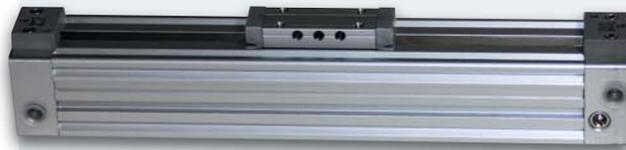


# Rodless Pneumatic Cylinders

General Overview



## 2 – Company Profile



Lanomatic AG is a flexible small-sized company with its headquarters in Switzerland and a production site in the EU. We are specialized in rodless pneumatic cylinders.

Many years of experience allow us to offer a technically highly developed and high-quality product at competitive prices.

Our range of cylinders offer diameters from 18 to 63 mm (piston diameter). Our product range is based on a modular design. Depending on requirements, add-on parts supplement our cylinders. For special applications, we also offer special cylinders. A choice of accessories complete our portfolio.

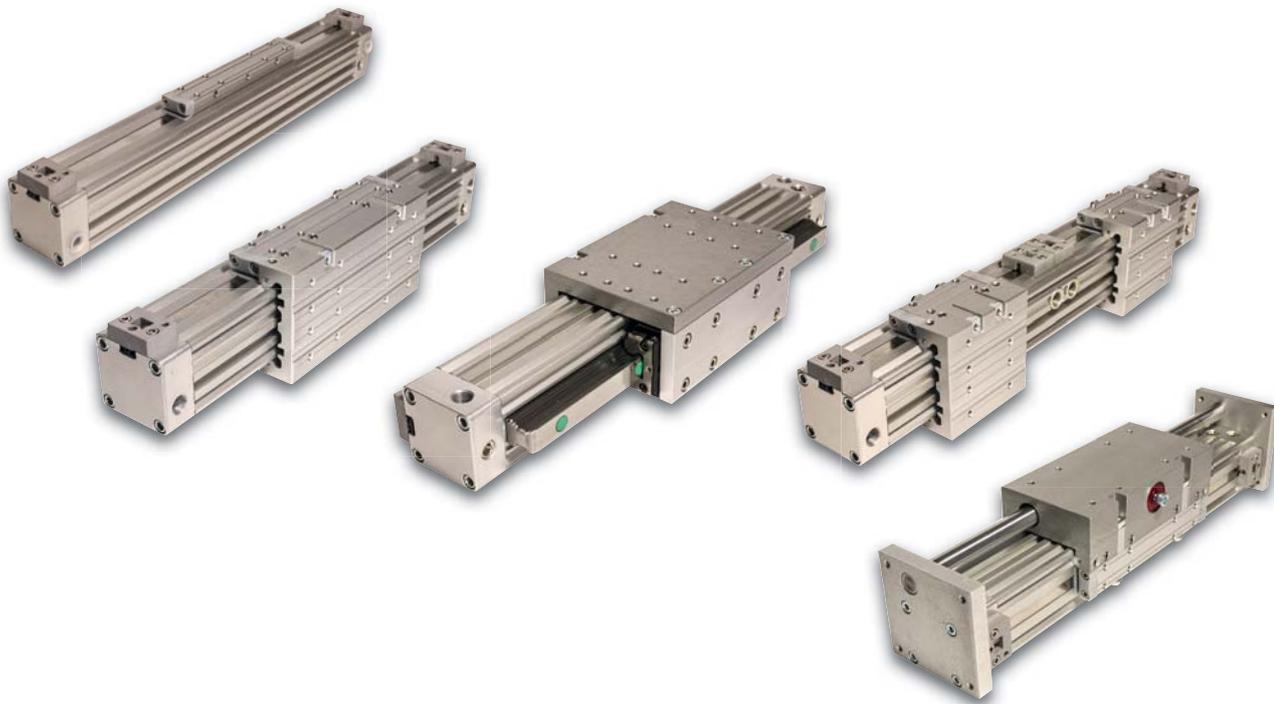
Together with our assembly and sales partners, we have global presence on all important markets and serve our customers through decentralized assembly within very short delivery times.

