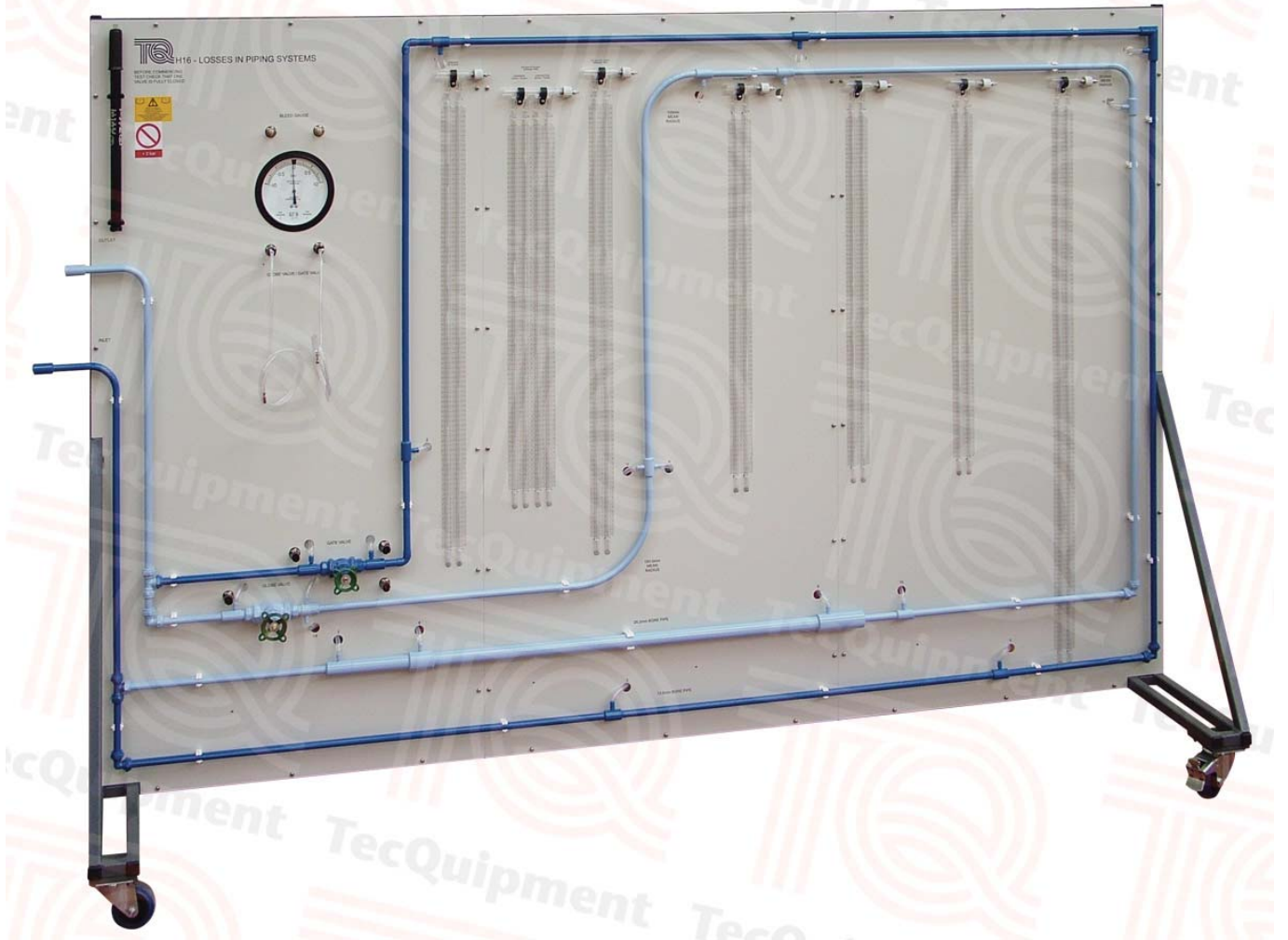


# H16

## Losses in Piping Systems

***Shows pressure losses in several small-bore pipe circuit components, typical of those found in central heating installations***



