



EQUIPMENT SERIES: 51S

BULLETIN NO. 1

DATE: 2-22-63

Page 1 of 2

EQUIPMENT TYPE: RECEIVERS 51S-1/1F

SUBJECT: SUPPRESSION OF UNWANTED OSCILLATIONS IN LOW LEVEL AUDIO OUTPUT LINES
AND ALLOW USE OF WIRING CONFIGURATION SHOWN IN FIGURE 1-2.a OF
INSTRUCTION BOOK

The modification in this service bulletin is to add an isolation pad to the low level audio output lines to suppress oscillations that may be caused by some remote lines with reactive loads. Included in the modification procedure (step 6) is a wiring change to allow the 600-ohm line and remote r-f gain control wiring option shown in figure 1-2.a in the 51S-1 Instruction Book to be used. The performance of these modifications is not considered essential unless the remote line output, TB1, is used or if the optional wiring change would be used.

These modifications will be factory installed in 51S-1 serial numbers above 589, 51S-1F serial numbers above 163 and in all 51S-1A and 51S-1AF.

MODIFICATION PROCEDURE:

1. Remove 51S-() from its case and turn bottom side up.
2. Locate circular terminal strips TB8 and TB9, and transformer T4. (Reference may be made to the 51S-1/1A/1F/1AF Instruction Book, figure 6-5 for aid in locating these components.)
3. Refer to figure 1. Terminals 3 and 6 of T4 have two shielded wires on them and terminals 4 and 5 have only one shielded wire on them. Disconnect the wires from terminal 3 of T4 and connect to terminal J of TB9.
4. Disconnect the wires from T4 terminal 6 and connect to terminal H of TB8.
5. Connect one of the 220-ohm resistors (745-0725-00) between terminal 3 of T4 and terminal J of TB9. Connect other 220-ohm resistor between terminal 6 of T4 and terminal H of TB8.
6. Remove the white-brown-red-blue wire from T4 pin 5 and connect to TB8 terminal B. Connect the no. 22 AWG white-brown-red-blue wire (439-7057-00) to TB8 terminal B and J7, EXT RF GAIN.
7. Replace 51S-() in its case and return to operation.

PARTS REQUIRED:

<u>Qty</u>	<u>Description</u>	<u>Collins Part Number</u>	<u>Unit Price</u>
2	Resistor, 220 ohm, 1/4 watt	745-0725-00	\$.19
1.0 (ft)	Wire, electrical, no. 22 AWG, white- brown-red-blue Teflon insulated	439-7057-00	.01

The above parts may be obtained from Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa at the prices indicated. All orders should specify the Collins part numbers and make reference to 51S Service Bulletin No. 1. The referenced prices are subject to change without notice.

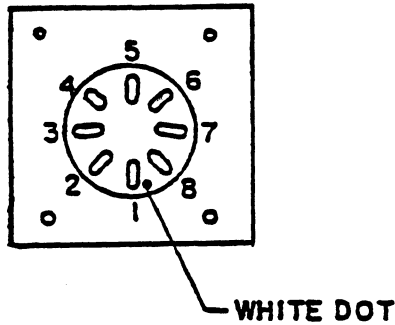


Figure 1. Terminal Designation of Transformer T4 in 51S-().

June 15, 1973

REVISION 1
TO
51S-1 SERVICE BULLETIN NO 2

Attached is a revised issue of 51S-1 HF Receiver, Service Bulletin No 2 titled, "Replace Transformers T14 and T15 with Mechanical Filter" originally dated 22 June 1964.

The revision consists of:

1. Page 1, paragraph 7, the referenced 51S-1 Receiver Instruction Book, Collins part number 523-0097-000, has been added.
2. Page 1, the kit price has been reduced to \$66.31 from \$78.64.
3. Page 1, a note introducing two production configurations (A and B) has been added.
4. Page 2, modification procedure steps (2) and (3) cover both production configurations. These procedure steps change the value of the input and output resonating capacitors.
5. Page 2, paragraph following the modification procedures has been added to provide procedures for testing the modification results.
6. Page 3, a service bulletin identification procedure has been added.
7. Page 3, modification information chart (Collins part number 280-3779-010), has been added to the list of parts.
8. Page 4, figure 1, partial schematic diagrams showing production configuration A before and after the modification has been added.
9. Page 5, figure 2, partial schematic diagrams showing production configuration B before and after the modification has been added.

Black bars in the margin indicate the change locations.

Replace the original service bulletin with the revised issue.



SERVICE BULLETIN

1 - 15 June 1973

FROM: AMATEUR COMMUNICATIONS PRODUCT MANAGEMENT, CEDAR RAPIDS,
IOWA 52406

51S-1 COMMUNICATIONS RECEIVER (522-2245-030)
51S-1A COMMUNICATIONS RECEIVER (522-2546-030)
51S-1AF COMMUNICATIONS RECEIVER (522-3156-001)
51S-1B COMMUNICATIONS RECEIVER (522-3857-001)
51S-1F COMMUNICATIONS RECEIVER (522-2498-001)

SERVICE BULLETIN NO 2

SUBJECT: Replacement of transformers T14 and T15 with mechanical filter

Applicable to all 51S-1() receivers as an option; the modification is not essential to good operation.

Production cut-in: the changes in this service bulletin will not be incorporated in production receivers.

Provides the 51S-1() receiver with improved skirt selectivity when in the AM operating mode.

This modification replaces IF transformers T14 and T15 with a Collins mechanical filter. Resonating capacitors are added depending upon the circuit configuration.

An estimated 4 manhours are required to perform this modification.

Modification kit, Collins part number 549-2835-000 (itemized in paragraph 3), is available for shipment within 30 days after receipt of order at a price of \$66.31. The price is subject to change without notice; minimum order charge is \$25.00. Order from Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa 52406. When ordering, specify the kit part number and reference this 51S-1() Service Bulletin No 2.

When performing this modification, refer to 51S-1/1A/1F/1AF/1B Receiver Instruction Book, Collins part number 523-0097-000, ninth edition dated 1 July 1969.

MODIFICATION PROCEDURES

NOTE: The modification procedures depend upon the circuit configuration of the receiver. Configuration A in figure 1 shows fixed resonating capacitors (C127 through C132) across the input and output of each filter. Configuration B in figure 2 is the same circuit except C127 through C132 are removed and resonating capacitors C127 and C130 are switched to the input and output of the selected filter.

