

MST

Miniature Stroke Model MST

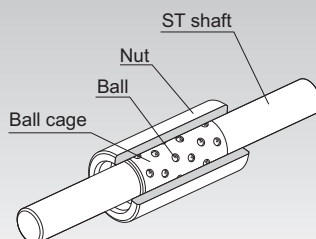


Fig.1 Structure of Miniature Stroke Model MST

Structure and Features

Model MST consists of an ST shaft, ball cage and nut. These components can freely be combined according to the application. The sectional shape is small, the clearance is minimal and the motion is extremely light and smooth. Accordingly, model MST can be used in a variety of small, precision measuring equipment such as optic measuring instrument's spindle, pen plotter, OA equipment, computer terminals, automatic scale, digital length measuring machine and solenoid valve.

[Highly Accurate Bearing]

Precision steel balls (sphericity in mutual difference: 0.0003 mm) compliant with JIS B 1501 are incorporated in a copper alloy ball cage to ensure high accuracy. The ball cage serves to prevent the balls from falling off with a unique ball-retaining design.

[Highly Durable Bearing]

The nut of the ST shaft uses a selected material, and is heat-treated and ground. In addition, the raceways are finished with ultra fine finish. The rows of balls are densely arranged in the ball cage, and the balls are placed so that the ball raceways do not overlap with each other. It enables this model to be used over a long period without wear and to demonstrate high durability.

[Compact Bearing]

Use of a combination of balls with a 1 mm diameter and a thin nut allows a small sectional shape and space-saving design.

[Bearing with Extremely Low Frictional Resistance]

Since the balls are in point-contact with the raceways, rolling loss is minimal and rolling motion with low-friction is achieved.

Fit

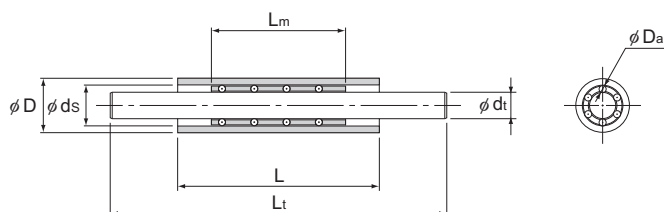
The inner surface of the housing must be finished to H6 to H7, and secured with an adhesive after the nut is inserted.

When press fitting is required, mounting the nut to the hole will reduce the inner diameter. Therefore, be sure to check the inner diameter after press fitting the nut and adjust the shaft diameter so that a correct preload is achieved. Also make sure that the preload must not exceed $-2\mu\text{m}$.

Travel Distance of the Ball Cage

The ball cage can travel up to 1/2 of the stroke length (ℓ_s) of the nut or the ST shaft in the same direction.

Model MST



Combined model No.	Ball cage					Nut	
	Model No.	D_s	L_m (A)	Permissible load C_0 N	Mass g	Model No.	D
MST 3-A:B:C	M3510	1	10	68.6	0.7	S5710	7 $\begin{smallmatrix} 0 \\ \square 0.006 \end{smallmatrix}$
	M3515		15	98	1.1	S5720	
	M3520		20	137	1.4	S5730	
MST 4-A:B:C	M4610	1	10	78.4	0.9	S6810	8 $\begin{smallmatrix} 0 \\ \square 0.006 \end{smallmatrix}$
	M4615		15	118	1.4	S6820	
	M4620		20	157	1.9	S6830	
MST 5-A:B:C	M5710	1	10	98	1.1	S71010	10 $\begin{smallmatrix} 0 \\ \square 0.006 \end{smallmatrix}$
	M5715		15	137	1.7	S71020	
	M5720		20	186	2.3	S71030	
MST 6-A:B:C	M6810	1	10	108	1.2	S81120	11 $\begin{smallmatrix} 0 \\ \square 0.011 \end{smallmatrix}$
	M6815		15	157	2	S81130	
	M6820		20	216	2.6	S81140	

Note: If the radial clearance needs to be zero or below, add symbol $\square$ at the end of the model number.

(Example) MST5-203080 C1

Combined radial clearance
Symbol for zero or below

Combination of models M5720, S71030 and T580.

Model number coding

MST 4-10 20 60 M

ST shaft outer diameter dimension (mm) Nut length (mm) (B) Using stainless steel

Ball cage length (mm) (A) ST shaft length (mm) (C)

Combined model number
(ball cage): M4610 (nut): S6820 (ST shaft): T460 Combination of these components

Note: The model numbers of ball cage, nut and ST shaft are indicated in the corresponding specification table.

Unit: mm

				ST shaft				Combined radial clearance μm
	d _s	L (B)	Mass g	Model No.	d _i	L _i (C)	Mass g	
	5 ±0.002	10 20 30	1.4 2.9 4.5	T350 T360	3 $\begin{smallmatrix} 0 \\ \square 0.003 \end{smallmatrix}$	50 60	2.8 3.3	$\square 2$ to +5
	6 ±0.002	10 20 30	1.7 3.6 5	T450 T460	4 $\begin{smallmatrix} 0 \\ \square 0.003 \end{smallmatrix}$	50 60	4.5 5.6	$\square 2$ to +5
	7 ±0.002	10 20 30	2.9 6.3 10	T550 T580	5 $\begin{smallmatrix} 0 \\ \square 0.003 \end{smallmatrix}$	50 80	7.1 12.6	$\square 2$ to +5
	8 ±0.002	20 30 40	7.1 10 12.6	T650 T680	6 $\begin{smallmatrix} 0 \\ \square 0.003 \end{smallmatrix}$	50 80	10 16.6	$\square 2$ to +5

LM Stroke