
ELECTRONICS FIELD CHANGE BULLETIN
 U. S. NAVAL SHORE ELECTRONICS ENGINEERING
 3431 CARLYN SPRING ROAD
 BAILEY'S CROSSROADS, VIRGINIA

MODIFIES 0-941/UR
 CIRCUITS TO PROVIDE AUTOMATIC
 CONNECTION OF 0- 941/UR
 AS FREQUENCY STANDARD FOR
 ASSOCIATED EQUIPMENT WHEN
 EXTERNAL STANDARD FAILS

TYPE (1)	CLASS (A)	OPERATIONAL CHANGE (X)
ESTIMATED MANHOURS (4)		NON-OPERATIONAL CHANGE ()

Prepared by
 The Technical Materiel Corporation

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AUTHORIZATION NOTICE: Forces afloat or station personnel shall accomplish this field change at the earliest opportunity on ship- or shore-installed equipment affected without reference to the Bureau of Ships.

EQUIPMENT AFFECTED: 0-941/UR (Commercial Designation: HFS-1)

PURPOSE: This modification provides for automatic switchover to the internal frequency standard, in the event of failure of the external frequency standard.

PREVIOUS FIELD CHANGES: No previous field changes need be accomplished prior to the installation of this field change.

EFFECT ON NOMENCLATURE: Military nomenclature changes to upon accomplishment of this field change. Commercial designation becomes .* For simplicity, 0-941/UR will be referred to, in this bulletin, as HFS.

IDENTIFICATION OF ACCOMPLISHMENT: To determine whether this modification has been accomplished, remove the external frequency standard; the equipment shall still operate.

* Blank spaces indicate nomenclature has not yet been assigned.

LIST OF MATERIAL REQUIRED: Table 1 lists material supplied with the field change kit.

Table 1. Material supplied with field change modification kit.

ITEM	REF. DESIG.	MANUFACTURER PART NUMBERS	QTY.	DESCRIPTION
1		AX-546	1	1-MC Changeover Unit
2		UG-625/U	1	BNC Jack
3		EY-102-2	1	Grommet
4		SCBPO632BN6	4	Mach Screw
5		LWE 06MRN	4	Washer, Split
6		FW 06HBN	4	Washer, Flat
7		NTH 0632BN8	4	Nut, Hex
8		CA-1049	1	Power Cable
9		7/16"	1	Drill Bit
10		5/16"	1	Drill Bit
11		11/64"	1	Drill Bit
12		TP-131	1	Stamp Kit
13		CA-480-3-9	1	Coaxial Inter. Cable
14		CA-480-3-9	1	Coaxial Inter. Cable
15		NP-362-27	1	Name Plate
16			1	No. 48 Drill Bit
17		SFBS-0256-SN3	4	Self-tapping Screw
18			2	Electronics Field Change Bulletin

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TOOLS AND TEST EQUIPMENT: Table 2 lists the tools and test equipment required by the installing activity to perform this modification. Since these tools are non-specialized, they are not provided with this field change kit.

Table 2. Tools and Test Equipment Required.

ITEM	TOOLS and TEST EQUIPMENT
1	Flat-blade screwdrivers, assorted sizes
2	Phillips-head screwdrivers, assorted sizes
3	Diagonal cutting pliers, 6-inch
4	Longnose pliers, 6-inch
5	Spin-tite wrenches, assorted sizes
6	Electric drill with 1/4" or 3/8" chuck
7	Solder, rosin-core
8	Soldering iron, 100-watt
9	Steel Rule, 6-inch or equivalent

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PROCEDURE: The following procedure is for making the field change. Refer to Table 1 and Table 2 of this bulletin and technical manual for HFS for equipment, parts, and components identification.

1. Remove all power from the HFS (disconnect cable from rear panel jack J3001).

NOTE

When performing step 2, identify corresponding jack and plug connection; this facilitates reconnection.

2. Disconnect all cables from jacks on rear of HFS.
3. Remove HFS from associated equipment; place HFS on work bench.
4. Remove top and bottom covers from HFS.
5. Unplug and remove capacitor C3001 from its socket. Retain C3001; it will be replaced later.
6. Unplug cable fitted with plug P3118 from jack J3107. Unsolder cable from jack J3020.
7. Use electric drill (item 6, table 2) and 7/16" drill bit (item 9, table 1), to drill 7/16" hole in HFS chassis as shown in figure 1.
8. Mount BNC jack (item 2, table 1) in hole drilled in step 7.
9. Use stamp kit (item 12, table 1) to mark HFS chassis below jack mounted in step 8 as follows: J3035.
10. Measure 23 inches along cable attached to rear of P3009: cut cable at 23-inch point.
11. Strip 1-1/2" of insulation from both cut ends of cable cut in step 10.

