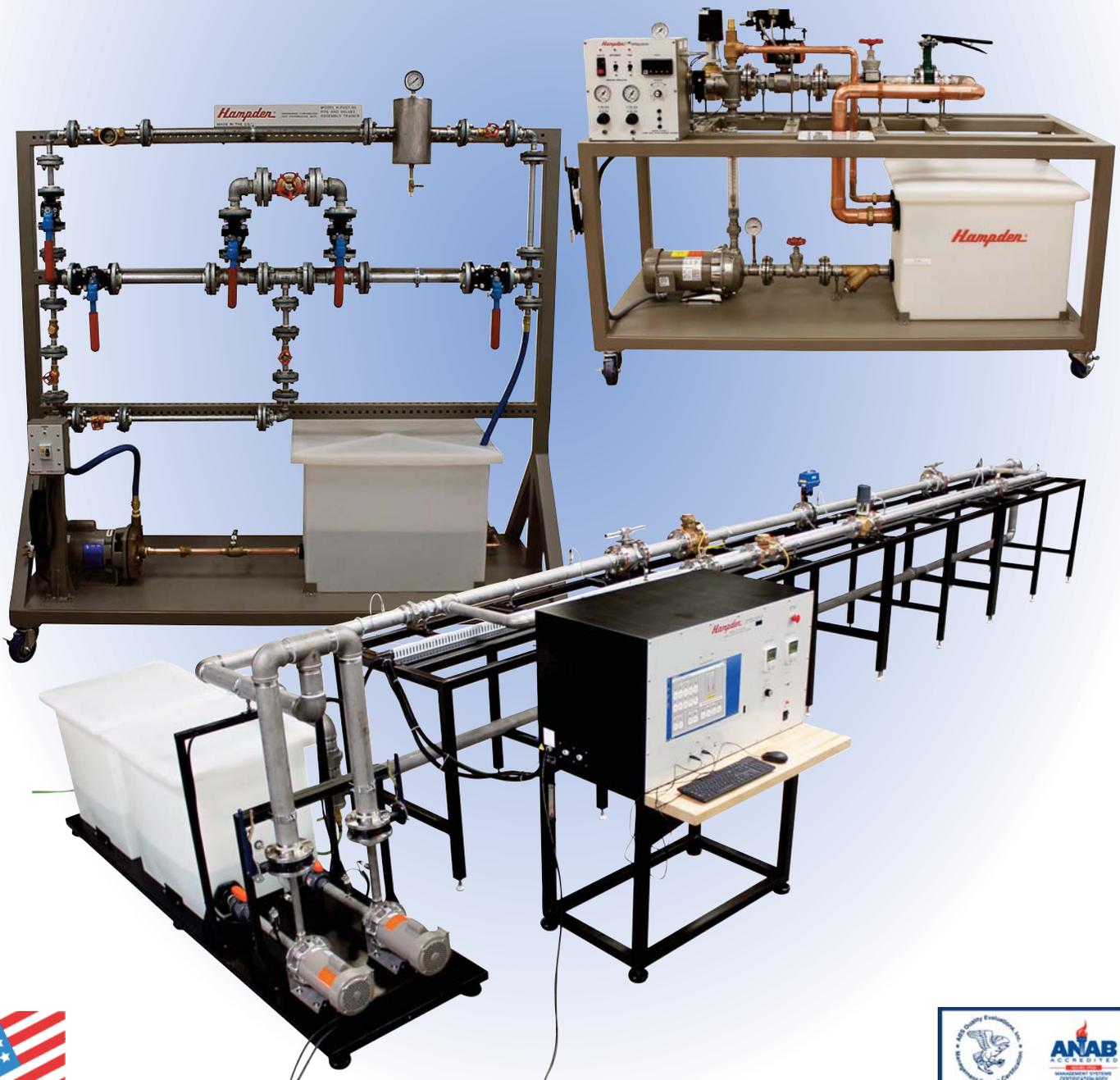


Hampden[®] ENGINEERING CORPORATION

PUMP AND VALVE ASSEMBLY TRAINERS



Introduction

Pumps and valves are essential mechanisms that are utilized in many industrial manufacturing processes. Pumps are devices used to raise, compress or transfer fluids or gases. Pumps can be hydraulic pumps, pneumatic pumps or electric pumps and include a large variety of types such as centrifugal pumps, diaphragm pumps and vacuum pumps.

