

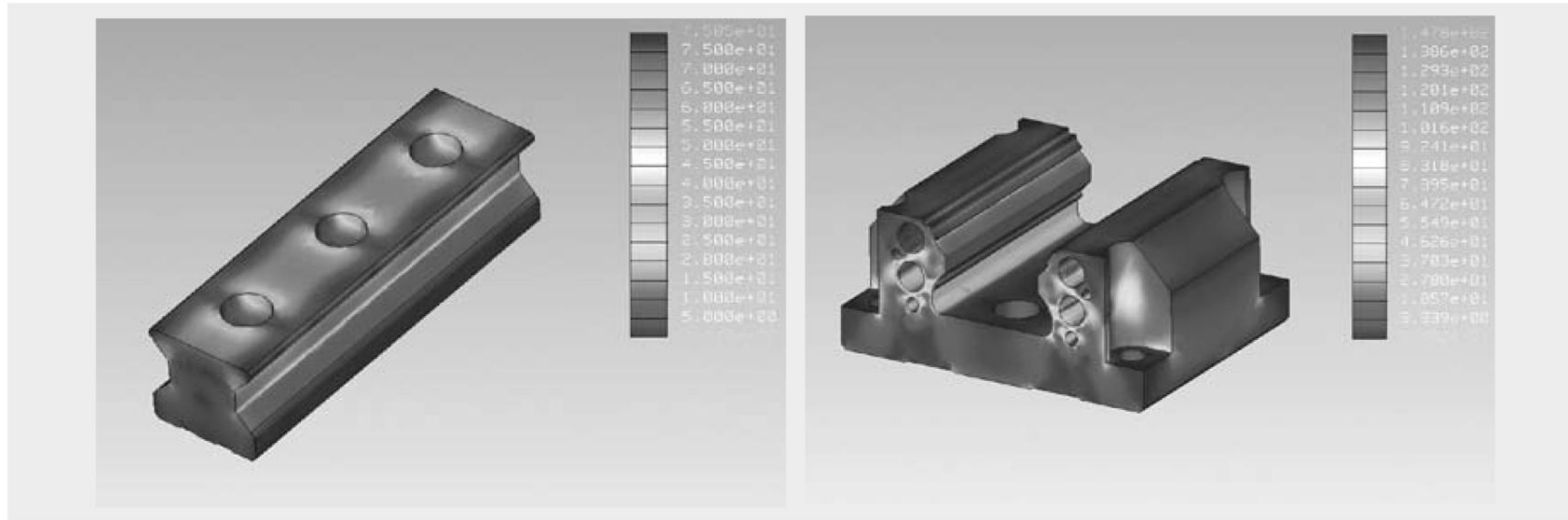
2-4 RG Series – High Rigidity Roller Type Linear Guideway

2-4-1 Advantages and features

The new RG series from Hiwin features a roller as the rolling element instead of steel balls. The roller series offers super high rigidity and very high load capacities. The RG series is designed with a 45-degree angle of contact. Elastic deformation of the linear contact surface, during load, is greatly reduced thereby offering greater rigidity and higher load capacities in all 4 load directions. The RG series linear guideway offers high performance for high-precision manufacturing and achieving longer service life.

