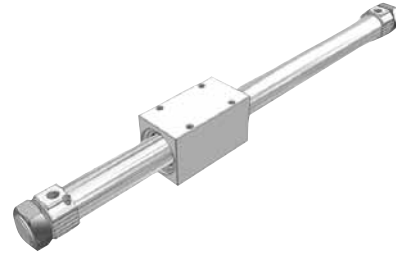


- Available in 3 bores with stroke lengths up to 2000 mm
- Adjustable air cushioning is available on all cylinders
- The load is fixed onto the mobile carriage by 4 tapped holes
- The cylinder is attached by the ends with jam nuts, flanges or foot mounts



Specifications for P1Z series magnetically coupled rodless

Operating medium	Compressed air		
Maximum pressure - bar (PSI)	7 (100)		
Minimum pressure - bar (PSI)	2 (29)		
Bore size mm (inch nominal)	16 (5/8)	20 (3/4)	32 (1 1/4)
Port size	M5 BSPP, 10-32 NPT	1/8 BSPP, 1/8 NPT	1/8 BSPP, 1/8 NPT
Ambient temperature °F (°C)	15 to 140°F (-10 to 160°C)		
Maximum stroke mm (inch)	1000 (39.4)	1500 (59.1)	2000 (78.7)
Stroke tolerance mm	+1.5/-0	<=1000 +1.5/-0; >1000 +2/-0	
Piston speed m/s (inch/sec)	0.1 to 0.4 (4 to 15.75)		
Max. coupling force N (lbs)	157 (35)	236 (53)	703 (158)
Cushion	Air cushion standard		
Lubrication	Not required (If you choose to lubricate your system, continuing lubrication will be required.)		

Technical data

Bore size	Weights				
	Weight at zero stroke		Weight per 25mm of stroke		
mm	inch	kg	lbs	kg	lbs
16	5/8	0.28	0.62	0.01	0.02
20	3/4	0.46	1.01	0.02	0.05
32	1-1/4	1.35	2.98	0.04	0.08

Conditions of use

If external lubrication is added, this must always be continued.

Working medium, air quality

Working medium: Dry, filtered compressed air to ISO 8573-1 class 3. 4. 3. or better

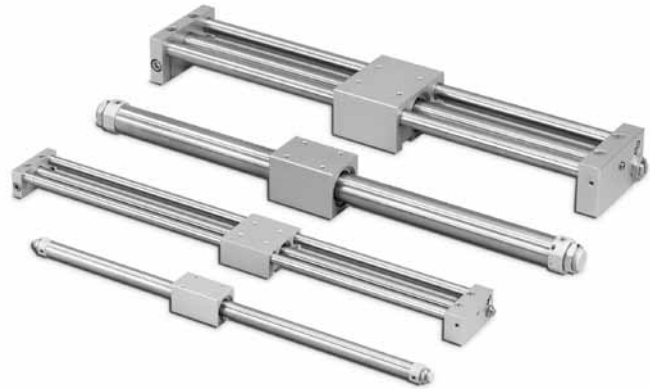
Standard cylinder (15 positions)							Options (16 positions)																																																					
P	1	Z	M	0	1	6	S	N	N	0	5	0	0	B	F	M	N																																											
							<table border="1" style="width: 100%;"> <tr><th colspan="2">Bore</th></tr> <tr><td>016</td><td>Ø 16 mm</td></tr> <tr><td>020</td><td>Ø 20 mm</td></tr> <tr><td>032</td><td>Ø 32 mm</td></tr> </table>		Bore		016	Ø 16 mm	020	Ø 20 mm	032	Ø 32 mm	<table border="1" style="width: 100%;"> <tr><th colspan="2">Cushioning</th></tr> <tr><td>N</td><td>None (Ø 16 only)</td></tr> <tr><td>A</td><td>Adjustable Cushions</td></tr> </table>		Cushioning		N	None (Ø 16 only)	A	Adjustable Cushions	<table border="1" style="width: 100%;"> <tr><th colspan="2">Strokes</th></tr> <tr><td>0200</td><td>200 mm</td></tr> <tr><td>1000</td><td>1000 mm</td></tr> </table>		Strokes		0200	200 mm	1000	1000 mm	<table border="1" style="width: 100%;"> <tr><th colspan="2">Mounting kit*</th></tr> <tr><td>F</td><td>Footmount</td></tr> <tr><td>L</td><td>Flanges</td></tr> <tr><td>N</td><td>None (std.)</td></tr> </table>		Mounting kit*		F	Footmount	L	Flanges	N	None (std.)	<table border="1" style="width: 100%;"> <tr><th colspan="2">Options *</th></tr> <tr><td>B†</td><td>None</td></tr> <tr><td>W</td><td>With options</td></tr> </table>		Options *		B†	None	W	With options	<table border="1" style="width: 100%;"> <tr><th colspan="2">Cylinder port type</th></tr> <tr><td>M†</td><td>Metric (Ø 16 only)</td></tr> <tr><td>B†</td><td>BSPP (Ø 20 & 32)</td></tr> <tr><td>N</td><td>NPTF (Ø 20 & 32)</td></tr> </table>		Cylinder port type		M†	Metric (Ø 16 only)	B†	BSPP (Ø 20 & 32)	N	NPTF (Ø 20 & 32)
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<p>* Cylinders are supplied with mounting nuts fitted on each endplate.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Ø</th> <th>Stroke (mm)</th> <th>(in)</th> </tr> </thead> <tbody> <tr> <td>16</td> <td>0 to 1000</td> <td>0 to 39.4</td> </tr> <tr> <td>20</td> <td>0 to 1500</td> <td>0 to 59.1</td> </tr> <tr> <td>32</td> <td>0 to 2000</td> <td>0 to 78.7</td> </tr> </tbody> </table>																		Ø	Stroke (mm)	(in)	16	0 to 1000	0 to 39.4	20	0 to 1500	0 to 59.1	32	0 to 2000	0 to 78.7																															
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<p>Order code examples:</p> <ul style="list-style-type: none"> - P1ZM016SNN0100B Ø 16 mm bore 100 mm stroke cylinder supplied with mounting nut on each endplate - P1ZM020SAN1000WFBN Ø 20 mm bore 1 m stroke cylinder with foot mount on each endplate 																																																												



