

**TYPE N2 CARRIER TELEPHONE SYSTEM**  
**VOICE-FREQUENCY AMPLIFIER OVER-ALL LINE-UP**  
**TRANSMITTING AND RECEIVING**  
**J99272AA AND J99272BA**

The N2 VF amplifier is used in place of the N2 compandor whenever noncompandored channel operation is desired. The VF amplifier may be used at both terminals of an N2 system to provide noncompandored channels for data or other such special services or may be used for through-channel service. In the latter application, VF amplifiers are installed in the intermediate office when two channels of separate N2 systems are wired together to form a built-up circuit. Thus, the distortions contributed by a second compressor and expander are avoided. The J99272AA VF amplifier may only be used in through-channel service or with through-channel adjustment. In the tests described here, a 1000-cycle tone is applied to the transmitting end of a channel and appropriate adjustments are made at transmitting and receiving ends to adjust the respective VF amplifier gains. In the transmitting VF amplifier, the OUT ADJ control permits adjustment of the VF amplifier output. Adjustment of the controls should be made only when the high-frequency line and the transmitting and receiving terminal modem units are within requirements. Where 4-wire test jack appearances are available in a patching bay, jack field, or test board, the tests should be made from those jacks. Where 4-wire test jack appearances are not available, the N2 terminal test stand is required. The adjustments are made so that VF output from the N2 terminal at a standard office level of +7 db (+4 db in -13 and +4 db offices) is obtained at the 4-wire jacks, if they are provided. If 4-wire jacks are not provided, the +7 db level will be at the output of the N2 VF amplifier.

When two N2 channels are connected in tandem, standard office levels (+7 and -16) are provided at each jack appearance, and two 23-db pads (one per direction) are provided in the 4-wire voice path between the N2 channels. Fig. 1 shows the application of VF amplifier units to provide a noncompandored circuit for data transmission; Fig. 2 shows VF amplifiers used for through-channel interconnection of two N2 channels. The adjustment of the VF amplifier will depend on its service application and connecting circuit.

**APPARATUS:**

J99272W or AH N2 Terminal Test Stand  
Hewlett-Packard 400-type Vacuum Tube Voltmeter (VTVM)  
21A or 40-type Transmission Measuring Set (TMS)  
262B Plug (600-ohm termination)  
3P17 Cord (for 21A TMS) or 3P6/3P7 Cord (for 40-type TMS)  
W2DW Cord

**INITIAL ADJUSTMENT OF CHANNEL NET GAIN**

The channel should not be put in service until this test is completed.

AT THE TRANSMITTING TERMINAL — PREPARATION FOR ADJUSTMENT								
STEP	PROCEDURE							
	<b>Offices with 4-wire VF Patch or Jack Bay</b>							
1	<p>Patch a 1000-cycle (600-ohm source) test tone to the MOD IN jacks on the patch jack bay. Use the proper test-tone power as shown:</p> <p style="text-align: center;">-16 dbm (-16 and +7 offices) -13 dbm (-13 and +4 offices)</p> <p><i>Note:</i> In -13 and +4 offices, a 3-db pad must be provided in the transmitting and in the receiving pair between the jacks and the carrier terminal to provide these level points.</p>							
2	<p>Using the W2DW cord, connect the VTVM to the VI1 and VI2 jacks on the VF amplifier.</p> <p><i>Requirement:</i> -15.8 to -16.5</p>							
	<b>Offices Without Jack Appearances</b>							
1	Remove the VF amplifier unit from the terminal and reconnect it, using the N2 terminal test stand (see Fig. 3).							
2	<p>Patch a 1000-cycle (600-ohm source) test tone to the COMP IN jack on the test stand, using test-tone power as shown:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>TEST-TONE POWER</th> <th>TERMINAL TEST STAND</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center;">0 dbm</td> <td>Patch to MW IN jack</td> </tr> <tr> <td>Patch from -16 dbm jack to COMP IN jack</td> </tr> <tr> <td style="text-align: center;">-16 dbm</td> <td>Patch to COMP IN jack</td> </tr> </tbody> </table>	TEST-TONE POWER	TERMINAL TEST STAND	0 dbm	Patch to MW IN jack	Patch from -16 dbm jack to COMP IN jack	-16 dbm	Patch to COMP IN jack
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0 dbm	Patch to MW IN jack							
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AT THE TRANSMITTING TERMINAL — ADJUSTMENT								
STEP	PROCEDURE							
	<b>Channel with VF Amplifier</b>							
1	<p>Using the W2DW cord, connect the VTVM to the MI and MG (ground) jacks on the modem associated with the VF amplifier.</p> <p><i>Requirement 1:</i> Data Adjustment — +20.8 db</p> <p><i>Requirement 2:</i> Through-channel Adjustment — +16.8 db</p> <p>If these requirements are not met, adjust the IN ADJ potentiometer on the VF amplifier unit.</p> <p><i>Note:</i> The J99272AA VF amplifier may only be adjusted to the through-channel adjustment.</p>							

