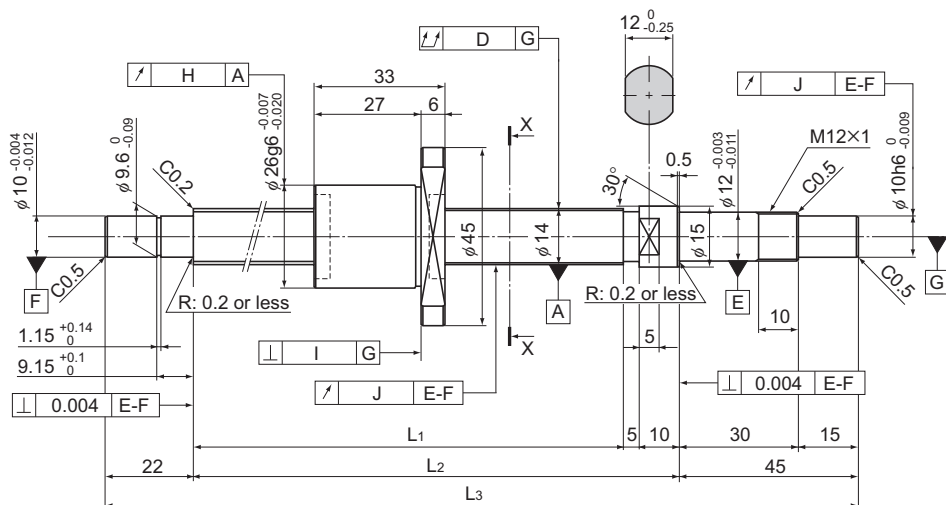
X-X arrow view

Ball Screw Specifications			
Lead (mm)	2		
BCD (mm)	14.3		
Thread minor diameter (mm)	13		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1 turn × 3 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	1.8	1.8	1.8
Basic static load rating C_{0a} (kN)	4.3	4.3	4.3
Preload torque (N-m)	4.9×10^3 to 4.9×10^2	—	—
Spacer ball	None	None	None
Rigidity value (N/μm)	140		
Circulation method	Deflector		

Unit: mm

	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.02	0.01	0.008	0.009	±0.008	0.008	0.15	1.0
	0.025	0.012	0.01	0.012	±0.018	0.018	0.15	1.0
	0.04	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	1.0
	0.025	0.01	0.008	0.009	±0.01	0.008	0.15	1.0
	0.03	0.012	0.01	0.012	±0.02	0.018	0.15	1.0
	0.045	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	1.0
	0.025	0.01	0.008	0.009	±0.01	0.008	0.15	1.0
	0.03	0.012	0.01	0.012	±0.02	0.018	0.15	1.0
	0.045	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	1.0
	0.03	0.01	0.008	0.009	±0.012	0.008	0.15	1.0
	0.04	0.012	0.01	0.012	±0.023	0.018	0.15	1.0
	0.055	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	1.0
	0.04	0.01	0.008	0.009	±0.013	0.01	0.15	1.0
	0.05	0.012	0.01	0.012	±0.025	0.02	0.15	1.0
	0.06	0.02	0.014	0.014	Travel distance: ±0.05/300		0.15	1.0

BNK1404-3 Shaft diameter: 14; lead: 4



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1404-3RRG0+230LC3Y	100	148	163	230
BNK 1404-3RRG0+230LC5Y				
BNK 1404-3RRG2+230LC7Y				
BNK 1404-3RRG0+280LC3Y	150	198	213	280
BNK 1404-3RRG0+280LC5Y				
BNK 1404-3RRG2+280LC7Y				
BNK 1404-3RRG0+330LC3Y	200	248	263	330
BNK 1404-3RRG0+330LC5Y				
BNK 1404-3RRG2+330LC7Y				
BNK 1404-3RRG0+430LC3Y	300	348	363	430
BNK 1404-3RRG0+430LC5Y				
BNK 1404-3RRG2+430LC7Y				
BNK 1404-3RRG0+530LC3Y	400	448	463	530
BNK 1404-3RRG0+530LC5Y				
BNK 1404-3RRG2+530LC7Y				

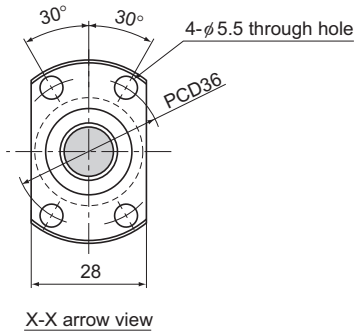
Note) A stainless steel type is also available for model BNK1404. When placing an order, add symbol "M" to the end of the model number.

(Example) BNK1404-3RRG0+230LC3Y M

_____ Symbol for stainless steel type

For accuracy grades C3 and C5, clearance GT is also available as standard.

Finished Shaft Ends Precision Ball Screw



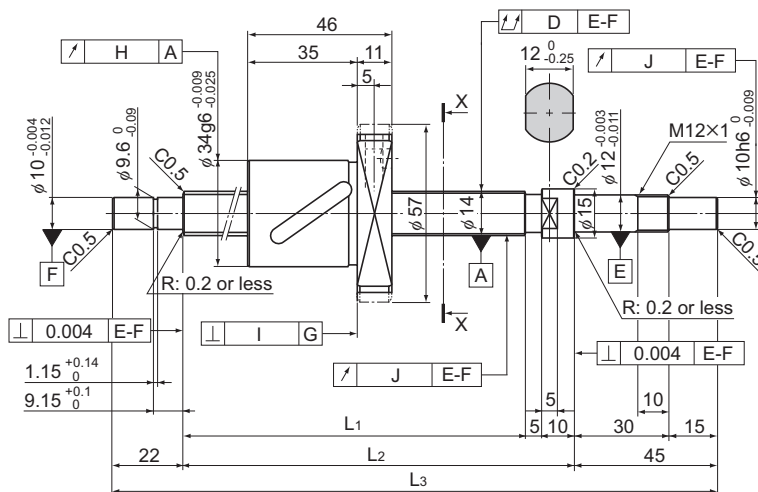
Ball Screw Specifications			
Lead (mm)	4		
BCD (mm)	14.65		
Thread minor diameter (mm)	12.2		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	1 turn \times 3 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	4.2	4.2	4.2
Basic static load rating C_{0a} (kN)	7.6	7.6	7.6
Preload torque (N-m)	9.8×10^3 to 6.9×10^2	—	—
Spacer ball	None	None	None
Rigidity value (N/ μ m)	190		
Circulation method	Deflector		

Unit: mm

	Runout of the screw shaft axis D	Runout of the nut circumference H	Flange perpendicularity I	Runout of the thread groove surface J	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	0.025	0.01	0.008	0.009	± 0.01	0.008	0.13	0.8
	0.03	0.012	0.01	0.012	± 0.02	0.018	0.13	0.8
	0.045	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.13	0.8
	0.025	0.01	0.008	0.009	± 0.01	0.008	0.13	0.8
	0.03	0.012	0.01	0.012	± 0.02	0.018	0.13	0.8
	0.045	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.13	0.8
	0.03	0.01	0.008	0.009	± 0.012	0.008	0.13	0.8
	0.04	0.012	0.01	0.012	± 0.023	0.018	0.13	0.8
	0.055	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.13	0.8
	0.04	0.01	0.008	0.009	± 0.013	0.01	0.13	0.8
	0.05	0.012	0.01	0.012	± 0.025	0.02	0.13	0.8
	0.06	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.13	0.8
	0.045	0.01	0.008	0.009	± 0.015	0.01	0.13	0.8
	0.055	0.012	0.01	0.012	± 0.027	0.02	0.13	0.8
	0.075	0.02	0.014	0.014	Travel distance: $\pm 0.05/300$		0.13	0.8

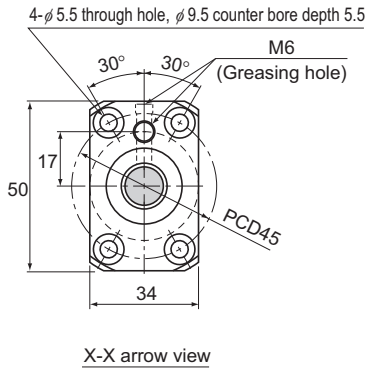
Ball Screw

BNK1408-2.5 Shaft diameter: 14; lead: 8



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1408-2.5RRG0+321LC5Y	150	239	254	321
BNK 1408-2.5RRG2+321LC7Y				
BNK 1408-2.5RRG0+371LC5Y	200	289	304	371
BNK 1408-2.5RRG2+371LC7Y				
BNK 1408-2.5RRG0+421LC5Y	250	339	354	421
BNK 1408-2.5RRG2+421LC7Y				
BNK 1408-2.5RRG0+471LC5Y	300	389	404	471
BNK 1408-2.5RRG2+471LC7Y				
BNK 1408-2.5RRG0+521LC5Y	350	439	454	521
BNK 1408-2.5RRG2+521LC7Y				
BNK 1408-2.5RRG0+571LC5Y	400	489	504	571
BNK 1408-2.5RRG2+571LC7Y				
BNK 1408-2.5RRG0+621LC5Y	450	539	554	621
BNK 1408-2.5RRG2+621LC7Y				
BNK 1408-2.5RRG0+671LC5Y	500	589	604	671
BNK 1408-2.5RRG2+671LC7Y				
BNK 1408-2.5RRG0+721LC5Y	550	639	654	721
BNK 1408-2.5RRG2+721LC7Y				
BNK 1408-2.5RRG0+771LC5Y	600	689	704	771
BNK 1408-2.5RRG2+771LC7Y				
BNK 1408-2.5RRG0+871LC5Y	700	789	804	871
BNK 1408-2.5RRG2+871LC7Y				

Note) For accuracy grade C5, clearance GT is also standardized.
Plug the unused oil hole before using the product.

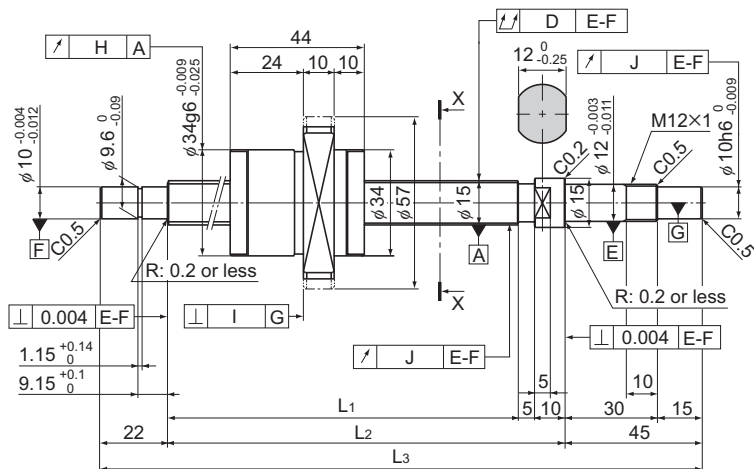


Ball Screw Specifications			
Lead (mm)	8		
BCD (mm)	14.75		
Thread minor diameter (mm)	11.2		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	2.5 turns × 1 row		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	4.3	6.9	6.9
Basic static load rating C_{0a} (kN)	5.8	11.5	11.5
Preload torque (N-m)	2×10^2 to 7.8×10^2	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/μm)	80	150	
Circulation method	Return pipe		

Unit: mm

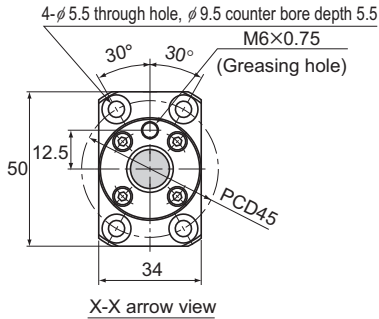
	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.035	0.015	0.011	0.012	±0.023	0.018	0.29	0.84
	0.055	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.035	0.015	0.011	0.012	±0.023	0.018	0.29	0.84
	0.055	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.04	0.015	0.011	0.012	±0.025	0.02	0.29	0.84
	0.06	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.04	0.015	0.011	0.012	±0.025	0.02	0.29	0.84
	0.06	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.05	0.015	0.011	0.012	±0.027	0.02	0.29	0.84
	0.075	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.05	0.015	0.011	0.012	±0.027	0.02	0.29	0.84
	0.075	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.05	0.015	0.011	0.012	±0.03	0.023	0.29	0.84
	0.075	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.065	0.015	0.011	0.012	±0.03	0.023	0.29	0.84
	0.09	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.065	0.015	0.011	0.012	±0.035	0.025	0.29	0.84
	0.09	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.065	0.015	0.011	0.012	±0.035	0.025	0.29	0.84
	0.09	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84
	0.085	0.015	0.011	0.012	±0.035	0.025	0.29	0.84
	0.12	0.03	0.018	0.014	Travel distance: ±0.05/300		0.29	0.84

BNK1510-5.6 Shaft diameter: 15; lead: 10



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1510-5.6G0+321LC5Y	150	239	254	321
BNK 1510-5.6G2+321LC7Y				
BNK 1510-5.6G0+371LC5Y	200	289	304	371
BNK 1510-5.6G2+371LC7Y				
BNK 1510-5.6G0+421LC5Y	250	339	354	421
BNK 1510-5.6G2+421LC7Y				
BNK 1510-5.6G0+471LC5Y	300	389	404	471
BNK 1510-5.6G2+471LC7Y				
BNK 1510-5.6G0+521LC5Y	350	439	454	521
BNK 1510-5.6G2+521LC7Y				
BNK 1510-5.6G0+571LC5Y	400	489	504	571
BNK 1510-5.6G2+571LC7Y				
BNK 1510-5.6G0+621LC5Y	450	539	554	621
BNK 1510-5.6G2+621LC7Y				
BNK 1510-5.6G0+671LC5Y	500	589	604	671
BNK 1510-5.6G2+671LC7Y				
BNK 1510-5.6G0+721LC5Y	550	639	654	721
BNK 1510-5.6G2+721LC7Y				
BNK 1510-5.6G0+771LC5Y	600	689	704	771
BNK 1510-5.6G2+771LC7Y				
BNK 1510-5.6G0+871LC5Y	700	789	804	871
BNK 1510-5.6G2+871LC7Y				
BNK 1510-5.6G0+971LC5Y	800	889	904	971
BNK 1510-5.6G2+971LC7Y				

Note) For accuracy grade C5, clearance GT is also standardized.

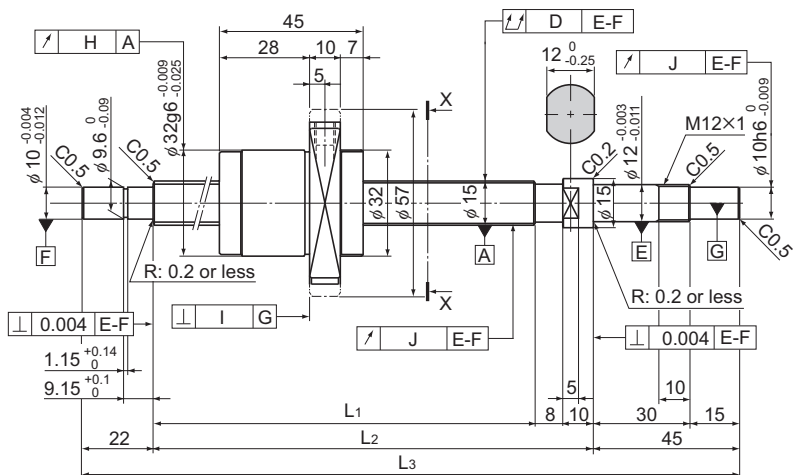


Ball Screw Specifications			
Lead (mm)	10		
BCD (mm)	15.75		
Thread minor diameter (mm)	12.5		
Threading direction, No. of threaded grooves	Rightward, 2		
No. of circuits	2.8 turns × 2 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	9	14.3	14.3
Basic static load rating C_{0a} (kN)	13.9	27.9	27.9
Preload torque (N-m)	2×10^2 to 9.8×10^2	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/μm)	190	350	
Circulation method	End cap		

Unit: mm

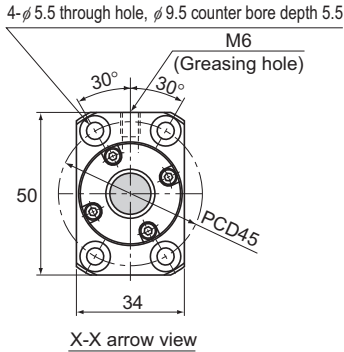
	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.035	0.015	0.011	0.012	±0.023	0.018	0.22	0.76
	0.055	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.035	0.015	0.011	0.012	±0.023	0.018	0.22	0.76
	0.055	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.04	0.015	0.011	0.012	±0.025	0.02	0.22	0.76
	0.06	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.04	0.015	0.011	0.012	±0.025	0.02	0.22	0.76
	0.06	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.05	0.015	0.011	0.012	±0.027	0.02	0.22	0.76
	0.075	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.05	0.015	0.011	0.012	±0.027	0.02	0.22	0.76
	0.075	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.05	0.015	0.011	0.012	±0.03	0.023	0.22	0.76
	0.075	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.065	0.015	0.011	0.012	±0.03	0.023	0.22	0.76
	0.09	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.065	0.015	0.011	0.012	±0.035	0.025	0.22	0.76
	0.09	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.065	0.015	0.011	0.012	±0.035	0.025	0.22	0.76
	0.09	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.085	0.015	0.011	0.012	±0.035	0.025	0.22	0.76
	0.12	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76
	0.085	0.015	0.011	0.012	±0.04	0.027	0.22	0.76
	0.12	0.03	0.018	0.014	Travel distance: ±0.05/300		0.22	0.76

BNK1520-3 Shaft diameter: 15; lead: 20



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1520-3G0+321LC5Y	150	236	254	321
BNK 1520-3G2+321LC7Y				
BNK 1520-3G0+371LC5Y				
BNK 1520-3G2+371LC7Y	200	286	304	371
BNK 1520-3G0+421LC5Y				
BNK 1520-3G2+421LC7Y				
BNK 1520-3G0+471LC5Y	250	336	354	421
BNK 1520-3G2+471LC7Y				
BNK 1520-3G0+521LC5Y				
BNK 1520-3G2+521LC7Y	300	386	404	471
BNK 1520-3G0+571LC5Y				
BNK 1520-3G2+571LC7Y				
BNK 1520-3G0+621LC5Y	350	436	454	521
BNK 1520-3G2+621LC7Y				
BNK 1520-3G0+671LC5Y				
BNK 1520-3G2+671LC7Y	400	486	504	571
BNK 1520-3G0+721LC5Y				
BNK 1520-3G2+721LC7Y				
BNK 1520-3G0+771LC5Y	450	536	554	621
BNK 1520-3G2+771LC7Y				
BNK 1520-3G0+821LC5Y				
BNK 1520-3G2+821LC7Y	500	586	604	671
BNK 1520-3G0+871LC5Y				
BNK 1520-3G2+871LC7Y				
BNK 1520-3G0+921LC5Y	550	636	654	721
BNK 1520-3G2+921LC7Y				
BNK 1520-3G0+971LC5Y				
BNK 1520-3G2+971LC7Y	600	686	704	771
BNK 1520-3G0+1021LC5Y				
BNK 1520-3G2+1021LC7Y				
BNK 1520-3G0+1071LC5Y	650	736	754	821
BNK 1520-3G2+1071LC7Y				
BNK 1520-3G0+1121LC5Y				
BNK 1520-3G2+1121LC7Y	700	786	804	871
BNK 1520-3G0+1171LC5Y				
BNK 1520-3G2+1171LC7Y				
BNK 1520-3G0+1221LC5Y	750	836	854	921
BNK 1520-3G2+1221LC7Y				
BNK 1520-3G0+1271LC5Y				
BNK 1520-3G2+1271LC7Y	800	886	904	971
BNK 1520-3G0+1321LC5Y				
BNK 1520-3G2+1321LC7Y				

Note) For accuracy grade C5, clearance GT is also standardized.

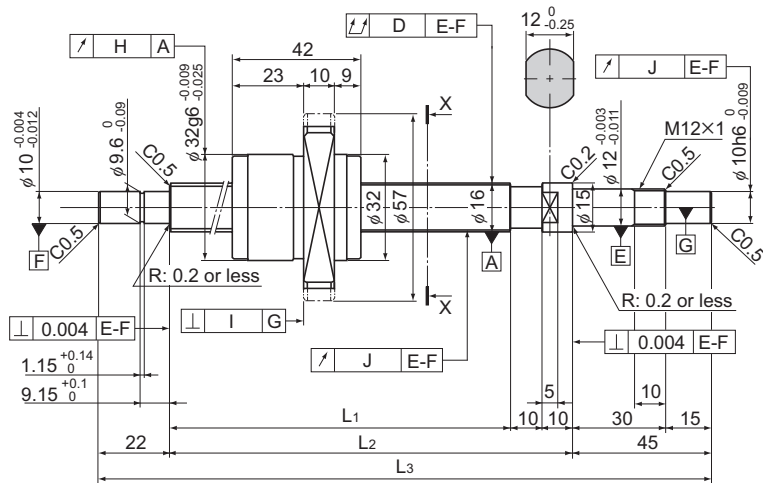


Ball Screw Specifications			
Lead (mm)	20		
BCD (mm)	15.75		
Thread minor diameter (mm)	12.5		
Threading direction, No. of threaded grooves	Rightward, 2		
No. of circuits	1.5 turns \times 2 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	5.1	8	8
Basic static load rating C_{0a} (kN)	7.9	15.8	15.8
Preload torque (N-m)	2×10^2 to 8.8×10^2	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/ μ m)	110	200	
Circulation method	End cap		

Unit: mm

	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.035	0.015	0.011	0.012	± 0.023	0.018	0.32	1.05
	0.055	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.035	0.015	0.011	0.012	± 0.023	0.018	0.32	1.05
	0.055	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.04	0.015	0.011	0.012	± 0.025	0.02	0.32	1.05
	0.06	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.04	0.015	0.011	0.012	± 0.025	0.02	0.32	1.05
	0.06	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.05	0.015	0.011	0.012	± 0.027	0.02	0.32	1.05
	0.075	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.05	0.015	0.011	0.012	± 0.027	0.02	0.32	1.05
	0.075	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.05	0.015	0.011	0.012	± 0.03	0.023	0.32	1.05
	0.075	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.065	0.015	0.011	0.012	± 0.03	0.023	0.32	1.05
	0.09	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.065	0.015	0.011	0.012	± 0.035	0.025	0.32	1.05
	0.09	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.065	0.015	0.011	0.012	± 0.035	0.025	0.32	1.05
	0.09	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.085	0.015	0.011	0.012	± 0.035	0.025	0.32	1.05
	0.12	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05
	0.085	0.015	0.011	0.012	± 0.04	0.027	0.32	1.05
	0.12	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.32	1.05

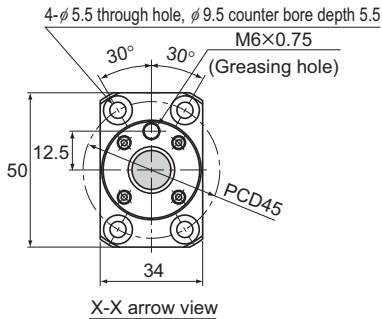
BNK1616-3.6 Shaft diameter: 16; lead: 16



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 1616-3.6G0+321LC5Y	150	234	254	321
BNK 1616-3.6G2+321LC7Y				
BNK 1616-3.6G0+371LC5Y	200	284	304	371
BNK 1616-3.6G2+371LC7Y				
BNK 1616-3.6G0+421LC5Y	250	334	354	421
BNK 1616-3.6G2+421LC7Y				
BNK 1616-3.6G0+471LC5Y	300	384	404	471
BNK 1616-3.6G2+471LC7Y				
BNK 1616-3.6G0+521LC5Y	350	434	454	521
BNK 1616-3.6G2+521LC7Y				
BNK 1616-3.6G0+571LC5Y	400	484	504	571
BNK 1616-3.6G2+571LC7Y				
BNK 1616-3.6G0+621LC5Y	450	534	554	621
BNK 1616-3.6G2+621LC7Y				
BNK 1616-3.6G0+671LC5Y	500	584	604	671
BNK 1616-3.6G2+671LC7Y				
BNK 1616-3.6G0+721LC5Y	550	634	654	721
BNK 1616-3.6G2+721LC7Y				
BNK 1616-3.6G0+771LC5Y	600	684	704	771
BNK 1616-3.6G2+771LC7Y				
BNK 1616-3.6G0+871LC5Y	700	784	804	871
BNK 1616-3.6G2+871LC7Y				
BNK 1616-3.6G0+971LC5Y	800	884	904	971
BNK 1616-3.6G2+971LC7Y				

Note) For accuracy grade C5, clearance GT is also standardized.

Finished Shaft Ends Precision Ball Screw

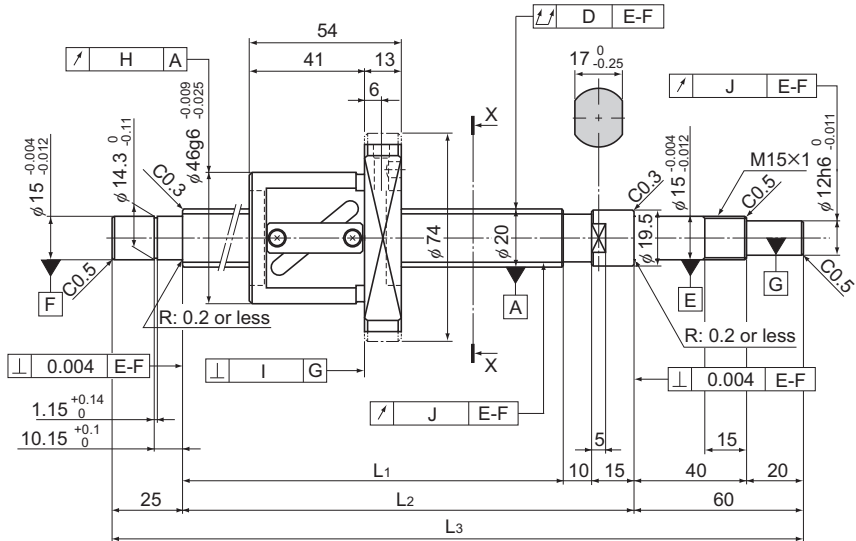


Ball Screw Specifications			
Lead (mm)	16		
BCD (mm)	16.65		
Thread minor diameter (mm)	13.7		
Threading direction, No. of threaded grooves	Rightward, 2		
No. of circuits	1.8 turns \times 2 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	4.4	7.1	7.1
Basic static load rating C_{0a} (kN)	7.2	14.3	14.3
Preload torque (N-m)	2×10^2 to 9.8×10^2	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/ μ m)	120	230	
Circulation method	End cap		

Unit: mm

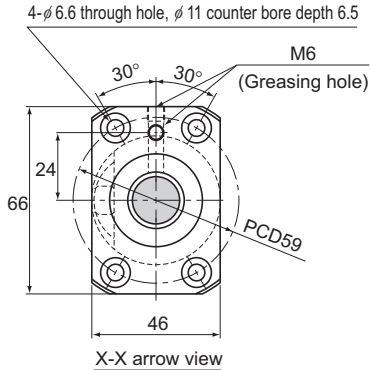
	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.035	0.015	0.011	0.012	± 0.023	0.018	0.2	1.25
	0.055	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.035	0.015	0.011	0.012	± 0.023	0.018	0.2	1.25
	0.055	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.04	0.015	0.011	0.012	± 0.025	0.02	0.2	1.25
	0.06	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.04	0.015	0.011	0.012	± 0.025	0.02	0.2	1.25
	0.06	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.05	0.015	0.011	0.012	± 0.027	0.02	0.2	1.25
	0.075	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.05	0.015	0.011	0.012	± 0.027	0.02	0.2	1.25
	0.075	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.05	0.015	0.011	0.012	± 0.03	0.023	0.2	1.25
	0.075	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.065	0.015	0.011	0.012	± 0.03	0.023	0.2	1.25
	0.09	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.065	0.015	0.011	0.012	± 0.035	0.025	0.2	1.25
	0.09	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.065	0.015	0.011	0.012	± 0.035	0.025	0.2	1.25
	0.09	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.085	0.015	0.011	0.012	± 0.035	0.025	0.2	1.25
	0.12	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25
	0.085	0.015	0.011	0.012	± 0.04	0.027	0.2	1.25
	0.12	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.2	1.25

BNK2010-2.5 Shaft diameter: 20; lead: 10



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 2010-2.5RRG0+499LC5Y	300	389	414	499
BNK 2010-2.5RRG2+499LC7Y				
BNK 2010-2.5RRG0+599LC5Y	400	489	514	599
BNK 2010-2.5RRG2+599LC7Y				
BNK 2010-2.5RRG0+699LC5Y	500	589	614	699
BNK 2010-2.5RRG2+699LC7Y				
BNK 2010-2.5RRG0+799LC5Y	600	689	714	799
BNK 2010-2.5RRG2+799LC7Y				
BNK 2010-2.5RRG0+899LC5Y	700	789	814	899
BNK 2010-2.5RRG2+899LC7Y				
BNK 2010-2.5RRG0+999LC5Y	800	889	914	999
BNK 2010-2.5RRG2+999LC7Y				
BNK 2010-2.5RRG0+1099LC5Y	900	989	1014	1099
BNK 2010-2.5RRG2+1099LC7Y				
BNK 2010-2.5RRG0+1199LC5Y	1000	1089	1114	1199
BNK 2010-2.5RRG2+1199LC7Y				
BNK 2010-2.5RRG0+1299LC5Y	1100	1189	1214	1299
BNK 2010-2.5RRG2+1299LC7Y				

Note) For accuracy grade C5, clearance GT is also standardized.
Plug the unused oil hole before using the product.

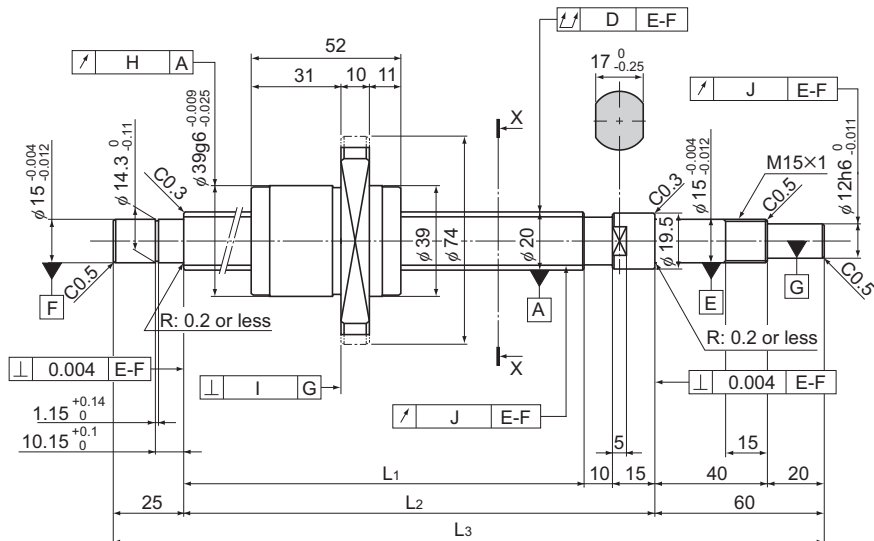


Ball Screw Specifications			
Lead (mm)	10		
BCD (mm)	21		
Thread minor diameter (mm)	16.4		
Threading direction, No. of threaded grooves	Rightward, 1		
No. of circuits	2.5 turns \times 1 row		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	7	11.1	11.1
Basic static load rating C_{0a} (kN)	11	22	22
Preload torque (N-m)	2×10^2 to 9.8×10^2	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/ μ m)	110	210	
Circulation method	Return pipe		

Unit: mm

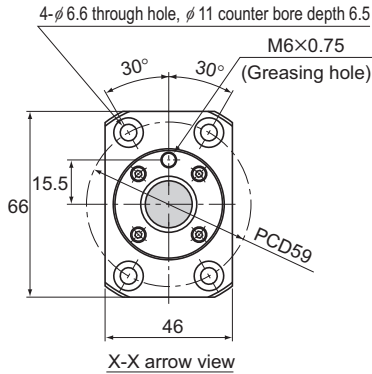
	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.04	0.015	0.011	0.012	± 0.025	0.02	0.58	1.81
	0.06	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.58	1.81
	0.05	0.015	0.011	0.012	± 0.027	0.02	0.58	1.81
	0.075	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.58	1.81
	0.065	0.015	0.011	0.012	± 0.03	0.023	0.58	1.81
	0.09	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.58	1.81
	0.065	0.015	0.011	0.012	± 0.035	0.025	0.58	1.81
	0.09	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.58	1.81
	0.085	0.015	0.011	0.012	± 0.035	0.025	0.58	1.81
	0.12	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.58	1.81
	0.085	0.015	0.011	0.012	± 0.04	0.027	0.58	1.81
	0.12	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.58	1.81
	0.11	0.015	0.011	0.012	± 0.04	0.027	0.58	1.81
	0.15	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.58	1.81
	0.11	0.015	0.011	0.012	± 0.046	0.03	0.58	1.81
	0.15	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.58	1.81
	0.15	0.015	0.011	0.012	± 0.046	0.03	0.58	1.81
	0.19	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.58	1.81

BNK2020-3.6 Shaft diameter: 20; lead: 20



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 2020-3.6G0+520LC5Y	300	410	435	520
BNK 2020-3.6G2+520LC7Y				
BNK 2020-3.6G0+620LC5Y	400	510	535	620
BNK 2020-3.6G2+620LC7Y				
BNK 2020-3.6G0+720LC5Y	500	610	635	720
BNK 2020-3.6G2+720LC7Y				
BNK 2020-3.6G0+820LC5Y	600	710	735	820
BNK 2020-3.6G2+820LC7Y				
BNK 2020-3.6G0+920LC5Y	700	810	835	920
BNK 2020-3.6G2+920LC7Y				
BNK 2020-3.6G0+1020LC5Y	800	910	935	1020
BNK 2020-3.6G2+1020LC7Y				
BNK 2020-3.6G0+1120LC5Y	900	1010	1035	1120
BNK 2020-3.6G2+1120LC7Y				
BNK 2020-3.6G0+1220LC5Y	1000	1110	1135	1220
BNK 2020-3.6G2+1220LC7Y				
BNK 2020-3.6G0+1320LC5Y	1100	1210	1235	1320
BNK 2020-3.6G2+1320LC7Y				

Note) For accuracy grade C5, clearance GT is also standardized.

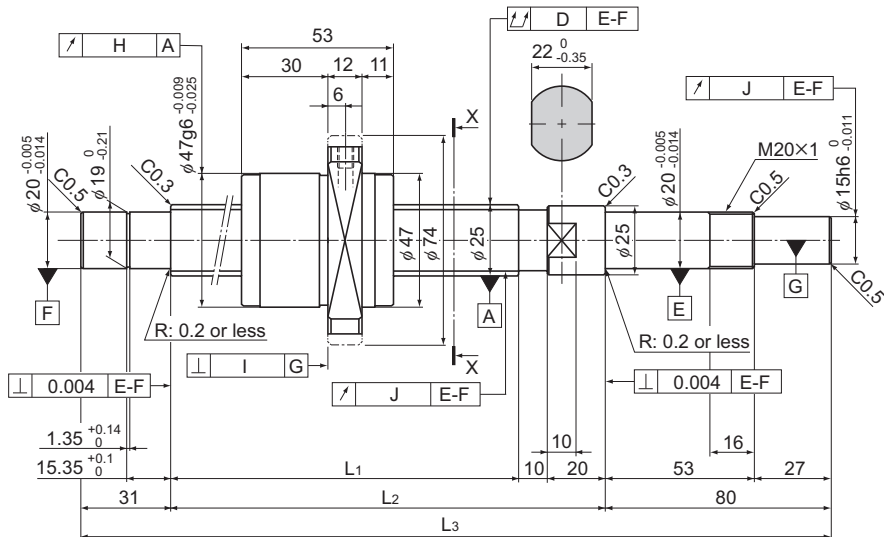


Ball Screw Specifications			
Lead (mm)	20		
BCD (mm)	20.75		
Thread minor diameter (mm)	17.5		
Threading direction, No. of threaded grooves	Rightward, 2		
No. of circuits	1.8 turns \times 2 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	7	11.1	11.1
Basic static load rating C_{0a} (kN)	12.3	24.7	24.7
Preload torque (N-m)	2×10^2 to 9.8×10^2	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/ μ m)	160	290	
Circulation method	End cap		

Unit: mm

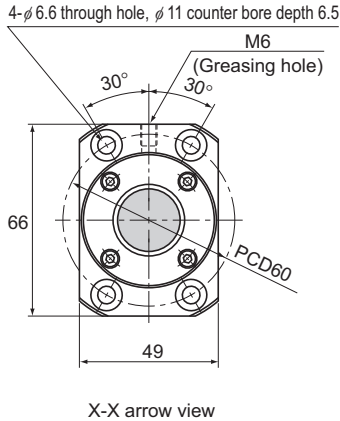
	Runout of the screw shaft axis	Runout of the nut circumference	Flange perpendicularity	Runout of the thread groove surface	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	D	H	I	J				
	0.05	0.015	0.011	0.012	± 0.027	0.02	0.39	2.04
	0.075	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.39	2.04
	0.05	0.015	0.011	0.012	± 0.03	0.023	0.39	2.04
	0.075	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.39	2.04
	0.065	0.015	0.011	0.012	± 0.03	0.023	0.39	2.04
	0.09	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.39	2.04
	0.085	0.015	0.011	0.012	± 0.035	0.025	0.39	2.04
	0.12	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.39	2.04
	0.085	0.015	0.011	0.012	± 0.04	0.027	0.39	2.04
	0.12	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.39	2.04
	0.11	0.015	0.011	0.012	± 0.04	0.027	0.39	2.04
	0.15	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.39	2.04
	0.11	0.015	0.011	0.012	± 0.046	0.03	0.39	2.04
	0.15	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.39	2.04
	0.11	0.015	0.011	0.012	± 0.046	0.03	0.39	2.04
	0.15	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.39	2.04
	0.15	0.015	0.011	0.012	± 0.046	0.03	0.39	2.04
	0.19	0.03	0.018	0.014	Travel distance: $\pm 0.05/300$		0.39	2.04

BNK2520-3.6 Shaft diameter: 25; lead: 20



Model No.	Stroke	Screw shaft length		
		L ₁	L ₂	L ₃
BNK 2520-3.6G0+751LC5Y	500	610	640	751
BNK 2520-3.6G2+751LC7Y				
BNK 2520-3.6G0+851LC5Y	600	710	740	851
BNK 2520-3.6G2+851LC7Y				
BNK 2520-3.6G0+1051LC5Y	800	910	940	1051
BNK 2520-3.6G2+1051LC7Y				
BNK 2520-3.6G0+1251LC5Y	1000	1110	1140	1251
BNK 2520-3.6G2+1251LC7Y				
BNK 2520-3.6G0+1451LC5Y	1200	1310	1340	1451
BNK 2520-3.6G2+1451LC7Y				
BNK 2520-3.6G0+1651LC5Y	1400	1510	1540	1651
BNK 2520-3.6G2+1651LC7Y				
BNK 2520-3.6G0+1851LC5Y	1600	1710	1740	1851
BNK 2520-3.6G2+1851LC7Y				

Note) For accuracy grade C5, clearance GT is also standardized.



