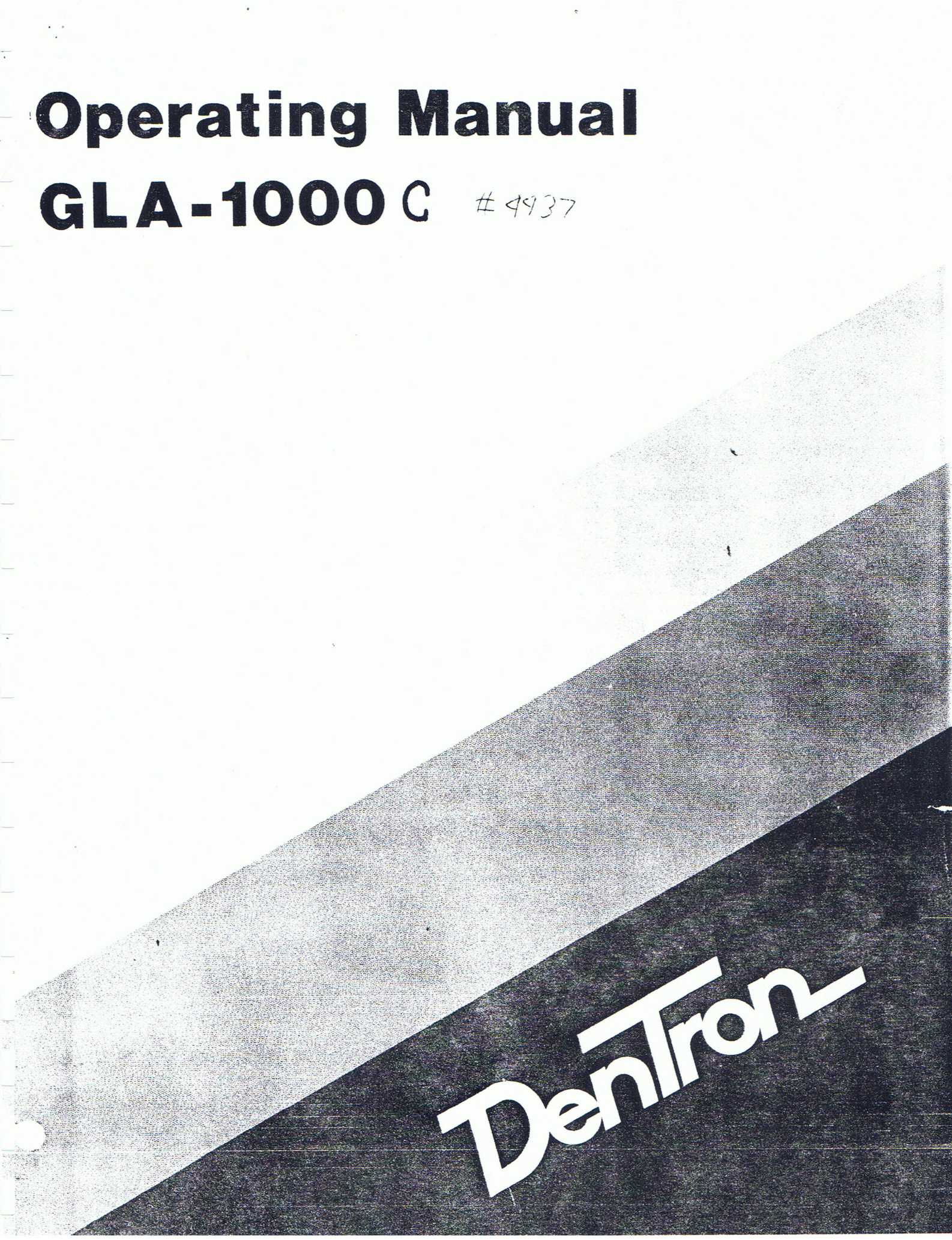
Operating Manual

GLA-1000 C #4937



Contents

Introduction

Dentron Radio Company designed the GLA-1000C 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 800 Watts CW input and 1200 Watts input PEP SSB, a built-in power supply suitable for 120 or 240 Volt AC mains, complete metering of essential voltages and currents, a relative power output monitor, and modern styling. The GLA-1000C 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.)

