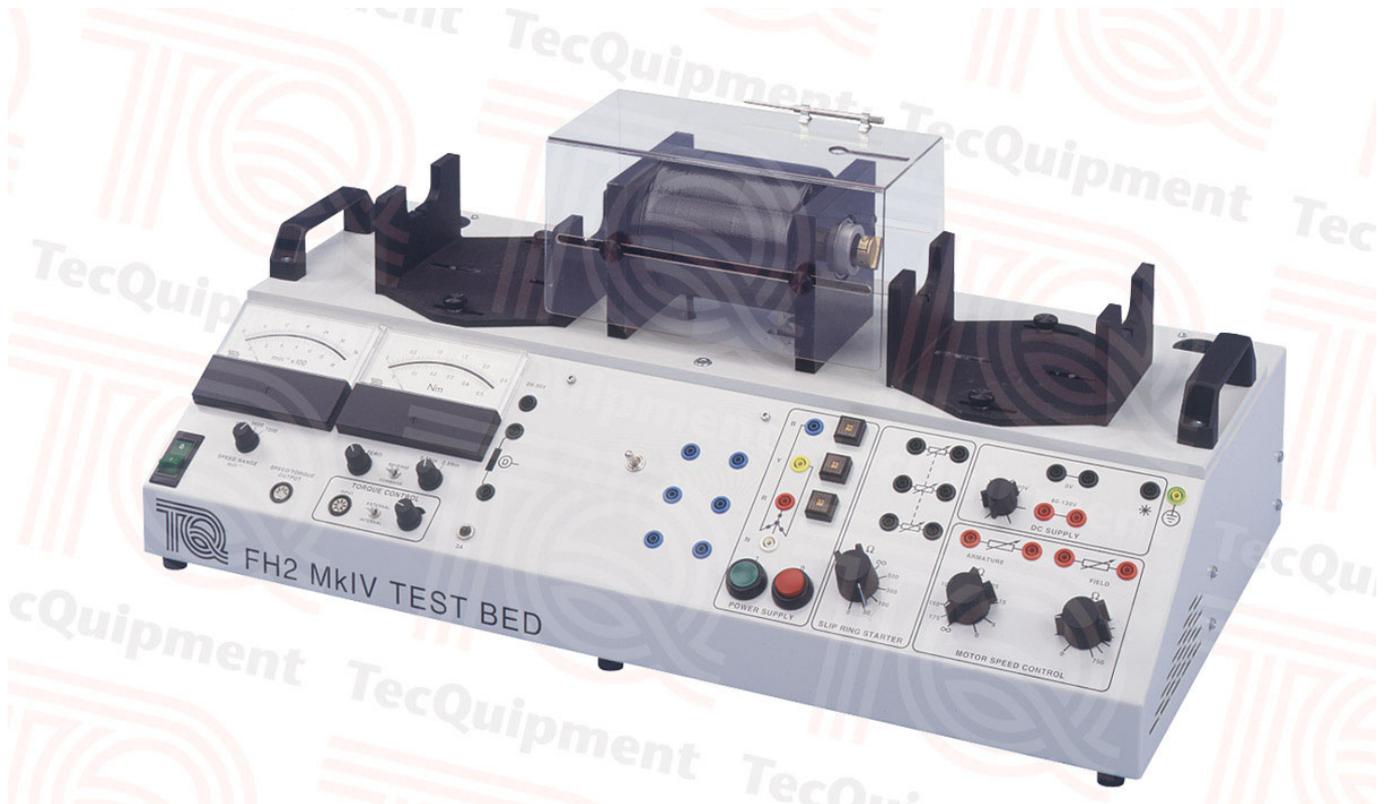


FH2

Electrical Machines Test Bed

Part of the Electrical Machines Teaching System, this is a test bed for the Fractional Horsepower (FH) Electrical Machines range. It gives electrical power and a variable load to test the optional machines.



- A compact, bench-mounting test bed to test the performance of TecEquipment's fractional horsepower (FH) machines, including a.c. and d.c. motors and generators
- Includes d.c. and a.c. supplies for the optional FH range machines
- Uses electric dynamometer to load optional machines for accurate measurement of machine shaft power output and speed
- Optional machines fit to the test bed with simple, reliable locating pins and shaft coupling – needs no tools
- Works with full range of optional instruments, motor drives and TecEquipment's optional Data Management System (DMS2) for computer-controlled machine-performance tests
- Includes pack of shrouded leads and many safety features, such as interlocks, guards and shrouded sockets for safe experiments

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- An ISO 9001 certified company

FH2

Electrical Machines Test Bed

Description

The Electrical Machines Test Bed is a bench-mounting unit. It works with other optional instruments to give a full range of tests on the optional range of fractional horsepower (FH) machines.