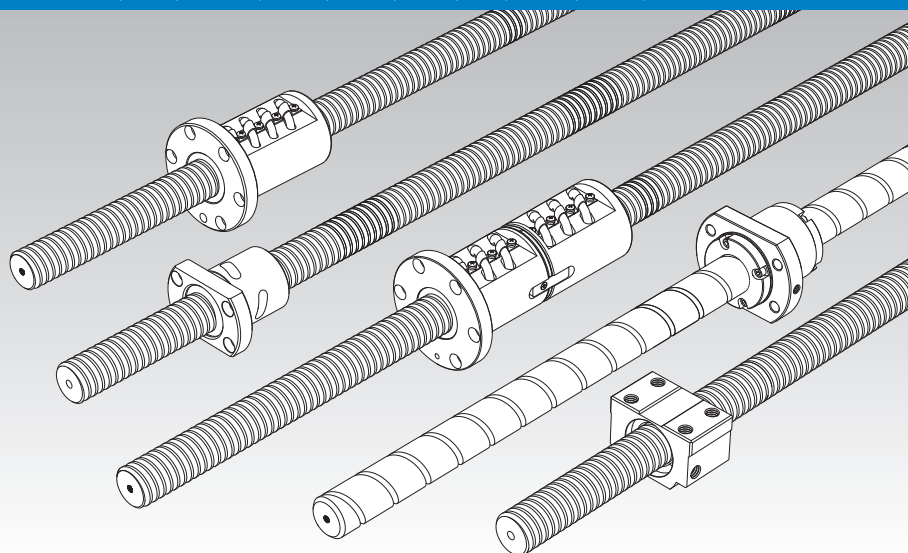
Ball Screw Specifications			
Lead (mm)	20		
BCD (mm)	26		
Thread minor diameter (mm)	21.9		
Threading direction, No. of threaded grooves	Rightward, 2		
No. of circuits	1.8 turns \times 2 rows		
Clearance symbol	G0	GT	G2
Axial clearance (mm)	0	0.005 or less	0.02 or less
Basic dynamic load rating C_a (kN)	10.5	16.7	16.7
Basic static load rating C_{0a} (kN)	19	38	38
Preload torque (N-m)	4.9×10^2 to 2.2×10^1	—	—
Spacer ball	1 : 1	None	None
Rigidity value (N/ μ m)	190	360	
Circulation method	End cap		

Unit: mm

	Runout of the screw shaft axis D	Runout of the nut circumference H	Flange perpendicularity I	Runout of the thread groove surface J	Lead angle accuracy		Nut mass kg	Shaft mass kg/m
					Representative travel distance error	Fluctuation		
	0.055	0.015	0.011	0.013	± 0.03	0.023	0.53	3.03
	0.07	0.03	0.018	0.02	Travel distance: $\pm 0.05/300$		0.53	3.03
	0.065	0.015	0.011	0.013	± 0.035	0.025	0.53	3.03
	0.085	0.03	0.018	0.02	Travel distance: $\pm 0.05/300$		0.53	3.03
	0.085	0.015	0.011	0.013	± 0.04	0.027	0.53	3.03
	0.1	0.03	0.018	0.02	Travel distance: $\pm 0.05/300$		0.53	3.03
	0.11	0.015	0.011	0.013	± 0.046	0.03	0.53	3.03
	0.13	0.03	0.018	0.02	Travel distance: $\pm 0.05/300$		0.53	3.03
	0.11	0.015	0.011	0.013	± 0.054	0.035	0.53	3.03
	0.13	0.03	0.018	0.02	Travel distance: $\pm 0.05/300$		0.53	3.03
	0.14	0.015	0.011	0.013	± 0.054	0.035	0.53	3.03
	0.17	0.03	0.018	0.02	Travel distance: $\pm 0.05/300$		0.53	3.03
	0.14	0.015	0.011	0.013	± 0.065	0.04	0.53	3.03
	0.17	0.03	0.018	0.02	Travel distance: $\pm 0.05/300$		0.53	3.03

Precision Ball Screw

Models BIF, DIK, BNFN, DKN, BLW, BNF, DK, MDK, WHF, BLK/WGF and BNT



Point of Selection	A15-8
Options	A15-352
Model No.	A15-369
Precautions on Use	A15-374
Accessories for Lubrication	A24-1
Mounting Procedure and Maintenance	B15-104
Lead Angle Accuracy	A15-11
Accuracy of the Mounting Surface	A15-14
Axial Clearance	A15-19
Maximum Length of the Screw Shaft	A15-24
DN Value	A15-33
Support Unit	A15-316
Recommended Shapes of Shaft Ends	A15-324
Dimensions of Each Model with an Option Attached	A15-360

For THK Precision Ball Screws, a wide array of precision-ground screw shafts and ball screw nuts are available as standard to meet diversified applications.

Structure and Features

[Combinations of Various shaft Diameters and Leads]

You can select the combination of a shaft diameter and a lead that meet the intended use from the various nut types and the screw shaft leads. Those nut types include the return-pipe nuts, which represent the most extensive variations among the series, the compact simple nuts and the large-lead end-cap nuts.

[Standard-stock Types (with Unfinished Shaft Ends/Finished Shaft Ends) are Available]

The unfinished shaft end types, which are mass manufactured by cutting the standardized screw shafts to the standard lengths, and those with finished shaft ends, for which the screw shaft ends are machined to match the corresponding the support units, are available as the standard.

[Accuracy Standards Compliant with JIS (ISO)]

The accuracy of the Ball Screw is controlled in accordance with the JIS standards (JIS B1192-1997).

	Precision Ball Screw					Rolled Ball Screw		
	C0	C1	C2	C3	C5	C7	C8	C10
Accuracy grades	C0	C1	C2	C3	C5	C7	C8	C10

Type	Series symbol	Grade	Remarks
For positioning	C	0, 1, 3, 5	JIS series
	Cp	1, 3, 5	ISO compliant
For transport	Ct	1, 3, 5, 7, 10	

[Options that Meet the Environment are Available]

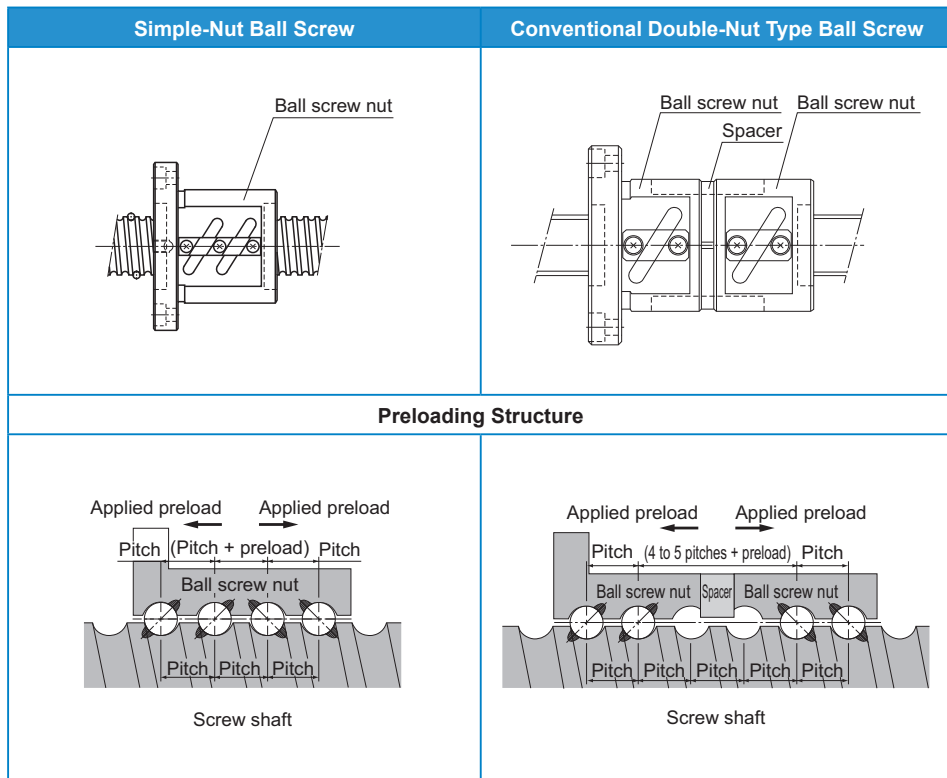
Options are available consisting of a lubricator (QZ), which enables the maintenance interval to be significantly extended, and a wiper ring (W), which improves the ability to remove foreign materials in adverse environments.

[Structure and Features of Offset Preload Type Simple-Nut Ball Screw]

The Simple-Nut Ball Screw is an offset preload type in which a phase is provided in the middle of a single ball screw nut, and an axial clearance is set at a below-zero value (under a preload).

The Simple-Nut Ball Screw has a more compact structure and allows smoother motion than the conventional double-nut type (spacer inserted between two nuts).

[Comparison between the Simple Nut and the Double-Nuts]

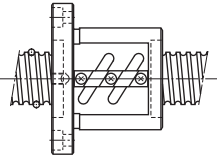


Simple-Nut Ball Screw

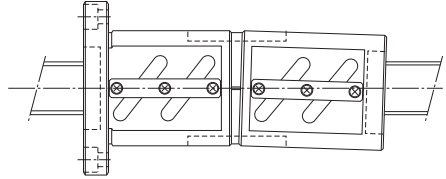
Conventional Double-Nut Type Ball Screw

Rotational Performance

The preload adjustment with Simple Nut Ball Screw is performed according to the ball diameter. This eliminates the inconsistency in the contact angle, which is the most important factor of the Ball Screw performance. It also ensures the high rigidity, the smooth motion and the high wobbling accuracy.

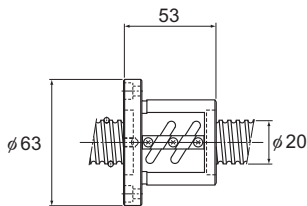


The use of a spacer in the double-nuts tends to cause inconsistency in the contact angle due to inaccurate flatness of the spacer surface and an inaccurate perpendicularity of the nut. This results in a non-uniform ball contact, an inferior rotational performance and a low wobbling accuracy.

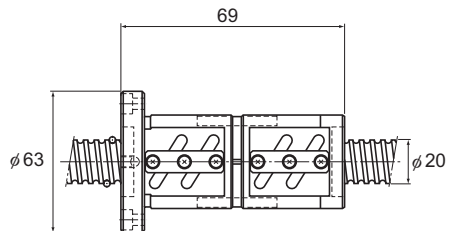


Dimensions

Since Simple-Nut Ball Screw is based on a preloading mechanism that does not require a spacer, the overall nut length can be kept short. As a result, the whole nut can be lightly and compactly designed.

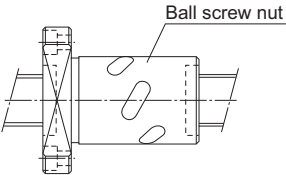
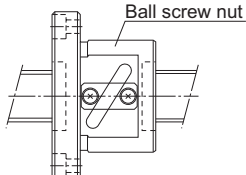
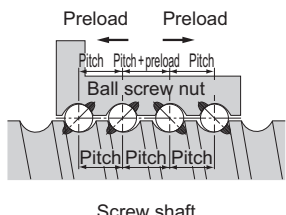
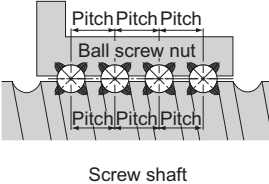
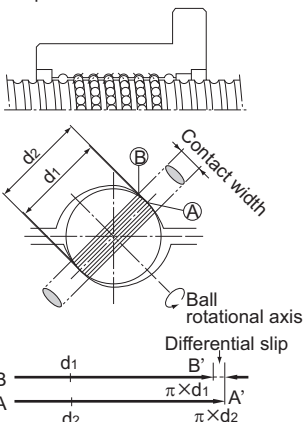
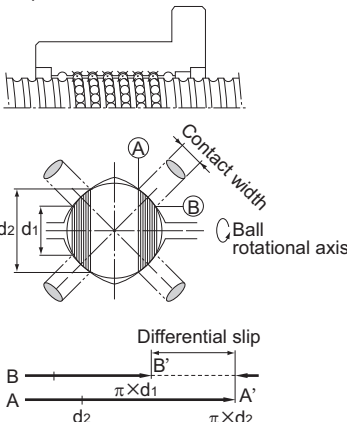


Simple-Nut



Double-Nut

[Comparison between the Offset Preload Type of Simple-Nut Ball Screw and the Oversized-ball Preload Nut Ball Screw]

Simple-Nut Ball Screw Model DIK	Conventional Oversized-ball Preload Nut Ball Screw Model BNF
 <p>Ball screw nut</p>	 <p>Ball screw nut</p>
Preloading Structure	
 <p>Preload Preload</p> <p>Pitch Pitch + preload Pitch</p> <p>Ball screw nut</p> <p>Pitch Pitch Pitch</p> <p>Screw shaft</p>	 <p>Pitch Pitch Pitch</p> <p>Ball screw nut</p> <p>Pitch Pitch Pitch</p> <p>Screw shaft</p>
Accuracy Life	
<p>Simple-Nut Ball Screw model DIK has a similar preloading structure to that of the double-nut type although the former only has one ball screw shaft. As a result, no differential slip or spin occurs, thus to minimize the increase in the rotational torque and the generation of heat. Accordingly, a high level of accuracy can be maintained over a long period.</p> <p>2 point contact structure</p>  <p>d_2 d_1 Contact width</p> <p>Ball rotational axis</p> <p>Differential slip</p> <p>B d_1 B'</p> <p>A $\pi \times d_1$ A'</p> <p>d_2 $\pi \times d_2$</p>	<p>With the oversized-ball preload nut Ball Screw, a preload is provided through the balls each in contact with the raceway at four points. This causes differential slip and spin to increase the rotational torque, resulting in an accelerated wear and a heat generation. Therefore, the accuracy deteriorates in a short period.</p> <p>4 point contact structure</p>  <p>Ball rotational axis</p> <p>Differential slip</p> <p>B d_1 B'</p> <p>A $\pi \times d_1$ A'</p> <p>d_2 $\pi \times d_2$</p>

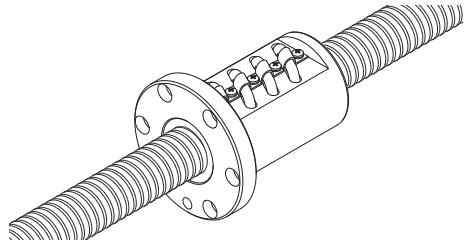
Types and Features

[Preload Type]

Model BIF

The right and the left screws are provided with a phase in the middle of the ball screw nut, and an axial clearance is set at a below-zero value (under a preload). This compact model is capable of a smooth motion.

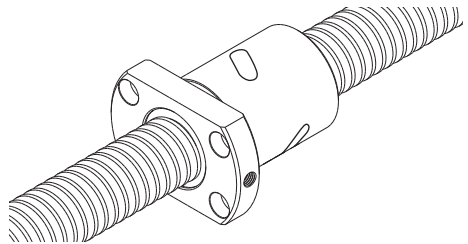
Specification Table⇒ **A15-182**



Model DIK

The right and the left screws are provided with a phase in the middle of the ball screw nut, and an axial clearance is set at a below-zero value (under a preload). This compact model is capable of a smooth motion.

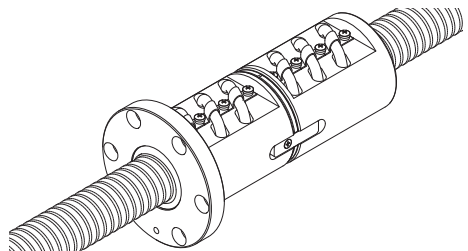
Specification Table⇒ **A15-182**



Model BNFN

The most common type with a preload provided via a spacer between the two combined ball screw nuts to eliminate the backlash. It can be mounted using the bolt holes drilled on the flange.

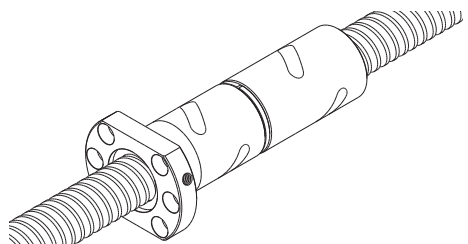
Specification Table⇒ **A15-182**



Model DKN

A preload is provided via a spacer between the two combined ball screw nuts to achieve a below-zero axial clearance (under a preload).

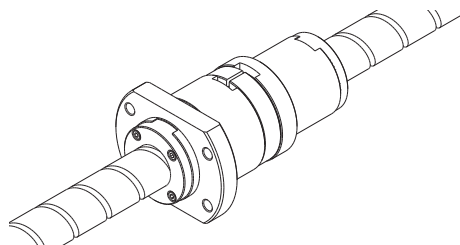
Specification Table⇒ **A15-202**



Model BLW

Since a preload is provided through a spacer between two large lead nuts, high-speed feed without backlash is ensured.

Specification Table⇒ **A15-182**

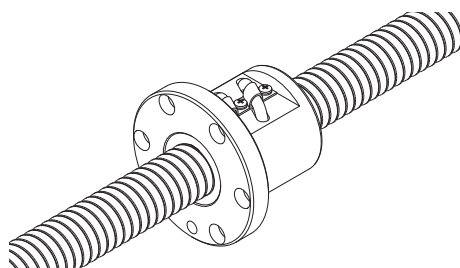


[No Preload Type]

Model BNF

The simplest type with a single ball screw nut. It is designed to be mounted using the bolt holes drilled on the flange.

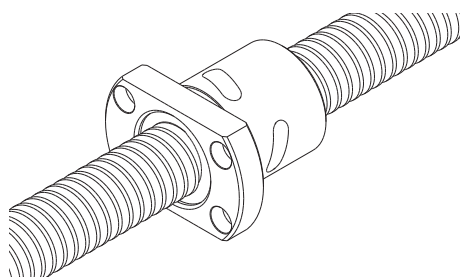
Specification Table⇒ **A15-218**



Model DK

The most compact type, with a ball screw nut diameter 70 to 80% of that of the return-pipe nut.

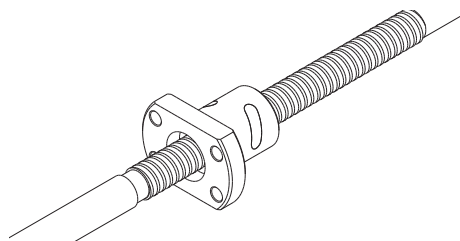
Specification Table⇒ **A15-216**



Model MDK

A miniature type with a screw shaft diameter of $\phi 4$ to $\phi 14$ mm and a lead of 1 to 5mm.

Specification Table⇒ **A15-216**

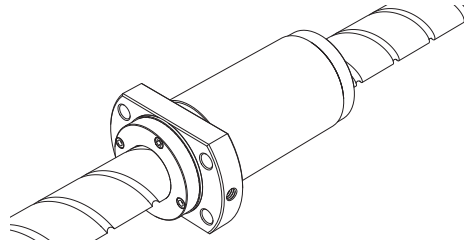


Model WHF

This Ball Screw for high-speed feed achieves a DN value of 120,000 by using a new circulation structure.

Since the nut outer diameter and the mounting holes of this model are dimensionally interchangeable with the previous model WGF, model WGF can be replaced with this model. (WHF1530, WHF2040 and WHF2550)

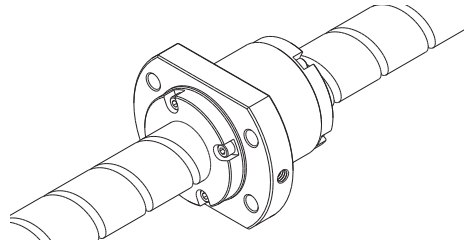
Specification Table⇒ **A15-216**



Models BLK/WGF

With model BLK, the shaft diameter is equal to the lead dimension. Model WGF has a lead dimension 1.5 to 3 times longer than the shaft diameter.

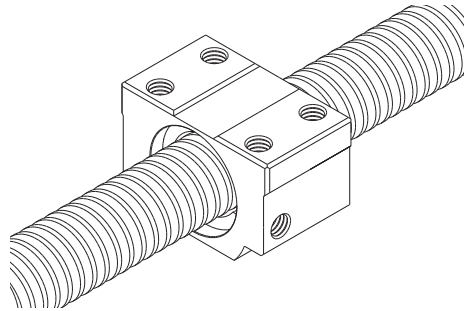
Specification Table⇒ **A15-216**



Square Ball Screw Nut Model BNT

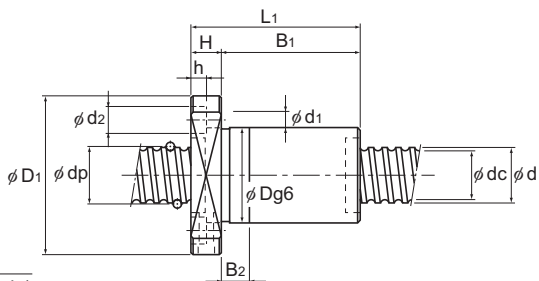
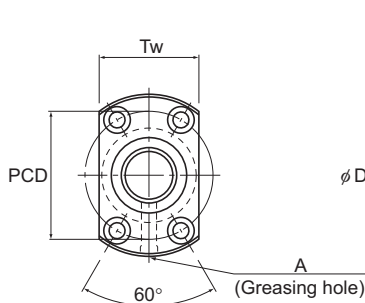
Since mounting screw holes are machined on the square ball screw nut, this model can compactly be mounted on the machine without a housing.

Specification Table⇒ **A15-246**

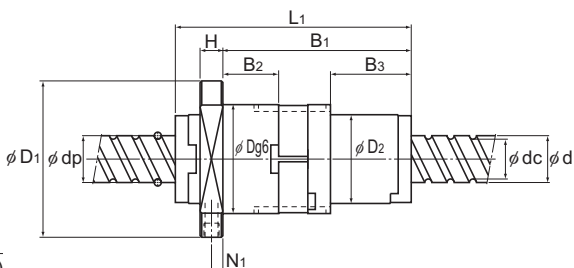
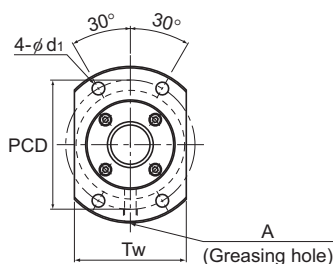


Preload Type of Precision Ball Screw

Screw shaft outer diameter	14 to 18
Lead	4 to 16



DIK (1404 to 2510)



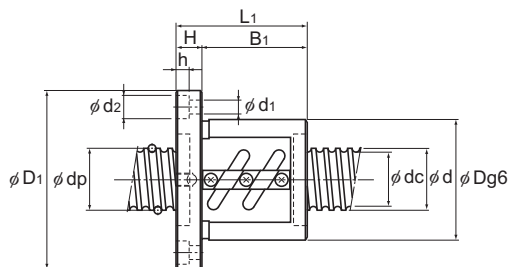
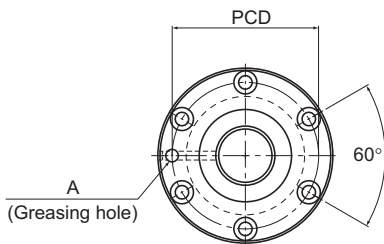
BLW

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/ μ m			
						Ca kN	C _{0a} kN		Outer diameter D	Flange diameter D ₁	D ₂
14	4	DIK 1404-4	14.5	11.8	2×1	3	5.1	190	26	45	—
		DIK 1404-6	14.5	11.8	3×1	4.2	7.7	280	26	45	—
15	10	BLW 1510-5.6	15.75	12.5	2×2.8	14.3	27.8	680	43	64	34
16	4	BIF 1604-6	16.5	13.8	2×1.5	5.1	10.5	350	36	59	—
		BIF 1605-5	16.75	13.2	1×2.5	7.4	13.9	330	40	60	—
	DIK 1605-6	16.75	13.2	3×1	7.4	13	310	30	49	—	
	BNFN 1605-3	16.75	13.2	2×1.5	8.7	16.8	390	40	60	—	
	BNFN 1605-5	16.75	13.2	2×2.5	13.5	27.8	640	40	60	—	
	BIF 1606-5	16.8	13.2	1×2.5	7.5	14	330	40	60	—	
18	4	BIF 1610-3	16.8	13.2	1×1.5	4.8	8.5	210	40	63	—
		BLW 1616-3.6	16.65	13.7	2×1.8	7.1	14.3	440	41	60	32
	10	BIF 1810-3	18.8	15.5	1×1.5	5.1	9.6	230	42	65	—
		BNFN 1810-2.5	18.8	15.5	1×2.5	7.8	15.9	360	42	65	—
		BNFN 1810-3	18.8	15.5	2×1.5	9.2	19.1	430	42	65	—

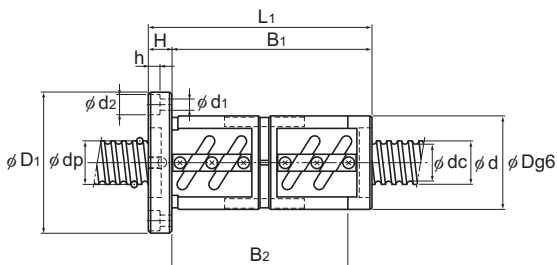
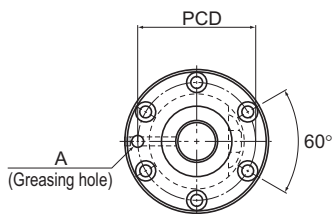
Note) The model numbers in dimmed type indicate semi-standard types.

If desiring them, contact THK.

Model BLW cannot be attached with seal.



BIF



BNFN

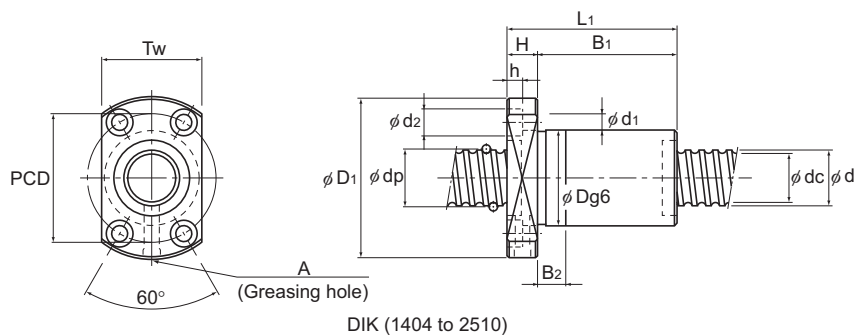
Unit: mm

Nut dimensions													Screw shaft inertial moment/mm	Nut mass	Shaft mass
Overall length	H	B ₁	B ₂	B ₃	PCD	d ₁	d ₂	h	Tw	N ₁	Greasing hole				
L ₁	H	B ₁	B ₂	B ₃	PCD	d ₁	d ₂	h	Tw	N ₁	A	kg·cm ² /mm	kg	kg/m	
48	10	38	10	—	35	4.5	8	4.5	29	—	M6	2.96×10^{-4}	0.2	1.0	
60	10	50	10	—	35	4.5	8	4.5	29	—	M6	2.96×10^{-4}	0.23	1.0	
89	10	69	18.7	28.6	52	5.5	—	—	46	5	M6	3.9×10^{-4}	0.81	1.07	
65	11	54	—	—	47	5.5	9.5	5.5	—	—	M6	5.05×10^{-4}	0.48	1.35	
56	10	46	—	—	50	4.5	8	4.5	—	—	M6	5.05×10^{-4}	0.56	1.25	
60	10	50	10	—	39	4.5	8	4.5	31	—	M6	5.05×10^{-4}	0.3	1.25	
96	10	86	75	—	50	4.5	8	4.5	—	—	M6	5.05×10^{-4}	0.81	1.25	
106	10	96	85	—	50	4.5	8	4.5	—	—	M6	5.05×10^{-4}	0.88	1.25	
62	10	52	—	—	50	4.5	8	4.5	—	—	M6	5.05×10^{-4}	0.56	1.25	
62	11	51	—	—	51	5.5	9.5	5.5	—	—	M6	5.05×10^{-4}	0.57	1.41	
84.5	10	65.5	18.1	27.1	49	4.5	—	—	44	6	M6	5.05×10^{-4}	0.67	1.42	
75	12	63	—	—	53	5.5	9.5	5.5	—	—	M6	8.09×10^{-4}	0.75	1.81	
119	12	107	94	—	53	5.5	9.5	5.5	—	—	M6	8.09×10^{-4}	1.09	1.81	
135	12	123	110	—	53	5.5	9.5	5.5	—	—	M6	8.09×10^{-4}	1.21	1.81	

For model number coding, see [A15-248](#).

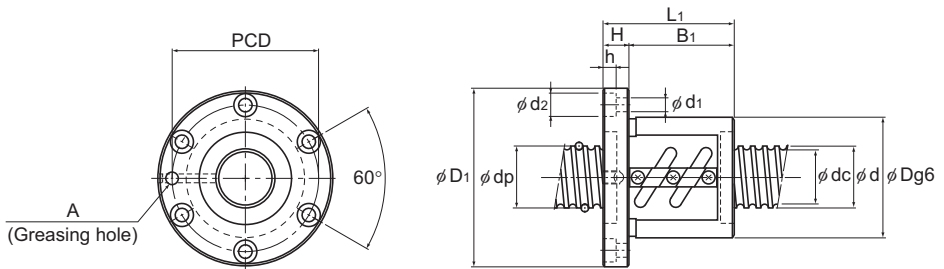
Preload Type of Precision Ball Screw

Screw shaft outer diameter	20
Lead	4 to 5



Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity
						Ca kN	Ca kN	K N/μm
20	4	BIF 2004-5	20.5	17.8	1×2.5	4.8	10.9	360
		BIF 2004-10	20.5	17.8	2×2.5	8.6	21.8	700
		DIK 2004-6	20.5	17.8	3×1	5.2	11.6	380
		DIK 2004-8	20.5	17.8	4×1	6.6	15.5	510
	5	BIF 2005-5	20.75	17.2	1×2.5	8.3	17.4	390
		BIF 2005-6	20.75	17.2	2×1.5	9.7	21	470
		BIF 2005-7	20.75	17.2	1×3.5	11.1	24.5	550
		BIF 2005-10	20.75	17.2	2×2.5	15.1	35	760
		DIK 2005-6	20.75	17.2	3×1	8.5	17.3	310

Note) The model numbers in dimmed type indicate semi-standard types.
If desiring them, contact THK.



BIF

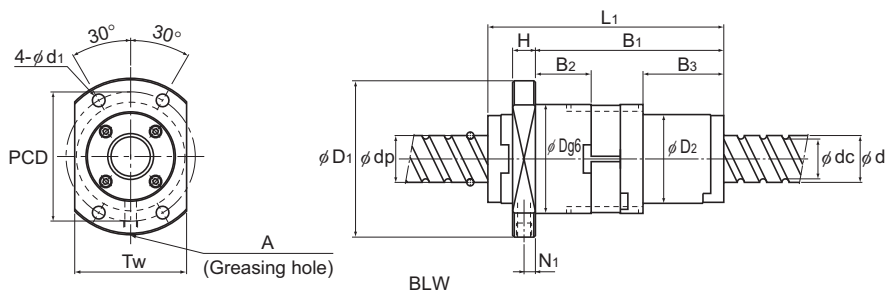
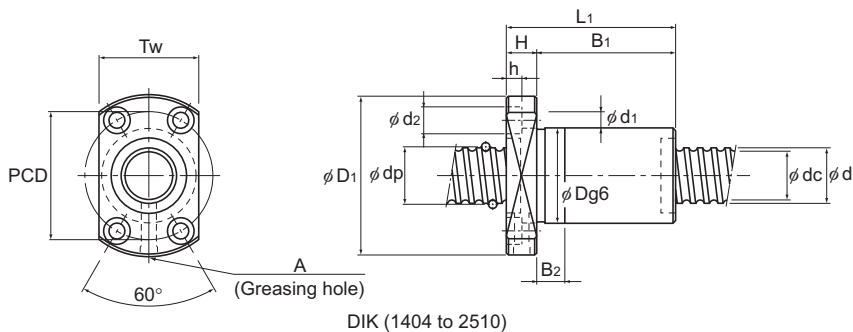
Unit: mm

	Nut dimensions										Screw shaft inertia moment/mm ³	Nut mass	Shaft mass
	Outer diameter	Flange diameter	Overall length	H	B ₁	B ₂	PCD	d ₁ × d ₂ × h	Tw	Greasing hole			
	D	D ₁	L ₁	H	B ₁	B ₂	PCD	d ₁ × d ₂ × h	Tw	A	kg·cm ² /mm ³	kg	kg/m
	40	63	53	11	42	—	51	5.5 × 9.5 × 5.5	—	M6	1.23 × 10 ⁻³	0.49	2.18
	40	63	76	11	65	—	51	5.5 × 9.5 × 5.5	—	M6	1.23 × 10 ⁻³	0.61	2.18
	32	56	62	11	51	15	44	5.5 × 9.5 × 5.5	35	M6	1.23 × 10 ⁻³	0.34	2.18
	32	56	70	11	59	15	44	5.5 × 9.5 × 5.5	35	M6	1.23 × 10 ⁻³	0.37	2.18
	44	67	56	11	45	—	55	5.5 × 9.5 × 5.5	—	M6	1.23 × 10 ⁻³	0.57	2.06
	44	67	77	11	66	74	55	5.5 × 9.5 × 5.5	—	M6	1.23 × 10 ⁻³	0.79	2.06
	44	67	65	11	54	62	55	5.5 × 9.5 × 5.5	—	M6	1.23 × 10 ⁻³	0.69	2.06
	44	67	86	11	75	83	55	5.5 × 9.5 × 5.5	—	M6	1.23 × 10 ⁻³	0.85	2.06
	34	58	61	11	50	10	46	5.5 × 9.5 × 5.5	36	M6	1.23 × 10 ⁻³	0.38	2.06

For model number coding, see **A15-248**.

Preload Type of Precision Ball Screw

Screw shaft outer diameter	20
Lead	6 to 20

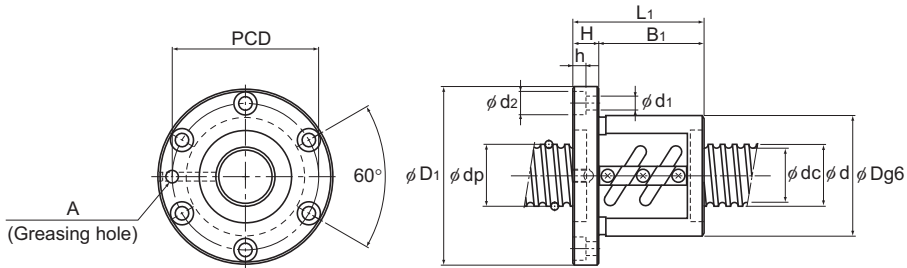


Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm			
						Ca kN	Ca kN		Outer diameter D	Flange diameter D ₁	D ₂
20	6	BIF 2006-3	20.75	17.2	1×1.5	5.4	10.5	250	48	71	—
		BIF 2006-5	20.75	17.2	1×2.5	8.3	17.5	390	48	71	—
		DIK 2006-6	21	16.4	3×1	11.4	21.5	410	35	58	—
		BNFN 2006-3	20.75	17.2	2×1.5	9.7	21	470	48	71	—
		BNFN 2006-3.5	20.75	17.2	1×3.5	11.1	24.5	550	48	71	—
		BNFN 2006-5	20.75	17.2	2×2.5	15.1	35	760	48	71	—
	8	BIF 2008-5	21	16.4	1×2.5	11.1	21.8	760	46	74	—
		DIK 2008-4	21	16.4	2×1	8.1	14.4	280	35	58	—
	10	BIF 2010A-3	21	16.4	1×1.5	7.2	13.2	250	46	74	—
	12	BIF 2012-3	21	16.4	1×1.5	7.1	12.5	250	48	71	—
20	BLW 2020-3.6	20.75	17.5	2×1.8	11.1	24.7	570	48	69	39	

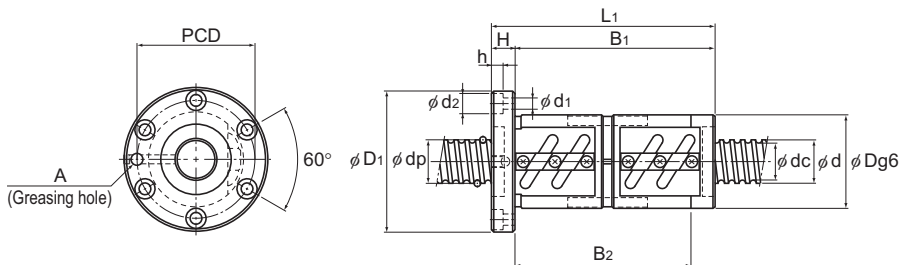
Note) The model numbers in dimmed type indicate semi-standard types.

If desiring them, contact THK.

Model BLW cannot be attached with seal.



BIF



BNFN

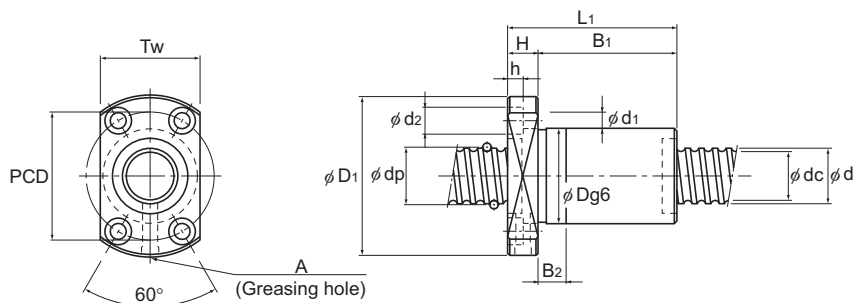
Unit: mm

Nut dimensions													Screw shaft inertial moment/mm ³	Nut mass	Shaft mass
Overall length	H	B ₁	B ₂	B ₃	PCD	d ₁	d ₂	h	Tw	N _i	Greasing hole	kg·cm ² /mm			
56	11	45	—	—	59	5.5	9.5	5.5	—	—	M6	1.23×10 ⁻³	0.74	2.13	
62	11	51	—	—	59	5.5	9.5	5.5	—	—	M6	1.23×10 ⁻³	0.8	2.13	
76	11	65	15	—	46	5.5	9.5	5.5	36	—	M6	1.23×10 ⁻³	0.48	1.93	
110	11	99	—	—	59	5.5	9.5	5.5	—	—	M6	1.23×10 ⁻³	1.3	2.13	
98	11	87	—	—	59	5.5	9.5	5.5	—	—	M6	1.23×10 ⁻³	1.17	2.13	
122	11	111	—	—	59	5.5	9.5	5.5	—	—	M6	1.23×10 ⁻³	1.42	2.13	
84	15	69	—	—	59	5.5	9.5	5.5	—	—	M6	1.23×10 ⁻³	1.02	2.06	
69	11	58	15	—	46	5.5	9.5	5.5	36	—	M6	1.23×10 ⁻³	0.45	2.06	
78	15	63	67	—	59	5.5	9.5	5.5	—	—	M6	1.23×10 ⁻³	0.94	2.14	
88	18	70	—	—	59	5.5	9.5	5.5	—	—	M6	1.23×10 ⁻³	1.15	2.19	
105	10	84	25	36	57	5.5	—	—	50	5	M6	1.23×10 ⁻³	0.54	2.25	

For model number coding, see [A15-248](#).

Preload Type of Precision Ball Screw

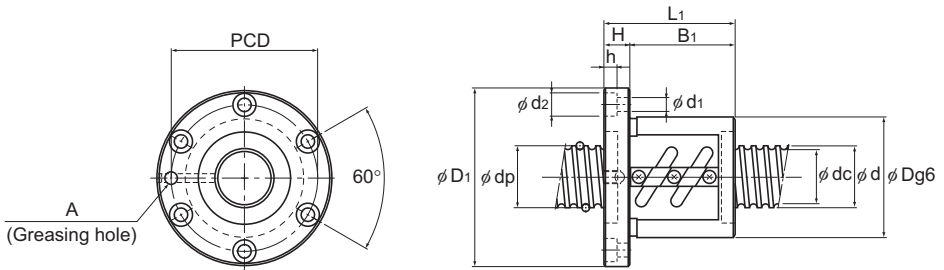
Screw shaft outer diameter	25
Lead	4 to 6



DIK (1404 to 2510)

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K
						Ca	C _a	
						kN	kN	N/μm
25	4	DIK 2504-6	25.5	22.8	3×1	5.7	15	470
		DIK 2504-8	25.5	22.8	4×1	7.4	19.9	620
		○ BIF 2504-5	25.5	22.8	1×2.5	5.2	13.7	420
		○ BIF 2504-10	25.5	22.8	2×2.5	9.5	27.3	820
	5	DIK 2505-6	25.75	22.2	3×1	9.7	22.6	490
		○ BIF 2505-3	25.75	22.2	1×1.5	6	13.1	280
		○ BIF 2505-5	25.75	22.2	1×2.5	9.2	22	470
		○ BIF 2505-6	25.75	22.2	2×1.5	10.8	26.4	560
		○ BIF 2505-7	25.75	22.2	1×3.5	12.3	30.7	650
		○ BIF 2505-10	25.75	22.2	2×2.5	16.7	44	910
	6	DIK 2506-4	26	21.4	2×1	9.1	18	330
		DIK 2506-6	26	21.4	3×1	12.8	27	490

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.
Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.
For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.



BIF

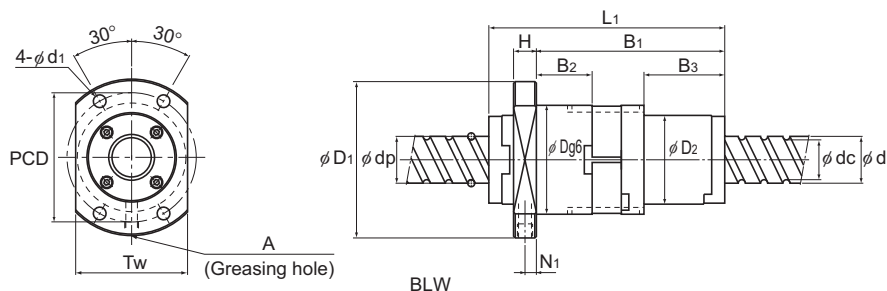
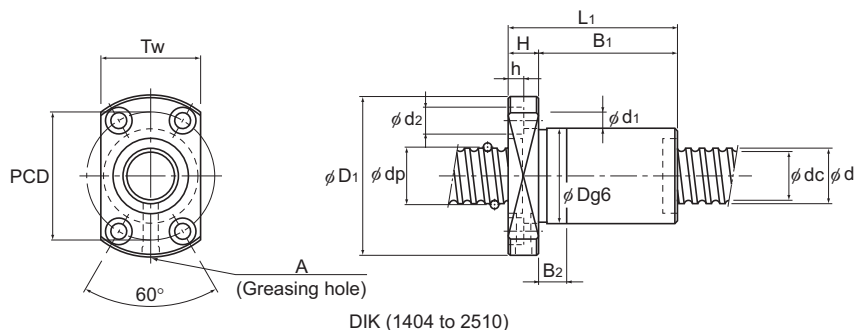
Unit: mm

	Nut dimensions										Screw shaft inertial moment/mm ³	Nut mass	Shaft mass
	Outer diameter	Flange diameter	Overall length							Greasing hole			
	D	D ₁	L ₁	H	B ₁	B ₂	PCD	d ₁ × d ₂ × h	Tw	A			
	38	63	63	11	52	15	51	5.5 × 9.5 × 5.5	39	M6	3.01 × 10 ⁻³	0.43	3.5
	38	63	71	11	60	15	51	5.5 × 9.5 × 5.5	39	M6	3.01 × 10 ⁻³	0.47	3.5
	46	69	48	11	37	—	57	5.5 × 9.5 × 5.5	—	M6	3.01 × 10 ⁻³	0.55	3.5
	46	69	72	11	61	—	57	5.5 × 9.5 × 5.5	—	M6	3.01 × 10 ⁻³	0.74	3.5
	40	63	61	11	50	10	51	5.5 × 9.5 × 5.5	41	M6	3.01 × 10 ⁻³	0.47	3.35
	50	73	52	11	41	—	61	5.5 × 9.5 × 5.5	—	M6	3.01 × 10 ⁻³	0.7	3.35
	50	73	55	11	44	—	61	5.5 × 9.5 × 5.5	—	M6	3.01 × 10 ⁻³	0.75	3.35
	50	73	77	11	66	79	61	5.5 × 9.5 × 5.5	—	M6	3.01 × 10 ⁻³	0.95	3.35
	50	73	65	11	54	62	61	5.5 × 9.5 × 5.5	—	M6	3.01 × 10 ⁻³	0.83	3.35
	50	73	85	11	74	82	61	5.5 × 9.5 × 5.5	—	M6	3.01 × 10 ⁻³	1.02	3.35
	40	63	60	11	49	10	51	5.5 × 9.5 × 5.5	41	M6	3.01 × 10 ⁻³	0.46	3.19
	40	63	72	11	61	15	51	5.5 × 9.5 × 5.5	41	M6	3.01 × 10 ⁻³	0.54	3.19

For model number coding, see [A15-248](#).

