Date: Sat, 10 Jan 1998 17:33:12 -0800
Reply-To: crippel@exis.net
Sender: Collins Collectors List <COLLINS@LISTSERV.TEMPE.GOV>
Comments: Authenticated sender is <crippel@exis.net>
From: Chuck Rippel <crippel@EXIS.NET>
Subject: KWS-1 "Deadly Caps" List
Content-type: text/plain; charset=US-ASCII

Someone asked me to post the list of "caps that must go" in a KWS-1.
Here is the list I compiled after doing mine.

KWS-1 Capacitor Replacement List
1/31/96

Here is the Cap list:

C-325 .0033uf @400V
C-324 .47uf @100V
C-403 .1uf @200V
C-413 .1uf @150V

C-113 .01uf @400V
C-115 .01uf @400V
C-122 .001uf @400V
C-127 .1uf @150V
C-134 .1uf @150V
C-303 .033uuf @400V

Power supply:
C-506 .022uf @400V

There are also the blue capacitors in the audio section.

C-116 .5uf @200V
C-114 .2uf @200V
C-106 .5uf @600V

Jack, WB8BFS said that his ALC meter drift problems were cleared up
after replacement.

Chuck Rippel - WA4HHG
Board Member and Secretary to the Collins Collectors Association
Redistribution of postings to this list are by permission only
CCA Member Number: 4
AMI Number: 950
Society of Broadcast Engineers #21735
Reply to: crippel@usa.net

To: COLLINS@LISTSERV.TEMPE.GOV
Subject: 75A-4 Caps -- For those who Asked---And then there were "15 Bad Little Caps" + Beauties
Date: Fri, 17 Apr 1998 08:48:58 -0600
MIME-Version: 1.0
X-Mailer: Internet Mail Service (5.5.2232.9)
Content-Type: text/plain

Hi Group:

For those who asked more about the usual bad caps in a 75A-4.
Chuck Ripple called the "seven deadly caps".

C-34	100pfd	V-3	pin 3
C-52	4 pfd	V-5	pin 7
C-68	470pfd	V-7	pin 2
C-75	470pfd	V-8	pin 8
C-81	470pfd	V-9	Pin 1
C-104	470pfd	V-21	pin 1

"Butch, K0BS"-- Later Added to the list 3 more troublesome micas:

C-71	1000pfd	V-7	pin 6	a high failure item
C-95	.01uf	V-11	pin 6	
C-96	.01uf	V-12	pin 2	

Jerry Solomon added:

C-147	V-12	Pin 1
C-148	V-12	pin 2/5

Also:

C-113	50ufd	150vdc	Bias Supply to much higher voltages
C-137	50ufd	150vdc	Bias Supply to much higher voltages

and of course any source of heavy hum puts it right back to the three section Electrolytic:

C-94 a,b, c, 40ufd/40ufd/40ufd 300vdc. High Voltage supply--get higher working voltages. These tend to go out fast after a set has not been used for a long time. Reform carefully.

C-124 B+ Bypass Capacitor .5ufd 200vdc. Collins lists it incorrectly as a .5mmf. Might have to use a very stout .47ufd 300+ volts.

Also: On the Black Beauties--they are a real controversy--some sets shouwed them perfect; others showed them leaking; when disconnected from the circuit; they made very little difference "In my Opinion". They are all .1mfd. They are usually in they way of these others so I generally change them out. However, they are in no way any where near the problems of any of the other above mentioned caps; again in my opinion; I think Butch might agree. And they are very Pretty but.....

Regards,

Jerry W6CCC

publications engineering

SERVICE BULLETIN

COLLINS RADIO COMPANY

Cedar Rapids, Iowa 52406

SERVICE BULLETIN NO.1 Date 4-19-56

EQUIPMENT TYPE: KWS-1 TRANSMITTER

SUBJECT: PREVENT OFF FREQUENCY OSCILLATION APPEARING ON THE OUTPUT

It has been determined that the current through the voltage regulator tubes V105 and V106 is exceeding the tube ratings and has caused an oscillation to appear on the output approximately 15KCs removed from the operating frequency. This condition can be eliminated by the insertion of a 1000 ohm resistor in series with the input of the VR tubes which reduces the current drain.

