SECTION 3

STARTING AND GROUND CHECKING

LIST OF CHAPTERS

Note.—*A list of contents appears at the beginning of each chapter*

Chapter 1

PREPARING FOR SERVICE

CONTENTS

General

1. This chapter describes those operations which must be carried out before a newly installed power plant is started. For a detailed description of the unpacking and installation procedures reference should be made to Sect. 2 of this Volume and AP101B-1902-1A respectively.

2. Carefully examine all pipe runs to ensure that they are correctly connected and that all unions are securely tightened and locked. Examine all drain connections to ensure that they are clear and check that all drain pipes have an uninterrupted fall from the power plant to the exit point.

3. A general examination should be made of all harness runs for security, kinking and signs of chafing. Ensure that identification labels have not been damaged or removed.

Replenishing the engine oil sump

4. Power plants are normally stored without oil in the lubrication system; and it is essential therefore that the oil sump is filled before any attempt is made to start or cycle a newly installed power plant.

5. The total quantity of oil required to fill a completely dry power plant is approximately six pints.

6. After the initial filling of the oil sump of a newly installed power plant, the engine must be dry-cycled (Chap. 2) for two thirty-second periods to ensure that the amount of oil absorbed by the filter and cooler has not subsequently lowered the oil level.

7. To fill the oil sump, remove the protective cap from the $\frac{1}{2}$ in B.S.P. Lockheed quick release coupling, underneath the pressure re-oiling valve. The cap is secured with a bayonet fixing.

8. ◀Secure the oil delivery hose to the quick release coupling. Some loss of oil from overflow pipe will occur; this must be ignored as it is not an indication of the oil level in the sump. Supply oil to the re-oiling valve at a pressure not exceeding 10 lbf/in^2. When oil commences to flow from the overflow pipe again the sump oil level will be correct: disconnect the oil supply hose from the quick release coupling as quickly as possible. Replace the protective cap on quick release coupling. ▶

Replenishing the blower oil reservoir

9. To check the blower oil level, sever the locking wire and release the combined oil level and filler plug on the port side of the blower body. The oil must be level with the bottom of the plug hole.

10. To replenish the blower oil reservoir, remove the oil LEVEL and FILLER plug and insert a syringe (tool No. 27VA/1253) filled with the correct grade of oil (see Leading Particulars), into the filler plug hole. Slowly inject the oil into the blower reservoir until it reaches the bottom of the hole, then refit the plug and washer, and secure the locking wire.

De-inhibiting the fuel system

11. Before any attempt is made to start a newly installed power plant, the fuel system must be de-inhibited by wet-cycling the power plant as described in Chap. 2 of this section.

12. On completion of the wet cycle, wait approximately four minutes for the fuel to drain from the engine, then dry cycle the power plant (Chap. 2) to complete the drying out process.

Note ...

> After three consecutive starts, dry or wet cycles, a period of not less than thirty minutes must elapse before any attempt is made to re-energise the starter, otherwise the starter may be seriously over-heated.

Functional equipment checks

13. The only functional checks required following initial installation are, first to initiate a successful start, and second to check the output of the a. c. generator and the motorised air pump. Details of the procedure for starting the power plant will be found in Chap. 2 of this section. Refer to AP101B-1902-1A for details of the a. c. generator check.

14. The checks on the motorised air pump should be carried out concurrently with the initial start, as detailed in the following paragraphs. The equipment required consists of a manometer and a Schrader valve adapter.

(1) Fit the Schrader valve adapter to the pipe from the manometer

and then connect the pipe to the Schrader valve on the power plant re-oil valve tray.

(2) Select the starting sequence for the power plant and check that a manometer reading of not less than 2 in Hg is obtained.

Note ...

The manometer reading must be taken the moment the engine starts to revolve otherwise in the event of a faulty non-return valve in the P_2 line, the manometer will record P_2 pressure rather than delivery pressure.

