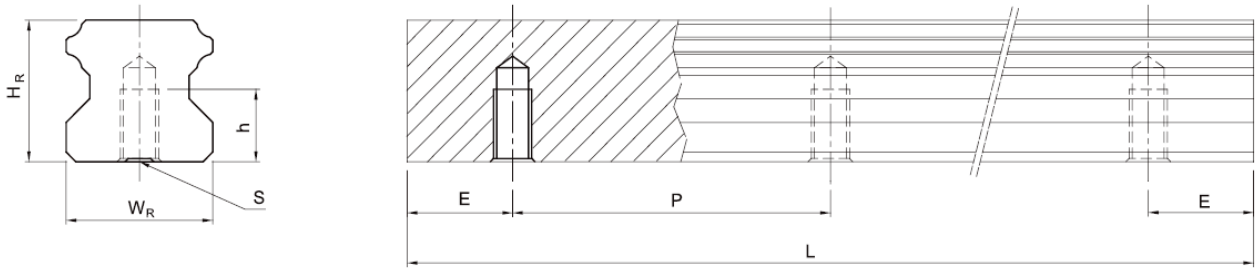
(4) Dimensions for MSQ-T (Rail Mounting from Bottom)



Model No.	Dimensions of Rail (mm)						Weight
	WR	HR	S	h	P	E	（kg/m）
MSQ-T15	15	15	M5X0.8P	8	60	20	1.48
MSQ-T20	20	17.5	M6X1P	10	60	20	2.29
MSQ-T25	23	22	M6X1P	12	60	20	3.35
MSQ-T30	28	26	M8X1.25P	15	80	20	4.67
MSQ-T35	34	29	M8X1.25P	17	80	20	6.51
MSQ-T45	45	38	M12X1.75P	24	105	22.5	10.87
MSQ-T55	53	44	M14X2P	24	120	30	15.67
MSQ-T65	63	53	M20X2.5P	30	150	35	21.73

2.2 MSZ Series - High Rigidity Roller Type Linear Guideway

2.1.1 MSZ series roller type rolling linear guide pair features

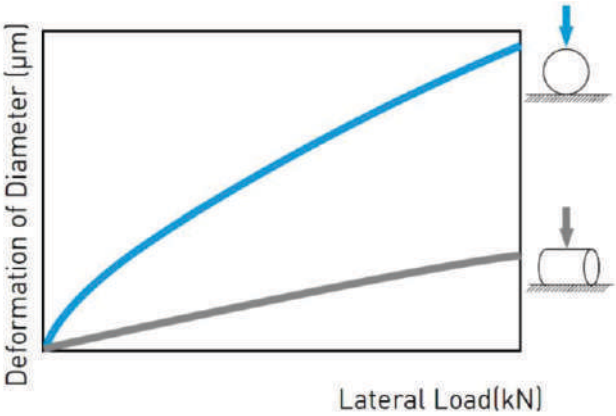
MSZ series roller type rolling linear guide pair replace the steel ball with the roller rolling body, designed for the realization of ultra-rigid and overweight load capacity. Through the line contact mode between the rolling body and the guide and the slide block, the rolling body can only form a small amount of elastic deformation when bearing high load. The design of 45° contact Angle makes the whole reach four directions of high rigidity and high load capacity characteristic table Now. Through the realization of ultra-high rigidity, the machining accuracy can be greatly improved to meet the requirements of high precision; Due to the characteristic of heavy load, the service life of linear rolling guide pair is extended. Very suitable for high speed automation industry machinery and high rigidity requirements of the equipment use.

(1) Optimal design

FEM analysis was performed to determine the optimal structure of the block and the rail. The unique design of the circulation path allows the MSZ series linear guideway to offer smoother linear motion.

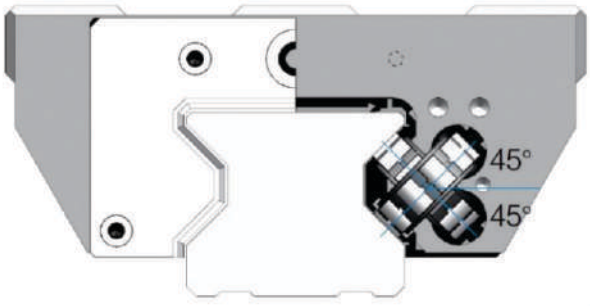
(2) Super high rigidity

The MSZ series is a type of linear guideway that uses rollers as the rolling elements. Rollers have a greater contact area than balls so that the roller guideway features higher load capacity and greater rigidity. The figure shows the rigidity of a roller and a ball with equal volume.



(3) Super high load capacity

With the four rows of rollers arranged at a contact angle of 45-degrees, the MSZ series linear guideway has equal load ratings in the radial, reverse radial and lateral directions. The MSZ series has a higher load capacity in a smaller size than conventional, ball-type linear guideways.



(4) Operating life increased

Compare with the ball element, the contact pressure of rolling element is distributed on the line region. Therefore, stress concentration was reduced significantly and the MSZ series offers longer running life. The nominal life of MSZ series can be calculated by using Formula.

The acting load will affect the nominal life of a linear guideway. Based on the selected basic dynamic rated load and the actual load. The nominal life of ball type and roller type linear guideway can be calculated by Formula (7) respectively.

