

The Harman Kardon Model hk570i

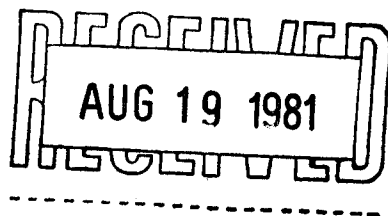
AM/FM/Stereo FM Solid State Receiver

REFER TO SERVICE BULLETINS
OR BECOME A STATISTIC!!

Technical Manual

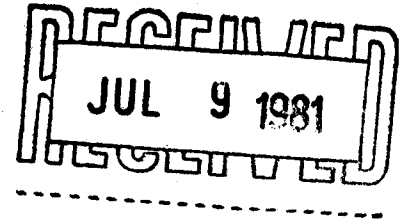
Supplementary Manual

This manual is to be applied to the regular voltage units with serial number 02501 and above, and multi voltage units. For all other parts and service information except them in this manual, please refer to the original manual.



harman/kardon

SERVICE BULLETIN #1002 - JUNE 9, 1981



TO: ALL HARMAN KARDON WARRANTY STATIONS
FROM: PETER PHILIPS, NATIONAL SERVICE MANAGER
SUBJECT: hk5701 DC OFFSET

A DC offset voltage at the output terminals of the model hk5701 stereo receiver may be caused by a defective metal film resistor in the stabilized power supply.

This stabilized power supply consists of the transistors Q4, Q5, Q6, and Q7 (page 10 of the Service Manual). Transistors Q4 and Q5 supply a stabilized voltage to the control amplifier, transistors Q6 and Q7 supply a stabilized voltage to the phono amplifier. If the metal film resistors R11 and R12 become defective, the voltage supply to the control amplifier and the phono amplifier are no longer properly stabilized. As a result both of these amplifiers will have a DC offset.

Through the control amplifier, this signal may enter into the power amplifier section since the capacitors C401 and C402 become reversed polarized.

It is, therefore, recommended that before attempting to perform any repairs on either the phono, control or power amplifier that the value of the resistors of R11 and R12 are measured with an ohm meter. R11 shall be 150 ohms, R12 shall be 220 ohms.

In the event these metal film resistors are indeed defective, they may be replaced by either a metal or a carbon film resistor of 1/2 W.

*See
Newer
Bulletin
next page
↓*

SERVICE BULLETIN #1002, REVISION A - AUGUST 25, 1981

TO: ALL HARMAN KARDON WARRANTY STATIONS
FROM: PETER PHILIPS, NATIONAL SERVICE MANAGER
SUBJECT: hk570i DC OFFSET

(This bulletin supersedes the previous bulletin #1002 dated, June 9, 1981.)

A DC offset voltage at the output terminals of the model hk570i stereo receiver may be caused by a defective metal film resistor in the stabilized power supply.

This stabilized power supply consists of the transistors Q4, Q5, Q6 and Q7 (page 10 of the Service Manual). Transistors Q4 and Q5 supply a stabilized voltage to the control amplifier, transistors Q6 and Q7 supply a stabilized voltage to the phono amplifier. If the metal film resistors R11 or R12 become defective, the voltage supply to the control amplifier and the phono amplifier are no longer properly stabilized. As a result both of these amplifiers will have a DC offset.

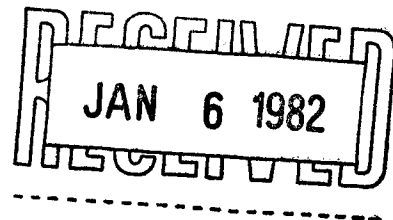
Through the control amplifier, this signal may enter into the power amplifier section since the capacitors C401 and C402 become reversed polarized.

It is therefore recommended that before any attempts are made to repair either the phono, control or power amplifier sections, the resistances of R11 and R12 are measured with an ohm meter. R11 shall be 150 ohms, R12 shall be 220 ohms.

In the event these metal film resistors are indeed defective, they are to be replaced with the same value and rating as the original component.

Furthermore, in order to improve the reliability of the stabilized power supply the resistance of R609/610 are to be increased from 1.8k ohm to 2.2k ohm. These resistors are located next to the electrolytic capacitors C605/606 in the center of the phono equalizer PC board.

SERVICE BULLETIN #1010 - DECEMBER 4, 1981



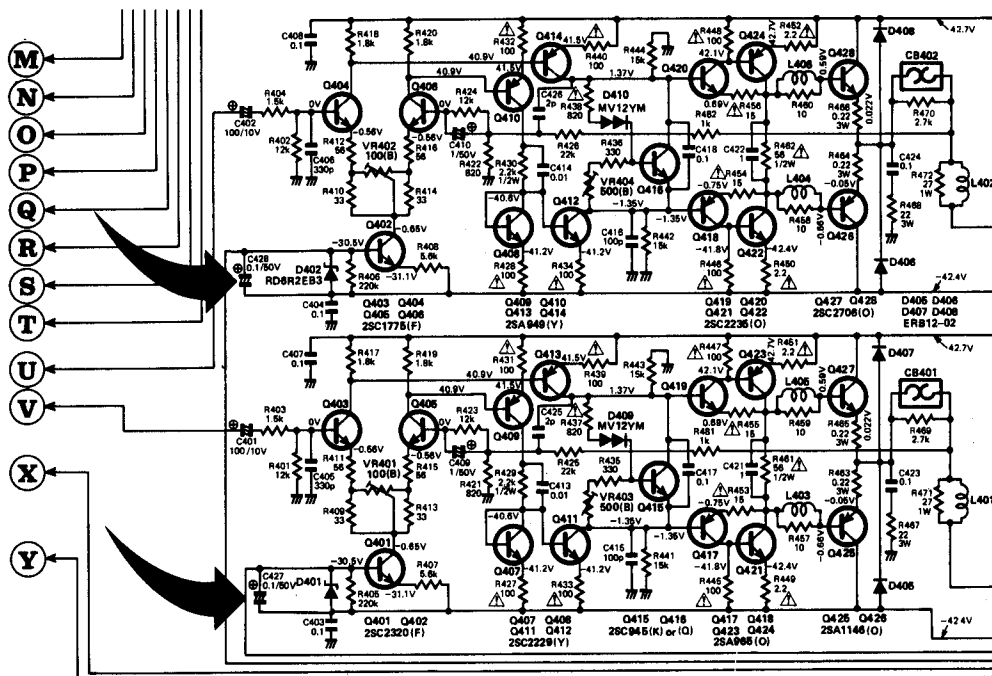
TO: ALL HARMAN KARDON WARRANTY STATIONS
 FROM: PETER PHILIPS, NATIONAL SERVICE MANAGER
 SUBJECT: TURN ON TRANSIENT - MODEL hk5701

When efficient loudspeakers are connected to the hk5701, there is the possibility that a slight pop noise is heard at the moment the unit is switched ON.

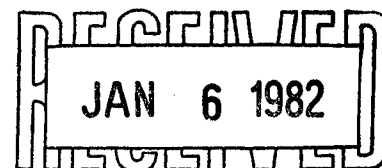
In order to reduce this small "turn on transient" it is recommended to solder on the bottom of the power amplifier PC Board two capacitors across the zener diodes D401 and D402. The positive side of these capacitors shall be connected to the base of Q401 respectively Q402.

The rating of these capacitors shall be 0.1 microfarad/50V.

This modification applies only to units with serial number 08501 and lower.



SERVICE BULLETIN #1011 - DECEMBER 7, 1981



TO: ALL HARMAN KARDON WARRANTY STATIONS

FROM: PETER PHILIPS, NATIONAL SERVICE MANAGER

SUBJECT: CHANGE OF OUTPUT TRANSISTORS
 MODELS: hk570i/hk580i

The output transistors for the model hk570i have been changed after serial number 15001. In the model hk580i this change took place after serial number 05201.

When replacing defective output transistors in these two models, it is recommended you perform the modifications as indicated in column 2 on the chart below.