Recommended Trainers

Hampden **Model H-PVST-1** Pump and Valve System Trainer

Hampden **Model H-PVST-50** Pipe and Valves Assembly Trainer

Hampden **Model H-PVST-200** Full Scale Pump and Valve System Trainer

Hampden **Model H-PVST-400** Full Scale Industrial Pump and Valve System Trainer

Hampden **Model H-181A** Steam PowerPlant System (Boiler Trainer)

Program Expanders

Expand and Customize your program with the following Hampden Trainers

- H-181-100A Steam Boiler Trainer
- H-CVAT-1A Control Valve Actuator Trainer

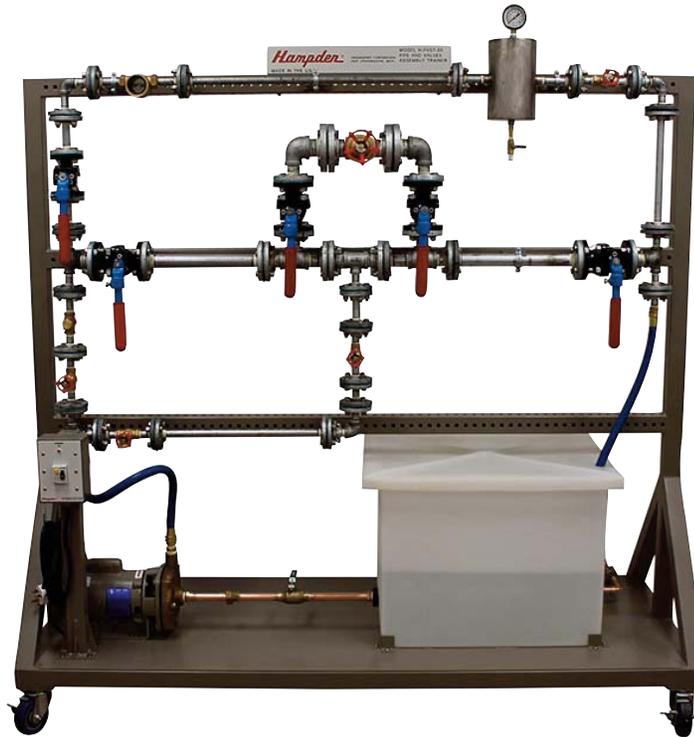
Cutaway Valves

- H-1500-AVC-B Gate Valve
- H-1500-BVC-B Ball Valve
- H-1500-CVC-B Check Valve
- H-1500-GVC-B Globe Valve
- H-1500-PVC-B Plug Valve
- H-1500-RVC-B Safety Relief Valve
- H-1500-UVC-B Butterfly/Diaphragm



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H-PVST-50



PIPE AND VALVES ASSEMBLY TRAINER

The Hampden **Model H-PVST-50** Pipe and Valve Assembly Trainer provides the student with a hands on trainer for industrial valves, fittings, and piping. The student will learn the necessary methods of connecting and running metal/iron piping.

The Hampden **Model H-PVST-50** Pipe and Valve Assembly Trainer consists of a frame that students use to mount and run pipes, valves, and other components. Once the piping is complete, the system will be tested by allowing water to be pumped through it. The student will learn how to make the necessary connections.

Objectives

- Identifying Components
- Identifying Symbols
- Design and Function of Valves
- Planning of Piping and System Installations
- Cutting Pipe
- Threading Pipe
- Securing Threaded Metal Coupling
- Piping Arrangement 1
- Piping Arrangement 2
- Piping Arrangement 3
- Designing Your Own Arrangements



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Sections

The unit consists of three (3) sections constructed out of 11 gauge sheet metal with an instrument tan enamel finish with the control panel finished in gloss white enamel.

This unit is approximately 34'L x 10'D.

