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**USER HANDBOOK**  
  
**for**  
  
**ELEVATED AERIAL**  
  
**(36 TO 60 Mc/S)**

**PUBLISHED UNDER THE AUTHORITY OF  
THE SIGNAL OFFICER-IN-CHIEF  
THE WAR OFFICE  
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# C O N T E N T S

Section		Page
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## CHAPTER 1 - GENERAL DESCRIPTION

1	Purpose and Facilities ... ..	1
2	Components ... ..	1

## CHAPTER 2 - OPERATION

3	The Supporting Mast ... ..	3
4	Tuning ... ..	3
5	Assembly ... ..	5

## I L L U S T R A T I O N S

Fig. No.		Page
1	Elevated Aerial ... ..	iv
2	Components ... ..	2
3	Adjusting the Aerial ... ..	4
4	Mounting the Aerial ... ..	6
5	Elevated Aerial in use ... ..	7

## A S S O C I A T E D P U B L I C A T I O N

Mast Telescopic 27 ft ... W.O. Code No. 12059

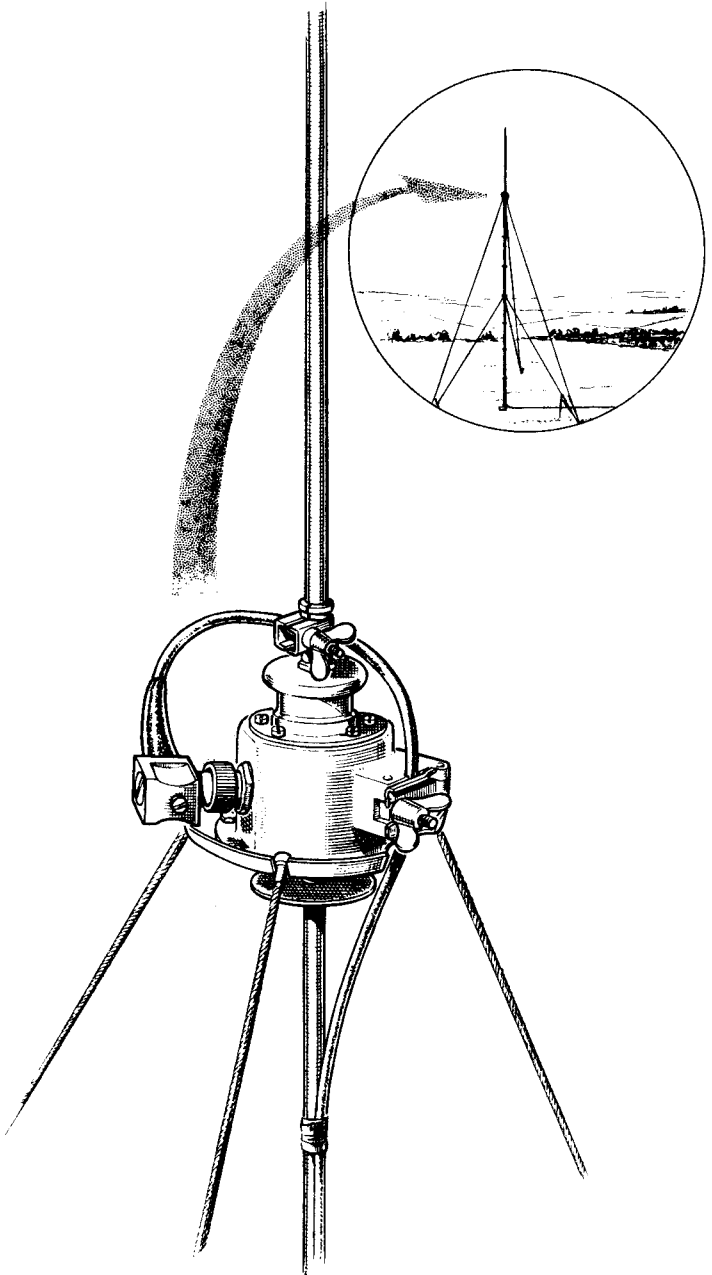


FIG. 1. ELEVATED AERIAL.

