

TYPE 242

SUMMARY OF DATA

PURPOSE

Type 242 is fitted in conjunction with Type 291 and Type 275 to provide A-band interrogation working in the standard Mark 3 I.F.F. system.

FREQUENCY

Fixed frequency in the band 165-185 Mc/s (normally 179 or 182 Mc/s).

WAVELENGTH

1.8 to 1.6 metres (approximately).

PEAK POWER OUTPUT

1 kW.

PULSE REPETITION FREQUENCY

125 or 50 p.p.s.

PULSE LENGTH

6 microseconds.

BEAM WIDTH

Aerial Outfit ASD (with Type 291M, 268) all round radiation and reception.
Aerial Outfit ASW (with Type 275) - 60° (approximately) to half field strength.

INTERMEDIATE FREQUENCY

11Mc/s.

RECEIVER BAND-WIDTH

4 Mc/s to 6 dB down.

POWER REQUIREMENTS

180V 500 c.p.s. 200 watts (for office equipment).

The power supplies for Type 242 are normally obtained from the associated radar equipment.

MAJOR UNITS

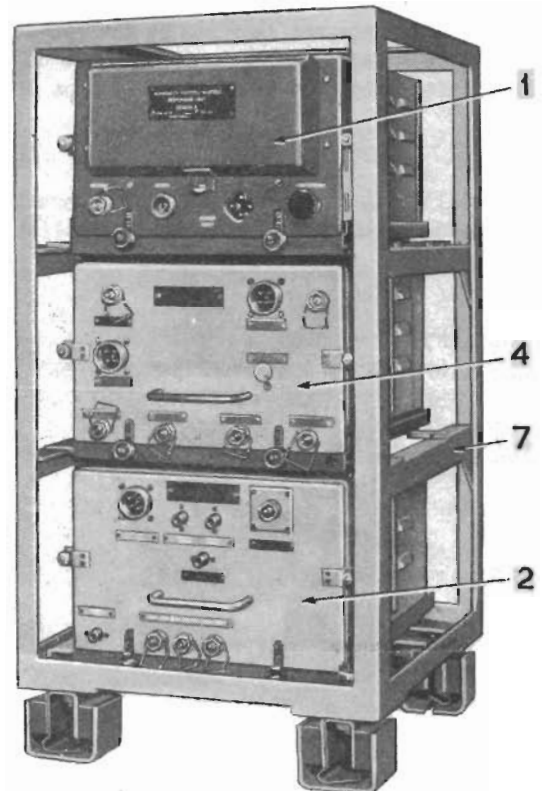
1. Patt. W4790/A/B/C Responder Unit Des. A.
2. Patt. W4832/A Transmitter 7AD.
3. Patt. W6283A Oscillator Unit for Transmitter 7AD only.
4. Patt. W6332/A/B/C Modulator and Mixer Unit Des. D (with Type 277/P, 293/M/P/Q, 291).
or Patt. W7383/A/B Modulator and Mixer Unit Des. E (293/M/P/Q (remotely controlled), 277/P/Q (with H.F.P. & JH2) and 9721).
5. Patt. W9050 Switch Unit 2 pole 1 way (not with Types 276/7, 293).
6. Patt. 53874 Performance Meter Des. 2.
7. Patt. 54920 Framework, sprung, for three instruments (Type 275 only).

PHYSICAL DATA

Total weight of office equipment - 130 lb.
Total weight of Aerial Outfit AQP (with Pedestal 19S) - 50 lb.
Total weight of Aerial Outfit AQP (with Pedestal 19W) - 100 lb.
Total weight of Aerial Outfit ASD - 30 lb.

ASSOCIATED AERIALS

Aerial Outfit ASD (Type 242 fitted with variations of Type 286 and 291).
Aerial Outfit ASL (Type 242 fitted with Type 277T)
Aerial Outfit ASM (Type 242 fitted with Type 291 in ships where no Type 271/2/3 series or Type 276/7/293 series are fitted).
Aerial Outfit ASW (Type 242 Fitted with Type 275 except when fitted in R.M.R.).



TYPE 242

ASSOCIATED TEST EQUIPMENT

Patt. W8053 Output Tester S.E.6.
A.M. Ref. No. 10T/87 Wavemeter W1310.
A.M. Ref. No. 10T/90 Monitor, Type 25 (not when Patt. No. 68622, Oscilloscope, Miniature is supplied).
A.M. Ref. No. 10T/6045 Wavemeter, Type W1649 (only to Depot and Repair Ships).

