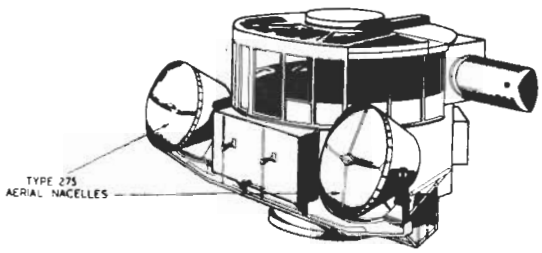
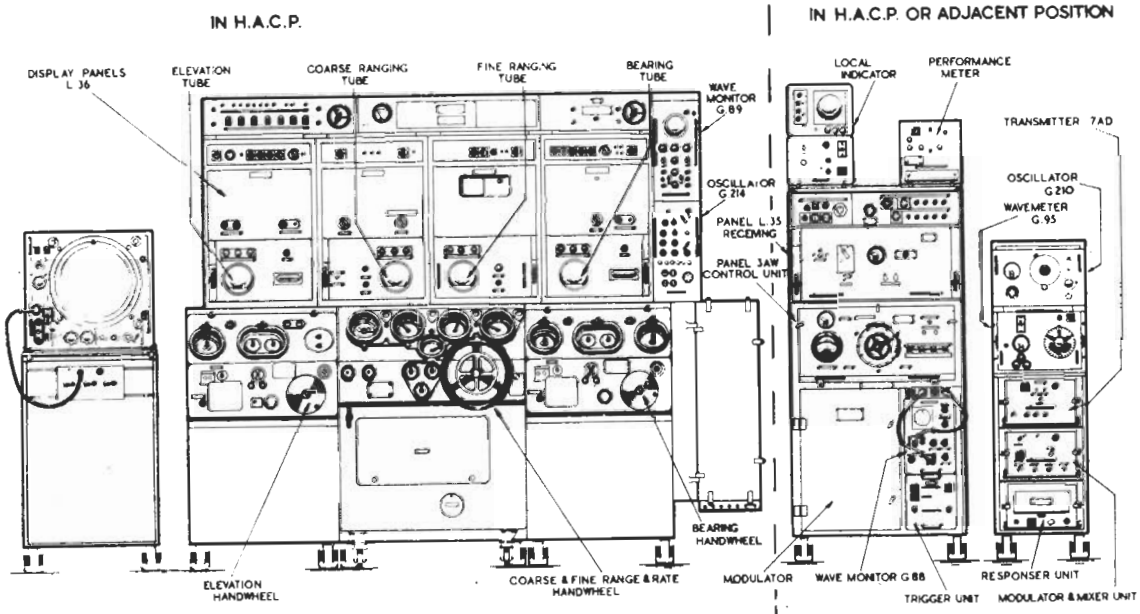
TYPE 275/M

SUMMARY OF DATA

PURPOSE	A G.A. set for the control of H.A. armament in cruisers and above and H.A./L.A. armament in destroyers.
FREQUENCY	3450 - 3614 Mc/s
WAVELENGTH	8.3 - 8.7 cms.
POWER OUTPUT	400 kW (peak)
PULSE REPETITION FREQUENCY	500 pulses per secon
PULSE LENGTH	0.5 microsecond
INTERMEDIATE FREQUENCY	60 Mc/s
RECEIVER BANDWIDTH	4 Mc/s
BEAM-WIDTH	(a) Transmitter (half field strength) - 6.0° horizontal, 8.2° vertical (b) Receiver (half field strength) - 6.8° horizontal, 6.8° vertical (c) Combined beam width (half field strength) - 4.8° horizontal, 5.2° vertical (d) Overall width of radiation pattern of transmitter plus receiver plus conical scanning (half field strength) - 7.0° horizontal, 8.3° vertical
POWER REQUIREMENTS AND CONSUMPTION	180V 500 c/s - 2.5 kW x 50V 50 c/s - 200W x 220V D.C. - 2.5 kW (Additional 1.5 kW required if Type 275 is fitted in R.M.R.) x Similar supplies are required for Type 275 in R.M.R. if fitted.
HEAT DISSIPATION IN OFFICE	Panel L36 - 860 watts Modulator and Receiver - 1½ kW E.P.I. - 225 watts Type 242 - 200 watts



