

Like other specialized diagrams, P&ID's are comprised of standard shapes and symbols. There's a huge variety of symbols, depending on industry and manufacturer, so we've created this guide to feature the most popular P&ID symbols supported within our [P&ID software](#) and is standardized for best practice across the industry.

Want to make a Piping & Instrumentation Diagram of your own? Try Lucidchart. It's quick, easy, and completely free.

[Make a P&ID](#)

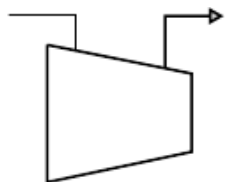
About P&ID symbols

[Piping and instrumentation diagrams](#), or P&IDs, are used to create important documentation for process industry facilities. The shapes in this legend are representative of the functional relationship between piping, instrumentation, and system equipment units. We've broken them down into seven main groups: equipment, piping, vessels, heat exchangers, pumps, instruments, and valves.

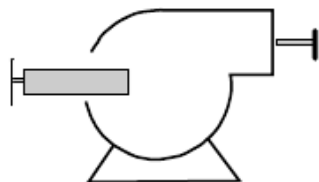
With Lucidchart, it's easy to access all of the featured P&ID symbols. Users can also import SVG and other image files to create a custom P&ID library for any situation.

Equipment symbols

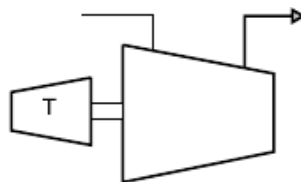
Equipment is comprised of miscellaneous P&ID units that don't fit into the other categories. This group includes hardware like compressors, conveyors, motors, turbines, vacuums, and other mechanical devices.



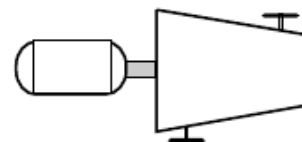
Axial Compressor



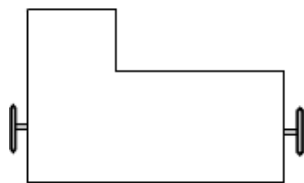
Centrifugal Compressor



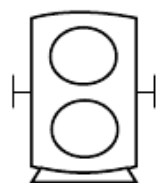
Centrifugal Compressor



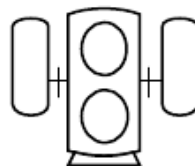
Centrifugal Compressor



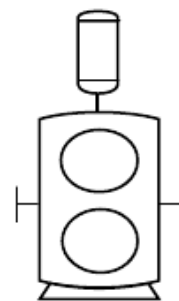
Reciprocation Compressor



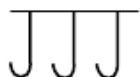
Rotary Compressor



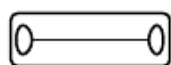
Rotary Compressor



Positive Displacement



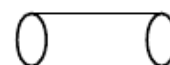
Overhead Conveyor



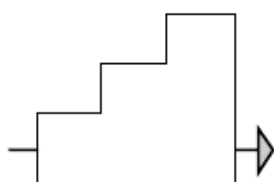
Scraper Conveyor



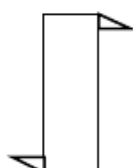
Screw Conveyor



Conveyor



Positive Displacement



Elevator



Elevator



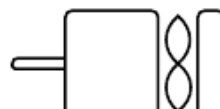
Hoist



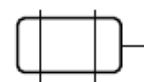
Skip Hoist



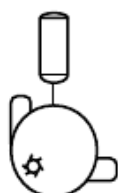
Motor



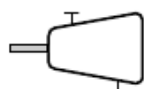
Diesel Motor



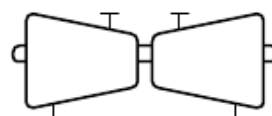
Electric Motor



Liquid Ring Vacuum



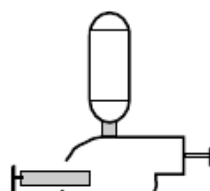
Turbine Driver



Double Flow Turbine



Agitator or Mixer





Drum



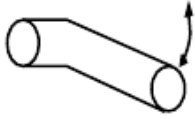
Tank



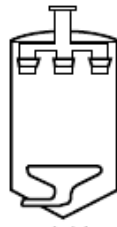
Centrifugal Blower



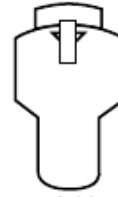
Alkylation



Boom Loader



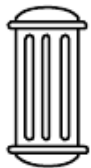
Fluid
Catalytic
Cracking



Fluid
Cooking



Fluidized
Reactor



Tubular



Reformer



Mixing
Reactor



Hydro-
desulfur-
ization

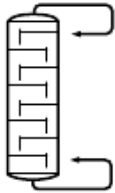
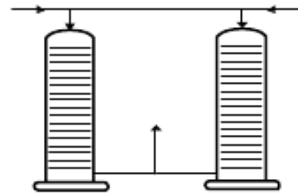
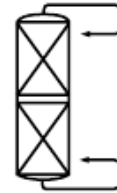


