Advance

LOW FREQUENCY SIGNAL GENERATOR TYPE J.

(Including J1, J2, J1/NA, J2/NA, J1/E, J2/E.)

THE type J Signal Generators provide 1 watt output into 600 ohms, isolated from earth, over a frequency range of 15 c/s to 50 kc/s. A 5 ohm source is also provided giving a maximum output of not less than ½ watt. The instrument contains a resistance-capacitance bridge oscillator feeding via a buffer valve into an output stage. The stabilization of the oscillator and the feed-back on the output stage provide a constancy of output with varying frequency of ±1 db, with distortion at full power output more than 34 db down on fundamental (less than 2%). On the J1 the output is controlled by a calibrated potentiometer. The output voltage of the J2 is directly monitored by a first grade rectifier voltmeter.

The standard models operate from power supplies of 105-125 volts, 210-250 volts, A.C. only, 40-100 c/s.

The J1/NA and J2/NA operate from power supplies of 117 volts A.C. only, 25-60 c/s.

The J1/E and J2/E operate from power supplies of 110-125 volts, 140-160 volts, and 220 volts A.C. only, 40-100 c/s.

SPECIFICATION

Frequency Ranges:

A ... 50 kc/s - 4 kc/s

B ... 4 kc/s - 300 c/s

C ... 300 c/s - 15 c/s

Accuracy ± (2% + 1 c/s).

OUTPUT

Output into 600 ohms: 0.1mW - 1W (0.25V-25V), continuously variable.

Accuracy: Model J1 ± 2 db.

Model J2 ± (1db + 1.5% F.S.D.)

Maximum output into 5 ohms greater than ½ watt, continuously variable.

OUTPUT IMPEDANCE

The output impedance approximates to 600 ohms over the whole range. Where close accuracy is required the 20 db attenuator should be used.

ATTENUATOR

A 20 db 600 ohm attenuator is incorporated. This is a π pad built of close tolerance resistors.

When switched in it provides a very accurate output impedance with a maximum output of 10 mW (2.5 volts).

DISTORTION

Total harmonic and hum content as compared with fundamental, above 100 c/s :

better than 34 db down (2%) at full output

better than 40 db down (1%) at 0.1 watt.

There is a slight increase in distortion below 100 c/s but it is still low to 15 c/s.

POWER SUPPLIES

J1, J2 :

105 - 125 volt, 210 - 250 volt, A.C. only, 40 c/s - 100 c/s.

J1/NA, J2/NA :

117 volts, A.C. only, 25 c/s - 60 c/s.

J1/E, J2/E :

110-125 volts, 140-160 volts, and 220 volts, A.C. only, 40-100 c/s.

CONSUMPTION

Approximately 40 watts.

WEIGHT

20 lbs.

OVERALL DIMENSIONS

13½in. x 10¼in. x 8¼in.

POWER SUPPLY

The J1/NA and the type J2/NA are for operation at 117 volts. 25-60 c/s only. The standard J1 and J2 are normally despatched with the mains transformer set to operate at 210-250 volts and the tapping must be changed for 105-125 volts. To do this : remove the disc on the underside of the case, uncovering the tags of the mains transformer. Tag 2 is connected to tag 3 for 210-250 volts input. For 105-125 volts remove the connection between tag 2 and tag 3. Connect tag 1 to tag 2, and tag 3 to tag 4. For J1/E and J2/E solder the flexible lead to the appropriate tag. Replace the cover disc. The instrument is provided with a 3-core cable so that the case may be earthed to the mains if desired.

The ON-OFF switch is incorporated in the output control.

FREQUENCY

A signal of any frequency between 15 c/s and 50 kc/s is set using the range switch in conjunction with the calibrated dial.

Continuous adjustment is by means of the slow motion control situated centrally below the dial.

OUTPUT

Output into a 600 ohm load is taken from the two red terminals labelled " 600 ohms." Output into a 5 ohm load is taken between

the black terminal marked " E " (which is an earthing terminal) and the red terminal next to it. Variation of output is obtained by use of the output control. An additional control of output at 600 ohms is provided by the 20 db attenuator by use of which a very accurate impedance is obtained.

