

**TYPE N1, O, AND ON CARRIER TELEPHONE SYSTEMS**  
**OVERALL CHANNEL LINEUP**  
**THRU CHANNEL UNIT—1000-HZ AND 3700-HZ OUTPUT**

◆N1, O, and ON Systems, which are modified for 3-dB reduced level signaling, decrease noise production in adjacent channels by 1 to 4 dB.◆

This section is reissued to include 3-dB reduced level 3700-Hz requirements. Arrows indicate changes in the section. This reissue *does not* affect Equipment Test Lists.

Thru channel units are used in place of channel units in N1, O, and ON terminals when connecting a channel in tandem with a channel of another system. For various N1, O, and ON System interconnections, the receiving circuitry of one thru channel unit provides level adjustment and amplification for the VF message and signaling tone obtained from the system of which it is a part, and the transmitting circuitry of another unit located in the terminal associated with the connecting channel provides an impedance match with the transmitter of the other system. The thru channel unit of the connecting channel is called the complementary unit.

◆ When a tandem connection between N1, O, or ON and N2 or N3 channels is desired, there is no complementary thru channel unit in the associated N2 or N3 terminal. Instead the thru channel unit used in the N1, O, or ON terminal is connected to a J99272CA through channel connector and pad unit in the associated N2 or N3 terminal. Since 3700-Hz signaling is disabled in this application, S2 on the thru channel unit is set to off and only the 1000-Hz tests are made. The transmitting circuitry of the same thru channel unit accepts the VF from the N2 or N3 System and provides an impedance match to the N1, O, or ON transmitter.◆

This test measures and adjusts the voice-frequency and signaling outputs (when used) of the J98703AH (N carrier) and J98705AF (O and ON carrier) thru channel units. Adjustments should be made only after the channel unit at the distant (transmitting) terminal has been lined up.

**APPARATUS:**

- 1—Hewlett-Packard 400-Type Vacuum Tube Voltmeter (VTVM)
- 1—W2DW Cord
- 1—Channel Unit Test Stand J98705M
- 1—262B Plug (600 ohms)
- 1—2B Signaling Test Set

