

TEAC

**SERVICE
MANUAL**

**AG-5700
AG-2700
FM/AM Stereo Receiver**



TEAC CORPORATION

51032020

1. GENERAL DISCRIPTION

AG-5700 and AG-2700 AM/FM Stereo Receiver

This Service Manual is written for both the TEAC AG-5700 and the AG-2700 AM/FM Stereo Receivers. Both models are similar in many ways.

The AG-5700 offers greater power per channel and more system versatility and design elegance.

The AG-2700 is a more economical model with all the features and controls required of a high quality AM/FM Stereo Receiver.

The adjustment procedures and maintenance information for each model are clearly divided in this manual. All information applies to both models unless specifically noted as applying to either model alone.

AG-5700



AG-2700



TABLE OF CONTENTS

1. GENERAL DESCRIPTION	3
Specifications	4
2. DISASSEMBLY	5
Dial Cord String Path	6
Parts Location and check points	7
3. ALIGNMENT	8
Front end Circuit and Adj. Location	12
4. BASIC TROUBLE-SHOOTING	14
5. VOLTAGE AND WAVEFORM SIGNAL DIAGRAMS	17
6. BLOCK DIAGRAM	22

SPECIFICATIONS

AG-5700

AMPLIFIER SECTION:

Rated Power: 50W + 50W at 8 ohms both channels operated THD 0.5%

Harmonic Distortion: 0.08% at rated power

Output Load Impedance: 4 – 16 ohms

Damping Factor: 30 at 8 ohms

Frequency Response: 20 – 40,000 Hz ± 1 dB

Inputs: Phono: 2.5 mV, Mic: 3.0 mV, Aux: 150 mV,

Tape deck play: 1/2: 150 mV/ 50 k ohms

Phono Maximum Input level: 150 mV

Outputs: Record out: 1/2: 150 mV, Record out (DIN): 30 mV

Signal to Noise Ratio: Phono input: better than 70 dB,
Tuner, Aux, Tape: better than 85 dB

Channel Separation: 50 dB

Tone Control: 100 Hz ± 8 dB, 10,000 Hz ± 8 dB

Loudness Control: 100 Hz + 6 dB, 10,000 Hz + 4 dB

Filter: High cut: 10,000 Hz – 6 dB

TUNER SECTION:

FM

Receiving Frequency: 88 – 108 MHz

Sensitivity: 10.3 dBf (1.8 µV)

Capture Ratio: below 1.3 dB

Image Rejection: better than 80 dB (98 MHz)

IF Rejection: better than 80 dB (98 MHz)

Selectivity: better than 60 dB

Spurious Radiation: meets or exceeds FCC requirements

Signal to Noise Ratio: better than 75 dB

Harmonic Distortion: below 0.2%

FM Stereo Separation: better than 40 dB (1,000 Hz)

Antenna Input Impedance: 300 ohms balanced, 75 ohms unbalanced

AM

Receiving Frequency: 535 – 1,605 kHz

Sensitivity: 200 µV/m (IHF)

Image Rejection: better than 40 dB

IF Rejection: better than 40 dB

Selectivity: better than 25 dB

GENERAL:

Power Requirements: 100/117/220/240V AC, 50/60 Hz
(General Export model)
220V AC, 50 Hz (Europe model)
240V AC, 50 Hz (Australia, U.K. model)

Power Consumption: 40W at no signal, 310W at MAX. power

Dimensions: 466 (W) x 297 (D) mm x 150 (H)
[18-1/4" (W) x 11-3/4" (D) x 5-7/8" (H)]

Weight: 12.5 kg [27.5 lbs] net

AG-2700

AMPLIFIER SECTION:

Rated Power: 20W + 20W at 8 ohms both channels operated THD 0.5%

Harmonic Distortion: 0.2% at rated power

Output Load Impedance: 4 – 16 ohms

Damping Factor: 30 at 8 ohms

Frequency Response: 20 – 20,000 Hz ± 1 dB

Inputs: Phono: 3.5 mV, AUX: 180 mV,

Tape deck play: 180 mV/50 k ohms

Outputs: Record out: 180 mV, Record out (DIN): 30 mV

Signal to Noise Ratio: Phono input: better than 70 dB.

AUX input: better than 70 dB

Hum and Noise: 1 mV (Volume minimum)

Channel Separation: Phono: 50 dB, AUX: 50 dB

Tone Control: 100 Hz ± 10 dB, 10,000 Hz ± 10 dB

Loudness Control: 100 Hz + 6 dB, 10,000 Hz + 10 dB

Filter: High cut: 10,000 Hz – 12 dB

TUNER SECTION:

FM

Receiving Frequency: 88 – 108 MHz

Sensitivity: 13.2 dBf (2.5 µV)

Capture Ratio: below 2.5 dB

Image Rejection: better than 50 dB (98 MHz)

IF Rejection: better than 70 dB (98 MHz)

Selectivity: better than 40 dB

Spurious Radiation: meets or exceeds FCC requirements

Signal to Noise Ratio: better than 60 dB

Harmonic Distortion: below 0.5%

FM Stereo Separation: better than 30 dB (1,000 Hz)

Antenna Input Impedance: 300 ohms balanced, 75 ohms unbalanced

AM

Receiving Frequency: 535 – 1,605 kHz

Sensitivity: 200 µV/m (IHF)

Image Rejection: better than 40 dB

IF Rejection: better than 40 dB

Selectivity: better than 25 dB

GENERAL:

Power Requirements: 100/117/220/240V AC, 50/60 Hz
(General Export model)
220V AC, 50 Hz (Europe model)
240V AC, 50 Hz (Australia, U.K. model)

Power Consumption: 20W at no signal, 140W at MAX. power

Dimensions: 450 (W) x 315 (D) mm x 153 (H)
[17-3/4" (W) x 12-3/8" (D) x 6" (H)]

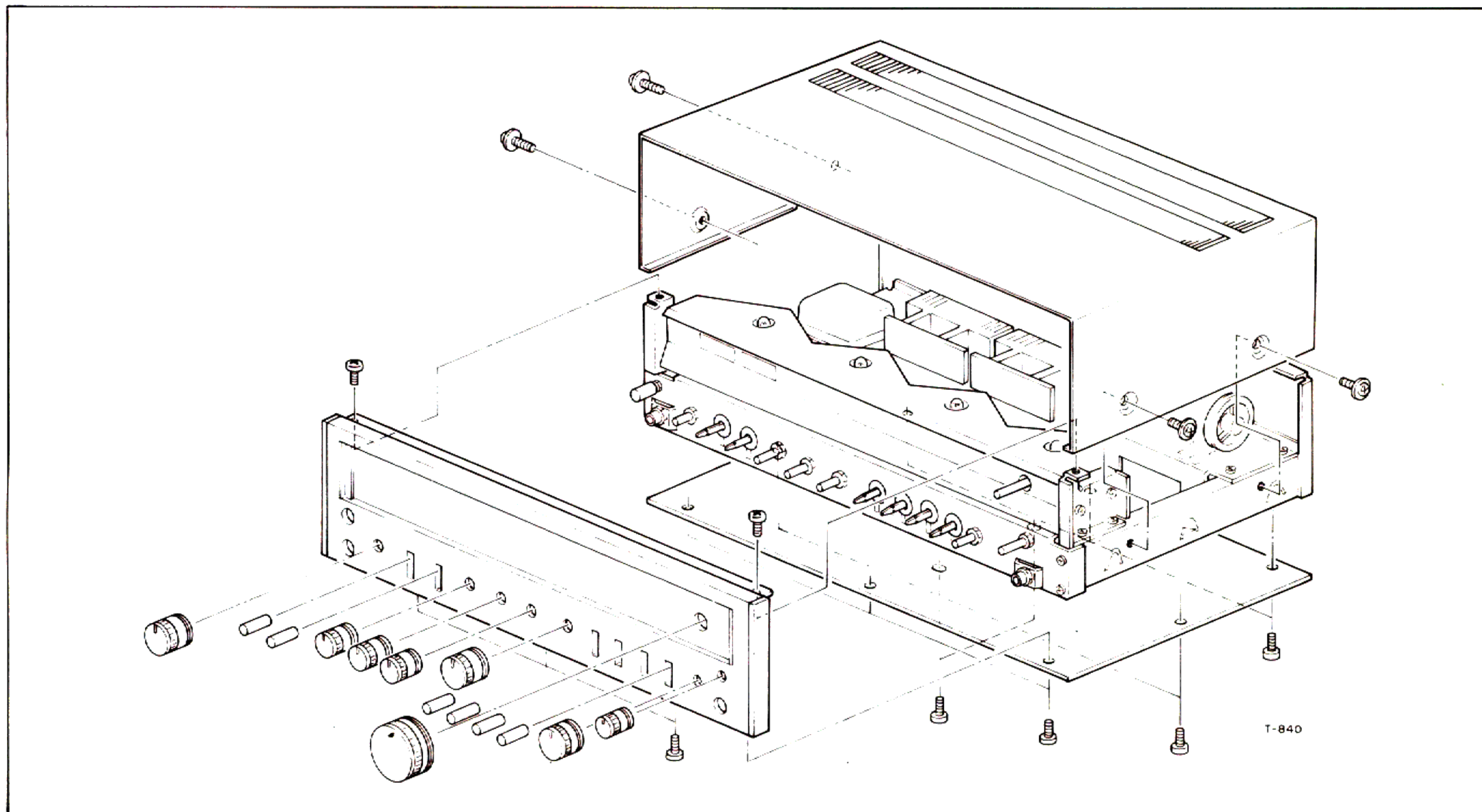
Weight: 9 kg [19.8 lbs] net

NOTE: Improvements may result in features or specifications change without notice.

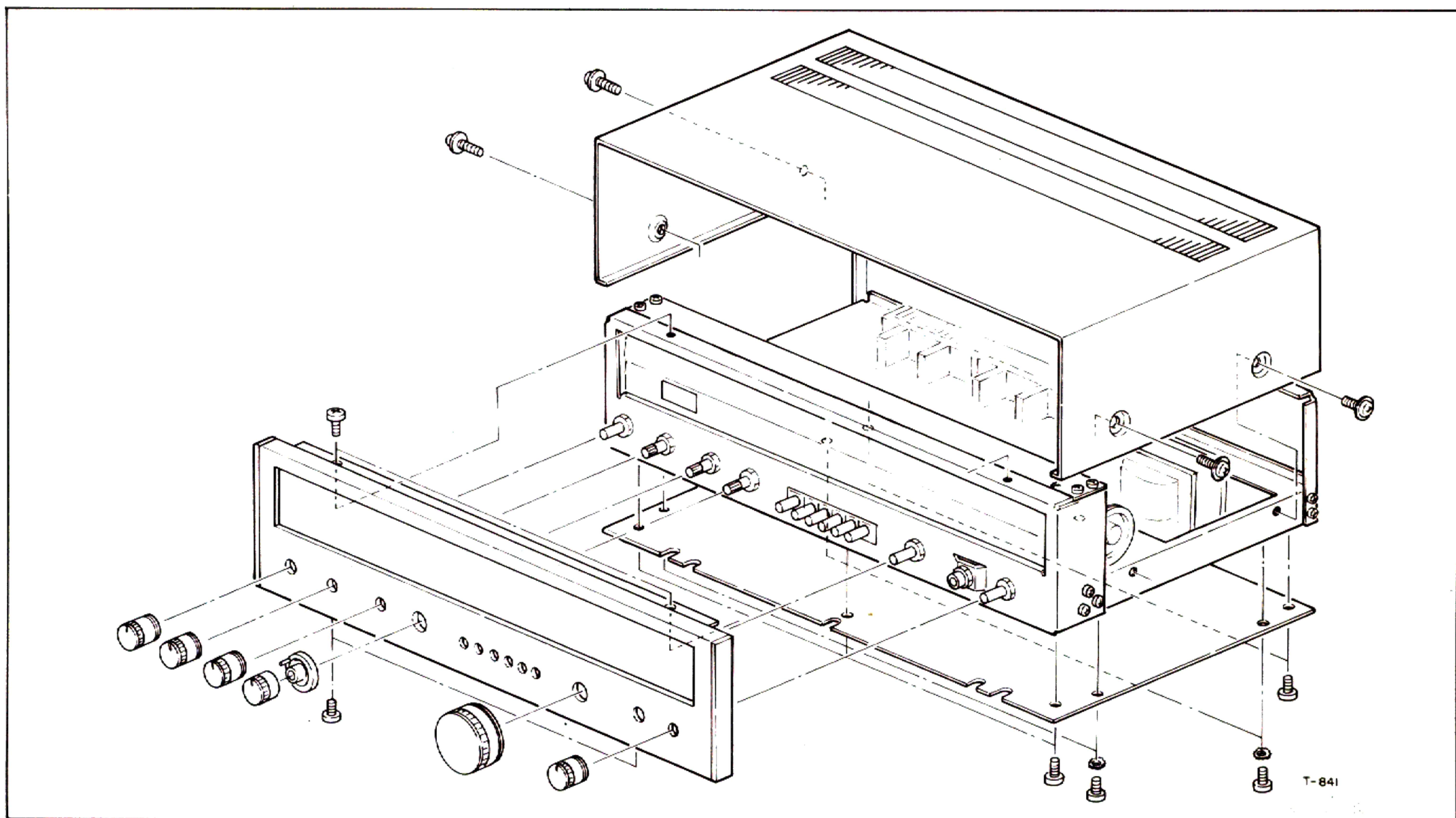
2. DISASSEMBLY

FRONT PANEL, BONNET AND BOTTOM PLATE

AG-5700



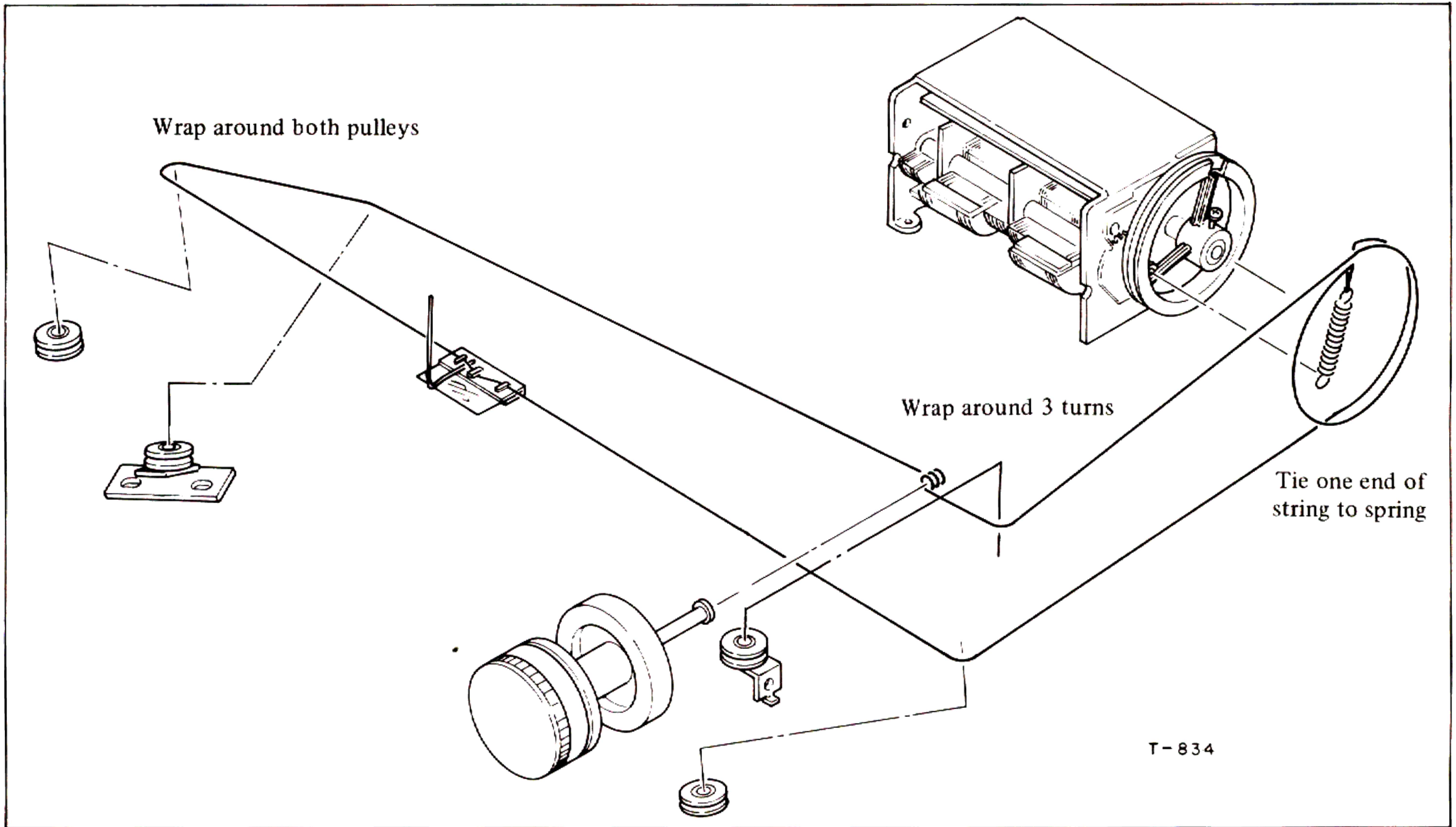
AG-2700



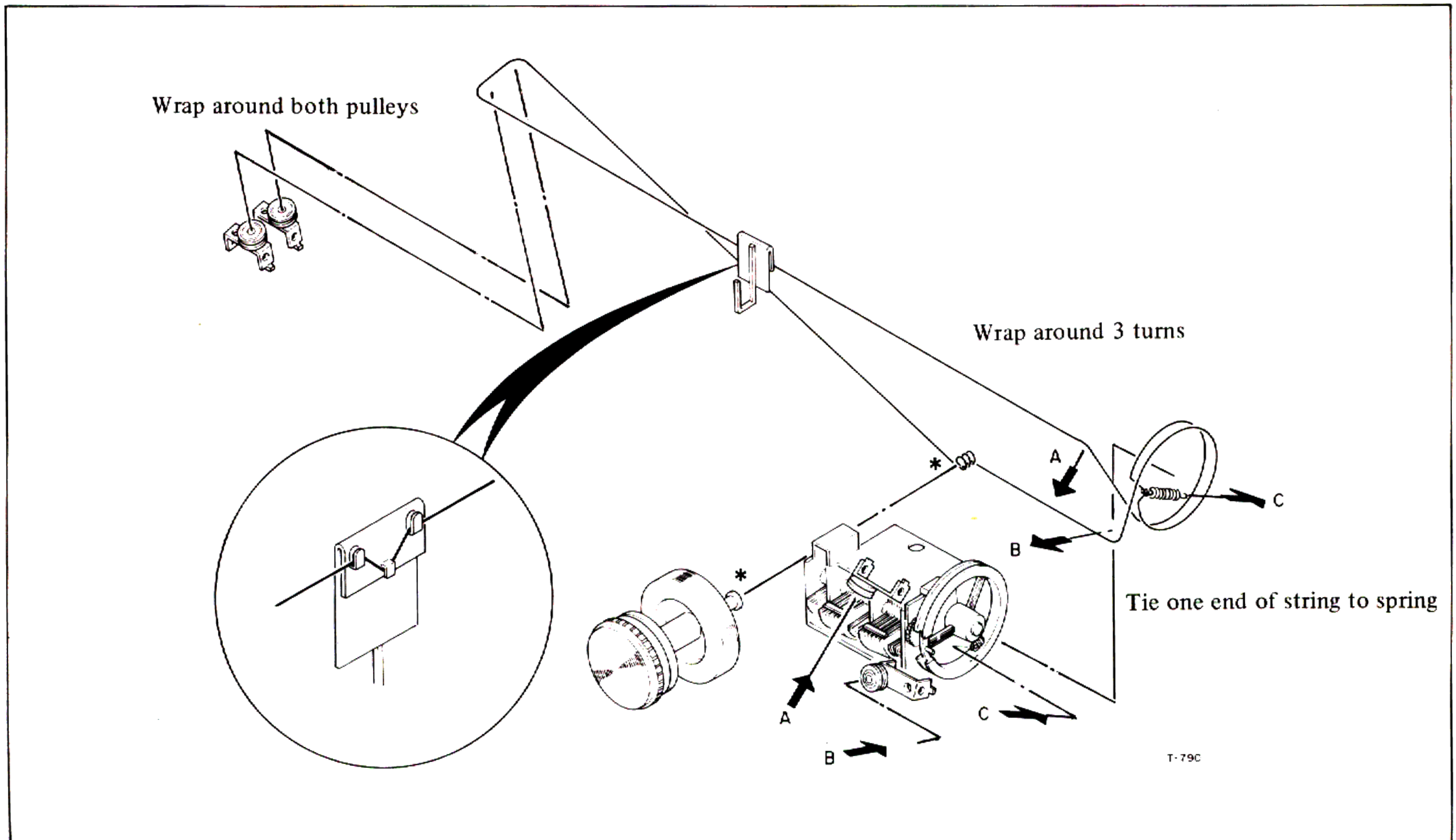
DIAL CORD STRING PATH

NOTE: Prior to removing old dial cord for replacement, carefully inspect winding path and connection method to insure that new dial cord string can be properly installed.

