SECTION 5

MINOR REPAIRS

LIST OF CHAPTERS

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

Chapter 1

GENERAL INFORMATION AND SERVICING TOOLS

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Introduction

1. This chapter provides a list of the special purpose and standard tools required to service the power plant; general information is also provided relating to standard practices to be observed whilst carrying out servicing operations and minor repairs.

Tools

2. *Tools required for removing an A.A.P.P. from the aircraft*

Ref. No.	*Description*	*Quantity*
-	Open ended spanner 7/16 in. x 1/2 in. Whit.	1
1L/28	Open ended spanner 2 BA	1
1L/29	Open ended spanner 4 BA	1
1C/6339	Open ended spanner 1/2 in. x 9/16 in. a/f	1
1L/73	Open ended spanner 11/16 in. Whit.	1
1L/80	Ring spanner 9/16 in. a/f	2
1C/5321	1/2 in. screwdriver	1
1C/2177	1/4 in. screwdriver	1
27BA/8782	C-spanner	1
260K/95342	C-spanner	1
260K/95341	C-spanner	1
260K/95340	C-spanner	1
64KK/1042	Wire locking combination tool	1
1B/1805	Side cutters	1
1H/33	Long snipe nosed pliers	1

3. *Tools required for routine maintenance and minor repairs*

Ref. No.	*Description*	*Quantity*
-	Open ended spanner 7/16 in. x 1/2 in. Whit.	1
-	Open ended spanner 9/16 in. x 5/8 in. Whit.	1
-	Open ended spanner 1/2 in. x 9/16 in. a/f	1
-	Open ended spanner 7/16 in. x 1/2 in. a/f	1
1L/28	Open ended spanner 2 BA	1
1L/29	Open ended spanner 4 BA	1
1L/73	Open ended spanner 11/16 in. Whit.	1
1L/6339	Ring spanner 1/2 in. x 9/16 in. a/f	1
-	Ratchet handle 3/8 in. square drive	1
-	Strap wrench	1
1H/33	Pliers, long snipe nose	1
-	Pliers, combination 6 in.	1
-	Hammer, ball pein, 1/2 lb	1
-	Hammer, ball pein, 1 lb	1
1C/5321	Screwdriver, large	1
1C/2177	Screwdriver, medium	1
-	Screwdriver, small	1
-	Diagonal cutting nippers	1
-	Micrometer depth gauge 0 to 3 in.	1
27BA/8782	C-spanner	1
260K/95342	C-spanner	1
260K/95341	C-spanner	1
260K/95340	C-spanner	1
1L/80	Ring spanner 9/16 in. a/f	1
-	Allen key 3/16 in.	1
64KK/1042	Wire locking combination tool	1
1B/1805	Side cutters	1

4. Special purpose tools

Ref.No.	Description	Quantity
64AF/14	Spanner for fuel drain valve	1
-	Drain pipe assembly (compressor wash/inhibiting)	1
64AF/13	Burner sit-back adapter	1
◄ 64AF/17	Oil level template	1 ►

Use of molybdenum disulphide

5. Where a dry film lubrication is required to prevent scuffing, for example on lightly loaded components and components to be operated at elevated temperatures, molybdenum disulphide compound (ZX-28) should be used.

6. The compound should be applied to the working surface of the component with a brush. Care must be taken to apply only a small amount and to brush it well into the whole of the working surface.

7. The following components must be treated with molybdenum disulphide before final assembly :-

Description	Detailed in chapter
Thermocouple union nuts	4
Temperature control mercury boiler retaining bolts	3
Jet pipe clamping ring bolts	7
Jet pipe extension clamping bolts	7
Burner retaining bolts	3
Third point mounting spherical bearing and rod	7

Use of anti-corrosive paste

8. Anti-corrosive paste (Ref.33C/1264) should be used to prevent electrolytic corrosion wherever dissimilar metals are brought into contact.

9. The surfaces to be brought into contact should be coated with the paste and the joint made while the surface is still tacky. Surplus paste squeezed out of the joints may be wiped off, but care must be taken not to draw the filler out of the joint. The paste will dry on the surface where exposed to the air; but within the joint the paste will remain plastic almost indefinitely and will form a perfect joint as it is both airtight and watertight.

10. The following components must be coated with anti-corrosive paste before assembly:-

Decription	Detailed in chapter
Fuel drain valve	3
Hydraulic coupling retaining bolts	5

CAUTION

Great care must be exercised when treating the fuel drain valve to ensure that the compound does not enter the valve body, otherwise the assembly may fail to function.

Use of jointing compound

11. Before using jointing compound SQ32/R(DTD900/4586), the components concerned should be degreased with a trichlorethylene soaked cloth.

12. Apply the compound to the two faces to be mated using a stiff brush and allow at least 10 minutes air drying before attempting to assemble. After securing the assembly, allow a few minutes to elapse and re-tighten.

13. The following components should be treated with jointing compound before assembly :-

Description	Detailed in chapter
Generator mounting face	4
Hydraulic pump mounting face	5
Re-oil valve (pre-mod. M131)	2

Use of silicone compound

14. To prevent any damage to the protective lacquer on the power plant harness due to chafing, cable clips removed during minor repairs or routine servicing should be lightly smeared with silicone compound (XG-250) before being refitted.

Marking hot end components

15. When marking components that are subjected to high temperatures, the use of lead pencils, wax crayons, or any medium which will leave a carbon deposit, may result in carburization and embrittlement of the affected area; blackboard or common chalk produces a deep etched effect when subjected to heat. The use of these materials for marking the hot end components is therefore forbidden.

16. When it is necessary to make a temporary marking on any component that is subjected to high temperatures, use either tailor's chalk or french chalk.

Chapter 2

OIL SYSTEM

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Draining the oil sump

1. ◄The engine oil sump can be drained by removing the blanking plug from the pipe connected to the filler tube and allowing the oil to discharge into a conveniently placed container. After draining is completed re-fit the blanking plug with a new sealing washer. For details of the correct method of re-filling the sump refer to Sect. 3, Chap. 1.►

Removing the magnetic sump plug

2. (1) Drain the engine oil sump.

(2) Sever the locking wire and disconnect the oil cooler inlet pipe at the connection on the port side of the gearbox.

(3) Unscrew the magnetic plug from the forward wall of the sump taking care to retain the aluminium washer.

Note . . .

Care must be taken when withdrawing the plug not to disturb any particles adhering to the magnet.

Fitting the magnetic sump plug

3. (1) Carefully wash the plug in clean fuel, then fit it together with the aluminium washer in the forward wall of the engine sump.

(2) Reconnect the oil cooler inlet pipe at the union on the gearbox and securely wire-lock.

(3) Refill the engine oil sump.

Removing the oil pressure switch

4. (1) Remove the front end cover (Chap. 7 of this section).

(2) Sever the locking wire and disconnect the wiring harness at the socket connection on the pressure switch.

(3) Sever the locking wire and disconnect the oil cooler inlet pipe at the banjo union adapter securing the pressure switch to the oil cooler.

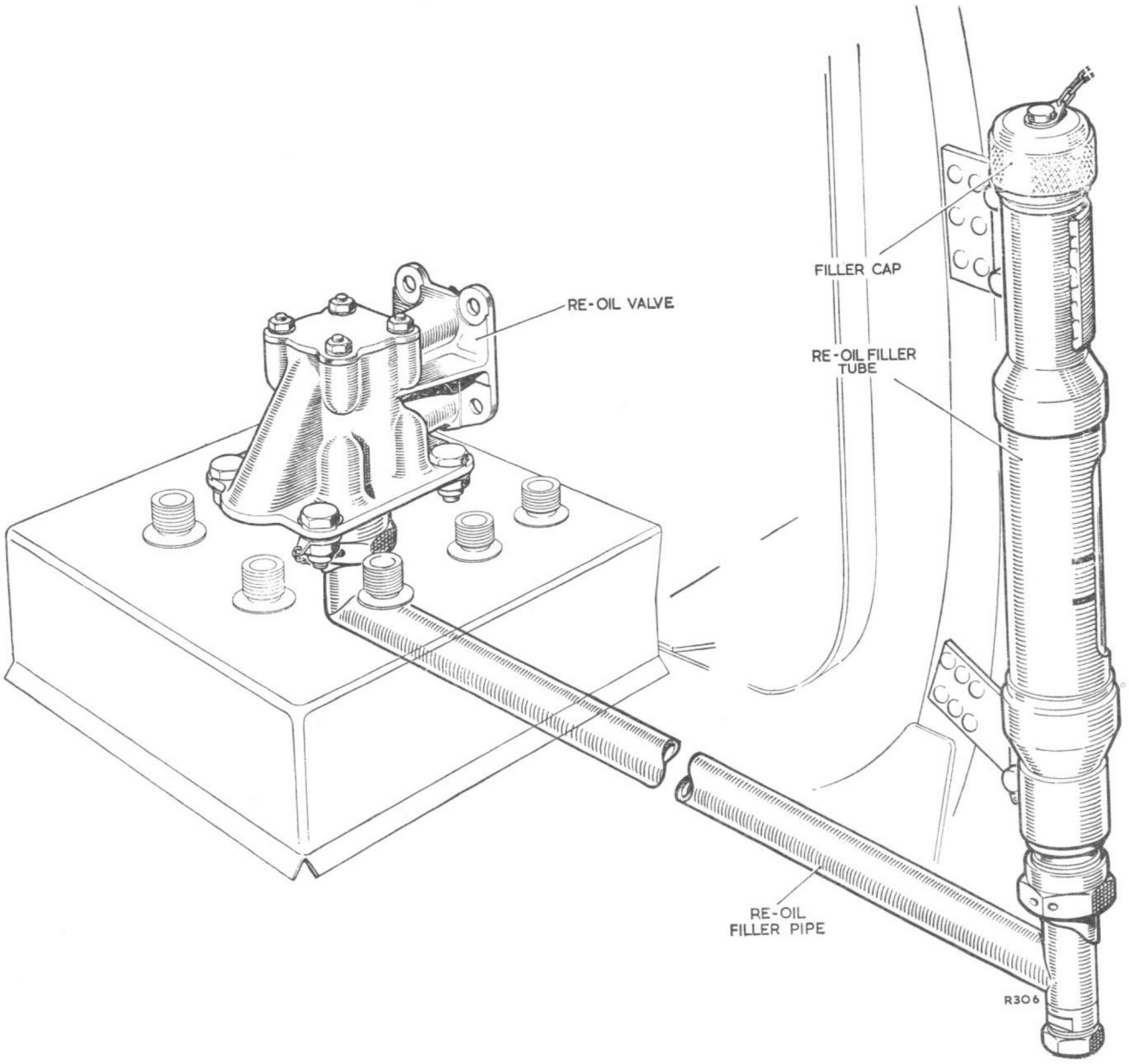

Fig. 1. Draining the oil sump

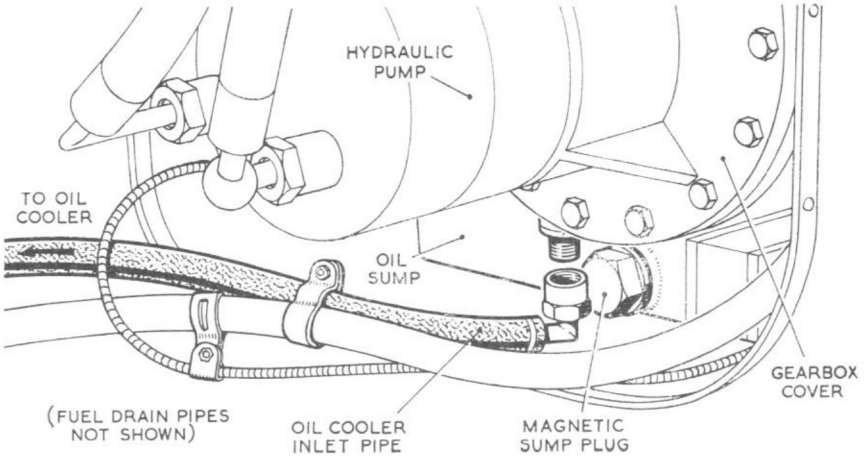

Fig. 2. Removing the magnetic sump plug

(4) Unscrew the banjo union adapter and remove the oil pressure switch carefully noting the two aluminium washers.

Fitting an oil pressure switch

5. Before fitting an oil pressure switch, check that it is set to operate at 3 to 4 lbf/in^2. Proceed to fit the switch as follows:—

(1) Assemble the pressure switch together with the two aluminium washers on to the union adapter; then screw the adapter into the oil cooler, holding the switch as nearly vertical as is possible without fouling the oil cooler mounting flange.

(2) Reconnect the oil cooler inlet pipe to the union adapter and securely wire lock.

(3) Reconnect the wiring harness to the socket connection on the pressure switch and securely wire lock.

(4) Refit the front end cover (Chap. 7 of this section).

Note . . .

On completion of the foregoing operation, dry cycle the engine (Sect. 3, Chap. 2) to recirculate the engine oil, and check the oil level by replenishment (Sect. 3, Chap. 1).

Removing the blower and oil cooler assembly

6. (1) Remove the front end cover (Chap. 7 of this section).

(2) Sever the locking wire and disconnect the inlet and outlet pipes and the intermediate shaft oil supply pipe at the respective unions on the oil cooler body.

(3) Sever the locking wire and disconnect the wiring harness at the socket connection on the oil pressure switch.

(4) Release the two hose clips securing the rubber air duct to the generator and the blower outlet adapter, and remove the duct completely.

(5) Sever the locking wire and release the 'King' clamp securing the blower and oil cooler assembly to the gearbox outer cover. The blower and oil cooler can now be withdrawn, complete with the oil pressure switch, but care should be taken to retain the sealing O-ring between the blower mounting flange and the gearbox cover.

