Training Systems

Teaching and learning hydraulics, pneumatics, electronics in real-time

Handcrafted with pride in AMERICA

MF900-VETS
Vehicle Electrical Training System -

Purpose-

With the advances in electronic systems today and their use in automotive systems, instructors need a better way to introduce students, who may have only mechanical backgrounds, to the world of automotive electronics systems.

The MF900-VETS is designed to help instructors to help students with:

- Fundamentals of electrical and electronics circuits
- Understanding electrical automotive systems
- Learn automotive starter system
- Learn alternator's battery charging system
- Learn about speed, coolant temperature and oil pressure sensors
- Understand CAN-BUS multiplexing systems (J1939 and OBD-II)
- Learn about DTC (Diagnostic Trouble Code)
- Troubleshooting of automotive lighting systems
- Understand the difference between LED and Incandescent Lights
- Learn about automotive electronics modules

How the MF900-VETS will benefit instructors, students and the college:

1. Instructors will benefit because they will:
   a. Teach with an already interconnected, automotive system.
   b. Produce faults for troubleshooting.
   c. Not have to deal with automotive connectors as the trainer has electronic connectors which can be disconnected manually, or via the computer.
   d. Teach the multiplexing system that is interactive with the computer.
   e. Teach the kind of outputs produced by automotive sensors.
   f. Teach what digital and analog inputs/outputs are.
   g. Teach "pull up type" and ladder resistor inputs.
   h. Have easy access to many points of the electrical system with banana-plug style test points.
   i. Teach the Starting and Charging systems with the modules included.
   j. Teach with the aid of the on-board software that interacts with the trainer.

2. **Students will benefit because they will:**
   a. Have the skill to troubleshoot automotive electrical systems.
   b. Have the skill to avoid unnecessary replacement of electronic modules.
   c. Understand multiplexing systems and failure cases.
   d. Understand the Starting and Charging systems.
   e. Have the skills necessary to understand other manufacturers electrical schematics.
   f. Learn the effects of bad grounding connections.
   g. Learn about voltage drops and bad connections.
   h. Learn the importance of using more testing tools (e.g., oscilloscopes, protocol analyzers, etc.) due to the complexity of today's electronics.
   i. Understand modern electrical systems from an Input/Output/Modules point of view.
   j. Have a better understanding of electronic components in one multiplexing system and what they need for connectivity.
   k. Learn about multiplexing system communication protocols (J1939).
   l. Have the skills to stay updated with modern electronics already present in today's automotive systems.

fluidpower TRAINING INSTITUTE™ www.fpti.org

2170 South 3140 West, Salt Lake City, UT 84119 • Tel. 801.908.5456 • Fax: 801.908.5734 • info@fpti.org **888-222-3421**

MF900-VETS Vehicle Electrical Training System -

3. Colleges will benefit because they will:

a. Attract students because students will see, and appreciate, the investment the college has made in lab equipment that is specifically designed for teaching skills safely.
b. Graduate students who will have the skill-sets needed to get, and keep, good paying jobs.
c. Serve industry well – properly trained technicians means increased productivity and profitability for employers.
d. Invest in training simulators that are designed for teaching specific skills safely leaving less chance for accidents and thus reducing liability.

Hands-on Activities -

Hands-on activities include:

- Starter system, cold and hot start
- Alternator charging system, load current, battery current
- Understanding the automotive system of the MF900
- Identifying the electronics modules (Lights Module , Sensors Module and Switch Module)
- Lights Module: control of the lights
  Sensors Module: Sensors reading (TPS, speed, coolant)
  Switch Module: Low current switches, dimmer, mul tifunction switch
- Inputs, Outputs of the modules, types
- Power Distribution Module, fuses and relays identification
- Multiplexing system, communication between the modules, CAN-BUS and J1939
- Diagnostic Trouble Code, Testing with a J1939 generic Reader or an OBD-II reader
- Troubleshooting the electrical system

Course material -

- Interactive Software on trainer, includes schematics and fault generation.

The MF900-VETS consists of the following components:

- One (1) 12V starter with cold and hot start selection, through software, with one 12V battery.
- One side panel with LED's and Incandescent Lights.
- A multi-function switch with steering wheel.
- Wiper Motor.
- Automotive panel with gauges and indicators.
- Power distribution module with relays and fuses.
- Standard automotive switches and R-ladder switches (Transmission switch, multifunction switch).
- Three (3) Electronics Modules for the multiplexing system.
- Electronic connectors with indicators.
- Banana-plug type test points.
- CAN-BUS/J1939 and OBD-II available for trouble-shooting.
- Magnetic and Hall effect speed sensors on main panel.
- Coolant Temperature and Oil Pressure automotive sensors on main panel.
- TPS sensor on main panel.
- Battery and alternator current sensors for monitoring charging and crank current.
- Touch-screen computer with interactive software for generating faults, seeing J1939 messages in real-time, interactive schematics, etc.

