

PRINCIPLE OF OPERATION OF OUTFIT R.I.S. (3)

1. GENERAL.

Outfit R.I.S. (3) has been designed especially to eliminate interference to R/T reception from Radar sets Types 79, 279, 281 and similar modified types. The system is equally effective for morse reception and is being standardised as the R.I.S. outfit for R.C.O.'s and B.R.R's.

Outfit R.I.S. (3) may also be adapted to operate similarly to Outfit R.I.S. (1) with receivers on W/T watch, when required.

2. METHODS ADOPTED

In the full equipment of R.I.S. (3) three methods have been adopted to reduce and finally eliminate Radar interference. These are as follows :-

- (i) The amplitude of the V.H/F interference at the fundamental frequency of the Radar transmission is heavily attenuated by a rejector circuit tuned to the Radar frequency and connected in the aerial lead to the receiver.
- (ii) The remaining interference may be dealt with at the output to the receiver by a noise suppressor unit which limits such residual interferences to an amplitude comparable with the signal output from the set.
- (iii) A locally generated pulse is used to cut off entirely the output from the noise suppressor unit at the same instant that the Radar interfering pulses operate. The local pulses are generated and phased in a phase control unit. (This is similar to the method employed in R.I.S. (1)).

The relative value of methods (i) (ii) and (iii) above is likely to vary in different cases, for example, on low and medium frequencies the aerial rejector alone may be sufficient to give good reception; at other frequencies all three methods may be required simultaneously.

Besides the fundamental V.H/F at which the Radar set is intended to work, spurious radiation at a number of lower frequencies is usually emitted from the Radar aerial and feeder, and to a lesser extent from power and lighting leads leaving the Radar office. This radiation causes tunable interference in the receivers, principally in the range 1.5 - 10 Mc/s. The tuning of some of these frequencies may be fairly sharp but others may spread over the whole band covered by one or more ranges of the receiver tuning. Such interference, which is actually inside the tuning range of the receiver, cannot be cut out by the aerial rejector circuit and has to be dealt with by the second and third methods.

The full list of stores comprised in R.I.S. (3) is given in the Establishment List E.508. The principal items are as follows :-

- (1) Pattern W3220 Rejector Unit (Aerial Receiving, Design A).
- (2) Pattern W3086 Noise Suppressor and Output Switch Unit.
- (3) Pattern W3394 Phase Control Unit, Design E.
- (4) Pattern W3393 Battery Control Unit.