(3) In the event of the air pump failing to achieve the output specified, a careful check should be made of the P_2 non-return valve, the aircraft electrical supply and the electrical portion of the pump. If no other fault can be detected then a replacement pump must be fitted (Sect. 5, Chap. 3).

Chapter 2

STARTING AND GROUND CHECKING

LIST OF CONTENTS

Introduction

1. This chapter describes the procedures for ground starting, running and checking the power plant, but personnel concerned with the running and checking of engines must also be acquainted with the information contained in the appropriate sections of A.P.4505B, Vol. 1.

Precautions

2. The following precautions must be observed before any attempt is made to start or during any period of ground running. Failure to do so may result in injuries to personnel and/or damage to the power plant.

WARNING . . .

The a.a.p.p. exhaust is directed downwards from the outlet below the starboard main plane; the area in this vicinity, just aft of the starboard main wheel, must be clear of personnel and equipment when the a.a.p.p. is to be started, and for the duration of the run.

(1) Before attempting a start, care should be taken to ensure that there is no possibility of loose debris being drawn into the air intake.

(2) If there is any likelihood of the power plant being run during sand or dust storms, a sand filter must be fitted. For more detailed information on the use of this equipment reference should be made to A.P.4505B, Vol. 1.

STARTING THE ENGINE

Preliminaries before starting

3. Before starting a newly installed power plant or one which has been inhibited or has had certain components removed for servicing, the appropriate procedure and checks described in Chap. 1 must be carried out. Particular care must be taken in this respect with regard to the lubrication system.

4. (1) Check the fuel level, and replenish as necessary by running any fuel pump in No. 4 group of the aircraft fuel system (No. 4, 5 or 7 tank starboard) until the fuel level indicator reads HIGH.

(2) Check the a.a.p.p. oil level (Sect. 4).

(3) Check the operation of the fire warning indicator system by operating the test button and noting that the warning lamp illuminates.

(4) Check the operation of the cartridge and sump oil heaters with a 200v a.c. supply on the main bus bar. After the supply has been on for at least one hour, check that the sump oil temperature is in the range 50 $\pm$ 10°C and that the cartridge breeches are warm (20 $\pm$ 5°C). These checks must be carried out with the engine stationary, as the heater circuits are automatically switched off when the engine is running.

(5) Charge the a.a.p.p. oxygen cylinders to 2100 lbf/in^2, and ensure that the charging cock in the a.a.p.p. oxygen system on the unit is wirelocked OPEN. This cock is closed only when the system is broken down for installation or removal of the a.a.p.p. Check the functioning of the a.a.p.p. bleed valve by operating the A.V.S. switch. Check that the a.a.p.p. bleed valve indicator adjacent to the switch operates correctly.

(6) Check the calibration of the J.P.T. indicator as detailed in A.P.4505B, Vol. 1, Book 2, Section 6, Chapter 5.

(7) Check the cartridge selector switch operation by connecting a positive supply to terminals 5 and 6 and a negative to terminals 3 and 4. Carry out at least four operations, noting reversal of polarity at terminals 1 and 2.

(8) Carry out a continuity check on the cartridges, using a safety ohmmeter of 0 to 5 ohms range, or a pyrotechnic fuse tester (Ref. 5G/1142).

(9) Check that the oxygen contents gauge reads FULL.

(10) Select the a.a.p.p. master switch ON.

(11) Set the oxygen and relight switch ON.

Note . . .

Check that the oxygen warning light illuminates, and that oxygen flow is indicated by loss of approximately $\frac{1}{4}$ *contents capacity in approximately* 30 *seconds.*

(12) Select the a.a.p.p. oxygen switch OFF.

(13) Select the a.a.p.p. master switch OFF.

(14) Re-charge the oxygen cylinders to 2100 lbf/in².

