

# Precision Linear Rail

## PMI Group

THE DYNAMICS OF MOVEMENT



**PMI GROUP, LINEAR MOTION TECHNOLOGY:**  
Partners with Matara for over 20 years, PMI specialise in manufacturing high quality linear rail and carriages, supplying multiple industries worldwide.

# Cut To Specification In-House Large UK Stock

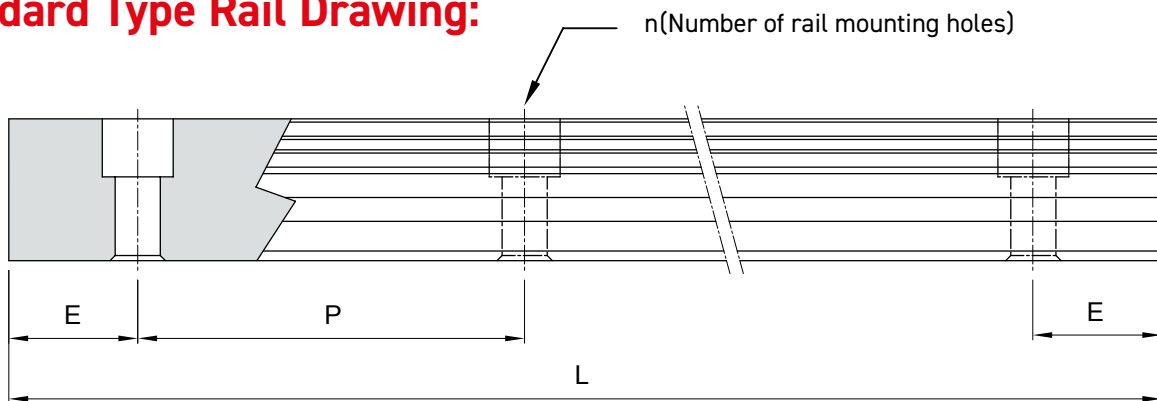
## PMI Linear Rail Order Example

Code: **MSA 25 A 2 SS FO** **+R 1200 -20 /40 P** **II**  
Options: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

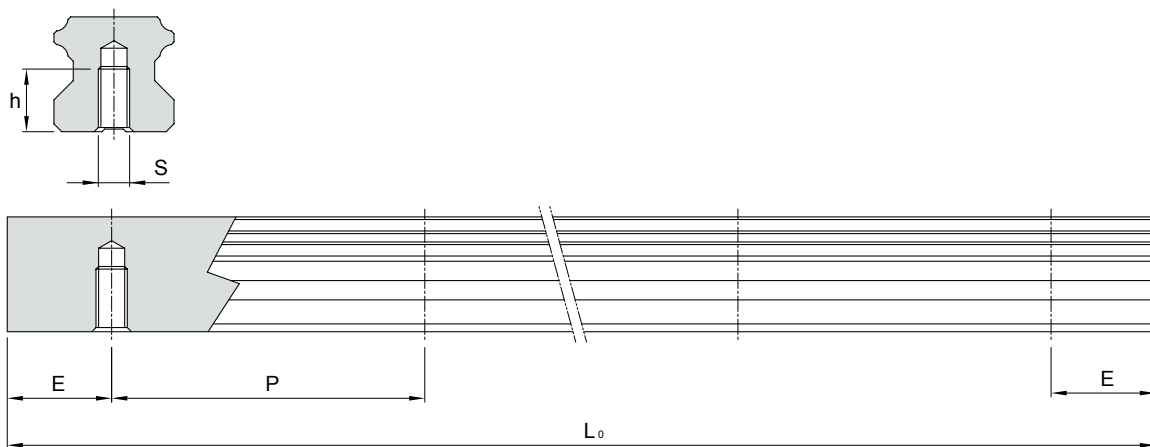
| Options |                                      | Linear Rail Series                                                              |                      |              |                 |                                          |                            |                            |
|---------|--------------------------------------|---------------------------------------------------------------------------------|----------------------|--------------|-----------------|------------------------------------------|----------------------------|----------------------------|
| 1       |                                      | MSA                                                                             | MSB                  | MSC/<br>MSD  | MSG             | SME                                      | SMR                        | MSR                        |
| 2       | Size                                 | 15, 20, 25, 30, 35, 45, 55, 65                                                  | 15, 20, 25, 30, 35   | 7, 9, 12, 15 | 21, 27, 35      | 15, 20, 25, 30, 35, 45                   | 20, 25, 30, 35, 45, 55, 65 | 20, 25, 30, 35, 45, 55, 65 |
| 3       | Carriage Type                        | E, S                                                                            | TE, TS, E, S, LE, LS | M, LM        | E, S            | EA, EB, SA SB/SV, LEA, LEB, LSA, LSB/LSV | E, S, LE, LS               | E, S, LE, LS               |
| 4       | No. Carriage Per Rail                | 1, 2, 3,...                                                                     |                      |              |                 |                                          |                            |                            |
| 5       | Carriage dust protection             | No symbol, UU, SS, ZZ, DD, KK, LL, RR, HD<br>Please see Dust Proof table (p.41) |                      |              |                 |                                          |                            |                            |
| 6       | Pre-Load *                           | FC, F0, F1                                                                      |                      | FC, F0       | FC, F0, F1      | FC, F0                                   | F0, F1, F2                 |                            |
| 7       | Code of Special carriage             | No symbol, A, B                                                                 |                      |              |                 |                                          |                            |                            |
| 8       | Rail Type                            | R, T                                                                            | R, U, T              | R            | R               | R, T                                     | R, T                       | R, T                       |
| 9       | Rail Length (mm)                     | Please see Rail Dimensions table (p.4-5)                                        |                      |              |                 |                                          |                            |                            |
| 10      | Rail hole pitch from start side (E1) | Please see Rail Dimensions table (p.4-5)                                        |                      |              |                 |                                          |                            |                            |
| 11      | Rail hole pitch from end side (E2)   | Please see Rail Dimensions table (p.4-5)                                        |                      |              |                 |                                          |                            |                            |
| 12      | Accuracy Grade                       | N, H, P, SP, UP                                                                 | N, H, P, SP, UP      | N, H, P      | N, H, P, SP, UP | N, H, P                                  | H, P, SP, UP               | H, P, SP, UP               |
| 13      | Code of Special Rail                 | No symbol, A, B ...                                                             |                      |              |                 |                                          |                            |                            |
| 14      | Dust Protection Option Of Rail       | Refer to Code of Contamination table (p.38)                                     |                      |              |                 |                                          |                            |                            |
| 15      | Number Of Rails Per Axis             | No symbol, II, III, IV ...                                                      |                      |              |                 |                                          |                            |                            |

\* FC (Light Pre-Load),  
F0 (Medium Pre-Load),  
F1 (Heavy Pre-Load)  
F2 (Ultra Heavy Pre-Load)

## Standard Type Rail Drawing:



## Tapped Hole Type Rail Drawing:



$$L = (n-1) \times P + 2 \times E$$

$L$ : Total Length of rail (mm)

$n$ : Number of mounting holes

$P$ : Distance between any two holes (mm)

$E$ : Distance from the centre of the last hole to the edge (mm)

## Standard & Tapped Type Dimensions:

| Model No. | Standard Pitch (P) | Standard (Estd.) | Minimum ( $E_{min.}$ ) | Max ( $L_0 \text{ max.}$ ) | S (Tapped Only) | h (mm) (Tapped Only) |
|-----------|--------------------|------------------|------------------------|----------------------------|-----------------|----------------------|
| MSA 15    | 60                 | 20               | 5                      | 4000                       | M5              | 8                    |
| MSA 20    | 60                 | 20               | 6                      | 4000                       | M6              | 10                   |
| MSA 25    | 60                 | 20               | 7                      | 4000                       | M6              | 12                   |
| MSA 30    | 80                 | 20               | 8                      | 4000                       | M8              | 15                   |
| MSA 35    | 80                 | 20               | 8                      | 4000                       | M8              | 17                   |
| MSA 45    | 105                | 22.5             | 11                     | 4000                       | M12             | 24                   |
| MSA 55    | 120                | 30               | 13                     | 4000                       | M14             | 24                   |
| MSA 65    | 150                | 35               | 14                     | 4000                       | M20             | 30                   |

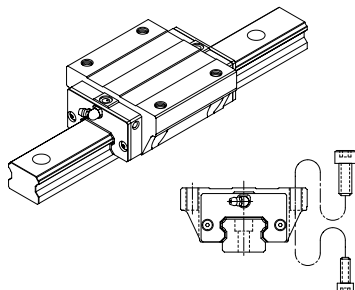
| Model No. | Standard Pitch (P) | Standard (Estd.) | Minimum (E <sub>min.</sub> ) | Standard Max (L <sub>0 max.</sub> ) | S (Tapped Only)           | h (mm) (Tapped Only) |
|-----------|--------------------|------------------|------------------------------|-------------------------------------|---------------------------|----------------------|
| MSB 15    | 60                 | 20               | 5                            | 4000                                | M5                        | 7                    |
| MSB 20    | 60                 | 20               | 6                            | 4000                                | M6                        | 9                    |
| MSB 25    | 60                 | 20               | 7                            | 4000                                | M6                        | 10                   |
| MSB 30    | 80                 | 20               | 7                            | 4000                                | M8                        | 14                   |
| MSB 35    | 80                 | 20               | 8                            | 4000                                | M8                        | 16                   |
| MSC 7     | 15                 | 5                | 3                            | 1000                                | Tapped Type Not Available |                      |
| MSC 9     | 20                 | 7.5              | 4                            | 1000                                | Tapped Type Not Available |                      |
| MSC 12    | 25                 | 10               | 4                            | 1000                                | Tapped Type Not Available |                      |
| MSC 15    | 40                 | 15               | 4                            | 1000                                | Tapped Type Not Available |                      |
| MSD 7     | 30                 | 10               | 3                            | 1000                                | Tapped Type Not Available |                      |
| MSD 9     | 30                 | 10               | 4                            | 1000                                | Tapped Type Not Available |                      |
| MSD 12    | 40                 | 15               | 4                            | 1000                                | Tapped Type Not Available |                      |
| MSD 15    | 40                 | 15               | 4                            | 1000                                | Tapped Type Not Available |                      |
| MSG 21    | 50                 | 15               | 5                            | 3000                                | Tapped Type Not Available |                      |
| MSG 27    | 60                 | 20               | 5                            | 3000                                | Tapped Type Not Available |                      |
| MSG 35    | 80                 | 20               | 7                            | 3000                                | Tapped Type Not Available |                      |
| SME 15    | 60                 | 20               | 5                            | 4000                                | M5                        | 8                    |
| SME 20    | 60                 | 20               | 6                            | 4000                                | M6                        | 10                   |
| SME 25    | 60                 | 20               | 7                            | 4000                                | M6                        | 12                   |
| SME 30    | 80                 | 20               | 8                            | 4000                                | M8                        | 15                   |
| SME 35    | 80                 | 20               | 8                            | 4000                                | M8                        | 17                   |
| SME 45    | 105                | 22.5             | 11                           | 4000                                | M12                       | 24                   |
| MSR 20    | 30                 | 20               | 6                            | 4000                                | M6                        | 11                   |
| MSR 25    | 30                 | 20               | 7                            | 4000                                | M6                        | 12                   |
| MSR 30    | 40                 | 20               | 8                            | 4000                                | M8                        | 15                   |
| MSR 35    | 40                 | 20               | 8                            | 4000                                | M8                        | 17                   |
| MSR 45    | 52.5               | 22.5             | 11                           | 4000                                | M12                       | 24                   |
| MSR 55    | 60                 | 30               | 13                           | 4000                                | M14                       | 24                   |
| MSR 65    | 75                 | 35               | 14                           | 4000                                | M20                       | 30                   |
| SMR 25    | 30                 | 20               | 7                            | 4000                                | M6                        | 12                   |
| SMR 30    | 40                 | 20               | 8                            | 4000                                | M8                        | 15                   |
| SMR 35    | 40                 | 20               | 8                            | 4000                                | M8                        | 17                   |
| SMR 45    | 52.5               | 22.5             | 11                           | 4000                                | M12                       | 24                   |
| SMR 55    | 60                 | 30               | 13                           | 4000                                | M14                       | 24                   |
| SMR 65    | 75                 | 35               | 14                           | 4000                                | M20                       | 30                   |

|             |
|-------------|
| Linear Rail |
| MSA         |
| MSB         |
| MSC         |
| MSD         |
| MSG         |
| SME         |
| SMR         |
| MSR         |
| Options     |
| Rollscrews  |
| Power       |
| End         |
| Couplings   |
| Range       |

## SME Series Ballchain Type Linear Rail

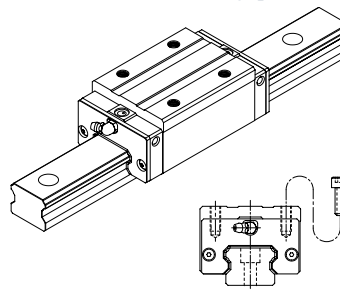
Carriage Types:

### SME-EA Type



This type offers the installation either from top or bottom side of carriage.

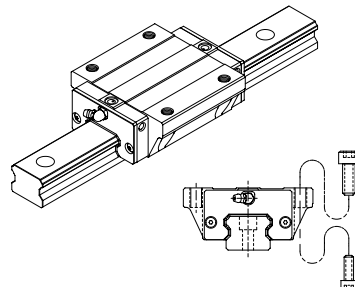
### SME-SA Type



Square type with smaller width and can be installed from top side of carriage.

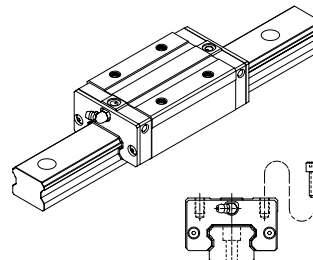
**Heavy Load**

### SME-EB Type



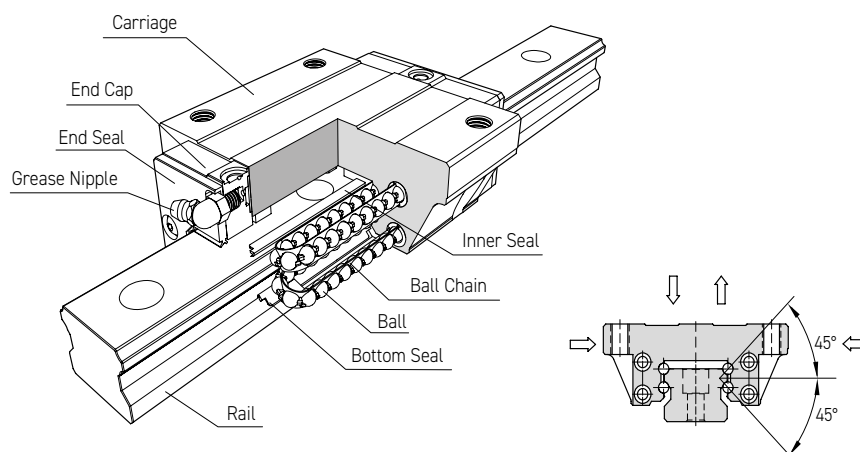
All dimensions are the same as SME-EA except the mounting hole dimensions of the carriage are different and the height is lower. This does not change the basic loading ratings.