In production units with serial number 372 and above this modification is accomplished by changing the value of R131 from 1800 ohm to 2700 ohms. The following procedure is recommended for field modification on serial numbers 371 and below.

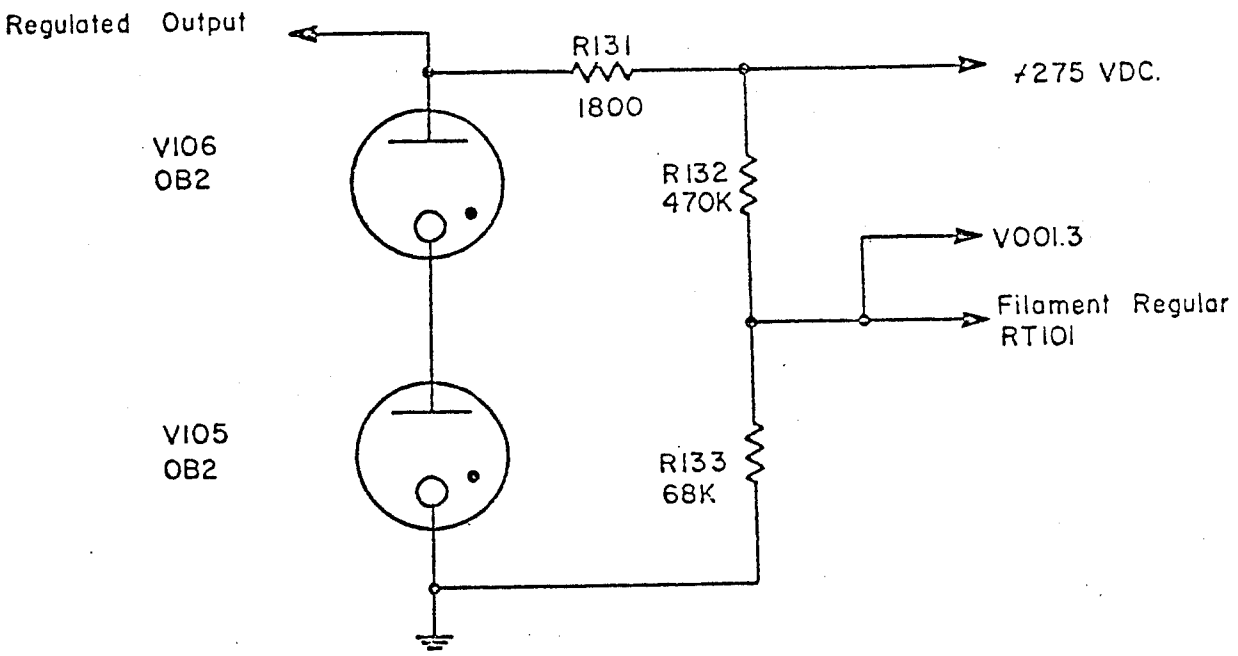
1. Remove bottom cover from Exciter/Power Amplifier.
2. Remove the white lead with red tracer, coming from the oscillator housing assembly, from the B / insulated terminal beside the VOX relay.
3. Install an insulated terminal, CPN 306 0234 00, on the RF Chassis using the screw which holds the solder lugs to which the yellow coax shields are tied.
4. Connect a 1000 ohm 2 watt resistor, CPN 745 5652 00, between the B / terminal and the newly installed terminal.
5. Connect the white lead with read tracer removed in step 2 above to the newly installed terminal.
6. Replace bottom cover.

Parts required for modification:

