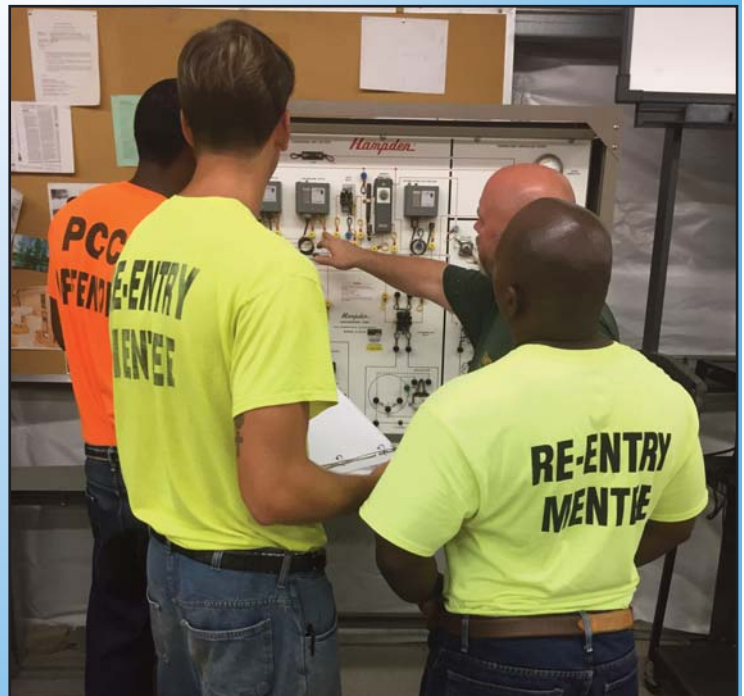


# TRAINING EQUIPMENT FOR RE-ENTRY PROGRAMS

GSA Contract Pricing in Place  
Contract # 47QRAA25D00AD



Louisiana State Penitentiary Re-entry Training Facility



**Hampden**  
ENGINEERING CORPORATION



## Charging System

Hampden's **Model H-AUTO-ICS** provides training in the principles of automotive charging systems, displaying both internal and external voltage regulators. Simplified techniques are demonstrated to pinpoint problems in automotive charging systems.

### Testing Capabilities

- Battery
- Battery Cables
- Alternator Drive Belt
- Charging System – Volts
- Voltage Regulator
- Voltage Run Test
- Voltage Regulator
- Electrical Connections

## Storage Battery

Hampden's **Model H-AUTO-SB** provides training on testing automotive batteries utilizing hand held digital multimeters.

### Testing Capabilities

- Normal Battery Operation
- Battery Status
- Battery Capacity
- Battery Terminals
- Battery Charging
- Battery Drain Test
- Voltage Drop from Battery to Load
- Battery Testing
- Jump Start Vehicle from Another Vehicle
- Battery Cell Testing

### MODEL H-AUTO-BS

demonstrates brake system fundamentals, featuring disc and drum brake theory and repair.



### MODEL H-AUTO-CS

demonstrates cooling system fundamentals, troubleshooting and repair. Radiator status is presented.



## Braking System

Hampden's **Model H-AUTO-BS** demonstrates brake system fundamentals, featuring disc and drum brake theory and repair.

### Testing Capabilities

- Master Cylinder
- Brake System Metering Valve
- Rear Drum Brakes
- Self Adjusting Drum Brakes
- Emergency Brake
- Front Disc Brake
- Spongy Brake Pedal
- Power Brake

## Cooling System

Hampden's **Model H-AUTO-CS** demonstrates cooling system fundamentals, troubleshooting and repair. Radiator status is presented.

### Testing Capabilities

- Coolant Capacity
- Water Pump Drive Belt
- Radiator Cap
- Coolant Mixture
- Radiator Hose
- Water Pump
- Coolant Leak
- Radiator
- Thermostat Test
- Fan
- Electrical Control

## Starting System

Hampden's **Model H-AUTO-SS** provides training in the use of digital multimeters to pinpoint problems in automotive starting systems.

### Testing Capabilities

- Battery
- Battery Cables
- Ignition Switch
- Neutral Safety Switch
- Starter Motor Solenoid
- Starter Motor
- Slow Cranking
- Fusible Link
- Power Train Module
- Flywheel
- Charging
- Engine Ignition
- Power Train
- Fuel

## Air Conditioning

Hampden's **Model H-DAACS-CSI** demonstrates the principles of operation and troubleshooting of current factory installed AC systems.

### Testing Capabilities

- Suction, discharge, pressure and temperature gauges
- Built-in voltage and continuity probes
- Adjustable ambient temperature control
- Three-speed fan control and LPCO control
- Adjustable RPM control

## Automotive Heating

Hampden's **Model H-AUTO-AH** demonstrates procedures used to repair automotive heating systems.

### Testing Capabilities

- Duct Delivery
- Heater Blower
- Control
- Heater Core
- Thermostat

## Lighting System

Hampden's **Model H-AUTO-LS** demonstrates the application of basic electrical theory to troubleshoot automotive lighting systems.

### Testing Capabilities

- Power Distribution
- Light Switch
- Head Lamps
- Turn and Hazard Light
- Rear Backup Lamps
- Front Parking Lamps
- Daytime Running Lamps
- Fog Lamps

## Electrical Diagnosis

Hampden's **Model H-AUTO-ED** emphasizes applying the basics of electricity to troubleshooting automotive electrical and electronic systems.