Beside our basic cylinders we also manufacture custom designed solutions. Thanks to flexible manufacturing capacities, this is already possible for smaller quantities.

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Germany



Our cylinders have a compact design. Many products of our competitors can be replaced without major adjustments.

Apart from the cylinder with the standard length yoke (ZS), we also offer a version with a yoke that is approximately 40 percent shorter (ZK).

The cylinder stroke can be freely selected up to a length of 6 000 mm. Longer strokes are possible.

The Lanamatic standard cylinder has an end cap with multi port connections. Accordingly, the cylinder offers a large variety of connections: one-sided, two-sided, front-side, bottom-side.

Due to their tested and proven geometry, our profile tubes are highly resistant to any type of deformation. In addition, the profile tubes have different C- and T-grooves to take up magnetic switches.

All cylinders are equipped with continuously variable end position cushioning.

A large number of add-on parts allow the cylinders to be equipped for a wide range of applications and loads.

With additionally mounted external guide carriages along the profile tube, the cylinder can absorb higher forces. Guide carriages can be mounted on each side (ZF) or on the bottom-side (ZFU). However, carriages can also be attached on both sides at the same time (ZFF). The recirculating ball bearing guide, mounted on the bottom-side of the profile tube, can absorb large forces (ZSS).

Existing cylinders can be retrofitted with add-on parts at any time. The front side fastening equipment (mounting brackets) of the cylinders can be adjusted to the situation at hand by rotating the corresponding fastening equipment by 90°.

For long strokes, the profile tube can be additionally supported by special fastening equipment (middle support).

During maintenance of our cylinders, all wear parts can be replaced. For the repair of our cylinders, we offer spare parts.

## 4 – Technical Information



<b>Design</b>	Rodless cylinder with direct power transmission through the tube slot onto the yoke.
<b>Stroke length</b>	Any length up to 6000 mm, longer on request
<b>Mounting position</b>	Any
<b>Mode of action</b>	Double-action with adjustable end position cushioning
<b>Operating pressure</b>	2 ... 8 bar
<b>Operating temperature</b>	-20 °C ... +80 °C
<b>Medium</b>	Filtered and slightly oiled or unoled compressed air
<b>Materials</b>	Al parts made of high-strength anodized alloy, sealing parts made of oil-resistant plastics and elastomers
<b>End position cushioning</b>	The novel pin type cushioning works similarly to an injection pump, i.e., rotating a control notch changes the flow volume. The cushioning effect can be continuously varied from 0 to 100 % by rotation.



## Weight

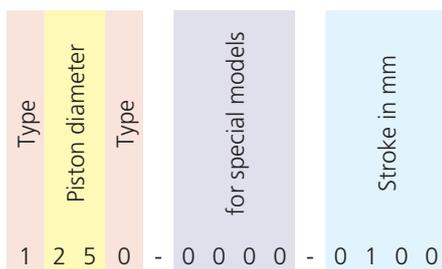
Cylinder	Weight at zero stroke (weight/stroke to be added)									Weight/stroke	
	ZS	ZK	ZF	ZFF	ZFK	ZSS	ZKS	ZKS	ZP	Per 1000 mm *2	
18	0.3 kg	0.2 kg	0.4 kg	0.6 kg	0.3 kg	1.0 kg	0.8 kg	0.8 kg	- kg	1.5 kg (2.5 kg) *1	
25	0.6 kg	0.4 kg	0.9 kg	1.1 kg	0.6 kg	1.6 kg	1.4 kg	1.4 kg	1.2 kg	2.6 kg (4.0 kg) *1	
32	1.1 kg	0.7 kg	1.5 kg	2.2 kg	1.2 kg	2.5 kg	2.2 kg	2.2 kg	2.6 kg	3.6 kg (5.8 kg) *1	
40	1.8 kg	1.2 kg	2.8 kg	3.8 kg	2.0 kg	3.8 kg	3.2 kg	3.2 kg	4.6 kg	4.8 kg (8.3 kg) *1	
50	3.2 kg	2.0 kg	4.9 kg	6.4 kg	3.2 kg	5.9 kg	5.6 kg	5.6 kg	8.2 kg	7.4 kg (12.1 kg) *1	
63	5.6 kg	3.2 kg	8.0 kg	10.4 kg	6.4 kg	9.0 kg	8.5 kg	8.5 kg	13.6kg	10.0 kg (15.5 kg) *1	

