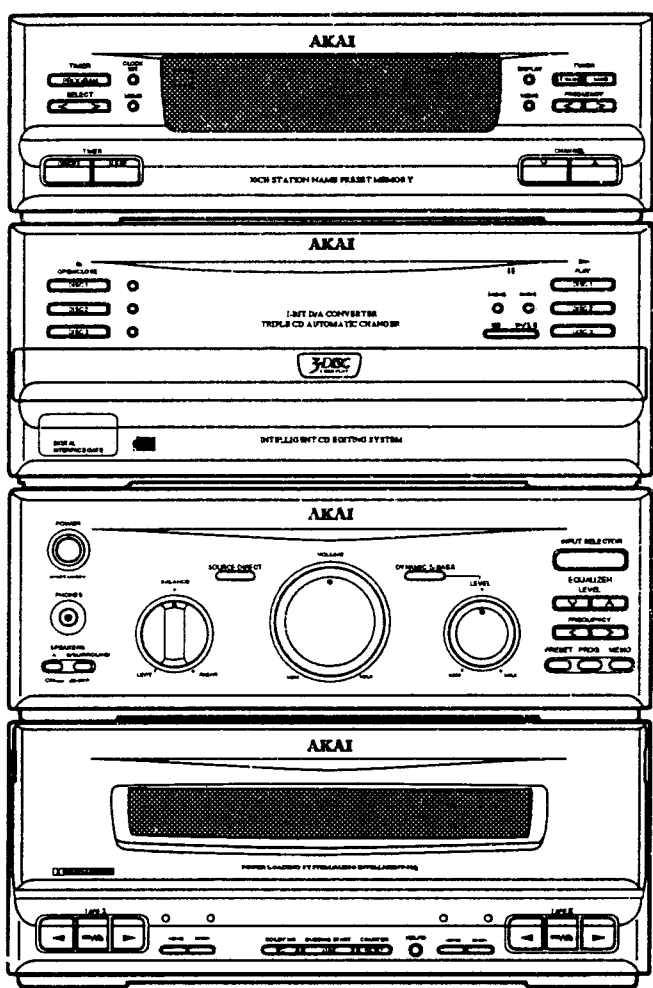


1064

RX-590
RX-690

AKAI SERVICE MANUAL



MODEL TC-690 & AX-690

MINI STEREO COMPONENT SYSTEM

SYSTEM **RX-590** series

(RX-590,593,595,597)

AX-590, TC-590,690,790 & SR-590,690,790

SYSTEM **RX-690** series

(RX-690,693,695,697)

AX-690, TC-590,690,790 & SR-590,690,790

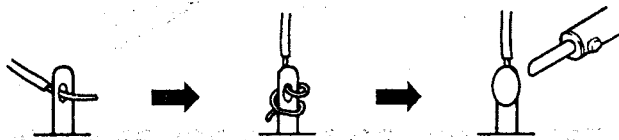
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★ SAFETY INSTRUCTIONS

PRECAUTIONS DURING SERVICING

- Parts identified by the Δ (*) symbol are critical for safety. Replace them only with the parts number specified.
- In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with the specified replacements.
Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
- Use specified internal wiring. Note especially:
 - Wires covered with PVC tubing
 - Double insulated wires
 - High voltage leads
- Use specified insulating materials for hazardous live parts. Note especially:
 - Insulation Tape
 - PVC tubing
 - Spacers (insulating barriers)
 - Insulation sheets for transistors
 - Plastic screws for fixing micro switches
- When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap the ends of the wires securely around the terminals before soldering.



- Make sure that wires do not contact heat producing parts (heat sinks, oxide metal film resistors, fusible resistors, etc.).
- Check that replaced wires do not contact sharp edged or pointed parts.
- Also check areas surrounding repaired locations.
- Make sure that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

SAFETY CHECK AFTER SERVICING

After servicing, make measurements of leakage-current or resistance in order to determine that exposed parts are acceptably insulated from the supply circuit. The leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal, microphone jacks, signal input/output connectors, etc.) and the earth ground through a resistor of 1500 ohms paralleled with a 0.15 μ F capacitor, under the unit's normal working conditions. The leakage-current should be less than 0.5 mA rms AC. The resistance measurement should be done between accessible exposed metal parts and power cord plug prongs with the power switch (if included) "ON". The resistance should be more than 2.2M Ohms.

MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

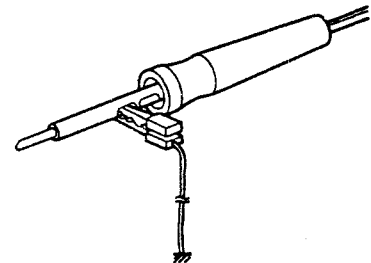
Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can. Please leave them at an appropriate depot.



PRECAUTIONS IN REPAIRING

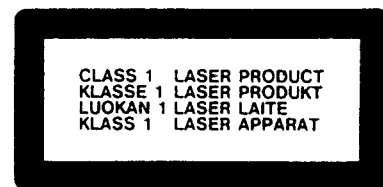
When repairing or adjusting the unit, please note the following points.

- Do not put excessive pressure on the mechanical part (operation part), including the pick-up block, as extremely high mechanical precision is required in these parts.
- When the base is removed for repair or adjustment, make sure that there are no metal objects in the narrow gap between the P.C. board or the mecha parts and the base.
- The Micro-Computer and the CD signal processing ICs can be damaged by static electricity or leakage from a soldering iron during repairing. While soldering, please take the precautions against leakage as in the illustration.

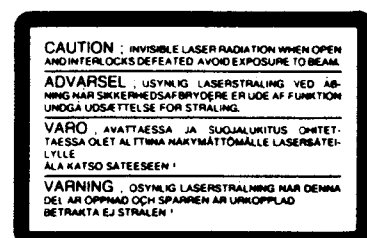


- Do not loosen any screws in the pick-up block. When handling the pick-up block, please refer to the points to NOTE when replacing the pick up block.
- To avoid hazardous invisible Laser Radiation, DO NOT look at the Laser Beam (Objective lens) directly.
- On models for some countries, laser warning labels are affixed on the unit and inside of the unit, as shown below. For your safety, read these labels carefully when repairing or adjusting the unit.

[EUROPE, SCANDINAVIA, U.K. and AUSTRALIA]



Label affixed on the rear panel of the unit.



Label affixed on the reverse side of the rear panel of the unit (except U model).

INFORMATIONS

[U.S.A. and CANADA]

CLASS 1 LASER PRODUCT

Indicated on the rear panel of the unit.

**DANGER—INVISIBLE LASER RADIATION
WHEN OPEN AND INTERLOCK
FAILED OR DEFEATED.
AVOID DIRECT EXPOSURE TO BEAM.**

Indicated near the pick up block.

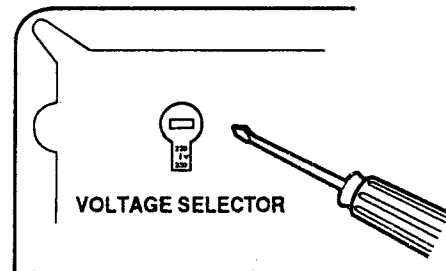
SYMBOLS FOR PRIMARY DESTINATION

Unit destinations are indicated with letters as shown below.

Symbols	Principal Destinations
A	U.S.A
B	U.K
C	Canada
E	Europe (except U.K)
J	Japan
S	Australia
V	Germany
U	Universal Area
Y*	Custom version

VOLTAGE CONVERSION (U Model only)

Before connecting the power cord, set the VOLTAGE SELECTOR located on the rear panel of the AX-590 or AX-690 so that the correct voltage for your area is indicated.



PRECAUTION ABOUT THE POWER SUPPLY

AX-590/690

The transmission of the system control signal between the TC-590/690/790 and AX-590 (or AX-690) is absolutely necessary to control the system during normal use. However, if the TC-590/690/790 is not available when repairing the AX-590/690, turn the power on using the following method.

Press the power switch for more than 5 seconds after the AC power cord is connected to the AC outlet.

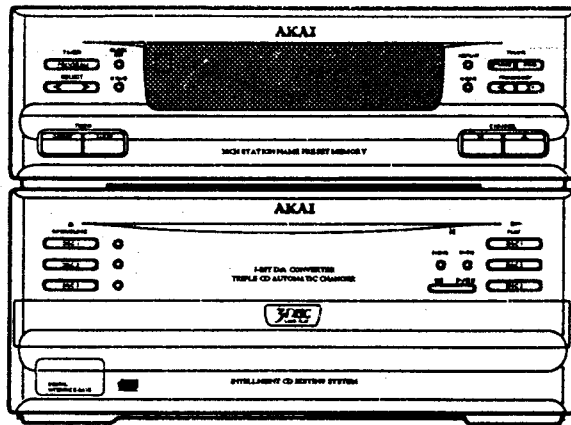
Although the selected input will not be indicated, it is possible to change the input source with the "INPUT SELECTOR" button. Pressing the "INPUT SELECTOR" button repeatedly will change the input source from CD → FM → TAPE-I → TAPE-II → PHONO → LINE and back again.

TC-590/690/790

Power for the TC-590/690/790 is supplied from the AX-590 or AX-690.

Also, transmission of the system control signal between the TC-590/690/790 and AX-590 (or AX-690) is necessary to control the system.

Therefore, when repairing the TC-590/690/790, repair should be made together with the AX-590 (or AX-690).



MODEL TC-690

TUNER CD PLAYER

MODEL TC-590,690,790

SPECIFICATIONS

<p>Tuner section</p> <p>FM RDS function (TC-790 only) .. PS/CT/AF/PTY/TP Tuning frequency range 87.5 to 108 MHz Usable sensitivity (V) 17.2 dBf (IHF, 3 % THD) (E, S, U, C) 13.2 dBf (IHF, 3 % THD) Quieting sensitivity MONO (V) 21.2 dBf (E, S, U, C) 17.2 dBf STEREO (V) 35.2 dBf (E, S, U, C) 31.2 dBf S/N ratio (IHF) MONO (V) 65 dB (E, S, U, C) 70 dB STEREO (E, S, U, V, C) 60 dB Frequency response 30 Hz to 15 kHz \pm 1 dB Total harmonic distortion MONO 0.3 % (at 1 kHz) STEREO 0.7 % (at 1 kHz) Selectivity 70 dB (\pm400 kHz) Image rejection (V) 80 dB (E, S, U, C) 50 dB Stereo separation 42 dB (at 1 kHz) Capture ratio 2 dBf AM suppression 60 dB Spurious rejection 80 dB IF rejection (V) 105 dB (E, S, U, C) 90 dB MW Tuning frequency range (E, S, V) 531 to 1602 kHz (9 kHz step) (U) 531 to 1602 kHz (9 kHz step) 530 to 1710 kHz (10 kHz step) (C) 530 to 1710 kHz (10 kHz step)</p>	<p>Usable sensitivity 500 μV/m S/N ratio 40 dB Selectivity 20 dB Image rejection 35 dB IF rejection 60 dB LW Tuning frequency range (E) 153 to 351 kHz (1 kHz step) (S, U, V) 153 to 279 kHz (1 kHz step) Usable sensitivity 800 μV/m Selectivity 25 dB Image rejection 35 dB IF rejection 60 dB</p> <p>CD section Type 3 discs auto changer Pick up system 3 beam laser pick-up Sampling frequency 44.1 kHz Error correction system Cross interleave reed solomon Frequency response 20 to 20,000 Hz \pm 1 dB S/N ratio 97dB (A-weight) Dynamic range 92 dB Wow & flutter Less than measurable limits Total harmonic distortion 0.006% (at 1 kHz) Channel separation 80 dB (at 1 kHz)</p> <p>GENERAL Dimensions TC-590 270 (W) x 111 (H) x 330 (D) mm TC-690,790 270 (W) x 199 (H) x 330 (D) mm Weight TC-590 3.0 kg TC-690,790 3.4 kg Power requirement Supplied from AX-590,690 Power consumption 10 W (Nominal 8 W)</p> <p>Standard accessories FM long wire antenna x 1 AM loop antenna x 1 Plug adaptor x 1</p>
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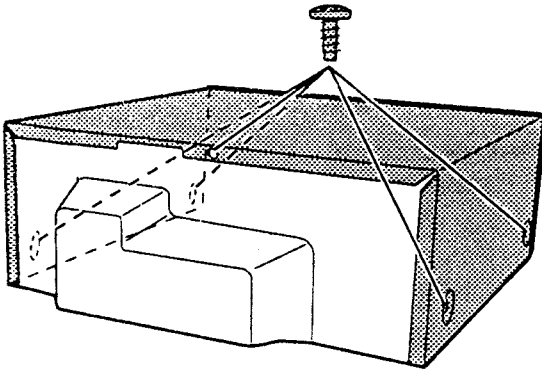
* For improvement purposes, specifications and design are subject to change without notice.

I. DISASSEMBLY

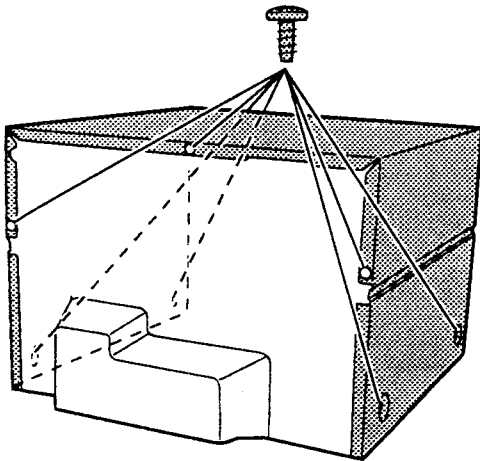
In case of trouble etc., necessitating dismantling, please dismantle in the order shown in the illustrations.
Reassemble in the reverse order.

1. Removal of UPPER COVER

- 1) Remove the screws (5 or 7 depending on model).



(TC-590)

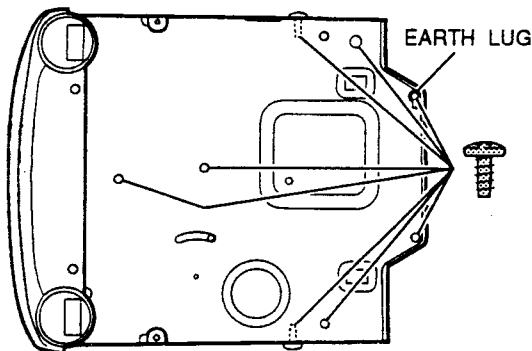


(TC-690,790)

- 2) Remove the UPPER COVER.

3. BOTTOM COVER

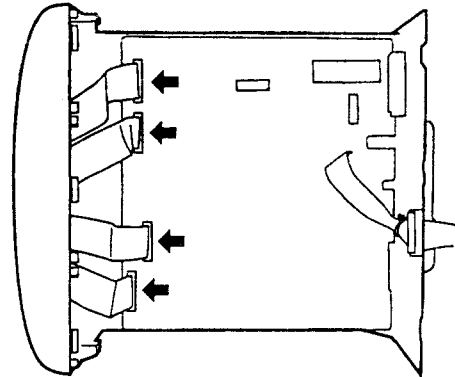
- 1) Remove the four FRONT PANEL retaining screws (refer to steps 4) and 5) of step 2). (It is not necessary to remove the FRONT PANEL BLOCK completely.)
- 2) Remove the two screws on the side and six screws on the bottom.



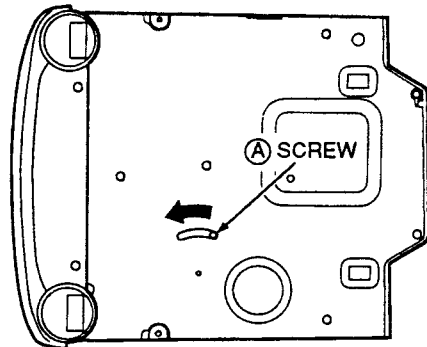
- 3) Remove the BOTTOM COVER by pulling it backward carefully.

2. Removal of FRONT PANEL

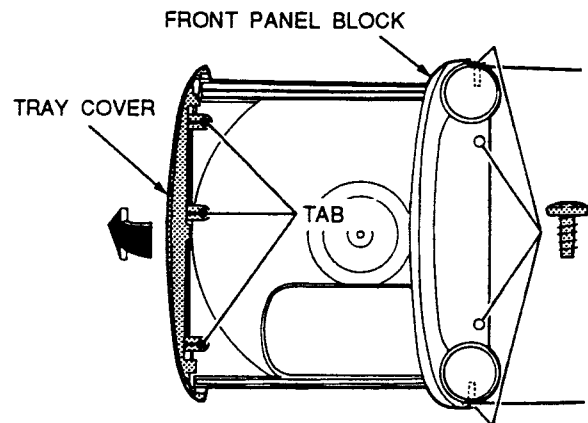
- 1) Disconnect the J500, J501, J502 and J503 connectors on the TU-CD PCB.
Refer to the note #1 on page 10 before disconnecting.



- 2) Slide the Ⓐ screw on the bottom in the forward direction with a philips type screwdriver. Then pull the TRAY in the forward direction.



- 3) While pulling up the three tabs, remove the tray cover by carefully pulling it off in the direction of the arrow.



- 4) Remove the two screws on both sides and the two screws on the bottom.
- 5) While pulling the tabs on the side outwards, remove the FRONT PANEL BLOCK.

II. PRINCIPAL PARTS LOCATION

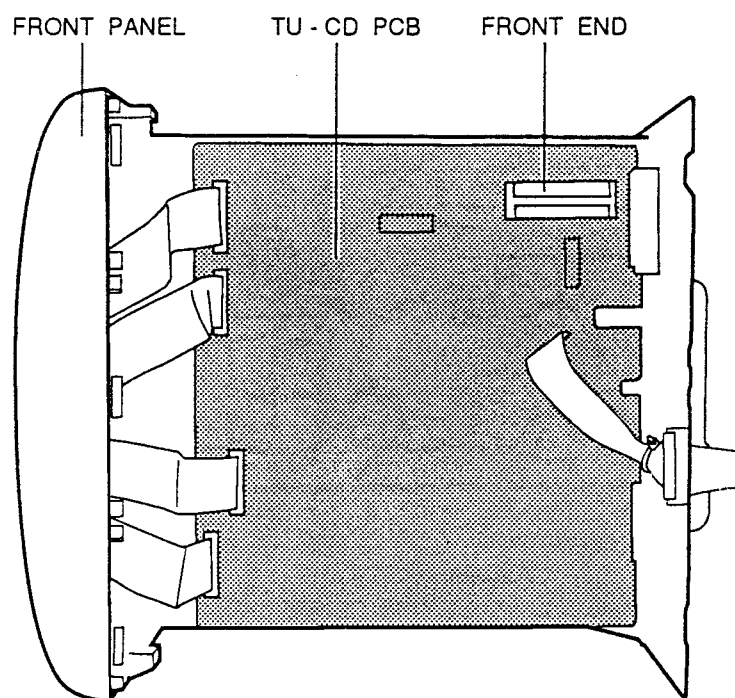


Fig. 2-1 Top view (1)

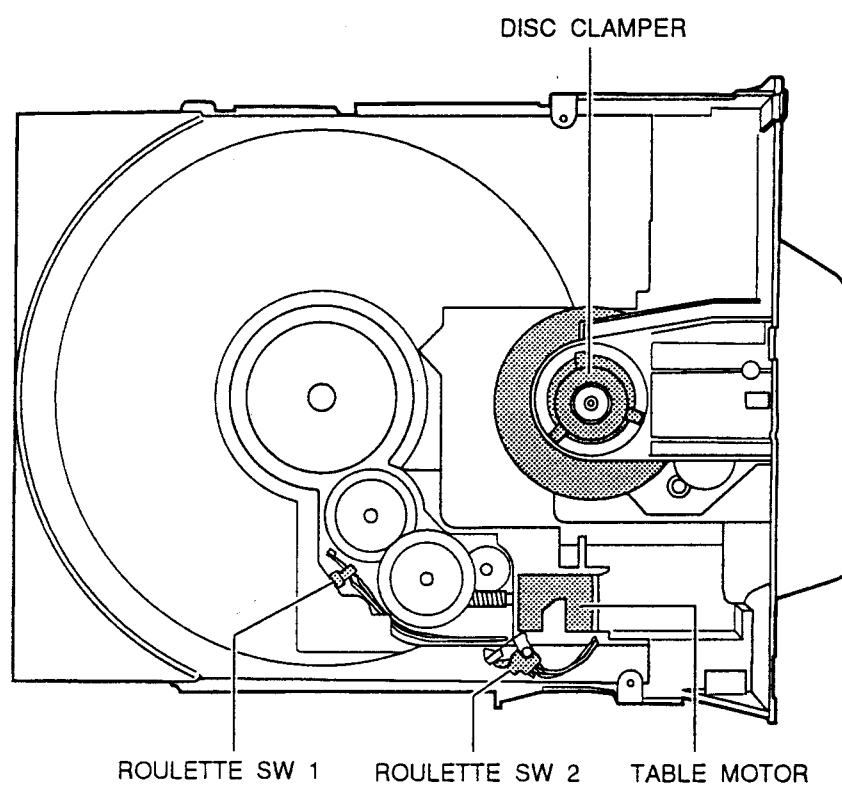


Fig. 2-2 Top view (2)

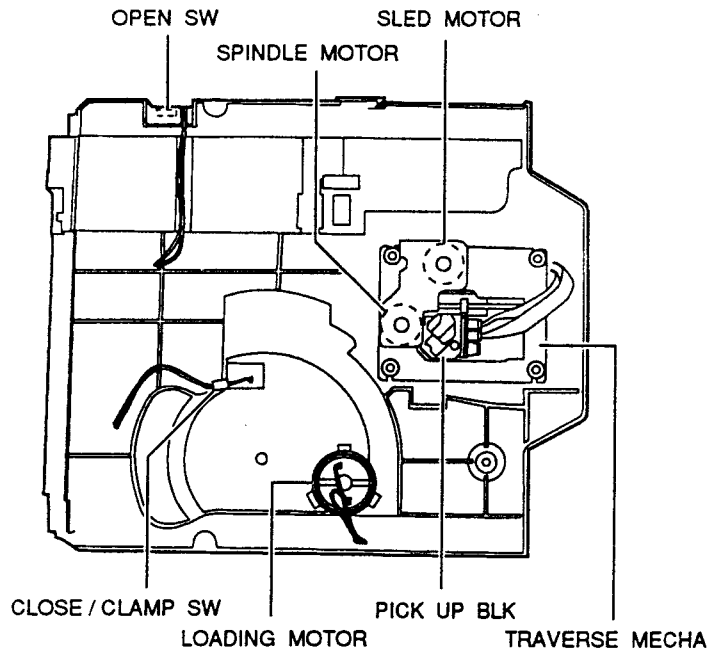


Fig. 2-3 Bottom view

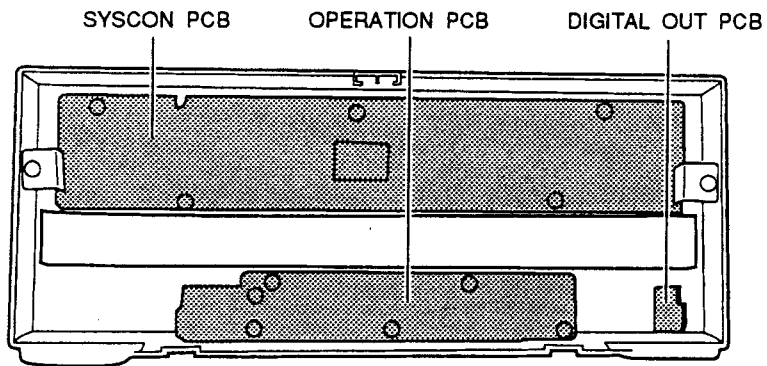


Fig. 2-4 Front panel (TC-590)

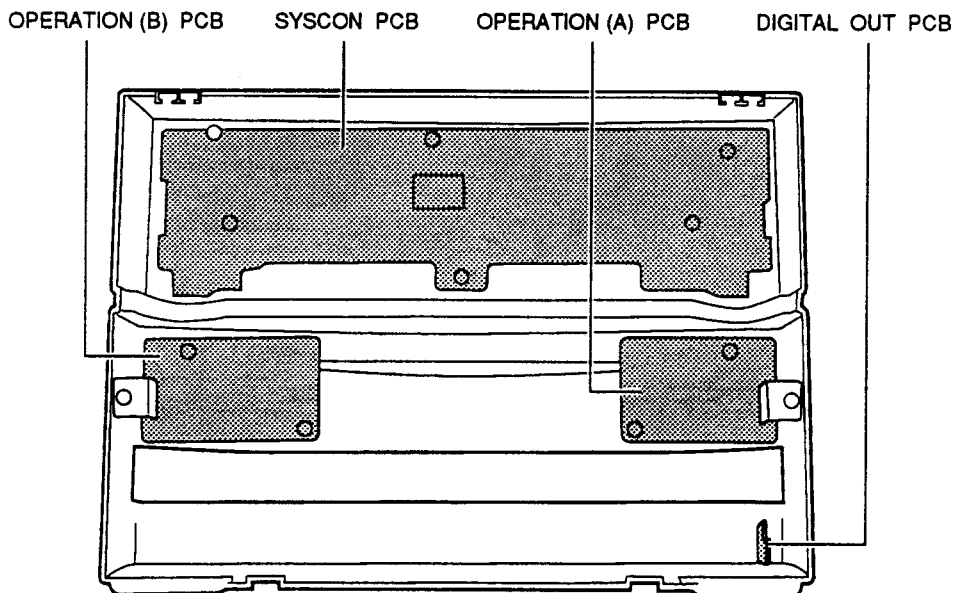


Fig. 2-5 Front panel (TC-690,790)

III. MAIN COMPONENTS REPLACEMENT

3-1. REMOVAL OF THE TRAVERSE MECHA.

- 1) Remove the BOTTOM COVER (refer to page 6).
- 2) Short the circuit on the PICK UP BLOCK with solder as shown in Fig. 3-1.

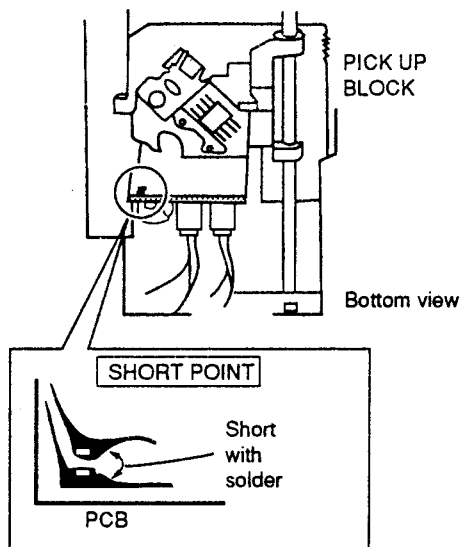


Fig. 3-1

- 3) Disconnect the three connectors carefully (two connectors are on the PICK UP PCB and the other is on the MOTOR PCB of the TRAVERSE MECHA.).

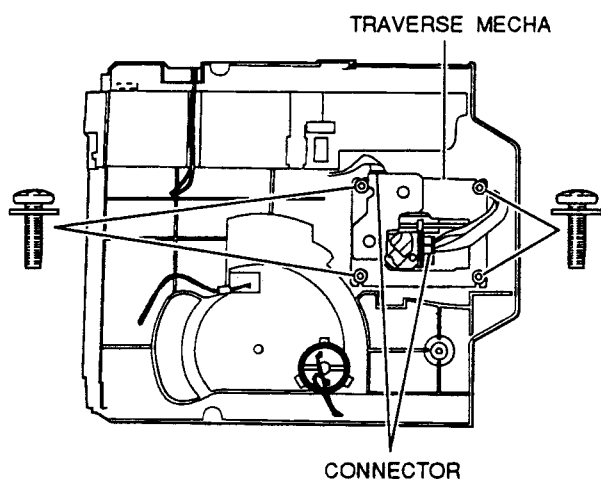


Fig. 3-2

- 4) Remove the four retaining screws, then remove the PICK UP BLOCK.
- 5) Proceed in the reverse order for installation but never unsolder the shorted part before connecting the three connectors.

Note:

To protect the laser diode from damage caused by high voltage static electricity, a part of the PCB on the PICK UP BLOCK has to be shorted before disconnecting the connectors. After replacement, be sure to connect the two connectors and then remove the solder at the shorted part before turning the power ON.

3-2. REPLACEMENT OF THE SLED MOTOR

- 1) Remove the TRAVERSE MECHA (refer to section 3-1).
- 2) Unsolder the leads of the SLED and SPINDLE MOTORS then remove the MOTOR PCB.

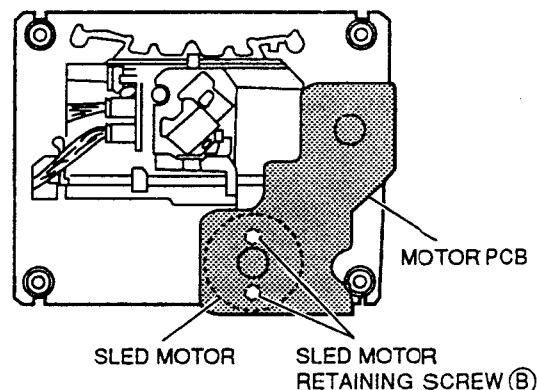


Fig. 3-3

- 3) Remove the SLED MOTOR RETAINING (B) SCREWS, then replace the SLED MOTOR.
- 4) Reassemble in the reverse order.

About the SPINDLE MOTOR:

Replacement of the SPINDLE MOTOR itself is not recommended because the adjustment of the TURN TABLE height is quite critical and requires the use of a special jig.

3-3. REPLACEMENT OF THE PICKUP BLOCK

- 1) Remove the TRAVERSE MECHA (refer to section 3-1).
- 2) Push the (A) stopper in the right direction and pull the SLIDE SHAFT in the forward direction to remove the PICK UP BLOCK, then replace the PICK UP BLOCK.

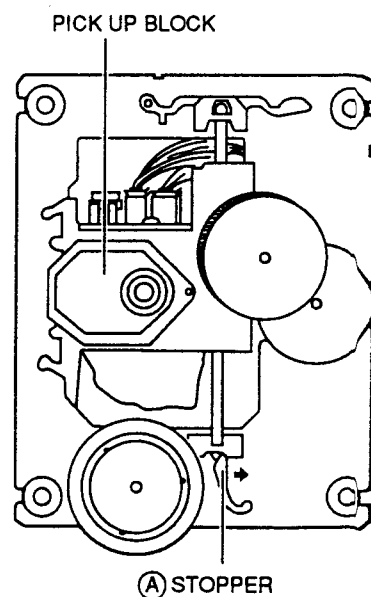


Fig. 3-4

- 3) Reassemble in the reverse order.

3-4. REMOVAL OF THE TU-CD PCB

Note:

1. To protect the system control IC from the electrical damage, wait more than 1 min. after unplugging the power cord before disconnecting the connectors. And also remove the solder between JW120 and JW121 on the TU-CD PCB. (This will disconnect the C510 positive side.) Never short the JW120 and JW121 with the solder before connecting the connectors when reassembling.

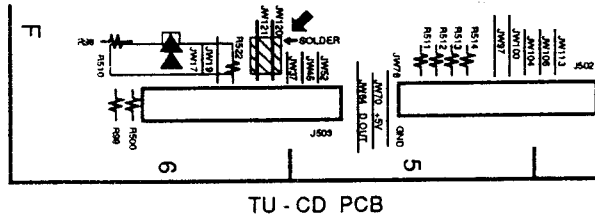


Fig. 3-5a

2. When disconnecting the flat cable, first unlock the stopper on the connector by pulling it upward before disconnecting. When connecting, press down the stopper on the connector first, then insert the wires of the flat cable into the respective holes on the connector carefully.

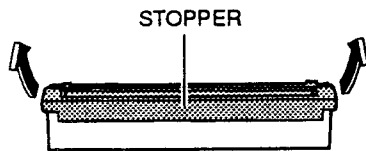
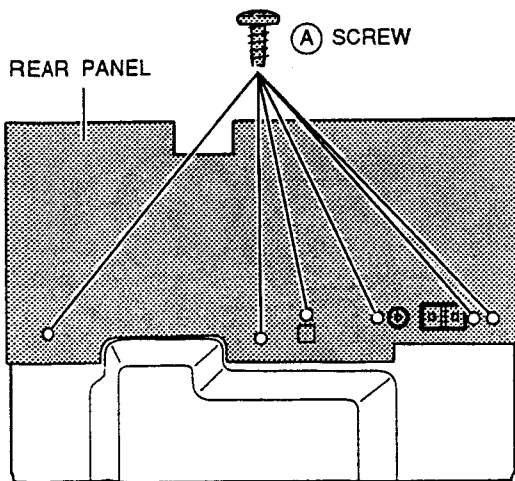


Fig. 3-5b

- 1) Remove the six (A) screws and remove the REAR PANEL as shown in Fig. 3-6.



(Illustration is of TC-690,790 model)

Fig. 3-6

- 2) Disconnect the four flat cables from the J500, J501, J502 and J503 connectors on the TU-CD PCB.
- 3) Disconnect the P200, P201, P202, P203 and P204 connectors on the TU-CD PCB. Be sure to short the shorting point on the PICK UP PCB before disconnecting the P200 and P201 connectors. (Refer to Fig. 3-1 on page 9.)
- 4) Remove the (B) screw and the five (C) screws of the TU-CD PCB, then remove the TU-CD PCB.

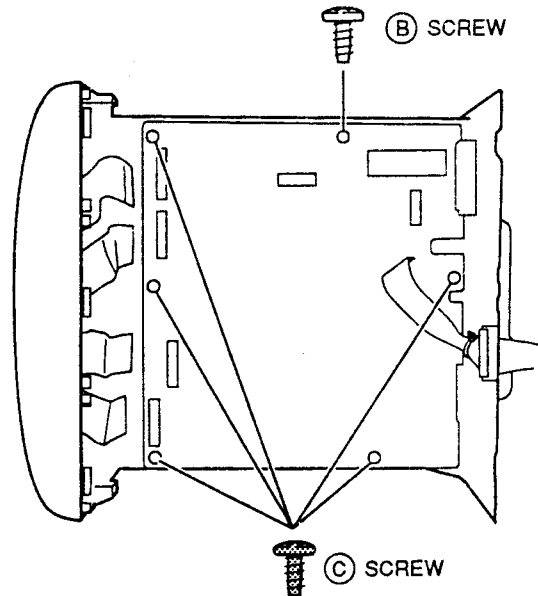
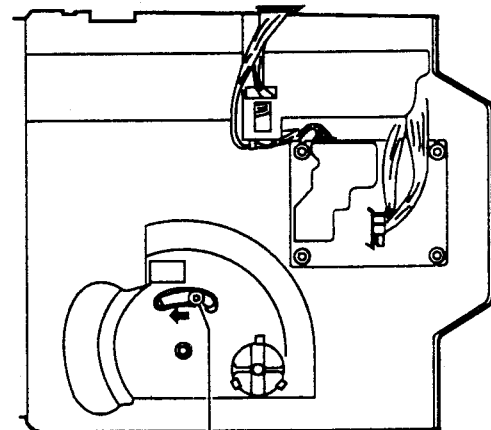


Fig. 3-7

3-5. REPLACEMENT OF THE LOADING MOTOR

- 1) Remove the BOTTOM COVER (refer to page 6).
- 2) Push the GEAR HOLDER retaining screw in the direction of the arrow, then pull out the TRAY BLOCK.



GEAR HOLDER retaining screw

Fig. 3-8

- 3) Unhook the LOADING BELT with tweezers.
- 4) Unsolder the lead wires of the LOADING MOTOR with a soldering iron.
- 5) While opening the LOADING MOTOR's three retaining tabs, push the motor pulley part down with your middle finger to remove the LOADING MOTOR, then replace it.

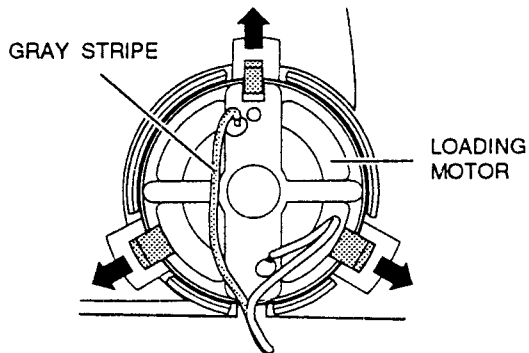


Fig. 3-9

- 6) Reassemble in the reverse order. Make sure that the wire with the gray stripe is connected to the motor's O marked terminal when soldering.

3-6. REMOVAL OF THE TRAY BLOCK

- 1) Remove the FRONT PANEL BLOCK and BOTTOM COVER (refer to page 6).
- 2) Remove the TU-CD PCB (refer to page 10).
- 3) If the TRAY BLOCK is at the "in" position, slide the GEAR HOLDER retaining screw in the direction of the arrow and pull out the TRAY BLOCK slowly (refer to Fig.3-8).
- 4) Remove the PCB HOLDER retaining screws then remove the PCB HOLDER and the BRACKETs on both sides.

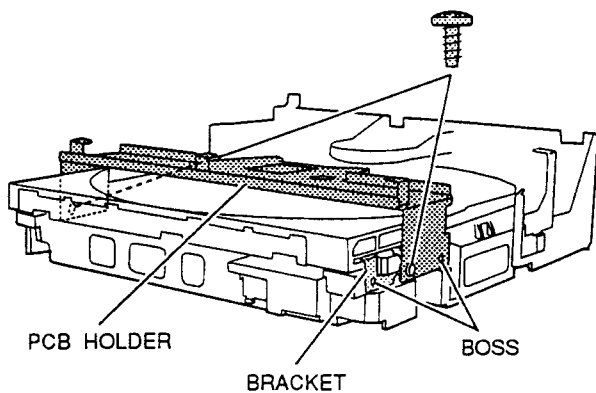


Fig. 3-10

- 5) Remove the TRAY BLOCK.

3-7. REPLACEMENT OF THE TABLE MOTOR

- 1) Remove the TRAY BLOCK (refer to section 3-6).
- 2) Remove the DISC HOLDER retaining screw, then remove the DISC HOLDER.

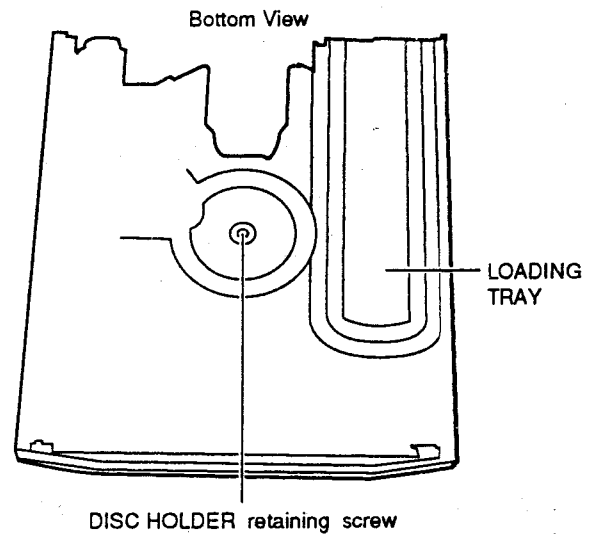


Fig. 3-11

- 3) Remove the TABLE GEAR (B) and WORM WHEEL TABLE GEAR.

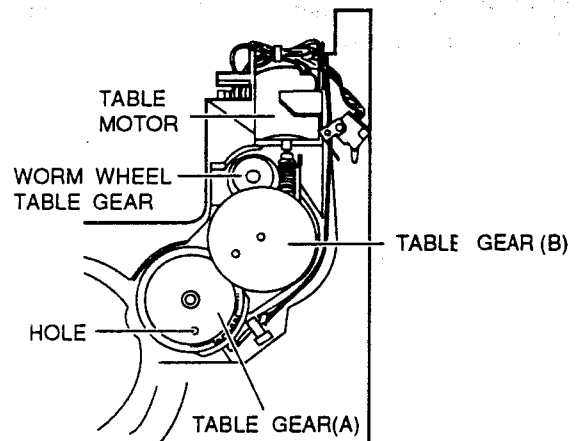


Fig. 3-12

-
- 4) Unsolder the lead wires of the TABLE MOTOR.
 - 5) Remove the TABLE MOTOR while opening the TABLE MOTOR retaining hook and squeezing the motor stopper. Then replace the TABLE MOTOR.

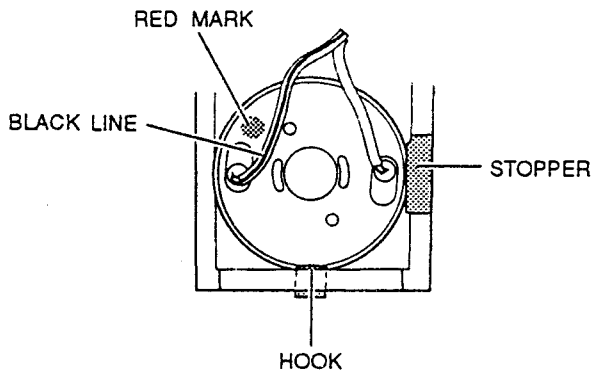


Fig. 3-13

- 6) Reassemble in the reverse order.
 - Make sure the wire with the black line is connected to the motor's red side terminal when soldering.
 - When attaching the TABLE GEAR (B), make sure that the TABLE GEAR (A)'s hole is aligned with its reference hole on the LOADING TRAY.
 - When installing the DISC HOLDER on the LOADING TRAY, make sure to place the DISC HOLDER so that "DISC 3" is facing upward ("DISC 2" faces right and label "DISC 1" faces left accordingly).

IV. ADJUSTMENT (TUNER SECTION)

Note: There is no adjustment for the CD player.

4-1. INSTRUMENT CONNECTIONS

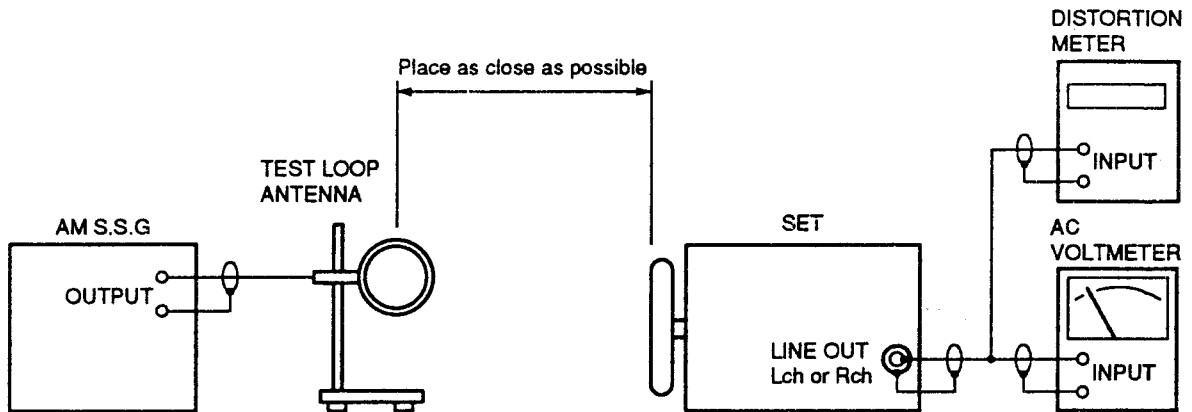


Fig. 4-1 Instrument connection for AM tuner adjustment

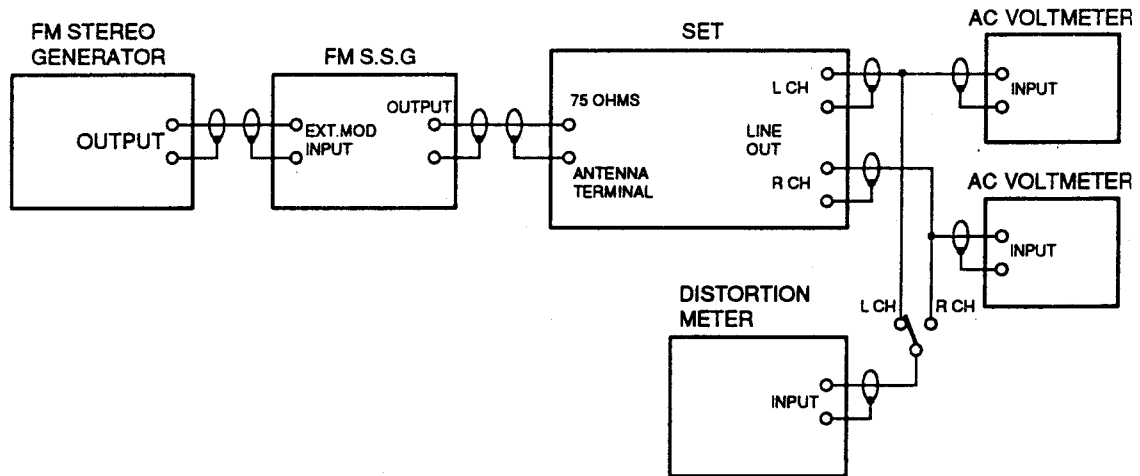


Fig. 4-2 Instrument connection for FM tuner adjustment

Note:

Before making adjustment, select the tuner mode (FM, MW or LW) by pressing the "INPUT SELECTOR" button on the AX-590/690, then select the tuner band with the "BAND" button on the TC-590/690/790 according to the adjustment procedure.

4-2. HOW TO CALL THE PRESET FREQUENCY FOR THE ADJUSTMENT

The preset frequency can be called with the "TUNER/CD 10 KEY" buttons on the remote control unit. To clear the previous preset stations, press the "RESET" button on the rear panel before proceeding. The internal frequency preset memory is set as shown below.

Initial preset frequency for adjustment and inspection.

PRESET ch No.	PRODUCT DESTINATION								
	[S], [U], [V]			[E]			[A], [C]		
1	FM	98.0 MHz	AUTO	FM	98.0 MHz	AUTO	FM	98.0 MHz	AUTO
2	FM	88.0 MHz	MONO	FM	88.0 MHz	MONO	FM	88.0 MHz	MONO
3	FM	108.0 MHz	MONO	FM	108.0 MHz	MONO	FM	108.0 MHz	MONO
4	LW	162 kHz		LW	162 kHz		AM	1400 kHz	
5	LW	279 kHz		LW	297 kHz		AM	600 kHz	
6	LW	198 kHz		LW	198 kHz		AM	1000 kHz	
7	MW	1404 kHz		MW	1404 kHz		FM	87.5 MHz	MONO
8	MW	603 kHz		MW	603 kHz		FM	90.0 MHz	MONO
9	MW	999 kHz		MW	999 kHz		FM	106.0 MHz	MONO
10	LW	279 kHz		LW	351 kHz		AM	530 kHz	
11	FM	87.5 MHz	MONO	FM	87.5 MHz	MONO	AM	1710 kHz	
12	FM	90.0 MHz	MONO	FM	90.0 MHz	AUTO	FM	87.5 MHz	AUTO
13	FM	106.0 MHz	MONO	FM	106.0 MHz	MONO	FM	87.5 MHz	AUTO
14	MW	531 kHz		MW	531 kHz		FM	87.5 MHz	AUTO
15	MW	1602 kHz		MW	1602 kHz		FM	87.5 MHz	AUTO
16	LW	153 kHz		LW	153 kHz		FM	87.5 MHz	AUTO
17	FM	87.5 MHz		LW	288 kHz		FM	87.5 MHz	AUTO
18 - 30	FM	87.5 MHz	AUTO	FM	87.5 MHz	AUTO	FM	87.5 MHz	AUTO

Note: About tuning step conversion (effective on [U] version only)

The MW frequency band of this unit is preset to 9 kHz tuning intervals. However, the frequencies of MW broadcasts in some countries are set at 10 kHz intervals.

If your country uses 10 kHz tuning intervals, the following tuning step conversion is necessary before you can tune in stations.

1. Turn the power ON.
2. Select the tuner mode by pressing the "INPUT SELECTOR" button.
3. Select the "FM mono" mode by pressing the "BAND" button.
4. Press and hold the "BAND" button for over 5 seconds until [AM 530 kHz] appears on the FL display. Tuning intervals will now be set to 10 kHz.

- To reset the unit to 9 kHz tuning intervals:
Press the "RESET" button located on the rear panel.

- * The LW frequency band can not be selected with the "BAND" button at MW 10 kHz tuning interval mode.
- * The preset frequency can not be called with "TUNER/CD 10 KEY" button at MW 10 kHz tuning interval mode.

4-3. ADJUSTMENT

NOTE:
 1. Set the S.S.G to 1 kHz, 75 kHz deviation for [U], [S], [B], or [E] model and 1 kHz 40 kHz deviation for [V] model during FM section adjustment.
 2. Set the S.S.G to 1 kHz, 30 % modulation during AM section adjustment. The frequencies indicated in < > are for the [E] version model, and [] are for [C] version model.

STEP	ADJUSTMENT ITEM
1.	S.S.G frequency & output level
2.	Set's tuning frequency & mode
3.	Test point, adjustment part
4.	Remarks (*) & result (*)

Test Point Adjustment Part

FM

3 | FM TUNING INDICATOR

- 98.0 MHz, 22 dBμ (MONO)
- 98.0 MHz (preset 1 ch but FM MONO)
- Tuning Indicator on the FLD, VR1
- * Tuning indicator is lit at 22 dBμ input.

2 | MONO USABLE SENSITIVITY

- 98.0 MHz, 8 dBμ (MONO) (4 dBμ for [V])
- 98.0 MHz (preset 1 ch but FM MONO)
- T2
- * Connect the distortion meter to LINE OUT.
* Minimum distortion

4 | DISTORTION (STEREO)

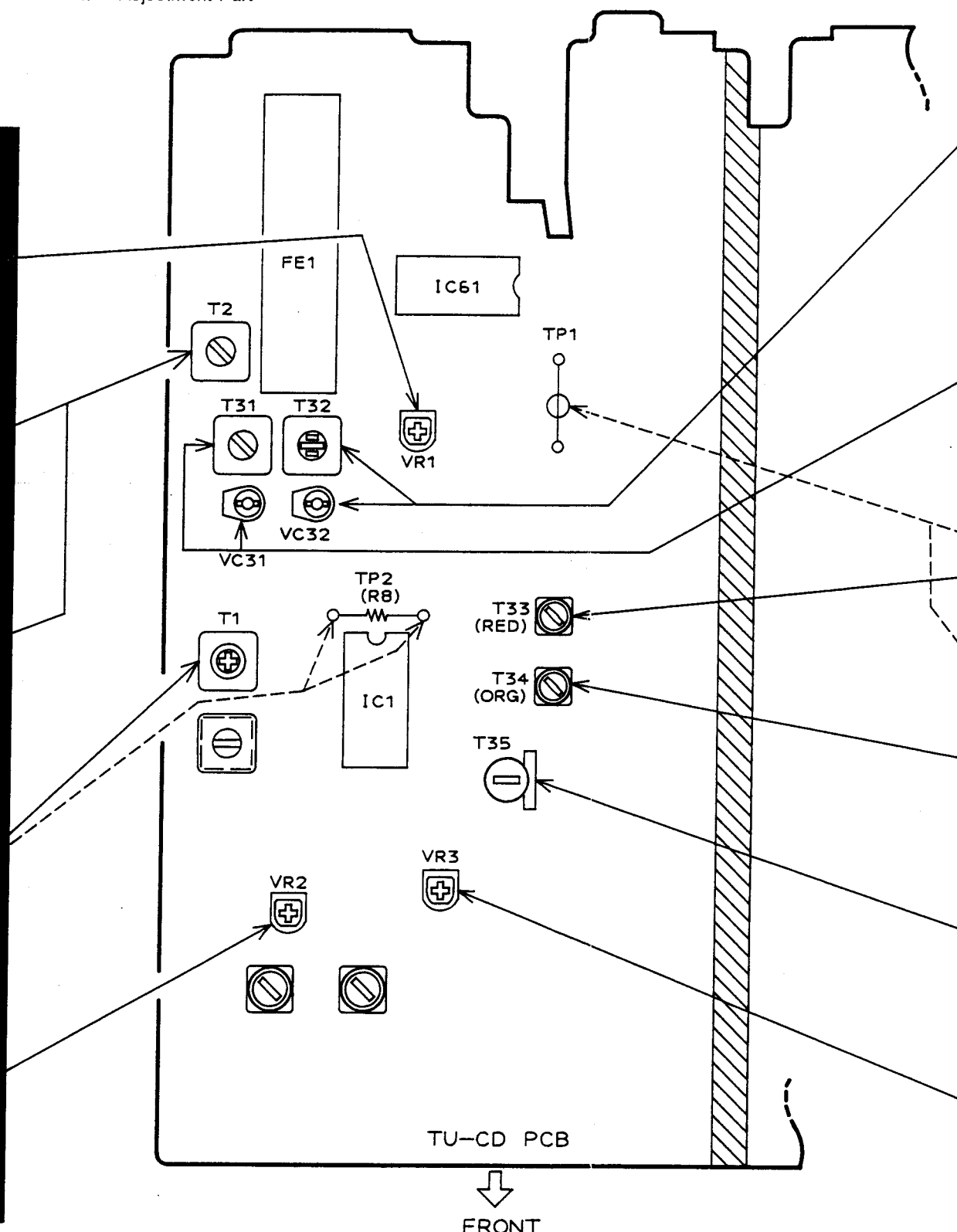
- 98.0 MHz, 60 dBμ (STEREO L or R channel only)
- 98.0 MHz (FM AUTO, preset 1 ch)
- T2
- * Connect the distortion meter to LINE OUT.
* Minimum Distortion (less than 1.0 %)
Note: Never turn the T2 more than ± 90°.

1 | CENTER VOLTAGE

- 98.0 MHz, 60 dBμ (MONO)
- 98.0 MHz (FM AUTO, preset 1 ch)
- T1
- * Connect the DC Digital Voltmeter to both ends of TP2(R8).
* 0 ± 50 mV

5 | STEREO SEPARATION

- 98.0 MHz, 60 dBμ (STEREO L or R channel only)
- 98.0 MHz (FM AUTO, preset 1 ch)
- VR2
- * Connect the milli-voltmeter to LINE OUT.
* Minimum output level for opposite channel.



AM

3 | LW SENSITIVITY

- 162 kHz, 74 dBμ (Low) & 279 kHz <297 kHz>, 74 dBμ (High)
- 162 kHz (preset 4 ch), 279kHz <297 kHz> (preset 5 ch)
- T32 (Low), VC32 (High)
- * Connect the distortion meter to LINE OUT.
* Minimum distortion & maximum output level.
* For best results, repeat Low and High adjustments several times.

4 | MW SENSITIVITY

- 603 kHz [600 kHz], 74 dBμ (Low) & 1,404 kHz [1,400 kHz], 74 dBμ (High)
- 603 kHz [600 kHz] (Low) (preset 8 ch [5 ch])
1,404 kHz [1,400 kHz] (High)(preset 7 ch [4 ch])
- T31 (Low) & VC31 (High)
- * Connect the distortion meter to LINE OUT.
* Minimum distortion & maximum output level.
* For best results, repeat Low and High adjustments several times.

2 | MW OSC

-
- 1,404 kHz [1,710 kHz] (preset 7 ch [11 ch])
- T33
- * Connect the Digital DC Voltmeter between TP1 (JW 91) and GND.
* 6.7 ± 0.05 V [9.5 ± 0.05 V]

1 | LW OSC (except [C])

-
- 279 kHz <351 kHz> (preset 10 ch)
- TP1 (JW 91) & T34
- * Connect the Digital DC Voltmeter between TP1 and GND.
* 5.4 ± 0.05V <8.2 ± 0.05V>

5 | IF LEVEL

- 198 kHz [1,000 kHz], 74 dBμ
- 198 kHz [1,000 kHz] (preset 6 ch)
- T35
- * Connect the milli-voltmeter to LINE OUT.
* Maximum output level.

6 | AM TUNING INDICATOR

- 999 kHz [1,000 kHz], 55 dBμ
- 999 kHz [1,000 kHz] (preset 9 ch [6 ch])
- Tuning indicator on the FLD, VR3
- * Tuning LED is lit.

V. SUPPLEMENTAL INFORMATION

TEST MODE FOR CD's OPERATION CHECK

There is no manual adjustment in the CD section on this model.

CD section adjustments are automatically carried out by the micro computer.

