

Type H09 Beat-Frequency Oscillator

This Beat-Frequency Oscillator generates very low frequencies. The frequency range is 0-320 cycles, covered in 3 ranges. The main dial of the instrument is divided for each cycle and covers the range 0-120 cycles. By means of a switch 0, 100, and 200 cycles can be added to the indication of the main dial.

The instrument is provided with a d-c meter for checking the zero adjustment. It is directly connected in the anode circuit of the modulator tube. By means of this meter a very accurate zero adjustment can be made as synchronization of the h-f oscillators of the instrument will not appear until at frequencies lower than 0.1 cycle. After the zero adjustment has been made the frequency accuracy is 0.1 cycle $\pm 0.5\%$. If the zero lies outside the range of the zero adjustment knob it can be corrected by means of the screw driver adjustment at this knob.

The Beat-Frequency Oscillator is provided with fine and coarse controls for the output voltage. By means of a switch the output circuit can be matched to 37.5, 150, 600, and 2400 ohms ohmic load. At the three highest impedances the center tap of the secondary winding of the output transformer is passed to a telephone jack. By means of an internal potentiometer that controls a negative feed-back the output impedance is adjusted to the same value as that of the matching impedances.

A rectifier meter having the ranges 10, 25, and 100 volts, is provided for controlling the output voltage. The rectifier meter can be damped by an electrolytic capacitor so that the deflection becomes stable down to frequencies of approximately 2 cycles.

At frequencies over 5 cycles the output is maximum about 5 watts, at 2 cycles it is 4 watts, and at 1 cycle it is 1 watt. At 60 cycles the distortion factor at 0.5 watt is about 0.7%, at 1 watt it is about 1%, and at 2 watts about 2%.

For checking the anode current of the output tubes are two sets of test jacks on the rear of the chassis. These test jacks are connected by means of short-circuit straps which are accessible after the instrument has been removed from the cabinet. The tubes must draw the same anode current in order to have a distortion factor as small as possible. The anode current must be about 30 mA. The adjustment is made by means of the screw driver adjustments of the two potentiometers mounted on the upper shelf above the two type EL2 tubes.

The variation of the output voltage with the frequency is less than 0.2 db in the range 2-120 cycles, and less than 0.5 db in the range 1-300 cycles.

Operating principle

The Beat-Frequency Oscillator incorporates 2 h-f oscillators that operate at 10,000 cycles. By means of the main dial the frequency of one oscillator can be continuously increased by

120 cycles, while the frequency of the other oscillator can be decreased by 100 or 200 cycles by means of the 3-position switch. The two high frequencies are passed to a modulator tube in whose anode circuit a filter is connected that cuts off all modulation products except the difference frequency. The latter is passed to an amplifier tube via the output controls and from there via a phase inverter tube to two push-pull coupled output tubes. The output transformer has 8 secondary windings which by means of the output impedance switch is coupled in series or in parallel in a proper way. This makes the efficiency and the frequency response of the transformer almost independent of the output impedance.

