

TYPE N2 CARRIER TELEPHONE SYSTEM — TERMINAL EQUIPMENT
ALARM AND CONTROL UNIT
ELECTRICAL TESTS AND ADJUSTMENTS

This section describes the alignment procedures for the transistor circuitry of the N2 alarm circuit and excludes the relays associated with this circuit. Tests for the associated relays are discussed in Section 362-803-502. This practice is divided into four parts:

- (A) Preparation of Test Equipment
- (B) 21-volt Power Supply Alarm Control Circuit
- (C) Carrier Alarm Control Circuit
- (D) Maintenance Instructions for the N2 Alarm Unit

The N2 alarm unit contains two distinct circuits as shown in Fig. 1: (1) the 21-volt power supply alarm control circuit, and (2) the carrier alarm control circuit. The 21-volt power supply alarm control circuit monitors the -21 volt supply and initiates the power alarm when the deviations of the -21 volt supply exceed ± 1 volt. The carrier alarm control circuit monitors the total received carrier power (12 carriers). Upon loss of received carrier power, the carrier alarm control circuit initiates the carrier alarm and automatic trunk conditioning.

For alignment the alarm unit must be removed from the terminal and placed in the N2 terminal test stand to make the potentiometer controls accessible. A -21 volt supply, capable of being varied ± 1 volt, is needed to align the alarm unit. However, since the test supply must be varied ± 1 volt, the working -21 volt power unit in the terminal cannot be used because transmission through the terminal might be affected. Therefore, an alternate power supply is plugged into the N2 switching set and used to align the alarm unit.

Transmission through the terminal is not impaired when the alarm unit is removed from the terminal. Thus, alignment of the alarm unit can be accomplished with the terminal either in or out of service.

In general, the carrier failure indications and automatic trunk conditioning are disabled when the alarm unit is removed from the terminal. However, for this test the carrier failure indications and automatic trunk conditioning are disabled for the period of time the alarm unit is under test. Therefore, if the alarm unit is to be tested with the terminals in service, the alarm unit should be tested and returned to the terminal as quickly as possible. Also, the local and distant office should be notified before tests are begun.

APPARATUS:

- 1 — Alternate Power Supply (J87216A)
- 1 — N2 Switching Set (J99272U)
- 1 — N2 Terminal Test Stand (J99272W)
- 1 — KS-8585, List 9 H. B. Jones Plug (wired as shown in Fig. 3)
- 2 — 165C Dummy Plugs

(A) Preparation of Test Equipment	
STEP	PROCEDURE
1	Remove the N2 alarm unit from the terminal bay. (See Fig. 1.) This should cause the office alarms to operate.
2	Turn the ALM RLS key on the MISC JK & ALM panel at the bottom of the bay (to the vertical position — see Fig. 2) to silence the office alarms and to extinguish the bay lamp ALM on the top of the bay. The ALM U RMV lamp on the MISC JK & ALM panel will remain lighted.
3	Insert the alarm unit into jack J41 on the N2 terminal test stand, and put plug P1 of the test stand into the vacated jack on the terminal bay from which the alarm unit was removed. This action should cause the office alarms to operate again.
4	To silence the office alarms and to extinguish the bay lamp ALM once again, return the ALM RLS key on the MISC JK & ALM panel back to normal. The ALM U RMV lamp will also be extinguished.
5	On the test stand, insert a 165C dummy plug into either EXP OUT or EQPT IN jack to prevent the local office alarms from operating when the alternate power supply voltage is varied to align the alarm unit. Insert a dummy plug into either COMP IN or EQPT OUT jack to prevent false operation of the carrier group alarm circuit when the received carrier is intentionally or inadvertently removed from the alarm unit. <i>Caution 1: Do not remove either dummy plug for the remainder of this test.</i> <i>Caution 2: The dummy plugs disable all alarm indications. Therefore, no alarms will be indicated should a true carrier failure occur while the alarm unit is under test.</i>
6	Operate the 21V ALM TST key on the test stand so that it is positioned vertically. With the key in this position, the -21 volt path from the test stand to the terminal is opened. <i>Caution: Do not touch this key for the remainder of this test.</i>
7	Insert plug P2 of the N2 switching set into the TEST PWR jack on the alarm unit, and set the LOAD switch to the TST ALT position and the VM & RIPPLE switch to the ALT position.
8	Insert a -21 volt alternate power supply into the well (jack J8) of the switching set. Observe the voltmeter on the switching set, and with the ADJ VOLTS control on the alternate power supply, adjust the voltage to -20 volts. <i>Caution: Do not allow the voltage to go beyond -23 volts or damage may result to the alternate power supply.</i>

