



Established 1910

## INSTALLATION INSTRUCTIONS FOR ACCESSORY ITEMS IN MODEL HQ-100 SERIES HAMMARLUND COMMUNICATIONS RECEIVERS



100 KCS CRYSTAL CALIBRATOR  
455 KCS BEAT FREQ. OSCILLATOR

### NOTE

HQ-100A series receiver has built-in B.F.O. Therefore XC 455 B.F.O. Kit not required.

XC 100 Crystal calibrator may still be installed in HQ-100A if desired.

HAMMARLUND MANUFACTURING CO., INC., 460 W. 34th STREET, NEW YORK I, N. Y.

**KIT #38657-G5 100 KCS CRYSTAL CALIBRATOR**

**KIT #38657-G6 455 KCS BEAT FREQ. OSCILLATOR**

The above two kits are mechanically identical and differ only to the extent of the frequency of the oscillator quartz crystals provided. The installation of both units is identical with the sole exception of the termination of the orange output lead wire as herein described.

Series HQ-100 Receivers, starting with Serial #1130, have chassis which are already drilled to permit simple installation of the above two kits. To install these kits in receivers which have not been factory drilled, a drilling template and dimensioned drawing have been provided.

Please read these step-by-step instructions carefully and follow them in detail. In making soldered connections, use a light, clean soldering iron and radio-grade, rosin-cored solder only. DO NOT use fluxes of any kind in making soldered connections. Do not overheat connections, to avoid deteriorating associated insulating materials.

Make certain the power cord plug is removed from the power outlet. Disconnect all wires from the terminals at the rear of the chassis. Carefully turn the receiver up on its face on top of a clean towel placed over a smooth working surface. This will prevent marring of the front panel, knobs, etc. On receivers equipped with the electric clock-timer, remove the clock adjustment knob at the rear of the receiver employing a small knob screwdriver. With a proper size socket wrench, remove the two screws at the cabinet rear corners which fasten the cabinet to the chassis. Lift the cabinet off from the receiver assembly, passing the power cord through the opening at the rear of the cabinet. Tip the receiver back on the chassis so that the front panel is vertical and the underside of the chassis wiring is exposed.

Carefully unwrap the oscillator unit, removing all parts from the packing. Remove the shield cover from the oscillator assembly. Fasten the cover unit to the receiver chassis alongside the 6AL5 tube and the last IF transformer at the rear right corner of the chassis, using the two self tapping screws passed through the underside of the chassis and threaded into the shield cover.

Insert the rubber grommet in the chassis hole directly in front of the oscillator unit. Pass the four lead wires from the unit down through the rubber grommet and carefully install the oscillator assembly in the shield with the four screws previously removed in dis-assembling it.

Install the toggle switch supplied with the kit in the rear skirt of the receiver chassis, between the switch shaft clearance hole and the "S" meter adjustment potentiometer. The holes for the switch and for the grommet and shield are already provided in some receivers as above indicated. Where it is necessary to add the holes to the receiver chassis, refer to the drilling print provided. The grommet hole is  $5/16''$  diameter, the two mounting holes for the oscillator unit are  $.136''$  diameter, and the toggle switch hole is  $1/2''$  diameter. In drilling these holes, be extremely careful so that the drill does not punch through the chassis and strike the output transformer or the antenna switch.

The toggle switch hole is centered between the "S" meter adjustment potentiometer and the clearance hole for the band switch shaft. The rear  $.136''$  diameter hole is  $5/8''$  from the chassis rear and  $1-7/8''$  from the right side of the chassis as viewed from the front. On the same  $1-7/8''$  line from the right side of the chassis and  $2-1/8''$  measured toward the front of the receiver from this hole, the  $5/16''$  diameter hole for the rubber grommet is located. The second  $.136''$  diameter hole should be spotted on the chassis through the shield cover removed from the oscillator unit. This hole is located  $5/8''$  forward of the first hole, and proximately  $9/16''$  to the left of the 1st hole toward the center of the receiver chassis. (Use of the drilling template provided will simplify location of all holes).

Solder the black wire of the oscillator unit to the ground lug on the 6AL5 tube socket (V7). Similarly, solder the white-black wire to pin #4 of the second IF tube socket (V6). Solder the red wire to one side of the toggle switch and solder the short length of red-wire-supplied with the kit to the other terminal of the toggle switch. Place these leads carefully around the inside of the chassis with other existing wiring. Solder the red lead from the toggle switch to the B plus 250 volt terminal of the filter capacitor (where a red lead is already connected), being careful to lay this lead down so that it does not interfere with the belt drive of the antenna trimmer capacitor.

In the case of the 100 KCS calibrator installation, solder the orange lead wire to the antenna terminal along with the existing black wire.