	(1) From	(2) To
OUTPUT TRANSISTORS	<u>H/K Part Number</u>	<u>H/K Part Number</u>
Q428, Q427 Q426, Q425	5611-1146 5613-2706	5611-1106(0) 5613-2581(0)
SECONDARY FUSES		
FU2, 3, 4, 5	3.14A/125V	4A/125V h/k PN 5732-402031 (model hk580i only)
R436, 437	330 ohm	470 ohm
IDLING CURRENT ADJUSTMENT	33mV	44mV

NOTE:

This Service Bulletin supersedes Service Bulletin #1001 dated, June 9, 1981.

SERVICE BULLETIN #2004 - APRIL 22, 1982

TO: ALL HARMAN KARDON WARRANTY STATIONS

SUBJECT: TUNING KNOB ASSEMBLY hk5701

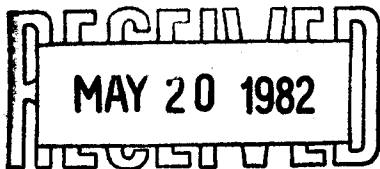
In the earlier model hk5701 (serial numbers below 16500) the Tuning Knob was secured onto the Tuning Shaft by means of a 1.5mm allen screw. In hk5701's with serial numbers above 16500 the Tuning Knob is pressed onto the Tuning Shaft.

These two types of Tuning Knob and Tuning Shaft assemblies are not interchangeable.

Therefore, when ordering these two parts from our Parts Department please use the following part numbers:

	Serial No. 16500 <u>And Below</u>	Serial No. 16501 <u>And Above</u>
Tuning Knob	1634-01601	A630-HK570
Tuning Shaft	2602-007109	2602-007114

Note: The construction of the new type of Tuning Knob of the model hk5701 is identical to the construction of the model hk3501 (P/N A630-HK350) and the model hk460i, (P/N A630-HK460) Tuning Knobs.



PRECAUTIONS

1. Always disconnect the chassis from power line when soldering. Turning the power switch OFF is not enough. Power line leakage passing through the heating element may destroy the transistors.
2. Never attempt to do any work on the transistor amplifiers without first disconnecting the AC line cord and waiting until the power supply filter capacitors have discharged.
3. Replacement for output and driver transistors, if necessary, must be made from the same beta group as the original type.
4. If one output transistor burns out (open or short) always remove all the output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All transistors in one channel will be destroyed if the base biasing circuit is open on the emitter end.
5. When mounting a replacement power transistor, be sure that the bottom of the flange, the mica insulators and the surface of the heat sink are free of foreign matter, for they may cause transistor failure.
6. Silicon grease must be applied between the transistor and the mica insulator, and between the mica insulator and the heat sink for better heat conduction.
7. Fuses must be replaced with size and type indicated. Use of other types can expose components to destructive current levels.

ALIGNMENT PROCEDURES

AM ALIGNMENT

- Instruments:**
1. AM Signal Generator modulated with 400Hz at 30%.
 2. Oscilloscope
 3. AC V.T.V.M.

- Notes:**
1. Set function selector switch to AM position.
 2. Connect signal source to a loop placed to radiate signals into AM antenna loop stick (L251).

Step	Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
1	455kHz	VTVM and oscilloscope to TP1 and ground	Quiet point on band	T251, T252, T253	Maximum output on VTVM and at the same time clean wave form on oscilloscope
2	540kHz	Same as above	540kHz	L252	Same as above
3	1600kHz	Same as above	1600kHz	TC252	Same as above
4	Repeat steps 2 and 3 for optimum sensitivity				
5	600kHz	VTVM and oscilloscope to TP1 and ground	Tune for signal	L251	Maximum output on VTVM and at the same time clean wave form on oscilloscope
6	1400kHz	Same as above	Same as above	TC251	Same as above
7	Repeat steps 5 and 6 for optimum sensitivity				

ALIGNMENT PROCEDURES

FM ALIGNMENT

- Instruments:**
1. FM Signal Generator modulated with 1000Hz at 100% (75kHz).
 2. Center Zero Meter
 3. Distortion Meter
 4. AC V.T.V.M.

- Notes:**
1. Set function selector switch to FM position.
 2. Set muting switch to OFF (button in) position.
 3. Connect signal source to FM antenna terminals.
 4. Set signal weak to obtain an exact tuning point when tuning.

Step	Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
1		VTVM to tape out 1 jack	Quiet point on band	T101	Maximum noise on VTVM
2		Center zero meter to TP2 and TP3	Same as above	T201(A)	Indicating "0" on center zero meter
3		VTVM to tape out 1 jack	Same as above	T201(B)	Minimum noise on VTVM
4	88MHz 6dBf (1 μ V)	Same as above	88MHz	L105	Maximum output on VTVM
5	108MHz 6dBf (1 μ V)	Same as above	108MHz	TC103	Same as above
6	Repeat steps 4 and 5 for optimum sensitivity				
7	90MHz 6dBf (1 μ V)	VTVM to tape out 1 jack	Tune for signal	L102, L103	Maximum output on VTVM
8	106MHz 6dBf (1 μ V)	Same as above	Same as above	TC101, TC102	Same as above
9	Repeat steps 7 and 8 for optimum sensitivity				
10	98MHz 65dBf (970 μ V)	Distortion meter to tape out 1 jack	Tune for signal	T201(B)	Minimum reading on distortion meter
11	Repeat step 2 (DC balance adjustment) once again.				

MUTING SENSITIVITY ADJUSTMENT

- Instruments:**
1. FM Signal Generator modulated with 1000Hz at 100% (75kHz).
 2. AC V.T.V.M.

- Notes:**
1. Set function selector switch to FM position.
 2. Set muting switch to ON (button out) position.
 3. Connect signal source to FM antenna terminals.
 4. Turn VR1 (at cabinet back) to clockwise fully.

Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
98MHz 30dBf (16 μ V)	AC VTVM to tape out 1 jack	98MHz	VR1	Turn VR1 to counter-clockwise till needle deflection on VTVM

ALIGNMENT PROCEDURES

STATION LOCK AND SIGNAL STRENGTH INDICATORS ADJUSTMENT

Instrument: FM Signal Generator modulated with 1000Hz at 100% (75kHz).

- Notes:**
1. Set function selector switch to FM position.
 2. Connect signal source to FM antenna terminals.
 3. Set signal weak to obtain an exact tuning point when tuning.

Step	Signal Source	Dial Setting	Adjust	Adjust For
1	98MHz 24dBf (8 μ V)	98MHz	VR354	"1" of signal strength display LEDs lights
2			VR351	Center of station lock indicator LED lights
3	98MHz 85dBf (9.7mV)		VR352	All signal strength display LEDs lights
4	Repeat step 1 once again.			

MPX ADJUSTMENT

Instruments:

1. FM Signal Generator modulated with 1000Hz at 100% (75kHz).
2. Frequency Counter

- Notes:**
1. Set function selector switch to FM position.
 2. Connect signal source to FM antenna terminals.

Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
98MHz 65dBf (970 μ V)	Frequency Counter to TP4 and ground	98MHz	VR302	76kHz

STEREO FM INDICATOR ADJUSTMENT

Instrument: FM Stereo Signal Generator modulated with 1000Hz at 100% (75kHz).

- Notes:**
1. Set function selector switch to AUTO FM position.
 2. Connect signal source to FM antenna terminals.
 3. Set main signal ON and pilot signal (9%) ON of FM stereo signal generator.

Signal Source	Dial Setting	Adjust	Adjust For
98MHz 36dBf (30 μ V)	98MHz	VR353	Stereo FM indicator LED lights to just light

ALIGNMENT PROCEDURES

SEPARATION ADJUSTMENT

- Instruments:** 1. FM Stereo Signal Generator modulated with 1000Hz at 100% (75kHz).
(L + R = 45% L - R = 45% 19kHz = 9%)
2. AC V.T.V.M.

- Notes:** 1. Set function selector switch to AUTO FM position.
2. Set blend control to STEREO position.
3. Connect signal source to FM antenna terminals.
4. Set signal weak to obtain an exact tuning point when tuning.

Step	Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
1	Set Lch signal ON at FM stereo signal generator				
2	98MHz 65dBf (970 μ V)	VTVM to Rch tape out 1 jack	98MHz	VR301, VR303	Minimum output on VTVM
3	Set Rch signal ON at FM stereo signal generator				
4	98MHz 65dBf (970 μ V)	VTVM to Lch tape out 1 jack	98MHz	VR301, VR303	Minimum output on VTVM

IDLING CURRENT ADJUSTMENT

Instrument: DC V.T.V.M.

