

Chapter 9

◀ A.R.I.18215/1 (Pre. Mod.1449) ▶

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Introduction

1. The A.R.I.18215/1 (radio altimeter Mk.5A), measures the height of the aircraft above the terrain directly beneath. The installation provides continuous indication of altitude over a range of 0-5,000 feet and is calibrated at 20 feet

intervals throughout this range.

2. The installation comprises a transmitter-receiver and a power unit in conjunction with two aerials, (one transmitting and one receiving), fitted on the under-

side of the rear fuselage.

3. In addition, a switch unit, altitude indicator and three altitude warning lamps are provided on the 1st pilot's panel. Power supplies are from a circuit breaker (No.3) fitted at the signaller's station.

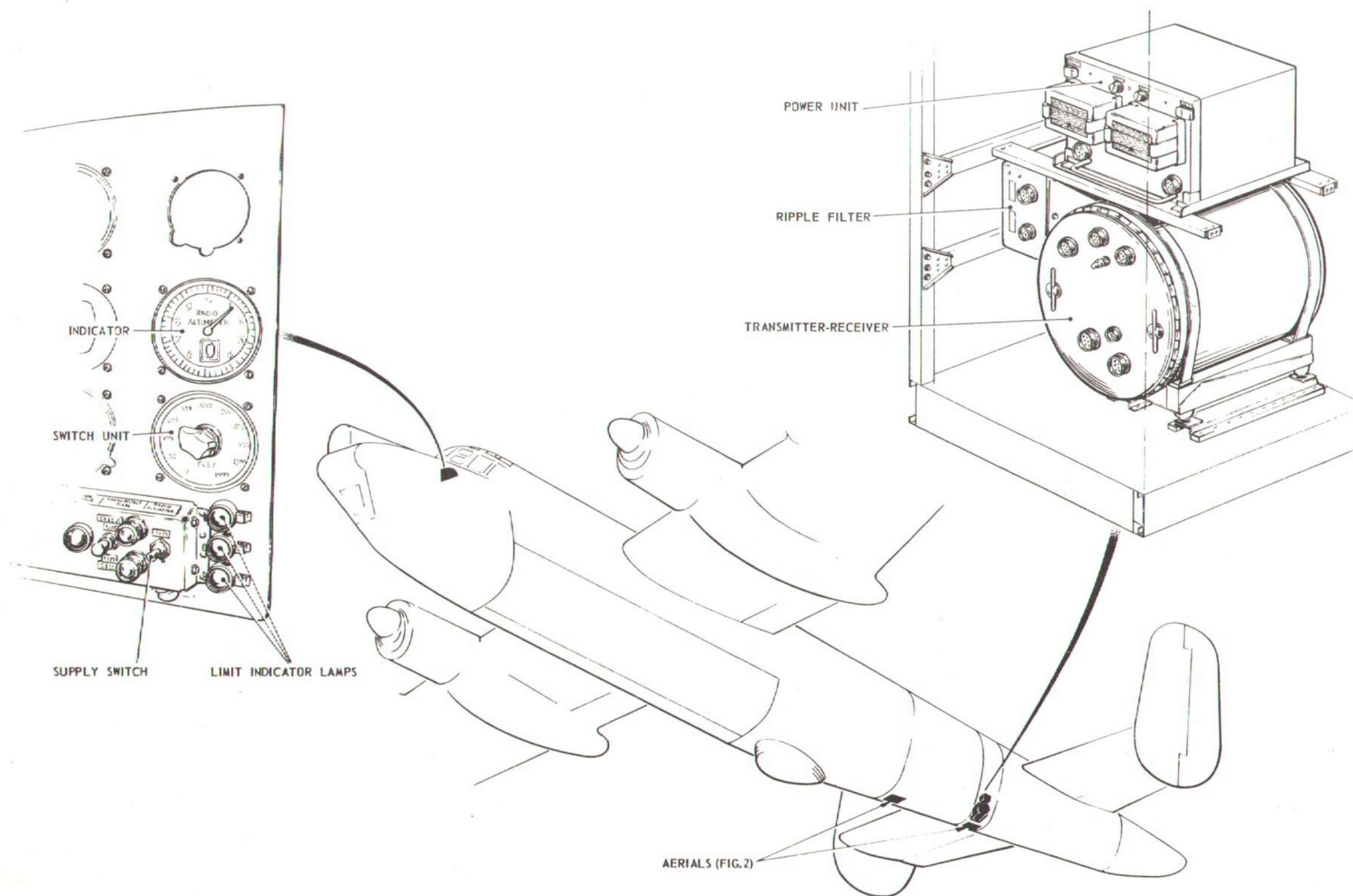


Fig.1 - Location of equipment

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DESCRIPTION AND OPERATION

Transmitter-receiver

4. The transmitter-receiver, Type 1576A, is a pressurized unit and is located in the rear section of the fuselage (fig.1). The unit is secured by metal straps to a mounting, Type 1032, which is fitted on a resilient mounting assembly, Type 1033/1.

