



AP 113D-0721-16

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CONTROL PANEL, TYPE 12

Lucas Aerospace Type F2801

GENERAL AND TECHNICAL INFORMATION REPAIR AND RECONDITIONING INSTRUCTIONS

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence

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**ROYAL NAVY by DGA (N)
ROYAL AIR FORCE by DGSM (RAF)**

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**Service users should send their comments through
the channel prescribed for the purpose in:**

**AP 100B-01 Order 0504 (RAF)
Naval Aircraft Maintenance Manual (RN)**

AMENDMENT RECORD

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REPAIR AND RECONDITIONING INSTRUCTIONS (-6)

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WARNINGS

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH

MAKE SURE YOU KNOW THE SAFETY PRECAUTIONS AND FIRST AID
INSTRUCTIONS BEFORE YOU USE A HAZARDOUS SUBSTANCE

READ THE LABEL ON THE CONTAINER IN WHICH THE SUBSTANCE IS SUPPLIED

READ THE DATA SHEET APPLICABLE TO THE SUBSTANCE

OBEY THE LOCAL ORDERS AND REGULATIONS

WARNINGS

(1) TRICHLOROETHANE. TRICHLOROETHANE IS USED IN THE MAINTENANCE OF THIS
EQUIPMENT. REFER TO JSP(F)395.

(2) LETHAL VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. REFER
TO EMER MANAGEMENT S250 OR TO AP100D-20, AS APPROPRIATE.

Chapter 1CONTROL PANEL TYPE 12, LUCAS AEROSPACE TYPE F2801

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LEADING PARTICULARS

Control panel Type 12	Ref. No. 5UC/6369631
Input	25-28 VDC

Output (when used with rotary inverter Type 100A or 100C)

115V \pm 11.5V 400 c/s
12.0V
 \pm 20 c/s, 150W, 0.8 p.f., three-phase AC

Overall dimensions:

Length	6.625 in
Depth	6.655 in
Height	3.187 in
Weight	5 lb

Connectors:

DC input, 1-pole plug	Ref. No. 5X/7141
AC output to load, 5-pole plug	Ref. No. 5X/7032
Input from inverter, 5-pole plug	Ref. No. 5X/7112
Voltage regulator Type 54 (incorporated)	Ref. No. 5UC/4952
Carbon pile, consisting 13 washers each 10.9 mm dia. x 3 mm thick	5UC/4379017
(total length approx. 1.5 in)	Ref. No. 5UC/2162
Ballast resistor, 1000 ohm	Ref. No. 10W/Z244002
Trimmer resistor, 500 ohm	Ref. No. 10W/7434
Pile resistance range	0.2 to 1.8 ohm
Operating coil resistance	1550 ohm (cold)
Coil current	0.041 to 0.051 amp

Used with rotary inverter:

Type 100A	Ref. No. 5UB/4938
Type 100C	Ref. No. 5UB/4352358

Control panel and inverter Type 100A (matched pair for RN use)	Ref. No. 5UB/6507
Control panel and inverter Type 100C (matched pair for RN use)	Ref. No. 5UB/8885

MODIFICATION RECORD

This chapter incorporates all relevant modifications up to and including Mod No LG 2257.

