

Appendix 1

STANDARD SERVICEABILITY TEST for STATIC TRANSDUCER, TYPE B

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Introduction

1. This appendix describes the serviceability tests to be applied to the static transducer Type B, Ref. No. 6A/6434 prior to installation in an aircraft and at any time when the serviceability is suspect. The tolerances specified are not to be exceeded.

Test equipment

2. The following test equipment is required:—
- (1) Multimeter model 8 SX (Ref. No. F19-6625-99-943-1524)
 - (2) Portable pitot-static test set, Mk. 3 (Ref. No. 6C/2106) or air data test set, Type B (Ref. No. 6C/3720)
 - (3) Valve voltmeter, Type CT343 (Ref. No. F19-6625-99-943-6282) or instrument of similar range and accuracy.
 - (4) Test set, Type 9B (Ref. No. 6C/2868) consisting of the following units:—
Air data test panel (Ref. No. 6C/3649)
Power supply test panel (Ref. No. 6C/4322)

Distribution panel (Ref. No. 6C/3650)
Power control unit (Ref. No. 6C/2017)
Interconnecting cables (Ref. No. 6C/3651, 6C/3688 and 6C/4321).

Power supplies

3. The following power supplies are required:—
- (1) $115 \pm 2\text{V}$, 400 ± 5 c/s 3-phase, phase rotation ABC, B phase earthed.
 - (2) 27 ± 1
 $- 0.5$ V d.c.
 - (3) 230V, 50 c/s (for use with the air data set, Type B).

Servicing methods

4. (1) All operations are to be carried out in the sequence listed. The operation is to be read through completely before it is carried out.
- (2) The 3-phase supply is to be maintained at $115 \pm 2\text{V}$ and 400 ± 5 c/s throughout the test unless otherwise detailed.

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(3) When tests are completed a blanking cover is always to be fitted to the static input of the transducer.

(4) Unless otherwise stated, all tests of the static transducer are to be carried out with the base of the transducer level and in the horizontal plane.

(5) The unit is only to be subjected to changes of pressure when the electrical circuit is operative.

(6) When power for the air data test set, Type 9B, is derived from the power control unit the auxiliary power input plug on the power supply test panel is live (*fig. 1*) and the protection cap provided must be fitted at all times.

(7) In the event of the servo indicator recording potentiometer being driven to the end of its travel, power to the servomotor is automatically cut-off by means of micro switches. To restore the power, set the A.D.S. OUTPUT switch to COUNTER RESET which will short circuit the micro switch and energize the servomotor in the correct sense to drive the potentiometer away from its end stop. The counter may now be driven to the desired reading by setting the A.D.S. OUTPUT switch to the appropriate position and operating the INCREASE/DECREASE switch. The air data test set, Type 9B, distribution panel electrical connections and cable harness associated with the transducer are identified with yellow markings.

(8) Table 1 gives the abbreviations used for panels, meters, switches, potentiometers and other components contained on the test equipment.

TABLE 1

Test equipment components—abbreviations

Component	Abbreviation
Power control unit	P.C.U.
Power supply test panel	P.S.T.P.
Main ON/OFF switch	S1
SOCKET SELECT switch	S8
VOLTAGE SELECT switch	S9
TORQUE SWITCH TEST switches	S10, S11, S12
INT/EXT METERS switch	S13
M3 FUNCTION switches	S14, S15
Balance 20V (X and Y)	RV9
A.C. voltmeter	M1
D.C. voltmeter	M2
Millivoltmeter	M3
PHASE ROTATION INDICATOR	X1
Air data test panel	A.D.T.P.
SYSTEM LOAD switch	S3
A.D.S. OUTPUT switch	S4
SIMULATE switch	S5

TEMPERATURE SELECTOR switch	S6
INCREASE/DECREASE counter bias switch	S7
DISPLAY SYNCHROS potentiometers	CX1 (COARSE) CX2 (FINE)
LOG (P-S) SIMULATOR	T4
SERVO INDICATOR	G1

Preliminary examination

5. Examine the transducer for damage and clean externally using a dry rag (Ref. No. 32B/242).

TEST PROCEDURE

Preparation of test set, Type 9B

6. Connect the power supply cable to the INPUT plug on the P.C.U., as shown in Fig. 1. The pin connections are as follows:—

- A — 115V A phase
- B — 115V B phase
- C — 115V C phase
- D — 28V d.c. +ve
- E — 28V d.c. -ve.

