COMBUSTION LABORATORY UNIT - OIL BURNER FITTED

C492/115/B

Year 1
study

Features

- Purpose built Insulated Combustion Chamber, with Instrumentation.
- Designed for Supervised Student Operation.
- Designed to operate on US style 1 Phase (115V)
- Flame Failure Device.
- Comes Pre-fitted Fitted with Oil Burner and 2 different fuel tanks.
- Changes to Burner Settings Quickly and Easily Observed.
- Fuel and air adjustment available.
- Variable water jacket temperature allows domestic heating simulation
- Flue gas and AFR analysis available as standard.
- Flame and flue Temperature measurement.
- Research possibility to test new fuels within range of burner specifications.
- Optional Computerised Data Acquisition Upgrade.

Description

The Hilton Combustion Laboratory Unit enables students to study many aspects of combustion and Burner operation using burners typical of those used commercially. A Oil burner is fitted as standard. The unit is frame mounted, is fully instrumented and requires only a conventional single phase electrical supply, cooling water and the chosen fuel. As a purpose built training unit it is designed for supervised student operation by including several safety features. A hand held digital gas analyser supplied allows the O2 content of the flue gas to be determined and this in turn allows calculation of the air /fuel ratio, excess air and combustion efficiency. For advanced students or research, an optional high specification gas analyser C492D is available that allows investigation of CO, NO and SO2 in addition to the standard analysis. The unit will be of wide interest to all those concerned with the combustion of fuels and energy conservation, from the burner maintenance technician, to research and test engineers.

Related Laws/Applications

- Building services
- Mechanical Engineering
- Marine engineering
- Chemical engineering
- Mining engineering
- Environmental engineering
- Energy Conservation
- Industrial Research
- Vocational, Plant Maintenance
- Fuel Technology
- Thermodynamics

Learning capabilities

- Familiarisation of the adjustment and operation of a commercial Oil burner.
- Assessment of a burner
- Firing rate
- Turndown range
- Flame stability
- Flame shape
- Flame radiation
- Smoke emission
- Using either clean light boiler fuels, or natural gas or LPG
- The effect of air/fuel ratio on Combustion efficiency as measured by flue gas constituents and temperature.
- The effect of air/fuel ratio on Heat transfer
- The effect of air/fuel ratio on Energy balance
- Comparison of Flue Gas Analysis with theoretical predictions.
- Comparison of Oil and Gas Burners (With optional extra Burner)
- Comparative performance of different fuels or fuel additives.

Technical Specification

- Frame: Powder coated 25 mm mild steel angle frame with 16 swg shelves.
- Chamber: Stainless steel combustion chamber, approximately Ø450 mm ID, Ø500mm OD x 1000 mm long, with four 100 mm quartz glass windows.
- Chamber and end plate water cooled, front plate has 80mm thick insulation and burner mounting studs.
- Oil Burner: Package burner with integral fan and control box. Pressure jet atomisation. Two interchangeable nozzles of 1.5 and 2.2 US gall/hr (5.1 & 7.57 L/hour) working at 8 to 15 Bar (116 to 200 psi) with 60° spray angle, giving heat rates up to 108kW approx. (depending on fuel).
- NOTE MAXIMUM PRESSURE ON KEROSENE is 10 Bar

Recommended Ancillaries

- C492A
- C492C
- C492D

What's in the Box?

- 1 x C492 (Oil Burner fitted)
- 1 x Water Cooled probe
- 1 x CO2 Detector
- 1 x Tool kit
- Instruction manual
- Packing list
- Test sheet
- 2 year spares

You might also like

- C492/115/A
- C492/115/A/B

Weights & Dimensions

- Weight: 260 kg
- Length: 2000mm
- Width: 600mm
- Height: 1700mm

Essential Services

- 110-120 Volts, Single Phase, 60Hz (With earth/ground).
- Line current up to 6A at 110v.
- Water: Up to 25 litres m-1 at a minimum of 10m head. Open drain for this flow rate.
- Oil: Kerosene, gas oil or other clean light fuels (density 790 - 835 kg/m3, viscosity 0.011 - 0.055 cm2/s@ 40 C). Flow rate 2 to 5 g/s.
- Extraction Suitable ducting to extract 3m3/min of exhaust gases at upwards of 400°C out of the building – C492C recommended.
- Ventilation Room must be adequately ventilated to provide 8m3/min of fresh air flow.

Ordering information

To order this product, please call PA Hilton quoting the following codes:
C492/115/B
C492/115/B/CC