

INSTALLATION AND OPERATING INSTRUCTIONS

GONSET VHF POWER AMPLIFIER

MODELS 3211, 3212, 3211-CD, 3212-CD

WARNING

Over 1000 volts is employed on this amplifier, and it is very dangerous to work on out of cabinet. Always pull the a-c cord and short the high voltage supply to ground with an insulated screwdriver to discharge the filter condensers before attempting to work on it.

TVI

If TVI is caused to channel 2 when operating on the 50-54 Mc. band, due to lack of selectivity in nearby TV receivers, it can be reduced or eliminated by addition of a Drake model TV-300-HP filter at the antenna terminals of the TV receiver.

WARRANTY

The Gonset Company warrants this product to be free from defective material and workmanship when new, and will remedy any defect or replace any defective part other than the vacuum tubes free of charge for a period of 3 months from date of original purchase, provided warranty registration card is filled in and mailed to us. This warranty does not apply to units which have in any way been abused or misused, either deliberately or accidentally, or have been altered.

The defective unit or part must be returned to us transportation charges prepaid, after first getting authorization to return.

No dealer or other person is authorized to assume any further liability on our behalf when selling this unit.

Made in U.S.A.

801 S. MAIN ST.



BURBANK, CALIF.

GENERAL

The Gonset VHF linear power amplifier is designed to (1) increase the carrier power of an amplitude-modulated, low-powered VHF radiotelephone transmitter, such as the Gonset Communicator, to a level of 50 to 60 watts, or (2) increase the carrier power of a low powered FM or CW VHF transmitter to nearly 100 watts. Approximately 4 to 5 watts is required to drive the amplifier to the full output, but the amplifier can still be used where as little as 3 watts is available. In the latter case the power output will be reduced slightly.

The amplifier includes relays for transmit-receive switching, actuated by a T-R switching line that applies approximately 40 volts to J2 on the rear panel of the amplifier during receive periods. When the Communicator III is used as the exciter, this T-R voltage is supplied automatically through the VFO accessory cut-off bias line connection on the rear of the COMMUNICATOR III cabinet.

It is important to note that the PLATE VOLTAGE IS APPLIED TO THE TUBES AT ALL TIMES (both transmit and receive) so long as the primary switch is in the "on" position.

INSTALLATION

The amplifier is shipped with all tubes removed from their sockets. All tubes should be inserted in their sockets and the back screen then attached to the cabinet with the screws supplied.

If a Phillips head screwdriver is not available for inserting the screws that hold the back, a small conventional screwdriver having a narrow blade will serve the purpose.

Installation is accomplished by connecting the amplifier to the antenna, and inter-connecting the amplifier and driver by means of the cables furnished, and plugging in the 115 volt cord. It is recommended that the amplifier be connected to a load at all times it is turned on, because of high r-f voltages that may build up across the antenna output circuit under certain conditions of tuning when there is no load on the amplifier. For best operation the amplifier is designed to feed a 50 ohm line having a VSWR of not more than 2.0.

When the amplifier is used with the Gonset COMMUNICATOR III, connect the VFO jack on the rear of COMMUNICATOR III to jack J2 on the rear of the amplifier, using the small coaxial cable supplied. If the Gonset VHF VFO is also in use, connect the proper jack on the rear of the VFO to the second (VFO) jack on the rear of the amplifier (J4).

When other exciters are used, approximately 40 volts must be applied to either jack on the rear of the amplifier during RECEIVE periods, and removed during transmit periods, to actuate the relays, unless other arrangements are used. A suitable modification may be necessary in the amplifier T-R relay wiring to connect the antenna to the receiver during receive periods when separate receiver and exciter are used. A satisfactory arrangement can be set up in most cases by reference to the schematic diagram to work up a circuit to fit individual station requirements.

The large coax cable furnished connects from the regular (top) antenna connector on the COMMUNICATOR to the "input" receptacle on the amplifier.

OPERATION

The amplifier is so designed that so long as the driving power is limited to approximately 6 watts, nothing can be damaged under any possible conditions of mistuning, either accidentally or deliberately, providing that at least some load is connected to the amplifier to prevent r-f voltages from reaching excessive values across the antenna coupling components.

