



SERVICE BULLETIN

EQUIPMENT TYPE KWS-1

BULLETIN NO. 6

DATE 2-6-59

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GENERAL

Continued research on the KWS-1 Single Side Band Transmitter has shown that modification may be required to improve the operation of the transmitter. This bulletin outlines those modifications. It should be noted that many of the units in the field are operating and will continue

to operate satisfactorily. The incorporation of the modifications are not recommended simply to bring the equipment up to date. If the unit is not exhibiting the symptoms outlined in this subject, the equipment should not be modified. The replacement of parts outlined in Subjects C and F should only be made in the event of failure of the parts in the unit.

SUBJECT A: Failure Of L403

Several field failures of L403 indicate that the fiberglass insulation, installed on the top and bottom covers of the P.A. assembly, absorbing

humidity is the offender, resulting in burnout of L403. As a precautionary measure the fiberglass should be removed from the covers of all units. Tests made on units without this insulation show that there is no difference in acoustical noise level.

SUBJECT B: Improved Filter Chokes, L259 and L260

Several reports of field failure of r-f filter choke, L260, has been reported. L260 and L259 are in series with the high voltage interlock switches of the exciter and power supply. In the event that either of these filter chokes should fail, it is recommended that both be replaced with chokes of a higher current rating. The recommended chokes (240 0073 00) are .5 mhy with a current rating of 100 milliamperes. The lower inductance chokes will operate equally as well as the 2 mhy chokes that were originally used.

It is not recommended that L259 and L260 be replaced simply to bring equipment up to date but that the replacement chokes be used in the event of failure of either L259 and L260.

MODIFICATION PROCEDURES:

1. Remove plugs P102 and P103 from unit.

<u>Qty.</u>	<u>Description</u>	<u>Circuit Symbol</u>	<u>Collins Part Number</u>
2	Choke, RF filter .5 mhy 100 ma	L259,260	240 0073 00

SUBJECT C: Modification to Eliminate Instability on 80 Meters

Several reports of instability have been received when the KWS-1 is used with trap antennas or antennas with a high reactance on 80 meters. The symptoms are continuous plate current readings when the carrier control is reduced to zero. The same symptoms prevail when using SSB. This situation can be corrected by stiffening the P.A. feedback network as outlined in the following procedure.

MODIFICATION PROCEDURE.

1. Remove the bottom cover from the unit.
2. Remove all wiring connections to 1000 uuf feed thru capacitor, C714, located between V206 and V207 and remove capacitor from chassis. not damage other components. Use of a small pencil iron is recommended.

2. Remove cover plate located directly under blower hose connection from exciter.

3. Remove the choke, L260 connected from J103 pin 1 to 1000 mmfd capacitor and replace with new choke (240 0073 00).

4. Remove the choke, L259, connected from J103 pin 7 to 1000 mmfd capacitor and replace with new choke (240 0073 00).

5. Replace cover plate, P102, and P103 onto unit.

PARTS REQUIRED:

For modification parts, price quotations (minimum order charge is \$15.00), and availability contact Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa 52406. All parts orders must specify the Collins modification kit number, or part numbers, quantity required, and reference this service bulletin.

<u>Collins Part Number</u>
240 0073 00

3. Replace C714 with a 2200 uuf capacitor (913 1203 00) and replace original wiring on capacitor terminals.

4. Remove top shield from P.A. housing.

5. Solder a new 5 uuf capacitor (913 0092 00) across capacitor C402. Refer to Figure 6-10 of the Instruction Manual for location of C402.

6. Re-neutralize as outlined in Section V 5.2.3. 6.e of the Instruction Manual.

PARTS REQUIRED:

For modification parts, price quotations (minimum order charge is \$15.00), and availability contact Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa 52406. All parts orders must specify the Collins modification kit number, or part numbers, quantity required, and reference this service bulletin.

<u>Qty.</u>	<u>Description</u>	<u>Circuit Symbol</u>	<u>Collins Part Number</u>
1	Capacitor, 2200 uuf	C714	913 1293 00
1	Capacitor, 5 uuf		913 0092 00

SUBJECT D: Modification to Eliminate 100 KC Parasitic Oscillation of Power Amplifier.

An investigation into reports of instability of the KWS-1 indicated that some units had a tendency toward a parasitic oscillation at approximately 100 KC. The oscillation occurs at the resonance of L405 and C404 and C405 which is usually 100 kc. Reducing the Q of the parasitic tank to a value too low to allow oscillation to take place can be accomplished by placing sufficient resistance in series with L405.