- a. Disconnect all wiring from IF transformers T14 and T15; remove the transformers from the chassis.



SERVICE BULLETIN

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b. Disconnect from S2B, the wire which was at T15. For configuration A, connect wire (421-2220-000) and parallel 51 pF (912-3858-000) and 62 pF (912-3864-000) capacitors to S2B as shown in figure 1.

For configuration B, connect wire (421-2220-000) and 51 pF (912-3858-000) capacitor to S2B as shown in figure 2.

c. Disconnect from S2A, the wire which was at T14. For configuration A, connect wire (421-2220-000) and parallel 51 pF (912-3858-000) capacitors to S2A as shown in figure 1.

For configuration B, connect wire (421-2220-000) and 51 pF (912-3858-000) capacitors to S2A as shown in figure 2.

d. Remove the bus wire from GRD1 that was connected to T14 and T15. Connect wire (422-2220-000) and loose end of capacitor in step b. to GRD 1. Insulate wire with sleeve (152-1558-000). Refer to figure 3.

e. Connect bus wire (422-2220-000) and loose end of capacitor in step c. to GRD 2 (figure 3).

f. Install plate covers (549-2836-002) on top of chassis; leave the screw hole to which the nylon filter clamp will be installed (step i.).

g. Install wires from S2A and GRD 2 to mechanical filter (526-9378-000). Refer to figure 3.

h. Install wires from S2B and GRD 2 to mechanical filter.

i. Place nylon clamp over the mechanical filter and secure clamp to chassis hole (step f.).

If test equipment is available and a bandpass check is desired, refer to paragraph 4.4.3 in the referenced instruction book.

Enter SB2-R1 on the modification information chart on rear of the receiver. If no chart, one may be ordered separate from the kit. When attaching a new chart, enter both SB1 and SB2-R1 (provided SB1 modification has been installed). The length of the information chart may be changed to fit the selected location on the receiver.

MATERIAL INFORMATION

All parts required to modify one 51S-1() Receiver are contained in modification kit, Collins part number 549-2835-000. The following is a list of parts in the kit.

<u>NEW COLLINS</u>				<u>REPLACED</u>	
<u>PART NUMBER</u>	<u>QTY</u>	<u>PRICE</u>	<u>DESCRIPTION</u>	<u>COLLINS</u>	<u>INSTRUCTIONS</u>
				<u>PART NUMBER</u>	<u>-DISPOSITION</u>
150-1544-000	1		Clamp, nylon (HP-7N)		
152-1558-000	1.1 ft		Sleeving, Teflon (SV-HC-2-22-0)		



SERVICE BULLETIN

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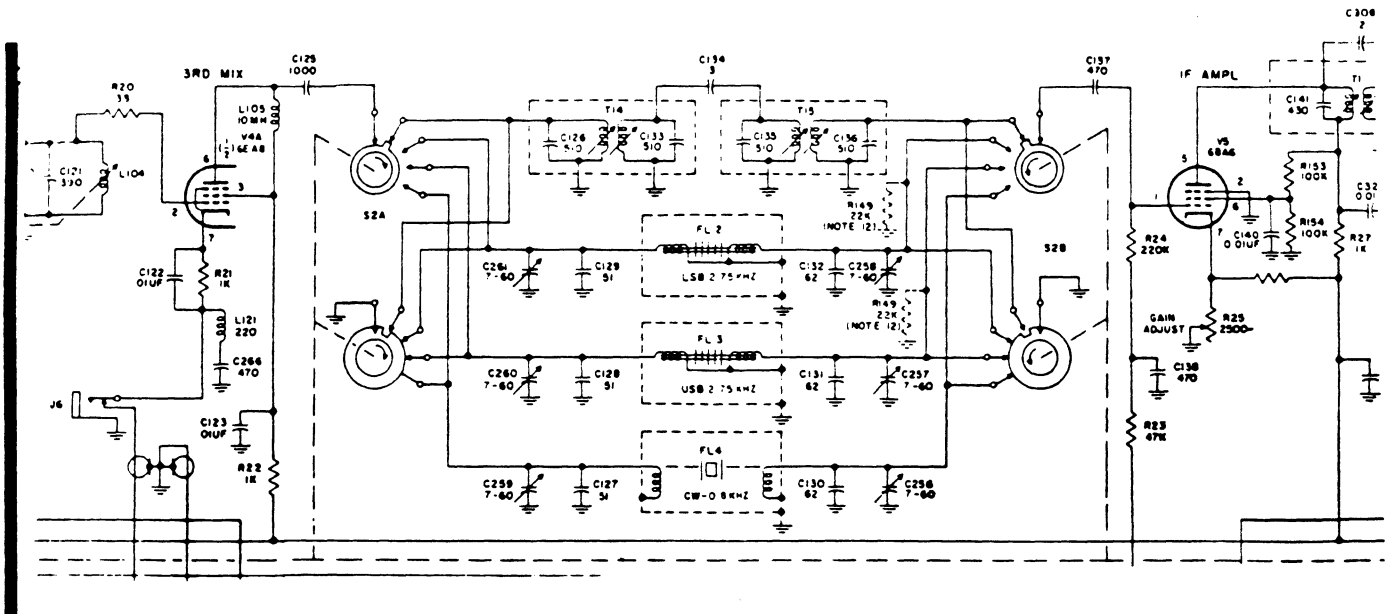
<u>NEW COLLINS</u> <u>PART NUMBER</u>	<u>QTY</u>	<u>PRICE</u>	<u>DESCRIPTION</u>	<u>REPLACED</u> <u>COLLINS</u> <u>PART NUMBER</u>	<u>INSTRUCTIONS</u> <u>-DISPOSITION</u>
*280-3779-010	1		Mod. Info. Chart		
310-0054-000	2		Washer, flat		
310-0076-000	4		Washer, spltlock		
313-0156-000	4		Nut, 4-40 (P313-0156-000)		
343-0285-000	3		Screw, 4-40 x 1/2" (P343-0285-000)		
421-2220-000	1.1 ft		Wire, No. 22 AWG bus (QQW243TYPE SAWG- 22)		
526-9378-000	1		Filter, mechanical		
541-5974-002	1		Spacer, tubular		
549-2836-002	2		Plate, cover		
912-3858-000	3		Capacitor, 51 pF (CM04ED510J03)		
912-3864-000	1		Capacitor, 62 pF (CM04ED620J03)		

*Info chart, not part of kit.

