

P1E Series ISO Cylinders

High fibre nitrile piston rod seal and polyurethane wiper ring.

Combined cushion/non return seal for fast breakaway speed of the piston.

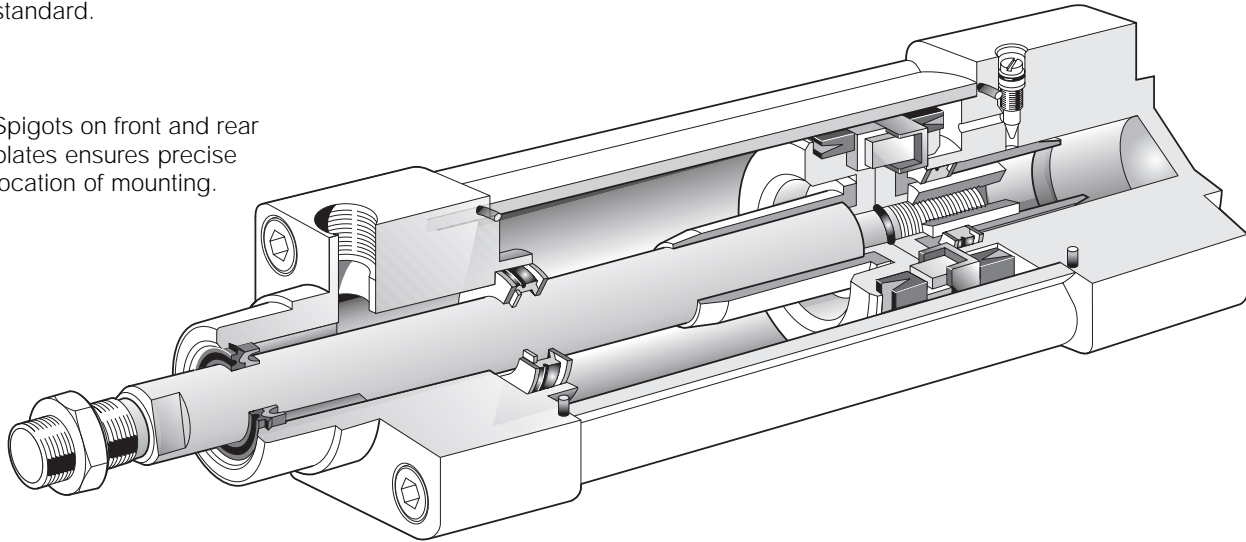
Aluminium tube to give high strength to weight ratio. Anodised as standard.

Zinc diecast end plates on 32, 40 & 50mm bore cylinders. On bore sizes above 63mm weight saving aluminium diecastings are used.

Retained cushion adjusting screw allows a high degree of control over the cushion and will not blow out during adjustment.

Stainless steel piston rod as standard.

Spigots on front and rear plates ensures precise location of mounting.



Oil retaining bronze bearing ensures extreme piston rod accuracy.

Extra long acetal cushion sleeves for improved life and long cushion length.

Polyurethane piston seals pre-lubricated for outstanding non-lube operation.

Acetal wear strip on piston aids smooth operation. A magnetic strip is housed within the wear strip as standard.

P1E Series ISO Cylinders

The P1E Series range of I.S.O. cylinders are precision made to the most exacting standards to provide the finest pneumatic cylinders available with the widest choice of options.

Standardized installation

Complying with I.S.O. 6431, VDMA 24562 and DIN 24335, the exacting standard demanded by European automotive manufacturers, the design of the P1E Series I.S.O. cylinders far exceeds the quality and performance offered with ordinary pneumatic cylinders.

Quality right from the start

Quality starts with the design brief, and remains the top priority throughout the design stages. Quality is also prioritized in planning, purchasing, production, distribution and service. Parker Pneumatic meets the quality assurance standards of ISO 9001.

Adaptability for use with electronics

P1E Cylinders are equipped as standard with magnetic pistons for proximity position sensing. A full range of sensors enables the cylinders to be integrated into the most advanced automation systems. The sensors can be fitted at any position along the cylinder stroke.

Design

In the development of P1E cylinders, great emphasis was placed on the importance of long service life, and operation with unlubricated air characteristics essential for applications in demanding environments.

Long service life

Proven sealing systems and pre-lubricated bearings, together with surface smoothness and precise tolerances in all constituent parts, provide long, safe and reliable service life.

