# 2-11 QR series - Roller Type Linear Guideway, with SynchMotion® Technology

QR series offers super high rigidity and very high load capacities. The QR series with SynchMotion® Technology offers low friction, smooth movement, quieter operation and longer running life. In the industry where high accuracy, low noise and high rigidity is required, the QR series is interchangeable with the RG series.

2-11-1 Advantages and features

(1) Super high load capacity in linear guideway, with the four rows of rollers arranged at a contact angle of 45-degrees, the QR series linear guideway has equal load ratings in the radial, reverse radial and lateral directions. The QR series has a higher load capacity in a smaller size than conventional, ball-type linear guideways.
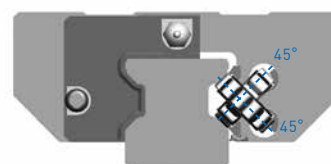
(2) Low Noise Design With SynchMotion® technology, rolling elements are interposed between the partitions of SynchMotion® to provide improved circulation. Due to the elimination of contact between the rolling elements, collision noise and sound levels are drastically reduced.
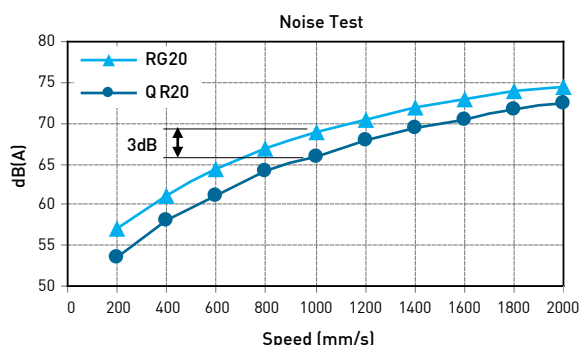
(3) Smooth Movement In standard linear guideways, rolling elements on the load side of the guide block begin rolling and push their way through the raceway. When they contact other rolling elements they create counter-rotational friction. This results in a great variation of rolling resistance. The QR linear guideway, with SynchMotion® technology prevents this condition.
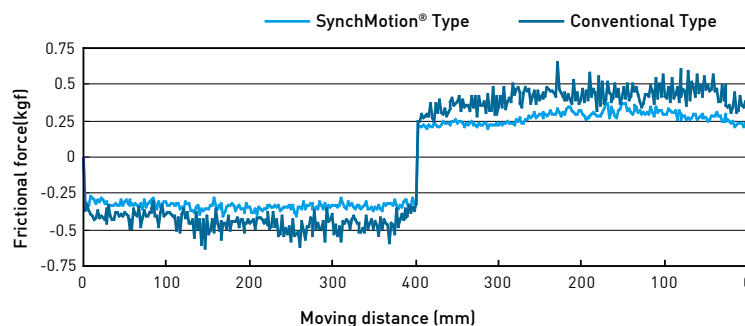
(4) The QR series is a type of linear guideway that uses rollers as the rolling elements. Elastic deformation of the linear contact surface, during load, is greatly reduced thereby offering greater rigidity and higher load capacities in all 4 load directions.
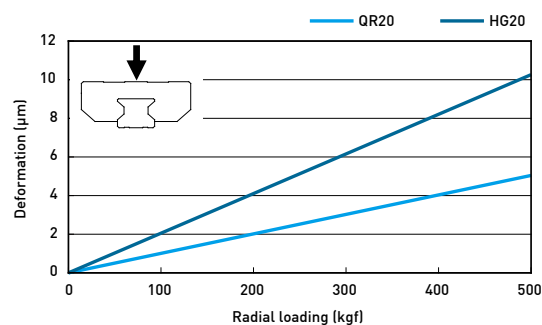
QR Series
Roller Type

(5) Sample test
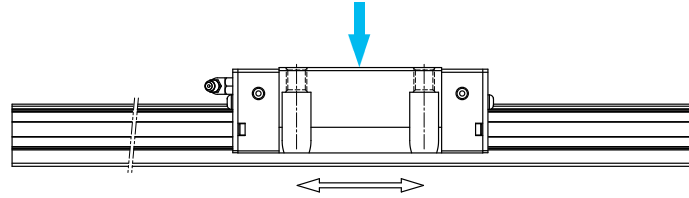## 1. Nominal life test

Table 2-11-1

Tested model 1: QRW20CC Preload: ZA class Max speed: 28m/min Acceleration: 1G Stroke: 0.2m Lubrication: grease held every 100 km External: 8.6 kN Traveling distance: 1024km	**Test results:** The nominal life of QRW20 is 1000km. After traveling 1024km, fatigue flaking did not appear on the surface of the raceway or rollers. And roller chain is not broken in this case.
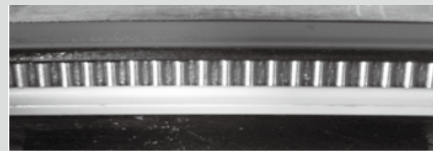
2. Durability Test

Table 2-11-2

Tested model 2: QRH20CA Preload: Z0 class Max speed: 180m/min Acceleration: 3G Stroke: 0.23m Oil feed rate: 0.14cm^3/hr External: 0km (No loading) Traveling distance: 10586km	**Test results:** After traveling 10586km, fatigue flaking did not appear on the surface of the raceway or rollers. And roller chain is not broken in this case.
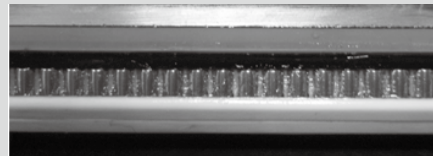
Note: The data listed are from samples.

