MINOR REPAIRS

CONTENTS

Introduction

1 The following operations detail the procedure to be effected during repair of engine equipment. The equipment is identified by groups, details of which are given in the preliminary pages.

2 The special tools, test equipment and materials required are listed in Table 1 and are called up in the text by 'Table No. and Item No.' and are additional to those listed in Table 1 (Topic -1).

3 O-ring seals should be fitted in the dry condition and the exposed surface lubricated with grease, Item 7 (Table 1, Topic -1).

4 During assembly lubricate all threads with grease, Item 6 (Table 1, Topic -1).

TABLE 1 SPECIAL TOOLS, TEST EQUIPMENT AND MATERIALS

Item	Ref. No.	Part No.	Description
1		558-2-01663	Spanner - air valve sleeve removal (Group 7/E only)
2		-	* Circlip pliers, Anderton external MINI 1/4 in straight
3	Local manufacture	558-2-01662	Pressure test adapter (fig.1)
4	34A/9423147	-	AVPIN fuel (NATO code S-746)

* Obtainable from Anderton Springs Ltd., Sicilian House, Sicilian Avenue, Southampton Row, W.C.1.

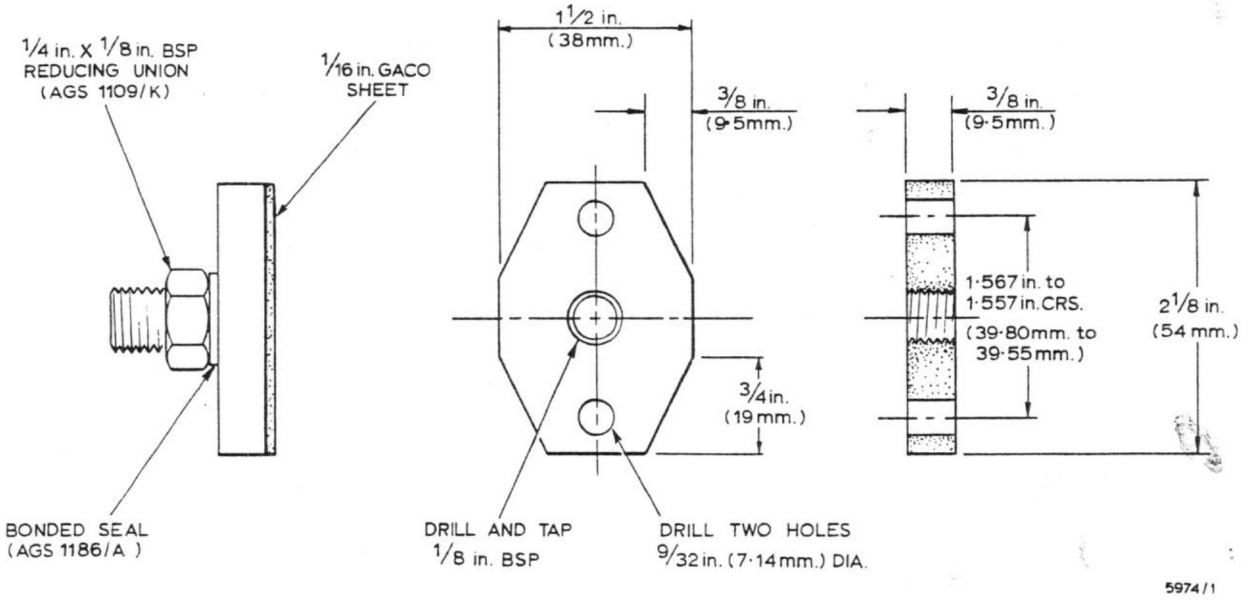

Fig.1 Pressure test adapter

DISMANTLING (fig. 2 and 3)

Air valve from atomizer

5

5.1 Remove the nuts and bolts securing the air valve dust cover, then remove the cover.

5.2 Group 23/E: Remove the air pipe sleeve and shim(s); record the total thickness of the shim(s) to facilitate assembly.

