

OLYMPUS 202/301 SERIESSECTION 12AIRBORNE AUXILIARY POWER PLANT1. Introduction

The power plant is a small gas turbine driving alternator. It fulfills two primary functions viz (i) to provide sufficient electrical power for continued use of essential flight services and (ii) to provide a supply of compressed air for AVS. It can also be used during Ground Servicing for independent supplies of electrical power or low pressure air.

2. Description

The engine consists of a single sided centrifugal compressor driven by a single stage axial turbine and mounted on two bearings. Air is admitted from the underside of the power plant through side intakes to the rotor and passed into the single revers flow combustion chamber. The gases pass down through a volute to a fixed nozzle ring onto the turbine rotor. The gases are then exhausted to atmosphere. A self-contained fuel control unit provides automatic control for starting, running speed and maximum temperature. As the engine is operated at a constant speed, no throttle valve is necessary, the fuel flow being controlled automatically by spill valves. Lubrication from a Gear type pressure pump draws the oil from a  $4\frac{1}{2}$  pint oil sump. An electrical heater in the sump will assist starting at altitude. Two starting systems are provided, an electrical starter for normal conditions and a cartridge starter for emergency conditions. There are two cartridges discharging directly onto the turbine blades. To assist starting at high altitude oxygen enrichment is provided. Two cylinders, a pressure reducing valve, a solenoid operated shut off valve, a charging valve and a system contents gauge are the components in this system. The main burner is used to deliver the oxygen into the combustion chamber. A single fire bottle and fire detector heads mounted on the chassis ensure fire protection.

3. Fuel Tank

A 10 gallon fuel tank is mounted at the rear of the AAPP installation. Replenishment of the tank can be carried out during flight from a connection with the No 4 engine fuel supply pipe. The fuel pressure passing a non-return valve enters the transfer valve at the inlet to the fuel tank. A second connection with the main refuelling rail ensures replenishment during a normal refuelling sequence. "High level" and "Low level" float switches are fitted in the tank and operate an indicator on the AAPP Control panel.

4. Air Supply

A retractable scoop intake fitted below the installation supplies the AAPP from the scoop the air is ducted two ways viz (i) to the engine compressor intake and (ii) to the blower unit. The scoop is operated by a hydraulic jack spring loaded to open. Hydraulic pressure closes the scoop and in flight the scoop is opened either by ejecting the RAM Air turbine or by the selection of the Master Switch on the AAPP control panel.