Basic version

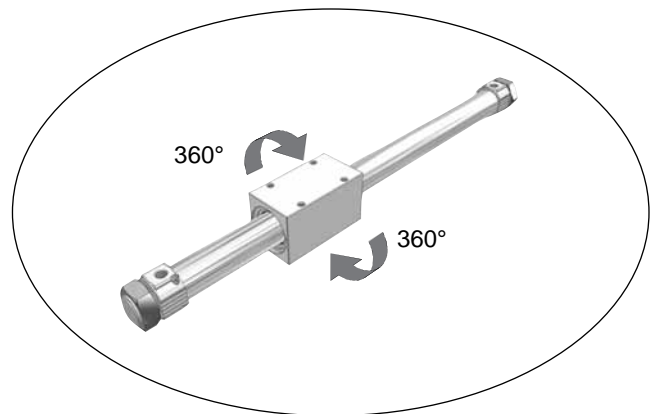
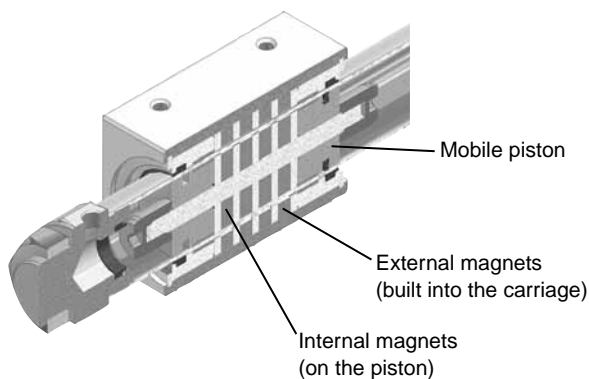
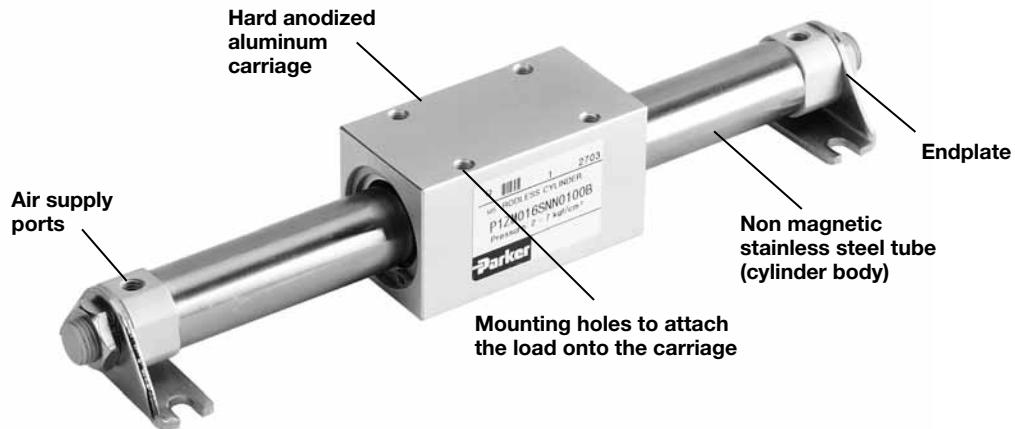
The magnetic rodless cylinder is a pneumatic cylinder featuring a mobile piston fitted with annular magnets. The mobile carriage is also equipped with magnets to provide magnetic coupling between the piston and carriage. It incorporates the following features:

- end of stroke cushioning/bumpers
- mounting:
 - threaded endcaps
 - optional foot mount
 - optional flange mount



Sensors

For sensors see page B294.



Cushioning

Ø 16 mm: non-adjustable bumper or adjustable pneumatic cushioning

Ø 20 and 32 mm: adjustable pneumatic cushioning

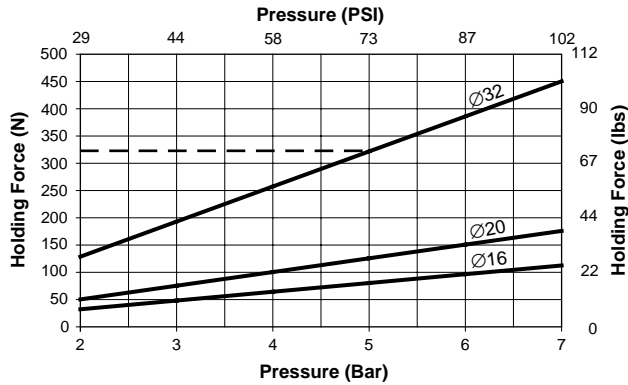
Mounting

The mobile carriage is free to rotate 360° around the cylinder axis. This feature facilitates the adaptation of the cylinder to various mounting arrangements.

The load must be guided by an external device.

B	Rodless Cylinders
	Actuator Products
Series	OSP-P
Series	P1X
Series	P1Z
Series	GDL

Technical data



Example:

Pressure: 5 bar

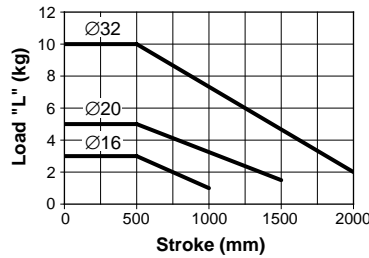
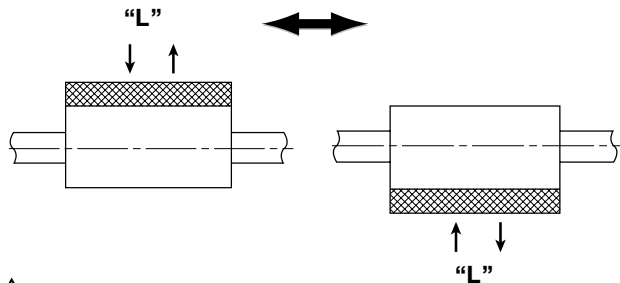
$F_{max} = 322 \text{ N}$ for Ø 32 mm cylinder

⚠ Calculate the kinetic energy due to the load moved

Acceleration or deceleration should not exceed the magnetic coupling force of cylinder

Load diagrams

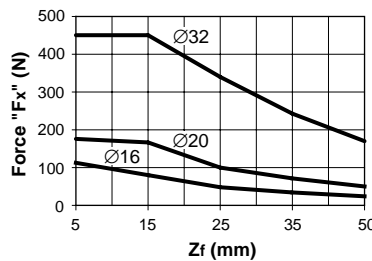
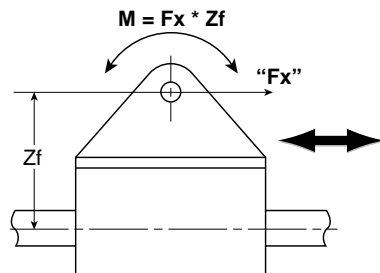
Permissible radial loads, horizontal mounting



