



# SERVICE BULLETIN

Collins Telecommunications Products Division/Rockwell International

● 350485

HF-380 TRANSCEIVER (622-3580-001)  
KWM-380 TRANSCEIVER (622-5093-001)  
SYNTHESIZER VARIABLE REFERENCE FREQUENCY LOOP A5A2 (638-6920-001)

SERVICE BULLETIN NO 16  
(SUPERSEDES SERVICE BULLETIN NO 3)

ELIMINATE FREQUENCY WARBLE AND REDUCE 500-Hz SIDEBANDS  
ON INJECTION FROM SYNTHESIZER

This service bulletin applies to the following:

EQUIPMENT	APPLICABLE TO SERIAL NUMBER	PRODUCTION CUT-IN SERIAL NUMBER
HF-380 622-3580-001	206 and below	207
KWM-380 622-5093-001	2099 and below	2100
Production cut-in for circuit card A5A2 (638-6920-001) is REV K.		

A frequency warble may occur at certain frequencies in some radios. The warble will usually occur at the top end of each 1-MHz band. The problem has been traced to two integrated circuits on synthesizer variable frequency loop A5A2. When U14 and U26 are at the low end of their specified parameters, a low rf input may cause them to miscount. Steps F through L of the modification procedure will correct this problem.

The synthesizer 500-Hz sidebands can be observed as a false signal 500 Hz away from a strong cw carrier when tuning with a narrow cw crystal filter. This service bulletin (steps M and N of the modification procedure) reduces the 500-Hz sideband level on the synthesizer output (first receiver mixer local oscillator).

Estimated time required to perform the modification is 1.5 man-hours.

The modification parts are itemized in the material information paragraph. For additional information concerning parts, contact Collins Telecommunications Products Division/Rockwell International, Service Parts Department, Cedar Rapids, Iowa 52498. Reference HF-380/KWM-380 Service Bulletin No 16 in all correspondence.

No special tools or equipment are required.

## MODIFICATION PROCEDURE

- A. Disconnect the transceiver from primary power.
- B. Set the transceiver on its side with the power transformer on top. Remove the dust cover by removing four screws located adjacent to the four feet on the bottom of the transceiver.

**CAUTION: THIS EQUIPMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES. SPECIAL HANDLING METHODS AND MATERIALS MUST BE USED TO PREVENT EQUIPMENT DAMAGE. THE MAINTENANCE OPERATOR AND ALL TOOLS SHOULD BE GROUNDED.**

- C. Remove the card cage cover by removing all screws on the cover.
- D. Remove the A5 assembly from the card cage. Two cable clamps on the side of the card cage must be removed to provide enough slack in the cable to remove A5.
- E. Remove the screws that secure A5A2 card to the center plate. This will allow access to the rear of the card for soldering purposes.

**NOTE: Refer to figure 1 for location of components. Refer to figure 2 for a schematic diagram showing the revised U10/U19 connections.**

A 25- to 30-watt soldering iron with a tip designed for printed circuit use should be used. The tip should be clean to ensure proper melting of the solder prior to component lead removal or securing new components to the card. However, excessive applications of heat should be avoided.

- F. Remove 4-pF capacitor C40 and replace it with a 12-pF capacitor (912-4141-120).
- G. Remove 4-pF capacitor C45 and replace it with a 12-pF capacitor (912-4141-120)
- H. Remove transistor Q9 (2N5486) and replace it with a 2N5397 transistor (352-0998-010).
- I. Remove 0.15- $\mu$ H coil L6 and replace it with a 0.10- $\mu$ H coil (240-2723-140).
- J. Remove 0.15- $\mu$ H coil L7 and replace it with a 0.10- $\mu$ H coil (240-2723-140).
- K. Remove 47-pF capacitor C50 and replace it with a 27-pF capacitor (913-1098-570).
- L. Remove 154- $\Omega$  resistor R24 and replace it with a 56- $\Omega$  resistor (745-0704-000).
- M. On the bottom of the card, cut the circuit trace which connects U10-5 to U10-10.
- N. Install a jumper wire (428-0282-050) from U19-2 to U10-5 on the bottom of the card.
- O. Mark SB 16 on the circuit card near the part number.



# SERVICE BULLETIN

Collins Telecommunications Products Division/Rockwell International

- P. Reassemble the transceiver in the reverse order of disassembly.
- Q. Mark SB 16 on the service bulletin information chart. If the transceiver does not have an information chart (280-3778-010), order one and attach it near the name-plate.

