

FEBRUARY 11, 1971

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-1

VFO DRIFT

The vfo coil has been changed to improve the drift problem experienced in many units. The old coil [PN 40-810] should be replaced by the new coil [PN 40-1976] whenever a unit displays excessive drift. This has been made a permanent change in all future production.

SEPTEMBER 14, 1972

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-2

REPEATED HETERODYNE OSCILLATOR TUBE FAILURE INADEQUATE USB-LSB FREQUENCY DRIFT

Change: R-212 from 220 Ohm to 330 Ohm 1/2 watt resistor [PN 1-4]. Lack of VFO shift range can be corrected by changing the value of the FET source resistor.

Change: R-947 from 470 Ohm to 1000 Ohm [PN 1-9].

FEBRUARY 16, 1973

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-3

CARRIER NULL CONTROL FAILURE

Recently an improved mounting method was devised for the [PN 10-147] controls in kit models SB-102, SB-401 and HW-101. Current production utilizes a fiber washer for greater clearance and the case of the control is grounded by a separate wire. We are anxious to know if this will reduce the failure rate. Please make note of any change, good or bad, and keep us posted.

OCTOBER 29, 1973

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-4

LOW OUTPUT ON 40 METERS

1. **REMOVE** the 1-1/2" bare wire from hole 1 on the **DRIVER PLATE** circuit board & the ground foil of the **RF DRIVER** board.
2. Connect a 3/4" bare wire between the ground foils of these same two boards.
3. **REMOVE** the 1-3/4" bare wire from hole 1 in the **DRIVE GRID** circuit board & the ground foil of the **RF DRIVER** board.
4. Connect a 3/4" bare wire between the ground foils of these same two boards.
5. **REMOVE** the 2-3/4" bare wire which ties the ground foils of the circuit boards to the shields.
6. **REMOVE** the coil cover. Then **REMOVE** four of the light spring clips & their hardware as shown:

[[[NOTE: The pictorial shows removal of the set of clips & hardware located directly down from the 2 holes in the cover; the other set to be removed is directly across and down from the 3 holes in the cover.]]]

7. Readjust the driver grid & drive plate coils as instructed in the HW-101 manual.

MAY 23, 1974

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-5

ALTERNATE METHOD OF NEUTRALIZING THE FINAL AMPLIFIERS

NOTE: Be sure unit is off and power supply high voltage capacitors are discharged.

1. Disconnect final plates and screen grid. **
2. Turn unit on.
3. Rotate the band switch to 28.5.
4. Place the VTVM RF probe in the antenna connector.*
5. Set the function switch to tune.
6. Rotate the level control fully clockwise.
7. Adjust the preselector control for a maximum indication on the VTVM.
8. Adjust the final control for a maximum indication on the VTVM, with the load control set at the 50 ohm position.
9. Using an insulated screwdriver, adjust neutralizing capacitor for a minimum indication on the VTVM.
10. Readjust the neutralizing capacitor for a minimum indication on the VTVM.
11. Turn the function switch to the off position.
12. Discharge high voltage power supply capacitors.
13. Reconnect final plates and screen grid.

* VTVM and RF probe will be needed.

**To remove screen voltage in SB-100, HW-100 and HW-101 disconnect R920 [100 ohm resistor] from buss wire between pins of V8 and V9. In the SB-102 removal of accessory plug is all that's required. To remove high voltage in SB-100, SB-101 and SB-102 disconnect red wire at lug 4 [in SB-100 lug 3] of terminal strip BK that goes to grommet BL. In HW-100 and HW-101 disconnect red wire going to lug 1 of RF choke in final cage.

NOTE: Take adequate steps to eliminate any possible contact with B+ or B+ shorts to chassis after disconnecting wire and resistor.

MAY 23, 1974

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-6

SB & HW SERIES AUDIO PREAMPLIFIER & VOX CIRCUIT TROUBLESHOOTING GUIDE

It is assumed that the basic steps such as making DC voltage measurement, checking tubes & reviewing the soldering have been completed.

The following information was compiled from the above transceivers in the 80M LSB position. The mike level control was at the 9:00 o'clock position.

AC signal voltages are listed below. These voltages were measured from the microphone connector through the VOX circuit. All measurements were made with a VTVM. A microphone or audio generator for .1V @ 1KHZ can be used as the signal source.

Mike Connector Lug 1	.1VAC
Pin 2 of V1	.02VAC
Pin 6 of V1	10-15VAC
Pin 6 Level Control	10-15VAC
Pin 5 Level Control	.5VAC
Pin 9 of V1	.2VAC
Pin 8 of V1	.1 - .3VAC
Center Arm of VOX Sensitivity Control	5-15VAC
Pin 7 of V17	5-10VAC
Pin 6 of V17	40-50VAC
Junction of C211-D201	40-50VAC
Pin 9 of V12	9-15VAC

By tracing the AC signal from stage to stage the point of trouble can be isolated & steps taken to correct it.

POSSIBLE TROUBLE AREAS

- Check each of the shielded cables for a possible open or poorly grounded shield.
- Check for continuity through each of the shielded cables.
- Check for a proper ground at the mike control level.
- If the frequency response of the audio stage is not within specifications check the values & installation of C1, C2, C3 & C9.
- A change in VOX delay after operating for a period of time can be caused by leakage in diode D201. The other possibility is a change in value of capacitor C213. Either component could experience a change in operation characteristics due to heat.