7. (1) Set P.C.U. MAINS switch to ON.
- (2) Ensure that the neon lamp is lit and is indicating the correct phase rotation.
- (3) Check that the frequency is 400 ± 5 c/s.
- (4) Adjust the A.C. INCREASE control until the a.c. voltmeter reads 115V. Check that all three positions of the VOLTAGE SELECTOR switch is 115 ± 2 V.
- (5) Set VOLTAGE SELECTOR switch to A-B.
- (6) Adjust the D.C. INCREASE control until the d.c. voltmeter reads 28V.

8. Ensure that all four lamps of X1 (P.S.T.P.) are evenly lit.

Self tests on test set, Type 9B

Power supply test panel

9. (1) Set the P.S.T.P. switches as follows:—
 - S1 to ON
 - S8 to INT. P.S.U.
 - S2 to 2.
 - (2) Set S9 to the positions indicated in Table 2. All voltages are to be within the tolerances quoted.
 - (3) Set S9 to OFF.
10. (1) (a) Set S14 to 20V BAL. and S15 to X100.
 - (b) Set S15 to successively lower ranges. The final M3 reading is not to exceed 10mV.
 - (c) Set S15 to OFF.

TABLE 2
Voltage levels

VOLTAGE SELECT SW. (S9)	Voltage reading		Tolerance	
	M1	M2	plus	minus
25V REF	25	—	1.5	1.5
170V	170	—	2	5
—30V	—	30	2.5	2.5
—6V (a)	—	6	0.5	0.5
+9V	—	9	0.5	1.0
—6V (b)	—	6	0.5	0.5
8V	8	—	0.5	0.5
50V	50	—	2	0
115V A \emptyset	115	—	2	2
115V B \emptyset	115	—	2	2
115V C \emptyset	115	—	2	2
20V (X)	20	—	1.5	1.0
20V (Y)	20	—	1.5	1.0
9.5V (X)	9.5	—	0.5	0.5
9.5V (Y)	9.5	—	0.5	0.5
6V a.c.	6V	—	1.0	1.0
6V a.c. PS8	6V	—	1.0	1.0

- (2) (a) Set S14 to 9.5V BAL. and S15 to X100.
 (b) Set S15 to successively lower ranges. The final M3 reading is not to exceed 10mV.
 (c) Set S15 to OFF, S2 to 1 and S1 to OFF.

Air data test panel

- 11.** (1) Set the switches and controls as follows:—
 CX1 and CX2 to 0 deg
 T4 to 0000
 S3 to ON
 S6 to 0.4
 S5 to OFF
 S4 to TEST 4
- (2) Set S1 to ON. C1 is to indicate 00000 ± 2 .
- (3) Set S5 to MACH 0 FT., T4 to 3828 and S4 to LOG P-S. C1 is to indicate within ± 20 divisions of the figure shown for LOG P-S at 150 kt, in Table 3 of the test set, Type 9B, calibration chart.
- (4) Set S5, S4, S1 and the P.C.U. MAINS switch to OFF.

Static transducer

12. Connect the static transducer to ST1 and ST2 (yellow sockets) on the distribution panel using cable assemblies CA28 and CA29, as shown in fig. 1.

Continuity test

13. Using a multimeter, carry out a continuity test on the transducer at the distribution panel patch board. Continuity must be obtained between the pins on the patch board which are joined with a white line.