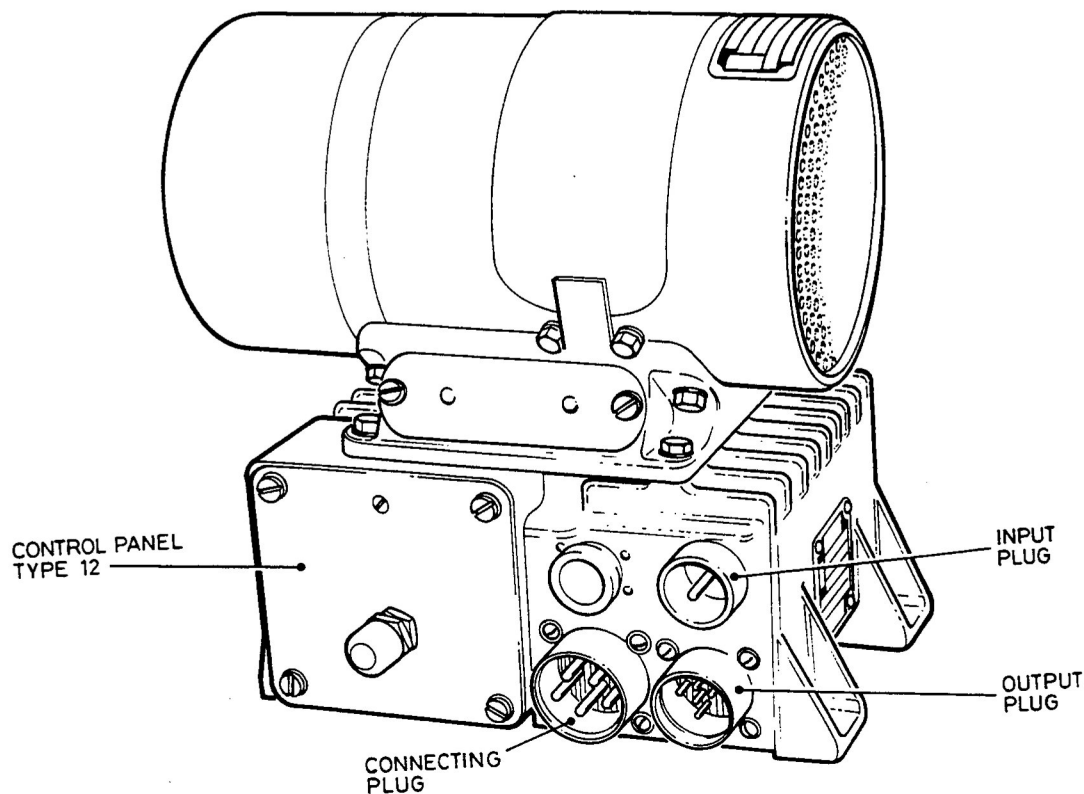


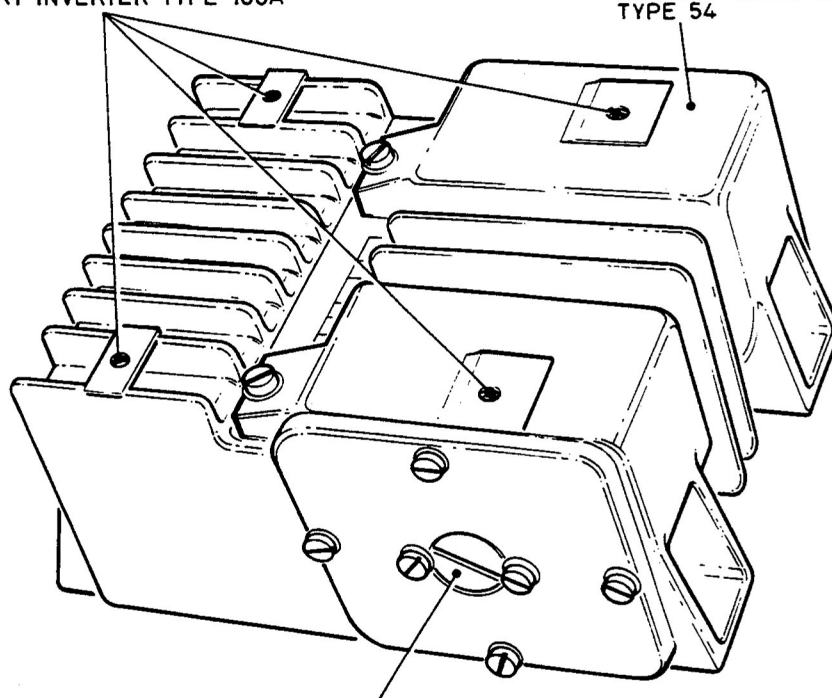
Fig 1 Control panel Type 12 with rotary inverter Type 100A

Introduction

1 The control panel, Type 12, is used to regulate the output of the rotary inverters, Type 100A and 100C, which are described in AP 113D-0104-16. The inverter may be mounted directly on the control panel (fig 1), four equi-spaced fixing holes being provided on the latter for this purpose (fig 2), giving a choice of four possible mounting positions. Alternatively, the inverter may be mounted remote from the control panel to suit an individual installation. Connection is made in each instance by the connecting plug shown in fig 1 on the control panel and the corresponding socket on the inverter.

HOLES FOR SECURING
ROTARY INVERTER TYPE 100A

VOLTAGE REGULATOR
TYPE 54



CORE ADJUSTING SCREW

Fig 2 Control panel Type 12

DESCRIPTION

General

2 The control panel (fig 2) comprises two main assemblies, a voltage regulator and a rectifier, suppressor and terminal block housing. In addition to the 8-way terminal block, to which access is gained by removal of the baseplate (fig 3), there is an "EARTH" terminal which may be either linked internally to the case, or connected via a lead taken through the plug situated along-side the DC input plug, to a remote earth.

3 The two stage suppressor is connected in series with the DC input, whence the supply passes through the carbon pile of the regulator to the inverter unit. The AC output from the inverter is fed into the control panel where a tapping is rectified to provide a DC source required to energize the operating coil of the regulator. The three-phase AC leaves the control panel through the output plug (fig 1).

Voltage regulator

4 The voltage regulator Type 54 (fig 4), is a series carbon pile regulator on which information of a general nature is given in AP 113D-0003-1 and AP 113D-0004-1.

5 The carbon pile of which details are given in the Leading Particulars is contained in a ceramic tube, which in turn is enclosed in a finned casting to provide effective heat dissipation.