MAY 23, 1974

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-7

SB & HW SERIES INSTABILITY & CORRECTIVE INFORMATION

We suggest you check for each of the following possible causes:

1. Intermittent, rosin or cold solder joints.
2. Loose hardware at the tube sockets, terminal strips, circuit boards, shields and rear panel sockets.
3. Poor lead dress at tube sockets V8 & V9. The component leads must be short as possible.
4. Check C925 (Final tune capacitor) to be sure it is isolated from the tuning shaft. This is to prevent RF from traveling on the shaft to the front panel.
5. Check all edges of the final enclosures for proper grounding to the main chassis.
6. Check the hardware for the side rails to be sure a good ground is being provided.

7. Be sure that all the ground clips on the coil cover are making good contact with the switch shields.
8. Check the soldering of the switch shields to the center pins of tube sockets V6, V7, V10 & V11.
9. Check the ground leads from the switch board & shields, to be sure they are going to ground foil & not to the preselector capacitor foil pods on the RF driver board.
10. Check for broken or shorted pigtailed on each of the shielded cables in the unit.
11. Check RFC801 & L901 for any signs of deterioration or physical damage, (burn spots). If apparent replace the part.
12. Improper adjustment of the Het. Osc. coils could cause improper mixing action, resulting in the final operating at a different frequency appearing as instability.
13. Change driver & final tubes then reneutralize per manual instructions.
14. Check driver tube shield to be sure that it has a good ground contact with the socket spring clip.
15. Check for a good ground between the front panel & chassis.
16. Check the SWR of the antenna system at the frequency of operation. Should be below 2:1.
17. Check the antenna coax for leakage, poor connectors & broken shield connections.
18. Is the transmitter properly grounded?
19. Be sure all shields & tube shields are installed.
20. Realign using a properly terminated 50 ohm non-reactive dummy load. **NOTE:** This does not include a light bulb.
21. Check for normal Het. Osc. test-point voltage.
22. Check for proper LMO injection voltage 1.0-1.5 VRF.
23. Check for a high AC ripple content in the LV-B+, HV-B+ and bias voltages from the power supply.
24. Check to be sure that the shafts do not touch each other in the insulated coupling, and that the set screws do not touch the PA shield.
25. Check to be sure that the PA tune shaft turns the variable capacitor & is not slipping in the insulated coupling.

 DECEMBER 18, 1974

HW-101
 SSB TRANSCEIVER

BULLETIN NO:
 HW-101-8

OSCILLATIONS OR LOW DRIVE

Loose boards cause sporadic self oscillations & unstable RF conditions, particularly at the high [15 & 10 meter] bands. The comb brackets which have been used are aluminum & could not be soldered. Steel brackets are now available [PN 204-2096] & should be used whenever encountered in the field. Both the switch shields & the driver boards should be soldered to these brackets.

This change helps to increase grid drive as well as increase stability.

 MAY 2, 1975

HW-101
 SSB TRANSCEIVER

BULLETIN NO:
 HW-101-9

SELF OSCILLATIONS OCCURRING AFTER INSTALLATION OF STEEL COMB BRACKETS

It has been found that in a number of units, self oscillations are still occurring after installation of both steel comb brackets [PN 204-2096]. To correct the condition, the screws around the RF driver board must be tightened securely. Also, the lockwashers between the circuit board & chassis must be installed, otherwise a good ground is not assured. Retightening screws which are already snug will also cause these oscillations to disappear in units where it is a problem.

 MARCH 26, 1976

HW-101

BULLETIN NO:

S-METER DRIFT

To bring the meter drift to an acceptable level, install the following:

CHANGE: R107 from 100K Ohm 1/2 Watt to 100K 1 Watt
[PN 1-28-1]

This makes the voltage divider string more stable with temperature changes caused by internal heating.

This change will be made in future production runs.

NOVEMBER 15, 1976

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-11

LOW RECEIVER SENSITIVITY

NOTE: Sensitivity of the unit is worse on the higher frequencies [15] & [10] meters.

CURE: Diode D907 may be in backwards or banded backwards.

JANUARY 14, 1977

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-12

IMPROPERLY MANUFACTURED 6HS6 TUBES

Some 6HS6 tubes supplied with the HW-101 were improperly manufactured with the suppressor grid and cathode pin outs interchanged. These tubes will glow brightly when power is applied.

All of these tubes, with this trouble, have been removed from stock. Any new 6HS6 tubes ordered from parts replacement will be okay.

Some HW-101 kits will temporarily have 6AU6 tubes substituted for the 6HS6 until production quantities of the good tubes are available.

APRIL 13, 1977

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-13

GERMANIUM DIODE CHANGE

The seven germanium diodes [PN 56-26-1] used in this kit are selected [PN 56-26] diodes. They are selected for low reverse-current characteristics.

Due to the low percentage of the tested diodes meeting the low reverse-current spec, the germanium diodes in this kit are being changed as follows:

CR1, CR2, CR3 and CR4 in the Balanced Modulator circuit are being changed to [PN 56-87] hot-carrier diodes.

CR901, CR941 and CR201 are being changed to non-selected [PN 56-26] diodes.

Install these changes only when needed.

APRIL 28, 1977

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-14

IMPROVE ALC ADJUSTMENT

Remove: R202 (10 k ohm) and replace with a jumper wire.

JUNE 2, 1977

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-15

DRIVER AND MIXER SWITCH SHIELDS WILL NOT TAKE SOLDER

The two switch shields which have a zinc coating, will not take solder. To correct this, the coating on these shields has been changed to a "lustre lite" coating. The part number of the shield remains the same, [PN 206-519]. The new shields can be identified by the "gold" color.

Any switch shield that will not take solder should be changed to the newer-type shield.

AUGUST 23, 1977

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-16

SIDE TONE TOO LOUD

Complaints are being received that the side tone is too loud when using headphones with this unit. To reduce the side tone level,

CHANGE: R326 from 1 Megohm to 3.3 Megohm [PN 1-38].

