

Chapter 13A
A.R.I. 18101 AND A.R.I. 18157

LIST OF CONTENTS

	Para.		Para.		Para.
Introduction ...	1	Comparator ...	6	SERVICING	
DESCRIPTION AND OPERATION		Backplate assembly ...	8	Precautions ...	15
A.R.I. 18101		Control unit ...	9	General instructions ...	16
Power supplies ...	3	A.R.I. 18157		REMOVAL AND INSTALLATION	
Aerials ...	4	Switch unit ...	10	Precautions ...	18
Filter unit ...	5	Indicator ...	11	General instructions ...	19
		Junction box, homing ...	14		

LIST OF TABLES

	Table
Major items of equipment ...	1
Connectors for A.R.I. 18101 ...	2
Connectors for A.R.I. 18157 ...	3

LIST OF ILLUSTRATIONS

Fig.		Fig.
Location of equipment ...	1	Routeing charts
Assembly of aerial ...	2	A.R.I. 18101 ...
		A.R.I. 18157 ...

Introduction

1. The A.R.I. 18101 and the A.R.I. 18157 operate in conjunction with the main receiving equipment of the second sonics installation (Chap. 13, A.R.I. 18108/1), and provide c/w homing facilities, thus permitting the aircraft to be homed to a sonobuoy transmitter. The A.R.I. 18101 equipment

provides the homing information, which is then fed to the A.R.I. 18157 for visual indication at the pilot's and navigator's stations. The A.R.I. 18157 includes a switch unit, under the control of the 1st pilot, which allows the homing indicators to display either sonobuoy homing information, or U.H.F. homing information from the

A.R.I. 18120/4 (Chap. 6).

2. Full information on the A.R.I. 18101 and 18157 is contained in the publication quoted in Table 1, but a brief description of the various units is contained in the following paras. Installation details are shown in fig. 1.

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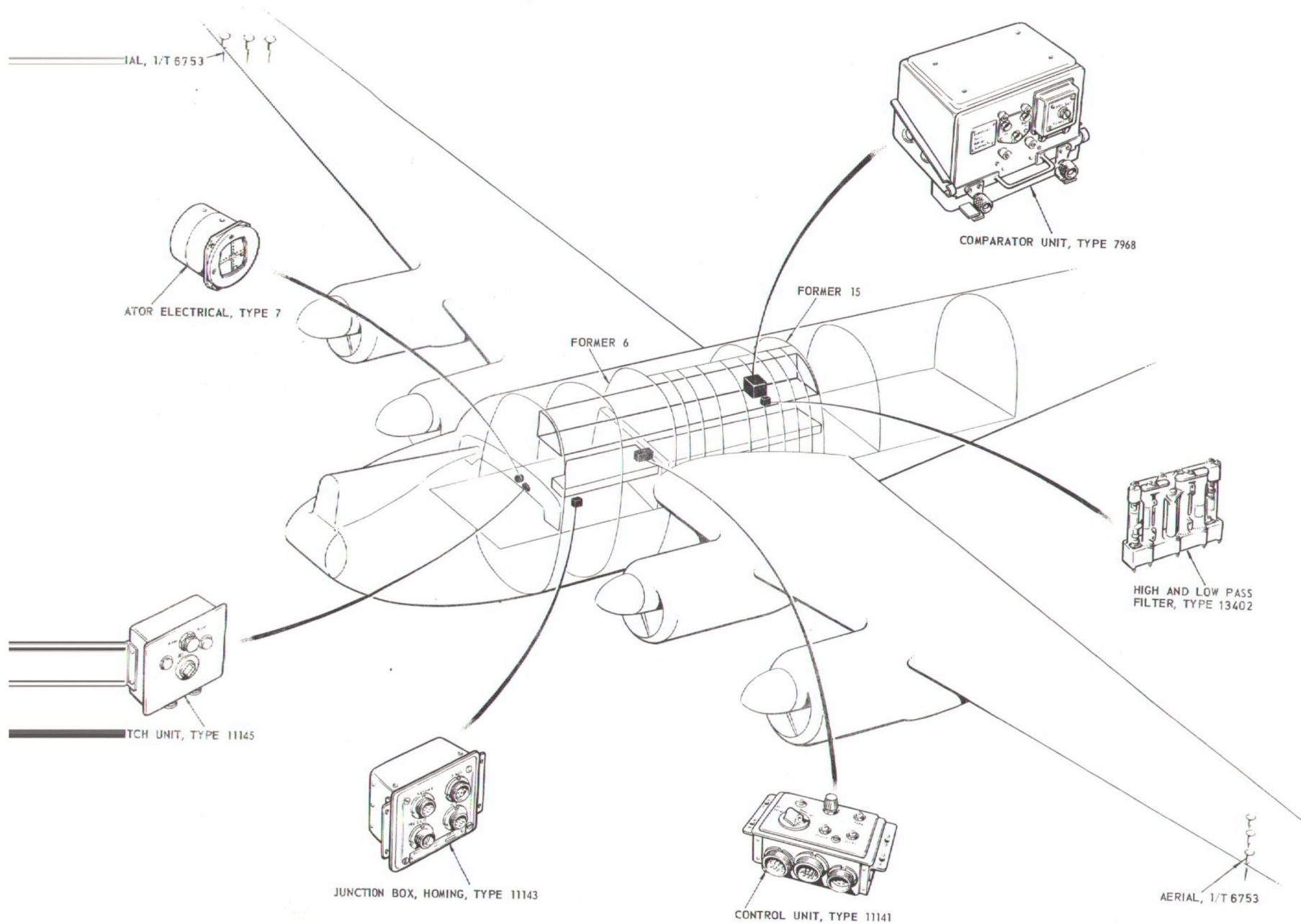