AERIAL ARRAY (AUS) ON MK. VI DIRECTOR



E.P.I. TALLBOY PANELS 3AW & L35 INTERROGATOR

MAJOR UNITS

(a) Transmitter and Modulator

1.	Patt. W7012E/D	Panel 3AW Modulating & Rectifying
2.	Patt. W7015	Trigger Unit Design B
3.	Patt. W6258	Discharge Line Unit 25 kV working
4.	Patt. W7013B/C	Control Unit for Panel 3AW
5.	Patt. W7014	Wavemonitor G88
6.	Patt. W9267	Spark Gap W7016 complete with box
7.	Patt. W8012A	Transmitter 9W
8.	Patt. 53917	Wavemeter G95
9.	Patt. 53920/A/B	Oscillator G210

(b) Receiver Outfit CEH (or CEM for Type 275M*)

10.	Patt. W8020A	Panel L35 (Receiving)
11.	Patt. W8024A	Rectifier Unit S.E.11
12.	Patt. 53634	Amplifier M78
13.	Patt. 61589	Frequency Control Unit, 55A
14.	Patt. W8022	Cathode Follower Unit Des. 4
15.	Patt. W8025/A	Cathode Ray & Rectifier Unit Des. 3
16.	Patt. 53874	Performance Meter Design 2 (Part of Type 242)
17.	Patt. W7044A	Wavemonitor G89
18.	Patt. 54732	Test Oscillator G214
19.	Patt. W8040C/D	Panel L36 (R.B.) Inner Right
20.	Patt. W7041A	Rectifier Unit S.E.3
21.	Patt. W8001	Control Unit, Design 8
22.	Patt. W8037	Ranging Spot Generator S.E.3
23.	Patt. W8038A	Time Base Unit, Design Q
24.	Patt. W8043	Amplifier M72
25.	Patt. W8035A/B	Panel L36 (R.B.) Inner Left
26.	Patt. W8033	Time Base Unit Design P
27.	Patt. W8032	Rectifier Unit S.E.12
28.	Patt. W8036	Strobe Generator Design B
29.	Patt. W8034	Delay Unit, Design E
30.	Patt. W7026	Oscillator G203
31.	Patt. W8002	Control Unit Design 10
32.	Patt. W8041	Amplifier M71
33.	Patt. W8030B	Panel L36 (R.B.) Outer Left
34.	Patt. W8031	Integrator Unit S.E.2
35.	Patt. W8028	Modulation Filter Unit S.E.1
36.	Patt. W8029B	Phase Measuring Unit S.E.1
37.	Patt. W8026A	Signal Divider S.E.1
38.	Patt. W8027A	Time Base Unit Design O
39.	Patt. W7831	Control Unit Design 7
40.	Patt. 53185/A	Board Controlling & Distributing Design 3
41.	Patt. W8006	Receiver P54
42.	Patt. W8045B/C	Panel L36 (R.B.) Outer Right
43.	Patt. W8019	Filter Unit Design 4 Video
44.	Patt. W8042	Cathode Follower Unit Des. 3
45.	Patt. W8026A	Signal Divider S.E.1
46.	Patt. W8027A	Time Base Unit, Design O
47.	Patt. W7040A	Plan Adjusting Unit S.E.2

Items 2 - 6 are components of Item 1
Items 11 - 14 are components of Item 10
Items 20 - 24 are components of Item 19
Items 26 - 32 are components of Item 25
Items 32, 34 & 45 are components of Item 34
Items 27, 32, 36 & 43 - 46 are components of Item 42

* Type 275 becomes Type 275M when Receiver Outfit CEM is fitted in lieu of CEH. Receiver Outfit CEM is a CEH modified to reduce internal fire risk and the units carry the same pattern numbers with a later suffix letter.

PHYSICAL DATA

Weight of Display Panels and Related Apparatus	- 6¼ cwt
Weight of Receiver and Modulator Panels	- 5¼ cwt
Weight of Display Unit Design 13 or 25 (E.P.I.)	- 1 cwt
Weight of Transmitter 9W	- 115 lb
Weight of Receiver P54 and Beam Switch Mechanism	- 150 lb
Dimensions of typical office	- 8'6" x 8'3"

Note

ASSOCIATED AERIAL OUTFIT

Aerial Outfit AUS consisting of a transmitter nacelle and receiver nacelle.
The nacelles, their reflectors and associated waveguide sections are part of D.M.O's Director. Only the electronic units within the nacelles are supplied by D.R.E.