### SME-SB / SME-SV Type

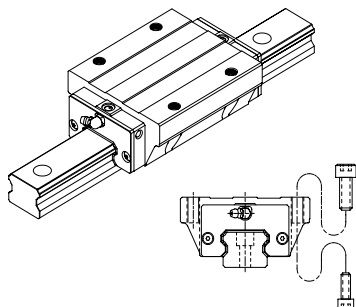


All dimensions are the same as SME-SA except the mounting hole dimensions of the carriage are different and the height is lower. This does not change the basic loading ratings.

## SME Carriage Construction:

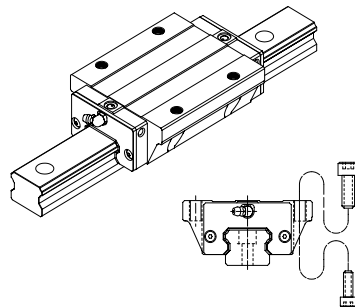


### **SME-LEA Type**



All dimensions are the same as SME-EA except the length is longer, which makes it more rigid.

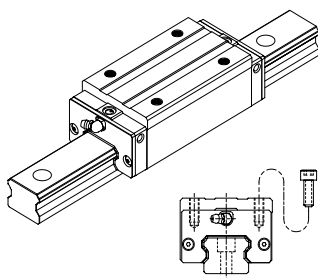
### **SME-LEB Type**



All dimensions are the same as SME-EB except the length is longer, which makes it more rigid.

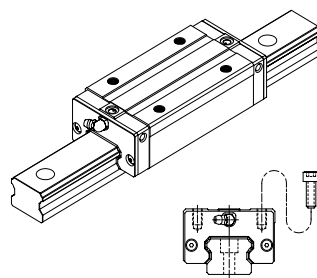
**Ultra Heavy Load**

### **SME-LSA Type**



All dimensions are the same as SME-SA except the length is longer, which makes it more rigid.

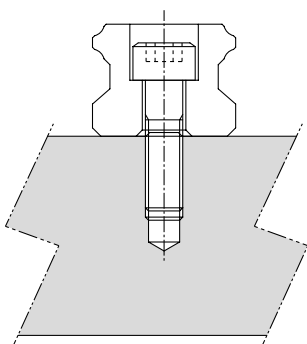
### **SME-LSB / SME-LSV Type**



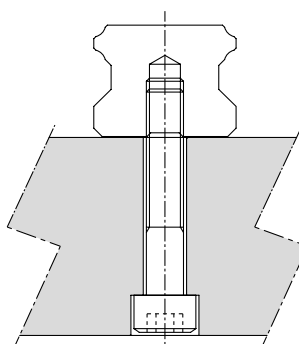
All dimensions are the same as SME-SB and the SME-SV except the length is longer, which makes it more rigid.

## **SME Linear Rail Types**

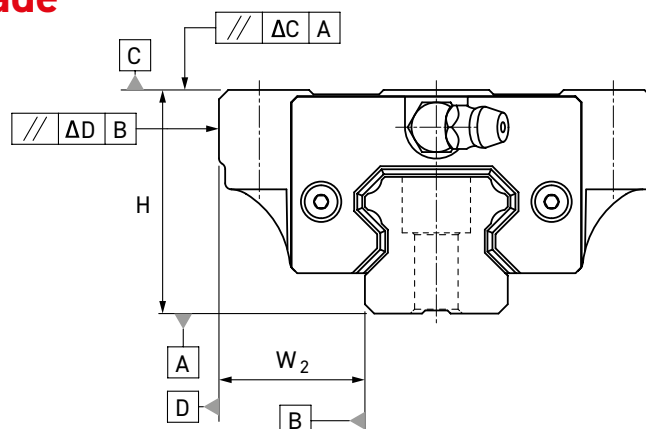
### **Counter Bore (R Type)**



### **Tapped Hole (T Type)**



## SME Accuracy Grade

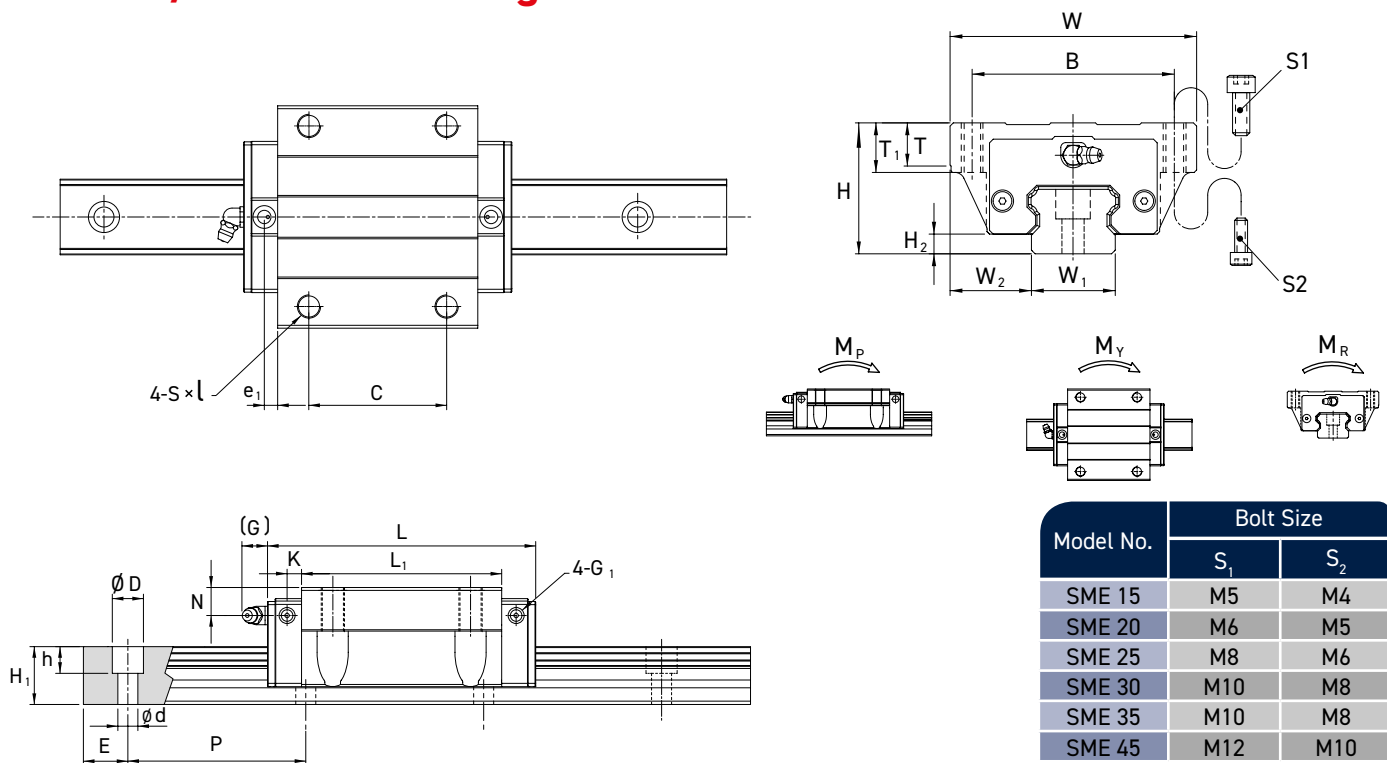


| Rail Length (mm) |                 | Running Parallelism Values (μm) |    |    |     |     |
|------------------|-----------------|---------------------------------|----|----|-----|-----|
| Above            | Or less (incl.) | N                               | H  | P  | SP  | UP  |
| 0                | 315             | 9                               | 6  | 3  | 2   | 1.5 |
| 315              | 400             | 11                              | 8  | 4  | 2   | 1.5 |
| 400              | 500             | 13                              | 9  | 5  | 2   | 1.5 |
| 500              | 630             | 16                              | 11 | 6  | 2.5 | 1.5 |
| 630              | 800             | 18                              | 12 | 7  | 3   | 2   |
| 800              | 1000            | 20                              | 14 | 8  | 4   | 2   |
| 1000             | 1250            | 22                              | 16 | 10 | 5   | 2.5 |
| 1250             | 1600            | 25                              | 18 | 11 | 6   | 3   |
| 1600             | 2000            | 28                              | 20 | 13 | 7   | 3.5 |
| 2000             | 2500            | 30                              | 22 | 15 | 8   | 4   |
| 2500             | 3000            | 32                              | 24 | 16 | 9   | 4.5 |
| 3000             | 3500            | 33                              | 25 | 17 | 11  | 5   |
| 3500             | 4000            | 34                              | 26 | 18 | 12  | 6   |

| Model No.      | Item                                                     | Running Parallelism Values (μm) |        |             |                    |                    |
|----------------|----------------------------------------------------------|---------------------------------|--------|-------------|--------------------|--------------------|
|                |                                                          | Normal N                        | High H | Precision P | Super Precision SP | Ultra Precision UP |
| 15<br>20       | Tolerance for height H                                   | ±0.1                            | ±0.03  | 0<br>-0.03  | 0<br>-0.015        | 0<br>-0.008        |
|                | Height difference ΔH                                     | 0.02                            | 0.01   | 0.006       | 0.004              | 0.003              |
|                | Tolerance for distance W <sub>2</sub>                    | ±0.1                            | ±0.03  | 0<br>-0.03  | 0<br>-0.015        | 0<br>-0.008        |
|                | Difference in distance W <sub>2</sub> (ΔW <sub>2</sub> ) | 0.02                            | 0.01   | 0.006       | 0.004              | 0.003              |
|                | Running parallelism of surface C with surface A          | ΔC (see the Table to the Left)  |        |             |                    |                    |
|                | Running parallelism of surface D with surface B          | ΔD (see the Table to the Left)  |        |             |                    |                    |
| 24<br>30<br>35 | Tolerance for height H                                   | ±0.1                            | ±0.04  | 0<br>-0.04  | 0<br>-0.02         | 0<br>-0.01         |
|                | Height difference ΔH                                     | 0.02                            | 0.015  | 0.007       | 0.005              | 0.003              |
|                | Tolerance for distance W <sub>2</sub>                    | ±0.1                            | ±0.04  | 0<br>-0.04  | 0<br>-0.02         | 0<br>-0.01         |
|                | Difference in distance W <sub>2</sub> (ΔW <sub>2</sub> ) | 0.03                            | 0.015  | 0.007       | 0.005              | 0.003              |
|                | Running parallelism of surface C with surface A          | ΔC (see the Table to the Left)  |        |             |                    |                    |
|                | Running parallelism of surface D with surface B          | ΔD (see the Table to the Left)  |        |             |                    |                    |
| 45             | Tolerance for height H                                   | ±0.1                            | ±0.04  | 0<br>-0.04  | 0<br>-0.02         | 0<br>-0.01         |
|                | Height difference ΔH                                     | 0.02                            | 0.015  | 0.007       | 0.005              | 0.003              |
|                | Tolerance for distance W <sub>2</sub>                    | ±0.1                            | ±0.04  | 0<br>-0.04  | 0<br>-0.02         | 0<br>-0.01         |
|                | Difference in distance W <sub>2</sub> (ΔW <sub>2</sub> ) | 0.03                            | 0.015  | 0.007       | 0.005              | 0.003              |
|                | Running parallelism of surface C with surface A          | ΔC (see the Table to the Left)  |        |             |                    |                    |
|                | Running parallelism of surface D with surface B          | ΔD (see the Table to the Left)  |        |             |                    |                    |

|             |     |     |     |     |     |     |     |     |                     |                    |                  |              |                 |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|---------------------|--------------------|------------------|--------------|-----------------|
| Linear Rail | MSA | MSB | MSC | MSD | MSG | SME | SMR | MSR | Linear Rail Options | Rollled Ballscrews | Power Leadscrews | End Supports | Couplings Range |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|---------------------|--------------------|------------------|--------------|-----------------|

## SME-EA/SME-LEA Carriage and Rail Dimensions



| Model No. | Bolt Size      |                |
|-----------|----------------|----------------|
|           | S <sub>1</sub> | S <sub>2</sub> |
| SME 15    | M5             | M4             |
| SME 20    | M6             | M5             |
| SME 25    | M8             | M6             |
| SME 30    | M10            | M8             |
| SME 35    | M10            | M8             |
| SME 45    | M12            | M10            |