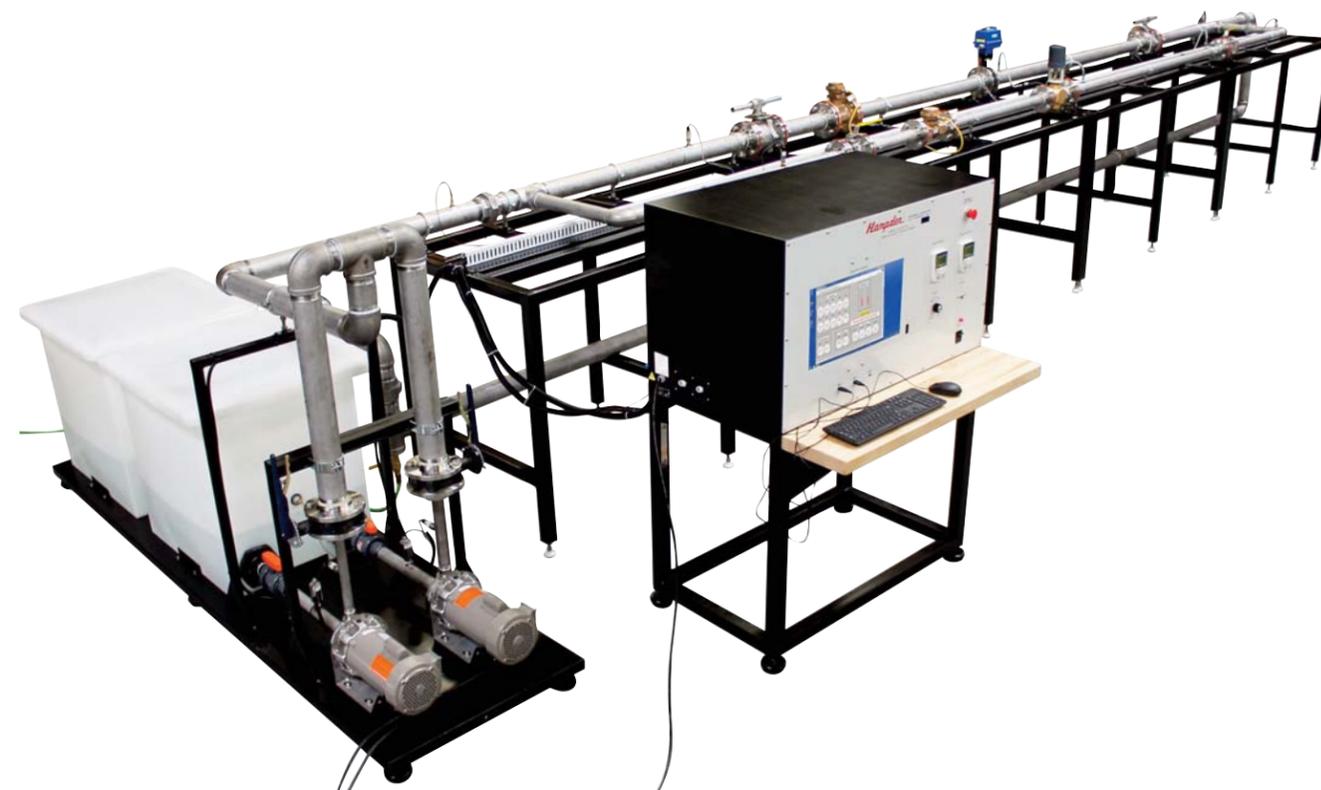
Section One: Pump Section — 10'L x 3'W

Section Two: Control Section — 4'W x 3'D

Section Three: Valves Section — 28'L x 3'D

Objectives

- Water Flow Paths
- Water Flow Rate (Globe Valve)
- Water Flow Rate (Butterfly Valve)
- Water Flow Rate (VFD, Pump 1, 2" Line)
- Water Flow Rate (VFD, Pump 2, 2" Line)
- Water Flow Rate (VFD, Parallel Pumps, 2" Line)
- Water Flow Rate (VFD, Pump 1, 3" Line)
- Water Flow Rate (VFD, Pump 2, 3" Line)
- Water Flow Rate (VFD, Parallel Pumps, 3" Line)
- Pressure Measurement with Pump 1
- Pressure Measurement with Pump 2
- Pressure Measurement with Both Pumps in Parallel
- Motorized Globe Valve
- Motorized Butterfly Valve



FULL SCALE PUMP AND VALVE SYSTEM TRAINER

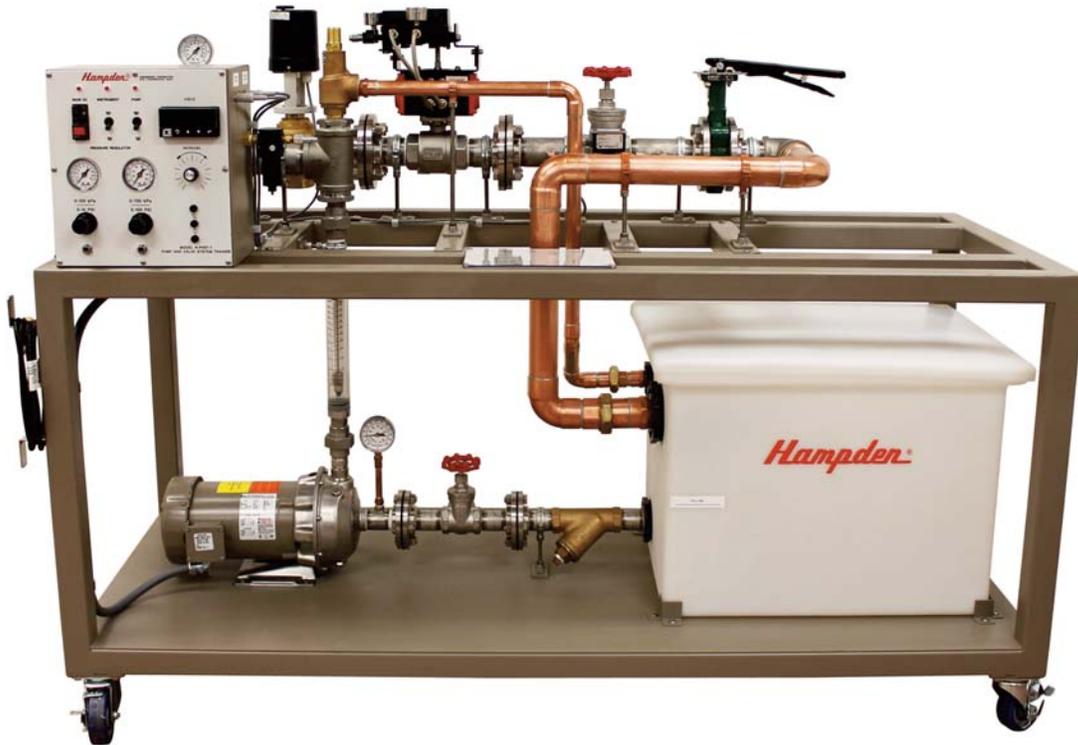
The Hampden **Model H-PVST-200** Full Scale Industrial Pump and Valve System Trainer is a custom designed unit built to meet the plant specific training needs of the industrial facility. The trainer includes the basic facilities necessary to pump water (or other fluids) in a loop together with the plant specific pump(s), valves and control configurations. Furthermore, all major components are flanged fitted which allows easy removal from the unit. This will enable the trainee to learn service procedures.