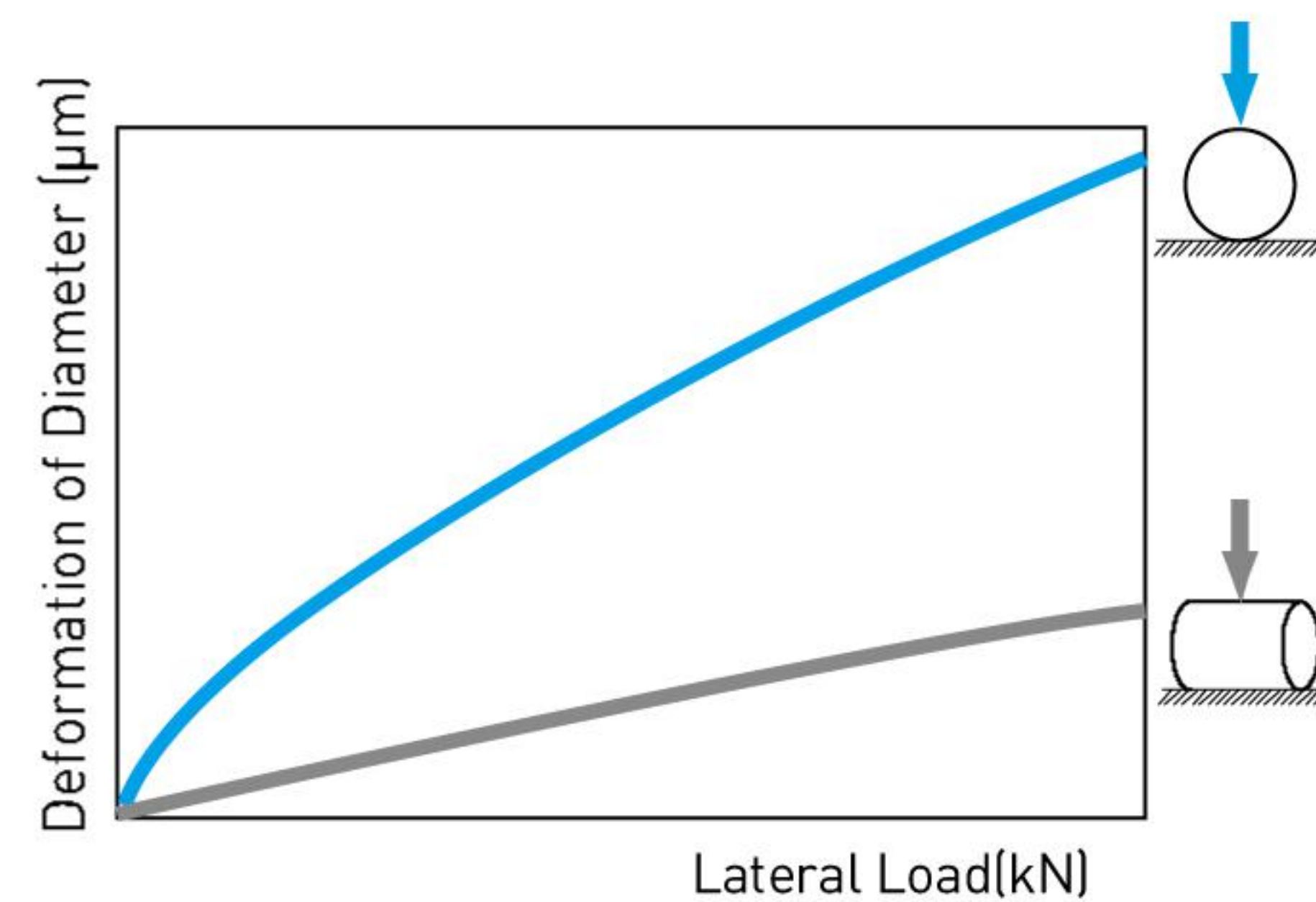
(1) Optimal design

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



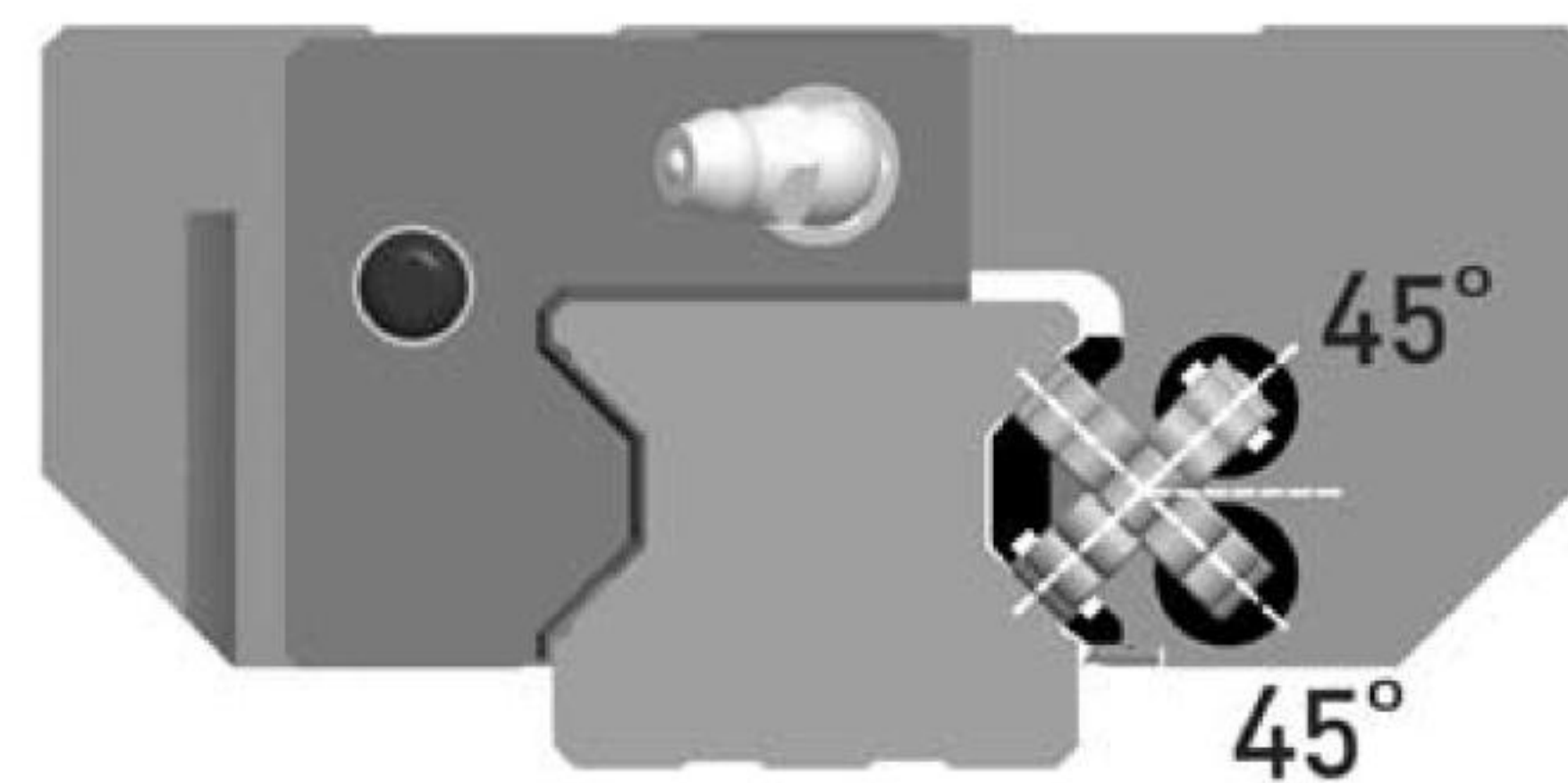
(2) Super high rigidity

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



(3) Super high load capacity

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



(4) Operating life increased

The basic dynamic load rating (100km rating) complies with ISO standard (ISO14728-1). The actual load will affect the nominal life of a linear guideway. Based on the selected basic dynamic rated load and the actual load, the nominal life can be calculated by using Eq.2.4. This life formula is different from that for conventional linear ball-type guideways.

$$L = \left(\frac{C}{P} \right)^{\frac{10}{3}} \cdot 100\text{km} = \left(\frac{C}{P} \right)^{\frac{10}{3}} \cdot 62\text{mile} \quad \dots\dots\dots \text{Eq. 2.4}$$

Linear Guideways

RG Series

If the environmental factors are taken into consideration, the nominal life will be influenced greatly by the motion conditions, the hardness of the raceway, and the temperature of the linear guideway. The relationship between these factors is expressed in Eq.2.5.

$$L=\left(\frac{f_h\cdot f_t\cdot C}{f_w\cdot P}\right)^{\frac{10}{3}}\cdot 100km=\left(\frac{f_h\cdot f_t\cdot C}{f_w\cdot P}\right)^{\frac{10}{3}}\cdot 62mile$$

..... Eq. 2.5

- L : Nominal life

P : Calculated load

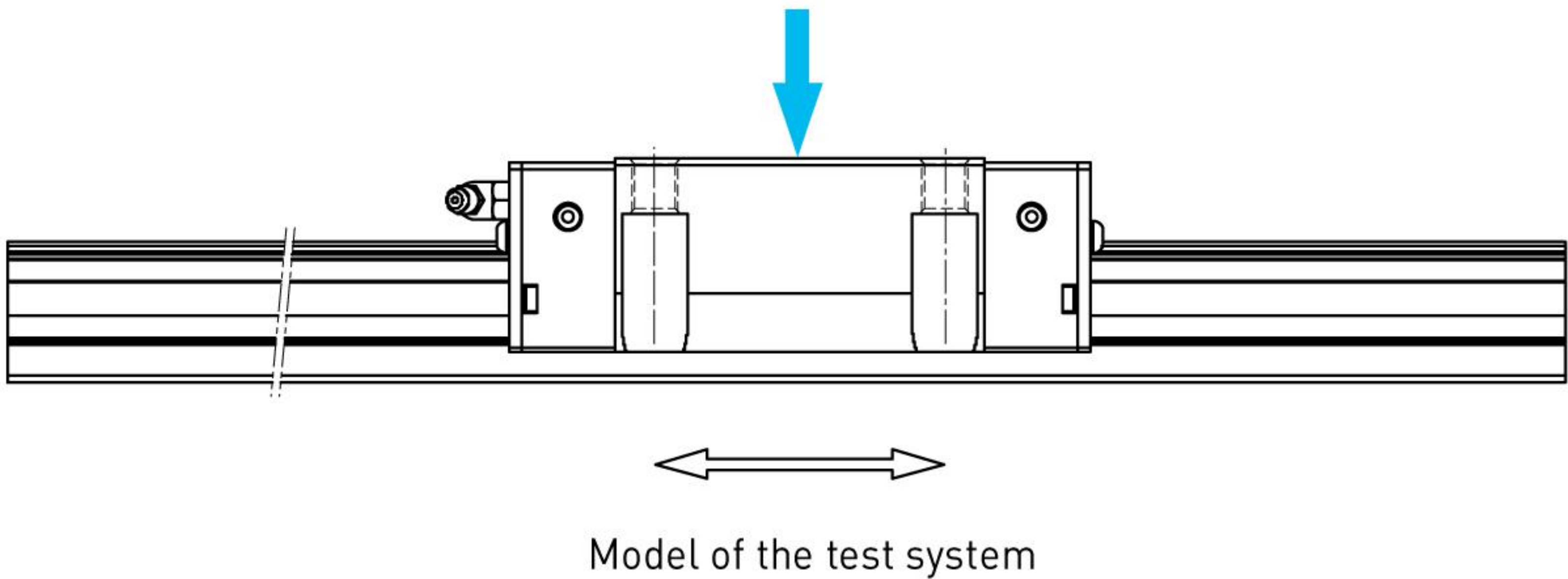
C : Basic dynamic load rating
- f_h : Hardness factor

f_t : Temperature factor

f_w : Load factor

Where, the hardness factor, the temperature factor and the load factor are the same as a ball-type guideway. Compared with conventional linear ball-type guideways, the RG series linear guideway has a higher load capacity that allows it to achieve a longer service life.