Ø	L Max.	
	(kg)	(lbs.)
16	3	6.6
20	5	11.0
32	10	22.0

⚠ The load must be guided by a device from outside the cylinder

Permissible axial loads, horizontal mounting

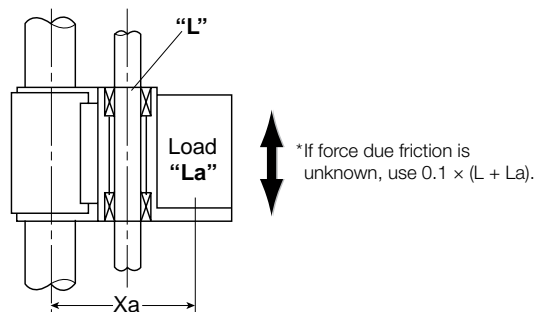


Ø	Max. Moment M		Max. F_x^*	
	(Nm)	(in-lbs.)	(N)	(lbs.)
16	1.2	11	112	25
20	2.5	22	175	39
32	8.5	75	450	101

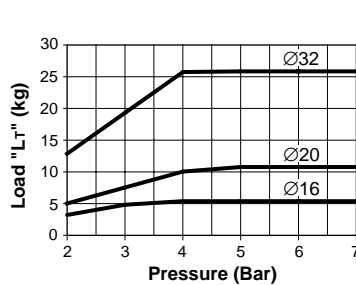
* at 7 bar

⚠ The load must be guided by a device from outside the cylinder

Permissible axial loads, vertical mounting



*If force due to friction is unknown, use $0.1 \times (L + La)$.



Ø	Max. load T		Max. X_A	
	(kg)	(lbs.)	(mm)	(in.)
16	5	11	122	4.8
20	10	22	142	5.6
32	24	53	174	6.8

* at 6.5 bar

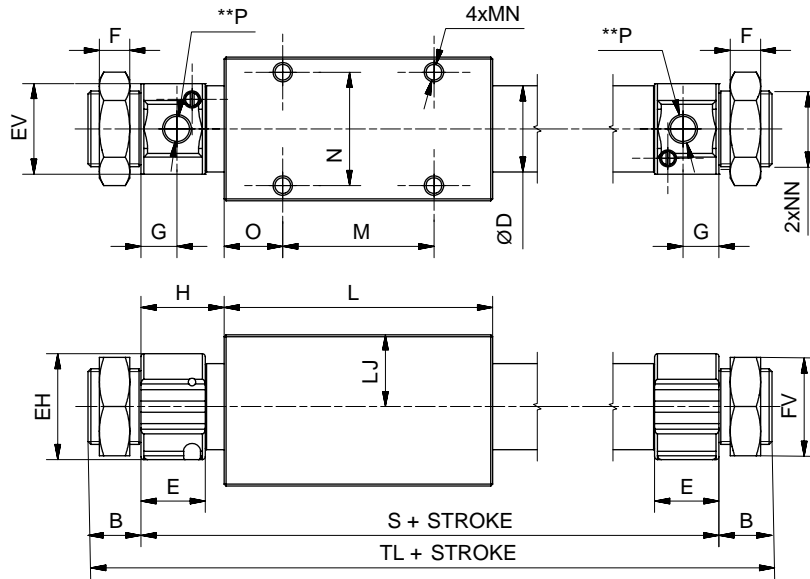
L = Load guided by external device
La = Direct mounting onto the cylinder
Ff = Force due to friction*

LT = Load weight + guiding device weight + force due to friction



Dimensions

** = Air supply Ports



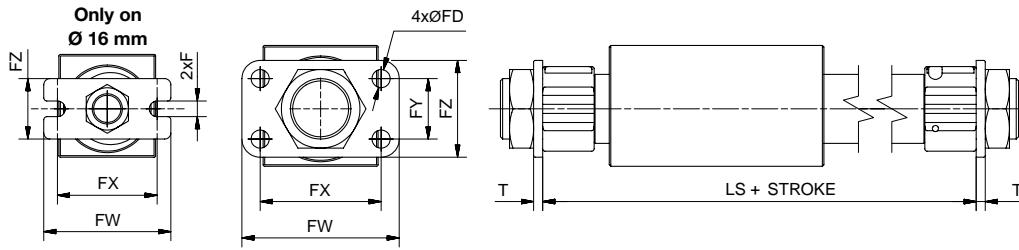
Ø	A	AA	B	ØD	E	ØEH	ØEV	F	FV	G	H	L	LJ	M	N	O
16	32 (1.26)	34 (1.34)	10 (0.39)	18 (0.71)	11 (0.43)	18 (0.71)	18 (0.71)	4 (0.16)	14 (0.55)	5.5 (0.22)	15.5 (0.61)	61 (2.40)	16 (0.63)	34 (1.34)	25 (0.98)	13.5 (0.53)
20	38 (1.50)	40 (1.57)	14 (0.55)	22.8 (0.90)	17 (0.67)	28 (1.10)	24 (0.94)	8 (0.31)	26 (1.02)	9.5 (0.37)	22 (0.87)	71 (2.80)	19 (0.75)	40 (1.57)	30 (1.18)	15.5 (0.61)
32	60 (2.36)	60 (2.36)	16 (0.63)	35 (1.38)	17 (0.67)	40 (1.57)	36 (1.42)	8 (0.31)	32 (1.26)	9.5 (0.37)	23 (0.91)	87 (3.43)	30 (1.18)	50 (1.97)	40 (1.57)	18.5 (0.73)

Ø	P	MN	NN	S	TL
16	M5 x 0.8 (10-32)	M4 x 0.7 x 6	M10 x 1 x 6	92 (3.62)	112 (4.41)
20	G 1/8 (1/8)	M5 x 0.8 x 8	M20 x 1.5 x 7	115 (4.53)	143 (5.63)
32	G 1/8 (1/8)	M6 x 1 x 10	M26 x 1.5 x 7	133 (5.24)	165 (6.50)

B
 Rodless Cylinders
 Actuator Products
 OSP-P Series
 P1X Series
 P1Z Series
 GDL Series

