

### Energy Losses in Pipes - F1-18

The unit consists of a vertical test pipe on the side of the equipment which can be fed directly from the hydraulics bench supply or, alternatively, from the integral constant head tank above.

These in turn provide high or low flow rates which may be controlled by a valve at the discharge end of the test pipe. Manometers are used to measure the head loss. For large pressure differentials we would recommend the Armfield H12-8 Digital Pressure meter, although a water-over-mercury manometer is also built into the unit. In addition, a pressurised water manometer for small pressure differentials is also fitted to the unit.

#### Experimental content

- ▶ To investigate the head loss due to friction in the flow of water through a pipe and to determine the associated friction factor over a range of flow rates in laminar flow
- ▶ To investigate the head loss due to friction in the flow of water through a pipe and to determine the associated friction factor over a range of flow rates in turbulent flow
- ▶ Determining the critical Reynolds number

#### Description

The Energy Losses in Pipes accessory consists of a test pipe, orientated vertically on the side of the equipment, which may be fed directly from the hydraulics bench supply or, alternatively, from the integral constant head tank.

These sources provide high or low flow rates which can be controlled by a valve at the discharge end of the test pipe. Head loss between two tapping points in the test pipe is measured using two manometers, a water over mercury manometer or an H12-8 for large pressure differentials and a pressurised water manometer for small pressure differentials.

Excess water discharging from the constant head tank is returned to the sump tank of the hydraulics bench, adjustable feet permit levelling.

**Mercury is not supplied:**

*The H12-8 Digital Pressure Meter is available as an alternative to mercury manometers* – for more information view online [www.armfield.co.uk/h-12](http://www.armfield.co.uk/h-12)

#### Technical specifications

Diameter of test pipe	3.0mm
Length of test pipe	760mm
Distance between pressure tapping points	500mm
Range of mercury manometer	500mm
Range of water manometer	500mm
Measuring cylinder capacity	1000ml
Requires Hydraulics Bench Service unit F1-10/F1-10-2	

#### Overall dimensions

Length	0.33m
Width	0.28mm
Height	0.75m

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Service and maintenance support: [armfieldassist.com](http://armfieldassist.com)



F1-18: Energy losses in pipes software screen

#### Ordering codes

- ▶ F1-18

Issue: 2

URL: <http://www.armfield.co.uk/f1>

Applications

ChE ME CE IP

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