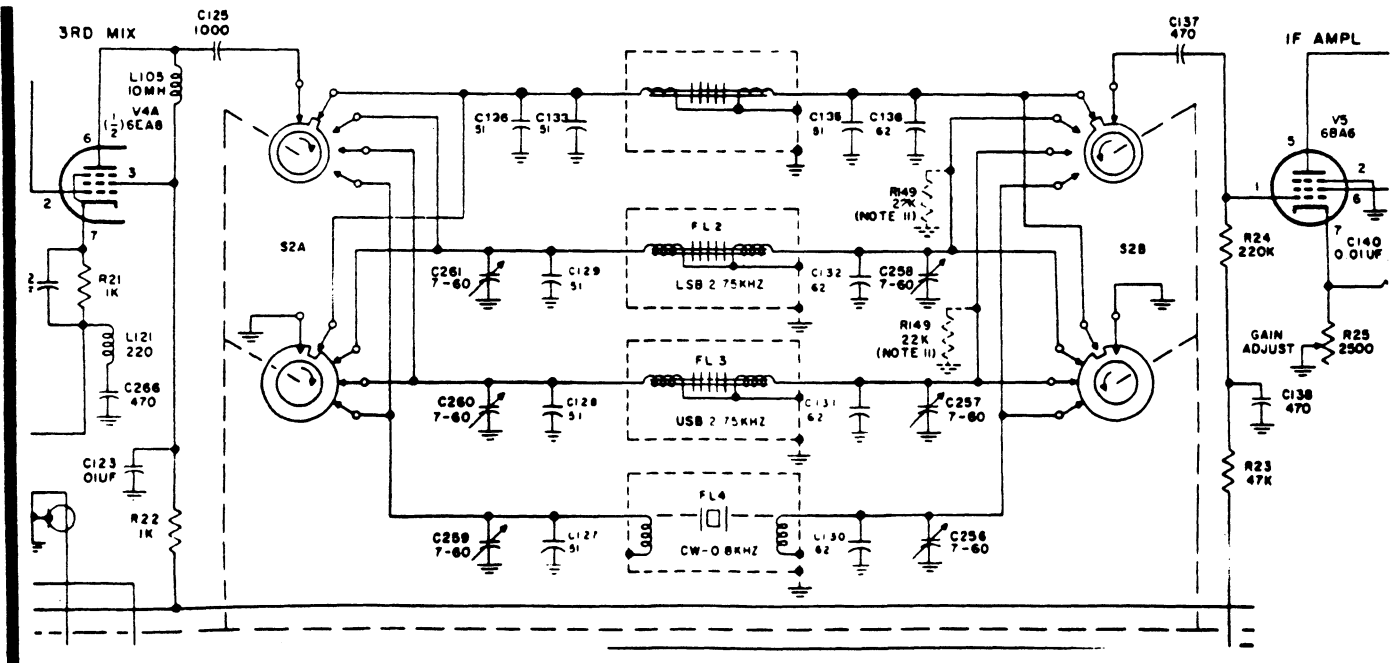


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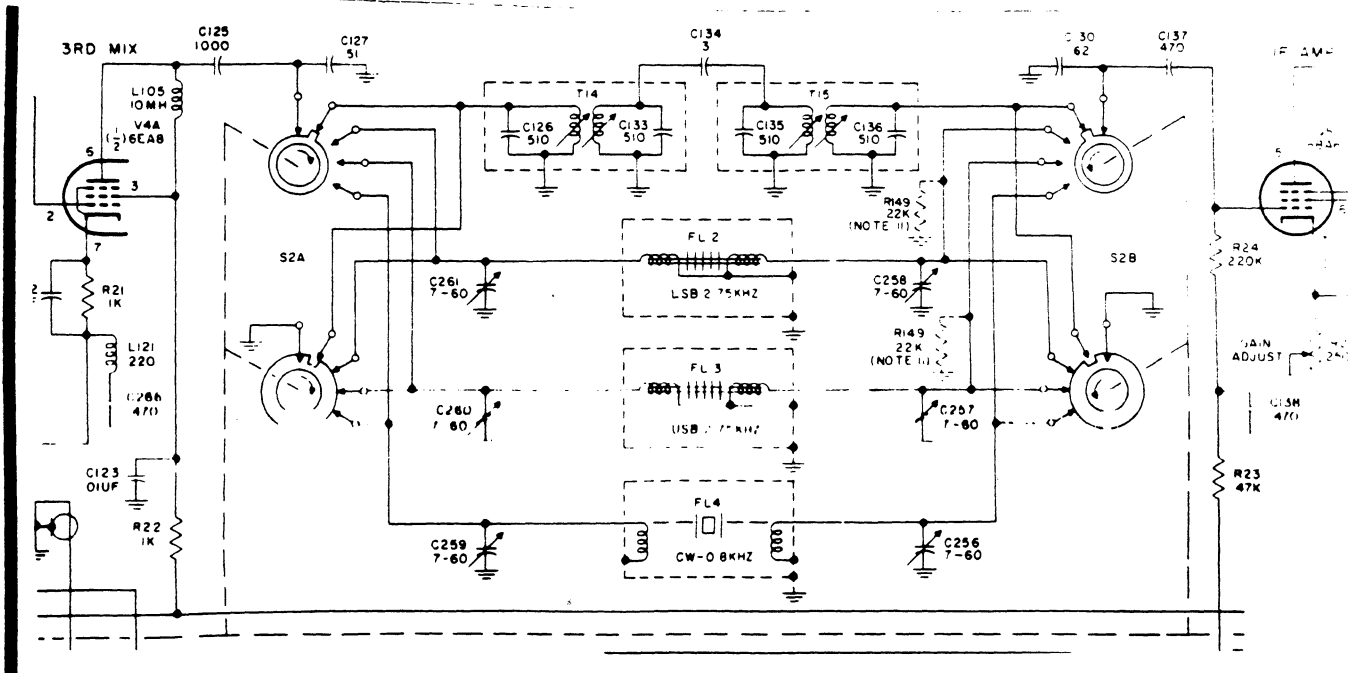