BRIEF DESCRIPTION

The P.R.F. of the main radar equipment is counted down (4:1 or 10:1) in the modulator which fires the interrogator transmitter and also a trace displaced from the radar trace on the "A" scan presentation. The interrogator signals are received by the responder unit and displayed on this trace as inverted signals along with the normal radar echoes. Coincidence of the interrogator pulse and the radar echo identifies the target. The associated shipborne transponder is Type 253 series or Mark 3 I.F.F. when fitted in aircraft.

REMARKS

Installation layout depends on the parent radar equipment but the three main units should be mounted together and the lengths of the interconnecting coaxial leads should not exceed 3 ft.

HANDBOOKS

B.R.1439 (Type 242)
B.R.1608 (Servicing Manual for Type 242)
B.R.1583 (Performance Meter Des. 2)

ESTABLISHMENT LIST

E.534.

INSTALLATION SPECIFICATIONS

B.181/R1 (Type 242)
B.200 (Aerial Outfit ASD)
B.374 (Aerial Outfit ASW)
B.478 (Aerial Outfit AQP)

TYPE 242M/P/Q

SUMMARY OF DATA

PURPOSE

Type 242M is an interrogator equipment used in conjunction with radar Type 277 series and Type 293.

Type 242P/Q is normally used with Types 960/982/983.

FREQUENCY

Fixed frequency in the band 159-189 Mc/s.

WAVELENGTH

1.9 to 1.6 metres (approximately).

PEAK POWER OUTPUT

2 or 10 kW.

PULSE REPETITION FREQUENCY

Submultiple of 500 p.p.s. with Types 277/293/982/983.

Submultiple of 250 p.p.s. with Type 960.

PULSE LENGTH

4 microseconds.

BEAM-WIDTH

88° (to half field strength) for Aerial Outfits ASS, ANH and ANR.

INTERMEDIATE FREQUENCY

11 Mc/s.

RECEIVER BAND-WIDTH

4 Mc/s to 6 dB's down.

POWER REQUIREMENTS

180V 500 c.p.s. 500 watts (Type 242M/P office equipment)

180V 500 c.p.s. 750 watts (Type 242Q office equipment)

220V D.C. 100 watts)

22V D.C. 22 watts) (for aerial control)

Power supplies are usually obtained from the associated radar equipment.

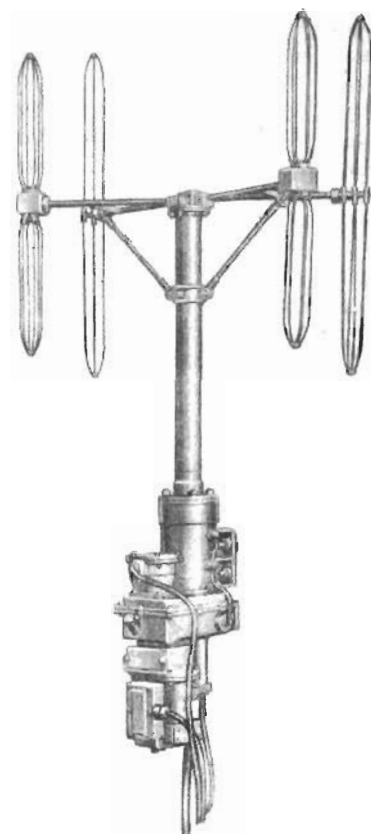
MAJOR UNITS

Type 242M

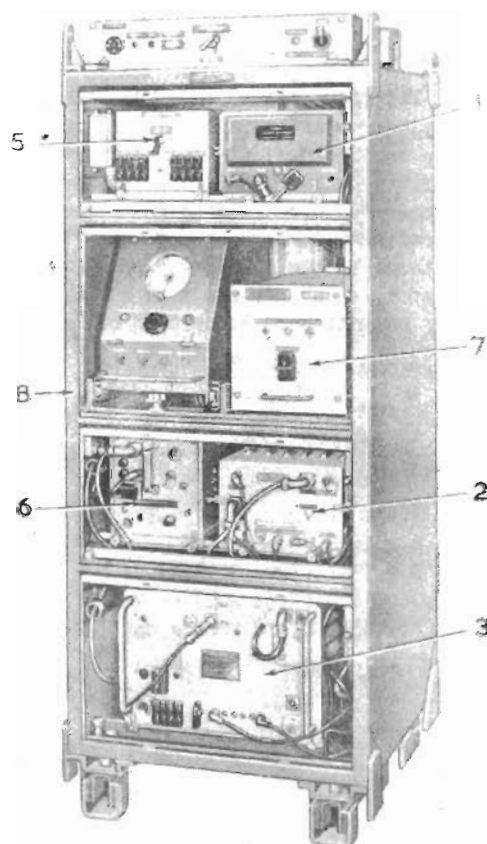
1. Patt. W4790A/B/C Responder Unit, Des. 'A'
2. Patt. W6332A/B/C Modulator and Mixer Unit, Des. 'D' with Types 277/P (not remotely controlled), Types 293M (except where Indicator Outfits JH1/2 are fitted)