Effective cushioning

A long cushioning zone and simple, adjustable cushion screw facilitates fine adjustment and permits a large mass, high velocity and short cycle time.

Hard anodised cylinder tube

The basic P1E Series cylinder features hard anodised cylinder tube as standard and is pre lubricated on assembly, the tube finish and seal quality is such that in most applications they can operate without lubrication for the normal service life of a pneumatic cylinder. This coating to the tube produces unrivalled low friction operation particularly in low speed applications.

High temperature cylinders

For high temperature applications Viton high quality seals and P.T.F.E. wear strips can be incorporated.

The basic temperature range is -10°C to $+70^{\circ}\text{C}$, for applications above this temperature please consult Technical Sales.

Magnetic cylinders

Available for use with reed switches or with specified induction sensors, the magnetic versions feature a encapsulated polymer magnetic.

This protects the magnet from wear and maintains the low stiction qualities of the cylinder.

Variants

In addition to the basic versions, a number of special variants of the Parker P1E cylinders are available.

The special variants are designed to meet the most exacting demands.

The available options include:

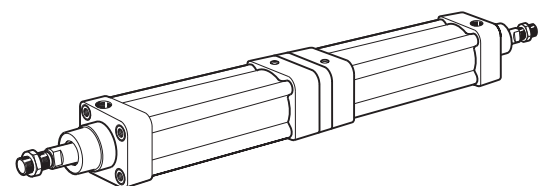
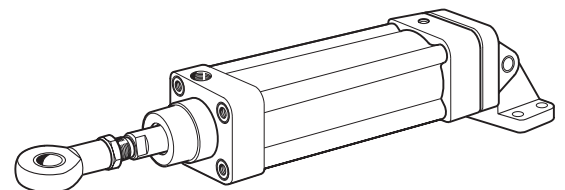
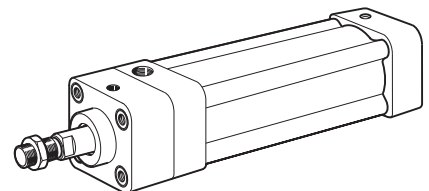
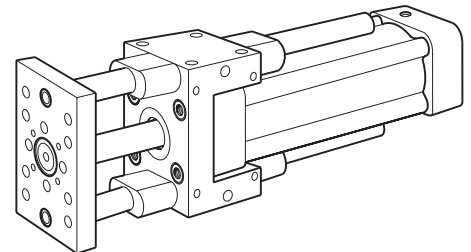
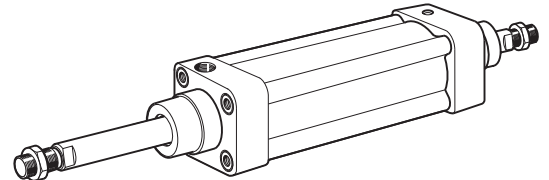
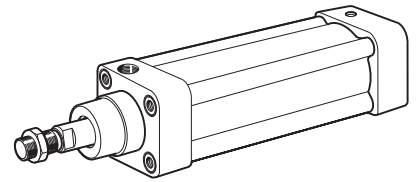
- Non-standard stroke lengths
- Choice of two different piston-rod materials
- Extended piston rods
- Double piston rods
- External guide, for controlled guidance of the piston rod
- Piston-rod locking device, which enables the piston rod to be locked in any position
- High temperature cylinder versions for use in ambient temperatures up to $+180^{\circ}\text{C}$
- Factory fitted mountings
- Rod gaiter fitted.

Operation with proximity position sensing

A complete range of sensors for proximity position sensing is available. The sensors are of the reed and solid state type. They can be supplied with flying leads, or with connector plugs.

Complete range of mountings

A complete range of surface-treated mountings according to ISO, VDMA and AFNOR are available as accessories.