5.3 Group 7/E: Remove the sleeve locking plate then, using spanner, Table 1, Item 1, remove the air valve sleeve; remove the seal backing plate.

5.4 Remove the air valve assembly.

5.5 Group 5/E2: Remove the shim(s) and the ACA seal; discard the seal.

Air valve

6

6.1 Depress the air valve spring, then remove the retaining washer; remove the retaining plate.

6.2 Separate the air valve, guide and spring.

Atomizer

7

7.1 Remove the nuts and bolts securing the fuel inlet dust cover, then remove the dust cover.

7.2 Remove the nuts, bolts and distance pieces securing the atomizer dust cover, then remove the dust cover.

7.3 Group 23/E: Remove the fuel pipe sleeve.

7.4 Suitably clamp the atomizer body to the housing, then remove the retaining screws.

7.5 Release the clamp, then remove the body complete with the fuel valve.

Note ...

Do not remove the PTFE sealing ring (Mod S.291 units)

7.6 Mod S.291 units: Suitably identify the position of the locating pin to the body and sleeve, then remove the fuel valve sleeve; collect the locating pin.

Note ...

Where the pin remains firmly located in the body and is not damaged it should not be removed.

7.7 Mod S.488 and S.660 units: Remove the fuel valve.

7.7.1 Depress the locking cone against the spring, then remove the split collets; remove the locking cone and spring.

7.7.2 Remove the spring adjustment shim(s); record the total thickness of the shims to facilitate reassembly.

7.7.3 Using circlip pliers, Table 1, Item 2, remove and discard the valve securing circlip, then remove the shims; record the total thickness of the shims to facilitate reassembly.