ITEM LIST

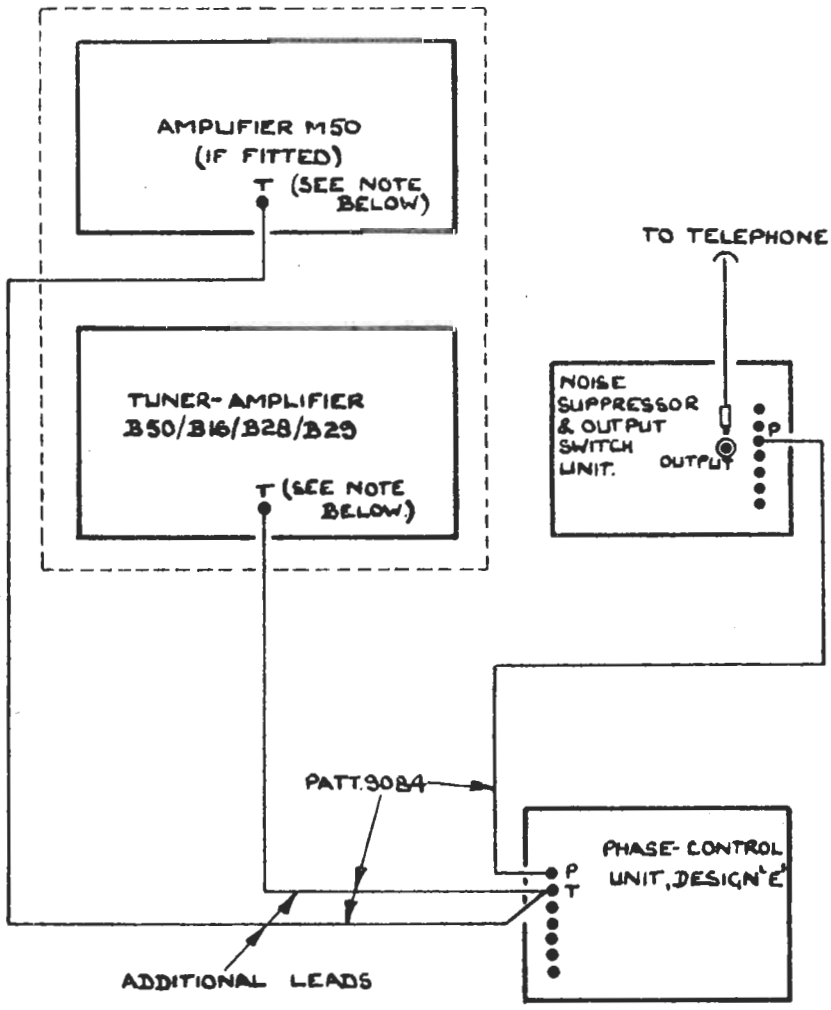
1. APW3220 REJECTOR UNIT, AERIAL RECEIVING DES 'A'
2. AP X 1728 TRANSFORMER 230/230V 300V.A SINGLE PHASE 50v
3. APW3394 PHASE CONTROL UNIT DES 'E' FOR OUTFIT R.I.S.(3)
4. APW3086 NOISE SUPPRESSOR & OUTPUT SWITCH UNIT
6. APW1617 JUNCTION BOX 1-WAY
13. RECEIVER H.R.O
14. APW2835/A RECEIVER B 28
16. AP 142 BOX WITH TWO PHONE JACKS
17. AP 4887 JUNCTION BOX 4-WAY
18. AP 4881 JUNCTION BOX 2-WAY
19. AP 8289 TUMBLER SWITCH
20. AP 7149 JACK PLUG WITH 8'-6" SCREENED TWIN LEAD
21. AP 1165 JACK PLUGS TWO CONNECTED BY 3'-6" SCREENED TWIN LEAD.
22. AP 1429 JACK PLUGS TWO, CONNECTED BY 5'-0" SCREENED TWIN LEAD

NOTES:

- 1 NOT MORE THAN THREE RECEIVERS CONNECTED IN THE R.I.S (3.) SYSTEM ARE SUPPLIED FROM EACH PHASE CONTROL UNIT (3)
2. IN ADDITION TO THE RECEIVERS CONNECTED IN THE R.I.S (3.) SYSTEM NOT MORE THAN THREE RECEIVERS IN THE R.I.S. (1) SYSTEM MAY BE SUPPLIED FROM EACH PHASE CONTROL UNIT
- 3 WHEN THE RECEIVING AERIALS ARE CONNECTED THROUGH AN AERIAL EXCHANGE, REJECTOR UNITS (1) ARE FITTED BETWEEN EXCHANGE AND RECEIVER
- 4 THE NOISE SUPPRESSOR AND OUTPUT SWITCH (4) IS SUPPLIED FROM THE SAME 230V 50V SUPPLY AS USED BY THE RECEIVERS, AND NOT THE 230V 50V SUPPLY USED BY THE RADAR OUTFIT. WHEN NO A.C. SUPPLY IS AVAILABLE BATTERY OPERATION IS USED (AS IN FIG 28)
5. AP 611A CABLE USED WHEN IT DOES NOT EXCEED 6' IN LENGTH, OTHERWISE AP 13819 CABLE IS USED

OUTFIT R.I.S. (3)