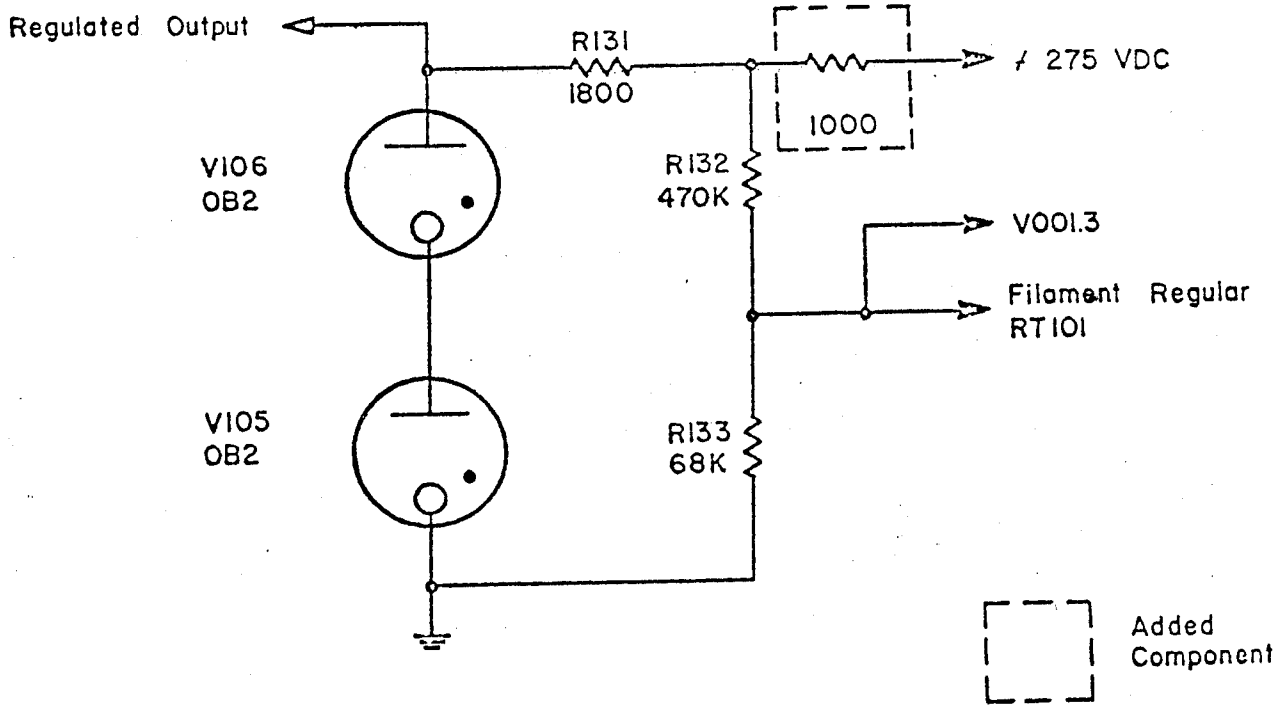
Qty.	Description	Collins Part Number
1	Resistor 1000 ohm 2 watt ± 10%	745 5652 00
1	Terminal, Insulated	306 0234 00

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.

BEFORE MODIFICATION



AFTER MODIFICATION



COLLINS RADIO COMPANY

CEDAR RAPIDS, IOWA

EQUIPMENT TYPE KWS-1 **BULLETIN NO.** 2A **DATE** 1-25-57

SUBJECT: A. USE OF CRYSTAL MICROPHONE WITH KWS-1
B. PREVENT ARCING OF CONTACTS ON VOX RELAY
C. HEAT REDUCING TUBE SHIELDS

This Bulletin is being reissued to include Type 66J tube shields used in the power supply of the KWS-1, and revise the ordering procedure of Section C. Therefore Service Bulletin #2 becomes obsolete and should be discarded.

SUBJECT A: USE OF CRYSTAL MICROPHONE WITH KWS-1.

Recent engineering investigation has shown that the value of R102 in the grid of the audio amplifier, V101, caused a serious low frequency attenuation when a crystal microphone is used with the KWS-1.

In order to improve the quality of transmission this resistor has been changed to a value of 1 megohm effective with serial number 714. R102 may be replaced in prior built exciters as described below.

1. Remove bottom plate by removing 24 screws.
2. Remove 100K ohm 1/2 watt resistor. R102 connected from pin 2 of V101 to grounded lug on terminal strip.
3. Replace with 1 megohm, 1/2 watt ± 10%, R102 (CPN 745 1478 00) between pin 2 of V101 and grounded lug on terminal strip.