Fig.1. Location of equipment
◀Mod. 1291 embodied and filter Type No. corrected▶

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DESCRIPTION AND OPERATION

A.R.I.18101**Power supplies**

3. The A.R.I.18101 operates from 115-volt, single-phase a.c. and 28-volt d.c., connection being made into the sonics power distribution panel (Chap.13). The supply for switching the display on the A.R.I.18157 is fed from the A.R.I. being displayed on the indicators. Should the A.R.I.18101 supply fail, however, the A.R.I.18157 will automatically be selected to "U.H.F. homing".

Aerials

4. The aerial array consists of a quarter-wave blade, with a reflector and director, mounted on the underside of each outer mainplane, as shown in fig.2. To avoid any mismatch between the two aerials, the port and starboard feeder cables are manufactured equal in length.

Filter unit

5. A filter unit, Type 13402, is coupled into each aerial feeder cable to prevent interference to the homing signals from equipment operating on the same frequency band. The two filters are mounted on the navigator's radio shelf at former 11. The inboard unit is in the starboard aerial feeder.

Comparator

6. The comparator unit operates in conjunction with either of the receivers in the "second" A.R.I.18108 installation (Chap.13), to provide homing and signal strength indications for display on the A.R.I.18157 electrical indicators, Type 7. The homing aerial inputs are switched alternately and the signal strengths compared. With equal signals, the indicators

will show the sonobuoy to be directly ahead of the aircraft. With the sonobuoy to port or starboard of the aircraft centre line, the signal inputs from the homing aerials will be unequal. In this instance the indicators will show the change of direction required to restore the aircraft to the correct heading with respect to the sonobuoy. The horizontal pointer of the indicators is fed with signal strength information, whilst a dip in the needle reading indicates that the aircraft is over the top of the sonobuoy transmitter.

7. The comparator consists of several sub-modules mounted on a main chassis. R.F. connections to the unit are via three co-axial sockets on the front face; a 27-pole uniton plug on the rear face provides for the remaining connections. The unit is mounted on the navigator's top shelf, between formers 10 and 11.

Backplate assembly

8. The backplate, Type 11810, is attached to the comparator tray and carries a 27-pole socket to mate with the plug on the comparator. In addition, the backplate carries two change-over relays, designated "A" and "B" controlled by a switch on the control unit, Type 11141. The relays allow either the "A" or "B" receiver of the "second" A.R.I.18108/1 installation to be selected into the homing system as required.

Control unit

9. The control unit, Type 11141, fitted on the routine attack navigator's panel, carries the operational controls for the A.R.I.18101. The unit also includes circuits for the signal strength indication,

together with several associated pre-set controls. Connections to the unit are via two Mk.4 plugs and a Mk.4 socket.

