

## TECHNICAL INFORMATION LINEAR RAIL HRC/ARC/ERC/WRC

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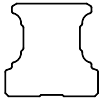
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## Product overview

Linear rail guides with ball chain for extremely silent and smooth operation. The HRC/ARC/ERC and the WRC series are very similar in performance and other characteristics. The major difference between the two series is the rail and system width.



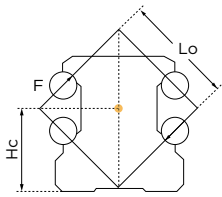
Rail  
ARC/HRC/ERC



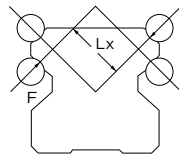
Rail  
WRC

The HRC/ARC/ERC range includes many types of blocks, but the standard versions are suitable for most linear applications. If necessary, there are versions that are long, short or slim, with low height or with flange. The WRC range offer standard or flanged blocks. All blocks are equipped with stainless steel reinforcement plates for increased operational life.

The ARC/HRC/ERC/WRC Linear Guide Series uses the O-type arrangement for the four row ball circulation design. The contact angle between the rail and ball is 45 degrees. The load capacity is equal in all four main load directions. An O-arrangement increases both load capacity and stiffness in the rolling direction ( $M_r$ ) compared to a X-arrangement. The O-arrangement excels in particular for systems using only a single rail.

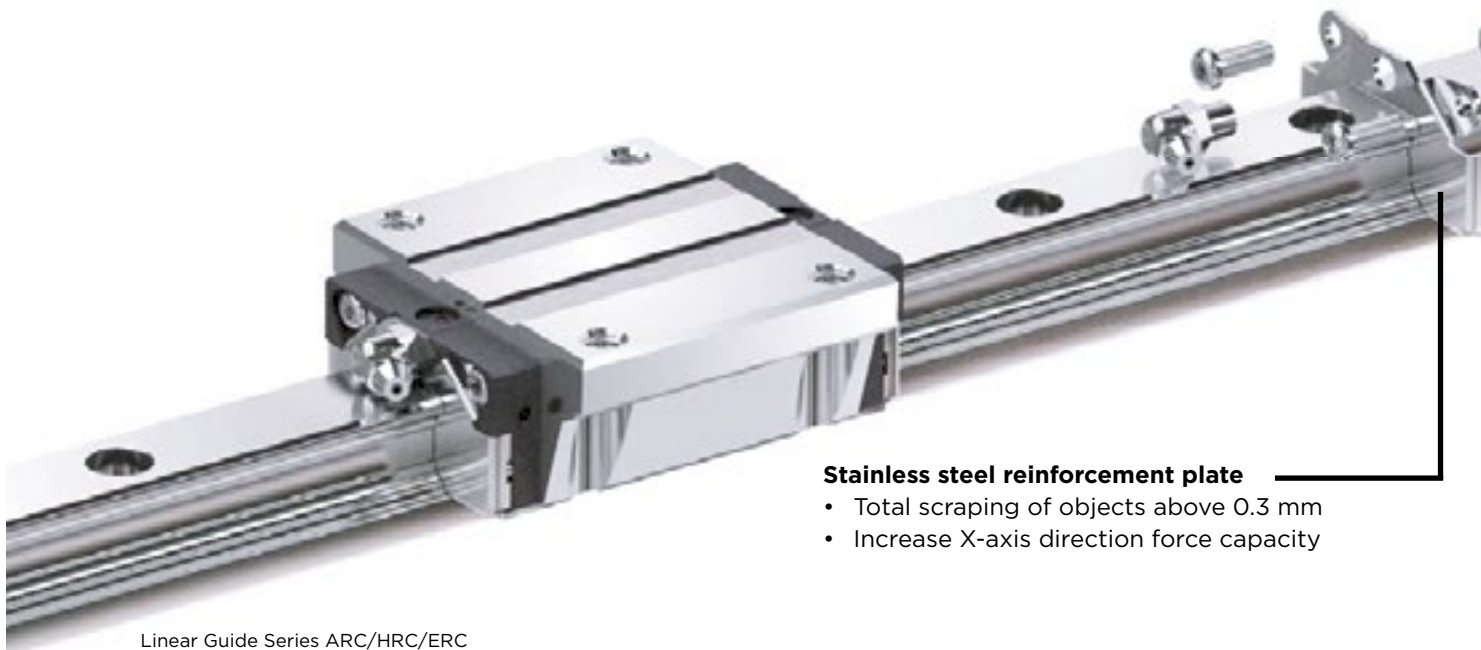


O-Type Arrangement



X-Type Arrangement

The ARC/HRC/ERC blocks are equipped with ball chain in sizes 15-45. The WRC series are available both with and without ball chain in all sizes. The ball chain keeps the balls separated within the slider and by that increases lifetime and creates a more silent running performance. The ball chain design offers larger contact area between the balls and the chain, which helps keep the lubricant film intact, hence low-noise operations with extended service life.



**Stainless steel reinforcement plate**

- Total scraping of objects above 0.3 mm
- Increase X-axis direction force capacity