Unit: mm

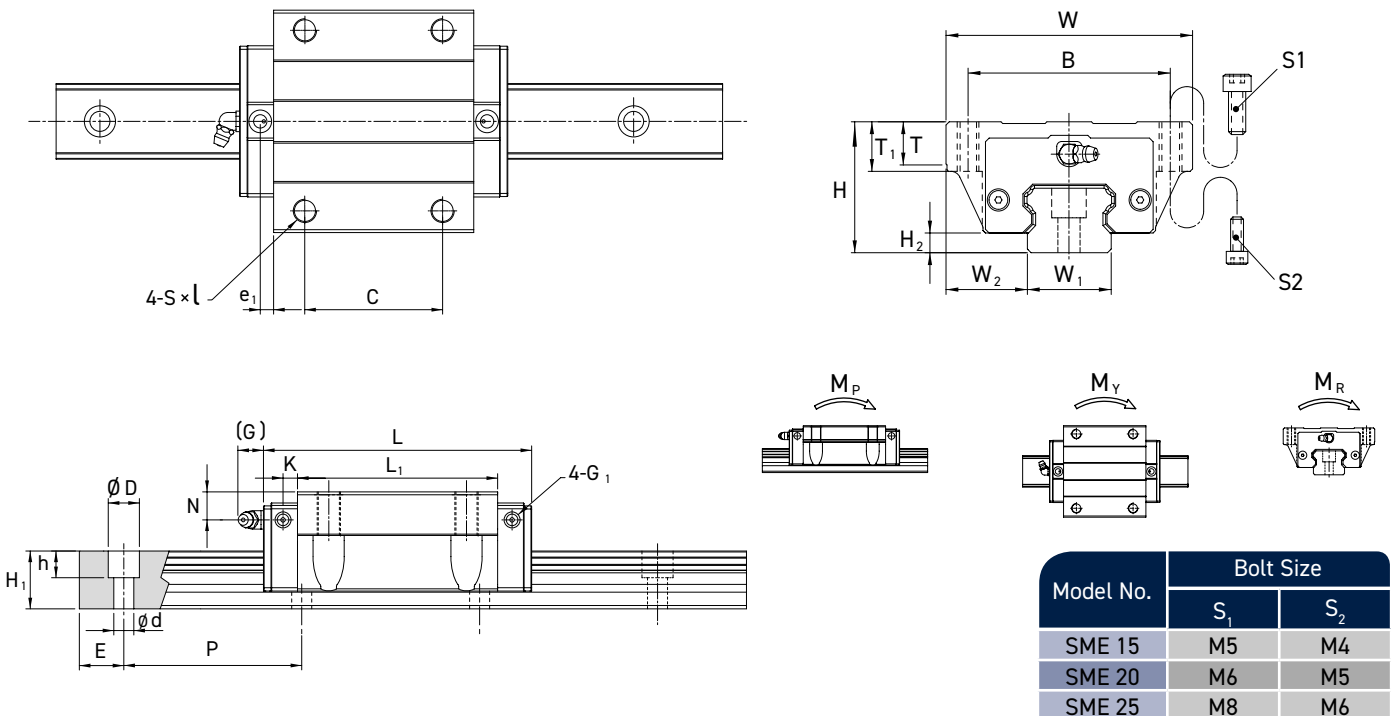
| Model No.               | External Dimension |     |                |                |                | Carriage Dimensions |    |        |                |     |                |    |      |     |                |                |               |
|-------------------------|--------------------|-----|----------------|----------------|----------------|---------------------|----|--------|----------------|-----|----------------|----|------|-----|----------------|----------------|---------------|
|                         | H                  | W   | L              | W <sub>2</sub> | H <sub>2</sub> | B                   | C  | S × l  | L <sub>1</sub> | T   | T <sub>1</sub> | N  | G    | K   | e <sub>1</sub> | G <sub>1</sub> | Grease Nipple |
| SME 15 EA<br>SME 15 LEA | 24                 | 47  | 64.4<br>79.4   | 16             | 3.5            | 38                  | 30 | M5×8   | 48<br>63       | 5.5 | 8              | 5  | 5.5  | 2.7 | -              | M4             | G-M4          |
| SME 20 EA<br>SME 20 LEA | 30                 | 63  | 78.5<br>97.5   | 21.5           | 4.7            | 53                  | 40 | M6×10  | 58.3<br>77.3   | 7   | 10             | 8  | 12   | 3.7 | -              | M4             | G-M6          |
| SME 25 EA<br>SME 25 LEA | 36                 | 70  | 92<br>109      | 23.5           | 5.8            | 57                  | 45 | M8×13  | 71<br>88       | 7   | 13             | 10 | 12   | 4   | -              | M4             | G-M6          |
| SME 30 EA<br>SME 30 LEA | 42                 | 90  | 107.6<br>132.6 | 31             | 7.5            | 72                  | 52 | M10×15 | 80<br>105      | 12  | 15             | 8  | 12   | 6.5 | 5.4            | M6             | G-M6          |
| SME 35 EA<br>SME 35 LEA | 48                 | 100 | 120.6<br>150.6 | 33             | 8              | 82                  | 62 | M10×15 | 90<br>120      | 12  | 15             | 8  | 12   | 6.5 | 6              | M6             | G-M6          |
| SME 45 EA<br>SME 45 LEA | 60                 | 120 | 140<br>174.5   | 37.5           | 10             | 100                 | 80 | M12×18 | 106<br>140.5   | 12  | 18             | 10 | 13.5 | 8.5 | 6.1            | M6             | G-PT 1/8      |

| Model No.               | Rail Dimension |                |     |           |             | Basic Load Rating  |                                | Rail                   |               |                        |               |                        | Weight         |              |
|-------------------------|----------------|----------------|-----|-----------|-------------|--------------------|--------------------------------|------------------------|---------------|------------------------|---------------|------------------------|----------------|--------------|
|                         | W <sub>1</sub> | H <sub>1</sub> | P   | E<br>std. | D x h x d   | Dynamic<br>C<br>kN | Static<br>C <sub>0</sub><br>kN | M <sub>p</sub><br>kN-m |               | M <sub>y</sub><br>kN-m |               | M <sub>R</sub><br>kN-m | Carriage<br>kg | Rail<br>kg/m |
|                         |                |                |     |           |             |                    |                                | Single*                | Double*       | Single*                | Double*       |                        |                |              |
| SME 15 EA<br>SME 15 LEA | 15             | 13             | 60  | 20        | 7.5×5.8×4.5 | 12.5<br>15.4       | 20.2<br>27.5                   | 0.14<br>0.25           | 0.69<br>1.15  | 0.14<br>0.25           | 0.69<br>1.15  | 0.16<br>0.21           | 0.22<br>0.29   | 1.4          |
| SME 20 EA<br>SME 20 LEA | 20             | 15.5           | 60  | 20        | 9.5×8.5×6   | 20.4<br>25.3       | 32.1<br>43.6                   | 0.27<br>0.49           | 1.34<br>2.24  | 0.27<br>0.49           | 1.34<br>2.24  | 0.33<br>0.44           | 0.42<br>0.62   | 2.3          |
| SME 25 EA<br>SME 25 LEA | 23             | 18             | 60  | 20        | 11×9×7      | 28.3<br>33.0       | 44.3<br>56.1                   | 0.45<br>0.71           | 2.14<br>3.20  | 0.45<br>0.71           | 2.14<br>3.20  | 0.52<br>0.66           | 0.67<br>0.89   | 3.2          |
| SME 30 EA<br>SME 30 LEA | 28             | 23             | 80  | 20        | 14×12×9     | 39.4<br>47.0       | 59.5<br>76.5                   | 0.68<br>1.11           | 3.37<br>5.32  | 0.68<br>1.11           | 3.37<br>5.32  | 0.83<br>1.07           | 1.18<br>1.54   | 4.5          |
| SME 35 EA<br>SME 35 LEA | 34             | 26             | 80  | 20        | 14×12×9     | 54.7<br>67.6       | 81.0<br>109.9                  | 1.07<br>1.92           | 5.25<br>8.75  | 1.07<br>1.92           | 5.25<br>8.75  | 1.41<br>1.91           | 1.74<br>2.28   | 6.2          |
| SME 45 EA<br>SME 45 LEA | 45             | 32             | 105 | 22.5      | 20×17×14    | 72.7<br>90.0       | 105.8<br>143.6                 | 1.61<br>2.88           | 7.82<br>13.08 | 1.61<br>2.88           | 7.82<br>13.08 | 2.41<br>3.27           | 3.22<br>4.21   | 10.5         |

**Note:** The basic dynamic load rating C of ball type is based on the 50 km for nominal life.  
The conversion between C for 50 km and C100 for 100 km is C=1.26 × C100.

**Note\*:** Single: Single carriage/ Double: Two carriages in close proximity to one another.

## SME-EB/SME-LEB Carriage and Rail Dimensions



Unit: mm

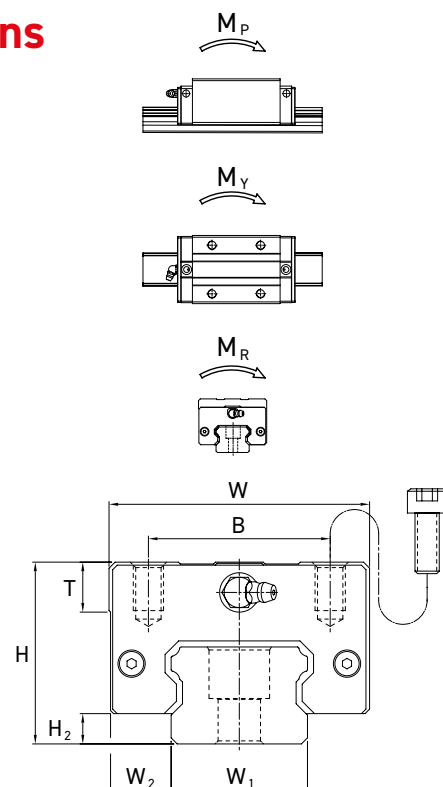
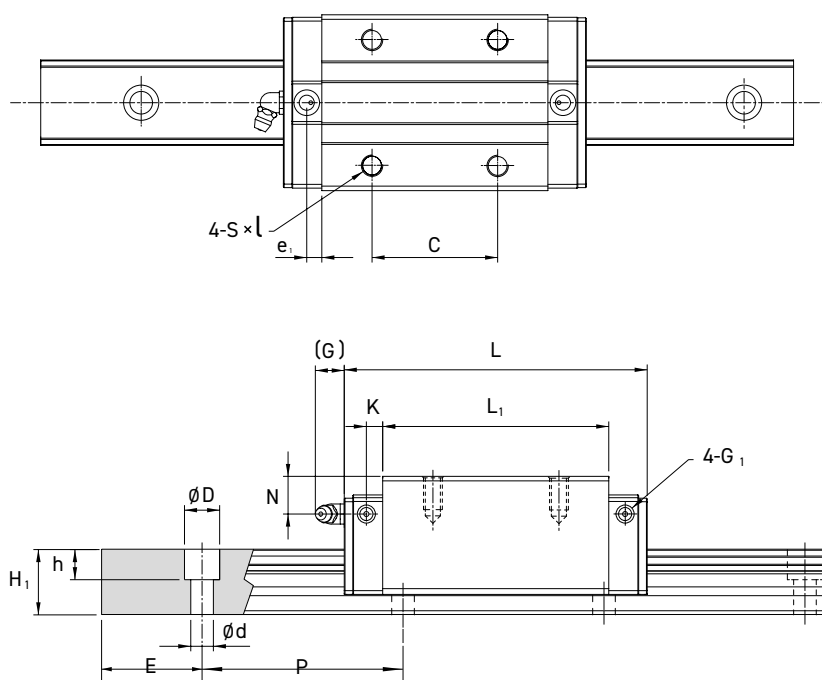
| Model No.               | External Dimension |     |                |                |                | Carriage Dimensions |          |        |                |     |                |     |      |     |                |                |               |
|-------------------------|--------------------|-----|----------------|----------------|----------------|---------------------|----------|--------|----------------|-----|----------------|-----|------|-----|----------------|----------------|---------------|
|                         | H                  | W   | L              | W <sub>2</sub> | H <sub>2</sub> | B                   | C        | S × l  | L <sub>1</sub> | T   | T <sub>1</sub> | N   | G    | K   | e <sub>1</sub> | G <sub>1</sub> | Grease Nipple |
| SME 15 EB<br>SME 15 LEB | 24                 | 52  | 64.4<br>79.4   | 18.5           | 3.5            | 41                  | 26<br>36 | M5×8   | 48<br>63       | 5.5 | 8              | 5   | 5.5  | 2.7 | -              | M4             | G-M4          |
| SME 20 EB<br>SME 20 LEB | 28                 | 59  | 78.5<br>97.5   | 19.5           | 4.7            | 49                  | 32<br>45 | M6×8   | 58.3<br>77.3   | 7.0 | 8              | 6.0 | 12   | 3.7 | -              | M4             | G-M6          |
| SME 25 EB<br>SME 25 LEB | 33                 | 73  | 92<br>109      | 25             | 5.8            | 60                  | 35<br>50 | M8×10  | 71<br>88       | 7.0 | 10             | 7.0 | 12   | 4   | -              | M4             | G-M6          |
| SME 30 EA<br>SME 30 LEA | 42                 | 90  | 107.6<br>132.6 | 31             | 7.5            | 72                  | 52       | M10×15 | 80<br>105      | 12  | 15             | 8   | 12   | 6.5 | 5.4            | M6             | G-M6          |
| SME 35 EA<br>SME 35 LEA | 48                 | 100 | 120.6<br>150.6 | 33             | 8              | 82                  | 62       | M10×15 | 90<br>120      | 12  | 15             | 8   | 12   | 6.5 | 6              | M6             | G-M6          |
| SME 45 EA<br>SME 45 LEA | 60                 | 120 | 140<br>174.5   | 37.5           | 10             | 100                 | 80       | M12×18 | 106<br>140.5   | 12  | 18             | 10  | 13.5 | 8.5 | 6.1            | M6             | G-PT 1/8      |

| Model No.               | Rail Dimension |                |     |           |             | Basic Load Rating  |                                | Rail                   |               |                        |               |                        | Weight         |              |
|-------------------------|----------------|----------------|-----|-----------|-------------|--------------------|--------------------------------|------------------------|---------------|------------------------|---------------|------------------------|----------------|--------------|
|                         | W <sub>1</sub> | H <sub>1</sub> | P   | E<br>std. | D x h x d   | Dynamic<br>C<br>kN | Static<br>C <sub>0</sub><br>kN | M <sub>p</sub><br>kN-m |               | M <sub>y</sub><br>kN-m |               | M <sub>R</sub><br>kN-m | Carriage<br>kg | Rail<br>kg/m |
|                         |                |                |     |           |             |                    |                                | Single*                | Double*       | Single*                | Double*       |                        |                |              |
| SME 15 EB<br>SME 15 LEB | 15             | 13             | 60  | 20        | 7.5×5.8×4.5 | 12.5<br>15.4       | 20.2<br>27.5                   | 0.14<br>0.25           | 0.69<br>1.15  | 0.14<br>0.25           | 0.69<br>1.15  | 0.16<br>0.21           | 0.21<br>0.27   | 1.4          |
| SME 20 EB<br>SME 20 LEB | 20             | 15.5           | 60  | 20        | 9.5×8.5×6   | 20.4<br>25.3       | 32.1<br>43.6                   | 0.27<br>0.49           | 1.34<br>2.24  | 0.27<br>0.49           | 1.34<br>2.24  | 0.33<br>0.44           | 0.39<br>0.55   | 2.3          |
| SME 25 EB<br>SME 25 LEB | 23             | 18             | 60  | 20        | 11×9×7      | 28.3<br>33.0       | 44.3<br>56.1                   | 0.45<br>0.71           | 2.14<br>3.20  | 0.45<br>0.71           | 2.14<br>3.20  | 0.52<br>0.66           | 0.42<br>0.65   | 3.2          |
| SME 30 EA<br>SME 30 LEA | 28             | 23             | 80  | 20        | 14×12×9     | 39.4<br>47.0       | 59.5<br>76.5                   | 0.68<br>1.11           | 3.37<br>5.32  | 0.68<br>1.11           | 3.37<br>5.32  | 0.83<br>1.07           | 1.18<br>1.54   | 4.5          |
| SME 35 EA<br>SME 35 LEA | 34             | 26             | 80  | 20        | 14×12×9     | 54.7<br>67.6       | 81.0<br>109.9                  | 1.07<br>1.92           | 5.25<br>8.75  | 1.07<br>1.92           | 5.25<br>8.75  | 1.41<br>1.91           | 1.74<br>2.28   | 6.2          |
| SME 45 EA<br>SME 45 LEA | 45             | 32             | 105 | 22.5      | 20×17×14    | 72.7<br>90.0       | 105.8<br>143.6                 | 1.61<br>2.88           | 7.82<br>13.08 | 1.61<br>2.88           | 7.82<br>13.08 | 2.41<br>3.27           | 3.22<br>4.21   | 10.5         |

**Note:** The basic dynamic load rating C of ball type is based on the 50 km for nominal life.  
The conversion between C for 50 km and C100 for 100 km is C=1.26 × C100.