**SECTION 362-310-501**

STEP	PROCEDURE
1	<p><i>Note:</i> The channel must be out of service before this test can be performed.</p> <p><b>A. 1000-Hz Output Test</b></p> <p><b>At Distant Terminal</b></p> <p>If the channel is arranged for 3700-Hz signaling, place the channel in an off-hook condition through the use of the 2B signaling test set.</p> <p>Patch 1000-Hz test tone to the channel input (MOD IN jack of patch bay), applying the following applicable test power:</p> <p style="padding-left: 40px;">2-wire operation: 0 dBm 4-wire operation: -16 dBm (at -16 and +7 offices)</p> <p><b>At Thru Channel Terminal</b></p> <p>◆If 4-wire test jack appearances are available in a patching bay, carrier terminal bay, or test board, the tests should be made from those jacks; otherwise, set up the thru channel unit in a test stand.◆ The test stand is required on O and ON if the R potentiometer needs adjustment. Set switch on test stand to N1-O1 NORM.</p> <p>Check that the receiving circuitry of the thru channel unit is terminated by one of the following methods, as applicable:</p> <p>(a) When the thru channel unit is connected to the transmitting circuitry of the complementary thru channel unit, the receiving circuitry is terminated normally.</p> <p>(b) When the complementary thru channel unit is not connected and the channel unit under test is not placed in a test stand, terminate by inserting a 262B (600-ohm) plug into the DEMOD OUT jack or its equivalent.</p> <p>(c) When the channel unit test stand is used and the complementary thru channel unit is not connected, terminate the channel unit by inserting a 262B plug in the VF OUT jack of the test stand.</p> <p>(d) ◆When the thru channel unit is connected to the TRMTG pad of the J99272CA through channel connector and pad unit, the receiving circuitry is properly terminated.◆</p> <p>Check that the OBB, O, N, NBB switch (S1) on the right side of the unit (see Fig. 1 or 2) is set to N (J98703AH) or O (J98705AF) when 3700-Hz signaling is used; otherwise, it should be set to NBB (J98703AH) or OBB (J98705AF).</p> <p>Proceed to Step 9 for N carrier; for O and ON carrier, include Steps 7 and 8.</p> <p>Connect the VTVM to the R jack and ground and measure the receiving level of the channel under test (see Fig. 2).</p> <p><b>Requirement:</b> Lineup: +11.0 dB Maintenance: +10.0 to +12.0 dB</p>
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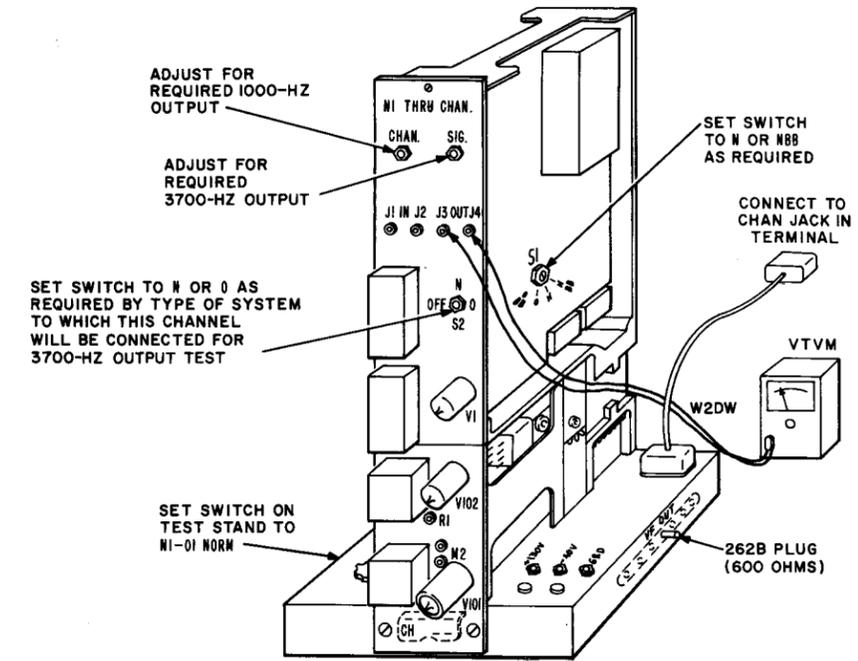
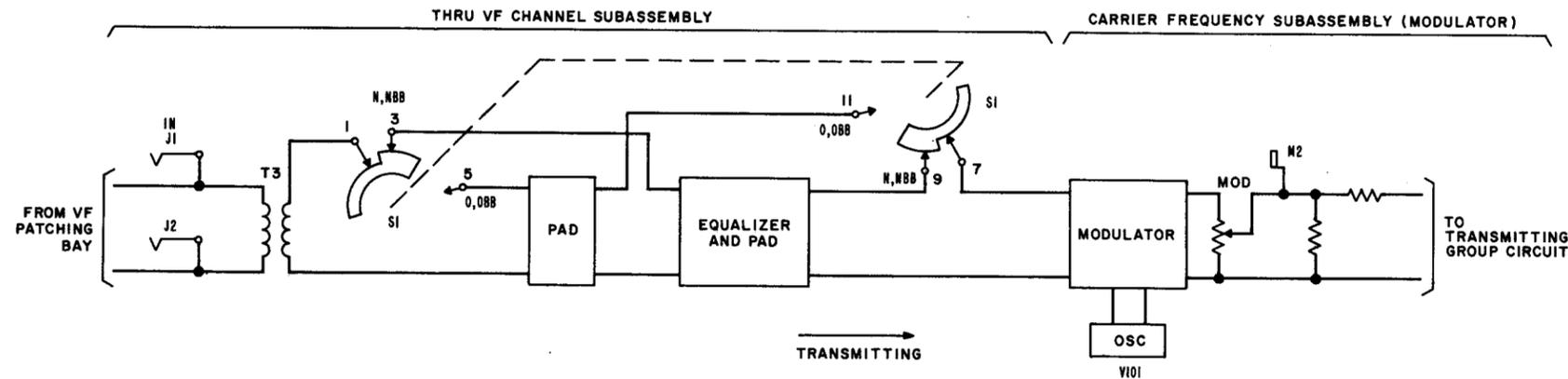
STEP	PROCEDURE
8	If the requirement of Step 7 is not met and an adjustment is necessary, set the R potentiometer to meet the lineup requirement.
9	<p>Using the W2DW cord, patch the VTVM to jacks J3 and J4 in the receiving circuitry of the thru channel unit.</p> <p><i>Note:</i> Neglecting the loss in cabling, a measurement at J1 and J2 (when the complementary unit is used for termination) is an alternative in -16 and +7 offices.</p>
10	<p>Measure the level at the point under test.</p> <p><b>Requirement:</b> (-16 and +7 offices)  Lineup: +4.0 dB  Maintenance: +3.0 to +5.0 dB</p>
11	If the requirement of Step 10 is not met, set the CHAN potentiometer of the receiving thru channel unit to meet the lineup requirement.
12	If the requirement of Step 10 cannot be met by adjustment of the CHAN potentiometer, replace the V1 tube and repeat Steps 9 through 11.
13	If the requirement still cannot be met and the transmitting portion of the channel at the distant terminal is within requirements, replace the subassembly and repeat Steps 3 through 11.
	<p><b>B. 3700-Hz Output Test</b></p> <p><b>At Distant Terminal</b></p>
14	Remove the 1000-Hz test tone from the channel input and operate the TWD L key of the 2B signaling test set to ON HOOK (ground on M lead). This applies 3700-Hz signaling tone to the channel.
	<p><b>At Thru Channel Terminal</b></p>
15	Operate the OFF, N, O switch (S2) to N or O as required by the type of system to which the channel will be connected.
16	Connect the VTVM as instructed in Step 9 and measure the 3700-Hz signaling tone. Refer to the requirements of Table A or B for -16 and +7 offices.
17	If the requirement of Step 16 is not met, set the SIG potentiometer of the receiving channel unit to meet the lineup requirement.
18	If the requirement in Step 16 still cannot be met and the signaling output of the channel at the distant terminal is within requirements, replace the subassembly and repeat Steps 3 through 18.
19	Remove all test connections and restore service to normal.

