

Appendix 4

PITOT-STATIC TRANSDUCER, TYPE B, Ref. No. 6A/6435

SERVICING

REMOVAL AND REPLACEMENT OF COMPONENTS

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Introduction

1. This appendix describes the removal and replacement of major and minor electrical components of the pitot-static transducer, Type B to a depth consistent with the second line range of spares held up to and including modification ADS/142.

2. The transducer is illustrated in chap. 12 and a circuit diagram is given at fig. 12, of that chapter.

3. Components permitted to be removed and replaced within the depth of servicing are shown in Table 1; faulty components will be disposed of in accordance with current instructions.

4. The transducer is made up of three main sub-assemblies, viz: a front panel and chassis, a gear plate and a motor plate; the assembly is complete with a dust cover.

5. The components carried on the sub-assemblies are shown in Table 1.

Tools and materials

6. The following tools and materials are required:—

- (1) Tools: plug/socket, Plessey Mk. 4, special tool.
- (2) Materials (in addition to those of para. 7).
 - (a) Solder, 18 SWG, 60/40 resin cored.
 - (b) Sleeve HELLERMAN Type T to DEF20 Type A, size No. H15.
 - (c) P.V.C. filament: $\frac{3}{4}$ mm.
 - (d) Silicon rubber sleeving, 0.028 in. bore.
 - (e) 22 SWG copper wire.

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7. All screws and nuts 8BA and smaller should be locked on assembly with Loctite sealant, Type E. All other screws and nuts should be locked with Loctite sealant, Type C.

REMOVAL AND REPLACEMENT OF COMPONENTS

8. Unless otherwise detailed, the replacement procedure for all components is a reversal of the removal. Where split clamps have to be replaced attention is drawn to Appendix 2, Table 1.

Caution . . .

Damage may be caused to components by the transfer of excessive heat due to misuse of a soldering iron. This damage can largely be prevented by the use of a heat shield between the iron and the component. The soldering iron must be allowed to reach the required temperature before being applied to the component. Sleeving PTFE will not suffer damage in contact with the hot soldering iron.

Cover

9. Remove the two 6BA ch. hd. screws securing the cover to the rear faces of the right and left hand side frames. Slide the cover clear of the chassis. When replacing the cover, ensure that the front edge is engaged tightly with the spring clips attached to the front panel.

Transistor amplifier TA1 (3C5161)

(Chap. 12, fig. 2, 4 and 7)

10. Unsolder the nine connections to pins a to j. These pins are identified on the rear of the plinth supporting TA1 (Chap. 12, fig. 7). Remove the two 6BA ch. hd. screws securing the tie rail to the top of TA1, (the tie rail remaining tied to the cable-form), and the 6BA screw and clamp securing the cable-form to TA1. Remove the four 6BA ch hd. screws securing the base of the TA plinth to the gear plate. Lift TA1 and plinth assembly off the gear plate and remove the four 6BA ch. hd. screws securing the transistor amplifier to the plinth and retain the screws. On replacement these screws should be substituted for those in the base of the replacement transistor amplifier.

11. Detailed servicing of the transistor amplifier is covered in Chap. 7, Appendix 4.

Socket PT1 and plug PT2

12. Remove the four 6BA ch. hd. screws retaining the side frames to the locating pin pillars, the 8BA ch. hd. screw and nut securing the lower right hand corner of the type label and the four 6BA screws securing the magnetic amplifier to the front panel. Withdraw the front panel and side frames from the transducer as far as the

cable-form will permit. With the special tool provided unscrew and remove the locking ring from the appropriate plug/socket. Extract the plug/socket from its socket and unsolder the connections to the base pins. (It is advisable to label each wire with a tag identifying the pin from which it is removed). Remove the plug/socket.

Magnetic amplifier MA1 (3C635 or 3C635/1)

(Chap. 12, fig. 2 and 4)

13. Unsolder the connections to pins ADJGHK and N on top of the magnetic amplifier. Remove the two 6BA ch. hd. screws securing the magnetic amplifier to its rear mounting pillars and the four 6BA screws securing the magnetic amplifier to the front panel. Lift out the magnetic amplifier complete with flux shield, from the top of the transducer. The flux shield can be separated from the magnetic amplifier by removing the remaining 6BA ch. hd. screw.

Motor-tachogenerator

14. Remove the magnetic amplifier as described in para. 13. Unsolder the eight leads connecting the motor-tachogenerator to the tag strip mounted on the gear plate (Chap. 12, fig. 6). Remove the four 6BA screws from the mounting flange of the motor-tachogenerator and lift vertically; the gear head remains on the motor plate.

Note . . .

After replacement of the motor-tachogenerator, the velocity feedback may require adjustment as described in Appendix 3, para. 10.

