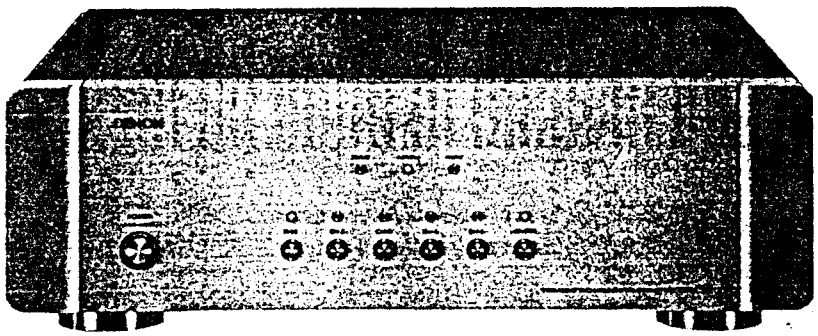
DENON

Hi-Fi Component

SERVICE MANUAL

MODEL DA-S1

D/A CONVERTER



MC-Service

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NIPPON COLUMBIA CO., LTD.

IMPORTANT TO SAFETY

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:

1. **Handle the power supply cord carefully**
   Do not damage or deform the power supply cord. If it is damaged or deformed, it may cause electric shock or malfunction when used. When removing from wall outlet, be sure to remove by holding the plug attachment and not by pulling the cord.
2. **Do not open the top cover**
   In order to prevent electric shock, do not open the top cover. If problems occur, contact your DENON DEALER.
3. **Do not place anything inside**
   Do not place metal objects or spill liquid inside the D/A Converter. Electric shock or malfunction may result.

Please, record and retain the Model name and serial number of your set shown on the rating label.

Model No. DA-S1 Serial No. _____

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION:
USE OF CONTROLS OR ADJUSTMENTS OR REFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE D/A CONVERTER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

NOTE:
This unit may cause interference to radio and television reception if you do not operate it in strict accordance with this OPERATING INSTRUCTIONS.

This unit complies with Class B computing device rules in accordance with the specifications in Sub part J or Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. If the unit does cause interference to any radio or television reception, try to reduce it by one or more of the following means:
a) Turn the other unit to improve reception.
b) Move this unit.
c) Move this unit away from others.
d) Plug this unit respectively into a different AC outlet.

*** This is note in accordance with Section 15.838 of the FCC Rules.**

IMPORTANT (BRITISH MODEL ONLY)

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral Brown: Live

The colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

SAFETY INSTRUCTIONS

1. **Read Instructions** – All the safety and operating instructions should be read before the appliance is operated.
2. **Retain Instructions** – The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** – All warnings on the appliance and in the operating instructions should be adhered to.
4. **Follow Instructions** – All operating and use instructions should be followed.
5. **Water and Moisture** – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. **Carts and Stands** – The appliance should be used only with a cart or stand that is recommended by the manufacturer.

6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

7. **Wall or Ceiling Mounting** – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. **Ventilation** – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. **Heat** – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. **Power Sources** – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. **Grounding or Polarization** – Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

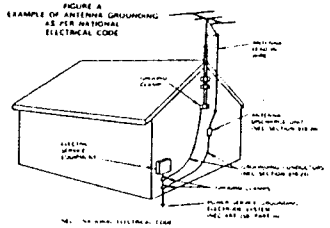
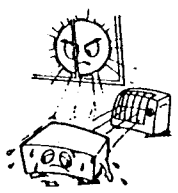


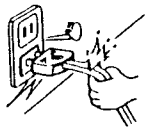
FIGURE A
EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE

12. **Power Cord Protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
14. **Cleaning** – The appliance should be cleaned only as recommended by the manufacturer.
15. **Power Lines** – An outdoor antenna should be located away from power lines.
16. **Outdoor Antenna Grounding** – If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.
17. **Nonuse Periods** – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
18. **Object and Liquid Entry** – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
19. **Damage Requiring Service** – The appliance should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
    E. The appliance has been dropped, or the enclosure damaged.
20. **Servicing** – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

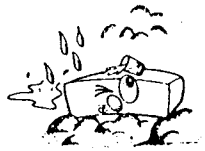
NOTE ON USE/OBSERVATIONS RELATIVES A L'UTILISATION/NOTAS SOBRE EL USO



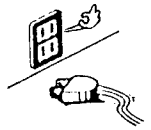
- Avoid high temperatures
  Allow for sufficient heat dispersion when installed on a rack.
- Eviter des températures élevées
  Tenir compte d'une dispersion de chaleur suffisante lors de l'installation sur une étagère.
- Evite altas temperaturas
  Permite la suficiente dispersion del calor cuando está instalado en la consola.



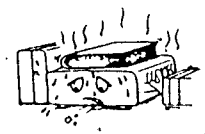
- Handle the power cord carefully. Hold the plug when unplugging the cord.
- Manipuler le cordon d'alimentation avec précaution.
  Tenir la prise lors du débranchement du cordon.
- Maneje el cordón de energía con cuidado.
  Sostenga el enchufe cuando desconecte el cordón de energía.



- Keep the set free from moisture, water, and dust.
- Protéger l'appareil contre l'humidité, l'eau et la poussière.
- Mantenga el equipo libre de humedad, agua y polvo.

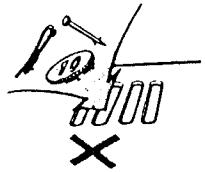


- Unplug the power cord when not using the set for long periods of time.
- Débrancher le cordon d'alimentation lorsque l'appareil n'est pas utilisé pendant de longues périodes.
- Desconecte el cordón de energía cuando no utilice el equipo por mucho tiempo.

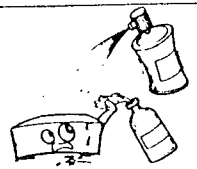


*(For sets with ventilation holes)

- Do not obstruct the ventilation holes.
- Ne pas obstruer les trous d'aération.
- No obstruya los orificios de ventilación.



- Do not let foreign objects in the set.
- Ne pas laisser des objets étrangers dans l'appareil.
- No deje objetos extraños dentro del equipo.



- Do not let insecticides, benzene, and thinner come in contact with the set.
- Ne pas mettre en contact des insecticides, du benzène et un diluant avec l'appareil.
- No permita el contacto de insecticidas, gasolina y diluyentes con el equipo.

- Never disassemble or modify the set in any way.
- Ne jamais démonter ou modifier l'appareil d'une manière ou d'une autre.
- Nunca desarme o modifique el equipo de ninguna manera.

We greatly appreciate your purchase of this Denon product.
To ensure that you take fullest advantage of your D/A converter, read these instructions carefully before using the unit and be sure to always operate it properly.
After reading these instructions, be sure to keep them for future reference should questions or problems arise.

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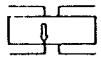
Please check to make sure the following items are included with the main unit in the carton:

(1) Operating Instructions 1
(2) Connection Cord 2

IMPORTANT
(CANADIAN MODEL ONLY)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus setout in the Radio Interference Regulations of the Canadian Department of Communication.

- **Line Voltage Selection (for multiple voltage models only)**
  - Be sure to check that the voltage selector on the rear panel is set to the proper voltage.
  - If not, contact your store of purchase.
  - Never remove screws or try to switch the voltage selector on your own.



- FOR U.S.A. & CANADA MODEL ONLY

CAUTION

TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

- POUR LES MODELES AMERICAINS ET CANADIENS UNIQUEMENT

ATTENTION

POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

FEATURES

The DA-S1 is a D/A converter using a newly developed ALPHA (Adaptive Line Pattern Harmonized Algorithm) processor to provide the ultimate waveform reproduction and in particular faithful reproduction of the original sound at low levels. It achieves high performance and faithful musical expression with no fold-back noise within the audible range and ideal infinite impulse response thanks to specially selected DACs, a non-feedback buffer amplifier, totally separated digital and analog circuitry, and a strong power supply. The DA-S1 is equipped with synchronized driving and five different types of digital inputs.

(1) Ultimate signal reproduction using a newly developed ALPHA processor

1. High speed interpolation by the newly developed ALPHA processor recreates the data below the LSB (least significant bit) lost upon recording to provide smooth waveform reproduction.
2. The original signals, including such unusual waveforms as impulse response, can also be reproduced with no ringing.
3. The effects of ALPHA processing are particularly noticeable at low levels, such as when music gently fades out or gradually emerges from total silence.

(2) High precision D/A converters

1. The highly acclaimed 20-bit Super Linear Converter is used to provide unrivaled linearity at low levels. low levels.
2. The D/A converters are special version 20 bit D/A converters carefully selected to meet high standards for linearity, S/N ratio and elimination of distortion.
3. Distortion and S/N ratio are further improved through differential operation of two D/A converters per channel.

(3) Synchronized driving with an ultra high speed synchronized optical link (ST-GEN LOCK)

1. The speed at which data transfer is a very rapid 50Mbit/sec, nearly 10 times that of conventional optical links (6Mbit/sec). This virtually eliminates transmission distortion due to signal delay (jitter).
2. The D/A converter master clock is synchronized with the CD Transport clock, improving clock precision and suppressing jitter.
3. The AT&T ST-Link™ system is used for the interface, allowing direct one-way connection to a CD Transport with an ST-Link™ output jack.

(4) High precision digital filter

1. The DA-S1 uses a high performance 20-bit input digital filter of the type used for professional recording.
2. Suppression is 117 dB or less at no-pass range, rivaling the highest suppression in the world.
3. The residual ripple is ±0.00002 dB at pass range, also rivaling the highest in the world.

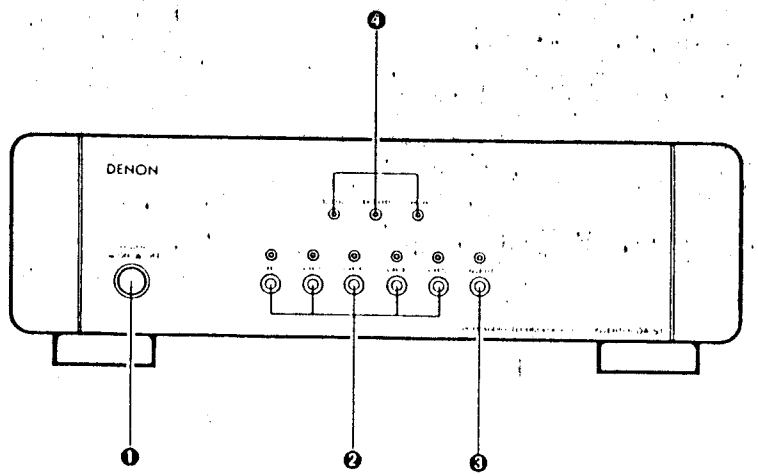
(5) Pure non-feedback buffer amplifier

1. A pure non-feedback amplifier is used after I/V (current/voltage) conversion. The discrete DC servo coupling achieves provide a high-speed, low-impedance output. Signals are transmitted to the line outputs with no deterioration of the D/A converter's amazingly low S/N ratio and distortion.
2. XLR (gold plated) balanced outputs for little sound quality deterioration are provided in addition to RCA pin-plug jacks.

(6) Totally separated digital and analog circuitry

1. The digital and analog circuitry are totally separated with ultra high-speed photocouplers on all signal lines.
2. The digital and analog circuits each have their own dedicated power transformer and power supply circuit.
3. Completely separated left and right channels ensure negligible mutual interference.
4. The digital circuitry is shielded to protect it from high frequency noise.

NAMES AND FUNCTIONS OF PARTS



❶ **Power Switch (POWER)**
- Press this to turn on the power of the DA-S1.

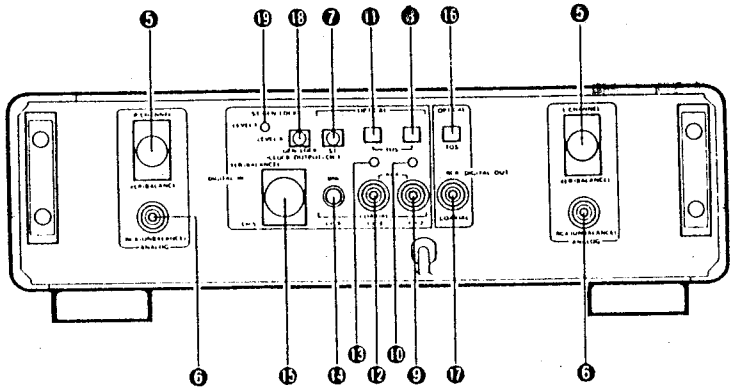
❷ **Input Selector Switches (CH-1 to CH-5)**
- Use these switches to select one of the digital signal input jacks on the rear panel (❼, ❽, ❾, ❿, ⓫, ⓬ or ⓭).
- The corresponding LED (light emitting diode) lights.
- Two systems each can be connected to channels 2 and 3 (CH 2 and CH-3). Use switches ⓮ and ⓯ on the back panel to select the optical input (OPTICAL-TOS) or the coaxial input (COAXIAL-RCA).

