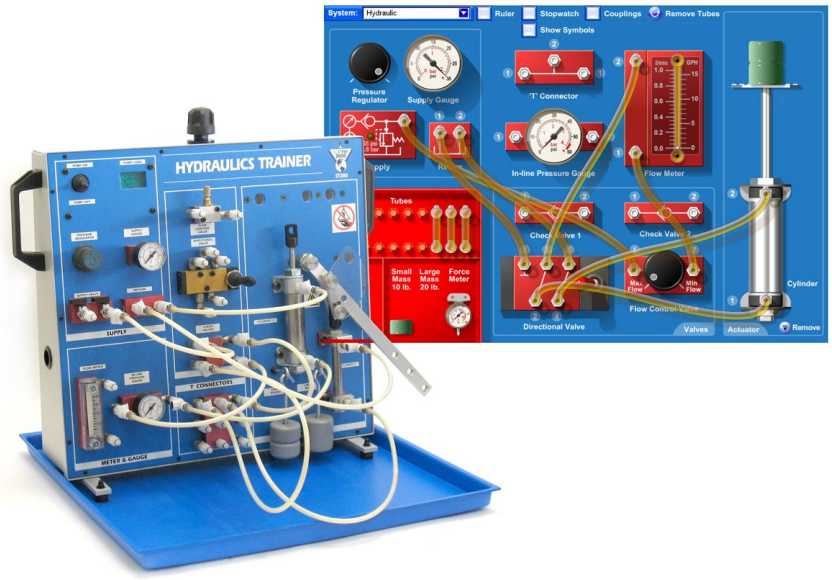
Hydraulics (Engineering Unit)



This is one of a series of instructional curriculum units designed specifically to operate within a lockstep environment where all students carry out assignments simultaneously within the same topic area. It can be run independently, or as an ideal addition to our ScanTEK Technology Program.

This unit makes use of hardware supplied with the ScanTEK technology module. It includes 10 lessons of on-screen curriculum materials in an html format. These can be delivered via a LAN using our Class*Act* classroom management system or via the Internet using our Class*Campus* management system.

The curriculum includes continuous assessment, assessment tests and a workbook journal to create a portfolio of work during the lessons. Typical activities include hands-on investigations, problem-solving, and group projects.

Each lesson contains between one and two hours of study. A lesson typically begins with a PowerPoint presentation that provides students with background information required to complete the rest of the lesson. If used with our Class*Act* SRS system, questions integrated into the PowerPoint presentation can be tracked as each student responds on their handheld keypad.

Demonstration activities are carried out by the instructor using purpose built hardware. Students carry out hands-on activities using a software simulation of the hardware. The students also have an opportunity to verify their solutions using the hardware.

Where appropriate, research activities that include the use of multimedia explorers are also incorporated.

This instructional unit uses a unique software simulation of hydraulic systems. This enables a whole class to carry out activities in the same topic areas at the same time.

The simulator allows the student to construct, operate and evaluate hydraulic circuits. The dump truck system allows students to design, construct and operate the hydraulic system of a dump truck tipper.

A variety of hydraulic components are provided in the simulator. These components are:

- Pressure Regulator
- In-line Pressure Gauge
- Flow Meter
- Flow Control Valve
- Check Valves
- T-Piece
- Double-acting Cylinder
- Hydraulic Motor
- Force Meter

Topic areas include:

- Principles of Hydraulics
- Components, Symbols and Circuits
- Basic Hydraulic Laws
- Actuators
- Levers and Movement
- Valves and Flow Control
- Creating Pressure with Pumps
- Speed Control of Cylinders
- Cylinder Design
- Problem Solving – Dump Truck Tipper

Activities include:

- Identify the fundamental parts of a hydraulic system.
- Construct a hydraulic circuit to operate a hydraulic cylinder.
- Compare hydraulic components to schematic symbols.
- Identify the basic laws governing hydraulics.
- Demonstrate Pascal's law.
- Explain the operation of hydraulic actuators.
- Measure the pressure created by a hand pump.
- Control cylinder speed using a flow control valve.

Each lesson is designed to meet a number of performance objectives. These include academic, technical and occupational objectives. The lessons are written in such a way as to enable a student to attain the performance objectives, with continuous assessment activity questions and assessment test questions linked to these in order to provide a measure of true competency.

The performance objectives are used by the ClassAct or ClassCampus management systems to generate a comprehensive portfolio of student reports.

The items supplied with this instructional unit include:

- 12 x Hydraulics Accessory Kit-A
- On-screen Student Curriculum CD
- Instructor's Guide

Additional items required:

- ST280/10 Hydraulics
- Computer

Module Facts

Order as:
ST280/LS/10 Hydraulics (Engineering)

	No.	Average time
Lessons	10	90 mins
	Total	15 hours

Class*Act*, Class*Act* SRS & Class*Campus* enabled

LJ Technical Systems
Web site: www.ljgroup.com

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