

The entire tube is slotted throughout its full length. The force is transmitted through the load friction, which is attached to the piston axle.

The design of the piston axle is that way that the inner part of the piston axle is connected through the slot with the outer part of it.

Therefore the force transmission runs as follows:

Air pressure piston area, piston axle (inner part), piston axle (outer part), load friction, load.

The sealing of the cylinder slot is guaranteed by a most precisely grinded inner steel band. The inner band is kept in position due to magnet stripes which are placed on both sides of the slot. In addition there is an outer steel band covering the slot in order to keep dust out of inner space of the cylinder.

During piston movement as well as during still stand of it both steel bands are lifted right after the piston seal and led through the piston axle by means of a separate own guiding channel. Before and behind the piston axle both bands are covering the slot permanently again.

Features

- Stronger forces.
- Higher loads.
- Very flexible in the user's design.
- End caps with 3 air connections and adjustable cushioning.
- 50% space-savings.
- Magnetic as standard.

Specification

Model	MCRPLD		
Acting type	Double acting		
Tube I.D. (mm)	16	25	32
Port size	M5	G1/8	G1/4
No. of port	3		
Medium	Air		
Operating pressure range	0.1~0.78 MPa		
Stroke range	ø16	100~3300mm	
	ø25~32	100~5700mm (*1)	
Ambient temperature	-10~+80°C (No freezing)		
Lubrication	With or without lubrication (*2)		
Cushion	With adjustable cushion at both ends		
Sensor switch	RCAL (Please refer to page 6-9)		
Sensor switch holder	HPL		

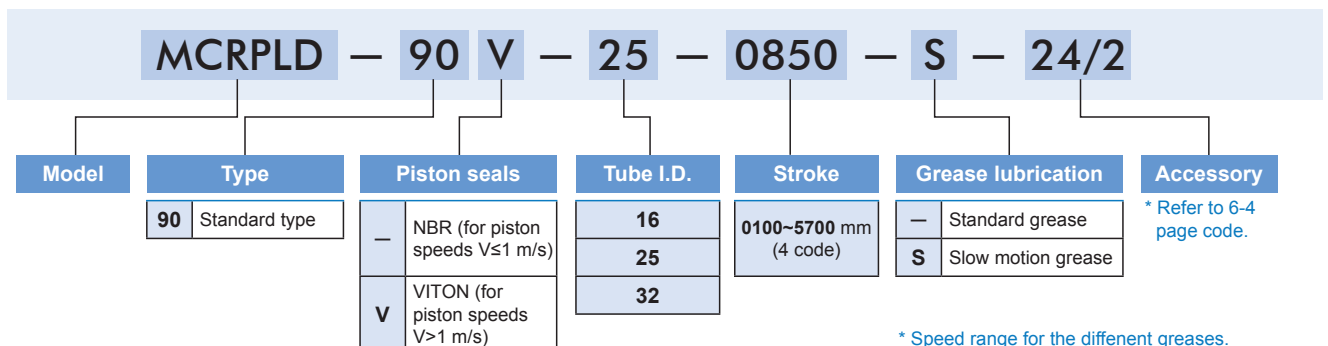
*1. In increments of 1mm, long strokes on request.

*2. Attention: Before changing operation from lubricated to nonlubricated air the cylinder has to be disassembled, cleaned, newly greased and reassembled.

*3. The tube isn't airtight, so the cylinder is allowed the leakage.

Before the cylinder is sale, it has passed the standard of leakage test.

Order example



* Speed range for the different greases.