❸ **Phase Inverter Switch**
- Press this to invert the phase of the output signals from output jacks ❺ and ❻.
- The LED (light-emitting diode) lights when the inverted output mode is selected.

❹ **Sampling Frequency Indicators**
- Digital audio signals with three different sampling frequencies (32 kHz, 44.1 kHz and 48 kHz) can be connected to the DA-S1's digital inputs.
- The LED (light-emitting diode) for the sampling frequency of the digital audio signals connected to the channel selected with the input selector switches lights.

NOTE:

The input selector switch and the phase inverter switch position set when the power is turned off are stored in the memory, so the same input selector switch and phase inverter switch position are automatically set when the power is turned back on.



❺ Analog Output Jacks (BALANCE)
(Canon XLR-3-32 type)
- Use these jacks for connection to the amplifier's balanced input jacks (600 ohm input impedance).

❻ Analog Output Jacks (UNBALANCE)
(Coaxial RCA)
- Use these jacks for connection to the amplifier's input jacks.

❼ Digital Input Jack – (CH-1)
(OPTICAL-ST)
- This is a digital input jack for connection of an ST-Link™ optical fiber cable.
- This input jack is selected when the channel 1 (CH-1) input selector switch on the front panel is selected.

❽ Digital Input Jack – (CH-2)
(OPTICAL-TOS)
- This is a digital input jack for connection of an optical fiber cable.
- This input jack is selected when the channel 2 (CH-2) input selector switch is set to the OPTICAL-TOS position and the channel 2 (CH-2) input selector switch on the front panel is selected.

❾ Digital Input Jack – (CH-2)
(COAXIAL-RCA)
- This is a digital input jack for connecting a 75 ohm RCA pin-plug cord.
- This input jack is selected when the channel 2 (CH-2) input selector switch is set to the COAXIAL-RCA position and the channel 2 (CH-2) input selector switch on the front panel is selected.

❿ Input Selector Switch – (CH-2)
(OPTICAL/COAXIAL)
- Use this switch to select the digital inputs connected to input jacks ❽ and ❾.

⓫ Digital Input Jack – (CH-3)
(OPTICAL-TOS)
- This input jack is selected when the channel 3 (CH-3) input selector switch is set to the OPTICAL-TOS position and the channel 3 (CH-3) input selector switch on the front panel is selected. This jack is of the same type as input jack ❽.

⓬ Digital Input Jack – (CH-3)
(COAXIAL-RCA)
- This input jack is selected when the channel 3 (CH-3) input selector switch is set to the COAXIAL-RCA position and the channel 3 (CH-3) input selector switch on the front panel is selected. This jack is of the same type as input jack ❾.

⓭ Input Selector Switch – (CH-3)
(OPTICAL/COAXIAL)
- Use this switch to select the digital inputs connected to input jacks ⓫ and ⓬.

⓮ Digital Input Jack – (CH-4)
(COAXIAL-BNC)
- This is a digital input jack for connection of a coaxial cord with BNC type connectors.
- This input jack is selected when the channel 4 (CH-4) input selector switch on the front panel is selected.

⓯ Digital Input Jack – (CH-5) (BALANCE)
(Canon XLR-3-31 type)
- This is a digital input jack for connection of a Canon connector (XLR type) cord.
- This input jack is selected when the channel 5 (CH-5) input selector switch on the front panel is selected.

⓰ Digital Output Jack
(OPTICAL-TOS)
- Digital data is output in optical form from this jack.
- The digital data input to the digital input jack selected with the input selector switches on the front panel (CH-1 to CH-5) is output from this jack.
- Optical fiber cables can be connected to this jack.

⓱ Digital Output Jack
(COAXIAL-RCA)
- Digital data is output from this jack.
- The digital data input to the digital input jack selected with the input selector switches on the front panel (CH-1 to CH-5) is output from this jack.
- 75 ohm RCA pin plug cords can be connected to this jack.

⓲ Synchronizing Clock Output Jack
(GEN LOCK CLOCK OUTPUT-ST)
- This is the clock output jack for synchronized driving of the separately sold DP-S1 CD Transport.
- Use an ST-Link™ optical fiber cable (same as jack ❼) for connection of this jack.

ST-Link™ is a registered trademark of AT&T.

⓳ Input Signal Precision Selector Switch
(ST-GEN LOCK/LEVEL-I/LEVEL-II)
- Use this switch to select the digital input level conforming to digital audio interface specifications LEVEL-I or LEVEL-II, or the position for Denon's own synchronized driving.
- Set this switch to LEVEL-II for normal digital inputs.
- When components equipped with high precision digital output in the LEVEL-I mode are connected, set this switch to LEVEL-I for high precision data transmission with little jitter.
- For synchronized driving with the separately sold DP-S1 CD Transport, connect the ST-Link™ optical fiber cable to jack ⓲, connect a cable to one of the digital input jacks (CH-1 to CH-5), then set this switch to the ST-GEN LOCK mode for data transmission with optimum precision.

NOTE:
Noise may be produced unless two-way connections for synchronized driving are made when this switch is set to the ST-GEN LOCK mode. Only set this switch to the ST-GEN LOCK mode when connections are made for synchronized driving.

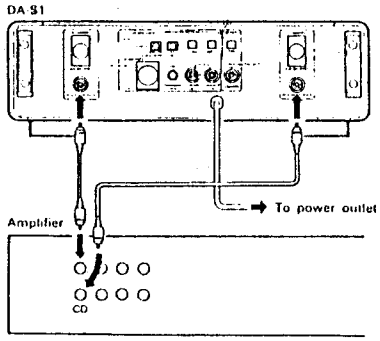
CONNECTIONS

Always turn the power of all components off when making connections.

Output Jack Connections

❶ Analog Output Jacks (UNBALANCE)

- Connect as shown on the diagram using the included RCA pin-plug cords.
- Use the amplifier's [CD], [AUX] or [TAPE PLAY] input jacks.
- Use the red-lined pin-plug cord for the right channel, the white-lined pin-plug cord for the left channel.



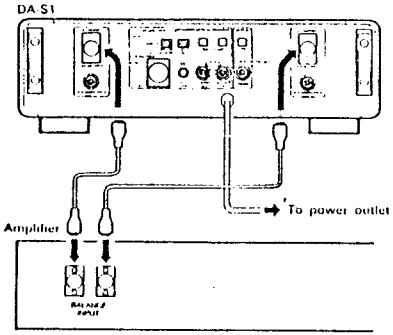
❷ Analog Output Jacks (BALANCE)

- Connect as shown on the diagram using a Canon connector (XLR type) cord, available in stores.
- Canon connector signal layout

Line up this indent with the protruding part of the connector.

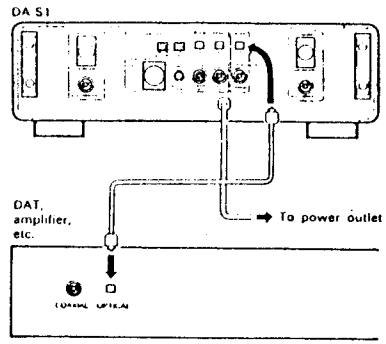
1: Common
2: Cold
3: Hot

NOTE:
Do not short circuit the hot or cold terminal with the common terminal.



❸ Digital Output Jack (OPTICAL-TOS)

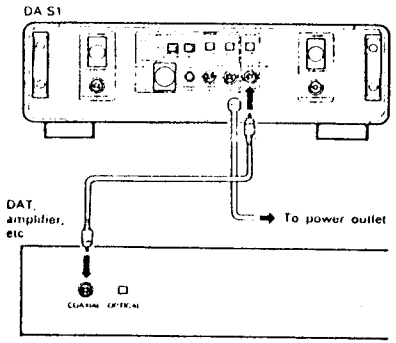
- Connect as shown on the diagram using an optical fiber cable, available in stores.
- The jack includes a cap. Remove the cap, then insert the cord securely so that it is locked.



❹ Digital Output Jack (COAXIAL-RCA)

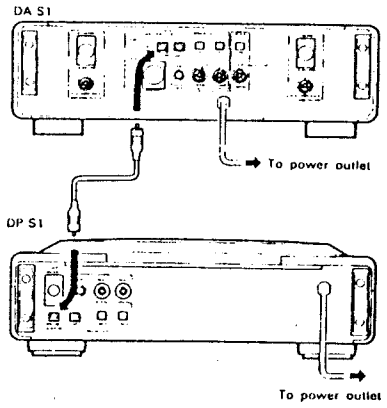
- Connect as shown on the diagram using a coaxial 75 ohm RCA pin-plug cord, available in stores.

NOTE:
Do not connect the COAXIAL jack to an audio jack, for example an amplifier's CD input jack.



❺ Synchronizing Clock Output Jack (GEN LOCK CLOCK OUTPUT-ST)

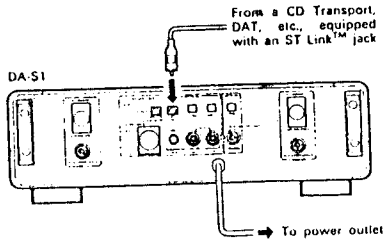
- For synchronized driving (ST GEN LOCK) with the separately sold DP-S1 CD Transport, connect as shown on the diagram using an ST Link™ type optical fiber cable.
- The jack includes a cap. Remove the cap, line up the protruding part of the jack with the guide groove in the connector, turn clockwise and insert securely until the cable is locked.



Input Jack Connections

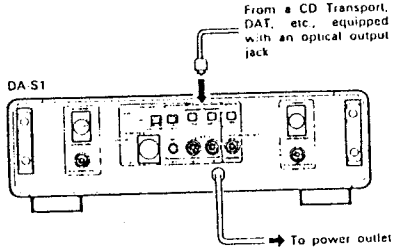
❶ Digital Input Jack (OPTICAL-ST)
(CH-1)

- Connect as shown on the diagram using an optical fiber cable (ST-Link™ type), available in stores.
- The jack includes a cap. Remove the cap, line up the protruding part of the jack with the guide groove in the connector, turn clockwise and insert securely until the cable is locked.



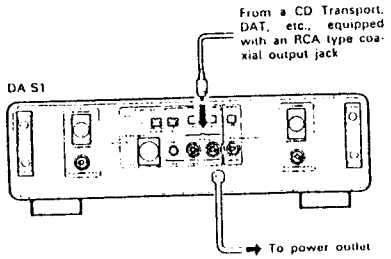
❷ Digital Input Jacks (OPTICAL-TOS)
(CH-2 and CH-3)

- Connect as shown on the diagram using an optical fiber cable, available in stores.
- The jack includes a cap. Remove the cap, then insert the cord securely so that it is locked.



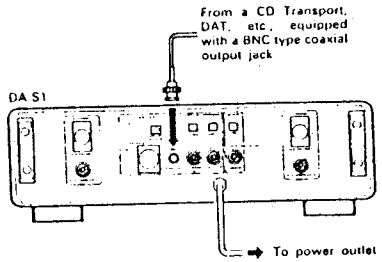
❸ Digital Input Jacks (COAXIAL-RCA)
(CH-2 and CH-3)

- Connect as shown on the diagram using a coaxial 75 ohm RCA pin-plug cord, available in stores.



❹ Digital Input Jack (COAXIAL-BNC)
(CH-4)

- Connect as shown on the diagram using a coaxial cord with BNC type connectors, available in stores.

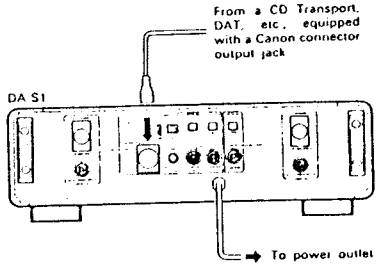


❺ Digital Input Jack (BALANCE)
(CH-5)

- Connect as shown on the diagram using a Canon connector (XLR type) cord, available in stores.