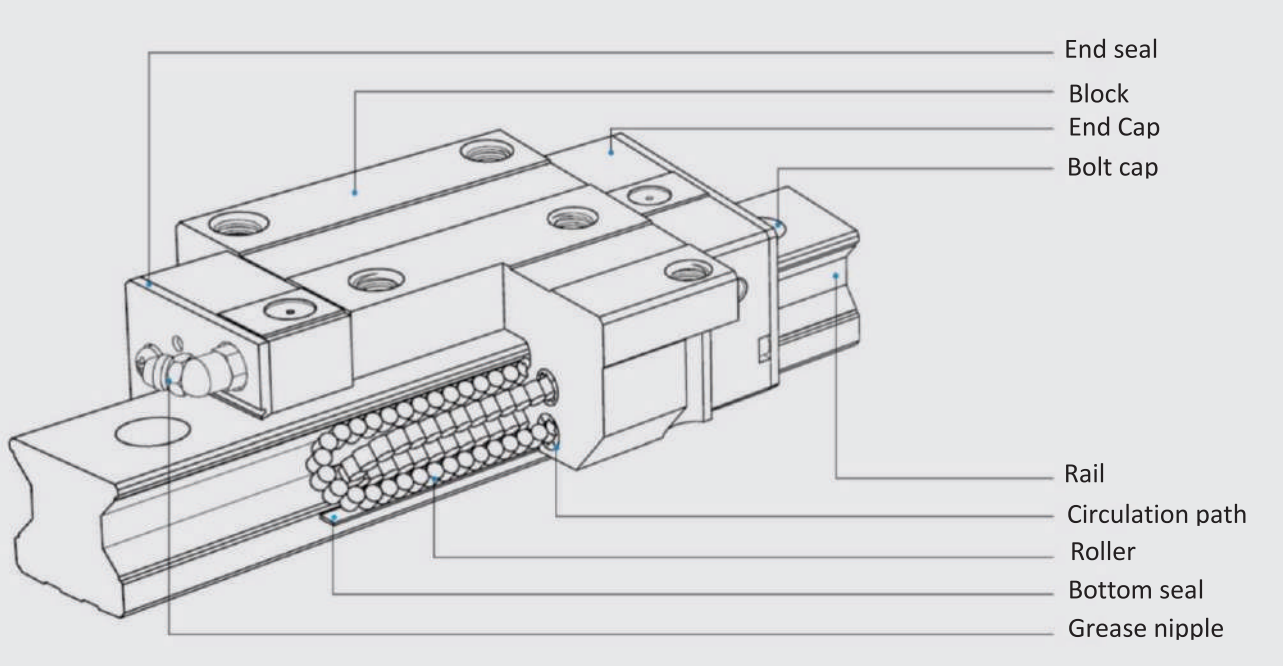
$$L = \left(\frac{C}{P}\right)^{\frac{10}{3}} \times 100km \qquad (7)$$

If the environmental factors are taken into consideration, the nominal life is influenced greatly by the motion conditions, the hardness of the raceway, and the temperature of the linear guideway. The relationship between these factors is expressed in Formula (8).

$$L = \left(\frac{f_h \times f_t \times C}{f_w P} \right)^{\frac{10}{3}} \times 100km \qquad (8)$$

L: Nominal life
C: Basic dynamic load rating
P: Actual load
f_h: Hardness factor
f_t: Temperature factor
f_w: Load factor

2.2.2 Construction of MSZ Series

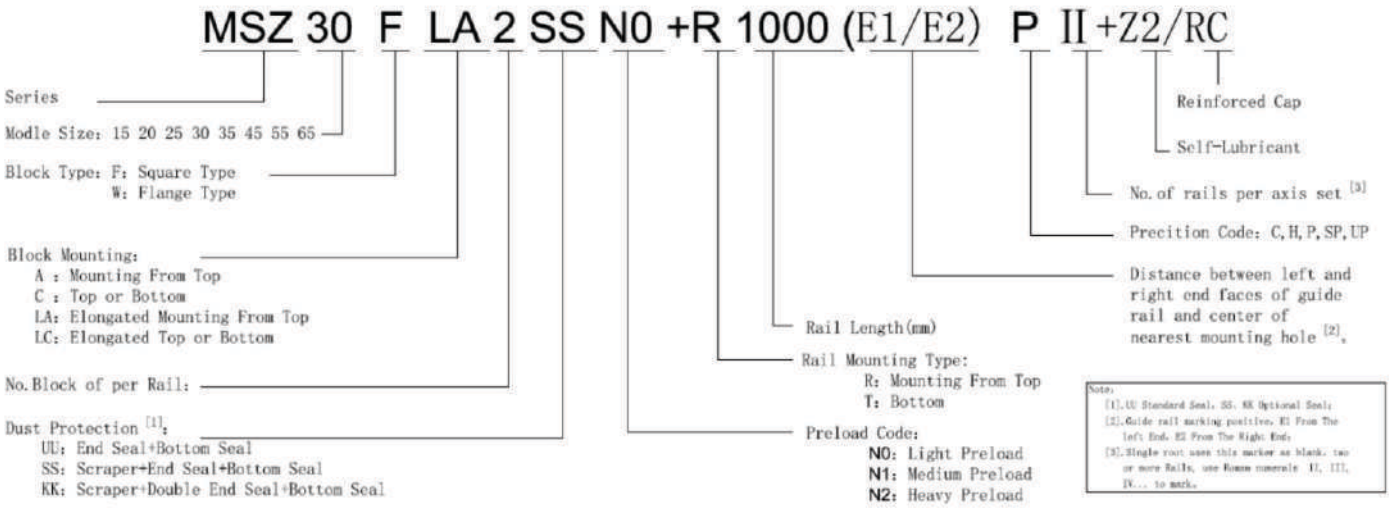


- Rolling circulation system: Block, Rail, End cap. Circulation path, rollers
- Lubrication system: Grease nipple and piping joint
- Dust protection system: End seal, Bottom seal, Cap, Double seals, and Scraper

