

## 1. Product Introduction

### High load and high moment capacity

The ST Miniature Stroke Slide Series is designed with two rows of balls. The ball track has a gothic profile design with a 45 degree contact angle to achieve equal load capacity in a mono block. This provides more space for the larger rolling elements while enhancing the load and moment capacity.

### High running accuracy and smoothness

The steel balls of the ST miniature stroke slide series roll on the rail without recirculation, resulting in excellent running behavior, smoothness, low friction, and high accuracy without vibration.

### Dual plate design

The ST Miniature Stroke Slide Series adopts a pair of end plates into the design. Both the center rail and bearing block sides have a plate installed that prevents the linear guide from over-stroking.

### Easy mounting

The mounting of the ST Miniature Stroke Slide Series is accomplished by fitting the fixing screw downward into the count bore of the rail by intersecting the hole pattern on the block and cage within the hole pitch. The one piece cage therefore does not influence the mounting of the rail while the preload is preset by ball sorting.



### Temperature

The ST Miniature Stroke Slide Series can withstand temperatures of up to 150 °C. There are two treatment options for higher temperature applications:

T1 : 200°C  
T2 : 300°C

Applying treatments for higher temperature applications will reduce the load capacity.

### Anti-corrosion feature

The ST Miniature Stroke Slide Series is composed of quenched hardened process stainless steel for the rail, block, and steel balls. The block plate and screws are made of stainless steel as well – providing a great model for maintenance and inspection applications.

## 2. Technical Information

### Accuracy

The ST Miniature Stroke Slide Series has three grades for accuracy. Precision (P), High (H) and Normal (N).

### Preload

The ST Miniature Stroke Slide series has two preload classes, V0 and V1, as described in the MR miniature linear guide series preload table.

### Geometric and positional accuracy of the mounting surface

The inaccuracy of the mounting surfaces will affect the running accuracy and reduce the operating lifetime of the ST Miniature Stroke Slide. If the inaccuracies of the mounting surface exceed the values calculated by formulas (15), (21), and (17), the lifetime will be shortened, as calculated by formulas (19) and (20).

$$e_{1(mm)} = b_{(mm)} \cdot f_1 \cdot 10^{-4} \quad \text{--- (15)}$$

$$e_{2(mm)} = \left( \frac{d}{L_C} \frac{(mm)}{(mm)} \right) \cdot f_2 \cdot 10^{-5} \quad \text{--- (21)}$$

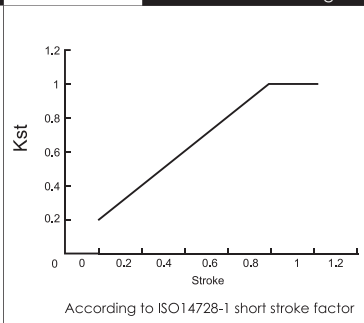
$$e_{3(mm)} = f_3 \cdot 10^{-3} \quad \text{--- (17)}$$

Rating life calculation

$$L = K_{st} \left( \frac{C_{1008}}{P} \right)^3 \cdot 10^5 \quad \text{--- (19)}$$

$$L_h = \frac{L}{2 \cdot s \cdot n \cdot 60} = K_{st} \cdot \frac{L}{v_m \cdot 60} \quad \text{--- (20)}$$

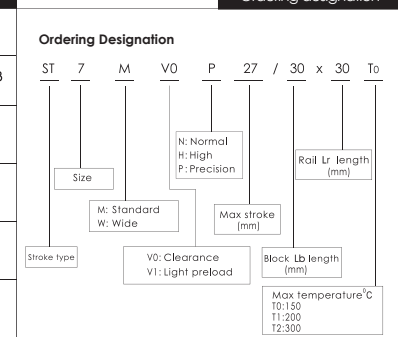
Short stroke factor diagram



The mounting surface geometric and positional accuracy factor

Size	V0			V1		
	f <sub>1</sub>	f <sub>2</sub>	f <sub>3</sub>	f <sub>1</sub>	f <sub>2</sub>	f <sub>3</sub>
7	5	200	4	3	130	3
9	5	300	6	4	200	4
12	6	380	8	4	250	6
15	7	530	12	5	350	8

Ordering designation



### Lubrication

Lubrication of the ST Miniature Stroke Slide Series can be performed by adding the lubricant onto the raceway of the rail.