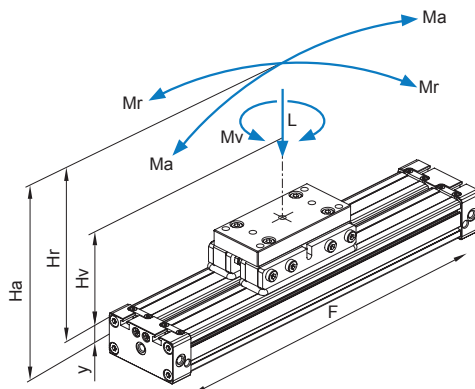
• Standard grease

NBR piston seals: 0.2 m/s ≤ V ≤ 1 m/s
VITON piston seals: 1 m/s < V

• Slow motion grease

NBR piston seals: V < 0.2 m/s
VITON piston seals: V < 0.2 m/s

Forces and moments



Formulas

$$Ma = F \times Ha$$

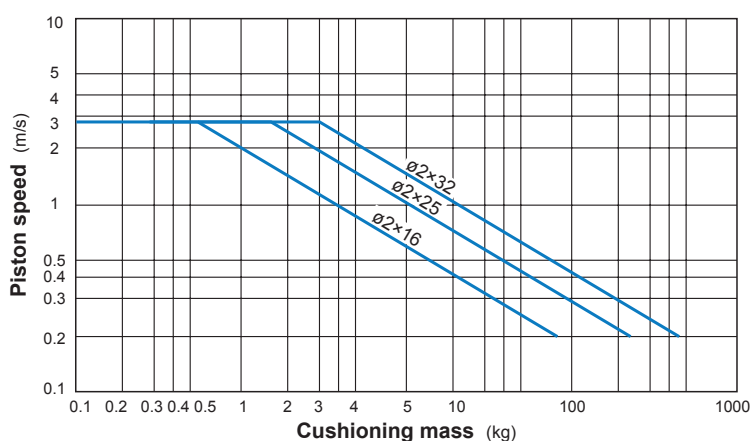
$$Mr = F \times Hr$$

$$Mv = F \times Hv$$

Cylinder ∅	Effect force (N) at 6 bar F	Cushion (mm) S	Max. allowed load (N) L	Max. allowed bending moment (Nm)		Max. allowed torque (Nm)
				Ma axial	Mr radial	
2×16	200	15	240	8.0	2.4	1.0
2×25	480	21	600	30.0	8.0	6.0
2×32	820	26	900	60.0	16.5	10.0

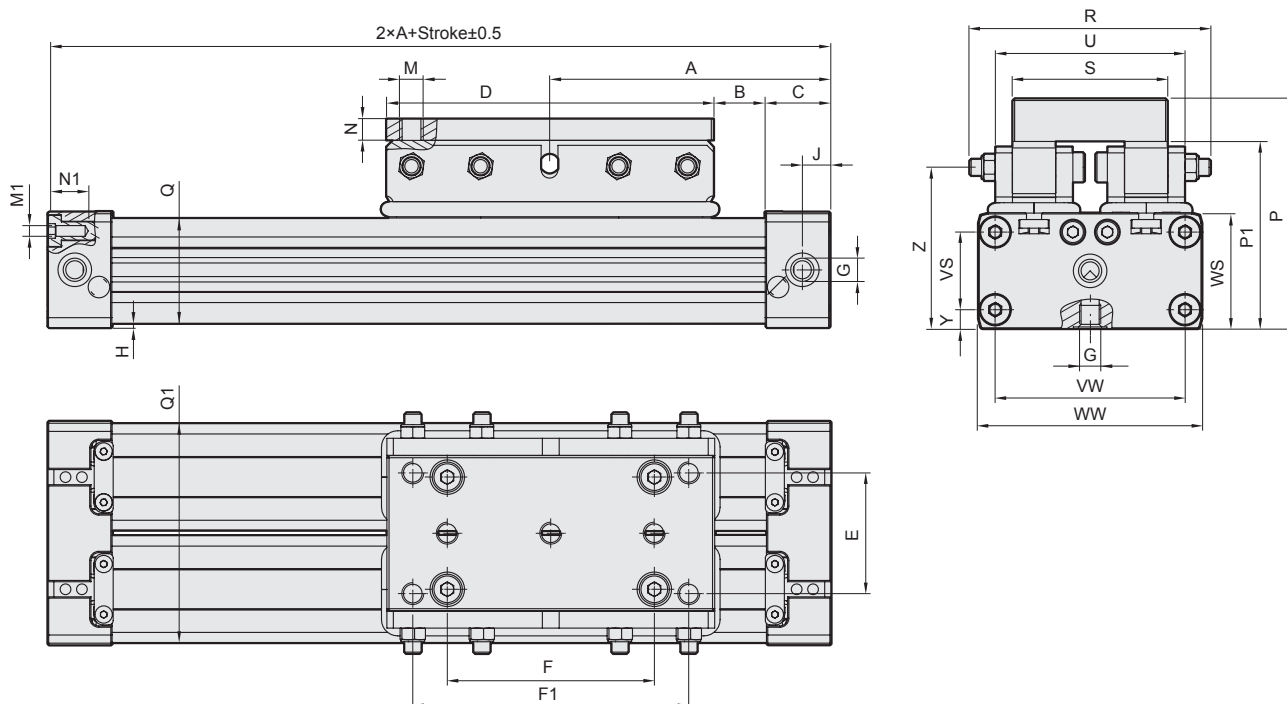
- The figures above are max. values based on light shock free duty and speed of $V \leq 0.2 \text{ m/sec}$ - $V \leq 0.45 \text{ m/sec}$.
- Max. pressure 6 bar.
- An exceeding of the values in dynamic operations, even for short moments, has to be avoided.
- Attention: Resulting forces could lead to extreme exceedings of the values. In case of undefinable situations the above max. values have to be reduced by 10~20%

Cushioning diagram



Pay attention to the following points

- If the limits above are exceeded additional shock absorbers are necessary.
- For piston speeds of more than $\geq 1 \text{ m/s}$ VITON seals are recommended.
- For piston speed $\leq 0.1 \text{ m/s}$ (NBR), $\leq 0.2 \text{ m/s}$ (VITON) slow speed lubrication is necessary.
- Maximum duration life will be achieved when piston speeds do not exceed 1 m/s .