AG-5700



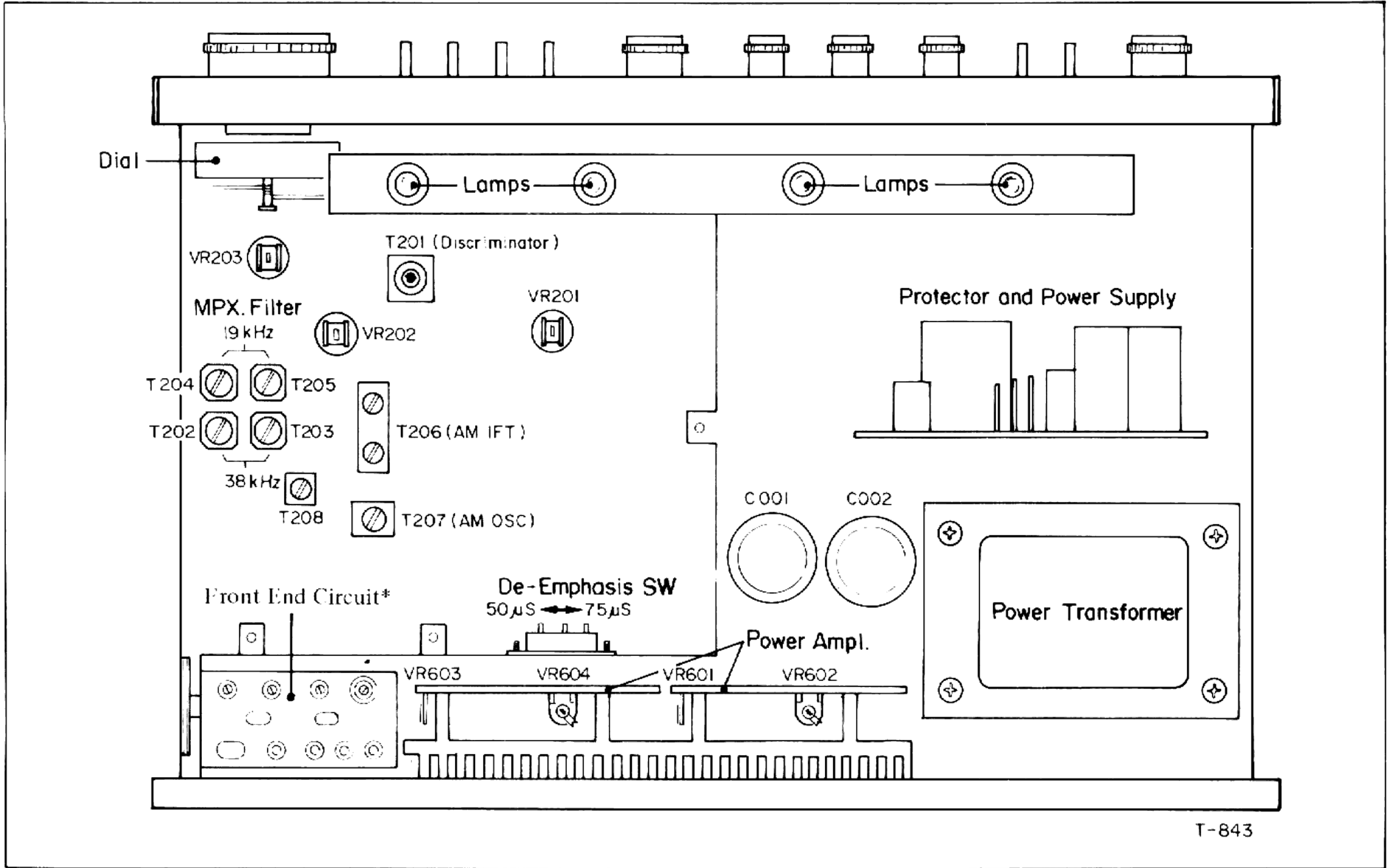
AG-2700



PARTS LOCATION AND CHECK POINTS

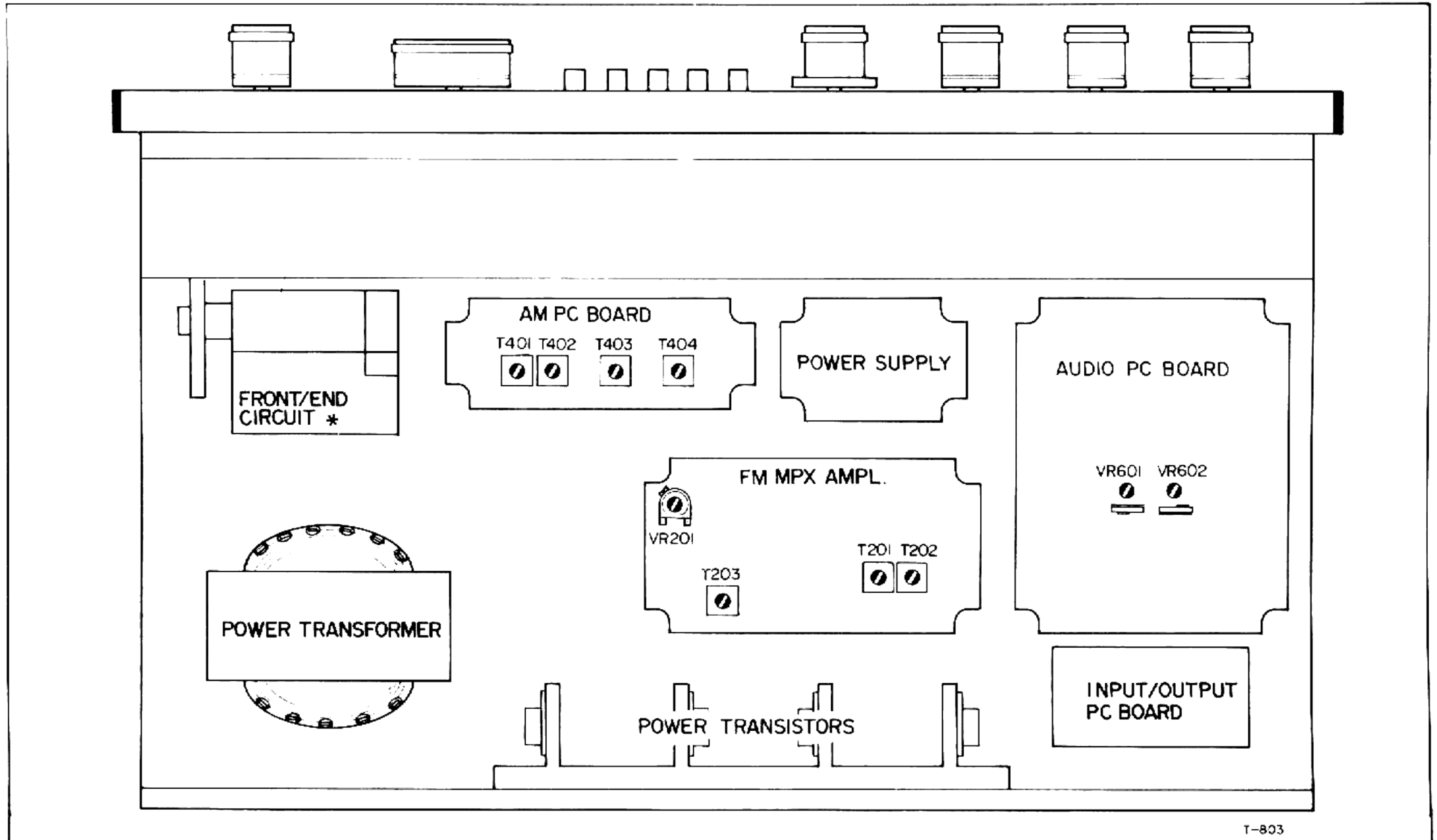
CHASSIS TOP VIEW

AG-5700



AG-2700

NOTE: *marks Refer to page 12 and 13 for More detailed Adj. Location.



3. ALIGNMENT

AG-5700

GENERAL NOTICE

Overall adjustment and alignment procedures are outlined below.

The AG series Receivers utilize the latest circuitry and most modern materials and techniques.

Since the AG series Receivers are similar in design to those of other leading manufacturers, general alignment and servicing procedures may be followed. However, if you do not possess the required test equipment or should you fail to understand the circuit operation, alignment should not be attempted.

REQUIRED EQUIPMENT

- Sweep Generator
- AM/FM Signal Generator
- Audio Generator
- Oscilloscope
- AC V. T. V. M.
- Distortion Meter
- Stereo Signal Generator
- Plastic Alignment Tools
- 8 ohms / 20W Dummy load Resistor

FM ALIGNMENT PROCEDURE

STEP	ALIGN ITEM	TEST SIGNAL	FEED SIGNAL	OUTPUT INDICATOR	DIAL SETTING	ADJUST	ADJUST FOR
1	O.S.C	Set FM SG freq. to 90 MHz, 60 dB Output, Internal 75 kHz (devi.) with 400 Hz	To antenna 300 ohm terminal (FM) See Fig. 4	Oscilloscope and distortion Meter output load	90 MHz	L.O.	Adjust Test signal 90 MHz and Dial setting to match
		106 MHz			TCO	Adjust Test signal and Dial setting to match	
Repeat above signal 90 MHz and 106 MHz							
2	High-frequency Ampl. circuit	90 MHz, 10 dB ~ 60 dB output, internal 75 kHz, Deviation 100% (mod.)	To antenna 300 ohm terminal (FM)	Oscilloscope and distortion meter output load	90 MHz	LR-1, LR-2 and LA	Minimum
		Set FM SG freq. to 106 MHz			106 MHz	TCR-1, TCR-2 and TCA	
Repeat above signal 90 MHz and 106 MHz							
3	FM IF ADJ.	106 MHz, Internal 75 kHz, Deviation 100% (mod.)	To antenna 300 ohm terminal (FM)	Oscilloscope and distortion Meter output Load	106 MHz	IF	Minimum
4	Discriminator					T201 (Upper side)	Minimum
5	Meter Tuning					T201 (Lower side)	Adjust to center Tuning meter See Fig. 1
6	Input Meter					VR-201	Adjust maximum on INPUT meter See Fig. 2
7	19 kHz (WHT) Filter adj.	106 Mhz, 60 dB output, external 75 kHz, Deviation 100% (mod.)	To antenna 300 ohm terminal (FM) See Fig. 4	Oscilloscope and V.T.V.M.	106 MHz	T202 and T203	Minimum
8	38 kHz (BLK) Filter Adj.					T204 and T205	Minimum
9	V.C.O. Level setting	106 MHz, external 67.5 kHz (mod.) pilot for 10%				VR-202	Adjust until lamp lights
10	Separation					VR-203	Adjust for maximum indication on R and L meter

AM ALIGNMENT PROCEDURE

STEP	ALIGN ITEM	TEST SIGNAL	FEED SIGNAL	OUTPUT INDICATOR	DIAL SETTING	ADJUST	ADJUST FOR
1	OSC.	Set AM SG freq. to 600 kHz, 400 Hz, 40% (mod.)	Loop antenna to Bar Ant. Approx. 60 cm apart See Fig. 10	Connect Oscilloscope and V.T.V.M.	600 kHz	T207	Adjust Test signal 600 kHz and Dial setting 600 kHz to match
		1400 kHz			AM-1 (OSC)	Adjust Test signal 1400 kHz and Dial setting 1400 kHz to match	
Repeat above signal 600 kHz and 1400 kHz							
2	RF Ampl. adj.	600 kHz, 400 Hz, 40% (mod.)	Loop antenna to Bar Ant. Approx. 60 cm apart. See Fig. 10	Connect Oscilloscope and V.T.V.M.	600 kHz	Bar antenna	Maximum
		1400 kHz			AM-2 (RF)		
3	AM IF adj.	455 kHz			455 kHz	T206 and 208	Maximum

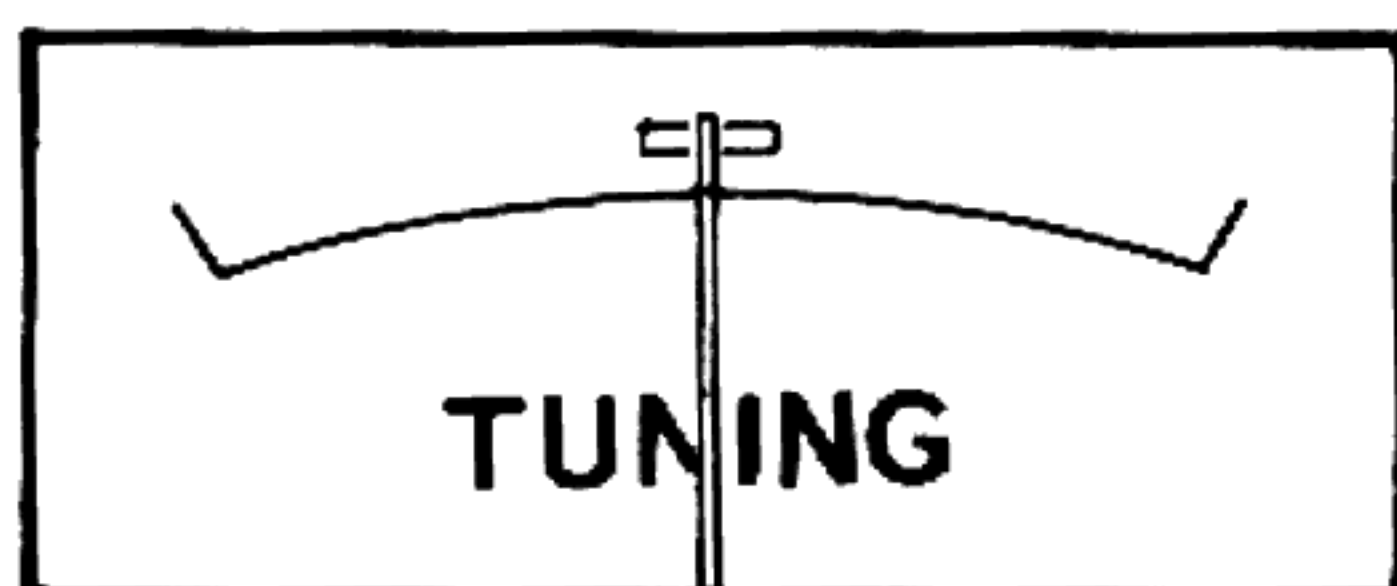


Fig. 1

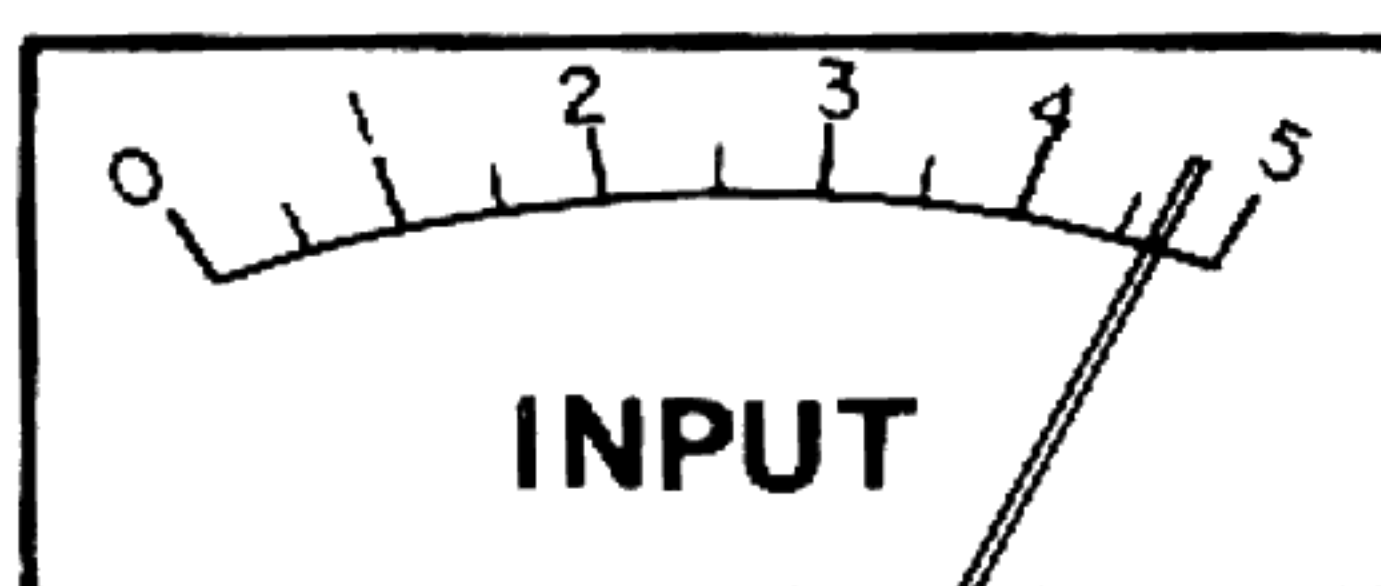


Fig. 2 T-833

POWER AMPLIFIER ADJUSTMENT

1. Connect a VOM (tester) to following check point. (Fig.3).
2. Adjust VR-603 (L) and VR-605 (R) for 0.02V.
3. Adjust VR-602 (L) and VR-604 (R) for 0V.