5. Connections are made at the front of the unit and consist of a 4-pole power supply plug, two co-axial aerial plugs, two sockets for connection to the switch unit and indicator and two Schraedar air valves.

Power unit

6. The power unit, Type 814, is fitted on a resilient mounting tray adjacent to the transmitter-receiver. The unit is not pressurized and is secured to the tray by two flanges bolted at the front and a full length flange which engages with a clip at the back.

7. A carbon pile regulator within the power unit stabilizes the d.c. supply at 19.5 volts and a rotary transformer is used to provide H.T. for the transmitter-receiver. The front panel of the unit carries the two socket connections, supply fuses and L.T. and H.T. test points. Also on the front panel are two air filter elements which are held in position by two spring clips. The elements filter the cooling air which is generated by a fan on the shaft of the rotary transformer.

Ripple filter

8. A ripple filter, Pt.No.1/T4935, is

connected between the power supplies (T.B.423, fig.3) and the input of the power unit. The filter unit consists of a metal box with a removeable lid and contains two chokes, ten 50 MFD. capacitors and two 1 MFD. capacitors.

Indicator

9. The indicator, Type 10, is fitted on the 1st pilot's panel. This is a sealed instrument which indicates altitude in multiples of 1,000 ft. on a counter mechanism and sub-divisions of 1,000 ft. by means of a pointer on a graduated scale. When reading the scale, the number indicated on the counter is read first, followed by the pointer.

10. At the back of the indicator is fitted the plug connection. There is also a scale and control marked 0-25 ft. which is preset. This control applies correction to the indicator, so that when the aircraft is on the ground the indicator will read zero, and not the height of the aerals above the ground. This condition is fulfilled on initial installation by setting the control to the height of the aerals from the ground.

Switch unit

11. The switch unit, Type 7231, is fitted on the 1st pilot's panel and determines the altitude at which the warning lamps will operate. The altitude is pre-selected on a rotary switch whose scale is calibrated 0-1000 ft. Connections are made at the back of the unit, where a preset control is also provided to compensate for the

height of the aerals above the ground as in the case of the indicator, Type 10.

Altitude limit indicator lamps

12. The three indicator lamps are situated on the 1st pilot's instrument panel. Each lamp, fitted with a coloured screen, will indicate the altitude of the aircraft in relation to that selected on the switch unit. The indications are as follows:-

Amber lamp - Illuminates when aircraft is flying above the selected altitude.

Green lamp - Illuminates when aircraft is flying at the selected altitude.

Red lamp - Illuminates when aircraft is flying below the selected altitude.

13. The lamps are normally fitted to a mounting and the assembly is supplied as an indicator, Type 7230. On this aircraft the mounting is discarded and the lamps are fitted direct to the pilot's panel.

Aerals

14. The transmitting and receiving aerals, Type 7059, are fitted in the under side of the fuselage at formers 30 and 35. The aerals are dipoles and each one is housed in an aluminium reflector box, Pt No.1/T4934. A fibre-glass cover is used to seal the assembly as illustrated in fig.2.

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SERVICING

General

15. The equipment should be checked for security, cleanliness and correct bonding. The associated plug and socket connections should be examined for tightness of connections and signs of corrosion. When ground testing, the altimeter should be switched on to check the reading on the indicator, Type 10, which should read zero altitude. The filaments

of the warning lamps can be tested by pressing the cap of each lamp in turn.

NOTE . . .

Five minutes should be allowed after switching on before tests are commenced.