## CHAPTER 1 - GENERAL DESCRIPTION

### SECTION 1 - PURPOSE AND FACILITIES

- 1.1 Propagation on VHF or near VHF is mainly by line-of-sight and the height of the aerial above the operating site is important in obtaining the greatest possible range.
- 1.2 The elevated aerial, when mounted on a mast, provides additional height and increased range.
- 1.3 Expected working ranges of 10 to 15 miles between vehicles using ordinary rod aerials can be increased by about a half by using an elevated aerial at one site. If elevated aerials are used at both sites the normal range can be about doubled.
- 1.4 The elevated aerial should be used when the limit range for reliable communication with rod aerials has been reached. The elevated aerial should also be used when communication is difficult due to poor siting.
- 1.5 The elevated aerial described in this handbook can be used with the SR A40, SR A41, SR B47, SR C42 and CPRC-26.
- 1.6 Time required to erect and dismantle mast and attached aerial, or to re-adjust length of vertical element to another frequency, is approximately 10 minutes in each case.

### SECTION 2 - COMPONENTS

- 2.1 The elevated aerial has three radial elements, inclined at  $60^\circ$  from horizontal, and a vertical element. The radial elements are fixed in their length. The vertical element, which is telescopic, is adjustable in one megacycle steps and covers the frequency range from 36 to 60 Mc/s.
- 2.2 The complete kit of the Elevated Aerial, 36 to 60 Mc/s, consists of the following separate items. (See Fig. 2).

Aerial, telescopic, 36-60 Mc/s	...	...	...	1
Cable assembly, 50-ft.	...	...	...	1
Case, aerial	...	...	...	1
Coupler, plug and chain assembly	...	...	...	1
Mounting, aerial and plug assemblies	...	...	...	1
Haversack No. 1, or Satchel Signals No. 1	...	...	...	1
Stay assembly, 5-ft. + 50-ft.	...	...	...	3
User handbook (W.O. Code No. 12060)	...	...	...	1

