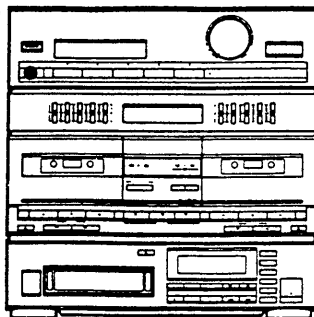


Service Manual

PIONEER
The future of sound and vision.



ORDER NO.
ARP1933

STEREO MULTI CD CASSETTE DECK AMPLIFIER

XD-Z63M

MODEL XD-Z63M HAS FOLLOWING VERSIONS:

Type	Power requirement	Export destination
HB	AC220V, 240V (Switchable)*	United Kingdom
HE	AC220V, 240V (Switchable)*	European continent
HEWZ	AC220V, 240V (Switchable)*	West Germany

* Change the Jumper wires of assembly boards.

- This manual is applicable to the XD-Z63M/HB and HE types.
- As to the HE type, refer to page 22.
- As to the other types, refer to the applicable service manuals.
- The XD-Z63M consists of a CD block and a deck amplifier block. For details, see page 6. The CD block is described in pages 23 to 78. The Deck amplifier block in pages 79 to 135.
- Ce manuel pour le service comprend les explications en français de réglage.
(voir les pages 57 à 67 pour le bloc CD, et les pages 128 à 131 pour bloc de l'amplificateur.)
- Este manual de servicio trata del método ajuste escrito en español.
(Vea las páginas 68 a 78 para el bloque de CD, y las páginas 132 a 135 para el bloque del amplificador/grabadora.)
- As to the system composition, refer to the S-115CDM service manual (ARP1939).

THE QUALITY OF
THIS MANUAL IS
THE BEST THAT
IS AVAILABLE

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1. SAFTEY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS OHITETTAESSA
OLET ALTTIINA NÄKYMÄTTÖMÄLLE
LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING
NÅR SIKKERHEDSAFBRYDERE ER UDE
AF FUNKTION. UNDGÅ UDSÆTTELSE
FOR STRÅLING.

VARNING!

OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR
ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta
EJ STRÅLEN.



LASER
Kuva 1
Lasersäteilyn
varoituserkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH
EMITS INVISIBLE INFRARED RADI-
ATION WHICH IS DANGEROUS TO EYES.
THERE IS A WARNING SIGN ACCORDING
TO PICTURE 1 INSIDE THE DEVICE
CLOSE TO THE LASER DIODE.



LASER
Picture 1
Warning sign for
laser radiation

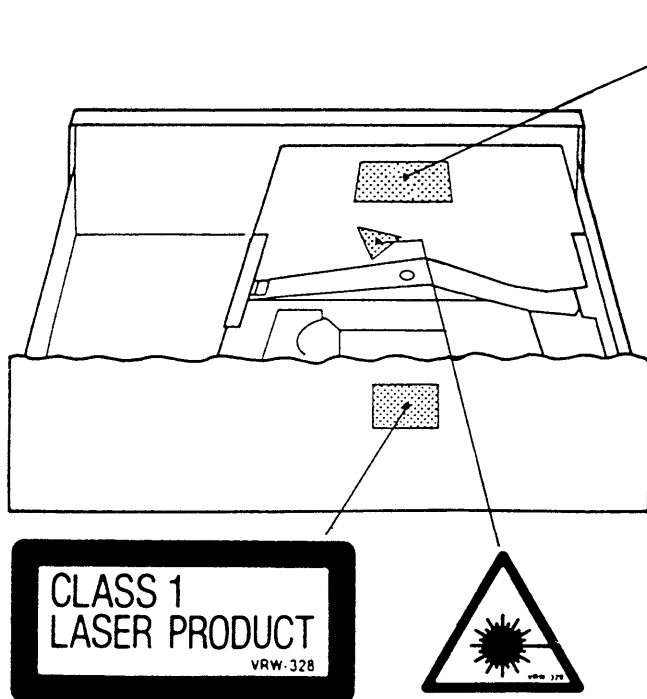
IMPORTANT

THIS PIONEER APPARATUS CONTAINS LASER OF
HIGHER CLASS THAN 1. SERVICING OPERATION
OF THE APPARATUS SHOULD BE DONE BY A
SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER :5mW
WAVELENGTH : 780-785 nm

LABEL CHECK (MULTI MAGAZINE type)

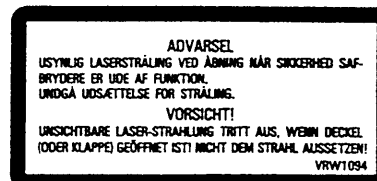


HE, HEWZ and HB models

HB model



HE and HEWZ models



Additional Laser Caution

1. Laser Interlock Mechanism

The ON/OFF (L/H) status of the loading state detection switches, LPS1 (S701) and LPS2 (S702), are detected with the system microcomputer. The laser diode does not oscillate unless these switches are both ON (L). This is the so called clamped state. Consequently, if these switches are short-circuited on purpose, the interlock becomes invalid. Also, in the test mode (refer to page 46), the interlock mechanism does not operate. When pins ④, ⑤ or ② of CXA1081S (IC1) is short-circuited to GND, or when there is a short-circuit between the respective pins of Q1 (fault condition), the laser diode keeps oscillating.

2. If the fault condition described in 1 is induced with the cover open and with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a class 1 or higher laser beam.

2. SPECIFICATIONS

Multi-CD cassette deck amplifier: XD-Z63M

Amplifier Section

DIN music power	50 W + 50 W (1 kHz, T.H.D. 1 %, 8 Ω)
Continuous Power Output (DIN)	33 W + 33 W (1 kHz, T.H.D. 1 %, 8 Ω)
Graphic equalizer frequency band	100 Hz, 330 Hz, 1 kHz, 3.3 kHz, 10 kHz, ± 7 dB
Signal-to-Noise Ratio (DIN, continuous Power/50 mW)	
PHONO	68 dB/60 dB
Total Harmonic Distortion (40 Hz to 20,000 Hz, 15 W, 8 ohms) **	No more than 0.2 %
Input sensitivity	
PHONO (MM)	2.5 mV/47 k Ω
VIDEO	150 mV/22 k Ω

Tape Deck Section

Systems	4 track, 2-channel stereo
Heads	Recording/playback head $\times$ 1 Playback head $\times$ 1 Erasing head $\times$ 1
Motor	DC servo 2 speed motor $\times$ 2
Wow and Flutter	No more than 0.09 % (WRMS)
Fast Winding Time	Approximately 95 seconds (C-60 tape)
Frequency Response (-20 dB recording):	
Normal tape	35 Hz to 14,000 Hz ± 6 dB (EIAJ)
CrO ₂ tape	35 Hz to 15,000 Hz ± 6 dB (EIAJ)
Signal-to-Noise ratio	
Dolby NR OFF	56 dB (EIAJ)
Noise Reduction Effect	
Dolby B type NR ON	More than 10 dB (at 5 kHz)

CD Section

Type	Compact disc digital audio system
Operating temperature	$+5^{\circ}\text{C} - +35^{\circ}\text{C}$ ($+41^{\circ}\text{F} - +95^{\circ}\text{F}$)

Frequency response	4 Hz - 20 kHz (± 0.5 dB)
S/N	100 dB or more (EIAJ)
Dynamic range	92 dB or more (EIAJ)
Channel separation	93 dB or more (EIAJ)
Wow and flutter	Limit of measurement ($\pm 0.001\%$ W.PEAK) or less (EIAJ)
Number of channels	2 channels (stereo)

Miscellaneous

Power requirements	a.c. 240 Volts $\sim$, 50/60 Hz
Power Consumption	222 W
Dimensions	360 (W) $\times$ 368 (H) $\times$ 341 (D) mm
Weight	12.0 kg

Furnished Parts

Operating Instructions	1
Remote control unit	1
Dry cell batteries	2
Six-compact-disc magazine	1
Control cord	1

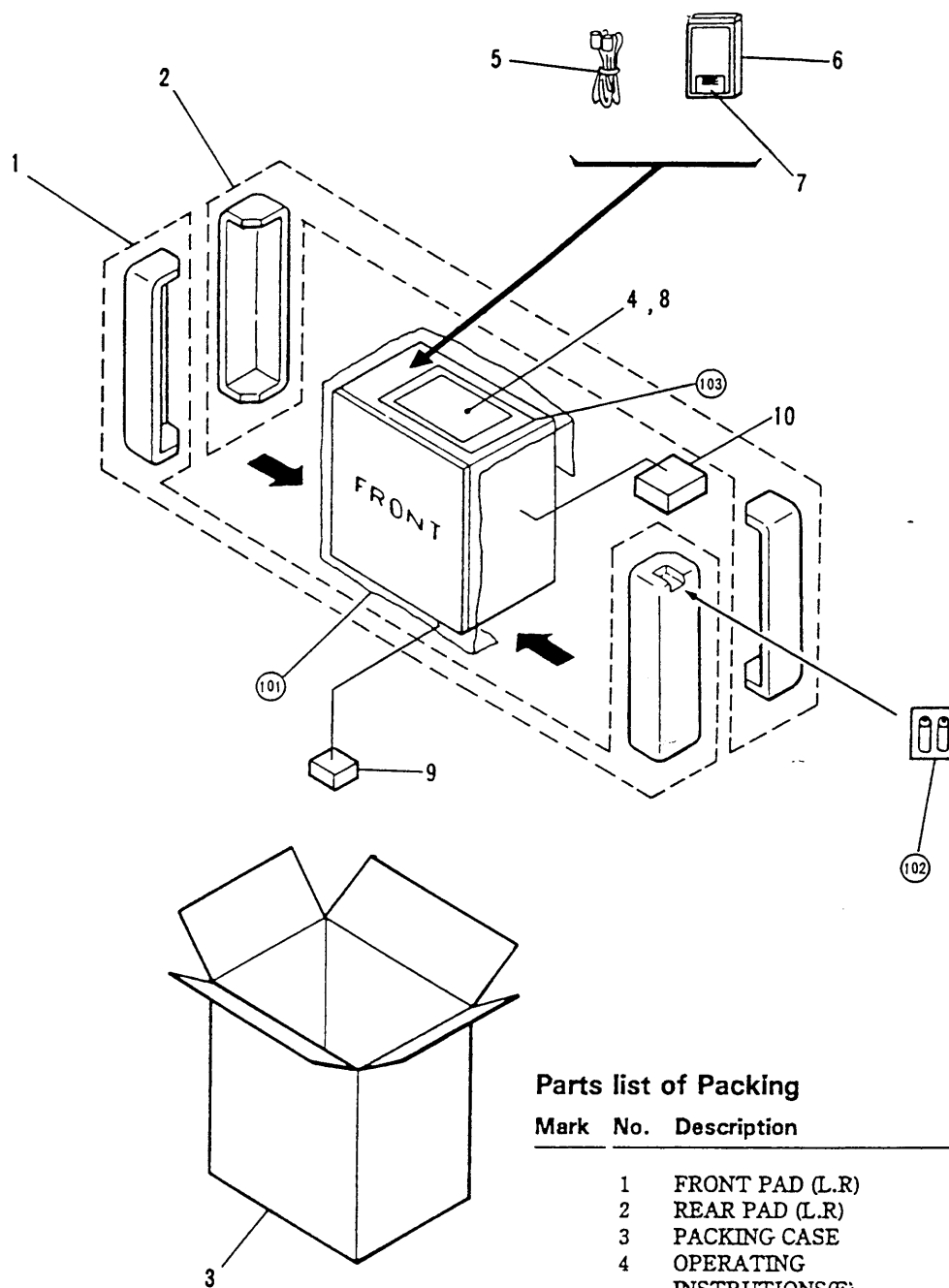
Accessories

EP Adaptor	1
------------	---

* Specifications and design subject to possible modification without notice due to improvement.

** Measured By Audio Spectrum Analyzer.

3. PACKING



Parts list of Packing

Mark	No.	Description	Parts No.
	1	FRONT PAD (L.R)	AHA1327
	2	REAR PAD (L.R)	AHA1328
	3	PACKING CASE	AHD1804
	4	OPERATING INSTRUCTIONS(E)	ARB1226
	5	CORD WITH PLUG	ADE-085
	6	REMOTE CONTROL UNIT (CU-DC019)	AXD1133
	7	BATTERY COVER	AZN1856
	8	CAUTION CARD	ARM1003
	9	UNDER PAD	AHA1334
	10	MULTI MAGAZINE ASSEMBLY	PXA1283
	101	SHEET	
	102	*AAA* DRY CELL	
	103	LITERATURE BAG	

4. CONFIGURATIONS OF CD BLOCK AND DECK AMPLIFIER BLOCK

Electrical configurations of the CD block and deck amplifier block are shown in " 4.2 OVER ALL SCHEMATIC DIAGRAM " (page 9) . Mechanism configurations of them are shown in " 4.1 EXPLODED VIEWS AND PARTS LIST " (page 7) . See the following pages respectively. See the following pages respective blocks.

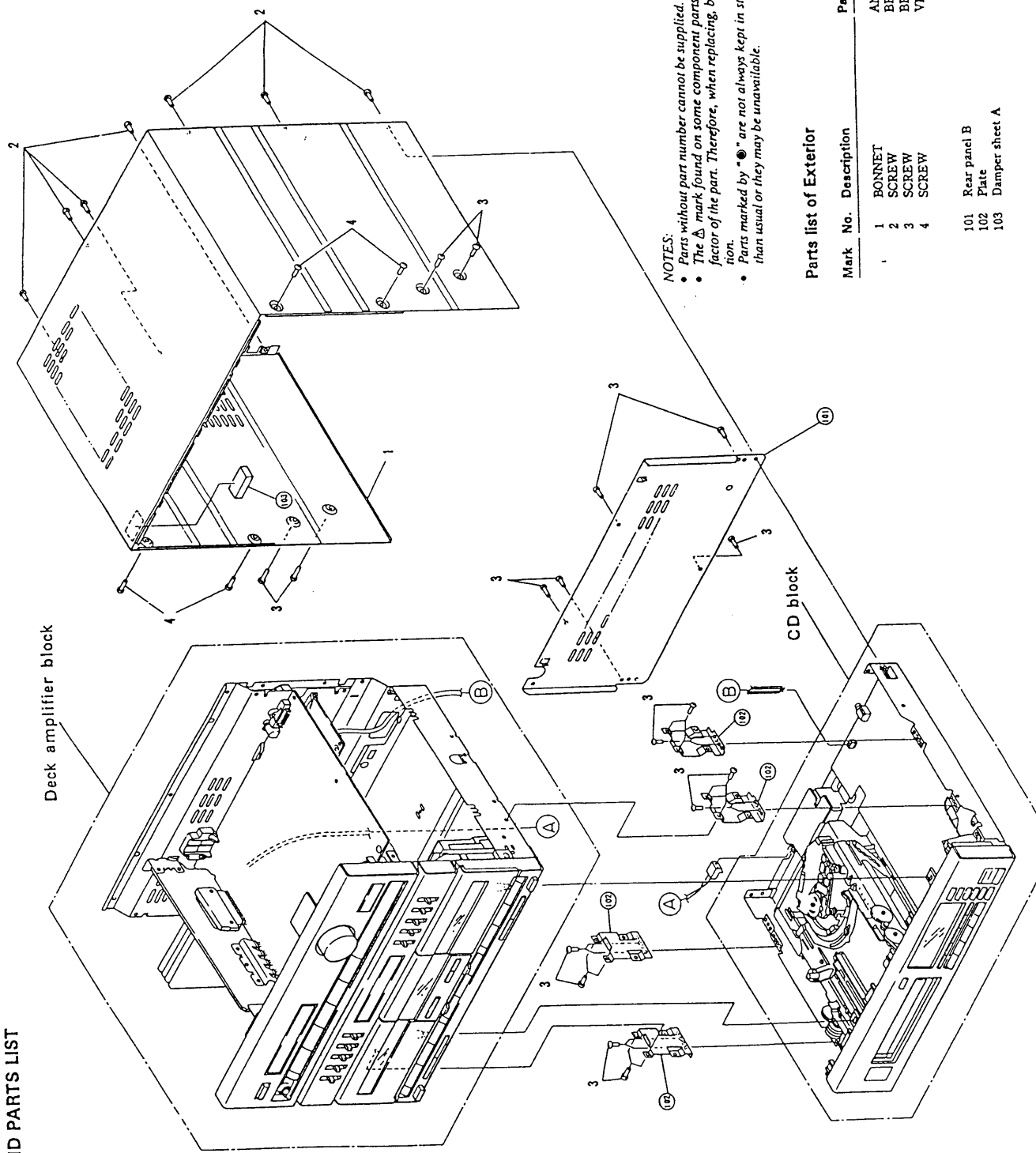
9. CD BLOCK (Page23~Page78)

9.1 EXPLODED VIEWS AND PARTS LIST	23
9.2 SCHEMATIC DIAGRAM	29
9.3 P.C.BOARDS CONNECTION DIAGRAM	33
9.4 ELECTRICAL PARTS LIST	44
9.5 ADJUSTMENTS.....	46
9.5 RÉGLAGE.....	57
9.5 AJUSTE	68

10. DECK AMPLIFIER BLOK (Page79~Page135)

10.1 EXPLODED VIEWS AND PARTS LIST	79
10.2 SCHEMATIC DIAGRAMS AND P.C.BOARD CONNECTION DIAGRAMS	88
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10.4 AJUSTE	132

4.1 EXPLODED VIEWS AND PARTS LIST



NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

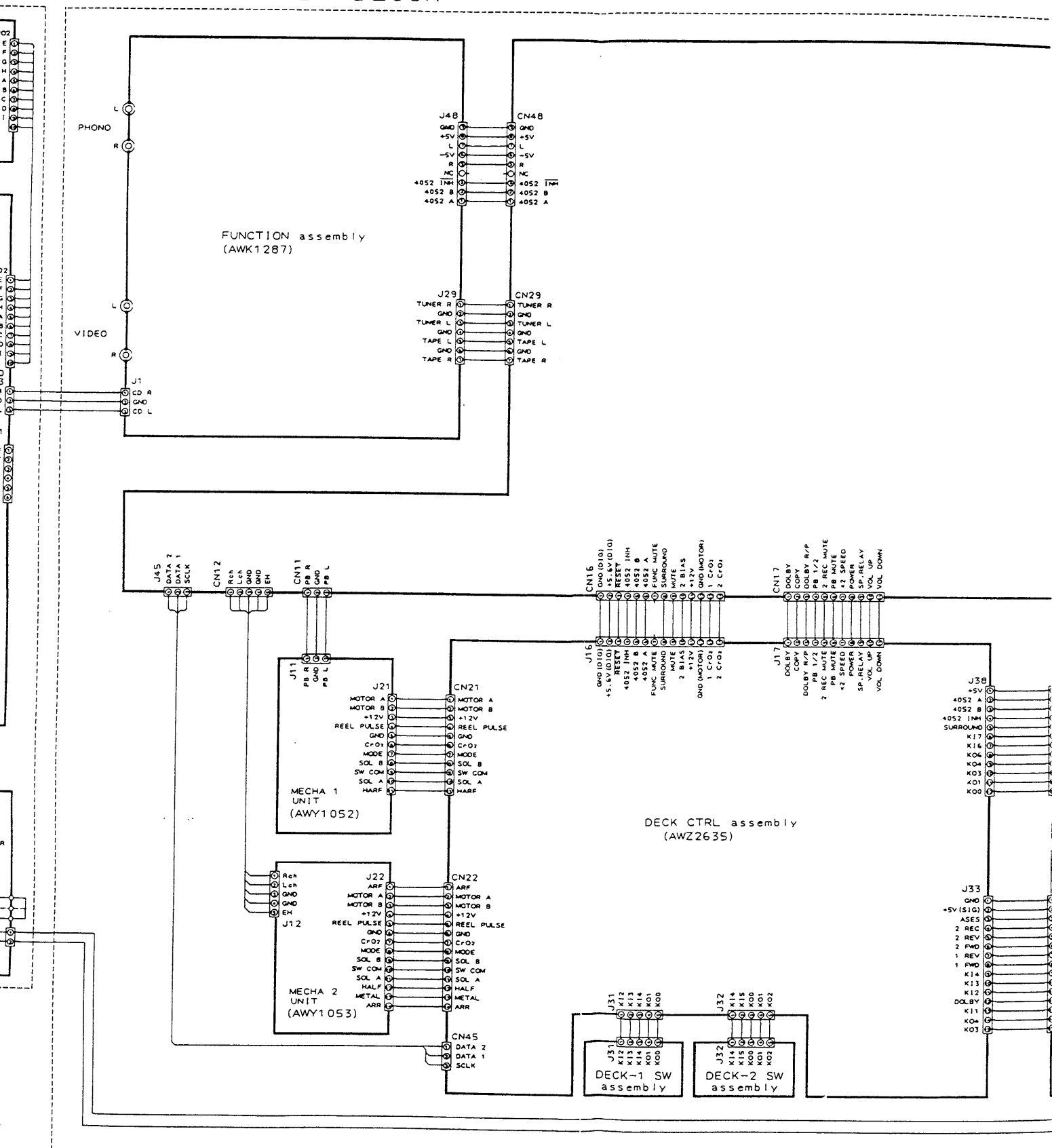
Parts list of Exterior

Mark No.	Description	Parts No.
1	BONNET	ANE1228
2	SCREW	BEZ30P080FCU
3	SCREW	BEZ30P080FZK
4	SCREW	VPZ30P080FZK
101	Rear panel B	
102	Plate	
103	Damper sheet A	

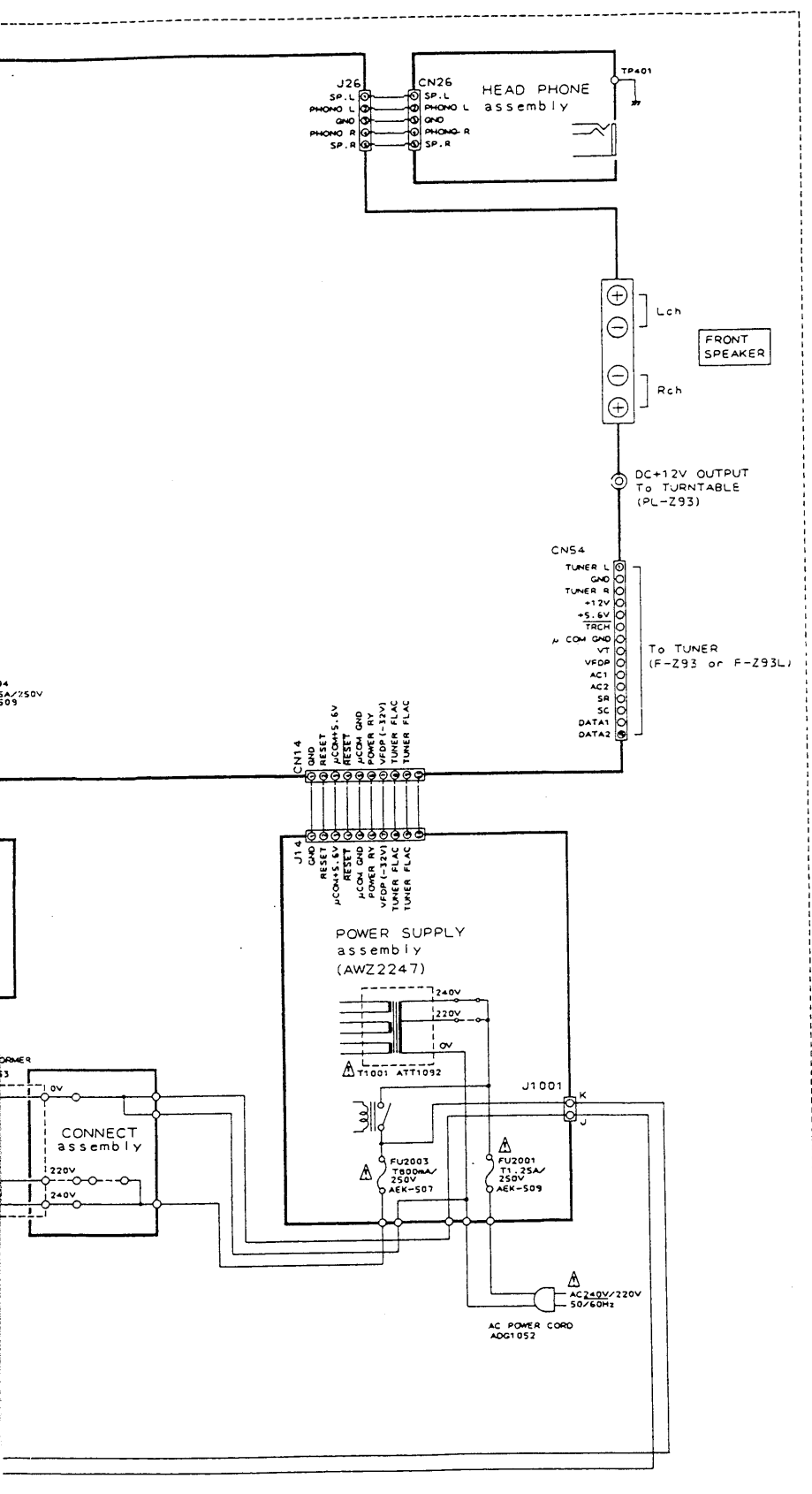
2



Note:
Refer to page 12
for LINE VOLTAGE
SELECTION.







1. RESISTORS:

Indicated in Ω , $\frac{1}{2}W$, $\frac{1}{4}W$, $\pm 5\%$ tolerance unless otherwise noted k: k Ω , M: M Ω , (F): $\pm 1\%$, (G): $\pm 2\%$, (K): $\pm 10\%$ (M): $\pm 20\%$ tolerance

2. CAPACITORS:

Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:

$\square$: Signal voltage at (33W + 33W 8 Ω) output (1kHz)
 $\square$: DC voltage (V) at no input signal
Value in () is DC voltage at rated power.
 $\leftarrow$ mA: DC current at no input signal

4. OTHERS:

$\Rightarrow$: Signal route.

$\odot$: Adjusting point.

The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

* marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

CD block

FUNCTION BOARD assembly (PWZ1381)

S201-S207, S216, S217, S222-S230

Tact SW

SWITCH BOARD assembly

S701-S704 Slide SW

SELECT BOARD assembly

S601 Slide SW

MAIN BOARD assembly (PWZ1538)

S1 Tact SW

Deck amplifier block

DECK-1 SW assembly

S811-S815 Tact SW

DECK-2 SW assembly

S821-S825 Tact SW

DECK CENTER assembly

S848 DOLBY ON-OFF

S849 REVERSE MODE

S853, S861, S862, S871, S872, S875

Tact SW

AMP, GEO CTRL assembly (AWZ2639)

S701-S705, S707 Tact SW

The underline indicates the switch position

5. LINE VOLTAGE SELECTION

• Line voltage can be changed with the following steps.

1. Disconnect the AC power cord.
2. Remove the bonnet and separate the deck amplifier block and the CD block.
3. CD block (TRANSFORMER BOARD assembly); change the position of the wire ⑥ as follows.

Voltage	Terminal No. of Transformer board assembly
220V	①
240V	②

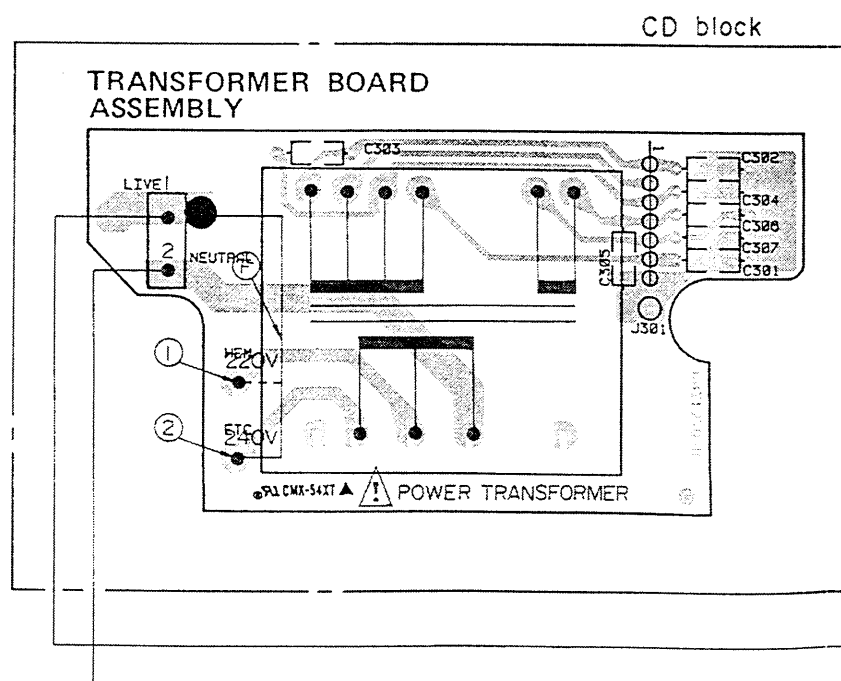
Deck amplifier block (POWER SUPPLY assembly);
Change the position of the jumper wires ①-⑤ as follows.

