

white wire the "hot" wire, regardless of which pole of the battery is grounded.

Because of the heavy current drawn on transmit (15 amps) when using 6 volt supply, it is desirable that heavy wire be used to supply voltage to the COMMUNICATOR in a 6 volt vehicular installation. No. 8 B&S gauge is recommended from the battery or starter terminal up to the point where the flexible cable furnished with the COMMUNICATOR is attached. For casual operation in "stray" 6 volt automobiles simply clip on the ammeter terminal or main "hot" terminal under the dash. Voltage will be adequate when the generator is charging but it may on the shy side when the motor is not running.

The 12 volt model not only draws half as much current, but a given voltage drop in the wiring amounts to less when figured on a percentage basis (as compared to a 6 volt system). For this reason, use of very heavy wire is not required with the 12 volt model.

Units covered by this manual have tuners and transmitters which can be converted from 6 to 12 volt operation and vice versa by changing tie point jumpers as indicated on the schematic. Thus, it is only necessary to purchase a 12 volt power supply should the owner desire to convert a 6 volt model to a 12 volt model at a later date.

"12 volt" models covered by this manual actually are designed for 13.5 volt input (design center). Many "12 volt" automobiles actually deliver approximately 15 volts under light or moderate loads after the generator has been charging for a time.

It should also be pointed out that the newer, very high compression cars with 12 volt ignition also produce much more electrical noise than a typical 6 volt car, particularly with regard to ignition noise but also regulator noise, generator noise et cetera. This is mentioned only so that the reader will know that it is a normal condition.

RECEIVER

Receiver operation is self-explanatory except for squelch. On reception the tuning eye acts as a carrier strength indicator, actuated by the a.v.c.

SQUELCH OPERATION

The COMMUNICATOR II-B employs a highly effective carrier-actuated squelch circuit which may be used or not as desired. In the absence of a signal the exceptionally flat a-v-c characteristic of the COMMUNICATOR receiver normally will cause a high background noise which becomes objectionable if prolonged, as when maintaining a standby watch on C.D., C.A.P., or other net frequencies. The squelch facility permits muting of this background noise.

The squelch circuit employs a biased series-gate diode which is indirectly actuated by the a-v-c voltage. The combination is very effective, gating cleanly on an a-v-c voltage change as small as 0.1 volt when the threshold control is set carefully. The circuit is designed so that compensating factors tend to hold the threshold setting substantially constant over a moderate change in supply voltage to the COMMUNICATOR.

To disable the squelch, just turn the squelch con-

trol slightly past the point where the gate "opens" on background noise with no station tuned in. It is not necessary to turn it full clockwise.

To use the squelch, back off the threshold control counter-clockwise just to the point where the background noise disappears, and stop there. This makes the squelch the most sensitive (so that it will open on weak signals). Unfortunately, this also makes the squelch sensitive to electrical noise that is sufficiently strong to cause the a-v-c voltage to change. This means that, if such noise (such as very strong ignition noise or interferences from a nearby commutator motor) is intermittent in nature, the threshold control must be backed off enough to prevent the intermittent noise from triggering the squelch. It will then take a stronger carrier to open the squelch. In extremely noisy locations it may be necessary to turn the threshold control full counter-clockwise to prevent triggering of the squelch by noise. Such operation will be possible only if the desired signals are quite strong.

Certain limitations to the operation of the squelch should be kept in mind. For instance, the normal change in quiescent a-v-c voltage that occurs as the receiver is tuned over the band will cause the threshold setting to change slightly as one tunes over the band. For this reason it is recommended that the squelch be used only after a station is tuned in, and that it be disabled when "looking around the band." For best operation of the squelch, the noise clipper should be left on at all times.

TRANSMITTER

The COMMUNICATOR transmitter is designed for intermittent service with a "transmit" time not to exceed 10 minutes during any 20 minute period. If the transmitter "on" time exceeds this duty cycle, or if the COMMUNICATOR is operated for a long period in an unusually high ambient temperature, it is recommended that the back screen be removed (when this can be done safely).

The output circuit is designed to work either into a quarter wave whip screwed into the coaxial connector on the top at frequencies above 100 Mc., or into 50 or 70 ohm coaxial line having a moderately low standing wave ratio.

The flexible end-fed "zepp" type antenna furnished with 6 meter models provides an easily carried antenna for fixed-portable operation. It may be oriented for either vertical or horizontal polarization. It should be supported by means of a safety pin or string at either end. Performance is much better than with a quarter wave whip stuck directly into the coax fitting, due largely to lack of sufficient grounding surface (cabinet area) at 50 Mc. Inside a steel-reinforced building best results usually will be obtained by locating the indoor antenna near a window.

The multiplier stages are tuned by removing the snap buttons and starting with the "Osc" position, closing the eye as far as possible on each indicated position of the tuning eye switch in sequence with the transmit-receive switch in the "transmit" position. IMPORTANT: When tuning up the 6 meter models, the "tripler" tuning should be touched up after the "final grid" is resonated, as it is difficult to get a pronounced resonance indication on the "tripler" condenser unless the "final grid" is near resonance.