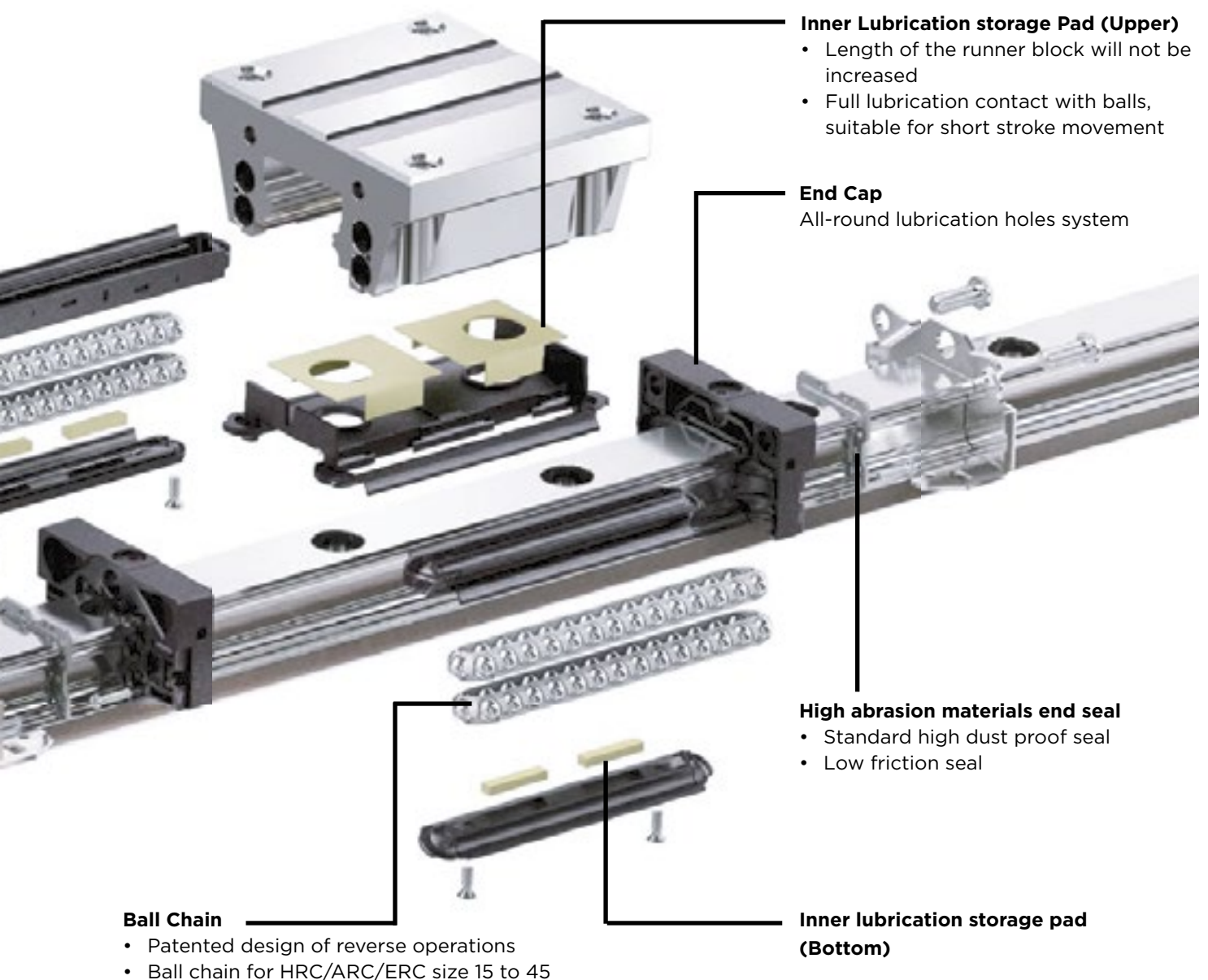
Linear Guide Series ARC/HRC/ERC

## Characteristics

- Quiet with long service life
- High dynamic load and high load capabilities
- Dustproof design
- Excellent dynamic performance and high speed
- Optional counterbored holes from the top and tapped mounting holes from the bottom rail
- Optional surface treatments

## Application areas

Rail guides have a wide area of use. They are suitable for most applications that needs a linear movement.



Note! Ball chain is optional for WRC

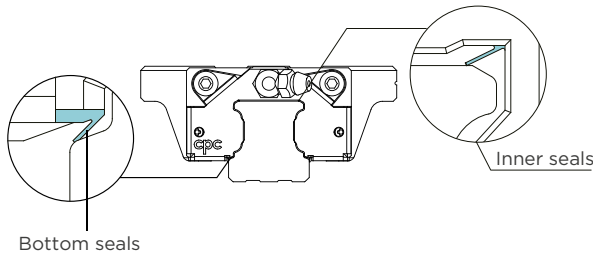
# System description

## Dustproof design

The completely sealed design helps prevent dust ingress and reduce lubricant loss, often resulting in extended service life.

## Inner seals

The inner seals both protect the rails from foreign particles and keep the lubrication inside the runner block while maintaining a low friction profile.

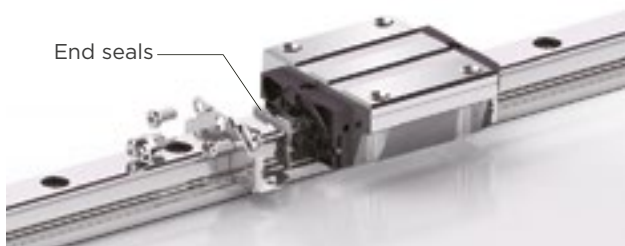


## Bottom seals

The bottom seals work in conjunction with the inner seals to keep foreign particles out and lubrication from leaking out. This sealing design significantly reduces re-lubrication needs and prolongs the service life of the runner block.

## End seals

The end seals work in conjunction with the bottom and inner seals to block foreign particles out and prevent lubrication leakage. The flexibility of the engineering plastic material has a strong friction resistance and is less prone to cracking than typical NBR plastics.



## Tight seals (S) Option

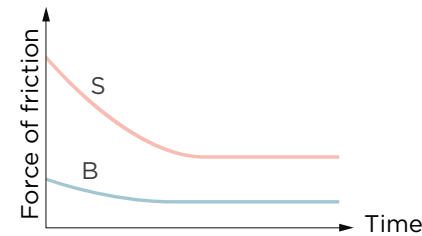
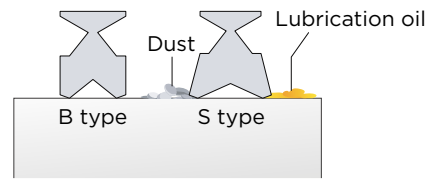
Directly in contact with the rail surface, having better dustproof and lubrication holding capabilities. We recommends using this type of seals in environments that is exposed for long durations to high dusts and saw wood dust, etc. The friction will be higher than for the low friction seals.

## Low friction seals (B) Standard

The low-friction seals have slight contact with the rail and are suitable for most environments, with both low friction and a scraper function.

## Seal type friction comparison

Friction levels will be the highest on new linear rails. But, after short periods of operation, such friction will be reduced to a constant level.

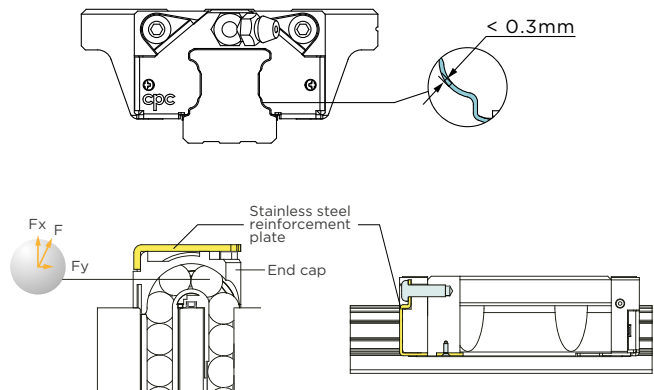


## Stainless steel reinforcement plate (Patent)

With clearance between rail profile of no more than 0.3 mm, the plate can scrape large particles such as iron fillings to protect the end seals

Using two stainless-steel reinforcement plates, the L-shaped design is fastened by screws onto the top and the bottom of the runner block, to enhance the rigidity and the cladding of the end caps.

