

RECEIVER OUTFITS QM6, QM7, QM8 AND QM11

SUMMARY OF DATA

QM6
QM7
QM8
QM11

PURPOSE

A Navigational Aid using the Decca Navigator System.

GENERAL DESCRIPTION

The Decca Navigator System is a system of navigation using as its basis the geometry of the hyperbola. This principle is derived from the fact that between any two fixed points, a series of lines may be drawn which have the property that at any point of each line, the difference in the distance between any two fixed points has the same value. The lines thus formed take the form of hyperbolic curves. The distance difference between the Receiver and two fixed Transmitting Stations some distance apart was the measurement used in earlier navigational aids such as Gee and Loran.

The Decca system is, however, somewhat different; it consists of a number of groups or chains of transmitting stations. Each chain consists of four stations - a master and three slaves (known as the purple, red and green slaves respectively). The approved range of the system is approximately 240 nautical miles radius from the master station so that a series of chains could give continuous coverage. All the stations radiate C.W., each on a prescribed frequency. The four frequencies are harmonically related to a common fundamental frequency and the phase of each slave's transmission is controlled at all times, by the master transmission. The chain should be regarded as three pairs of stations, each pair consisting of the Master and one Slave.

The radio waves sent out by the Master and each Slave station are converted in four separate channels in the receiver to a common frequency and their phase relationship are compared. This comparison of phase achieves a similar but more accurate result than that of difference distance measurement already discussed. Each phase change of 360° produces a separate lane, a fixed number of lanes (different for each pair) constituting a zone. The width of these lanes varies greatly from 400 - 600 yards on the base line to 3 miles at the edge of the coverage.

In Outfit QM6, QM7, QM8 and QM11 there are no facilities for lane identification so it is essential to initially set up the lane numbers by visual observation.

Receiver Outfit QM6 can only be used on the English Chain. Receiver Outfit QM7 can only be used on the N.W. Chain. Receiver Outfit QM8 can only be used on S.W. Chain. Receiver Outfit QM11 can only be used on Scottish Chain.

FREQUENCIES (kc/s)

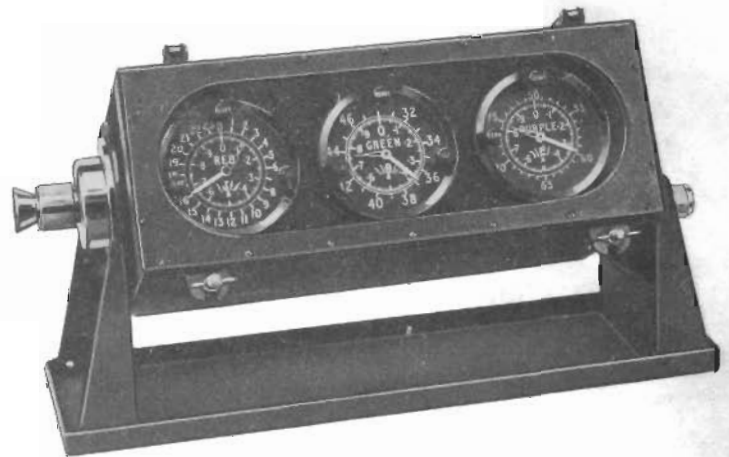
	Outfit QM6 (English)	Outfit QM7 (N.W.)	Outfit QM8 (S.W.)	Outfit QM11 (Scottish)
Channel				
Black (Master)	85.00	84.645	84.280	85.180
Red Slave	113.333	112.860	112.375	113.573
Green Slave	127.500	126.9675	126.420	127.770
Purple Slave	70.833	70.537	70.233	70.983

POWER REQUIREMENTS AND CONSUMPTION

24 volts D.C. at 3.75 amps.



RECEIVER B55



INDICATOR UNIT, METER TYPE, DES. 7

MAJOR UNITS

Outfit Q16

Pattern No.	Description	PHYSICAL DATA		
		Height	Width	Depth
67454	Receiver B55	1' 9"	1' 8"	10½"
67455	Indicator Unit Meter Type, Design 7	10½"	1' 6"	9½"
67457	Power Unit (Rotary Transformer)	5½"	9"	3"

Outfit Q17

67949	Receiver 62C	1' 9"	1' 8"	10½"
67455	Indicator Unit Meter Type, Design 7	10½"	1' 6"	9½"
67457	Power Unit (Rotary Transformer)	5½"	9"	3"

Outfit Q18

101419	Receiver Decca Mk. 4M1 Single Chain	1' 9"	1' 8"	10½"
67455	Indicator Unit Meter Type, Design 7	10½"	1' 6"	9½"
67457	Power Unit (Rotary Transformer)	5½"	9"	3"

Outfit Q11

102445	Receiver B55	1' 9"	1' 8"	10½"
67455	Indicator Unit, Meter Type Design 7	10½"	1' 6"	9½"
67457	Power Unit (Rotary Transformer)	5½"	9"	3"

Total Weight of each Outfit is approximately - 83 lb.

POWER SUPPLY ARRANGEMENTS

- (a) In vessels with a 24V main battery supply a Patt. 59328 switch fuse is required between the main Distribution Board and the Rotary Transformer.
- (b) In vessels where no main battery supply is available a duplicate battery of four in No. Patt. W1469A Accumulator 6V/130 amp hours is required. Patt. 5999 Switch 2 pole 2 way 15 amps, Patt. 8191A Fuse Box and 2 in No. Patt. 57183 Bonding Plates are also required.
- (c) Where a main supply of 220V D.C. is available, Battery Outfit E8n is necessary together with Patt. 8290 Switch Tumbler 1 way 10/15 amps.

AERIAL

The aerial in each outfit consists of Patt. 611A Insulated Cable approximately 30 feet in length and a special concentric feeder.

HANDBOOK

ESTABLISHMENT LIST

E.994

INSTALLATION SPECIFICATION

B.700