



**2600-Hz E1A SINGLE FREQUENCY SIGNALING CIRCUIT  
OUT-OF-SERVICE TESTS USING TESTING CIRCUIT  
SD-96519-01 OR SD-96519-02 AND 2B SIGNALING  
TEST SET J-64730B**

**1. GENERAL**

**1.001** This addendum supplements Section 179-318-502, Issue 3. The attached pages must be inserted in accordance with the filing instructions above.

**1.002** This addendum is issued to change the title to include the 2B signaling test set J-64730B. This addendum does not affect the Equipment Test List.

**Attached:**

**Page 1 dated June 1973—Revised**  
**Page 2 dated June 1973—Reissued**

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TEST SET J-64730B<sub>4</sub>**

**1. GENERAL**

**1.01** This section describes a method of making out-of-service tests of 2600-cycle single-frequency signaling circuits per SD-96499-01, using testing circuit SD-96519-01 or SD-96519-02. It also describes a method of making potentiometer adjustments to compensate for variations in the characteristics of some circuit elements. If the requirements of this section cannot be met after readjustment of potentiometers or relays, the units should be returned to a repair center, since special techniques are involved in testing and clearing trouble on some of the components.

**Caution:** *The 291- or 303-type relays shall be maintained in an upright position not less than 1 minute before beginning any tests.*

**1.02** This section is reissued to:

- (a) Delete reference to the P43C851 disengaging tool.
- (b) Add Fig. 1 and 2 illustrating the use of the 725A tool.
- (c) Incorporate changes in the pulsing tests of the receiver at 12 pps.

Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

**1.03** The tests covered are:

**A. Pulsing of Transmitter M Relay:** This test checks that the M relay is properly following pulses.

**B. Hold of HL Relay:** This test checks the HL relay release time.

**C. Transmitted Tone Level:** This test checks the level of the transmitted single-frequency tone.

**D. Bias of Transistor Q10:** This test checks the voltage at transmitter Q10 with no signal input.

**E. Test of 4-wire Terminating Circuit, Gain of Receiver Voice Amplifier, Blocking of Amplifier, and Insertion of Band-Elimination Network:** The following features are checked: (a) transmission loss from 2-wire or 4-wire transmit; (b) transmission loss from 4-wire receive to 2-wire and approximate adjustment of REC or RCV potentiometer; (c) trans-hybrid loss from 4-wire receive to 4-wire transmit; and (d) blocking of the voice amplifier by the received signal frequency and insertion of band-elimination network.

**F. Operate Sensitivity of Receiver Signaling Amplifier:** This test checks the receiver sensitivity and describes its adjustment by means of the SS potentiometer.

**G. Timing of Receiver R, RG, and G Relays:** This test checks the operate and release time of the R and RG relays and describes a method of adjusting the OT and RT potentiometers to meet requirements. It also provides a test to ensure proper limiting of the signal amplifier. The G relay is also tested.

**H. Receiver Guard Action:** This test checks the receiver guard circuit in limiting operation by voice signals.

**1.04** The transmission measuring set is referred to in this section as TMS.

**1.05** The 2B signaling test set is referred to in this section as 2B test set.

**1.06** Make percent break adjustments of the 2B test set slowly above 70 percent to prevent pulsing out incorrect values. Incorrect values will be obtained if the rate of vibration of the PERCENT BREAK meter pointer is not the same as that of the PULSES PER SECOND meter pointer. To restore correct percent break values, turn the ADJ % BK control counterclockwise until both pointers are vibrating at the same rate, then turn the control more slowly clockwise until the desired percent break value is obtained. It may also be necessary to change the coarse ADJ % BK control from S, M, or L setting to obtain the desired range on the PERCENT BREAK meter.

**1.07** The J98613AY test panel (SD-96519-01 or SD-96519-02) is referred to in this section as test circuit. KEYERS switch 1 and RECEIVER switch 2 on this panel are referred to as SW1 and SW2, respectively. Jacks and keys mentioned in this practice are part of the test panel unless otherwise specified.

**1.08** The LEV switch on the signaling unit, when in the +7 position, provides 7-db attenuation to the line receive level. The tests in this section are made with the LEV switch in the +7 position, except where noted. If the switch was in the 0 position when the unit was removed from service, return it to the 0 setting if the unit is to be placed in the same service as before.

**1.09** Since some steps in this section require different actions for talk-off improved and unmodified units, the following designations are used to identify the units.

DESIGNATION USED IN BSP	DESIGNATION ON SF UNIT
E1A	E1A
E1A-( )	All E1A units with series numbers

**1.10 Lettered Steps:** A letter a, b, c, etc, added to step number in Part 3 or 4 of this section indicates an action which may or may not be required, depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter

within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

**1.11 Brief Tests for Units Modified or Required by WECO:** The steps listed below are to be used only when it is reasonably certain that the units have not suffered damage. Otherwise, the complete test must be performed. These limited tests are not extensive enough to ensure that a unit will meet all requirements; however, they provide a reasonable degree of assurance of proper operation.

TEST FOR	TEST	STEPS
M Relay	A	Steps 27 to 33.
HL Relay	B	All steps.
REC or RCV Potentiometer	E	Steps 17, 18, 20, 25 through 28c, and 54.
SS Potentiometer	F	All steps.
OT and RT Potentiometers and G relay	G	Steps 27 through 40, 47 through 51g, 70 through 81, and 97.

**2. APPARATUS**

**2.01** The apparatus required of each test is shown in Table A. The details of each item are covered in the paragraphs indicated by the number in parentheses.

TABLE A

APPARATUS	TESTS							
	A	B	C	D	E	F	G	H
Test Circuit (2.02)	1	1	1	1	1	1	1	1
2B Test Set (2.03)	1	1	-	1	-	-	1	-
TMS (2.04)	-	-	1	-	1	1	-	1
Cord (2.05)	1	1	-	-	-	-	1	-
Cord (2.06)	1	1	-	-	-	-	1	-
Cord (2.07)	-	-	1	-	1	1	-	1
Cord (2.08)	-	-	-	1	-	-	-	-
Tool (2.09)	1	1	1	1	1	1	1	1
258D (dummy) Plug	1	1	-	-	-	-	1	-
Screwdriver, R-8210	-	-	-	-	1	1	1	-
Tool (2.10)	-	-	-	-	-	-	1	-
Tool (2.11)	-	-	√	-	√	-	-	-

√ As required.