SEPTEMBER 28, 1977

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-17

TRANSCEIVER OSCILLATES IN TRANSMIT WITH THE MIC KEYED

If it is not possible to null the carrier and get more than ~25 watts with the microphone keyed and the mic level turned down, V12 [PN 411-124] may be causing the transmit mixer to oscillate. The mic level control will operate nearly normal in tune, but will exhibit normal control over the first 75% of the rotation and will decrease the output over the last 25%.

If V12 is an Elmenco tube, replace V12 [PN 411-124] with a GE tube. (**NOTE:** If a GE tube is not available, it may be necessary to try several Elmenco tubes for a satisfactory result.)

JANUARY 20, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-18

**RF CHOKE IN FINAL PLATE CIRCUIT OVERHEATS OR
DIFFICULT TO NEUTRALIZE ON 10 AND 15 METER BANDS**

6146B tubes in the final amplifier may be causing this problem. To correct, replace with 6146A tubes.

A label will be installed on the back panel of the HW-101 recommending the use of 6146A tubes only. The 6146B tubes should not be used as a replacement.

FEBRUARY 2, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-19

VFO SHIFT

The trimmers on the VFO tuning capacitor tend to align at their minimum capacitance. Therefore, the head of the screw may not be under sufficient pressure against the spring plates of the trimmers, and intermittent frequency shift can result. Changing C947 from 56 to 47pf NPO [PN 21-147] will allow the trimmers to tune to a point with tighter compression.

FEBRUARY 3, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-20

LOW POWER OUTPUT, S-METER DRIFT, ETC

The #44 pilot lamps presently used in the unit unbalance the series-parallel filament line because of their 250ma current requirements.

In each unit service, change the pilot lamps to type #47 [PN 412-11].

This change will be incorporated in future runs.

MARCH 31, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-21

DISTORTED AUDIO, NO CARRIER NULL OR ERRATIC POWER OUTPUT IN VOICE MODE

This problem may be caused by V1 oscillating at approximately 65KHZ, especially if a "GE" brand tube is used at this location.

To correct,

INSTALL: .005 uf capacitor [PN 21-57] in parallel with the .2 uf capacitor at C3.

Install only as needed.

APRIL 14, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-22

RELATIVE POWER METER PEGS ON 15 AND 10 METER

Diode CR-901 [PN 56-26] should be mounted on terminal strip BR with 1/2" leads. This introduces a slight amount of inductance into the circuit, which cures the problem.

The next manual level will include this instruction.

JUNE 5, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-23

RELAYS REMAIN ENERGIZED AFTER TRANSMIT CONDITION

After keying the transceiver with PTT for thirty to forty seconds, a positive voltage in excess of 10 volts appears at the control grid, pin 9 of V12, thus keeping the relays energized.

To correct the problem, replace V12 [PN411-124]. IEC Brand tubes have been found defective in several cases, but other brands may also cause this problem.

JUNE 5, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-24

POOR AGC ACTION

Leakage in the 6HS6 tubes [PN 411-247] at V10 and/or V11 has been found to cause:

- poor AGC action
- Fast S-meter decay
- poor sensitivity when RF gain control is fully clockwise.

This usually occurs after warmup of at least an hour. A positive voltage, usually over 1 volt, will appear at the grid, pin 1, of either one or both tubes.

Replacement of the tube with the positive voltage corrects the problem.

JUNE 5, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-25

100 KHZ CALIBRATOR SPURS

Strong signals may occur at other than 100khz points.

Look at the calibrator output [ahead of output diode] with an oscilloscope. Use high input gain and a slow sweep speed. If the upper portion of the sine-wave signal appears choppy or uneven, the Y201 crystal may be at fault.

After installation of a new crystal [PN 404-43], recheck with oscilloscope.

AUGUST 3, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-26

RECEIVER RECOVERY SLOW

THIS BULLETIN OBSOLETE. REFER TO BULLETIN NO: HW-101-36 DTD OCTOBER 10, 1978.

JULY 24, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-27

ERRATIC VFO TUNING

Erratic tuning can be caused by an intermittent electrical contact in the vernier drive of the tuning capacitor. This causes a change in the ground path from the capacitor frame. This affects the capacitance and subsequently, the tuning.

To prevent this, solder a heavy gauge wire or braid from the stop stud to a solder lug under the closest mounting screw. This provides a suitable short ground path from the capacitor frame to ground.

JULY 24, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-28

CARRIER NULLS WITH IC14 TRIMMER PLATES COMPLETELY MESHED

If C14 nulls the carrier with its plates fully meshed toward V2 [to the right], relocate C18, 12pf capacitor, to the other section of the null trimmer [C14].

JULY 24, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-29

POOR PRESELECTOR TRACKING

This problem is more noticeable on the 10-meter band. It may be caused by the drive belt slipping or by one of the variable capacitors not turning due to excessive friction in its bearings.

Check the belt for being loose or worn and replace as needed. Lubricate the bearing of the variable capacitors.

If lubricating the capacitor bearings does not allow the rotor to turn freely, replace the capacitor [PN 26-122].

AUGUST 1, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-30

LOADING CAPACITOR TURNS AS PLATE CAPACITOR IS ROTATED

This problem can be caused by:

- Insufficient friction in the loading capacitor or;
- Excessive friction between the plate and load tuning shafts.

If the problem persists after freeing and lubricating the shafts, install a rubber grommet [PN 73-3] on the loading capacitor shaft between the pulley and the RF cage. Apply slight pressure to the grommet as the pulley set-screw is tightened. This will add enough friction to keep the loading capacitor still while tuning the plate control. Use only as needed.

AUGUST 3, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-31

RELAYS CHATTER IN VOX MODE

This may occur when the VOX gain is in the near-full CW position with the MIC level advanced past the 12 o'clock position. Also, the unit will not return to receive when the operator stops talking.