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PROCEDURE: (cont'd)

12. Connect stripped end of 23-inch cable (connected to P3009) to jack J3035 (mounted in step 8). Connect braid of cable to ground; connect center conductor of cable to center of jack.
13. Connect other stripped end of cable (connected to terminal of P3010) to J3020. Connect braid of cable to ground; connect center conductor of cable to center of jack.
14. Use 11/64-inch drill bit (item 11, table 1) and electric drill (item 6, table 2) to drill four 11/64-inch holes in HFS chassis as shown in figure 1.
15. Use 5/16-inch drill bit (item 10, table 1) and electric drill 5/16-inch hole in HFS chassis as shown in figure 1.
16. Press grommet (item 3, table 1) into hole drilled in step 15.
17. Solder one end of cable CA-1049 (item 8, table 1) to relay switch assembly AX-546 (item 1, table 1), see figure 2 , as follows:
 - (a) Orange wire to 24-volt terminal of AX-546.
 - (b) Black wire to ground lug of AX-546.
18. Pass free end of cable CA-1049 from rear of HFS through grommet installed in step 16.

NOTE

When performing step 19, position AX-546 so that its BNC coaxial connectors lie in a horizontal plane nearest the bottom rear of HFS.

19. Use nuts, screws, and washers (items 4, 5, 6, and 7, table 1) to mount AX-546 on holes drilled in step 14.

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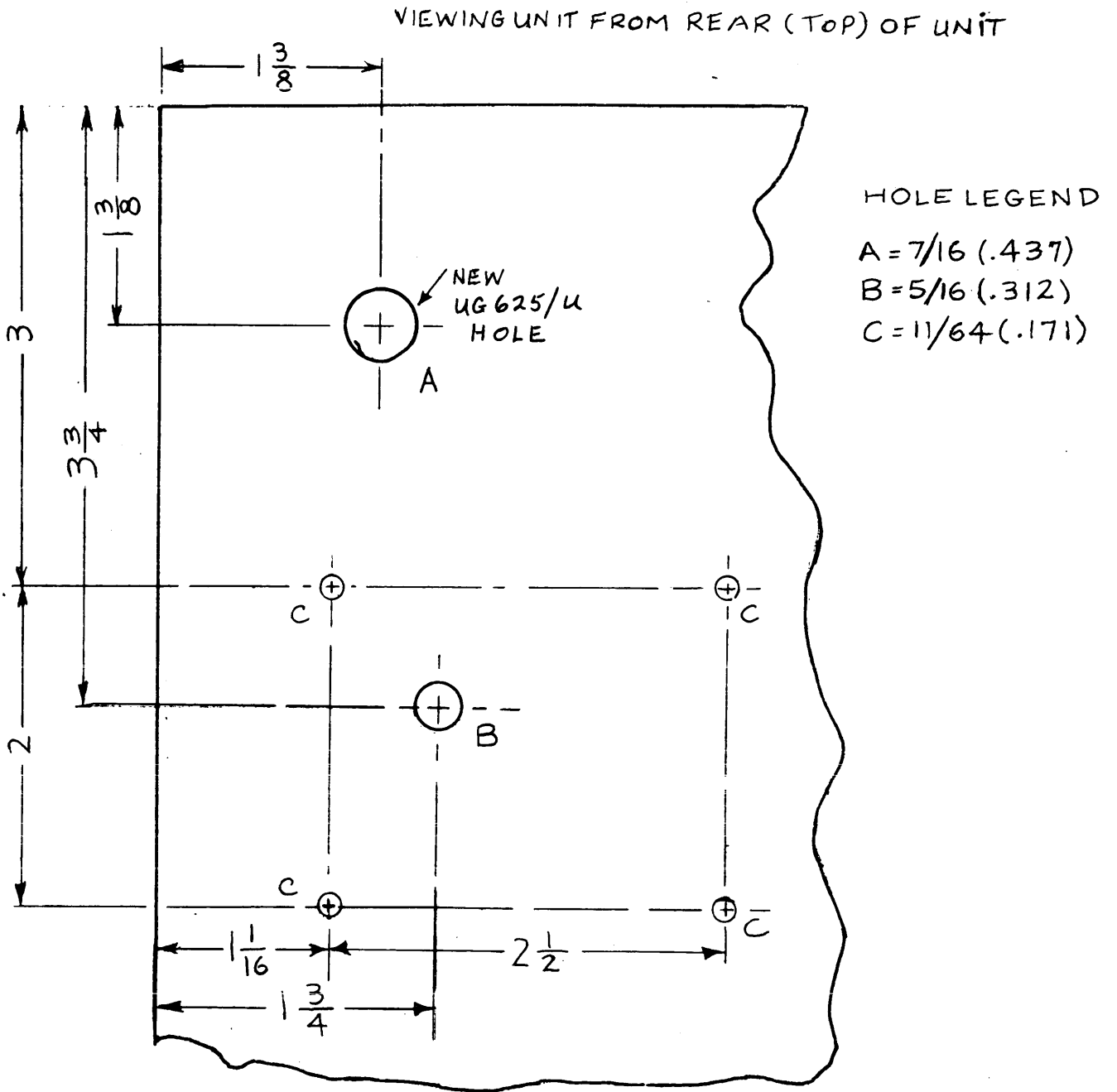