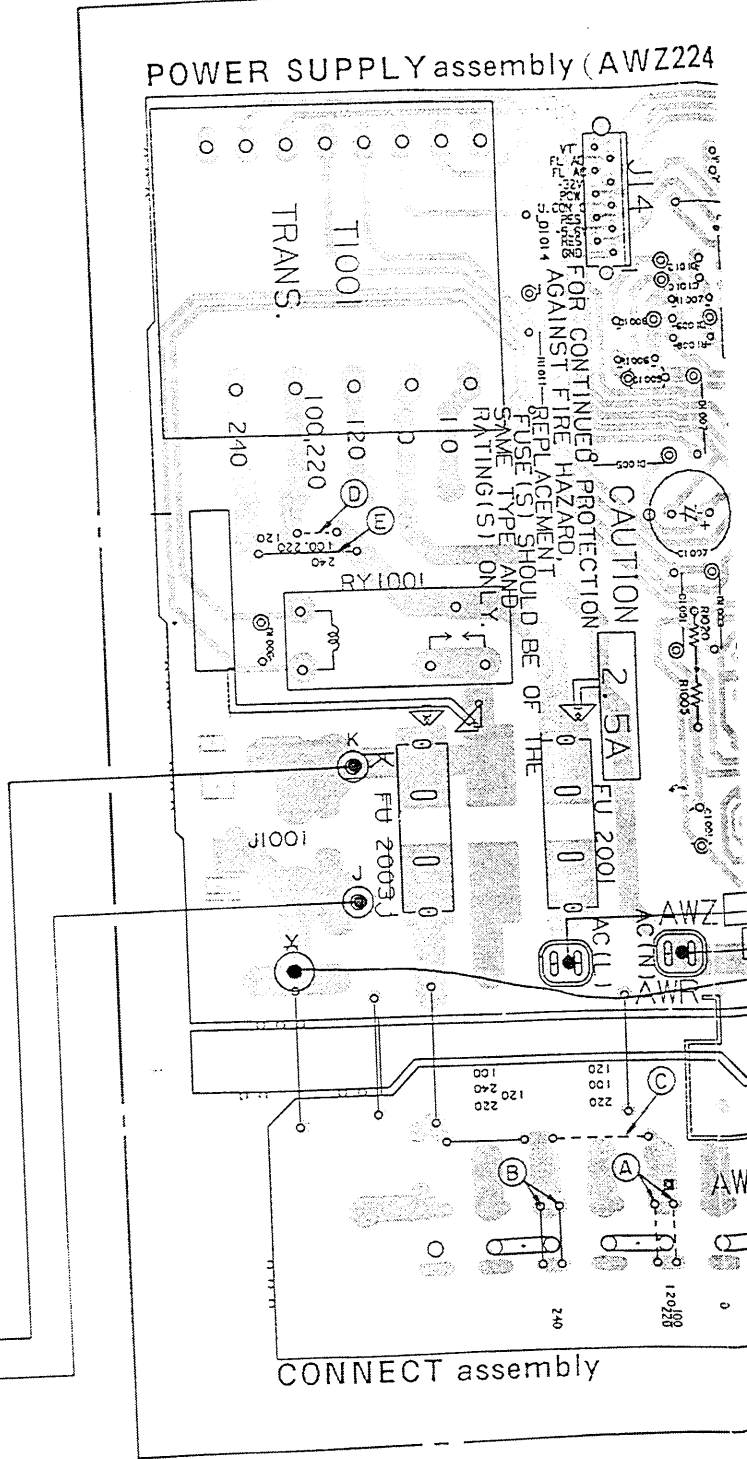
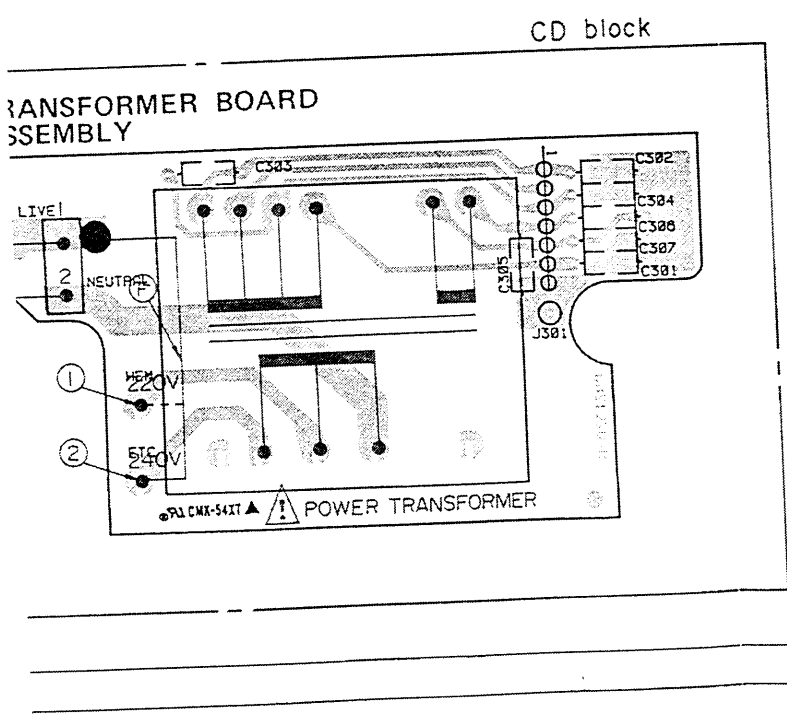
Jumper wire Voltage	220V	240V
①	○	×
②	×	○
③	○	×
④	○	×
⑤	×	○

○: Be needed
×: Be needless

4. Stick the line voltage label on the rear panel.

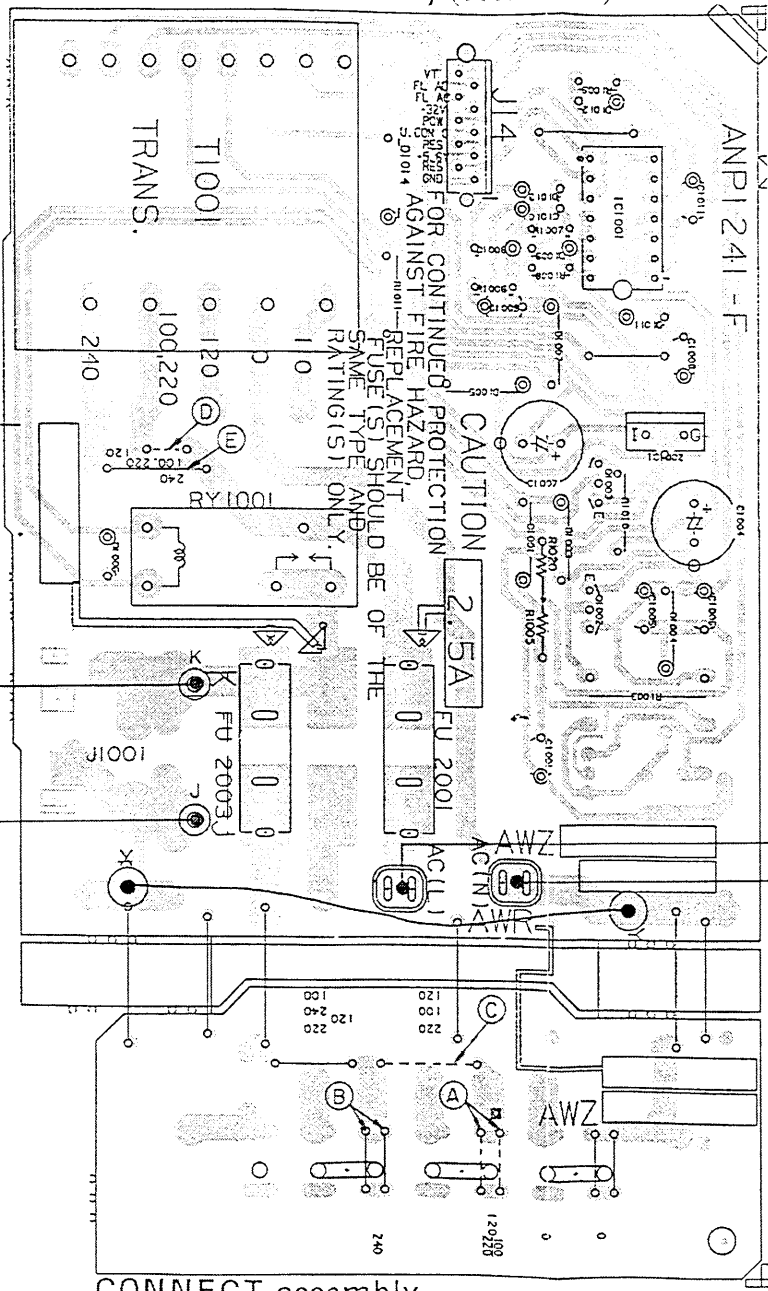
Description	Part No.
220Vlabel	AAX-193
240Vlabel	AAX-192



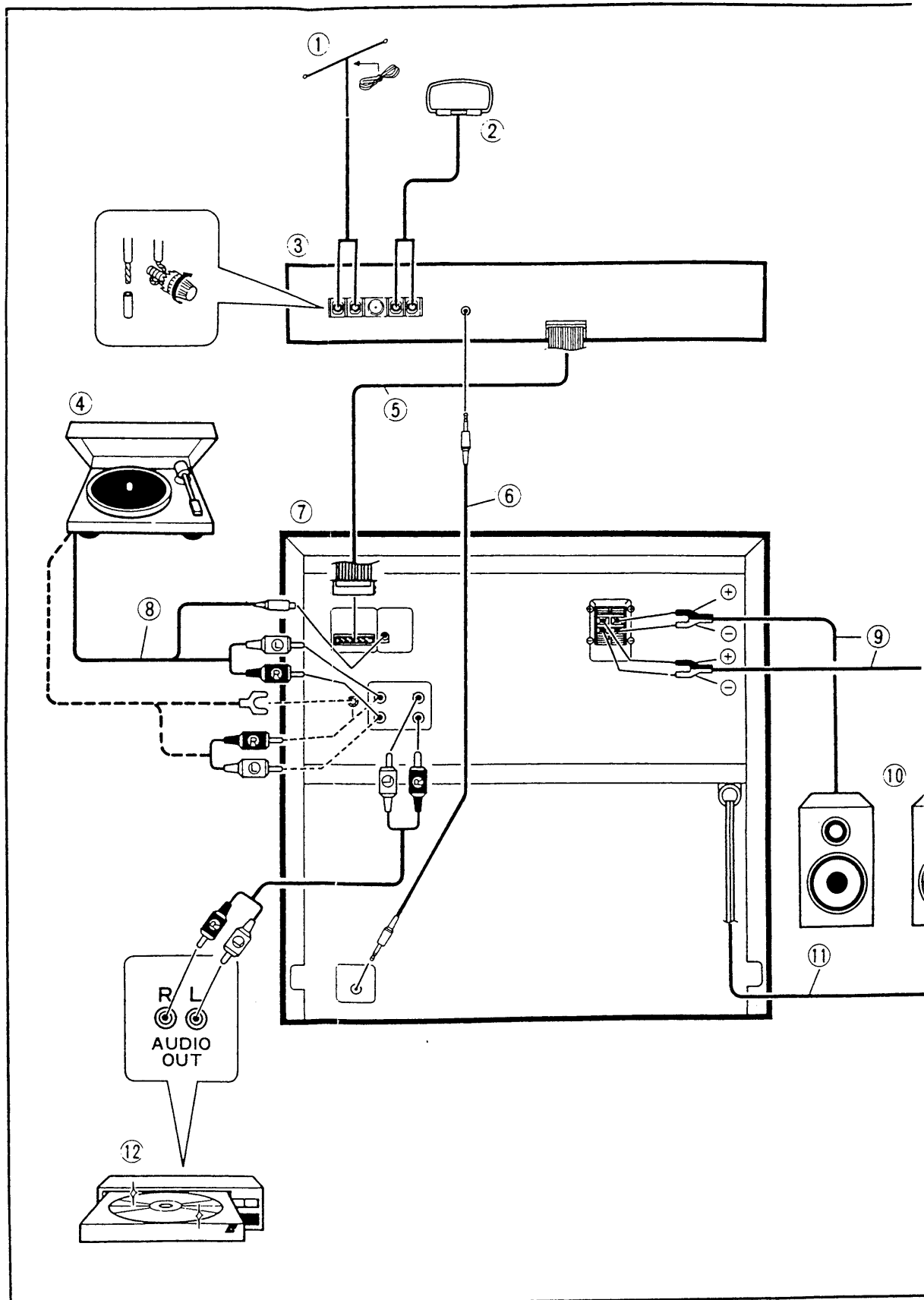


Deck amplifier block

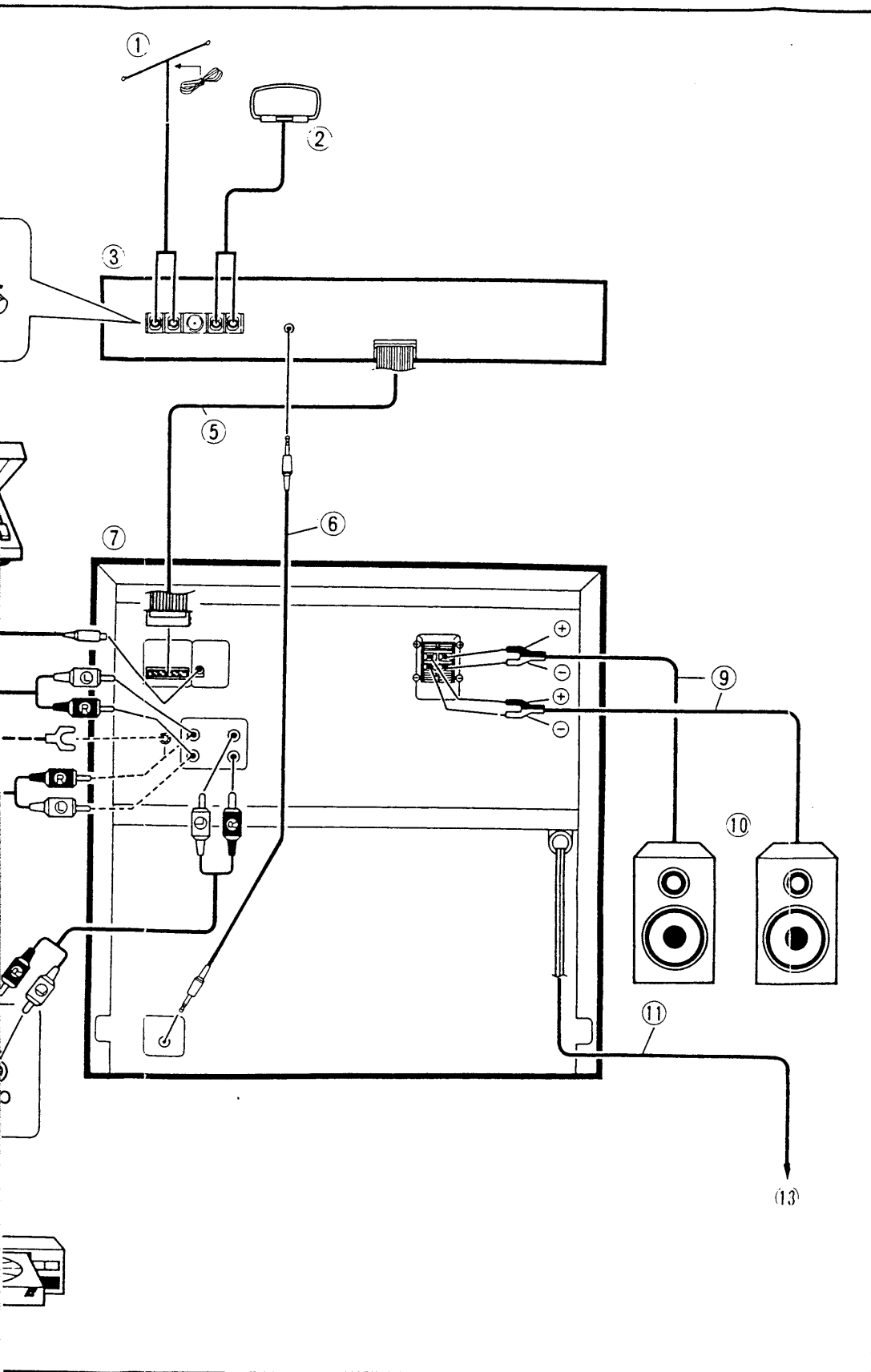
POWER SUPPLY assembly (AWZ2247)



6. CONNECTIONS



CTIONS



Refer to page 14 for the connections diagram. ①

- ① Accessory FM T-type antenna
- ② Accessory AM loop antenna
- ③ FM/AM tuner (F-Z93L)
- ④ Turntable (PL-Z93)
- ⑤ Tuner input/output cord
- ⑥ Accessory control cord
- ⑦ Multi CD cassette deck amplifier
- ⑧ Turntable output cord
- ⑨ Speakers cord
- ⑩ Speaker system
- ⑪ Power cord
- ⑫ LD player or video cassette recorder (VCR)
- ⑬ AC wall socket

Plug the power cord into the AC wall socket outlet only after all the connections have been completed.

Proceed as follows with the set-up and connections.

1. Place the tuner on top of the CD cassette deck amplifier.
2. Connect the tuner input/output cord ⑤ to CD cassette deck amplifier.

TUNER CONNECTION (Page 4, diagram ③)

Insert the connector until it locks, thus ensuring that it is connected. When disconnecting the connector, pull it in the opposite direction while pressing the left and right claws.

3. Connect the FM T-type antenna ① and the AM loop antenna ② to the tuner's antenna terminals.

Connect the control cord ⑥.

4. Place the turntable on top of the tuner.
5. Connect the turntable's cords ⑧ to the CD cassette deck amplifier's jacks.

If using the turntable PL-Z93, connect the turntable's audio cords and power supply cord respectively to the CD cassette deck amplifier's PHONO jacks and DC 12V OUTPUT jack.

If using a different turntable, connect its audio cord and ground cord.

6. Use the "VIDEO" jacks for connection to the audio jacks of an LD player or VCR.

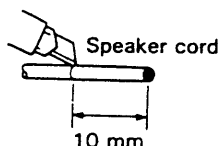
NOTE:

- Insert the plugs securely into the jacks. Improper connection can lead to sound distortion or malfunction.
- The white plug is for the left channel connection and the red plug for the right channel connection.

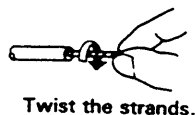
7. Connect the speaker cords ⑨ to the SPEAKERS terminals.
- Connect the "+" terminals on the CD cassette deck amplifier to the "+" terminals on the speakers, the "-" terminals on the CD cassette deck amplifier to the "-" terminals on the speakers.

Connecting the speaker cords.

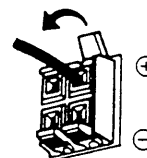
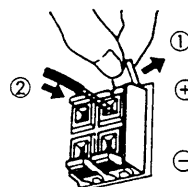
Cutter



Twist the strands.



Twist the strands.



NOTE:

Do not allow the conductors of the cords to project out of the terminals or to come into contact with other conductors. A breakdown or failure may occur when conductors touch.

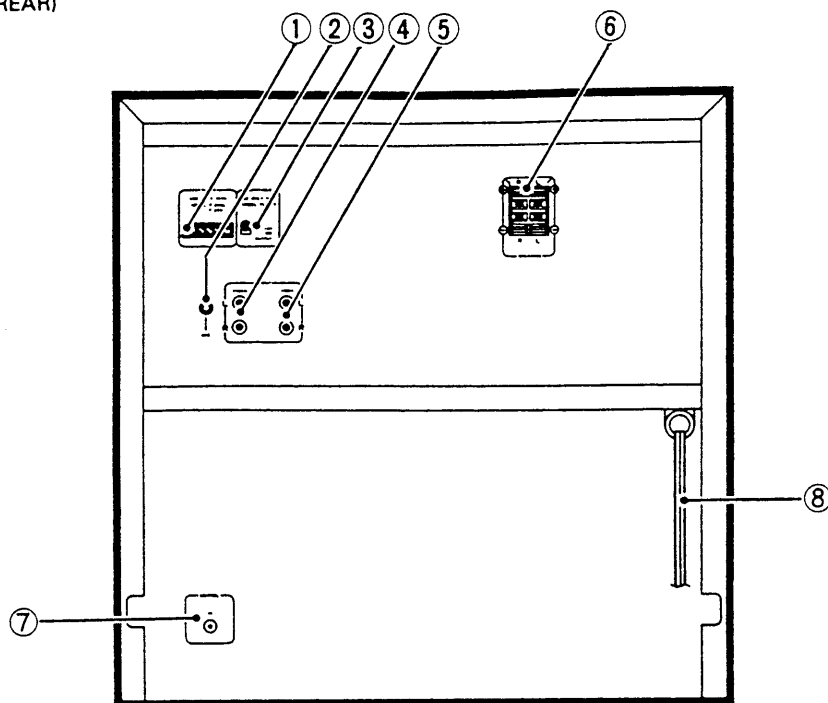
Speaker impedance

Connect speaker systems with a nominal impedance of between 6 and 16 Ω .

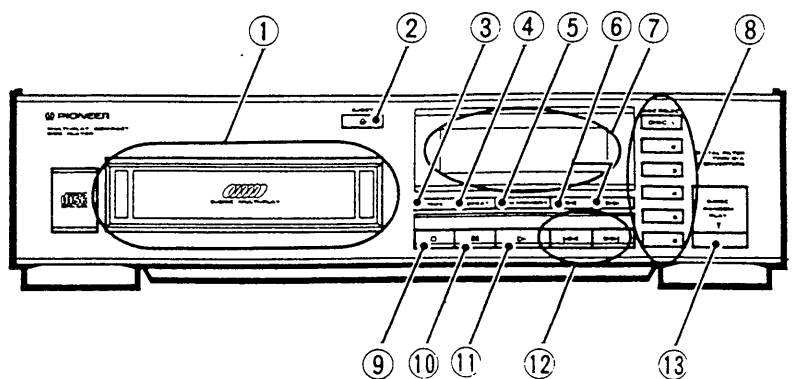
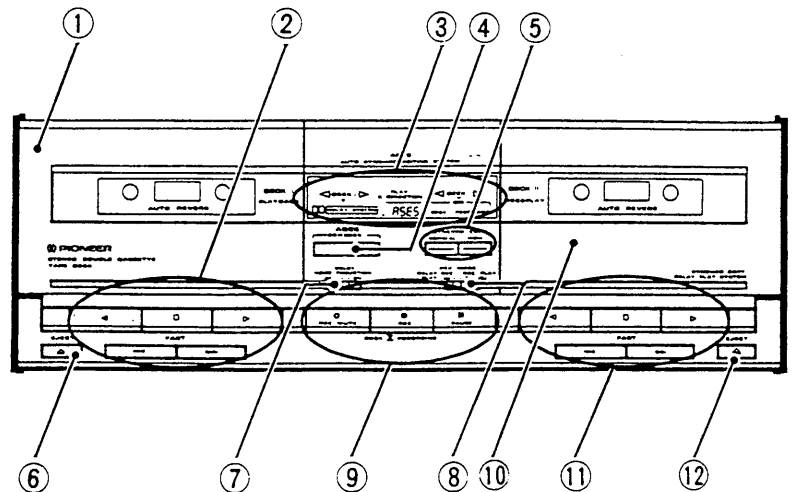
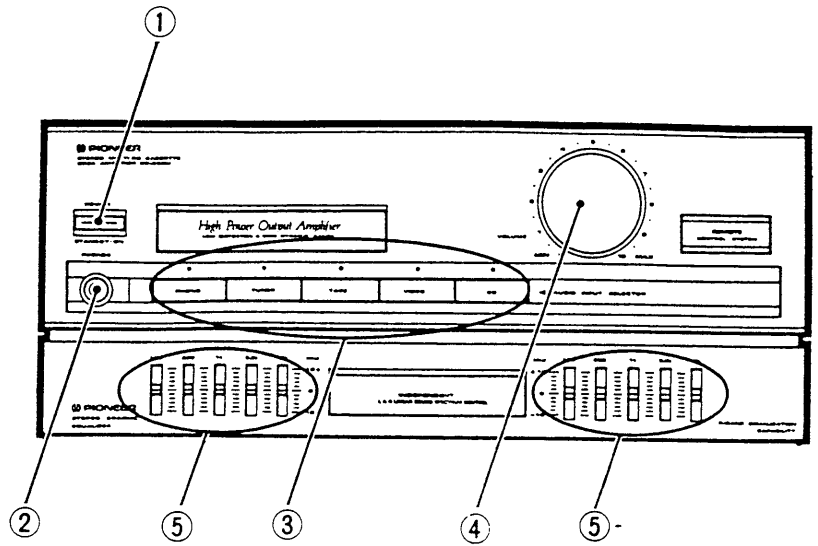
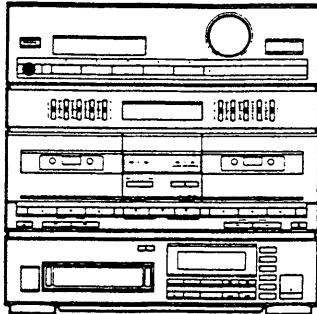
8. Finally, connect the power cord ⑪ to the AC wall socket.

7. PANEL FACILITIES

XD-Z63M (REAR)



XD-Z63M



REAR PANEL FACILITIES

Multi-CD cassette deck amplifier: XD-Z63M

① TUNER jacks

Connect the tuner input/output cord here.

② Ground terminal (GND)

Connect this to the ground terminal on the turntable (except for PL-Z93).

③ TURNTABLE (DC 12 V OUTPUT) jack

This jack supplies power to the turntable (PL-Z93).

④ PHONO input jacks

Connect the output cord of the turntable to these jacks.

⑤ VIDEO input jacks

Connect to audio output jacks of LD player or VCR, etc.

⑥ SPEAKERS terminals

L: Connecting the left speaker system as seen from the listening position.

R: Connecting the right speaker system as seen from the listening position.

NOTE:

Connect a speaker system having a nominal impedance ranging from 6Ω to 16Ω

⑦ CONTROL IN jack

Connect to CD cassette deck amplifier CONTROL OUT jack of tuner (F-Z93L)

⑧ Power cord

Connect this to the AC wall socket.

FRONT PANEL FACILITIES

Multi-CD cassette deck amplifier: XD-Z63M

- Tapes can be played back on deck I; tapes can be played back and recorded on deck II.
- Sound can be recorded as adjusted by the graphic equalizer.

Amplifier section/Graphic equalizer section

① POWER STANDBY/ON switch

This is the switch for electric power.

ON: When set to the ON position, power is supplied and the unit becomes operational.

STANDBY: When set to the STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness.

The tuner section display indicates only the time.

② PHONES (Headphones) jack

For stereo headphones.

NOTE:

There is no speaker output when headphones are plugged into the PHONES jack.

③ Input selector switches/indicators

[PHONO] Press to play records on a turntable connected to the PHONO jacks.

[TUNER] Press to listen to radio broadcast.

[TAPE] Press to listen to cassette tape.

[VIDEO] Press to listen to stereo component connected to the VIDEO jacks.

[CD] Press to listen to a CD player.

④ VOLUME control

⑤ Graphic equalizer controls

Fine adjustment in sound quality are possible using the 5 controls on the graphic equalizer.

Cassette Deck Section

① DECK I cassette door

② Deck I Operation switches--

▷ **(PLAY: FWD)** . . . For playing back a tape in the forward mode.

◁ **(PLAY: REV)** . . . For playing back a tape in the reverse mode.

□ **(STOP)** For stopping the tape.

▶▶ **FAST** Fast forward in forward mode, rewind in reverse mode.

◀◀ **FAST** Rewind in forward mode, fast forward in reverse mode.

③ Operation indicators

ASES: Lights when the A.S.E.S. (Auto Synchro Editing System) is operating.

DECK II RECORDING: Lights when recording. Flashes when copying a tape.

Slow flashing = Normal copy

Rapid flashing = High speed copy

Direction (◁, ▷): Show direction of tape travel.

④ A.S.E.S.(CD ▶ DECK II) switch

Used for automatically recording a CD on cassette tape. (See page 29)

⑤ SYNCHRO COPY switches

Used for tape copying.

NORMAL: Copying from the Deck I tape to the Deck II tape at normal recording/playback speed.

HIGH: Copying at about twice normal tape speed. (Copies can be made in about half the NORMAL time.)

⑥ Deck I EJECT switch

⑦ DOLBY* NOISE REDUCTION (DOLBY NR) switch

Set this switch to the ON position to activate the DOLBY NR system.

- Tapes recorded using Dolby noise reduction should always be played back with the noise reduction system on. Sound quality will be adversely affected if played back with the system off, or if tapes recorded using a different noise reduction system are played back with the Dolby NR system on.
- It is recommended that tapes recorded with Dolby B type NR be so marked on the label. This will help prevent incorrect setting of the noise reduction switch during playback.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

⑧ REV (REVERSE) MODE switch

Switch position	During playback	During recording
RELAY REC PLAY 	Plays both tape sides. When one deck finishes playback, the other deck begins playback of both tape sides for 6 times. If there is a tape in only one deck, then that deck continuously plays both sides of the tape for 6 times.	Records on one side (Deck II only).
REC  PLAY 	Plays both tape sides for 6 times.	Records on both sides (Deck II only).

⑨ DECK II switches

REC MUTE (○) Used for creating a blank space between songs. The unrecorded space is created for as long as this switch is kept depressed during recording.

REC (●) To set to recording standby mode. Recording begins when you press the PLAY switch (< or >).

PAUSE (□□) Temporarily stops tape travel. Cancels pause mode when pressed again.

⑩ DECK II cassette door

⑪ Deck II Operation switches:

Same as Deck I operation switches ②.

⑫ Deck II EJECT switch

CD player section

① Magazine insertion slot

② EJECT switch

Press to eject a magazine. When pressed, any magazine inside is expelled forward.

③ TIME switch

Use to select the method for displaying the playing time on the indicator panel.

Each time the switch is pressed, the indication changes from TIME, REMAIN (track remain) and REMAIN (disc remain) : This will not be displayed during programmed playback to TOTAL in that order. (For details concerning the display contents, refer to the explanation about the indicators.)

④ REPEAT switch

Press to perform repeat playback.

- If pressed during normal playback mode, all tracks on all the discs in the magazine will be played back repeatedly.
- If pressed during programmed playback, the programmed tracks will be repeatedly played back in the programmed order.
- In the case of random playback mode, after all the tracks have been played, random playback will start again.

⑤ PGM (Program) MEMORY switch

Use to program a sequence of tracks.

- Press this switch after selecting a desired disc and track with DISC SELECT and track search switches. Tunes will be added to the order in which they are specified.
- If only a DISC SELECT switch is pressed, all tracks on the specified disc will be added to the program. The letters 'AL' will appear on the indicator.

⑥ Manual search switches (<<<, >>>)

When the player is in playback or pause modes, these switches are pressed to perform fast forward or reverse operations, to allow manual searching. These operations are done only during the time either switch is pressed.

