

DATE 2-16-61

SH. 1 OF 9

COMPILED BY

S. D.

TMC SPECIFICATION NO. S 545

TITLE: ALIGNMENT OF THE CHL-1 TEST UNIT

JOB

APPROVED

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PROCEDURE FOR THE ALIGNMENT
OF THE CHL-1 TEST UNIT

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I. INTRODUCTION

A. The CHL-1 test unit as the name implies, is used for the production testing of the CHL-1. The test unit employs an amplifier with a tuned plate circuit for the following frequencies:

1. 500 KC
2. 100 KC
3. 10 KC
4. 1 KC
5. 100 CPS

B. The frequencies mentioned above are then metered by a VTVM circuit. The input levels of each frequency are set, so that a meter indication of between 15 to 20 micro-amps is obtained for all frequencies. The correct meter indication is obtained only under the following conditions:

1. Proper frequency input. (500KC,100Kc, etc.)
2. Proper alignment of plate tank circuits.

C. Associated with the 10 KC input, is a circuit used to indicate the presence of a 5 KC component imposed on the pulse train. Shown in Figure 1

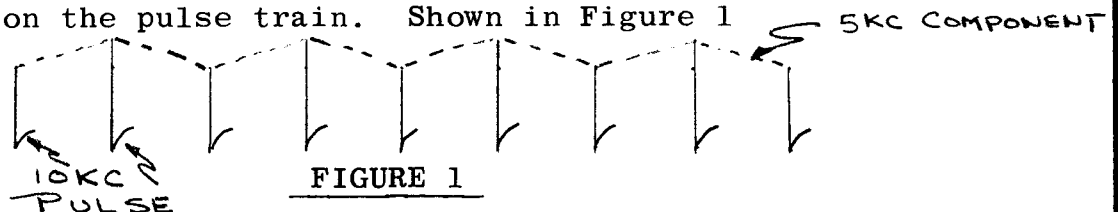


FIGURE 1

This 5KC component is caused by improper triggering of the 10 KC divider circuit. It may or may not be present from unit to unit. When it is present, the neon lamp on the front panel will glow.

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II. TEST EQUIPMENT REQUIRED

1. REGULATED POWER SUPPLY (CPP-2)
2. 50 OHM 10 WATT RESISTOR
3. FREQUENCY COUNTER (H.P. 524 C)
4. 1 MC SOURCE (CSS-1 OR EQUIVALENT)
5. DIVIDER CHASSIS (CHL-1)
6. OSCILLOSCOPE (TEKTRONIX TYPE 545A OR EQUIVALENT)
7. ENG. SKETCH 4-1563 (SCHEMATIC)
8. ENG. SKETCH 2-1562 (COMPONENT LAYOUT)

