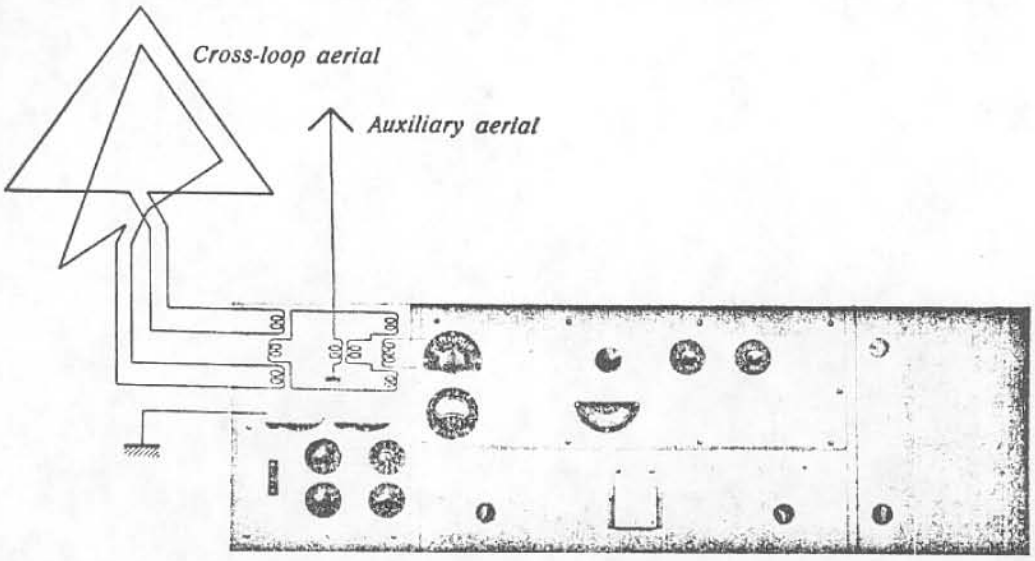
# TELEFUNKEN




**The cross-loop receiver E 379 II 0 (designed for mounting on a table) with schematic diagram of the input circuit**

# Receivers for Directional Reception with Cross-Loop and Rotatable Frame Aerials

In districts with very intense wireless traffic it is no longer possible to ensure undisturbed reception by merely increasing the selectivity of the receiving apparatus. Therefore, under such conditions, recourse is had to *directional reception*.

It is for wireless services of this class that the receivers E 379/380 0 have been developed.

**Types:**
- E 379 I 0: Cross-loop receiver for mounting in a table
- E 379 II 0: Cross-loop receiver for mounting on a table
- E 380 I 0: Rotatable frame receiver for mounting in a table
- E 380 II 0: Rotatable frame receiver for mounting on a table.

**Universal application, directional and non-directional reception**

being possible by the use of frame aerial and auxiliary aerial:

(1) Single circle or all-round reception by means of the single wire auxiliary aerial (for non-directional reception).

(2) Double circle or figure-of-eight reception by means of the frame aerial (for directional reception, if the interfering transmitter is situated at an angle of 0—90° in relation to the transmitter it is desired to receive).

(3) Cardioid or uni-directional reception by means of the frame aerial and auxiliary aerial (for directional reception, if the interfering transmitter is situated at an angle of more than 90° in relation to the desired transmitter).

Switching-over from one type of reception to another one is effected by means of a switch mounted in the receiver.

Directional reception is possible either by the *goniometer* method, i. e., by means of a fixed cross-loop frame aerial, or by means of a *rotatable frame aerial.* When receiving on the cross-loop aerial, suitable neutralizing permits connecting several receivers to the same cross-loop aerial; it is only necessary in this case to provide a separate auxiliary aerial for each receiver.

*Overall dimensions and weight:*

| | | |
|---|---|---|
| Width . . . . . | 48″ | (1220 mms.) |
| Height . . . . . | 15″ | ( 380 mms.) |
| Depth . . . . . | 15¾″ | ( 400 mms.) |

Weight about 93 lbs. (42·5 kgs)

**Wave range:**

Within the limits of 200 to 12000 metres, 1500—25 kc/s, the wave range of the receiver can be arranged to suit clients' requirements, provided that the minimum to maximum wavelength ratio does not exceed 1 to 2·5 approximately.