Figure 1. Rear Panel of HFS.

PROCEDURE: (cont'd)

20. Pass free end of CA-1049 through grommet located below jack J3001; route CA-1049 under chassis to jack J3003.
21. Solder free end of CA-1049 to jack J3003, see figure 2, as follows:
 - (a) Orange wire to pin 4 of J3003.
 - (b) Black wire to pin 3 of J3003.
22. Clean all metal drilling parts from HFS.
23. Plug capacitor C3001 (removed in step 5) into its socket.
24. Replace HFS top and bottom covers.
25. Connect one end of cable CA-480-3-9 (item 13, table 1) to jack J3020; connect other end of cable to AX-546 OUT jack J2.
26. Connect one end of cable CA-480-3-9 (item 14, table 1) to jack J3035 (installed in step 8); connect other end of cable to AX-546 INT STD IN jack J3.
27. Using number 48 drill bit (item 16, table 1), electric drill, and using identification plate (item 15, table 1) as a template, drill four number 48 holes directly below existing identification plate.
28. Use screws (item 17, table 1) to mount identification plate (item 15, table 1) below existing identification plate.
29. Replace HFS into associated equipment and connect cables that were disconnected in steps 1 and 2 as follows:
 - (a) Connect the external frequency standard cable to EXT STD in jack J1 on AX-546.
 - (b) Connect a-c power cable to jack J3001 on rear of HFS.

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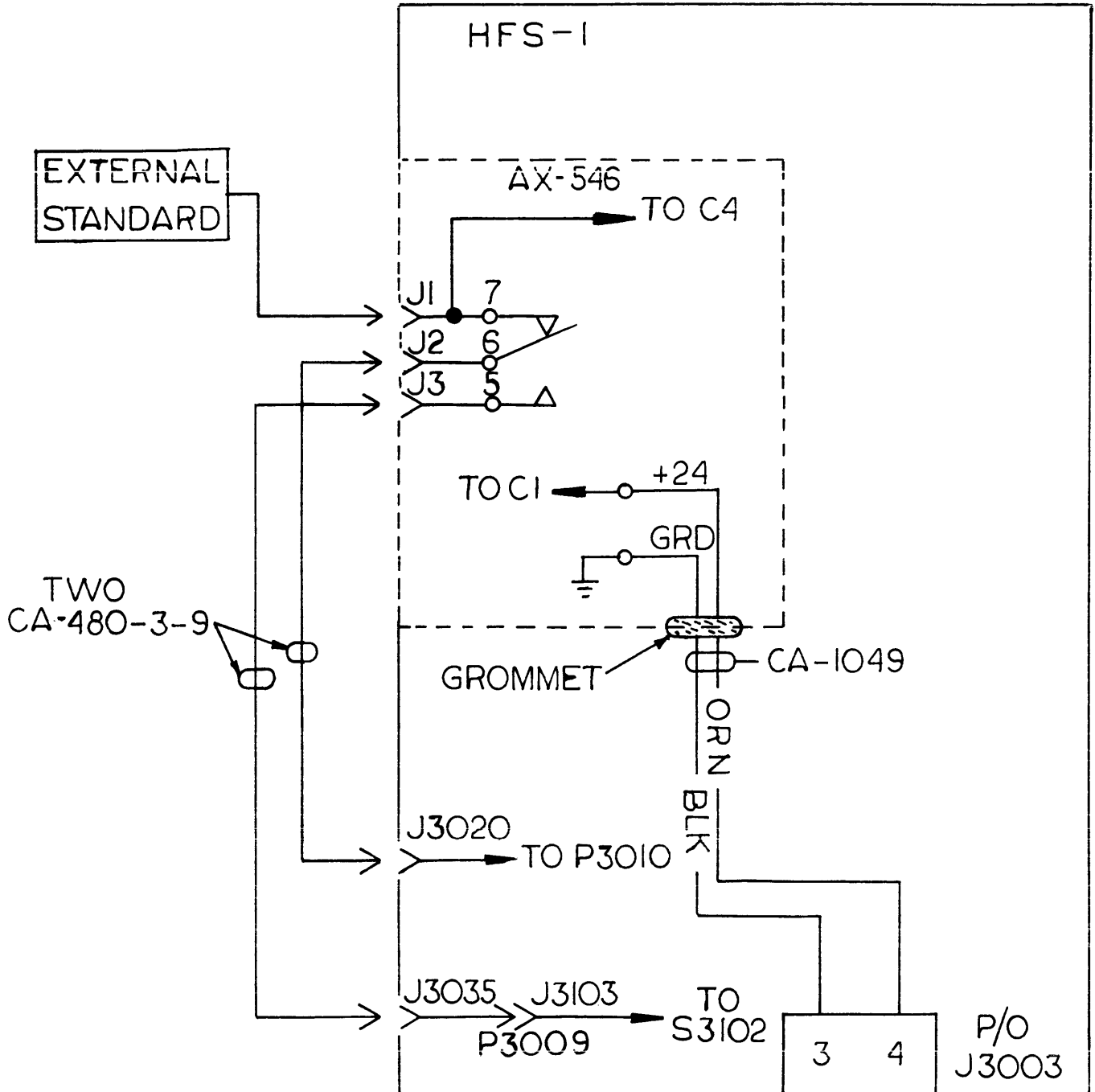


