

# Fluid Power Learning System

Educational Training Equipment for the 21st Century

Bulletin 223-14E

## Hampden MODEL H-FP-223-14 Hydraulic Trainer

### Purpose

The Hampden **Model H-FP-223-14** 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.

The vertical panel is constructed of code gauge steel finished in instrument white baked enamel. The following components are mounted on the panel:

- flow control valves
- check valves
- sequence valve
- needle valves
- pressure compensated flow control
- pressure reducing valve
- deceleration valve
- pressure gauges
- hydraulic cylinder
- hydraulic cylinder w/clear tube and tapered cam
- hydraulic motor with Lexan shaft guard
- header for pressure
- header for return and drain
- hose rack
- tees
- cross
- hoses with quick connect fittings
- lever operated 4-way directional control valve
- flowmeter
- solenoid operated 4-way closed center directional control valve
- emergency pushbutton switch

All panel mounted components include quick connect fittings and the appropriate graphic symbol.

The mobile bench is constructed of code gauge steel finished in instrument tan enamel with two fixed and two swivel locking casters, a storage cabinet with adjustable shelf and locking hinged door. The bench top is of a pan construction with replaceable nonwoven absorbent mat.

The following are mounted within the bench:

- 10 gallon reservoir with filler breather cap
- liquid level gauge
- thermometer
- vacuum gauge
- ball valve
- 10 micron filter
- aeration filter
- needle valve
- motor starter switch w/overload protection
- pressure gauge
- solenoid selector switch
- venting ball valve
- pressure relief valve
- 3-GPM gear pump
- 8 foot power cord and cord rack
- electric motor w/vibration and isolation mounts

### Courseware

Text: *Industrial Hydraulic Technology*  
Lab Manual: *Hydraulic Technology*  
Instructor's Guide: *Industrial Hydraulic Technology*

### Optional Systems

#### H-FP-223-14-FP Hydraulic Fault System

This option adds 8 two-way hydraulic solenoid valves and 10 instructor inserted faults located behind a locked panel.

#### H-FP-223-14-EH Electrohydraulics Option:

The courseware covers the following topics:

- Speed Control of the Hydraulic Cylinder
- Speed Control of the Hydraulic Motor
- Position Control of the Hydraulic Cylinder
- Preset and Cycle Between Two Different Speeds or Positions



Hampden **MODEL H-FP-223-14** Hydraulic Trainer  
Shown with EH Option  
Dimensions: 66"W x 65"H x 28"D  
Weight: 1,000 lbs.

### Mechanical Ratings

#### Hydraulic

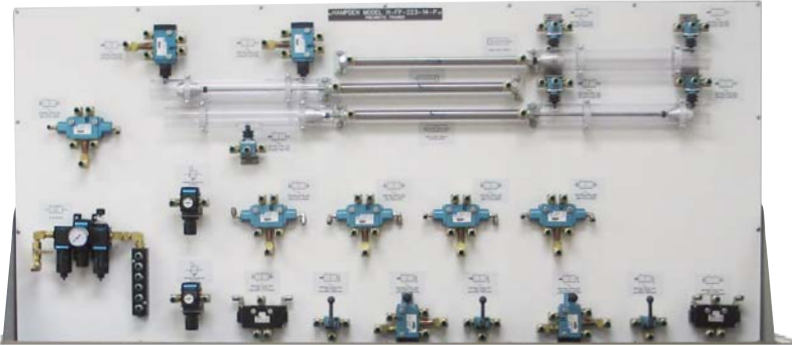
Flow:	3 GPM
Pressure:	to 500 PSI
Electrical:	120V.AC 1Ø 15A
Noise Level:	Approx. 73 DBA or less
Pump Motor:	1HP, 1800 RPM

#### Pneumatic

Air:	10SCFM min. @ 125 psi max
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**MODEL H-FP-223-14P**  
Pneumatics Option

## Optional Systems Continued

### H-FP-223-14P Pneumatics Option:

- Panel
- Cylinder: Double-Acting Single Rod w/CAM and clear plastic tube guard
- Cylinder: Double-Acting Double Rod with CAMS and clear plastic tube guards
- Manifold, 4-port
- Directional Control Valve: 4-way, 2-position, 5-ported CAM operated spring return
- Directional Control Valve: 3-way, 2-position non-passing CAM operated spring return
- Combination Air Line Filter, Regulator and Lubricator with pressure gauge, adjustable for 2-125psi, manual drain.
- Regulator, 2-125psi with pressure gauge.
- Directional Control Valve: 4-way, 2-position, 5-ported, double remote air operated
- Directional Control Valve: 4-way, 2-position, 5-ported, dual pressure, double remote air operated
- Directional Control Valve: 4-way, 2-position, 5-ported single pressure, double remote air operated
- Directional Control Valve: 3-way, 2-position remote pilot operated
- Directional Control Valve: 3-way, 2-position hand lever operated, spring return
- Directional Control Valve: 4-way, 2-position, 5-ported hand lever operated, spring return
- Check Valve: 1/4" ports - poppet type
- Flow Control Valve: Needle type 1/4" ports
- Quick Exhaust/Shuttle Valve
- Exhaust Mufflers
- Tubing, thermoplastic 65Ft. 1/4"
- Tees
- Plugs
- Parts Storage Box, plastic (loose components)
- Graphic symbol tag for each panel mounted component.

### H-FP-223-14-JS Joy Stick Option:

The Hampden **Model H-FP-223-14-JS** Joy Stick Option is a lever operated hydraulic control pressure valve with 4 control ports, incorporated into the lever are 5 thumb switches, to allow connections for electrohydraulic components.

The control ports and thumb switches are brought out to connection points on the enclosure allowing inter-connection between the Hampden **Model H-FP-223-14** and **H-FP-223-14-EH**.

Included with the Joy Stick Option are 4 fault switches located behind a lockable compartment. The fault switches will allow the instructor to insert realistic faults into the system for troubleshooting.



### H-FP-223-14-A Accumulator Option:

The following components are furnished:

- One quart accumulator with gauge adapter and pressure gauge
- Solenoid bleed-down valve



### H-FP-223-14-PPS Pneumatic Air Supply Option

This unit consists of a 3 gallon compressor with high torque motor, regulator with gauge and auto-pressure setting. Motor has built-in thermal protection and includes an off-on switch.



All Hampden units are available for operation at any voltage or frequency

**Hampden**  
ENGINEERING CORPORATION