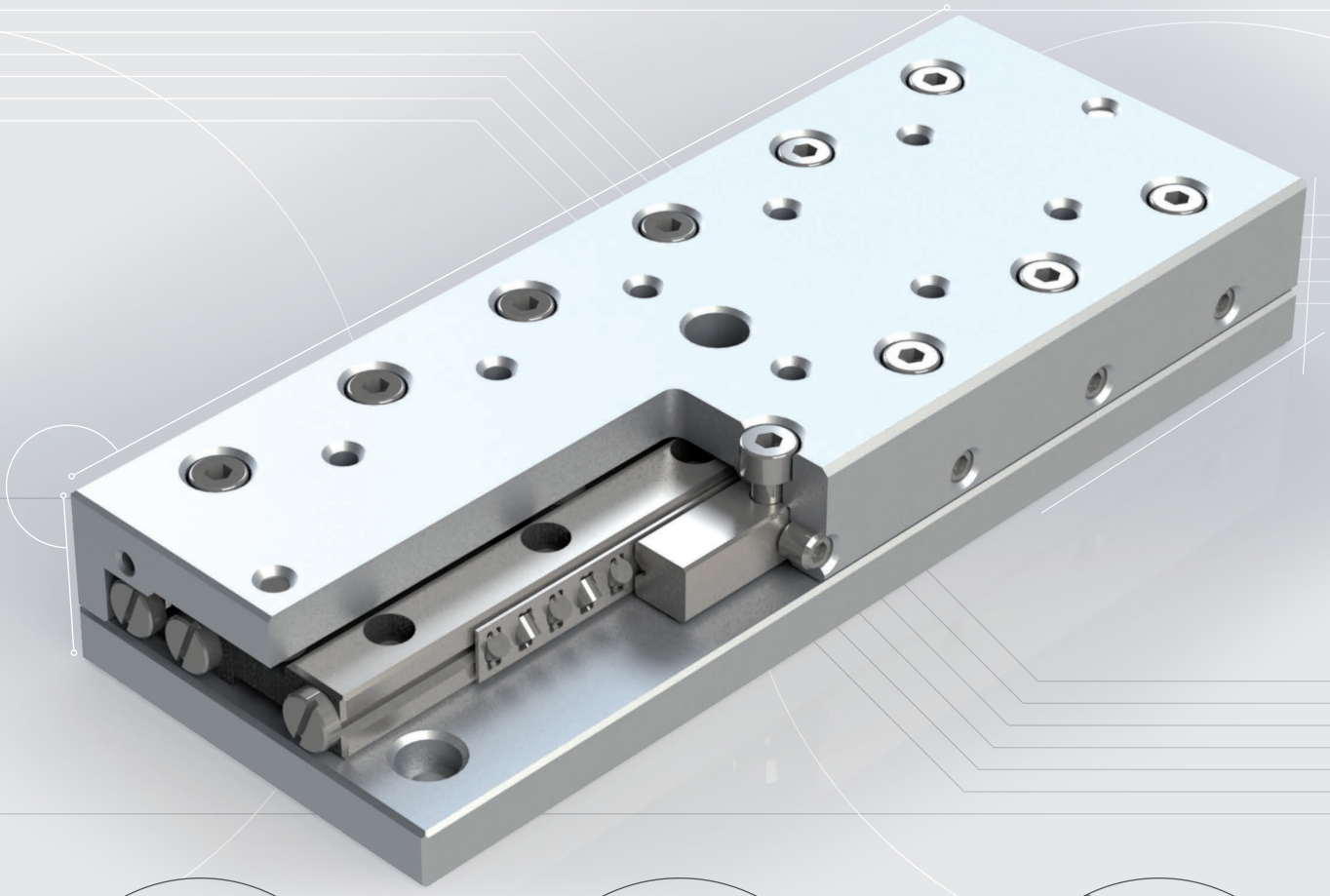
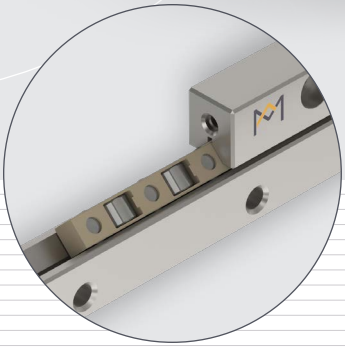
OVER 50 YEARS of success

