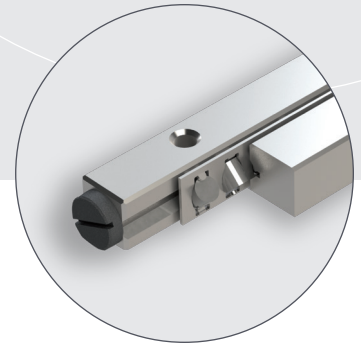
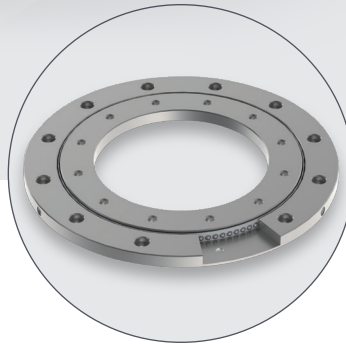
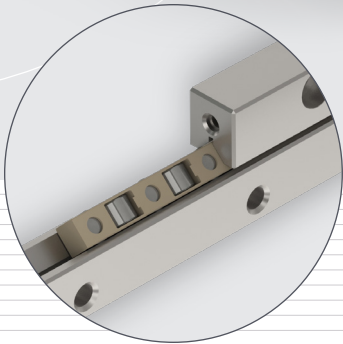
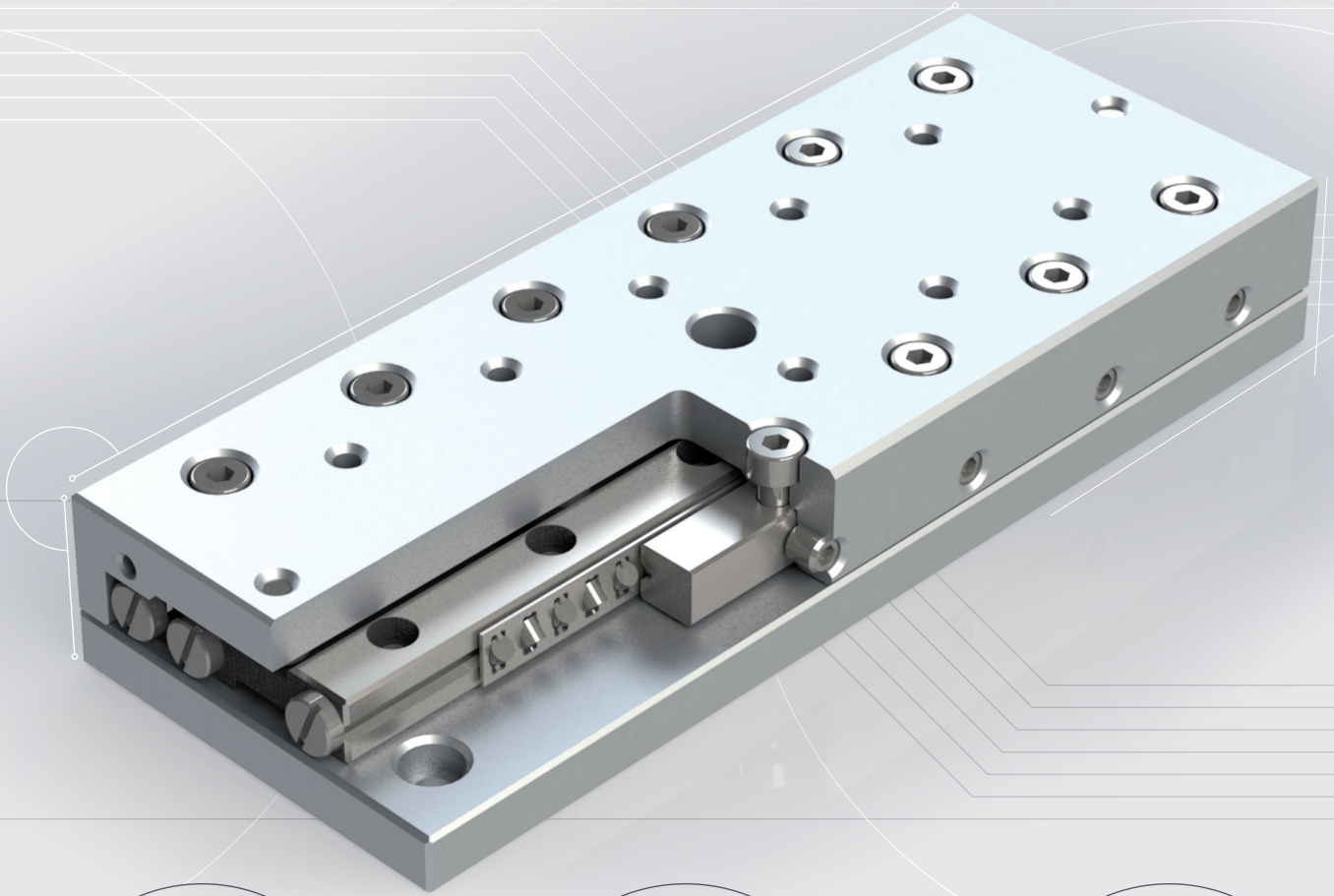


