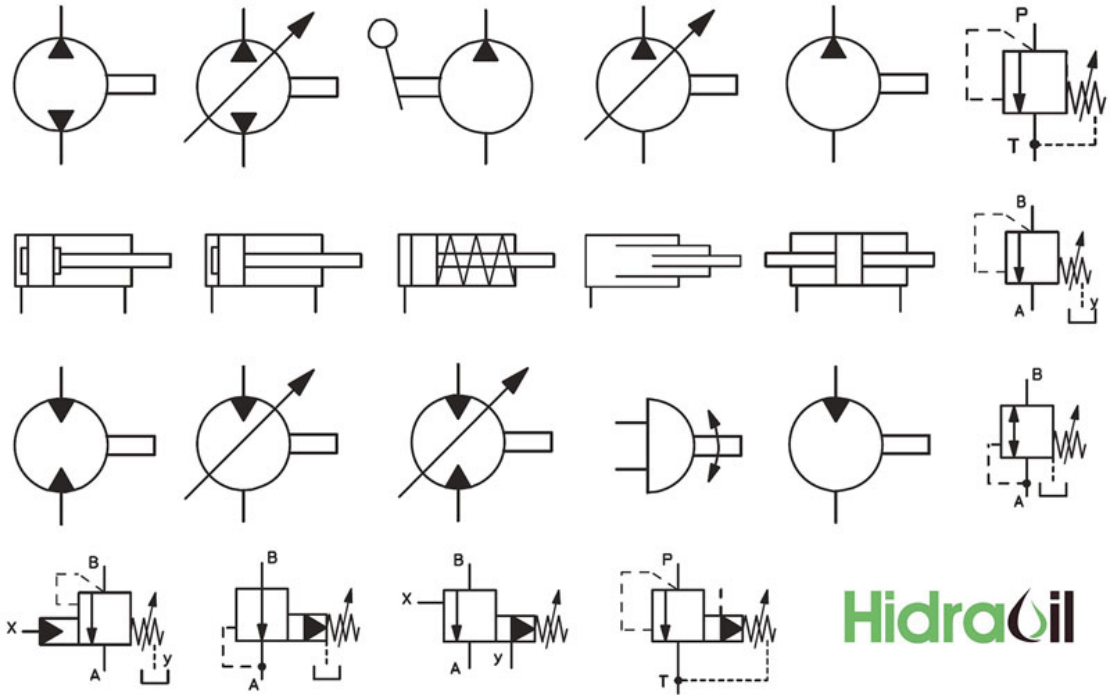
Hydraulic symbols

Illustrated guide to reading hydraulic circuit diagrams



The PDF includes the illustrated symbol tables and the guide to reading circuit diagrams.

77 symbols	11 tables	EN

Edition 2026-11-09 · Hidraoil Fluid Power

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Hydraulic symbols represent pumps, motors, cylinders, valves and connections in a circuit diagram. They describe function and the relationship between components rather than each part's physical shape or installation position. Understanding this language helps with maintenance, component identification and interpreting how a machine operates.

The ISO 1219 family provides a reference framework for fluid-power symbols and circuit diagrams. This guide brings together common symbols for consultation. The manufacturer's schematic and machine documentation remain essential when interpreting a specific circuit.

How to read a hydraulic schematic

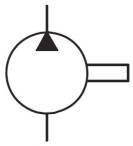
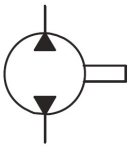
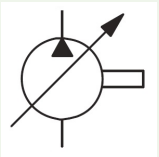
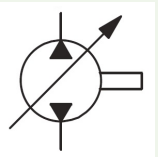
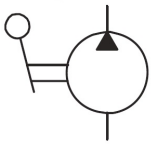
Start by identifying the power source, pump, reservoir and actuators. Then follow the working, return, pilot and drain lines. Distinguish a connected junction from crossing lines without a connection: confusing them changes the circuit's meaning.

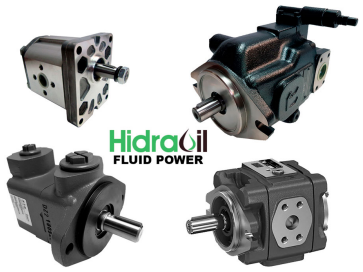
Arrows indicate functions such as flow direction or adjustability, depending on the element. Each box in a directional valve represents a position, with internal lines showing the connections. Symbols at the sides, such as springs and solenoids, show how the valve is actuated or returned.