Starting procedure (both methods)

5. When the a.a.p.p. is to be run for an extended period without starting the main engines, e.g. for aircraft servicing or for compass swinging, the filter box Part No. 1/U1910 must be fitted over the scoop air intake. When fitting the box, care must be taken to ensure that the pressure pads are not over-tightened, otherwise damage may be caused to the undercarriage fairing.

Notes . . .

(1) *The filters in ground running filter box* 1*U*/1910 *must be checked with a water manometer, at periods stated in the appropriate Servicing Schedule, in accordance with the instruction displayed on the front of the box, i.e. filters should be changed when the manometer reading exceeds* 3 *in. W.G. Refit the screwed blanking plug after the filter check.*

(2) *Should three false starts in succession be experienced, it is essential that the cartridges be removed and new ones inserted. This is necessary as continued false starts cause fuel to collect in the cartridge breech (vertical pipe). At the same time ensure that the cartridge O-rings are undamaged and positioned correctly.*

Caution . . .

Oxygen must not be fed during electric ground starts otherwise damage to the A.A.P.P. combustion chamber may result.

Electric starting

6. (1) Ensure that the 200V, 400 c/s a.c. and 28V T.R.U. d.c. supplies are ON, then make the following control selections:

(2) Battery isolation switch ON.

(3) A.c. generator switches (four) OFF.

(4) Oxygen enrichment switch OFF.

(5) A.a.p.p. L.P. fuel cock ON.

(6) Check a.a.p.p. fuel level HIGH.

(7) Cabin air valves SHUT.

(8) A.V.S. system switch OFF.

(9) A.a.p.p. bleed air switch SHUT (check that the bleed indicator shows SHUT).

(10) Check that the R.A.T. release toggle is NORMAL and that the R.A.T. is retracted.

(11) Check that if there is pressure in the aircraft hydraulic system that the a.a.p.p. intake is CLOSED; if the system is unpressurized, the intake will be open.

(12) A.a.p.p. master switch ON. Note that the intake opens if the hydraulic system is pressurized and that the a.a.p.p. fuel booster pump starts.

(13) Press the a.a.p.p. start button for one second to start the engine. Note that it is permissible, during starting, for the J.P.T. to exceed the maximum limitation of 665°C for not more than ten seconds.

(14) Check that stabilised electrical output from the a.c. generator fitted to the a.a.p.p. is within the range $400 \pm 2\frac{1}{2}\%$ c/s and $115 \pm 2\frac{1}{2}\%$ volts (Line to Neutral) and is achieved within thirty seconds.

(15) Note that the normal NO LOAD frequency is approximately 409 c/s, and check that the J.P.T. is below 630°C and the oil pressure not less than $4\frac{1}{2}$ lbf/in².

Cartridge starting

7. If the a.a.p.p. has been running prior to this check, note that the maximum permitted residual a.a.p.p. J.P.T. of 150°C prior to cartridge starting must be observed.

(1) Ensure that two 'live' cartridges complete with sealing rings are fitted in the breeches.

(2) Select battery isolation switch ON.

(3) Check oxygen switch OFF.

(4) Check a.a.p.p. fuel level HIGH (para. 4).

(5) Check L.P. fuel cock ON.

(6) Check that the R.A.T. bay is clear of obstructions, then eject the R.A.T. by operation of pilot's toggle on the cockpit coaming.

Note . . .

Where Mod. 1271 *is embodied, a.a.p.p. cartridge starting is available without R.A.T. ejection and should be functioned.*

(7) Select a.a.p.p. master switch ON.

(8) Press starter button firmly for three seconds. Check that the unit starts and that the electrical output from the a.c. generator reaches stabilised values within the limits $400 \pm 2\frac{1}{2}\%$ c/s and $115 \pm 2\frac{1}{2}\%$ volts within five seconds, and that the J.P.T. is below 630°C, and the oil pressure not less than $4\frac{1}{2}$ lbf/in².

Subsequent attempts to start

8. After any failure to start, but particularly after a failure to light-up, a draining period of not less than three minutes must be allowed to elapse before attempting to re-start, otherwise the accumulation of fuel in the main air casing and combustion chamber may cause excessive jet pipe temperatures.

