

C O N T E N T S

	<u>PAGE</u>
<u>CHAPTER I</u>	
Description and Specification	2
 <u>CHAPTER II</u>	
Circuit Description	3
 <u>CHAPTER III</u>	
Installation and Operating Instructions	4
 CIRCUIT DIAGRAM	6

CHAPTER I

Description

The Labgear L.O. 50 is an entirely self-contained transmitter for the band of amateur frequencies from 3.5 to 30.0 Mc/s. The use of printed circuits for the exciter and modulator, together with high grade components, has resulted in a transmitter with exceptional reliability.

The whole transmitter is housed in an attractive metal cabinet, of modern styling, which will be an asset to any amateur station.

Specification

Nominal Input	Up to 40 Watts telephony, 60 Watts telegraphy.
Power Control	Reduces the power input to any level down to 7 Watts minimum whilst maintaining linear modulation.
Valve line-up	6X80 VFO, 6L91 Multiplier, 5763 Multi/Driver, 6V05-20 Final H.F. Amplifier, 6X80 and 12AU7 Speech Amplifiers, $\frac{1}{2}$ 12BH7 Modulator, $\frac{1}{2}$ 12BH7 Clamper and 5840Y Full Wave Rectifier.
Frequency Coverage	3.5 Mc/s. to 30.0 Mc/s. Amateur Bands only.
Frequency Control	Variable frequency oscillator of high stability. Stabilized S.F.
Exciter	Oscillator valve and exciter on one printed circuit.
Output Circuit	Correctly engineered Pi Tank circuit for 75 ohms output, unbalanced.
Metering	Moving coil meter switched to monitor grid drive or PA Anode current as required.
Circuit Protection	Clamp tube and mains fuse fitted.
Function Switch	Four positions - Off, Standby, C W and Phone.
Setting Facility	Function switch in CW position, key up or down depending on band and receiver pick up.
Modulation	Linear screen modulation gives full modulation from a crystal microphone.
Shielding	Screened leads and compartment shielding incorporated as necessary.
Power Requirements	105/115; 200/250 Volts, 40-60 Cycles.
Power Consumption	200 Watts.
Finish	Suitable for use in any part of the World.
Size	16 $\frac{1}{2}$ " wide, 12 $\frac{1}{2}$ " high and 14" deep.
Weight	35 lbs.

CHAPTER II

Circuit Description

The switched V.F.O. circuit operates in the 1.8 Mc/s. range and the oscillatory circuit is switched so that the various amateur bands occupy the major portion of the V.F.O., calibrated dial. V.1., an 6F80 is the V.F.O. valve operating in a low L, high C, Clapp circuit the anode coil of which resonates at 3.8 Mc/s. V.2 a 6AK5 (EL91) valve is a multiplier, the anode circuit of which is either purely resistive or broad band tuned according to the band in use. The voltage on G2 of V2 is variable so that the drive level through V3 to the final amplifier may be adjusted to the required level. V3 type 5763 operates as a multiplier driver, the anode circuit is tuned to carrier frequency by means of C35. Circuit constants have been so adjusted that it is impossible to resonate at any frequency other than that of the band in use. The final amplifier valve 6V6-20 is driven in Class C and the anode circuit, a pi-output tank circuit, has been designed to operate into a 75 ohm asymmetrical load.

The modulator is a four stage amplifier supplying audio to the screen of V4 the final amplifier. The conventional speech amplifier consists of V5, an 6F80, and V6 a 12AU7, the modulator consisting of one half of V7 a 12BK7 double triode. The remaining half of V7 acts as a clamp valve for the final amplifier V4. R17 is the audio gain control and R25 is the power control. This control sets the D.C. potential on the screen of V4 about which the audio voltages are superimposed. It can be seen, therefore, that any power level down to seven watts input, the correct amount of audio may be obtained to ensure linear modulation.

The power requirements for the transmitter are obtained from T2, which supplies 6.3V heaters, 5V for the rectifier and 530V for the rectifier anodes. The rectifier V8 is a 58A0Y operating as a full wave choke input rectifier. A mains fuse is incorporated in the red mains selector plug.

Keying is effected in the cathode of V2. The drive to the final amplifier and the anode current can be monitored, at will, by means of S3.

CHAPTER III

Installation and Operating Instructions.

Immediately upon receipt examine the transmitter for any damage incurred in transit. If damage is detected, the following details must, at once, be notified in writing to the carrier concerned and also to - Labgear Limited, Willow Place, Cambridge, England:

- (a) Particulars of damage.
- (b) Date of receipt.
- (c) Invoice or packing note number.
- (d) Condition of carton in which the transmitter was transported.

Adjust the mains tap panel on the back of the instrument to the voltage of the supply mains.

NOTE: This instrument has been designed to operate on A.C. mains only and on no account must it be connected to a D.C. supply.

Wire up the mains lead to a 3 pin table plug. Red - live, black - neutral and green - earth.

Attach the aerial load 75 ohms impedance to the socket at the rear of the instrument, also the lead from the key to the appropriate jack socket.

Plug in the microphone, crystal high impedance, to the co-axial socket on the front panel.

Setting Up CW.

Set band switches S1 and S2 to required band.
Power Control fully anti-clockwise.
Modulation control fully anti-clockwise.
Loading condenser C39 fully clockwise (Min loading)
Meter switch to Grid.
Set V.F.O. dial to required frequency.
Amplitude control to half setting.
Switch function switch to stand by and allow to warm up.
Switch to CW with the key down.
Peak the drive control for maximum drive in the meter.
Set the amplitude control to give 2mA drive.
Switch meter to read Anode current.
Advance the power control to maximum, and obtain minimum dip in the Anode current, using P.A. Tuning Control.
Load up the Pi-output circuit C38 and C39 as normal
Increase power control to give the required output.
Release key.

Setting Up - Telephony

Remove key.

Set up as above for CW with function switch in Phone position
Adjust input for 60 Watts and increase serial coupling C39 until
the dip in anode current is about 5mA at the full power control
setting.

Decrease the power control setting for not more than 10 Watts input.
Increase modulation control until plate meter current fluctuates.
Check the setting of the drive control so that the fluctuations on
mod are either side of minimum dip as indicated in the Anode
current meter readings

NOTES:

60 Watts input is approximately 150 mA.

40 Watts input is approximately 100 mA.