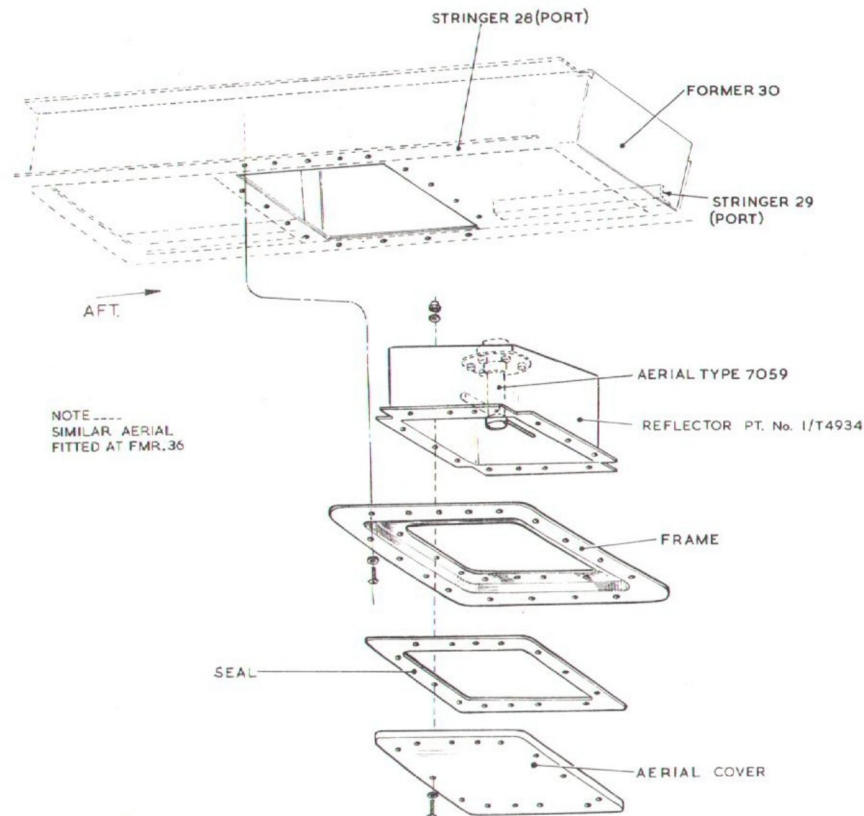


Fig.2 - Details of aerals

Voltage checks

16. When voltage checks or adjustment of the system is required the following should be carried out:-

- (1) Connect a testmeter, Type H, set to the 25-volt range into the 19-volt test jack, at the top right hand corner of the power unit front panel and switch on the supply from the pilot's panel.
- (2) Observe the reading on the testmeter which should be 19.5 volts. If necessary adjust the SET REGULATOR control on the power unit.
- (3) Switch the supply off and then on and if necessary re-adjust the regulator until 19.5 volts is obtained.
- (4) Set the testmeter to the 500 volt d.c. range and connect it into the H.T. voltage TEST JACK at the top left hand corner of the power unit front panel. The reading should be between 235 and 265 volts.
- (5) Switch off power supply and remove testmeter.

17. Full servicing details including setting up procedure, bench testing instructions and information on the necessary test equipment are provided in A.P.2533H, Vol.1.

REMOVAL AND INSTALLATION

Transmitter-receiver

18. The transmitter-receiver in the rear fuselage can be removed complete with its mounting, Type 1032, from the resilient mounting assembly, when the knurled screws on the mounting assembly have been released.

Power unit

19. To remove the power unit, the two flanges at the front should be unbolted and the unit lifted to release the rear flange from its securing clip.

Pilot's instruments

20. The indicator and the switch unit on the 1st pilot's panel can be easily removed when the panel is released.

NOTE . . .

When the instruments are being re-fitted or when new instruments are installed, the preset controls at the back of the instruments should be checked to ensure that they are set to the height of the aerials above the ground.

Aerials

21. Should it be necessary to remove the aerials, the appropriate access panels in the floor of the aircraft should be raised and the aerials disconnected. Each aerial complete with reflector box and fibre-glass cover can then be withdrawn from the outside of the fuselage by removing the screws on the mounting frame.

22. Installation of the equipment is the reverse of the above instructions bearing in mind that connections are to be secure and free from damage and any bonding removed is correctly re-fitted.

TABLE 1

Major items of equipment

Item	Ref. No.	Type	A.P. Reference
Transmitter-receiver	10D/2585	T.R.1576A	◀ A.P.116B-0204-1 ▶
Electrical indicator	10Q/73	10	
Switch unit	10F/17565	7231	
Power unit	10K/17035	814	
Mounting assembly	10AJ/213	1032	
Mounting assembly	10AJ/214	1033/1	
Mounting assembly	10AJ/275	11505	
Aerials (2)	10B/16764	7059	
Ripple Filter	-	1/T.4935	

