UNCLASSIFIED

CSS-1C

HKJ

FIELD CHANGE

for

OSCILLATOR, RADIO FREQUENCY

0-715B/URA-31

THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, N.Y. OTTAWA, ONTARIO

ELECTRONICS FIELD CHANGE BULLETIN
BUREAU OF SHIPS, NAVY DEPARTMENT
WASHINGTON, D. C.

1-0-715B/URA-31

MODIFIES 0-715B/URA-31
CIRCUITS TO PROVIDE AUTOMATIC
CONNECTION OF 0-715B/URA-31
AS FREQUENCY STANDARD FOR
ASSOCIATED EQUIPMENT WHEN
EXTERNAL STANDARD FAILS

TYPE (1) CLASS (A)
ESTIMATED MANHOURS ( )

OPERATIONAL CHANGE (X)
NON-OPERATIONAL CHANGE ( )

Prepared by
The Technical Materiel Corporation

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: 0-715B/URA-31 (Commercial designation: CSS-1B)

PURPOSE: Modifies 0-715B/URA-31 so that it is automatically connected, as a frequency standard, to associated equipment when an external frequency standard input to the equipment fails.

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

EFFECT ON NOMENCLATURE: Military nomenclature changes to 0-715C/URA-31 upon accomplishment of this field change. Commercial designation becomes CSS-1C. For simplicity, 0-715B/URA-31 will be referred to, in this bulletin, as CSS.

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.	PART NUMBERS	QTY	DESCRIPTION
1		NP-362-26	1	Identification Plate
2		AX-546	1	Relay Switch Assembly
3		MS-4339	1	Mounting Plate for item 2
4		EY-102-2	2	Rubber Grommet
5		CA-1050	1	Power Cable
			1	Drill bit, 5/16"
7		CA-480-3-9	1	Coaxial Cable
8		SCBP0632BN5	4	Mounting screw for item 3
9		LWE06MRN	4	Lock Washer for item 8
10		CD-101-1-MW	3 ft.	Lacing Cord
11		SCFP0632BN6	1	Screw
12		SFBS-0256-SN3	4	Self-tapping screw
13			1	Drill bit, number 48

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.	Metal shears, 12-inch

PROCEDURE: The following procedure is for making the field change. Refer to Table 1 and Table 2 of this bulletin and technical manual for CSS

PROCEDURE (CONT).

1. Set CSS STANDBY/ON switch at STANDBY.

2. Disconnect a-c power cable from POWER in jack J605 on rear of CSS. NOTE: When performing step 3, as each cable is removed, label it with the number of the CSS jack that the cable was connected to.

3. Disconnect coaxial cables from J602, J603, and J606 on rear of CSS.

4. Remove CSS from its associated equipment; place CSS on work bench.

5. Remove top and bottom covers from CSS.

6. Remove four screws that hold terminal board A2352-B to underside of CSS chassis. Screw heads are reached from top of chassis.

NOTE

When performing Step 7, be careful not to pull too hard on soldered connections.

8. Use electric drill (item 6, table 2) and 5/16" drill bit (item 6, table 1) to drill 5/16" hole in chassis as shown in figure 1.

9. Press grommet (item 4, table 1) into 5/16" hole drilled in step 8.

10. Remove screws from positions labelled 1, 2, and 3 on figure 2.

11. Affix mounting plate (item 3, table 1) in position shown on figure 2. Use original screws in positions labelled 1 and 2; use screw (item 11, table 1) in position labelled 3 on figure 2.

12. Press grommet (item 4, table 1) into center hole of mounting plate installed in step 12.

13. Refer to figure 3 for steps 13 and 14. Solder one end of green wire of CA-1050 (item 5, table 1) to standoff insulator at junction of R619 and C610.

14. Solder one end of black wire of CA-1050 to ground lug nearest R619 and CR601 on underside of chassis.

15. Route CA-1050 along existing wire harness; pass free end through grommet installed in step 9 to topside of chassis, then through grommet installed in step 12 to rear of chassis.

16. NOTE: When performing step 16, be careful not to squeeze any wires between chassis and terminal board hardware. Mount terminal board A2352-B, moved in steps 6 and 7, in its original place, using original screws.

17. Solder free end of CA-1050 to AX-546 (item 2, table 1) as follows:

    (a) Green wire to 24-volt terminal of AX-546.

    (b) Black wire to ground lug of AX-546.