**TABLE A**  
**CHANNEL TO BE CONNECTED TO AN N SYSTEM**

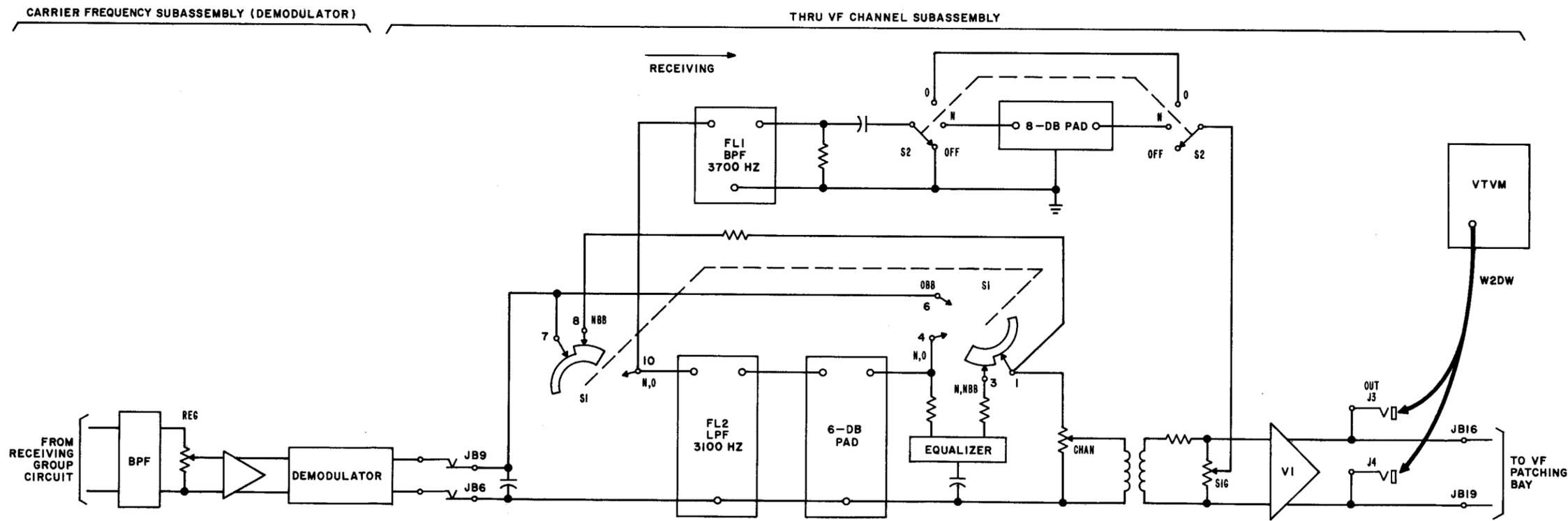
TEST	3-DB REDUCED LEVEL	OLD LEVEL
Lineup	-4.5 dB	-1.5 dB
Maintenance	-5.5 to -3.5 dB	-2.5 to -0.5 dB