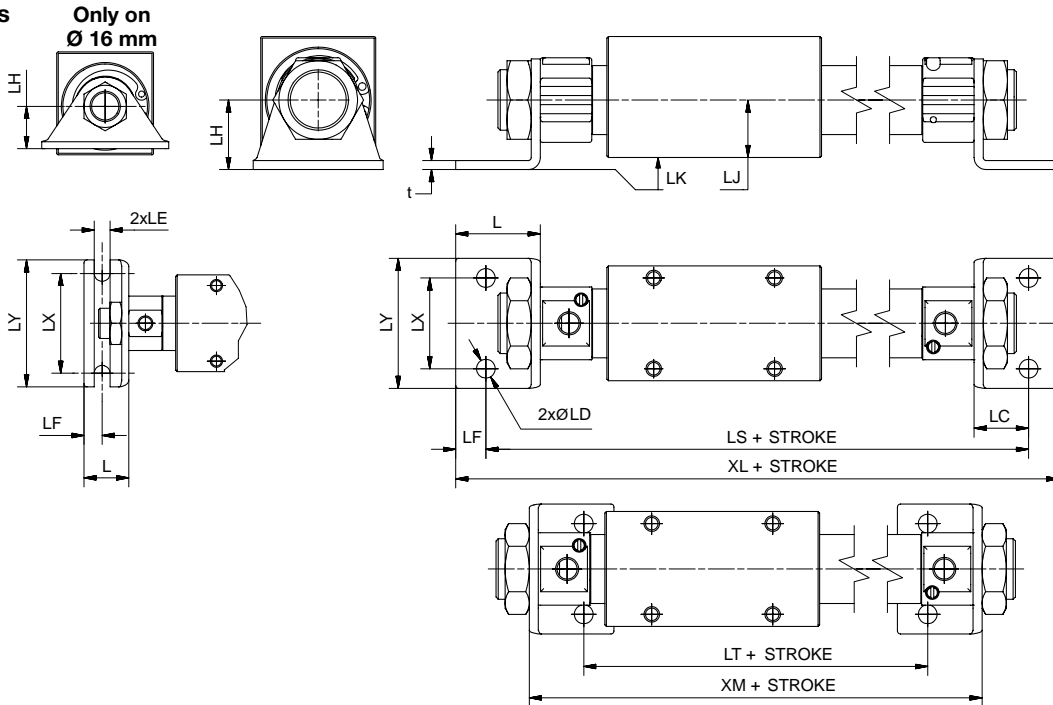
Mountings

Flanges



Ø	F	ØFD	FW	FX	FY	FZ	T	LS	Order code
16	5.2 (0.20)	-	42 (1.65)	33 (1.30)	-	20 (0.79)	2.3 (0.09)	92 (3.62)	PDC15-FH
20	-	6 (0.24)	52 (2.05)	40 (1.57)	20 (0.78)	32 (1.26)	3 (0.12)	115 (4.53)	PK1A20-FH
32	-	7 (0.28)	80 (3.15)	64 (2.52)	28 (1.10)	44 (1.73)	5 (0.20)	133 (5.24)	PK1A25-FH

Brackets



Ø	t	L	LC	ØLD	LE	LF	LH	LJ	LK	LX	LY	LS	LT	XL	XM	Order code
16	2.3 (0.09)	14.8 (0.58)	8.8 (0.35)	-	5.2 (0.20)	6 (0.24)	14 (0.55)	16 (0.63)	-2 (-0.08)	33 (1.30)	42 (1.65)	109.6 (4.32)	79 (3.11)	121.6 (4.79)	96.6 (3.80)	PDC15-LB*
20	3 (0.12)	28 (1.10)	18 (0.71)	6.2 (0.24)	-	10 (0.39)	23 (0.91)	19 (0.75)	4 (0.16)	30 (1.18)	43 (1.69)	151 (5.94)	85 (3.35)	171 (6.73)	121 (4.76)	PK1A20-LB*
32	3 (0.12)	35 (1.38)	23 (0.91)	7 (0.28)	-	12 (0.47)	30 (1.18)	30 (1.18)	0 (0)	46 (1.81)	62 (2.44)	179 (7.05)	**	203 (7.99)	**	PK1A25-LB*

* Set of 2 pcs
 ** Impossible mounting

B

Rodless Cylinders
Actuator Products

OSP-P
Series

P1X
Series

P1Z
Series

GDL
Series



The magnetic rodless cylinder is a pneumatic cylinder featuring a mobile piston with annular magnets.

The mobile carriage is also equipped with magnets to give magnetic coupling between the piston and carriage. The carriage slides along the main tube and is guided by two guide rods.

It incorporates the following features:

- Built-in guide rods
- Adjustable end-of-stroke bumpers
- Optional magnetic piston sensing
- Optional transfer porting

Guidance

The guided version consists of a carriage fitted with 4 plain bearings, guided on 2 rods.

This design provides high rigidity, accurate guidance and smooth movement of the carriage.

End of stroke

Each endplate can be fitted with an adjustable bumper or self-compensating shock absorbers.

Optional transfer porting

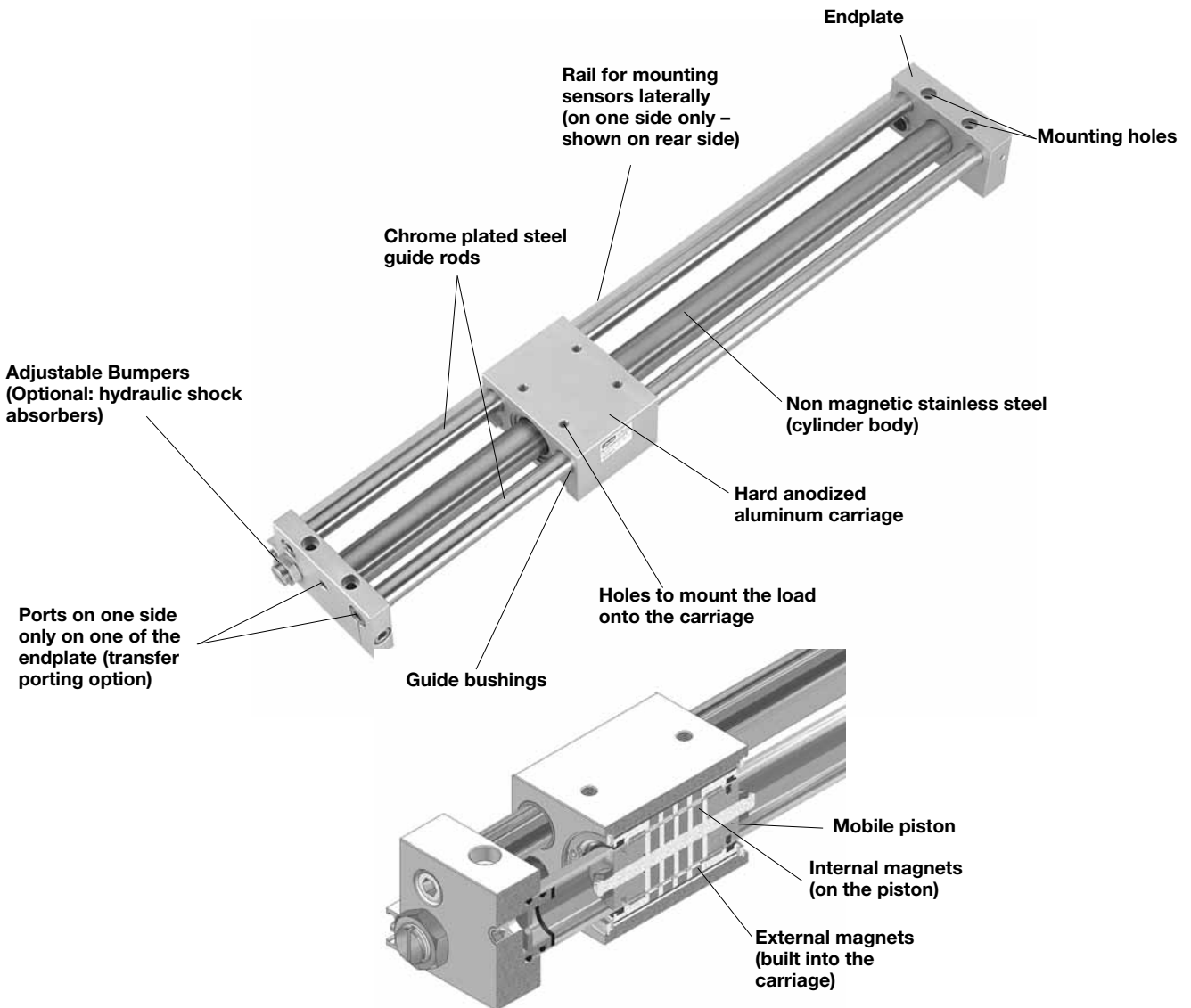
Cylinder air supply is located on one end only to facilitate cylinder installation and avoid long tube lengths for longer strokes.