(B) 21-volt Power Supply Alarm Control Circuit	
STEP	PROCEDURE
1	Turn potentiometer R5 on the alarm unit fully counterclockwise and potentiometer R2 to approximately the center of its range.
2	On the switching set, set the LOAD switch to the TRANSFER position and the VM & RIPPLE switch to either the ALT or REG position. Observe the voltmeter. The voltage should read -20 volts. If an adjustment is necessary, adjust the alternate power supply to -20 volts.
3	Turn potentiometer R5 slowly clockwise until the 21V ALM lamp on the alarm unit just lights.
4	Adjust the alternate power supply to -22 volts.
5	If the 21V ALM lamp is lighted, turn potentiometer R2 counterclockwise until the lamp goes out, and then turn slowly clockwise until the lamp just lights. If the 21V ALM lamp is out, turn potentiometer R2 slowly clockwise until the lamp just lights.
6	Adjust the alternate power supply voltage to -21.7 volts. <i>Requirement:</i> Lamp 21V ALM shall be off.
7	Adjust the alternate power supply to -20 volts. <i>Requirement:</i> Lamp 21V ALM shall be on.
8	Adjust the alternate power supply to -20.3 volts. <i>Requirement:</i> Lamp 21V ALM shall be off.
9	Adjust the alternate power supply to -21 volts. <i>Note:</i> If the above requirements cannot be met, repeat Steps 1 through 5 in Part (B).
(C) Carrier Alarm Control Circuit	
STEP	PROCEDURE
1	Depress and release the CARR PWR ALM TST key on the test stand, and watch relay K1 on the alarm unit under test. With each operation of the CARR PWR ALM TST key, relay K1 shall operate and release. <i>Caution: Do not depress the key without a dummy plug either in COMP IN or EQPT OUT jack.</i>

