



Radio Direction Finder Receiver

Flektromekano Type P 78



230-540 kc/s.

RADIO EQUIPMENT AND RADIO NAVIGATIONAL INSTRUMENTS

Radio Direction Finder

Receiver

Type P 78

ELEKTROMEKANO's Radio Direction Finder Receiver Type P 78 is a highly sensitive instrument designed for universal marine application. The 6-valve superheterodyne receiver covers the medium frequency range, 230—540 kc/s., assigned by the International Radio Regulations for the purposes of distress and direction finding and for maritime radio beacons, and it fulfils the latest requirements and recommendations of the International Conventions (Atlantic City 1947, London 1948 and Paris 1951).

Its sturdy make and easy operation make the receiver well fitted for use in all ships, irrespective of size.

The D.F. Receiver Type P 78 is used in conjunction with ELEKTROMEKANO's Loop Antenna Type ER 20 or ELEKTROMEKANO's Loop Antenna Type ER 20/KG, which is equipped with a device for automatic correction of quadrantal error and also has facilities for providing true North presentation on the compass card when fitted with a gyro repeater motor in vessels having a gyro compass.

Specifications:

Design:

The receiver is contained in a spray-water proof aluminium cabinet, attractively finished in grey cellulose. The power supply terminals are located on the right-hand side of the cabinet while a flange for the flexible tube covering the wires from the loop antenna is located on the top of the cabinet to the left. The »sense« antenna is connected to the receiver through a set of coaxial cable connectors on the left-hand side of the cabinet.

Circuit:

6-valve superheterodyne receiver with one R. F. amplifying stage, one frequency changing stage, two I. F. amplifying stages, one diode detector, one A.F. amplifying stage (output stage) and a separate beat frequency oscillator.

The tuning capacitors of the loop antenna circuit, the R. F. band-pass filter and the local oscillator are coupled together mechanically and controlled by a single knob on the front panel.

The I.F. amplifier has three I.F. band-pass filters (110 kc/s.). Without causing any appreciable variation of the receiver gain, the selectivity can be increased by switching two quartz crystals into the circuit of the first I.F. band-pass filter. The output stage is equipped with a low-pass filter, which cuts off all A.F. signals above 1300 c/s. The output circuit is designed for use with high-impedance headphones.

The beat frequency oscillator is crystal-controlled.

The receiver is equipped with effective zero-sharpening and sense-finding devices.

Types of Reception: Unmodulated telegraphy A1 (CW) and modulated telegraphy A2 (MCW).

Frequency Range: 230-540 kc/s. in one band.

Tuning Scale: The receiver is equipped with an illuminated scale, which is calibrated in kc/s.

Accuracy of Adjustment: At 500 kc/s. one millimeter scale division is equal to a 2-kc/s. change of frequency.
At 240 kc/s. one millimeter scale division is equal to a 1-kc/s. change of frequency.

Sensitivity: In order to obtain accurate bearings with a direction finder equipment the International Conventions require that the field strength, which, when the loop is orientated for maximum signal, is necessary to produce an output of 1 mW at a signal/noise ratio of 20 db, should be less than 50 μ V/m. Background noise should be measured without signal.

The direction finder receiver Type P 78 used in conjunction with the loop antenna Type ER 20 or Type ER 20/KG produces the above mentioned output

at 12 $\mu\text{V/m}$ for A1 signals and at 6 $\mu\text{V/m}$ for A2 signals (70 % modulation at 400 c/s.) and therefore it will give much more accurate bearings than required.

Selectivity: When the crystal filter is switched off, the total bandwidth is:

2.0 kc/s. for an attenuation of 6 db.

4.6 kc/s. for an attenuation of 30 db.

When the crystal filter is switched on, the total bandwidth is:

0.6 kc/s. for an attenuation of 6 db.

1.7 kc/s. for an attenuation of 30 db.

Image & Intermediate Frequency Protection: The attenuation of the image and intermediate frequency signals is greater than 90 db.

Valve Complement: One EF 85, one ECH 81 and four EBF 80.

Power Requirements: 6-, 24- or 30-volt storage battery (filament supply)
120-volt anode battery (anode supply)

Power Consumption: Filament supply: 24 V or 30 V 0.6 A
6 V 2.2 A
Anode supply: 120 V 35 mA

Dimensions: Receiver Unit:
Height: 41 cm
Width: 62 cm
Depth: 28 cm

Weight: Receiver Unit: 12.5 kg

(All data are subject to possible alterations of design).

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