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28 - JAN 1967

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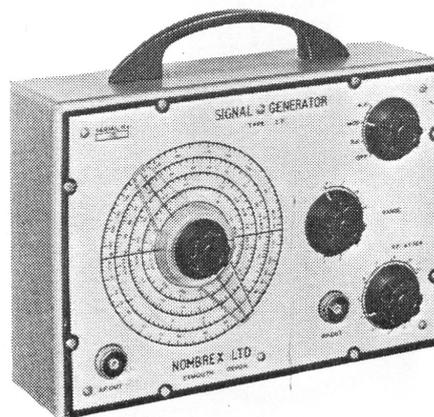
NOMBREX

WIDE RANGE TRANSISTORIZED

SIGNAL GENERATOR

MODEL 27

OPERATING INSTRUCTIONS



Manufactured by

NOMBREX LTD. (INSTRUMENTS
DIVISION)

ESTUARY HOUSE, CAMPERDOWN TERRACE
EXMOUTH - DEVON - ENGLAND

Tel.: Exmouth 3515

Grams: Nombrex, Exmouth.

The MODEL 27 Generator was designed to meet the need for a small and really portable instrument at a competitive price. Although of simple construction and operation it is capable of performance comparable with other more expensive instruments. It is of robust construction, employing the latest techniques of design and assembly, and with normal use will stand up to continuous hard use with complete reliability.

CIRCUIT

The circuit design employs an R.F. transistor signal oscillator, the circuit characteristics being carefully chosen to ensure stable operation under varying conditions and temperatures. The R.F. signal is available either unmodulated, or alternatively modulated by a 400 cycles sine wave from a separate A.F. Modulator transistor. Printed circuit assembly is employed for stability and long-term reliability.

RANGES:

The instrument gives continuous frequency coverage from 150 Kc/s to 350 Mc/s, in eight bands as below:—

| | |
|----------------------------|-----------------------------|
| (1) 149 Kc/s To 438 Kc/s | (5) 9.8 Mc/s To 34.1 Mc/s |
| (2) 425 Kc/s To 1.25 Mc/s | (6) 29.5 Mc/s To 69.0 Mc/s |
| (3) 1.18 Mc/s To 3.83 Mc/s | (7) 56.0 Mc/s To 166.0 Mc/s |
| (4) 3.4 Mc/s To 10.75 Mc/s | (8) 118.0 Mc/s To 350 Mc/s |

All signal ranges except No. 8 are on fundamentals

GENERAL SPECIFICATION

ACCURACY: Better than ± 2 per cent. overall, but generally within $\frac{1}{2}$ per cent. to $1\frac{1}{2}$ per cent. on individual ranges and scale positions.

Frequency shift with change of load or attenuator setting generally less than .2 per cent. Shift due to failing battery voltage less than .4 per cent. down to 7.5V at which voltage battery should be renewed.

OUTPUT LEVEL: Average 50 mV into 75 ohms load on all ranges, dependent on range and frequency: A.F. output approximately 1 Volt R.M.S. at 400 c/s.

OUTPUT IMPEDANCE: Employing of necessity a miniature resistive attenuator the output impedance varies with attenuator setting, and is 400 ohms at maximum. Both R.F. and A.F. output sockets are D.C. isolated by capacitors rated 500 V DCW. If the signal is to be applied to test points at a higher potential than 500V, an additional capacitor of suitable voltage rating should be inserted at the red "live" lead termination of the test lead. The black lead clip is normally connected direct to the chassis of the receiver. The output attenuator does not operate on the A.F. output.

BATTERY: Employs standard 9 volt transistor battery, Ever-Ready PP4, Drydex DT4, or equivalent. Suitable U.S.A. or Continental alternative types are available in all overseas territories.

CONSUMPTION: Total 3mA (average) giving several months' of battery life with normal usage. The battery should be replaced when it has fallen to the 7.5V minimum. Be sure to switch the instrument to "OFF" position when not in use to conserve battery. Run-down batteries, if left in the instrument, may leak and cause irreparable damage.

CONTROLS:

FREQUENCY CONTROL: Transparent hair-line cursor permitting adjustment to 1 per cent. accuracy. All ranges are directly calibrated.

FUNCTION SWITCH: Four-position switch, providing unmodulated R.F., modulated R.F., A.F. sine wave only (at separate socket), and switch-off.

RANGE SWITCH: Eight-position switch, numbered to correspond with the ranges of the frequency scale.

ATTENUATOR: Operates on the R.F. Signal only, and is arbitrarily divided into ten un-calibrated divisions.

ACCESS

Instruments are supplied without battery fitted, to avoid deterioration. Access to fit or renew battery is by removing the eight rear screws and back cover. Ensure that the battery is firmly gripped in the spring clip provided and that the connectors are clear of any components.

OPERATION

It is not considered necessary to give detailed instruction in the use of R.F. Signal Generators as most users will already be familiar with the procedure, and the subject is adequately covered by a number of standard textbooks. The following, however, is a brief resume of the general procedure for testing and alignment of radio receivers or amplifiers.