Check the tube at V1. A "GE" tube will tend to oscillate, thus causing the above problem. Other 6EA8 tube brands should operate properly at V1.

AUGUST 3, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-32

"CHIRPING" AND SLOW RECEIVER RECOVERY

If "chirping" of the audio in the receive mode and slow recovery of the receiver after long periods of transmitting are encountered, remove the cover of RL2 and check for carbon buildup at the base, just below the contact. Clean dirt or carbon tracks, or replace if necessary.

A dirt or carbon buildup will cause the +300 volts to be applied to adjacent contacts such as the bias or AGC lines, adversely affecting receiver cutoff by upsetting the operation of 1] V12, receiver mixer; 2] V10, RF amplifier; and 3] V11, first receiver mixer.

AUGUST 21, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-33

ALC METER READS BELOW ZERO

If the ALC meter reads below zero on SSB transmit and low on voice peaks, perform the following:

- Install a 2K ohm resistor [PN 1-90] between lug 1 of relay 1 and the center lug of the S meter zero adjust control.

For fussy customers, a 10K ohm trim control [PN 10-312] may be used for exact zeroing on both transmit and receive.

AUGUST 22, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-34

S METER DRIFT

If the S meter drops below zero and pins after 1/2 hour of operation, there may be leakage in one or more of the following tubes: V3, V4, V10 or V11. New RCA tubes may exhibit the same problem. The following procedure will aid in finding the leaky tube:

1. Disconnect R415 to isolate V3 and V4 from the AGC line. Monitor the control grid at P1 of V3 for several minutes. If the voltage drifts in the positive [+] direction, V3 or V4 is leaky. Proceed to step 2. If the voltage remains stable, go to step 5.

2. Remove the white/blue wire from pin 2 of T102 and repeat the test. This will isolate V4 from V3. If the voltage still drifts, V3 is at fault.

3. To verify, reconnect the white/blue wire and then disconnect R101. Monitor the voltage at pin 1 of V4. The voltage should remain stable.

4. Reconnect R415 and R101.

5. Disconnect R408 and check the voltage at pin 1 of V10. If voltage drifts, replace V10. If the voltage is stable, replace V11.

6. Reconnect R415 and R408.

Straight substitution with new tubes may not work if more than one tube is causing the problem, since even a small leakage can cause the drift. When you replace a tube, check for stable voltage at its control grid. Replace with the tube which gives most stable voltage.

SEPTEMBER 26, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-35

POOR IF SENSITIVITY

Check C101. It may have inadvertently been wired to point 2. It should be wired to point 15. It is an "easy-to-overlook" wiring error that would cause the transceiver to have low IF sensitivity which would result in poor receiver sensitivity and low power output.

OCTOBER 10, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-36

RECEIVER RECOVERY SLOW

This is an improved method of grounding the PA tube screens in receive mode. The screens will now be grounded through the unused contacts of RL1, independent of the action of RL2.

Complete the following wiring changes:

1. Disconnect the WHT-ORG-ORG lead from RL2, lug 7 and reconnect it to RL1, lug 10.
2. Connect RL1, lug 2 to ground.
3. Connect a wire to RL1, lug 6 to RL2, lug 7.

This Bulletin will supersede TEB-100-12 dated August 3, 1978.

At R11, the PA screen connection [Lug 10] will always break from the +300 volt supply condition [Lug 6] before the screens are grounded by lug 2 in receive condition [de-energized relay]. This eliminates the possibility of the +300 volt supply momentarily being shorted to ground during transition from transmit to receive.

This modification is **NOT/NOT** for the SB-100, SB-101 or SB-102 transceivers.

OCTOBER 11, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-37

R940 SHORTING TO SHIELD

To prevent the leads of R940 shorting to ground, install a length of sleeving [PN 346-1] on each lead of R940.

This will be incorporated in future production.

OCTOBER 13, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-38

POOR CARRIER SUPPRESSION

The HW-101 carrier suppression specification is -45db or below. If the carrier cannot be nulled on both USB and LSB to this level, try changing R9 on the modulator board from a 1K Ohm to a 390 Ohm [PN 1-48].

This change will reduce the injection level to the balanced modulator and hence reduce the carrier suppression level.

NOVEMBER 20, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-39

IDENTIFICATION OF THE 6146A TUBES

The 6146A tubes [PN 411-75] used at V8 and V9 of this unit are marked '6146A' in white ink on the side of the tube. These tubes may also have '6146B' etched in the glass. These tubes have been reworked by G.E. and are acceptable for use in the HW-101. Most tube cartons will contain the following insert to explain the situation to the customer:

***IMPORTANT INFORMATION;
THE TUBE SUPPLIED WITH THIS NOTICE IS TYPE 6146A, AS PRINTED ON ONE SIDE OF
THE TUBE, EVEN THOUGH THERE MAY BE A 6146B ETCHED ELSEWHERE ON THE TUBE
ENVELOPE.***

ALWAYS REPLACE V8 AND V9 WITH 6146A TYPE TUBES

Replace the backing from this label and place the label at any convenient location inside the cabinet top.

NOVEMBER 28, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-40

NOISE OR STATIC FROM SPEAKER WHEN CHASSIS TAPPED LIGHTLY

If noise or static is heard from the speaker when the chassis is lightly tapped, check for intermittent tubes, cold solder connections, or intermittently shorting filaments in the pilot lamps by tapping each lamp lightly. This produces noise in the filament supply but usually will not produce any difference in the lamp brilliance.