Fitting the blower and oil cooler assembly

7. The blower and oil cooler are not held in store as a complete assembly, but if the two components are pre-assembled together with the oil

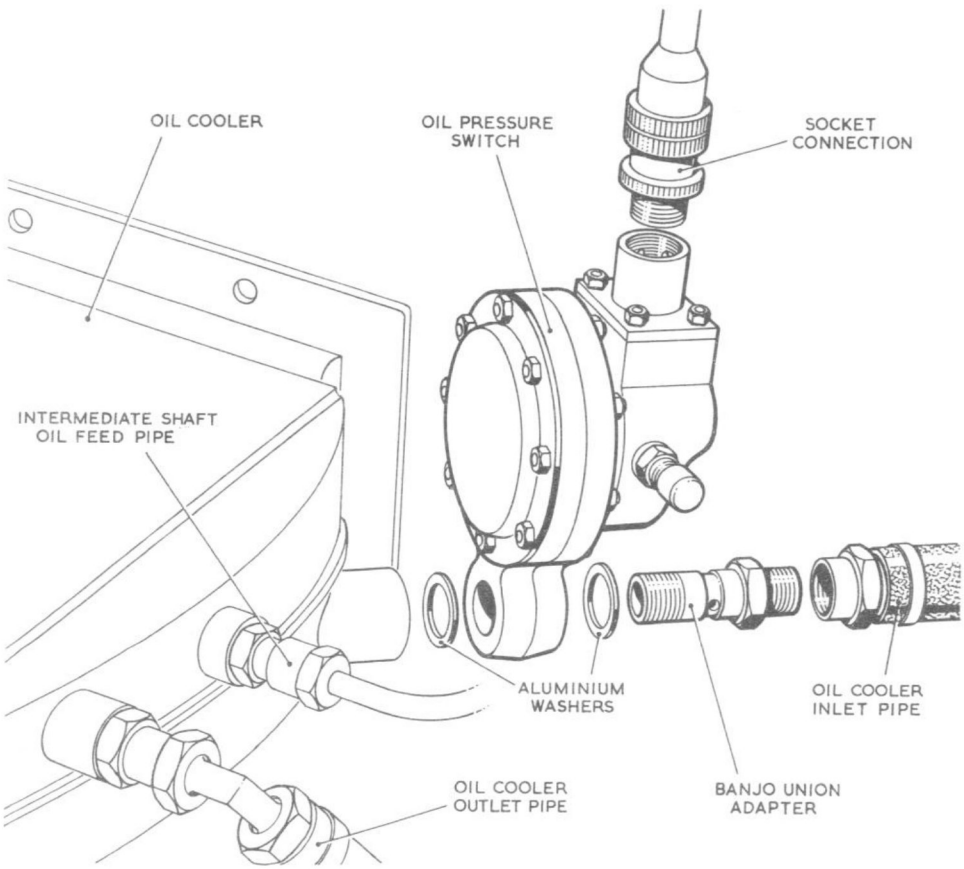

Fig. 3. Removing the oil pressure switch

pressure switch (para. 7), subsequent assembly to the engine will be made considerably easier. Proceed as follows:—

(1) Lightly smear the O-ring recessed immediately behind the blower drive pinion with engine oil, and position the large O-ring into the annular groove in the blower mounting flange.

(2) Offer the blower and oil cooler assembly complete with the pressure switch up to the gearbox cover, making sure that the dowel in the inner web of the blower housing is properly located in the corresponding slot in the gearbox inner shroud.

Note . . .

It may be necessary to slightly oscillate the blower in order to correctly mesh the blower drive pinion with the drive gear.

(3) Secure the blower and oil cooler unit in position with the retaining 'King' clamp, then securely wire-lock the turnbuckle.

Note . . .

The 'King' clamp turnbuckle should be positioned at the base of the blower assembly.

(4) Reconnect the oil cooler inlet and outlet pipes and the intermediate shaft oil supply pipe to the respective unions on the oil cooler body, and securely wire-lock.

(5) Reconnect the wiring harness to the socket connection on the oil pressure switch and securely wire-lock.

(6) Assemble the two hose clips on the blower air duct and secure the duct in position between the blower outlet adapter and the generator.

(7) Fit the front end cover (Chap. 7 of this section).

Note . . .

On completion of the foregoing operation, dry cycle the engine (Sect. 3, Chap. 2) to recirculate the engine oil, and check the oil level by replenishment (Sect. 3, Chap. 1).

Dismantling the blower and oil cooler assembly

8. (1) Remove the oil pressure switch.

(2) Release the six bolts, plain washers and self-locking nuts securing the blower outlet adapter to the blower; then withdraw the adapter complete with the oil cooler, taking care to retain the fibre gasket.

(3) Release the two hose clips securing the blower orifice plate and hose to the blower outlet adapter and remove both the orifice and hose.

(4) Release the six self-locking nuts and plain washers securing the oil cooler to the

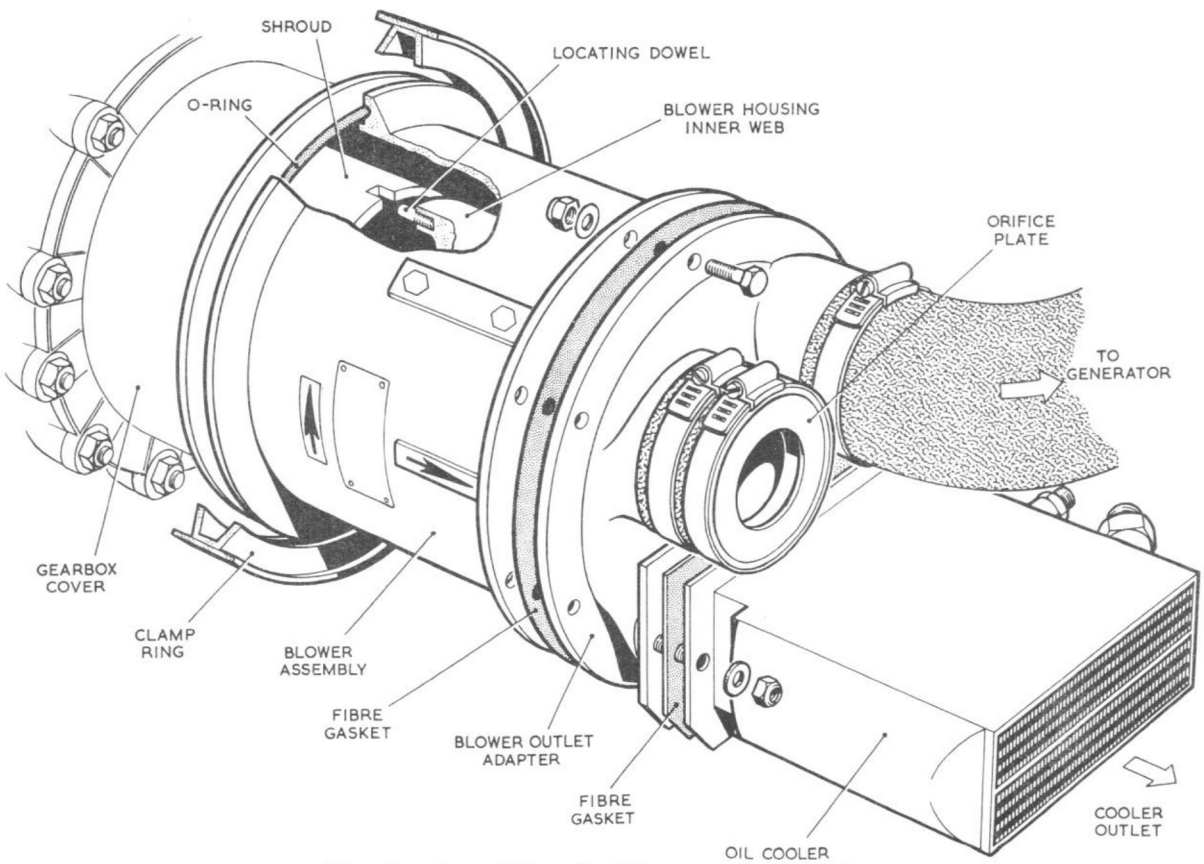

Fig. 4. Assembling the blower and oil cooler

blower outlet adapter, then part the two components taking care to retain the fibre gasket.

Assembling the blower and oil cooler

9. (1) Position the oil cooler together with the fibre gasket over the studs in the rectangular outlet of the blower outlet adapter, and secure with six plain washers and self-locking nuts.

Note . . .

When positioning the oil cooler on the blower outlet adapter, hold the adapter with the two circular outlets uppermost; the cooler inlet and outlet unions should then be on the right-hand side viewed from the oil cooler outlet.

(2) Position the blower unit with the locating dowel in the inner web in the 11 o'clock position viewed from the outlet and then offer up the oil cooler and adapter assembly together with a fibre gasket so that the oil cooler is horizontal and the circular openings are uppermost relevant to the dowel.

(3) Secure the oil cooler and blower outlet adapter to the blower with six bolts, plain washers and self-locking nuts.

(4) Assemble the blower orifice plate into the hose, then secure the plate in the hose, and the hose to the blower outlet duct with two hose clips.

Note . . .

With the circular outlets in the blower outlet adapter uppermost the orifice plate should be secured to the left-hand outlet viewed from the oil cooler end.

(5) Assemble the oil pressure switch to the oil cooler.

Removing the blower air intake ducting

10. (1) Remove the front end cover (Chap. 7, of section 5).

(2) Remove the rear end cover (Chap. 7, of section 5).

(3) Release the ten bolts and plain washers securing the blower air intake ducting to the rear face of the gearbox.

(4) Release the eight bolts and plain washers securing the blower air intake ducting to the floor of the central beam. Six of these bolts are retained by nuts welded on the interior of the beam, but the remaining two pass through the flange at the rear of the central beam and are secured by self-locking nuts.

(5) The blower air intake ducting complete with the two loose aluminium flanges can now be withdrawn rearwards.

Fitting the blower air intake ducting

11. (1) Transfer the two loose aluminium flange pieces from the original duct making sure that when in position they are firmly seated on the rubber flanges of the duct.

(2) Check that the mounting faces for the duct, on the floor of the central beam and the rear face of the gearbox, are completely free of oil or grease and place the duct in position.

(3) Fit the ten bolts and plain washers securing the duct to the gearbox and tighten down evenly.

(4) Fit the eight bolts and plain washers securing the duct to the central beam and tighten down evenly. The two bolts passing through the rear flange of the beam are retained by self-locking nuts.

Note . . .

Care must be taken during the two preceding operations to tighten down each set of bolts evenly, otherwise buckling of the aluminium flanges may occur.

(5) Fit the rear end cover (Chap. 7 of this section.

(6) Fit the front end cover (Chap. 7 of this section).

Chapter 3

FUEL SYSTEM

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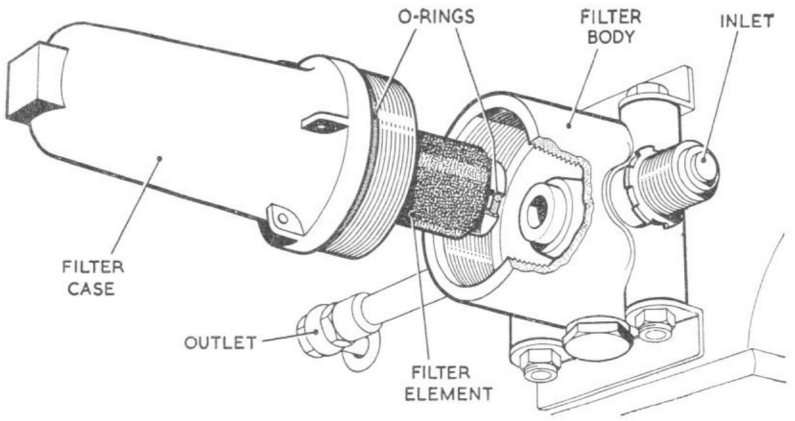


Fig. 1. Removing the fuel filter element

Introduction

1. The component assemblies of the fuel system, with the exception of the fuel pump and pressure raising valve, are completely interchangeable.

2. If it is necessary to renew either the fuel pump or the pressure raising valve, both components, which carry identical serial numbers, must be renewed.

Renewing the L.P. fuel filter element

3. (1) Disconnect the self-sealing coupling on the inlet side of the filter head.

(2) Sever the locking wire securing the filter bowl to the filter head; then using a suitable spanner on the squared end, unscrew the bowl in a counter clockwise direction, taking care to retain the O-ring recessed into the threaded portion of the bowl.

(3) Draw the filter element off the spigot in the filter head and discard.

(4) Examine the interior of the filter bowl for cleanliness and if necessary wash out with clean fuel.

(5) Check that there is an O-ring recessed into the upper end of the replacement filter element, then push the element over the spigot in the filter head.

(6) Fit a new O-ring into the undercut below the threaded portion of the filter bowl, and screw the bowl into the filter head.

(7) Reconnect the self-sealing coupling to the inlet side of the filter head, then renew any wire locking that may have been disturbed.

Removing the L.P. fuel filter

4. (1) Disconnect the self-sealing coupling on the inlet side of the filter head.

(2) Sever the locking wire and release the banjo bolt securing the fuel pump inlet pipe to the fuel filter extension adapter.

(3) Release the two bolts and self-locking nuts securing the filter to the mounting bracket and withdraw the filter completely.

Fitting a replacement fuel filter

5. (1) Remove the half-coupling and the extension adapter from the unserviceable filter assembly, and transfer them to the replacement unit.

(2) Position the filter assembly in the mounting bracket on the rear face of the central beam, with the relief valve plug facing downwards, and secure the filter with two bolts and self-locking nuts. Do not forget to position a wire locking tab beneath the head of the right-hand bolt.

(3) Fit the banjo bolt securing the fuel pump inlet pipe to the filter extension adapter. Ensure that there is an aluminium washer on either side of the banjo.

(4) Check that all the wire locking has been correctly renewed, then bleed the fuel system (Sect. 3, Chap. 1).