## MATERIAL INFORMATION

The parts listed below are required to modify one HF-380 or one KWM-380.

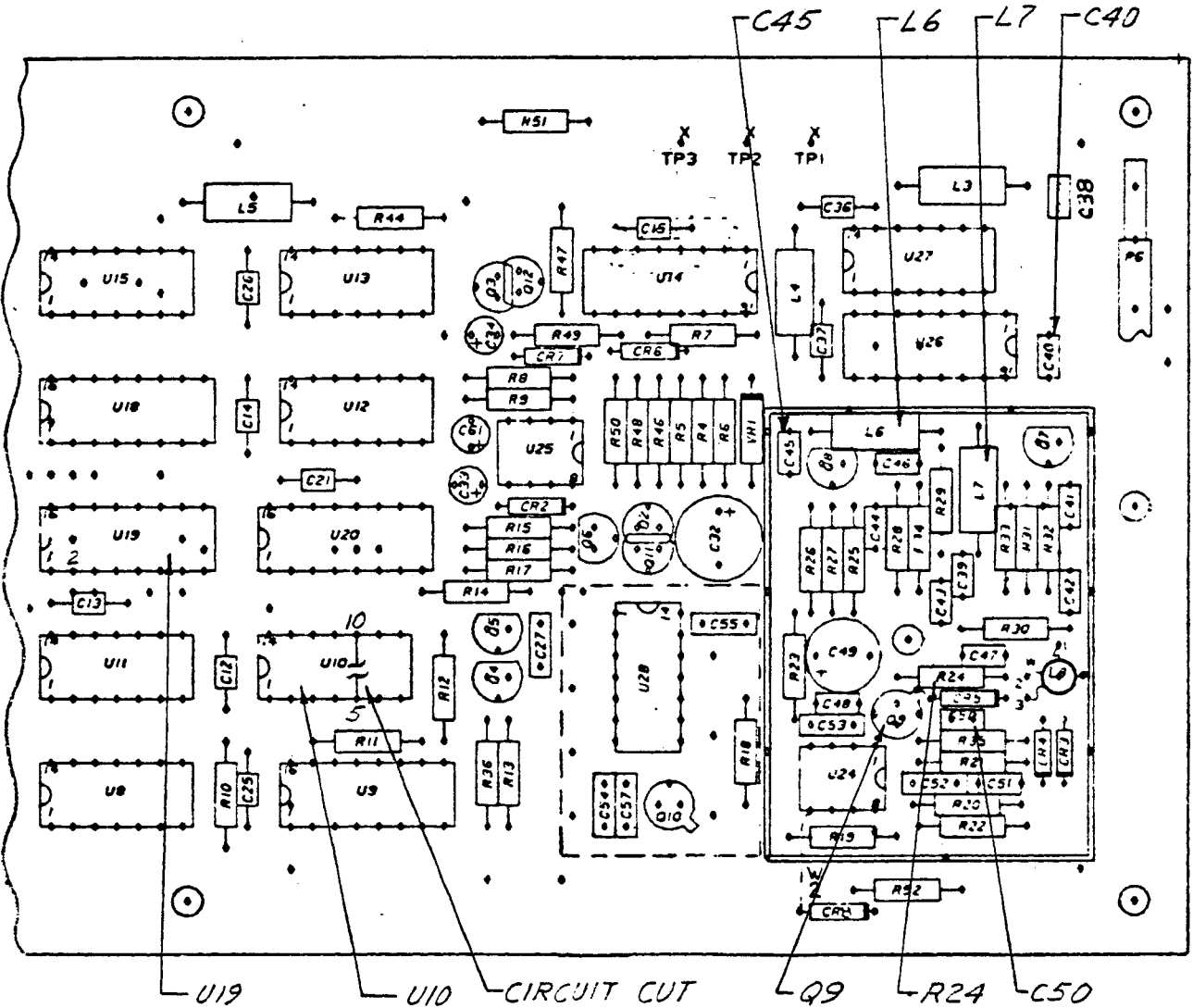
<u>COLLINS PART NUMBER</u>	<u>QTY</u>	<u>UNIT PRICE</u>	<u>DESCRIPTION</u>
912-4141-120	2		Capacitor, 12 pF, C40, C45
352-0998-010	1		Transistor, 2N5397, Q9
240-2723-140	2		Coil, 0.10 $\mu$ H, L6, L7
913-1098-570	1		Capacitor, 27 pF, C50
745-0704-000	1		Resistor, 56 $\Omega$ , R24
428-0282-050	75 mm (3 in)		Wire, jumper
*280-3778-010	1		Chart, information

\*Order as needed.



