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**pneumatics**  
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# Pneumatic cylinders

Series P1E

According to ISO and VDMA

Cylinder diameters 160 and 200 mm


Catalogue PDE2580TCUK-ul. May 2009




ENGINEERING YOUR SUCCESS.

Features	Air cylinder	Hydraulic cylinder	Electro mechanical actuators
Overload safe	***	***	*
Easy to limit force	***	***	*
Easy to vary speed	***	***	*
Speed	***	**	**
Reliability	***	***	***
Robustness	***	***	*
Installation cost	***	*	**
Ease of service	***	**	*
Safety in damp environments	***	***	*
Safety in explosive atmospheres	***	***	*
Safety risk with electrical installations	***	***	*
Risk of oil leak	***	*	***
Clean, hygienic	***	**	*
Standardised measurements	***	***	*
Service life	***	***	*
Hydraulic system required	***	*	***
Weight	**	**	**
Purchase price	***	**	*
Power density	**	***	*
Noise level during operation	**	***	**
High force for size	**	***	*
Positioning possibilities	*	***	***
Total energy consumption	*	**	***
Service interval	*	**	***
Compressor capacity required	*	***	***


\* = good, \*\*=average, \*\*\*=excellent



**Important**  
 Before attempting any external or internal work on the cylinder or any connected components, make sure the cylinder is vented and disconnect the air supply in order to ensure isolation of the air supply.



**Note**  
 All technical data in this catalogue are typical data only.  
 Air quality is essential for maximum cylinder service life (see ISO 8573).



**WARNING**

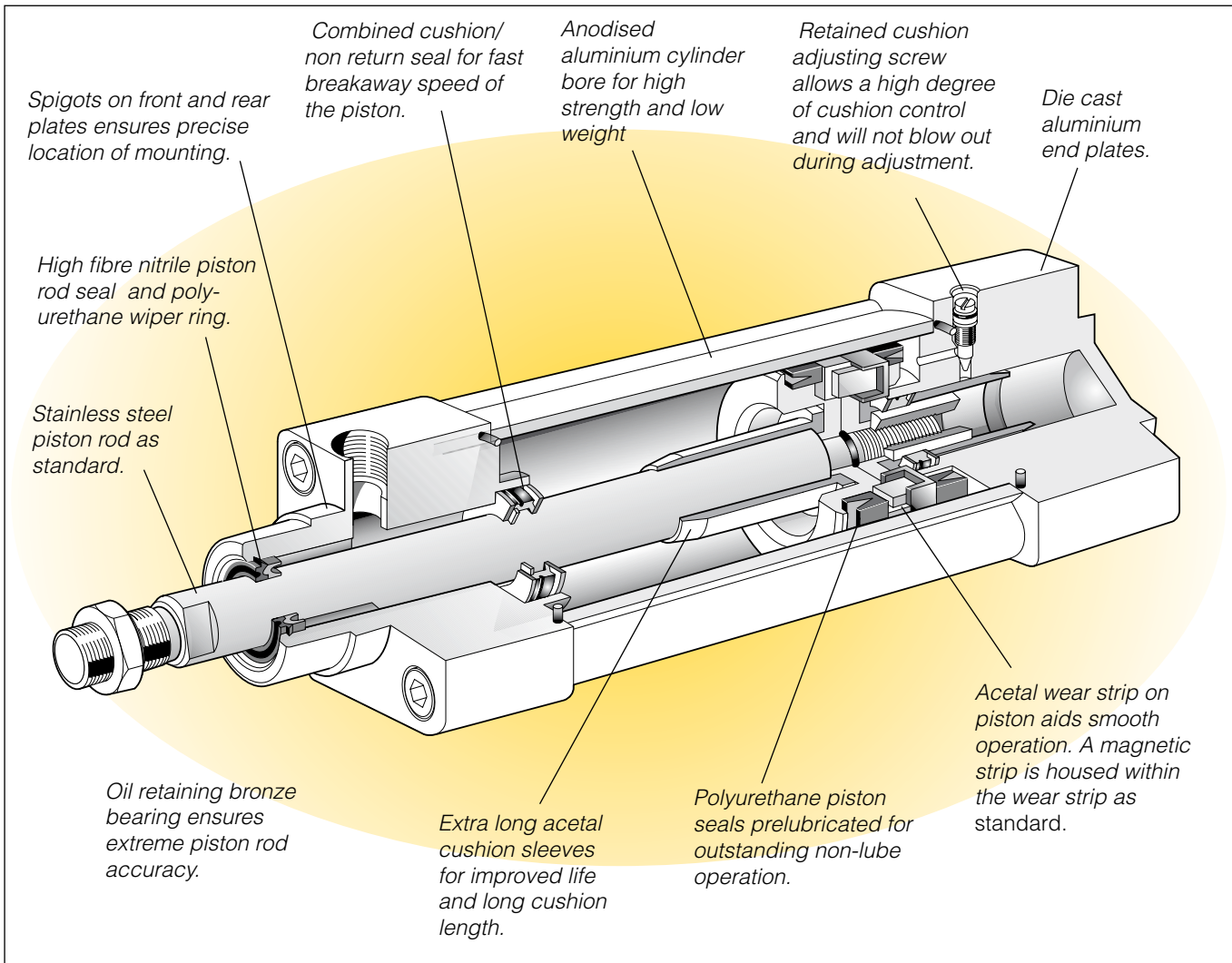
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## ISO Cylinders – P1E

The P1E Series 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.

### Installation dimensions according to international ISO/VDMA standards

The new P1E complies with the current ISO 6431, ISO 15552, VDMA 24562 and AFNOR installation dimension standards. For customer reassurance world-wide.

### High quality

As with our other products, the P1E has been developed with quality in all aspects – specification, design, planning, purchasing, production, distribution and service. We have been certified under the ISO 9001 QA standard since 1992. Quality in all our products and services is our prime aim.

### Adaptability for use with electronics

P1E Cylinders are equipped as standard with magnetic pistons for 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.

### Anodised cylinder barrel

The basic P1E Series cylinder features anodised cylinder tubes as standard and are pre lubricated on assembly. The cylinder bore finish and seal quality are such that in most applications they can operate without lubrication for the normal service life of a pneumatic cylinder.

### High temperature cylinders

For high temperature applications, we can offer cylinders with high quality fluorocarbon rubber seals and P.T.F.E. wear strips.

### Magnetic cylinders

Available for use with electronic or reed sensors, the magnetic versions feature an encapsulated polymer magnet. This protects the magnet from wear and maintains low friction.

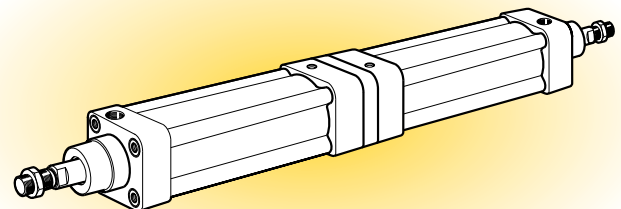
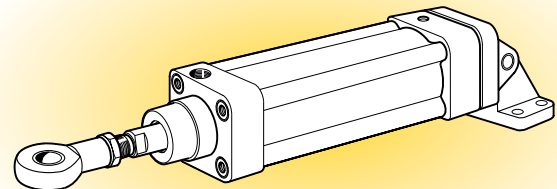
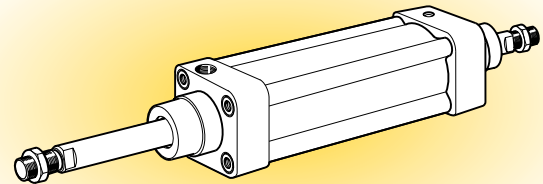
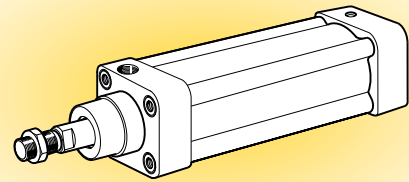
### Variants

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
- Through piston rod
- High temperature cylinder versions for use in ambient temperatures up to +180 °C
- Factory fitted mountings

### Complete range of mountings

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



**Cylinder forces, double acting variants**

Cyl. bore/ pist. rod mm	Stroke	Piston area		Max theoretical force in N (bar)								
		cm <sup>2</sup>		1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0
<b>160/40</b>	+	201,1	2011	4021	6032	8042	10053	<b>12064</b>	14074	16085	18096	20106
	-	188,5	1885	3770	5655	5740	9425	<b>11310</b>	13195	15080	16965	18850
<b>200/40</b>	+	314,2	3142	6283	9425	12566	15708	<b>18850</b>	21991	25133	28274	31416
	-	301,6	3016	6032	9048	12064	15080	<b>18096</b>	21112	24127	27043	30159