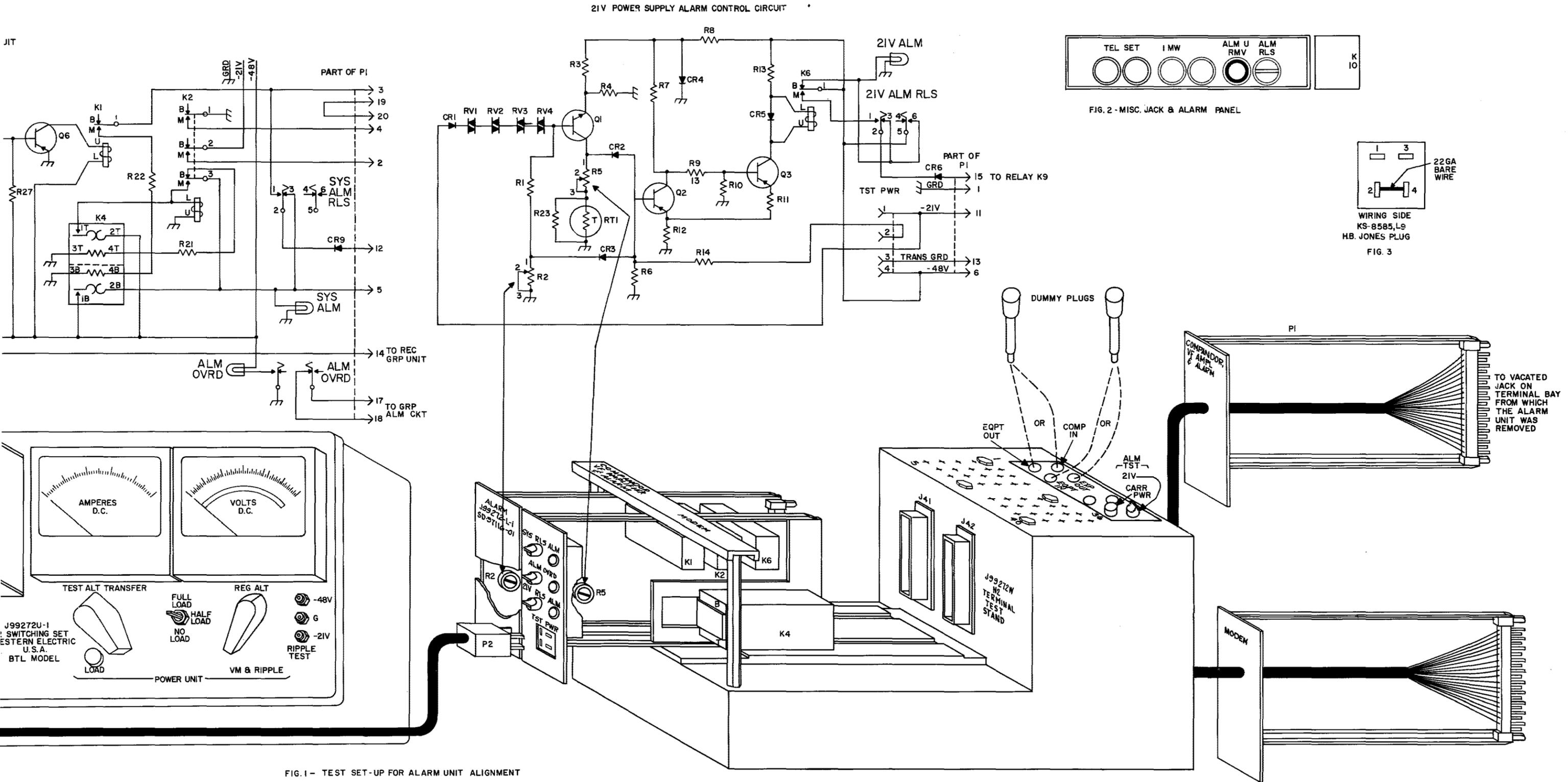


Fig. 1, 2, and 3 - Test Setup for Alarm Unit Alignment and Miscellaneous Figures

STEP	PROCEDURE
2	<p>Remove the alarm unit from the test stand, and plug it back into the terminal bay. Use the ALM RLS key on the MISC JK & ALM panel to silence the office alarms and to extinguish the lamps as mentioned in Part (A), Steps 2 and 4.</p> <p>If it is desirable at this time to check the timing and operation of relay K4 and associated parts of the alarm circuitry, see Section 362-803-502.</p>
<p>(D) Maintenance Instructions For the N2 Alarm Unit</p> <p>A maintenance check for the N2 alarm unit can be made with the alarm unit in the terminal with the terminal in or out of service. If the maintenance check on the alarm unit is performed with the terminal in service, the local office should be notified that the power alarms will be actuated. A Jones plug, wired as shown in Fig. 3, is used to simulate failure of the -21 volt power supply by applying -48 volts through a series resistor to the base of transistor Q2.</p>	
STEP	PROCEDURE
1	<p>Insert Jones plug into the TEST PWR jack on the alarm unit.</p> <p>Requirement: The power alarms shall be actuated.</p>
2	<p>Remove Jones plug.</p>

