



## P7671

### PRESSURE/TEMPERATURE STEAM BENCH

#### FEATURES

- ◆ Compact modular design
- ◆ Low capital cost
- ◆ Easy installation
- ◆ Comprehensive instrumentation
- ◆ Pressure test certificates supplied for major components

#### PRINCIPLE EXPERIMENTS

- ◆ To investigate the relationship between the temperature and pressure of saturated steam
- ◆ To compare the experimental observations with published data such as in steam tables

#### INTRODUCTION

Steam is one of industry's most flexible mediums for heating and power generation. Cussons P7671 Pressure Temperature Steam Bench enables students to investigate the relationship between the temperature and pressure of saturated steam and compare the experimental observations with data published in steam tables i.e. Rogers and Mayhew "Thermodynamic and Transport Properties of Fluids".

#### DESCRIPTION

Cussons P7671 Pressure/Temperature Steam Bench consists of a sturdy framework and panels of all steel construction, fitted with a student work surface, interconnecting back panel and adjustable feet. The steam bench includes a 2-pen chart recorder to provide a continuous recording of the process variables, namely temperature and pressure and gives students the opportunity to become familiar with the presentation of such data on a typical process recorder used in industry.

#### STEAM HEADER ASSEMBLY

Mild steel steam header welded in accordance with BS 2633 (1973) with a branch incorporating a combined isolating and control valve providing steam supply to pressure vessel. The steam header is enclosed within a header box and fully insulated with mineral wool.

#### PRESSURE VESSEL

Mild steel fabricated tube welded in accordance with BS 2633 (1973), designed for a working pressure of 10.34 bar, a maximum steam temperature of 235°C and is fitted with:

- temperature measuring point complete with type K thermocouple driving a 0-250°C analogue temperature.
- temperature measuring point complete with 0-250°C mercury in steel type V sensor driving a chart recorder pen (red trace).

- pressure measuring point driving 0-16 bar Bourdon type pressure gauge and a chart recorder pen (green trace).
- blowdown line incorporating a combined isolating and control valve, connected to the bench blowdown line.

### **CERTIFICATION**

The steam header and pressure vessel are pressure tested at 21 bar and are supplied complete with test certificates.

### **CHART RECORDER**

Circular case, vertically mounted 2-pen chart recorder driven by a mechanical clock at the rate of 1 revolution every six hours. Measured values of temperature and pressure are continuously recorded on a circular calibrated chart by a writing system using fibre pen capsules. The charts have a diameter of 255 mm with a writing width of 105 mm. 5-red pens, 5-green pens and 100 charts are supplied with the unit.

### **SERVICE SYSTEMS**

The bench is equipped with independent service lines relating to water supply (untreated), blowdown and drainage. These lines inter-connect with similar facilities on other steam benches to provide a common service facility.

### **SERVICES REQUIRED**

Steam supply at maximum pressure of 10.34 bar and a maximum temperature of 235°C, which may be supplied by Cussons P7670 Steam Boiler Bench, a Cussons Steam Plant or clients own steam line.

### **INTERCONNECTION OF STEAM BENCHES**

To enable steam benches to be linked to form a system utilising common steam supply and service system, the steam bench is supplied complete with:

- an interconnecting back panel and student work surface.
- a set of 4 stainless steel flexible hoses for the steam and service connections.
- a section of aluminium-clad lagging for the flexible steam hose.

### **PIPE CLOSURE KIT**

If this steam bench is to be installed on a stand alone basis **or** is the last unit in a run of steam benches, a P7682 Pipe Closure Kit will be required.

## **TENDER SPECIFICATION**

The bench is to comprise of a mild steel pressure vessel welded in accordance with BS 2633 (1973) designed for a working pressure of 10.34 bar and a maximum steam temperature of 235°C and fitted with a type K thermocouple driving a 0-250°C analogue temperature indicator, a pressure measuring point coupled to a 0-16 bar Bourdon type pressure gauge, a 0-250°C mercury in steel type V temperature sensor and a pressure measuring point coupled to a circular mechanically driven 2-pen chart recorder and a blowdown line complete with a combined isolating and control valve connected to the bench blowdown line. Steam supply to the pressure vessel is to be from a fully insulated steam header with supply branch fitted with a combined isolating and control valve. The forgoing are to be installed on a sturdy frame and panels of all steel construction complete with service facilities relating to water supply, blowdown and drainage. The bench shall be designed to interconnect with all other steam benches to form a comprehensive steam bench system and will be supplied complete with an interconnecting back panel, student work surface, a set of four stainless steel flexible hoses, a section of aluminium clad lagging for the flexible steam hose and a supply of chart recorder pens (10-off) and charts (100-off).

### **SERVICES**

*Steam Supply:-*

Maximum working pressure of 10.34 bar and maximum temperature of 235°C, which can be supplied by Cussons P7670 Steam Boiler Bench, a Cussons Steam Plant, or clients own steam line.

### **SHIPPING DETAILS**

Case size:	2.32 m <sup>3</sup>
Gross weight:	220 Kg
Nett weight:	125 Kg

***Cussons Technology Ltd.***

102 Great Clowes Street, Manchester M7 1RH, England

Tel. +(44)161 833 0036

Fax. +(44)161 834 4688

E-mail: sales@cussons.co.uk Web: www.cussons.co.uk

The Company may alter detail specifications at its discretion and without notice, in line with its policy of continuous development.