Options

The following options are available to enhance the Magnetic Rodless cylinder functions:

- External bumpers: when low operating pressure, light loads and short strokes.
- External hydraulic shock absorbers: recommended for arduous applications.
- Reed and solid state sensors: provide sensing at an adjustable position along the entire stroke of the cylinder.

B	Rodless Cylinders Actuator Products
	OSP-P Series
	P1X Series
	P1Z Series
	GDL Series



Standard cylinder (15 positions)	Options (16 positions)																																														
<p>P 1 Z M 0 1 6 T N N</p> <table border="1" style="margin-bottom: 10px;"> <tr><th colspan="2">Bore</th></tr> <tr><td>016</td><td>Ø 16 mm</td></tr> <tr><td>020</td><td>Ø 20 mm</td></tr> <tr><td>032</td><td>Ø 32 mm</td></tr> </table> <table border="1" style="margin-bottom: 10px;"> <tr><th colspan="2">Cushioning</th></tr> <tr><td>C</td><td>Adjustable stop</td></tr> <tr><td>H</td><td>Hydraulic shock absorber</td></tr> </table> <table border="1" style="margin-bottom: 10px;"> <tr><th colspan="2">Function</th></tr> <tr><td>G</td><td>Guided</td></tr> <tr><td>T</td><td>Guided with transfer porting</td></tr> </table>	Bore		016	Ø 16 mm	020	Ø 20 mm	032	Ø 32 mm	Cushioning		C	Adjustable stop	H	Hydraulic shock absorber	Function		G	Guided	T	Guided with transfer porting	<p>0 5 0 0 B N M L</p> <table border="1" style="margin-bottom: 10px;"> <tr><th colspan="2">Strokes</th></tr> <tr><td>0200</td><td>200 mm</td></tr> <tr><td>1000</td><td>1000 mm</td></tr> </table> <table border="1" style="margin-bottom: 10px;"> <tr><th colspan="2">Options</th></tr> <tr><td>B†</td><td>None</td></tr> <tr><td>W</td><td>With options</td></tr> </table> <table border="1" style="margin-bottom: 10px;"> <tr><th colspan="2">End of stroke sensing</th></tr> <tr> <th>NPN</th> <th>PNP</th> <th>Reed</th> <th>Sensors type (Qty: 2)</th> </tr> <tr> <td>L</td> <td></td> <td></td> <td>With rail, no sensor</td> </tr> <tr> <td>N† (std.)</td> <td></td> <td></td> <td>No sensor rail</td> </tr> </table> <p><small>† Standard when "B" option is used.</small></p>	Strokes		0200	200 mm	1000	1000 mm	Options		B†	None	W	With options	End of stroke sensing		NPN	PNP	Reed	Sensors type (Qty: 2)	L			With rail, no sensor	N† (std.)			No sensor rail
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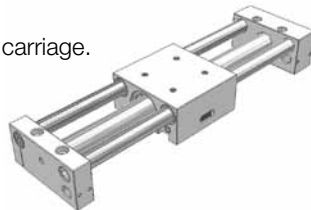
Range

Magnetic rodless cylinder, guided version

Available in 3 diameters with possible strokes up to 1500 mm (59 in).

4 tapped mounting holes on the carriage.

Endcap mounting provided by 4 tapped and counterbored holes.



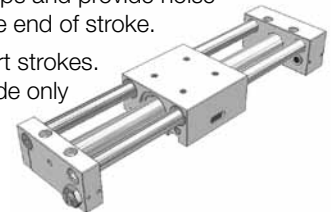
Options

External adjustable bumpers

Can be fitted on cylinder endcaps and provide noise reduction and adjustment at the end of stroke.

Used when light loads and short strokes.

Pneumatic air supply on one side only (transfer porting option).



External hydraulic shock absorbers

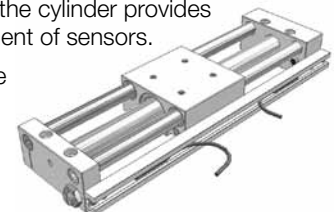
Self-compensating hydraulic shock absorbers can be used instead of bumpers for a greater cushioning effect at the end of stroke.

They are recommended for arduous applications.

Reed or solid state sensors:

A rail fitted on one side only of the cylinder provides mounting and position adjustment of sensors.

The rail is located on same side as the end of stroke stops.



General features

Specifications for P1Z series magnetically coupled rodless

Operating medium	Compressed Air		
Maximum pressure bar (PSI)	7 (100)		
Minimum pressure bar (IPS)	2 (29)		
Bore size mm (inch nominal)	16 (5/8)	20 (3/4)	32 (1 1/4)
Port size	M5 BSPP, 10-32 NPT	1/8 BSPP, 1/8 NPT	1/8 BSPP, 1/8 NPT
Ambient temperature °F (°C)	15 to 140°F (-10 to 160°C)		
Maximum stroke mm (inch)	750 (29.5)	1000 (39.4)	1500 (59.1)
Stroke tolerance mm	+1.5/-0; >1000 +2/-0		
Piston speed m/s (inch/sec)	0.1 to 0.4 (4 to 15.75)		
Max. coupling force N (Lbs)	157 (35)	236 (53)	703 (158)
Cushion	Air cushion standard		
Lubrication	Not required (If you choose to lubricate your system, continuing lubrication will be required.)		

