

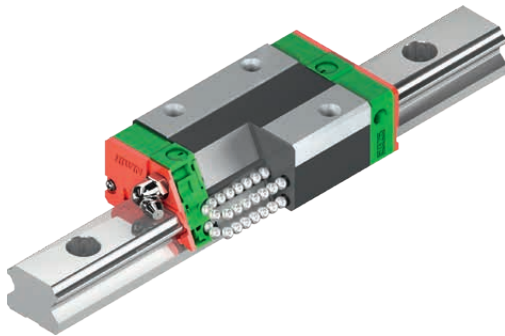
3.2 EG and QE series

3.2.1 Properties of the linear guideways, series EG and QE

The HIWIN linear guideways of the EG series with four ball tracks have a low installation height, making them ideally suited to applications with a low installation space. Despite this, the EG series has the same properties as the HG series – good loading capacity, low displacement forces and high efficiency. The ball retainers prevent the balls from falling out when the block is pulled off the rail during assembly. The models of the QE series with SynchMotion™ technology offer all the advantages of the standard series EG. Controlled movement of the balls at a defined distance also results in improved synchronous performance, higher reliable travel speeds, extended lubrication intervals and less running noise. Since the installation dimensions of the QE blocks are identical to those of the EG blocks, they are also fitted on the EGR standard rail and can therefore be interchanged with ease. For more information, refer to [Page 24](#).

3.2.2 Design of the EG/QE series

- 4-row recirculation ball bearing guide
- 45° contact angle of ball tracks
- Ball retainers prevent the balls from falling out when the block is removed
- Various sealing variants depending on the field of application
- 6 options for connecting grease nipple or lubrication adapter
- SynchMotion™ technology (QE series)



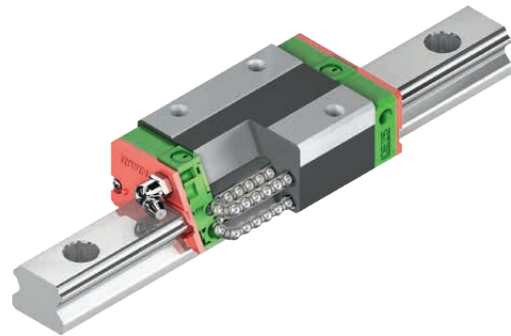
Design of the EG series

Advantages:

- Zero play
- Interchangeable
- High accuracy
- High loading capacity in all loading directions
- Low friction losses even with preload thanks to optimized ball tracks and 2-point contact

3.2.3 Order codes for the EG/QE series

For EG/QE linear guideways, a distinction is made between fully assembled and unmounted models. The dimensions of both models are the same. The main difference is that the block and rail in the unmounted models can be freely interchanged. Block and rail can be ordered separately and fitted by the customer. Their accuracy extends to class P.



Design of the QE series

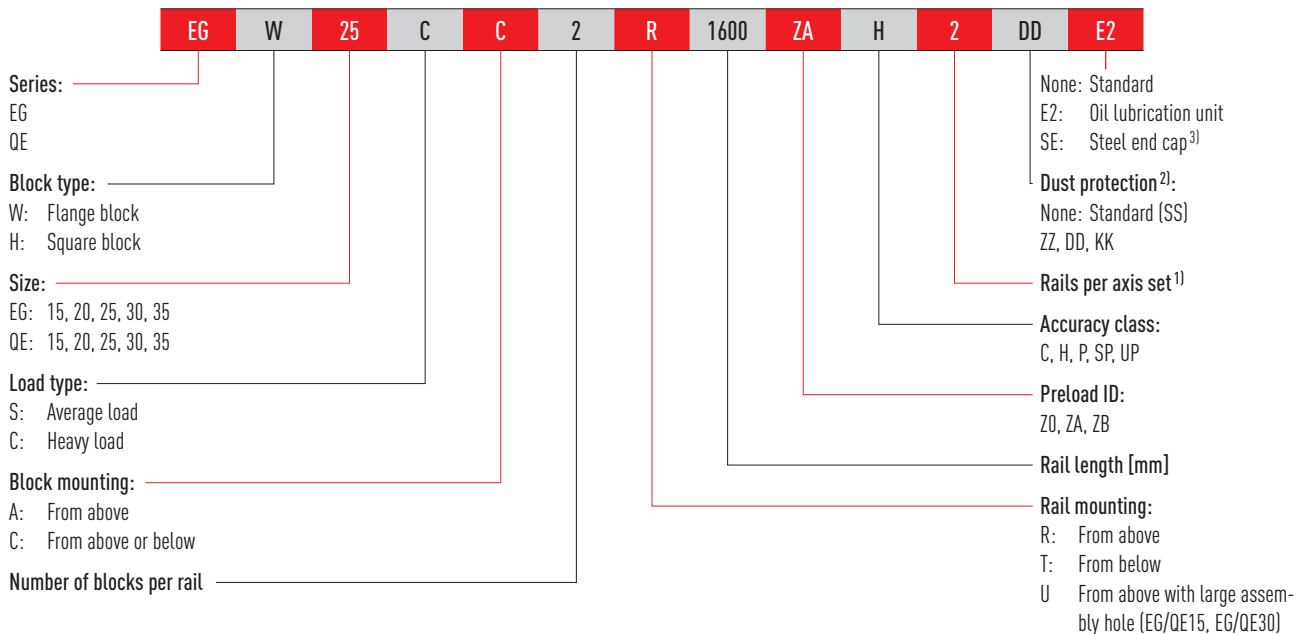
Additional advantages of QE series:

- Improved synchronous performance
- Optimized for higher travel speeds
- Extended lubrication intervals
- Less running noise
- Higher dynamic load capacities

