

Miniature Stroke Rotary Bushing



CAT-57118

Micro size with a shaft diameter of 2 mm is newly introduced!



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Very smooth rotation and reciprocating linear motion in axial direction at the same time!

IK Miniature Stroke Rotary Bushing





Micro size and super precision

The smallest size is newly introduced!

100

Shaft diameter 2 mm! Outer ring outside diameter 5 mm!

High reliability super precision

IN Miniature Stroke Rotary Bushing is a very compact linear motion rolling guide with a low sectional height, and can achieve both rotary motion and reciprocating motion in the axial direction at the same time.

Including the smallest model having a shaft diameter of 2 mm, this series features smooth motion with low frictional resistance, and is used in micro mechanisms of machines and equipment requiring precise rotation and linear motion such as measuring instruments, IC manufacturing machines, and precision equipment.



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Miniature Stroke Rotary Bushing

Rotary and linear motion

Steel balls held in a retainer are assembled into an outer ring having a cylindrical bore raceway, so linear motion as well as rotary movement can be achieved.

Extremely accurate

The outer ring and shaft are precisely superfinished after heat treatment. The assembled set, which consists of an outer ring, shaft and very precise steel balls held in a retainer, is set to zero or minimal preload. So extremely accurate operation can be achieved both in rotary and linear motion.

Very smooth movement

All parts are precisely finished and assembled to obtain an optimal preload. This series offers very smooth and stable movement as well as high accuracy with low frictional resistance.

Extremely compact size

Very small diameter steel balls are assembled in a very thin walled outer ring. So the assembled set is extremely compact in sectional height. The smallest size model has a shaft diameter of 2 mm and an outside diameter of outer ring of 5 mm.





Identification Number

The specification of Miniature Stroke Rotary Bushing is indicated by the identification number, consisting of a model code, a size, a length, and a selection code.

Assembled set	With shaft S Without shaft S	TS TS	<u>4</u> _ <u>4</u>		20 20	<u> </u>	<u>5 – 5</u> 5	<u>0</u> / <u>N</u>	<u>И1</u>
Parts	Outer ring Ball cage Shaft	R K F	4	6 8 6	<u>3 20</u>	<u>1</u> !	<u>5</u> 5	<u>A / M</u> <u>A</u> 0 <u>A / M</u>	<u>И1</u> И1
Model code				_					
Series Assembled set with shaft STSI Assembled set without shaft STS Outer ring	Shaft diameter Indicate the shaft diameter in mm. For an assembled set without shaft and for a ball cage, indicate an inscribed circle diameter. Bore diameter of outer ring Indicate the bore diameter of outer ring in mm. For a ball cage, indicate a circumscribed circle Outside diameter of outer ring Indicate the outside diameter of outer ring in mm. For a ball cage, indicate a circumscribed circle	Size							
OR…A Ball cage BK…A	Length of outer ring Indicate the length of outer ring in mm. Length of ball cage Indicate the length of ball cage in mm. Length of shaft Indicate the length of shaft in mm.	Lenath	, , , , ,						
Shaft SF…A	Selection M1 select group : M1 Table 2 s M2 select group : M2 When as M3 select group : M3 selection	shows ssem n cod	s selecti abling p le.	on code earts, c	es and (combine	dimensi e parts	onal tole with th	erances. e same	Selection code

The accuracy of Miniature Stroke Rotary Bushing is shown below.

Table 1 Accuracy

Outside diameter of outer ring mm		Tolerance of outside diameter of outer ring µm		Maximum radial runout of outside diameter of outer ring	Tolerance of length of outer ring and shaft mm	
over	incl.	high	low	μm		
3	6	0	-5			
6	10	0	-6	8	+0.1	
10	18	0	-8			
18	30	0	—9	9		

Table 2 Selection codes and dimensional tolerances

unit: µm										
Selection code	Tolera outer ri	nce of ng bore	Tolera inscribe dian	nce of ed circle neter	Tolerance of shaft diameter					
	high	low	high	low	high	low				
M1	-1	-3	-1	-3	0	-1				
M2	-2	-4	-2	-4	-1	-2				
MЗ	-3	-5	-3	-5	-2	-3				

Basic static load rating

The basic static load rating is defined as the static radial load that gives a prescribed constant contact stress at the center of the contact area between the rolling element and raceway receiving the maximum load.

The load rating of Miniature Stroke Rotary Bushing is given for the case when the steel balls assembled in a retainer are positioned within the outer ring raceway without escaping from it and equally share an applied load.

Fit

Miniature Stroke Rotary Bushing is set to minimal preload condition to obtain high operating accuracy. For Miniature Stroke Bushing with shaft, a slight clearance fit between the outer ring and the housing is recommended to avoid any undesirable influence on the inscribed circle diameter.

Also, when assembling the outer ring, ball cage and shaft, select the outer ring and shaft which have the same selection code and match them to a ball cage.

Precaution for Use

- The outer ring should have a clearance fit in the housing. When the outer ring must be fixed in the axial direction to the housing, use a stop ring, etc. at the end of the outer ring or use synthetic adhesive.
- For assembly, the outer ring is fixed in the housing bore at first, then the shaft is inserted into the ball cage. As the shaft is inserted, the ball cage moves in the axial direction in the outer ring. The ball cage must be located at the correct position after assembly. A convenient way of locating the ball cage is to shift the position of the ball cage prior to assembly to the inserting direction for the distance of 1/2 of the inserting distance of the shaft.
- When inserting the shaft into a ball cage, be careful not to damage the steel balls and raceways by twisting the shaft or applying a shock load.
- Miniature Stroke Rotary Bushing can be used with oil or grease lubrication. When lubricating with grease, the grease is usually lightly smeared on the raceways of the shaft and outer ring. A good quality lithium-soap base grease is recommended.