Configuration A Before Modification

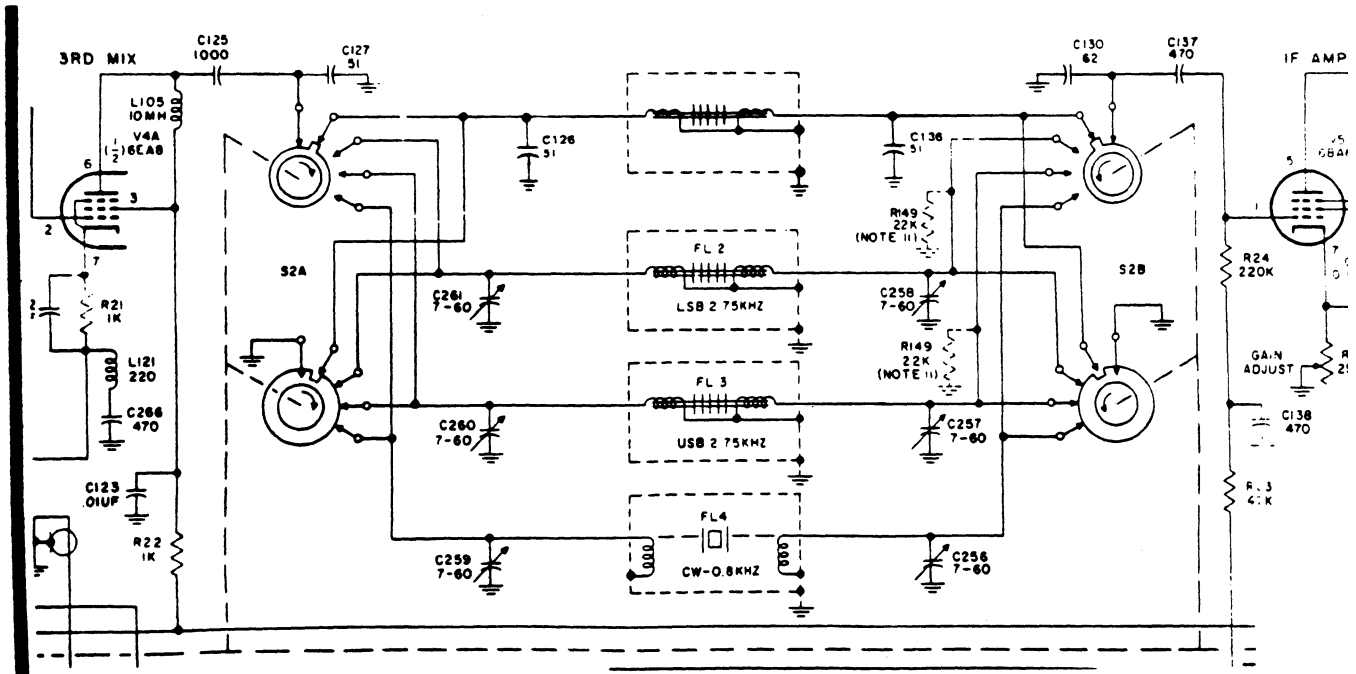


Configuration A After Modification

51S-1 HF Receiver, Partial Schematic Diagram
Figure 1



Configuration B Before Modification



Configuration B After Modification

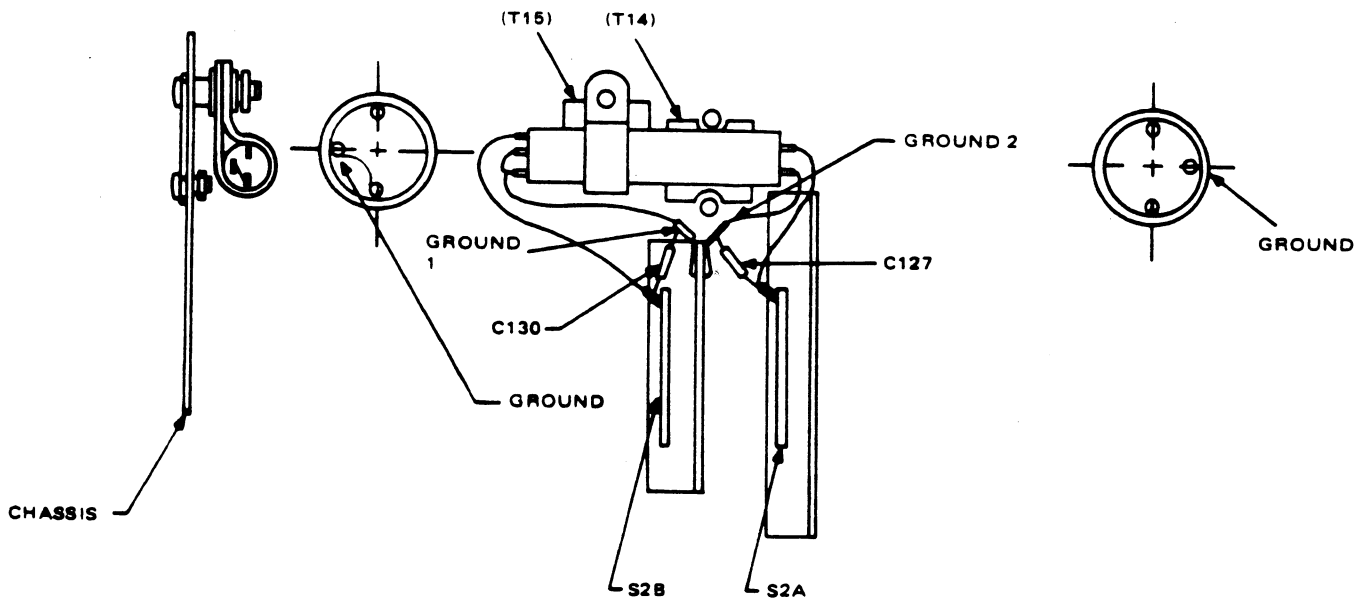
51S-1 HF Receiver, Partial Schematic Diagram
Figure 2

1 - 15 June 1973



SERVICE BULLETIN

SERVICE BULLETIN NO 2



51S-1 HF Receiver, Modification Components Locations
Figure 3



AUGUST 31, 1964

Cedar Rapids, Iowa 52406

telephone : area code 319, 365-8411

cable : COLINRAD

REVISION TO
51S SERVICE BULLETIN NO. 3
DATED 8-11-64

Attached is a revised copy of incorrectly numbered 51S Service Bulletin No. 2, originally dated 8-11-64 and titled, "Improve Sensitivity of Lower Bands".