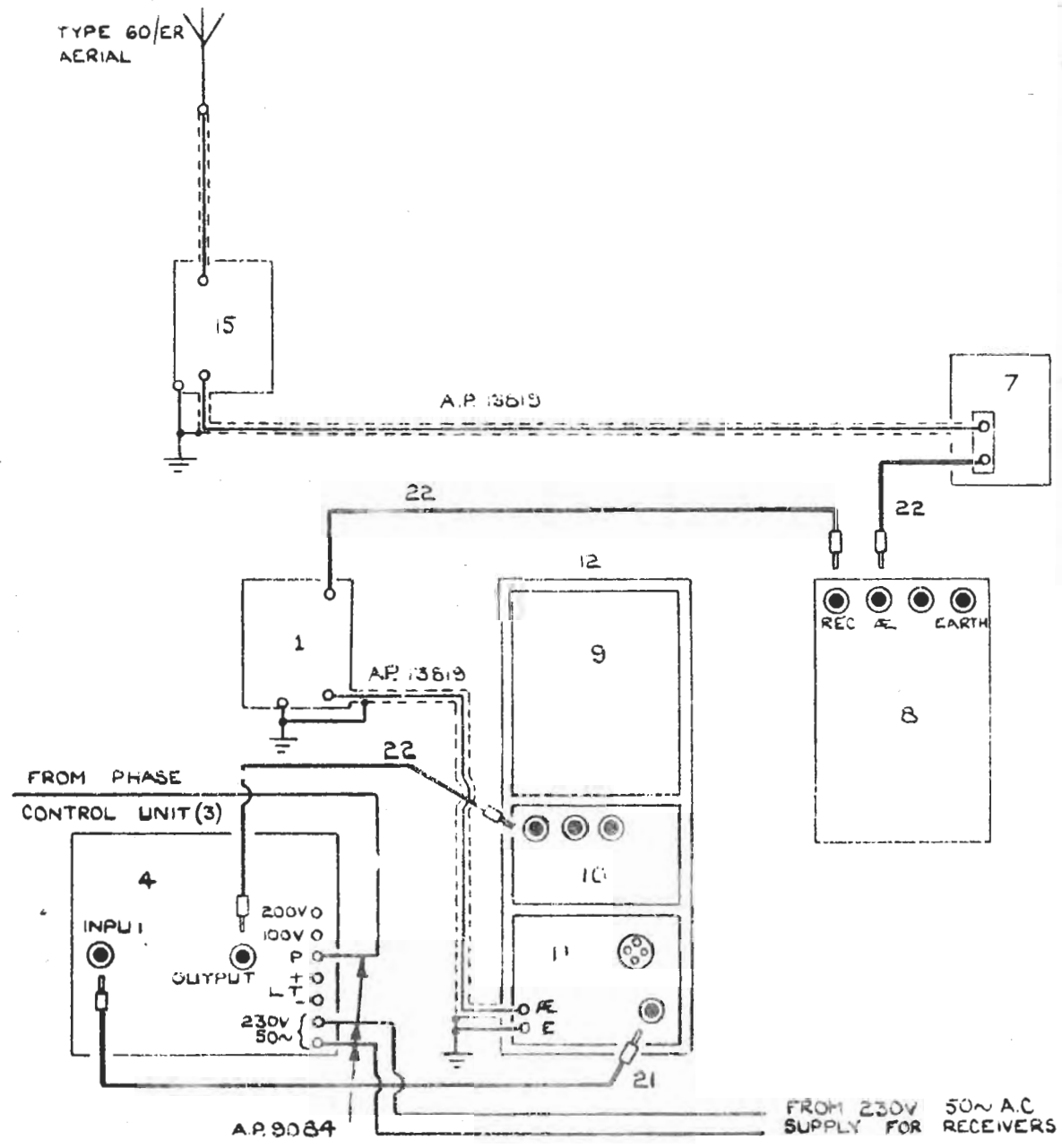
ALTERNATIVE USE AS R.I.S (1) & R.I.S (3) WITH RECEIVER OUTFITS CAA, CAB, CAD, CUA, CDC, CDF.



NOTE:- TERMINAL MARKED 'T': ON A NUMBER OF RECEIVERS- e.g. B28 - THIS TERMINAL MAY BE MARKED 'R.I.S. INPUT' OR SIMPLY 'R.I.S.'

OUTFIT RIS (3)