⑦ Indicators

- > (PLAY): Lights during playback.
- (PAUSE): Lights during pause mode, when playback is temporarily interrupted.
- REPEAT: Light during repeat playback.
- PROGRAM: Lights after programming (after program has been memorized).
- RANDOM: Lights during random playback.
- DISC: Indicates disc number (1-6) during playback or search.
- TRACK: Indicates track number (01-99) during playback or search.

TIME/REMAIN/TOTAL:

Changes each time the TIME switch is pressed.

- TIME: Displays the track number of the track being played and the playback time (minutes and seconds).
- REMAIN: Displays the remaining time on the track being played.
When the TIME switch is pressed again, the remaining time on the disc will be displayed.
- TOTAL: Displays the total number of tracks on one disc (TRACK) and the overall playback time (MIN, SEC).

During programmed playback operation, displays the playing time, the remaining time of the track being played and the total program steps (TOTAL).

MIN: Playing or remaining time for the track indicated by the minute.

SEC: Playing or remaining time for the track indicated by the second.

DISC Symbol ():

If a nonexistent disc is searched for, the corresponding disc symbol will go off.

⑧ DISC SELECT switches (1-6)

Use to select disc numbers for playback or programming.

⑨ Stop/clear switch ()

Press to stop playback. When pressed, the player goes into stop mode and all operations stop.

When pressed during stop mode, the program stored in memory is cleared.

⑩ Pause switch ()

Press to temporarily interrupt playback. When pressed again, the pause mode is cancelled and playback resumes.

⑪ Play switch ()

Press to begin playback, and to cancel the player from the pause mode.

⑫ Track search switches ()

When the player is in the normal playback, programmed playback or pause modes, these switches are pressed to search for a desired track. Pressing either switch causes the player to advance to the next track, or return to the previous track.

⑬ RANDOM PLAY switch

Press to begin random playback.

8. FOR HE TYPE

8.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- Parts without part number cannot be supplied.
- The $\triangle$ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

The XD-Z63M/HE type is the same as the XD-Z63M/HB type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		HB type	HE type	
	POWER SUPPLY assembly	AWZ2247	AWZ2245	Deck amplifier block
	CONNECT assembly	Non supply	Non supply	Deck amplifier block
$\triangle$	FU2001,FU2004,FU2005 Fuse (T1.25A/250V)	AEK-509	AEK-018	Deck amplifier block
$\triangle$	FU2003 Fuse (T800mA/250V)	AEK-507	AEK-031	Deck amplifier block
$\triangle$	AC Power cord	ADG1052	ADG1049	Deck amplifier block
	Operating Instructions (English)	ARB1226	.....	Packing
	Operating instructions	.....	ARC1199	Packing
	Operating instructions	.....	ARE1156	Packing
	CD block	Non supply (240V)	Non supply (220V)	*1

* 1: The only difference between the HB type CD block and the HE type CD block is connection of the power supply (220V and 240V).
For details, refer to LINE VOLTAGE SELECTION

8.2 POWER SUPPLY assembly (AWZ2245; HE type) and CONNECT assembly (HE type).

The difference in parts between the POWER SUPPLY assemblies of the HE type (AWZ2245) and the HB type (AWZ2247) is the jumper wire (220V and 240V).

The difference in parts between the CONNECT assemblies of the HE type and the HB type is the jumper wire (220V and 240V).

For details, refer to LINE VOLTAGE SELECTION

9. CD BLOCK

9.1 EXPLODED VIEWS AND PARTS LIST

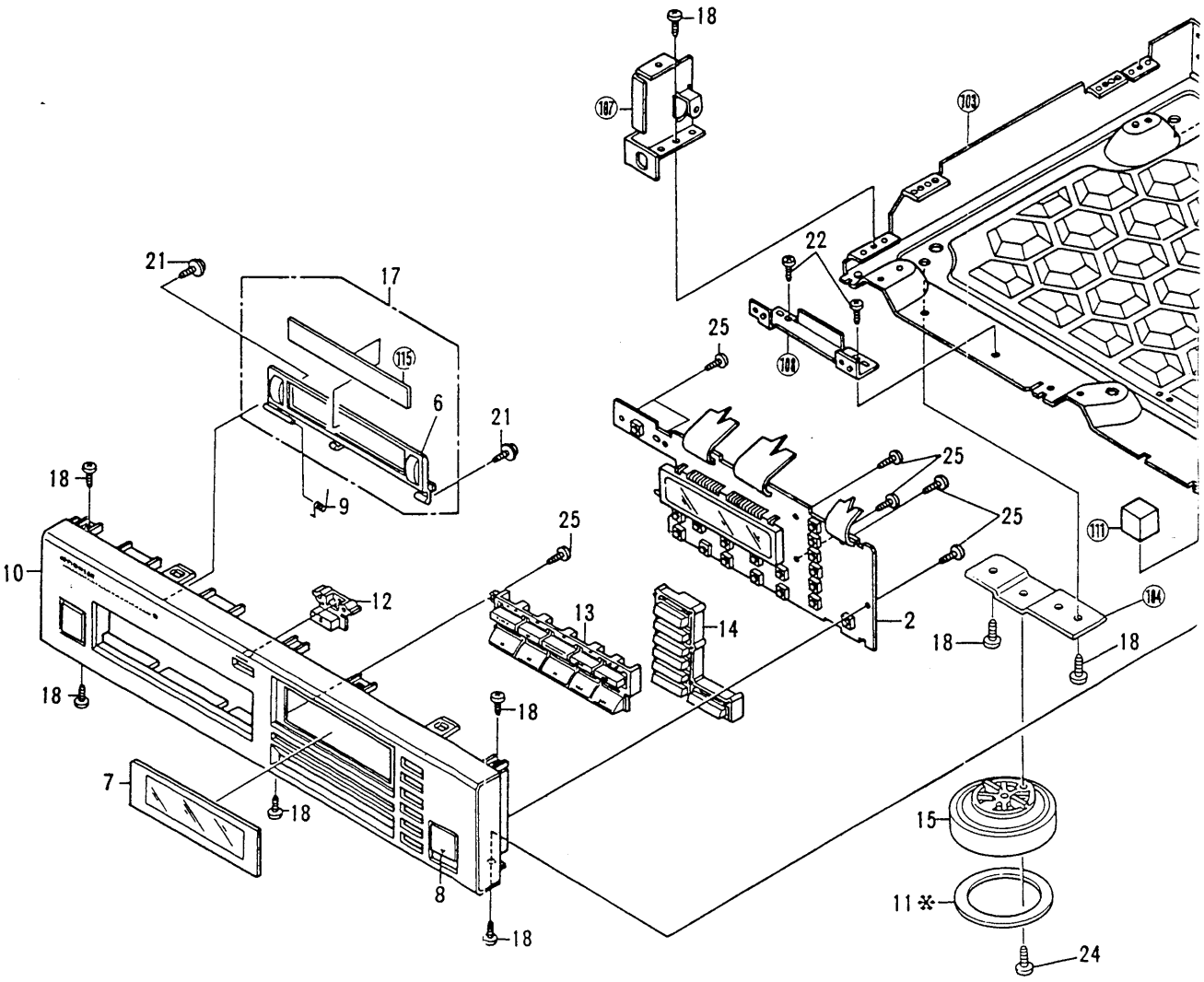
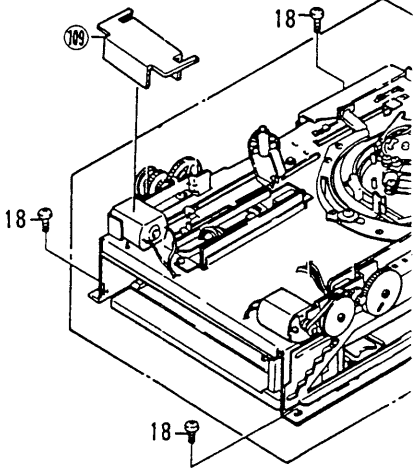
9.1.1 Exterior

A

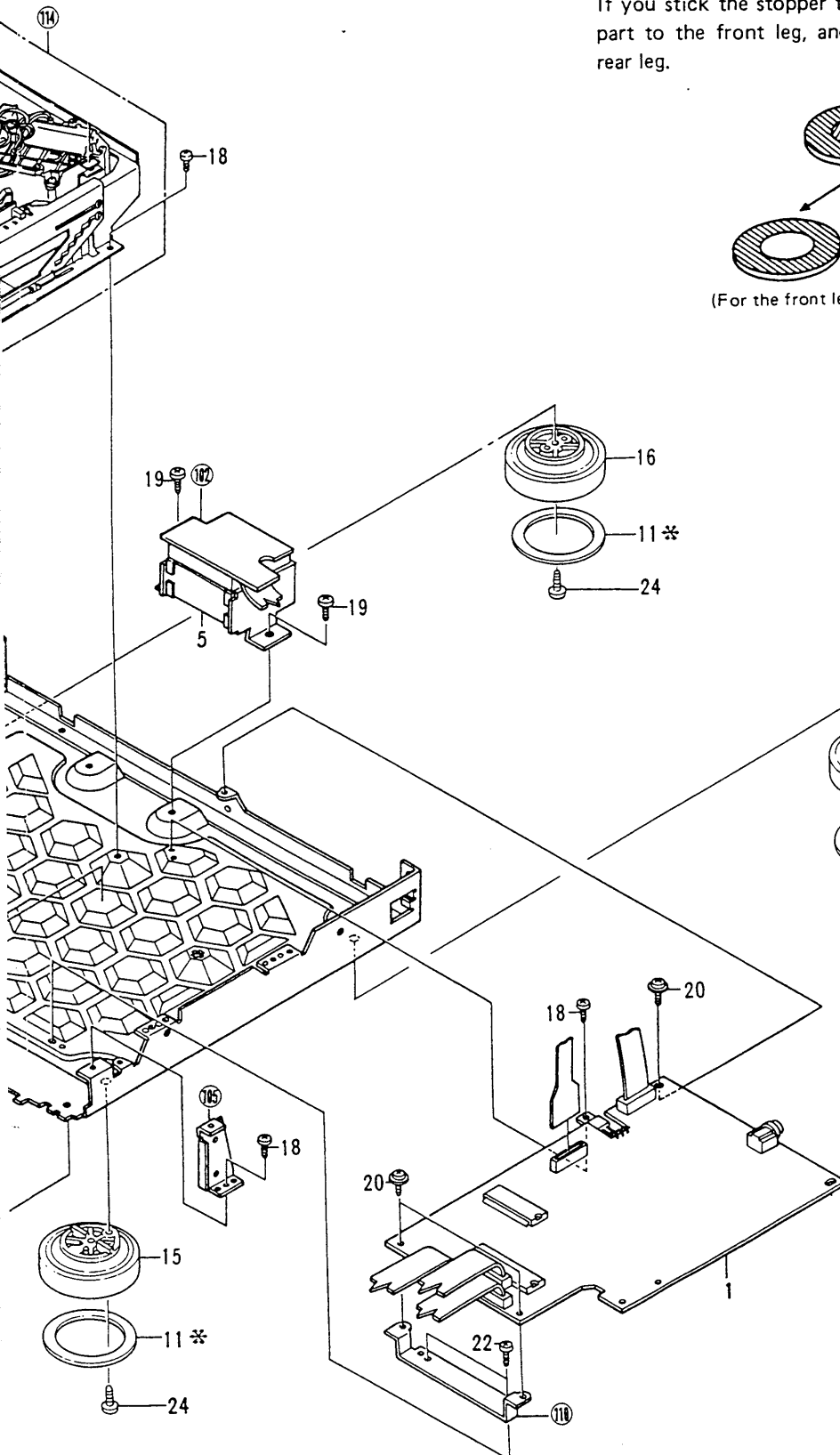
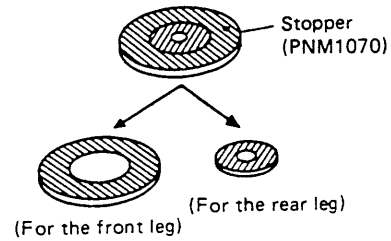
B

C

D



* The stopper consists of the big ring part and the small ring part.
If you stick the stopper to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.



A

B

C

D

NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "©" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List of Exterior

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
Δ ©	1	PWZ1538	Main board assembly		101		.....
©	2	PWZ1831	Function board assembly		102		Transformer board assembly
	3		.....		103		Base
	4		.....		104		Base plate
	5	PTT1104	Power transformer (AC220/240V)		105		Angle
	6	PNW1532	Door		106		.....
	7	PAM1419	Window		107		Front angle (A)
	8	PAM1349	Decoration plate		108		Angle (P)
	9	PBH1022	Door spring		109		Shield plate (M)
	10	PNW1747	Function panel		110		P.C.B angle
	11	PNM1070	Stopper		111		Cushion
	12	PAC1344	Eject button		112		.....
	13	PAC1425	Function button		113		.....
	14	PAC1426	Disc button		114		Multi mechanism assembly
	15	PNW1619	Insulator		115		Door name plate
	16	PNW1376	Insulator				
	17	PEA1011	Door assembly				
	18	BBZ30P080FZK	Screw				
	19	BBZ40P060FMC	Screw				
	20	IBZ30P060FCC	Screw				
	21	IPZ30P060FMC	Screw				
	22	PCZ30P040FMC	Screw				
	23	PEC-107	Binder				
	24	IBZ30P120FCC	Screw				
	25	PPZ30P100FMC	Screw				

9.1.2 Mechanism section

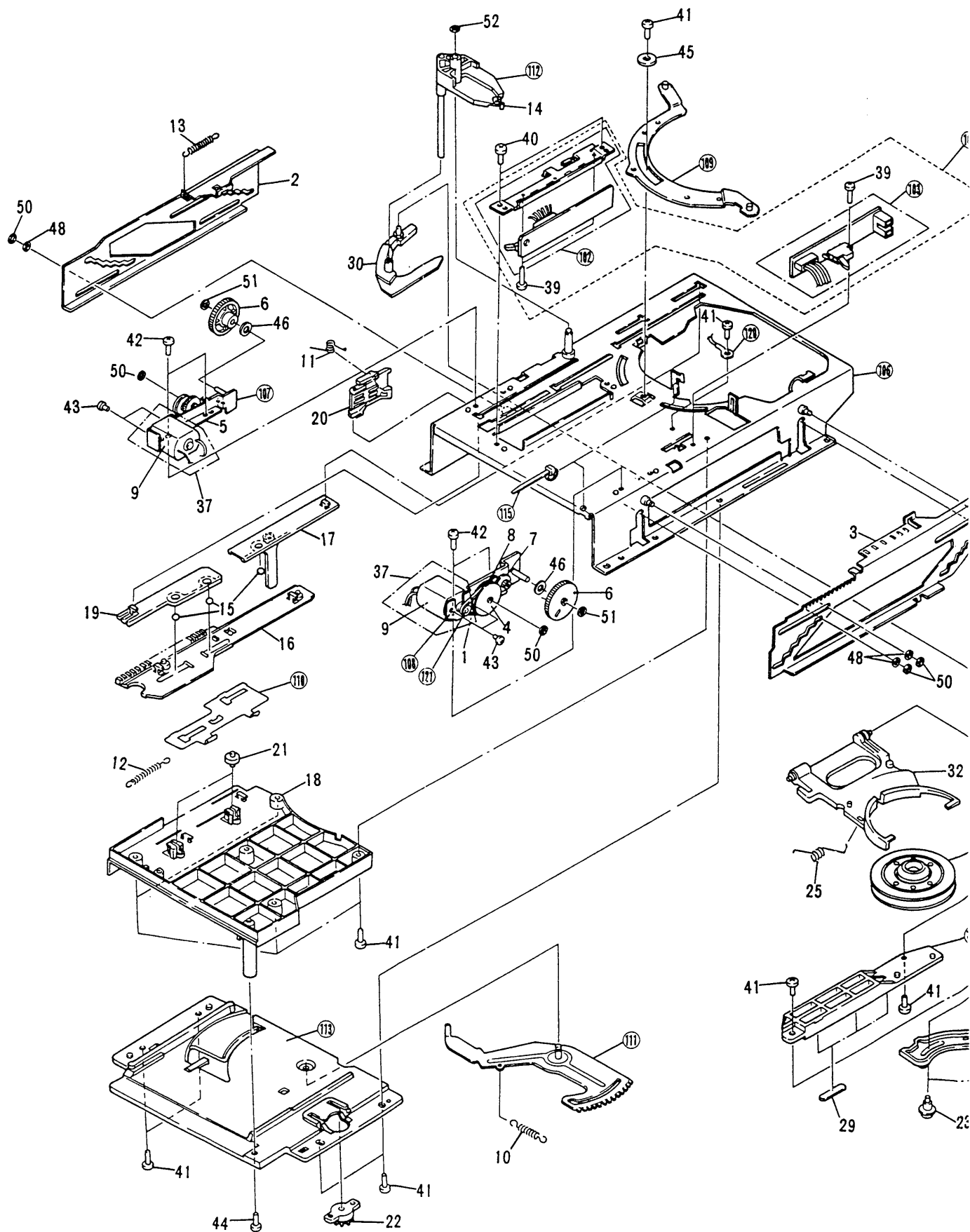
Parts List of Mechanism Section

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description	A
	1	PEB1015	Belt		51	WT26D060D013	Washer	
	2	PNB1028	Stair (L)		52	WT31D054D025	Washer	
	3	PNB1138	Stair (R)		53	BPZ20P080FZK	Screw	
	4	PNW1095	Gear pulley		54	CGDYX104M25	Semiconductive ceramic Capacitor	
	5	PNW1096	Gear					
	6	PNW1097	Gear		55	PBA1037	Screw M2 x 2.5	
	7	PNW1098	Idle gear		56	PBH1008	Drive spring	
	8	PNW1122	Gear		57	PBK1057	Plate spring	
	9	PXM1002	Motor		58	PEB1072	Belt	
	10	PBH-465	Eject spring		59	PLA1003	Drive worm	
	11	PBH1014	Lock spring		60	PLA1004	Guide bar	
	12	PBH1015	SW spring		61	PNW1063	Carriage plate	
	13	PBH1018	Stair spring		62	PNW1066	Pulley	
	14	PBK1009	Drive spring		63	PNW1520	Mechanism chassis	
	15	PBP-001	Steel ball $\phi 4$		64	PSH1003	Slide switch (INSIDE)	B
	16	PNW1099	Rack		65		.....	
	17	PNW1101	Operation plate		66	PWY1009	Pick up assembly	
	18	PNW1102	Top guide		67	PYY1027	Disc table assembly	
	19	PNW1253	Drive plate					
	20	PNW1395	Lock lever		101		Mechanism board assembly	
	21	PNY-386	Roller		102		Switch board assembly	
	22	PXC-016	Damper assembly		103		Select board assembly	
	23	PBA-125	Screw		104		Servo mechanism assembly	
	24	PBA1002	Screw		105		Spindle motor	
	25	PBH1016	Clamper spring (T)					
	26	PBH1017	Clamper spring (B)		106		Main chassis	
	27	PEB1014	Float rubber		107		Gear angle (L)	
	28	PED1001	Cushion (A)		108		Gear angle (R)	
	29	PED1002	Cushion (B)		109		Lever	
	30	PNW1105	Rotaly lever		110		SM select	
	31	PNW1106	Clamper cam		111		Eject lever	
	32	PNW1107	Clamper holder (T)		112		Drive lever	C
	33	PNW1108	Clamper holder (B)		113		Bottom guide	
	34	PNW1110	Pressure cam		114		Rubber tube	
	35	PNW1111	Upper tray		115		Binder	
	36	PNW1448	Clamper		116		Sub chassis	
	37	PYY1025	Motor assembly (CARRIAGE, LOADING, DISC SELECT)		117		Upper chassis	
	38	PYY1109	Motor assembly (with oil)		118		Upper guide	
	39	BBZ20P080FMC	Screw		119		.....	
	40	BBZ30P060FCC	Screw		120		Earth lead unit	
	41	BBZ30P060FMC	Screw		121		Motor pulley	
	42	PCZ30P040FMC	Screw		122		Magnet	
	43	PMZ20P030FMC	Screw		123		Base plate	
	44	PPZ30P080FMC	Screw		124		Carriage M board	
	45	WA30F120M100	Washer		125		Disc table	
	46	WA31D054D013	Washer					D
	47	PLA1023	Roller					
	48	WA31D054D050	Washer					
	49	WT12D032D025	Washer					
	50	WT26D047D025	Washer					

1

2

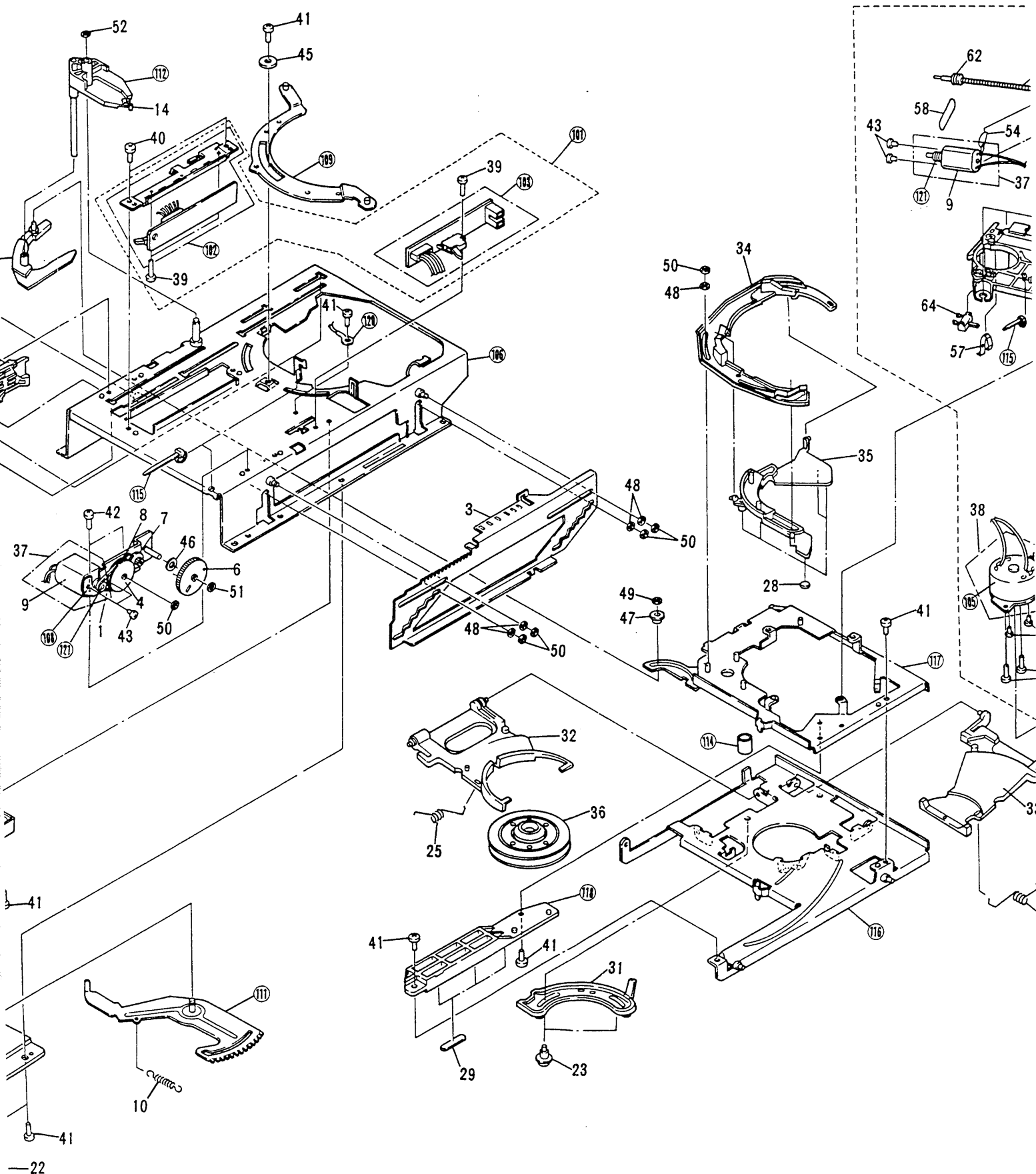
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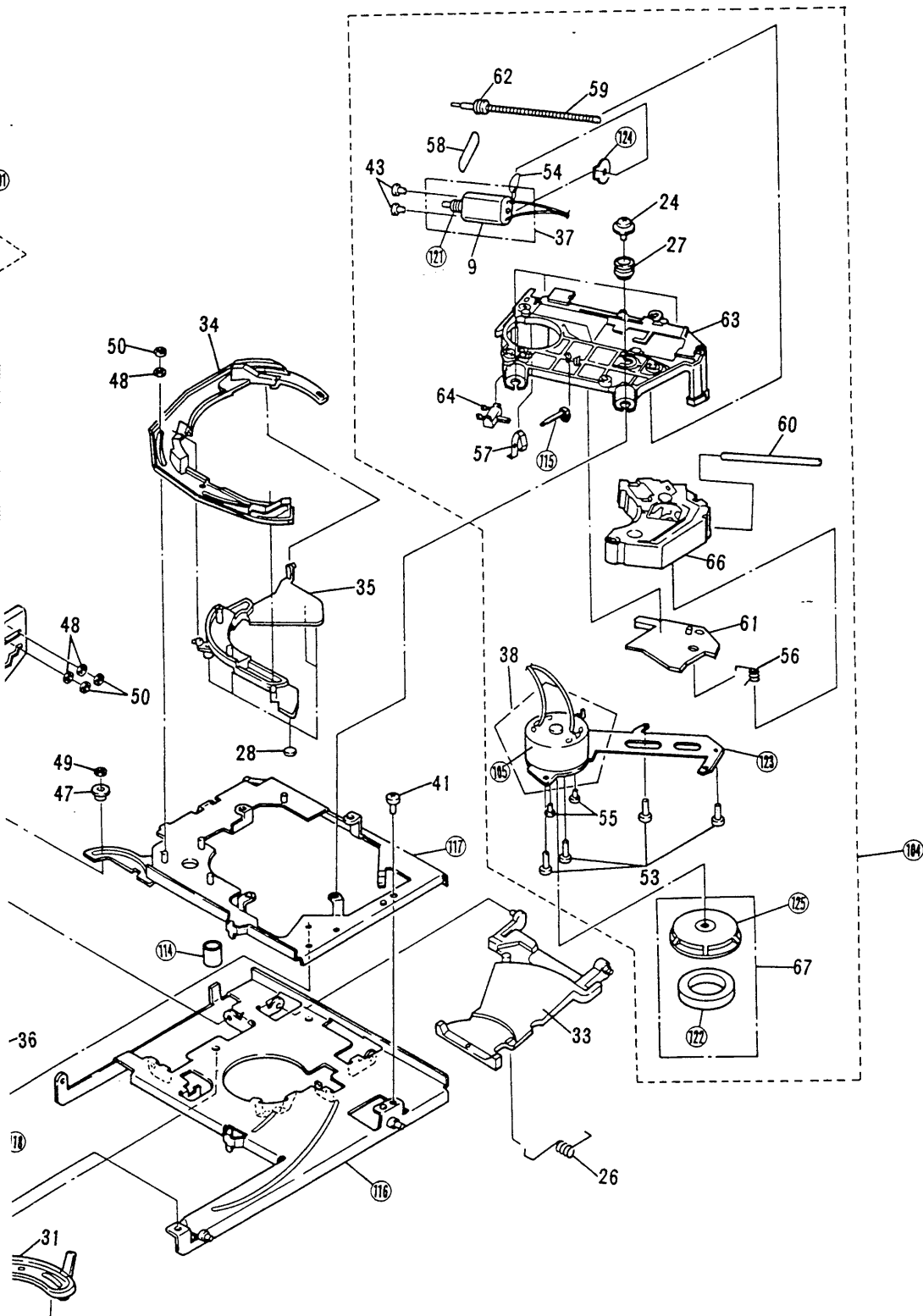


