Hydraulic Training Systems

Teaching and learning hydraulics in real-time

MF550-HTS Hydrostatic Transmission Simulator

Handcrafted with pride in AMERICA

Purpose -

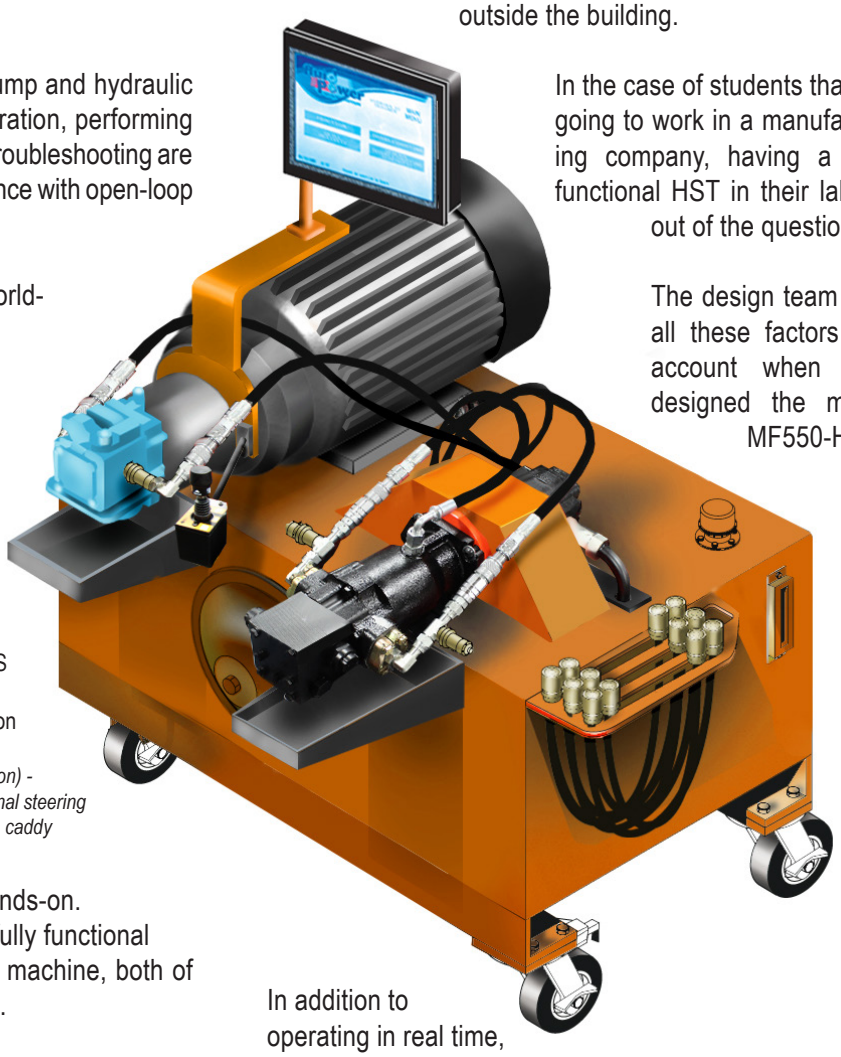
Hydrostatic transmissions (HST's), also known as closed-loop systems, provide hydraulic power for production machines like conveyors, grinding mills, elevators, etc. They are also extremely popular in the mobile industry for providing hydraulic power for agricultural, construction, forestry, mining, marine, military, etc.

Although they consist of only a hydraulic pump and hydraulic motor that operate in a closed-loop configuration, performing set-ups, adjustments, services, testing, and troubleshooting are challenging for technicians that have experience with open-loop hydraulic systems.

Consequently, there is a critical shortage world-wide of competent HST technicians. The most challenging problem technical colleges and technical training facilities face is that to effectively train technicians they need to learn on a fully functional HST.

This presents several challenges, including:

- Safety
- Production
- Machine availability
- Cost



MF500-HTS Hydrostatic Transmission Simulator *(artist rendition) - Shows optional steering module hose caddy*

Safety:

The most effective way to learn HST's is hands-on. The only place that an instructor will find a fully functional HST is in a production plant or in a mobile machine, both of which offer their own unique safety hazards.

