



# 20-sim

The power in modeling

## Hydraulics Library

The 20-sim hydraulics library contains components to model the dynamic behavior of hydraulic circuits. The library is part of the iconic diagrams library of 20-sim. This means that you can simply connect the components of the hydraulic library without bothering about the mathematical equations. In this way you can create a model, similar to drawing a hydraulic circuit on a piece of paper.

### Components

For all components of the library the standard ISO symbols have been used.

- Cylinders: double acting, single acting, spring return.
- Displacement pumps with fixed and variable displacement.
- Laminar resistances and orifices with fixed and variable sizes.
- Flow sensors and pressure sensors.
- Proportional and directional valves: two way, three-four way.
- Pressure reducing and pressure relief valves.
- Flow control valves and check valves.
- Accumulators, tanks and constant volumes.

The library components are open. You can inspect the underlying equations and change them to create you own library components.

### Building models

Hydraulic components can easily be coupled to other library models. The pumps and motors have a rotation port that can be coupled to models of the rotation library.

The cylinder models have a translation port that can be coupled to models of the translation library. Some models have a variable input that can be coupled to models of the signal library. Together with the sensor models, control loops can be added using the control library.

Most hydraulic components have lumped volumes to ensure a seamless connection with other components. As a result almost all components can be connected arbitrarily.

### Reference

The 20-sim hydraulic library has been based on the literature of P. Dransfield and P. Beater. The library comes standard with 20-sim. No additional fees are required.