### Testing Capabilities

- Battery Test
- Charging System
- Short in a Circuit
- Open
- Identify Component Cluster
- Pinpointing Shorts to Ground
- Pinpointing Opens in Circuit
- Select Faults
  - No Dome Light
  - No Brake Light
  - No Lights
  - No Blower
  - No Wipers
  - Slow Cranking
  - Won't Start

## Fuel Delivery System

Hampden's **Model H-AUTO-FDS** trains the student to pinpoint the problem area and make the proper repair.

### Testing Capabilities

- Fuel Tank foreign matter
- Internal Fuel Pump
- External Fuel Pump
- Restricted Fuel Filter
- Pressure Regulator Test
- Select Faults
  - Carburated
    - Fuel Filter Plugged
    - Mechanical Pump Failure
    - Fuel Sock Plugged
    - Idle Adjustment
    - Fuel Tank Empty
  - Fuel Injected
    - PCM Failure
    - Fuel Filter Plugged
    - Fuel Pump Failure
    - Fuel Rail-Fuel
    - Injector Pulsing



## Automotive Simulators

Hampden's line of **Computer Assisted Panel Instruction Modules** have been designed to provide realistic System Operation & Troubleshooting functions to virtually

**ANY CLASSROOM!**

Each module's front panel is silkscreened with a complete schematic & pictorial layout of all system operations and combined with actual test-point pushbuttons, LEDs and meters.

All units are controlled via a laptop computer (supplied) using supplied Hampden software and USB I/O Interface. Automotive Trainers are as follows:

- **H-AUTO-ICS** Charging System Simulator
- **H-AUTO-SB** Storage Battery Simulator
- **H-AUTO-BS** Braking System Simulator (shown)
- **H-AUTO-CS** Cooling System Simulator (shown)
- **H-AUTO-SS** Starting System Simulator
- **H-AUTO-AH** Automotive Heating Simulator
- **H-AUTO-LS** Lighting System Simulator
- **H-AUTO-ED** Electrical Diagnosis Simulator
- **H-AUTO-FDS** Fuel Deliver System Simulator
- **H-DAACS-CSI** Air Conditioning Simulator (shown)



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# DIESEL

*Hampden Engineering Corporation*

## State-Of-The Art Diesel Engine Simulation Systems Provide Hands-On Experience in the Classroom

Students and instructors will be able to start-up, operate and troubleshoot all functional components of a simulated system under a variety of conditions. Every functional component, control and indicating device is included as well as status test buttons at all crucial locations. Students can develop real system skills and 'by the book' diagnostic procedures quickly and easily. An interactive menu allows the instructor to determine the operating mode of the simulator, starting temperature, introduction of faults and malfunctions, testing of components and monitoring students' performance.



Hampden **MODEL H-CD-46-RC** (in RC Style Cabinet) Four-Cycle Diesel Engine Simulator System replicates all functions of a Cummins NC-855 engine. Includes computer as shown. Unit size: 22"H x 32"W x 22"D

MODEL	ENGINE	APPLICATION
H-DD-24	Detroit Diesel 471T	Marine – Generator – Industrial
H-CD-46	Cummins NC-855	Automotive – Industrial – Generator – Marine
H-CD-46B	Cummins 6BT-5.9	Automotive (On & Off Road)
H-CD-46C	Cummins 6CTA-8.3	Automotive – Industrial – Generator – Marine
H-DD-48	Detroit Allison 8.2L	Automotive – Industrial – Generator – Marine
H-JD-44	John Deere 4-276T	Generator – Industrial



Hampden's series of full size cutaway engines provide a complete training experience. Interior components are color coded.

## CUTAWAYS

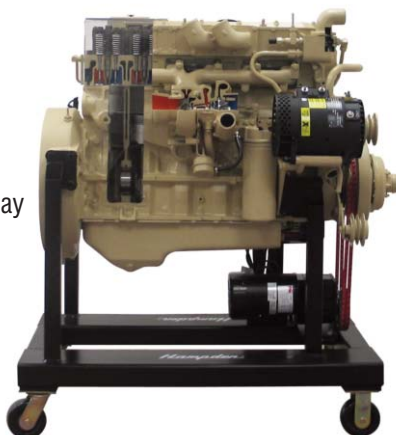
**H-DH-160V4-CA**  
Engine Cutaway  
on Mobile Stand



**H-HMMWV-6.2-CA**  
Engine Cutaway  
on Mobile Stand



**H-CAT-3116-CA**  
Caterpillar Engine Cutaway  
on Mobile Stand



**H-DET-8V-92TA-CA**  
Detroit Engine Cutaway  
on Mobile Stand



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## **MODEL H-RST-2**

The Hampden **MODEL H-RST-2 Refrigeration System Trainer** has evaporator and condenser coils and Hi and Low pressure receivers made of tempered glass – to permit students to observe the change in refrigerant state. Either a thermostatic expansion valve or a capillary tube may be used for the liquid control device. A reversing valve allows the trainer to be operated as a heat pump. The trainer can also operate as a Flooded Evaporator system.



## **MODEL H-ACD-1A-CDL**

The Hampden **MODEL H-ACD-1A-CDL Air Conditioning Demonstrator** provides a pitot tube pressure sensor and a manometer for measuring air flow, a refrigerant flow meter, wet and dry bulb thermometers,

and gauges for measuring evaporation and condensing pressures. The variable speed blower, the moisture injector, the duct heating elements, and the eight interchangeable end plates with size orifices all combine to provide an enormous variety of operating conditions for students to investigate.