**TABLE B**  
**CHANNEL TO BE CONNECTED TO AN O OR ON SYSTEM**

TEST	3-DB REDUCED LEVEL	OLD LEVEL
Lineup	+2.5 dB	+5.5 dB
Maintenance	+1.5 to +3.5 dB	+4.5 to +5.5 dB



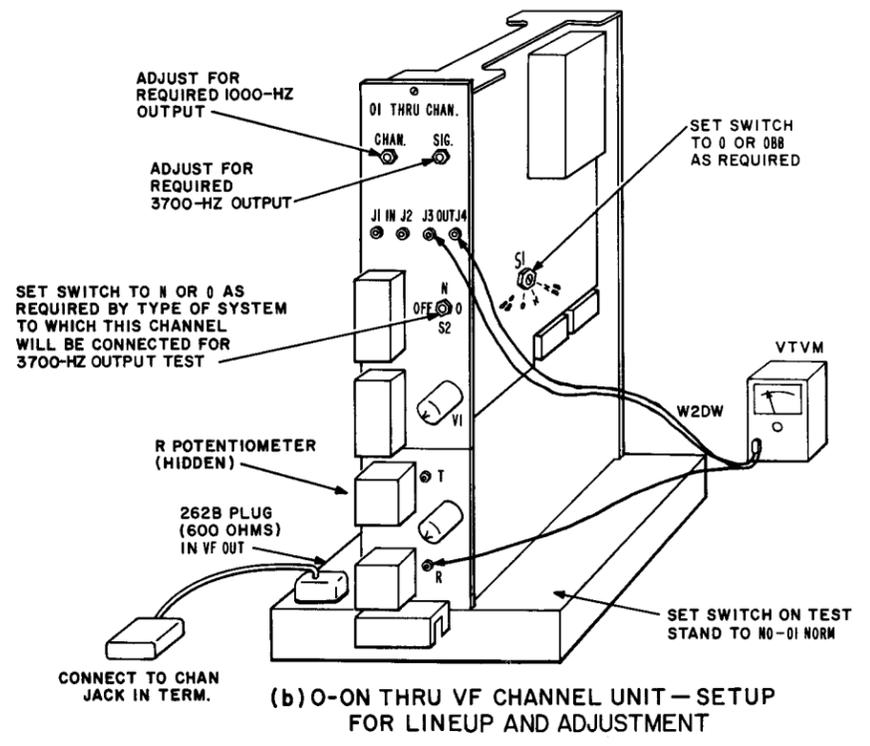
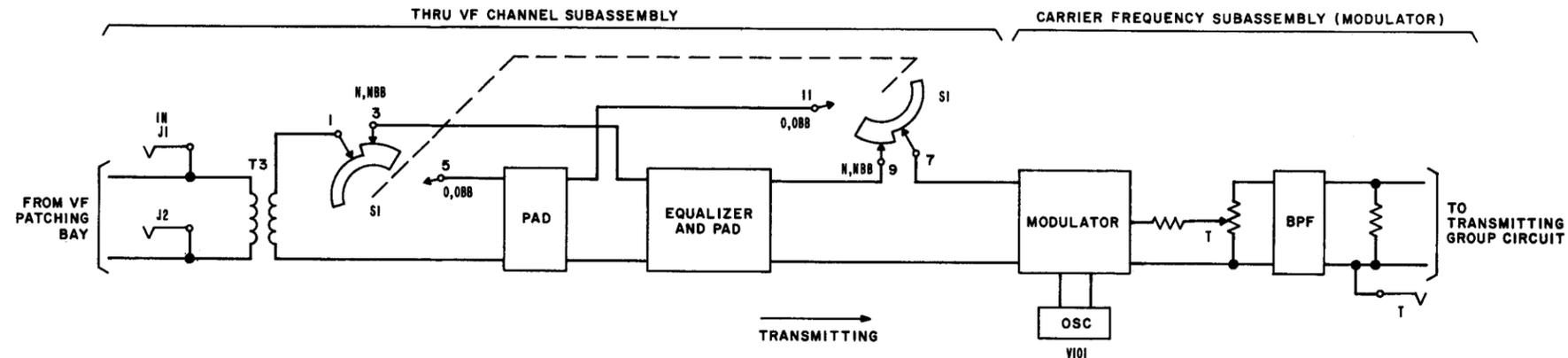
(b) N1 THRU VF CHANNEL UNIT—SETUP FOR LINEUP AND ADJUSTMENT



