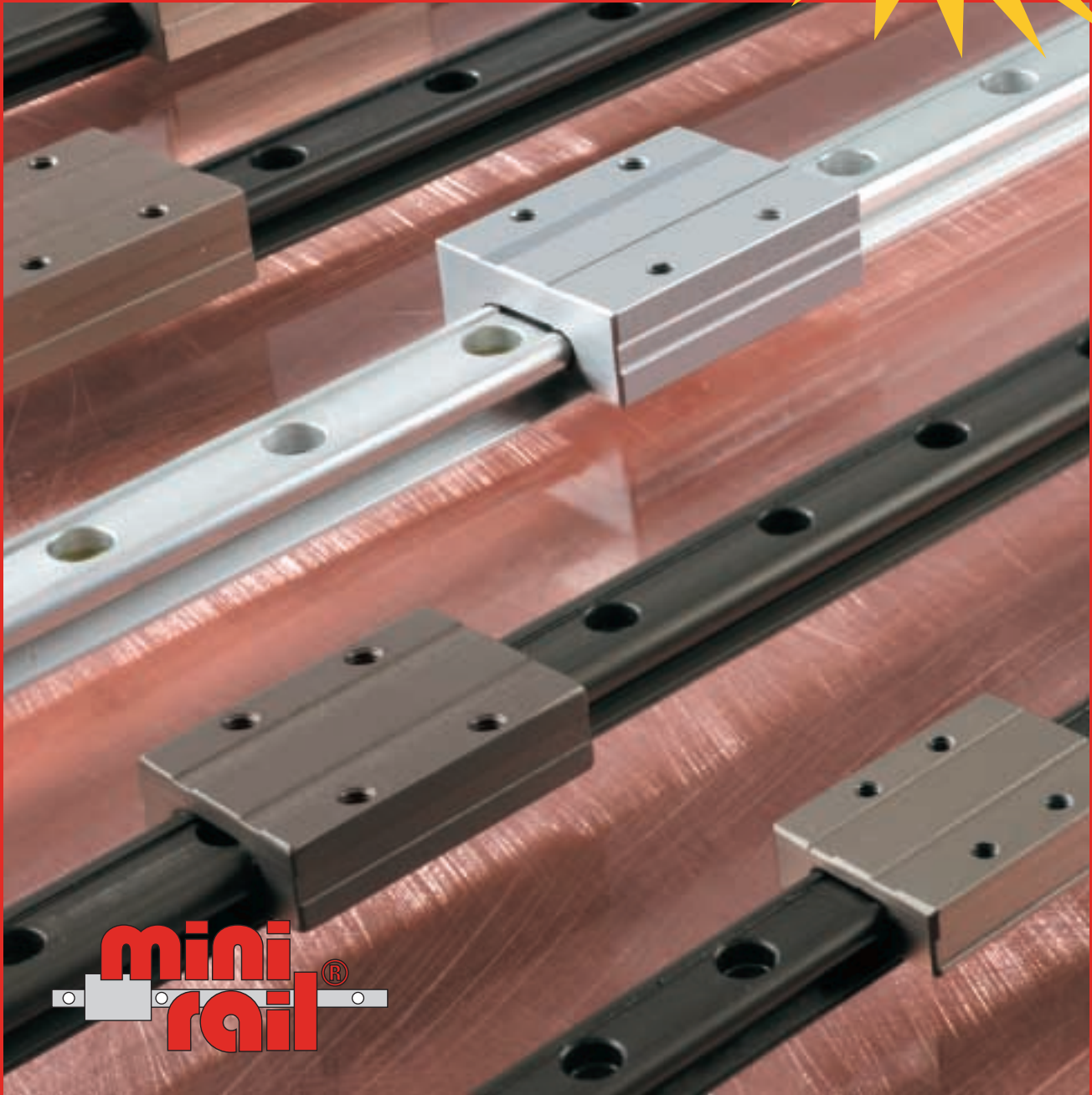


Miniature Linear Guides

SMOOTH & QUIET LINEAR MOTION

NEW!