Input matching circuits make the GLA-1000C compatible with any exciter or transceiver, especially the popular solid state power amplifier units. Rear panel controls allow for relay switching and relative power output sensitivity. A maximum drive figure of 125 Watts is a factory specification. Special circuitry required by FCC Type Acceptance regulations limit the frequency coverage of the GLA-1000C to 160 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: 120 VAC 50/60 Hz 12.5 Amps
Factory Fused at 15 Amps
240 VAC 50/60 Hz 7 Amps
Recommended fuse 10 Amps

* Frequency Coverage: 160 Mtrs: 1.8 to 2.0 MHz
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 21.5 MHz
10 Mtrs: With Modification by Licensed Amateur
(Covers most MARS frequencies just outside the Amateur Bands)

* RF Drive: Maximum 125 Watts

* DC Input: 800W 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)
10 - Diodes
1 - Zener Diode
1 - Series Regulator Transistor

* 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 Supply

Your GLA-1000 C , as shipped, is connected for 120 Volt AC operation. Power is applied to T1 , the power transformer, through the ON/OFF switch, S1, and the circuit breakers. AC voltage from the high voltage secondary is fed to a full-wave bridge rectifier where it is converted to DC. The output of the bridge rectifier is filtered by a string of capacitors to provide approximately 1200 Volts DC. This serves as the plate voltage supply for the power amplifier tubes.

The second secondary provides 12 Volts DC through a diode and filter capacitor to operate the meter lamps and the keying relay.

The third secondary supplies 6.3 volts AC to the filaments of the four D50A power amplifier tubes.

The meter indicates the power supply voltage and current using resistors built into the circuit. In the voltage mode a circuit consisting of three resistors supplies a current which is proportional to the supply voltage. In the plate current mode a small value resistor in the plate supply common return serves as a shunt across which the meter is connected to indicate plate current. In the relative power mode a small portion of the RF signal output is rectified and filtered. The resulting DC signal is used as a current proportional to the RF relative power.

Amplifier Section

When the amplifier is in standby mode the RF signal from the exciter is directed from the input connector of the GLA-1000C through relay contacts RY1-A and RY1-B to the RF Output connector bypassing the amplifier completely. Note: The meter indicates DC plate voltage in standby position.

Placing the control switch in the volts, current, or relative power positions causes the amplifier to become operational. The RF applied to the input connector is fed through RY1-A to the range switch section S2-C and then to the input impedance matching network. The output of the matching network is fed through the range switch and capacitor coupled to the cathodes of the four D50A tubes.

The tubes amplify the signal. The amplified RF signal is coupled through a capacitor to the RF output matching network

consisting of the "Tune" and "Load" capacitors and the plate inductance. The RF signal is then directed through RY1-B to the RF output connector. The range switch S2-A selects the correct inductance by connecting the proper tap to the output of the network.

The cathode return circuit consisting of a power transistor and a zener diode provides proper operating bias voltages for the amplifier. The 40 uH choke provides RF isolation and the 47k resistor biases the tubes to cutoff in the standby mode.

The 2.4 mH choke across the "Load" capacitor is a safety device. If the plate coupling capacitor should ever fail shorted this choke will render the amplifier inoperative.

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-1000C in service out side of the cabinet. Contact with voltages in this amplifier can be fatal to the human body.

3. Never attempt to operate the GLA-1000C with drive power of more than 125 watts!

4. Never attempt to operate the GLA-1000C 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-1000C with books, papers or other pieces of equipment or overheating may result.

8. Do not use different tuning procedures other than indicated in this book.

9. When cleaning the GLA-1000C, 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

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.

Warning

NEVER MAKE AN ATTEMPT TO PUT THE AMPLIFIER IN SERVICE OUTSIDE OF THE CABINET. CONTACT WITH VOLTAGES IN THIS AMPLIFIER CAN BE FATAL!