AT THE RECEIVING TERMINAL	
STEP	PROCEDURE
	<b>Offices with 4-wire VF Patch or Jack Bay</b>
1	<p>Connect the TMS (21A or 40-type) to the DEMOD OUT jack.</p> <p><b>Requirement:</b> +7.0 dbm</p> <p>If this requirement is not met, adjust the OUT ADJ potentiometer on the VF amplifier unit.</p>
	<b>Offices Without Jack Appearances</b>
1	Remove the VF amplifier unit from the terminal and reconnect it, using the N2 terminal test stand (see Fig. 4).
2	<p>With a 3P17 or 3P6 cord, connect the DET IN (600 ohms) of the 21A TMS (600-ohm TST jack of the 40-type TMS) to the EXP OUT jack of the N2 terminal test stand.</p> <p><b>Requirement:</b> +7.0 dbm</p> <p>If this requirement is not met, adjust the OUT ADJ potentiometer located on the VF amplifier.</p>

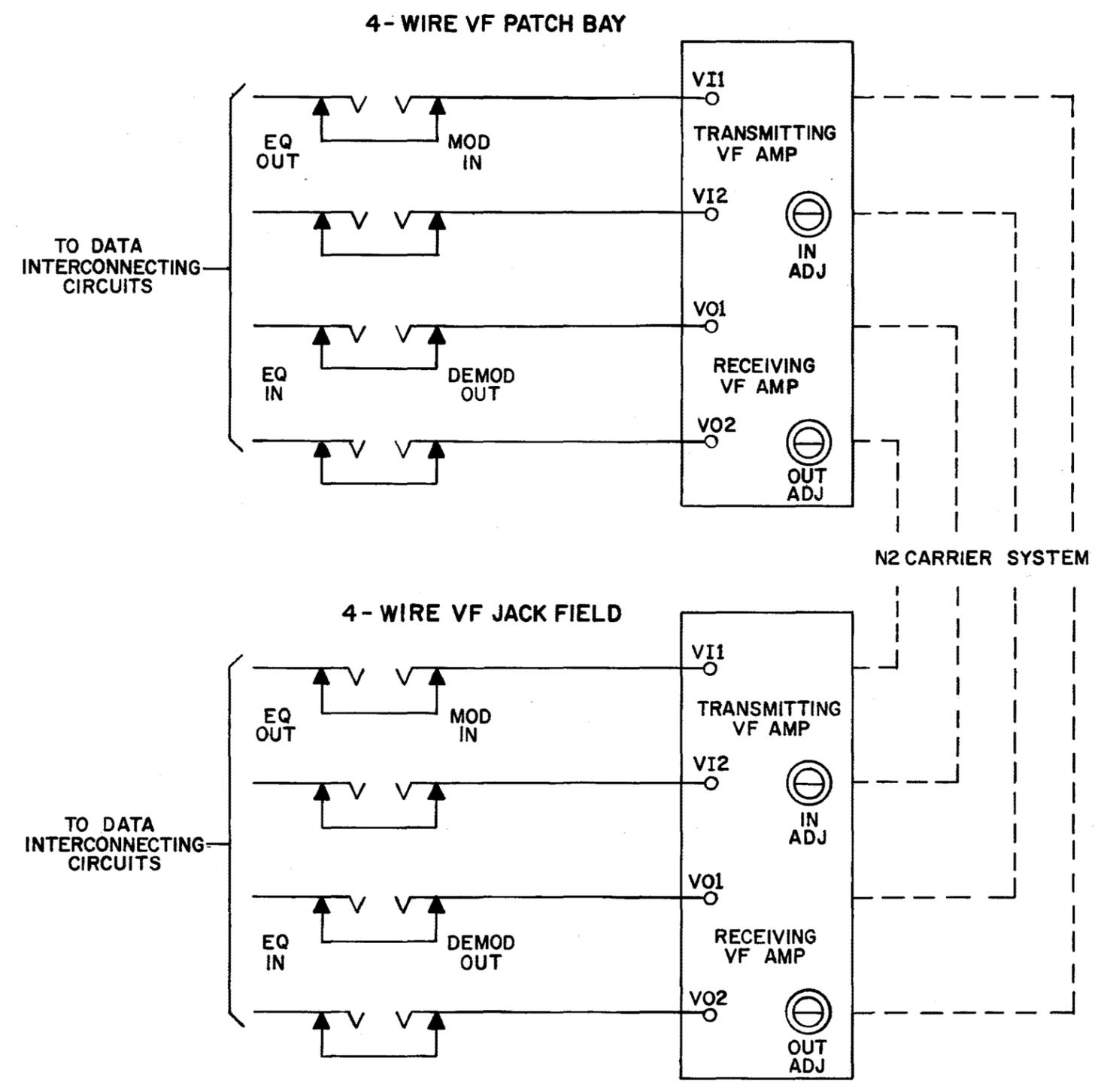


Fig. 1 - VF Amplifier - Use to Provide Noncompanded Channel for Data Transmission