Failure to start

9. If after two attempts the engine fails to start, a defect should be suspected, and investigated in accordance with the fault diagnosis chart given in Chap. 3.

Note . . .

After three consecutive starts, dry or wet cycles, a period of not less than thirty minutes must elapse before any attempt is made to re-energise the starter, otherwise the starter may be seriously overheated.

GROUND RUNNING CHECKS

10. (1) Run the a.a.p.p. for twenty minutes at NO LOAD conditions then check all output readings.

(2) On completion of the above test, select the a.a.p.p. a.c. generator ON and apply the following airframe electrical loads:—

All P.F.C.'s	ON
All fuel booster pumps (MANUAL)	ON
No. 1 and 2 Frequency changers	ON
T.R.U.'s	ON

Apply the above load to the a.a.p.p. for fifteen minutes, then check and record voltage, frequency, J.P.T., oil pressure and temperature, and ambient air temperature and pressure.

(3) Remove electrical load and allow J.P.T. to stabilise.

(4) Select the A.V.S. switch OPEN.

(5) Open a manual flow control valve fitted on the port side of any of the rear seats, and note discharge of air from M.S. connector at that seat.

(6) Shut down A.V.S. system.

STOPPING THE ENGINE

11. Note . . .

Except in emergency conditions, the power plant must not be shut down until all electrical loads have been removed, otherwise the subsequent thermal shock may severely damage the turbine rotor.

The procedure for stopping the engine is as follows:—

(1)	All electrical loads	OFF
(2)	Air selector switch	NORMAL
(3)	A.a.p.p. master switch	OFF
(4)	Battery isolation switch	OFF

DRY CYCLING THE ENGINE

12. This cycle is to blow out residual fuel following a 'WET' cycle or abortive start. Proceed as follows:—

(1) Ensure that the 200V, 400 c/s a.c. and 28V T.R.U. d.c. supplies are ON.

(2) Battery isolation switch ON.

(3) A.c. generator switches (four) OFF.

(4) Oxygen enrichment switch OFF.

(5) A.a.p.p. L.P. fuel cock ON.

(6) Check a.a.p.p.fuel level HIGH.

(7) Cabin air valves SHUT.

(8) A.V.S. system switch OFF.

(9) A.a.p.p. bleed air switch SHUT. Check that the bleed indicator shows SHUT.

(10) Check that the R.A.T. release toggle is NORMAL and that the R.A.T. is retracted.

(11) Check that if there is pressure in the aircraft hydraulic system that the a.a.p.p. intake is CLOSED; if the system is unpressurized, the intake will be open.

(12) Ensure that both cartridge breeches have dummy cartridges complete with sealing rings fitted.

(13) A.a.p.p. master switch ON.
Note that if the hydraulic system is pressurized, the a.a.p.p. air intake is open. Check that fuel booster pump starts.

(14) Ignition isolation switch (spring loaded) —to ISOLATE.

(15) H.P. cock override switch (spring loaded) —to SHUT.

(16) A.a.p.p. start button—press for one second. The button will lock in and the engine will DRY cycle for thirty seconds on the electric starter motor then shut down.

(17) Release the ignition isolate switch.

(18) Release the H.P. cock override switch.

(19) A.a.p.p. master switch OFF.

(20) Check that the a.a.p.p. intake closes if hydraulic pressure is available.

WET CYCLING THE ENGINE

13. This cycle is carried out to ensure that the a.a.p.p. fuel system is primed and to de-inhibit the engine.

(1) Ensure that the 200V, 400 c/s a.c. and 28 T.R.U. d.c. supplies are ON.

(2) Battery isolation switch ON.

(3) A.c. generator switches (four) OFF.

(4) Oxygen enrichment switch OFF.

(5) A.a.p.p. L.P. fuel cock ON.