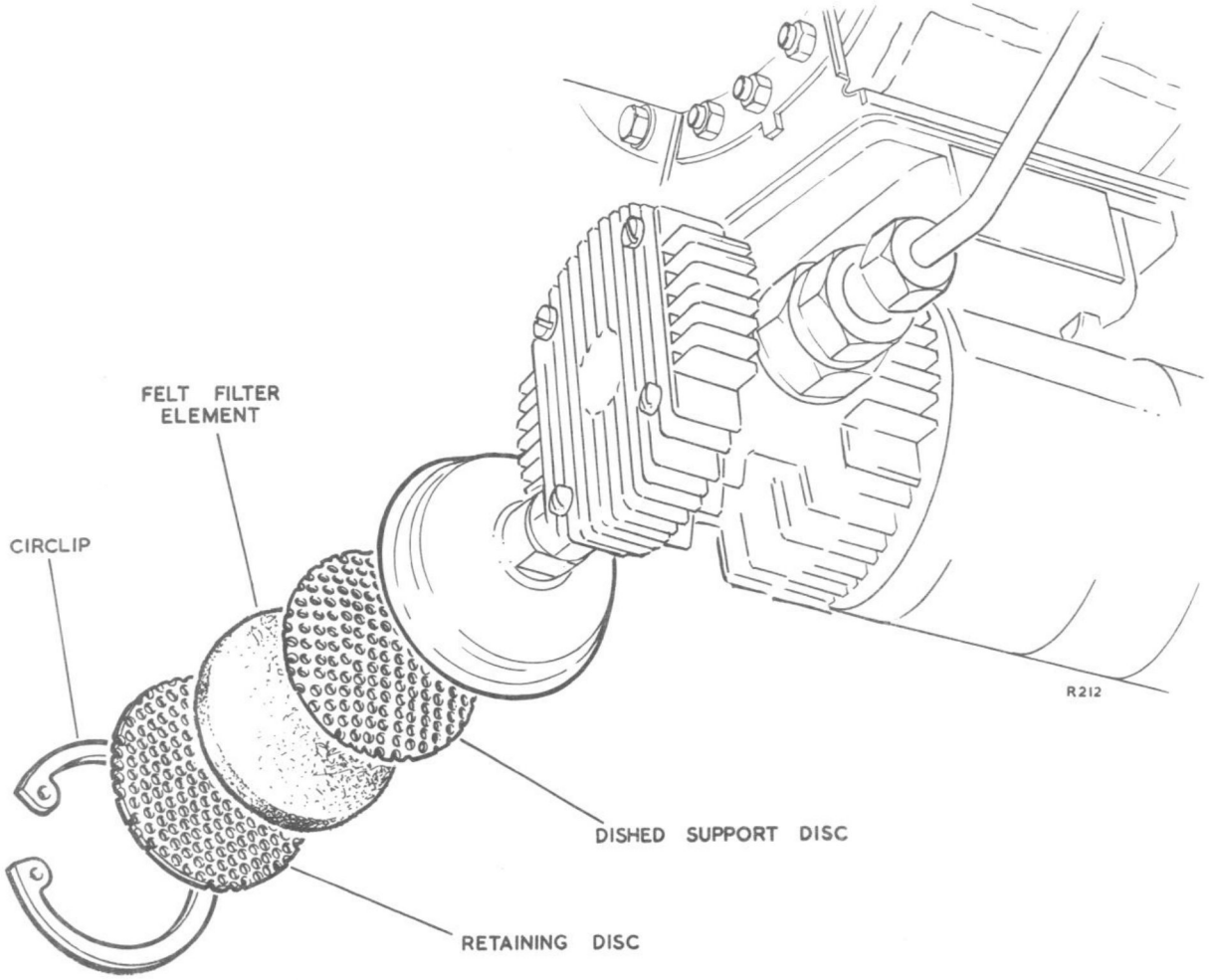
Removing the motorised air pump

6. (1) Remove the rear end cover (Sect. 5, Chap. 7).

(2) Sever the locking wire, and disconnect the wiring harness at the socket connection on the air pump motor.

(3) Sever the locking wire, and release the union nut securing the air outlet pipe to the air pump body.

(4) Release the four bolts, the self-locking nuts and plain washers securing the air pump to its mounting bracket.



◄Fig. 1A. Removing the motorised air pump filter►

(5) Lift the air pump clear of its mounting bracket, taking care to retain the mounting gasket, and at the same time noting the relative positions of the thermocouple and Firewire harness brackets.

Fitting a replacement motorised air pump

7. (1) Transfer the air intake filter and the air outlet pipe union from the defective pump to the replacement unit. The inlet and outlet ports are clearly marked.

(2) Position the air pump mounting gasket on the mounting bracket and secure the pump with four bolts, plain washers and self-locking nuts. Do not forget to refit the thermocouple and Firewire harness support brackets.

Note . . .

Ensure that the shroud surrounding the air pump motor is not obstructed in any way.

(3) Secure the air outlet pipe to the union on the pump body, and wire-lock the union nut.

(4) Reconnect and securely wire-lock the wiring harness at the socket plug on the air pump motor body.

(5) Refit the rear end cover (Sect. 5, Chap. 7).

◄Removing the motorised air pump filter element

7A. Release the internal circlip from the rim of the filter body, withdraw the perforated retaining disc and the felt filter element, followed by the dished perforated support disc.

Fitting the motorised air pump filter element

7B. Place the dished perforated support disc into the filter body followed by the filter element and the perforated retaining disc. Insert the internal circlip into the rim of the filter body to retain the element and discs.►

Removing the air assistance non-return valve

8. (1) Remove the rear end cover (Sect. 5, Chap. 7).

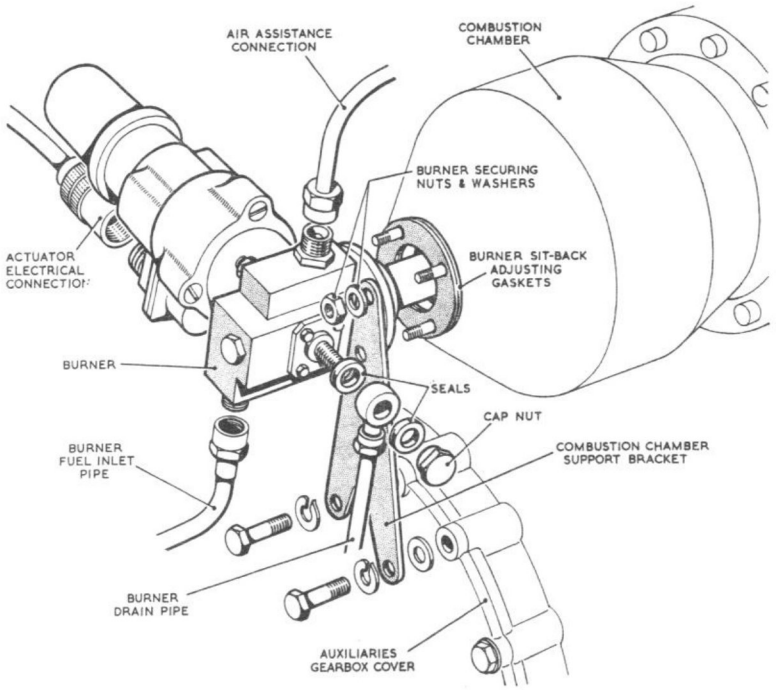


Fig. 2. Removing the burner and actuator

(2) Sever the locking wire and release the three pipe unions at the non-return valve body.

(3) Release the clip securing the valve body to the main air casing, and remove the valve.

Fitting the air assistance non-return valve

9. (1) Check that the non-return valve is free from dirt or foreign matter, then place in position with the elongated portion of the body facing towards the diffuser tapping in the main air casing.

(2) Reconnect the three union nuts securing the valve body to the air assistance pipes.

(3) Secure the valve to the main air casing with an aluminium clip (Post Mod. MO 168), and securely wire-lock all disturbed components.

(4) Refit the rear end cover (Sect. 5, Chap. 7).

Removing the burner and actuator assembly (fig. 2)

10. (1) Sever the locking wire and disconnect the air assistance pipe, the fuel inlet pipe and the fuel drain pipe at the burner body.

(2) Sever the locking wire and disconnect the wiring harness at the socket connection on the burner actuator.

(3) Sever the locking wire securing the combustion chamber drain pipe union nut to the combustion chamber support bracket, then remove the two bolts, spring washers and spacers securing the support bracket to the gearbox cover.

(4) Sever the locking wire and release the four nuts and plain washers securing the burner assembly and the support bracket to the combustion chamber. Draw the support bracket followed by the burner off the mounting studs, taking care to ensure that the adjacent Firewire harness is not damaged during the process.

Caution . . .

When removing the burner, use care not to damage the adjusting gaskets and so lose the sit-back adjustment (*para.* 12).

◄ (5) To remove and re-fit the burner actuator refer to Sect.5, Chap.4. ►

Fitting the burner and actuator assembly (fig.2)

11. (1) Position the burner gaskets on the burner mounting flange, and place the burner in position on the combustion chamber with the actuator pointing inward, toward the centre line of the unit.

Caution...

The burner adjusting gaskets must be refitted exactly as they were removed or the sit-back adjustment will be lost. If a new burner is fitted or if the gaskets are damaged, the sit-back adjustment must be re-measured (para. 12).

(2) Position the combustion chamber support bracket over the burner mounting studs and secure both the bracket and the burner with four nuts and plain washers.

(3) Refit the two bolts, spring washers and spacers, securing the lower end of the support bracket to the auxiliaries gearbox.

(4) Reconnect the wiring harness at the socket connection on the burner actuator.

(5) Reconnect the air assistance and fuel pipes at their respective unions on the burner body and finally securely wire lock all those components disturbed during the preceding operations. Bleed the fuel system (Sect. 3, Chap.1).

Burner sit-back (fig.3)

12. When fitted to the engine, the burner nozzle must sit-back 0.065 $\pm$ 0.010 in. behind the burner shroud in the flame tube. The burner sit-back is determined by the thickness of gaskets interposed between the burner flange and the flange of the combustion chamber outer air casing.

13. The number of gaskets required to obtain the correct relationship can be determined by the use of a micrometer depth gauge and the sit-back adapter (Tool No.428556).

Note...

The adjusting gaskets are supplied in the following thicknesses: Part No. 424221 is 0.015 in., and Part No. 423596 is 0.030 in. It should be noted however that these dimensions, which are only approximate, will tend to vary from gasket to gasket and it is advisable to take a micrometer reading when selecting them for use.

Adjusting the burner sit-back

14. (1) Using a suitable micrometer depth gauge measure and record the length of the burner barrel between the end face of the air shroud and the burner mounting flange (dimension "A" in fig.3).

(2) Position the burner sit-back adapter on the micrometer extension rod, then using a surface table or an engineer's parallel, check that the end of the extension rod is square with the lower face of the adapter; then securely tighten the adapter retaining screw.

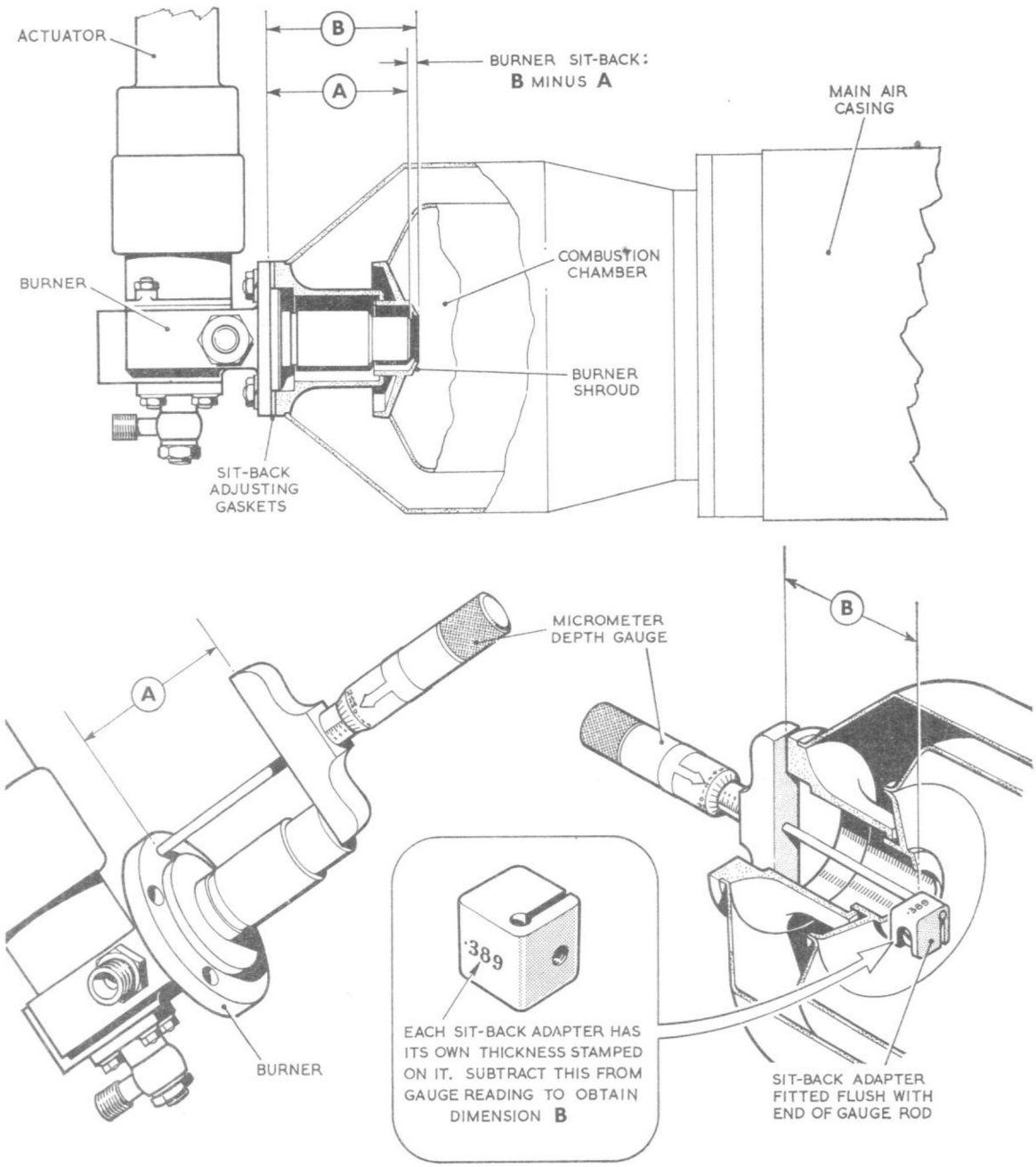


Fig. 3. Burner sit-back adjustment

(3) Insert the micrometer extension rod complete with the sit-back adapter into the combustion chamber, and hook the adapter over the burner shroud in the flame tube.