P1E Series ISO Cylinders

Technical information

Available cylinder thrust

Cylinder Bore	Piston Rod Ø	Piston Area cm ²		Effective Force (N) / Pressure (bar)							
		Extending	Retracting	1		2		3		4	
32	12	8,0	5,9	64	55	129	100	193	166	257	221
40	16	12,6	10,6	100	87	200	174	300	262	400	349
50	20	19,6	16,5	157	137	314	274	470	410	627	547
63	20	31,1	28,0	249	218	498	437	746	655	995	875
80	25	50,0	45,3	402	371	803	742	1205	1114	1606	1485
100	25	78,5	73,6	628	564	1256	1128	1884	1692	2512	2320
125	32	122,66	114,62	962	899	1925	1798	2887	2698	3849	3597
160	40	200,96	188,40	1577	1478	3153	2956	4730	4434	6307	5912
200	40	314,00	301,44	2464	2365	4927	4730	7391	7095	9854	9460

Cylinder Bore	Effective Force (N) / Pressure (bar)											
	5		6		7		8		9		10	
32	332	276	386	322	450	387	515	442	579	498	643	553
40	500	436	600	523	700	610	800	698	900	785	1000	872
50	784	684	941	821	1098	958	1254	1094	1411	1231	1508	1368
63	1244	1092	1493	1310	1742	1529	1990	1747	2239	1966	2488	2184
80	2008	1856	2410	2227	2811	2598	3212	2970	3614	3341	4016	3712
100	3140	2884	3768	3448	4396	4012	5024	4640	5652	5268	6080	5896
125	4812	4496	5774	5395	6736	6295	7698	7194	8661	8093	9623	8992
160	7883	7391	9460	8869	11037	10347	12613	11825	14190	13303	15767	14781
200	12318	11825	14781	14190	17245	16555	19708	18920	22172	21285	24635	23650

Note: The above thrust chart determines practical thrusts, assuming a cylinder efficiency of 80%

Useful Calculations:

Theoretical Force

Push/Extend

$$F = \frac{\pi \times D^2 \times P}{40}$$

Pull/Retract

$$F = \frac{(D^2 - d^2) \times P}{40}$$

Internal friction and losses must be taken into account which will reduce the available force by typically 20%. For fast cycling applications, the effective force should be reduced by 30%.

Theoretical Air Consumption

For the outstroke

Air consumption (l/s)

$$Q_0 = \frac{\pi \times D^2 \times L \times (P + 1,013)}{4052}$$

For the instroke

Air consumption (l/s)

$$Q_1 = \frac{\pi \times (D^2 - d^2) \times L \times (P + 1,013)}{4052}$$

Total air consumption per cycle of cylinder = $Q_0 + Q_1$ (l)

$$\text{Average air flow required} = \frac{Q_0 + Q_1}{T_u + T_1} \text{ (l/s)}$$

Where

F = force in (Newtons)

D = bore diameter (mm)

P = air pressure (bar)

L = stroke (mm)

T_0 = Time to outstroke (s)

T_1 = Time to instroke (s)

d = Piston rod diameter (mm)

Q_0 = air consumption outstroke (l)

Q_1 = air consumption instroke (l)

Technical Information

General

Temperature Range	-10°C to +70°C Polyurethane -10°C to +180°C Viton
Pressure Range	Air: 0 to 10 bar Max.

Materials

Piston Rod:	Stainless Steel to BS 970:303S31 Chrome rod for rod locking cylinders.
Tubing:	Hard anodised aluminium Alloy to BS 1471:6063
Piston:	Ø32 - Ø100 Zinc Die Casting to BS1004A Ø125 - Ø160 Aluminium Alloy BS1490:LM4
End Plates:	Ø32 - Ø50 Zinc Die Casting to BS1004A Ø63 - Ø100 Aluminium Alloy BS 1490:LM24 Ø125 - Ø160 Aluminium Alloy BS1490:LM4
Seals:	Polyurethane Viton Option
Neck Bearing:	Oil Retaining Bronze
Wear Strip:	Polyacetal
Tie Rods:	Zinc Plated Steel to BS 970:220M07
Tie Rod Nuts:	Zinc Plated Steel to BS 970:050A20