If the CD player section is defective and it is necessary to check the operation partially, "CD operation check" mode in the various TEST MODEs can be used while repairing.

To engage the "CD operation check" mode

While pressing and holding both the "MEMO" and "FREQUENCY ►" buttons, plug in the AC power cord to the AC outlet.

Note:

- During "CD operation check" mode, only the DISC 1 "▲" open/close button can be used for loading. Place a disc on TRAY 1 accordingly.
- Carry out testing by pressing the "DISC 1 ►" button once for each testing step.
- To disengage the test mode for "CD operation check", disconnect the AC power cord from the AC outlet.
- The testing step will return to "TEST-0" if the "▲" open/close button for disc 1 is pressed during steps "TEST-1" to "TEST-9".
- To continue checking after the step number has reached "TEST-9", open the tray once then repeat the procedure.
- The test result is displayed at the right side of the testing step number indication in the FL display. The result will be indicated as "OK" or "NG" (Not Good).

Testing step	Operation
TEST-0	Right after the "CD operation check" mode is engaged.
TEST-1	For checking the Laser beam projection.
TEST-2	For checking the memorization of the electrical tracking offset.
TEST-3	For checking the memorization of the electrical focus offset.
TEST-4	For checking the adjustment of the rough focus amp gain.
TEST-5	For checking the adjustment of the rough tracking amp gain.
TEST-6	For checking the adjustment of the tracking balance.
TEST-7	For checking the adjustment of the rough focus balance.
TEST-8	For checking the adjustment of the precise focus amp gain.
TEST-9	For checking the adjustment of the precise tracking amp gain.

VI. PARTS LIST

ATTENTION

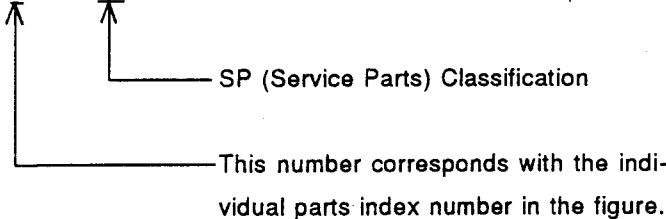
1. When placing an order for parts, be sure to list the Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List or Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.
 - a) Mechanism Block
 - b) PC Block

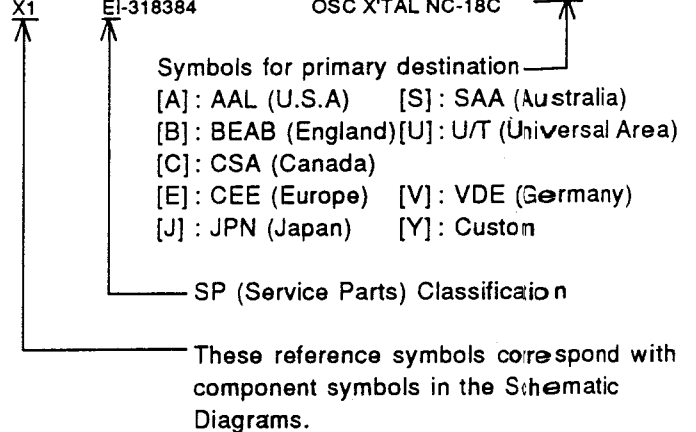
2. HEAD BASE BLOCK

Ref. No.	Part. No.	Description
1	BH-T2023A320A	HEAD BASE BLOCK
2	HP-H2206A010A	HEAD R/P PR4-8FU C
3	ZS-477876	PAN20x03STL CMT
4	ZS-536488	BID20x08STL CMT
5	ZG-402895	SP CS ANGLE ADJUST



2. MAIN PC BOARD

Ref. No.	Part. No.	Description
IC1	EI-324536	IC HD14049BP
IC2	EI-336801	IC MB8841-564M
C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
C1B	EC-350949	C MMY V 223M 250DC [J]
C1C	EC-338397	C MMY V 223M 125AC [C,A]
X1	EI-318384	OSC X'TAL NC-18C



The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

WARNING

Δ (※) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

Δ (※) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

1. RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref. No.	Part No.	Description
1	*BB-408757N5	MECHA TRAVERSE KSM-2101ABM
2	BM-733203M	MOTOR GEAR ASSY (MB)
3	BM-374198	MOTOR RF-370CA-15370
4	BM-408752M1	MOTOR RF-500TB-14415
5	*BC-394728J2	PICK UP KSS-210A
6	ED-418635J	D LED SEL6415E(C,D) GREEN
7	ED-307572	D SILICON H 1SS131
8	*ED-511907	D SILICON 1N4002 100/1.0A
9	ED-372893	D VARACTOR SVC321SPA A DBL
10	*ED-402202J	D ZENER H HZS11A1
11	*ED-418687J	D ZENER H HZS11A1L T26
12	*ED-396363J	D ZENER H HZS11B3
13	*ED-418676J	D ZENER H HZS11C2L T26
14	ED-402181J	D ZENER H HZS3A1
15	ED-397175J	D ZENER H HZS4A2
16	ED-367576	D ZENER H HZS5.6B2J
17	ED-402188J	D ZENER H HZS5A3
18	ED-389688J	D ZENER H HZS5B2
19	ED-397234J	D ZENER H HZS6A2
20	ED-408733J	D ZENER H HZS6A3L
21	ED-393759J	D ZENER H HZS6B1L
22	*ED-400171J	D ZENER H HZS6C2L
23	*ED-387783J	D ZENER H HZS6C3L
24	ED-425401J	D ZENER H HZS7A2L
25	EE-422289N	FRONT END FE340-A04 3 THROW [TC-590,TC-690[E]]
26	EE-415058J	FRONT END FE417-G04 [TC-690[V],TC-790]
27	EI-419336J	IC AN8389S
28	EI-419335J	IC AN8806SB
29	EI-419334J	IC BA6247
30	EI-387938J	IC HD74LS05P
31	EI-408673J	IC LA1851N
32	EI-416515J	IC LC7073M [TC-790]
33	EI-354951	IC LM7000N
34	EI-419340J	IC MN66271RA
35	EI-425470J	IC M38184M8-134FP RX1TUCD1
36	EI-400756J	IC NJM4558L-B
37	EI-408672J	IC S-80721AN
38	EI-415159J	IC SAA6579T [TC-790]
39	EI-405224J	IC ST24C02AB1/AAB
40	EI-332259	IC TC4052BP
41	EI-408674J	OSC CE CSB456F15 19.000KHZ
42	EI-382875J	OSC CE CST4.00MGW 4MHZ [TC-790]
43	EI-418663J	OSC CE CST6.30MGW-TF01 T05
44	EI-368825M	OSC X'TAL C-002RX 32.768KHZ
45	EI-381139N	OSC X'TAL HC-49/U 16934.400KHZ
46	EI-408814M	OSC X'TAL HC-49/U 7200KHZ
47	EI-416694M	OSC X'TAL HC-49/U-S 4.33200MHZ [TC-790]
48	EJ-394490J	SOCKET OPTICAL GP1F32T
49	EM-419263M	IND FL 12-BT-83GK CHARACTER
50	ES-733205M	SW LEAF
51	ES-408754M	SW LEAF LSA-1119H
52	ES-408755M	SW LEAF LSA-2127E
53	ES-408758M	SW LEVER SSCTL-S-R
54	ES-362883	SW TACT SKHLLM
55	ES-394818J	SW TACT SOR-123HS T05
56	ES-394427J	SW TACT SOR-133HS T05
57	ES-422074J	SW TACT SOR-143HS T05
58	ET-411995J	DETECTOR GP1U581X
59	ET-354370	TR DTA124ES
60	ET-354415	TR DTA144ES
61	ET-353897	TR DTC114ES
62	ET-354365	TR DTC114YS
63	ET-373485	TR DTC123JS
64	ET-375986	TR DTC124TS

Ref. No.	Part No.	Description
65	ET-373391	TR DTC143ZS
66	ET-354414	TR DTC144ES
67	ET-354094	TR DTC144WS
68	ET-349458	TR FET 2SK192A Y
69	ET-337759	TR FET 2SK246 GR
70	ET-353899	TR 2SA1317 S,T,U
71	*ET-394495J	TR 2SA934 Q,R
72	ET-418637J	TR 2SC3000 E,F T05
73	ET-397160J	TR 2SC3330 R,S,T,U,V
74	ET-394735J	TR 2SC3792 T05
75	*ET-408842J	TR 2SD2394 E,F
76	*ET-416697J	TR 2SD2396 J,K
77	EX-425682J	THERMISTOR NTH5D222KA
78	MA-733202M	TURNTABLE CHASSIS ASSY (MB)

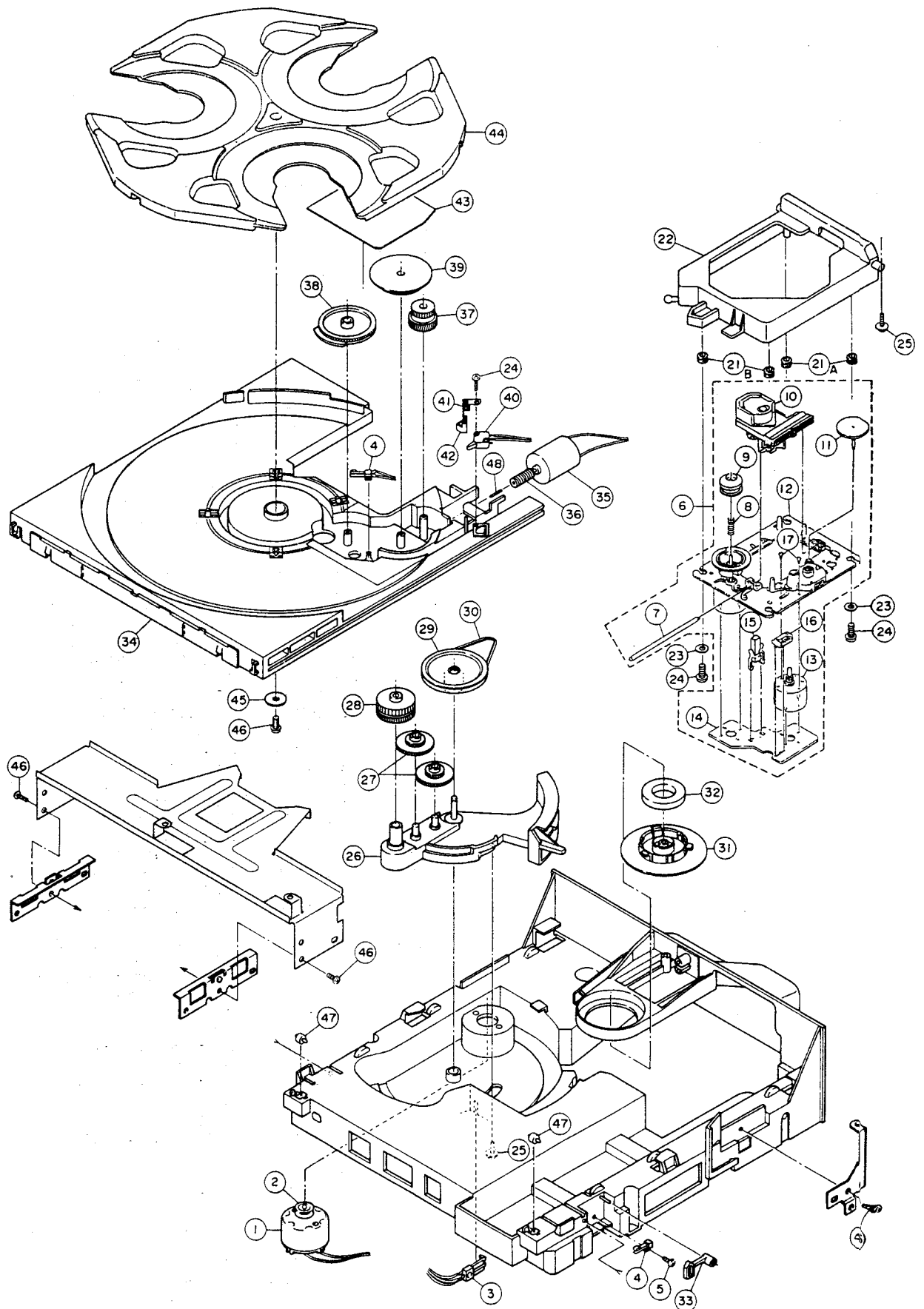
2. CD MECHANISM

Ref. No.	Part No.	Description
1	BM-408752M1	MOTOR RF-500TB-14415
2	MR-407764M	PULLEY (SG)
3	ES-408755M	SW LEAF LSA-2127E
4	ES-408754M	SW LEAF LSA-1119H
5	ZS-343082	PT BR26X08STL CMT
6	*BB-408757N5	MECHA TRAVERSE KSM-2101ABM
7	MS-733198M	SLIDE SHAFT
8	ZG-733199M	SP COMPRESSION
9	MZ-733200M	CENTER RING (LO)
10	*BO-394728J2	PICK UP KSS-210A
11	MZ-733201M	GEAR (A)
12	MA-733202M	TURNTABLE CHASSIS ASSY (MB)
13	BM-733203M	MOTOR GEAR ASSY (MB)
14	EA-733204M	MOTOR P.C BOARD (6P)
15	ES-733205M	SW LEAF
16	EJ-733206M	CONNECTOR 6P
17	ZS-477876	PAN20X03STL CMT
18X	EW-408749M	WIRE ASSY YMC-02 PU1 8P
19X	EW-408750M	WIRE ASSY YMC-02 PU2 8P
20X	EW-408751M	WIRE ASSY YMC-02 TRAVERSE 6P
21-A	MB-407746M1	INSULATOR (SG)
21-B	MB-411992M1	INSULATOR(B) (SG)
22	MZ-407745M2	HOLDER TRAVERSE (SG)
23	ZW-418561M	PW21X100X100STL BZN (SG)
24	ZS-418560M	PT BID20X15STL BZN (SG)
25	ZS-407886J	BT PAN30X08STL BZN C100
26	BL-409250M	SG HOLDER GEAR PART
27	MZ-407734J1	GEAR LOADING(B)
28	MZ-407733M	GEAR LOADING(A) (SG)
29	MZ-407763J1	PULLEY GEAR
30	MB-407767M	BELT LOADING (SG)
31	MZ-410907J1	CLAMPER(B)
32	MZ-413089J	MAGNET FM30X17X5.2 4P
33	ML-407765J	LEVER SW LOADING
34	SC-407748M3	TRAY LOADING (SG)
35	BM-374198	MOTOR RF-370CA-15370
36	MZ-407740J	WORM TABLE
37	MZ-407739M	GEAR WORM WHEEL TABLE (SG)
38	MZ-407737M	GEAR TABLE(A) (SG)
39	MZ-407738M	GEAR TABLE(B) (SG)
40	ES-408758M	SW LEVER SSCTL-S-R
41	ZG-407741M	SP PLATE HOLDER DISK (SG)
42	ML-407742M2	LEVER SW (SG)
43	SZ-407750M	COVER GEAR (SG)
44	MZ-411049M	HOLDER DISK(B) (SG)
45	ZW-396336M	PW30X150X080STL CMT (SG)
46	ZS-394414J	BT BID30X08STL BZN
47	MR-407755M	ROLLER (SG)
48	MS-411215J	SHAFT WORM
49	ZS-390395J	BT BID20X10STL BZN
50	ZW-413013J	PW125X195X025PSSL

NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

CD MECHANISM



PARTS LIST

3. P.C. BOARD BLOCK

Ref. No.	Part No.	Description
1-A	BA-A6015T040EML PC TU-CD BLK TC-590(U)/ML [U] [TC-590]	
1-B	BA-A6015T040AML PC TU-CD BLK TC-590(E)/ML [E,S] [TC-590]	
1-C	BA-A6015T040FML PC TU-CD BLK TC-690(E)/ML [E] [TC-690]	
1-D	BA-A6015T040BML PC TU-CD BLK TC-690(V)/ML [V] [TC-690]	
1-E	BA-A6015T040CML PC TU-CD BLK TC-790/ML [TC-790]	
2-A	BA-A6016T050BML PC#SYS890 BLK TC-590(U)/ML [U,S] [TC-590]	
2-B	BA-A6016T050AML PC#SYS890 BLK TC-590(E)/ML [E] [TC-590]	
2-C	BA-A6015T050AML PC#SYS690 BLK TC-690(E)/ML [E] [TC-690]	
2-D	BA-A6015T050BML PC#SYS690 BLK TC-690(V)/ML [V] [TC-690]	
2-E	BA-A6015T050CML PC#SYS690 BLK TC-790/ML [TC-790]	

PC (#) SYS BLK CONSISTS OF FOLLOWING P.C. BOARDS.

- SYSCON P.C. BOARD
- OPERATION P.C. BOARD (TC-590)
- OPERATION (A) P.C. BOARD (TC-690/790)
- OPERATION (B) P.C. BOARD (TC-690/790)
- DIGITAL P.C. BOARD

4. TU-CD P.C. BOARD

Ref. No.	Part No.	Description
C300	EC-324662	C EC V CUT AS1 222M 25.0DC
C510	EC-422050J	C DBL LAYER EECS5R5V 105 5.5DC
D1	ED-307572	D SILICON H 1SS131
D31	ED-372893	D VARACTOR SVC321SPA A DBL
D32	ED-372893	D VARACTOR SVC321SPA A DBL
D33	ED-307572	D SILICON H 1SS131
D34	ED-307572	D SILICON H 1SS131
D61	ED-367576	D ZENER H HZS5.6B2J
D62	ED-307572	D SILICON H 1SS131
D63	ED-307572	D SILICON H 1SS131
D64	ED-307572	D SILICON H 1SS131
D66	ED-389688J	D ZENER H HZS5B2
D290	ED-425401J	D ZENER H HZS7A2L
D291	ED-402188J	D ZENER H HZS5A3
D292	ED-397175J	D ZENER H HZS4A2
D293	ED-402181J	D ZENER H HZS3A1
D294	ED-408733J	D ZENER H HZS6A3L
D300	* ED-511907	D SILICON 1N4002 100/1.0A
D301	* ED-511907	D SILICON 1N4002 100/1.0A
D302	* ED-511907	D SILICON 1N4002 100/1.0A
D303	* ED-511907	D SILICON 1N4002 100/1.0A
D304	* ED-418676J	D ZENER H HZS11C2L T26
D305	* ED-418687J	D ZENER H HZS11A1L T26
D306	* ED-387783J	D ZENER H HZS6C3L
D307	ED-393759J	D ZENER H HZS6B1L
D308	* ED-387783J	D ZENER H HZS6C3L
D309	ED-307572	D SILICON H 1SS131
D310	ED-307572	D SILICON H 1SS131
D311	* ED-396363J	D ZENER H HZS11B3
D312	ED-397234J	D ZENER H HZS6A2
D313	ED-307572	D SILICON H 1SS131
D314	* ED-402202J	D ZENER H HZS11A1
D315	* ED-400171J	D ZENER H HZS6C2L
D316	* ED-511907	D SILICON 1N4002 100/1.0A
D317	* ED-511907	D SILICON 1N4002 100/1.0A
D318	* ED-511907	D SILICON 1N4002 100/1.0A
D319	* ED-511907	D SILICON 1N4002 100/1.0A
D320	* ED-511907	D SILICON 1N4002 100/1.0A
D500	* ED-511907	D SILICON 1N4002 100/1.0A
D501	ED-307572	D SILICON H 1SS131
D502	ED-307572	D SILICON H 1SS131
D503	ED-307572	D SILICON H 1SS131
D504	ED-307572	D SILICON H 1SS131
D505	ED-307572	D SILICON H 1SS131
D506	ED-307572	D SILICON H 1SS131
D507	ED-307572	D SILICON H 1SS131
D508	ED-307572	D SILICON H 1SS131
D509	ED-307572	D SILICON H 1SS131
FE1-A	EE-422289N	FRONT END FE340-A04 3 THROW [TC-590,TC-690[E]]
FE1-B	EE-415058J	FRONT END FE417-G04 [TC-690[V],TC-790]
FL2-A	EH-394759J	FILTER CE SFE10.7MS2GK-A [TC-590,TC-690[E]]
FL2-B	EH-338338	FILTER CE SFE10.7MS3GK-A [TC-690[V],TC-790]
FL3-A	EH-394759J	FILTER CE SFE10.7MS2GK-A [TC-590,TC-690[E]]
FL3-B	EH-338338	FILTER CE SFE10.7MS3GK-A [TC-690[V],TC-790]
FL4	EH-405199J	FILTER LC LP K7-J1YD-0170 [TC-690[V],TC-790]
FL51	EH-408815J	FILTER LC LP 42B-5226-03
FL52	EH-408815J	FILTER LC LP 42B-5226-03
IC1	EI-408673J	IC LA1851N
IC61	EI-354951	IC LM7000N
IC93	EI-415159J	IC SAA6579T [TC-790]
IC94	EI-416515J	IC LC7073M [TC-790]
IC200	EI-419335J	IC AN8806SB
IC230	EI-419340J	IC MN66271 RA
IC250	EI-419336J	IC AN8389S
IC270	EI-400756J	IC NJM4558L-B
IC290	EI-419334J	IC BA6247

Ref. No.	Part No.	Description
IC400	EI-332259	ICTC4052BP
IC401	EI-400756J	IC NJM4558L-B
IC402	EI-400756J	IC NJM4558L-B
IC500	EI-408672J	IC S-80721AN
IC501	EI-387938J	IC HD74LS05P
J230	EJ-394490J	SOCKET OPTICAL GP1F32T
J300	EW-408676J	WIRE ASSY HFG07157601 L580 15P
L1	EO-357539	COIL FIX 1 EL0606RA T05 222K
R8	ER-422082N	R CB H S10FLR 25FJ 1/4W 223J
R290	ER-382474J	R OMF H S10 FS 1/2W 1R2J
R308	* ER-418750J	R OMF V T05FS ERG1SE 1W 330J
R309	* ER-418751J	R OMF V T05 FS ERX1SE 1W R62J
T1	EO-422336N	COIL DET1 292TEAS3741Z 10.7MHZ
T2	EO-416498J	COIL IFT K7-H5 10.7MHZ
T31	EO-416501M	COIL VARI 2 MRHNF-45669A
T32	EO-416502M	COIL VARI 2 MRZNF-45670A
T33	EO-363279	COIL OSC 2 A7NRS-9857X 150.0UH
T34	EO-352089	COIL OSC 2 7BRS-9098X 580.0UH
T35	EO-408687J	COIL IFT BCFAZ-024
TH250	EX-425682J	THERMISTOR NTH5D222KA
TM1	EJ-359031	TERMINAL LEVER YKD31-0215 P 2P
TR1	ET-418637J	TR 2SC3000 E,F T05
TR2	ET-397160J	TR 2SC3330 R,S,T,U,V
TR32	ET-394735J	TR 2SC3792 T05
TR33	ET-353897	TR DTC114ES
TR35	ET-349458	TR FET 2SK192A Y
TR61	ET-337759	TR FET 2SK246 GR
TR62	ET-397160J	TR 2SC3330 R,S,T,U,V
TR63	ET-354094	TR DTC144WS
TR64	ET-354094	TR DTC144WS
TR65	ET-354094	TR DTC144WS
TR66	ET-353899	TR 2SA1317 S,T,U
TR67	ET-353899	TR 2SA1317 S,T,U
TR200	ET-353899	TR 2SA1317 S,T,U
TR250	ET-375986	TR DTC124TS
TR251	ET-375986	TR DTC124TS
TR290	ET-354365	TR DTC114YS
TR291	ET-354365	TR DTC114YS
TR292	ET-354365	TR DTC114YS
TR293	ET-354365	TR DTC114YS
TR301	* ET-416697J	TR 2SD2396 J,K
TR302	ET-373391	TR DTC143ZS
TR303	* ET-408842J	TR 2SD2394 E,F
TR304	ET-397160J	TR 2SC3330 R,S,T,U,V
TR305	* ET-408842J	TR 2SD2394 E,F
TR306	ET-354414	TR DTC144ES
TR307	* ET-394495J	TR 2SA934 Q,R
TR308	* ET-408842J	TR 2SD2394 E,F
TR309	ET-354414	TR DTC144ES
TR310	* ET-408842J	TR 2SD2394 E,F
TR311	* ET-353899	TR 2SA1317 S,T,U
TR312	ET-354414	TR DTC144ES
TR400	ET-397160J	TR 2SC3330 R,S,T,U,V
TR401	ET-397160J	TR 2SC3330 R,S,T,U,V
TR402	ET-354415	TR DTA144ES
TR403	ET-354094	TR DTC144WS
TR500	ET-353897	TR DTC114ES
TR501	ET-354370	TR DTA124ES
TS500	ES-362883	SW TACT SKHMLM
VC31	EC-337603	C S-FIX H VCT51F 5.5-30
VC32	EC-356284	C S-FIX H VCT51G 7.5- 50
VR1	EV-389479J	R S-FIX H T05EVNDXAA03 0.1W223
VR2	EV-389476J	R S-FIX H T05EVNDXAA03 0.1W103
VR3	EV-389489J	R S-FIX H T05EVNDXAA03 0.1W472
X1	EI-408674J	OSC CE CSB456F15 19.000KHZ
X61	EI-408814M	OSC X'TAL HC-49/U 7200KHZ
X92	EI-416694M	OSC X'TAL HC-49/U-S 4.33200MHZ [TC-790]
X93	EI-382875J	OSC CE CST4.00MGW 4MHZ [TC-790]
X230	EI-381139N	OSC X'TAL HC-49/U 16934.400KHZ

5. SYSCON P.C. BOARD (TC-590)

Ref. No.	Part No.	Description
D1	ED-418635J	D LED SEL6415E(C,D) GREEN
D2	ED-418635J	D LED SEL6415E(C,D) GREEN
D3	ED-418635J	D LED SEL6415E(C,D) GREEN
IB1	EH-422066J	COMP R RGL6T 473J
IB2	EH-422064J	COMP R RGL6T 333J
IB3	EH-408821J	COMP R RGL12T 473J
IB4	EH-408821J	COMP R RGL12T 473J
IC1	EI-425470J	IC M38184M8-134FP RX1TUCD1
IC2	EI-405224J	IC ST24C02AB1/AAB
IN1	EM-419263M	IND FL 12-BT-83GK CHARACTER
PH1	ET-411995J	DETECTOR GP1U581X
R1	ER-365753	R MF H RK14 1/4W 226J
TR1	ET-373485	TR DTC123JS
TR2	ET-373485	TR DTC123JS
TR3	ET-373485	TR DTC123JS
TS1	ES-394427J	SW TACT SOR-133HS T05
TS2	ES-394427J	SW TACT SOR-133HS T05
TS3	ES-394427J	SW TACT SOR-133HS T05
TS4	ES-394427J	SW TACT SOR-133HS T05
TS5	ES-394427J	SW TACT SOR-133HS T05
TS6	ES-394427J	SW TACT SOR-133HS T05
TS7	ES-394427J	SW TACT SOR-133HS T05
TS8	ES-394427J	SW TACT SOR-133HS T05
TS9	ES-394427J	SW TACT SOR-133HS T05
TS10	ES-394427J	SW TACT SOR-133HS T05
TS11	ES-422074J	SW TACT SOR-143HS T05
TS12	ES-422074J	SW TACT SOR-143HS T05
TS13	ES-394427J	SW TACT SOR-133HS T05
TS14	ES-394427J	SW TACT SOR-133HS T05
TS15	ES-394427J	SW TACT SOR-133HS T05
TS16	ES-394427J	SW TACT SOR-133HS T05
TS17	ES-394427J	SW TACT SOR-133HS T05
X1	EI-418663J	OSC CE CST6.30MGW-TF01 T05
X2	EI-368825M	OSC X'TAL C-002RX 32.768KHZ

6. SYSCON P.C. BOARD (TC-690/790)

Ref. No.	Part No.	Description
D100	ED-418635J	D LED SEL6415E(C,D) GREEN
D101	ED-418635J	D LED SEL6415E(C,D) GREEN
D102	ED-418635J	D LED SEL6415E(C,D) GREEN
IB1	EH-422066J	COMP R RGL6T 473J
IB2	EH-422064J	COMP R RGL6T 333J
IB3	EH-408821J	COMP R RGL12T 473J
IB4	EH-408821J	COMP R RGL12T 473J
IC1	EI-425470J	IC M38184M8-134FP RX1TUCD1
IC2	EI-405224J	IC ST24C02AB1/AAB
IN1	EM-419263M	IND FL 12-BT-83GK CHARACTER
PH1	ET-411995J	DETECTOR GP1U581X
R1	ER-365753	R MF H RK14 1/4W 226J
TR1	ET-373485	TR DTC123JS
TR2	ET-373485	TR DTC123JS
TR3	ET-373485	TR DTC123JS
TS1	ES-394427J	SW TACT SOR-133HS T05
TS2	ES-394427J	SW TACT SOR-133HS T05
TS3	ES-394818J	SW TACT SOR-123HS T05
TS4	ES-394818J	SW TACT SOR-123HS T05
TS5	ES-394818J	SW TACT SOR-123HS T05
TS6	ES-422074J	SW TACT SOR-143HS T05
TS7	ES-422074J	SW TACT SOR-143HS T05
TS8	ES-394427J	SW TACT SOR-133HS T05
TS9	ES-422074J	SW TACT SOR-143HS T05
TS10	ES-422074J	SW TACT SOR-143HS T05
TS11	ES-394427J	SW TACT SOR-133HS T05
TS12	ES-394818J	SW TACT SOR-123HS T05
TS13	ES-394818J	SW TACT SOR-123HS T05
TS14	ES-394427J	SW TACT SOR-133HS T05
TS15	ES-394818J	SW TACT SOR-123HS T05
X1	EI-418663J	OSC CE CST6.30MGW-TF01 T05
X2	EI-368825M	OSC X'TAL C-002RX 32.768KHZ

7. OPERATION P.C. BOARD (TC-590)

Ref. No.	Part No.	Description
TS100	ES-422074J	SW TACT SOR-143HS T05
TS101	ES-422074J	SW TACT SOR-143HS T05
TS102	ES-422074J	SW TACT SOR-143HS T05
TS103	ES-422074J	SW TACT SOR-143HS T05
TS107	ES-422074J	SW TACT SOR-143HS T05
TS108	ES-422074J	SW TACT SOR-143HS T05
TS109	ES-422074J	SW TACT SOR-143HS T05
TS110	ES-422074J	SW TACT SOR-143HS T05

8. OPERATION (A) P.C. BOARD(TC-690/790)

Ref. No.	Part No.	Description
TS100	ES-394818J	SW TACT SOR-123HS T05
TS101	ES-394818J	SW TACT SOR-123HS T05
TS102	ES-394818J	SW TACT SOR-123HS T05

9. OPERATION (B) P.C. BOARD(TC-690/790)

Ref. No.	Part No.	Description
TS200	ES-394818J	SW TACT SOR-123HS T05
TS201	ES-394818J	SW TACT SOR-123HS T05
TS202	ES-394818J	SW TACT SOR-123HS T05
TS203	ES-394818J	SW TACT SOR-123HS T05
TS204	ES-394818J	SW TACT SOR-123HS T05
TS205	ES-394818J	SW TACT SOR-123HS T05
TS206	ES-394818J	SW TACT SOR-123HS T05

10. DIGITAL OUT P.C. BOARD

Ref. No.	Part No.	Description
J200	EJ-394490J	SOCKET OPTICAL GP1F32T [TC-590]
J300	EJ-394490J	SOCKET OPTICAL GP1F32T [TC-690/790]

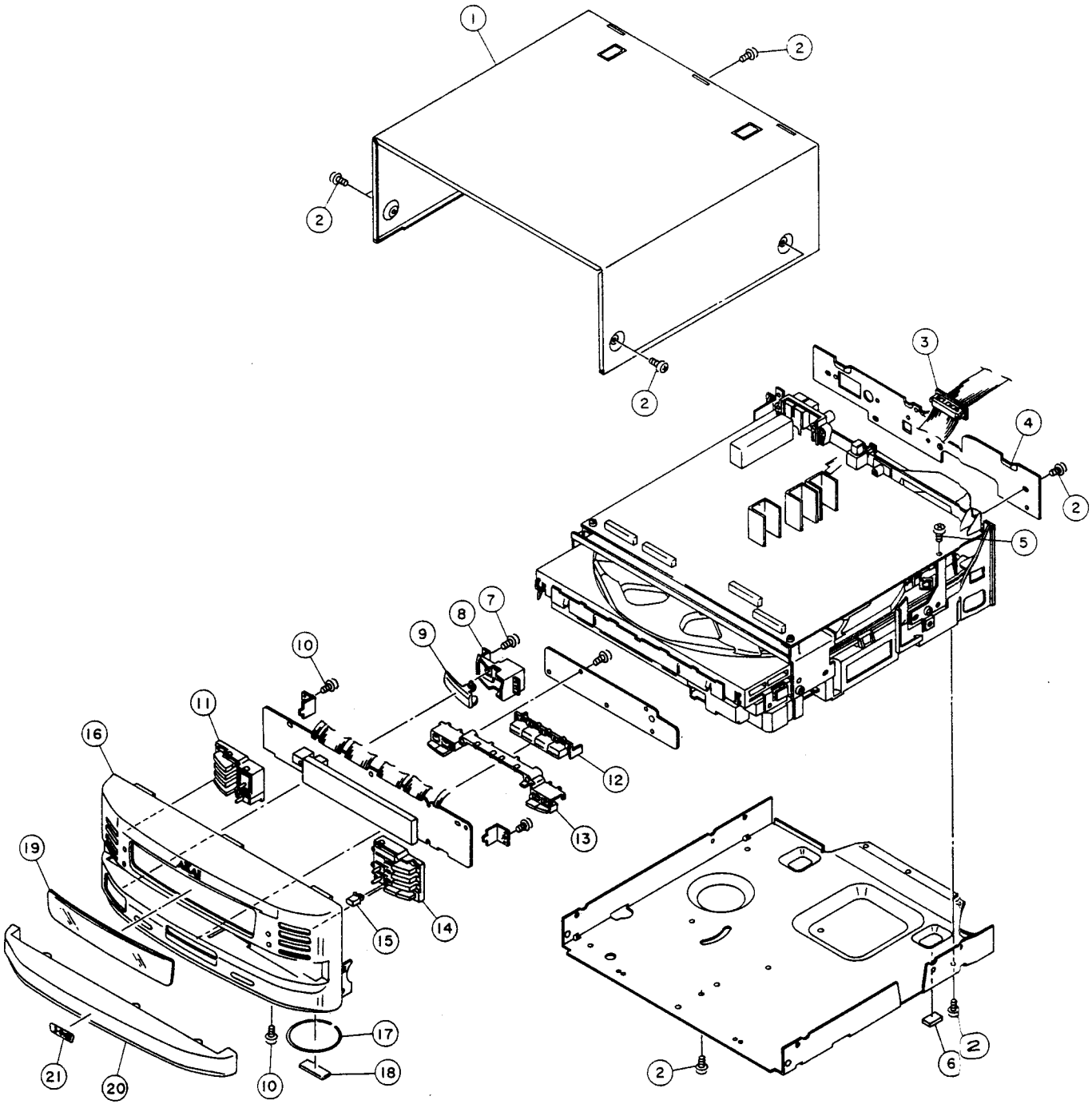
11. FINAL ASSEMBLY BLOCK (TC-590)

Ref. No.	Part No.	Description
1	SP-420669M	COVER UPPER (SG)
2	ZS-394412J	BT BID30X08STL BZN PROJECTION
3	SZ-407909M	WIRE HOLDER (SG)
4	SP-420670M	PANEL REAR (SG)
5	ZS-331181	BT BID30X08STL NI3
6	SA-407840M	CUSHION FOOT REAR (SG)
7	ZS-393515J	BT BID30X10STL BZN
8	SZ-419958M	HOLDER DOOR (SG)
9	SP-419945M	DOOR (SG)
10	ZS-394414J	BT BID30X08STL BZN
11	SB-420667M	BUTTON TIMER(2) (SG)
12	SB-420649M	BUTTON TUNING(B) (SG)
13	SB-419919M	BUTTON FUNCTION TC(2) (SG)
14	SB-420665M	BUTTON DISC (SG)
15	SE-420666M	LENS DISC (SG)
16	SP-421783M	PANEL FRONT TC-590 (SG)
17	SZ-419923M	RING FOOT(1) (SG)
18	SA-394136M	CUSHION FOOT (SG)
19	SE-420668M	WINDOW FLD-TC(2) (SG)
20	SP-419943M	COVER TRAY (SG)
21	SM-419941J	NAME PLATE 3D(2)

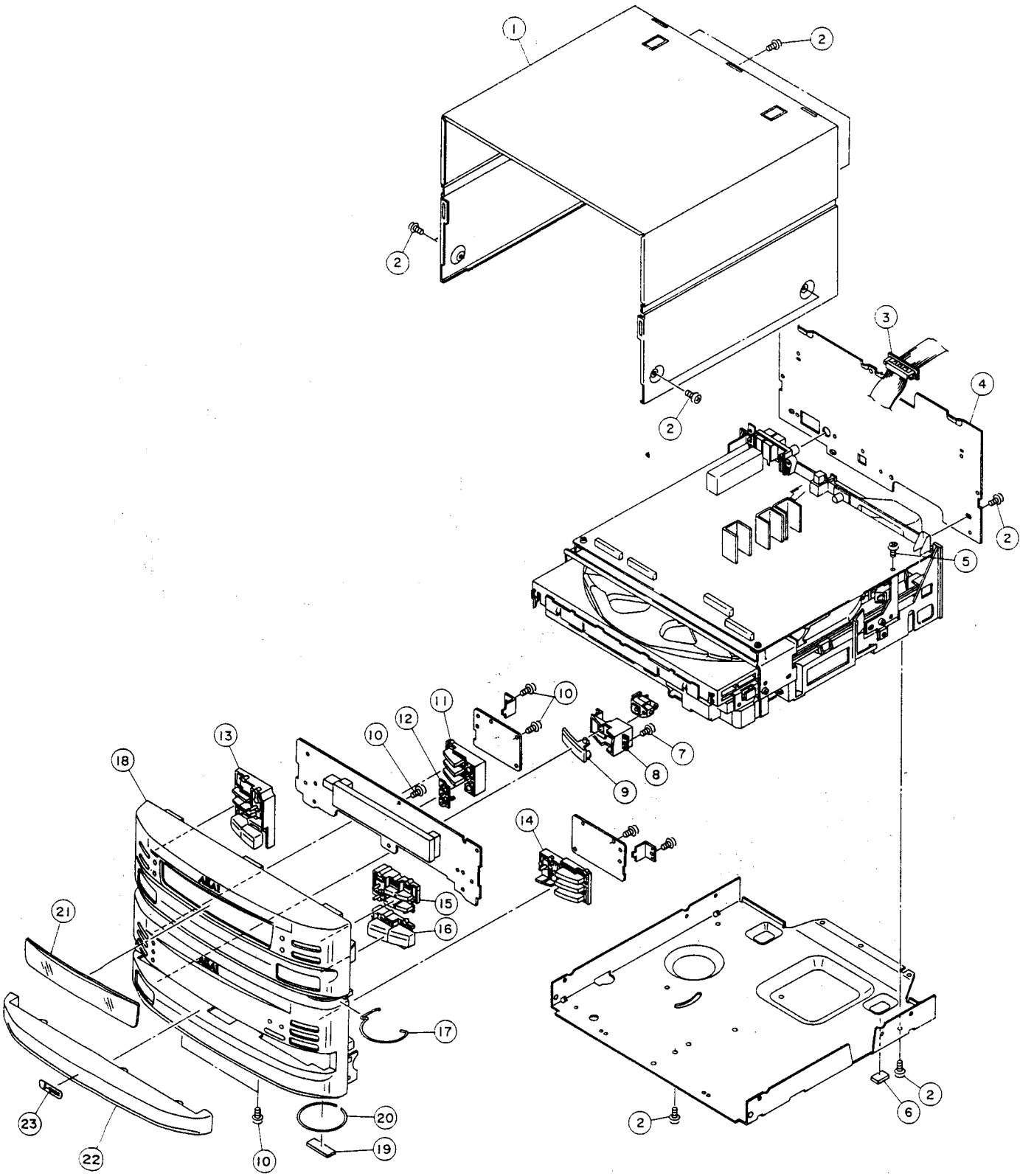
NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

FINAL ASSEMBLY BLOCK (TC-590)



FINAL ASSEMBLY BLOCK (TC-690/790)



12. FINAL ASSEMBLY BLOCK (TC-690/790)

Ref. No.	Part No.	Description
1	SP-419960M	COVER UPPER TC(1) (SG)
2	ZS-394412J	BT BID30X08STL BZN PROJECTION
3	SZ-407909M	WIRE HOLDER (SG)
4-A	SP-419956M	PANEL REAR TC-690(E,V) (SG)
4-B	SP-419955M	PANEL REAR TC-790(V) (SG)
5	ZS-331181	BT BID30X08STL NI3
6	SA-407840M	CUSHION FOOT REAR (SG)
7	ZS-393515J	BT BID30X10STL BZN
8	SZ-419958M	HOLDER DOOR (SG)
9	SP-419945M	DOOR (SG)
10	ZS-394414J	BT BID30X08STL BZN
11	SB-419953M	BUTTON OPEN (SG)
12	SE-419946M	LENS DISC (SG)
13	SB-419948M	BUTTON TIMER(1) (SG)
14	SB-419954M	BUTTON PLAY (SG)
15	SB-419952M	BUTTON TUNER (SG)
16	SB-419950M	BUTTON CHANNEL(1) (SG)
17	SZ-419924M	RING FOOT(2) (SG)
18-A	SP-419942M	PANEL FRONT TC-690 (SG)
18-B	SP-421776M	PANEL FRONT TC-790 (SG)
19	SA-394136M	CUSHION FOOT (SG)
20	SZ-419923M	RING FOOT(1) (SG)
21	SE-419944M	WINDOW FLD TC(1) (SG)
22	SP-419943M	COVER TRAY (SG)
23	SM-419941J	NAME PLATE 3D(2)

NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

13. ACCESSARY

Ref. No.	Part No.	Description
1	AX-415039M	ANT LOOP WAU0990-0172M
2	EE-396107M	ANT WIRE FM A3063
3	EJ-394417J	SOCKET COAX HXC 0526-01-010

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Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.
AX415039M	13-1	ED511907	4-D318	ER422082N	4-R8	ET354365	4-TR292
BAA6015T040A	3-1-B	ED511907	4-D319	ES362883	4-TS500	ET354365	4-TR293
BAA6015T040B	3-1-D	ED511907	4-D320	ES394427J	5-TS1	ET354370	4-TR501
BAA6015T040C	3-1-E	ED511907	4-D500	ES394427J	5-TS2	ET354414	4-TR306
BAA6015T040E	3-1-A	EE396107M	13-2	ES394427J	5-TS3	ET354414	4-TR309
BAA6015T040F	3-1-C	EE415058J	4-FE1-B	ES394427J	5-TS4	ET354414	4-TR312
BAA6015T050A	3-2-C	EE422289N	4-FE1-A	ES394427J	5-TS5	ET354415	4-TR402
BAA6015T050B	3-2-D	EH338338	4-FL2-B	ES394427J	5-TS6	ET373391	4-TR302
BAA6015T050C	3-2-E	EH338338	4-FL3-B	ES394427J	5-TS7	ET373485	5-TR1
BAA6016T050A	3-2-B	EH394759J	4-FL2-A	ES394427J	5-TS8	ET373485	5-TR2
BAA6016T050B	3-2-A	EH394759J	4-FL3-A	ES394427J	5-TS9	ET373485	5-TR3
BB408757N5	2-6	EH405199J	4-FL4	ES394427J	5-TS10	ET373485	6-TR1
BL409250M	2-26	EH408815J	4-FL51	ES394427J	5-TS13	ET373485	6-TR2
BM374198	2-35	EH408815J	4-FL52	ES394427J	5-TS14	ET373485	6-TR3
BM408752M1	2-1	EH408821J	5-IB3	ES394427J	5-TS15	ET375986	4-TR250
BM733203M	2-13	EH408821J	5-IB4	ES394427J	5-TS16	ET375986	4-TR251
BO394728J2	2-10	EH408821J	6-IB3	ES394427J	5-TS17	ET394495J	4-TR307
EA733204M	2-14	EH408821J	6-IB4	ES394427J	6-TS1	ET394735J	4-TR32
EC324662	4-C300	EH422064J	5-IB2	ES394427J	6-TS2	ET397160J	4-TR2
EC337603	4-VC31	EH422064J	6-IB2	ES394427J	6-TS8	ET397160J	4-TR62
EC356284	4-VC32	EH422066J	5-IB1	ES394427J	6-TS11	ET397160J	4-TR304
EC422050J	4-C510	EH422066J	6-IB1	ES394427J	6-TS14	ET397160J	4-TR400
ED307572	4-D1	EI332259	4-IC400	ES394818J	6-TS3	ET397160J	4-TR401
ED307572	4-D33	EI354951	4-IC61	ES394818J	6-TS4	ET408842J	4-TR303
ED307572	4-D34	EI368825M	5-X2	ES394818J	6-TS5	ET408842J	4-TR305
ED307572	4-D62	EI368825M	6-X2	ES394818J	6-TS12	ET408842J	4-TR308
ED307572	4-D63	EI381139N	4-X230	ES394818J	6-TS13	ET408842J	4-TR310
ED307572	4-D64	EI382875J	4-X93	ES394818J	6-TS15	ET411995J	5-PH1
ED307572	4-D309	EI387938J	4-IC501	ES394818J	8-TS100	ET411995J	6-PH1
ED307572	4-D310	EI400756J	4-IC270	ES394818J	8-TS101	ET416697J	4-TR301
ED307572	4-D313	EI400756J	4-IC401	ES394818J	8-TS102	ET418637J	4-TR1
ED307572	4-D501	EI400756J	4-IC402	ES394818J	9-TS200	EV389476J	4-VR2
ED307572	4-D502	EI405224J	5-IC2	ES394818J	9-TS201	EV389479J	4-VR1
ED307572	4-D503	EI405224J	6-IC2	ES394818J	9-TS202	EV389489J	4-VR3
ED307572	4-D504	EI408672J	4-IC500	ES394818J	9-TS203	EW408676J	4-J300
ED307572	4-D505	EI408673J	4-IC1	ES394818J	9-TS204	EW408749M	2-18X
ED307572	4-D506	EI408674J	4-X1	ES394818J	9-TS205	EW408750M	2-19X
ED307572	4-D507	EI408814M	4-X61	ES394818J	9-TS206	EW408751M	2-20X
ED307572	4-D508	EI415159J	4-IC93	ES408754M	2-4	EX425682J	4-TH250
ED307572	4-D509	EI416515J	4-IC94	ES408755M	2-3	MA733202M	2-12
ED367576	4-D61	EI416694M	4-X92	ES408758M	2-40	MB407746M1	2-21-A
ED372893	4-D31	EI418663J	5-X1	ES422074J	5-TS11	MB407767M	2-30
ED372893	4-D32	EI418663J	6-X1	ES422074J	5-TS12	MB411992M1	2-21-B
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ED402188J	4-D291	EJ394490J	10-J200	ES422074J	7-TS108	MZ407738M	2-39
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ED408733J	4-D294	EJ733206M	2-16	ES422074J	7-TS110	MZ407740J	2-36
ED418635J	5-D1	EM419263M	5-IN1	ES733205M	2-15	MZ407745M2	2-22
ED418635J	5-D2	EM419263M	6-IN1	ET337759	4-TR61	MZ407763J1	2-29
ED418635J	5-D3	EO352089	4-T34	ET349458	4-TR35	MZ410907J1	2-31
ED418635J	6-D100	EO357539	4-L1	ET353897	4-TR33	MZ411049M	2-44
ED418635J	6-D101	EO363279	4-T33	ET353897	4-TR500	MZ413089J	2-32
ED418635J	6-D102	EO408687J	4-T35	ET353899	4-TR66	MZ733200M	2-9
ED418676J	4-D304	EO416498J	4-T2	ET353899	4-TR67	MZ733201M	2-11
ED418687J	4-D305	EO416501M	4-T31	ET353899	4-TR200	SA394136M	11-18
ED425401J	4-D290	EO416502M	4-T32	ET353899	4-TR311	SA394136M	12-19
ED511907	4-D300	EO422336N	4-T1	ET354094	4-TR63	SA407840M	11-6
ED511907	4-D301	ER365753	5-R1	ET354094	4-TR64	SA407840M	12-6
ED511907	4-D302	ER365753	6-R1	ET354094	4-TR65	SB419919M	11-13
ED511907	4-D303	ER382474J	4-R290	ET354094	4-TR403	SB419948M	12-13
ED511907	4-D316	ER418750J	4-R308	ET354365	4-TR290	SB419950M	12-16
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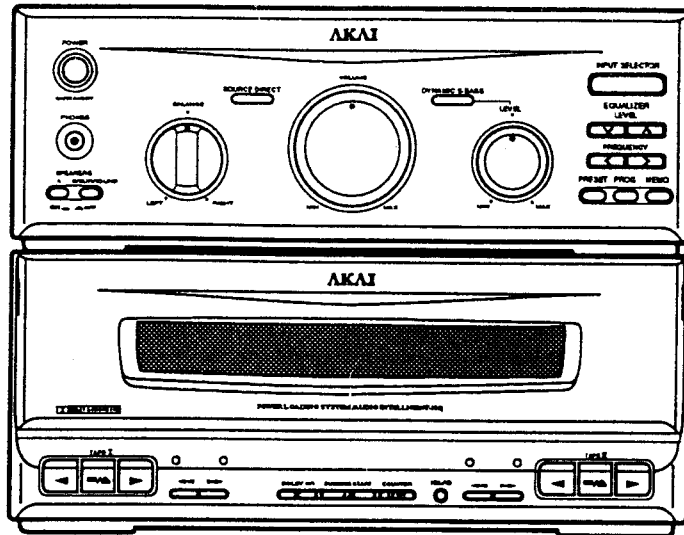
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SB420667M	11-11						
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SE419944M	12-21						
SE419946M	12-12						
SE420666M	11-15						
SE420668M	11-19						
SM419941J	11-21						
SM419941J	12-23						
SP419942M	12-18-A						
SP419943M	11-20						
SP419943M	12-22						
SP419945M	11-9						
SP419945M	12-9						
SP419955M	12-4-B						
SP419956M	12-4-A						
SP419960M	12-1						
SP420669M	11-1						
SP420670M	11-4						
SP421776M	12-18-B						
SP421783M	11-16						
SZ407750M	2-43						
SZ407909M	11-3						
SZ407909M	12-3						
SZ419923M	11-17						
SZ419923M	12-20						
SZ419924M	12-17						
SZ419958M	11-8						
SZ419958M	12-8						
ZG407741M	2-41						
ZG733199M	2-8						
ZS331181	11-5						
ZS331181	12-5						
ZS343082	2-5						
ZS390395J	2-49						
ZS393515J	11-7						
ZS393515J	12-7						
ZS394412J	11-2						
ZS394412J	12-2						
ZS394414J	2-46						
ZS394414J	11-10						
ZS394414J	12-10						
ZS407886J	2-25						
ZS418560M	2-24						
ZS477876	2-17						
ZW396336M	2-45						
ZW413013J	2-50						
ZW418561M	2-23						

ABBREVIATIONS (COMPACT DISC)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
A-D	Analog to Digital (Convertor)	Mb	Mega Bits
ADC	Analog to Digital (Convertor)	MDA	Mortor Drive Amplifier
BCD	Binary Code Decimal	MFM	Modified Frequency Modulation
BPI	Bits per Inch	MM	Mono-stable Multivibrator
CD	Compact Disc	M ² FM	Modified Modified Frequency Modulation
CIRC	Cross Interleaving & Reed Solomon Coding	MOD2	Modulo 2 (Addition)
CLV	Constant Linear Velocity	MP	Microprocessor
CP	Clock Pulses	MSB	Most Significant Bit
CRCC	Cyclic Redundancy Check Codes	NA	Numerical Aperture
D Level	Decision Level	NRZ	Non Return to Zero
D-A	Digital to Analog (Convertor)	NRZ-1	Non Return to Zero Inverted
DAC	Digital to Analog (Convertor)	P	Parity Data
DAD	Digital Audio Disc	PAM	Pulse Amplitude Modulation
DEM	Dynamic Element Matching	PCM	Pulse Code Modulation
DPD	Differential Phase Detection	PD	Phase Detector
DSV	Digital Sum Value	PE	Phase Encode
EFM	Eight to fourteen Modulation	PLL	Phase Locked Loop
EX-OR	EXclusive OR	PNM	Pulse Number Modulation
FCI	Flux Changes per Inch	PPM	Pulse Phase Modulation
FIR	Finite Impulse Response	PWM	Pulse Width Modulation
FP	Front Pulse	Q	Parity Data
FPG	Front Pulse Gate	Q, R ₁ , R ₂ , etc.	Data for Right Channel
f	Frequency of Sampling	RAM	Random Access Memory
GF	Galois Field	RPG	Rear Pulse Gate
H & V (Parity)	Horizontal & Vertical	SCOOP	Self Coupled Optical Pick-up
IIR	Infinite Impulse Response	S & H	Sample & Hold
kb	Kilo Bits	S/N	Signal to Noise Ratio
L, L ₁ , L ₂ , etc.	Data for Left Channel	SSG	Standard Signal Generator
LPF	Low Pass Filter	SYSCON	SYStem CONTROL
LSB	Least Significant Bit		

ABBREVIATIONS (TUNER)


ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
AFC	Auto Frequency Control	MEMO	MEMOry
AGC	Auto Gain Control	MI-COM	Micro-COMputer
ALC	Auto Level Control	MIN	MINimum
AM	Amplitude Modulation	MIX	MIXing
AMP	AMPlifier	MPX	Multi pleX
ANT	ANTenna	MW	Medium Wave (frequency)
BATT	BATTery	NC	No Connection
BLK	BLock	NFB	Negative Feed Back
BUFF	BUFFer	OSC	OSCillator
COMP	COMPalator	PCB	Printed Circuit Board
DET	DETECT (DETECTor)	PLL	Phase Locked Loop
FLD	FLUorescent Display	Q.D	Quadrature Detector
FM	Frequency Modulation	Rch	Right channel
FREQ	FREQuency	REF	REFerence
GND	GrouND	REG	REGulator
H	Hight	RF	Radio Frequency
HPF	Hight Pass Filter	SEG	SEGment
IF	Intermediate Frequency	SELE	SELEctor
IHF	Institut of High Fidelity	SENS	SENSitivity
IND	INDicator	SIG	SIGnal
I/O	In/Out	S/N	Signal to Noise Ratio
JW	Jumper Wire	SSG	Standard Signal Generator
L	Low	STD	STanDard
LCD	Liquid Crystal Display	SW	SWitch: Short Wave (frequency)
Lch	Left channel	THD	Total Harmonic Distortion
LED	Light Emiting Diode	TP	Test Point
LPF	Low Pass Filter	VCO	Voltage Controlled Oscillator
LW	Long Wave (Frequency)	VR	Variable Resistor
		X'TAL	Crystal



STEREO DECK AMPLIFIER

SPECIFICATIONS

[Amplifier section]	[DECK section]
<p>Power output</p> <p>AX-590 50 W + 50 W (6 ohms, 10 % THD, EIAJ) 38 W + 38 W (6 ohms, 1 % THD, DIN) 32 W + 32 W (6 ohms, 0.5 % THD, 60 Hz ~ 20 kHz, FTC)</p> <p>AX-690 62 W + 62 W (6 ohms, 10 % THD, EIAJ) 50 W + 50 W (6 ohms, 1%THD, DIN) 40 W + 40 W (6 ohms, 0.5 % THD, 60Hz ~ 20kHz, FTC)</p> <p>Frequency response 10 Hz to 100 kHz (10 Hz : -4 dB, 100 kHz : -3 dB)</p> <p>Required speaker impedance</p> <p>Front speaker 6 to 16 ohms (A or B) 12 to 16 ohms (A + B)</p> <p>Surround speaker 8 to 16 ohms</p> <p>Input Sensitivity</p> <p>PHONO 3.2 mV / 47 k ohms LINE 220 mV / 22 k ohms</p> <p>Output level 170 mV / 1 k ohms</p> <p>S/N ratio</p> <p>PHONO 70 dB (A-weight) Except PHONO 90 dB (A-weight)</p> <p>Residual noise 0.08 mV (A-weight)</p> <p>Channel separation 70 dB</p> <p>Super bass effects</p> <p>AX-590 12 dB / 70 Hz AX-690 0 to 15 dB / 70 Hz</p> <p>Tone control (AX-590 only)</p> <p>Bass ± 11 dB / 100 Hz Treble ± 11 dB / 10 kHz</p> <p>Graphic equalizer (AX-690 only)</p> <p>Control band 5 band Control frequency 60 Hz / 250 Hz / 1 kHz / 4 kHz / 16 kHz Control range ± 10 dB</p>	<p>Track system 4 track 2 channel system</p> <p>Wow & Flutter 0.09 % (WRMS), 0.15 % (DIN)</p> <p>Frequency response</p> <p>Normal 30 Hz to 15 kHz ± 3 dB CrO₂ 30 Hz to 16 kHz ± 3 dB</p> <p>S/N ratio</p> <p>Dolby C (AX-690 only) .. 73 dB (1 kHz to 10 kHz) Dolby B 63 dB (5 kHz) Dolby off 53 dB (CrO₂ tape)</p> <p>Total harmonic distortion Less than 0.5 % (normal tape, at 315 Hz)</p> <p>Channel separation 43 dB (normal tape)</p> <p>[General]</p> <p>Power requirements AC 220 V to 230 V, 50Hz for Europe except U.K. AC 120 V, 60 Hz for U.S.A. and Canada AC 110 / 127 / 220 to 230 / 240 V, 50 / 60 Hz convertible for other countries</p> <p>Power consumption</p> <p>AX-590 120 W (nominal 97 W) 130 W (nominal 105 W) (with TC-590,690, 790)</p> <p>AX-690 140 W (nominal 115 W) 150 W (nominal 123 W) (with TC-590,690, 790)</p> <p>Dimensions 270 (W) x 199 (H) x 315 (D) mm</p> <p>Weight</p> <p>AX-590 7.0 kg AX-690 7.2 kg</p>
	<p>Standard accessories</p> <p>Remote control unit x 1 Batteries x 2 Operator's manual x 1</p>

- * For improvement purposes, specifications and design are subject to change without notice.
- * Noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
- * The "DOLBY" and  symbol are trademarks of Dolby Licensing Corporation.