- Notes:** 1. Set function selector switch to AUX position.
2. Set volume control to minimum position.

Step	Connect Output Meter To	Adjust	Adjust For
1	DC VTVM to TP5(+) and TP6(-)	VR404	33mV
2	DC VTVM to TP7(+) and TP8(-)	VR403	33mV

DC VOLTAGE BALANCE ADJUSTMENT

Instrument: DC V.T.V.M.

- Notes:** 1. Set function selector switch to AUX position.
2. Set volume control to minimum position.
3. Press in speaker 1 push button to ON (button in) position.

Step	Connect Output Meter To	Adjust	Adjust For
1	DC VTVM to Lch terminal of speaker system 1	VR402	0V \pm 60mV
2	DC VTVM to Rch terminal of speaker system 1	VR401	0V \pm 60mV

ALIGNMENT PROCEDURES

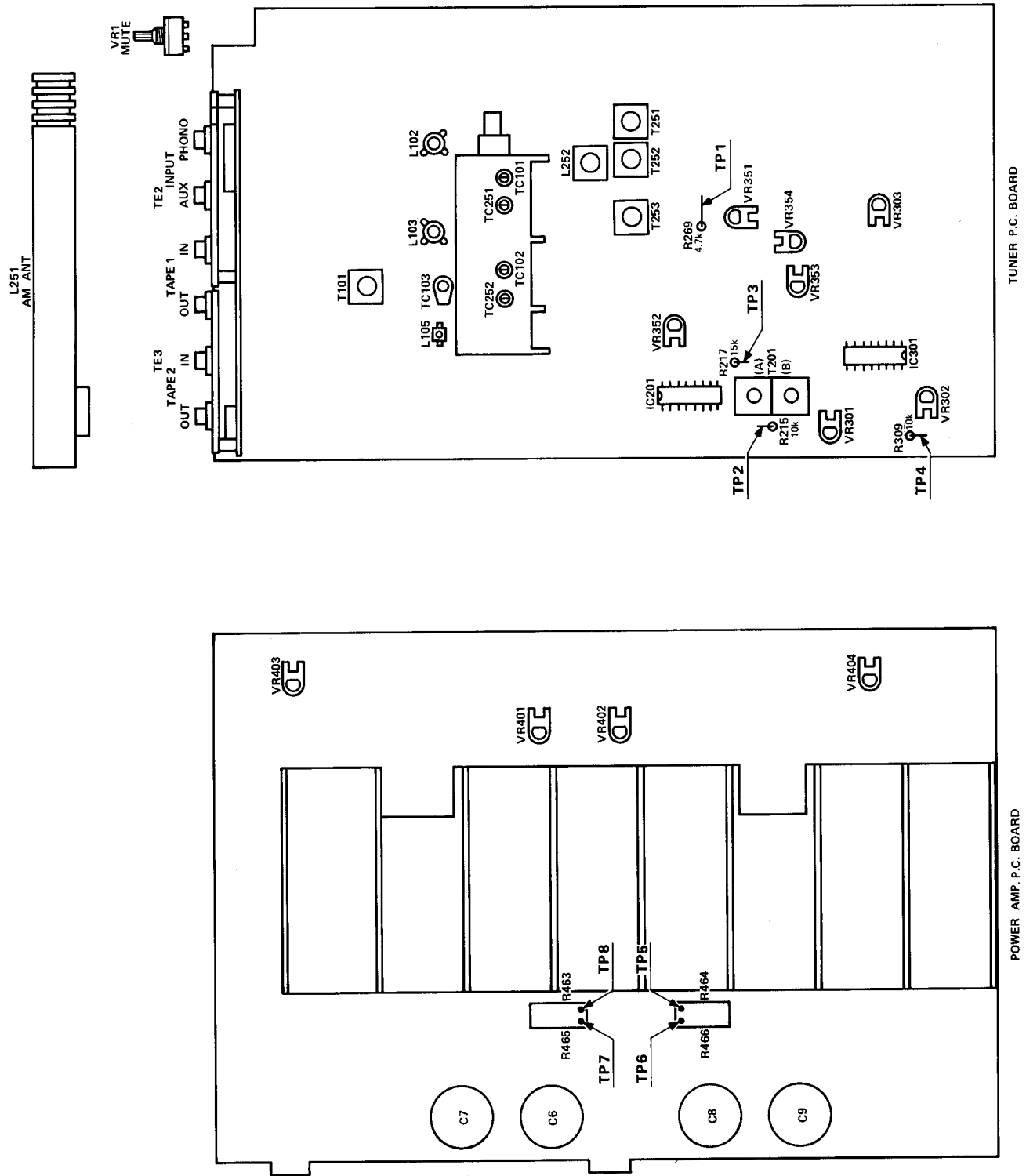
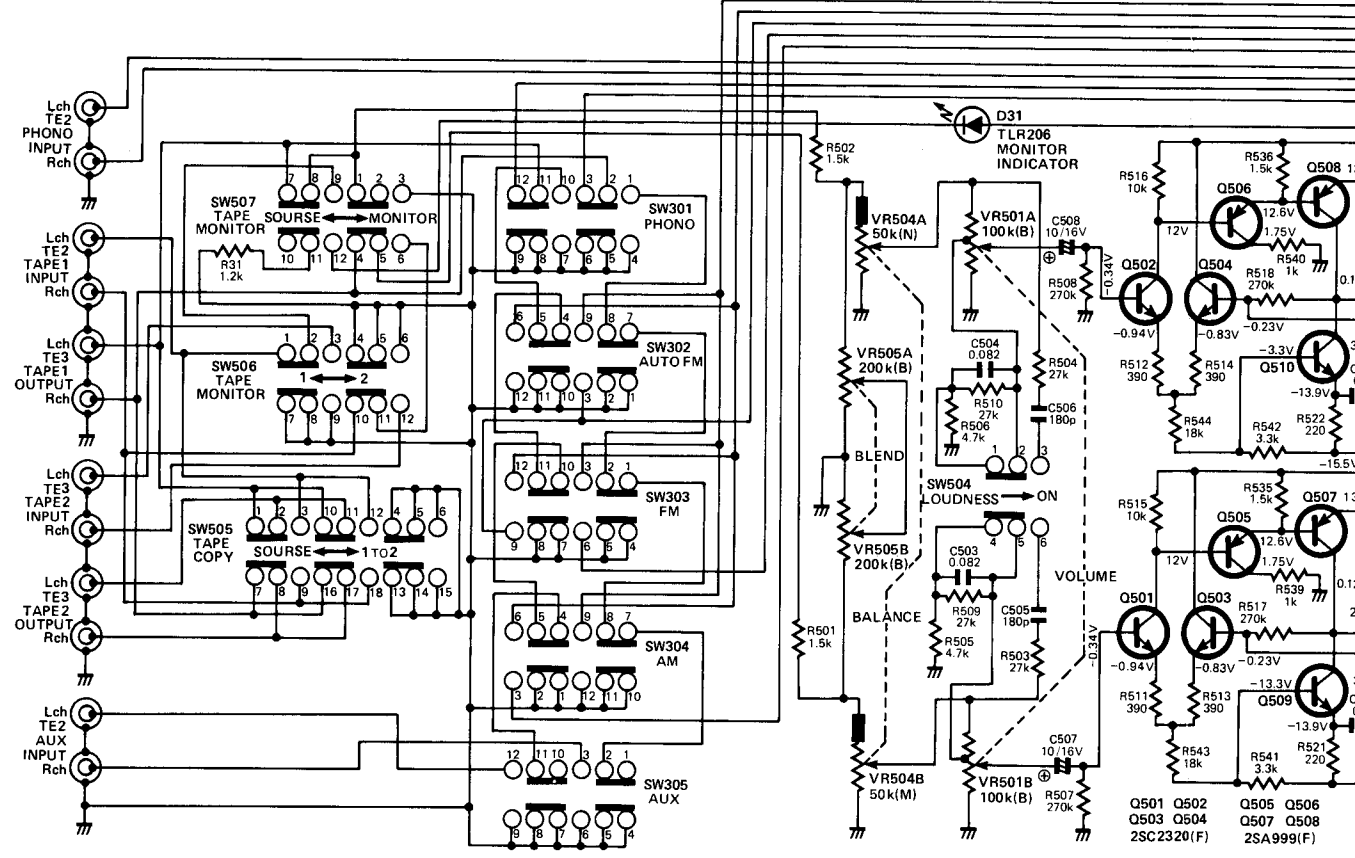
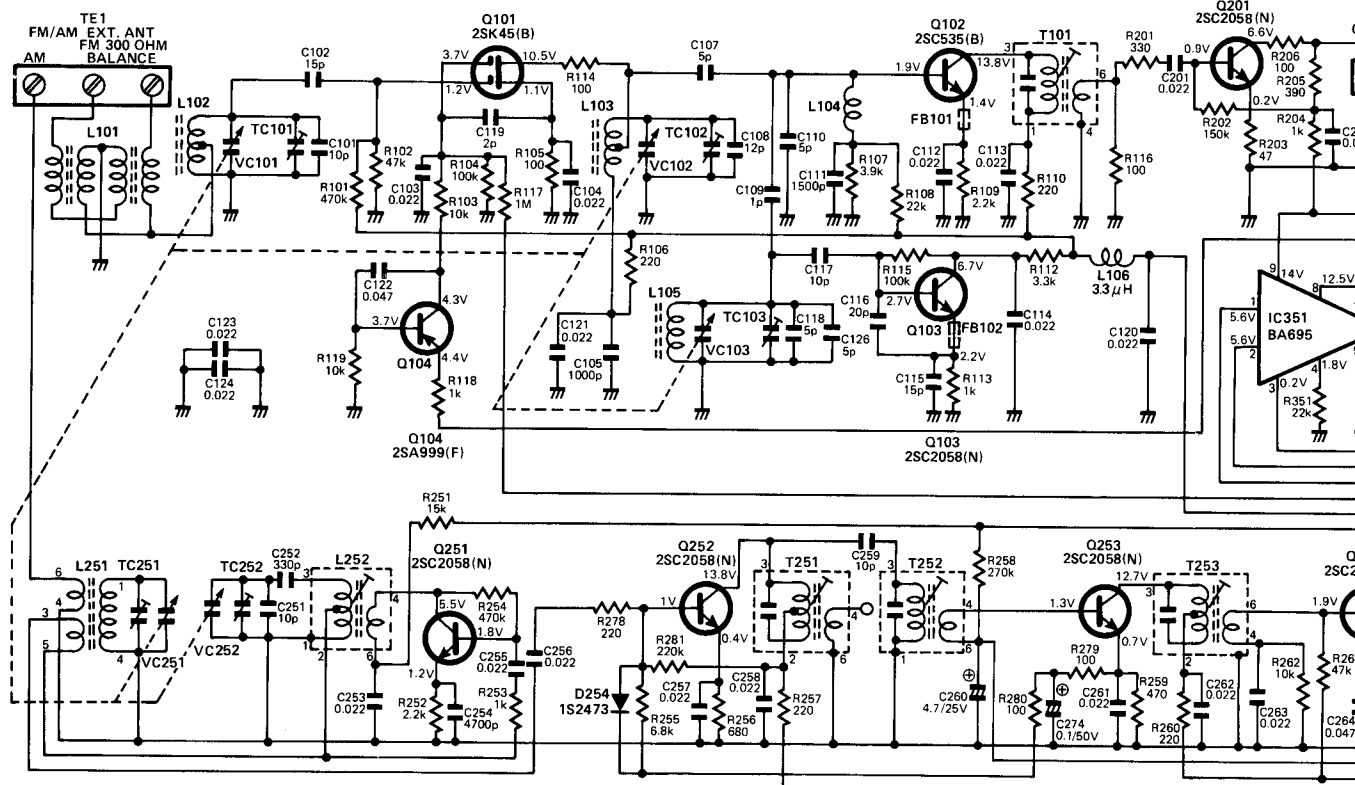
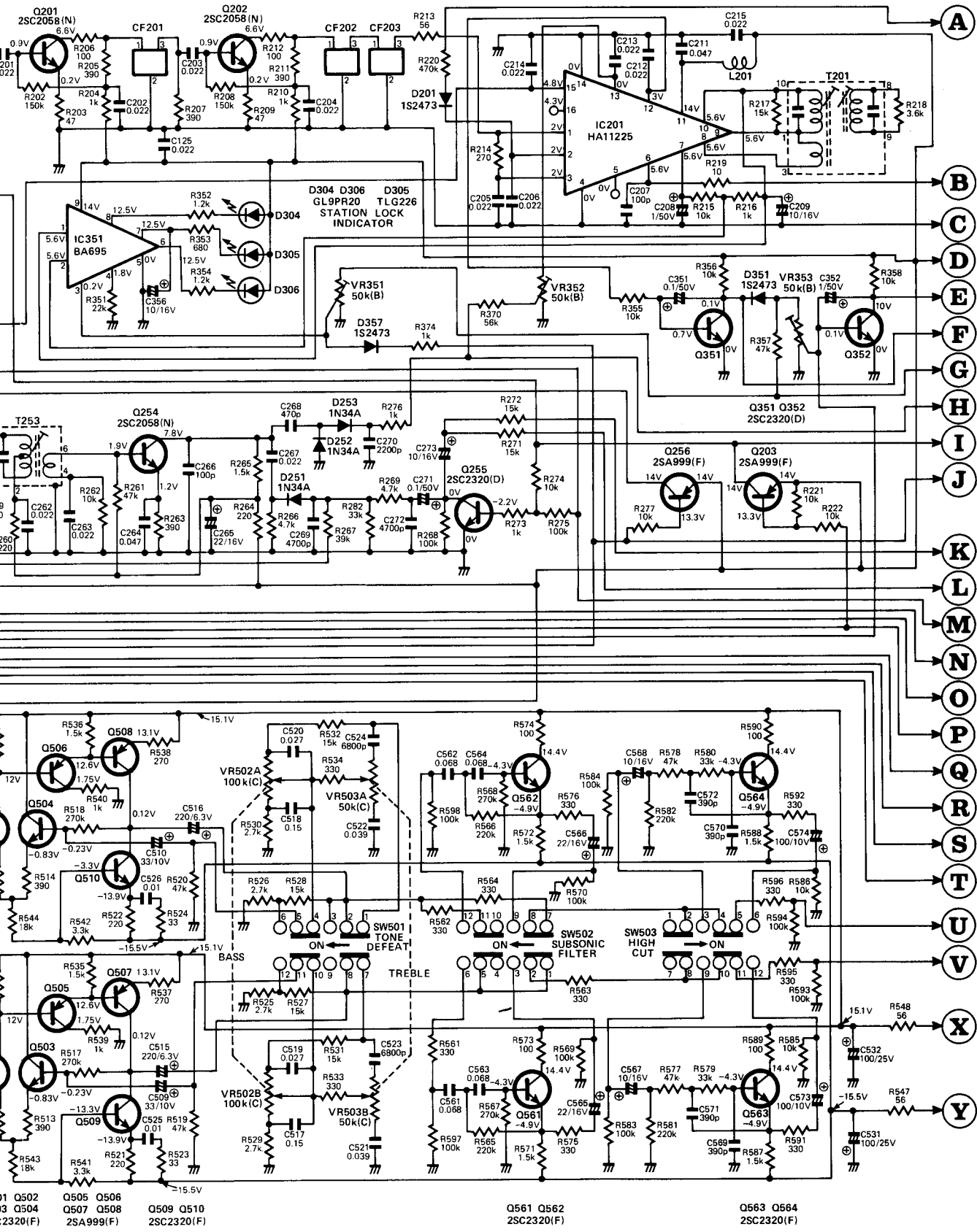


