

Hydraulic Training Systems

Teaching and learning hydraulics in real-time



MF600-1HP HydraBike - Basic Hydraulics Training System

The 1-HumanPower™, zero-emissions hydraulic training system is designed to help students clearly understand fundamental hydraulics as it relates to horsepower, flow and pressure.

It's the only training system that lets students literally see how increases and decreases in pedal speed relates to increases and decreases in actuator speed. Also, the clever use of areas and weights let's students actually see the relationship of pressure to actuator force and torque. Changes in "human-power" in reaction to increases and decreases in pedal speed (flow) and pedal force and torque (pressure) makes it possible for students to relate those changes to input horsepower in a hydraulic system.

The MF600-1HP lets students pedal their way to really understanding vital fundamentals that are sometimes hard to grasp with theory.

- Prime mover – student.
- Power supply - human-mechanical energy is converted into fluid energy when a student exerts a force on pedals, which is converted to torque. The torque rotates a weighted fly-wheel, which is connected to a hydraulic pump through a belt drive.
- Seat - comfortable gel-seat, which has convenient wrench-free height and lateral adjustment.
- Crane: Has three functions: boom raise/lower, mast rotation left/right (180° either way), and hydraulic winch with belt and hook (for attaching weight).

Digital panel-mounted instrumentation -

- Flow meter
- Pressure gauge
- Digital tachometer.



Hydraulic components:

- Fixed displacement gear pump
- Dual double-acting, single rod cylinder - boom raise and boom lower
- Double-acting, single-rod cylinder - mast extension
- Bi-directional, fixed displacement hydraulic motor - belt reel
- Four (4) cartridge-type directional control valves
- Flow control valves one way
- Hydraulic tank - plastic 0.75 gallon (3.79 liter) capacity
- Weight - (approximately 50 pounds/22.7 kg)

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TRAINING INSTITUTE™
www.fpti.org

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Features -

- Boom cylinder permits students to see how pressure responds to changes in surface area when the load is constant.
- Due to the fact the student is the prime mover, the student can see first-hand how changes in pedal speed relate to changes in actuator speed.
- This also allows student to see first-hand how they must respond by exerting more or less power in response to changes in flow and pressure.

Learning Activities -

What the MF600-1HP HydraBike will teach students:

1. Hydraulic safety.
2. Force and torque – each student calculates the amount of torque he/she generates at the bikes' flywheel.
3. Flow relative to flywheel and pump speed.
4. How changes in flow effect changes in actuator speed.
5. How to calculate actuator speed.
6. Where pressure comes from.
7. Why a hydraulic pump has everything to do with pressure in a hydraulic system.
8. How to calculate force and torque output.
9. How pressure changes in response to changes in load.
10. How pressure changes in response to changes in area and displacement.
11. How changes in area relate to changes is pressure when the load is constant.
12. Hydraulic horsepower.
13. How to calculate hydraulic horsepower.
14. Pressure differential.

Visual Aids and Books -

- PowerPoint presentation
- Student activities manual
- Instructor answer book

Shipping Specifications -

Shipping weight (does not include pallet and packaging):

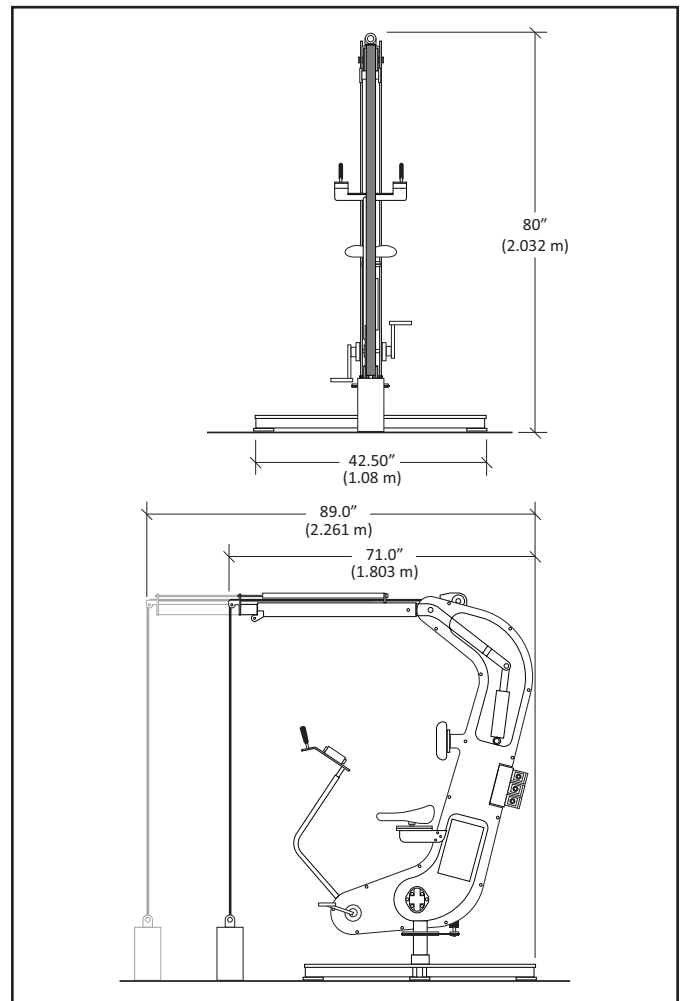
318 kgs (700 lbs)

Footprint dimensions:

2032cm (80") tall x 1308cm (51.50") wide x 2261cm (89") deep (at full boom extension).

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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