## **MODEL H-ACT-1**

The Hampden **MODEL H-ACT-1 Air Conditioning System Trainer** is an efficient and environmentally friendly refrigerant. The Model H-ACT-1 is designed to provide the student with a thorough understanding of the systems used in residential and commercial applications. The trainer can be supplied with an integral fault package comprised of ten electrical faults, mounted in a locking box on the rear of the trainer.



## **MODEL H-ACCS-1A**

The Hampden **MODEL H-ACCS-1A Air Conditioning Control System** contains the actual components used in the control of commercial and residential heating/cooling systems. All components are prewired into a complete thermostat-actuated control system and then diagrammed to facilitate understanding and use.



## **MODEL H-CRT-4B**

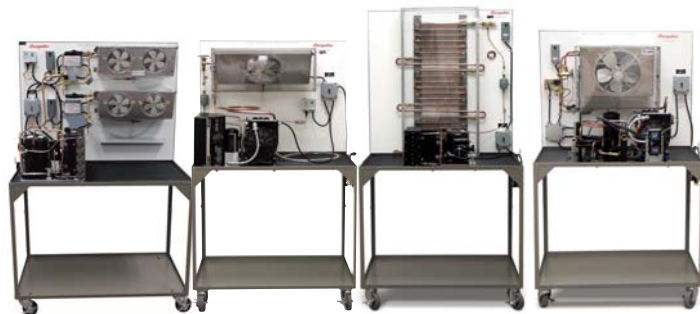
The Hampden **MODEL H-CRT-4B Commercial Multi-Compressor Rack Refrigeration System**

Trainer was designed to provide students with a thorough understanding of the multiple compressor refrigeration cycle, including measurement of pressure, vacuum, flow rate, and temperature. The system components are panel mounted to provide easy access for testing and troubleshooting. The Hampden Model H-CRT-4B is supplied with an integral Fault Package, comprised of preset electrical faults mounted in a locking box on the side of the trainer.



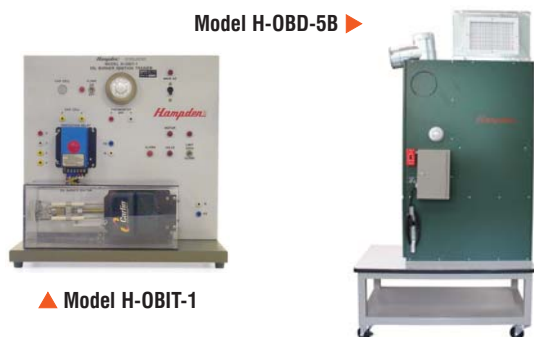
**ALL HAMPDEN  
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- MODEL H-ACTK-1A:** Beverage Cooler
- MODEL H-ACTK-2:** Single Evaporator Refrigeration/Freezer
- MODEL H-ACTK-3:** Two-Door Refrigerator
- MODEL H-ACTK-4:** Grocery Reach-in Cooler
- MODEL H-ACTK-5:** Small Walk-in Meat Cooler
- MODEL H-ACTK-6:** Multiple Case Cooler
- MODEL H-ACTK-7:** Ice Cream Freezer
- MODEL H-ACTK-8A:** Restaurant High-Temperature Salad-Box
- MODEL H-ACTK-9:** Commercial Florist Cooler
- MODEL H-ACTK-10:** Room Air Conditioner
- MODEL H-ACTK-11:** Small Air Conditioner
- MODEL H-ACTK-12:** Water Chiller Trainer
- MODEL H-ACTK-15:** Freezer Trainer
- MODEL H-ACTK-19:** AC/Refrigeration Trainer Kit
- MODEL H-ACTK-20A:** AC/Refrigeration Control Kit
- MODEL H-ACTK-21A:** Mini Split-Type AC Trainer
- MODEL H-ACTK-22:** Split-Type Heat Pump Trainer
- MODEL H-ACTK-23:** Geothermal Trainer

## Oil Heat Trainers



Hampden has a number of trainers and demonstrators covering every aspect of oil operated systems. Train your students how to adjust, check-out, operate, and troubleshoot a typical oil burner or oil furnace.

- ◆ **H-OBD-1T** Oil Burner Test Kit
- ◆ **H-OBD-2** Mobile Oil Burner Demonstrator
- ◆ **H-OBD-5B** Domestic Oil Furnace Demonstrator
- ◆ **H-OBD-1** Oil Burner Demonstrator with Mobile Bench
- ◆ **H-OPT-1** Oil Pump Trainer
- ◆ **H-OBIT-1** Oil Burner Ignition Trainer

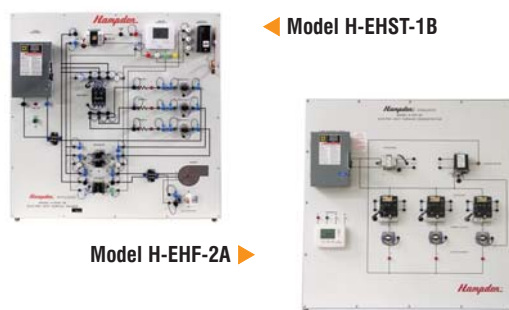
## Gas Heat Trainers



Hampden offers a complete line of trainers and demonstrators covering every component of gas operated systems.