Fig. 1—Alignment Points Location

SCHEMATIC DIAGRAM



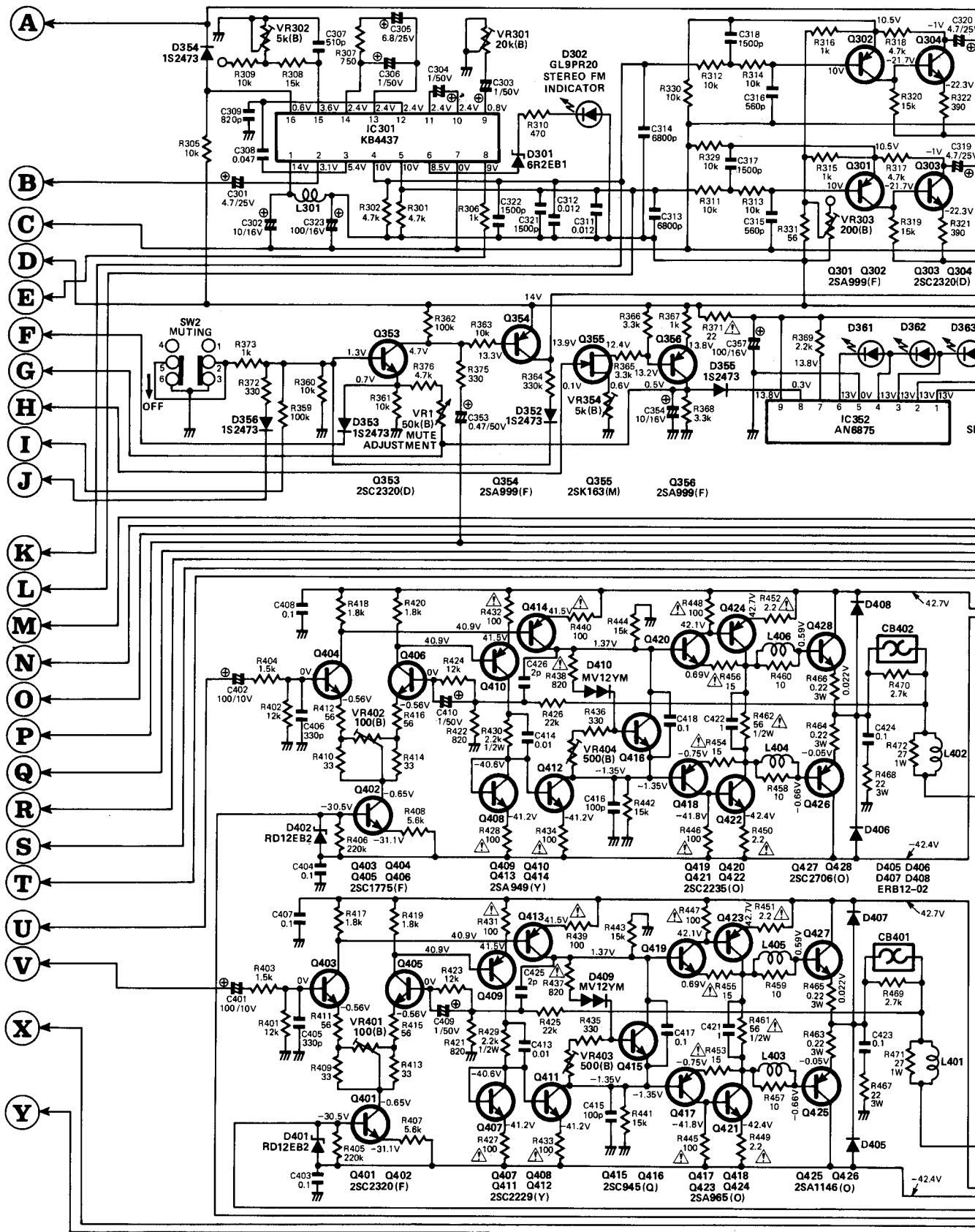


Q1 Q502 Q505 Q506
 Q3 Q504 Q507 Q508 Q509 Q510
 :2320(F) 2SA999(F) 2SC2320(F)

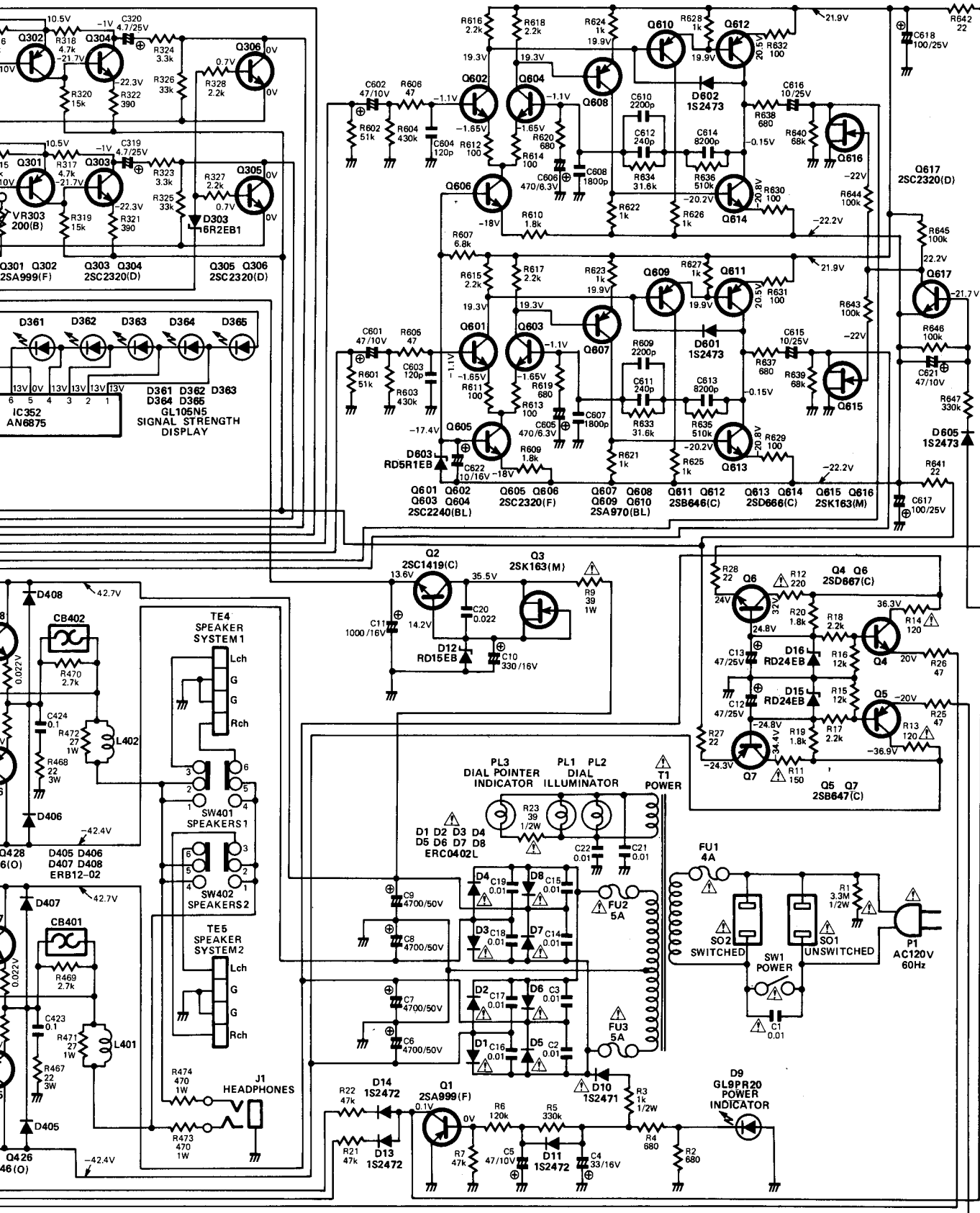
Q561 Q562
 2SC2320(F)

Q563 Q564
 2SC2320(F)