# SERVICE BULLETIN

Collins Telecommunications Products Division/Rockwell International

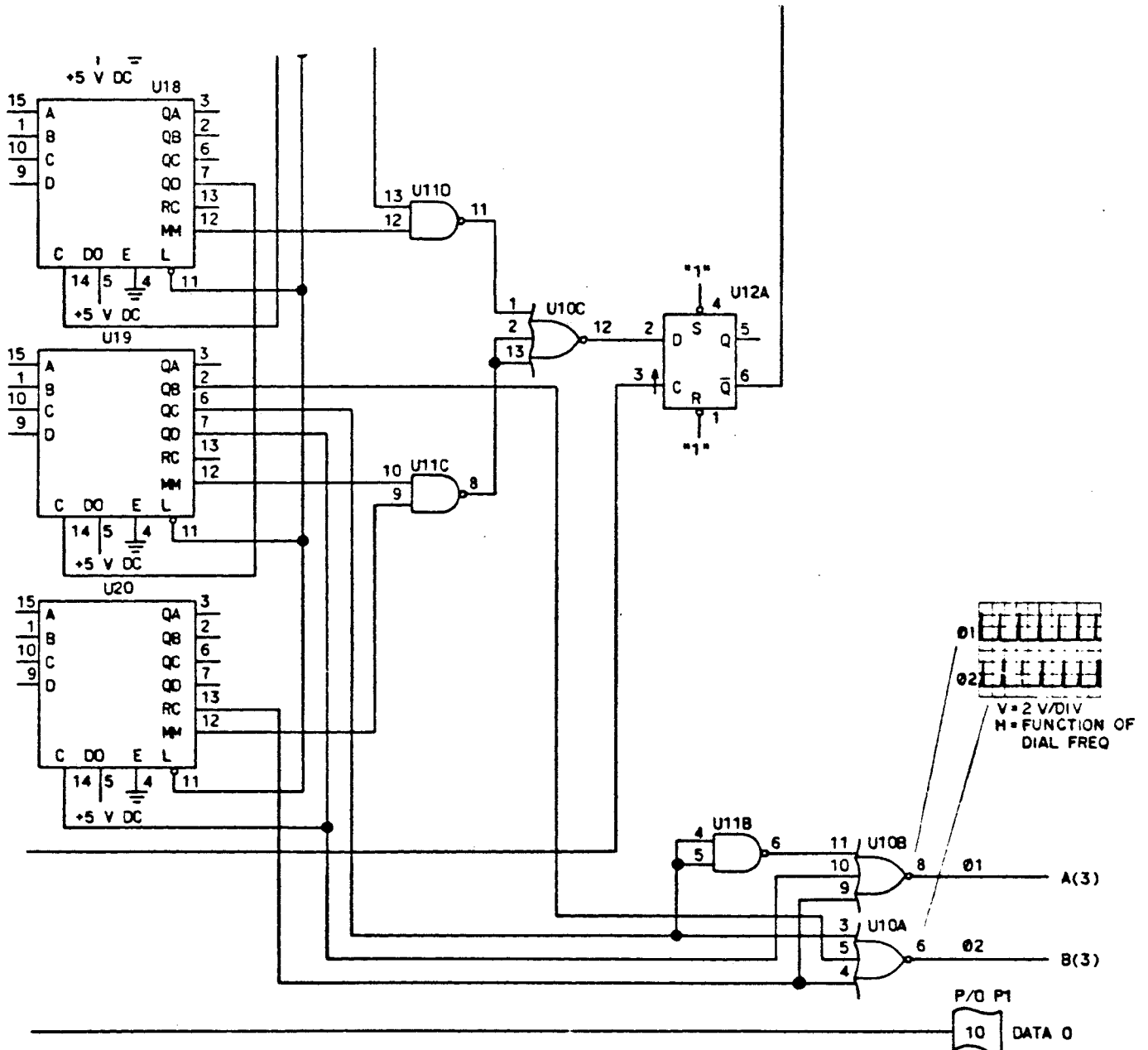


P/O Synthesizer Variable Reference Frequency Loop A5A2  
Figure 1



# SERVICE BULLETIN

Collins Telecommunications Products Division/Rockwell International



P/O Synthesizer Variable Reference Frequency Loop A5A2, Schematic Diagram  
Figure 2