- Mobile, space-saving panel that includes the common pipework parts used in domestic heating systems
- Includes two colour-coded water circuits
- Works with TecEquipment's Hydraulic or Gravimetric Hydraulic Benches for easy installation
- Includes different pipe bends and valves for students to compare losses
- Fitted with a range of piezometers and a pressure gauge to give accurate pressure measurement
- Optional 'roughened pipe' ancillary to investigate flow characteristics in a roughened pipe

- TecEquipment Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK
- **T** +44 115 972 2611 • **F** +44 115 973 1520 • **E** info@tecquipment.com • **W** www.tecquipment.com
- An ISO 9001 certified company

# H16

## Losses in Piping Systems

### Description

The Losses in Piping Systems apparatus comprises a vertical panel with two separate hydraulic circuits, colour-coded for clarity. Each circuit includes various pipe system components. The unit has wheels for mobility. They also help when storing the apparatus.

TecEquipment's Gravimetric or Volumetric Hydraulic Bench (H1 or H1D, available separately) supplies each circuit with a controlled flow of water. This allows students to study flow through the various pipe forms and components, and study and compare the pipe and component characteristics.

The circuits are made of small-bore copper pipe, commonly used in a wide variety of applications such as domestic central-heating systems. The small bore allows the circuits to include many pipe bends and components, while preserving effective upstream and downstream test lengths.

To measure pressure loss across components, the panel includes piezometer tubes and a pressure gauge. The pressure gauge measures pressure loss across valves; the piezometer tubes measure pressure loss across the other components. Included is a hand-pump to adjust the datum position of the piezometers.

Both circuits have common inlet and outlet pipes, controlled by valves. The valves are at the outlet to minimise flow disruption.

TecEquipment offers the optional 'roughened pipe'. This can fit to the Losses in Piping Systems apparatus or be used by itself (fitted to a wall and connected to a hydraulic bench). It includes a pipe with a roughened internal bore, and pressure tapping points connected to a manometer. The manometer measures the pressure drop due to the pipe. Students compare their experimental results with Moody and Nickuradse charts.

### Standard Features

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

### Experiments

A comprehensive range of investigations into losses in a variety of pipes and pipe system components, including:

- Straight pipe loss
- Sudden expansion
- Sudden contraction
- Bends with different radius
- Valves
- Elbows
- Flow in a roughened pipe – needs the optional Roughened Pipe (H16p)

### Essential Ancillaries

- Hydraulic Bench: Gravimetric (H1) or Volumetric (H1D)

### Recommended Ancillaries

- Roughened Pipe (H16p)

### Essential Services

*Water supply:*

From the Hydraulic Bench (H1 or H1D)

*Floor space needed (H16):*

2.6 m x 1.5 m (plus space for the hydraulic bench)

*Space needed (H16p):*

Fitted to the H16 or 1.5 m x 0.3 m of wall

### Operating Conditions

*Operating environment:*

Laboratory environment

*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

# H16

## Losses in Piping Systems

### Specification – H16

*Nett dimensions and weight:*

2600 mm x 800 mm x 1700 mm, and 95 kg

*Packed dimensions and weight:*

4.3 m<sup>3</sup> and 150 kg

*Parts:*

- Small-bore straight pipe (nominally 13.6 mm bore copper)
- Larger-bore straight pipe (nominally 26.4 mm bore copper)
- Sudden expansion (13.6 mm to 26.2 mm)
- Sudden contraction (26.2 mm to 13.6 mm)
- 90-degree mitre bend (no radius)
- Elbow (13.6 mm radius)
- Small radius, smooth 90° bend (50 mm radius)
- Medium radius, smooth 90° bend (100 mm radius)
- Large radius, smooth 90° bend (150 mm radius)
- Gate valve and Globe valve

### Specification – H16p

*Nett dimensions and weight:*

1200 mm x 200 mm x 200 mm, and 3 kg

*Packed dimensions and weight:*

0.05 m<sup>3</sup> and 5 kg

*Internal coating thickness:*

300 µm to 600 µm

*Pipe diameter:*

18 mm

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