

P7669 MINIATURE STEAM POWER PLANT

P7669R Reciprocating

P7669T Turbine

FEATURES

- ◆ Demonstration model steam system representative of Industrial Power System
- ◆ Self contained complete teaching facility
- ◆ Low cost introduction to steam studies
- ◆ Simply installed
- ◆ Comprehensive instrumentation

APPLICATIONS

- ◆ Demonstration of steam power generation cycle
- ◆ Thermal and plant efficiency
- ◆ Heat balance and energy utilisation
- ◆ Power generation
- ◆ Fuel consumption

DESCRIPTION

Cussons P7669 Miniature Steam Power Plant is the smallest in our comprehensive range of Steam Power Products and has been designed to allow teaching establishments to give students an appreciation of steam and its properties, without the larger capital investment normally required. A small gas fired boiler supplies steam to a single cylinder double-acting reciprocating engine which drives, by means of a belt, a small DC generator with switchable resistive

loading. The exhaust steam from the engine is condensed in a water cooled condenser, the condensate being measured by weighing the collecting beaker provided. Instrumentation to measure various temperatures throughout the plant, steam pressure, fuel and cooling water flow, together with voltage and current loading on the DC generator, is provided. It is thus possible to perform a series of tests on the plant, to ascertain boiler and engine characteristics as well as overall plant performance. All components are mounted on a self supporting framework.

TENDER SPECIFICATION

- **GAS FIRED MODEL STEAM BOILER** – with a design pressure of 4 bar g and an equivalent evaporation of 24.5 kg steam per m³ gas consumed from and at 100°C.
- **BOILER FEED PUMP** (hand operated) and **FEEDWATER TANK**.
- **P7669R STEAM ENGINE** – single cylinder double acting reciprocating model steam engine. Bore 19.05 mm, Stroke 19.05 mm. Nominal power output 3.3 watts at 1200 rpm .
- **P7669T STEAM ENGINE** – single rotor stage model steam turbine. Diameter 75 mm
- **DC GENERATOR** – coupled to the engine by a driving belt, with resistive load bank of 4 lamp bulbs each with nominal rating of 6V 0.03A (i.e.

20 ohms giving a power of 1.8 watts).

- **CONDENSER UNIT** – shell and tube atmospheric type condenser. Condensate collection by metal beaker. Minimum cooling water flow rate 0.5 litres/min.
- **INSTRUMENTATION** – comprehensive instrumentation is supplied comprising:

Pressure Boiler steam via 0-6 bar pressure gauge

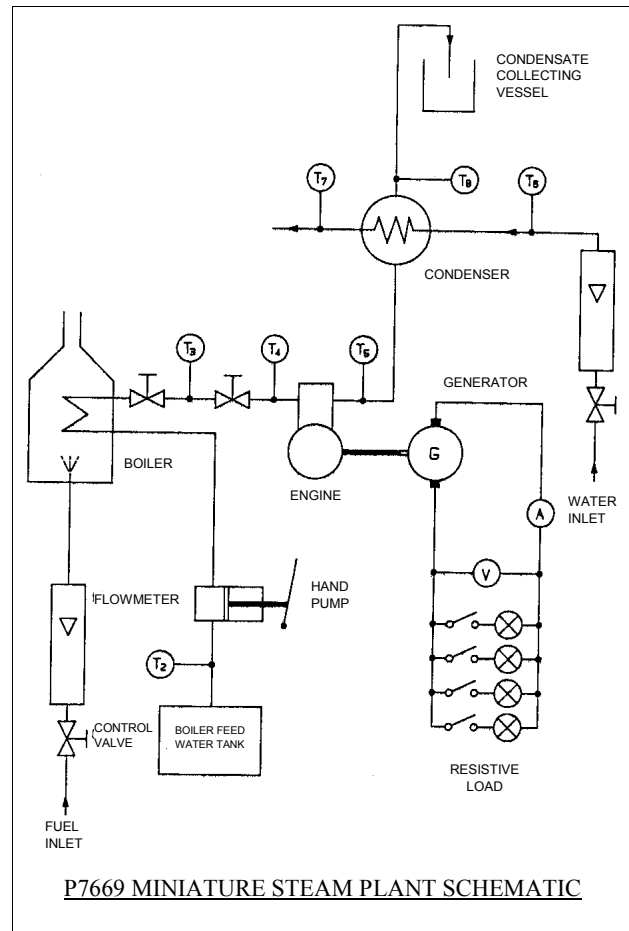
Temperatures Ambient air
 Boiler feed water
 Boiler steam
 Engine steam inlet
 Engine steam exhaust
 Condenser cooling water inlet
 Condenser cooling water outlet
 Condensate

Flowmeters Fuel (gas)
 Cooling water (50-800cc/mm)

Voltmeter 0-10V DC

Ammeter 0-1A DC

- All necessary interconnecting pipework, valves and fittings, together with electrical cabling, are included.
- All above equipment is supplied on a fabricated steel frame with components and instrumentation mounted at working height.
- Operating and instruction manual available in English but can be translated into other languages as an optional extra.



	Nett Weight	Length	Width	Height
	kg	mm	mm	mm
P7669	94	600	600	1725

SERVICES

Fuel:- Natural Gas as standard.
 Propane, butane or coal gas options available, but must be specified on ordering.

Water:- Mains water supply.

N.B. The results obtained on this 'miniature' steam power plant must not, of course, be taken as representative of those which exist on a 'large' scale steam plant used for the efficient generation of electric power. This table model plant has been assembled to give an insight into the factors involved in the calculations for plant operation but no attempt has been made to create a system having efficiencies representative of large scale systems.

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