SCHEMATIC DIAGRAM



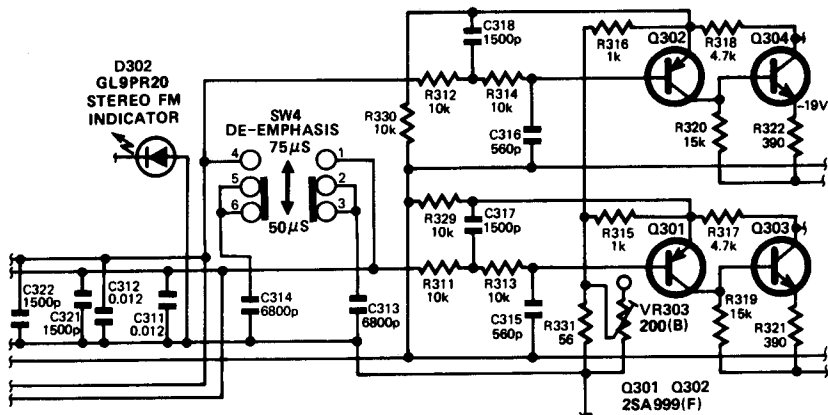
NOTES: 1. ALL RESISTANCES ARE 1/4 WATTS, UNLESS OTHERWISE NOTED, VALUES ARE IN Ω . K Ω = 1000 Ω , M Ω = 1000 K Ω
 2. ALL CAPACITANCES VALUES ARE IN μ F UNLESS OTHERWISE NOTED. pF = μ μ F



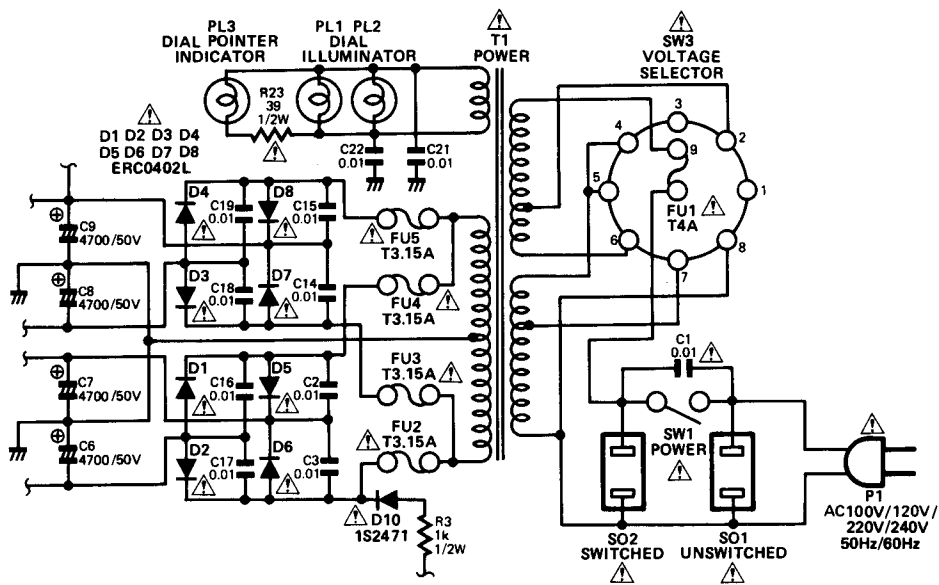
3. ALL VOLTAGES READING FROM CHASSIS ARE MEASURED WITH V.T.V.M. UNDER NO SIGNAL CONDITIONS.
 4. SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

SCHEMATIC DIAGRAM

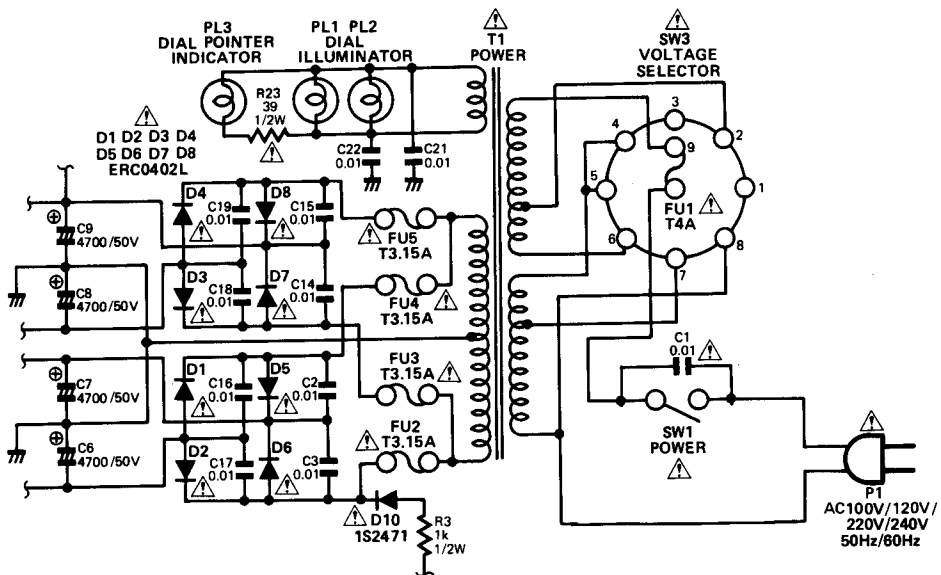
THE FOLLOWING SCHEMATIC DIAGRAM IS APPLIED TO MULTI VOLTAGE UNIT.