- ◆ **H-GHT-1B** Gas Heat Trainer with Faults
- ◆ **H-GHT-1T** Gas Burner Test Package
- ◆ **H-GT-1** Gas Control Demonstration Trainer
- ◆ **H-GT-2** Electronic Ignition Gas Trainer with Flue Damper
- ◆ **H-EIG-1C** Electronic Ignition Gas Trainer
- ◆ **H-GC-2A** Gas Controls Trainer
- ◆ **H-GHT-2C** Gas Heat Trainer
- ◆ **H-GHT-3** Gas Burner Demonstrator
- ◆ **H-GHT-4A** Gas Fired Warm Air Heating Trainer

## Electric Heat Trainers



Hampden has a number of trainers and demonstrators covering every aspect of electric heating systems. Your students will learn to connect and operate an electric heat furnace. Training is available for designing, wiring, checking out, and troubleshooting electric furnace control systems of the type found in residential dwellings and commercial establishments.

- ◆ **H-EHF-1A** Mobile Electric Heat Furnace Control System
- ◆ **H-EHF-2A** Electric Heat Furnace Demonstrator
- ◆ **H-EHST-1B** Electric Heat Service Trainer



## Heating/Cooling Trainers

GSA Contract # 47QRAA25D00AD

Hampden Engineering offers a wide variety of forced air and hydronic heating and cooling system trainers. These trainers provide students with experience in gas, oil, and electric furnaces, oil and electric boilers, forced air heating and cooling, and circulating hot water heating and chilled water cooling. All units that have forced air heating may also be equipped with air conditioning and all units that have hydronic heating may also be equipped with chilled water cooling.

- ◆ **H-AHST-D** Air & Hydronics Gas/Oil Heating Trainer
- ◆ **H-AHST-D2** Air & Hydronics Gas/Oil Heating Trainer with A/C
- ◆ **H-AHST-D3** Air & Hydronics Gas/Electric Heating Trainer with A/C
- ◆ **H-FAHT-1-G** Gas Fired Forced Air Furnace
- ◆ **H-FAHT-1-G-A** Forced Air Heating Trainer with Summer Air
- ◆ **H-FAHT-2** Forced Air Heating Trainer



**Model H-AHST-D3**  
Air/Hydronic: Gas/Electric  
with Summer Air

This Hampden **MODEL H-GHT-4A** Gas Fired Warm Air Heating Trainer provides hands-on training by allowing students to conduct tests and adjustments on a modern forced air gas modulating furnace that is fired by either natural gas or liquified petroleum. It is a two-stage heating and modulating fan controlled trainer featuring; Sealed Combustion, Pressure Switch, Stainless Steel Secondary Heat Exchanger, Induced Draft Motor Blower, New Ignitor Technology, Multi-Speed Blower, Variable Speed Blower



This Hampden **Model H-GC-2A** Gas Controls Trainer provides students with experience in connecting and operating three standard residential gas-fired furnace control systems for both winter heating and summer cooling. It contains all the standard control components for the following three types of systems:

- (1) single-function gas valve and pilotstat switch (2) combination gas control valve system (3) powerpile system.

### MODEL H-GHT-3

Mobile Gas Burner Demonstrator introduces the student technician to a variety of common installation and operation features normally associated with residential and light commercial gas fired, hot air furnaces.



This Hampden **Model H-GHT-2C** Gas Heat Trainer contains the actual control components of a commercial gas heat installation. **No gas is required.** Although operation of the blower motor, along with the pilot and main burner are simulated, the spark ignitor is real and fully functional. **Up to 15 faults** may be inserted from side panel.



## DDC Training at Your Fingertips

The Hampden **H-MZBM-T1C** and **H-MZBM-J2A** Multi-Zone Building Energy Management Trainers have been designed to interface with many other Hampden products. The units provide training for the installation, operation, and troubleshooting of a variable air volume unit and a constant volume air handler.



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# PLUMBING AND PIPING

*Hampden Engineering Corporation*

## Model H-PPST-1 Piping/Pipefitters System Trainer

The Hampden **Model H-PPST-1** Piping/ Pipefitters System Trainer provides the student with a hands on trainer for piping. The student will learn the necessary methods of connecting and running metal/iron piping, plastic piping, copper tubing, and hydraulic hose.



## MODELH-BFPD-1 Back Flow Prevention Demonstrator

provides the instructor with the ability to demonstrate multiple methods of back flow prevention of liquids.



## Model H-PST-1 Plumbing System Trainer

demonstrates the process of using gray water in toilet flushing systems.



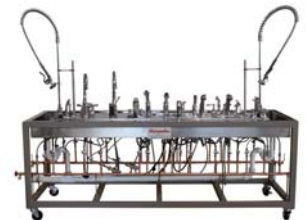
## H-PUMT-10 Pumps Trainer

demonstrates different types of pump, allowing students to become familiar with their operation and installation. Including a sump pump, automatic sewage pump, recirculating pump, and a laundry pump.



## H-FFFT-5 Fixtures /Fittings/Faucets Trainer

demonstrates the types of faucets and fixtures used in most residential and commercial installations. Students will acquaint themselves with the proper connection and operation of these devices.



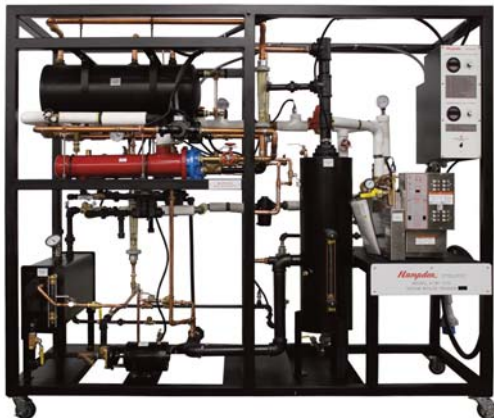
## Model H-RPT-1 Residential Piping Trainer

demonstrates the process of a low flow pressure assisted toilet system.



