

Chapter 3

(revised)

TRANSMITTER TYPE 75C—COMMON AERIAL WORKING

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General description

1. 'Common aerial working' (CAW) is the name given to a system which enables a number of VHF transmitters, up to a maximum of eight, to be fed into a single aerial. Similarly, up to eight receivers can be fed from another single aerial.

2. As the maximum number of transmitters or receivers which may be connected to a single aerial is eight, it is necessary to provide additional aerials when the number of either exceeds the maximum for a single aerial.

3. When, however, a VHF installation consists of less than eight transmitters or receivers, and the installation is divided into two groups in offices at opposite ends of the ship, it will be necessary to provide aerials to each of the offices. It is not practicable to connect transmitters or receivers fitted in a forward office to a common aerial sited aft, or vice versa.

Method of obtaining CAW

4. The transmitters or receivers are fed to or from their respective common aerials, via a multi-way junction box, through a resonator tuning unit, using a single resonator for each transmitter and a double one for each receiver. Each resonator is tuned to the frequency of its associated transmitter or receiver. Three-way, five-way or nine-way junction boxes are available (*fig. 1 and 2*).

5. Flexible connections between transmitter and resonator, and receiver and resonator should be as short as possible. In aircraft carriers all flexible connections should be of Pattern 13831 cable; in capital ships and cruisers of Pattern 13821 cable. If it is necessary to use alternative cable, the

characteristic impedances should be 100 ohms and 70 ohms respectively.

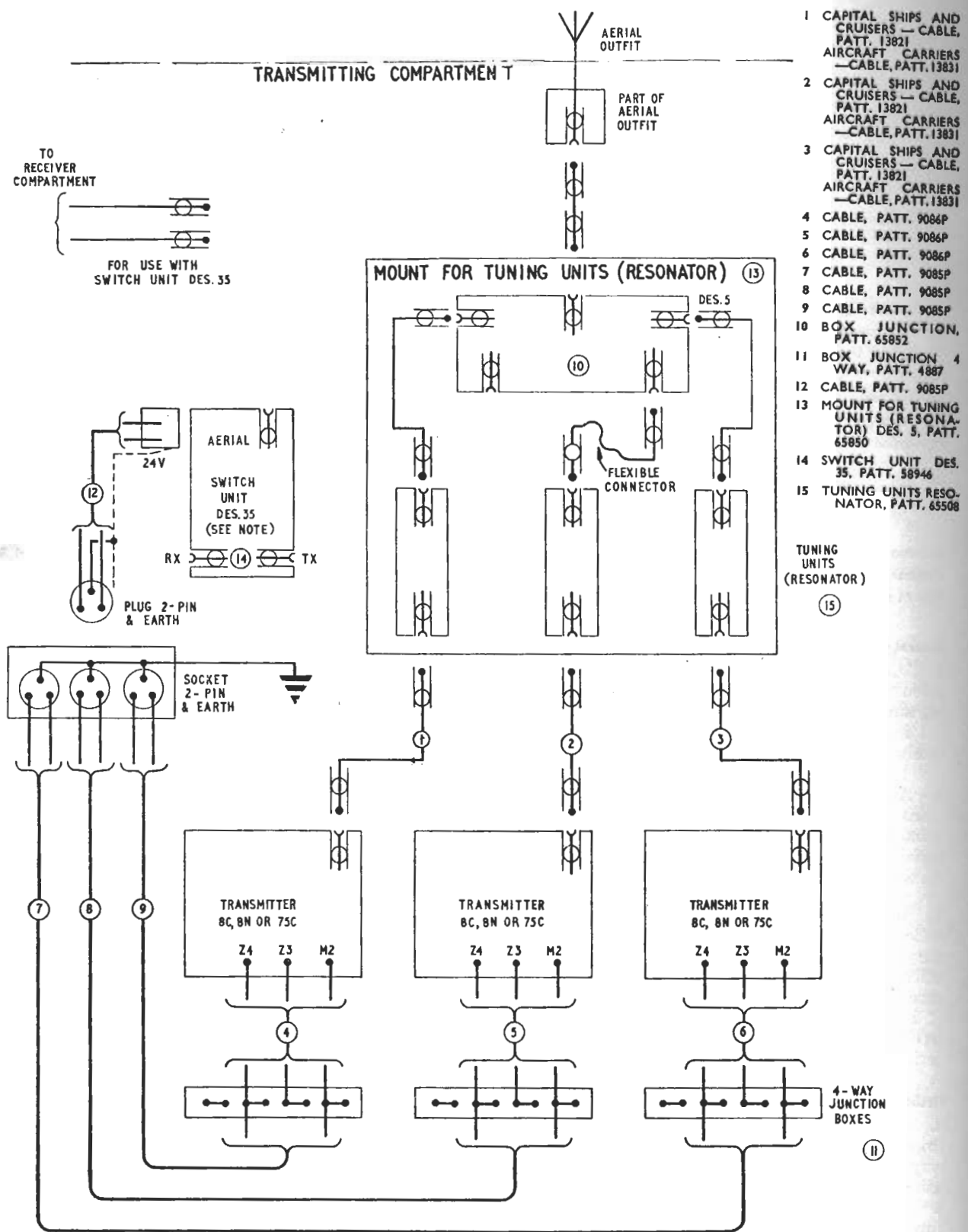
6. The flexible connectors Pattern 65768 used between resonators and junction boxes should be one quarter-wavelength in length at mid-band frequency. The lengths of internal connections in resonators and junction boxes are to be included in the quarter-wavelength measurement.

Use of Type M switch with CAW (emergencies only)

7. When CAW is installed, a Type M switch, modified to Pattern 58946 switch unit, Design 35, is to be fitted or retained in each VHF office containing transmitters. This is only for emergency use when the number of effective aerials available for the dual function of transmission and reception is reduced to one only.

8. Under this condition, the aerial available is taken direct to the AERIAL socket of the switch unit, and the RF output from the selected transmitter is taken direct to the TRANSMITTER socket of the switch unit. There is also a 24-volt DC socket on the switch unit for the 24-volt supply from the transmitter in use. The aerial socket of the receiver common aerial junction box should be connected to the RECEIVER socket of the switch unit, by means of the feeder cable link provided. By this arrangement eight receivers and one transmitter may be kept in operation with only one aerial available.

9. It will be seen that with this arrangement for transmission and reception on one aerial only, the receivers will be completely cut off during transmission, due to the change-over action of the Type M switch when the send-receive switch is closed.



NOTE:- SWITCH UNIT DES. 35 2-PIN PLUG & SOCKETS AND 4-WAY JUNCTION BOXES ARE FOR EMERGENCY USE ONLY

NUMBERS SHOWN THUS:- (5) REFER TO KEY

Fig. 1. Common aerial working (transmitters)

RESTRICTED