

# RECEIVER OUTFITS QM3 and QM4

## SUMMARY OF DATA

### 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 three separate channels in the receiver to a common frequency and their phase relationships 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  $360^\circ$  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.

With Outfits QM3 - QM4 the lane numbers are set up initially by visual observation.

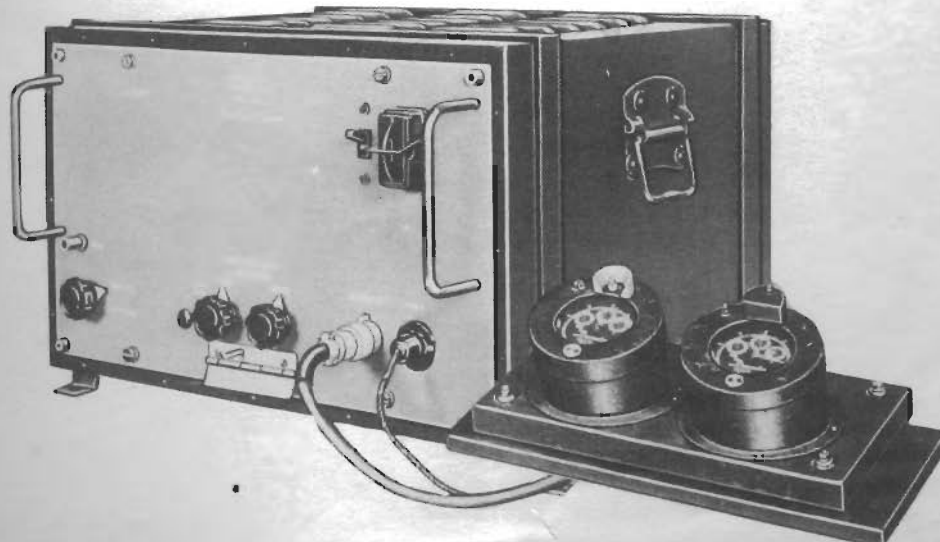
Outfits QM3 and QM4 can only be used on the English Chain which has the Master Station situated at Puckeridge (18 miles north of London).

### FREQUENCIES

<u>Outfit QM3</u>		<u>Outfit QM4</u>	
Master	85.00 kc/s	Master	85.00 kc/s
Red Slave	113.3 kc/s	Red Slave	113.3 kc/s
Green Slave	127.5 kc/s	Purple Slave	70.833 kc/s

### POWER REQUIREMENTS AND CONSUMPTION

Outfit QM3 and QM4 - 220/240 volts 50/60 c/s 200 watts.



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## MAJOR UNITS

### Outfit QM3

Patt. No.	DESCRIPTION	PHYSICAL DATA		
		Height	Width	Depth
66671	Receiver B49	1' 2"	2' 0"	1' 7½"
65701	Indicator Unit Meter Type, Design 3	4½"	1' 6"	6"
65702	Indicator Unit Meter Type, Design 4	4½"	1' 3½"	6"

### Outfit QM4

Patt. No.	DESCRIPTION	PHYSICAL DATA		
		Height	Width	Depth
66672	Receiver B53	1' 2"	2' 0"	1' 7½"
65701	Indicator Unit Meter Type, Design 3	4½"	1' 6"	6"
65702	Indicator Unit Meter Type, Design 4	4½"	1' 3½"	6"

The total weight of each outfit is approximately 90 lb.

## POWER SUPPLY OUTFITS

A.C. Supply Outfit DJB when no suitable power supply is available.

## AERIAL

The aerial in each outfit consists of Patt. 611A insulated cable approximately 30 ft. in length.

## HANDBOOK

### ESTABLISHMENT LIST

E682 (Outfit QM3)

### INSTALLATION SPECIFICATION

B641 (Outfit QM3)