**mini
rail**®



MADE IN THE U.S.A.

800.962.8979 www.pacific-bearing.com



Behind Every Great Product is a Great Team!



Bob Elmer, a 31-year veteran, served as lead toolmaker on Mini Rail, creating a cost effective alternative to rolling element profile rails.



Our product development process involves a dedicated group of toolmakers with over 250 years experience.

The result in this case is Mini Rail, a price competitive and size-interchangeable alternative to miniature profile rails. Based on our proven Simplicity technology, Mini Rail is smooth, quiet, self-lubricating, and cost effective.



6402 Rockton Road Roscoe, Illinois 61073 Fax: 815.389.5790

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PBMR0503-100M



simplicity[®] technology *now applied to profile rails*



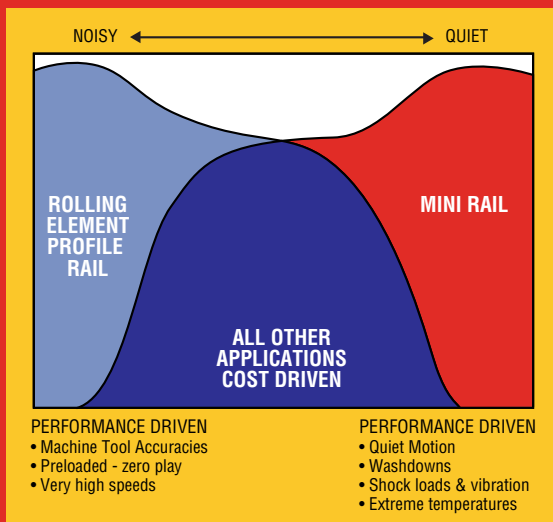
Performance Advantages:

- 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

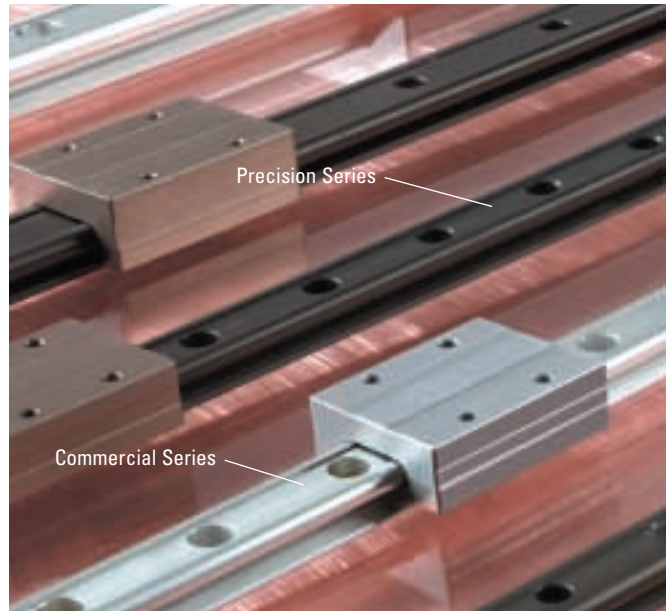


Product Overview

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 high 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 3600mm, meaning no cumbersome butt joints. These guides are precision manufactured out of 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.