+ = Outward stroke  
- = Return stroke

**Note!**  
Select a theoretical force 50-100% larger than the force required

**Main data: P1E**

Cylinder beteckning	Cylinder bore area		Piston rod dia. area		Piston rod thread	Total mass at 0 mm stroke		Mass moving parts at 0 mm stroke		Air con- sump- tion	Conn. thread
	mm	cm <sup>2</sup>	mm	cm <sup>2</sup>		kg	Supplement per 10 mm stroke kg	kg	Supplement per 10 mm stroke kg		
P1E-T160	<b>160</b>	201,1	40	12,6	M36x2	11,71	0,228	11,71	0,228	2,814 <sup>1)</sup>	G3/4
P1E-T200	<b>200</b>	314,2	40	12,6	M36x2	15,45	0,252	15,45	0,252	4,396 <sup>1)</sup>	G3/4

1)Free air consumption per 10 mm stroke for a double stroke at 6 bar

**Material specification**

Piston rod	Stainless steel, X 10 CrNiS 18 9
Piston rod seal	Polyurethane
Piston rod bearing	Oil Retaining Bronze
End cover	Black anodised aluminium
Tie Rods	Zinc Plated Steel
Tie Rod Nuts	Zinc Plated Steel
O-ring, internal	Nitrile rubber, NBR
Cylinder barrel	Hard anodised aluminium
Piston	Aluminium
Piston seal	Polyurethane
Piston bearing	Polyurethane
Magnetic ring	Plastic bound magnetic material

**Variants:**

**High-temperature version, type F:**

Piston rod seal	Fluorocarbon rubber, FPM
Piston seal	Fluorocarbon rubber, FPM
O-rings	Fluorocarbon rubber, FPM

**Operation data**

Working pressure	Max 10 bar
Working temperature	max +70 °C min -10 °C
High temp version	max +180 °C min 0 °C

Greased for life, does not normally need additional lubrication. If extra lubrication is given, this must always be continued.

**Working medium, air quality**

Working medium Dry, filtered compressed air to ISO 8573-1 class 3.4.3.

**Recommended air quality for cylinders**

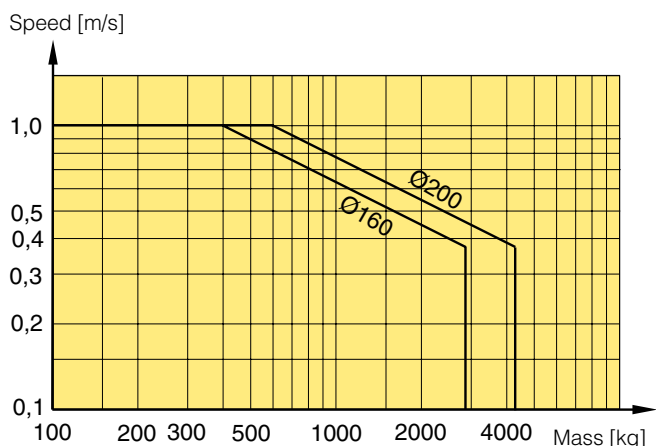
For best possible service life and trouble-free operation, ISO 8573-1 quality class 3.4.3 should be used. This means 5 µm filter (standard filter) dew point +3 °C for indoor operation (a lower dew point should be selected for outdoor operation) and oil concentration 1.0 mg oil/m<sup>3</sup>, which is what a standard compressor with a standard filter gives.

**Cushioning characteristics**

The diagram below is used for dimensioning of cylinders related to the cushioning capacity. The maximum cushioning capacity shown in the diagram assumes the following:

- Low load, i.e. low pressure drop across the piston
- Equilibrium speed
- Correctly adjusted cushioning screw
- 6 bar at cylinder port

The load is the sum of internal and external friction, plus any gravitational forces. At high relative load (pressure drop exceeding 1 bar), we recommend that for any given speed, the mass should be reduced by a factor of 2.5, or for a given mass, the speed should be reduced by a factor of 1.5. This is in relation to the maximum performance given in the diagram



**ISO 8573-1 quality classes**

Quality class	Pollution particle size (µm)	max concentration (mg/m <sup>3</sup> )	Water max. press. dew point (°C)	Oil max concentration (mg/m <sup>3</sup> )
<b>1</b>	0,1	0,1	-70	0,01
<b>2</b>	1	1	-40	0,1
<b>3</b>	5	5	-20	1,0
<b>4</b>	15	8	+3	5,0
<b>5</b>	40	10	+7	25
<b>6</b>	-	-	+10	-

## Order key

**P1E-T**

Cylinder version	
T	Tie rod
D	Centre trunnion, tie rod

**160**

Cylinder bore mm	
160	
200	

**M**

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

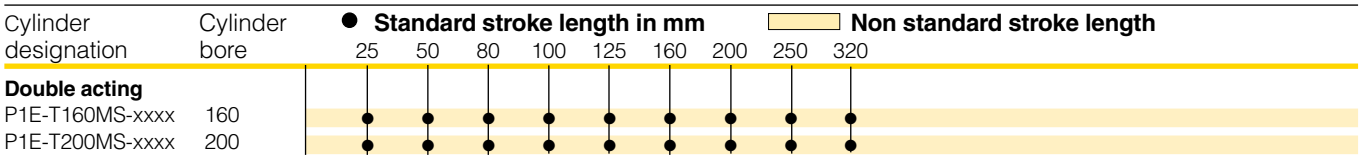
**S - 0250**

Sealing material	
S	Standard seals, magnetic piston
A	Standard seals, non magnetic piston
F	High temperature seals, non magnetic piston

Stroke length	
0025	
0050	
0080	
0100	
0125	
0160	
0200	
0250	
0320	
Standard stroke length in mm	

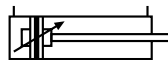
## Stroke length

Standard stroke lengths in mm according to ISO 4393. Special stroke lengths up to 2700 mm

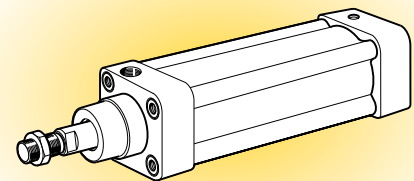


## Double-acting P1E-T

Piston rod Ø40 mm, thread M36x2



Cyl. bore mm	Stroke mm	Weight kg	Order code
<b>160</b> Conn. G3/4	25	12,28	<b>P1E-T160MS-0025</b>
	50	12,85	<b>P1E-T160MS-0050</b>
	80	13,53	<b>P1E-T160MS-0080</b>
	100	13,99	<b>P1E-T160MS-0100</b>
	125	14,56	<b>P1E-T160MS-0125</b>
	160	15,36	<b>P1E-T160MS-0160</b>
	200	16,27	<b>P1E-T160MS-0200</b>
	250	17,41	<b>P1E-T160MS-0250</b>
	320	19,01	<b>P1E-T160MS-0320</b>
<b>200</b> Conn. G3/4	25	16,08	<b>P1E-T200MS-0025</b>
	50	16,71	<b>P1E-T200MS-0050</b>
	80	17,47	<b>P1E-T200MS-0080</b>
	100	17,97	<b>P1E-T200MS-0100</b>
	125	18,60	<b>P1E-T200MS-0125</b>
	160	19,48	<b>P1E-T200MS-0160</b>
	200	20,49	<b>P1E-T200MS-0200</b>
	250	21,75	<b>P1E-T200MS-0250</b>
	320	23,51	<b>P1E-T200MS-0320</b>



Non-standard stroke lengths on request

**Guide for selecting suitable tubing**

The selection of the correct size of tubing is often based on experience, with no great thought to optimizing energy efficiency and cylinder velocity. This is usually acceptable, but making a rough calculation can result in worthwhile economic gains.