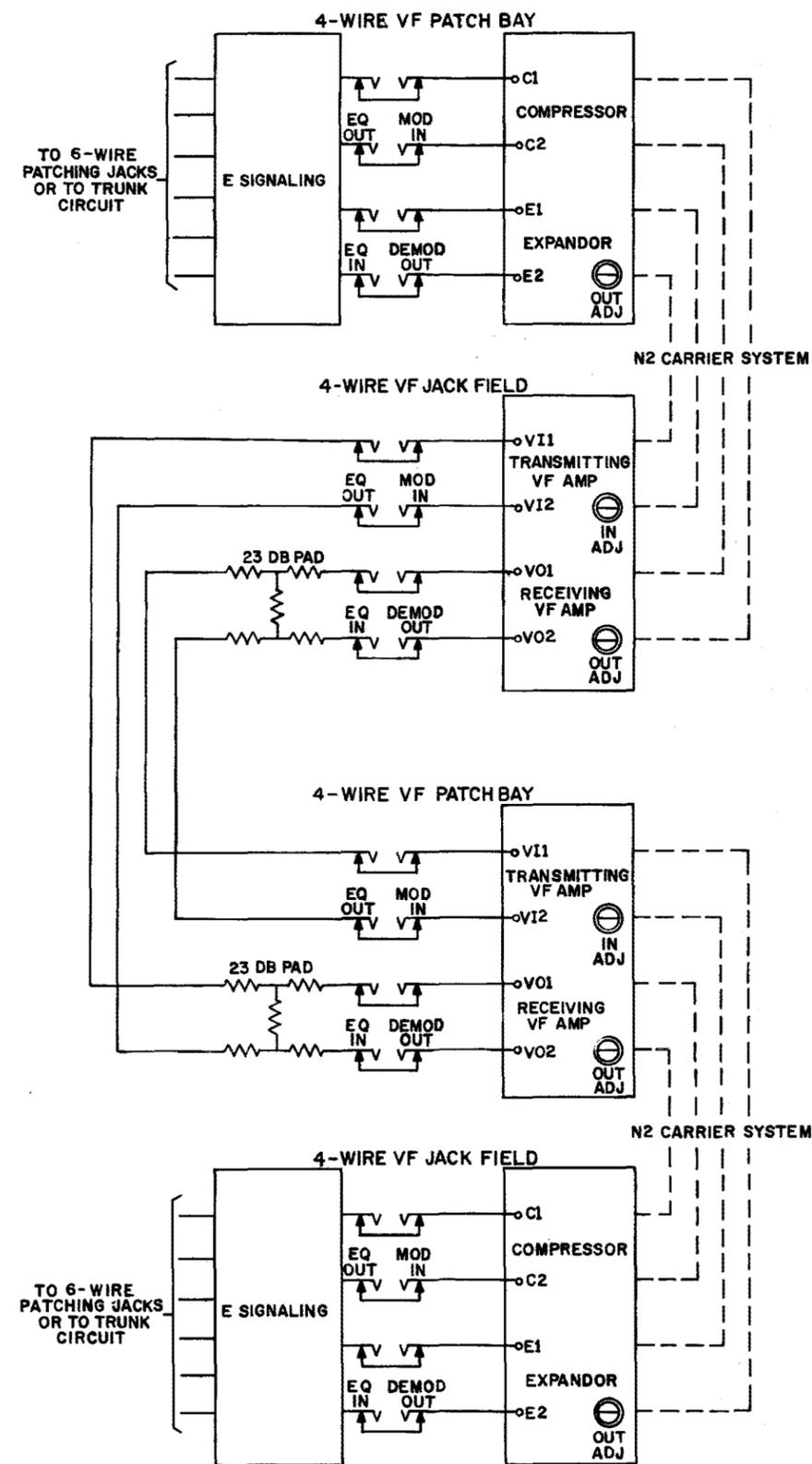


Fig. 2 - VF Amplifier — Use to Provide