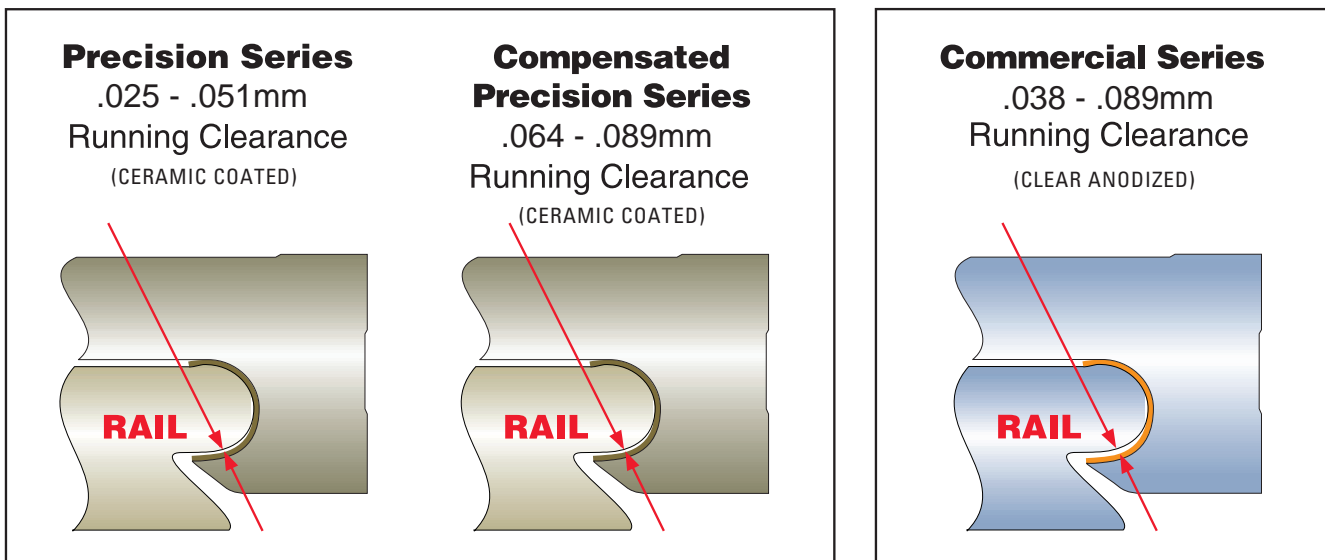
Technical Data

Mini Rail is offered in three design configurations:

Precision Series: Ceramic coated 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: Same as Precision Series (above) except with additional clearance provided to tolerate misalignment.

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



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 Pacific Bearing products for a specific application. Pacific Bearing's only obligation will be to repair or replace without charge, any defective components if returned promptly. No liability is assumed beyond such replacement.

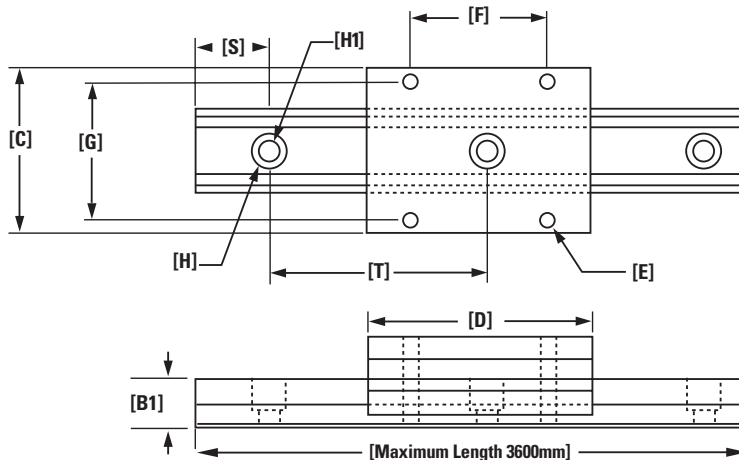
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Mini-Rail Specifications

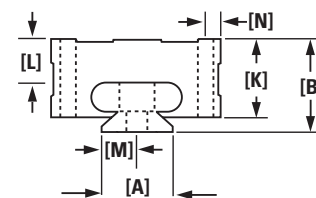
(Maximum Length 3600mm)