**The following is the basic principle:**

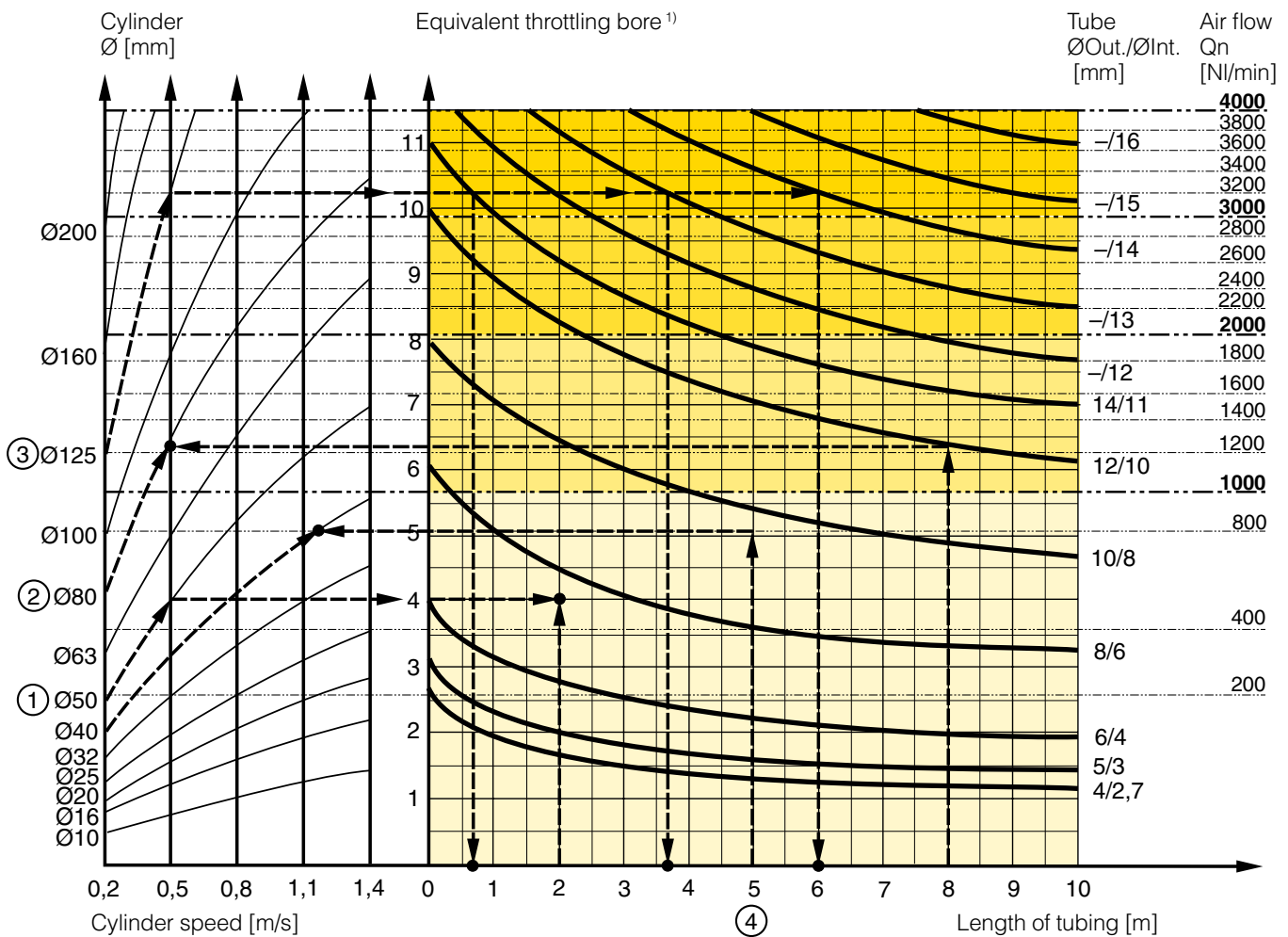
1. The primary line to the working valve could be over sized (this does not cause any extra air consumption and consequently does not create any extra costs in operation).
2. The tubes between the valve and the cylinder should, however, be optimized according to the principle that an insufficient bore throttles the flow and thus limits the cylinder speed, while an oversized pipe creates a dead volume which increases the air consumption and filling time.

The chart below is intended to help when selecting the correct size of tube to use between the valve and the cylinder.

**The following prerequisites apply:**

The cylinder load should be about 50% of the theoretical force (= normal load). A lower load gives a higher velocity and vice versa. The tube size is selected as a function of the cylinder bore, the desired cylinder velocity and the tube length between the valve and the cylinder.

If you want to use the capacity of the valve to its maximum, and obtain maximum speed, the tubing should be chosen so that they at least correspond with the equivalent restriction diameter (see description below), so that the tubing does not restrict the total flow. This means that a short tubing must have at least the equivalent restriction diameter. If the tubing is longer, choose it from the table below. Straight fittings should be chosen for highest flow rates. (Elbow and banjo fittings cause restriction.)



- 1) The “equivalent throttling bore” is a long throttle (for example a tube) or a series of throttles (for example, through a valve) converted to a short throttle which gives a corresponding flow rate. This should not be confused with the “orifice” which is sometimes specified for valves. The value for the orifice does not normally take account of the fact that the valve contains a number of throttles.
- 2) Qn is a measure of the valve flow capacity, with flow measured in litre per minute (l/min) at 6 bar(e) supply pressure and 1 bar pressure drop across the valve.



**Example ①: Which tube diameter should be used?**

A 50 mm bore cylinder is to be operated at 0.5 m/s. The tube length between the valve and cylinder is 2 m. In the diagram we follow the line from 50 mm bore to 0.5 m/s and get an “equivalent throttling bore” of approximately 4 mm. We continue out to the right in the chart and intersect the line for a 2 m tube between the curves for 4 mm (6/4 tube) and 6 mm(8/6 tube). This means that a 6/4 tube throttles the velocity somewhat, while an 8/6 tube is a little too large. We select the 8/6 tube to obtain full cylinder velocity.

**Example ②: What cylinder velocity will be obtained?**

A 80 mm bore cylinder will be used, connected by 8 m 12/10 tube to a P2L-B valve. What cylinder velocity will we get? We refer to the diagram and follow the line from 8 mm tube length up to the curve for 12/10 tube. From there, we go horizontally to the curve for the Ø80 cylinder. We find that the velocity will be about 0.5 m/s.

**Example ③: What is the minimum inner diameter and maximum length of tube?**

For an application a 125 mm bore cylinder will be used. Maximum velocity of piston rod is 0.5 m/s. The cylinder will be controlled by a P2L-D valve. What diameter of tube can be used and what is maximum length of tube.

We refer to the diagram. We start at the left side of the diagram cylinder Ø125. We follow the line until the intersection with the velocity line of 0.5 m/s. From here we draw a horizontal line in the diagram. This line shows us we need an equivalent throttling bore of approximately 10 mm. Following this line horizontally we cross a few intersections. These intersections shows us the minimum inner diameter (rightside diagram) in combination with the maximum length of tube (bottomside diagram).

For example:

Intersection one: When a tube (14/11) will be used, the maximum length of tube is 0.7 meter.

Intersection two: When a tube (—/13) will be used, the maximum length of tube is 3.7 meter.

Intersection three: When a tube (—/14) will be used, the maximum length of tube is 6 meter.

**Example ④: Determining tube size and cylinder velocity with a particular cylinder and valve?**

For an application using a 40 mm bore cylinder with a valve with Qn=800 NI/min. The distance between the cylinder and valve has been set to 5 m.