Preload Type of Precision Ball Screw

Screw shaft outer diameter	25
Lead	6 to 25

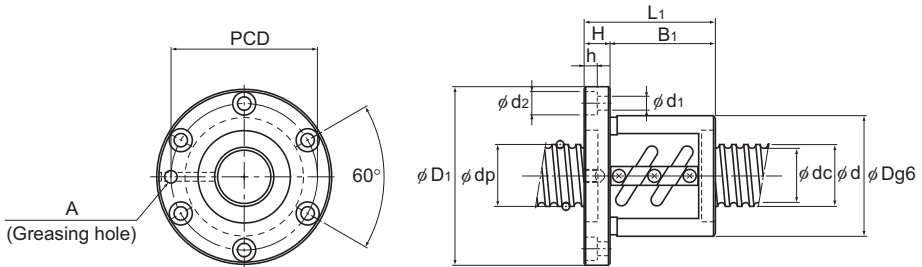


Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K			
						Ca	C _a		Outer diameter D	Flange diameter D ₁	D ₂
25	6	○ BIF 2506-5	26	21.4	1×2.5	12.5	27.3	490	53	76	—
		○ BIF 2506-6	26	21.4	2×1.5	14.6	32.8	580	53	76	—
		○ BIF 2506-7	26	21.4	1×3.5	15.1	35.9	670	53	76	—
		○ BIF 2506-10	26	21.4	2×2.5	22.5	54.8	940	53	76	—
	8	DIK 2508-4	26	21.4	2×1	9.2	18.8	340	40	63	—
		DIK 2508-6	26	21.4	3×1	13.1	28.1	500	40	63	—
		○ BIF 2508-5	26.25	20.5	1×2.5	15.8	32.8	500	58	85	—
		○ BIF 2508-6	26.25	20.5	2×1.5	18.5	39.4	600	58	85	—
	10	○ BIF 2508-7	26.25	20.5	1×3.5	21.2	46	690	58	85	—
		○ BIF 2508-10	26.25	20.5	2×2.5	28.7	65.8	970	58	85	—
	12	DIK 2510-4	26	21.6	2×1	9	18	330	40	63	—
		○ BIF 2510A-5	26.3	21.4	1×2.5	15.8	33	500	58	85	—
	16	○ BIF 2512-5	26	21.9	1×2.5	12.3	27.6	490	53	76	—
		○ BIF 2516-3	26	21.4	1×1.5	7.9	16.7	300	53	76	—
25	BLW 2525-3.6	26	21.9	2×1.8	16.6	38.7	700	57	82	47	

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**. Model BLW cannot be attached with seal.



BIF

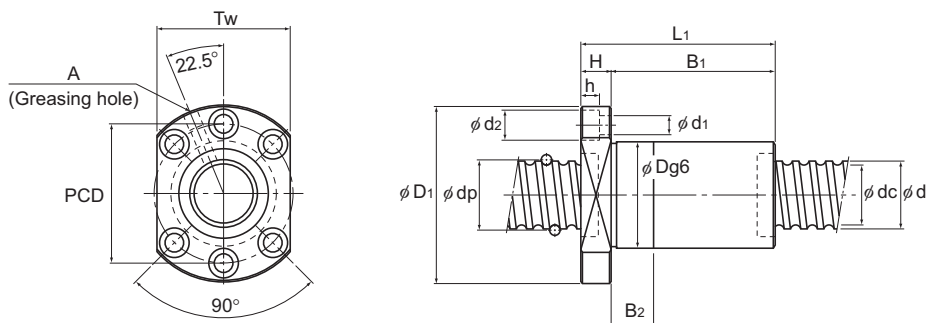
Unit: mm

Nut dimensions													Screw shaft inertial moment/mm ³	Nut mass kg	Shaft mass kg/m
Overall length											Greasing hole				
L ₁	H	B ₁	B ₂	B ₃	PCD	d ₁	d ₂	h	Tw	N ₁	A	kg·cm ² /mm	kg	kg/m	
62	11	51	—	—	64	5.5	9.5	5.5	—	—	M6	3.01 × 10 ⁻³	0.91	3.19	
86	11	75	—	—	64	5.5	9.5	5.5	—	—	M6	3.01 × 10 ⁻³	1.19	3.19	
74	11	63	—	—	64	5.5	9.5	5.5	—	—	M6	3.01 × 10 ⁻³	1.06	3.19	
98	11	87	—	—	64	5.5	9.5	5.5	—	—	M6	3.01 × 10 ⁻³	1.33	3.19	
71	12	59	15	—	51	5.5	9.5	5.5	41	—	M6	3.01 × 10 ⁻³	0.54	3.35	
94	12	82	25	—	51	5.5	9.5	5.5	41	—	M6	3.01 × 10 ⁻³	0.68	3.35	
82	15	67	—	—	71	6.6	11	6.5	—	—	M6	3.01 × 10 ⁻³	1.52	3.13	
111	15	96	—	—	71	6.6	11	6.5	—	—	M6	3.01 × 10 ⁻³	1.92	3.13	
98	15	83	—	—	71	6.6	11	6.5	—	—	M6	3.01 × 10 ⁻³	1.74	3.13	
130	15	115	—	—	71	6.6	11	6.5	—	—	M6	3.01 × 10 ⁻³	2.2	3.13	
85	15	70	20	—	51	5.5	9.5	5.5	41	—	M6	3.01 × 10 ⁻³	0.65	3.45	
100	18	82	—	—	71	6.6	11	6.5	—	—	M6	3.01 × 10 ⁻³	1.86	3.27	
96	11	85	—	—	64	5.5	9.5	5.5	—	—	M6	3.01 × 10 ⁻³	1.31	3.52	
92	11	81	—	—	64	5.5	9.5	5.5	—	—	M6	3.01 × 10 ⁻³	1.25	3.6	
124.5	12	101.5	33	44	68	6.6	—	—	60	5	M6	3.01 × 10 ⁻³	0.94	3.52	

For model number coding, see **A15-248**.

Preload Type of Precision Ball Screw

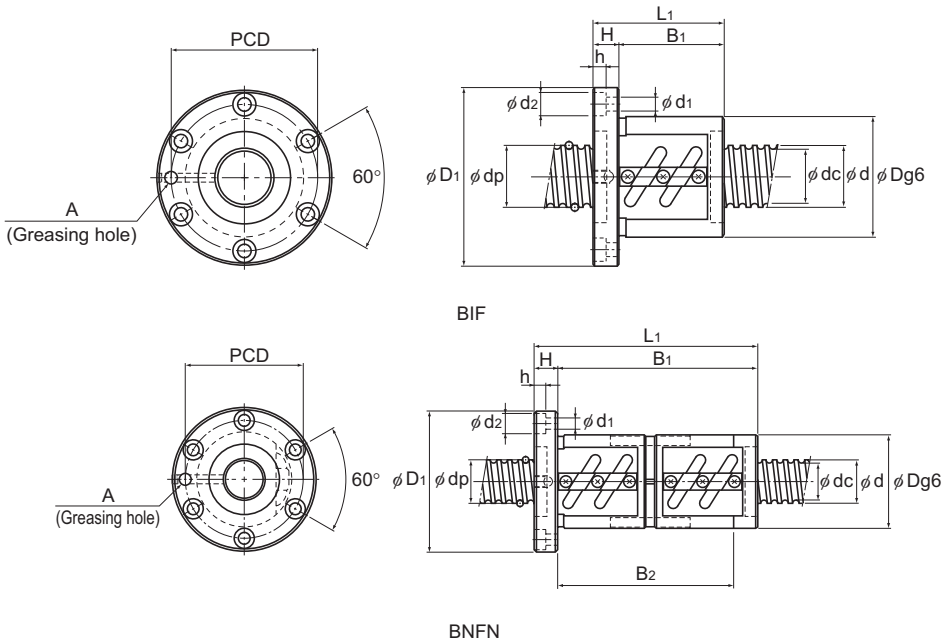
Screw shaft outer diameter	28
Lead	5 to 10



DIK (2805 to 6312)

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm
						Ca kN	Coa kN	
28	5	BIF 2805-5	28.75	25.2	1×2.5	9.7	24.6	520
		BIF 2805-6	28.75	25.2	2×1.5	11.3	29.5	620
		BIF 2805-7	28.75	25.2	1×3.5	12.9	34.4	720
		BIF 2805-10	28.75	25.2	2×2.5	17.4	49.4	1000
		DIK 2805-6	28.75	25.2	3×1	10.5	26.4	560
		DIK 2805-8	28.75	25.2	4×1	13.4	35.2	730
	6	BNFN 2805-7.5	28.75	25.2	3×2.5	24.8	73.8	1470
		BIF 2806-5	28.75	25.2	1×2.5	9.6	24.6	520
		BIF 2806-7	28.75	25.2	1×3.5	12.9	34.5	710
		BIF 2806-10	28.75	25.2	2×2.5	17.5	49.4	1000
		DIK 2806-6	29	24.4	3×1	14	32	530
	8	BNFN 2806-7.5	28.75	25.2	3×2.5	24.8	73.8	1470
		BIF 2808-5	29.25	23.6	1×2.5	16.8	36.8	550
		BIF 2808-6	29.25	23.6	2×1.5	19.6	44.2	660
		BIF 2808-10	29.25	23.6	2×2.5	30.4	73.7	1060
	10	BIF 2810-3	29.75	22.4	1×1.5	15.7	29.4	350
		DIK 2810-4	29.25	23.6	2×1	12.3	25	380
		BNFN 2810-2.5	29.75	22.4	1×2.5	24	48.2	560

Note) The model numbers in dimmed type indicate semi-standard types.
If desiring them, contact THK.



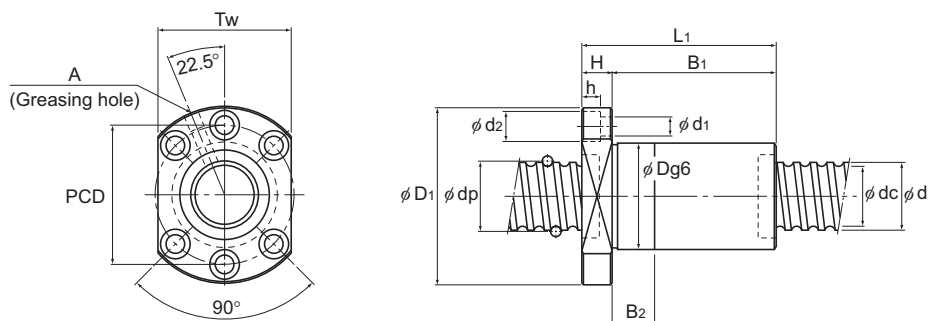
Unit: mm

	Nut dimensions										Screw shaft inertial moment/mm ³	Nut mass	Shaft mass
	Outer diameter	Flange diameter	Overall length	H	B ₁	B ₂	PCD	d ₁ × d ₂ × h	Tw	Greasing hole			
	D	D ₁	L ₁	H	B ₁	B ₂	PCD	d ₁ × d ₂ × h	Tw	A	kg·cm ² /mm ³	kg	kg/m
	55	85	59	12	47	—	69	6.6 × 11 × 6.5	—	M6	4.74 × 10 ⁻³	0.98	4.27
	55	85	79	12	67	69	69	6.6 × 11 × 6.5	—	M6	4.74 × 10 ⁻³	1.27	4.27
	55	85	69	12	57	59	69	6.6 × 11 × 6.5	—	M6	4.74 × 10 ⁻³	1.14	4.27
	55	85	89	12	77	—	69	6.6 × 11 × 6.5	—	M6	4.74 × 10 ⁻³	1.34	4.27
	43	71	69	12	57	15	57	6.6 × 11 × 6.5	55	M6	4.74 × 10 ⁻³	0.61	4.27
	43	71	79	12	67	20	57	6.6 × 11 × 6.5	55	M6	4.74 × 10 ⁻³	0.68	4.27
	55	85	134	12	122	109	69	6.6 × 11 × 6.5	—	M6	4.74 × 10 ⁻³	1.88	4.27
	55	85	68	12	56	—	69	6.6 × 11 × 6.5	—	M6	4.74 × 10 ⁻³	1.09	4.36
	55	85	80	12	68	73	69	6.6 × 11 × 6.5	—	M6	4.74 × 10 ⁻³	1.27	4.36
	55	85	104	12	92	—	69	6.6 × 11 × 6.5	—	M6	4.74 × 10 ⁻³	1.52	4.36
	43	71	73	12	61	15	57	6.6 × 11 × 6.5	55	M6	4.74 × 10 ⁻³	0.64	4.36
	55	85	158	12	146	133	69	6.6 × 11 × 6.5	—	M6	4.74 × 10 ⁻³	2.16	4.36
	60	104	92	18	74	—	82	11 × 17.5 × 11	—	M6	4.74 × 10 ⁻³	2.11	4.02
	60	104	120	18	102	—	82	11 × 17.5 × 11	—	M6	4.74 × 10 ⁻³	2.45	4.02
	60	104	140	18	122	—	82	11 × 17.5 × 11	—	M6	4.74 × 10 ⁻³	2.74	4.02
	65	106	88	18	70	—	85	11 × 17.5 × 11	—	M6	4.74 × 10 ⁻³	2.33	3.66
	45	71	84	15	69	20	57	6.6 × 11 × 6.5	55	M6	4.74 × 10 ⁻³	0.82	4.18
	65	106	146	18	128	—	85	11 × 17.5 × 11	—	M6	4.74 × 10 ⁻³	3.41	3.66

For model number coding, see [A15-248](#).

Preload Type of Precision Ball Screw

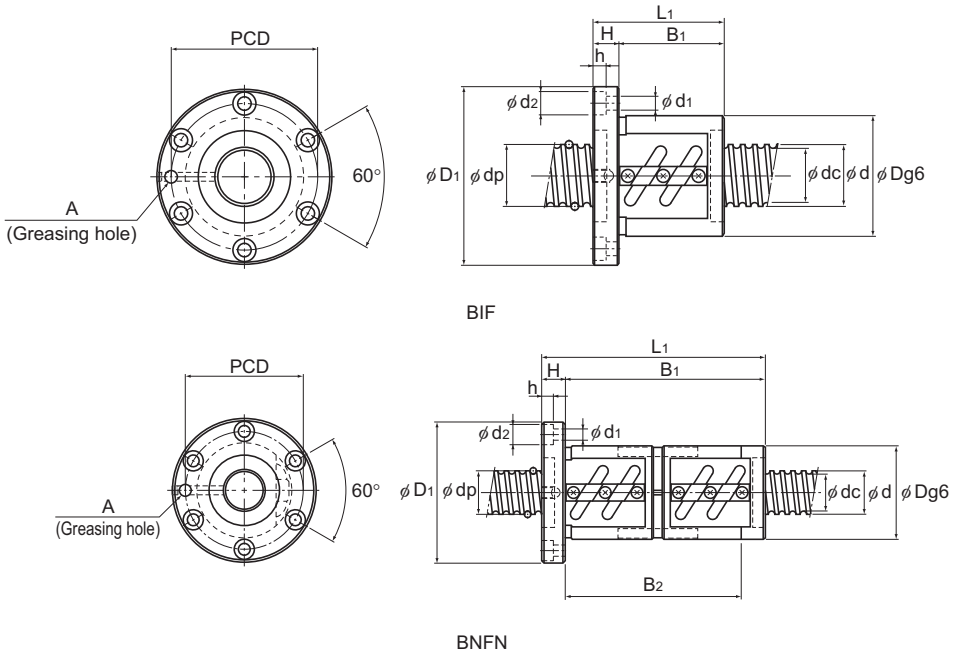
Screw shaft outer diameter	32
Lead	4 to 6



DIK (2805 to 6312)

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K
						Ca kN	C _{0a} kN	
32	4	BIF 3204-10	32.5	30.1	2×2.5	10.5	35.4	1010
		DIK 3204-6	32.5	30.1	3×1	6.4	19.6	580
		DIK 3204-8	32.5	30.1	4×1	8.2	26.1	760
		DIK 3204-10	32.5	30.1	5×1	10	32.7	940
	5	DIK 3205-6	32.75	29.2	3×1	11.1	30.2	620
		DIK 3205-8	32.75	29.2	4×1	14.2	40.3	810
		○ BIF 3205-5	32.75	29.2	1×2.5	10.2	28.1	570
		○ BIF 3205-6	32.75	29.2	2×1.5	12	33.8	690
		○ BIF 3205-10	32.75	29.2	2×2.5	18.5	56.4	1110
	6	○ BNFN 3205-7.5	32.75	29.2	3×2.5	26.3	84.5	1640
		DIK 3206-6	33	28.4	3×1	14.9	37.1	630
		DIK 3206-8	33	28.4	4×1	19.1	49.5	820
		○ BIF 3206-5	33	28.4	1×2.5	13.9	35.2	600
		○ BIF 3206-6	33	28.4	2×1.5	16.3	42.2	710
		○ BIF 3206-7	33	28.4	1×3.5	18.5	49.2	810
○ BIF 3206-10	33	28.4	2×2.5	25.2	70.4	1150		

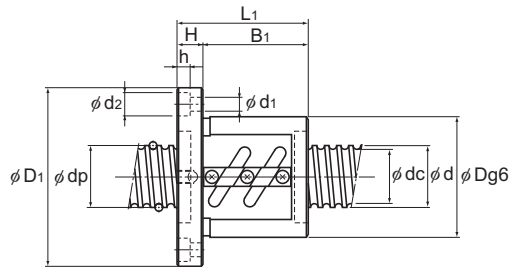
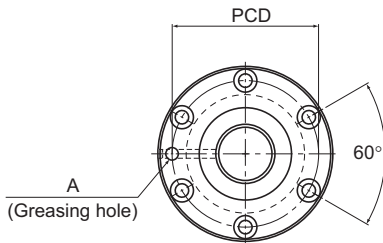
Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.
Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.
For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.



Unit: mm

	Nut dimensions										Screw shaft inertial moment/mm ³	Nut mass	Shaft mass
	Outer diameter	Flange diameter	Overall length							Greasing hole			
	D	D ₁	L ₁	H	B ₁	B ₂	PCD	d ₁ × d ₂ × h	Tw	A			
	54	81	76	11	65	—	67	6.6 × 11 × 6.5	—	M6	8.08 × 10 ⁻³	0.97	5.86
	45	76	64	11	53	15	63	6.6 × 11 × 6.5	59	M6	8.08 × 10 ⁻³	0.57	5.86
	45	76	72	11	61	15	63	6.6 × 11 × 6.5	59	M6	8.08 × 10 ⁻³	0.62	5.86
	45	76	80	11	69	20	63	6.6 × 11 × 6.5	59	M6	8.08 × 10 ⁻³	0.66	5.86
	46	76	62	12	50	10	63	6.6 × 11 × 6.5	59	M6	8.08 × 10 ⁻³	0.60	5.67
	46	76	73	12	61	15	63	6.6 × 11 × 6.5	59	M6	8.08 × 10 ⁻³	0.67	5.67
	58	85	56	12	44	—	71	6.6 × 11 × 6.5	—	M6	8.08 × 10 ⁻³	0.94	5.67
	58	85	78	12	66	78	71	6.6 × 11 × 6.5	—	M6	8.08 × 10 ⁻³	1.21	5.67
	58	85	86	12	74	—	71	6.6 × 11 × 6.5	—	M6	8.08 × 10 ⁻³	1.31	5.67
	58	85	136	12	124	111	71	6.6 × 11 × 6.5	—	M6	8.08 × 10 ⁻³	1.93	5.67
	48	76	73	12	61	15	63	6.6 × 11 × 6.5	59	M6	8.08 × 10 ⁻³	0.74	6.31
	48	76	87	12	75	20	63	6.6 × 11 × 6.5	59	M6	8.08 × 10 ⁻³	0.85	6.31
	62	89	63	12	51	—	75	6.6 × 11 × 6.5	—	M6	8.08 × 10 ⁻³	1.21	6.31
	62	89	87	12	75	86	75	6.6 × 11 × 6.5	—	M6	8.08 × 10 ⁻³	1.57	6.31
	62	89	75	12	63	—	75	6.6 × 11 × 6.5	—	M6	8.08 × 10 ⁻³	1.39	6.31
	62	89	99	12	87	—	75	6.6 × 11 × 6.5	—	M6	8.08 × 10 ⁻³	1.75	6.31

For model number coding, see [A15-248](#).



BIF

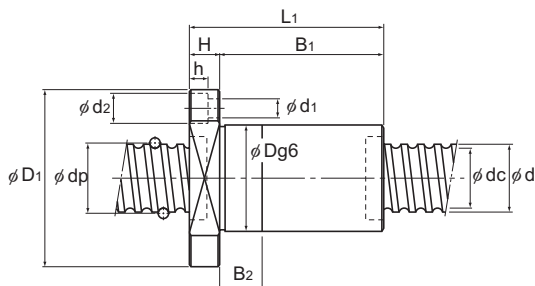
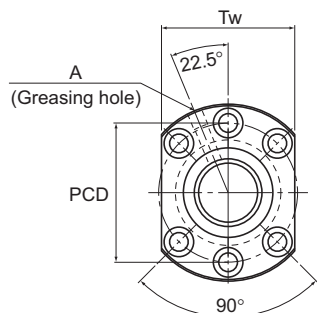
Unit: mm

Overall length	Nut dimensions												Screw shaft inertial moment/mm ³	Nut mass kg	Shaft mass kg/m
	L ₁	H	B ₁	B ₂	B ₃	PCD	d ₁	d ₂	h	Tw	N _i	Greasing hole A			
82	15	67	—	—	82	9	14	8.5	—	—	M6	8.08 × 10 ⁻³	1.93	5.39	
111	15	96	—	—	82	9	14	8.5	—	—	M6	8.08 × 10 ⁻³	2.42	5.39	
98	15	83	—	—	82	9	14	8.5	—	—	M6	8.08 × 10 ⁻³	2.21	5.39	
143	15	128	—	—	82	9	14	8.5	—	—	M6	8.08 × 10 ⁻³	2.99	5.39	
130	15	115	—	—	82	9	14	8.5	—	—	M6	8.08 × 10 ⁻³	2.77	5.39	
110	15	95	25	—	69	9	14	8.5	66	—	M6	8.08 × 10 ⁻³	1.57	4.98	
100	15	85	—	—	90	9	14	8.5	—	—	M6	8.08 × 10 ⁻³	2.92	4.98	
137	15	122	136	—	90	9	14	8.5	—	—	M6	8.08 × 10 ⁻³	3.73	4.98	
120	15	105	119	—	90	9	14	8.5	—	—	M6	8.08 × 10 ⁻³	3.35	4.98	
160	15	145	159	—	90	9	14	8.5	—	—	M6	8.08 × 10 ⁻³	4.27	4.98	
98	15	83	25	—	69	9	14	8.5	66	—	M6	8.08 × 10 ⁻³	1.43	5.2	
146	18	128	—	—	98	11	17.5	11	—	—	M6	8.08 × 10 ⁻³	4.5	4.9	
155	15	127	42.4	55.4	81	9	—	—	70	6	M6	8.08 × 10 ⁻³	3.19	5.83	

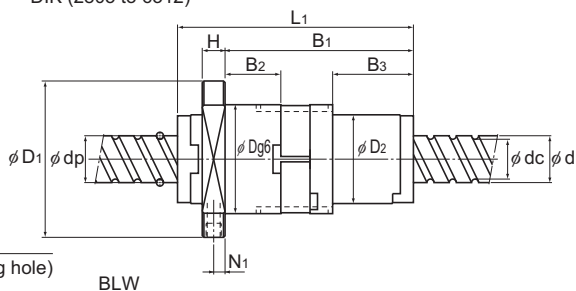
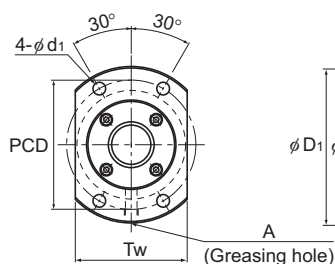
For model number coding, see [A15-248](#).

Preload Type of Precision Ball Screw

Screw shaft outer diameter	36
Lead	6 to 36



DIK (2805 to 6312)



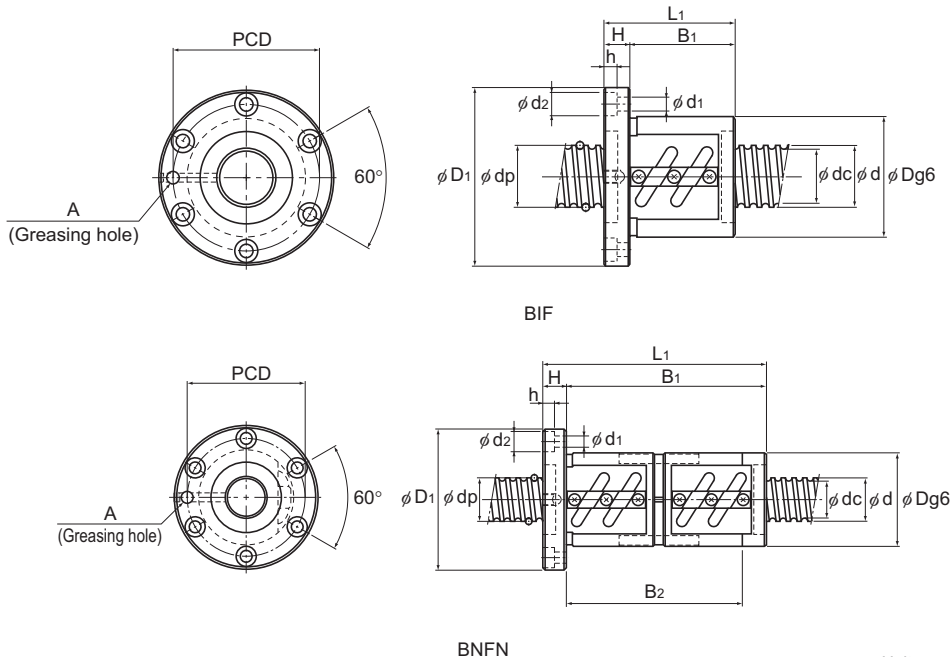
BLW

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K				
						Ca	C _{0a}		Outer diameter D	Flange diameter D ₁	D ₂	
						kN	kN	N/μm	D	D ₁	D ₂	
36	6	○ BIF 3606-5	36.75	33.2	1×2.5	10.7	31.8	630	65	100	—	
		○ BIF 3606-6	36.75	33.2	2×1.5	12.5	38	740	65	100	—	
		○ BIF 3606-10	36.75	33.2	2×2.5	19.4	63.4	1220	65	100	—	
		○ BNFN 3606-7.5	36.75	33.2	3×2.5	27.5	95.2	1790	65	100	—	
	8	○ BIF 3608-5	37.25	31.6	1×2.5	18.8	47.5	670	70	114	—	
		○ BIF 3608-10	37.25	31.6	2×2.5	34.1	95.1	1290	70	114	—	
		○ BNFN 3608-7.5	37.25	31.6	3×2.5	48.3	142.1	1910	70	114	—	
		DIK 3610-6	37.75	30.5	3×1	28.8	63.8	710	58	98	—	
	10	DIK 3610-8	37.75	30.5	4×1	36.8	85	940	58	98	—	
		DIK 3610-10	37.75	30.5	5×1	44.6	106.3	1160	58	98	—	
		○ BIF 3610-5	37.75	30.5	1×2.5	27.6	63.3	700	75	120	—	
		○ BIF 3610-10	37.75	30.5	2×2.5	50.1	126.4	1350	75	120	—	
	12	○ BNFN 3610-7.5	37.75	30.5	3×2.5	71.1	190.1	1990	75	120	—	
		○ BIF 3612-5	38	30.1	1×2.5	32.1	71.4	720	78	123	—	
		○ BIF 3612-10	38	30.1	2×2.5	58.4	142.1	1370	78	123	—	
		○ BIF 3616-5	38	30.1	1×2.5	32.1	71.4	720	78	123	—	
	16	○ BNFN 3616-5	38	30.1	2×2.5	58.3	143.1	1380	78	123	—	
		○ BIF 3620-3	37.75	30.5	1×1.5	17.6	38.3	430	70	103	—	
	20	36	BLW 3636-3.6	37.4	31.7	2×1.8	30.8	78	980	79	116	66

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**. Model BLW cannot be attached with seal.



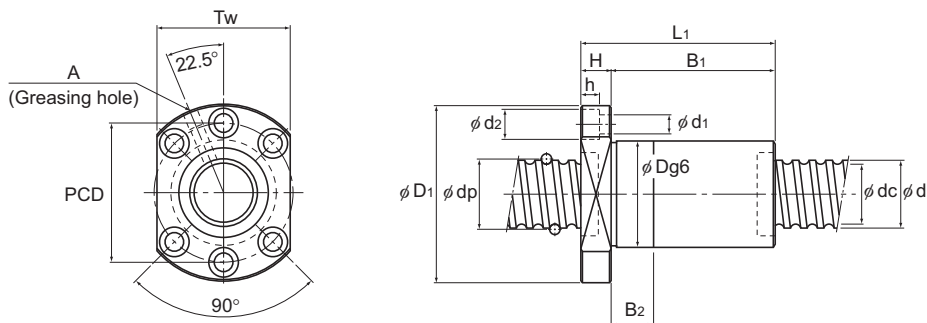
Unit: mm

Nut dimensions													Screw shaft inertial moment/mm ⁴	Nut mass	Shaft mass
Overall length	L ₁	H	B ₁	B ₂	B ₃	PCD	d ₁	d ₂	h	Tw	N ₁	Greasing hole			
71	15	15	56	58	—	82	9	14	8.5	—	—	M6	1.29×10 ⁻²	1.57	7.39
92	15	15	77	79	—	82	9	14	8.5	—	—	M6	1.29×10 ⁻²	1.93	7.39
107	15	15	92	94	—	82	9	14	8.5	—	—	M6	1.29×10 ⁻²	2.17	7.39
161	15	15	146	130	—	82	9	14	8.5	—	—	M6	1.29×10 ⁻²	2.96	7.39
92	18	18	74	—	—	92	11	17.5	11	—	—	M6	1.29×10 ⁻²	2.57	6.96
140	18	18	122	—	—	92	11	17.5	11	—	—	M6	1.29×10 ⁻²	2.57	6.96
212	18	18	194	—	—	92	11	17.5	11	—	—	M6	1.29×10 ⁻²	4.87	6.96
122	18	18	104	30	—	77	11	17.5	11	75	—	M6	1.29×10 ⁻²	2.03	6.51
143	18	18	125	35	—	77	11	17.5	11	75	—	M6	1.29×10 ⁻²	2.3	6.51
164	18	18	146	45	—	77	11	17.5	11	75	—	M6	1.29×10 ⁻²	2.57	6.51
111	18	18	93	—	—	98	11	17.5	11	—	—	M6	1.29×10 ⁻²	3.45	6.51
171	18	18	153	—	—	98	11	17.5	11	—	—	M6	1.29×10 ⁻²	4.84	6.51
261	18	18	243	224	—	98	11	17.5	11	—	—	M6	1.29×10 ⁻²	6.93	6.51
123	18	18	105	—	—	100	11	17.5	11	—	—	M6	1.29×10 ⁻²	4.07	6.41
195	18	18	177	—	—	100	11	17.5	11	—	—	M6	1.29×10 ⁻²	5.45	6.41
140	18	18	122	—	—	100	11	17.5	11	—	—	M6	1.29×10 ⁻²	4.38	6.8
268	18	18	250	—	—	100	11	17.5	11	—	—	M6	1.29×10 ⁻²	7.8	6.8
115	15	15	100	—	—	85	9	14	8.5	—	—	M6	1.29×10 ⁻²	2.75	7.24
181	17	17	147.9	49.4	65.4	95	11	—	—	82	7	M6	1.29×10 ⁻²	5.99	7.34

For model number coding, see **■15-248**.

Preload Type of Precision Ball Screw

Screw shaft outer diameter	40
Lead	5 to 10



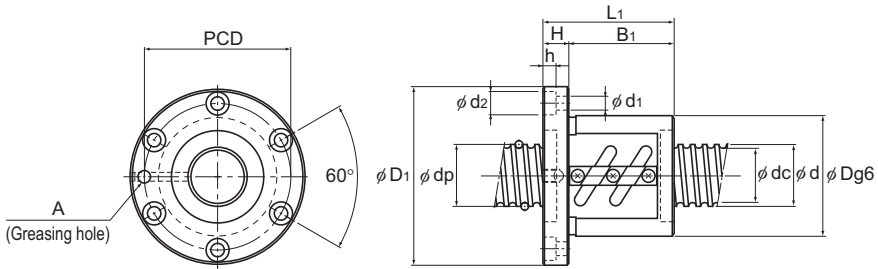
DIK (2805 to 6312)

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _{0a} kN	
40	5	BIF 4005-6	40.75	37.2	2×1.5	13	42.3	810
		BIF 4005-10	40.75	37.2	2×2.5	20.3	70.6	1320
		BNFN 4005-6	40.75	37.2	4×1.5	23.7	84.7	1580
	6	BIF 4006-5	41	36.4	1×2.5	15.3	44.1	710
		BIF 4006-10	41	36.4	2×2.5	27.7	88.1	1360
		BNFN 4006-7.5	41	36.4	3×2.5	39.2	132.3	2010
	8	BIF 4008-5	41.25	35.5	1×2.5	19.6	52.8	730
		BIF 4008-6	41.25	35.5	2×1.5	22.9	63.4	860
		BIF 4008-10	41.25	35.5	2×2.5	35.7	105.8	1410
	10	BIF 4010-5	41.75	34.4	1×2.5	29	70.4	750
		BIF 4010-6	41.75	34.4	2×1.5	33.8	84.5	900
		BIF 4010-7	41.75	34.4	1×3.5	38.8	99	1050
		BIF 4010-10	41.75	34.4	2×2.5	52.7	141.1	1470
		DIK 4010-6	41.75	34.7	3×1	29.8	69.3	750
DIK 4010-8	41.75	34.7	4×1	38.1	92.4	1000		

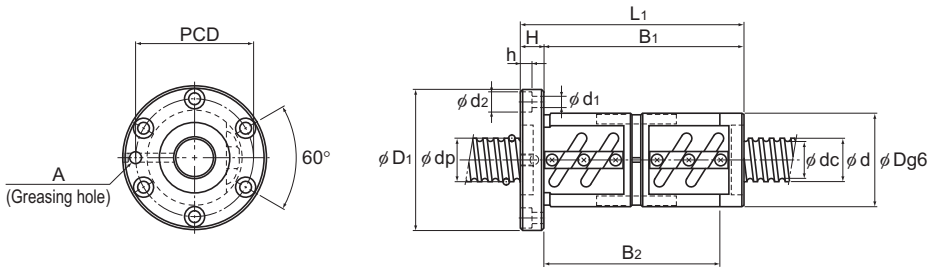
Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

These models can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.



BIF



BNFN

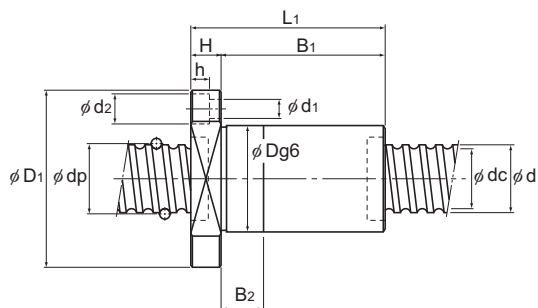
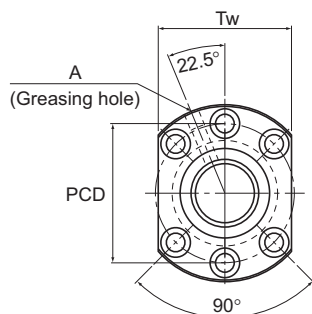
Unit: mm

	Nut dimensions										Screw shaft inertial moment/mm kg·cm ² /mm	Nut mass kg	Shaft mass kg/m
	Outer diameter D	Flange diameter D ₁	Overall length L ₁	H	B ₁	B ₂	PCD	d ₁ × d ₂ × h	Tw	Greasing hole A			
67	101	81	15	66	—	83	9 × 14 × 8.5	—	M6	1.97 × 10 ⁻²	1.69	9.06	
67	101	89	15	74	—	83	9 × 14 × 8.5	—	M6	1.97 × 10 ⁻²	1.85	9.06	
67	101	156	15	141	—	83	9 × 14 × 8.5	—	M6	1.97 × 10 ⁻²	2.82	9.06	
70	104	66	15	51	—	86	9 × 14 × 8.5	—	M6	1.97 × 10 ⁻²	1.63	8.82	
70	104	102	15	87	—	86	9 × 14 × 8.5	—	M6	1.97 × 10 ⁻²	2.29	8.82	
70	104	162	15	147	—	86	9 × 14 × 8.5	—	M6	1.97 × 10 ⁻²	3.29	8.82	
74	108	82	15	67	—	90	9 × 14 × 8.5	—	M6	1.97 × 10 ⁻²	2.19	8.72	
74	108	111	15	96	—	90	9 × 14 × 8.5	—	M6	1.97 × 10 ⁻²	2.74	8.72	
74	108	130	15	115	—	90	9 × 14 × 8.5	—	M6	1.97 × 10 ⁻²	3.17	8.72	
82	124	103	18	85	—	102	11 × 17.5 × 11	—	M6	1.97 × 10 ⁻²	3.69	8.22	
82	124	140	18	122	133	102	11 × 17.5 × 11	—	M6	1.97 × 10 ⁻²	4.56	8.22	
82	124	123	18	105	116	102	11 × 17.5 × 11	—	M6	1.97 × 10 ⁻²	4.18	8.22	
82	124	163	18	145	—	102	11 × 17.5 × 11	—	M6	1.97 × 10 ⁻²	5.33	8.22	
62	104	113	18	95	25	82	11 × 17.5 × 11	79	PT 1/8	1.97 × 10 ⁻²	2.09	8.22	
62	104	137	18	119	35	82	11 × 17.5 × 11	79	PT 1/8	1.97 × 10 ⁻²	2.42	8.22	

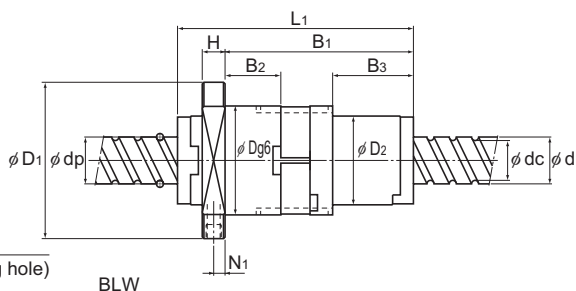
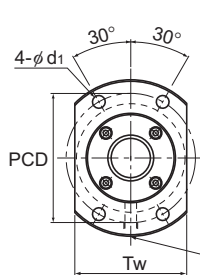
For model number coding, see [A15-248](#).