**Note\*:** Single: Single carriage/ Double: Two carriages in close proximity to one another.

## SME-SA/SME-LSA Carriage and Rail Dimensions



Unit: mm

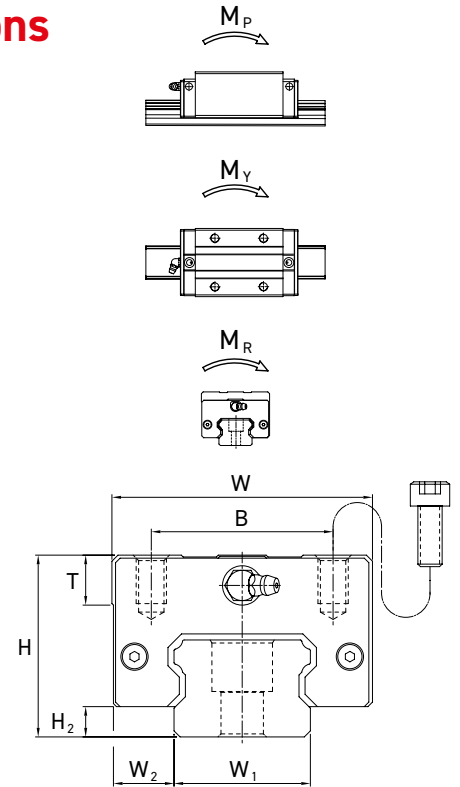
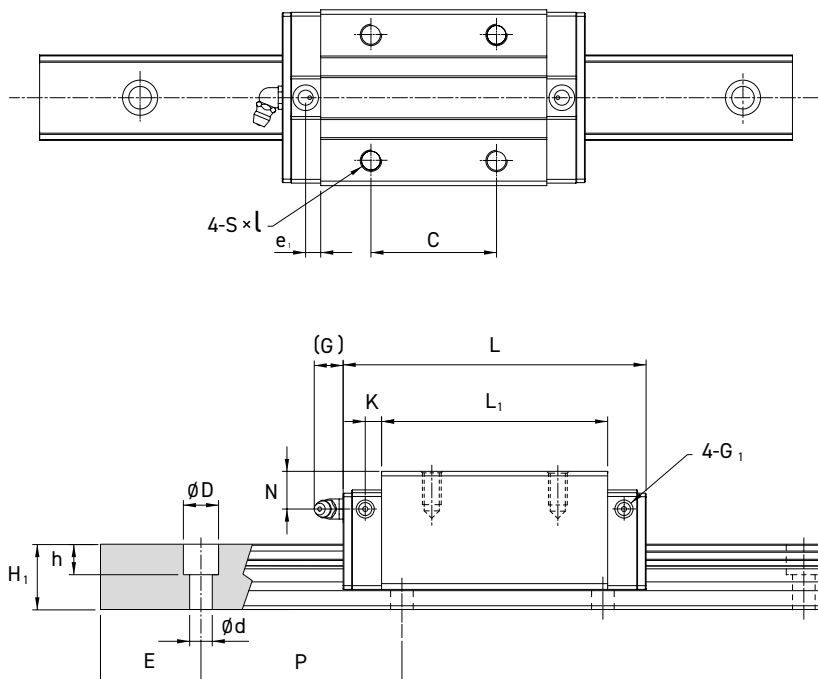
| Model No.               | External Dimension |    |                |                |                | Carriage Dimensions |       |        |                |    |    |      |     |                |                |               |
|-------------------------|--------------------|----|----------------|----------------|----------------|---------------------|-------|--------|----------------|----|----|------|-----|----------------|----------------|---------------|
|                         | H                  | W  | L              | W <sub>2</sub> | H <sub>2</sub> | B                   | C     | S × l  | L <sub>1</sub> | T  | N  | G    | K   | e <sub>1</sub> | G <sub>1</sub> | Grease Nipple |
| SME 15 SA<br>SME 15 LSA | 28                 | 34 | 64.4<br>79.4   | 9.5            | 3.5            | 26                  | 26    | M4×7.5 | 48<br>63       | 6  | 9  | 5.5  | 2.7 | -              | M4             | G-M4          |
| SME 20 SA<br>SME 20 LSA | 30                 | 44 | 78.5<br>97.5   | 12             | 4.7            | 32                  | 36 50 | M5×7   | 58.3<br>77.3   | 6  | 8  | 12   | 3.7 | -              | M4             | G-M6          |
| SME 25 SA<br>SME 25 LSA | 40                 | 48 | 92<br>109      | 12.5           | 5.8            | 35                  | 35 50 | M6×12  | 71<br>88       | 8  | 14 | 12   | 4   | -              | M4             | G-M6          |
| SME 30 SA<br>SME 30 LSA | 45                 | 60 | 107.6<br>132.6 | 16             | 7.5            | 40                  | 40 60 | M8×12  | 80<br>105      | 8  | 11 | 12   | 6.5 | 5.4            | M6             | G-M6          |
| SME 35 SA<br>SME 35 LSA | 55                 | 70 | 120.6<br>150.6 | 18             | 8              | 50                  | 50 72 | M8×14  | 90<br>120      | 11 | 15 | 12   | 6.5 | 6              | M6             | G-M6          |
| SME 45 SA<br>SME 45 LSA | 70                 | 86 | 140<br>174.5   | 20.5           | 10             | 60                  | 60 80 | M10×20 | 106<br>140.5   | 16 | 20 | 13.5 | 8.5 | 6.1            | M6             | G-PT 1/8      |

| Model No.               | Rail Dimension |                |     |           |             | Basic Load Rating  |                                | Rail                   |               |                        |               |                        | Weight         |              |
|-------------------------|----------------|----------------|-----|-----------|-------------|--------------------|--------------------------------|------------------------|---------------|------------------------|---------------|------------------------|----------------|--------------|
|                         | W <sub>1</sub> | H <sub>1</sub> | P   | E<br>std. | D x h x d   | Dynamic<br>C<br>kN | Static<br>C <sub>0</sub><br>kN | M <sub>p</sub><br>kN-m |               | M <sub>y</sub><br>kN-m |               | M <sub>R</sub><br>kN-m | Carriage<br>kg | Rail<br>kg/m |
|                         |                |                |     |           |             |                    |                                | Single*                | Double*       | Single*                | Double*       |                        |                |              |
| SME 15 SA<br>SME 15 LSA | 15             | 13             | 60  | 20        | 7.5×5.8×4.5 | 12.5<br>15.4       | 20.2<br>27.5                   | 0.14<br>0.25           | 0.69<br>1.15  | 0.14<br>0.25           | 0.69<br>1.15  | 0.16<br>0.21           | 0.22<br>0.25   | 1.4          |
| SME 20 SA<br>SME 20 LSA | 20             | 15.5           | 60  | 20        | 9.5×8.5×6   | 20.4<br>25.3       | 32.1<br>43.6                   | 0.27<br>0.49           | 1.34<br>2.24  | 0.27<br>0.49           | 1.34<br>2.24  | 0.33<br>0.44           | 0.30<br>0.39   | 2.3          |
| SME 25 SA<br>SME 25 LSA | 23             | 18             | 60  | 20        | 11×9×7      | 28.3<br>33.0       | 44.3<br>56.1                   | 0.45<br>0.71           | 2.14<br>3.20  | 0.45<br>0.71           | 2.14<br>3.20  | 0.52<br>0.66           | 0.56<br>0.73   | 3.2          |
| SME 30 SA<br>SME 30 LSA | 28             | 23             | 80  | 20        | 14×12×9     | 39.4<br>47.0       | 59.5<br>76.5                   | 0.68<br>1.11           | 3.37<br>5.32  | 0.68<br>1.11           | 3.37<br>5.32  | 0.83<br>1.07           | 0.93<br>1.21   | 4.5          |
| SME 35 SA<br>SME 35 LSA | 34             | 26             | 80  | 20        | 14×12×9     | 54.7<br>67.6       | 81.0<br>109.9                  | 1.07<br>1.92           | 5.25<br>8.75  | 1.07<br>1.92           | 5.25<br>8.75  | 1.41<br>1.91           | 1.57<br>2.05   | 6.2          |
| SME 45 SA<br>SME 45 LSA | 45             | 32             | 105 | 22.5      | 20×17×14    | 72.7<br>90.0       | 105.8<br>143.6                 | 1.61<br>2.88           | 7.82<br>13.08 | 1.61<br>2.88           | 7.82<br>13.08 | 2.41<br>3.27           | 3.06<br>4.00   | 10.5         |

**Note:** The basic dynamic load rating C of ball type is based on the 50 km for nominal life.  
The conversion between C for 50 km and C100 for 100 km is C=1.26 × C100.

**Note\*:** Single: Single carriage/ Double: Two carriages in close proximity to one another.

## SME-SB/SME-LSB Carriage and Rail Dimensions



Unit: mm

| Model No.               | External Dimension |    |                |                |                | Carriage Dimensions |          |        |                |    |    |      |     |                |                |               |
|-------------------------|--------------------|----|----------------|----------------|----------------|---------------------|----------|--------|----------------|----|----|------|-----|----------------|----------------|---------------|
|                         | H                  | W  | L              | W <sub>2</sub> | H <sub>2</sub> | B                   | C        | S × l  | L <sub>1</sub> | T  | N  | G    | K   | e <sub>1</sub> | G <sub>1</sub> | Grease Nipple |
| SME 15 SB<br>SME 15 LSB | 24                 | 34 | 64.4<br>79.4   | 9.5            | 3.5            | 26                  | 26<br>34 | M4×5   | 48<br>63       | 6  | 5  | 5.5  | 2.7 | -              | M4             | G-M4          |
| SME 20 SB<br>SME 20 LSB | 28                 | 42 | 78.5<br>97.5   | 11             | 4.7            | 32                  | 32<br>45 | M5×5.5 | 58.3<br>77.3   | 6  | 6  | 12   | 3.7 | -              | M4             | G-M6          |
| SME 25 SB<br>SME 25 LSB | 33                 | 48 | 92<br>109      | 12.5           | 5.8            | 35                  | 35<br>50 | M6×7   | 71<br>88       | 8  | 7  | 12   | 4   | -              | M4             | G-M6          |
| SME 25 SV<br>SME 25 LSV | 36                 | 48 | 92<br>109      | 12.5           | 5.8            | 35                  | 35<br>50 | M6×9   | 71<br>88       | 8  | 10 | 12   | 4   | -              | M4             | G-M6          |
| SME 30 SB<br>SME 30 LSB | 42                 | 60 | 107.6<br>132.6 | 16             | 7.5            | 40                  | 40<br>60 | M8×10  | 80<br>105      | 8  | 8  | 12   | 6.5 | 5.4            | M6             | G-M6          |
| SME 35 SB<br>SME 35 LSB | 48                 | 70 | 120.6<br>150.6 | 18             | 8              | 50                  | 50<br>72 | M8×11  | 90<br>120      | 11 | 8  | 12   | 6.5 | 6              | M6             | G-M6          |
| SME 45 SB<br>SME 45 LSB | 60                 | 86 | 140<br>174.5   | 20.5           | 10             | 60                  | 60<br>80 | M10×16 | 106<br>140.5   | 16 | 10 | 13.5 | 8.5 | 6.1            | M6             | G-PT 1/8      |

| Model No.               | Rail Dimension |                |     |                   |             | Basic Load Rating  |                                | Rail                   |               |                        |               | Weight                 |                |              |
|-------------------------|----------------|----------------|-----|-------------------|-------------|--------------------|--------------------------------|------------------------|---------------|------------------------|---------------|------------------------|----------------|--------------|
|                         | W <sub>1</sub> | H <sub>1</sub> | P   | E <sub>std.</sub> | D × h × d   | Dynamic<br>C<br>kN | Static<br>C <sub>0</sub><br>kN | M <sub>p</sub><br>kN-m |               | M <sub>y</sub><br>kN-m |               | M <sub>R</sub><br>kN-m | Carriage<br>kg | Rail<br>kg/m |
|                         |                |                |     |                   |             |                    |                                | Single*                | Double*       | Single*                | Double*       |                        |                |              |
| SME 15 SB<br>SME 15 LSB | 15             | 13             | 60  | 20                | 7.5×5.8×4.5 | 12.5<br>15.4       | 20.2<br>27.5                   | 0.14<br>0.25           | 0.69<br>1.15  | 0.14<br>0.25           | 0.69<br>1.15  | 0.16<br>0.21           | 0.19<br>0.22   | 1.4          |
| SME 20 SB<br>SME 20 LSB | 20             | 15.5           | 60  | 20                | 9.5×8.5×6   | 20.4<br>25.3       | 32.1<br>43.6                   | 0.27<br>0.49           | 1.34<br>2.24  | 0.27<br>0.49           | 1.34<br>2.24  | 0.33<br>0.44           | 0.26<br>0.35   | 2.3          |
| SME 25 SB<br>SME 25 LSB | 23             | 18             | 60  | 20                | 11×9×7      | 28.3<br>33.0       | 44.3<br>56.1                   | 0.45<br>0.71           | 2.14<br>3.20  | 0.45<br>0.71           | 2.14<br>3.20  | 0.52<br>0.66           | 0.31<br>0.49   | 3.2          |
| SME 25 SV<br>SME 25 LSV | 23             | 18             | 60  | 20                | 11×9×7      | 28.3<br>33.0       | 44.3<br>56.1                   | 0.45<br>0.71           | 2.14<br>3.20  | 0.45<br>0.71           | 2.14<br>3.20  | 0.52<br>0.66           | 0.44<br>0.62   | 3.2          |
| SME 30 SB<br>SME 30 LSB | 28             | 23             | 80  | 20                | 14×12×9     | 39.4<br>47.0       | 59.5<br>76.5                   | 0.68<br>1.11           | 3.37<br>5.32  | 0.68<br>1.11           | 3.37<br>5.32  | 0.83<br>1.07           | 0.85<br>1.10   | 4.5          |
| SME 35 SB<br>SME 35 LSB | 34             | 26             | 80  | 20                | 14×12×9     | 54.7<br>67.6       | 81.0<br>109.9                  | 1.07<br>1.92           | 5.25<br>8.75  | 1.07<br>1.92           | 5.25<br>8.75  | 1.41<br>1.91           | 1.22<br>1.61   | 6.2          |
| SME 45 SB<br>SME 45 LSB | 45             | 32             | 105 | 22.5              | 20×17×14    | 72.7<br>90.0       | 105.8<br>143.6                 | 1.61<br>2.88           | 7.82<br>13.08 | 1.61<br>2.88           | 7.82<br>13.08 | 2.41<br>3.27           | 2.86<br>3.57   | 10.5         |

## The Recommended Tightening Torque For Rails

The improper tightening torque could affect the mounting accuracy, so tightening the bolts by torque wrench to specified torque is highly recommended. Different types of mounting surface should have different torque value for applications.

| Model No. | Torque Value |           |          |
|-----------|--------------|-----------|----------|
|           | Iron         | Cast iron | Aluminum |
| M2        | 0.6          | 0.4       | 0.3      |
| M3        | 2            | 1.3       | 1        |
| M4        | 4            | 2.7       | 2        |
| M5        | 8.8          | 5.9       | 4.4      |
| M6        | 13.7         | 9.2       | 6.8      |
| M8        | 30           | 20        | 15       |
| M10       | 68           | 45        | 33       |
| M12       | 120          | 78        | 58       |
| M14       | 157          | 105       | 78       |
| M16       | 196          | 131       | 98       |
| M20       | 382          | 255       | 191      |

Note: 1 N-m = 0.738 lbf-ft

## Dust Proof Code Of Contamination Protection

For: 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 friction end seal                                                                  |
| HD        | High dust end seal+high dust inner and bottom seal<br>(supply MSA15S~35S , MSB15S~20S) |

For: MSC, MSD Series

| Code | Contamination Protection |
|------|--------------------------|
| LL   | Low friction end seal    |
| RR   | LL+Bottom seal           |

For: MSA, MSB, MSG, MSR, SMR, SME Series

| Code | Contamination Protection  |
|------|---------------------------|
| /CC  | Cover strip               |
| /CB  | Cover strip (Buckle Type) |
| /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.