Unpacking Instructions

Carefully remove your GLA-1000C from its packing carton, making sure there is no damage evident from shipping. If there is any damage, notify the delivering shipper immediatly, 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 packaging 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-1000C 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-1000C is factory wired for 120V AC operation. If 240V 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-1000C 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 W2) and a dummy load (such as a Dentron Big Dummy) to the RF out connector using RG-8/U cable or its equivalent.

3. Connect the GLA-1000C keying lead to your transmitter using shielded cable such as RG-174U (See interconnect diagram). The GLA-1000C requires closed contacts to ground on transmit. Open on Receive

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-1000C into a 120V AC power source.

2. Turn METER switch to STANDBY. Switch on power by depressing AC line switch. Meter will light and cooling fan will start. Meter will read the high voltage potential.

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

3. Turn METER switch to the VOLTS position. The Plate Voltage meter scale should indicate approximately 1200 volts DC.

4. Return the METER switch to STANDBY. Tune your exciter in the CW mode for maximum output as stated in your Owners 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-1000C TUNE and Band controls for the desired frequency band; also set the GLA-1000C BAND SELECTOR for the frequency. (Load control for 160, 80 and 40 preset at"3". 20 and 15 preset at"5").

7. Rotate the GLA-1000C METER switch to the CURRENT position. Key your exciter and begin to increase the CW carrier level until reaching approximately 400 MA on the GLA-1000C 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.800 Amps x 1000 volts = 800 Watts CW or approximately 1250 Watts PEP in SSB Mode).

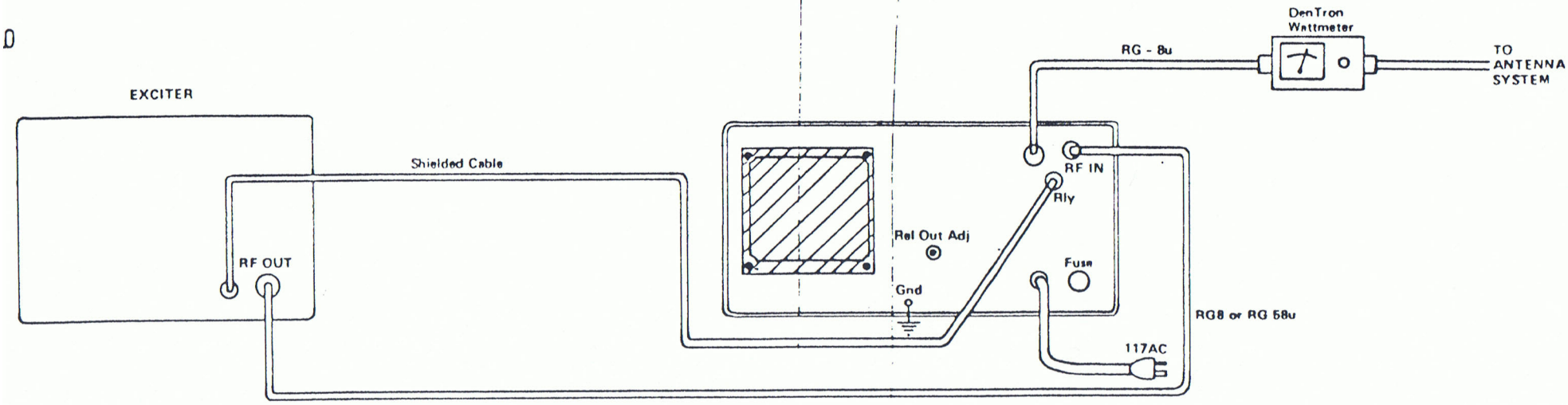
Tuning Procedure

SSB

1. Turn METER 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 full meter scale deflection on the GLA-1000C meter.

2. Set your exciter for either sideband and adjust your mike gain control for approximately one-half scale on voice peaks, with GLA-1000C in REL. OUTPUT position. This will insure proper operation by limiting drive to maximum talk power.

GLA-1000C Connection Diagram



GLA-1000 Service Data

Warning

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

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 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 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 by two swinging tabs. These are raised to a semi-vertical position and bulbs are slid out of sockets. Bulbs resemble a 22 caliber cartridge.