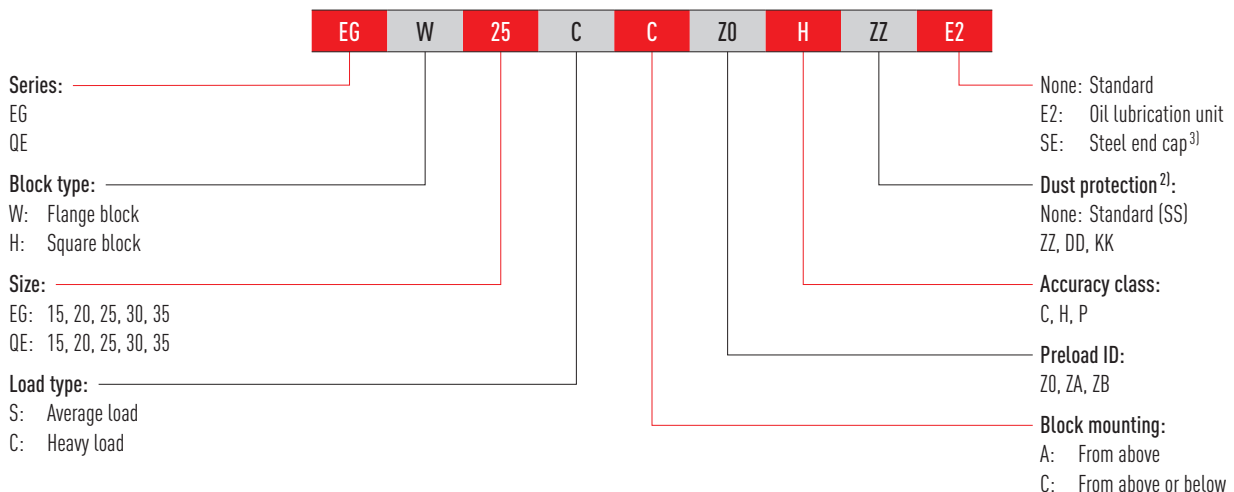
Linear guideways

EG and QE series

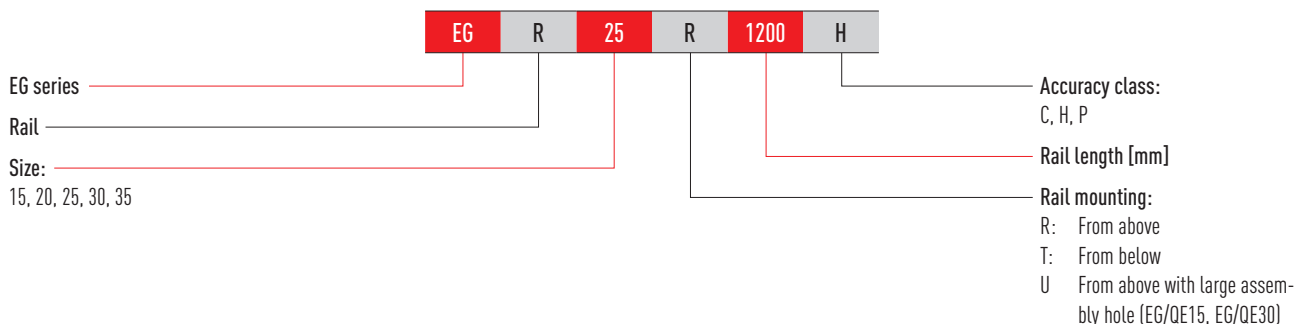
Order code for linear guideway (fully assembled)



Order code for block (unmounted)



Order code for rail (unmounted)



Note:

¹⁾ The figure 2 is also a quantity, i.e. one item of the above-mentioned article consists of a pair of rails. No number is specified for individual rails

By default multi-part rails are delivered with staggered butt joints.

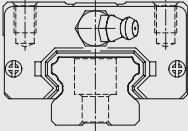
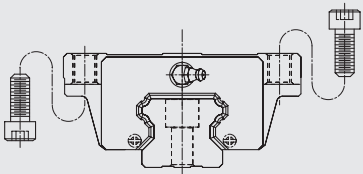
²⁾ You will find an overview of the individual sealing systems on [Page 22](#)

³⁾ Only available for EG 20 and EG 25

3.2.4 Block types

HIWIN provides square and flange blocks for its linear guideways. Given their low height and larger mounting surface, flange blocks are better suited to large loads.

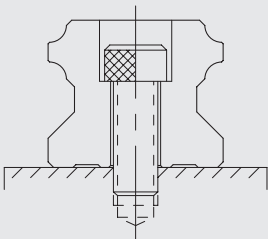
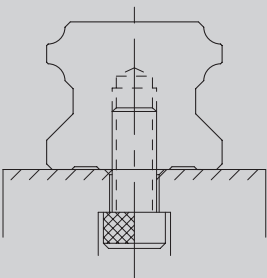
Table 3.21 Block types

Type	Series/size	Structure	Height [mm]	Typical application
Square type	EGH-SA EGH-CA		24 – 48	○ Machining centres ○ NC lathes ○ Grinding machines ○ Precision milling machines ○ High-performance cutting machines ○ Automation technology ○ Transport technology ○ Measuring technology ○ Machines and equipment requiring high positioning accuracy
Flange type	EGW-SC EGW-CC			

3.2.5 Rail types

In addition to rails with standard fastening from above, HIWIN also provides rails for fastening from below.

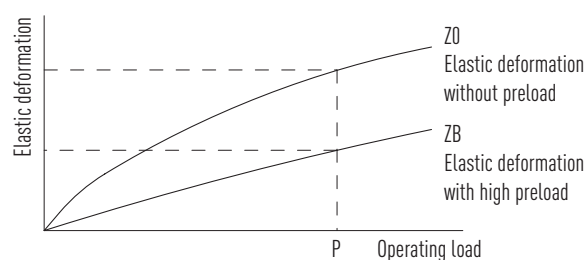
Table 3.22 Rail types

Fastening from above	Fastening from below
	
EGR_R	EGR_T

3.2.6 Preload

Definition

Every rail type can be preloaded based on the size of the balls. The curve shows that the rigidity doubles at higher preload. The EG/QE series offers three standard preload classes for various applications and conditions.



