



Introduction

DenTron Radio Company designed the GLA-1000 with efficiency in mind. Our engineers weren't only concerned with efficiency in terms of power input versus power output, they were also worried about offering an amplifier that is efficient space-wise, and dollar-wise. The result is a compact linear offering 1000 Watts DC CW input and 1200 Watts input PEP SSB, a built-in power supply suitable for 117 or 234 V AC mains, complete metering of essential voltages and currents, frontpanel amplifier bypassing, a relative power output monitor, and modern styling. The GLA-1000 comes equipped with a tilt-up bail to increase air circulation and a super quiet forced air cooling system designed for trouble free operation. The high voltage power supply is all solid state, and there are four final tubes, DenTron D-50A pentodes. (DenTron offers replacement tube kits through its dealers worldwide).

The GLA-1000 is compatible with almost any exciter or transceiver, and rear panel controls allow for relay switching and relative power output sensitivity. A maximum drive figure of 125 Watts is factory specification. Special circuitry required by FCC Type Acceptance regulations limit frequency coverage of the GLA-1000 to 80 through 15 meters, although proper modification by a licensed Amateur will allow 10 meter coverage. Most MARS frequencies just outside the Amateur Bands can be covered without modification.

Warning

MAKE NO ATTEMPT TO PUT THE AMPLIFIER IN SERVICE OUTSIDE OF THE CABINET! CONTACT WITH VOLTAGES IN THIS AMPLIFIER CAN BE FATAL!

Warning

BE CERTAIN THAT YOU REMOVE THE INNER PACKAGING ABOVE THE D-50A FINAL TUBES PRIOR TO OPERATION. REMOVE THE TOP COVER ACCORDING TO THE INSTRUCTIONS UNDER SERVICE DATA. IT WILL ALSO BE NECESSARY TO INSTALL THE 15 AMP FUSE (TAPED TO THE GLA-1000 POWER TRANSFORMER) BEFORE INSTALLING THE UNIT.

Specifications

- **Size:** H. 5 3/8" W. 11" D. 11"
- **Weight:** 24 lbs.
- **Electrical Power Consumption:** 117 VAC 50/60 Hz 12.5 Amps
Factory fused at 15 Amps
234 VAC 50/60 Hz 7 Amps
Recommended fuse 10 Amps
- **Frequency Coverage:**
80 Mtrs: 3.45 to 4.3 MHz
40 Mtrs: 6.950 to 7.5 MHz
20 Mtrs: 13.950 to 14.5 MHz
15 Mtrs: 20.950 to 21.350 MHz
10 Mtrs: With Modification by Licensed Amateur
(Covers most MARS frequencies just outside the
Amateur Bands.)
- **RF Drive:** Maximum 125 Watts
- **DC Input:** 1 KW CW and 1200 Watts PEP SSB
- **Spurious Emissions:** IMD better than 30 dB down
Harmonics better than 40 dB down
- **Components:** 4 – D-50A tubes (6LQ6)
6 – Diodes
- **FCC Type Accepted**

Warning

TO TAKE FULL ADVANTAGE OF THE GLA-1000 COOLING SYSTEM, IT IS HIGHLY RECOMMENDED THAT THE UNIT BE RAISED UP WITH THE PROVIDED BAIL UNDER NORMAL OPERATING PROCEDURES.

Theory of Operation

Power Section

After your GLA-1000 is hooked up to the AC power source, power is applied to T1 through SW1B in the standby mode, voltage, current and REL. output mode. The GLA-1000 comes operational on 117 volts AC.

To operate the GLA-1000 on 230 volts, it is necessary to change the jumpers on the terminal strip on the back panel. After power has been applied to T1, the first secondary winding has connected to it a full wave bridge rectifier consisting of D2 through D5 and C17 through C20. This converts the AC voltage to DC voltage. The DC voltage is now filtered by C21 through C23. The DC voltage is metered by the combination of R12, R13 and R14. Approximately 1200 volts DC is applied to the plates of the tubes through RFC6 and RFC2 and through RFC5. DC current is measured across R7.