2-11-2 Construction of QR Series
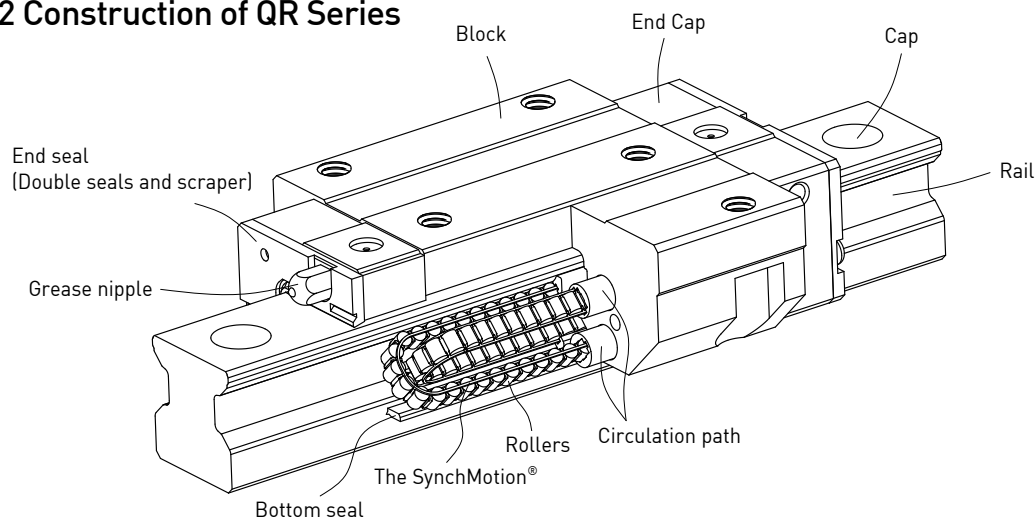
- Rolling circulation system: Block, Rail, End cap, Circulation path, rollers and the SynchMotion®.
- Lubrication system: Grease nipple and piping joint
- Dust protection system: End seal, Bottom seal, Cap, Double seals and Scraper

2-11-3 Model Number of QR series

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

(1) Non-interchangeable type

QR | W | 35 | C | C | E | 2 | R | 1640 | E | ZA | P | II | + | KK/E2+RC

QR Series
Block Type
W : Flange Type
H : Square Type
L : Square Type (Low)[3]
Model size
20, 25, 30, 35, 45
Load Type
C : Heavy Load
H : Super Heavy Load
Block Mounting
A : Mounting From Top
C : Top or Bottom
E: Special Block
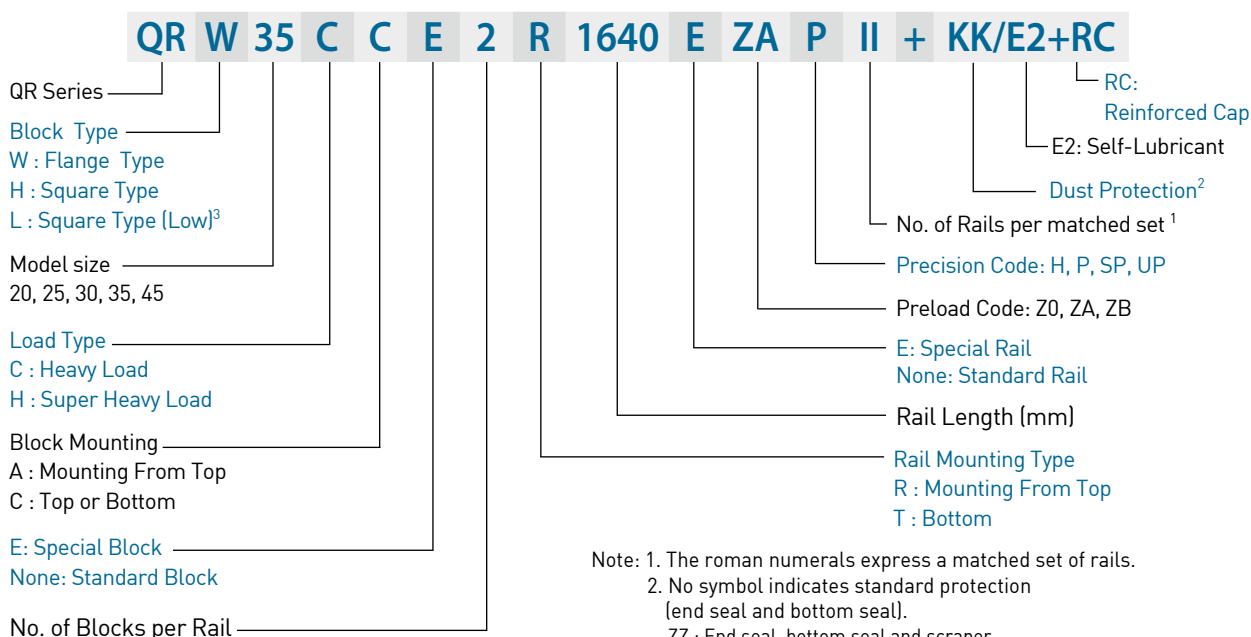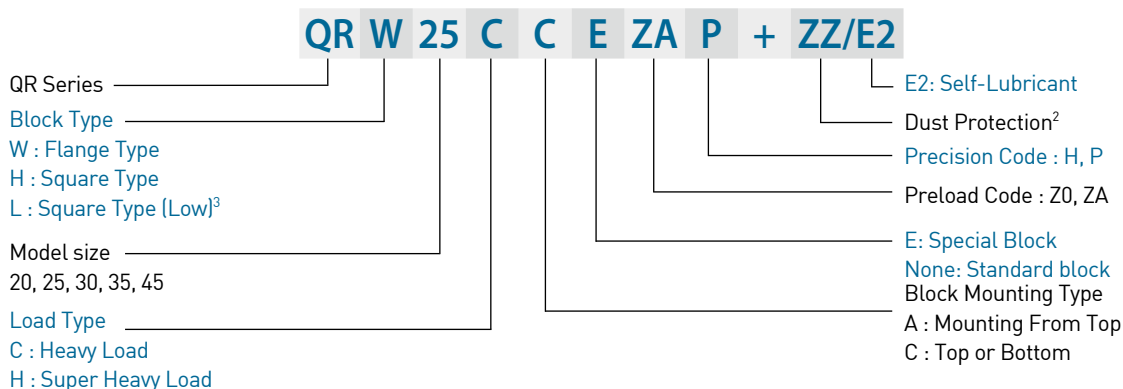None: Standard Block
No. of Blocks per Rail

RC: Reinforced Cap
E2: Self-Lubricant
Dust Protection[2]
No. of Rails per matched set [1]
Precision Code: H, P, SP, UP
Preload Code: Z0, ZA, ZB
E: Special Rail
None: Standard Rail
Rail Length (mm)
Rail Mounting Type
R : Mounting From Top
T : Bottom

Note: 1. The roman numerals express a matched set of rails.
2. No symbol indicates standard protection (end seal and bottom seal).
ZZ : End seal, bottom seal and scraper
KK: Double seals, bottom seal and scraper.
DD: Double seals and bottom seal
3. Block type QRL is the low profile design of QRH (square type), the assembled height is same as QRW (flange type) in same size.