2.2.3 Model Number of MSZ series

MSZ series linear guideways are classified into non-interchangeable and interchangeable types. The sizes of these two types are the same as one another. The main difference is that the interchangeable type of blocks and rails can be freely exchanged and they can maintain P-class accuracy. Because of strict dimensional control, the interchangeable type linear guideways are a wise choice for customers when rails do not need to be matched for an axis. The model number of the RG series identifies the size, type, accuracy class, preload class, etc

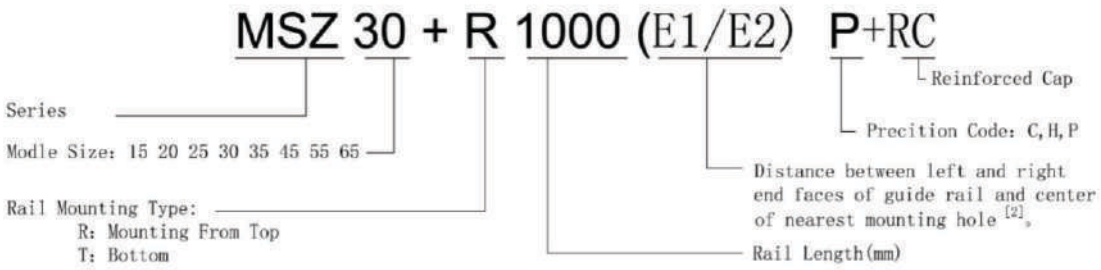
(1) Non-interchangeable type



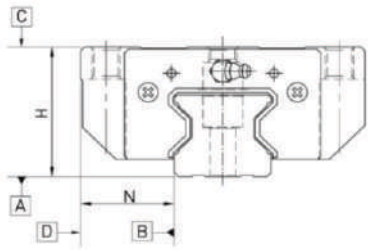
(2) Interchangeable type

◆ Model Number of MSZ Block

◆ Model Number of MSZ Rail



2.2.4 Accuracy Classes



The accuracy of MSZ series can be classified into normal (C), high (H), precision (P), super precision (SPI ultra-precision (UP), five classes. Please choose the class by referring the accuracy of applied equipment.

(1) Accuracy of non-interchangeable guideways

unit：mm

Series	MSZ-15、20			
Accuracy Classes	High(H)	Precision (P)	Super Precision (SP)	Ultra Precision(UP)
Dimensional tolerance of height H	±0.03	0 -0.03	0 -0.015	0 -0.008
Dimensional tolerance of width N	±0.03	0 -0.03	0 -0.015	0 -0.008
Variation of height H	0.01	0.006	0.004	0.003
Variation of width N	0.01	0.006	0.004	0.003
Running parallelism of block surface C to surface A	See Table 2-2-9			
Running parallelism of block surface D to surface B	See Table 2-2-9			

Table 2-2-1 Accuracy Standards

unit：mm

Series	MSZ-25、30、35			
Accuracy Classes	High(H)	Precision (P)	Super Precision (SP)	Ultra Precision(UP)
Dimensional tolerance of height H	±0.04	0 -0.04	0 -0.02	0 -0.01
Dimensional tolerance of width N	±0.04	0 -0.04	0 -0.02	0 -0.01
Variation of height H	0.015	0.007	0.005	0.003
Variation of width N	0.015	0.007	0.005	0.003
Running parallelism of block surface C to surface A	See Table 2-2-9			
Running parallelism of block surface D to surface B	See Table 2-2-9			

Table 2-2-2 Accuracy Standards

unit：mm

Series	MSZ-45、55			
Accuracy Classes	High(H)	Precision (P)	Super Precision(SP)	Ultra Precision(UP)
Dimensional tolerance of height H	±0.05	0 -0.05	0 -0.03	0 -0.02
Dimensional tolerance of width N	±0.05	0 -0.05	0 -0.03	0 -0.02
Variation of height H	0.015	0.007	0.005	0.003
Variation of width N	0.02	0.01	0.007	0.005
Running parallelism of block surface C to surface A	See Table 2-2-9			
Running parallelism of block surface D to surface B	See Table 2-2-9			

Table 2-2-3 Accuracy Standards

unit：mm

Series	MSZ-65			
Accuracy Classes	High(H)	Precision (P)	Super Precision(SP)	Ultra Precision(UP)
Dimensional tolerance of height H	±0.07	0 -0.07	0 -0.05	0 -0.03
Dimensional tolerance of width N	±0.07	0 -0.07	0 -0.05	0 -0.03
Variation of height H	0.02	0.01	0.007	0.005
Variation of width N	0.025	0.015	0.01	0.007
Running parallelism of block surface C to surface A	See Table 2-2-9			
Running parallelism of block surface D to surface B	See Table 2-2-9			