TABLE 2

Connectors for A.R.I. 18215/1

Part No.	Cable form	Connecting
2/T.5961	Miniature 12C (DEF.10)	Switch unit to transmitter/receiver
3/T.5961	Miniature 12C (DEF.10)	Indicator to transmitter/receiver
4/T.5961	Miniature 6C (DEF.10)	Switch unit to indicator lamps
5/T.5961	Miniature 4R (DEF.10)	Transmitter/receiver to power unit
6/T.5961	Uniradio 21	Transmitter/receiver to forward aerial
7/T.5961	Uniradio 21	Transmitter/receiver to aft aerial
8/T.5961	Miniature 2R (DEF.10)	Power Unit to ripple filter
9/T.5961	Miniature 2R (DEF.10)	T.B.423 (A) and (C) to ripple filter

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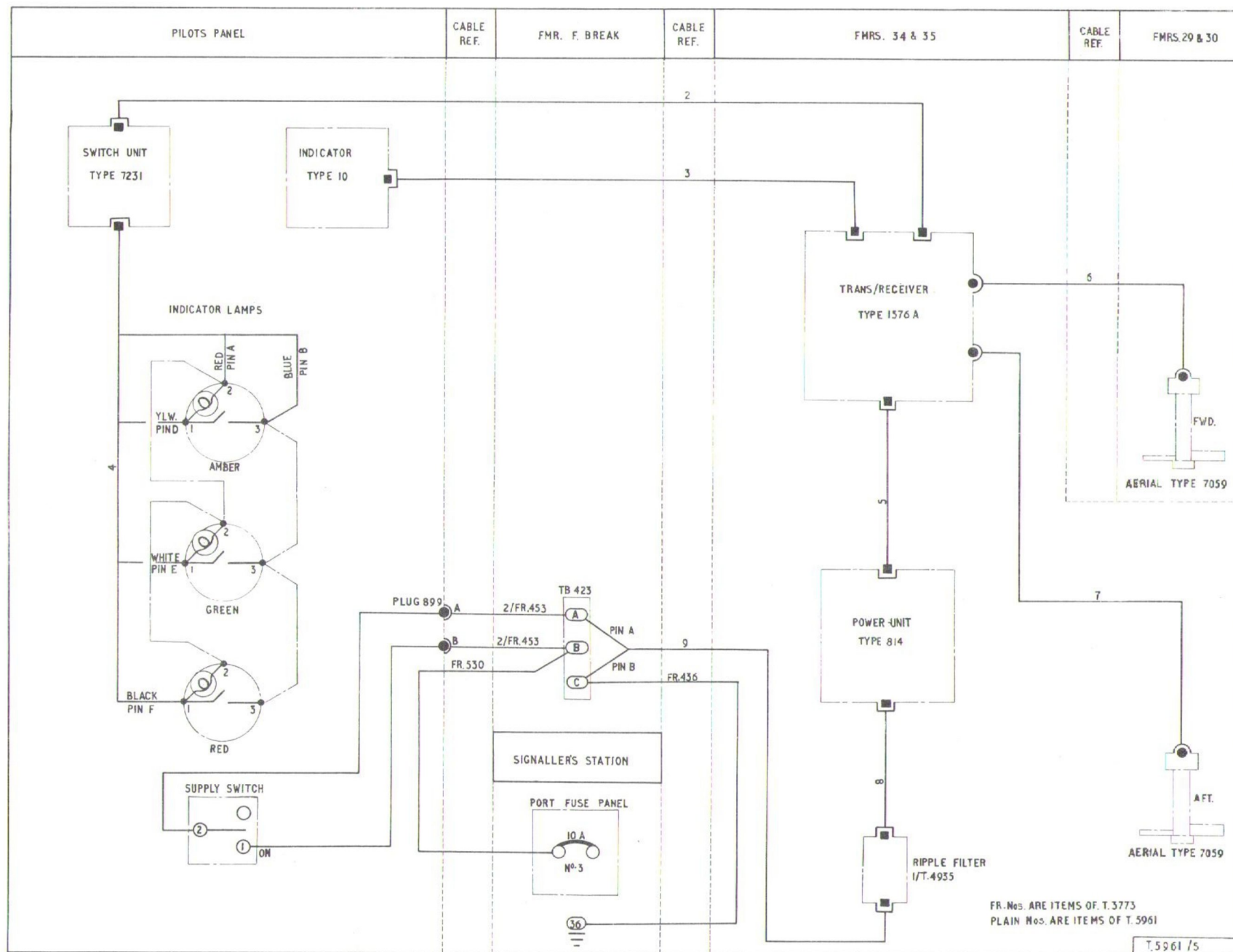


Fig. 3. A.R.I. 18215/1
«Indicator lamps' was indicator unit, Type 7230»
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