COMMENCING ASSEMBLY.

1. Check all components against Parts List.
Make sure you allocate the correct rating Resistors and Condensers to the right circuit.

2. Mount components on the chassis in the following order:-
Valveholders (make sure each valveholder Key is in correct position and has solder tag on fixing screw - see schematic drawing).
When fitting the 6146 valveholder a solder tag should be placed under the 4BA fixing bolt on top of the chassis in the left-hand position looking from the rear. This tag is required for earthing the rotor of the PA condenser.
Mount Mains selector panels, "Key" and "RX Mute" sockets to the tag strips, 2 LF chokes, fuseholder, all rubber grommets; mount C20A trimmer on the bracket and secure to the chassis by means of two 4BA bolts and nuts.
Mount all transformers (twist each set of connecting wires and push through appropriate grommet).

3. Mount PA RF choke.
It is necessary to remove the two wiring nuts and bottom section of insulator.
Place the choke in an upright position with the other half of the insulator bush on top of chassis through appropriate hole and replace outer insulator bush and two nuts on threaded rod below chassis.

4. Mount the PA tuning condenser on bracket, foot of bracket facing front panel. Secure with two 4BA bolts and nuts.
The right-hand position (looking from rear) is a mushroom head bolt and should be inserted from underside of chassis.
Earth rotor of PA tuning condenser (large tag under retaining nut) to 4BA solder tag (see Note.2) with braided flexible wire.

5. Mount VFO on chassis.
First remove the two nuts on the dial and switch. Guide these spindles and VFO Unit into position under chassis. Replace nuts on spindles.

6. Mount 2-Gang Condenser C29 on Front Panel by means of two 4BA x $\frac{1}{4}$ C.S. screws. Bolt Panel to chassis by two 2BA screws and nuts at foot of panel. Mount switches, variable potentiometers etc. on panel.

7. Fit PA screening box and side brackets.
Self tapping screws are used at base.

8. Mount all feed through condensers on VFO Unit bottom screen and on Mains filter box in readiness for assembly.

9. Wire resistors and condensers on to tagboard (see Fig.2.) also meter rectifier (care must be taken not to solder to the rectifier tags but only to the wires provided, otherwise damage to rectifier may occur). Tagboard is mounted on side of chassis by two 4BA screws and nuts. Two 4BA nuts are used to space the tagboard off chassis.

10. When wiring under chassis, a suitable cardboard box placed under an H.T. transformer to keep chassis level will help.

11. Commence wiring by putting in all 'earth' connection between valve pins and chassis. Connect all heater wiring - use the thick PVC wire for heater connections and for all wire carrying high tension. Keep in mind, when laying wires behind bottom screening box, around power supplies and transformers, that a much neater finish will be achieved if most of these wires can be laced together with cord at the end of the assembly, after testing out. This means that these wires should be left long enough to be laced into position. It will be found helpful to

12. "Make off" all transformer wires. These should be cut off to appropriate lengths. The heater wires must be well cleaned before soldering.

13. Mount resistors R5, 6, 8 & 9.
Mount feed thru' condensers on bottom screen to VFO Unit (note that C55 and 56 should be 91 pf - these can usually be identified by a purple and white spot).
HT to the VFO Unit is fed via feed thru' condenser in the bottom VFO screen, to R9 situated near R10.
HT from slider of the potentiometer R10 to No.2 tag on the VFO Unit tag strip must be screened.
A length of suitable screen cable is provided.

14. Complete wiring the base of the 6146 and fit coupling and spindle to C20a. Connections to the feed thru' condensers in the bottom screen should be 'made off' under the screen. The screen should be screwed in position and the external connections made to the feed thru' condensers.

15. Complete wiring power supplies - care should be taken to position the electrolytic condensers in order that the connections joining the two pairs of 32 uf electrolytics in series, are well isolated from chassis.

16. Looking at under chassis, the wires through the grommet from S4 (on Front Panel above chassis) should be threaded through the 8 m/m sleeve provided and layed along the bottom of the tagboard near to chassis.

17. A short length of screened wire should be used to connect the Microphone socket to R20. This resistor and C30 should be connected by shortest possible wires.
~~The open side of the channel should face outwards from the~~ chassis allowing adequate clearance ~~above the VR150~~ valveholder tags.
~~The screened wire should be layed in this channel piece.~~

18. Connect wires to Send/Receive switch, Meter switch, all Toggle switches and meter.

19. Connect up Pi Coil and circuits in PA stage. Wire 33 ohm 2 watt resistor centrally in L17 and connect to top cap for 6146. A short length of flexible wire should be used.

20. Assemble and connect up Mains filter and fit cover plate.

21. Carefully check over all wiring before connecting to Mains and testing out.
Adjust mains selectors to appropriate mains voltage.

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NOTE: Care must be taken in selecting the thin black wires for T.1 connection to the 6146 heater. The heavy black wires connect to chassis and 'D' heaters as shown in the schematic diagram.
C.48. With some VFO Units the chassis corner may have to be trimmed to allow the feed thru' condenser C48 sufficient clearance.

