



Advanced Industrial Electro-Hydraulics with Proportional Control

The EXP6-A Industrial Electro-Hydraulics Training System with Proportional Control is designed for comprehensive hands-on study of OPEN and CLOSED LOOP electrical control of hydraulic systems using a PROPORTIONAL valve, PLC and components used in modern industry. It includes a student manual and instructor's guide which focus on the background and applications of combining hydraulics and electrical control in industrially relevant laboratory exercises.

The curriculum begins with a fundamental review of basic hydraulics principles and an introduction to programmable logic control (PLC). These sections are followed by hydraulic speed and position control with electrical logic circuits and schematics. Additional topics focus on typical electro-hydraulic applications found in industry.

An industrial grade component panel with built-in PLC, 24-volt DC power supply, instrumentation, and components is mounted on a slanted stainless steel surface for easy access when conducting experiments.

The component panel is attached to an "A-shaped" metal cabinet. A lockable storage area behind the panel provides space for manuals and additional components. Removable components on the panel, specialty components, and sensors from TII that expand the capabilities of the system can be mounted on the T-slot surface in front and on the panel.

The EXP6-A can be mounted on a mobile training bench that has cabinet space for the hydraulic power supply and allows the system to be wheeled between classrooms. The portability and rugged design of the training system allow it to meet demanding training schedules.

The EXP6-A is one of six building blocks in TII's industrial based Explorer Series of technology training systems. Other modules address the principles and applications of hydraulics, basic electro-hydraulics, pneumatics, basic electro-pneumatics, and sophisticated electro-mechanics of open/closed loop feedback control systems for pneumatics.

SPECIFICATIONS

The EXP6-A is a complete education / training system that covers electro-hydraulic open and closed loop proportional control technology in its three areas of instruction: Physical Properties and Fundamentals, Applications, and Electro-Hydraulic Control and Logic. The training system is constructed of a welded steel "A-shaped" frame with a formed sheet steel shell. The system is modular in design so that it can be used as a stand-alone table, on a countertop, or integrated into a bench configuration with other TII trainers. Components are either panel mounted, attached to a subplate for easy T-slot adjustable mounting, or loose. The EXP6-A is compatible with TII's EXP11-P1 or P5 hydraulic power supply systems. The front trainer panel consists of two sections.

1. The **Instrument Section** includes a system pressure gauge, two in-line pressure testing gauges, two four-port manifolds (pressure and return), a 24 volt DC power supply, two red-colored switches (momentary and latching) with electrical interfacing jacks, two indicator lights with electrical interfacing jacks, a system power on/off fused switch located to the right side of the "A-shaped" frame, and a hydraulic shut-off valve located to the left side.

2. The **Component Section** is constructed of 16 gauge stainless steel and angled for ease of use when reading gauges and building circuits. The PLC with thirteen I/O (6 digital inputs and 2 analog inputs with green colored jacks, 4 digital outputs and 1 analog output with white colored jacks) is embedded into the panel. All components and PLC Inputs/ Outputs are identified in large silkscreen lettering. Individual component electrical interfacing and PLC I/O is via panel mounted female connectors using the universal connecting patchcord/ banana jack systems.

PANEL COMPONENTS:

- Hydraulic Motor with Gear and See-thru Guard
- Proportional Directional Control Valve with Electronic Conditioning and Switching Relay
- Solenoid Directional Control Valve
- Double Rod Double Acting Cylinder (10 in stroke)
- Double Acting Cylinder (5 in stroke)
- Linear Transducer (0 to +10 V)

Additional Components:

- One Adjustable Potentiometer
- Two Magnetic Proximity Sensors
- Two Limit Switches
- Three Panel Meters (0 to 10 VDC)
- One Panel Meter (-10 to +10 VDC)
- One Rate Indicator Display
- One OPEN/ CLOSED Loop Selector Switch
- One REVERSING Selector Switch
- One Emergency Stop Push-Button

Additional Accessories:

- Hydraulic Hose Kit
- Electrical Patchcord Kit
- PLC Programming CD

A **Storage Compartment** is located behind the component panel and accessed through a hinged door with lock. This area is designed for storing hoses and extra components. All components, hoses, instruments and fittings are industrial grade design. All fittings are ball-check quick connect/disconnect.

Options to expand capabilities of the system include a wide range of specialty components which can be purchased for mounting on the system's T-slot experiment surface. Also, the EXP6-A can be purchased with a mobile cabinet (EXP-MB). The EXP6-A is placed on top of the EXP-MB. The hydraulic power supply (EXP11-P-1) is placed inside. The model number for this three part combined system (EXP6-A, EXP11-P-1, EXP-MB) is EXP3-EPB.

CURRICULUM

The EXP6-A curriculum was designed for industrial relevancy and reviewed by industry experts. The comprehensive courseware includes a student activities manual and instructor's guide. Instruction includes background study of the topic, observational and hands-on experiments, application exercises, and mathematical calculations.

EXP6-EHA Dimensions: 34" W x 30" D x 72" H
EXP6-EHA Shipping Weight: 600 lbs

For more information, customer service, or technical assistance please call 800-451-2169

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