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5. Mounting

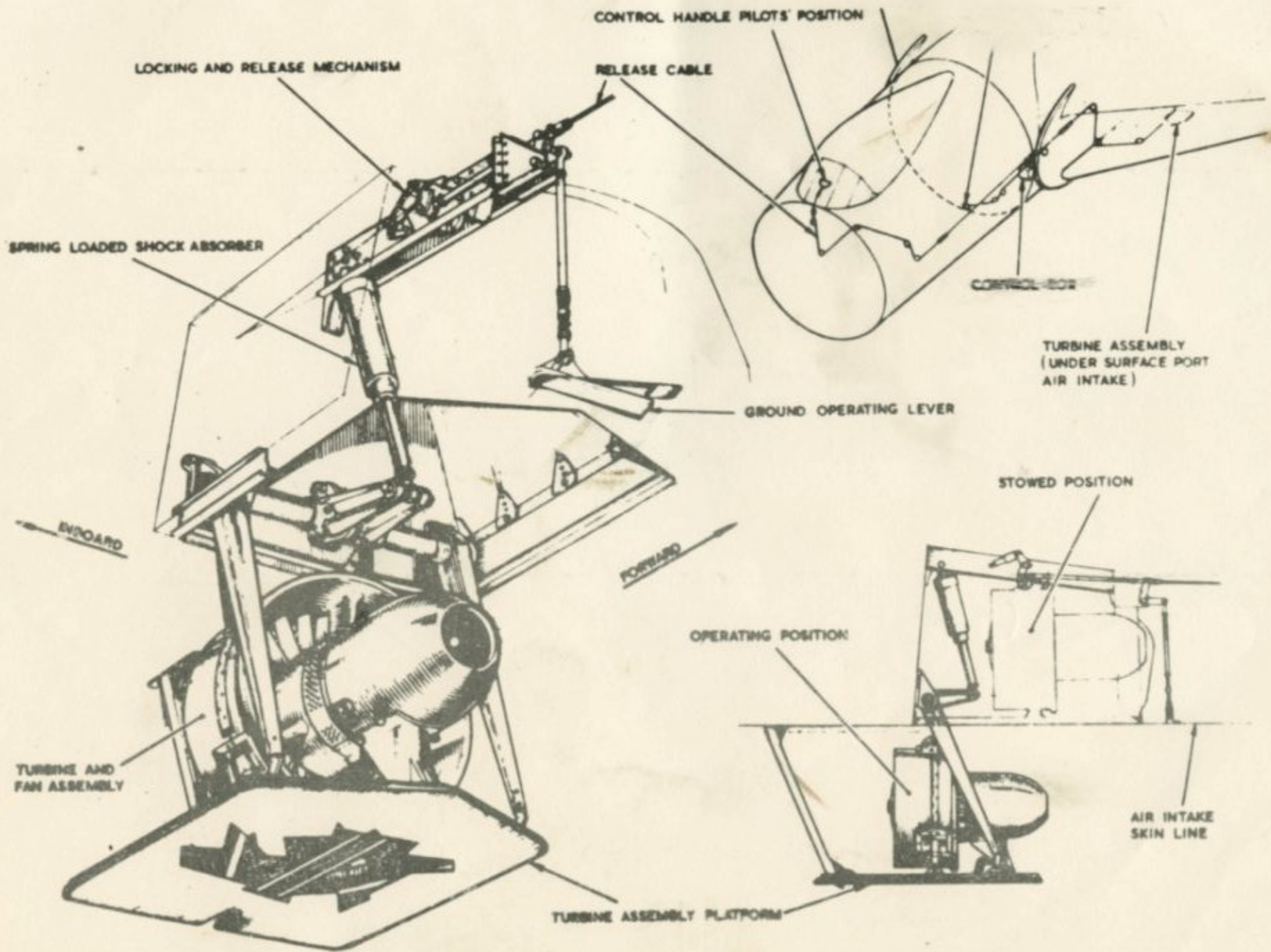
Two brackets on the top plate of the AAPP racelle engage with lugs on the lateral support beam. Bolts and nuts secure the brackets, locking being effected by split pins. Slightly aft of the main attachment is a turn buckle adjusted steadying strut.

6. Blower Unit

Produces 450 cu ft of air per minute to the alternator and oil cooler. The gearbox has a wet sump oil system the capacity being .12 pints. A combined oil filler and level plug is fitted to the outer casing.

7. Air Bleed

The AAPP air bleed valve, when opened, will supply air to the hot air ducting of the aircraft sufficient for operation of the Air Ventilated Suit system only. The valve is controlled by a switch on the Co-Pilot's cabin control panel. The valve position is shown by an indicator alongside the switch.