1: Common
2: Cold
3: Hot

NOTE:
Do not short-circuit the hot or cold terminal with the common terminal



OPERATION PRECAUTIONS

- **Optical fibers**

  The DA-S1 uses optical fiber transmission for digital input jacks channels 1 to 3 (CH-1 to CH-3), one of the digital output jacks and the GEN LOCK CLOCK OUTPUT ST jack. With optical fiber cables, light signals are transmitted along the inner core. Scratches on the tip of the plug or foreign objects in the receptacle could seriously hamper signal transmission.
  If there is extra cable length, coil the cable into a wide loop behind the set. Never strongly bend the cable.
  Optical fiber cables must be connected to the connectors in a specific direction. For ST-Link™ cables, line up the protruding part of the jack with the guide groove in the connector.
  Always hold on the plug when disconnecting the cable. Never pull directly on the cable.

- **Volume level**

  The DA-S1 has a wide dynamic range. Be careful not to turn the volume on the amplifier up too high for example at the beginning of a piece when the level seems low, as the speakers may be damaged at sections where the volume level is high.

- **Place of installation**

  Humming may occur if the DA-S1 is installed near a TV or other audio components or if their connection cords are nearby. If this happens, try setting the components or their connection cords in a different position. Also, noise may be heard in AM or FM broadcasts if the DA-S1 is turned on while listening to a tuner. If this happens, turn the DA-S1's power off.

INSTALLATION PRECAUTIONS

This D/A converter uses a microcomputer for controlling internal electronic circuits. In the event that the converter is used while a nearby tuner or TV is turned on, although unlikely, interference could occur either in the sound from the tuner or the picture of the TV. To avoid this, please take the following precautions.

- Keep the D/A converter as far away from the tuner or TV set as possible.
- Keep the power cable and connecting cable of the D/A converter separate from the antenna wires of the tuner and TV.
- Interference is particularly likely to occur when an indoor antenna or a 300-ohm feeder cable is used. Thus, use of an outdoor antenna and 75-ohm coaxial cable is strongly recommended.

300-ohm feeder cable

75-ohm coaxial cable

TROUBLESHOOTING

Check the following once again before assuming there is a problem with the DA-S1:

- **Are all connections correct?**
- **Is the DA-S1 being operated properly as described in the instructions?**

If the set is not operating properly, check as shown on the table below. If this does not solve the problem, the DA-S1 may be malfunctioning. Turn the power off immediately and contact your store of purchase.

Symptom	Cause	Refer to:
No sound is produced, or sound is distorted.	Output cord is not properly connected to the amplifier. Amplifier controls and switches not properly set.	Pages 10 to 13

NOTE FOR PARTS LIST

- Part indicated with the mark " ◉ " are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "l" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol ⚠ ▒▒ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

● Resistors

Ex.: RN (Type) 14K (Shape and performance) 2E (Power) 182 (Resistance) G (Allowable error) FR (Others)

RD : Carbon RC : Composition RS : Metal oxide film RW : Winding RN : Metal film RK : Metal mixture	2B : 1/8W 2E : 1/4W 2H : 1/2W 3A : 1W 3D : 2W 3F : 3W 3H : 5W	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20%	P : Pulse-resistant type NL : Low noise type NB : Non-burning type FR : Fuse-resistor F : Lead wire forming

• **Resistance**

1 8 2 ⇒ 1800 ohm = 1.8 kohm
- 2: indicates number of zeros after effective number.
- 1 8: 2-digit effective number.

• Units: ohm

1 R 2 ⇒ 1.2 ohm
- 2: 1-digit effective number.
- 1 R: 2-digit effective number, decimal point indicated by R.

• Units: ohm

● Capacitors

Ex.: CE (Type) 04W (Shape and performance) 1H (Dielectric strength) 2R2 (Capacity) M (Allowable error) BP (Others)

CE : Aluminum foil electrolytic CA : Aluminum solid electrolytic CS : Tantalum electrolytic CQ : Film CK : Ceramic CC : Ceramic CP : Oil CM : Mica CF : Metallized CH : Metallized	0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V 1H : 50V 2A : 100V 2B : 125V 2C : 160V 2D : 200V 2E : 250V 2H : 500V 2J : 630V	F : ±1% G : ±2% J : ±5% K : ±10% M : ±20% Z : +80% −20% P : +100% −0% C : ±0.25pF D : ±0.5pF * : Others	HS : High stability type BP : Non-polar type HR : Ripple-resistant type DL : For charge and discharge HF : For assuring high frequency U : UL part C : CSA part W : UL-CSA type F : Lead wire forming

• **Capacity (electrolyte only)**

2 2 2 ⇒ 2200uF
- 2: Indicates number of zeros after effective number.
- 2 2: 2-digit effective number.

•Units: uF.

2 R 2 ⇒ 2.2uF
- 2: 1-digit effective number.
- 2 R: 2-digit effective number, decimal point indicated by R.

• Units: µF.

• **Capacity (except electrolyte)**

2 2 2 ⇒ 2200pF = 0.0022µF
- 2: (More than 2) — Indicates number of zeros after effective number.
- 2 2: 2-digit effective number.

• Units: µF.

2 2 1 ⇒ 220pF
- 1: (0 or 1) — Indicates number of zeros after effective number.
- 2 2: 2-digit effective number.

• Units: pF.

• When the dielectric strength is indicated in AC, "AC" is included after the dieelectric strength value.

PARTS LIST OF P.W. BOARD
3U-2413 POWER UNIT

Ref. No.	Part. No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC550	263 0809 006	IC NJM7805FA(S)	
IC552	263 0652 907	IC PST529C	
D550	276 0305 001	Diode S4VB20	
D555	276 0432 903	Diode 1SS270A TE	
RESISTORS GROUP			
(Not included Carbon Film ±5% 1/4W type)			
CAPACITORS GROUP			
C550	253 8014 702	Ceramic(Chip) 0.01µF/400VAC	CK45F2GAC103MC
C551,552	254 4356 768	Electrolytic 2200µF/50V	CE04W1H222MC ARS
C553	256 1055 709	Metallized 1µF/100V	CF93B2A105KC GUG
C554	254 4356 755	Electrolytic 220µF/50V	CE04W1H221MC ARS
C555	256 1045 007	Film 1µF/63V	CQ93B1J105K(SA)
C557	254 4356 001	Electrolytic 10µF/50V	CE04W1H100 ARS
OTHER PARTS			
F550	206 1025 051	Fuse (1.6)	
F550	EP-5870	Fuse Holder	
F555	206 1035 009	Fuse 3.15A (T)	
F555	202 0022 008	Fuse Holder	
CB551	205 0581 001	2P VH Connector Base	
CB552	205 0768 002	2P VH Connector Base (BLK)	
CB553	205 0581 001	2P VH Connector Base	
CB554	205 0825 000	3P AC Connector Base	
CB555	205 0841 000	3P AC Connector Base (BK)	
CB556	205 0825 000	3P AC Connector Base	
CB557	205 0841 000	3P AC Connector Base (BK)	
CB558	205 0825 000	3P AC Connector Base	
CB559	205 0841 000	3P AC Connector Base (BK)	
CB560	205 0653 036	3P VH Connector Base	
CB561	205 0233 058	5P EH Connector Base	

3U-2414 LED & SWITCH UNIT

Ref. No.	Part. No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC650	262 1831 012	µComputer HD6473724S1F	
IC651	262 1711 006	IC X24C00P	
TR651-659	269 0025 901	Transistor RN1202(10K-10K)T	Built in Resistor
D651-655	393 9416 908	LED SEL-2210R(TP2)	
D656	393 9419 905	LED SEL-2810D(TP2)	
D657-659	393 9417 907	LED SEL-2410G(TP2)	
RESISTORS GROUP			
(not included Carbon Film ±5% 1/4W type)			
CAPACITORS GROUP			
C650	253 9036 909	Ceramic 0.1µF/25V	CK45=1E104ZT
OTHER PARTS			
X650	399 0111 006	Ceramic Oscillator	CST4.23MGW040
SW651-656	212 4388 910	Tact Switch	
CB650	205 0305 038	13P EH SID Connector Base	
CB651	205 0234 031	3P EH SID Connector Base	

3U-2416 INTERFACE UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC101	262 1279 001	IC HD74HC393P	
IC102	262 1834 006	IC TC74HC76AP	
IC103	262 1058 002	IC HD74HC125P	
IC104	262 1318 001	IC TC74HC00AP	
IC105	262 1265 002	IC TC74HCU04AP	
IC106	262 1318 001	IC TC74HC00AP	
IC107	262 0910 002	IC YM3623B	DAIF
IC108,109	262 1265 002	IC TC74HCU04AP	
IC110	262 0932 006	IC SN75157P	LAMBDA
IC111-113	262 1058 002	IC HD74HC125P	
IC114,115	262 1832 008	IC F257001PH	ALPHA
IC116	262 1833 007	IC SM5842AP	DF
IC117	262 1616 004	IC HG62E33R79FS	
IC118,119	262 1265 002	IC TC74HCU04AP	
IC120	262 1058 002	IC HD74HC125P	
IC121	262 0738 006	IC TC5081AP	FC
IC123	263 0890 002	IC V-18M432-D300	VCO
IC124	262 1265 002	IC TC74HCU04AP	
IC125	263 0076 004	IC HA17901P	
IC126	262 1099 003	IC SN74HC02N	
IC127	262 0849 005	IC HD74HC10P	
IC128	262 0912 000	IC HD74HC123AP	
TR101-103	269 0025 901	Transistor RN1202(10K-10K)T	Built in Resistor
TR901	269 0023 903	Transistor RN1201(4.7K-4.7K)T	Built in Resistor
D101-107	276 0432 903	Diode 1SS270A TE	
D109-111	276 0554 014	Variable Capacitor Diode FC54M	
D112	393 9416 908	LED SEL-2210R	PLL LOCK
D113-115	276 0432 903	Diode 1SS270A TE	
D901,902	276 0553 905	Diode 1SR35-200A(T93X)	
D903	276 0460 904	Zener Diode HZS5C-1TD	
D904	209 0008 146	Jumper (L=5)	
RESISTORS GROUP			
(Not included Carbon Film ±5% 1/4W type)			
R153	244 2051 958	Metallic film 220 ohm 1W (Non burning type)	RS14B3A221JNBST
R205	244 2051 958	Metallic film 220 ohm 1W (Non burning type)	RS14B3A221JNBST
R212	247 0007 945	Chip 1kohm 1/10W	RM73B--102JT
R217-219	247 0007 945	Chip 1kohm 1/10W	RM73B--102JT
R226	247 0007 945	Chip 1kohm 1/10W	RM73B--102JT
R227	247 0006 962	Chip 470 ohm 1/10W	RM73B--471JT
R228,229	247 0007 945	Chip 1kohm 1/10W	RM73B--102JT
RR232	247 0007 945	Chip 1kohm 1/10W	RM73B--102JT
R233,234	247 0007 945	Chip 1kohm 1/10W	RM73B--102JT
R236	247 0006 962	Chip 470 ohm 1/10W	RM73B--471JT
R237-239	247 0007 945	Chip 1kohm 1/10W	RM73B--102JT
R240	247 0012 927	Chip 100kohm 1/10W	RM73B--104JT
R241	247 0013 984	Chip 470kohm 1/10W	RM73B--474JT
R242	247 0006 946	Chip 390 ohm 1/10W	RM73B--391JT