In the case of installing the 455 KCS beat frequency oscillator, extend the orange lead wire over to the bus wire jumper which connects the last IF transformer to Pin #2 of the 6AL5 tube socket (V7), and wrap approximately two turns of the insulated orange wire around this bus wire. Cleanly clip off the excess length of the orange wire after wrapping it around the bus, making certain that the wire conductor itself does not contact the bus. The wire must be left insulated and is not soldered to the bus. (Only capacity coupling is required.)

After installing and connecting the oscillator unit, carefully examine the wiring in the area in which the modification was done to make certain no leads have been displaced or terminals disturbed. Turn the receiver assembly right side up on the bench and connect the necessary lead wires to the rear of the chassis apron. Plug in the power cord.

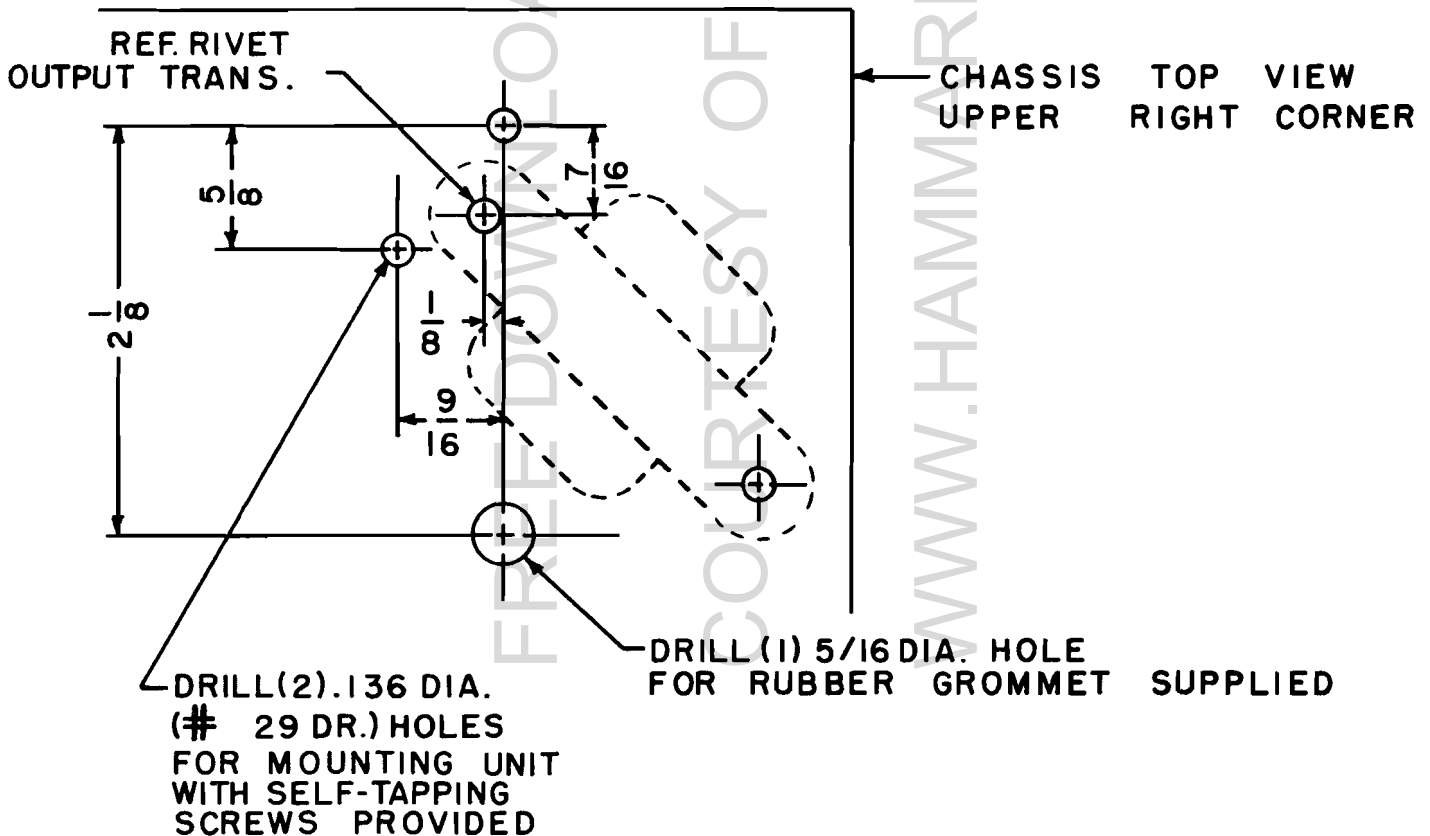
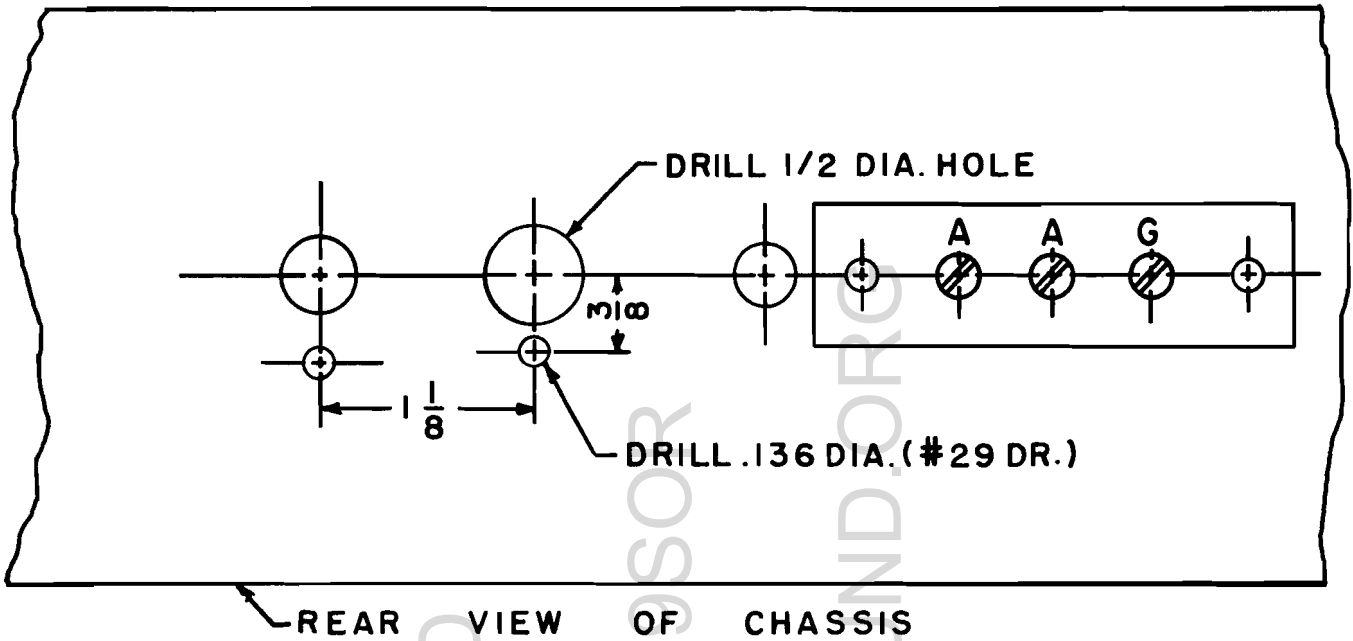
To set up the 100 KCS crystal calibrator unit, tune in a signal of known frequency accuracy, such as the Bureau of Standards Radio Station WWV at 5.0 MCS. Adjust the trimmer on the calibrator unit for zero beat. This should be done with the BFO of the receiver turned off and while the tone modulation of WWV is not present on the carrier. Allow the receiver approximately 15 minutes time to warm up and repeat this adjustment to make certain the oscillator and the rest of the receiver has had time to stabilize. No further adjustment of any kind should be required.