The L-shaped stainless-steel reinforcement plates with bottom latches help cover and strengthen the end caps, allowing high-speed/stronger impact applications.

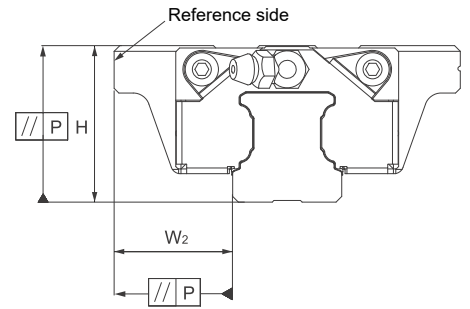


## Precision classes

The linear guides provide 5 different grades of precision: N, H, P, SP, and UP.  
 Engineers can choose different grades depend on the machine applications.

### Block reference side

The reference side on blocks should be used against the fixed abutment to ensure parallelism. In case of two or more blocks keep the reference edge towards the same direction.



Note! Side without groove mark is reference side.

## ARC/HRC/ERC

Size	Accuracy grades (µm)		UP	SP	P	H	N standard
15-20	Tolerance of dimension height H	H	±5	±10	±15	±30	±70
	Variation of height for different runner block on the same position of rail	ΔH	3	5	6	10	20
	Tolerance of dimension width W <sub>2</sub>	W <sub>2</sub>	±5	±7	±10	±20	±40
	Variation of width for different runner block on the same position of rail	ΔW <sub>2</sub>	3	5	7	15	30
25-35	Tolerance of dimension height H	H	±5	±10	±20	±40	±80
	Variation of height for different runner block on the same position of rail	ΔH	3	5	7	15	20
	Tolerance of dimension width W <sub>2</sub>	W <sub>2</sub>	±5	±7	±10	±20	±40
	Variation of width for different runner block on the same position of rail	ΔW <sub>2</sub>	3	5	7	15	30
45-55	Tolerance of dimension height H	H	±5	±10	±20	±40	±80
	Variation of height for different runner block on the same position of rail	ΔH	3	5	7	15	25
	Tolerance of dimension width W <sub>2</sub>	W <sub>2</sub>	±5	±7	±10	±20	±40
	Variation of width for different runner block on the same position of rail	ΔW <sub>2</sub>	3	5	7	15	30

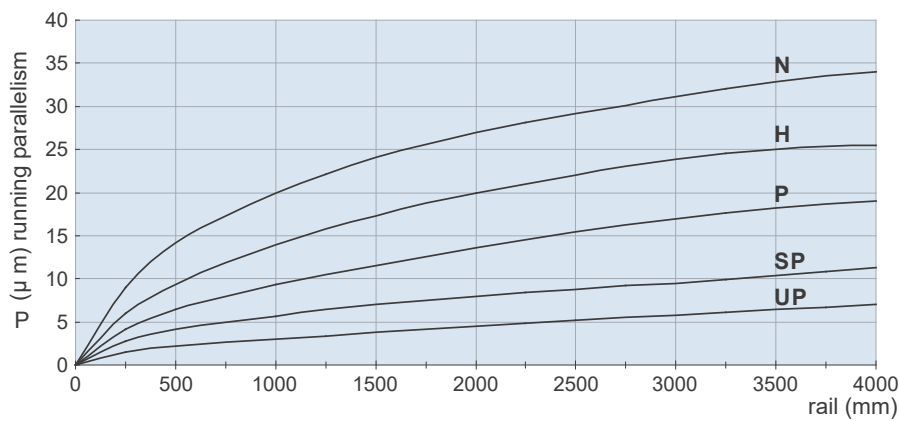
## WRC

Accuracy grades (µm)		UP	SP	P	H	N
Tolerance of dimension height H	H	±5	±10	±15	±30	±70
Variation of height for different runner block on the same position of rail	ΔH	3	5	6	10	20
Tolerance of dimension width W <sub>2</sub>	W <sub>2</sub>	±5	±7	±10	±20	±40
Variation of width for different runner block on the same position of rail	ΔW <sub>2</sub>	3	5	7	15	30

## Applications

Class	Movement, conveyance	Manufacturing equipment	High precision manufacturing equipment	Measuring equipment
N standard	X	X		
H	X	X	X	
P		X	X	X
SP			X	X
UP				X
Examples	<ol style="list-style-type: none"> <li>1. Conveyance system</li> <li>2. Industrial robots</li> <li>3. Office machinery</li> </ol>	<ol style="list-style-type: none"> <li>1. Woodworking machine</li> <li>2. Punching press</li> <li>3. Injection molding machine</li> </ol>	<ol style="list-style-type: none"> <li>1. Lathe/milling machine/ grinding machine</li> <li>2. Electrical discharge machining (EDM)</li> <li>3. CNC machining center</li> </ol>	<ol style="list-style-type: none"> <li>1. Three dimensional measuring instrument</li> <li>2. Detection mirror/head shaft</li> <li>3. X-Y Table</li> </ol>

### Runner block relative to linear guide, datum plane parallel motion precision





## Speed

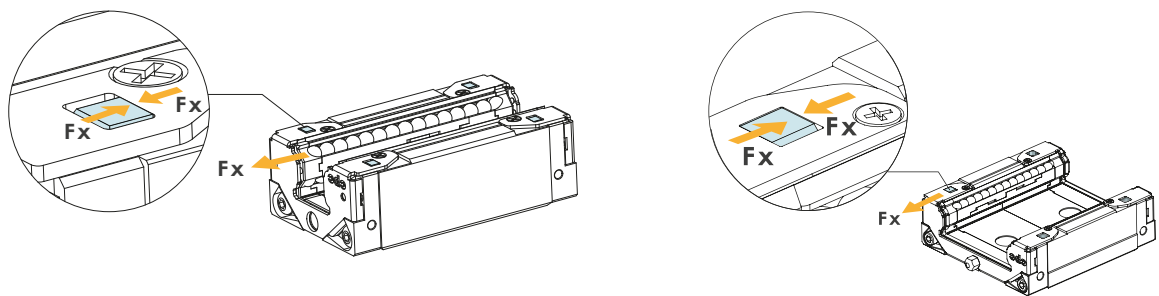
The ARC/HRC/ERC/WRC Linear Guide Series use the stainless steel reinforcement plates and additional bottom latches, increasing its axial force and tolerance capacity to achieve a faster operating speed.