Figure 2. Modification, Cabling Diagram

ROUTINE INSTRUCTIONS.

1. Corrections to publications and charts. The applicable technical manual shall be corrected in accordance with the following instructions:
 - (a) Maintenance Support Activities shall make the corrections immediately but shall keep the superseded data in the book for support of equipments that have not been modified. Holders of equipment shall not make these corrections or replacements until after the field change has been accomplished.
 - (b) Correct Technical Manual (IN-3001B) for Control Synthesizer and Standard, Model HFS-1 in accordance with temporary correction T-4.
 - (c) This field change does not affect any other publications, plans or charts.
2. Record of Accomplishment: Personnel making this field change shall record the completion data of the change on the Electronic Equipment History Card, NAVSHIPS 536, and on the Record of Field Changes card, NAVSHIPS 537.
3. Disposition of Replaced Material: Parts removed when performing this field change shall be turned into the nearest supply activity for processing in accordance with current Bureau of Ships instructions.
4. Disposition of Field Change Bulletin: Maintenance support activities shall maintain a library copy of this field change bulletin. Holders of equipment shall not destroy this field change bulletin until the field change has been accomplished, the equipment tested, and the applicable manuals, drawings, charts, and identification plates have been corrected or replaced.

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TEMPORARY CORRECTION TO TECHNICAL MANUAL
IN-3001B FOR CONTROL SYNTHESIZER AND STAN-
DARD MODEL HFS-1 (Military Designation:
0-941/UR)

This temporary correction revises the manual to reflect the equipment changes made by Field Change 1-0-941/UR. The purpose of this field change is to modify the HFS-1 so that its internal frequency standard is automatically connected to associated equipment when an external frequency standard input to the equipment fails.

When this change is included in the manual, the manual shall cover the equipment as though Field Change 1-0-941/UR had been accomplished on the equipment. This correction does not supersede any other corrections or changes.

Maintenance Support Activities shall make this correction in the technical manual immediately, but shall keep the superseded data intact for support of equipments that have not been modified.

Holders of equipment accompanied by technical manuals shall not make this correction in the manual until accomplishment of the field change.

Make the following pen-and-ink corrections. Insert this temporary correction T-4 in the technical manual immediately after the front cover and preceding T-3.