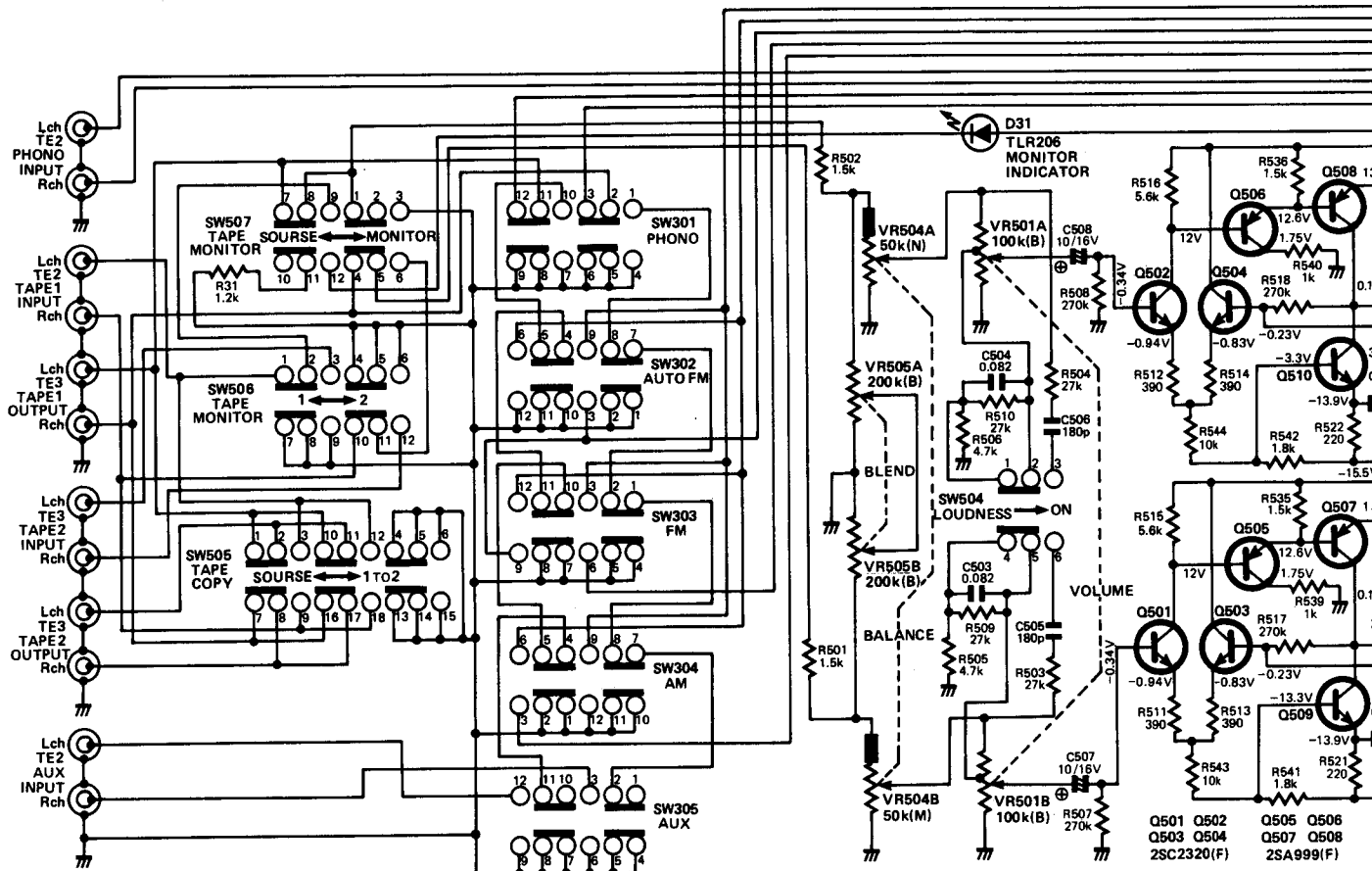
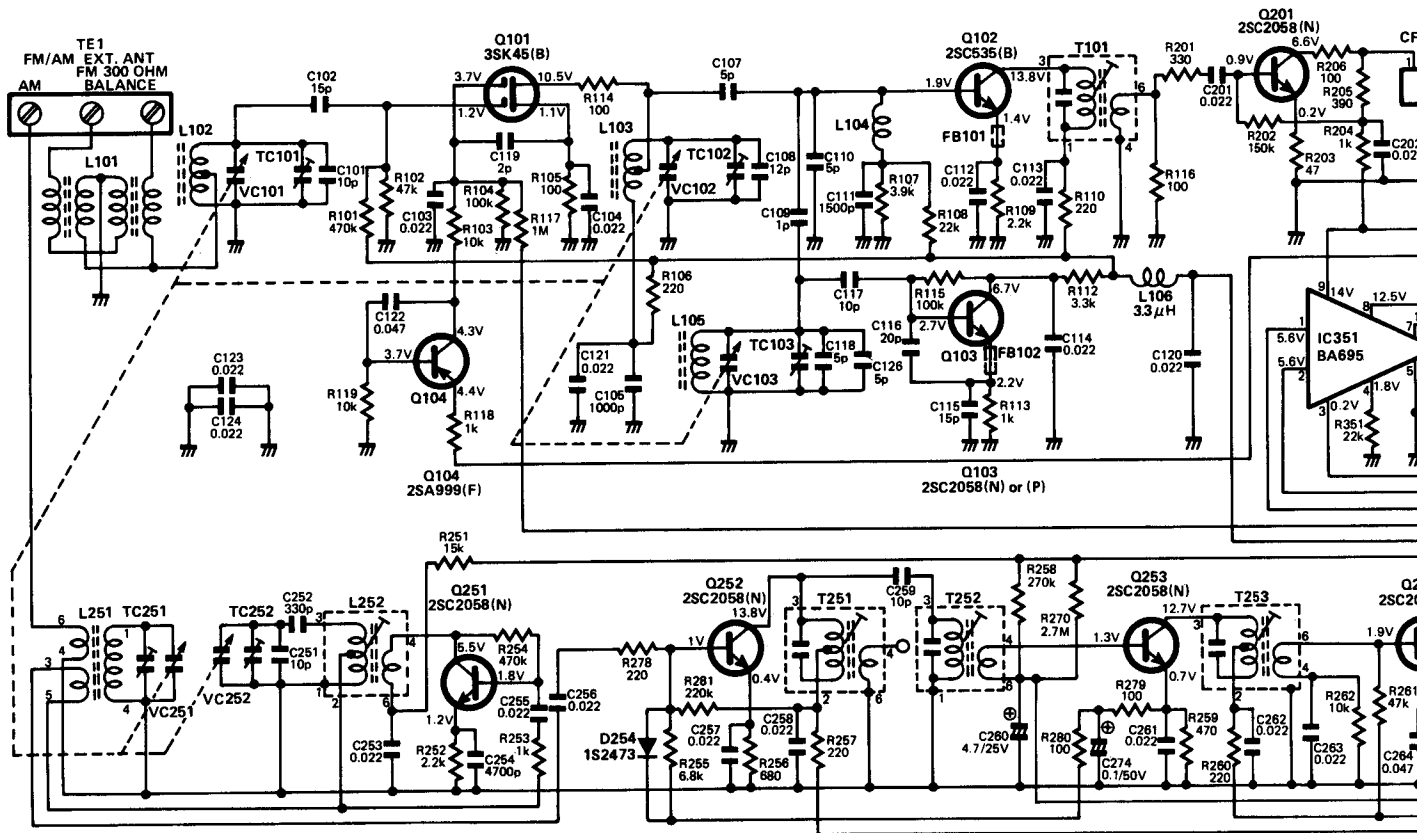
FOR ASIA