(4) Rotate the micrometer sleeve until the measuring face is pulled tight against the burner mounting flange, and then read off the distance recorded (dimension "B" in fig. 3).

Note . . .

It is advisable to leave the thimble cap loose during the preceding operation, otherwise the sit-back adapter will also rotate.

(5) Subtract the dimension stamped on the side of the adapter block from the dimension obtained in (4), then from the product of this

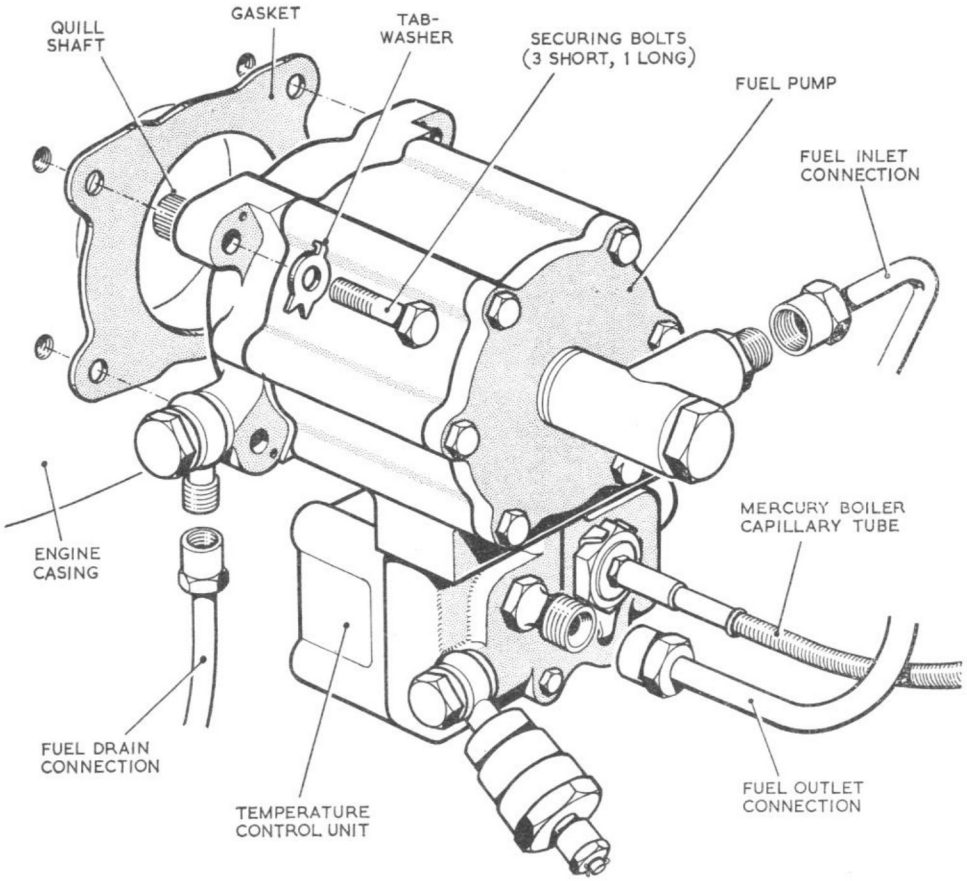


Fig. 4. Removing the fuel pump complete with temperature control unit

sum subtract the length of the burner barrel established in (1).

(6) The figure finally obtained represents the burner sit-back in the combustion chamber and will give an indication of the number of adjusting gaskets required.

Removing the fuel pump

15. (1) Remove the front end cover (Sect. 5, Chap. 7).

(2) Release the clip securing the temperature control capillary tube to the flexible oil cooler pipes.

(3) Sever the locking wire, then release the union nuts retaining the two flexible oil cooler pipes, and remove both pipes completely.

(4) Release the clips securing the Firewire to the fuel pump inlet and delivery pipes.

(5) Sever the locking wire, then release the union nuts securing the fuel pump delivery pipe to the temperature control and the burner body, and remove the pipe completely.

(6) Sever the locking wire, release the union nuts securing the fuel pump inlet pipe at the fuel pump and the central beam, and remove the pipe completely.

(7) Sever the locking wire and release the union nut securing the fuel drain pipe to the union on the fuel pump body.

(8) Release the four bolts and tabwashers securing the fuel pump to the engine auxiliaries mounting plate, then withdraw the pump complete with temperature control, taking care to retain the fuel pump mounting gasket and the drive quill.

Note . . .

Care must be taken during all these operations to ensure that the temperature control capillary tube is not bent unnecessarily, otherwise the tube may be fractured.

(9) Support the fuel pump, release the three bolts and tabwashers securing the temperature control to the pump body, and carefully part the two assemblies taking care to retain the two O-rings recessed into the temperature control body.

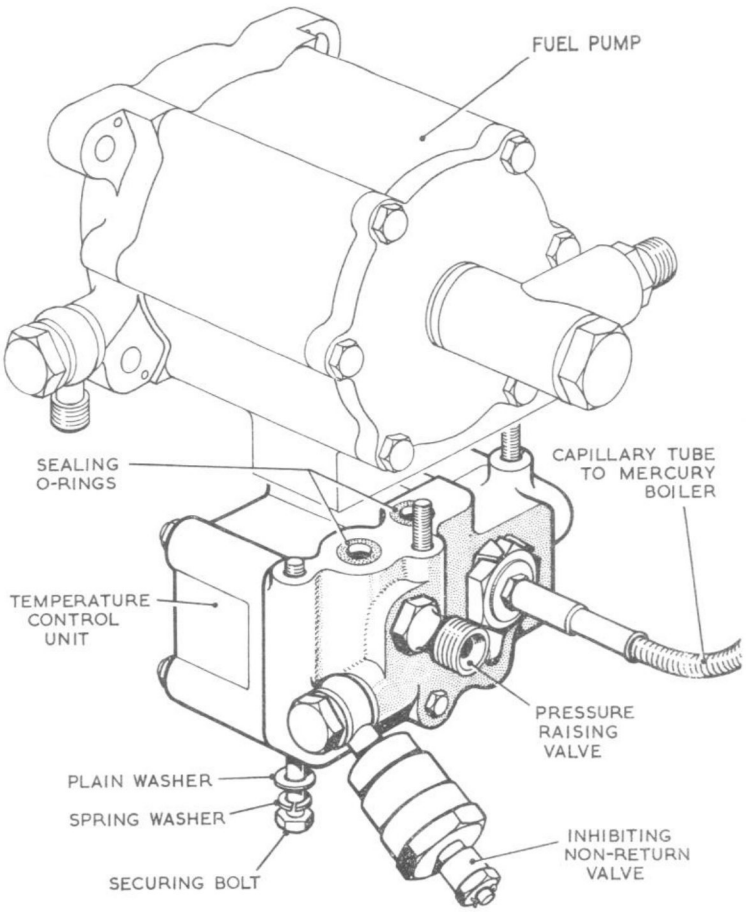


Fig. 5. Removing the temperature control unit from the fuel pump

(10) Unscrew the pressure raising valve from the temperature control body taking care to retain the bonded sealing washer.

(11) Using a suitable length of locking wire, support the temperature control body so that no undue strain is thrown on the capillary tube. and finally, wire the pressure raising valve to the fuel pump.

Caution . . .

The pressure raising valve and the fuel pump are calibrated and fitted as a matched set, carrying identical serial numbers; it is therefore vitally important to ensure when changing fuel pumps that the correct pressure raising valve is fitted.

Refitting the fuel pump

16. (1) If the fuel pump is a replacement unit. check that the associated pressure raising valve carries an identical serial number, then screw the valve into the temperature control body, having first fitted a bonded sealing washer.

(2) Place the two sealing O-rings in position in their respective recesses in the temperature control mounting face, then fit the temperature control body on the fuel pump and secure with three bolts and tabwashers.

(3) Engage the fuel pump drive quill with the driving member on the oil pump gear, and position the pump mounting gasket on the auxiliaries mounting plate; then offer up the pump and secure it in position with four bolts and tabwashers.

Note . . .

The lower left-hand fuel pump securing bolt viewed from the front is shorter than the other three.

(4) Reconnect the fuel drain pipe at the fuel pump body and refit the fuel pump inlet and delivery pipes. Do not forget to refit the Firewire clips and to securely wirelock the pipe union nuts.

(5) Refit the two flexible oil cooler pipes. Do not forget to refit the temperature control capillary tube clip, and to securely wirelock the pipe union nuts.

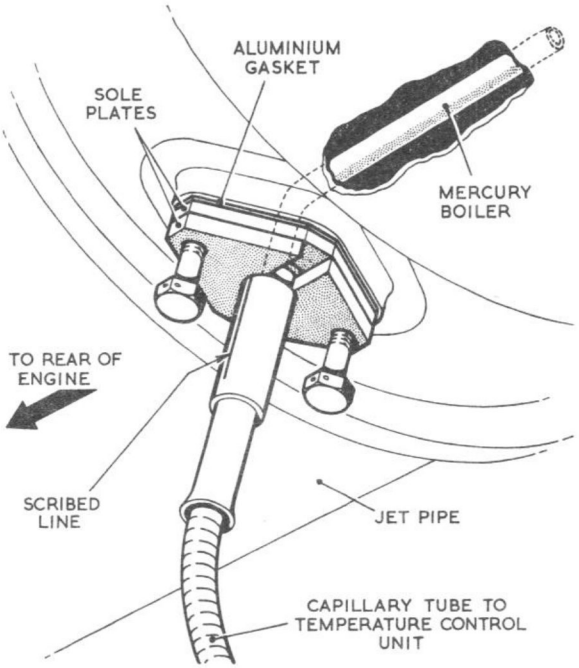


Fig. 6. Removing the temperature control mercury boiler

(6) Finally, bleed the fuel system (Sect. 3, Chap. 1), and refit the front end cover (Sect. 5, Chap. 7).

Removing the temperature control

17. (1) Remove the front end cover (Sect. 5, Chap. 7).

(2) Remove the rear end cover (Sect. 5, Chap. 7).

(3) Remove the fuel pump and temperature control complete (para. 15).

(4) Release the two bolts securing the mercury boiler to the exhaust cone and withdraw the boiler complete with its plain and slotted retaining plates and aluminium gasket.

Note . . .

Should any difficulty be experienced in releasing the mercury boiler retaining bolts spray each bolt with penetrating fluid (oil OM-21 plus 10% kerosine grade B) and allow to soak for half an hour before attempting to unscrew.

(5) Free the temperature control capillary tube completely by releasing the retaining clips.

Note . . .

Care must be taken during all these operations to ensure that the temperature control capillary tube is not bent unnecessarily, otherwise the tube may be fractured.

(6) Detach the temperature control from the fuel pump (para. 15, sub-para. (9)), and remove the assembly from the power plant completely.

Fitting the temperature control

18. (1) If the temperature control is a replacement unit, transfer the pressure raising valve and bonded seal from the defective unit.

(2) Assemble the temperature control to the fuel pump (para. 16, sub-para. (1)).

Caution . . .

The three bolts securing the temperature control to the fuel pump vary in length and unless refitted correctly will damage the pump casing. Viewed from the front, the bolt lengths are as follows: left-hand 2·25 in.; centre 2·45 in.; and right-hand 2·0 in.

(3) Secure the fuel pump and temperature control to the engine auxiliaries mounting plate (para. 16, sub-para. (3)).

(4) Lay the temperature control capillary tube in position and assemble the plain and slotted retaining plates to the mercury boiler.

(5) Place the aluminium washer in position on the exhaust cone, then insert the boiler complete with its retaining plates, making quite sure the tip of the bulb is facing directly into the exhaust stream.

(6) Check that the two setting marks on the shank of the boiler (Mod. MO 125) are aligned with the retaining bolts (fig. 7) then smear the retaining bolts with a little molybdenum disulphide and securely tighten down.

(7) Check that the run of the capillary tube is free and without tension, then refit the four retaining pipe clips.

WARNING . . .

Do not under any circumstances attempt to adjust or alter the temperature control setting.

