

## **P1D – pneumatic cylinders meeting future needs today**



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Possible.

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# P1D

## ISO/VDMA Cylinders



# The cylinder fam



**Global  
Pneumatics**

### A global product

Parker Hannifin introduces the P1D family as a global product range, available to users all over the world.

### Innovative thinking throughout

The new P1D family, which conforms to international ISO/VDMA installation standards, has been designed in close collaboration with customers all over the world to produce a family of cylinders that will meet the demands of the future. The entirely new design brings with it several innovative solutions aimed at ensuring optimal operation for a very long time. Carefully-considered choice of materials and advanced manufacturing methods give a service life in the topmost class; in normal use a P1D cylinder is practically everlasting.

### World class technology

The smallest detail of the new cylinders has been thought through from first principles. An example is the adjustable air cushioning, which has been completely redesigned. The use of moulded plastic inserts has made it possible to optimise the flow geometry and the characteristic for every cylinder size. This means quicker and more precise setting. As well as reducing weight, the plastic materials contribute to a quieter operation.

### A family with many versions

Several versions of the P1D cylinders have been given unique features, e.g. for confined spaces or strict hygiene requirements. A wide range of accessories completes the picture of a comprehensive range of cylinders for demanding users.

### Rugged exterior

End covers and body extrusion of anodised aluminium give a rugged exterior protected from corrosion.



#### P1D Standard

With its durable, user-friendly design, the basic model in the P1D family offers high performance.



#### P1D Clean

The obvious choice for strict hygiene requirements, with unique features for demanding applications.

### Common data for P1D

<b>Cylinder diameter</b>	32-125 mm.
<b>Working pressure &amp; temperature</b>	Max 10 bar / -20°C to +80°C.
<b>Working media</b>	Oil-free filtered compressed air.
<b>Initial lubrication</b>	Transparent food grade grease.
<b>Body extrusion</b>	Anodised aluminium with grooves for integral sensors.
<b>End covers</b>	Pressure die-cast anodised aluminium.
<b>Inserts, piston &amp; cushioning screw</b>	High-strength injection-moulded plastics.
<b>Piston rod &amp; seals</b>	Stainless steel / polyurethane



# ily everyone's been waiting for

## Innovative design

The inside of the cylinders is made from high-strength engineering plastics such as acetal and polyurethane, giving high performance combined with low weight.



## Wear-resistant polyurethane seals

All seals are made of PUR, an extremely wear-resistant material which gives P1D extra long life.



VDMA

AFNOR

## A future-proof choice

The new P1D cylinders are a safe choice for the future, since the installation dimensions conform to international standards such as ISO, VDMA and AFNOR.



### P1D Flexible Porting

For installation in confined spaces, P1D cylinders are also available with both ports in the same end cover.



### Complete working units

Reduce time and labour for ordering, receipt, installation, etc. – order a complete P1D cylinder with factory-fitted accessories.





# P1D

## Standard

### An efficient machine component

Thanks to the uncompromising hi-tech design, P1D cylinders are reliable and efficient in all types of applications. During the development of the new cylinder family, our users stressed the importance of properties such as high torsional strength, corrosion-resistant materials, wear-resistant seal materials and simple sensor handling. The result is a reliable 'install and forget' machine component with high performance and long life.

### New sensor technology

The standard version of the P1D cylinder series has a body extrusion with integral grooves which provide a secure, mechanically-protected mounting of the sensors. The new sensors are of the 'drop-in' type. They are easily installed from the side into the sensor groove and are locked quickly and securely with a screw. Four separate sensor grooves give ample choice of sensor positioning for different applications. Naturally, all P1D cylinders also have a magnetic function as standard.

### P1D Tie-Rod

The new cylinder series is also available with the same high-tech basic design, intended for applications where a tie-rod cylinder is required. All installation dimensions conform to international standards for complete interchangeability. The tie-rods are of stainless steel.



# Advanced techno



### Stainless steel piston rod

The stainless steel piston rod makes the P1D suitable for use in corrosive environments as well.



### Optimised weight and strength

The pressure die-cast aluminium end covers, combined with bearings, inserts and piston of modern engineering plastics gives the P1D cylinders good properties and makes them light and strong at the same time.

## Data for P1D Standard

<b>Cylinder diameter</b>	32-125 mm.
<b>Dimension standards</b>	ISO 6431, ISO/DIS 15 552, VDMA 24562, AFNOR.
<b>Sensor technology</b>	Drop-in electronic and reed sensors, with LED. 3 or 10 m cable, 8mm or M12 connectors.
<b>Materials</b>	Tie-rods of stainless steel.



# logy – all the way

## Polyurethane gives long service life

End-of-stroke washers and seals of PUR with carefully chosen hardness give smooth operation and high resistance to wear.



## Optimised cushioning

The plastic inserts give every cylinder size its own unique geometry, providing optimal, easily-adjusted cushioning.