III. EQUIPMENT LAYOUT

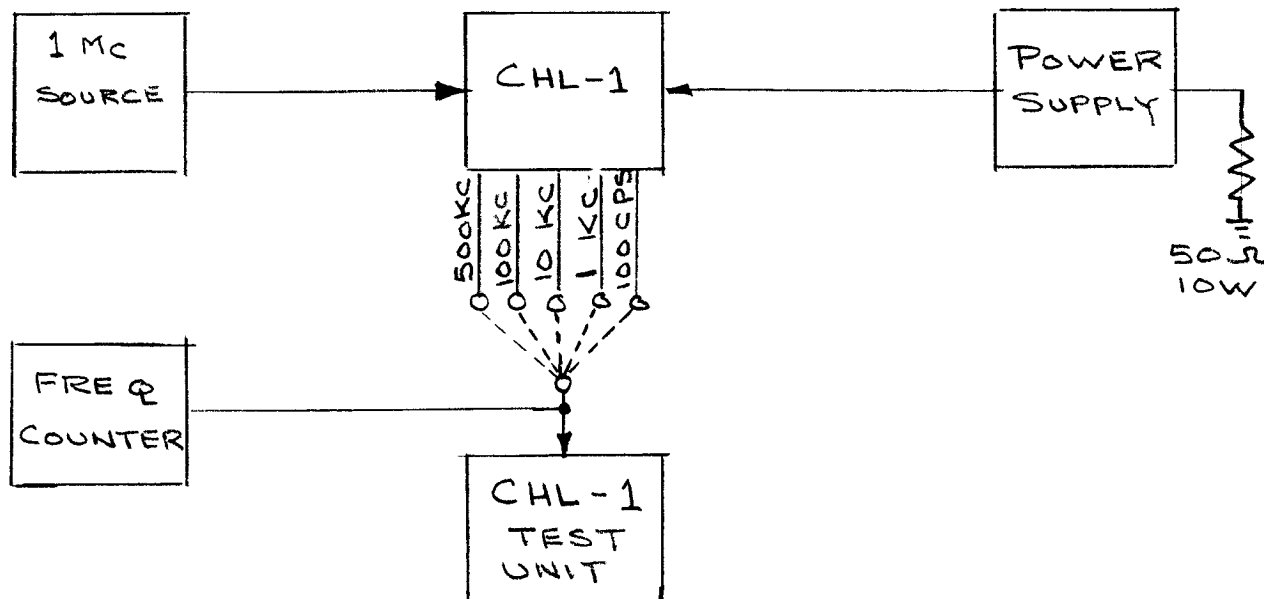


FIGURE 3

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IV. PRELIMINARY

- A. Connect the 50 ohm 10 watt resistor across the D.C. filament supply in CPP-2.
- B. Connect test unit, CPP-2 and CSS-1 to 115 VAC power source.
- C. Turn power on. (Allow a minimum of 30 min. warm-up time for CSS-1).
- D. Set VOLT ADJ. in CPP-2 to 160 V.

V. ALIGNMENT OF TEST UNIT

- A. With units connected as shown in Equipment Layout, monitor each frequency individually with the frequency meter. Each frequency must be as indicated. If not, adjust individual pots. on the CHL-1 to obtain the correct frequency output.
- B. Set selector SW to 500 KCS. Connect 500 KC (J103) to test unit. If meter reads too far negative or positive, set zero adj knob on front panel for a center meter reading. Tune 500 KC adjust (Fig.2) for a maximum meter reading and lock. Remove the 500 KC input and set the meter for zero. Replace the 500 KC input. A meter reading of between 15 and 20 micro-amps should be indicated. If this is not so, alternately adjust the D.C. meter balance and the zero adj. The following conditions should be met for proper operation of the metering circuit.

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B. CONT'D.

1. Zero input, meter reads zero
2. Signal input, meter reads 15 to 20 micro-amps.

C. 100 KC INPUT

Set selector SW to 100 KCS. Connect 100 KC (test point) to test unit. Tune 100 KC adj. (Fig.2) for maximum meter indication. Meter should read approximately 15 to 20 micro-amps. After peaking 100 KC tank circuit, turn 100 KC adj. potentiometer (CHL-1) through its range observing meter. When the frequency output of the CHL-1 is other than 100 KC the meter will drop off to zero. Reset potentiometer to maximum reading on meter.

D. 10 KC INPUT

Set selector switch to 10 KCS. Connect 10 KC adj. (J104 or J113) to test unit. Tune 10 KC adj. (Fig.2) for maximum meter indication. Meter should read approximately 15 to 20 micro-amps. After peaking 10 KC tank circuit turn 10 KC adj potentiometer (CHL-1) through its entire range observing meter. Meter reading will drop off for frequencies other than 10 KC. Reset potentiometer to maximum reading on meter.

E. 5KC INDICATOR

In order to properly set the 5 KC indicator, the wave form shown in Fig. 1 must be present. It may be necessary to duplicate this condition in the CHL-1 being used for this test. This can be accomplished

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E. CONT'D.

by inserting a 2.2 K resistor in series with R122 in the CHL-1. Observe the 10 KC output from the CHL-1 with a scope and adjust the 10 KC adj. potentiometer (CHL-1) for **the** wave form shown in Fig. 1. Connect 10 KC (J104 or J113) to test unit. After a 5 KC component is produced, set the bias adj. potentiometer (Fig. 2) to 3 volts positive on the grid of V 2 (pin 7). Tune 5 KC adj. # 1 (Fig. 2) for maximum lamp brightness.