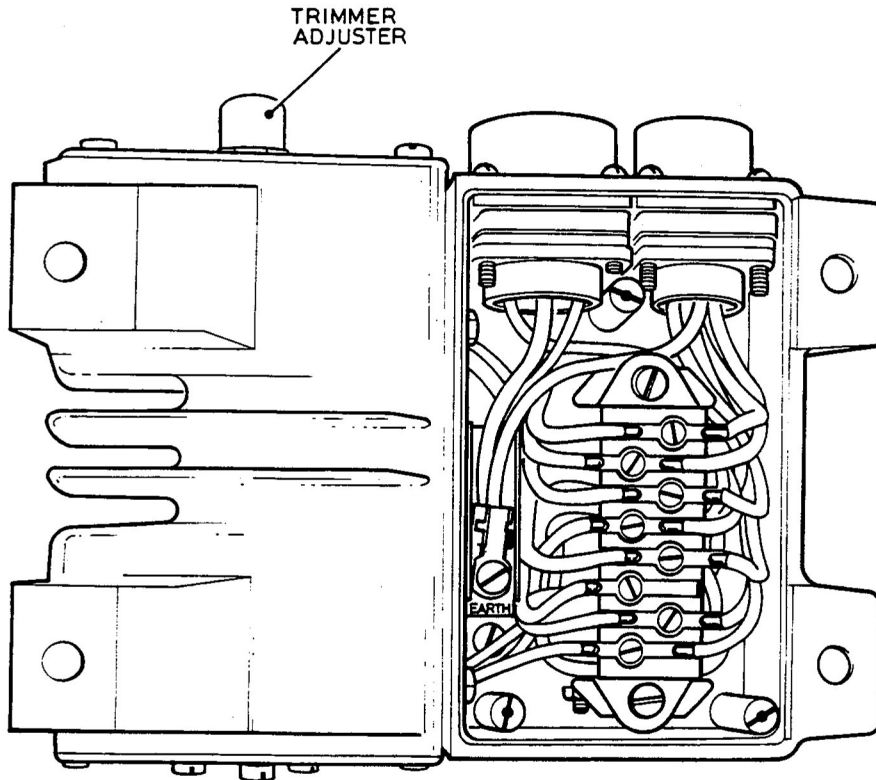


Fig 3 View on underside of control panel

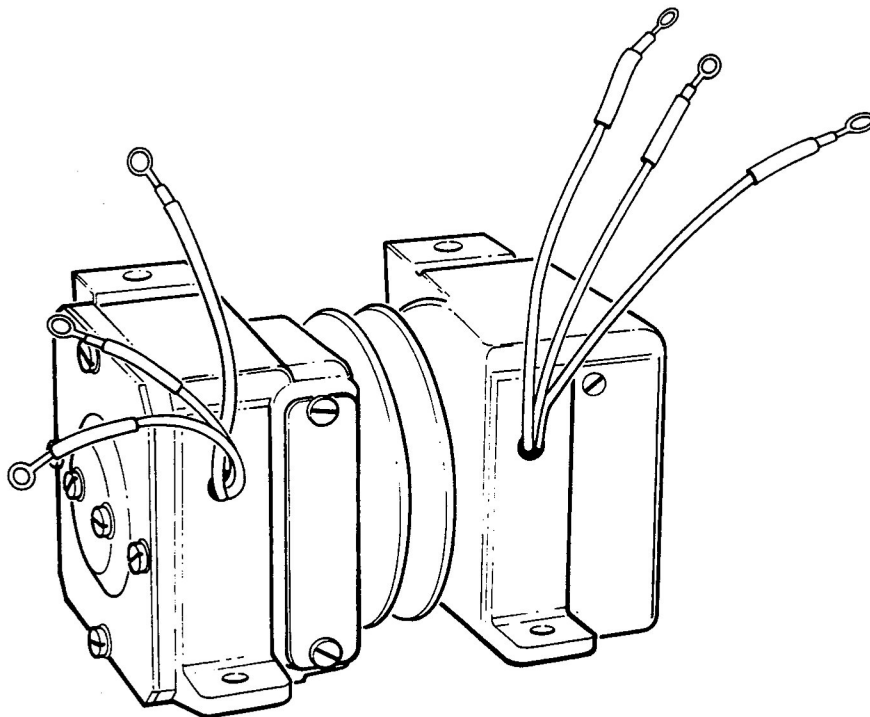


Fig 4 Regulator Type 54

6 The operating coil which is housed within the magnet case, encloses an adjustable core (fig 5), any necessary adjustments being made by releasing the core locking screws and turning the slotted end of the core which is located in the endplate (fig 2).

7 The armature assembly is mounted on radial leaf springs with a central carbon terminal plug, insulated from the armature, providing electrical connection to the movable end of the carbon pile.

8 The carbon pile may be adjusted by means of the pile compression screw (fig 5) on removal of the cover plate and slackening off the locking screw.

9 In series with the operating coil are a fixed ballast resistance of 1000 ohm and a variable trimmer resistor of 500 ohm. Adjustment of the trimmer resistor is made by turning the trimmer adjusting screw which protrudes through the cover plate and is accessible on removal of the trimmer cap (fig 3).

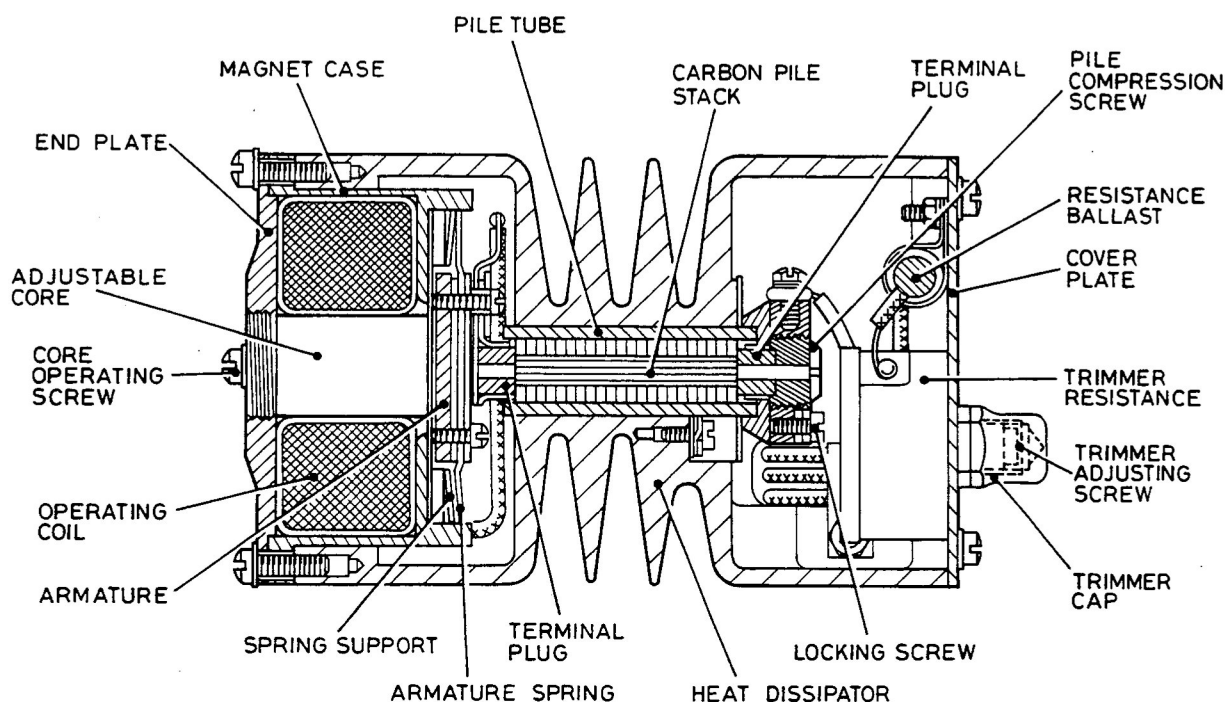


Fig 5 Regulator (sectional view)