\*1 for ZSS and ZKS incl. profiled rail  
\*2 for ZP weight per 500 mm

All data given are approximate values

## Article numbers scheme

Please use these numbers for your order



Example: Article number for a ZS cylinder with a diameter of 25 mm, standard connection and a stroke of 100 mm

Type	1st. pos.	Ø	Ø	4th pos.
ZS	1	x	x	0
ZK	2	x	x	0
ZF	3	x	x	0
ZFK	3	x	x	2
ZFF	3	x	x	1
ZFU	3	x	x	5
ZSS	1	x	x	3
ZKS	2	x	x	3
ZP	4	x	x	0
ZFB (passive)	3	x	x	4
ZTS	6	x	x	1
ZTK	6	x	x	2
ZGS	5	x	x	0
ZGK	5	x	x	3

### Basic models

Cost efficient, reliable and compact.

Profile tube and yoke have a very compact and intelligent design. This allows an assembly based on modular design. The two cylinders ZS and ZK in six different piston diameters from 18 to 63 mm form the foundation.



**ZS**  
Standard cylinder

Rodless double-action cylinder with adjustable end position cushioning.



**ZK**  
Standard cylinder short

Cylinder with yoke shortened by approx. 40 % – particularly compact design.

### Models with external guide

Guides integrated into the cylinder and optimally tuned to one another

Guiding cylinders with slide guides running on the profile tube and those with recirculating ball bearing guides for highest demands are being offered.



**ZF, ZFK, ZFF, ZFU**  
Guiding cylinder with external carriage

ZF/ZFK: The external slide guide is mounted on one of the two sides (left or right).

ZFF: The external slide guide is mounted on both sides.

ZFU: The external slide guide is mounted on the bottom-side.



**ZSS, ZKS**  
Guiding cylinder with external ball bearing guide

Equipped with external recirculating ball bearing guide on the bottom-side.

## Special cylinders

Can be equipped with an external guide.

A selection of available special cylinders. Application-specific solutions on request.



**ZP**  
Parallel cylinder

For high loads and moments in all directions.  
Double-action force. Central connection.



**ZFB**  
Guiding cylinder with passive locking unit

High safety for vertical stroke use.



**ZTS, ZTK**  
Tandem cylinder

For high torques in longitudinal direction.



**ZGS, ZGK**  
Gripping cylinder

Gripping and clamping functions.  
Opening and closing functions.

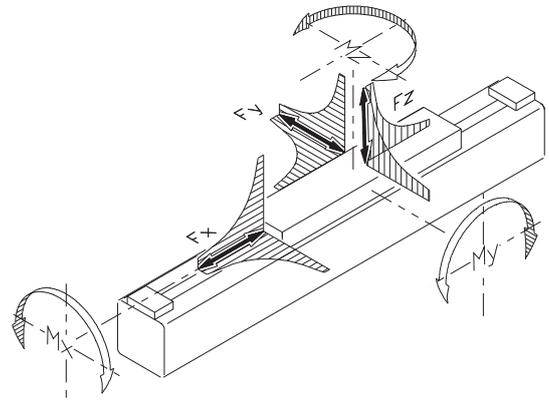
## Fastening equipment / Accessoires

The accessories facilitate installation and are the ideal supplement for optimum functioning in the application.