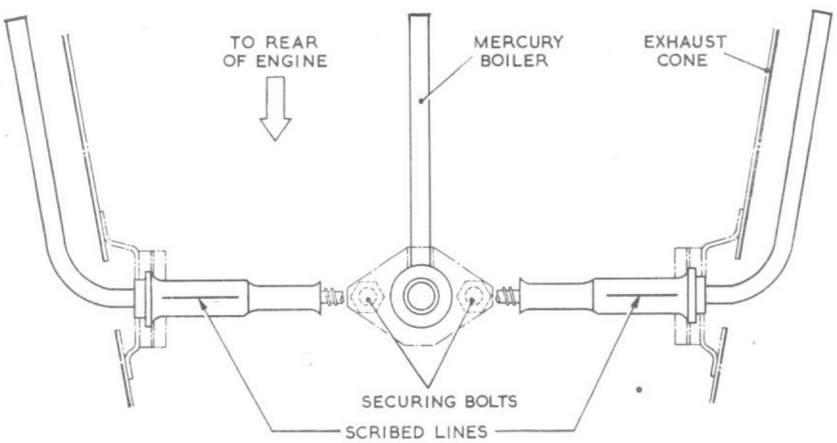


Fig. 7. Alignment of temperature control mercury boiler

Chapter 4

IGNITION AND ELECTRICAL SYSTEMS

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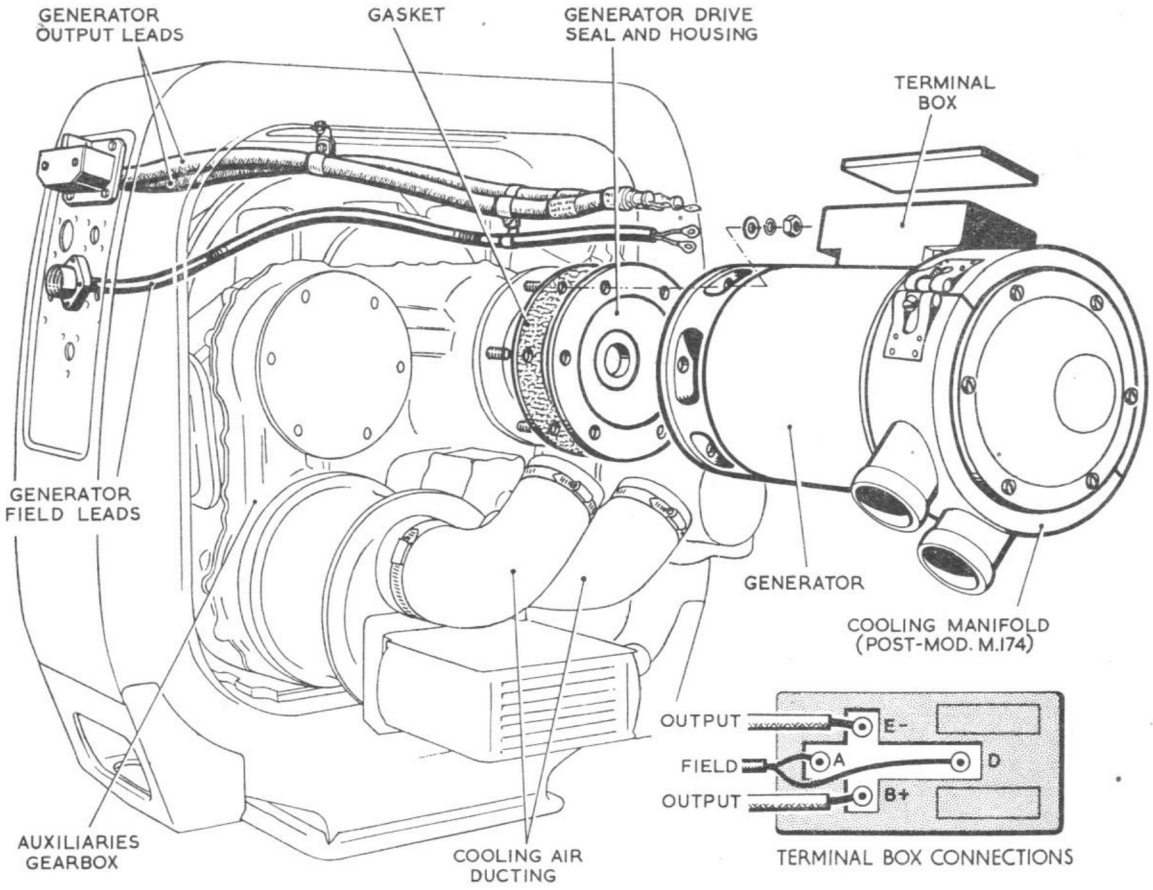

Fig. 1. Removing the generator and the generator drive housing seal (Post-Mod. M174)

Removing the d.c. generator (fig. 1)

1. (1) Remove the two screws and the Dzus fastener securing the generator terminal box lid.

(2) Disconnect the generator leads from the terminals within the box, then refit the lid.

(3) Slacken the two hose clips securing the air ducts to the generator cooling manifold, then remove the hoses from the manifold.

(4) Supporting the generator, remove the six nuts, spring washers and plain washers that secure the generator to the studs, then discard the generator gasket.

Fitting the d.c. generator

2. (1) Fit a replacement fibre gasket over the generator mounting studs, then slide the generator, terminal box uppermost, over the studs and carefully engage the splines in the quill shaft. Fit the six stiffnuts and plain washers (Pre-Mod. M.174) or the six nuts, spring washers and plain washers (Post-Mod. M.174).

(2) (*Pre-Mod. M.*174). Assemble the manifold halves on the generator with the air duct stub facing the blower unit. Fit the four bolts, plain washers and stiffnuts, lightly clamping the manifold to permit rotation. Place the air duct over the manifold stub and tighten the hose clip. Ensuring that the air duct is not twisted, tighten the four stiffnuts evenly to secure the manifold assembly.

(3) (*Post-Mod. M.*174). Assemble the manifold halves on the generator with the two air duct stubs facing the blower unit. Fit the two capscrews, lightly clamping the manifold to permit rotation. Place the air ducts over the manifold stubs and tighten the hose clips. Ensuring that the air ducts are not twisted, tighten the two capscrews evenly to secure the manifold assembly.

(4) Remove the two screws and the Dzus fastener securing the terminal box lid; then secure the generator field leads to the terminals A and D, and secure the positive lead to terminal B, and the negative lead to terminal E. Fit the lid and secure it with the screws and the Dzus fastener.

Removing the generator drive housing seal (fig. 1)

3. (1) Remove the generator (para. 1).

(2) Using as large a pin punch as possible, carefully punch the two spring pins out through the back of the generator drive mounting face in the auxiliary gearbox.

(3) Remove the three bolts securing the seal housing to the auxiliary gearbox.

(4) Lift off the seal housing and discard the gasket.

(5) Extract the circlip and press the seal from the seal housing.

Fitting the generator drive housing seal

4. (1) Ensure that the drive housing is clean, then carefully press in the new seal, plain side toward the open end of the drive housing bore.

(2) Fit the circlip.

(3) Place a new gasket on the drive housing.

(4) Align the dowel holes in the drive housing with the mating holes in the auxiliary gearbox, then secure lightly with the three bolts.

(5) Carefully punch the two spring pins into the dowel holes until they are just below the surface of the drive housing and finally tighten the three bolts.

(6) Fit the generator (para. 2).

Removing the generator terminal block

5. (1) Remove the two stiffnuts securing the generator positive and negative leads to the terminals inside the central beam.

(2) Remove the two bolts, spring washers and plain washers securing the terminal block cover.

(3) Detach the cover and the two stiffnuts retaining the aircraft leads on the terminals.

(4) Remove the four stiffnuts, plain washers and bolts securing the terminal block to the central beam.

Fitting the generator terminal block

6. (1) Locate the terminal block at the aperture in the central beam, and pass the four bolts through the terminal block platform and the central beam.

(2) Fit the four plain washers and stiffnuts.

(3) Fit the generator positive and negative leads on the appropriate terminals, then fit the two stiffnuts.

(4) Connect the aircraft leads to the appropriate terminals and fit the terminal block cover with the two bolts, spring washers and plain washers.

Removing the igniter plug (fig. 2 and 3)

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. Affix a warning notice to the appropriate switch.

7. (*Pre-Mod. M.*101). Unscrew the ignition lead from the gland nut, then unscrew the nut and withdraw the igniter plug.

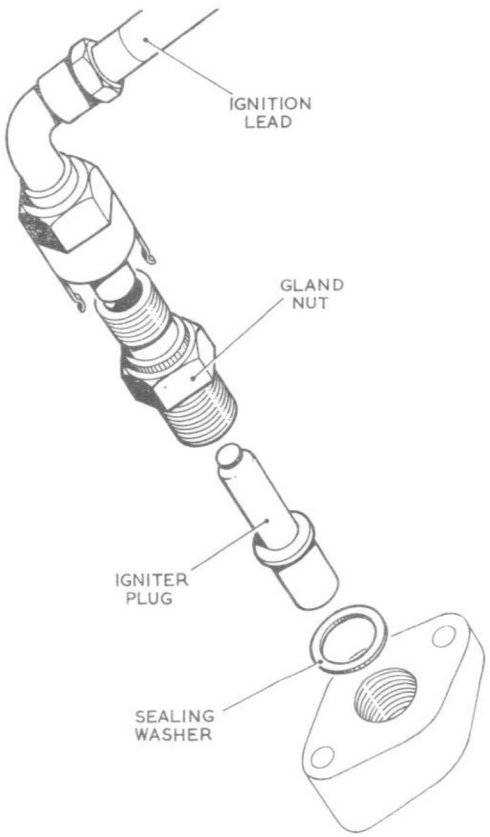

Fig. 2. Removing the igniter plug (Pre-Mod. M101)

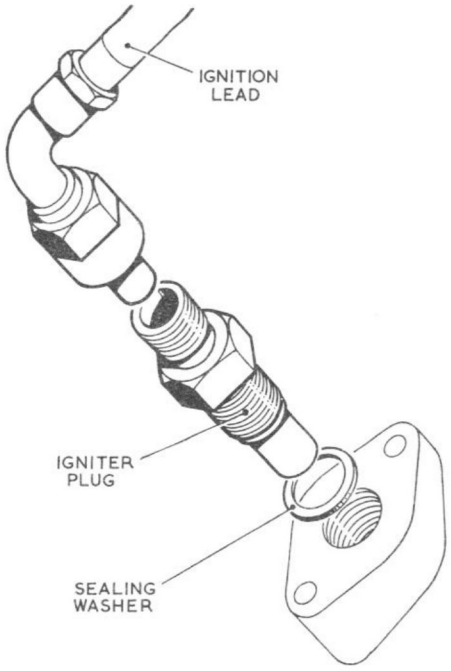

Fig. 3. Removing the igniter plug (Post-Mod. M101)

8. (*Post-Mod. M.*101). Cut the locking wire, unscrew the lead from the igniter plug, then unscrew the plug. Discard the plug sealing washer.

Fitting the igniter plug

9. (*Pre-Mod. M.*101). Place a new sealing washer on the igniter plug and insert the plug into the suspension plug. Screw in the gland nut and connect the ignition lead.

10. (*Post-Mod. M.*101). Place a new sealing washer on the igniter plug and screw the plug into the suspension plug. Connect the lead and wire-lock.

Removing the burner h.p. cock actuator

11. (1) Cut the locking wire and release the electrical cable at the socket connection on the burner actuator.

(2) Release the two nuts, plain and spring washers and withdraw the actuator downward, carefully noting the splined coupling on the actuator spindle.

(3) Remove the splined coupling from the actuator spindle.

Fitting the burner h.p. cock actuator (fig. 4)

12. (1) Energize the terminal pins A and B in the actuator connection socket to traverse the actuator spindle in a clockwise direction, and check that the mark inscribed on the spindle coincides with the mark X on the actuator body as shown in fig. 4. Now energize terminal pins A and C to reverse the spindle in an anti-clockwise direction and check that the inscribed mark on the spindle coincides with the mark Y on the actuator body.

Note . . .

The identification letters of the terminal pins are moulded at the base of the pins in the electrical socket. Pin D is for the location of the electrical plug only.

(2) Turn the burner valve spindle until the inscribed mark on the spindle coincides with the lines inscribed on the burner body-end plate.

(3) Motor the actuator in a clockwise direction (connection to pin A and pin B) until it cuts out; fit the splined coupling on the actuator spindle and offer the actuator up to the burner, carefully engaging the coupling with the burner valve spindle. Ensure that the burner valve spindle is not rotated during this operation.

(4) Secure the actuator to the burner with two plain and spring washers and two nuts.

(5) Connect the electrical cable to the actuator socket connection and securely wire-lock.

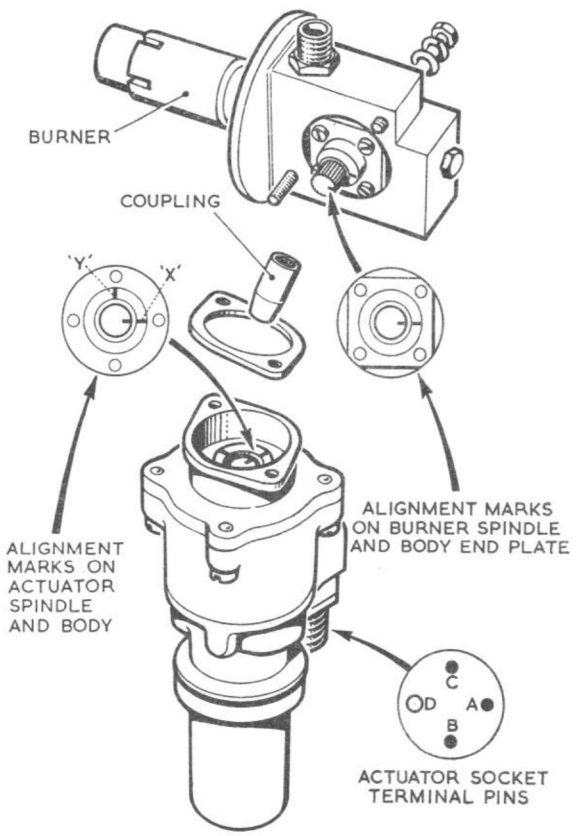

Fig. 4. Aligning the burner and actuator

Removing the jet pipe thermocouples (fig. 5)

13. (1) Release the union nuts securing the thermocouples to their respective bosses on the exhaust cone, then carefully withdraw each thermocouple from the cone. The harness arrangement does not make it practical to remove the thermocouples individually.

Note . . .

Should any difficulty be experienced in releasing the thermocouple nuts, spray each boss and nut with penetrating fluid (Oil OM-21 plus 10 per cent kerosine, Grade B) and allow to soak for half an hour before attempting to unscrew.

(2) Disconnect the thermocouple harness at the terminal block on the motorised air pump bracket. Release the clips securing the harness, then remove it complete with the thermocouples.

(3) Withdraw the four thermocouple leads from the oil resistant sheath.

(4) Under no circumstances should the thermocouples be dismantled or the leads interfered with or reduced in length. Each thermocouple and lead should be examined for damage and if in good condition checked for continuity and insulation.

Testing the jet pipe thermocouples

14. (1) The resistance value of each thermocouple, measured from the thermocouple terminal block to the contact end must be as shown in the following list:—

Thermocouple (Type number)	Resistance (ohms)
F.1223	0·62 ± 0·06
F.1225	0·99 ± 0·07
F.1226	0·78 ± 0·06
F.1227	1·35 ± 0·09

(2) The insulation resistance of each thermocouple measured between the wires and the sheath by a 250 volt megger must not be ◄ less than 100 ohms at 650°C ± 50°C. ►

(3) Thermocouples which become damaged or fail to pass the above tests should be considered unserviceable. Do not attempt to service a defective thermocouple; discard it and install a new one.

Fitting the jet pipe thermocouples (fig. 5)

15. (1) Lay the four thermocouple leads together and bind the ends together with a suitable length of locking wire.

(2) Powder the interior of the protective hose with french chalk, thread the lock-wire through the hose and then draw the four leads into the hose.