NOTE: Meter will not indicate presence of 5 KC.

Secondly tune 5 KC adj. # 2 (Fig. 2) for maximum lamp brightness. Repeat several times. After peaking 5 KC tank circuits set 10 KC adj. potentiometer (CHL-1) for maximum indication on meter and lamp being extinguished.

F. 1 KC INPUT

Set selector switch to 1 KCS. Connect 1 KC (J105) to test unit. Tune 1 KC adj. (Fig.2) for maximum meter indication. Meter should read approximately 15 to 20 micro-amps. After peaking 1 KC tank circuit, turn 1 KC adj. potentiometer (CHL-1) through its entire range, observing meter. Meter reading will drop off for frequencies other than 1 KC. Reset potentiometer to maximum reading on meter.

G. 100 CPS INPUT

Set selector switch to 100 CPS. Connect 100 CPS (J106) to test unit. Tune 100 CPS adj. #1 (Fig.2) for maximum meter indication. Secondly, tune 100 CPS adj. #2 (Fig.2) for maximum meter indication. Repeat several

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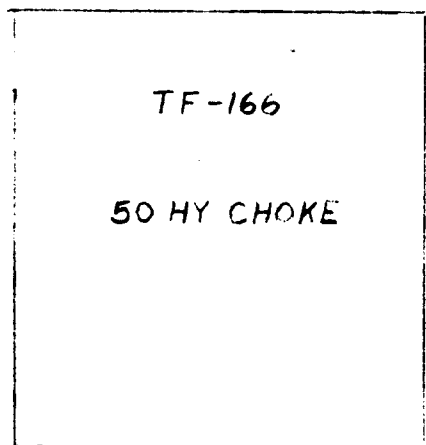
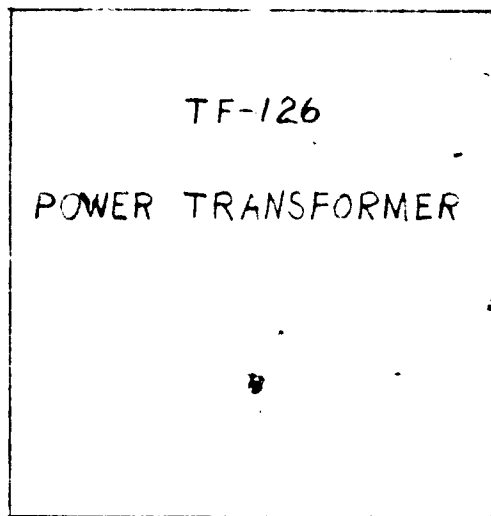
JOB

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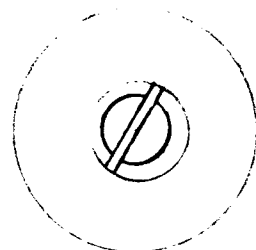
G. CONT'D.

Times. After peaking both tank circuits turn 100 CPS adj. potentiometer (CHL-1) through its entire range observing meter. Meter reading will drop off for frequencies other than 100 CPS. Reset potentiometer to maximum reading on meter. It should be noted here that as 100 CPS is being approached the meter needle will indicate a swing or a beat. The 100 CPS is properly set when the meter pointer is stationary and at its maximum point.

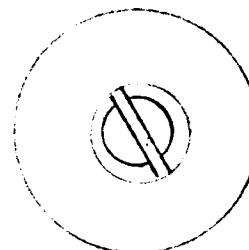
The CHL-1 test unit should now be properly aligned and may be used to properly test all CHL-1 units.