Table 2-2-4 Accuracy Standards

(2) Accuracy of interchangeable guideways

unit：mm

Series	MSZ-15、20			
Accuracy Classes	High(H)	Precision (P)	Super Precision(SP)	Ultra Precision(UP)
Dimensional tolerance of height H	±0.03	±0.015		
Dimensional tolerance of width N	±0.03	±0.015		
Variation of height H	0.01	0.006		
Variation of width N	0.01	0.006		
Running parallelism of block surface C to surface A	See Table 2-2-9			
Running parallelism of block surface D to surface B	See Table 2-2-9			

Table 2-2-5 Accuracy Standards

unit：mm

Series	MSZ-25、30、35			
Accuracy Classes	High(H)	Precision (P)	Super Precision(SP)	Ultra Precision(UP)
Dimensional tolerance of height H	±0.04	±0.02		
Dimensional tolerance of width N	±0.04	±0.02		
Variation of height H	0.015	0.007		
Variation of width N	0.015	0.007		
Running parallelism of block surface C to surface A	See Table 2-2-9			
Running parallelism of block surface D to surface B	See Table 2-2-9			

Table 2-2-6 Accuracy Standards

unit：mm

Series	MSZ-45、55			
Accuracy Classes	High(H)	Precision (P)	Super Precision(SP)	Ultra Precision(UP)
Dimensional tolerance of height H	±0.05	±0.025		
Dimensional tolerance of width N	±0.05	±0.025		
Variation of height H	0.015	0.007		
Variation of width N	0.02	0.01		
Running parallelism of block surface C to surface A	See Table 2-2-9			
Running parallelism of block surface D to surface B	See Table 2-2-9			

Table 2-2-7 Accuracy Standards

unit：mm

Series	MSZ-65			
Accuracy Classes	High(H)	Precision (P)	Super Precision(SP)	Ultra Precision(UP)
Dimensional tolerance of height H	±0.07	±0.035		
Dimensional tolerance of width N	±0.07	±0.035		
Variation of height H	0.02	0.01		
Variation of width N	0.025	0.015		
Running parallelism of block surface C to surface A	See Table 2-2-9			
Running parallelism of block surface D to surface B	See Table 2-2-9			

Table 2-2-8Accuracy Standards

(3) Accuracy of running parallelism

unit：μm

Rail Length（mm）	Accuracy			
	High（H）	Precision （P）	Super Precision（SP）	Ultra Precision（UP）
0~100	7	3	2	2
100~200	9	4	2	2
200~300	10	5	3	2
300~500	12	6	3	2
500~700	13	7	4	2
700~900	15	8	5	3
900~1100	16	9	6	3
1100~1500	18	11	7	4
1500~1900	20	13	8	4
1900~2500	22	15	10	5
2500~3100	25	18	11	6
3100~3600	27	20	14	7
3600~4000	28	21	15	7
4000~4500	30	22	15	9
4500~5000	31	23	16	10
5000~5500	32	24	16	11
5500~6000	33	24	17	12

Table 2-2-9 Accuracy of Running Parallelism

2.2.5 Preload

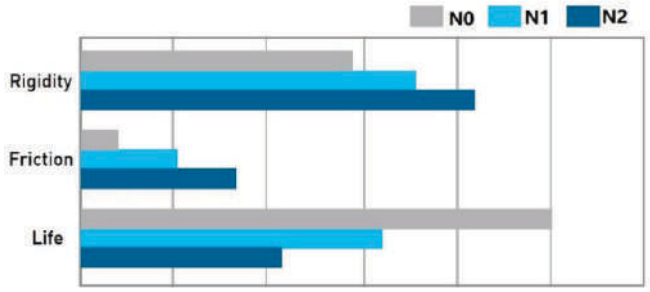
A preload can be applied to each guideway using oversized rollers. Generally, a linear motion guideway has negative clearance between the raceway and rollers to improve stiffness and maintain high precision. The RG series linear guideway offers three standard preloads for various applications and conditions.

Class	Code	Preload	Condition
Light Preload	N0	0.02C~0.04C	Certain load direction, low impact, low precision required
Medium Preload	N1	0.07C~0.09C	High rigidity required; high precision required
Heavy Preload	N2	0.12C~0.14C	Super high rigidity required, with vibration and impact