Linear guideways

EG and QE series

Preload ID

Table 3.23 Preload ID

ID	Preload		Application	Sample applications
Z0	Light preload	$0 - 0.02 C_{dyn}$	Constant load direction, low impact, low accuracy needed	- Transport technology - Automatic packaging machines - X-Y axis in industrial machines - Welding machines
ZA	Medium preload	$0.03 - 0.05 C_{dyn}$	High accuracy needed	- Machining centres - Z axes for industrial machines - Eroding machines - NC lathes - Precision X-Y tables - Measuring technology
ZB	High preload	$0.06 - 0.08 C_{dyn}$	High rigidity needed, vibration and impact	- Machining centres - Grinding machines - NC lathes - Horizontal and vertical milling machines - Z axis of machine tools - High-performance cutting machines

3.2.7 Load ratings and torques

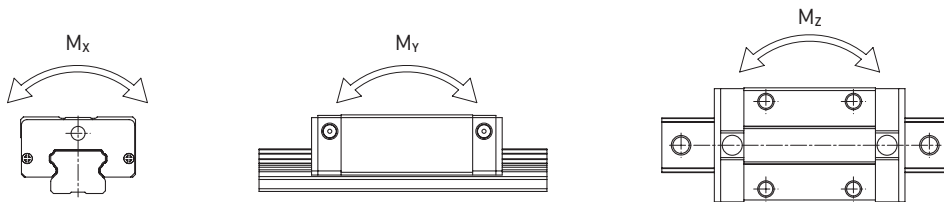


Table 3.24 Load ratings and torques for series EG/QE

Series/size	Dynamic load rating C_{dyn} [N] ¹⁾	Static load rating C_0 [N]	Dynamic moment [Nm]			Static moment [Nm]		
			M_x	M_y	M_z	M_{0x}	M_{0y}	M_{0z}
EG_15S	5,350	9,400	45	22	22	80	40	40
QE_15S	8,560	8,790	68	29	29	70	30	30
EG_15C	7,830	16,190	62	48	48	130	100	100
QE_15C	12,530	15,280	98	73	73	120	90	90
EG_20S	7,230	12,740	73	34	34	130	60	60
QE_20S	11,570	12,180	123	47	47	130	50	50
EG_20C	10,310	21,130	107	78	78	220	160	160
QE_20C	16,500	20,210	171	122	122	210	150	150
EG_25S	11,400	19,500	134	70	70	230	120	120
QE_25S	18,240	18,900	212	96	96	220	100	100
EG_25C	16,270	32,400	190	160	160	380	320	320
QE_25C	26,030	31,490	305	239	239	370	290	290
EG_30S	16,420	28,100	233	122	122	400	210	210
QE_30S	26,270	27,820	377	169	169	400	180	180
EG_30C	23,700	47,460	339	274	274	680	550	550
QE_30C	37,920	46,630	544	414	414	670	510	510
EG_35S	22,660	37,380	339	187	187	560	310	310
QE_35S	36,390	36,430	609	330	330	610	330	330
EG_35C	33,350	64,840	504	354	354	980	690	690
QE_35C	51,180	59,280	863	648	648	1,000	750	750

¹⁾ Dynamic load rating for travel distance of 50,000 m

3.2.8 Rigidity

Rigidity depends on preload. Formula [F 3.4](#) can be used to determine deformation depending on rigidity.

F 3.4

$$\delta = \frac{P}{k}$$

δ Deformation [μm]
P Operating load [N]
k Rigidity [N/μm]

Table 3.25 Radial rigidity for series EG/QE

Load class	Series/ size	Rigidity depending on preload		
		Z0	ZA	ZB
Average load	EG_15S	105	126	141
	QE_15S	96	115	128
	EG_20S	126	151	168
	QE_20S	116	139	153
	EG_25S	156	187	209
	QE_25S	137	165	184
	EG_30S	184	221	246
	QE_30S	169	203	226
	EG_35S	221	265	295
	QE_35S	214	257	287
Heavy load	EG_15C	172	206	230
	QE_15C	157	187	209
	EG_20C	199	238	266
	QE_20C	183	219	245
	EG_25C	246	296	329
	QE_25C	219	263	293
	EG_30C	295	354	395
	QE_30C	271	326	363
	EG_35C	354	425	474
	QE_35C	333	399	445