I. DISASSEMBLY

In case of trouble etc., necessitating dismantling, please dismantle in the order shown in the illustrations. Reassemble in the reverse order.

※ If the CASSETTE MECHA. BLOCK removal is intended, press both the "EJECT" buttons on the FRONT PANEL to open the cassette holders and cassette door before proceeding.

1-1. Removal of the UPPER COVER.

1) Remove the seven screws.

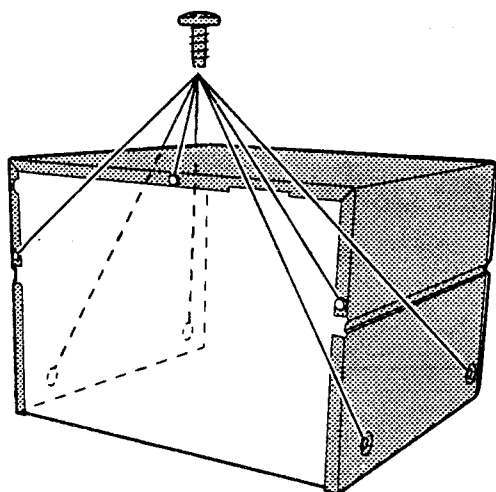


Fig. 1-1

1-2. Removal of the FRONT PANEL BLOCK

1) Remove the five screws on the bottom.

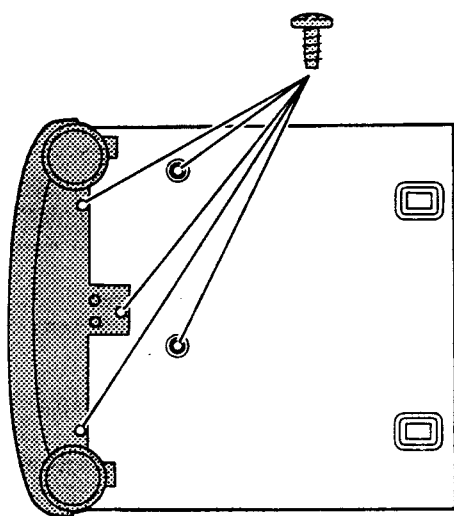


Fig. 1-2

2) Remove the four screws on both sides.

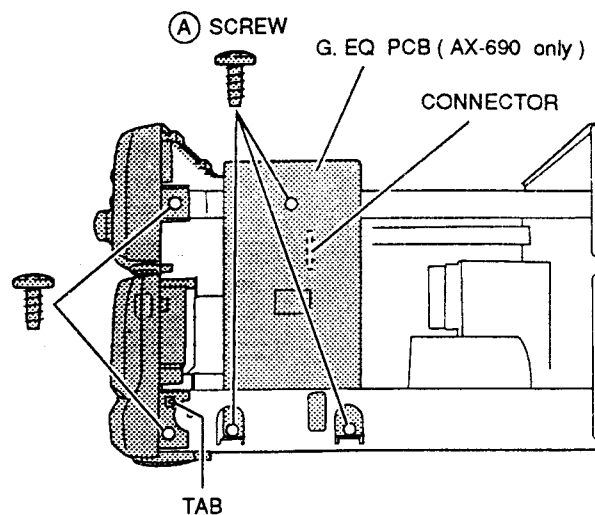


Fig. 1-3

3) Remove the three Ⓐ screws on the G.EQ PCB and detach the G.EQ PCB from the DECK PCB (AX-690 only).

4) Disconnect the flat cables from the J3 and J4 (for AX-590) or J4A (for AX-690) connectors and the shield wire from the J8 connector on the INPUT PCB.

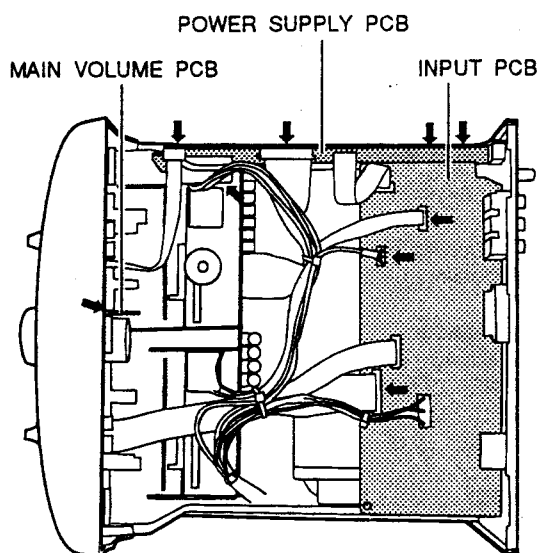


Fig. 1-4

5) Disconnect the flat cables from the J10 and J15 connectors on the POWER SUPPLY PCB and also disconnect the P11 and P12 connectors at the lower side of the POWER SUPPLY PCB.

6) Disconnect the P13 connector on the MAIN VOLUME PCB.

7) Disconnect the P5 connector and remove the two screws on the POWER SUPPLY PCB. Next, release the tabs on both side of the FRONT PANEL, then pull the FRONT PANEL BLOCK out with care. When pulling the FRONT PANEL BLOCK out, press the POWER SUPPLY PCB to the left to avoid the fuses touching the DECK PCB.

1-3. Removal of the CASSETTE MECHA. BLOCK

1-3-1. Removal of the DECK PCB

- 1) Disconnect the flat cables from the J601 and J602 connectors while pushing the stoppers of the connectors down.

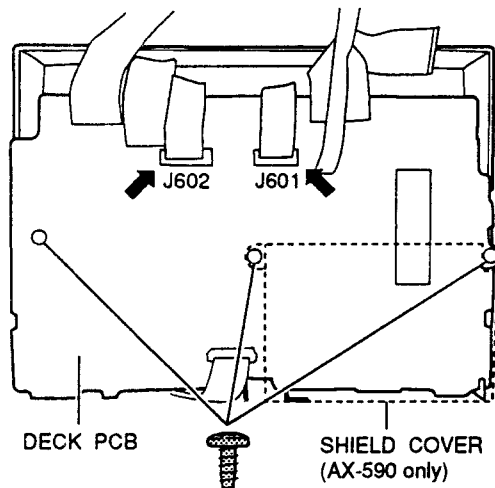


Fig. 1-5

- 2) Disconnect the flat cables from the J17 and J22 connectors by pulling the stoppers of the connectors up.
- 3) Disconnect the P1, P101, P601 and P602 connectors and remove the three screws on the DECK PCB, then remove the DECK PCB and the shield cover (AX-590 only).

1-3-2. Removal of the MECHA. BLOCK

- 1) Unhook the door spring on the TAPE-I MECHA. BLOCK.

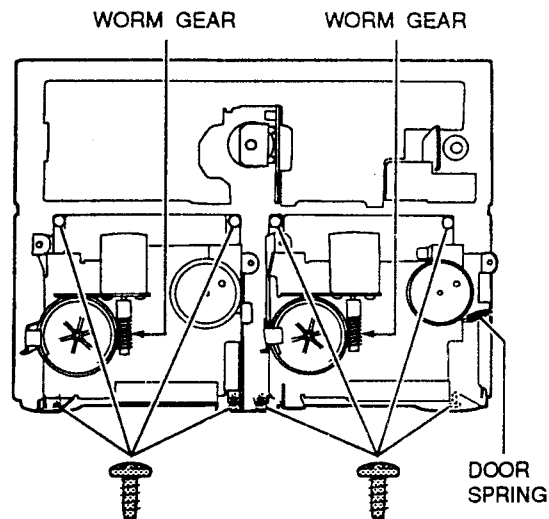


Fig. 1-6

- 2) Remove the four screws for each of the TAPE-I and TAPE-II MECHA. BLOCKs then remove the BLOCKs carefully. If the cassette holder is closed, turn the loading motor's WORM GEAR to open it and then remove the MECHA. BLOCK.

II. PRINCIPAL PARTS LOCATION

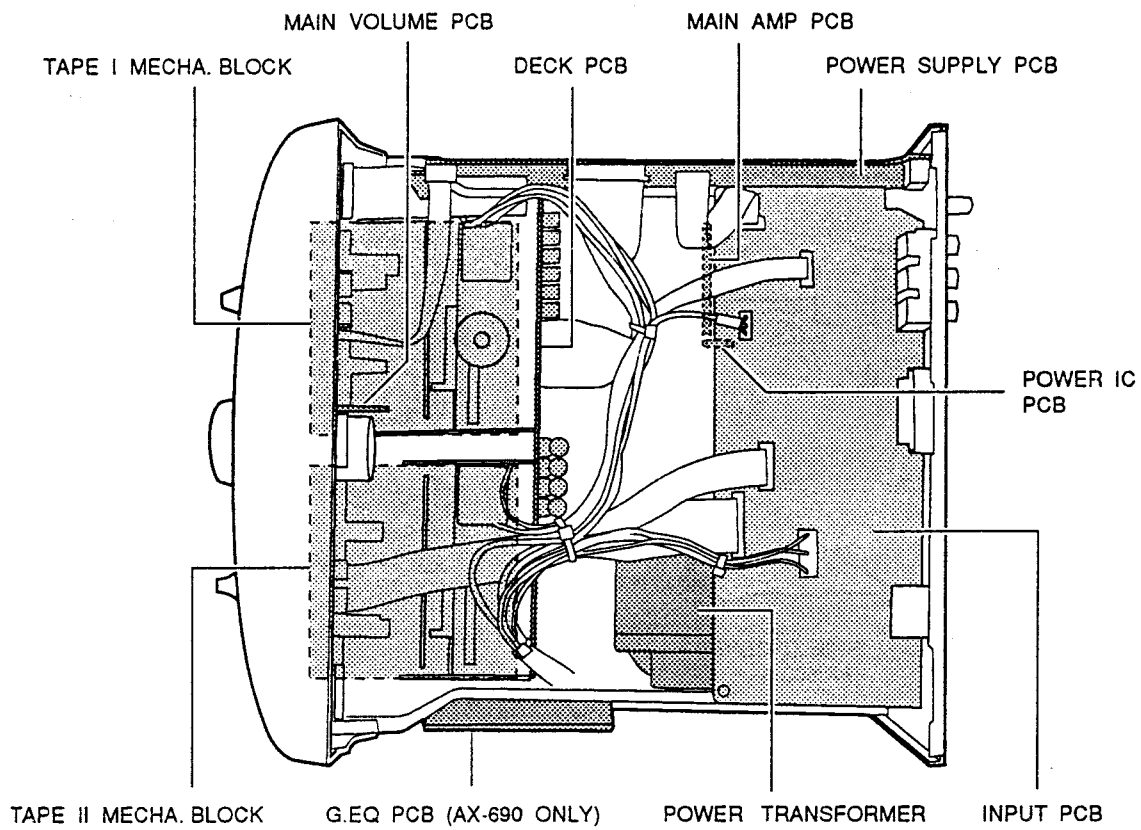


Fig. 2-1 Top view

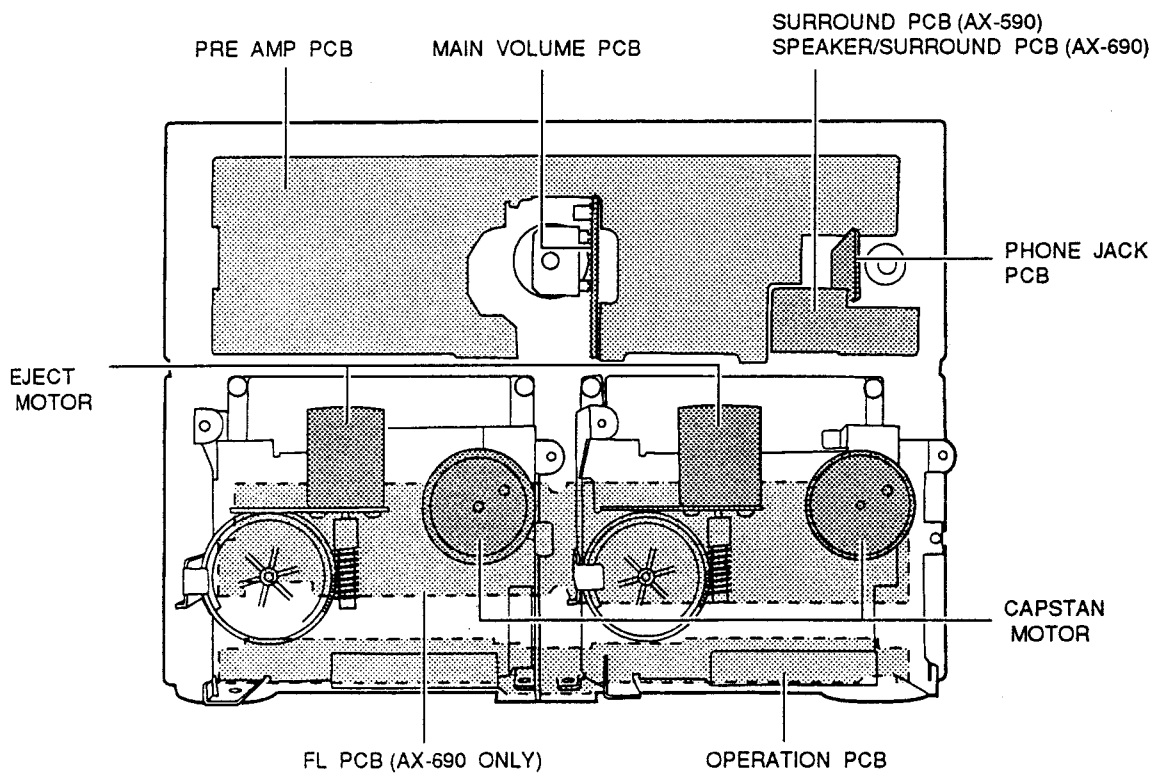


Fig. 2-2 Front panel

III. REPLACEMENT OF PRINCIPAL MECHANICAL PARTS

3-1. REPLACEMENT OF THE FR BELT and MAIN BELT

1) Remove the two (A) screws then remove the HEAD SHIELD PLATE.

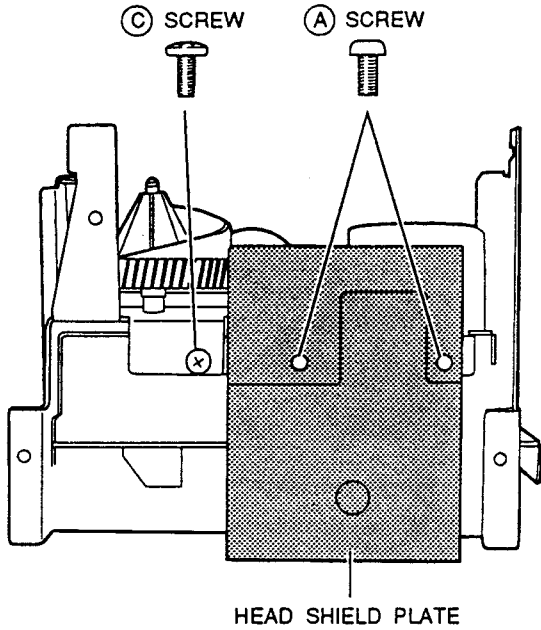


Fig. 3-1

2) Remove the (B) graduated screw and remove the EJECT ARM and the EJECT TORSION SPRING. Next, remove the CASSETTE HOLDER.

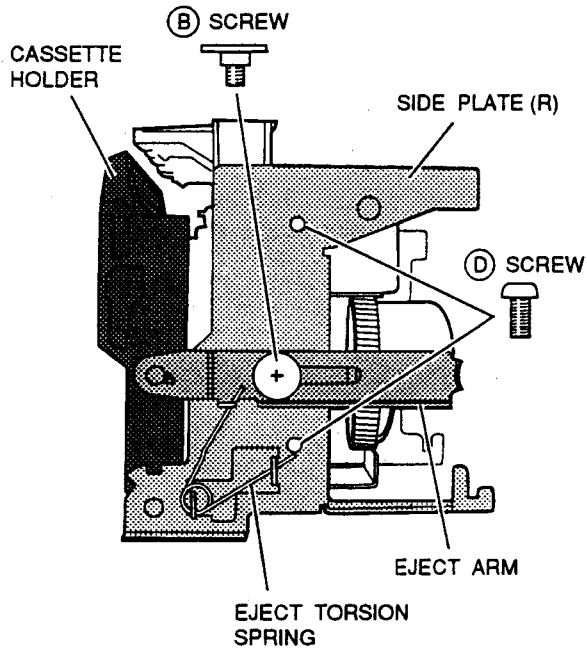


Fig. 3-2

3) Remove the (C) and two (D) screws and remove the SIDE PLATE (R) (refer to Fig.3-1 and 3-2).

4) Remove the two (E) screws and then remove the SIDE PLATE (L).

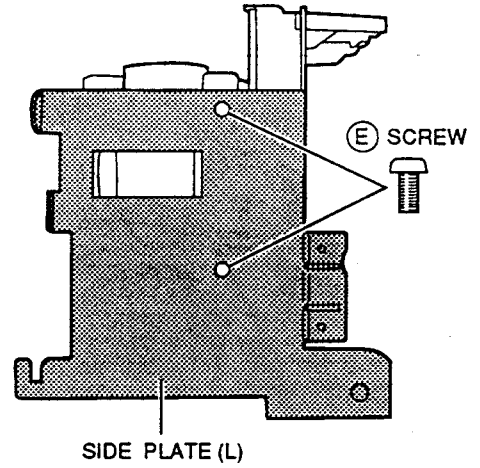


Fig. 3-3

5) Remove the (E) screw and three (G) screws, then remove the FW BRACKET.

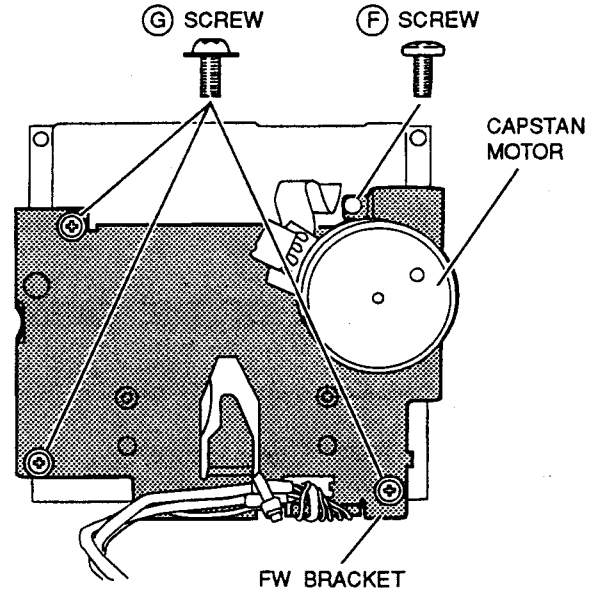


Fig. 3-4

6) Change the FR BELT if necessary.

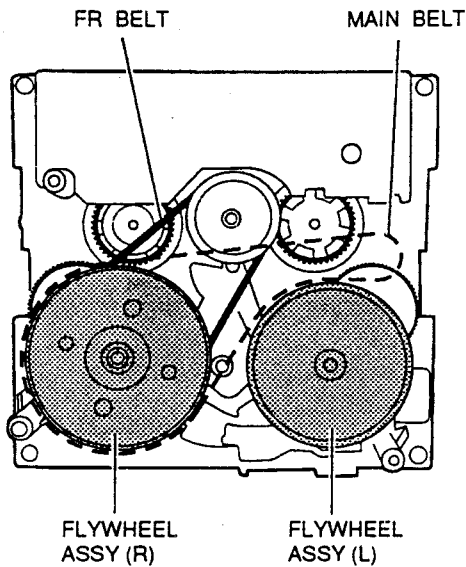


Fig. 3-5

- 7) Remove the old MAIN BELT and then place the new one on the FLYWHEEL ASS'Y (R).
- 8) Attach the FW BRACKET and tighten the four retaining screws, then thread the MAIN BELT using tweezers carefully.
- 9) Proceed in the reverse order of step 1) to 4) for installation. After replacement, tape speed adjustment must be performed.

3-2. REPLACEMENT OF THE CAPSTAN MOTOR

- 1) Unsolder the flat cable on the CAPSTAN MOTOR with a soldering iron.
- 2) Remove the FW BRACKET (refer to page 33).
- 3) Remove the two (A) retaining screws and replace the CAPSTAN MOTOR.

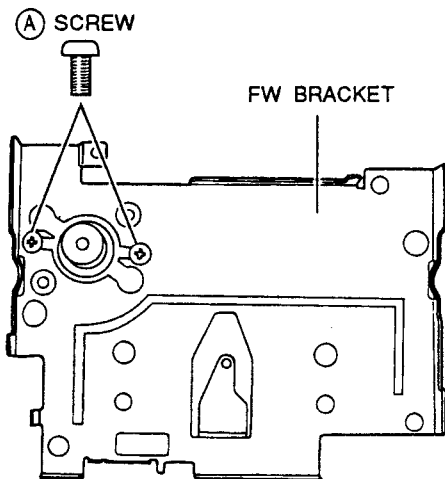


Fig. 3-6

- 4) Solder the flat cable onto the CAPSTAN MOTOR's terminal then proceed in the reverse order for installation (refer to section 3-1 step 8)). After replacement, tape speed adjustment must be performed.

3-3. REPLACEMENT OF THE EJECT MOTOR

- 1) Remove the (B) graduated screw and remove the EJECT ARM and the EJECT TORSION SPRING (refer to Fig. 3-2).
- 2) Remove the slit washer and remove the EJECT CAM GEAR.

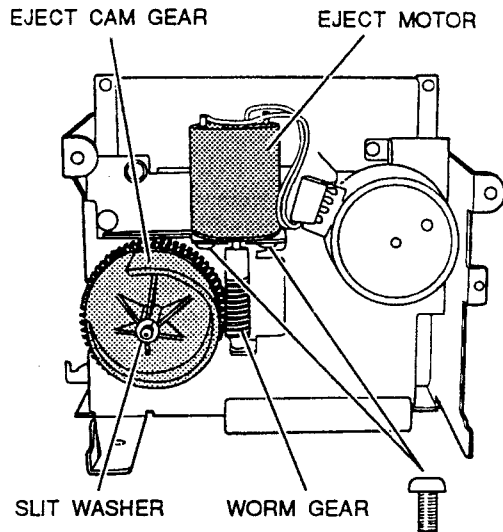


Fig. 3-7

- 3) Unsolder the two lead wires and remove the two retaining screws, then remove the EJECT MOTOR and extract the WORM GEAR.
- 4) Attach the WORM GEAR onto the new EJECT MOTOR's shaft and install it.
- 5) Attach the previously removed motor shield plate onto the new motor and then solder the lead wires.
- 6) Proceed in the reverse order of step 1) to 2) for installation.

3-4. REPLACEMENT OF THE PINCH ROLLER BLOCK

- 1) Pull the PINCH ROLLER BLOCK upward while releasing the pinch roller retaining hook in the direction of the arrow to remove it.

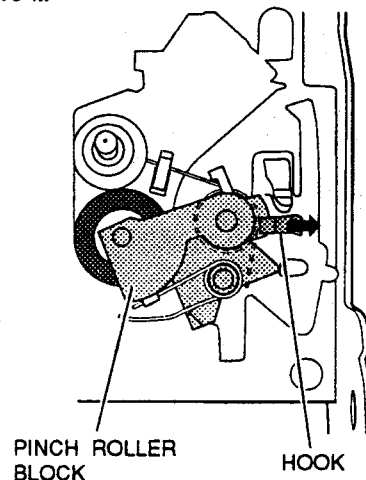


Fig. 3-8

- 2) Replace the PINCH ROLLER BLOCK and reassemble in the reverse order. Attach the two springs in the correct position when placing the PINCH ROLLER BLOCK.

3-5. REPLACEMENT OF THE PB HEAD OR REC/PB HEAD

- 1) Remove the two ⓐ screws and remove the HEAD SHIELD PLATE as shown in Fig. 3-1.
- 2) Disconnect all the lead wires (from the head) on the JUNCTION PCB with a soldering iron.

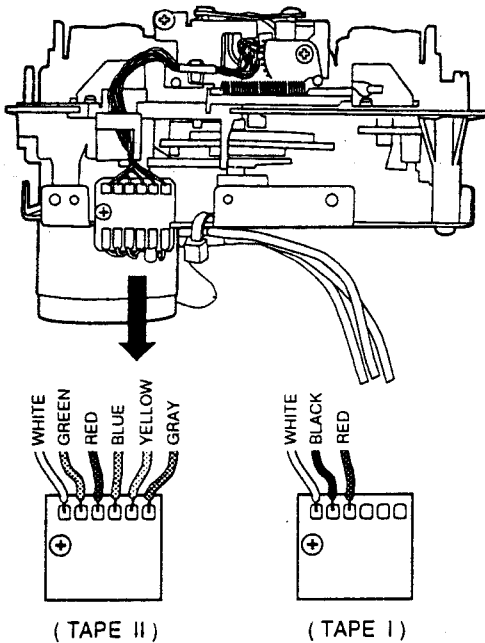


Fig. 3-9

- 3) Remove the two head retaining screws and remove the head.

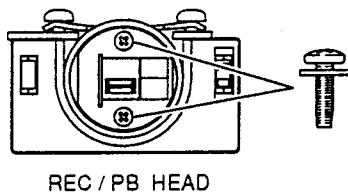


Fig. 3-10

- 4) Thread all the lead wires into the hole on the HEAD HOLDER and then tighten the two retaining screws.
- 5) Solder all the lead wires.
- 6) De-magnetize the HEAD then reassemble in the reverse order. After replacement, head azimuth and PB level adjustments are absolutely necessary for the proper performance. In addition, the REC level and REC bias current adjustments are also required for the TAPE-II HEAD (refer to sections 5-8 & 5-9).

Note:

If the removal of the HEAD HOLDER is necessary, align the first tooth of the HEAD HOLDER with the groove between the first and second tooth on the HEAD ARM GEAR when reassembling as shown in Fig. 3-11.

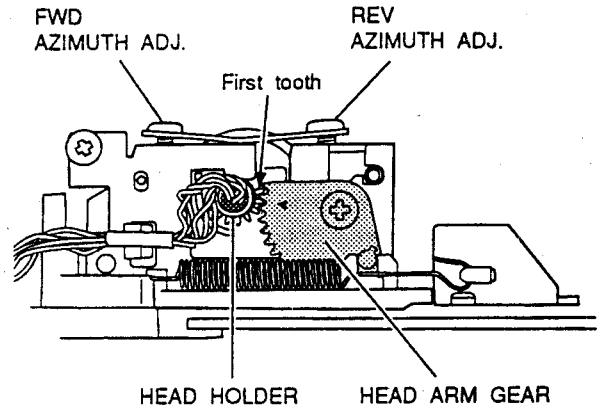


Fig. 3-11

IV. MECHANICAL ADJUSTMENT

4-1. ADJUSTMENT OF THE HEAD AZIMUTH ALIGNMENT

- 1) Connect an AC milli-voltmeters to the L-ch and R-ch of LINE OUT on the AX-590/690 and connect CH-1 and CH-2 inputs of an oscilloscope to the output of the AC milli-voltmeters.
- 2) Play back a 10 kHz (-15 dB), HEAD AZIMUTH ALIGNMENT TEST TAPE (TF-106CH) then adjust the PB HEAD AZIMUTH ALIGNMENT Ⓐ (FWD PLAY) and Ⓑ (REV PLAY) SCREWS respectively so that the reading on the AC milli-voltmeters are at maximum and waveforms on the oscilloscope are in the same phase, in both FWD and REV directions. Perform the adjustment on both the TAPE-I and TAPE-II heads if necessary. (Use a demagnetized philips type screwdriver for adjustment.)
- 3) After adjustment, the AZIMUTH ADJ. screws must be paint-locked (refer to Fig. 3-11 on page 35).

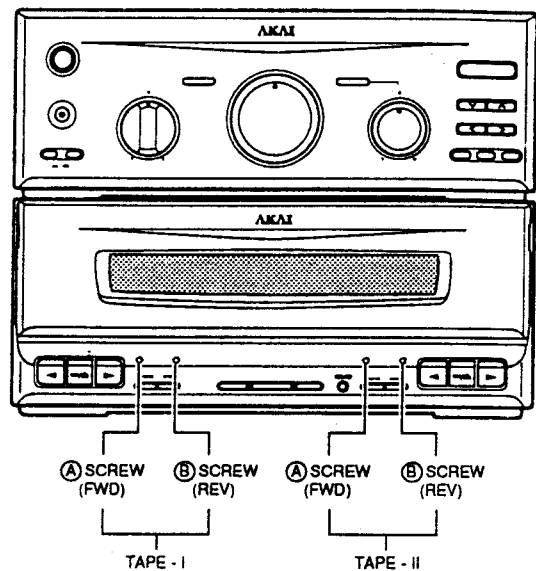
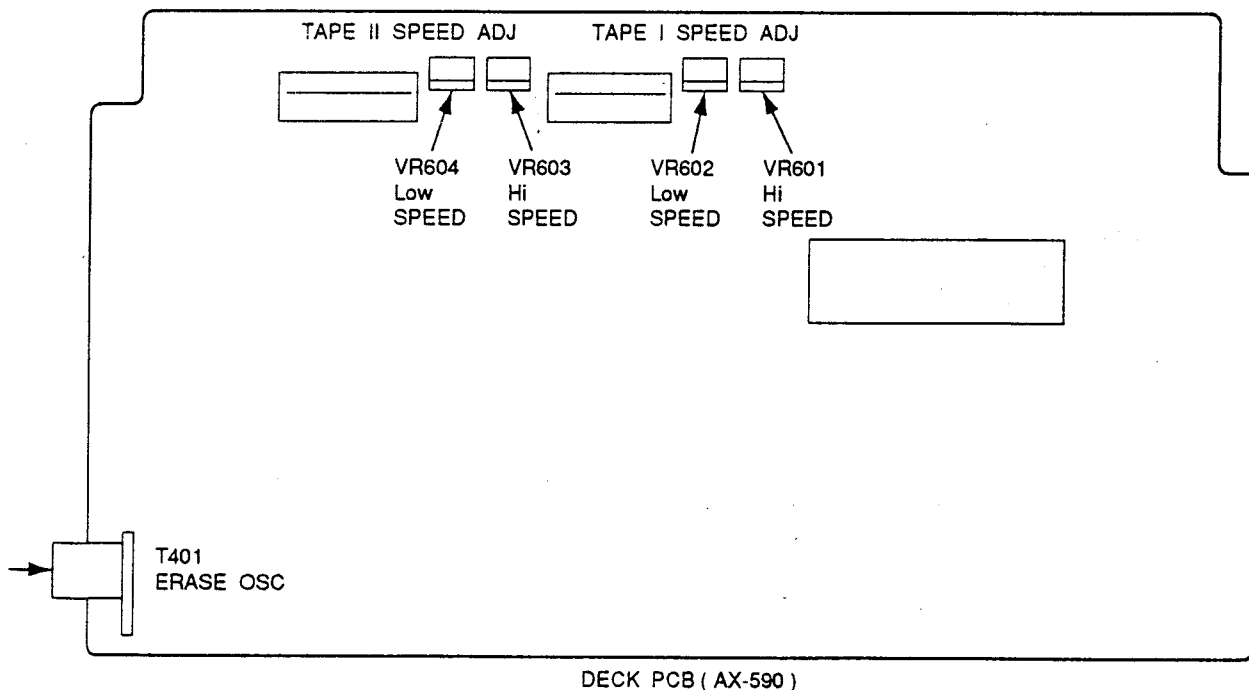


Fig. 4-1

V. ELECTRICAL ADJUSTMENT

ADJUSTMENT LOCATION FOR AX-590



※ Each adjustment must refer AX-690's adjustment.

NOTE:

- 1) The following adjustment should be performed in the "ADJUSTMENT TEST MODE". To engage the "ADJUSTMENT TEST MODE", connect the AC power cord to the AC outlet while pressing the TAPE-I "▶" and "DUBBING START" buttons together. When the "ADJUSTMENT TEST MODE" is engaged, X1 DUB indicator is lit.
- 2) When performing the tape speed adjustment, observe the following notes.
 - Adjustment should be started more than 30 seconds after the power is ON.
 - Adjustment should be made at X2 speed mode first then normal speed mode.
 - Adjustment should be made in the forward direction.
- 3) To disengage the adjustment test mode, unplug the AC power cord from the AC outlet.
- 4) Set the DOLBY NR switch to "OFF" position during adjustment.
- 5) Use a maxell UDI C-60 tape for adjustment "steps 8 & 9".
- 6) Before adjustment, clean and de-magnetize the heads.

STEP	ADJUSTMENT
1.	Test tape/input signal
2.	Mode
3.	Check point, adjustment part
4.	Remarks (●) and result (*)

8 | NORMAL POSITION BIAS (AX-690 only)

1. 1 kHz and 10 kHz, -36.5 dBs (at TP1 & TP2), NORMAL recording tape
2. REC → PLAY
3. TP1, VR401 (L-ch) / TP2, VR402 (R-ch)
4. • Connect an AC milli-voltmeter to the TP1 & TP2.
Connect an audio signal generator to the LINE IN terminal and set the generator level so that the TP1 & TP2 levels are -36.5 dBs.
* Playback level difference between 1 kHz and 10 kHz after recording is within ± 0.2 dB.

7 | BIAS OSC FREQUENCY

1. Normal type blank tape
2. REC
3. C405, T401
4. • Connect a frequency counter between C405's lead and GND. (10:1 probe should be used to avoid affecting the measurement.)
* 100.0 ± 0.2 kHz

4 | TAPE-II NORMAL TAPE SPEED

1. 3,150 Hz test tape (TF-110CT)
2. PLAY
3. LINE OUT, VR604
4. • Connect a frequency counter to LINE OUT and press the "DUBBING START" button again to resume normal tape speed.
* 3,150 ± 10 Hz

3 | TAPE-II (X2) TAPE SPEED

1. 3,150 Hz test tape (TF-110CT)
2. PLAY
3. LINE OUT, VR603
4. • Connect a frequency counter to LINE OUT and press the "DUBBING START" button to engage the double tape speed.
* 6,300 ± 20 Hz

9 | RECORDING LEVEL (AX-690 only)

1. 315 kHz, -14.0 dBs (at TP1 & TP2), NORMAL recording tape
2. REC → PLAY
3. TP1, VR201 (L-ch) / TP2, VR251 (R-ch)
4. • Connect an AC milli-voltmeter to the TP1 & TP2.
• Connect an audio signal generator to the LINE IN terminal and set the generator level so that the TP1 & TP2 levels are -14.0 dBs.
* Playback levels after recording are -14.0 dBs

5 | TAPE-I PB LEVEL (AX-690 only)

1. 315 Hz test tape (TF-101CL)
2. PLAY
3. TP1, VR1 (L-ch) & TP2, VR51 (R-ch)
4. • Connect an AC milli-voltmeter to the TP1 and TP2.
* -14.0 dBs

6 | TAPE-II PB LEVEL (AX-690 only)

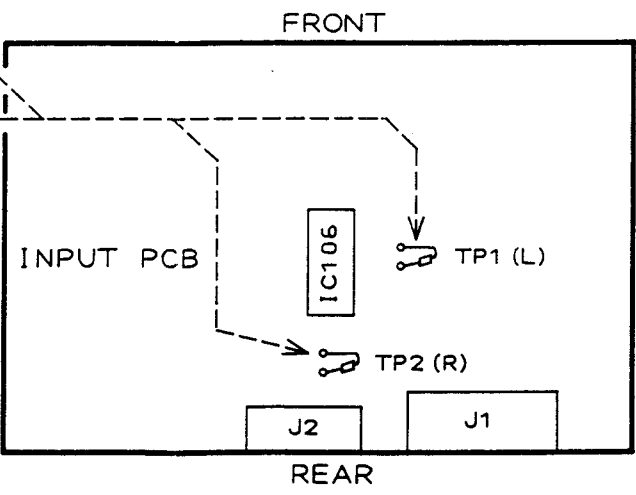
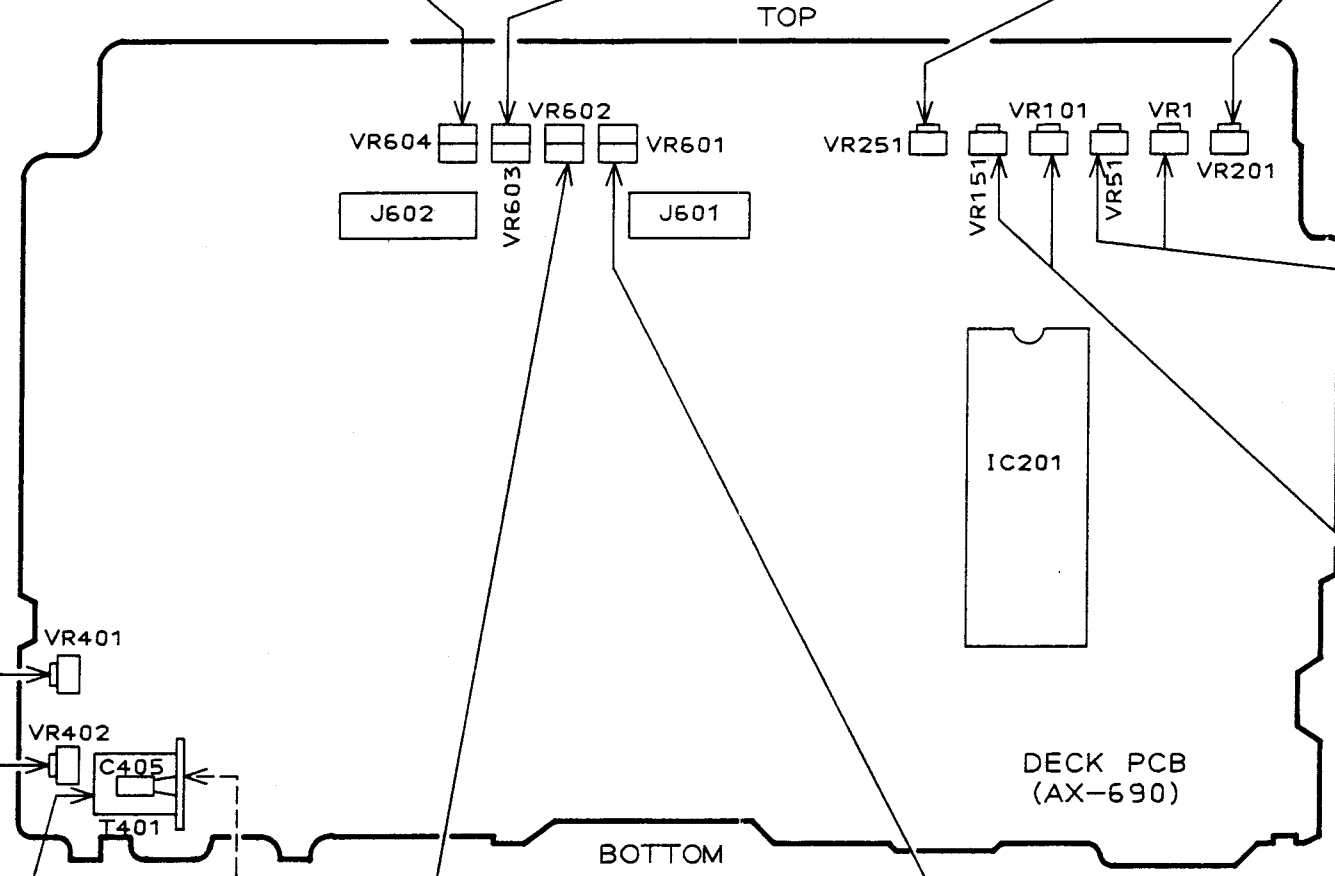
1. 315 Hz test tape (TF-101CL)
2. PLAY
3. TP1, VR101 (L-ch) & TP2, VR151 (R-ch)
4. • Connect an AC milli-voltmeter to the TP1 and TP2.
* -14.0 dBs

2 | TAPE-I NORMAL TAPE SPEED

1. 3,150 Hz test tape (TF-110CT)
2. PLAY
3. LINE OUT, VR602
4. • Connect a frequency counter to LINE OUT and press the "DUBBING START" button again to resume normal tape speed.
* 3,150 ± 10 Hz

1 | TAPE-I (X2) TAPE SPEED

1. 3,150 Hz test tape (TF-110CT)
2. PLAY
3. LINE OUT, VR601
4. • Connect a frequency counter to LINE OUT and press the "DUBBING START" button to engage the double tape speed.
* 6,300 ± 20 Hz



VI. PARTS LIST

ATTENTION

- When placing an order for parts, be sure to list the Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
- Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.
- Since the parts shown in Parts List or Preliminary Service Manual may have been the subject of change, please use this Parts List for all future reference.

HOW TO USE THIS PARTS LIST

- This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
- The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
- Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
- How to read the Parts List.

a) Mechanism Block

2. HEAD BASE BLOCK

Ref. No.	Part No.	Description
1	BH-T2023A320A	HEAD BASE BLOCK
2	HP-H2206A010A	HEAD R/P PR4-8FU C
3	ZS-477876	PAN20x03STL CMT
4	ZS-536488	BID20x08STL CMT
5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

This number corresponds with the individual parts index number in the figure.

b) PC Block

2. MAIN PC BOARD

Ref. No.	Part No.	Description
IC1	EI-324536	IC HD14049BP
IC2	EI-336801	IC MB8841-564M
C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
C1B	EC-350949	C MMY V 223M 250DC [J]
C1C	EC-338397	C MMY V 223M 125AC [C,A]
X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination

[A]: AAL (U.S.A) [S]: SAA (Australia)
 [B]: BEAB (England) [U]: U/T (Universal Area)
 [C]: CSA (Canada)
 [E]: CEE (Europe) [V]: VDE (Germany)
 [J]: JPN (Japan) [Y]: Custom

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

- When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

WARNING

Δ (*) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

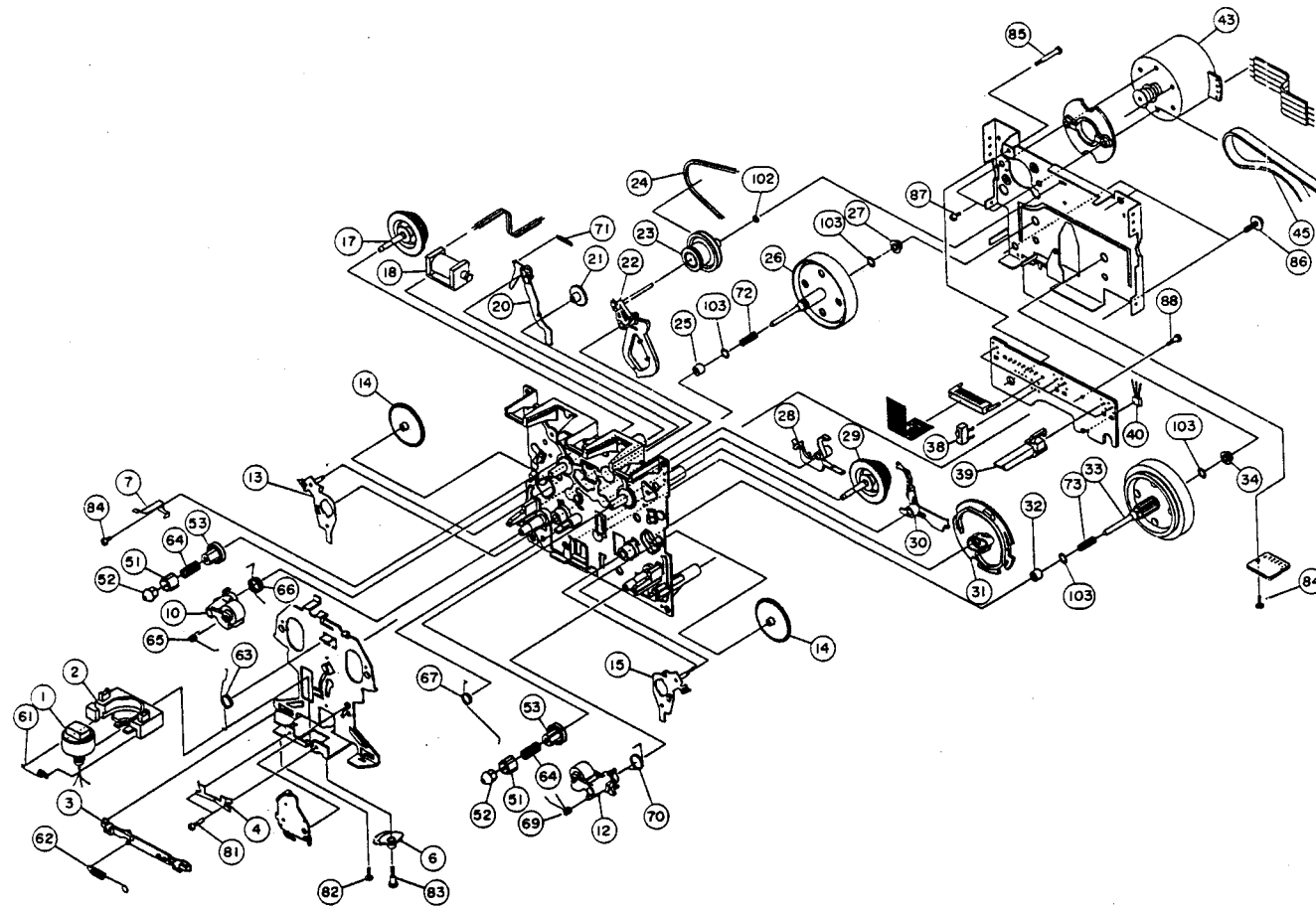
Δ (*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

1. RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	AX-418670N	REMOCON RC-S590	51	EQ-422089N	RELAY POW DH2S 2NO 12V
2	AX-418671N	REMOCON RC-S690	52	* ER-200746	R FUSE H ERD2FC 1/4W 1000G
3	BB-418668N	MECHA CRF-4107 [R MECHA]	53	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
4	BB-418666N	MECHA CRF-4108 [L MECHA]	54	ES-408755M	SW LEAF LSA-2127E
5	BM-733691J	MOTOR ASSY	55	ES-419356N	SW PUSH PS-135M2-A22S 2-02N
6	BM-374198	MOTOR RF-370CA-15370	56	* ES-418650J	SW SELECT ESE-37311
7	* BT-418652N	TRANS POW C1036-E,V [E,V] [590]	57	ES-419355N	SW SLIDE SS-296B22P25H8 2-02N [AX-690]
8	* BT-418651N	TRANS POW C1036-U [U,B,S] [590]	58	ES-419357N	SW SLIDE SS-336-B12H5BKS 1-02N [AX-590]
9	* BT-418655N	TRANS POW C1037-E [E] [690]	59	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
10	* BT-418654N	TRANS POW C1037-U [U,B,S] [690]	60	ES-415046J	SW TACT SOR-132HS T05 [AX-690]
11	* BT-418657N	TRANS POW C1037-V [V] [690]	61	ES-414593J	SW TACT SOR-142HS T05 [AX-690]
12	ED-418718J	D LED SEL3413E(C,D) GREEN	62	ES-733689J	SWITCH (LEAF)
13	ED-418636J	D LED SEL6215S(C,D) RED [AX-590]	63	ES-733688J	SWITCH (MODE)
14	ED-418635J	D LED SEL6415E(C,D) GREEN [AX-590]	64	ET-369248	TR DTA114YS
15	* ED-307572	D SILICON H 1SS131	65	ET-354415	TR DTA144ES
16	* ED-394708J	D SILICON RBA402 200/4.0A	66	ET-360399	TR DTC114TS
17	* ED-511907	D SILICON 1N4002 100/1.0A	67	ET-354365	TR DTC114YS
18	ED-388320J	D ZENER H HZS12B3L	68	ET-354371	TR DTC124ES
19	ED-422073J	D ZENER H HZS30-3L T26	69	ET-364060	TR DTC143ES
20	* ED-391003J	D ZENER H HZS4C3	70	ET-354364	TR DTC143TS [AX-690]
21	ED-394924J	D ZENER H HZS5C1 [AX-590]	71	ET-373391	TR DTC143ZS
22	* ED-408733J	D ZENER H HZS6A3L	72	ET-354414	TR DTC144ES
23	* ED-400171J	D ZENER H HZS6C2L	73	ET-337759	TR FET 2SK246 GR
24	* ED-395862J	D ZENER H HZS7A1L	74	ET-422048J	TR 2SA1198S S,E T05
25	ED-387820J	D ZENER H HZS9A2L	75	ET-353899	TR 2SA1317 S,T,U
26	* EF-403289M	FUSE TIME 218 250V 1.25A [U,B,S] [AX-590]	76	ET-352726	TR 2SA1392 T,U
27	* EF-393708M	FUSE TIME 218 250V 1.60A [U,B,S] [AX-690]	77	ET-305463	TR 2SA970 GR,BL
28	* EF-394701M	FUSE TIME 218 250V 3.15A [AX-590]	78	ET-388338J	TR 2SB1425 S,E
29	* EF-394704M	FUSE TIME 218 250V 4.00A [AX-690]	79	* ET-408841J	TR 2SB1565 E,F
30	* EF-403606M	FUSE TIME 218 250V 800MA	80	ET-394571J	TR 2SC2389 S,E T05
31	* EI-353421	IC BA6229	81	ET-397160J	TR 2SC3330 R,S,T,U,V
32	EI-419331J	IC HA12155NT [AX-690]	82	ET-378524J	TR 2SC3383 S,T,U TR 2SC3576 [AX-690]
33	EI-419330J	IC HA12171NT [AX-590]	83	ET-418329J	TR 2SC3708 S T05
34	EI-387938J	IC HD74LS05P	84	ET-394735J	TR 2SC3792 T05
35	EI-733690J	IC LB9051A	85	ET-397176J	TR 2SD1012-V F,G,H
36	EI-419341J	IC MN12510F	86	* ET-366168	TR 2SD1292 Q,R
37	EI-425471J	IC M38184M8-135FP RX1DECK1	87	* ET-408842J	TR 2SD2394 E,F
38	EI-393323J	IC M5218AL-771	88	* ET-416697J	TR 2SD2396 J,K
39	EI-419339J	IC M62408FP	89	EI-416697J	VR SPL RK16812MG SPE.104X2 [AX-690]
40	EI-213390	IC NJM4558D	90	EV-418664N	CORD FFC AD P1.25 L=68 18P [690]
41	EI-400756J	IC NJM4558L-B [AX-690]	91	EW-418812N	CORD FFC AD P1.25 L=68 18P [690]
42	* EI-394709J	IC STK4142-2 [AX-590]	92	HP-733660J	HEAD HOLDER ASSY (PB) [CRF-4108]
43	* EI-358554	IC STK4152-2 [AX-690]	93	HR-733659J	HEAD HOLDER ASSY (REC/PB) [CRF-4107]
44	EI-408393J	IC ST24C01B1 [AX-690]	94	HZ-733661J	FLAME HEAD
45	EI-332259	IC TC4052BP	95	MB-733677J	BELT FR
46	EI-200573	IC TC4053BP	96	MB-733692J	BELT MAIN
47	EI-396490J	OSC CE CST4.00MGW-TF01 T05	97	MP-733666J	PINCH ARM (L) ASSY
48	EI-418663J	OSC CE CST6.30MGW-TF01 T05	98	MP-733667J	PINCH ARM (R) ASSY
49	EM-419260M	IND FL BJ230GK			
50	EP-733672J	SOLENOID			

MACHANISM BLOCK



2. MACHANISM BLOCK

Ref. No.	Part No.	Description
1-A	HR-733659J	HEAD HOLDER ASSY (REC/PB) [CRF-4107]
1-B	HP-733660J	HEAD HOLDER ASSY (PB) [CRF-4108]
2	HZ-733661J	FLAME HEAD
3	ML-733662J	LEVER HEAD
4	ZG-733663J	SPRING AZIMUTH
6	MZ-733664J	GEAR HEAD ARM
7	ZG-733665J	SPRING CASSETTE
10	MP-733666J	PINCH ARM (L) ASSY
12	MP-733667J	PINCH ARM (R) ASSY
13	ML-733668J	ARM PLAY(L)
14	MZ-733669J	GEAR PLAY
15	ML-733670J	ARM PLAY(R)
17	MT-733671J	SUB REEL (L) ASSY
18	EP-733672J	SOLENOID
20	ML-733673J	ARM RVS
21	MZ-733674J	GEAR FF
22	ML-733675J	ARM FR ASSY
23	MR-733676J	PULLEY FR ASSY
24	MB-733677J	BELT FR
25	MV-733678J	METAL
26	MI-733679J	FLYWHEEL (L) ASSY
27	MV-733680J	METAL
28	ML-733681J	ARM BRAKE
29	MT-733682J	SUB REEL (R) ASSY
30	ML-733683J	ARM TRIGGER
31	MZ-733684J	GEAR CAM
32	MV-733685J	METAL
33	MI-733686J	FLYWHEEL (R) ASSY
34	MV-733687J	METAL
38	ES-733688J	SWITCH (MODE)
39	ES-733689J	SWITCH (LEAF)
40	EI-733690J	IC LB9051A
43	BM-733691J	MOTOR ASSY
45	MB-733692J	BELT MAIN
51	MT-733693J	REEL A
52	MT-733694J	REEL B
53	MR-733695J	PULLEY REEL
61	ZG-733696J	SPRING
62	ZG-733697J	SPRING
63	ZG-733698J	SPRING
64	ZG-733699J	SPRING
65	ZG-733700J	SPRING
66	ZG-733701J	SPRING
67	ZG-733702J	SPRING
69	ZG-733703J	SPRING
70	ZG-733704J	SPRING
71	ZG-733705J	SPRING
72	ZG-733706J	SPRING
73	ZG-733707J	SPRING
81	ZS-733708J	SCREW (AZIMUTH)
82	ZS-733709J	SCREW 20X06
83	ZS-733710J	SCREW
84	ZS-733711J	SCREW 20X04
85	ZS-733712J	SCREW 20X16
86	ZS-733713J	SCREW 26X08
87	ZS-733714J	SCREW 26X07
88	ZS-733715J	SCREW 26X08
102	ZW-733716J	WASHER 16X040X040
103	ZW-733717J	WASHER 26X042X013

NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

3. P.C. BOARD BLOCK

Ref.No.	Part No.	Description
1-A	BA-C1036T050AML PC(#)MAIN590 BLK AX-590(U)/ML [U,B,S]	
1-B	BA-C1036T050BML PC(#)MAIN590 BLK AX-590(E)/ML [E]	
1-C	BA-C1036T050CML PC(#)MAIN590 BLK AX-590(V)/ML [V]	
1-D	BA-C1036T050DML PC(#)MAIN590 BLK AX-690(U)/ML [U,B,S]	
1-E	BA-C1036T050EML PC(#)MAIN590 BLK AX-690(E)/ML [E]	
1-F	BA-C1036T050FML PC(#)MAIN590 BLK AX-690(V)/ML [V]	
2-A	BA-C1036T060AML PC(#) DECK590 BLK AX-590/ML	
2-B	BA-C1037T060AML PC(#) DECK690 BLK AX-690/ML	
3	BA-C1037T070AML PC GEQ BLK AX-690/ML [AX-690]	

PC (#) MEIN BLK CONSISTS OF FOLLOWING P.C. BOARDS.