Preload Type of Precision Ball Screw

Screw shaft outer diameter	40
Lead	12 to 40



DIK (2805 to 6312)



BLW

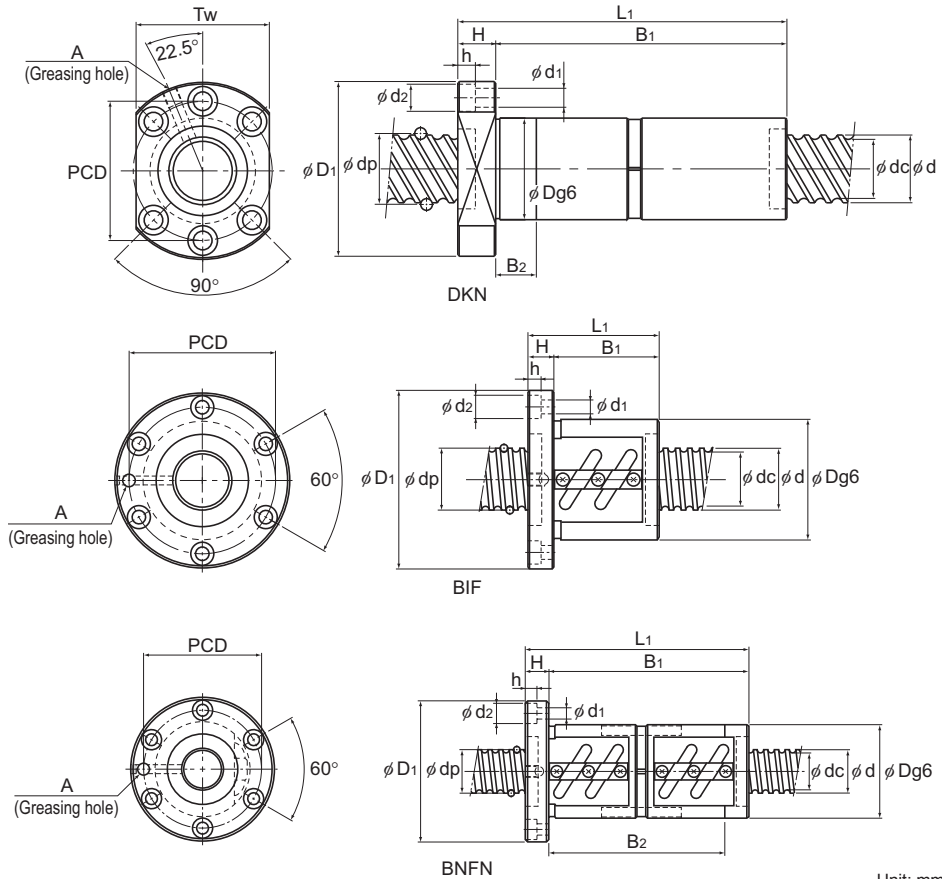
Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating			Rigidity		
						Ca kN	Ca kN	K N/μm	Outer diameter D	Flange diameter D ₁	D ₂
40	12	BIF 4012-5	42	34.1	1×2.5	33.9	79.2	770	84	126	—
		BIF 4012-7	42	34.1	1×3.5	45.4	110.7	1070	84	126	—
		BIF 4012-10	42	34.1	2×2.5	61.6	158.8	1490	84	126	—
		DIK 4012-6	41.75	34.4	3×1	30.6	72.3	790	62	104	—
		DIK 4012-8	41.75	34.4	4×1	39.2	96.4	1030	62	104	—
	16	DIK 4016-4	41.75	34.4	2×1	21.5	68.4	540	62	104	—
		BNFN 4016-5	42	34.1	2×2.5	61.4	158.8	1500	84	126	—
		20	DKN 4020-3	41.75	34.7	3×1	29.4	69.3	750	62	104
	40	BLW 4040-3.6	41.75	35.2	2×1.8	38.7	99.2	1090	84	121	73

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

These models can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.

Model BLW cannot be attached with seal.



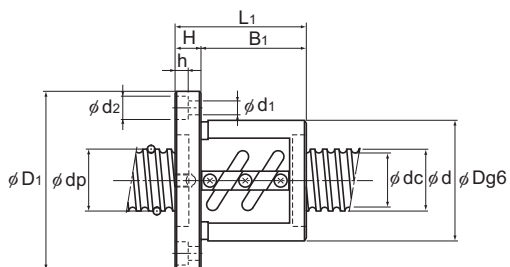
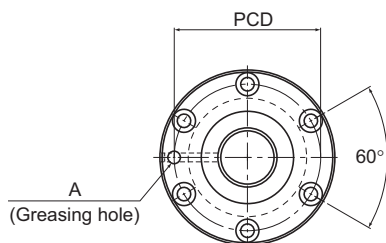
Unit: mm

Nut dimensions													Screw shaft inertial moment/mm	Nut mass	Shaft mass
Overall length	H	B ₁	B ₂	B ₃	PCD	d ₁	d ₂	h	Tw	N ₁	Greasing hole	kg·cm ² /mm			
119	18	101	—	—	104	11	17.5	11	—	—	M6	1.97×10^{-2}	4.36	8.12	
143	18	125	142	—	104	11	17.5	11	—	—	M6	1.97×10^{-2}	4.93	8.12	
191	18	173	—	—	104	11	17.5	11	—	—	M6	1.97×10^{-2}	6.47	8.12	
138	18	120	35	—	82	11	17.5	11	79	—	PT 1/8	1.97×10^{-2}	2.44	8.5	
163	18	145	45	—	82	11	17.5	11	79	—	PT 1/8	1.97×10^{-2}	2.78	8.5	
120	18	102	30	—	82	11	17.5	11	79	—	PT 1/8	1.97×10^{-2}	2.19	8.83	
280	22	258	—	—	104	11	17.5	11	—	—	M6	1.97×10^{-2}	9.27	8.55	
223	18	205	25	—	82	11	17.5	11	79	—	PT 1/8	1.97×10^{-2}	3.61	9.03	
191	17	158	54.5	70.5	100	11	—	—	87	7	M6	1.97×10^{-2}	6.16	9.01	

For model number coding, see [A15-248](#).

Preload Type of Precision Ball Screw

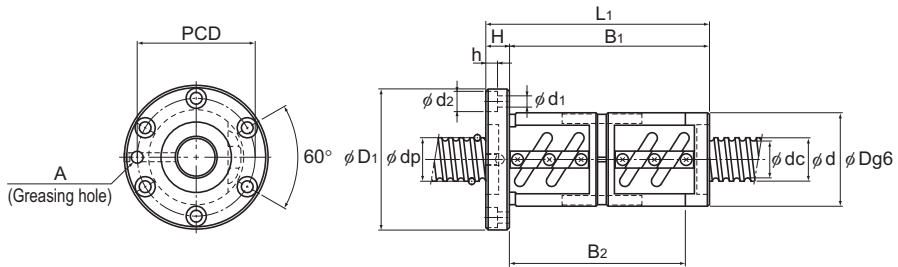
Screw shaft outer diameter	45
Lead	6 to 20



BIF

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _{0a} kN	
45	6	BIF 4506A-5	46	41.4	1×2.5	16	49.6	770
		BIF 4506A-10	46	41.4	2×2.5	29	99	1500
		BNFN 4506A-7.5	46	41.4	3×2.5	41.2	150	2210
	8	BIF 4508-5	46.25	40.6	1×2.5	20.7	59.5	790
		BIF 4508-10	46.25	40.6	2×2.5	37.4	118.6	1540
		BNFN 4508-7.5	46.25	40.6	3×2.5	53.1	178.4	2270
	10	BIF 4510-5	46.75	39.5	1×2.5	30.7	79.3	830
		BIF 4510-6	46.75	39.5	2×1.5	35.9	95.2	990
		BIF 4510-10	46.75	39.5	2×2.5	55.6	158.8	1610
		BNFN 4510-7.5	46.75	39.5	3×2.5	78.8	238.1	2370
	12	BIF 4512-10	47	39.2	2×2.5	65.2	178.4	1640
	20	BIF 4520-3	47.7	37.9	1×1.5	44.2	99	690

Note) The model numbers in dimmed type indicate semi-standard types.
If desiring them, contact THK.



BNFN

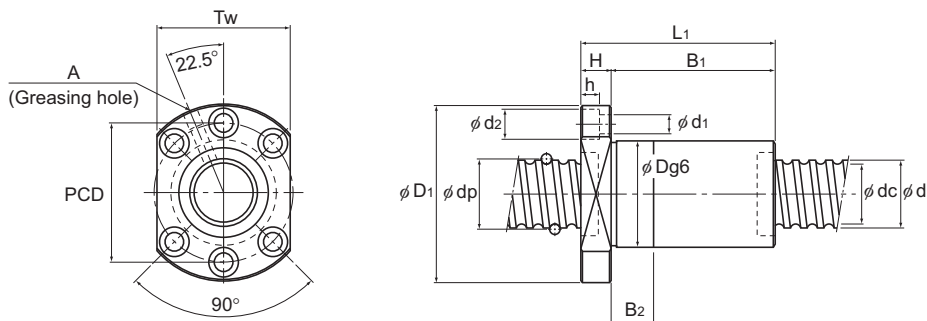
Unit: mm

	Nut dimensions									Screw shaft inertial moment/mm ²	Nut mass	Shaft mass
	Outer diameter	Flange diameter	Overall length						Greasing hole			
	D	D ₁	L ₁	H	B ₁	B ₂	PCD	d ₁ × d ₂ × h	A	kg·cm ² /mm	kg	kg/m
	80	114	71	15	56	—	96	9 × 14 × 8.5	PT 1/8	3.16 × 10 ⁻²	2.18	11.31
	80	114	107	15	92	—	96	9 × 14 × 8.5	PT 1/8	3.16 × 10 ⁻²	3.05	11.31
	80	114	161	15	146	—	96	9 × 14 × 8.5	PT 1/8	3.16 × 10 ⁻²	4.25	11.31
	85	127	92	18	74	—	105	11 × 17.5 × 11	PT 1/8	3.16 × 10 ⁻²	3.42	11.21
	85	127	140	18	122	—	105	11 × 17.5 × 11	PT 1/8	3.16 × 10 ⁻²	4.86	11.21
	85	127	212	18	194	—	105	11 × 17.5 × 11	PT 1/8	3.16 × 10 ⁻²	6.74	11.21
	88	132	111	18	93	104	110	11 × 17.5 × 11	PT 1/8	3.16 × 10 ⁻²	4.35	10.65
	88	132	144	18	126	127	110	11 × 17.5 × 11	PT 1/8	3.16 × 10 ⁻²	5.35	10.65
	88	132	171	18	153	164	110	11 × 17.5 × 11	PT 1/8	3.16 × 10 ⁻²	6.19	10.65
	88	132	261	18	243	224	110	11 × 17.5 × 11	PT 1/8	3.16 × 10 ⁻²	8.92	10.65
	90	130	191	18	173	—	110	11 × 17.5 × 11	PT 1/8	3.16 × 10 ⁻²	6.98	10.54
	98	142	135	20	115	—	120	11 × 17.5 × 11	PT 1/8	3.16 × 10 ⁻²	6.56	10.37

For model number coding, see [A15-248](#).

Preload Type of Precision Ball Screw

Screw shaft outer diameter	50
Lead	5 to 10



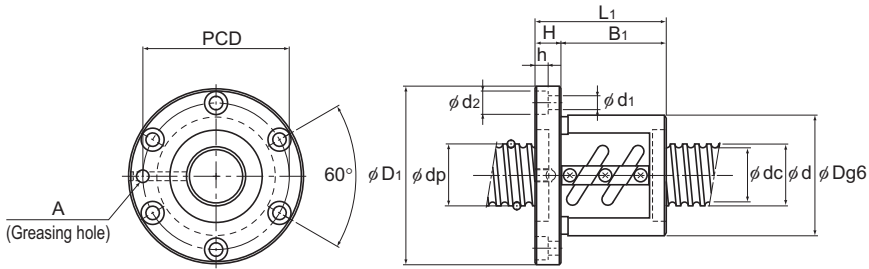
DIK (2805 to 6312)

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K N/μm	
						Ca kN	C _a a kN		
50	5	○ BIF 5005-6	50.75	47.2	2×1.5	14.2	53	970	
		○ BIF 5005-10	50.75	47.2	2×2.5	22.0	88.2	1570	
	8	○ BIF 5008-5	51.25	45.5	1×2.5	21.6	66.2	860	
		○ BIF 5008-10	51.25	45.5	2×2.5	39.1	132.3	1680	
	10	DIK	○ BNFN 5008-7.5	51.25	45.5	3×2.5	55.4	198.9	2470
			DIK 5010-6	51.75	44.4	3×1	33.9	90.7	940
			DIK 5010-8	51.75	44.4	4×1	43.4	120.5	1230
		DIK 5010-10	51.75	44.4	5×1	52.5	150.9	1530	
		○ BIF	5010-5	51.75	44.4	1×2.5	32	88.2	900
			5010-6	51.75	44.4	2×1.5	37.5	105.8	1080
			5010-7	51.75	44.4	1×3.5	42.8	123.5	1240
			5010-10	51.75	44.4	2×2.5	58.2	176.4	1750
			○ BNFN 5010-7.5	51.75	44.4	3×2.5	82.5	264.6	2580

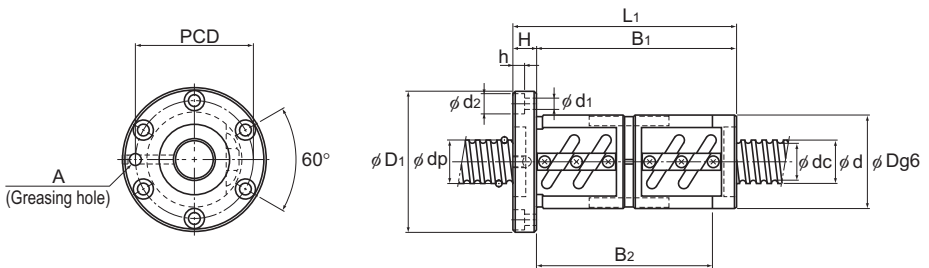
Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.



BIF



BNFN

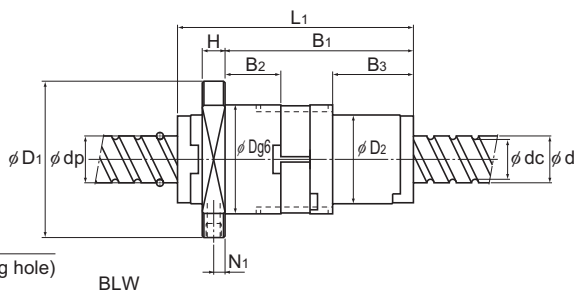
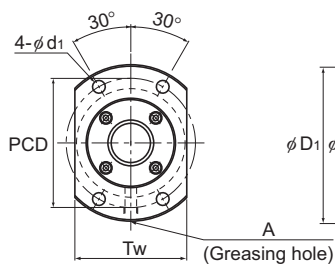
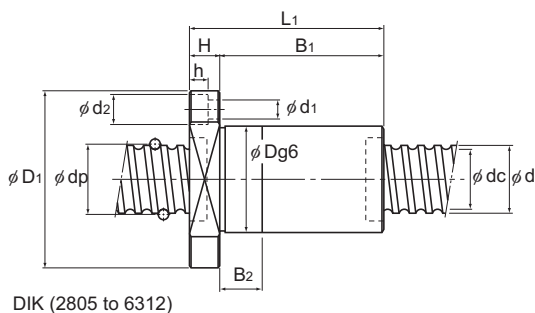
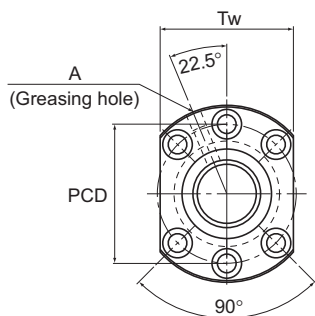
Unit: mm

	Nut dimensions										Screw shaft inertial moment/mm ²	Nut mass kg	Shaft mass kg/m
	Outer diameter	Flange diameter	Overall length							Greasing hole			
	D	D ₁	L ₁	H	B ₁	B ₂	PCD	d ₁ × d ₂ × h	Tw	A			
	80	114	83	15	68	—	96	9 × 14 × 8.5	—	PT 1/8	4.82 × 10 ⁻²	2.38	14.42
	80	114	93	15	78	—	96	9 × 14 × 8.5	—	PT 1/8	4.82 × 10 ⁻²	2.43	14.42
	87	129	85	18	67	—	107	11 × 17.5 × 11	—	PT 1/8	4.82 × 10 ⁻²	3.16	14.0
	87	129	133	18	115	—	107	11 × 17.5 × 11	—	PT 1/8	4.82 × 10 ⁻²	4.51	14.0
	87	129	205	18	187	—	107	11 × 17.5 × 11	—	PT 1/8	4.82 × 10 ⁻²	6.35	14.0
	72	123	114	18	96	30	101	11 × 17.5 × 11	92	PT 1/8	4.82 × 10 ⁻²	2.65	13.38
	72	123	137	18	119	35	101	11 × 17.5 × 11	92	PT 1/8	4.82 × 10 ⁻²	3.03	13.38
	72	123	160	18	142	45	101	11 × 17.5 × 11	92	PT 1/8	4.82 × 10 ⁻²	3.41	13.38
	93	135	103	18	85	—	113	11 × 17.5 × 11	—	PT 1/8	4.82 × 10 ⁻²	4.31	13.38
	93	135	140	18	122	133	113	11 × 17.5 × 11	—	PT 1/8	4.82 × 10 ⁻²	5.55	13.38
	93	135	123	18	105	116	113	11 × 17.5 × 11	—	PT 1/8	4.82 × 10 ⁻²	5.03	13.38
	93	135	163	18	145	—	113	11 × 17.5 × 11	—	PT 1/8	4.82 × 10 ⁻²	6.26	13.38
	93	135	253	18	235	216	113	11 × 17.5 × 11	—	PT 1/8	4.82 × 10 ⁻²	9.19	13.38

For model number coding, see [A15-248](#).

Preload Type of Precision Ball Screw

Screw shaft outer diameter	50
Lead	12 to 50



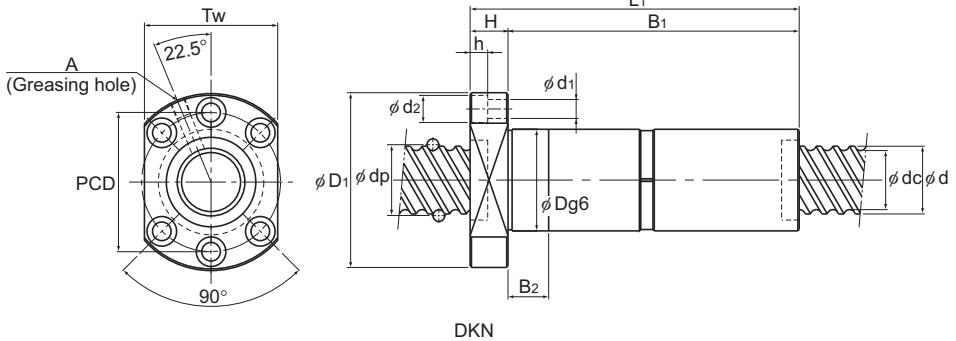
Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K			
						Ca kN	Ca kN		Outer diameter D	Flange diameter D1	D2
50	12	DIK 5012-6	52.25	43.3	3 × 1	45.8	113	970	75	129	—
		DIK 5012-8	52.25	43.3	4 × 1	58.6	150.6	1270	75	129	—
		○ BIF 5012-5	52.25	43.3	1 × 2.5	43.4	109.8	930	100	146	—
		○ BIF 5012-7	52.25	43.3	1 × 3.5	58	153.9	1280	100	146	—
		○ BIF 5012-10	52.25	43.3	2 × 2.5	78.8	220.5	1810	100	146	—
	16	DIK 5016-4	52.25	43.3	2 × 1	32.3	75.5	660	75	129	—
		DIK 5016-6	52.25	43.3	3 × 1	45.7	113.3	970	75	129	—
		○ BIF 5016-5	52.7	42.9	1 × 2.5	72.6	183.3	1230	105	152	—
		○ BIF 5016-10	52.7	42.9	2 × 2.5	132.3	366.5	2360	105	152	—
	20	DKN 5020-3	52.25	43.6	3 × 1	44.2	108.8	930	75	129	—
		○ BIF 5020-5	52.7	42.9	1 × 2.5	72.5	183.3	1230	105	152	—
	50	BLW 5050-3.6	52.2	44.1	2 × 1.8	57.8	155	1340	106	149	90

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

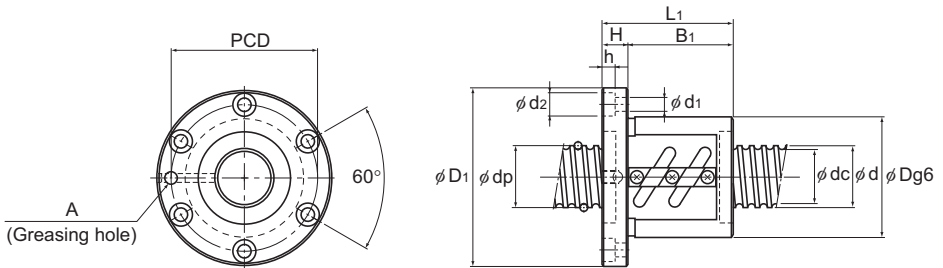
Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.

Model BLW cannot be attached with seal.



DKN



BIF

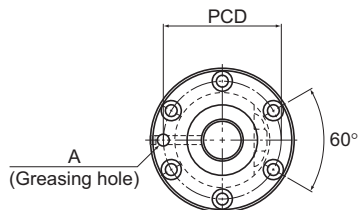
Unit: mm

Nut dimensions													Screw shaft inertial moment/mm	Nut mass	Shaft mass
Overall length	H	B ₁	B ₂	B ₃	PCD	d ₁	d ₂	h	Tw	N ₁	Greasing hole	kg·cm ² /mm			
L ₁											A				
145	22	123	35	—	105	14	20	13	98	—	PT 1/8	4.82 × 10 ⁻²	3.83	12.74	
170	22	148	45	—	105	14	20	13	98	—	PT 1/8	4.82 × 10 ⁻²	4.31	12.74	
123	22	101	114	—	122	14	20	13	—	—	PT 1/8	4.82 × 10 ⁻²	6.02	12.74	
147	22	125	138	—	122	14	20	13	—	—	PT 1/8	4.82 × 10 ⁻²	7.2	12.74	
195	22	173	186	—	122	14	20	13	—	—	PT 1/8	4.82 × 10 ⁻²	9.05	12.74	
129	22	107	30	—	105	14	20	13	98	—	PT 1/8	4.82 × 10 ⁻²	3.52	13.41	
175	22	153	45	—	105	14	20	13	98	—	PT 1/8	4.82 × 10 ⁻²	4.41	13.41	
164	25	139	—	—	128	14	20	13	—	—	PT 1/8	4.82 × 10 ⁻²	9.18	12.5	
260	25	235	—	—	128	14	20	13	—	—	PT 1/8	4.82 × 10 ⁻²	13.30	12.5	
243	28	215	30	—	105	14	20	13	98	—	PT 1/8	4.82 × 10 ⁻²	6.0	13.8	
201	28	173	—	—	128	14	20	13	—	—	PT 1/8	4.82 × 10 ⁻²	11.02	13.1	
245	20	203.8	70.7	91.7	126	14	—	—	108	8	M6	4.82 × 10 ⁻²	9.06	14.08	

For model number coding, see **15-248**.

Preload Type of Precision Ball Screw

Screw shaft outer diameter	55
Lead	10 to 20



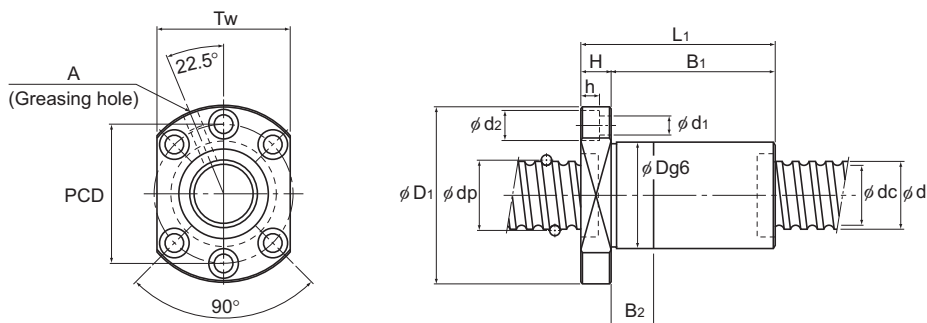
BNFN

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _{0a} kN	
55	10	BNFN 5510-2.5	56.75	49.5	1×2.5	33.4	97	970
		BNFN 5510-5	56.75	49.5	2×2.5	60.7	194	1890
		BNFN 5510-7.5	56.75	49.5	3×2.5	85.9	291.1	2770
	12	BNFN 5512-2.5	57	49.2	1×2.5	39.3	108.8	990
		BNFN 5512-3	57	49.2	2×1.5	46	131.3	1180
		BNFN 5512-3.5	57	49.2	1×3.5	52.4	152.9	1360
		BNFN 5512-5	57	49.2	2×2.5	71.3	218.5	1920
	16	BNFN 5512-7.5	57	49.2	3×2.5	100.9	327.3	2830
		BNFN 5516-2.5	57.7	47.9	1×2.5	76.1	201.9	1310
	20	BNFN 5516-5	57.7	47.9	2×2.5	138.2	402.8	2550
		BNFN 5520-2.5	57.7	47.9	1×2.5	76	201.9	1320
			BNFN 5520-5	57.7	47.9	2×2.5	138.2	403.8

Note) The model numbers in dimmed type indicate semi-standard types.
If desiring them, contact THK.

Preload Type of Precision Ball Screw

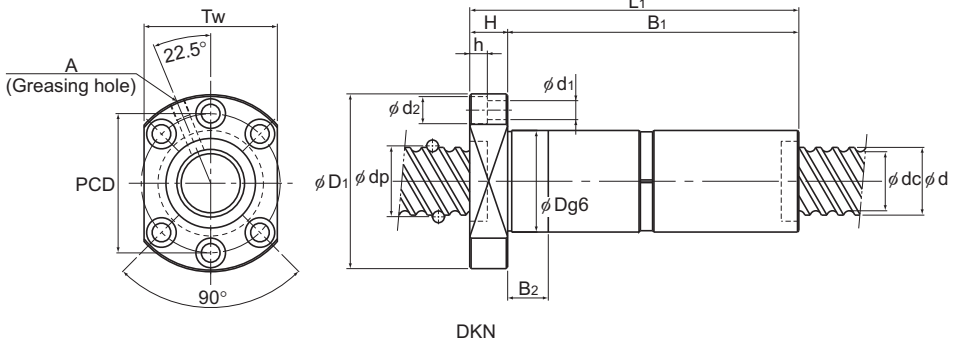
Screw shaft outer diameter	63
Lead	10 to 20



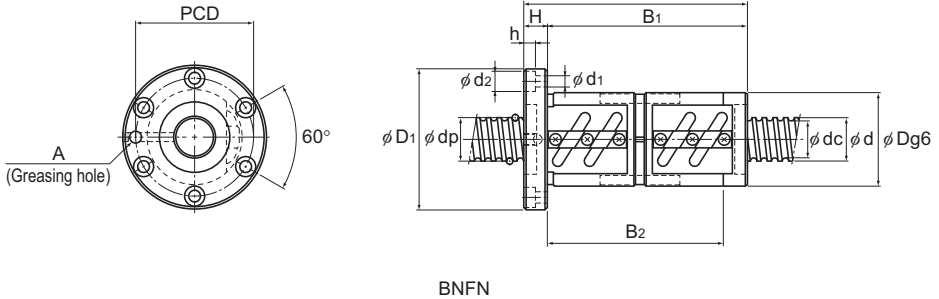
DIK (2805 to 6312)

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _{0a} kN	
63	10	DIK 6310-8	64.75	57.7	4 × 1	49.5	160.7	1550
		BNFN 6310-2.5	64.75	57.7	1 × 2.5	35.4	111.7	1090
		BNFN 6310-5	64.75	57.7	2 × 2.5	64.2	222.5	2100
		BNFN 6310-7.5	64.75	57.7	3 × 2.5	90.9	334.2	3090
	12	DIK 6312-6	65.25	56.3	3 × 1	51.9	147.4	1200
		DIK 6312-8	65.25	56.3	4 × 1	66.4	196.6	1570
		BNFN 6312A-2.5	65.25	56.3	1 × 2.5	48.1	139.2	1120
		BNFN 6312A-5	65.25	56.3	2 × 2.5	87.4	278.3	2160
	16	BNFN 6316-2.5	65.7	55.9	1 × 2.5	81.1	231.3	1470
		BNFN 6316-5	65.7	55.9	2 × 2.5	147	462.6	2840
	20	BNFN 6320-2.5	65.7	55.9	1 × 2.5	81	231.3	1470
		BNFN 6320-5	65.7	55.9	2 × 2.5	147	463.5	2640
DKN 6320-3		65.7	55.9	3 × 1	83.5	229.3	1470	

Note) The model numbers in dimmed type indicate semi-standard types.
If desiring them, contact THK.



DKN



BNFN

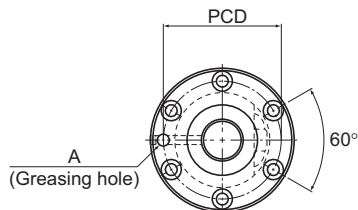
Unit: mm

	Nut dimensions										Screw shaft inertial moment/mm ²	Nut mass kg	Shaft mass kg/m
	Outer diameter	Flange diameter	Overall length							Greasing hole			
	D	D ₁	L ₁	H	B ₁	B ₂	PCD	d ₁ ×d ₂ ×h	Tw	A			
	85	146	141	22	119	35	122	14×20×13	110	PT 1/8	1.21×10 ⁻¹	4.16	21.93
	108	154	137	22	115	—	130	14×20×13	—	PT 1/8	1.21×10 ⁻¹	6.98	21.93
	108	154	197	22	175	—	130	14×20×13	—	PT 1/8	1.21×10 ⁻¹	9.4	21.93
	108	154	257	22	235	—	130	14×20×13	—	PT 1/8	1.21×10 ⁻¹	11.81	21.93
	90	146	146	22	124	35	122	14×20×13	110	PT 1/8	1.21×10 ⁻¹	4.93	21.14
	90	146	171	22	149	45	122	14×20×13	110	PT 1/8	1.21×10 ⁻¹	5.56	21.14
	115	161	159	22	137	—	137	14×20×13	—	PT 1/8	1.21×10 ⁻¹	9.32	21.14
	115	161	231	22	209	—	137	14×20×13	—	PT 1/8	1.21×10 ⁻¹	12.84	21.14
	122	184	208	24	184	—	152	18×26×17.5	—	PT 1/8	1.21×10 ⁻¹	14.61	20.85
	122	184	304	24	280	—	152	18×26×17.5	—	PT 1/8	1.21×10 ⁻¹	20.19	20.85
	122	180	227	28	199	—	150	18×26×17.5	—	PT 1/8	1.21×10 ⁻¹	15.91	20.85
	122	180	347	28	319	—	150	18×26×17.5	—	PT 1/8	1.21×10 ⁻¹	22.88	20.85
	95	159	243	28	215	30	129	18×26×17.5	121	PT 1/8	1.21×10 ⁻¹	9.5	20.85

For model number coding, see **15-248**.

Preload Type of Precision Ball Screw

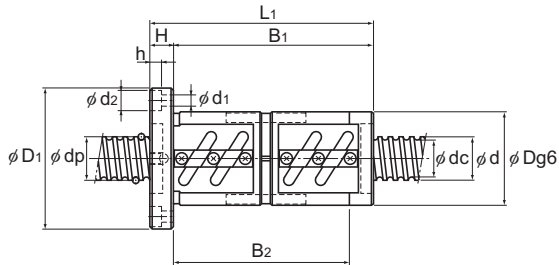
Screw shaft outer diameter	70 to 100
Lead	10 to 20



BNFN

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K N/μm	
						Ca kN	C _{0a} kN		
70	10	BNFN 7010-2.5	71.75	64.5	1×2.5	36.8	123.5	1180	
		BNFN 7010-5	71.75	64.5	2×2.5	66.9	247	2280	
		BNFN 7010-7.5	71.75	64.5	3×2.5	94.9	371.4	3350	
	12	BNFN 7012-2.5	72	64.2	1×2.5	43.5	139.2	1200	
		BNFN 7012-5	72	64.2	2×2.5	78.9	278.3	2320	
		BNFN 7012-7.5	72	64.2	3×2.5	111.7	417.5	3420	
20	BNFN 7020-5	72.7	62.9	2×2.5	153.9	514.5	3090		
80	10	BNFN 8010-2.5	81.75	75.2	1×2.5	38.9	141.1	1300	
		BNFN 8010-5	81.75	75.2	2×2.5	70.6	283.2	2530	
		BNFN 8010-7.5	81.75	75.2	3×2.5	100	424.3	3720	
	12	BNFN 8012-5	82.3	74.1	2×2.5	96.5	353.8	2620	
		20	BNFN 8020A-2.5	82.7	72.9	1×2.5	90.1	294	1770
			BNFN 8020A-5	82.7	72.9	2×2.5	163.7	589	3430
100	20	BNFN 10020A-2.5	102.7	92.9	1×2.5	99	368.5	2110	
		BNFN 10020A-5	102.7	92.9	2×2.5	179.3	737	4080	
		BNFN 10020A-7.5	102.7	92.9	3×2.5	253.8	1105.4	6010	

Note) The model numbers in dimmed type indicate semi-standard types.
If desiring them, contact THK.



BNFN

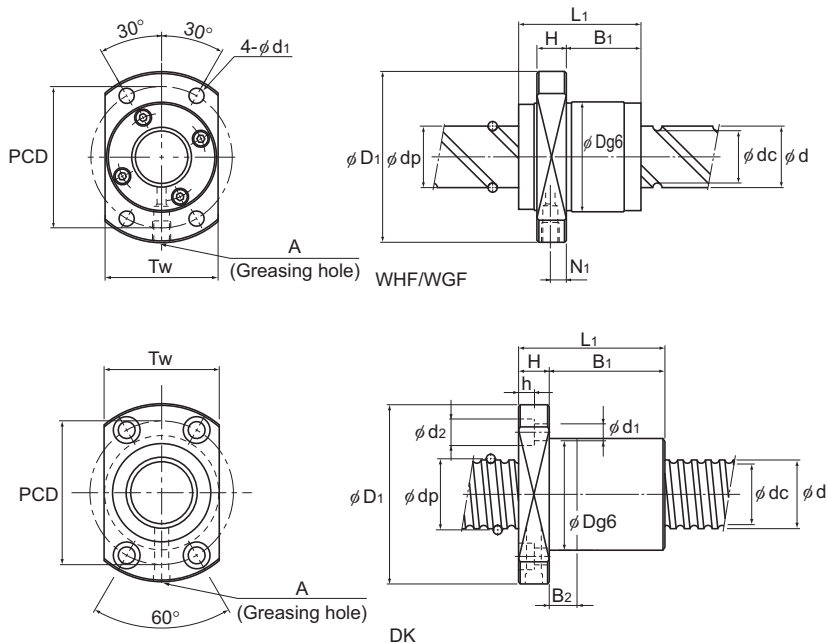
Unit: mm

	Nut dimensions								Screw shaft inertial moment/mm kg·cm ² /mm	Nut mass kg	Shaft mass kg/m
	Outer diameter D	Flange diameter D ₁	Overall length L ₁	H	B ₁	PCD	d ₁ × d ₂ × h	Greasing hole A			
125	167	141	18	123	145	11 × 17.5 × 11	PT 1/8	1.85 × 10 ⁻¹	9.19	27.4	
125	167	201	18	183	145	11 × 17.5 × 11	PT 1/8	1.85 × 10 ⁻¹	12.57	27.4	
125	167	261	18	243	145	11 × 17.5 × 11	PT 1/8	1.85 × 10 ⁻¹	15.96	27.4	
128	170	165	18	147	148	11 × 17.5 × 11	PT 1/8	1.85 × 10 ⁻¹	11.26	27.24	
128	170	237	18	219	148	11 × 17.5 × 11	PT 1/8	1.85 × 10 ⁻¹	15.63	27.24	
128	170	309	18	291	148	11 × 17.5 × 11	PT 1/8	1.85 × 10 ⁻¹	20.0	27.24	
130	186	325	28	297	158	18 × 26 × 17.5	PT 1/8	1.85 × 10 ⁻¹	23.4	27.0	
130	176	137	22	115	152	14 × 20 × 13	PT 1/8	3.16 × 10 ⁻¹	9.15	36.26	
130	176	197	22	175	152	14 × 20 × 13	PT 1/8	3.16 × 10 ⁻¹	12.41	36.26	
130	176	257	22	235	152	14 × 20 × 13	PT 1/8	3.16 × 10 ⁻¹	15.67	36.26	
135	181	231	22	209	157	14 × 20 × 13	PT 1/8	3.16 × 10 ⁻¹	16.02	35.26	
143	204	227	28	199	172	18 × 26 × 17.5	PT 1/8	3.16 × 10 ⁻¹	20.08	35.81	
143	204	347	28	319	172	18 × 26 × 17.5	PT 1/8	3.16 × 10 ⁻¹	28.97	35.81	
170	243	231	32	199	205	22 × 32 × 21.5	PT 1/8	7.71 × 10 ⁻¹	28.15	57.13	
170	243	351	32	319	205	22 × 32 × 21.5	PT 1/8	7.71 × 10 ⁻¹	39.99	57.13	
170	243	471	32	439	205	22 × 32 × 21.5	PT 1/8	7.71 × 10 ⁻¹	51.84	57.13	

For model number coding, see [A15-248](#).

No Preload Type of Precision Ball Screw

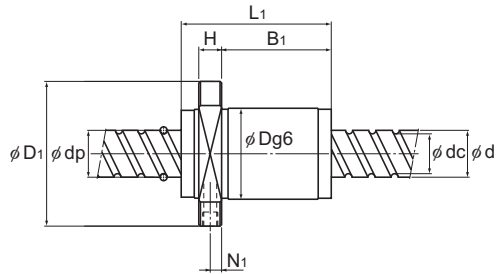
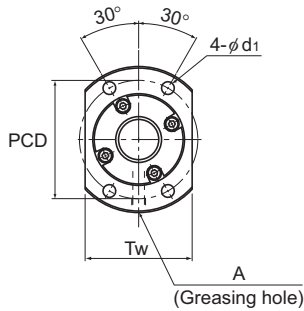
Screw shaft outer diameter	4 to 15
Lead	1 to 40



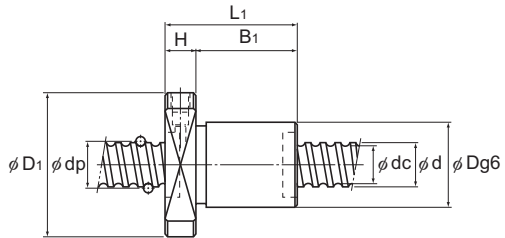
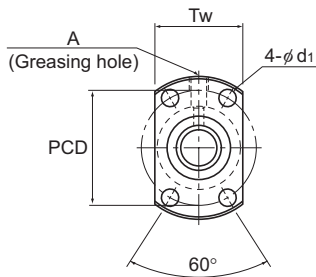
Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm	Outer diameter D	Flange diameter D ₁
						Ca kN	C _{0a} kN			
4	1	MDK 0401-3	4.15	3.4	3×1	0.29	0.42	35	9	19
6	1	MDK 0601-3	6.2	5.3	3×1	0.54	0.94	60	11	23
8	1	MDK 0801-3	8.2	7.3	3×1	0.64	1.4	80	13	26
	2	MDK 0802-3	8.3	7	3×1	1.4	2.3	80	15	28
10	12	WGF 0812-3	8.4	6.6	2×1.65	2.2	3.9	110	18	31
	2	MDK 1002-3	10.3	9	3×1	1.5	2.9	100	17	34
12	15	WGF 1015-3	10.5	8.3	2×1.65	3.3	6.2	140	23	40
	2	MDK 1202-3	12.3	11	3×1	1.7	3.6	120	19	36
13	20	WGF 1320-3	13.5	10.8	2×1.65	4.7	9.6	180	28	45
14	2	MDK 1402-3	14.3	13	3×1	1.8	4.3	190	21	40
	4	MDK 1404-3	14.65	12.2	3×1	4.2	7.6	190	26	45
		DK 1404-4	14.5	11.8	4×1	5.4	10.2	180	26	45
	5	DK 1404-6	14.5	11.8	6×1	7.7	15.4	270	26	45
		MDK 1405-3	14.75	11.2	3×1	7	11.6	140	26	45
15	10	BLK 1510-5.6	15.75	12.5	2×2.8	14.3	27.8	340	34	57
	20	WGF 1520-1.5	15.75	12.5	1×1.5	4.4	7.9	100	32	53
		WGF 1520-3	15.75	12.5	2×1.5	8.1	15.8	190	32	53
	30	WGF 1530-1	15.75	12.5	2×0.6	3.5	5.4	90	32	53
		WGF 1530-3	15.75	12.5	2×1.6	8.1	14.6	220	32	53
		WGF 1530-3.4	15.75	12.5	2×1.7	8	14.4	195	32	53
	40	WGF 1540-1.5	15.75	12.5	2×0.75	3.9	7.4	110	32	53
WGF 1540-3.4		15.75	12.5	2×1.7	7.7	16.3	209	34	57	

Note) Models MDK0401, 0601 and 0801 is not provided with a labyrinth seal.

Models MDK0401, 0601, 0801, model WHF, model WGF and Large Lead Precision Ball Screw model BLK cannot be attached with seal.