Table 2-2-10 Preload Class

Note: C in the table stands for rated dynamic load

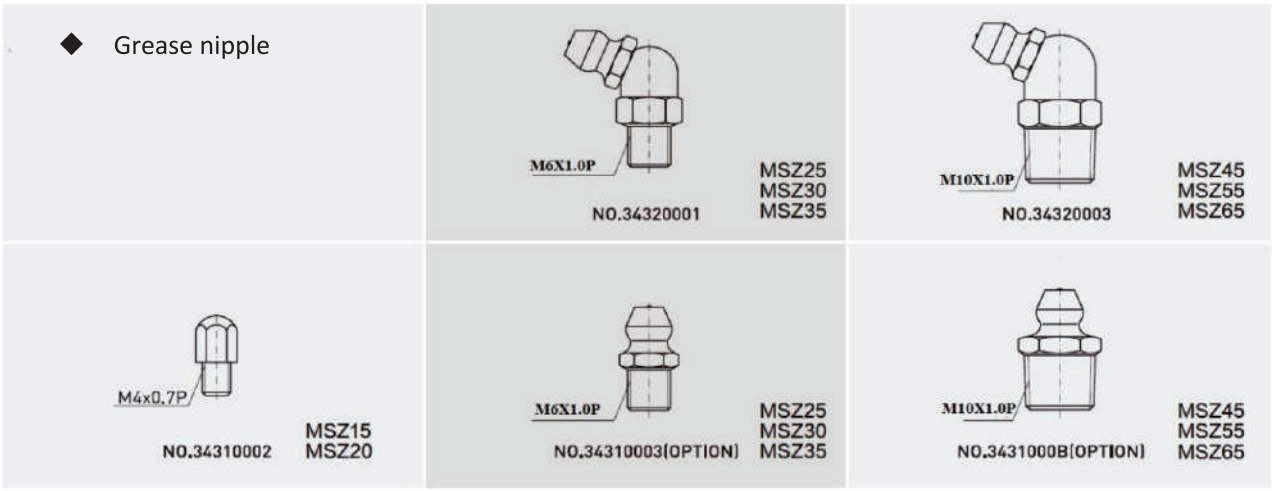
The figure shows the relationship between the rigidity, friction and nominal life. A preload no larger than N1 would be recommended for smaller model sizes to avoid over-preload affecting the life of the guideway.



2.2.6 Lubrication

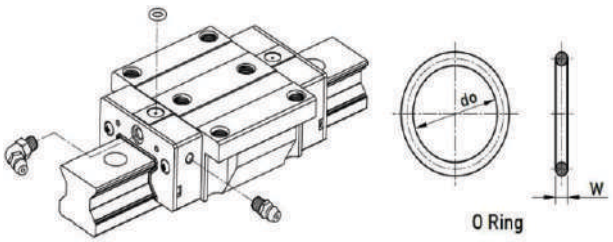
(1) Grease

◆ Grease nipple



Mounting location

The standard location of the grease fitting is at both ends of the block, but the nipple can be mounted in the side or the top of block. For lateral installation, we recommend that the nipple be mounted at the non-reference side, otherwise please contact us. It is possible to carry out the lubrication by using an oil-piping joint. The figure shows the locations of the grease fitting.



size	O-Ring		Lube hole at top: max. permissible depth for piercing
	do（mm）	W（mm）	T（mm）
MSZ15	2.5±0.15	1.5±0.15	3.45
MSZ20	2.5±0.15	1.5±0.15	4
MSZ25	7.5±0.15	1.5±0.15	5.8
MSZ30	7.5±0.15	1.5±0.15	6.2
MSZ35	7.5±0.15	1.5±0.15	8.65
MSZ45	7.5±0.15	1.5±0.15	9.5
MSZ55	7.5±0.15	1.5±0.15	11.6
MSZ65	7.5±0.15	1.5±0.15	14.5

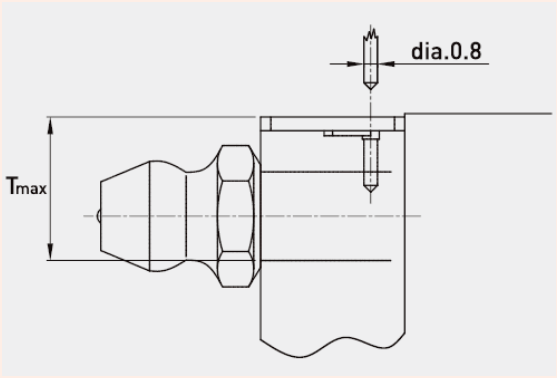


Table 2-2-11 O-Ring size and max. permissible depth for piercing

▶ The oil amount for a block filled with grease

unit：（cm^3）

Size	Heavy Load	Super Heavy Load	Size	Heavy Load	Super Heavy Load
MSZ15	3	-	MSZ35	12	14
MSZ20	5	6	MSZ45	19	23
MSZ25	7	8	MSZ55	28	35
MSZ30	9	10	MSZ65	52	63

Table 2-2-12 The oil amount for a block filled with grease

▶ Frequency of replenishment

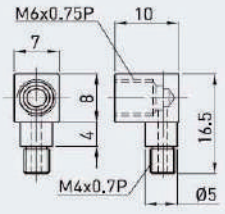
Check the grease every 100 km, or every 3-6 months.

(2) Oil

The recommended viscosity of oil is about 32~150cSt. If you need to use oil-type lubrication, please inform us.