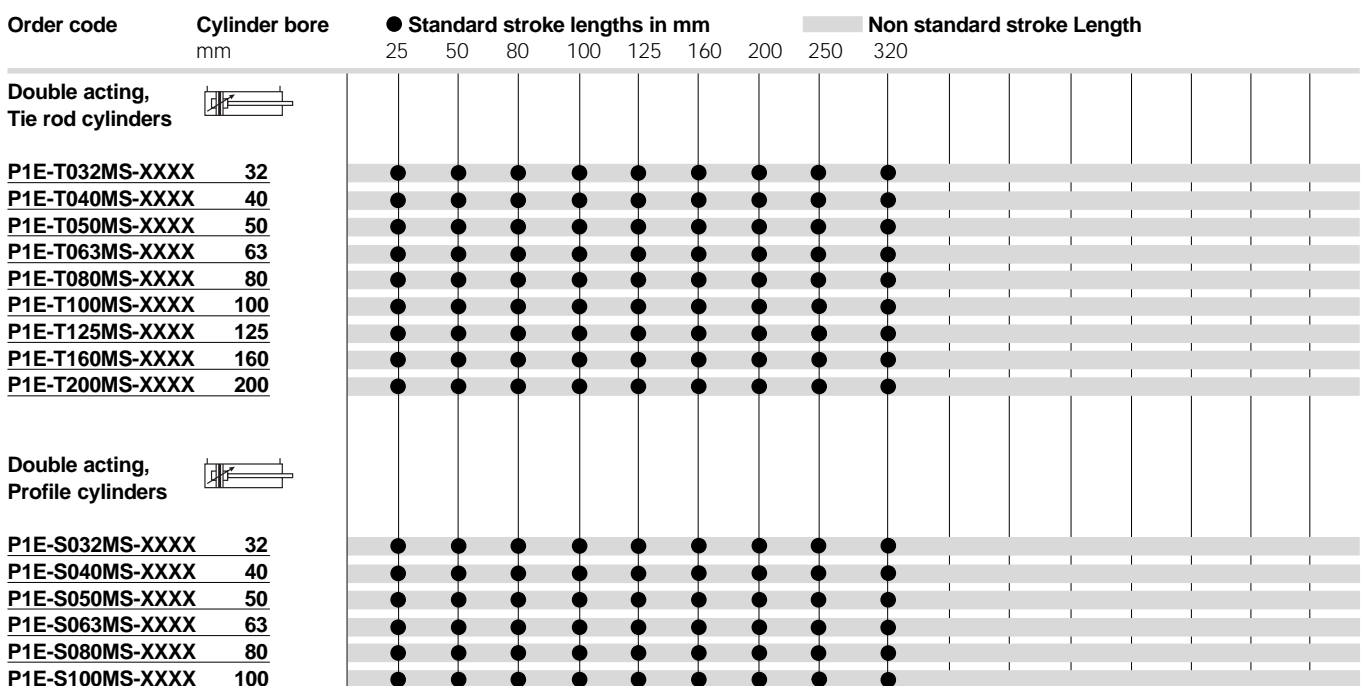
How to order standard cylinders

P 1 E - T 0 3 2 M S - 0 2 5 0

	Bore size	Cylinder version	Cylinder bore mm	Sealing/material	Stroke length
S	32-100	Smooth profile	032	S Standard seals, magnetic piston	0025
T	32-200	Tie rod	040	A Standard seals, non magnetic piston	0050
C	32-100	Centre trunnion, smooth profile	050	F High temperature seals, non magnetic piston	0080
D	32-200	Centre trunnion, tie rod	063	E Rod gaiter fitted, standard seals, magnetic piston	0100
Chrome rod			080	Selected with rod locking	0125
L	32-100	Rod locking smooth profile	100		C Standard seal, magnetic piston chrome rod
M	32-125	Rod locking tie rod	125	T Standard seals non magnetic piston chrome rod	0200
A	32-100	Centre trunnion, rod locking smooth profile	160		0250
E	32-125	Centre trunnion, rod locking tie rod	200		0320

Cylinder type/function	
M	Double acting cushioned
F	Double acting, through rod cushioned

Standard stroke lengths

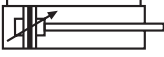
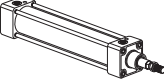


XXXX = Stroke

Note: Non standard stroke lengths are available in 5mm increments.