DECEMBER 11, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-41

RELAY CHATTER IN ANY SETTING OF THE VOX SENSITIVITY CONTROL

If the relays chatter in the VOX mode, try performing the procedures in BULLETIN'S HW-101-13, -31 and -38. If these changes do not correct the problem, perform the following:

1. With a scope, check for excessive noise at the junction [point 8] of R213 and R214. Any noise on the white-red-red wires coming from the mode and function switches will override the reverse bias to D201, thus activating V12B.
2. Replace the two white-red-red wires with shielded cable [PN 343-15].
3. Ground the shields to a ground foil near the junction of R213 and R214.

DECEMBER 27, 1978

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-42

UNIT "WARBLES" WHEN CHASSIS IS TAPPED

This "warble" has been traced to the VFO assembly. This occurs especially when the leads of the C946 and C953 capacitor combination is too long, enabling the capacitors to vibrate.

To solve this problem, glue the top of C946 [4700pf] to the chassis wall of the VFO assembly. The glue [PN 350-12] may be used.

January 24, 1979

HW-101
SSB TRANCEIVER

BULLETIN NO:
HW-101-43

POOR SENSITIVITY OR GRID OR PLATE DRIVER COILS WILL NOT TUNE

Check the lugs that are nearest the chassis and verify that they are not folded under the capacitors; thus shorting them out.

January 25, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-44

NO GROUND PIN ON TUBE SOCKETS AT V10 AND V11

The 7-pin tube sockets [PN 434-112] now used at V10 and V11 on the RF driver circuit board do not have a ground pin in the center. Only the 7-pin socket [PN 434-129] at V6 on this board uses a ground clip.

February 16, 1979

HW-101
SSB TRANSCEIVER

Bulletin No:
HW-101-45

VFO WILL NOT ADJUST PROPERLY

If the unit will not track at 0 and 500, or if it will track at 0 and 500, but the error at 100, 200, 300, 400 is greater than specifications, then make sure the slug in the VFO coil is adjusted to the lower of the two peaks. To check, insert the shorter end of PN 490-1 tuning tool into the coil. The body of the tool should just touch the top of the coil form. If it sticks out a half inch, the coil is at the wrong peak. Turn slug into coil and readjust tracking.

April 25, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-46

LOW POWER OUTPUT; POOR VOX SENSITIVITY

It has been determined that Sylvania, RCA and Westinghouse brand tubes do not function properly at locations V3 and V4.

The brands found to work at these locations are: EL-MENCO, IEC, General Electric and Realistic.

Westinghouse tubes at other locations through the unit may cause low power output and VOX problems. It is suggested not to use Westinghouse tubes at all.

May 15, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-47

DRIVER PRESELECTOR WON'T PEAK FOR FULL OUTPUT AT 7.0 MHZ

Driver Preselector Won't Peak For Full Output At 7.0 MHZ

When aligned the 40-Meter driver grid/plate coils at 7.2 MHZ with the driver preselector control at the 12 o'clock position, there may not be enough grid drive for full output when tuned to 7.0 MHZ. The preselector will be full CCW without peaking.

To correct, realign the 40-Meter driver grid/plate coils with the VFO set at 7.2 MHZ and the driver preselector control set to the one o'clock position.

At 7.3 MHZ, the driver preselector will still peak before reaching full CW.

May 15, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-48

PEC [PN 84-22] NO LONGER USED

The next production run of HW-101's will use discrete components instead of the PEC at V15A since the manufacturer will no longer supply this part. However, the parts replacement department has a three year supply of these on hand, so continue to order the PECs if an older unit requires one.

May 15, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-49

CHANGEOVER TO 6146B FINALS

The 6146A final amplifier tubes are no longer available from the manufacturer. Future production runs will use the 6146Bs. These are GE brand tubes and have been tested in the HW-101. No difficulty was encountered in neutralizing the finals; nor did the RF choke in the final plate circuit overheat. The tube replacement label [PN 390-146] should be removed from all units brought in for service.

July 30, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-50

R940 OVERHEATS

In new units, R904 100 ohm [PN 6-101] is a film-type resistor. During installation, the body of the resistor may rub against the driver shield, resulting in the resistor shorting to the shield. When installing a new resistor or preworking the unit, position this resistor away from the shield.

July 30, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-51

OPERATION OF MODE SWITCH TRIPS VOX

Dress wht-org-org lead from foil side of modulator board away from V1 foils.

If dressing of this lead fails to correct the problem, install filter in line with wht-org-org lead. Use the unused foil at point "A".

(((Shows .024uf connected from wht-org-org to ground --- 2.2K ohm resistor in line going to RI)))

August 15, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-52

VFO STOPS WORKING AT HIGH END OF ALL BANDS

This problem occurs in all modes except LSB. In LSB, the VFO operates okay.

To Correct:

Change: R947 from 1000 ohm to 470 ohm [PN 6-471]

Add: [PN 56-56] diode from gate of Q941 to ground; anode of diode to gate.

September 20, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-53

LOW TRANSMITTER OUTPUT; LOW RECEIVER SENSITIVITY

When cleaning the unit during prework [tube sockets, potentiometers, etc.], don't overlook the SSB/CW filter slide switch located with the RF gain control. This switch handles both transmit and receive signals and dirt and grease build-up can affect the performance of both functions.

September 27, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-54

RECEIVER AUDIO TROUBLESHOOTING INFORMATION

Equipment needed:

Audio Signal Generator

Oscilloscope
01uf capacitor 500 volts or greater [PN 21-16]

Procedure:

- connect a 4 ohm load to the speaker jack.
- set the AF gain control full clockwise.
- set the generator to 1 KHZ at .01 volt RMS
- connect the generator to V13, pin 7 through the .01uf capacitor.

The signal voltages for the points listed should compare with the values given below:

Pin 1 of V14 = 50mv p-p
Pin 9 of V14 = 1.5v p-p
Pin 8 of V14 = 1.5v p-p
Pin 6 of V14 = 35v p-p
Speaker Jack = .6v p-p

Add these voltages to your shop schematic.