The second secondary winding of T1 has two functions. First it supplies the non-rectified AC voltage used to light the meter lamps. Secondly, through D6 and C24, the secondary winding provides 12 volts DC which is used to operate the control relay and to power the red transmit indicator on the front panel. The third secondary winding of T1 is used strictly to energize the filaments of the four D50A power amplifier tubes.

Signal Operation

When the unit is in standby mode, the exciter RF output is fed directly into the RF input terminal of the GLA-1000 and through K1B and K1C, bypasses the GLA-1000, and goes out through the RF output terminal.

Whenever the GLA-1000 is placed in the volts, current or relative output function, the unit becomes operational as an amplifier. Signal now enters at RF input and goes through FL1 (an impedance matching device) and is coupled to the cathodes of the D50A's through C1 and C2. The now amplified RF signal of the D50's is coupled through C11 and tuned by C9, L1, L2 and C10. The amplified signal leaves the GLA-1000 by means of K1C and goes out the RF output jack.

Relative output is measured through a combination of R9, R10, D7, C26 and is adjusted to the meter by R8. RFC7 serves as a safety device in case C11 becomes shorted.

Cautions

1. Prior to operation, remove the internal packaging material around the D-50A tubes. Remove the top cover according to the Service Data section. Also install fuse taped to the power transformer.
2. Make no attempt to put the GLA-1000 in service outside of the cabinet. Contact with voltages in this amplifier can be fatal to the human body.
3. Never attempt to operate the GLA-1000 with drive power of more than 125 watts!
4. Never attempt to operate the GLA-1000 without first connecting it to an antenna with an SWR of less than 2:1, or a 50 Ohm dummy load of sufficient power handling capacity or serious damage may result to the amplifier.
5. Never run amplifier from an extension cord.
6. Do not attempt to change jumper connections inside the Amplifier without first removing the power plug from the power source.
7. Do not cover the top of the GLA-1000 with books, papers or other pieces of equipment or overheating may result.
8. Do not use different tuning procedures other than indicated in this manual.
9. When cleaning the GLA-1000, never blow high pressure air directly into the fan blades. Spinning the fan at higher speeds than it was designed for can cause damage and freeze the rotor assembly of the fan. Use brush in cleaning the fan assembly.

Warning

IF ANY PROBLEMS OCCUR THAT ARE NOT EASILY REPAIRED IN THE FIELD, PLEASE CONTACT DENTRON RADIO COMPANY FOR TECHNICAL ASSISTANCE.

Warning

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Unpacking Instructions

Carefully remove your GLA-1000 from its packing carton, making sure there is no damage evident from shipping. If there is any damage, notify the delivering shipper immediately, fully describing the damage. Be certain to remove the inner packaging. (See Service Data for top cover removal.) Install the 15 amp fuse taped to the power transformer before replacing the top cover.

Fully complete the DenTron Registration card included in the information package and return it to DenTron. Do not destroy the packing material, since it will be usable later should you require factory service or need to transport the amplifier for any other reason.

In general the location of your new GLA-1000 is not critical. Be certain, however, to leave enough room behind the unit to allow for proper air flow over and under the unit, as well as behind it.

Installation

The GLA-1000 is factory wired for 117V AC operation. If 234V AC is desired, you will have to rewire the power transformer primary per the schematic diagram. The terminal strip is located in the extreme lower left corner of the inside rear panel when viewing the unit from the front panel side.

1. Position the GLA-1000 so that the rear, sides and top of the unit are clear of all obstructions. This will assure proper air flow. (Placing the unit up on the built-in bail will also aid circulation.)
2. Connect a wattmeter (such as a DenTron) and a 50 Ohm dummy load (such as a DenTron Big Dummy), to the output connector using RG-8U cable or its equivalent.
3. Connect the GLA-1000 keying lead to your transmitter using shielded cable such as RG-174U (See interconnect diagram). The GLA-1000 requires closed contacts on transmit.
4. Connect the rear panel RF IN jack to the transmitter or exciter RF OUT jack using 50 ohm cable such as RG-58U.
5. Connect as short a ground lead as possible from a good earth ground to the unit's rear panel GND terminal.