TYPICAL CONNECTIONS WITH TYPE 60/ER



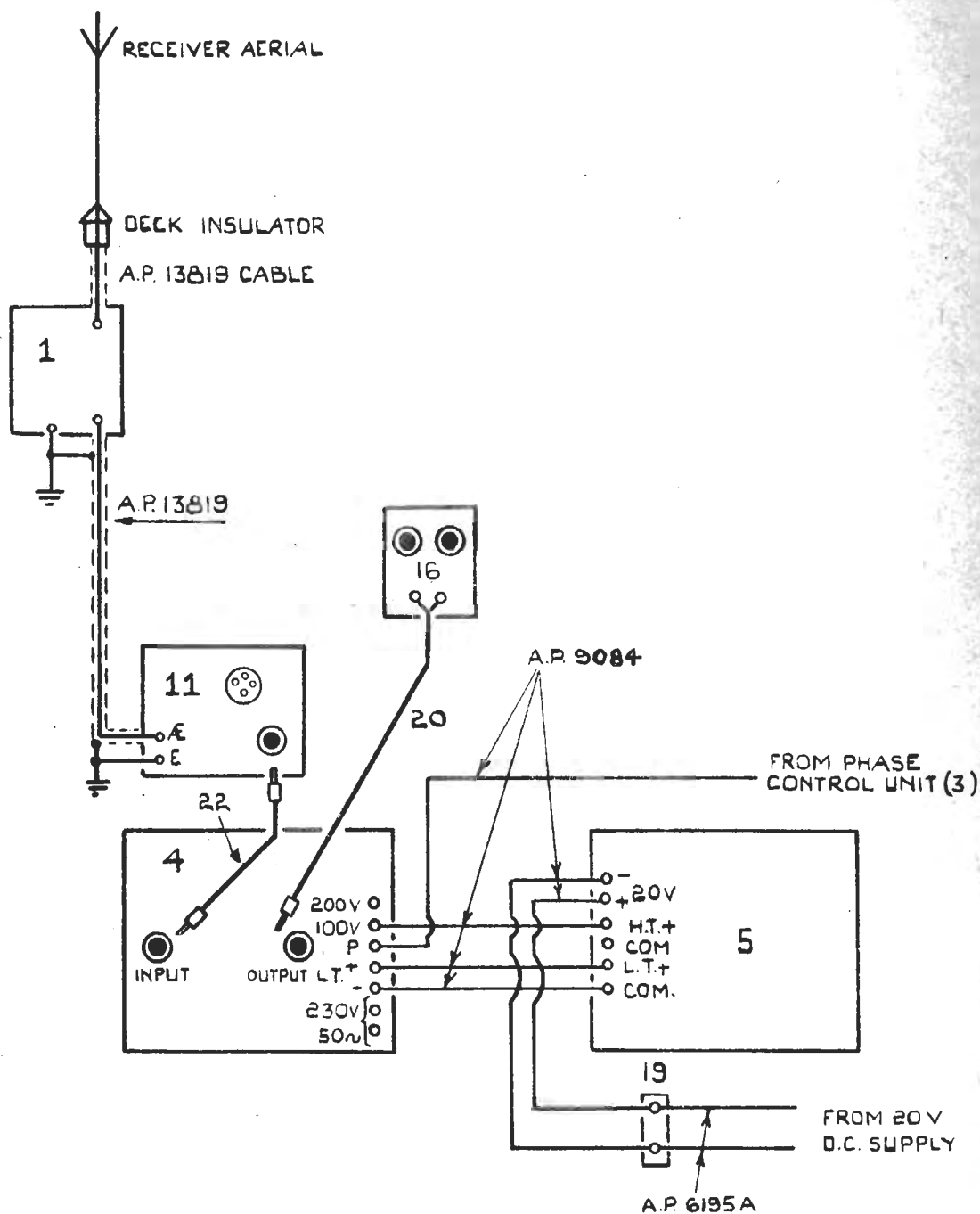
ITEM LIST.

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|-----|------------|--|
| 1. | A.P. W3220 | REJECTOR UNIT, AERIAL, RECEIVING, DES. 'A' |
| 4. | A.P. W3086 | NOISE SUPPRESSOR & OUTPUT SWITCH UNIT |
| 7. | A.P. X1453 | CONDENSER UNIT (FOR TRANSMITTER 4T) |
| 8. | A.P. 4807 | TRANSMITTER 4T |
| 9. | A.P. 4707 | BATTERY CONTROL UNIT 4T |
| 10. | | CONNECTING UNIT 4T |
| 11. | AP 6665 | TUNER AMPLIFIER B19 |
| 12. | AP. W235 | RECEIVER PANEL FOR OUTFIT CBR. |
| 15. | A.P. W3768 | CONDENSER UNIT (AERIAL TUNING) DES 'B' |
| 21. | A.P. 1165 | JACK PLUGS TWO CONNECTED BY 3'-6" SCREENED TWIN LEAD |
| 22. | AP 5531/2 | JACK PLUG WITH 6'-6"/2'-6" SCREENED TWIN LEAD LEAD. |

NOTE:- THE NOISE SUPPRESSOR & OUTPUT SWITCH UNIT(4) IS SUPPLIED FROM THE SAME 230V 50~ SUPPLY AS USED BY THE RECEIVERS, AND NOT THE 230V 50~ SUPPLY USED BY THE RADAR OUTFIT. WHEN NO A.C. SUPPLY IS AVAILABLE, BATTERY OPERATION IS USED (AS IN FIG 28)

OUTFIT R.I.S. (3)

TYPICAL CONNECTIONS TO RECEIVERS
WHERE NO A.C. SUPPLY AVAILABLE.