NOTE: Do not apply input signals.
See Adjuster VR's page 7.

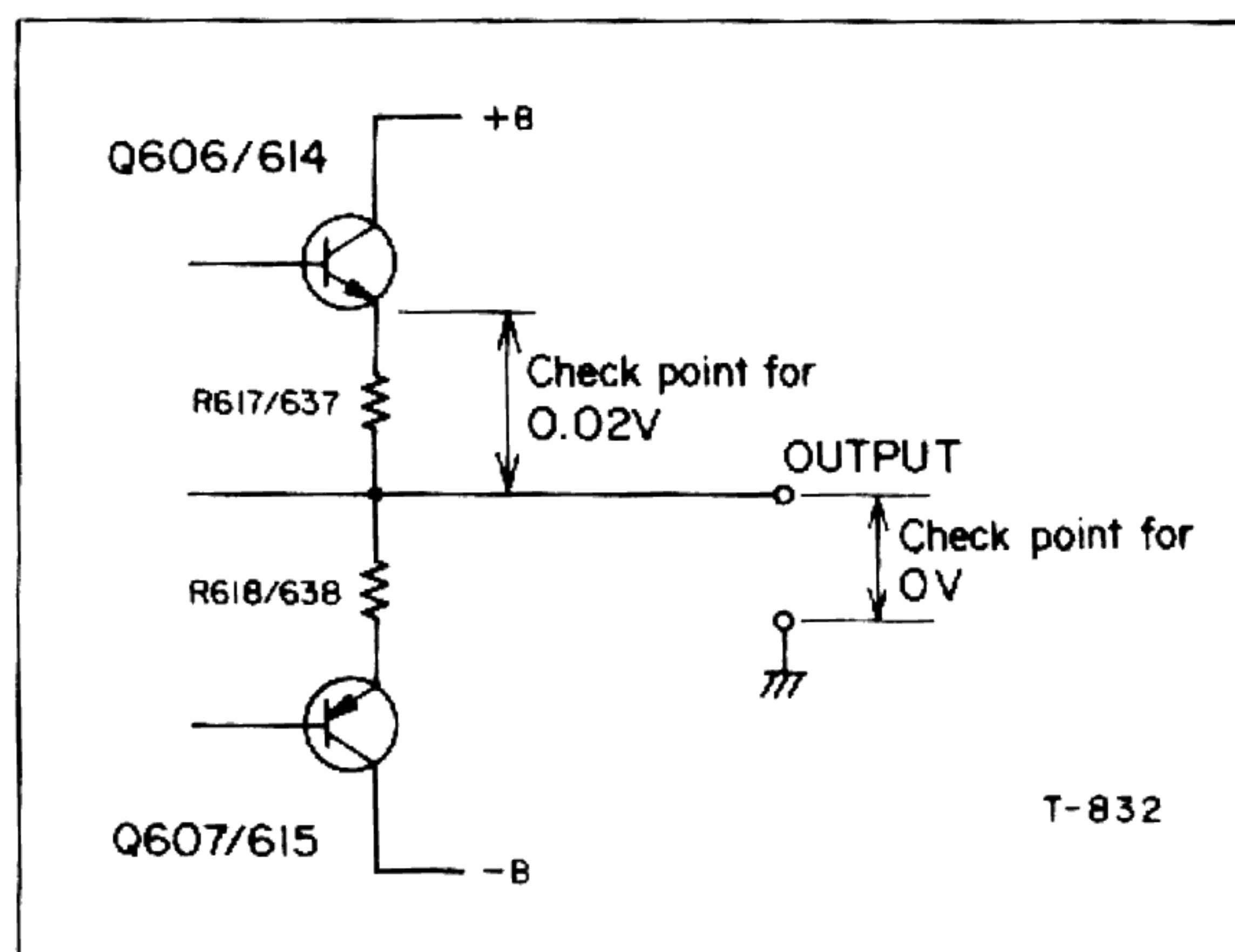


Fig. 3

Set-up for FM Align. Check

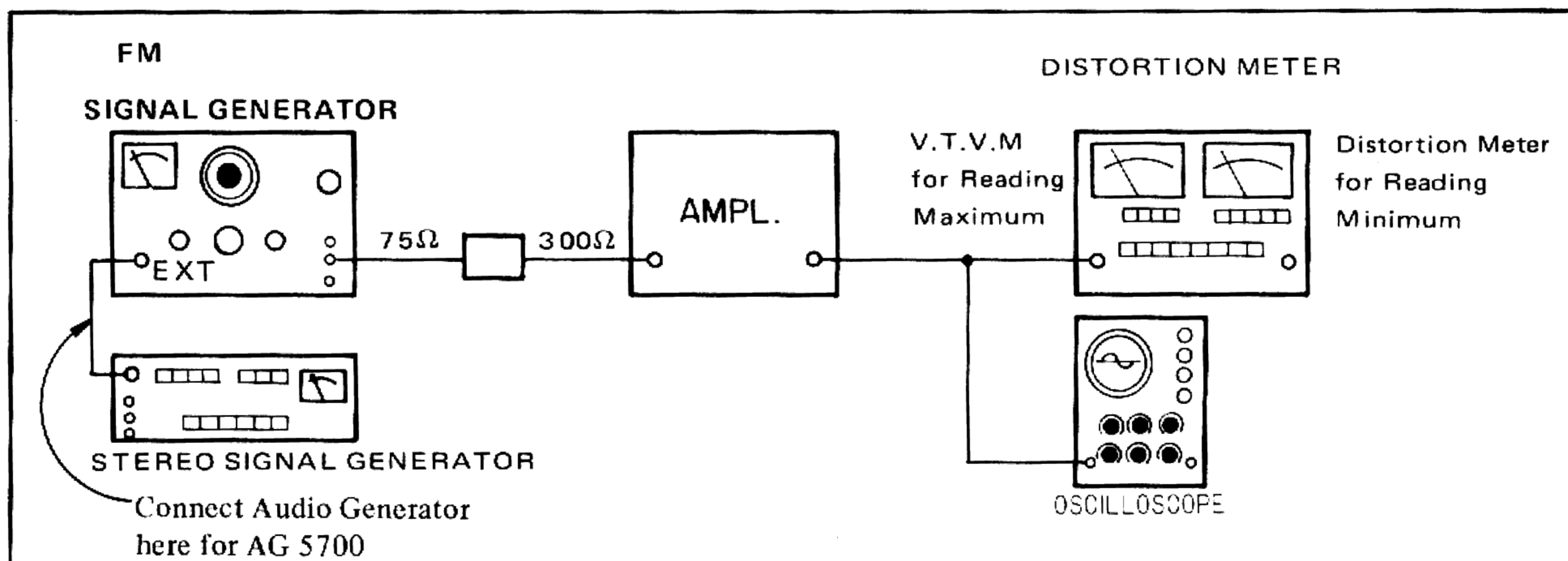


Fig. 4

T-798

FM ALIGNMENT PROCEDURE

STEP	ALIGN ITEM	TEST SIGNAL	FEED SIGNAL	OUTPUT INDICATOR	DIAL SETTING	ADJUST	ADJUST/CHECK FOR
1.	IF Transformer	10.7 MHz ±200 kHz	Sweep signal is sent to T.P 6 via the 10pF ceramic Capacitor See Fig. 5	Oscilloscope probe is connected to T.P 1 via the 10pF ceramic Capacitor	---	Fixed	I.F.T. Wave form See Fig. 6
2.	Discriminator			Oscilloscope is connected to check point T.P 2. See schematic	—	FM Discriminator is transformer T201, T202 top and bottom sides	S Curve See Fig. 7
3.	O S C.	90 MHz, 400 Hz 75 kHz. Deviation 100% (mod.)	To Antenna 300 ohm terminal (FM)	Oscilloscope and Distortion Meter at output load	90 MHz	No adjustment. Check only (Fixed)	
4.	O S C.	90 MHz, 400 Hz 75 kHz. Deviation 100% (mod.) Output level 60 dB			106 MHz	O S C. trimmer TCO (on Front End circuit)	Minimum
Repeat above step 3 and 4							
5.	High-frequency Ampl. circuit	90 MHz, 400 Hz 100% Modulation	To antenna 300 ohm terminal (FM)	Oscilloscope and Distortion Meter at output load	90 MHz	No adjustment. Check only (Fixed)	
6.	High-frequency Ampl. circuit	106 MHz 400 Hz 100% Modulation			106 MHz	Trimmer TCI and 3 (on Front End circuit)	Minimum
Repeat above 5 and 6							
7.	FM IF Adj.	106 MHz 400 Hz 100% Modulation	To Antenna 300 ohm terminal (FM)	same as above	106 MHz	IFT (on Front End)	Minimum
8.	Meter Tuning					Tuning coil T203	Maximum on output Meter Fig. 9

V.C.O. ADJUSTMENT PROCEDURE

SELECTOR SETTING FM STEREO or AUTO

PROCEDURE The voltage of voltage controlled oscillator should be readjusted. Adjust the semi fixed variable resistor VR201 (5k ohm) while observing the STEREO lamp through the dial panel, so that the STEREO lamp lights up when the AG-2700 receives the stereo signal.

NOTE: Rotate this variable resistor to left or right of center position. See Fig. 8 below.