IIK Miniature Stroke Rotary Bushing STSI、STS、OR…A、BK…A、SF…A





Outer ring

			Outer ring	Ball cage				
Shaft diameter	Model number of the assembled set without shaft	Identification number	Mass (Ref.)	Nominal dimen		nsions	Identification number	Mass (Ref.)
mm			g	Е	D	L1		g
		OR 3 5 10 A	0.9			10	BK 2 3 5 A	0.1
2	STS 2 <i>L</i> ₁ - <i>L</i> _b	OR 3 5 15 A	1.3	3.2	5	15	BK 2 310A	0.3
		OR 5 710A	1.5		10	BK 3 510A	0.7	
3	STS 3 <i>L</i> 1- <i>L</i> b	OR 5 7 20 A	2.9	5	7	20	BK 3 5 15 A	1.1
		OR 5 7 30 A	4.4			30	BK 3 5 20 A	1.4
		OR 6 8 10 A	1.7			10	BK 4 610A	0.9
4	STS 4 L1-Lb	OR 6 8 20 A	3.4	6	8	20	BK 4 615A	1.3
		OR 6 8 30 A	5.2			30	BK 4 6 20 A	1.8
		OR 71010A	3.1	7	10	10	BK 5 710A	1.0
5	STS 5 <i>L</i> 1- <i>L</i> b	L _b OR 7 10 20 A	6.3			20	BK 5 715A	1.6
		OR 71030A	9.4			30	BK 5 720A	2.0
6	STS 6 <i>L</i> ₁- <i>L</i> ♭	OR 81120A	7.0			20	BK 6 810A	1.2
		OR 81130A	10.5	8	11	30	BK 6 815A	1.8
		OR 81140A	14.1			40	BK 6 820A	2.3
		OR 10 13 20 A	8.5			20	BK 81010A	1.6
8	STS 8 L1-Lb	OR 10 13 30 A	12.7	10	13	30	BK 81015A	2.4
		OR 10 13 40 A	17.0			40	BK 81020A	3.2
		OR 12 18 20 A	22.2			20	BK 10 12 15 A	2.8
10	STS 10 <i>L</i> ₁ - <i>L</i> _b	OR 12 18 30 A	33.3	12	18	30	BK 10 12 20 A	3.8
		OR 12 18 43 A	47.7			43	BK 10 12 25 A	4.8
		OR 14 20 25 A	31.4			25		4.0
10	STS 12 <i>L</i> 1- <i>L</i> b	OR 14 20 30 A	20 30 A 37.7			30	BK 12 14 20 A	4.3
12		OR 14 20 35 A	44.0	14	20	35	BK 12 14 25 A	5.4
		OR 14 20 40 A	50.3			40	BK 12 14 30 A	6.1

Note (1): This figure shows the static load rating when the steel balls assembled in a retainer do not escape the raceway of outer ring and the balls equally share an applied load. Remark: "L1", "Lb", and "L" in the model number of the assembled set - either with shaft or without shaft - indicate "length of outer ring", "length of

ball cage" and "shaft length" respectively.

products are avaiable from: MARYLAND METRICS

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IKO



Ball cage



Shaft

			Basic static load		Model number of	Chaft			
Nomi	inal dime mm	nsions	C_0	Identification number Mass (Ref.) Nominal dimensions mm				the assembled set with shaft	Shaft diameter
Fw	Ew	Lb	N		g	F	L		mm
		_	10.5		0.5				
2	3.2	5	10.5	SF 2 20 A	0.5	2	20	STSI 2 L1-Lb-L	2
		10	21.0	5F 2 30 A	0.7		30		
		10	38.4						
3	5	15	57.7	SF 3 50 A	2.8	3	50	STSI 3 L1-Lb-L	3
		20	76.9	SF 3 60 A	3.3		60		
		10	59.5						
4	6	15	89.3	SF 4 50 A	4.9	4	50	STSI 4 L1-Lb-L	4
		20	119	SF 4 60 A	5.9		60		
		10	81.0						
5	7	15	121	SF 5 50 A 7.7 50	50	STSI 5 L1-Lb-L	5		
Ŭ		20	162	SF 5 80 A	12.3	, C	80		
		10	103						
6	8	15	154	SF 6 50 A	11.1	6	50	STSL 6 L1-Lb-L	6
Ũ	Ũ	20	206	SF 6 80 A	17.7	Ŭ	80		Ŭ
		10	105	SE 8 50 A	19.7		50		
8	10	15	157	SF 8 80 A	31.5	8	80	STSL 8 L1-Lb-L	8
Ũ	10	20	209	SF 8 90 A	35.5	Ŭ	90		Ŭ
		15	101	SE 10 80 A	49.3		80		
10	12	20	254	SF 10 100 A	61.6	10	100	STSI 10 / 1-/ 1-/	10
10	12	25	318	SF 10 120 A	74.0		120		10
		20	010	51 10 120 A	74.0		120		
		20	341	SF 12 80 A	71.0		80		
12	14	25	427	SF 12 100 A	88.8	12	100	STSI 12 L1-Lb-L	12
		30	512	SF 12 120 A	106.5		120		

Example of identification number (assembled set with shaft)



8

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51

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