(6) Check a.a.p.p. fuel level HIGH (para. 4).

(7) Cabin air valves SHUT.

(8) A.V.S. system switch OFF.

(9) A.a.p.p. bleed air switch SHUT. Check bleed indicator shows SHUT.

(10) Check that R.A.T. release toggle is NORMAL and that R.A.T. is retracted.

(11) Check that if the aircraft hydraulic system is pressurized that the a.a.p.p. intake is CLOSED; if the system is unpressurized, the intake will be open.

(12) Ensure that both cartridge breeches have dummy cartridges complete with sealing rings fitted.

(13) A.a.p.p. master switch ON.

(14) Check that if the hydraulic system is unpressurized that the a.a.p.p. intake is open.

(15) Check that the fuel booster pump starts.

(16) Ignition isolation switch (spring loaded) —to ISOLATE.

(17) A.a.p.p. start button—press for one second. The button will lock in and the engine will wet cycle for thirty seconds on the electric starter motor then shut down.

(18) Ignition isolation switch—release to OFF.

(19) A.a.p.p. master switch OFF. Check that the fuel booster pump stops, and that the a.a.p.p. intake closes if hydraulic pressure is available.

(20) Check that fuel has been sprayed during the wet cycle and that drainage is satisfactory.

Chapter 3

FAULT DIAGNOSIS

INTRODUCTION

1. This chart outlines the sequence of checks to be applied to a power plant to isolate the source of any particular fault in the shortest possible time.

2. In the event of a fault arising, carry out the check sequence indicated against the symptom experienced, until a positive result is obtained and then carry out the remedy suggested. In those instances where faults are indicated by a single instrument the instrument should be checked first. Defective components should not be dismantled in the process of fault diagnosis, the extent of minor repair work is specified in Sect. 5.

3. If it is necessary to disconnect the pipes of the fuel or oil systems all possible precautions must be taken to prevent the ingress of foreign matter. Similarly, all apertures resulting from the removal of components must be immediately and adequately blanked off.

4. Cross references are given in the chart to indicate the Section and Chapter of this Volume which contain the relevant procedures for rectification. Where associated publications are concerned the relevant A.P. numbers are also given.

WARNING . . .

The electrical energy stored in the capacitor of the high energy ignition unit is potentially lethal. Before starting any work which involves handling components of the ignition system, the l.t. supply to the unit must be disconnected and at least one minute allowed to elapse to permit the stored energy to dissipate.

Symptom	*Check-sequence*	*Failure Indicates*	*Remedy*
		ENGINE FAILS TO START	
1. Engine fails to rotate	Check voltage at a.a.p.p. bulkhead terminal block	Aircraft batteries discharged Aircraft wiring faulty	Refer to the aircraft publication (*A.P.*4505*B*)
	Check voltage at starter motor terminals	A.a.p.p. harness faulty	Check connections and renew the harness if necessary (*Sect.* 5, *Chap.* 4)
	Check starter motor with 'Megger'. Examine brushes and commutator	Starter motor failed	Renew the starter motor (*Sect.* 5, *Chap.* 4)
	Rotate blower drive shaft by hand	Engine seized	Return to M.U.
2. Engine rotates but fails to light-up	Energise ignition system and check that igniter plug is audible	Igniter plug failed	Renew igniter plug (*Sect.* 4, *Chap.* 1)
	Check igniter cable for continuity and insulation	Faulty igniter cable	Renew igniter cable (*Sect.* 5, *Chap.* 4)
	Check aircraft supply at high energy ignition unit	Aircraft wiring faulty Supply correct indicates a faulty high energy ignition unit	Refer to the aircraft publication (*A.P.*4505*B*) Renew high energy ignition unit (*A.P.*4505*B*)
	Check l.p. cock selected and fuel tank contents	Starting sequence incorrect	Refer to the aircraft publication (*A.P.*4505*B*)
	Disconnect combustion chamber drain pipe and check for presence of fuel		
	Inhibiting oil present	Fuel system inhibited	De-inhibit the fuel system (*Sect.* 3, *Chap.* 1)
	If no fuel present:— Disconnect 1.B.1 harness at the burner actuator and check for continuity and voltage	A.a.p.p. harness faulty	Check connections and renew the harness if necessary (*Sect.* 5, *Chap.* 4)
		Aircraft wiring faulty	Refer to the aircraft publication (*A.P.*4505*B*)
	Remove burner actuator and check h.p. cock spindle torque loading	H.p. cock seized	Renew the fuel system (*Sect.* 5, *Chap.* 3)
	Test burner actuator	Actuator failed	Renew burner actuator (*Sect.* 5, *Chap.* 4)
	If fuel present:— Check l.p. cock	L.p. cock and/or aircraft wiring faulty	Refer to the aircraft publication (*A.P.*4505*B*)