- A. The audio-frequency signal from the generator may be used for general testing and fault-finding in the A.F. and output stages of radio receivers, the last stages of sound channels of T.V. receivers, and for audio amplifiers or record players. The normal procedure is followed, applying the A.F. signal to successive audio stages, working backwards from the output stage. Quantitative or comparative stage gain measurements can be taken if an A.F. output meter is used at the receiver or amplifier output terminals.
- B. The I.F. amplifiers of both radio and T.V. receivers may be tested and accurately aligned in a similar manner, with the generator function switch set to MOD.
- C. The oscillator or frequency-changer circuits of radio or T.V. receivers may be similarly tested or aligned, applying a generator signal to the aerial input terminal. In the case of radio receivers, this follows the usual method of setting the receiver tuning to a calibration mark near the low frequency end of the scale, adjusting the generator to the correct frequency and adjust for maximum response on the oscillator and aerial input inductors. To obtain correct tracking over the waveband the same procedure is followed at a setting on the receiver scale near to the high-frequency end of the scale, the oscillator and aerial capacitance trimmers being adjusted for resonance. The above procedure should then be repeated at the low and high frequency points until completely in resonance. At all times testing should be carried out with the generator signal attenuated to the minimum possible, to avoid either overloading of the A.F. stages or false tuning resonances due to the AGC circuits operating.

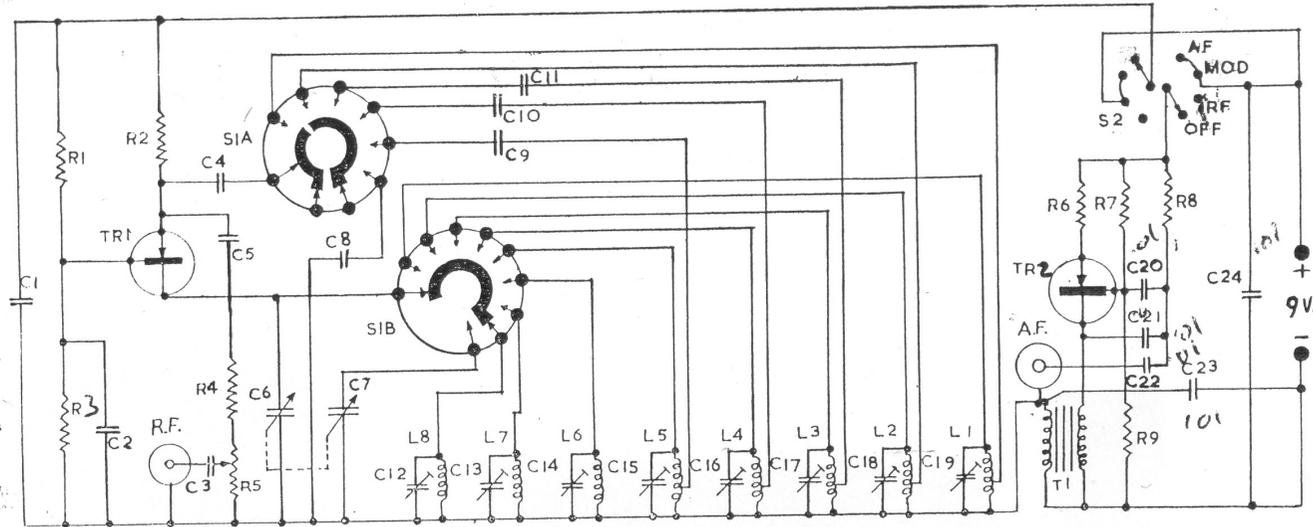
GUARANTEE:

The Model 27 Signal Generator is Guaranteed for a period of twelve months from purchase date against any defect or faulty manufacture, provided that the instrument has not been damaged by mis-use, has not been adjusted or serviced by anyone other than the manufacturers' service department or their appointed agent in U.K. or overseas.

SERVICE:

If the instrument should require service, unless otherwise arranged it should be returned, if purchased in U.K., to the Service Department of the manufacturer, or if purchased outside U.K. to the supplier from whom the instrument was purchased. It should be adequately packed, mailing charges pre-paid, and be accompanied by a letter clearly specifying the nature of the complaint.

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SIGNAL GENERATOR 27. PARTS LIST

| Key | Value | Tol. | Part No. | Key | Value | Part No. |
|------|-----------------|------|----------|------|---------------------|----------|
| R1 | 3.3K | 10% | 21 | T.1 | A.F. Transformer | 10 |
| R2 | 560 ohms | 10% | 20 | S.1. | Range Switch | 2 |
| R3 | 18K | 10% | 24 | S.2. | Function Switch | 1 |
| R4 | 390 ohms | 10% | 19 | L.1. | Range 1 Coil | 41 |
| R5 | 400 ohms | 10% | 5 | L.2. | " 2 " | 42 |
| R6 | 560 ohms | 10% | 20 | L.3. | " 3 " | 43 |
| R7 | 12K | 10% | 23 | L.4. | " 4 " | 44 |
| R8 | 6.8K | 10% | 22 | L.5. | " 5 " | 45 |
| R9 | 150K | 10% | 25 | L.6. | " 6 " | 46 |
| C1 | .003uF | 25% | 51 | L.7. | " 7 " | 47 |
| C2 | .01uF | 25% | 49 | L.8. | " 8 " | 48 |
| C3 | .0047uF | 25% | 50 | — | Case and Backplate | 7 |
| C4 | .01 | 25% | 49 | — | Case Handle | 9 |
| C5 | 220pF | 20% | 53 | — | Battery Clip | 8 |
| C6/7 | 228 + 65pF | 1% | 3 | — | Battery Connectors | 13 |
| C8 | 10pF | 10% | 56 | — | Tuning Cursor Knob | 39 |
| C9 | 500pF | 20% | 55 | — | Control Knobs | 14 |
| C10 | .001uF | 20% | 54 | — | Output Sockets | 11 |
| C11 | .001uF | 20% | 54 | — | Test Lead | 40 |
| TR.1 | R.F. Transistor | — | 12 | — | Co-Axial Plug | 15 |
| TR.2 | A.F. Transistor | — | 16 | — | Ferrite Screw Cores | 18 |

DC 171
24371

R7 EB
drops
stops LF
end,
& range
wavy
aligned.
Jan 79