A.R.I.18157**Switch unit**

10. The switch unit, Type 11145, is mounted on the canopy control panel and provides the pilot with over-riding control of the system used for homing. The unit carries a two-position switch, identified RT. and SB, which controls the four switching relays in the junction box, Type 11143. With the switch set at SB, the homing indicators of the A.R.I.18157 will display sonics information whilst selecting the RT position will connect the indicators to the A.R.I.18120/4 installation. Should any failure occur in the switching circuits, however, the indicators will automatically revert to displaying RT homing information.

Indicator

11. The indicator, electrical, Type 7, is a crossed pointer instrument. The vertical pointer displays azimuth bearing information on the source of the signal transmitted, relative to the fore and aft axis of the aircraft. When the A.R.I.18157 is selected to SB, the horizontal pointer acts as a signal strength indicator, the biasing being such that with no signal, the pointer is deflected fully down. It should be noted that the horizontal pointer is not used when the system is selected to RT homing.

12. With the selected homing equipment inoperative, warning flags are displayed on the indicator.

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13. Two indicators are fitted as part of the A.R.I.18157, one on the routine

attack navigator's panel and one on the pilot's panel.

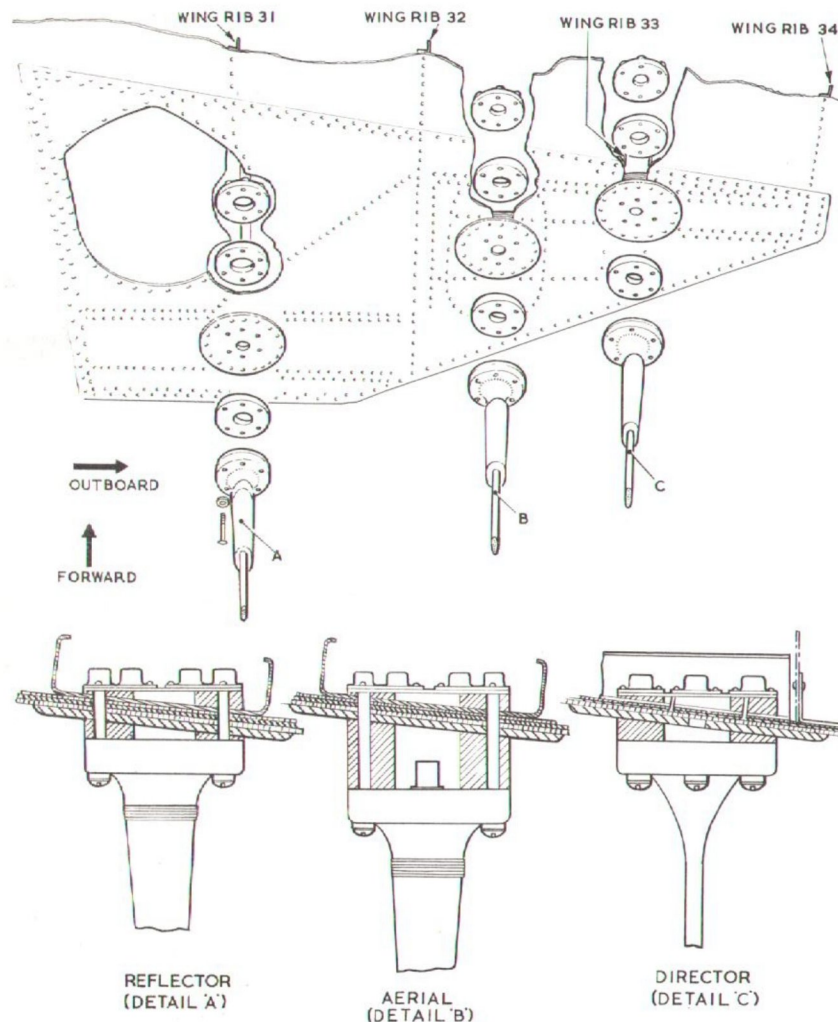


Fig.2 - Assembly of aerial

Junction box, homing

14. This junction box is mounted below the level of the signaller's table, between formers 1 and A, and serves as an inter-connecting point for the installation. Contained within the box are the four switching relays, mentioned in para.10.