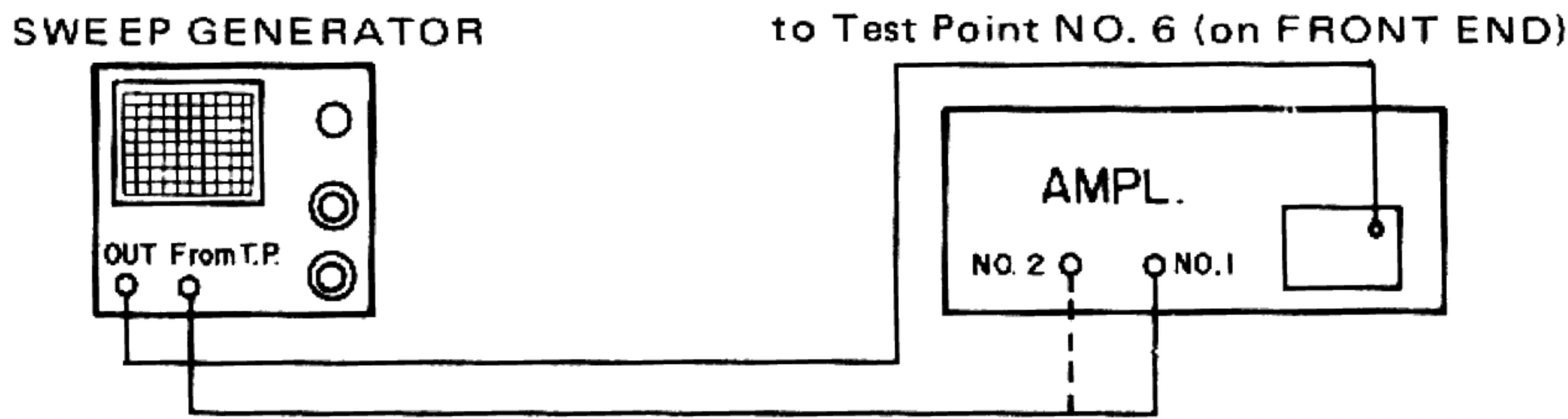


Fig. 5

T-796

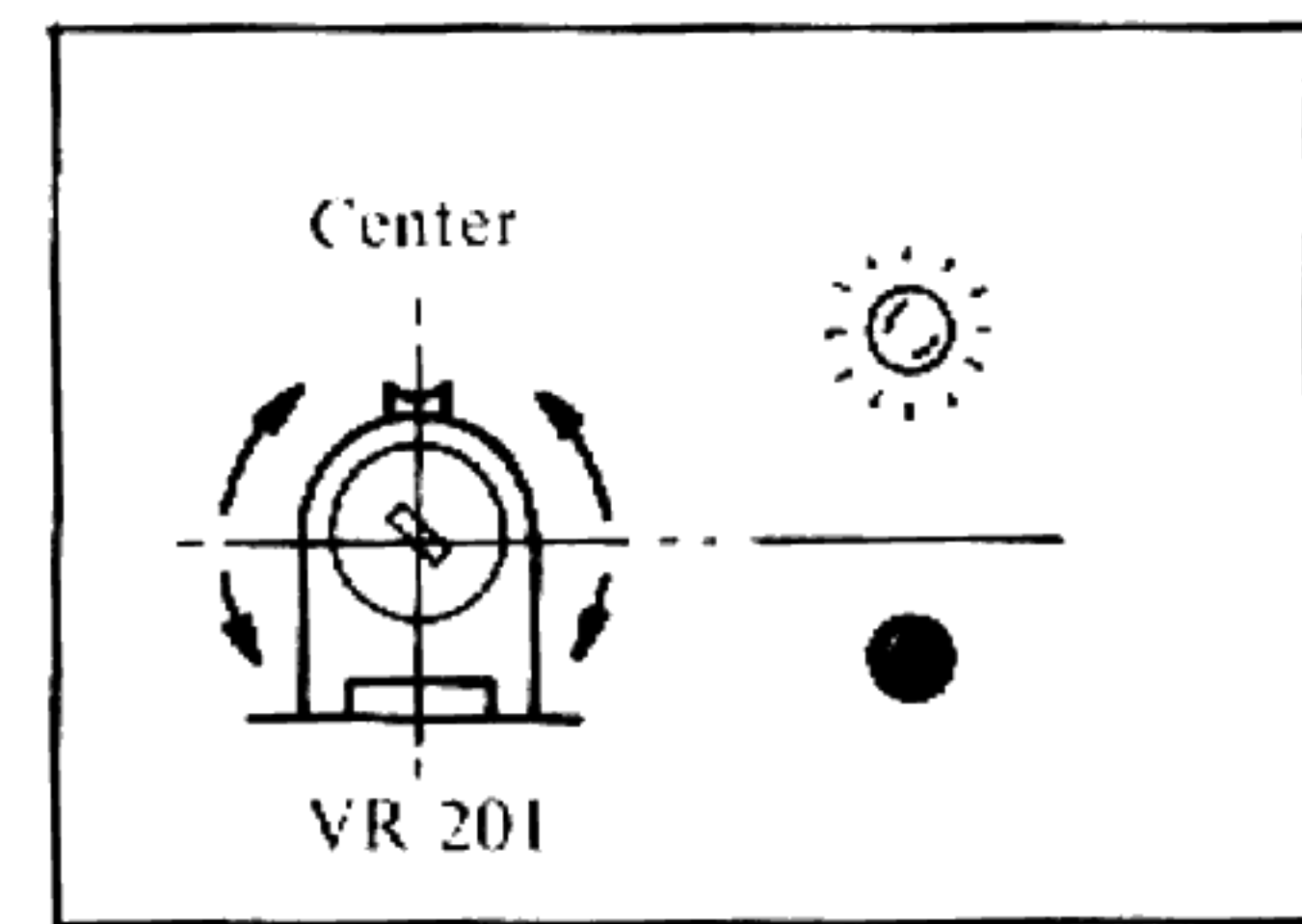


Fig. 8

T-845

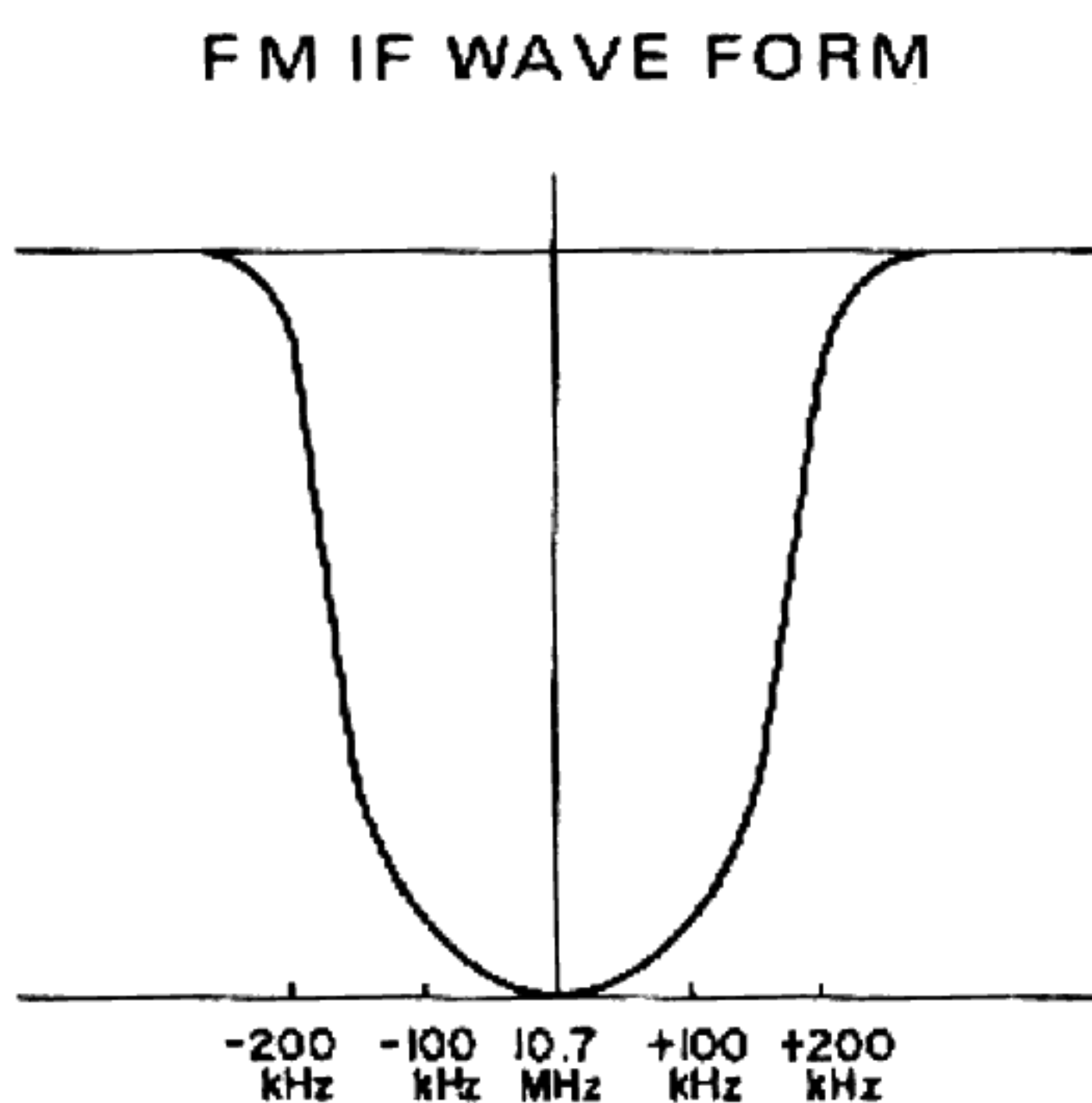


Fig. 6

T-792

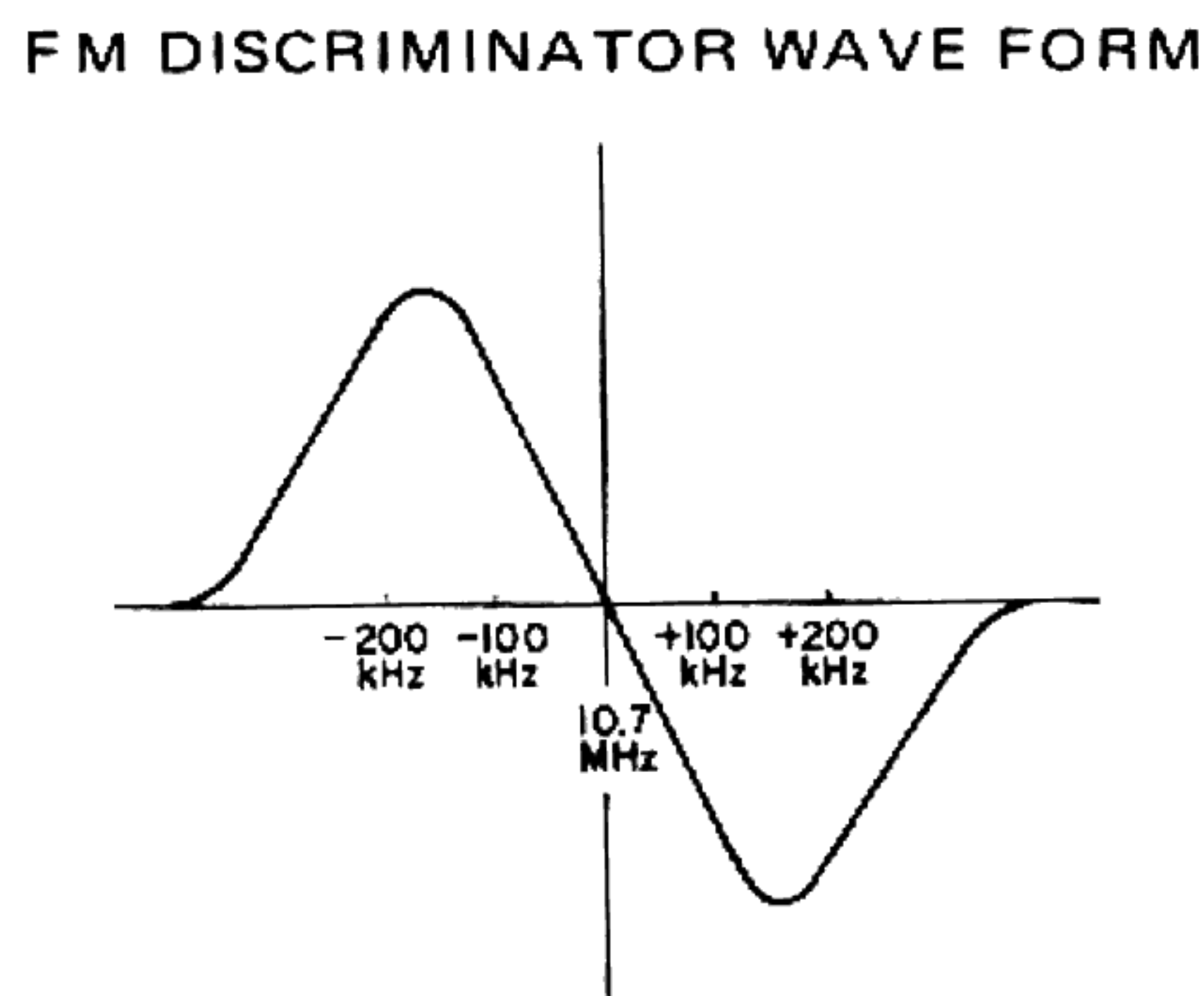


Fig. 7

T-793



Fig. 9

T-801

AM ALIGNMENT PROCEDURE

STEP	ALIGN ITEM	TEST SIGNAL	FEED SIGNAL	OUTPUT INDICATOR	DIAL SETTING	ADJUST	ADJUST/CHECK FOR
1.	IF Transformer	455 kHz Signal Generator	Loop antenna to Bar antenna approx. 60 cm apart See Fig. 10	Oscilloscope and V.T.V.M	---	Top and bottom sides from the 1st I.F.T. T402 (YEL), T403 (WHT) and T404 (GRY)	Maximum
2.	O S C.	540 kHz, 400 Hz Modulation		Oscilloscope and distortion meter at output load	540 kHz	O S C. Trimmer T401 (RED)	Minimum
3.	O S C.	1600 kHz, 400 Hz 30% modulation		1600 kHz	O S C. Trimmer TC 4 (on Front End circuit)	Minimum	
Repeat above 2 and 3							
4.	RF Ampl.	1400 kHz, 400 Hz 30% Modulation	Loop antenna to Bar antenna approx. 60 cm apart See Fig. 10	Oscilloscope and distortion meter at output load	1400 kHz	RF Trimmer TC 2 (on Front End circuit)	Minimum
5.	Antenna circuit				1400 kHz	No adjustment. Check only (Fixed)	

Repeat above 4 and 5

POWER AMPLIFIER ADJUSTMENT PROCEDURE

1. Set the SOURCE Selector Switch to Aux and POWER/SPEAKER Switch to A+B position.
2. Connect an Audio Generator with output of 1 kHz at 0.5 V to the AUX pin on the rear panel.
3. Connect an 8 ohm/20W load resistor, AC VTVM and oscilloscope to the speaker cable terminals. See Fig. 11.
4. Set the Main VOLUME control to the full clockwise position, and set the BALANCE control at mid position. Adjust Main VOLUME control for 12 V output to AC VTVM.
5. Adjust VR601 (L ch) and VR602 (R ch) on Audio P.C. Board to achieve vertical symmetry of the clipped waveform. See Fig. 12.
6. Set Main VOLUME control to a position where the clipping just disappears.

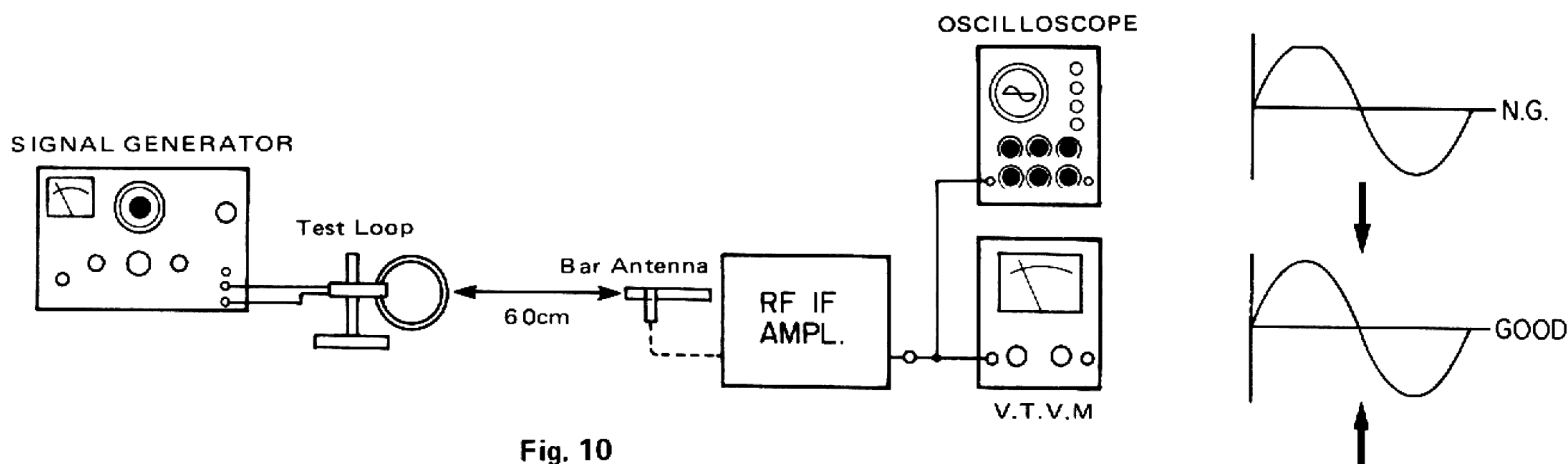


Fig. 10

Fig. 12

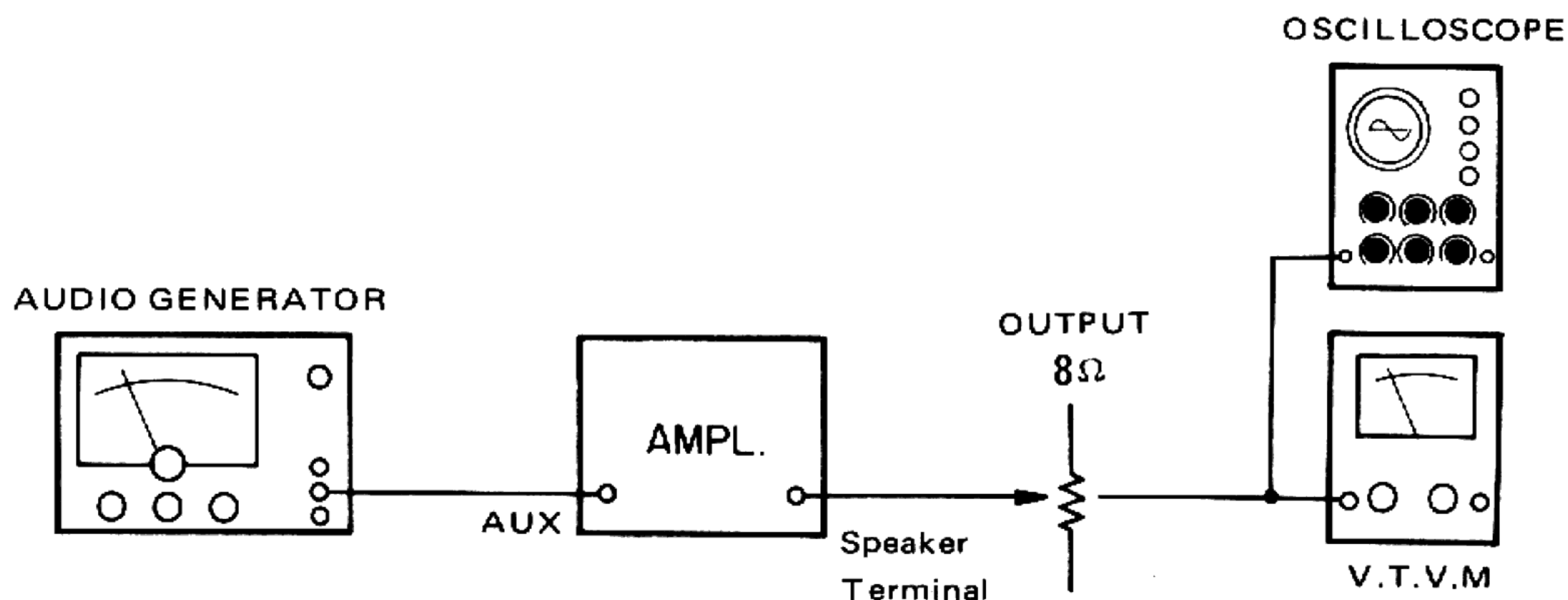
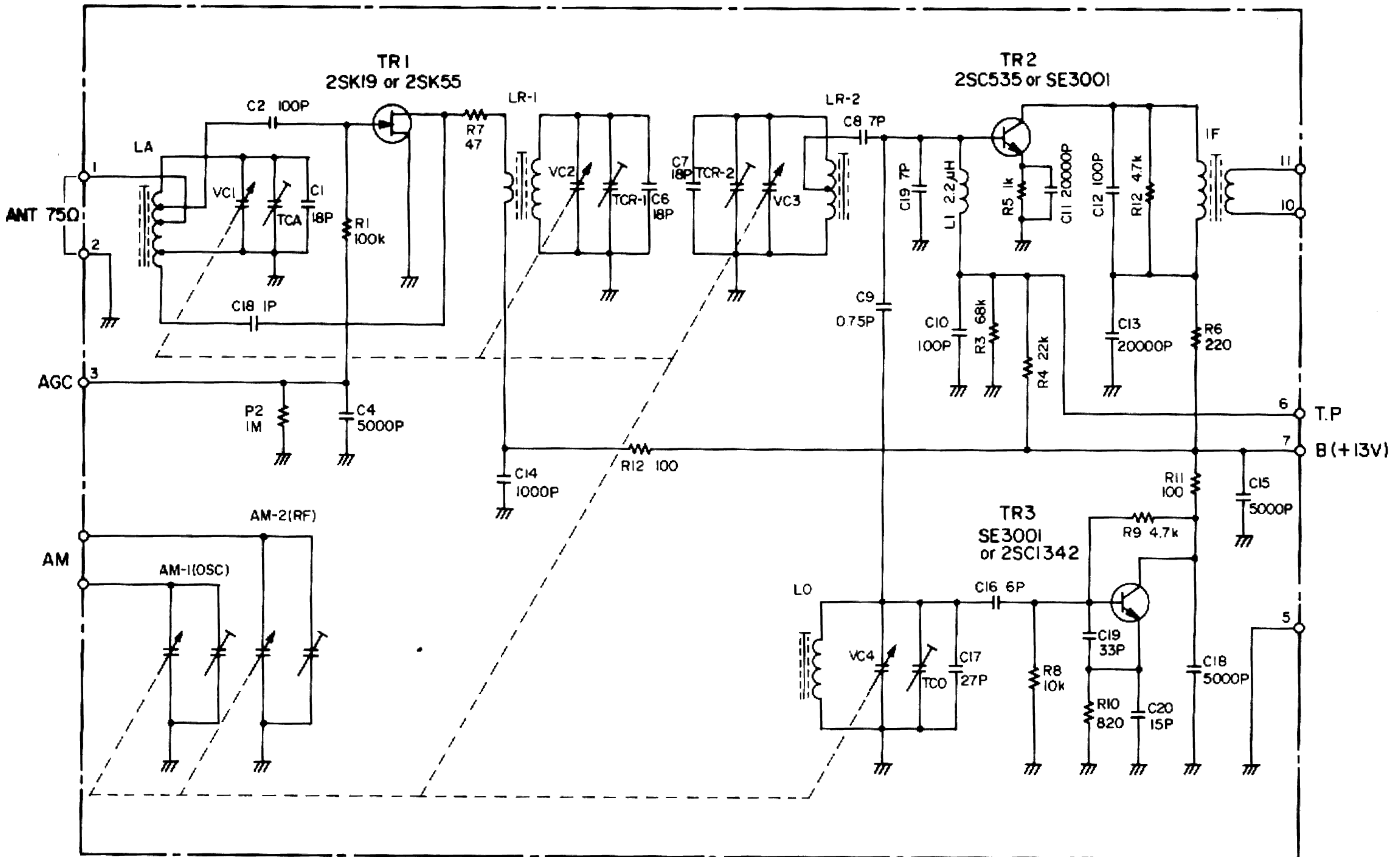