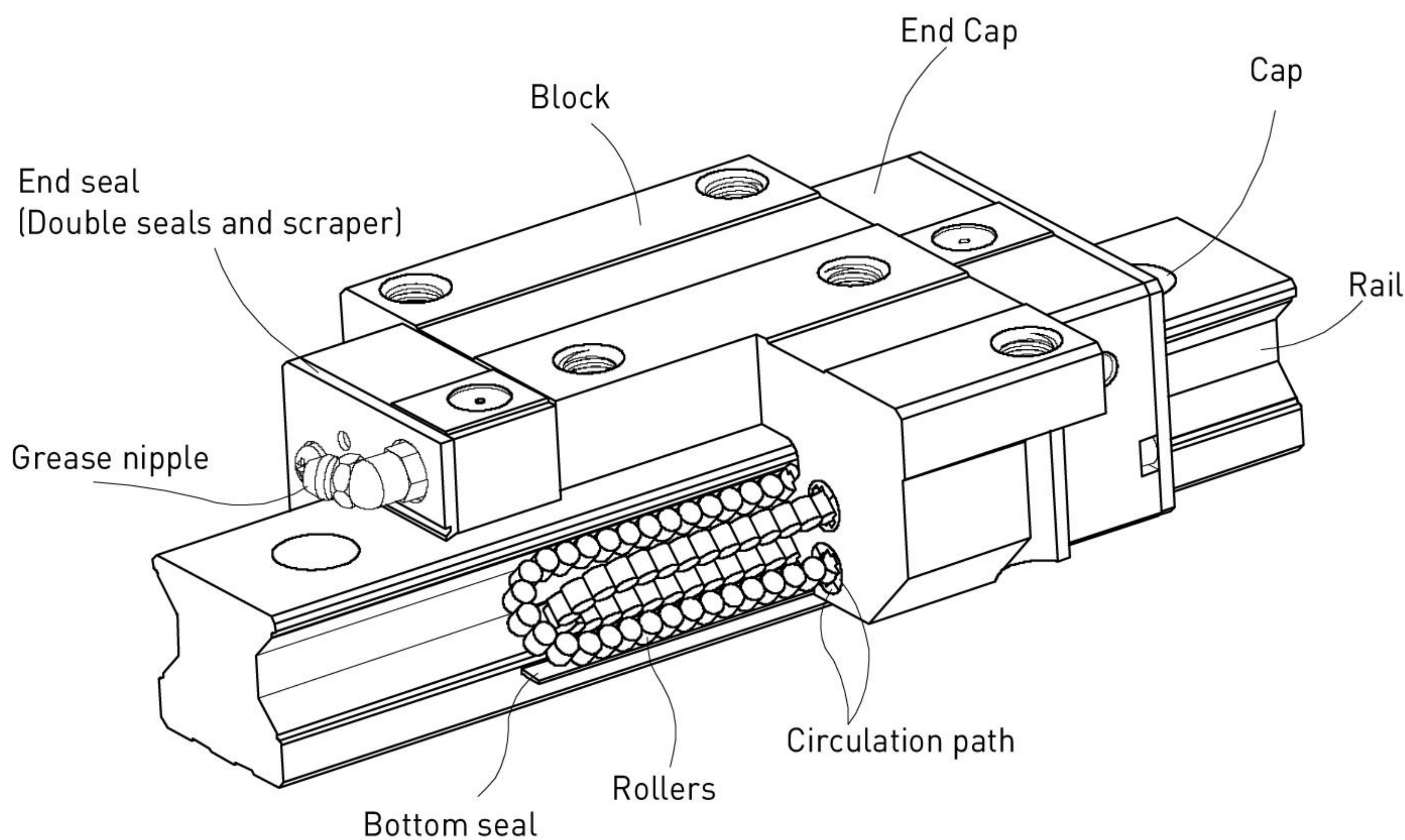
(5) Durability test



<div>Table 2.55</div> <div><div><div><div><div>Tested model 1: RGH35CA</div><div>Preload: ZA class</div><div>Max. Speed: 60m/min</div><div>Acceleration: 1G</div><div>Stroke: 0.55m</div><div>Lubrication: grease held every 100km</div><div>External: 15kN</div><div>Traveling distance: 1135km</div></div></div><div><div>Test results:</div><div>The nominal life of the model is 1000km.</div><div>After the traveling distance, fatigue flaking did not appear on the surface of the raceway or rollers.</div></div><div></div></div></div> <tr><td><div><div><div><div>Tested model 2: RGW35CC</div><div>Preload: ZA class</div><div>Max. Speed: 120m/min</div><div>Acceleration: 1G</div><div>Stroke: 2m</div><div>Lubrication: oil feed rate: 0.3cm³/hr</div><div>External load: 0kN</div><div>Traveling distance: 15000km</div></div></div><div><div>Test results:</div><div>Fatigue flaking did not appear on the surface of the raceway or rollers after a distance of (15000km).</div></div><div></div></div></td></tr>	<div><div><div><div>Tested model 2: RGW35CC</div><div>Preload: ZA class</div><div>Max. Speed: 120m/min</div><div>Acceleration: 1G</div><div>Stroke: 2m</div><div>Lubrication: oil feed rate: 0.3cm³/hr</div><div>External load: 0kN</div><div>Traveling distance: 15000km</div></div></div><div><div>Test results:</div><div>Fatigue flaking did not appear on the surface of the raceway or rollers after a distance of (15000km).</div></div><div></div></div>
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Note: The data listed are from these samples.