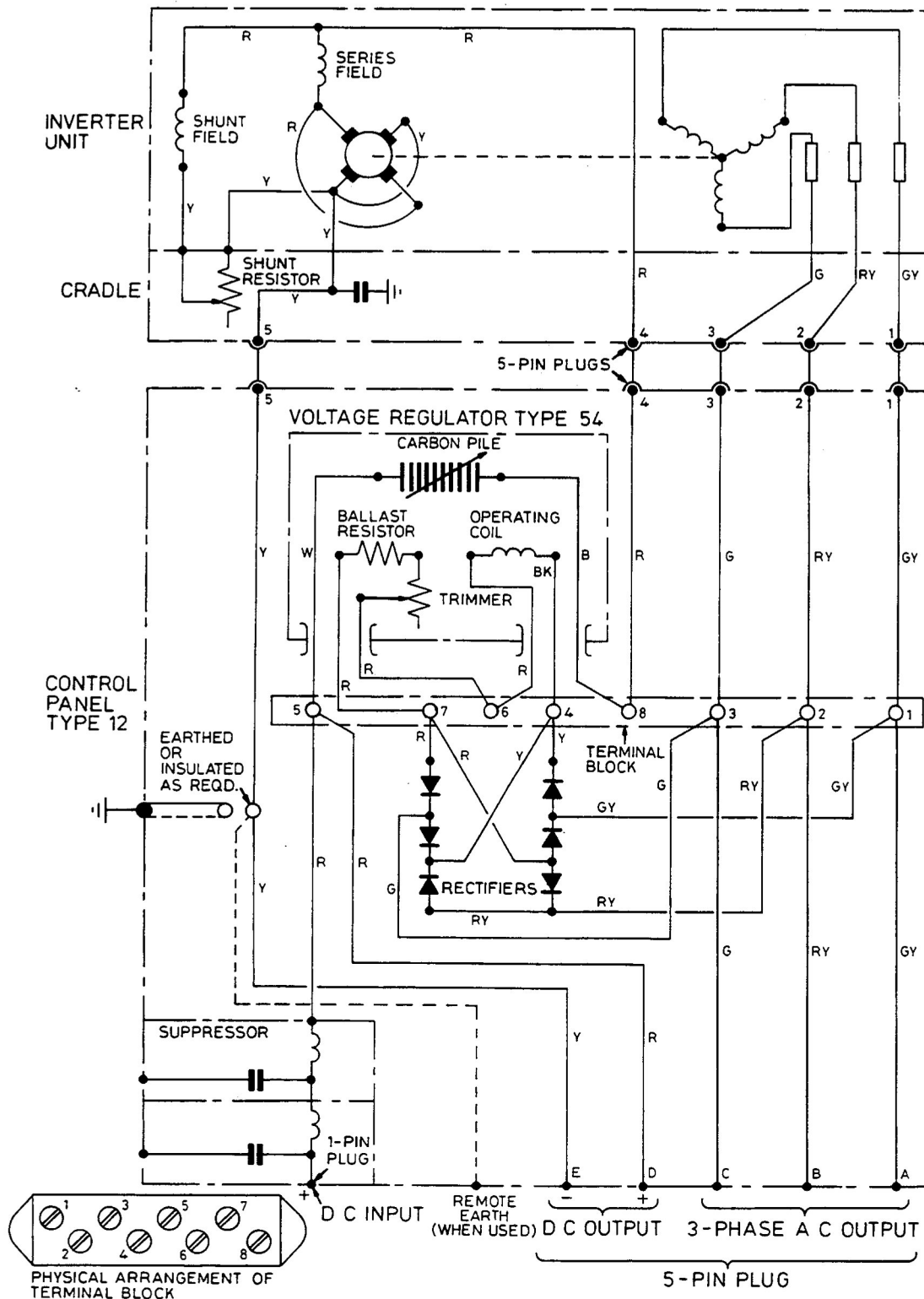


Fig 6 Circuit diagram

OPERATION

10 The control panel, Type 12, maintains the output of the Types 100A and 100C inverters at 115V, 400 c/s within close limits under varying load conditions. The DC input to the control panel is connected through the suppressor unit to the carbon pile of the voltage regulator and then fed directly onto the DC side of the inverter. A rectified AC is fed back to the operating coil of the regulator to obtain the required control, thus a decrease in the load or an increase in the DC supply voltage will cause an increase in coil current which will open the regulator carbon pile, increase its resistance and hence reduce the input voltage to the inverter.

Electrical connections

11 All electrical connections to the control panel are taken to the side on which the trimmer adjuster is fitted (fig 1). A circuit diagram of the control panel and associated inverter is shown in fig 6.

Chapter 2STANDARD SERVICEABILITY TEST

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1	Introduction
3	Test equipment
4	Test procedure
5	Insulation tests

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Introduction

1 The tests detailed in this chapter may be applied whenever a new unit is put into service or the serviceability is suspect.

2 A standard serviceability test for the control panel and the inverter Type 100A or 100C, when they are subsequently to be used as a matched pair (RN only) is detailed in AP 113D-0104-16, Chap 3.

Test equipment

3 The following test equipment or suitable equivalents are required:

Ref No	Description
4408122	Switch, DPST
5G6505337	Insulation tester, Comark BM8 MK2
5G4411727	Unit, inductive, electrical loading
5Q4348569	Voltmeter, 0-40V (V1)
10S2523606	Fluke multimeter, Model 25
5UB4938	Inverter, Type 100A
5UB4352358	OR Inverter, Type 100C
-	Power supply, 0-40V variable DC

TEST PROCEDUREWARNING

LETHAL VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. REFER TO THE LETHAL VOLTAGE WARNING IN THE PRELIMINARY PAGES OF THIS PUBLICATION.