- INPUT P.C. BOARD
- POWER SUPPLY P.C. BOARD
- MAIN AMP P.C. BOARD
- POWER IC P.C. BOARD

PC (#) DECK BLK CONSISTS OF FOLLOWING P.C. BOARDS.

- DECK P.C. BOARD
- BIAS OSC P.C. BOARD
- FL P.C. BOARD (AX-690)
- OPERATION P.C. BOARD
- PRE-AMP P.C. BOARD
- MAIN VOLUME P.C. BOARD
- PHONES JACK P.C. BOARD
- SURROUND SW P.C. BOARD (AX-590)
- SPEAKER/SURROUND SW P.C. BOARD (AX-690)
- VOLUME LED P.C. BOARD

4. INPUT P.C. BOARD

Ref. No.	Part No.	Description
C91	* EC-389414J	C CE V DE7090 B102K 400AC
D1	* ED-408733J	D ZENER H HZS6A3L
D2	* ED-307572	D SILICON H 1SS131
D3	* ED-307572	D SILICON H 1SS131
D4	* ED-511907	D SILICON 1N4002 100/1.0A
D5	* ED-511907	D SILICON 1N4002 100/1.0A
FR1	* ER-200746	R FUSE H ERD2FC 1/4W 1000G
FR2	* ER-200746	R FUSE H ERD2FC 1/4W 1000G
IC101	EI-213390	IC NJM4558D
IC102	EI-213390	IC NJM4558D
IC103	EI-213390	IC NJM4558D
IC104	EI-200573	IC TC4053BP
IC105	EI-200573	IC TC4053BP
IC106	EI-332259	IC TC4052BP
J1	EJ-419346N	PIN J YKC21-3164 6P
J2	EJ-408717J	SOCKET CFG1115-0121 RED 15P
J101	* EJ-416590J1	SOCKET INLET CCT-2302-0371 2P
L91	* EO-416686J	COIL LF LF-4D-102 102UH
F1-A	* EF-403289M	FUSE TIME 218 250V 1.25A [U,B,S] [AX-590]
F1-B	* EF-393708M	FUSE TIME 218 250V 1.60A [U,B,S] [AX-690]
F2-A	* EF-403289M	FUSE TIME 218 250V 1.25A [U,B,S] [AX-590]
F2-B	* EF-393708M	FUSE TIME 218 250V 1.60A [U,B,S] [AX-690]
F3	* EF-403606M	FUSE TIME 218 250V 800MA
F4	* EF-403606M	FUSE TIME 218 250V 800MA

5. POWER SUPPLY P.C. BOARD

Ref. No.	Part No.	Description
D201	* ED-394708J	D SILICON RBA402 200/4.0A
D202	* ED-511907	D SILICON 1N4002 100/1.0A
D203	* ED-511907	D SILICON 1N4002 100/1.0A
D204	* ED-511907	D SILICON 1N4002 100/1.0A
D205	* ED-511907	D SILICON 1N4002 100/1.0A
D206	* ED-511907	D SILICON 1N4002 100/1.0A
D207	* ED-511907	D SILICON 1N4002 100/1.0A
D208	* ED-511907	D SILICON 1N4002 100/1.0A
D209	* ED-511907	D SILICON 1N4002 100/1.0A
D210	* ED-511907	D SILICON 1N4002 100/1.0A
D211	ED-307572	D SILICON H 1SS131
D212	ED-307572	D SILICON H 1SS131
D213	ED-307572	D SILICON H 1SS131
D214	ED-307572	D SILICON H 1SS131
D215	ED-307572	D SILICON H 1SS131
D216	ED-307572	D SILICON H 1SS131
D217	ED-388320J	D ZENER H HZS12B3L
D218	ED-388320J	D ZENER H HZS12B3L
D219	ED-387820J	D ZENER H HZS9A2L
D220	ED-387820J	D ZENER H HZS9A2L
D221	ED-307572	D SILICON H 1SS131
D222	ED-388320J	D ZENER H HZS12B3L
D223	ED-307572	D SILICON H 1SS131
D224	ED-422073J	D ZENER H HZS30-3L T26
D225	* ED-388320J	D ZENER H HZS12B3L
D226	* ED-400171J	D ZENER H HZS6C2L
D227	* ED-400171J	D ZENER H HZS6C2L
D228	ED-307572	D SILICON H 1SS131
D229	ED-307572	D SILICON H 1SS131
D230	* ED-511907	D SILICON 1N4002 100/1.0A
D231	* ED-511907	D SILICON 1N4002 100/1.0A
L201	EO-403613J	COIL FIX 2 202AK-018A 2R2K
L202	EO-403613J	COIL FIX 2 202AK-018A 2R2K
R245	ER-353877	R OMF H S15 FS 1W 1R0J
R246	ER-353877	R OMF H S15 FS 1W 1R0J
R253	ER-347610	R CT P F09 PLATE 3W R22K
R254	ER-347610	R CT P F09 PLATE 3W R22K
R262	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
R263	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
R269	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
R270	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
R271	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
RL201	EQ-422089N	RELAY POW DH2S 2NO 12V
SW201	ES-419355N	SW SLIDE SS-296B22P25H8 2-02N
TM201	EJ-408698J	TERMINAL PUSH LQR0810-0006 8P
TR201	* ET-408842J	TR 2SD2394 E,F
TR202	* ET-408841J	TR 2SB1565 E,F
TR203	ET-352726	TR 2SA1392 T,U
TR204	ET-378524J	TR 2SC3383 S,T,U
TR205	ET-354371	TR DTC124ES
TR206	ET-353899	TR 2SA1317 S,T,U
TR207	* ET-408842J	TR 2SD2394 E,F
TR208	* ET-408841J	TR 2SB1565 E,F
TR209	ET-397160J	TR 2SC3330 R,S,T,U,V
TR210	ET-353899	TR 2SA1317 S,T,U
TR211	ET-354371	TR DTC124ES
TR212	ET-354371	TR DTC124ES
TR213	ET-353899	TR 2SA1317 S,T,U
TR214	ET-397160J	TR 2SC3330 R,S,T,U,V
TR215	ET-397160J	TR 2SC3330 R,S,T,U,V
TR216	ET-397160J	TR 2SC3330 R,S,T,U,V
TR217	ET-397160J	TR 2SC3330 R,S,T,U,V
TR218	ET-397160J	TR 2SC3330 R,S,T,U,V
TR219	ET-353899	TR 2SA1317 S,T,U
TR220	ET-353899	TR 2SA1317 S,T,U
TR221	* ET-408841J	TR 2SB1565 E,F
TR222	* ET-408842J	TR 2SD2394 E,F
TR223	* ET-408842J	TR 2SD2394 E,F
TR224	ET-397160J	TR 2SC3330 R,S,T,U,V
TR225	ET-337759	TR FET 2SK246 GR
TR226	ET-354414	TR DTC144ES
TR227	ET-397160J	TR 2SC3330 R,S,T,U,V
TR228	* ET-416697J	TR 2SD2396 J,K

Ref. No.	Part No.	Description
TR229	ET-305463	TR 2SA970 GR,BL
TR230	ET-305463	TR 2SA970 GR,BL
TR231	ET-353899	TR 2SA1317 S,T,U
TR232	ET-354371	TR DTC124ES
TR233	ET-408842J	TR 2SD2394 E,F
F201-A	* EF-394701M	FUSE TIME 218 250V 3.15A
F201-B	* EF-394704M	FUSE TIME 218 250V 4.00A
F202-A	* EF-394701M	FUSE TIME 218 250V 3.15A
F202-B	* EF-394704M	FUSE TIME 218 250V 4.00A
F203-A	* EF-403289M	FUSE TIME 218 250V 1.25A
F203-B	* EF-393708M	FUSE TIME 218 250V 1.60A
F204-A	* EF-403289M	FUSE TIME 218 250V 1.25A
F204-B	* EF-393708M	FUSE TIME 218 250V 1.60A

6. MAIN AMP P.C. BOARD

Ref. No.	Part No.	Description
D301	* ED-511907	D SILICON 1N4002 100/1.0A
D302	* ED-511907	D SILICON 1N4002 100/1.0A
R309	ER-336771	R OMF H S15 FS 1W 560J
R315	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J
R359	ER-336771	R OMF H S15 FS 1W 560J
R360	ER-422301J	R OMF V T05FS ERG12SE1/2W 100J

7. POWER IC P.C. BOARD

Ref. No.	Part No.	Description
IC401-A	* EI-394709J	IC STK4142-2
IC401-B	* EI-358554	IC STK4152-2

8. DECK P.C. BOARD

Ref. No.	Part No.	Description
D193	ED-307572	D SILICON H 1SS131
D195	ED-307572	D SILICON H 1SS131
D201	ED-394924J	D ZENER H HZS5C1
D301	ED-307572	D SILICON H 1SS131
D302	ED-307572	D SILICON H 1SS131
D303	ED-307572	D SILICON H 1SS131
D304	ED-307572	D SILICON H 1SS131
D401	* ED-391003J	D ZENER H HZS4C3
D501	ED-307572	D SILICON H 1SS131
D502	ED-307572	D SILICON H 1SS131
D503	ED-307572	D SILICON H 1SS131
D504	ED-307572	D SILICON H 1SS131
D601	ED-307572	D SILICON H 1SS131
D602	ED-307572	D SILICON H 1SS131
D603	* ED-395862J	D ZENER H HZS7A1L
FL1	EO-356809	COIL TUN 1 100Z-121 100.00KHZ
FL51	EO-356809	COIL TUN 1 100Z-121 100.00KHZ
FL102	EO-356809	COIL TUN 1 100Z-121 100.00KHZ
FL152	EO-356809	COIL TUN 1 100Z-121 100.00KHZ

Ref. No.	Part No.	Description
IB501-A	EH-422207J	COMP R RGL10X 472J
IB501-B	EH-422068J	COMP R RGL8X 472J
IB502	EH-383119J	COMP R RGL4X 473J
IC1	EI-393323J	IC M5218AL-771
IC101	EI-393323J	IC M5218AL-771
IC201-A	EI-419330J	IC HA12171INT
IC201-B	EI-419331J	IC HA12155NT
IC501	EI-425471J	IC M38184M8-135FP RX1DECK1
IC502	EI-387938J	IC HD74LS05P
IC503	EI-408393J	IC ST24C01B1
IC601	* EI-353421	IC BA6229
IC602	* EI-353421	IC BA6229
L401	EO-403270J	COIL FIX 1 EL0405RA T05 101J
TR1	ET-364060	TR DTC143ES
TR2	ET-354364	TR DTC143TS
TR51	ET-364060	TR DTC143ES
TR52	ET-354364	TR DTC143TS
TR101	ET-394571J	TR 2SC2389 S,E T05
TR102	ET-394571J	TR 2SC2389 S,E T05
TR103	ET-397160J	TR 2SC3330 R,S,T,U,V
TR104	ET-354364	TR DTC143TS
TR151	ET-394571J	TR 2SC2389 S,E T05
TR152	ET-394571J	TR 2SC2389 S,E T05
TR153	ET-397160J	TR 2SC3330 R,S,T,U,V
TR154	ET-354364	TR DTC143TS
TR181	ET-354365	TR DTC114YS
TR182	ET-354414	TR DTC144ES
TR183	ET-422048J	TR 2SA1198S S,E T05
TR184	ET-422048J	TR 2SA1198S S,E T05
TR201	ET-397160J	TR 2SC3330 R,S,T,U,V
TR251	ET-397160J	TR 2SC3330 R,S,T,U,V
TR281	ET-354414	TR DTC144ES
TR282	ET-369248	TR DTA114YS
TR283	ET-354414	TR DTC144ES
TR301	ET-397160J	TR 2SC3330 R,S,T,U,V
TR302	ET-397176J	TR 2SD1012-V F,G,H
TR304	ET-397160J	TR 2SC3330 R,S,T,U,V
TR305	ET-397160J	TR 2SC3330 R,S,T,U,V
TR306	ET-397160J	TR 2SC3330 R,S,T,U,V
TR307	ET-397160J	TR 2SC3330 R,S,T,U,V
TR308	ET-397160J	TR 2SC3330 R,S,T,U,V
TR309	ET-397160J	TR 2SC3330 R,S,T,U,V
TR351	ET-397160J	TR 2SC3330 R,S,T,U,V
TR352	ET-397176J	TR 2SD1012-V F,G,H
TR354	ET-397160J	TR 2SC3330 R,S,T,U,V
TR381	ET-369248	TR DTA114YS
TR382	ET-354414	TR DTC144ES
TR383	ET-369248	TR DTA114YS
TR401	ET-354414	TR DTC144ES
TR402	ET-354415	TR DTA144ES
TR403	* ET-366168	TR 2SD1292 Q,R
TR404	ET-397160J	TR 2SC3330 R,S,T,U,V
TR405	ET-397160J	TR 2SC3330 R,S,T,U,V
TR406	ET-354364	TR DTC143TS
TR407	ET-418329J	TR 2SC3708 S T05
TR408	ET-418329J	TR 2SC3708 S T05
TR501	ET-354414	TR DTC144ES
TR502-A	ET-354365	TR DTC114YS

Ref. No.	Part No.	Description
TR502-B	ET-354414	TR DTC144ES
TR503-A	ET-354365	TR DTC114YS
TR503-B	ET-354415	TR DTA144ES
TR504-A	ET-354365	TR DTC114YS
TR504-B	ET-361736	TR 2SC3576
TR505-A	ET-354365	TR DTC114YS
TR505-B	ET-361736	TR 2SC3576
TR506	ET-354365	TR DTC114YS
TR507	ET-354365	TR DTC114YS
TR508	ET-354365	TR DTC114YS
TR509	ET-354414	TR DTC144ES
TR510	ET-397160J	TR 2SC3330 R,S,T,U,V
TR601	ET-388338J	TR 2SB1425 S,E
TR602	ET-388338J	TR 2SB1425 S,E
TR603	ET-388338J	TR 2SB1425 S,E
TR604	ET-354415	TR DTA144ES
TR605	ET-373391	TR DTC143ZS
TR606-A	ET-354365	TR DTC114YS
TR606-B	ET-373391	TR DTC143ZS
TR607-A	ET-354365	TR DTC114YS
TR607-B	ET-373391	TR DTC143ZS
TR608	ET-397160J	TR 2SC3330 R,S,T,U,V
TR609	ET-397160J	TR 2SC3330 R,S,T,U,V
TR610	ET-354414	TR DTC144ES
TR611	ET-354414	TR DTC144ES
TR612	ET-353899	TR 2SA1317 S,T,U
TR613	ET-353899	TR 2SA1317 S,T,U
TR614	ET-373391	TR DTC143ZS
TR615	ET-373391	TR DTC143ZS
TR616	ET-388338J	TR 2SB1425 S,E
TR617	ET-388338J	TR 2SB1425 S,E
VR1	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
VR51	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
VR101	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
VR151	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
VR201	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
VR251	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
VR401	EV-422071J	R S-FIX V T05EVNDCAA03 0.1W224
VR402	EV-422071J	R S-FIX V T05EVNDCAA03 0.1W224
VR601	EV-408710J	R S-FIX V T05EVNDCAA03 0.1W472
VR602	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
VR603	EV-408710J	R S-FIX V T05EVNDCAA03 0.1W472
VR604	EV-408779J	R S-FIX V T05EVNDCAA03 0.1W103
X501	EI-418663J	OSC CE CST6.30MGW-TF01 T05

9. BIAS OSC P.C. BOARD

Ref. No.	Part No.	Description
T401	EO-408699J	COIL OSC 1 T2134 100.0KHZ

10. FL P.C. BOARD (AX-690)

Ref. No.	Part No.	Description
D701	ED-307572	D SILICON H 1SS131
D702	ED-307572	D SILICON H 1SS131
D703	ED-307572	D SILICON H 1SS131
IB701	EH-422070J	COMP R RGL12X 473J
IB702	EH-378540J	COMP R RGL5X 103J
IC701	EI-419341J	IC MN12510F
IN701	EM-419260M	IND FL BJ230GK
J701	EJ-422061J	SOCKET 00 6216 018 100 18P
X701	EI-396490J	OSC CE CST4.00MGW-TF01 T05

11. OPERATION P.C. BOARD

Ref. No.	Part No.	Description
D701	ED-418635J	D LED SEL6415E(C,D) GREEN [AX-590]
D702	ED-418635J	D LED SEL6415E(C,D) GREEN [AX-590]
D703	ED-418635J	D LED SEL6415E(C,D) GREEN [AX-590]
D704	ED-418635J	D LED SEL6415E(C,D) GREEN [AX-590]
D705	ED-418636J	D LED SEL6215S(C,D) RED [AX-590]
D706	ED-418636J	D LED SEL6215S(C,D) RED [AX-590]
D707	ED-418636J	D LED SEL6215S(C,D) RED [AX-590]
J702	EJ-422061J	SOCKET 00 6216 018 100 18P [AX-690]
SW701	ES-419357N	SW SLIDE SS-336-B12H5BKS 1-02N [AX-590]
TS701	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
TS702-A	ES-396610J	SW TACT SOR-122HS T05 [AX-590]
TS702-B	ES-414593J	SW TACT SOR-142HS T05 [AX-690]
TS703	ES-396610J	SW TACT SOR-122HS T05
TS704-A	ES-396610J	SW TACT SOR-122HS T05 [AX-590]
TS704-B	ES-414593J	SW TACT SOR-142HS T05 [AX-690]
TS705-A	ES-414593J	SW TACT SOR-142HS T05 [AX-590]
TS705-B	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
TS706	ES-414593J	SW TACT SOR-142HS T05
TS707	ES-414593J	SW TACT SOR-142HS T05
TS708	ES-414593J	SW TACT SOR-142HS T05
TS709	ES-414593J	SW TACT SOR-142HS T05
TS710-A	ES-414593J	SW TACT SOR-142HS T05 [AX-590]
TS710-B	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
TS711-A	ES-396610J	SW TACT SOR-122HS T05 [AX-590]
TS711-B	ES-414593J	SW TACT SOR-142HS T05 [AX-690]
TS712	ES-396610J	SW TACT SOR-122HS T05
TS713-A	ES-396610J	SW TACT SOR-122HS T05 [AX-590]
TS713-B	ES-414593J	SW TACT SOR-142HS T05 [AX-690]
TS714	ES-396610J	SW TACT SOR-122HS T05 [AX-690]

12. PRE-AMP P.C. BOARD

Ref. No.	Part No.	Description
D802	ED-418718J	D LED SEL3413E(C,D) GREEN
D803	ED-418718J	D LED SEL3413E(C,D) GREEN [AX-690]
IC801-A	EI-213390	IC NJM4558D [AX-590]
IC801-B	EI-400756J	IC NJM4558L-B [AX-690]
IC802	EI-213390	IC NJM4558D [AX-590]
IC803	EI-213390	IC NJM4558D [AX-590]
TR801	ET-394735J	TR 2SC3792 T05
TR802	ET-394735J	TR 2SC3792 T05
TR806	ET-354371	TR DTC124ES [AX-690]
TR807	ET-354371	TR DTC124ES [AX-690]
TR808	ET-354371	TR DTC124ES [AX-690]
TR851	ET-394735J	TR 2SC3792 T05
TR852	ET-394735J	TR 2SC3792 T05
TR881	ET-354371	TR DTC124ES
TR882-A	ET-354371	TR DTC124ES [AX-590]
TR882-B	ET-354415	TR DTA144ES [AX-690]
TR883-A	ET-397160J	TR 2SC3330 R,S,T,U,V [AX-590]
TR883-B	ET-354371	TR DTC124ES [AX-690]
TR884-A	ET-354415	TR DTA144ES [AX-590]
TR884-B	ET-397160J	TR 2SC3330 R,S,T,U,V [AX-690]
TR885-A	ET-354371	TR DTC124ES [AX-590]
TR885-B	ET-354415	TR DTA144ES [AX-690]
TR886-A	ET-354415	TR DTA144ES [AX-590]
TR886-B	ET-353899	TR 2SA1317 S,T,U [AX-690]
TR887-A	ET-354371	TR DTC124ES [AX-590]
TR887-B	ET-353899	TR 2SA1317 S,T,U [AX-690]
TR888-A	ET-353899	TR 2SA1317 S,T,U [AX-590]
TR888-B	ET-397160J	TR 2SC3330 R,S,T,U,V [AX-690]
TR889-A	ET-353899	TR 2SA1317 S,T,U [AX-590]
TR889-B	ET-397160J	TR 2SC3330 R,S,T,U,V [AX-690]
TR890	ET-397160J	TR 2SC3330 R,S,T,U,V [AX-590]
TR891	ET-397160J	TR 2SC3330 R,S,T,U,V [AX-590]
TS801	ES-396610J	SW TACT SOR-122HS T05
TS802	ES-396610J	SW TACT SOR-122HS T05
TS803-A	ES-396610J	SW TACT SOR-122HS T05 [AX-590]
TS803-B	ES-415046J	SW TACT SOR-132HS T05 [AX-690]
TS804	ES-415046J	SW TACT SOR-132HS T05 [AX-690]
TS805	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
TS806	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
TS807	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
TS808	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
TS809	ES-396610J	SW TACT SOR-122HS T05 [AX-690]

Ref. No.	Part No.	Description
TS810	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
TS811	ES-396610J	SW TACT SOR-122HS T05 [AX-690]
VR801-A	EV-419352N	VR ROTARY RK14K1230 L25 B103X2 [AX-590]
VR801-B	EV-419350N	VR ROTA.RK11K1130 SP W104 [AX-690]
VR802	EV-419351N	VR ROTARY RK14K1230 L30 B103X2 [AX-590]
VR803-A	EV-419350N	VR ROTA.RK11K1130 SP W104 [AX-590]
VR803-B	EV-419353N	VR ROTARY RK14K12C0 L30 A104X2 [AX-690]

13. MAIN VOLUME P.C. BOARD

Ref. No.	Part No.	Description
VR802	EV-418664N	VR SPL RK16812MG SPE.104X2 [AX-690]
VR804	EV-418664N	VR SPL RK16812MG SPE.104X2 [AX-590]

14. PHONES JACK P.C. BOARD

Ref.No.	Part No.	Description
J20-A	EJ-419348N	PHONE J 3P LGS6506-0100 3.5 [AX-590]
J20-B	EJ-419347N	PHONE J 3P LGY6502-0600 3.5 [AX-690]
R807	ER-397194J	R OMF V T05FS ERG1SE 1W 331J [AX-690]
R815	ER-397194J	R OMF V T05FS ERG1SE 1W 331J [AX-590]
R857	ER-397194J	R OMF V T05FS ERG1SE 1W 331J [AX-690]
R865	ER-397194J	R OMF V T05FS ERG1SE 1W 331J [AX-590]

15. SURROUND SW P.C. BOARD(AX-590)

Ref. No.	Part No.	Description
SW801	ES-419356N	SW PUSH PS-135M2-A22S 2-02N

16. SPEAKER/SURROUND SW P.C. BOARD (AX-690)

Ref.No.	Part No.	Description
SW801	ES-419356N	SW PUSH PS-135M2-A22S 2-02N
SW802	ES-419356N	SW PUSH PS-135M2-A22S 2-02N

17. VOLUME LED P.C. BOARD

Ref. No.	Part No.	Description
D801	ED-418635J	D LED SEL6415E(C,D) GREEN

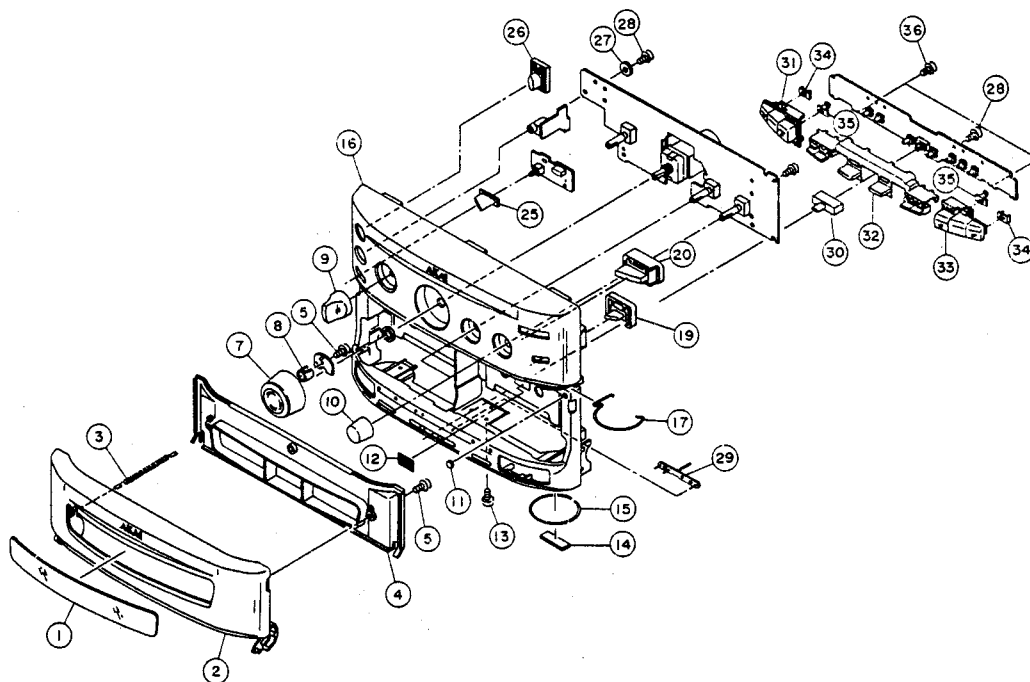
18. GEQ P.C. BOARD (AX-690)

Ref. No.	Part No.	Description
D1	ED-307572	D SILICON H 1SS131
IC1	EI-419339J	IC M62408FP
IC2	EI-213390	IC NJM4558D
IC3	EI-213390	IC NJM4558D
IC4	EI-213390	IC NJM4558D
TR1	ET-360399	TR DTC114TS
TR2	ET-360399	TR DTC114TS
TR3	ET-360399	TR DTC114TS
TR4	ET-360399	TR DTC114TS
TR5	ET-360399	TR DTC114TS

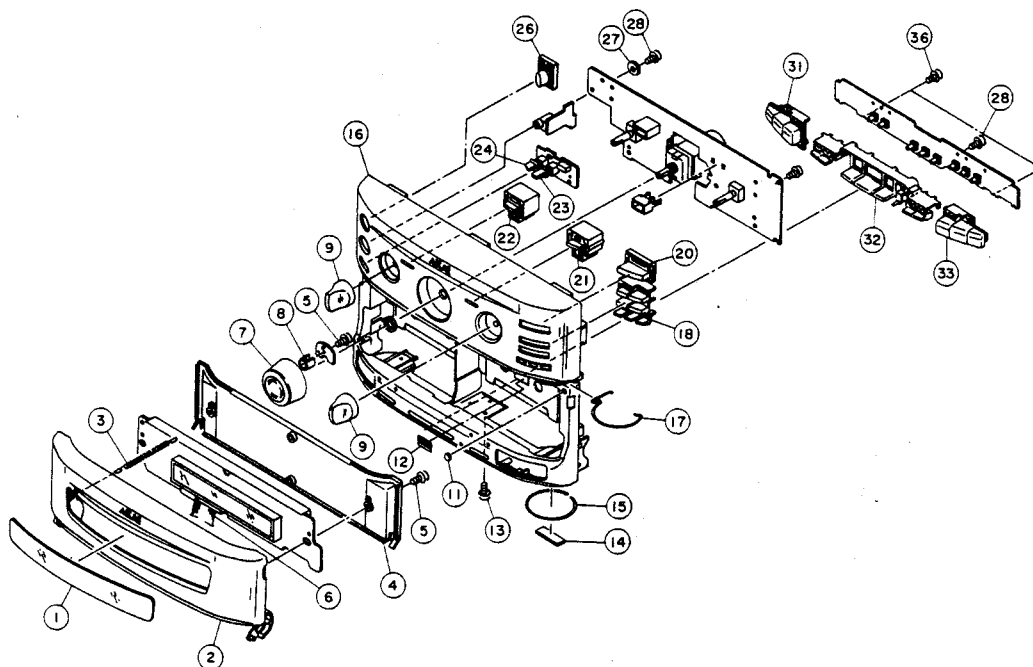
19. FRONT PANEL BLOCK

Ref. No.	Part No.	Description
1-A	SE-419931M	WINDOW DOOR(1) (SG) [590]
1-B	SE-419932M	WINDOW DOOR(2) (SG) [690]
2-A	SP-419925M	DOOR AX-590 (SG) [590]
2-B	SP-419926M	DOOR AX-690 (SG) [690]
3-A	ZG-419874M	SP PULL DOOR 590 (SG) [590]
3-B	ZG-419992M	SP PULL DOOR 690 (SG) [690]
4-A	SP-419929M	COVER DOOR(A) (SG) [590]
4-B	SP-419930M	COVER DOOR(B) (SG) [690]
5	ZS-394414J	BT BID30X08STL BZN
6	EW-418812N	CORD FFC AD P1.25 L=68 18P [690]
7	SK-419880M	KNOB VOLUME (SG)
8	SE-419884M	LENS VOLUME (SG)
9	SK-419881M	KNOB BALANCE (SG)
10	SK-419882M	KNOB TONE (SG) [590]
11	SZ-419902M	CUSHION DOOR (SG)
12	SE-394092M	REFLECTOR (SG)
13	ZS-404181J	BT BID30X06STL BZN
14	SA-394136M	CUSHION FOOT (SG)
15	SZ-419923M	RING FOOT(1) (SG)
16-A	SP-419875M	PANEL FRONT 590 (SG) [590]
16-B	SP-419909M	PANEL FRONT 690 (SG) [690]
17	SZ-419924M	RING FOOT(2) (SG)
18	SB-419910M	BUTTON EQ (SG) [690]
19	SB-419879M	BUTTON BASS (SG) [590]
20	SB-419877M	BUTTON INPUT (SG)
21	SB-419911M	BUTTON SUPER (SG) [690]
22	SB-419912M	BUTTON SOURCE (SG) [690]
23	SB-419914M	BUTTON SP(R) (SG) [690]
24	SB-419913M	BUTTON SP(L) (SG) [690]
25	SB-419878M	BUTTON SURROUND (SG) [590]
26	SB-419876M	BUTTON POWER (SG)
27	ZW-418658N	PW30X120X080STL CMT (SG)
28	ZS-393515J	BT BID30X10STL BZN
29	SE-419935M	LENS REC (SG) [590]
30	SK-419934M	KNOB DOLBY (SG) [590]
31-A	SB-419903M	BUTTON PLAY(L)-A (SG) [590]

FRONT PANEL BLOCK (AX-590)



FRONT PANEL BLOCK (AX-690)



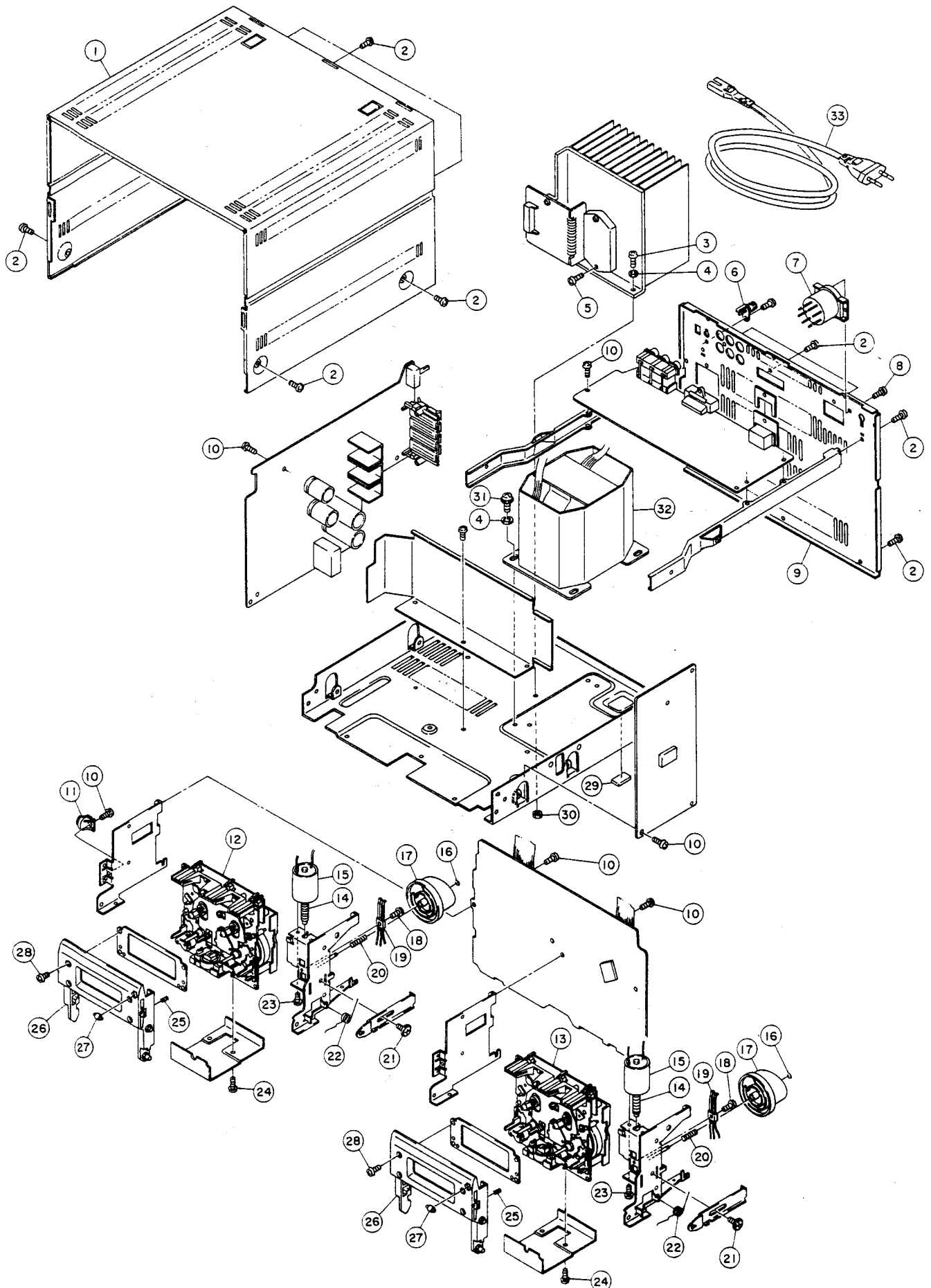
Ref. No.	Part No.	Description
31-B	SB-419920M	BUTTON PLAY(L)-B (SG) [690]
32-A	SB-419933M	BUTTON OPERATION (SG) [590]
32-B	SB-419915M	BUTTON FUNCTION AX(1) (SG) [690]
33-A	SB-419904M	BUTTON PLAY(R)-A (SG) [590]
33-B	SB-419921M	BUTTON PLAY(R)-B (SG) [690]

Ref. No.	Part No.	Description
34	SE-419901M	LENS DIR(B) (G) [590]
35	SE-419936M	LENS DIR(A) (G) [590]
36	ZS-331181	BT BID30X08STL N13

NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

FINAL ASSEMBLY BLOCK



PARTS LIST

20. FINAL ASSEMBLY BLOCK

Ref. No.	Part No.	Description
1	SP-419922M	COVER UPPER AX(1) (SG)
2	ZS-394412J	BT BID30X08STL BZN PROJECTION
3	ZS-435273	BID40X10STL CMT
4	ZW-410640J	SW40STL CMT
5	ZS-395789J	BT BID30X16STL BZN
6	EJ-329610	TERMINAL W/SCREW UB-0067 L 1P
7	*ES-418650J	SW SELECT ESE-37311
8	ZS-393644J	ST BID30X08STL BZN PROJECT
9-A	SP-419885M	PANEL REAR AX-590(U) (SG)
9-B	SP-419886M	PANEL REAR AX-590(E,V) (SG)
9-C	SP-419887M	PANEL REAR AX-590(B,S,Y7) (SG)
9-D	SP-419890M	PANEL REAR AX-690(U) (SG)
9-E	SP-419891M	PANEL REAR AX-690(E,V) (SG)
9-F	SP-419892M	PANEL REAR AX-690(B,S,Y7) (SG)
10	ZS-394414J	BT BID30X08STL BZN
11	MZ-418867J	DAMPER 3F96-A-E
12	BB-418666N	MECHA CRF-4108 [L MECHA]
13	BB-418668N	MECHA CRF-4107 [R MECHA]
14	MZ-419867M	WORM (SG)
15	BM-374198	MOTOR RF-370CA-15370
16	ZW-377824	SLIT W26X050X025LMN
17	MZ-419866M	CAM GEAR EJECT (SG)
18	ZS-383755J	ST BID20X06STL CMT
19	ES-408755M	SW LEAF LSA-2127E
20	ZG-425111N	SP PUSH CAM GEAR (SG)
21	ZS-419870M	SCREW GRADUATED (SG)
22	ZG-419868M	SP TORSION EJECT (SG)
23	ZS-432674	PAN30X03STL CMT
24	ZS-418754N	ST PAN20X03STL CMT (SG)
25	ZG-419869M	SP PUSH CASSETTE (SG)
26	MZ-419865M1	HOLDER CASSETTE (SG)
27	MR-407755M	ROLLER (SG)
28	ZS-370834	BID26X05STL BZN
29	SA-407840M	CUSHION FOOT REAR (SG)
30	ZW-311744	N40STL CMT 3
31	ZS-346742	ST PAN40X08STL CMT CUP
32-A	*BT-418651N	TRANS POW C1036-U [U,B,S] [590]
32-B	*BT-418652N	TRANS POW C1036-E,V [E,V] [590]
32-C	*BT-418654N	TRANS POW C1037-U [U,B,S] [690]
32-D	*BT-418655N	TRANS POW C1037-E [E] [690]
32-E	*BT-418657N	TRANS POW C1037-V [V] [690]
33-A	*EW-419258M	AC CORD 200S SZ-4W H03 VVH2-F U [U]
33-B	*EW-419249M	AC CORD 200S SE-1 SE-4 B E [E,V]
33-C	*EW-419248M	AC CORD 200S SE-5 SE-6 B B [B]
33-D	*EW-419250M	AC CORD 200 S SA-5SA-6 S [S]

NOTE :

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

21. ACCESSORY

Ref. No.	Part No.	Description
1-A	AX-418670N	REMOCON RC-S590
1-B	AX-418671N	REMOCON RC-S690

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Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.
AX418670N	21-1-A	ED418718J	12-D802	EJ419346N	4-J1	ES419355N	5-SW201
AX418671N	21-1-B	ED418718J	12-D803	EJ419347N	14-J20-B	ES419356N	15-SW801
BAC1036T050A	3-1-A	ED422073J	5-D224	EJ419348N	14-J20-A	ES419356N	16-SW801
BAC1036T050B	3-1-B	ED511907	4-D4	EJ422061J	10-J701	ES419356N	16-SW802
BAC1036T050C	3-1-C	ED511907	4-D5	EJ422061J	11-J702	ES419357N	11-SW701
BAC1036T050D	3-1-D	ED511907	5-D202	EM419260M	10-IN701	ES733688J	2-38
BAC1036T050E	3-1-E	ED511907	5-D203	EO356809	8-FL1	ES733689J	2-39
BAC1036T050F	3-1-F	ED511907	5-D204	EO356809	8-FL51	ET305463	5-TR229
BAC1036T060A	3-2-A	ED511907	5-D205	EO356809	8-FL102	ET305463	5-TR230
BAC1037T060A	3-2-B	ED511907	5-D206	EO356809	8-FL152	ET337759	5-TR225
BAC1037T070A	3-3	ED511907	5-D207	EO403270J	8-L401	ET352726	5-TR203
BB418666N	20-12	ED511907	5-D208	EO403613J	5-L201	ET353899	5-TR206
BB418668N	20-13	ED511907	5-D209	EO403613J	5-L202	ET353899	5-TR210
BM374198	20-15	ED511907	5-D210	EO408699J	9-T401	ET353899	5-TR213
BM733691J	2-43	ED511907	5-D230	EO416686J	4-L91	ET353899	5-TR219
BT418651N	20-32-A	ED511907	5-D231	EP733672J	2-18	ET353899	5-TR220
BT418652N	20-32-B	ED511907	6-D301	EQ422089N	5-RL201	ET353899	5-TR231
BT418654N	20-32-C	ED511907	6-D302	ER200746	4-FR1	ET353899	8-TR612
BT418655N	20-32-D	EF393708M	4-F1-B	ER200746	4-FR2	ET353899	8-TR613
BT418657N	20-32-E	EF393708M	4-F2-B	ER336771	6-R309	ET353899	12-TR886-B
EC389414J	4-C91	EF393708M	5-F203-B	ER336771	6-R359	ET353899	12-TR887-B
ED307572	4-D2	EF393708M	5-F204-B	ER347610	5-R253	ET353899	12-TR888-A
ED307572	4-D3	EF394701M	5-F201-A	ER347610	5-R254	ET353899	12-TR889-A
ED307572	5-D211	EF394701M	5-F202-A	ER353877	5-R245	ET354364	8-TR2
ED307572	5-D212	EF394704M	5-F201-B	ER353877	5-R246	ET354364	8-TR52
ED307572	5-D213	EF394704M	5-F202-B	ER397194J	14-R807	ET354364	8-TR104
ED307572	5-D214	EF403289M	4-F1-A	ER397194J	14-R815	ET354364	8-TR154
ED307572	5-D215	EF403289M	4-F2-A	ER397194J	14-R857	ET354364	8-TR406
ED307572	5-D216	EF403289M	5-F203-A	ER397194J	14-R865	ET354365	8-TR181
ED307572	5-D221	EF403289M	5-F204-A	ER422301J	5-R262	ET354365	8-TR502-A
ED307572	5-D223	EF403606M	4-F3	ER422301J	5-R263	ET354365	8-TR503-A
ED307572	5-D228	EF403606M	4-F4	ER422301J	5-R269	ET354365	8-TR504-A
ED307572	5-D229	EH378540J	10-IB702	ER422301J	5-R270	ET354365	8-TR505-A
ED307572	8-D193	EH383119J	8-IB502	ER422301J	5-R271	ET354365	8-TR506
ED307572	8-D195	EH422068J	8-IB501-B	ER422301J	6-R315	ET354365	8-TR507
ED307572	8-D301	EH422070J	10-IB701	ER422301J	6-R360	ET354365	8-TR508
ED307572	8-D302	EH422207J	8-IB501-A	ES396610J	11-TS701	ET354365	8-TR606-A
ED307572	8-D303	EI200573	4-IC104	ES396610J	11-TS702-A	ET354365	8-TR607-A
ED307572	8-D304	EI200573	4-IC105	ES396610J	11-TS703	ET354371	5-TR205
ED307572	8-D501	EI213390	4-IC101	ES396610J	11-TS704-A	ET354371	5-TR211
ED307572	8-D502	EI213390	4-IC102	ES396610J	11-TS705-B	ET354371	5-TR212
ED307572	8-D503	EI213390	4-IC103	ES396610J	11-TS710-B	ET354371	5-TR232
ED307572	8-D504	EI213390	12-IC801-A	ES396610J	11-TS711-A	ET354371	12-TR806
ED307572	8-D601	EI213390	12-IC802	ES396610J	11-TS712	ET354371	12-TR807
ED307572	8-D602	EI213390	12-IC803	ES396610J	11-TS713-A	ET354371	12-TR808
ED307572	10-D701	EI213390	18-IC2	ES396610J	11-TS714	ET354371	12-TR881
ED307572	10-D702	EI213390	18-IC3	ES396610J	12-TS801	ET354371	12-TR882-A
ED307572	10-D703	EI213390	18-IC4	ES396610J	12-TS802	ET354371	12-TR883-B
ED307572	18-D1	EI332259	4-IC106	ES396610J	12-TS803-A	ET354371	12-TR885-A
ED387820J	5-D219	EI353421	8-IC601	ES396610J	12-TS805	ET354371	12-TR887-A
ED387820J	5-D220	EI353421	8-IC602	ES396610J	12-TS806	ET354414	5-TR226
ED388320J	5-D217	EI358554	7-IC401-B	ES396610J	12-TS807	ET354414	8-TR182
ED388320J	5-D218	EI387938J	8-IC502	ES396610J	12-TS808	ET354414	8-TR281
ED388320J	5-D222	EI393323J	8-IC1	ES396610J	12-TS809	ET354414	8-TR283
ED388320J	5-D225	EI393323J	8-IC101	ES396610J	12-TS810	ET354414	8-TR382
ED391003J	8-D401	EI394709J	7-IC401-A	ES396610J	12-TS811	ET354414	8-TR401
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ED395862J	8-D603	EI408393J	8-IC503	ES414593J	11-TS704-B	ET354414	8-TR509
ED400171J	5-D226	EI418663J	8-X501	ES414593J	11-TS705-A	ET354414	8-TR610
ED400171J	5-D227	EI419330J	8-IC201-A	ES414593J	11-TS706	ET354414	8-TR611
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ED418635J	11-D701	EI419339J	18-IC1	ES414593J	11-TS708	ET354415	8-TR503-B
ED418635J	11-D702	EI419341J	10-IC701	ES414593J	11-TS709	ET354415	8-TR604
ED418635J	11-D703	EI425471J	8-IC501	ES414593J	11-TS710-A	ET354415	12-TR882-B
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Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.
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ABBREVIATIONS (AMPLIFIER)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
A	Analog	MC	Moving Coil
AC	Alternating Current	MM	Moving Magnet
AMP	AMPlifier	PCB	Printed Circuit Board
CD	Compact Disc	R	Right
COM	COMmon	REG	REGulator
D	Digital	REC	RECord
D/A	Digital to Analog	TR	TRansistor
DAC	Digital to Analog Converter	SW	SWitch
DAT	Digital Audio Tape recorder	V.AMP	Voltage AMPlifier
DC	Direct Current	V.DISC	Video DISC
GND	GrouND	VR	Variable Resistance
L	Left	VTR	Video Tape Recorder
LED	Light Emitting Diode		

ABBREVIATIONS (CASSETTE)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
AC	Alternating Current	MIN	MINute
A/D	Analog/Digital	MML	Maximum Modulation Level
AF	Auto Fader	MOL	Maximum Output Level
AMP	AMPlifier	MPX	Multi PleX
AR	Anti Recording	NC	Not Connected (No Connection)
AT BIAS	Auto Turning BIAS	NFB	Negative Feed Back
ATT	ATTenuator	NORM	NORMAl
BAL	BALance	NR	Noise Reduction
BEF	Band Elimination Filter	OSC	OSCillator (OSCillation)
BSS	Blank Search System	P	Pulse
CAP M	CAPstan Motor	PB	Play Back
CH	CHannel	QMSS	Quick Memory Search System
COMP	COMParator	QR	Quick Reverse
CONT	CONTinuance	R CH	Right CHannel
CRLP	Computer Recording Level Processing	REC	RECord (RECORDing)
CS	Chip Select	REV	REVerse
D/A	Digital/Analog	ROT	ROTation
DC	Direct Current	REW	REWind
DET	DETEctor	SEC	SECONd
DISCRI	DISCRIminator	SELE	SELEctor
DUB	DUBbing	SENS	SENSitivity
EQ	EQUALizer	SEPP	Single Ended Push Pull
FF (or F.FWD)	Fast Foward	SIG	SIGnal
FLD	FLuorescent Display	SPECT	SPECTrum
FREQ	FREQUENCY	STD	STANdard
FWD	ForWarD	SW	SWitch
GND	GrouND	SYSCON	SYStem CONtrol
H	High	TP	Test Point
HPF	High Pass Filter	TRIG	TRIGa
IND	INDicator	VCA	Voltage Control Attenuator
IPLS	Instant Program Location System	VOL	VOLUME
L	Low	VOLT	VOLTage
L CH	Left CHannel	VR	Variable Resistor
LED	Light Emitting Diode	X'TAL	cystAL
MEMO	MEMOry	X1	Normal speed
MICOM	MicroCOMputer	X2	Dubble speed

SPEAKER SYSTEM

MODEL SR-590, 690, 790

I. SPECIFICATIONS

	SR-590	SR-690	SR-790
System constructions	3-WAY 3 speakers	3-WAY 3 speakers	3-WAY 3 speakers
Woofers unit	135 mm cone type	165 mm cone type	175 mm P.P. cone type
Midrange unit	57 mm cone type	57 mm cone type	57 mm cone type
Tweeter unit	20 mm dome type	20 mm dome type	20 mm dome type
System impedance	6 ohms	6 ohms	6 ohms
Max. power input	50 W	65 W	70 W
Sensitivity	More than 88 dB / Wb/m	More than 89 dB / Wb/m	More than 88 dB / Wb/m
Frequency range	55 Hz to 20 kHz	55 Hz to 20 kHz	50 Hz to 20 kHz
Harmonic distortion	Less than 3 %	Less than 3 %	Less than 3 %
Enclosure type	Front bass reflex	Front bass reflex	Front bass reflex
Units layout	Center in-line	Center in-line	L/R symmetry
Front grille	Semi fixed type (cloth)	Semi fixed type (cloth)	Removable (cloth)
Dimensions (with grille)	174 (W) x 310.5 (H) x 252 (D)	200 (W) x 397.5 (H) x 270.5 (D)	204 (W) x 397.5 (H) x 249 (D)
Net weight	3.4 kg / pc	4.9 kg / pc	5.6 kg / pc

* For improvement purposes, specifications and design are subject to change without notice.

II. PARTS LIST

2-1. MODEL SR-590

Ref. No.	Part No.	Description
1	SS-733222K	SPEAKER PIEZO PT-20T-C [PIEZO-TWEETER]
2	SS-733728K	SPEAKER TWEETER CT-57F11(T) [MID-RANGE]
3	SS-733729K	SPEAKER WOOFER TAU-13W03001 [WOOFER]
4	TS-733727K	NET FRAME ASSY SR-590
5	SM-733726K	BUDGE AKAI
6	ZW-733228K	BUSH BADGE
7	TS-733213K	HOOK RUBBER

2-3. MODEL SR-790

Ref. No.	Part No.	Description
1	1545-594	SPEAKER TWEETER 20PT-950 [PIEZO-TWEETER]
2	1545-621	SPEAKER MIDRANGE 65CT-790 [MID-RANGE]
3	1545-611	SPEAKER WOOFER 17W-970 [WOOFER]
4	3917-546	FRONT GRILL (R) SR-790
5	3917-547	FRONT GRILL (L) SR-790
6	6554-188	CATCHER [FOR FRONT GRILL]
7	445-020-00	TERMINAL SPEAKER

2-2. MODEL SR-690

Ref. No.	Part No.	Description
1	SS-733222K	SPEAKER PIEZO PT-20T-C [PIEZO-TWEETER]
2	SS-733234K	SPEAKER TWEETER CT-57F06T [MID-RANGE]
3	SS-733510K	SPEAKER WOOFER TAU-13W03001 [WOOFER]
4	TS-733730K	NET FRAME ASSY SR-590
5	SM-733726K	BUDGE AKAI
6	ZW-733228K	BUSH BADGE
7	TS-733213K	HOOK RUBBER

MEMO

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AKAI

MODEL **TC-590, 890**

MODEL **AX-890**

MODEL **EA-890**

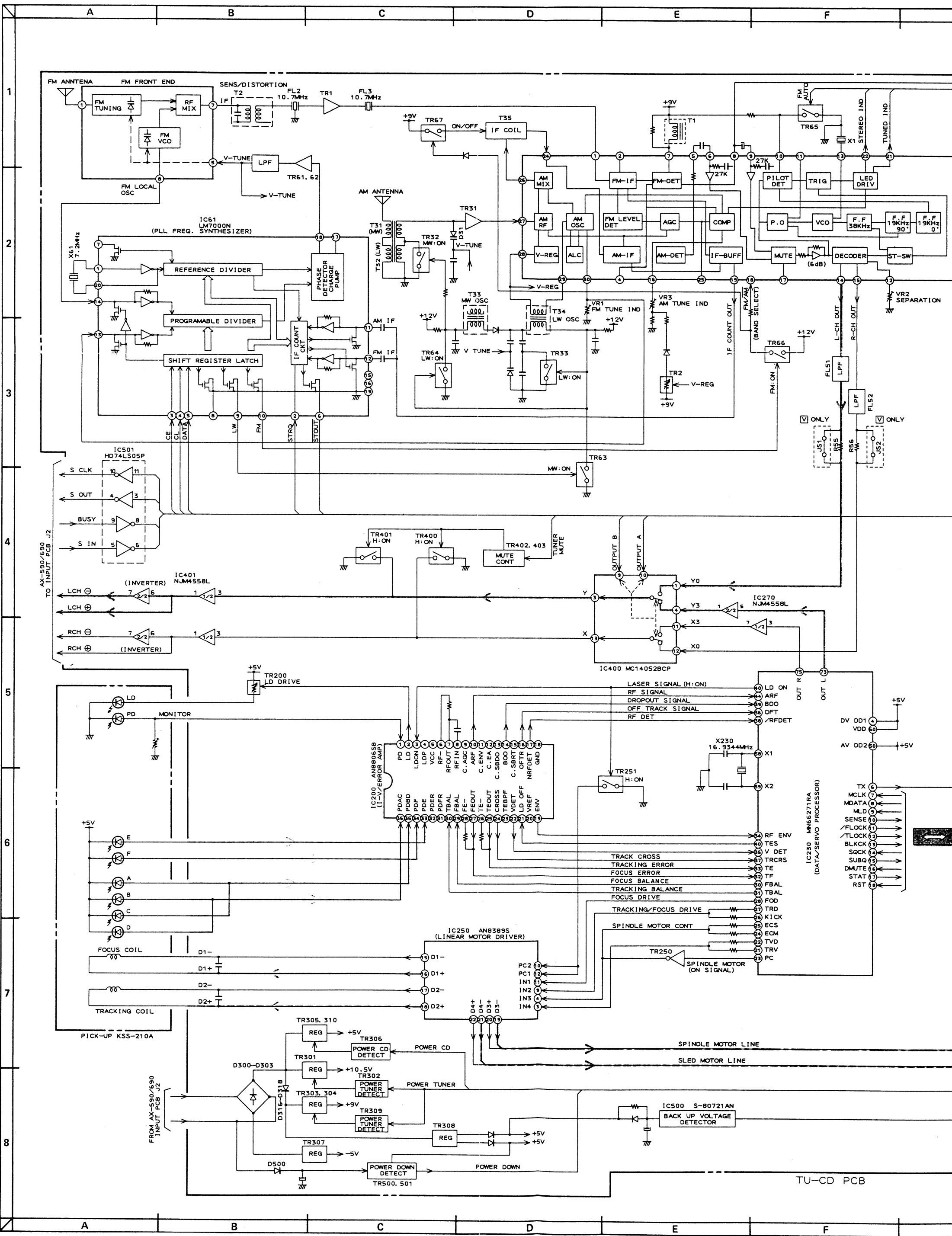
MODEL **SR-890**

SCHEMATIC DIAGRAMS AND PC BOARDS

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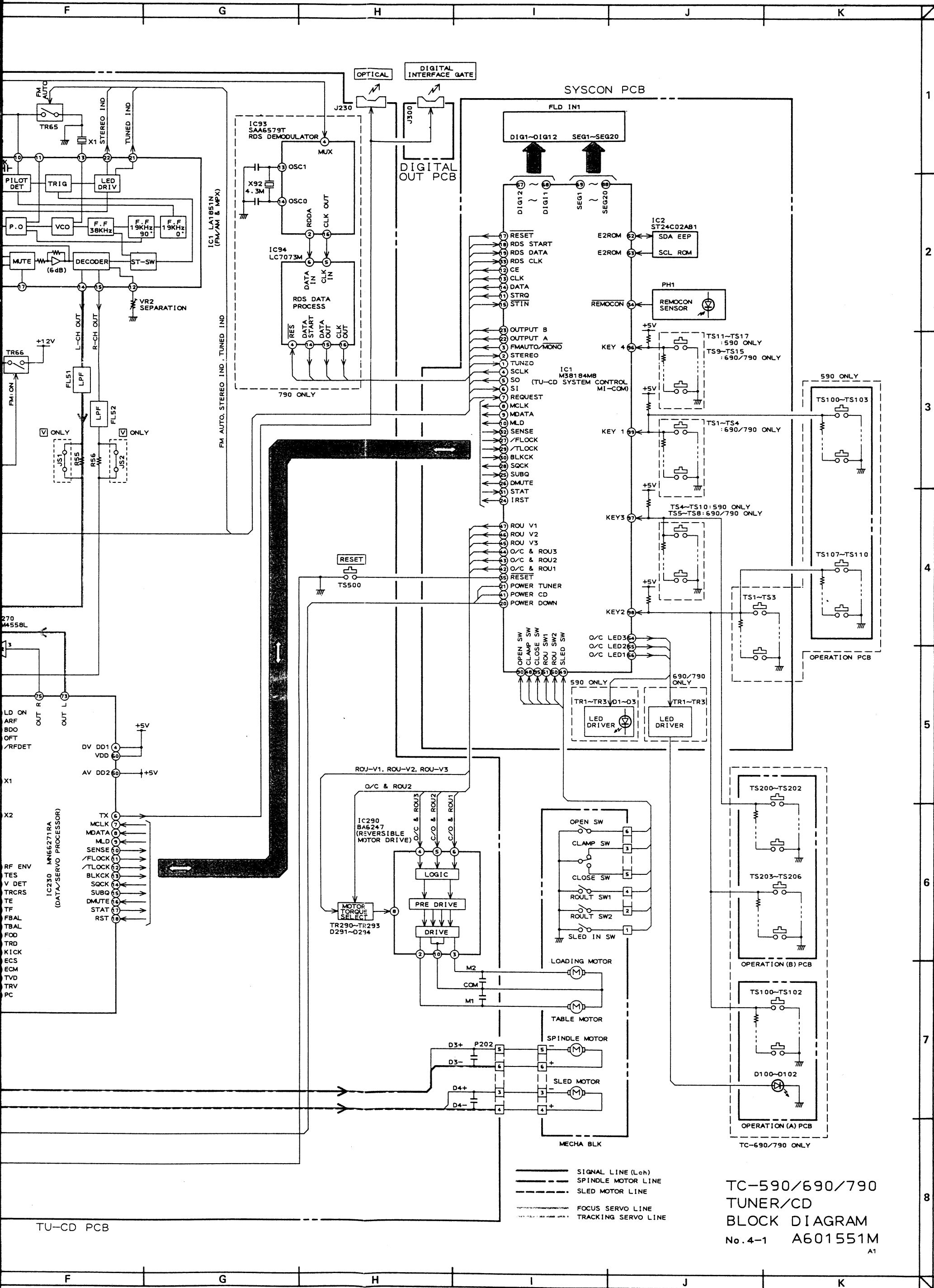
Use these schematic diagrams and PC boards together with the provided service manual.