**Electrical design and principle of the goniometer system in the receiver:**

The receiver for directional reception with a cross-loop type frame aerial contains in its casing a goniometer (See illustration on the front page). This goniometer consists of two fixed coils which are arranged crosswise and connected to the cross-loop aerial; it is by means of these coils that the field voltages picked up by the cross-loop aerial are transferred to a rotatable search coil. By rotating this search coil the signal intensity of the interfering transmitter is reduced to minimum. The search coil is coupled to the first high frequency stage by means of an aperiodic intermediate circuit, to which the auxiliary aerial is also coupled. Amplitude and phase of the auxiliary aerial current are adjustable by means of a resistance and inductance. Depending upon the phase adjustment the auxiliary aerial either serves to obtain the uni-directional reception diagram (cardioid) or, in the case of figure-of-eight reception, to sharpen up the minimum by compensating the non-directional aerial effect of the frame aerial.

**Components of the receiver:**

The receiver is an 11-valve superheterodyne set comprising the following components:

3 neutralized high frequency stages with 4 tuned circuits
1 high frequency heterodyne and 1 mixing stage
2 intermediate frequency stages
1 intermediate frequency detector
1 intermediate frequency heterodyne for modulated reception of C. W. transmitters (about 1000 c/s)
2 low frequency amplification stages (the last stage can be switched off at will).

The H. F. tuning circuits are tuned simultaneously by a single handle.

The band width of the intermediate frequency amplifier is adjustable to either 300 c/s or 500 c/s, depending on the keying speed. — In the low frequency portion of the receiver two audio-frequency circuits with a resonant frequency of 1000 c/s and a band width of 300 c/s are provided to eliminate interfering noise. In addition, connections are provided in the receiver for adding two other audio-frequency circuits, if required. — The signal intensity is variable within wide limits.

**Valves used:** Type RE 074 for all stages.

**Power supply:** Filaments: 4 V, 1 A Grid bias: 6—8 V Anodes: 200 V, about 30 mA.
The different voltages and the feed current of each valve can be checked on the instrument built into the receiver.

**Aerial system:** For the receiver E 379 0: Fixed cross-loop aerial and auxiliary aerial.
For the receiver E 380 0: Rotatable frame aerial and auxiliary aerial.

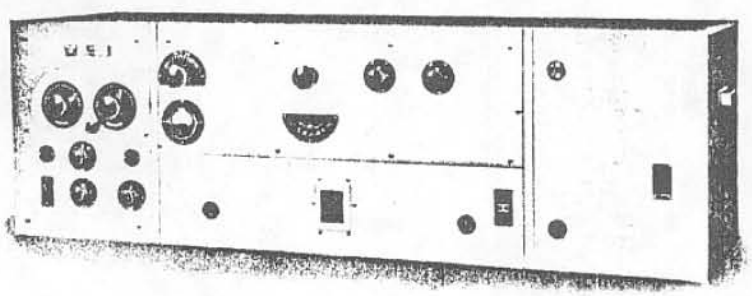
**The high selectivity of the receivers is characterized by**

(1) the selectivity of the high frequency amplification circuits (preselection).
An interfering frequency differing from the heterodyne frequency by the same amount as the received frequency, but lying on the opposite side of the heterodyne frequency, will be weakened to about $^1/_{20000}{}^{th}$ (by 86 decibels).

(2) the selectivity of the intermediate frequency amplification circuits.
An interfering transmitter, the frequency of which differs by about 2 kc/s from the received frequency, is weakened to $^1/_{5000}{}^{th}$ (by 75 decibels) of the output voltage which would be obtained in case of resonance.

(3) the low frequency selection. Two audio-frequency circuits tuned to 1000 c/s.

**Mechanical design:** The receivers are contained in a light metal cabinet. All stages are assembled, as far as necessary, in separate compartments which are accessible through hinged covers permitting easy replacement of the valves etc.
The receivers can be supplied for mounting on a table as well as in a table.



**Rotatable Frame Receiver E 380 110 (for mounting on a table)**