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Hepco-pacific mini rail®

MINIATURE LINEAR GUIDES

SMOOTH & QUIET LINEAR MOTION

- QUIETEST MOTION
- SELF-LUBRICATING
- INTERCHANGEABLE WITH MINIATURE PROFILE RAILS (7-20MM)
- WILL NOT FAIL CATASTROPHICALLY

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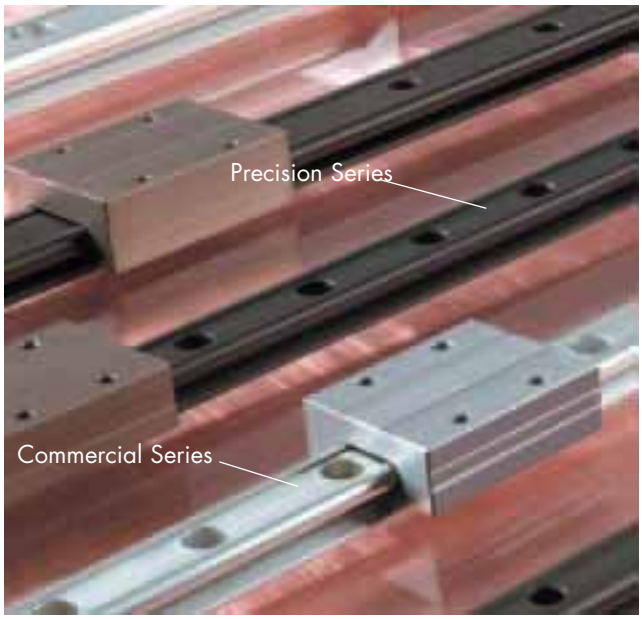
Based on Pacific Bearing Company's proven Simplicity technology, mini-rail miniature linear guides provide smooth and quiet linear motion. The self-lubricating design requires no sealing, emits no particulates, tolerates both high and low temperature extremes and has no rolling elements that can cause catastrophic failure.

mini-rail miniature linear guides are available in five sizes: 7, 9, 12, 15 and 20mm - in lengths up to 3000mm, meaning no cumbersome butt joints. These guides are precision manufactured from lightweight aluminum alloys to ensure long life and corrosion resistance.

An economical alternative to conventional miniature linear guides, mini-rail requires no maintenance, is fully interchangeable with industry standard sizes and is maintained in stock for quick delivery.



Technical Data

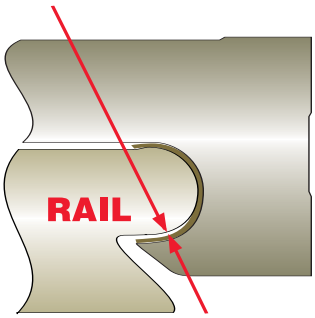
mini-rail is offered in three design configurations:

Precision Series (MR): Hardcoat anodised rails and carriages are corrosion resistant. FrelonGold® self-lubricating liner delivers the best overall performance, the highest loads, the best wear life, and speeds. Most precise running clearance for high precision applications.

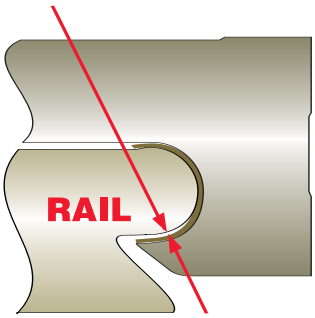
Compensated Precision Series (MRC): Same as Precision Series except provided with additional clearance on the carriage to tolerate misalignment.

Commercial Series (MRE): Best value for less demanding applications. Clear anodised coating provides a measure of corrosion resistance. FrelonJ™ self-lubricating liner is great for washdown applications.

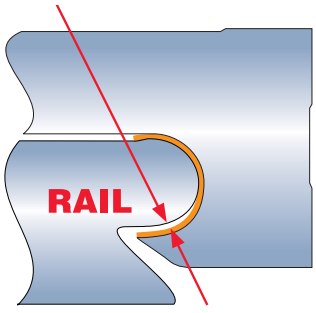
Precision Series (MR)
.025 - .051mm
Running Clearance
(HARDCOAT ANODISED)



Compensated Precision Series (MRC)
.064 - .089mm
Running Clearance
(HARDCOAT ANODISED)



Commercial Series (MRE)
.038 - .089mm
Running Clearance
(CLEAR ANODISED)



The data and specifications in this publication have been carefully compiled and are believed to be accurate and correct. However, it is the responsibility of the user to determine and ensure the suitability of Hepco-Pacfic products for a specific application. Hepco-Pacfic only obligation will be to repair or replace without charge, any defective components if returned promptly. No liability is assumed beyond such replacement.