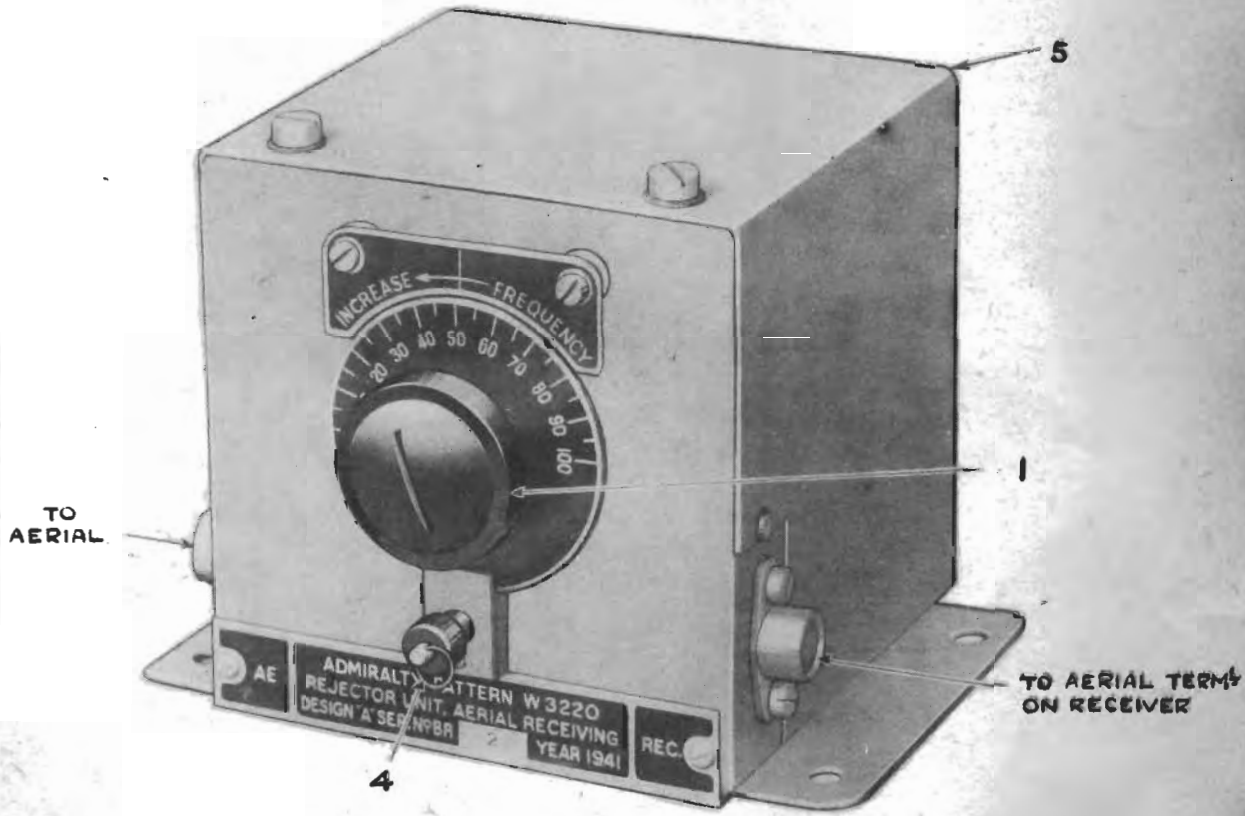


ITEM LIST

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|-----|-------------|---|
| 1. | A.P. W3220 | REJECTOR UNIT, AERIAL, RECEIVING. DES. A' |
| 4. | A.P. W3086 | NOISE SUPPRESSOR & OUTPUT SWITCH UNIT |
| 5. | A.P. W3393 | BATTERY CONTROL UNIT |
| 11. | A.P. 6665 | TUNER AMPLIFIER B19 |
| 16. | A.P. 142 | BOX WITH TWO PHONE JACKS |
| 19. | A.P. 4880 | JUNCTION BOX, 2-WAY |
| 20. | A.P. 7149 | JACK PLUG, WITH 8'-6" SCREENED TWIN LEAD |
| 22. | A.P. 5531/2 | JACK PLUG, WITH 6'-6" / 2'-6" SCREENED LEAD |

