Selecting a Cylinder Accessory

How do I choose an accessory for an HMI, HMD or HMIX Series cylinder?

At the piston rod end – accessories are selected by reference to the rod end thread. At the cap end – accessories are selected by cylinder bore size.

Why Choosing the Right Accessory is Critical

Cylinder mounting accessories and mountings transmit the force applied by a cylinder to the surface to which it is attached, and to the machine member to which it is connected. Mounting accessories and mountings also control alignment and resist movement which could result in fatigue failure.

A correctly specified mounting accessory:

- increases productivity
- reduces downtime
- provides greater machine and operator safety
- reduces maintenance

Piston Rod Ends

Accessories at the head end of a cylinder attach directly to the piston rod end, and Parker offers a range of different piston rod diameters and rod end styles, as shown in the table. Different thread forms, diameters and lengths give flexibility to the machine designer and ensure reliable performance for the end user.

Fatigue Failure – is the Rod Suitable for the Application?

Cycling a load subjects the piston rod to tensile and compressive forces, and these create the highest risk of fatigue failure at reduced diameters and threads. Depending on the diameter of the piston rod and the size of the threads attaching both the rod end accessory and the internal piston, fatigue failure can occur if an unsuitable piston rod is chosen. In all cases, rod end accessories should be securely butted up against the rod shoulder.

Notes

Push Loads – 12 mm and 14 mm diameter piston rods with four wrench flats should be restricted to 160 bar working pressure.

Pull Loads – Where a small diameter rod option is to be used in a high cycling, pull load application at or close to 210 bar working pressure, please consult Parker for guidance.

HMI, HMD and HMIX Cylinder Ranges

All rod ends can be supplied with two or four wrench flats. See Fatigue Failure, above, regarding pressure limitations where four flats are specified.

HMI cylinders are available with all of the rod sizes, rod end styles and rod end threads shown in the table.

HMD cylinders are only available with rod diameters No. 1 and No. 2, and only with the rod end threads highlighted in blue in the table.

HMIX cylinders are available with bore sizes from 40 mm to 200 mm, with all of the rod sizes, rod end styles and rod end threads shown in the table.

Selecting a Piston Rod End Type

Standard Male Rod Ends

The large thread diameter of the standard rod ends, Code 1 (with four wrench flats) or Code 4 (with two wrench flats), provides the maximum resistance to fatigue failure and is recommended for all applications. The rod end accessory or attachment should be securely butted up against the rod shoulder.

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Non-Standard Rod Ends

Non-standard piston rod ends are designated Style 3. For more information, please contact us.

Example 1 – Cylinder Cap End Accessory

Cylinder Specification:

- Cap fixed clevis (style BB – supplied complete with pivot pin), 80 mm bore

Accessory Specification:

- Position – cap end of cylinder
- Mounting – pivoting
- Alignment – fixed; movement in a single plane of motion

Recommended Accessory: Eye bracket

Accessory Sizing:

- Identify pin diameter at cap end of cylinder – 28 mm
- Select part number of corresponding eye bracket from web page or catalogue* – 144813
- Check dimensions. Use CAD view of 144813 on web page or refer to catalogue* to establish that the pin height, arc of travel etc. are suitable for the application.

Example 2 – Piston Rod End Accessory

Cylinder Specification:

- Cap fixed eye with spherical bearing (style SB3), 63 mm bore

Accessory Specification:

- Position – piston rod end
- Mounting – pivoting
- Alignment – to accommodate up to 4° of misalignment

Recommended Accessory: Rod eye with spherical bearing

Accessory Sizing:

- Select Code 7 rod end, to suit rod eye with spherical bearing
- Identify rod end thread from table opposite: M20x1.5
- Select part number of rod eye with spherical bearing from web page or catalogue* to suit thread – 145258
- Confirm pin diameter – 30 mm at each end of cylinder
- Check dimensions. Use CAD view of 145258 on web page or refer to catalogue* to establish that pin diameter, pin height, arc of travel etc. are suitable for the application.

*Full information for specifying a Parker HMI or HMD hydraulic cylinder can be found in catalogue HY07-1150/UK – click here

For the HMIX feedback cylinder catalogue HY07-1175/UK, click here

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Key

1 Rod clevis
2 Rod eye with plain bearing
3 Rod eye with spherical bearing
4 Pivot pin
5 Eye bracket
6 Clevis bracket

For the HMIX feedback cylinder catalogue HY07-1175/UK, click here