November 19, 1979

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-55

AVC DECAY TOO FAST; S METER DROPS TOO QUICKLY

Check for open R117 [PN 6-332]

When replacing this resistor, be sure to dress it away from the AVC wire ends protruding from the IF board to insure that the wire ends will not pierce the resistor's film coating.

JANUARY 21, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-56

LOW GRID DRIVE ON CERTAIN PORTIONS OF ONE OR MORE BANDS

The cause may be an improperly aligned or intermittent 8.395 - 8.895 Mhz bandpass filter, T202 [PN 52-65].

An alignment problem can be corrected by sweep aligning T202.

Equipment Required:

Post/Marker Sweep Generator (IG-5257 or equivalent) with Demodulator Probe (IG -5257) and Attenuator.

Oscilloscope (IO-4550 or equivalent).

RF Generator (MS-27 or equivalent).

Procedure:

- Unsolder T202's two mounting lugs on the bottom of the Bandpass circuit board.

- Turn the unit over and remove the screw from the top of T202. Remove the shield from T202.
- Connect your equipment as shown below:

[[Shows the RF Generator (set at 5.5mhz) connected to the Marker/Sweep Generator (set at 4.5 Mhz marker on and Lo Sweep), which is in turn connected to the O-scope. The Attenuator is connected to the Sweep Generator.]]

- Connect the demodulator probe's red lead to C402 (lead closest to front of transceiver); black lead to ground.
- Unplug the coax cable from the VFO (LMO) and connect to the attenuator (set to 0 dB).
- Set the controls and switches as follows:

RF Generator	
Frequency Dial.....	5.5 Mhz
Marker Sweep Generator	
4.5 Marker.....	ON
Trace.....	FCW
Sweep Range.....	LO
Unit Under Test	
Mic Level.....	FCW
Preselector.....	FCCW

- Key the transmitter and adjust T202 for a wave form similar to the one shown.

[[Base ref line graduated, starting at 4.5mhz - 4.75 - 5.0 - 5.25 - 5.5; Vertical plane is defined .1V - .2V - .3V. The waveform rises to .2V (TOP TRIMMER)/4.75 Mhz, remains steady till approximately 5.25 MHz/.3V which indicates (BOTTOM TRIMMER). Trace then drops back down to .2V where at approximately 5.5 Mhz, (MIDDLE TRIMMER). [this is just prior to the trace dropping back to the base line]]

JANUARY 21, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-57

RELAY CHATTER IN VOX MODE

This can be caused by the 0 to -50 Volt pulse at pin 9 of V1B when switching from transmit to receive. This is fed back to the VOX circuit through the MIC control.

Perform the suggestions in TEBs HW-101-31 and HW-101-41. If this doesn't correct the problem, then install two 0.1 uF capacitors [PN 27-28] across R308. This will reduce pulse rise time and improve VOX operation. **Note:** In some older transceivers, it may be necessary to add a higher value capacitor; perhaps as high as 0.47 uF.

Perform this modification on an "as-needed" basis.

JANUARY 21, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-58

RECEIVER OSCILLATIONS

The following symptoms may be present:

- The S meter deflects upscale when the CW filter is switched in.
- Oscillations occur with the RF Gain control at maximum and the Bandswitch is changed.
- Oscillations may die out after three to four minutes.

To correct, retune T103 [PN 52-79] to it's top peak. (This may also give you more audio output.)

MARCH 7, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-59

FINALS WILL NOT NEUTRALIZE; C913 AT MAXIMUM CAPACITY

Check for missing bare wire between Driver Plate board and RF-Driver board at location shown in drawing below.

[[Looking down at the RF-Driver Circuit Board - the Driver Plate Circuit Board is 'bonded' to it, by the short bare wire at a location on the PCB's approximately half-way between the right side of the chassis and the switch shaft that passes through the Driver Plate CB]]

If the bare wire is missing, install a 11/16 inch large braid [PN 345-1] between these two boards. If a bare wire is already installed, replace with the braid to improve reliability.

In either case, be sure the braid doesn't short to adjacent foils.

APRIL 10, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-60

RF MOD IN CQ MAGAZINE

The March, 1980 issue of CQ Magazine ran an article on interfacing the HW-101 to a Drake 2B receiver. Among other things, the article implied that Heath Company is supplying an RF gasket and metal inserts to replace the rear panel nylon inserts to correct an RF leakage problem from the back of the HW-101 during transmit.

This has been generating numerous phone calls to Technical Consultation from customers wanting the modification parts; whether they have RF leakage problems or not.

Currently, Heath does not offer such a modification for the HW-101 since Tech Consultation or Engineering has no evidence of any severe RF leakage problems.

If you discover that an HW-101 has rear panel RF leakage while you are servicing it, you can correct it by connecting a three inch length of braid [PN 345-1] between two solder lugs [PN 259-1] and mounting it on the rear cabinet top and rear panel on the transceiver. Be sure to sand the area around the solder lug on the cabinet top. Refer to the pictorial below.

[[Pictorial shows the 3" braid as stated above - connected in the center of the rear flange of the top cover to the middle of the rear back plane of the chassis]]

Perform this modification on an "as-needed" basis and only if standard servicing procedures do not correct; re:, lockwashers between the RF driver board and chassis, tube shields at V6 and V7, all hardware tightened.

JUNE 20, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-61

PARASITIC OSCILLATIONS

Parasitic oscillations occurring in the HW-101 may be caused by excessive component lead length. The leads of the components installed on V8 and V9 tube sockets should be kept to a minimum and dressed as shown in the pictorials below.