(3) Smear the threads of the thermocouple bosses on the exhaust cone with a little molybdenum disulphide ZX-28, and insert each couple into the boss. It is most important to ensure that the locating key on each couple is correctly located in the slot in the boss.

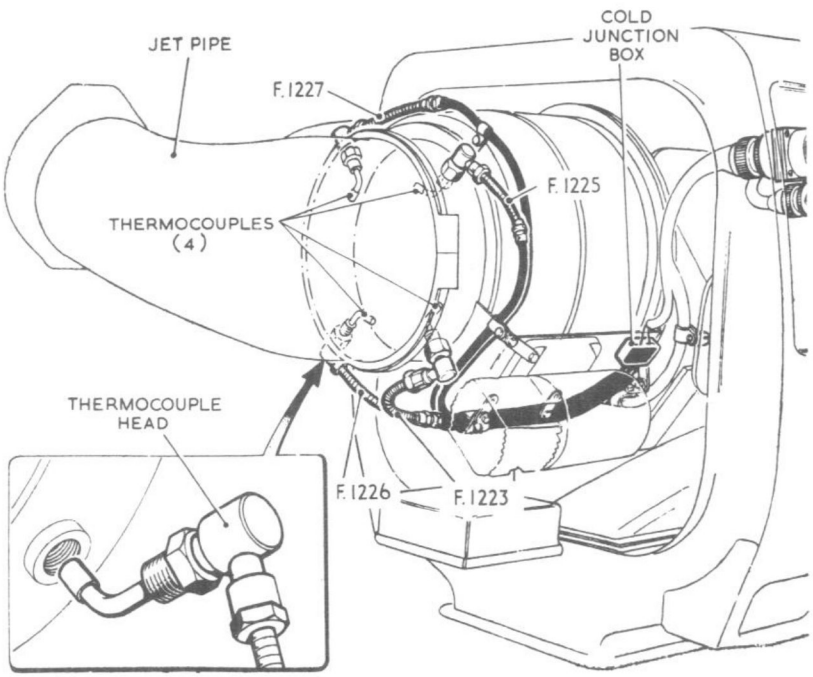

Fig. 5. Fitting the jet pipe thermocouples

(4) When satisfied that each thermocouple is correctly located within the boss, securely tighten the retaining union nut.

(5) Lay the thermocouple harness in position in the power plant and loosely secure the retaining cable clips.

(6) Connect the harness to the thermocouple terminal block; distribute the harness evenly through the clips and, when satisfied that it is correctly positioned, securely tighten each clip.

(7) Examine the assembly for correct positioning of the harness, the security of all cable clips and then finally carry out the checks described in para. 14.

Removing the hours counter

16. (1) Disconnect the leads at the back of the instrument; remove the two stiffnuts and the fixing bracket, then push the counter through the front of the mounting bracket.

Note . . .

Prior to Mod. M.115, the hours counter is held by three screws in the bezel locating in tapped holes in a ring behind the mounting bracket.

Fitting the hours counter

17. (1) (Pre-Mod. M.115). Pass the counter through the hole in the mounting bracket; slide the ring over the counter, aligning the screw holes, then fit the three screws.

(2) (Post-Mod. M.115). Pass the counter through the hole in the mounting bracket, fit the fixing bracket over the two studs in the counter, and fit the two stiffnuts, not milled edge nuts.

(3) Connect the leads to the appropriate terminals on the counter.

Removing the starts counter

18. (1) Disconnect the leads at the back of the counter.

(2) Remove the two screws and plain washers securing the counter to the mounting bracket and remove the counter.

Fitting the starts counter

19. (1) Position the counter behind the mounting bracket and align the screw holes.

(2) Fit a plain washer on each screw and fit the screws through the mounting bracket into the counter.

(3) Connect the leads at the back of the counter.

Note . . .

When fitting a replacement counter, remove and discard the reset knob.

Removing the E.23 connection plug

20. (1) Cut the wire-locking and disconnect the cable sockets on both sides of the plug.

(2) Remove the four stiffnuts securing the plug to the central beam.

Fitting the E.23 connection plug

21. (1) Position the plug at the aperture in the central beam, with the four screws protruding through the beam.

(2) Fit the four stiffnuts inside the central beam.

(3) Connect the cable sockets to the plug and wire-lock.

Removing the generator field plug

22. (1) Cut the wire-locking and disconnect the cable socket on each side of the plug.

(2) Remove the four stiffnuts securing the plug to the central beam.

Fitting the generator field plug

23. (1) Position the plug at the aperture in the central beam, with the four screws protruding through the beam.

(2) Fit the four stiffnuts inside the central beam.

(3) Connect the cable sockets to the plug and wire-lock.

Removing the igniter plug connector

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. Affix a warning notice to the appropriate switch.

24. (1) Cut the wire-locking and disconnect the ignition lead from the connector.

(2) Remove the four stiffnuts and the locking tab, then remove the four bolts, three plain washers and the second locking tab.

(3) Extract the connector from the central beam.

Fitting the igniter plug connector

25. (1) Place the connector in the aperture in the central beam, then pass one bolt fitted with a tabwasher through the connector flange and the central beam.

(2) Assemble the second tabwasher and a stiffnut on the bolt.

(3) Fit a plain washer to each of the three remaining bolts, locate the bolts and fit the stiffnuts.

(4) Securely tighten the four stiffnuts.

(5) Connect the ignition lead to the connector and wire-lock.

Removing and examining the electrical harness

26. (1) Release the appropriate cable clips.

(2) Disconnect the harness electrical connections from the appropriate accessory or component.

(3) Disconnect the harness electrical connection from the bulkhead plug.

(4) Remove the harnesss.

27. Examine the harness as follows:—

(1) Examine the cable outer sheathing for damage, chafing, perishing and oil saturation. Reject the harness for any of these defects.

(2) Check the sockets and knurled nuts for damage and the condition of the mating threads.

28. Check the continuity of the harness as follows: — Subject the serviceable harnesses to a lamp and battery test. Flex the cable throughout its length while testing; reject the cable if the lamp flickers or if there is a drop of light intensity.

29. Check the insulation resistance of the harness as follows: — Use a 500 volt megger for this test and set the rotary switch to 'Insulation Resistance'; the reading obtained should not be less than 2 megohms.

Fitting the electrical harness

30. Check the harness continuity and insulation resistance (para. 28 and 29) and assemble into the power plant as follows: —

(1) Lay the harness in position on the power plant and connect the electrical connections to their appropriate accessories or components.

(2) Retain the harness loosely with its appropriate cable clips. It may prove helpful to assemble the clips to the harness before laying it in position.

(3) Check that the harness is evenly distributed through the clips and then securely tighten each clip.

(4) Examine the assembly for the correct positioning of the harness and check the security of all harness clips.

(5) Carry out a functional test of the components fitted to the harness.

Chapter 5

HYDRAULIC SYSTEM

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Removing the hydraulic pump

1. (1) Place a drip tray under the unit, then cut the wire-locking and disconnect the aircraft hydraulic pipes at the A.A.P.P. self-sealing couplings. Disconnect the inlet, outlet and by-pass hoses and the pump seal drain pipe from the unions in the hydraulic pump.

(2) Blank the unions and the open ends of the pipes and hoses.

(3) Supporting the pump, remove the six nuts, spring washers and plain washers from the pump mounting studs.

(4) Ease the pump out of engagement with the muff coupling and discard the pump gasket.

Note . . .

The muff coupling may remain in the gearbox or be withdrawn with the pump. Refit the muff coupling to the gearbox.

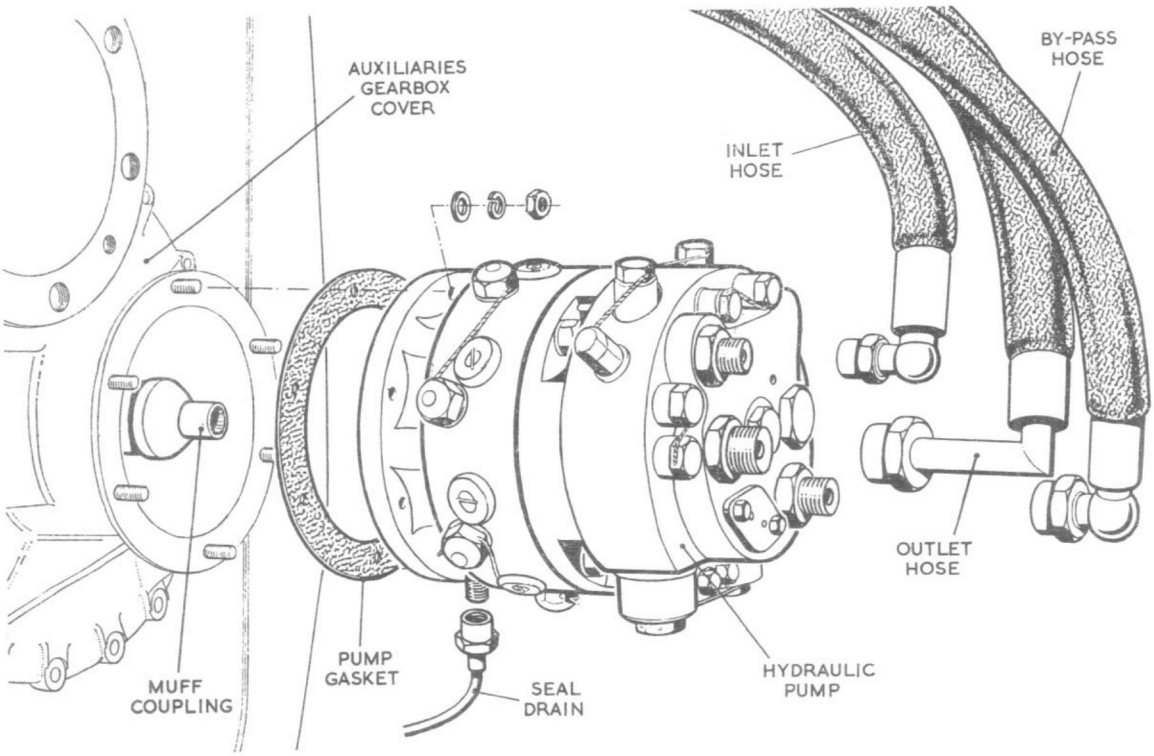

Fig. 1. Fitting the hydraulic pump

Fitting the hydraulic pump (fig. 1)

2. (1) Position a replacement pump gasket over the gearbox studs, then slide the hydraulic pump, with the seal drain downwards, on the studs in the gearbox to engage the muff coupling.

(2) Fit the six plain washers, spring washers and nuts to secure the pump on the studs.

(3) Connect the inlet, outlet and by-pass hoses and the seal drain pipe to the appropriate unions in the pump and the inlet pipe in the aircraft to the A.A.P.P. self-sealing inlet coupling. Wire-lock the pipe connections.

(4) Cut the wire-locking and remove the vent plug from the hydraulic pump and the cover plate from the spare generator drive on the gearbox cover. Rotate the spare generator driving gear clockwise as viewed; continue until an air-free flow of fluid is emitted from the vent.

(5) Refit the vent plug and the cover plate and wire-lock securely.

(6) Reconnect the two pipes from the aircraft to the self-sealing couplings and wire-lock.

Removing a self-sealing coupling

3. (1) Sever the wire-locking and remove the flexible pipe from the appropriate self-sealing coupling.

(2) Remove the four stiffnuts, bolts and plain washers, then lift off the coupling and the gasket. Discard the gasket.

Note . . .

The coupling serving the hydraulic pump inlet hose is secured by six stiffnuts, bolts and plain washers.

Fitting a self-sealing coupling

4. (1) Position a replacement gasket on the underside of the self-sealing coupling and assemble the coupling to the central beam.

(2) Place the plain washers under the bolt heads, fit the bolts down throught the coupling flange and the central beam, then fit and tighten the stiffnuts.

(3) Connect the hydraulic flexible hose and wire-lock.

Chapter 6

FIRE PREVENTION SYSTEM

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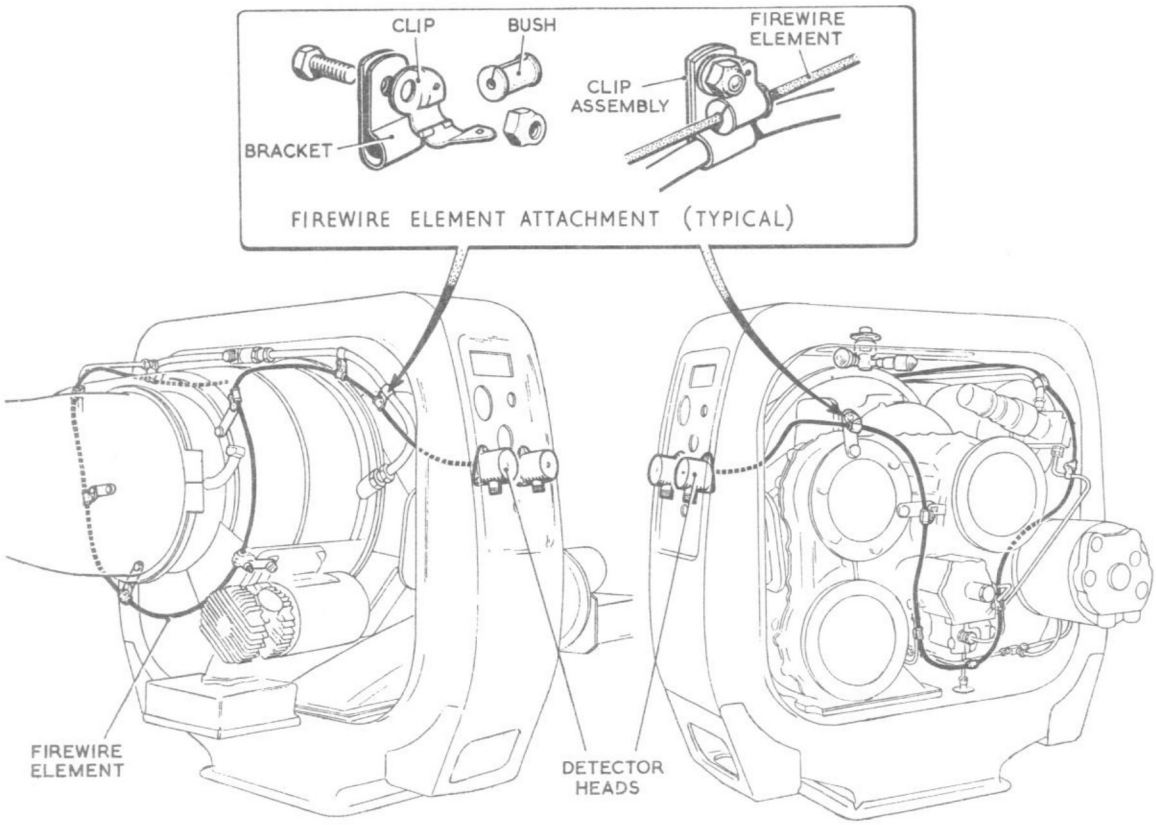

Fig. 1. Layout of the Firewire system

Removing the Firewire element

1. (1) Unscrew the Firewire from the back of the two fire detector bulkhead fittings and discard both sealing washers.

