

PHILIPS VIBRATION TESTER STM.206/20.

This E.I. describes the "Fault Detector" Type STM.206/20 made by Philips and used for Vibration Testing of Carrier and other equipment.

1. PRINCIPLE OF OPERATION.

- 1.1 A signal passing through the equipment under test will be subject to transient modulation by disturbance of any bad connection in the circuit.
- 1.2 If this signal is demodulated and the "carrier" filtered out, the side-bands produced by the faulty component are made audible as crackles or clicks.

2. COMPONENT SECTIONS.

- 2.1 The equipment consists of an oscillator and a receiver. Refer to Figure 1, Block Schematic.
- 2.2 The R-C oscillator produces any required frequency within three ranges 1-10 kc/s, 10-100 kc/s and 100-700 kc/s at a level variable from 1 volt to 90 db below 1 volt, into an impedance of 150 ohms. If the equipment under test produces a frequency of its own, the oscillator is not required; if it does not, a suitable frequency from the oscillator is injected into the equipment, which is then subjected to mechanical vibration.
- 2.3 The receiver amplifies, rectifies and filters the signal after it has passed through the equipment and reproduces any audible products of demodulation through a loudspeaker. The input impedance of the receiver may be set to 150 ohms, 600 ohms or "high" impedance.
- 2.4 The receiver is provided with a variable-level noise suppressor to enable the suppression of all signals of a lower level than those produced by a faulty component in the equipment under test. This control enables a strong contrast to be obtained between the times when no fault is present and times when the fault signal becomes audible.
- 2.5 Provision is also made for testing individual contacts by passing a small current from the receiver's power supply through the contacts and listening for modulation products in a similar manner.

3. METHOD OF USE.

- 3.1 Earth the fault tester at the socket provided and switch on.
- 3.2 Set the knob labelled "HF-LF-Contacts" to the position giving the necessary input impedance for the type of equipment under test.

3.3 When the oscillator has to be used:

- (i) Set the "Frequency Range" knob to the correct position.
- (ii) Select the required frequency by means of the knob below the dial. (3200 c/s for L.F. equipment of recent "wide-band" design.)
- (iii) Adjust the oscillator output level to the required value by means of knobs "Osc. Volt Coarse" and "Osc. Volt Fine". This level should be no higher than $1/3$ of the normal operating input voltage, i.e. 10 db lower than the normal level as measured on a correctly terminated T.M.S. The use of such a low level is necessary in order to prevent bad contacts from becoming "wetted", and thus losing their ability to modulate the test current.
- (iv) Feed the oscillator output into the equipment to be tested.

3.4 Lead the output signal from the equipment under test to the socket marked "Input" on the tester, and adjust the gain by means of the knob "Input Attenuator" till the pointer of the meter calibrated in mA is within the black sector.

3.5 Set knob "Loudspeaker" to "Intern". If an extension speaker is preferred, connect it to sockets "LSP.5 ohms" and set the switch to "Extern". If headphones are used they should be connected to the socket labelled "Phones".

3.6 Mechanically vibrate the components of the equipment according to the procedure laid down in the E.I. on Vibration Testing (LONG LINE EQUIPMENT General TE 0020).

3.7 For testing contacts:

- (i) Set knob "HF-LF-Contacts" to position "Contacts".
- (ii) Set the meter calibrated in ohms to full deflection by means of the knob "Calibration Ohmmeter".
- (iii) Connect the sockets labelled "Contacts" to the contact to be tested. The meter then indicates the contact resistance in ohms.
- (iv) If the contact points are moved a crackling noise in the speaker will indicate poor contact between the points.