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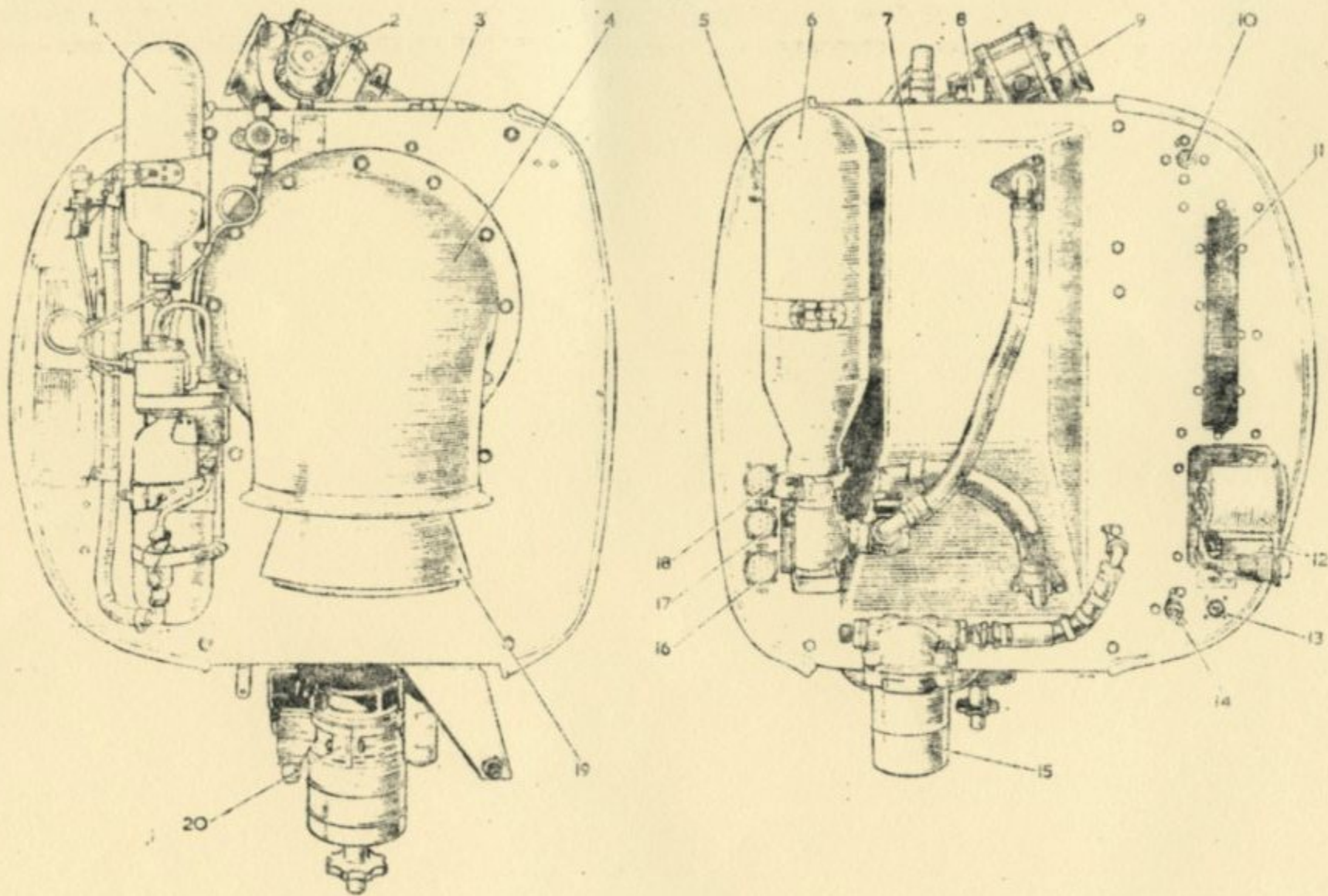
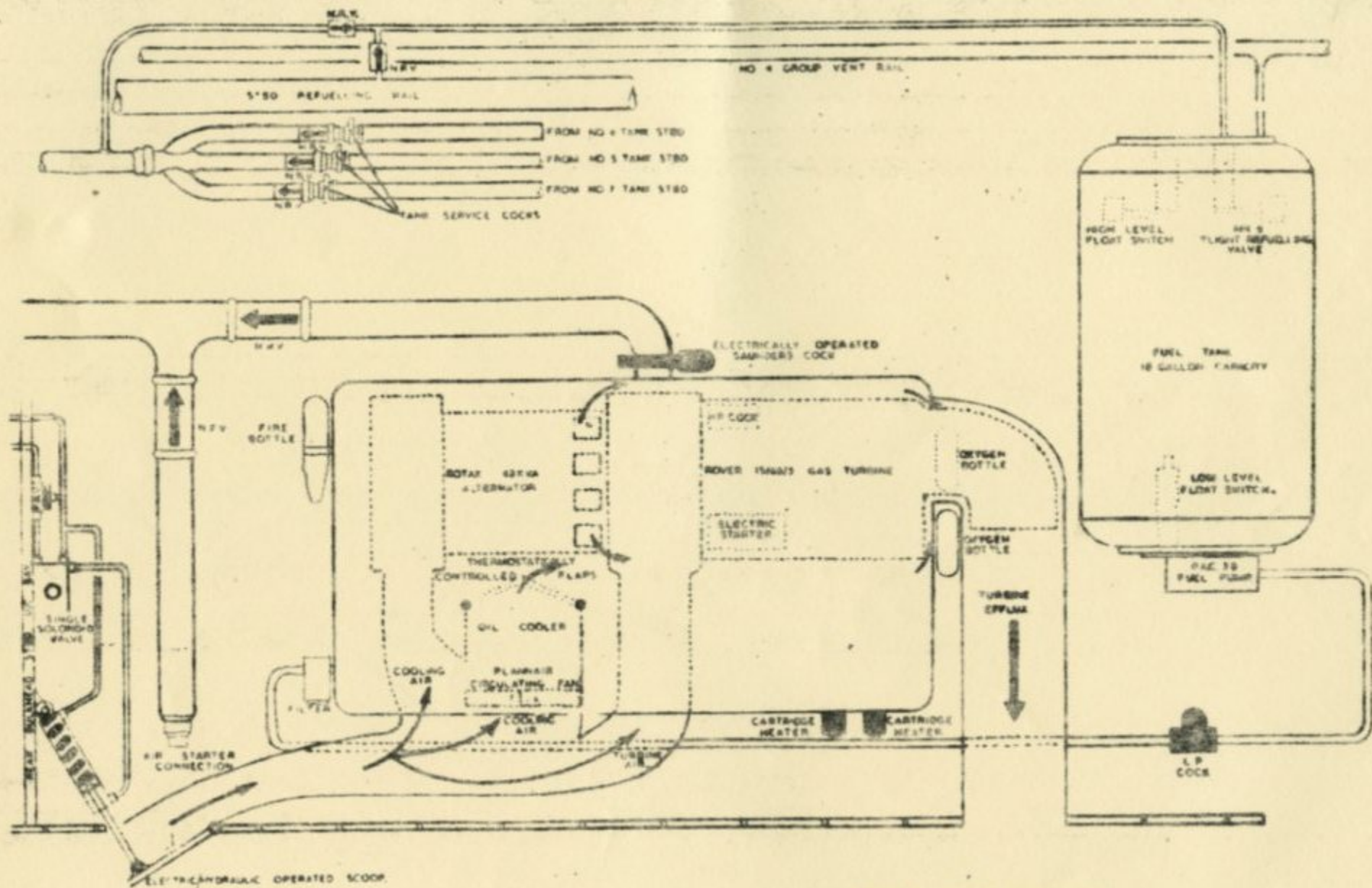