4 Connect the control panel into the test circuit as shown in fig 1 and apply the following test procedure:

4.1 Adjust the input voltage to 27 VDC.

4.2 Switch on the inverter and run continuously for 20 minutes.

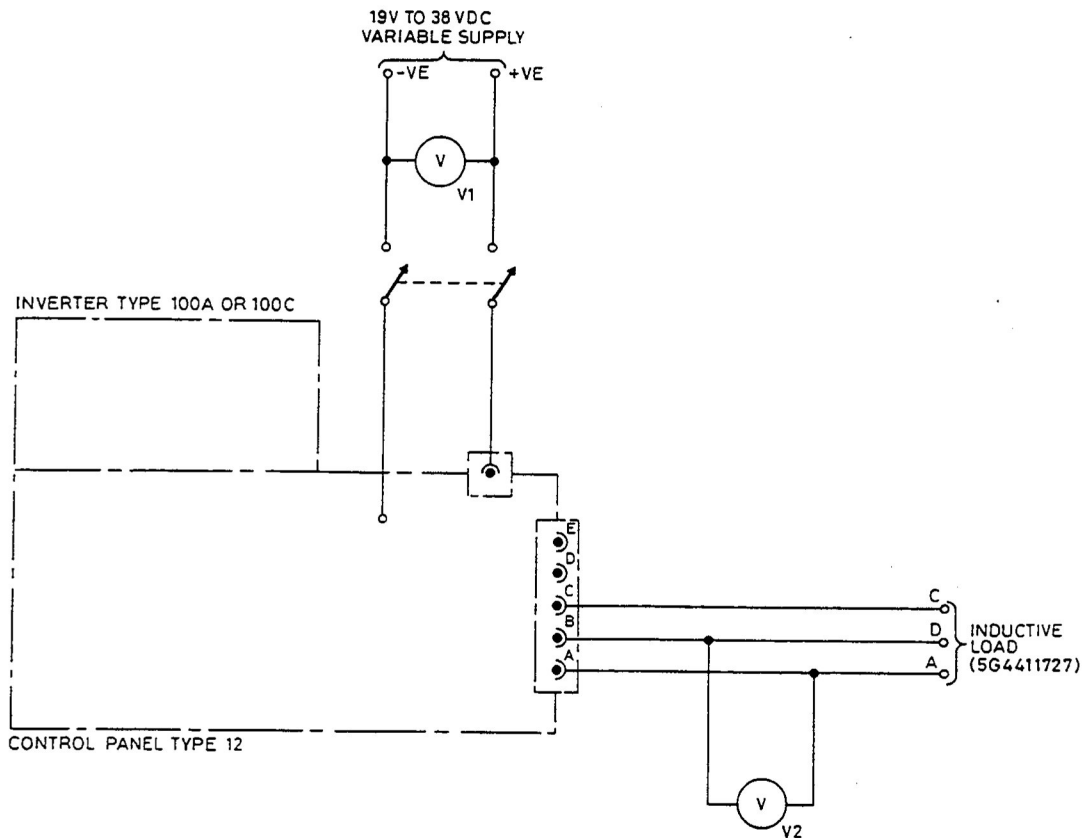


Fig 1 Test circuit

- 4.3 Check that the output voltage is within the limits of $120V \pm 1V$. Switch off the inverter.
- 4.4 Adjust the input voltage to 19V and switch on the inverter.
- 4.5 Increase the input voltage until the output voltage is 115V and check that the input voltage is within the limits $21.75V \pm 0.75V$.
- 4.6 Increase the input voltage until the output voltage stops increasing and check that the output voltage is within the limits $120V \pm 1V$.
- 4.7 Increase the input voltage to 35V and check that the value of output voltage obtained is within the limits $120V \pm 0.5V$. Switch off the inverter.
- 4.8 Adjust the input voltage to 27V and switch on the inverter.
- 4.9 Apply full load and check that the output voltage does not fall below 115V.
- 4.10 Switch the load off and check that the output voltage does not exceed 121V. Repeat this operation three times. Under these conditions the regulator must respond without tendency to instability (i.e. the regulator should be critically damped).

Insulation tests

5 Measure the insulation resistance between all connector pins and the frame using a 250V insulation resistance tester. The value obtained should be not less than 0.5 megohm.

Chapter 3BAY MAINTENANCE

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- 1 Introduction
- 3 Special tools, test equipment and materials
- 4 Dismantling
- 5 Bay maintenance
- 7 Assembly
- 8 Testing (RN)
- 9 Testing (RAF)
- Test procedure
- 10 Insulation resistance test
- 11 Functional test

Introduction

1 The following instructions apply only to authorised units having the necessary spares and test facilities; they are in addition to the instructions contained in Chapter 1 and Chapter 2.

2 When it is necessary to determine the serviceability of the complete unit prior to bay maintenance the tests detailed in Chapter 2 (RAF) or AP 113D-0104-16, Chapter 3 (RN) may be applied.

SPECIAL TOOLS, TEST EQUIPMENT AND MATERIALS

3 The following special tools, test equipment and materials are required:

Special tools

No special tools are required.

Test equipment

The following items of test equipment, or suitable equivalents, are required:

Ref No	Description
4408122	Switch, DPST
5G6505337	Insulation tester, Comark BM8 MK2
5G4411727	Unit, inductive, electrical loading
5Q4348569	Voltmeter, 0-40V (V1)
10S2523606	Fluke multimeter, Model 25
5UB4938	Inverter, Type 100A
5UB4352358	OR Inverter, Type 100C
-	Power supply, 19V to 35V variable DC

Materials

Ref No	Description
9150-99-2241793	Grease XG-287

DISMANTLING

4.

- 4.1 Remove the base cover.
- 4.2 Remove the cover plate and end plate from the regulator.

BAY MAINTENANCE

5

- 5.1 Examine all visible components for signs of mechanical damage, excessive wear, corrosion and security of attachment.
- 5.2 Check all electrical connections for security of attachment.

NOTE

Instances have occurred when, owing to the loss of the distance piece on the "EARTH" screw it has not been possible to make a tight connection at this point. This has resulted in an intermittent or broken DC supply to the inverter. It is of the utmost importance that the "EARTH" screw is tight and effects a satisfactory bond between the earth connections.

- 5.3 Examine cables for signs of deterioration of insulation, twisting and stretching.
- 5.4 Examine the operating coil for signs of overheating and check for continuity.
- 5.5 Examine the ballast resistor and trimmer resistor, both of which are mounted in the regulator, for signs of overheating and check for continuity.
- 5.6 Remove and examine the carbon pile assembly in accordance with AP 113D-0003-1 para 28 to 30.
- 5.7 Set the trimmer resistance to the electrical mid-position.
- 5.8 Lightly smear the plug threads with grease XG-287 (Ref No 9150-99-2241793).

NOTE

On no account must any lubricant be allowed to come into contact with plug pins.

- 6 Preliminary mechanical setting of the regulator should now be carried out in accordance with AP 113D-0003-1, Chap 2, para 3.

ASSEMBLY

- 7 Refit the base cover, cover plate and end plate removed at para 4.

TESTING (RN)WARNING

LETHAL VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. REFER TO THE LETHAL VOLTAGE WARNING IN THE PRELIMINARY PAGES OF THIS PUBLICATION.

8 Testing of the control panel and inverter Type 100A or 100C as a matched pair (RN only) should be applied in accordance with the instructions detailed in the following references:

8.1 AP 113D-0104-16, Chapter 1, para 24 (6) to (8).

8.2 AP 113D-0104-16, Chapter 3, standard serviceability test.

TESTING (RAF)

9 The control panel should be tested in conjunction with an inverter Type 100A or 100C, which it is assumed has been serviced and tested in accordance with AP 113D-0104-16.

TEST PROCEDUREInsulation resistance test

10 Measure the insulation resistance between the following points:

10.1 Each terminal of the terminal block and the frame, with the positive input cable disconnected, using a 250V insulation tester at the DC terminals and a 500V insulation tester at the AC terminals.

10.2 DC input pin and frame, with the positive cable reconnected to the terminal block, using a 250V insulation resistance tester. The value obtained in each case should be not less than 0.5 megohm.

Functional testsWARNING

LETHAL VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. REFER TO THE LETHAL VOLTAGE WARNING IN THE PRELIMINARY PAGES OF THIS PUBLICATION.