1. In HFS-1 manual, change all "HFS-1" references to "HFS-1 (MOD/KIT-216)".
2. In paragraph 1-3, page 1-1, change "Stability" to "Stability (using internal 1-mc standard)".
3. In table 1-1, page 1-2, add the following:

Q1	2N697	EXT 1 MC
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4. In table 1-1, page 1-2, add the following to DIODES: -

CR1, CR2, CR3	IN34
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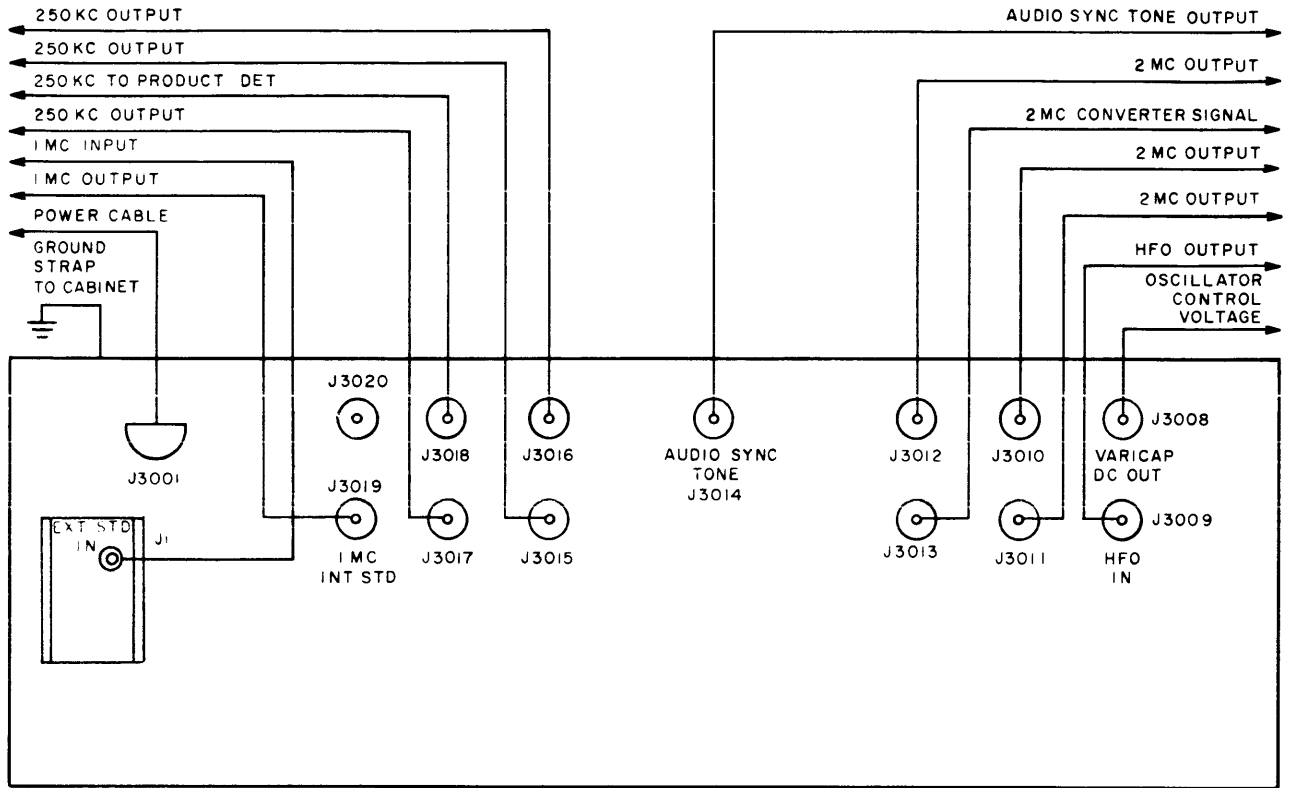
5. In table 2-1, page 2-1, change "J3020" to read "J1".
6. Make a copy of figure 2-2, page 2-2, in HFS-1 manual. Retain this copy in support of equipments that have not been modified.
7. Paste HFS-1 Interconnection Diagram, supplied with this temporary correction, over figure 2-2, page 2-2 in HFS-1 manual.
8. In paragraph 3-3, page 3-2, change second sentence to read:
"However, should you want to use an external 1-mc signal, make connection as shown in figure 2-2 and keep the INT/EXT switch S3102 in the INT position,"
9. In paragraph 3-3, page 3-2, change the sixth sentence to read:
"The external 1-mc source is connected to 1-mc external jack J1 at the rear of the equipment."
10. Make a copy of figure 4-4, page 4-7, in HFS-1 manual. Retain this copy in support of equipments that have not been modified.
11. Paste HFS-1 1-mc Frequency Standard Schematic Diagram, supplied with this temporary correction, over figure 4-4, page 4-7 in HFS-1 manual.
12. In paragraph 4-3c., second sub-paragraph, page 4-8, remove last sentence, "With S3102 in the External position, B+ is removed from V3105A and a 1-mc external signal, connected to J3107, can be used as a standard."
Replace with an additional paragraph as follows:
"With S3102 in the INT position, when an external 1-mc signal is connected at J1 receptacle, the 1-mc input causes Q1 transistor to conduct, energizing relay K1. The contacts of K1 break the internal 1-mc continuity. If the external 1-mc source should fail, Q1 ceases conducting and K1 is de-energized, re-making the internal 1-mc continuity."
13. On page 7-64, add "Parts List for Switchover Chassis Assembly" supplied with this temporary correction.