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a pair of 807's or 6146's in parallel. The difference between the two units is in the five output inductances. With the 4/102-V a grid trimmer of 25 pf. maximum capacity is required to be connected between P.A. grid and chassis in order to resonate the output inductances according to band of operation. The 4/102 does not require this trimmer. These units may also be used to drive a single 807 or 6146. The 4/102 requires a 25 pf. trimmer between P.A. grid and chassis, also the 4/102-V. must have this trimmer plus a 22 pf. silver mica condenser in parallel.

The unit employs three tubes - a 6J5GT "Clapp" oscillator, a 6AU6 buffer-multiplier for the 10, 15 and 20 metre band and a 6L6G driver (doubler/tripler). The plate tuning circuit of the driver has an inductance for each frequency range, adjustable to the centre of the frequency band in use. The r.f. output may be adjusted by varying the voltage applied to the screen of the driver valve. Installation must be within the main chassis for the transmitter close to the P.A. stage. Output connection to Grid should not exceed 3".

TECHNICAL DATA (Extracts from Geloso Instructions)

Power Supply: 400 V. at 50-70 m/a. 6.3 V. 1.5 A.

Frequency Ranges: 80 - 40-20 - 15 and 10 meter bands.

R.F. Power Output: sufficient to drive two 807's or equivalent tube types, connected in parallel operating at a plate voltage of 600 volts and a screen grid voltage of 225 volts. Under these operating conditions a grid current of 8 m/a may be obtained through a grid bias resistor of 12,500 ohms.
It is necessary to insert between the ground and the R.F. output drive tube grids a 25 pf. variable condenser (trimmer) of low minimum capacity for tuning R.F. output stage grid circuit.
If only one 807 or equivalent is to drive with same voltage Rg will be of 25,000 ohm and the grid current value of approximately 4 m/a; the variable condenser ground-grid must be shunted by another approximately 15 pf. fixed capacity.

Valve Line-Up: 6J5GT - 6AU6 - 6L6G.

Physical Dimensions: Chassis 5" x 5½" x 2¼" deep.
Dial escutcheon 8¼" x 5".

ALIGNMENT.

The unit is supplied already calibrated. When put to use, just a little "touching-up" is required in order to line it up to top performance.
With the aid of the calibrated dial No.1640 which indicates with precision the various frequencies, utilising a good r.f. signal generator, it is possible to proceed to an eventual realignment following the instructions contained in the table given below.
Before calibration attempts are started, it is necessary that the exciter unit and the tuning dial are definitely mounted and fastened in place on the chassis in such a way that the indicator of the dial coincides exactly with the "zero" of the centesimal logging scale if the variable tuning condenser is turned to minimum capacity (mechanical stop), the dial indicator may pass the 100 degree indication by several degrees.

ALIGNMENT. (continued)

Realignment may become necessary after the replacement of any one of the tubes. It should be noted that for the alignment of the buffer and driver stages the same previously calibrated "Clapp" oscillator may be used. For this purpose those frequencies are selected on the dial which are indicated in the table given below; the coil cores are adjusted for maximum output which will correspond to the point of maximum reading of a milli-ampere meter inserted into the grid circuit of the final r.f. power amplifier of the transmitter.

Alignment points for 6AU6 and 6L6G

Band m.	6AU6 mc/s.	Driver mc/s.
80	Aperiodic	L7 = 3.8
40	"	L8 = 7.15
20		L9 = 14.1
15	L5 = 21.2	L10 = 21.150
10	L6 = 28.6	L11 = 28.2

Oscillator tuning points

Band m.	Inductances mc/s.	Trimmer mc/s.
80(3.5-4mc/s)	L1 = 3.5	C1 = 4
40(7-7.45 ")	L2 = 7	C2 = 7.45
20(14-14.4")	L3 = 14	C3 = 14.4

Band	Clapp oscill.	Buffer plate	Driver plate	PA Plate
80	3.5-4 mc/s.	Aperiodic Amp.	3.5 : 4 mc/s	3.5 - 4
40	7.0-7.45 "	Amplifier	7 : 7.45 "	7 - 7.45
20	3.5-3.6 "	Dblr.7 : 7.2mcs	Dblr.14:14.4	14-14.4
15	3.5-3.6 "	" 7 : 7.2 "	Trpl.21:21.6	21-21.6
10	7.0-7.45 "	" 14 : 14.9"	Dblr.28:29.8	28-29.8

Voltage measurements

Valve		Voltage
6J5	(Plate	170
	(Grid	- 10 *
	(Cathode	0.3
6AU6	(Plate	230
	(Screen	230
	(Grid	- 11.5*
6L6	(Plate	390
	(Screen	200 ø
	(Grid	- 16 *

* Varies with Band and frequency
ø Variable 0 - 275 volts.

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