

GENERAL ELECTRONICS, INC.  
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CHICAGO 13, ILLINOIS

152M  
133Mx

## 600L

### INSTALLATION INSTRUCTIONS

The 600L is shipped ready to connect and operate. If it has been damaged during shipment, please file an insurance claim with the carrier. The crate should be retained for possible future reshipment. Due to the weight of the unit, cardboard cartons are not recommended.

The four 1/4-28 screws that were removed from the shipping crate should be used to attach the rubber feet, or bottom plate on rack units.

#### RF INPUT

Use 52 ohm coaxial cable with a minimum length of six feet. This is necessary to allow full drive to be supplied by the exciter on 10 meters. The input shows the exciter a 52 ohm essentially resistive load, therefore additional swamping is not required. The maximum input to be applied to the 600L should not exceed 30 volts or 20 watts RMS.

#### ANTENNA

Use a 52 or 72 ohm coax antenna system for design center results. The unit will deliver maximum undistorted output into unbalanced 25 to 100 ohm loads. For best results the SWR should not exceed 2:1. The 600L will work with higher standing wave ratios, however it is to your advantage to provide the best possible match between your antenna and its feed line. This will radiate the maximum amount of signal. Antenna reactance cannot be tuned out at the transmitter, even with a Pi network; it must be tuned out by adjusting the antenna length. Balanced open wire and ribbon feed lines should be connected through suitable antenna tuners or Balun coils.

#### TR SWITCH

A connector is provided on the 600L that is essentially in parallel with the antenna. The shortest practical coax cable should be used to connect the TR Switch. When a TR Switch is used, it is necessary to block bias the 600L to prevent tube noise on frequency.

#### EXTERNAL BLOCKING BIAS

All Multiphase Exciters provide 100 V negative blocking bias during Standby. It is recommended that the 600L be block biased during Standby to prevent tube noise on frequency and/or to reduce plate dissipation.

The following connections are recommended for use with a TR Switch or Antenna Relay:

Remove the protective cover over the bias interlock terminals on the 600L. The 4 prong socket is a duplicate of the screw driver terminals. Remove the jumper between #3 and #4. Connect ground terminal #5 on the exciter to #4 on the 600L. Connect blocking terminal #7 on the exciter to #3 on the 600L.

When a TR Switch is used, the jumper between #6 and #7 on the Multiphase Exciter remains.

When an antenna relay is used, the Exciter bias interlock jumper #6 and #7 is replaced with a pair of contacts on the antenna relay arranged to close during Transmit and open during Standby.

#### INTERNAL KEYING BIAS

If the exciter does not furnish blocking bias, the 600L Internal Keying bias can be utilized. The jumper on bias terminals #1 and #2 should be replaced by a pair of contacts on the exciter that will close during Transmit and open during Standby.

#### POWER SOURCE

The 600L is designed for use on 115 V, 50-60 cycle AC mains. Power circuit wiring should have #14 minimum conductor size to prevent loss of power and poor line regulation. Cheap light gauge extensions should be avoided. ADJUST NO SIGNAL DISSIPATION. Connect the power cord to 115 V, 50-60 cycles. Turn filament ON and allow several minutes for the mercury in the 816 rectifiers to vaporize. turn PLATE ON and with METER SWITCH in WATTS position, adjust SCREEN VOLTAGE control on rear to 70 watts input with no signal applied. If blocking bias is used, the exciter will have to be on MANUAL or in a Transmit condition to read WATTS INPUT.

#### VER OPERATION

Apply some carrier and tune exciter for maximum output. Remove carrier and modulate. The meter should average between 300 and 400 watts input. At this input the voice peaks will reach the maximum undistorted design center of 600 watts. Higher input power causes distortion in the unwanted sideband and should be avoided.

#### AM OPERATION

An input of 200 watts is recommended for AM operation on a monologue basis. If voice breakin and standby blocking bias is used, the input can be increased to 300 watts. The proper ratio of modulation to carrier energy can be determined by watching the wattmeter. The wattmeter will start to deflect with speech as 100% modulation is exceeded.

#### CW OPERATION

An input of 500 watts can be used for keyed CW. Standby blocking bias should be used to reduce average dissipation.

#### PM (PHASE MODULATION) OPERATION

An input of 200 watts is recommended for monologue transmissions. If voice breakin and standby blocking bias is used, the input can be increased to 500 watts.

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#### RF AMPS METER SCALE

The RF output signal is passed through a one ohm carbon resistor. The voltage drop across this resistor is rectified and the DC is applied to the meter calibrated in RF amperes. The meter is "fast acting" since it is not dependent upon a slow heating thermocouple.

At a carrier input of 500 watts, the RF output will average 2.3 amps plus or minus .1 amp into a 52 ohm resistive load. Higher antenna current indicates a lower load impedance and lower current indicates a higher load impedance.

#### REFLECTED POWER METER SCALE

The one ohm power sampling resistor is part of a bridge circuit arranged to indicate load impedance departures from a pure resistance of 52 ohms. A germanium diode functions as the null detector in the SWR bridge and its output is indicated on the meter. The Reflected Power Scale is in calibration at a carrier input of 500 watts. At the beginning of the yellow scale the SWR is approximately 3:1. The antenna should be pruned if the indication is in the red portion of the scale. The use of an Antennascope or an impedance bridge with an electrical half wave repeater transmission line is recommended for the pruning operation.

#### TVI

Television interference may be encountered in some areas. First, determine if interference is caused by fundamental overload of the TV receiver by installing a high pass filter at the TV receiver. If the interference persists, it may be caused by weak harmonics radiated by the antenna. Since the 600L RF unit is thoroughly shielded, the installation of a 52 or 72 ohm low pass filter close to the output connector should reduce the harmonic radiation. The attenuation required will vary with the order of harmonic and distance from the TV transmitter.

#### PLATE OVERLOAD

In the event of a plate voltage short, the PLATE OVERLOAD Breaker will trip out. It will continue to trip when reset if the short persists. It is essentially in series with the PLATE Supply Switch.

#### LOAD MISMATCH BREAKER

The SWR bridge in the output circuit of the 600L is used to control the internal blocking bias to prevent damage to the 813 in the event the unit is operated without a load.

At the front of the RF unit is a narrow shelf containing a 12AT7, a NE2 Neon Lamp, screwdriver slotted control and a telephone type relay. The control adjusts the sensitivity of the mismatch trip circuit. If bursts of voice energy cause the breaker circuit to trip while an antenna is connected, the sensitivity can be decreased by turning the control slowly counterclockwise. The factory adjustment is made with no antenna for trip out at approximately

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500 watts input.

If the 12AT7 tube is not functioning, the relay will not operate when the Plate Switch is turned on. If the relay does not operate, the VR75 will not glow and blocking bias will be applied to the 813. With blocking bias applied the Exciter will just begin to drive the 813.

CAUTION! DEADLY HIGH VOLTAGE

Due to the large energy storage capacity of the special 45 MFD filter capacitor, several minutes should be allowed before it is discharged with a large, well insulated, screwdriver.

CAUTION! To prevent damage to the RF choke DO NOT DISCHARGE B plus at the 813 plate cap. Suggest shorting the RF choke mounting bracket or feed thru insulators to the chassis.

The Screen Regulation circuit consists of an 812A series regulator, 6AQ5 control tube and two 0A2 reference tubes.