(2) Interchangeable type
○ Model Number of QR Block

QR | W | 25 | C | C | E | ZA | P | + | ZZ/E2

QR Series
Block Type
W : Flange Type
H : Square Type
L : Square Type (Low)[3]
Model size
20, 25, 30, 35, 45
Load Type
C : Heavy Load
H : Super Heavy Load

E2: Self-Lubricant
Dust Protection[2]
Precision Code : H, P
Preload Code : Z0, ZA
E: Special Block
None: Standard block
Block Mounting Type
A : Mounting From Top
C : Top or Bottom

○ Model Number of QR Rail (QR and RG share the identical rails)

RG | R | 25 | R | 1200 | E | P | + | RC

QR/RG Series
Interchangeable Rail
Model size
20, 25, 30, 35, 45
Rail Mounting Type
R : Mounting From Top
T : Bottom

RC:Reinforced Cap
Precision Code : H, P
E: Special Rail,
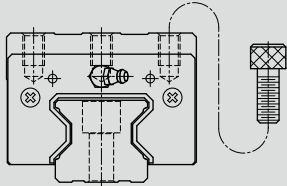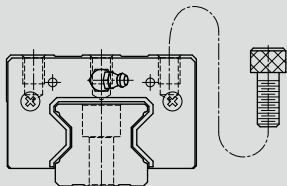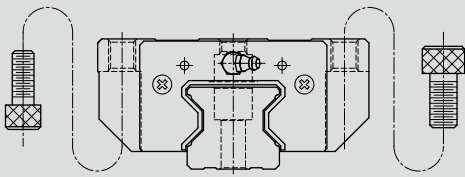None: Standard Rail
Rail Length (mm)
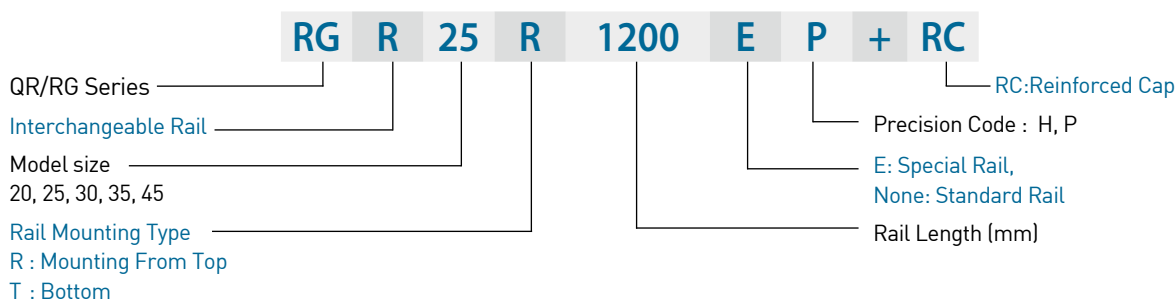
QR Series
Roller Type

2-11-4 Types

(1) Block types

QR series offers two types of guide blocks, flange and square type. Because of the low assembly height and large mounting surface, the flange type is excellent for heavy moment load applications.
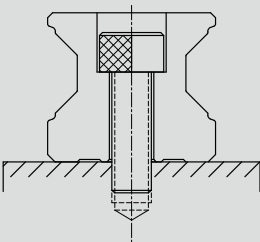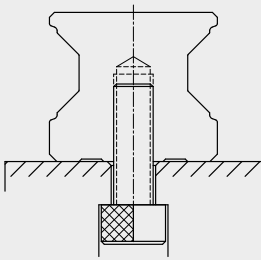
Table 2-11-3 **Block Types**

Type	Model	Shape	Height (mm)	Rail Length (mm)	Main Applications
Square	QRH-CA QRH-HA		34 ↓ 70	100 ↓ 4000	○ Automation Systems ○ Transportation equipment ○ CNC machining centers ○ Heavy duty cutting machines ○ CNC grinding machines ○ Injection molding machines ○ Plano millers ○ Devices requiring high rigidity ○ Devices requiring high load capacity ○ Electric discharge machines
Square (low)	QRL-CA QRL-HA		30 ↓ 60	100 ↓ 4000	
Flange	QRW-CC QRW-HC		30 ↓ 60	100 ↓ 4000	

(2) Rail types

In addition to the standard top mounting type, HIWIN also offers the bottom mounting type of rails.

Table 2-11-4 **Rail Types**

Mounting from Top	Mounting from Bottom

2-11-5 Accuracy Classes

The accuracy of the QR series can be classified into four classes: high (H), precision (p), super precision (Sp) and ultra precision (Up). Customers may choose the class by referencing the accuracy requirements of the applied equipment.

(1) Accuracy of non-interchangeable

Table 2-11-5 **Accuracy Standards**   Unit: mm

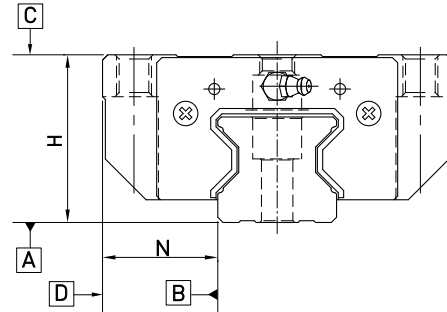| Item	QR - 20			
Accuracy Classes	**High** (H)	**Precision** (P)	**Super Precision** (SP)	**Ultra Precision** (UP)
Dimensional tolerance of height H	± 0.03	0 - 0.03	0 - 0.015	0 - 0.008
Dimensional tolerance of width N	± 0.03	0 - 0.03	0 - 0.015	0 - 0.008
Variation of height H	0.01	0.006	0.004	0.003
Variation of width N	0.01	0.006	0.004	0.003
Running parallelism of block surface C to surface A	See Table 2-11-11			
Running parallelism of block surface D to surface B	See Table 2-11-11			

Table 2-11-6 **Accuracy Standards**   Unit: mm

Item	QR- 25, 30, 35			
Accuracy Classes	**High** (H)	**Precision** (P)	**Super Precision** (SP)	**Ultra Precision** (UP)
Dimensional tolerance of height H	± 0.04	0 - 0.04	0 - 0.02	0 - 0.01
Dimensional tolerance of width N	± 0.04	0 - 0.04	0 - 0.02	0 - 0.01
Variation of height H	0.015	0.007	0.005	0.003
Variation of width N	0.015	0.007	0.005	0.003
Running parallelism of block surface C to surface A	See Table 2-11-11			
Running parallelism of block surface D to surface B	See Table 2-11-11			