Tuning Procedure

CW

1. Plug the GLA-1000 into a 117V AC power source.
2. Turn FUNCTION switch to STANDBY. Meter will light and cooling fan will start. Meter will read "0".

ALWAYS ALLOW 3 MINUTES WARM UP TIME BEFORE APPLYING DRIVE POWER TO THE GLA-1000.

3. Turn FUNCTION switch to the VOLTS position. The Plate Voltage meter scale should indicate approximately 1100 volts DC.
4. Return the FUNCTION switch to STANDBY. Tune your exciter in the CW mode for maximum output as stated in your Owner's Manual.

Warning

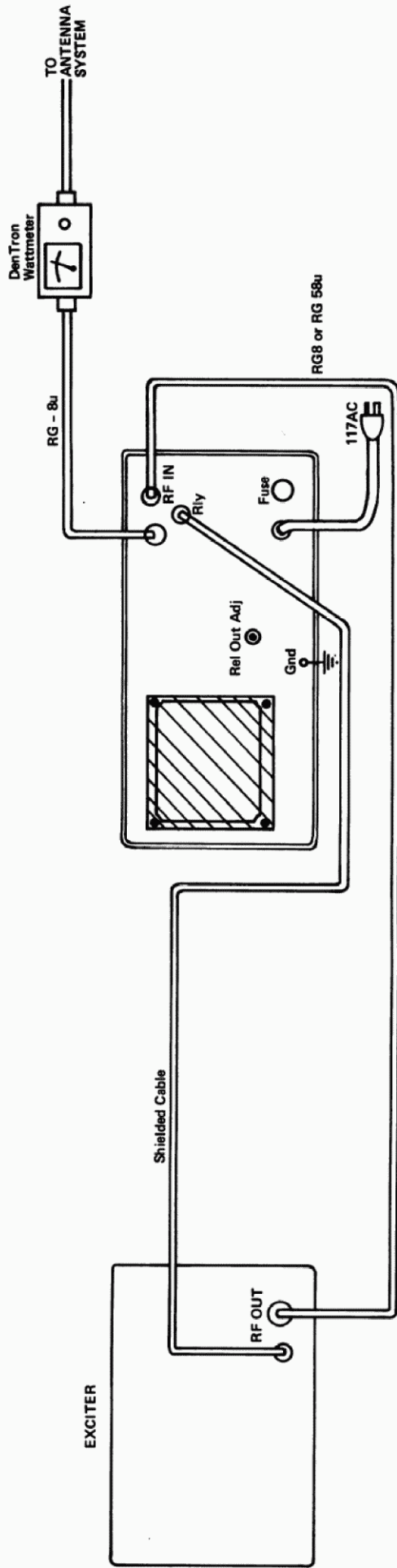
BEFORE CONTINUING, NEVER KEEP THE GLA-1000 KEYED FOR LONGER THAN 15 SECONDS AT A TIME AND ALLOW EQUAL COOL DOWN TIME.

5. Reduce CW output using the carrier or CW level control on your exciter. Unkey your exciter.
6. Preset the GLA-1000 TUNE and hand controls for the desired frequency band; also set the GLA-1000 BAND SELECTOR for the proper frequency. (Load control for 80 and 40 preset at "3". 20 and 15 preset at "5".
7. Rotate the GLA-1000 FUNCTION switch to the CURRENT position. Key your exciter and begin to increase the CW carrier level until reaching approximately 400 MA on the GLA-1000 Plate Current meter scale. Very rapidly, turn the TUNE and LOAD controls for maximum output on your wattmeter. Continue to increase the exciter CW carrier level until maximum output is reached (approximately 1.25 Amps. 1 KW input = 800 volts x 1.25 Amps. This is full legal limit.

SSB

1. Turn FUNCTION switch to REL. OUT. Re-Key your exciter to full output as described under CW, and adjust the SENS control (knurled shaft on rear panel) for maximum output on the GLA-1000 meter.
2. Set your exciter for either sideband and adjust your mike gain control for approximately two-thirds scale on voice peaks, with GLA-1000 in REL. OUTPUT position. This will insure proper operation by limiting drive to maximum talk power.