This revision corrects the Service Bulletin number from 2 to 3.

The attached completely replaces the referenced service bulletin. The black lines in the margin indicate where changes have been made to the original publication.



EQUIPMENT SERIES: 51S

BULLETIN NO. 3

DATE: 8-11-64

Page 1 of 2

Revised 8-31-64

EQUIPMENT TYPE: 51S-1/1A/1AF/1F COMMUNICATIONS RECEIVERS

SUBJECT: IMPROVE SENSITIVITY OF LOWER BANDS

The modification in this bulletin will provide improved sensitivity of the lower bands and allow a wider margin in 6DC6 tube characteristics.

Some 6DC6 tubes, used in V1 position, have been found to exhibit marginal noise resistance characteristics resulting in reduced sensitivity in the lower bands. This modification reduces the effects of this deficiency in tube manufacture.

The 6DC6 tube continues to be used in this application because of its excellent agc characteristics.

This modification is considered optional by the manufacturer.

This modification will be installed at time of manufacture in 51S-1 Receivers with serial numbers 1770 and above. The 6th Edition of the 51S-1/1A/1F/1AF Instruction Book will cover this modification.

MODIFICATION PROCEDURE:

1. Remove bottom shield over r-f turret compartment.
2. Remove bus wire connected between terminal 4 of large terminal strip in r-f amplifier compartment and pin 6 of tube socket XV1. (This 6-lug terminal strip is the center of the three terminal strips on the compartment shield. The terminal strip toward front of unit has 5 lugs and the one toward the rear of unit has 3 lugs. The lugs are numbered from back to front of unit.)
3. Install 47K resistor R151 in place from which bus wire was removed.
4. Install 0.01-uf capacitor C318 (913-3013-00) from terminal 4 of terminal strip described in step 2 to partition shield (ground) across tube socket XV1.
5. Replace bottom shield.

Page 2 of 2
8-11-64
Revised 8-31-64
PARTS REQUIRED:

Service Bulletin 3

51S

<u>Qty</u>	<u>Description</u>	<u>Collins Part Number</u>		<u>Price</u>
1	Resistor, 47K <u>+10%</u> , 1/2 watt carbon composition	R151	745-1422-000	\$0.04
1	Capacitor, 0.01 uf <u>+20%</u> , 500 wvdc ceramic disc	C318	913-3013-000	0.19

The above parts may be obtained from Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa at the prices indicated. All orders must specify the Collins part numbers of the parts required and make reference to 51S Service Bulletin No. 3. These parts are available for immediate shipment. The prices indicated are subject to change without notice.



EQUIPMENT SERIES: 51S SERVICE BULLETIN NO. 4 DATE: 8-9-65
Page 1 of 2

EQUIPMENT TYPE: 51S-1/LA/LAF/1F COMMUNICATION RECEIVER

SUBJECT: ADDITION OF DIAL LOCK ASSEMBLY

The modification in this bulletin provides a locking assembly for the kilocycle tuning control. Installation of this assembly will eliminate frequency changes due to mechanical vibration.

This modification is to be incorporated at the option of the customer.

This modification will be incorporated in production units.

The 7th Edition of the 51S-1/LA/LF/LAF Receiver Instruction Book will include the modification covered in this bulletin.

The estimated time required to perform this modification is 5 minutes.

MODIFICATION PROCEDURE:

1. Remove the kilocycle tuning control knob using a no. 8 Bristol wrench to loosen the setscrews.
2. Remove and discard the small black oval-head screw located on front panel directly below main tuning knob shaft.
3. Assemble the lock assembly as follows:
 - a. Insert bushing (757-8613-001) into lock arm (757-8614-001) with the chamfered side of bushing toward the lettered side of the lock arm.
 - b. Insert lock arm and bushing into spring assembly (757-8610-001) with the larger hole of the spring assembly toward the lettered side of the lock arm.
 - c. Insert screw (342-1824-000) into chamfered side of bushing.
4. Attach the lock assembly to the kilocycle tuning shaft using the threaded hole from which the screw was removed in step 2. Position the assembly so that the lock arm and the Corprene pad are pointing toward the bottom of the front panel.

5. Tighten the screw in the bushing into the front panel, and check the operation of the lock assembly noting that when the lock arm is moved to the right, the Corprene pad should spring away from the front panel.
6. Reinstall kilocycle tuning control knob, tighten the setscrew, and note that the knob does not rub against the Corprene pad when the lock arm is pointing down.

PARTS REQUIRED:

Price: \$3.55

Modification kit 757-8616-001 consists of the following items:

<u>Qty</u>	<u>Description</u>	<u>Collins Part Number</u>
1	Bushing, pivot, brass	757-8613-001
1	Arm, lock	757-8614-001
1	Spring, dial lock-cemented	757-8610-001
1	Screw, 4-40 x 1/2-inch, machine, steel	342-1824-000

The above parts may be obtained from Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa at the price indicated. The price is subject to change without notice. All orders should specify modification kit 757-8616-001 and make reference to 51S Service Bulletin No. 4. The parts will be available for shipment 1 September 1965.



publications engineering

SERVICE BULLETIN

COLLINS RADIO COMPANY

Cedar Rapids, Iowa 52406

COMMUNICATIONS

51S-1/1() RECEIVERS

SERVICE BULLETIN NO 5

SUBJECT A: CONVERTS 51S-1A/1AF TO 51S-1/1F

SUBJECT B: CONVERTS 51S-1/1F TO 51S-1A/1AF

51S-1A/1AF Receivers use 28-Vdc primary power. Modification procedure A, in this service bulletin, gives instructions for converting these units for operation from a 115- or 250-Vac power source.

51S-1/1F Receivers are manufactured with a 115- or 230-Vac power supply. Modification procedure B, in this service bulletin, includes instructions required for converting these units for 28-Vdc operation.

The estimated time to complete modification A is 1-1/2 hours and modification B is 1-1/2 hours.

The following modification kits may be obtained from Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa 52406 at the following prices:

<u>POWER SUPPLY TYPE</u>	<u>MODIFICATION KIT NUMBER</u>	<u>UNIT KIT PRICE</u>
115 Vac	606-9038-001	\$51.77
230 Vac	606-9038-002	\$51.77
28 Vac	554-8355-000	\$150.00

NOTE: Prices are subject to change without notice.