Warranty -

As with all FPTI™ training systems, the MF900-VETS Hydraulic Training Simulator is covered for two (2) years from date of delivery.

Warrantee covers defects in materials and quality of work. Warrantee does not cover damage caused by abuse or modifications.

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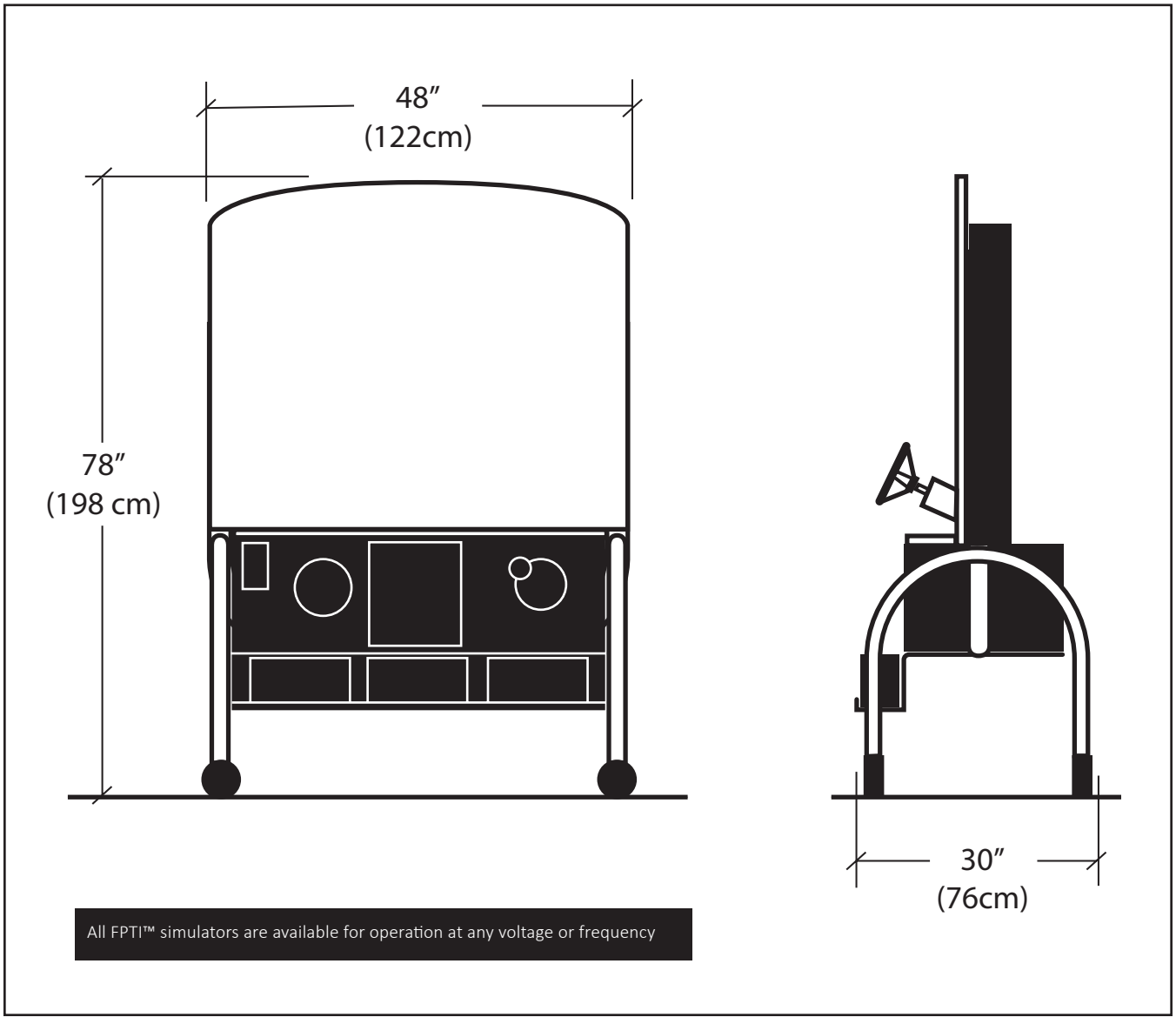
MF900-VETS Vehicle Electrical Training System -

Shipping Specifications - *(Subject to change)*
Shipping weight (does not include pallet and packaging):

Training simulator - 920 lbs (417 kgs)

Shipping dimensions (does not include pallet):
78” (198 cm) tall x 48” (122 cm) wide x 30” (76 cm) deep

Electrical Requirements for Operation -
110 VAC, 20 Amp dedicated circuit is required.
If an extension cord is used, it must be 12-gauge wire or larger, 3-conductor (neutral, hot, ground), 50-foot (15.24m) length max.



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

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