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# HYDRAULIC COMPONENTS

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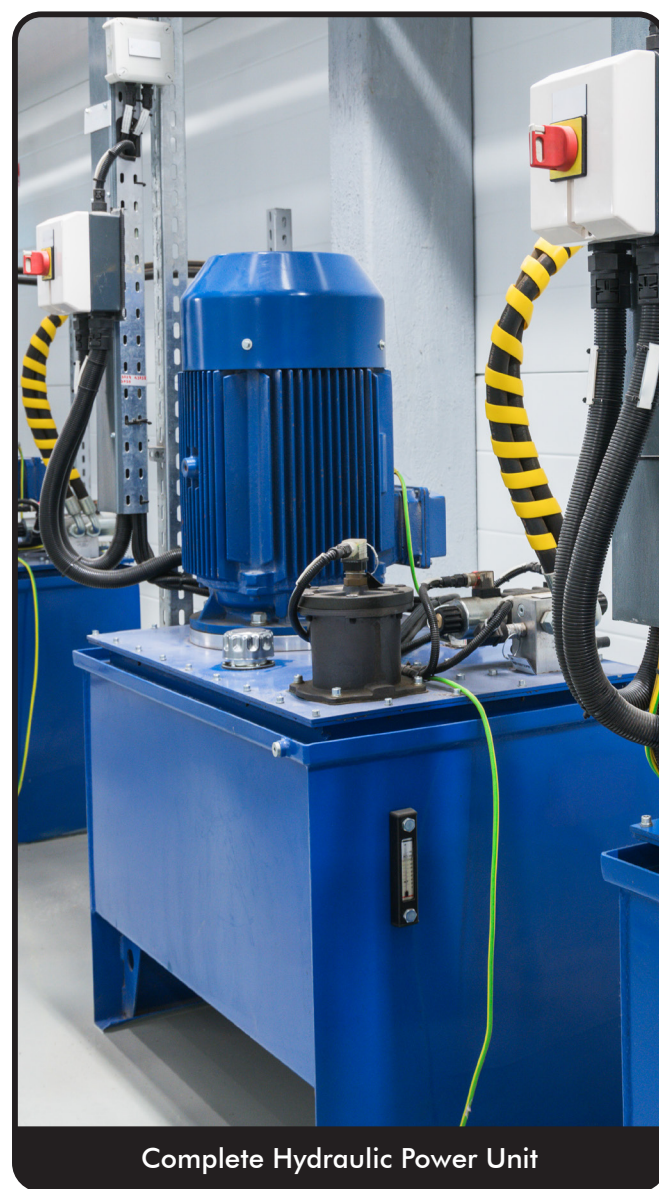
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# Hydraulic Systems Provide Reliable High Power Motion

Fluid power is generally divided into two main categories: Pneumatics and Hydraulics. Pneumatic systems use compressed air for low-cost applications requiring moderate forces or torques. Hydraulic systems use incompressible fluid (typically oil) at much higher pressure. The higher system pressure allows actuators to produce much higher forces or torques and the incompressible fluid allows for very precise positioning in actuators. Hydraulic systems also operate in a much smoother way with steadiness throughout the motion, whereas a pneumatic system can be described as somewhat quick and jerky.



Complete Hydraulic Power Unit

Hydraulic actuators and motors can also be utilized in dangerous environments where an electric motor-driven device would be unsafe due to potential sparks.

While hydraulic systems can be complex, it is possible to build a durable, powerful system for many industrial applications with a few basic components. The main components are a fluid reservoir, pump, filters, control valves, actuators, pipes or hoses, and fittings.

Since the primary medium of a hydraulic system is hydraulic fluid, there needs to be a place to store it. A fluid reservoir is a tank that holds the fluid, protects it from contaminants, removes air, and helps cool the fluid.

Pumps generate the flow of hydraulic fluid so that it can be useful in producing energy. Normally the pumps are controlled by an electric motor. However, combustion engines are sometimes used to operate hydraulic pumps on vehicles or other mobile systems.

Filters are just what they sound like in that they remove contaminants from hydraulic fluid to prevent seal breakdown and heat buildup from unnecessary friction. Sounds simple but hydraulic system filtration is very important and without proper filtration the system will fail prematurely due to fluid contamination causing wear and heat buildup in the system. A proper hydraulic filtration system is required for smooth operation and a reliable system.

Valves control the flow of fluid throughout the system and direct the fluid to where it is supposed to go. Control valves are available in manual, piloted, and solenoid operated styles.

Last but not least are hydraulic actuators. These devices translate the flow of fluid into mechanical motion or torque. Most of the time when we think of hydraulic actuators, we are thinking about hydraulic cylinders which are linear actuators. Hydraulic motors are another type of actuator that converts the flow of hydraulic fluid into rotational motion.