On the J1 the output control is calibrated in volts and watts (into 600 ohms). When the attenuator is switched in, the volts scale should be divided by 10. When the J1 is used with high impedance termination and the 20 db attenuator not used, a voltage approximately twice that indicated is obtained with some increase in distortion at high levels. If the 20 db attenuator is used, the voltage at high impedance is twice the voltage indicated with no increase in distortion.

On the J2 the output without the 20 db attenuator is that indicated by the meter, there being an increase in distortion if the output is not terminated. When the 20 db attenuator is in circuit and the output is loaded with 600 ohms, the output voltage is one tenth of that indicated. When the load is of high impedance the output voltage is one-fifth of that indicated.

The 600 ohm output is not connected to earth, but either terminal may be earthed.

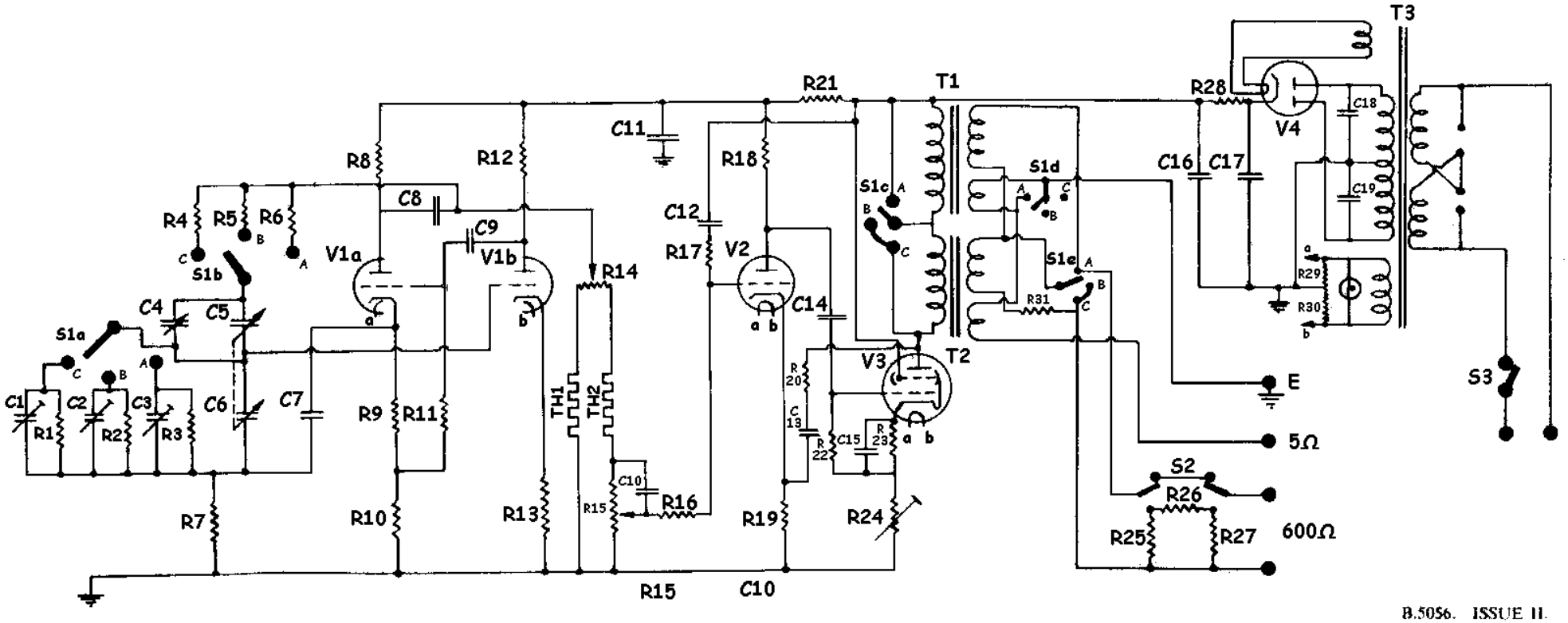
One side of the 5 ohm winding is earthed.

The black terminal marked " E " provides an earth connection, if required.