Unit: N/μm

Linear guideways

EG and QE series

3.2.9 Dimensions of the EG/QE blocks

3.2.9.1 EGH/QEH

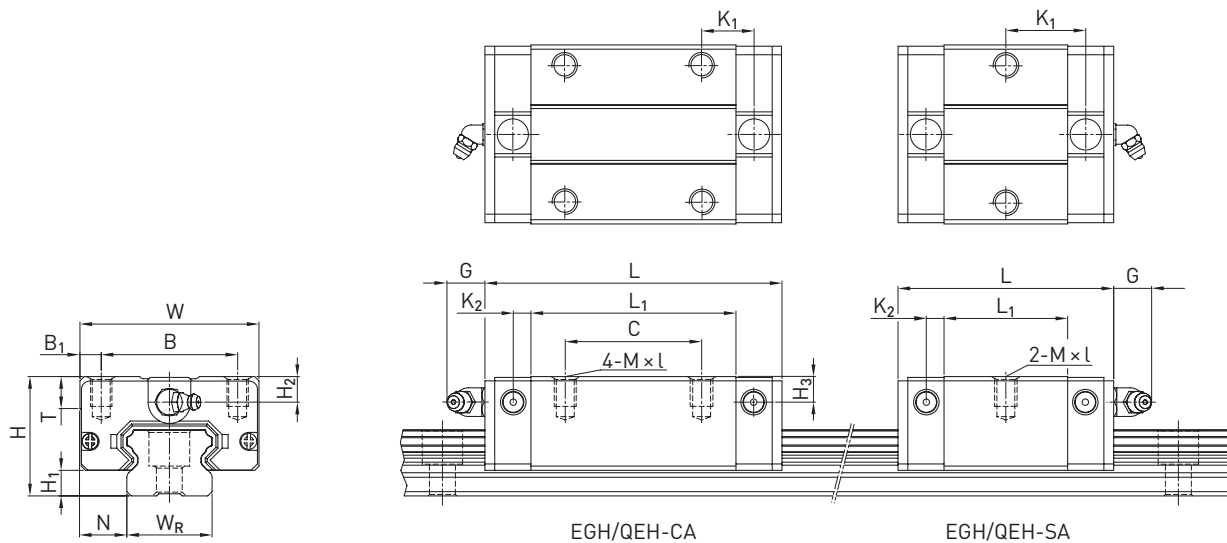


Table 3.26 Dimensions of the block

Series/ size	Installation dimensions [mm]			Dimensions of the block [mm]														Load ratings [N]		Weight [kg]
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	M × l	T	H ₂	H ₃	C _{dyn}	C ₀		
EGH15SA	24	4.5	9.5	34	26	4.0	—	23.1	40.1	14.80	3.50	5.7	M4 × 6	6.0	5.5	6.0	5,350	9,400	0.09	
EGH15CA							26	39.8	56.8	10.15							7,830	16,190	0.15	
QEH15SA	24	4.0	9.5	34	26	4.0	—	23.1	40.1	14.80	3.50	5.7	M4 × 6	6.0	5.5	6.0	8,560	8,790	0.09	
QEH15CA							26	39.8	56.8	10.15							12,530	15,280	0.15	
EGH20SA	28	6.0	11.0	42	32	5.0	—	29.0	50.0	18.75	4.15	12.0	M5 × 7	7.5	6.0	6.0	7,230	12,740	0.15	
EGH20CA							32	48.1	69.1	12.30							10,310	21,130	0.24	
QEH20SA	28	6.0	11.0	42	32	5.0	—	29.0	50.0	18.75	4.15	12.0	M5 × 7	7.5	6.0	6.5	11,570	12,180	0.15	
QEH20CA							32	48.1	69.1	12.30							16,500	20,210	0.23	
EGH25SA	33	7.0	12.5	48	35	6.5	—	35.5	59.1	21.90	4.55	12.0	M6 × 9	8.0	8.0	8.0	11,400	19,500	0.25	
EGH25CA							35	59.0	82.6	16.15							16,270	32,400	0.41	
QEH25SA	33	6.2	12.5	48	35	6.5	—	35.5	60.1	21.90	5.00	12.0	M6 × 9	8.0	8.0	8.0	18,240	18,900	0.24	
QEH25CA							35	59.0	83.6	16.15							26,030	31,490	0.40	
EGH30SA	42	10.0	16.0	60	40	10.0	—	41.5	69.5	26.75	6.00	12.0	M8 × 12	9.0	8.0	9.0	16,420	28,100	0.45	
EGH30CA							40	70.1	98.1	21.05							23,700	47,460	0.76	
QEH30SA	42	10.0	16.0	60	40	10.0	—	41.5	67.5	25.75	6.00	12.0	M8 × 12	9.0	8.0	9.0	26,270	27,820	0.44	
QEH30CA							40	70.1	96.1	20.05							37,920	46,630	0.75	
EGH35SA	48	11.0	18.0	70	50	10.0	—	45.0	75.0	28.50	7.00	12.0	M8 × 12	10.0	8.5	8.5	22,660	37,380	0.74	
EGH35CA							50	78.0	108.0	20.00							33,350	64,840	1.10	
QEH35SA	48	11.0	18.0	70	50	10.0	—	51.0	76.0	30.30	6.25	12.0	M8 × 12	10.0	8.5	8.5	36,390	36,430	0.58	
QEH35CA							50	83.0	108.0	21.30							51,180	59,280	0.90	

For dimensions of rail, see [Page 54](#). for standard and optional lubrication adapter, see [Page 128](#).