Note: Buckle Type: Apply to MSR, SMR Series

For: MSG, MSR, SMR, SME 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<br>+Inner seal |
| KK        | DD+Scraper                                               |

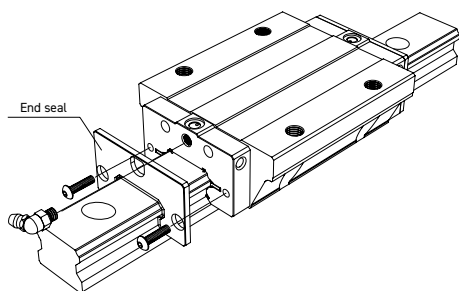
## Seals Material Choice:

As well as the standard NBR seal, we also offer FKM (Fluorocarbon Rubber) and HNBR (Hydrogenated Nitrile Butadiene Rubber) seals as per every customer's requirements.

## Contamination Protection

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

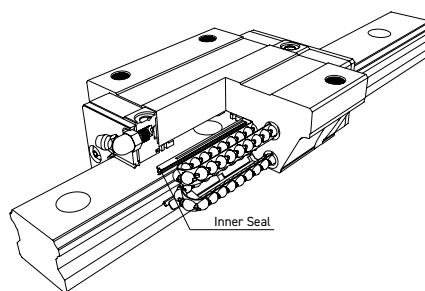
### End Seal



Two types sealing are available:

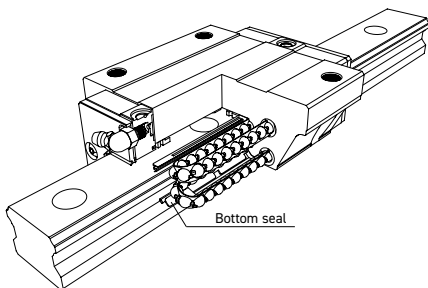
1. Bidirectional seal for high dust protection required.
2. Unidirectional seal for low frictional resistance required.

### Inner Seal



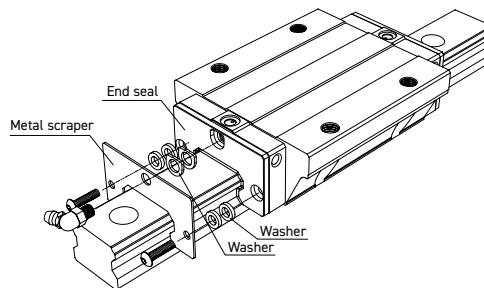
All dimensions are same as MSR-E except the length is longer, which makes it more rigid.

### Bottom Seal



Prevents contaminants from becoming lodged in the bolt hole.

### Metal Scraper



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

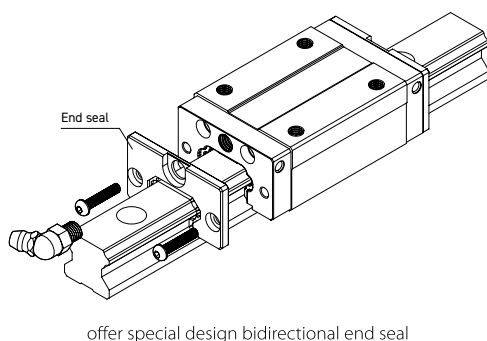
|             |     |     |     |     |     |     |     |     |                     |                   |                  |              |                 |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|---------------------|-------------------|------------------|--------------|-----------------|
| Linear Rail | MSA | MSB | MSC | MSD | MSG | SME | SMR | MSR | Linear Rail Options | Roller Ballscrews | Power Leadscrews | End Supports | Couplings Range |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|---------------------|-------------------|------------------|--------------|-----------------|

## HD-Enhanced Dust-Proof

### Construction:

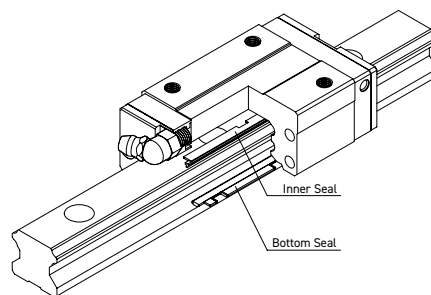
We can also offer, upon customer request, a carriage with enhanced contamination protection to prevent dust and other common contaminants from entering it.

#### High Dust End Seal



Prevents the inclusion of foreign matters from the bolt hole.

#### High Dust Inner Bottom Seal



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

### Features:

- Inner seal attached, having better seal effect than normal dust-proof attachment.
- Bidirectional end seal design strengthens the contact of rails with dust-proof end seal and high dust-proof inner & bottom seal.
- Enhanced dust-proof carriages have the same size and length as standard ones, however they have double the dust-proofing capability.

### Application Examples:

- Applicable to carpentry industry.
- Other high-dust environments.

### Test Conditions:

Specification: **MSA25SHD**

|                 |                    |
|-----------------|--------------------|
| Running Length  | 500mm (per cycle)  |
| Test Distance   | 150Km              |
| Feed Rate       | 1.7m/min           |
| Particle Amount | Spray continuously |

### Result:

After running 150 KM in a saw dust test environment, the carriage is still moving smoothly and the steel balls are also glossy. The end seal and inner seal protect against saw dust from entering the carriage. Overall running smoothness is not effected.



## Dust Protection

Shown in the tables below, the change in overall length of a series carriage depending on the dust protection option chosen:

### MSA Series

Unit: mm

| Model No. | No Symbol | UU | SS | LL | RR | ZZ  | DD  | KK   | HD  |
|-----------|-----------|----|----|----|----|-----|-----|------|-----|
| 15        | 2         | -  | -  | -  | -  | 6   | 5   | 11   | 3   |
| 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        | 1.2       | -  | -  | 0.6 | 0.6 | 7.8 | 6.6 | 14.4 | -  |

### MSG Series

Unit: mm

| Model No. | No Symbol | UU | SS | ZZ  | DD | KK   |
|-----------|-----------|----|----|-----|----|------|
| 21        | 1         | -  | -  | 7   | 6  | 13   |
| 27        | 1         | -  | -  | 7   | 6  | 13   |
| 35        | 1.8       | -  | -  | 7.8 | 6  | 13.8 |

### MSR, SMR Series

Unit: mm

| Model No. | No Symbol | UU  | SS | ZZ  | DD  | KK   |
|-----------|-----------|-----|----|-----|-----|------|
| MSR 20    | -         | 2   | -  | 6   | 6   | 12   |
| MSR 25    | SMR 25    | 2   | -  | 6   | 6   | 12   |
| MSR 30    | SMR 30    | 2   | -  | 7   | 6   | 13   |
| MSR 35    | SMR 35    | 2   | -  | 7   | 6   | 13   |
| MSR 45    | SMR 45    | 1.6 | -  | 7   | 6.4 | 13.4 |
| MSR 55    | SMR 55    | 0.8 | -  | 7.8 | 7.2 | 15   |
| MSR 65    | SMR 65    | 0.8 | -  | 7.8 | 7.8 | 15.6 |

### SME Series

Unit: mm

| Model No. | No Symbol | UU  | SS | ZZ  | DD  | KK   |
|-----------|-----------|-----|----|-----|-----|------|
| MSR 20    | -         | 2   | -  | 6   | 6   | 12   |
| MSR 25    | SMR 25    | 2   | -  | 6   | 6   | 12   |
| MSR 30    | SMR 30    | 2   | -  | 7   | 6   | 13   |
| MSR 35    | SMR 35    | 2   | -  | 7   | 6   | 13   |
| MSR 45    | SMR 45    | 1.6 | -  | 7   | 6.4 | 13.4 |
| MSR 55    | SMR 55    | 0.8 | -  | 7.8 | 7.2 | 15   |
| MSR 65    | SMR 65    | 0.8 | -  | 7.8 | 7.8 | 15.6 |

## 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.

| 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.

| 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 series*

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

#### *MSC series*

| 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.

| Model No. |        | Resistance |
|-----------|--------|------------|
| MSR 20    | -      | 3.5        |
| MSR 25    | SMR 25 | 4.5        |
| MSR 30    | SMR 30 | 8          |
| MSR 35    | SMR 35 | 12         |
| MSR 45    | SMR 45 | 18         |
| MSR 55    | SMR 55 | 20         |
| MSR 65    | SMR 65 | 35         |

### *SME series*

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

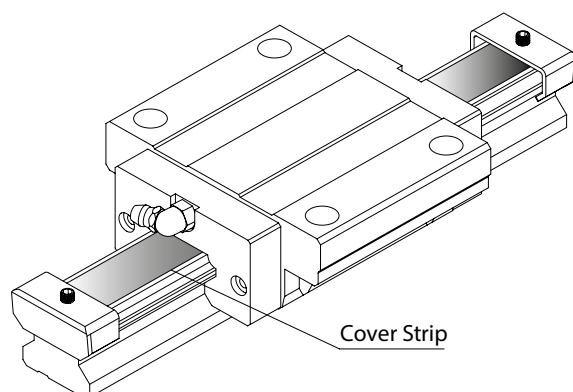
| Model No. | Resistance |
|-----------|------------|
| 15        | 2          |
| 20        | 3.5        |
| 25        | 4          |
| 30        | 6          |
| 35        | 10         |
| 45        | 12         |

## Cover Strip

A special design of cover strip is used to cover the bolt hole to prevent the foreign matters from entering the carriage. Indicate that the cover strip is required when ordering the guideway. Please refer to page 40 for the "Code of Contamination Protection for Rail" for the ordering code.

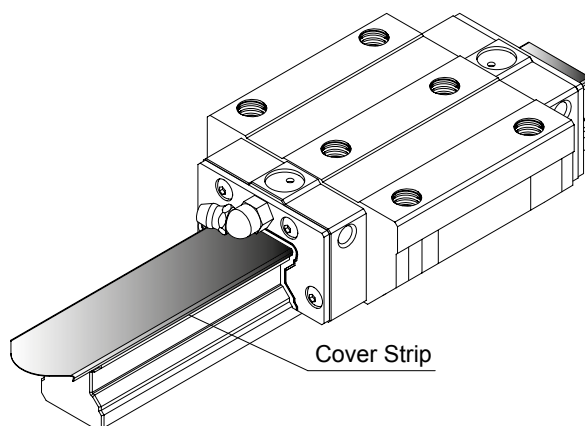
### Standard Type (Applicable to MSA, MSB, SME, MSR & SMR Series)

**Note:** When mounting the cover strip, the rail needs to be machined. The cover strip does not increase the height of rail.



### Buckle Type (Apply to MSR, SMR Series)

For the customer application, PMI design the buckle type of cover strip. The cover strip is fixed on the rail, and that will increase the assembly height of rail.



| Series |        | Increment (mm) | Assembly Height of Rail(mm) |
|--------|--------|----------------|-----------------------------|
| MSR 25 | SMR 25 | 0.3            | 23.8                        |
| MSR 30 | SMR 30 | 0.3            | 27.8                        |
| MSR 35 | SMR 35 | 0.3            | 30.8                        |
| MSR 45 | SMR 45 | 0.3            | 37.3                        |
| MSR 55 | SMR 55 | 0.3            | 43.3                        |
| MSR 65 | SMR 65 | 0.3            | 52.3                        |

**Note:** Due to the increased cover strip thickness, the pre-load will increase after mounting.

## Caps For Rail Mounting Hole

### Features:

A special design of cap is used to cover the bolt hole to prevent the foreign matters from entering the carriage. Application dependant, we can provide two kind of caps for selection, standard plastic or metallic type. When ordering, if required, please specify the metallic type.

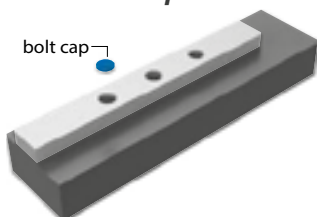
The plastic cap is mounted by using a plastic hammer with a pad placed on the top, until the top of cap is flush to the top surface of rail. The dimensions of the caps for different sizes of rail are shown below.

### Installation of plastic and metal cap:

When specifying either the plastic or metallic caps, please refer to the cap sizes, seen in the table on p.43.

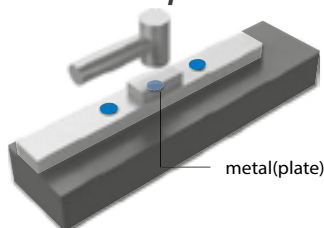
The steps of installing bolt cap with rail by below indicated figures:

#### Step 1



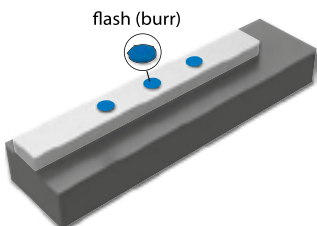
Put the cap into the bolt hole of rail.

#### Step 2



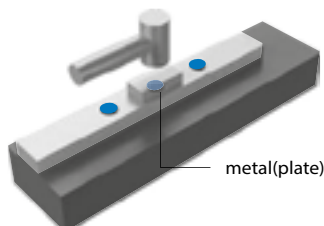
Put the plate on the cap, then pound it into the bolt hole of the rail with a rubber hammer, vertically.

#### Step 3



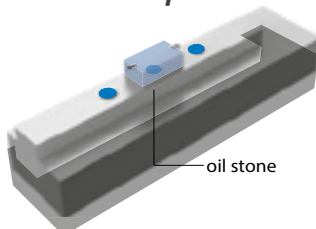
De-burr from the side of bolt hole.

#### Step 4



Hammer the plate until the cap is on the same plane with the top surface of rail.