The **H-PVST-200** trainer is designed to enable hands on training with different types of valves, positioners, actuators, and pumps all in one unit. The Students will work with the most widely used valves, actuators and pumps used in industry today. The student will learn to operate different valves manually and electronically through the

control panel. The control panel consists of two VFD control keypads, a computer screen with three USB inputs below it, a control potentiometer for the actuated globe valve, a three position switch for the butterfly valve, a main AC circuit breaker, and an emergency stop push button.

The piping of the system consists of two tanks connected with 3" coupling which feed to two 1.5HP pumps. The pumps run water through two lines of piping, one 2" line and one 3" line. Each line has a flow meter two ball valves a section of straight pipe and an actuated valve. The 3" line has an actuated globe valve and the 2" line has an actuated butterfly valve. The ball valves can divert flow so water can run through either line or both at the same time.

H-PVST-1



PUMP AND VALVE SYSTEM TRAINER

The Hampden **Model H-PVST-1** Pump and Valve System Trainer is a custom designed unit built to meet the plant specific training needs of the industrial facility. The trainer includes the basic facilities necessary to pump water (or other fluids) in a loop, together with the plant specific pump(s), valves and control configurations. Furthermore, all major components are flange fitted which allows easy removal from the unit. This will enable the trainee to learn the proper service procedures. The unit is permanently mounted on a steel control panel and frame and the top of the frame has a mylar overlay showing schematic of the pumping system.

Objectives

- Motorized Globe Valve
- Pneumatic Ball Valve
- Gate Valve with Differential Pressure Switch
- Butterfly Valve
- Piping Schematic

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H-PVST-400



FULL SCALE INDUSTRIAL PUMP AND VALVE SYSTEM TRAINER

The Hampden **Model H-PVST-400** Full Scale Industrial Pump and Valve System Trainer is a custom designed unit built to meet the plant specific training needs of the industrial facility. The trainer includes the basic facilities necessary to pump water (or other fluids) in a loop together with the plant specific pump(s), valves and control configurations. Furthermore, all major components are flanged fitted which allows easy removal from the unit. This will enable the trainee to learn service procedures. The unit consists of four (4) sections constructed out of 11 gauge sheet metal with an instrument tan enamel finish with the control panel finished in gloss white enamel.

Objectives

- Water Flow Paths
- Globe Valves
 - Motorized Globe Valve
- Butterfly Valves
 - Motorized Butterfly Valves
- 3-Way Valves
- Flow Rates
- Pressure Measurements
- Heat Exchanger
- Series and Parallel Flow Circuits

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H-181A



STEAM POWER PLANT SYSTEM (BOILER TRAINER)

The primary function of the Hampden **Model H-181A** Steam Power Plant System (Boiler Trainer) is to demonstrate to the student how a boiler makes steam for power generation. This model features full-function automatic controls at all points in the process. The system is made up of 4 separate modules.

The Hampden Steam Power Plant System (Boiler Trainer) consists of a control bench. Equipment behind the bench, such as the boiler, condenser, turbine, alternator, etc., is shown silkscreened on the lower section of the panel. All interconnecting piping is also shown so that the entire system is graphically represented. All pressure and temperature gauges are shown graphically where they appear in the system so that the student can monitor the readings of the gauges and know exactly where in the system these readings are being taken. All panel-mounted equipment is identified with silk-screened nomenclature.

Objectives

- Boiler Maintenance
- Turbine Maintenance
- Alternator Maintenance
- Steam Production
- Super Heater
- Condensate System
- Cooling Towers
- Economizer
- Electrical Loads
- Flow Nozzles
- Insulation Tests



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