## Magnetic piston as standard

The pistons have built-in magnets for proximity position sensing.



## New sensor technology

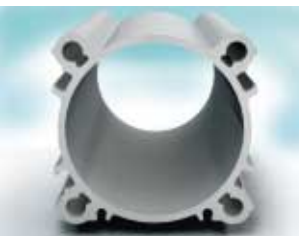
The drop-in sensors are easy to install in the grooves on the body extrusion and can be located anywhere along the stroke of the cylinder.



**AirCad™**  
Drawing Library

## CAD-drawings on the Internet

At our website, [www.parker.com](http://www.parker.com), you will find the AirCad Drawing Library containing 2D and 3D drawings for all main versions of the P1D – a big help in your design work.



## Torsionally stiff barrel

The design of the aluminium body extrusion combines high torsional stiffness with low weight.

## Special versions

P1D is also available in special versions, for example with through piston rod, extended piston rod and with three- and four-position cylinders.



# P1D

## Clean

### An obvious choice where hygiene is what matters

When developing the P1D Clean cylinder, we were guided by many years' experience of the strict demands of the food processing industry for hygiene and resistance to corrosion. Development work involved close collaboration with leading machine manufacturers and users in the food sector.

Among other things we have learnt the great importance of the external design of the cylinder, down to the smallest detail. What we call 'positive geometries' – convex surfaces – are used throughout to avoid pockets and recesses that might trap dirt.

P1D Clean has a convex body extrusion that gives efficient run-off whatever the mounting position of the cylinder. The new, sealed cushioning screw has also been given positive geometry, and the end cover screws can be fitted with sealing plugs which prevent dirt and liquids collecting there – a feature that is especially important if the cylinder is used vertically.

### Integral sensors (patent applied for)

To make the outside of the cylinders as smooth as possible, we have developed a system in which the sensors are completely housed within the body extrusion, with maintained functionality and flexibility.

It is important to be able to adjust each sensor position individually when the cylinder is installed in a machine or a production line. The system is designed so that this can be done over the entire stroke.

The integral sensors (standard type) run in dedicated grooves under a transparent, sealed strip. A camshaft locks the sensor in any required position. An LED indicates the sensor position, which can easily be adjusted by releasing a stop screw and moving the sensor to the required position by means of the cable. The sensors are inserted into their grooves through a transparent, sealed cover. Cables can be brought out upwards or downwards, at either end cover.

# The perfect fit



#### Sealing plugs

The plugs over the end cover screws provide an effective seal and prevent liquids from collecting. To ensure sealing, the plugs can only be used once. One set of four plugs is supplied with every P1D Clean cylinder. This set is also available as an accessory and can be used on all P1D cylinders.



#### Dry piston rod operation

In standard cylinders, the piston rod seal is of PUR. For applications in which the piston rod is often cleaned (removing the film of grease) a special sealing system of HDPE is available as an option.

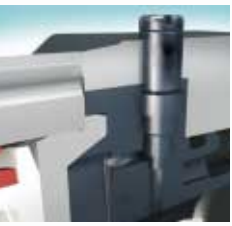
## Data for P1D Clean

<b>Cylinder diameter</b>	32-125 mm.	<b>Materials</b>	Sensor system fixing screws of stainless steel. Transparent plastic parts of ABS. Transparent strip of silicone. Plugs for end cover screws of PA.
<b>Integral sensors</b>	P1D standard sensors.	<b>Resistance to chemicals</b>	Tested for commonly used industrial detergents, both acid and alkaline.
<b>Number of sensors</b>	Up to four. Optional cable exit at front, rear or both ends.		
<b>Degree of protection</b>	Hoseproof to IP 65.		





# for the food industry



## Hygienic cushioning screw

The sealed projecting cushioning screw prevents liquids from collecting.



## Clear sensor position

The sensor LEDs can be clearly seen through the transparent sealing strip. This makes installation, adjustment and troubleshooting simple and logical.



## Convex shapes – always clean surfaces

The universal positive geometries make the cylinder easy to keep clean. Liquids always run off, whatever installation position of the cylinder.



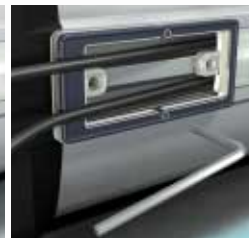
## Easily adjusted sensors

The sensors are fixed in the required position by a simple operation.



## Up to four integral sensors

Cylinders for two integral sensors have two undivided camshafts along the entire stroke. Free choice of cable exit, front or rear. There is also a version with divided camshafts for up to four sensors, which are installed two from each end cover, with cable exit front and rear.



# P1D

## Flexible Porting

### Flexibility for confined spaces

The trend is towards ever smaller dimensions for components and machines. In many cases, conventional cylinders with a connection in each end cover mean that the frame or other machine components must be modified. This often results in bulky solutions. New P1D Flexible Porting allows other, cleverer design solutions!