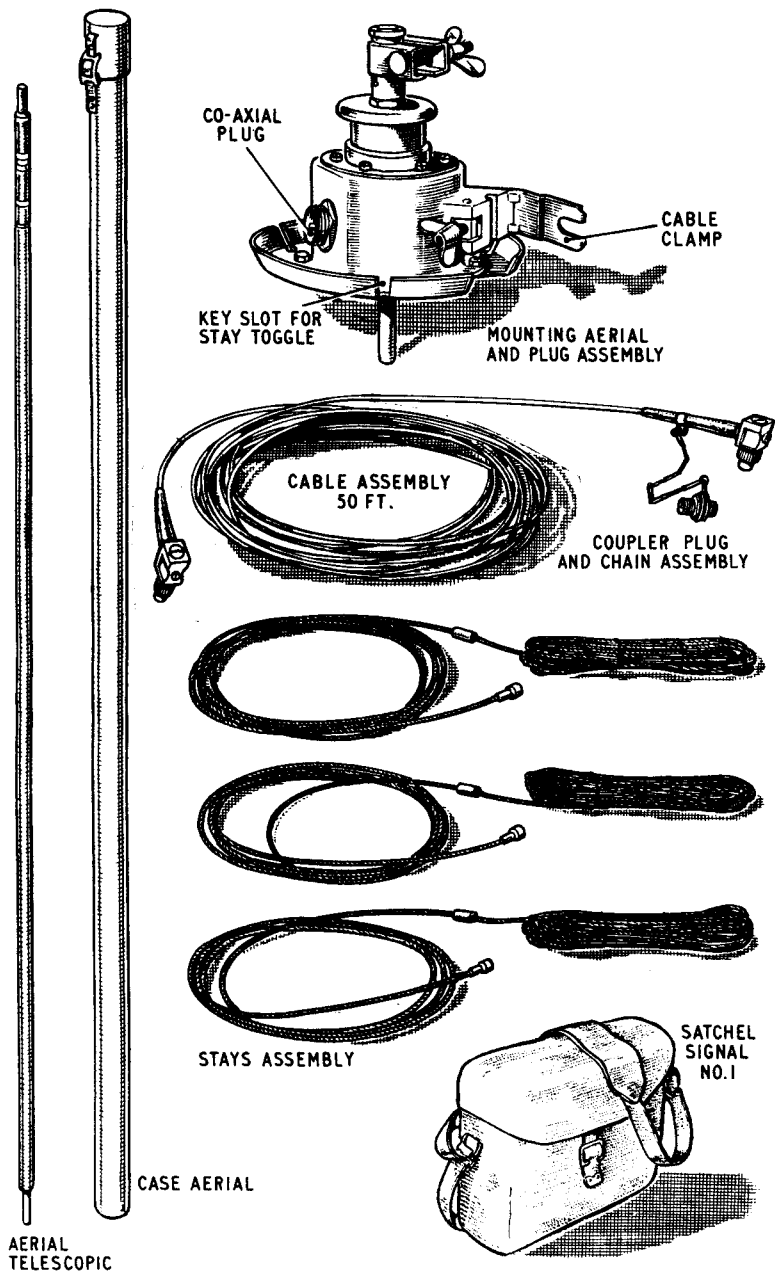


FIG. 2. COMPONENTS.