Synchro CX1 (I.A.S. synchro)

15. Remove the transistor amplifier (para. 10). Remove the five connections to the synchro. Remove the three 6BA ch. hd. screws securing the synchro clamps through the synchro mounting plate; remove the clamps. Remove the 80T gear from the shaft, and draw out the synchro vertically. It should be noted that on replacement the fixing clamp screws must be fully tightened when the electrical zero setting-up routine as described in Appendix 3, para. 15 has been completed.

Potentiometer RV3 (Chap. 12, fig. 2 and 6)

16. Remove the transistor amplifier (para. 10). Unsolder the three connections to the potentiometer and loosen the cable-form from the potentiometer. Release the split clamp securing the pinion to the potentiometer shaft. Remove the three 6BA ch. hd. screws and clamps from the gear plate and draw out the potentiometer vertically. After replacement setting up of RV3 must be carried out in accordance with the instructions contained in Appendix 3, para. 13.

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RV1 (Chap. 12, fig. 2)

17. Unsolder the three leads to the component. Remove the single 6BA ch. hd. screw securing the resistor to the gear plate, access to which is gained via a hole in the motor plate provided for this purpose. Lift the resistor off the gear plate.

RV4 (Chap. 12, fig. 2)

18. Unsolder the two leads to the component. Remove the single 6BA ch. hd. screw securing the resistor to the gear plate, access to which is gained via a hole in the motor plate provided for this purpose. Lift the resistor off the gear plate, together with the two 150-ohm fixed resistors (R15 and R16) mounted vertically alongside.

RV2 (Chap. 12, fig. 2)

19. Unsolder the two leads to the resistor. Remove the 6BA ch. hd. screw securing the resistor to the gear plate, access to which is gained via a hole in the motor plate provided for this purpose. Lift the resistor off the gear plate.

RV5 (Chap. 12, fig. 2)

20. Unsolder the three leads to the component. Remove the single 6BA screw securing the resistor to the gear plate, access to which is gained via a hole in the motor plate provided for this purpose. Lift the resistor off the gear plate.

Component panel (Chap. 12, fig. 4)

21. Proceed as in para. 10 (removal of transistor amplifier TA1) without removing the transistor amplifier from the plinth. Unsolder the connections from the cable-form to terminals of the component panel, labelling each wire with a tag identifying the point from which it is removed. The panel can now be lifted clear.

Components

22. It may be necessary to remove and replace

individual components from the component panel without entirely removing it. In such cases the panel should be released only as far as is necessary to gain access to the particular component without disturbing the cableform.

23. With snipe nosed pliers grip one wire of the component to be removed, apply the soldering iron to the turret lug to which the wire is connected and gently pull the connection apart. The wire should unwind easily as it is only hooked round the turret lug and not wrapped fully round it. Repeat for all other wires from the component. When refitting it should be remembered to wind the wire only half way round the turret lug in order to facilitate possible future removal.

R15 and R16

24. These resistors are mounted on the side of RV4. Remove the preset resistor as detailed in para. 18. Unsolder the fixed resistors mounted between a stand-off tag screwed to the top of the preset resistor, and one end of the preset resistor.

Capacitor C1 (Chap. 12, fig. 5)

25. Invert the transducer and release the clip holding C1 to the motor plate. Proceed as in para. 23.

Capacitor C2

26. C2 is located on the upper side of the motor plate almost immediately beneath RV5 (Chap. 12, fig. 2). Proceed as in para. 23.

MSW1

27. MSW1, together with the switch actuator, is removed by releasing the two 8BA screws securing the microswitch through two spacers to a keeper plate on top of the motor plate. Care must be taken not to lose the spacers and keeper plate. Remove the switch and actuator and, if required to change the switch, unsolder the two connections.

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TABLE 1
Sub-assemblies and components

Item	Sub-assembly	Component	If to be serviced	Remarks
(a)	(b)	(c)	(d)	(e)
1	Front panel and chassis	Socket Plessey 25-way orientation O, PT1	Yes	
		Plug Plessey 12-way orientation O, PT2	Yes	
		Static pressure line adapter	No	
		Captive screw	No	
		Mounting pillars for magnetic amplifier MA1	No	
2	Gear Plate	Capsule unit cover	No	Capsule unit is mounted between gear and motor plates
		Synchro CX1	Yes	
		Adjustable cam	Yes	Adjustment only, by fully trained personnel
		Magnetic amplifier, MA1, flux shield and mounting pillars	Yes	MA1 may be 3C635 or 3C635/1
		Transistor amplifier TA1 (3C5161) and plinth	Yes	
		Preset potentiometers RV1, RV2, RV3, RV4, RV5	Yes	
		Component panel assembly Ref. No. 3B8097 carrying resistors R5, R6, R7, R9, R10, R11, R12, R13, R14, silicon diodes MR1 and MR2.	Yes	
		R15 and R16 mounted on RV4	Yes	
3	Motor Plate	Cam unit CU8	No	
		Motor-tachogenerator and gear head	Yes	Motor-tachogenerator only
		Capsule unit body	No	See item 2
		Capacitors C1 and C2	Yes	
		MSW1	Yes	

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