Table 2-11-7 **Accuracy Standards**   Unit: mm

Item	QR - 45			
Accuracy Classes	**High** (H)	**Precision** (P)	**Super Precision** (SP)	**Ultra Precision** (UP)
Dimensional tolerance of height H	± 0.05	0 - 0.05	0 - 0.03	0 - 0.02
Dimensional tolerance of width N	± 0.05	0 - 0.05	0 - 0.03	0 - 0.02
Variation of height H	0.015	0.007	0.005	0.003
Variation of width N	0.02	0.01	0.007	0.005
Running parallelism of block surface C to surface A	See Table 2-11-11			
Running parallelism of block surface D to surface B	See Table 2-11-11			

QR Series
Roller Type

(2) Accuracy of interchangeable

Table 2-11-8 **Accuracy Standards**   Unit: mm

Item	QR - 20	
Accuracy Classes	**High (H)**	**Precision (P)**
Dimensional tolerance of height H	± 0.03	± 0.015
Dimensional tolerance of width N	± 0.03	± 0.015
Variation of height H	0.01	0.006
Variation of width N	0.01	0.006
Running parallelism of block surface C to surface A	See Table 2-11-11	
Running parallelism of block surface D to surface B	See Table 2-11-11	

Table 2-11-9 **Accuracy Standards**   Unit: mm

Item	QR- 25, 30, 35	
Accuracy Classes	**High (H)**	**Precision (P)**
Dimensional tolerance of height H	± 0.04	± 0.02
Dimensional tolerance of width N	± 0.04	± 0.02
Variation of height H	0.015	0.007
Variation of width N	0.015	0.007
Running parallelism of block surface C to surface A	See Table 2-11-11	
Running parallelism of block surface D to surface B	See Table 2-11-11	

Table 2-11-10 **Accuracy Standards**   Unit: mm

Item	QR - 45	
Accuracy Classes	**High (H)**	**Precision (P)**
Dimensional tolerance of height H	± 0.05	± 0.025
Dimensional tolerance of width N	± 0.05	± 0.025
Variation of height H	0.015	0.007
Variation of width N	0.02	0.01
Running parallelism of block surface C to surface A	See Table 2-11-11	
Running parallelism of block surface D to surface B	See Table 2-11-11	

(3) Accuracy of running parallelism

Table 2-11-11 **Accuracy of Running Parallelism**

| Rail Length (mm)	Accuracy (µm)			
	H	P	SP	UP
~ 100	7	3	2	2
100 ~ 200	9	4	2	2
200 ~ 300	10	5	3	2
300 ~ 500	12	6	3	2
500 ~ 700	13	7	4	2
700 ~ 900	15	8	5	3
900 ~ 1,100	16	9	6	3
1,100 ~ 1,500	18	11	7	4
1,500 ~ 1,900	20	13	8	4
1,900 ~ 2,500	22	15	10	5
2,500 ~ 3,100	25	18	11	6
3,100 ~ 3,600	27	20	14	7
3,600 ~ 4,000	28	21	15	7

2-11-6 Preload

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

Table 2-11-12

Class	Code	Preload	Condition
Light Preload	Z0	0.02C~ 0.04C	Certain load direction, low impact, low precision required
Medium Preload	ZA	0.07C~0.09C	High rigidity required, high precision required
Heavy Preload	ZB	0.12C~ 0.14C	Super high rigidity required, with vibration and impact

Note:The "C" in the preload column denotes basic dynamic load rating.

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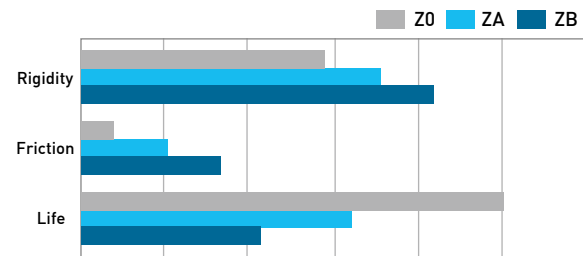
○ Stiffness performance

Stiffness depends on preload. The following table shows stiffness value of each size.

Table 2-11-13 **Radial stiffness for QR Series**

Load type	Series / Size	Stiffness for diffetent preload level(N/μm)		
		Z0	ZA	ZB
Heavy load	QR 20C	438	582	663
	QR 25C	537	694	889
	QR 30C	633	748	929
	QR 35C	952	1125	1426
	QR 45C	1498	1694	2137
Super heavy load	QR 25H	643	839	1070
	QR 30H	829	987	1224
	QR 35H	1317	1588	1953
	QR 45H	1991	2276	2881

2-11-7 Mounting location

(1) The standard location of the grease fitting is at either end of the block.
(2) Alternatively, the nipple may be mounted on the side of the block. For side installation, contact HIWIN to pre-drill the block at the desired location.
(3) Mounting the nipple on the top of the block requires an adaptor or o-ring depending on different series. HIWIN will pre-drill the holes to accommodate the application's requirement. For non-standard location, please contact HIWIN.
(4) Oil piping joints may also be used at these locations for lubrication. For customers who need to lubricate from the top on a standard block, HIWIN will pre-tap the block and add a recessed o-ring. Please contact HIWIN for more information.
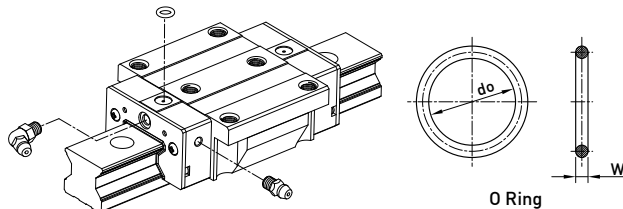
Table 2-11-14 **O-Ring size and max. permissible depth for piercing**

Size	O-Ring		Lube hole at top: max. permissible depth for piercing
	do (mm)	W (mm)	T_{max} (mm)
QR 20	2.5±0.15	1.5±0.15	4
QR 25	7.5±0.15	1.5±0.15	5.8
QR 30	7.5±0.15	1.5±0.15	6.2
QR 35	7.5±0.15	1.5±0.15	8.65
QR 45	7.5±0.15	1.5±0.15	9.5

2-11-8 Dust Proof Accessories

(1) Codes of accessories

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

Table 2-11-15

No symbol: Standard Protection (End seal + Bottom Seal)

ZZ (End seal + Bottom Seal + Scraper)

DD (Double seals + Bottom Seal)