#### Step 5



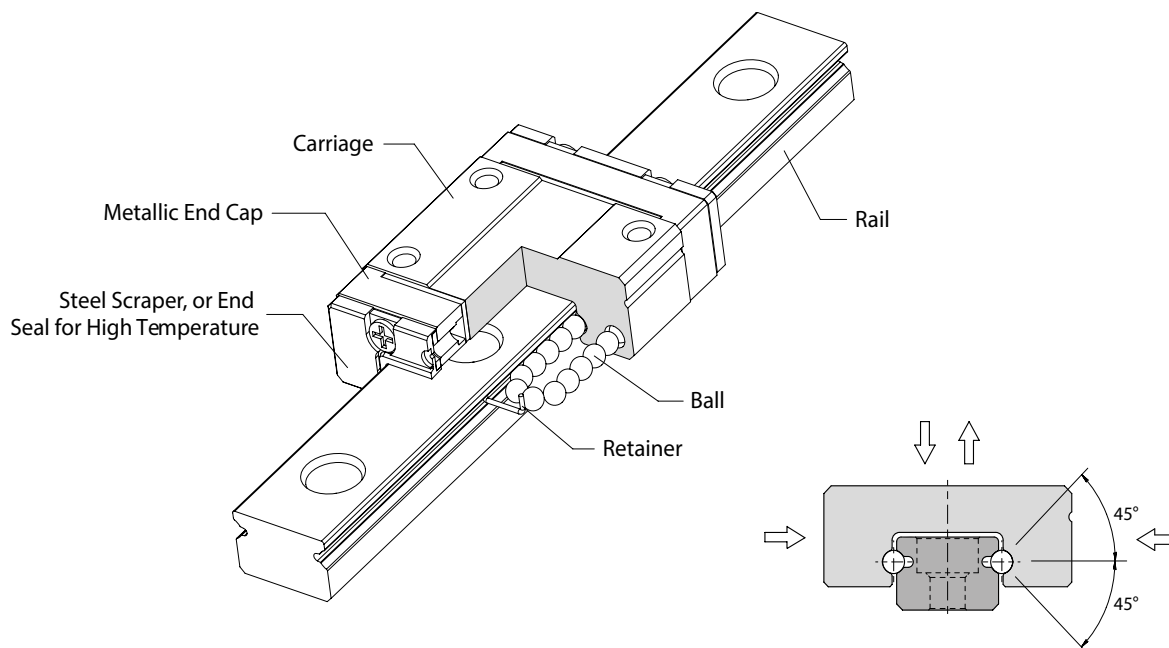
Use oil stone to polish the surface of caps and mop them with clean cloth. Finally, check the installation is perfectly flush with the rail.

| Code of Plastic Cap | Bolt Size | Rail Model       |                  |                  |                  |                  |                  |
|---------------------|-----------|------------------|------------------|------------------|------------------|------------------|------------------|
| M3C                 | M3        |                  | MSB15R           |                  |                  |                  |                  |
| M4C                 | M4        | MSA15R           | MSB15U           |                  | SME15R           |                  | MSG21R<br>MSG27R |
| M5C                 | M5        | MSA20R           | MSB20R           | MSR20R           | SME20R           |                  |                  |
| M6C                 | M6        | MSA25R           | MSB25R<br>MSB30R | MSR25R           | SME25R           | SMR25R           | MSG35R           |
| M8C                 | M8        | MSA30R<br>MSA35R | MSB30U<br>MSB35R | MSR30R<br>MSR35R | SME30R<br>SME35R | SMR30R<br>SMR35R |                  |
| M12C                | M12       | MSA45R           |                  | MSR45R           | SME45R           | SMR45R           |                  |
| M14C                | M14       | MSA55R           |                  | MSR55R           |                  | SMR55R           |                  |
| M16C                | M16       | MSA65R           |                  | MSR65R           |                  | SMR65R           |                  |

| Code of Plastic Cap | Bolt Size | Rail Model       |                  |                  |                  |                  |                  |
|---------------------|-----------|------------------|------------------|------------------|------------------|------------------|------------------|
| M4MC                | M4        | MSA15R           | MSB15U           |                  | SME15R           |                  | MSG21R<br>MSG27R |
| M5MC                | M5        | MSA20R           | MSB20R           | MSR20R           | SME20R           |                  |                  |
| M6MC                | M6        | MSA25R           | MSB25R<br>MSB30R | MSR25R           | SME25R           | SMR25R           | MSG35R           |
| M8MC                | M8        | MSA30R<br>MSA35R | MSB30U<br>MSB35R | MSR30R<br>MSR35R | SME30R<br>SME35R | SMR30R<br>SMR35R |                  |
| M12MC               | M12       | MSA45R           |                  | MSR45R           | SME45R           | SMR45R           |                  |
| M14MC               | M14       | MSA55R           |                  | MSR55R           |                  | SMR55R           |                  |
| M16                 | MSA65R    |                  | MSR65R           |                  | SMR65R           |                  |                  |
| M16C                | M16       | MSA65R           |                  | MSR65R           |                  | SMR65R           |                  |

## ME Type- Metallic End Cap Linear Guideway

### Construction and Characteristics:



### Features:

- Use of metallic parts.
- Excellent temperature resistance; service temperature under 140°C
- If the end seal is needed, the high-temperature rubber (FKM) in end seal is available.

### Applications:

- Welding equipment.
- Heat treatment equipment.
- Applications using vacuums (no vapour dispersion from plastic or rubber).

## Lubrication

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 environmental operation conditions.

### Grease lubrication

- Use of metallic parts.
- Excellent temperature resistance; service temperature under 140°C
- If the end seal is needed, the high-temperature rubber (FKM) in end seal is available.

**Note:** Carriages are supplied with assembly grease only.



| Code of Plastic Cap | Initial Feeding Amount (cm³) | Amount for Replenishing (cm³) |
|---------------------|------------------------------|-------------------------------|
| MSA 15              | 1.1                          | 0.4                           |
| MSA 20              | 2.1                          | 0.7                           |
| MSA 25              | 3.5                          | 1.2                           |
| MSA 30              | 5.8                          | 1.9                           |
| MSA 35              | 8.2                          | 2.7                           |
| MSA 45              | 16.1                         | 5.4                           |
| MSA 55              | 27.1                         | 9.0                           |
| MSA 65              | 51.6                         | 17.2                          |
| MSA 20L             | 3.1                          | 1.0                           |
| MSA 25L             | 5.1                          | 1.7                           |
| MSA 30L             | 8.2                          | 2.7                           |
| MSA 35L             | 11.8                         | 3.9                           |
| MSA 45L             | 23.0                         | 7.7                           |
| MSA 55L             | 38.8                         | 12.9                          |
| MSA 65L             | 77.8                         | 25.9                          |
| MSB 15              | 1.0                          | 0.3                           |
| MSB 20              | 1.5                          | 0.5                           |
| MSB 25              | 2.8                          | 0.9                           |
| MSB 30              | 4.5                          | 1.5                           |
| MSB 35              | 8.2                          | 2.7                           |
| MSB 15T             | 0.4                          | 0.1                           |
| MSB 20T             | 0.7                          | 0.2                           |
| MSB 25T             | 1.5                          | 0.5                           |
| MSB 30T             | 2.2                          | 0.7                           |
| MSB 35L             | 11.8                         | 3.9                           |
| MSG 21              | 1.2                          | 0.4                           |
| MSG 27              | 2.1                          | 0.7                           |
| MSG 35              | 5.6                          | 1.9                           |
| MSC 7               | 0.06                         | 0.02                          |
| MSC 9               | 0.16                         | 0.05                          |
| MSC 12              | 0.25                         | 0.08                          |
| MSC 15              | 0.49                         | 0.16                          |
| MSC 7L              | 0.11                         | 0.04                          |
| MSC 9L              | 0.24                         | 0.08                          |
| MSC 12L             | 0.42                         | 0.14                          |
| MSC 15L             | 0.80                         | 0.27                          |
| MSD 7               | 0.19                         | 0.06                          |
| MSD 9               | 0.42                         | 0.14                          |
| MSD 12              | 0.73                         | 0.24                          |

| Code of Plastic Cap | Initial Feeding Amount (cm³) | Amount for Replenishing (cm³) |
|---------------------|------------------------------|-------------------------------|
| MSD 15              | 1.51                         | 0.50                          |
| MSD 7L              | 0.28                         | 0.09                          |
| MSD 9L              | 0.60                         | 0.20                          |
| MSD 12L             | 1.07                         | 0.36                          |
| MSD 15L             | 2.18                         | 0.73                          |
| MSR 20              | 3.0                          | 1.0                           |
| MSR 25              | 4.5                          | 1.5                           |
| MSR 30              | 7.0                          | 2.3                           |
| MSR 35              | 9.6                          | 3.2                           |
| MSR 45              | 17.1                         | 5.7                           |
| MSR 55              | 26.0                         | 8.7                           |
| MSR 25L             | 5.5                          | 1.8                           |
| MSR 30L             | 8.7                          | 2.9                           |
| MSR 35L             | 12.3                         | 4.1                           |
| MSR 45L             | 22.0                         | 7.3                           |
| MSR 55L             | 34.3                         | 11.4                          |
| MSR 65L             | 64.8                         | 21.6                          |
| SMR 25              | 5.9                          | 2.0                           |
| SMR 30              | 8.8                          | 2.9                           |
| SMR 35              | 12.6                         | 4.2                           |
| SMR 45              | 21.0                         | 7.0                           |
| SMR 55              | 32.1                         | 10.7                          |
| SMR 25L             | 7.2                          | 2.4                           |
| SMR 30L             | 11.0                         | 3.7                           |
| SMR 35L             | 16.0                         | 5.3                           |
| SMR 45L             | 26.5                         | 8.8                           |
| SMR 55L             | 42.6                         | 14.2                          |
| SMR 65L             | 76.1                         | 25.4                          |
| SME 15              | 1.6                          | 0.5                           |
| SME 20              | 2.6                          | 0.9                           |
| SME 25              | 4.1                          | 1.4                           |
| SME 30              | 6.0                          | 2.0                           |
| SME 35              | 9.7                          | 3.2                           |
| SME 45              | 13.2                         | 4.4                           |
| SME 20L             | 3.6                          | 1.2                           |
| SME 25L             | 5.2                          | 1.7                           |
| SME 30L             | 8.1                          | 2.7                           |
| SME 35L             | 13.0                         | 4.3                           |
| SME 45L             | 18.5                         | 6.2                           |

|             | MSA         | MSB         | MSC         | MSD         | MSG         | SME         | SMR         | MSR         | Linear Rail Options | Rolled Ballscrews | Power Leadscrews | End Supports | Couplings Range |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|-------------------|------------------|--------------|-----------------|
| Linear Rail | Linear Rail | Linear Rail | Linear Rail | Linear Rail | Linear Rail | Linear Rail | Linear Rail | Linear Rail |                     |                   |                  |              |                 |

## Oil Lubrication

The recommended viscosity of oil is 30~150 Centistokes, and the recommended feeding rate per hour is shown in the table below.

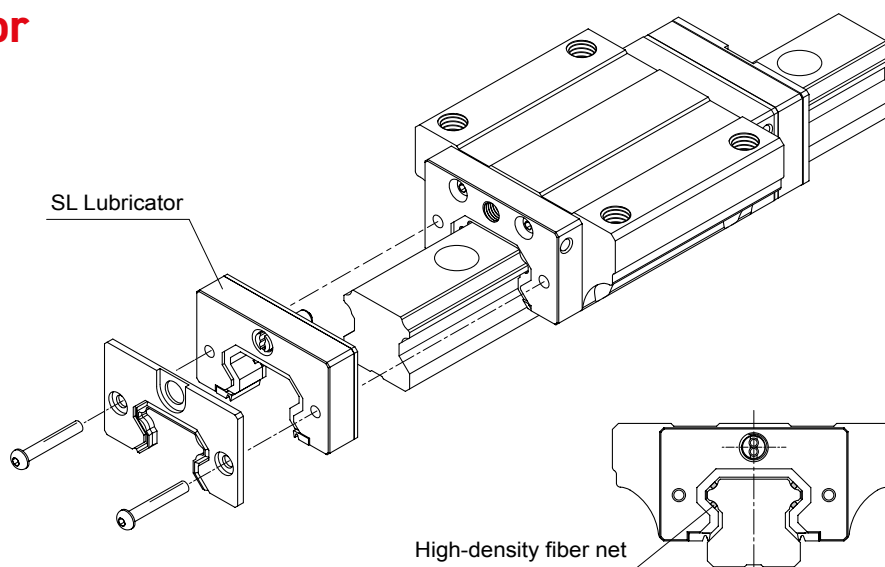
**Note:** Installation other than horizontal may result in the oil being unable to reach the raceway area.

Oil lubrication feeding rate:

| Code of Plastic Cap | Initial Feeding Amount (cm <sup>3</sup> ) | Amount for Replenishing (cm <sup>3</sup> ) |
|---------------------|-------------------------------------------|--------------------------------------------|
| 15                  | 0.6                                       | 0.4                                        |
| 20                  | 0.6                                       | 0.7                                        |
| 25                  | 0.9                                       | 1.2                                        |
| 30                  | 0.9                                       | 1.9                                        |
| 35                  | 0.9                                       | 2.7                                        |
| 45                  | 1.2                                       | 5.4                                        |
| 55                  | 1.5                                       | 9.0                                        |
| 65                  | 1.8                                       | 17.2                                       |
| MSG 21              | 0.6                                       | 1.0                                        |
| MSG 27              | 0.9                                       | 1.7                                        |
| MSG 35              | 0.9                                       | 2.7                                        |

**Note:** When the operating stroke length is less than the sum of the length of two carriages, the lubrication fitting should be applied on both ends of carriage for adequacy. Moreover, if the stroke length is less than a half of the length of a carriage, the carriage should be moved back and forth up to the length of two carriages while lubricating.

## SL Lubricator



### Characteristics:

The PMI SL lubricator unit is designed with an oil reservoir which equipped with a high-density fibre net. Through the fibre net the lubricant can be steadily fed onto the surface of raceway to satisfy the required lubricating function.

- **Lengthening the interval between maintenance works**

The SL Lubricator, unlike ordinary lubrication methods, effectively and evenly distributes the correct amount of oil to the raceway. This allows for a greater interval between maintenance.

- **Environmentally Friendly**

Through the use of SL lubricator, only the needed amount of oil will be fed for the purpose of lubrication, thereby the oil is almost nothing to lose in application. As a result, the environment will not be contaminated by waste oil.

### • Cost reduction

The SL Lubricator, unlike ordinary lubrication methods, effectively and evenly distributes the correct amount of oil to the raceway. This allows for a greater interval between maintenance.