Plate
Tower



Hydrocracking



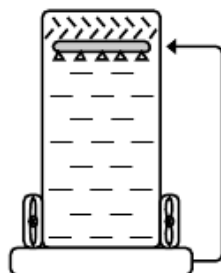
Packed
Tower



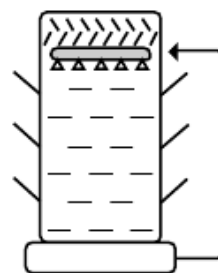
Chimney
Tower



Furnace



Counterflow Forced
Draft



Counterflow Natural
Draft



Crossflow
Induced




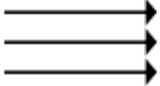














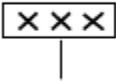




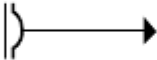


Oil Burner



Automatic
Stoker

Piping symbols

A pipe is a tube that transports fluid substances. Piping can be made of various materials, including metal and plastic. The piping group is made up of one-to-many pipes, multi-line pipes, separators, and other types of piping devices.

			
One to Many	Multi-lines	Mid-arrow	Butt Weld
			
Top to Top	Sonic Signal	Nuclear	Pneumatic
			
Hydraulic Signal Line	Mechanical Link	Soldered/Solvent	Double Containment
			
Flange	Flange 2	End Cap	End Cap 2
			
Breather	Electronically Insulated	Reducer	Inline Mixer
			
Separator	Bursting Disc	Flame Arrester	Flame Arrester 2



Detonation Arrester



Drain Silencer



Triangle Separator



Triangle Separator 2



Tundish



Open Vent



Siphon Drain



Removable Spool



Y Type Strainer



Diverter Valve



Pulsation Dampener



Duplex Strainer



Basket Strainer



Vent Silencer



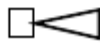
Inline Silencer



Steam Trap



Desuperheater



Ejector or Educator



Exhaust Head



Rotary Valve



Expansion Joint

Vessel symbols

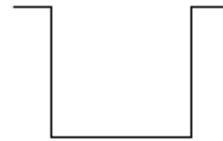
A vessel is a container that is used to store fluid. It may also alter the characteristics of the fluid during storage. The vessels category includes tanks, cylinders, columns, bags, and other vessels.



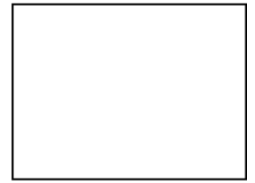
Vessel



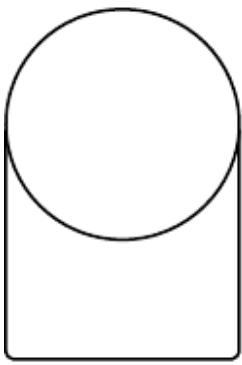
Open Tank



Open Top Tank



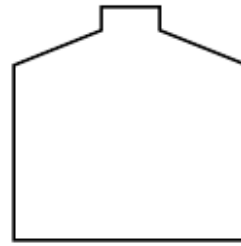
Closed Tank



Storage Sphere



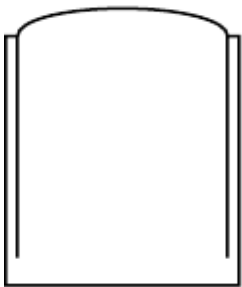
Column



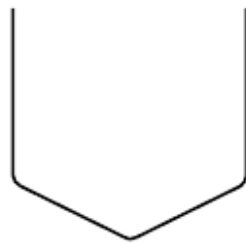
Tank



Tray
Column



Gas Holder



Clarifier



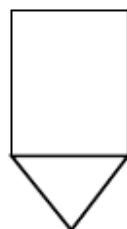
Gas
Cylinder



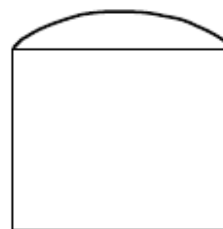
Bag



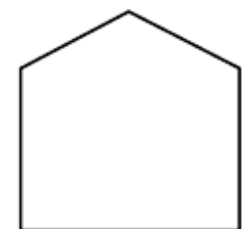
Reaction
Vessel



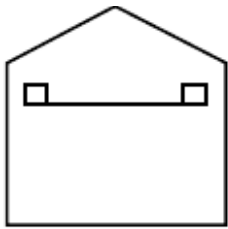
Bin



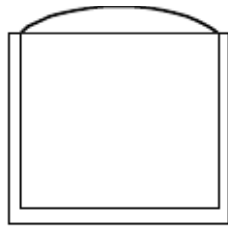
Dome Roof Tank



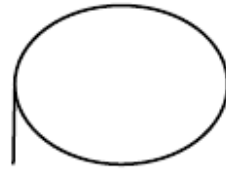
Cone Roof Tank



Internal Floating
Roof



Double Wall Tank



Onion Tank

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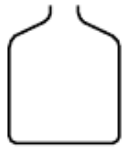
Enter your email address:

