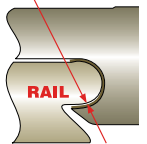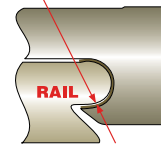# mini rail™

GST

MINIATURE LINEAR GUIDE

An economical alternative to conventional miniature linear guides. Available in five sizes and lengths up to 3600mm. The compact design is ideal in small footprint applications such as: packaging, clean rooms, x-y gantry systems, medical devices and material handling.

- **Available in five (5) sizes -**
  with lengths up to 3600mm

- **Self-lubricating FrelonGOLD® Liner**
  Maintenance Free

- **Corrosion-resistant**
  Ideal in Harsh Environments

- **Fully Interchangeable**
  Industry standard sizes

- **No Rolling Elements**
  No catastrophic failure

- **Compact Design, Small Footprint**
  Saves space

Ceramic Coated Rail & Carriage

FrelonGold
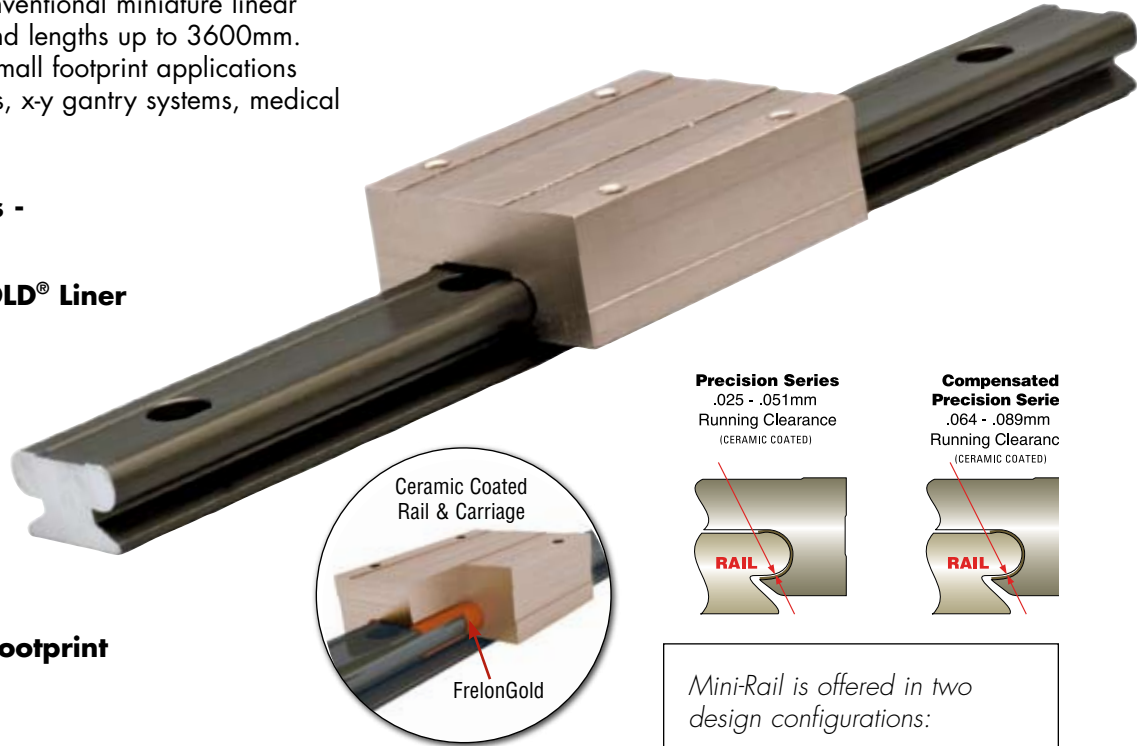
Precision Series
.025 - .051mm
Running Clearance
(CERAMIC COATED)

RAIL

Compensated Precision Serie
.064 - .089mm
Running Clearanc
(CERAMIC COATED)

RAIL

Mini-Rail is offered in two 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
Same as Precision Series except with additional clearance provided to tolerate misalignment.

STATIC LOAD DATA

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

F_1 F_1 F_3 F F

F_2 F_2 M_x M_y M_z M_x

C_L of M_x C_L of M_y C_L of M_z C_L of M_x
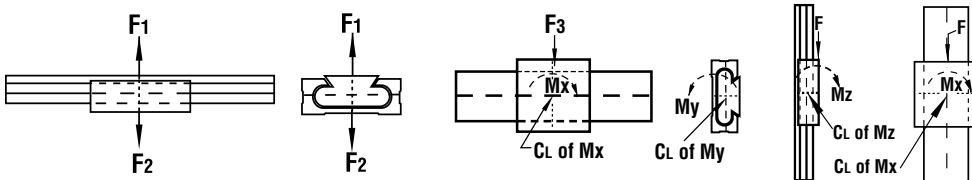
SIZE	F_1 (N)	F_1 (N)*	F_2 (N)	F_3 (N)	M_x (N-m)	M_y (N-m)	M_z (N-m)	M_x (N-m)	M_y (N-m)	M_z (N-m)
7	445	734	89	133	2.3	1.8	1.8	2.3	1.8	1.8
9	667	1557	125	222	5.0	3.2	3.2	5.0	3.2	3.2
12	1334	1957	222	400	9.0	5.6	5.6	9.0	5.6	5.6
15	2224	3114	356	667	15.1	9.0	9.0	15.1	9.0	9.0
20	3559	6005	578	1112	24.9	14.7	14.7	24.9	14.7	14.7

Max static load in Newtons.

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.

PV = The performance measurement of plane bearings.

PV = P x V, where P = pressure (load) in psi (kgf/cm^2)

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

NOTE: All three parameters must be met by an application for the bearing to perform properly.