FAULT DIAGNOSIS CHART—continued

Symptom	*Check-sequence*	*Failure Indicates*	*Remedy*
	◀ If the aircraft is stationed 4000 ft. or more above sea level. Check for air pressure at the air pump Schrader valve connection		
	If no air pressure:—		
	Check aircraft supply to air pump motor, for voltage and continuity, at a.a.p.p. bulkhead plug	Aircraft wiring faulty	Refer to *A.P.*101*B*–1902–1*A*
	Disconnect a.a.p.p. harness at air pump motor and check for continuity and voltage	A.a.p.p. harness faulty	Check connections and replace harness if necessary (*Sect.* 5, *Chap.* 4)
	Check air pump motor with 'Megger'	Air pump motor failed	Replace air pump assembly (*Sect.* 5, *Chap.* 3)
	Remove air pump inlet filter and check for presence of dirt	Air pump inlet filter choked	Clean air pump inlet filter (*Sect.* 5, *Chap.* 3)
	Disconnect air pump delivery pipe at pump outlet and check for pressure	Air pump failed	Replace air pump assembly (*Sect.* 5, *Chap.* 3)
	Remove the P_2 non-return valve and check operation	Non-return valve failed	Replace non-return valve (*Sect.* 5, *Chap.* 3)▶
	Check booster pump	Booster pump and/or aircraft wiring faulty	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)
	Check for fuel leaks	Fuel pipes or connections faulty	Tighten or renew (*Sect.* 5, *Chap.* 3)
	Check-sequence fails to indicate fault	Suspect faulty fuel system	Change the fuel system (*Sect.* 5, *Chap.* 3)

ENGINE RUNNING FAULTS

3. Engine lights-up but fails to accelerate to governed speed	Check that the airbleed valve is closed	Starting sequence incorrect	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)
	Check that there is no load applied to the a.c. generator	Starting sequence incorrect	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)

FAULT DIAGNOSIS CHART—continued

Symtom	*Check-sequence*	*Failure Indicates*	*Remedy*
	Check l.p. cock selected and fuel tank contents	Starting sequence incorrect	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)
	Check air intakes and exhaust for obstructions	Blanks, cleaning rag or tools left in ducting	Remove
	Check starter motor supply voltage at a.a.p.p. bulkhead terminal block	Aircraft batteries discharged	Refer to the aircraft publication (*A.P.*101B–1902–1*A*)
		Aircraft wiring faulty	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)
	Check voltage at starter motor terminals	A.a.p.p. harness faulty	Check connections and renew the harness if necessary (*Sect.* 5, *Chap.* 4)
	Check booster pump	Booster pump and/or aircraft wiring faulty	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)
	Check l.p. cock	L.p. cock and/or aircraft wiring faulty	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)
	Check air fuel ratio control P_2 pipe for security	Air leakage from pipe or connections	Tighten connections or renew pipe (*Sect.* 5, *Chap.* 1)
	Check for fuel leaks	Fuel pipes or connections faulty	Tighten or renew (*Sect.* 5, *Chap.* 1)
	Check oil sump	Incorrect grade of oil	Drain and replenish (*Sect.* 4, *Chap.* 1)
	Rotate blower drive shaft by hand	Engine seized	Return to M.U.
	Check-sequence fails to indicate fault	Fuel system contains air	Carry out a wet cycle (*A.P.*101*B*–1902–1*A*)
		Fuel system faulty	Change the fuel system (*Sect.* 5, *Chap.* 3)
4. Engine surges during acceleration	Check fuel drain valve		
	After previous attempted starts or wet cycles. Check fuel flow from valve	Insufficient time allowed for engine to drain	Wait approximately 10 minutes for excessive fuel to drain from the engine
	If no fuel at valve after attempted starts or wet cycles	Fuel drain valve blocked	Remove the fuel drain valve from engine and clean (*Sect.* 5, *Chap.* 3)
	Check that there is no load applied to the engine during acceleration period	Controls incorrectly operated	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)