Production:

When students need to learn in both environments, machines must be removed from production while the training is being executed.

Machine availability:

Instructors invariably must wait until it's convenient to remove a machine from production for hands-on training.

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

Cost:

If technical colleges want to teach HST's in their labs, they are forced to purchase an entire machine to obtain an HST. In addition to the exorbitant cost associated with purchasing a machine, they occupy so much space in the lab that they are forced to store them outside the building.

In the case of students that are going to work in a manufacturing company, having a fully functional HST in their labs is out of the question.

The design team took all these factors into account when they designed the model MF550-HTS.

In addition to operating in real time, with the aid of an onboard panel PC with 24" (61cm) touch-screen, it can auto-generate every fault/problem that is shown in an HST manufacturer's troubleshooting charts. The model MF550-HTS is unparalleled when it comes to teaching students to become experts in every aspect of HST set-up, maintenance, testing and troubleshooting.

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MF550-HTS Hydrostatic Transmission Simulator

Features:

HST Pump:

Our designers chose the Sauer Danfoss M46 for several reasons:

- It is widely used in the USA and throughout the world.
- It is functionally identical to most medium to heavy-duty HST pumps – Rexroth, Linde, Parker, Kawasaki, etc.
- Joystick electronic control.

NOTE: *We can customize the MF550-HTS for almost any similar sized HST pump.*

Hydraulic motor:

HST's can operate with either a high-speed/low torque motor, i.e., axial piston and bent axis, or a high torque/low speed motor. The model MF550-HTS has a high torque/low speed motor.

Electric motor:

15-HP (11.1 Kw)

Hot oil shuttle valve:

Students need to learn how to adjust and troubleshoot these valves, which are found in most medium to heavy-duty HST's.

24" (61cm) Panel PC with touchscreen:

The software includes a wide range of relevant information and learning activities, which include:

- Various drive modes
- Several troubleshooting modes
- Service manual

On-screen digital display:

The on-screen digital display shows the HST's operating parameters, which include:

- Electric motor amps
- Oil temperature
- Oil pressure – system
- Oil pressure – charge
- Case pressure
- Pump inlet restriction

Safety features:

- All pressure test points are non-invasive (zero-leak)
- Emergency stop
- No rotating shafts
- All moving couplings guarded
- Zero leak quick-connect/disconnect valves

Analog gauges:

Technicians will seldom have displays that show digitally, an HST's operating parameters. Consequently, they must learn how to use analog gauges and know where they must be connected to the HST to read the respective operating parameter.

There are four analog gauges:

- 0" to 30" (0 to 76cm) Hg – Pump inlet restriction
- 0 to 100 PSI (0 to 6.9 bar) – Case pressure
- 0 to 600 PSI (0 to 41.4 bar) – Charge pressure
- 0 to 3000 PSI (0 to 207 bar) – System pressure

Additional diagnostic instruments:

- 0 to 10-GPM analog flow meter with integrated pressure gauge
- Digital non-contact laser-guided tachometer

Oil cooler:

An air/oil cooler cools the oil when the HST is operating.

Oil filter:

A high efficiency filter keeps the oil clean for years of uninterrupted service.

Hydraulic reservoir:

Oil type – AW32 or equivalent
Capacity – 110 gallons (416 liters)

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Teaching objectives -

Visual Aids
PowerPoint presentation showing how components function, and the layout of a typical HST. Animations in slow motion show step-by-step how an HST functions.

Available textbooks and reference material:
- Introduction to Hydrostatic Transmissions
- Student activity book
- Instructor workbook

Adjustments:
- Charge pressure neutral
- Charge pressure forward and reverse
- Null
- Mechanical neutral
- Maximum flow

Testing:
- Charge pressure
- Charge pump flow
- Main pump flow
- System pressure
- Pump case pressure
- Electric motor speed
- Implement pump (optional)

Electronics:
- Electronic displacement control valve
- Electronic joystick

Options:
Hydraulic steering plug-and-play module:
The steering module is a replica of the steering system used in articulated vehicles, construction equipment, etc.:
- Orbitrol steering valve
- Cross port relief valve
- Priority flow divider
- Pressure relief valve