Refer to modification kit parts list on page 5 or 6 for individual parts detailed information. Orders for kits should specify the modification kit number, quantity of kits required, and reference 51S-1/1() Service Bulletin No 5.

The 51S-1/1A/1F/1AF/1B Receiver Instruction Book, ninth edition, Collins part number 523-0097000, lists the 28-Vdc power supply conversion kit as an accessory item.



MODIFICATION PROCEDURE A (Converts 51S-1A/1AF to 115-/230-Vac operation)

1. Disconnect power cord, and remove cabinet from unit as follows:
 - a. Turn receiver upside down on table or bench.
 - b. Remove four feet and screw that is midway between rear feet.
 - c. Remove two bright-plated screws under lid (unpainted screws either side of lid).
 - d. Remove chassis by sliding forward out of cabinet.

NOTE: In the following step, examine all wires for color code matching. When disconnecting wires, label or tag any that differ from the color code called out in the step.

2. Disconnect the following wires from the 28-Vdc power supply and let the wire ends hang free. See illustration for aid in locating terminals.

<u>WIRE AWG SIZE AND COLOR</u>	<u>WIRE QUANTITY</u>	<u>DISCONNECT FROM</u>
#16 white-red	1	Terminal 1
#16 white-black	1	Terminal 10
#22 white	1	Terminal 8
#22 white-red	3	Terminal 2
#22 white-orange	2	Terminal 4
#22 white-black-red-blue	2 or 3	Terminal 5
#22 white-brown-green	2	Terminal 6

3. If the 28-Vdc power supply has a stiffening arm attached to the side of the chassis, remove the slug rack cover and remove the two screws securing the arm.
4. Remove the four securing screws from the chassis of the 28-Vdc power supply, and lift out the supply.
5. Install the 115-/230-Vac power supply as follows:
 - a. Place power supply (547-2693-000) on 51S-1A chassis.
 - b. Place one each flat washer (310-0046-000), lockwasher (310-0077-000), and nut (313-0002-000), on the two studs protruding through the chassis from the filter choke L109. Start but do not tighten nuts at this time.
 - c. Place one each lockwasher (310-0072-000) and nut (313-0046-000), on the four studs protruding through the chassis from power transformer T6. Start but do not tighten nuts at this time.
 - d. Insert screw (343-0169-000) through the power supply chassis hole near fuse F1, and place flat washer (310-0046-000), lockwasher (310-0077-000), and nut (313-0002-000) on screw. Do not tighten nut at this time.



6. Attach power supply stiffening arm to the side of rf tuning unit on top of the chassis, securing with two screws (343-0134-000) and one each washers (310-6340-000) and (310-0278-000), and one nut (313-0132-000). Place the screw heads in the slug rack compartment. Tighten nuts, including those in steps 5.b, 5.c, and 5.d.
7. Cut the cable ties that secure the six sleeved wires on the cable harness located near rear of chassis. Connect the free ends of these wires to the ac power supply as follows (refer to note preceding step 2).

<u>WIRE AWG SIZE AND COLOR</u>	<u>WIRE LOCATION -- SOURCE</u>	<u>CONNECT TO</u>
#22 white-black	Rear chassis	T6-2
#22 white-red	Rear chassis	T6-1
#22 white-green	Rear chassis	T6-9
#22 white-blue	Rear chassis	T6-10
#22 white-orange	Near J10	F1-tip
#22 white	Near J10	F1-side

8. Reconnect the following wires to the 115-/230-Vac power supply that were disconnected from the dc power supply in step 2.

<u>WIRE AWG SIZE AND COLOR</u>	<u>WIRE QUANTITY</u>	<u>CONNECT TO</u>
#22 white	1	Center terminal of 3-terminal strip
#16 white-red	1	Terminal nearest fuse of 3-terminal strip
#16 white-black	1	Other terminal of 3-terminal strip
#16 white-red	3	C182 half-moon terminal
#22 white-orange	2	C182 triangle terminal
#22 white-brown-green	2	T6-7
#22 white-black-red-blue	2 or 3	Pin G of Vector terminal board

9. Cut sleeving (152-1367-000) into two 3/8-inch lengths, and place over the two no 6 studs left protruding in step 5.b.
10. Cut sleeving (152-1371-000) into four 3/8-inch lengths, and place over the four no 8 studs left protruding in step 5.c.
11. Examine chassis for damage, debris, and improper solder connections.
12. Locate 115-Vac power cord (554-7055-000) or 230-Vac power cord (554-7056-000), whichever is applicable. Remove fuse from cord kit and place 1.5-ampere fuse in F1 fuseholder of 115-Vac unit, or 0.75-ampere fuse in 230-Vac unit.

CAUTION: DO NOT CONNECT 115-VAC UNIT TO 230-VAC POWER SOURCE.

13. Replace cabinet, connect cord selected in step 12 to J10, and plug other end of P10 into ac socket with the round pin as ground.
14. Place 115-/230-Vac label (280-3015-000) adjacent to connector J10 on cabinet.



15. Check unit for proper operation.

MODIFICATION PROCEDURE B (Converts 51S-1/51S-1F to 28-Vdc operation)

1. Disconnect power cord and remove cabinet (refer to step 1 in modification procedure A).

NOTE: Refer to note in modification procedure A.

2. Disconnect the following wires from the ac power supply.

<u>WIRE AWG SIZE AND COLOR</u>	<u>WIRE QUANTITY</u>	<u>DISCONNECT FROM</u>
#22 white-black	1	T6-2
#22 white-red	1	T6-1
#22 white-green	1	T6-9
#22 white-blue	1	T6-10
#22 white-orange	1	F1-tip
#22 white	1	F1-side

3. Insert free ends of wires, disconnected in step 2, into sleeving (152-1363-000), secure sleeving with tape (435-1019-000), and tie back on cable with same tape.