### • Enables the most suitable oil for the purpose of use to be selected

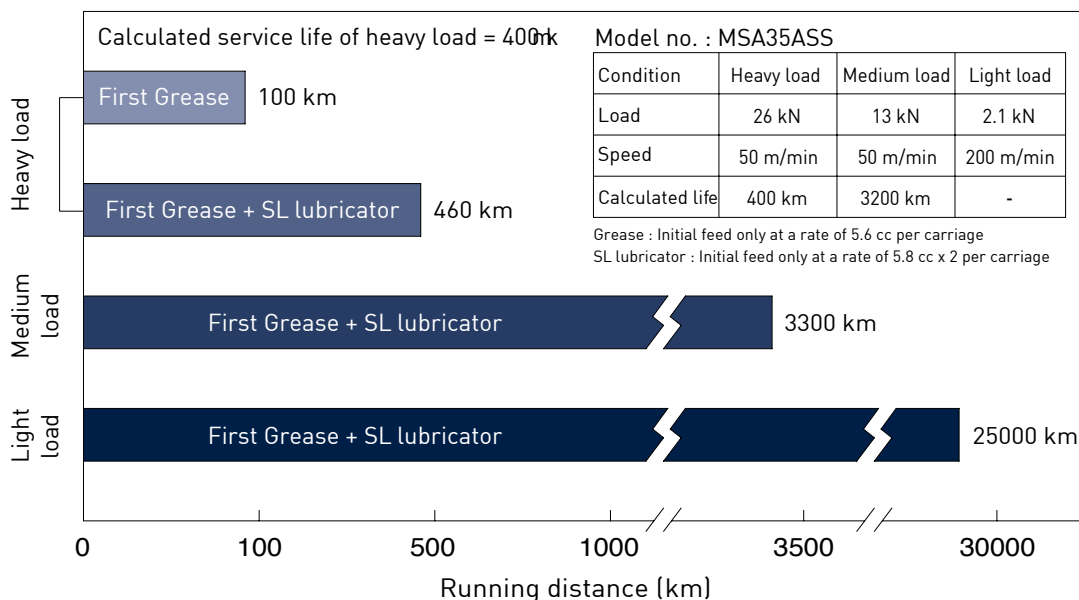
The SL lubricator makes it possible to select the most proper lubricant for your application of linear guideway.

## Performance:

### • Lengthening the interval between maintenance works

By using the SL lubricator, the time between carriage maintenance can be increased further, regardless of whether the load rating is dynamic or static.

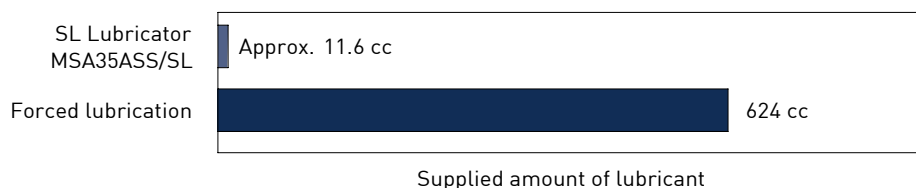
### • Running Test without Replenishment of Lubricant:



### • Effective use of lubricant

The SL Lubricator uses oil effectively as it only applies the correct amount to the rail. This results in a lower amount of waste in the long run.

### • Annual Lubricant Consumption per Carriage



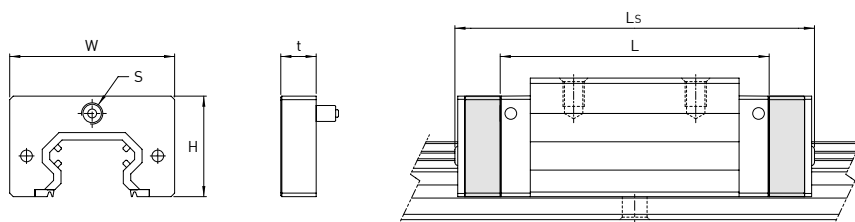
Amount of oil contained in SL Lubricator  
5.8 cc x 2 / carriage  
= 11.6 cc

Compared

Forced lubrication  
0.3 cc/hr x 8 hrs/day x 260 days/year  
= 624 cc

## SL Lubricator Dimensions

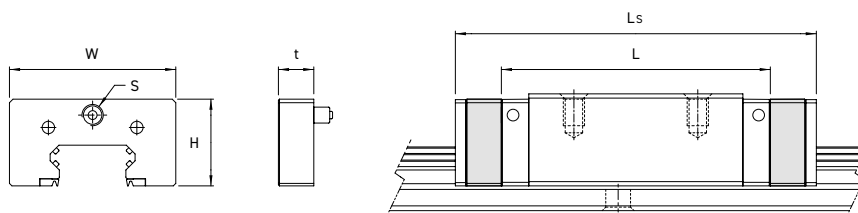
### MSA Series



| Model No. |       | Height<br>H | Width<br>W | Thickness<br>t | Tapped Hole<br>S | Carriage dimension (mm) |                                       |
|-----------|-------|-------------|------------|----------------|------------------|-------------------------|---------------------------------------|
|           |       |             |            |                |                  | Standard length<br>L    | SL Lubricator<br>Overall Length<br>Ls |
| MSA 15SL  | E/S   | 19          | 31.2       | 10             | M4               | 56.3                    | 81.3                                  |
| MSA 20SL  | E/S   | 21.2        | 42.8       | 10             | M6               | 67.3                    | 92.9                                  |
|           | LE/LS |             |            |                |                  | 83.2                    | 108.8                                 |
| MSA 25SL  | E/S   | 28.5        | 46.8       | 10             | M6               | 76                      | 101.6                                 |
|           | LE/LS |             |            |                |                  | 95                      | 120.6                                 |
| MSA 30SL  | A/E/S | 32          | 57         | 10             | M6               | 91.4                    | 117                                   |
|           | LE/LS |             |            |                |                  | 113.6                   | 139.2                                 |
| MSA 35SL  | A/E/S | 36.5        | 68         | 10             | M6               | 104                     | 131.2                                 |
|           | LE/LS |             |            |                |                  | 129.4                   | 156.6                                 |
| MSA 45SL  | A/E/S | 49          | 83.6       | 15             | 1/8PT            | 130.5                   | 167.7                                 |
|           | LE/LS |             |            |                |                  | 162.3                   | 199.5                                 |
| MSA 55SL  | A/E/S | 53          | 97         | 15             | 1/8PT            | 153.7                   | 191.5                                 |
|           | LE/LS |             |            |                |                  | 191.7                   | 229.5                                 |
| MSA 65SL  | A/E/S | 67          | 120        | 15             | 1/8PT            | 191.2                   | 229                                   |
|           | LE/LS |             |            |                |                  | 245.2                   | 283                                   |

**Note:** Supply the Dust proof series (UU, SS, ZZ, LL, RR)

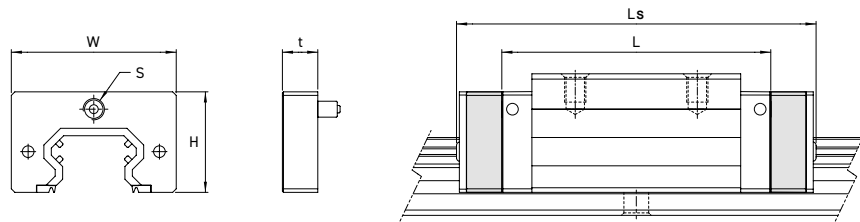
### MSB Series



| Model No. |       | Height<br>H | Width<br>W | Thickness<br>t | Tapped Hole<br>S | Carriage dimension (mm) |                                       |
|-----------|-------|-------------|------------|----------------|------------------|-------------------------|---------------------------------------|
|           |       |             |            |                |                  | Standard length<br>L    | SL Lubricator<br>Overall Length<br>Ls |
| MSB 15SL  | TE/TS | 18.5        | 33         | 10             | M4               | 65                      | 35                                    |
|           | E/S   |             |            |                |                  | 82                      | 52                                    |
| MSB 20SL  | TE/TS | 21.2        | 40.8       | 10             | M6               | 68                      | 42                                    |
|           | E/S   |             |            |                |                  | 87                      | 61                                    |
| MSB 25SL  | TE/TS | 24.5        | 47         | 10             | M6               | 80.2                    | 54.2                                  |
|           | E/S   |             |            |                |                  | 102                     | 76                                    |
| MSB 30SL  | TE/TS | 30.8        | 57         | 10             | M6               | 88                      | 62                                    |
|           | E/S   |             |            |                |                  | 116.7                   | 90.7                                  |
| MSB 35SL  | TE/TS | 37          | 68.5       | 10             | M6               | 98                      | 70.8                                  |
|           | E/S   |             |            |                |                  | 132                     | 104.8                                 |
|           | LE/LS |             |            |                |                  | 157.5                   | 130.3                                 |

**Note:** Supply the Dust proof series (UU, SS, ZZ, LL, RR)

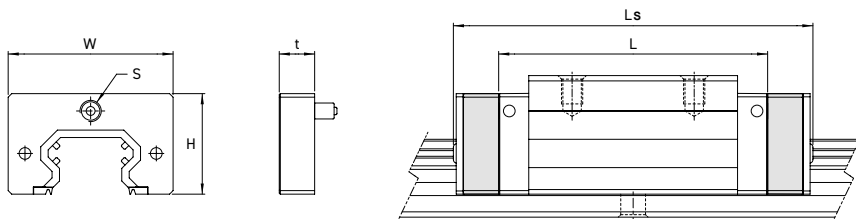
## MSR Series



| Model No. |       |          |         |             |               | Carriage dimension (mm) |                                 |
|-----------|-------|----------|---------|-------------|---------------|-------------------------|---------------------------------|
|           |       | Height H | Width W | Thickness t | Tapped Hole S | Standard length L       | SL Lubricator Overall Length Ls |
| MSR 25SL  | E/S   | 30.2     | 47      | 10          | M6            | 91.5                    | 117.5                           |
|           | LE/LS |          |         |             |               | 109.5                   | 135.5                           |
| MSR 30SL  | E/S   | 34.5     | 58.6    | 10          | M6            | 106.4                   | 132.4                           |
|           | LE/LS |          |         |             |               | 129.2                   | 155.2                           |
| MSR 35SL  | E/S   | 40.5     | 69      | 10.3        | M6            | 119.3                   | 145.9                           |
|           | LE/LS |          |         |             |               | 147.5                   | 174.1                           |
| MSR 45SL  | E/S   | 50.9     | 84      | 15.3        | 1/8PT         | 147.8                   | 184.8                           |
|           | LE/LS |          |         |             |               | 183                     | 220                             |
| MSR 55SL  | E/S   | 58.5     | 98      | 15.3        | 1/8PT         | 178.2                   | 216                             |
|           | LE/LS |          |         |             |               | 228.2                   | 266                             |
| MSR 65SL  | LE/LS | 76.5     | 122     | 15          | 1/8PT         | 294.2                   | 332                             |

Note: Supply the Dust proof series (UU, SS, ZZ)

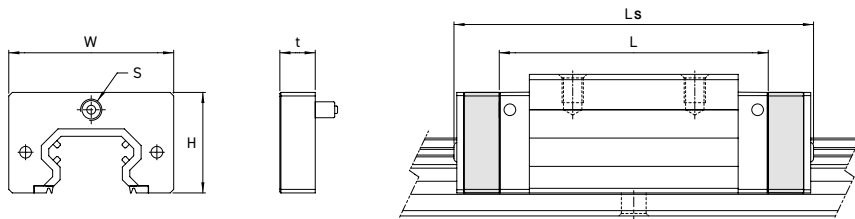
## SMR series



| Model No. |       |          |         |             |               | Carriage dimension (mm) |                                 |
|-----------|-------|----------|---------|-------------|---------------|-------------------------|---------------------------------|
|           |       | Height H | Width W | Thickness t | Tapped Hole S | Standard length L       | SL Lubricator Overall Length Ls |
| SMR 25SL  | E/S   | 30.2     | 47      | 10          | M6            | 91.5                    | 117.5                           |
|           | LE/LS |          |         |             |               | 109.5                   | 135.5                           |
| SMR 30SL  | E/S   | 34.5     | 58.6    | 10          | M6            | 106.4                   | 132.4                           |
|           | LE/LS |          |         |             |               | 129.2                   | 155.2                           |
| SMR 35SL  | E/S   | 40.5     | 69      | 10.3        | M6            | 119.3                   | 145.9                           |
|           | LE/LS |          |         |             |               | 147.5                   | 174.1                           |
| SMR 45SL  | E/S   | 50.9     | 84      | 15.3        | 1/8PT         | 147.8                   | 184.8                           |
|           | LE/LS |          |         |             |               | 183                     | 220                             |
| SMR 55SL  | E/S   | 58.5     | 98      | 15.3        | 1/8PT         | 178.2                   | 216                             |
|           | LE/LS |          |         |             |               | 228.2                   | 266                             |
| SMR 65SL  | LE/LS | 76.5     | 122     | 15          | 1/8PT         | 294.2                   | 332                             |

Note: Supply the Dust proof series (UU, SS, ZZ)

### SME series



| Model No. |       | Height<br>H | Width<br>W | Thickness<br>t | Tapped Hole<br>S | Carriage dimension (mm) |                                       |
|-----------|-------|-------------|------------|----------------|------------------|-------------------------|---------------------------------------|
|           |       |             |            |                |                  | Standard length<br>L    | SL Lubricator<br>Overall Length<br>Ls |
| SME 15SL  | E/S   | 20.1        | 33.2       | 10             | M4               | 59                      | 84.4                                  |
|           | LE/LS |             |            |                |                  | 22.8                    | 41.4                                  |
| SME 20SL  | E/S   | 22.8        | 41.4       | 10             | M6               | 72.5                    | 98.5                                  |
|           | LE/LS |             |            |                |                  | 33.5                    | 58.5                                  |
| SME 25SL  | E/S   | 26.1        | 47.2       | 10             | M6               | 86                      | 112                                   |
|           | LE/LS |             |            |                |                  | 49                      | 83.6                                  |
| SME 30SL  | E/S   | 33.5        | 58.5       | 10             | M6               | 102                     | 127.6                                 |
|           | LE/LS |             |            |                |                  | 127                     | 152.6                                 |
| SME 35SL  | E/S   | 38.5        | 68         | 10             | M6               | 113.8                   | 140.6                                 |
|           | LE/LS |             |            |                |                  | 143.8                   | 170.6                                 |
| SME 45SL  | E/S   | 49          | 83.6       | 15             | 1/8PT            | 132.8                   | 170                                   |
|           | LE/LS |             |            |                |                  | 167.3                   | 204.5                                 |

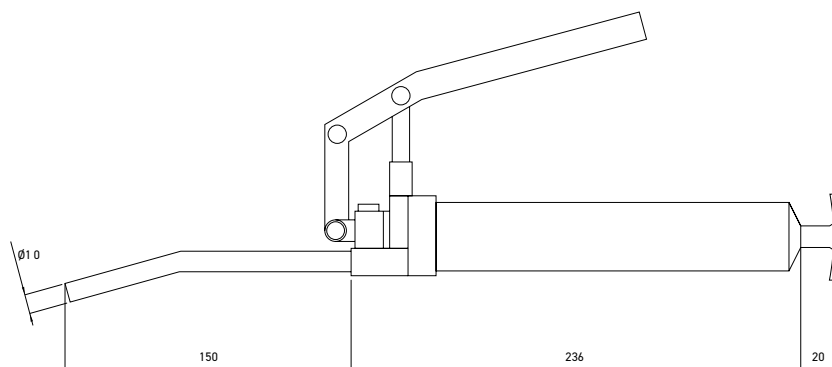
Note: Supply the Dust proof series (UU, SS, ZZ)

## Lubrication Equipment - Grease Gun

Note: Different nozzles are required for different greases and oils.