GLA-1000 Connection Diagram



GLA-1000 Service Data

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Tube Replacement: Allow 15 minutes with unit off before procedures below.

Remove unit from AC power source. Remove three upper screws on cabinet top right side and three screws on upper right side and one on top. This allows upper cover to be removed. Use an insulated screw driver and go from one of the plate caps of tubes to ground holding plastic part of screw driver. This will insure that plate voltage is completely discharged. Remove four plate caps of tubes carefully, being careful not to break parasitic chokes. Remove the four tubes and replace with DenTron D-50A's. These may be purchased from DenTron or any DenTron dealer. Be careful to plug tubes into tube sockets and not bend any of the pins. Replace plate caps on tubes. Replace cover unit before plugging unit back into AC to avoid hazardous shocks.

Bulb Replacement:

Remove top cover. (See tube replacement section). Bulbs are held into rear of meter

Meter Lamps: Remove top cover. (See tube replacement section). Bulbs are held into rear of meter by two swinging tabs. These are raised to a semi-vertical position and bulbs are slid out of sockets. Bulbs resemble a 22 caliber bullet cartridge.

New bulbs are then inserted and arms are swung down over center contact of bulb.

Transmit Lamp: For transmit light replacement, unthread from front of unit red lens. The bulb is fused into red lens. These bulbs also resemble a 22 caliber bullet cartridge. Use needle-nosed pliers to pull bulbs from red lens.

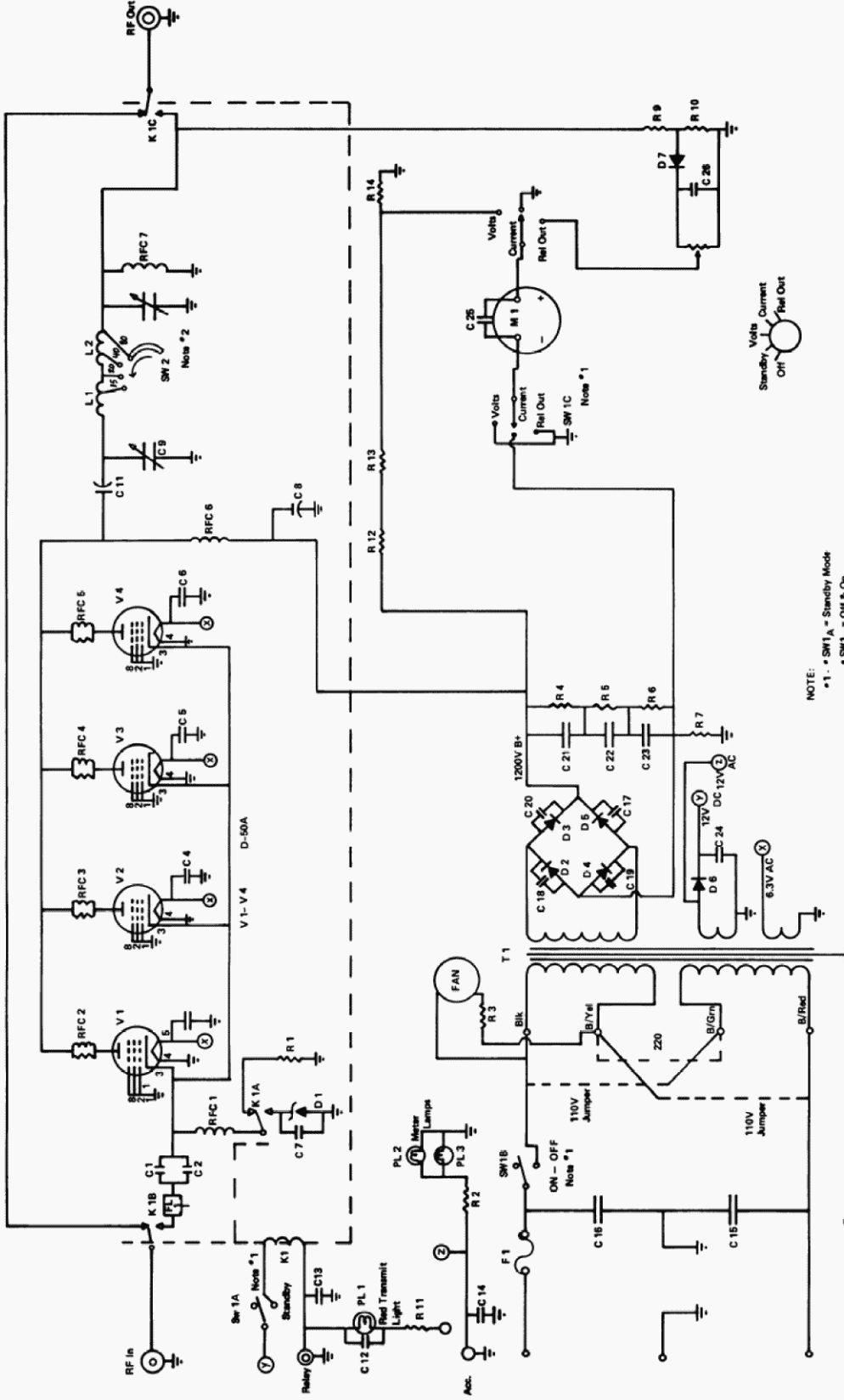
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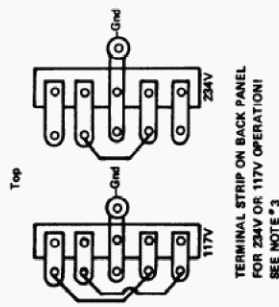
GLA-1000 Parts List