11 Connect the control panel into the test circuit as shown in Chapter 2, fig 1 and apply the following test procedure:

11.1 Adjust the input voltage V1 to 27 VDC.

11.2 Switch on the inverter and run continuously for 20 minutes on no load.

11.3 Adjust the regulator in accordance with AP 113D-0003-1, Chap 2 para 5 and 6.

NOTE

The output voltage at V2 should be adjusted to 115V with the pile screw one eighth of a turn "out" from the dip position.

Lock the magnet pile screw and switch off the supply.

- 11.4 Restart the inverter, repeat the dip position setting procedure and lock the pile screw one eighth of a turn "out" from the dip position. Switch off the supply.
- 11.5 Restart the inverter and check that the output voltage is within the limits $120V \pm 1V$. If this value is not obtained repeat operations at para 11.3 and 11.4. Switch off the inverter supply.
- 12 The remainder of the testing should be applied as detailed in Chapter 2, para 4.4 to 4.10.

REPAIR AND RECONDITIONING INSTRUCTIONS (-6)CONTROL PANEL TYPE 12 (LUCAS AEROSPACE TYPE F2801)

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MODIFICATION RECORD

This chapter incorporates all relevant modifications up to and including Mod No LG2257.

Introduction

1 The following instructions apply only to authorized units with the necessary spares and test facilities and are in addition to the instructions detailed in AP 113D-0721-1.

SPECIAL TOOLS, TEST EQUIPMENT AND MATERIALS

2 The following special tools, test equipment and materials are required:

Special tools

The following special tools are required:

Bracket setting plug (Drg No J100420).

Armature setting tool (Drg No XJ284).

Test equipment

The following items of test equipment, or suitable equivalents, are required:

Ref No	Description
10S 2523600	Fluke multimeter, Model 25
5P 6458996	Power supply, 70 VDC, Farrell TSV70 MK 2

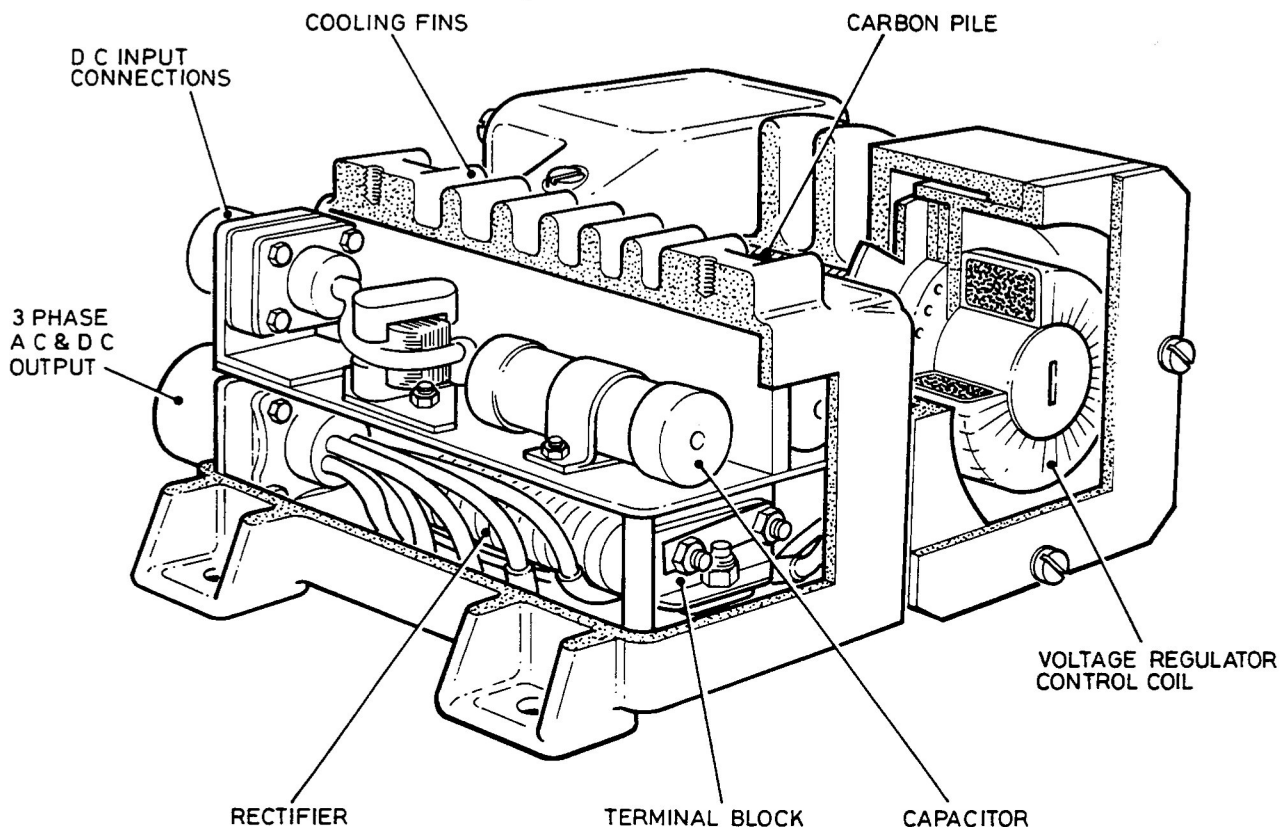


Fig 1 Control panel Type 12 (sectional view)

Materials

The following materials, or suitable equivalents are required:

Ref No	Description
33D/2201949	Trichloroethane, TS3670 type 1 or 2 (RAF)
0473/2201465	Trichloroethane, TS3670 type 1 or 2 (RN)

DISMANTLING

3 Reference should be made to fig 1 and 2 during the following dismantling procedure.

Cover plate and plugs

4 Release the screws (39), remove the shakeproof washers (40) and lift off the housing cover (36).

5 Draw back the sleeves (57) and (58) on the plug pins and disconnect the cables.

NOTE

The cables should be labelled so that they are easily identified on reassembly.

6 Release the screws (60), remove the shakeproof washers (61), retaining plate (62) and withdraw the plug (59). Plug (63) may be similarly removed.

Housing and flange assembly

7 Release the screws (54) and carefully ease the plug (8) into the housing (10). Release the screws (7) remove the washers (6) and lift the housing and flange assembly together with the regulator (56). Disconnect the wiring from the regulator and remove the housing and flange assembly complete with regulator.