KK (Double seals + Bottom Seal + Scraper)
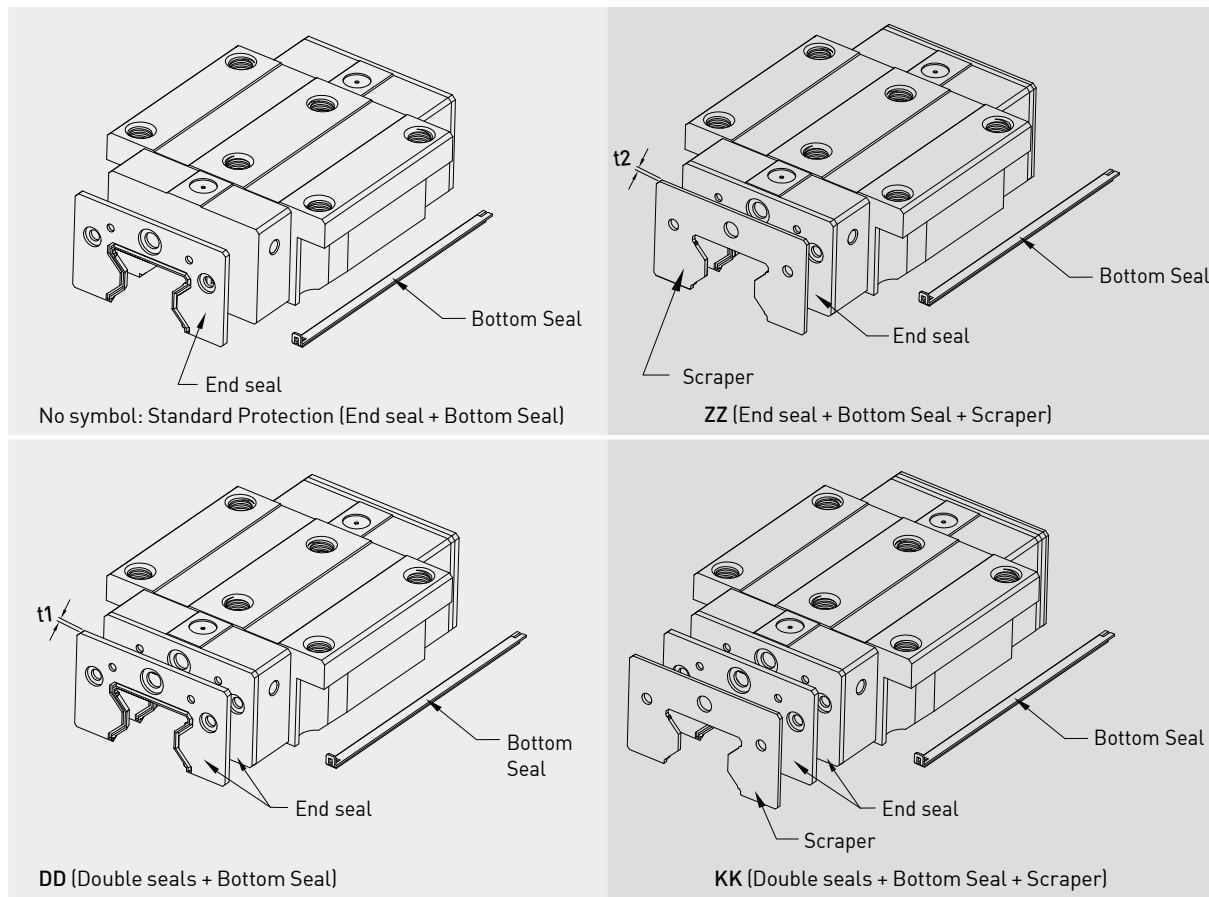
(2) End seal and bottom seal
To prevent life reduction caused by iron chips or dust entering the block.

(3) Double seals
Enhances the wiping effect, foreign matter can be completely wiped off.

Table 2-11-16 **Dimensions of end seal**

Size	Thickness (t1) (mm)	Size	Thickness (t1) (mm)
QR20 ES	2.2	QR35 ES	2.5
QR25 ES	2.2	QR45 ES	3.6
QR30 ES	2.4		

(4) Scraper
The scraper removes high-temperature iron chips and larger foreign objects.

Table 2-11-17 **Dimensions of scraper**

Size	Thickness (t2) (mm)	Size	Thickness (t2) (mm)
QR20 SC	1.0	QR35 SC	1.5
QR25 SC	1.0	QR45 SC	1.5
QR30 SC	1.5		

(5) Dimensions of block equipped with the dustproof parts
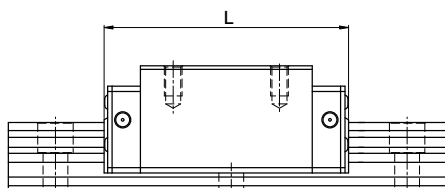
Table 2-11-18 **Overall block length**   unit: mm

Size	Overall block length (L)			
	SS	ZZ	DD	KK
QR20C	86.0 (88.0)	88.0 (92.4)	90.4 (92.4)	92.4 (96.8)
QR25C	97.7 (101.5)	99.9 (105.9)	102.3 (105.9)	104.3 (110.3)
QR25H	112.9 (116.5)	114.9 (120.9)	117.3 (120.9)	119.3 (125.3)
QR30C	109.8 (113.4)	112.8 (118.8)	114.6 (118.2)	117.6 (123.6)
QR30H	131.8 (135.4)	134.8 (140.8)	136.6 (140.2)	139.6 (145.6)
QR35C	124.0 (129.4)	127.0 (135.0)	129.0 (134.4)	132.0 (140.0)
QR35H	151.5 (156.9)	154.5 (162.5)	156.5 (161.9)	159.5 (167.5)
QR45C	153.2 (156.4)	156.2 (164.2)	160.4 (163.6)	163.4 (171.4)
QR45H	187.0 (190.2)	190.0 (198.0)	194.2 (197.4)	197.2 (205.2)

Note : The marking of "( )" denotes the maximum block length with screws, lips of end seals, etc.

QR Series
Roller Type

2-11-9 Friction

The maximum value of resistance per end seal are as shown in the table.

Table 2-11-19 **Seal Resistance**

Size	Resistance N (kgf)	Size	Resistance N (kgf)
QR 20 ES	2.45 (0.25)	QR 35 ES	3.53 (0.36)
QR 25 ES	2.74 (0.28)	QR 45 ES	4.21 (0.43)
QR 30 ES	3.31 (0.31)		

2-11-10 The Accuracy Tolerance of Mounting Surface

(1) The accuracy tolerance of rail-mounting surface

As long as the accuracy requirements of the mounting surfaces shown in the following tables are met, the high accuracy, high rigidity and long life of the QR series linear guideway will be maintained without any difficulty.