OUTFIT RIS (3)

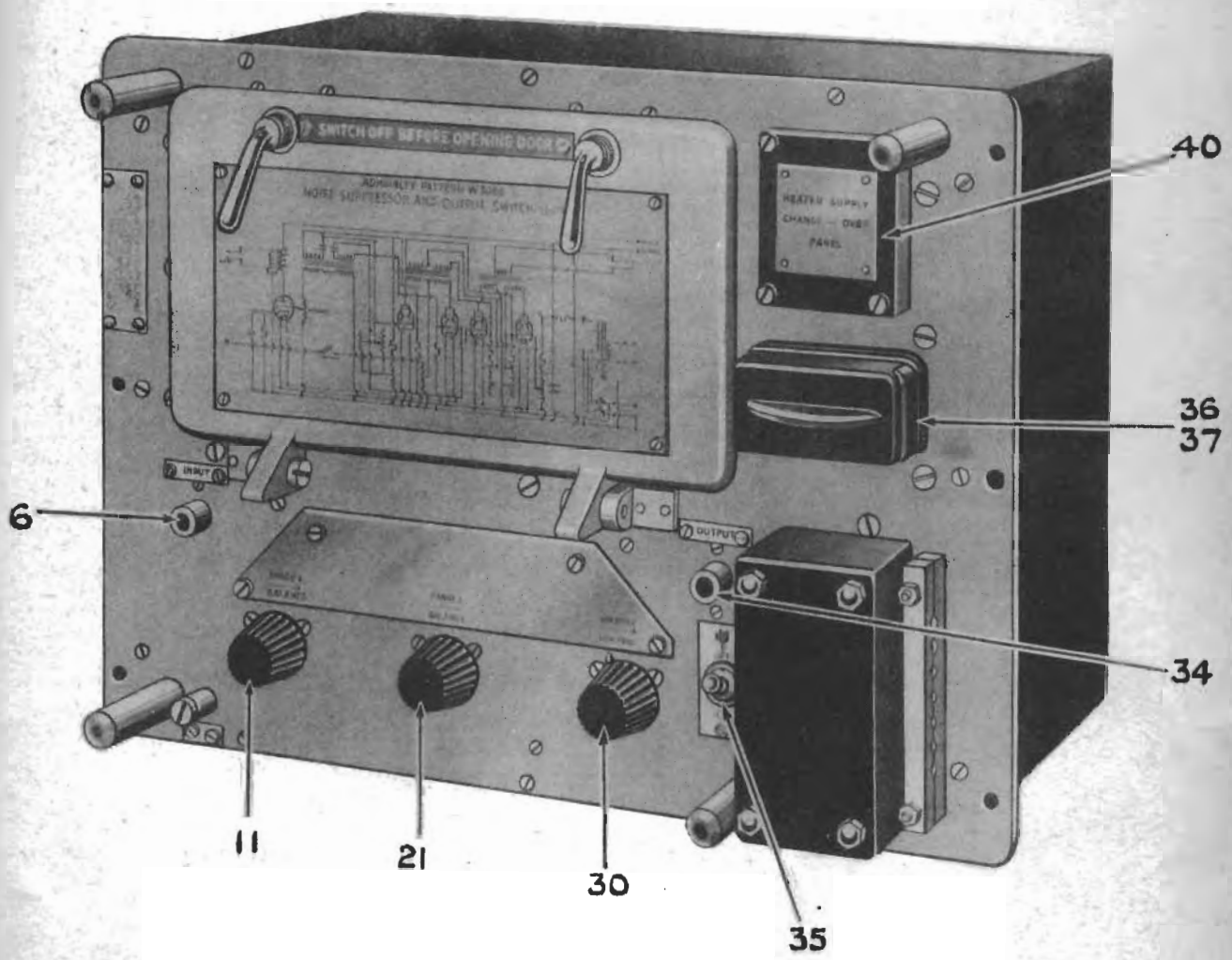
A.P.W3220 REJECTOR UNIT, AERIAL RECEIVING DESIGN "A"