1

2

3





A A

B 3

C C

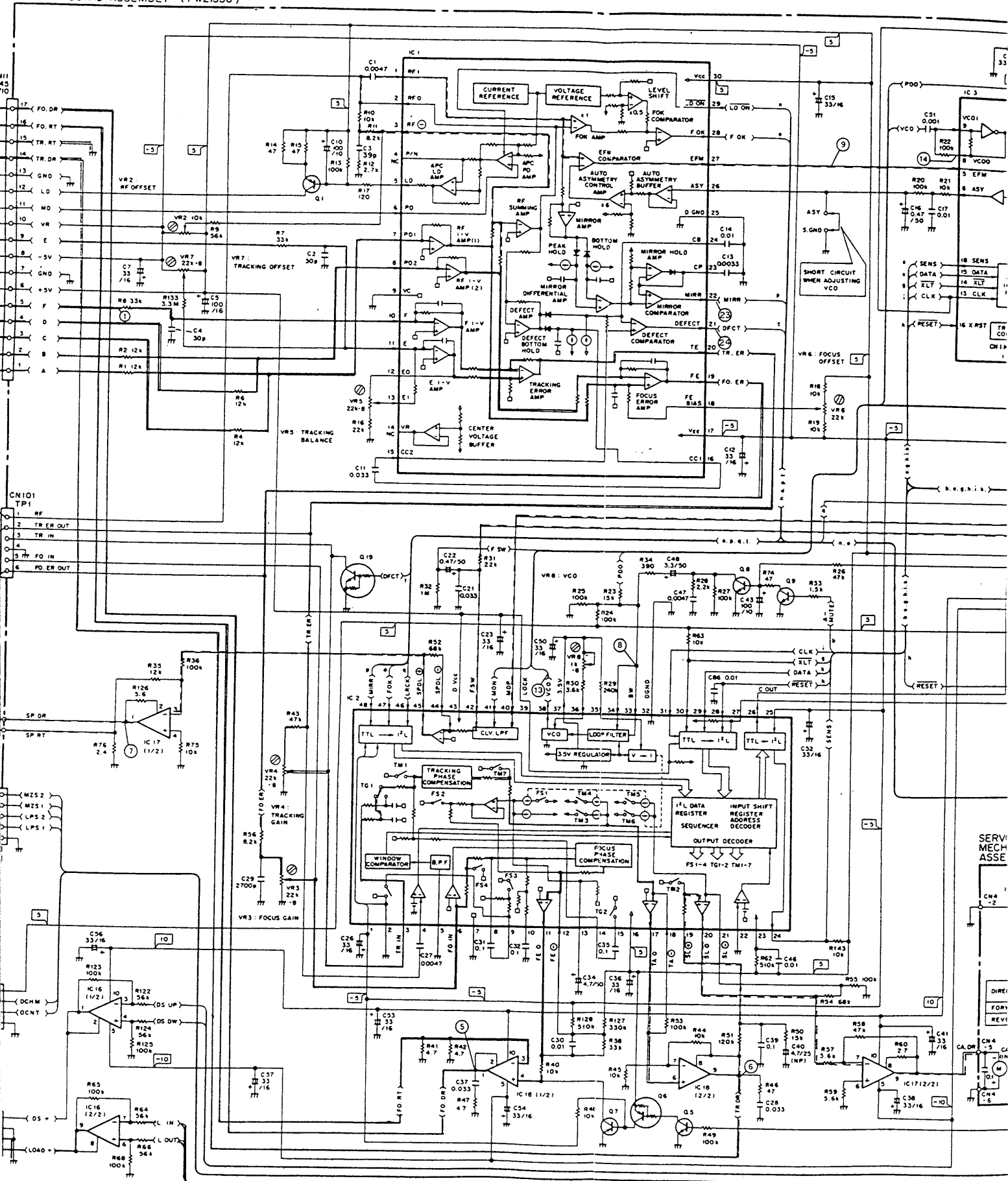
D D

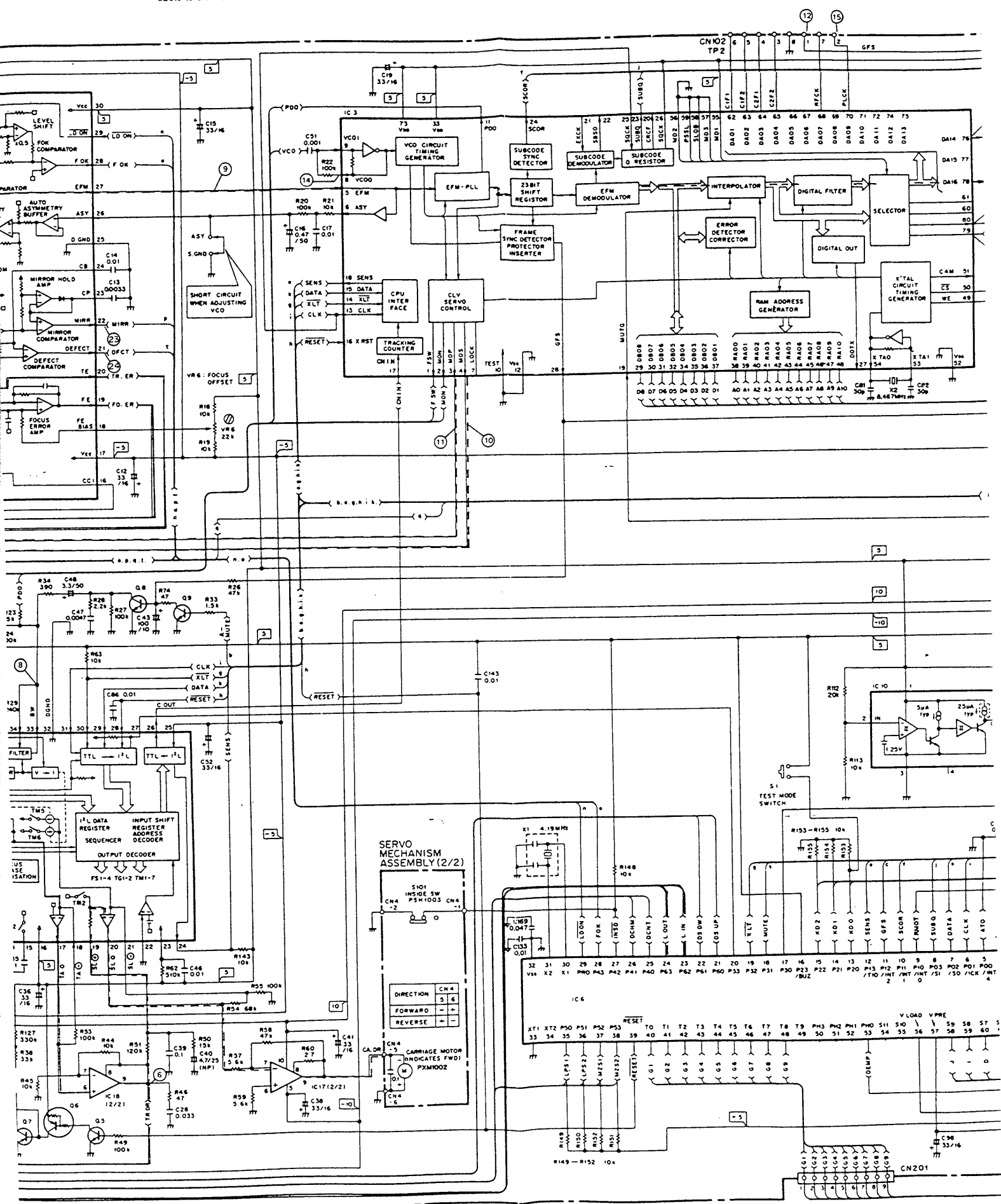
NOTE:

1. RESISTORS:

Indicated in Ω , 1/8W & 1/4W, $\pm 5\%$ tolerance unless noted k; k Ω , M; M Ω , (F); $\pm 1\%$, (G); $\pm 2\%$, (K); $\pm 20\%$ tolerance

MAIN BOARD ASSEMBLY (PWZ1538)





3. VOLTAGE, CURRENT:

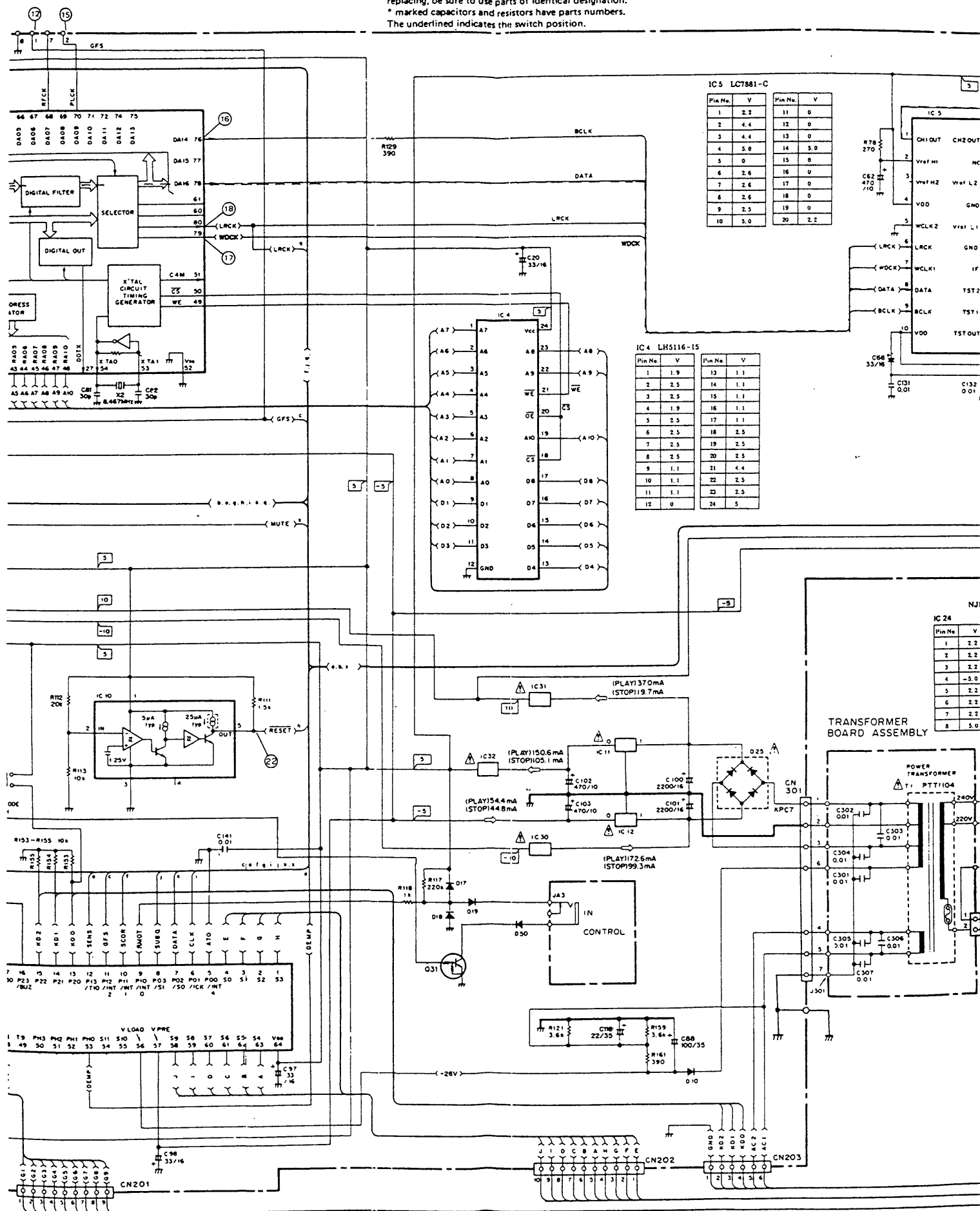
□: DC voltage (V) at PLAY state
 mA; DC current at PLAY or STOP state

4. OTHERS:

→: Signal route.
 ⊗: Adjusting point.

The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 * marked capacitors and resistors have parts numbers.
 The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit vary due to improvements in design.



nal route,
justing point.

found on some component parts indicates the
the safety factor of the part. Therefore, when
re to use parts of identical designation.
itors and resistors have parts numbers.
indicates the switch position.

This is the basic schematic diagram, but the actual circuit may
vary due to improvements in design.

MAIN BOARD ASSEMBLY

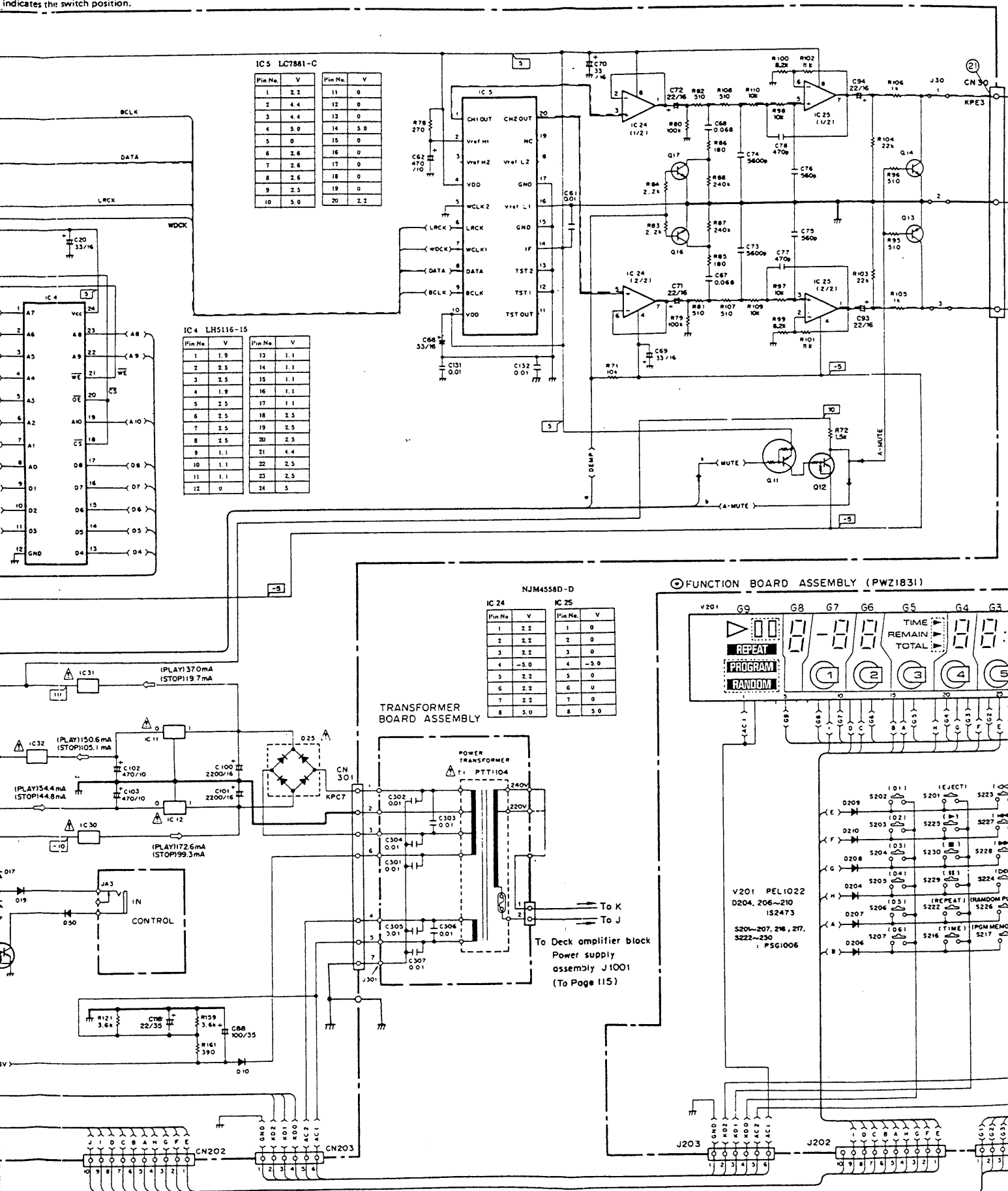
IC1 CXA1081S
IC2 CXA1082BS
IC3 CXD11300Z
IC4 LH5116-15
IC5 LC7881-C
IC6 PD4150A
IC10 MS1955AL
IC11 NJM78M05FA
IC12 NJM79M05FA

IC16 - IC18

TA8410K
NJM4558D-D
ICP N10
2SA1399
05, 8, 9, 16, 17
2SC1740S
DTA124ES
2SA932S
DTC124ES

Q13, 14 2SO1302

VR1 X1
VR2 X2
VR3 VR7
VR8 VR22
VR9 VR22
VR10 VR22
VR11 VR22
VR12 VR22
VR13 VR22
VR14 VR22
VR15 VR22
VR16 VR22
VR17 VR22
VR18 VR22
VR19 VR22
VR20 VR22
VR21 VR22
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VR92 VR22
VR93 VR22
VR94 VR22
VR95 VR22
VR96 VR22
VR97 VR22
VR98 VR22
VR99 VR22
VR100 VR22



MAIN BOARD ASSEMBLY

IC1 CXA1081S
IC2 CXA1082BS
IC3 CXD1130QZ
IC4 LMS116-15
IC5 LC7881-C
IC6 PD4150A
IC10 M51955AL
IC11 NJM78M05FA
IC12 NJM79M05FA

IC18 - IC18
IC24, 25 TAB410K
IC30 - 32 NJM4558B-D
ICF N10
Q1 2SA1399
Q5, 8, 9, 16, 17 2SC1740S
Q8, 11 DTA124ES
Q7 2SA932S
Q12, 18, 31 DTC124ES

Q13, 14 2SD1302
D10 11ES2
D17 - 19, 15S264
D50
D25 WL02ML6004

VR8 VRT56VS102
X1 VSS1N14
X2 PS1-012
S1 PSQ-064
VR2 VRT56VS103
VR3 - VR7 VRT56VS223

DC voltage of Semiconductors (at PLAY state)

IC1 CXA1081S

Pin No.	V	Pin No.	V
1	0	16	-3
2	1.3	17	-5
3	0	18	0
4	2.4	19	0
5	2.6	20	0
6	-4.8	21	-4.9
7	0	22	0
8	0	23	-1
9	0	24	-2.1
10	0	25	0
11	0	26	2.5
12	-1.2	27	2.4
13	-0.1	28	5
14	0	29	0
15	-3.1	30	5

IC2 CXA1082BS

Pin No.	V	Pin No.	V
1	-5	25	-5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	-4.1	47	5
24	5	48	0

IC3 CXD1130QZ

Pin No.	V	Pin No.	V	Pin No.	V	Pin No.	V
1	2.5	26	5	51	2.5	76	2.5
2	5	27	2.5	52	0	77	2.5
3	2.5	28	5	53	1.2	78	1.2
4	2.8	29	1.1	54	2.7	79	2.5
5	2.4	30	1.1	55	5	80	2.5
6	2.5	31	1.1	56	0		
7	5	32	1.1	57	0		
8	2.4	33	5	58	0		
9	2.4	34	1.1	59	0		
10	0	35	1.1	60	1.3		
11	1.8	36	1.1	61	1.3		
12	0	37	1.1	62	0		
13	5	38	2.5	63	0		
14	5	39	2.5	64	0		
15	5	40	2.5	65	0		
16	5	41	2.5	66	0		
17	0	42	1.9	67	0		
18	5	43	2.5	68	2.5		
19	0	44	2.5	69	2.5		
20	5	45	1.9	70	2.5		
21	0	46	2.5	71	5		
22	0	47	2.5	72	0		
23	2.0	48	2.5	73	5		
24	0	49	4.2	74	0		
25	5	50	2.5	75	2.4		

IC6 PD4150A

Pin No.	V	Pin No.	V	Pin No.	V
1	-13.4	26	5.0	51	0
2	-17.8	27	5.0	52	0
3	-11.95	28	5.0	53	-5.0
4	-12.55	29	0	54	-19.7
5	0	30	2.5	55	-7.4
6	5.0	31	2.5	56	-26.1
7	5.0	32	0	57	-5.0
8	2.0	33	0	58	-22.8
9	5.0	34	5.0	59	-7.8
10	0	35	0	60	-12.7
11	5.0	36	0	61	-4.2
12	5.0	37	0	62	-5.75
13	0	38	5.0	63	-9.6
14	0	39	5.0	64	5.0
15	0	40	-23.3		
16	0	41	-23.3		
17	5.0	42	-23.3		
18	0	43	-23.3		
19	5.0	44	-23.3		
20	5.0	45	-23.3		
21	0	46	-23.3		
22	0	47	-23.0		
23	0	48	-22.9		
24	0	49	-25.3		
25	5.0	50	5.0		

IC16 TA8410K

Pin No.	V	Pin No.	V
1	0		
2	0		
3	0		
4	0		
5	-9.6		
6	0		
7	0		
8	0		
9	0		
10	9.8		

IC17 TA8410K

Pin No.	V	Pin No.	V
1	-1.05		
2	-1.15		
3	0		
4	0		
5	-9.6		
6	0		
7	0		
8	-0.8		
9	-0.6		
10	9.8		

IC18 TA8410K

Pin No.	V	Pin No.	V
1	-1.1		
2	-1.1		
3	-0.2		
4	-0.2		
5	-9.6		
6	0		
7	0		
8	0		
9	0		
10	9.8		

IC10 M51955AL

Pin No.	V	Pin No.	V
1	5.0		
2	1.7		
3	0		
4	0		
5	5.0		

IC11 NJM78M05FA

Pin No.	V	Pin No.	V
1(N1)	9.8		
2(N2)	0		
3(N3)	5.0		

IC12 NJM79M05FA

Pin No.	V	Pin No.	V
1(N1)	9.8		
2(N2)	0		
3(N3)	5.0		

Transistors

Q No.	V	Q No.	V
Q1	3.9	Q2	3.2
Q3	0	Q4	0.7
Q5	5.0	Q6	0
Q7	0	Q8	0.2
Q9	0	Q10	0.7
Q11	5.0	Q12	-5.0
Q13	5.0	Q14	5.0
Q15	-5.0	Q16	-5.0
Q17	0	Q18	-5.0
Q19	0	Q20	-5.0
Q21	0	Q22	-4.9
Q23	0	Q24	5.0

Diodes

Di No.	V	Di No.	V
D1	3.9	D2	3.2
D3	0	D4	0.7
D5	5.0	D6	0
D7	0	D8	0.2
D9	0	D10	0.7
D11	5.0	D12	-5.0
D13	5.0	D14	5.0
D15	-5.0	D16	-5.0
D17	0	D18	-5.0
D19	0	D20	-5.0
D21	0	D22	-4.9
D23	0	D24	5.0

FOCUS SERVO LOOP

SIGNAL LINE

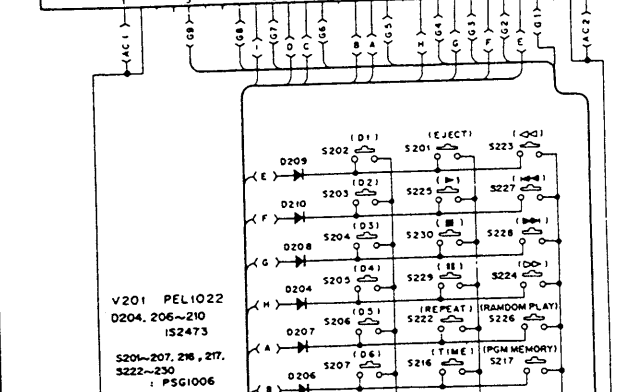
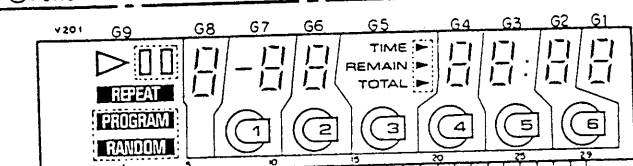
TRACKING SERVO LOOP

CARRIAGE SERVO LOOP

LOADING MOTOR

SPINDLE SERVO LOOP

FUNCTION BOARD ASSEMBLY (PWZ1831)

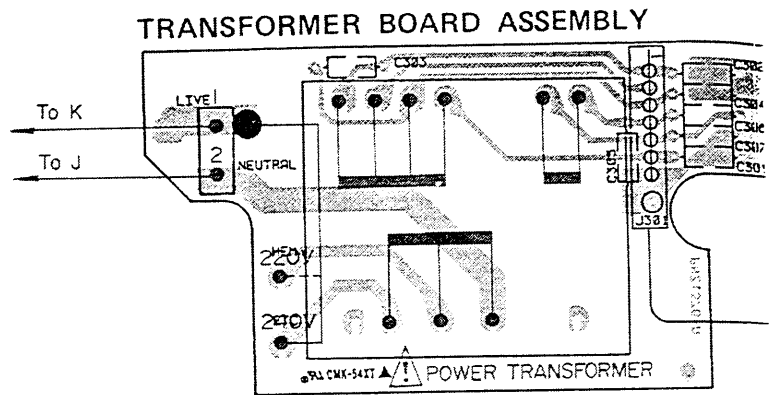


To K
To J
To amplifier block
To power supply
To J1001
Page 1151

9.3 P.C.BOARDS CONNECTION DIAGRAM

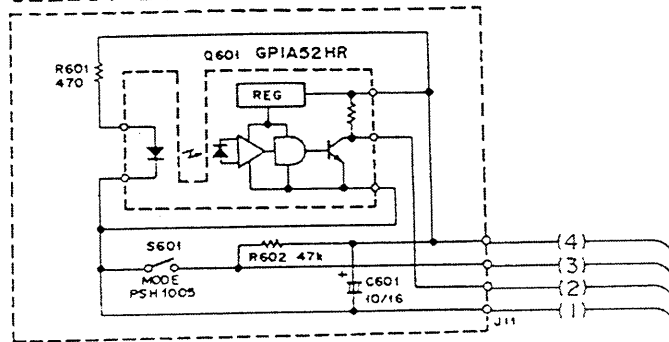
A

To Deck amplifier block
POWER SUPPLY
assembly J1001
(To Page 116)



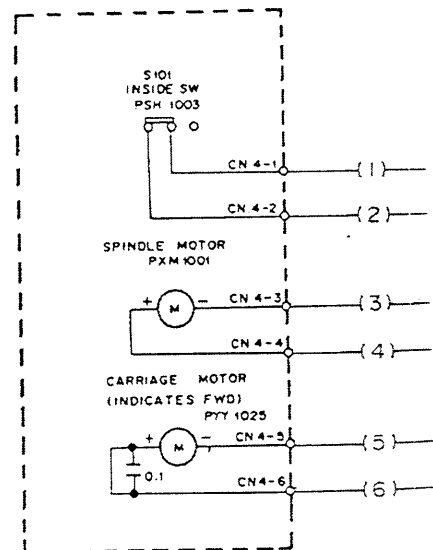
B

SELECT BOARD ASSEMBLY

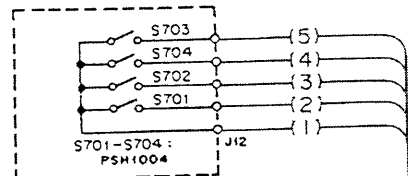
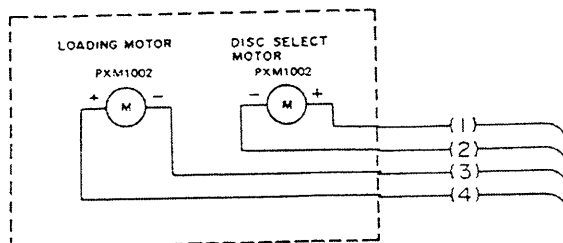


C

SERVO MECHANISM ASSEMBLY



D

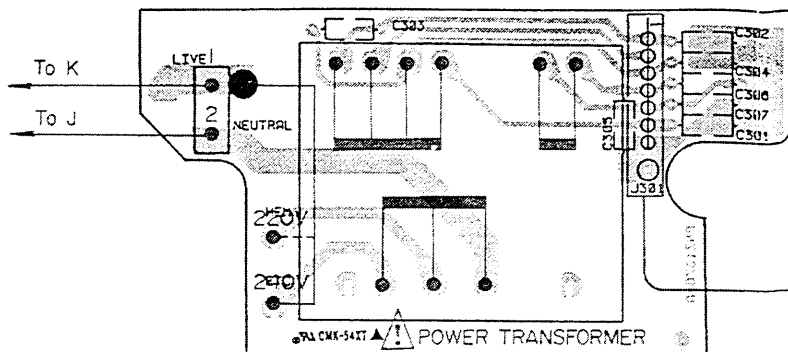


SWITCH BOARD ASSEMBLY

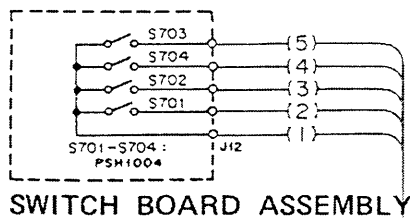
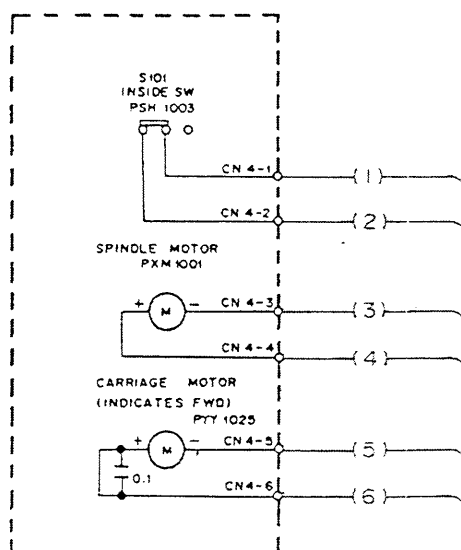
AGRAM

ifier block
UPPLY
U1001
(16)