OVER
50
YEARS
of success



Ball micro slides type PMM



TECHNISCHE DATEN

ASSEMBLY

The mounting holes of each type are drilled to a standard configuration in slide-top and -base and permit the user a quick attachment into the application. Thread holes in the table parterre according to ISO-standard. Dimensions in this catalogue are in mm.

Pm linear slides are precision devices and require proper mounting to perform at rated specifications. They have to be mounted on rigid and fine-machined, preferable by fine-milling, flat surfaces and supported over their entire base length. Hereby the characters qualities of PM linear slide will be shown to full advantage

LOADS AND MOMENTS

The slides listed in this catalogue are able to carry loads and moments in any direction. The load ratings are based on the fundamentals established by ISO and DIN for the calculation of roller bearings (ISO standard 281, for miniature slide type PMM DIN 636, part 3).

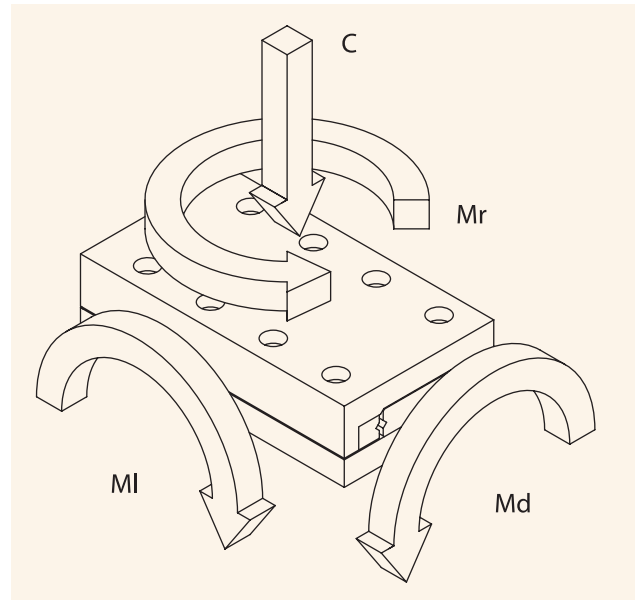
To ensure the high running accuracy and to prevent against play, vibration and overloads have to be avoided. The load capacity C , defined in ISO76-1987, is the maximum downward load or force located in the center of the upper part in horizontal zero-position.

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

M_d = Roll moment: Wenn a load is cantilevered off the side of an axis, perpendicular to the direction of travel.

M_r = Yaw moment: when a force causes a rotation moment about the center of an axis.

Exceeding of the listed moment ratings may reduce the life of the bearings and can degrade accuracy. Please feel free to contact one of our product specialists for more information.

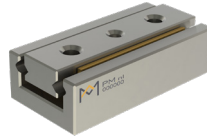


VACUUM AND CLEANROOM COMPATIBLE SLIDES

Most of the PM slides can be prepared for use in (ultra-high) vacuum or cleanroom environments. Special care has to be taken for example with the selection of the low outgassing materials, special lubricants, surface finishings, vented stainless steel fasteners for use in blind tapped holes, special ball- or crossed roller cages and with the selection of switches and wires. For the assembly of the tables we use modern cleanroom cells unto ISO/FDIS 14644-1 class 5 with clean spots class 3.

With over 50 years experience in this field we are ready to meet the most challenging requirements.

For more information please consult PM.



The PMM micro slides leading the trend with reduced sizes and weights. The tiny slides are made from corrosion resistant steel. This compact model is showing a consistent high running motion accuracy without clearance by a unsurpassed reliability. Thanks to the innovating design combined with a 4-point ball contact, these slides are showing an extreme low friction resistance with very smooth-running qualities and long operational lifetime. They are factory preloaded by selection on ball diameter.