### Normal

$V_{max} \leq 10m/s$   
 $a_{max} \leq 450m/s^2$

### Ball chain

$V_{max} \leq 3m/s$   
 $a_{max} \leq 250m/s^2$



## Operating temperature

The linear guides have a permissible operating temperature between -40 °C and 80 °C and the maximum temperature for short-term operation can reach +100 °C.

## Average friction of block

### ARC/HRC/ERC

Block type	Friction caused from ball bearing				Bottom seals + inner seals	End seals (2 sides)		External NBR seal with metal scraper
	Preload class					S-type Tight seals Option	B-type Low friction Standard	
	VC	V0	V1	V2				
15MN/FN	0.30	0.65	0.85	1.10	1.5	2.0	0.5	4
20MN/FN	0.40	0.75	1.40	1.60	2.0	2.5	1.0	5
25MN/FN	0.60	0.95	1.30	1.95	2.5	3.0	1.5	8
30MN/FN	0.55	1.10	2.00	3.10	3.0	5.0	2.0	10
35MN/FN	0.65	1.25	2.50	3.25	3.0	8.0	3.0	12
45MN/FN	0.85	2.10	2.80	4.00	4.0	11.0	4.0	20
55MN/FN	1.60	4.10	5.50	7.95	2.0	13.0	-	-

Unit N

For total friction sum figures in above table. For example: Friction ball bearings + bottom/inner seals + end seals.

**ARC/HRC/ERC**

Block type	Friction caused from ball bearing				Bottom seals + inner seals	End seals (2 sides)		External NBR seal with metal scraper
	Preload class					S-type Tight seals Option	B-type Low friction Standard	
	VC	VO	V1	V2				
15MS/FS	0.30	0.60	0.80	1.00	1.5	2.0	0.5	4
20MS/FS	0.40	0.70	1.10	1.40	2.0	2.5	1.0	5
25MS/FS	0.50	0.90	1.20	1.80	2.5	3.0	1.5	8
30MS/FS	0.50	1.00	1.80	2.30	3.0	5.0	2.0	10

Unit N

For total friction sum figures in above table. For example: Friction ball bearings + bottom/inner seals + end seals.

**ARC/HRC/ERC**

Block type	Friction caused from ball bearing				Bottom seals + inner seals	End seals (2 sides)		External NBR seal with metal scraper
	Preload class					S-type Tight seals Option	B-type Low friction Standard	
	VC	VO	V1	V2				
15ML/FL	0.40	0.70	0.90	1.40	1.5	2.0	0.5	4
20ML/FL	0.50	0.80	1.60	1.80	2.0	2.5	1.0	5
25ML/FL	0.70	1.20	1.80	2.00	2.5	3.0	1.5	8
30ML/FL	0.80	1.40	2.20	2.80	3.0	5.0	2.0	10
35ML/FL	0.90	1.60	2.70	3.50	3.0	8.0	3.0	12
45ML/FL	1.00	2.30	3.50	4.55	4.0	11.0	4.0	20
55ML/FL	1.90	4.30	6.60	8.60	2.0	13.0	-	-

Unit N

For total friction sum figures in above table. For example: Friction ball bearings + bottom/inner seals + end seals.

**Friction**

The linear guides have stable and constant running friction and slight start-up friction, which brings out the properties of the product’s low frictional resistance to the full.

$$F_{rn} = \mu \cdot F$$

$F_{rn}$  = Friction (N)  
 $F$  = Load (N)

Friction factor approx.  $\mu=0.001-0.002$

**Friction Factors**

- Sealing system
- Collision between rolling elements and rolling elements during operation
- Collision of the rolling elements with the return path
- Resistance caused by the rolling and sliding phenomenon at the contact point of the rolling element and the raceway of the rail
- Resistance caused by the squeezing of lubricant when the rolling elements running
- Resistance caused by contaminations

# Preload and clearance

The ARC/HRC/ERC/WRC linear guides provide 4 different preload class VC, V0, V1, V2.

## ARC

Class	Description	Preload value	Clearance (µm)							Application
			15	20	25	30	35	45	55	
VC	Clearance	0	+5--0	+5--0	+5--0	+5--0	+5--0	+5--0	+5--0	Smooth motion low friction
V0 standard	Light preload	0.02C	+0--4	+0--5	+0--6	+0--7	+0--8	+0--10	+0--12	For precision situations, smooth motion
V1	Medium preload	0.05C	-4--10	-5--12	-6--15	-7--18	-8--20	-10--24	-12--28	High stiffness, precision, high load situations
V2	Heavy preload	0.08C	-10--16	-12--18	-15--23	-18--27	-20--31	-24--36	-28--45	Super high stiffness, precision and load capacity

## HRC/ERC

Class	Description	Preload value	Clearance (µm)							Application
			15	20	25	30	35	45	55	
VC	Clearance	0	+5--0	+5--0	+5--0	+5--0	+5--0	+5--0	+5--0	Smooth motion low friction
V0 standard	Light preload	0.02C	+0--4	+0--5	+0--6	+0--7	+0--8	+0--10	+0--12	For precision situations, smooth motion
V1	Medium preload	0.08C	-4--12	-5--14	-6--16	-7--19	-8--22	-10--25	-12--29	High stiffness, precision, high load situations
V2	Heavy preload	0.13C	-12--19	-14--23	-16--26	-19--31	-22--35	-25--40	-29--46	Super high stiffness, precision and load capacity

## WRC

Class	Description	Preload value	Clearance (µm)		Application
			21/15	27/20	
VC	Clearance	0	+5--0	+5--0	Smooth motion low friction
V0 standard	Light preload	0.02C	+0--4	+0--5	For precision situations, smooth motion
V1	Medium preload	0.05C	-4--10	-5--12	High stiffness, precision, high load situations
V2	Heavy preload	0.08C	-10--16	-12--18	Super high stiffness, precision and load capacity

## Load rating & life

Under normal conditions, the linear rail system can be damaged by metal fatigue as the result of repeated stress. The repeated stress causes flaking of the raceways and steel balls. The life of linear rail system is defined as the total travel distance that the linear rail system travels until flaking occurs.

