Chapter 3

ARI-5919

LIST OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

Introduction

▶1. This chapter deals with the ARI-5919, which is a X-band search radar system. The ARI-5919 consists of a tail-mounted radar unit and an indicator unit in the AEO's front panel. The indicator unit combines the functions of indicator and control unit.

NOTE . . .
The ARI-5919 is removed from the aircraft when Mod.2017 to introduce ARI. 5952, is embodied. Details of the ARI-5952 will be found in chapter 8 of this section.

2. When airborne the ARI-5919 will normally be maintained in a stand-by condition (not transmitting). When required ARI-5919 can be switched to transmit in order to find the exact range and bearing of the attacking aircraft. ◀

3. Descriptive, servicing and operating details of the ARI-5919 are given in AP 114M-0200-1 which should be read in conjunction with the information contained in this chapter.

4. A location diagram of the major components is provided in fig.1. A connector table is contained in the text and a routing chart will be found at the end of the chapter.

5. The cooling system for this ARI is fully described in Sect.3, Chap.16 of this publication.

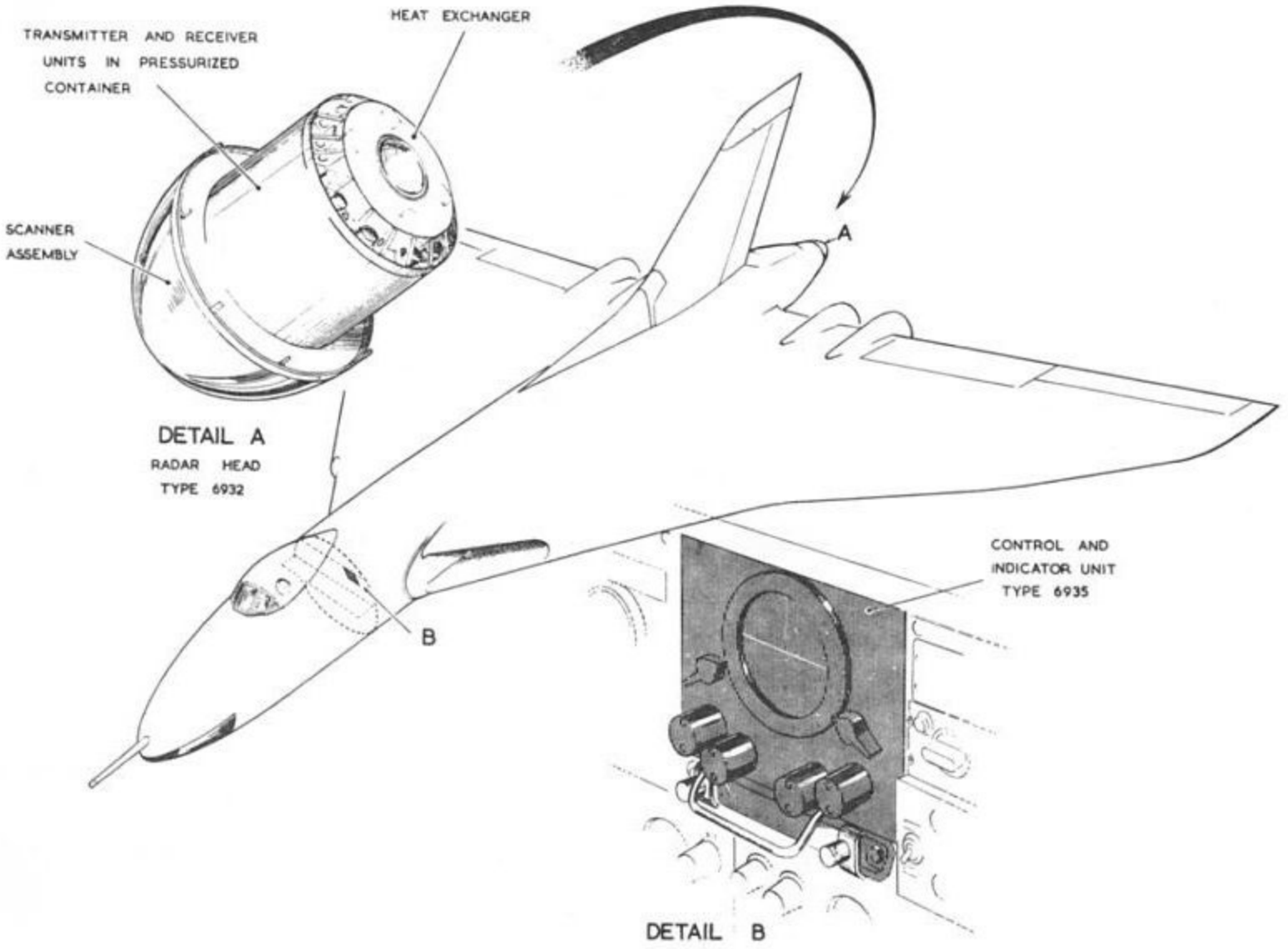

Fig. 1. Location of A.R.I. 5919 equipment.