18. NOTE: When performing step 18, position AX-546 so that its BNC coaxial connectors lie in a horizontal plane nearest the bottom rear of the CSS. Use screws and lockwashers(items 8 and 9, table 1). Attach AX-546 to mounting plate (item 3, table 1)

that was installed in step 11.

19. Refer to figure 4 and, using metal shears (item 9, table 2), cut CSS top cover to fit around AX-546.

20. Replace CSS top and bottom covers.

21. Using an identification plate (item 1, table 1) as a template, drill identification plate mounting holes directly below existing identification plate.

22. Use screws (item 12, table 1) to mount identification plate, (item 1, table 1) below existing identification plate.

23. Replace CSS in its associated equipment and connect cables that were disconnected in steps 2 and 3, to AX-546 as follows:

    (a) Cable labelled J603 connects to EXT STD in jack J1 on AX-546.

    (b) Cable labelled J606 connects to 1 MC OUT jack J2 on AX-546.

    (c) Connect one end of CA-480-3-9 (item 7, table 1) to J602 on CSS; connect other end of CA-480-3-9 to INTERNAL STD IN jack Js on AX-546.

    (d) Connect a-c power cable to J605 on CSS.

24. Set CSS STANDBY/ON switch at ON.

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-2010F) for Frequency Standard Model CSS-1B 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 in to 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.