This means that when the amplifier is used with a COMMUNICATOR, one need only tune for maximum output (consistent with adequate modulation capability if for A-M telephony) without regard to plate current or grid current values. Because of its economy and because it is an r-m-s rather than an averaging device, a Mazda lamp is used as the output indicator. This lamp is coupled to the output circuit in such a fashion that when everything is adjusted and working properly it glows at about half normal brilliancy for 50 watts input into a 50 ohm load, and at near normal brilliancy for 80 to 90 watts output (as obtained on F-M).

Being an r-m-s indicating device, the lamp permits a check on the modulation capability. When the amplifier is used for A-M telephony, the idea is to adjust the antenna coupling and drive to obtain the greatest amount of brilliancy that can be obtained and still have the lamp "modulate upward" on speech. If the drive is excessive or the loading insufficient, the upward modulation capability will be restricted and the lamp will not "modulate up".

If a more quantitative check on the modulation is desired on A-M, a scope should be employed. However, the very simple method described will result in a near-optimum adjustment satisfactory for all but the most critical. For F-M operation one simply tunes for maximum output (lamp brilliancy) without regard to upward modulation capability.

Where more than approximately 6 watts of drive is available, it is possible under some conditions of tuning adjustment to cause the tubes to draw excessive plate current. This will be evidenced by the tube anodes showing a yellow color, rather than orange, when viewed through the window. If more than 6 watts drive is available, it is best to insert a 0-250 or 0-300 ma. d-c meter in the meter jack the first time the unit is tuned up. Total cathode current should be limited to approximately 225 ma. maximum. After observing the color of the tube plates under conditions of proper tuning, the amplifier subsequently can be tuned up safely by utilizing the tube anode color as an indication of approximate plate dissipation.

INITIAL TUNE-UP

When all tubes have been inserted, and all connections properly made, the unit is ready for operation.

The procedure for A-M telephony is simply to adjust the drive and antenna loading to give the greatest tuning lamp brilliancy that can be obtained and still have pronounced "upward modulation" when checked with a whistle into the mike. The plate tuning controls should always be adjusted to resonance, and the grid tuning condenser preferably so. However, it is permissible to adjust the grid drive by detuning the grid condenser if no convenient method of varying the output of the r-f driver is provided. **WHEN COUPLED TO AN ANTENNA RATHER THAN A DUMMY LOAD, MAKE THESE ADJUSTMENTS AS RAPIDLY AS POSSIBLE AND THE TESTING AS BRIEF AS POSSIBLE.**

If the amplifier is used as a power amplifier for a low power F-M transmitter, one simply tunes for maximum brilliancy of the tuning lamp without regard to "upward modulation". This will provide considerably greater carrier power for the same power input.

If the driving transmitter is capable of delivering more than approximately 6 watts into a 50 ohm load, then it is recommended that a 0-250 or 0-300 ma. d-c meter be inserted in the cathode jack during initial tune up, to avoid the possibility of excessive dissipation of the 826's or overloading of the rectifier tubes. Once one gets the "feel" of the amplifier and is familiar with the shade of orange color indicating normal dissipation on the 826's, the meter no longer need be used. Actually the tubes will withstand considerable overload for short periods of time, but continued overload is not to be recommended. The same applies to the rectifiers.

NEUTRALIZATION

The amplifier is neutralized at the factory and ordinarily the adjustment will hold indefinitely unless it becomes necessary to replace one or both 826's.

Neutralization is accomplished in the same manner as for any cross-neutralized push-pull amplifier. The neutralizing capacitors are of the "piston" type, with lead screw adjustment accessible through two holes in the bottom of the cabinet. The mov-

able electrode is connected to the grid side in each case, so that there is no danger of electrical shock. However, to prevent detuning the grid tank and to be absolutely safe, only a plastic tool should be employed for adjustment. A piece of 1/4 inch polystyrene filed to a chisel point makes an excellent and inexpensive tool.

When the amplifier is properly neutralized, it will not self-oscillate at any setting of the plate tank condenser (excitation off). Another check is to remove the 5U4GB rectifiers, apply r-f excitation, insert an 0-25 or 0-50 ma. meter in the meter jack, and see if there is more than a barely perceptible flicker of the grid current as the plate tank condenser is tuned through resonance. This check is best made with a load on the amplifier, to simulate actual operating conditions for the plate tank.