Ref. No.	Part No.	Part Name	Remarks
CAPACITORS GROUP			
C101	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C102	254 4367 906	Electrolytic 47µF/63V	CE04W1J470MT ASF
C103	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C104	256 1034 979	Metallized 0.1µF/50V	CF93A1H104JT
C105	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C106	254 4367 906	Electrolytic 47µF/63V	CE04W1J470MT ASF
C110	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C111	253 1179 974	Ceramic 390pF/50V	CK45B1H391KT DD-3
C112	253 4536 909	Ceramic 10pF/50V	CC45SL1H100DT DD-3
C113	254 4313 918	Electrolytic 10µF/50V	CE04W1H100MT ASF
C114	253 1179 974	Ceramic 390pF/50V	CK45B1H391KT DD-3
C115	253 4536 941	Ceramic 15pF/50V	CC45SL1H150JT DD-3
C116	254 4313 918	Electrolytic 10µF/50V	CE04W1H100MT ASF
C117	253 1179 974	Ceramic 390pF/50V	CK45B1H391KT DD-3
C118	253 4536 909	Ceramic 10pF/50V	CC45SL1H100DT DD-3
C119	254 4313 918	Electrolytic 10µF/50V	CE04W1H100MT ASF
C120	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C121,122	253 4536 909	Ceramic 10pF/50V	CC45SL1H100DT DD-3
C123	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C124	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C125	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C126,127	255 4235 918	Film 100pF/100V	CQ93P2A101JT NH
C128	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C130	255 4232 953	Film 0.0047µF/100V	CQ93P2A472JT NH
C131,132	253 4536 909	Ceramic 10pF/50V	CC45SL1H100DT DD-3
C133	256 1035 091	Metallized 1µF/50V	CF93A1H105J
C134-136	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C138-142	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C143	256 1034 979	Metallized 0.1µF/50V	CF93A1H104JT
C144	255 4235 934	Film 0.01µF/100V	CQ93P2A103JT NH
C146	255 4235 918	Film 100pF/100V	CQ93P2A101JT NH
C147	255 4235 934	Film 0.01µF/100V	CQ93P2A103JT NH
C149	255 4235 918	Film 100pF/100V	CQ93P2A101JT NH
C152,153	256 1035 910	Metallized 0.22µF/50V	CF93A1H222JT
C154-163	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C165	254 4356 713	Electrolytic 100µF/50V	CE04W1H101MC ARS
C166	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C167	254 4313 918	Electrolytic 10µF/50V	CE04W1H100MT ASF
C168	254 4313 963	Electrolytic 1µF/50V	CE04W1H010MT ASF
C169,170	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C173-175	253 1184 901	Ceramic 0.1µF/50V	CK93E1H104MT TCD
C176	257 0004 961	Ceramic (Chip) 100pF/50V	CC73SL1H101JT
C177	257 0008 983	Ceramic (Chip) 0.001µF/50V	CK73B1H102KT
C178	257 0004 961	Ceramic (Chip) 100pF/50V	CC73SL1H101JT
C180	257 0004 961	Ceramic (Chip) 100pF/50V	CC73SL1H101JT
C181	257 0008 983	Ceramic (Chip) 0.001µF/50V	CK73B1H102KT
C182,183	257 0004 961	Ceramic (Chip) 100pF/50V	CC73SL1H101JT
C184	256 1034 953	Metallized 0.068µF/50V	CF93A1H683JT
C185	257 0006 943	Ceramic (Chip) 560pF/50V	CC73SL1H561JT
C186	257 0014 935	Ceramic (Chip) 0.1µF/25V	CK73F1E104ZT
C188	257 0014 935	Ceramic (Chip) 0.1µF/25V	CK73F1E104ZT
C189,190	257 0014 919	Ceramic (Chip) 0.047µF/25V	CK73F1E473ZT
C191	257 0004 961	Ceramic (Chip) 100pF/50V	CC73SL1H101JT
C901	254 4260 948	Electrolytic 1µF/50V	CE04W1H010MT SME

3U-2567 D/A UNIT

Ref. No.	Part No.	Part Name	Remarks
OTHER PARTS			
X101	399 0219 018	Crystal Oscillator (18.432MHz)	
X102	399 0219 005	Crystal Oscillator (16.9344MHz)	
X103	399 0219 021	Crystal Oscillator (12.288MHz)	
X104,105	399 0165 007	Crystal Oscillator (16.9344MHz)	
U101	269 0140 006	Connector ODL50-1261AAC(T)	ST- OUT
U102	269 0141 005	Connector ODL50-1361AAC(R)	ST- IN
U103,104	269 0116 001	Connector TORX176	TOS-IN
U105	269 0117 000	Connector TOTX176	TOS-OUT
L103,104	235 0074 962	Inductor (6R8)ST	
L105	235 0060 963	Inductor (4R7)ST	
L106,107	235 0060 918	Inductor (4R7)ST	
L108,109	235 0060 905	Inductor (2R2)ST	
L110	235 0049 900	Beads Inductor	
L801	231 8063 009	Pulse Trans.	
CB101	205 0233 058	5P EH Connector Base	
CB102	205 0275 032	13P EH Connector Base	
CB103,104	205 0233 061	6P EH Connector Base	
CB105	205 0233 032	3P EH Connector Base	
CB106	205 0278 039	3P EH Connector Base (BK)	
CB107	205 0233 045	4P EH Connector Base	
CB108	205 0233 032	3P EH Connector Base	
CB109	205 0278 039	3P EH Connector Base (BK)	
CB110	205 0277 030	3P EH Connector Base (RD)	
CB111	205 0276 031	3P EH Connector Base (BU)	
CB112	205 0296 037	3P EH Connector Base (YW)	
CB113	205 0233 032	3P EH Connector Base	
CN901	205 0343 058	5P Connector Base (KR-PH)	

Ref. No.	Part .No	Part Name	Remarks
SEMICONDUCTORS GROUP			
IC303	263 0809 006	IC NJM7805FA(S)	
IC304	263 0554 005	IC NJM7905FA	
IC308,309	262 1837 003	IC PCM1702P	
IC310,311	263 0360 008	IC NE5532	
IC312	263 0680 005	IC NJM5532DD	
IC313	263 0836 008	IC SSM2139	
IC321~323	269 0142 004	Photo Coupler PC912	
IC324,325	269 0143 003	Photo Coupler PC910	
TR301~304	275 0038 045	Transistor 2SK369(BL)/(GR)-C	
TR316	271 0102 924	Transistor 2SA1015(GR)	
TR319	273 0324 009	Transistor 2SC3298 O/Y	
TR322	275 0043 946	Transistor 2SK381(C)T	
TR325	271 0168 900	Transistor 2SA1145(O)/(Y)	
TR328	273 0281 919	Transistor 2SC2705(Y)	
TR331	273 0324 009	Transistor 2SC3298 O/Y	
TR334	271 0196 008	Transistor 2SA1306 O/Y	
TR337	269 0026 900	Transistor RN2202(10K-10K)T	Built in Resistor
TR338	269 0025 901	Transistor RN1202(10K-10K)T	Built in Resistor
TR339	271 0192 905	Transistor 2SA933S(S)TP	
D301	276 0305 001	Diode S4VB20	
D311	276 0467 907	Zener Diode HZS9A-1TD	
D314,315	276 0432 903	Diode 1SS270A TE	
D320,321	276 0049 914	Diode 1S2076A TE	
D328~331	276 0049 914	Diode 1S2076A TE	
LD300~302	333 9502 906	LED SEL-42140R(TP1)	3
RESISTORS GROUP			
(Not included Carbon Film ±5% 1/4W type)			
R303,304	241 2434 055	Carbon 820ohm 1/2W	RD05A2H821J RMG
R305,306	241 2438 064	Carbon 4.7Kohm 1/2W	RD05A2H472J RMG
R319	241 2434 068	Carbon 1Kohm 1/2W	RD05A2H102J RMG
R322	241 2445 057	Carbon 3.9Kohm 1/2W	RD05A2H392J RMG
R325	241 2445 057	Carbon 3.9Kohm 1/2W	RD05A2H392J RMG
R328	241 2438 006	Carbon 300ohm 1/2W	RD05A2H301J RMG
R331	241 2438 006	Carbon 300ohm 1/2W	RD05A2H301J RMG
R336	241 2438 080	Carbon 10Kohm 1/2W	RD05A2H103J RMG
R339	241 2438 006	Carbon 300ohm 1/2W	RD05A2H301J RMG
R342	241 2438 077	Carbon 6.8Kohm 1/2W	RD05A2H682J RMG
R345	241 2445 060	Carbon 5.1Kohm 1/2W	RD05A2H512J RMG
R348	241 2443 091	Carbon 620ohm 1/2W	RD05A2H621J RMG
R351,352	241 2434 039	Carbon 22ohm 1/2W	RD05A2H220J RMG
R359	241 2442 034	Carbon 91ohm 1/2W	RD05A2H910J RMG
R368	241 2438 022	Carbon 2.2Kohm 1/2W	RD05A2H222J RMG
R369	241 2438 019	Carbon 1.3Kohm 1/2W	RD05A2H132J RMG
R370	241 2438 022	Carbon 2.2Kohm 1/2W	RD05A2H222J RMG
R371	241 2438 080	Carbon 10Kohm 1/2W	RD05A2H103J RMG
R372,373	241 2445 060	Carbon 5.1Kohm 1/2W	RD05A2H512J RMG
R374	241 2438 080	Carbon 10Kohm 1/2W	RD05A2H103J RMG
R401	241 2438 080	Carbon 10Kohm 1/2W	RD05A2H103J RMG

PARTS LIST OF EXPLODED VIEW

Ref. No.	Part. No.	Part Name	Remarks	Q'ty
◉ 1	105 1088 423	REAR PANEL	U.S.A.	
◉ 1	105 1088 436	REAR PANEL	Europe	
◉ 1	105 1088 410	REAR PANEL	Multi-Voltage	
◉ 2	411 1241 204	SIDE CHASSIS(R)		
◉ 3	411 1251 207	SIDE CHASSIS(L)		
◉ 4	411 1249 303	CENTER CHASSIS(R)ASS'Y		
◉ 5	411 1253 302	CENTER CHASSIS(L)ASS'Y		
◉ 6	411 1244 104	BOTTOM CHASSIS		
◉ 7	414 0699 102	SHIELD(B)		
◉ 8	411 1240 302	FRONT CHASSIS		
◉ 9	GEN 2556	SIDE PANEL SUB ASS'Y		
◉ 11	412 3686 006	P.W.B.BRACKET(A)		
◉ 12	144 2299 009	FRONT PANEL		
◉ 13	GEN 2557	TOP COVER SUB ASS'Y		
◉ 14	144 2200 008	SIDE ESCUTCHEON		
◉ 16	3U- 2567	D / A UNIT		
◉ 17	3U- 2568	BALANCE UNIT		
◉ 18	3U- 2416	INTERFACE UNIT		
◉ 19	3U- 2413	POWER UNIT		
⚠ 20	233 0452 106	POWER TRANSFORMER(D)		
⚠ 21	233 0453 105	POWER TRANSFORMER(A)		
22	104 0267 006	FOOT ASS'Y		
23	414 9099 020	DAMP PLATE(FT)		
24	203 4926 006	CANNON CONNECTOR	XLR-3-32-A176	
25	203 4925 007	CANNON CONNECTOR	XLR-3-31-A176	
26	204 9801 006	1P PIN JACK		
27	203 1631 019	BNC CONNECTOR		
28	212 9108 001	TOGGLE SWITCH		
29	212 0259 001	TOGGLE SWITCH		
30	342 0015 009	FERRITE CORE		
31	212 4772 018	REMOTE SWITCH(250,B,3)		
32	412 3733 001	SUB PLATE ASS'Y		
◉ 34	412 3732 002	P.SW.BRACKET(C)		
37	445 0083 000	MINI CLAMP		
38	449 0100 008	SNAP BAND		
39	411 1568 000	TRANS. PLATE		
40	441 1566 100	TRANS. DAMPER(D)		
41	441 1567 109	TRANS. DAMPER(A)		
45	445 0048 016	CORD HOLDER(LS0)		
◉ 46	3U- 2414	LED & SW UNIT		
48	114 0121 000	LED RING		
49	477 0211 002	INSULATION WASHER		
50	114 0120 001	PUSH BUTTON GUIDE		
51	113 1623 009	PUSH BUTTON		
◉ 52	402 0125 002	RUBBER SPACER		
53	143 9107 007	LENS (IN PUT)		
54	146 1154 109	LED HOLDER		
◉ 59	461 0819 001	SPONGE		
60	475 1166 008	SLIT WASHER		
61	443 1313 003	SUB SHAFT		
62	412 3735 009	LEVER		
63	443 1314 002	LEVER SHAFT		
65	475 1165 009	SLIT WASHER		
⚠ 66	445 0020 005	BUSHING	U.S.A.	
⚠ 66	445 8009 002	BUSHING	Europe	
⚠ 66	445 0071 009	BUSHING	Multi-Voltage	
⚠ 67	206 2060 002	AC CORD WITH PLUG	U.S.A.	
⚠ 67	206 2118 006	AC CORD WITH PLUG	Europe	
⚠ 67	206 2083 018	AC CORD WITH PLUG	Multi-Voltage	
68	113 1625 007	PUSH BUTTON ASS'Y		

Ref. No.	Part. No.	Part Name	Remarks	Q'ty
69	463 9071 008	SPRING		
70	463 1003 009	3E RING		
71	114 0119 009	PUSH BUTTON GUIDE		
◉ 72	414 0700 101	SHIELD(A)		
◉ 73	129 0205 009	RUBBER SHEET		
101	473 8034 001	SCREW 3 x 8 CBTS(B)-CU		
102	471 9038 000	SCREW 4 x 10 HSFH-AU		
103	471 3837 003	SCREW 3 x 4 CBS-CU		
104	471 3830 000	SCREW 3 x 6 CBS-CU		
105	471 3840 003	SCREW 4 x 6 CBS-CU		
106	471 3840 016	SCREW 4 x 14 CBS-CU		
107	473 7518 104	SCREW 3 x 10 CBTS(P)-CU		
108	477 0224 015	SP WASHER		
110	144 2302 103	BACK FOOT		
120	449 0101 007	FLEXIBLE BUSH		
⚠★	212 0348 006	VOLTAGE SELECTOR	Multi-Voltage Only	
◉★	441 1582 003	V.S. PLATE	Multi-Voltage Only	

WARNING :

- Parts marked with " ⚠ " and/or shading have special characteristics important to safety.
  Be sure to use the specified parts for replacement.
- Part indicated with the mark " ◉ " are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.