FAULT DIAGNOSIS CHART—continued

Symptom	*Check-sequence*	*Failure Indicates*	*Remedy*
	No other symptoms apparent	Fuel system faulty	Renew the fuel system (*Sect.* 5, *Chap.* 3)
5. Engine surges during steady running	Check air intakes exhaust duct	Air intakes or exhaust duct obstructed	Remove the obstruction
6. Low or fluctuating engine oil pressure	Check engine oil level	Oil level incorrect	Replenish (*Sect.* 4, *Chap.* 1)
	Check all pipes, unions, etc., for security	Oil leakage from pipes or connections	Tighten connections or renew pipes (*Sect.* 5, *Chap.* 1)
	Check grade of engine oil	Incorrect grade of oil	Drain and replenish (*Sect.* 4, *Chap.* 1)
	Check oil pressure gauge	Oil pressure gauge faulty	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)
	Check electrical supply at a.a.p.p. bulkhead plug to oil pressure transmitter	Aircraft wiring faulty	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)
	Check for excessive oil sump temperature	Oil sump heater thermostat faulty	Renew the oil sump heater (*Sect.* 5, *Chap.* 2)
		Oil cooler actuator faulty	Renew the oil cooler actuator (*Sect.* 5, *Chap.* 4)
		Oil cooler and/or supply and return pipes blocked	Remove and examine for obstruction (*Sect.* 5, *Chap.* 2)
	Check oil pressure transmitter	Oil pressure transmitter faulty	Renew oil pressure transmitter (*Sect.* 5, *Chap.* 2)
	No other symptoms apparent	Suspect internal oil system failure	Return to M.U.
7 Power plant fails to accept specified electrical loads			
(1) Frequency falls off	Check jet pipe temperature reading. If high readings obtained at low frequency	Blanks, cleaning rag or tools left in air intakes	Remove
		Compressor dirty	Wash the compressor and diffuser (*Sect.* 4, *Chap.* 1)
		Engine seized	Return to M.U.
	Low jet pipe temperature readings recorded at low frequency	Air leakage from P_2 pipe or connections	Tighten connections or renew pipe (*Sect.* 5, *Chap.* 1)
		Fuel pipes or connections leaking	Tighten or renew (*Sect.* 5, *Chap.* 1)
		Fuel system faulty	Reset the temperature control unit Renew the fuel system (*Sect.* 5, *Chap.* 3)

FAULT DIAGNOSIS CHART—continued

Symptom	*Check-sequence*	*Failure Indicates*	*Remedy*
(2) Frequency constant	Check a.c. generator cables	Cables or connections faulty	Check connections and renew cables if necessary (*Sect.* 5, *Chap.* 4)
	Check a.c. generator	A.c. generator faulty	Renew the a.c. generator (*Sect.* 5, *Chap.* 4)
	Check aircraft wiring	Aircraft wiring faulty	Refer to the aircraft publication (*A.P.*101*B*–1902–1*A*)