7.7.4 Remove the valve guide and the valve from the body.

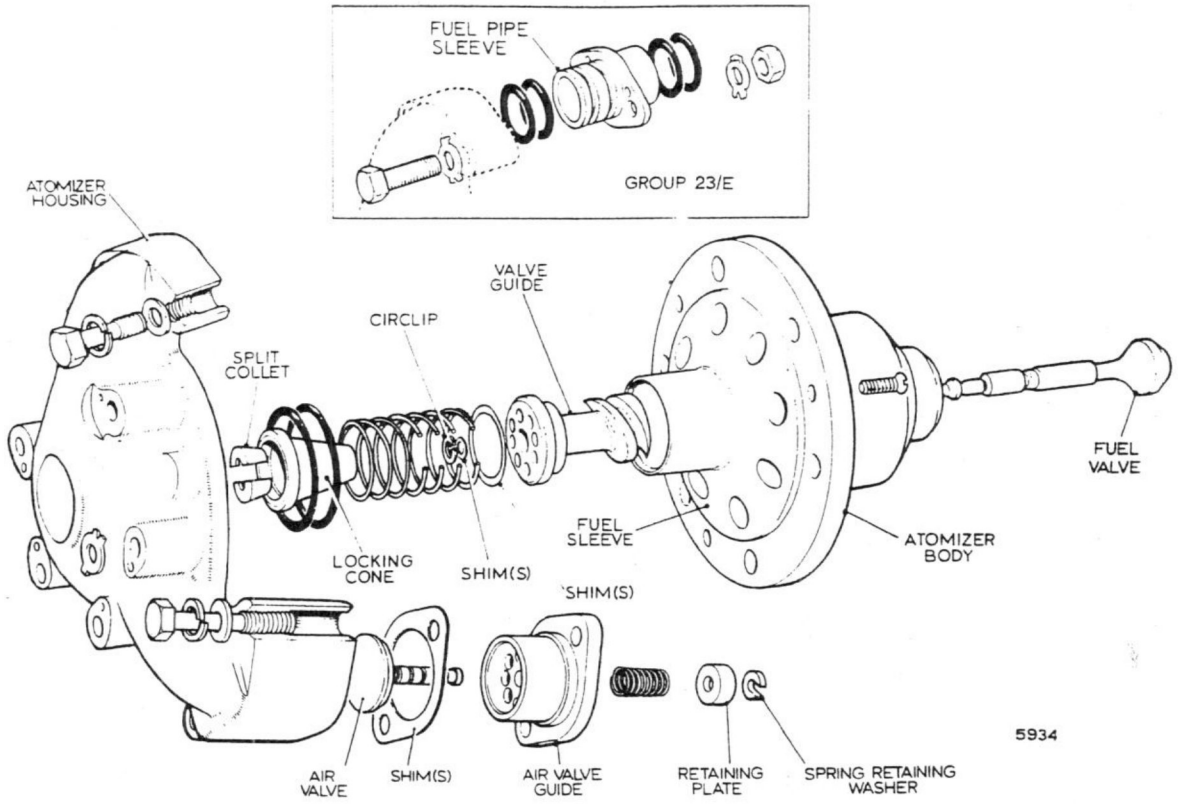

Fig.2 Atomizer (Mod. S.488 and S.660)

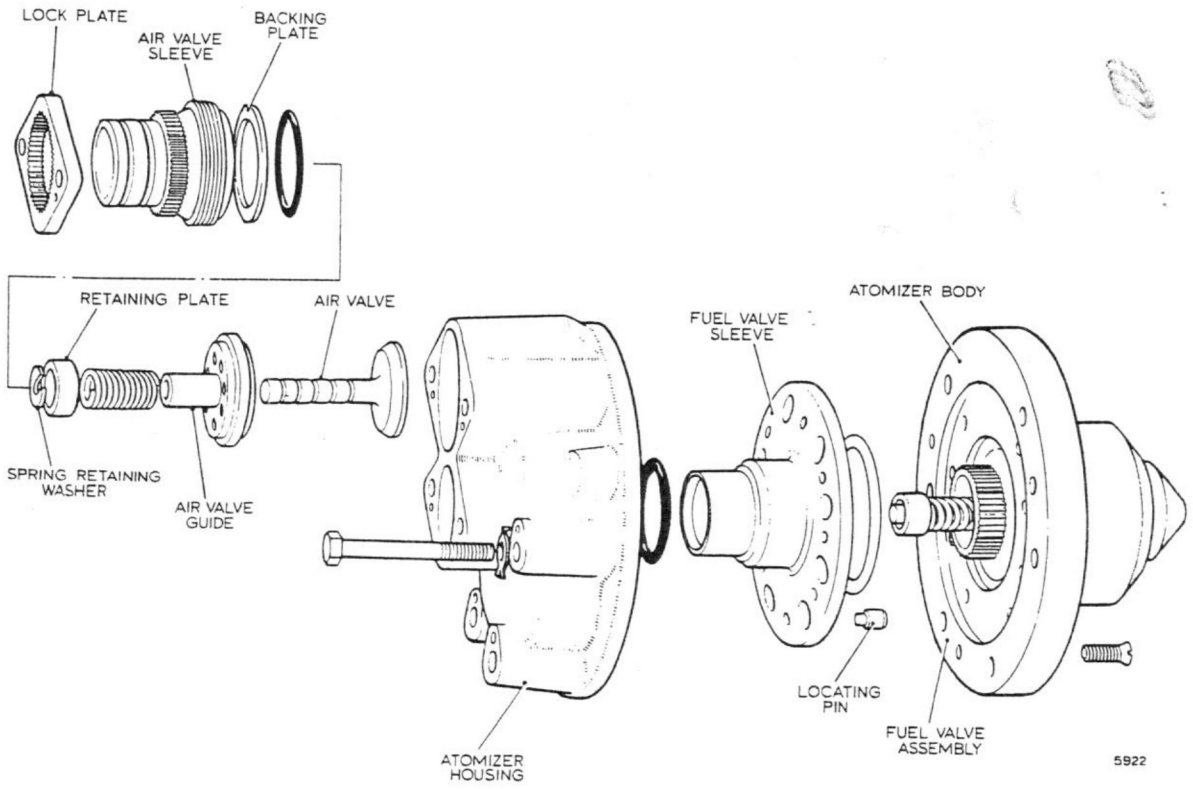

Fig.3 Atomizer (Mod. S.291)