[[Pictorials indicate a direct-path method of interconnectivity, keeping component lengths at their minimum]].

JUNE 20, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-62

PHASE SHIFT CIRCUIT BOARD PARTS LIST

The following components are being used to replace the PEC [PN 84-22] at V15A in the current production run of the HW-101. This list is intended as a quick reference when servicing the newer transceivers. Continue ordering [PN 84-22] if the PEC must be replaced on older units (re: Bulletin No. HW-101-48).

Circuit Comp. No.	Description	Heath Part No.
-----	-----	-----
C331	0.01 uF ceramic disk capacitor	21-16
C332 thru C336	470 pF mica capacitor	20-128
R341 thru R346	470 kilo Ohm, 1/2 watt resistor	1-33
	Phase shift circuit board	85-2138-1
	"F" connector (3 qty.)	432-734

AUGUST 12, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-63

VOX DELAY TOO SHORT

Change: C213 from a .2 uF capacitor to a .47 uF capacitor [PN 27-61].

AUGUST 13, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-64

LOAD CONTROL SQUEAKS WITH TEB HW-101-30 MOD INSTALLED

Install a 1/4" flat fiber washer [PN 253-62] between the grommet and the RF cage. Make this change only to units with the modification described in Bulletin No. HW-101-30.

AUGUST 21, 1980

HW-101

BULLETIN NO:

SSB TRANSCEIVER

HW-101-65

CW SIDETONE INOPERATIVE

This problem will occur only in units that use the phase shift circuit board in place of the PEC (see Bulletin HW-101-62, dated June 20, 1980).

NOVEMBER 4, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-66

ROTARY SWITCH DETENT CHANGE

The [PN 266-85] rotary switch detents are being replaced with [PN 266-1116] detents. The new detents [PN 266-1116] are directly interchangeable with the old ones.

Continue to use the old detents as replacements until Parts Department's stock is depleted.

DECEMBER 11, 1980

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-67

CANNOT ZERO S METER WITH THE METER ZERO CONTROL

Change: R104 from 47 ohm resistor to 75 ohm resistor [PN 6-750]
R105 from 47 ohm resistor to 22 ohm resistor [PN 6-220]

Make this change on an as-needed basis.

MARCH 12, 1981

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-68

WIRING FOR USE WITH THE HD-15 PHONE PATCH

Refer to the pictorial and perform these steps:

[[Pictorial shows the part of the PCB area where the C12 and V1 (6EA8) are installed]]

- Install a 22 kilohm [PN 6-223] resistor across points A and B.
- Install one end of a 2 feet coax cable [PN 343-15], center conductor to foil pad A, shielded conductor to ground.
- Route the coax cable back to the SPARE JACK and make connections.

MAY 8, 1981

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-69

NO POWER OUTPUT IN USB OR LSB; TUNE OKAY

This may be caused by an open 3.3 megohm resistor [PN 6-335] at R915. Failure of this resistor causes the ALC circuit to function incorrectly.

JUNE 30, 1981

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-70

SIDETONE IS TOO LOUD

To correct, install a volume control circuit.

Parts needed: one 500 kilohm control [PN 10-149]
one 0.005 uF capacitor [PN 21-27]
one fiber washer [PN 253-34]

Installation:

- Remove and discard R326.
- Install a 0.005 uF capacitor [PN 21-27] between the underside foil of pin 1 of V15 and the end lug of the volume control (inside lug that is nearest R302 & 303).
- Install a 500 kilohm CW volume control [PN 10-149] with a fiber washer [PN 253-34] as shown.

[[This is installed at the lower right hand corner of the PCB, where the middle lug is positioned where it can connect to the foil where C311 connects]].

SEPTEMBER 25, 1981

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-71

THE #266-1116 SWITCH DETENT BREAKS DURING INSTALLATION

This occasionally happens when installing the switch detent to the front panel. To correct, install two 3-48 x 3/8" screws [PN 250-172] with two lockwashers [PN 254-7], and two [PN 252-1] nuts.

[[The 3-48 x 3/8" screws and nuts are inserted through the switch detent on the inside of the panel, along with one of the lockwashers. The other lockwasher and control nut are then connected on the outside of the front panel]].

OCTOBER 21, 1981

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-72

VOX CYCLING

This may be caused by a spike introduced at the input of the VOX amplifier. To correct, install a [PN 57-27] diode in series with the white-red-red wire at the junction of resistors R213 and R214.

[[The diode is placed in series between the aforementioned junction of R213/214 and lug 2 & 3 of the PTT switch. The cathode connected to the wire going to the junction, and the anode connected to the path going to the PTT switch]].

NOVEMBER 13, 1981

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-73

TONE IN AUDIO WHEN SWITCH TO CW; RELAY CHATTERS WHEN KEY

IS CLOSED

Check for an open 40 uF capacitor [PN 25-36] at C5 in the PS-23A power supply.

JANUARY 21, 1982

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-74

KEYS CONTINUOUSLY WHEN USED WITH THE SA-5010 MEMORY KEYS

This may be caused by a defective 6EA8 tube [PN 411-124] at V15. To check for a defective tube, increase the volume to maximum on the HW-101, switch to CW mode, and listen for a 1-kilohertz tone. If a tone is heard, replace V15.

MARCH 11, 1982

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-75

R940 OVERHEATS

If the 100-ohm resistor [PN 6-101] at R940 overheats, change:

C701 and C801 from 680 pF 300 volt to 680 pF 500 volt [PN 20-735].

Install the higher voltage rated capacitor on all units received for service.