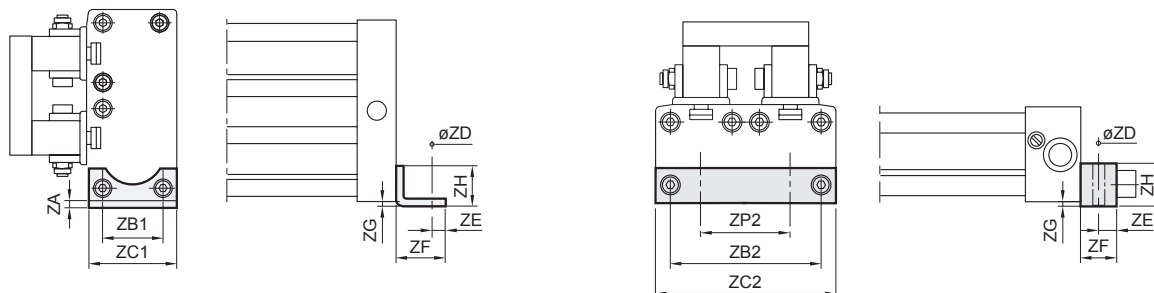
Code Tube I.D.	A	B	C	D	E	F	F1	G	H	J	M	N	M1	N1
2×16	65	12	15	76	—	—	48	M5	1.5	5.5	M5	10.0	M3	7
2×25	100	17	23	120	32.4	80	100	1/8	2.0	8.5	M6	15.0	M5	10
2×32	125	23	27	150	40.4	90	120	1/4	2.0	10.5	M8	12.0	M6	14

Code Tube I.D.	P	P1	Q×Q1	R	S	U	VW	VS	WW	WS	Y	Z
2×16	53.5	42.3	24×48	56	34	42	42	18	51	27	4.5	37.5
2×25	74.0	58.5	36×72	74	50	59	63	27	72	41	7.0	53.5
2×32	94.0	82.0	52×96	90	70	75	84	40	98	56	8.0	74.0

End cover bracket (foot)

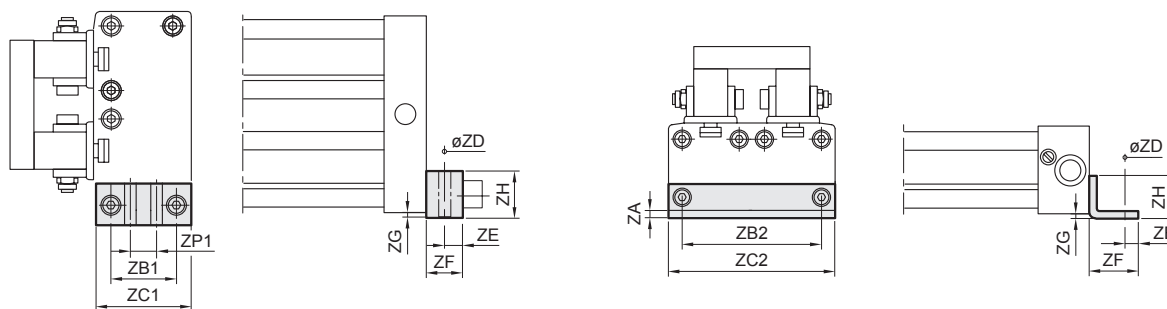
PL 24/1, for $\phi 16$
 PL 24/2, for $\phi 25$

PL 24/1.2, for $\phi 16$
 PL 24/2.2, for $\phi 25$



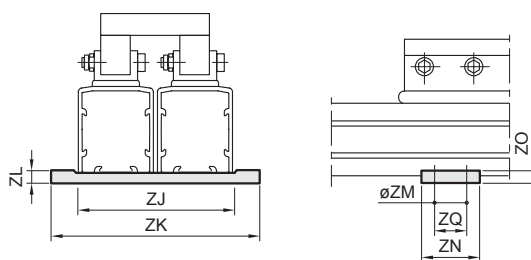
PL 24/3.1, for $\phi 32$

PL 24/3.2, for $\phi 32$



Mid section support

PL 25/1.2, for $\phi 16$
 PL 25/2.2, for $\phi 25$
 PL 25/3.2, for $\phi 32$



Code Tube I.D.	ZA	ZB1	ZB2	ZC1	ZC2	ZD	ZE	ZF	ZG	ZH	ZJ	ZK	ZL	ZM	ZN	ZO	ZP1	ZP2	ZQ	Order number
2×16	1.6	18	42	26	51	3.6	4	14	1.5	12.5	56.0	64	6	$\phi 3.5$	12	4	—	—	6.0	PL 24/1, 24/1.2, 25/1.2
2×25	2.5	27	63	40	72	5.6	6	22	2.0	18.0	84.5	96	6	$\phi 5.5$	20	4	—	—	10.5	PL 24/2, 24/2.2, 25/2.2
2×32	—	40	84	56	97	6.6	8	26	4.0	20.0	109.0	121	10	$\phi 6.5$	55	6	20	62.4	40.0	PL 24/3.2, 25/3.2