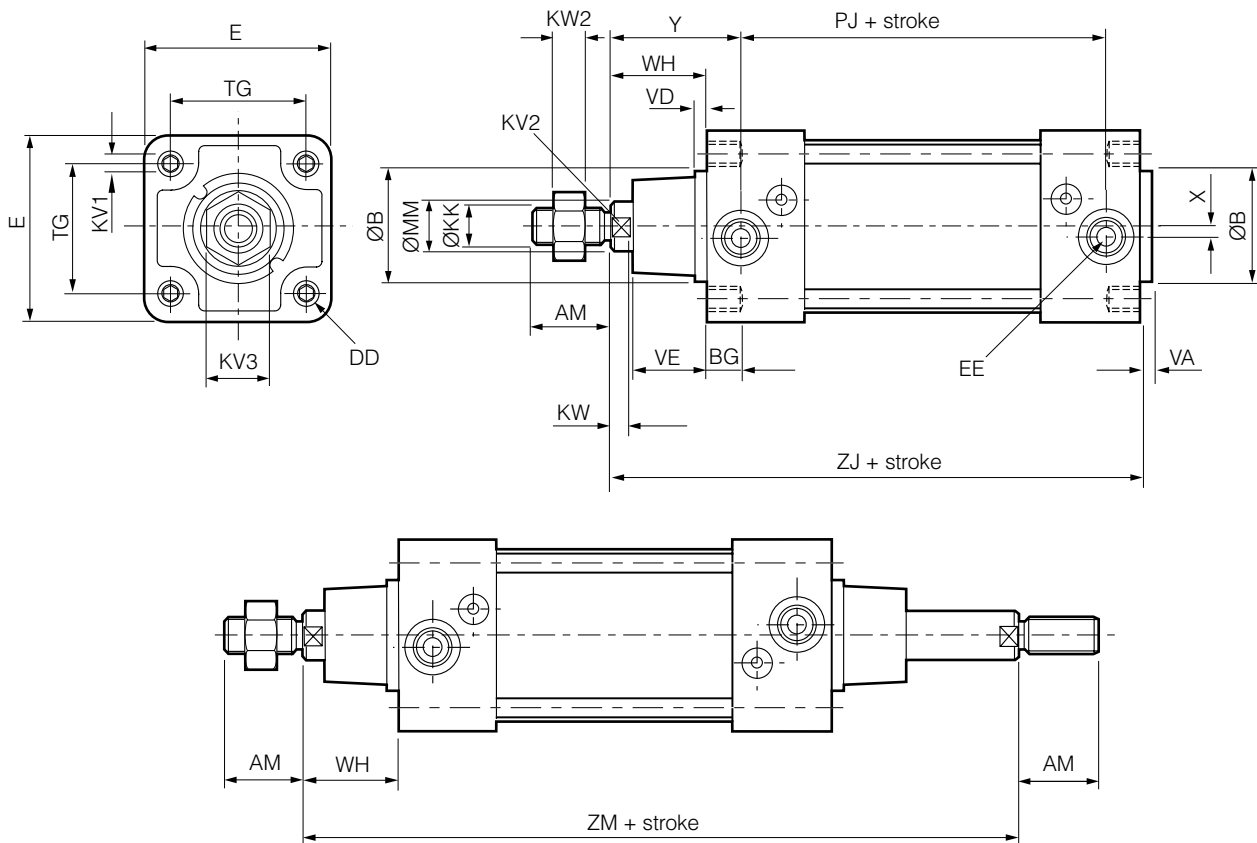
**Tube dimension:** What tube bore should be selected to obtain the maximum cylinder velocity? Start at pipe length 5 m, follow the line up to the intersection with 800 NI/min. Select the next largest tube diameter, in this case Ø10/8 mm.

**Cylinder velocity:** What maximum cylinder velocity will be obtained? Follow the line for 800 NI/min to the left until it intersects with the line for the Ø40 mm cylinder. In this example, the speed is just above 1.1 m/s.

**Valve series with respective flows in NI/minute**

Valve series	Qn in NI/Min
Valvetronic Solstar	33
Interface PS1	100
Adex A05	173
Moduflex size 1, (2 x 3/2)	220
Valvetronic PVL-B 5/3 closed centre, 6 mm push in	290
Moduflex size 1, (4/2)	320
B43 Manual and mechanical	340
Valvetronic PVL-B 2 x 2/3, 6 mm push in	350
Valvetronic PVL-B 5/3 closed centre, G1/8	370
Compact Isomax DX02	385
Valvetronic PVL-B 2 x 3/2 G1/8	440
Valvetronic PVL-B 5/2, 6 mm push in	450
Valvetronic PVL-B 5/3 vented centre, 6 mm push in	450
Moduflex size 2, (2 x 3/2)	450
Flowstar P2V-A	520
Valvetronic PVL-B 5/3 vented centre, G1/8	540
Valvetronic PVL-B 5/2, G1/8	540
Valvetronic PVL-C 2 x 3/2, 8 mm push in	540
Adex A12	560
Valvetronic PVL-C 2 x 3/2 G1/8	570
Compact Isomax DX01	585
VIKING Xtreme P2LAX	660
Valvetronic PVL-C 5/3 closed centre, 8 mm push in	700
Valvetronic PVL-C 5/3 vented centre, G1/4	700
B3-Series	780
Valvetronic PVL-C 5/3 closed centre, G1/4	780
Moduflex size 2, (4/2)	800
Valvetronic PVL-C 5/2, 8 mm push in	840
Valvetronic PVL-C 5/3 vented centre, 8 mm push in	840
Valvetronic PVL-C 5/2, G1/4	840
Flowstar P2V-B	1090
ISOMAX DX1	1150
B53 Manual and mechanical	1160
B4-Series	1170
VIKING Xtreme P2LBX	1290
B5-Series, G1/4	1440
Airline Isolator Valve VE22/23	1470
ISOMAX DX2	2330
VIKING Xtreme P2LCX, G3/8	2460
VIKING Xtreme P2LDX, G1/2	2660
ISOMAX DX3	4050
Airline Isolator Valve VE42/43	5520
Airline Isolator Valve VE82/83	13680

## Dimensions



Cyl. bore Ø mm	MM	KK* Ø	AM*	ØB +0/-2	WH e11	VD	VE	ZJ	VA	PJ	X	Y	KV3	KW2 A/F
160	40	M36x2	72	65	80	7	52	260	5	132	0	104	55	18
200	40	M36x2	72	75	95	7	60	275	5	132	0	119	55	18

Cyl. bore Ø mm	EE	DD	KV1	BG A/F	KV2 min	KW A/F	E	TG	ZM
160	G <sup>3</sup> / <sub>4</sub>	M16	30	24	36	16	179	140	340
200	G <sup>3</sup> / <sub>4</sub>	M16	30	24	36	16	216	175	370

\* According to ISO 6431

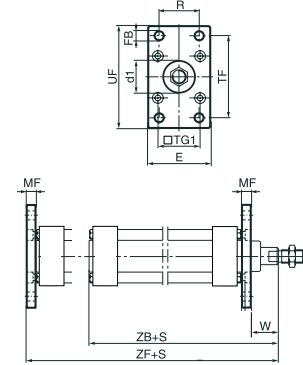
## Cylinder mountings

Type	Description	Cyl. bore Ø mm	Weight kg	Order code
<b>Flange MF1/MF2</b>	Intended for fixed mounting of cylinder. Flange can be fitted to front or rear end cover of cylinder.	160 200	6,00 8,00	<b>P1C-4SMB</b> <b>P1C-4TMB</b>



Materials  
Flange: Surface-treated steel, black  
Mounting screws acc. to DIN 6912: Zinc-plated steel 8.8

Supplied complete with mounting screws for attachment to cylinder.



According to ISO MF1/MF2, VDMA 24 562, AFNOR

Cyl. bore mm	d1 mm	FB mm	TG1 mm	E mm	R mm	MF mm	TF mm	UF mm	W mm	ZF mm
160	65	18	140	190	115	20	230	275	60	280
200	75	22	175	225	135	25	270	318	70	300

S=Stroke length

## Foot bracket MS1

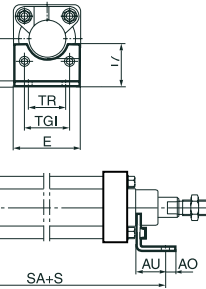


Intended for fixed mounting of cylinder. Foot bracket can be fitted to front and rear end covers of cylinder.

Materials  
Foot bracket: Surface-treated steel, black  
Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied in pairs with mounting screws for attachment to cylinder.

160  
200  
\*\* Weight per item



According to ISO MS1, VDMA 24 562, AFNOR

Cyl. bore mm	AB mm	TG <sub>1</sub> mm	E mm	TR mm	AO mm	AU mm	AH mm	I <sub>1</sub> mm	AT mm	SA mm
160	18	140	177	115	24	60	115	-	4,75	300
200	22	175	214	135	30	70	135	-	8	320

S=Stroke lengthd

## Clevis bracket MP2

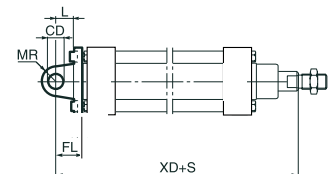
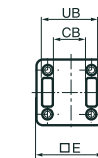


Intended for flexible mounting of cylinder. Clevis bracket MP2 can be combined with clevis bracket MP4.

Materials  
Clevis bracket: Surface-treated aluminium, black  
Pin: Surface hardened steel  
Circlips according to DIN 471: Spring steel  
Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied complete with mounting screws for attachment to cylinder.