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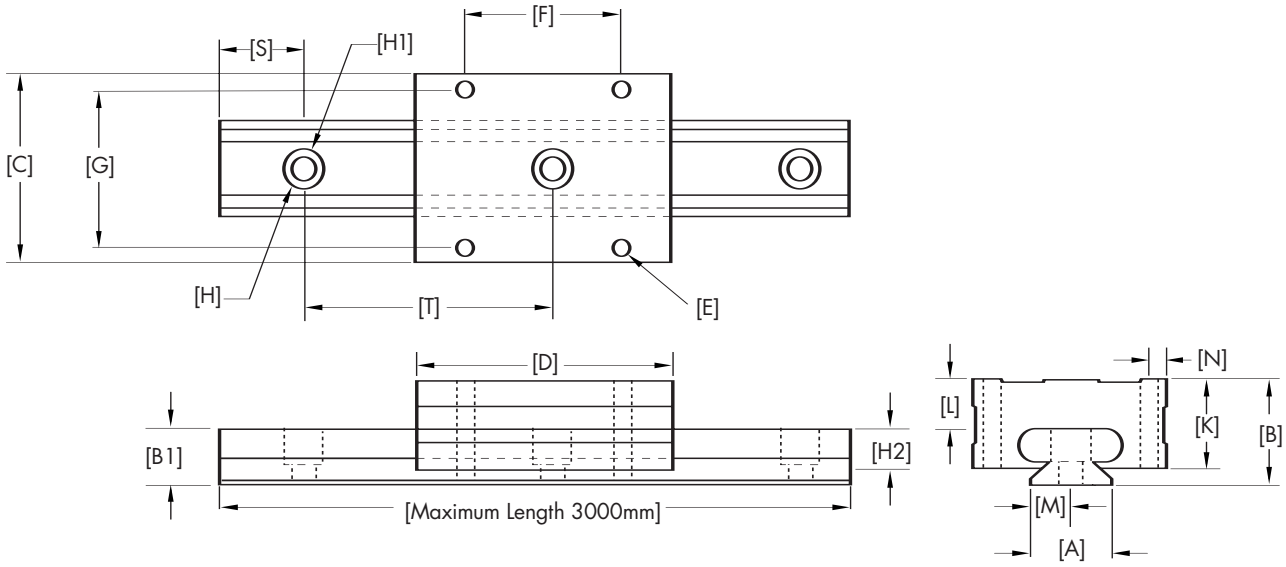
mini-rail Specifications (Maximum Length 3000mm)

Part Number	Running Clearance	A (mm)	B	B1	C	D	E	F	G	H	H1	H2	K	L	M	N	S	T
MR7x-xxx	.025 - .051	7	8	6.2	17	24	M2	8	12	4.2	2.4	2.3	6.2	1.7	3.5	2.3	5	15
MRC7x-xxx	.064 - .089	7	8	6.2	17	24	M2	8	12	4.2	2.4	2.3	6.2	1.7	3.5	2.3	5	15
MRE7x-xxx	.038 - .089	7	8	6.2	17	24	M2	8	12	4.2	2.4	2.3	6.2	1.7	3.5	2.3	5	15
M R9x-xxx	.025 - .051	9	10	7.3	20	30	M 3	13	15	4.5	2.6	3	8	2.4	4.5	2.5	7.5	20
M RC9x-xxx	.064 - .089	9	10	7.3	20	30	M 3	13	15	4.5	2.6	3	8	2.4	4.5	2.5	7.5	20
MRE9x-xxx	.038 - .089	9	10	7.3	20	30	M3	13	15	4.5	2.6	3	8	2.4	4.5	2.5	7.5	20
MR12x-xxx	.025 - .051	12	13	8	27	34	M3	15	20	6	3.5	3.5	10.7	4.6	6	3.5	10	25
MRC12x-xxx	.064 - .089	12	13	8	27	34	M3	15	20	6	3.5	3.5	10.7	4.6	6	3.5	10	25
MRE12x-xxx	.038 - .089	12	13	8	27	34	M3	15	20	6	3.5	3.5	10.7	4.6	6	3.5	10	25
MR15x-xxx	.025 - .051	15	16	9.3	32	42	M3	20	25	6	3.5	4.5	14.1	6.3	7.5	3.5	15	40
MRC15x-xxx	.064 - .089	15	16	9.3	32	42	M3	20	25	6	3.5	4.5	14.1	6.3	7.5	3.5	15	40
MRE15x-xxx	.038 - .089	15	16	9.3	32	42	M3	20	25	6	3.5	4.5	14.1	6.3	7.5	3.5	15	40
MR20x-xxx	.025 - .051	20	25	13.5	46	62	M4	38	38	9.5	6	8.5	21.2	11.2	10	4	20	60
MRC20x-xxx	.064 - .089	20	25	13.5	46	62	M4	38	38	9.5	6	8.5	21.2	11.2	10	4	20	60
MRE20x-xxx	.038 - .089	20	25	13.5	46	62	M4	38	38	9.5	6	8.5	21.2	11.2	10	4	20	60