○ The parallelism tolerance of reference surface (P)
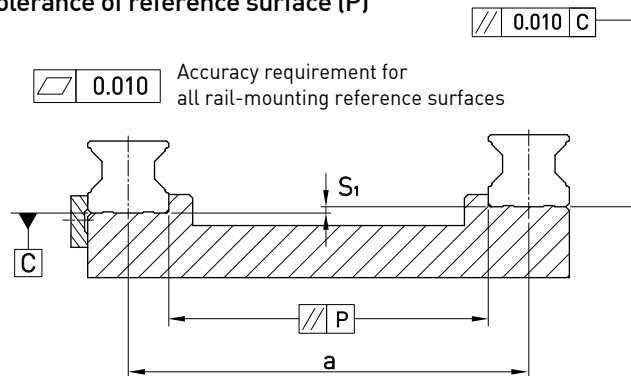
Table 2-11-20 **Max. Parallelism Tolerance (P)**   unit: μm

Size	Preload classes		
	Light Preload (Z0)	Medium Preload (ZA)	Heavy Preload (ZB)
QR20	8	6	4
QR25	9	7	5
QR30	11	8	6
QR35	14	10	7
QR45	17	13	9

○ The accuracy tolerance of reference surface height (S₁)

$$S_1 = a \times K$$

S_1 : Max. tolerance of height
a : Distance between paired rails
K : Coefficient of tolerance of height

Table 2-11-21 **Coefficient of tolerance of height**

Size	Preload classes		
	Light Preload (Z0)	Medium Preload (ZA)	Heavy Preload (ZB)
K	2.2×10^{-4}	1.7×10^{-4}	1.2×10^{-4}

(2) The accuracy tolerance of block-mounting surface

○ **The tolerance of the height of reference surface when two or more pieces are used in parallel (S_2)**
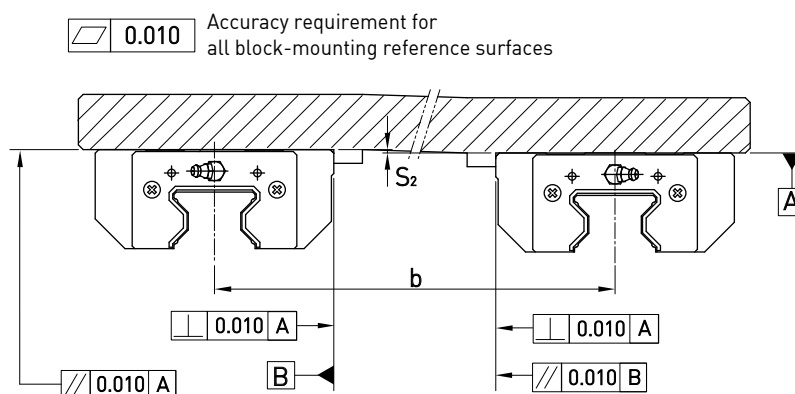
$$S_2 = b \times 4.2 \times 10^{-5}$$

S_2 : Max. tolerance of height
b : Distance between paired blocks

○ **The tolerance of the height of reference surface when two or more pieces are used in parallel (S_3)**

$$S_3 = c \times 4.2 \times 10^{-5}$$

S_3 : Max. tolerance of height
c : Distance between paired blocks

QR Series
Roller Type

2-11-11 Cautions for Installation

(1) Shoulder heights and fillets

Improper shoulder heights and fillets of mounting surfaces will cause a deviation in accuracy and the interference with the rail or block. As long as the recommended shoulder heights and fillets are followed, installation inaccuracies should be eliminated.

Table 2-11-22

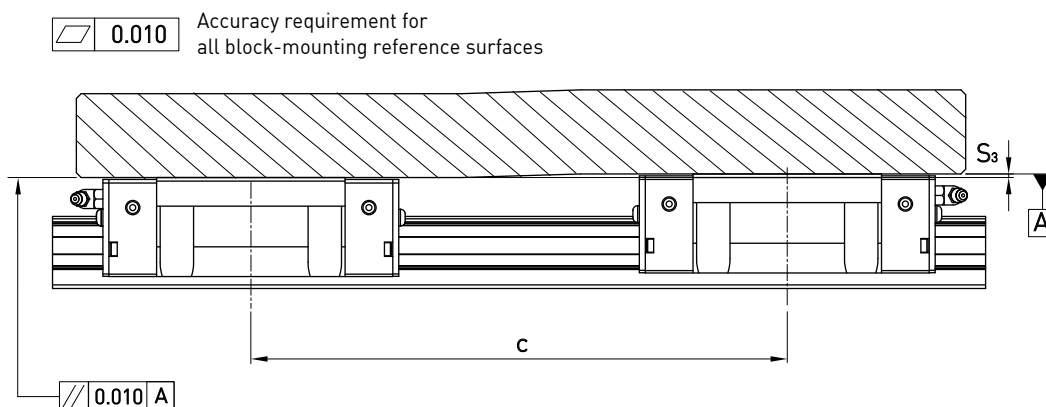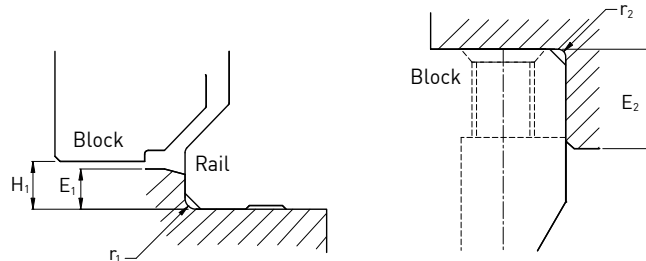| Size	Max. radius of fillets r_1 (mm)	Max. radius of fillets r_2 (mm)	Shoulder height beside the rail E_1 (mm)	Shoulder height beside the block E_2 (mm)	Clearance under block H_1 (mm)
QR20	0.5	0.5	3.5	5	5
QR25	1.0	1.0	5	5	5.5
QR30	1.0	1.0	5	5	6
QR35	1.0	1.0	6	6	6.5
QR45	1.0	1.0	7	8	8

(2) Tightening Torque of Bolts for Installation

Improper tightening of mounting bolts will seriously influence the accuracy of a linear guideway. The following tightening torque for the different sizes of bolt is recommended.