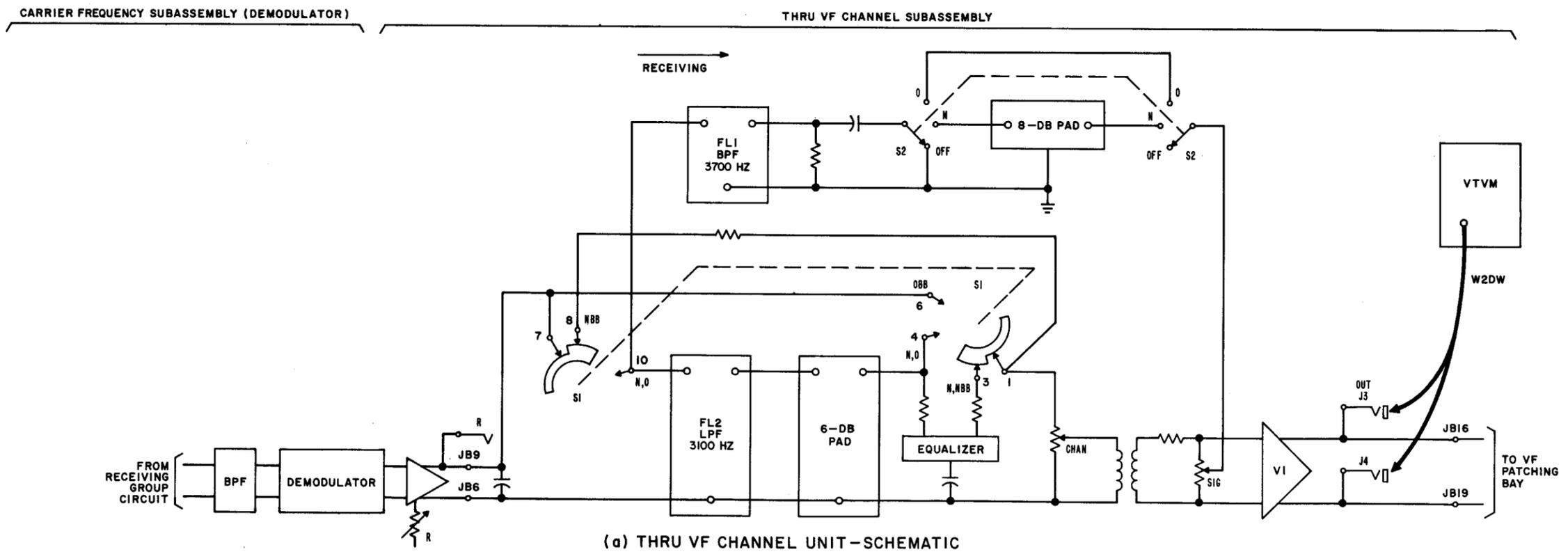
(a) THRU VF CHANNEL UNIT—SCHEMATIC

TPA 476711

Fig. 1—N Carrier—J98703AH Thru Channel Unit—1000-Hz and 3700-Hz Output



(b) O-ON THRU VF CHANNEL UNIT—SETUP FOR LINEUP AND ADJUSTMENT



(a) THRU VF CHANNEL UNIT—SCHEMATIC

Fig. 2—O and ON Carrier—J98705AF Thru Channel Unit—1000-Hz and 3700-Hz Output