NOTE: Add the overall length of the rail to the part number,
EXAMPLE "MR121-220" for a single carriage Precision Series assembly with a 220mm long rail.
Cut-to-length rails are available up to 3000mm.
The "S" dimension will remain constant at one end unless requested otherwise.
Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.



NOTE: CAD files can be downloaded from our website at www.hepcomotion.com

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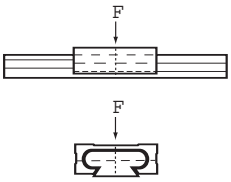
Static Load Data

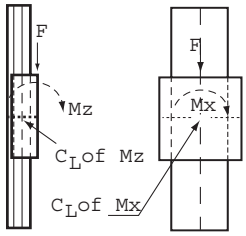
The numbers below are for rails in a static condition. Refer to the calculations below to establish dynamic parameters.

Size	F (N)	MSL (N)*
7	445	734
9	667	1557
12	1334	1957
15	2224	3114
20	3559	6005

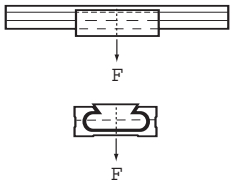
*Max static load in Newton



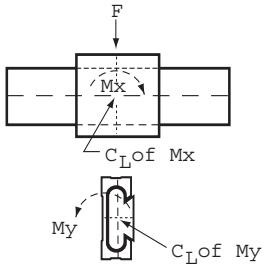
Size	Mx (N-m)	My (N-m)	Mz (N-m)
7	2.3	1.8	1.8
9	5.0	3.2	3.2
12	9.0	5.6	5.6
15	15.1	9.0	9.0
20	24.9	14.7	14.7



Size	F (N)
7	89
9	125
12	222
15	356
20	578



Size	F (N)	Mx (N-m)	My (N-m)	Mz (N-m)
7	133	2.3	1.8	1.8
9	222	5.0	3.2	3.2
12	400	9.0	5.6	5.6
15	667	15.1	9.0	9.0
20	1112	24.9	14.7	14.7



Performance Ratings for Linear Motion

Plane bearings are rated by their limiting PV, which is a combination of load over a given surface area and the velocity.

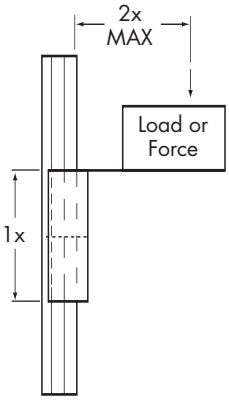
Bearing Material	Max. PV	Max. P	Max. (No Lubrication)
FrelonGold®	430 (kgf/cm² x m/min)	210.9 kgf/cm²	91.44 m/min
FrelonJ™	215 (kgf/cm² x m/min)	105.45 kgf/cm²	42.66 m/min

PV = The performance measurement of plane bearings
PV = P x V where P = pressure (load) in kgf/cm²
V = velocity (speed) in m/min
Note: All three parameters must be met by an application for the bearing to perform properly.

Cantilevered Loads

Binding of the carriage will occur if the 2:1 ratio for cantilevered loads and drive forces is exceeded.

This principle is not load or force dependent. It is a product of the coefficient of frictions associated with plane bearings. Contact Hepco for additional information.



ORDERING CODE

Standard length assemblies

MR E xx x - xxxx

MR: Product range

No entry: Precision Series running clearance (.025 - .051mm) FrelonGOLD® bearing material on RC70 hardcoat anodised rail

C: Compensated Precision Series running clearance (.064 - .089mm) FrelonGOLD® bearing material on RC70 hardcoat anodised rail

E: Commercial Series running clearance (.038 - .089mm) FrelonJ™ bearing material on clear anodised rail

(All interchangeable with miniature rolling element profile rails)

xx: Nominal sizes 7, 9, 12, 15, 20mm

x: Number of carriages per rail 1 or 2

xxxx: Length of rail in mm (max. length 3000mm)