Table 2-11-23 **Tightening Torque of Mounting Bolts for Rail Installation**

Size	Bolt size	Torque N-cm(kgf-cm)		
		Iron	Casting	Aluminum
QR20	M5×0.8P×20L	883 (90)	588 (60)	441 (45)
QR25	M6×1P×20L	1373 (140)	921 (94)	686 (70)
QR30	M8×1.25P×25L	3041 (310)	2010 (205)	1470 (150)
QR35	M8×1.25P×25L	3041 (310)	2010 (205)	1470 (150)
QR45	M12×1.75P×35L	11772 (1200)	7840 (800)	5880 (600)

Table 2-11-24 **Tightening Torque of Mounting Bolts for Block Installation**

Size	Bolt size	Torque N-cm(kgf-cm) Iron	Size	Bolt size	Torque N-cm(kgf-cm) Iron
QRH/L20	M5x0.8P	883 (90)	QRW30	M10x1.5P	6760 (689)
QRW20	M6x1P	1373 (140)	QRH/L35	M8x1.25P	3041 (310)
QRH/L25	M6x1P	1373 (140)	QRW35	M10x1.5P	6760 (689)
QRW25	M8x1.25P	3041 (310)	QRH/L45	M10x1.5P	6760 (689)
QRH/L30	M8x1.25P	3041 (310)	QRW45	M12x1.75P	11772 (1200)

Note: 1. 1 kgf = 9.81 N
2. When the mounting bolt holes are located on the middle of flange block, the tightening torque should be decrease to 60%.

2-11-12 Dimensions for QR series

(1) QRH-CA / QRH-HA

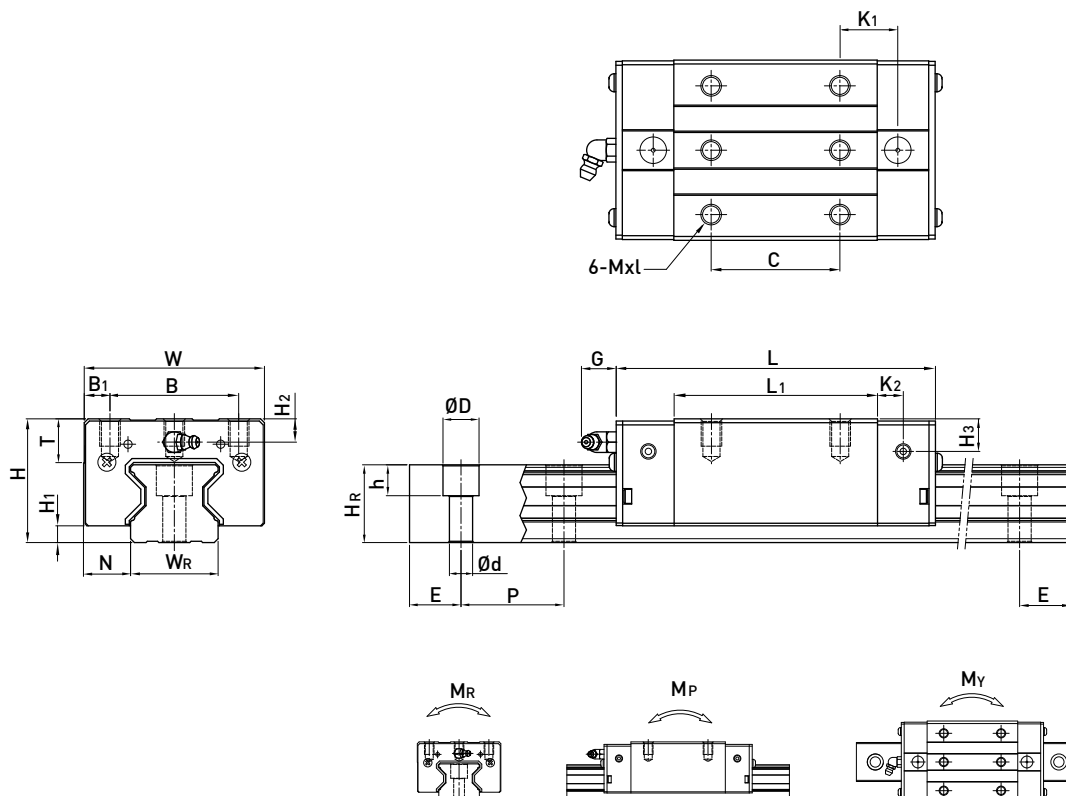| Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)													Dimensions of Rail (mm)							Mounting Bolt for Rail	Basic Dynamic Load Rating	Basic Static Load Rating	Static Rated Moment			Weight	
	H	H_1	N	W	B	B_1	C	L_1	L	K_1	K_2	G	Mxl	T	H_2	H_3	W_R	H_R	D	h	d	P	E	(mm)	C(kN)	C_0 (kN)	M_R kN-m	M_P kN-m	M_Y kN-m	Block kg	Rail kg/m
QRH20CA	34	5	12	44	32	6	36	57.5	86	15.8	6	5.3	M5 x 8	8	8.3	8.3	20	21	9.5	8.5	6	30	20	M5 x20	26.3	38.9	0.591	0.453	0.453	0.40	2.76
QRH25CA	40	5.5	12.5	48	35	6.5	35	66	97.9	20.75	7.25	12	M6 x 8	9.5	10.2	10	23	23.6	11	9	7	30	20	M6 x20	38.5	54.4	0.722	0.627	0.627	0.60	3.08
QRH25HA							50	81	112.9	21.5															44.7	65.3	0.867	0.907	0.907	0.74	3.08
QRH30CA	45	6	16	60	40	10	40	71	109.8	23.5	8	12	M8 x10	9.5	9.5	10.3	28	28	14	12	9	40	20	M8 x25	51.5	73.0	1.284	0.945	0.945	0.89	4.41
QRH30HA							60	93	131.8	24.5															64.7	95.8	1.685	1.63	1.63	1.15	4.41
QRH35CA	55	6.5	18	70	50	10	50	79	124	22.5	10	12	M8 x12	12	16	19.6	34	30.2	14	12	9	40	20	M8 x25	77.0	94.7	1.955	1.331	1.331	1.56	6.06
QRH35HA							72	106.5	151.5	25.25															95.7	126.3	2.606	2.335	2.335	2.04	6.06
QRH45CA	70	8	20.5	86	60	13	60	106	153.2	31	10	12.9	M10 x17	16	20	24	45	38	20	17	14	52.5	22.5	M12 x35	123.2	156.4	3.959	2.666	2.666	3.16	9.97
QRH45HA							80	139.8	187	37.9															150.8	208.6	5.278	4.694	4.694	4.10	9.97