BLK



MDK

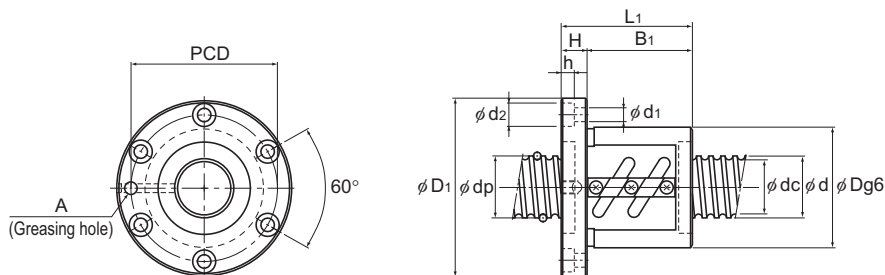
Unit: mm

Nut dimensions												Screw shaft inertial moment/mm ²	Nut mass	Shaft mass
Overall length											Greasing hole			
L ₁	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	N ₁	A				
13	3	10	—	14	2.9	—	—	13	—	—	—	1.97×10^{-6}	0.01	0.07
14.5	3.5	11	—	17	3.4	—	—	15	—	—	—	9.99×10^{-6}	0.017	0.14
15	4	11	—	20	3.4	—	—	17	—	—	—	3.16×10^{-6}	0.024	0.29
22	5	17	—	22	3.4	—	—	19	—	—	—	3.16×10^{-5}	0.034	0.27
27	4	17	—	25	3.4	—	—	20	—	—	—	3.16×10^{-5}	0.054	0.35
22	5	17	—	26	4.5	—	—	21	—	—	—	7.71×10^{-5}	0.045	0.47
33	5	22	—	32	4.5	—	—	25	—	—	—	7.71×10^{-5}	0.11	0.55
22	5	17	—	28	4.5	—	—	23	—	—	—	1.6×10^{-4}	0.05	0.71
43	5	29	—	37	4.5	—	—	30	—	—	—	2.2×10^{-4}	0.18	0.96
23	6	17	—	31	5.5	—	—	26	—	—	—	2.96×10^{-4}	0.15	1.0
33	6	27	—	36	5.5	—	—	28	—	—	—	2.96×10^{-4}	0.13	0.8
48	10	38	10	35	4.5	8	4.5	29	—	M6	—	2.96×10^{-4}	0.2	1
60	10	50	10	35	4.5	8	4.5	29	—	M6	—	2.96×10^{-4}	0.23	1
42	10	32	—	36	5.5	—	—	28	—	M6	—	2.96×10^{-4}	0.18	0.91
44	10	24	—	45	5.5	—	—	40	5	M6	—	3.9×10^{-4}	0.34	0.31
45	10	28	—	43	5.5	—	—	33	5	M6	—	3.9×10^{-4}	0.29	1.22
45	10	28	—	43	5.5	—	—	33	5	M6	—	3.9×10^{-4}	0.29	1.22
33	10	17	—	43	5.5	—	—	33	5	M6	—	3.9×10^{-4}	0.23	1.26
63	10	47	—	43	5.5	—	—	33	5	M6	—	3.9×10^{-4}	0.38	1.26
64.5	10	47.5	—	43	5.5	—	—	33	5	M6	—	3.9×10^{-4}	0.38	1.26
42	10	26.3	—	43	5.5	—	—	33	5	M6	—	3.9×10^{-4}	0.28	1.28
81.6	10	64.6	—	45	5.5	—	—	40	5	M6	—	3.9×10^{-4}	0.48	1.28

For model number coding, see [A15-248](#).

No Preload Type of Precision Ball Screw

Screw shaft outer diameter	16 to 18
Lead	4 to 16



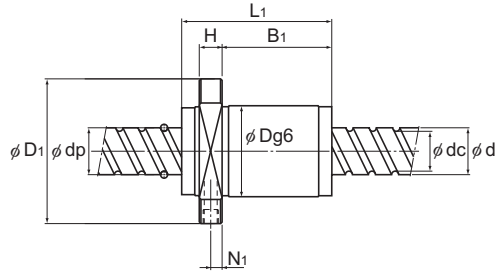
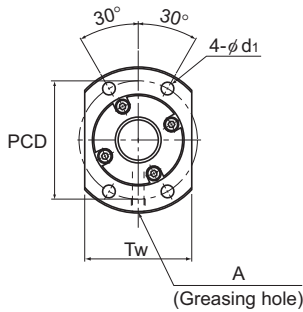
BNF

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K N/μm	Rigidity		
						Ca kN	C _{0a} kN		Outer diameter D	Flange diameter D ₁	
16	4	BNF 1604-3	16.5	13.8	2 × 1.5	5.1	10.5	180	36	59	
		BNF 1605-2.5	16.75	13.2	1 × 2.5	7.4	13.9	170	40	60	
	5	BNF 1605-3	16.75	13.2	2 × 1.5	8.7	16.8	200	40	60	
		BNF 1605-5	16.75	13.2	2 × 2.5	13.5	27.8	320	40	60	
		DK 1605-3	16.75	13.1	3 × 1	7.4	13	160	30	49	
		DK 1605-4	16.75	13.1	4 × 1	9.5	17.4	210	30	49	
	6	BNF 1606-2.5	16.8	13.2	1 × 2.5	7.5	14	170	40	60	
		BNF 1606-5	16.8	13.2	2 × 2.5	13.5	28	320	40	60	
	10	10	BNF 1610-1.5	16.8	13.5	1 × 1.5	4.8	8.5	100	40	63
			BLK 1616-2.8	16.65	13.7	1 × 2.8	5.2	9.9	180	32	53
16		BLK 1616-3.6	16.65	13.7	2 × 1.8	7.1	14.3	220	32	53	
		BNF 1810-2.5	18.8	15.5	1 × 2.5	7.8	15.9	190	42	65	
18	10	BNF 1810-3	18.8	15.5	2 × 1.5	9.2	19.1	220	42	65	

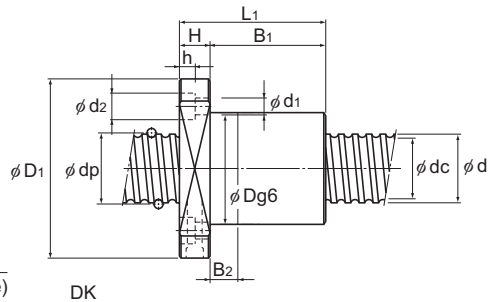
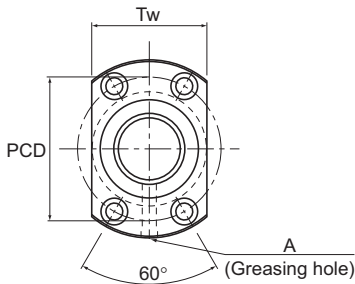
Note) The model numbers in dimmed type indicate semi-standard types.

If desiring them, contact THK.

Large Lead Precision Ball Screw model BLK cannot be attached with seal.



BLK



DK

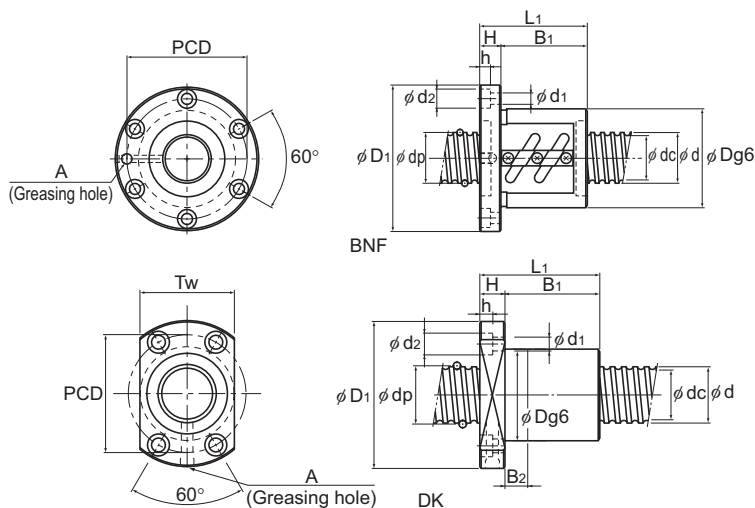
Unit: mm

Nut dimensions												Screw shaft inertial moment/mm ⁴	Nut mass	Shaft mass
Overall length										Greasing hole	kg·cm ² /mm ⁴			
L ₁	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	N ₁	A				
45	11	34	—	47	5.5	9.5	5.5	—	—	M6	5.05×10^{-4}	0.32	1.35	
41	10	31	—	50	4.5	8	4.5	—	—	M6	5.05×10^{-4}	0.37	1.24	
51	10	41	—	50	4.5	8	4.5	—	—	M6	5.05×10^{-4}	0.47	1.24	
56	10	46	—	50	4.5	8	4.5	—	—	M6	5.05×10^{-4}	0.49	1.24	
45	10	35	10	39	4.5	8	4.5	31	—	M6	5.05×10^{-4}	0.24	1.25	
50	10	40	10	39	4.5	8	4.5	31	—	M6	5.05×10^{-4}	0.26	1.25	
44	10	34	—	50	4.5	8	4.5	—	—	M6	5.05×10^{-4}	0.41	1.3	
62	10	52	—	50	4.5	8	4.5	—	—	M6	5.05×10^{-4}	0.49	1.3	
42	11	31	—	51	5.5	9.5	5.5	—	—	M6	5.05×10^{-4}	0.32	1.41	
54	10	37.5	—	42	4.5	—	—	38	5	M6	5.05×10^{-4}	0.32	1.41	
38	10	21.5	—	42	4.5	—	—	38	5	M6	5.05×10^{-4}	0.21	1.41	
69	12	57	—	53	5.5	9.5	5.5	—	—	M6	8.09×10^{-4}	0.67	1.81	
75	12	63	—	53	5.5	9.5	5.5	—	—	M6	8.09×10^{-4}	0.63	1.81	

For model number coding, see [A15-248](#).

No Preload Type of Precision Ball Screw

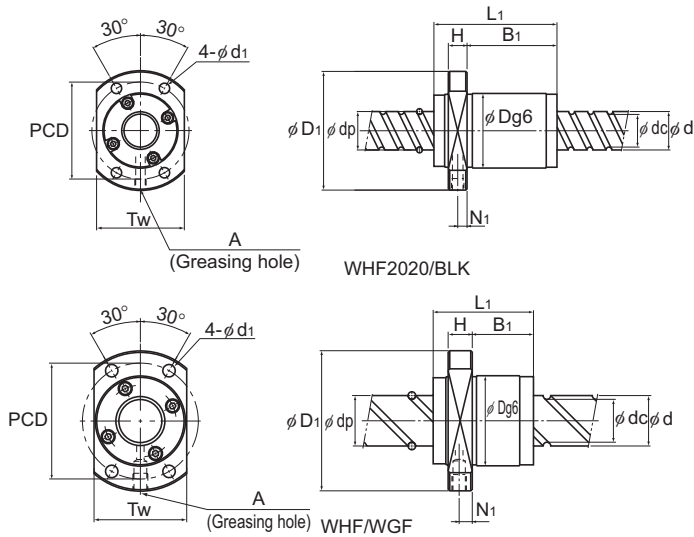
Screw shaft outer diameter	20
Lead	4 to 60



Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K N/μm	Outer diameter D	Flange diameter D ₁
						Ca kN	C _{0a} kN			
20	4	BNF 2004-2.5	20.5	17.8	1×2.5	4.8	10.9	180	40	63
		BNF 2004-5	20.5	17.8	2×2.5	8.6	21.8	350	40	63
		DK 2004-3	20.5	17.8	3×1	5.2	11.6	190	32	56
		DK 2004-4	20.5	17.8	4×1	6.6	15.5	250	32	56
	5	BNF 2005-2.5	20.75	17.2	1×2.5	8.3	17.4	200	44	67
		BNF 2005-3	20.75	17.2	2×1.5	9.7	21	240	44	67
		BNF 2005-3.5	20.75	17.2	1×3.5	11.1	24.5	270	44	67
		BNF 2005-5	20.75	17.2	2×2.5	15.1	35	380	44	67
		DK 2005-3	20.75	17.1	3×1	8.5	17.3	200	34	58
		DK 2005-4	20.75	17.1	4×1	11	23.1	260	34	58
	6	BNF 2006-2.5	20.75	17.2	1×2.5	8.3	17.5	200	48	71
		BNF 2006-3	20.75	17.2	2×1.5	9.7	21	240	48	71
		BNF 2006-3.5	20.75	17.2	1×3.5	11.1	24.5	270	48	71
		BNF 2006-5	20.75	17.2	2×2.5	15.1	35	380	48	71
		DK 2006-3	21	16.4	3×1	11.4	21.5	410	35	58
		DK 2006-4	21	16.4	4×1	14.6	28.6	540	35	58
	8	BNF 2008-2.5	21	16.4	1×2.5	11.1	21.9	210	46	74
		DK 2008-4	21	16.4	4×1	14.6	28.8	270	35	58
	10	BNF 2010A-1.5	21	16.4	1×1.5	7.2	13.2	130	46	74
	12	BNF 2012-1.5	21	16.4	1×1.5	7.1	12.5	130	48	71
20	BLK 2020-2.8	20.75	17.5	1×2.8	8.1	17.2	230	39	62	
	WHF 2020-3.4	20.75	17.5	2×1.7	9.6	21	225	42	64	
	BLK 2020-3.6	20.75	17.5	2×1.8	11.1	24.7	290	39	62	
25	WHF 2025-3.4	20.75	17.6	2×1.7	9.8	22.3	236	39	62	
30	WHF 2030-3.4	20.75	17.6	2×1.7	9.9	23.5	243	39	62	
	WGF 2040-1	20.75	17.5	2×0.65	4.3	8	110	37	57	
40	WGF 2040-3	20.75	17.5	2×1.65	9.5	20.2	280	37	57	
	WHF 2040-3.4	20.75	17.5	2×1.7	9.6	20.3	256	37	57	
60	WGF 2060-1.5	20.75	17.5	2×0.75	4.5	11	140	37	57	

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

Model WHF, model WGF and Large Lead Precision Ball Screw model BLK cannot be attached with seal.



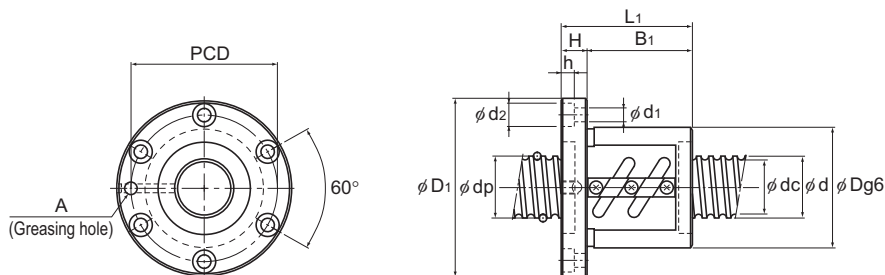
Unit: mm

Nut dimensions											Screw shaft inertial moment/mm ³	Nut mass	Shaft mass	
Overall length	L ₁	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	N ₁				Greasing hole
37	11	26	—	51	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.3	2.18
49	11	38	—	51	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.49	2.18
42	11	31	10	44	5.5	9.5	5.5	35	—	—	M6	1.23×10 ⁻³	0.26	2.18
46	11	35	10	44	5.5	9.5	5.5	35	—	—	M6	1.23×10 ⁻³	0.27	2.18
41	11	30	—	55	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.46	2.05
52	11	41	—	55	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.53	2.05
45	11	34	—	55	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.53	2.05
56	11	45	—	55	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.6	2.05
46	11	35	10	46	5.5	9.5	5.5	36	—	—	M6	1.23×10 ⁻³	0.31	2.06
51	11	40	10	46	5.5	9.5	5.5	36	—	—	M6	1.23×10 ⁻³	0.34	2.06
44	11	33	—	59	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.51	2.12
56	11	45	—	59	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.68	2.12
50	11	39	—	59	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.62	2.12
62	11	51	—	59	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.8	2.12
52	11	41	10	46	5.5	9.5	5.5	36	—	—	M6	1.23×10 ⁻³	0.36	1.93
59	11	48	10	46	5.5	9.5	5.5	36	—	—	M6	1.23×10 ⁻³	0.39	1.93
60	15	45	—	59	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.69	2.06
69	11	58	15	46	5.5	9.5	5.5	36	—	—	M6	1.23×10 ⁻³	0.45	2.06
58	15	43	—	59	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.77	2.14
64	18	46	—	59	5.5	9.5	5.5	—	—	—	M6	1.23×10 ⁻³	0.9	2.19
65	10	47.5	—	50	5.5	—	—	46	5	—	M6	1.23×10 ⁻³	0.49	2.25
47.1	10	24.1	—	53	5.5	—	—	46	5	—	M6	1.23×10 ⁻³	0.49	2.25
45	10	27.5	—	50	5.5	—	—	46	5	—	M6	1.23×10 ⁻³	0.35	2.25
56.2	10	33.2	—	50	5.5	—	—	46	5	—	M6	1.23×10 ⁻³	0.51	2.26
65.3	10	43.3	—	50	5.5	—	—	46	5	—	M6	1.23×10 ⁻³	0.55	2.28
41	10	25	—	47	5.5	—	—	38	5.5	—	M6	1.23×10 ⁻³	0.24	2.34
81	10	65	—	47	5.5	—	—	38	5.5	—	M6	1.23×10 ⁻³	0.48	2.34
82.7	10	65.7	—	47	5.5	—	—	38	5	—	M6	1.23×10 ⁻³	0.58	2.34
60	10	40.1	—	47	5.5	—	—	38	5	—	M6	1.23×10 ⁻³	0.4	2.37

For model number coding, see [A15-248](#).

No Preload Type of Precision Ball Screw

Screw shaft outer diameter	25
Lead	4 to 16



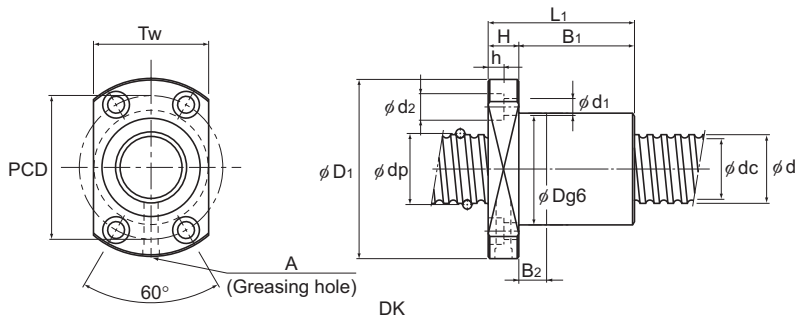
BNF

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K	Rigidity	
						Ca	C _{0a}		Outer diameter D	Flange diameter D ₁
						kN	kN	N/μm	D	D ₁
25	4	BNF 2504-2.5	25.5	22.8	1×2.5	5.2	13.7	210	46	69
		BNF 2504-5	25.5	22.8	2×2.5	9.5	27.3	410	46	69
		DK 2504-3	25.5	22.8	3×1	5.7	15	230	38	63
		DK 2504-4	25.5	22.8	4×1	7.4	19.9	310	38	63
	5	BNF 2505-2.5	25.75	22.2	1×2.5	9.2	22	240	50	73
		BNF 2505-3	25.75	22.2	2×1.5	10.8	26.4	280	50	73
		BNF 2505-3.5	25.75	22.2	1×3.5	12.3	30.7	320	50	73
		BNF 2505-5	25.75	22.2	2×2.5	16.7	44	460	50	73
		DK 2505-3	25.75	22.1	3×1	9.7	22.6	250	40	63
		DK 2505-4	25.75	22.1	4×1	12.4	30.3	320	40	63
	6	BNF 2506-2.5	26	21.4	1×2.5	12.5	27.3	250	53	76
		BNF 2506-3	26	21.4	2×1.5	14.6	32.8	290	53	76
		BNF 2506-3.5	26	21.4	1×3.5	15.1	35.9	330	53	76
		BNF 2506-5	26	21.4	2×2.5	22.5	54.8	470	53	76
		DK 2506-3	26	21.4	3×1	12.8	27	250	40	63
		DK 2506-4	26	21.4	4×1	16.8	37.4	330	40	63
	8	BNF 2508-2.5	26.25	20.5	1×2.5	15.8	32.8	250	58	85
		BNF 2508-3	26.25	20.5	2×1.5	18.5	39.4	290	58	85
		BNF 2508-3.5	26.25	20.5	1×3.5	21.2	46	340	58	85
		BNF 2508-5	26.25	20.5	2×2.5	28.7	65.8	480	58	85
		DK 2508-3	26	21.4	3×1	13.1	28.1	500	40	63
		DK 2508-4	26	21.4	4×1	16.8	37.5	330	40	63
	10	BNF 2510A-2.5	26.3	21.4	1×2.5	15.8	33	250	58	85
		DK 2510-3	26	21.6	3×1	12.7	27	250	40	63
DK 2510-4		26	21.6	4×1	16.7	37.6	330	40	63	
12	BNF 2512-2.5	26	21.9	1×2.5	12.3	27.6	250	53	76	
16	BNF 2516-1.5	26	21.4	1×1.5	7.9	16.7	150	53	76	

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

These models can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.



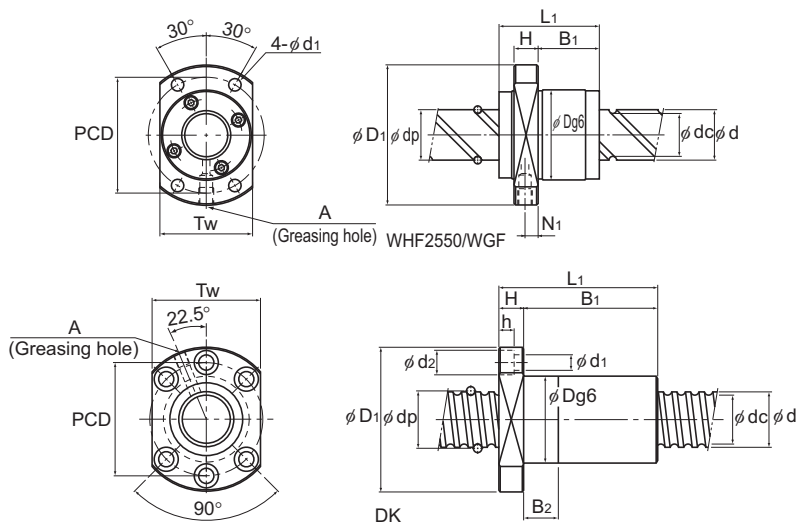
Unit: mm

Nut dimensions											Screw shaft inertial moment/mm ³	Nut mass	Shaft mass
Overall length										Greasing hole			
L ₁	H	B ₁	B ₂	PCD	d ₁	d ₂	h	T _w	A		kg·cm ² /mm	kg	kg/m
36	11	25	—	57	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.21	3.5
48	11	37	—	57	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.55	3.5
43	11	32	10	51	5.5	9.5	5.5	39	M6		3.01×10 ⁻³	0.33	3.5
47	11	36	10	51	5.5	9.5	5.5	39	M6		3.01×10 ⁻³	0.35	3.5
40	11	29	—	61	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.52	3.34
52	11	41	—	61	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.66	3.34
45	11	34	—	61	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.6	3.34
55	11	44	—	61	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.68	3.34
46	11	35	10	51	5.5	9.5	5.5	41	M6		3.01×10 ⁻³	0.38	3.35
51	11	40	10	51	5.5	9.5	5.5	41	M6		3.01×10 ⁻³	0.41	3.35
44	11	33	—	64	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.61	3.19
56	11	45	—	64	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.85	3.19
50	11	39	—	64	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.79	3.19
62	11	51	—	64	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.91	3.19
52	11	41	10	51	5.5	9.5	5.5	41	M6		3.01×10 ⁻³	0.41	3.19
60	11	49	10	51	5.5	9.5	5.5	41	M6		3.01×10 ⁻³	0.46	3.19
58	15	43	—	71	6.6	11	6.5	—	M6		3.01×10 ⁻³	1.07	3.12
71	15	56	—	71	6.6	11	6.5	—	M6		3.01×10 ⁻³	1.27	3.12
66	15	51	—	71	6.6	11	6.5	—	M6		3.01×10 ⁻³	1.29	3.12
82	15	67	—	71	6.6	11	6.5	—	M6		3.01×10 ⁻³	1.44	3.12
62	12	50	10	51	5.5	9.5	5.5	41	M6		3.01×10 ⁻³	0.48	3.35
71	12	59	15	51	5.5	9.5	5.5	41	M6		3.01×10 ⁻³	0.54	3.35
70	18	52	—	71	6.6	11	6.5	—	M6		3.01×10 ⁻³	1.43	3.27
80	15	65	15	51	5.5	9.5	5.5	41	M6		3.01×10 ⁻³	0.62	3.45
85	15	70	20	51	5.5	9.5	5.5	41	M6		3.01×10 ⁻³	0.65	3.45
60	11	49	—	64	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.86	3.51
60	11	49	—	64	5.5	9.5	5.5	—	M6		3.01×10 ⁻³	0.96	3.6

For model number coding, see **A15-248**.

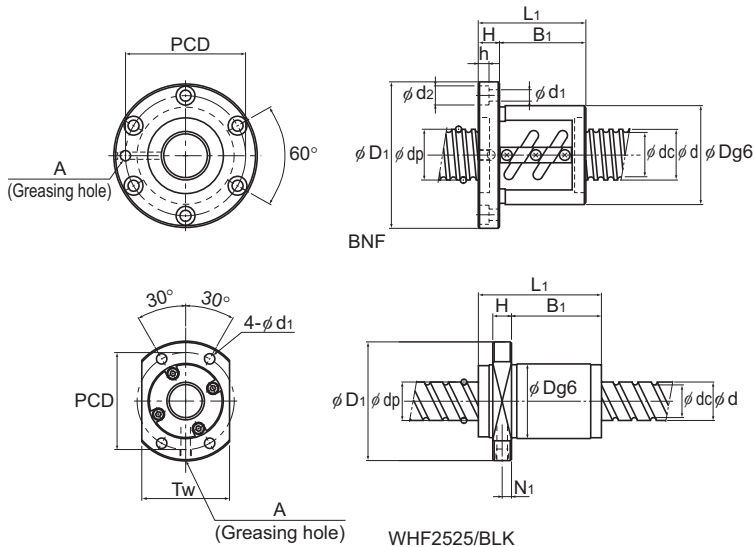
No Preload Type of Precision Ball Screw

Screw shaft outer diameter	25 to 30
Lead	5 to 90



Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm	Outer diameter D	Flange diameter D ₁
						Ca kN	C _{0a} kN			
25	25	BLK 2525-2.8	26	21.9	1×2.8	12.2	26.9	270	47	74
		WHF 2525-3.4	26	21.9	2×1.7	14.5	33.1	285	50	77
		BLK 2525-3.6	26	21.9	2×1.8	16.6	38.7	350	47	74
	50	WGF 2550-1	26	21.9	2×0.65	6.4	12.5	140	45	69
		WGF 2550-3	26	21.9	2×1.65	14.3	31.7	340	45	69
		WHF 2550-3.4	26	21.9	2×1.7	14.4	31.9	323	45	69
28	5	BNF 2805-2.5	28.75	25.2	1×2.5	9.7	24.6	250	55	85
		BNF 2805-3	28.75	25.2	2×1.5	11.3	29.5	300	55	85
		BNF 2805-3.5	28.75	25.2	1×3.5	12.9	34.4	350	55	85
		BNF 2805-5	28.75	25.2	2×2.5	17.5	49.4	500	55	85
		BNF 2805-7.5	28.75	25.2	3×2.5	24.8	73.8	740	55	85
		DK 2805-3	28.75	25.2	3×1	10.5	26.4	270	43	71
	6	DK 2805-4	28.75	25.2	4×1	13.4	35.2	360	43	71
		BNF 2806-2.5	28.75	25.2	1×2.5	9.6	24.6	250	55	85
		BNF 2806-3.5	28.75	25.2	1×3.5	12.9	34.5	350	55	85
		BNF 2806-5	28.75	25.2	2×2.5	17.5	49.4	500	55	85
		BNF 2806-7.5	28.75	25.2	3×2.5	24.8	73.8	740	55	85
		DK 2806-3	29	24.4	3×1	14	32	280	43	71
8	DK 2806-4	29	24.4	4×1	18	42.5	370	43	71	
	BNF 2808-2.5	29.25	23.6	1×2.5	16.8	36.8	270	60	104	
	BNF 2808-3	29.25	23.6	2×1.5	19.6	44.2	320	60	104	
	BNF 2808-5	29.25	23.6	2×2.5	30.4	73.7	530	60	104	
	10	BNF 2810-2.5	29.75	22.4	1×2.5	24	48.2	280	65	106
		DK 2810-4	29.25	23.6	4×1	22.4	50	370	45	71
30	60	WGF 3060-1	31.25	26.4	2×0.65	8.9	18	170	55	89
		WGF 3060-3	31.25	26.4	2×1.65	19.9	45.7	410	55	89
		WGF 3090-1.5	31.25	26.4	2×0.75	9.7	25.8	200	55	89

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.
Model WHF, model WGF and Large Lead Precision Ball Screw model BLK cannot be attached with seal.



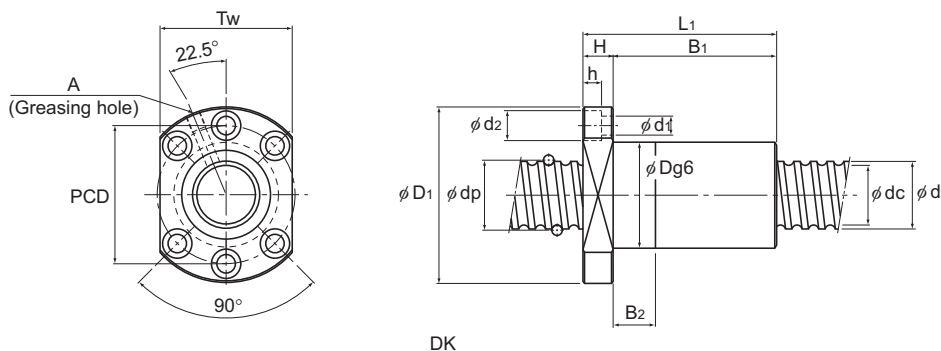
Unit: mm

Nut dimensions											Screw shaft inertial moment/mm ⁴	Nut mass kg	Shaft mass kg/m	
Overall length	L ₁	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	N ₁				Greasing hole A
80	12	60	—	60	6.6	—	—	—	56	6	M6	3.01 × 10 ⁻³	0.89	3.52
58.8	12	31.3	—	63	6.6	—	—	—	56	6	M6	3.01 × 10 ⁻³	0.65	3.52
55	12	35	—	60	6.6	—	—	—	56	6	M6	3.01 × 10 ⁻³	0.64	3.52
52	12	31.5	—	57	6.6	—	—	—	46	7	M6	3.01 × 10 ⁻³	0.43	3.66
102	12	81.5	—	57	6.6	—	—	—	46	7	M6	3.01 × 10 ⁻³	0.85	3.66
103.3	12	79.3	—	57	6.6	—	—	—	46	6	M6	3.01 × 10 ⁻³	0.72	3.66
44	12	32	—	69	6.6	11	6.5	—	—	—	M6	4.74 × 10 ⁻³	1.02	4.27
54	12	42	—	69	6.6	11	6.5	—	—	—	M6	4.74 × 10 ⁻³	0.92	4.27
49	12	37	—	69	6.6	11	6.5	—	—	—	M6	4.74 × 10 ⁻³	0.86	4.27
59	12	47	—	69	6.6	11	6.5	—	—	—	M6	4.74 × 10 ⁻³	1.06	4.27
74	12	62	—	69	6.6	11	6.5	—	—	—	M6	4.74 × 10 ⁻³	1.16	4.27
49	12	37	10	57	6.6	11	6.5	55	—	—	M6	4.74 × 10 ⁻³	0.48	4.27
54	12	42	10	57	6.6	11	6.5	55	—	—	M6	4.74 × 10 ⁻³	0.51	4.27
50	12	38	—	69	6.6	11	6.5	—	—	—	M6	4.74 × 10 ⁻³	0.87	4.36
56	12	44	—	69	6.6	11	6.5	—	—	—	M6	4.74 × 10 ⁻³	0.94	4.36
68	12	56	—	69	6.6	11	6.5	—	—	—	M6	4.74 × 10 ⁻³	1.09	4.36
86	12	74	—	69	6.6	11	6.5	—	—	—	M6	4.74 × 10 ⁻³	1.3	4.36
53	12	41	10	57	6.6	11	6.5	55	—	—	M6	4.74 × 10 ⁻³	0.5	4.36
61	12	49	10	57	6.6	11	6.5	55	—	—	M6	4.74 × 10 ⁻³	0.56	4.36
68	18	50	—	82	11	17.5	11	—	—	—	M6	4.74 × 10 ⁻³	1.75	4.02
80	18	62	—	82	11	17.5	11	—	—	—	M6	4.74 × 10 ⁻³	1.93	4.02
92	18	74	—	82	11	17.5	11	—	—	—	M6	4.74 × 10 ⁻³	2.11	4.02
86	18	68	—	85	11	17.5	11	—	—	—	M6	4.74 × 10 ⁻³	2.3	3.66
84	15	69	20	57	6.6	11	6.5	55	—	—	M6	4.74 × 10 ⁻³	0.82	4.18
62	15	37	—	71	9	—	—	—	56	9	M6	6.24 × 10 ⁻³	1.11	5.28
122	15	97	—	71	9	—	—	—	56	9	M6	6.24 × 10 ⁻³	1.9	5.28
92	15	61.3	—	71	9	—	—	—	56	9	M6	6.24 × 10 ⁻³	1.51	5.34

For model number coding, see **A15-248**.

No Preload Type of Precision Ball Screw

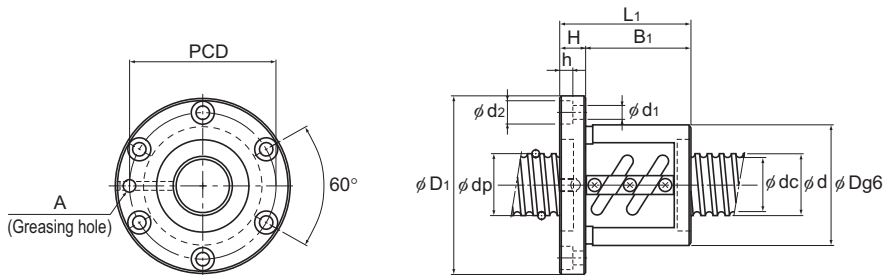
Screw shaft outer diameter	32
Lead	4 to 12



DK

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm	Outer diameter D	Flange diameter D ₁
						Ca kN	C _{0a} kN			
						Ph	dp	dc	Rows X turns	kN
32	4	BNF 3204-7.5	32.5	30	3×2.5	14.8	52.7	740	54	81
		DK 3204-3	32.5	30.1	3×1	6.4	19.6	290	45	76
		DK 3204-4	32.5	30.1	4×1	8.2	26.1	380	45	76
	5	○BNF 3205-2.5	32.75	29.2	1×2.5	10.2	28.1	280	58	85
		○BNF 3205-3	32.75	29.2	2×1.5	12	33.8	340	58	85
		○BNF 3205-4.5	32.75	29.2	3×1.5	17	50.7	500	58	85
		○BNF 3205-5	32.75	29.2	2×2.5	18.5	56.4	560	58	85
		○BNF 3205-7.5	32.75	29.2	3×2.5	26.3	84.5	810	58	85
		DK 3205-3	32.75	29.2	3×1	11.1	30.2	300	46	76
		DK 3205-4	32.75	29.2	4×1	14.2	40.3	400	46	76
	DK 3205-6	32.75	29.2	6×1	20.1	60.4	600	46	76	
	6	○BNF 3206-2.5	33	28.4	1×2.5	13.9	35.2	290	62	89
		○BNF 3206-3	33	28.4	2×1.5	16.3	42.2	350	62	89
		○BNF 3206-5	33	28.4	2×2.5	25.2	70.4	580	62	89
		DK 3206-3	33	28.4	3×1	14.9	37.1	310	48	76
		DK 3206-4	33	28.4	4×1	19.1	49.5	410	48	76
	8	○BNF 3208A-2.5	33.25	27.5	1×2.5	17.8	42.2	300	66	100
		○BNF 3208A-3	33.25	27.5	2×1.5	20.9	50.7	360	66	100
		○BNF 3208A-4.5	33.25	27.5	3×1.5	29.5	76	530	66	100
		○BNF 3208A-5	33.25	27.5	2×2.5	32.3	84.4	590	66	100
	10	○BNF 3210A-2.5	33.75	26.4	1×2.5	26.1	56.2	310	74	108
		○BNF 3210A-3	33.75	26.4	2×1.5	30.5	67.4	380	74	108
		○BNF 3210A-3.5	33.75	26.4	1×3.5	34.8	78.6	440	74	108
		○BNF 3210A-5	33.75	26.4	2×2.5	47.2	112.7	620	74	108
		DK 3210-3	33.75	26.4	3×1	25.7	52.2	300	54	87
		DK 3210-4	33.75	26.4	4×1	33	69.7	390	54	87
	12	○BNF 3212-3.5	34	26.1	1×3.5	40.4	88.5	440	76	121
		DK 3212-4	33.75	26.4	4×1	34.2	73.9	420	54	87

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.
Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.
For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.



BNF

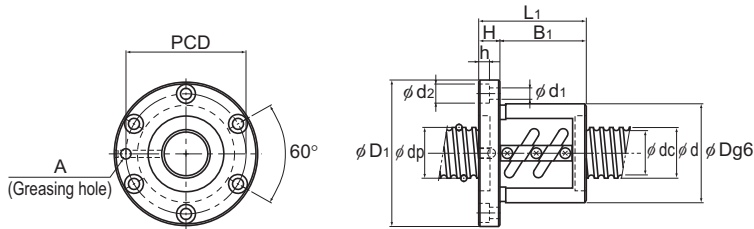
Unit: mm

Nut dimensions											Screw shaft inertial moment/mm ³	Nut mass	Shaft mass
Overall length	L ₁	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	Greasing hole			
	60	11	49	—	67	6.6	11	6.5	—	M6	8.08 × 10 ⁻³	0.81	5.86
	44	11	33	10	63	6.6	11	6.5	59	M6	8.08 × 10 ⁻³	0.44	5.86
	48	11	37	10	63	6.6	11	6.5	59	M6	8.08 × 10 ⁻³	0.47	5.86
	41	12	29	—	71	6.6	11	6.5	—	M6	8.08 × 10 ⁻³	0.76	5.67
	53	12	41	—	71	6.6	11	6.5	—	M6	8.08 × 10 ⁻³	0.91	5.67
	63	12	51	—	71	6.6	11	6.5	—	M6	8.08 × 10 ⁻³	1.03	5.67
	56	12	44	—	71	6.6	11	6.5	—	M6	8.08 × 10 ⁻³	0.94	5.67
	71	12	59	—	71	6.6	11	6.5	—	M6	8.08 × 10 ⁻³	1.13	5.67
	47	12	35	10	63	6.6	11	6.5	59	M6	8.08 × 10 ⁻³	0.5	5.67
	52	12	40	10	63	6.6	11	6.5	59	M6	8.08 × 10 ⁻³	0.53	5.67
	62	12	50	10	63	6.6	11	6.5	59	M6	8.08 × 10 ⁻³	0.6	5.67
	45	12	33	—	75	6.6	11	6.5	—	M6	8.08 × 10 ⁻³	0.94	5.47
	57	12	45	—	75	6.6	11	6.5	—	M6	8.08 × 10 ⁻³	1.12	5.47
	63	12	51	—	75	6.6	11	6.5	—	M6	8.08 × 10 ⁻³	1.21	5.47
	53	12	41	10	63	6.6	11	6.5	59	M6	8.08 × 10 ⁻³	0.58	6.31
	61	12	49	10	63	6.6	11	6.5	59	M6	8.08 × 10 ⁻³	0.65	6.31
	58	15	43	—	82	9	14	8.5	—	M6	8.08 × 10 ⁻³	1.5	5.39
	71	15	56	—	82	9	14	8.5	—	M6	8.08 × 10 ⁻³	1.73	5.39
	87	15	72	—	82	9	14	8.5	—	M6	8.08 × 10 ⁻³	2.02	5.39
	82	15	67	—	82	9	14	8.5	—	M6	8.08 × 10 ⁻³	1.93	5.39
	70	15	55	—	90	9	14	8.5	—	M6	8.08 × 10 ⁻³	2.2	4.98
	87	15	72	—	90	9	14	8.5	—	M6	8.08 × 10 ⁻³	2.6	4.98
	80	15	65	—	90	9	14	8.5	—	M6	8.08 × 10 ⁻³	2.44	4.98
	100	15	85	—	90	9	14	8.5	—	M6	8.08 × 10 ⁻³	2.92	4.98
	80	15	65	15	69	9	14	8.5	66	M6	8.08 × 10 ⁻³	1.22	4.98
	90	15	75	20	69	9	14	8.5	66	M6	8.08 × 10 ⁻³	1.34	4.98
	98	18	80	—	98	11	17.5	11	—	M6	8.08 × 10 ⁻³	3.4	4.9
	98	15	83	25	69	9	14	8.5	66	M6	8.08 × 10 ⁻³	1.43	5.2

For model number coding, see **A15-248**.