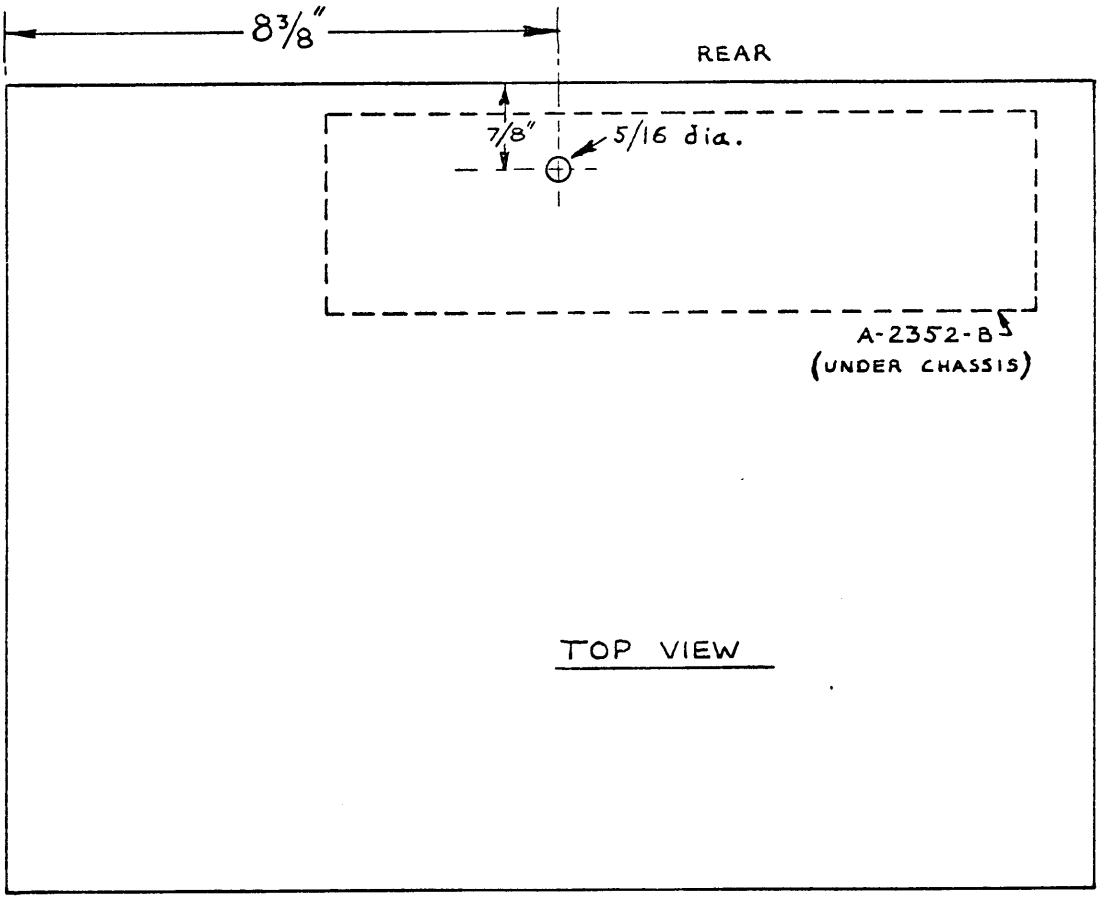


Figure 1. CSS, Top View

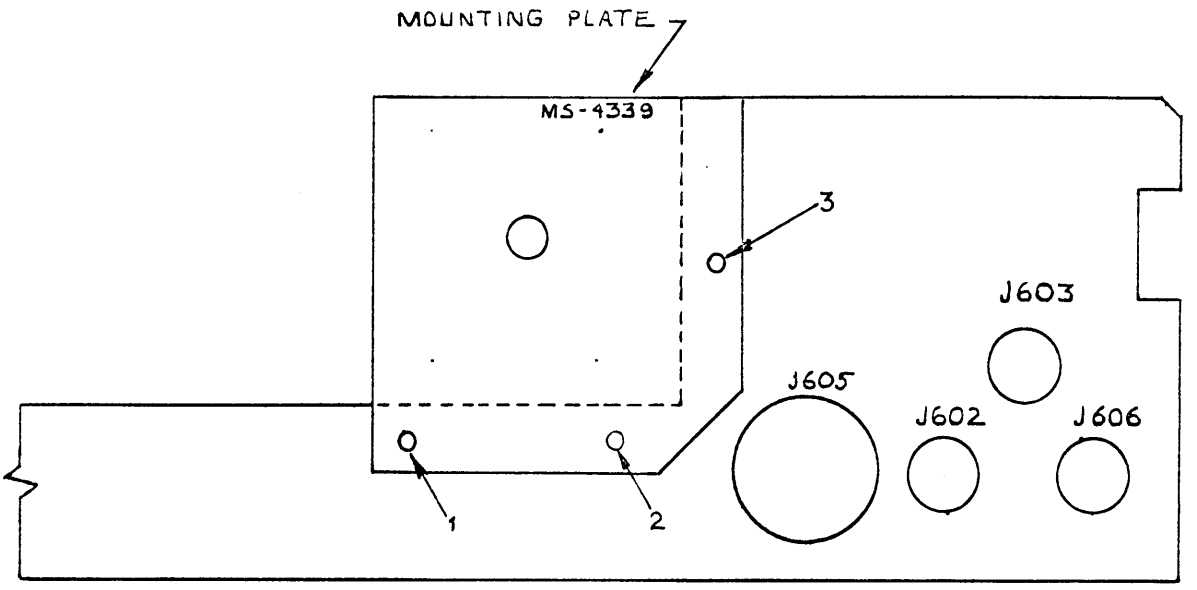


Figure 2. CSS, Rear View

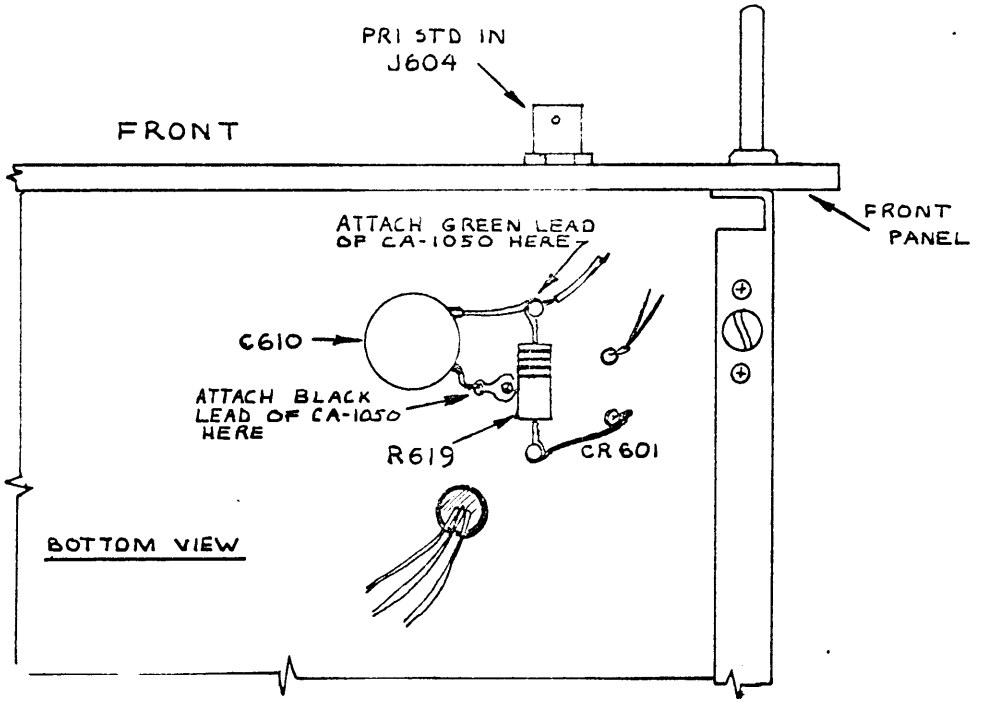


Figure 3. CSS, Bottom View

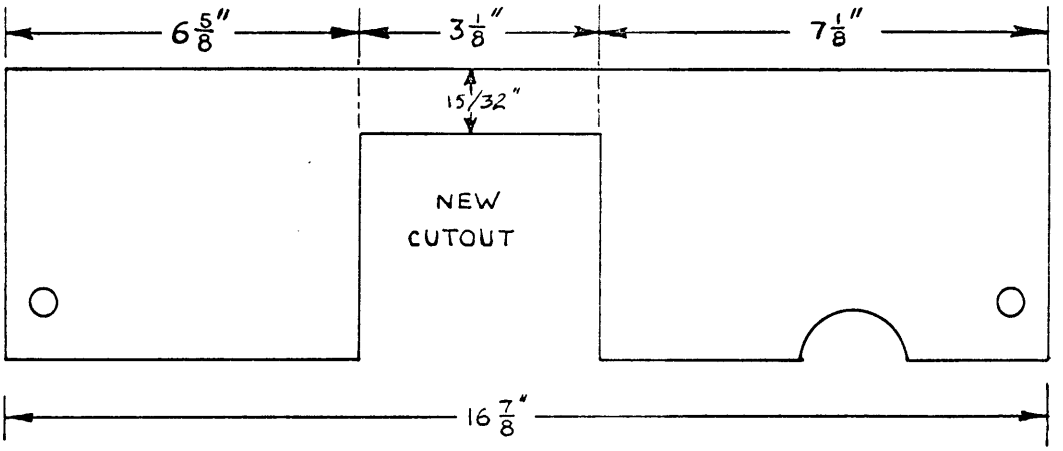


Figure 4. CSS, Top Cover, Rear View

TEMPORARY CORRECTION TO TECHNICAL MANUAL
IN-2010F FOR FREQUENCY STANDARD MODEL CSS-1B
(Military Designation: 0-715/URA-31)

This temporary correction revises the manual to reflect the equipment changes made by Field Change 1-0-715/URA-31. The purpose of this field change is to modify the CSS-1B so that it is automatically connected, as a frequency standard, 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 1-0-715/URA-31 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. Remove figure 8-1 (pp8-3/8-4) from CSS-1B manual and insert new figure 8-1 supplied with this temporary correction. Keep removed figure 8-1 for support of equipments that have not been modified.

2. Make a copy of figure 4-1, page 4-0 in CSS-1B manual. Retain this copy in support of equipments that have not been modified.
3. Paste CSS-1C Simplified Block Diagram supplied with this temporary correction over figure 4-1, page 4-0 in CSS-1B manual.
4. In CSS-1B manual, change all CSS-1B references to CSS-1C.
5. In paragraph 1-4, under Semiconductor Complement, add the following:

(1) 2N 1308

6. In paragraph 2-2c., change J602 to J2.