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Shipping Specifications -

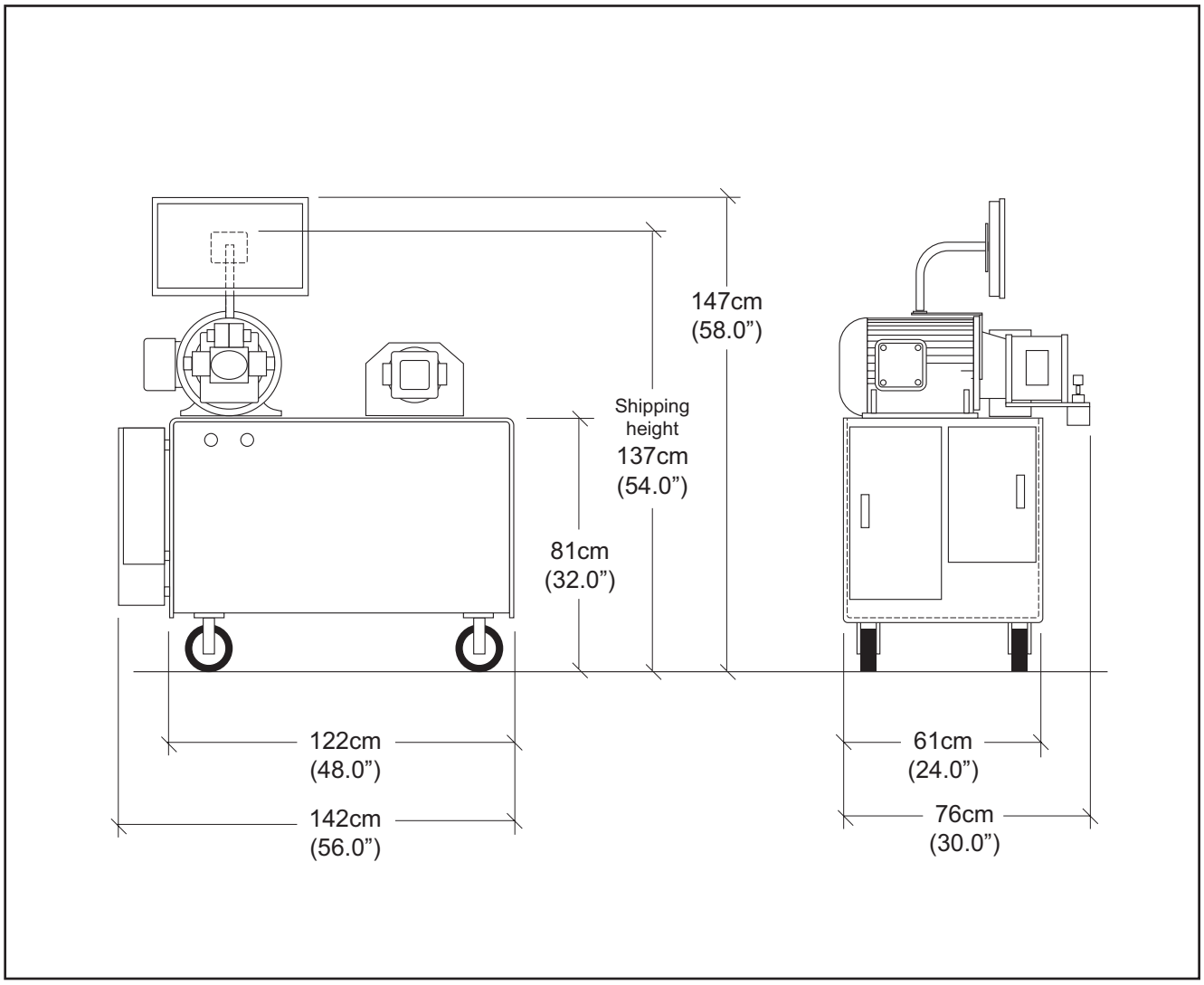
Shipping weight (does not include pallet or packaging):

454 kgs (1,000 lbs)

Shipping dimensions:
137cm (54.0”) tall x 76cm (30.0”) wide x 142cm (56.0”) long

Warranty -

FPTI™ warrantees it’s products against defect in materials or workmanship for a period of two (2) years from date of delivery.



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