PM.nl
DISCOVER PRECISION





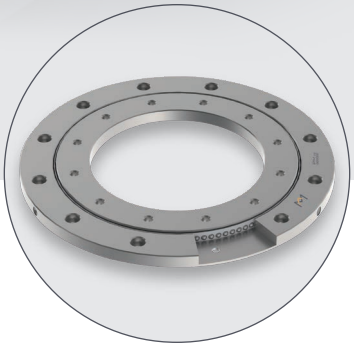


TABLE BEARING FMB SERIES

TECHNICAL DATA

ASSEMBLY

For each type the mounting holes are drilled to standard configuration in the slide top and slide base facilitating quick and easy installation into the application. Threaded holes in the slide parts are according to ISO-standards. Please note that dimensions listed in this catalogue are in mm.
PM linear slides are precision devices; proper mounting is a prerequisite for their performance according to specifications. Slides must be mounted onto rigid, fine-machined (preferably fine-milled or grinded), flat surfaces and must be supported over their entire base length. Specifications as listed are only valid when these conditions are met.

The surface of the side opposite to the preload set screws is ground parallel to the slide axis and can therefore be used as a reference face for mounting the slide into the application.

OPERATING TEMPERATURE

PM slides are capable of operating in a temperature range of -30 °C to +120 °C. For slides which contain plastic components (plastic cages), the operating temperature range is -30 °C to +80 °C.

MAXIMUM VELOCITY AND ACCELERATION

RTN / RTL, RTNG and RTS types crossed roller slides
Max. recommended speed v = 60 m/min.
Max. acceleration a = 50 m/sec^2.

PMM type ball micro slides
Max. recommended speed v = 60 m/min.
Max. acceleration a = 50 m/sec^2.

PMMR type crossed roller micro slides
Max. recommended speed v = 120 m/min.
Max. acceleration a = 200 m/sec^2 (20g).

DELIVERED CONDITION

PM slides are ready-to-use. The slides are factory preloaded by the use of lateral set screws and free of play. The amount of preload is approximately 10% of the dynamic load capacity. The slides are delivered with a small quantity of oil for lubrication which also protects the rails in the slides against corrosion. The quality grade of the crossed roller linear bearings which are used in the linear slides is in standard accuracy grade Q8.

The slides are free from stick-slip. The coefficient of friction range for slides fitted with balls or cylindrical rollers is 0.0005 to 0.003. PM slides are manufactured according the best manufacturing standards, offering high smoothness and precision of movement.
PMM and PMMR type of micro slides are factory preloaded by means of geometry pairing.

SERVICE

PM slides are factory-preloaded and don't need readjustment. Depending on the application requirements the linear bearings need re-lubrication. There are no specific calculations to determine the lubrication intervals for linear bearings, thus it must be determined for each application. However, we recommend a small quantity of lubrication at least twice a year for oil and at least once a year for grease.
The lubrication can be applied to the linear bearings using the lateral gap between the rails. If this is not possible cause of the design of the machine we advise the use of special lubrication holes which can be added to the rails. If this is the case for you, please consult a PM advisor.

STORAGE

PM slides are precision components and need to be handled with great care. Slides are delivered in a package, special developed for optimum protection against external vibrations and contamination. For transport and storage use the original package. Slides should be stored at constant room temperature and under clean and dry conditions. Remove the slides from their packaging just before use.