4. Remove the following wires from ac power supply, and let them hang free (refer to note in modification procedure A).

<u>WIRE AWG SIZE AND COLOR</u>	<u>WIRE QUANTITY</u>	<u>DISCONNECT FROM</u>
#22 white-brown-green	2	T6-7
#22 white-black-red-blue	2 or 3	Vector terminal board-G
#22 white-orange	2	C182
#22 white-red	3	C182
#16 white-black	1	Terminal strip
#16 white-red	1	Terminal strip
#22 white	1	Terminal strip

5. Remove the two screws securing stiffening arm to rf turret assembly above the chassis. Remove the six nuts from the transformer and choke studs that pass through the main chassis. Remove the nut from screw near XF1, and lift out ac power supply.

6. Attach 28-Vdc power supply (547-3930-000) to chassis using four self-tapping screws (330-0736-000) to secure supply to chassis.

7. Connect and solder the following wires to the dc supply (refer to note in modification procedure A). Use illustration for aid in locating terminals.



<u>WIRE AWG SIZE AND COLOR</u>	<u>WIRE QUANTITY</u>	<u>CONNECT TO</u>
#16 white-red	1	Terminal 1
#16 white-black	1	Terminal 10
#22 white	1	Terminal 8
#22 white-red	3	Terminal 2
#22 white-orange	2	Terminal 4
#22 white-brown-green	2	Terminal 6
#22 white-black-red-blue	2 or 3	Terminal 5

- Examine chassis for damage, debris and improper solder connections. Check that a 6-ampere fuse is installed in fuseholder F1.
- Power supply outputs are as follows:

<u>TEST POINT TERMINAL</u>	<u>INDICATION</u>
2	+150 Vdc
4	+140 Vdc
6	+28 Vdc
5	-39 Vdc
1	Hot input
10	Ground

NOTE: Power supply is factory-wired for negative ground.

- Replace unit dust cover, and connect cord (548-8245-000) to J10 and 28 Vdc.
- Remove 115-/230-Vac power supply input label located adjacent to connector J10 on cabinet. If power rating marking is required, place blank label (074-1446-400) or equivalent over label area and mark it ± 28 Vdc.
- Check unit for proper operation.

PARTS REQUIRED

Modification kit A, 606-9038-001 or 606-9038-002 (Converts 51S-1A/1AF to 115-/230-Vac operation)

<u>COLLINS PART NUMBER</u>	<u>QTY</u>	<u>DESCRIPTION</u>
024-0100-000	1	Bag
152-1367-000	0.1 ft	Sleeving, insulating
152-1371-000	0.2 ft	Sleeving, insulating
280-3015-000	1	Label, power input
310-0046-000	3	Washer, flat no 6
310-0072-000	4	Lockwasher, no 8
310-0077-000	3	Lockwasher, no 6
310-0278-000	2	Lockwasher, no 4



SERVICE
BULLETIN

<u>COLLINS PART NUMBER</u>	<u>QTY</u>	<u>DESCRIPTION</u>
310-6340-000	2	Washer, flat no 4
313-0002-000	3	Nut, no 6
313-0046-000	4	Nut, no 8
313-0132-000	2	Nut, no 4
343-0134-000	2	Screw, 4-40
343-0169-000	1	Screw, 6-32
547-2693-000	1	Supply, power, ac

NOTE: The following part is for modification kit 606-9038-001 only.

554-7055-000	1	Kit, power cord, 115 Vac
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NOTE: The following part is for modification kit 606-9038-002 only.

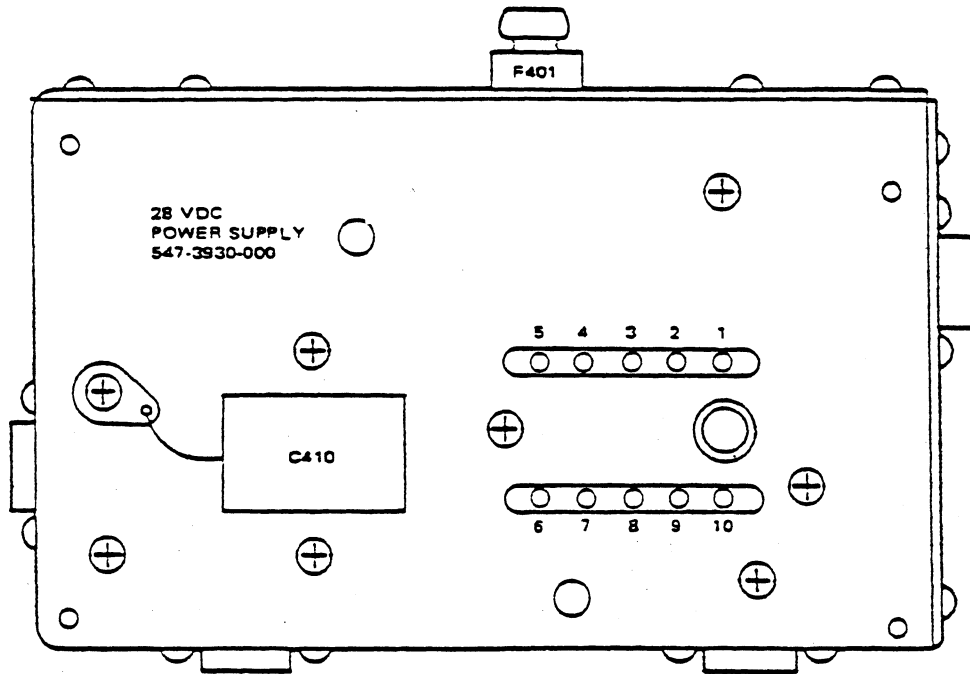
554-7056-000	1	Kit, power cord, 230 Vac
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Modification kit B, 544-8355-000 (Converts 51S-1/1F to 28-Vdc operation)

<u>COLLINS PART NUMBER</u>	<u>QTY</u>	<u>DESCRIPTION</u>
024-0100-000	1	Bag
152-1363-000	0.5 ft	Sleeving, insulating
264-4100-000	2	Fuse, 6 A, F1
330-0736-000	4	Screw, tapping, no 6
435-1019-000	3.0 ft	Tape
547-3930-000	1	Supply, power 28 Vdc
548-8245-000	1	Assy, power cord, 28 Vdc

NOTE: The following part is not part of the modification kit and must be ordered in addition to the kit, if required, at a unit price of \$0.01 each.

