



# SERVICE BULLETIN

1 September 1971

FROM: Publications Engineering Department, Cedar Rapids, Iowa 52406

51S-1/1F Receiver  
SERVICE BULLETIN NO 6

SURFACE COMMUNICATIONS PRODUCT LINE

EQUIPMENT: 51S-1 Receiver (522-2245-000)  
51S-1F Receiver (522-2498-000)  
(not valid for 51S-1A/1AF)

SUBJECT: Provision for high-speed receiver muting and recovery

The modification covered in this service bulletin may be performed to accomplish either of two objectives:

- a. To permit high-speed muting and recovery of the receiver without disturbing the AGC characteristics, as is desirable when operating break-in CW.
- b. To provide compatibility with certain communication systems in which all control voltages are nominal +28 Vdc. When used in such systems, the mute line may be tied directly to the system key line; the 51S will be muted whenever the associated transmitter is keyed.

This modification is to be performed at the option of the equipment user and will not be incorporated in production units. The estimated time to perform the modification is 4.5 hours.

For modification parts, price quotations (minimum order charge is \$15.00), and availability dates contact Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa 52406. All parts orders must specify the Collins modification kit number, quantity required, and reference 51S-1/1F Service Bulletin No 6.

Refer to the 51S-1/1A/1F/1AF/1B Receiver Instruction Book for the figures referred to in the modification procedure regarding component locations. A change to paragraph 1.4.3 Mute on page 1-3 of the instruction book applies only to receiver with SB 6 installed and should read as follows:

#### 1.4.3 Mute

The MUTE jack on the rear of the 51S-1 chassis provides connections for external standby-receive switching. The external switch may be contacts of a transmit-receive relay or a transmitter key line. For proper muting of the 51S-1, the contacts of a transmit-receive relay should be in open position during receiving and closed (grounded) position during transmitting. When muting is being used, the OFF-STBY-ON-CAL switch on the front panel of the 51S-1 must be in the STBY position.



# SERVICE BULLETIN

## SERVICE BULLETIN NO 6

### MODIFICATION PROCEDURES

a. 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).
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.

**NOTE:** Refer to the instruction book, figures 6-5 and 6-6 on pages 6-16 and 6-17, for location and identification of components and terminals.

- b. Disconnect the wires from mute jack J5 (figure 6-3, page 6-14) and reattach them to a nearby ground post. Remove and discard 0.01  $\mu$ F capacitor C323.
- c. Remove the shield cover over the bottom of the 51S-1.
- d. Remove existing 47-k $\Omega$ , 1/2-watt resistor R151 (V1 screen-grid resistor), and replace with new 47-k $\Omega$ , 1-watt resistor (745-3422-000).
- e. Connect a #22 orange wire (439-3033-000) to XV1-6, route other end out of rf section at rear of chassis, and connect to TB6-B.
- f. Replace shield cover removed in step c.
- g. Connect 1N4002 diode CR1001 (353-6442-020) from T6-7 (anode end) to TB12-H (cathode/banded end).
- h. Connect 47-ohm, 1/4-watt resistor R1001 (745-0701-000) from TB12-H to TB12-C.
- i. Connect 1800-ohm, 1/4-watt resistor R1002 (745-0758-000) from TB12-C to TB12-D.
- j. Connect 10- $\mu$ F, 50-Vdc capacitor C1001 (183-1368-000) from TB12-C (+ end) to ground lug near TB12 toward rear of 51S-1 chassis (- end).
- k. Connect 1N971B diode VR1001 (353-3182-000) from TB12-D (cathode/banded end) to ground lug near TB12 toward rear of 51S-1 chassis (anode end).
- l. Connect 18-k $\Omega$ , 1/4-watt resistor R1004 (745-0794-000) from TB12-D to TB12-F.
- m. Connect 18-k $\Omega$ , 1/4-watt resistor R1003 (745-0794-000) from TB12-D to TB12-J.
- n. Connect 1N4002 diode CR1003 (353-6442-020) from TB12-F (anode end) to TB12-A (cathode/banded end).
- o. Connect 1N4002 diode CR1002 (353-6442-020) from TB12-J (anode end) to TB12-K (cathode/banded end).
- p. Connect 1N4002 diode CR1004 (353-6442-020) from TB12-F (anode end) to TB12-K (cathode/banded end).
- q. Connect 1N751A diode VR1002 (353-2710-000) from TB12-K (cathode/banded end) to TB12-L (anode end).
- r. Connect 1000-ohm, 1/4-watt resistor R1005 (745-0749-000) from TB12-L to ground lug near TB12 toward front of 51S-1 chassis.
- s. Connect 2N2405 transistor Q1001 (352-0479-000) to TB6-J (emitter), TB6-I (base), and TB6-H (collector).
- t. Connect #24 sleeved bus wire (428-4823-000) from TB12-L to TB6-I.
- u. Connect #24 bus wire (421-2420-000) from TB6-J to ground lug near TB12 toward front of 51S-1 chassis.
- v. Connect #24 bus wire (421-2420-000) from TB6-J to TB6-D.