TRANSFORMER BOARD ASSEMBLY

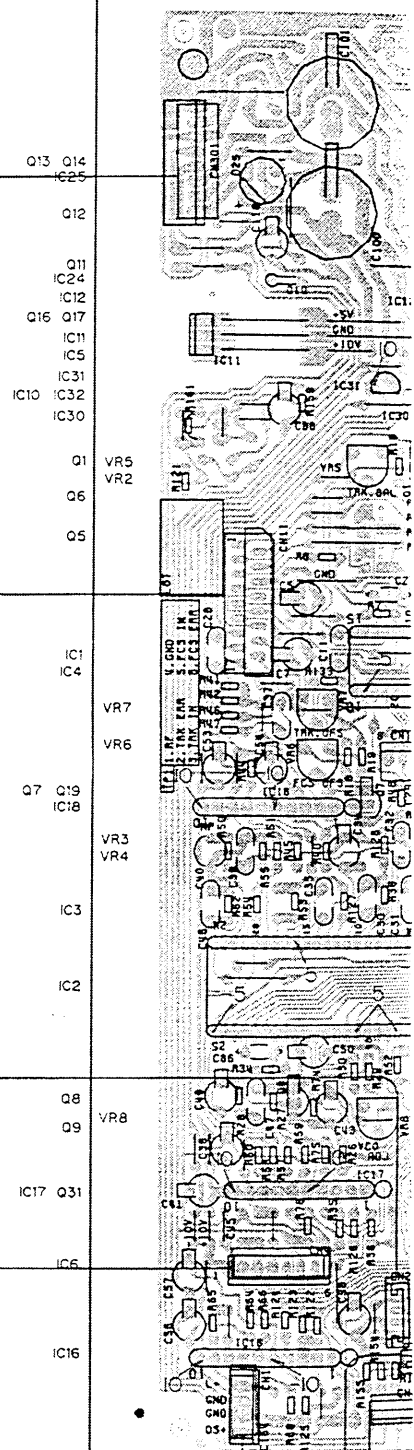


SERVO MECHANISM ASSEMBLY



SWITCH BOARD ASSEMBLY

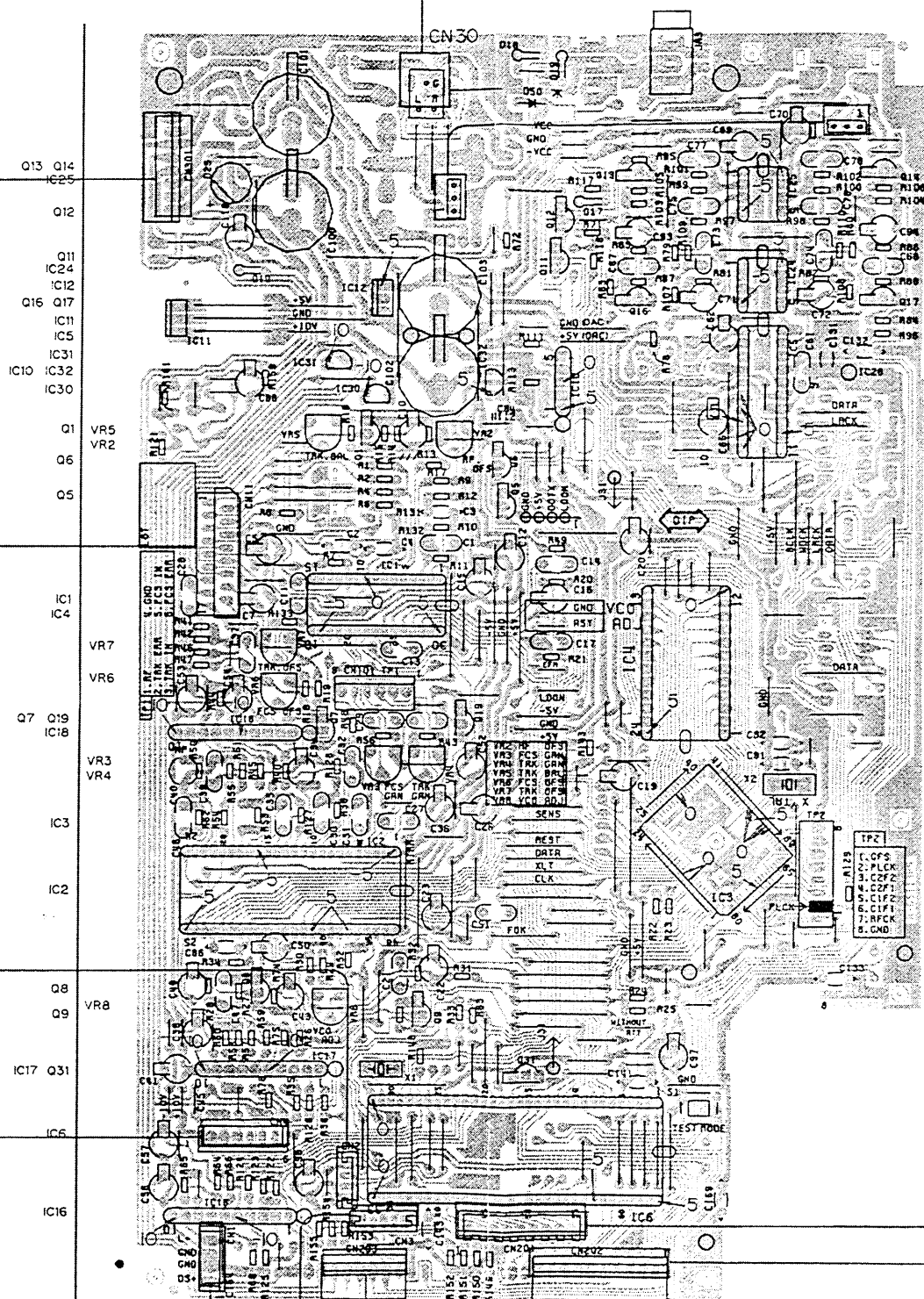
MAIN BOARD ASS



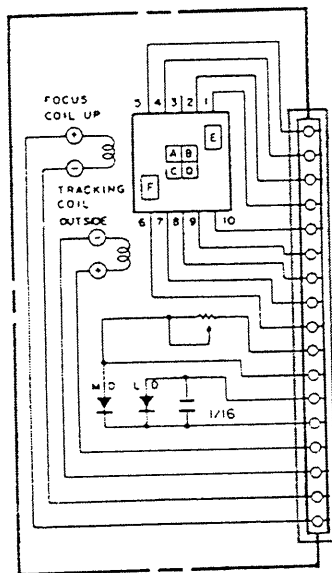
To Deck amplifier block
FUNCTION assembly
J1 (To Page 103)

PICK-1

MAIN BOARD ASSEMBLY (PWZ1538)



PICK-UP ASSEMBLY (PWY1009)



DC voltage of Semiconductors (at PLAY state)

IC1 CXA1081S

Pin No.	V	Pin No.	V
1	0	16	-2
2	1.3	17	-5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	-4.8	21	-4.9
7	0	22	0
8	0	23	-1
9	0	24	-2.1
10	0	25	0
11	0	26	2.5
12	-1.2	27	2.4
13	-0.1	28	3
14	0	29	0
15	-3.1	30	5

IC2 CXA1082BS

Pin No.	V	Pin No.	V
1	-5	25	-5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	-4.1	47	5
24	5	48	0

IC3 CXD1130QZ

Pin No.	V	Pin No.	V	Pin No.	V	Pin No.	V
1	2.5	26	5	51	2.3	76	2.3
2	5	27	2.5	52	0	77	2.3
3	2.5	28	5	53	2.2	78	1.2
4	2.8	29	1.1	54	2.2	79	2.5
5	2.4	30	1.1	55	5	80	2.5
6	2.5	31	1.1	56	0		
7	5	32	1.1	57	0		
8	2.4	33	5	58	0		
9	2.4	34	1.1	59	0		
10	0	35	1.1	60	1.3		
11	1.8	36	1.1	61	1.3		
12	0	37	1.1	62	0		
13	5	38	2.5	63	0		
14	5	39	2.5	64	0		
15	5	40	2.5	65	0		
16	5	41	2.5	66	0		
17	0	42	1.9	67	0		
18	5	43	2.5	68	2.5		
19	0	44	5	69	2.5		
20	5	45	1.9	70	2.3		
21	0	46	2.5	71	5		
22	0	47	2.5	72	0		
23	2.9	48	2.5	73	5		
24	0	49	4.2	74	0		
25	5	50	2.5	75	2.4		

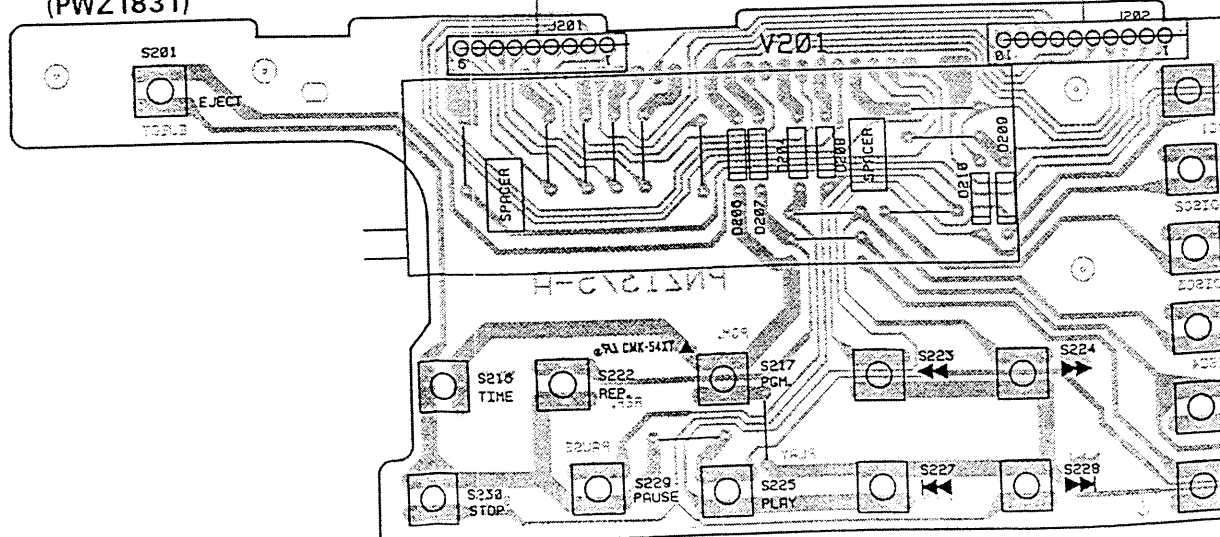
IC4 LH511

Pin No.	V
1	1.9
2	2.5
3	2.5
4	1.9
5	2.5
6	2.5
7	2.5
8	2.5
9	1.1
10	1.1
11	1.1
12	0

IC5 LC788

Pin No.	V
1	2.5
2	4.4
3	4.4
4	5.1
5	0
6	2.1
7	2.1
8	2.1
9	2.1
10	5

FUNCTION BOARD ASSEMBLY (PWZ1831)



DC voltage of Semiconductors (at PLAY state)

IC1 CXA1061S

Pin No.	V	Pin No.	V
1	0	16	-3
2	1.3	17	-5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	-4.8	21	-4.9
7	0	22	0
8	0	23	-1
9	0	24	-2.1
10	0	25	0
11	0	26	2.5
12	-1.2	27	2.4
13	-0.1	28	5
14	0	29	0
15	-3.1	30	5

IC2 CXA1082BS

Pin No.	V	Pin No.	V
1	-5	25	-5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.3
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	-4.1	47	5
24	5	48	0

IC3 CXD1130QZ

Pin No.	V	Pin No.	V	Pin No.	V	Pin No.	V
1	2.5	26	5	51	1.3	76	2.3
2	5	27	2.5	52	0	77	2.3
3	2.5	28	5	53	2.2	78	1.2
4	2.8	29	1.1	54	2.2	79	2.5
5	5.4	30	1.1	55	5	80	2.5
6	2.5	31	1.1	56	0		
7	5	32	1.1	57	0		
8	2.4	33	5	58	0		
9	2.4	34	1.1	59	0		
10	0	35	1.1	60	1.3		
11	1.8	36	1.1	61	1.2		
12	0	37	1.1	62	0		
13	5	38	2.5	63	0		
14	5	39	2.5	64	0		
15	5	40	2.5	65	0		
16	5	41	2.5	66	0		
17	0	42	1.9	67	0		
18	5	43	2.5	68	2.5		
19	0	44	2.5	69	2.5		
20	5	45	1.9	70	2.3		
21	0	46	2.5	71	5		
22	0	47	2.5	72	5		
23	2.0	48	2.5	73	5		
24	0	49	4.2	74	0		
25	5	50	2.5	75	2.4		

IC4 LH5116-15

Pin No.	V	Pin No.	V
1	1.9	13	1.1
2	2.5	14	1.1
3	2.5	15	1.1
4	1.9	16	1.1
5	2.5	17	1.1
6	2.5	18	2.5
7	2.5	19	2.5
8	2.5	20	2.5
9	1.1	21	4.4
10	1.1	22	2.5
11	1.1	23	2.5
12	0	24	5

IC5 LC7881-C

Pin No.	V	Pin No.	V
1	2.2	11	0
2	4.4	12	0
3	4.4	13	0
4	5.0	14	5.0
5	0	15	0
6	2.6	16	0
7	2.6	17	0
8	2.6	18	0
9	2.5	19	0
10	5.0	20	2.2

IC6 PD4150A

Pin No.	V	Pin No.	V	Pin No.	V
1	-13.4	26	5.0	51	0
2	-17.8	27	5.0	52	5.0
3	-11.95	28	5.0	53	-5.0
4	-12.55	29	0	54	-19.7
5	0	30	2.3	55	-7.4
6	5.0	31	2.5	56	-26.1
7	5.0	32	0	57	-5.0
8	2.0	33	0	58	-22.8
9	5.0	34	5.0	59	-7.8
10	0	35	0	60	-12.7
11	5.0	36	0	61	-4.2
12	5.0	37	0	62	-5.75
13	0	38	5.0	63	-9.6
14	0	39	5.0	64	5.0
15	0	40	-23.3		
16	0	41	-23.3		
17	5.0	42	-23.3		
18	0	43	-23.3		
19	5.0	44	-23.3		
20	5.0	45	-23.3		
21	0	46	-23.3		
22	0	47	-23.0		
23	0	48	-25.9		
24	0	49	-25.3		
25	5.0	50	5.0		

IC10 MS1955AL

Pin No.	V
1	5.0
2	1.7
3	0
4	0
5	5.0

IC16 TA8410K

Pin No.	V
1	0
2	0
3	0
4	0
5	-9.6
6	0
7	0
8	0
9	0
10	9.8

IC12 NJM79M05FA

Pin No.	V
1	0
12ND1	0
12N2	-9.6
OUT3	-5.0

IC17 TA8410K

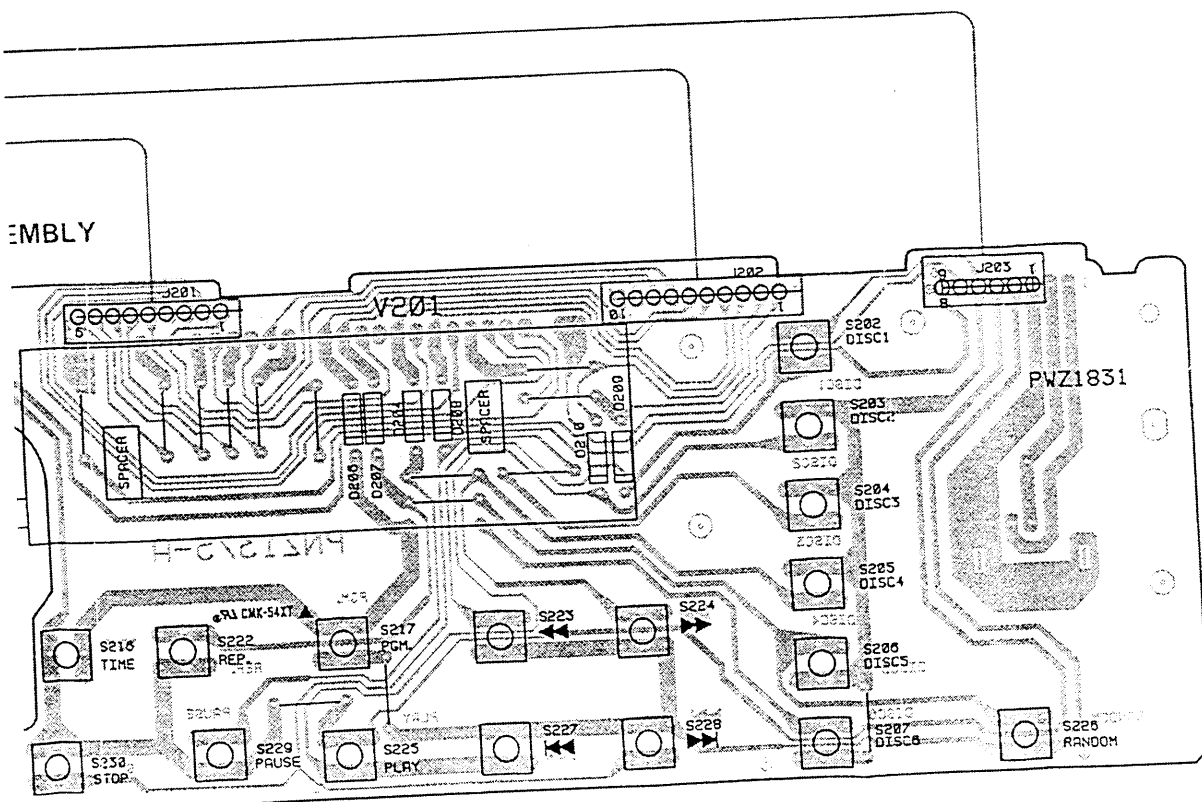
Pin No.	V
1	-1.85
2	-1.15
3	0
4	0
5	-9.6
6	0
7	0
8	-0.8
9	-0.6
10	9.8

IC11 NJM78M05FA

Pin No.	V
1	0
12ND1	0
12N2	5.0

P.C.B. pattern diagram indication	Corresponding symbol

1. This P.C.B. connection diagram is
2. The parts which have been mounted above Table.
3. The capacitor terminal marked with
4. The diode terminal marked with O shows
5. The transistor terminal marked with



IC 6 PD4150A

Pin No.	V	Pin No.	V	Pin No.	V
1	-13.4	20	5.0	31	0
2	-17.8	27	5.0	32	5.0
3	-11.95	28	5.0	33	-5.0
4	-12.56	29	0	34	-19.7
5	0	30	2.3	35	-7.4
6	5.0	31	2.5	36	-26.1
7	5.0	32	0	37	-5.0
8	2.0	33	0	38	-22.8
9	5.0	34	5.0	39	-7.8
10	0	35	0	40	-12.7
11	5.0	36	0	61	-4.5
12	5.0	37	0	62	-5.75
13	0	38	5.0	63	-9.6
14	0	39	5.0	64	5.0
15	0	40	-23.3		
16	0	41	-23.3		
17	5.0	42	-23.3		
18	0	43	-23.3		
19	5.0	44	-23.3		
20	5.0	45	-23.3		
21	0	46	-23.3		
22	0	47	-23.0		
23	0	48	-22.9		
24	0	49	-22.3		
25	5.0	50	5.0		

IC 10 MS1955AL

Pin No.	V
1	5.0
2	1.7
3	0
4	0
5	5.0

IC 12 NJM79M05FA

Pin No.	V
(IN)1	0
(IN)2	-9.6
(OUT)3	-5.0

IC 11 NJM78M05FA

Pin No.	V
(IN)1	9.8
(IN)2	0
(OUT)3	5.0

IC 16 TA8410K

Pin No.	V
1	0
2	0
3	0
4	0
5	-9.6
6	0
7	0
8	0
9	0
10	9.8

IC 17 TA8410K

Pin No.	V
1	-1.05
2	-1.15
3	0
4	0
5	-9.6
6	0
7	0
8	-0.8
9	-0.6
10	9.8

IC 18 TA8410K

Pin No.	V
1	-1.1
2	-1.1
3	-0.2
4	-0.2
5	-9.6
6	0
7	0
8	0
9	0
10	9.8

NJM4558D-D

Pin No.	V
1	2.2
2	2.2
3	2.2
4	0
5	2.2
6	2.2
7	0
8	2.2
9	5.0
10	5.0

IC 25

Pin No.	V
1	0
2	0
3	0
4	-5.0
5	0
6	0
7	0
8	5.0

Transistors

Q No.	E	C	B
Q 1	2.9	2.0	3.2
Q 5	0	0	0.7
Q 6	5.0	5.0	0
Q 7	0	-0.2	5.0
Q 8	0	0	0.7
Q 9	0	0.7	-5.0
Q 11	5.0	5.0	0
Q 12	-5.0	-5.0	5.0
Q 13	0	0	-5.0
Q 14	0	0	-5.0
Q 16	0	0	-5.0
Q 17	0	0	-5.0
Q 19	0	0	-4.9
Q 31	0	0	5.0

Diodes

U No.	Anode	Cathode
U 16	-25.6	1.0
U 17	5.0	5.0
U 18	0	5.0
U 19	5.0	4.8
U 25	-7.8	0
U 24	-13.5	5.4
U 26	-5.65	4.3
U 27	-8.0	4.0
U 28	-24.2	3.0
U 29	-12.65	3.3
U 210	-11.8	3.7

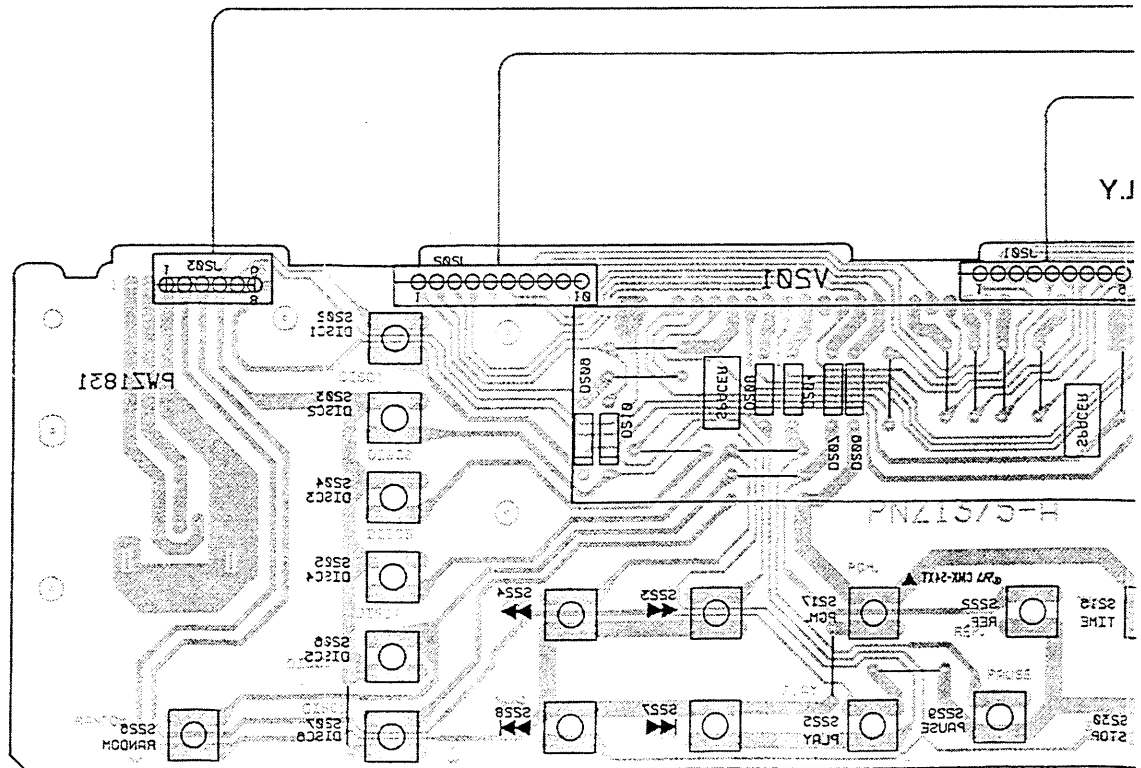
Anode → Cathode

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
		Zenner diode			Electrolytic capacitor (Non polarized)
		LED			Electrolytic capacitor (Noiseless)
		Varactor			Electrolytic capacitor (Polarized)
		Tact switch			Power capacitor
		Inductor			Semi-fixed resistor
		Coil			Resistor array
		Transformer			Resistor
		Filter			Resonator
					Thermistor

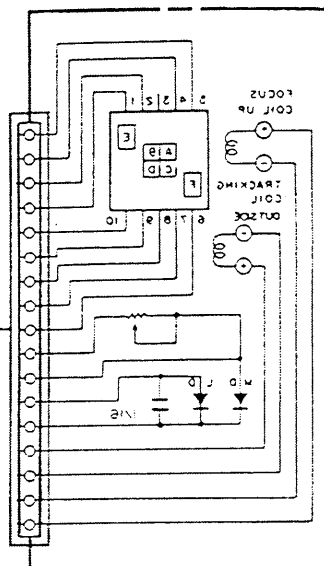
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

This picture shows the foil side of the printed circuit.

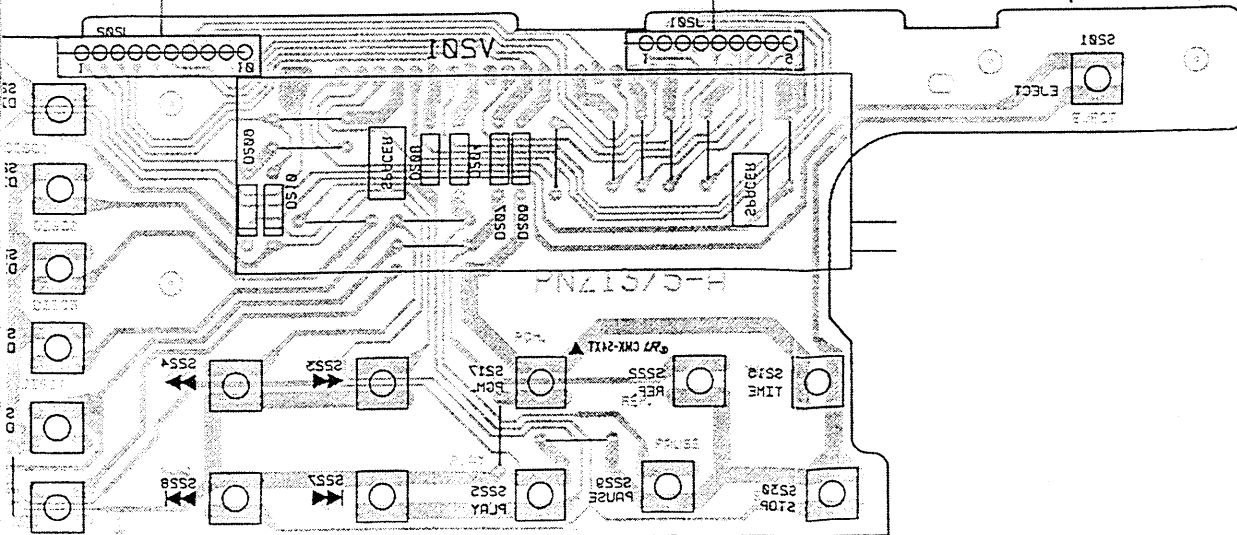




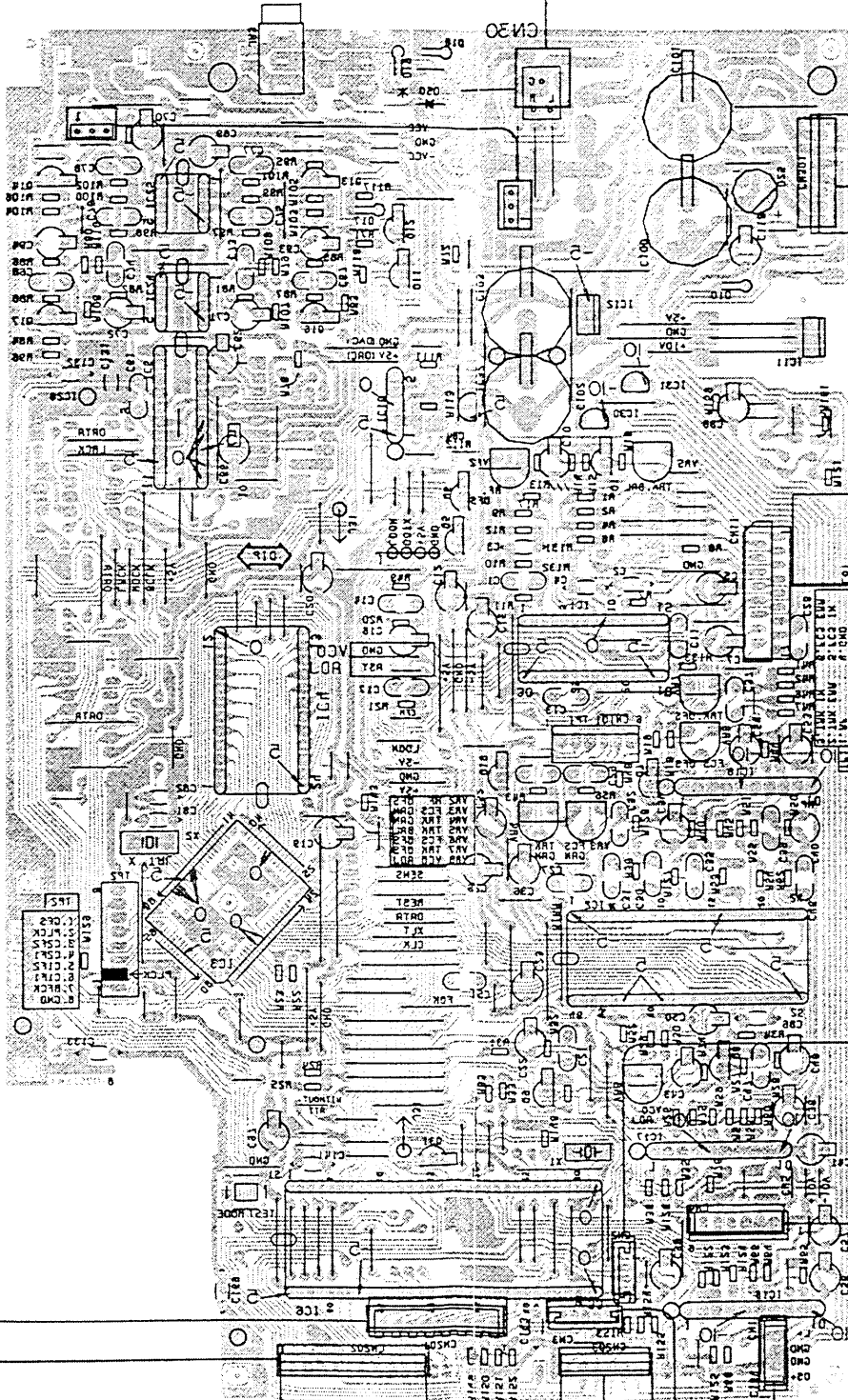
PICK-UP ASSEMBLY (PWY100g)



FUNCTION BOARD ASSEMBLY (PWZ1831)



711 (To Page 103)
FUNCTION assembly
To Deck amplifier block

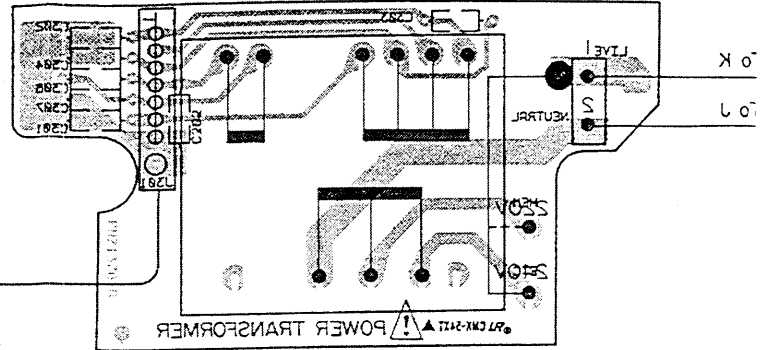


	02
08	01
2ARS	02

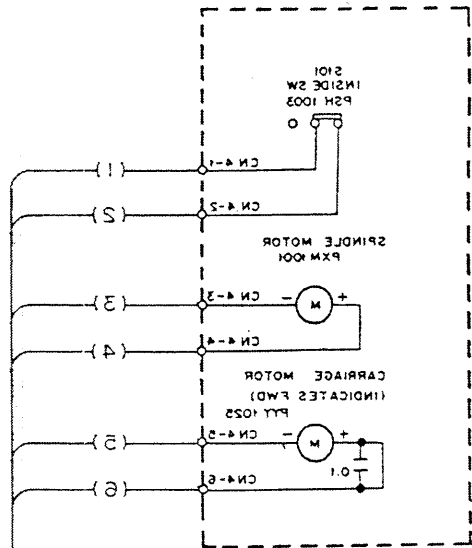
101
102
VR7
VR6
07 010
101
VR3
VR4
101
101

