DATE 6/17/53
SH. 1 OF 4
COMPILED BY T. M. C.

TMC SPECIFICATION NO. S - 167

TITLE: MODIFICATION OF DMK-4 HAMMARLUND SP-600 REC'R | JOB

APPROVED

The modification kit supplied by the Technical Materiel Corporation is essentially composed of three sections. Hence, procedure in conversation will be divided into three parts.

Before arriving at the point of electrical conversation, the mechanical details should be accomplished. The main features of the mechanical arrangements are:

1. Installation of HFO Amplifier chassis on the front sub-panel, near the HFO tube, V4.

2. Removal of existing terminal board under 3.5 mc. crystal oscillator V8 and substitution of terminal board provided.

3. Boring front and rear of chassis for installation of modified parts.

Modification 3.5 mc. Oscillator

Step 1: Remove shield can, located on the underside of chassis over th tube sockets of V8 and V6. Carefully lift the choke coil (L35) from the terminal board connection and move to one side, leaving the other end connection to pin 5 of V8. Care should be taken, as this choke coil will be re-installed. In the same manner, lift the terminal board connection of the 20,000 ohm (R40) resistor which goes to pin 6 of V6. The remaining connections to the terminal board may then be unsoldered. The 3.5 mc. crystal (Y7) is then removed from old board and re-installed on the new board, using hardware supplied. The new board is then installed in the same mounting holes. Connections from the terminal board may be ascertained by viewing accompanying pictorial drawing No. A-155. The RG59/U cable is connected from the terminal board to J301 on the rear of the chassis, drawing No. A-252.

INSTALLATION OF MASTER - SLAVE SWITCH, FOR THE 3.5 CRYSTAL OSCILLATOR.

Step 2: Remove the phone jack from its present position on the front panel and place to one side, as it must be re-located. In order to install SW-129-2 on the sub-panel directly behind the original phone jack hole, care must be taken that the hole centers be on the same horizontal axis. This can be accomplished by inserting the panel bearing on the front panel, and with a ¼" drill, locate the hole center on the sub-panel. The required 3/8" hole may then be drilled into the sub-panel using the original phone jack hole for a guide. SW-129-2 may then be installed with the coupling and shaft supplied. Refer to drawing No. A-153 for hole dimensions for shield and wiring of switch. Connect RG59/U short length cable, supplied, from 3.5 mc. oscillator to SW-129-2. Re-mount shield can over 3.5 mc. oscillat r unit after its modification, shown on drawing No. MS-151. Drill 3/8" hol on front panel between band switch, selectivity control, in line with R. F. and A.F. meter switch, shown on drawing No. ID-105 for replacement of phone jack. The accompanying name plate for switch indication is fastened to chassis by setting it und r the front pan l bearing.

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Modification BFO Oscillator

Step 3: Remove C137 and relocate terminal strip E10 up to next hole, leaving blue lead with green tracer on E10. Unsolder end of shielded lead which connects to L46 and connect to E10 lead, and solder.

On the unmodified electrical schematic of the receiver, it can be noted, there is a connection between S7 (MOD-CW) and S8 (AVC-MAN). Remove this jumper and connect lead supplied. From lug of L46, from which shielded lead was removed, connect to S7 as shown on modified schematic and drawing No. A-152. (This modification is only necessary if the receiver is to be used with the dual diversity combining unit, TMC Model DCU).

Modification of IF Output V16A.

Step 4: Remove L53 and C147. Unsolder end of C146 and R80 which connects to pin 6 of V16A. Connect both to E5. Connect R-404 from pin 6 to E5 tie point of C146 and R-80 and solder. Connect C-409 from pin 6 to J2 and solder both ends.

Connect C-410 from pin 8 to lug 6 of E15 ground. Remove C-145. Connect C-411 from pin 7 to stand-off supplied, TE-102-2, which must be mounted between V16 and V14 and connect green lead supplied from tie point of C-411 on TE-102-2 to tie point of R56 and R57 of T5. Refer above modification to drawing No. A-160.

REAR CHASSIS MODIFICATION

Step 5: Remove R74 and mount J302 in its place. Ground pin 7 of V12 and connect C301 direct to J302, making ends of capacitor as short as possibl . Remove relay receptacle, leaving ends together as removed, then insulate with two small wire nuts, which are furnished.