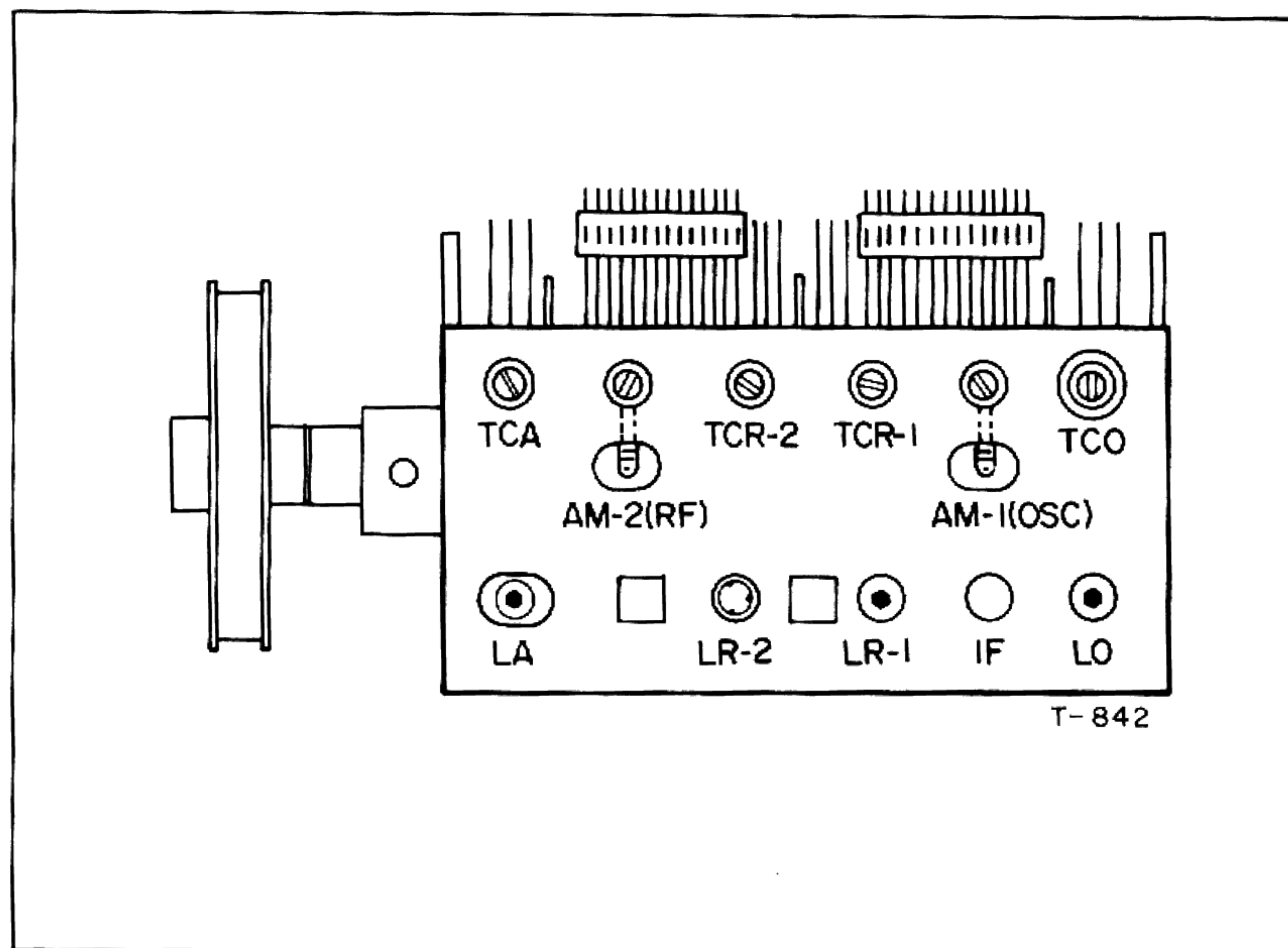
Fig. 11

FRONT END CIRCUIT AND ADJ. LOCATION

AG-5700



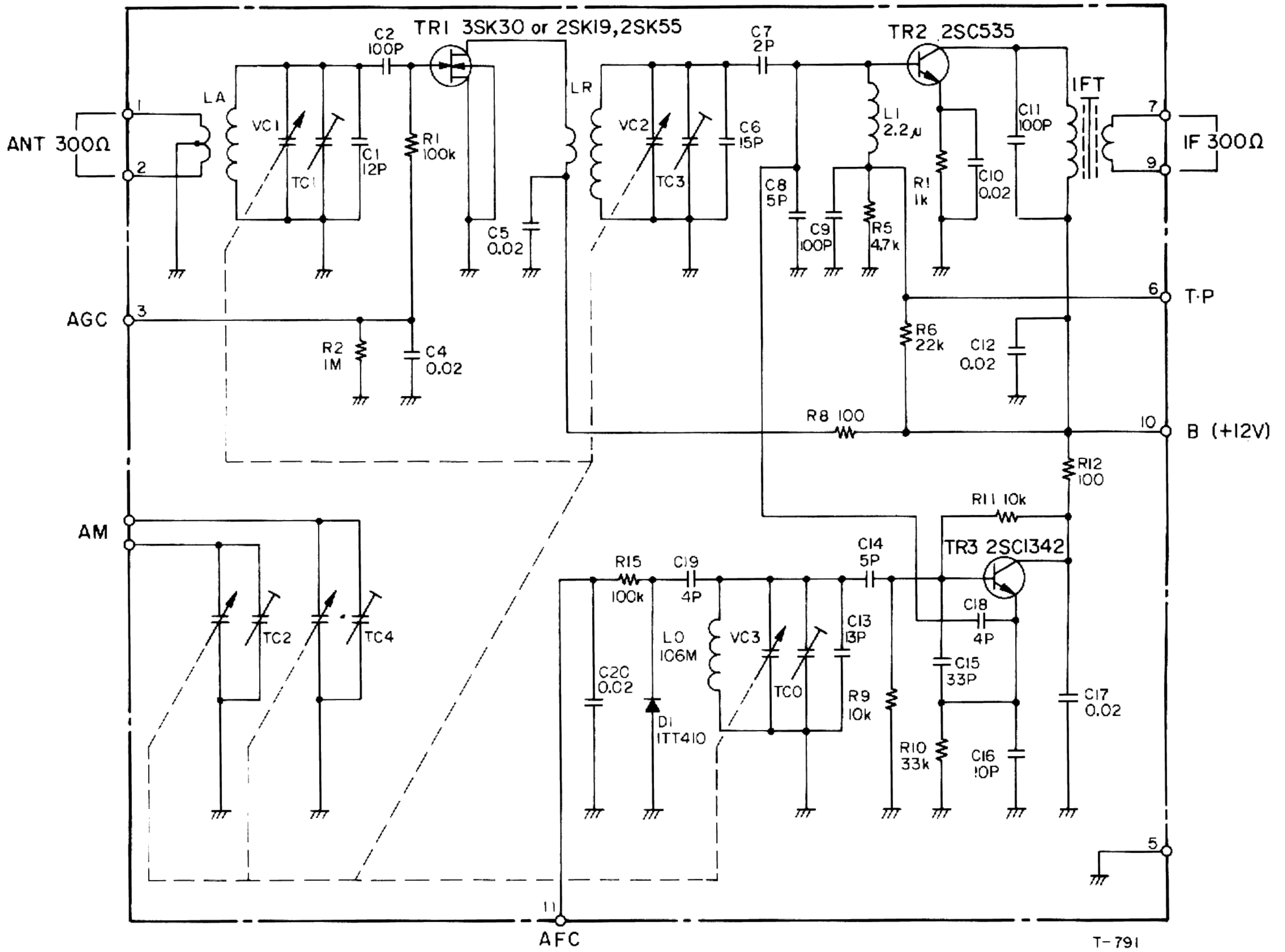
T-835



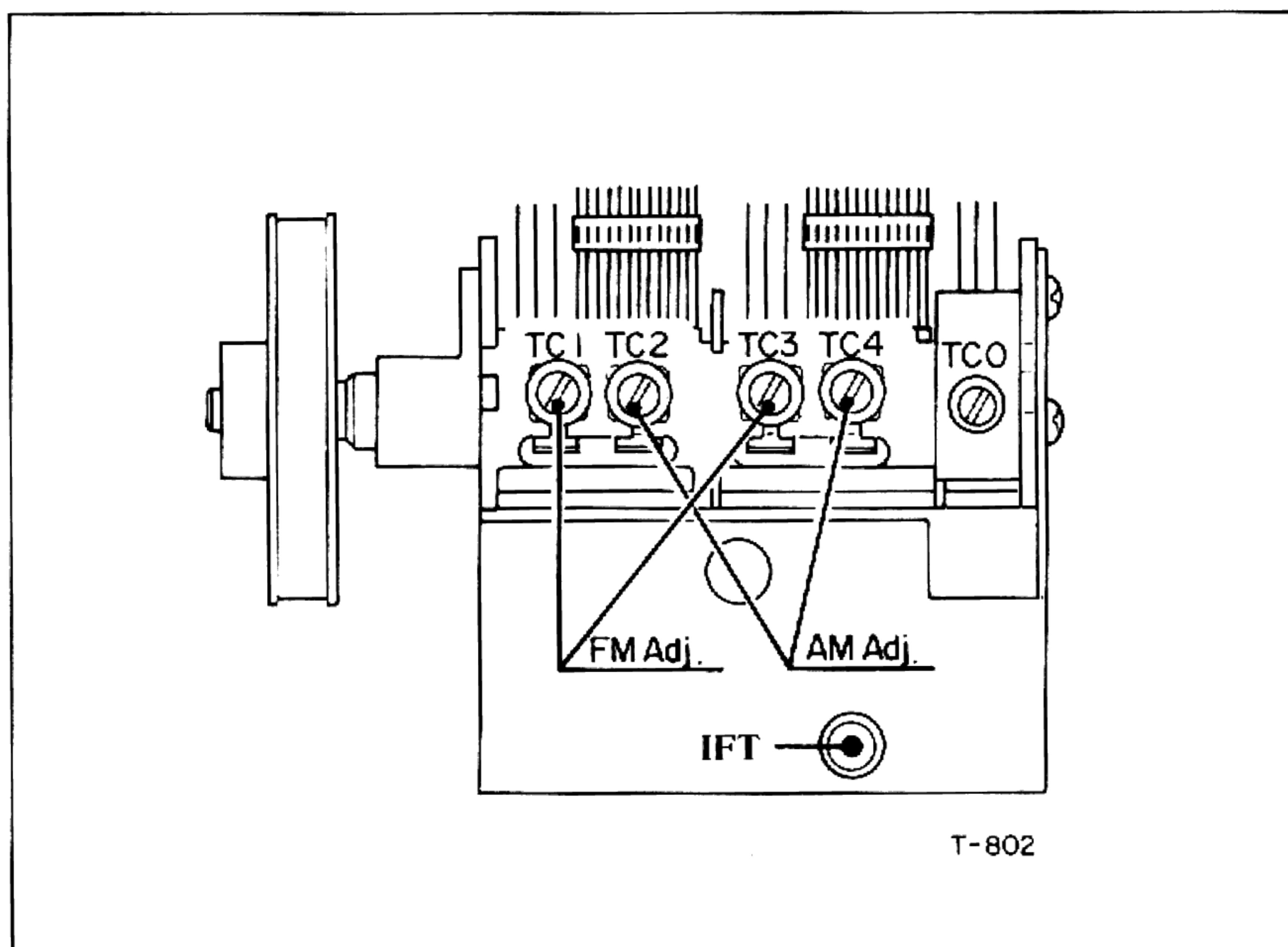
T-842

FRONT END CIRCUIT AND ADJ. LOCATION

AG-2700



T-791



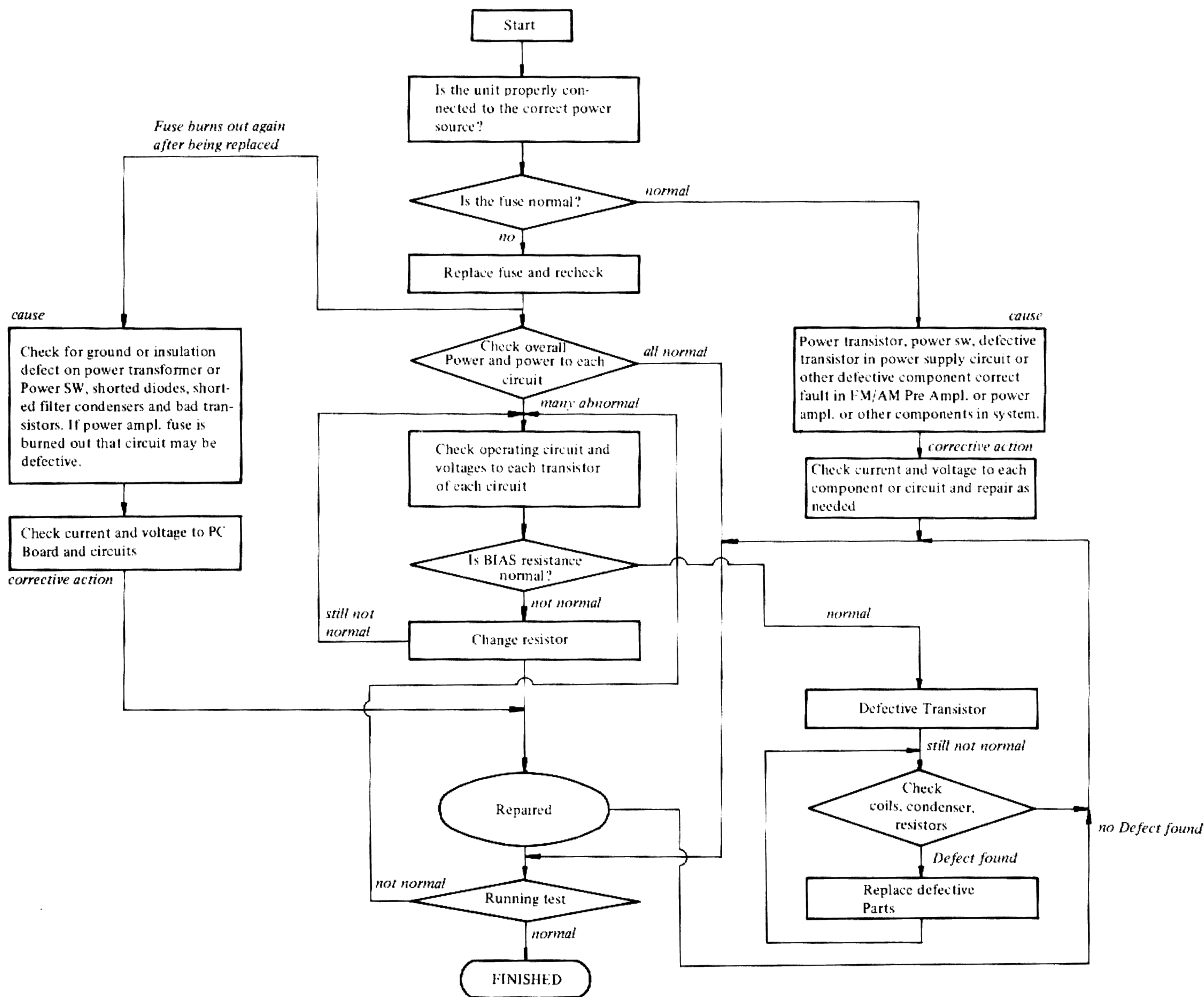
4. BASIC TROUBLE-SHOOTING -1

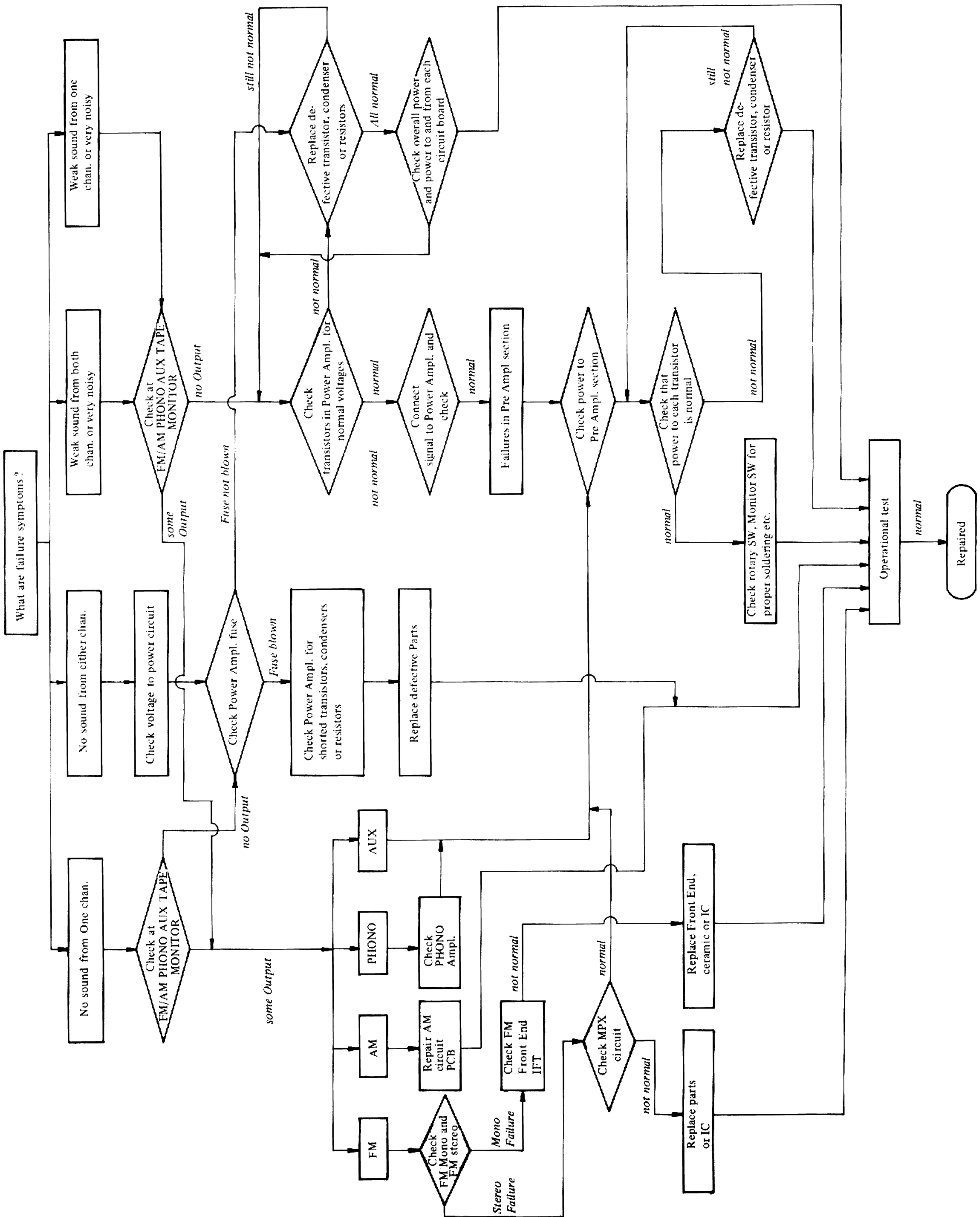
NOTE: If the Receiver is operating satisfactorily and a problem still exists in your stereo system, some of these common causes of trouble may be checked.

1. Incorrect or loose connections or connections not making good contact. Check all connections including those to speakers, record player, tape deck and antenna. Also check that power is properly connected to all components.
2. Incorrect operation. Be sure that you are operating all the components as explained in the manufacturer's instructions. If in doubt, re-read the Owner's Manuals.

3. Components improperly located. The components must be properly positioned to achieve the full stereo sound.
4. Components not working correctly. Check each individual component.

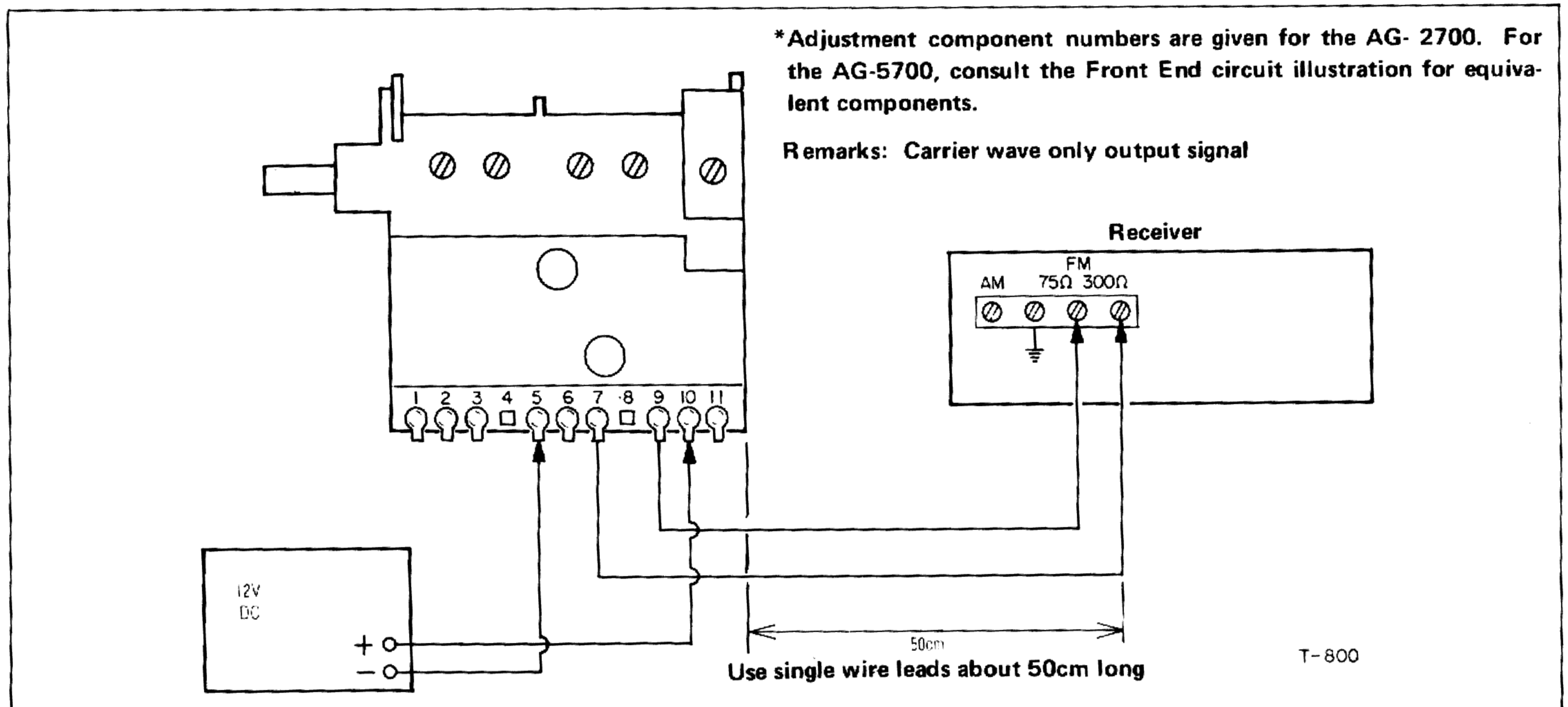
The following chart lists some of the possible causes of trouble. It may save you some unnecessary inconvenience if you can isolate and correct the problem using one of these suggestions.