3.2.9.2 EGW/QEW

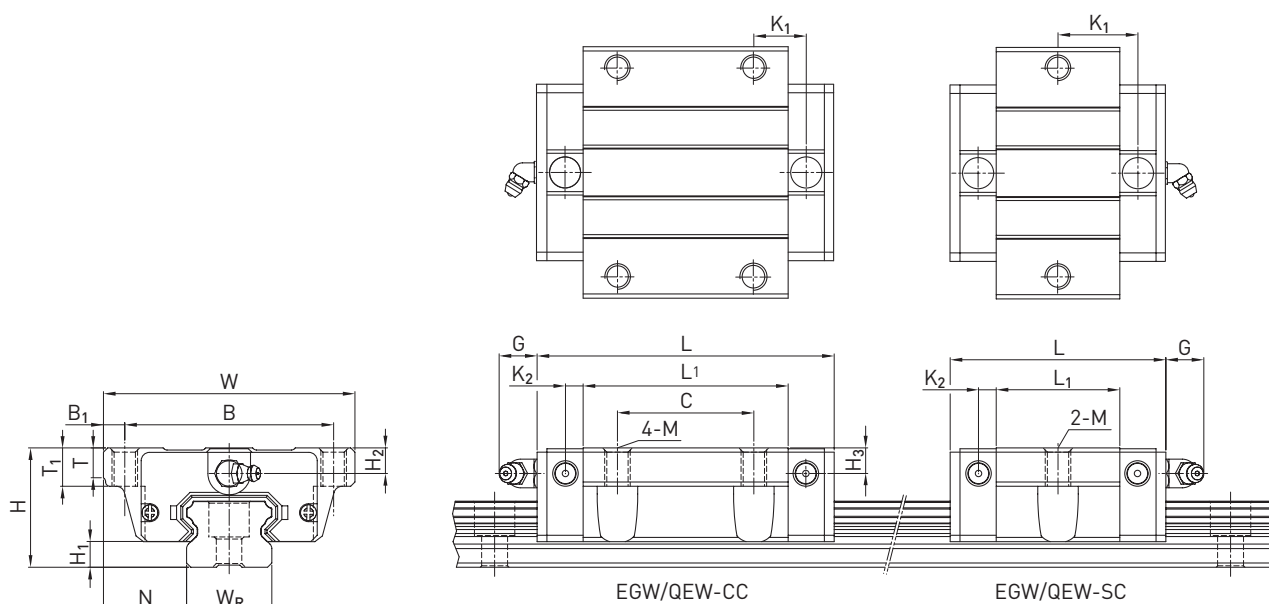


Table 3.27 Dimensions of the block

Series/ size	Installation dimensions [mm]			Dimensions of the block [mm]															Load ratings [N]		Weight [kg]
	H	H ₁	N	W	B	B ₁	C	L ₁	L	K ₁	K ₂	G	M	T	T ₁	H ₂	H ₃	C _{dyn}	C ₀		
EGW15SC	24	4.5	18.5	52	41	5.5	—	23.1	40.1	14.80	3.50	5.7	M5	5.0	7	5.5	6.0	5,350	9,400	0.12	
EGW15CC							26	39.8	56.8	10.15								7,830	16,190	0.21	
QEW15SC	24	4.0	18.5	52	41	5.5	—	23.1	40.1	14.80	3.50	5.7	M5	5.0	—	5.5	6.0	8,560	8,790	0.12	
QEW15CC							26	39.8	56.8	10.15								12,530	15,280	0.21	
EGW20SC	28	6.0	19.5	59	49	5.0	—	29.0	50.0	18.75	4.15	12.0	M6	7.0	9	6.0	6.0	7,230	12,740	0.19	
EGW20CC							32	48.1	69.1	12.30								10,310	21,130	0.32	
QEW20SC	28	6.0	19.5	59	49	5.0	—	29.0	50.0	18.75	4.15	12.0	M6	7.0	—	6.0	6.5	11,570	12,180	0.19	
QEW20CC							32	48.1	69.1	12.30								16,500	20,210	0.31	
EGW25SC	33	7.0	25.0	73	60	6.5	—	35.5	59.1	21.90	4.55	12.0	M8	7.5	10	8.0	8.0	11,400	19,500	0.35	
EGW25CC							35	59.0	82.6	16.15								16,270	32,400	0.59	
QEW25SC	33	6.2	25.0	73	60	6.5	—	35.5	60.1	21.90	5.00	12.0	M8	7.5	—	8.0	8.0	18,240	18,900	0.34	
QEW25CC							35	59.0	83.6	16.15								26,030	31,490	0.58	
EGW30SC	42	10.0	31.0	90	72	9.0	—	41.5	69.5	26.75	6.00	12.0	M10	7.0	10	8.0	9.0	16,420	28,100	0.62	
EGW30CC							40	70.1	98.1	21.05								23,700	47,460	1.04	
QEW30SC	42	10.0	31.0	90	72	9.0	—	41.5	67.5	25.75	6.00	12.0	M10	7.0	—	8.0	9.0	26,270	27,820	0.61	
QEW30CC							40	70.1	96.1	20.05								37,920	46,630	1.03	
EGW35SC	48	11.0	33.0	100	82	9.0	—	45.0	75.0	28.50	7.00	12.0	M10	10.0	13	8.5	8.5	22,660	37,380	0.91	
EGW35CC							50	78.0	108.0	20.00								33,350	64,840	1.40	
QEW35SC	48	11.0	33.0	100	82	9.0	—	51.0	76.0	30.30	6.25	12.0	M10	10.0	13	8.5	8.5	36,390	36,430	0.77	
QEW35CC							50	83.0	108.0	21.30								51,180	59,280	1.19	

For dimensions of rail, see [Page 54](#), for standard and optional lubrication adapter, see [Page 128](#).

Linear guideways

EG and QE series

3.2.10 Dimensions of the EG rail

The EG rails are used for both the EG and QE blocks.

3.2.10.1 Dimensions of EGR_R

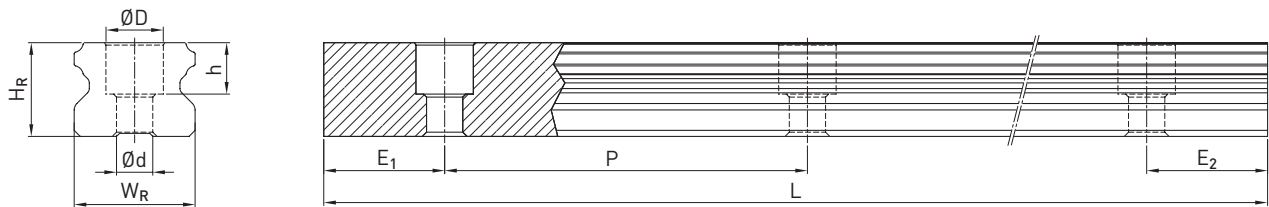


Table 3.28 Dimensions of rail EGR_R

Series/ size	Assembly screw for rail [mm]	Dimensions of rail [mm]						Max. length [mm]	Max. length $E_1 = E_2$ [mm]	Min. length [mm]	$E_{1/2}$ min [mm]	$E_{1/2}$ max [mm]	Weight [kg/m]
		W_R	H_R	D	h	d	P						
EGR15R	M3 × 16	15	12.5	6.0	4.5	3.5	60	4,000	3,900	132	6	54	1.25
EGR20R	M5 × 20	20	15.5	9.5	8.5	6.0	60	4,000	3,900	134	7	53	2.08
EGR25R	M6 × 25	23	18.0	11.0	9.0	7.0	60	4,000	3,900	136	8	52	2.67
EGR30R	M6 × 30	28	23.0	11.0	9.0	7.0	80	4,000	3,920	178	9	71	4.35
EGR35R	M8 × 35	34	27.5	14.0	12.0	9.0	80	4,000	3,920	178	9	71	6.14

3.2.10.2 Dimensions of EGR_U (large mounting holes)

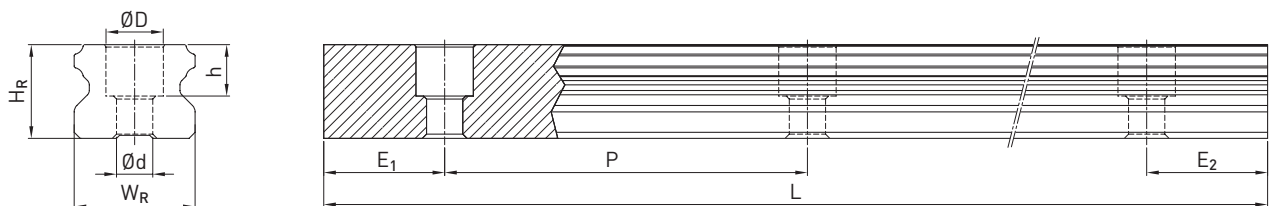


Table 3.29 Dimensions of rail EGR_U

Series/ size	Assembly screw for rail [mm]	Dimensions of rail [mm]						Max. length [mm]	Max. length $E_1 = E_2$ [mm]	Min. length [mm]	$E_{1/2}$ min [mm]	$E_{1/2}$ max [mm]	Weight [kg/m]
		W_R	H_R	D	h	d	P						
EGR15U	M4 × 16	15	12.5	7.5	5.3	4.5	60	4,000	3,900	132	6	54	1.23
EGR30U	M8 × 30	28	23.0	14.0	12.0	9.0	80	4,000	3,920	178	9	71	4.23