Mounting brackets  
Middle support  
Swinging bridge  
Stop adjustment  
Shock absorber  
Cross support  
Switches (reed and magnetic)

## 8 – Technical Characteristics

The technical characteristics here after are the basic conditions for choosing the suitable cylinder for an application. Any overload of a cylinder must be avoided under all circumstances as this may cause permanent damaging to the cylinder.

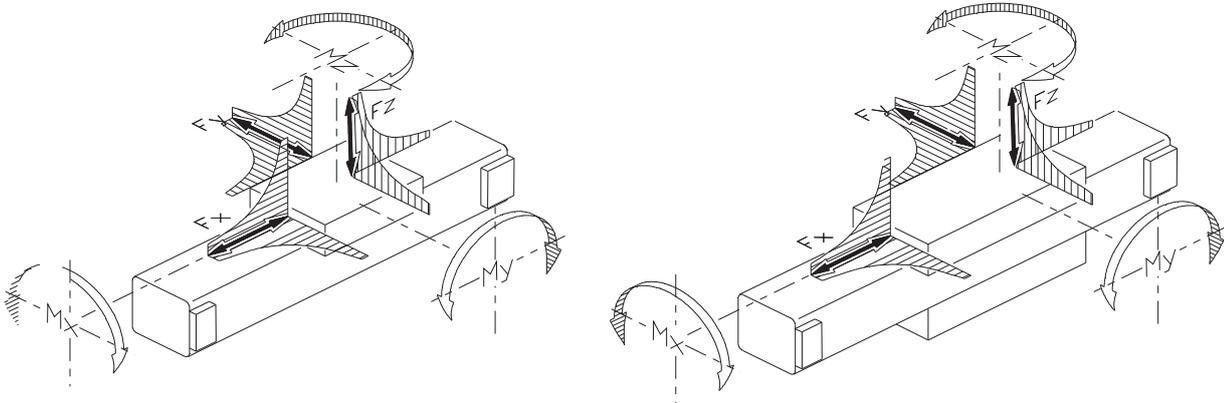


### ZS Standard cylinder

Piston Ø	$v_{\max} \leq 0.35 \frac{m}{s}$			$F_{\text{allowed}}$ at $v$			Torques		
	Fx (N) Action force at 6 bar	Fy (N)	Fz (N)	$F_{\text{allowed}}$ at 0.75 m/s	$F_{\text{allowed}}$ at 1 m/s	$F_{\text{allowed}}$ at 1.5 m/s	Mx (Nm) Fy/Fz	My (Nm) Fx/Fz	Mz (Nm) Fx/Fy
18	140	80	300	80	40	20	1	3	3
25	270	110	480	155	90	40	2	13	13
32	440	165	650	280	155	70	3.5	25	25
40	680	225	800	500	290	125	5.5	40	40
50	1060	325	1060	790	420	195	10	65	65
63	1680	435	1680	1500	850	370	16	100	100

### ZK Standard cylinder short

Piston Ø	$v_{\max} \leq 0.35 \frac{m}{s}$			$F_{\text{allowed}}$ at $v$			Torques		
	Fx (N) Action force at 6 bar	Fy (N)	Fz (N)	$F_{\text{allowed}}$ at 0.75 m/s	$F_{\text{allowed}}$ at 1 m/s	$F_{\text{allowed}}$ at 1.5 m/s	Mx (Nm) Fy/Fz	My (Nm) Fx/Fz	Mz (Nm) Fx/Fy
18	140	40	140	40	25	10	0.4	1.7	1.7
25	270	55	230	90	50	25	0.7	2.7	2.7
32	440	70	320	200	110	45	1.0	5.0	5.0
40	680	100	400	420	240	110	2.0	8.5	8.5
50	1060	140	480	750	440	190	3.5	13.0	13.0
63	1680	180	590	1500	850	380	5.0	18.0	18.0