# SERVICE BULLETIN

SERVICE BULLETIN NO 6

- w. Connect 10-k $\Omega$ , 1-watt resistor R1007 (745-3394-000) from TB6-H to TB6-C.
- x. Connect 0.1  $\mu$ F capacitor C1002 (913-3681-000) from TB6-H to ground lug near TB12 toward front of 51S-1 chassis.
- y. Remove the bus wire presently connected from receiver gain resistor R25 to ground, and replace it with a #22 green wire (439-3034-000) from R25 (center terminal) to TB6-H.
- z. If 0.01  $\mu$ F capacitor C139 is not installed from XV5-7 to ground, install 0.01  $\mu$ F capacitor C139 (913-3013-000) from R25 (center terminal) to ground.
- aa. Connect 560-ohm, 1/4-watt resistor R1006 (745-0740-000) from TB6-C to TB6-J.
- ab. Connect 2N2405 transistor Q1002 (352-0479-000) to TB6-D (emitter), TB6-C (base), and TB6-B (collector).
- ac. Connect 1N985B diode VR1003 (353-3196-000) from TB6-B (cathode/banded end) to TB6-D (anode end).
- ad. Connect a #22 brown wire (439-3036-001) from TB12-J to S1B-STBY (this wire is grounded by S1 when in the STBY position).
- ae. Connect a #22 blue wire (434-3035-000) from TB12-A to J5 mute jack S5.
- af. Turn the 51S-1 switch S1 to ON, and readjust receiver gain as explained in paragraph 4.4.11 of the instruction book.
- ag. Inspect 51S-1 for damage incurred during modification; dress wires and cables and remove debris.
- ah. Reassemble unit by reversing step a.
- ai. Check receiver for proper operation. The modified mute circuit operates when the OFF-STBY-ON-CAL switch S1 is in the STBY position. In this position, the receiver is muted when a ground is applied to mute jack J5.
- aj. Mark SB 6 on the top of the information chart (280-3778-010), and mark the lower two lines MUTE MODE . Cut off the lower two lines from the chart. Peel backing and GND TO MUTE press bottom part of chart to the rear of the chassis above and to the right of mute jack J5. Press the top portion of chart onto a convenient location on the unit.

**NOTE:** The illustration on page 6 is a 51S-1/1F partial schematic diagram showing the modification changes.

## PARTS REQUIRED

The modification kit (609-1478-001) required to modify one 51S-1 or 51S-1F Receiver consists of the following parts:

<u>COLLINS PART NUMBER</u>	<u>QTY</u>	<u>DESCRIPTION</u>
183-1368-000	1	Capacitor, 10 $\mu$ F, 50 Vdc, C1001
913-3681-000	1	Capacitor, 0.1 $\mu$ F, C1002
913-3013-000	1	Capacitor, 0.01 $\mu$ F, C139
353-6442-020	4	Diode, 1N4002, CR1001 through CR1004



# SERVICE BULLETIN

## SERVICE BULLETIN NO 6

<u>COLLINS PART NUMBER</u>	<u>QTY</u>	<u>DESCRIPTION</u>
352-0479-000	2	Transistor, 2N2405, Q1001, Q1002
745-3422-000	1	Resistor, 47 k $\Omega$ , 1 watt, R151
745-0701-000	1	Resistor, 47 ohms, 1/4 watt, R1001
745-0758-000	1	Resistor, 1800 ohms, 1/4 watt, R1002
745-0794-000	2	Resistor, 18 k $\Omega$ , 1/4 watt, R1003, R1004
745-0749-000	1	Resistor, 1000 ohms, 1/4 watt, R1005
745-0740-000	1	Resistor, 560 ohms, 1/4 watt, R1006
745-3394-000	1	Resistor, 10 k $\Omega$ , 1 watt, R1007
353-3182-000	1	Diode, 1N971B, VR1001
353-2710-000	1	Diode, 1N751A, VR1002
353-3196-000	1	Diode, 1N985B, VR1003
421-2420-000	0.8 ft	Wire #24 AWG, bus
428-4823-000	0.5 ft	Wire #24 AWG, bus, insulated
439-3033-000	1.0 ft	Wire #22 AWG, orange
439-3034-000	1.0 ft	Wire #22 AWG, green
439-3035-000	0.8 ft	Wire #22 AWG, blue
439-3036-000	2.0 ft	Wire #22 AWG, brown
280-3778-010	1	Information chart



# SERVICE BULLETIN

SERVICE BULLETIN NO 6