### Internal air channels

P1D Flexible Porting has the same body extrusion as P1D Clean. Because the air is carried in integral channels in the body extrusion, both connections can be made at the same end cover. The result is a cylinder that provides new possibilities for exploiting confined spaces or reducing the overall dimensions of the machine.

The flow capacity of the integral air channels gives performance comparable with the standard version. The Flexible Porting version comes with push-in straight or elbow fittings for diameters 32–63 mm. Cylinder sizes 80–125 mm have both connections at either end cover and can be ordered with or without fittings.

### Combine with P1D Clean

P1D Flexible Porting cylinders use the standard sensors with ordinary 'drop-in' installation. To combine with integral sensors, order P1D Clean with Flexible Porting as an option.



# Space for innovat



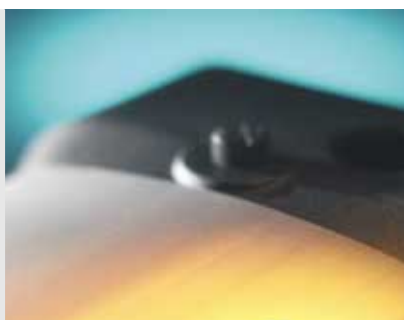
### Optional fittings

Order the Flexible Porting cylinders (80–125 mm) and other P1D cylinders with factory-installed fittings. Choose between push-in elbow and straight fittings from the Prestolok range (nickel-plated brass).



## Data for P1D Flexible Porting

<b>Cylinder diameter</b>	32–125 mm.
<b>Sensor technology</b>	P1D Standard sensors. Combine with P1D Clean for integral sensors.
<b>Connection parts</b>	Injection moulded POM (Ø 32–63 mm).
<b>Plug</b>	Nickel-plated brass (in the opposite end cover).





# ive applications

## Integral air channels

The integral air channels in the body extrusion mean that both connections can be located in the same end cover.



## Push-in fittings

Sizes 32–63 mm come with push-in fittings, straight or swivel elbow type. Sizes 80–125 mm have threaded ports in the end covers, offering a free choice of fittings.

## Protected sensors

The standard sensors are well protected, fully recessed in the grooves in the body extrusion.



# P1D

## Complete Units

### Everything under one part number

The P1D range means more than major technical advances: we have made it incredibly simple to order P1D cylinders as completely equipped working units with all accessories fitted, ready to plug in. Everything under one part number, which you create with the help of the order code key.

### Save time and costs

Now you can save time and money when choosing, ordering, receiving and installing, by ordering a complete cylinder rather than having to order up to ten separate items.

### The right quality

The new system saves a lot of time at every stage, from ordering to commissioning. You can also be sure of getting exactly the same configuration every time. All accessories are guaranteed correctly fitted, with the correct tightening torque.

# Let us help you wi

### Piston rod mountings

Order P1D with swivel eye bracket or clevis bracket of zinc-plated or stainless steel – or possibly a Flexo Coupling. Other examples from the wide range are a swivel eye bracket combined with clevis bracket GA and guidance modules (plain or ball-bearing type).



### Factory-fitted sensors

P1D Clean can be ordered with factory-fitted sensors. This is often an advantage for other cylinder versions as well. These cylinders come with the sensors mounted in the end positions. If needed, the sensors are easy to adjust when installing the cylinders. Choose from a wide range of sensors – electronic or reed type, 3 or 10 metres of cable, 8 mm or M12 connectors.



# th complete plug-in units

## Fittings or speed control

The cylinders are available with factory-fitted elbow or straight push-in fittings from the Prestolok range (nickel-plated brass). Banjo speed control valves from the Parker PTF range are available as an alternative.

## Cylinder mountings

A mounting is almost always needed when installing a cylinder. Take advantage of the opportunity to have factory-fitted mountings such as foot bracket, flange, clevis bracket MP2/MP4, swivel eye bracket GA, swivel rod eye or combinations of these. Sealing plugs can be fitted at the factory in unused end cover holes.



## The simple order code key

The order code key for P1D is based on the same principles as its predecessors, P1C and P1E. The key makes it easy to identify and order frequent versions of the cylinders. The transition from our earlier ranges of cylinders to the corresponding P1D cylinders is logical and simple.

### Example

Standard cylinder, smooth profile, double-acting  
Tie-rod cylinder, double-acting

### P1D order code

P1D-S032MS-0100  
P1D-T040MS-0200

### Comparison

P1C-S032MS-0100  
P1E-S032MS-0100  
P1E-T040MS-0200

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P	1	D	-	S	0	3	2	M	S	-	0	1	0	0

Cylinder version	
S	Standard, profile barrel
T	Tie-rod

Funktion	
M	Double-acting
F	Double-acting, through piston

Piston	Seals	
Stainless steel	S	Standard -20 °C – +80 °C.





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