

Chapter 3 I.L.S.

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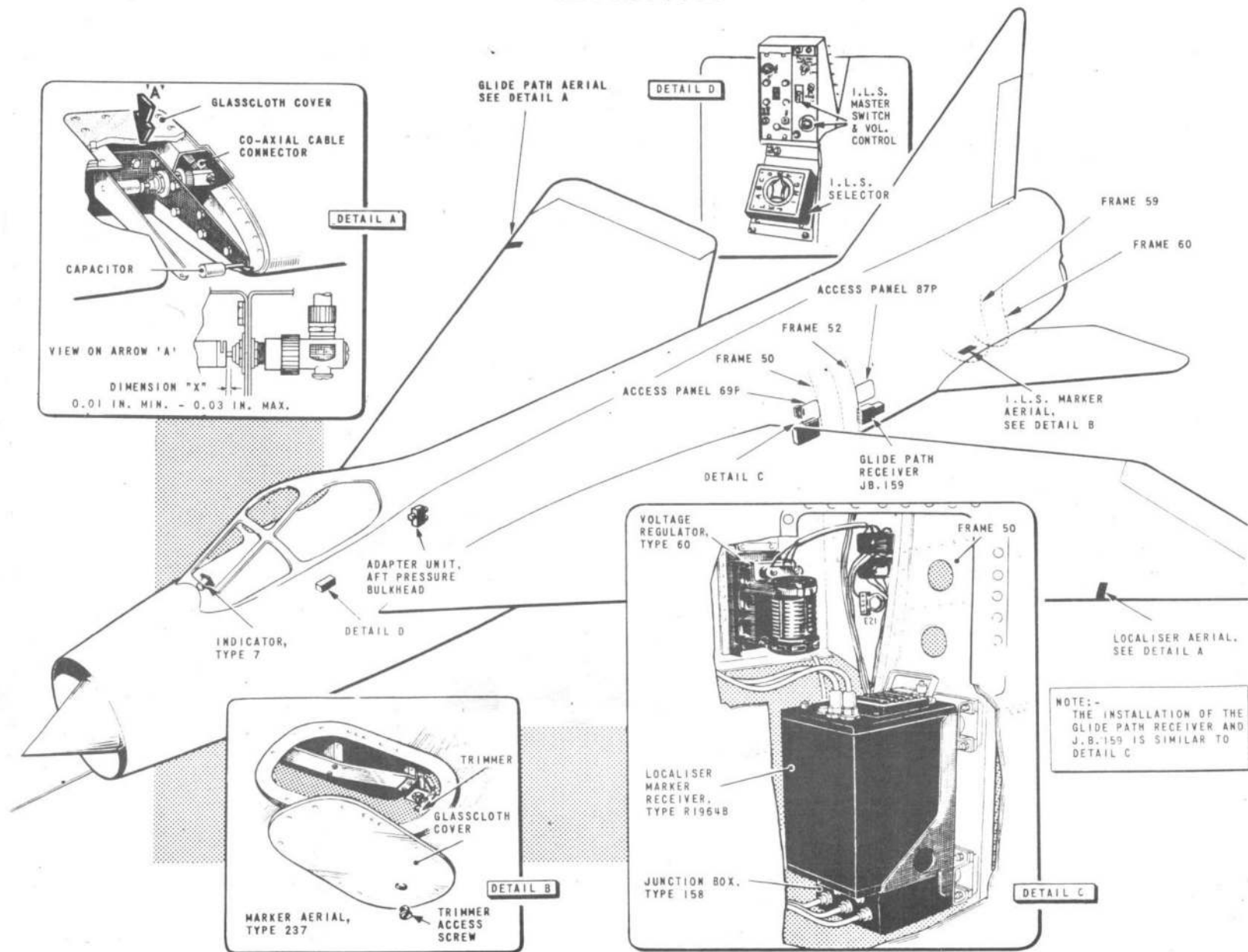


FIG. 1. I.L.S. INSTALLATION

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WARNING

The relevant safety precautions detailed on the LETHAL WARNING marker card must always be observed before entering the cockpit or performing any operations upon the aircraft.

DESCRIPTION**General**

1. This chapter now includes information contained in the following modification:-

Mod.4499 Introduction of I.F.F./S.S.R.

The Instrument Landing System (A.R.I. 18011) provides the pilot with facilities for bringing the aircraft within sight of the runway under conditions of poor visibility. The aircraft installation is described in this chapter, and details of the equipment units and their functioning are given in A.P. 116B-0408-1.

Indicator, Type 7

2. This indicator is mounted on the instrument flying panel and shows the position of the aircraft relative to the runway.

Marker lamp, Type B

3. The marker lamp indicates when the aircraft is over a particular marker beacon in the approach path by means of a flashing signal peculiar to that marker beacon.

I.L.S. master switch

4. This ON/OFF switch is mounted next

to the Tacan control unit on the port console.

I.L.S. volume control

5. This control is fitted adjacent to the I.L.S. master switch.

Control unit, Type 705

6. The control unit is mounted at the forward end of the radio panel. It contains the local oscillator circuits of the localizer and glide path receivers, and the channel selector switch.

Localizer-marker receiver and J.B.158

7. This receiver and junction box, which are complementary to each other, are mounted on the forward face of frame 50, at the port side of the aircraft.

Glide path receiver and J.B.159

8. This receiver and junction box, which are complementary to each other, are mounted on the aft face of frame 52, at the port side of the aircraft.

Voltage regulator, Type 60

9. The regulator is mounted immediately above the localizer-marker receiver inside panel 69P. It provides d.c. at 19 volts for the heater circuits of the receivers.