Leak test

Pitot-static test set, Mk. 3

- 14.** (1) Prepare the pitot-static test set, Mk. 3 for use as described in A.P.1275T, Vol. 1, Sect. 3, Chap. 38 and fit into the test set, Type 9B as shown in fig. 1.
- (2) Blank off STATIC outlet and PITOT outlet.
- (3) Reduce the pressure to 300mb and close STATIC control valve.
- (4) Note the change of the test set STATIC INDICATOR reading after 3 min.
- (5) Increase the pressure to atmospheric.
- (6) Connect the static transducer STATIC union to the pitot-static test set STATIC outlet, using a flexible hose not exceeding 5 ft. in length (fig. 1). Secure the ends of the flexible hose with hose clips.
- (7) Set the switches on the test set, Type 9B as follows:—
 P.C.U. MAINS switch to ON
 S4 switch to LOG S
 S1 to ON

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TABLE 3
Ranging tests

Height ft. × 1000	Static pressure (mb)	Air data test set, Type B						Pitot-static test set, Mk. 3					
		Log S		HT.4T		HT.10T		Log S		HT.4T		HT.10T	
		G1 reading	Tol.	G1 reading	Tol.	G1 reading	Tol.	G1 reading	Tol.	G1 reading	Tol.	G1 reading	Tol.
-1	1050.4	See test	±106	99712	±21			See test	±105	99712	±25		
0	1013.2	set, Type	±105	00000	±21	00000	±48	set, Type	±105	00000	±25	00000	±58
+1	977.2	9B cali-	±105	00288	±21			9B cali-	±105	00288	±25		
2	942.1	bration	±105	00576	±21	01372	±55	bration	±105	00576	±25	01372	±62
3	908.1	chart	±105	00864	±21			chart	±105	00864	±25		
4	875.1		±105	01152	±21				±105	01152	±25		
5	843.1		±105	01440	±21				±105	01440	±25		
10	696.8		±105	02880	±21				±105	02880	±25		
15	571.8		±105	04320	±30				±105	04320	±35		
20	465.6		±105	05760	±38				±105	05760	±45		
25	376.0		±105	07200	±45				±105	07200	±55		
30	300.9		±105	08640	±52				±105	08640	±65		
35	238.4		±105	10080	±62				±105	10080	±77		
40	187.5		±135	11520	±72				±170	11520	±90		
45	147.5		±137	12960	±83				±170	12960	±105		
50	116.0		±140	14400	±94				±170	14400	±120		

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S3 switch to ON

Allow 15 min for warm up.

- (8) Reduce the pressure to 300mb and close the STATIC control valve.
- (9) Note the change of the test set STATIC INDICATOR reading after 3 min. This is not to exceed 1.5mb more than that observed in sub-para. (4).
- (10) Increase the applied pressure to atmospheric.

Air data test set, Type B

15. (1) Prepare the air data test set, Type B for use as described in A.P.1275T, Vol. 1, Sect. 3, Chap. 42.

(2) Connect the static transducer to the ALT outlet of the air data test set, Type B, distribution panel using a flexible hose not exceeding 5 ft in length and a shut-off valve (*fig. 1*).

(3) Open the shut-off valve.

(4) Set the air data test set, Type 9B switches as follows:—

S4 switch to LOG S

P.S.U. MAINS switch to ON

S1 to ON

S3 to ON

Allow 15 min. for warm-up.

- (5) Increase the height to 30,000 ft and close the shut-off valve.
- (6) Note the change of G1 over 3 min. This is not to exceed forty divisions.
- (7) Open the shut-off valve and decrease height to 0 ft.

Ranging tests

16. Carry out the ranging tests outlined in Table 3. At each height set S4 to LOG S, HT.4T and HT.10T as necessary. Readings are to be taken with increasing and decreasing height and are to be within the tolerances quoted.

Note . . .

When switching from LOG S to HT.4T or HT.10T and from HT.4T to HT.10T, G1 must be driven to the figure given in Table 3 by setting S7 to the appropriate position. On releasing the switch toggle the counters will drive to the correct reading.

Servo follow-up test

17. (1) Set S4 to HT.4T.
- (2) Decrease the pressure to the equivalent of 10,000 ft.
- (3) Set S1 to OFF.
- (4) Increase the pressure to the equivalent of 0 ft.
- (5) Set S1 to ON. The synchro should come to rest within 6 sec with G1 reading 00000 \pm 25.

Switching off and disconnecting equipment

18. (1) Set all the switches and simulators on the test set, Type 9B to off, normal or zero positions.
- (2) Disconnect the static hose from the transducer.
- (3) Disconnect the transducer from the test set, Type 9B.
- (4) Lightly smear plug and sockets threads (ST1 and ST2) with silicone compound MS4.
- (5) Fit viscap to transducer static connection.



