

RESTRICTED

BR 333(1)  
Original

## AERIAL OUTFIT AYC

AYC

## SUMMARY OF DATA

## PURPOSE

A fixed SHF DF aerial outfit in surface vessels in conjunction with Aerial Outfits AYD and AYE for use with Radio Search and DF Outfits UA2/3.

## TYPE OF RECEPTION

Pulsed RF Signals from target radar.

## FREQUENCY RANGE

2500 - 4100 Mc/s.

## POLARISATION

Horizontal and vertical.

## POWER GAIN

Approx. 8 dB.

## BRIEF DESCRIPTION

The Outfit comprises four Aerial Units and four RF Units with interconnecting cables. The Aerial Units are arranged so that their horns face Fore and Aft, Port and Starboard. Each horn collector is designed to have a cosine  $2\theta$  radiation pattern in the horizontal plane and to receive both horizontal and vertically polarised transmissions. Transformation to common horizontal polarisation is achieved by a twist section of guide at the throat of the horn feeding a waveguide-to-cable termination. The RF signals to the RF Unit situated at the base of the mast are carried by coaxial cable having an aluminium sheath and helical polythene dielectric.

In the RF Unit, the signal progressively passes through a cable-to-waveguide transformer, a section of waveguide containing three passive protection gas cells, a taper matching section and a waveguide filter before detection by a crystal detector in a broadband bar and post type crystal holder. The detector is a CV7181, 7182 or 7183 biased silicon cartridge crystal and the video output is connected by a short length of coaxial cable to a line matching transformer to step the impedance down to 75 ohms. Connection to the office equipment is made by  $\frac{3}{8}$  in Pyrotex cable.

The gas cells (CV2488) protect the crystals from accidental burn out in the presence of strong radar signals. They require a priming voltage of 1.5 kV d.c. and this is derived from a 115 V to 500 V transformer and Rectifier Unit 63DX which are contained within the casting of the RF Unit. The 115 V a.c. mains is switched on manually by a Control Power Supply, A.P.186176 located in the office.

## MAJOR UNITS

Patt. No.	Description	Qty.	Physical Data			
			Length	Breadth	Height	Weight
61559	Box, junction, for one Patt. 13941 and one Patt. 13832 cables.	4	2½ in	2 in	1½ in	1 lb
5985-A.P.186486	Aerial Unit.	4	36 in	12 in	8 in	40 lb
5985-A-P-186532	RF Unit, Video	4	30¼ in	8½ in	10 in	40 lb
186176	Control, Power Supply	1	5¼	4½ in	8 in	-

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### SPECIAL TEST EQUIPMENT

Pattern 61640 Test Set Design 15 (with Pattern 62855 Aerial Injection Unit Design 2).

A.P. 62840 Cable.

CT540 Signal Generator.

### HANDBOOKS

B. R. 2354(1) Handbook for Aerial Outfits AYC/D/E.

C. B. Handbook for Reciprocal Intercept in Submarines.

B. R. 2348 Handbook for Radio Search and DF Outfit UA2

B. R. 2349 Handbook for Radio Search and DF Outfit UA3

### INSTALLATION SPECIFICATION

B. 806/R2

### ESTABLISHMENT LIST

E. 1182