Hydraulic Press

## What types of applications use hydraulic power?

For applications that require more than just simple movement of light or medium-weight objects where pneumatics can be used, hydraulics are often chosen and usually found in industrial applications such as:

- Elevators or lifts
- Hoppers
- Rams
- Industrial presses
- Industrial clamps
- Large industrial shears

Hydraulics are also used in everyday applications that we neglect to notice such as:

- Power steering and braking systems in vehicles
- Automatic transmissions
- Elevators
- Hydraulic log splitters

## Why buy hydraulic cylinders from us?

There are many distinct advantages to buying hydraulic cylinders from us. For decades AutomationDirect has been known as a reliable source for automation equipment such as PLCs, drives, mechanical power

transmission components, and pneumatic components. We have consistently delivered quality products to our customers and can get them to our customers quickly.



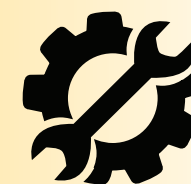
### Price

As with all of our product lines, our prices are often well below the list prices of traditional automation suppliers. Our direct business model allows us to operate more efficiently than other suppliers and pass the savings on to you.



### Quality

All of the hydraulic cylinders and accessories we sell have a 2-year warranty



### Service

We give you options for self-service but at the same time, we are there when you need us. You can place your order online or call our customer service. Have a technical question about one of our products or need help gathering up a bill of materials for one of your projects? You can call our Free Technical Support.

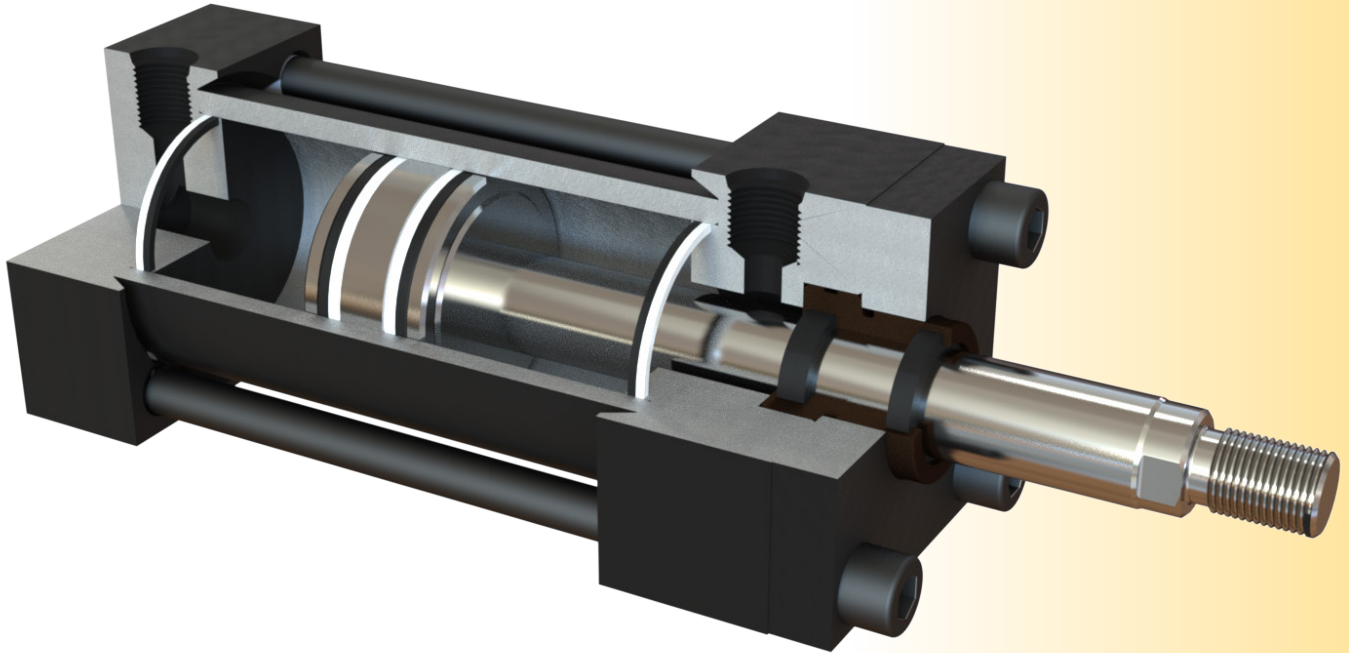
# Hydraulic Cylinders in Stock and Ready to Ship!

AutomationDirect carries the Peninsular brand of NFPA standard hydraulic cylinders. Unlike other suppliers, our hydraulic cylinders are in stock and ready to ship to you - no long lead times for made-to-order cylinders. These double-acting cylinders are fabricated to very

strict tolerance specifications from the highest quality materials. Many bolt-on mounting options allow for installation flexibility and replacement of existing cylinder installations.

Peninsular hydraulic cylinders offer the features needed for most common applications:

- Interchangeable with other popular brands of NFPA cylinders
- Available bore sizes: 1-1/2", 2", 2-1/2", 3-1/4", 4"
- Wide selection of stroke lengths
- All models are double-acting
- Tapped end caps for mounting accessories
- Ductile iron rod bearing
- 3000 psi working pressure
- Temperature range is -20° F to 200° F
- Bolt-on mounting accessories include front or rear flange mounts, rear pivot eye mounts, rear clevis mounts, and rod clevis mounts
- Made in the USA
- All models are typically available for same-day shipment



Optional mounting accessories available:



Flange Mounting Plate



Rear Pivot Eye



Rear Clevis Bracket



Rod Clevis