ASSOCIATED POWER SUPPLY OUTFITS

A.C. Supply Outfit DUE	-	Ships fitted with one Type 275/M
DUH Supply Outfit DUM	-	Ships fitted with two Type 275/M
A.C. Supply Outfit DVG	-	Ships fitted with three or four Type 275

(See respective Summary of Data Sheets)

BRIEF DESCRIPTION

Type 275 which supersedes Type 285 was designed as an integral part of the H.A. Fire Control System in cruisers and above and the H.A./L.A. Fire Control System in destroyers. It can provide accurate Range, Bearing and Elevation of a target.

The set consists of separate transmitter and receiver aerial arrays with certain of the transmitter and receiver equipment fitted in the two nacelles mounted on the Director tower. The nacelles are air conditioned. Beam switching in the form of Conical Scanning is provided in the Receiver nacelle, giving side-by-side presentation of echoes on the display equipment.

The modulator, receiver and display equipment together with the test equipment is fitted in the T.S. or H.A.C.P. The Display equipment consists of elevation, bearing, coarse and fine range presentations. Display Outfit JD2 is mounted adjacent to Panel L36 to facilitate the detection of targets in elevation (E.P.I.)

HANDBOOK	B.R.1768(1) - (5), B.R.1871(1) - (4)
ESTABLISHMENT LISTS	E632 (Type 275) E678 (Aerial Outfit AUS)
INSTALLATION SPECIFICATIONS	B307 (Type 275) B374 (Aerial Outfit AUS)

TYPE 275P

SUMMARY OF DATA

PURPOSE

Similar to Type 275/M but with the additional facility of auto-aiming.

FREQUENCY

3450 - 3614 Mc/s

WAVELENGTH

8.3 - 8.7 cms.

POWER OUTPUT

400 kW (peak)

PULSE REPETITION FREQUENCY

500 pulses per second

PULSE LENGTH

0.5 microsecond

INTERMEDIATE FREQUENCY

60 Mc/s

RECEIVER BANDWIDTH

4 Mc/s

BEAM WIDTH

(a)	Transmitter (half field strength)	- 6.0° horizontal 8.2° vertical
(b)	Receiver (half field strength)	- 6.8° horizontal 6.8° vertical
(c)	Combined beam width (half field strength)	- 4.8° horizontal 5.2° vertical
(d)	Overall width of radiation pattern of transmitter plus receiver plus conical scanning (half field strength)	- 7.0° horizontal 8.3° vertical

POWER REQUIREMENTS AND CONSUMPTION

180V 500 c/s - 2.5 kW * 220V D.C. - 2.5 kW (Additional 1.5 kW required if Type 275P
50V 50 c/s - 200W * is fitted in R.M.R.)

* Similar supplies are required for Type 275P in R.M.R. if fitted

HEAT DISSIPATION IN OFFICE

Panel L36A - 860 watts
Modulator & Receiver - 1½ kW
E.P.I. - 225 watts

MAJOR UNITS

(a) Transmitter and Modulator

1. Patt. W7012C/D Panel 3AW Modulating & Rectifying
2. Patt. W7015 Trigger Unit Design B
3. Patt. W6258 Discharge Line Unit 25 kV working
4. Patt. W7013B Control Unit for Panel 3AW
5. Patt. W7014 Wavemonitor G88
6. Patt. W9267 Spark Gap W7016 complete with box
7. Patt. W8012 Transmitter 9W
8. Patt. 53917 Wavemeter G95
9. Patt. 53920/A/B Oscillator G210