◆ Types of oil piping joint

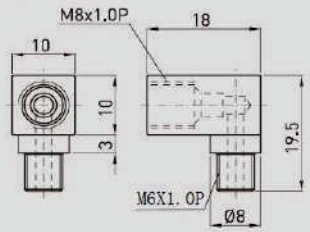
LF-64



NO.97000EA1

MSZ15
MSZ20

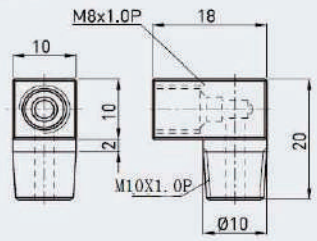
LF-76



NO.970002A1

MSZ25
MSZ30
MSZ35

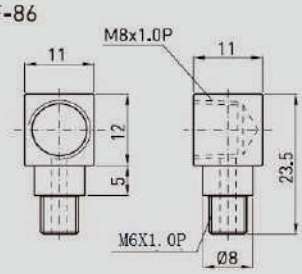
LF-78



NO.970006A1

MSZ45
MSZ55
MSZ65

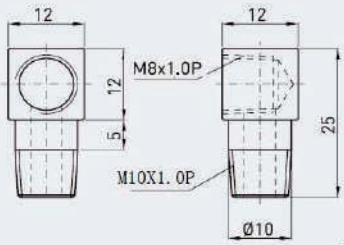
LF-86



NO.970004A1

MSZ25
MSZ30
MSZ35

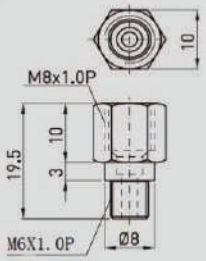
LF-88



NO.970008A1

MSZ45
MSZ55
MSZ65

SF-76



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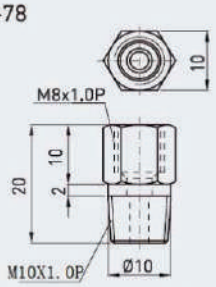
MSZ25
MSZ30
MSZ35

SF-78



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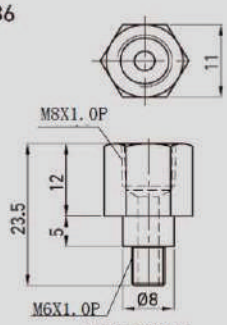
MSZ45
MSZ55
MSZ65

SF-86



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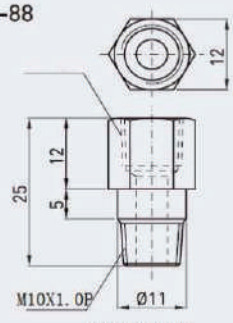
MSZ25
MSZ30
MSZ35

SF-88



NO.970007A1

MSZ45
MSZ55
MSZ65

◆ Oil feeding rate

unit： （cm^3/hr）

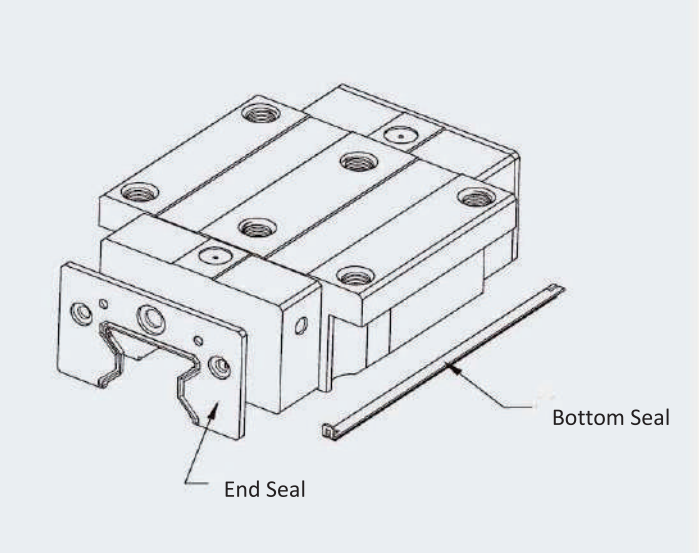
Size	Feed rate	Size	Feed rate
MSZ15	0.14	MSZ35	0.23
MSZ20	0.14	MSZ45	0.3
MSZ25	0.167	MSZ55	0.367
MSZ30	0.2	MSZ65	0.433

Table 2-2-13 oil feed rate

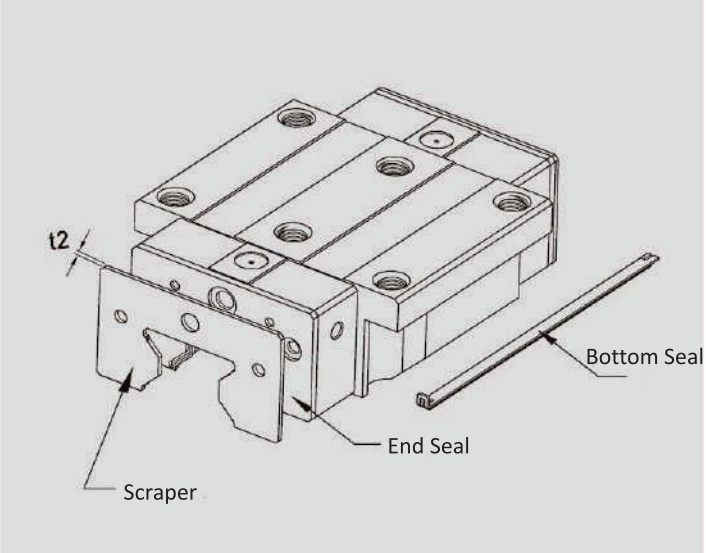
2.2.7 Dust Proof Accessories

(1) Codes of accessories

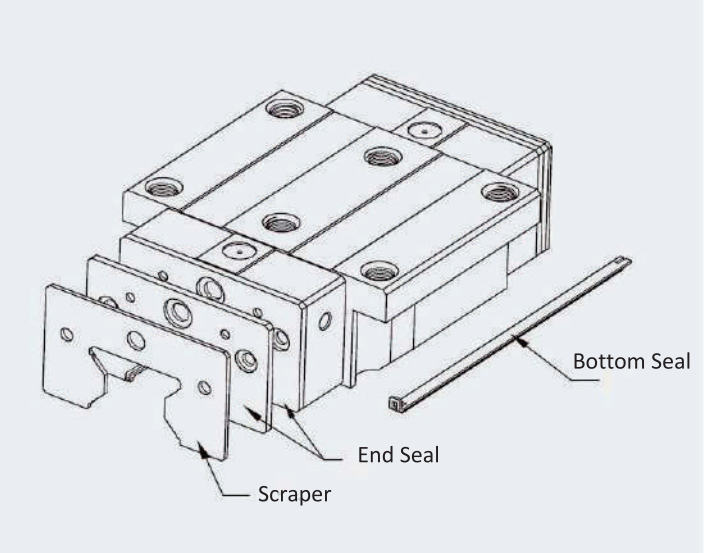
If the following accessories are needed, please add the code followed by the model number.