Sign up free

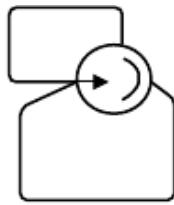
By signing up you agree to
our terms & conditions.

Heat exchanger symbols

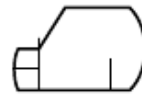
A heat exchanger is a device that's designed to efficiently transfer heat from different areas or mediums. This category includes boilers, condensers, and other heat exchangers.



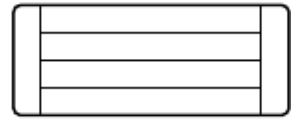
Boiler



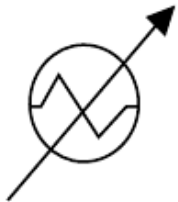
Boiler



Reboiler



Condenser



Condenser



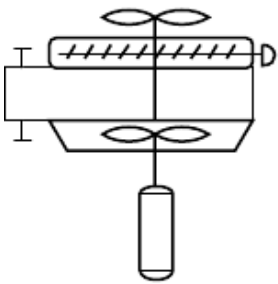
Evaporative
Condenser



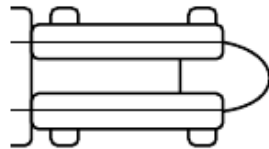
Cooling
Tower



Heat
Exchanger



Air Cooled Exchanger



Hairpin Exchanger

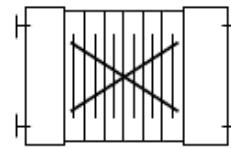
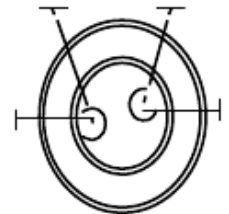
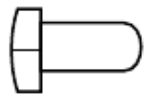


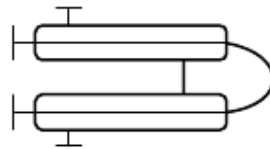
Plate And Frame
Heat Exchanger



Spiral Heat
Exchanger



U-Tube
Heat
Exchanger



Double Pipe Heat



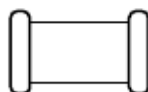
Shell and
Tube
Heat



Shell and
Tube
Heat



Shell and
Tube
Heat



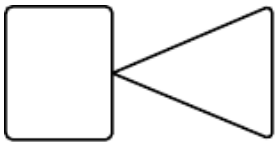
Single Pass
Heat



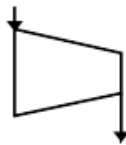
Heater

Pump symbols

A pump is a device that uses suction or pressure to raise, compress, or move fluids in and out of other objects. This section is comprised of both pumps and fans.



Ejector / Injector



Compressor /
Turbine



Motor Driven
Turbine



Triple Fan
Blades



Fan
Blades



Centrifugal
Pump



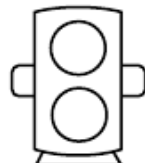
Centrifugal
Pump



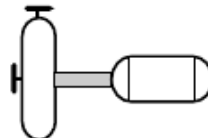
Centrifugal
Pump



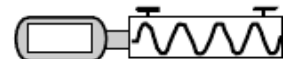
Centrifugal
Pump



Gear Pump



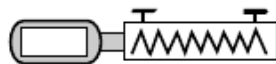
Horizontal Pump



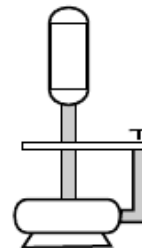
Progressive Cavity
Pump



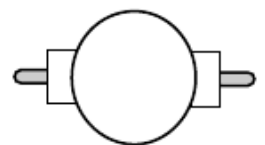
Screw
Pump



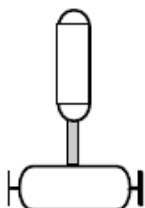
Screw Pump



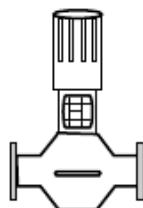
Sump Pump



Vacuum Pump



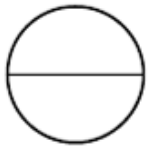
Vertical
Pump



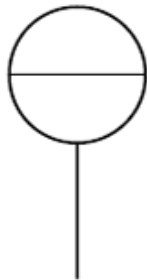
Vertical
Pump

Instrument symbols

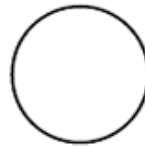
An instrument is a device that measures—and sometimes controls—quantities such as flow, temperature, angle, or pressure. The instruments group houses indicators, transmitters, recordings, controllers, and elements.