Fig. 3. Rover n.a.p.p. Mk. 10301 (end views)

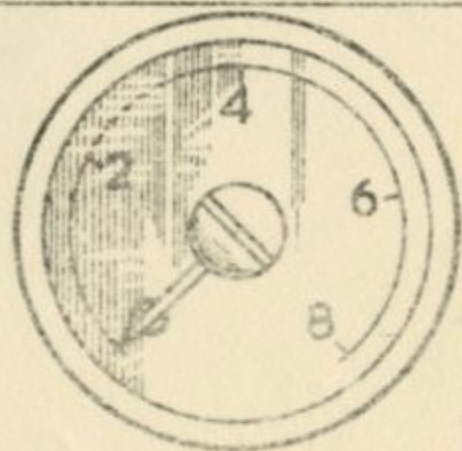




AAPP. INSTALLATION.

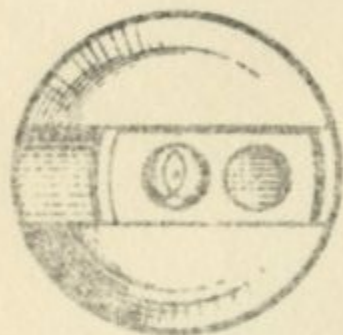
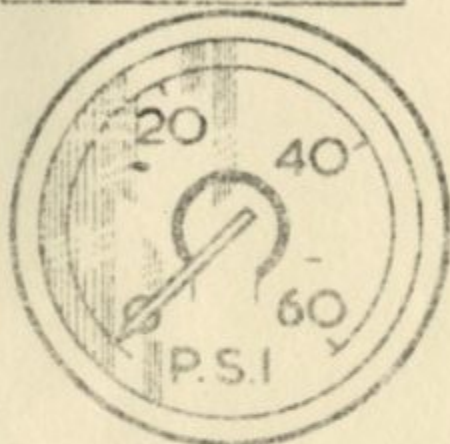
A.A.P.P