If adjustment of the neutralizing capacitors is required, they should be moved in and out together to maintain circuit symmetry. Usually only a slight readjustment will be required when changing tubes.

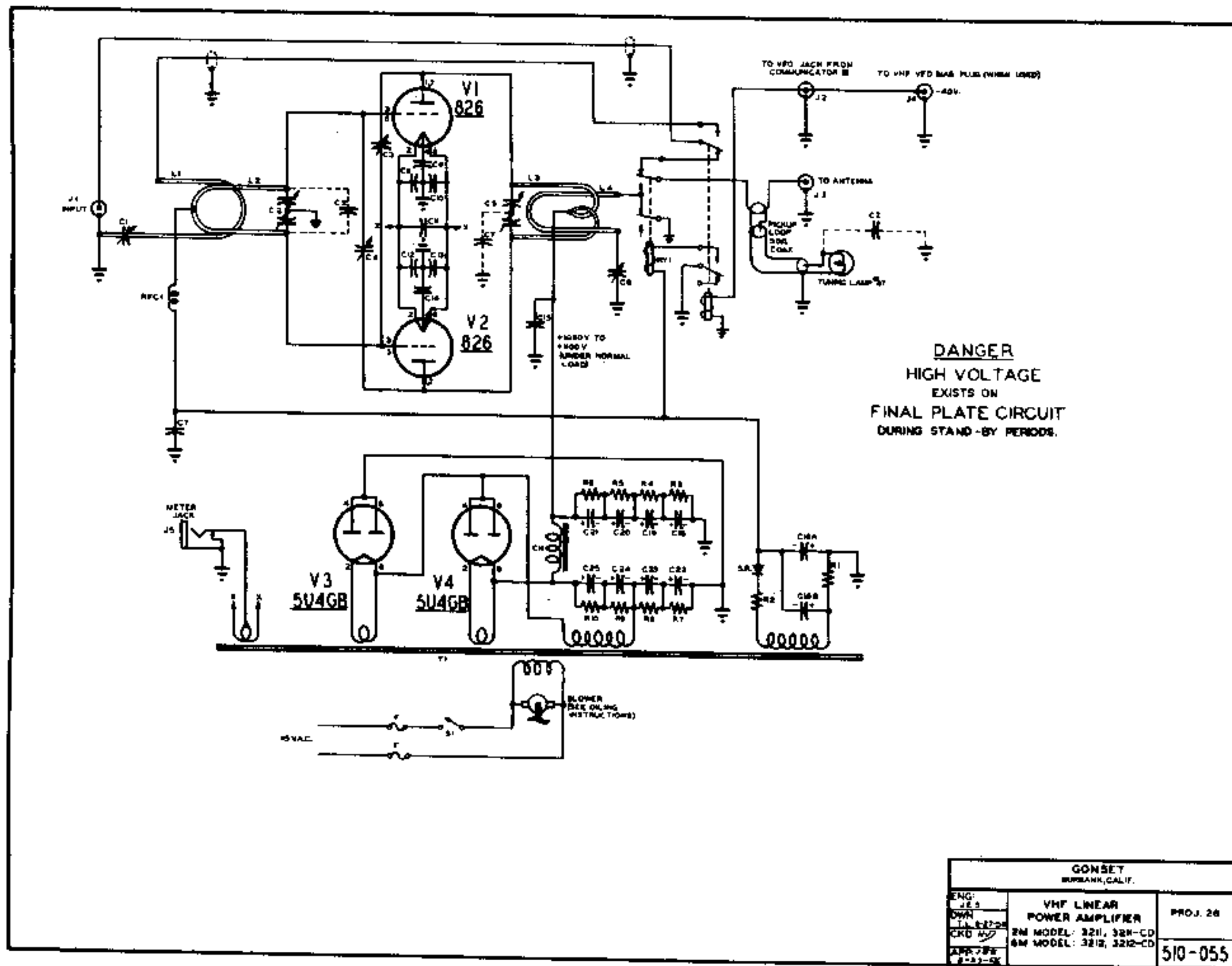
BLOWER LUBRICATION

The blower motor should be lubricated about every 60 days with normal use; less frequently if seldom used and more frequently if used constantly. A couple of drops of medium-light machine oil should be applied to the oil hole at each end of the armature. The rear oil hole is reached by inserting the nozzle of the oil can through the meter jack on the rear of the chassis. This requires removing the chassis from the cabinet.

