

# Hydraulic Training Systems

Teaching and learning hydraulics in real-time



## Plug-and-Play Training Module

### 3-Section Mobile Directional Control Valve

Model Number- MF100-MDCV – non troubleshooting

Model Number- MF100-MDCV-TS – w/troubleshooting

#### Purpose -

The MF100-MDCV is an actual directional valve assembly that is commonly used on machinery such as front-end loaders and forklifts. It is equipped with all the valves typically found in this type of mobile valve configuration.

The valves include: main pressure relief valve, load-check valves, cylinder port relief valves (line reliefs), and anti-cavitation valves. It also has two “cylinder” spools and a “motor” spool.

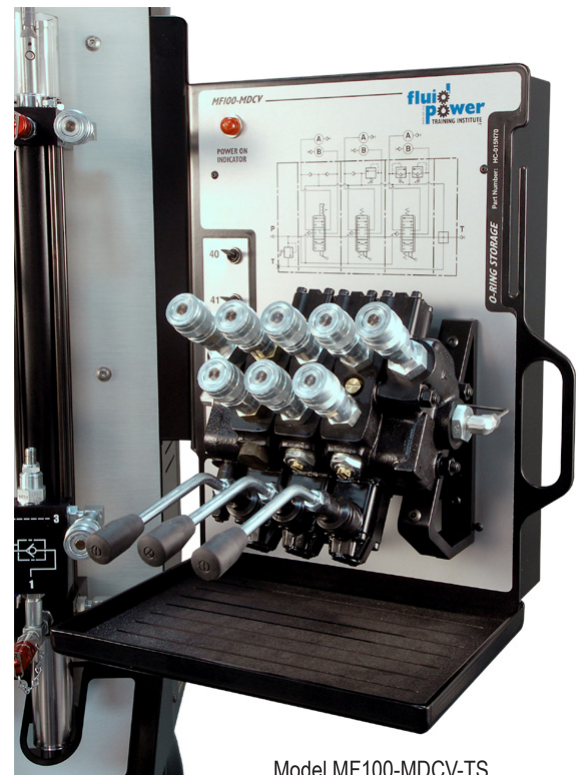
The MF100-MDCV is designed to plug into the side of the MF102 series training simulators.

#### How the MF100-MDCV will benefit instructors and students -

The MF100-MDCV three-section directional control valve is designed to operate in conjunction with the three (3) actuators on the MF102 series training simulators. The “motoring spool” provides directional control functions for the hydraulic motor, and the two “cylinder spools” provide directional control functions for the two cylinders.

The lesson (included with simulator) allows instructors to demonstrate the following procedures:

- The purpose of the main pressure relief valve
- How the main pressure relief valve functions
- How to safely and properly set a main pressure relief valve
- The purpose of a cylinder port relief valve
- How a cylinder port relief valve functions
- How to safely and properly set cylinder port relief valves
- The purpose of a load check valve
- How a load-check valve functions
- The purpose of an anti-cavitation valve
- How an anti-cavitation valve functions
- The purpose of power-beyond
- How a power-beyond circuit functions
- How to read a hydraulic schematic for a typical mobile directional control valve



Model MF100-MDCV-TS  
(w/troubleshooting capability)

#### Course Materials and Visual Aids -

- Fundamental Hydraulic Manual/Directional Control Valve Learning Module/Mobile Directional Control Valves
- Mobile Directional Control Valve Simulator Activities include:
  - Students construct (from a schematic) a front-end loader hydraulic system
  - Student activities include: Set main pressure relief valve; cylinder port relief valves , construct power-beyond circuit
- Instructor’s guide and answer sheets
- Visual Presentation - Mobile Directional Control Valves Full-color, PowerPoint presentation in CD format
- Optional: CD - “How to Teach Mobile Directional Control Valves.”

This CD is ideal for instructors who are new to teaching hydraulics

All FPTI simulators are available for operation at any voltage or frequency



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## Plug-and-Play Training Module 3-Section Mobile Directional Control Valve

**Model MF100-MDCV-TS -  
Three-section directional control valve with  
comprehensive diagnostics capability**

### Introduction -

The Fluid Power Training Institute™ conducted a 10-year study of leakage rates - due to wear - in hydraulic components. Those exact leakage rates are designed into the MF100-MDCV-TS training module.

FPTI™ also developed a technique for field-testing hydraulic components to detect wear. The technique is called pressure/leak testing. Pressure/leak testing provides a way for technicians to test hydraulic components with the prime-mover safely locked out. There is also no need to remove a component or disassemble it, and the duration of each test averages fifteen minutes.

Students who learn and understand pressure/leak testing will undoubtedly revolutionize field-testing as we know it.

### Diagnostic Activities -

The MF100-MDCV-TS is designed to help instructors teach and students learn how to safely and effectively test a typical mobile directional control valve regardless of the number of sections.

Students will learn to pressure/leak test individual sections with the objective of determining, with pinpoint precision, the condition of a given port. If there is unacceptable leakage in a given port the student will learn how to determine if the problem is related to spool/bore wear, cylinder port relief or anti-cavitation valve, or both.

Students will learn to perform pressure/leak tests to examine:

- Main pressure relief valves
- Anti-cavitation valves
- Cylinder port relief valves
- Spool to bore wear

Plug-and-Play training modules attach quickly and easily to any MF102 series training simulator



### Student Activities -

Included in the student activities manual are circuits for a wide range of mobile machines including: front-end loaders, forklifts, drills, etc.

The student engages in an activity based on problems described by the operator. These are typical everyday problems. These exercises are designed to teach students how to develop critical thinking skills.

The troubleshooting activities are student driven (the instructor does not need to set the faults). On the MF102-TS models, faults are automatically introduced when a student activates a numbered switch(es).

On the MF102-TSE models faults are automatically introduced via the on-board panel PC and touchscreen.

### Shipping Specifications -

MF100-MDCV and MF100-MDCV-TS -

Shipping weight (does not include container and packaging):  
29.48 kgs (65 lbs)

Shipping dimensions:  
58 cm (23") tall x 53 cm (21") wide x 33 cm (13") deep

### Warranty -

FPTI™ warrants its products against defect in materials or workmanship for a period of two (2) years from date of delivery.