Aerials

10. Three aerials are fitted inside suitably-placed cavities on the aircraft; the glide path aerial in the starboard wing leading edge, the localizer aerial in the port leading edge, and the marker

aerial in the skin on the underside of the fuselage between frames 59 and 60. The aerials are accessible through plastic panels secured with countersunk screws.

I.L.S. adapter unit

11. This unit, situated on the rear face of the aft pressure bulkhead, is connected in the circuit between the glide path receiver and the I.L.S. indicator. Its function is to supply I.L.S. signals to the autopilot computer.

Note...

The 'I.L.S. coupling' facility is not available on the present autopilot system.

SERVICING**General**

12. The equipment units should be checked periodically for security and freedom from damage, and the aerials must be kept free from corrosion. Instructions for servicing the various items are given in A.P.116B-0408-1.

Marker aerial

13. To ensure maximum efficiency, provision is made for tuning the aerial in situ to its marker frequency of 75 MHz by means of a trimmer illustrated on fig.1.

Power supply circuit

14. When investigating faults or making continuity checks on the power supply circuit, reference should be made to the routing diagram in Sect.6, Chap.11.

FUNCTIONAL TESTS

Note...

In addition to the normal operational tests and continuity checks, the following tests should be made at the intervals laid down in Vol.4 of this publication, or whenever any major component of the system has been repaired or renewed.

Equipment

15. The following test equipment is required:-

Test set, Type 391 - Ref.No.10S/16374
 Headset, Type 9 - Ref.No.10AH/14
 Microphone assy.,
 Type 48 - Ref.No.10A/14381

Test procedure

Localizer deflection sensitivity

16.

(1) Check that seals on pre-set controls of R.1964B and R.1965B are intact.

Note...

If any seal is broken, return equipment for bay servicing.

(2) Place test set Type 391 as near as possible to localizer aerial.

(3) Extend localizer aerial on test set.

(4) Connect test set to 28-volt d.c. supply. Check correct polarity by moving the switch on front of test set to 'Supply' position; the meter should read to the right.

(5) Switch test set 'ON', depress 'Supply Operate' switch and check that

pointer on test set meter falls within red section of scale.

(6) Set 'I.L.S. Master' switch to 'ON', and allow 5 min warm-up period.

(7) Set VP/I.L.S. indicator switch on U.H.F. switch panel to I.L.S./INDR.

(8) Set channel selector switch on I.L.S. control unit to channel corresponding to working frequency of test set.

(9) Plug headset into pilot's mic/tel. socket. Refer to note after para.18(8).

(10) Select NORMAL on U.H.F. set selector switch and T/R on U.H.F. control unit. Turn volume control to maximum (clockwise) and allow 2 min for the equipment to warm up.

(11) Turn I.L.S. volume control to maximum (clockwise).

(12) Set up test set as follows:-

Function switch to 'LOCAL'

Tuning switch to 'XTAL'

Adjust deflection control for zero reading on meter.

(13) Check that localizer pointer of I.L.S. indicator is in the 'On Course' position and flag is hidden.

(14) Adjust deflection control to give reading of 58 micro-amp to the left on test set meter, and check that localizer

pointer of aircraft indicator reads three dots to the left.

Note...

The centre circle is counted as the first dot.

(15) Adjust deflection control to give reading of 58 micro-amp to the right on test set meter, and check that pointer of aircraft indicator reads three dots to the right.

(16) Set test set function switch to 'LOC AUDIO', Freq. Mod. (C.P.S.) switch to '1300', and check that a 1300 Hz note is heard in the headset.

(17) Set test set tuning switch to 'AUTO'.

(18) Check that aircraft indicator reads at least two dots deflection to the left when channel selector switch on I.L.S. control unit is set to any crystallized channel.

Glide path deflection sensitivity

17.

(1) Place test set as near as possible to glide path aerial.

(2) Extend glide path aerial on test set.

(3) Set function switch to 'GLIDE PATH' and tuning switch to 'XTAL'.

Note...

If test set is being used on 'MANUAL', retune to glide path frequency.

TABLE 1

Connectors and cable assemblies.

The item numbers given in this table refer to the connectors and cable assemblies in the I.L.S. circuit diagram, fig.2.

Symbols:- TM 20 = UNITER SIL 20, T 14 = UNITER SIL 14, F 12 = UNIEGLAS 12.

CONNECTORS

ITEM	CABLE	REFERENCE NO.
4	Coaxial	10 HB/8861
4A	Coaxial	10 HB/5033
4B	Coaxial	10 HB/5047
5	Coaxial	10 HB/5043
5A	Coaxial	10 HB/5034
5B	Coaxial	10 HB/5046
6	Coaxial	10 HB/5045
7	T 14 (braided)	10 HB/5039
8	TM 20	10 HB/5035
8A	TM 20	10 HB/8859
9	TM 20	10 HB/5038
9A	TM 20	10 HB/8860
10	TM 20	10 HB/5037
10A	TM 20	10 HB/5029
10B	6-core sheathed	10 HB/9156
11	TM 20	10 HB/5036
12	T 14 (braided)	10 HB/5040
13	Coaxial	10 HB/5042
13A	Coaxial	10 HB/9158
14	Coaxial	10 HB/5041
14A	Coaxial	10 HB/9157
15	TM 20	10 HB/8858
15A	TM 20	10 HB/8857
	Wire pin-to-pin	
	Wired pin-to-pin except pins E & F which connect to 2-pin plug on marker cable	

CABLE ASSEMBLIES

			PART NO.
IL 55	F 12	Voltage regulator to 10-way T/B	EB3.82.441
IL 59	F 12	10-way T/B to E.21	EB3.82.443

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