Size	Standard Lengths Available (max length 3000mm)						
7	40	70	85	100	130	-	-
9	55	75	95	115	155	195	275
12	120	170	220	270	320	370	470
15	150	230	310	430	470	670	-
20	220	280	340	460	640	880	-

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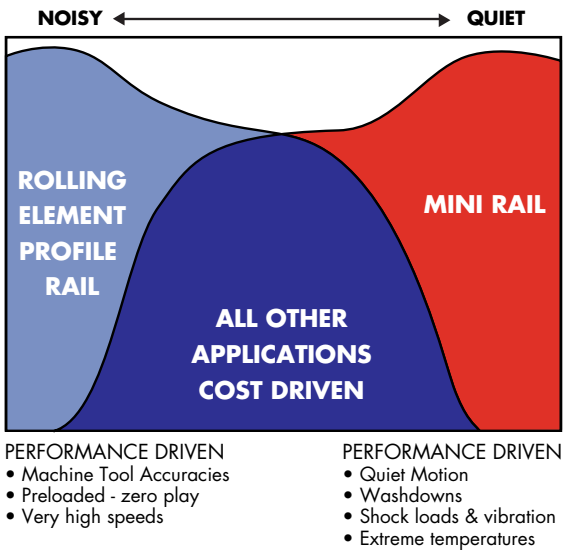
simplicity® technology now applied to profile rails



PERFORMANCE DRIVEN
- Machine Tool Accuracies
- Preloaded - zero play
- Very high speeds

PERFORMANCE DRIVEN
- Quiet Motion
- Washdowns
- Shock loads & vibration
- Extreme temperatures

Performance Advantages:

- Quietest running
- Self-lubricating
- Dampens vibration
- No metal to metal contact
- Tolerates shock loads
- Will not fail catastrophically
- Corrosion resistant

Industries Include:

- Semi-conductor processing
- Clean room
- Scanning and input devices
- Printing and output devices
- Packaging machinery
- Pick and place machinery
- Textile machinery
- Material handling applications
- Automotive assembly plants
- Fitness equipment
- Medical devices
- Foundries and steel mills

Design Criteria:

Rolling element profile rails are good for high speed applications, but are NOT recommended for noise reduction, contaminated environments, high vibration, shock loads, or wide temperature extremes. mini rail® * self-lubricating technology performs better in these applications.

*Registered in the U.S. Patent and Trademark Office. Registration #2690260

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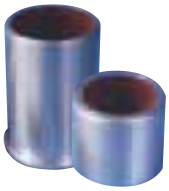
Alternative Products

Simplicity Bearings

The high speed and load benefits of the Hepco-Pacific Frelon™ Gold liner are readily apparent but for the most extreme environments of wash-downs and corrosion the 'J'-Liner is readily available. Designed to interchange with failing ball based systems Hepco-Pacific Simplicity bearings are available in standard or pillow block, open or closed formats.

Flanged Housings

Hepco-Pacific Flanged bearings are available either with single or double flanges. These bearings can be either face or end mounted eliminating the need for a precision pilot. With this simplified installation process an improved final alignment of the shaft is combined with a bearing that cannot catastrophically fail.



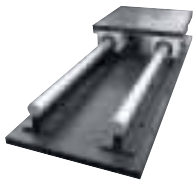
Sleeve Bearings

Sleeve bearings are an ideal solution for low to moderate speed linear/rotary applications. These bearings combine all of the Simplicity benefits such as self-lubrication, contamination and shock load tolerance ideal for idle rollers, conveyors and packaging machinery.

Square Bearings

Square bearings are utilised in tough applications where alignment is difficult and space is critical. The Simplicity benefits of contamination tolerance, self lubrication and high load capacity are combined with the radial integrity on a single shaft eliminating costly and bulky.

Complementary Linear Products



Shaft

To make the most of your Hepco-Pacific Simplicity bearings we offer high load/ rigidity support rails, light and strong tubular or aluminium options, stainless steel in 400 or 300 Series. All of these options are available in random lengths or machined to your exacting specifications.

Hardened Crown Track Rollers

The Hardened Crown Track Roller is an inexpensive linear motion solution providing low friction, smooth operation and a high load capacity. This simple bearing and rail system combines precision with wide operating tolerances suitable for use in applications such as door/guarding systems and conveyors.

Contact details

Hepco Slide Systems Ltd
Lower Moor Business Park, Tiverton Way
Tiverton, Devon, England EX16 6TG

Tel: 01884 257000 Fax: 01884 243500

E-mail: hepco.sales@hepco.co.uk **Website:** www.hepcomotion.com

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