### Rating life L

The rating life of the ST Miniature Stroke Slide Series can be calculated by formulas (19) and (20), in accordance with ISO 14728-1.

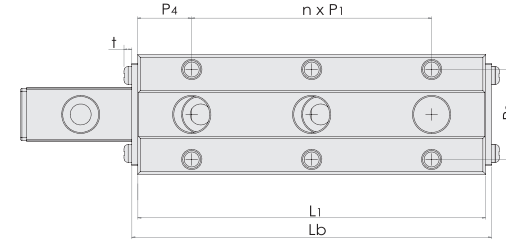
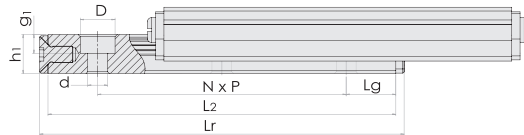
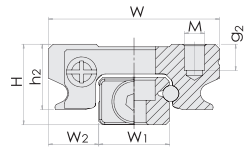
### Height and Chamfered Reference Edge

The tables for the chamfered reference edge corner and the height of the reference edge for the MR Miniature Linear Guide Series are also suitable for the ST Miniature Stroke Slide Series.

### 3. Ordering Information

An example of the ST Miniature Stroke Slide Series part numbering system is shown above.

4. Dimensions and Specifications



Model Code	Fabricate Dimensions (mm)		Rail Dimensions (mm)				Block Dimensions (mm)						Model Code
	H	W <sub>2</sub>	P	W <sub>1</sub>	h <sub>1</sub>	D x d x g <sub>1</sub>	P <sub>1</sub>	P <sub>2</sub>	W	h <sub>2</sub>	M x g <sub>2</sub>	t	
ST7M	8	5	15	7	4.7	4.2x2.4x2.3	15	12	17	6.5	M2x2.5	1	ST7M
ST9M	10	5.5	20	9	5.5	6x3.5x3.5	20	15	20	7.8	M3x3.0	1.3	ST9M
ST12M	13	7.5	25	12	7.5	6x3.5x4.5	25	20	27	10	M3x3.5	1.3	ST12M

Model Code	Max Stroke	Rail Dimensions (mm)				Block Dimensions (mm)				Load Capacities (N)		Static Moment (Nm)		
	L <sub>s</sub>	L <sub>r</sub>	L <sub>2</sub>	L <sub>g</sub>	N	L <sub>b</sub>	L <sub>1</sub>	P <sub>4</sub>	n	C <sub>1008</sub> (dyn)	C <sub>0</sub> (stat)	M <sub>r0</sub>	M <sub>p0</sub>	M <sub>y0</sub>
ST7M	27	30	28	6.5	1	30	28	6.5	1	910	1580	5.9	3.4	3.4
ST7M	41	45	43	6.5	2	45	43	6.5	2	1220	2500	9.1	8	8
ST7M	55	60	58	6.5	3	60	58	6.5	3	1490	3330	12.4	14.6	14.6
ST9M	38	40	38	9	1	40	38	9	1	1590	2773	13.1	6.8	6.8
ST9M	58	60	58	9	2	60	58	9	2	2080	4170	19.7	16	16
ST9M	78	80	78	9	3	80	78	9	3	2520	5547	26.2	29.2	29.2
ST12M	44	50	47.4	11.2	1	50	47.4	11.2	1	2550	4340	27	16	16
ST12M	69	75	72.4	11.2	2	75	72.4	11.2	2	3350	6510	40.1	35.6	35.6
ST12M	94	100	97.4	11.2	3	100	97.4	11.2	3	4050	8670	54	62.8	62.8