P1E Series ISO Cylinders

Main data for P1E cylinders

Symbol	Cyl. bore mm	Stroke mm	Weight Kg	Order code	Order code			
				Tie rod cylinders	Profile cylinders			
Double acting Magnetic  	32	25	1,00	P1E-T032MS-0025	P1E-S032MS-0025			
		50	1,10	P1E-T032MS-0050	P1E-S032MS-0050			
		80	1,22	P1E-T032MS-0080	P1E-S032MS-0080			
		Rod thread mm	100	1,30	P1E-T032MS-0100	P1E-S032MS-0100		
		12/M10x1,25	125	1,40	P1E-T032MS-0125	P1E-S032MS-0125		
			160	1,54	P1E-T032MS-0160	P1E-S032MS-0160		
			Port size	200	1,70	P1E-T032MS-0200	P1E-S032MS-0200	
			G1/8	250	1,90	P1E-T032MS-0250	P1E-S032MS-0250	
		320		2,18	P1E-T032MS-0320	P1E-S032MS-0320		
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			40	25	1,08	P1E-T040MS-0025	P1E-S040MS-0025	
				50	1,20	P1E-T040MS-0050	P1E-S040MS-0050	
				80	1,35	P1E-T040MS-0080	P1E-S040MS-0080	
				Rod thread mm	100	1,45	P1E-T040MS-0100	P1E-S040MS-0100
				16/M12x1,25	125	1,57	P1E-T040MS-0125	P1E-S040MS-0125
160	1,75				P1E-T040MS-0160	P1E-S040MS-0160		
Port size	200				1,95	P1E-T040MS-0200	P1E-S040MS-0200	
G1/4	250				2,20	P1E-T040MS-0250	P1E-S040MS-0250	
	320			2,59	P1E-T040MS-0320	P1E-S040MS-0320		
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	50			25	2,06	P1E-T050MS-0025	P1E-S050MS-0025	
				50	2,19	P1E-T050MS-0050	P1E-S050MS-0050	
				80	2,35	P1E-T050MS-0080	P1E-S050MS-0080	
				Rod thread mm	100	2,46	P1E-T050MS-0100	P1E-S050MS-0100
				20/M16x1,5	125	2,59	P1E-T050MS-0125	P1E-S050MS-0125
		160	2,78		P1E-T050MS-0160	P1E-S050MS-0160		
		Port size	200		3,00	P1E-T050MS-0200	P1E-S050MS-0200	
		G1/4	250		3,27	P1E-T050MS-0250	P1E-S050MS-0250	
			320	3,65	P1E-T050MS-0320	P1E-S050MS-0320		
			<hr/>					
			63	25	2,10	P1E-T063MS-0025	P1E-S063MS-0025	
				50	2,25	P1E-T063MS-0050	P1E-S063MS-0050	
				80	2,43	P1E-T063MS-0080	P1E-S063MS-0080	
				Rod thread mm	100	2,53	P1E-T063MS-0100	P1E-S063MS-0100
				20/M16x1,5	125	2,70	P1E-T063MS-0125	P1E-S063MS-0125
160	2,91				P1E-T063MS-0160	P1E-S063MS-0160		
Port size	200				3,15	P1E-T063MS-0200	P1E-S063MS-0200	
G3/8	250				3,45	P1E-T063MS-0250	P1E-S063MS-0250	
	320			3,87	P1E-T063MS-0320	P1E-S063MS-0320		
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	80			25	3,25	P1E-T080MS-0025	P1E-S080MS-0025	
				50	3,46	P1E-T080MS-0050	P1E-S080MS-0050	
				80	3,71	P1E-T080MS-0080	P1E-S080MS-0080	
				Rod thread mm	100	3,38	P1E-T080MS-0100	P1E-S080MS-0100
				25/M20x1,5	125	4,09	P1E-T080MS-0125	P1E-S080MS-0125
		160	4,38		P1E-T080MS-0160	P1E-S080MS-0160		
		Port size	200		4,72	P1E-T080MS-0200	P1E-S080MS-0200	
		G3/8	250		5,14	P1E-T080MS-0250	P1E-S080MS-0250	
			320	5,73	P1E-T080MS-0320	P1E-S080MS-0320		
			<hr/>					
			100	25	4,30	P1E-T100MS-0025	P1E-S100MS-0025	
				50	4,57	P1E-T100MS-0050	P1E-S100MS-0050	
				80	4,90	P1E-T100MS-0080	P1E-S100MS-0080	
				Rod thread mm	100	5,12	P1E-T100MS-0100	P1E-S100MS-0100
				25/M20x1,5	125	5,39	P1E-T100MS-0125	P1E-S100MS-0125
160	5,78				P1E-T100MS-0160	P1E-S100MS-0160		
Port size	200				6,22	P1E-T100MS-0200	P1E-S100MS-0200	
G1/2	250				6,77	P1E-T100MS-0250	P1E-S100MS-0250	
	320			7,54	P1E-T100MS-0320	P1E-S100MS-0320		

Non standard strokes on request