CAPACITORS:	
C1, C2, C3, C4, C5, C6, C7, C12, C13, C14, C15, C16, C17, C18, C19, C20, C25, C26	.01 mfc, 1KV Disc
C8	500pf 6KV Disc
C9	D-232-45 Var.
C10	D-5854 Var.
C11	1000pf 6KV Door Knob
C21, C22, C23	100mfd 500WV Electrolytic PC mount
C24	500mfd 50WVDC Electrolytic PC mount
RESISTORS:	
R1	47K 2 watt carbon
R2	100 ohm 1 watt carbon
R3	570 ohm non-inductive fan resistor
R4, R5, R14	100K 2 watt carbons
R7	Meter shunt
R8	100K pot (REL out)
R9	27K 1/2 watt carbon
R10	1K 1/2 watt carbon
R11	50 ohm 1/2 watt carbon
R12, R13	750K 1 watt 1% wire wound
DIODES:	
D1	IN3308 Zener
D2, D3, D4, D5	1500V 3amp
D6	IN4007
D7	IN295
CHOKES:	
RFC-1	8.5uh choke
RFC2, RFC3, RFC4, RFC5	Parasitic chokes
RFC6	Plate choke
RFC7	2.5mh choke
TUBES:	
V1, V2, V3, V4	D-50A tubes
COILS:	
L1	Secondary tank coil 15 & 20 mtrs.
L2	80-40 Tank coil
SWITCHES:	
SW2	Bank Switch
SW1A, B, C	Function Switch
K1	3PDT relay
MISCELLANEOUS:	
M1	Panel meter (plate voltage, plate current, relative output)
F1	15 Amp Fuse
PL1, PL2, PL3	12 volt bulbs (382)
Fan	117 VAC 75CFM
T1	Power transformer PR: 117V/234V 50/60HZ, 800V, 12V, 6.3V Sec.

GLA-1000 SCHEMATIC



- NOTE:
- *1. - SW1A - Standby Mode
 - * SW1B - Off & On
 - * SW1C - Current, Voltage, Rel. Out.
 - *2. SW2 - Shown Front View, Continuously Shorting Towards 15 Mhz.
 - *3. Remove Either 117V or 234V Jumpers Before Changing From One to Another



TERMINAL STRIP ON BACK PANEL FOR 234V OR 117V OPERATION! SEE NOTE *3