The rating load capacities and static moment are calculated according to ISO14728 standard. The rating life for basic dynamic load rating is defined as the total 100 km travel distance that 90% of a group of identical linear guides can be operated individually under the same conditions free from any material damage caused by rolling fatigue.

Nominal Life (km):  $L = \left(\frac{C}{P}\right)^3 \times 100 \text{ km}$

- L: Nominal life
- P: Load
- C: Basic dynamic load rating (N)

The basic dynamic load rating C is a statistical number. When the standard of 50km travel distance is applied, the basic dynamic load rating C of ISO 14728 should be multiplied by 1.26 for conversion.

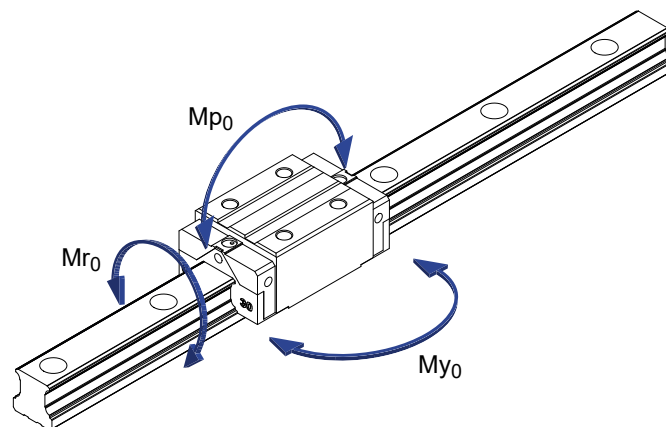
### Basic Static Load Rating: C<sub>0</sub> (N)

If an excessive load or shock is applied to the linear rail system in the static or dynamic state, permanent but local deformation can occur to the steel balls and raceway. The Basic Static Load Rating is the maximum load the bearing can accept without affecting the dynamic life. This value is usually associated with a permanent deformation of the race way surface of 0.0001 time the ball diameter.

### Static Permissible Moment: M<sub>0</sub> (Nm)

These loads are maximum moments or torque loads that can be applied to the bearing without damaging the bearing or affecting subsequent dynamic life.

- Mr<sub>0</sub>: Moment in rolling direction
- Mp<sub>0</sub>: Moment in pitching direction
- My<sub>0</sub>: Moment in yawing direction



When the load is applied horizontally or vertically (0°, 90°, 180°, 270°), the equivalent load of the slide is equal to the actual load. When the load angle is 45, its equivalent load is approximately 1.414 times that of the main direction. Therefore, in order to increase the service life of the linear system, it should be installed in the appropriate direction to bear the load.

## Static load safety factor (fs)

In order to be able to withstand the permanent deformation of the linear bearing and ensure that it will not affect the accuracy and smooth operation of the linear slide system. The static load safety factor fs is calculated as below.

$f_s = \frac{C_0}{P} \quad \text{(radial load)}$	<p>C<sub>0</sub>: Basic static load P: Load</p>
$f_s = \frac{M_0}{M} \quad \text{(moment load)}$	<p>M<sub>0</sub>: Static permissible torque (Nm) (Mr<sub>0</sub>, Mp<sub>0</sub>, My<sub>0</sub>) M: Load torque (Nm)</p>

Operating situation	fs
General operation	1-2
Shock or impact	2-3
High precision and smooth operation	≥ 3

# Lubrication

Lubrication for linear rail system is a key part of its performance:

- To reduce friction and wearing for each moving part.
- To eliminate the heat on linear rail system.
- To prevent corrosion on inside and outside of linear rail system.
- Dust-prevention.

At delivery, the block contains correct amount of grease and can be directly installed in the machine, no need to be washed. Before the first start-up the linear rail must be lubricated for protection purpose; this is to avoid the contact with pollutant.

## Lubrication interval

- Lubrication intervals vary according to the environment and working condition of machine.
- Frequent visual inspection is necessary to ensure that the lubrication consistently provides an oil film on the surface of the rail.
- If dry and discolored, relubrication should be carried out immediately, and the relubrications interval should determined according to the environment and condition of use.
- The lubrication interval must be shortened if the travel stroke is <2 or >15 times the length of the steel body of block.
- If the stroke is less than two times the steel body of the block, the grease must be injected through the lubrication hole from both left and right of the block and then run on the rail that is at least three times the length of the block to distribute the grease evenly in the block. Repeat this step twice.
- If the use deviates from the horizontal installation, the use of lubrication must be carefully checked.

The block has lubrication ports at front end, back end, left side, right side and top. Block must run back and forth while lubricating. Correct amount of grease needed for the different block model in table below.

If the block already has grease inside and the grease used for re-lubrication is different the block needs to be cleaned before lubrication. Test the lubricants to avoid grease incompatibility.

## Amount of grease needed for one block

Size	Without ball chain			Ball-chain type		
	Short (S)	Standard (N)	Long (L)	Short (S)	Standard (N)	Long (L)
HRC/ARC/ERC 15	1.4	2	3.2	1.2	1.5	2.5
HRC/ARC/ERC 20	2.3	4	5.5	2.3	3.5	5
HRC/ARC/ERC 25	3.9	7	9.5	3.9	7	9
HRC/ARC/ERC 30	5.9	10	14	5.4	9	12.5
HRC/ARC/ERC 35	-	16	21	-	15	19.5
HRC/ARC/ERC 45	-	32	40	-	30	37
HRC/ARC/ERC 55	-	53	66.5	-	-	-
WRC 21/15	-	2.7	-	-	2.2	-
WRC 27/20	-	5.3	-	-	4.8	-

Units in cm<sup>3</sup>.

## Classification and selection of lubrication

Lubricant for linear rail system must be selected after considering environment and working condition.

Rollco recommends:

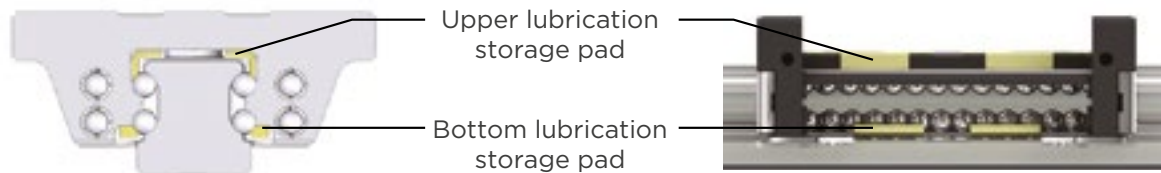
Item	Application	Brand
Normal working conditions	Multipurpose industrial application	RA Grease NLGI 1.5



For special working conditions, please contact Rollco.