BEARING MATERIAL	MAX. "PV"	MAX. "P"	MAX. "V" (NO LUBRICATION)
FrelonGold®	20,000 (psi x ft./min.) or 0.7 N/m^2 x m/s	3000 psi or 20.68 N/mm^2	300 sfm or 1.524 m/s
FrelonJ®	10,000 (psi x ft./min.) or 0.35 N/m^2 x m/s	1500 psi or 10.34 N/mm^2	140 sfm or 0.711 m/s

DIMENSIONAL INFORMATION

DETAIL A (SCALE 2:1)

QUALIFIED EDGE

"L" ±.030
[MAX LENGTH 3600mm]
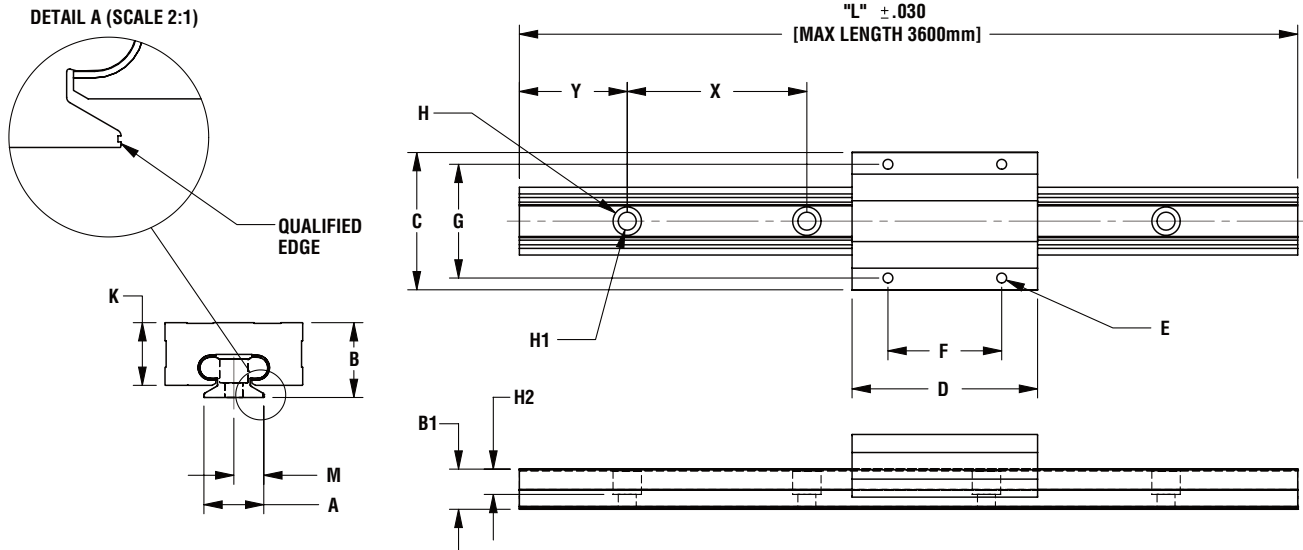
(Maximum Length 3600mm)

Part Number	Running Clearance	A	B	B1	C	D	E		F	G	H	H1	H2	K	M	y	x	Rail wt. (gram/mm)	Carriage wt. (gram)
MR7-XXX	.025 - .051	7	8	6.1	17	24	M2 x 0.4	THRU	8	12	4.2	2.4	2.3	6.2	3.5	5	15	0.10	5.7
MRC7-XXX	.064 - .089	7	8	6.1	17	24	M2 x 0.4	THRU	8	12	4.2	2.4	2.3	6.2	3.5	5	15	0.10	5.7
MR9-XXX	.025 - .051	9	10	7.1	20	30	M3 x 0.5	THRU	13	15	4.5	2.6	3	8.0	4.5	7.5	20	0.16	8.5
MRC9-XXX	.064 - .089	9	10	7.1	20	30	M3 x 0.5	THRU	13	15	4.5	2.6	3	8.0	4.5	7.5	20	0.16	8.5
MR12-XXX	.025 - .051	12	13	8.0	27	34	M3 x 0.5	THRU	15	20	6	3.5	3.5	10.7	6	10	25	0.22	20.0
MRC12-XXX	.064 - .089	12	13	8.0	27	34	M3 x 0.5	THRU	15	20	6	3.5	3.5	10.7	6	10	25	0.22	20.0
MR15-XXX	.025 - .051	15	16	9.2	32	42	M3 x 0.5	THRU	20	25	6	3.5	4.5	14.1	7.5	15	40	0.38	34.0
MRC15-XXX	.064 - .089	15	16	9.2	32	42	M3 x 0.5	THRU	20	25	6	3.5	4.5	14.1	7.5	15	40	0.38	34.0
MR20-XXX	.025 - .051	20	25	13.4	46	62	M4 x 0.7	12.5	38	38	9.5	6	8.5	21.2	10	20	60	0.48	127.9
MRC20-XXX	.064 - .089	20	25	13.4	46	62	M4 x 0.7	12.5	38	38	9.5	6	8.5	21.2	10	20	60	0.48	127.9

NOTES: 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. Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.
All carriage mounting holes are through tapped except MR20 12.5mm of thread.
The "S" dimension will remain constant at one end unless requested otherwise.

ORDER INFORMATION

ASSEMBLY MR ☐ XX - XXXX - XX

Mini-Rail
Miniature Linear Guide

Series
Blank = Precision Series
C= Compensated Precision Series

FrelonGOLD® bearing material on RC70 ceramic-coated rail

# of Carriages

Length of Rail in mm
EX: 50mm = 0050

Nominal Sizes
(7, 9, 12, 15, 20mm)

PBC LINEAR
A PACIFIC BEARING CO.