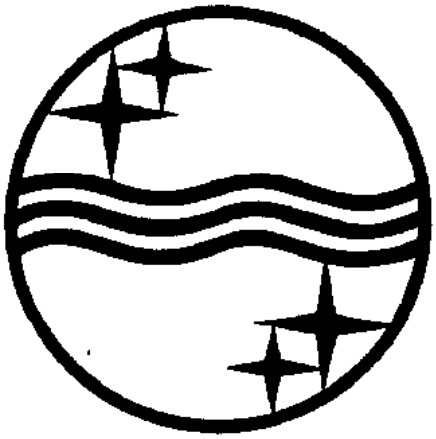
PHILIPS

SERVICE OSCILLATOR
TYPE GM 2880



PHILIPS MEASURING INSTRUMENTS

INSTRUCTIONS FOR USING PHILIPS SERVICE OSCILLATOR TYPE GM 2880

G E N E R A L

This instrument incorporates an oscillator the wavelength of which is continuously variable between 14·3 - 3000 metres (21 Mc/s - 100 kc/s).

This range is divided into 6 stages; for each stage a calibrated curve for the condenser settings is available.

There is a possibility of obtaining five fixed calibrated wavelengths, thus enabling adjustment of the tuning scale of a receiver to be effected at a moment's notice.

The H.F. signals can be modulated by an L.F. signal of 400 c/s, for which purpose an L.F. oscillator has been built-in.

The instrument contains furthermore a fixed H.F. oscillator enabling the production of a beat-note for testing the L.F. part of a receiver.

An attenuator with five stages from 10:1 enables the oscillator to be used for measuring the selectivity curves and the delayed or non-delayed A.V.C. curves of a receiver with the aid of an appropriate output meter.

I N S T A L L A T I O N

INSERTING THE VALVES

Remove the rear panel (after having loosened the fixing screws) and insert the following valves in their sockets, from left to right:

one valve E 409 with one mark on the base,
one valve E 409 with two marks on the base;
one valve E 409 with three marks on the base,
one rectifying valve 506.

Do not interchange these valves. When replacing a valve, mark its base in a similar way.

ADJUSTMENT FOR THE CORRECT MAINS VOLTAGE

Before connecting the oscillator to the mains make sure that the mains voltage lies between the limits, which can be read through the round aperture of the rear-panel. If not, the oscillator must be adjusted to the correct voltage range. For this purpose a terminal plate is provided above the valves in the right-hand compartment (seen from the back). The strips must be connected between the terminals according to the diagram for the desired voltage given on the paper disc of the rear panel.

After adjustment, take care the voltage limits to which the oscillator has now been adjusted can be read through the round aperture of the rear-panel.

The rear-panel can now be refixed.

CONNECTION

For the mains connection a flex is provided, the female plug of which is to be placed over the countersunk plugs at the left on the oscillator.

The blank terminal "⏚" on the aerial socket at the right of the oscillator must be effectively earthed. This is essential as otherwise the casing might be alive.

For connection of the oscillator to the aerial and earth sockets of the receiving set a special flex and artificial aerial is provided (see fig.).

The large concentric plug "A" is inserted in the aerial plug of the oscillator.

The artificial aerial "D" has two pins: the centre pin "F" is for the aerial and the pin on the strip "G" for the earth socket of the receiver. The distance between these two pins can be altered by loosening the milled nut "E", in order to adapt it to the sockets of the set under test. If necessary a longer strip can be used.

The larger pin "B" of the flex is inserted in the unmarked socket of the artificial aerial "D" (as shown in the figure) for wavelengths above 200 metres or in the socket marked with a red dot for wavelengths under 200 metres. In the first case use is made of the artificial aerial, in the second case a resistance of 400 ohms is inserted.

The small plug "C" of the flex is inserted in the socket at the side of the artificial aerial as shown in the figure in order to earth the receiver via the oscillator.