PARTS LIST OF PACKING & ACCESSORIES

Ref. No.	Part. No.	Part Name	Remarks	Q'ty
	504 0092 060	Styrene Paper	For AC Cord	1
	505 0131 076	Cabinet Cover	For Equipment	1
	503 1087 107	Cushion		2
	501 1703 113	Carton Case		1
	502 0821 002	Inner Carton		1
	505 0038 030	Envelope		1
	203 2204 005	Pin Cord		1
	511 2522 002	Instruction Manual(3)		1
	511 2523 001	Instruction Manual(5)	Europe Only	1
	515 0623 109	DAI Warranty Home	U.S.A. Only	1
	515 8030 008	Preset Label	Multi-Voltage Only	1
	203 3667 007	Plug Adapter	Multi-Voltage Only	1

SPECIFICATIONS

- **Audio**

No. of channels:	2 channel
Frequency response:	2~20,000 Hz ±0.2 dB
Dynamic range:	100 dB
Signal-to-noise ration:	120 dB
Harmonic distortion:	0.0015%
Separation:	120 dB (1kHz)
Output voltage:	Unbalanced: 2.5 Vrms/10 kohm load
	Balanced type: 2.5 Vrms/10 kohm load

- **Digital input signal format**

Format:	Digital audio interface
• **OPTICAL-ST**	
Acceptable laser power:	–30 dBm or greater
Acceptable laser wavelength:	875 nm
• **OPTICAL-TOS**	
Acceptable laser power:	–27 dBm or greater
Acceptable laser wavelength:	660 nm
• **COAXIAL-RCA:**	0.5 Vp-p/75 ohm
• **COAXIAL-BNC:**	0.5 Vp-p/75 ohm
• **BALANCE:**	5.0 Vp-p/110 ohm

- **Digital output signal format**

• **OPTICAL-TOS**	
Peak optical power:	–15 dBm ~ –21 dBm
Acceptable laser wavelength:	660 nm
• **COAXIAL-RCA:**	0.5 Vp-p/75 ohm
• **GEN LOCK CLOCK OUTPUT-ST**	
Peak optical power:	–16 dBm or greater
Acceptable laser wavelength:	875 nm
Signal format:	16.9344 MHz (384fs), Duty 50% clock

- **General**

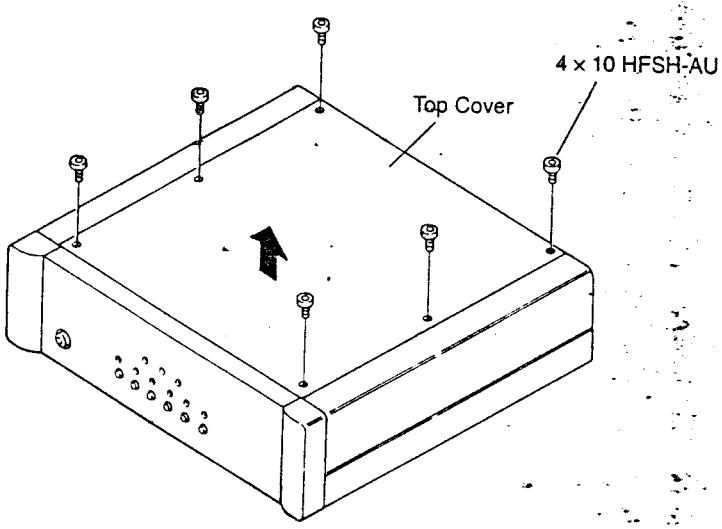
Power Supply:	60 Hz, voltage is shown on rating label
Power Consumption:	28 W
Dimensions:	434 (W) × 141 (H) × 419 (D) mm
	(17-3/32" × 5-35/64" × 16-1/2")
Weight:	20 kg (44 lbs 2 oz)

*Design and specifications are subject to change without notice in the course of product improvement.

DISASSEMBLY

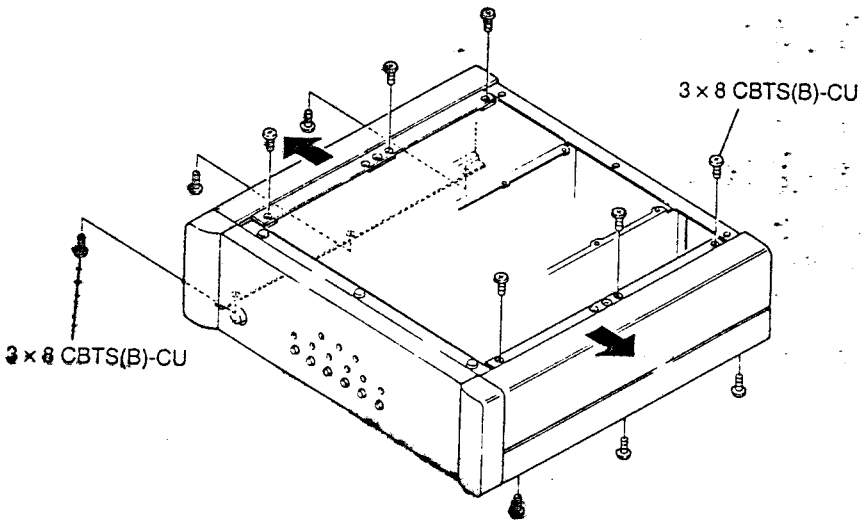
1. Top Cover

① Remove 6 screws from Top Cover.
② Detach the Top Cover as per the arrow shows.

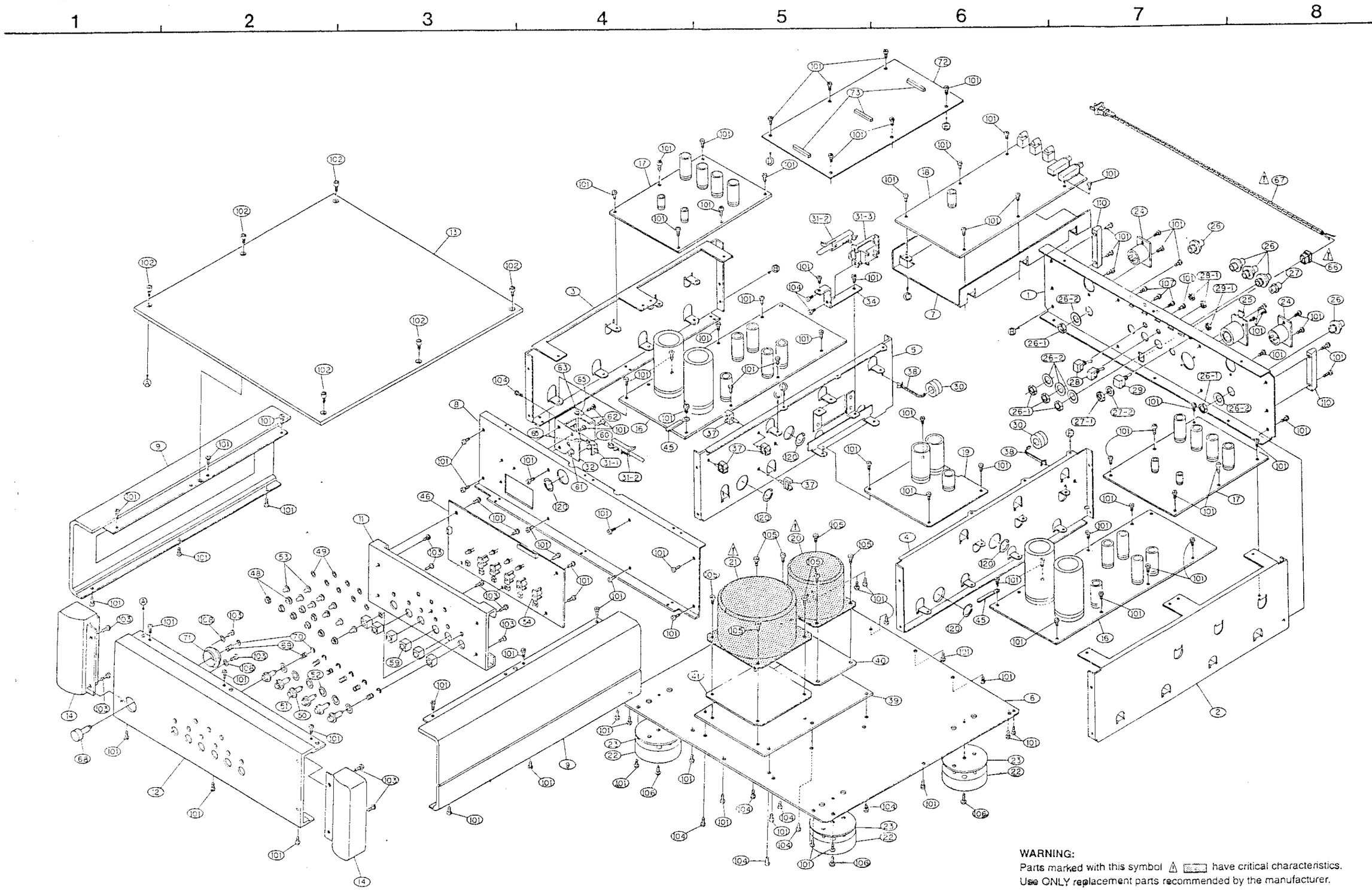


2. Side Panel

① Remove 12 screws from both Side Panel.
② Detach the Side Panels as per the arrow shows.



EXPLODED VIEW



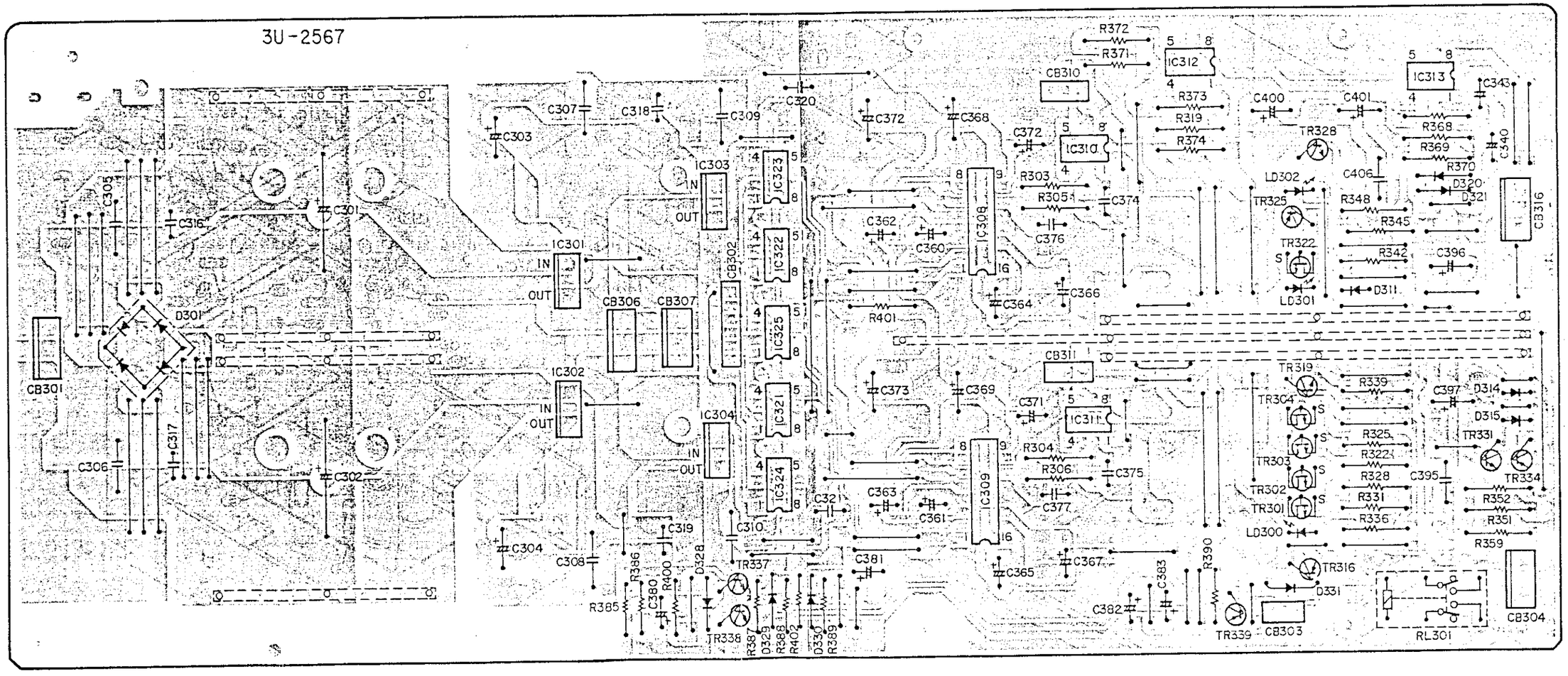
WARNING:
Parts marked with this symbol ⚠ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