ADDITIONAL PARTS REQUIRED:

Qty.	Description	Circuit Symbol	Collins Part Number	Price
1	Resistor, 1 megohm, 1/2 w ± 10%	R102	745 1478 00	$ .10

The above resistor kit may be obtained by ordering from Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa after January 30, 1957 at no charge for a period of six (6) months from the date of this Service Bulletin. All orders for this part should make reference to this Service Bulletin.

SUBJECT B: PREVENT ARCING OF CONTACTS ON VOX RELAY

It has been discovered that some arcing is taking place at contacts 4 and 5 on the voice operate relay, K101, in the KWS-1. To prevent this arcing and increase the life of the relay contacts an arc suppression filter has been incorporated in production of the exciter effective with serial number 695. It is recommended that this filter be installed on all units below the above serial number and may be accomplished as described below.

1. Mount resistor R246, 100 ohm 1 watt ± 10% (CPN 745 3310 00) and capacitor C315, .01 mfd 500V (CPN 913 1188 00) on tie point (CPN 306 2230 00) as shown in Figure 1. Do not solder.

2. Mount above assembly under existing screw which fastens shield to RF chassis as shown in Figure 2.

3. Remove DA936, white with orange and blue tracers, wire from terminal 5 of K101 and connect to tie point assembly as shown in Fig. 2.

4. Remove DA913, white with orange and brown tracers, wire from terminal 4 of K101 and connect to tie point assembly as shown in Fig. 2.

5. Connect terminals 4 and 5 of K101 to the tie points using #22 buss wire (CPN 421 2220 00) as shown in Figure 2. Solder all connections.

6. Replace bottom plate onto exciter.

ADDITIONAL PARTS REQUIRED: MODIFICATION KIT 542 3158 00.

Qty.	Description	Circuit Symbol	Collins Part Number
1	Tie Point		306 2230 00
1	Resistor, 100 ohm 1 watt ± 10%	R246	745 3310 00
1	Capacitor, .01 mfd 500V	C315	913 1188 00
0.5	Wire, #22 buss (ft)		421 2220 00

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 C: HEAT REDUCING TUBE SHIELDS

A heat reducing tube shield and liner has been developed by Collins that can lower bulb hot spot temperature rise above ambient to 55 percent of former values. Current information indicates that the 66J shields can reduce tube failures to less than 1/2 of failures encountered using the nickel plated JAN tube shields or black shield with opening in the walls that are not 66J type. The 66J provides longer tube life by conducting heat from the glass tube to the metal shield, socket, and chassis which then radiates the heat into the air. The common nickel plated tube shield actually raises the tube glass temperature higher than glass temperature would be if the tube was run without a shield. Therefore, on tubes V105, V106, and RT101 where shielding is not necessary, the life of these tubes can be increased by removing the nickel plated JAN tube shields. However, if the 66J series tube shield is used, removal of the shield on these tubes will cause them to run hotter. The presence of this new shield can be noted by its black finish whereas JAN shields are nickel plated.

In keeping with the policy of incorporating new designs into production of equipment, these type 66J are now being used in the production of the KWS-1. Customers having the KWS-1 employing the use of these new shields SHOULD NOT remove the shield from the tubes V105, V106 and RT101.

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.

PARTS REQUIRED: MODIFICATION KIT 542 3177 00

Kit consists of:

Qty.	Tube	Shield Type No.	Collins Part Number
2	V107, V509	66J-1	522 0441 003
7	V001, V202, V203, V205, V208, V209, V507	66J-2	522 0442 003
4	V105, V106, V403, V506	66J-3	522 0443 003
7	V101, V102, V103, V104, V201, V204, V505	66J-5	522 0445 003
3	V206, V207, RT101	66J-6	522 0446 003