160  
200



According to ISO MP2, VDMA 24 562, AFNOR

Cyl. bore mm	E mm	UB mm	CB mm	FL mm	L mm	CD mm	MR mm	XD mm
160	177	170	90	55	35	30	30	315
200	214	170	90	60	36	30	30	335

S=Stroke length

## Cylinder mountings

Type	Description	Cyl. bore Ø mm	Weight kg	Order code
<b>Clevis bracket MP4</b>	Intended for flexible mounting of cylinder. Clevis bracket MP4 can be combined with clevis bracket MP2.	160	3,00	<b>P1C-4SME</b> <b>P1C-4TME</b>
		200	6,20	



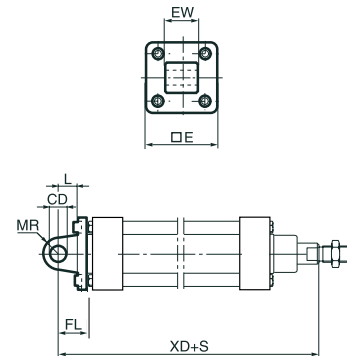
**Materials**  
Clevis bracket: Surface-treated aluminium, black  
Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied complete with mounting screws for attachment to cylinder.

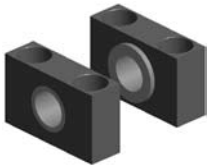
According to ISO MP4, VDMA 24 562, AFNOR

Cyl. bore mm	E	EW	FL ±0,2	L	CD	MR	XD
160	177	90	55	35	30	30	315
200	214	90	60	35	30	30	335

S=Stroke length



<b>Pivot bracket for MT4</b>	Intended for use together with central trunnion MT4.	160	6,46	<b>9301054268</b> <b>9301054268</b>
		200	9,20	

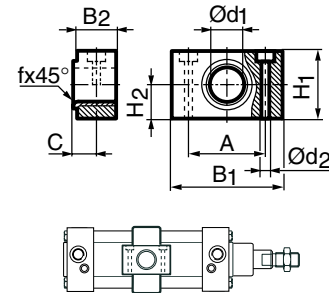


**Material**  
Pivot bracket: Surface-treated aluminium  
Bearing acc. to DIN 1850 C: Sintered oil-bronze bushing

Supplied in pairs.

According to ISO, VDMA 24 562, AFNOR

Cyl. bore mm	B <sub>1</sub>	B <sub>2</sub>	A	C	d <sub>1</sub>	d <sub>2</sub> H13	H <sub>1</sub>	H <sub>2</sub>	fx45° min
160	92	40	60	22,5	32	18,0	60	30	2,5
200	92	40	60	22,5	32	18,0	60	30	2,5



<b>Centre trunnion MT4</b>	Intended for articulated mounting of cylinder. The trunnion is factory-fitted in the centre of the cylinder or at an optional location specified by the XV-measure – see the order code key on page 7. Combined with pivot bracket for MT4.	160	XX	<b>See order key on page 7</b>
		200	XX	



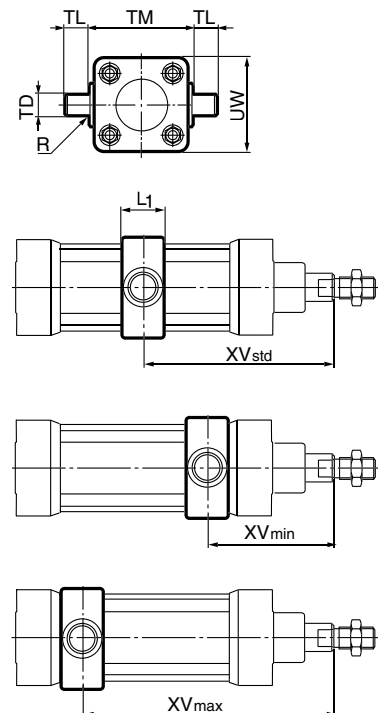
**Material:**  
Trunnion: zinc plated steel

### Trunnion centred

The central trunnion is ordered with letter D in position. See the order code key at pages 7.

### Trunnion with optional location

Please contact customer service for other XV dimensions



According to ISO MT4, VDMA 24 562, AFNOR

Cyl. bore mm	TM	TL	TD	R	UW	L1	X1*	XV* min	X2*
160	200	32	32	2,5	190	70	170	169	170
200	250	32	32	2,5	242	70	185	184	186

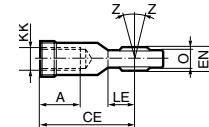
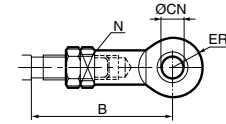
XVstd = X1 + Stroke length/2, XVmax = X2 + Stroke length

## Cylinder mountings

Type	Description	Cyl. bore Ø mm	Weight kg	Order code
<b>Swivel rod eye</b>	Swivel rod eye for articulated mounting of cylinder. Swivel rod eye can be combined with clevis bracket GA. Maintenance-free.	160	2,00	<b>P1C-4SRS</b> <b>P1C-4SRS</b>
		200	2,00	



Materials  
Swivel rod eye: Zinc-plated steel  
Swivel bearing according to DIN 648K: Hardened steel



According to ISO 8139

Cyl. bore mm	A mm	B min mm	B max mm	CE mm	CN H9 mm	EN h12 mm	ER mm	KK M36x2	LE min mm	N mm	O mm	Z mm
160	56	139	161	125	35	43	40	M36x2	41	14	28	15°
200	56	139	161	125	35	43	40	M36x2	41	14	28	15°

## Clevis

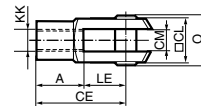
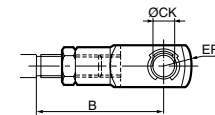
Clevis for articulated mounting of cylinder.

160 4,30  
200 4,30

**P1C-4SRC**  
**P1C-4SRC**



Material  
Clevis, clip: Galvanized steel  
Pin: Hardened steel



According to ISO 8140

Cyl. bore mm	A mm	B min mm	B max mm	CE mm	CK h11/E9 mm	CL mm	CM mm	ER mm	KK M36x2	LE mm	O mm
160	72	158	180	144	35	70	35	50	M36x2	72	83
200	72	158	180	144	35	70	35	50	M36x2	72	83

## Nut

Intended for fixed mounting of accessories to the piston rod.  
Material: Zinc-plated steel

160 0,110  
200 0,110

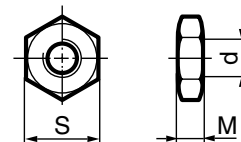
**9128985606**  
**9128985606**



The cylinders are delivered with a zinc-plated steel piston rod nut

According to DIN 439 B

Cyl. bore mm	d mm	M mm	S mm
160	M36x2	18	55
200	M36x2	18	55



### New drop-in sensors

The completely new "drop-in" sensors can easily be installed from the side in the sensor groove, at any position along the piston stroke. The sensors are completely recessed and thus mechanically protected. Choose between electronic or reed sensors and several cable lengths and 8 mm and M12 connectors. There is a double jointed adapter for the tie-rod version, which offers simple and flexible use of standard sensors.



### Electronic sensors

The new electronic sensors are "Solid State", i.e. they have no moving parts at all. They are provided with short-circuit protection and transient protection as standard. The built-in electronics make the sensors suitable for applications with high on and off switching frequency, and where very long service life is required.

#### Technical data

Design	GMR (Giant Magnetic Resistance) magneto-resistive function
Installation	From side, down into the sensor groove, so-called drop-in
Outputs	PNP, normally open (also available in NPN design, normally closed, on request)
Voltage range	10-30 VDC 10-18 V DC, ATEX sensor
Ripple	max 10%
Voltage drop	max 2,5 V
Load current	max 100 mA
Internal consumption	max 10 mA
Actuating distance	min 9 mm
Hysteresis	max 1,5 mm
Repeatability accuracy	max 0,2 mm
On/off switching frequency	max 5 kHz
On switching time	max 2 ms
Off switching time	max 2 ms
Encapsulation	IP 67 (EN 60529)
Temperature range	-25 °C to +75 °C -20 °C to +45 °C, ATEX sensor
Indication	LED, yellow
Material housing	PA 12
Material screw	Stainless steel
Cable	PVC or PUR 3x0.25 mm <sup>2</sup> see order code respectively

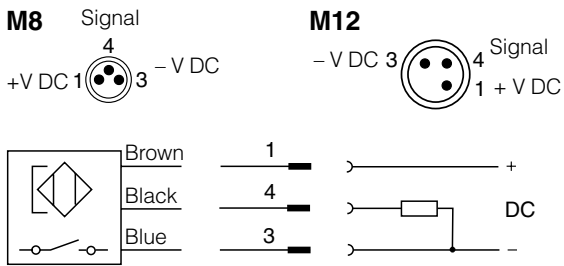
### Reed sensors

The sensors are based on proven reed switches, which offer reliable function in many applications. Simple installation, a protected position on the cylinder and clear LED indication are important advantages of this range of sensors.