Unsolder one end (lug 5 of E15) of C-143, which connects to shielded cable of phono input terminal board in rear of chassis, and connect to pin 6 of V17. Connect C302 from lug 5 of E15 (with green spaghetti each end-supplied) to lug 3 of E3, new terminal board rear of chassis.

Connect a shielded lead from lug 2 of E3 to pin 6 of V17, and solder. Connect a jumper lead from lug 4 of E3 to tie points of C140 and R60, as shown on A-151. Ground lugs 1 and 5 of E3 to ground lug which is mounted under E3 mounting screw, which is also furnished. Instructions for mounting terminal board E3 and J302 are shown on drawing No. MS-150 and A-252.

BFO Adapter Assembly A-129

Step 6: Each receiver will be supplied with an adapter type unit for relocating the BFO for convenience in removing and re-installing the BFO tube. This modification unit relocates the BFO tub alongside th tuning unit RF head and is placed parallel with V1 above the chassis It is mounted by two 6-32

screws which support the tuning head plate. The BFO unit is then wired electrically through a cable with a small type plug, which then plugs into the original BFO tube socket. The plug will have a shield over it, which will also hold the plug in the socket, and will prevent any unwanted interaction which may occur. Upon completing the above modification, it is recommended that the BFO calibration be rechecked, as explained in the instruction manual. The above unit is shown on drawing No. A-129.

Modification of Injection - HFO Unit

Step 7: On the top side of the receiver, near V4, there is located ceramic feed-through. The present internal connection is cut. This may be accomplished by inserting a small pair of scissors into the trimmer openings alongside, and cutting the connection as far down as possible. This may also be done with a long needle-nose pliers. Connections shown on drawing No. ID-104. An insulated wire, #22 buss, is connected to C1H and fed through physically, to the feed-through and should be as short as possible. The capacitor is accessible by removing the RF head top cover plate. In this same region, the grounded end of C80 may be observed where it is connected to a ground terminal projection near the capacitor tie point mentioned above.

Note that C80 does not appear on the modified schematic. Ground end of C80 must be cut loose, close to capacitor body and may be left hanging. Be sure that the capacitor is dressed away from any other points which may place it in circuit again.

HFO Assembly Installation

Step 8: The HFO assembly is then mounted on the sub-panel. The switch being installed in the already existing hole, directly to the left of V4, looking at it from the rear of the receiver. The wiring cable which feeds through the bottom of the HFO amplifier assembly is laid down between the main chassis and the RF section to the underside of the chassis. Mounted on the underside of the chassis will be found a terminal strip E13 located near the chok s L51 and L52, drawing No. A-152.

It may be observed that there is a jumper between lugs 2 and 3 of the strip. This jumper served to impress the regulated 150V on the plate of V4. In slave operation, the switch in the HFO assembly removes the 150V. from th plate of V4. Hence, for modification, remove jumper and connect the orange lead to lug 2, which will also have a red lead with white tracer, connected to it. Remove the two red leads with white tracer from lug 3 and connect them to the terminal strip provided, which will be installed under one of the mounting bolts of L51. Connect R405 from this point to lug 3. Connect C406 from lug 3 to ground terminal of V13.

Connect C407 from lug 4 to lug 8, which is ground. Connect C408 from ti point of R405 on terminal strip provided, to ground terminal of V13. Connect C404 from lug 7 to ground lug provided, mounted on C161 mounting strap.

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Connect brown lead from HFO assembly to lug 7, which is 6.3 fil., and black lead to lug 1, which is ground. Connect red lead from HFO assembly to tie point of R405 and C406 to lug 3 of E13.

All mechanical parts and location shown on drawing No. ID-105 and ID-106. A coupling linkage and shaft must be installed for switching to Master-Slave operation. A 3/8" hole shall be required for above modification, top right of receiver above Beat oscillator knob. Install shaft and front panel bearing supplied. The accompanying name plate for switch indication is fastened to panel by setting it under the front panel bearing.

Completion of Modification

Step 9: The receiver must be re-aligned to Recover calibration. For single unit operation, a jumper must be connected across terminals 2 and 3 of E3. A load resistor must be connected across the 600 ohm output terminal board, rear of chassis. This resistor should be on the order of 600 ohms, 2 watt; or speaker having a 600 ohm load may also be used.