## Option

The option with inner lubrication storage pad design (ordering code Z) enables long-term lubrication effects and customers can inject lubrication oil directly through its lubrication holes to ensure sufficient storage in the lubrication storage pad.



## All-direction lubrication ports

On the front, top and side, there are lubrication ports. All blocks are delivered with front mounted standard grease nipple, block size 15 with straight standard nipple and block size 20 - 55 with angled standard nipple. The top port comes with an O-ring seal to allow easy relubrication from the top, and the diverse comprehensive lubrication injection design allows for lubrication from all directions. The side and top lubrication injection port is sealed on delivery to prevent leakage of lubrication.



Grease nipples / oil piping joints

## Grease nipples / oil piping joints

For information about grease nipples and optional adapters, please see our website.

### Port sizes for grease nipple

Type	Port size		Top o-ring size
	Front	Side	
HRC/ARC 15	M3	M3	P3
HRC/ARC 20	M3	M3	P4
HRC/ARC/ERC 25	M6	M3	P4
HRC/ARC 30	M6	M6	P5
HRC/ARC 35	M6	M6	P5
HRC/ARC 45	PT1/8	M6	P5
HRC/ARC 55	M6	M6	P5
WRC 21/15	M3	M3	P3
WRC 27/20	M3	M3	P4



## Selection of HK Clamping Element

Due to the height difference of the rail guide blocks, an adapter plate is sometimes needed to ensure proper function of the HK Clamping Element.

Block type	Clamping element	Adapter plate
ARC15 FN, FS, MN & MS	HK1514D	-
HRC15 FN	HK1514D	-
HRC15 MN	HK1514D	PHK15-4
ARC20 FN, FS, MN, ML & MS	HK2005KN	-
HRC20 FN, FL, MN & ML	HK2005KR	-
ARC25 FN, FS, MN, ML & MS	HK2505KN	-
ERC25 MN & ML	HK2505KR	-
HRC25 FN & FL	HK2505KR	-
HRC25 MN & ML	HK2505KR	PHK25-4
ARC30 FN, FS, MN, ML & MS	HK3002K	-
HRC30 FN & FL	HK3002K	-
HRC30 MN & ML	HK3002K	PHK30-3
ARC35 FN, MN & ML	HK3505KR	-
HRC35 FN & FL	HK3505KR	-
HRC35 MN & ML	HK3505KR	PMK35-7
ARC45 MN & ML	HK4501A	-
HRC45 FN & FL	HK4501A	-
HRC45 MN & ML	HK4501A	PHK45-10

For other types - please contact Rollco.

## Selection of MK & MKS Clamping Element

Due to the height difference of the rail guide blocks, an adapter plate is sometimes needed to ensure proper function of the MK or MKS Clamping Elements.

Block type	Clamping element	Adapter plate
ARC15 FN, FS, MN & MS	MK1514D / MKS1514D	-
HRC15 FN	MK1514D / MKS1514D	-
HRC15 MN	MK1514D / MKS1514D	PMK15-4
ARC20 FN, FS, MN, ML & MS	MK2014D / MKS2014D	-
HRC20 FN, FL, MN & ML	MK2014D / MKS2014D	PMK20-2-A
ARC25 FN, FS, MN, ML & MS	-	-
ERC25 MN & ML	MK2514D / MKS2514D	-
HRC25 FN & FL	MK2514D / MKS2514D	-
HRC25 MN & ML	MK2514D / MKS2514D	PMK25-4
ARC30 FN, FS, MN, ML & MS	MK3005A / MKS3005A	-
HRC30 FN & FL	MK3005A / MKS3005A	-
HRC30 MN & ML	MK3005A / MKS3005A	PMK30-3
ARC35 FN, MN & ML	MK3514D / MKS3514D	-
HRC35 FN & FL	MK3514D / MKS3514D	-
HRC35 MN & ML	MK3514D / MKS3514D	PMK35-7
ARC45 MN & ML	MK4514D / MKS4514D	-
HRC45 FN & FL	MK4514D / MKS4514D	-
HRC45 MN & ML	MK4514D / MKS4514D	PMK45-10

For other types - please contact Rollco.

## Installation surface geometry position accuracy

The rough finishing or milling on installation site will impact the working accuracy of linear guide, and reduce the service life of both standard and wide ball type linear guide. The accuracy of installation site and linear guides are critical factors to determine the accuracy of work bench. When the error of installation site is larger than the value calculated by following formula, the working resistance and service life will be impacted.

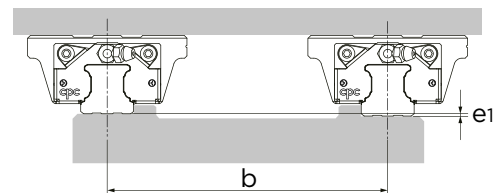
$$e1 \text{ (mm)} = b \text{ (mm)} \cdot f1 \cdot 10^{-4}$$

$$e2 \text{ (mm)} = d \text{ (mm)} \cdot f2 \cdot 10^{-5}$$

$$e3 \text{ (mm)} = f3 \cdot 10^{-3}$$

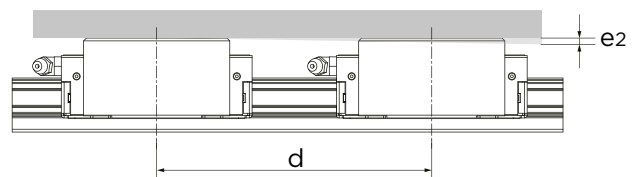
### Applicable to 15-55 all models

Block length	ARC / HRC / ERC (f1)			
	VC	VO	V1	V2
MS / FS	5.2	3.5	2.2	1.1
MN / FN	4.5	3.1	1.8	0.8
ML / FL	4.2	2.8	1.7	0.7