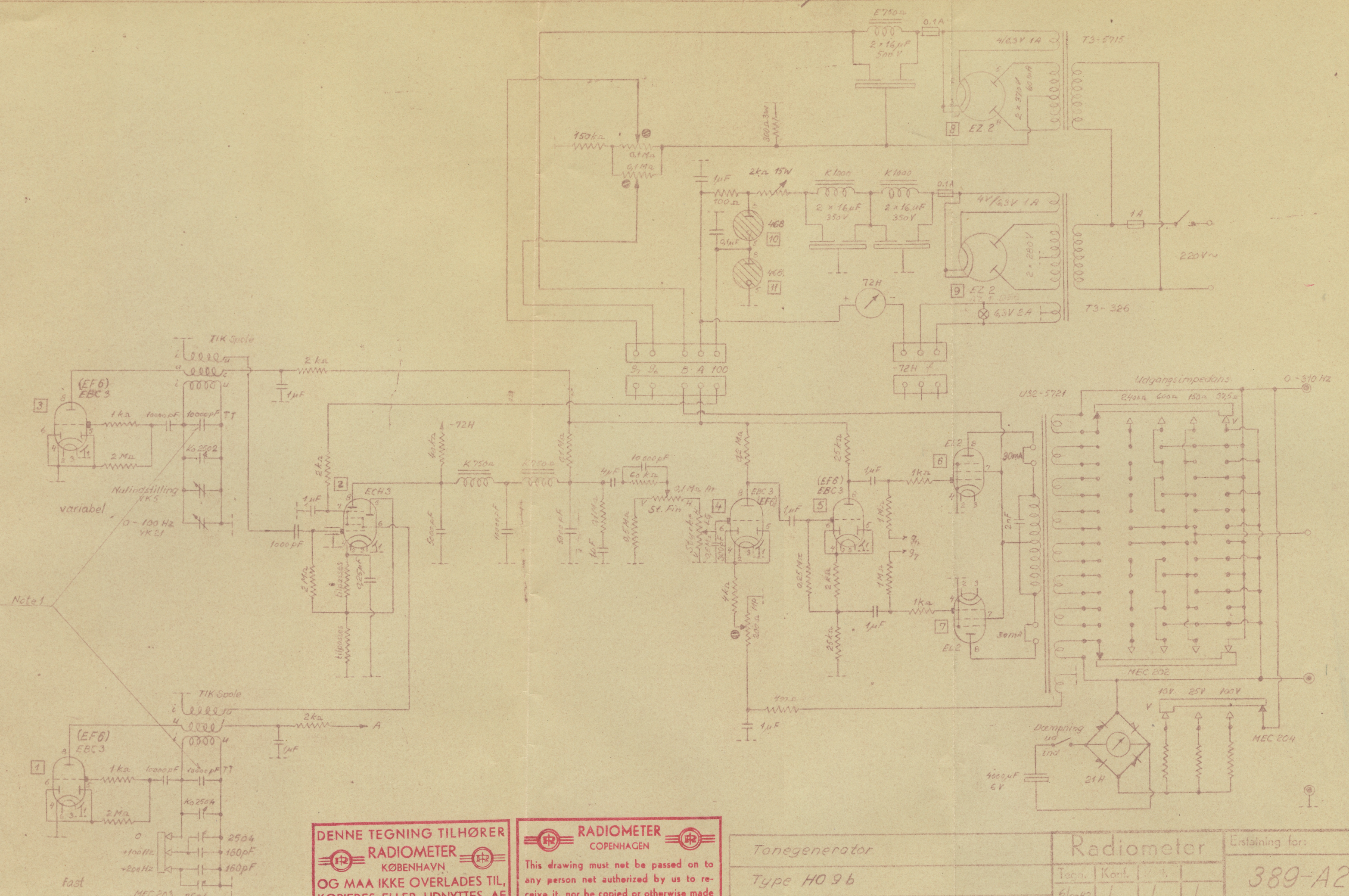
Tubes

The Beat-Frequency Oscillator is supplied with the following tubes:

4	Philips type	EBC3 (or EF6)
1	"	" ECH3
2	"	" EL2
2	"	" EZ2
2	"	" 4687

If the tubes are replaced the types ECH3 and the two type EL2 must be selected, as some tubes may cause a high distortion factor.

The instrument is operated from 220 volt power line. It consumes about 85 VA.



Note 1

DENNE TEGNING TILHØRER

RADIOMETER

KØBENHAVN

OG MAA IKKE OVERLADES TIL,

KOPIERES ELLER UDNYTTES AF

UVEDKOMMENDE

RADIOMETER

COPENHAGEN

This drawing must not be passed on to any person not authorized by us to receive it, nor be copied or otherwise made use of by such person without our authority

Tonegenerator				Radiometer				Erfattet af:	
Type HO 9 b				Tegn.	Kont.	V.		389-A2	
Diagram				6/8-42	1	1	1		
				#				Erfattet af:	