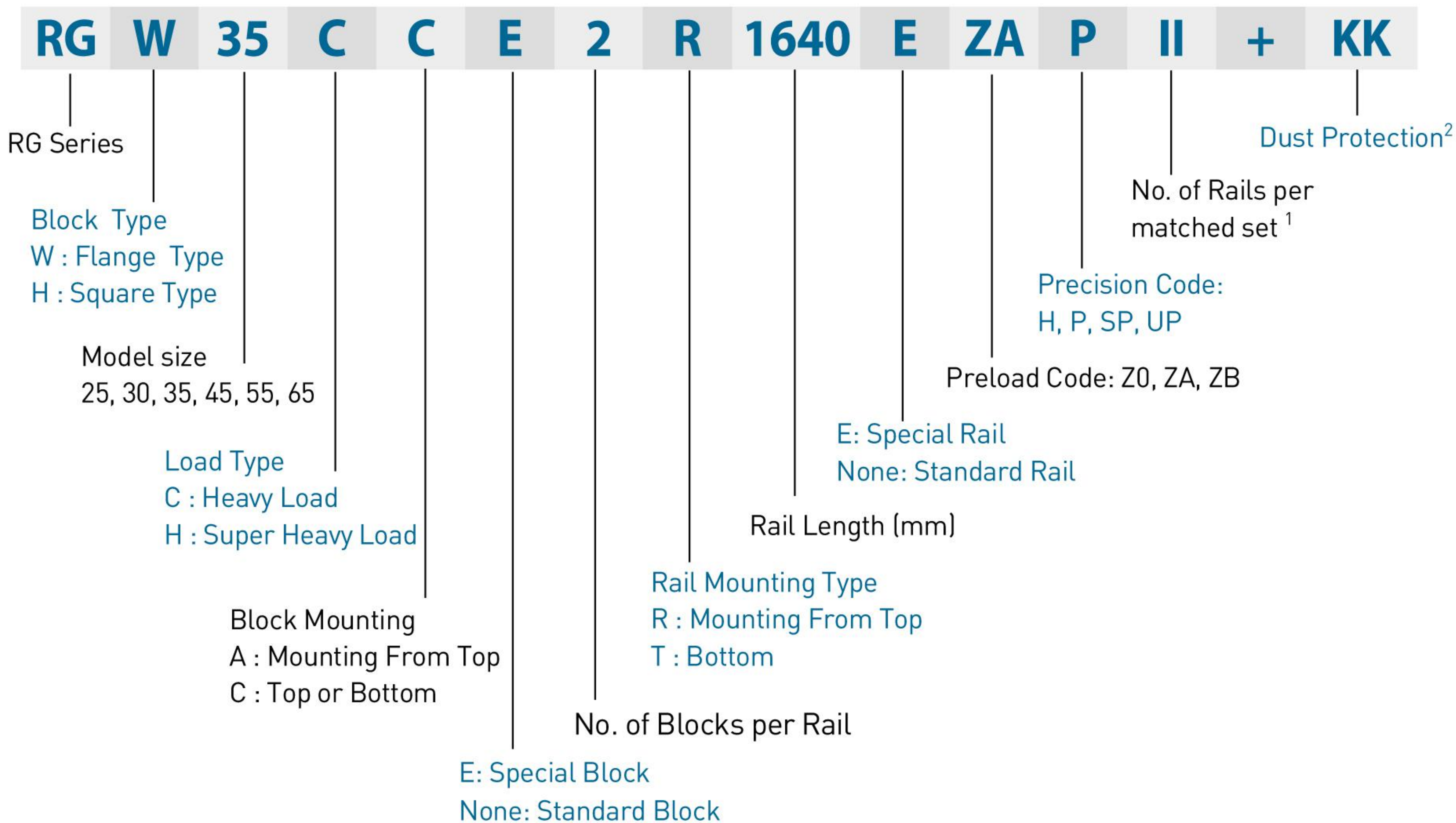
2-4-2 Construction of RG Series



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

2-4-3 Model Number of RG series

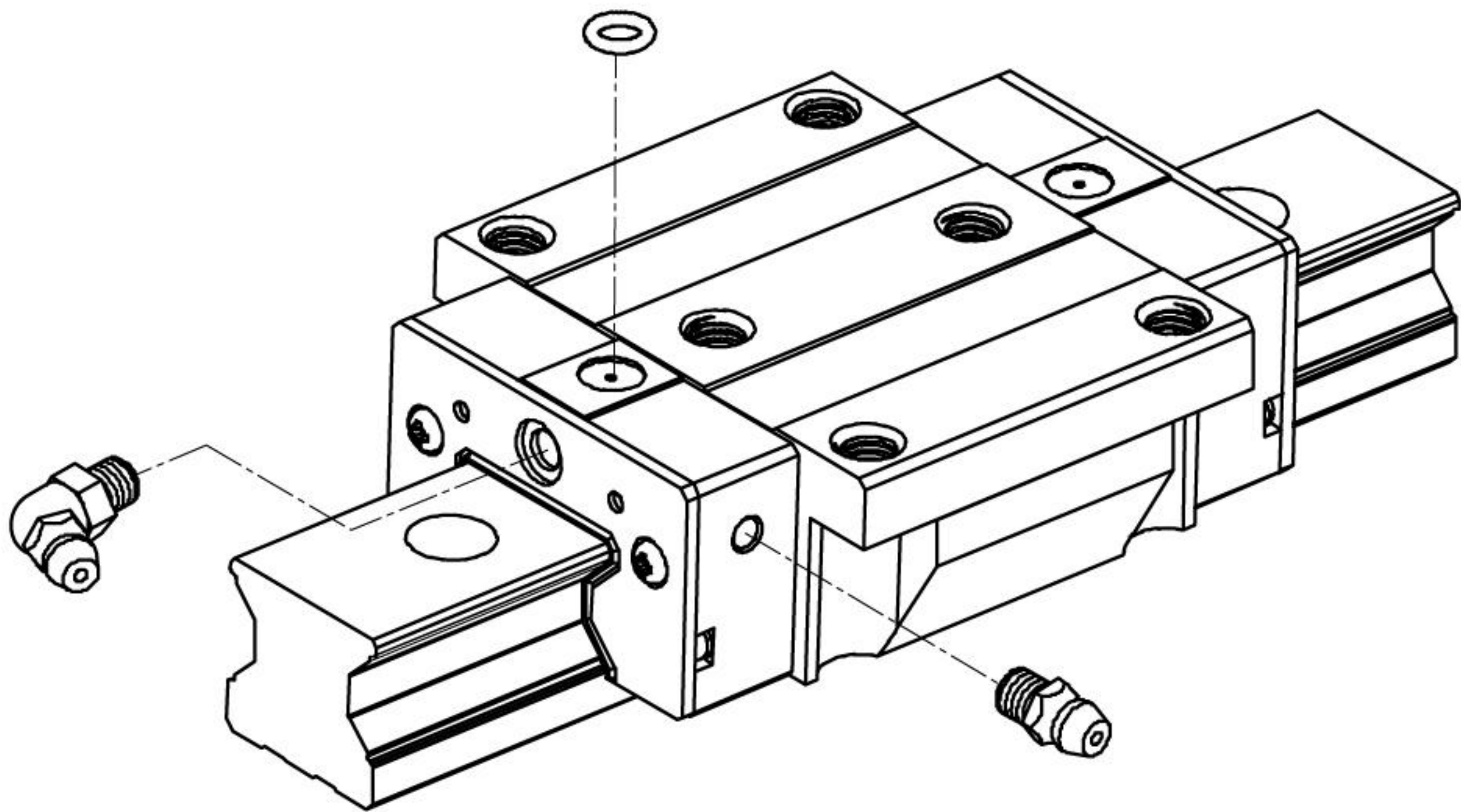
In order to maintain H-class accuracy, the RG series linear guideway is available in only non-interchangeable types. Model numbers of the RG series contain the size, type, accuracy class, preload class, etc..