TROUBLE-SHOOTING -2

NOTE: If you do not have a suitable Signal Generator, a substitute method can be used. Refer to following connection.



- (1) Connect 12V DC to pins (5) and (10) of the Front End circuit of the AG-2700 or AG-5700.
- (2) Connect the AG-2700 or AG-5700 ANT terminals to pins 7 and 9 of the Front End circuit using single wire leads about 50 cm long.
- (3) Set the variable condenser on the Front End circuit to its maximum position.
Set oscillation frequency to 98 MHz.
Set oscillation voltage to about - 100 dB. (Only Carrier wave)

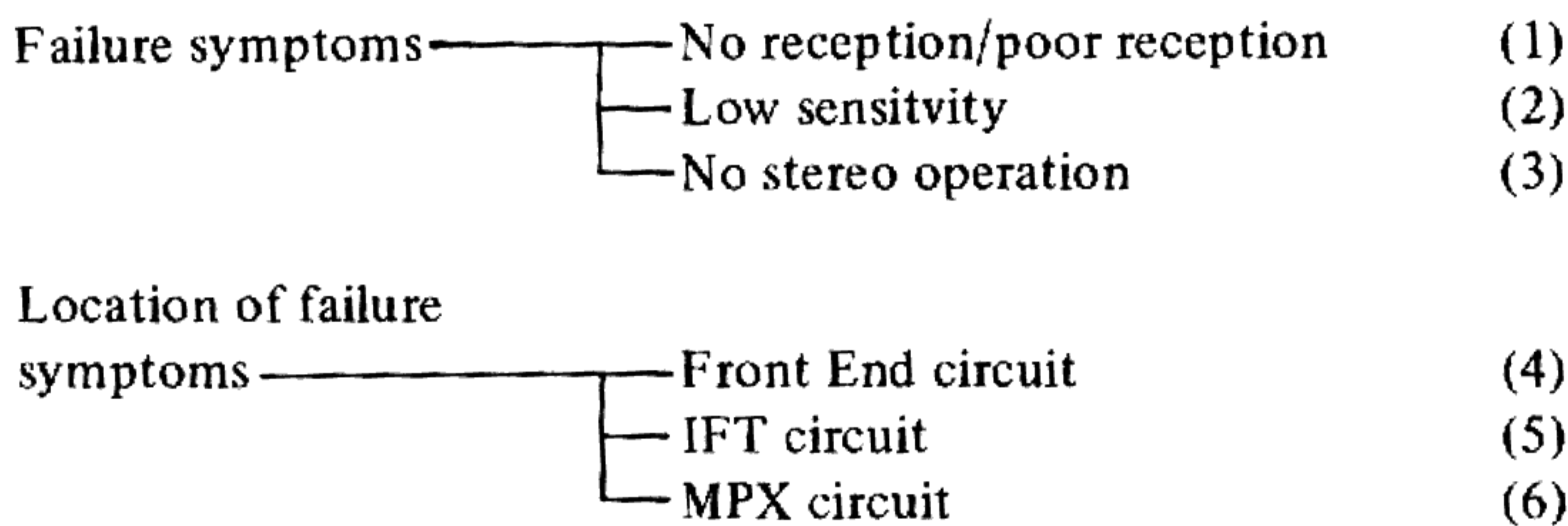
For failure symptom (3)

For failures in (6), isolate and repair according to the following procedure. (See. above *mark).

- A. Check for proper voltage to ICs in MPX circuit.
- B. Adjust VR201 to set proper voltage to VCO. See VCO adjustment explanation.

NOTE: Most failure in the MPX circuit are caused by a failure of the HA1156. Therefore for most MPX circuit failures, change this IC.

FM circuit operational defects



For failure symptoms (1), (2)

Many failures in (1) and (2) are caused by circuits (4) and (5). Use the following method to check for problems in the Front End circuit or in the IFT circuit.

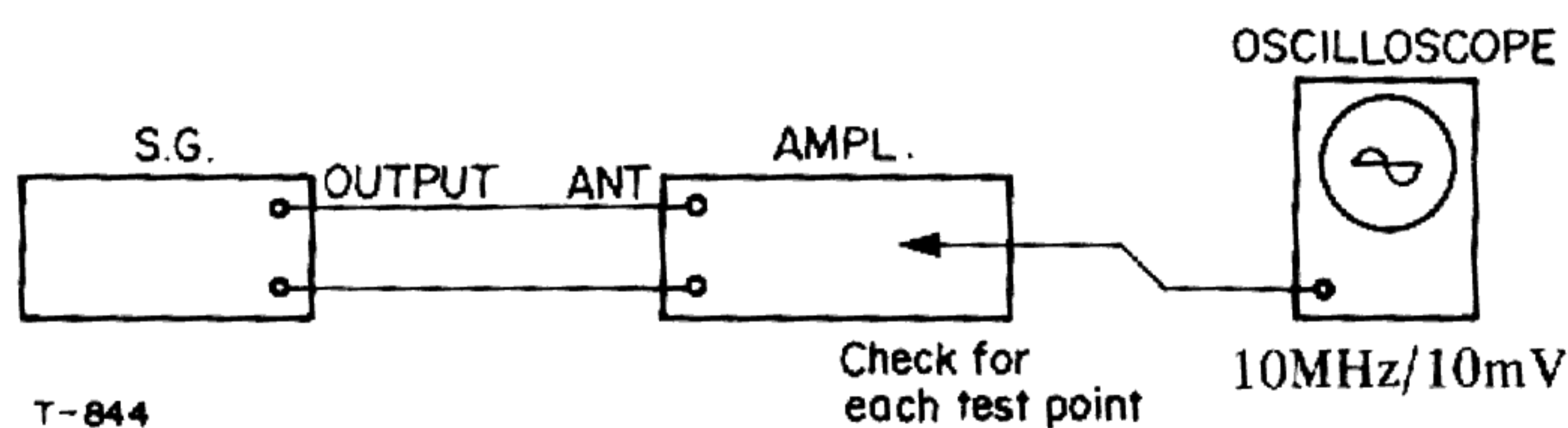


Fig. 13

- A. Set the Signal Generator for 98 MHz output at - 100 dB.
- B. Tune the AG-2700 or AG-5700 dial for 98 MHz.

Checking condition of Front End

1. Failures in the high frequency operation of Front End are difficult to isolate. The easiest method of isolation is to replace the whole assy.
2. If the Front End checks O.K., the failure determination should proceed as follows.
 - A. Connect an input signal to the 300 ohm ANT terminals. (See Fig. 13.) Use an oscilloscope connected to terminal 7 of the Front End circuit and check for the normal voltage and waveform FM given on the Front End schematic diagram.
 - B. If IFT coils TC-3 and TC-1 are adjusted and the waveform does not change, transistor TR-1 or TR-2 should be replaced.
 - C. If there is no signal output, TR-3 in oscillator circuit is not operating and should be replaced.

IFT Check

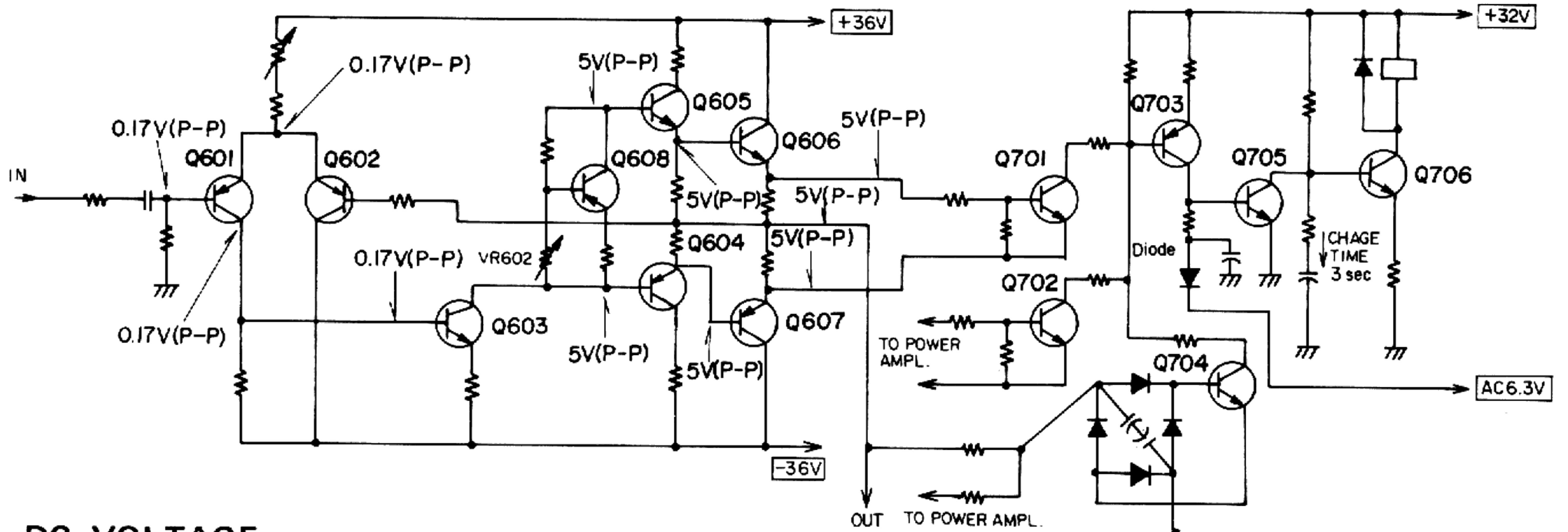
Check the voltage terminal 7. If the voltage is not correct, the failure is not in the Front End but in the IFT circuit. Check for the voltage and waveform shown in FM MPX CIRCUIT voltage chart.

NOTE: If ceramic condenser E201 or E202 is bad, replace both of them as a pair.

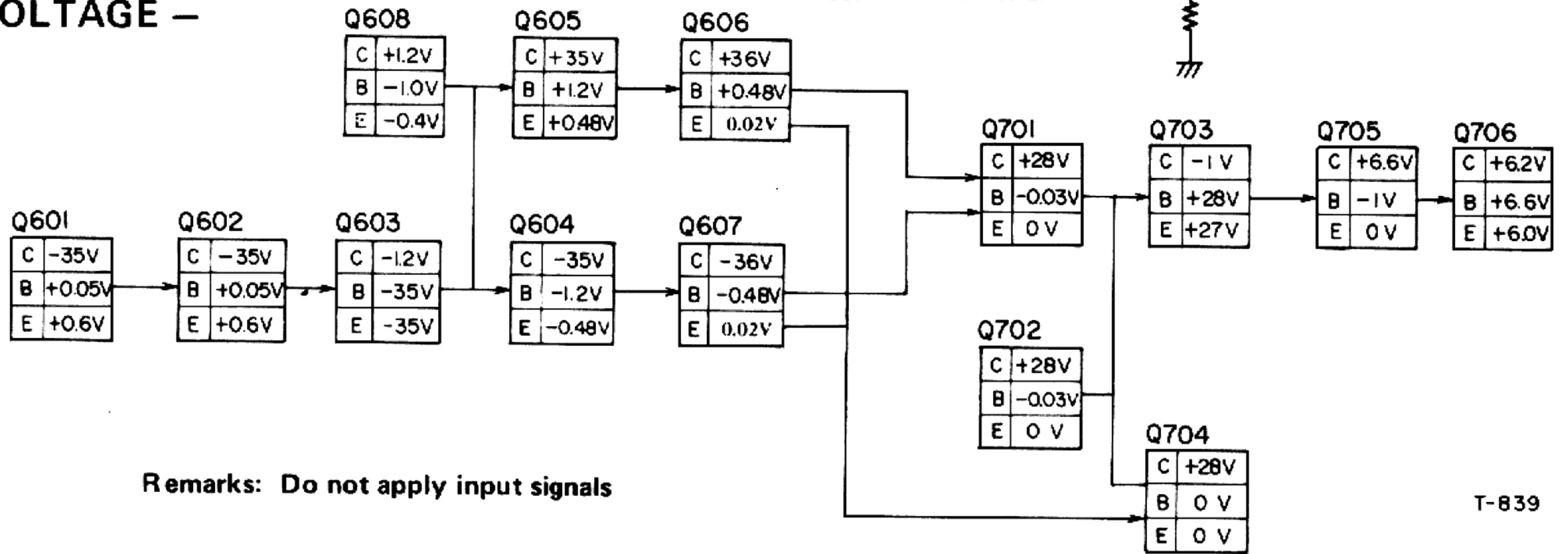
5. VOLTAGE AND WAVEFORM SIGNAL DIAGRAMS

AG-5700

MAIN AND PROTECTOR CIRCUIT



- DC VOLTAGE -

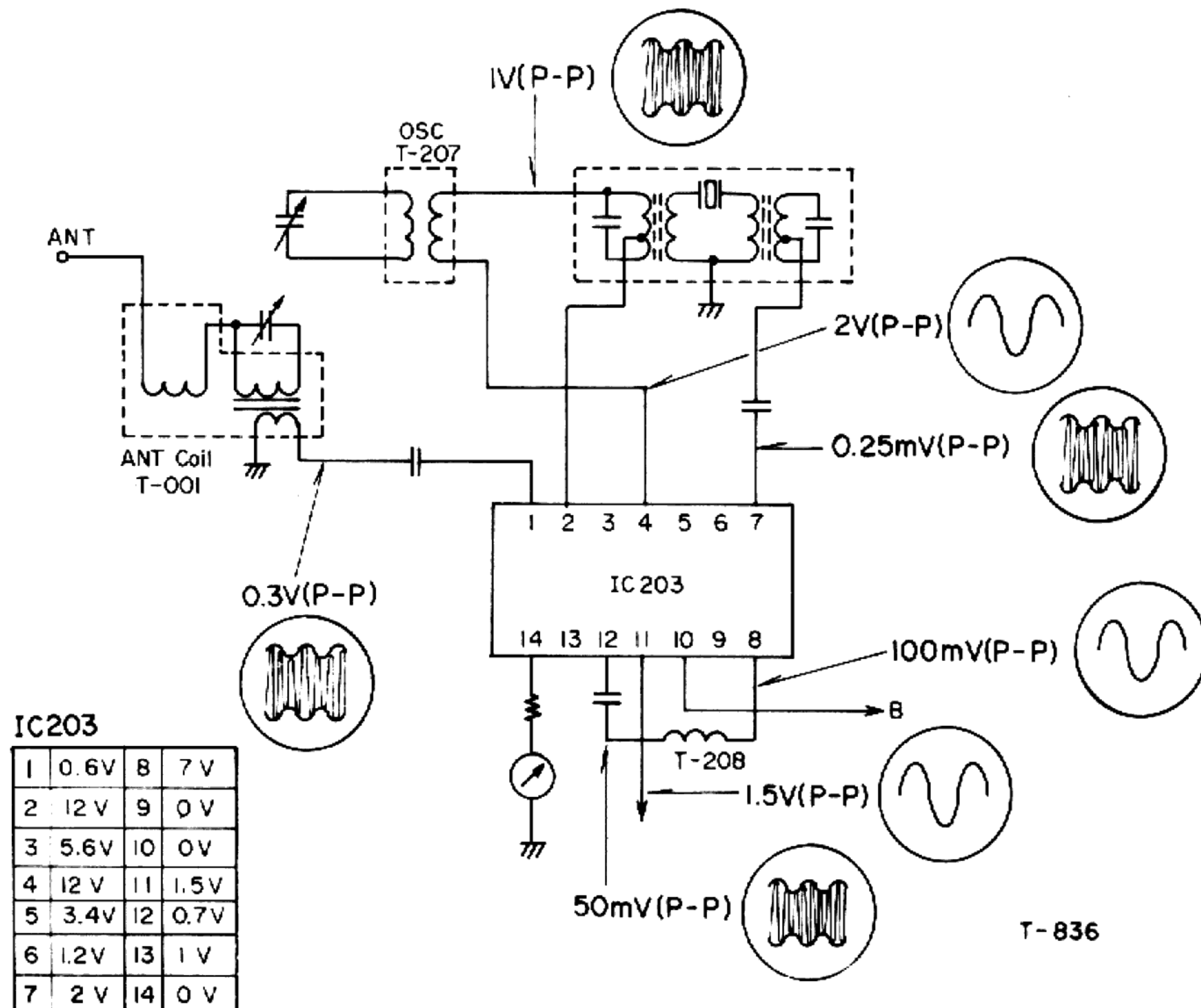


Remarks: Do not apply input signals

T-839

AM CIRCUIT

Remarks: Connect SG to the AM ANT. Set 100 dB output level.
Check waveform with oscilloscope.