### ZF/ZFU Standard cylinder with external carriage

Piston Ø	$v_{\max} \leq 0.35 \text{ m/s}$			$F_{\text{allowed}}$ at v			Torques		
	Fx (N) Action force at 6 bar	Fy (N)	Fz (N)	$F_{\text{allowed}}$ at 0.75 m/s	$F_{\text{allowed}}$ at 1 m/s	$F_{\text{allowed}}$ at 1.5 m/s	Mx (Nm) Fy/Fz	My (Nm) Fx/Fz	Mz (Nm) Fx/Fy
18	140	370	370	100	58	26	3.5	6	6
25	270	800	800	280	160	65	10	20	20
32	440	1200	1200	510	300	140	25	45	45
40	680	1600	1600	1000	550	250	40	75	75
50	1060	2100	2100	1500	850	380	80	150	150
63	1680	2800	2800	2500	1400	610	110	250	250

### ZFK Guiding cylinder short with external carriage

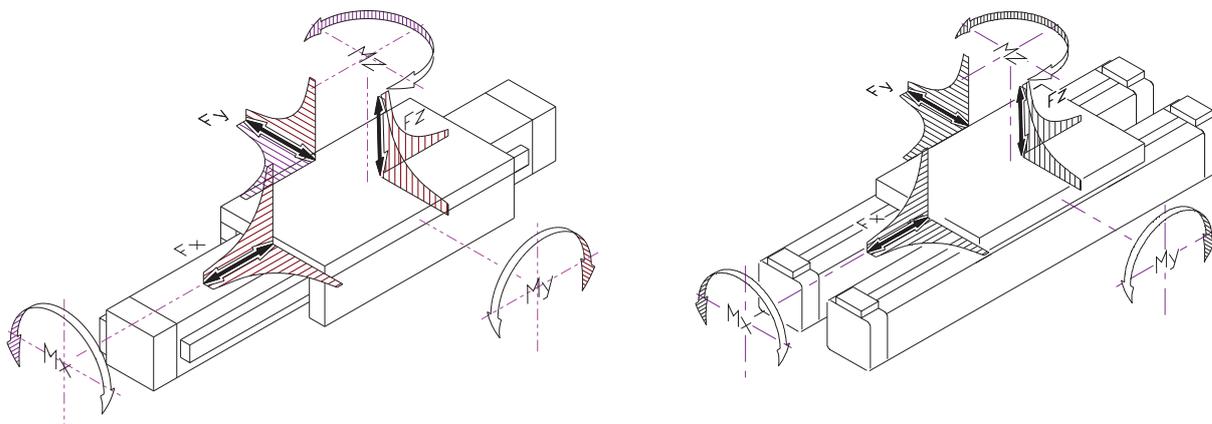
Piston Ø	$v_{\max} \leq 0.35 \text{ m/s}$			$F_{\text{allowed}}$ at v			Torques		
	Fx (N) Action force at 6 bar	Fy (N)	Fz (N)	$F_{\text{allowed}}$ at 0.75 m/s	$F_{\text{allowed}}$ at 1 m/s	$F_{\text{allowed}}$ at 1.5 m/s	Mx (Nm) Fy/Fz	My (Nm) Fx/Fz	Mz (Nm) Fx/Fy
18	140	150	150	50	30	12	1.8	1.8	1.8
25	270	250	250	100	60	30	4	4	4
32	440	450	450	250	135	65	10	10	10
40	680	600	600	480	280	140	16	16	16
50	1060	900	900	800	480	220	30	30	30
63	1680	1100	1100	1500	950	400	45	45	45

### ZFF Guiding cylinder with 2 external carriages

Data for Mz when guide carriages have been connected

Piston Ø	$v_{\max} \leq 0.35 \text{ m/s}$			$F_{\text{allowed}}$ at v			Torques		
	Fx (N) Action force at 6 bar	Fy (N)	Fz (N)	$F_{\text{allowed}}$ at 0.75 m/s	$F_{\text{allowed}}$ at 1 m/s	$F_{\text{allowed}}$ at 1.5 m/s	Mx (Nm) Fy/Fz	My (Nm) Fx/Fz	Mz (Nm) Fx/Fy
18	140	550	550	150	80	31	5.2	9	9
25	270	1200	1200	420	210	80	15	30	30
32	440	1800	1800	750	400	170	37	67	67
40	680	2400	2400	1500	750	300	60	110	110
50	1060	3200	3200	2200	1150	460	120	220	220
63	1680	4200	4200	3700	1900	740	170	370	370