## Model H-181-100B Steam Boiler Trainer

efficiently provides hot water for process heat and building heat typically used throughout industry. This trainer teaches technicians the skills they need to select, operate, install, maintain and repair basic steam systems.



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# CONSTRUCTION TRADES

Hampden Engineering Corporation

## H-MCI-1000-WSB-1 Wiring Service Board



The **Model H-MCI-1000-WSB-1** Wiring Service Board Trainer is ideal for learning wiring skills in Electrical Shops with limited space. The following manuals are furnished with the trainer: The National Electrical Code, Blue Print Reading, and Instructor's Guide.

## H-RET-2A Residential Electricity Trainer



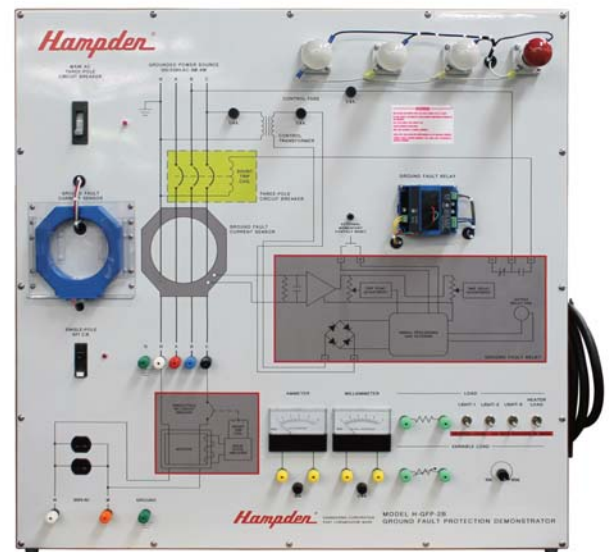
The Hampden **Model H-RET-2A** Residential Electricity Trainer consists of electrical components and instrumentation for demonstration and practical exercises in electrical circuits and measurements.

## H-EM-2D Emergency Lighting Demonstrator



Hampden's **Model H-EM-2D** demonstrator is a fully functioning emergency lighting system which presents students with the most common installation and operational features. The trainer is a composite of basic equipment usually associated with commercial and industrial layouts and typical of those encountered by the service technician.

## H-GFP-2B Ground Fault Protection Demo



The **Model H-GFP-2B** Ground Fault Protection Demonstrator provides the sensors, monitors, and protection devices for learning the meaning of ground fault currents and the code requirements for ground fault protection.

# Standard Products...Designed



## H-MFA-3C Fire Alarm Demonstrator



Hampden's **Model H-MFA-3C** is a fully functioning fire alarm system which can be utilized to present the student with a variety of common installation and operational features. The trainer is a composite of basic equipment usually associated with residential and commercial layouts.

## H-MCP-3B Clock Systems Demonstrator



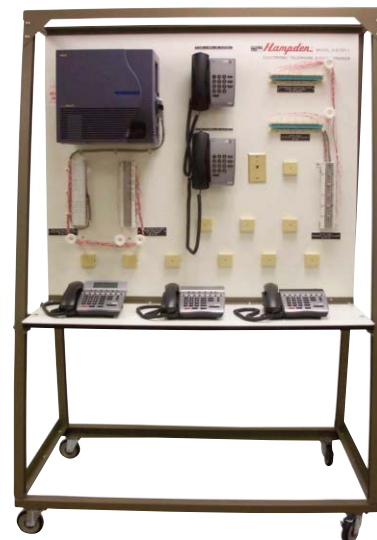
Hampden **Model H-MCP-3B** Clock Demonstrator introduces the student to a variety of installation and operational features normally associated with an electronic master clock system. It is a complete fully functional clock system representative of the systems found in schools, hospitals, industrial and office applications.

## H-EH-2A Electric Heating Demonstrator



Hampden **Model H-EH-2A** Electric Heating Demonstrator contains various types of electric heaters and control devices that might be found in either home or industry. A variety of components allow for the application of electrical heating techniques of wiring, control, and operation of various types of electrical heating devices.

## H-ETST-1 Electronic Telephone System Trainer



The Hampden **MODEL H-ETST-1** Electronic Telephone System Trainer permits the student to move from classroom theory to hands-on troubleshooting with current technologies on state-of-the-art electronic telephone systems.



**Model H-190-1A**

Smart Grid Electrical Distribution Trainer

## Model H-190 Series Smart Grid Trainers

The Hampden 190 Series of Smart Grid Trainers have been developed to educate students with the technology being used in the field of electrical power generation and distribution. Each individual module will demonstrate a key section of the power grid. When the individual modules are combined a modern smart grid is created.



**Model H-190-2A**

Smart Grid Load Monitoring Trainer



### H-RCSD-2B Residential Remote Control Switching Demonstrator

Hampden's **Model H-RCSD-2B** Residential Remote Control Switching Demonstrator provides a complete trainer showing a state-of-the-art home wiring system via programmed or manual remote control of lighting and appliances.

**Model H-RCSD-2B** Residential Remote Control Switching Demonstrator is based on the Lutron 'Caseta Home Controls' using the various Caseta Smart Bridge Home Automation Components designed to simulate a residential house wiring system including a complete comprehensive training program.

*Complete training for state-of-the-art  
home wiring system featuring Lutron Caseta  
Smart Bridge components*



### H-RCSD-3C Residential/Commercial Remote Control Switching Demonstrator

Hampden's **Model H-RCSD-3C** Residential/ Commercial Remote Control Switching Demonstrator provides a complete trainer showing a state-of-the-art building wiring system control of lighting and appliances via programmed or manual remote.

