

## 15.1 Dust Proof

### A. Code of contamination protection

#### Code of contamination protection for Carriage

##### MSA \ MSB Series :

Code	Contamination Protection
no symbol	Scraper(both ends)
UU	Bidirectional end seal(both ends)
SS	Bidirectional end seal+Bottom seal
ZZ	SS+Scraper
DD	Double bidirectional end seal+Bottom seal
KK	DD+Scraper
LL	Low frictional end seal
RR	LL+Bottom seal
HD	high dust end seal +high dust inner and bottom seal (supply MSA15~35 , MSB15~20)

##### SME \ SMR \ MSR Series :

Code	Contamination Protection
no symbol	Scraper(both ends)
UU	Bidirectional end seal(both ends)
SS	Bidirectional end seal+Bottom seal+Inner seal
ZZ	SS+Scraper
DD	Double bidirectional end seal+Bottom seal+Inner seal
KK	DD+Scraper

##### MSC \ MSD Series :

Code	Contamination Protection
LL	Low frictional end seal
RR	LL+Bottom seal

#### Code of contamination protection for Rail

##### MSA \ MSB \ SME \ MSR \ SMR Series :

Code	Contamination Protection
/CC	Cover strip
/MC	Copper bolt cap
/MD	Stainless bolt cap

Note: There are two metallic bolt caps of copper and stainless that could be supplied by customer's choice.

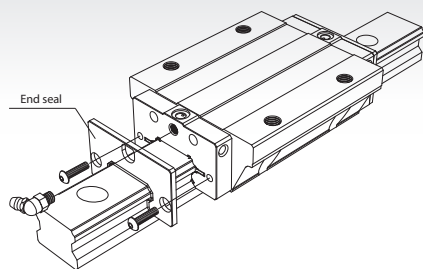
#### Seal materials choice

Beside the standard seal NBR that FKM (Fluorocarbon Rubber) seal or HNBR (Hydrogenated Nitrile Butadiene Rubber) seal could be supplied as requirement by customer's choice.

## B. Contamination protection

Each series of linear guideway offers various kinds of dust protection accessory to keep the foreign matters from entering into the carriage.

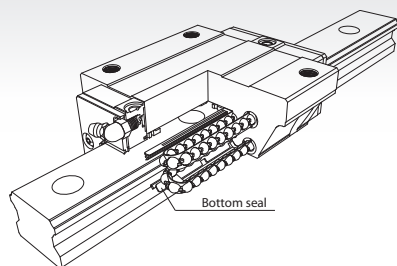
### End seal



Two types sealing are available:

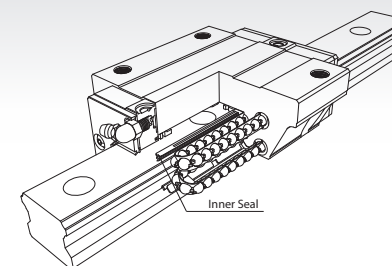
1. Bidirectional seal for high dust protection required.
2. Monodirectional seal for low frictional resistance required.

### Bottom seal



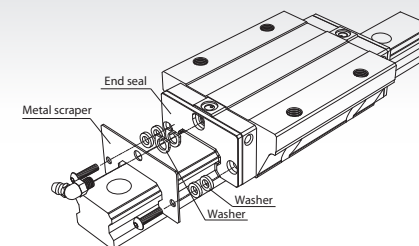
Prevent the inclusion of foreign matters from the bolt hole.

### Inner Seal



Preventing the inclusion of foreign matters from bottom of carriage.

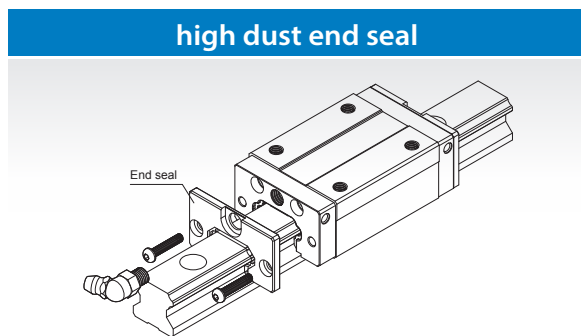
### Metal scraper



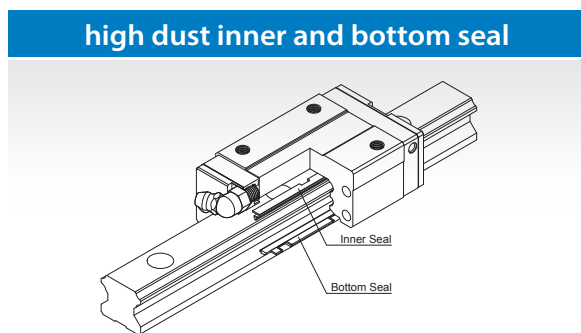
Removing spatters, iron chips, and large foreign matters as well as protecting the end seals.