The test bed gives a d.c. supply and variable resistances to adjust the current in the field coils and armatures of d.c. machines. It also has a fixed a.c. supply for the a.c. machines, single and three-phase. The user presses large push-buttons to stop and start the power supplies. The test bed includes a three-phase rotor-starting resistance arrangement for the optional Wound Rotor Induction Motor (FH100).

Included on the test bed is a fixed d.c. machine that works as a dynamometer to load the shafts of the other machines. The test bed energises the dynamometer and measures the torque and speed of its shaft. Students use these measurements to find the torque and power delivered by the machine under test. The user operates a control on the front of the test bed to vary the torque (load). They can also select an external input control for use with the optional Data Management System (DMS2) for computer-controlled load tests. The test bed has two meters: one shows the torque, the other shows the speed. Sockets under the meters output speed and torque signals and accept the external torque control signal.

The test machines fit into a sliding cradle on either side of the dynamometer. Most machines fit into the right-hand cradle. The left-hand cradle is mainly for the D.C. Compound Motor (FH50) because it can work as a generator, a synchronous motor and a prime mover. This cradle is also for machines when they work as an extra inertial load to the test machine.

A clear guard covers the coupling between the machine under test and the dynamometer. The nylon coupling allows for slight mechanical misalignment between the test machine and the dynamometer.

The test bed includes a taper pin to lock the rotor of selected test machines for 'locked rotor' tests.

Supplied with each optional test machine is a plate with a mimic diagram of the machine's windings. The plate fits over a set of sockets on the front of the test bed. Students can easily see how to connect the supplies to the test machine.

Note: The FH2 does not supply power for the Stepper Motor (FH150). You need the Stepper Motor System (SMS2) to do this.

Standard Features

- Supplied with comprehensive user guide
- Two-year warranty
- Made in accordance with the latest European Union directives

Experiments

The test bed works with other parts of the FH range to offer many experiments. Refer to the separate Electrical Machines range overview datasheet for full details.

Recommended Ancillaries

All other products in the FH range (see overview datasheet).

Essential Ancillaries

Supply Converter Unit (MPM1004) – determined by local supply voltage. See Essential Services.

Essential Services

Electrical supply:

Three-phase with earth and neutral 50/60 Hz
220/240 VAC phase-to-phase, 10 A per phase

TecEquipment can supply the optional Supply Converter Unit (MPM1004) to convert three-phase 380/415 VAC down to 220/240 VAC three-phase. One MPM1004 will work up to three test beds.

Bench space needed:

For standard experiments with other parts of the FH range, you need approximately 1500 mm x 750 mm.

Operating Conditions

Operating environment:

Laboratory environment

Storage temperature range:

-25°C to +55°C (packed)

Operating temperature range:

+5°C to +40°C

Operating relative humidity range:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

Sound Levels

Less than 70 dB(A)

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FH2

Electrical Machines Test Bed

Specifications

Nett dimensions and weight:

800 mm x 400 mm x 330 mm and 36 kg

Packed dimensions and weight:

Approximately 0.18 m³ and 41 kg

A.C. supply for test machines:

Three-phase and neutral 220/240 VAC between phases, 127/138 VAC phase to neutral. A resettable overcurrent circuit-breaker protects each phase.

D.C. supply for test machines:

Variable, 80 VDC to 130 VDC

Torque control:

Variable 0 to 2.5 Nm, shown on an analogue meter. Has internal/external switch for manual control or remote control by other FH range products.

Speed indicator:

Has three ranges up to 7200 rev.min⁻¹

Speed and torque sockets:

Speed signal output: 1 V / 1000 rev.min⁻¹

Torque signal output: 1 V / 1 Nm

Torque signal input: +/- 10 VDC

Slip ring starter adjustment:

Three stepped value resistances on one shaft, 0, 50, 100, 300, 500 ohms and open circuit (infinity)

Other controls:

Motor speed controls: variable resistance for series connection to field coils and armatures of d.c. machines.

Start/stop/run switch: a toggle-switch that works with some machines to help to test them correctly.

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