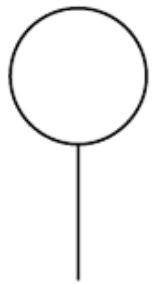
Indicator



Indicator 2



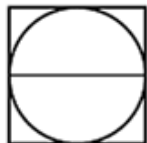
Indicator 3



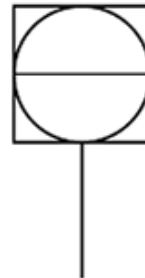
Indicator 4



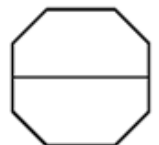
Indicator 5



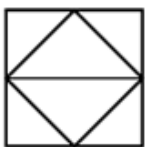
Shared Indicator



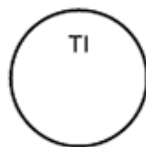
Shared Indicator 2



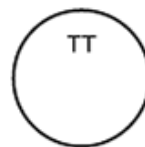
Computer Indicator



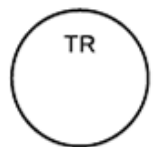
Programmable Indicator



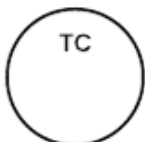
Temp Indicator



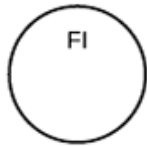
Temp Transmitter



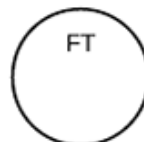
Temp Recorder



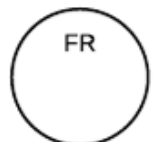
Temp Controller



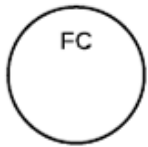
Flow Indicator



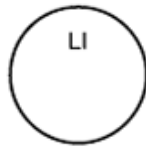
Flow Transmitter



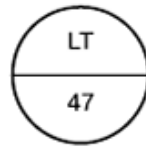
Flow Recorder



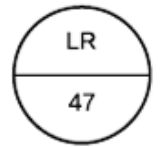
Flow Controller



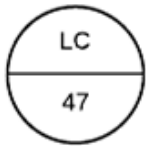
Level Indicator



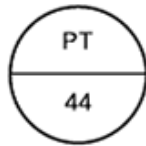
Level Transmitter



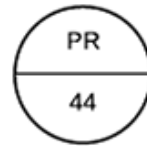
Level Recorder



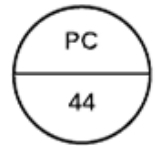
Level Controller



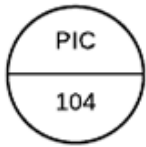
Pressure Transmitter



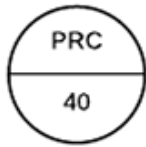
Pressure Recorder



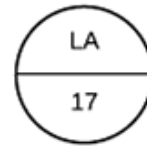
Pressure Controller



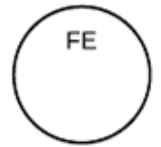
Pressure Indicating



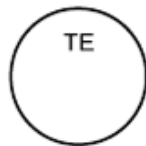
Pressure Recording



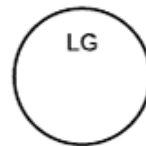
Level Alarm



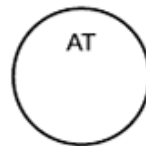
Flow Element



Temperature Element



Level Gauge



Analyzer Transmitter



Transducer

Valve symbols

A valve regulates, directs, or controls the flow of a fluid by opening, closing, or partially obstructing passageways in a piping system. This category includes rotameters, orifices, and other types of valves.



Gate Valve



Gate Valve



Globe Valve



Control Valve



Back Pressure



Needle Valve



Butterfly Valve



Butterfly Valve



Ball Valve



Diaphragm



Plug Valve



Gate Valve



Globe Valve



Check Valve



Check Valve 2



Angle Valve



Angle Valve



Angle Valve



Powered Valve



Solenoid Valve



Hydraulic Valve



Motor-operated Valve



Float-operated Valve



Needle Valve



3-Way Plug Valve



4-Way Valve



Gauge



Bleeder Valve



Orifice



Rotameter