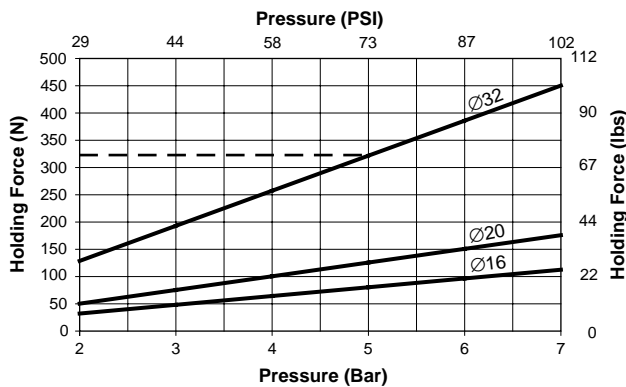
Weights

Bore size		Weight at zero stroke		Weight per 25mm of stroke	
mm	inch	kg	lbs	kg	lbs
16	5/8	0.9	1.98	0.05	0.11
20	3/4	1.52	3.35	0.08	0.17
32	1-1/4	3.63	8.00	0.13	0.29

Options

Function	Description
	Sensors mounting in T-slot
Detection	Reed or solid state sensors (PNP or NPN)
External rubber bumpers	Supplied pre-fitted in endplates if chosen
Hydraulic shock absorbers	Self-compensating shock absorbers supplied pre-fitted in endplates if chosen

Pressure in the cylinder / pneumatic holding force



Example:

Pressure: 5 bar (73 PSI)

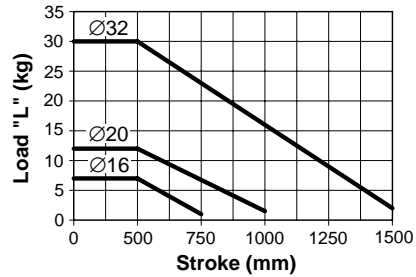
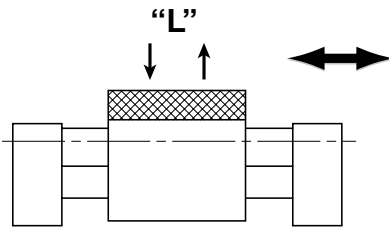
$F_{max} = 322 \text{ N (72 lbs.)}$ for Ø 32 mm cylinder

⚠ Calculate the kinetic energy due to the load moved.

Acceleration or deceleration should not exceed the magnetic coupling force of cylinder.

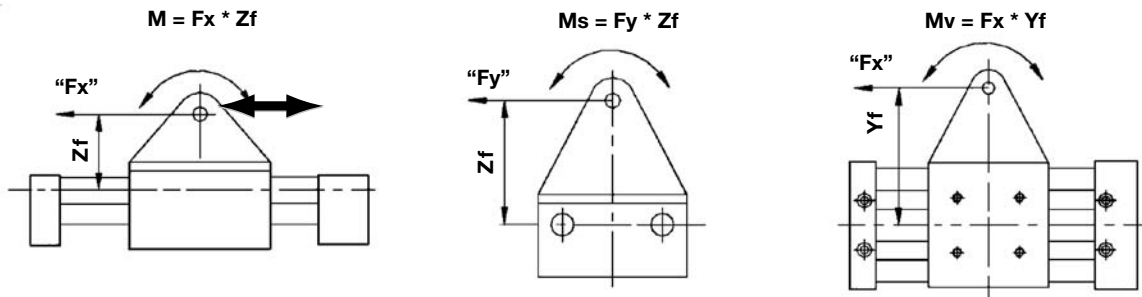
Load diagrams

Permissible radial loads, horizontal mounting



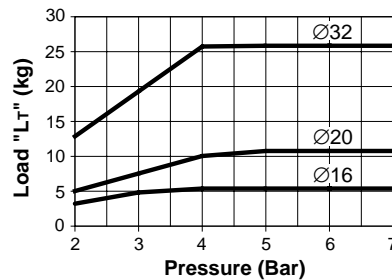
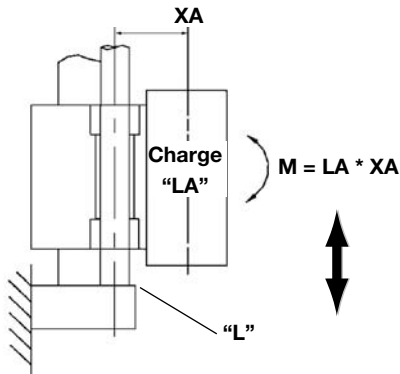
Ø	L Max.	
	(kg)	(lbs.)
16	7	15
20	12	26
32	30	66

Permissible axial loads, horizontal mounting



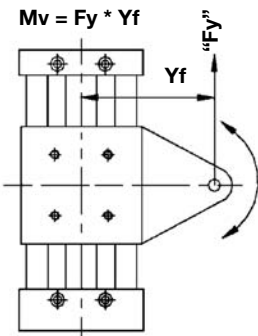
Ø	Max. moment M		Max. moment Ms		Max. moment Mv	
	(Nm)	(in-lbs.)	(Nm)	(in-lbs.)	(Nm)	(in-lbs.)
16	2.4	21	0.5	4.4	2.4	21
20	5	44	1	8.9	5	44
32	15	133	3	26.6	15	133

Permissible axial loads, vertical mounting



Ø	Max. load LT*	Max. XA
	(kg)	(mm)
16	5	122
20	10	142
32	24	174

* at 6.5 bar



- L** = Load guided by external device
 - LA** = Mounting direct onto cylinder
 - LT** = Load weight + guiding device weight + force due to friction
 - Ff*** = Force due to friction
- *If force due to friction is unknown, use 0.1 * (L + LA)