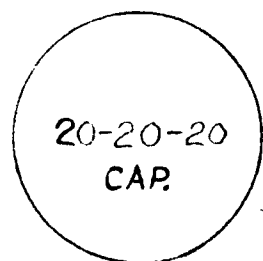
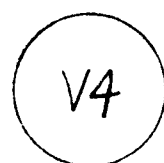
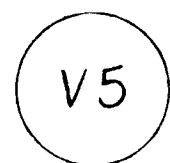
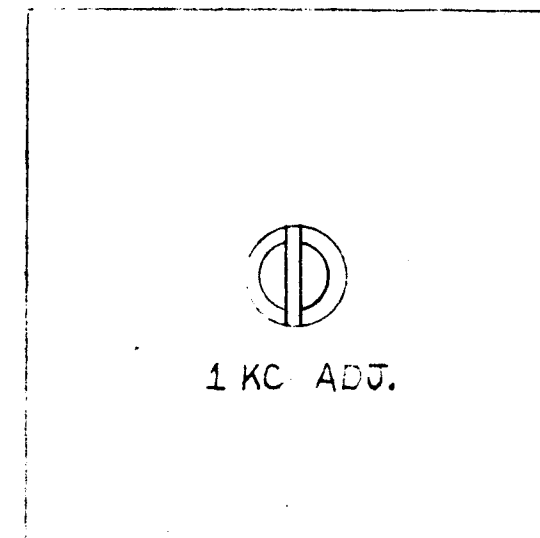
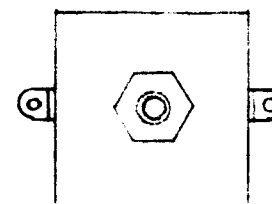
100 CPS
ADJ. #2



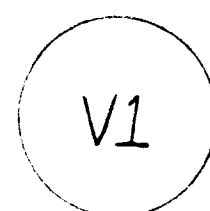
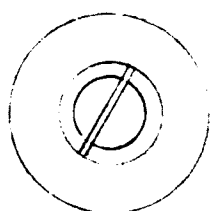
100 CPS
ADJ. #1



500 KC ADJ.
AT BOTTOM OF UNIT



10 KC ADJ.



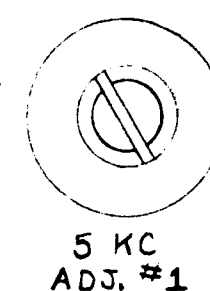
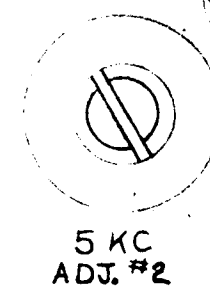
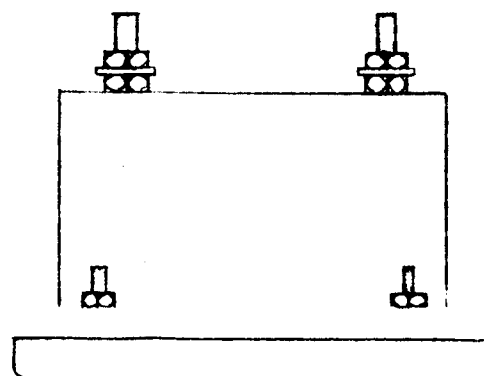
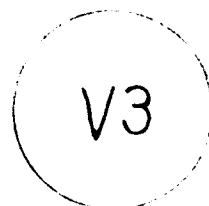
100 KC ADJ.



BIAS ADJ.



METER DC BAL. ADJ.