O P E R A T I O N

SWITCHING-ON

The oscillator is switched on by setting SK 1 (see fig.) in its upper position. Wait about a quarter of an hour before putting the oscillator into operation, so allowing it to heat up sufficiently and avoiding "creeping" during operation.

UNMODULATED H.F. SIGNALS (14·3 - 3000 metres, 21 Mc/s-100 Kc/s

SK 2 is set at position "1".
SK 5 is set at its lower position ("0").
SK 6 is set at position "1".
SK 3 is set at the desired waveband. This knob has 6 positions the corresponding wavebands being:

at position "1":	14·3	-	30	metres	(21	- 10	Mc/s);
at position "2":	27·5	-	80	metres	(11	- 3·75	Mc/s);
at position "3":	75	-	200	metres	(4	- 1·5	Mc/s);
at position "4":	190	-	550	metres	(1600	- 545	Kc/s);
at position "5":	460	-	1400	metres	(650	- 215	Kc/s);
at position "6":	1070	-	3000	metres	(280	- 100	Kc/s).

The desired wavelength can now be adjusted by means of C 1. For this purpose make use of the calibrated curves on top of the apparatus. The numbers of these curves correspond with the positions of SK 3.

If a shorter wavelength than 14'3 metres is desired use can be made of the higher harmonics. For instance, if a wavelength of 10 or 5 metres is desired, the oscillator is set at a wavelength of 20 metres and then the second respectively the fourth harmonic is used.

MODULATED H.F. SIGNAL (14·3 - 3000 metres, 21 Mc/s - 100 Kc/s)

The instructions given for obtaining unmodulated signals (see above) can be entirely followed, with the exception that SK 5 is now pushed into its upper position "Mod". At this position the H.F. signal will be modulated by the built-in L.F. oscillator working on a frequency of 400 c/s.

MODULATED OR UNMODULATED H.F. SIGNALS ON FIVE FIXED CALIBRATED WAVELLNGTHS

C 1 is turned to position 900.
SK 6 is set at position "1".
SK 5 is set at the lower position ("0") if an unmodulated or at position "Mod" if a modulated signal is desired.

With SK 3 at position "4" the following calibrated wavelengths can be obtained:

with SK 2 at position "2" a wavelength of 225 metres (1333 Kc/s);
with SK 2 at position "3" a wavelength of 350 metres (857 Kc/s);
with SK 2 at position "4" a wavelength of 550 metres (545 Kc/s);

with SK 3 at position "5" the following calibrated wavelengths can be obtained:

with SK 2 at position "5" a wavelength of 900 metres (333 Kc/s);
with SK 2 at position "6" a wavelength of 1800metres (167 Ko/s).

BEAT-NOTE

Owing to a built-in oscillator working on a fixed wavelength (about 350 metres), it is possible by heterodyning with the

variable oscillator to obtain any desired beat-note for testing the L.F. part of a receiver and its loudspeaker.

SK 2 is set at position "1".

SK 5 is set at its lower position ("0"),
SK 6 is set at position "2" for switching-on the built-in fixed oscillator.
The receiver is accurately tuned to the wavelength of this oscillator (about 350 metres).
SK 3 is set at position "4" and C 1 so turned that the beat-note is heard.

ATTENUATOR

With SK 4 at position "6" and R 1 turned as far as it will go in a clockwise direction the maximum H.F. output is obtained. This amounts to about 0·15 volt at positions "1" and "2" of SK 3 and to about 0·5 volt at positions "3", "4", "5" and "6" of SK 3.

When changing SK 4 from position "6" to position "5" 1/10 of the original voltage is delivered; at position "4" 1/100 of the original voltage, etc. At position "1" 1/100000 of the original voltage is thus obtained.

Starting from the voltage at position "1" of SK 4 this voltage can thus be raised to 100000 times the original voltage.

Knob R 1 enables the output voltage to be smoothly regulated at all positions of SK 4.