CLEANING

8

8.1 Clean the atomizer body mounting face, ensuring that all deposits are removed.

8.2 Immerse the components in boiling water to remove AVPIN deposits, using a lint-free cloth to remove residual deposits from the air valve guide and the plunger.

8.3 Dry the components using clean, low pressure air and ensure that all passageways are free from obstruction.

Note ...

Ensure that the air valve guide and its associated plunger, and the fuel valve guide and its associated plunger are kept together as matched assemblies.

EXAMINATION

General

9

9.1 Visually examine all parts for damage; cracks on any part will entail its rejection, but scratches and burrs are acceptable provided that the raised metal is carefully removed and no source of leak is created and that exposed surfaces are reprotected.

9.2 Ensure that all joint faces are clean and undamaged and that all passageways and orifices are free from obstruction.

9.3 Ensure that the air valve guide and its associated plunger and the fuel valve guide and its associated plunger are kept together as matched assemblies.

Air valve

Note ...

Rejection of the valve plunger will entail rejection of the valve guide.

10

10.1 Examine the plunger/guide seating for damage; damage, scoring or pitting will entail rejection.

10.2 Check the condition of the PTFE coating; evidence of flaking will entail rejection.

Note ...

(1) On pre mod 2347 assemblies, loss of PTFE coating at the plunger/guide contact line is acceptable provided that there is no evidence of flaking.

(2) On Mod 2347 assemblies, apparent loss of PTFE coating should be rechecked using a 2X magnifying glass; where there is evidence of PTFE impregnation, particularly on the guide bore and the plunger stem and the seat mating surfaces, the PTFE coating may still be effective.

Fuel valve

11 Examine the plunger/guide seating for damage; damage, scoring, pitting or signs of hammering will entail rejection.

ASSEMBLING (fig. 2 and 3)

Atomizer

Mod S.291 units

12

12.1 Position the locating pin in its original position in the atomizer body (refer para 7.6).

12.2 Fit the O-ring seal to the recess provided in the atomizer body then, aligning the identification mark to the locating pin, position the fuel valve sleeve on the valve retaining nut splines.

12.3 Check that the holes in the flange are aligned and as near concentric as possible to the ports in the body; adjust the position of the locating pin in the body and sleeve to suit.

12.4 Fit the O-ring seal(s) to the groove(s) in the atomizer housing.

12.5 Position the atomizer housing, aligning the attachment holes, on the body then, using three slave nuts and bolts, clamp the housing to the body; fully tighten the nuts evenly in turn.

12.6 Using feeler gauges, check that the gap between the housing and body faces is the same all round; adjust the nuts to suit.

12.7 Secure the body to the housing with the three retaining screws; fully tighten the screws, then remove the slave nuts and bolts.

Mod S.488 and S.660 units

13

13.1 Insert the valve guide, small diameter first, into the atomizer body engaging the slot in the guide flange to the pin in the fuel sleeve.

13.2 Insert the fuel valve, from the nozzle end, through the fuel sleeve.

13.3 Locate the shim(s) on the valve stem then, using pliers, Table 1, Item 2, secure with the circlip.

Note ...

No other method of assembling the circlip is permissible.

13.4 Check the movement of the valve. This should be between 0.021 and 0.023 in (0.53 and 0.58 mm); adjust the thickness of the shims to suit.

Note ...

Where the circlip is removed to facilitate adjustment it must be discarded and a new circlip fitted.