(2) Release the Firewire from the 24 securing clips.

Fitting the Firewire element

2. (1) Position the Firewire in the 24 securing clips, taking extreme care to avoid kinks or sharp bends. The run of the Firewire is shown in fig. 1.

(2) Using new sealing washers, connect the Firewire to the two fire detector bulkhead fittings and torque load the attachment nuts to between 80 and 100 lb in.

(3) Tighten the securing clips.

Removing a fire detector bulkhead fitting

3. (1) Unscrew the Firewire from the back of the fitting.

(2) Remove the three stiffnuts and bolts securing the bulkhead fitting to the central beam.

Fitting a fire detector bulkhead fitting

4. (1) Locate the bulkhead fitting at the appropriate aperture in the central beam.

(2) Pass the three bolts through the flange of the fitting and the central beam and fit the stiffnuts.

(3) Using a new sealing washer, connect the Firewire to the back of the fitting.

Removing the fire extinguisher connection union

5. (1) Cut the wire-locking and unscrew the coupling nut on the connector.

(2) Remove the four bolts and stiffnuts holding the connection union to the central beam.

(3) Lift off the connection union and discard the gasket.

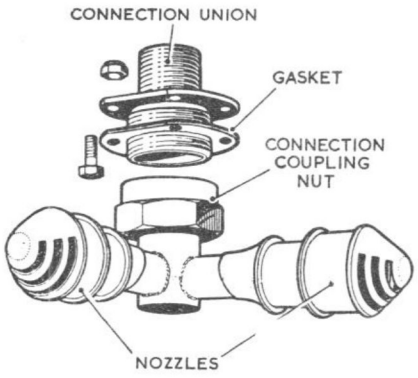

Fig. 2. Removing the fire extinguisher connection union

Fitting the fire extinguisher connection union

6. (1) Assemble a replacement rubber gasket on the connection union.

(2) Fit the union to the central beam.

(3) Pass the four bolts from the underside of the central beam and through the connection union.

(4) Fit the four stiffnuts.

(5) Position the connector and loosely screw up the coupling nut.

(6) Ensuring that the connector nozzles are facing forward and equally disposed about the A.A.P.P. centre line, tighten and wire-lock the coupling unit.

Chapter 7

NACELLE

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Introduction

1. This chapter describes those operations required to remove and refit the detachable parts of the power plant nacelle either for repair or renewal, or to gain access to the engine and the auxiliaries.

2. When removing components associated with the a.a.p.p. it is assumed that the appropriate bulkhead panel will be opened and that all locking devices, cable clips etc., and all nuts, bolts etc. will be removed before attempting to remove the component. Before removing components with electrical connections, ensure that the appropriate circuit breaker is out, and affix a warning notice to the circuit breaker panel.

3. No attempt should be made to remove the engine from the nacelle central beam assembly. If a beam is damaged to such an extent that repairs would involve removing the engine and the auxiliaries, then the power plant must be regarded as unserviceable.

Removing the front end cover

4. The front end cover is secured to the central beam assembly by eight Dzus fasteners. To remove the cover insert a screwdriver into the slotted head of each fastener, push and turn in an anti-clockwise direction. When released, the slots in the fastener heads will be vertical.

Fitting the front end cover

5. Place the cover on the central beam and secure in position with the eight Dzus fasteners. When secured, the screwdriver slots in the fastener heads will be in a horizontal position.

Removing the rear end cover

6. (1) Disconnect the wiring harness at the socket connection on the mounting bracket of the hours counter and the starts counter.

(2) Withdraw the two pip pins retaining the jet pipe shroud extention quill tube within the jet pipe shroud. The extension tube can now be withdrawn outboard of the aircraft skin.

Note...

The jet pipe shroud extension quill tube is sealed at both ends by rubber O-rings, and it may be necessary to impart a slight turning motion to the tube before it can be withdrawn.

(3) Knock down the ears of the locking tabwashers, and release the two bolts and nuts securing the jet pipe extension clamping ring halves. The jet pipe extension can now be lifted clear of the jet pipe elbow.

(4) Release the two bolts securing the mounting bracket for the hours counter and starts counter to the jet pipe shroud adapter ring, and re remove the hours and starts counters assembly; take care to retain the two distance pieces interposed between the mounting bracket and the adapter ring.

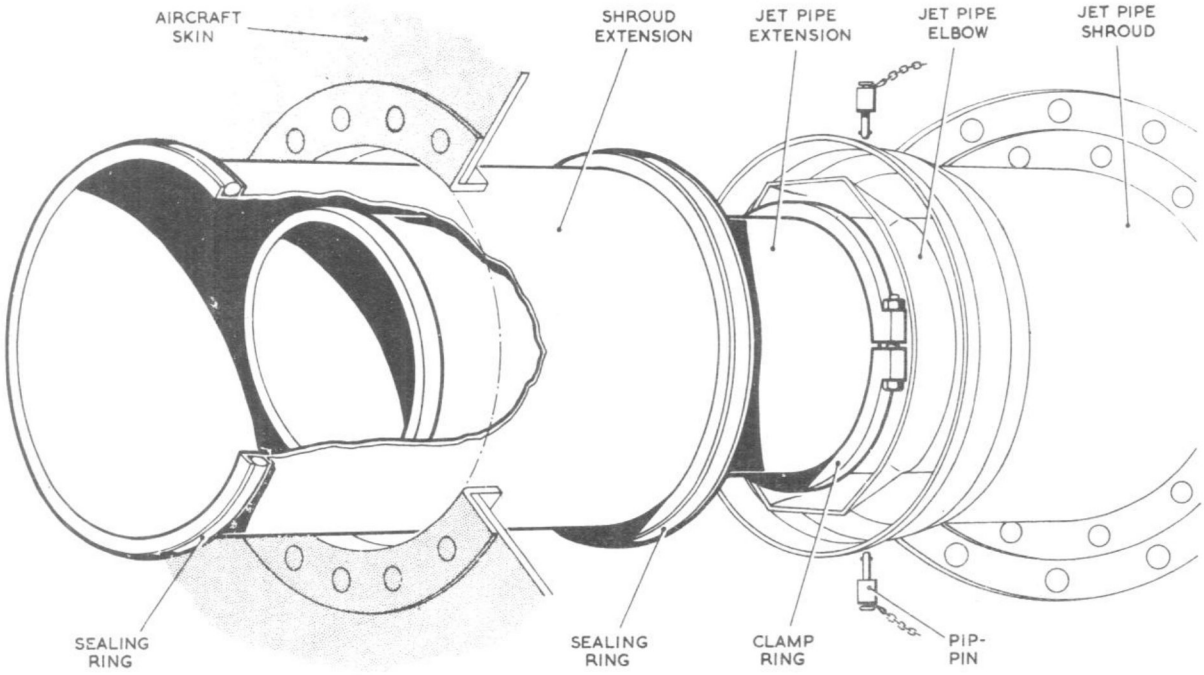


Fig. 1. Removing the jet pipe extension

(5) Remove the ten remaining bolts and plain washers securing the jet pipe shroud and the adapter ring to the rear end cover, then withdraw the shroud complete with adapter over the jet pipe elbow.

(6) Disconnect the three external drain pipes at their respective unions in the re-oil connection tray and remove the pipes completely.

(7) Release and withdraw the securing bolt retaining the third point mounting clevis in the aircraft. Push the rear end of the power plant upward just sufficiently to allow the clevis to clear the ball hitch in the aircraft; then, using a strap wrench on the plain portion of the mounting rod, unscrew the rod complete with the clevis, locknut, sealing tray and self-locking nut. Care should be taken to retain the loose O-ring within the sealing tray.

Caution . . .

From this point onward the power plant will be free to rock about the axis of the main mounting points and great care must be taken not to exert excessive leverage on either end of the unit.

(8) Finally, release the eight Dzus fasteners securing the rear end cover to the central beam, and withdraw the cover rearward over the jet pipe.

Fitting the rear end cover

7. (1) Place the rear end cover in position over the jet pipe elbow and secure the retaining Dzus fasteners.

(2) Place the sealing tray and O-ring in position on the third point mounting rod;

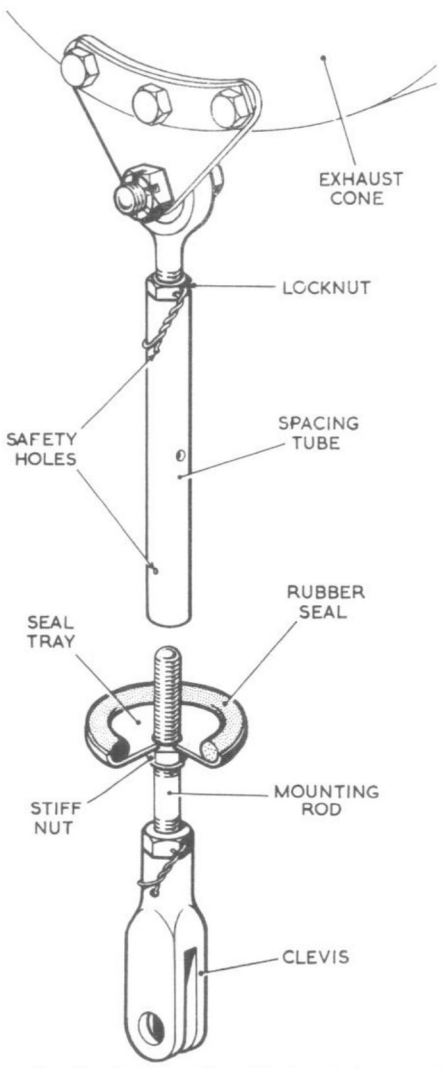


Fig. 2. Removing the third point mounting

screw the rod into the spacing tube on the power plant, then secure the clevis end in the aircraft.

(3) The third point mounting rod provides a means of adjusting the height of the jet pipe relative to the orifice in the aircraft skin; but provided that the jet pipe elbow, the clevis locknut and the sealing tray nut on the rod have not been disturbed, it should be possible to make the adjustment by screwing the rod further in or out of the spacing tube.

(4) To check that the height of the power plant is correctly adjusted, loosely position the jet pipe extension on the jet pipe elbow and ensure that the end of the extension is concentric within the orifice in the aircraft skin.

Note . . .

Should it prove necessary to move the third point clevis, insert a length of lockwire into the safety hole drilled laterally through the clevis body before finally securing the locknut; if the wire will pass through the body, the clevis must be re-positioned to engage a greater number of threads.

(5) Reconnect the drain pipes, external to the power plant, to the respective unions in the re-oil connection tray.

(6) Place the jet pipe shroud complete with the adapter ring over the jet pipe elbow making sure that the paint marks on the rear end cover and the adapter are correctly aligned; then secure in position with ten bolts and plain washers.

(7) Fit the two remaining bolts into the mounting bracket for the hours counter and the starts counter, with the two spacing washers beneath the bracket, then secure the complete assembly to the shroud ring adapter.

(8) Place the jet pipe extension in position on the jet pipe elbow; position the clamping ring halves over the flange of the jet pipe and its extension, and secure with two bolts, nuts and tabwashers.

Note . . .

The jet pipe clamping ring halves are manufactured in matching pairs and must be fitted as such. Each ring half has a serial number engraved on one face, and when the two halves are assembled, the two faces must correspond.

(9) Push the jet pipe shroud extension quill tube over the jet pipe extension from outside the boom, until it fits snugly inside the flange of the jet pipe shroud.

(10) Rotate the shroud extension until the two sets of holes in the shroud and its extension are correctly aligned, then fit the retaining pip pins.

(11) Reconnect the wiring harness at the socket connection on the mounting bracket for the hours counter and the starts counter.

(12) Finally check and ensure that all the components disturbed are securely wire-locked.

Removing the jet pipe elbow

8. (1) Remove the rear end cover as stated in para. 6.

(2) Sever the wire-locking and disconnect the drain pipe at the base of the jet pipe elbow.

(3) Knock down the ears of the locking tabwashers and release the two bolts and nuts securing the jet pipe clamping ring halves. The jet pipe can now be lifted clear of the power plant.

Fitting the jet pipe elbow

9. (1) Place the jet pipe elbow in position on the exhaust cone; position the clamping ring halves over the flanges of the jet pipe and exhaust cone, and secure with two bolts, nuts and tabwashers but do not, as yet, knock down the ears of the tabwashers.

Note . . .

The jet pipe clamping ring halves are manufactured in matching pairs and must be fitted as such. Each ring half has a number engraved on one face and when the halves are assembled, the two faces must correspond. For convenience and accessibility, the clamp ring securing bolts should be positioned at three o'clock and nine o'clock respectively.

(2) Place the rear end cover over the jet pipe elbow and secure in position on the central beam.

(3) Temporarily secure the jet pipe shroud complete with the adapter ring to the rear end cover, making quite sure that the paint marks on the shroud and the cover are correctly aligned.

(4) Using a rule, check that in the vertical plane, the jet pipe elbow is accurately centralised within the jet pipe shroud.