P.W.BOARD

1 2 3 4 5 6 7 8

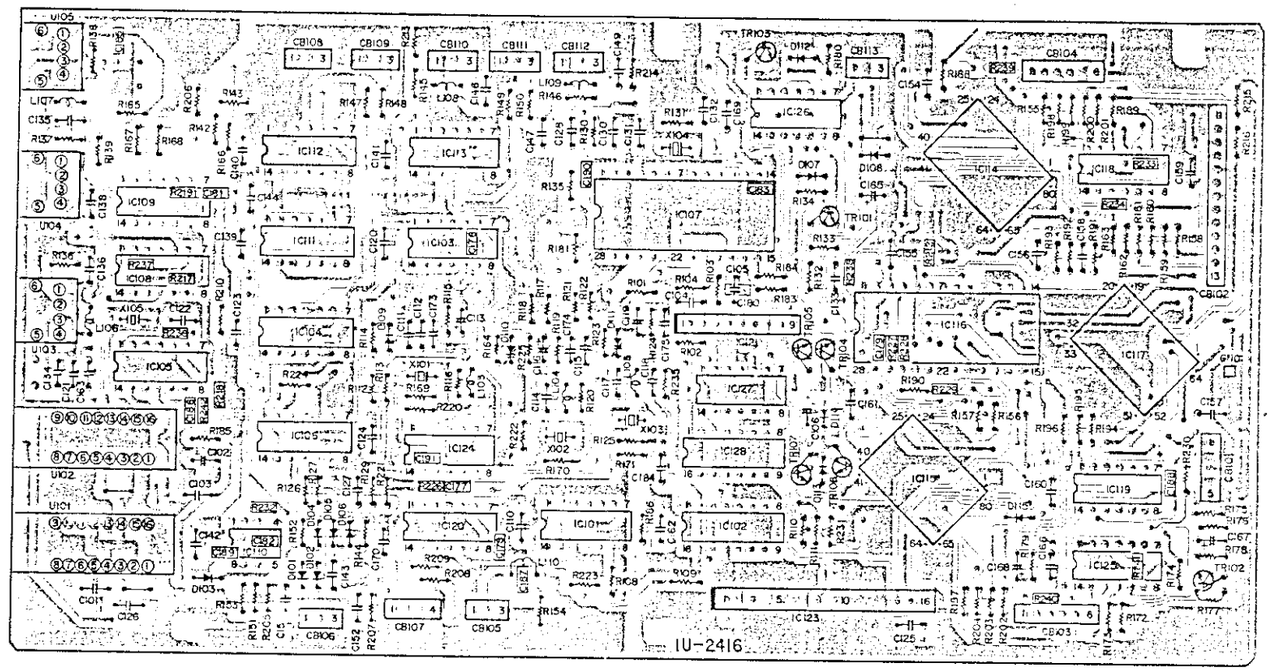
A B C D E

3U-2567 D/A UNIT

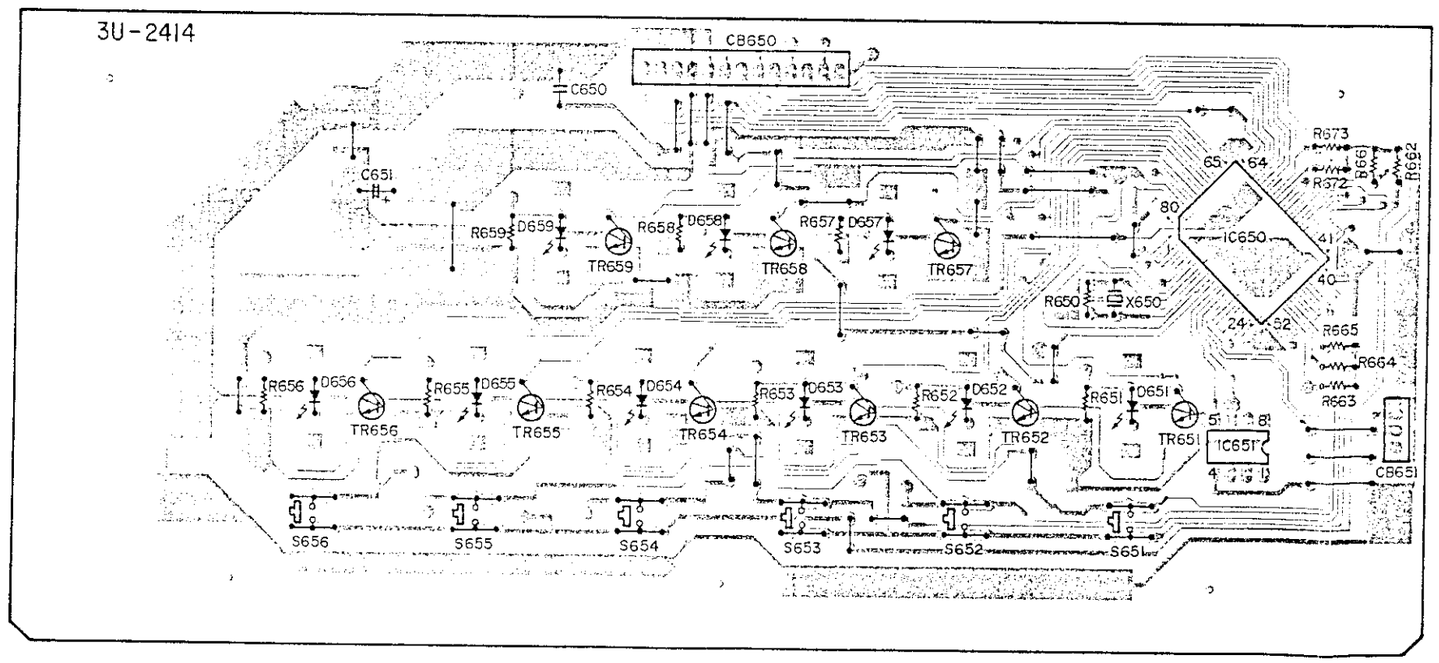


MC-Service

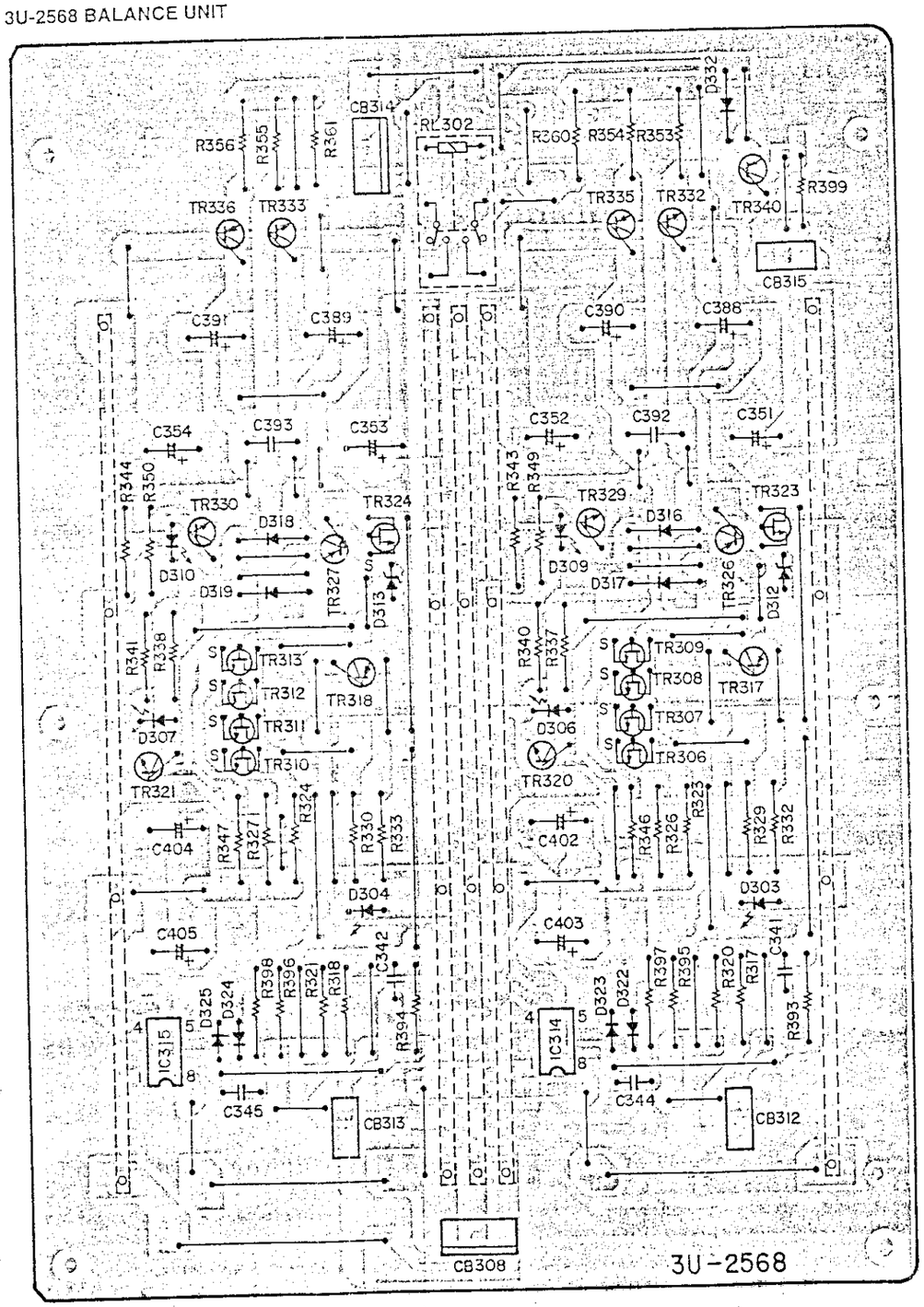
3U-2416 INTERFACE UNIT



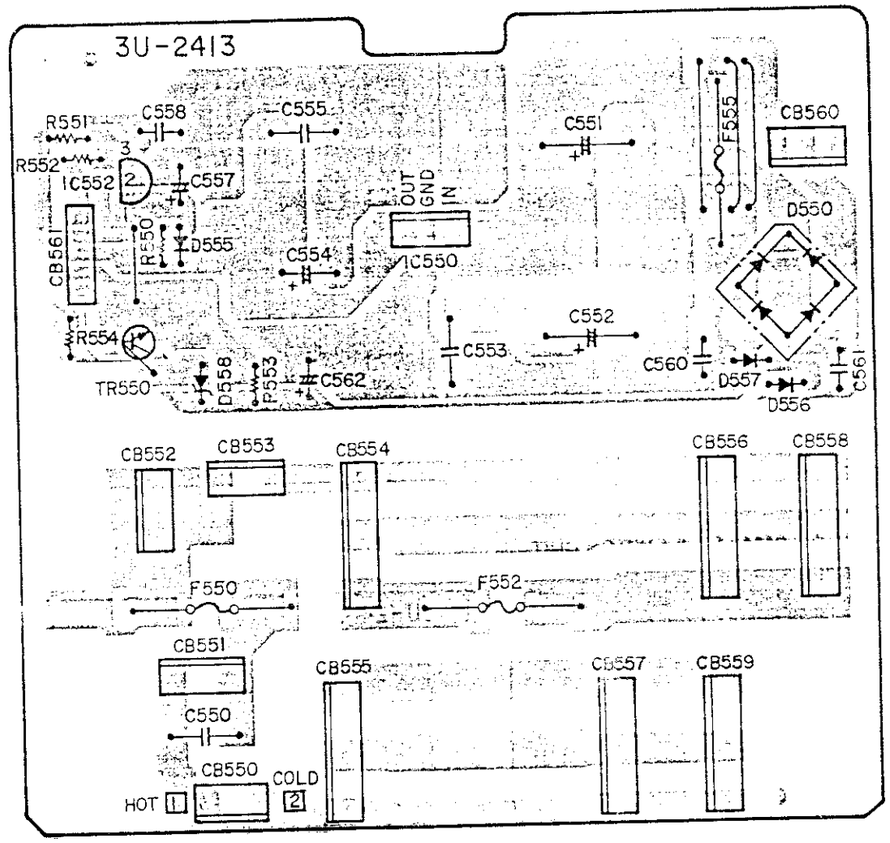
3U-2414 LED & SWITCH UNIT



3U-2568 BALANCE UNIT



3U-2413 POWER UNIT

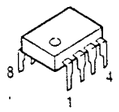


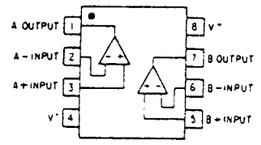
MC-Service

SEMICONDUCTORS

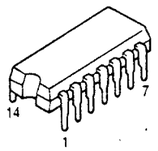
● IC's (Microcomputer)

