

## TYPES 253P and 253Q

## SUMMARY OF DATA

**PURPOSE**

Transponders fitted in all ships (except submarines, which have Type 253M) to work in the Mark III I.F.F. system in conjunction with and in response to triggering pulses from any Interrogator or Radar set in the same frequency band. When triggered, Types 253P/Q respond with various coded signals as required for the purposes of (i) normal interrogation (ii) ship to ship identification (iii) homing.

**FREQUENCY**

- (i) 157-187 Mc/s (swept through every 2.8 seconds) for normal Mark III I.F.F.
- (ii) A fixed frequency normally 182 Mc/s for ship to ship identification and beacon facilities.

**WAVELENGTH**

1.9 to 1.6 metres.

**PEAK POWER OUTPUT**

10 watts (a low power output of  $\frac{1}{2}$  watt is also available as an anti-D/F measure).

**PULSE REPETITION FREQUENCY**

As triggered by Interrogators or Radar Sets (limited only by a 300 microsecond period of quiescence between each transmission).

**PULSE LENGTHS**

- (i) 6-10 microseconds (narrow)  
 (ii) 17-25 microseconds (wide) (iii) 80 microseconds (distress).

**BEAM-WIDTH**

All round radiation and response.

**POWER REQUIREMENTS & CONSUMPTION**

(i) 24 volts D.C. at 8 amps with a ripple content of less than 1% (ii) 180 volts, 500 c/s or 230 volts, 50 c/s at 70 watts is required for Test Set 74A.

**HEAT DISSIPATION IN OFFICE**

250 watts.

**MAJOR UNITS**Type 253P

1. Patt. W9465B Receiver P43B
2. Patt. W9823A Rectifier Unit, Design 35  
or  
Patt. 56584 Rectifier Unit, Design 55  
or  
Patt. 57238 Rectifier Unit, Design 69
3. Patt. 59277 Code Selection Unit, Design 3
4. 10LB/137 Control Unit, Assembly, Type 1

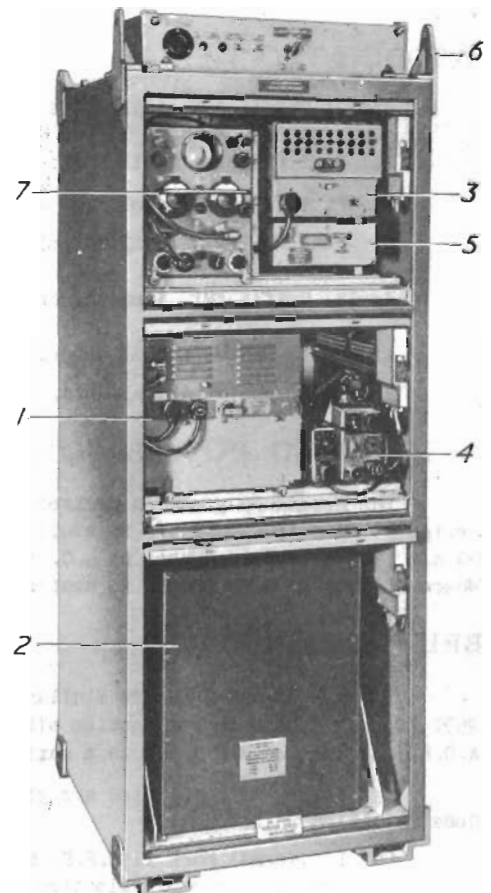
The above items are housed in a framework.

A.M. Ref. 105B/160 Test Set 74A

Type 253Q

1. Patt. W9465B Receiver P43B
2. Patt. 9823A Rectifier Unit, Design 35  
or  
Patt. 56584 Rectifier Unit, Design 55
3. Patt. 59277 Code Selection Unit, Design 3
4. 10LB/137 Control Unit, Assembly, Type 1
5. Patt. 66441 Control Unit, Design 61
6. Patt. 65351 Cabinet, Design 3
7. A.M. Ref. 105B/160 Test Set 74A

Items 1 to 5 and 7 are housed in Unit 6.



TYPE 253Q - VIEW WITH COVERS OPEN

## PHYSICAL DATA

Type 253P is fitted in a framework of dimensions 3' x 1' 6" x 2' high and weighs 120 lb.

Type 253Q is housed in a steel cabinet of dimensions 2' 1" x 2' 2" x 6' 1½" high and weighs 650 lb (including Test Set 74A).

Aerial Outfit ASH weighs 30 lb.

Aerial Outfit ANT weighs 30 lb.

## ASSOCIATED AERIAL

Aerial Outfit ASH (all ships except coastal craft) consisting of:

1. Patt. W5141 Dipole Unit
2. Patt. W5142 Transformer and Matching Unit
3. Patt. W6757 Aerial Unipole, Design A

Aerial Outfit ANT (coastal craft only) consisting of:

1. Patt. W6757 Aerial Unipole, Design A
2. Patt. 59518 Aerial Unit, Design 23

## ASSOCIATED POWER SUPPLY OUTFIT

The necessary power is derived from Patt. W9823A Rectifier Unit, Design 35 or Patt. 56584 Rectifier Unit, Design 55 when 180V, 500 c/s is available or Patt. 57238 Rectifier Unit, Design 69 when 230V, 50 c/s or 115V, 60 c/s is available. Where no A.C. supply is available but 110/220 D.C. is, Battery Outfit BBR will be used. Where no A.C. or D.C. supply is available Battery Outfit BBJ will be used.

## BRIEF DESCRIPTION

Types 253P and 253Q are similar except that Type 253Q is mounted in a resilient steel cabinet. Type 253Q is only fitted in conjunction with Type 960. Both sets may be remotely controlled as required in the A.D.R./Ops Room or B.P.R. up to a maximum of 120 feet of control cable.

The following facilities are given by Types 253P/Q by the three operating buttons 'I', 'A' and 'B' on the Code Selection Unit.

- (a) I : Normal Mark II I.F.F. responses i.e. sweeping through 157-187 Mc/s every 2.8 seconds. Six codes are available by selection and as each code consists of four transmissions (a combination of wide and narrow pulses) a complete code is transmitted once every 11.2 seconds. A special extra wide pulse is available for Distress purposes.
- (b) A : Alternate normal I.F.F. code (four narrow pulses of which any two are transmitted on Button A) for 5.6 seconds followed by 5.6 seconds of Identity Code on a fixed frequency of 182 Mc/s. This code consists of two letters which can be any combination of nine narrow, wide or blank pulses which are selected by means of the nine switches on the Code Selection Unit.
- (c) B : Chopped response on the fixed frequency of 182 Mc/s. The response is mechanically interrupted for 40 milliseconds every 1/5 second to distinguish it from a normal code.

## REMARKS

To limit mutual interference, the aerial for Type 253P/Q should be sited at least 12 feet away from the nearest interrogator aerial on the ship.

Only one Test Set 74A is allowed per ship.

## HANDBOOKS

B.R.1500, B.R.1462

## ESTABLISHMENT LISTS

E520 (Types 253P/Q and Aerial Outfit ASH)

E929 (Aerial Outfit ANT)

## INSTALLATION SPECIFICATIONS

B199

B200 (Aerial Outfits ASH and ANT)