(5) When satisfied that the jet pipe is correctly positioned within the shroud, carefully

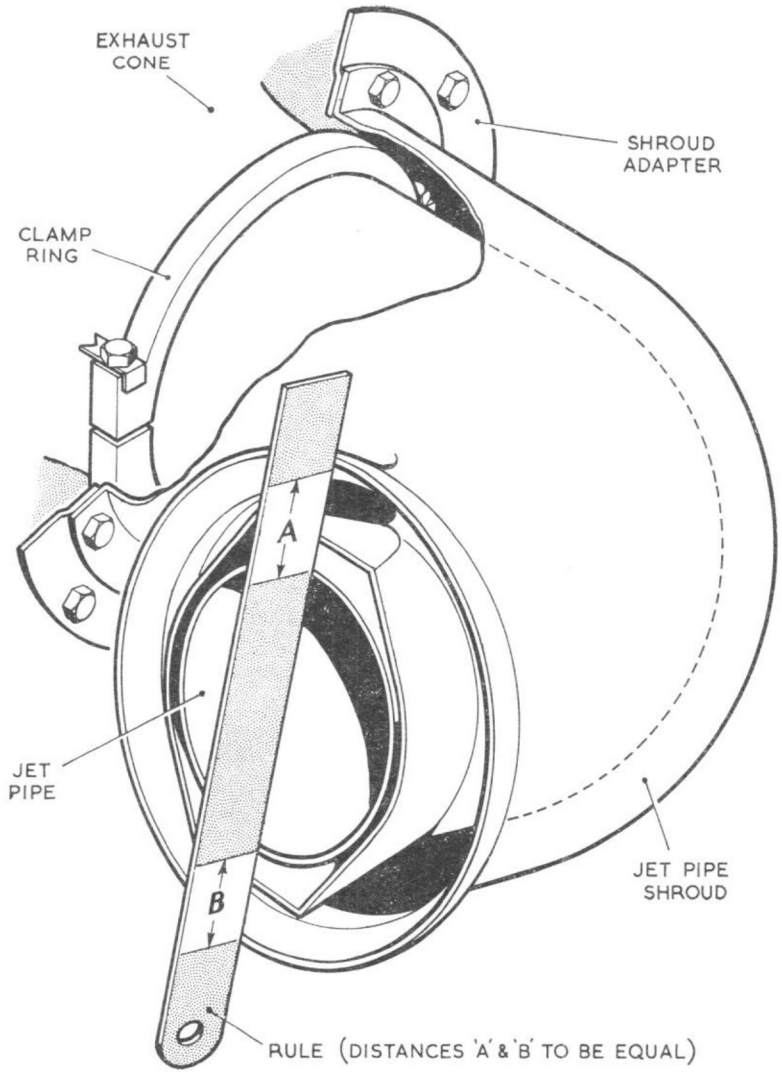


Fig. 3. Centralising the jet pipe

remove both the shroud and the rear end cover, then securely tighten the jet pipe clamping ring bolts, and knock down the ears of the locking tabwashers.

(6) Re-connect the jet pipe elbow drain pipe at the union at the base of the elbow and securely wire-lock.

(7) Finally refit the rear end cover and the jet pipe shroud as stated in para. 7.

Removing the re-oil valve tray

10. (1) Remove the rear end cover as stated in para. 6.

(2) Sever the wire-locking and disconnect the four drain pipes and the air pump test connection at the respective unions on the top face of the tray.

(3) Release the clip securing the temperature control capillary tube to the re-oil valve.

Caution . . .

Care must be taken during all these operations not to bend the temperature control capillary tube unnecessarily, otherwise the tube may be fractured.

(4) Drain the oil sump (Sect. 5, Chap. 2).

(5) Release the four bolts, plain washers and self-locking nuts securing the re-oil valve tray to the re-oil valve. Note the two wire locking tabwashers and the clip support bracket retained by two of the bolts.

(6) Withdraw the re-oil valve tray.

Fitting the re-oil valve tray

11. (1) Place the re-oil valve tray on the re-oil valve and secure in position with four bolts, plain washers and self-locking nuts. Care should be taken to ensure that the wire locking tabwashers and the clip support bracket are correctly fitted.

(2) Fit the re-oil pipe to the re-oil valve and the central beam.

(3) Fit the clip securing the temperature

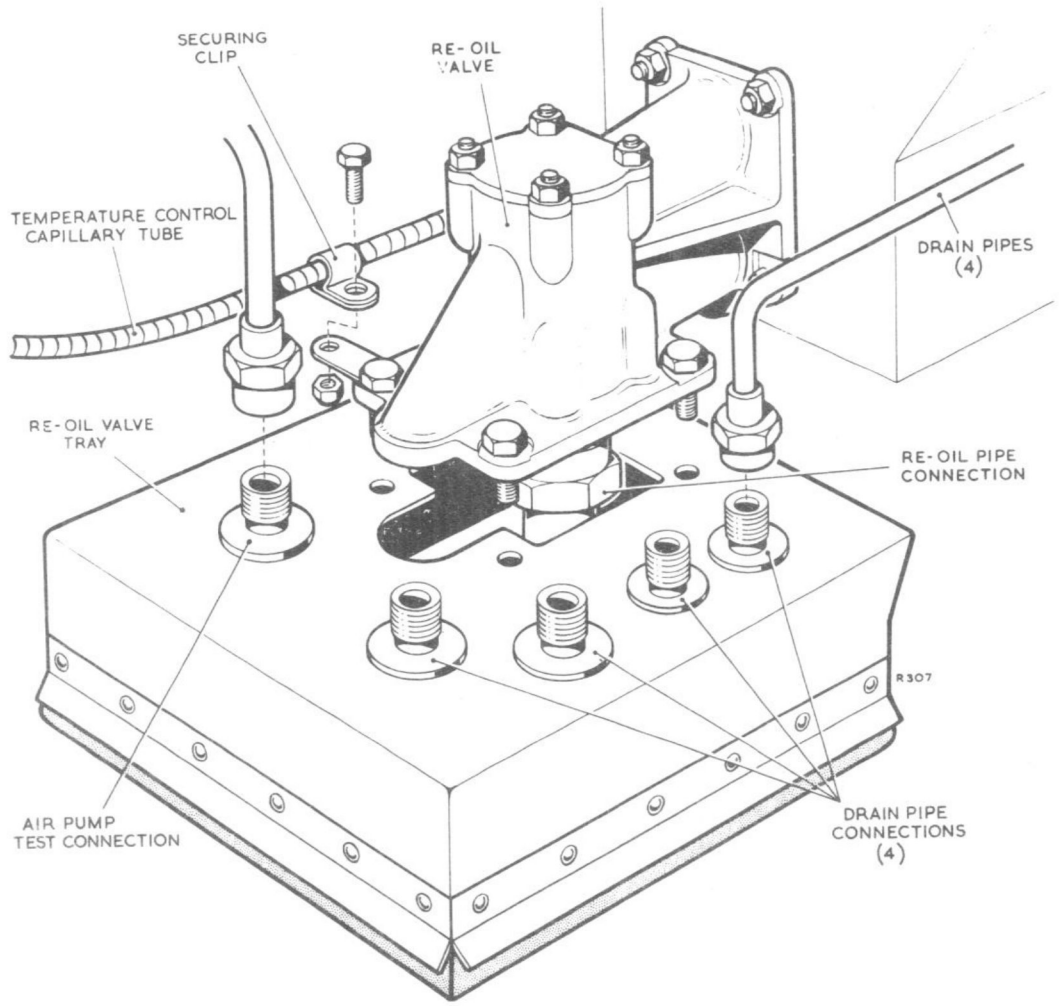


Fig. 4. Removing the re-oil valve tray

control capillary tube to the support bracket on the re-oil valve.

(4) Reconnect and securely wire-lock the four drain pipes and the air pump test connection at the respective unions on the top face of the re-oil valve tray.

(5) Refit the rear end cover as stated in para. 7.

(6) Refill the oil sump (Sect. 3, Chap. 1).

Renewing the bedding tape on the end covers and the re-oil valve tray

12. The front and rear covers and the re-oil valve tray are insulated from the other nacelle panels by strips of bedding tape riveted to the leading edges. To renew the bedding tape, proceed as follows:—

Renewing the tape on the end covers

13. (1) Using a $\frac{1}{8}$ in. (3 mm) drill, remove the heads from the retaining pop rivets and strip the tape from the cover.

(2) Cut a suitable length of new tape and lay in position along the edge of the cover.

(3) With a suitable tool, pierce a series of holes in the tape to correspond with the existing holes in the cover, then using a pair of scissors, cut a series of slots to fit round the male portion of the Dzus fasteners.

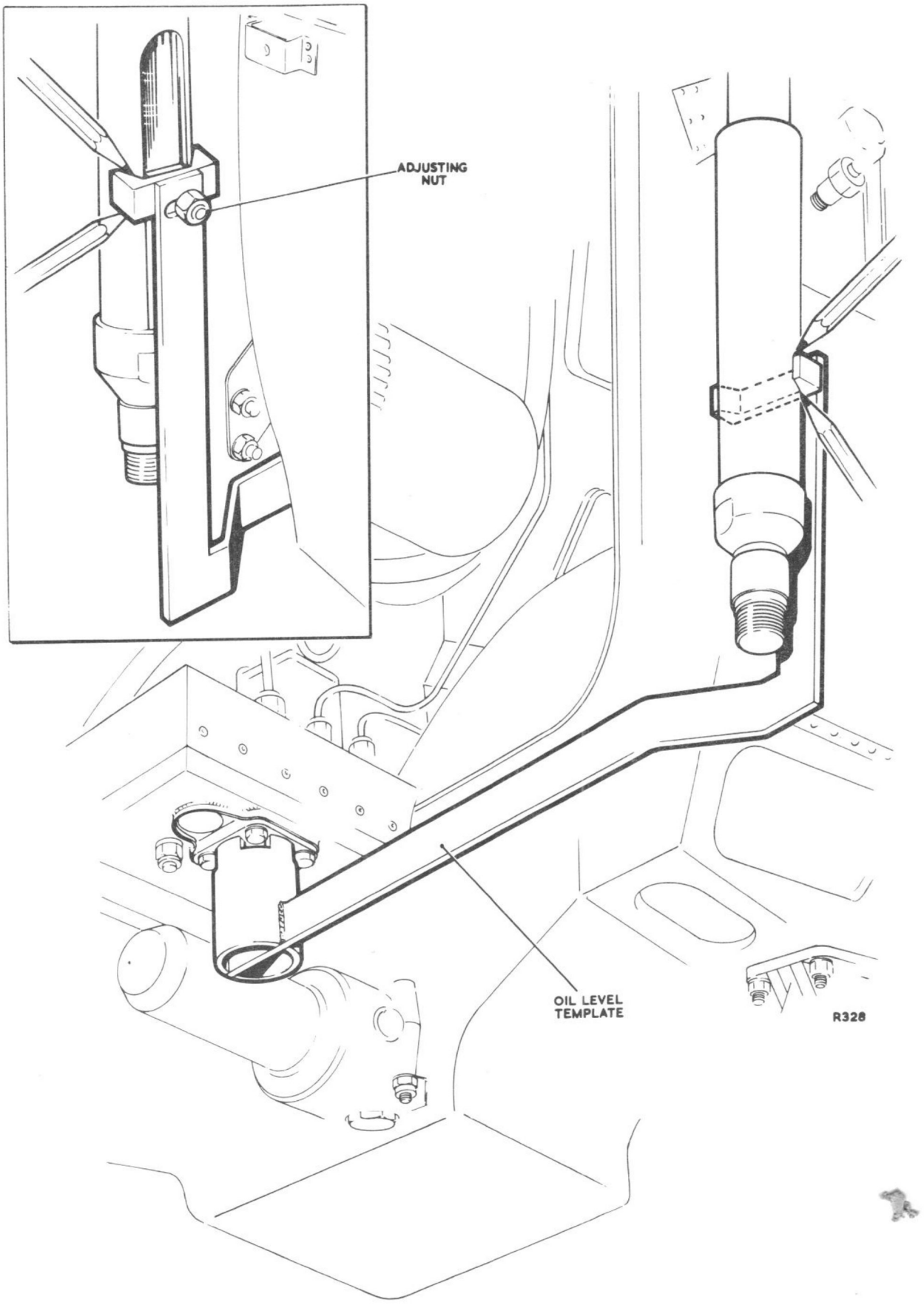
(4) Finally secure the tape to the cover with pop rivets and plain washers.

Renewing the tape on the re-oil valve tray

14. (1) Using a $\frac{1}{8}$ in. (3 mm) drill, remove the heads from the retaining pop rivets, then withdraw the plate washers from the inside edge of the tray and strip out the defective tape.

(2) Cut the new tape into suitable lengths, and sandwich between the inside edge of the tray and the appropriate plate washer.

(3) With a suitable tool pierce a series of holes in the tape to correspond with the existing holes in the tray and the plate washers, then finally secure all three with pop rivets.



◄ Fig. 5 Using the oil level template ►

Removing the re-oil filler assembly.

15.◄(1) Drain the oil system (para.1 of this section).

(2) Unscrew the filler cap from the re-oil filler assembly, cut and remove the locking wire from the pipe connection at the bottom of the assembly and remove the pipe.

(3) Remove the four bolts, washers, stiffnuts and the wire locking tab retaining the filler to the mounting brackets, and withdraw the filler from the engine complete with the 'P' clip.

Fitting the re-oil filler assembly.

16. (1) Fit the re-oil filler assembly to the top mounting bracket with the two bolts washers and stiffnuts.

(2) Slide the 'P' clip onto the bottom of the re-oil filler assembly and connect to the bottom mounting bracket with the two bolts, washers, stiffnuts and wire locking tab. The wire locking tab is to be positioned under the head of the lower bolt.

(3) Slacken the nut retaining the oil level indication portion of template (Ref.No. 64AF/17). Locate the template over the union connection on the adapter plate ensuring correct seating on the base of the plate with the bolt heads situated in the slots. Adjust the oil level indicator to fit into the window in the filler protection tube and tighten the retaining nut. Mark the tube on both sides of the window above and below the indicator. Remove the template and paint a black line 0.125 in wide above the top mark and below the bottom mark, these lines indicate the high and low oil levels.

(4) Re-fit the pipe to the re-oil filler assembly and the adapter plate wire lock the connections and fill the oil system (Sect.3. Chap.1). ►