NE5532

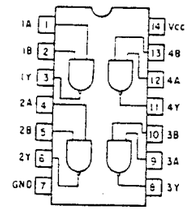




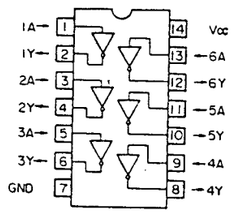
TC74HC00AP
TC74HC04AP
SN74HC02N
HD74HC10P
HD74HC125P
HD74HC393P



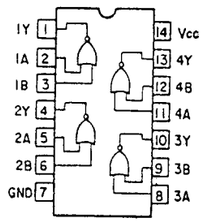
TC74HC00AP



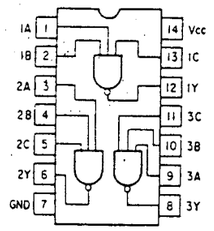
TC74HC04AP



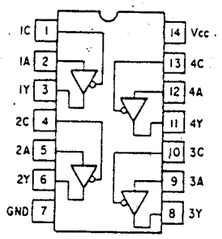
SN74HC02N



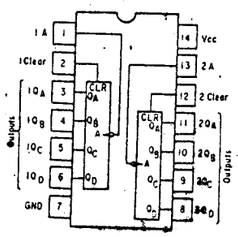
HD74HC10P



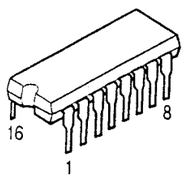
HD74HC125P



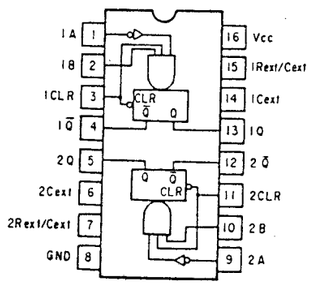
HD74HC393P



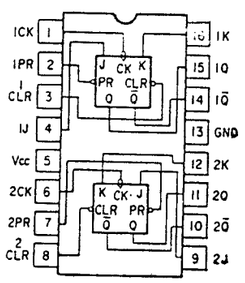
HD74HC123AP
TC74HC76AP



HD74HC123AP

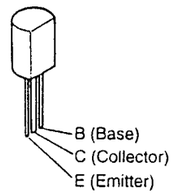


TC74HC76AP

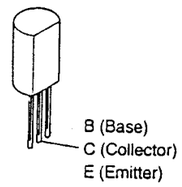


● TRANSISTORS

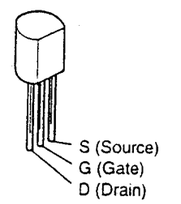
2SA933(S)
2SA1015(Y)



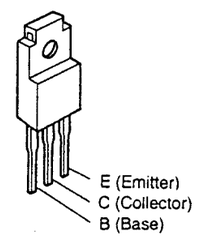
2SC2705(O/Y)
2SA1145(O/Y)



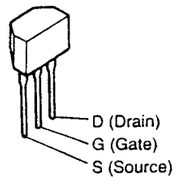
2SK369(BG)/(GR)-C



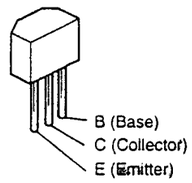
2SA1306 O/Y
2SC3298 O/Y



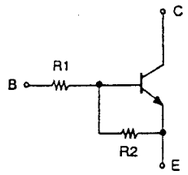
2SK381(C)



RN1201(4.7k-4.7k)NPN
RN1202(10k-10k)NPN
RN2202(10k-10k)PNP

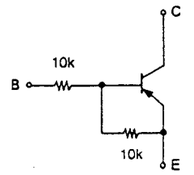


RN1201
RN1202



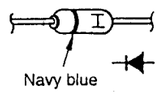
	R1	R2
RN1201	4.7kohm	4.7kohm
RN1202	10kohm	10kohm

RN2202

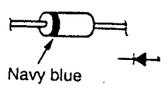


● DIODES (including LED)