SERVICING

Precautions

15. Before attempting any servicing, the warning notes and general servicing precautions in Chapter 1 of this section should be noted.

General instructions

16. At the appropriate servicing periods, the equipment should be examined for damage, corrosion and security. Where applicable, the bonding of the mountings should be checked, and filaments replaced when necessary. Connectors should be examined for security and damage.

17. Full servicing information, including test equipment details, is contained in A.P.116G-0301 and 0302.

REMOVAL AND INSTALLATION

Precautions

18. Prior to the removal of any item of equipment, the notes in Chapter 1 of this section should be read.

General instructions

19. Removal of the major items of equipment is straightforward and detailed instructions are not considered necessary.

20. When replacing or reconnecting items, ensure that the plug pins are not damaged or distorted and that the plugs and sockets are free from corrosion.

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TABLE 1

Major items of equipment

Item	Type	Ref. No.	A.P. Reference
A.R.I.18101			
Control unit (Navigator)	11141	10L/16363	◀ A.P.116G-0301-1 ▶
Comparator unit	7968	10D/21574	
Backplate (Comparator)	11810	10D/21576	
Filter unit	13402	10P/13292	
A.R.I.18157			
Switch unit (Pilot)	11145	10F/20137	}
Junction box, (Homing)	11143	10D/21575	
Indicator (Electrical)	7	10Q/61	

TABLE 2

Connectors for A.R.I.18101

Part No.	Cable form	Connecting
2/T5674	Miniature 1C (DEF.10) 2 off Equipment wire (Spec.DEF.12B) Type 2, 23/.0076, 2 off	Control unit 11141 JB9429 to No.2 junction box 9429 C.U.(N)
3/T5674	Uniradio 43	No.2 receiver A-RF to relay A (A) (Comparator backplate)
4/T5674	Uniradio 43	No.2 receiver B-RF to relay B (A) (Comparator backplate)
5/T5674	Uniradio 43	No.2 amplifier 11144 OUT.1 to relay A (B) (Comparator backplate)
6/T5674	Uniradio 43	No.2 amplifier 11144 OUT.2 to relay B (B) (Comparator backplate)
7/T5674	Uniradio 43	◀ Filter unit 13402, Port, OUT to Comparator 7968 (Port)
8/T5674	Uniradio 43	Filter unit 13402, Stbd., OUT to Comparator 7968 (Stbd.) ▶
2/T5948	Uniradio 67	Plugbreak No.794 to rib 1 wing break, (Starboard)
3/T5948	Miniature 1C (DEF.10) 2 off Equipment wire (Spec.DEF.12B) Type 2, 23/.0076, 20 off	Comparator 7968 to relay A (white) (Comparator backplate) Comparator 7968 to relay B (black) (Comparator backplate) Comparator 7968 to Sonics P.D.P.6

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TABLE 2 (continued)

Part No.	Cable form	Connecting
4/T5948	Uniradio 67	Plugbreak No.793 to rib 1 wing break (Port)
5/T5948	Uniradio 43	◀ Filter unit 13402, Port, IN to Plugbreak No.793
6/T5948	Uniradio 43	Filter unit 13402, Stbd. IN to Plugbreak No.794 ▶
13/T4668	Uniradio 67	Rib 1 wing break, Port to rib 19 wing break (Port)
14/T4668	Uniradio 67	Rib 1 wing break, Stbd., to rib 19 wing break (Stbd.)
15/T4668	Uniradio 67	Rib 19 wing break, Port to ribs 32 and 33 wing break (Port)
16/T4668	Uniradio 67	Rib 19 wing break, Stbd. to ribs 32 and 33 wing break (Stbd.)