LOADS AND MOMENTS

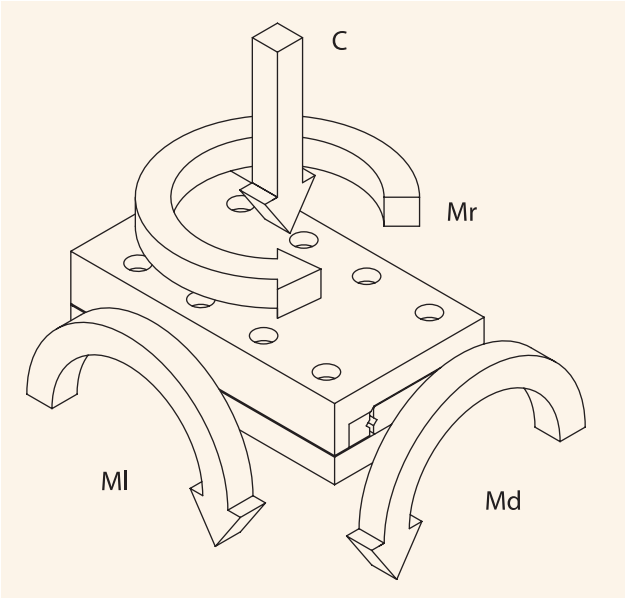
Slides listed in this catalogue are able to carry loads and moments in any direction. Load ratings are compliant with ISO and DIN standards for calculating roller bearings (ISO standard 281, for miniature slide type PMM DIN 636, part 3). To ensure high running accuracy and to prevent the occurrence of play, any vibration and overloading must be avoided.

Load capacity C, defined in ISO76-1987, is the maximum downward load or force located in the center of the upper part in horizontal zero-position.

Ml = Pitch moment: when a load is cantilevered (not symmetrically mounted) off the end of a slide, parallel to the direction of travel.

Md = Roll moment: when a load is cantilevered off the side of a slide, perpendicular to the direction of travel.

Mr = Yaw moment: when a force causes a rotation moment around the centre of an axis.
Exceeding of the listed moment ratings may reduce the lifetime of the bearings and can degrade accuracy. Please feel free to contact one of our product specialists for information.

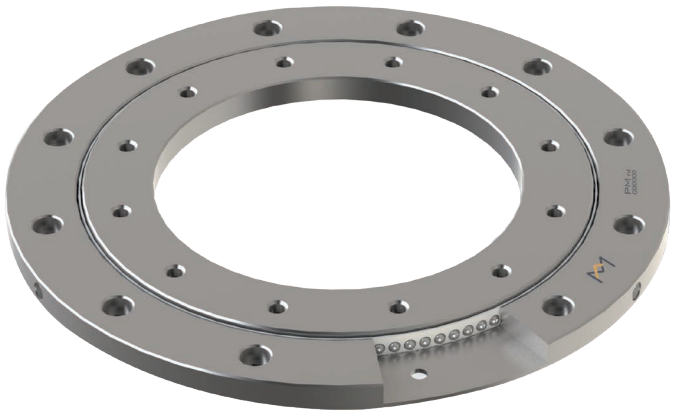


VACUUM AND CLEANROOM COMPATIBLE SLIDES

The majority of PM slides can be prepared for use in (ultra-high) vacuum or cleanroom environments. Special care has to be taken, for example when selecting low outgassing materials, special lubricants, surface finishings, vented stainless steel fasteners for use in blind tapped holes, special ball- or crossed roller cages as well as switches and wires. Slides are assembled in our modern cleanroom cells certified to ISO/FDIS 14644-1 class 6 with cleanspots class 5.

With over 50 years' experience we are well equipped and capable to fulfil your orders meeting even the most demanding requirements.

Please consult your PM advisor for more information.



The precision Flat Mounted table Bearing (FMB) consists of two through hardened standard bearing steel rings and a teflon cage filled with steel balls precision-matched. The custom designed ball-groove increases load capacity and stiffness in moment loading while guaranteeing high precision, longer service life and a very low coefficient of friction. Pre-drilled attachment holes ensure easy installation.

MATERIAL

Rings and balls are made of bearing steel 1.3505, hardness 58 - 62 HRC. Ball cage material teflon

FEATURES AND SPECIFICATION

- Low profile and space saving design
- Simple installation thanks to pre-drilled attachment holes, the bearing can be installed on the mounting surface and tightened down by attachment screws
- Maintenance free teflon ball cage
- High load capacity: the custom developed gothic arc shaped V-groove, by virtue of its geometry, provides a greater contact area and high precision. They are factory preloaded by means of geometry pairing
- FMB bearings operate under different conditions and therefore supplied in two preload classes
  V0 (0.02C) and V1 (0.08C)
  N-class: the industry standard
  P-class: only available on request
- Space-saving design: This bearing is a great option for reducing the size of many types of precision rotary bearing systems. The FMB's compact design, as low as 8 mm in height, can replace a double back or face mounted angular contact bearing pair, constituting substantial savings in space and cost