## Enhanced Dust-proof

According to the environmental and operational conditions, *PMI* provide enhanced contamination protection could be supplied as requirement by customer's choice, the excellent of enhanced contamination protection to prevent dust enter the carriage.



offer special design bidirectional end seal



Prevent the foreign matters enter the carriage from the bolt hole.

Types of seal to the carriage overall length, see the table shown as below

### MSA Series

Unit: mm

Model No.	No symbol	UU	SS	LL	RR	ZZ	DD	KK	HD
15	1	-	-	-	-	6	5	11	1
20	1.4	-	-	-	-	7	5.6	12.6	0.4
25	1.4	-	-	-	-	7	5.6	12.6	0.4
30	1.4	-	-	-	-	7	5.6	12.6	0.4
35	0.6	-	-	-	-	7.8	7.2	15	-
45	0.6	-	-	-	-	7.8	7.2	15	-
55	-	-	-	-	-	7.8	7.8	15.6	-
65	-	-	-	-	-	7.8	7.8	15.6	-

### MSB Series

Unit: mm

Model No.	No symbol	UU	SS	LL	RR	ZZ	DD	KK	HD
15	-	-	-	-	-	5	5	10	1
20	1	-	-	-	-	7	6	13	-
25	1	-	-	-	-	7	6	13	-
30	1	-	-	-	-	7	6	13	-
35	0.6	-	-	-	-	7.8	7.2	15	-

### SME Series

Unit: mm

Model No.	no symbol	UU	SS	ZZ	DD	KK
15	0.4	-	-	6	5.6	11.6
20	1	-	-	7	6	13
25	1	-	-	7	6	13
30	1.4	-	-	7	5.6	12.6
35	1	-	-	7.8	6.8	14.6
45	0.6	-	-	7.8	7.2	15

### MSR \ SMR Series

Unit: mm

Model No.	no symbol	UU	SS	ZZ	DD	KK
25	2	-	-	6	6	12
30	2	-	-	7	6	13
35	2	-	-	7	6	13
45	1.6	-	-	7	6.4	13.4
55	0.8	-	-	7.8	7.2	15
65	0.8	-	-	7.8	7.8	15.6

### MSG Series

Unit: mm

Model No.	no symbol	UU	SS	ZZ	DD	KK
21	1.4	-	-	7.4	6	13.4
27	1.4	-	-	7.4	6	13.4
35	1.4	-	-	7.8	6	13.8

### Resistance value of seal

#### MSA series

The maximum resistance value of MSA series with seals type UU when it is applied with grease is shown below.

Unit: N

Model No.	Resistance	
	UU	HD
15	2	18
20	3.5	19
25	4	30
30	6	23
35	10	25
45	12	-
55	18	-
65	30	-

#### MSB series

The maximum resistance value of MSB series with seals type UU when it is applied with grease is shown below.

Unit: N

Model No.	Resistance	
	UU	HD
15	2	18
20	3.5	19
25	4	-
30	6	-
35	10	-

#### MSC \ MSD series

The maximum resistance value of MSC series with seals type LL when it is applied with grease is shown below.

#### MSC

Unit: N

Model No.	Resistance
7	0.08
9	0.1
12	0.4
15	0.8

#### MSD

Unit: N

Model No.	Resistance
7	0.4
9	0.8
12	1.1
15	1.3

### MSR \ SMR series

The maximum resistance value of MSR and SMR series with seals type UU when it is applied with grease is shown below.

Unit: N

Model No.	Resistance
25	4.5
30	8
35	12
45	18
55	20
65	35

### SME series

The maximum resistance value of SME series with seals type UU when it is applied with grease is shown below.

Unit: N

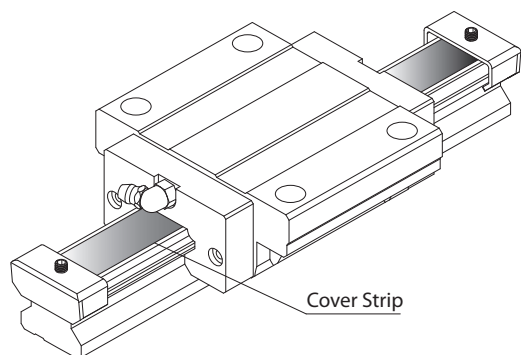
Model No.	Resistance
15	2
20	3.5
25	4
30	6
35	10
45	12

### C. Cover Strip

A special designed of cover strip is used to cover the bolt hole to prevent the foreign matters from entering the carriage. Please specify when ordering.

Note:When mounting the cover strip the rail needs to be machined.Indicate that the cover strip is required when ordering the guideway. The cover strip could not increase the height of rail.