7. At end of paragraph 4-1, page 4-0, add the following: An automatic change-over relay automatically connects the CSS-1C as a frequency standard, to associated equipment if an external frequency standard input to the equipment fails.
8. At end of first paragraph within paragraph 4-2, page 4-0, add the following:

The 1-mc output from J602 is applied to INT 1-mc jack J3, and 1-mc from an external source may be appled to EXT STD IN jack J1. One of these two signals is coupled through relay K1 to 1-mc out jack J2.

If a 1-mc input is being applied to J1, relay K1 couples the signal from J1 to J2. If an input is not being applied to J1, transistor Q1 actuates relay K7, and the 1-mc input to J3 is coupled to J2.

9. Change paragraph 5-3d. to read: Connect VTVM to 1-mc OUT jack J2. Connect a 1-mc (at 1 v.r.m.s.) signal input to J1. VTVM should indicate at least 1 v.r.m.s. If normal indication is not observed, check K1, Q1 and all other components in relay switching circuit. Disconnect input to J1. There should be a clicking sound and a momentary drop in the VTVM indication as relay K1 switches; VTVM indication should then return to at least 1 v.r.m.s. If normal indication is not observed, try adjusting potentiometer R617. If trouble still exists, check for defective potentiometer R617, amplifiers Q601 or Q602 or transformer T603. Check K1, Q1, and all other components in relay switching circuit.