OPTIONAL FEATURES

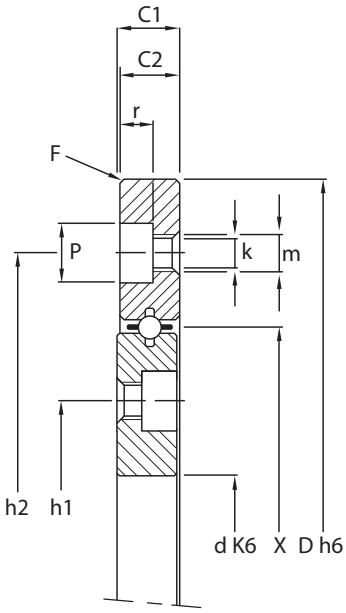
- Defined push force
- Outside diameters up to 500 mm
- Full stainless steel version
- Customised pre-drilled holes
- Crossed roller version
- Double row balls
- Special coatings such as Durni-coat to improve corrosion resistance
- UHV compatible version incl. lubricants
- Cleaning and packaging available according to various ISO cleanroom standards
- Defined preload

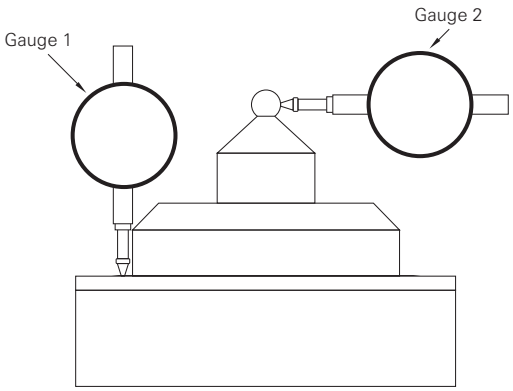
ORDER NOTES

Please specify the following in your order note:

- Model no. and quantity needed
- Preload class and precision class

Example: 2 pieces type FMB 60.140.V0.N





Measuring set up

Type	Main dimensions												C_{dyn}[1]
	D h6	d K6	C	C1	h1	h2	X	m	k	p	r	z[2]	(N)
FMB 40.120	120	40			60	100	80					8	6070
FMB 60.140	140	60			80	120	100			-		8	7047
FMB 80.160	160	80	8.5	8	100	140	120	M5	4.3	8	4.5	8	8100
FMB 100.180	180	100			120	160	140					12	9153
FMB 120.200	200	120			140	180	160					12	10.125
FMB 140.220	220	140			160	200	180					12	11.178
FMB 150.250	250	150	10.5	10	175	225	200	M6	5.2	9.5	5.5	12	12.717
FMB 200.300	300	200			225	275	250					12	15.228
FMB 250.350	350	250	12.5	12	275	325	300	M6	5.2	9.5	5.5	12	20.331

[1] Load ratings according to ISO 281

Units: mm

[2] Number of attachment holes per ring

Type	Weight (kg)	Axial runout (µm)		Eccentricity (µm)		Wobble (µm)	
		N Class	P Class	N Class	P Class	N Class	P Class
FMB 40.120	0.57	4	1	3	1	3	2
FMB 60.140	0.72	4	2	3	2	3	3
FMB 80.160	0.90	4	2	4	2	4	3
FMB 100.180	1.00	5	2	5	2	4	4
FMB 120.200	1.15	5	2	5	2	5	4
FMB 140.220	1.30	6	3	6	3	6	4
FMB 150.250	2.30	8	4	8	4	8	6
FMB 200.300	2.90	8	5	8	5	8	6
FMB 250.350	4.15	10	6	10	6	10	6

Axial run-out (gauge 2): maximum axial variation of outer ring in comparison to the centre of rotation.
Eccentricity: also referred to as concentricity, defines the deviation of the centre of rotation from its mean position over one revolution.
Wobble (gauge 1): angular deviation of the axis of rotation over one revolution.

Bold = Short lead time item
Regular = Long lead time item - please ask us about prices and lead times

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