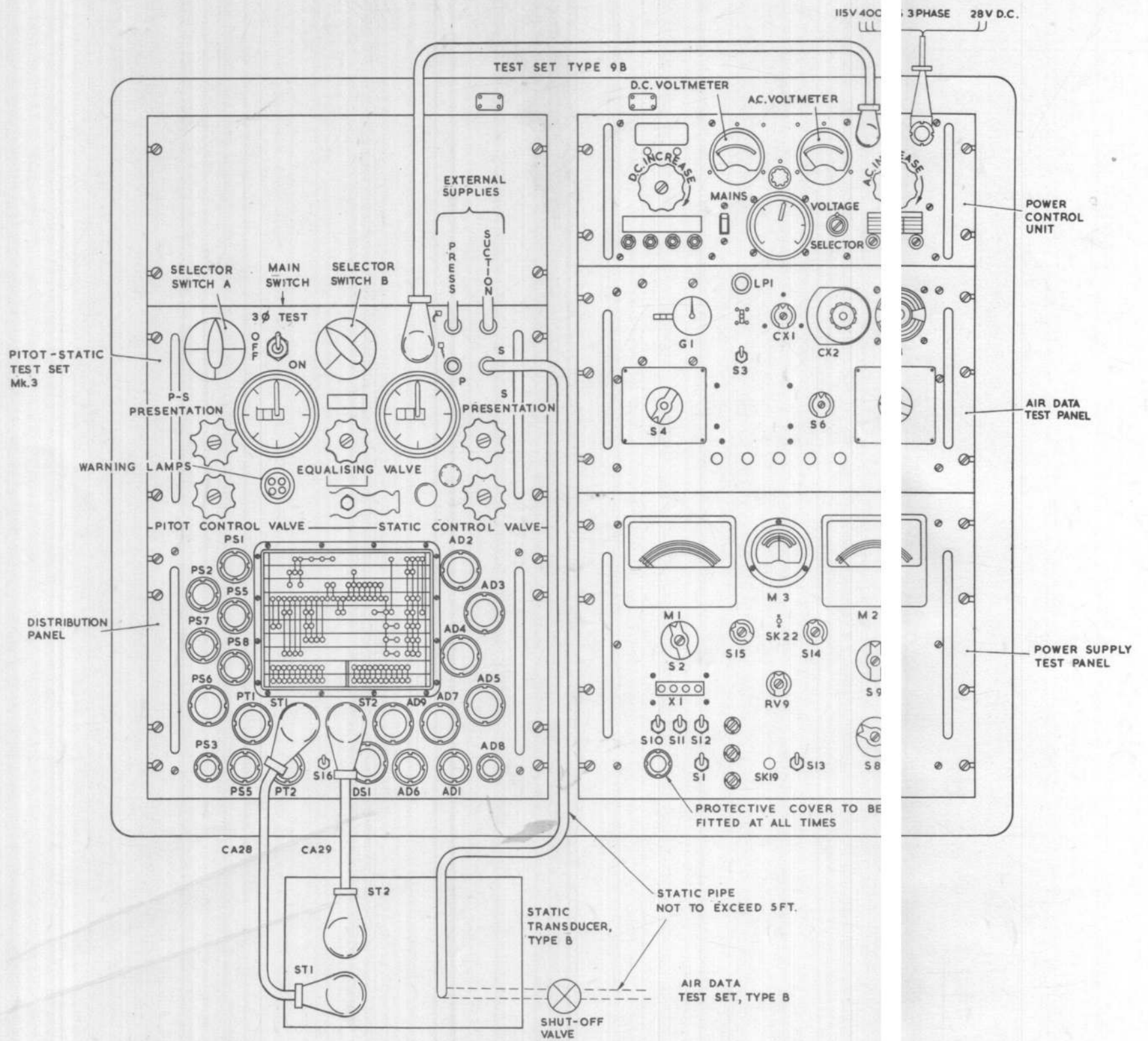


Fig. 1

Static transducer, Type B, connected to test equipment.

Fig. 1

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