80	80
20	20
100	100
100	100

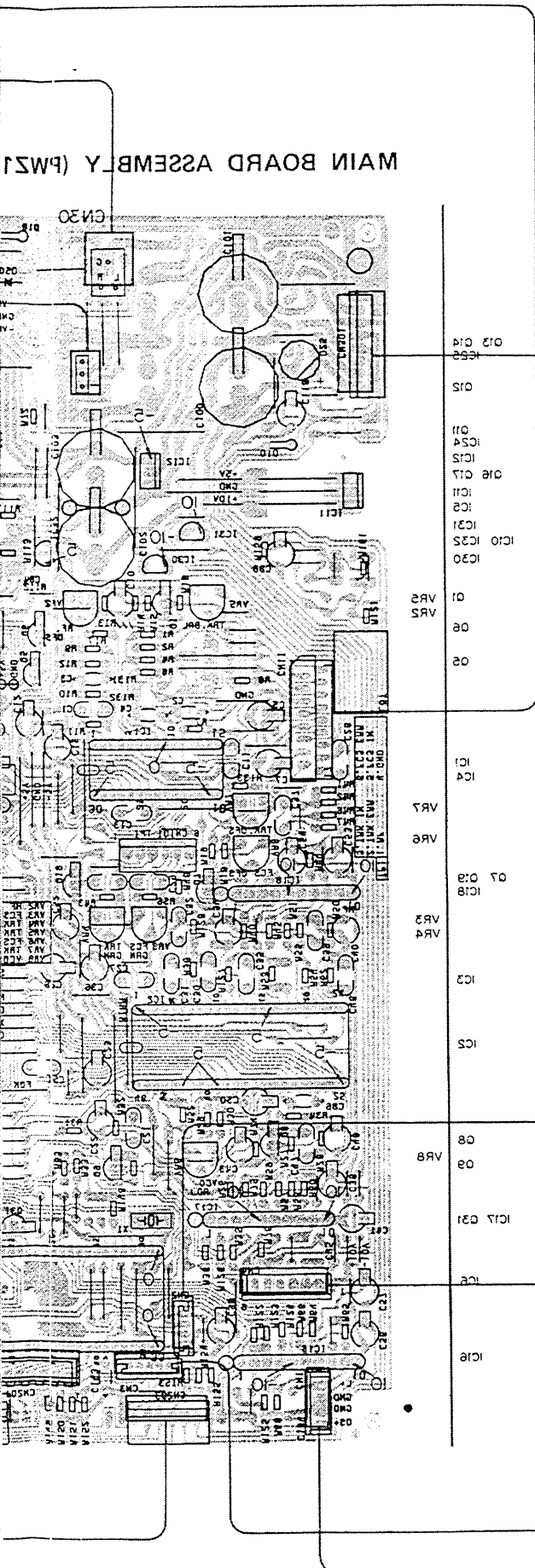
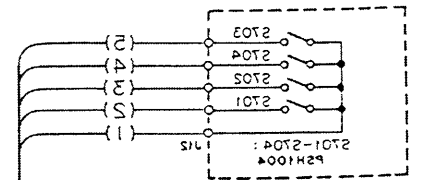
TRANSFORMER BOARD ASSEMBLY



SERVO MECHANISM ASSEMBLY



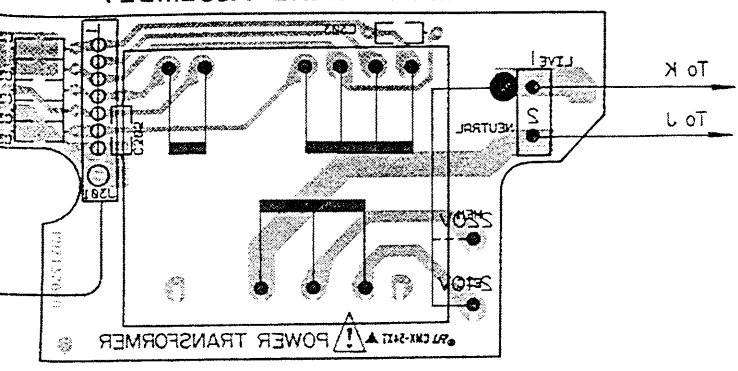
SWITCH BOARD ASSEMBLY



A

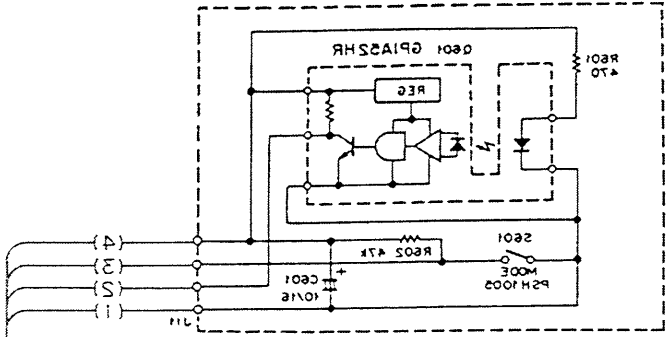
To Deck amplifier block
POWER SUPPLY
assembly 11001
(To Page 116)

TRANSFORMER BOARD ASSEMBLY



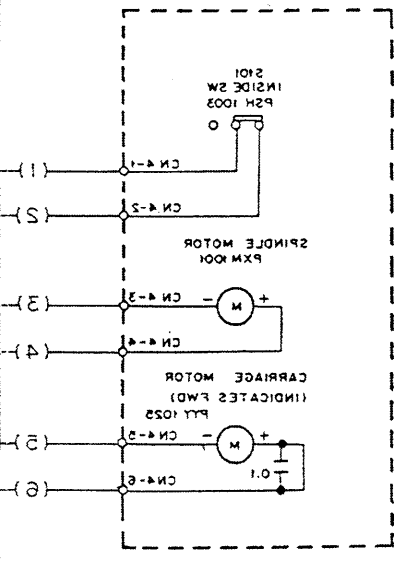
B

SELECT BOARD ASSEMBLY



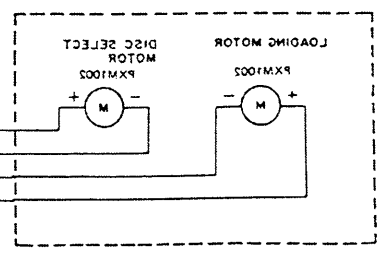
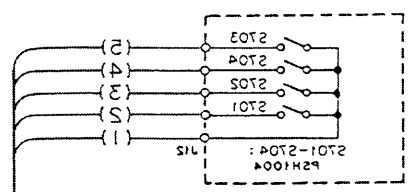
C

SERVO MECHANISM ASSEMBLY



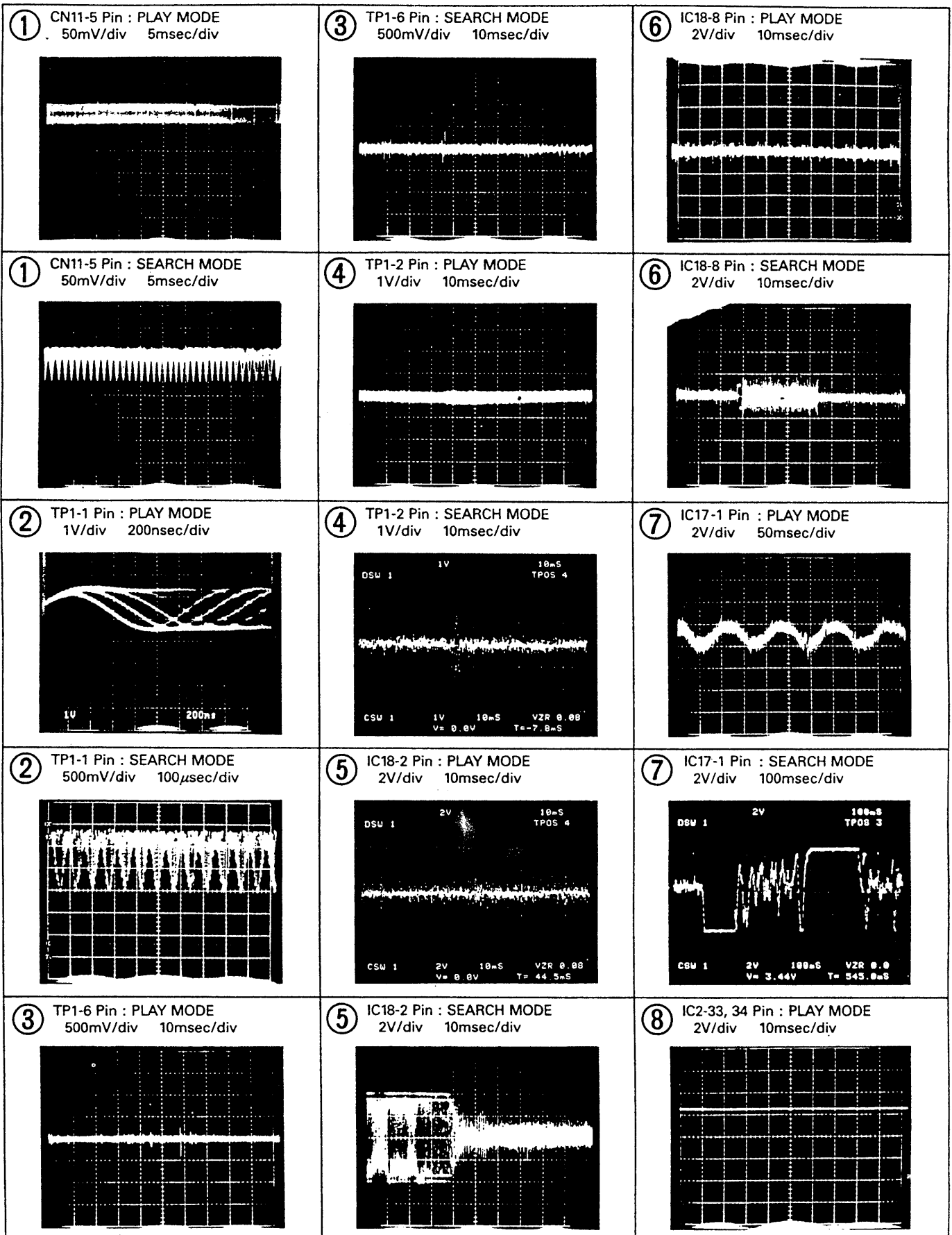
D

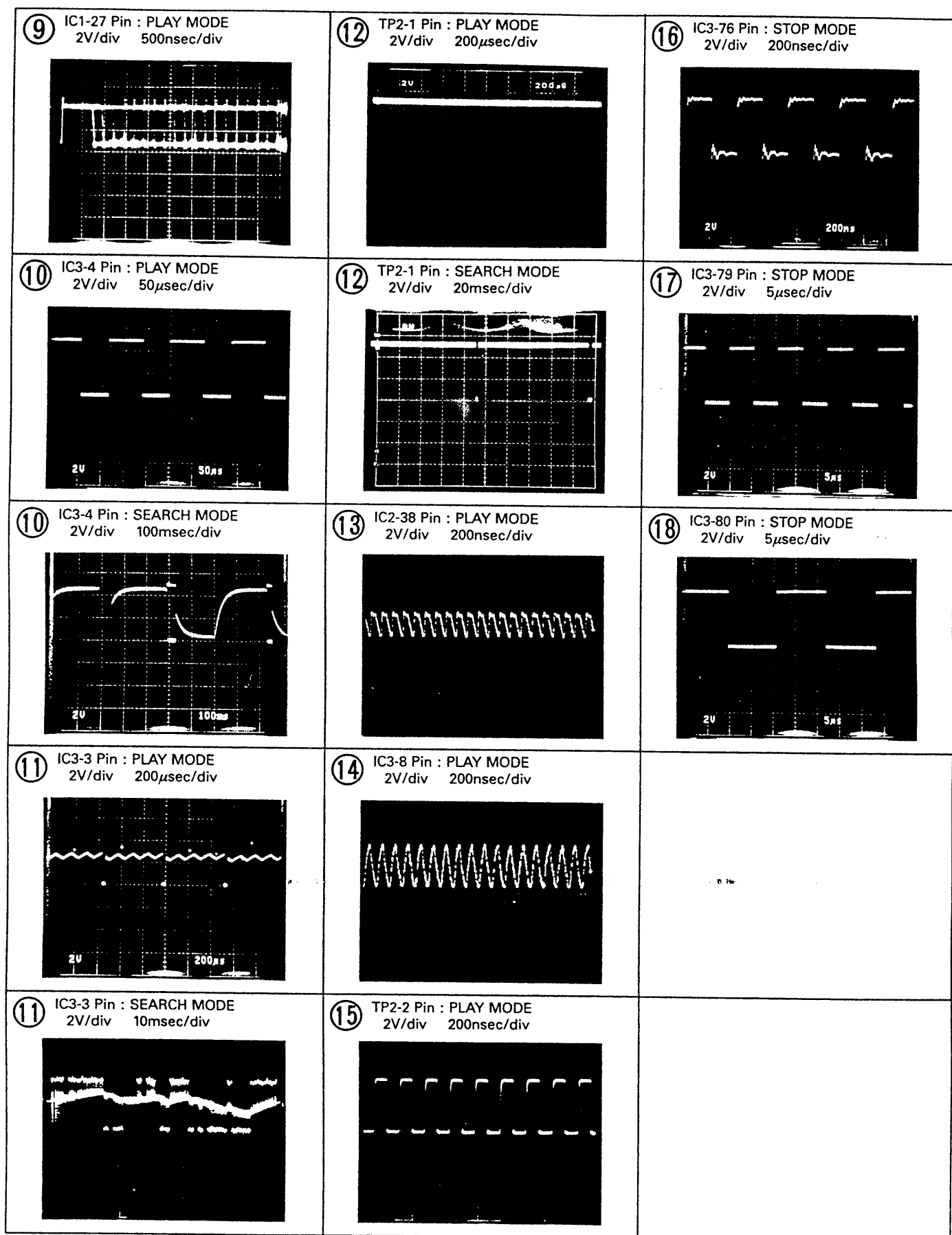
SWITCH BOARD ASSEMBLY

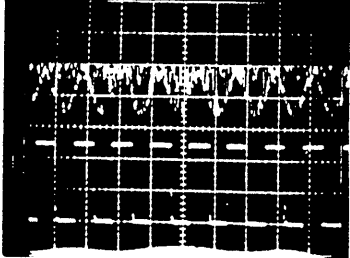
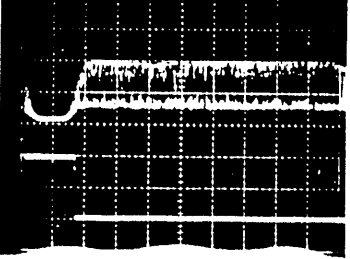
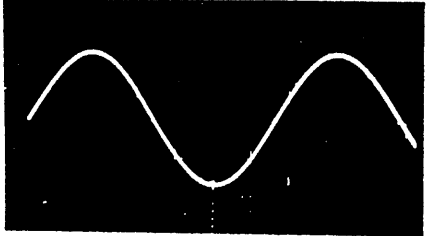
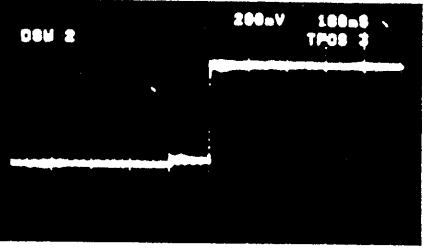
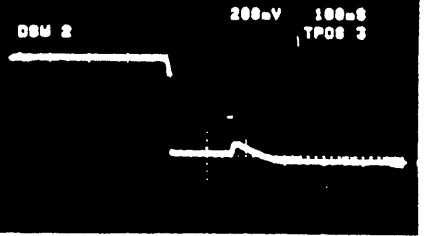


Wave Forms

NOTE : The encircled numbers denote measuring points in the schematic diagram.





①9	②3 IC1-22 Pin : TRACKING OPEN 0.1msec/div Upper TP1-1 Pin : 1V/div - Lower IC1-22 Pin : 2V/div 	
②0	②4 IC1-21 Pin : DFCT 0.5msec/div Upper TP1-1 Pin : 1V/div Lower IC1-21 Pin : 5V/div 	
②1 OUTPUT Lch : PLAY MODE 2V/div 50μsec/div 		
②2 IC10-5 Pin : POWER ON 2V/div 100msec/div 		
②2 IC10-5 Pin : POWER OFF 2V/div 100msec/div 		

9.4 ELECTRICAL PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	56 × 10 ¹	561.....	RD1/4PS	⚠	⚠	⚠	J
47kΩ	47 × 10 ³	473.....	RD1/4PS	⚠	⚠	⚠	J
0.5Ω	0R5.....		RN2H	⚠	⚠	⚠	K
1Ω	010.....		RSIP	⚠	⚠	⚠	K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	562 × 10 ¹	5621.....	RN1/4SR	⚠	⚠	⚠	⚠	F
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Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
⚠ ⊙	Main board assembly	PWZ1538
⊙	Function board assembly	PWZ1831
	Transformer board assembly	
	Switch board assembly	
	Select board assembly	

Mark	Symbol & Description	Part No.
	Q6, Q11	DTA124ES
	Q12, Q19, Q31	DTC124ES
	Q1	2SA1399
	Q7	2SA933S
	Q5, Q8, Q9, Q16, Q17	2SC1740S
	Q13, Q14	2SD1302
⚠	D25	WL02ML-5004
⚠	D10	11ES2
⚠	D17-D19, D50	1SS254

OTHERS

Mark	Symbol & Description	Part No.
⚠	Pick-up assembly	PWY1009
	Power transformer T1	PTT1104
	Motor assembly (DISC SELECT, DISC LOADING, CARRIAGE)	PYY1025
	Motor (DISC SELECT, DISC LOADING, CARRIAGE)	PXM1002
	Motor assembly (with oil)	PYY1109
	Slide switch (INSIDE SW)	PSH1003

SWITCH

Mark	Symbol & Description	Part No.
	S1 Tact switch	PSG-064

CAPACITORS

Mark	Symbol & Description	Part No.
	C2, C4, C81, C82	CCCCH300J50
	C3	CCCCH390J50
	C40	CEANP4R7M25
	C16, C22	CEASR47M50
	C10, C43, C62	CEAS101M10
	C88	CEAS101M35
	C71, C72, C93, C94	CEAS220M16
	C100, C101	CEAS222M16
	C118	CEAS220M35
	C48	CEAS3R3M50
	C7, C12, C15, C19, C20, C23, C26, C36, C38, C41, C50, C52-C54, C56, C57, C66, C69, C70, C97, C98	CEAS330M16
	C34	CEAS4R7M50

⊙ Main Board Assembly (PWZ1538)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	CXA1081S
	IC2	CXA1082BS
	IC3	CXD1130Q
⚠	IC30-IC32	ICP-N10
	IC5	LC7881-C
	IC4	LH5116-15
	IC10	M51955AL
	IC24, IC25	NJM4558D-D
⚠	IC11	NJM78M05FA
⚠	IC12	NJM79M05FA
	IC6	PD4150A
⚠	IC16-IC18	TA8410K

Mark	Symbol & Description	Part No.
	C102, C103 C61, C86, C131–C133, C141, C143 C169 C30, C51 C5	CEAS471M10 CKCYF103Z50 CKCYF473Z50 CQMA102K50 CEAS101M16
	C14, C17, C46 C31, C32, C35, C39 C29 C13 C11, C21, C28, C37	CQMA103K50 CQMA104K50 CQMA272J50 CQMA332J50 CQMA333K50
	C77, C78 C1, C27, C47 C75, C76 C73, C74 C67, C68	CQMA471J50 CQMA472J50 CQMA561J50 CQMA562J50 CQMA683J50

RESISTOR

Mark	Symbol & Description	Part No.
VR2	Semi-fixed resistor (10k Ω)	VRTB6VS103
VR3–VR7	Semi-fixed resistor (22k Ω)	VRTB6VS223
VR8	Semi-fixed resistor (1k Ω)	VRTS6VS102
R30	Metal film resistor Other resistors	RN1/6PQ3601F RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
JA3	Remote control jack	RKN1004
CN11	Connector (17p)	52045–1710
X2	Crystal resonator	PSS-012
X1	Ceramic resonator	VSS1014
CN301	Connector (7p)	KPC7
CN30	Connector (3p)	KPE3

⊙Function Board Assembly (PWZ1831)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D204, D206–D210	1S2473

SWITCHES

Mark	Symbol & Description	Part No.
	S201–S207, S216, S217, S222–S230 Tact switch	PSG1006

OTHERS

Mark	Symbol & Description	Part No.
	V201 Fluorescent indicator tube	PEL1022

Transformer Board Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C301, C303 C302, C304–C307	CKPYF103Z50 CKPYX103N25

Switch Board Assembly

SWITCHES

Mark	Symbol & Description	Part No.
	S701–S704 Slide switch (LOADING POSITION, MAGAZINE)	PSH1004

Select Board Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	Q601	GP1A52HR

SWITCH

Mark	Symbol & Description	Part No.
	S601 Slide switch (MODE)	PSH1005

CAPACITOR

Mark	Symbol & Description	Part No.
	C601	CEAL100M16

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

9.5 ADJUSTMENTS

The adjustment items of this model should be performed in the order as shown below.

• Adjustment and check Items

1. Tracking offset, focus offset and RF offset adjustments
2. RF level adjustment
3. LD (Laser Diode) output power confirmation
4. Focus lock and spindle lock confirmation
5. Grating adjustment
6. Tracking balance adjustment
7. Tangential adjustment
8. Focus gain adjustment
9. Tracking gain adjustment
10. VCO free-run frequency adjustment
11. Method to confirm S character (FOCUS ERROR)

• Measuring Equipment

1. Dual trace oscilloscope
2. Laser power meter
3. Test disc (YEDS7)
4. Tracking balance adjustment filter
5. Loop gain adjustment filter
6. Signal generator
7. Frequency counter
8. Other general tools

• Test Mode

Test Mode setting and cancellation procedures

- (1) To set the Test Mode, turn the POWER switch of this system (S707) ON pushing the TEST MODE SWITCH (S1).
- (2) To cancel the Test Mode, simply turn the POWER switch of the player OFF.

The various key functions in the Test Mode are listed in Table 9-1.

• Adjusting Points

- VR1: Laser power
- VR7: Tracking offset (TRK.OFS)
- VR3: Focus gain (FCS.GAN)
- VR4: Tracking gain (TRK.GAN)
- VR5: Tracking balance (TRK.BAL)
- VR6: Focus offset (FCS.OFS)
- VR8: VCO adjustment (VCO.ADJ)
- VR2: RF offset (RF.OFS)

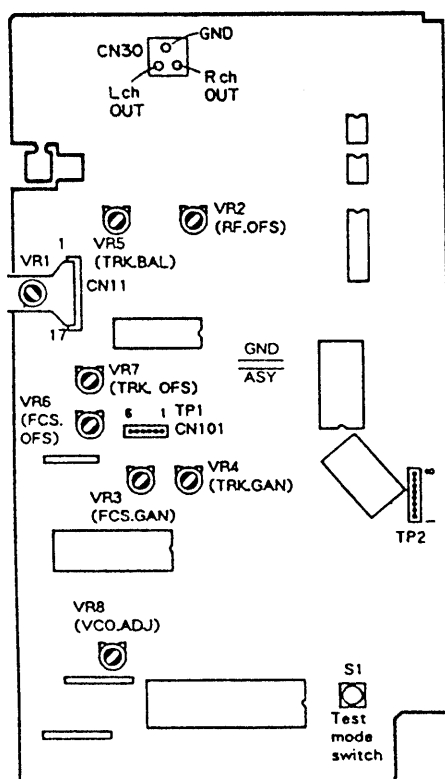


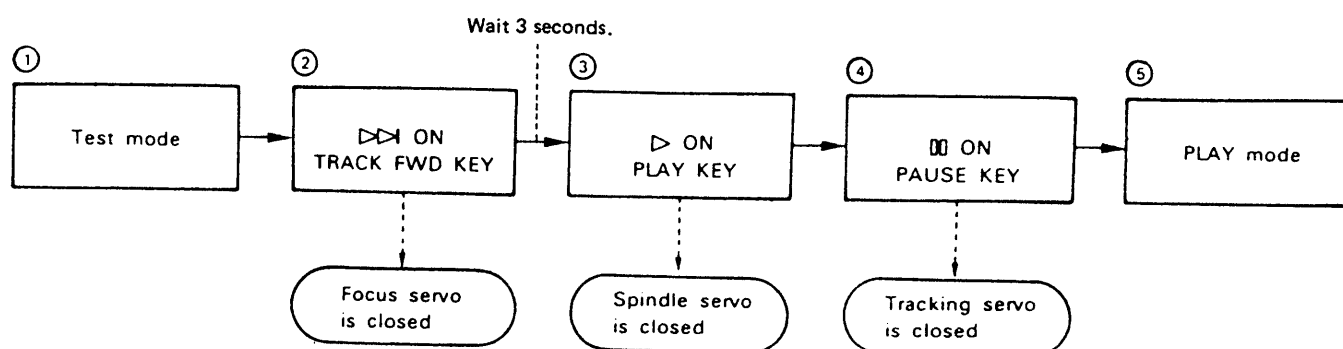
Fig. 9-1 Adjusting point

In the Test Mode, each servo circuit can be closed and opened by separate operations. Consequently, each servo must be closed one at a time (in serial sequence) to set PLAY mode.

Note that PLAY mode is not activated by simply pressing the PAUSE key () in the Test Mode.

Example: Switching from STOP to PLAY mode.

- * The each servo mechanisms operate in a serial sequence in the Test Mode.



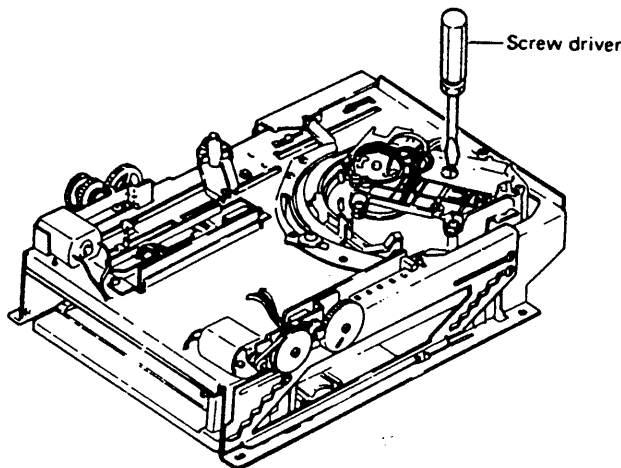
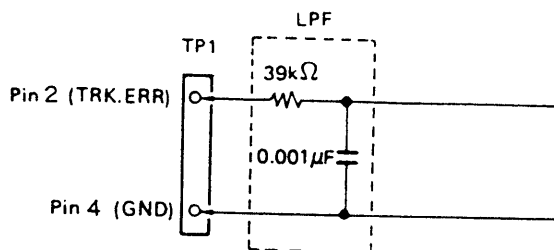
• Key Functions in Test Mode

Symbol	Key name	Function during test mode	Description
	TRACK FWD	Focus servo is closed.	Laser diode lights up. Actuator is moved up/down, then focus servo is closed.
	PLAY	Spindle servo is closed.	Spindle starts to rotate and the servo is closed when it turns into the CLV-A servo mode.
	PAUSE	Tracking servo is closed/opened.	Performs toggle operation. Closing the tracking servo and becomes PLAY mode by depressing the key (Focus servo and spindle servo must be closing), and PAUSE indicator lights up. Tracking servo opens by depressing the key again.
	MANUAL SEARCH REV	Carriage moves in reverse direction. (towards disc center)	Carriage is moved towards disc center at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
	MANUAL SEARCH FWD	Carriage moves in forward direction. (towards disc end)	Carriage is moved towards disc end at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
	STOP	STOP	All servos are opened.
	EJECT	(CD Magazine) EJECT	CD Magazine is ejected. However, pickup does not return to the park position. Moreover, even when disc is closed the pickup remains as is.

Table 9-1

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
1	TRACKING OFFSET, FOCUS OFFSET AND RF OFFSET ADJUSTMENT					
			TP1 PIN 2 (TRK.ERR) TP1 PIN 6 (FCS.ERR) TP1 PIN 1 (RF OUTPUT)	VR5 (TRK.BAL) VR7 (TRK.OFS) VR6 (FCS.OFS) VR2 (RF.OFS)	45° 0V±50 mV FOCUS offset 0V±50 mV RF offset 100 mV±50 mV	• Set to TEST mode. ✕ • Turn VR5 TRK.BAL (Tracking balance) volume clockwise 45° from the center. • Adjust with VR7 TRK.OFS (Tracking offset) volume so that the voltage of pin 2 TRK.ERR (Tracking error) of TP1 becomes 0V±50 mV. • Adjust VR6 FCS.OFS (focus offset) so that the FCS.ERR (focus error) voltage at TP1 pin 6 becomes 0V±50 mV. • Adjust VR2 RF.OFS (RF offset) so that the RF output voltage at TP1 PIN 1 becomes 100 mV±50 mV.
2	RF LEVEL ADJUSTMENT					
			TP1 Pin 1 (RF)	VR1 Laser power	1.5Vp-p ^{+0.2} ₋₀ V	• Set to TEST mode. ✕ • Play TEST disc and connect probe of an oscilloscope to pin 1 RF (RF output) of TP1 and measure the P-P voltage of RF waveform. • Adjust VR1 (Laser power) so that the value is within 1.5Vp-p^{+0.2}₋₀ V.
3	LD (LASER DIODE) OUTPUT POWER CONFIRMATION					
					Confirmation: less than 0.13 mW	• Set to TEST mode. ✕ • Press TRACK FWD key (▷) and turn ON LD (laser diode). • Place sensor of the laser power meter immediately above the object lens and confirm that the output power of the LD is less than 0.13 mW. NOTE: Measure after removing the servo mechanism.
4	FOCUS LOCK AND SPINDLE LOCK CONFIRMATION					
	0.5V/div	100 msec/div	TP1 Pin 1 (RF output)		RF output exists Normal rotation	• Set TEST disc. • Set to TEST mode. ✕ • Shift the pickup close to the center of the disc by pressing the MANUAL SEARCH FWD key (▷). • Note that this step must be performed. • Observe pin 1 RF (RF output) of TP1 with an oscilloscope and confirm that the RF signal is output after pressing the TRACK FWD key (▷). • Press PLAY key (▷) and be sure that the disc rotates in normal direction at almost the specified speed (as it is close to the center of the disc, the rotating speed is around 30 rpm) and not rotates abnormally or inversely.

