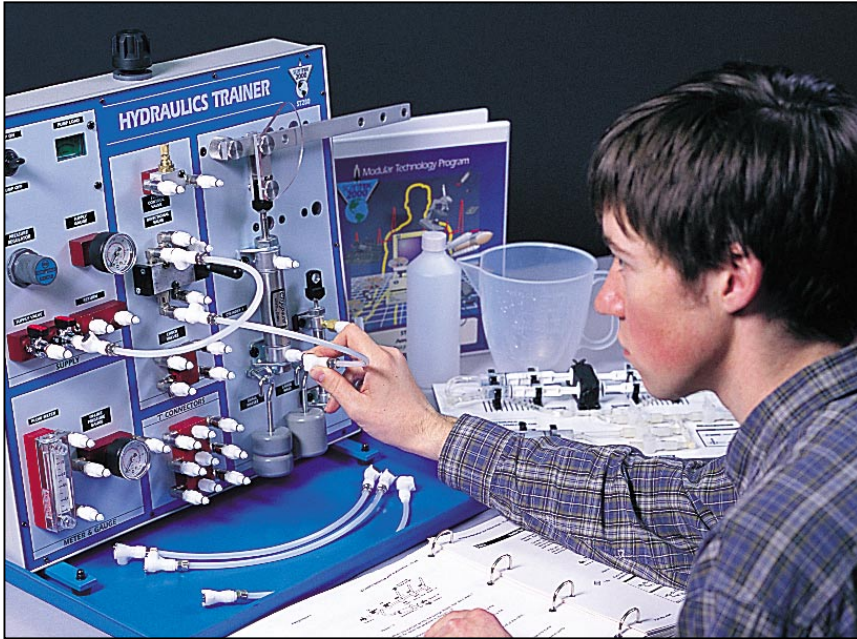# Hydraulics (10-assignment)

This is an integrated instructional module designed specifically to operate within a Modular Program environment. It is ideal for use with our Scantek Technology program. The module includes a 10-assignment exploratory curriculum that is split into two parts. Each part includes a pre-test and post test. The module includes hardware, software, and curriculum materials sufficient to provide a complete learning experience.

The curriculum incorporates continuous assessment through questions. When used in conjunction with a ClassAct networked management system, this provides instant feedback of student performance. The assessments begin with a comprehensive pre-test. This quiz includes questions for each subsequent assignment, together with questions that will specifically test math and reading ability.

Every assignment starts with a series of questions designed to track inventory. These ensure that any missing items are located before they are needed.

Each assignment is divided into a series of tasks. Hands-on tasks form the core of the student work. Where appropriate, these are accompanied by research tasks based upon illustrated textbooks. Assessment questions are incorporated into each task.

Typical 10-assignment topic areas include:
- Building and testing hydraulic circuits
- Pressure, force and area relationship
- Hydraulic component symbols

Typical 10-assignment topic areas include (continued):
- Compression of gases
- Cylinder diameter and speed relationship
- Hydraulic valves to control a circuit
- Energy flow in a hydraulic system
- Hydraulic lever
- Hydraulic cylinders
- Defines a hydraulic system
- Volumetric efficiency
- Bernoulli's law

Typical 10-assignment activities include:
- Find out what hydraulics is and the basic parts of all hydraulic systems.
- Investigate compressibility and compare the performance of oil and air.
- Explain compressibility using the structure of matter.
- Look at the pressure, force and area relationship.
- Discover Pascal's law and how it relates to hydraulic technology.
- Recognize how symbols can be used in hydraulics to simplify the design and drawing of circuits and components.
- Investigate hydraulic valves and how they are used to control what happens in a hydraulic circuit.
- Look at the output part of hydraulic systems – cylinders.
- Investigate fluid flow and how it is measured.
- Discover Bernoulli's law which relates fluid flow and pressure and see how flow rate affects cylinder speed.
- Investigate the formula F = P x A
- Discover the principle of the hydraulic lever and how hydraulic systems can be used to magnify forces.
- Design a hydraulic system to operate two cylinders in sequence and simulate an aircraft undercarriage system.

Each assignment is designed around a list of performance objectives. These lists include academic, technical and occupational objectives. The assignments are written in such a way as to enable a student to attain the performance objectives, with the assessment questions linked to these in order to provide a measure of true competency.

The performance objectives are used by the ClassAct management system to generate a comprehensive portfolio of student competency reports. Default reports supplied with this module include:
- Entry report
- Technical/Occupational Exit report
- Basic Skills report based upon the federal SCAN's report.

The items supplied with this instructional module include:
- 10-assignment On-Screen Student Assignment Guide CD
- 10-assignment Student Assignment Guide
- 10-assignment Student Workbook
- 10-assignment Instructor's Guide
- Computer Aided Instruction software
- Hydraulics Trainer
- Drip tray
- Hydraulic hoses
- Lever arm
- Swivel guard
- Fulcrum
- Pivot pins
- Stopwatch
- Hydraulic oil
- Funnel
- Paper towels

Additional items required:
- Computer

Module Facts

For Technology Program, order as:
ST280/10 Hydraulics

	No.	Average time
Assignments	10	45 minutes
Extension Activities	2	45 minutes
Total		9 hours

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