FIGURE 1
Mounting of component on terminal strip

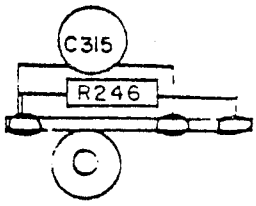
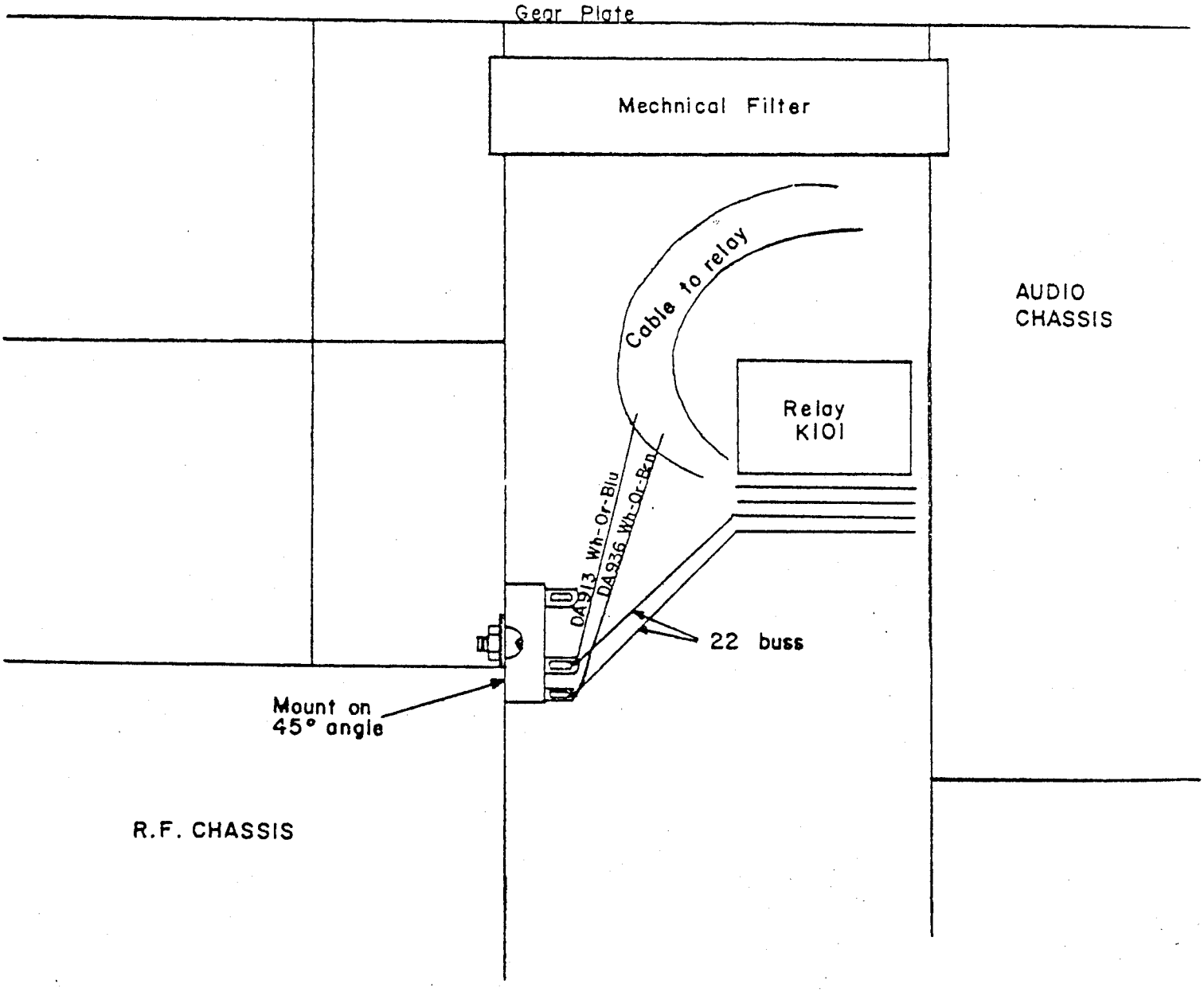


FIGURE 2



AFTER MODIFICATION

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SERVICE BULLETIN

COLLINS RADIO COMPANY

Cedar Rapids, Iowa 52406

EQUIPMENT TYPE KWS-1 BULLETIN NO. 3 DATE 6-30-57

SUBJECT: A. IMPROVED SPARK SUPPRESSION OF CONTACTS OF VOX RELAY K101

B. ALC MODIFICATION

SUBJECT A. IMPROVED SPARK SUPPRESSION OF CONTACTS OF VOX RELAY K101

An improved spark suppression circuit for the contacts of VOX Relay K101 has been designed. Production models of the KWS-1 with serial numbers from 695 through 1248 employ a 100-ohm resistor, R246, and a 0.01 mf capacitor, C315, connected across the relay contacts to provide this suppression. Service Bulletin No. 2A outlined the incorporation of these components into units in the field. A small selenium rectifier, now available, will accomplish the suppression more effectively than the resistor-capacitor network. The rectifier effectively shorts the counter-EMF developed by the collapsing field in the relay coil before it gets to the VOX relay contacts.