The **Model H-RCSD-3C** Residential/Commercial Remote Control Switching Demonstrator is based on the Lutron 'Castea Home Controls' using the various Caseta Smart Bridge Components in addition to Ring, Nest, and Amazon components designed to simulate a residential/commercial system, including a complete comprehensive training program.

**GSA Contract # 47QRAA25D00AD**

## **Model H-SPT-AC-1A Solar Photovoltaic Trainer**

offers the user a practical alternative  
to the difficulties  
of supplying electric power  
to remote locations.



## **Model H-WPG-1B Wind Powered Generator**

has been designed to  
provide the student with  
the basic understanding  
of how wind generators  
function as an alternate  
source of energy.



## **Model H-GTL-1 Geothermal Trainer**

provides hands-on training by allowing students to conduct tests  
and adjustments on a modern Geothermal Heat Pump.

## **Model H-HEAT-1A Home Efficiency Auditor Testing Facility**

is built to mimic an actual home with components used in a new  
GREEN home. The H-HEAT-1A will allow potential auditors to learn the  
proper techniques in performing a complete energy audit.  
Some of the areas covered are consistent data collection, insulation  
inspection, HVAC analysis, base load consumption, air leakage, energy  
usage, along with many more vital areas.



## **Model H-SST-1A Solar System Trainer**

is an actual solar hot water heating  
system. The trainer is mounted on  
a mobile frame and the collector panel  
is adjustable for easy positioning  
in direct sunlight.



## **Model H-PVIT-1 Photovoltaic Installers Trainer**

has been designed with the  
latest Industrial/Commercial  
components available.  
The trainer will provide the necessary training  
in completing a fully functioning,  
grid-tied solar electric system.  
This system will have the capability  
to be fully monitored and controlled.

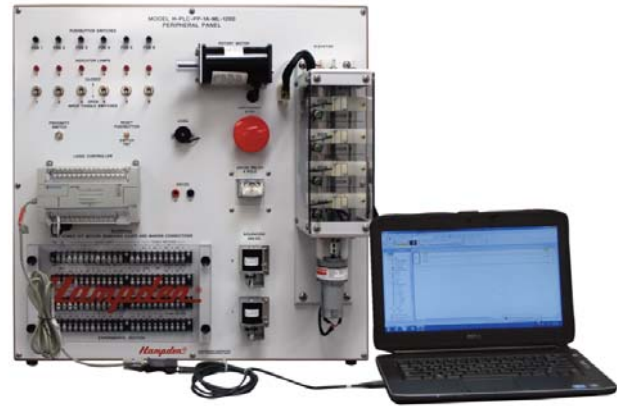




## H-PLC-PP-1A-ML-1200 Programmable Logic Controls Training System

The Hampden **Model H-PLC-PP-1A-ML-1200** Programmable Logic Controls Training System offers a complete package that provides students with an industry standard PLC and hardware that allows them to design, connect and debug real-world circuits.

The Hampden **Model H-PLC-PP-1A-ML-1200** Programmable Logic Controls, Training System provides students with hands-on experience, utilizing standard commercially available programmable logic controllers interfaced with actual input and output devices.



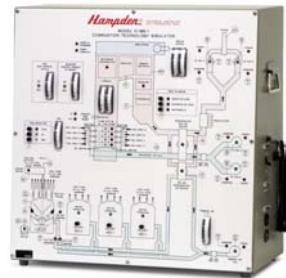
## Hampden H-185-2A Advanced Boiler Trainer



The Hampden **MODEL H-185-2A** Hampden Advanced Boiler Trainer serves to demonstrate principles of operation and troubleshooting techniques of a current model boiler system. Operational hands-on activities performed by students also include; real time, dynamic experience with all phases of oil, gas and pulverized coal firing.

The following insertable malfunctions may be accessed via the computer program: Forced Draft, Boiler PSI High, Induced Draft, Low Oxygen, Drum Level High, Pollution, Drum Level Low, Feedwater, and Boiler Temp High.

## Hampden H-186-1 Combustion Technology Simulator



The Hampden **MODEL H-186-1** Combustion Technology Simulator serves to demonstrate principles of operation and troubleshooting techniques of a current power plant combustion system. This system simulates: fuel systems, analog control loops, digital controls, alarms and trips.

Instructors may insert system faults such as: Heater Level High, Master Fuel Trip, Oil Gun Off/Trip, Furnace PSI Trip, Gas Gun Off/Trip, Main Gas Valve Trip, ID Fan Trip, Air Velocity Low, FD Fan Trip, and Pulverizer Motor Trip

## Hampden H-187-1 Turbine/Generator Technology Simulator



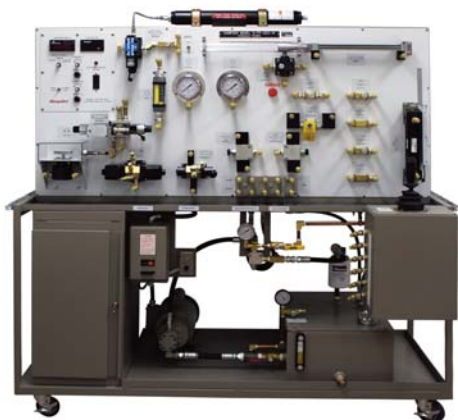
The Hampden **MODEL H-187-1** Turbine/Generator Technology Simulator demonstrates principles of operation & troubleshooting skills of a steam turbine/generator system.