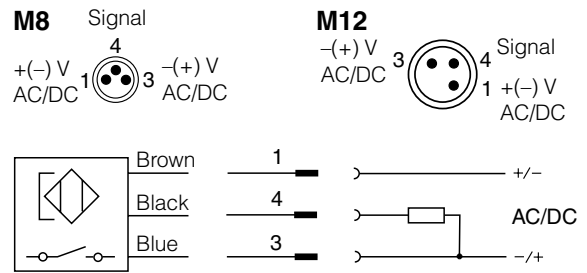
#### Technical data

Design	Reed element
Mounting	From side, down into the sensor groove, so-called drop-in
Output	Normally open , or normally closed
Voltage range	10-30 V AC/DC or 10-120 V AC/DC 24-230 V AC/DC
Load current	max 500 mA for 10-30 V or max 100 mA for 10-120 V max 30 mA for 24-230 V
Breaking power (resistive)	max 6 W/VA
Actuating distance	min 9 mm
Hysteresis	max 1,5 mm
Repeatability accuracy	0,2 mm
On/off switching frequency	max 400 Hz
On switching time	max 1,5 ms
Off switching time	max 0,5 ms
Encapsulation	IP 67 (EN 60529)
Temperature range	-25 °C to +75 °C
Indication	LED, yellow
Material housing	PA12
Material screw	Stainless steel
Cable	PVC or PUR 3x0.14 mm <sup>2</sup> see order code respectively

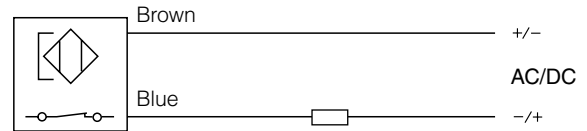
## Electronic sensors



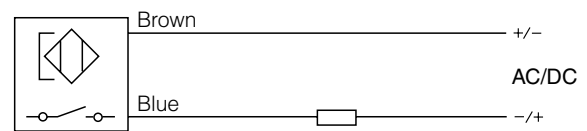
## Reed sensors



### P8S-GCFPX

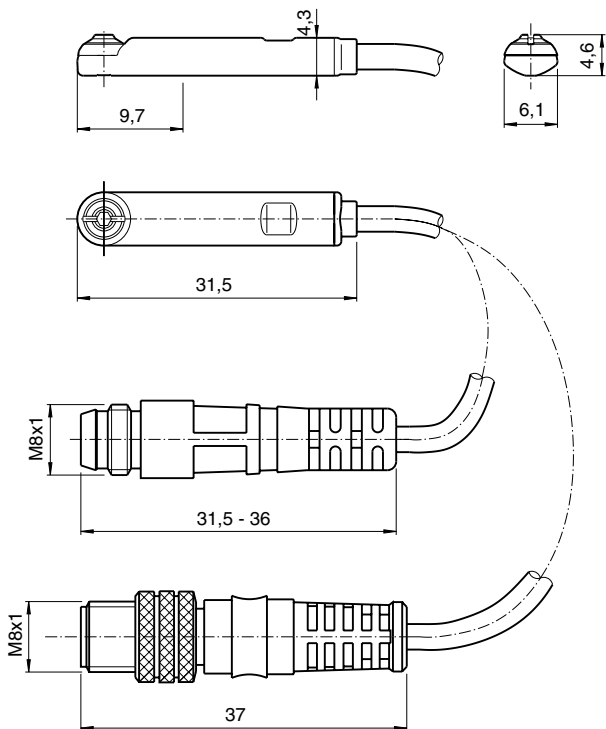


### P8S-GRFLX / P8S-GRFLX2

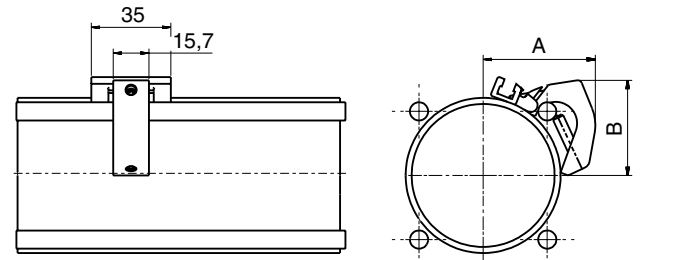


## Dimensions

### Sensors




### Adapter



Cyl. bore mm	A mm	B mm
160	95	90
200	112	107

## Ordering data

Output/function	Cable/connector	Weight kg	Order code
<b>Electronic sensors , 10-30 V DC</b>			
PNP type, normally open	0,27 m PUR-cable and 8 mm snap-in male connector	0,007	<b>P8S-GPSHX</b>
PNP type, normally open	1,0 m PUR-cable and 8 mm snap-in male connector	0,013	<b>P8S-GPSCX</b>
PNP type, normally open	1,0 m PUR-cable and M8 screw male connector	0,013	<b>P8S-GPCCX</b>
PNP type, normally open	0,27 m PUR-cable and M12 screw male connector	0,015	<b>P8S-GPMHX</b>
PNP type, normally open	3 m PVC-cable without connector	0,030	<b>P8S-GPFLX</b>
PNP type, normally open	10 m PVC-cable without connector	0,110	<b>P8S-GPFTX</b>
<b>Electronic sensor 18-30 V DC</b>			
<b>ATEX-certified</b>			
 <b>II3G EEx nA II T4X</b> <b>II3D 135 °C IP67</b>		<b>See ATEX information in P1D catalogue</b>	
Type PNP , normally open	3 m PVC-cable without connector	0,030	<b>P8S-GPFLX/EX</b>
<b>Reed sensors , 10-30 V AC/DC</b>			
Normally open	0,27 m PUR-cable and 8 mm snap-in male connector	0,007	<b>P8S-GSSHX</b>
Normally open	1,0 m PUR-cable and 8 mm snap-in male connector	0,013	<b>P8S-GSSCX</b>
Normally open	1,0 m PUR-cable and M8 male connector	0,013	<b>P8S-GSCCX</b>
Normally open	0,27 m PUR-cable and M12 screw male connector	0,015	<b>P8S-GSMHX</b>
Normally open	1,0 m PUR-cable and M12 screw male connector	0,023	<b>P8S-GSMCX</b>
Normally open	3 m PVC-cable without connector	0,030	<b>P8S-GSFLX</b>
Normally open	10 m PVC-cable without connector	0,110	<b>P8S-GSFTX</b>
Normally closed	5m PVC-cable without connector <sup>1)</sup>	0,050	<b>P8S-GCFPX</b>
<b>Reed sensors, 10-120 V AC/DC</b>			
Normally open	3 m PVC-cable without connector	0,030	<b>P8S-GRFLX</b>
<b>Reed sensorer, 24-230 V AC/DC</b>			
Normally open	3 m PVC-cable without connector	0,030	<b>P8S-GRFLX2</b>

1) Without LED

## Adapter for tie-rod design

Description	Weight kg	Order code
Double jointed adapter	0,07	<b>P8S-TMA0X</b>





### Connecting cables with one connector

The cables have an integral snap-in female connector.



Type of cable	Cable/connector	Weight kg	Order code
<b>Cables for sensors, complete with one female connector</b>			
Cable, Flex PVC	3 m, 8 mm Snap-in connector	0,07	<b>9126344341</b>
Cable, Flex PVC	10 m, 8 mm Snap-in connector	0,21	<b>9126344342</b>
Cable, Super Flex PVC	3 m, 8 mm Snap-in connector	0,07	<b>9126344343</b>
Cable, Super Flex PVC	10 m, 8 mm Snap-in connector	0,21	<b>9126344344</b>
Cable, Polyurethane	3 m, 8 mm Snap-in connector	0,01	<b>9126344345</b>
Cable, Polyurethane	10 m, 8 mm Snap-in connector	0,20	<b>9126344346</b>
Cable, Polyurethane	5 m, M12 screw connector	0,07	<b>9126344348</b>
Cable, Polyurethane	10 m, M12 screw connector	0,20	<b>9126344349</b>

### Male connectors for connecting cables

Cable connectors for producing your own connecting cables. The connectors can be quickly attached to the cable without special tools. Only the outer sheath of the cable is removed. The connectors are available for M8 and M12 screw connectors and meet protection class IP 65.



