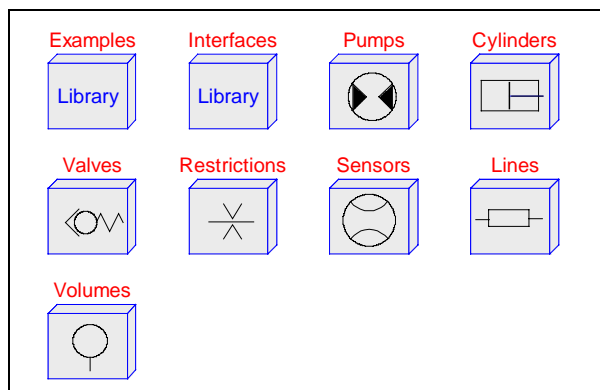


Hydraulics Library HyLib



Scope of the Library

The hydraulics library of Dymola is a powerful yet simple to use tool for the modeling of hydraulic systems using mineral oil. Applications include machine tools, automatic transmissions, and open or closed circuit drives used in for example excavators or forklift trucks.

There is a seamless integration of the hydraulics library with other Dymola libraries, see for example the model of the forklift truck below.

Theoretical Background

There is quite a number of simulation packages for hydraulic components that use simple textbook models. For real applications these models usually fail because

they lead to severe numerical problems. Often the source of the models is not given so that a modeler has to make guesses about them. In HyLib all models can be examined at source code level and over 100 references give a sound theoretical background.

Use of the Library

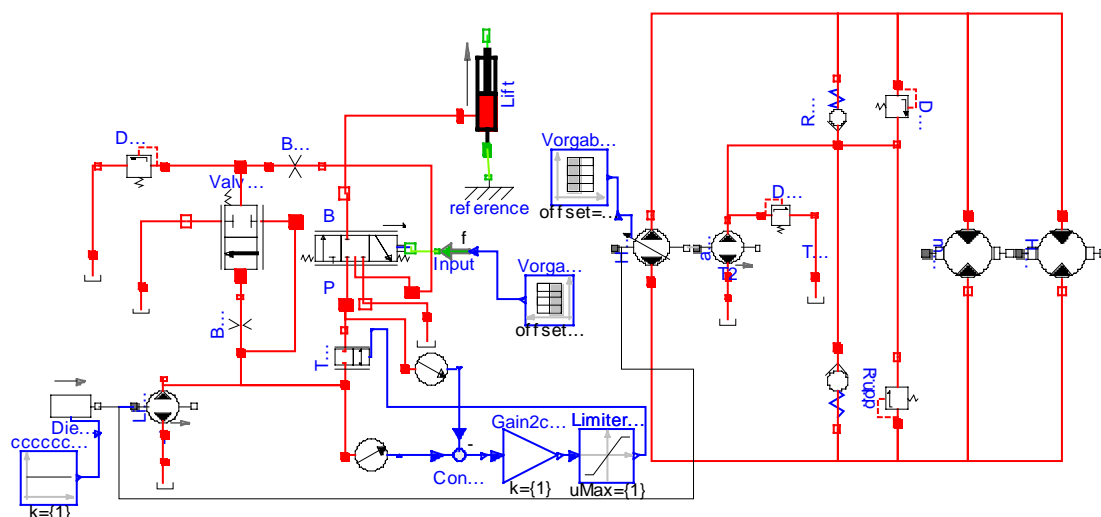
The hydraulics library provides basic model classes for the modeling of pumps, motors and cylinders, restrictions and valves, hydraulic lines, lumped volumes and sensors. In total there are more than 90 models.

For standard applications these classes cover all needed components. If, however, specially designed components are used these can be easily modeled by modifying library components. All relevant effects, like spool forces, metering orifices, pressure dependent bulk modulus, are available as submodels.

The modeling concept allows hydraulic components to be connected in an arbitrary way, e.g. in series or in parallel, just by drawing connection lines, no special components for splits or mergers are required.

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Model of a hydraulic circuit of a forklift truck with its hydraulic circuit, mechanical parts and the control system.