Where the 455 KCS crystal beat frequency oscillator has been installed in the receiver, tune in Station WWV or any stable CW signal and zero beat that signal using the Q multiplier with the crystal beat frequency oscillator turned off. Then switch the function selector under the clock or medallion at the upper left hand corner of the receiver to the REC. position. Turn the crystal beat frequency oscillator on with the switch provided at the rear of the chassis and adjust the trimmer of the crystal beat frequency oscillator unit for zero beat. If this is not possible within the range of the trimmer, the frequency control of the receiver itself should be re-adjusted, following the alignment procedure outlined in the Instruction Manual for the HQ-100 Receiver, so that the Q multiplier frequency zero (upper right hand control knob) agrees with the crystal BFO frequency. Allow approximately 15 minutes warm-up time and repeat these adjustments to assure stabilization of the crystal beat frequency oscillator unit and the receiver circuits. No further adjustment of any kind should be required.

After completing all of the above operations, disconnect all wires from the terminals at the rear of the chassis. Make certain all connections are properly completed and no foreign matter has been left in the receiver. Carefully turn the receiver chassis up on its face per previous instructions. Pass the power cord through the opening at the rear of the cabinet and set the cabinet down in place on top of the chassis, locating the clock shaft extension (where clock is employed) through the hole in the rear of the cabinet. Use a small knob-type screwdriver to secure the small knob on the rear adjustment shaft of the clock. Replace the two rear screws which fasten the cabinet to the chassis.

Should either of the two accessory kits fail to function properly after completing the above step-by-step procedures, please check through these procedures a second time. In the event you are then unable to make these kits function properly, please direct your communication for further information to the Hammarlund Manufacturing Company, Inc.; Commercial Products Division; 460 West 34th Street; New York 1, N.Y.

# MECHANICAL INSTALLATION DRAWING



THIS DWG. IS TO SCALE & MAY BE USED AS A  
DRILLING TEMPLATE