Gear Pump Demonstration Unit – FM52

Two gear wheels operate inside a casing. One is driven while the other rotates in mesh with it. The liquid is carried around in the space between consecutive teeth and then ejected as the teeth mesh. The pump has no valves. It is a positive displacement pump and will deliver against high pressures. The output is a more even flow than that of a reciprocating pump. It is particularly suitable for high-viscosity fluids.
**Description**

A motor-driven gear pump mounted on a stainless steel plinth with a water reservoir and pipework for continuous circulation. The pump head and the water reservoir are manufactured from clear acrylic for maximum visibility.

A manually operated valve at the pump outlet allows control of the flow and a pressure relief valve protects the operator and the equipment. Electronic sensors measure the pump outlet pressure, the flow rate and the water temperature.

The pump speed is accurately controlled by an advanced electronic inverter within the IFD7 (an essential accessory). This inverter also calculates the torque produced at the motor drive shaft, allowing the power used by the pump to be derived.

The IFD7 also provides the conditioning electronics for the sensors and allows their readings to be displayed on the computer software.

**Demonstration capabilities**

- Demonstration of a gear pump in operation
- Measurement of constant-speed pump performance, including the production of characteristic curves of outlet pressure against:
  - Flow rate
  - Motor shaft power
  - Pump speed
  - Pump efficiency
  - Volumetric efficiency
- Comparison of student calculations with computer results

**Software**

The ArmSOFT software enables the operator to control the pump speed 0 to 100%. Feedback from the sensors is then displayed in real time for the end user with simultaneous data logging.

The data trend is also displayed graphically in real time and can be exported to another platform such as Excel for further analysis.

**Essential accessories / equipment**

- Armfield IFD7

**Ordering specification**

- A small-scale gear pump demonstration unit comprising of a water reservoir, pump, control valve, relief valve and interconnecting pipework, all mounted on a stainless steel base
- Equipped with electronic measurement sensors for pump head pressure, flow rate and water temperature
- Transparent pump head for visibility
- Capable of being linked to a PC (not supplied) via a USB interface console (an essential accessory), which does not require internal access to the computer. Also enables interfacing to other software packages
- Supplied with software providing full instructions for setting up, operating, calibrating and performing the teaching exercises. Facilities for logging, processing and displaying data graphically
- Offers a complete teaching package of coursework and laboratory investigation

**Ordering codes**

- FM52
- IFD7-A: 220-240V / 1Ph / 50Hz
- IFD7-G: 220-240V / 1Ph / 60Hz

**Technical details**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max flow rate</td>
<td>6.5 l/m typical</td>
</tr>
<tr>
<td>Max head</td>
<td>25</td>
</tr>
<tr>
<td>Max pump speed</td>
<td>1,800rpm</td>
</tr>
<tr>
<td>Motor power rating</td>
<td>250W</td>
</tr>
<tr>
<td>Gear Diameter</td>
<td>38mm</td>
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<tr>
<td>Pressure Sensor</td>
<td>0 to 100psi</td>
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<tr>
<td>Pressure Relief Valve</td>
<td>3bar</td>
</tr>
</tbody>
</table>

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- IFD7-G: 220-240V / 1Ph / 60Hz

**Warranty**

Armfield standard warranty applies with this product

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**Knowledge base**

> 26 years’ expertise in industrial R&D technology
> 50 years’ providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.