INDICATOR LAMP REPLACEMENT

Because of the frequency involved, it is not practical to employ a regular lampholder for the No. 47 Mazda output indicator lamp. Thus, should it require replacement, the new bulb must be soldered in.

The coupling to the indicator lamp may be adjusted, if desired, by reaching in with a polystyrene rod through the ventilation hole through which the link may be seen (near the rear of the antenna coax connector).



GONSET BURBANK, CALIF.		
ENG: JES	VHF LINEAR POWER AMPLIFIER	PROJ. 28
OWN: LA 827-28		
CRD: W		
APP: JFE 8-27-54		
		510-055

- | | | | | | | |
|------|--|------|--|---------------------------|------------------------------------|--|
| C1 | 5-50 μF, TRIMMER, GPN 074-013 | C7 | 5-50 μF, PADDER, PRE-ADJUSTED, GPN 074-013 | } FOR Q1
MODEL
Q-1Y | J1 | INPUT COAX CONNECTOR, RECEPTACLE GPN 302-030 |
| C2 | SPLIT STATOR GRID TANK CAPACITOR, GPN 074-069 | C8 | .001 μF, DISC CERAMIC, 50V, 3KV | | J2 | CONNECTOR, RECEPTACLE, GPN 302-005 |
| C3 | GPN 074-030a | C9 | 15-25 μF (VALUE MAY VARY) | | J3 | ANTENNA COAX CONNECTOR, RECEPTACLE GPN 302-011 |
| C4 | 2-5 μF, NEUTRALIZING CAPACITOR, SPECIAL | R1 | 750K, 1/2 WATT, 10% | J4 | CONNECTOR, RECEPTACLE, GPN 302-005 | |
| C5 | SPLIT STATOR PLATE TANK CAPACITOR, GPN 074-065 | R2 | 100K, 1 WATT, 10% | J5 | JACK GPN 302-001 | |
| C6 | GPN 074-029* | R3 | | C-R | RECTIFIER, SELENIUM GPN 473-003 | |
| C7 | 50 μF, APC, ANTENNA LOADING, GPN 074-028 | R4 | | CH | FILTER CHOKE GPN 275-005 | |
| C8 | .001 μF, DISC CERAMIC, 50V | R5 | | S1 | ROTARY POWER SWITCH GPN 174-001 | |
| C9 | | R6 | | T1 | POWER TRANSFORMER GPN 271-004 | |
| C10 | | R7 | | | | |
| C11 | .001 μF, TUBULAR | R8 | | | | |
| C12 | | R9 | | | | |
| C13 | | RF-1 | R.F. CHOKE, 5.2 μH GPN 027-004 | | | |
| C14 | .001 μF, TUBULAR | F | FUSE, 5AMP, 3AG | | | |
| C15 | .001 μF, DISC CERAMIC, 50V, 3KV | L1 | GRID LINK COIL GPN 011-06 | | | |
| C16A | 80 μF, 150 V | L2 | GRID COIL GPN 011-062 GPN 011-090* | | | |
| C16B | 30 μF, 150 V | L3 | PLATE COIL GPN 011-060 GPN 011-088* | | | |
| C17 | SELECTED | L4 | ANTENNA COIL GPN 011-061 GPN 011-091* | | | |
| C18 | | | | | | |
| C19 | | | | | | |
| C20 | | | | | | |
| C21 | | | | | | |
| C22 | 10 μF, 450V, ELECTROLYTIC, GPN 073-011 | RY1 | RELAY DPDT, 375Ω GPN 111-009 | | | |
| C23 | | RY2 | RELAY DPDT, 5K Ω GPN 111-010 | | | |
| C24 | | | | | | |
| C25 | | | | | | |
- * REFERS TO METER PART NUMBERS