Size and working condition:

**Discharge pressure:** 15MPa  
**Discharge rate:** 0.35g/stroke  
**Weight (excluding the grease):** 680g  
**Overall length:** about 400mm  
**Width:** about 120mm  
**Outside diameter of nozzle:** Ø10mm



## Greasing Information For Standard Applications.

**Load Ratio:** Max. 15% Of  
Dynamic Basic Load Rating  
**Temperature Range:** -10 ~ 80 °C  
**Speed:** < 1 M/S  
**Speed Co-Efficient:** < 120,000

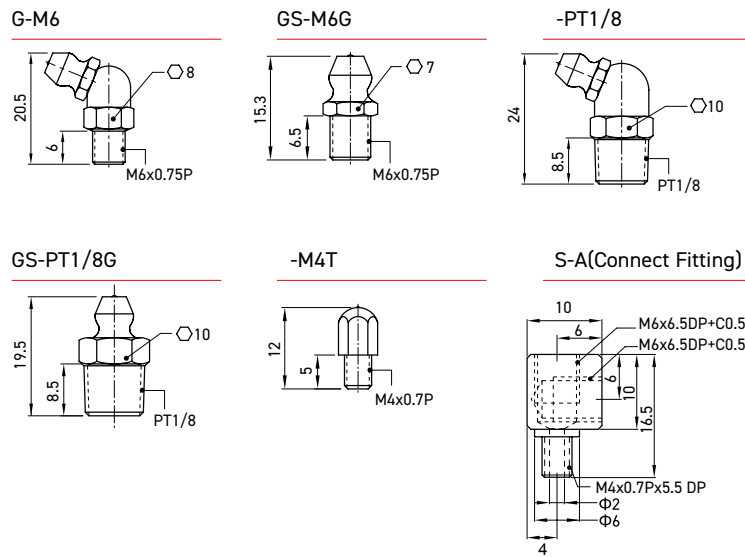
**Load Ratio:** Max. 50% Of  
Dynamic Basic Load Rating  
**Temperature Range:** -10 ~ 80 °C  
**Speed:** < 1 M/S  
**Speed Co-Efficient:** < 120,000

| Manufacturer   | Part Number           |
|----------------|-----------------------|
| Kluber         | Kluberlub GL-261.4    |
| Mobil          | Mobilux EP1           |
| Fuch Lubritech | Lagermeister BF2      |
| Lubcon         | Turmogrease CAK 25002 |

| Manufacturer   | Part Number          |
|----------------|----------------------|
| Kluber         | Kluberlub BE 71-501  |
| Fuch Lubritech | Lagermeister EP2     |
| Lubcon         | Turmogrease Li 802EP |

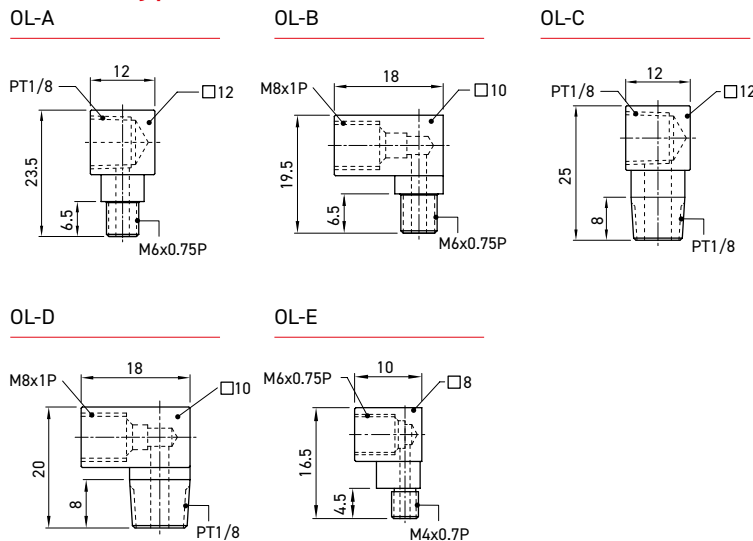
# Grease Nipple & Piping Joint

## Grease Nipple

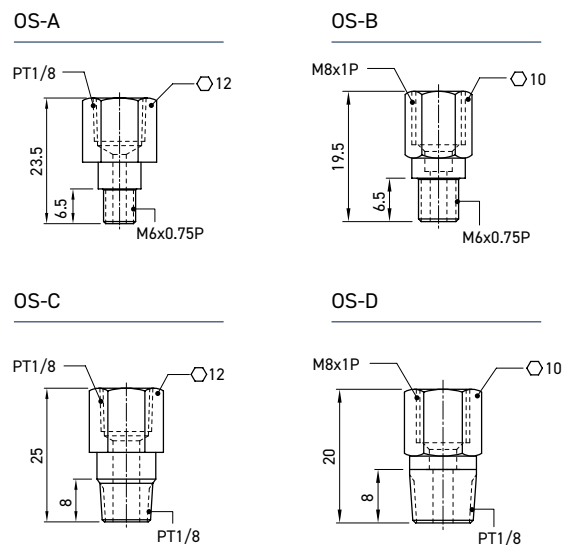


## Oil Piping Joint

### •OL Type



### •OS Type



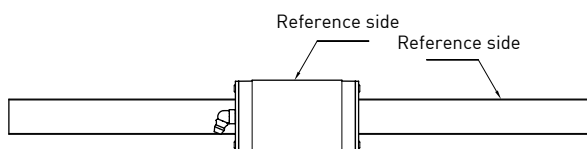
| Model No. |       |       |       |       |       | Dust Proof Type |          |          |           |          |           |          |           |
|-----------|-------|-------|-------|-------|-------|-----------------|----------|----------|-----------|----------|-----------|----------|-----------|
|           |       |       |       |       |       | SS              |          | DD       |           | ZZ       |           | KK       |           |
| MSA15     | MSB15 | SME15 |       | MSR20 |       | G-M4            | OL-E     | G-M4L    | OL-EL     | G-M4L    | OL-EL     | G-M4L    | OL-EL     |
| MSA20     | MSB20 | SME20 |       |       |       |                 |          |          |           |          |           |          |           |
| MSA25     | MSB25 | SME25 | SMR25 | MSR25 | MSG21 | G-M6            | GS-M6    | G-M6M    | GS-M6M    | G-M6M    | GS-M6M    | G-M6L    | GS-M6L    |
| MSA30     | MSB30 | SME30 | SMR30 | MSR30 | MSG27 | OL-A            | OL-B     | OL-AL    | OL-BLR    | OL-AL    | OL-BLR    | OL-AL    | OL-BLR    |
| MSA35     | MSB35 | SME35 | SMR35 | MSR35 | MSG35 | OS-A            | OS-B     | OS-AL    | OS-BL     | OS-AL    | OS-BL     | OS-AL    | OS-BL     |
| MSA45     |       | SME45 | SMR45 | MSR45 |       | G-PT1/8         | GS-PT1/8 | G-PT1/8L | GS-PT1/8L | G-PT1/8L | GS-PT1/8L | G-PT1/8L | GS-PT1/8L |
| MSA55     |       |       | SMR55 | MSR55 |       | OL-C            | OL-D     | OL-CL    | OL-DL     | OL-CL    | OL-DL     | OL-CL    | OL-DL     |
| MSA65     |       |       | SMR65 | MSR65 |       | OS-C            | OS-D     | OS-CL    | OS-DL     | OS-CL    | OS-DL     | OS-CL    | OS-DL     |

Note: 1. MSA15-ZZ and MSA15-DD use the nipple "G-M4"  
2. MSB15 uses the "OL-EL" nipple, rather than "OL-E".

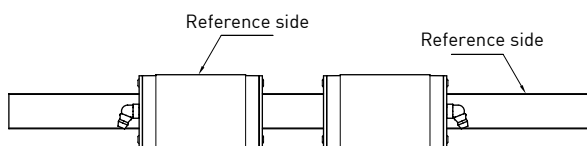
## The Relationship Between The Direction Of Lubrication And The Reference Side

The standard lubrication fitting is grease nipple (G-M6, G-PT1/8, G-M4). The codes for different application types for lubrication fittings are shown below. For cases other than specified, please contact us for confirmation.

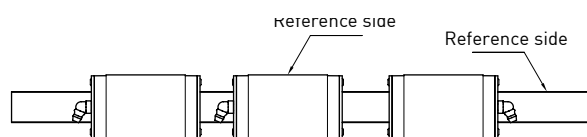
Code: C1R1



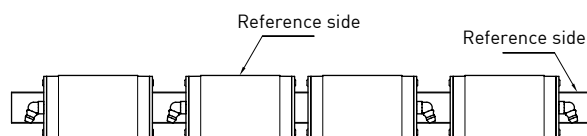
Code: C2R1



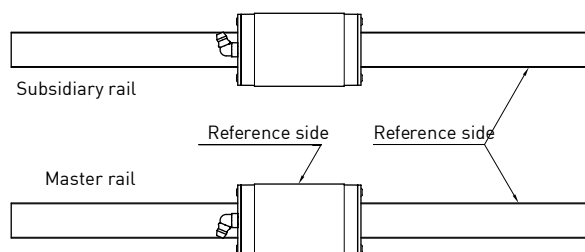
Code: C3R1



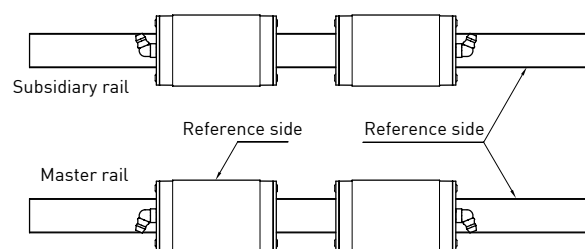
Code: C4R1



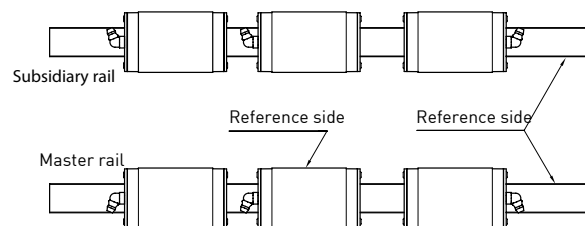
Code: C1R2



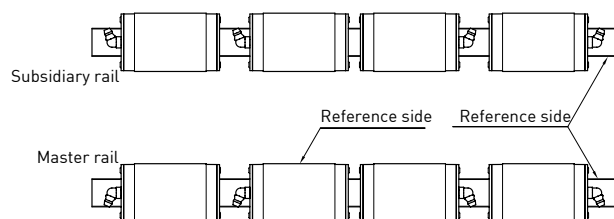
Code: C2R2



Code: C3R2



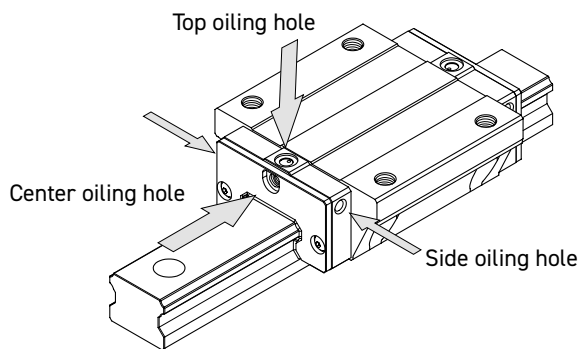
Code: C4R2



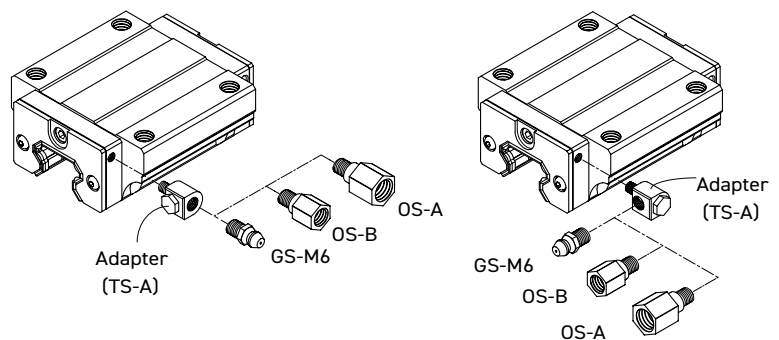
## Lubrication Position

The standard mounting location for the lubrication nipples on all types of carriage can be found at the centre of both ends. For lateral and top application, please specify when ordering. As shown below, the lateral application is achieved by using an adapter to connect the grease/oil fitting to the hole on the carriage.

### Lubrication Location

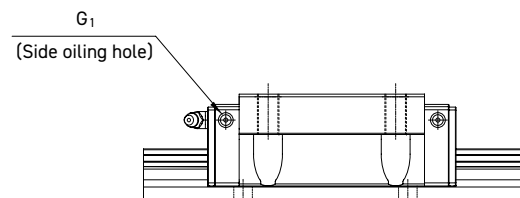
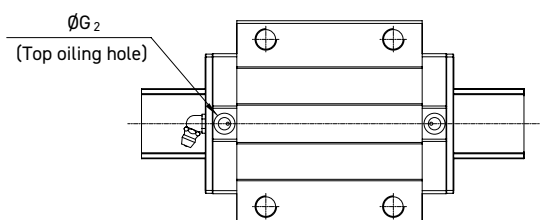


### Lateral Usage



| Model No. |        | Center  | Side    |        |
|-----------|--------|---------|---------|--------|
|           |        | Nipple  | G1      | Nipple |
| MSA 15    | MSB 15 | G-M4    | M4×0.7P | G-M4   |
| MSA 20    | MSB 20 | G-M6    | M4×0.7P | G-M4   |
| MSA 25    | MSB 25 | G-M6    | M4×0.7P | G-M4   |
| MSA 30    | MSB 30 | G-M6    | M4×0.7P | G-M4   |
| MSA 35    | MSB 35 | G-M6    | M4×0.7P | G-M4   |
| MSA 45    |        | G-PT1/8 | M4×0.7P | G-M4   |
| MSA 55    |        | G-PT1/8 | M4×0.7P | G-M4   |
| MSA 65    |        | G-PT1/8 | M4×0.7P | G-M4   |

**Note:** MSA and MSB series have no top oiling hole option.



| Model No. | Center | Side    |        | Top |        |
|-----------|--------|---------|--------|-----|--------|
|           | Nipple | G1      | Nipple | G2  | O-Ring |
| MSG 21    | G-M6   | M4×0.7P | G-M4   | -   | -      |
| MSG 27    | G-M6   | M4×0.7P | G-M4   | 6.1 | P3     |
| MSG 35    | G-M6   | M4×0.7P | G-M4   | 7.3 | P4     |