B

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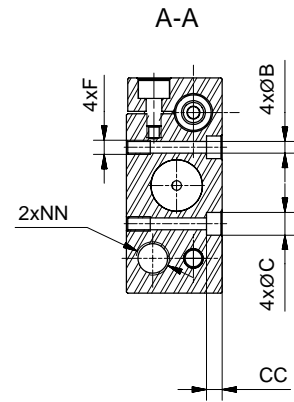
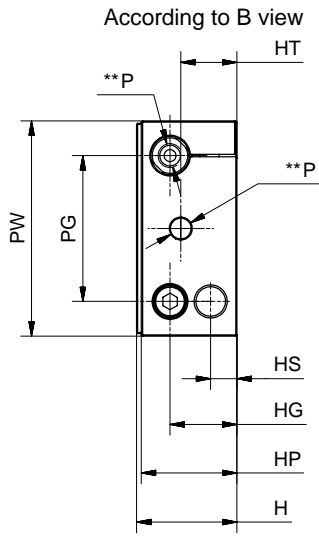
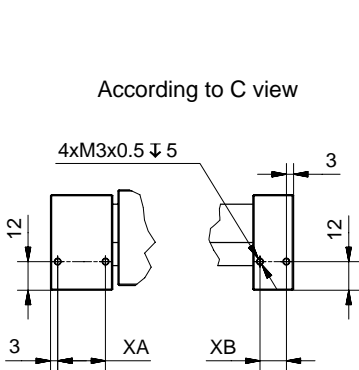
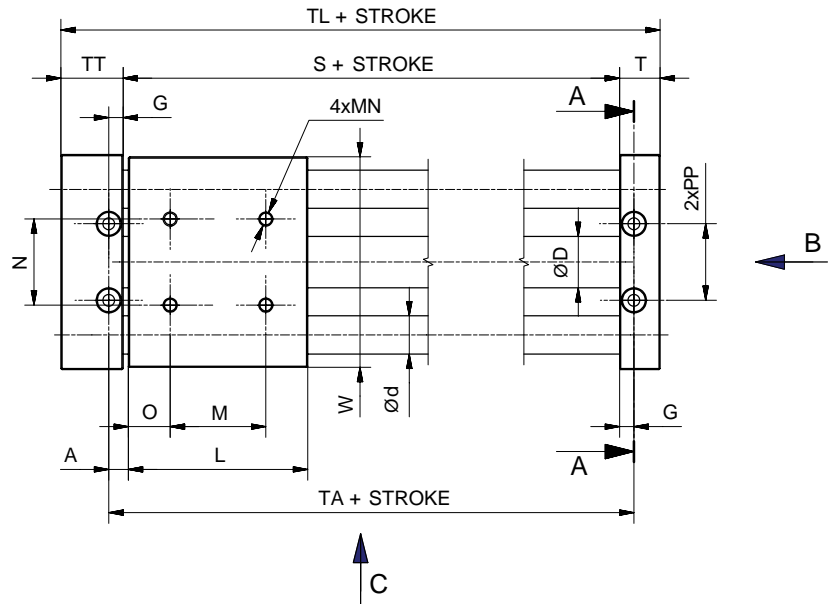
P1X
 Series

P1Z
 Series

GDL
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Dimensions

** = Air supply ports



Ø	A	ØB	ØC	CC	ØD	Ød	F	G	H	HP	HG	HS	HT	L	M	N	MN
16	8 (.31)	4.3 (.17)	8 (.31)	4.5 (.18)	17.4 (.69)	12 (.47)	M5x0.8 x 10	6 (.24)	34 (1.34)	33.5 (1.32)	25 (0.98)	12 (.47)	21.5 (0.85)	65 (2.56)	34 (1.34)	30 (1.18)	M5 x 0.8 x 8
20	8 (.31)	5.5 (.22)	9.5 (.37)	6.5 (.26)	21.4 (.84)	16 (.63)	M6x1 x 10	6 (.24)	42 (1.65)	40 (1.57)	28 (1.10)	12 (.47)	23.5 (.93)	75 (2.95)	40 (1.57)	36 (1.42)	M6 x 1 x 10
32	13.5 (.53)	8.7 (.34)	14 (.55)	8 (.31)	33.6 (1.32)	20 (.79)	M10x1.5 x 15	10 (.39)	66 (2.60)	64 (2.52)	46 (1.81)	20 (.79)	41 (1.61)	91 (3.58)	60 (2.36)	50 (1.97)	M8 x 1.25 x 12

Ø	NN	O	P	PG	PW	PP	T	TT	S	TA	TL	W	XA	XB
16	M10 x 1 x 6	15.5 (0.61)	M5 x 0.8	50 (1.97)	70 (2.76)	27 (1.06)	14 (0.55)	23 (0.91)	69 (2.76)	81 (3.19)	106 (4.17)	68 (2.68)	17 (0.67)	8 (0.31)
20	M14 x 1.5 x 7	17.5 (0.69)	G1/8	61 (2.40)	90 (3.54)	32 (1.26)	17 (0.67)	26 (1.02)	79 (3.11)	91 (3.58)	122 (4.80)	88 (3.46)	20 (0.79)	11 (0.43)
32	M20 x 1.5 x 7	15.5 (0.61)	G1/8	86 (3.39)	122 (4.80)	50 (1.97)	20 (0.79)	28 (1.10)	97 (3.82)	117 (4.61)	145 (5.71)	118 (4.65)	22 (0.87)	14 (0.55)

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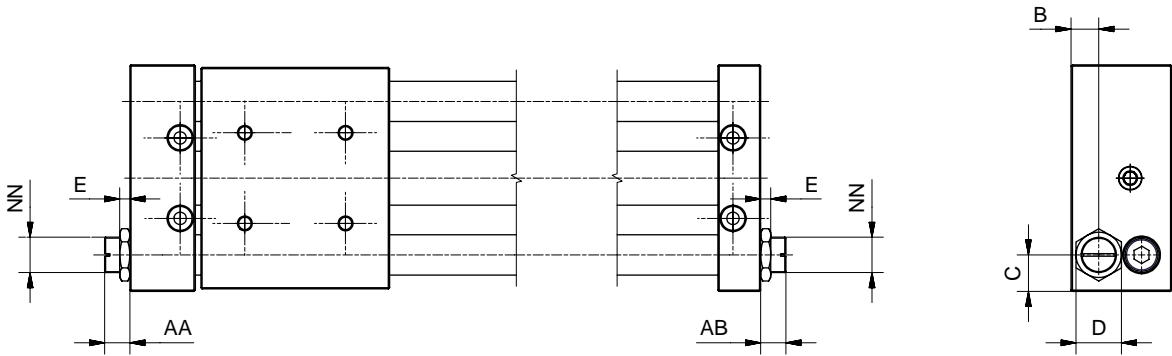