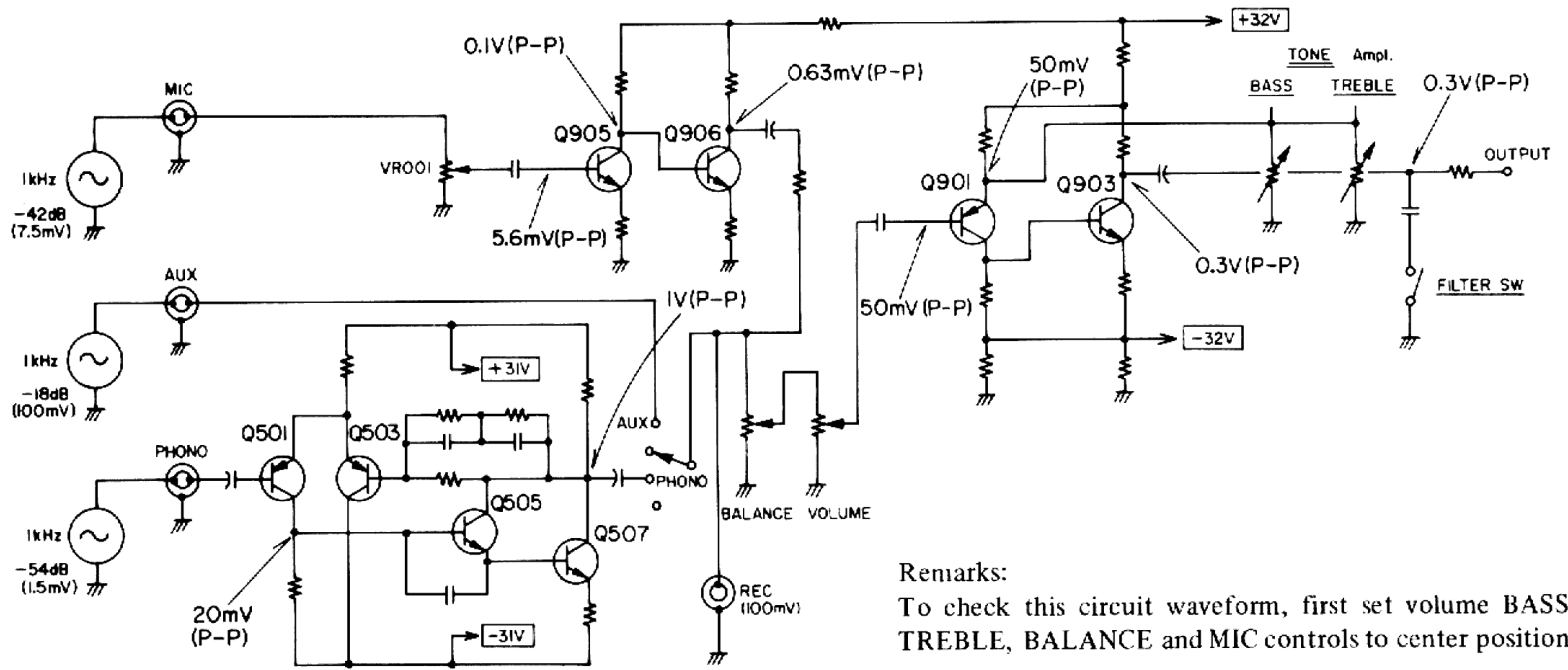


T-836

VOLTAGE AND WAVEFORM SIGNAL DIAGRAMS

AG-5700

PRE AMPL. CIRCUIT



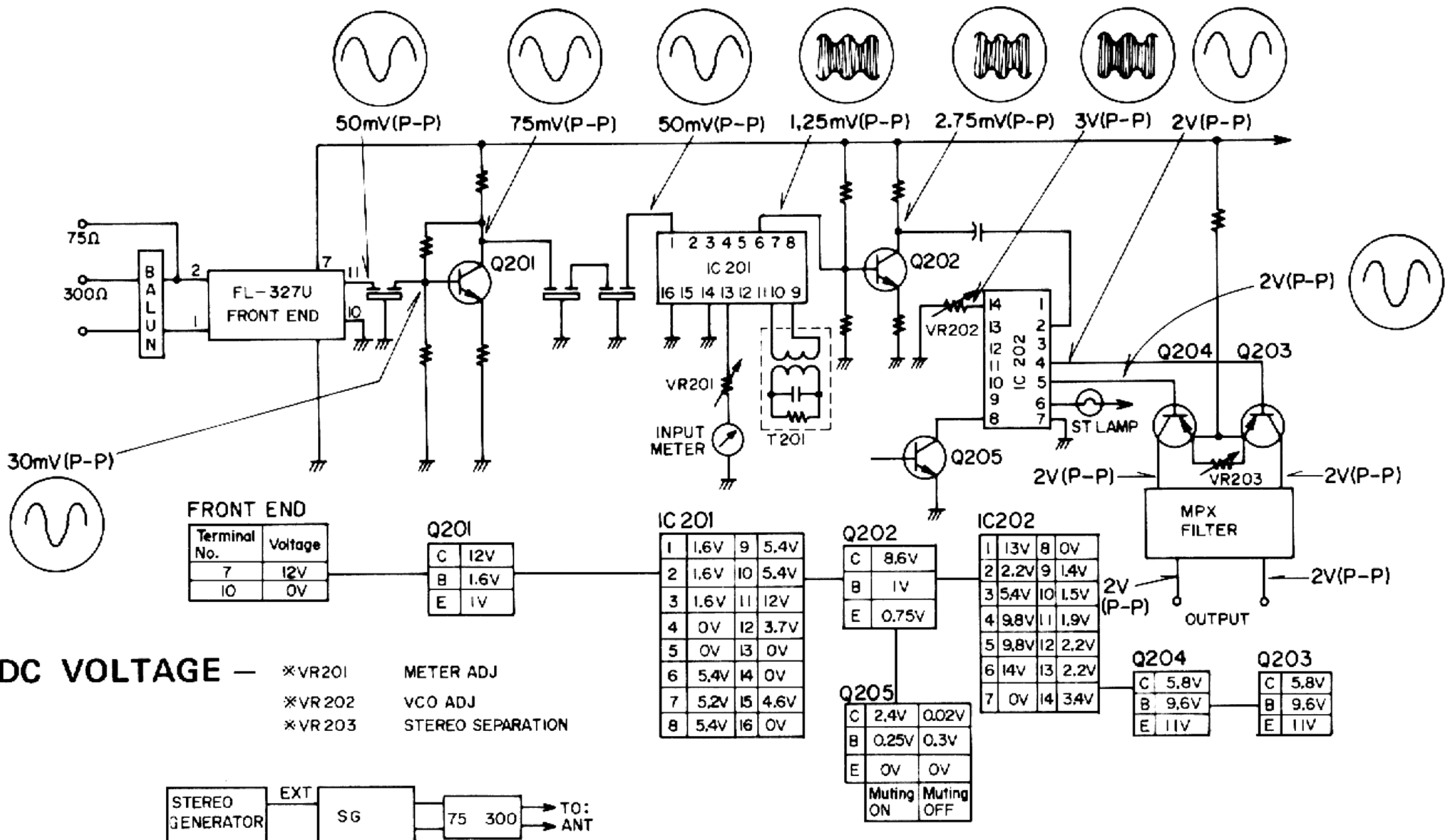
Remarks:
To check this circuit waveform, first set volume BASS, TREBLE, BALANCE and MIC controls to center position.

- DC VOLTAGE -

Q501	Q503	Q505	Q507	Q905	Q906	Q901	Q903
C +17V	C +23V	C -1.1V	C -12V	C +1.8V	C +14V	C -17V	C +4V
B 0V	B 0V	B -17V	B -13V	B +0.6V	B +14V	B +0.6V	B -17V
E -0.6V	E -0.6V	E -13V	E -19V	E +0.5V	E +0.8V	E +6V	E -18V

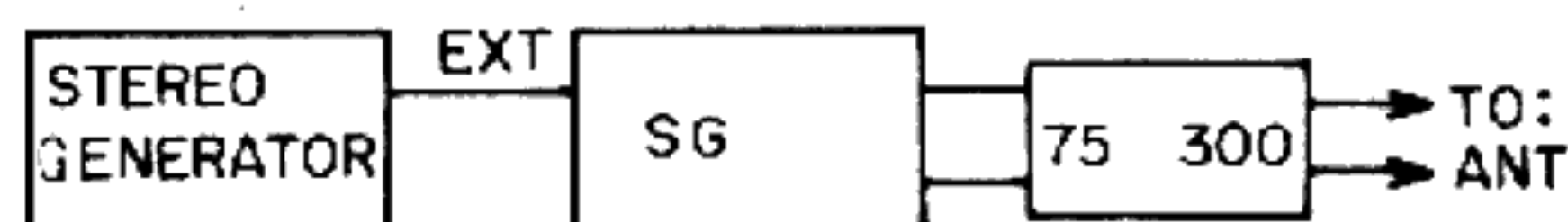
T-838

FM CIRCUIT



- DC VOLTAGE -

- *VR201 METER ADJ
- *VR202 VCO ADJ
- *VR203 STEREO SEPARATION

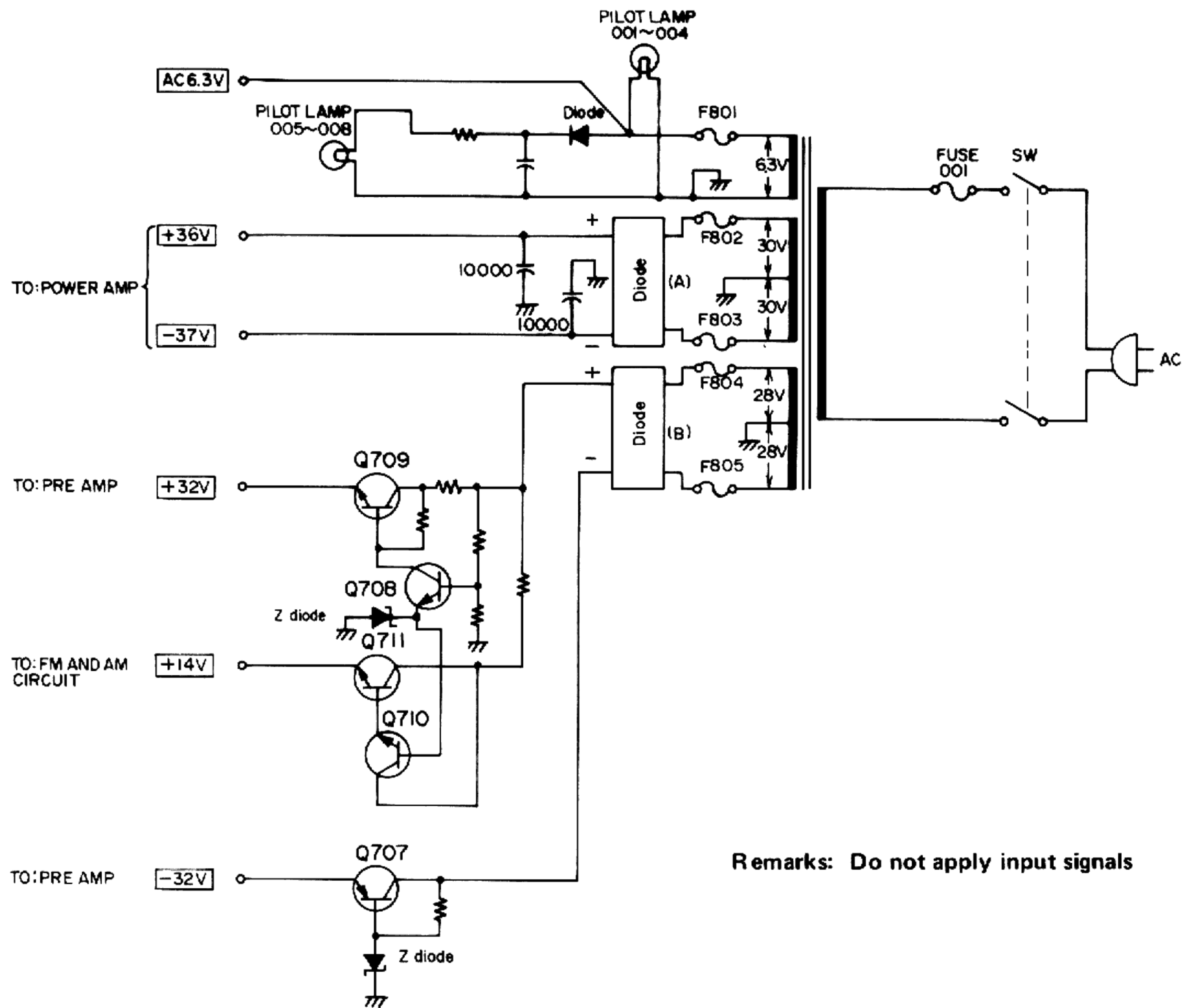


T-837

VOLTAGE AND WAVEFORM SIGNAL DIAGRAMS

AG-5700

POWER CIRCUIT



- DC VOLTAGE -

Q709		Q708		(A)		(B)	
C	+35V	C	+35V	Diode		Diode	
B	+33V	B	+15V	+	37V	+	38V
E	+32V	E	+15V	-	37V	-	38V

Q711		Q710	
C	+15V	C	+25V
B	+15V	B	+15V
E	+14V	E	+15V

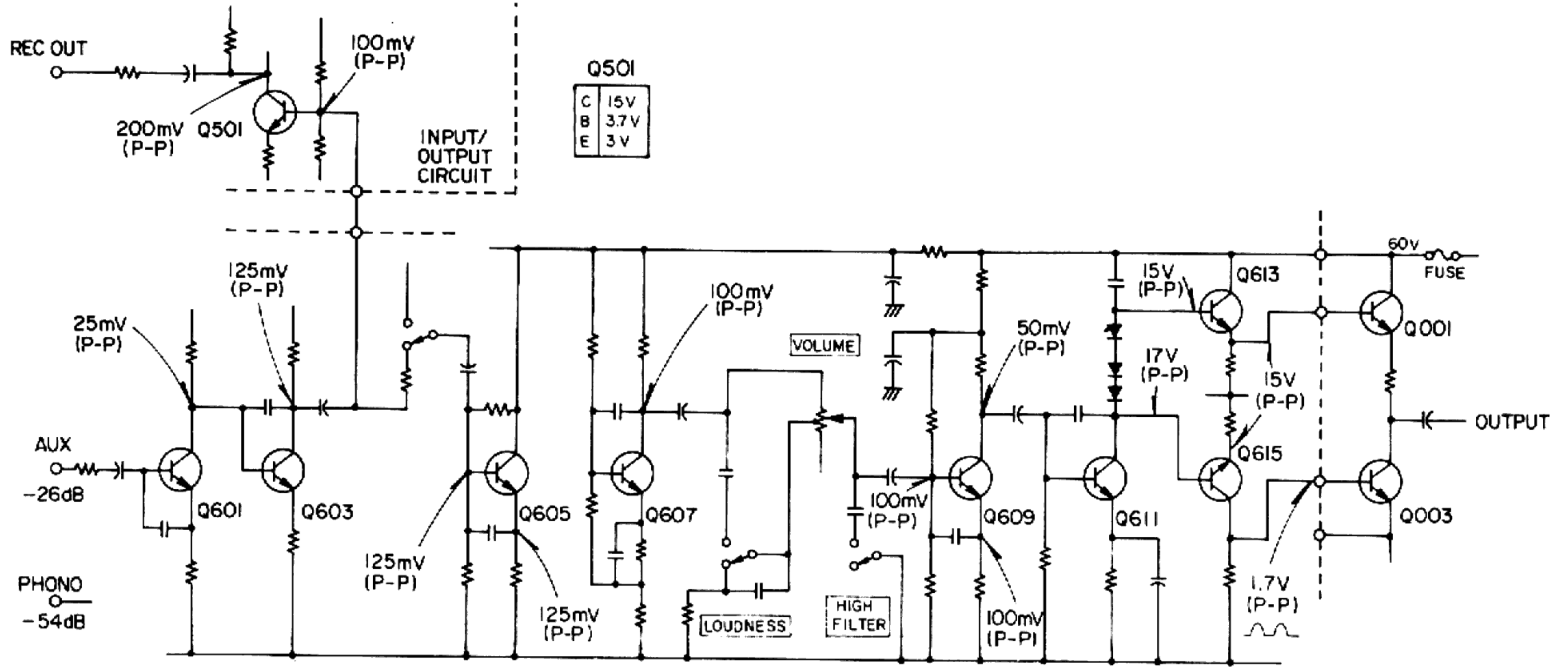
Q707	
C	-38V
B	-33V
E	-32V

T-840

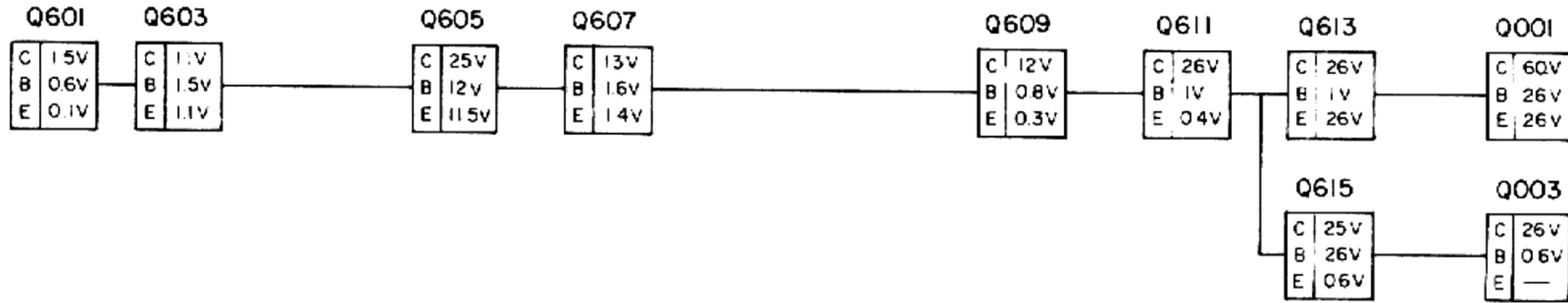
VOLTAGE AND WAVEFORM SIGNAL DIAGRAMS

AG-2700

AUDIO AMPL CIRCUIT



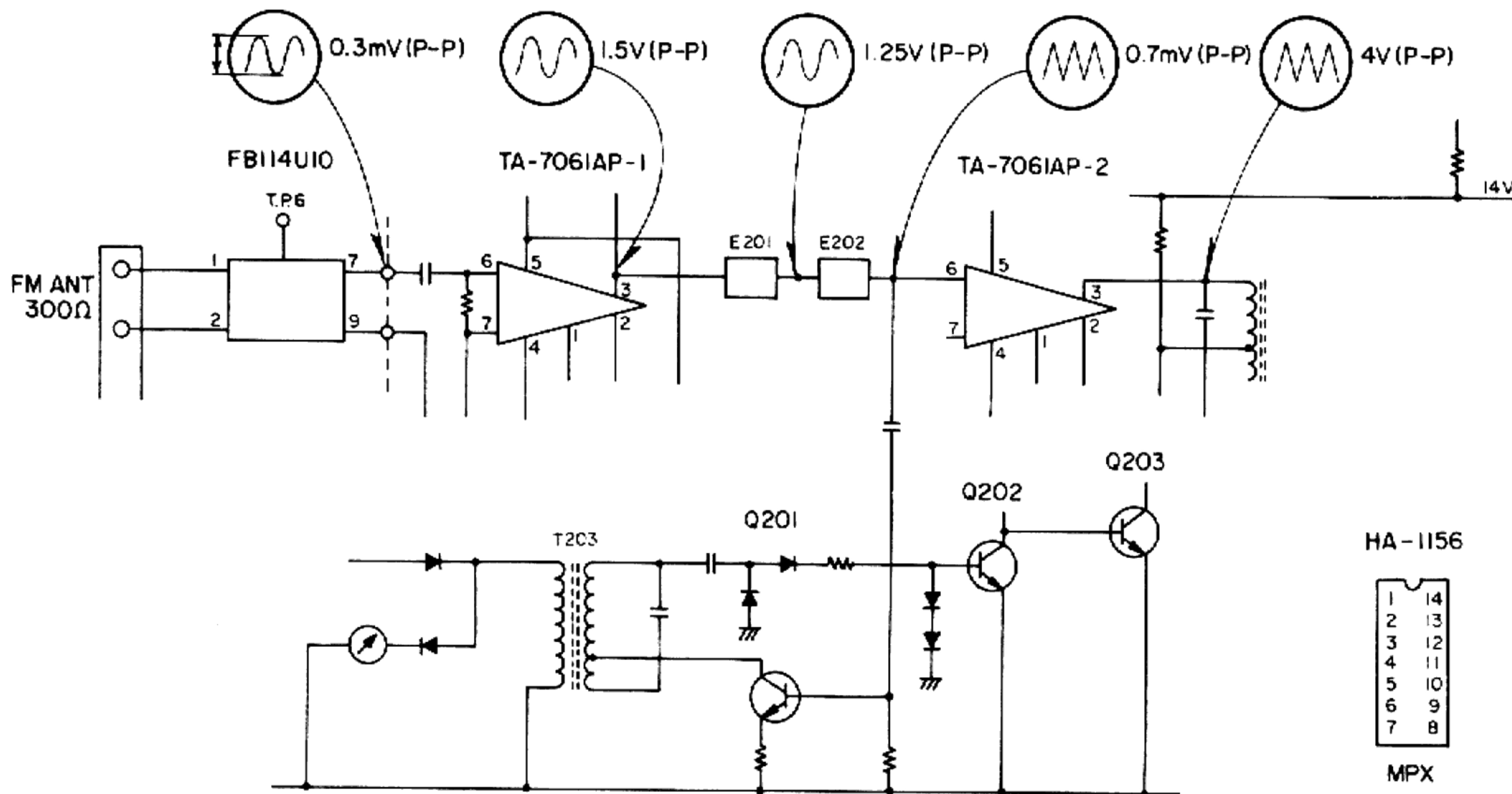
- DC VOLTAGE -



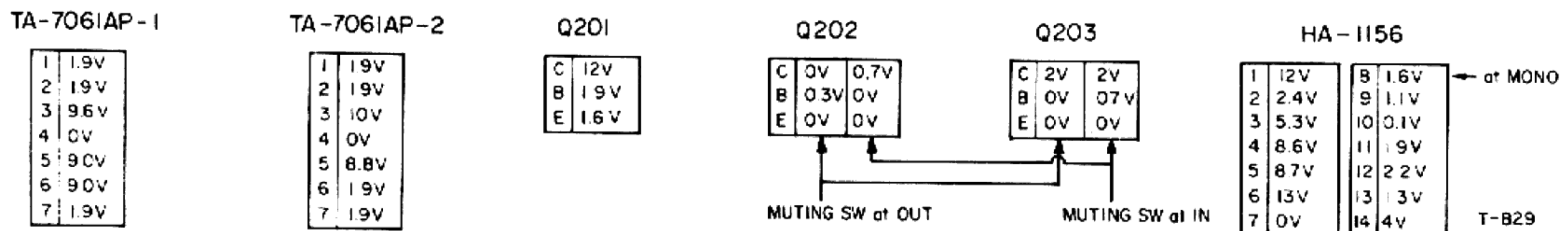
Remarks: (0 dB = 0.775V)

- Apply a 1 kHz -26 dB signal to the AUX input terminals. Check the waveform using an oscilloscope.
- Use -54 dB connected to the PHONO only terminals to test that input.
- Connect 8 ohm load resistor to output terminal to check POWER AMPL circuit.
- Diagram shows values read if using an oscilloscope (peak to peak). To obtain values which will be read when using a VTVM, divide indicated values (peak to peak) by 2.8.
- DC voltages shown are read using VTVM with DC 20k ohms/V input impedance.