FRONT VIEW

OUTFIT RIS (3)

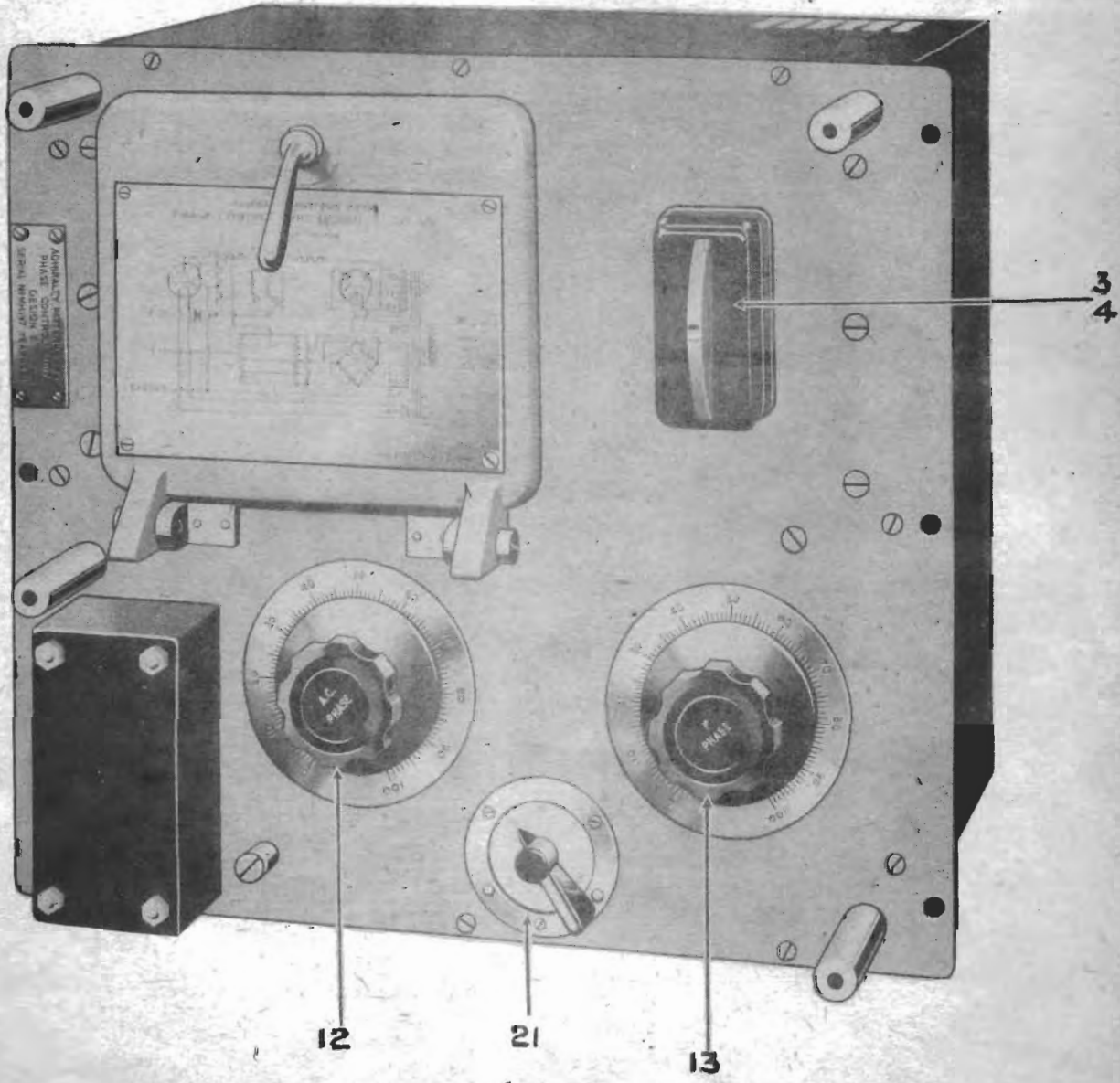
A.P. W3086 NOISE SUPPRESSOR AND OUTPUT SWITCH UNIT



FRONT VIEW

OUTFIT RIS (3)