8 Release the screws (5) and (55) remove the shakeproof washers (4) and separate the regulator from the housing.

Voltage regulator

9 With reference to AP 113D-0721-1, Chapter 1, fig 5, the regulator should be dismantled as follows:

9.1 Remove the trimmer cap.

9.2 Release the four cover plate securing screws and collect the four washers.

9.3 Lift off the cover plate, loosen the screw securing the cable clamp and remove the cover plate assembly from the regulator.

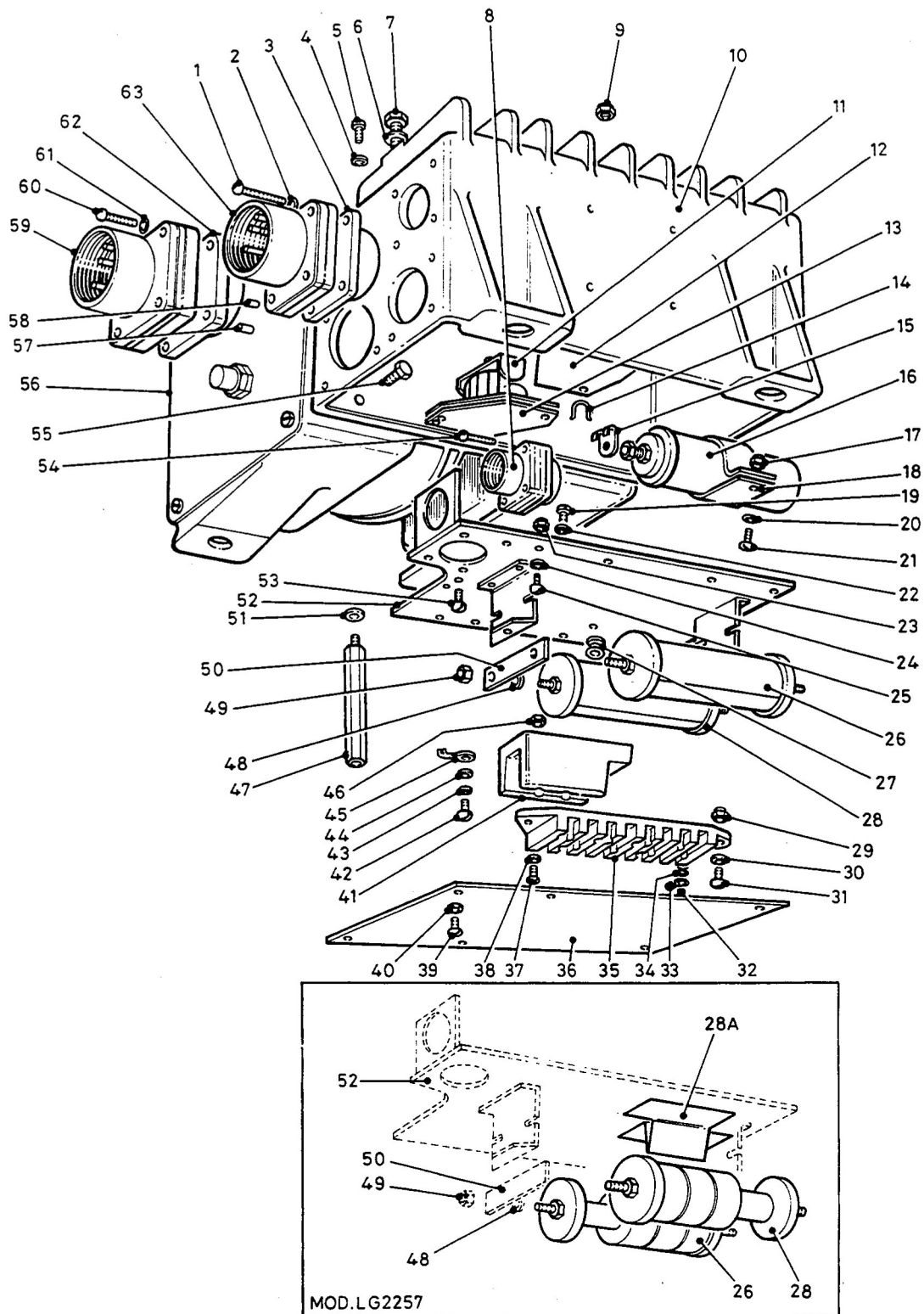


Fig 2 Control panel Type 12 (exploded view)

Key to Fig 2

1	Screw	32	Screw
2	Shakeproof washer	33	Tag
3	Retaining plate	34	Thackray washer
4	Shakeproof washer	35	Terminal block
5	Screw	36	Housing cover plate assembly
6	Shakeproof washer	37	Screw
7	Screw	38	Washer
8	DC input plug (positive)	39	Screw
9	Stiffnut	40	Shakeproof washer
10	Housing and flange assembly	41	Earth terminal block
11	Suppressor coil assembly	42	Screw
12	Suppressor coil assembly	43	Spring washer
13	Suppressor coil insulation piece	44	Distance piece
14	Inter-suppressor load clip	45	Terminal tag
15	Tag	46	Nut
16	Capacitor	47	Spacing post
17	Nut	48	Washer
18	Clip	49	Nut
19	Earth terminal block fixing screw	50	Locking strip
20	Shakeproof washer	51	Shakeproof washer
21	Screw	52	Mounting plate assembly
22	Shakeproof washer	53	Screw
23	Nut	54	Screw
24	Plain washer	55	Screw
25	Screw	56	Carbon pile regulator
26	Rectifier	57	Sleeve (pins 4 and 5)
27	Grommet	58	Sleeve (pins 1-3)
28	Rectifier	59	Plug (interconnecting)
28a	Insulation	60	Screw
29	Terminal block nut	61	Shakeproof washer
30	Washer	62	Retaining plate
31	Screw	63	Plug (AC and DC output)

9.4 Loosen the pile compression locking screw and remove the pile compression screw, the terminal plug and the carbon pile.

NOTE

To remove the carbon pile, insert a metal rod or stiff wire through the hole in the carbon washers and tilt the regulator sufficiently to permit the washers to slide out of the pile tube.

9.5 Remove the pile compression screw support bracket and insulators. The pile tube location screw is now visible and may be unscrewed and removed together with a spring washer and circlip. The pile tube may now be carefully withdrawn from the regulator case.

9.6 Release the four end plate securing screws and collect the four washers. Remove the end plate together with any packing pieces that may be fitted and withdraw the operating coil and magnet case. The following items are now accessible and may be withdrawn from the regulator:

9.6.1 Armature stop washer.

9.6.2 Packing washers (if fitted).

- 9.6.3 Brass spacer ring.
- 9.6.4 Bi-metallic spring support.
- 9.6.5 Armature assembly.