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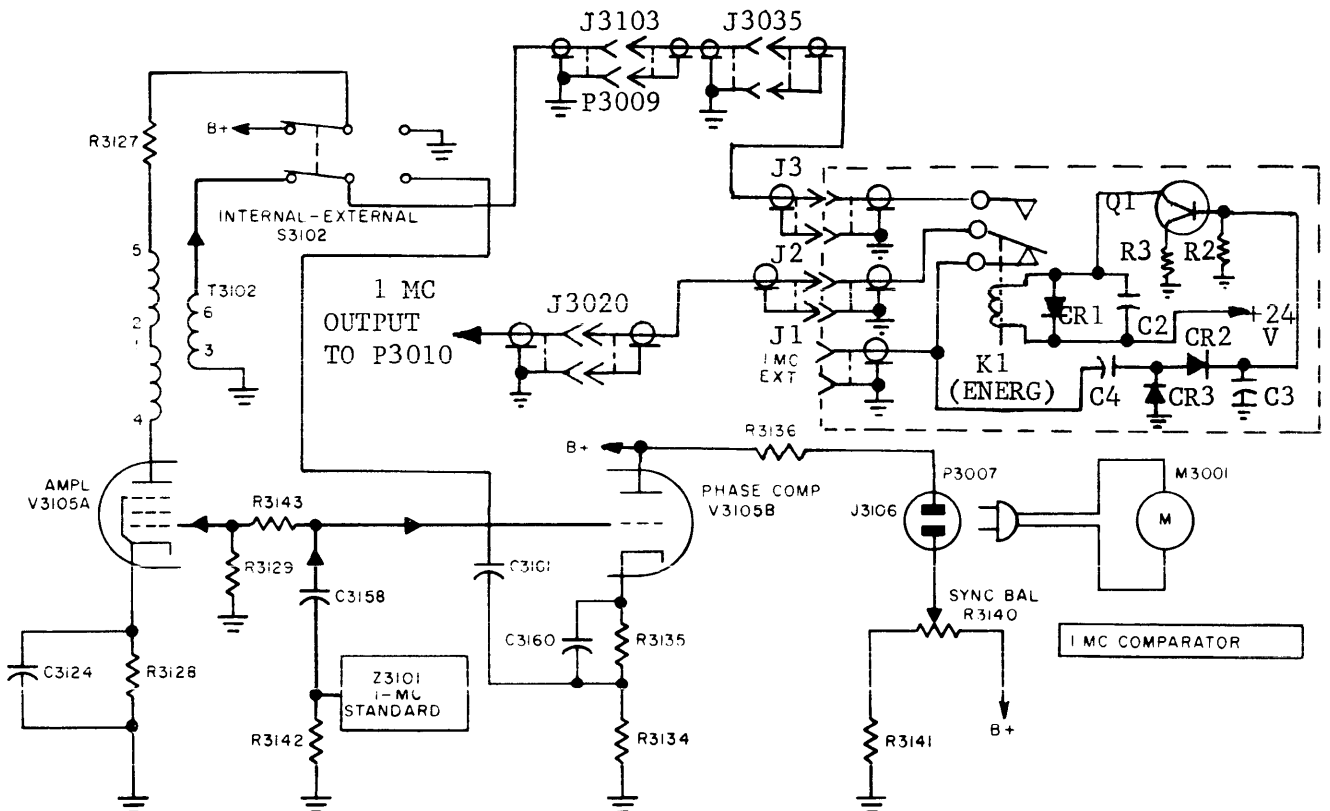
14. Make a copy of figure 8-1 (Sheet 1 of 3), page 8-3/8-4, in HFS-1 manual. Retain this copy in support of equipments that have not been modified.
15. Paste circuit revision of sheet 1 of figure 8-1, supplied with this temporary correction, over 1-mc input area (as indicated by reference components in the revision) onto figure 8-1, sheet 1 in HFS-1 manual.
16. Insert AX-546 Switchover Assembly Schematic Diagram, supplied with this temporary correction, between sheet 3 of figure 8-1 (page 8-7/8-8) and back cover in HFS-1 manual.