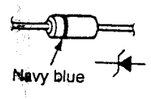
1S2076A



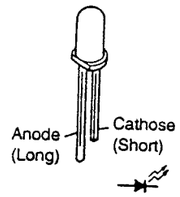
1SS270A



HZS9A-1TD
HZS5C-1TD

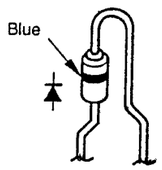


SEL-2210R
SEL-2810D
SEL-2410G

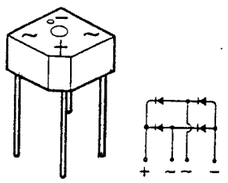


SEL-42140R

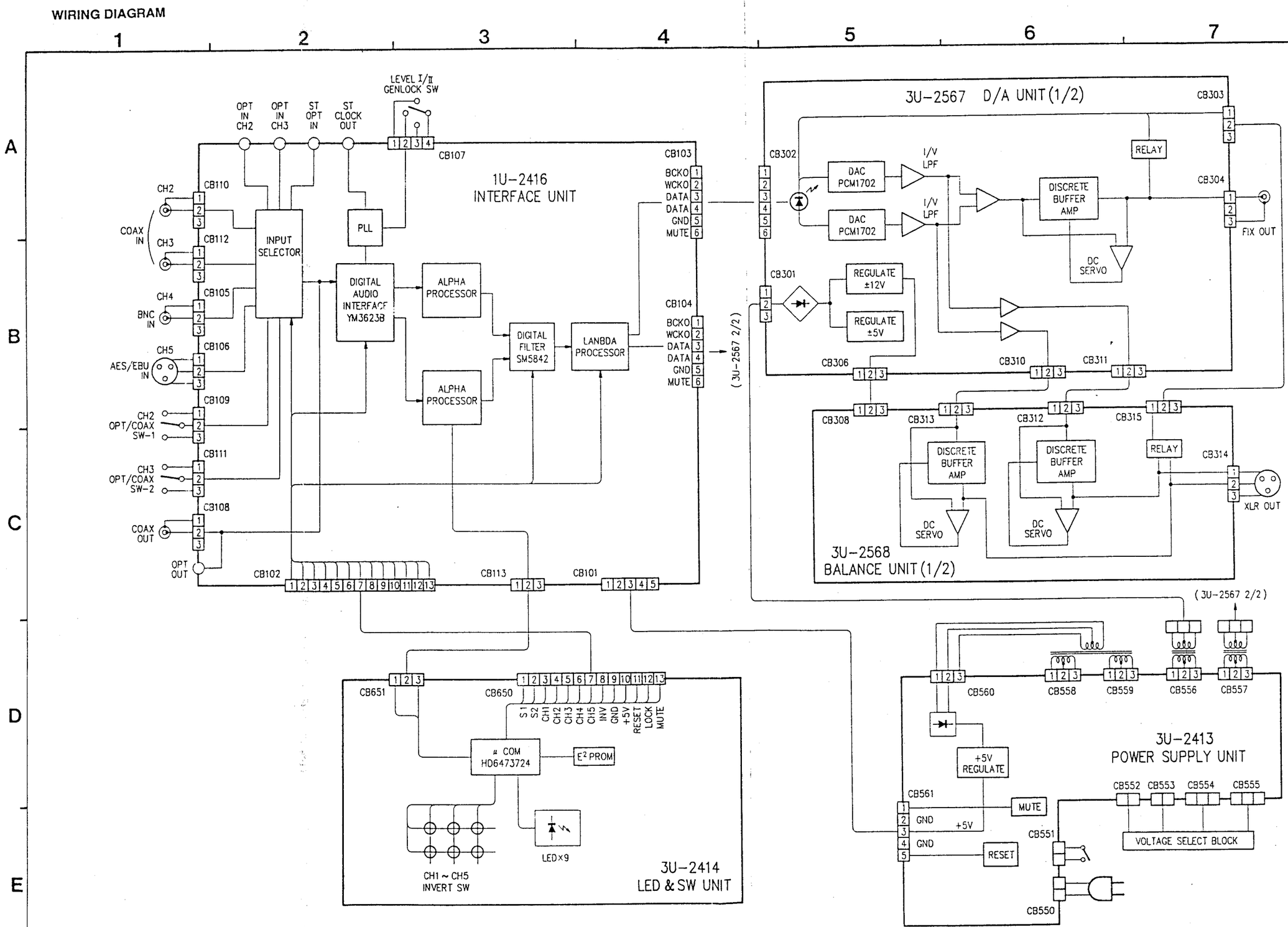
1SR35-200A



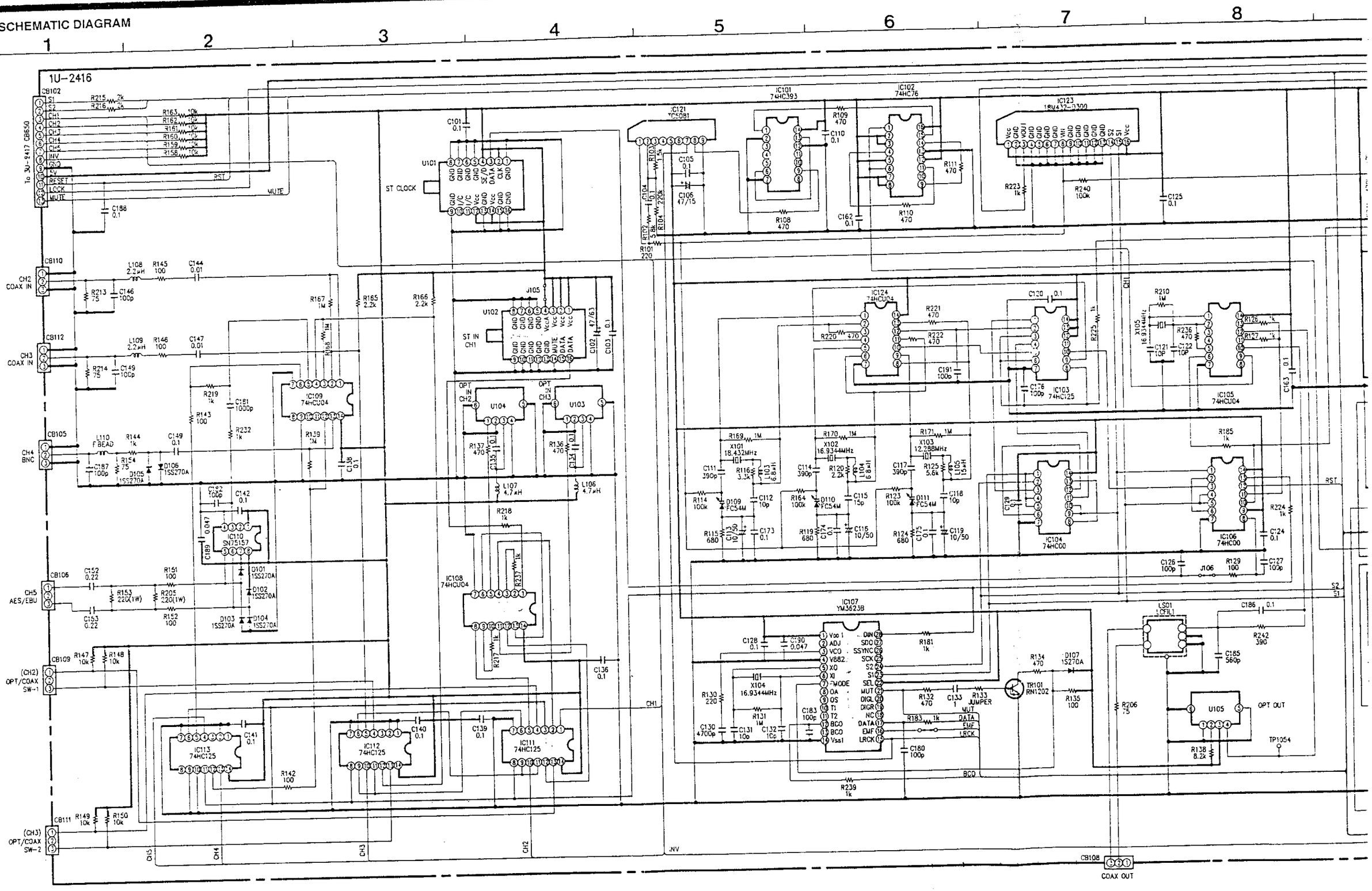
S4VB20



WIRING DIAGRAM

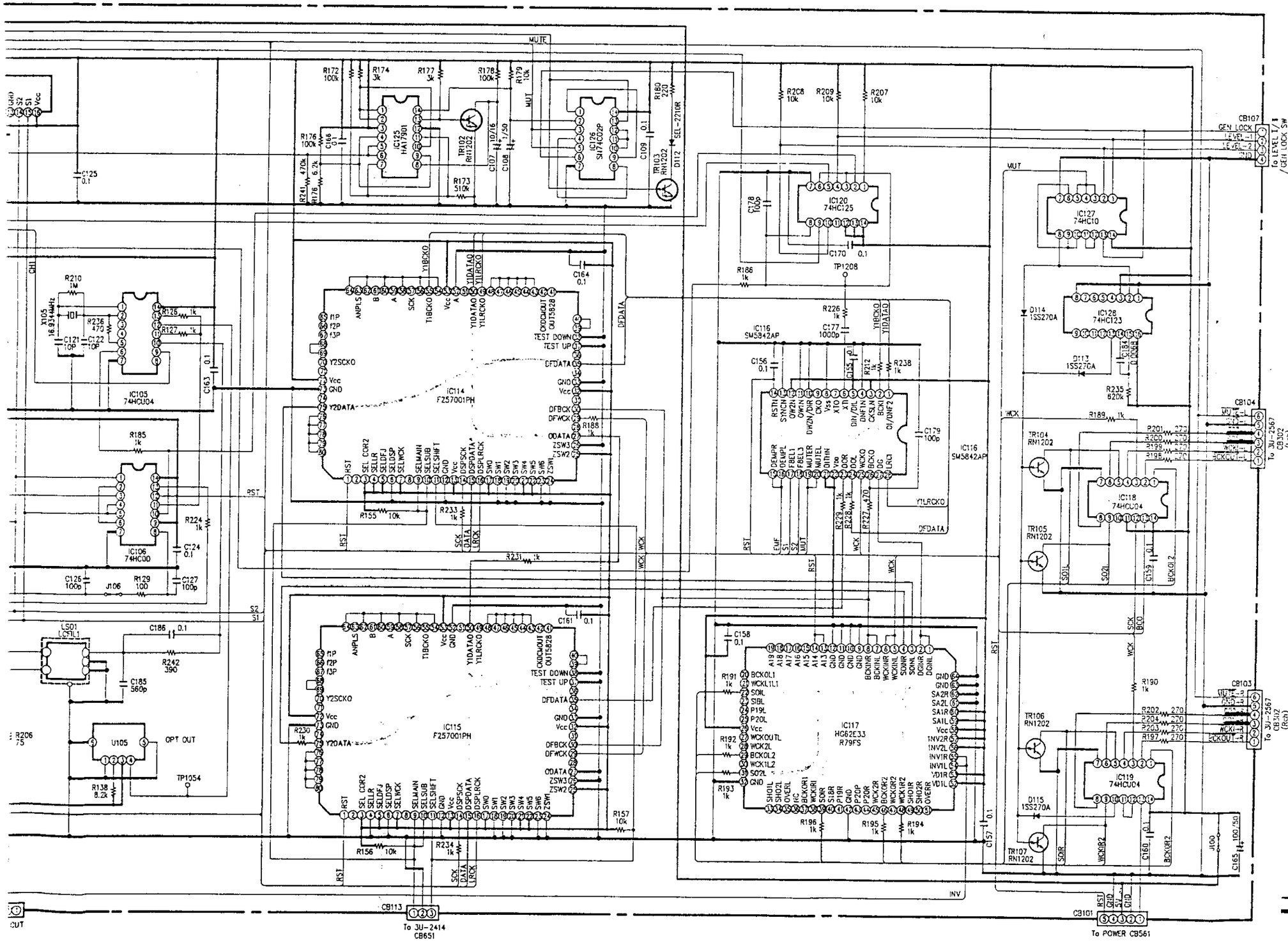


SCHEMATIC DIAGRAM



8 9 10 11 12 13 14 15

A B C D E



NOTES
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM, M=1,000,000 OHM

ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD

EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.

CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

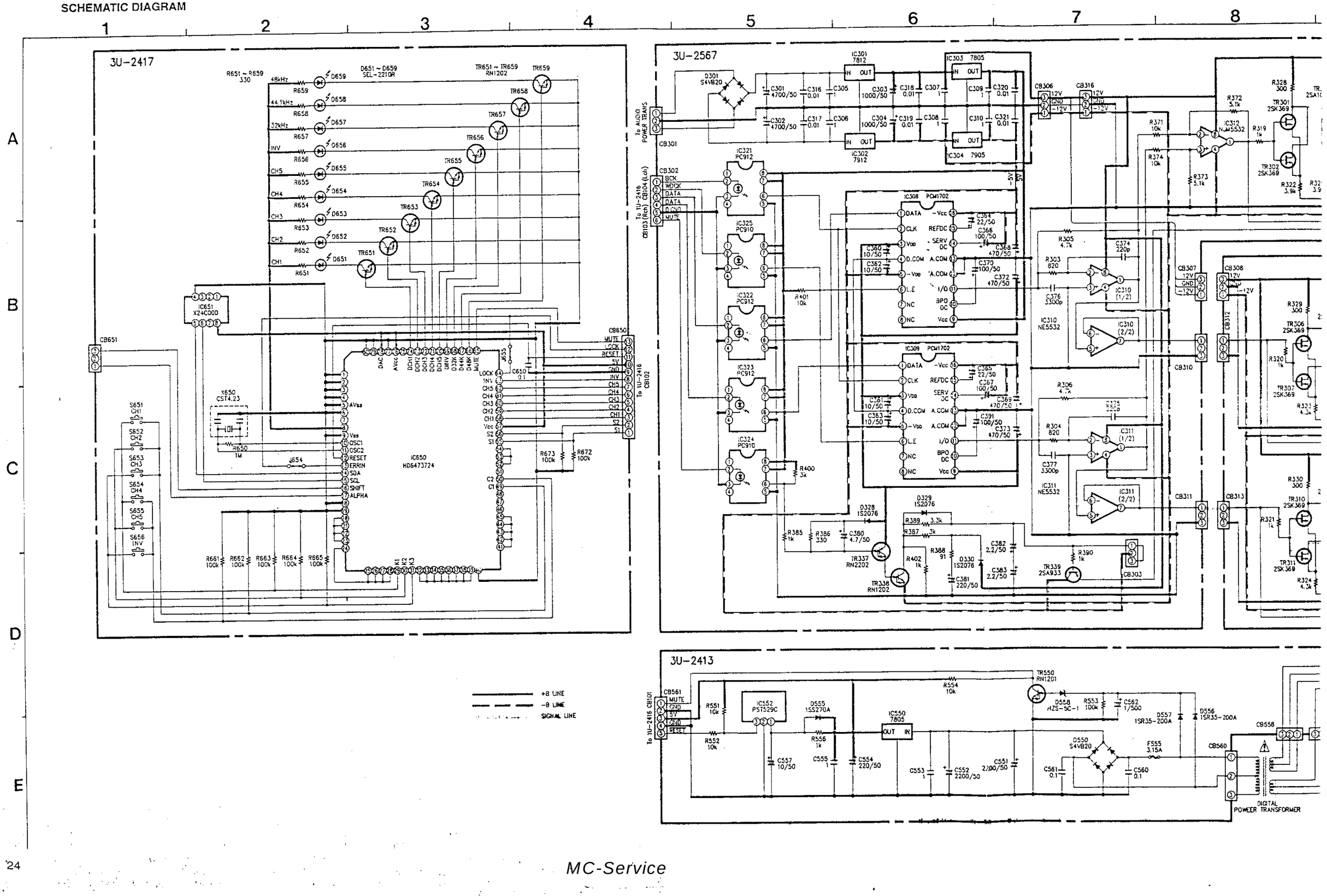
WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

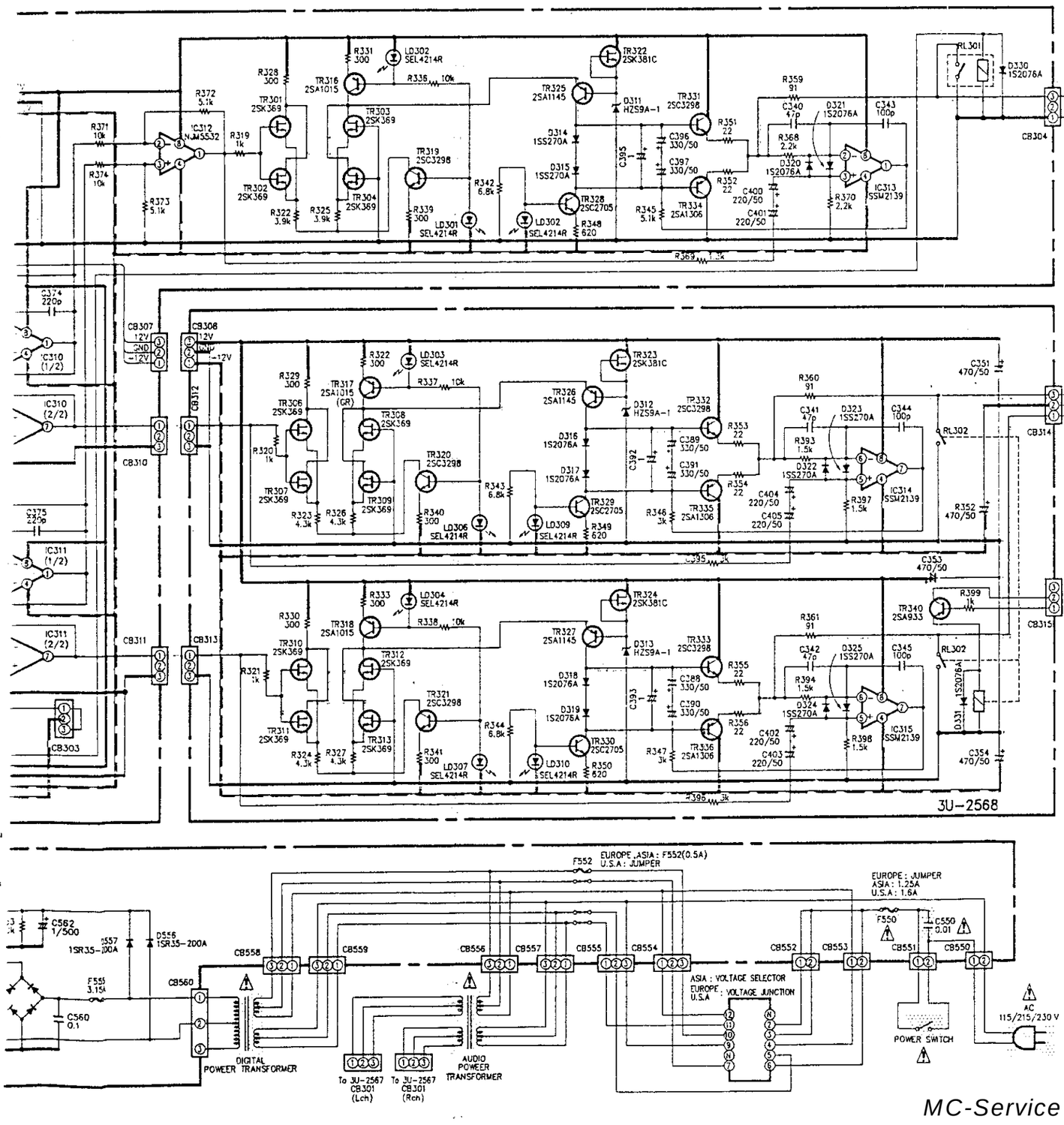
CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.

+9 LINE
SIGNAL LINE

SCHEMATIC DIAGRAM





NOTES
ALL RESISTANCE VALUES IN OHM. k=1,000 OHM. M=1,000,000 OHM

ALL CAPACITANCE VALUES IN MICRO FARAD. P=MICRO-MICRO FARAD

EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.

CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

WARNING:
Parts marked with this symbol ⚠ ▨ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

WARNING:
DO NOT return the unit to the customer until the problem is located and corrected.