Connector	Weight kg	Order code
M8 screw connector	0,017	<b>P8CS0803J</b>
M12 screw connector	0,022	<b>P8CS1204J</b>

### Ready to use connecting cables with connectors at each end

As accessories the system comprises a large number of different cables in order to meet all requirements that may arise and to make the installation simple, fast and reliable. Cables with moulded 8 mm snap-in round contacts in both ends. The cables are available in two types, one with a straight male and female connectors respectively, and one with a straight 3-pole male connector in one end and an angled 3-pole female connector in the other end.



#### Technical data

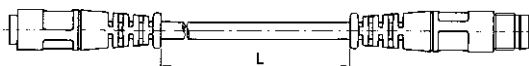
##### Contacts

Moulded 8 mm snap-in male/female contacts.  
Enclosure IP67

##### Cable

Conductor 3x0,25 mm<sup>2</sup> (32x0,10 mm<sup>2</sup>)  
Sheath PVC/PUR  
Colour Black

Cables with straight 3-pole male and female connectors respectively.



Cables with a straight 3-pole male connector in one end and an angled 3-pole female connector in the other end.



Designation	Weight kg	Order code
Cable with straight contacts, 0,2 m	0,02	<b>9121717014</b>
Cable with straight contacts, 0,3 m	0,02	<b>9121717015</b>
Cable with straight contacts, 0,5 m	0,03	<b>9121717016</b>
Cable with straight contacts, 1,0 m	0,03	<b>9121717017</b>
Cable with straight contacts, 2,0 m	0,05	<b>9121717018</b>
Cable with straight contacts, 3,0 m	0,07	<b>9121717019</b>
Cable with straight contacts, 5,0 m	0,12	<b>9121717020</b>
Cable with straight contacts, 10 m	0,23	<b>9121717021</b>

Designation	Weight kg	Order code
Cable with straight and angled connectors, 0,2 m	0,02	<b>9121717022</b>
Cable with straight and angled connectors, 0,3 m	0,02	<b>9121717023</b>
Cable with straight and angled connectors, 0,5 m	0,03	<b>9121717024</b>
Cable with straight and angled connectors, 1,0 m	0,03	<b>9121717025</b>
Cable with straight and angled connectors, 2,0 m	0,05	<b>9121717026</b>
Cable with straight and angled connectors, 3,0 m	0,07	<b>9121717027</b>
Cable with straight and angled connectors, 5,0 m	0,12	<b>9121717028</b>
Cable with straight and angled connectors, 10 m	0,23	<b>9121717029</b>

### Connection block Valvetronic 110

The Valvetronic 110 is a connection block that can be used for collecting signals from sensors at various points on a machine and connecting them to the control system via a multicore cable. Valvetronic 110 can also be used for central connection of the multi-core cable to the outputs of a control system, and can be laid to a machine where the output signals can be connected. The connection block has ten 8 mm snap-in circular connectors and a multi-core cable which is available in lengths of 3 or 10 m. The connections on the block are numbered from 1 to 10. Blanking plugs are available for unused connections, as labels for marking the connections of each block.



### Technical data

#### Connections:

Ten 3-pole numbered 8 mm round snap-in female contacts  
Input block



- Pin 1 Common, +24 VDC
- Pin 2 Input signal
- Pin 3 Common, 0V

Output block



- Pin 1 Common, GND
- Pin 2 Output signal
- Pin 3 Common, 0V

#### Electrical data:

Voltage 24 VDC (max. 60 V AC/75 V DC)  
Insulation group according to DIN 0110 class C  
Load max. 1 A per connection  
total max. 3 A

#### Cable:

Length 3 m or 10 m  
Type of cable LifYY11Y  
Conductor 12  
Area 0.34 mm<sup>2</sup>  
Colour marking According to DIN 47 100

#### Mechanical data

Enclosure IP 67, DIN 40050 with fitted contacts and/or blanking plugs.

Temperature -20 °C to +70 °C





#### Material

Body PA 6,6 VD according to UL 94  
Contact holder PBTP  
Snap-in ring LDPE  
Moulding mass Epoxy  
Seal NBR  
Screws Plated steel

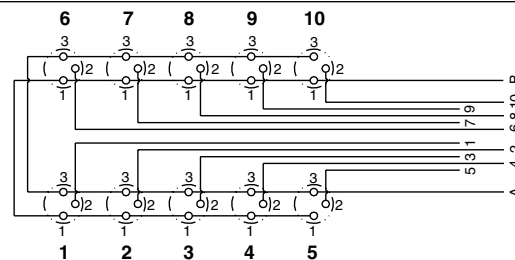
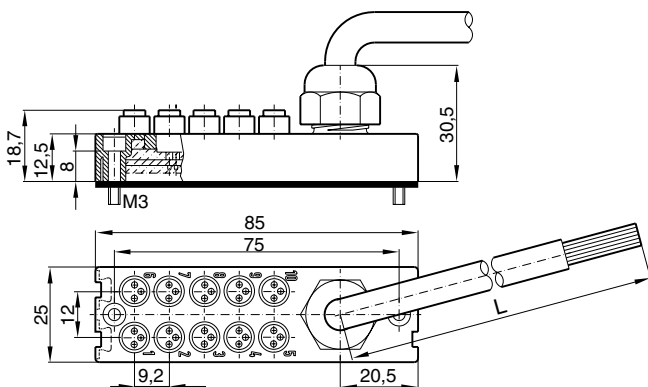
#### Industrial durability

Good chemical and oil resistance. Tests should be performed in aggressive environments.

### Ordering data




Designation	Weight kg	Order code
 Connection block Valvetronic 110 with 3 m cable	0,32	<b>9121719001</b>
 Connection block Valvetronic 110 with 10 m cable	0,95	<b>9121719002</b>
 Blanking plugs (pack of 10) Use blanking plugs to close unused connections.	0,02	<b>9121719003</b>
 Labels (pack of 10) White labels to insert in grooves on the side of the connection	0,02	<b>9121719004</b>