Note: 1. Roman numerals are used to express the number of matched sets of rails.
2. For dust protection, no symbol is required if it is standard (end seal and bottom seal only).
ZZ: End seal, bottom seal and scraper
KK: Double seals, bottom seal and scraper
DD: Double seals and bottom seal

2-4-7 Lubrication

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

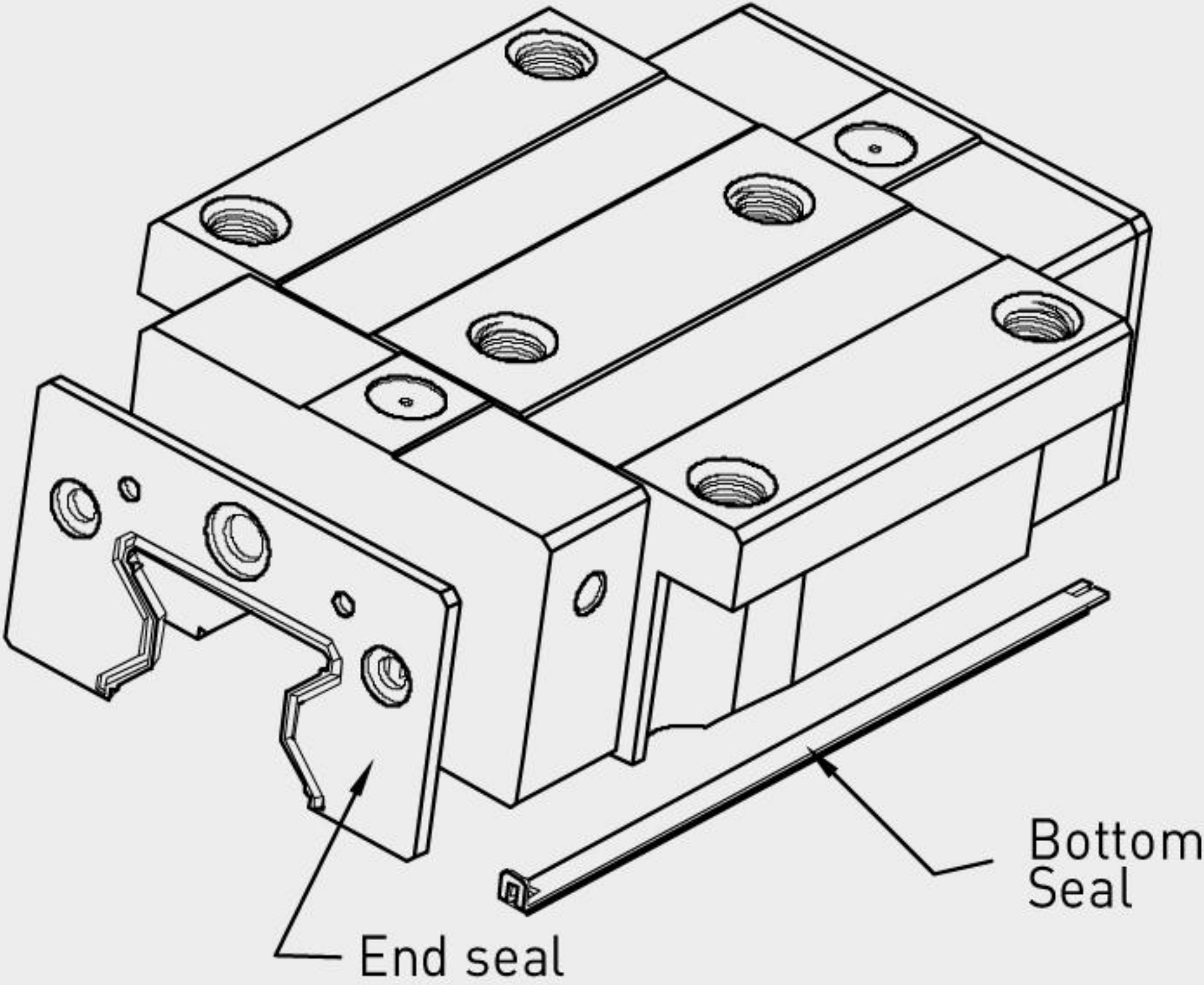
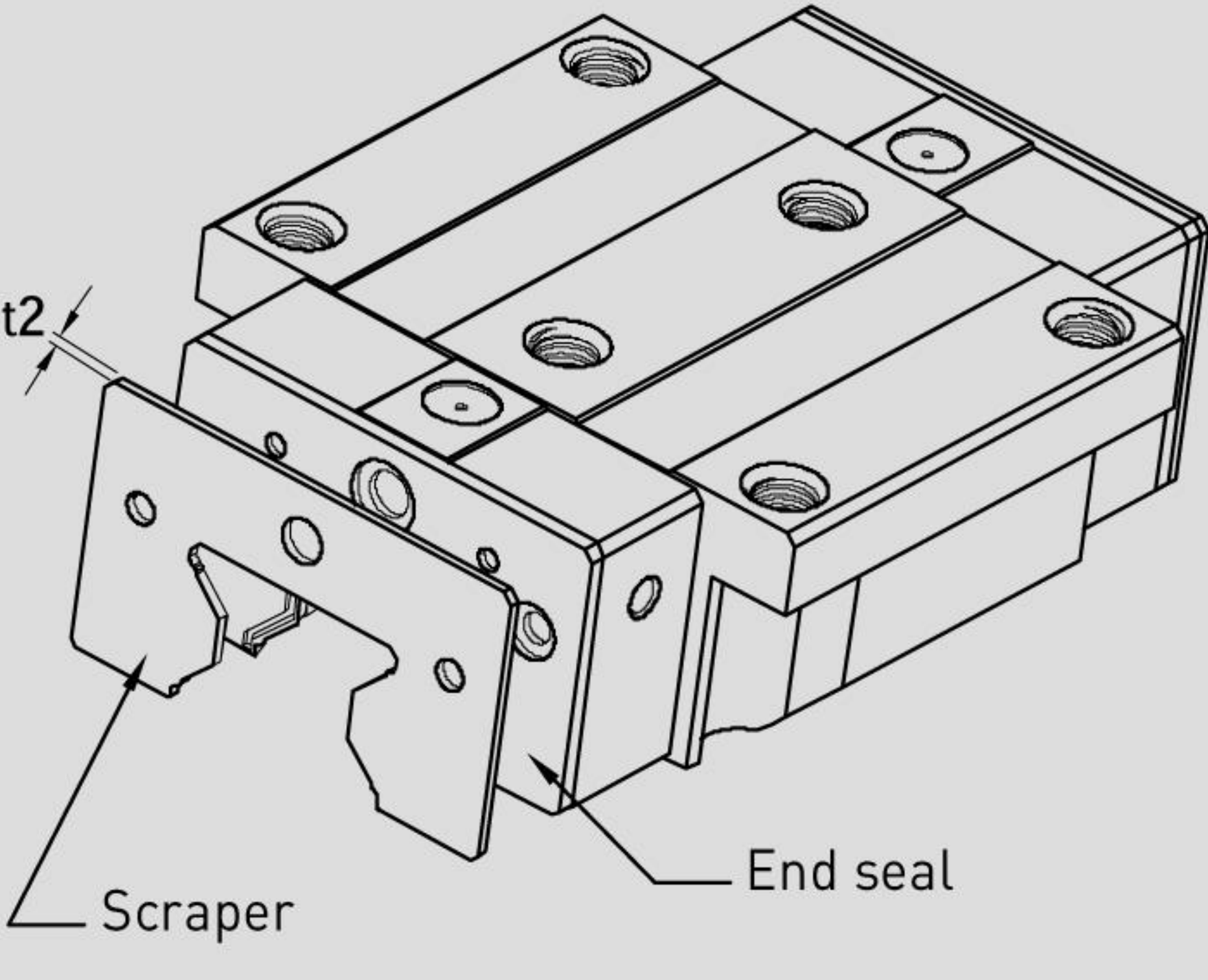
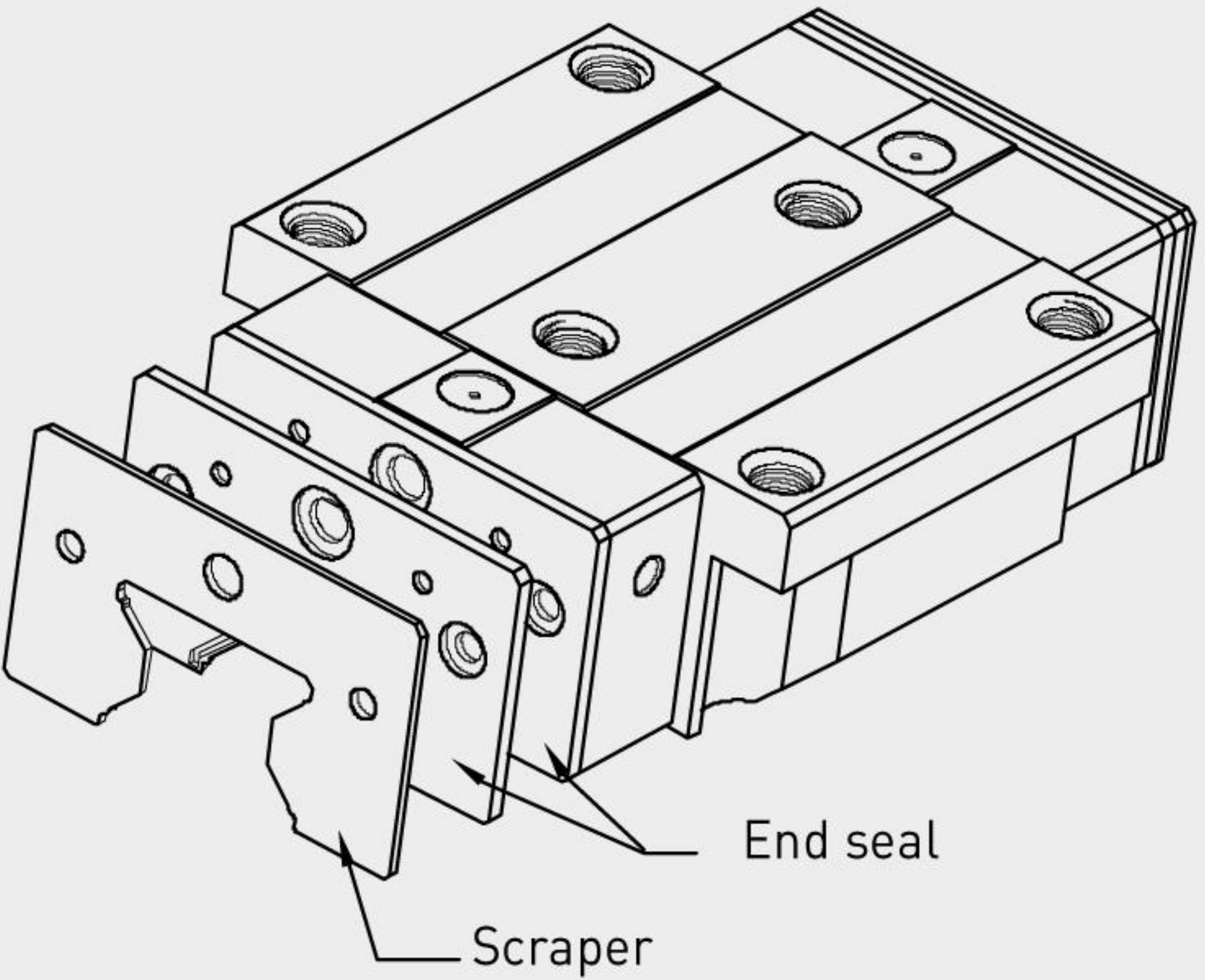
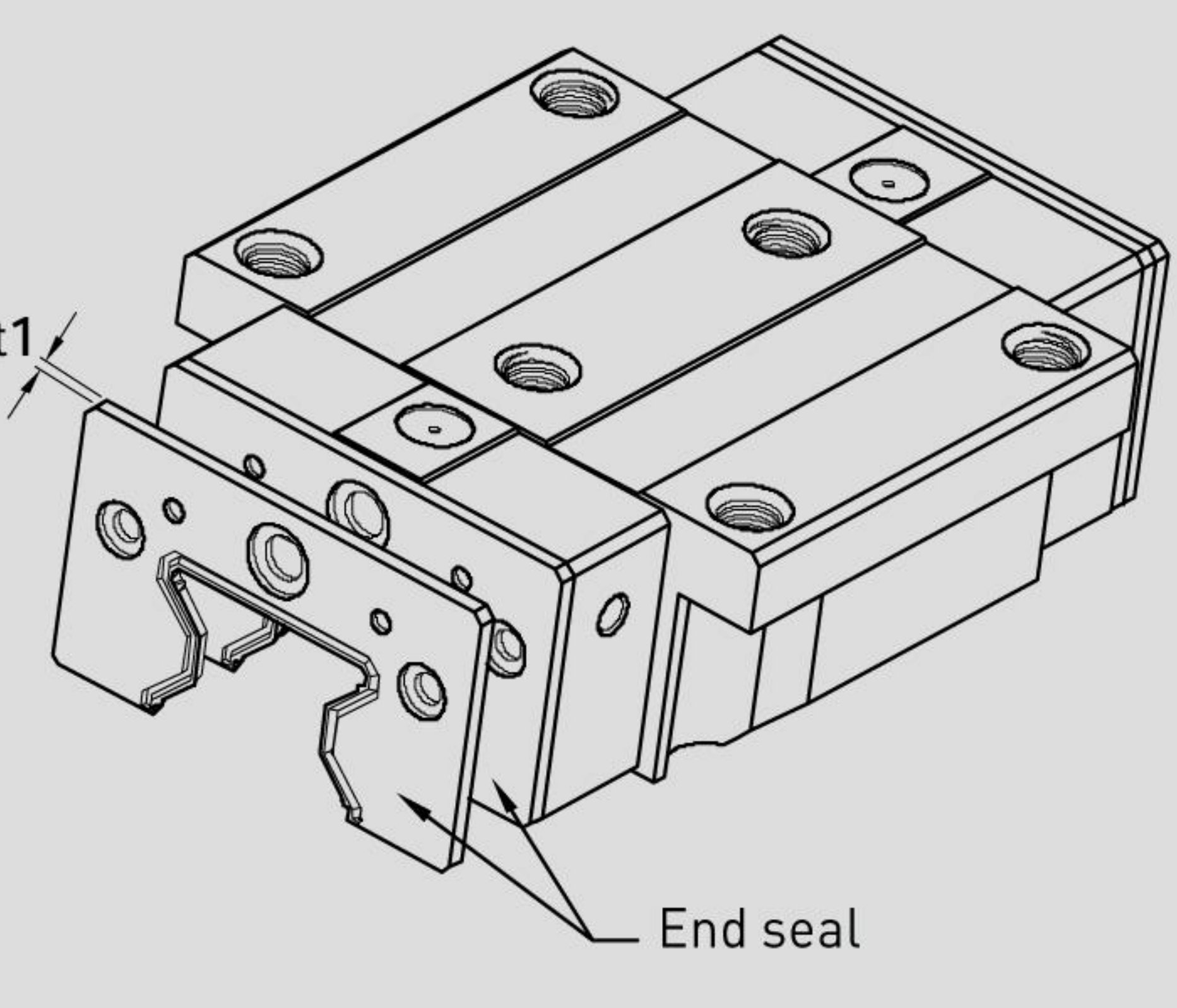