MATERIALS

Table parts and balls: stainless steel 1.4034, hardness 54 - 57 HRC. Ball cage brass

FEATURES AND SPECIFICATION

- 3 Sizes
- Can be mounted in horizontal and vertical direction
special designed single piece U-shaped cage prevents creeping of the cage and is limited by using inside screws
- Slide-top and -base have equal lengths
- All mounting surfaces are finished by precision grinding
- All the flanks of the slide are ground parallel to the rails and can serve as Reference Faces
- The slide-top and -base have tapped attachment holes, drilled to a standard configuration offering simple mounting
- Running accuracies are shown on page 128

OPTIONS (CONSULT PM)

- Selected slides can be supplied with a height tolerance of ± 0.01 mm
- Defined push force
- UHV compatible version
- All stainless steel version

Notes by ordering

When ordering please specify the following:

- Model no. and quantity

Example: 1 piece slide type PMM 2-30

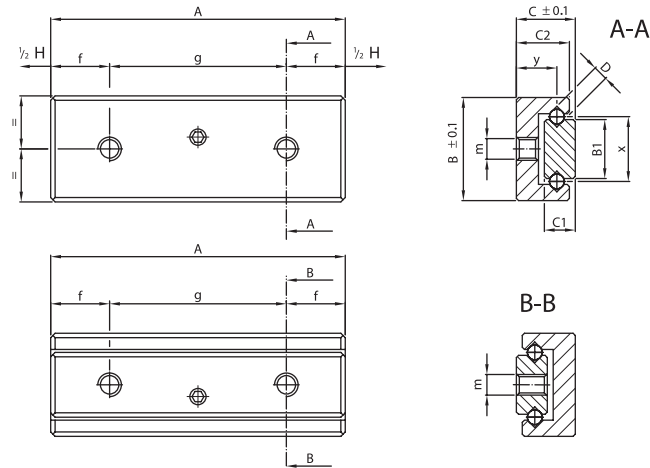


Fig. 1

Type					Stroke H						
	A	B	C	D		B1	C1	C2	f	g	h
PMM 05-10	10				5				2.5	1x5	
PMM 05-15	15	7	4	1	10	4	2.1	3.6	3.5	1x8	-
PMM 05-20	20				15				4	1x12	
PMM 05-25	25				20				4.5	1x16	
PMM 1-15	15				5				3.5	1x8	
PMM 1-20	20				10				4	1x12	
PMM 1-25	25				15				4.5	1x16	
PMM 1-30	30	10	6	1.5	20	5	3	5.5	5	1x20	4
PMM 1-35	35				25				5.5	1x24	
PMM 1-40	40				30				6	1x28	
PMM 1-45	45				35				6.5	1x32	
PMM 1-50	50				40				7	1x36	
PMM 2-30	30				20				5	1x20	
PMM 2-40	40				30				6	1x28	
PMM 2-50	50	15	8	2.5	40	8	4.5	7.5	7	1x36	7
PMM 2-60	60				50				7.5	3x15	
PMM 2-70	70				60				8	3x18	
PMM 2-80	80				70				10	3x20	