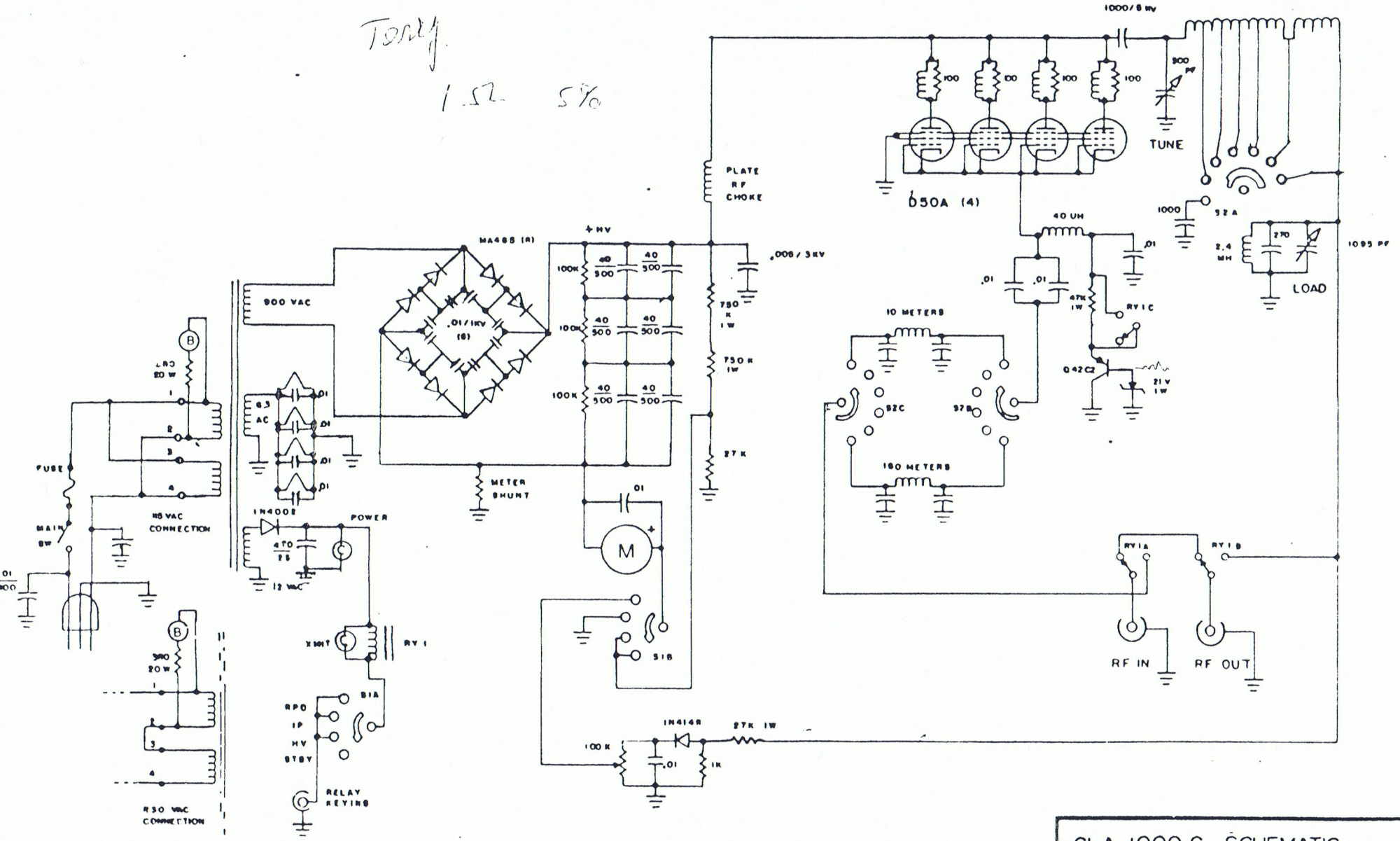
New bulbs may now be inserted and arms swung down over center contact of bulb.

Warning

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

Tony.

1 Ω 5%



GLA 1000 C SCHEMATIC

TITLE PHONE	approved by G. J. MISIC	drawn by LYN
DATE 1 DEC 82		

Denton RADIO CO.