2-4-8 Dust Proof Accessories

(1) Codes of accessories

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

Table 2.63

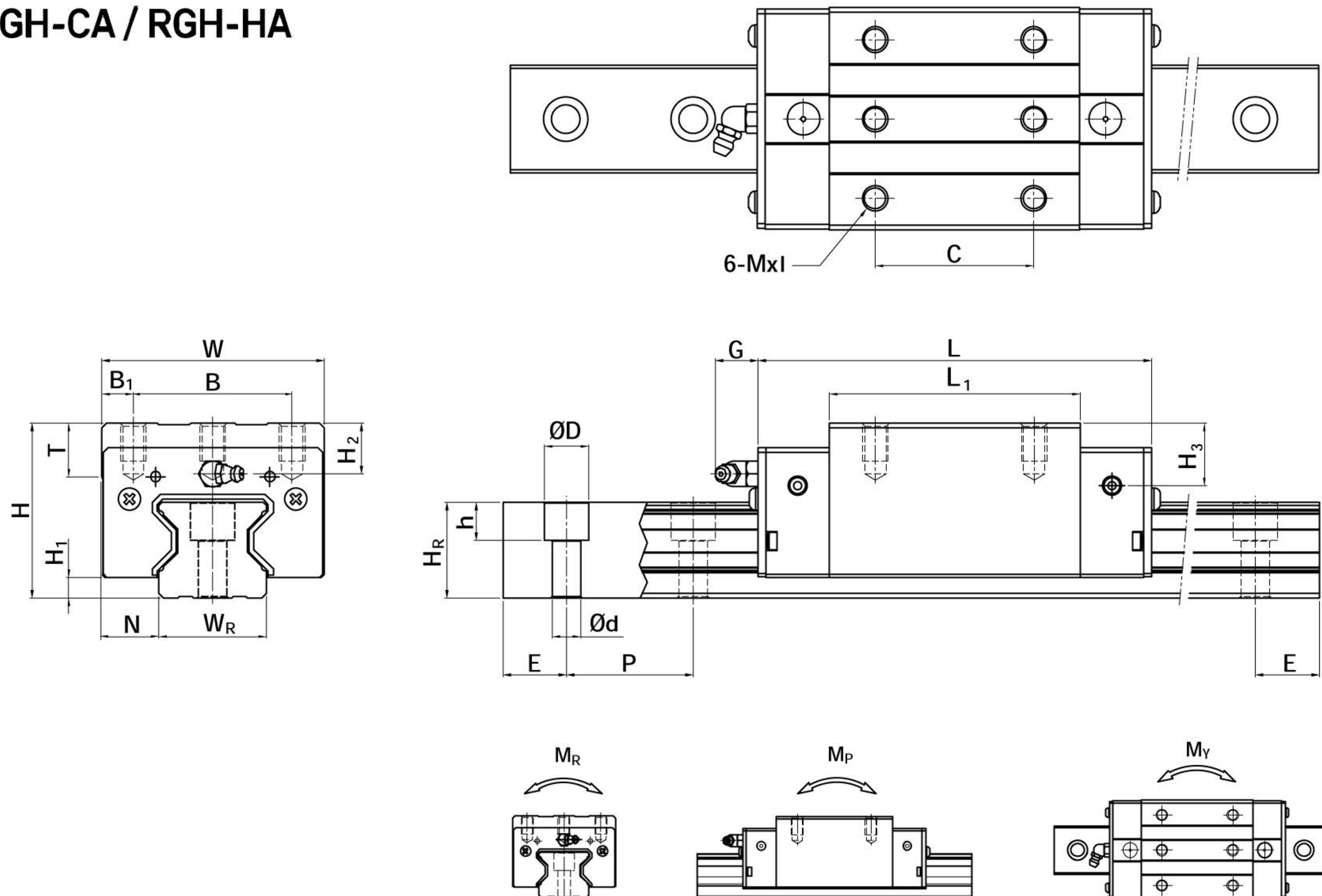
 <p>End seal</p> <p>Bottom Seal</p> <p>No symbol: Standard Protection (End seal + Bottom Seal)</p>	 <p>Scrapper</p> <p>End seal</p> <p>ZZ (End seal + Bottom Seal + Scrapper)</p>
 <p>End seal</p> <p>Scrapper</p> <p>KK (Double seals + Bottom Seal + Scrapper)</p>	 <p>End seal</p> <p>DD (Double seals + Bottom Seal)</p>