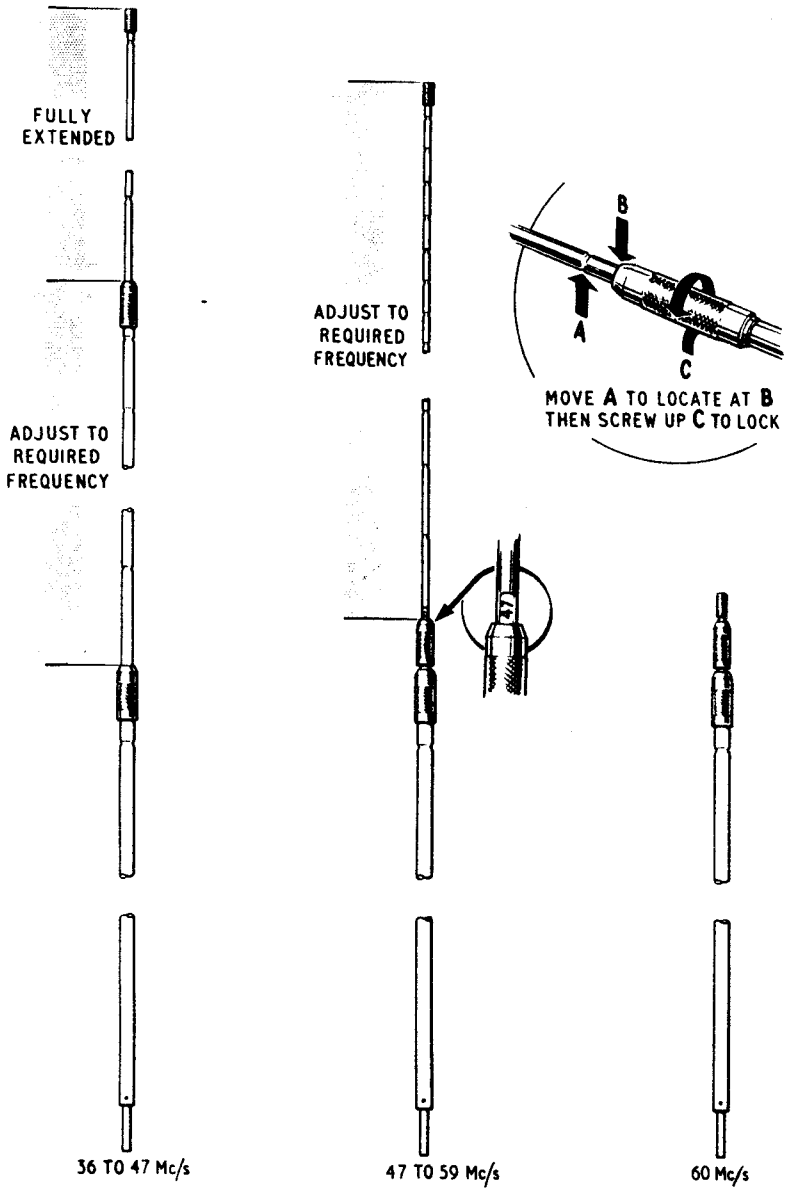
## CHAPTER 2 - OPERATION

### SECTION 3 - THE SUPPORTING MAST

- 3.1 The elevated aerial would normally be used in conjunction with the Masts Telescopic 27-ft., which should be erected in accordance with the User Handbook (W.O. Code No. 12059), subject to the following modifications:-
- (a) The Base Insulator is NOT used.
  - (b) The three upper mast stays are replaced by the three stay assemblies 5-ft. + 50-ft. which form part of the elevated aerial (see Figs. 1 and 2, also Section 2 on page 1).
- 3.2 The assembled elevated aerial is mounted on the top mast section at ground level (see Fig. 4 and paragraph 3.3 below).
- 3.3 In the case of telescopic masts which are not self-supporting when in the lowered position, the three unused upper mast stays may be used to hold the fully telescoped mast upright (see Fig. 4). With the lowest mast section independently secured, the remainder of the mast and the attached elevated aerial can be raised and lowered by one man. This is particularly convenient when frequent changes in the length of the vertical element are necessary to comply with new frequency allocations. There are no stay plates on the upper end of the lowest mast section but the unused mast stay cords can be tied in place and the other ends taken out and fastened to the stay pegs.

### SECTION 4 - TUNING

- 4.1 To avoid possible damage to the radio transmitter, two important points must be observed when using the elevated aerial; the vertical element *MUST* be tuned to the ordered frequency, and the aerial assembly *MUST* be mounted on a mast 26 to 28 feet high, with the stay pegs 15 feet from the base of the mast.
- 4.2 The telescopic vertical element has three sections (see Fig. 3). The middle and lower sections are provided with



**FIG. 3. ADJUSTING THE AERIAL.**

screwed collets which locate in grooves on the inner section and are locked in position by turning the knurled sleeve. Each groove represents a one megacycle step, the frequency being engraved on flats in the rod adjacent to each groove. (See Fig. 3).

- 4.3 The sections are released for adjustment by unscrewing the knurled sleeve whereupon the sections will slide freely within each other.
- 4.4 When the vertical element has been set to the ordered frequency by locating the collets in the appropriate grooves, the sections must be securely locked in this position otherwise they are liable to slip under vibration or buffeting by the wind.
- 4.5 There is no adjustment for the three radial elements. These form part of the upper stay system and are correctly set in position when the mast is erected.

## SECTION 5 - ASSEMBLY

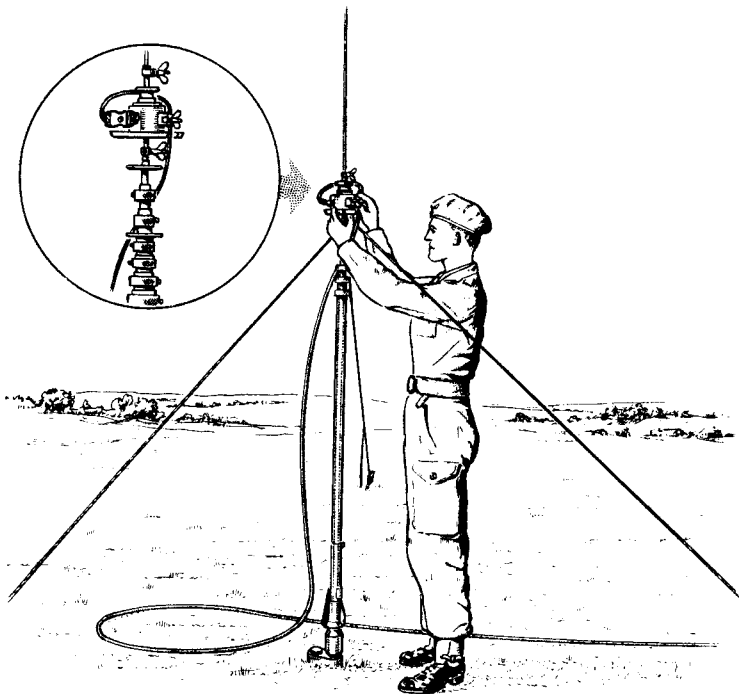
- 5.1 After the mast, in its closed position, has been set up and secured, as described in paragraph 3.3, proceed as below:-
- 5.2 Fit the spigot of the Mounting, Aerial and Plug Assembly into the socket at the upper end of the top mast section and firmly tighten the wingnut clamp on the socket.
- 5.3 Fit the three Stay Assemblies by engaging the nipple at the end of each radial element into one of the three key-slots in the base plate of the mounting.
- 5.4 Fit the socket at the end of the Cable Assembly 50-ft., other than the end to which the Coupler, Plug and Chain Assembly is attached, to the co-axial plug on the mounting and tighten the locking ring. (See Fig. 1).