(b) Receiver Outfit CEN

10.	Patt. W8020A	Panel L35 (Receiving)
11.	Patt. W8024A	Rectifier Unit S.E.11
12.	Patt. 53634	Amplifier M78
13.	Patt. 61589	Frequency Control Unit, 55A
14.	Patt. W8022	Cathode Follower Unit Des. 4
15.	Patt. W8025/A	Cathode Ray & Rectifier Unit Design 3
16.	Patt. 64250	Resolver Driving Amplifier Design 25
17.	Patt. W7044A	Wavemonitor G89
18.	Patt. 54732	Test Oscillator G214
19.	Patt. 64374	Panel L36A (R.B.) Inner Right
20.	Patt. W7041	Rectifier Unit S.E.3
21.	Patt. W8001	Control Unit, Design 8
22.	Patt. W8037B	Ranging Spot Generator S.E.3
23.	Patt. W8038A	Time Base Unit, Design Q
24.	Patt. W8043	Amplifier M72
25.	Patt. W8035A/B	Panel L36A (R.B.) Inner Left
26.	Patt. W8033	Time Base Unit Design P
27.	Patt. W8032	Rectifier Unit S.E.12
28.	Patt. W8036	Strobe Generator Design B
29.	Patt. W8034	Delay Unit, Design E
30.	Patt. W7026	Oscillator G203
31.	Patt. W8002	Control Unit Design 10
32.	Patt. W8041	Amplifier M71
33.	Patt. 64373	Panel L36A (R.B.) Outer Left
34.	Patt. W8031	Integrator Unit S.E.2
35.	Patt. 64376	Filter Unit Design 66 Modulation
36.	Patt. 64248	Filter Unit Design 65
37.	Patt. W8026A/B	Signal Divider S.E.1
38.	Patt. 64377	Time Base Unit, 72T
39.	Patt. W7831	Control Unit Design 7
40.	Patt. 53185/A	Board Controlling & Distributing Design 3
41.	Patt. W8006	Receiver P54
42.	Patt. 64375	Panel L36A (R.B.) Outer Right
43.	Patt. W8019	Filter Unit Design 4 Video
44.	Patt. W8042	Cathode Follower Unit Des. 3
45.	Patt. W8026A/B	Signal Divider S.E.1
46.	Patt. 64377	Time Base Unit, 72T
47.	Patt. W7040A	Plan Adjusting Unit S.E.2
48.	Patt. 64249	Test Unit Design 8
49.	Patt. 64371	Control Panel Design 3

Items 2 - 6 are components of Item 1
Items 11 - 14 are components of Item 10
Items 20 - 24 and 49 are components of Item 19
Items 26 - 32 are components of Item 25
Items 16, 27, 34, 35, 37, 38 and 48 are components of Item 33
Items 27, 32, 36 and 43 - 46 are components of Item 42

Note. Some pattern numbers may carry later suffix letters as a result of minor modifications.

PHYSICAL DATA

Weight of Display Panels and Related Apparatus	- 6¾ cwt
Weight of Receiver and Modulator Panels	- 5¾ cwt
Weight of Display Unit Design 13 or 25 (S.P.I.)	- 1 cwt
Weight of Transmitter 9W	- 115 lb
Weight of Receiver P54 and Beam Switch Mechanism	- 150 lb
Dimensions of typical office	- 8'6" x 8'3"

ASSOCIATED AERIAL OUTFIT

Aerial Outfit AUS consisting of a transmitter nacelle and receiver nacelle.

Note. The nacelles, their reflectors and associated waveguide sections are part of D.N.O's Director. Only the electronic units within the nacelles are supplied by D.R.E.

ASSOCIATED POWER SUPPLY OUTFITS

A.C. Supply Outfit DUE - Ships fitted with one Type 275/M/P
A.C. Supply Outfit DUH - Ships fitted with two Type 275/M/P
A.C. Supply Outfit DVG - Ships fitted with three or four Type 275/M/P

(See respective Summary of Data Sheets.)

BRIEF DESCRIPTION

Type 275P is the auto-aiming version of Type 275/M, intended for application to fire-control systems that are capable of auto-follow in aim (e.g. F.P.S.3 and 5 and U.S. Mark 37). The change from Type 275/M is effected by adding certain new units to Panel L36 and modifying others, after which the Panel becomes L36A. In addition, the original reference signal generator unit in the receiving aerial nacelle is replaced by a resolver gear box. The modifications are normally carried out as an A and A item.

HANDBOOK

B.R. 1768(1) to (5) Addendum No. 1.

ESTABLISHMENT LIST

E.632

INSTALLATION SPECIFICATION

B307