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HFS-1, Interconnection Diagram



Frequency Standard Schematic Diagram (Part of 3100 Deck)

PARTS LIST

for

SWITCHOVER CHASSIS ASSEMBLY

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 100,000 uuf, +80% -20%; 300 WVDC.	CC100-37
C2	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 10,000 uuf, GMV; 500 WVDC.	CC100-16
C3	Same as C2.	
C4	Same as C2.	
CR1	SEMICONDUCTOR DEVICE, DIODE: germanium; max. peak inverse voltage 60 V; continuous average forward current 50 ma; max. peak forward recurrent 150 ma; max. surge current 500 ma; max. inverse current 800 ua at -50 V or 50 ua at -10 V.	1N34
CR2	Same as CR1.	
CR3	Same as CR1.	
J1	CONNECTOR, RECEPTACLE, ELECTRICAL: RF; 1 round female contact, straight type; series BNC to BNC.	UG625B/U
J2	Same as J1.	
J3	Same as J1.	
K1	RELAY, ARMATURE: DPDT; 5,000 ohms, +10% DC resistance; operating voltage 20.5 VDC; current rating 4.1 ma; 85 mw at 25°C; contacts rated for 1 amp at 29 VDC; clear high impact styrene dust cover case.	RL156-4
Q1	TRANSISTOR: NPN; silicon mesa; collector to base voltage 60 V; collector to emitter voltage 40 V; emitter to base voltage 5 V; collector current 175 ma; power dissipation 2 watts at 25°C; junction temperature 175°C; hermetically sealed metal case.	2N697
R2	RESISTOR, FIXED, COMPOSITION: 100,000 ohms, +5%: 1/2 watt.	RC20GF104J

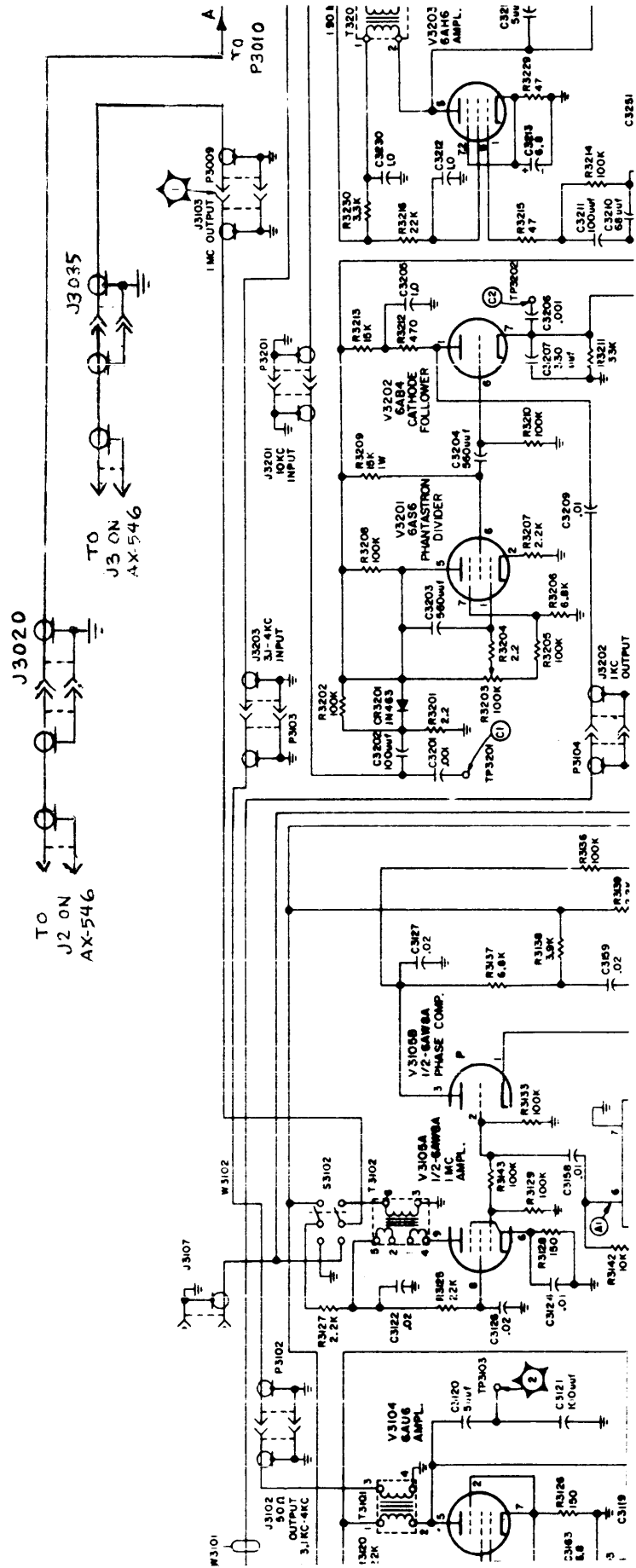
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PARTS LIST (CONT)