A symbol alone does not establish flow rating, maximum pressure, thread type or component size. Drawings also do not all represent the same initial condition. Check the diagram notes and the manufacturer's intended rest, actuated and safety states.

Hydraulic pump symbols

Pump symbols distinguish operating direction and fixed or variable displacement. A hand pump is identified by its actuation. Actual selection also requires flow, pressure, speed and inlet-condition data.

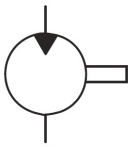
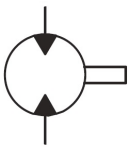
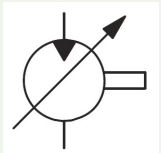
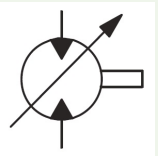
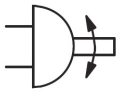
Component or function	Symbol	Component or function	Symbol
Fixed-displacement pump, unidirectional		Fixed-displacement pump, bidirectional	
Variable-displacement pump, unidirectional		Variable-displacement pump, bidirectional	
Hand pump			



Read more about hydraulic pumps or browse the pump category.

Hydraulic motor symbols

A hydraulic motor converts fluid energy into rotation. Its symbols distinguish reversibility and variable displacement. A limited-rotation actuator does not necessarily represent a motor capable of continuous rotation.

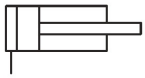
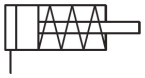
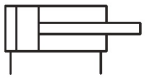
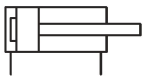
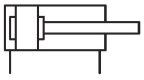
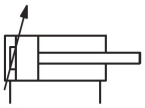
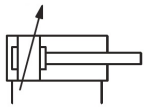
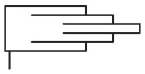
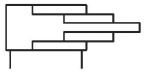
Component or function	Symbol	Component or function	Symbol
Fixed-displacement motor, unidirectional		Fixed-displacement motor, bidirectional	
Variable-displacement motor, unidirectional		Variable-displacement motor, bidirectional	
Limited-rotation rotary actuator			



See the hydraulic motor guide and motor families.

Hydraulic cylinder symbols

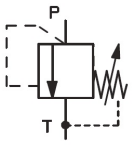
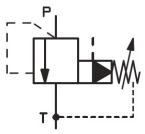
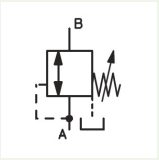
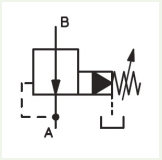
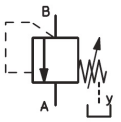
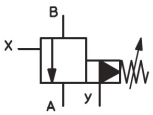
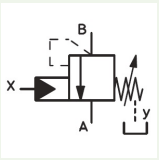
A single-acting cylinder may return through an external force or a spring. In a double-acting cylinder, fluid acts in both directions. End cushioning and adjustable cushioning are different functions from adjusting the cylinder stroke.

Component or function	Symbol	Component or function	Symbol
Single-acting cylinder with external-force return		Single-acting cylinder with spring return	
Double-acting cylinder		Double-acting cylinder with double-ended rod	
Cylinder with cushioning at one end		Cylinder with cushioning at both ends	
Cylinder with adjustable cushioning at one end		Cylinder with adjustable cushioning at both ends	
Single-acting telescopic cylinder		Double-acting telescopic cylinder	

Check the hydraulic cylinders and their mounting dimensions.

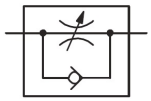
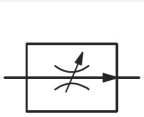
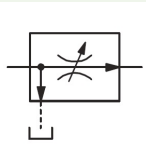
Pressure control valve symbols

Relief, reducing, sequence and counterbalance valves perform different functions. Pilot operation changes how an element is controlled; it does not automatically make one valve equivalent to another. Read the complete symbol, including pilot and drain ports.

Component or function	Symbol	Component or function	Symbol
Direct-acting pressure relief valve		Pilot-operated pressure relief valve	
Direct-acting pressure reducing valve		Pilot-operated pressure reducing valve	
Direct-acting sequence valve		Pilot-operated sequence valve	
Counterbalance or overcenter valve			

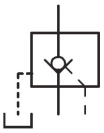
Flow control valve symbols

A throttle creates a restriction. A pressure-compensated flow controller includes a function that reduces the influence of pressure changes within its operating conditions. A check valve provides different behaviour in the opposite direction.