Through-channel Service

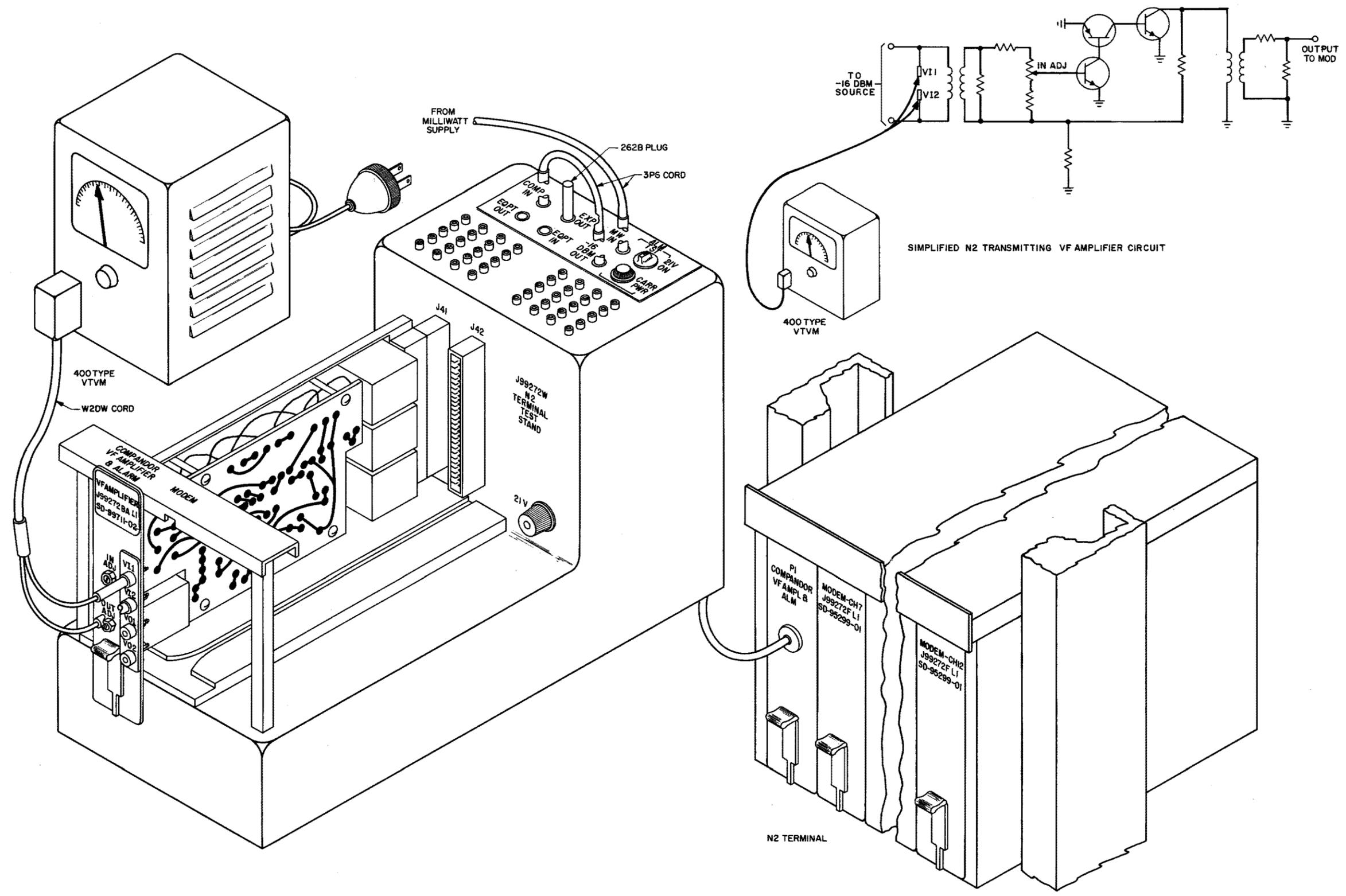


Fig. 3 - N2 Terminal