Instructors may insert simulated mechanical or electrical faults into the system, such as: Turbine Trip, Low Vacuum Trip, Turbine Exhaust Hood Temp High, Lube Oil Tank Low, Generator Field Temp High, Bearing Trip High, and Bearing Vibration High.

## Hampden H-188-1 Electrical Generation Fundamentals Trainer



The Hampden **Model H-188-1** Electrical Generation Fundamentals Trainer is designed to demonstrate the principles of electrical power generation. The Hampden **Model H-188-1** Electrical Generation Fundamentals Trainer is a fully computer-controlled unit designed to interface with a supplied Laptop Computer.



**H-FP-223-14**

Shown with A Option, EH Option, FP Option and JS Option

### **Model H-FP-223-14 Hampden Hydraulic Trainer**

consists of a mobile bench, hydraulic pump, and selection of hardware mounted on a vertical panel. All hydraulics hardware is of commercial quality and configured for training purposes.



**H-FP-223-15**

Shown with FP Option, EPS Option, and PPS Option

### **Model H-FP-223-15 Hampden Electro-Pneumatic Trainer**

consists of a wide selection of commercial grade electro-pneumatic hardware mounted to a vertical panel above a mobile bench which includes a lockable storage cabinet. A popular choice among educators because of the variety of configurations available for demonstration. Includes; tubing, tees, plugs, experimental hardware and courseware.

### **Model H-RIG-1C Rigging Systems Trainer**

has been designed to teach the techniques of safely moving loads of various shapes, sizes and types.



The Hampden Rigging System contains a variety of lifting and moving devices to allow the student to learn the proper methods of moving loads safely.

### **Model H-IMTS-1 Industrial Maintenance Training System**

Provides maintenance technicians with the equipment needed to learn state-of-the-art techniques for maintaining complex drive systems through "hands-on" practice.

The Industrial Maintenance Training System Consists of various drives and mechanisms used in industry.



### **Model H-EWT-100 Electrical Wiring Trainer**

provides the student with a hands on trainer for single and three phase wiring. The student will learn the necessary methods of running conduit, pulling wire and making final connections.

The Hampden **Model H-EWT-100** Electrical Wiring Trainer consists of a four sided frame that students use to run wire and make electrical connections. Once they complete the installation the unit can be run to test out the circuit.





**MODEL GNR-H2200** Industrial Controls Training System provides students with practical "hands-on" experience in designing, wiring, checking out, and troubleshooting "real-world" motor control systems. The system consists of interchangeable unitized control modules mounted on a wood core white melamine panel. The student selects just the components needed for a particular system, secures them on the panel with wing nuts and wires them in accordance with the control diagram. All pushbuttons, contactors and other control components are suitably rated for use with 1HP motors.



**MODEL GNR-1200** Industrial Controls Training System provides practical "hands-on" experience designing, wiring, checking out, and troubleshooting "real-world" motor control systems. The unit consists of interchangeable unitized control modules mounted on a wood core white melamine panel. Instructor-controlled faults can be inserted into each module. All control components are rated for use with Hampden Series 100 Rotating Machines or machines up to 1-HP.



The **MODEL H-REM-ACDC-MC** Motor Controller provides students with an interactive understanding of AC and DC motor control set-ups by interfacing components. An instructor's fault system consists of 22 switch-injectable faults. Rated for use with DC fractional HP machines and AC systems; three-phase squirrel-cage and DC motor. Wound-rotor and synchronous motors are optional.



**MODEL ACC-100-K**



**MODEL DCC-100-K**

The Series 100 Modular Motor Controllers provide students with the opportunity of observing the operation of electromagnetic contactors and relays. Each model contains a number of Lexan® modules with one or more control components. The student interconnects these components into systems to control the operation of Hampden Series 100 Fractional Horsepower Motors. Each system furnished complete with cords and bench rack. Modules mount in the bench rack without the use of tools.



The **MODEL H-MGI-100** Motor-Generator Interface Module provides an all-in-one solution for interfacing motors and machines with computers.

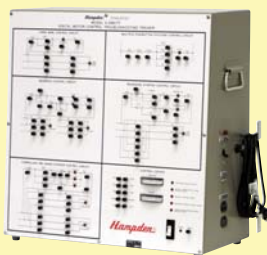
Providing ease-of-connection for real-world signal levels, the **MODEL H-MGI-100** connects to any PC computer via an USB cable. Your motor experiments can now be recorded and analyzed by the

software included. Hampden includes templates for many standard fractional and integral motor setups. The **MODEL H-MGI-100** also provides inputs for the Hampden **MODEL H-REM-LC-D** Digital Load Cell and **MODEL HPT-100A** Digital Photo Tachometer.



The **MODEL ACC-100** Fractional HP AC Controller with faults, includes control buttons, forward-reverse contactor, variable resistors, wound rotor control, DC field contactor, overload relay, rectifier, autotransformer, time delay relays, and 3-pole isolated circuit breaker.

The Hampden **MODEL H-DMCTT** Digital Motor Control Troubleshooting Trainer provides interactive motor control troubleshooting training via computer to a student operator wanting exposure to connection and operation, without bulky hardware and electrical hookups. The computer allows the student to explore motor control and troubleshooting with interactive prompting on the computer screen for student operation. The trainer may be put into a programmed sequence of faults that pace the student through an instructor-selected range of faults.



The **MODEL H-IEC-B2** Alternator Voltage Controller provides students with an understanding of the methods (pulse width modulation and pulse frequency modulation) employed in regulating the terminal voltage of an alternator, including voltage and frequency feedback.