Record details of, or put carefully to one side any shims removed during the above operations as an aid to assembly.

Rectifiers

10 Disconnect the electrical wiring at the terminal block, remove the nuts (49), locking strips (50), washers (48) and slide out the rectifiers (26) and (28). Remove insulation (28A) (Mod LG2257).

Terminal block

11 Disconnect all cables from the terminal block, release the screws (31) and (37), collect the washers (30) and (38) and the nuts (29) and (46), and remove the terminal block (35).

Suppressor coil and capacitor assemblies

12 Disconnect the wiring from each coil. Release the screws (25) and (53), collect the washers (24) and nuts (23). The two suppressor coil assemblies (11) and (12) may now be removed complete with the insulation pieces (13).

13 Disconnect the wiring from each capacitor terminal. Release the screws (21), collect the washers (20) and the nuts (17). The two capacitors (16) may now be removed complete with clips (18).

CLEANING

WARNING

TRICHLOROETHANE. TRICHLOROETHANE IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE TRICHLOROETHANE WARNING IN THE PRELIMINARY PAGES OF THIS MANUAL.

14 Dust should be removed using a dry brush and a controlled air blast. If further cleaning is necessary use a lint-free cloth moistened with Trichloroethane, as detailed in AP113A-0308-1 Chapter 6, Servicing Technique No 5. Dry using a controlled air blast.

CAUTION...

Trichloroethane should not be permitted to come into contact with the porous, carbon pile tube.

15 Trichloroethane should be used for removing old varnish from the terminal block.

EXAMINATION AND REPAIR

16 The following instructions are in addition to those detailed in AP 113D-0721-1, Chapter 1, para 5.1 to 5.5 and 5.7 and 5.8.

16.1 Check the capacitors and suppressor coils for serviceability.

16.2 Apply continuity and open circuit tests to the rectifier units using a Fluke multimeter, Model 25 (Ref No 10S2523606), to determine their serviceability.

16.3 Check the operating coil, ballast and trimmer resistor resistance values against details given in the leading particulars of AP 113D-0721-1, Chapter 1.

Replacements

17 The following items should be discarded and new items fitted on assembly:

17.1 Carbon pile.

17.2 Shakeproof washers.

17.3 Tab washers.

17.4 Stiff nuts.

17.5 All components showing signs of excessive wear.

ASSEMBLY

Suppressor coil and capacitor assemblies

18 Replace the suppressor coil insulation pieces (13) and the suppressor coil assemblies (11) and (12). Secure with screws (25) and (53), washers (24) and nuts (23). Reconnect the electrical wiring.

19 Secure the capacitors (16) and clips (18) with screws (21), washers (20) and nuts (17). Reconnect the electrical wiring.

Terminal block

20 Refit the terminal block (35) to the mounting plate assembly (52) and secure with the screws (31) and (37), washers (30) and (38) and nuts (29) and (46). Reconnect electrical wiring, securing tags (33) with the screws (32) and Thackray washers (34).

NOTE

The Thackray washers are placed beneath the cable tags.

Rectifiers

21 Replace the rectifiers (26 and 28), the insulation (28A) (Mod LG2257), the locking strips (50), washers (48) and secure with nuts (49). Reconnect the electrical wiring at the terminal block.

NOTE

When a new rectifier is fitted both the rectifier tags and cable terminations should be coated with grey rectifier enamel before and after electrical connections are made at the rectifier.

Voltage regulator

22

22.1 Replace the pile tube, insert the circlip to locate in the pile tube groove and secure with the 6 BA screw and spring washer. Refit the pile compression screw support bracket and insulators, taking particular care with the fitting of the porcelain bushes. Align the bracket with the pile tube using bracket setting plug (Drg No J100420) and make secure with the two screws.

22.2 Place the magnet case on the bench, with the shallow recess uppermost, and assemble parts in the following order:

22.2.1 Armature stop washer (smaller centre hole).

22.2.2 Packing washers, if fitted (larger centre hole).

22.2.3 Brass spacer ring.

22.2.4 Bi-metallic spring support.

22.2.5 Armature assembly.

Lower the regulator case over the magnet case, aligning the slot in the magnet case with the slot in the regulator case, and feed the armature cable through the slot in the regulator case. Replace the operating coil and feed the cables through the magnet case and regulator case slots. Replace the packing pieces, end plate and four end plate securing washers and screws.

WARNING

LETHAL VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. REFER TO THE LETHAL VOLTAGE WARNING IN THE PRELIMINARY PAGES OF THIS PUBLICATION.

22.3 Centralize the armature assembly with the pile tube using the armature setting tool (Drg No XJ284) and apply 70 VDC (Ref No 5P6458996) across the operating coil to pull the armature down.

22.4 Remove the armature setting tool.

22.5 Fit the new carbon pile, terminal plug and pile compression screw in accordance with AP 113D-0003-1, para 28 to 30.

22.6 Disconnect the 70V supply applied at para 22.3.

22.7 Collect together the three cables and secure in the cable clamp unfastened at para 9.3. Feed the cables out through the slot in the regulator case but do not secure the cover plate at this stage.

Preliminary mechanical setting

23 Perform preliminary mechanical setting in accordance with AP 113D-0003-1, Chap 2, para 3.

Assembling the regulator to the housing and flange assembly

24 Fit the regulator to the housing (10), and secure with screws (5) and (55) and washers (4).

Mounting plate assembly and plugs

25 Refit the plug (8) and reconnect the electrical wiring. Bring together the housing assembly and the mounting plate assembly (52), reconnect all electrical wiring and secure the two assemblies with screws (7) and washers (6). Secure plug (8) to the housing with screws (54).

26 Refit plug (59) and retaining plate (62), and secure with screws (60) and shakeproof washers (61). Similarly refit plug (63). Reconnect the electrical wiring to both and slide the sleeves (57) and (58) into position over the plug pins.

TESTING

27 The control panel should now be subjected to the tests detailed in AP 113D-0721-1, Chap 3, para 8 to 12. No additional tests are required.

Cover plates

28

28.1 Refit the housing cover (36), and secure with screws (39) and shakeproof washers (40).

28.2 Refit the cover plate to the regulator and secure with the four washers and screws.

28.3 Replace the trimmer cap. ¶