UU：End Seal+Bottom Seal



SS：Scraper+End Seal+Bottom Seal



KK：Scraper+Double End Seal+Bottom Seal

(2) End seal and bottom seal

To prevent life reduction caused by iron chips or dust entering the block.

(3) Double seals

Enhances the wiping effect, foreign matter can be completely wiped off.

unit：mm

Size	Thickness(t1)	Size	Thickness(t1)
MSZ15	2.2	MSZ35	2.5
MSZ20	2.2	MSZ45	3.6
MSZ25	2.2	MSZ55	3.6
MSZ30	2.4	MSZ65	4.4

Table 2-2-14 Dimensions of end seal

(4) Scraper

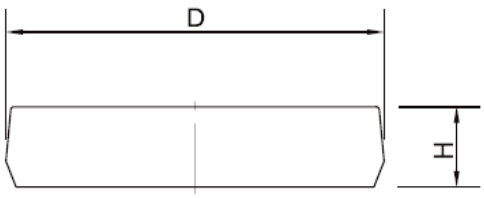
The scraper removes high-temperature iron chips and larger foreign objects.

unit：mm

Size	Thickness(t1)	Size	Thickness(t1)
MSZ15	1.5	MSZ35	1.5
MSZ20	1.5	MSZ45	1.5
MSZ25	1.5	MSZ55	1.5
MSZ30	1.5	MSZ65	1.5

Table 2-2-15 Dimensions of scraper

(5) Bolt caps for rail mounting holesCaps are used to cover the mounting holes to prevent chips or other foreign objects from collecting in the holes. The caps will be enclosed in each rail package.

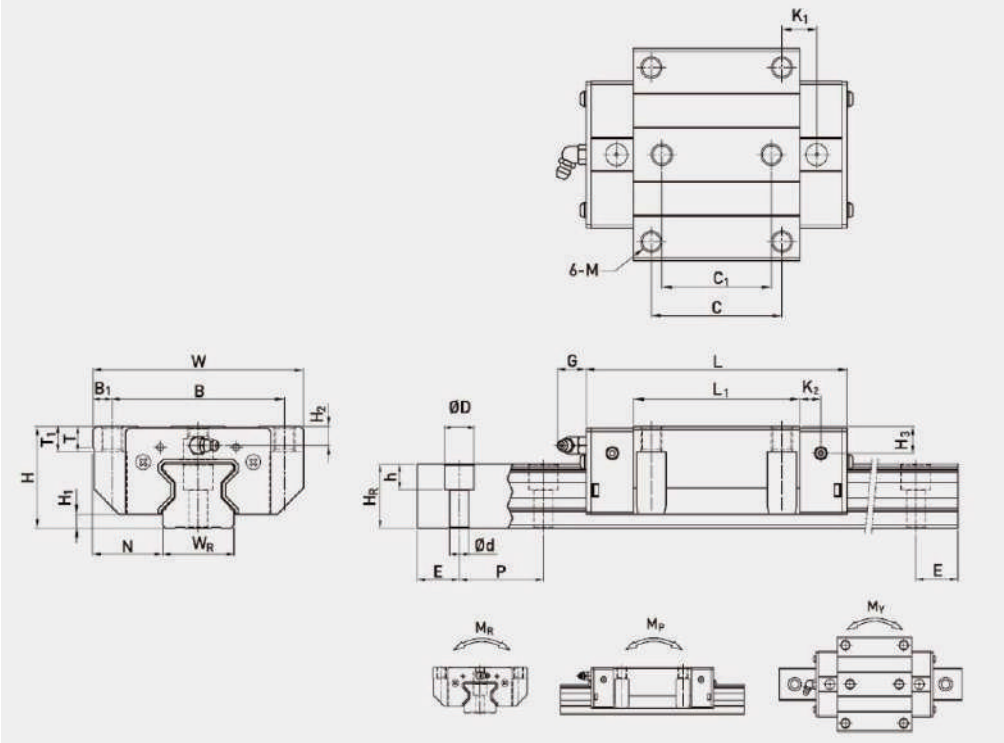


unit：mm

Rail size	Bolt size	Diameter(D)	Thickness(H)	Rail size	Bolt size	Diameter(D)	Thickness(H)
MSZ-R15	M4	7.65	1.1	MSZ-R35	M8	14.2	3.5
MSZ-R20	M5	9.65	2.5	MSZ-R45	M12	20.25	4.5
MSZ-R25	M6	11.15	2.5	MSZ-R55	M14	23.25	5.0
MSZ-R30	M8	14.2	3.5	MSZ-R65	M16	26.35	5.0