10. In paragraph 6-4a. change J602 to J2.

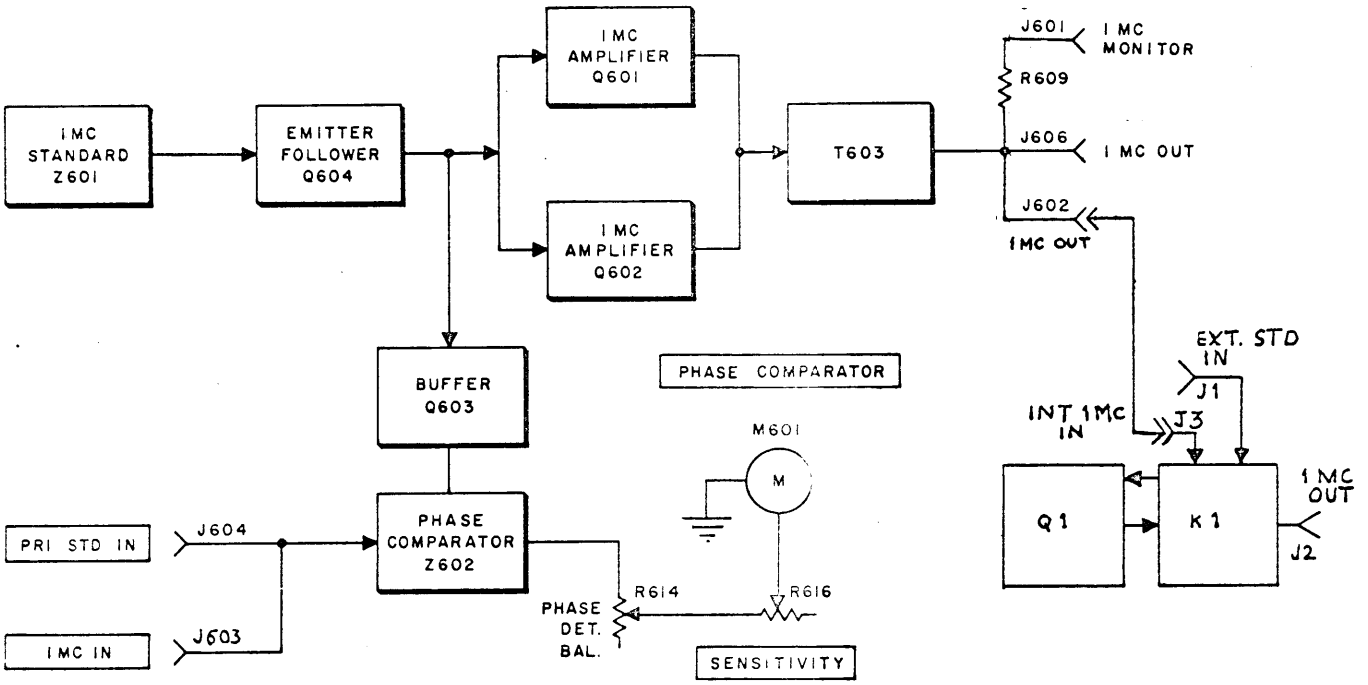
11. In paragraph 6-5c, change J606 to J2.

12. Add the following items to SECTION 7, PARTS LIST:

REF SYMBOL	DESCRIPTION	TMC PART NO.
C1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 100,000uuf, +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.	
*	CABLE ASSEMBLY, ELECTRICAL; RF; consists of 9-inch length of RG-174/U coaxial cable and two BNC cable connectors, TMC part number PL-244-1.	CA-480-3-9

* Supplied as loose item with modification kit.