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www.comoso.com

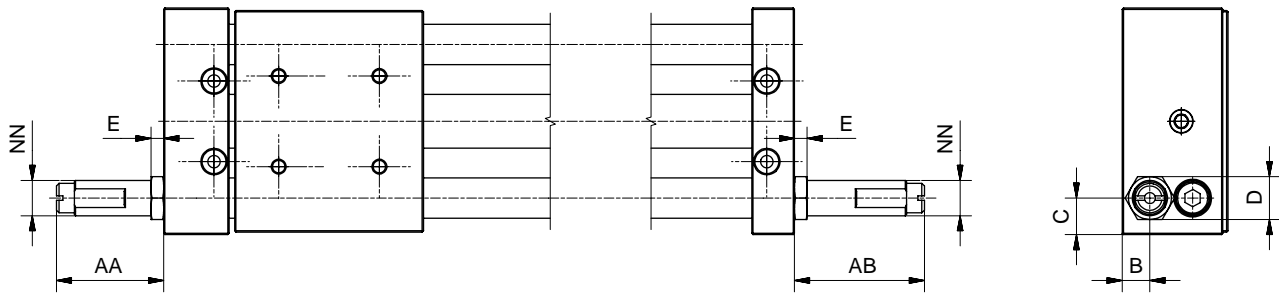
Parker Hannifin Corporation
 Pneumatic Division
 Richland, Michigan
www.parker.com/pneumatics

Optional external adjustable bumpers



Ø	AA	AB	B	C	D	E	NN
16	7.5 (0.30)	6.5 (0.26)	12 (0.47)	10 (0.39)	14 (0.55)	4 (0.16)	M10 x 1
20	10 (0.39)	10 (0.39)	11 (0.43)	14.5 (0.57)	18 (0.71)	4 (0.16)	M14 x 1.5
32	11 (0.43)	12 (0.47)	20 (0.79)	18 (0.71)	26 (1.02)	8 (0.31)	M20 x 1.5

External hydraulic shock absorbers



Ø	AA	AB	B	C	D	E	NN
16	18 (0.71)	27 (1.06)	12 (0.47)	10 (0.39)	13 (0.51)	3 (0.12)	M10 x 1
20	50 (1.97)	59 (2.32)	11 (0.43)	14.5 (0.57)	17 (0.67)	5 (0.20)	M14 x 1.5
32	56 (2.20)	66 (2.60)	20 (0.79)	18 (0.71)	24 (0.94)	6 (0.24)	M20 x 1.5

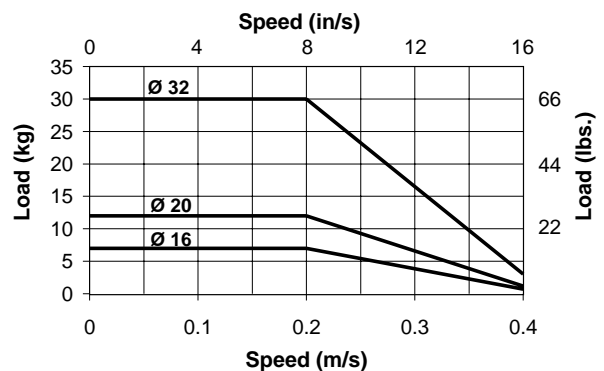
Loads / speeds diagram

The diagram to the right exhibits the P1Z cylinders maximum capacities with an adjustable bumper.

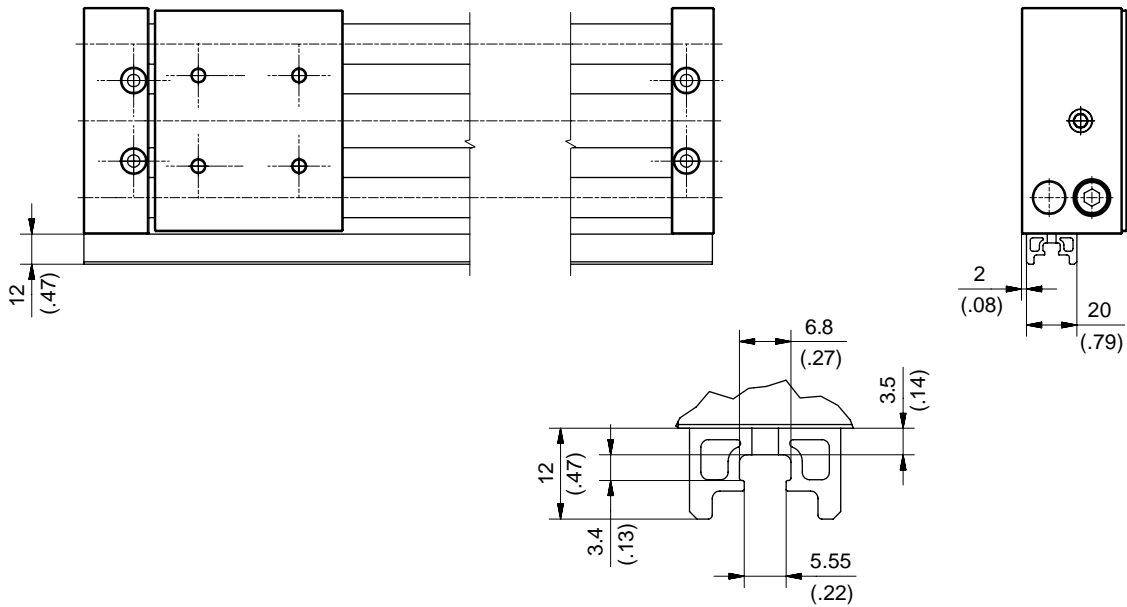
If the intersection exhibits between speed and load is above the curves, it is imperative to use hydraulic shock absorbers to prevent cylinder damage.

Example:

- Ø 32 mm cylinder with a 0.3 m/s speed and 25 kg load
 Choose the hydraulic shock absorber option
- Ø 20mm cylinder with 0.2 m/s speed and 10 kg load
 Choose the adjustable bumpers option



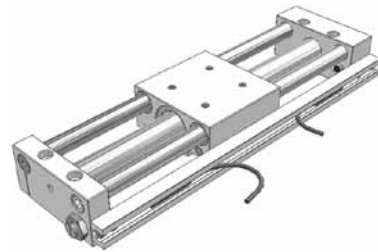
Optional sensor rail



Detection

Reed or solid state sensor mounting is possible on one cylinder side only.

External aluminum profile integrates 1 T-slot for sensor mounting.



Repair kits

Ø	Basic version	Guided version
16 (Cushioned)	P1ZM016SAN-R	–
16 (Non-cushioned)	P1ZM016SNN-R	P1ZM016GNN-R
20	P1ZM020SAN-R	P1ZM020GNN-R
32	P1ZM032SAN-R	P1ZM032GNN-R

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