No Preload Type of Precision Ball Screw

Screw shaft outer diameter	32 to 36
Lead	6 to 36



BNF

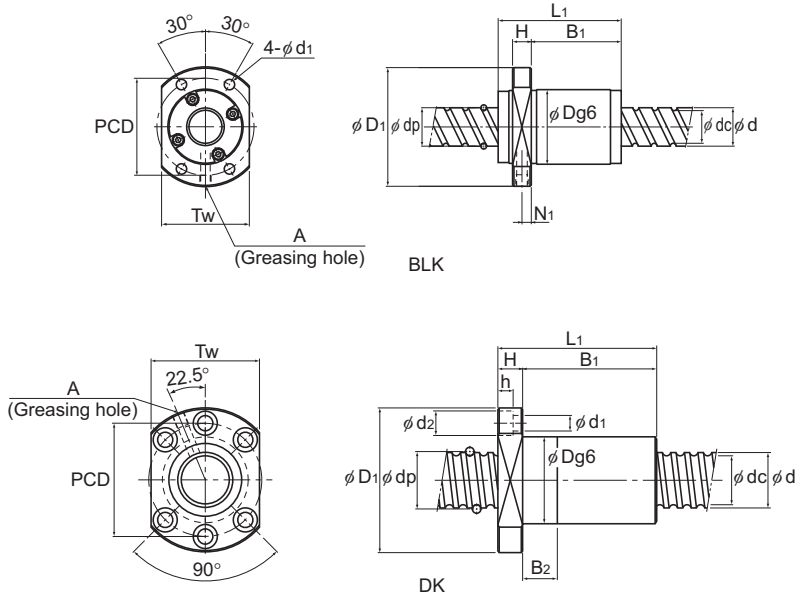
Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm	Flange diameter	
						Ca kN	C _{0a} kN		Outer diameter D	Flange diameter D ₁
32	32	BLK 3232-2.8	33.25	28.3	1×2.8	17.3	41.4	340	58	92
		BLK 3232-3.6	33.25	28.3	2×1.8	23.7	59.5	440	58	92
36	6	○BNF 3606-2.5	36.75	33.2	1×2.5	10.7	31.8	310	65	100
		○BNF 3606-3	36.75	33.2	2×1.5	12.5	38	370	65	100
		○BNF 3606-5	36.75	33.2	2×2.5	19.4	63.4	610	65	100
		○BNF 3606-7.5	36.75	33.2	3×2.5	27.5	95.2	890	65	100
		○BNF 3608-2.5	37.25	31.6	1×2.5	18.8	47.5	330	70	114
	8	○BNF 3608-5	37.25	31.6	2×2.5	34.1	95.1	650	70	114
		○BNF 3608-7.5	37.25	31.6	3×2.5	48.3	142.1	950	70	114
		○BNF 3610-2.5	37.75	30.5	1×2.5	27.6	63.3	350	75	120
	10	○BNF 3610-5	37.75	30.5	2×2.5	50.1	126.4	680	75	120
		○BNF 3610-7.5	37.75	30.5	3×2.5	71.1	190.1	990	75	120
		DK 3610-3	37.75	30.5	3×1	28.8	63.8	350	58	98
		DK 3610-4	37.75	30.5	4×1	36.8	85	470	58	98
	12	○BNF 3612-2.5	38	30.1	1×2.5	32.1	71.4	350	78	123
		○BNF 3612-5	38	30.1	2×2.5	58.4	142.1	690	78	123
	16	○BNF 3616-2.5	38	30.1	1×2.5	32.1	71.4	350	78	123
	20	○BNF 3620-1.5	37.75	30.5	1×1.5	17.6	38.3	220	70	103
		BLK 3620-5.6	37.75	31.2	2×2.8	54.9	134.3	760	70	110
	24	BLK 3624-5.6	38	30.7	2×2.8	63.8	151.9	770	75	115
BLK 3636-2.8		37.4	31.7	1×2.8	22.4	54.1	390	66	106	
36	BLK 3636-3.6	37.4	31.7	2×1.8	30.8	78	490	66	106	

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.

Large Lead Precision Ball Screw model BLK cannot be attached with seal.



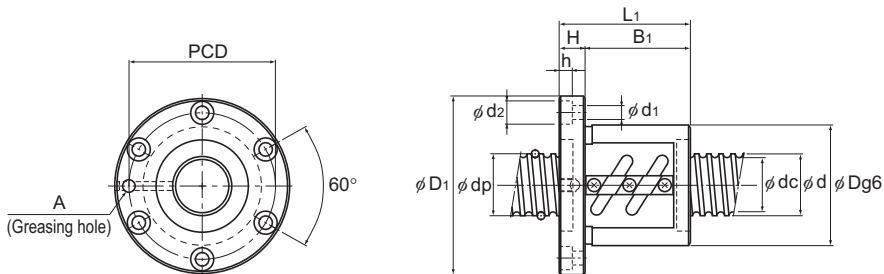
Unit: mm

	Nut dimensions											Screw shaft inertial moment/mm ³	Nut mass kg	Shaft mass kg/m
	Overall length	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	N ₁	Greasing hole			
102	15	77	—	74	9	—	—	68	7.5	M6	8.08 × 10 ⁻³	1.78	5.83	
70	15	45	—	74	9	—	—	68	7.5	M6	8.08 × 10 ⁻³	1.32	5.83	
53	15	38	—	82	9	14	8.5	—	—	M6	1.29 × 10 ⁻²	1.29	7.39	
62	15	47	—	82	9	14	8.5	—	—	M6	1.29 × 10 ⁻²	1.43	7.39	
71	15	56	—	82	9	14	8.5	—	—	M6	1.29 × 10 ⁻²	1.57	7.39	
89	15	74	—	82	9	14	8.5	—	—	M6	1.29 × 10 ⁻²	1.85	7.39	
68	18	50	—	92	11	17.5	11	—	—	M6	1.29 × 10 ⁻²	2.11	6.96	
92	18	74	—	92	11	17.5	11	—	—	M6	1.29 × 10 ⁻²	2.57	6.96	
116	18	98	—	92	11	17.5	11	—	—	M6	1.29 × 10 ⁻²	3.03	6.96	
81	18	63	—	98	11	17.5	11	—	—	M6	1.29 × 10 ⁻²	2.75	6.51	
111	18	93	—	98	11	17.5	11	—	—	M6	1.29 × 10 ⁻²	3.45	6.51	
141	18	123	—	98	11	17.5	11	—	—	M6	1.29 × 10 ⁻²	4.15	6.51	
82	18	64	15	77	11	17.5	11	75	—	M6	1.29 × 10 ⁻²	1.52	6.51	
93	18	75	20	77	11	17.5	11	75	—	M6	1.29 × 10 ⁻²	1.66	6.51	
87	18	69	—	100	11	17.5	11	—	—	M6	1.29 × 10 ⁻²	3.14	6.41	
123	18	105	—	100	11	17.5	11	—	—	M6	1.29 × 10 ⁻²	4.07	6.41	
92	18	74	—	100	11	17.5	11	—	—	M6	1.29 × 10 ⁻²	3.27	6.8	
75	15	60	—	85	9	14	8.5	—	—	M6	1.29 × 10 ⁻²	1.91	7.24	
78	17	45	—	90	11	—	—	80	8.5	M6	1.29 × 10 ⁻²	2.23	6.49	
94	18	59	—	94	11	—	—	86	9	M6	1.29 × 10 ⁻²	3.05	6.39	
113	17	86	—	85	11	—	—	76	8.5	M6	1.29 × 10 ⁻²	2.61	7.34	
77	17	50	—	85	11	—	—	76	8.5	M6	1.29 × 10 ⁻²	1.93	7.34	

For model number coding, see **■15-248**.

No Preload Type of Precision Ball Screw

Screw shaft outer diameter	40
Lead	5 to 10

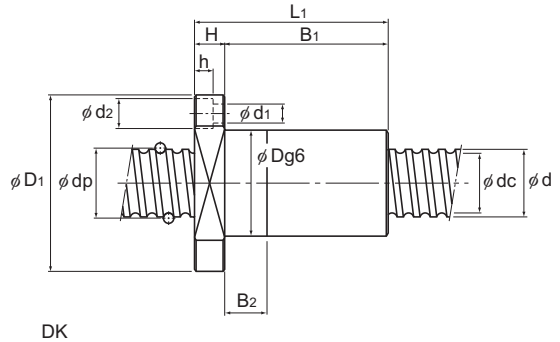
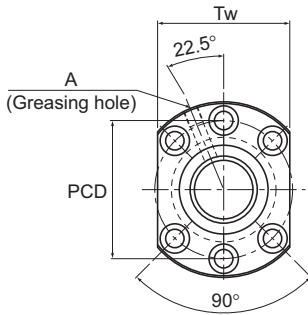


BNF

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/ μ m	Flange diameter	
						Ca kN	C _{0a} kN		Outer diameter D	Flange diameter D ₁
40	5	BNF 4005-3	40.75	37.2	2×1.5	13	42.3	400	67	101
		BNF 4005-4.5	40.75	37.2	3×1.5	18.5	63.5	600	67	101
		BNF 4005-6	40.75	37.2	4×1.5	23.7	84.7	780	67	101
	6	BNF 4006-2.5	41	36.4	1×2.5	15.3	44.1	350	70	104
		BNF 4006-5	41	36.4	2×2.5	27.7	88.1	690	70	104
		BNF 4006-7.5	41	36.4	3×2.5	39.2	132.3	1010	70	104
	8	BNF 4008-2.5	41.25	35.5	1×2.5	19.6	52.8	360	74	108
		BNF 4008-3	41.25	35.5	2×1.5	22.9	63.4	430	74	108
		BNF 4008-5	41.25	35.5	2×2.5	35.7	105.8	710	74	108
	10	BNF 4010-2.5	41.75	34.4	1×2.5	29	70.4	380	82	124
		BNF 4010-3	41.75	34.4	2×1.5	33.8	84.5	450	82	124
		BNF 4010-3.5	41.75	34.4	1×3.5	38.8	99	520	82	124
		BNF 4010-5	41.75	34.4	2×2.5	52.7	141.1	740	82	124
			DK 4010-3	41.75	34.4	3×1	29.8	69.3	380	62
		DK 4010-4	41.75	34.4	4×1	38.1	92.4	500	62	104

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.
These models can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.



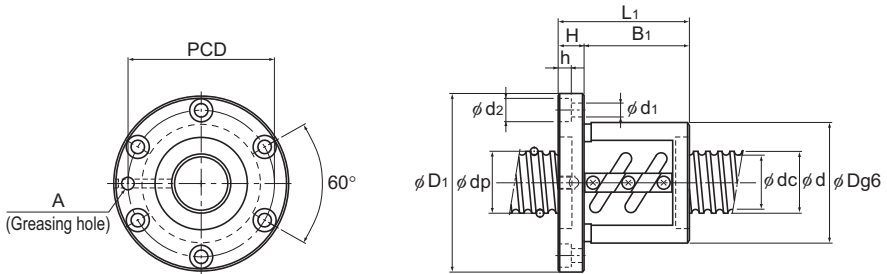
Unit: mm

Nut dimensions											Screw shaft inertial moment/mm ²	Nut mass kg	Shaft mass kg/m
Overall length	L ₁	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	Greasing hole A			
	56	15	41	—	83	9	14	8.5	—	M6	1.97×10^{-2}	1.31	9.06
	66	15	51	—	83	9	14	8.5	—	M6	1.97×10^{-2}	1.46	9.06
	81	15	66	—	83	9	14	8.5	—	M6	1.97×10^{-2}	1.69	9.06
	48	15	33	—	86	9	14	8.5	—	M6	1.97×10^{-2}	1.32	8.82
	66	15	51	—	86	9	14	8.5	—	M6	1.97×10^{-2}	1.63	8.82
	84	15	69	—	86	9	14	8.5	—	M6	1.97×10^{-2}	1.94	8.82
	58	15	43	—	90	9	14	8.5	—	M6	1.97×10^{-2}	1.7	8.72
	71	15	56	—	90	9	14	8.5	—	M6	1.97×10^{-2}	1.97	8.72
	82	15	67	—	90	9	14	8.5	—	M6	1.97×10^{-2}	2.19	8.72
	73	18	55	—	102	11	17.5	11	—	M6	1.97×10^{-2}	2.86	8.22
	90	18	72	—	102	11	17.5	11	—	M6	1.97×10^{-2}	3.33	8.22
	83	18	65	—	102	11	17.5	11	—	M6	1.97×10^{-2}	3.14	8.22
	103	18	85	—	102	11	17.5	11	—	M6	1.97×10^{-2}	3.69	8.22
	83	18	65	15	82	11	17.5	11	79	PT 1/8	1.97×10^{-2}	3.14	8.22
	93	18	75	20	82	11	17.5	11	79	PT 1/8	1.97×10^{-2}	3.41	8.22

For model number coding, see **■15-248**.

No Preload Type of Precision Ball Screw

Screw shaft outer diameter	40
Lead	12 to 40



BNF

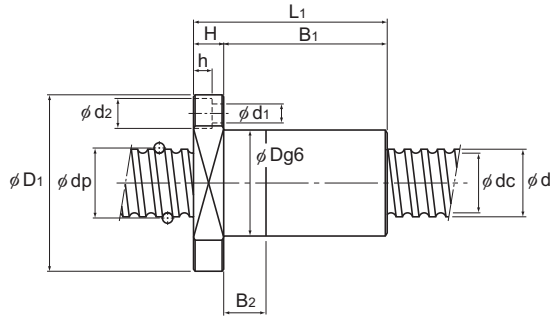
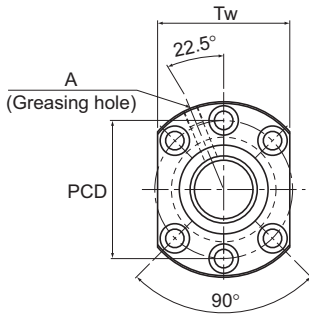
Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm		
						Ca kN	C _{0a} kN		Outer diameter D	Flange diameter D ₁
40	12	○BNF 4012-2.5	42	34.1	1×2.5	33.9	79.2	390	84	126
		○BNF 4012-3.5	42	34.1	1×3.5	45.4	110.7	530	84	126
		○BNF 4012-5	42	34.1	2×2.5	61.6	158.3	750	84	126
		○DK 4012-3	41.75	34.4	3×1	30.6	72.3	390	62	104
		○DK 4012-4	41.75	34.4	4×1	39.2	96.4	520	62	104
	16	○BNF 4016-5	42	34.1	2×2.5	61.4	158.8	740	84	126
		○DK 4016-4	41.75	34.4	4×1	39.1	96.8	520	62	104
		○DK 4020-3	41.75	34.7	3×1	29.4	69.3	750	62	104
	40	BLK 4040-2.8	41.75	35.2	1×2.8	28.2	68.9	430	73	114
		BLK 4040-3.6	41.75	35.2	2×1.8	38.7	99.2	550	73	114

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

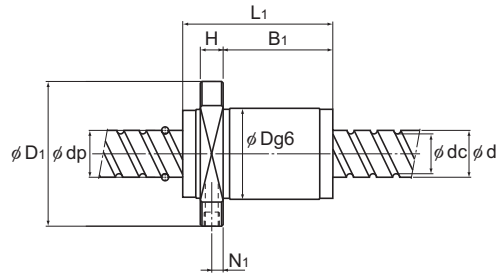
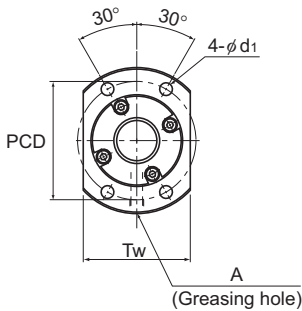
Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.

Large Lead Precision Ball Screw model BLK cannot be attached with seal.



DK



BLK

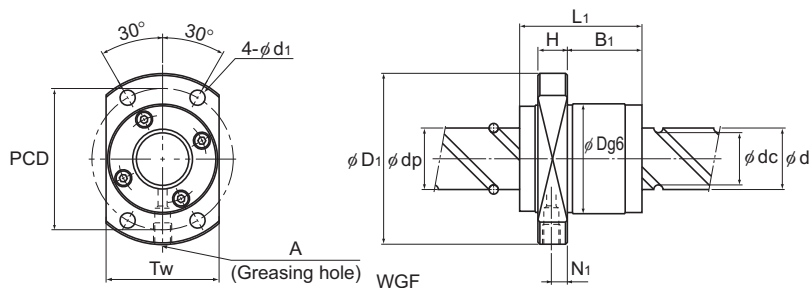
Unit: mm

Nut dimensions												Screw shaft inertial moment/mm ²	Nut mass	Shaft mass
Overall length	L ₁	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	N ₁	Greasing hole			
83	18	65	—	104	11	17.5	11	—	—	—	M6	1.97 × 10 ⁻²	3.31	8.12
95	18	77	—	104	11	17.5	11	—	—	—	M6	1.97 × 10 ⁻²	3.66	8.12
119	18	101	—	104	11	17.5	11	—	—	—	M6	1.97 × 10 ⁻²	4.36	8.12
90	18	72	20	82	11	17.5	11	79	—	—	PT 1/8	1.97 × 10 ⁻²	1.77	8.5
103	18	85	25	82	11	17.5	11	79	—	—	PT 1/8	1.97 × 10 ⁻²	1.95	8.5
152	22	130	—	104	11	17.5	11	—	—	—	M6	1.97 × 10 ⁻²	5.52	8.55
120	18	102	30	82	11	17.5	11	79	—	—	PT 1/8	1.97 × 10 ⁻²	2.19	8.83
123	18	105	30	82	11	17.5	11	79	—	—	PT 1/8	1.97 × 10 ⁻²	2.23	9.03
125	17	96.5	—	93	11	—	—	84	8.5	—	M6	1.97 × 10 ⁻²	3.4	9.01
85	17	56.5	—	93	11	—	—	84	8.5	—	M6	1.97 × 10 ⁻²	2.48	9.01

For model number coding, see [A15-248](#).

No Preload Type of Precision Ball Screw

Screw shaft outer diameter	40 to 45
Lead	6 to 80

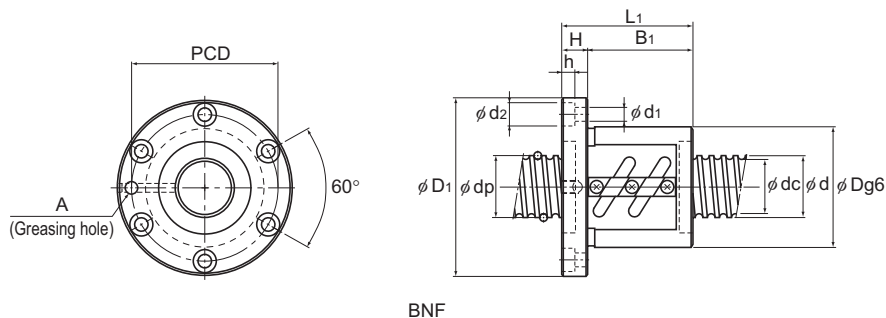


Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm	Outer diameter	
						Ca kN	Ca0 kN		D	Flange diameter D1
40	80	WGF 4080-1	41.75	35.2	2×0.65	15	32.1	220	73	114
		WGF 4080-3	41.75	35.2	2×1.65	33.4	81.4	530	73	114
45	6	BNF 4506A-2.5	46	41.4	1×2.5	16	49.6	390	80	114
		BNF 4506A-5	46	41.4	2×2.5	29	99	750	80	114
		BNF 4506A-7.5	46	41.4	3×2.5	41.2	150	1100	80	114
	8	BNF 4508-2.5	46.25	40.6	1×2.5	20.7	59.5	400	85	127
		BNF 4508-5	46.25	40.6	2×2.5	37.4	118.6	770	85	127
		BNF 4508-7.5	46.25	40.6	3×2.5	53.1	178.4	1140	85	127
	10	BNF 4510-2.5	46.75	39.5	1×2.5	30.7	79.3	420	88	132
		BNF 4510-3	46.75	39.5	2×1.5	35.9	95.2	500	88	132
		BNF 4510-5	46.75	39.5	2×2.5	55.6	158.8	800	88	132
		BNF 4510-7.5	46.75	39.5	3×2.5	78.8	238.1	1190	88	132
12	BNF 4512-5	47	39.2	2×2.5	65.2	178.4	820	90	130	
20	BNF 4520-1.5	47.7	37.9	1×1.5	44.2	99	350	98	142	

Note) The model numbers in dimmed type indicate semi-standard types.

If desiring them, contact THK.

Model WGF cannot be attached with seal.



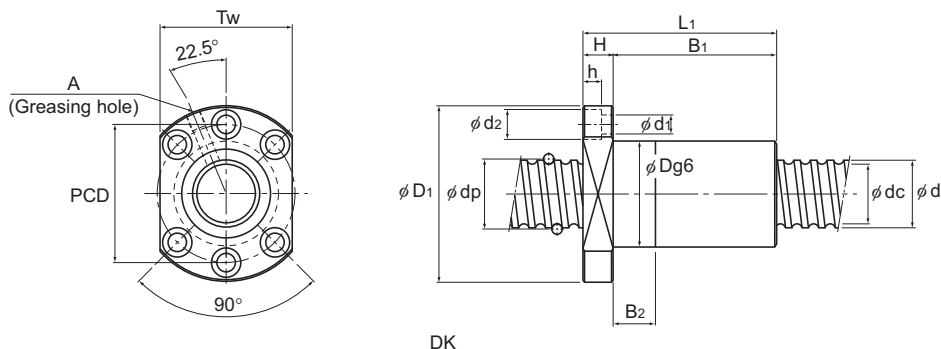
Unit: mm

Nut dimensions											Screw shaft inertial moment/mm	Nut mass	Shaft mass
Overall length	H	B ₁	PCD	d ₁	d ₂	h	T _w	N ₁	Greasing hole				
79	17	50.5	93	11	—	—	74	8.5	M6	1.97×10^{-2}	2.34	9.38	
159	17	130.5	93	11	—	—	74	8.5	M6	1.97×10^{-2}	4.18	9.38	
53	15	38	96	9	14	8.5	—	—	PT 1/8	3.16×10^{-2}	1.76	11.31	
71	15	56	96	9	14	8.5	—	—	PT 1/8	3.16×10^{-2}	2.18	11.31	
89	15	74	96	9	14	8.5	—	—	PT 1/8	3.16×10^{-2}	2.59	11.31	
68	18	50	105	11	17.5	11	—	—	PT 1/8	3.16×10^{-2}	2.76	11.21	
92	18	74	105	11	17.5	11	—	—	PT 1/8	3.16×10^{-2}	3.42	11.21	
116	18	98	105	11	17.5	11	—	—	PT 1/8	3.16×10^{-2}	4.09	11.21	
81	18	63	110	11	17.5	11	—	—	PT 1/8	3.16×10^{-2}	3.43	10.65	
94	18	76	110	11	17.5	11	—	—	PT 1/8	3.16×10^{-2}	3.83	10.65	
111	18	93	110	11	17.5	11	—	—	PT 1/8	3.16×10^{-2}	4.35	10.65	
141	18	123	110	11	17.5	11	—	—	PT 1/8	3.16×10^{-2}	5.26	10.65	
119	18	101	110	11	17.5	11	—	—	PT 1/8	3.16×10^{-2}	4.74	10.54	
95	20	75	120	11	17.5	11	—	—	PT 1/8	3.16×10^{-2}	5.04	10.37	

For model number coding, see **■15-248**.

No Preload Type of Precision Ball Screw

Screw shaft outer diameter	50
Lead	5 to 10



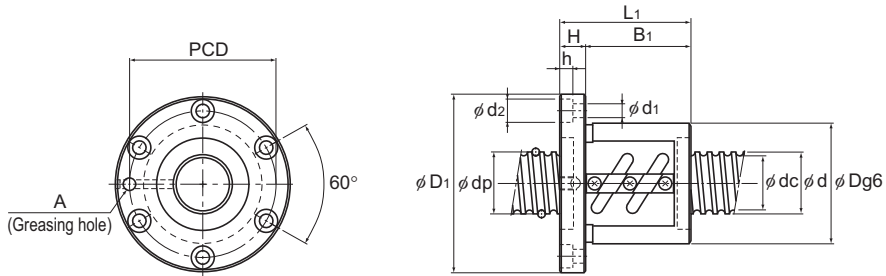
Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm	Rigidity	
						Ca kN	C _{0a} kN		Outer diameter D	Flange diameter D ₁
						5	8	10	Ca kN	C _{0a} kN
50	5	○ BNF 5005-4.5	50.75	47.2	3×1.5	20.2	79.5	710	80	114
		○ BNF 5008-2.5	51.25	45.5	1×2.5	21.6	66.2	430	87	129
	8	○ BNF 5008-5	51.25	45.5	2×2.5	39.1	132.3	840	87	129
		○ BNF 5008-7.5	51.25	45.5	3×2.5	55.4	198.9	1230	87	129
	10	○ BNF 5010-2.5	51.75	44.4	1×2.5	32	88.2	450	93	135
		○ BNF 5010-3	51.75	44.4	2×1.5	37.5	105.8	540	93	135
		○ BNF 5010-3.5	51.75	44.4	1×3.5	42.8	123.5	620	93	135
		○ BNF 5010-5	51.75	44.4	2×2.5	58.2	176.4	880	93	135
		○ BNF 5010-7.5	51.75	44.4	3×2.5	82.5	264.6	1290	93	135
		DK 5010-3	51.75	44.4	3×1	33.9	90.7	470	72	123
		DK 5010-4	51.75	44.4	4×1	43.4	120.5	610	72	123
		DK 5010-6	51.75	44.4	6×1	62.7	186.8	930	72	123

Note) The model numbers in dimmed type indicate semi-standard types.

If desiring them, contact THK.

Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.



BNF

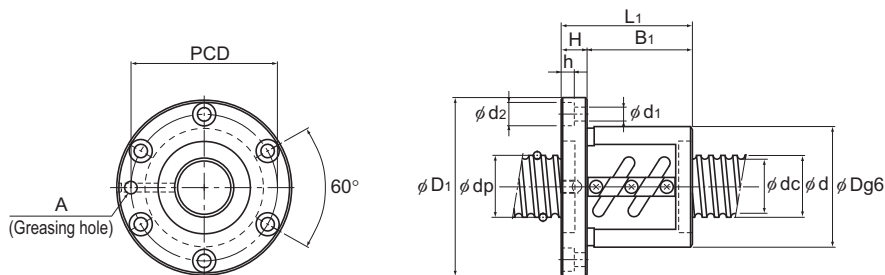
Unit: mm

Nut dimensions											Screw shaft inertial moment/mm ²	Nut mass	Shaft mass
Overall length	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	Greasing hole	A			
68	15	53	—	96	9	14	8.5	—	PT 1/8	4.82 × 10 ⁻²	1.91	14.4	
61	18	43	—	107	11	17.5	11	—	PT 1/8	4.82 × 10 ⁻²	2.52	14.0	
85	18	67	—	107	11	17.5	11	—	PT 1/8	4.82 × 10 ⁻²	3.16	14.0	
109	18	91	—	107	11	17.5	11	—	PT 1/8	4.82 × 10 ⁻²	3.8	14.0	
73	18	55	—	113	11	17.5	11	—	PT 1/8	4.82 × 10 ⁻²	3.33	13.38	
90	18	72	—	113	11	17.5	11	—	PT 1/8	4.82 × 10 ⁻²	3.88	13.38	
83	18	65	—	113	11	17.5	11	—	PT 1/8	4.82 × 10 ⁻²	3.66	13.38	
103	18	85	—	113	11	17.5	11	—	PT 1/8	4.82 × 10 ⁻²	4.31	13.38	
133	18	115	—	113	11	17.5	11	—	PT 1/8	4.82 × 10 ⁻²	5.28	13.38	
83	18	65	15	101	11	17.5	11	92	PT 1/8	4.82 × 10 ⁻²	2.14	13.38	
93	18	75	20	101	11	17.5	11	92	PT 1/8	4.82 × 10 ⁻²	2.3	13.38	
114	18	96	30	101	11	17.5	11	92	PT 1/8	4.82 × 10 ⁻²	2.65	13.38	

For model number coding, see [A15-248](#).

No Preload Type of Precision Ball Screw

Screw shaft outer diameter	50
Lead	12 to 50



BNF

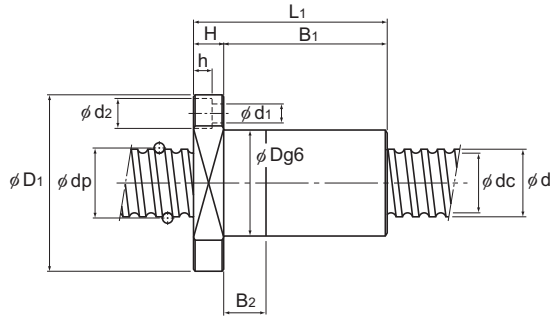
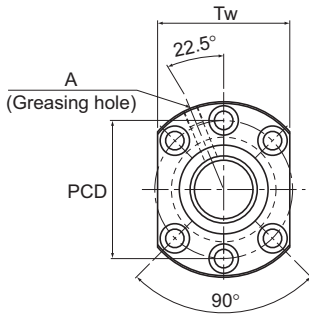
Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm	Rigidity	
						Ca kN	C _{0a} kN		Outer diameter D	Flange diameter D ₁
50	12	DK 5012-3	52.25	43.3	3×1	45.8	113	490	75	129
		DK 5012-4	52.25	43.3	4×1	58.6	150.6	640	75	129
		○BNF 5012-2.5	52.25	43.3	1×2.5	43.4	109.8	470	100	146
		○BNF 5012-3.5	52.25	43.3	1×3.5	58	153.9	640	100	146
		○BNF 5012-5	52.25	43.3	2×2.5	78.8	220.5	910	100	146
	16	DK 5016-3	52.25	43.3	3×1	45.7	113.3	490	75	129
		DK 5016-4	52.25	43.3	4×1	58.5	151	640	75	129
		○BNF 5016-2.5	52.7	42.9	1×2.5	72.6	183.3	620	105	152
	20	○BNF 5016-5	52.7	42.9	2×2.5	132.3	366.5	1180	105	152
		DK 5020-3	52.25	43.6	3×1	44.2	108.8	470	75	129
	50	○BNF 5020-2.5	52.7	42.9	1×2.5	72.5	183.3	620	105	152
		BLK 5050-2.8	52.2	44.1	1×2.8	42.2	107.8	530	90	135
BLK 5050-3.6		52.2	44.1	2×1.8	57.8	155	670	90	135	

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.

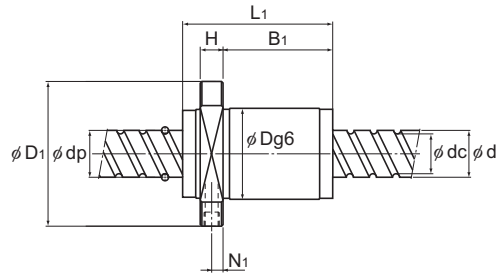
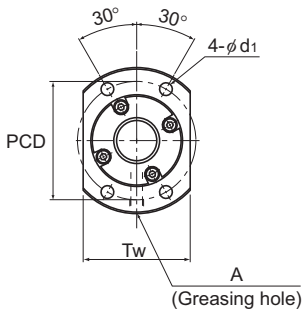
Those models marked with ○ can be attached with QZ Lubricator or the wiper ring.

For dimensions of the ball screw nut with either accessory being attached, see **A15-360**.

Large Lead Precision Ball Screw model BLK cannot be attached with seal.



DK



BLK

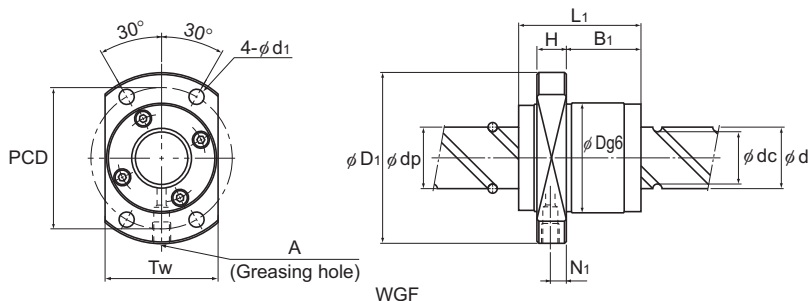
Unit: mm

Nut dimensions												Screw shaft inertial moment/mm ⁴	Nut mass	Shaft mass
Overall length	L ₁	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	N ₁	Greasing hole			
97	22	75	20	105	14	20	13	98	—	—	PT 1/8	4.82×10^{-2}	2.91	12.74
110	22	88	25	105	14	20	13	98	—	—	PT 1/8	4.82×10^{-2}	3.16	12.74
87	22	65	—	122	14	20	13	—	—	—	PT 1/8	4.82×10^{-2}	4.57	12.74
99	22	77	—	122	14	20	13	—	—	—	PT 1/8	4.82×10^{-2}	5.05	12.74
123	22	101	—	122	14	20	13	—	—	—	PT 1/8	4.82×10^{-2}	6.02	12.74
111	22	89	25	105	14	20	13	98	—	—	PT 1/8	4.82×10^{-2}	3.18	13.41
129	22	107	30	105	14	20	13	98	—	—	PT 1/8	4.82×10^{-2}	3.52	13.41
116	25	91	—	128	14	20	13	—	—	—	PT 1/8	4.82×10^{-2}	6.98	12.5
164	25	139	—	128	14	20	13	—	—	—	PT 1/8	4.82×10^{-2}	9.18	12.5
136	28	108	30	105	14	20	13	98	—	—	PT 1/8	4.82×10^{-2}	3.94	13.8
141	28	113	—	128	14	20	13	—	—	—	PT 1/8	4.82×10^{-2}	8.32	13.08
156	20	122	—	112	14	—	—	104	10	—	M6	4.82×10^{-2}	6.18	14.08
106	20	72	—	112	14	—	—	104	10	—	M6	4.82×10^{-2}	4.45	14.08

For model number coding, see [A15-248](#).

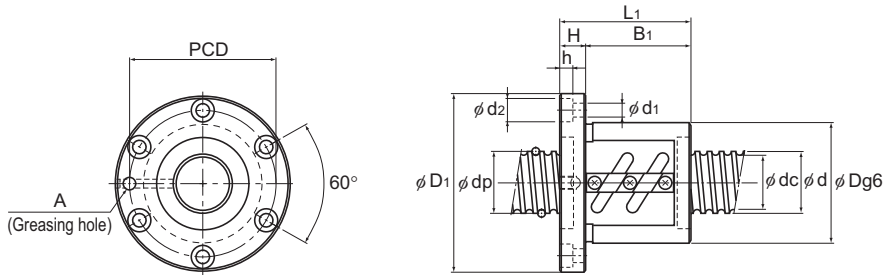
No Preload Type of Precision Ball Screw

Screw shaft outer diameter	50 to 55
Lead	10 to 100



Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm	Outer diameter	
						Ca kN	C _{0a} kN		D	Flange diameter D ₁
										D
50	100	WGF 50100-1	52.2	44.1	2×0.65	22.4	50.1	270	90	135
		WGF 50100-3	52.2	44.1	2×1.65	49.9	127.2	650	90	135
55	10	BNF 5510-2.5	56.75	49.5	1×2.5	33.4	97	490	102	144
		BNF 5510-5	56.75	49.5	2×2.5	60.7	194	950	102	144
		BNF 5510-7.5	56.75	49.5	3×2.5	85.9	291.1	1390	102	144
	12	BNF 5512-2.5	57	49.2	1×2.5	39.3	108.8	500	105	147
		BNF 5512-3	57	49.2	2×1.5	46	131.3	590	105	147
		BNF 5512-3.5	57	49.2	1×3.5	52.4	152.9	680	105	147
		BNF 5512-5	57	49.2	2×2.5	71.3	218.5	960	105	147
		BNF 5512-7.5	57	49.2	3×2.5	100.9	327.3	1420	105	147
	16	BNF 5516-2.5	57.7	47.9	1×2.5	76.1	201.9	650	110	158
		BNF 5516-5	57.7	47.9	2×2.5	138.2	402.8	1280	110	158
	20	BNF 5520-2.5	57.7	47.9	1×2.5	76	201.9	660	112	158
		BNF 5520-5	57.7	47.9	2×2.5	138.2	403.8	1280	112	158

Note) The model numbers in dimmed type indicate semi-standard types. If desiring them, contact THK.
Model WGF cannot be attached with seal.



BNF

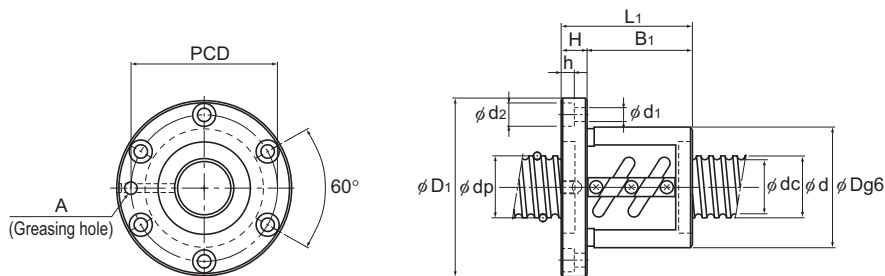
Unit: mm

Nut dimensions											Screw shaft inertial moment/mm	Nut mass	Shaft mass
Overall length	L ₁	H	B ₁	PCD	d ₁	d ₂	h	Tw	N ₁	Greasing hole			
	98	20	64	112	14	—	—	92	10	M6	4.82×10^{-2}	4.18	14.66
	198	20	164	112	14	—	—	92	10	M6	4.82×10^{-2}	7.63	14.66
	81	18	63	122	11	17.5	11	—	—	PT 1/8	7.05×10^{-2}	4.19	16.43
	111	18	93	122	11	17.5	11	—	—	PT 1/8	7.05×10^{-2}	5.36	16.43
	141	18	123	122	11	17.5	11	—	—	PT 1/8	7.05×10^{-2}	6.54	16.43
	93	18	75	125	11	17.5	11	—	—	PT 1/8	7.05×10^{-2}	5.01	16.29
	107	18	89	125	11	17.5	11	—	—	PT 1/8	7.05×10^{-2}	5.6	16.29
	105	18	87	125	11	17.5	11	—	—	PT 1/8	7.05×10^{-2}	5.52	16.29
	129	18	111	125	11	17.5	11	—	—	PT 1/8	7.05×10^{-2}	6.54	16.29
	165	18	147	125	11	17.5	11	—	—	PT 1/8	7.05×10^{-2}	8.07	16.29
	116	25	91	133	14	20	13	—	—	PT 1/8	7.05×10^{-2}	7.4	15.46
	164	25	139	133	14	20	13	—	—	PT 1/8	7.05×10^{-2}	9.73	15.46
	127	28	99	134	14	20	13	—	—	PT 1/8	7.05×10^{-2}	8.4	16.1
	187	28	159	134	14	20	13	—	—	PT 1/8	7.05×10^{-2}	11.45	16.1

For model number coding, see [A15-248](#).

No Preload Type of Precision Ball Screw

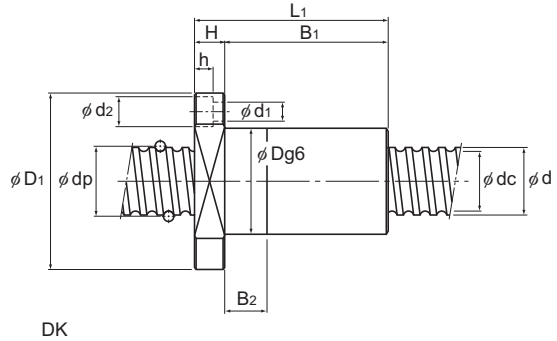
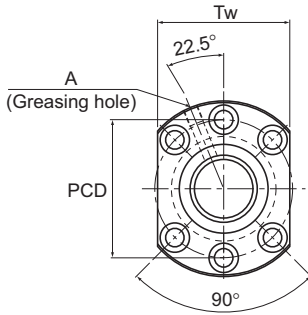
Screw shaft outer diameter	63
Lead	10 to 20



BNF

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows x turns	Basic load rating		Rigidity K N/μm	Outer diameter	
						Ca kN	C _{0a} kN		D	Flange diameter D _f
						63	10	BNF 6310-2.5	64.75	57.7
		BNF 6310-5	64.75	57.7	2×2.5	64.2	222.5	1050	108	154
		BNF 6310-7.5	64.75	57.7	3×2.5	90.9	334.2	1550	108	154
		DK 6310-4	64.75	57.7	4×1	49.5	160.7	780	85	146
		DK 6310-6	64.75	57.7	6×1	70.3	242.1	1140	85	146
	12	BNF 6312A-2.5	65.25	56.3	1×2.5	48.1	139.2	560	115	161
		BNF 6312A-5	65.25	56.3	2×2.5	87.4	278.3	1090	115	161
		DK 6312-3	65.25	56.3	3×1	51.9	147.4	600	90	146
		DK 6312-4	65.25	56.3	4×1	66.4	196.6	785	90	146
	16	BNF 6316-5	65.7	55.9	2×2.5	147	462.6	1420	122	184
	20	BNF 6320-2.5	65.7	55.9	1×2.5	81	231.3	740	122	180
		BNF 6320-5	65.7	55.9	2×2.5	147	463.5	1420	122	180
		DK 6320-3	65.7	55.9	3×1	83.5	229.3	1470	95	159

Note) The model numbers in dimmed type indicate semi-standard types.
If desiring them, contact THK.



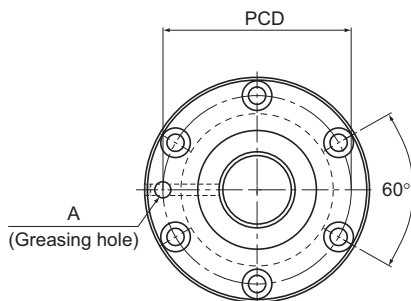
Unit: mm

Nut dimensions											Screw shaft inertial moment/mm ³	Nut mass kg	Shaft mass kg/m
Overall length	H	B ₁	B ₂	PCD	d ₁	d ₂	h	Tw	Greasing hole	A			
77	22	55	—	130	14	20	13	—	PT 1/8	1.21 × 10 ⁻¹	4.57	21.93	
107	22	85	—	130	14	20	13	—	PT 1/8	1.21 × 10 ⁻¹	5.77	21.93	
137	22	115	—	130	14	20	13	—	PT 1/8	1.21 × 10 ⁻¹	6.98	21.93	
97	22	75	20	122	14	20	13	110	PT 1/8	1.21 × 10 ⁻¹	3.28	21.93	
118	22	96	30	122	14	20	13	110	PT 1/8	1.21 × 10 ⁻¹	3.7	21.93	
87	22	65	—	137	14	20	13	—	PT 1/8	1.21 × 10 ⁻¹	5.8	21.14	
123	22	101	—	137	14	20	13	—	PT 1/8	1.21 × 10 ⁻¹	7.56	21.14	
98	22	76	20	122	14	20	13	110	PT 1/8	1.21 × 10 ⁻¹	3.71	21.14	
111	22	89	25	122	14	20	13	110	PT 1/8	1.21 × 10 ⁻¹	4.04	21.14	
160	24	136	—	152	18	26	17.5	—	PT 1/8	1.21 × 10 ⁻¹	11.82	20.85	
127	28	99	—	150	18	26	17.5	—	PT 1/8	1.21 × 10 ⁻¹	10.1	21.57	
187	28	159	—	150	18	26	17.5	—	PT 1/8	1.21 × 10 ⁻¹	13.58	21.57	
136	28	108	30	129	18	26	17.5	121	PT 1/8	1.21 × 10 ⁻¹	6.17	21.57	

For model number coding, see **A15-248**.