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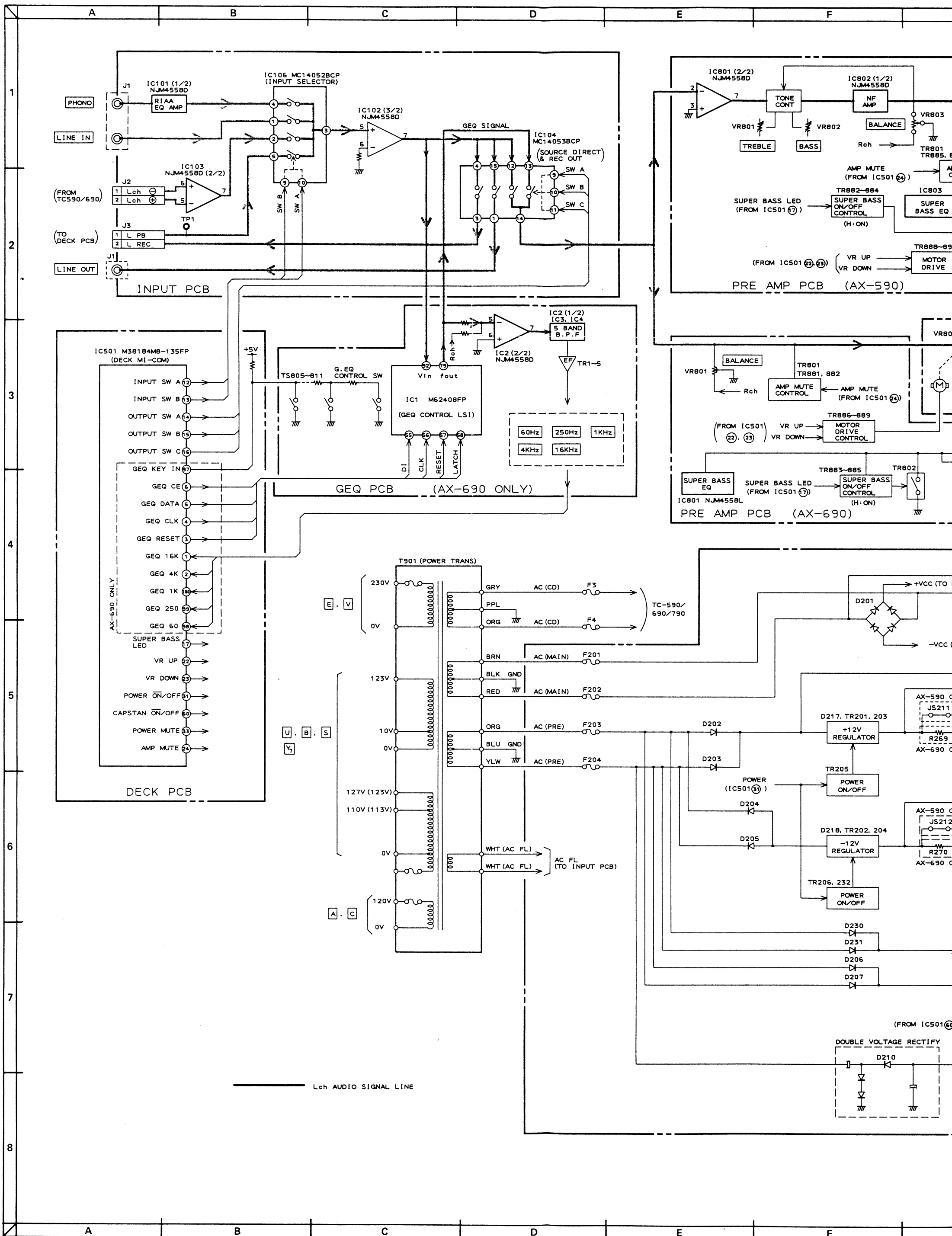
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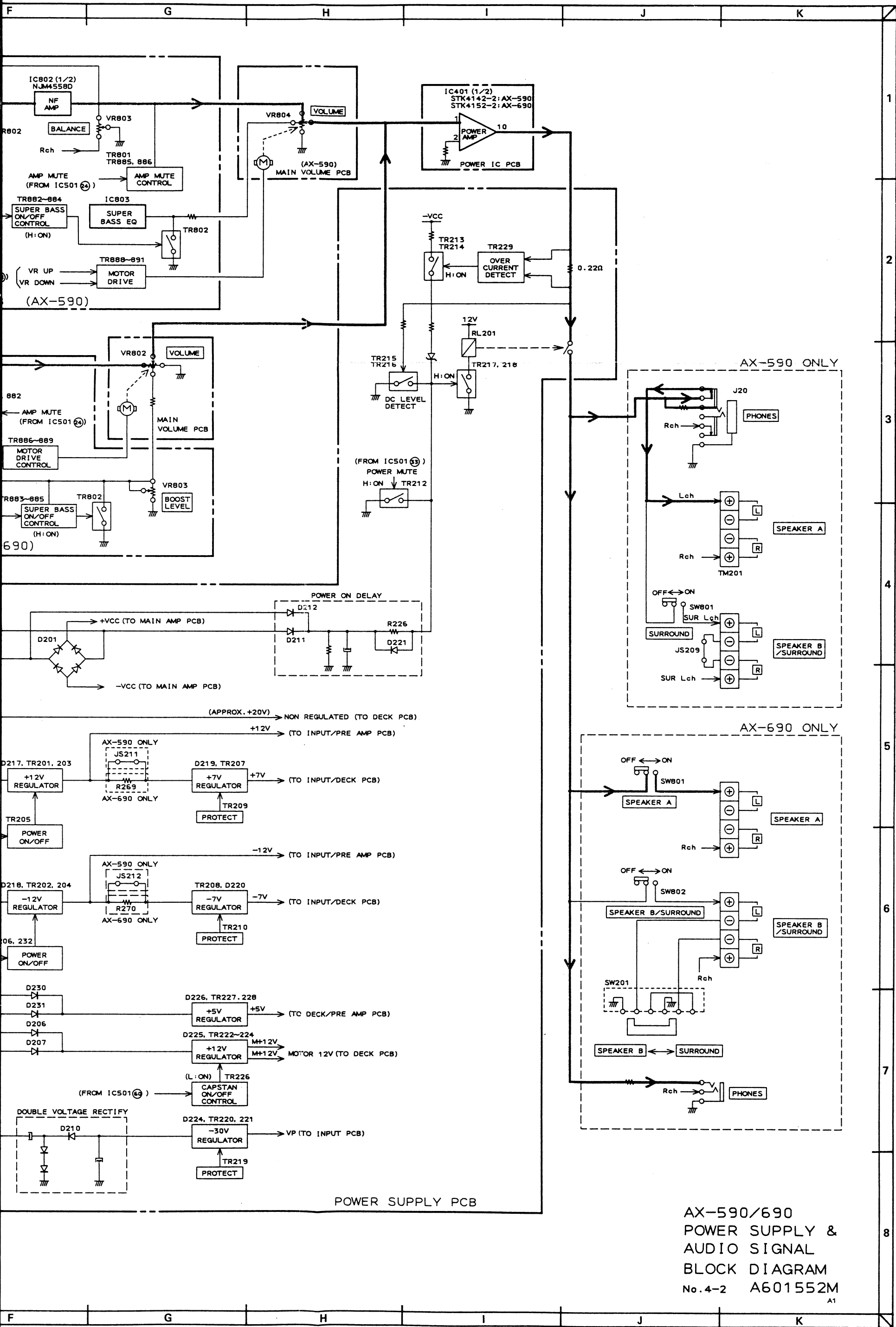
TU-CD PCB



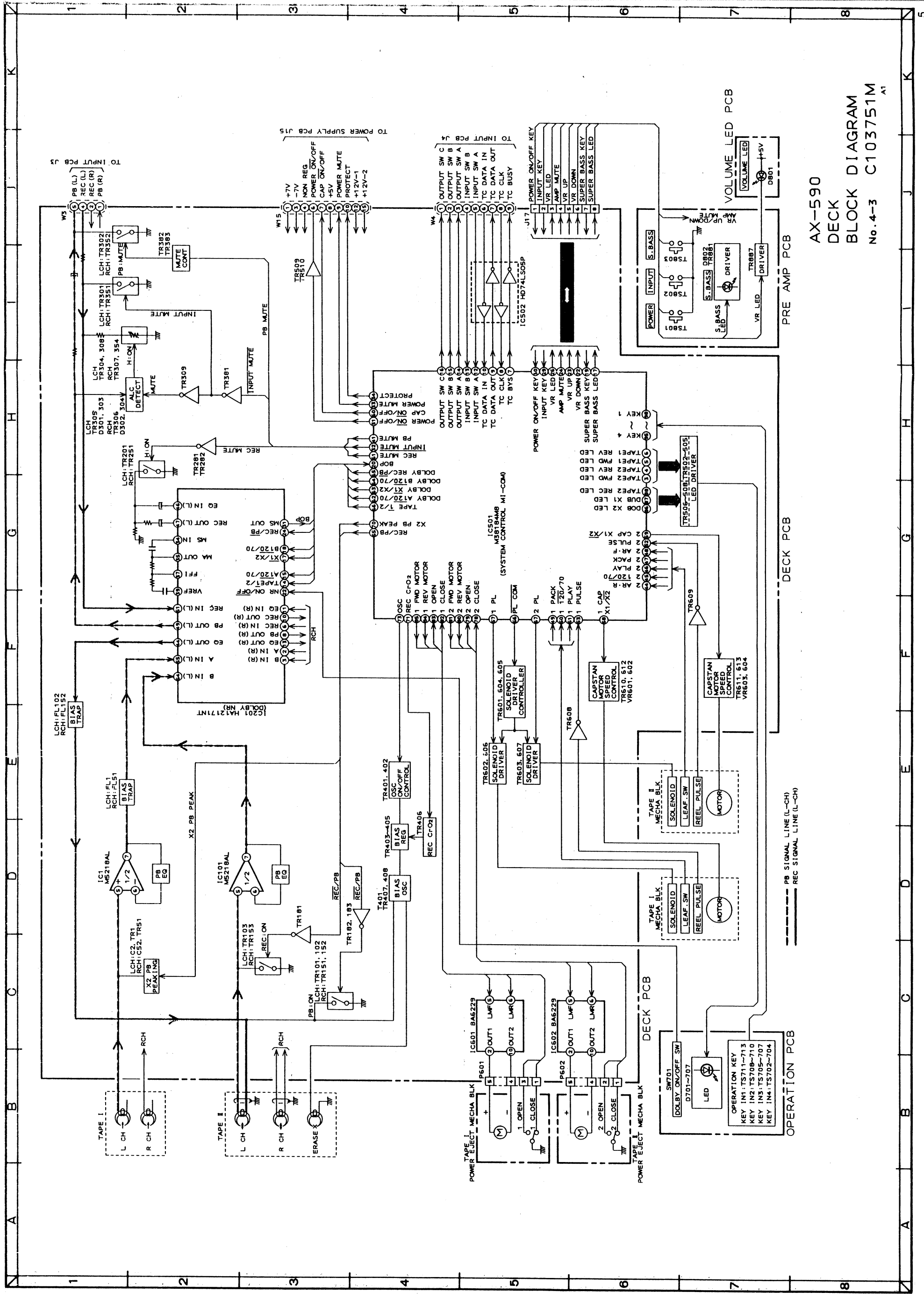
TC-590/690/790
TUNER/CD
BLOCK DIAGRAM
No. 4-1 A601551M
A1

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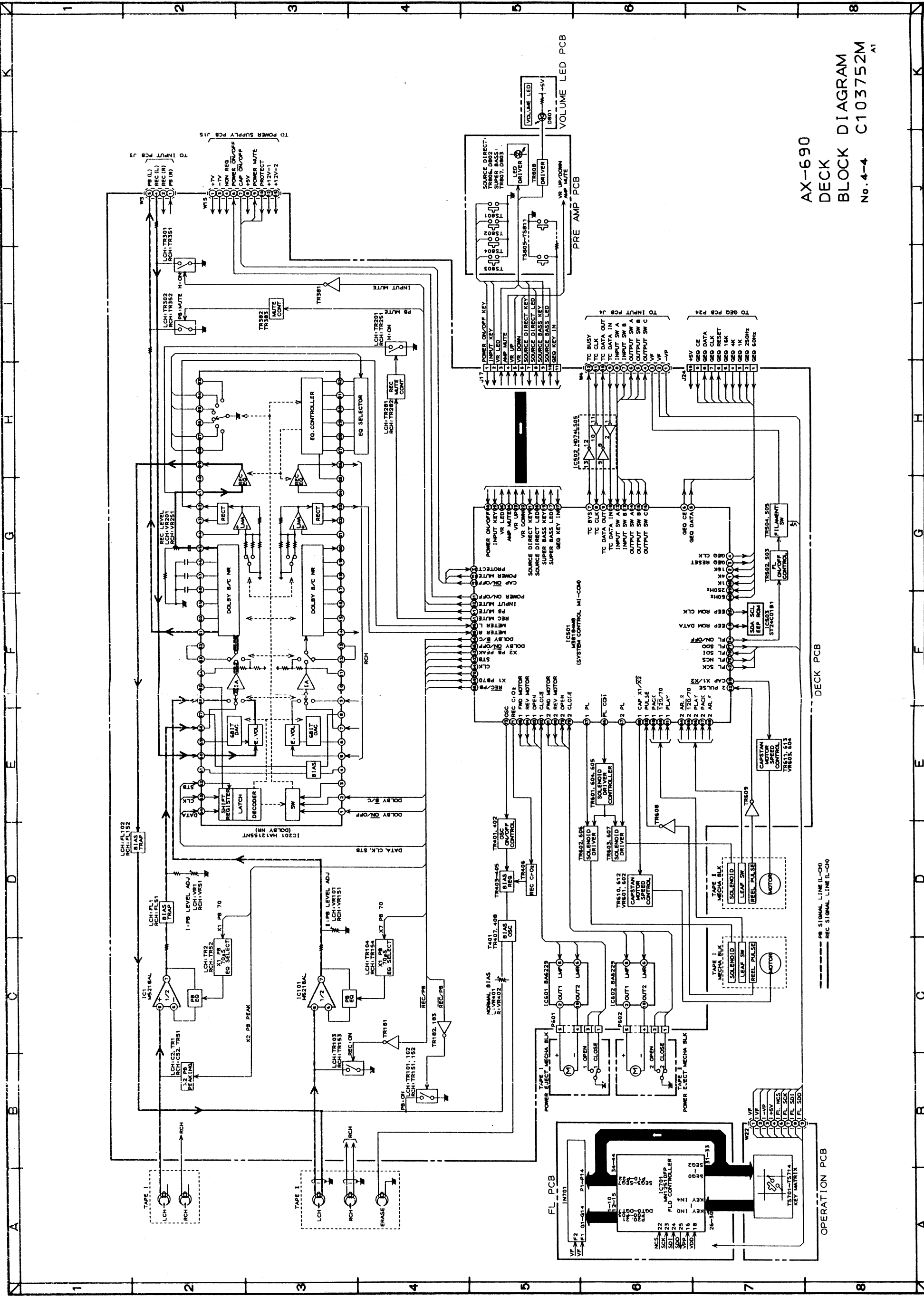




AX-590/690
 POWER SUPPLY &
 AUDIO SIGNAL
 BLOCK DIAGRAM
 No. 4-2 A601552M
 A1



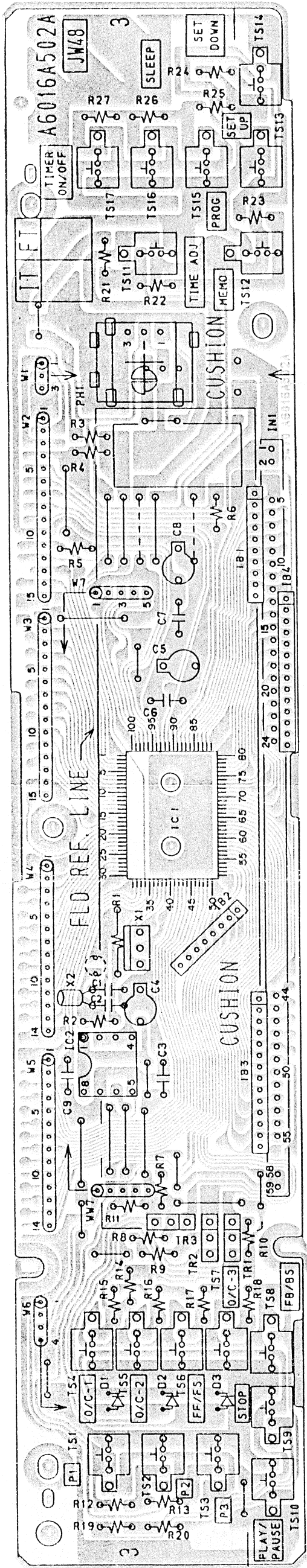
AX-590
 DECK
 BLOCK DIAGRAM
 No. 4-3 C103751M^{A1}



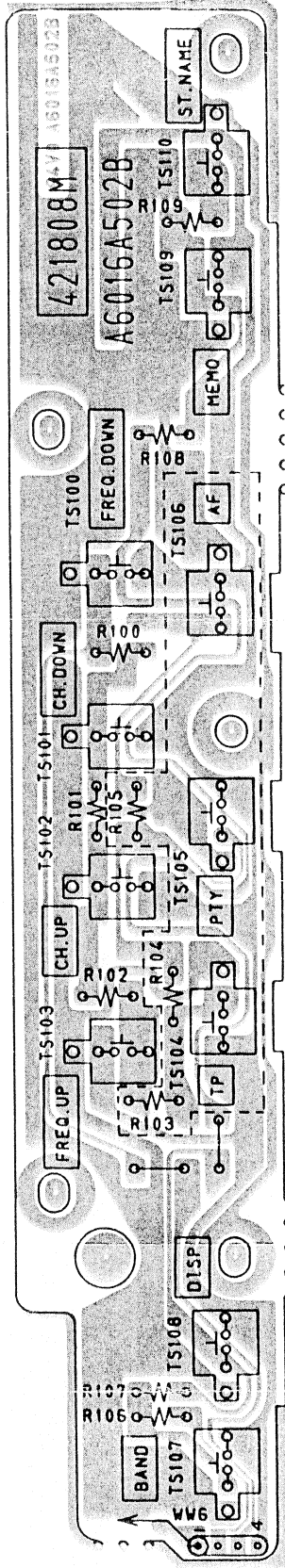
AX-690
DECK
BLOCK DIAGRAM
No. 4-4 C103752M A1

--- PB SIGNAL LINE (L-CH)
--- REC SIGNAL LINE (L-CH)

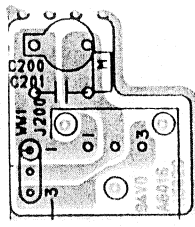
FL PCB
OPERATION PCB
DECK PCB
PRE AMP PCB



SYSCON PCB A6016A502A (TC-590 ONLY)



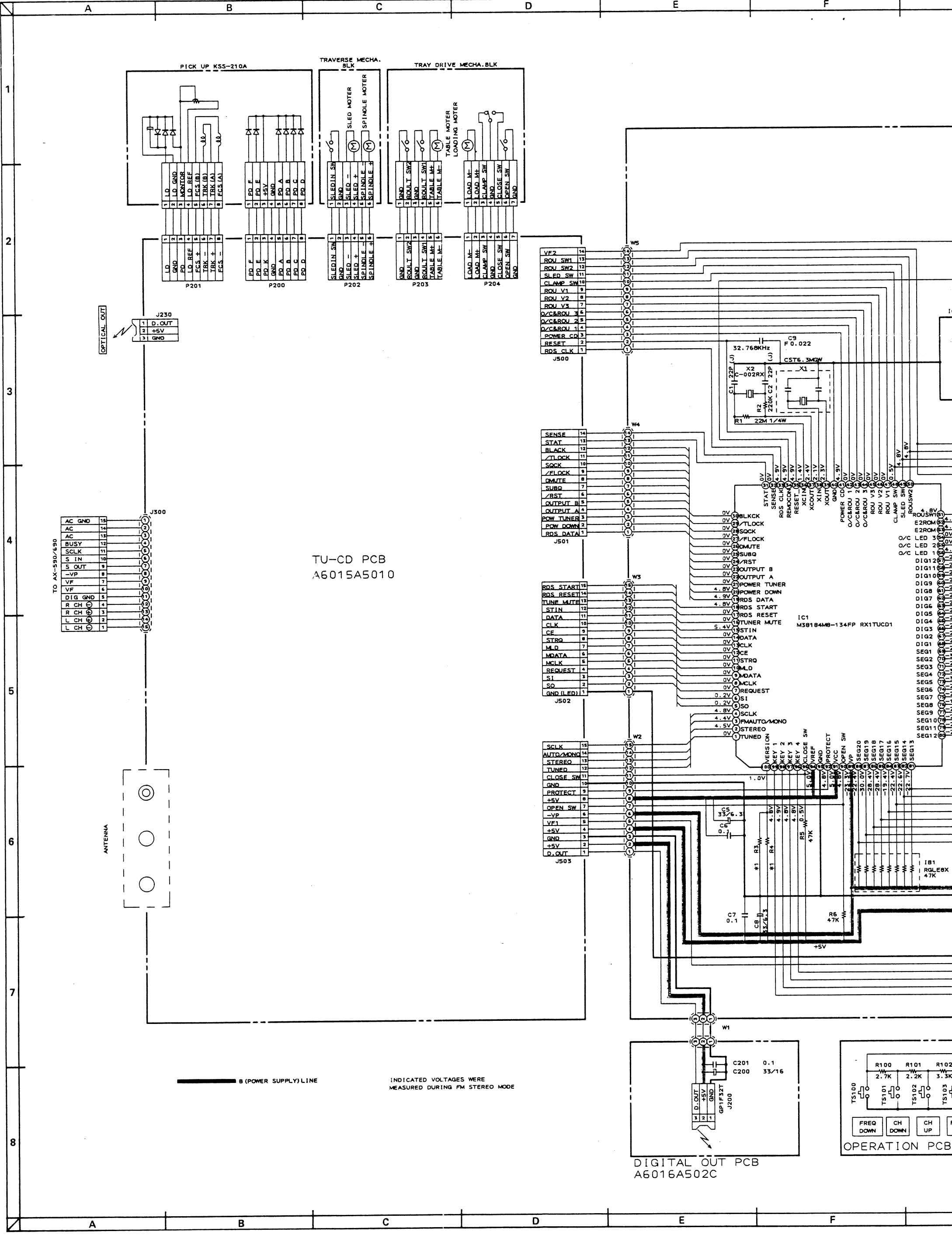
OPERATION PCB A6016A502B (TC-590 ONLY)



DIGITAL OUTPUT

DIGITAL OUT PCB
A6016A502C (TC-590 ONLY)

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER.
REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT
PARTS INFORMATION.



TU-CD PCB
A6015A5010

DIGITAL OUT PCB
A6016A502C

OPERATION PCB

— B (POWER SUPPLY) LINE

INDICATED VOLTAGES WERE
MEASURED DURING FM STEREO MODE

TO AX-590/690

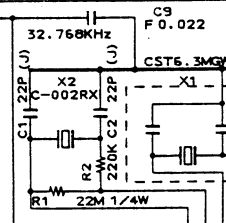
AC GND	12
AC	11
AC	10
BUSY	9
SCLK	8
S IN	7
S OUT	6
-VP	5
VF	4
VF	3
DIG GND	2
R CH	1
R CH	1
L CH	1
L CH	1

VF2	14
ROU SW1	13
ROU SW2	12
SLED SW	11
CLAMP SW	10
ROU V1	9
ROU V2	8
ROU V3	7
O/C/ROU 3	6
O/C/ROU 2	5
O/C/ROU 1	4
POWER CD	3
RESET	2
RDS CLK	1

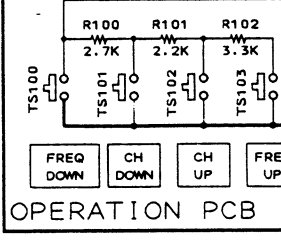
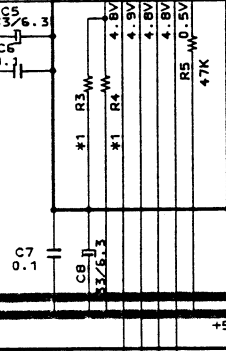
SENSE	14
STAT	13
BLACK	12
/TLOCK	11
SQCK	10
/FLOCK	9
DMUTE	8
SUBQ	7
/RST	6
OUTPUT B	5
OUTPUT A	4
POW TUNER	3
POW DOWN	2
RDS DATA 1	1

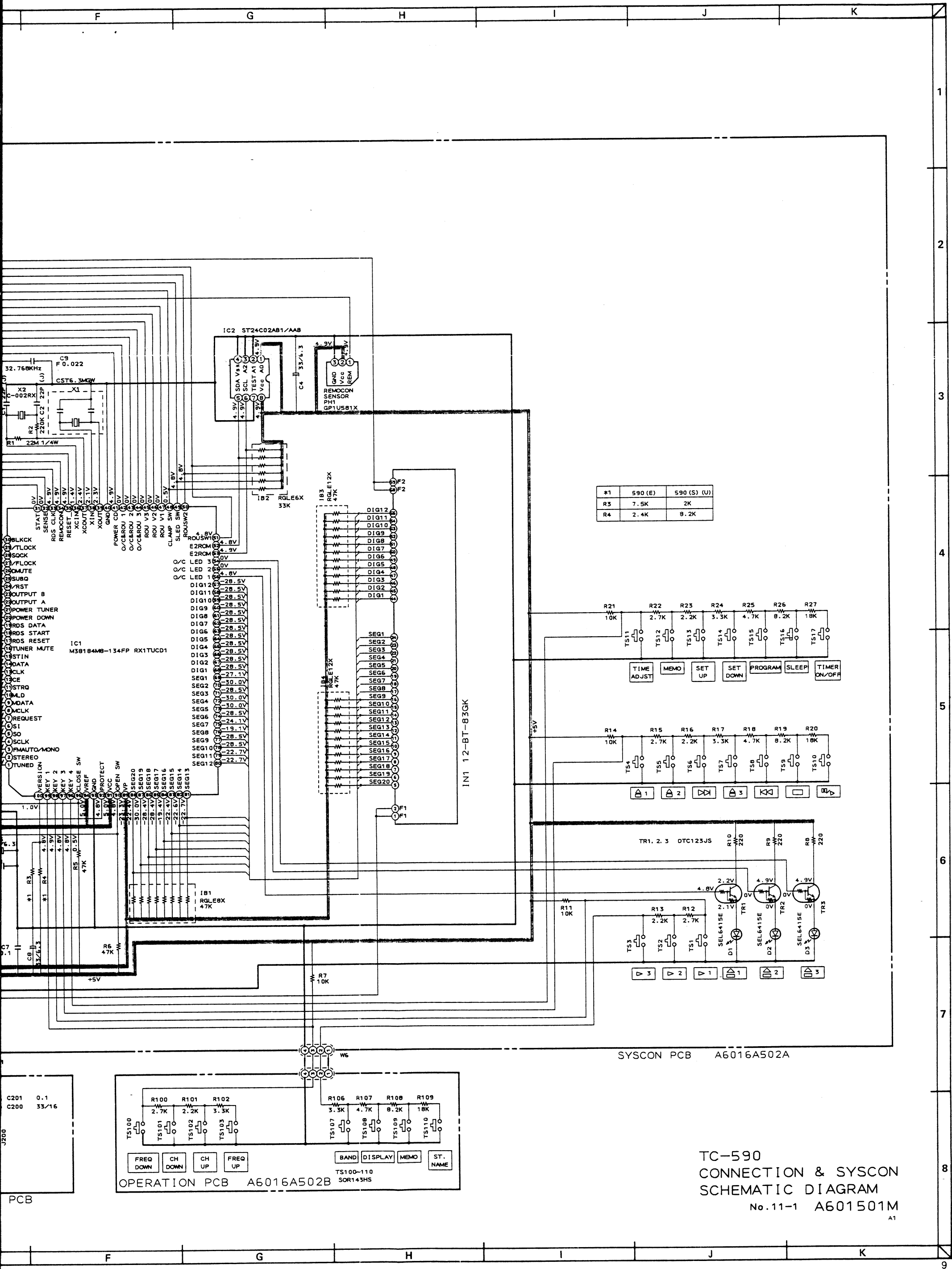
RDS START	15
RDS RESET	14
TUNE MUTE	13
STIN	12
DATA	11
CLK	10
CF	9
STRQ	8
MLD	7
MDATA	6
MCLK	5
REQUEST	4
S1	3
S0	2
GND (LED)	1

SCLK	15
AUTO/MONO	14
STEREO	13
TUNED	12
CLOSE SW	11
GND	10
+5V	9
PROTECT	8
-VP	7
+5V	6
VF1	5
+5V	4
GND	3
+5V	2
D. OUT	1

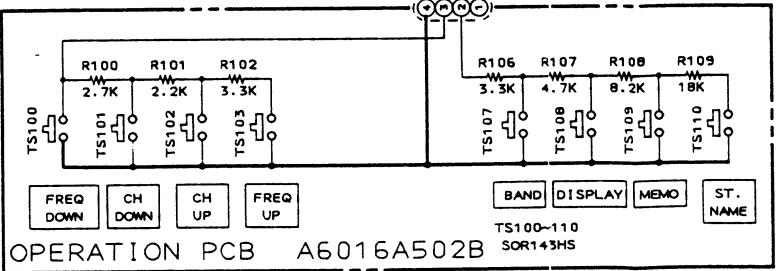


IC1
M39184M8-134FP RX1TUCD1

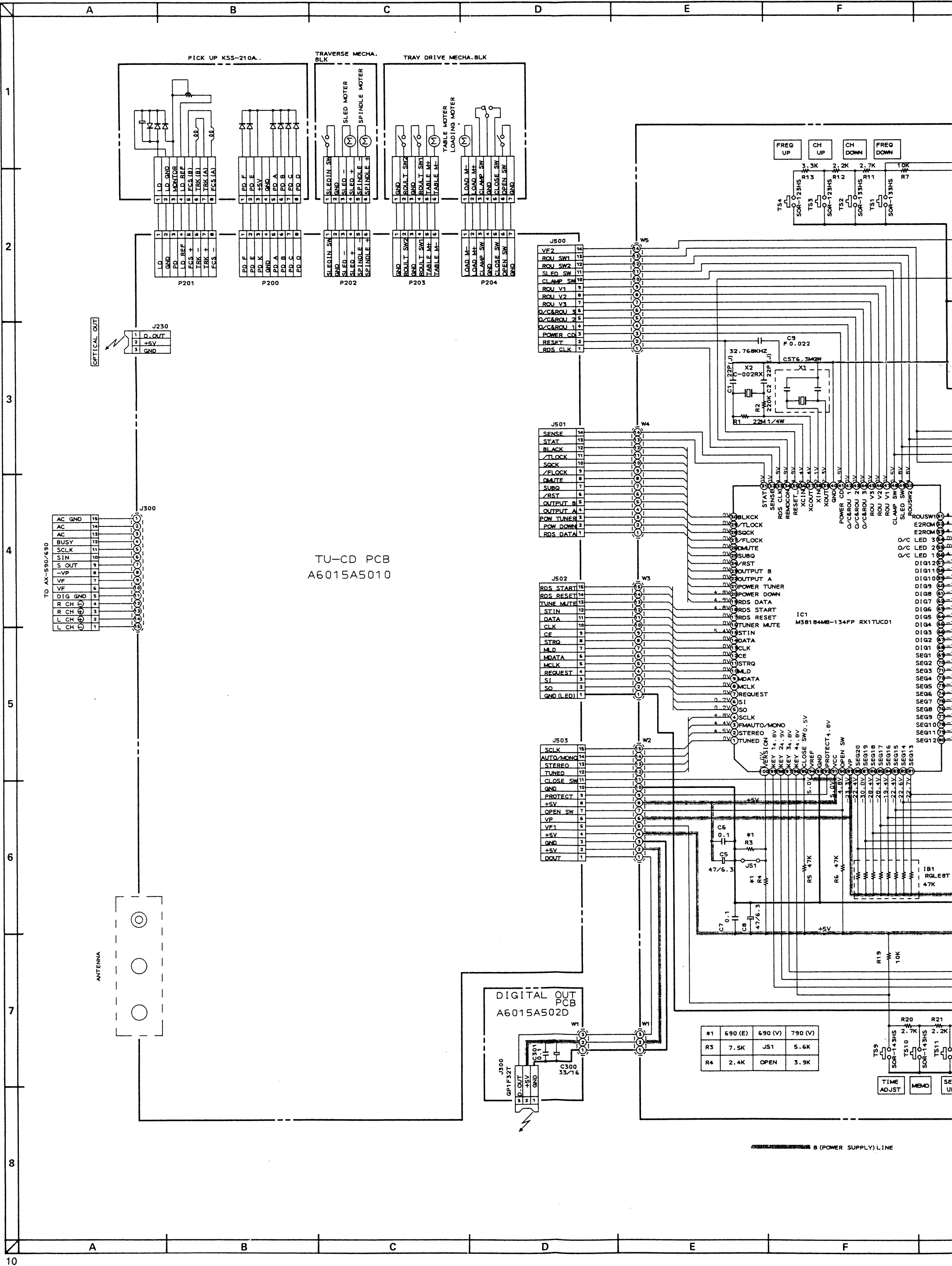




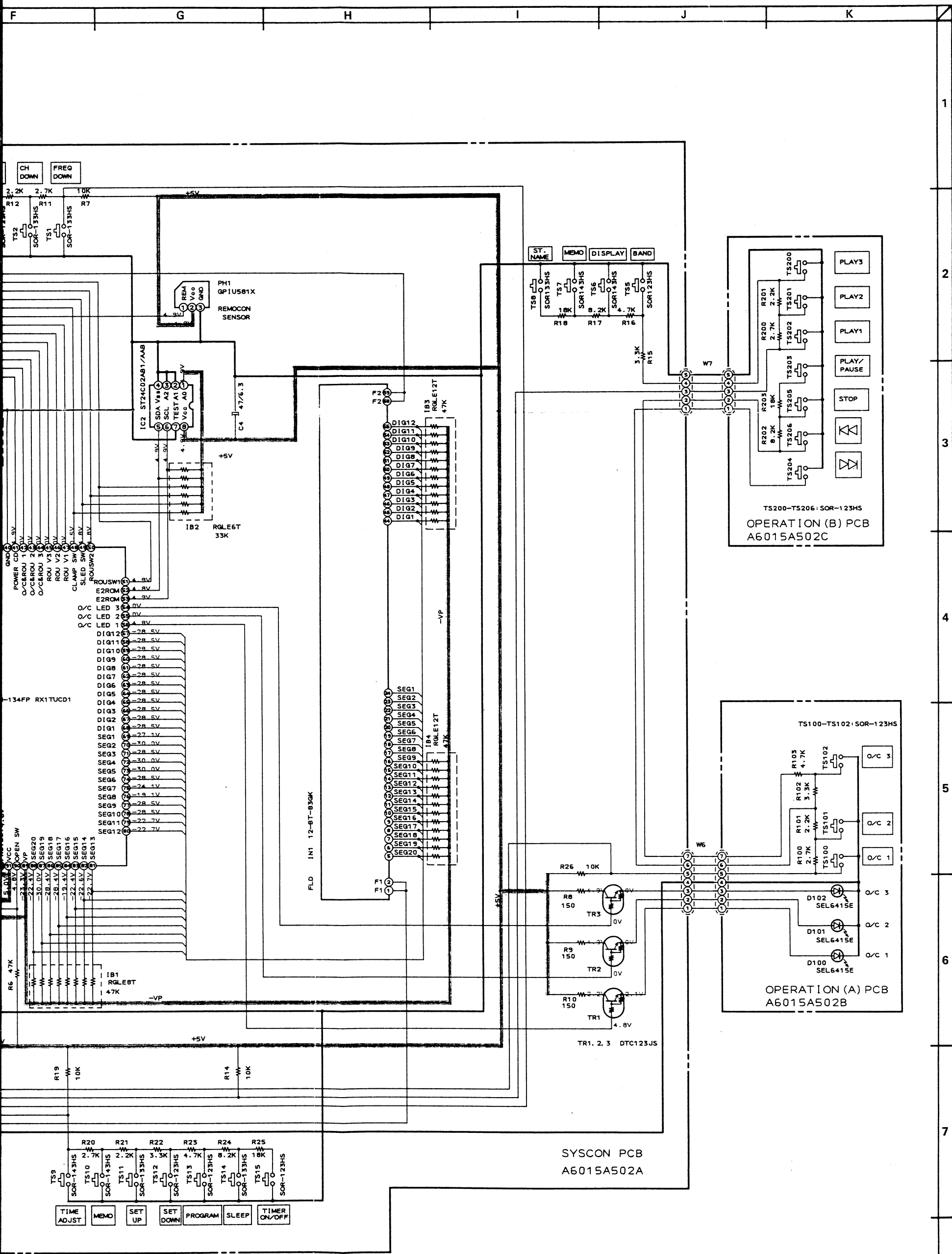
SYSCON PCB A6016A502A



TC-590
CONNECTION & SYSCON
SCHEMATIC DIAGRAM
No.11-1 A601501M
A1



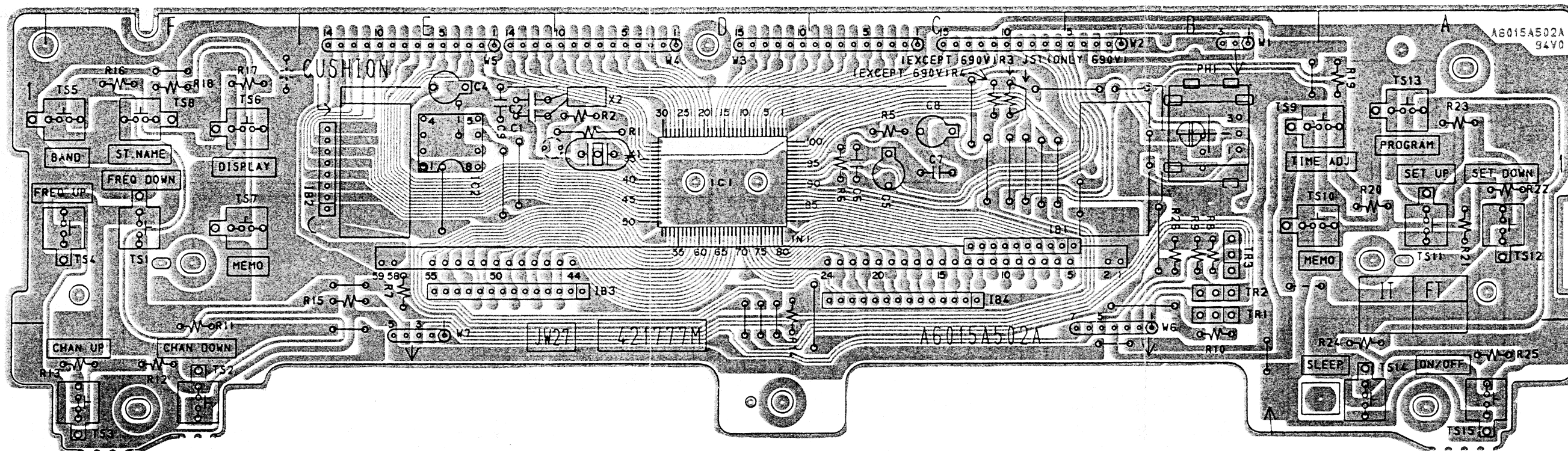
B (POWER SUPPLY) LINE



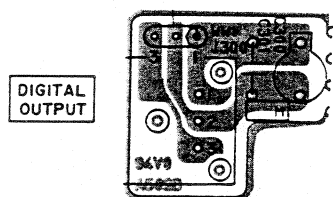
INDICATED VOLTAGES WERE MEASURED DURING FM STEREO MODE

TC-690/790
 CONNECTION & SYSCON
 SCHEMATIC DIAGRAM
 No.11-2 A601502M

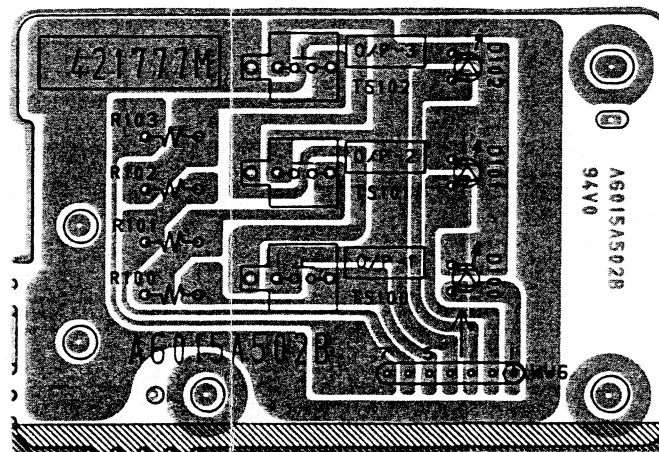
A1



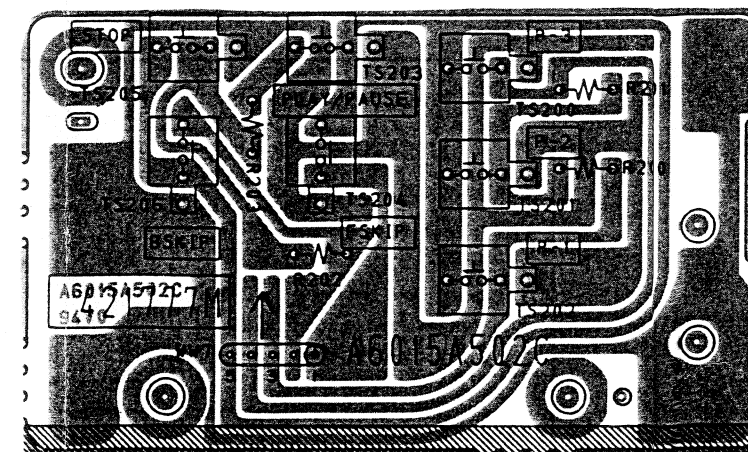
SYSCON PCB A6015A502A (TC-690/790 ONLY)



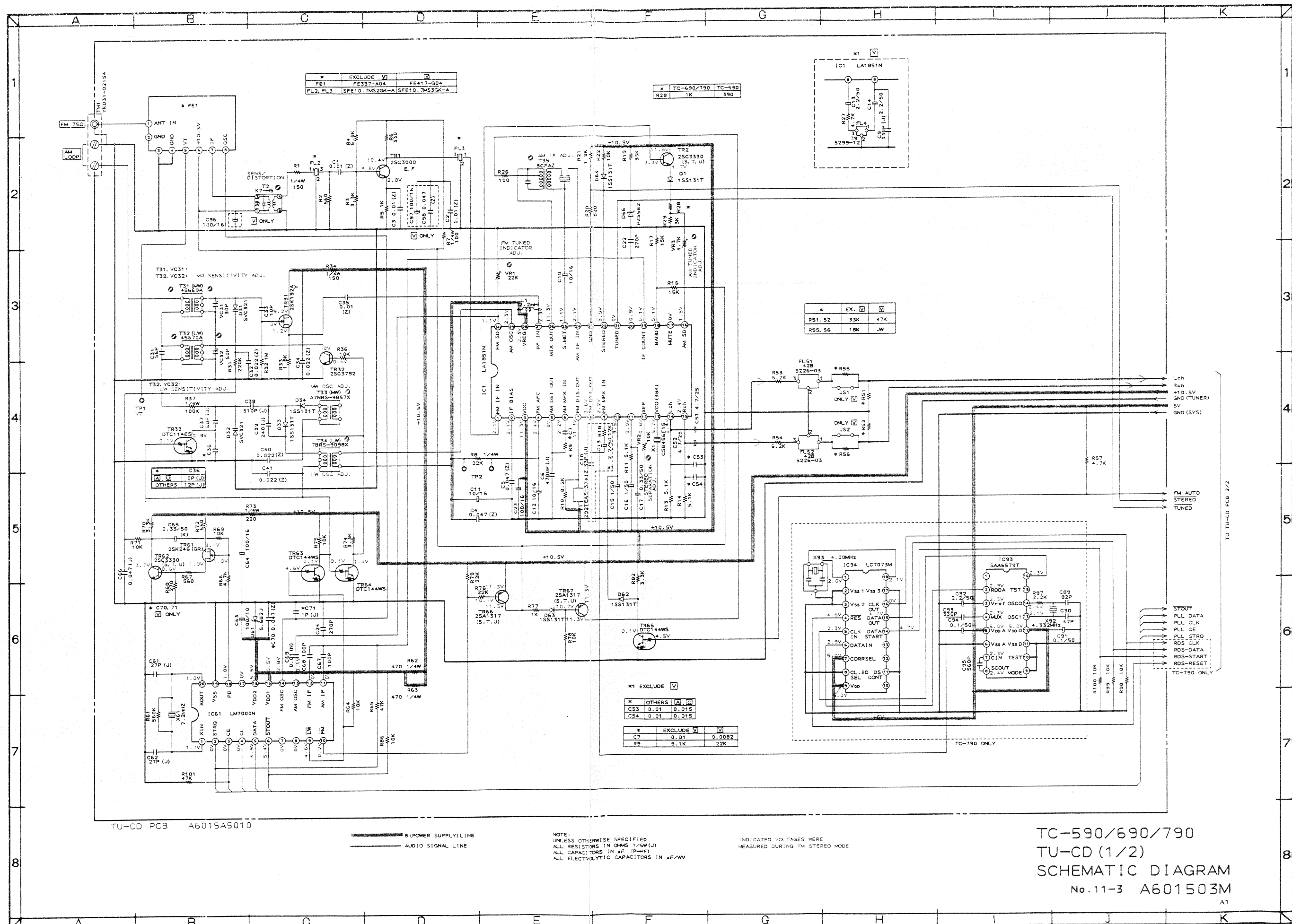
DIGITAL OUT PCB A6015A502D
(TC-690/790 ONLY)



OPERATION(A) PCB A6015A502B
(TC-690/790 ONLY)



OPERATION(B) PCB A6015A502C
(TC-690/790 ONLY)

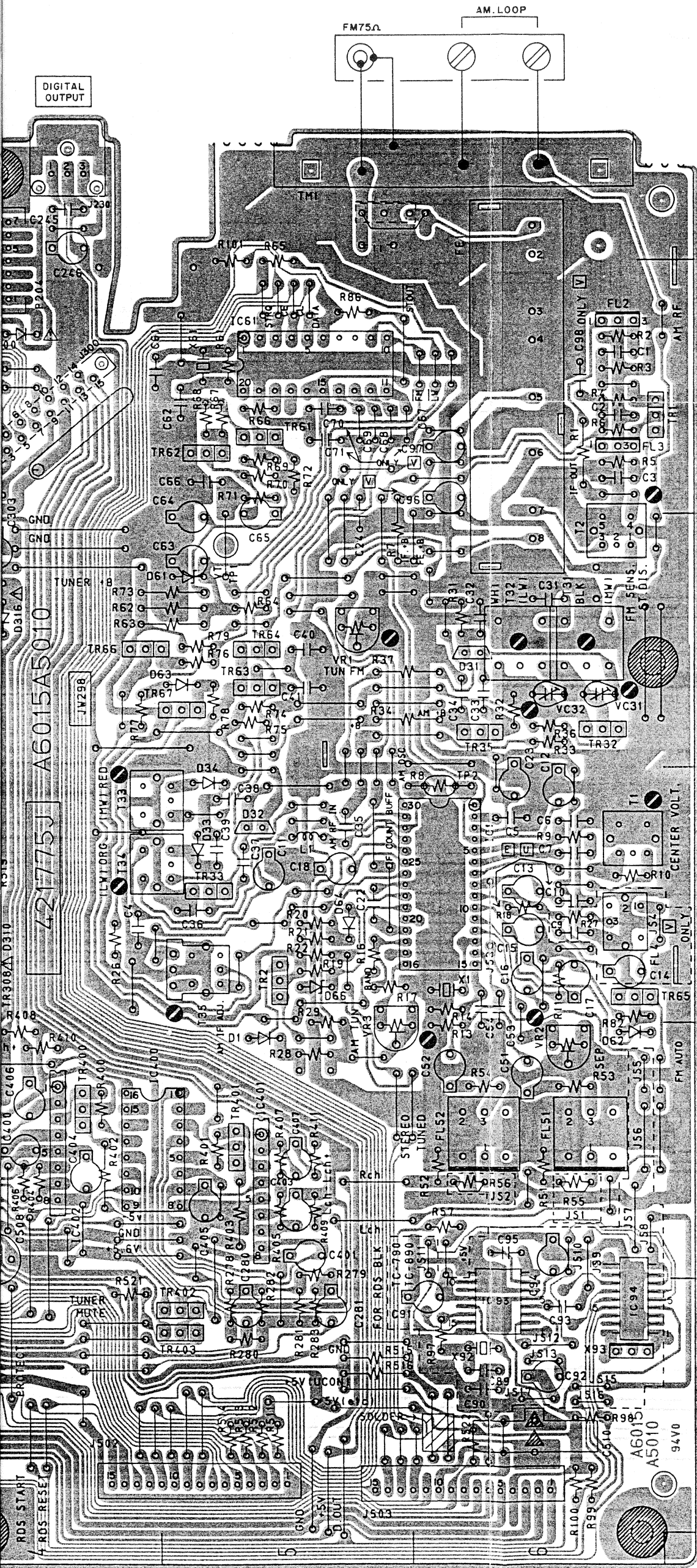


TU-CD PCB A6015A5010

TC-590/690/790
 TU-CD (1/2)
 SCHEMATIC DIAGRAM
 No. 11-3 A601503M
 A1



TU-CD PCB A6015A5010



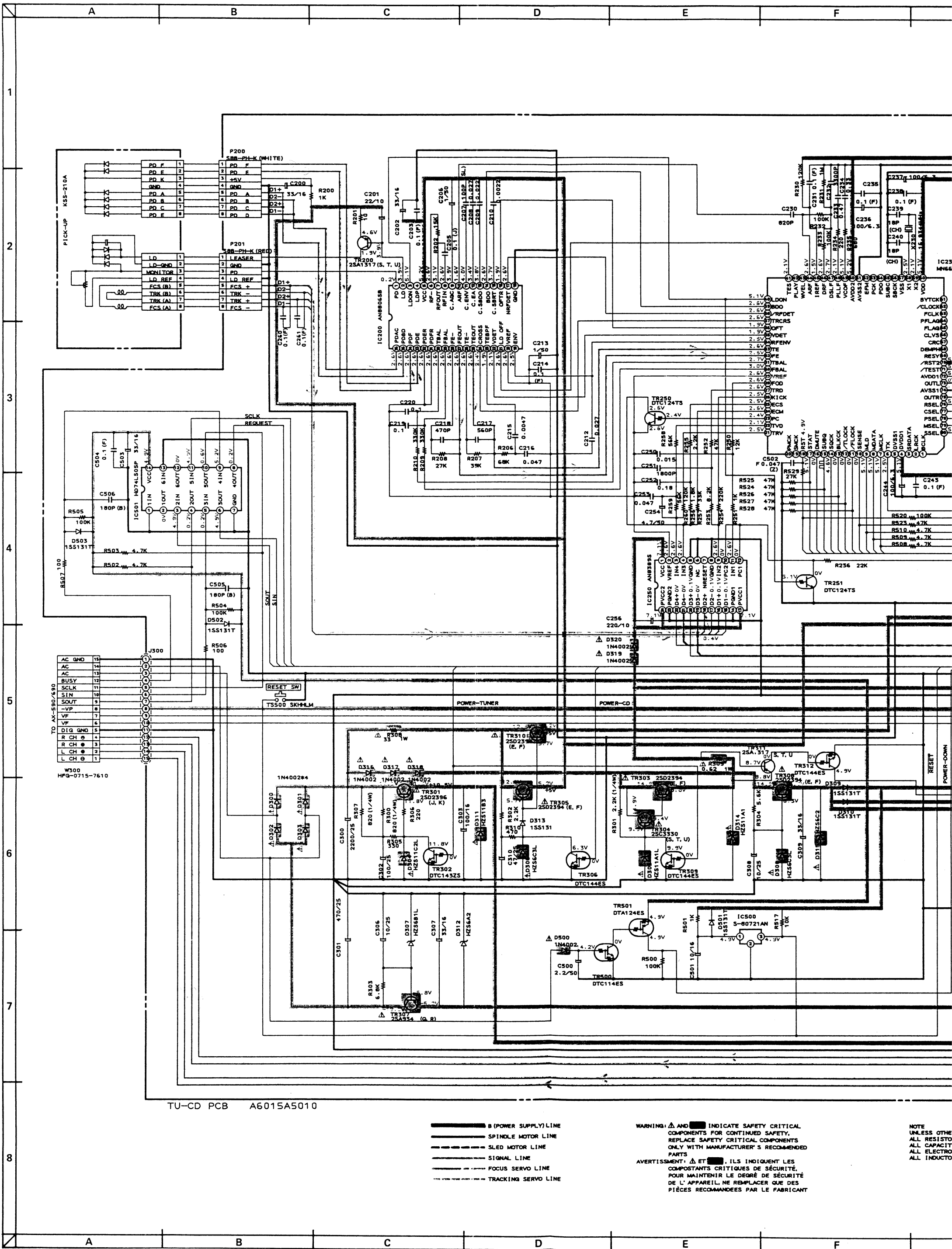
PRINCIPAL PARTS LOCATION

ICs			
IC1	D6	TR35	C6
IC61	B5	TR61	B5
IC93	F6	TR62	B5
IC94	F6	TR63	C5
IC200	B1	TR64	C5
IC230	D1,2	TR65	D6
IC250	C2	TR66	C4
IC270	E2	TR67	C5
IC290	E1	TR200	A1
IC400	E4,5	TR250	C2
IC401	E5	TR251	C,D2
IC402	E4	TR290	F1
IC500	E3	TR291	F1
IC501	B3	TR292	F1
		TR293	F1
CONNECTORs			
J230	A4	TR301	C4
J300	B4	TR302	C3
J500	F1	TR303	C,D4
J501	F2	TR304	C,D3
J502	F5	TR305	D4
J503	F6	TR306	D3
P200	A2	TR307	C3
P201	A2	TR308	D4
P202	D1	TR309	D4
P203	C1	TR310	D3
P204	A,B4	TR311	C3
		TR312	E3
		TR400	E4
TRANSISTORs			
TR1	B6	TR401	E5
TR2	D5	TR402	F5
TR32	C6	TR403	F5
TR33	D5	TR500	B3
		TR501	B3

WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.