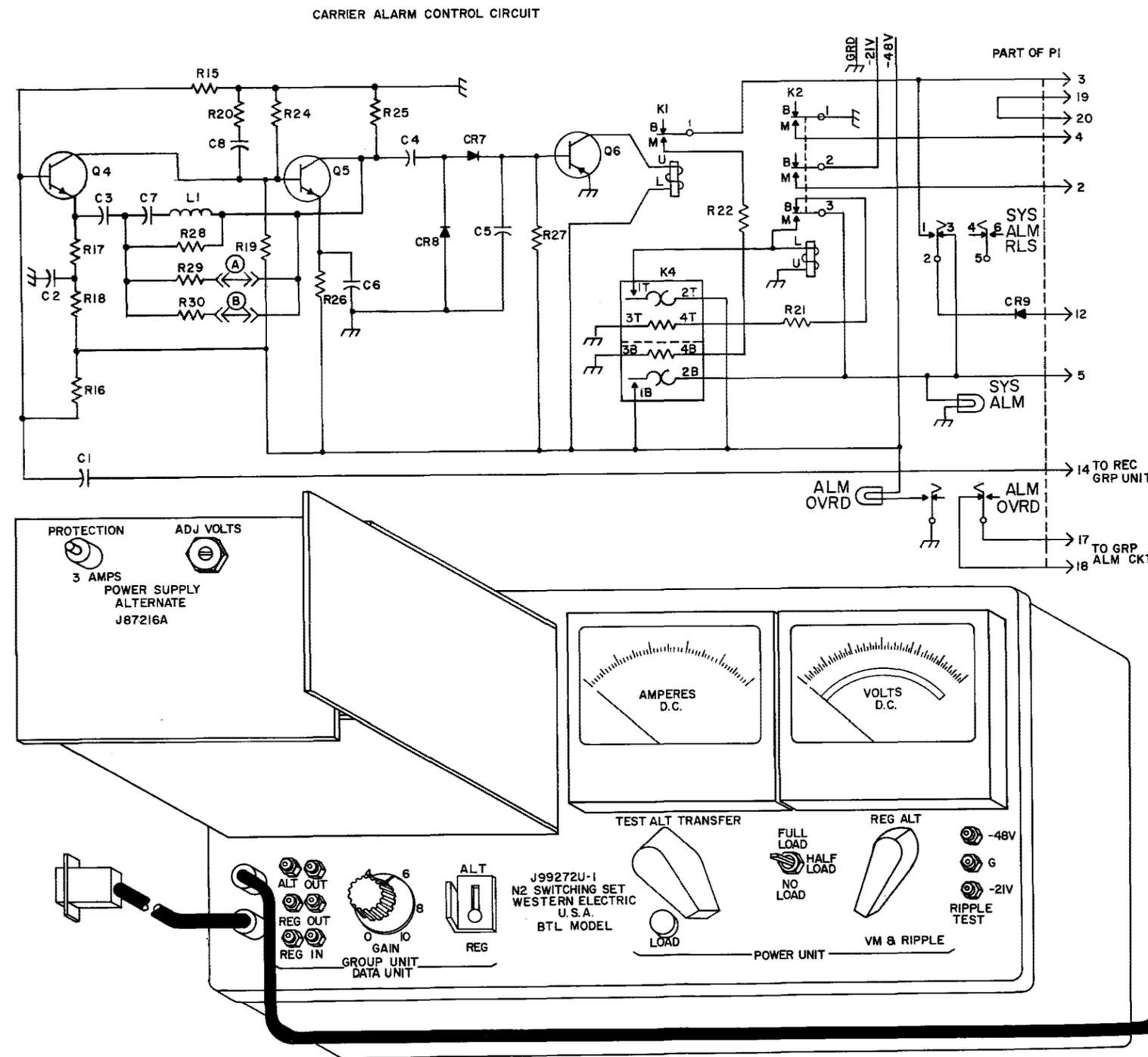


FIG. 1 - TEST SET-UP FOR ALM