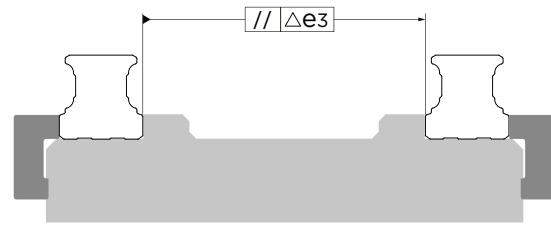


### Applicable to 15-55 all models

Block length	ARC / HRC / ERC (f2)			
	VC	VO	V1	V2
MS / FS	43.1	29.7	18.3	8.9
MN / FN	26.0	17.5	10.5	4.8
ML / FL	18.4	12.3	7.3	3.1

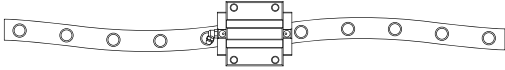
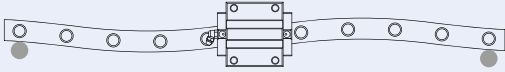
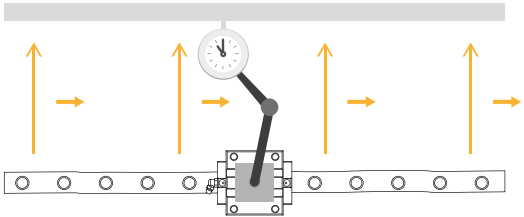
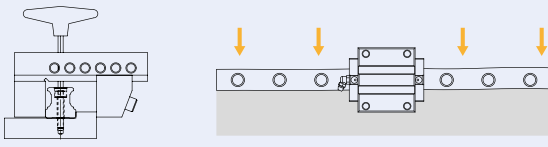



Block length	ARC (f3)			
	VC	VO	V1	V2
15 MS / FS	20	14	9	5
15 MN / FN	18	13	8	4
15 ML	16	12	7	3
20 MS / FS	25	18	12	6
20 MN / FN	23	16	10	5
20 ML	21	14	9	4
25 MS / FS	31	22	15	8
25 MN / FN	27	20	13	6
30 MS / FS	38	28	18	10
30 MN / FN	33	24	15	8
30 ML	31	22	14	7
35 MN / FN	37	27	17	8
35 ML	35	25	16	8
45 MN	49	35	23	11
45 ML	45	32	21	10
55 MN	65	46	30	15
55 ML	62	44	28	13



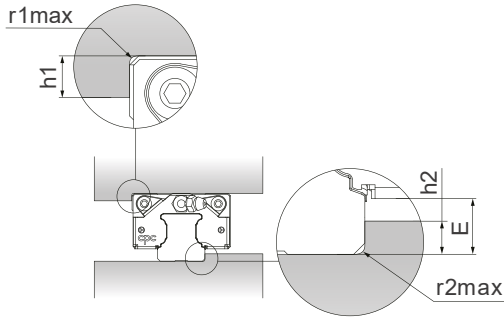
Block length	HRC / ERC (f3)			
	VC	VO	V1	V2
15 MN / FN	18	13	8	4
15 ML / FL	16	12	7	3
20 MN / FN	23	16	10	5
20 ML / FL	21	14	9	4
25 MS	31	22	15	8
25 MN / FN	27	20	13	6
25 ML / FL	25	18	11	5
30 MN / FN	33	24	15	8
30 ML / FL	31	22	14	7
35 MN / FN	37	27	17	8
35 ML / FL	35	25	16	8
45 MN / FN	49	35	23	11
45 ML / FL	45	32	21	10
55 MN / FN	65	46	30	15
55 ML / FL	62	44	28	13

# Rail installation

Diagram	Description	Feature
	<p>No straightening. Strongly advised against.</p>	<p>No precision Low lateral bearing capacity</p>
	<p>Straightening by pin. Not recommended.</p>	<p>No precision Low lateral bearing capacity</p>
	<p>Straightening based on straight edge, calibrated by meter.</p>	<p>Low to mid precision Low lateral bearing capacity</p>
	<p>Rail placed on a supporting edge. (Precision vise applied.)</p>	<p>High precision One side with high lateral bearing capacity.</p>
	<p>With support edge and lateral mounting screw.</p>	<p>Very high precision. High lateral bearing capacity on both sides.</p>

## Dimension of reference edge

To ensure the linear guide is precisely assembled with machine table, Rollco machines a recess in the reference edge corner. The corner of the machine table must be smaller than the chamfer of the linear guide to avoid interference. To consult on chamfer sizes and shoulder heights, please refer to the table below.

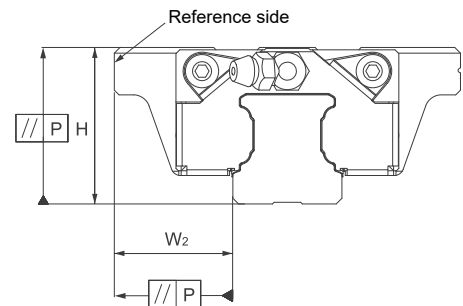


Type	r1max	r2max	h1	h2	E
HRC/ARC/ERC 15	0.5	0.5	4.0	2.5	3.3
HRC/ARC/ERC 20	0.5	0.5	5.0	4.0	5.0
HRC/ARC/ERC 25	1.0	1.0	5.0	5.0	6.0
HRC/ARC/ERC 30	1.0	1.0	6.0	5.5	6.6
HRC/ARC/ERC 35	1.0	1.0	6.0	6.5	7.6
HRC/ARC/ERC 45	1.0	1.0	8.0	8.0	9.3
HRC/ARC/ERC 55	1.5	1.5	10.0	10.0	12.0
WRC 21/15	0.4	0.4	5.0	2.0	2.7
WRC 27/20	0.4	0.4	5.0	3.0	3.5

### Block reference side

The reference side on blocks should be used against the fixed abutment to ensure parallelism. In case of two or more blocks keep the reference edge towards the same direction.

Note! Side without groove mark is reference side.



## Bolt mounting torque

The below mounting torque is recommended for mounting the rail.