Note:

1. The tolerance for E is +0.5 to - 1 mm for standard rails and 0 to -0.3 mm for joints.
2. If the $E_{1/2}$ dimensions are not indicated, the maximum possible number of mounting holes will be determined under consideration of $E_{1/2}$ min.
3. The rails are shortened to the required length. If the $E_{1/2}$ dimensions are not indicated, these will be carried out symmetrically.

3.2.10.3 Dimensions of EGR_T (rail mounting from below)

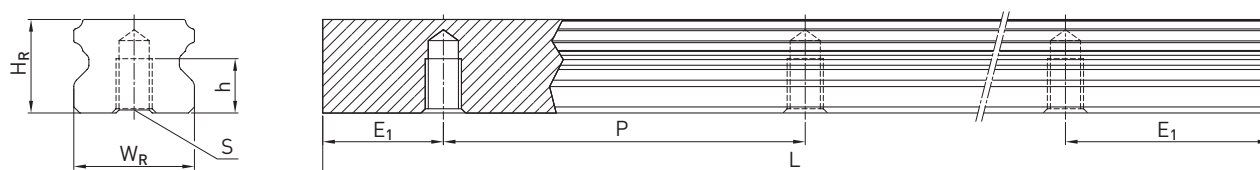


Table 3.30 Dimensions of rail EGR_T

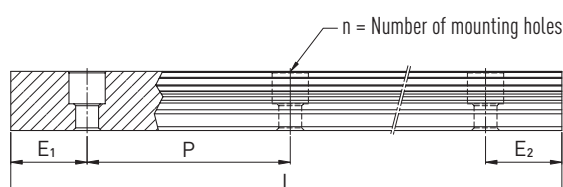
Series/ size	Dimensions of rail [mm]					Max. length [mm]	Max. length $E_1 = E_2$ [mm]	Min. length [mm]	$E_{1/2}$ min [mm]	$E_{1/2}$ max [mm]	Weight [kg/m]
	W_R	H_R	S	h	P						
EGR15T	15	12.5	M5	7	60	4,000	3,900	132	6	54	1.26
EGR20T	20	15.5	M6	9	60	4,000	3,900	134	7	53	2.15
EGR25T	23	18.0	M6	10	60	4,000	3,900	136	8	52	2.79
EGR30T	28	23.0	M8	14	80	4,000	3,920	178	9	71	4.42
EGR35T	34	27.5	M8	17	80	4,000	3,920	178	9	71	6.34

Note:

1. The tolerance for E is +0.5 to -1 mm for standard rails and 0 to -0.3 mm for joints.
2. If the $E_{1/2}$ dimensions are not indicated, the maximum possible number of mounting holes will be determined under consideration of $E_{1/2}$ min.
3. The rails are shortened to the required length. If the $E_{1/2}$ dimensions are not indicated, these will be carried out symmetrically.

3.2.10.4 Calculating the length of rails

HIWIN offers rails in customised lengths. To prevent the risk of the end of the rail becoming unstable, the value E must not exceed half of the distance between the mounting holes (P). At the same time, the value $E_{1/2}$ should be between $E_{1/2}$ min and $E_{1/2}$ max so that the mounting hole does not rupture.



F 3.5

$$L = (n - 1) \times P + E_1 + E_2$$

- L Total length of the rail [mm]
n Number of mounting holes
P Distance between two mounting holes [mm]
 $E_{1/2}$ Distance from the middle of the last mounting hole to the end of the rail [mm]

3.2.10.5 Tightening torques for mounting bolts

Insufficient tightening of the mounting bolts strongly compromises the precision of the linear guideway; the following tightening torques are therefore recommended for the relevant screw sizes.

Table 3.31 Tightening torques of the mounting bolts according to ISO 4762-12.9

Series/size	Screw size	Torque [Nm]	Series/size	Screw size	Torque [Nm]
EG/QE_15	M3 × 16	2	EG/QE_30	M6 × 30	14
EG/QE_15U	M4 × 16	4	EG/QE_30U	M8 × 30	31
EG/QE_20	M5 × 20	9	EG/QE_35	M8 × 35	31
EG/QE_25	M6 × 25	14			

Linear guideways

EG and QE series

3.2.10.6 Cover caps for mounting holes of rails

The cover caps are used to keep the mounting holes free of chips and dirt. The standard plastic caps are provided with each rail. Optional cover caps must be ordered separately.



Table 3.32 Cover caps for mounting holes of rails

Rail	Screw	Article number			Ø D [mm]	Height H [mm]
		Plastic (200 pcs.)	Brass	Steel		
EGR15R	M3	5-002217	5-001340	—	6.0	1.2
EGR20R	M5	5-002220	5-001350	5-001352	9.5	2.5
EGR25R	M6	5-002221	5-001355	5-001357	11.0	2.8
EGR30R	M6	5-002221	5-001355	5-001357	11.0	2.8
EGR35R	M8	5-002222	5-001360	5-001362	14.0	3.5
EGR15U	M4	5-002218	5-001344	—	7.5	1.2
EGR30U	M8	5-002222	5-001360	5-001362	14.0	3.5

3.2.11 Sealing systems

Various sealing systems are available for HIWIN blocks. You will find an overview on [Page 22](#). The table below shows the total length of the blocks with the different sealing systems. Sealing systems suitable for these sizes are available.