Production units carrying serial numbers above 1248 have this modification incorporated. The following procedure outlines the incorporation of this modification into units below serial number 1249.

MODIFICATION PROCEDURE

1. Remove interconnecting plugs P102 and P103 from the rear of the transmitter.
2. Remove the blower hose.
3. Remove the six screws holding the cover on the filter box directly under the blower hose connection. Remove this cover.
4. If resistor-capacitor network R246 and C315 is connected across the contacts of K101, remove these components.
5. Mount Selenium Rectifier CR201 (353 0153 00) in an existing hole using washer (310 0056 00), lock washer (310 0071 00) and nut (313 0053 00).
6. Connect a short piece of #22 insulated wire from the rectifier terminal marked + to pin 4 of J102.
7. Connect another short piece of #22 insulated wire from the other rectifier terminal to pin 9 of J102.
8. Bend over the rectifier terminals sufficiently to clear the filter box cover when it is replaced.
9. Replace the filter box cover with its six screws, blower hose and connectors.

PARTS REQUIRED

QTY.	DESCRIPTION	SYMBOL NUMBER	COLLINS PART NUMBER
1	Rectifier, Selenium	CR201	353 0153 00
1	Washer		310 0056 00
1	Washer, Lock		310 0071 00
1	Nut		313 0053 00

SUBJECT B. ALC MODIFICATION

The Automatic Load Control circuit of the KWS-1 has been changed in order to eliminate "tails" on the ends of transmissions because of the ALC action. The tail is caused by rapid decay of the ALC voltage, which allows the gain of the transmitter to come up before the VOX relay drops out. This causes background room noise to produce the tail between the time the operator quits talking (ALC stops) and the VOX relay drops out.

To eliminate this problem a two-speed time constant has been added in the ALC circuit. One section is fast, allowing normal ALC action during speech. The other section is slow. The resultant is a rapid decay of ALC voltage down to a certain level, then a very slow decay from that point on. This keeps the gain of the transmitter down to a reasonable level until the VOX relay drops out, eliminating the tail. Transmitters bearing serial numbers 1083 and higher include factory-built circuitry which, although not identical with the modification described here, accomplishes the same result in a manner more convenient to production methods. The following procedure outlines the incorporation of the two-speed time constant into the ALC circuit of equipments having serial numbers 1082 and below.

MODIFICATION PROCEDURE

1. Remove bottom plate of transmitter.
2. Mount a tie point (305 9032 00) on the screw which holds shield in r-f chassis beside K101 near C297. C297 is the 1000 mmf capacitor mounted beside sideband filter FL101.
3. Using this tie point, connect a .0033 mf capacitor (931 0283 00) in parallel with a 680 K resistor (745 1471 00). Also connect a .47 mf capacitor (931 0500 00) in parallel with 3.3 megohm resistor (745 1499 00). Connect these two circuits in series with each other from C297 to ground.
4. Replace bottom plate.
5. Remove the top cover from the power amplifier.
6. Remove the shield from the base of V403.
7. Remove R407, 470K ½-watt resistor connected from pins 1 and 6 of V403 to insulated terminal post.
8. Replace shield on base of V403.
9. Replace cover on power amplifier box.

PARTS REQUIRED

QTY.	DESCRIPTION	COLLINS PART NUMBER
1	Tie point	306 9032 00
1	Capacitor, .0033 mf, ±10%, 400 v.	931 0283 00
1	Capacitor, .47 mf, ±10%, 100 v.	931 0500 00
1	Resistor, 680 K, ±10%, ½ w.	745 1471 00
1	Resistor, 3.3 mg, ±10%, ½ w.	745 1499 00

TO OBTAIN PARTS

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.