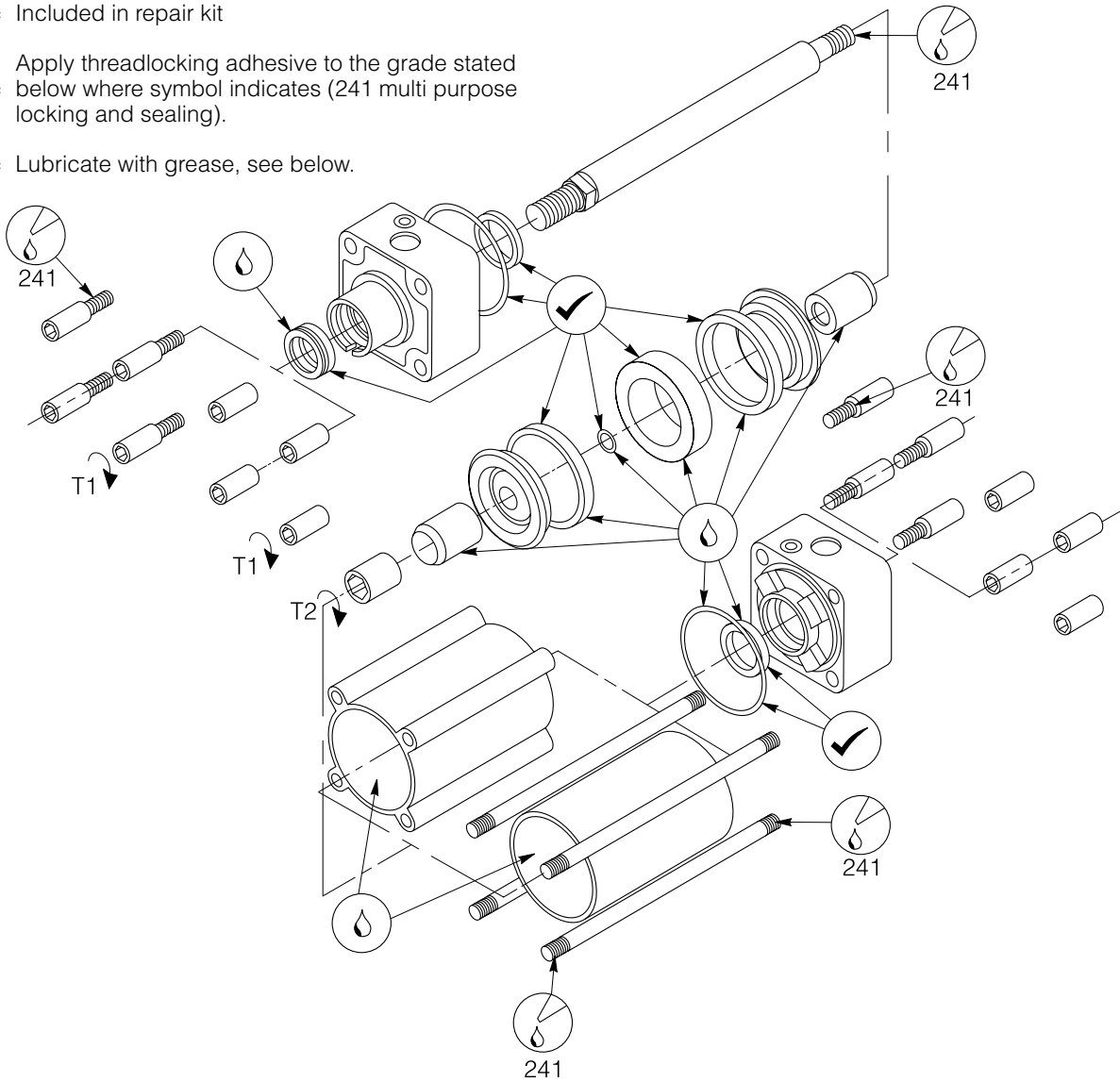
### Dimensions and wiring diagrams



Conductor	Colour	Input	Output
1	Pink	Signal 1	Signal 1
2	Grey	Signal 2	Signal 2
3	Yellow	Signal 3	Signal 3
4	Green	Signal 4	Signal 4
5	White	Signal 5	Signal 5
6	Red	Signal 6	Signal 6
7	Black	Signal 7	Signal 7
8	Violet	Signal 8	Signal 8
9	Grey-Pink	Signal 9	Signal 9
10	Red-Blue	Signal 10	Signal 10
A	Blue	0 V	0 V
B	Brown	+24 V	PE

## Repair kits

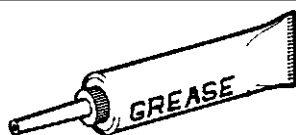
-  = Included in repair kit
-  = Apply threadlocking adhesive to the grade stated below where symbol indicates (241 multi purpose locking and sealing).
-  = Lubricate with grease, see below.



Ø	T1 Nm	NV	T2 Nm	NV
32	4-5	6	9-10	5
40	4-5	6	9-10	6
50	9-10	8	28-30	12
63	9-10	8	28-30	12
80	18-20	10	80-85	12
100	18-20	10	80-85	12
125	24-26	24	115-125	30
160	36-38	30	163-177	22
200	36-38	30	163-177	22

Ø	Repair kits	
	Standard	High temperature
32	<b>P1E-6KRM</b>	<b>P1E-6KRV</b>
40	<b>P1E-6LRM</b>	<b>P1E-6LRV</b>
50	<b>P1E-6MRM</b>	<b>P1E-6MRV</b>
63	<b>P1E-6NRM</b>	<b>P1E-6NRV</b>
80	<b>P1E-6PRM</b>	<b>P1E-6PRV</b>
100	<b>P1E-6QRM</b>	<b>P1E-6QRV</b>
125	<b>P1E-6RRM</b>	<b>P1E-6RRV</b>
160	<b>P1E-6SRM</b>	<b>P1E-6SRV</b>
200	<b>P1E-6TRM</b>	<b>P1E-6TRV</b>

### Grease for P1E



Standard	30g	<b>9127394541</b>
High temperature	30g	<b>9127394521</b>
Low temperature	30g	<b>9127394541</b>

# Parker Worldwide

**AE – UAE, Dubai**  
Tel: +971 4 8127100  
parker.me@parker.com

**AR – Argentina, Buenos Aires**  
Tel: +54 3327 44 4129

**AT – Austria, Wiener Neustadt**  
Tel: +43 (0)2622 23501-0  
parker.austria@parker.com

**AT – Eastern Europe, Wiener Neustadt**  
Tel: +43 (0)2622 23501 900  
parker.easteurope@parker.com

**AU – Australia, Castle Hill**  
Tel: +61 (0)2-9634 7777

**AZ – Azerbaijan, Baku**  
Tel: +994 50 2233 458  
parker.azerbaijan@parker.com

**BE/LU – Belgium, Nivelles**  
Tel: +32 (0)67 280 900  
parker.belgium@parker.com

**BR – Brazil, Cachoeirinha RS**  
Tel: +55 51 3470 9144

**BY – Belarus, Minsk**  
Tel: +375 17 209 9399  
parker.belarus@parker.com

**CA – Canada, Milton, Ontario**  
Tel: +1 905 693 3000

**CH – Switzerland, Etoy**  
Tel: +41 (0) 21 821 02 30  
parker.switzerland@parker.com

**CL – Chile, Santiago**  
Tel: +56 2 623 1216

**CN – China, Shanghai**  
Tel: +86 21 5031 2525

**CZ – Czech Republic, Klecany**  
Tel: +420 284 083 111  
parker.czechrepublic@parker.com

**DE – Germany, Kaarst**  
Tel: +49 (0)2131 4016 0  
parker.germany@parker.com

**DK – Denmark, Ballerup**  
Tel: +45 43 56 04 00  
parker.denmark@parker.com

**ES – Spain, Madrid**  
Tel: +34 902 33 00 01  
parker.spain@parker.com

**FI – Finland, Vantaa**  
Tel: +358 (0)20 753 2500  
parker.finland@parker.com

**FR – France, Contamine s/Arve**  
Tel: +33 (0)4 50 25 80 25  
parker.france@parker.com

**GR – Greece, Athens**  
Tel: +30 210 933 6450  
parker.greece@parker.com

**HK – Hong Kong**  
Tel: +852 2428 8008

**HU – Hungary, Budapest**  
Tel: +36 1 220 4155  
parker.hungary@parker.com

**IE – Ireland, Dublin**  
Tel: +353 (0)1 466 6370  
parker.ireland@parker.com

**IN – India, Mumbai**  
Tel: +91 22 6513 7081-85

**IT – Italy, Corsico (MI)**  
Tel: +39 02 45 19 21  
parker.italy@parker.com

**JP – Japan, Tokyo**  
Tel: +(81) 3 6408 3901

**KR – South Korea, Seoul**  
Tel: +82 2 559 0400

**KZ – Kazakhstan, Almaty**  
Tel: +7 7272 505 800  
parker.easteurope@parker.com

**LV – Latvia, Riga**  
Tel: +371 6 745 2601  
parker.latvia@parker.com

**MX – Mexico, Apodaca**  
Tel: +52 81 8156 6000

**MY – Malaysia, Shah Alam**  
Tel: +60 3 7849 0800

**NL – The Netherlands, Oldenzaal**  
Tel: +31 (0)541 585 000  
parker.nl@parker.com

**NO – Norway, Ski**  
Tel: +47 64 91 10 00  
parker.norway@parker.com

**NZ – New Zealand, Mt Wellington**  
Tel: +64 9 574 1744

**PL – Poland, Warsaw**  
Tel: +48 (0)22 573 24 00  
parker.poland@parker.com

**PT – Portugal, Leca da Palmeira**  
Tel: +351 22 999 7360  
parker.portugal@parker.com

**RO – Romania, Bucharest**  
Tel: +40 21 252 1382  
parker.romania@parker.com

**RU – Russia, Moscow**  
Tel: +7 495 645-2156  
parker.russia@parker.com

**SE – Sweden, Spånga**  
Tel: +46 (0)8 59 79 50 00  
parker.sweden@parker.com

**SG – Singapore**  
Tel: +65 6887 6300

**SK – Slovakia, Banská Bystrica**  
Tel: +421 484 162 252  
parker.slovakia@parker.com

**SL – Slovenia, Novo Mesto**  
Tel: +386 7 337 6650  
parker.slovenia@parker.com

**TH – Thailand, Bangkok**  
Tel: +662 717 8140

**TR – Turkey, Istanbul**  
Tel: +90 216 4997081  
parker.turkey@parker.com

**TW – Taiwan, Taipei**  
Tel: +886 2 2298 8987

**UA – Ukraine, Kiev**  
Tel: +380 44 494 2731  
parker.ukraine@parker.com

**UK – United Kingdom, Warwick**  
Tel: +44 (0)1926 317 878  
parker.uk@parker.com

**US – USA, Cleveland**  
Tel: +1 216 896 3000

**VE – Venezuela, Caracas**  
Tel: +58 212 238 5422

**ZA – South Africa, Kempton Park**  
Tel: +27 (0)11 961 0700  
parker.southafrica@parker.com

European Product Information Centre  
Free phone: 00 800 27 27 5374  
(from AT, BE, CH, CZ, DE, DK, ES, FI, FR, IE,  
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