

Mechocean

ENGINEERING | TRUST | QUALITY



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Hydraulic Cylinder Selection

A Hydraulic cylinder is a device consisting essentially of a movable piston and rod assembly contained within a cylindrical bore which is actuated by an operating medium and uses the pressure of that fluid to produce mechanical force and linear motion.

The power output, or thrust produced is the product of the system pressure multiplied by the area of the internal piston surface upon which that pressure acts.

The proper selection of a fluid power cylinder requires the consideration of numerous factors influenced by the expected application conditions.

Those factors include the cylinder mounting style, stroke length, cycle speed, operating pressure, operating media, mounting attitude, direction of work force, and means of stopping the work load after it is put in motion.

Prior to selecting a model for use, the engineering information section which follows should be thoroughly reviewed and the final cylinder specifications established as a result of determinations based on design recommendations applicable to the intended use. The given information will aid in the selection of the proper cylinder bore, mounting, rod diameter, and the inclusion of recommended optional construction features.

Push side cylinder force, $F_1 = A_1 \times P \times \beta$ (kgf)

Pull side cylinder force, $F_2 = A_2 \times P \times \beta$ (kgf)

A_1 : Push side piston pressurized area(cm²)

A_2 : Pull side piston pressurized area (cm²)

D : Cylinder bore (cm)

$$A_1 = \frac{\pi}{4}D^2$$

d : Diameter of piston rod (cm)

$$A_2 = \frac{\pi}{4}(D^2 - d^2)$$

P : Operating pressure (kgf/cm²)

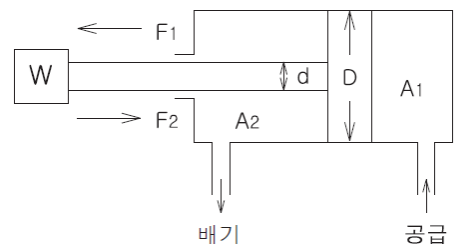
β : Load rate (%)

When deciding the actual cylinder output, the resistance in the cylinder slipping part and the pressure loss in the piping and machines must be considered.

The load rate is the ration of the actual force loaded onto the cylinder to the theoretical force (theroetical cylinder force) calculated from the circuit set pressure. The general set points are shown below.

For low speed working : 60~80%

For high speed working : 25~35%



TIE ROD CYLINDERS

Tie-rod type, Medium, High Pressure hydraulic cylinders, available with a wide range of mounting arrangements conforming to CETOP recommendations.

Specifications

- Rated pressure 50 -170 kg/cm².
- Peak pressure 70 -210 Kg/cm².
- Cylinder bore diameters: 25mm to 350mm.
- Strokes up to 3000 mm.
- Temperature range: -20°C to 90°C. (Optional seal systems for temperatures up to 180°C)

Application

These cylinders are designed and constructed for high duty cycles in Machine Tool applications.

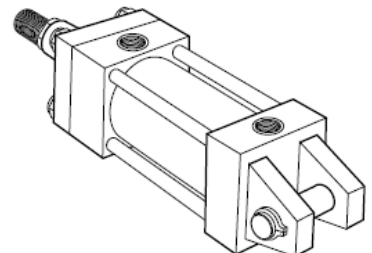
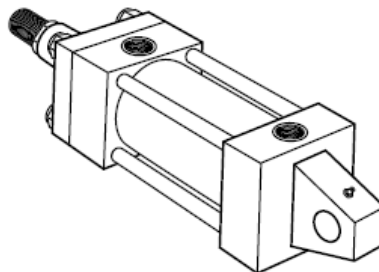
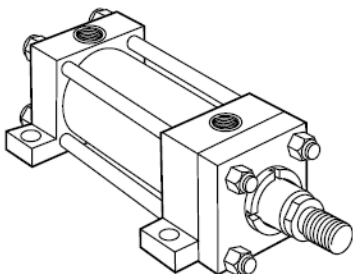
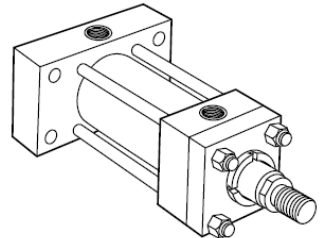
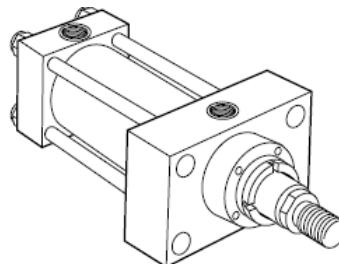


Mechocean offer a wide range of custom built Tie-Rod Hydraulic Cylinders

□ Mounting Styles:

Mechocean offers Tie Rod Hydraulic Cylinders with wide range of mounting arrangements:

- Head Flange Mounting
- End Cap Flange Mounting
- Side Lugs Mounting
- End Cap Fixed Eye Mounting
- End Cap Fixed Celvis Mounting



WELDED HYDRAULIC CYLINDERS

This type of cylinder usually has a narrow body and often a shorter overall length and can be offered with long strokes. Mechocean offers wide variety of welded hydraulic cylinder with different mounting styles.

Specifications

Rated Pressure: 210 kg/cm².

Cylinder Bore Diameter up to 400 mm.

Strokes up to 5000 mm.

Temperature range: -20°C to 90°C. (Optional sealing systems for temperatures up to 180°C)

Application

These Welded Cylinders are mainly used in Material Handling, Construction, Earth-Moving and Agricultural Equipment.

Mechocean offer a wide range of custom built Welded Cylinders



CUSTOMISED HYDRAULIC CYLINDERS

Mechocean offer wide range of customized hydraulic cylinder including compact cylinders, Clamping Cylinders, Rotary Cylinders, Telescopic Cylinders for various applications.