Bold = Short lead time item

Regular = Long lead time item - please request for price and delivery time

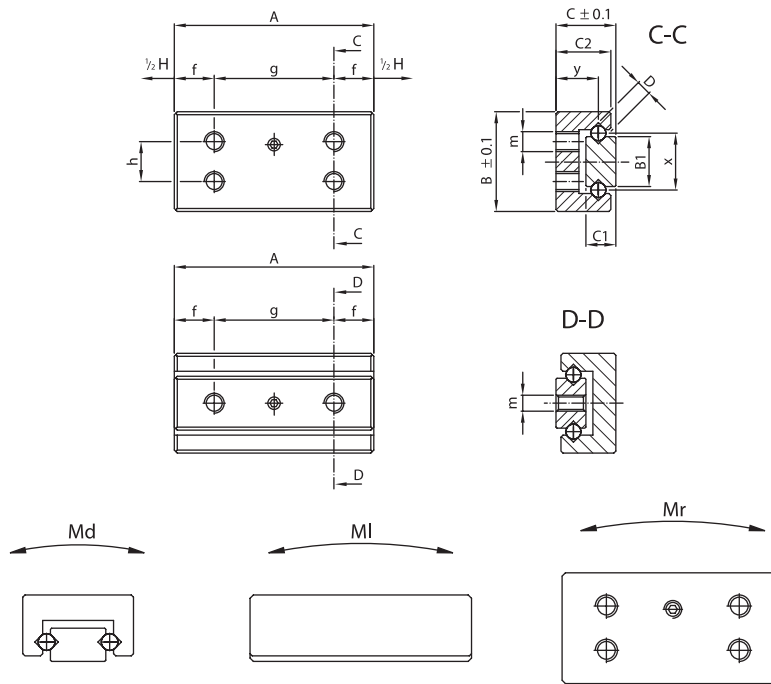


Fig. 2

			C _{dyn} in N	Weight (g)	Md in Ncm	MI in Ncm	Mr in Ncm	Fig.
m	x	y						
M1.6	4.4	2.75	23	2	4.5	1.5	3.2	1
			27	3	5.4	2.2	3.8	1
			36	4	7.2	3.4	5.0	1
			45	5	9.0	4.7	6.3	1
M2	5.7	4.25	60	5	15.0	9.0	15.5	2
			70	7	18.7	11.0	19.5	2
			80	10	18.7	11.0	19.5	2
			90	12	22.5	16.0	23.7	2
			105	14	26.2	19.0	28.1	2
			120	17	30.0	22.5	32.4	2
			135	19	33.8	27.0	36.8	2
150	21	37.5	31.5	41.3	2			
M2.5	8.8	5.5	195	28	78.0	40.0	69.8	2
			234	36	95.0	50.0	83.6	2
			273	45	109.2	62.5	98.7	2
			312	54	124.8	80.0	113.5	2
			390	64	156.0	109.2	143.8	2
429	73	171.6	125.0	159.1	2			

Units: mm



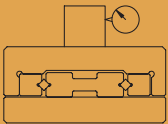
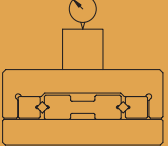
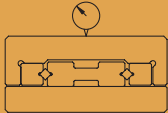
RUNNING ACCURACIES AND TOLERANCES

PM slides are delivered with accuracies as mentioned in the table below. The checks on the slides are made in unloaded horizontal position. The shown values can also be used for 2-axis combinations. If so, please refer to the belonging slide-strokes. When more axis are used in a

combination it will be more complicated and we offer in these questions our experience.

On request the precision slides will be delivered with a certificate of compliance, measured with a HP laser accuracy equipment.

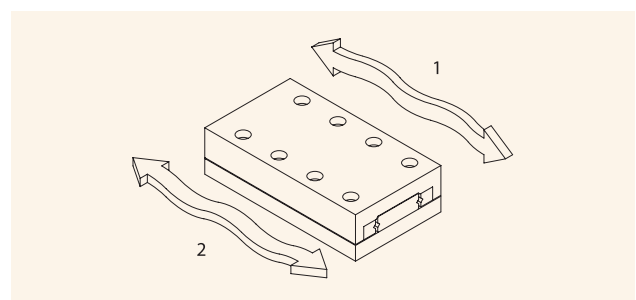
Special higher accuracy grade slides can be requested.

Type	A in mm	 Straight line accuracy in μm over travellenght on the side	 Flatness accuracy in μm over travellenght on the top	 Parallism in μm , neutral position on side top
RT (RTN/RTL)	25-50	2	2	5
	55-95	3	2	6
	105-155	4	3	7
	160-305	4	3	8
	310-510	4	4	10
	510-710	5	4	13
	810-1010	5	5	15
RTA (RTNA/RTLA) Aluminum	25-50	2	2	5
	55-95	3	2	5
	105-155	4	3	8
	160-305	4	3	10
	310-510	4	4	15
	510-710	5	4	20
	810-1010	5	5	25
RTNG	52-91	2	2	5
	106-166	3	2	6
	171-314	3	3	7
	317-517	4	3	10
	524-817	4	4	13
	824-1028	5	5	15
RTS	25-45	3	3	2
	55-95	4	4	4
	105-155	5	5	5
PMM und PMMR	15-30	3	4	5
	35-50	4	4	6
	60-80	5	6	8

1. STRAIGHT LINE ACCURACY: this is the amount of error deviates from the ideal straight line of travel in the vertical plane.

2. FLATNESS ACCURACY: this is the amount of error deviates from the ideal straight line of travel in the horizontal plane.

PARALLISM IN M, NEUTRAL POSITION ON SLIDE TOP: the parallism of the table surfaces occurs unloaded on a flat, horizontal surface in zero-position.



PM RESEARCH AND PRODUCTION FACILITY



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