(2) End seal and bottom seal

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

2-4-13 Dimensions for RG series

(1) RGH-CA / RGH-HA



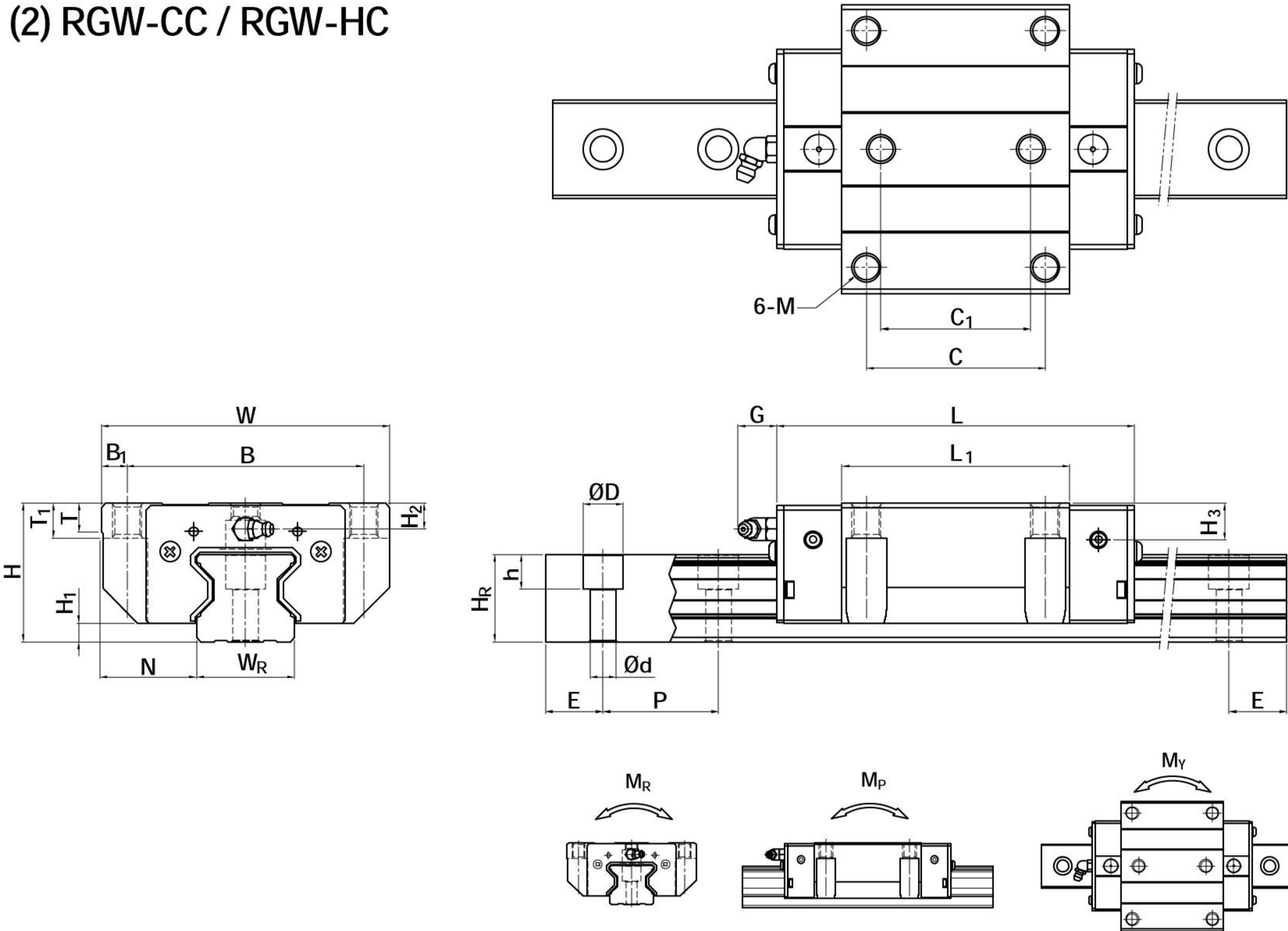
Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)										Dimensions of Rail (mm)										Mounting Bolt for Rail	Basic Dynamic Load Rating	Basic Static Load Rating	Static Rated Moment			Weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	MxI	T	H ₂	H ₃	W _R	H _R	D	h	d	P	E	(mm)	C(kN)	C ₀ (kN)	M _R kN-m	M _P kN-m	M _Y kN-m	Block kg	Rail kg/m		
RGH 25CA	40	5.5	12.5	48	35	6.5	35	64.5	97.9	12	M6x8	9.5	10.2	10	23	23.6	11	9	7	30	20	M6x20	27.7	57.1	0.758	0.605	0.605	0.55	3.08		
RGH 25HA							50	81	114.4														33.9	73.4	0.975	0.991	0.991	0.7			
RGH 30CA	45	6	16	60	40	10	40	71	109.8	12	M8x10	9.5	9.5	13.8	28	28	14	12	9	40	20	M8x25	39.1	82.1	1.445	1.06	1.06	0.82	4.41		
RGH 30HA							60	93	131.8														48.1	105	1.846	1.712	1.712	1.07			
RGH 35CA	55	6.5	18	70	50	10	50	79	124	12	M8x12	12	16	19.6	34	30.2	14	12	9	40	20	M8x25	57.9	105.2	2.17	1.44	1.44	1.43	6.06		
RGH 35HA							72	106.5	151.5														73.1	142	2.93	2.6	2.6	1.86			
RGH 45CA	70	8	20.5	86	60	13	60	106	153.2	12.9	M10x17	16	20	24	45	38	20	17	14	52.5	22.5	M12x35	92.6	178.8	4.52	3.05	3.05	2.97	9.97		
RGH 45HA							80	139.8	187														116	230.9	6.33	5.47	5.47	3.97			
RGH 55CA	80	10	23.5	100	75	12.5	75	125.5	183.7	12.9	M12x18	17.5	22	27.5	53	44	23	20	16	60	30	M14x45	130.5	252	8.01	5.4	5.4	4.62	13.98		
RGH 55HA							95	173.8	232														167.8	348	11.15	10.25	10.25	6.4			
RGH 65CA	90	12	31.5	126	76	25	70	160	232	12.9	M16x20	25	15	15	63	53	26	22	18	75	35	M16x50	213	411.6	16.20	11.59	11.59	8.33	20.22		
RGH 65HA							120	223	295														275.3	572.7	22.55	22.17	22.17	11.62			

Note : 1 kgf = 9.81 N

Linear Guideways

RG Series

(2) RGW-CC / RGW-HC



Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)														Dimensions of Rail (mm)								Mounting Bolt for Rail	Basic Dynamic Load Rating	Basic Static Load Rating	Static Rated Moment			Weight	
	H	H ₁	N	W	B	B ₁	C	C ₁	L ₁	L	G	M	T	T ₁	H ₂	H ₃	W _R	H _R	D	h	d	P	E	(mm)	C(kN)	C ₀ (kN)	M _R kN-m	M _P kN-m	M _Y kN-m	Block kg	Rail kg/m		
RGW 25CC	36	5.5	23.5	70	57	6.5	45	40	64.5	97.9	12	M8	9.5	10	6.2	6	23	23.6	11	9	7	30	20	M6x20	27.7	57.1	0.758	0.605	0.605	0.67	3.08		
RGW 25HC									81	114.4															33.9	73.4	0.975	0.991	0.991	0.86			
RGW 30CC	42	6	31	90	72	9	52	44	71	109.8	12	M10	9.5	10	6.5	10.8	28	28	14	12	9	40	20	M8x25	39.1	82.1	1.445	1.06	1.06	1.06	4.41		
RGW 30HC									93	131.8															48.1	105	1.846	1.712	1.712	1.42			
RGW 35CC	48	6.5	33	100	82	9	62	52	79	124	12	M10	12	13	9	12.6	34	30.2	14	12	9	40	20	M8x25	57.9	105.2	2.17	1.44	1.44	1.61	6.06		
RGW 35HC									106.5	151.5															73.1	142	2.93	2.6	2.6	2.21			
RGW 45CC	60	8	37.5	120	100	10	80	60	106	153.2	12.9	M12	14	15	10	14	45	38	20	17	14	52.5	22.5	M12x35	92.6	178.8	4.52	3.05	3.05	3.22	9.97		
RGW 45HC									139.8	187															116	230.9	6.33	5.47	5.47	4.41			
RGW 55CC	70	10	43.5	140	116	12	95	70	125.5	183.7	12.9	M14	16	17	12	17.5	53	44	23	20	16	60	30	M14x45	130.5	252	8.01	5.4	5.4	5.18	13.98		
RGW 55HC									173.8	232															167.8	348	11.15	10.25	10.25	7.34			
RGW 65CC	90	12	53.5	170	142	14	110	82	160	232	12.9	M16	22	23	15	15	63	53	26	22	18	75	35	M16x50	213	411.6	16.20	11.59	11.59	11.04	20.22		
RGW 65HC									223	295															275.3	572.7	22.55	22.17	22.17	15.75			

Note : 1 kgf = 9.81 N