

**VDAS® MFP103**

## POSITIVE DISPLACEMENT PUMP SUPPORT MODULE

Allows students to study and perform tests on a range of positive displacement pumps: to understand how they work and calculate their performance



TYPICAL SCREENSHOT OF THE OPTIONAL VDAS® SOFTWARE



TWO OF THE OPTIONAL PUMPS

- Mobile pump-support module with full instrumentation
- Part of TecEquipment's Modular Fluid Power range which connects with the Universal Dynamometer (MFP100) as a common motive-power source for a cost-effective solution
- Allows students to study and test a range of popular positive-displacement pumps (available separately)
- Connection plate with schematic diagram clearly shows oil-flow circuit and how parts of the module connect to each other
- Fully variable speed, for range of test results
- Includes digital display of pressures, flow and oil temperature
- Can connect to TecEquipment's Versatile Data Acquisition System (VDAS®) and software

# POSITIVE DISPLACEMENT PUMP SUPPORT MODULE

## DESCRIPTION

For use with and driven by the Universal Dynamometer (MFP100, available separately), the Positive Displacement Pump Module is part of TecQuipment's Modular Fluid Power range. When used with one of the optional pumps, the Positive Displacement Pump Support Module is ideal for student experiments, demonstrations and projects.

Positive-displacement pumps are common machines, used to move fluids in many applications, and usually at high pressures. They can be rotary pumps or reciprocating pumps and work by moving a fixed volume of fluid from their inlet to their outlet. These pumps are used in lubrication systems, hydraulic systems, automobiles, agriculture, medical equipment, sanitation and many industrial applications.

The module consists of a mobile frame with an oil reservoir, a flow meter, valves and instruments to measure pump performance. The flow meter is a positive-displacement unit, so that it still works correctly at any oil viscosity. Any of the optional pumps fit to the module. Two flexible, high-pressure pipes with quick-release, self-sealing connections connect the pump to the oil circuit.

The separate Universal Dynamometer (MFP100) also fixes to the module to drive the pump. The Universal Dynamometer measures and displays the speed and torque of the pump to calculate and display mechanical (shaft) power. Electronic pressure transducers measure the pump inlet and delivery pressures and the fluid flow rate. Speed is fully variable up to the maximum allowable for the pump. Included with the module is the oil to fill the oil reservoir. A thermocouple measures the oil temperature to allow calculation of the oil viscosity. The oil system includes a pressure-relief valve to keep the oil pressure at a safe level.

The optional positive-displacement pumps include rotary and reciprocating types, including a piston pump, a gear pump, a vane pump and a swash-plate (axial piston) pump. The optional pumps fix to the bottom shelf of the pump-support module when not in use.

For quick and reliable tests, TecQuipment can supply the optional Versatile Data Acquisition System (VDAS®). This gives accurate real-time data capture, monitoring and display, calculation and charting of all the important readings on a computer (computer not included).

## STANDARD FEATURES

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

## AVAILABLE EXPERIMENT MODULES

- Piston Pump (MFP103a)
- Gear Pump (MFP103b)
- Vane Pump (MFP103c)
- Swash Plate Pump (MFP103d)

**NOTE:** You must choose at least one of the optional pumps to use with the Positive Displacement Pump Module. You cannot do tests or experiments without an optional pump.

## ESSENTIAL BASE UNIT

- Universal Dynamometer (MFP100)

## RECOMMENDED ANCILLARIES

- VDAS-F (frame-mounted version of the Versatile Data Acquisition System)

## ESSENTIAL SERVICES

### ELECTRICAL SUPPLY (FOR THE UNIVERSAL DYNAMOMETER):

Single-phase 230 VAC, 50 Hz at 20 A

Two-phase 220 VAC, 60 Hz at 20 A

### FLOOR SPACED NEEDED:

2 m x 1.5 m



SHOWN FITTED WITH THE UNIVERSAL DYNAMOMETER (MFP100) AND A PUMP

# POSITIVE DISPLACEMENT PUMP SUPPORT MODULE

## OPERATING CONDITIONS

### OPERATING ENVIRONMENT:

Laboratory

### STORAGE TEMPERATURE RANGE:

-25°C to +55°C (when packed for transport)

### OPERATING TEMPERATURE RANGE:

+5°C to +40°C

### OPERATING RELATIVE HUMIDITY RANGE:

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

## SPECIFICATIONS

### NETT DIMENSIONS AND WEIGHT (ASSEMBLED):

1540 mm x 1620 mm x 660 mm and 138 kg (with no oil in the reservoir)

### APPROXIMATE PACKED VOLUME AND WEIGHT:

1.6 m<sup>3</sup> and 250 kg (with oil)

### OIL RESERVOIR CAPACITY:

30 litres

Oil type: Shell Morlina 10 or equivalent

### TEMPERATURE MEASUREMENT:

K-type thermocouple and display

### PRESSURE MEASUREMENT:

Electronic pressure transducers and display

### FLOW MEASUREMENT:

Oval gear flowmeter