# MOTORS

## Power Electronics Systems

Hampden Engineering Corporation

GSA Contract # 47QRAA25D00AD

### H-ACVD-100 AC Vector Drive Trainer System



The **Model H-ACVD-100** AC Vector Drive Trainer System provides students with hands-on experience with advanced motor controls. It is available in two configurations; as a stand-alone trainer and as an adjunct trainer to the Hampden Series 100 Rotating Machine System. Either system is designed for bench top mounting or may be used with the optional **Model HMT-4** Mobile Table.

### H-VFD-100C Variable Frequency Drive Trainer



The **Model H-VFD-100C** Fractional Horsepower 3Ø Variable Frequency Drive controls the speed of induction or synchronous motors rated to 1/3 HP. The unit consists of a fully operational VFD and all the push buttons and switches that will allow the user to program and run the VFD. The VFD is protected by a Main AC circuit breaker. The output is 0-230 V, 3Ø, 0-500 hz. The unit can be programmed and reprogrammed to teach students how a VFD works and what kind of parameters to set for various motor applications.

## HDI-100 DISSECTIBLE MOTORS

*Extend Hampden Series 100 Rotating Electrical Machines Program with Series HDI-100 Dissectible Motors*

### Series HDI-100 Hampden Dissectible Motors

Hampden's Dissectible Motors, **Series HDI-100**, are a versatile aid in teaching the construction, principle of operation, and operating characteristics of fractional horsepower motors. Their versatility makes them a practical complement to the Hampden Series 100 Rotating Electrical Machines Program.

The four stators and corresponding rotors of Hampden's Dissectible Motors are the same ones used in standard industrial motors. This architecture provides the student with realistic construction and operating characteristics. Commutator, brushes, centrifugal switch, etc., may all be observed during operation.

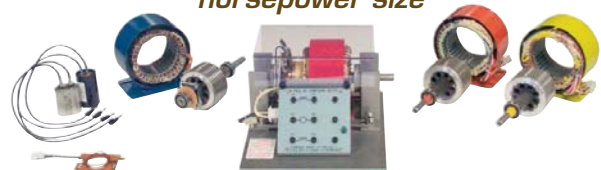
Each motor assembles in minutes. First the student clamps the selected stator on the terminal panel/base. Next, the rotor is inserted and held in position by specially designed end bells. A coupling flange is then secured

to the motor shaft. The student then chooses the terminal panel overlay for that motor and begins the experimentation.

The motor program includes the following four motors:

- DC Motor
- Single-Phase AC Squirrel-Cage Induction Motor
- Three-phase, Four-Pole Squirrel-Cage Induction Motor
- Three-phase, Two-Pole Squirrel-Cage Induction Motor

*Hampden Dissectible Motors include DC and Single-Phase and Three-Phase AC in fractional horsepower size*



**Standard Products...Designed to Meet Your Growing Needs!**

## TRANSFORMERS



### **Model H-DTT-26 Transformer Lab Kit**

allows students to correctly make connections to power transformers located on utility poles.

## ELECTRICITY KITS

### **HEE-A Series: Discovering Facts about Electricity**

The Hampden Series of HEE-A Kits teaches students about the Behavior of Electricity, Basic Electrical Devices and Basic Circuit Designs. Provides complete resources for the quick assembly and disassembly of simple bread-board experiments.

### **HEE-A Standard Series: Fundamentals of Electricity & Electronics**

A variety of Electricity & Electronics training programs to suit virtually any course objective — industrial arts, pre-vocational, vocational, or technical. Includes kit of experimental components, bread-boarding apparatus, interconnecting leads, power supplies, meters, laboratory benches, and student experiment manuals

#### **Basic Electricity Model HEE-2D**

All components required for;  
Basic Electricity, Zbar, Rockmaker & Bates

### **H-CAI Series: Electricity and Electronics**

#### **Basic Electronics Model H-CAI-BE**

Covers basic laws governing circuit behavior & a solid introduction to passive and reactive components, linear amplifiers and TTL devices.  
Grob's, Basic Electronics

#### **Electricity Model H-CAI-EE**

A unified presentation of subjects enables students to develop an understanding of electricity and its applications. Fowler's, Electricity: Principles and Applications

#### **Digital Electronics Model H-CAI-DE**

Provides a concise explanation of TTL circuits, basic digital theory, circuit simplification and design techniques.  
Tokheim Digital Electronics

#### **Electronic Communication Systems Model H-CAI-ECS**

Covers the basic laws governing circuit behavior, passive & reactive components, amplifiers and TTL devices.  
Frenzel's Principles of Electric Communication Systems

## Mechanical Maintenance



**H-1500-BVC-B**  
Ball Valve  
Cutaway with Base



**H-1500-GVC-B**  
Globe Valve  
Cutaway with Base



**H-1500-PVC-B**  
Plug Valve  
Cutaway with Base



**H-1500-UVC-B**  
Butterfly/Diaphragm Valve  
Cutaway with Base



**H-1500-RVC-B**  
Safety Relief Valve  
Cutaway with Base

### **Hampden Cutaways**

allow for convenient classroom training for the operation, construction, and maintenance of common industrial components. Through carefully planned sectioning and color-coding, the complete internal configuration of each component is exposed and showcased. Seal features and hardware locations have been retained.



Hampden is committed to providing industry-leading technology.

For the latest from Hampden, visit our home page at <http://www.hampden.com> or e-mail us at [sales@hampden.com](mailto:sales@hampden.com)

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