or Patt. W7383A/B Modulator and Mixer Unit, Des. 'E' with Type 293M/P/Q remotely controlled, Type 277/P/Q with H.F.P. and Indicator Outfit JH2 and Type 972M.

3. Patt. W9458A Transmitter and pre-amplifier Unit, Des. 1
4. Patt. W9050 Switch Unit, 2 pole 1 way
5. Patt. 53874 Performance Meter, Des. '2'



AERIAL OUTFIT ASS



TYPE 242Q

Type 242P/Q

1. Patt. 65073 Responder Unit, Des. 7
2. Patt. 65072 Modulator and Mixer Unit, Des. 8
3. Patt. W9458A Transmitter and pre-amplifier Unit, Des. 1
4. Patt. W9050 Switch Unit, 2 pole 1 way (Type 242P only)
5. Patt. 65071 Switch Unit, Des. 4i (Type 242Q only)
6. Patt. 53874 Performance Meter, Des. 2
7. Patt. 59883 Display Co-ordination Unit (Type 242Q only)
8. Patt. 65349 Cabinet, Des. 1 (Type 242Q only)

PHYSICAL DATA

Weight of Office Equipment

Type 242M/P	150 lb.
Type 242Q (in cabinet)	800 lb.
Type 242P when fitted with Types 960/982	350 lb.

Dimensions of Cabinet, Des. 1 (A.P.65349) (including resilient mounts)

<u>Height</u>	<u>Width</u>	<u>Depth</u>
6' 7"	2' 3"	2' 2"

ASSOCIATED AERIALS

- Aerial Outfit ASS (Type 242M with Types 276, 277, 293 and 972M)
- Aerial Outfit ANR (Type 242P with Types 960, and 277P)
- Aerial Outfit ANH (Type 242Q with Types 960, 982 and 983)

ASSOCIATED TEST EQUIPMENT

- Patt. W8053 Output Tester S.E.6.
- A.M. Ref. No. 10T/87 Wavemeter W1310.
- A.M. Ref. No. 10T/90 Monitor, Type 25 (not when Patt. 68622, Oscilloscope, Miniature, is supplied).
- A.M. Ref. No. 10T/6045 Wavemeter, Type W1649 (only to Depot and Repair Ships).

BRIEF DESCRIPTION

The operation of the Type 242M is similar to that of Type 242 (q.v.) with minor modifications. The new transmitter (Design 1) replacing transmitter Type 7AD, offers a choice of high or low power output (10 kW or 2 kW) with a variation of the frequency over a band approximately 30 Mc/s wide. A pre-amplifier is incorporated in the transmitter unit which increases the responder range, and the T/R switching arrangements are improved. The "responder" and "modulator and mixer" units of Type 242M are changed to convert to Type 242P which is fitted in conjunction with radar Types 960/277. The new units enable 'A'-band interrogation to be displayed on the Display Outfit JM1 in the R.D.R. Type 242Q is fitted with radar Types 960/982/983 and consists basically of Type 242P mounted in a cabinet and with a new switch unit which enables control of the Interrogator Aerial, gain control and ON-OFF switching to be carried out either from the Type 242Q in the Type 960 office or the JM1 in the R.D.R.

REMARKS

As for Type 242.

HANDBOOKS

- B.R.1436 (Type 242M)
- B.R.1961 (Type 242P/Q)
- B.R.1439 (Type 242)
- B.R.1583 (Performance Meter Des. 2)

ESTABLISHMENT LIST

E.534.

INSTALLATION SPECIFICATIONS

- B.480 (Type 242M/P)
- B.628 (Type 242Q)
- B.478 (Aerial Outfit ASS)
- B.623 (Aerial Outfits ANR and ANH)