FM MPX CIRCUIT



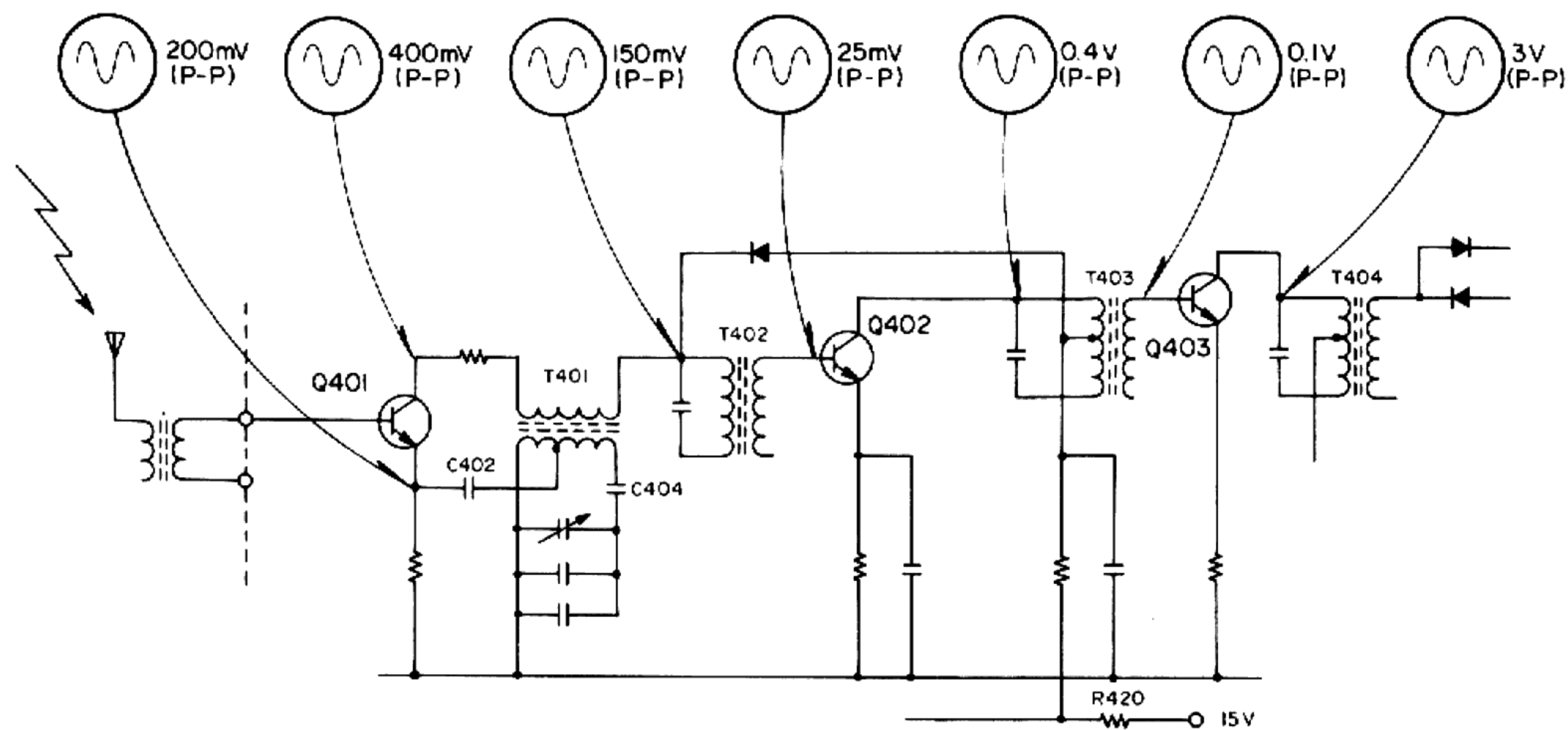
- DC VOLTAGE -



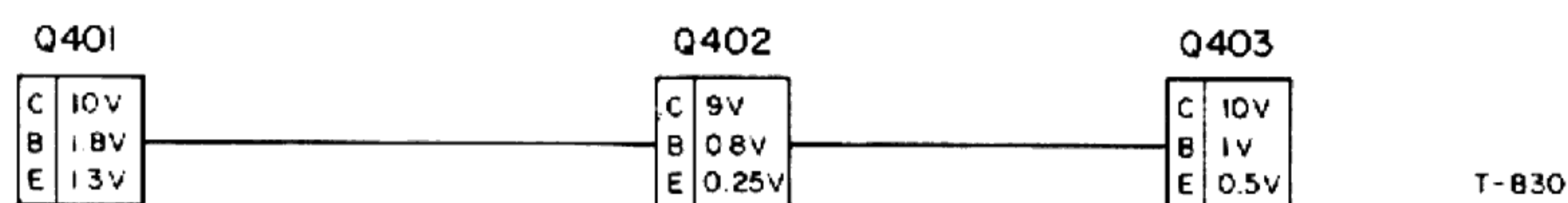
VOLTAGE AND WAVEFORM SIGNAL DIAGRAMS

AG-2700

AM CIRCUIT



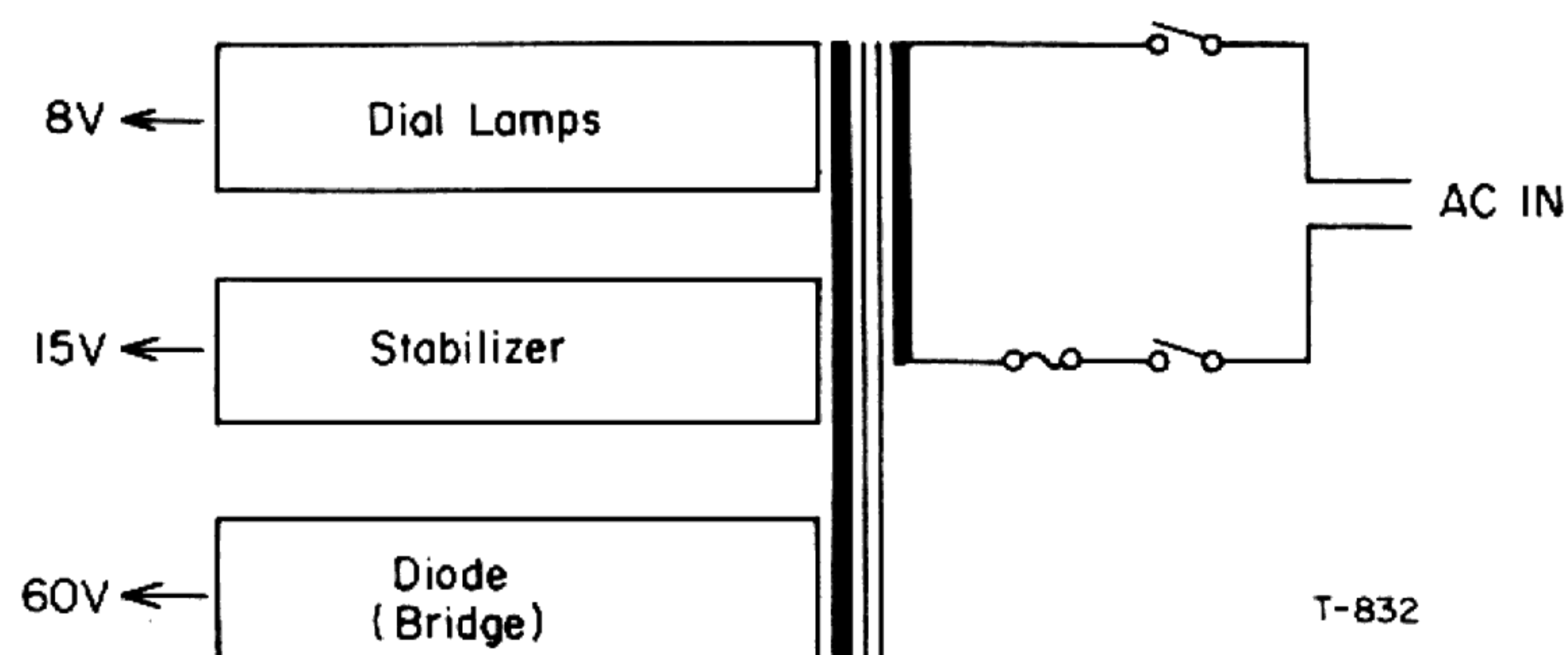
— DC VOLTAGE —



Remarks:

- (1) Connect the Antenna terminal to AM antenna to receive radio broadcast signal (or use Signal Generator). Measure waveforms using an oscilloscope.
- (2) Measure T401 for oscillation frequency only.
- (3) Frequency of signal after T402 should be 455 KHz.
- (4) If there is no waveform signal at emitter of Q401; T401, C404, C402 or Q401 is defective and should be replaced.
- (5) If the voltage of waveform at Q402 or Q403 are incorrect, replace these parts.

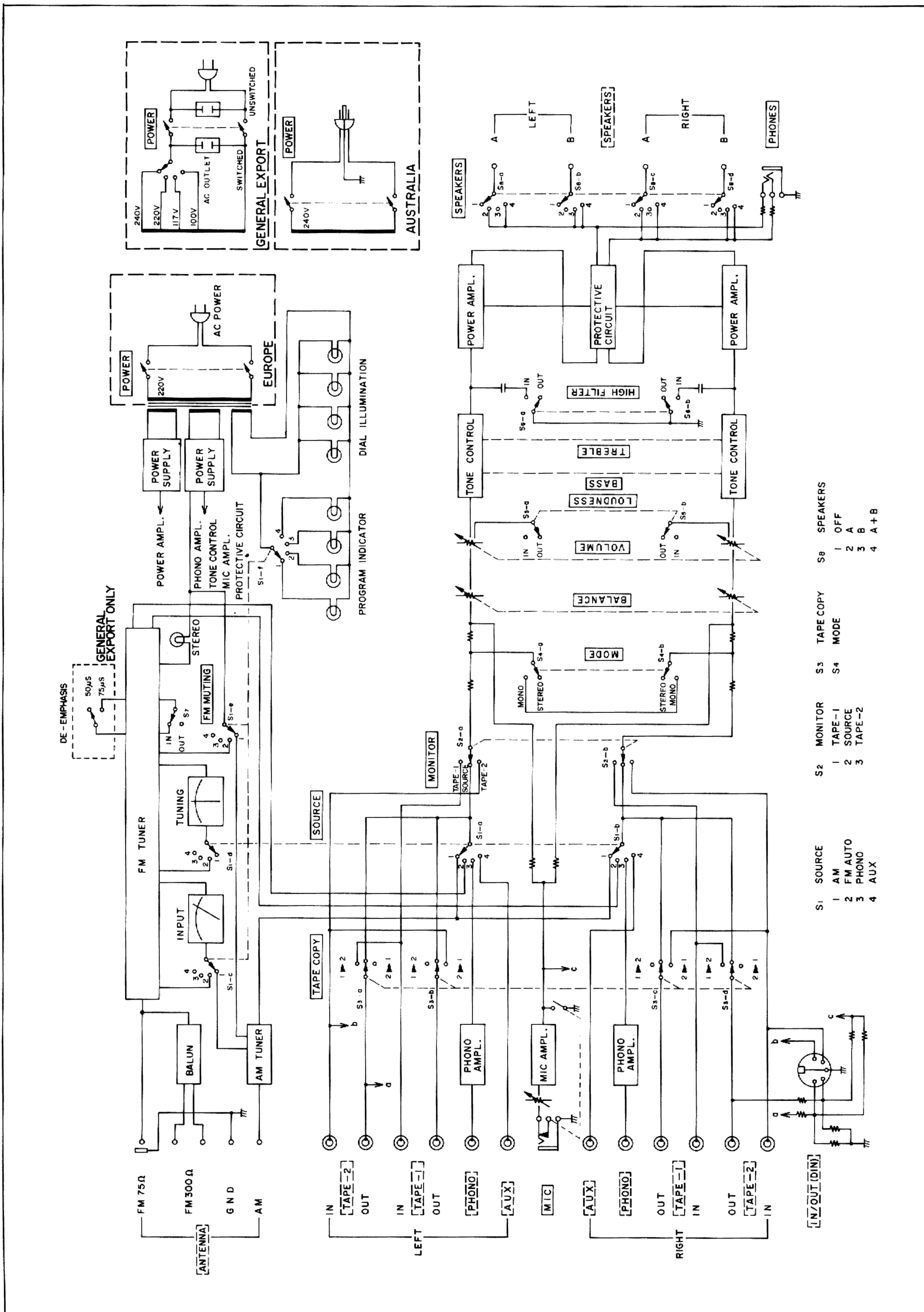
POWER SUPPLY



6. BLOCK DIAGRAM

AG-5700

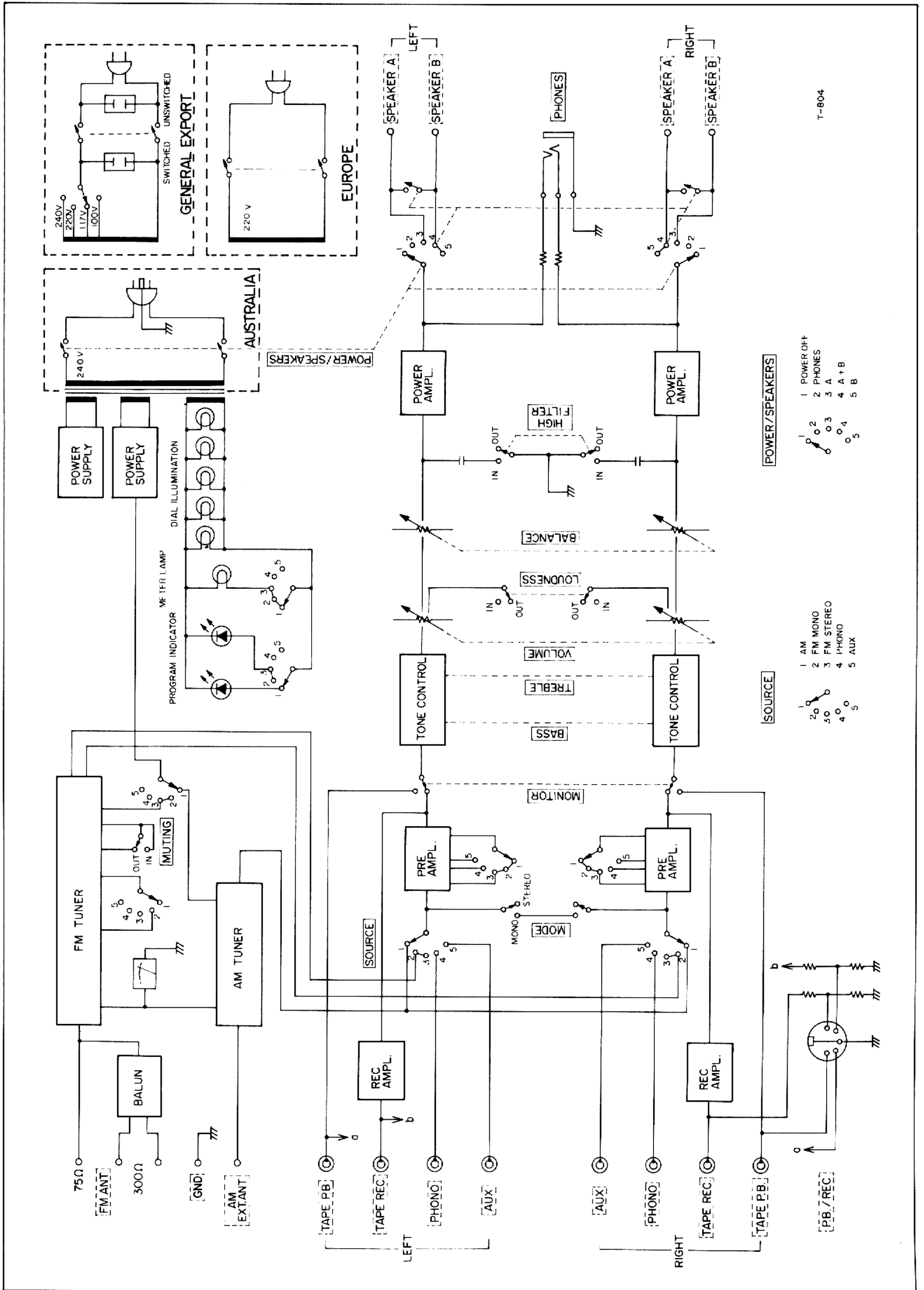
AG-5700



- | | | | | | | | |
|----|---------|----|---------|----|-----------|----|----------|
| S1 | SOURCE | S2 | MONITOR | S3 | TAPE COPY | S8 | SPEAKERS |
| 1 | AM | 1 | TAPE-1 | 1 | MODE | 1 | OFF |
| 2 | FM AUTO | 2 | SOURCE | 2 | A | 2 | A |
| 3 | PHONO | 3 | TAPE-2 | 3 | B | 3 | B |
| 4 | AUX | 4 | | 4 | A+B | 4 | A+B |

BLOCK DIAGRAM

AG-2700



T-804