REF SYMBOL	DESCRIPTION	TMC PART NO.
CR1	SEMICONDUCTOR DEVICE, DIODE: germanium; max. peak inverse volts 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.	IN34
CR2	Same as CR1.	
CR3	Same as CR1.	
J1	CONNECTOR, RECEPTACLE, ELECTRICAL: RF; 1 round female contact; straight type; 52 ohms; series BNC to BNC.	UG625B/U
J2	Same as J1.	
J3	Same as J1.	
K1	RELAY, ARMATURE: DPDT; 5,000 ohms DC resustance ±10%; 20.5 volts DC operating voltage; operating current 4.1 ma; power rated at 85 mw at 25°C; 8 contacts rated at 1 amp at 29 VDC resistance; clear high impact styrene dust cover case.	RL156-4
Q1	TRANSISTOR: germanium.	2N1308
R1	RESISTOR, FIXED, COMPOSITION: 68,000 ohms, ±5%; 1/2 watt.	RC20GF683J
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 pheriolic socket.	TS171-1



CSS-1C, Simplified Block Diagram

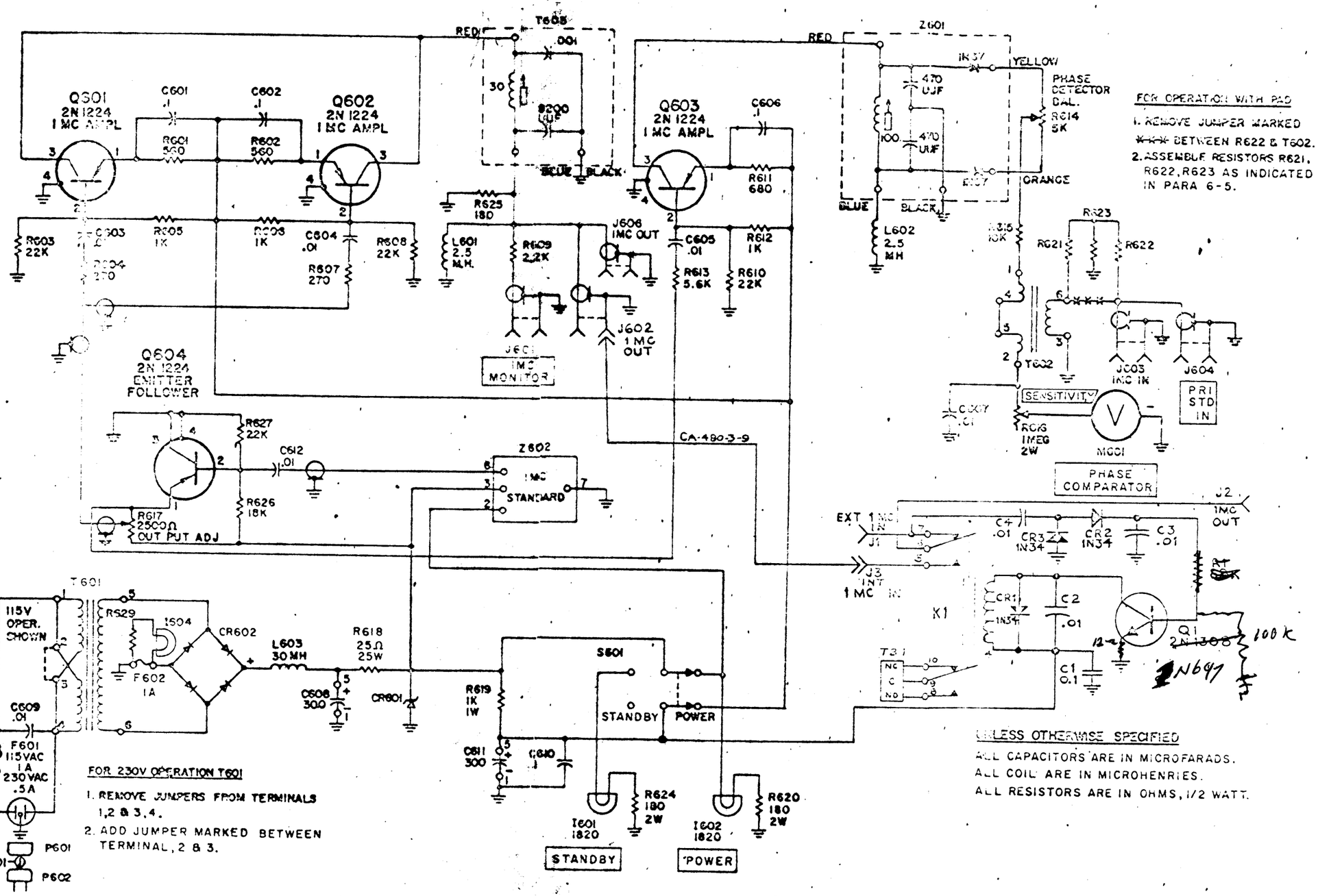


Figure 8-1. Frequency Standard CSS-1C Schematic Diagram