No Preload Type of Precision Ball Screw

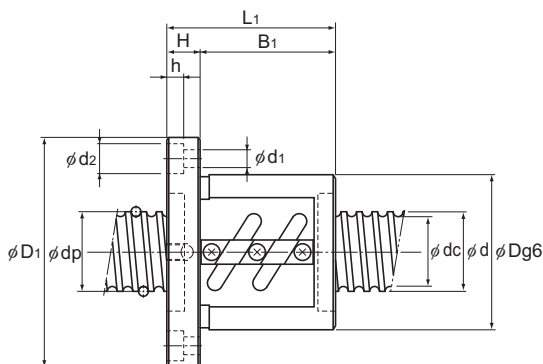
Screw shaft outer diameter	70 to 100
Lead	10 to 20



BNF

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows X turns	Basic load rating		Rigidity K N/μm	Outer diameter	
						Ca kN	C _{0a} kN		D	D ₁
70	10	BNF 7010-2.5	71.75	64.5	1×2.5	36.8	123.5	590	125	167
		BNF 7010-5	71.75	64.5	2×2.5	66.9	247	1140	125	167
		BNF 7010-7.5	71.75	64.5	3×2.5	94.9	371.4	1680	125	167
	12	BNF 7012-2.5	72	64.2	1×2.5	43.5	139.2	600	128	170
		BNF 7012-5	72	64.2	2×2.5	78.9	278.3	1160	128	170
		BNF 7012-7.5	72	64.2	3×2.5	111.7	417.5	1710	128	170
20	BNF 7020-5	72.7	62.9	2×2.5	153.9	514.5	1550	130	186	
80	10	BNF 8010-2.5	81.75	75.2	1×2.5	38.9	141.1	650	130	176
		BNF 8010-5	81.75	75.2	2×2.5	70.6	283.2	1270	130	176
		BNF 8010-7.5	81.75	75.2	3×2.5	100	424.3	1860	130	176
	20	BNF 8020A-2.5	82.7	72.9	1×2.5	90.1	294	890	143	204
		BNF 8020A-5	82.7	72.9	2×2.5	163.7	589	1720	143	204
		BNF 8020A-7.5	82.7	72.9	3×2.5	231.6	883.2	2520	143	204
100	20	BNF 10020A-2.5	102.7	92.9	1×2.5	99	368.5	2110	170	243
		BNF 10020A-5	102.7	92.9	2×2.5	179.3	737	4080	170	243
		BNF 10020A-7.5	102.7	92.9	3×2.5	253.8	1105.4	6010	170	243

Note) The model numbers in dimmed type indicate semi-standard types.
If desiring them, contact THK.



BNF

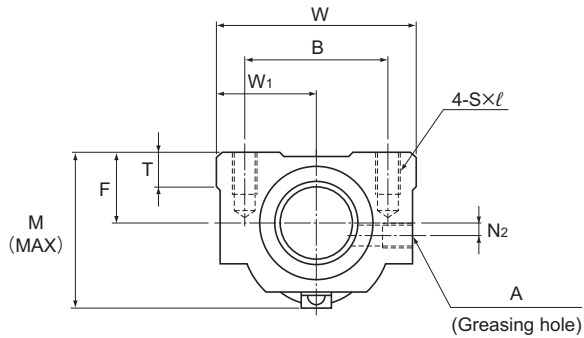
Unit: mm

Nut dimensions									Screw shaft inertial moment/mm ⁴	Nut mass kg	Shaft mass kg/m
Overall length	L ₁	H	B ₁	PCD	d ₁	d ₂	h	Greasing hole A			
	81	18	63	145	11	17.5	11	PT 1/8	1.85×10^{-1}	5.8	27.4
	111	18	93	145	11	17.5	11	PT 1/8	1.85×10^{-1}	7.49	27.4
	141	18	123	145	11	17.5	11	PT 1/8	1.85×10^{-1}	9.19	27.4
	93	18	75	148	11	17.5	11	PT 1/8	1.85×10^{-1}	6.89	27.24
	129	18	111	148	11	17.5	11	PT 1/8	1.85×10^{-1}	9.08	27.24
	165	18	147	148	11	17.5	11	PT 1/8	1.85×10^{-1}	11.26	27.24
	185	28	157	158	18	26	17.5	PT 1/8	1.85×10^{-1}	14.5	27.0
	77	22	55	152	14	20	13	PT 1/8	3.16×10^{-1}	5.9	36.26
	107	22	85	152	14	20	13	PT 1/8	3.16×10^{-1}	7.53	36.26
	137	22	115	152	14	20	13	PT 1/8	3.16×10^{-1}	9.15	36.26
	127	28	99	172	18	26	17.5	PT 1/8	3.16×10^{-1}	12.68	35.81
	187	28	159	172	18	26	17.5	PT 1/8	3.16×10^{-1}	17.12	35.81
	247	28	219	172	18	26	17.5	PT 1/8	3.16×10^{-1}	21.56	35.81
	131	32	99	205	22	32	21.5	PT 1/8	7.71×10^{-1}	18.28	57.13
	191	32	159	205	22	32	21.5	PT 1/8	7.71×10^{-1}	24.2	57.13
	251	32	219	205	22	32	21.5	PT 1/8	7.71×10^{-1}	30.12	57.13

For model number coding, see [■15-248](#).

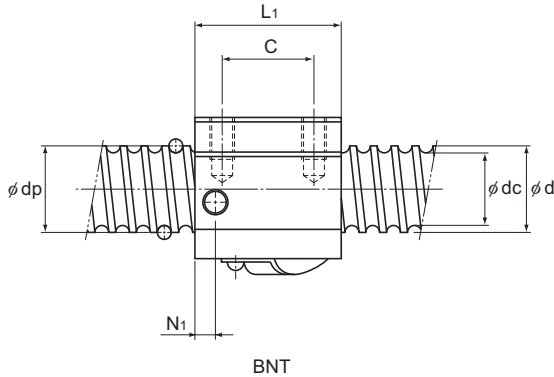
No Preload Type of Precision Ball Screw (Square Nut)

Screw shaft outer diameter	14 to 45
Lead	4 to 12



BNT

Screw shaft outer diameter d	Lead Ph	Model No.	Ball center-to-center diameter dp	Thread minor diameter dc	No. of loaded circuits Rows × turns	Basic load rating		Rigidity K N/μm
						Ca kN	C _{0a} kN	
14	4	BNT 1404-3.6	14.4	11.5	1×3.65	6.8	12.6	190
	5	BNT 1405-2.6	14.5	11.2	1×2.65	7.2	12.6	150
16	5	BNT 1605-2.6	16.75	13.5	1×2.65	7.8	14.7	170
18	8	BNT 1808-3.6	19.3	14.4	1×3.65	18.2	34.4	270
20	5	BNT 2005-2.6	20.5	17.2	1×2.65	8.7	18.3	200
	10	BNT 2010-2.6	21.25	16.4	1×2.65	14.7	27.8	220
25	5	BNT 2505-2.6	25.5	22.2	1×2.65	9.6	23	240
	10	BNT 2510-5.3	26.8	20.2	2×2.65	43.4	92.8	520
28	6	BNT 2806-2.6	28.5	25.2	1×2.65	10.1	25.8	270
		BNT 2806-5.3	28.5	25.2	2×2.65	18.3	51.6	510
32	10	BNT 3210-2.6	33.75	27.2	1×2.65	27.3	59.5	330
		BNT 3210-5.3	33.75	27.2	2×2.65	49.6	118.9	640
36	10	BNT 3610-2.6	37	30.5	1×2.65	28.7	65.6	360
		BNT 3610-5.3	37	30.5	2×2.65	52.1	131.2	700
45	12	BNT 4512-5.3	46.5	39.2	2×2.65	68.1	186.7	860



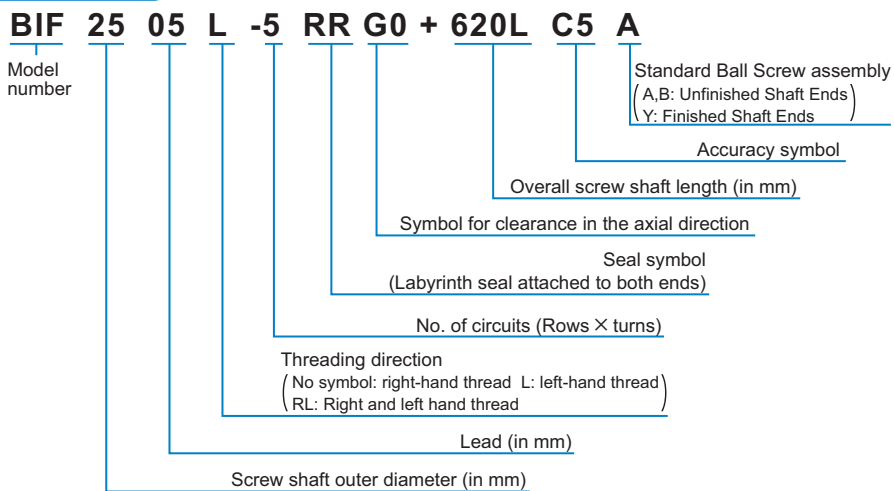
Unit: mm

	Nut dimensions											Screw shaft inertial moment/mm ³ kg·cm ² /mm	Nut mass kg	Shaft mass kg/m	
	Width W	Center height F	Overall length L ₁	Mounting hole			W ₁	T	M	N ₁	N ₂				Greasing hole A
				B	C	S×ℓ									
34	13	35	26	22	M4×7	17	6	30	6	2	M6	2.96×10 ⁻⁴	0.15	0.93	
34	13	35	26	22	M4×7	17	6	31	6	2	M6	2.96×10 ⁻⁴	0.15	0.92	
42	16	36	32	22	M5×8	21	21.5	32.5	6	2	M6	5.05×10 ⁻⁴	0.3	1.24	
48	17	56	35	35	M6×10	24	10	44	8	3	M6	8.09×10 ⁻⁴	0.47	1.46	
48	17	35	35	22	M6×10	24	9	39	5	3	M6	1.23×10 ⁻³	0.28	2.06	
48	18	58	35	35	M6×10	24	9	46	10	2	M6	1.23×10 ⁻³	0.5	1.99	
60	20	35	40	22	M8×12	30	9.5	45	7	5	M6	3.01×10 ⁻³	0.41	3.35	
60	23	94	40	60	M8×12	30	10	55	10	—	M6	3.01×10 ⁻³	1.18	2.79	
60	22	42	40	18	M8×12	30	10	50	8	—	M6	4.74×10 ⁻³	0.81	4.42	
60	22	67	40	40	M8×12	30	10	50	8	—	M6	4.74×10 ⁻³	0.78	4.42	
70	26	64	50	45	M8×12	35	12	62	10	—	M6	8.08×10 ⁻³	1.3	4.98	
70	26	94	50	60	M8×12	35	12	62	10	—	M6	8.08×10 ⁻³	2.0	4.98	
86	29	64	60	45	M10×16	43	17	67	11	—	M6	1.29×10 ⁻²	1.8	6.54	
86	29	96	60	60	M10×16	43	17	67	11	—	M6	1.29×10 ⁻²	2.4	6.54	
100	36	115	75	75	M12×20	50	20.5	80	13	—	M6	3.16×10 ⁻²	4.1	10.56	

For model number coding, see **■15-248**.

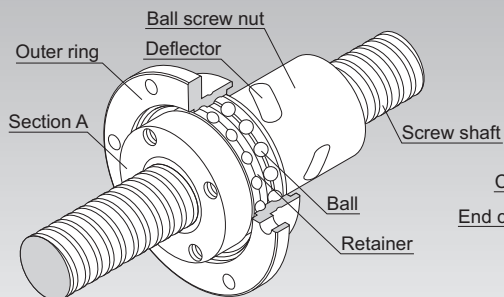
Model Number Coding

Model number coding

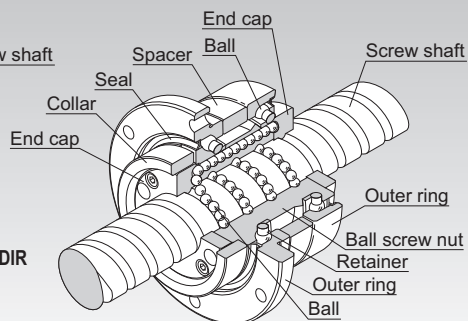


Precision Rotary Ball Screw

Models DIR and BLR



Structure of Standard-Lead Rotary Nut Ball Screw Model DIR



Structure of Large Lead Rotary Nut Ball Screw Model BLR

Point of Selection **A 15-8**

Options **A 15-352**

Model No. **A 15-369**

Precautions on Use **A 15-374**

Accessories for Lubrication **A 24-1**

Mounting Procedure and Maintenance **B 15-104**

Accuracy Standards **A 15-254**

Example of Assembly **A 15-256**

Axial Clearance **A 15-19**

Maximum Length of the Screw Shaft **A 15-24**

DN Value **A 15-33**

Structure and Features

[Model DIR]

Standard-Lead Rotary-Nut Ball Screw model DIR is a rotary-nut Ball Screw that has a structure where a simple-nut Ball Screw is integrated with a support bearing.

Its ball screw nut serves as a ball recirculation structure using deflectors. Balls travel along the groove of the deflector mounted in the ball screw nut to the adjacent raceway, and then circulate back to the loaded area to complete an infinite rolling motion.

Being an offset preload nut, the single ball screw nut provides different phases to the right and left thread in the middle of the nut, thus to set the axial clearance below zero (a preload is provided). This allows more compact, smoother motion to be achieved than the conventional double-nut type (a spacer is inserted between two nuts).

The support bearing comprises of two rows of DB type angular bearings with a contact angle of 45° to provide a preload. The collar, previously used to mount a pulley, is integrated with the ball screw nut. (See the A section.)

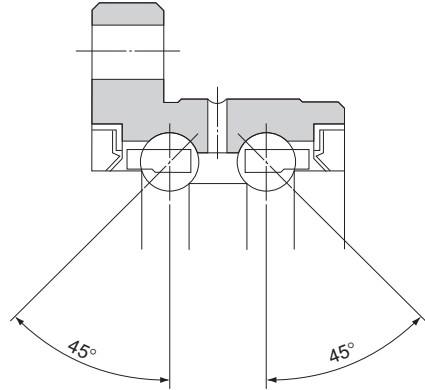


Fig.1 Structure of the Support Bearing

● Compact

Because of the internal circulation mechanism using a deflector, the outer diameter is only 70 to 80%, and the overall length is 60 to 80%, of that of the return-pipe nut, thus to reduce the weight and decrease the inertia during acceleration.

Since the nut and the support bearing are integrated, a highly accurate, and a compact design is achieved. In addition, small inertia due to the lightweight ball screw nut ensures high responsiveness.

● Capable of Fine Positioning

Being a Standard-Lead Ball Screw, it is capable of fine positioning despite that the ball screw nut rotates.

● Accuracy can Easily be Established

As the support bearing is integrated with the outer ring, the bearing can be assembled with the nut housing on the end face of the outer ring flange. This makes it easy to center the ball screw nut and establish accuracy.

● Well Balanced

Since the deflector is evenly placed along the circumference, a superb balance is ensured while the ball screw nut is rotating.

- **Stability in the Low-speed Range**

Traditionally, motors tend to have an uneven torque and a speed in the low-speed range due to the external causes. With model DIR, the motor can be connected independently with the screw shaft and the ball screw nut, thus to allow micro feeding within the motor's stable rotation range.

[Model BLR]

The Rotary Ball Screw is a rotary-nut ball screw unit that has an integrated structure consisting of a ball screw nut and a support bearing. The support bearing is an angular bearing that has a contact angle of 60°, contains an increased number of balls and achieves large axial rigidity.

Model BLR is divided into two types: Precision Ball Screw and Rolled Screw Ball.

- **Smooth Motion**

It achieves smoother motion than rack-and-pinion based straight motion.

- **Low Noise even in High-speed Rotation**

Model BLR produces very low noise when the balls are picked up along the end cap. In addition, the balls circulate by passing through the ball screw nut, allowing this model to be used at high speed.

- **High Rigidity**

The support bearing of this model is larger than that of the screw shaft rotational type. Thus, its axial rigidity is significantly increased.

- **Compact**

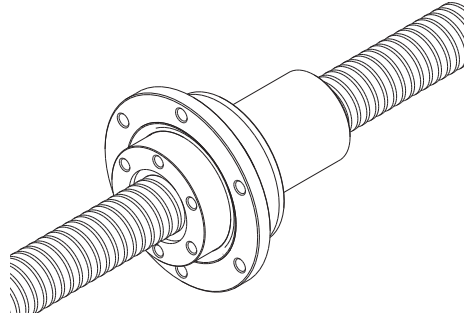
Since the nut and the support bearing are integrated, a highly accurate, and a compact design is achieved.

- **Easy Installation**

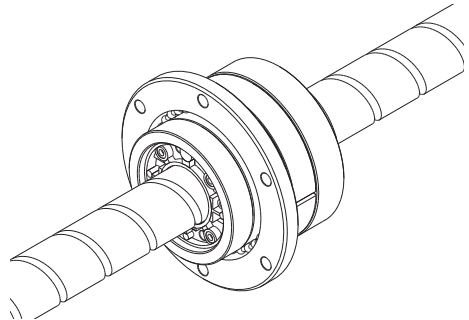
By simply mounting this model to the housing with bolts, a ball screw nut rotating mechanism can be obtained. (For the housing's inner-diameter tolerance, H7 is recommended.)

Type

[Preload Type]

Model DIRSpecification Table⇒ **A15-258**

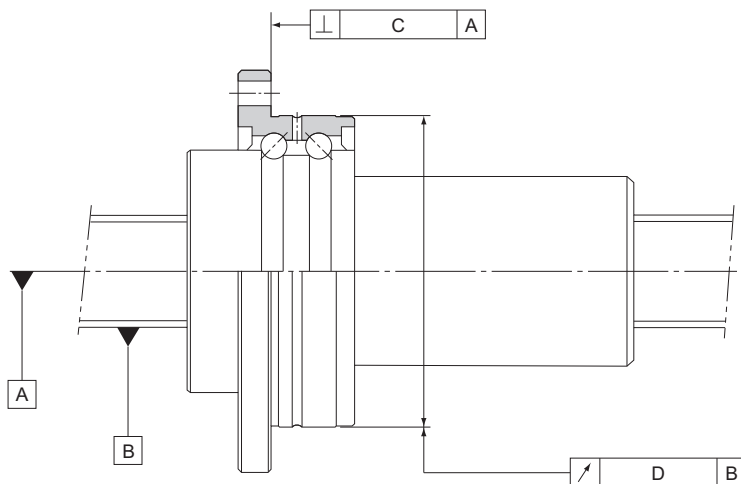
[No Preload Type]

Model BLRSpecification Table⇒ **A15-260**

Accuracy Standards

[Model DIR]

The accuracy of model DIR is compliant with a the JIS standard (JIS B 1192-1997) except for the radial runout of the circumference of the ball screw nut from the screw axis (D) and the perpendicularity of the flange-mounting surface against the screw axis (C).

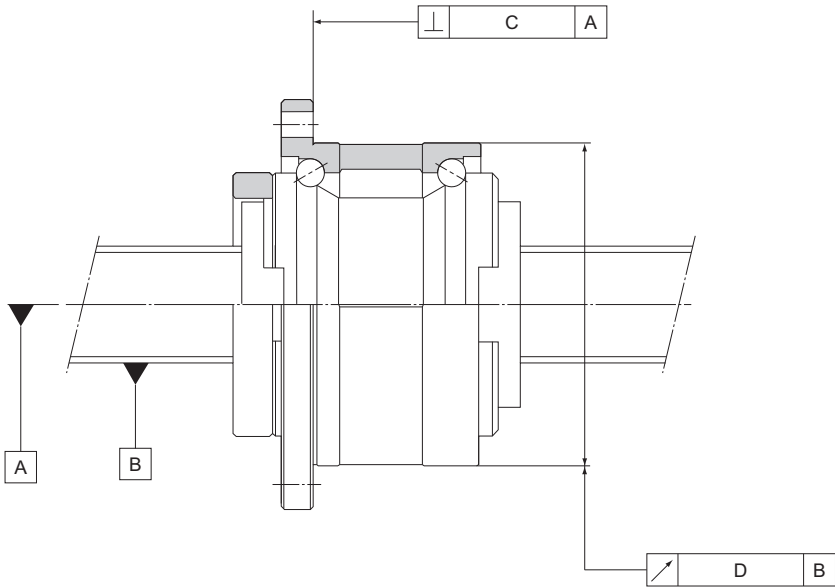


Unit: mm

Accuracy grades	C3		C5		C7	
	C	D	C	D	C	D
DIR 16□□	0.013	0.017	0.016	0.020	0.023	0.035
DIR 20□□	0.013	0.017	0.016	0.020	0.023	0.035
DIR 25□□	0.015	0.020	0.018	0.024	0.023	0.035
DIR 32□□	0.015	0.020	0.018	0.024	0.023	0.035
DIR 36□□	0.016	0.021	0.019	0.025	0.024	0.036
DIR 40□□	0.018	0.026	0.021	0.033	0.026	0.036

[Model BLR]

The accuracy of model BLR is compliant with a the JIS standard (JIS B 1192-1997) except for the radial runout of the circumference of the ball screw nut from the screw axis (D) and the perpendicularity of the flange-mounting surface against the screw axis (C).

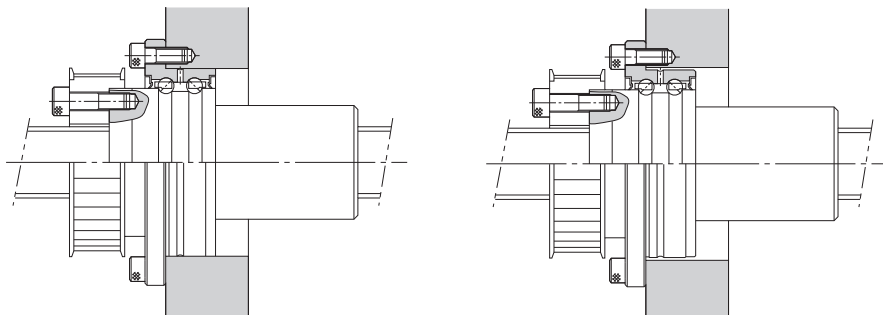


Unit: mm

Lead angle accuracy	C3		C5		C7	
Accuracy grades	C3		C5		C7	
Model No.	C	D	C	D	C	D
BLR 1616	0.013	0.017	0.016	0.020	0.023	0.035
BLR 2020	0.013	0.017	0.016	0.020	0.023	0.035
BLR 2525	0.015	0.020	0.018	0.024	0.023	0.035
BLR 3232	0.015	0.020	0.018	0.024	0.023	0.035
BLR 3636	0.016	0.021	0.019	0.025	0.024	0.036
BLR 4040	0.018	0.026	0.021	0.033	0.026	0.046
BLR 5050	0.018	0.026	0.021	0.033	0.026	0.046

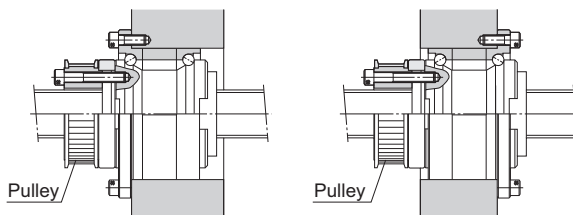
Example of Assembly

[Example of Mounting Ball Screw Nut Model DIR]



Installation to the housing can be performed on the end face of the outer ring flange.

[Example of Mounting Ball Screw Nut Model BLR]



Standard installation method

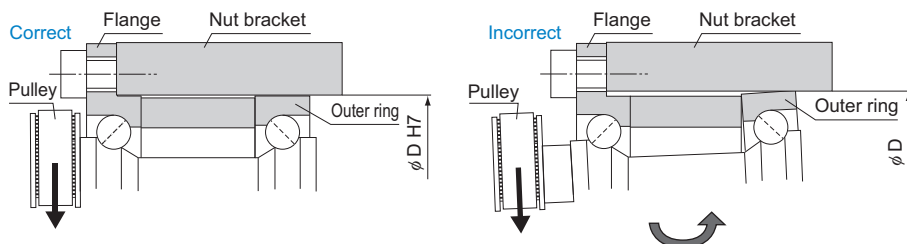
Inverted flange

Note) If the flange is to be inverted, indicate "K" in the model number. (applicable only to model BLR)

Example: BLR 2020-3.6 K UU

Symbol for inverted flange (No symbol for standard flange orientation)

[Important note concerning model BLR]



Note) Since the outer rings are separable, it is necessary to include an internal diameter tolerance in the nut bracket so that the outer ring on the side opposite from the flange does not shift. (H7 is recommended.)

[Example of Mounting Model BLR on the Table]

- (1) Screw shaft free, ball screw nut fixed
(Suitable for a long table)

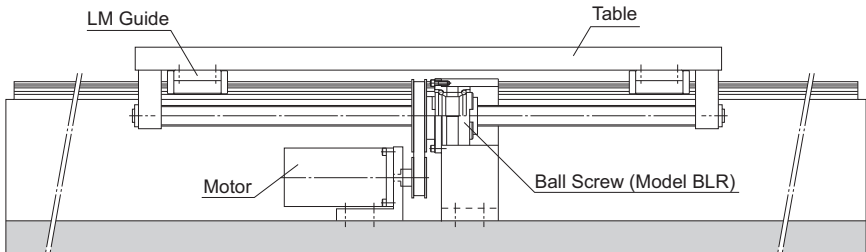


Fig.2 Example of Installation on the Table (Ball Screw Nut Fixed)

- (2) Ball screw nut free, screw shaft fixed
(Suitable for a short table and a long stroke)

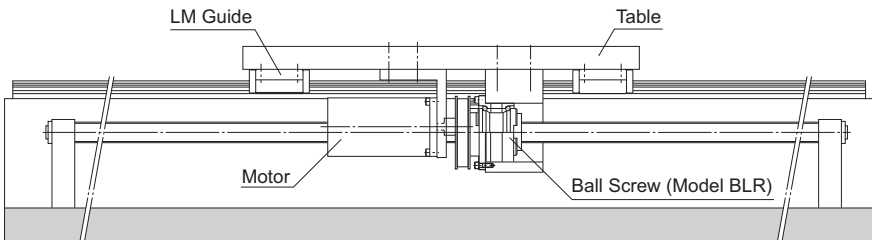
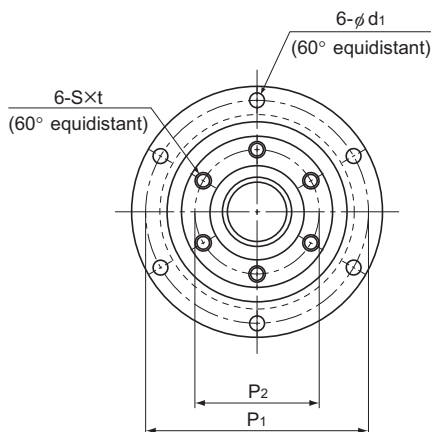


Fig.3 Example of Installation on the Table (Screw Shaft Fixed)

Model DIR Standard-Lead Rotary-Nut Ball Screw



Model No.	Screw shaft outer diameter d	Thread minor diameter dc	Lead Ph	Ball center-to-center diameter dp	Basic load rating		Rigidity K N/μm				
					Ca kN	C _{0a} kN		Outer diameter D	Flange diameter D ₁	Overall length L ₁	D ₃ h7
DIR 1605-6	16	13.2	5	16.75	7.4	13	310	48	64	79	36
DIR 2005-6	20	17.2	5	20.75	8.5	17.3	310	56	72	80	43.5
DIR 2505-6	25	22.2	5	25.75	9.7	22.6	490	66	86	88	52
DIR 2510-4		21.6	10	26	9	18	330	66	86	106	52
DIR 3205-6	32	29.2	5	32.75	11.1	30.2	620	78	103	86	63
DIR 3206-6		28.4	6	33	14.9	37.1	630	78	103	97	63
DIR 3210-6		26.4	10	33.75	25.7	52.2	600	78	103	131	63
DIR 3610-6	36	30.5	10	37.75	28.8	63.8	710	92	122	151	72
DIR 4010-6	40	34.7	10	41.75	29.8	69.3	750	100	130	142	79.5
DIR 4012-6		34.4	12	41.75	30.6	72.3	790	100	130	167	79.5

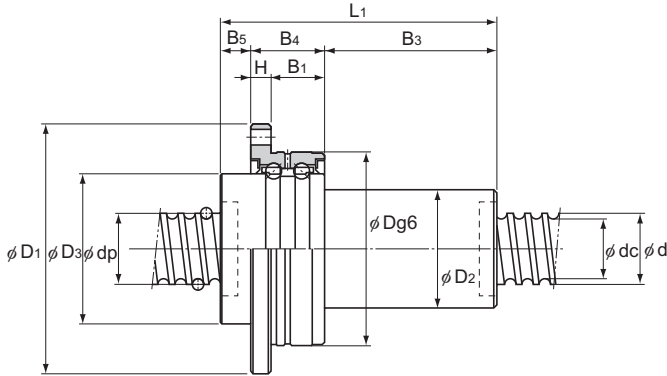
Model number coding

DIR2005-6 RR G0 +520L C1

Model number Seal symbol (*1) Overall screw shaft length (in mm)
 Symbol for clearance in the axial direction (*2) Accuracy symbol (*3)

(*1) See [A15-352](#). (*2) See [A15-19](#). (*3) See [A15-12](#).

Precision Rotary Ball Screw



Unit: mm

Ball screw dimensions												Support bearing basic load rating		Nut inertial moment	Nut mass	Shaft mass
D ₂	B ₅	B ₄	B ₃	P ₁	P ₂	H	B ₁	S	t	d ₁	Ca	C _{0a}	kg·cm ²	kg	kg/m	
												kN	kN			
30	8	21	50	56	30	6	15	M4	6	4.5	8.7	10.5	0.61	0.49	1.24	
34	9	21	50	64	36	6	15	M5	8	4.5	9.7	13.4	1.18	0.68	2.05	
40	13	25	50	75	43	7	18	M6	10	5.5	12.7	18.2	2.65	1.07	3.34	
40	11	25	70	75	43	7	18	M6	10	5.5	12.7	18.2	2.84	1.16	3.52	
46	11	25	50	89	53	8	17	M6	10	6.6	13.6	22.3	5.1	1.39	5.67	
48	11	25	61	89	53	8	17	M6	10	6.6	13.6	22.3	5.68	1.54	5.47	
54	11	25	95	89	53	8	17	M6	10	6.6	13.6	22.3	8.13	2.16	4.98	
58	14	33	104	105	61	10	23	M8	12	9	20.4	32.3	14.7	3.25	6.51	
62	14	33	95	113	67	10	23	M8	12	9	21.5	36.8	20.6	3.55	8.22	
62	14	33	120	113	67	10	23	M8	12	9	21.5	36.8	22.5	3.9	8.5	

Note) The rigidity values in the table represent spring constants each obtained from the load and the elastic deformation when providing a preload 10% of the basic dynamic load rating (Ca) and applying an axial load three times greater than the preload.

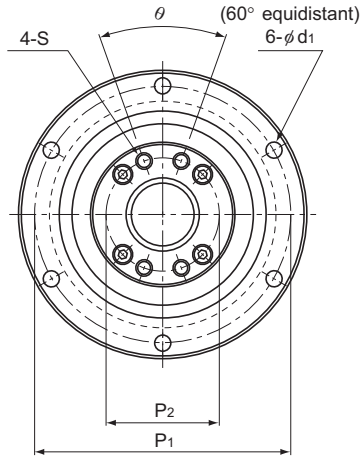
These values do not include the rigidity of the components related to mounting the ball screw nut. Therefore, it is normally appropriate to regard roughly 80% of the value in the table as the actual value.

If the applied preload (Fa₀) is not 0.1 Ca, the rigidity value (K_s) is obtained from the following equation.

$$K_s = K \left(\frac{F_{a0}}{0.1C_a} \right)^{\frac{1}{3}}$$

K: Rigidity value in the dimensional table.

Model BLR Large Lead Rotary-Nut Precision Ball Screw



Model No.	Screw shaft outer diameter d	Thread minor diameter dc	Lead Ph	Ball center-to-center diameter dp	Basic load rating		Outer diameter D	Flange diameter D ₁	Overall length L ₁	D ₃
					Ca kN	C _{0a} kN				
BLR 1616-3.6	16	13.7	16	16.65	7.1	14.3	52 ⁰ _{-0.007}	68	43.5	40 ⁰ _{-0.025}
BLR 2020-3.6	20	17.5	20	20.75	11.1	24.7	62 ⁰ _{-0.007}	78	54	50 ⁰ _{-0.025}
BLR 2525-3.6	25	21.9	25	26	16.6	38.7	72 ⁰ _{-0.007}	92	65	58 ⁰ _{-0.03}
BLR 3232-3.6	32	28.3	32	33.25	23.7	59.5	80 ⁰ _{-0.007}	105	80	66 ⁰ _{-0.03}
BLR 3636-3.6	36	31.7	36	37.4	30.8	78	100 ⁰ _{-0.008}	130	93	80 ⁰ _{-0.03}
BLR 4040-3.6	40	35.2	40	41.75	38.7	99.2	110 ⁰ _{-0.008}	140	98	90 ⁰ _{-0.035}
BLR 5050-3.6	50	44.1	50	52.2	57.8	155	120 ⁰ _{-0.008}	156	126	100 ⁰ _{-0.035}

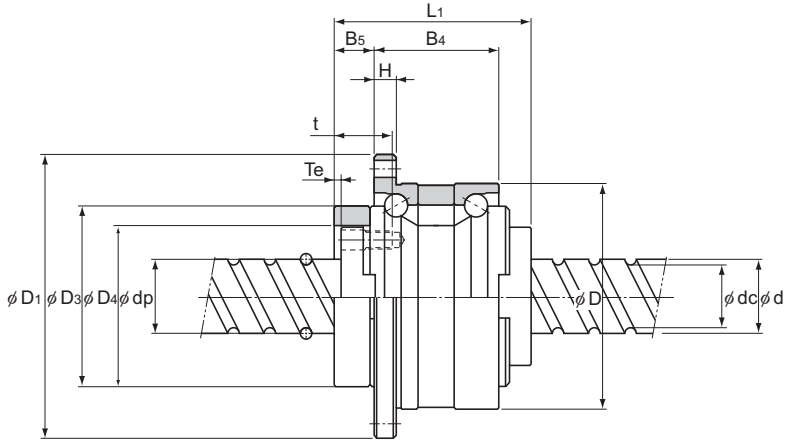
Model number coding

BLR2020-3.6 K UU G1 +1000L C5

Model number Flange orientation symbol (*1) Symbol for clearance in the axial direction (*3) Accuracy symbol (*4)
 Symbol for support bearing seal (*2) Overall screw shaft length (in mm)

(*1) See **A15-256**. (*2) UU: Seal attached on both ends No symbol: Without seal. (*3) See **A15-19**. (*4) See **A15-12**.

Precision Rotary Ball Screw



Unit: mm

Ball screw dimensions												Support bearing basic load rating		Nut inertial moment kg·cm ²	Nut mass kg	Shaft mass kg/m
D ₄	H	B ₄	B ₅	T _e	P ₁	P ₂	S	t	d ₁	θ°	C _a kN	C _{0a} kN				
32 ^{+0.025} ₀	5	27.5	9	2	60	25	M4	12	4.5	40	19.4	19.2	0.48	0.38	1.41	
39 ^{+0.025} ₀	6	34	11	2	70	31	M5	16	4.5	40	26.8	29.3	1.44	0.68	2.25	
47 ^{+0.025} ₀	8	43	12.5	3	81	38	M6	19	5.5	40	28.2	33.3	3.23	1.1	3.52	
58 ^{+0.03} ₀	9	55	14	3	91	48	M6	19	6.6	40	30	39	6.74	1.74	5.83	
66 ^{+0.03} ₀	11	62	17	3	113	54	M8	22	9	40	56.4	65.2	16.8	3.2	7.34	
73 ^{+0.03} ₀	11	68	16.5	3	123	61	M8	22	9	50	59.3	74.1	27.9	3.95	9.01	
90 ^{+0.035} ₀	12	80	25	4	136	75	M10	28	11	50	62.2	83	58.2	6.22	14.08	

Ball Screw

Permissible Rotational Speeds for Rotary Ball Screws

The permissible rotational speeds for models DIR and BLR and rotary ball screws is restricted to whichever is lower of the support bearing permissible rotational speed, the DN value (70,000) and the critical speed of the screw. When using the product, do not exceed the permissible rotational speed.

Table1 Model DIR permissible rotational speed

Unit:min⁻¹

Model No.	Permissible Rotational Speed			
	Ball Screw Unit		Support bearing	
	Calculated using shaft length	Calculated using DN value	Grease Lubrication	Oil Lubrication
DIR1605	see A15-32 .	4179	4200	5600
DIR2005		3373	3500	4700
DIR2505		2718	2900	3900
DIR2510		2692	2900	3900
DIR3205		2137	2400	3300
DIR3206		2121	2400	3300
DIR3210		2074	2400	3300
DIR3610		1854	2100	2800
DIR4010		1676	1900	2600
DIR4012		1676	1900	2600

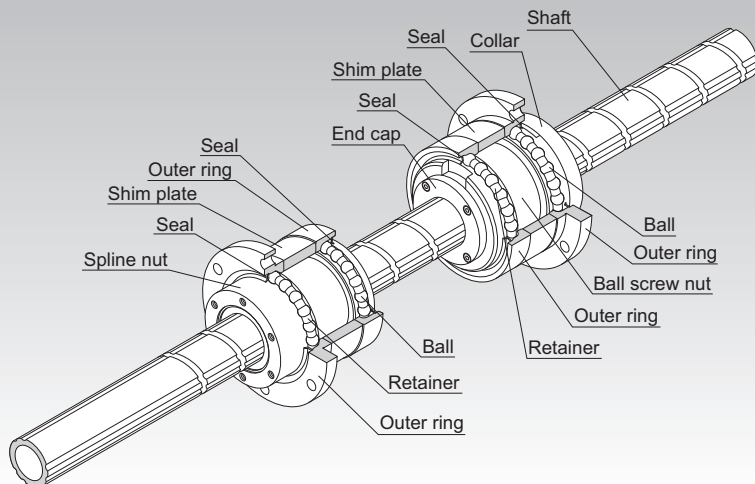
Table2 Model BLR permissible rotational speed

Unit:min⁻¹

Model No.	Permissible Rotational Speed			
	Ball Screw Unit		Support bearing	
	Calculated using shaft length	Calculated using DN value	Grease Lubrication	Oil Lubrication
BLR1616	see A15-32 .	4204	4000	5600
BLR2020		3373	3200	4300
BLR2525		2692	2800	3700
BLR3232		2105	2400	3300
BLR3636		1871	2000	2700
BLR4040		1676	1800	2400
BLR5050		1340	1600	2200

Precision Ball Screw/Spline

Models BNS-A, BNS, NS-A and NS



Point of Selection **A15-8**

Options **A15-352**

Model No. **A15-369**

Precautions on Use **A15-374**

Accessories for Lubrication **A24-1**

Mounting Procedure and Maintenance **B15-104**

DN Value **A15-33**

Accuracy Standards **A15-267**

Action Patterns **A15-268**

Example of Assembly **A15-271**

Example of Use **A15-272**

Precautions on Use **A15-273**

Structure and Features

The Ball Screw/Spline contains the Ball Screw grooves and the Ball Spline groove crossing one another. The nuts of the Ball Screw and the Ball Spline have dedicated support bearings directly embedded on the circumference of the nuts.

The Ball Screw/Spline is capable of performing three (rotational, linear and spiral) modes of motion with a single shaft by rotating or stopping the spline nut.

It is optimal for machines using a combination of rotary and straight motions, such as scholar robot's Z-axis, assembly robot, automatic loader, and machining center's ATC equipment.

[Zero Axial Clearance]

The Ball Spline has an angular-contact structure that causes no backlash in the rotational direction, enabling highly accurate positioning.

[Lightweight and Compact]

Since the nut and the support bearing are integrated, highly accurate, compact design is achieved. In addition, small inertia because of the lightweight ball screw nut ensures high responsiveness.

[Easy Installation]

The Ball Spline nut is designed so that balls do not fall off even if the spline nut is removed from the shaft, making installation easy. The Ball Screw/Spline can easily be mounted simply by securing it to the housing with bolts. (For the housing's inner-diameter tolerance, H7 is recommended.)

[Smooth Motion with Low Noise]

As the Ball Screw is based on an end cap mechanism, smooth motion with low noise is achieved.

[Highly Rigid Support Bearing]

The support bearing on the Ball Screw has a contact angle of 60° in the axial direction while that on the Ball Spline has a contact angle of 30° in the moment direction, thus to provide a highly rigid shaft support.

In addition, a dedicated rubber seal is attached as standard to prevent entry of foreign materials.