Table 2-2-16 Dimensions of Bolt Caps for Rail Mounting Holes

(2) MSZ-WC/WLC

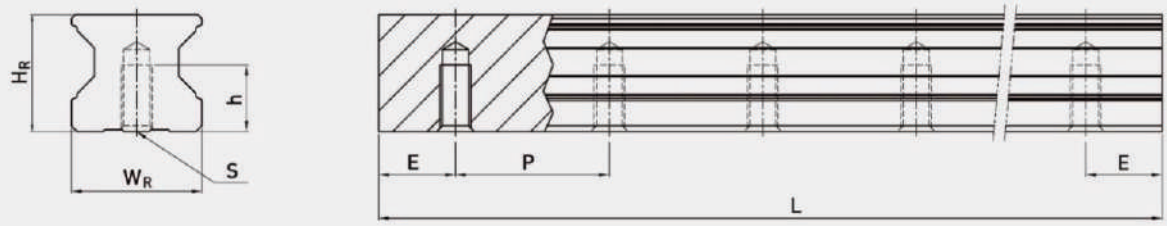


Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)															Dimensions of Rail (mm)							Mounting Bolt for Rail	Basic Dynamic load Rating	Basic Static load Rating	Static Rated Moment			Weight	
	H	H1	N	W	B	B1	C	C1	L1	L	K1	K2	G	M	T	T1	H2	H3	WR	HR	D	h	d	P	E	(mm)	C(KN)	C0(KN)	MR KN-m	MP KN-m	MY KN-m	Block Kg	Rail Kg/m
MSZ15WC	24	4	16	47	38	4.5	30	26	45	68	11.4	4.7	5.3	M5	6	6.95	3.6	6.1	15	16.5	7.5	5.7	4.5	30	20	M4x16	24	0.311	0.311	0.173	0.173	0.22	1.8
MSZ20WC	30	5	21.5	63	53	5	40	35	57.5	86	13.8	6	5.3	M6	8	10	4.3	4.3	20	21	9.5	8.5	6	30	20	M5x20	46.7	0.647	0.647	0.46	0.46	0.47	2.76
MSZ20WLC									77.5	106	23.8																26.9	63	63	0.872	0.837	0.837	
MSZ25WC	36	5.5	23.5	70	57	6.5	45	40	64.5	97.9	15.75	7.25	12	M8	9.5	10	6.2	6	23	23.6	11	9	7	30	20	M6x20	57.1	0.758	0.758	0.605	0.605	0.72	3.08
MSZ25WLC									81	114.4	24																33.9	73.4	73.4	0.975	0.991	0.991	
MSZ30WC	42	6	31	90	72	9	52	44	71	109.8	17.5	8	12	M10	9.5	10	6.5	7.3	28	28	14	12	9	40	20	M8x25	82.1	1.445	1.445	1.06	1.06	1.16	4.41
MSZ30WLC									93	131.8	28.5																48.1	105	105	1.846	1.712	1.712	
MSZ35WC	48	6.5	33	100	82	9	62	52	79	124	16.5	10	12	M10	12	13	9	12.6	34	30.2	14	12	9	40	20	M8x25	105.2	2.17	2.17	1.44	1.44	1.75	6.06
MSZ35WLC									106.5	151.5	30.25																73.1	142	142	2.93	2.6	2.6	
MSZ45WC	60	8	37.5	120	100	10	80	60	106	153.2	21	10	12.9	M12	14	15	10	14	45	38	20	17	14	52.5	22.5	M12x35	178.8	4.52	4.52	3.05	3.05	3.43	9.97
MSZ45WLC									139.8	187	37.9																116	230.9	230.9	6.33	5.47	5.47	
MSZ55WC	70	10	43.5	140	116	12	95	70	125.5	183.7	27.75	12.5	12.9	M14	16	17	12	17.5	53	44	23	20	16	60	30	M14x45	252	8.01	8.01	5.4	5.4	5.43	13.98
MSZ55WLC									173.8	232	51.9																167.8	348	348	11.15	10.25	10.25	
MSZ65WC	90	12	53.5	170	142	14	110	82	160	232	40.8	15.8	12.9	M16	22	23	15	15	63	53	26	22	18	75	35	M16x50	411.6	16.20	16.20	11.59	11.59	11.63	20.22
MSZ65WLC									223	295	72.3																275.3	572.7	572.7	22.55	22.17	22.17	

★Note：1. 1kgf=9.81N

2. The rated load in the table is the theoretical calculated value of C100R. If the value of C50R is needed, it can be obtained by the formula C50R=1.23XC100R。

(3) Dimensions for MSZ-T (Rail Mounting from Bottom)



Model No.	Dimensions of Rail (mm)						Weight
	W_R	H_R	S	h	P	E	(kg/m)
MSZ-T15	15	16.5	M5X0.8P	8	30	20	1.86
MSZ-T20	20	21	M6X1P	10	30	20	2.76
MSZ-T25	23	23.6	M6X1P	12	30	20	3.36
MSZ-T30	28	28	M8X1.25P	15	40	20	4.82
MSZ-T35	34	30.2	M8X1.25P	17	40	20	6.48
MSZ-T45	45	38	M12X1.75P	24	52.5	22.5	10.83
MSZ-T55	53	44	M14X2P	24	60	30	15.15
MSZ-T65	63	53	M20X2.5P	30	75	35	21.24