FEBRUARY 25, 1982

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-76

CARRIER NULL CONTROL INSTALLATION CHANGE

The case of the 200-ohm carrier null control [PN 10-147] has been changed to an aluminum case. Therefore, you cannot solder a wire to the case as was done on the older type control. If you attempt to solder a wire to the case, the heat will damage the plastic parts inside the control. So, when replacing a carrier null control with the new type, use the following procedure:

- Melt a small amount of solder onto the two mounting tabs of the 200 ohm control [PN 10-147].
- Now place a fiber washer on the shaft of the control and install it from the foil side of the board. Solder the five tabs to the foil.

APRIL 23, 1982

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-77

VFO STOPS OSCILLATING AT HIGH END OF DIAL

Two peaks will be noticed when adjusting the VFO coil, one near the top of the coil and the other near the bottom of the coil. Adjust the VFO coil to the top peak to correct this problem. However, to do this it may be necessary to adjust the slugs in T941 to reduce the output level. Reduce the output level from 3-volt RF to about 2-volt RF.

APRIL 29, 1983

HW-101

BULLETIN NO:

TUNE CONTROL SLIPS

To Prevent the loading shaft from slipping when the tune control is adjusted, install two nylon washers and a spring washer behind the loading shaft pulley onto the loading shaft. Use the following installation procedure and illustration to install the washers.

Parts needed:

QTY	DESCRIPTION	PART NO.
-----	-----	-----
2	flat nylon washer	253-49
1	spring washer	253-36

Procedure:

1. Remove V6, V7, V10 and V11.
2. Remove the loading shaft pulley.
3. Install the spring washer [PN 253-36] between the two nylon washers [PN 253-49] on the loading shaft.
4. Reinstall the pulley by firmly pushing it onto the shaft and compressing the spring washer between the nylon washers.
5. Reinstall V6, V7, V10 and V11.

 SEPTEMBER 14, 1983

 HW-101
 SSB TRANSCEIVER

 BULLETIN NO:
 HW-101-79
DRIVER STAGE OSCILLATES ON 15 METERS

Bend the driver neutralizer wire exiting from hole "W" on the RF driver circuit board flat against the circuit board as shown in the pictorial below. This will eliminate the oscillation. Perform this on an "as needed" basis.

[[Pictorial shows neutralizer wire bent flat against PCB - down along side of C412.]]

 SEPTEMBER 14, 1983

 HW-101
 SSB TRANSCEIVER

 BULLETIN NO:
 HW-101-80
LOW TRANSMITTER OUTPUT DUE TO LOW VCO OUTPUT

To check, measure the voltage at the emitter of Q942. The voltage should be about 8.6 VDC. If the voltage is significantly less (i.e. 7.5 VDC), replace Q942 with a hand-selected [PN 417-118] transistor with the generic marking 2N3393 on it. This replacement should increase the output by 0.1 VRF. Next, change R945 from a 4700 ohm resistor to a 47 kilohm resistor [PN 6-473]. This will raise the VFO output by another 0.1 VRF. These power increase may make the difference between a unit that will meet transmitter power specs and one that will not.

 JANUARY 27, 1984

 HW-101
 SSB Transceiver

 Bulletin No:
 HW-101-81
PRESELECTOR CAPACITORS WON'T TAKE SOLDER

The variable capacitors [PN 26-122] have been found to have corrosion on the pins used to solder the frame to the driver board. The last production run and all parts in replacement stock had this condition. To correct, remove the capacitor from the circuit board. With fine sandpaper or a small ignition file, remove the corrosion. Tin the pins before reinstalling. Be careful not to damage the plates of the capacitors.

Replacement parts stock has been reworked.

SEPTEMBER 21, 1984

HW-101
SSB Transceiver

Bulletin No:
HW-101-82

S METER DRIFTS; IF OSCILLATES

Check the brand of 6AU6 tubes at V3 and V4. If a brand other than GE is used at these locations, replace them with GE brand tubes. Parts replacement will stock only GE brand of 6AU6 tubes [PN 411-11].

FEBRUARY 8, 1985

HW-101
SSB Transceiver

Bulletin No:
HW-101-83

OSCILLATION ON 15 METERS

On the RF driver board in the newer units, the tube sockets at V10 and V11 were changed to types without the center ground post. Consequently, the switch shields aren't grounded at those points. To correct, refer to the drawing below and use large metal braid [PN 345-1] to ground the switch shield to the RF driver board ground foils at V10 and V11 and at the ends of the shield where the bare wires are located. Resolder the ground post connections at V6 and V7.

DECEMBER 22, 1988

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-84

R1, R6 AND R7 OUT OF TOLERANCE OR OPEN

The wattage rating of the resistors used R1, R2, and R7 are too low. This cause them to go out of tolerance and eventually open. To prevent this failure, change:

R1 from a 100 kilohm, .5 watt resistor
 to a 100 kilohm, 1 watt resistor [PN 6-104-1].

R6 AND R7 from a 33 kilohm, .5 watt resistor
 to a 33 kilohm 1 watt resistor [PN 6-333-1].

Also check the 100 kilohm resistor at R215 and the 22 kilohm resistor at R316 for signs of overheating. If necessary, replace them with 1 watt resistors: 100 kilohms [PN 6-104-1] and 22 kilohms [PN 6-223-1].

APRIL 28, 1989

HW-101
SSB TRANSCEIVER

BULLETIN NO:
HW-101-85

VOX ACTIVATES WHEN MIKE NOT CONNECTED

If the optional cable to "patch jack" is installed, using the spare phono jack, and the VOX activates without a mike connected, suspect a poor ground at the spare phono jack. This phono jack is used as a ground

connection for the power supply, including the 60 Hz filament supply. A poor ground at this point causes hum in the speech amp, tripping the VOX. To correct this problem, tighten the screws securing the spare phono jack.

That's all what is listed for the HW-101 from 1966-1989. Enjoy! 73 & ZUT! // Joe - W7LPP/4