TABLE 3

Connectors for A.R.I.18157

Part No.	Cable form	Connecting
2/T5663	Equipment wire (Spec.DEF.12B) Type 2, 23/.0076, 7 off	Junction box 11143 C.U.(N) to Switch unit 11141 J.B.H.
5/T5663	Equipment wire (Spec.DEF.12.B) Type 2, 23/.0076, 12 off	Junction box 11143 Meter to Indicator elect (Navigator)
2/T5950	Equipment wire (Spec.DEF.12B) Type 2, 23/.0076, 8 off	Switch unit 11145 Meter to Indicator elect (Pilot)
3/T5950	Equipment wire (Spec. DEF.12B) Type 2, 23/.0076, 12 off	Junction box 11143 SW.U to switch unit 11145 J.B.H.
4/T5950	Equipment wire (Spec.DEF.12B)	Junction box 11143 R/T. to Junction box 9636 IND. OUT

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A.P.O. 1B-1702-1B3, Sect. 8, Chap. 13A

A.L. 13, Nov. 67

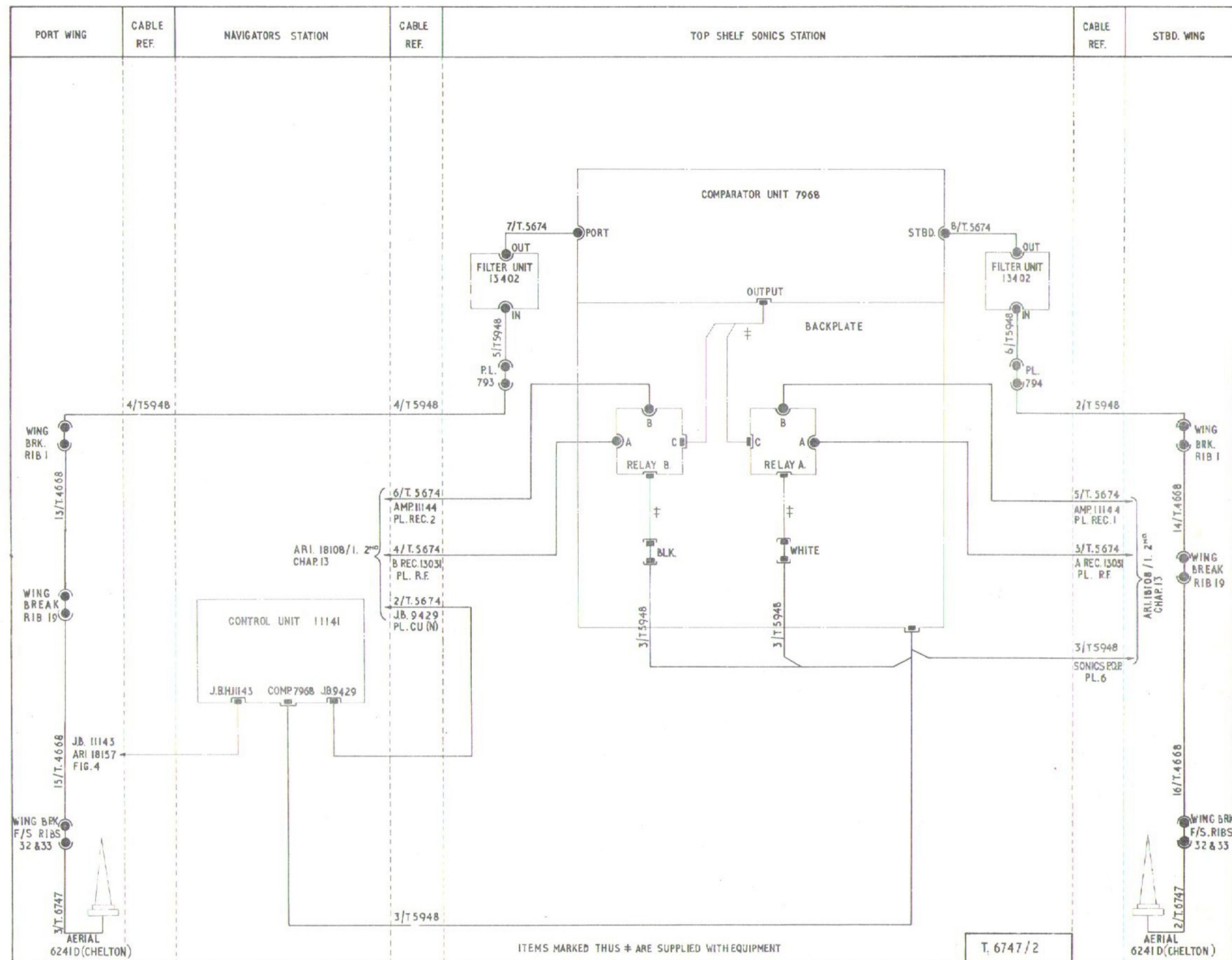


Fig. 3. A.R.I. 1B101

Mod. 1291 embodied

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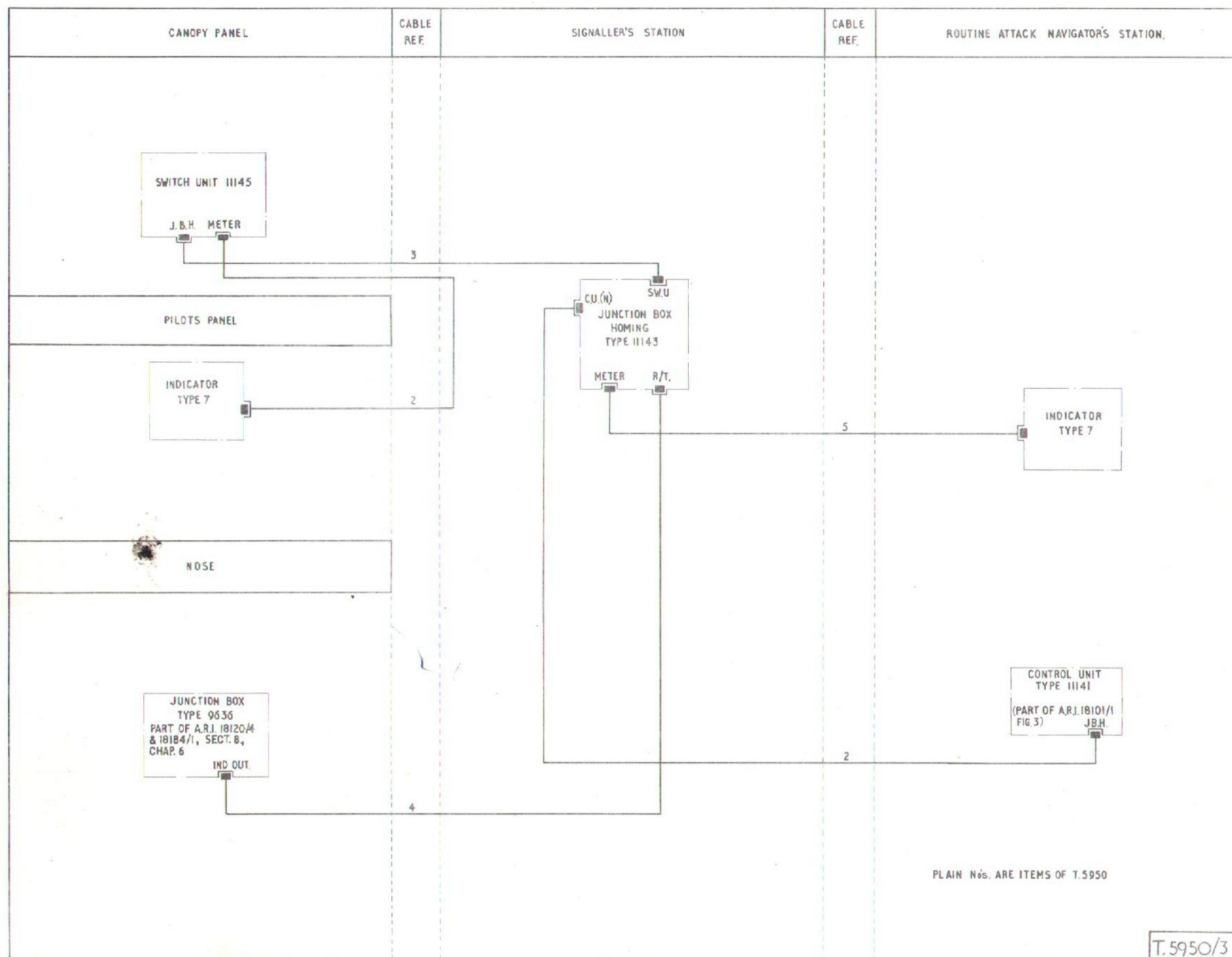


Fig. 4. A.R.I. 18157

«Annotation (J.B.H.) at switch unit corrected»

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