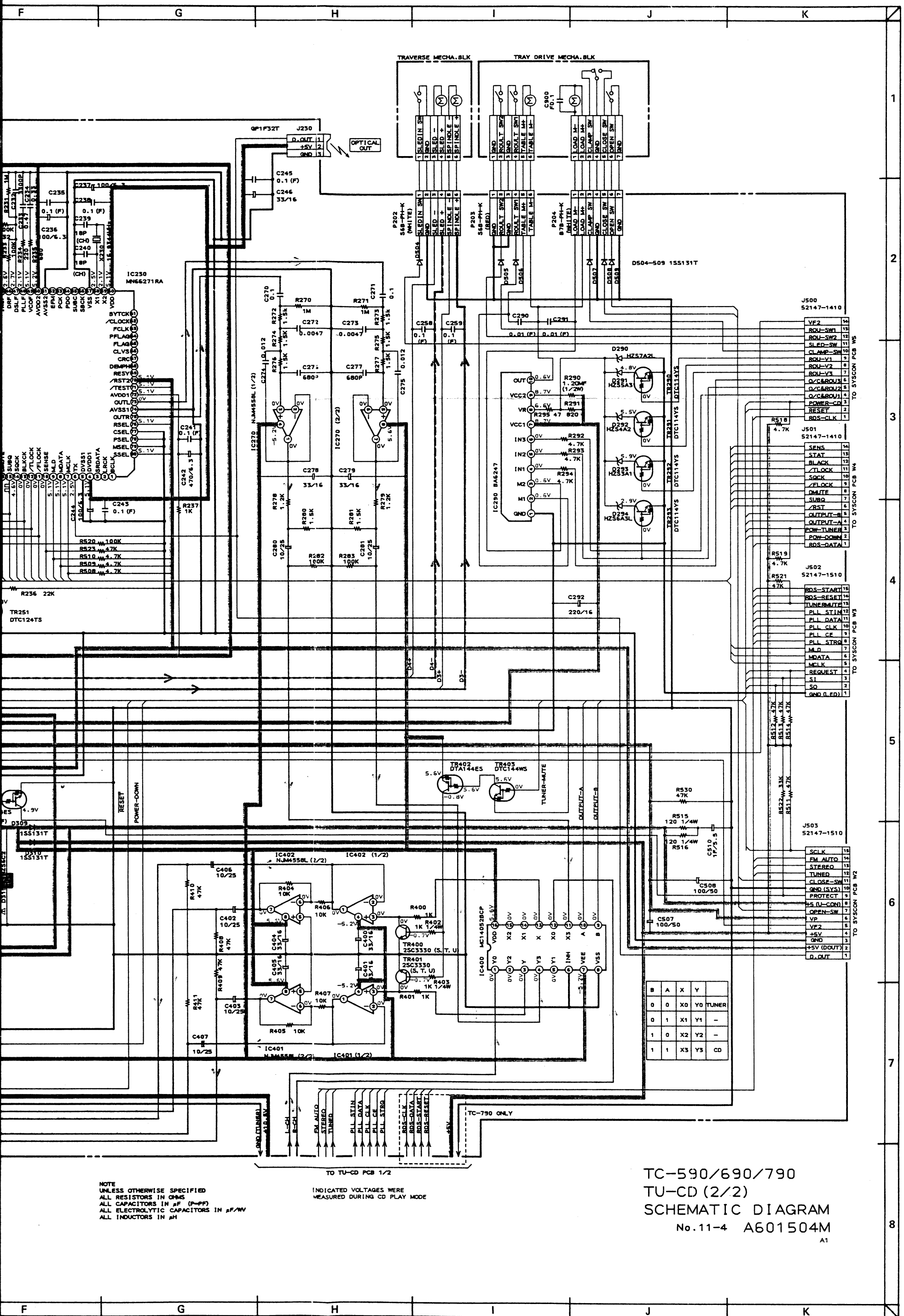
TU-CD PCB A6015A5010

- B (POWER SUPPLY) LINE
- SPINDLE MOTOR LINE
- SLED MOTOR LINE
- SIGNAL LINE
- FOCUS SERVO LINE
- TRACKING SERVO LINE

WARNING: Δ AND \square INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: Δ ET \square ILS INDIQUENT LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS
ALL CAPACITORS
ALL ELECTROLYTIC CAPACITORS
ALL INDUCTORS



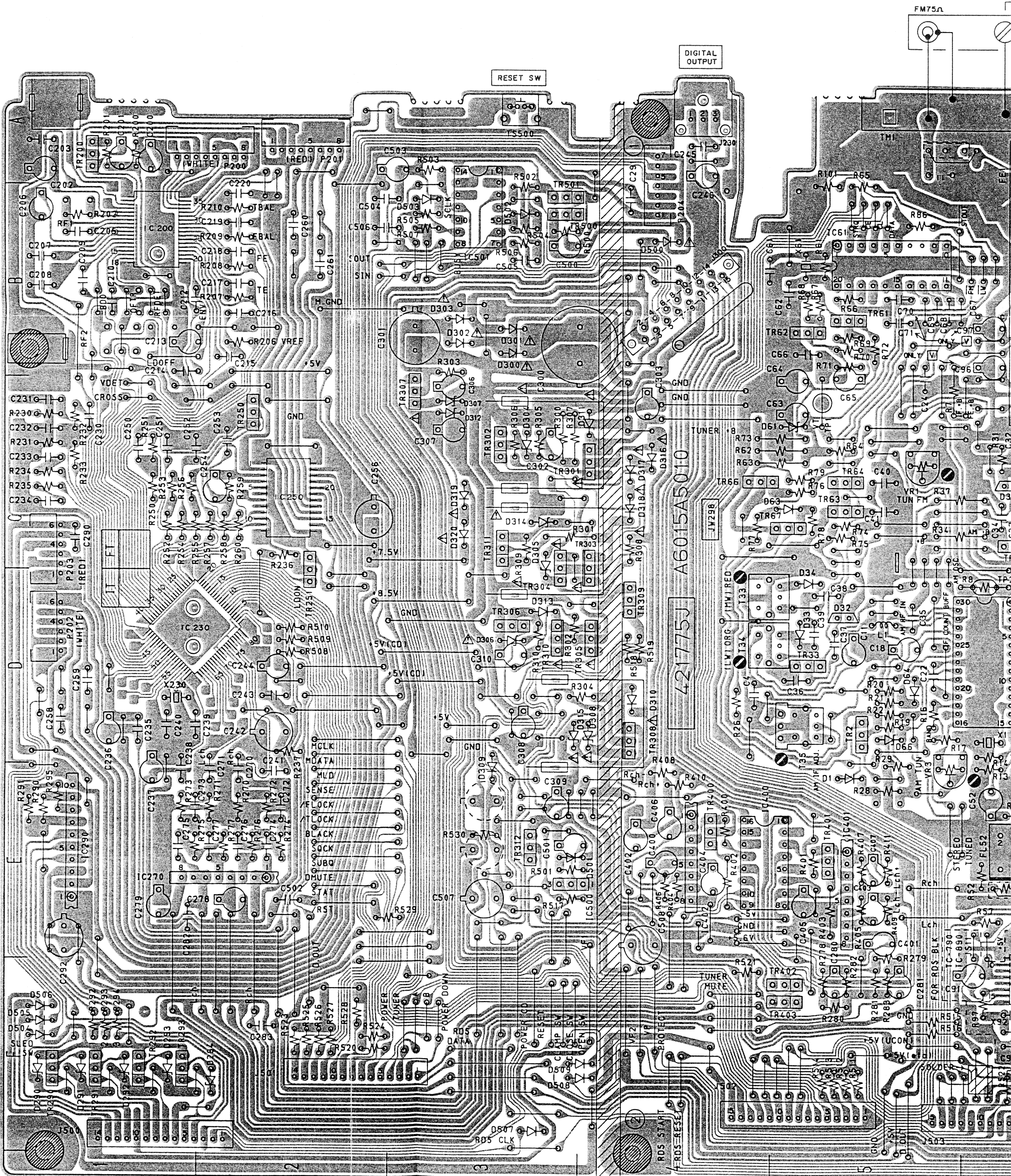
NOTE
 UNLESS OTHERWISE SPECIFIED
 ALL RESISTORS IN OHMS
 ALL CAPACITORS IN pF (p-PF)
 ALL ELECTROLYTIC CAPACITORS IN uF/W
 ALL INDUCTORS IN uH

INDICATED VOLTAGES WERE
 MEASURED DURING CD PLAY MODE

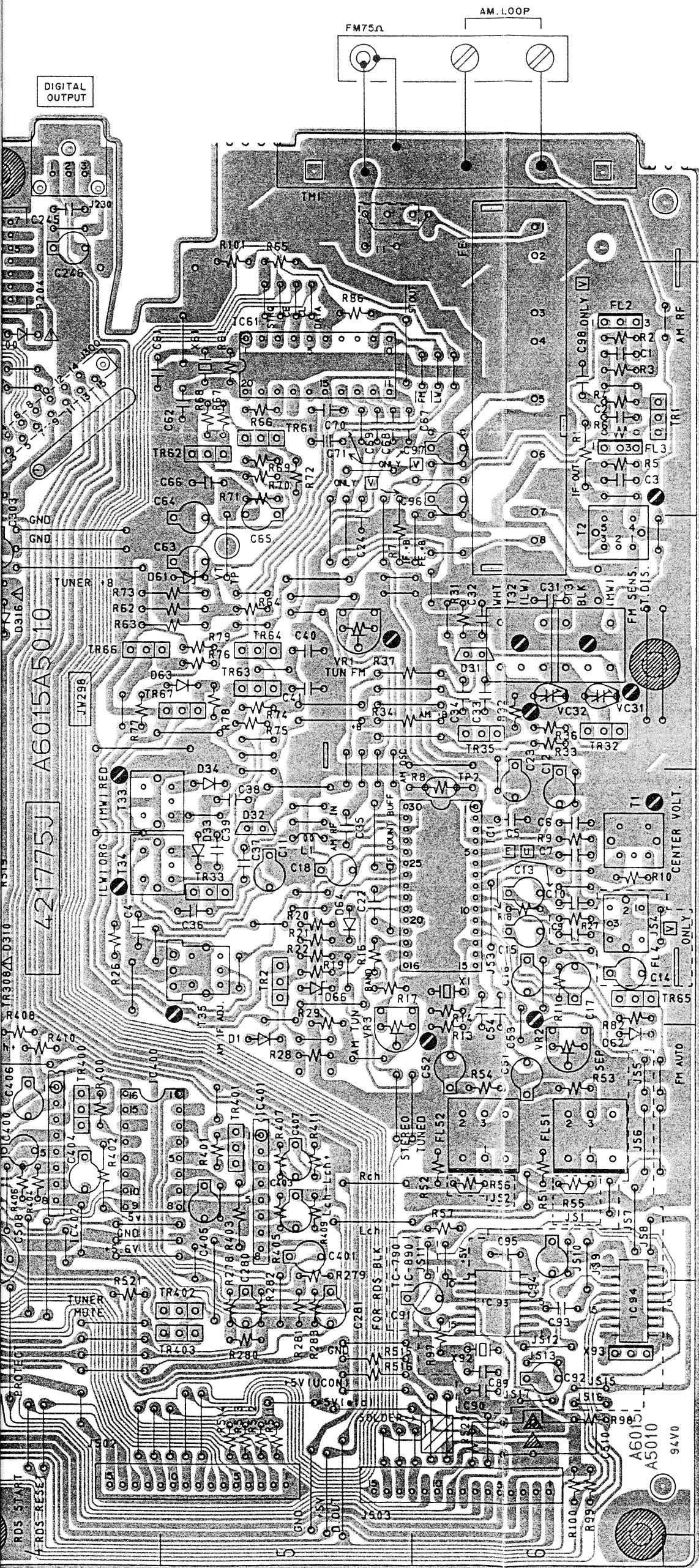
TC-590/690/790
 TU-CD (2/2)
 SCHEMATIC DIAGRAM
 No.11-4 A601504M

A1

B	A	X	Y	
0	0	X0	Y0	TUNER
0	1	X1	Y1	-
1	0	X2	Y2	-
1	1	X3	Y3	CD



TU-CD PCB A6015A5010



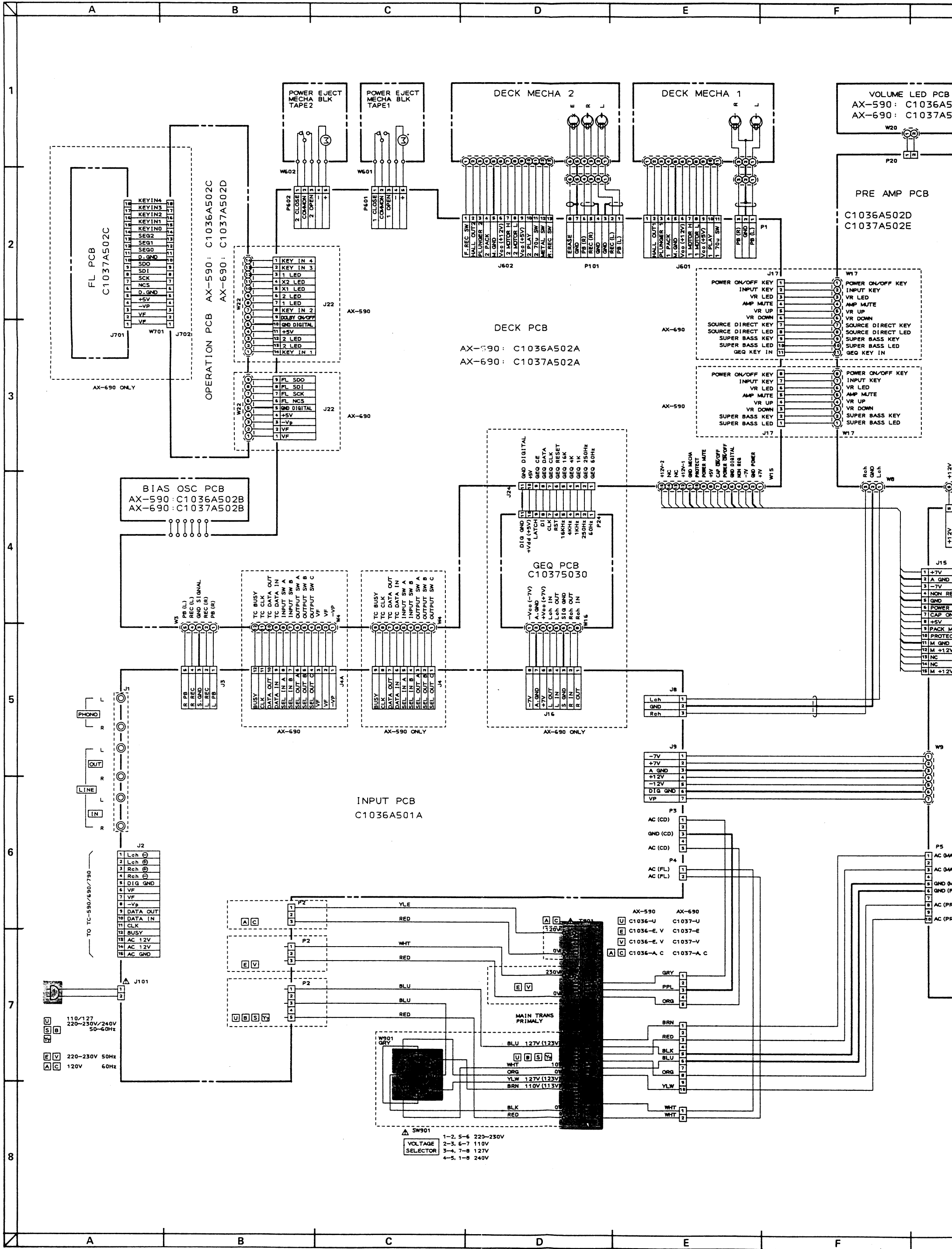
PRINCIPAL PARTS LOCATION

ICs			
IC1	D6	TR35	C6
IC61	B5	TR61	B5
IC93	F6	TR62	B5
IC94	F6	TR63	C5
IC200	B1	TR64	C5
IC230	D1,2	TR65	D6
IC250	C2	TR66	C4
IC270	E2	TR67	C5
IC290	E1	TR200	A1
IC400	E4,5	TR250	C2
IC401	E5	TR251	C,D2
IC402	E4	TR290	F1
IC500	E3	TR291	F1
IC501	B3	TR292	F1
		TR293	F1
CONNECTORs			
J230	A4	TR301	C4
J300	B4	TR302	C3
J500	F1	TR303	C,D4
J501	F2	TR304	C,D3
J502	F5	TR305	D4
J503	F6	TR306	D3
P200	A2	TR307	C3
P201	A2	TR308	D4
P202	D1	TR309	D4
P203	C1	TR310	D3
P204	A,B4	TR311	C3
		TR312	E3
TRANSISTORs			
TR1	B6	TR400	E4
TR2	D5	TR401	E5
TR32	C6	TR402	F5
TR33	D5	TR403	F5
		TR500	B3
		TR501	B3

WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

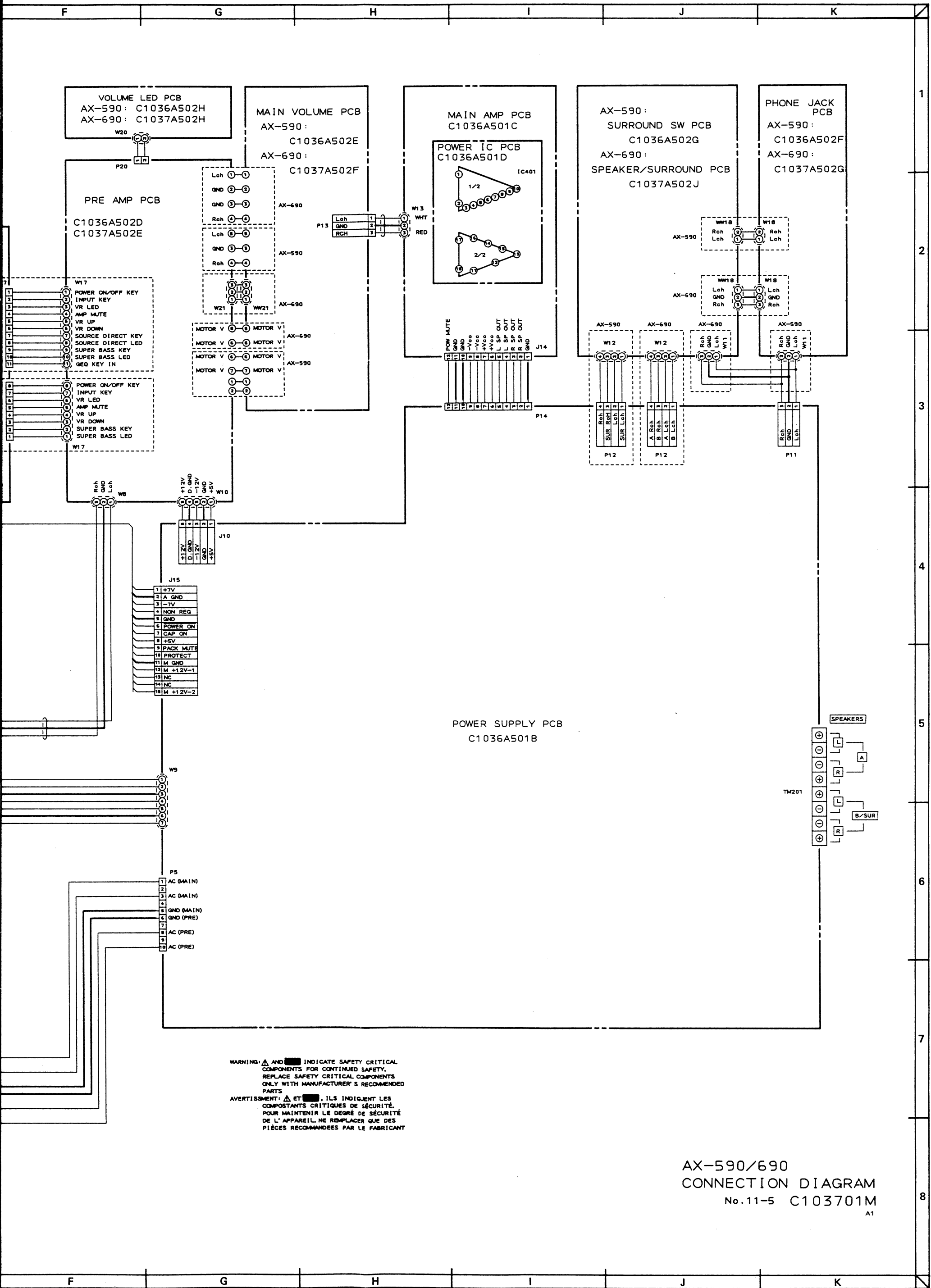
NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.



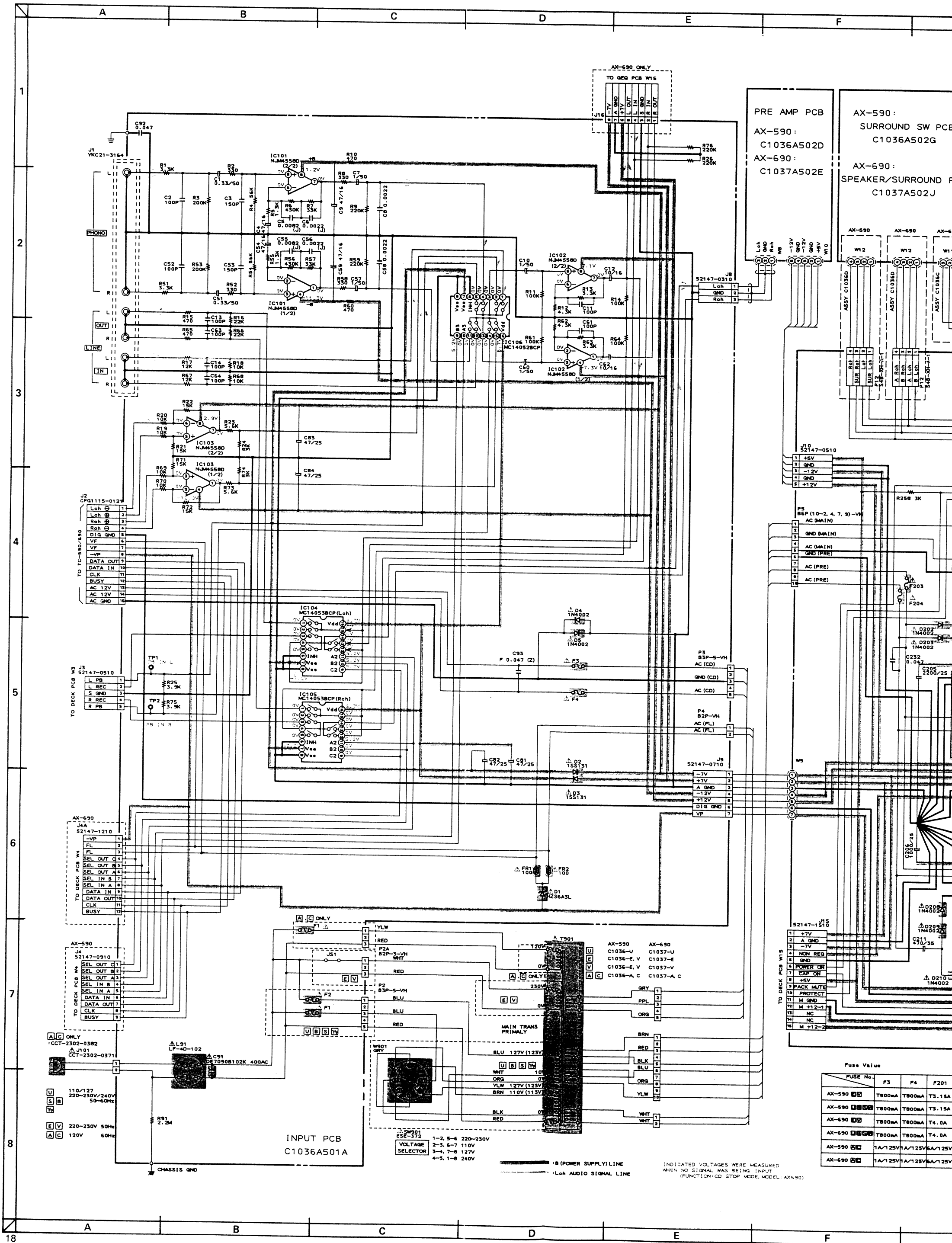
SW901
 1-2, 5-6 220-230V
 2-3, 6-7 110V
 3-4, 7-8 127V
 4-5, 1-8 240V

AX-590 AX-690
 C1036-U C1037-U
 C1036-E V C1037-E
 C1036-E V C1037-V
 C1036-A C C1037-A C

- 1 +7V
- 2 A GND
- 3 -7V
- 4 NON REG
- 5 GND
- 6 POWER ON
- 7 CAP ON
- 8 +5V
- 9 PACK MUTE
- 10 PROTECT
- 11 M GND
- 12 M +12V-1
- 13 NC
- 14 NC
- 15 M +12V-2



AX-590/690
 CONNECTION DIAGRAM
 No.11-5 C103701M
 A1



PRE AMP PCB
 AX-590:
 C1036A502D
 AX-690:
 C1037A502E

AX-590:
 SURROUND SW PCB
 C1036A502G

AX-690:
 SPEAKER/SURROUND PCB
 C1037A502J

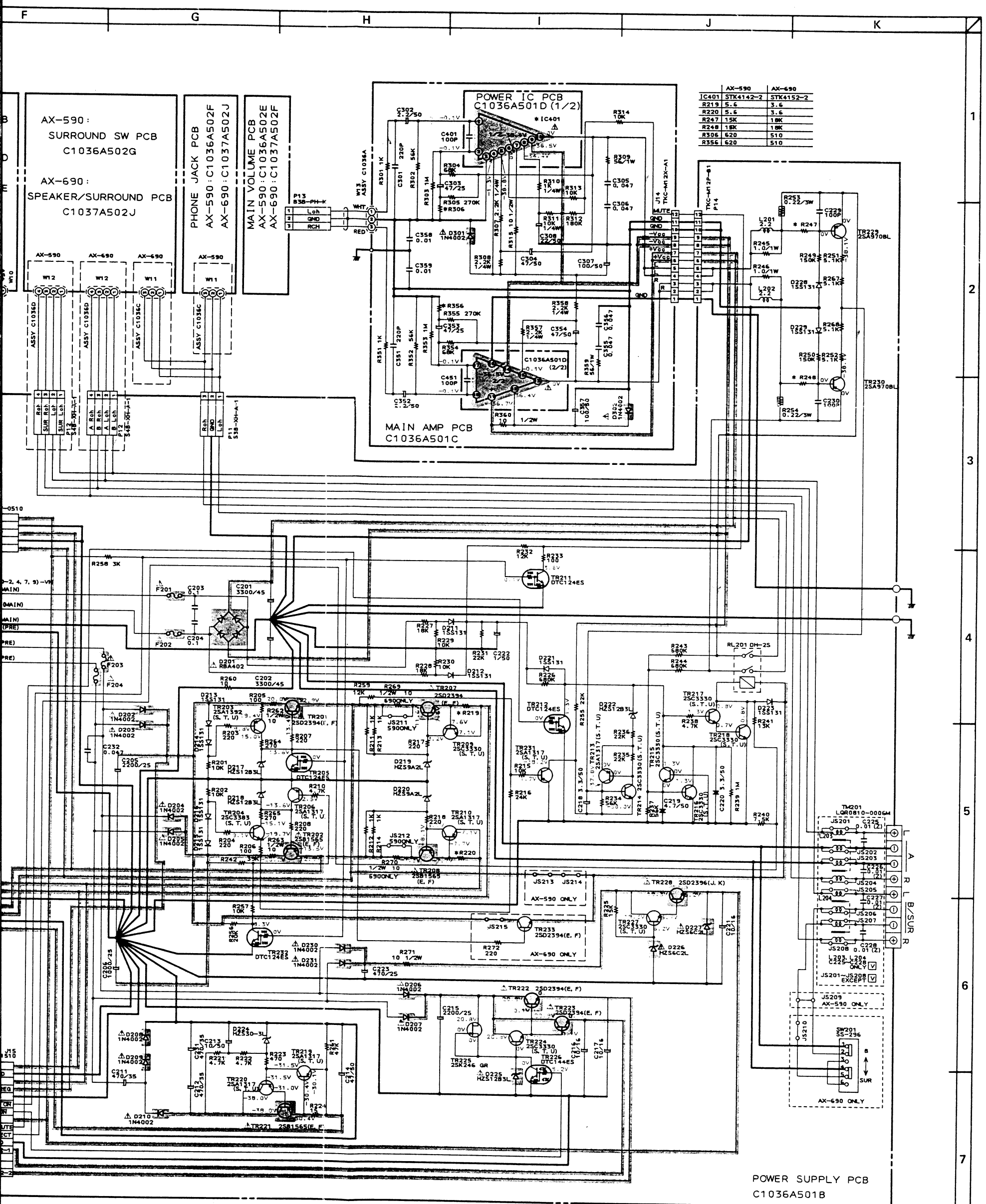
Fuse Value

FUSE No.	F3	F4	F201	F202	F203	F204
AX-590	T800mA	T800mA	T3.15A	T3.15A	T3.15A	T3.15A
AX-590	T800mA	T800mA	T3.15A	T3.15A	T3.15A	T3.15A
AX-590	T800mA	T800mA	T4.0A	T4.0A	T4.0A	T4.0A
AX-590	T800mA	T800mA	T4.0A	T4.0A	T4.0A	T4.0A
AX-590	1A/125V	1A/125V	1A/125V	1A/125V	1A/125V	1A/125V
AX-590	1A/125V	1A/125V	1A/125V	1A/125V	1A/125V	1A/125V

INDICATED VOLTAGES WERE MEASURED WHEN NO SIGNAL WAS BEING INPUT (FUNCTION: CD STOP MODE, MODEL: AX-590)

VOLTAGE SELECTOR
 1-2, 5-6 220-230V
 2-3, 6-7 110V
 3-4, 7-8 127V
 4-5, 1-8 240V

— 18 (POWER SUPPLY) LINE
 - - - - - 18 (AUDIO SIGNAL) LINE



	AX-590	AX-690
IC401	STK4142-2	STK4152-2
R219	5.6	3.6
R220	5.6	3.6
R247	15K	18K
R248	18K	18K
R306	620	510
R356	620	510

POWER SUPPLY PCB
C1036A501B

Fuse Value

FUSE No.	F3	F4	F201	F202	F203	F204	F1	F2
AX-590	T800mA	T800mA	T3.15A	T3.15A	T1.25A	T1.25A	—	—
AX-590	T800mA	T800mA	T3.15A	T3.15A	T1.25A	T1.25A	T1.25A	T1.25A
AX-690	T800mA	T800mA	T4.0A	T4.0A	T1.6A	T1.6A	—	—
AX-690	T800mA	T800mA	T4.0A	T4.0A	T1.6A	T1.6A	T1.6A	T1.6A
AX-590	1A/125V	1A/125V	1.25V/6A/125V	1.25V/2A/125V	2A/125V	2A/125V	3.15V	—
AX-690	1A/125V	1A/125V	1.25V/6A/125V	1.25V/2A/125V	2A/125V	2A/125V	3.15V	—

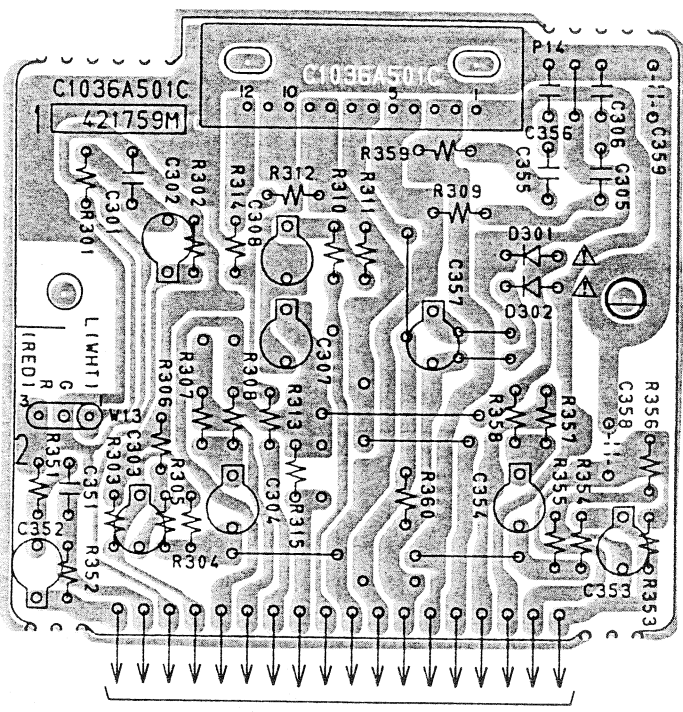
WARNING! Δ AND \square INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: Δ ET \square ILS INDIQUENT LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

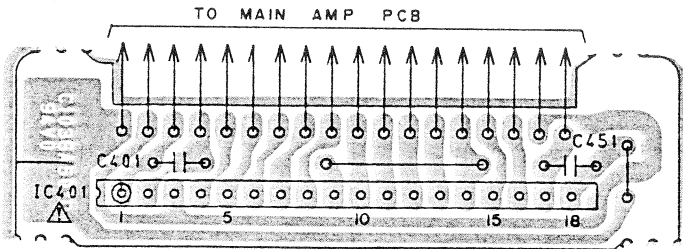
NOTE: UNLESS OTHERWISE SPECIFIED, ALL RESISTORS IN OHMS 1/4W, ALL CAPACITORS IN μ F (P-PF), ALL ELECTROLYTIC CAPACITORS IN μ F/W.

AX-590/690
MAIN
SCHEMATIC DIAGRAM
No. 11-6 C103702M

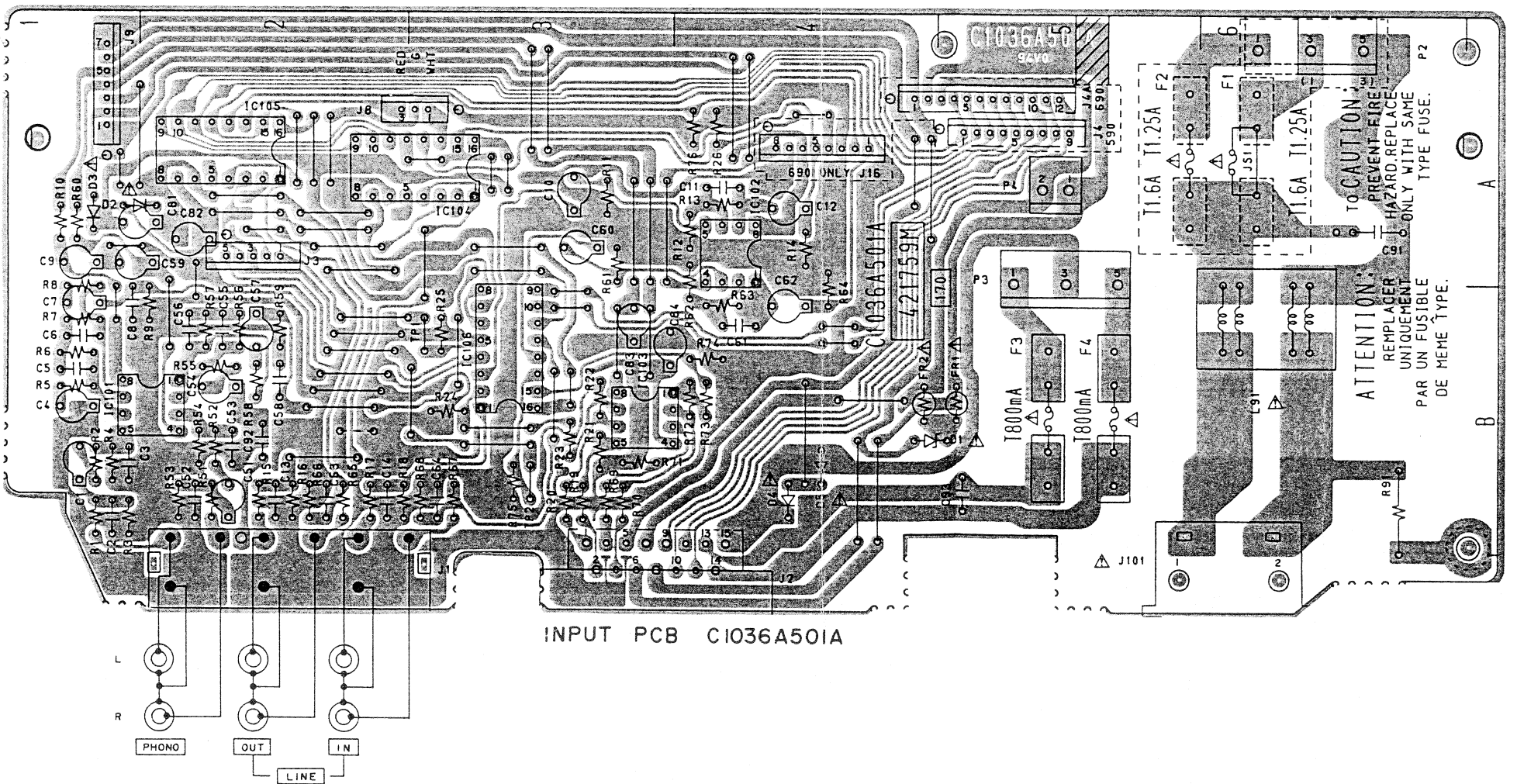
A1



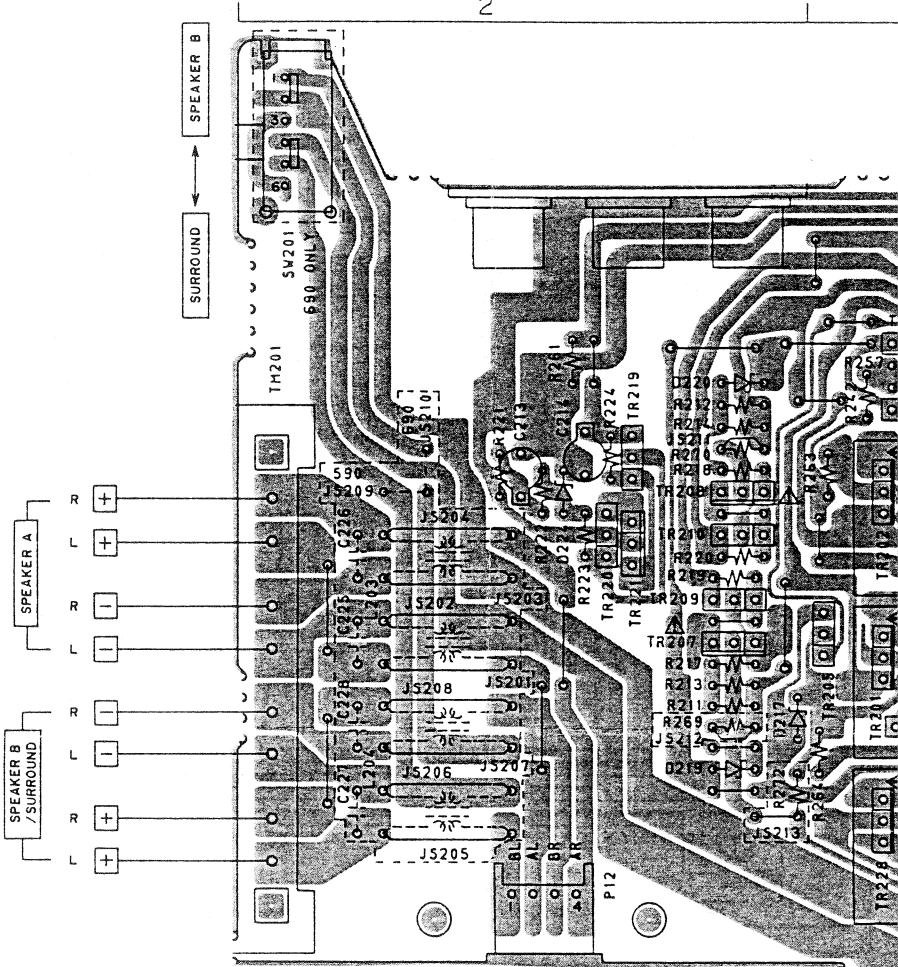
MAIN AMP PCB C1036A501C

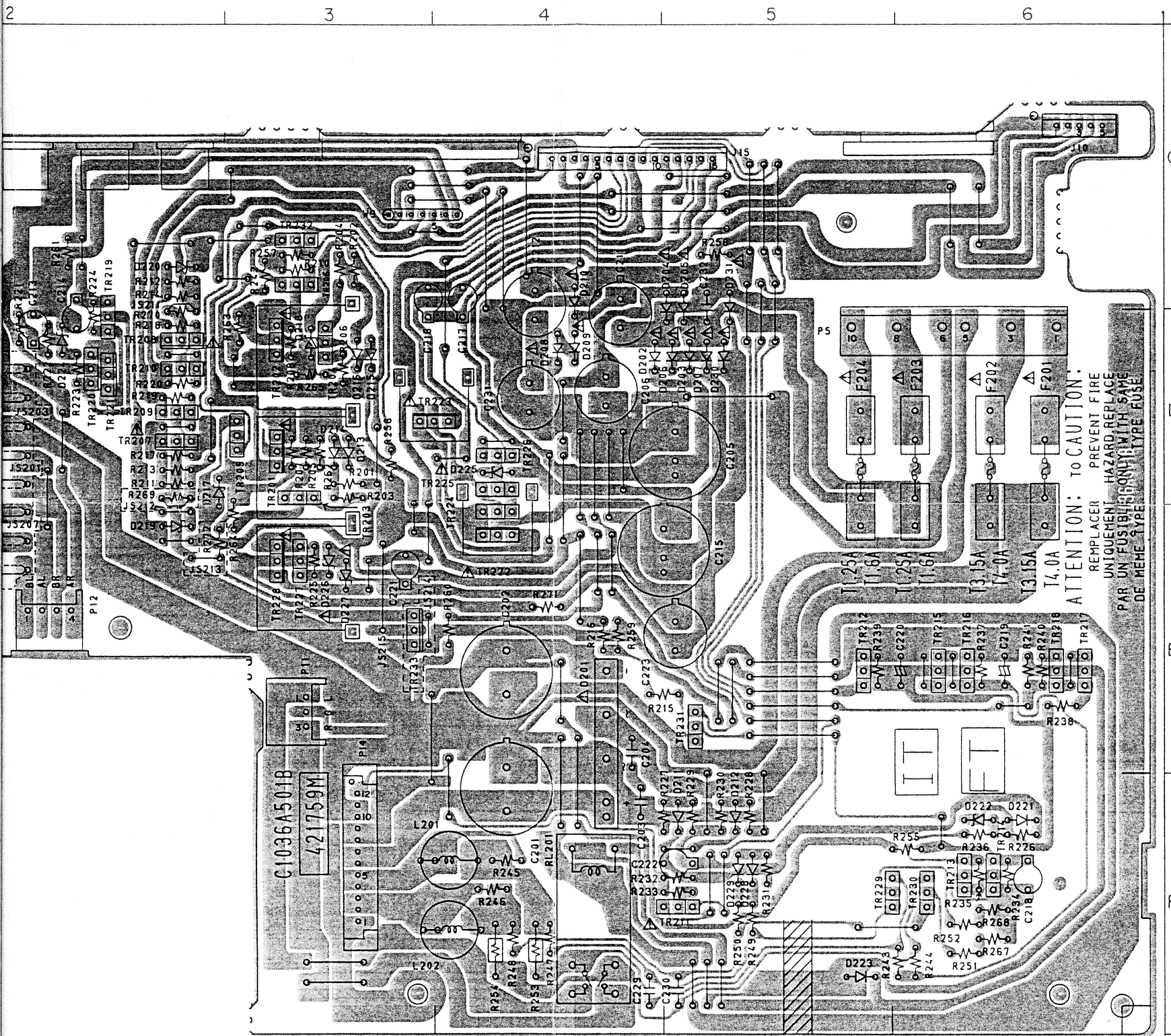


POWER IC PCB C1036A501D



INPUT PCB C1036A501A





POWER SUPPLY PCB CI036A501B

PRINCIPAL PARTS LOCATION

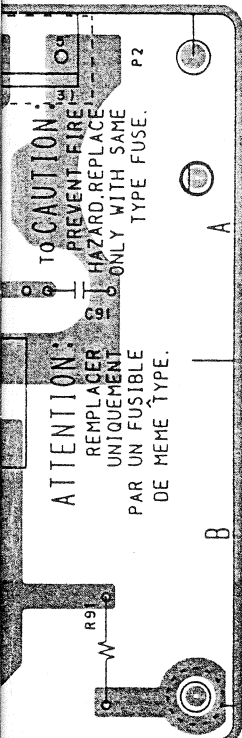
- CONNECTORS
 J10 C6
 J15 C4,5
 P5 D6
 P11 E3
 P12 E2
 P14 F3
 W9 C3,4

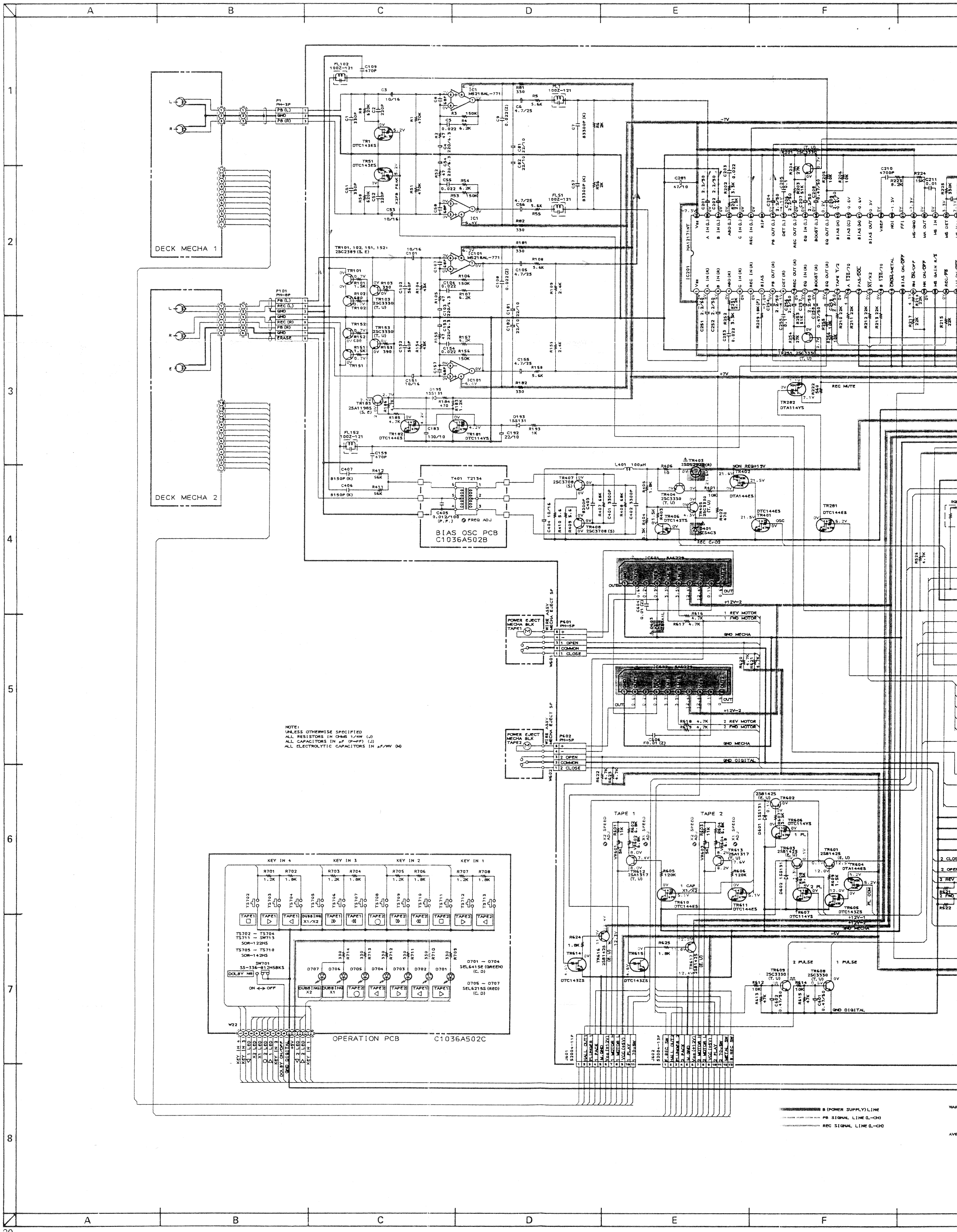
- TRANSISTORS
 TR201 D3
 TR202 D3
 TR203 D3
 TR204 D3
 TR205 D3
 TR206 C3
 TR207 D2
 TR208 D2
 TR209 D2
 TR210 D2
 TR211 F5
 TR212 E5
 TR213 F6
 TR214 F6
 TR215 E6
 TR216 E6
 TR217 E6
 TR218 E6
 TR219 D2
 TR220 D2
 TR221 D2
 TR222 E4
 TR223 D3,4
 TR224 E4
 TR225 D4
 TR226 D4
 TR227 E3
 TR228 E3
 TR229 F5,6
 TR230 F6
 TR231 E5
 TR232 C3
 TR233 E3

ATTENTION: TO CAUTION:
 REPLACER PREVENT FIRE
 UNIQUEMENT HAZARD-REPLACE
 PAR UN FUSIBLE DU MEME TYPE FUSE
 DE MEME TYPE

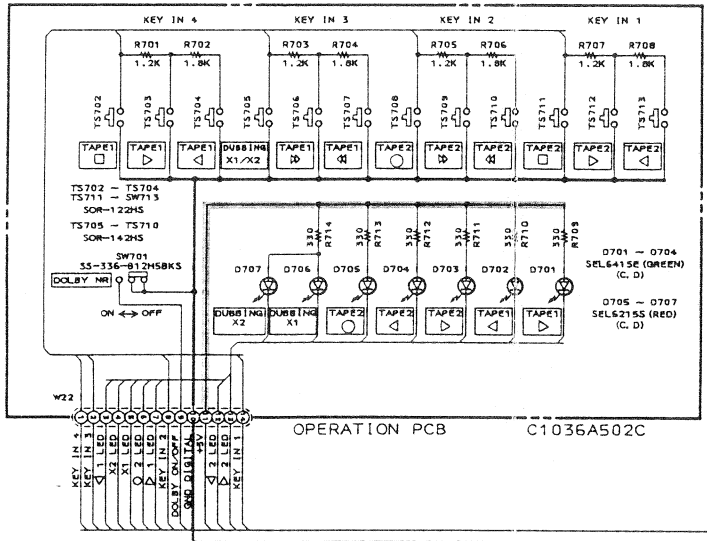
WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS
 AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

NOTE: PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.