Tests — VF Amplifier Input

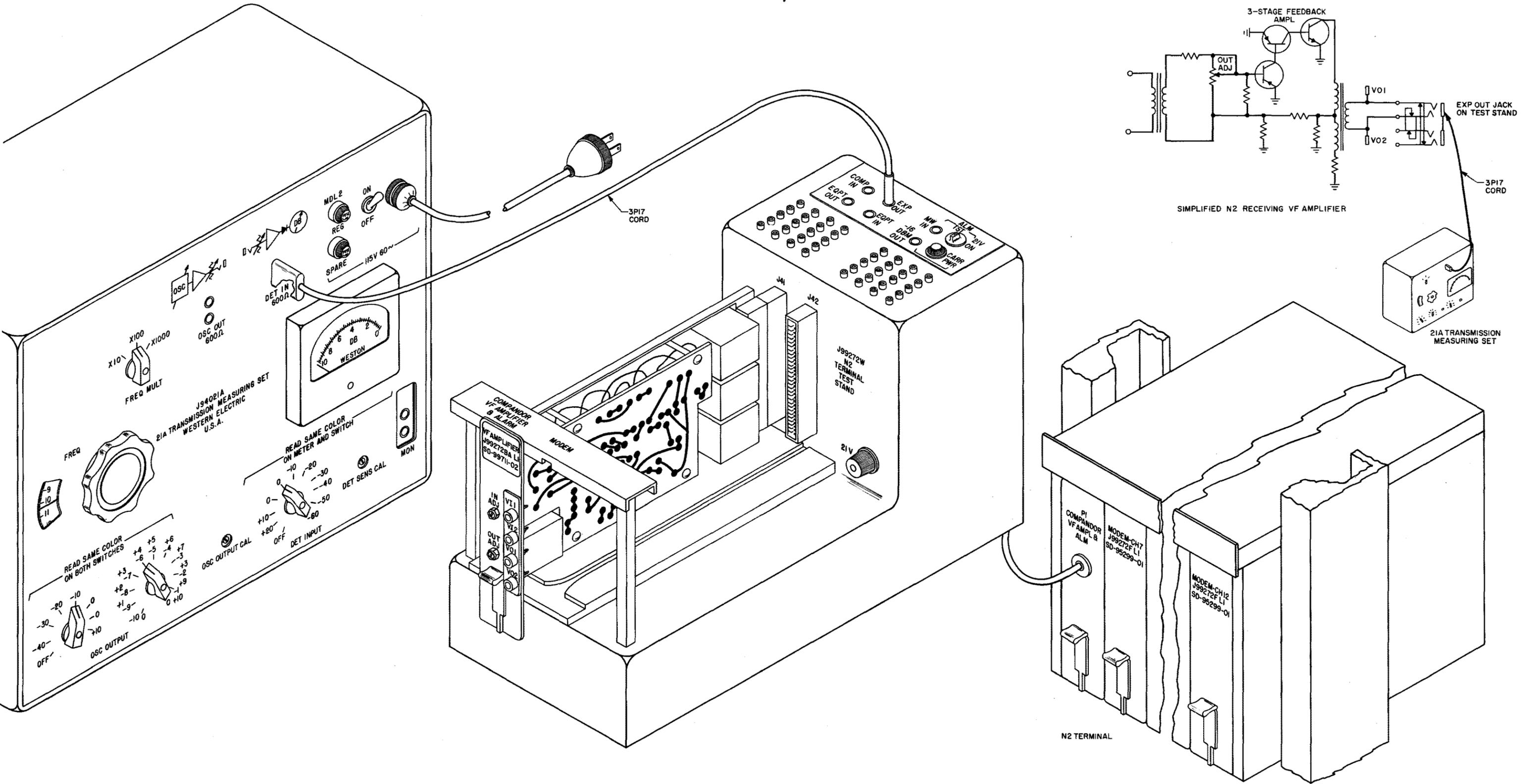


Fig. 4 - N2 