13.5 Position the spring adjustment shim(s) on the valve guide, then position the spring on the shim(s).

13.6 Locate the locking cone on the spring and secure with the split collets.

13.7 Fit the O-ring seals to the grooves in the atomizer housing.

13.8 Position the atomizer housing, aligning the attachment holes, on the body and secure with the three retaining screws; fully tighten the screws evenly in turn.

13.9 Carry out the checks detailed in para. 24.

14 Group 23/E. Fit the O-ring seals to the internal and external grooves in the fuel pipe sleeve, then assemble the sleeve to the fuel inlet port.

15 Group 5/E2: Position the original shim(s) on the fuel inlet.

Note ...

The ACA seal is fitted when the atomizer is installed in the combustion chamber.

16 Group 5/E2 and 23/E: Assemble the fuel inlet dust cover and secure with the nuts and bolts.

17 Group 6/E: Assemble the fuel valve dust cover to the fuel inlet port.

18 Assemble the atomizer dust cover and secure with the nuts, bolts and distance pieces.

Air valve

19

19.1 Position the air valve in the guide then locate the spring, over the stem, in the guide.

19.2 Position the retaining plate, flange first, on the spring, then depress the plate and fit the retaining washer to the groove in the valve stem.

19.3 Release the retaining plate ensuring that the washer locates in the bore of the plate.

Air valve to atomizer

Group 23/E

20

20.1 Position the air valve, seat first, in the housing inlet port.

20.2 Fit the O-ring seals to the external grooves on the air valve sleeve and the spigot on the air valve guide.

20.3 Assemble the sleeve, interposing the original shim(s), to the inlet port then, holding the sleeve firmly in position, measure the clearance between the sleeve flange and the housing; this should be between 0.002 and 0.005 in (0.05 and 0.13 mm). Adjust the thickness of the shim(s) to suit.

20.4 Fit the O-ring seals to the internal grooves in the air valve sleeve, then assemble the air valve dust cover and secure with the nuts and bolts.

Group 5/E2

21

21.1 Position the original shim(s) on the air valve body, then assemble the air valve to the housing inlet port.

Note ...

The ACA seal is fitted when the atomizer is assembled to the combustion chamber.

21.2 Assemble the air valve dust cover and secure with the nuts and bolts.

Group 7/E

22

22.1 Position the air valve, seat first, in the housing inlet port.

22.2 Fit the O-ring seal to the spigot on the air valve guide, then locate the backing plate on the seal and secure with the air valve sleeve.

22.3 Using spanner, Table 1, Item 1, fully tighten the sleeve, then position the lock plate, spigot first and aligning the bolt holes, on the sleeve splines.

22.4 Assemble the air valve dust cover and secure with the bolts, nuts and distance pieces.

TESTING

Fuel valve

Mod S.291 units

23

23.1 Support the atomizer body, nozzle downwards, clear of the bench, then carefully fill the valve chamber with fuel, Table 1, Item 4.

23.2 Check, over a period of 15 minutes, for leakage through the fuel valve. No leakage is permitted.

Note ...

If leakage still occurs, reject the atomizer.

Mod S.488 and S.660 units

24

24.1 Carefully fill the valve chamber with fuel, Table 1, Item 4.

24.2 Fit the pressure adapter, Table 1, Item 3, to the fuel inlet.

24.3 Apply air at a pressure of 30 lbf/in^2 (2.07 bar) and check the leakage from the fuel valve which must not exceed 0.5 millilitres per min (20 drops per min); excessive leakage will entail rejection of the atomizer.

Note ...

The valve may be centralized manually to facilitate this check.

24.4 Slowly increase the pressure; record the pressure at which the valve opens. This should be between 39 and 41 lbf/in^2 (2.69 to 2.83 bar). Adjust the spring adjustment shim(s) to suit.

24.5 Release the pressure, then remove the adapter and drain off the fuel.