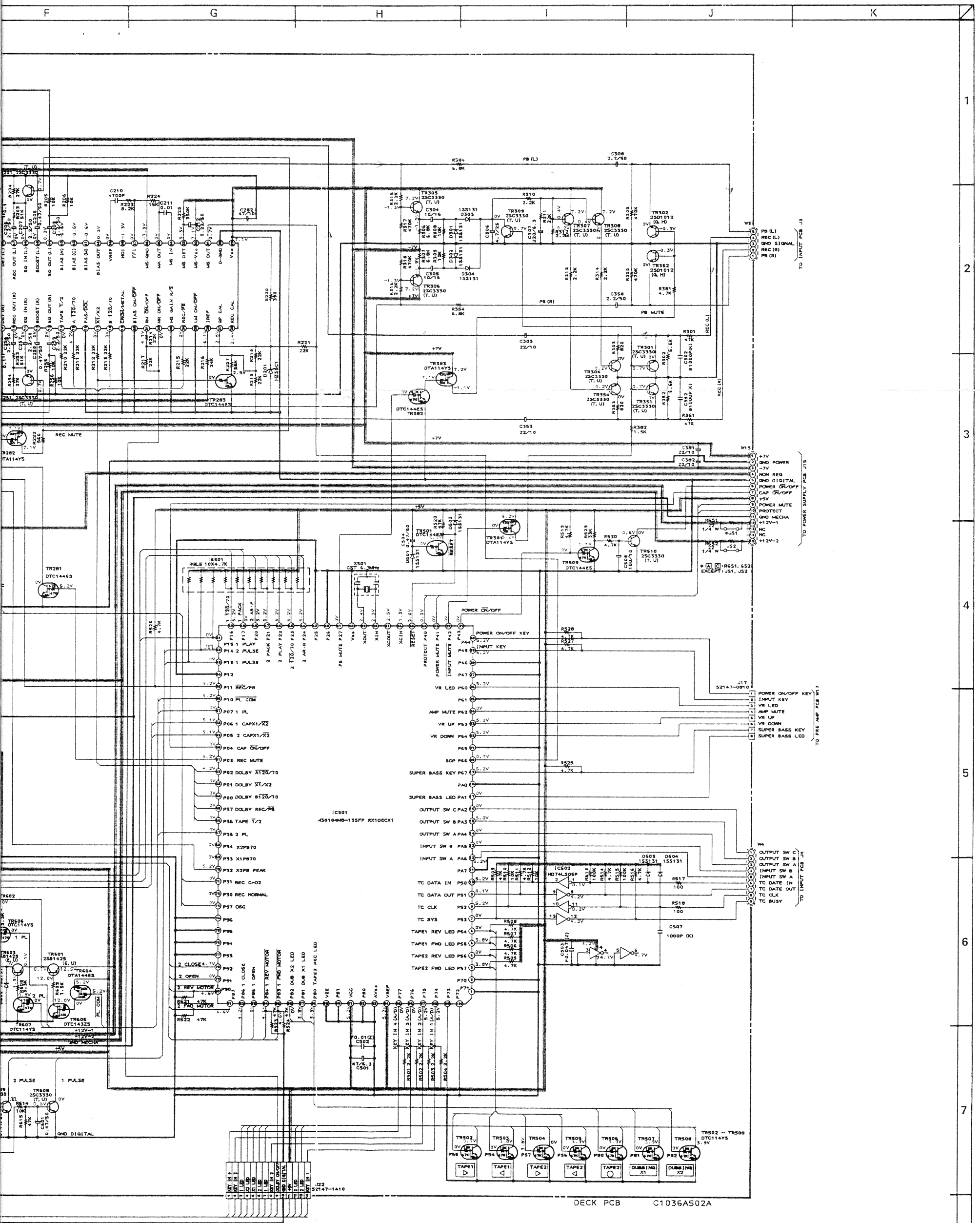




NOTE:
 UNLESS OTHERWISE SPECIFIED
 ALL RESISTORS IN OHMS (Ω) (R)
 ALL CAPACITORS IN P.F.F. (C)
 ALL ELECTROLYTIC CAPACITORS IN P.F.F. (E)



--- B (POWER SUPPLY) LINE
 --- PB SIGNAL LINE (L-CH)
 --- REC SIGNAL LINE (L-CH)



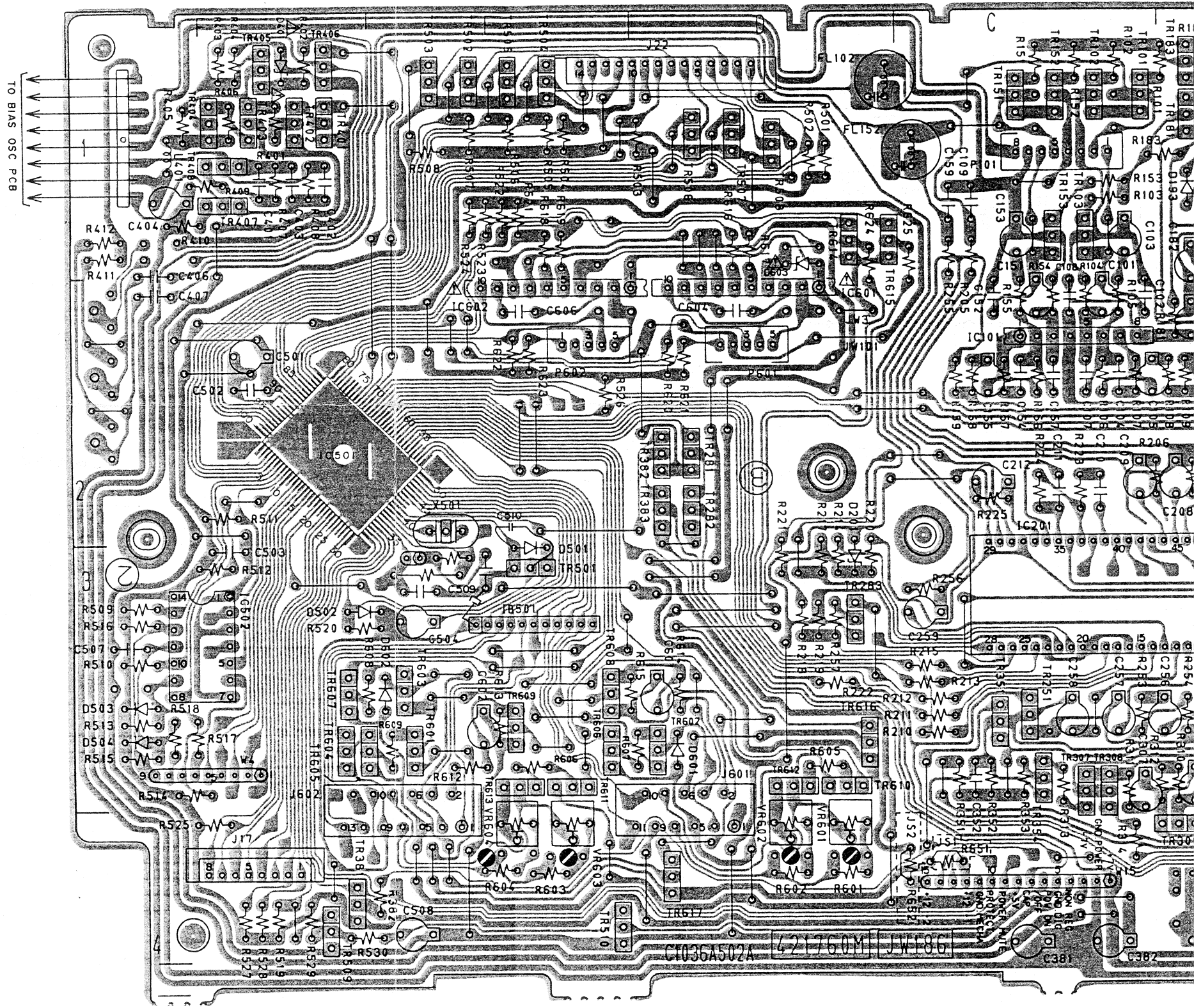
WARNING: Δ AND \square INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: Δ ET \square ILS INDIQUENT LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

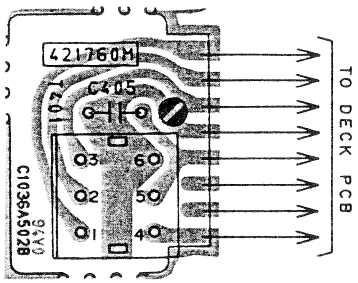
NOTE: UNLESS OTHERWISE SPECIFIED, ALL RESISTORS IN OHMS (1/4W/0.1W). ALL CAPACITORS IN μ F 50V/50V.

(INDICATED VOLTAGES WERE MEASURED DURING PB MODE (CONDITION TAPE II) AND PLAY, NORMAL TAPE, DOLBY OFF)

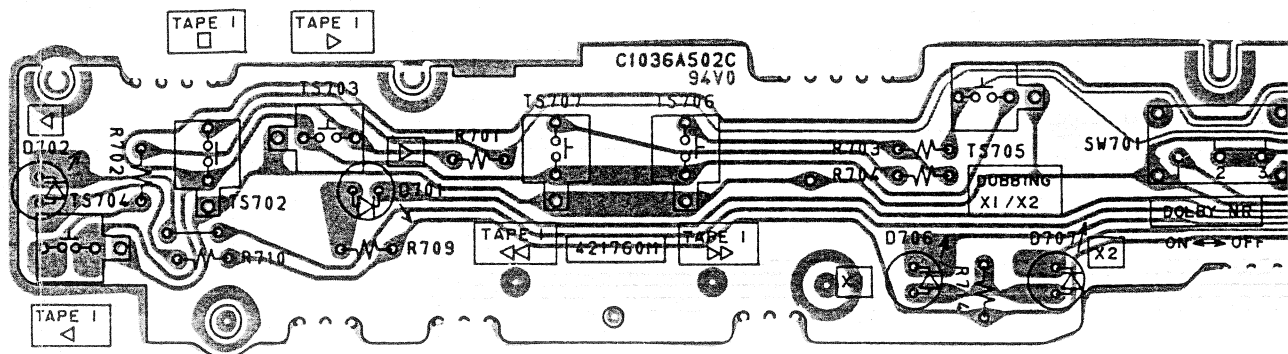
AX-590
DECK
SCHEMATIC DIAGRAM
No. 11-7 C103703M
A0



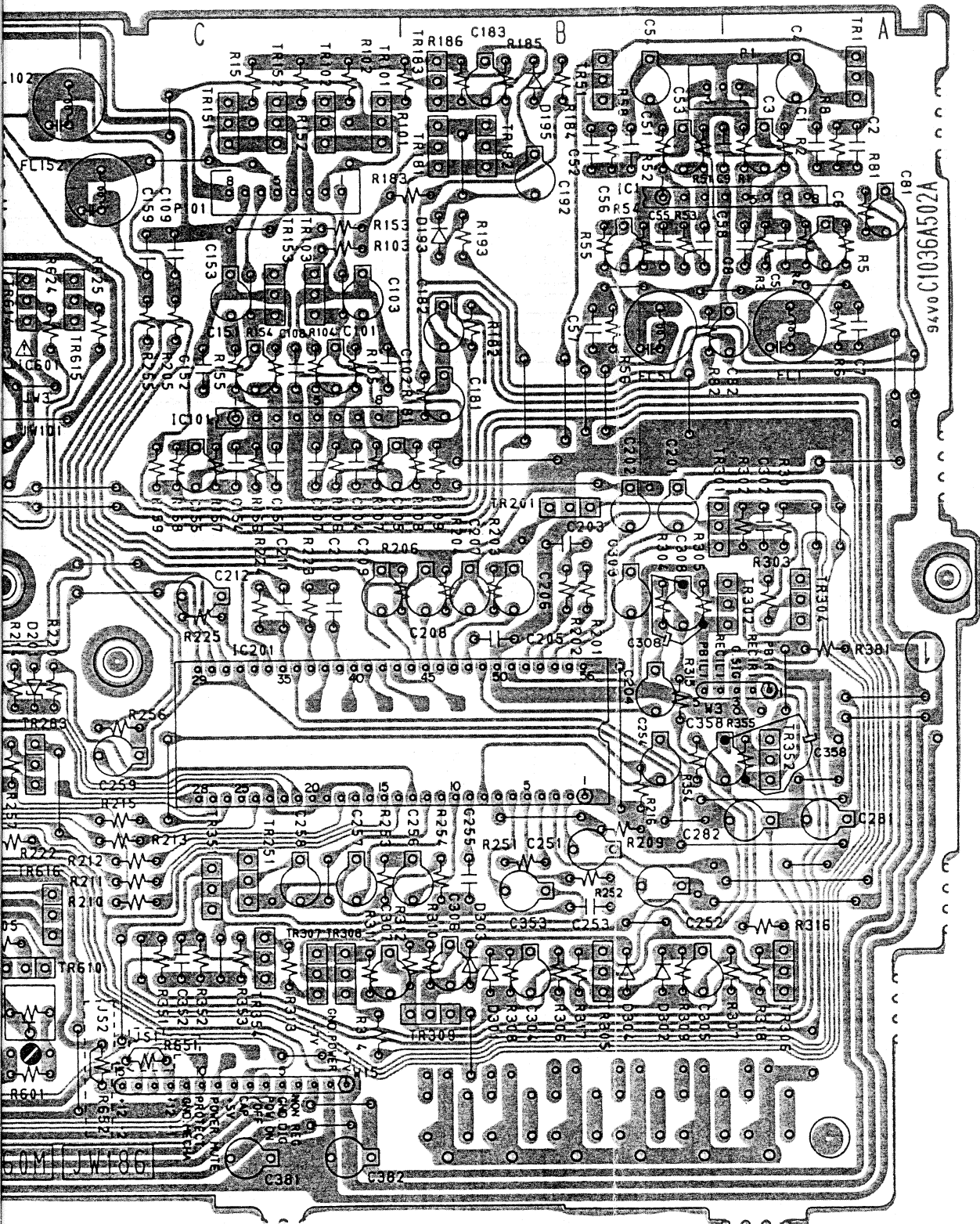
DECK PCB CI036A502A (AX-590 ONLY)



BIAS OSC PCB CI036A502B
(AX-590 ONLY)



OPERATION PCB CI036A502C



PRINCIPAL PARTS LOCATION

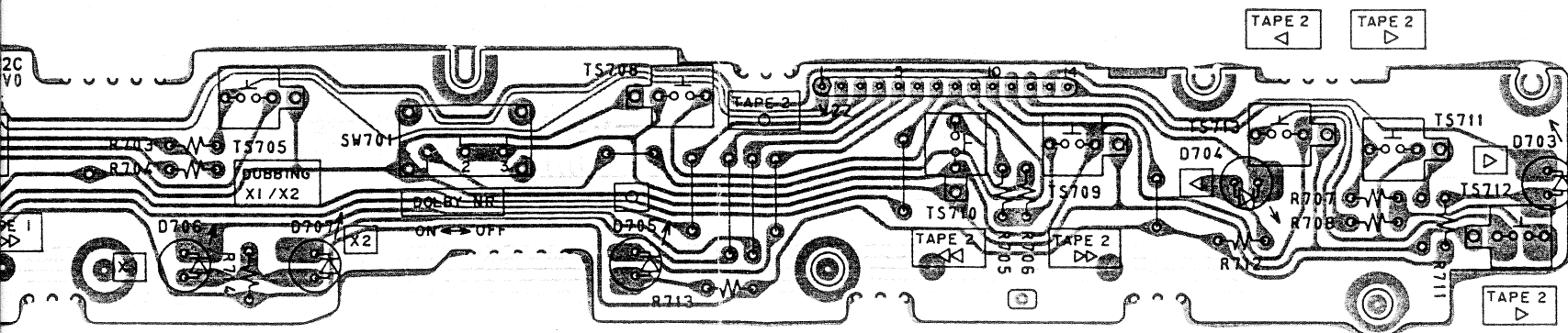
ICs			
IC1	A,B1	TR407	F1
IC101	C2	TR408	F1
IC201	B,C3	TR501	E3
IC501	E,F2	TR502	E1
IC502	F3	TR503	E1
IC601	D2	TR504	E1
IC602	E2	TR505	E1
TRANSISTORS			
TR1	A1	TR506	D1
TR51	B1	TR507	D1
TR101	C1	TR508	D1
TR102	C1	TR509	F4
TR103	C1	TR510	D4
TR151	C1	TR601	E3
TR152	C1	TR602	D3
TR153	C1	TR603	E3
TR181	B1	TR604	F3
TR182	B1	TR605	F3
TR183	B1	TR606	E3
TR201	B2	TR607	F3
TR251	C3	TR608	E3
TR281	D2	TR609	E3
TR282	D2	TR610	D3
TR283	D3	TR611	E3
TR301	B2	TR612	D3
TR302	A,B2	TR613	E3
TR304	A2	TR614	D1
TR305	B3,4	TR615	D1
TR306	A3,4	TR616	D3
TR307	C3,4	TR617	D4
TR308	C3,4	CONNECTORS	
TR309	B4	J17	F4
TR351	C3	J22	D,E1
TR352	A3	J601	D3,4
TR354	C3	J602	E3,4
TR381	F4	P1	A,B1
TR382	D2	P101	C1
TR383	D2	P601	D2
TR401	F1	P602	E2
TR402	F1	WIRES	
TR403	F1	W3	A,B3
TR404	F1	W4	F3
TR405	F1	W15	C4
TR406	F1		

CIO36A502A (AX-590 ONLY)

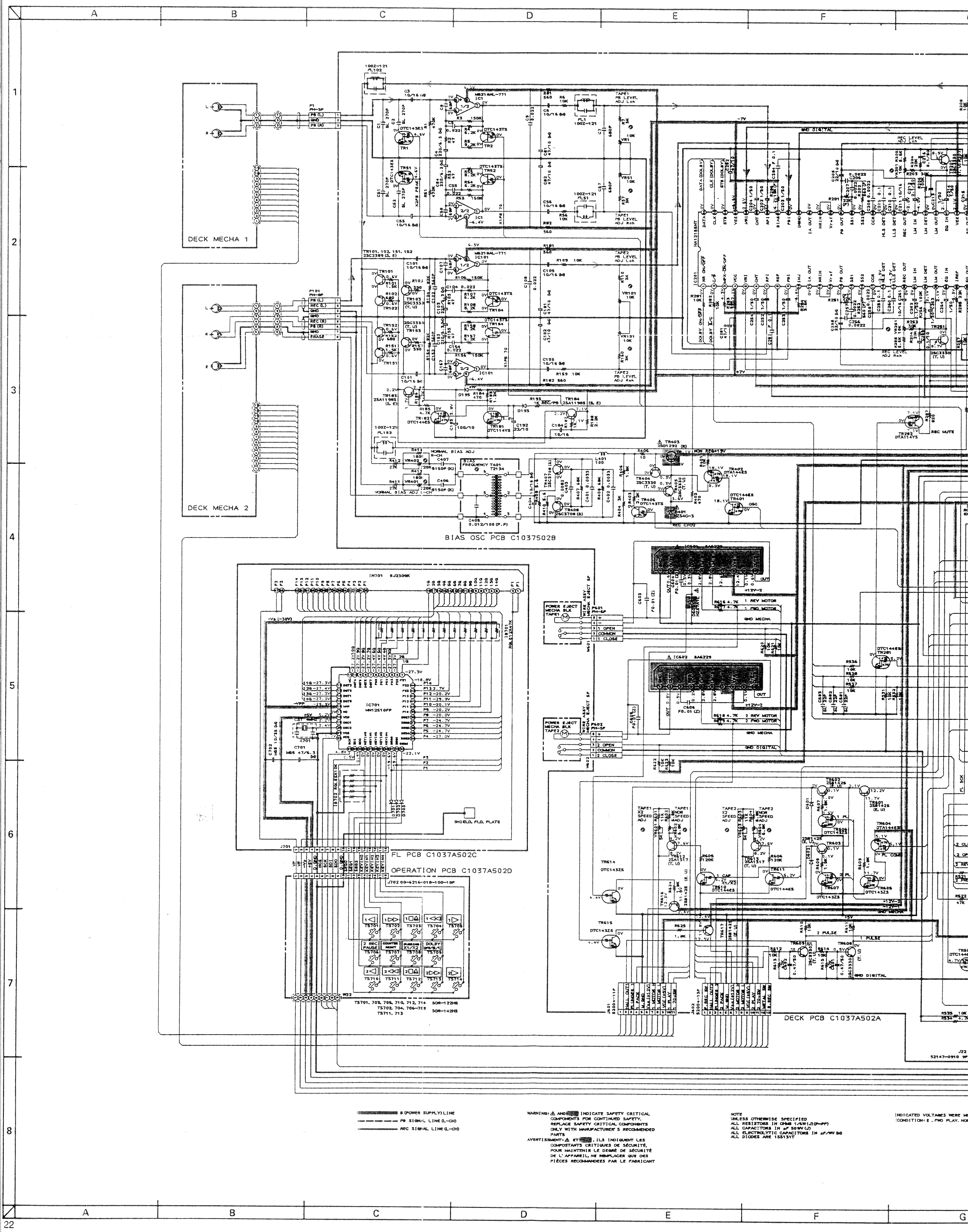
WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.



OPERATION PCB CIO36A502C (AX-590 ONLY)

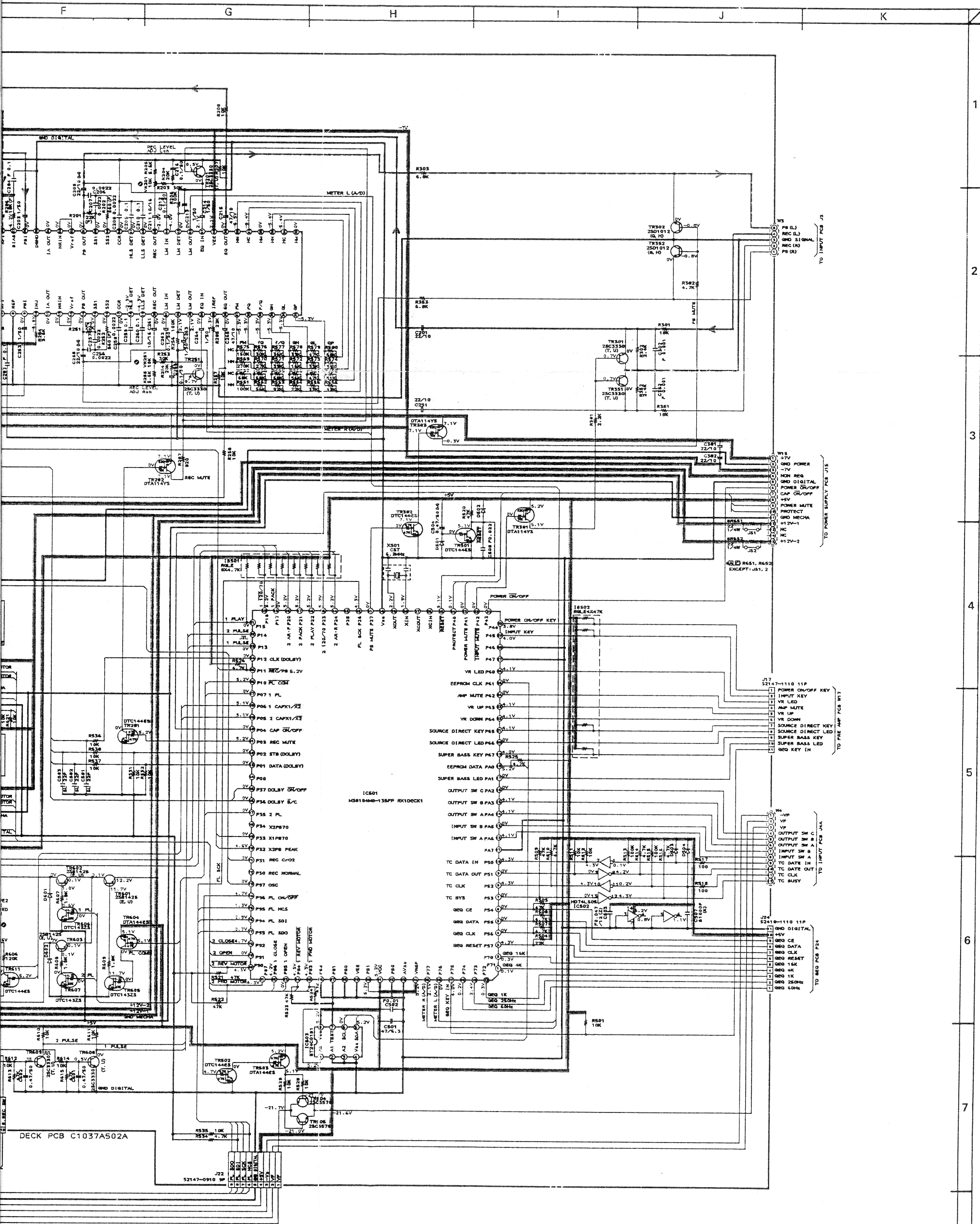


--- B POWER SUPPLY LINE
 --- PB SIGNAL LINE (L-G)
 --- REC SIGNAL LINE (L-G)

WARNING: Δ AND \square INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.
AVERTISSEMENT: Δ ET \square ILS INDICENT LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

NOTE: UNLESS OTHERWISE SPECIFIED ALL RESISTORS IN OHMS (1.5W (1/10-W)) ALL CAPACITORS IN μ F (50V(D)) ALL ELECTROLYTIC CAPACITORS IN μ F/VV 50 ALL DIODES ARE 1SS137

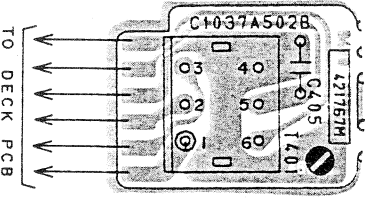
INDICATED VOLTAGES WERE MEASURED UNDER THE FOLLOWING CONDITIONS: E.P.M.O. POWER, NORMAL TAPES, NORMAL SPEED, NORMAL BIAS, NORMAL REC. LEVEL, NORMAL PAUSE, NORMAL REVERSE, NORMAL STILL, NORMAL PLAY, NORMAL F.W.



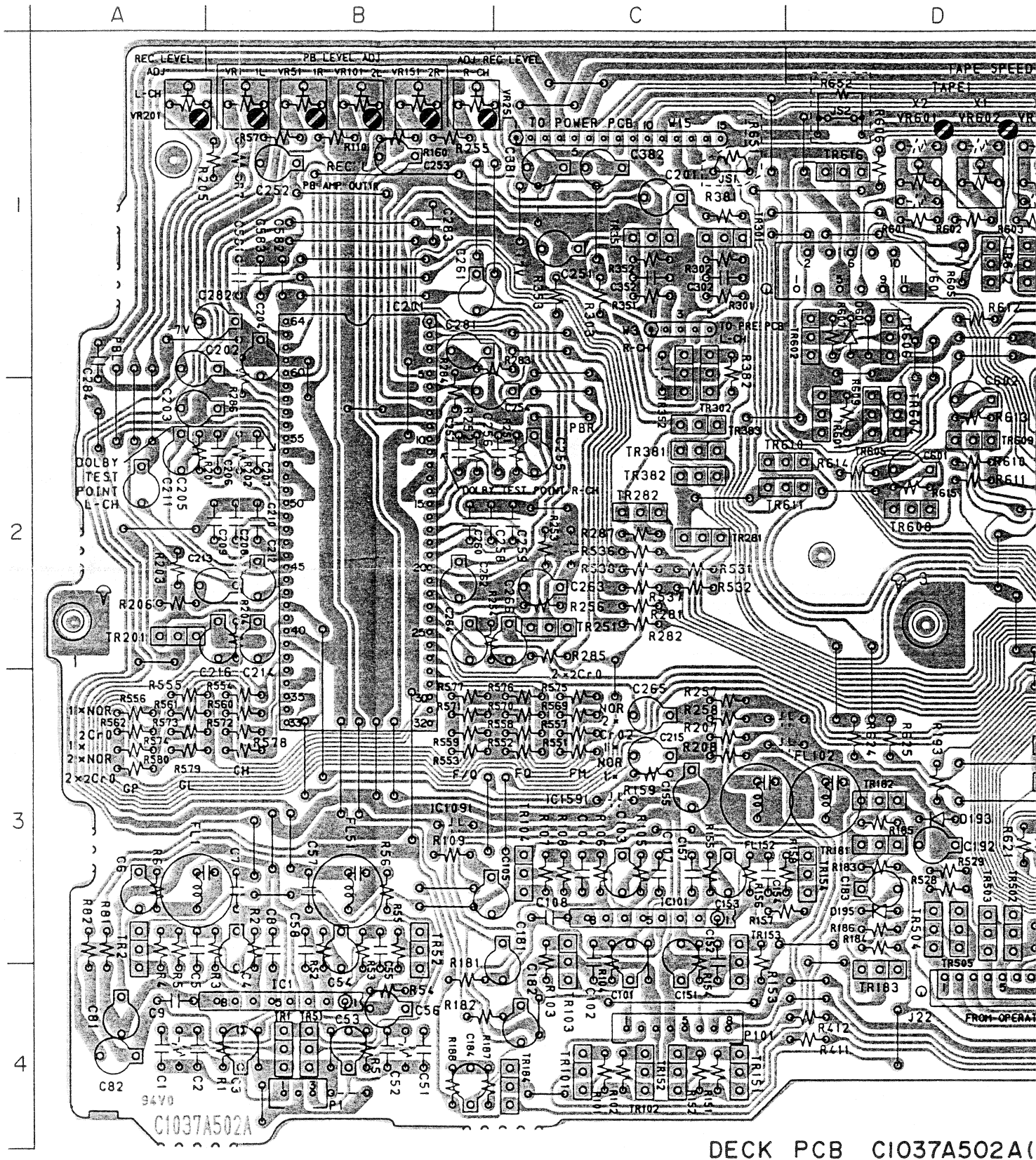
UNLESS SPECIFIED
RESISTORS ARE IN OHMS (W, R, K, M, Ω)
CAPACITORS ARE IN μF (μ, M, P, N, F)
RESISTOR TOLERANCES IN μF/W/V 50
RESISTOR TOLERANCES IN μF/W/V 50

INDICATED VOLTAGES WERE MEASURED DURING PB MODE
(CONDITION: 1. PB PLAY, NORMAL TAPE, DOLBY OFF)

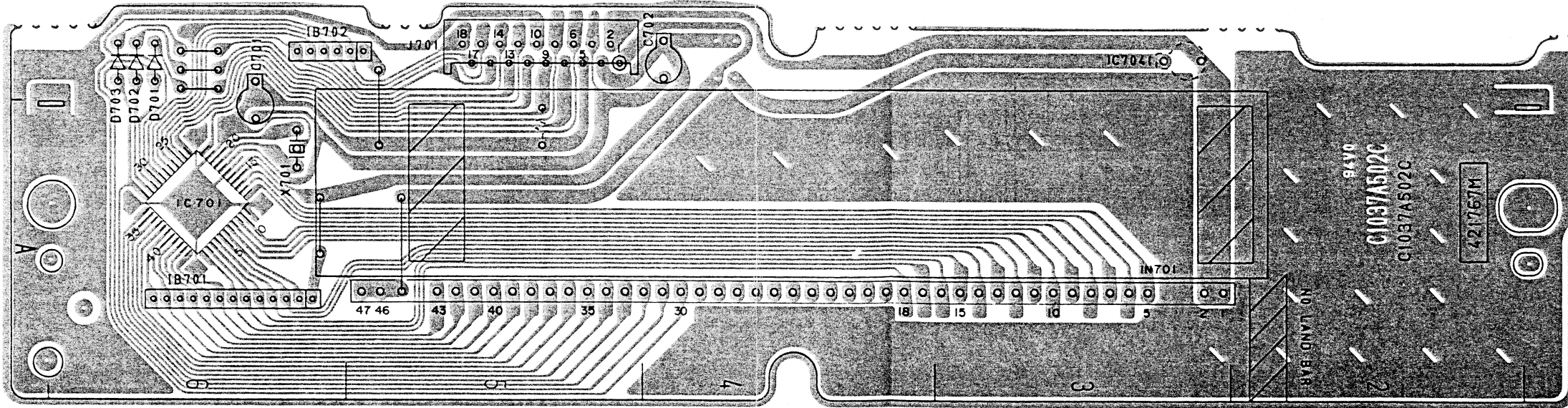
AX-690
DECK
SCHEMATIC DIAGRAM
No. 11-8 C103704M
A0



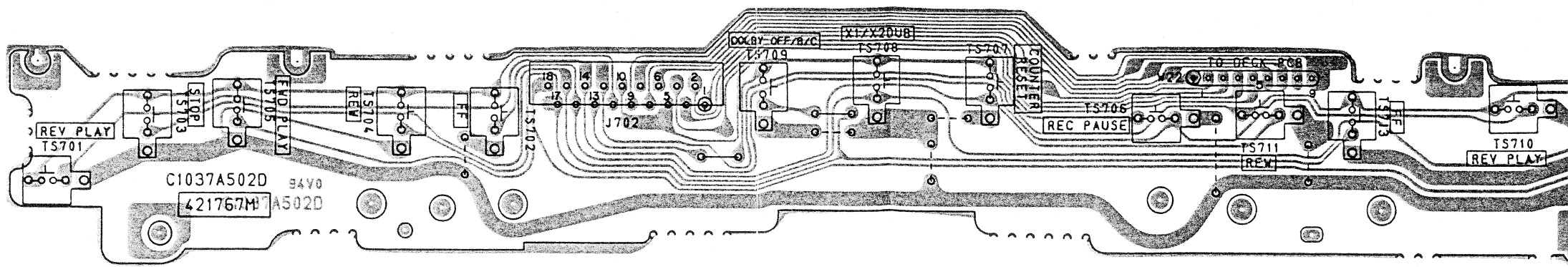
BIAS OSC PCB C1037A502B
(AX-690 ONLY)



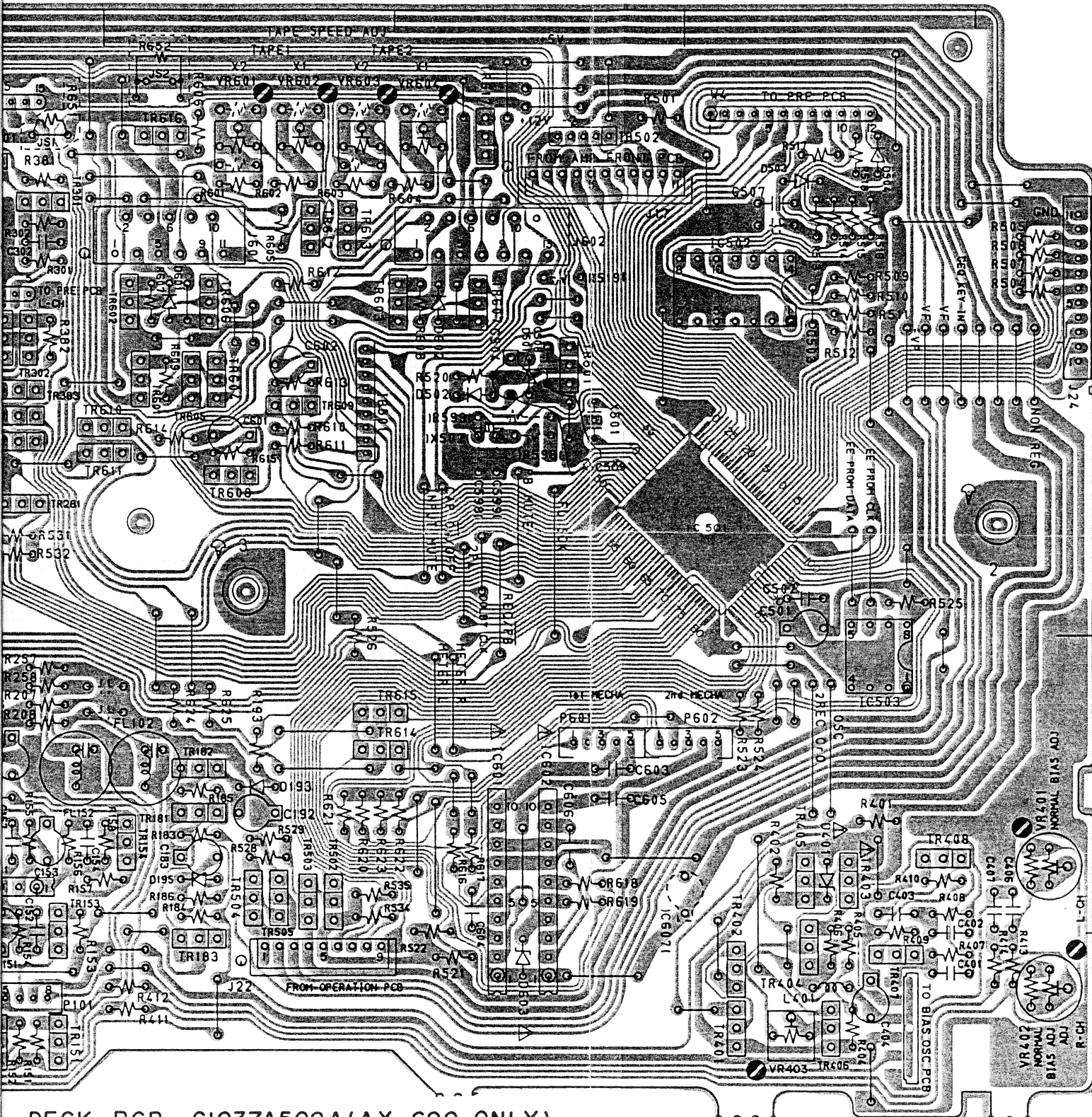
DECK PCB C1037A502A



FL PCB C1037A502C (AX-690 ONLY)



OPERATION PCB C1037A502D (AX-690 ONLY)



DECK PCB CI037A502A (AX-690 ONLY)

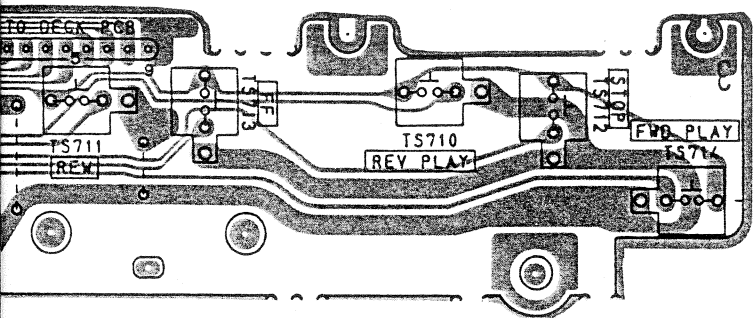
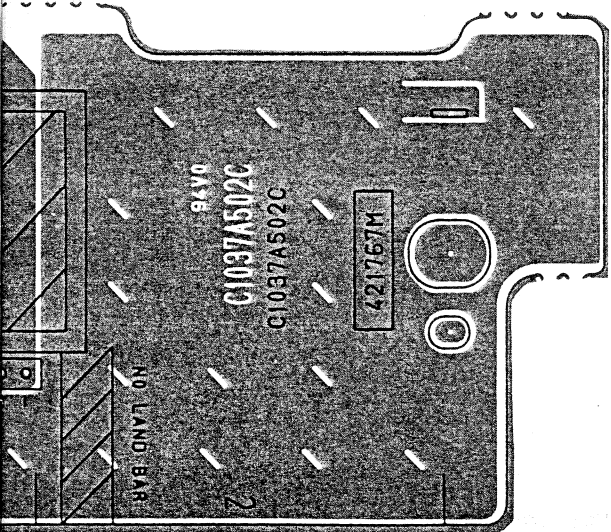
PRINCIPAL PARTS LOCATION

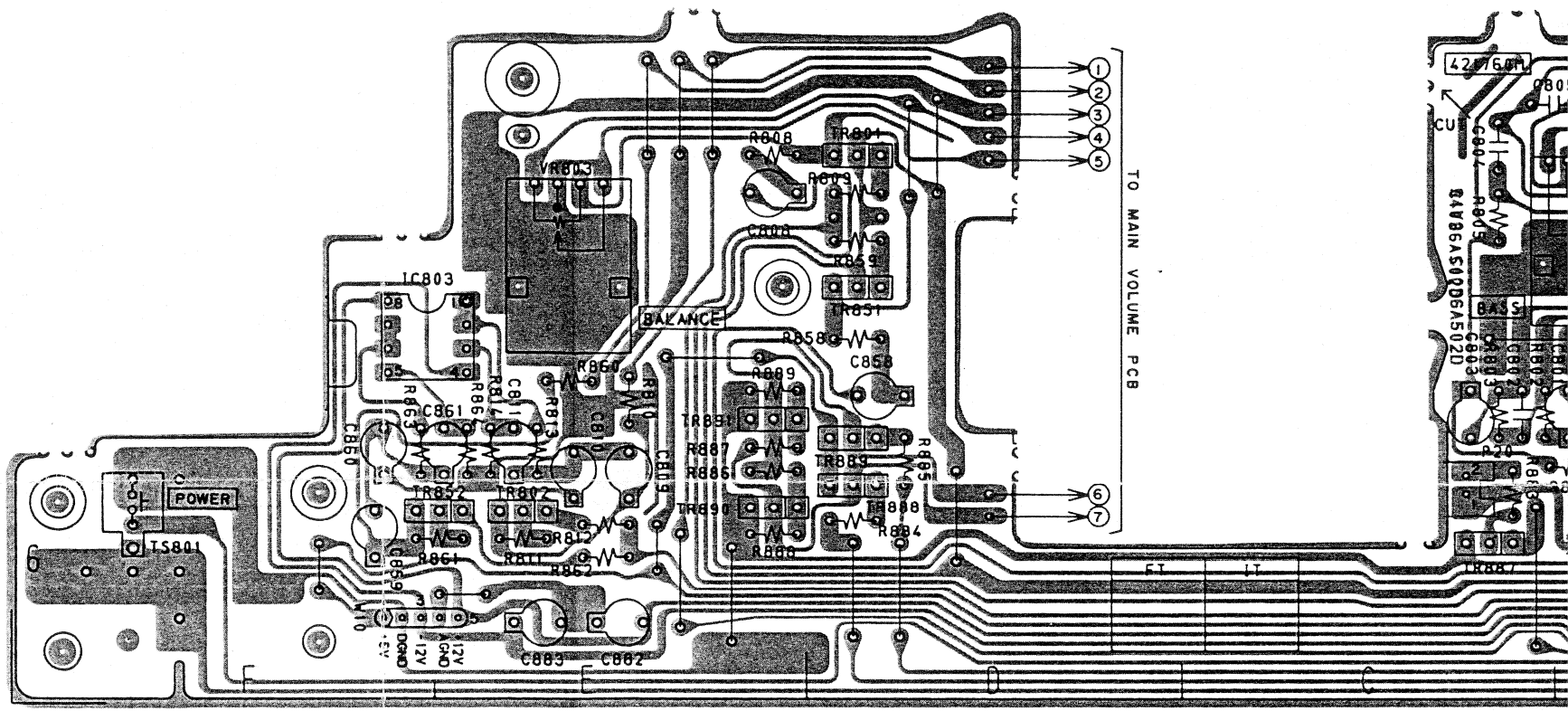
ICs			
IC1	B4	TR406	F4
IC101	C3	TR407	F4
IC201	B2	TR408	F3
IC501	E,F2	TR501	E2
IC502	F1	TR502	D3
IC503	F3	TR503	D3
IC601	E3	TR504	D3
IC602	E3	TR505	D3
		TR601	D2
		TR602	D1
		TR603	E1
		TR604	D2
		TR605	D2
		TR606	D1
		TR607	E1
		TR608	D2
		TR609	D2
		TR610	C,D2
		TR611	C,D2
		TR612	D1
		TR613	D1
		TR614	D3
		TR615	D3
		TR616	D1
		TR617	E1
TRANSISTORS			
TR1	B4		
TR2	A3,4		
TR51	B4		
TR52	B3,4		
TR101	C4		
TR102	C4		
TR103	C4		
TR104	C3		
TR151	C4		
TR152	C4		
TR153	C4		
TR154	D3		
TR181	D3		
TR182	D3		
TR183	D4		
TR184	C4		
TR201	A2		
TR251	C2		
TR281	C2		
TR282	C2		
TR301	C1		
TR302	C1,2		
TR351	C1		
TR352	C1,2		
TR381	C2		
TR382	C2		
TR383	C2		
TR401	F4		
TR402	F4		
TR403	F3		
TR404	F4		
TR405	F3		
CONNECTORS			
J17	E1		
J22	D4		
J24	F1		
J601	D1		
J602	E1		
P1	B4		
P101	C4		
P601	E3		
P602	E,F3		
WIRES			
W3	C1		
W4	F1		
W15	C1		

WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

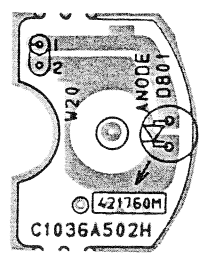
AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.

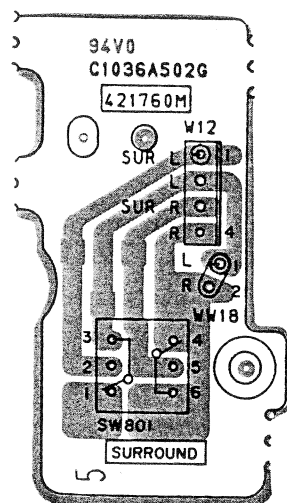




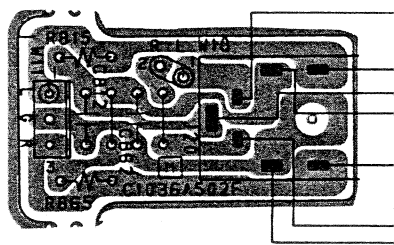
PRE AMP PCB CI036A502D (AX-590 ONLY)



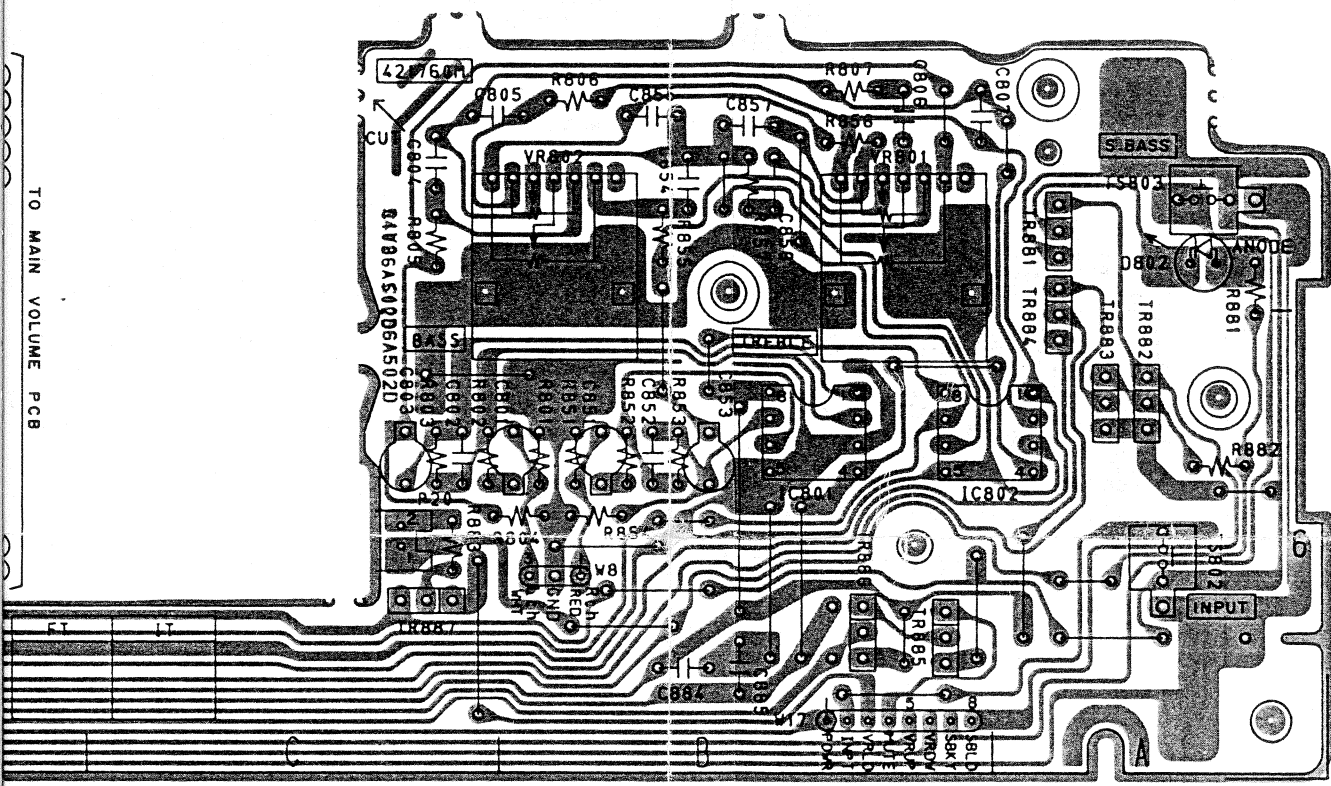
VOLUME LED PCB CI036A502H (AX-590 ONLY)



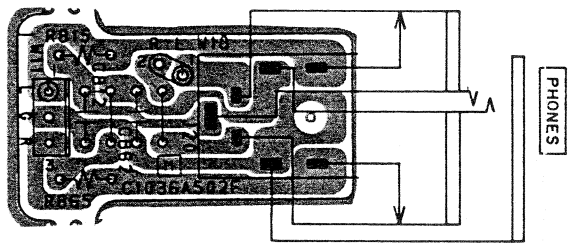
SURROUND SW PCB CI036A502G (AX-590 ONLY)



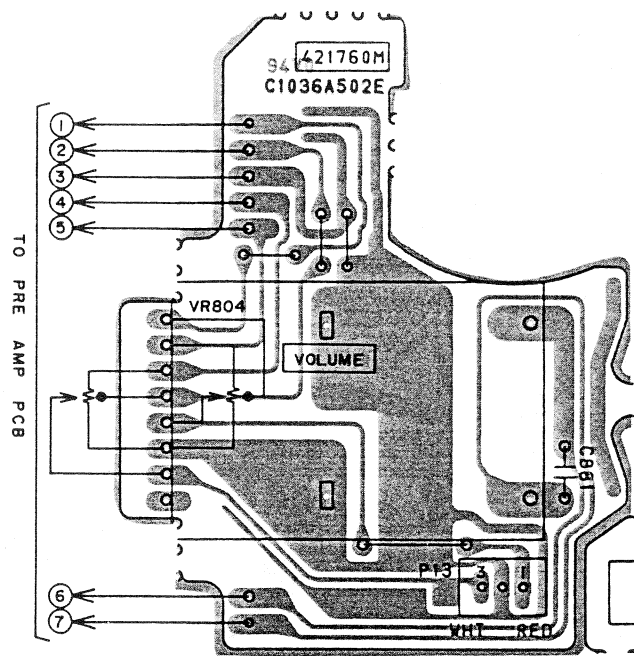
PHONE JACK PCB CI036A502I (AX-590 ONLY)



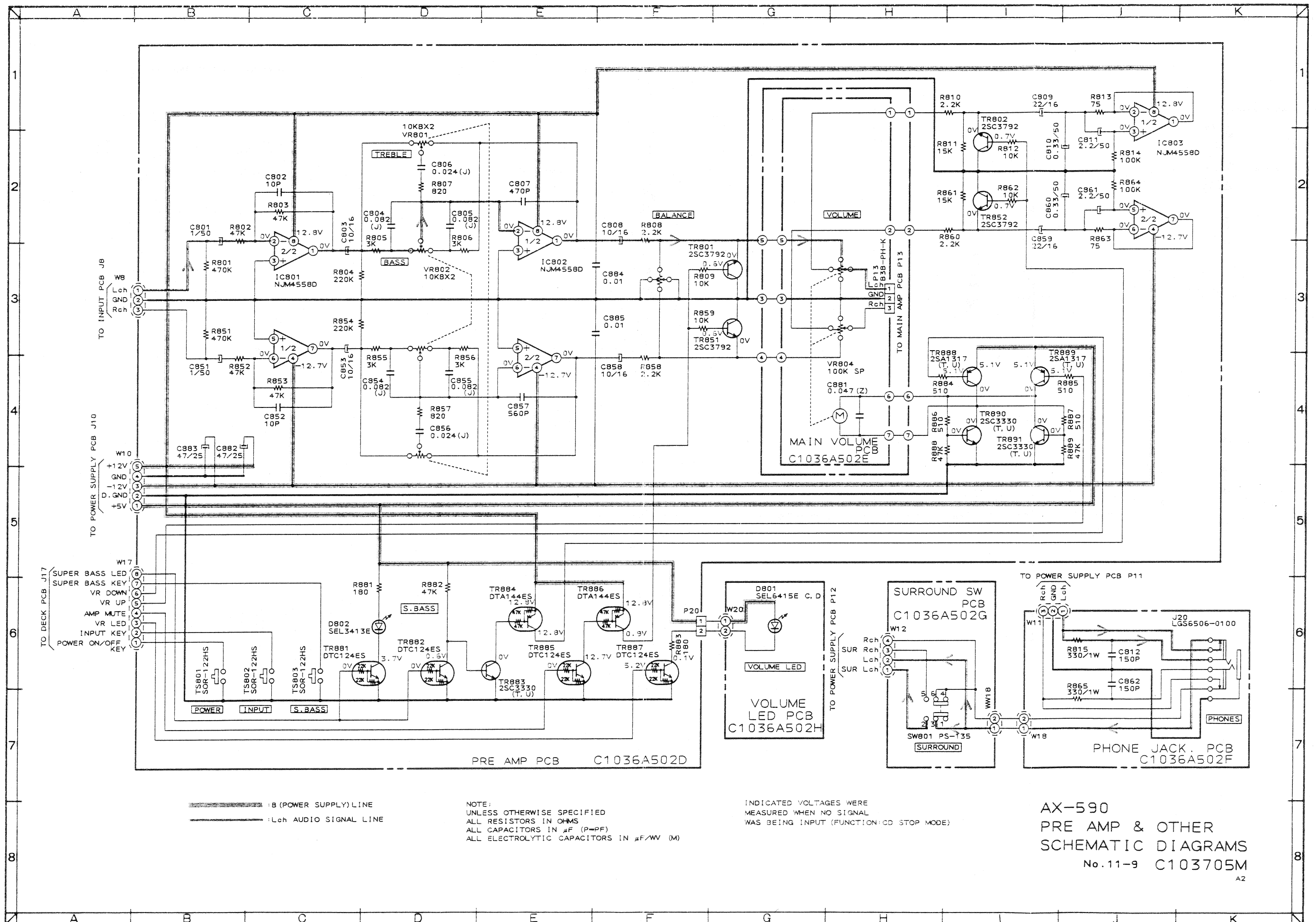
CB CI036A502D (AX-590 ONLY)



PHONE JACK PCB CI036A502F
(AX-590 ONLY)



MAIN VOLUME PCB CI036A502E
(AX-590 ONLY)

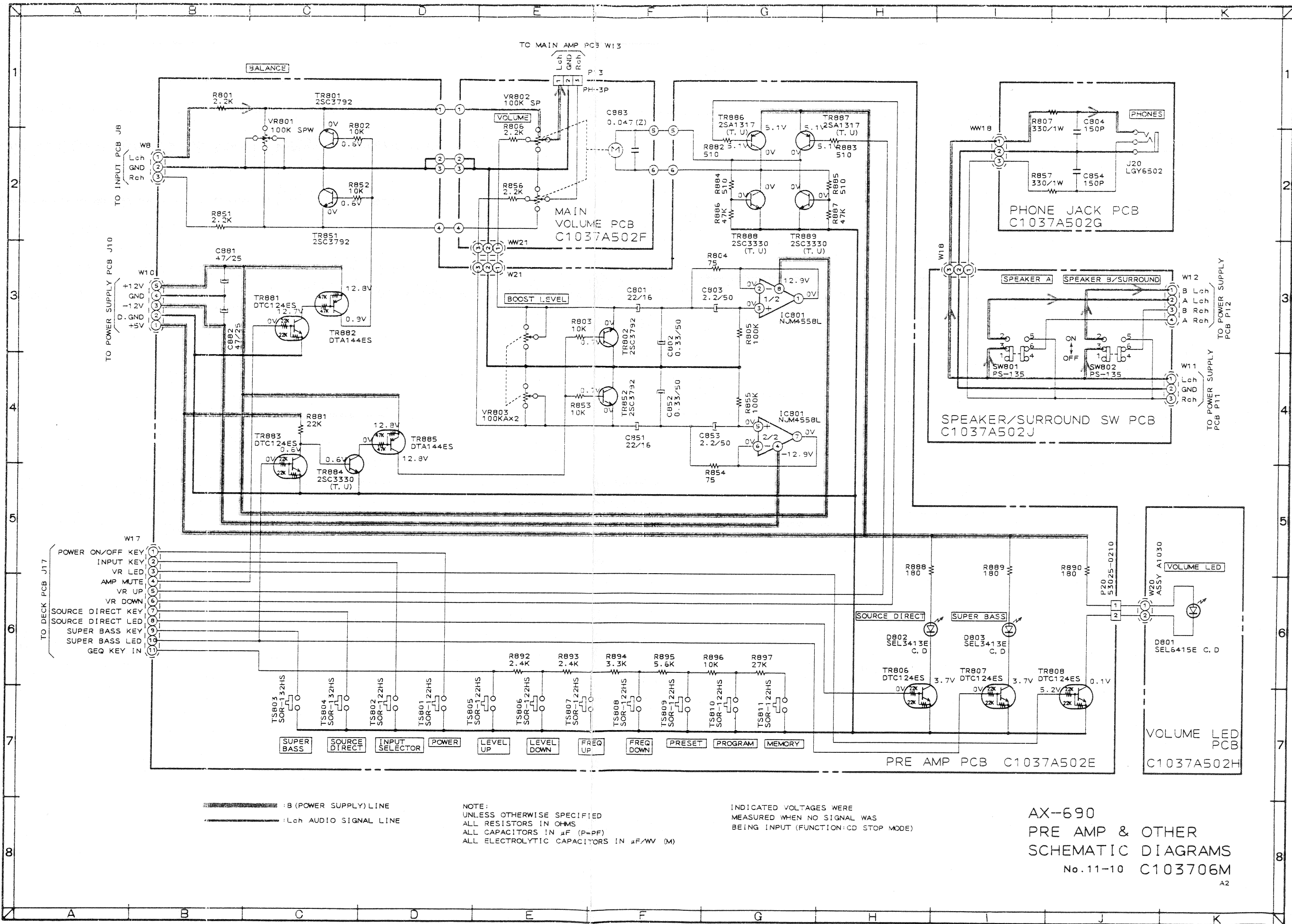


----- :B (POWER SUPPLY) LINE
 _____ :Lch AUDIO SIGNAL LINE

NOTE:
 UNLESS OTHERWISE SPECIFIED
 ALL RESISTORS IN OHMS
 ALL CAPACITORS IN μ F (P-PF)
 ALL ELECTROLYTIC CAPACITORS IN μ F/WV (M)

INDICATED VOLTAGES WERE
 MEASURED WHEN NO SIGNAL
 WAS BEING INPUT (FUNCTION:CD STOP MODE)