DESCRIPTION AND OPERATION

Components

6. The installation consists of the following components:-

Indicator unit	Type 6935
Radar head	Type 6932

Indicator unit, Type 6935

7. The indicator unit, Type 6935, is installed on an anti-vibration tray on the navigator's panel at the A.E.O's station as in fig.1. This unit combines the functions of indicator and control unit for the installation. A rotary switch provides for the selection of warm up, stand-by or transmit condition of the circuits in the radar head. A C.R.T. display provides location and distance indication in three time base ranges as follows:-

0 to 5 N.M.
5 to 10 N.M.
8 to 18 N.M.

Diffused lighting of the dials on the front is provided by a twin ganged dimmer switch located on the A.E.O's radio switch panel.

Radar Head, Type 6932

8. The radar head, Type 6932, is installed at the extreme end of the rear fuselage structure, the radome of the scanner forming the tail cone of the fuselage. The head consists of a pressurised cylindrical canister in which is mounted the scanner assembly, together with the transmitting and receiving units.

9. Pressurization of the canister is provided by air bottles mounted adjacent to the radar head. The pressure first inflates the radome sealing ring and seals the unit, and then pressurises the remainder of the unit via a differential valve. The canister is cooled through the medium of a heat exchanger, which is supplied with a flow of ram air regulated by a thermostatically-controlled electrically-actuated valve. The mechanical aspect of the pressurization and cooling system is described in Book 1, Sect.3, Chap.16, and the electrical circuit for the cooling system in Book 2, Sect.6, Chap.22 of this publication.

Power supplies

10. The 28-volt d.c. and 200-volt, 3-phase, 400 c/s. a.c. supplies required for the installation are fed from the following fuses:-

(1) 28 volt d.c.

Service	Fuse	Rating	Location
Indicator dial lighting	(548 (655	5A 5A	3P 4P
Cooling circuit and relay 630	706	7·5A	48P

(2) 200-volt, 3-phase, 400 c/s. a.c.

Service	Fuse	Rating	Location
Radar head circuits	103-R 103-B 103-Y	10A 10A 10A	60P 60P 60P

SERVICING

Precautions

11. Servicing personnel in particular are warned that a.c. and d.c. voltages in excess of 100 volts can be dangerous to the extent of causing personal injury, fatal or otherwise. It is essential that the utmost attention be given to servicing instructions where matters of safety are concerned and that maximum co-operation be maintained between trades mutually concerned in servicing operations.

Installation

12. The setting-up, operating and servicing instructions for the A.R.I.5919 and its components are contained in A.P. 2891J. The security of all components should be checked regularly. All connectors, plugs, sockets and terminal blocks should be examined for damage and ingress of dirt and moisture.

Pressurization system

13. In conjunction with the servicing of the system as laid down in A.P.4505B, Vol.4, the following periodic check should be carried out on the radar head. With a suitable pressure gauge, check at the schrader valve marked TEST, that the pressure of the radar head is 20lb.per.sq.in.

Power supplies

14. Using a ground power supply trolley check with a suitable test meter at the disconnected radar head supply socket, that the a.c. output is 200-volt at pins A to J and the d.c. output is 28-volt at pins K and M.

REMOVAL AND ASSEMBLY

General

15. Access to the components is straightforward, but the following points should be observed. When it is necessary to remove or replace any components, secure all loose connectors to the adjacent aircraft structure to prevent damage.

Indicator unit, Type 6935

16. To remove the indicator unit, Type 6935, release the two knurled screws on the front panel and slide the unit out of its anti-vibration mounted box.

Radar head, Type 6932

17. The radar head incorporating the radar unit, heat exchanger, mounting ring and radome is removed and installed as a complete unit. Ensure that all electrical power supplies are switched off, then proceed as follows:-

(1) Close the line valve on the pressure reducing panel, to shut off the air supply to the radar head.

(2) Disconnect the air hose where it connects to the radar head.

(3) Disconnect the head from the temperature sensing unit.

(4) Disconnect the four electrical connectors from the unit.

(5) Disconnect the four quick release clamps, which attach the cooling air manifolds to the adaptor fitted to the cooling air ports of the heat exchanger.

(6) Remove the screws indicated by arrows stencilled on the radome.

(7) Fit the lifting attachment Ref.No. 10S/17399.

(8) Attach suitable hoisting equipment to the slinging link on the arm of the lifting attachment. It should be noted that the link should be fitted in the third hole from the end of the arm.