※ See page 46

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
5	GRATING ADJUSTMENT					
	 Fig. 9-2  Fig. 9-3					• Set to TEST mode. ☒. • Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷) so that the grating adjustment screw of the pickup can be seen through the oval hole of the upper side of the servo mechanism. • Insert the (–) screwdriver into the adjusting hole from the upper side of the mechanism as shown in Fig. 9-2, and confirm that the grating screw turns. • Press TRACK FWD key (▷) and PLAY key (▷) sequentially and close the focus servo and spindle servo. (Do not close the tracking servo.) • Observe the waveform of pin 2 TRK.ERR (Tracking error) of TP1 with an oscilloscope. At this point, insert a 4 kHz cutoff low-pass filter. (Fig. 9-3)
	0.5V/div	5 ms/div	TP1 Pin 2 TRK.ERR	Grating Grating	Null point Maximum amplitude	• Turn the (–) screwdriver and find null point. (Photo. 9-1) • Then, turn slowly the (–) screwdriver counterclockwise from the null point and adjust at the point where the waveform (Tracking error signal) firstly becomes maximum amplitude. (See Photo. 9-3.) Note: If the (–) screwdriver is pressed strongly, the pickup moves toward disc center, accordingly adjustment becomes difficult. • Finally, be sure to confirm that the tracking error signal (at this time, 4 kHz of cutoff low-pass filter is not inserted) when the pickup is moved toward the disc center and the P-P voltage of the tracking error signal at the outer circumference of the disc are not varied greatly. When the level is deviated over ±10%, adjust again by turning grating screw to the maximum error amplitude point.

✕ See page 46

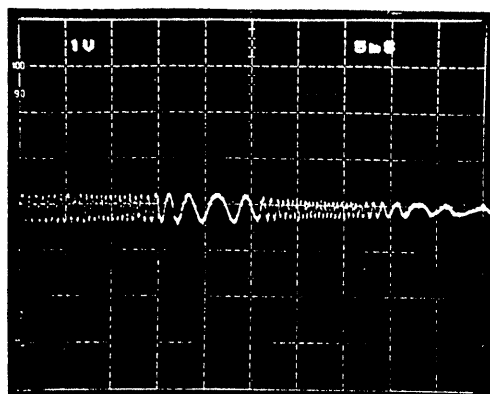


Photo. 9-1 Null point

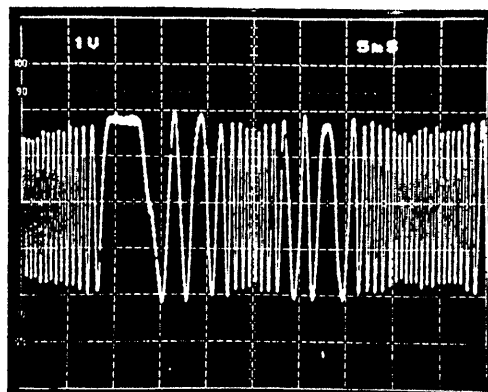


Photo. 9-3 Maximum amplitude

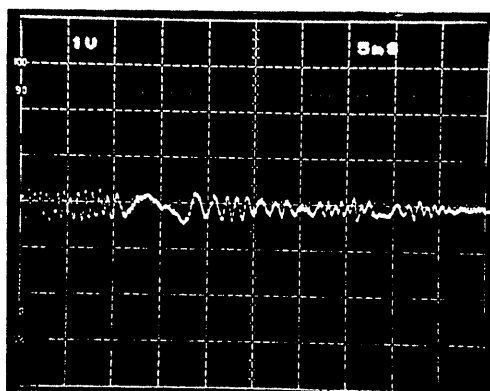
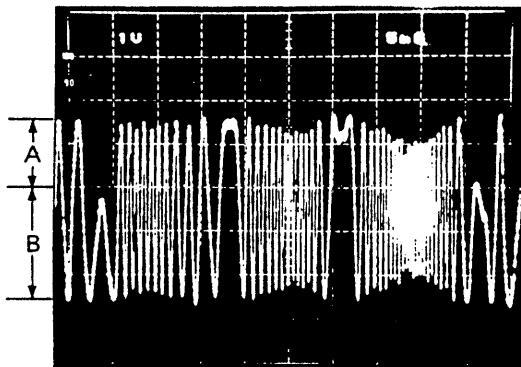
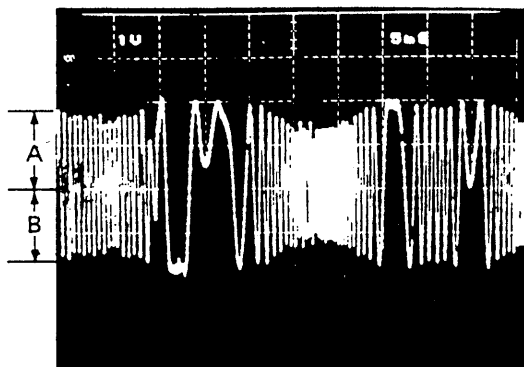


Photo. 9-2 Waveform of not null point

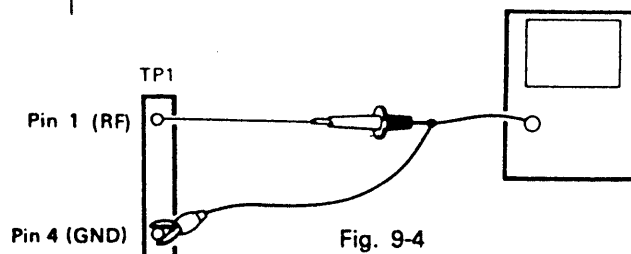
Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
6	TRACKING BALANCE ADJUSTMENT					
	0.5V/div	5 msec /div	TP1 Pin 2 (TRK.ERR)	VR5 (TRK.BAL)	(TRK.ERR)	• Set the TEST disc. • Set to TEST mode. ✕ • Shift the carriage close to the center of the disc by pressing MANUAL SEARCH FWD key (▶▶). • Press TRACK FWD key (▶▶), and PLAY key (▶) to start turning the disc. • Observe pin 2 TRK.ERR (Tracking error) of TP1 with an oscilloscope and adjust with VR5 TRK.BAL (Tracking balance) volume so that the DC component of the tracking error disappears. Note: Before proceeding with the above adjustments, be sure to adjust the tracking error offset.
 Photo. 9-4 DC component exists  Photo. 9-5 DC component not exist						

✕ See page 46

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
7	TANGENTIAL ADJUSTMENT					
		200nS	TP1 Pin 1 (RF output)	Tangential adjustment screw	Best eye pattern	• Set the TEST disc. • Set to TEST mode. ※ • Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷). • Press TRACK FWD key (▷▷), PLAY key (▷) and PAUSE key (⏏) sequentially, and close all the servos. (Pause indicator lights up.) • Observe pin 1 RF (RF output) of TP1 with an oscilloscope and adjust with the tangential screw so that the eye pattern becomes clear. (Fig. 9-4) • The adjusting point is the middle point between the point where the eye pattern becomes deteriorate by turning the tangential screw clockwise and the point where the eye pattern becomes deteriorate by turning the tangential screw counterclockwise. As a criterion, observe that the overall waveform is clear and one of the diamond shapes within the eye pattern (Photo. 9-6), and adjust at as an optimum point where the diamond shape is seen relatively fine line.

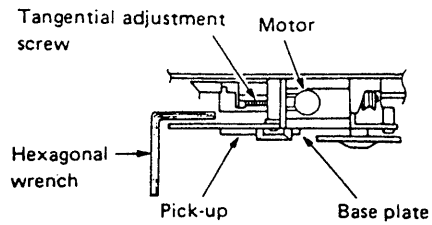
Fig. 9-4

Note: During the adjustment, hold hexagonal wrench to upward so as to keep the pickup body not goes down.



Note: During the adjustment, hold hexagonal wrench to upward so as to keep the pickup body not goes down.

※ See page 46



In the figure below, the top and bottom is opposite to that of the actual product.

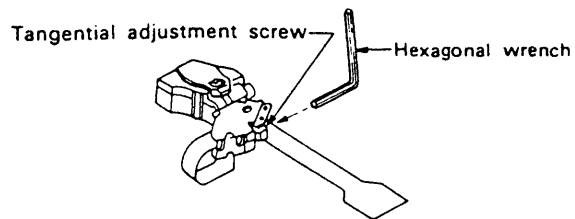


Fig. 9-5 Tangential adjustment

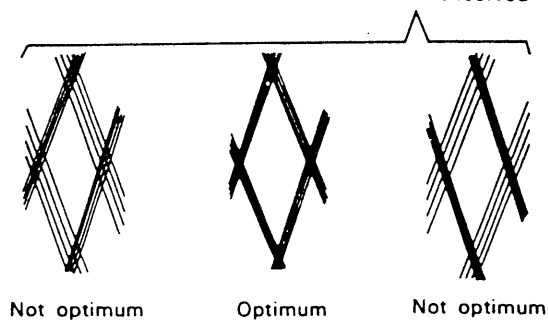
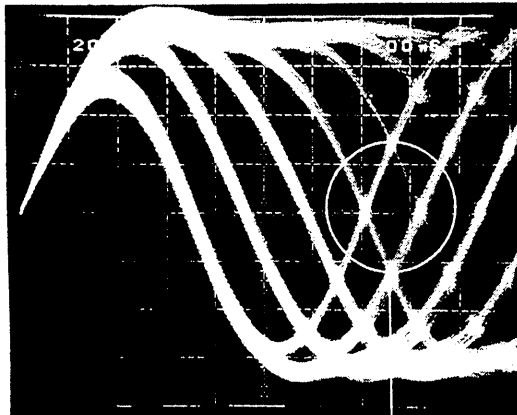


Photo. 9-6

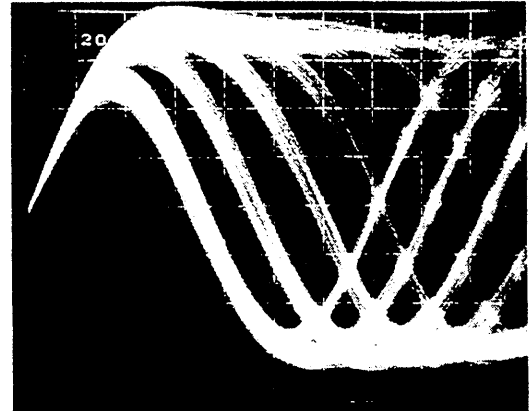


Photo. 9-7

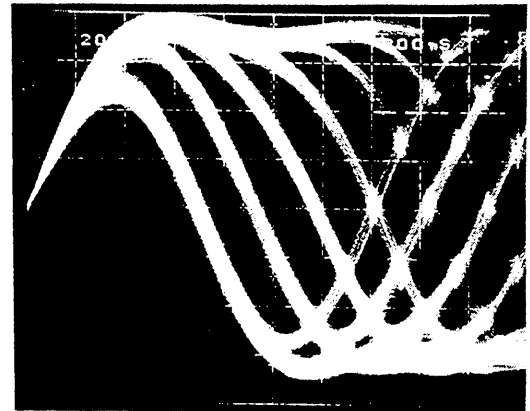


Photo. 9-8

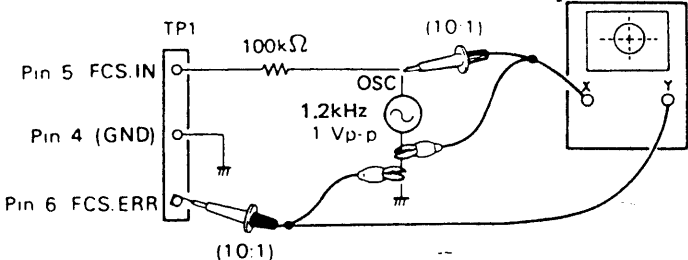
Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
8	FOCUS GAIN ADJUSTMENT					
	20mV/div.5/mV/div. CH1 (X), CH2 (Y) (Probe 10 : 1)	X axis TP1 Pin 5 (FCS.IN) Y axis TP1 Pin 6 (FCS.ERR)	VR3 (FCS.GAN)	Phase difference 90°	- In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig. 9-6. - Set to PLAY mode. - Turn the POWER of oscillator ON and output 1.2kHz 1 Vp-p. - Note: (Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON.) - Adjust with VR3 FCS.GAN (Focus gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (Phase difference 90°).	

Fig. 9-6

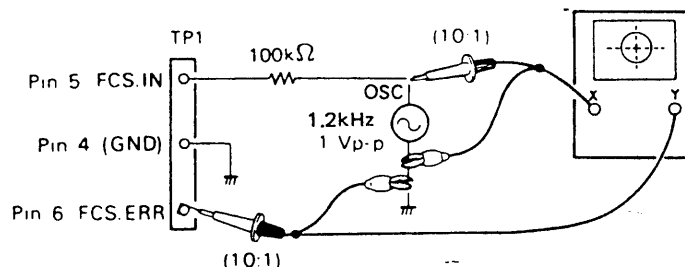


Fig. 9-6

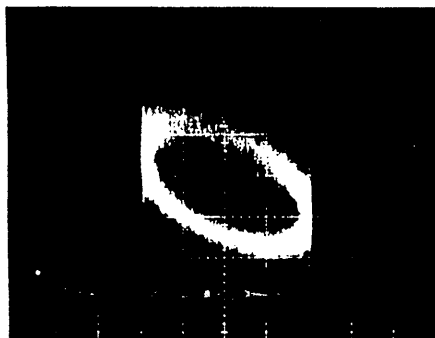


Photo. 9-9 High gain



Photo. 9-10 Optimum gain

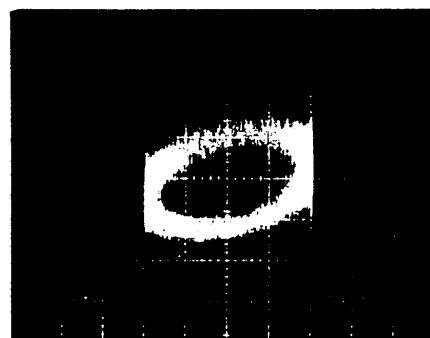


Photo. 9-11 Low gain

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
9	TRACKING GAIN ADJUSTMENT					
	50 mV/div.5mV/div. CH1 (X). CH2 (Y) (Probe 10 : 1)	X axis TP1 Pin 3 (TRK.IN) Y axis TP1 Pin 2 (TRK.ERR)	VR4 (TRK.GAN)	Phase difference 90	- In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig. 9-7. - Set to PLAY mode. ✕ - Turn the POWER of oscillator ON and output 1.2 kHz 2 Vp-p. Note: (Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON.) - Adjust with VR4 TRK GAN (Tracking gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (phase difference 90°).	

The diagram illustrates the test setup for tracking gain adjustment. It shows a circuit with the following components and connections:

- TP1** is connected to **Pin 3 (TRK. IN)** via a $100\text{k}\Omega$ resistor.
- Pin 4 (GND)** is connected to ground.
- Pin 2 (TRK. ERR)** is connected to ground via a $39\text{k}\Omega$ resistor.
- An **OSCILLATOR** is connected to **Pin 3 (TRK. IN)** via a $100\text{k}\Omega$ resistor and to **Pin 2 (TRK. ERR)** via a $39\text{k}\Omega$ resistor.
- The oscillator output is **1.2 kHz 2 Vp-p**.
- The oscillator is connected to the **OSC** input of the oscilloscope.
- The oscilloscope is set to **PLAY** mode.
- The oscilloscope is connected to the **OSC** input of the oscilloscope.
- The oscilloscope is connected to the **OSC** input of the oscilloscope.

Fig. 9-7

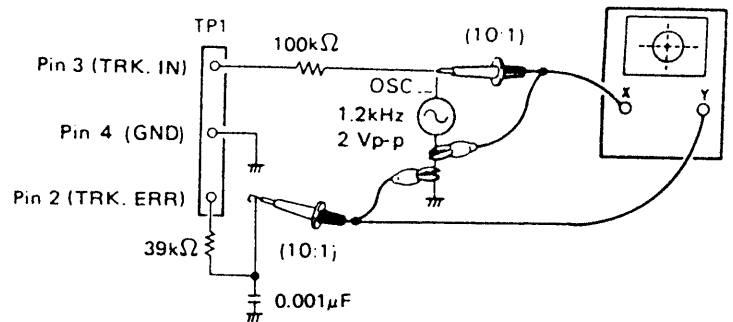


Fig. 9-7

✕ See page 46

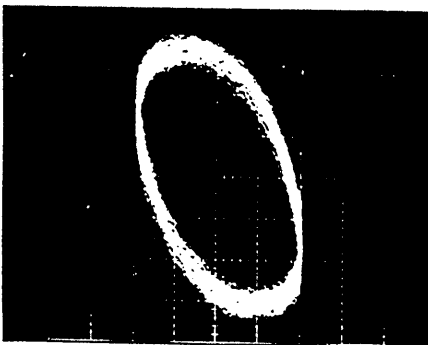


Photo. 9-12 High gain

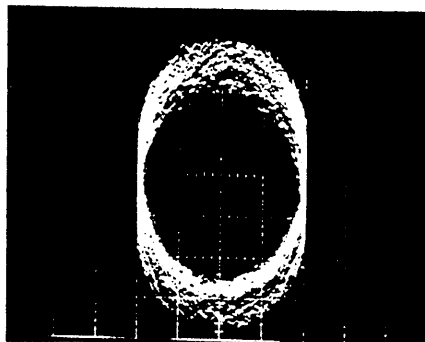


Photo. 9-13 Optimum gain

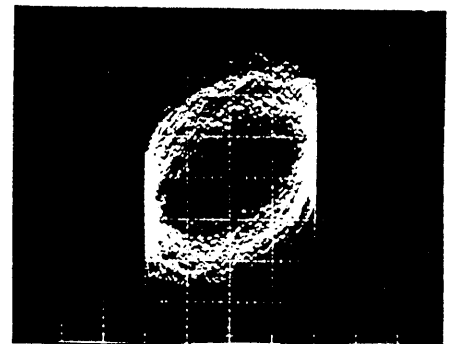
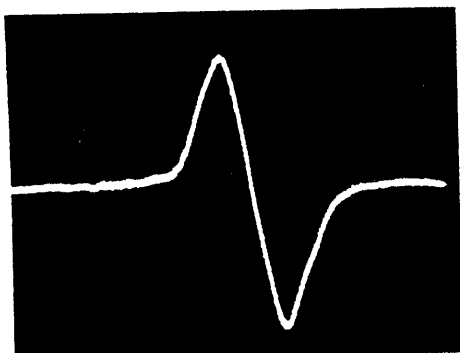


Photo. 9-14 Low gain

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
10	VCO FREE RUN FREQUENCY ADJUSTMENT					
			TP2 Pin 2 (PLCK)	VR8 (VCO.ADJ)	4.275 ±0.025 MHz	• Set to TEST mode. ※ • Short-circuit between ASY and GND jumper with grating driver, etc. (Fig. 9-1) • Connect frequency counter, which is measurable over 10 MHz, to pin 2 of TP2. • Adjust with VR8.VCO ADJ (VCO adjustment) volume so that the value of frequency counter becomes 4.275±0.025 MHz.
11	METHOD TO CONFIRM S CHARACTER (FOCUS ERROR)					
						• Set to TEST mode. ※ • Short-circuit between pin 5 FCS. IN (Focus in) of TP1 and GND. • Press TRACK FWD key (▷) and observe the waveform of pin 6 FCS.ERR (Focus error) of TP1 at that time with an oscilloscope.

※ See page 46



Focus error
Photo. 9-15

9.5 RÉGLAGE

Les réglages pour ce modèle doivent être réalisés dans l'ordre indiqué ci-dessous.

• Réglages et vérifications à effectuer

1. Réglages de l'offset de centrage de piste, de l'offset de focalisation et de l'offset RF.
2. Réglage du niveau RF
3. Vérification de la puissance de sortie de la diode laser (LD)
4. Vérification du verrouillage de focalisation et du verrouillage de moyeu
5. Réglage du réseau
6. Réglage de l'équilibrage de centrage de piste
7. Réglage tangentiel
8. Réglage du gain de focalisation
9. Réglage du gain de centrage de piste
10. Réglage de la fréquence propre du VCO
11. Méthode de contrôle de la caractéristique S (erreur de focalisation)

• Matériel de mesure

1. Oscilloscope double trace
2. Appareil de mesure pour puissance laser
3. Disque d'essai (YEDS7)
4. Filtre de réglage pour équilibrage de centrage de piste
5. Filtre de réglage pour gain de boucle
6. Générateur de signal
7. Fréquencemètre
8. Outillage général divers

• Mode d'essai

Méthodes de réglage et d'annulation du mode d'essai

- (1) Pour régler le mode d'essai, placer l'interrupteur d'alimentation (POWER) du lecteur (S707) sur la position de marche (ON) en appuyant sur l'interrupteur de mode d'essai (TEST MODE SWITCH) (S1).
- (2) Pour annuler le mode d'essai, amener simplement l'interrupteur d'alimentation (POWER) du lecteur sur la position d'arrêt (OFF).

Les différentes fonctions des touches dans le mode d'essai sont indiquées dans le tableau 9-1.

• Points de réglage

- VR1: Puissance laser
 VR7: Décalage de centrage de piste (TRK.OFS)
 VR3: Gain de focalisation (FCS.GAN)
 VR4: Gain de centrage de piste (TRK.GAN)
 VR5: Equilibrage de centrage de piste (TRK.BAL)
 VR6: Décalage de focalisation (FCS.OFS)
 VR8: Réglage du VCO (VCO.ADJ)
 VR2: Offset RF (RF.OFS)

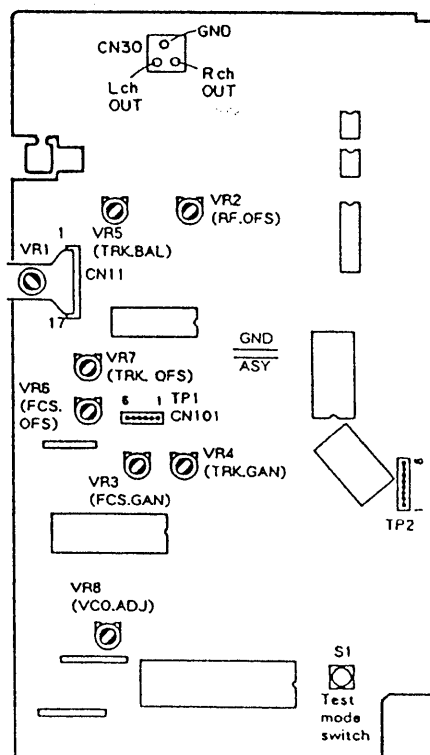


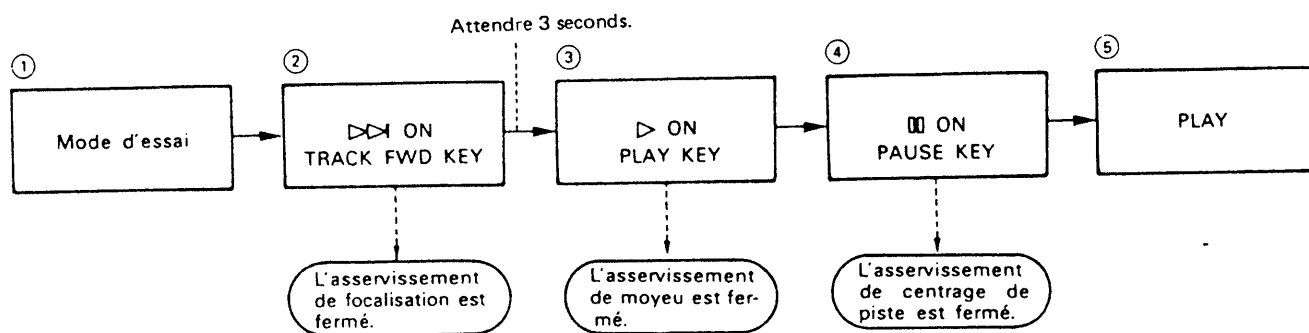
Fig. 9-1 Point de réglage

Dans le mode d'essai (Test Mode), chaque circuit asservi peut être fermé ou ouvert au moyen d'opérations séparées. En conséquence, les asservissements doivent être fermés l'un après l'autre (séquentiellement) pour régler le mode de lecture (PLAY).

Note: Le mode de lecture (PLAY) n'est pas simplement mis en oeuvre par l'enfoncement de la touche PAUSE () dans le mode d'essai.

Exemple: Commutation du mode d'arrêt (STOP) au mode de lecture (PLAY).

- * Dans le mode d'essai (Test Mode), chaque servo-mécanisme agit séquentiellement.

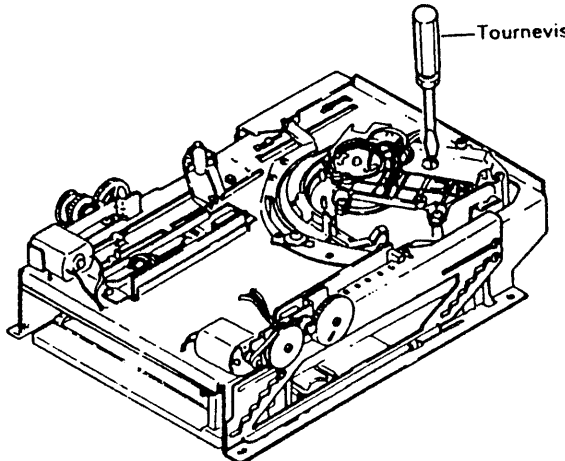
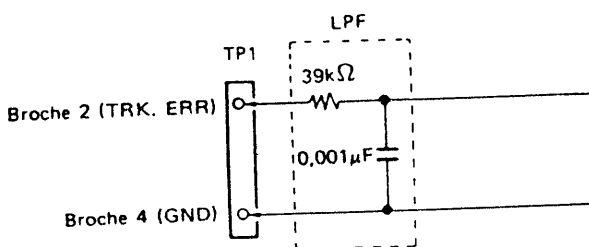


• Fonction des touches dans le mode d'essai (Test Mode)

Symbole	Désignation de touche	Fonction pendant le mode d'essai	Description
	TRACK FWD	Asservissement de focalisation fermé	La diode laser s'allume. Le moteur d'asservissement se déplace vers le haut/bas, puis l'asservissement de focalisation est fermé.
	PLAY	Asservissement de moyeu fermé	Le moyeu commence à tourner et l'asservissement est fermé lorsqu'il passe dans le mode CLV-A.
	PAUSE	Asservissement de centrage de piste ouvert/fermé	Réalise l'opération de bascule. Fermeture de l'asservissement de centrage de piste et passage en mode de lecture (PLAY) en appuyant sur la touche (l'asservissement de focalisation et l'asservissement de moyeu doivent se fermer); le voyant de PAUSE s'allume. L'asservissement de centrage de piste s'ouvre par une nouvelle pression sur la touche.
	MANUAL SEARCH REV	Le chariot se déplace en arrière (vers le centre du disque).	Le chariot se déplace vers le centre du disque à une vitesse élevée d'environ 3 cm/s. Comme il n'y a pas de dispositif de sécurité, relâcher la touche dès que le chariot arrive en fin de course.
	MANUAL SEARCH FWD	Le chariot se déplace en avant (vers le centre du disque).	Le chariot se déplace vers la fin du disque à la vitesse élevée d'environ 3 cm/s. Comme il n'y a pas de dispositif de sécurité, relâcher la touche dès que le chariot arrive en fin de course.
	STOP	Arrêt	Tous les asservissements sont ouverts
	EJECT	Ejection du magasin de disques compact	Le magasin du disque compact est éjecté. Néanmoins, la tête de lecture ne revient pas sur sa position de repos. De plus, même lorsque le disque est enfermé, la tête de lecture demeure tel quel.