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SERVICE BULLETIN

COLLINS RADIO COMPANY

Cedar Rapids, Iowa 52406

EQUIPMENT TYPE: KWS-1 TRANSMITTER SERVICE BULLETIN NO. 4 DATE 9-20-57

SUBJECT: ARCHING OF PLATE TRANSFORMER T503

A few cases of trouble have been encountered with the plate transformer, T503, in the Power Supply of the KWS-1 arching from the transformer to the baffle mounted on the transformer. It is recommended that a close inspection of units in the field be made to assure a minimum clearance of 3/8 inch between the baffle plate and transformer winding.

Recommended procedure is as follows:

1. Turn Filament and Plate switch off.
2. Remove front and rear panels from Power Supply.
3. Loosen four screws that mount transformer to cabinet.
4. Slide transformer as far as possible to the center of the cabinet and tighten transformer mounting screws.
5. Loosen two screws that mount baffle plate to transformer. Slide baffle toward side of cabinet as far as possible and tighten mounting screws.

COLLINS | SERVICE BULLETIN

EQUIPMENT TYPE	BULLETIN NO.	DATE
KWS-1	5	11-15-57

SUBJECT: A. TYPE 4X250B TUBES, VARIATION IN INPUT CAPACITY
B. CHANGE OF F503 AND F504 TO SLOW BLOW TYPE

SUBJECT A: TYPE 4X250B TUBES, VARIATION IN INPUT CAPACITY

The early 4X250B Tubes, having all-glass seals, had an input capacity somewhat higher than the 4X150's which were employed in the original design of the KWS-1. When manufacturing and in-the-field changes were made from the 4X150's to the 4X250B's it was necessary to decrease the inductance of the 11 and 10 meter Driver Tank coil L705. This was done by removing one turn of the coil, leaving three turns instead of four, but having the same spacing between turns. (The Instruction Book incorrectly describes L705 as having five turns.)

The 4X250B Tube is now being manufactured with a ceramic seal. The ceramic-sealed tubes have lower input capacity than those with glass seals. Reports from customers have indicated that in some instances the 10 meter band will not track when the ceramic-sealed 4X250B's are used in KWS-1's having either the original 4-turn close spaced or the later 3-turn close spaced L705's; the former having slightly too much inductance, the latter not quite enough.

Beginning with about serial number 1000, production KWS-1 transmitters have employed a third design of L705 which works satisfactorily with 4X250B's having either the glass or ceramic seals. The current L705 again has four turns, but with wider spacing than the original. Some transmitters up to serial 1100 or so may have the three turn coil due to the transition from one coil design to another in the middle of a production run.

If difficulty is encountered in tracking the 10 meter band after replacement of the Power Amplifier tubes, L705 should be replaced. The new coil has the same Part Number as the earlier design, 540 5672 00. The replacement procedure is as follows:

1. Disconnect the transmitter from primary power.
2. Turn the Exciter Power Amplifier onto its righthand end. Remove the bottom plate.
3. Locate L705. Reference to the Instruction Book, page 6-35. Figure 6-5, "Exciter, Bottom View, Upper Right Corner," is recommended.
4. Carefully unsolder and remove leads from L705.
5. On top side of chassis, use screwdriver or similar tool to depress the tabs of the coil and slug holding clip. Remove the coil, slug and clip assembly from the chassis.