(9) Slightly tension the hoist, then release the four fasteners securing the radar head to the fuselage.

(10) Lower the radar head and secure it to the attachment ring, Ref. No.10S/17398, which is fitted to the servicing trolley, Ref.No. 10S/17400. It should be noted that for field use, this trolley, is mounted on trolley, Type E, Ref. No. 4F/1924.

TABLE 1

Connectors for A.R.I.5919

A.V.Roe Item No.	Cable form	Connecting between
3/T4511	Miniature 6E	R.P.B. plug 189 and plug break 916
4/T4511	Miniature 25C	R.P.B. plug 881 and plug break 915
5/T4511	Miniature 6E	Plug break 916 and radar head
6/T4511	Miniature 25C	Plug break 915 and radar head

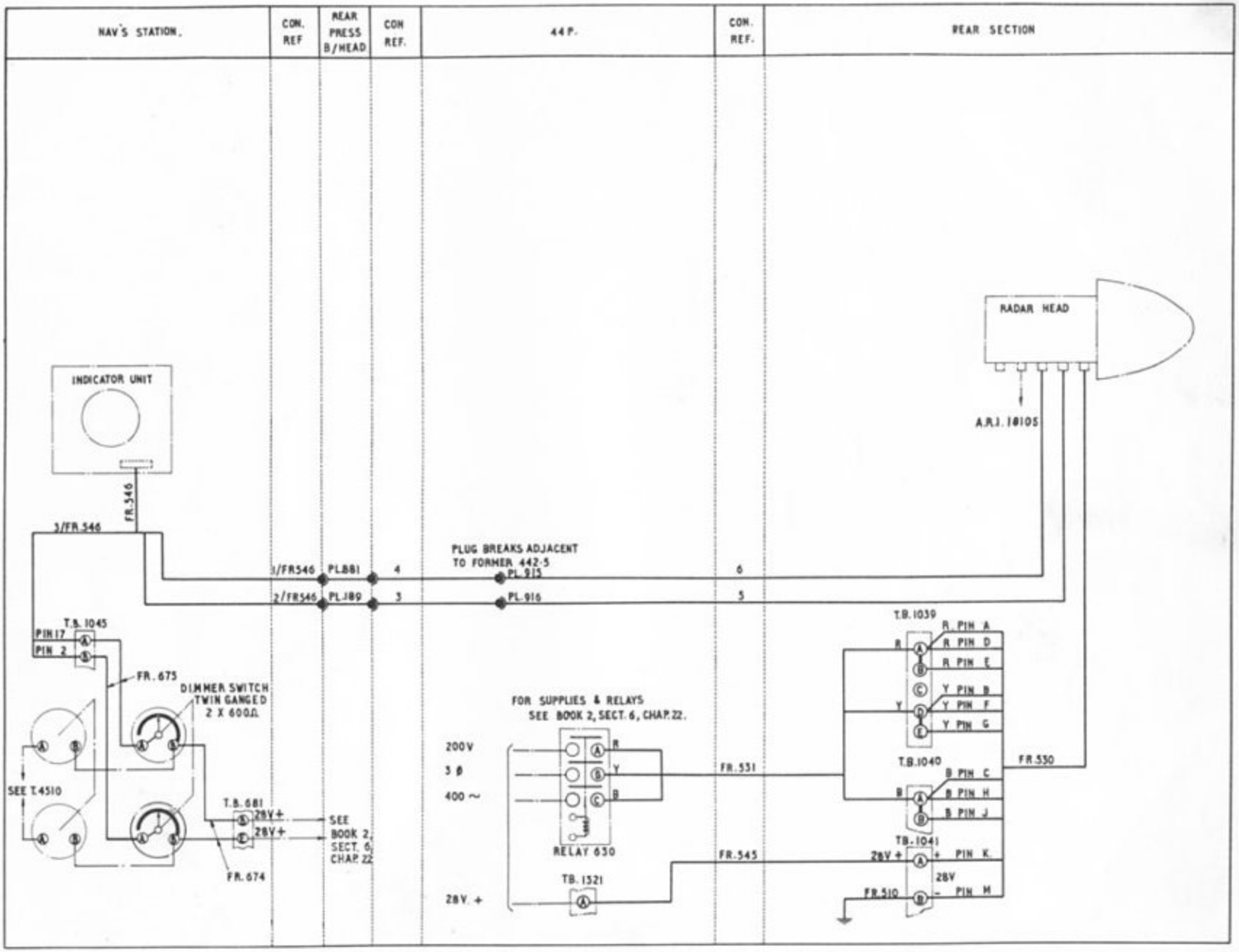

Fig. 2 A.R.I. 5919

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