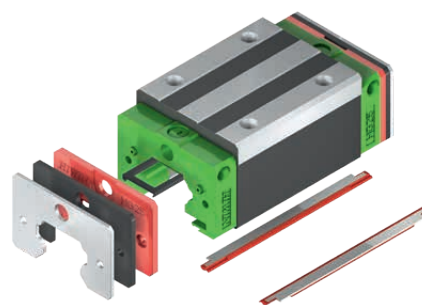


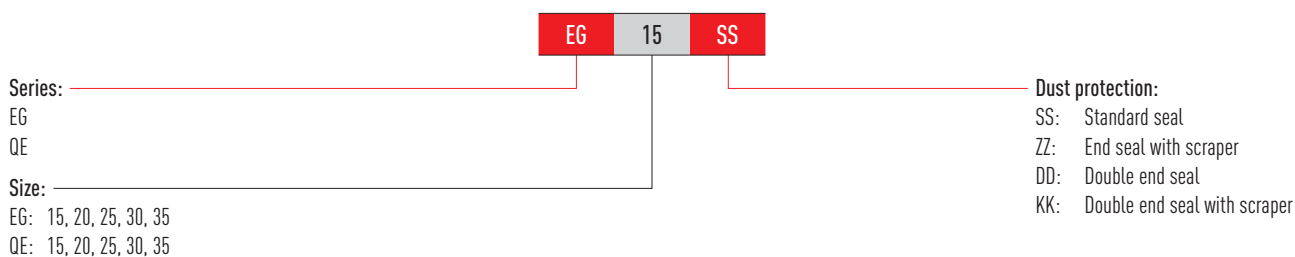
Table 3.33 Total length of blocks with different sealing systems

Series/ size	Total length L			
	SS	DD	ZZ	KK
EG_15S	40.1	44.1	41.7	45.7
QE_15S	40.1	44.1	42.1	46.1
EG_15C	56.8	60.8	58.4	62.4
QE_15C	56.8	60.8	58.8	62.8
EG_20S	50.0	54.0	51.6	55.6
QE_20S	50.0	54.0	52.0	56.0
EG_20C	69.1	73.1	70.7	74.7
QE_20C	69.1	73.1	71.1	75.1
EG_25S	59.1	63.1	61.1	65.1
QE_25S	60.1	65.1	62.1	67.1
EG_25C	82.6	86.6	84.6	88.6
QE_25C	83.6	88.6	85.6	90.6
EG_30S	69.5	73.5	71.5	75.5
QE_30S	67.5	72.5	69.5	74.5
EG_30C	98.1	102.1	100.1	104.1
QE_30C	96.1	101.1	98.1	103.1
EG_35S	75.0	79.0	78.0	82.0
QE_35S	76.0	80.0	79.0	83.0
EG_35C	108.0	112.0	111.0	115.0
QE_35C	108.0	112.0	111.0	115.0

Unit: mm

3.2.11.1 Designation of sealing sets

The sealing sets are always supplied along with the assembly material and include the parts needed in addition to the standard seal.



Linear guideways

EG and QE series

3.2.12 Friction

The table shows the maximum frictional resistance of the individual end seal. Depending on sealing setup (SS, ZZ, DD, KK), the value may have to be multiplied. The values indicated apply to blocks on uncoated rails. Higher friction forces occur on coated rails.

Table 3.34 Frictional resistance of single-lipped seals

Series/size	Friction force [N]	Series/size	Friction force [N]
EG_15	1.0	QE_15	1.1
EG_20	1.0	QE_20	1.4
EG_25	1.0	QE_25	1.7
EG_30	1.5	QE_30	2.1
EG_35	2.0	QE_35	2.3

3.2.13 Lubrication unit E2

You will find more information about the lubrication unit in the general information in the lubrication unit E2 Section „2.6.3 Oil lubrication unit E2“ on Page 15.

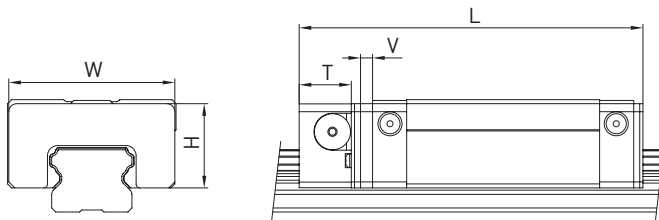


Table 3.35 Dimensions of block with lubrication unit E2

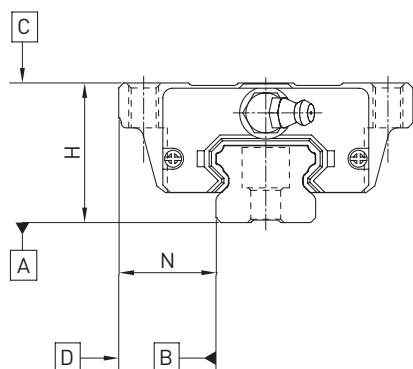
Model	Dimensions of the block [mm]								Oil quantity [cm ³]	Mileage ²⁾ [km]
	W	H	T	V	L _{SS} ¹⁾	L _{ZZ} ¹⁾	L _{DD} ¹⁾	L _{KK} ¹⁾		
EG_15S	33.3	18.7	11.5	3.0	54.6	56.2	58.6	60.2	1.7	2,000
EG_15C	33.3	18.7	11.5	3.0	71.3	72.9	75.3	76.9	1.7	2,000
EG_20S	41.3	20.9	13.0	3.0	66.0	67.6	70.0	71.6	2.9	3,000
EG_20C	41.3	20.9	13.0	3.0	85.1	86.7	89.1	90.7	2.9	3,000
EG_25S	47.3	24.9	13.0	3.0	75.1	77.1	79.1	81.1	4.8	5,000
EG_25C	47.3	24.9	13.0	3.0	98.6	100.6	102.6	104.6	4.8	5,000
EG_30S	59.3	31.0	13.0	3.0	85.5	87.5	89.5	91.5	8.9	9,000
EG_30C	59.3	31.0	13.0	3.0	114.1	116.1	118.1	120.1	8.9	9,000

¹⁾ Total length depending on selected dust protection. SS = Standard dust protection

²⁾ Mileage at which the oil tank level should be checked at the very latest

3.2.14 Tolerances depending on accuracy class

The EG and QE series are available in five accuracy classes depending on parallelism between block and rail, height accuracy H and accuracy of width N. The choice of accuracy class is determined by the machine requirements.