Note : 1. 1 kgf = 9.81 N
2. The theoretical dynamic rated load is C_{100R}, if necessary C_{50R} conversion formula is as follows : $C_{50R} = 1.23 \times C_{100R}$
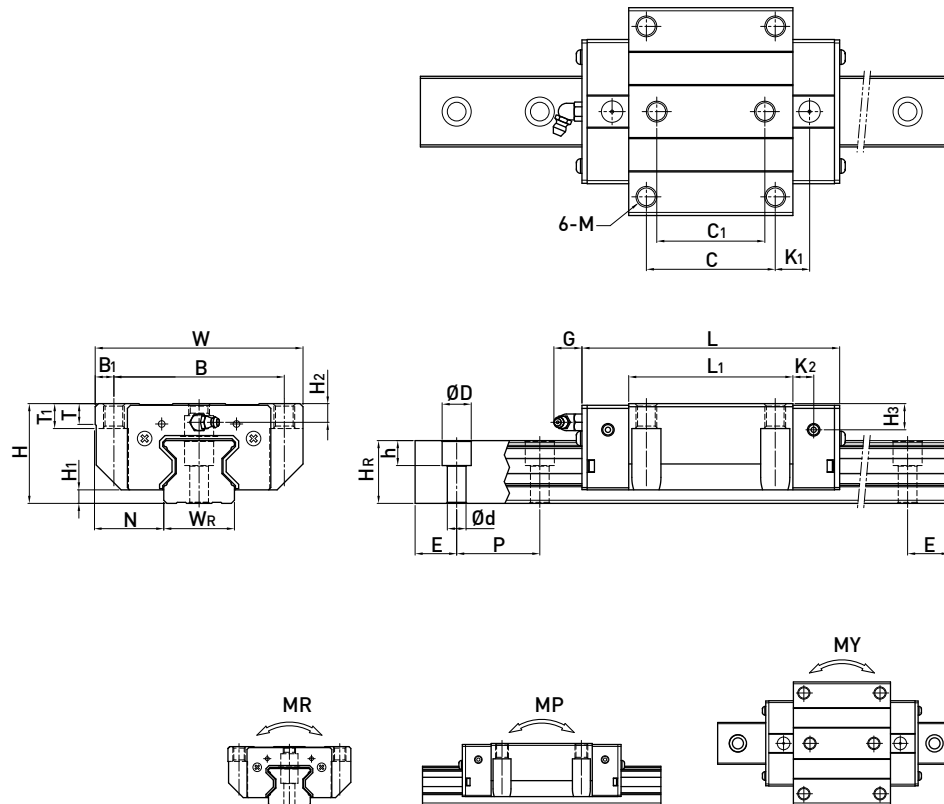
QR Series
Roller Type

(2) QRL-CA / QRL-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	K_1	K_2	G	Mxl	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
QRL20CA	30	5	12	44	32	6	36	57.5	86	15.8	6	5.3	M5x6	8	4.3	4.3	20	21	9.5	8.5	6	30	20	M5x20	26.3	38.9	0.591	0.453	0.453	0.32	2.76
QRL25CA	36	5.5	12.5	48	35	6.5	35	66	97.9	20.75	7.25	12	M6x8	9.5	6.2	6	23	23.6	11	9	7	30	20	M6x20	38.5	54.4	0.722	0.627	0.627	0.50	3.08
QRL25HA							50	81	112.9	21.5															44.7	65.3	0.867	0.907	0.907	0.62	
QRL30CA	42	6	16	60	40	10	40	71	109.8	23.5	8	12	M8x10	9.5	6.5	7.3	28	28	14	12	9	40	20	M8x25	51.5	73.0	1.284	0.945	0.945	0.79	4.41
QRL30HA							60	93	131.8	24.5															64.7	95.8	1.685	1.63	1.63	1.02	
QRL35CA	48	6.5	18	70	50	10	50	79	124	22.5	10	12	M8x12	12	9	12.6	34	30.2	14	12	9	40	20	M8x25	77.0	94.7	1.955	1.331	1.331	1.26	6.06
QRL35HA							72	106.5	151.5	25.25															95.7	126.3	2.606	2.335	2.335	1.63	
QRL45CA	60	8	20.5	86	60	13	60	106	153.2	31	10	12.9	M10x17	16	10	14	45	38	20	17	14	52.5	22.5	M12x35	123.2	156.4	3.959	2.666	2.666	2.45	9.97
QRL45HA							80	139.8	187	37.9															150.8	208.6	5.278	4.694	4.694	3.17	

Note : 1. 1 kgf = 9.81 N

2. The theoretical dynamic rated load is C_{100R}, if necessary C_{50R} conversion formula is as follows : $C_{50R} = 1.23 \times C_{100R}$

(3) QRW-CC / QRW-HC

MR   MP   MY

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	K$_1$	K$_2$	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
QRW20CC	30	5	21.5	63	53	5	40	35	57.5	86	13.8	6	5.3	M6	8	10	4.3	4.3	20	21	9.5	8.5	6	30	20	M5x20	26.3	38.9	0.591	0.453	0.453	0.47	2.76
QRW25CC	36	5.5	23.5	70	57	6.5	45	40	66	97.9	15.75	7.25	12	M8	9.5	10	6.2	6	23	23.6	11	9	7	30	20	M6x20	38.5	54.4	0.722	0.627	0.627	0.71	3.08
QRW25HC									81	112.9	24																44.7	65.3	0.867	0.907	0.907	0.90	3.08
QRW30CC	42	6	31	90	72	9	52	44	71	109.8	17.5	8	12	M10	9.5	10	6.5	7.3	28	28	14	12	9	40	20	M8x25	51.5	73.0	1.284	0.945	0.945	1.15	4.41
QRW30HC									93	131.8	28.5																64.7	95.8	1.685	1.63	1.63	1.51	4.41
QRW35CC	48	6.5	33	100	82	9	62	52	79	124	16.5	10	12	M10	12	13	9	12.6	34	30.2	14	12	9	40	20	M8x25	77.0	94.7	1.955	1.331	1.331	1.74	6.06
QRW35HC									106.5	151.5	30.25																95.7	126.3	2.606	2.335	2.335	2.38	6.06
QRW45CC	60	8	37.5	120	100	10	80	60	106	153.2	21	10	12.9	M12	14	15	10	14	45	38	20	17	14	52.5	22.5	M12x35	123.2	156.4	3.959	2.666	2.666	3.41	9.97
QRW45HC									139.8	187	37.9																150.8	208.6	5.278	4.694	4.694	4.54	9.97

Note : 1. 1 kgf = 9.81 N
   2. The theoretical dynamic rated load is C$_{100R}$, if necessary C$_{50R}$ conversion formula is as follows : C$_{50R}$ = 1.23 x C$_{100R}$