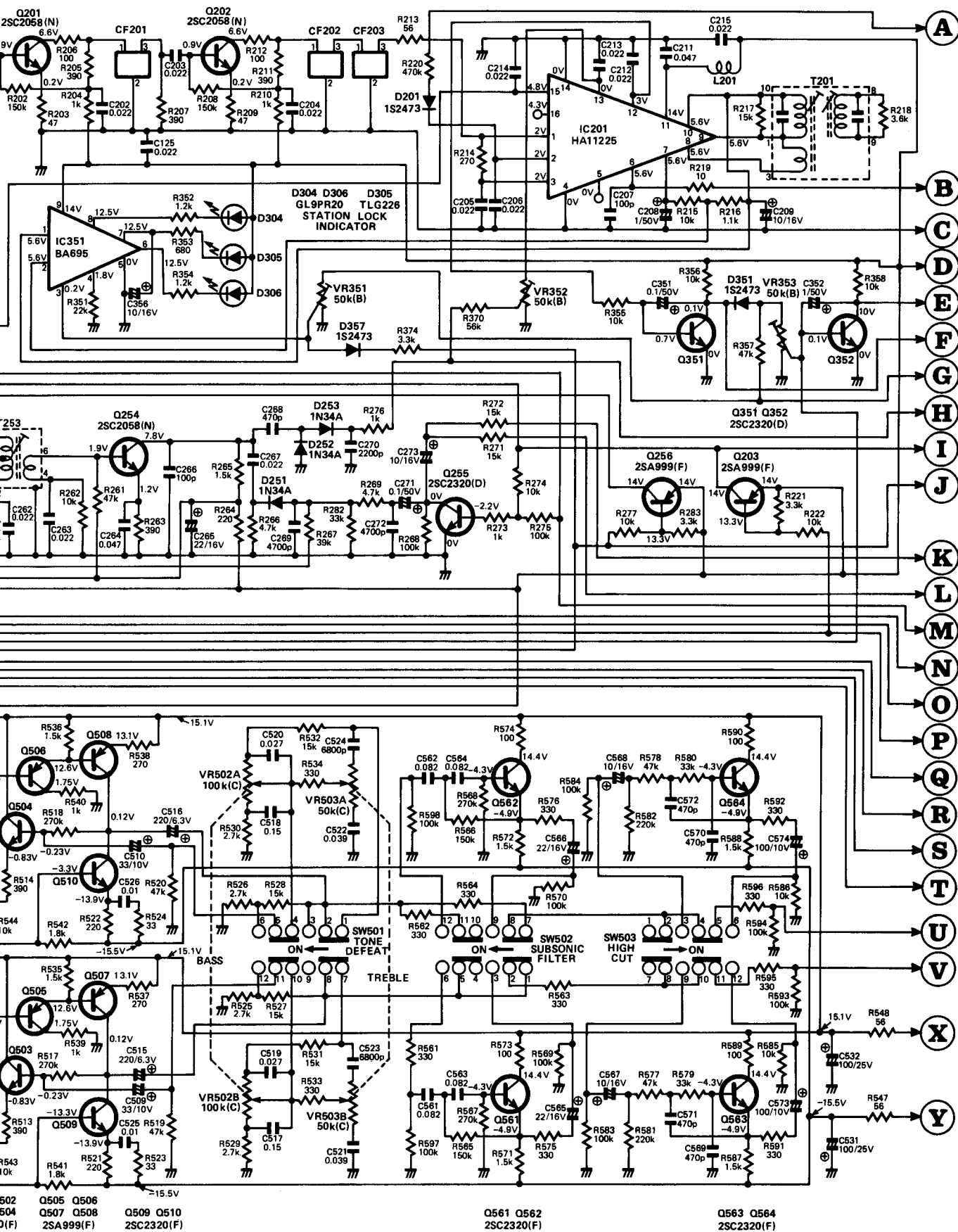


FOR EUROPE, OCEANIA AND SWEDEN

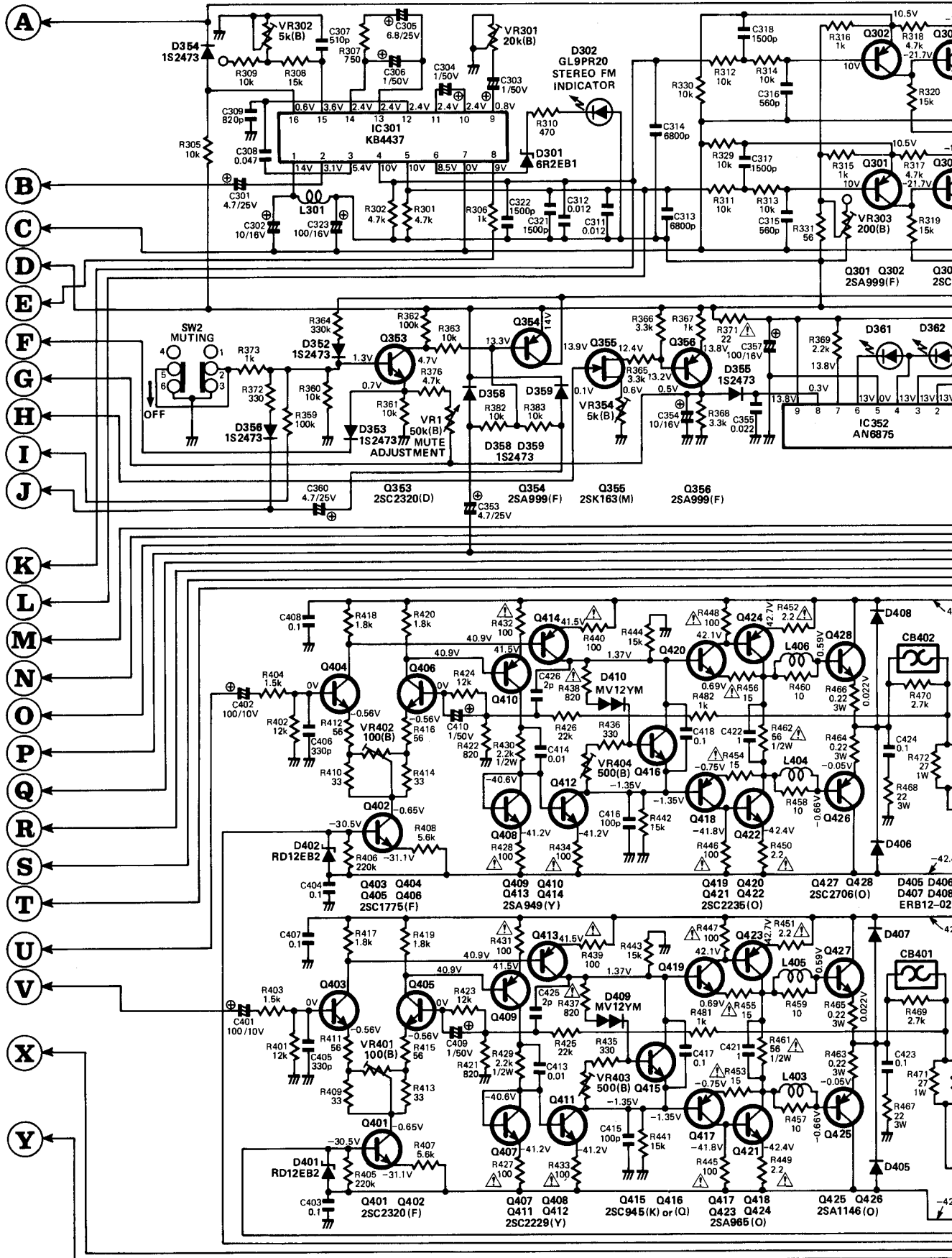


SCHEMATIC DIAGRAM

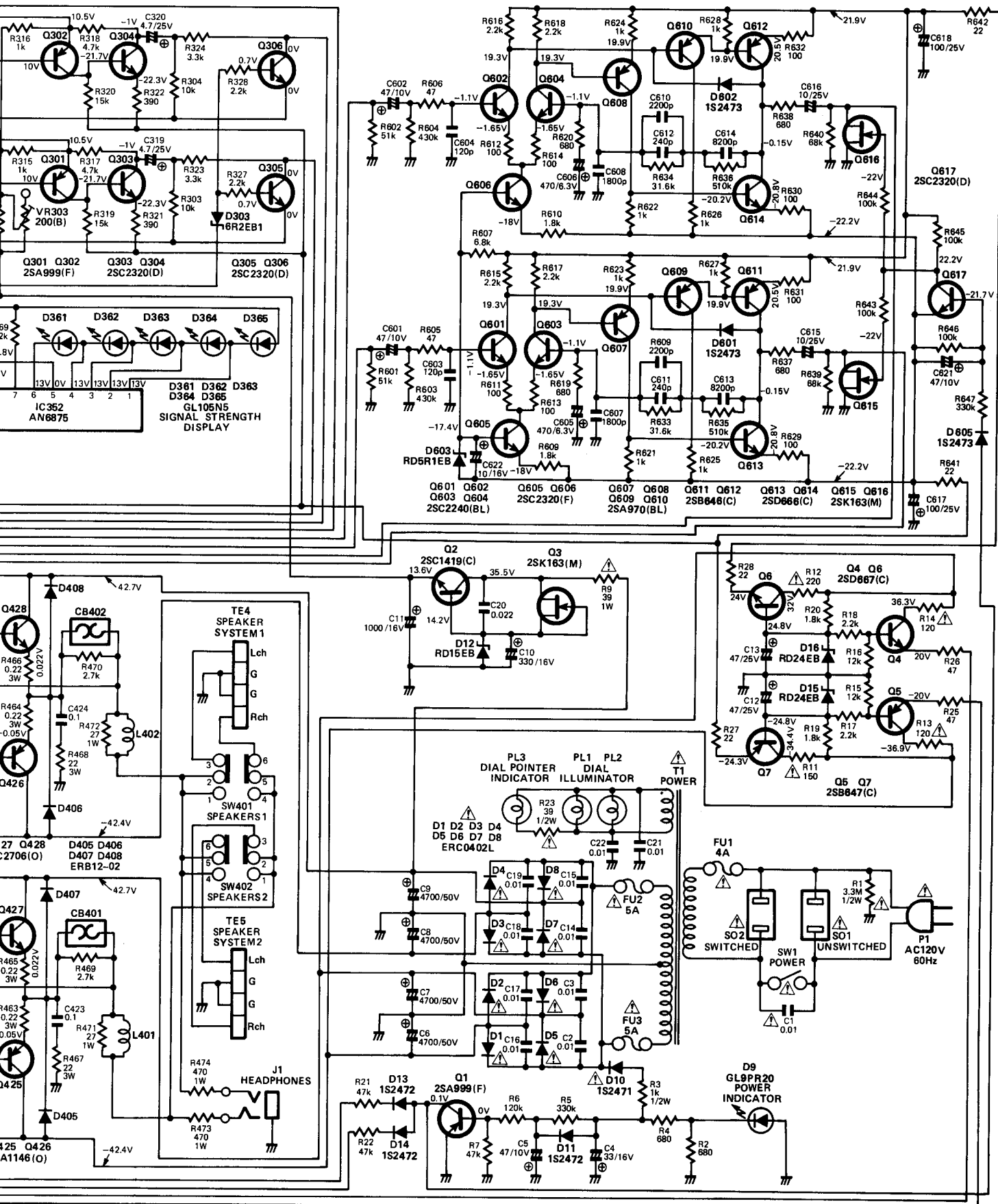




SCHEMATIC DIAGRAM



NOTES: 1. ALL RESISTANCES ARE 1/4 WATTS, UNLESS OTHERWISE NOTED, VALUES ARE IN Ω . $K\Omega = 1000\Omega$, $M\Omega = 1000 K\Omega$
 2. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. $pF = \mu\mu F$



2 = 1000 KΩ

3. ALL VOLTAGES READING FROM CHASSIS ARE MEASURED WITH V.T.V.M. UNDER NO SIGNAL CONDITIONS.
4. ⚠ SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

Serial Number 02501 and above