Part Number	Running Clearance	A (mm)	B	B ₁	C	D	E	F	G	H	H ₁	H ₂	K	L	M	N	S	T
MR7-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
MRC7-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
MRE7-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
MR9-xxx	.025 - .051	9	10	7.3	20	30	M3	13	15	4.5	2.6	3	8.0	2.4	4.5	2.5	7.5	20
MRC9-xxx	.064 - .089	9	10	7.3	20	30	M3	13	15	4.5	2.6	3	8.0	2.4	4.5	2.5	7.5	20
MRE9-xxx	.038 - .089	9	10	7.3	20	30	M3	13	15	4.5	2.6	3	8.0	2.4	4.5	2.5	7.5	20
MR12-xxx	.025 - .051	12	13	8.0	27	34	M3	15	20	6	3.5	3.5	10.7	4.6	6	3.5	10	25
MRC12-xxx	.064 - .089	12	13	8.0	27	34	M3	15	20	6	3.5	3.5	10.7	4.6	6	3.5	10	25
MRE12-xxx	.038 - .089	12	13	8.0	27	34	M3	15	20	6	3.5	3.5	10.7	4.6	6	3.5	10	25
MR15-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
MRC15-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
MRE15-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
MR20-xxx	.025 - .051	20	25	13.5	46	62	M4	38	38	9.5	6	8.5	21.2	11.2	10	4.0	20	60
MRC20-xxx	.064 - .089	20	25	13.5	46	62	M4	38	38	9.5	6	8.5	21.2	11.2	10	4.0	20	60
MRE20-xxx	.038 - .089	20	25	13.5	46	62	M4	38	38	9.5	6	8.5	21.2	11.2	10	4.0	20	60

NOTE: Add the overall length of the rail to the part number, EXAMPLE "MR12-220" for a Precision Series assembly with a 220mm long rail. Cut-to-length rails are available up to 3600mm. 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.pacific-bearing.com.



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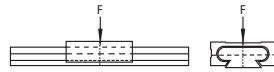
SMOOTH & QUIET LINEAR MOTION

Static Load Data

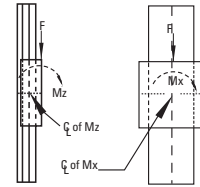
The numbers below are for rails in a static condition. Refer to the calculations below to establish dynamic parameters.

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

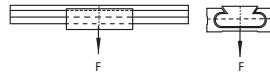
*Max static load in Newtons.



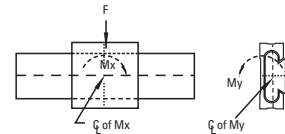
Size	Mx (N-m)	My (N-m)	Mz (N-m)
7	2.3	1.8	1.8
9	5.0	3.2	3.2
12	9.0	5.6	5.6
15	15.1	9.0	9.0
20	24.9	14.7	14.7



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. "V" (No Lubrication)
FrelonGold®	20,000 (psi x ft/min) or 430 (kgf/cm² x m/min)	3000 psi or 210.9 kgf/cm²	300 sfm or 91.44 m/min.
FrelonJ™	10,000 (psi x ft/min) or 215 (kgf/cm² x m/min)	1500 psi or 105.45 kgf/cm²	140 sfm or 42.66 m/min.

PV = The performance measurement of plane bearings

PV = P x V where P = pressure (load) in psi (kgf/cm²)

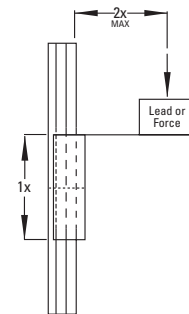
V = velocity (speed) in sfm (m/min.)

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 factory or website for additional information.



Load / Moment Conversion

$$N = 4.45 \times (\text{lbs})$$

$$N - m = 0.113 \times (\text{in-lbs})$$

ORDERING CODE

Standard length assemblies with single carriage

MR: standard Mini-Rail
(interchangeable with miniature rolling element profile rails)

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

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

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

XX: nominal sizes 7, 9, 12, 15, 20mm

XXXX: length of rail in mm (max. length 3600mm)

MR E XX - XXXX

Size	Standard Lengths Available (max. length 3600mm)						
07	40	70	85	100	130	-	-
09	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	-

