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SIGMUND PUMPS LIMITED

TEAM VALLEY · GATESHEAD II

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Press Release for Immediate Publication

AN ULTRA-LIGHT WEIGHT FIRE PUMP POWERED BY GAS TURBINE

THE LATEST SIGMUND ACHIEVEMENT

The Sigmund Rover 1S/60 ultra-light weight fire pump represents the most remarkable advance in modern fire protection. For many years Sigmund hydraulic engineers have applied their efforts to the design of a fire pump which can give the fire fighter the essential qualities demanded by the vital urgency of the job - light weight, small bulk, easy and quick starting, fast priming, and absolute dependability at all times. Each new advance in pump design has been incorporated from accumulated experience in succeeding models of Sigmund fire pumps to achieve the ideal unit.

Now the amazing advances in gas turbine design and development by the Rover team of engineers have been brought together with Sigmund hydraulic experience to overcome every major problem confronting the fire pump designer.

By combining the advantages of the latest Rover light weight gas turbine with those of the Sigmund high speed centrifugal pump, the new 1S/60 unit gives outstanding advantages not obtainable previously by any equivalent portable petrol driven fire pump.

The following are some of the more noteworthy features of this unique unit which will be of the utmost interest to fire protection engineers, and to all interested in the latest pumping unit for this vital emergency service:-

- (1) Light weight and small bulk.
- (2) Easy and quick starting.
- (3) Easy and quick priming.
- (4) Can be run on Diesel, paraffin, or petrol fuel.
- (5) Standard N.F.S. fitting - twin discharge branches.
- (6) Grouped starting and priming controls.
- (7) Grouped instrument control panel.
- (8) Frame of braced tubular steel construction giving maximum strength with lightness.
- (9) The most compact and lightest 400 g.p.m. fire pump yet made.

In addition to fire protection duty on land the Sigmund Rover 1S/60 is suitable for shipboard service, and can be operated on deck to give prompt

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and efficient protection in case of fire at sea.

The prototype unit has already been successfully tested and initial orders have been received.

Government Departments and the N.F.S. are extremely interested in this remarkable new fire fighting unit.

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THE SIGMUND ROVER 1S/60 GAS TURBINE DRIVEN FIRE PUMP

TECHNICAL SPECIFICATION

COMBINED UNIT

The complete pumping set consists of a Rover gas turbine engine and a specially designed Sigmund centrifugal pump close coupled to the power unit. The whole is mounted in a lightweight tubular frame, complete with fuel tank and a fully instrumented panel, for easy portability or alternatively for use as a trailer unit.

POWER UNIT

The power unit is a single shaft gas turbine engine having a continuous rating of 60 shaft horse power at a turbine rotor speed of 46,000 r.p.m. Power is taken from the compressor shaft through suitable reduction gearing to drive the Water pump at 4,500 r.p.m. The main components of the unit are the single stage centrifugal compressor of forged aluminium alloy with steel inlet guide vanes and the axial flow turbine machined from Nimonic forging, blades integral with the disc. The fuel system and governor is self contained consisting of a starting control, accelerator control, maximum speed control, maximum temperature control and a fuel filter. The unit which is attached to the auxiliary mounting plate is driven through a reduction gear from the compressor shaft.

The fuel consumption is 1.4/b.h.p./hr. at the continuous rated condition. Air flow is 1.35 lb/sec. and the Jet pipe temperature is 600 deg. C.

The lubrication system consists of a gear type oil pump submerged in the oil sump formed in the base of the compressor housing. Two filters are incorporated in the system, a suction filter to protect the pump gears from the ingress of foreign matter and a Purolator Micronic filter on the discharge side of the pump. Provision for oil cooling is made in the oil sump.

A High Heat Release combustion chamber is used incorporating either a spill type burner or a variable flow pressure sensitive type burner.

PUMP UNIT

The pump unit incorporates a specially designed single stage centrifugal pump having a capacity of 400 g.p.m. at a total delivery head of 231 ft. when pumping from a 10 ft. static lift using 3 lengths of 4" smooth bore suction hose and a strainer. Discharge can be taken from 2-2.1/2" discharge pipes. The impeller rotates at 4,500 r.p.m. this speed being obtained by reduction gearing incorporated partly in the pump and partly in the turbine.

The suction eye is provided with a standard 4" suction hose connection with removable internal strainer and blank cap, whilst on the delivery side 2-2.1/2" delivery valves of approved type with standard hose connection are provided.

Drive for the pump is taken from a gear wheel fitted on splines and supported in a double row conical roller bearing lubricated by pressurised oil from the turbine, this oil being injected into the bearings through a hollow shaft and returned via the gear casing to the turbine oil sump. The bearing housing and gear chamber form part of the liquid space of the pump and are thus cooled by the liquid pumped. A plug is provided on the pump casing for the purpose of taking off cooling water if required.

A mechanical seal is used for sealing of the stuffing box, liquid collecting in the chamber between oil seal and mechanical seal being taken away through the drain hole.

PRIMING EQUIPMENT

The priming unit consists of an air ejector which takes the air for this purpose from the compressed air receiver of the gas turbine. This is operated by a single lever and designed to lift water 24 ft. at the rate of not less than 1 ft. per second at atmospheric pressure.

STARTING UP

Hand starting is by means of a cranked handle connected by sprockets and a chain to the oil pump driving gear which operates the compressor shaft via the intermediate gear of the auxiliaries driving gear train. The starting handle is designed to fold down and is contained within the frame dimensions when not in use. The system incorporates a free wheel which is completely enclosed and is automatically lubricated; the ratio between the compressor rotor and starting handle is 100 : 1. Operated in conjunction with the starting mechanism is an electric generator which provides the high energy spark to ignite the mixture in the combustion chamber.

INSTRUMENTATION

The following instruments are provided:-

1. Gas Turbine Unit

- | | | | |
|-----|-----------------------------|---|---|
| (a) | Oil pressure gauge |) | To conform
with
Home Office
requirements |
| (b) | Engine revolution indicator |) | |
| (c) | Oil temperature gauge. |) | |
| (d) | On/off fuel control valve |) | |

2. Pump

- (a) Compound pressure gauge (suction)
- (b) Discharge pressure gauge
- (c) Priming control

MOUNTING

The combined unit is mounted in a frame of tubular steel construction suitably braced to provide maximum strength with lightness.

A fuel tank with sufficient capacity for 25 minutes operation is secured within the frame by means of metal straps and an instrument panel positioned above the Water pump is bolted to the tubular frame.

Carrying handles which fold down when not in use are attached to the front and rear struts of the tubular frame.

As an alternative the whole unit can be mounted on a trailer of welded construction incorporating twin angle towing bar and hand brake over-run mechanism, reversing catch, hose carriers and tool box. Safety skids are provided for the trailer unit at the rear to protect the undercarriage when negotiating rough ground and when uncoupling before stand tubes are in position.

Trailer wheels are easy to remove. Springs are semi-elliptic and designed for heavy duty.

FUEL

The unit can be run on commercial petrol, commercial paraffin, diesel fuel or any distillate fuel.