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
R3	RESISTOR, FIXED, COMPOSITION: 12 ohms, <u>±</u> 5%; 1/2 watt.	RC20GF120J
TB1	TERMINAL BOARD, BARRIER: 3 terminals; 6-32 thd x 1/4" long binder head screws; phenolic black bakelite.	TM100-3
XK1	SOCKET, RELAY: with retainer; 6 beryllium copper gold plated contacts; black pherolic socket.	TS171-1
J3035	Same as J1.	

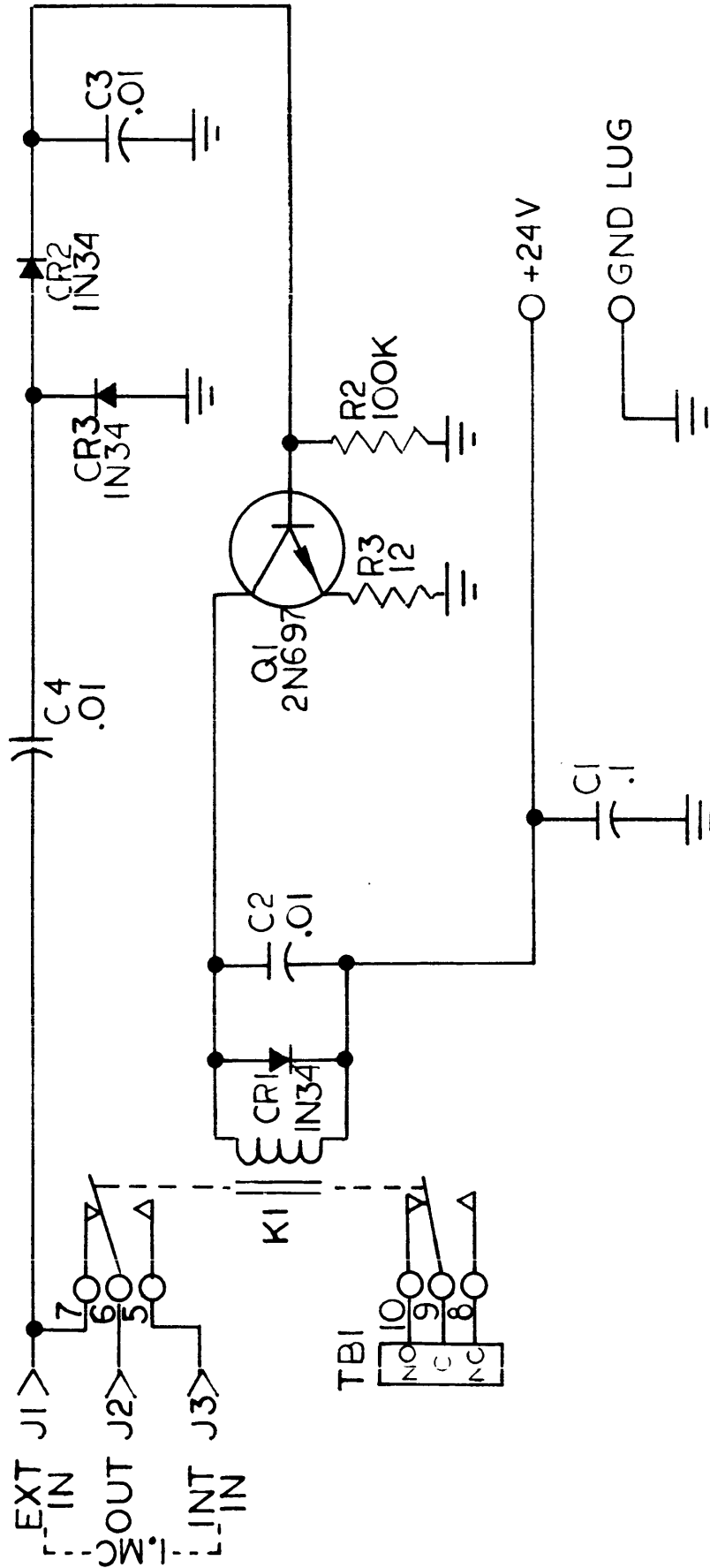
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Revision of sheet 1 of figure 8-1.

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NOTE
 1. ALL CAPACITORS IN uf
 2. RELAY K1 SHOWN ENERGIZED

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