JET PIPE TEMPERATURE



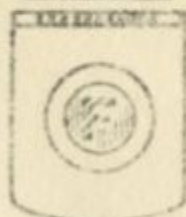
FUEL LEVEL

OIL PRESSURE



START  
DO NOT ATTEMPT  
CARTRIDGE RESTART  
UNTIL LIGHT IS OUT

FIRE



FIRE  
TEST



LP  
COCK



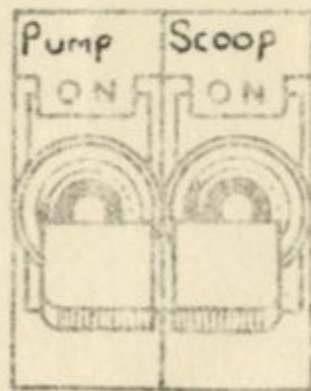
HP COCK  
OVERRIDE



IGN  
ISOL



OXYGEN  
&  
RELIGHT



MASTER  
SWITCH

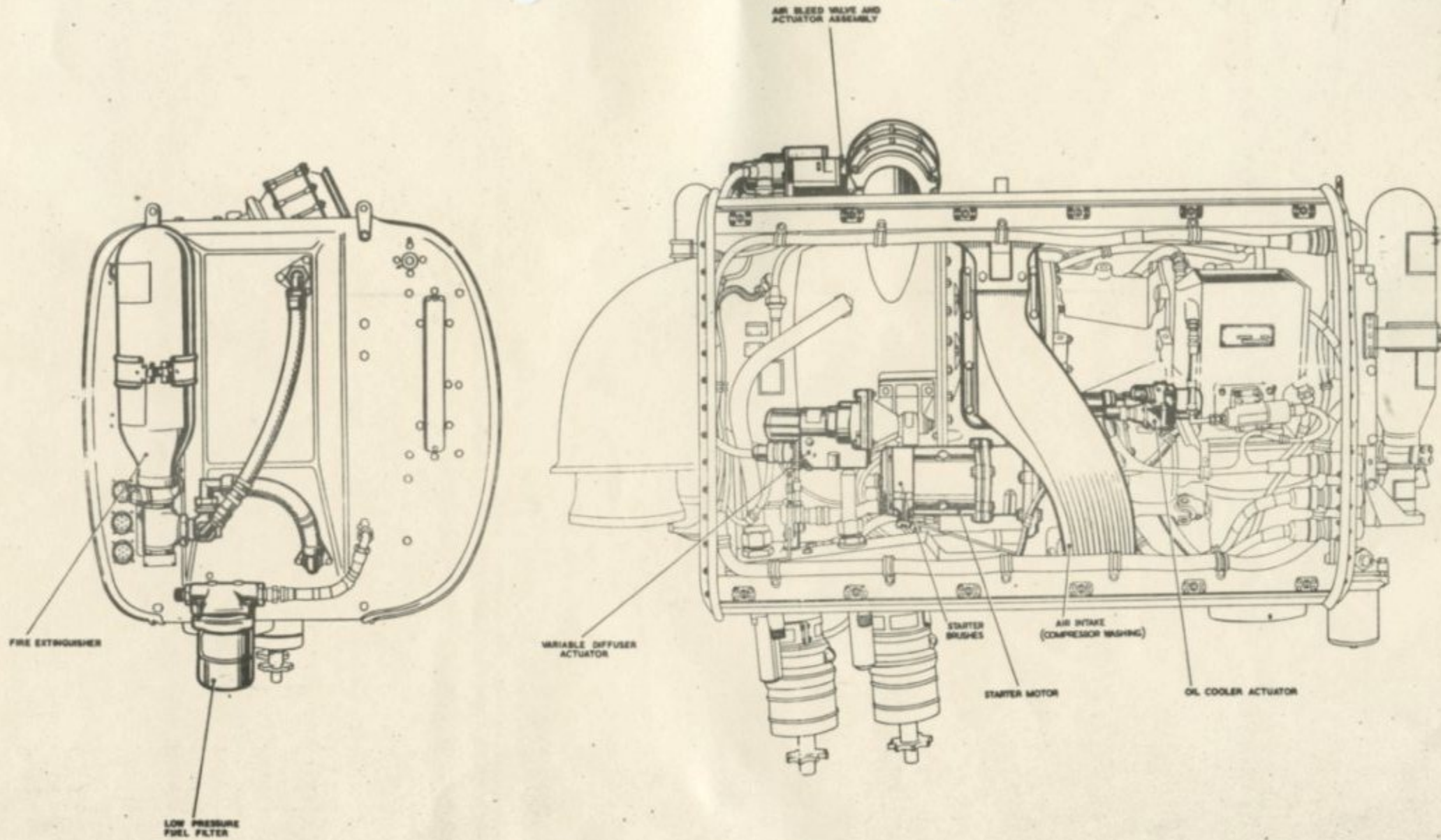


Fig. 2: Routine servicing points. (Sheet 2.)

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