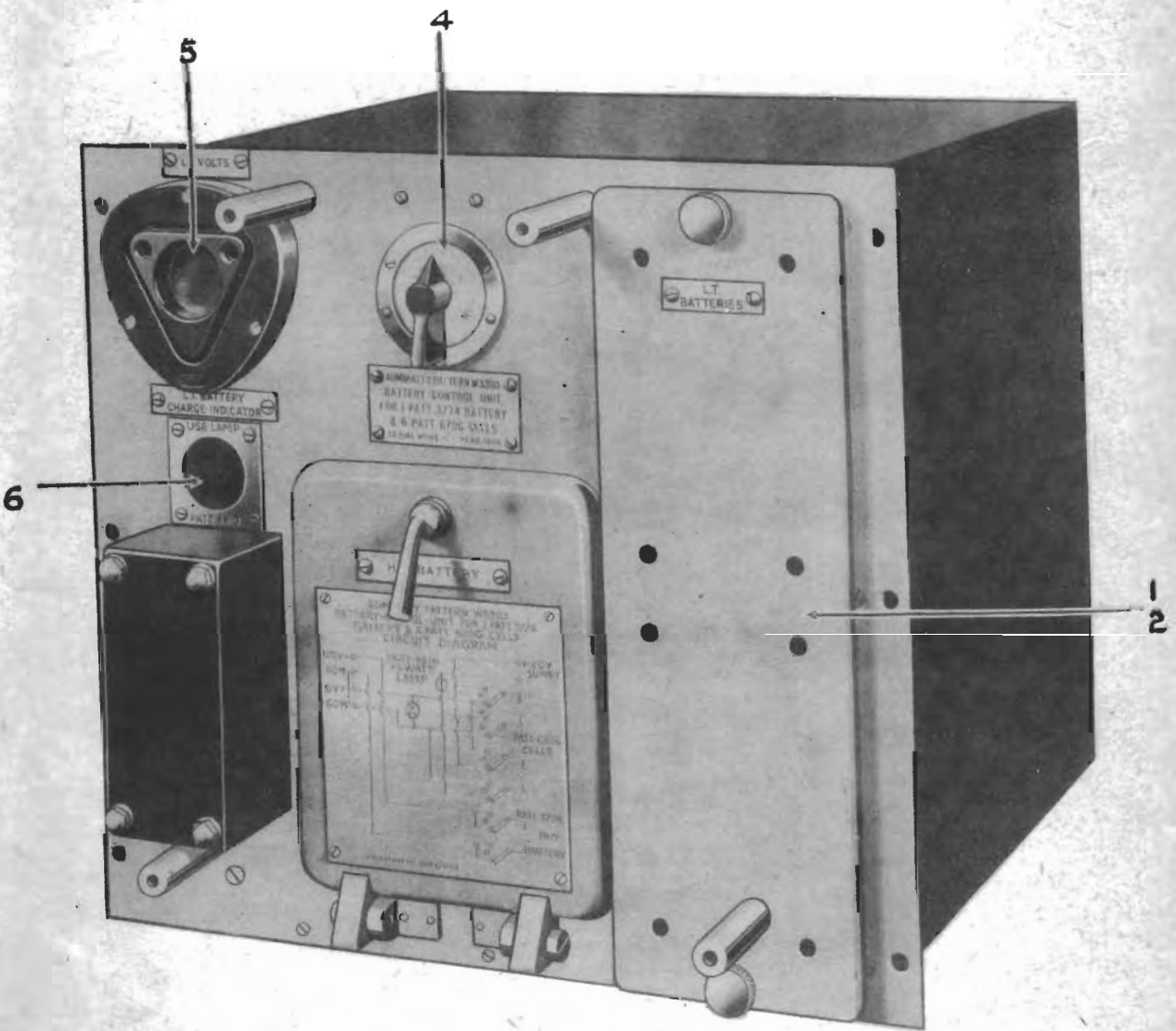
A.P. W3394 PHASE CONTROL UNIT, DESIGN "E"



FRONT VIEW

OUTFIT RIS (3)

A.P. W3393 BATTERY CONTROL UNIT



FRONT VIEW