Component or function	Symbol	Component or function	Symbol
Adjustable bidirectional throttle valve		One-way flow control valve with check valve	
Two-port pressure-compensated flow control valve		Three-port pressure-compensated flow control valve	

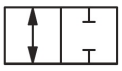
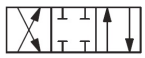
Check valve symbols

Check valves allow flow in one direction and block the opposite direction according to their design. Pilot pressure may permit controlled opening of the blocked path. Interpret an external drain with the rest of the circuit, without confusing it with a main working connection.

Component or function	Symbol	Component or function	Symbol
Check valve without spring		Spring-loaded check valve	
Pilot-operated check valve		Pilot-operated check valve with external drain	

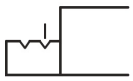
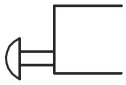
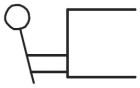
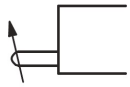
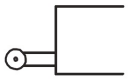
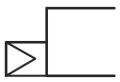
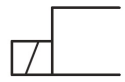
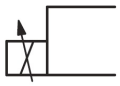
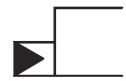
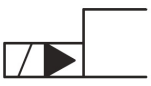
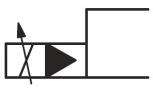
Directional control valve symbols

The first number indicates the number of main ports and the second the number of positions. A 4/3 valve has four ports and three positions. Read the centre box explicitly: different centre configurations provide different connections.

Component or function	Symbol	Component or function	Symbol
2/2 directional valve: two ports, two positions		3/2 directional valve: three ports, two positions	
4/2 directional valve: four ports, two positions		4/3 directional valve: four ports, three positions	

Valve actuation and return mechanisms

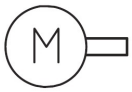
Actuation symbols are added to the main element. A detent holds a position, while a spring may return the valve to another position. Proportional control differs from electrical on/off actuation; the functions must not be confused when reading a diagram.

Component or function	Symbol	Component or function	Symbol
Detent		Pushbutton	
Lever		Adjustable stroke stop	
Return spring		Roller plunger	
Pneumatic actuation		Electrical solenoid	
Proportional solenoid		Hydraulic pilot actuation	
Electrohydraulic actuation		Proportional electrohydraulic actuation	

Find specific part numbers in the hydraulic control components.

Drive sources and mechanical power transmission

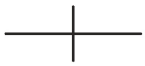
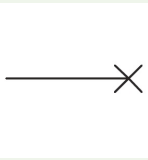
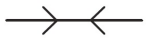
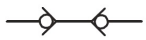
These symbols identify drive sources and shaft rotation directions. An electric motor is different from a hydraulic motor, even though both may appear in the same power unit diagram.

Component or function	Symbol	Component or function	Symbol
Electric motor		Internal combustion engine	
Shaft rotating in one direction		Shaft rotating in both directions	

See the electric motor category.

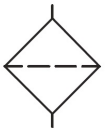
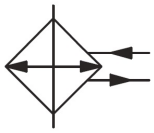
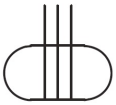
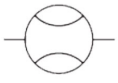
Connections, lines and pressure test points

Line styles distinguish main connections, pilot circuits and drains. Quick-release couplings and measurement points have their own symbols. The drawing legend clarifies specific conventions and avoids relying solely on line colour.

Component or function	Symbol	Component or function	Symbol
Main working line		Pilot line	
Drain line		Flexible hose	
Crossing lines without a connection		Connected line junction	
Closed pressure test connection		Connected pressure test connection	
Quick-release coupling		Quick-release coupling with check valves	

Accumulators, filters and hydraulic accessories

Accessories complete a circuit with energy storage, fluid conditioning and measurement. Distinguish heaters from coolers, and pressure from differential pressure. Reservoir symbols also convey information about fluid level and pipe connections.

Component or function	Symbol	Component or function	Symbol
Hydraulic accumulator		Filter	
Fluid heater		Fluid cooler	
Liquid-cooled heat exchanger		Reservoir with pipes above the oil level	
Reservoir with pipes below the oil level		Pressurised reservoir	
Pressure gauge		Differential pressure gauge	
Pressure switch		Flowmeter	

Identify a component by combining its symbol with its label, parts list and nameplate. Browse hydraulic accessories or the product catalogue with these details available.