6. Where the "teeth" of the clip bite into the phenolic coil form, lift the "teeth" away and remove the clip and slug assembly from the coil form.
7. In a reverse manner install the clip and slug assembly on a new L705, Collins Part Number 540 5672 00.
8. Place the new assembly in the chassis, being careful to orient the solder loops of the coil so that connections can be restored. Make certain both tabs of the clip snap into a locking position above the chassis.
9. Reconnect and solder the leads to the coil.
10. Replace bottom plate and return the Exciter/Power Amplifier to its normal operating position. Connect primary power.
11. Retrack the Driver tank on the High 10, Low 10, and 11 meter bands as follows: (It is assumed the preceding exciter stages are properly tracked and neutralized.)
    a. Turn FILAMENTS ON. Leave P.A. PLATE VOLTAGE OFF.
    b. Set MULTIMETER switch to P.A. GRID position.
    c. Set MAIN TUNING dial and BAND CHANGE to 29.5 mc on High 10 band.
    d. Set EMISSION switch to CAL position.
    e. Adjust CARRIER LEVEL for mid-scale indication of MULTIMETER. Note: If mid-scale indication cannot be obtained, leave CARRIER LEVEL at maximum clockwise position.
    f. Adjust the slug of the newly installed L705 for maximum P.A. GRID current, reducing the CARRIER LEVEL as necessary to maintain mid-scale deflection of the MULTIMETER.
    g. Set MAIN TUNING dial and BAND CHANGE to 28.5 mc on Low 10 band.
    h. Adjust CARRIER LEVEL per step e, above.
    i. Adjust Ten Meter Trimmer C708 for maximum P.A. GRID current, reducing the CARRIER LEVEL as necessary to maintain mid-scale deflection of the MULTIMETER.
    j. Set MAIN TUNING dial and BAND CHANGE to 27.5 mc on 11 meter band.
    k. Adjust CARRIER LEVEL per step e, above.
    m. Adjust Eleven Meter Trimmer C707 for maximum P.A. GRID current, reducing the CARRIER LEVEL as necessary to maintain mid-scale deflection of the MULTIMETER.

PART REQUIRED:

QTY.	DESCRIPTION	SYMBOL DESIGNATION	PART NUMBER COLLINS
1	Coil, Radio Frequency: 4 turns #26 AWG wire	L705	540 5672 00

TO OBTAIN PARTS:

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 B. CHANGE OF F503 AND F504 TO SLOW BLOW TYPE

There have been several reports, both from customers and from Collins Final Test, of random failure of Filament, Blower and Low Voltage fuses F503 and F504. Investigation has shown that line surges are the probable cause of these failures. To correct this situation, beginning with units built in December, 1957, power supplies for the KWS-1 will have F503 and F504 revised from Collins Part Number 264 4080 00 to 264 0216 00, the latter being a 3.2 amp 125 volt slow blow replacement for the original 3 amp 250 volt fuse. Visually, the differences between a fast blow fuse and a slow blow or time lag fuse are easily noted. The fast blow fuse has only a single long fusible element running through the glass enclosure, connecting the two end caps. The time lag fuse contains a short fusible element, a heating device (usually appearing as a short piece of black carbon), and a coil spring to pull the elements apart when sustained overload creates enough heat to melt the low temperature solder with which the elements are joined. KWS-1 users who encounter the above described fuse failure in an otherwise properly functioning equipment may obtain replacement fuses from most distributors of radio and electronic parts, or may order from Collins Radio Company, Service Parts Department. Cedar Rapids, Iowa.

CROSS REFERENCE:

DESCRIPTION	COLLINS PART NUMBER	BUSSMAN TYPE NUMBER	LITTELFUSE TYPE NUMBER
Fuse, Cartridge, Glass Enclosed, Time Lag, 3-2/10 ampere, 125 volt.	264 0216 00	MDX-3-2/10	3AG "Slo-Blo" Cat. # 31303.2

SERVICE BULLETIN

EQUIPMENT TYPE KWS-1 BULLETIN NO. 6 DATE 2-6-59

SUBJECT A: Failure of L403

B: Improved Filter Chokes, L259 and L260

C: Modification to Eliminate Instability on 80 Meters

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

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

F: Replacement of Carrier Level Control, R129

G: Synchronization of P.A. Roller Coils and Tuning Capacitor

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 incorporati of the modifications are not recommended simp to bring the equipment up to date. If the unit not exhibiting the symptoms outlined in ea subject, the equipment should not be modifie The replacement of parts outlined in Subjects and F should only be made in the event of failu 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 burni out L403. As a precautionary measure t fiberglass should be removed from the covers all units. Tests made on units without tl 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.

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.

Qty.	Description	Circuit Symbol	Collins Part Number
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. Do not damage other components. Use of a small pencil iron is recommended.

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.

Qty.	Description	Circuit Symbol	Collins Part Number
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.

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.

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

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.

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.

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

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 ohm 2 watt ± 20%. This potentiometer will give smoother 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.