The symptoms, which usually were most prevalent on the low frequency end of 80 meters, although it can happen on other bands, are a sudden, sharp increase in P.A. plate current, pinning the plate meter, as the drive is slowly increased from 0, or decreased from mid-scale grid current to 0. If this symptom occurs the following modification can be made.

MODIFICATION PROCEDURE.

1. Remove bottom cover from the unit.

<u>Qty.</u>	<u>Description</u>	<u>Collins Part Number</u>
1	Resistor, 470 2 watt	745 5638 00
1	Standoff, insulated	306 0233 00

2. Remove small bottom plate, just behind VFO, exposing 4X250B tube sockets.

3. Remove yellow wire from terminal mounted between and to the side of tube sockets.

4. Remove nut mounting ground lug to chassis and replace with insulated standoff (306 0233 00).

5. Connect yellow wire, removed in step 3, to newly installed standoff. Mount 470 ohm, 2 watt resistor (745 5638 00) between two insulated standoffs. Solder connections.

6. Replace 4X250B bottom plate and bottom plate onto unit.

PARTS REQUIRED:

For modification parts, price quotations (minimum order charge is \$15.00), and availability contact Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa 52406. All parts orders must specify the Collins modification kit number, or part numbers, quantity required, and reference this service bulletin.

Collins Part Number

SUBJECT E: Modification to Eliminate Parasitic Oscillation in First Mixer, V201.

Complaints were received that spurious frequencies were being generated by the KWS-1. Investigation showed that the 1st Mixer, V201, had a tendency toward parasitic oscillation at 180 mc. If a complaint is received on interference around this frequency the following modification may be made.

MODIFICATION PROCEDURE.

1. Remove bottom cover from unit.

2. Unsolder coax lead and capacitor lead from insulated standoff mounted nearest V201 pin 8.

3. Mount new insulated standoff (306 0233 00) onto screw mounting V201 and ground lug nearest V201 pin 9.

4. Solder coax lead and capacitor lead, unsoldered in step 2, to newly installed insulated standoff.
5. Unsolder all wiring from V201 pin 6 and connect to standoff nearest V201 pin 8. Do not solder.
6. Mount 47 ohm, 1/2 watt resistor (745 1296 00) from standoff of step 5 to V201 pin 6. Solder all connections.

<u>Qty</u>	<u>Description</u>	<u>Collins Part Number</u>
1	Resistor, 47 ohm 1/2 watt	745 1296 00
1	Standoff, insulated	306 0233 00

7. Replace bottom cover onto unit.

PARTS REQUIRED:

For modification parts, price quotations (minimum order charge is \$15.00), and availability contact Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa 52406. All parts orders must specify the Collins modification kit number, or part numbers, quantity required, and reference this service bulletin.

SUBJECT F: Replacement of Carrier Level Control, R129.

If replacement of the Carrier Level Control, R129, on the front panel becomes necessary, it is recommended that this control be replaced with an Allen-Bradley Potentiometer, 100,000 ohms, 2 watt \pm 20%. This potentiometer will give satisfactory operation.

REPLACEMENT PROCEDURE.

1. Remove the following knobs: PA Loading, PA Tuning, Frequency Control, Band Change, Sidetone Select, and Carrier Level.
2. Remove screws holding front panel to chassis.

3. Pull panel forward to clear control shafts and lay panel open.

4. Replace Carrier Level potentiometer, R129, with new potentiometer (380 0151 00).

5. Replace front panel onto chassis.

6. Replace screws into front panel and replace control knobs.

For modification parts, price quotations (minimum order charge is \$15.00), and availability contact Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa 52406. All parts orders must specify the Collins modification kit number, or part numbers, quantity required, and reference this service bulletin.

SUBJECT G: Synchronization of PA Roller Coils and Tuning Capacitors.

The following is the correct procedure for synchronizing the P.A. roller coils and tuning capacitors in the KWS-1.

1. Set P.A. Tune and Load dials to 0-0.

2. Set C407, C408, and C409 capacitors to full mesh.

3. Set roller for "PA Tune" coil, 1 turn from maximum inductance (end of coils furthest from front panel are maximum inductance end.)

4. Set roller for "PA Load" 4 turns from maximum inductance.