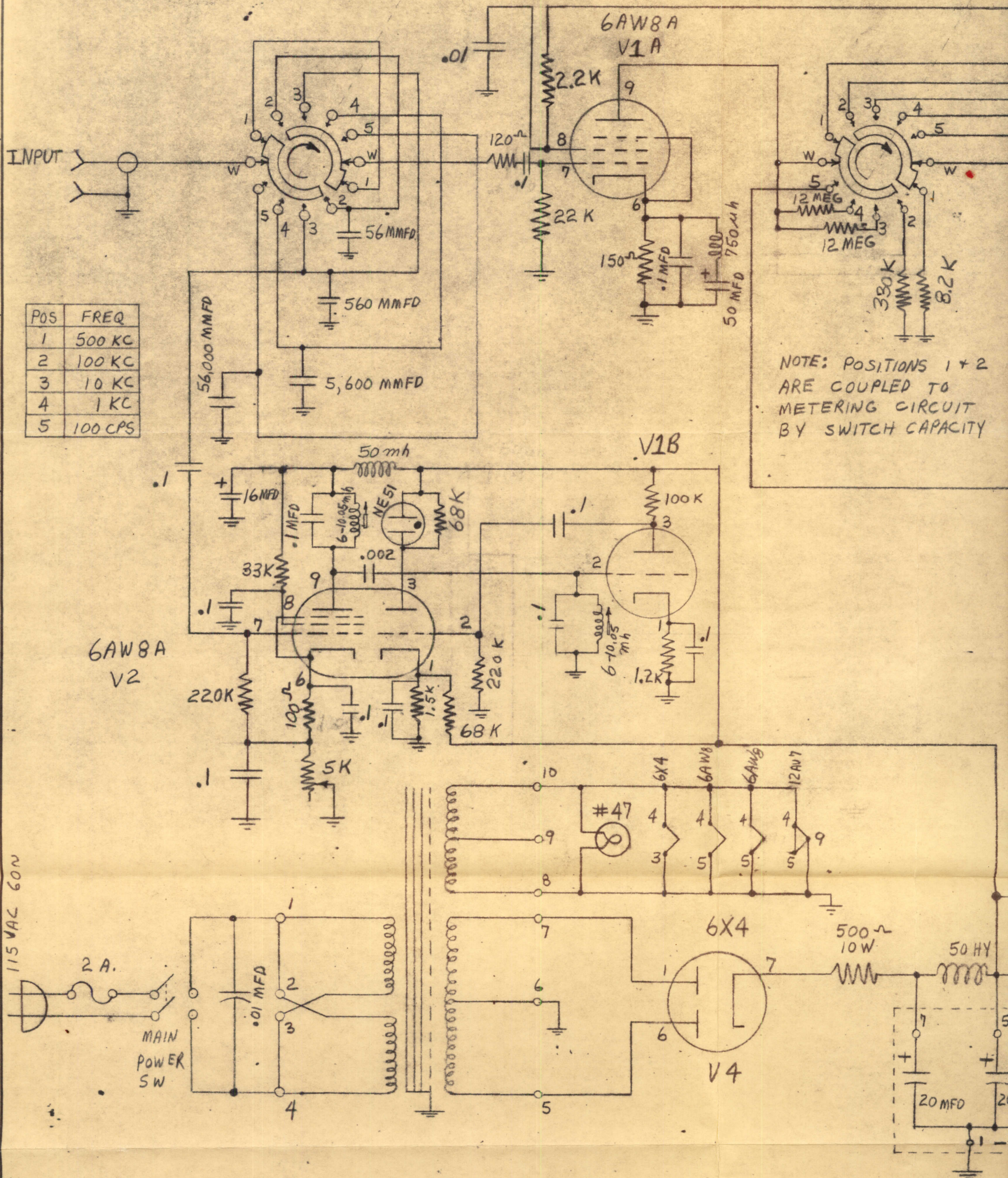
NOTE: SUPPLY 1 COPY
OF THIS DWG WHEN
ISSUING S-545

LAYOUT OF COMPONENTS, TEST UNIT ^{CHL-1}

THE TECHNICAL MATERIAL CORPORATION
MAMARONECK, NEW YORK

DATE 2-8-67	CHKD.
DRAWN	APPD.
SHEET OF	NO 2-1562

Sheet 8 of 9



POS	FREQ
1	500 KC
2	100 KC
3	10 KC
4	1 KC
5	100 CPS

NOTE: POSITIONS 1 + 2 ARE COUPLED TO METERING CIRCUIT BY SWITCH CAPACITY

SYM	ZONE	DESCRIPTION	DATE	CH. NO.	DRAFTS	CHECKER	ENG. APP.
UNLESS OTHERWISE SPECIFIED:			SCALE				
DIMENSIONS ARE IN INCHES			MAXIMUM ALLOWABLE TOLERANCES HAVE BEEN DETERMINED AND ANY DEVIATIONS WILL BE CAUSE FOR REJECTION. REMOVE ALL BURRS & SHARP EDGES				
FRACTIONS ± 1/64		DECIMALS ± .005	ANGLES ± 1/2°				

REQ. PER UNIT	MODEL	SECTION	USED