Linear Guide Service Life Calculation and Model Selection

Company /		Date (DD/MM/YEAR) /	
Address /		Tel /	
Contact /	Department /	Machine Model /	
Application(Axial) /	Amount required per Machines /	Sample Required Date (DD/MM/YEAR)/	
Application Drawing Provided? <input type="checkbox"/> Yes <input type="checkbox"/> No			Production Date (DD/MM/YEAR)/
Assembly Specification / Way of Assembling			
Rails per Axial	<input type="checkbox"/> I (1)	<input type="checkbox"/> II (2)	<input type="checkbox"/> III (3) <input type="checkbox"/> Other _____
Blocks per Rail	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3 <input type="checkbox"/> Other _____
Distribution of Blocks (mm)	$l_0$ : _____ (Distance Between Blocks on the same rail)		$l_1$ : _____ (Distance Between Adjacent Blocks on different rails)
Center of Mass of load(mm)	$l_{mx}$ : _____	$l_{my}$ : _____	$l_{mz}$ : _____
Mass of Load (kg)	_____ (Please include mounting plate weight)		
Driver Position (mm)	$l_{dz}$ : _____	$l_{dy}$ : _____	
External Force Applying Position (mm)	$l_{Fx}$ : _____	$l_{Fy}$ : _____	$l_{Fz}$ : _____
Axial Component (N)	$F_x$ : _____	$F_y$ : _____	$F_z$ : _____
One Rail Per Axial			
Two Rails Per Axial			
Motion Specification			
Drive Mechanism	<input type="checkbox"/> Linear Motor <input type="checkbox"/> Ball Screw <input type="checkbox"/> Pneumatic Cylinder <input type="checkbox"/> Belt <input type="checkbox"/> Hydraulic cylinder <input type="checkbox"/> Rack and Pinion <input type="checkbox"/> Manual <input type="checkbox"/> Other _____		
Specification	Stroke Distance (mm):	Maximum Speed (m/sec):	
	Acceleration (m/sec <sup>2</sup> ):	Deceleration (m/sec <sup>2</sup> ):	
	Stroke Time (sec):	Frequency (hr <sup>-1</sup> ):	
	Daily Operation Time (hr):	Expected Service Life (Year):	
Environment and Lubrication Requirements			
Environment	<input type="checkbox"/> General <input type="checkbox"/> Clean room(Grade/Class _____) <input type="checkbox"/> Vacuum / Low Pressure <input type="checkbox"/> Small Amount of Dust (Substance _____) <input type="checkbox"/> Large Amount of Dust (Substance _____) <input type="checkbox"/> Liquid (Substance _____) <input type="checkbox"/> Special Gas (Substance _____) <input type="checkbox"/> Other _____		
cpc Initial Lubrication	<input type="checkbox"/> Pre-lubricated (Regular Amount) <input type="checkbox"/> Pre-lubricated (Small Amount) <input type="checkbox"/> None <input type="checkbox"/> Other _____		
cpc Initial Antirust Method	<input type="checkbox"/> Apply Antirust Oil On the Surface <input type="checkbox"/> Apply Grease On the Surface <input type="checkbox"/> None <input type="checkbox"/> Other _____		
Customer Initial Lubrication	<input type="checkbox"/> cpc Grease only <input type="checkbox"/> In addition to cpc Grease, Inject Customer's Grease (Grease : _____) <input type="checkbox"/> Remove cpc Grease And Inject Customer's Grease (Solvent: _____) (Grease: _____) <input type="checkbox"/> Other _____		
End User Re-lubrication Method	<input type="checkbox"/> Manual <input type="checkbox"/> Central Oiling System <input type="checkbox"/> None <input type="checkbox"/> Other _____		