Terminal Tests — VF Amplifier Output

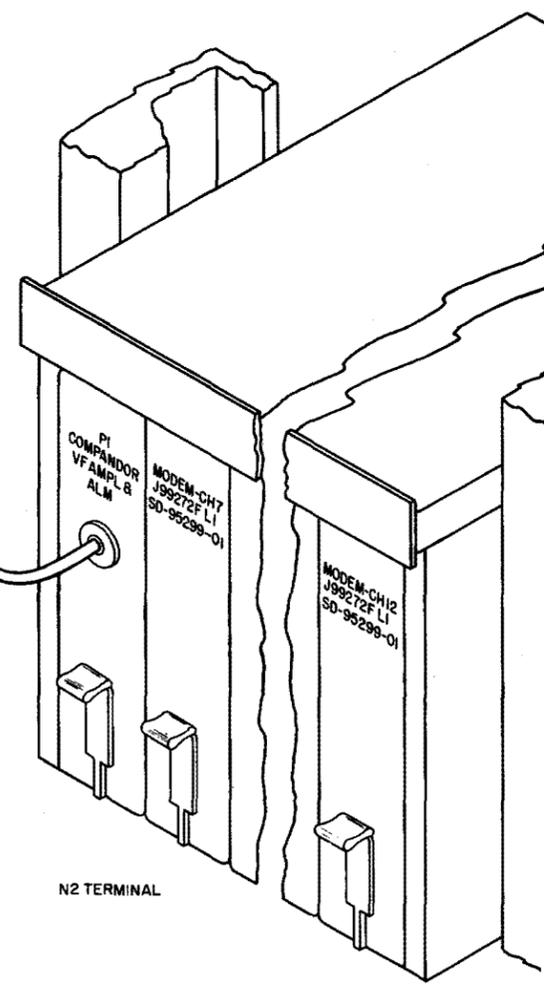