074-1446-400	1	Label, blank
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28-Vdc Power Supply, Bottom View, Terminal Location



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

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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 μ F capacitor C323.
- c. Remove the shield cover over the bottom of the 51S-1.
- d. Remove existing 47-k Ω , 1/2-watt resistor R151 (V1 screen-grid resistor), and replace with new 47-k Ω , 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- μ 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 Ω , 1/4-watt resistor R1004 (745-0794-000) from TB12-D to TB12-F.
- m. Connect 18-k Ω , 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 Ω , 1-watt resistor R1007 (745-3394-000) from TB6-H to TB6-C.
- x. Connect 0.1 μ 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 μ F capacitor C139 is not installed from XV5-7 to ground, install 0.01 μ 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 μ F, 50 Vdc, C1001
913-3681-000	1	Capacitor, 0.1 μ F, C1002
913-3013-000	1	Capacitor, 0.01 μ F, C139
353-6442-020	4	Diode, 1N4002, CR1001 through CR1004



SERVICE BULLETIN

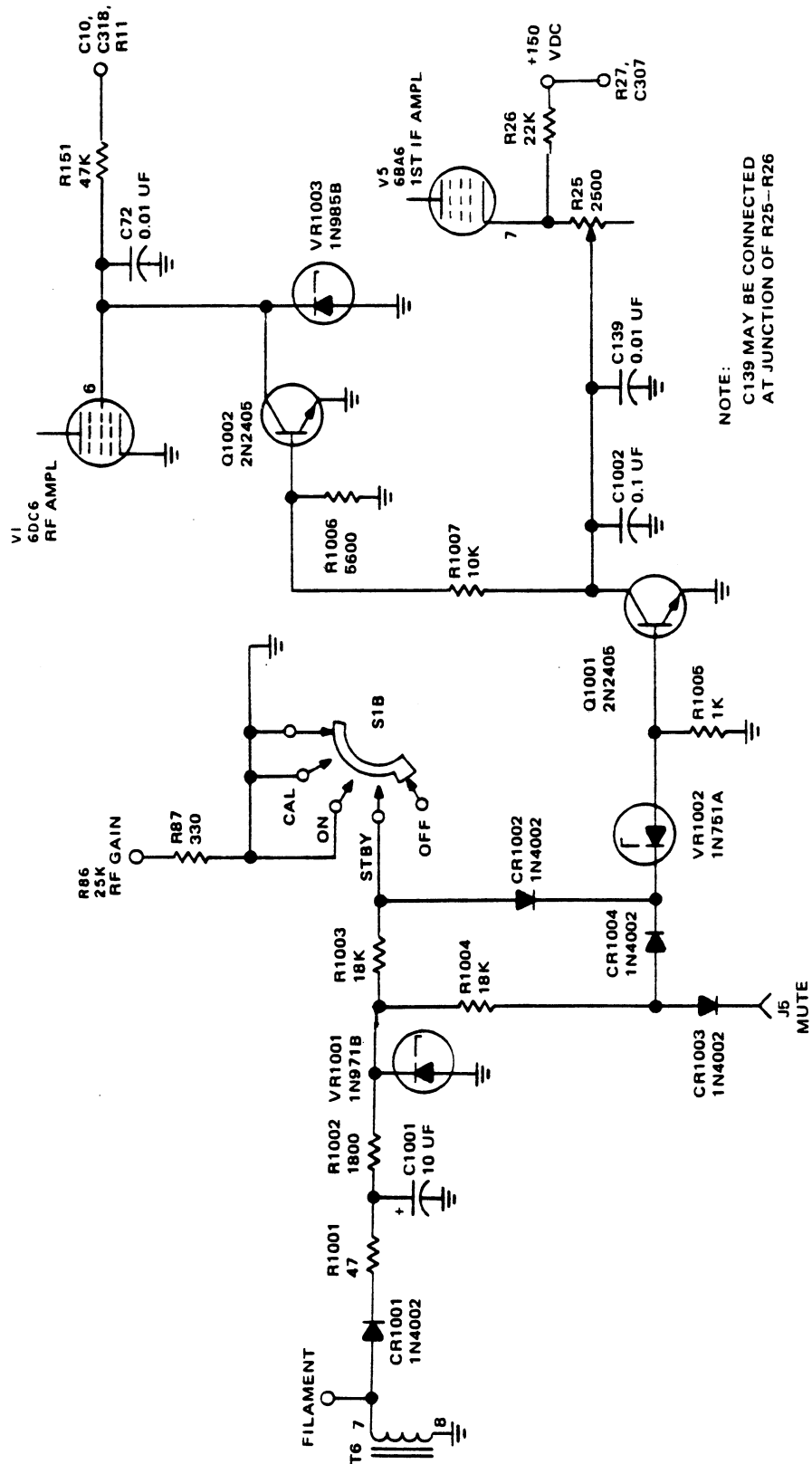
SERVICE BULLETIN NO 6

<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 Ω , 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 Ω , 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 Ω , 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





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).



SERVICE BULLETIN

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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.
- l. 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.



SERVICE BULLETIN

SERVICE BULLETIN NO 7

- 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.

COLLINS RADIO COMPANY

CEDAR RAPIDS, IOWA



SERVICE BULLETIN

SERVICE INFORMATION LETTER 7-63

DATE: 5-14-63

EQUIPMENT TYPE: RECEIVER 51S-1

SUBJECT: REDUCED HUM IN AUDIO OUTPUT WITH USE OF 28-VOLT
D-C POWER SUPPLY

Audio output hum from 400 cps a-c power operation becomes noticeable if the operational techniques are such that the audio gain control is set at or near maximum and the r-f gain control is used to control the signal level. Wherever surrounding noise conditions require full audio gain advance in addition to full r-f gain advance, it is recommended that, if possible, 28 volt d-c power be used in preference to 400 cps a-c power. The power source to be used, however is left to the discretion of the user.

A 28 volt d-c power supply is available which can be directly interchanged with the a-c power supply.

The 28-volt d-c versions of Receivers 51S-1 and 51S-1F have type designations 51S-1A and 51S-1AF.

The Collins part numbers of the 51S-1A/1AF and the 28-volt power supply with mounting hardware and power cord are as given below. Price and delivery information on these components can be obtained from Collins Radio Company, Ground Communications Product Line, Cedar Rapids, Iowa.

Description

Collins Part Number

Receiver 51S-1A, 28 volt d-c, cabinet model	522-2546-00
Receiver 51S-1AF, 28 volt d-c, rack mounted model	522-3156-00
Power supply assembly, 28 volt d-c	554-8355-00