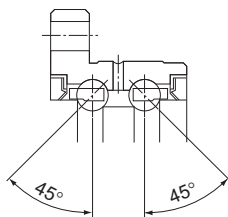


Fig.1 Structure of Support Bearing Model BNS-A

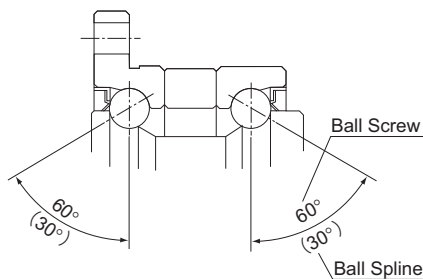


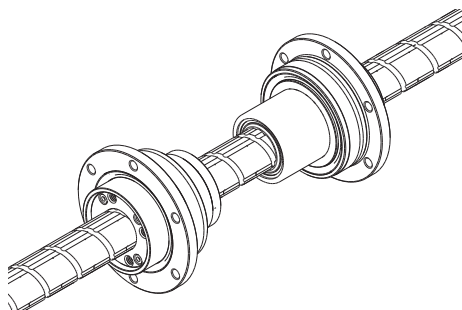
Fig.2 Structure of Support Bearing Model BNS

Type

[No Preload Type]

Model BNS-A

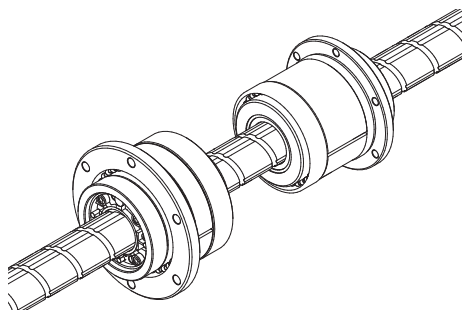
Specification Table⇒ **A15-274**



(Compact type: linear-rotary motion)

Model BNS

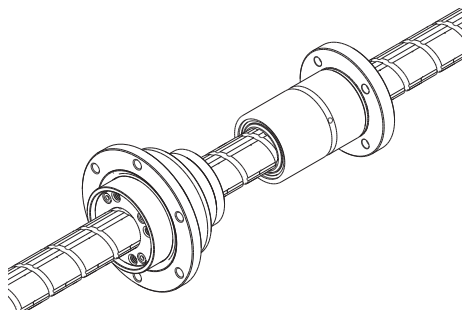
Specification Table⇒ **A15-276**



(Heavy-load type: linear-rotary motion)

Model NS-A

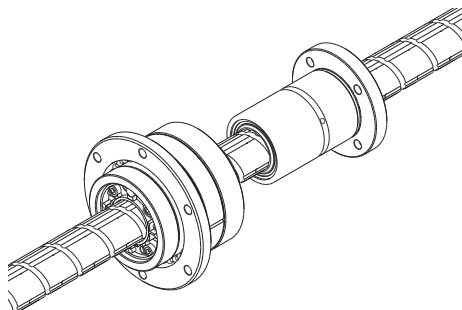
Specification Table⇒ **A15-278**



(Compact type: straight motion)

Model NS

Specification Table⇒ **A15-280**



(Heavy-load type: straight motion)

Accuracy Standards

The Ball Screw/Spline is manufactured with the following specifications.

[Ball Screw]

Axial clearance : 0 or less

Lead angle accuracy : C5

(For detailed specifications, see **A15-12**, **A15-19**.)

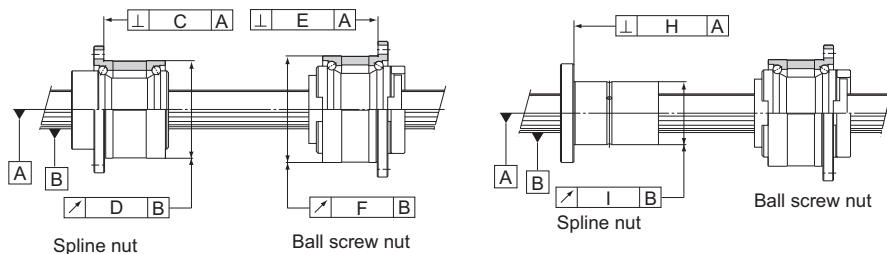
[Ball Spline]

Clearance in the rotational direction : 0 or less (CL: light preload)

(For detailed specifications, see **A3-29**.)

Accuracy grade : class H

(For detailed specifications, see **A3-33**.)



Spline nut

Ball screw nut

Spline nut

Ball screw nut

Model BNS

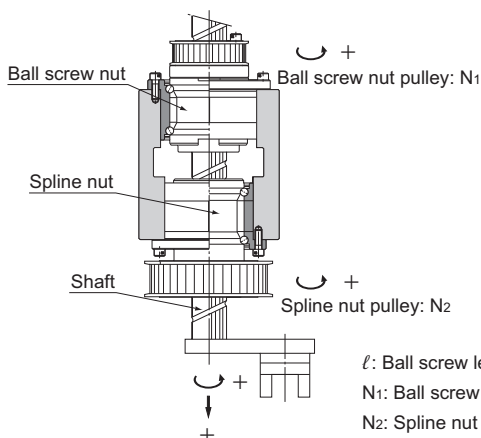
Model NS

Unit: mm

Model No.	C	D	E	F	H	I
BNS 0812 NS 0812	0.014	0.017	0.014	0.016	0.010	0.013
BNS 1015 NS 1015	0.014	0.017	0.014	0.016	0.010	0.013
BNS 1616 NS 1616	0.018	0.021	0.016	0.020	0.013	0.016
BNS 2020 NS 2020	0.018	0.021	0.016	0.020	0.013	0.016
BNS 2525 NS 2525	0.021	0.021	0.018	0.024	0.016	0.016
BNS 3232 NS 3232	0.021	0.021	0.018	0.024	0.016	0.016
BNS 4040 NS 4040	0.025	0.025	0.021	0.033	0.019	0.019
BNS 5050 NS 5050	0.025	0.025	0.021	0.033	0.019	0.019

Action Patterns

[Model BNS Basic Actions]



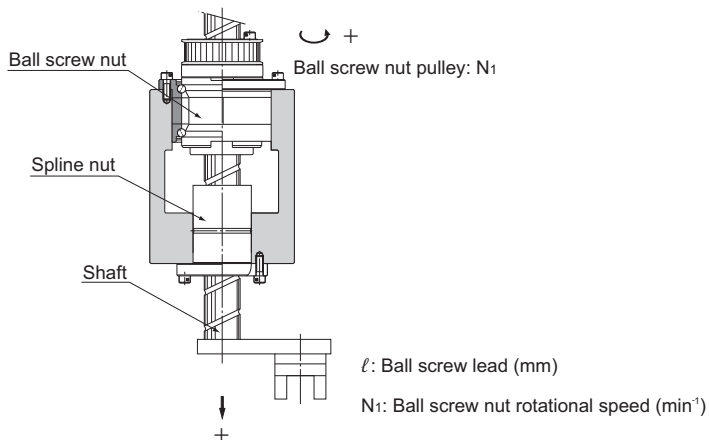
ℓ : Ball screw lead (mm)

N_1 : Ball screw nut rotational speed (min^{-1})

N_2 : Spline nut rotational speed (min^{-1})

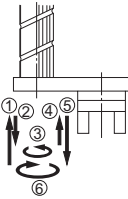
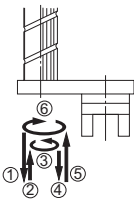
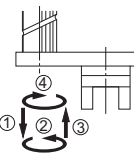
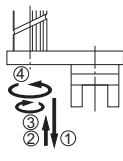
Motion	Action direction	Input		Shaft motion	
		Ball screw pulley	Ball spline pulley	Vertical direction (speed)	Rotational direction (rotation speed)
1. Vertical 	(1) Vertical direction→down Rotational direction→0	N_1 (Forward)	0	$V=N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(2) Vertical direction→up Rotational direction→0	$-N_1$ (Reverse)	0	$V=-N_1 \cdot \ell$ ($N_1 \neq 0$)	0
2. Rotation 	(1) Vertical direction→0 Rotational direction→forward	N_1	N_2 (Forward)	0	N_2 (Forward) ($N_1=N_2 \neq 0$)
	(2) Vertical direction→0 Rotational direction→reverse	$-N_1$	$-N_2$ (Reverse)	0	$-N_2$ (Reverse) ($-N_1=-N_2 \neq 0$)
3. Spiral 	(1) Vertical direction→up Rotational direction→forward	0	N_2 ($N_2 \neq 0$)	$V=N_2 \cdot \ell$	N_2 (Forward)
	(2) Vertical direction→down Rotational direction→reverse	0	$-N_2$ ($-N_2 \neq 0$)	$V=-N_2 \cdot \ell$	$-N_2$ (Reverse)

[Model NS Basic Actions]

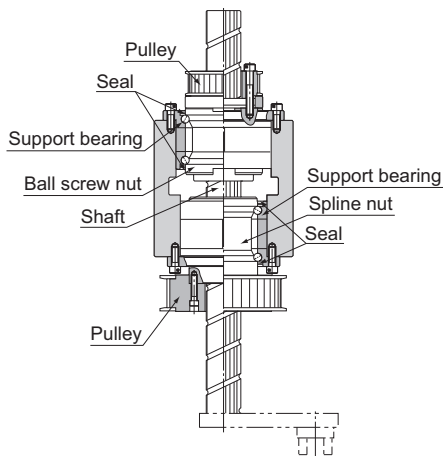


Motion	Action direction	Input	Shaft motion	
		Ball screw pulley	Vertical direction (speed)	
1. Vertical 	(1)	Vertical direction →down	N_1 (Forward)	$V=N_1 \cdot \ell$ ($N_1 \neq 0$)
	(2)	Vertical direction →up	$-N_1$ (Reverse)	$V=-N_1 \cdot \ell$ ($N_1 \neq 0$)

[Model BNS Extended Actions]

Motion	Action direction	Input		Shaft motion	
		Ball screw pulley	Ball spline pulley	Vertical direction (speed)	Rotational direction (rotational speed)
1. Up→down→forward →up→down→reverse 	(1)	Vertical direction→up $-N_1$ (Reverse)	0	$V=-N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(2)	Vertical direction→down N_1 (Forward)	0	$V=N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(3)	Rotational direction→forward N_1	N_2 (Forward)	0	N_2 (Forward) ($N_1=N_2 \neq 0$)
	(4)	Vertical direction→up $-N_1$	0	$V=-N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(5)	Vertical direction→down N_1	0	$V=N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(6)	Rotational direction→reverse $-N_1$	$-N_2$ (Reverse)	0	$-N_2$ (Reverse) ($-N_1=N_2 \neq 0$)
2. Down→up→forward →down→up→reverse 	(1)	Vertical direction→down N_1	0	$V=N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(2)	Vertical direction→up $-N_1$	0	$V=-N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(3)	Rotational direction→forward N_1	N_2	0	N_2 ($N_1=N_2 \neq 0$)
	(4)	Vertical direction→down N_1	0	$V=N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(5)	Vertical direction→up $-N_1$	0	$V=-N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(6)	Rotational direction→reverse $-N_1$	$-N_2$	0	$-N_2$ ($-N_1=N_2 \neq 0$)
3. Down→forward →up→reverse 	(1)	Vertical direction→down N_1	0	$V=N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(2)	Rotational direction→forward N_1	N_2	0	N_2 ($N_1=N_2 \neq 0$)
	(3)	Vertical direction→up $-N_1$	0	$V=-N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(4)	Rotational direction→reverse $-N_1$	$-N_2$	0	$-N_2$ ($-N_1=N_2 \neq 0$)
4. Down→up →reverse→forward 	(1)	Vertical direction→down N_1	0	$V=N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(2)	Vertical direction→up $-N_1$	0	$V=-N_1 \cdot \ell$ ($N_1 \neq 0$)	0
	(3)	Rotational direction→reverse $-N_1$	$-N_2$	0	$-N_2$ ($-N_1=N_2 \neq 0$)
	(4)	Rotational direction→forward N_1	N_2	0	N_2 ($N_1=N_2 \neq 0$)

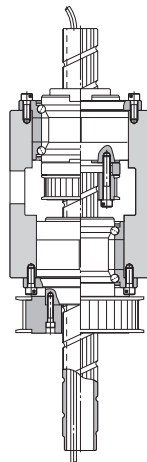
Example of Assembly



- Example of installing the ball screw nut input pulley

and the spline nut input pulley, both outside the housing.

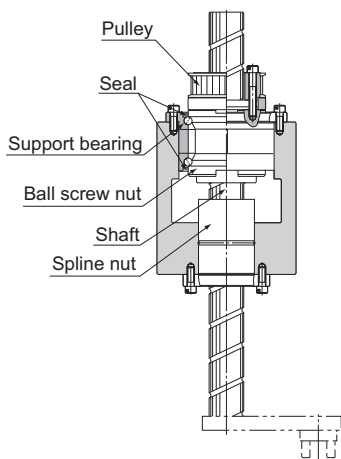
The housing length is minimized.



- Example of installing the ball screw nut pulley

inside the housing.

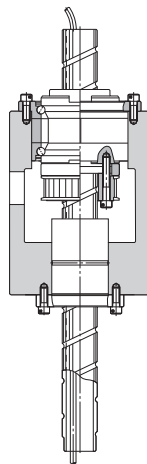
Fig.3 Example of Assembling Model BNS



- Example of installing the ball screw nut pulley outside

the housing.

The housing length is minimized.



- Example of installing the ball screw nut pulley

inside the housing.

Fig.4 Example of Assembling Model NS

Example of Use

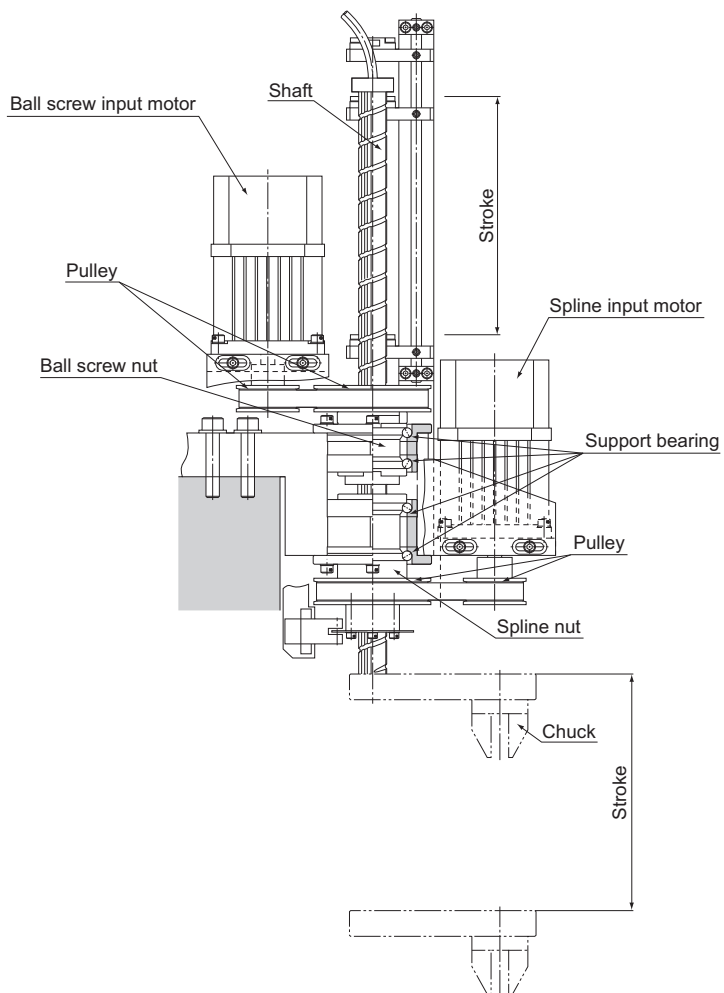


Fig.5 Example of Using Model BNS

Precautions on Use

[Lubrication]

When lubricating the Ball Screw/Spline, attach the greasing plate to the housing in advance.

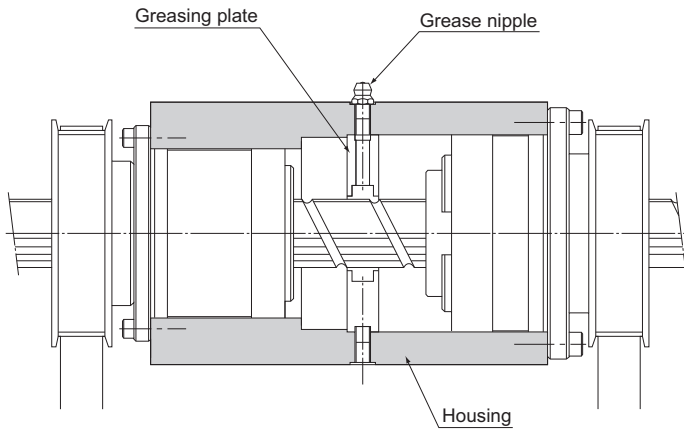
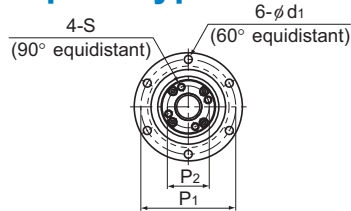
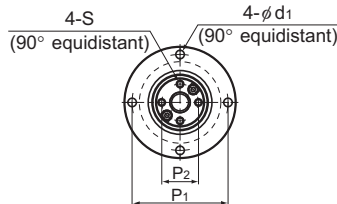


Fig.6 Lubrication Methods

Model BNS-A Compact Type: Linear-Rotary Motion



Ball screw unit
(Models BNS 1616A to 4040A)



Ball spline unit
(Models BNS 0812A and 1015A)

Ball screw unit

Model No.	Screw shaft outer diameter d	Screw shaft inner diameter db	Lead Ph	Ball screw dimensions								
				Basic load rating		Ball center-to-center diameter dp	Thread minor diameter dc	Outer diameter D	Flange diameter D ₁	Overall length L ₁	D ₃ h7	D ₄ H7
				C _a kN	C _{0a} kN							
BNS 0812A	8	—	12	1.1	1.8	8.4	6.6	32	44	28.5	22	19
BNS 1015A	10	—	15	1.7	2.7	10.5	8.3	36	48	34.5	26	23
BNS 1616A	16	11	16	3.9	7.2	16.65	13.7	48	64	40	36	32
BNS 2020A	20	14	20	6.1	12.3	20.75	17.5	56	72	48	48	39
BNS 2525A	25	18	25	9.1	19.3	26	21.9	66	86	58	52	47
BNS 3232A	32	23	32	13	29.8	33.25	28.3	78	103	72	63	58
BNS 4040A	40	29	40	21.4	49.7	41.75	35.2	100	130	88	79.5	73

Ball spline

Model No.	Ball spline dimensions									
	Basic load rating		Static permissible moment M _A N·m	Basic torque rating		Outer diameter D ₇ g6	Flange diameter D ₅	Overall length L ₂	D ₆ h7	BE ₁
	C kN	C ₀ kN		C _T N·m	C _{0T} N·m					
BNS 0812A	1.5	2.6	5.9	2	2.9	32	44	25	24	16
BNS 1015A	2.7	4.9	15.7	3.9	7.8	36	48	33	28	21
BNS 1616A	7.1	12.6	67.6	31.4	34.3	48	64	50	36	31
BNS 2020A	10.2	17.8	118	56.8	55.8	56	72	63	43.5	35
BNS 2525A	15.2	25.8	210	105	103	66	86	71	52	42
BNS 3232A	20.5	34	290	180	157	78	103	80	63	52
BNS 4040A	37.8	60.5	687	418	377	100	130	100	79.5	64

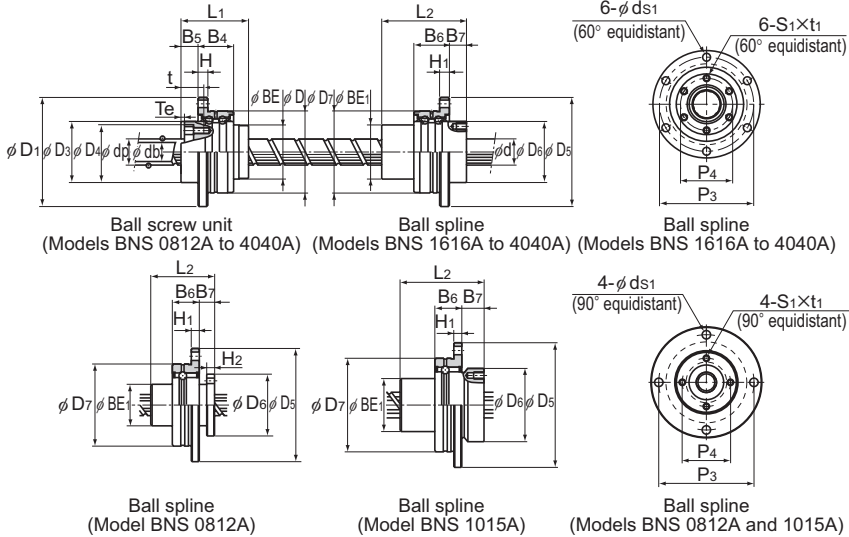
Note) For K hollow shaft, please refer to the db dimension for the inner bore diameter of the shaft. If requested solid shaft is also available. See "Ball Spline" **A3-106** for details.

Model number coding

BNS2020A +500L

Model number Overall shaft length (in mm)

Precision Ball Screw/Spline

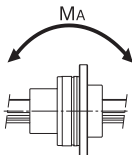


Unit: mm

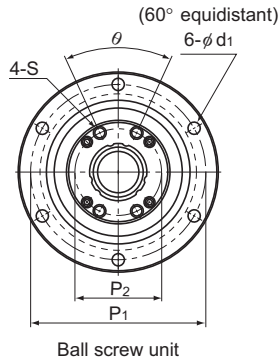
	BE	H	B ₄	B ₅	T _e	P ₁	P ₂	S	t	d ₁	Support bearing basic load rating		Nut inertial moment kg·cm ²	Screw shaft inertial moment/mm J kg·cm ² /mm	Nut mass kg	Shaft mass kg/m
											C _a	C _{0a}				
	19	3	10.5	7	1.5	38	14.5	M2.6	10	3.4	0.8	0.5	0.03	3.16×10^{-5}	0.08	0.35
	23	3	10.5	8	1.5	42	18	M3	11.5	3.4	0.9	0.7	0.08	7.71×10^{-5}	0.15	0.52
	32	6	21	10	2	56	25	M4	13.5	4.5	8.7	10.5	0.35	3.92×10^{-4}	0.31	0.8
	39	6	21	11	2.5	64	31	M5	16.5	4.5	9.7	13.4	0.85	9.37×10^{-4}	0.54	1.21
	47	7	25	13	3	75	38	M6	20	5.5	12.7	18.2	2.12	2.2×10^{-3}	0.88	1.79
	58	8	25	14	3	89	48	M6	21	6.6	13.6	22.3	5.42	5.92×10^{-3}	1.39	2.96
	73	10	33	16.5	3	113	61	M8	24.5	9	21.5	36.8	17.2	1.43×10^{-2}	3.16	4.51

Unit: mm

	H ₁	B ₆	B ₇	H ₂	P ₃	P ₄	S ₁ ×t ₁	ds ₁	Support bearing basic load rating		Nut inertial moment kg·cm ²	Nut mass kg
									C	C ₀		
	3	10.5	6	3	38	19	M2.6×3	3.4	0.6	0.2	0.03	0.08
	3	10.5	9	—	42	23	M3×4	3.4	0.8	0.3	0.08	0.13
	6	21	10	—	56	30	M4×6	4.5	6.7	6.4	0.44	0.35
	6	21	12	—	64	36	M5×8	4.5	7.4	7.8	0.99	0.51
	7	25	13	—	75	44	M5×8	5.5	9.7	10.6	2.2	0.79
	8	25	17	—	89	54	M6×10	6.6	10.5	12.5	5.17	1.25
	10	33	20	—	113	68	M6×10	9	16.5	20.7	16.1	2.51



Model BNS Heavy-load Type: Linear-Rotary Motion



Ball screw unit

Model No.	Screw shaft outer diameter d	Screw shaft inner diameter db	Lead Ph	Ball screw dimensions							
				Basic load rating		Ball center-to-center diameter dp	Thread minor diameter dc	Outer diameter D	Flange diameter D ₁	Overall length L ₁	D ₃ h7
				Ca kN	C _{0a} kN						
BNS 1616	16	11	16	3.9	7.2	16.65	13.7	52 ⁰ _{-0.007}	68	43.5	40
BNS 2020	20	14	20	6.1	12.3	20.75	17.5	62 ⁰ _{-0.007}	78	54	50
BNS 2525	25	18	25	9.1	19.3	26	21.9	72 ⁰ _{-0.007}	92	65	58
BNS 3232	32	23	32	13	29.8	33.25	28.3	80 ⁰ _{-0.007}	105	80	66
BNS 4040	40	29	40	21.4	49.7	41.75	35.2	110 ⁰ _{-0.008}	140	98	90
BNS 5050	50	36	50	31.8	77.6	52.2	44.1	120 ⁰ _{-0.008}	156	126	100

Ball spline

Model No.	Ball spline dimensions							
	Basic load rating		Static permissible moment M _s N-m	Basic torque rating		Outer diameter D ₇	Flange diameter D ₅	Overall length L ₂
	C kN	C ₀ kN		C _T N-m	C _{0T} N-m			
BNS 1616	7.1	12.6	67.6	31.4	34.3	52 ⁰ _{-0.007}	68	50
BNS 2020	10.2	17.8	118	56.8	55.8	56 ⁰ _{-0.007}	72	63
BNS 2525	15.2	25.8	210	105	103	62 ⁰ _{-0.007}	78	71
BNS 3232	20.5	34	290	180	157	80 ⁰ _{-0.007}	105	80
BNS 4040	37.8	60.5	687	418	377	100 ⁰ _{-0.008}	130	100
BNS 5050	60.9	94.5	1340	842	768	120 ⁰ _{-0.008}	156	125

Note) Dimension U indicates the length from the head of the hexagonal-socket-head type bolt to the ball screw nut end.

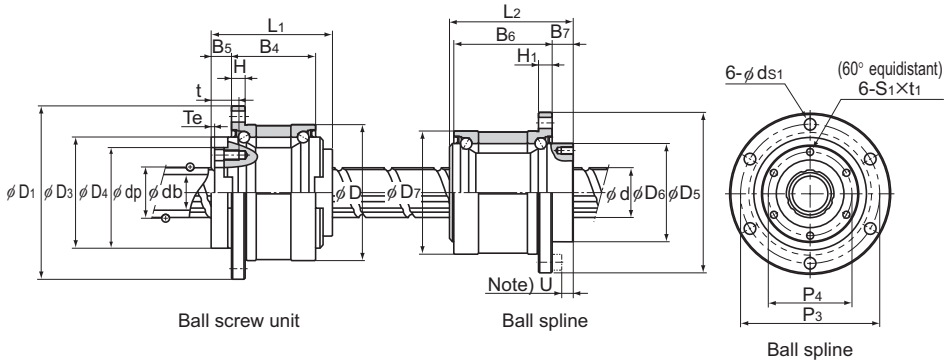
For K hollow shaft, please refer to the db dimension for the inner bore diameter of the shaft. If requested solid shaft is also available. See "Ball Spline" **A3-106** for details.

Model number coding

BNS2525 +600L

Model number Overall shaft length (in mm)

Precision Ball Screw/Spline

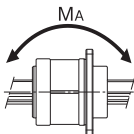


Unit: mm

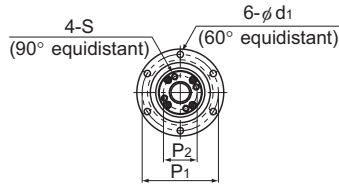
D ₄	H	B ₄	B ₅	T _e	P ₁	P ₂	S	t	d ₁	θ°	Support bearing basic load rating		Nut inertial moment	Screw shaft inertial moment/mm	Nut mass	Shaft mass
											Ca	C _a				
											kN	kN	kg·cm ²	J kg·cm ² /mm	kg	kg/m
32	5	27.5	9	2	60	25	M4	12	4.5	40	19.4	19.2	0.48	3.92 × 10 ⁻⁴	0.38	0.8
39	6	34	11	2	70	31	M5	16	4.5	40	26.8	29.3	1.44	9.37 × 10 ⁻⁴	0.68	1.21
47	8	43	12.5	3	81	38	M6	19	5.5	40	28.2	33.3	3.23	2.2 × 10 ⁻³	1.1	1.79
58	9	55	14	3	91	48	M6	19	6.6	40	30	39	6.74	5.92 × 10 ⁻³	1.74	2.96
73	11	68	16.5	3	123	61	M8	22	9	50	59.3	74.1	27.9	1.43 × 10 ⁻²	3.95	4.51
90	12	80	25	4	136	75	M10	28	11	50	62.2	83	58.2	3.52 × 10 ⁻²	6.22	7.16

Unit: mm

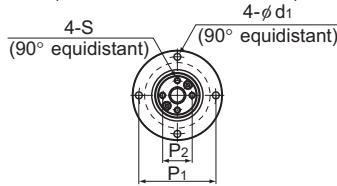
D ₆	h ₇	H ₁	B ₆	B ₇	P ₃	P ₄	S ₁ × t ₁	d _{s1}	U	Support bearing basic load rating		Nut inertial moment	Nut mass
										C	C ₀		
										kN	kN	kg·cm ²	kg
39.5	5	37	10	60	32	32	M5 × 8	4.5	5	12.7	11.8	0.52	0.51
43.5	6	48	12	64	36	36	M5 × 8	4.5	7	16.2	15.5	0.87	0.7
53	6	55	13	70	45	45	M6 × 8	4.5	8	17.6	18	1.72	0.93
65.5	9	60	17	91	55	55	M6 × 10	6.6	10	20.1	24	5.61	1.8
79.5	11	74	23	113	68	68	M6 × 10	9	13	37.2	42.5	14.7	3.9
99.5	12	97	25	136	85	85	M10 × 15	11	13	41.6	54.1	62.5	6.7



Model NS-A Compact Type: Straight Motion



Ball screw unit
(Models NS 1616A to 4040A)



Ball screw unit
(Models NS 0812A and 1015A)

Ball screw unit

Model No.	Screw shaft outer diameter d	Screw shaft inner diameter db	Lead Ph	Ball screw dimensions									
				Basic load rating		Ball center-to-center diameter dp	Thread minor diameter dc	Outer diameter D	Flange diameter D ₁	Overall length L ₁	D ₃ h7	D ₄ H7	
				Ca kN	C _{0a} kN								
NS 0812A	8	—	12	1.1	1.8	8.4	6.6	32	44	28.5	22	19	
NS 1015A	10	—	15	1.7	2.7	10.5	8.3	36	48	34.5	26	23	
NS 1616A	16	11	16	3.9	7.2	16.65	13.7	48	64	40	36	32	
NS 2020A	20	14	20	6.1	12.3	20.75	17.5	56	72	48	43.5	39	
NS 2525A	25	18	25	9.1	19.3	26	21.9	66	86	58	52	47	
NS 3232A	32	23	32	13	29.8	33.25	28.3	78	103	72	63	58	
NS 4040A	40	29	40	21.4	49.7	41.75	35.2	100	130	88	79.5	73	

Ball spline

Model No.	Ball spline dimensions						
	Basic load rating		Static permissible moment M _A N-m	Basic torque rating		Outer diameter D ₇	Flange diameter D ₅ ⁰ _{-0.2}
	C kN	C ₀ kN		C _T N-m	C _{0T} N-m		
NS 0812A	1.5	2.6	5.9	2	2.9	16 _{-0.011}	32
NS 1015A	2.8	4.9	15.7	3.9	7.8	21 _{-0.013}	42
NS 1616A	7.1	12.6	67.6	31.4	34.3	31 _{-0.013}	51
NS 2020A	10.2	17.8	118	56.8	55.8	35 _{-0.016}	58
NS 2525A	15.2	25.8	210	105	103	42 _{-0.016}	65
NS 3232A	20.5	34	290	180	157	49 _{-0.016}	77
NS 4040A	37.8	60.5	687	418	377	64 _{-0.019}	100

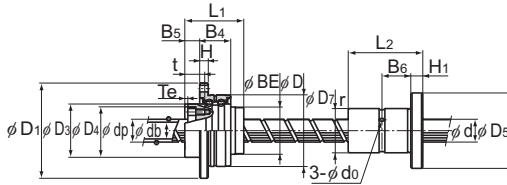
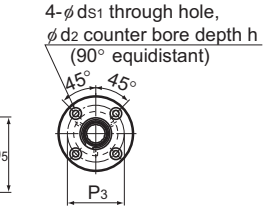
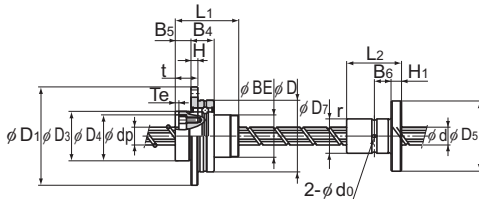
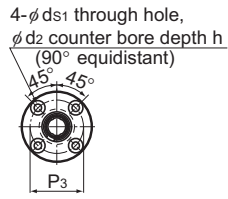
Note) For K hollow shaft, please refer to the db dimension for the inner bore diameter of the shaft. If requested solid shaft is also available. See "Ball Spline" **A3-106** for details.

Model number coding

NS2020A +500L

Model number Overall shaft length (in mm)

Precision Ball Screw/Spline

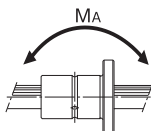
Ball screw unit
(Models NS 1616A to 4040A)Ball spline
(Models NS 1616A to 4040A)Ball spline
(Models NS 1616A to 4040A)Ball screw unit
(Models NS 0812A and 1015A)Ball spline
(Models NS 0812A and 1015A)Ball spline
(Models NS 0812A and 1015A)

Unit: mm

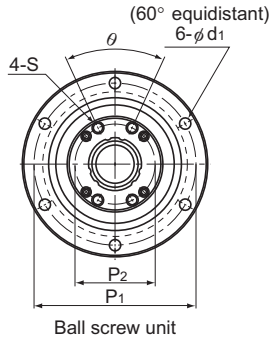
	BE	H	B ₄	B ₅	T _e	P ₁	P ₂	S	t	d ₁	Support bearing basic load rating		Nut inertial moment	Screw shaft inertial moment/mm	Nut mass	Shaft mass
											Ca	C _{0a}				
											kN	kN	kg·cm ²	J kg·cm ² /mm	kg	kg/m
	19	3	10.5	7	1.5	38	14.5	M2.6	10	3.4	0.8	0.5	0.03	3.16 × 10 ⁻⁵	0.08	0.35
	23	3	10.5	8	1.5	42	18	M3	11.5	3.4	0.9	0.7	0.08	7.71 × 10 ⁻⁵	0.15	0.52
	32	6	21	10	2	56	25	M4	13.5	4.5	8.7	10.5	0.35	3.92 × 10 ⁻⁴	0.31	0.8
	39	6	21	11	2.5	64	31	M5	16.5	4.5	9.7	13.4	0.85	9.37 × 10 ⁻⁴	0.54	1.21
	47	7	25	13	3	75	38	M6	20	5.5	12.7	18.2	2.12	2.2 × 10 ⁻³	0.88	1.79
	58	8	25	14	3	89	48	M6	21	6.6	13.6	22.3	5.42	5.92 × 10 ⁻³	1.39	2.96
	73	10	33	16.5	3	113	61	M8	24.5	9	21.5	36.8	17.2	1.43 × 10 ⁻²	3.16	4.51

Unit: mm

	Overall length	H ₁	B ₆	r	Greasing hole	d ₀	P ₃	Mounting hole			Nut mass
								d _{s1}	d ₂	h	
	L ₂										kg
	25	5	7.5	0.5	1.5	24	3.4	6.5	3.3	0.04	
	33	6	10.5	0.5	1.5	32	4.5	8	4.4	0.09	
	50 ^{-0.2}	7	18	0.5	2	40	4.5	8	4.4	0.23	
	63 ^{-0.2}	9	22.5	0.5	2	45	5.5	9.5	5.4	0.33	
	71 ^{-0.3}	9	26.5	0.5	3	52	5.5	9.5	5.4	0.45	
	80 ^{-0.3}	10	30	0.5	3	62	6.6	11	6.5	0.58	
	100 ^{-0.3}	14	36	0.5	4	82	9	14	8.6	1.46	



Model NS Heavy-load Type: Linear Motion



Ball screw unit

Model No.	Screw shaft outer diameter d	Screw shaft inner diameter db	Lead Ph	Ball screw dimensions							
				Basic load rating		Ball center-to-center diameter dp	Thread minor diameter dc	Outer diameter D	Flange diameter D _f	Overall length L ₁	D ₃ h7
				Ca kN	C _{0a} kN						
NS 1616	16	11	16	3.9	7.2	16.65	13.7	52 ⁰ _{-0.007}	68	43.5	40
NS 2020	20	14	20	6.1	12.3	20.75	17.5	62 ⁰ _{-0.007}	78	54	50
NS 2525	25	18	25	9.1	19.3	26	21.9	72 ⁰ _{-0.007}	92	65	58
NS 3232	32	23	32	13	29.8	33.25	28.3	80 ⁰ _{-0.007}	105	80	66
NS 4040	40	29	40	21.4	49.7	41.75	35.2	110 ⁰ _{-0.008}	140	98	90
NS 5050	50	36	50	31.8	77.6	52.2	44.1	120 ⁰ _{-0.008}	156	126	100

Ball spline

Model No.	Ball spline dimensions					
	Basic load rating		Static permissible moment M _k N-m	Basic torque rating		Outer diameter D ₇
	C kN	C ₀ kN		C _T N-m	C _{0T} N-m	
NS 1616	7.1	12.6	67.6	31.4	34.3	31 ⁰ _{-0.013}
NS 2020	10.2	17.8	118	56.9	55.9	35 ⁰ _{-0.016}
NS 2525	15.2	25.8	210	105	103	42 ⁰ _{-0.016}
NS 3232	20.5	34	290	180	157	49 ⁰ _{-0.016}
NS 4040	37.8	60.5	687	419	377	64 ⁰ _{-0.019}
NS 5050	60.9	94.5	1340	842	769	80 ⁰ _{-0.019}

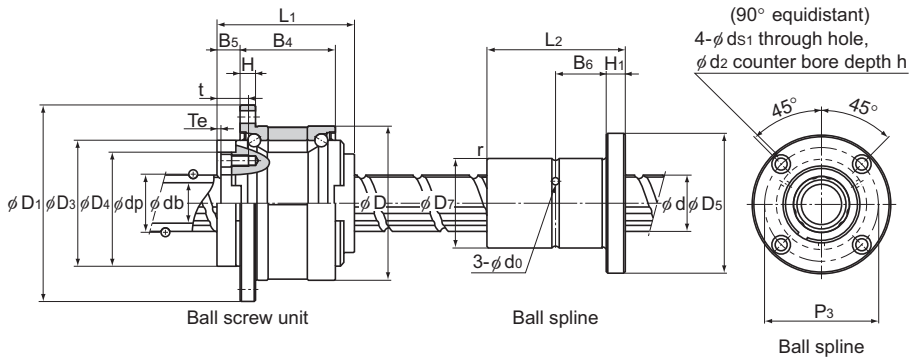
Note) For K hollow shaft, please refer to the db dimension for the inner bore diameter of the shaft. If requested solid shaft is also available. See "Ball Spline" **A3-106** for details.

Model number coding

NS2525 +600L

Model number Overall shaft length (in mm)

Precision Ball Screw/Spline



Unit: mm

D ₄	H7	H	B ₄	B ₅	T _e	P ₁	P ₂	S	t	d ₁	θ°	Support bearing basic load rating		Nut inertial moment kg·cm ²	Screw shaft inertial moment/mm J kg·cm ² /mm	Nut mass kg	Shaft mass kg/m
												C _a kN	C _{0a} kN				
32	5	27.5	9	2	60	25	M4	12	4.5	40	19.4	19.2	0.48	3.92×10^{-4}	0.38	0.8	
39	6	34	11	2	70	31	M5	16	4.5	40	26.8	29.3	1.44	9.37×10^{-4}	0.68	1.21	
47	8	43	12.5	3	81	38	M6	19	5.5	40	28.2	33.3	3.23	2.2×10^{-3}	1.1	1.79	
58	9	55	14	3	91	48	M6	19	6.6	40	30	39	6.74	5.92×10^{-3}	1.74	2.96	
73	11	68	16.5	3	123	61	M8	22	9	50	59.3	74.1	27.9	1.43×10^{-2}	3.95	4.51	
90	12	80	25	4	136	75	M10	28	11	50	62.2	83	58.2	3.52×10^{-2}	6.22	7.16	

Unit: mm

Flange diameter D ₅	Overall length L ₂	H ₁	B ₆	r	Greasing hole d ₀	P ₃	Mounting hole			Nut mass kg
							d _{s1}	d ₂	h	
51	50 ⁰ _{-0.2}	7	18	0.5	2	40	4.5	8	4.4	0.23
58	63 ⁰ _{-0.2}	9	22.5	0.5	2	45	5.5	9.5	5.4	0.33
65	71 ⁰ _{-0.3}	9	26.5	0.5	3	52	5.5	9.5	5.4	0.45
77	80 ⁰ _{-0.3}	10	30	0.5	3	62	6.6	11	6.5	0.58
100	100 ⁰ _{-0.3}	14	36	0.5	4	82	9	14	8.6	1.46
124	125 ⁰ _{-0.3}	16	46.5	1	4	102	11	17.5	11	2.76

