

TWO STAGE COMPRESSOR TEST SET F865



Year 1
study

3 to 4
participants

Space required
2x1.5x2m

Features

- Allows Investigation of a Single and Two Stage Compressor (with, or without intercooling) at a Range of Delivery Pressures.
- Safe and Suitable For Student Operation.
- Instrumentation Allows Detailed Analysis of Compressor Performance.
- Optional Computerised Data Acquisition

Description

The reciprocating air compressor is a fundamental subject for thermodynamic analysis and study. The process of induction and compression is a cyclic one. However by the use of a large reservoir on intake and discharge the system can be examined as a steady flow process. A floor standing unit with belt driven two stage reciprocating air compressor that may be operated as a single stage, two stage, or two stage with and without intercooling system. Instrumentation allows the drive power to be measured together with the motor speed. Compressor speed is measured through the fixed pulley ratio between the drive motor and compressor. The intake air passes through an orifice for flow measurement to a vessel that reduces intake pulsations and allows various intake conditions to be established. Valves allow an

intercooler between the low and high pressure stages to be included or removed from the circuit to demonstrate and investigate comparative performance. Valves also allow the unit to be operated in single stage or two stage mode with and without intercooling. The 1st stage and 2nd stage pressures are indicated on gauges and all of the relevant system temperatures are recorded by thermocouple sensors connected to multiple selector switches and a digital temperature indicator. The flow measurement orifice is connected to a panel mounted manometer to allow differential pressure measurement. Air is delivered to a receiver fitted with a high pressure cut out and relief valve for operator safety. A throttle valve allows discharge pressure to be controlled and adjusted. The F865 unit is available either with, or without Computerised Data Acquisition (data logging).

Related Laws/Applications

- Thermodynamics
- Energy Conservation
- Mechanical Engineering
- Plant and Process Engineering
- Automotive Engineering
- Fluid Mechanics

Learning capabilities

- Investigation Of Variation In Air Flow Rate, With Compressor Pressure Ratio:- With And Without Intercooling
- Investigation Of Variation In Volumetric Efficiency With Compressor Pressure Ratio:- With And Without Intercooling
- Investigation Of Variation Of Isothermal Efficiency With Compressor Pressure Ratio:- With And Without Intercooling
- Investigation Of The Compressor Performance Relative To Electrical Power, Shaft Power, And Heat Loss:- With and Without Intercooling

Technical Specification

- Working Pressure: max 10bar gauge
- Temperature Range: ambient – 180°C approx.
- Motor power: 3kW
- Pressure vessel capacity: 200L
- Two Cylinder Compressor
- Low Pressure Cylinder: Bore 95mm; Stroke 50mm
- High Pressure Cylinder: Bore 50mm; Stroke 50mm
- Six temperature Measuring points
- Noise levels measured around the apparatus. (*These will vary dependent upon specific installation. Measurement parameters: 0.5m @45°): at operator's ear level 100.2db; in front of the apparatus 96.3db; back the apparatus 102.5db; left-hand side of the apparatus 97.9db; right-hand side of the apparatus 98.4db; at exhaust of the vessel. 106.3db

What's in the Box?

- 1 x F865
- 2 x 5m Cooling water supply and drain hose
- 1 x Manometer Fluid
- 1 x 3m Manometer hose
- 1 x Discharge pipe
- 2 x Ear Defenders
- 2 x Safety spectacles
- 2 x Pair of gloves
- Instruction manual
- Packing List
- Test Sheet
- Wiring Diagram

You might also like

- F860 – Single Stage Compressor Test Unit
- F300 – Compressible Flow Range
- F110 – Pressure Measurement Bench

Weights & Dimensions

- 1340(L) x 900(W) x 1300(H) mm (approx.)
- Net Weight: 160 kg (approx.)
- Gross Weight: 232 kg (approx.)
- Packing Case Dimensions: 1.9(L) x 0.77(W) x 1.4(H) m

Essential Services

- 380-440 Volts, Three Phase, 50Hz/60Hz, + Neutral + Earth/ground, line current up to 10A at 415v.
- 210-220 Volts, Three Phase, 60Hz + Earth/ground, line current up to 20A at 220v.
- Water:3 litres/minute at 20m head

Data logger channel inputs where applicable*

[Where the D103 Hiton Data Logger \(HDL\) is fitted, the following data can be recorded \(where applicable\):](#)

F865/115/FC & F865/230/FC

- Air Inlet °C
- Air Outlet °C
- Air into HP °C
- Air HP out °C
- Water Inlet °C
- Water Outlet °C
- Discharge Px
- High Px
- Orifice differential Px
- Motor Volts
- Motor Amps
- Compressor RPM
- Water Flow
- Supply Volts

Ordering information

To order this product, please call PA Hilton quoting the following codes:
F865/415 - Two Stage Compressor Test Set (415 / 3Ph / 50 Hz)
F865/220 - Two Stage Compressor Test Set (220V / 3Ph / 60Hz)
F865/415/FC - Two Stage Compressor Test Set Computer Linked (415 / 3Ph / 50 Hz)
F865/220/FC- Two Stage Compressor Test Set Computer Linked (220V / 3Ph / 60Hz)

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COUNTRY OF ORIGIN - UK WARRANTY PERIOD - 5 YEARS