To remove the instrument from the case proceed as follows :
REMOVE THE TWO COIN SLOTTED SCREWS FROM THE REAR OF THE CASE.

Lay the instrument on its back and unscrew the four screws in the corners of the panel a little at a time. The instrument will be lifted from the case.

To reassemble : Lay the case on its back and replace the instrument. Engage the threads of the corner screws and screw up evenly. Replace the two coin slotted screws.



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NOTE. - Every effort is made to keep this drawing up to date, but the right is reserved to adjust the values or amend the circuit without notice.

RESISTORS

R.1	13M	ohms	±	1%	2	watt	high stability
R.2	1M	„	„	„	½	„	„ „
R.3	70,000	„	„	„	½	„	„ „
R.4	13M	„	„	„	2	„	„ „
R.5	1M	„	„	„	½	„	„ „
R.6	70,000	„	„	„	½	„	„ „
R.7	150,000	„	„	5%	¼	„	„ „
	and adjustable series resistor						
R.8	22,000	ohms	±	10%	½	watt	
R.9	500	„	„	„	¼	„	
R.10	1.800	ohms	±	5%	¼	watt	
R.11	1M	„	„	10%	¼	„	
R.12	22.000	„	„	„	½	„	
R.13	1.000	„	„	„	¼	„	
R.14	5.000	„	pre-set potentiometer				
R.15	25.000	„	potentiometer				
R.16	47.000	„	±	10%	¼	watt	
R.17	680.000	„	„	„	¼	„	
R.18	56.000	„	„	„	¼	„	
R.19	3.300	„	„	„	¼	„	
R.20	62.000	„	„	„	¼	„	
R.21	2,200	ohms	±	10%	½	watt	
R.22	1M	„	„	„	¼	„	
R.23	330	„	„	„	½	„	
R.24	1,000	„	pre-set potentiometer				
R.25	750	„	±	5%	1	watt	
R.26	2.970	„	„	1%	¼	watt	high stability
R.27	733	„	„	1%	¼	„	„ „
R.28	500	„	„	10%	2	„	
R.29	22	„	„	„	½	„	
R.30	22	„	„	„	½	„	
R.31	100	„	„	„	¼	„	

CAPACITORS

C.1	Wire Trimmer		
C.2	Wire Trimmer		
C.3	Wire Trimmer		
C.4	3-30	pF	Concentric Trimmer
C.5	14-546	pF	Ganged Variable
C.6	14-546	pF	Condensers
C.7	0.1	μF	350v. D.C.W. paper tubular
C.8	8	μF	450v. D.C.W. electrolytic
C.9	0.1	μF	350v. D.C.W. paper tubular
C.10	10	pF	Miniature metallized paper
C.11	16	μF	350v. D.C.W. electrolytic
C.12	0.1	μF	350v. D.C.W. paper tubular
C.13	0.25	μF	350v. D.C.W. paper tubular
C.14	0.1	μF	350v. D.C.W. paper tubular
C.15	0.02	μF	150v. D.C.W. miniature metallized pape
C.16	32	μF	350v. D.C.W. electrolytic
C.17	16	μF	350v. D.C.W. electrolytic
C.18	0.005	μF	750v. D.C.W. M/Mica
C.19	0.005	μF	750v. D.C.W. M/Mica

THERMISTORS

TH1.	S.T. and C.	Type 1522/100
TH2.	S.T. and C.	1451/100

VALVES

V.1	6SN7GT
V.2	6J5GT
V.3	6V6GT
V.4	6X5GT

SWITCHES

S1a-e.	Range Switch
S2.	Attenuator Switch
S3.	Mains Switch

TRANSFORMERS

T.1	Output Transformer, Low Frequency
T.2	Output Transformer, High Frequency
T.3	Mains Transformer, Input 105-125v., 210-250v., 40-100 c/s on standard models. Input 117v., 25-60 c/s on J1/NA and J2/NA. Input 110-125v., 140-160v., 220v., 40-100 c/s on J1/E and J2/E.

METER

On J2, J2/NA and J2/E only.

M.1.	0140 A.C. Rectifier type, 2in. square flush mounting.