*NOTE:- A clamp is provided on the side of the mounting to enable the weight and movement of the cable assembly to be removed from the plug and socket. The clamp is so arranged that either a straight-entry or a right-angle socket can be used on the cable assembly.*

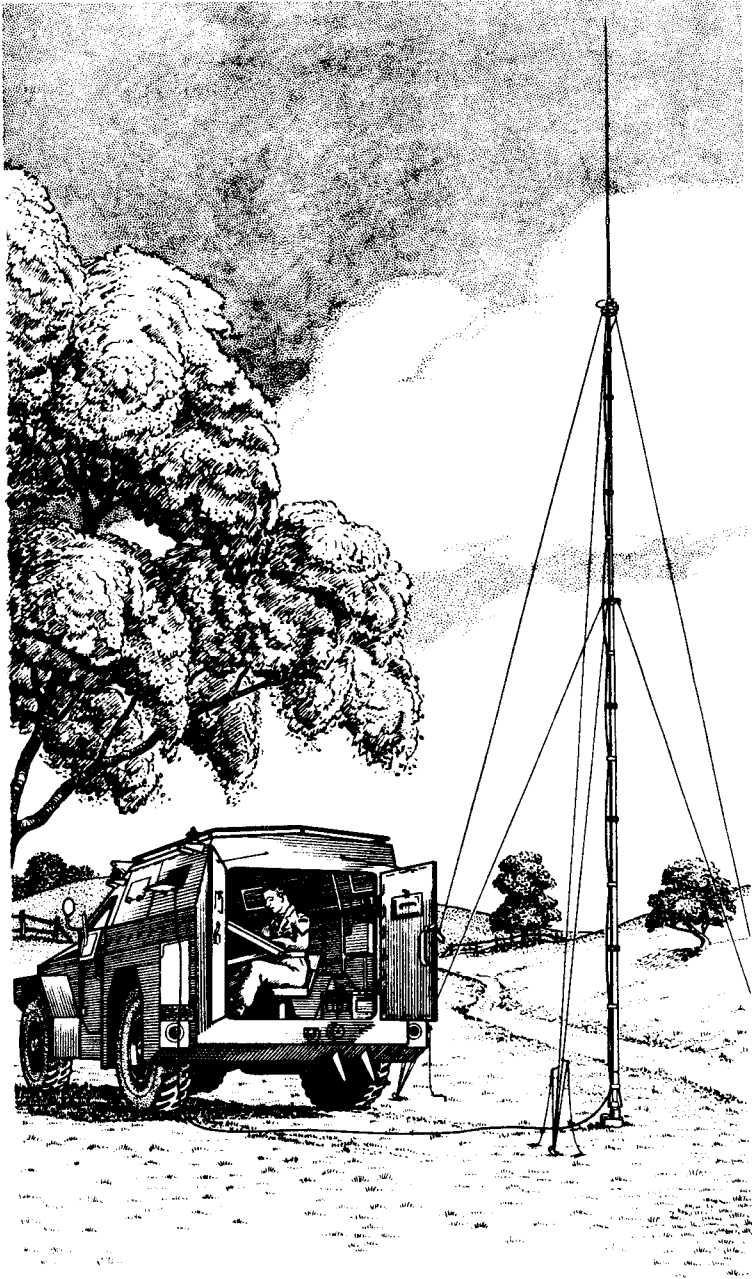
- 5.5 Unscrew and remove the wingnut and open the hinged member of the clamp. Pass the connector around the mounting and, leaving a small loop, insert the connector into the clamp. Close the hinged member, replace and tighten the wingnut, as shown in Fig. 1.



- 5.6 After the vertical element has been set up and locked to the ordered frequency (as directed in Section 4), fit the spigot of the element into the socket at the top of the mounting and tighten the wingnut on the socket.
- 5.7 Raise the mast to its full height, in accordance with instructions given in the mast handbook. During the erection secure the co-axial connector to the mast at frequent intervals with tape or yarn, finally tying-back the connector at the base of the mast. (See Fig. 5).
- 5.8 The Coupler, plug and chain assembly is used to connect two Cable Assemblies 50-ft. in series to form a 100-ft. co-axial feeder, when required. When not in use, the two sockets of the Cable Assembly 50-ft. should be connected to the coupler to protect the plugs and sockets of both items.



**FIG. 4. MOUNTING THE AERIAL.**



**FIG. 5. ELEVATED AERIAL IN USE.**