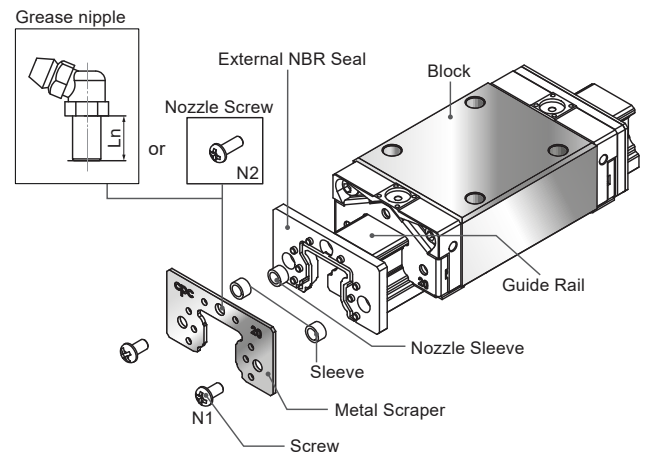
### Screw tightening torque (Nm)

Strength grade 12.9 Alloy steel screw	Steel	Cast iron	Non-ferrous metals
M3	2.0	1.3	1.0
M4	4.1	2.7	2.1
M5	8.8	5.9	4.4
M6	13.7	9.2	6.9
M8	30	20	15
M10	68	45	33
M12	118	78	59
M14	157	105	78

## Installation of External NBR seal with metal scraper

External NBR Seal is available for applications under harsh environments. Dustproof solution for milling machining, machinery processing, wood-working or other outdoor applications. It demonstrates high dust-proof ability to prevent contamination from fine dust, iron scrap or dirt.

1. Set block on the rail before installing external NBR seal.
2. Make sure rubber part is fitted in the sleeve. If rubber parts fall off, please set the sleeve to the correspondent bore.
3. Overlap rubber part and metal scrapper with the corresponding salient point and the bore. cpc logo must be facing outward.
4. Slide the external NBR seal into rail from two sides and closely connect with the block.
5. Fasten screw into the correspondence bore. Make sure the seal is centre aligned with the rail while fastening. Do not make metal scraper contact with guide rail.



# HRC/ARC/ERC Mounted Rail & Block

ARC - U - 15 - 2 - MN - BZC - VO - N - SN - 1480 - 20 - 20

**Type**

HRC, ARC or ERC

**Bottom mounting rail**

U: Yes (If No, leave empty)

**Size**

15, 20, 25, 30, 35, 45 or 55

**Number of blocks**

**Block width**

M: Standard  
F: Flanged

**Block length**

L: Long  
N: Standard  
S: Short

**Seal type\***

B: Standard low friction seal  
S: Option tight seal

**Lubrication storage pad**

Z: Yes (If No, leave empty)

**Ball chain\*\***

C: Yes (If No, leave empty)

**Preload class**

VC, VO standard, V1, V2

**Accuracy grade**

N standard, H, P, SP, UP

**Customization code**

If no customization, leave empty  
J: Joint rail standard  
JK: Joint rail keyway + wedge  
SN: External NBR seal with metal scraper  
MPC: Metal-plastic caps for rail mounting holes

**Rail length (mm)**

**Starting hole pitch (mm)**

**End hole pitch (mm)**

\*For size 55 is only sealing type S available.

\*\*Available for sizes 15-45 only



# HRC/ARC/ERC Rail

HRU - 25 - J - 1480 - 20 - 20

**Rail type**

HR

**Mounting hole position**

C: Counterbore from above

U: Tapped from the bottom (bottom mounting)

**Size**

15, 20, 25, 30, 35, 45 or 55

**Customization code**

If no customization, leave empty

J: Joint rail standard

JK: Joint rail keyway + wedge

MPC: Metal-plastic caps for rail mounting holes

**Rail length (mm)**

**Starting hole pitch (mm)**

**End hole pitch (mm)**

# HRC/ARC/ERC Block

ARC - 25 - FN - BZC - V0 - N - SN

**Type**

HRC, ARC or ERC

**Size**

15, 20, 25, 30, 35, 45 or 55

**Block width**

M: Standard

F: Flanged

**Block length**

L: Long

N: Standard

S: Short

**Seal type\***

B: Standard low friction seal

S: Option tight seal

**Lubrication storage pad**

Z: Yes (If No, leave empty)

**Ball chain\*\***

C: Yes (If No, leave empty)

**Preload class**

VC, V0 standard, V1, V2

**Accuracy grade**

N standard, H, P, SP, UP

For accuracy higher than "N", please use order code for mounted rail & block to define the product.

**Customization code**

If no customization, leave empty

SN: External NBR seal with metal scraper

\*For size 55 is only sealing type S available.

\*\*Available for sizes 15-45 only

# WRC Mounted Rail & Block

WRC - U - 21/15 - 2 - M - N - B - Z - C - V0 - N - SN - 1480 - 20 - 20

**Type**  
WRC

**Bottom mounting rail**  
U: Yes (If No, leave empty)

**Size**  
21/15, 27/20

**Number of blocks**

**Block width**  
M: Standard  
F: Flanged

**Block length**  
N: Standard

**Seal type**  
B: Standard low friction seal  
S: Option tight seal

**Lubrication storage pad (available for 21/15)**  
Z: Yes (If No, leave empty)

**Ball chain**  
C: Yes (If No, leave empty)

**Preload class**  
VC, V0 standard, V1, V2

**Accuracy grade**  
N standard, H, P, SP, UP

**Customization code**  
If no customization, leave empty  
J: Joint rail standard  
JK: Joint rail keyway + wedge  
SN: External NBR seal with metal scraper  
MPC: Metal-plastic caps for rail mounting holes

**Rail length (mm)**

**Starting hole pitch (mm)**

**End hole pitch (mm)**

# WRC Rail

WRU - 21/15 - J - 1480 - 20 - 20

**Rail type**

WR

**Mounting hole position**

C: Counterbore from above

U: Tapped from the bottom (bottom mounting)

**Size**

21/15, 27/20

**Customization code**

If no customization, leave empty

J: Joint rail standard

JK: Joint rail keyway + wedge

MPC: Metal-plastic caps for rail mounting holes

**Rail length (mm)**

**Starting hole pitch (mm)**

**End hole pitch (mm)**

# WRC Block

WRC - 21/15 - FN - BZC - V0 - N - SN

**Type**  
WRC

**Size**  
21/15, 27/20

**Block width**  
M: Standard  
F: Flanged

**Block length**  
N: Standard

**Seal type**  
B: Standard low friction seal  
S: Option tight seal

**Lubrication storage pad (available for 21/15)**  
Z: Yes (If No, leave empty)

**Ball chain**  
C: Yes (If No, leave empty)

**Preload class**  
VC, V0 standard, V1, V2

**Accuracy grade**  
N standard, H, P, SP, UP  
For accuracy higher than "N", please use order code for mounted rail & block to define the product.

**Customization code**  
If no customization, leave empty  
SN: External NBR seal with metal scraper



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