3.2.14.1 Parallelism

Parallelism of stop surfaces D and B of block and rail and parallelism of top of block C to mounting surface A of rail. Ideal linear guideway installation is required, as is a measurement in the centre of the block.

Table 3.36 Tolerance of parallelism between block and rail

Rail length [mm]	Accuracy class				
	C	H	P	SP	UP
– 100	12	7	3	2	2
100 – 200	14	9	4	2	2
200 – 300	15	10	5	3	2
300 – 500	17	12	6	3	2
500 – 700	20	13	7	4	2
700 – 900	22	15	8	5	3
900 – 1100	24	16	9	6	3
1100 – 1500	26	18	11	7	4
1500 – 1900	28	20	13	8	4
1900 – 2500	31	22	15	10	5
2500 – 3100	33	25	18	11	6
3100 – 3600	36	27	20	14	7
3600 – 4000	37	28	21	15	7

Unit: μm

Linear guideways

EG and QE series

3.2.14.2 Accuracy – height and width

Height tolerance of H

Permissible absolute dimension variance of height H, measured between centre of screw-on surface C and underside of rail A, with block in any position on the rail.

Height variance of H

Permissible variance of height H between several blocks on a rail, measured in the same rail position.

Width tolerance of N

Permissible absolute dimension variance of width N, measured between centre of screw-on surfaces D and B, with block in any position on the rail.

Width variance of N

Permissible variance of width N between several blocks on a rail, measured in the same rail position.

Table 3.37 Height and width tolerances

Series/size	Accuracy class	Height tolerance of H	Width tolerance of N	Height variance of H	Width variance of N
EG_15, 20 QE_15, 20	C (Normal)	± 0.1	± 0.1	0.02	0.02
	H (High)	± 0.03	± 0.03	0.01	0.01
	P (Precision)	$0/-0.03^{1)}$ $\pm 0.015^{2)}$	$0/-0.03^{1)}$ $\pm 0.015^{2)}$	0.006	0.006
	SP (Super precision)	$0/-0.015$	$0/-0.015$	0.004	0.004
	UP (Ultra precision)	$0/-0.008$	$0/-0.008$	0.003	0.003
EG_25, 30, 35 QE_25, 30, 35	C (Normal)	± 0.1	± 0.1	0.02	0.03
	H (High)	± 0.04	± 0.04	0.015	0.015
	P (Precision)	$0/-0.04^{1)}$ $\pm 0.02^{2)}$	$0/-0.04^{1)}$ $\pm 0.02^{2)}$	0.007	0.007
	SP (Super precision)	$0/-0.02$	$0/-0.02$	0.005	0.005
	UP (Ultra precision)	$0/-0.01$	$0/-0.01$	0.003	0.003

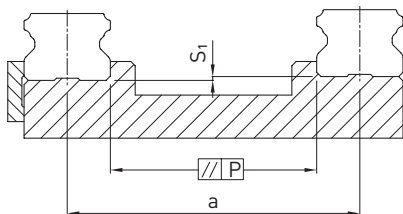
Unit: mm

¹⁾ Fully assembled linear guideway

²⁾ Unmounted linear guideway

3.2.14.3 Permissible mounting surface tolerances

Once the requirements relating to the accuracy of the mounting surfaces are met, the good accuracy, rigidity and lifetime of the EG and QE series linear guideways are achieved.



Tolerance for the parallelism of the reference surface (P):

Table 3.38 Maximum tolerance for parallelism (P)

Series/size	Preload class		
	Z0	ZA	ZB
EG/QE_15	25	18	—
EG/QE_20	25	20	18
EG/QE_25	30	22	20
EG/QE_30	40	30	27
EG/QE_35	50	35	30

Unit: μm

Tolerance for the height of the reference surface (S₁):

F 3.6 $S_1 = a \times K$

S₁ Max. height tolerance [mm]
a Distance between rails [mm]
K Coefficient of the height tolerance

Table 3.39 Coefficient of the height tolerance (K)

Series/size	Preload class		
	Z0	ZA	ZB
EG/QE_15	2.6×10^{-4}	1.7×10^{-4}	—
EG/QE_20	2.6×10^{-4}	1.7×10^{-4}	1.0×10^{-4}
EG/QE_25	2.6×10^{-4}	1.7×10^{-4}	1.4×10^{-4}
EG/QE_30	3.4×10^{-4}	2.2×10^{-4}	1.8×10^{-4}
EG/QE_35	4.2×10^{-4}	3.0×10^{-4}	2.4×10^{-4}

3.2.15 Shoulder heights and fillets

Imprecise shoulder heights and fillets of mounting surfaces compromise precision and may lead to conflicts with the block or rail profiles. The following shoulder heights and edge profiles must be observed in order to avoid assembly problems.

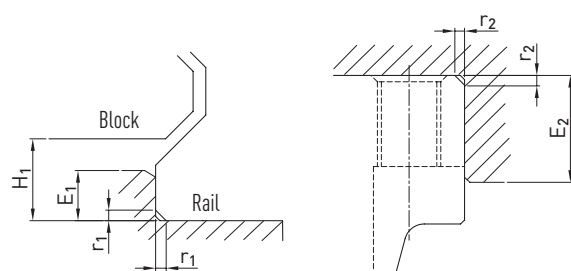


Table 3.40 Shoulder heights and fillets

Series/size	Max. edge radius r ₁	Max. edge radius r ₂	Shoulder height of reference edge of rail E ₁	Shoulder height of reference edge of block E ₂	Clearance under block H ₁
EG/QE_15	0.5	0.5	2.7	5.0	4.5
EG/QE_20	0.5	0.5	5.0	7.0	6.0
EG/QE_25	1.0	1.0	5.0	7.5	7.0
EG/QE_30	1.0	1.0	7.0	7.0	10.0
EG_35	1.0	1.0	7.5	9.5	11.0
QE_35	1.0	1.5	7.5	9.5	11.0

Unit: mm