## 10 – Technical Characteristics



### ZSS Guiding cylinder

Piston Ø	Load rating per carriage			Rail			Torques		
	Type	$C_{dyn}$ N	$C_0$ N	Type			Mx (Nm)	My (Nm)	Mz (Nm)
18	MR15MN	3810	5590	MR15M			87	22	
25	EGH15CA	8350	16300	L1S15			170	154	130
32	EGH20CA	11700	23500	L1S20			320	266	222
40	EGH25CA	18800	36500	L1S25			572	516	434
50	EGH30CA	28800	55000	L1S30			1040	870	730
63									

### ZKS Guiding cylinder

Piston Ø	Load rating per carriage			Rail			Torques		
	Type	$C_{dyn}$ N	$C_0$ N	Type			Mx (Nm)	My (Nm)	Mz (Nm)
18	MR15MN	3810	5590	MR15M			43	11	11
25	EGH15CA	8350	16300	L1S15			85	77	65
32	EGH20CA	11700	23500	L1S20			160	133	111
40	EGH25CA	18800	36500	L1S25			286	258	217
50	EGH30CA	28800	55000	L1S30			520	435	365
63									

### ZP Parallel cylinder

Piston Ø	$v_{max} \leq 0.35 \frac{m}{s}$			$F_{allowed}$ at v			Torques		
	$F_x$ (N) Action force at 6 bar	$F_y$ (N)	$F_z$ (N)	$F_{allowed}$ at 0.75 m/s	$F_{allowed}$ at 1 m/s	$F_{allowed}$ at 1.5 m/s	Mx (Nm) Fy/Fz	My (Nm) Fx/Fz	Mz (Nm) Fx/Fy
25	540	240	900	300	175	75	16	27	27
32	880	360	1220	540	300	130	29	52	52
40	1360	540	1750	1090	620	280	55	88	88
50	2120	750	2500	1760	1000	450	90	155	155
63	3360	1000	3300	2900	1660	720	148	260	260



The data given are for product description only and are not to be construed as guaranteed properties in the legal sense.

Any claims for damages against us, no matter on what legal basis, are null and void, unless we are responsible for wilful intent or gross negligence.

Technical modifications, omissions and mistakes reserved.

The Lanamatic cylinders have been built in accordance with state-of-the-art standards and are safe to operate. Dangers can arise if:

- the cylinder is used, mounted or maintained by unqualified personnel or used, mounted or maintained improperly.
- the cylinder is used contrary to its designated use.
- the accident prevent regulations, the VDE guidelines, and the safety and mounting instructions are not observed.

In addition, note that:

- procedures that impair the functioning and operating safety of the Lanamatic cylinders must be refrained from.
- the Lanamatic cylinder may be used exclusively according to its specification, any other use being deemed as contrary to its designated use.
- the manufacturer shall not be liable for damage resulting from such use.
- during mounting, reconstruction and maintenance work, the energy supplies must be removed.
- during maintenance, mounting and reconstruction, it is recommended removing the Lanamatic cylinder from the work area and performing the work outside the danger zone.
- during mounting, connection, setup, commissioning and testing, you have to make sure that accidental actuation of the cylinder by the installer or somebody else is reliably prevented.
- additional bores, threads or parts to be mounted not offered as accessories may only be attached after consultation with the Lanamatic AG.
- if the cylinder is to be operated in environment containing abrasive dust or aggressive vapors, prior approval must be obtained from the Lanamatic AG.
- otherwise the current safety and accident prevention regulations of the place of use shall apply.



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