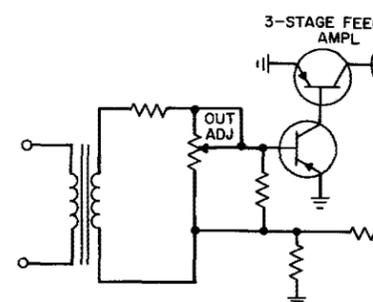
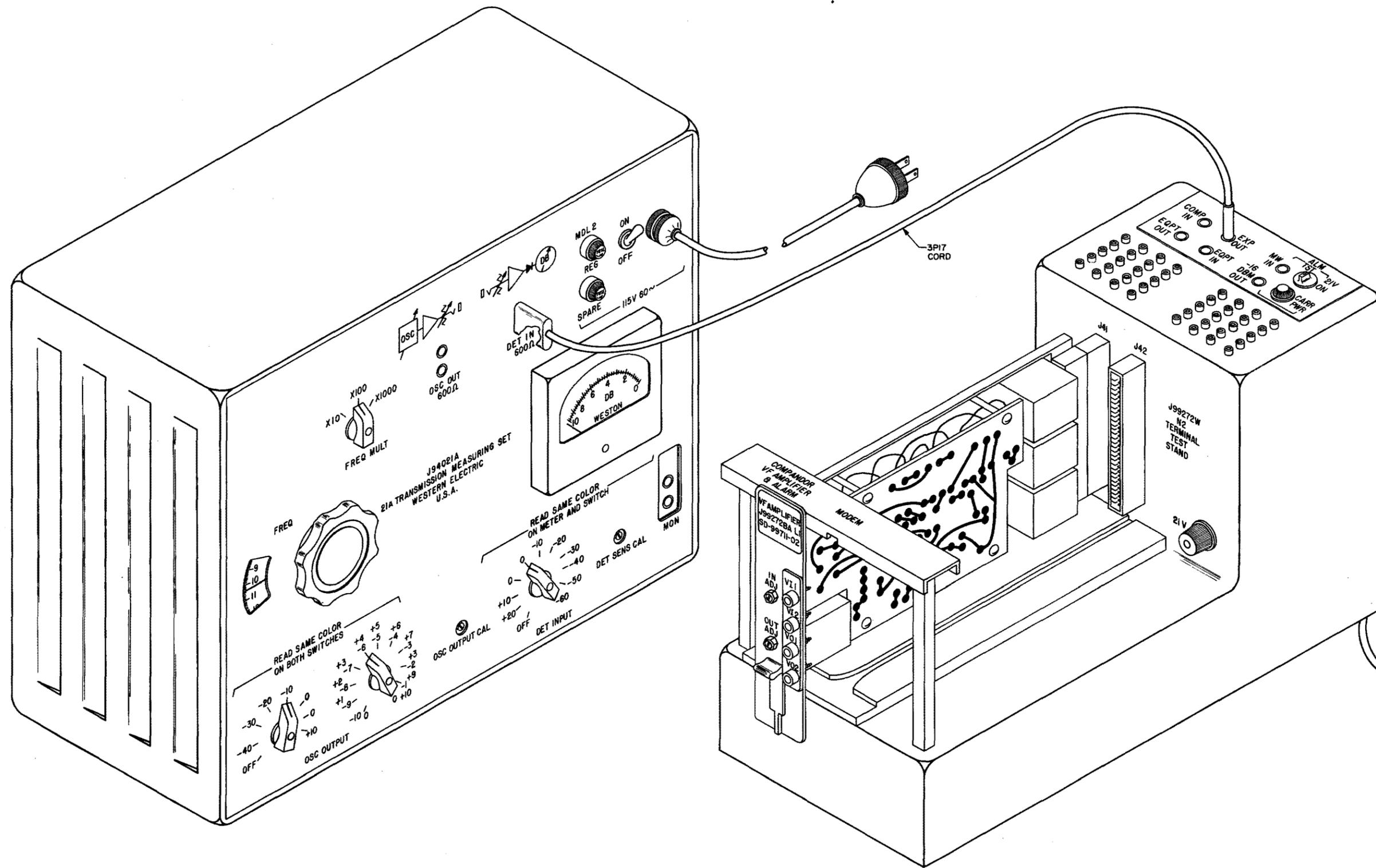


Fig. 4 - N2 T