#### MSA \ MSB \ SME \ MSR \ SMR series



### D. Caps for rail mounting hole

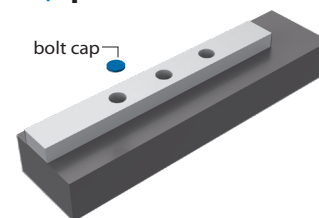
A special designed of cap is used to cover the bolt hole to prevent the foreign matters from entering the carriage. According to difference of application, *PMI* provide two kind of caps for selection, made by plastic and metal. The metallic cap is for opyion,please specify when ordering. The plastic cap is mounted by using a plastic hammer with a flat pad placed on the top,until the top of cap is flush to the top surface of rail.The dimension of caps for different sizes of rail is shown.

#### Installation of plastic and metal cap

According to the environmental and operational conditions, choose plastic or metal, plastic and metal model cap size, please refer to Table I Table II.

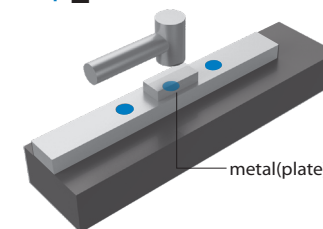
#### The steps of installing bolt cap with rail by below indicated figures

##### step.1



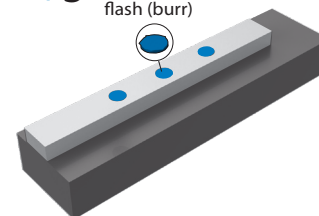
Put the cap into the bolt hole of rail.

##### step.2



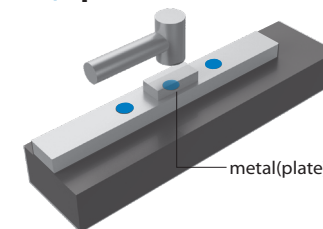
Put the plate on the cap,then pound it into the bolt of rail with rubber hammer vertically.

##### step.3



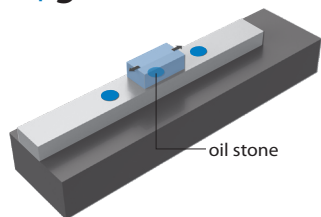
Clear the "shaving " away from the side of bolt hole.

##### step.4



Continue pounding the cap until the cap is on the same plane with the top surface of rail.

step.5



Use oil stone to polish the surface of caps and mop them with clean bunny cloth. And finally check the installation is good for smoothing by your finger.

**Install attention:**

Owing to the side of hole is very sharp during installation. Therefore, pay special attention for safety in case of finger and hands be slashed.

Table I

Code of Plastic Cap	Bolt Size	Rail Model					
M3C	M3		MSB15R				
M4C	M4	MSA15R	MSB15U		SME15R		MSG21R MSG27R
M5C	M5	MSA20R	MSB20R		SME20R		
M6C	M6	MSA25R	MSB25R MSB30R	MSR25R	SME25R	SMR25R	MSG35R
M8C	M8	MSA30R MSA35R	MSB35R	MSR30R MSR35R	SME30R SME35R	SMR30R SMR35R	
M12C	M12	MSA45R		MSR45R	SME45R	SMR45R	
M14C	M14	MSA55R		MSR55R		SMR55R	
M16C	M16	MSA65R		MSR65R		SMR65R	

Table II

Code of Metallic Cap	Bolt Size	Rail Model					
M4MC	M4	MSA15R	MSB15U		SME15R		MSG21R MSG27R
M5MC	M5	MSA20R	MSB20R		SME20R		
M6MC	M6	MSA25R	MSB25R MSB30R	MSR25R	SME25R	SMR25R	MSG35R
M8MC	M8	MSA30R MSA35R	MSB35R	MSR30R MSR35R	SME30R SME35R	SMR30R SMR35R	
M12MC	M12	MSA45R		MSR45R	SME45R	SMR45R	
M14MC	M14	MSA55R		MSR55R		SMR55R	
M16MC	M16	MSA65R		MSR65R		SMR65R	

**15.2 Lubrication**

A well lubrication is important for maintaining the function of linear guideway. If the lubrication is not sufficient, the frictional resistance at rolling area will increase and the service life will be shortened as a result of wear of rolling parts.

Two primary lubricants are both grease and oil used for linear motion system, and the lubrication methods are categorized into manual and forced oiling. The selection of lubricant and its method should be based on the consideration of operating speed and environment requirement.

**Grease lubrication**

The grease feeding interval will be varied with different operating conditions and environments. Under normal operating condition, the grease should be replenished every 100km of travel. The standard grease is lithium-based grease No.2. Moving the carriage back and forth with minimum stroke length of length of 3 carriages after the carriages been greased. To assure the grease is evenly distributed inside of carriage, the mentioned process should be repeated twice at least.