AX-590
 PRE AMP & OTHER
 SCHEMATIC DIAGRAMS
 No.11-9 C103705M
 A2



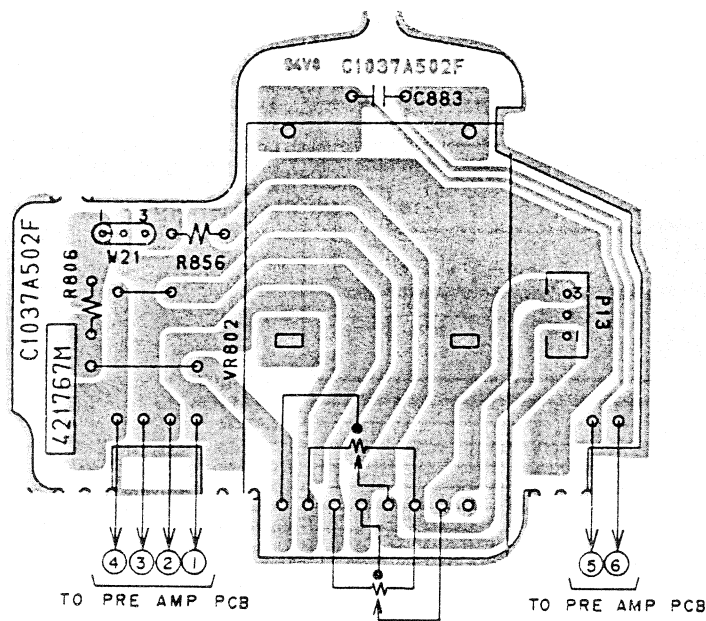
- TO DECK PCB J17
- 1 POWER ON/OFF KEY
 - 2 INPUT KEY
 - 3 VR LED
 - 4 AMP MUTE
 - 5 VR UP
 - 6 VR DOWN
 - 7 SOURCE DIRECT KEY
 - 8 SOURCE DIRECT LED
 - 9 SUPER BASS KEY
 - 10 SUPER BASS LED
 - 11 GEQ KEY IN

:B (POWER SUPPLY) LINE
 :Lch AUDIO SIGNAL LINE

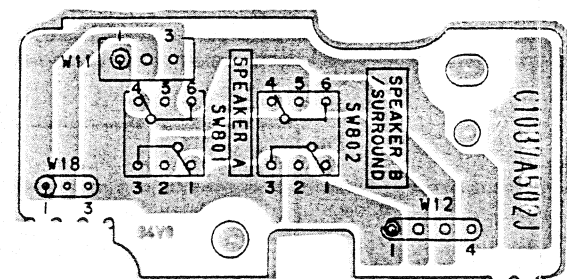
NOTE:
 UNLESS OTHERWISE SPECIFIED
 ALL RESISTORS IN OHMS
 ALL CAPACITORS IN μ F (P-PF)
 ALL ELECTROLYTIC CAPACITORS IN μ F/W (M)

INDICATED VOLTAGES WERE
 MEASURED WHEN NO SIGNAL WAS
 BEING INPUT (FUNCTION: CD STOP MODE)

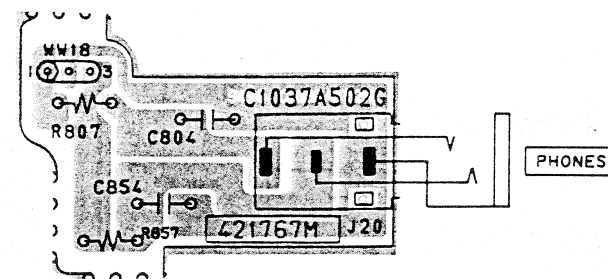
AX-690
 PRE AMP & OTHER
 SCHEMATIC DIAGRAMS
 No. 11-10 C103706M
 A2



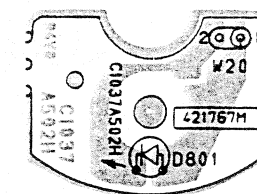
MAIN VOLUME PCB C1037A502F
(AX-690 ONLY)



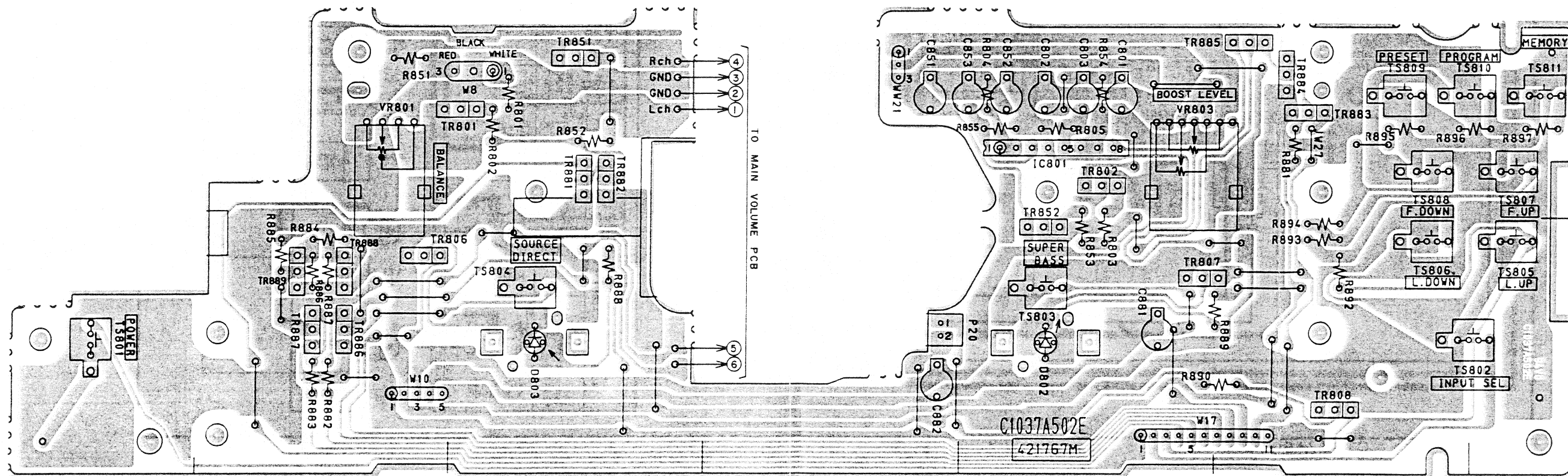
SPEAKER /SURROUND PCB C1037A502J
(AX-690 ONLY)



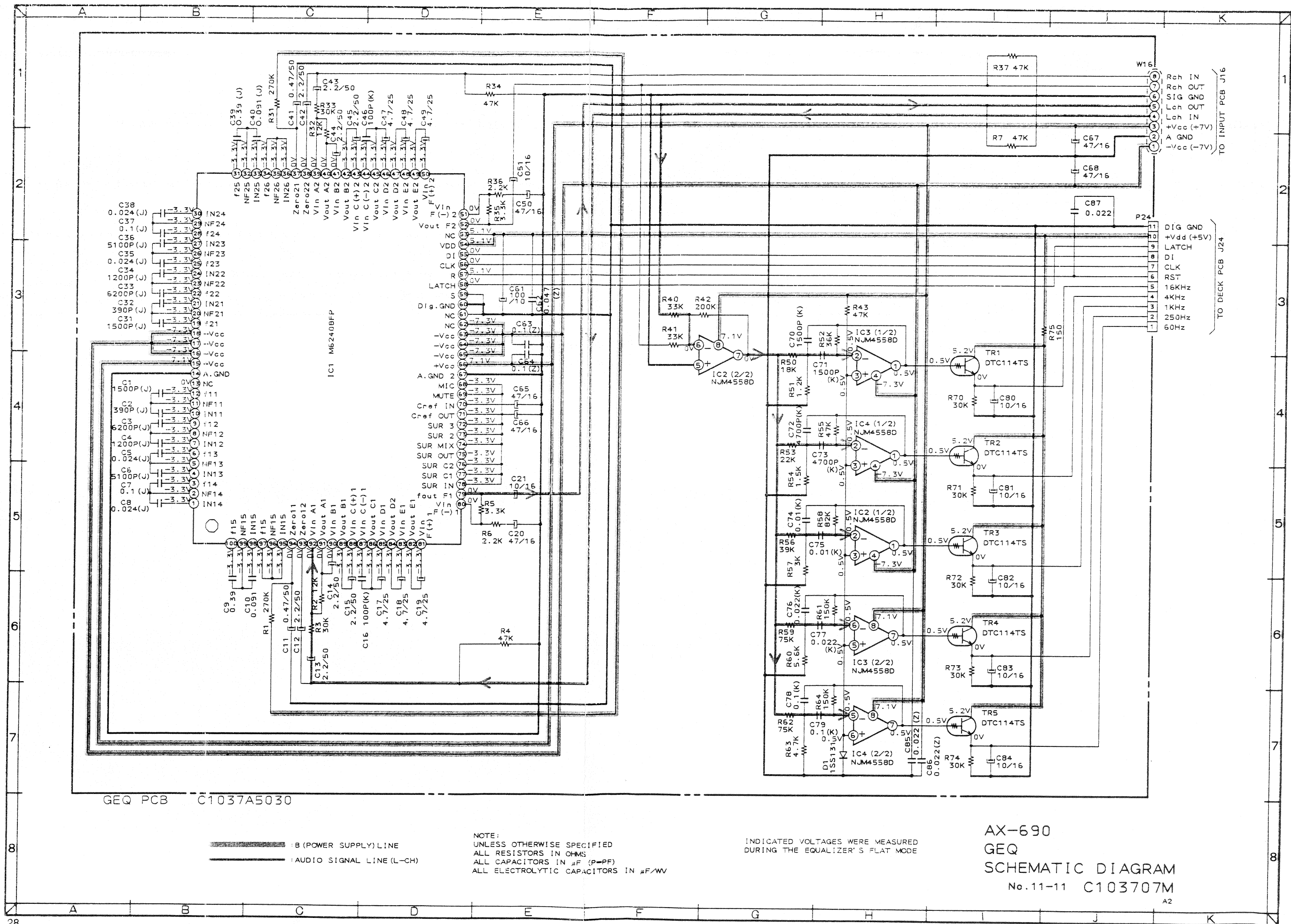
PHONE JACK PCB C1037A502G
(AX-690 ONLY)

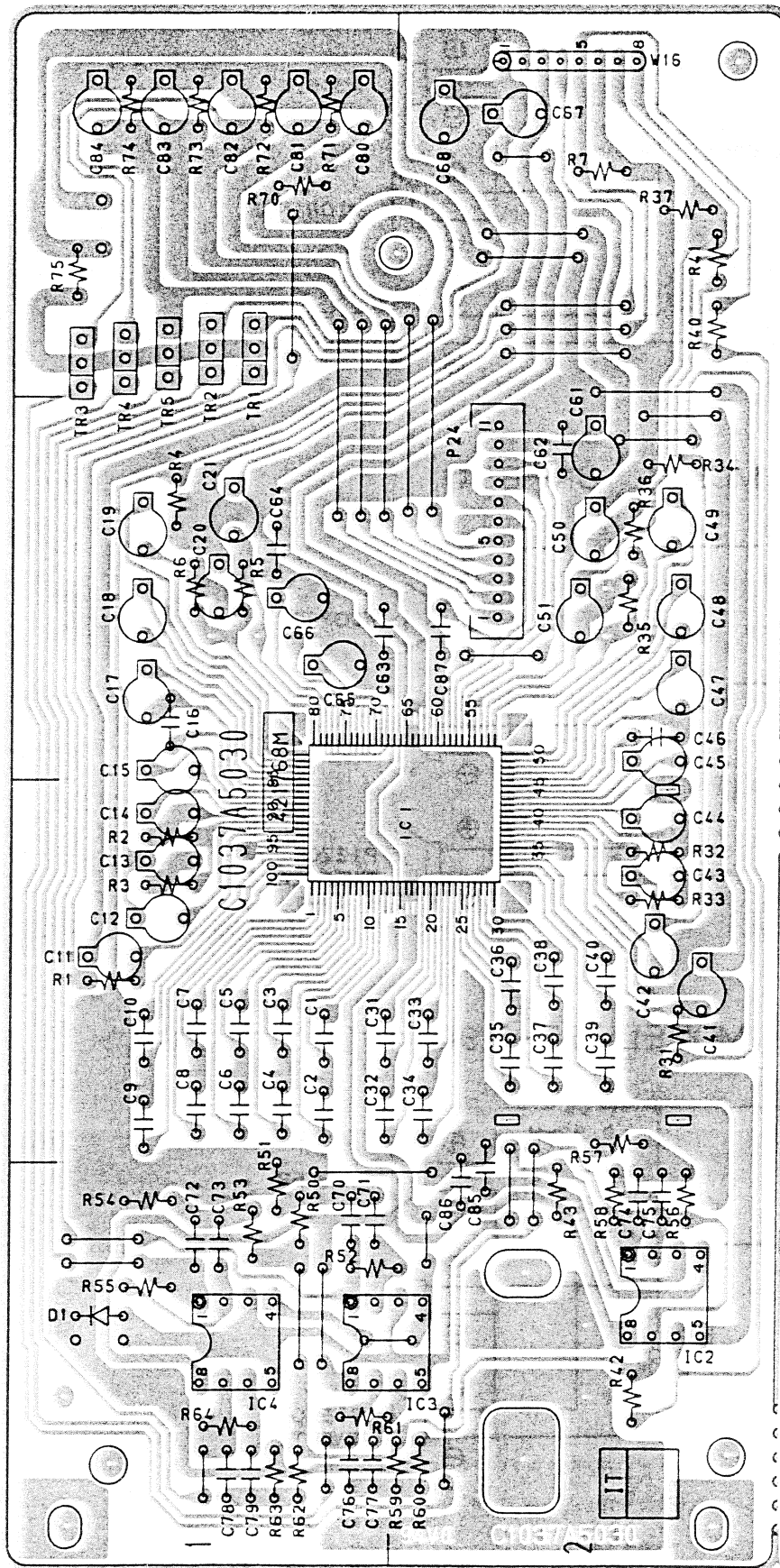


VOLUME LED PCB C1037A502H
(AX-690 ONLY)



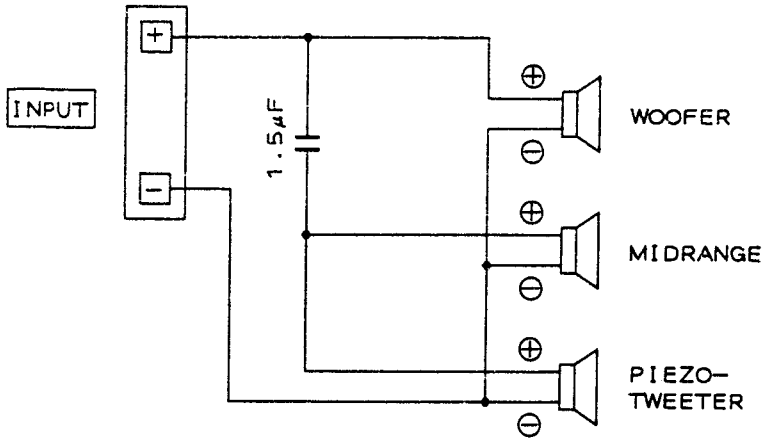
PRE AMP PCB C1037A502E (AX-690 ONLY)



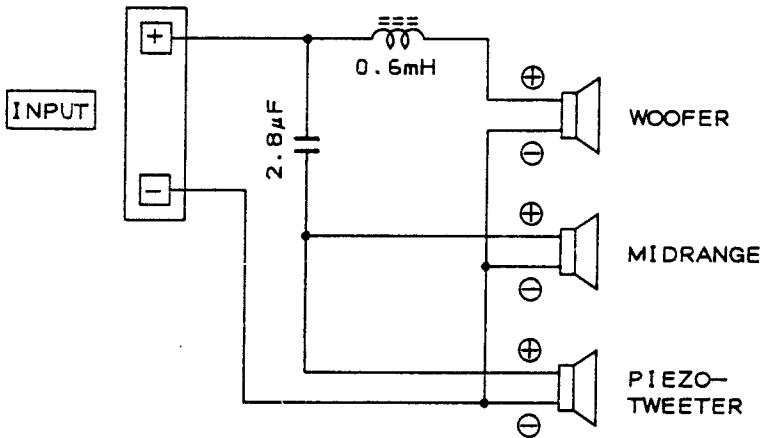


GEQ PCB C1037A5030 (AX-690 ONLY)

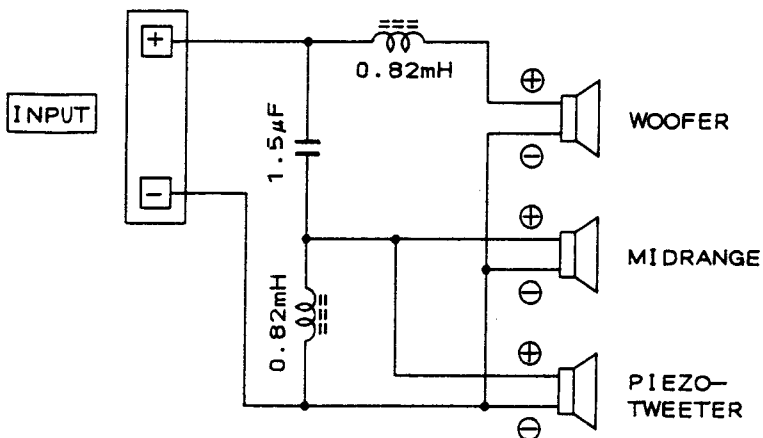
MODEL SR-590



MODEL SR-690

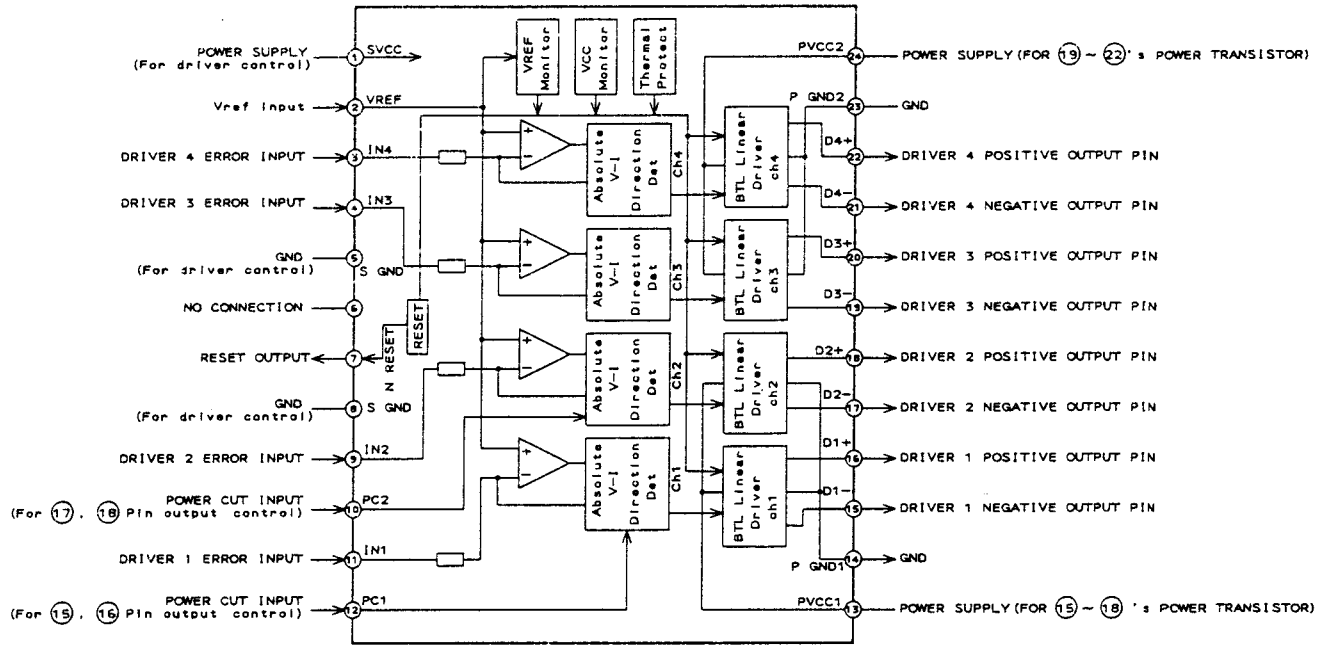


MODEL SR-790



SR-590/690/790
SCHEMATIC DIAGRAMS

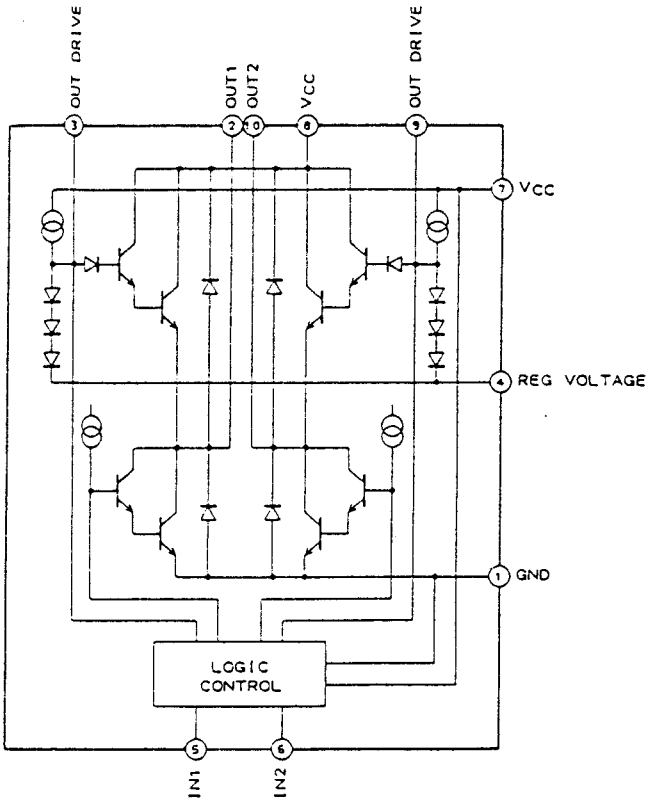
AN8389S (LINEAR MOTOR DRIVER)



AN8806SB (I-V/ERROR AMP)

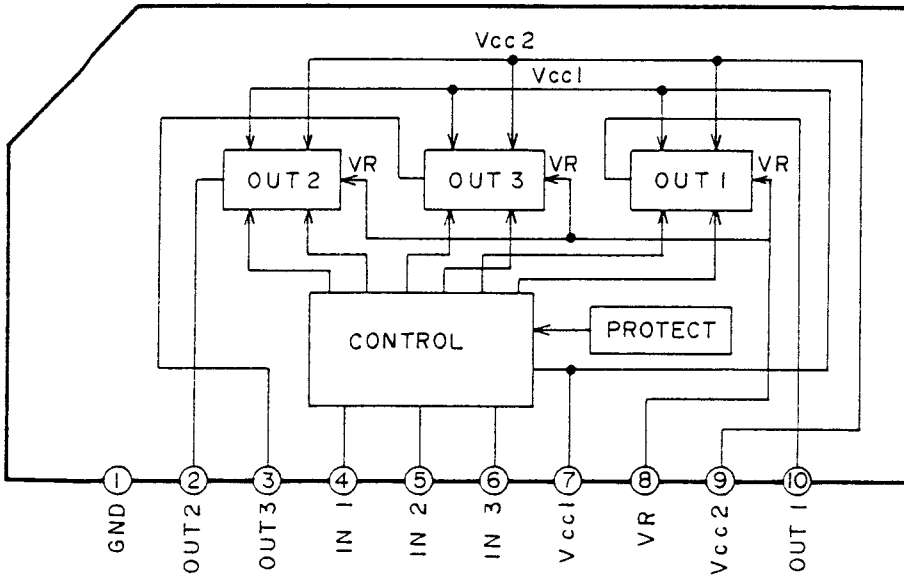
Pin No.	PORT NAME	I/O	FUNCTION
1	PD	I	PD signal input for LD output monitor
2	LD	O	Connect to the external transistor's base for LD drive
3	LDON	I	LD APC on/off select input
4	LDP	I	APC reference voltage select input
5	VCC	-	Power supply
6	RF-	I	RF AMP inverted input pin
7	RFOUT	O	RF inverted amp output
8	RFIN	I	RF AGC input pin
9	C.AGC	-	Capacitor connecting pin for RF AGC loop filter
10	AR	O	RF output pin after AGC operation
11	C.ENV	-	Connecting capacitor for RF
12	C.EA	-	Connecting a capacitor for AMP
13	S.SBDO	-	Capacitor connecting pin for low speed detection of the dark level D0 detection
14	BDO	O	BDO detection output pin (positive logic)
15	C.SBRT	-	Capacitor connecting pin for low speed detection of the OFTR detection
16	OFTR	O	Off track detection output pin (positive logic)
17	NRFDET	O	RF signal level detection output pin (negative logic)
18	GND	-	Ground
19	ENV	O	Envelope output pin
20	VREF	O	1/2 VCC output pin
21	LD OFF	I	Input pin of forced stop for LD APC
22	VDET	O	Vibration detection output pin
23	TEBPF	I	Vibration detection input pin
24	CROSS	O	Output pin for TE CROSS detection signal
25	TEOUT	O	TE AMP output pin
26	TE-	I	TE AMP inverted input pin
27	FEOUT	O	FE AMP output pin
28	FE-	I	FE AMP inverted input pin
29	FBAL	I	Control signal input pin for FO balance adjustment
30	TBAL	I	Control signal input pin for TE balance adjustment
31	PDFR	-	Resistor connection pin for setting I-V conversion resistance value of PDE
32	PDER	-	Resistor connection pin for setting I-V conversion resistance value of PDF
33	PDE	I	Connect to pin diode E
34	PDF	I	Connect to pin diode F
35	PDBD	I	Connect to B,D of 4 separation astigmatic PD
36	PDAC	I	Connect to B,D of 4 separation astigmatic PD

BA6229 (BI-DIRECTIONAL MOTOR DRIVE)



INPUT		OUTPUT		MODE
⑤	⑥	②	⑩	
H	H	L	L	BRAKE
L	H	L	H	CASSETTE & TAPE LOADING
H	L	H	L	CASSETTE & TAPE UNLOADING
L	L	OPEN	OPEN	STOP

BA6247 (REVERSIBLE MOTOR DRIVE)

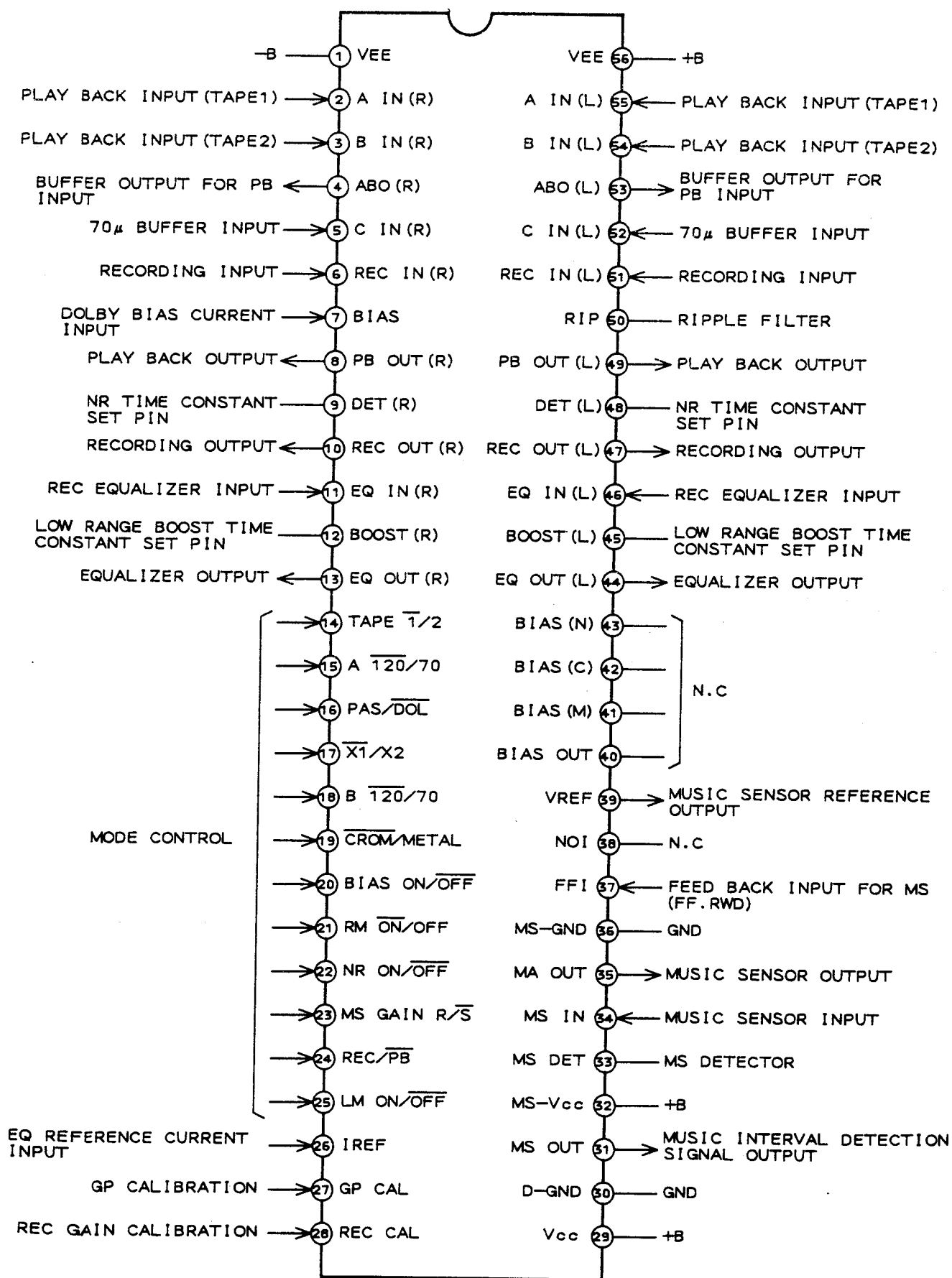


IN PUT			OUT PUT		
IN1	IN2	IN3	OUT1	OUT2	OUT3
L	L	$\frac{L}{H}$	L	L	L
H	L	L	H	L	OPEN
H	L	H	L	H	OPEN
L	H	L	H	OPEN	L
L	H	H	L	OPEN	H
H	H	$\frac{L}{H}$	L	L	L

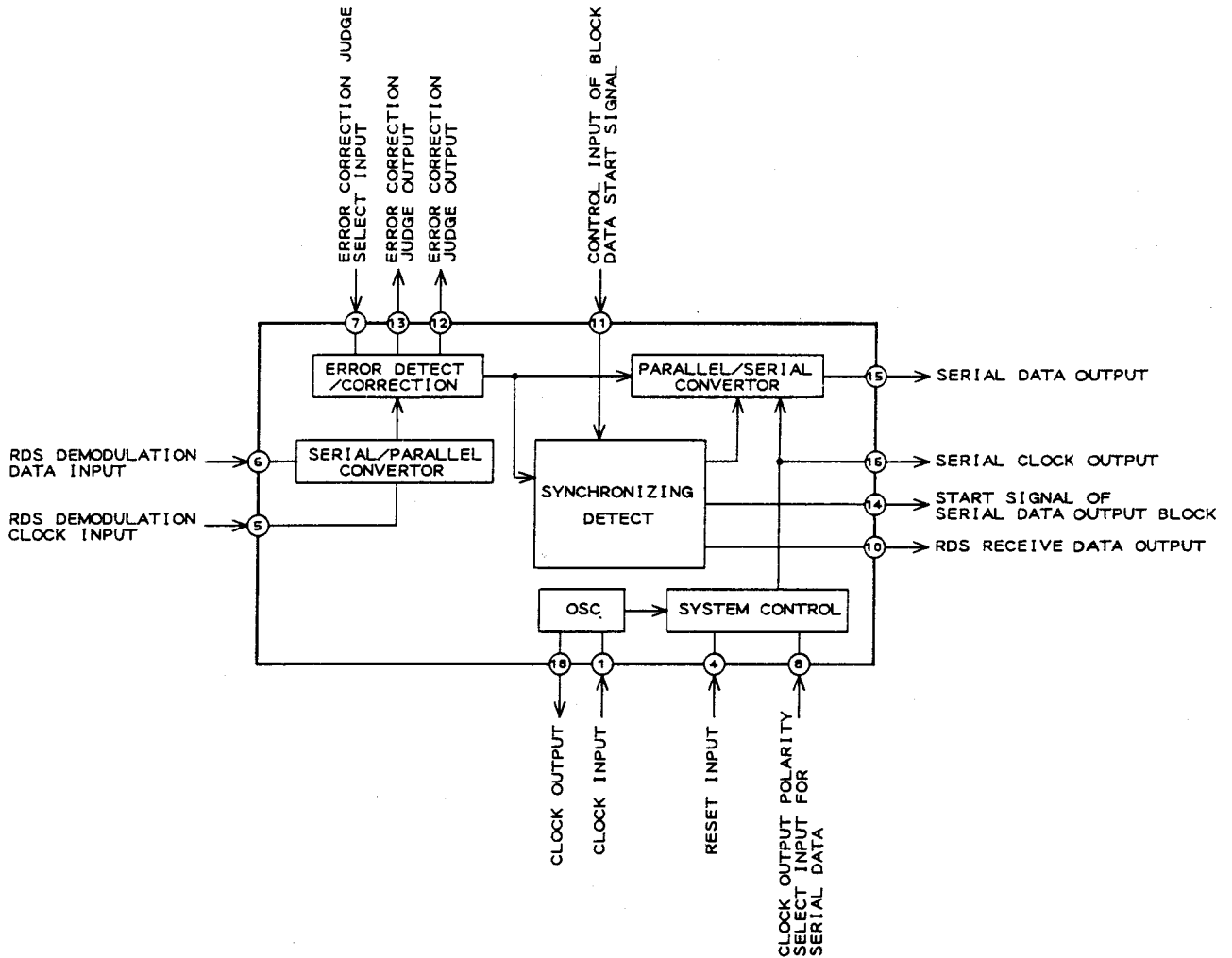
HA12155NT (DOLBY NR)

Pin No.	PORT NAME	I/O	FUNCTION
1	NR ON/OFF	I	Mode control
2	C/B	I	
3	MPX ON/OFF	I	
62	STB	I	
64	DATA	I	
4	Vcc	-	+B (Power supply)
5, 60	VR1	I	Volume input
6, 59	CNT	I	DAC output volume control
7, 58	RPI	I	Recording input
8	RFF	-	Ripple filter
9, 56	PBI	I	Play back input
10	INJ	I	Injection current input for I ² L
11, 54	IA OUT	-	Not used
12, 53	NR IN	I	NR processor input
13, 52	VREF	O	Reference voltage buffer output
14, 51	PB OUT	O	Play back output (decode)
15, 50	SS1	I	Spectral skewing amp
16, 49	SS2	O	
17, 48	CCR	O	Current controlled resistor
18, 47	HLS DET	-	Time constant pin for rectifier
19, 46	LLS DET	-	
20, 45	REC OUT	O	Recording output (encode)
21, 44	LM IN	I	Level meter input
22, 43	LMD	O	Time constant pin for level meter
23, 42	LM OUT	O	Level meter output
24, 41	EQ IN	I	Equalizer input
25	IREF	I	EQ reference current input
26, 39	EQ OUT	O	Equalizer output
27	FM	O	EQ parameter current input
28	fQ	O	
29	f/Q	O	
30	GH	O	
31	GL	O	
32	Gp	O	
33	HM	-	EQ parameter selector
34	HC	-	
35	HN	-	
36	NM	-	
37	NC	-	
38	NN	-	
40, 61	GND	-	Ground
55	D GND	-	Digital ground
57	BIAS	I	DOLBY NR reference current input

HA12171NT (DOLBY NR)



LC7073M (RDS DATA PROCESS)



SAA6579T (RDS DEMODULATOR)

PIN No	PORT NAME	I/O	FUNCTION
1	QUAL	O	QUALITY INDICATION OUTPUT
2	RDDA	O	RDS DATA OUTPUT
3	VREF	—	REFERENCE VOLTAGE OUTPUT
4	MUX	I	MULTIPLEX SIGNAL INPUT
5	VDD	—	+5 V SUPPLY VOLTAGE FOR ANALOG PART
6	VSS	—	GND FOR ANALOG PART
7	CIN	I	SUBCARRIER INPUT TO COMPARATOR
8	SCOUT	O	SUBCARRIER OUTPUT OF RECONSTRUCTION FILTER
9	MODE	I	OSCILLATOR MODE / TEST CONTROL INPUT
10	TEST	I	TEST ENABLE INPUT
11	VSS	—	GND FOR DIGITAL PART
12	VDD	—	+5 V SUPPLY VOLTAGE FOR DIGITAL PART
13	OSC1	I	OSCILLATOR INPUT
14	OSC0	O	OSCILLATOR OUTPUT
15	T57	O	57 kHz CLOCK SIGNAL OUTPUT
16	RDCL	O	RDS CLOCK OUTPUT

M38184M8 (TUNER/CD SYSTEM CONTROL MI-COM)

Pin No.	PORT NAME	I/O	FUNCTION
1	TUNED	I	Tuner indicator input
2	STEREO	I	Stereo indicator input
3	FMAUTO/MONO	O	FM auto/mono select output (H : FMAUTO)
4	SCLK	O	Clock data output to Bus
5	SO	O	Bus data output to DECK section
6	SI	I	Bus data input from DECK section
7	REQUEST	I	Bus REQUEST input pin from DECK section
8	MCLK	O	Command send clock output
9	MDATA	O	Command send data output
10	MLD	O	Command send load output
11	STRQ	O	Tuner PLL IF counter request output
12	CE	O	Tuner PLL chip enable output
13	CLK	O	Tuner PLL clock output
14	DATA	O	Tuner PLL data output
15	STIN	I	Tuner PLL auto search stop input
16	TUNER MUTE	O	Tuner mute control output (H : on)
17	RDS RESET	O	RDS error correction IC reset output
18	RDS START	I	RDS data start input
19	RDS DATA	I	RDS data input
20	POWER DOWN	I	Power down detect input (L : back up)
21	POWERTUNER	O	Tuner power on/off control output (H : tuner off)
22	OUTPUT A	O	Analog switch control output A
23	OUTPUT B	O	Analog switch control output B
24	RES	O	Reset output (for CD's LSI)
25	SUBQ	I	SUB code Q data detection input
26	DMUTE	O	Focus servo lock signal detect input
28	SQCK	O	External clock output for sub code Q resistor
29	TLOCK	I	tracking servo lock signal detect input
30	BLKCK	I	Input to detect sub code block clock signal
31	STAT	I	Status signal detect input
32	SENSE	I	Sense signal detect input
33	RDS CLK	I	RDS clock input
34	REMOCON	I	Remote control signal detect input
35	RESET	I	Reset sw input
36	XCIN	I	X'tal oscillator input for timer
37	XCOUT	O	X'tal oscillator output for timer
38	XIN	I	X'tal oscillator input for this IC
39	XOUT	O	X'tal oscillator output for this IC
40	GND	-	Ground
41	POWER CD	O	CD power on/off control output (H : CD off)
42 ~ 44	O/C&ROU 1 ~ 3	O	Tray rotation ,open/close and DISC clamp control output
45 ~ 47	ROU V 1 ~ 3	O	Control output for tray's and DISC clamp rotation position detection
48	CLAMP SW	I	Input to detect disc clamp position (H : on)
49	SLED SW	I	Input to detect pick up innermost position (L : innermost)
50, 51	ROU SW 1, 2	I	Input to detect disc rotation position
52	E ² PROM	I	EEP ROM input control
53	E ² PROM	I	EEP ROM input control
54 ~ 56	O/C LED 1 ~ 3	O	Pin for controlling LED according to disc loading and open/close
57 ~ 68	DIG1 ~ 12	O	Output to FLD'S 12 grids drive
69 ~ 88	SEG1 ~ 20	O	Output to FLD'S 18 segments drive
89	VP	I	Negative power supply for FLD blanking
90	OPEN SW	I	Input to detect tray open position ("L"once : open during play) ("L"twice : open during stop)
91	VCC	-	Power supply
92	PROTECT	I	Input to detect abnormal condition
93	GND	-	Ground
94	VREF	I	Reference voltage input
95	CLOSE SW	I	Input to detect tray close position (L : close)
96	KEY 4	I	A/D input for timer system switches
97	KEY 3	I	A/D input for open/close switches
98	KEY 2	I	A/D input for CD operation & tuner system switches
99	KEY 1	I	A/D input for tuner system switches
100	VERSION	I	Input to select version

M38184M8 (AX-590 SYSTEM CONTROL MI-COM)

Pin No.	PORT NAME	I/O	FUNCTION
1, 2, 11, 18 21, 25, 27 28, 40, 42 43, 54 74~77 89, 90, 92 94, 99, 100		-	GND
3	TAPE2 FWD LED	O	LED control output (H : on)
4	TAPE2 REV LED	O	
5	TAPE1 FWD LED	O	
6	TAPE1 REV LED	O	
7	TC BYS	O	Output for bus request to CD/tuner block
8	TC CLK	I	Bus clock input from CD/tuner block
9	TC DATA OUT	O	Bus serial data output to CD/tuner block
10	TC DATA IN	I	Bus serial data input from CD/tuner block
12	INPUT SW A	I	Input switch control signal A
13	INPUT SW B	I	Input switch control signal B
14	OUTPUT SW A	O	Output switch control signal A
15	OUTPUT SW B	O	Output switch control signal B
16	OUTPUT SW C	O	Output switch control signal C
17	SUPER BASS LED	O	SUPER BASS LED control output
19	SUPER BASS KEY	I	SUPER BASS command input
20	BOP	I	Input of music's blank output pulse (L : music blank part)
22	VR DOWN	O	Main VR control (DOWN) output
23	VR UP	O	Main VR control (UP) output
24	AMP MUTE	O	Pre AMP mute control output (H : mute)
26	VR LED	O	Main VR LED control output
29	INPUT KEY	I	Input select switch (CD TUNER TAPE1 TAPE2 PHONO LINE)
30	POWER ON/OFF KEY	I	Power switch key input
31	POWER ON/OFF	O	Power ON/OFF control output (H : power off)
32	INPUT MUTE	O	REC input mute control (L:mute)
33	POWER MUTE	O	Power AMP mute control output (H : mute on)
34	POTECT	I	Input for detection of PROTECT operation
35	RESET	I	Reset signal input (L : reset)
36	XCIN	I	X' tal OSC
37	XCOUT	O	
38	XOUT	O	
39	XIN	I	
41	PB MUTE	O	Playback mute control output (H : mute)
44	2 AR.R	I	Tape 2 reverse recording inhibit input
45	2 120/70	I	Tape 2 120 μs/70 μs tape detect input (L : 120 μs)
46	2 PLAY	I	Tape 2 head position detect input
47	2 PACK	I	Tape 2 pack detect input
48	2 AR.F	I	Tape 2 forward recording inhibit input
49	1 PACK	I	Tape 1 pack detect input
50	1 120/70	I	Tape 1 120 μs/70 μs tape detect input (L : 120 μs)
51	1 PLAY	I	Tape 1 head position detect input
52	2 PULSE	I	Tape 2 reel pulse input
53	1 PULSE	I	Tape 1 reel pulse input
55	REC/PB	O	Head REC/PB control output (H : PB)
56	PL COM	O	Plunger ON/OFF (common) control output (L : active)
57	1 PL	O	Tape 1 plunger ON/OFF control output (H : active)
58	1 CAPx1/x2	O	Tape 1 capstan motor x1/x2 speed switching output (H : x1, L : x2)
59	2 CAPx1/x2	O	Tape 2 capstan motor x1/x2 speed switching output (H : x1, L : x2)
60	CAP ON/OFF	O	Capstan motor ON/OFF control output (L : on)
61	REC MUTE	O	REC MUTE control output (H:mute)
62	DOLBY A120/70	O	Output for tape 1 EQ switching (L : 120 is)
63	DOLBY x1/x2	O	Output for x1/x2 EQ switching (L : x1)

Pin No.	PORT NAME	I/O	FUNCTION
64	DOLBY B120/70	O	Output for tape 2 EQ switching (L : 120 μs)
65	DOLBY REC/PB	O	Output for REC/PB switching of DOLBY IC (L : PB)
66	TEPE 1/2	O	Output for TEPE 1/2 switching (L : tape 1)
67	2 PL	O	Tape 2 plunger ON/OFF control output (H : active)
68, 69, 72		-	Not used
70	x2 PB PEAK	O	x1/x2 PB peaking frequency select (H : x1)
71	REC CrO2	O	CrO2 tape recording EQ select output
73	OSC	O	Bias OSC control output (H : OSC on)
74	FL ON/OFF	O	Output for turning the FLD filament power ON/OFF control
75	FL NCS	O	Output to FLD MI-COM control
76	FL SDI	I	Key input from FLD MI-COM
77	FL SDO	O	Serial data out to FLD MI-COM
78	2 CLOSE	I	Input to detect tape 2 cassette holder close position (H : close)
79	2 OPEN	I	Input to detect tape 2 cassette holder open position (H : open)
80	2 REV MOTOR	O	Tape 2 EJECT motor direction control (reverse)
81	2 FWD MOTOR	O	Tape 2 EJECT motor direction control (forward)
82	1 CLOSE	I	Input to detect tape 1 cassette holder close position (H : close)
83	1 OPEN	I	Input to detect tape 1 cassette holder open position (H : open)
84	1 REV MOTOR	O	Tape 1 EJECT motor direction control (reverse)
85	1 FWD MOTOR	O	Tape 1 EJECT motor direction control (forward)
91	VCC	-	Connect to +5 V power supply
94	VREF	-	
95	KEY IN 4	I	A/D input from the tape operation key switches
96	KEY IN 3	I	
97	KEY IN 2	I	
98	KEY IN 1	I	

M38184M8 (AX-690 SYSTEM CONTROL MI-COM)

Pin No.	PORT NAME	I/O	FUNCTION
1	GEQ 4K	I	Input for 4 kHz A/D conversion
2	GEQ 16K	I	Input for 16 kHz A/D conversion
3	GEQ RESET	O	Reset signal output to G.EQ IC
4	GEQ CLK	O	Clock output to G.EQ IC
5	GEQ DATA	O	Data output to G.EQ IC
6	GEQ CE	O	Chip enable output to G.EQ IC
7	TC BYS	O	Output for bus request to CD/tuner block
8	TC CLK	I	Bus clock input from CD/tuner block
9	TC DATA OUT	O	Bus serial data output to CD/tuner block
10	TC DATA IN	I	Bus serial data input from CD/tuner block
11, 27, 28 40, 86~89 92, 93		-	GND
12	INPUT SW A	I	Input switch control signal A
13	INPUT SW B	I	Input switch control signal B
14	OUTPUT SW A	O	Output switch control signal A
15	OUTPUT SW B	O	Output switch control signal B
16	OUTPUT SW C	O	Output switch control signal C
17	SUPER BASS LED	O	SUPER BASS LED control output
18	EEPROM DATA	I/O	EEP ROM serial data IN/OUT
19	SUPER BASS KEY	I	SUPER BASS command input
20	SOURCE DIRECT LED	O	SOURCE DIRECT LED control output
21	SOURCE DIRECT KEY	I	SOURCE DIRECT command input
22	VR DOWN	O	Main VR control (DOWN) output
23	VR UP	O	Main VR control (UP) output
24	AMP MUTE	O	Pre AMP mute control output (H : mute)
25	EEPROM CLK	O	EEP ROM serial clock output
26	VR LED	O	Main VR LED control output
29	INPUT KEY	I	Input select switch (CD → TUNER → TAPE1 → TAPE2 → PHONO → LINE)
30	POWER ON/OFF KEY	I	Power switch key input
31	POWER ON/OFF	O	Power ON/OFF control output (H : power off)
32	INPUT MUTE	O	REC input mute control (L : mute)
33	POWER MUTE	O	Power AMP mute control output (H : mute on)
34	POTECT	I	Input for detection of PROTECT operation
35	RESET	I	Reset signal input (L : reset)
36	XCIN	I	
37	XCOUT	O	X' tal OSC
38	XOUT	O	
39	XIN	I	
41	PB MUTE	O	Playback mute control output (H : mute)
42	FL SCK	O	Serial clock output to FLD MI-COM
43, 64 68, 72		-	Not used
44	2 AR.R	I	Tape 2 reverse recording inhibit input
45	2 T20/70	I	Tape 2 120 μs/70 μs tape detect input (L : 120 μs)
46	2 PLAY	I	Tape 2 head position detect input
47	2 PACK	I	Tape 2 pack detect input
48	2 AR.F	I	Tape 2 forward recording inhibit input
49	1 PACK	I	Tape 1 pack detect input
50	1 T20/70	I	Tape 1 120 μs/70 μs tape detect input (L : 120 μs)
51	1 PLAY	I	Tape 1 head position detect input
52	2 PULSE	I	Tape 2 reel pulse input
53	1 PULSE	I	Tape 1 reel pulse input
54	CLK (DOLBY)	O	Serial clock out to DOLBY IC
55	REC/PB	O	Head REC/PB control output (H : PB)
56	PL COM	O	Plunger ON/OFF (common) control output (L : active)
57	1 PL	O	Tape 1 plunger ON/OFF control output (H : active)
58	1 CAPx1/x2	O	Tape 1 capstan motor x1/x2 speed switching output (H : x1, L : x2)

Pin No.	PORT NAME	I/O	FUNCTION
59	2 CAPx1/x2	O	Tape 2 capstan motor x1/x2 speed switching output (H : x1, L : x2)
60	CAP ON/OFF	O	Capstan motor ON/OFF control output (L : on)
61	REC MUTE	O	REC MUTE control output (H : mute)
62	STB(DOLBY)	O	Strobe pulse output to DOLBY IC
63	DATA(DOLBY)	O	Serial data output to DOLBY IC
65	DOLBY ON/OFF	O	DOLBY ON/OFF control output (L : off)
66	DOLBY B/C	O	DOLBY B/C select control output (L : B, H : C)
67	2 PL	O	Tape 2 plunger ON/OFF control output (H : active)
68	x2 PB 70 μs	O	x1/x2 speed playback EQ switching output (H : x2 70 μs)
69	x1 PB 70 μs	O	x1/x2 speed playback EQ switching output (H : x1 70 μs or x2 120 μs)
70	x2 PB PEAK	O	x1/x2 PB peaking frequency select (H : x1)
71	REC CrO2	O	CrO2 tape recording EQ select output
73	OSC	O	Bias OSC control output (H : OSC ON)
74	FL ON/OFF	O	Output for turning the FLD filament power ON/OFF control
75	FL NCS	O	Output to FLD MI-COM control
76	FL SDI	I	Key input from FLD MI-COM
77	FL SDO	O	Serial data out to FLD MI-COM
78	2 CLOSE	I	Input to detect tape 2 cassette holder close position (H : close)
79	2 OPEN	I	Input to detect tape 2 cassette holder open position (H : open)
80	2 REV MOTOR	O	Tape 2 EJECT motor direction control (reverse)
81	2 FWD MOTOR	O	Tape 2 EJECT motor direction control (forward)
82	1 CLOSE	I	Input to detect tape 1 cassette holder close position (H : close)
83	1 OPEN	I	Input to detect tape 1 cassette holder open position (H : open)
84	1 REV MOTOR	O	Tape 1 EJECT motor direction control (reverse)
85	1 FWD MOTOR	O	Tape 1 EJECT motor direction control (forward)
90	PB1	-	
91	VCC	-	Connect to +5 V power supply
94	VREF	-	
95	METER R (A/D)	I	Input for carrying out level meter detection
96	METER L (A/D)	I	
97	GEQ KEY IN	I	A/D input from G.EQ system switches
98	GEQ 60 Hz	I	Input for 60 Hz A/D conversion
99	GEQ 250 Hz	I	Input for 250 Hz A/D conversion
100	GEQ 1K	I	Input for 1 kHz A/D conversion

MN66271 (DATA/SERVO PROCESSOR)

Pin No.	PORT NAME	I/O	FUNCTION
1	BCLK	O	Bit clock output for SR DATA
2	LRCK	O	L/R identify signal output
3	SRDATA	O	Serial data output
4	DVDD1	I	Power supply for digital circuit
5	DVSS1	-	Ground for digital circuit
6	TX	O	Digital audio interface output signal
7	MCLK	I	MI-COM command clock signal input
8	MDATA	I	MI-COM command data input
9	MLD	I	MI-COM command load signal input (L : load)
10	SENSE	O	Sense signal output
11	FLOCK	O	Focus servo lock signal output (L : locked)
12	TLOCK	O	Tracking servo lock signal (L : locked)
13	BLKCK	O	Subcode block clock signal output
14	SQCK	I	External clock input for subcode resistor
15	SUBQ	O	Subcode Q code output
16	DMUTE	I	Muting input (H : mute)
17	STAT	O	Status signal output
18	RST	I	Reset input(L:reset)
19	SMCK	O	Clock signal output MSEL = H : 8.4672 MHz, MSEL = L : 4.2336 MHz
20	PMCK	O	88.2KHz clock signal output
21	TRV	O	Traverse(sled motor) forced delivery output
22	TVD	O	Traverse(sled motor) drive output
23	PC	O	Spindle motor on/off control (L : on)
24	ECM	O	Spindle motor drive signal output (forced mode output)
25	ECS	O	Spindle motor drive signal output (servo error signal output)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	Reference voltage for DA output section
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog)
33	TE	I	Tracking error signal input (analog)
34	REFNV	I	RF envelope signal input (analog)
35	VDET	I	Vibration detect signal input (H : detect)
36	OFT	I	Off track signal input (H : off track)
37	TRCRS	I	Track cross signal input
38	RFDET	I	RF detection signal input (L : detect)
39	BDO	I	Dropout signal input (H : drop out)
40	LDON	O	Laser on/off control output
41	TES	O	Tracking error shunt signal output (H : shunt)
42	PLAY	O	Play signal output (H : play)
43	WVEL	O	Double speed status signal output
44	ARF	I	RF signal input
45	IREF	I	Reference current input pin
46	DRF	I	Bias pin for DSL
47	DSLFL	I/O	Loop filter pin for DSL
48	PLLF	I/O	Loop filter pin for PLL
49	VCOFL	I/O	Loop filter pin for VCO
50	AVDD2	I	Power supply for analog circuit
51	AVSS2	-	Ground for analog circuit
52	EFM	O	EFM signal output
53	PCK	O	PLL extraction clock output
54	PDO	O	Phase comparison output between EFM signal and PCK signal
55	SUBC	O	Sub code serial data output
56	SBCK	O	Clock input for sub code serial output
57	VSS	-	Ground for OSC circuit

MN66271 (DATA/SERVO PROCESSOR)

Pin No.	PORT NAME	I/O	FUNCTION
58	X1	I	X'tal OSC input (f = 16.9344 MHz)
59	X2	O	X'tal OSC output (f = 16.9344 MHz)
60	VDD	I	Power supply for OSC circuit
61	BYTCK	O	Byte clock output
62	CLDCK	O	Sub code frame clock signal output (f = 7.35 kHz)
63	FCLK	O	X'tal OSC frame clock output (f = 7.35 kHz)
64	IPFLAG	O	Interpolation flag output (H : interpolation)
65	FLAG	O	FLAG OUTPUT
66	CLVS	O	Spindle servo phase synchronization condition signal output (H : CLV, L : rough servo)
67	CRC	O	Sub code CRC check result output (H : OK, L : NG)
68	DEMPH	O	De-emphasis detect signal output (H : ON)
69	RESY	O	Re-produced synchronizing signal output of the frame synchronization (H : synchronized, L : pull out)
70	RST2	I	Reset pin for stop of after MASH circuit (L : reset)
71	TEST	I	Test pin (H : normal)
72	AVDD1	I	Analog circuit power supply (for audio output section)
73	OUTL	O	L-ch output
74	AVSS1	-	Analog circuit ground (for audio output section)
75	OUTR	O	R-ch output
76	RSEL	I	RF signal's polarity select pin
77	CSEL	I	X'tal OSC frequency select pin (L : normal)
78	PSEL	I	Test pin (L : normal)
79	MSEL	I	Output frequency selection pin for SMCK pin (H : 8.4672 MHz, L : 4.2336 MHz)
80	SSEL	I	Output mode selection pin for sub Q pin (H : Q code buffer using mode)