



SERVICE BULLETIN

1 January 1972

FROM: Publications Engineering Department, Cedar Rapids, Iowa 52406

51S-1() RECEIVER SERVICE BULLETIN NO 7

SURFACE COMMUNICATIONS PRODUCT LINE

EQUIPMENT: 51S-1 Receiver (522-2245-000)
51S-1A Receiver (522-2546-030)
51S-1AF Receiver (522-3156-000)
51S-1B Receiver (522-3857-001)
51S-1F Receiver (522-2498-000)

SUBJECT: Reduce 500-kHz Spurious Response

Reduction of 500-kHz internal spurious signals to improve receiver operation for units requiring 500-kHz frequency reception.

This modification is recommended for users requiring 500-kHz frequency operation. This modification will be incorporated in production units beginning with all 51S-1() serial number 8523 (MCN 3462) and above.

For modification parts kit, Collins part number 618-7101-001, or modification parts, price quotations, and availability dates, contact Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa 52406. The minimum order charge is \$15.00. All orders must specify the modification kit number or individual Collins part numbers with the quantity required, and reference 51S-1() Service Bulletin No 7. Refer to the 51S-1/1A/1F/1AF/1B Receiver Instruction Book (Collins part number 523-0097000) for the figures referred in the following modification procedure regarding component locations.

MODIFICATION PROCEDURE

NOTE: Refer to the instruction book, figures 6-1 through 6-8 on pages 6-12 through 6-18, for location and identification of components and terminals.

- a. Turn on 51S-1 with antenna not connected, place emission switch to USB, tune to approximately 333 kHz, and listen for spurious response. If spurious signal is not present, crystal Y20 on the turret crystal board must be changed to Collins part number 289-6996-020, 10.332 MHz. In older radios, the crystal frequency is 15.5 MHz.

CAUTION: TURN OFF 51S-1 RECEIVER AND DISCONNECT POWER CORD BEFORE PROCEEDING.

- b. Remove receiver from cabinet as follows:
 1. Remove all four feet and the screw that is midway between the two rear feet (on rack-mounted units, remove the five mounting screws on the bottom of the mount).



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2. Turn the receiver right side up, lift lid on cabinet-mounted units, and remove the two bright-plated screws in the style frame.
3. Carefully slide the chassis forward and set the cabinet aside.
- c. Examine the parts at turret TB4. Refer to instruction book figure 6-6 for location of components. Locate CR15, the AM detector diode. This should be connected between terminals A and E of TB4. If new crystal Y20 was installed in step b, a 330-pF capacitor, C319 (912-2852-000) should be connected from CR15 cathode (terminal E) to ground. If it is not present, install it in the radio in this location.
- d. Remove and discard 220- μ H rf coil L114 connected between V17 pin 5 and TB6-A.
- e. Remove and discard 0.01- μ F capacitor C226 connected between TB6-A and TB5-L.
- f. Remove and save 470-pF capacitor C224 from V17 pin 5 to ground.
- g. Remove and discard 5.6-k Ω resistor R97 connected between TB6-A and TB6-G.
- h. Remove and discard 1.0-k Ω resistor R98 connected between TB6-F and TB6-G.
- i. Disconnect center conductor of coaxial cable at bfo end, which is located at TB5-L, and at the product demodulator end at TB4-I. Disconnect shield at bfo end located at V11 pin 5.

NOTE: Early model radios may have the shield grounded at a different location.

- j. Remove the nut from the ground lug located at the chassis edge and adjacent to TB4, and replace it with a bifurcated standoff terminal (306-0234-000).
- k. Connect new 220- μ F rf coil L114 (240-2715-410) between TB4-I and the added standoff terminal from step j.
 - . Connect 470-pF capacitor C224 (removed and saved in step f) from the added standoff terminal (step j) to the ground lug under the terminal. Use new capacitor (470 pF, 912-2864-000) if original one was damaged.
- m. Connect the free center conductor of the coaxial cable (step i) to the standoff terminal (step j).
- n. At the ground lug near V17 pin 4, remove the nut and replace it with a standoff terminal (306-0976-000).
- o. Connect new 56-k Ω resistor R155 (745-0812-000) between TB6-F and TB6-G.
- p. Connect new 18-k Ω resistor R156 (745-0794-000) between TB6-G and V17-5. Keep resistor leads reasonably short.
- q. Connect new 1000-pF capacitor C326 (913-3009-000) between V17 pin 5 and the added terminal. Keep the capacitor lead length reasonably short. Position the capacitor over the tube socket with the disc parallel with the chassis.
- r. Connect the remaining free end of the coaxial cable (step i); center conductor to the added standoff (step n) near V17 and the shield to the ground lug near V17 pin 1. This cable may have to be rerouted for it to reach. A short piece of bus wire may be used to extend the shield connection to reach the ground terminal. The center conductor exposure should not be increased, and it is advantageous to keep the center conductor exposure beyond the shield to a minimum.
- s. Connect new 100-pF capacitor C327 (912-2816-000) from the AM detector enable line at S2C (emission) on the front panel to the nearest available ground on the front panel. The AM detector enable line is a white-red-green-blue wire connected to the S2C terminal at the bottom of the front panel and on the side toward the AF gain control.
- t. Clean debris from chassis and check unit for proper solder connections and potential shorts.
- u. Restore power and turn on unit. Check for 500-kHz spurious response and for proper receiver operation.
- v. Remove power to unit.



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- w. Restore chassis to cabinet.
- x. Mark unit information chart SB7. If no chart is present, use new chart (280-2778-010), mark all SB's, and place on unit.

PARTS REQUIRED

The modification kit (618-7101-001) and optional parts required to modify one receiver are itemized as follows:

<u>COLLINS PART NUMBER</u>	<u>QTY</u>	<u>DESCRIPTION</u>
240-2715-410	1	Inductor, 220 μ H, MS90537-41 (L114)
306-0234-000	1	Terminal, standoff, bifurcated
306-0976-000	1	Terminal, standoff
745-0794-000	1	Resistor, 18 k Ω , 1/4 watt, RCR07G183KS (R156)
745-0812-000	1	Resistor, 56 k Ω , 1/4 watt, RCR07G563KS (R155)
912-2816-000	1	Capacitor, 100 pF, CM05FD101J03 (C327)
913-3009-000	1	Capacitor, 0.001 μ F, 40C73A1 (C326)

The following parts are not included in modification kit (618-7101-001), and if required for older receivers, they must be ordered separately by their Collins part number.

280-3778-010	1	Chart, information
289-6996-020	1	Crystal, 10.332 MHz, xtal unit, qtz (Y20)
912-2852-000	1	Capacitor, 330 pF, CM05FD331J03 (C319)
912-2864-000	1	Capacitor, 470 pF, CM05FD471J03 (C224)

NOTE: If the above optional parts are required, order them with the modification kit due to the \$15.00 minimum order charge.