4. MAINTENANCE OF TESTER.

4.1 Full circuit diagrams are given in the handbook supplied with the equipment.

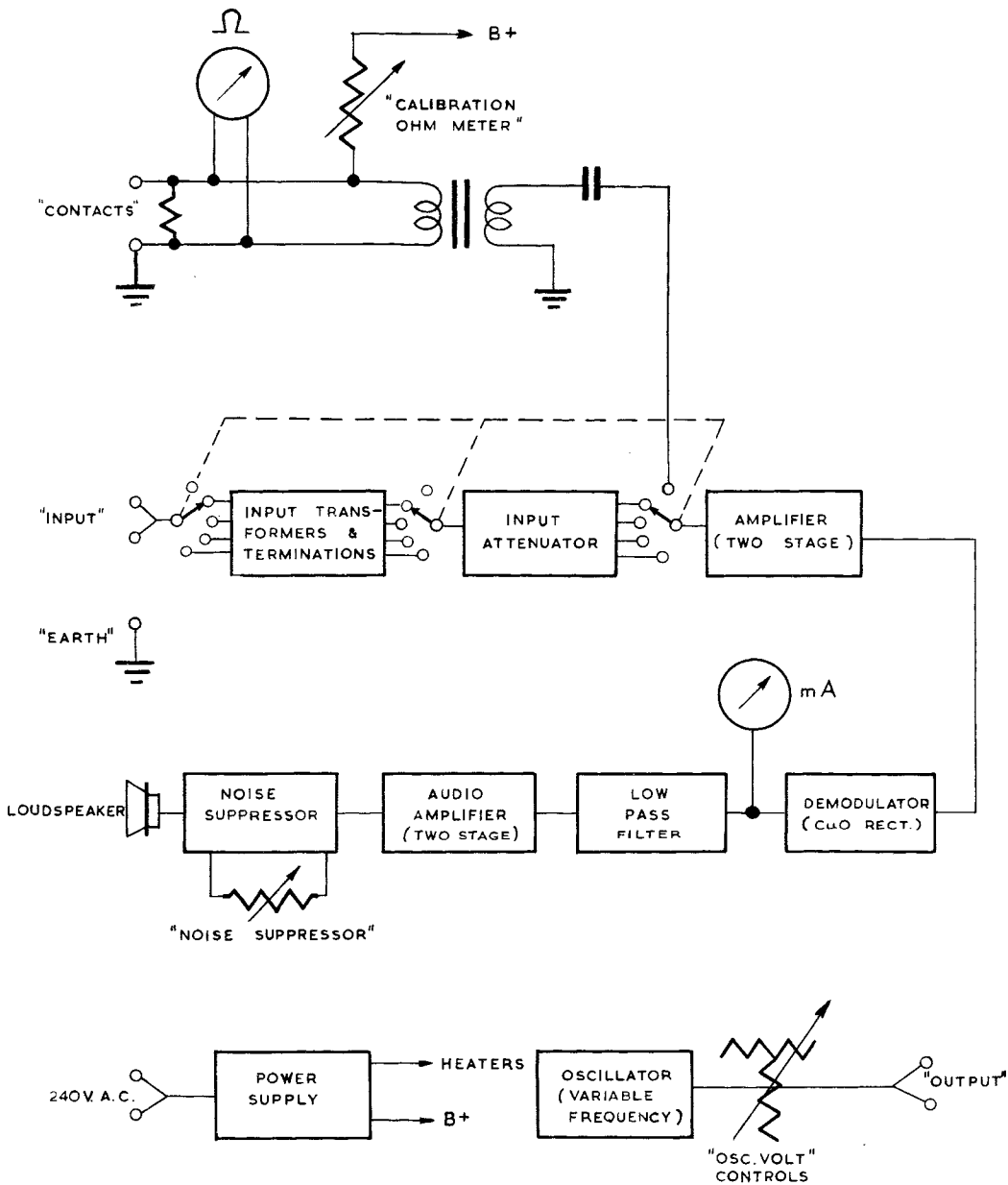


FIG. 1 BLOCK SCHEMATIC OF VIBRATION TESTER
(PHILLIPS STM 206/20).

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