Tableau 9-1

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/spécifications de réglage	Méthode de réglage
	V	H				
1.	REGLAGES DE L'OFFSET DE CENTRAGE DE PISTE, DE L'OFFSET DE FOCALISATION ET DE L'OFFSET RF					
			TP1 broche 2 (TRK.ERR) TP1 BROCHE 6 (FCS.ERR) TP1 BROCHE 1 (RF OUTPUT)	VR5 (TRK.BAL) VR7 (TRK.OFS) VR6 (FCS.OFS) VR2 (RF.OFS)	45° 0V±50 mV Offset de focalisation 0V±50 mV Offset RF 100 mV±50 mV	• Régler le mode d'essai (TEST). ✕ • Tourner le potentiomètre VR5 TRK.BAL (équilibrage de centrage de piste) de 45° depuis le centre dans le sens des aiguilles d'une montre. • Ajuster le potentiomètre VR7 TRK.OFS (décalage de centrage de piste) de façon à ce que la tension à la broche 2 TRK.ERR (erreur de centrage de piste) de TP1 devienne égale à 0V±50 mV. • Régler VR6 FCS.OFS (offset de focalisation) de manière à ce que la tension de FCS.ERR (erreur de focalisation) relevée sur la broche 6 de TP1 soit de 0V±50 mV. • Régler VR2 RF.OFS (offset HF) de manière à ce que la tension de RF OUTPUT (sortie HF) relevée sur la broche 1 de TP1 soit de 100 mV±50 mV.
2.	REGLAGE DU NIVEAU RF					
			TP1 Broche 1 (RF)	VR1 Puissance laser	1.5Vp-p ^{+0.2} ₋₀ V	• Régler le mode d'essai (TEST). ✕ • Reproduire le disque d'essai (TEST) et raccorder la sonde d'un oscilloscope à la broche 1 RF (sortie RF) de TP1 et mesurer la tension C-C de la forme d'onde RF. • Régler la puissance laser de façon que la tension soit de 1.5Vp-p^{+0.2}₋₀ V.
3.	CONTRÔLE DE LA PUISSANCE DE SORTIE DE LA DIODE LASER (LD)					
					Confirmation: moins de 0,13 mW	• Régler le mode d'essai (TEST). ✕ • Appuyer sur la touche de centrage de piste arrière (TRACK FWD) (⏮) et enclencher la diode laser (LD). • Placer la capteur de l'instrument destiné à mesurer la puissance laser au dessus de l'objectif et vérifier que la puissance de sortie de la diode laser (LD) est inférieure à 0,13 mW. NOTE: Prière de mesurer après avoir déposé le servomécanisme.
4.	CONTRÔLE DU VERROUILLAGE DE FOCALISATION ET DU VERROUILLAGE DE MOYEU					
	0.5 V/div.	100 ms/div.	TP1 broche 1 (sortie RF)		Présence de sortie RF Rotation normale	• Mettre en place le disque d'essai (TEST). • Régler le mode d'essai (TEST). ✕ • Déplacer la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche [MANUAL SEARCH FWD (⏮)]. • Cette étape doit absolument être réalisée. • Observer le signal RF à la broche 1 de TP1 (sortie RF) au moyen d'un oscilloscope et vérifier que le signal RF sorte après l'enfoncement de la touche d'avance de piste TRACK FWD (⏮). • Appuyer sur la touche de lecture (PLAY) (▶) et s'assurer que le disque tourne en sens normal avec approximativement la vitesse spécifiée (étant près du centre du disque, la vitesse de rotation est d'environ 30 tr/mn), sans anomalie ni inversion du sens de rotation.

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/spécifications de réglage	Méthode de réglage
	V	H				
5.	RÉGLAGE DE LA MIRE					
						• Régler le mode d'essai (TEST). ✖ • Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (▷). de façon à ce que la vis de réglage du réseau de la tête de lecture puisse être vue à travers le trou oval situé à la partie supérieure de l'asservissement. • Introduire le tournevis (—) dans le trou de réglage depuis la partie supérieure du mécanisme, comme illustré à la figure 9-2, puis vérifier que la vis de réseau tourne. • Appuyer séquentiellement sur les touches de piste avant TRACK FWD (▷) et de lecture (PLAY) (▷), et fermer les asservissements de focalisation et de moyeu. (Ne pas fermer l'asservissement de centrage de piste.) • Observer la forme d'onde à la broche 2 TRK.ERR (erreur de centrage de piste) de TP1 au moyen d'un oscilloscope. Introduire alors un filtre de coupure passe-bas 4 kHz. (Figure 9-3)
						• Faire tourner un le tournevis (—) et rechercher le point zéro. (Photo 9-1) • Tourner ensuite lentement dans le sens contraire des aiguilles d'une montre le tournevis (—) depuis le point zéro et l'ajuster sur le point où la forme d'onde (signal d'erreur de centrage de piste) présente une première amplitude maximum. (Voir photo 9-3.) Note: Si le tournevis (—) est appuyé avec force, la tête de lecture se déplace vers le centre du disque et le réglage devient difficile à effectuer. • Finalement, s'assurer que le signal d'erreur de centrage de piste (cette fois-ci le filtre de coupure passe-bas à 4 kHz n'est pas introduit) n'a pas beaucoup varié lorsque la tête de lecture est déplacée vers le centre du disque, et aussi que la tension C-C du signal de centrage de piste n'a pas non plus beaucoup varié sur la circonférence extérieure du disque. Lorsque le niveau varie de plus de ±10%, recommencer le réglage en tournant la vis de réseau jusqu'au point d'amplitude d'erreur maximum.
	0.5 V/div.	5 ms/div.	TP1 Broche 2 TRK ERR	Réseau Réseau	Point zéro Amplitude maximum	

✖ Voir page 57

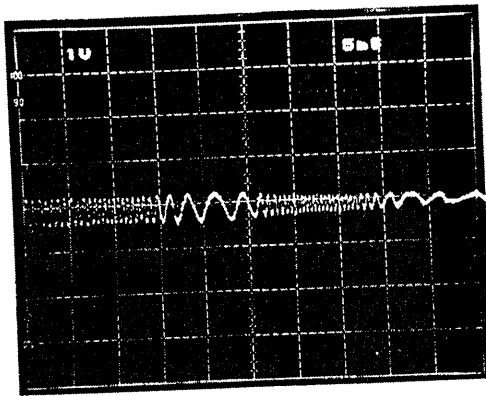


Photo. 9-1 Point zéro

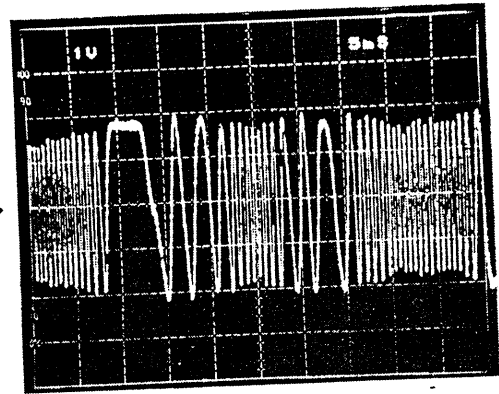


Photo. 9-3 Amplitude maximum

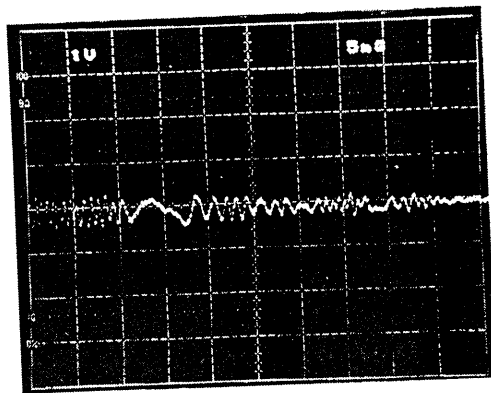
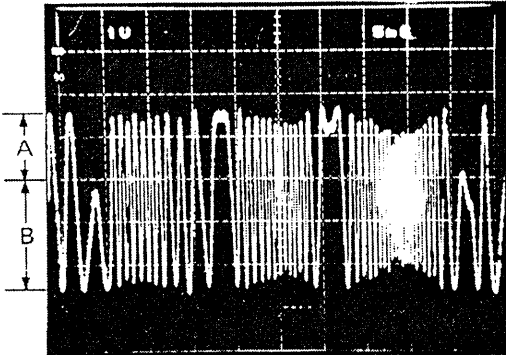


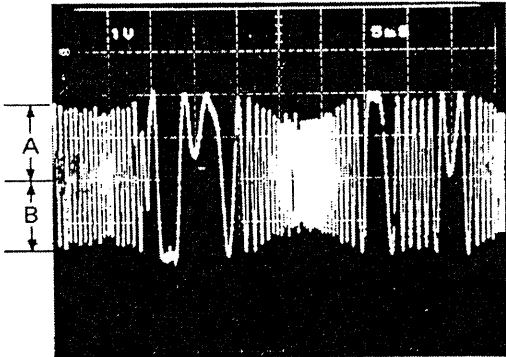
Photo. 9-2 Forme d'onde hors du point zéro

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
6. RÉGLAGE DE L'ÉQUILIBRAGE DE CENTRAGE DE PISTE						
	0.5 V/div.	5 ms/div.	TP1 Broche 2 (TRK.ERR)	VR5 (TRK.BAL)	TRK.ERR	• Mettre en place le disque d'essai (TEST). • Régler le mode d'essai (TEST). ✕ • Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (>>). • Appuyer sur la touche de piste avant (TRACK FWD) (>>) et sur la touche de lecture (PLAY) (>) pour faire tourner le disque. • Observer la broche 2 TRK.ERR (erreur de centrage de piste) de TP1 au moyen d'un oscilloscope et ajuster au moyen du potentiomètre VR5 TRK.BAL (équilibre de centrage de piste) de façon à ce que la composante continue de l'erreur de centrage de piste disparaisse. Note: Avant de procéder aux ajustements ci-dessus, veiller à régler le décalage d'erreur de piste.



A ≠ B

→



A = B

Photo. 9-4 Présence de la composante continue

Photo. 9-5 Absence de la composante continue

✕ Voir page 57

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/spécifications de réglage	Méthode de réglage
	V	H				
7. RÉGLAGE TANGENTIEL						
		200 ns	TP1 Broche 1 (sortie RF)	Vis de réglage tangentiel	Mire Best Eye	• Mettre en place le disque d'essai (TEST) • Régler le mode d'essai (TEST). ✕ • Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (↗). • Appuyer séquentiellement sur les touches d'avance de piste (TRACK FWD) (↗), de lecture (PLAY) (▶) et de pause (PAUSE) (⏸), et fermer tous les asservissements. (Le voyant de pause s'allume.) • Observer le signal RF à la broche 1 (sortie RF) de TP1 au moyen d'un oscilloscope et régler au moyen de la vis tangentielle, de façon à ce que la mire Best Eye devienne claire. (Figure 9-4) • Le point de réglage se situe au milieu entre le point où la mire se détériore en tournant la vis tangentielle dans le sens des aiguilles d'une montre et le point où la mire se détériore en tournant la vis tangentielle dans le sens inverse des aiguilles d'une montre. Comme critère, observer que la forme d'onde globale soit claire et que l'une des formes de losange se situe dans la mire (Photo 9-6); réaliser le réglage en un point optimum où la forme de losange apparaît avec des traits relativement fins.

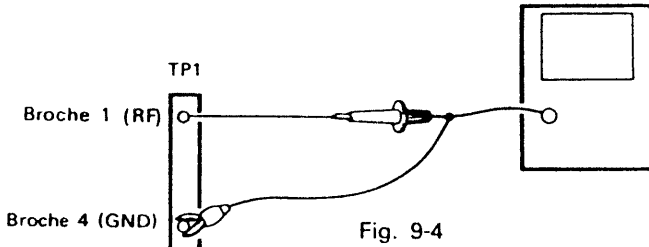
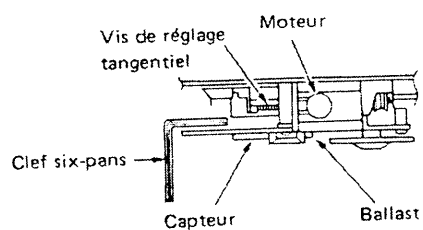


Fig. 9-4

Note: Pendant le réglage, tenir la clef six-pans vers le haut de façon à ce que le corps de la tête de lecture ne descende pas.

※ Voir page 57



Dans l'illustration ci-dessous, le dessus et le dessous de l'appareil sont en réalité à l'envers.

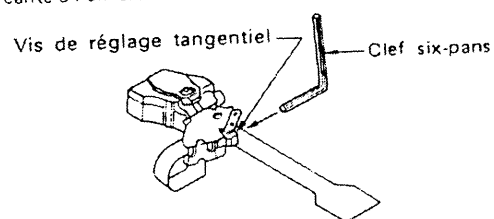
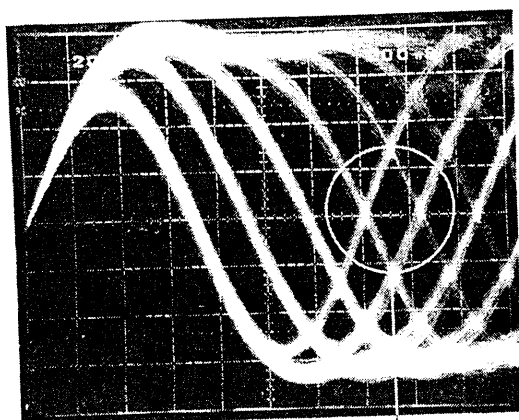


Fig. 9-5 Réglage tangentiel



Partie à observer

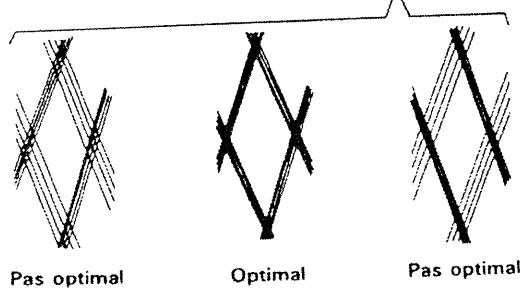


Photo. 9-6

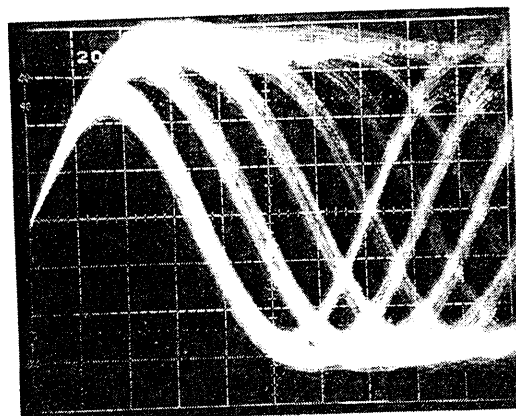


Photo. 9-7

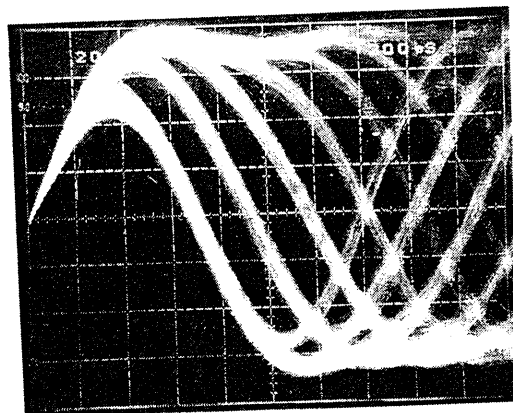


Photo. 9-8

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
8. RÉGLAGE DU GAIN DE FOCALISATION						
	20 mV/div. 5 mV/div. Canal 1(X). Canal 2(Y). (Sonde 10:1)	Axe X TP1 Broche 5 (FCS.IN) Axe Y TP1 Broche 6 (FCS.ERR)	VR3 (FCS.GAN)	Différence de phase 90°.	• L'alimentation étant coupée (POWER OFF), raccorder un oscilloscope et un oscillateur de la manière indiquée à la figure 9-6. • Régler le mode de lecture (PLAY). • Enclencher l'alimentation de l'oscillateur et délivrer un signal de 1,2kHz à 1 Vc-c. Note: (En fonction de l'oscillateur utilisé, certains appareils fournissent un courant continu lors de leur enclenchement. Par conséquent, il est préférable de raccorder l'oscillateur après avoir enclenché son alimentation.) • Ajuster le potentiomètre VR3 FCS.GAN (gain de focalisation) de façon à ce que la figure de Lissajou observée sur l'oscilloscope devienne un cercle horizontal (déphasage 90°).	

Fig. 9-6

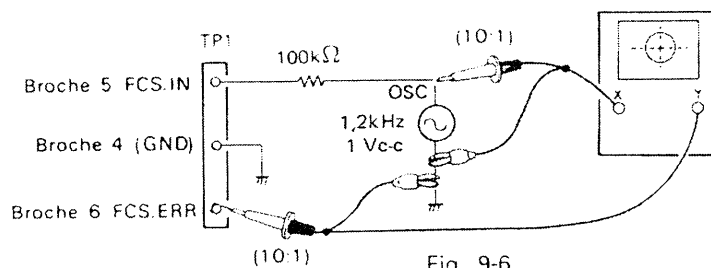


Fig. 9-6

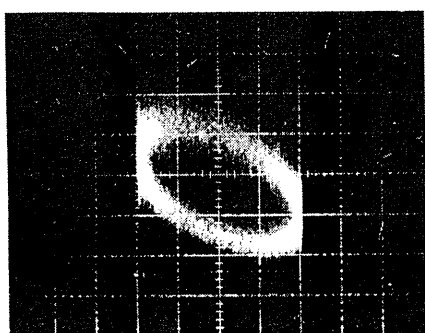


Photo. 9-9 Gain élevé

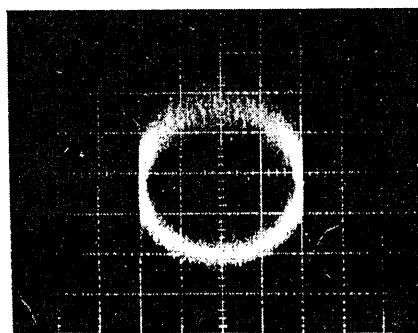


Photo. 9-10 Gain optimum

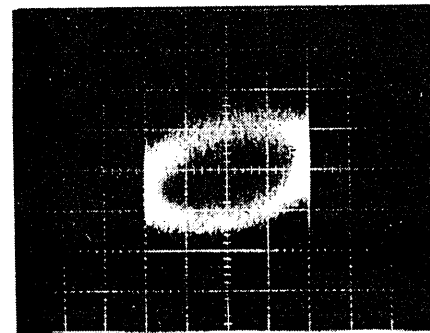


Photo. 9-11 Gain réduit

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
9. RÉGLAGE DU GAIN DE CENTRAGE DE PISTE						
	50 mV/div 5 mV/div. Canal 1 (X). Canal 2 (Y) (Sonde 10:1)	Axe X TP1 Broche 3 (TRK.IN) Axe Y TP1 Broche 2 (TRK.ERR)	VR4 (TRK.GAN)	Déphasage 90°	• L'alimentation étant coupée (POWER OFF), raccorder un oscilloscope et un oscillateur de la manière indiquée à la figure 9-7. • Régler le mode d'essai (TEST). ✕ • Appuyer séquentiellement sur les touches d'avance de piste (TRACK FWD) (), de lecture (PLAY) () et de pause (PAUSE) (), puis enclencher chaque asservissement de focalisation, moyeu et centrage de piste. Enclencher l'alimentation de l'oscillateur et fournir un signal de 1,2 kHz à 2 Vc-c. Note: (En fonction de l'oscillateur utilisé, certains appareils fournissent un courant continu lors de leur enclenchement. Par conséquent, il est préférable de raccorder l'oscillateur après avoir enclenché son alimentation.) • Ajuster le potentiomètre VR4 TRK GAN (gain de centrage de piste) de façon à ce que la figure de Lissajou sur l'oscilloscope devienne un cercle horizontal (déphasage 90°).	

Fig. 9-7

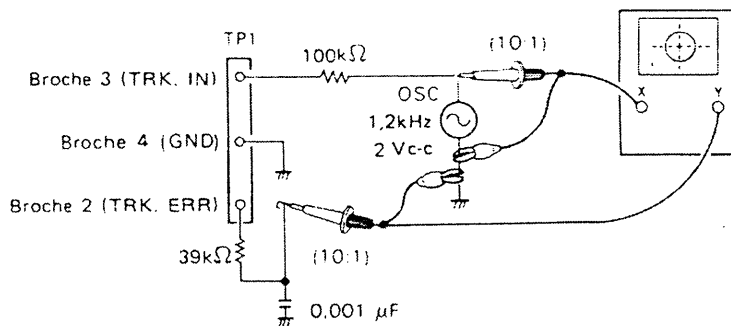


Fig. 9-7

✕ Voir page 57

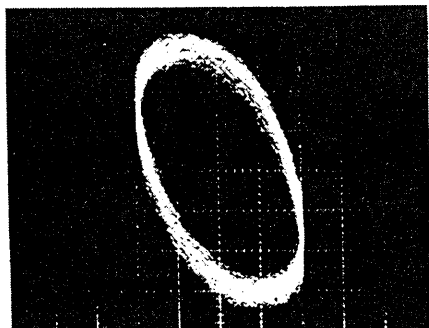


Photo. 9-12 Gain élevé

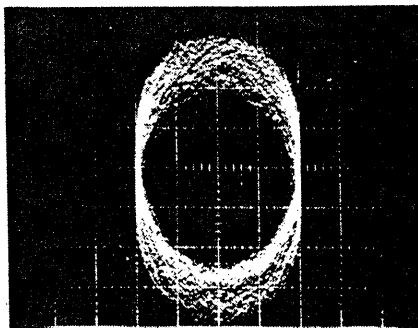


Photo. 9-13 Gain optimum

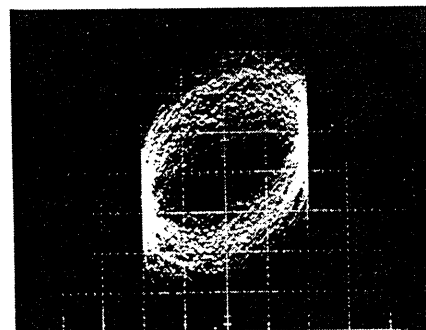
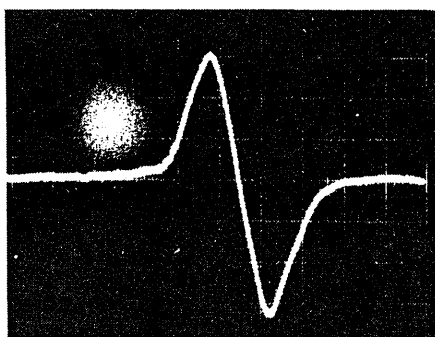


Photo. 9-14 Gain réduit

Pas No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
10. RÉGLAGE DE LA FRÉQUENCE PROPRE DU VCO						
			TP2 Broche 2 (PLCK)	VR8 (VCO.ADJ)	4.275 ±0.025 MHz	• Régler le mode d'essai (TEST). ※ • Court-circuiter entre les ponts ASY et GND au moyen de l'outil de réseau, etc. (Figure 9-1) • Raccorder un fréquencemètre capable de mesurer au-dessus de 10 MHz à la broche 2 de TP2. • Ajuster le potentiomètre VR8 VCO ADJ (réglage du VCO) de façon à ce que la valeur indiquée par le fréquencemètre devienne égale à 4,275±0,025 MHz.
11. MÉTHODE DE CONTRÔLE DE LA CARACTÉRISTIQUE S (ERREUR DE FOCALISATION)						
						• Régler le mode d'essai (TEST). ※ • Réaliser un court-circuit entre la broche 5 FCS.IN (entrée de focalisation) de TP1 et la terre GND. • Appuyer sur la touche d'avance de piste (TRACK FWD) () et observer simultanément la forme d'onde à la broche 6 FCS.ERR (erreur de focalisation) de TP1 au moyen d'un oscilloscope.

※ Voir page 57



Erreur de mise au point

Photo. 9-15

9.5 AJUSTE

Los items de ajuste de este modelo deberán ser efectuados en el orden mostrado abajo.

• Items de ajuste y comprobación

1. Ajuste de desviación de seguimiento, foco y RF.
2. Ajuste del nivel de RF
3. Confirmación de la alimentación de salida de LD (diodo láser)
4. Confirmación de enclavamiento del enfoque y del eje
5. Ajuste del retículo
6. Ajuste del equilibrio de seguimiento
7. Ajuste tangencial
8. Ajuste de la ganancia de enfoque
9. Ajuste de la ganancia de seguimiento
10. Ajuste de la frecuencia propia de VCO
11. Método para confirmar el carácter S (error de enfoque)

• Equipo de medición

1. Osciloscopio de doble traza
2. Medidor de alimentación del láser
3. Disco de prueba (YEDS7)
4. Filtro de ajuste de equilibrio de seguimiento
5. Filtro de ajuste de ganancia de bucle
6. Generador de señal
7. Contador de frecuencia
8. Otras herramientas generales

• Modo de prueba

Ajuste del modo de prueba y los procedimientos de cancelación

- (1) Para disponer el modo de prueba, coloque en ON el interruptor POWER del reproductor (S707) mientras presiona el interruptor TEST MODE (S1). (terminales del modo de ajuste).
- (2) Para cancelar el modo de prueba, simplemente gire el interruptor de POWER del reproductor a OFF.

Las varias funciones de tecla en el modo de prueba están enlistadas en la Tabla 9-1.

• Puntos de ajuste

- VR1: Alimentación del láser
- VR7: Desviación del seguimiento (TRK.OFS)
- VR3: Ganancia de enfoque (FCS.GAN)
- VR4: Ganancia de seguimiento (TRK.GAN)
- VR5: Equilibrio de seguimiento (TRK.BAL)
- VR6: Desviación de enfoque (FCS.OFS)
- VR8: Ajuste de VCO
- VR2: Compensación de RF (RF.OFS)

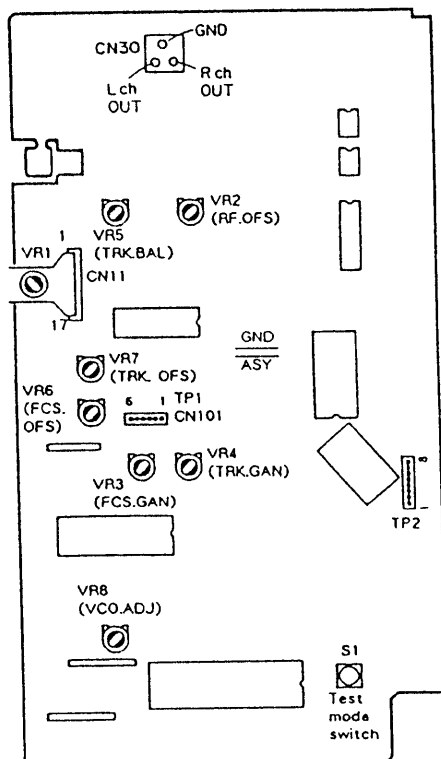


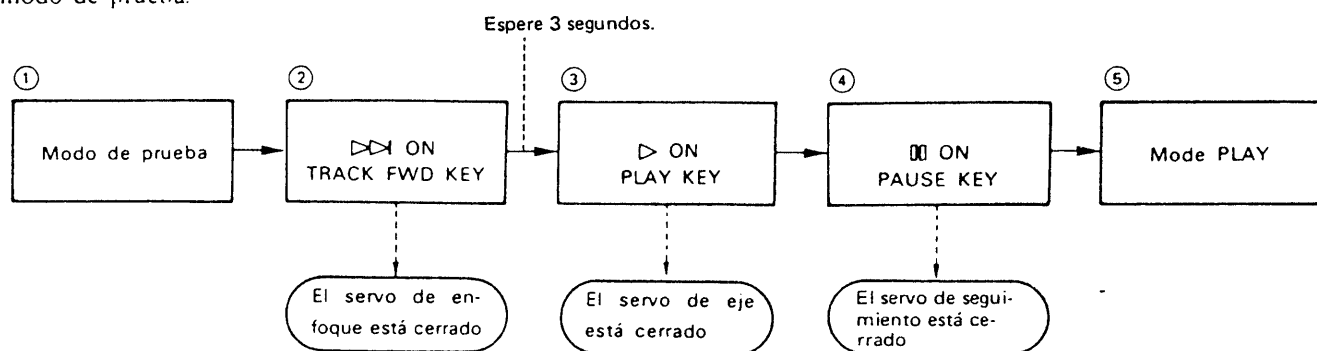
Fig. 9-1 Punto de ajuste

En el modo de prueba, cada servocircuito puede ser cerrado y abierto por operaciones separadas. Consecuentemente, cada servo deberá ser cerrado uno a la vez (en secuencia en serie) para ajustar el modo de PLAY (reproducción).

Fijese que el modo de PLAY no se activa simplemente presionando la tecla de PAUSE (pausa) () en el modo de prueba.

Ejemplo: Conmutando del modo de STOP (parado) a PLAY.

* Cada servomecanismo funciona en una secuencia en serie en el modo de prueba.

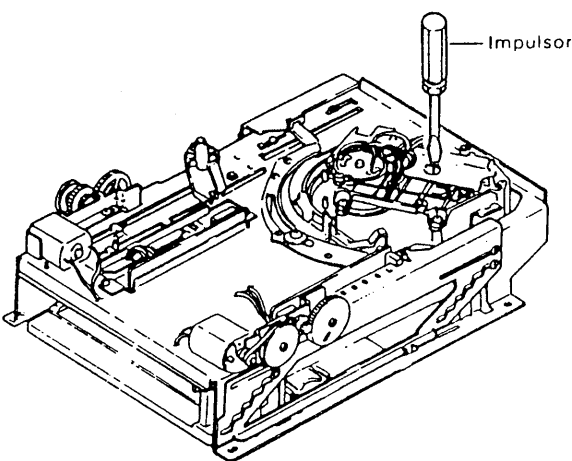
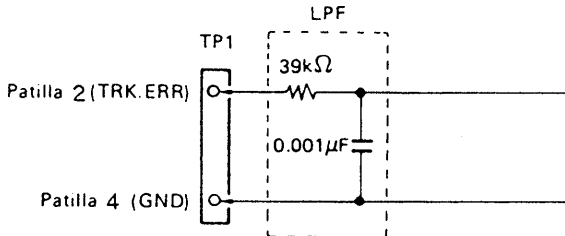


• Funciones de tecla en el modo de prueba

Símbolo	Nombre de tecla	Función durante el modo de prueba	Descripción
	TRACK FWD	El servo de enfoque está cerrado.	El diodo láser se enciende. El actuador se mueve arriba/abajo, luego se cierra el servo de enfoque.
	PLAY	El servo de eje está cerrado.	El eje comienza a rotar y se cierra el servo cuando se convierte en el modo de servo CLV-A.
	PAUSE	El servo de seguimiento está cerrado/abierto	Ejecuta la operación de conexión oscilante. Cuando se cierra el servo de seguimiento y se pone en el modo de PLAY presionando esta tecla (el servo de enfoque y el del eje deberán estar cerrados), y el indicador de pausa se enciende. El servo de seguimiento se abre presionando de nuevo la tecla.
	MANUAL SEARCH REV	El carro se mueve en la dirección inversa (hacia el centro del disco)	El carro se mueve hacia el centro del disco a una alta velocidad de como 3 cm/seg. Ya que no existe un mecanismo de seguridad para detener el carro, libere la tecla cuando el carro llegue al final.
	MANUAL SEARCH FWD	El carro se mueve en la dirección hacia delante. (hacia el final del disco)	El carro se mueve hacia el final del disco a una alta velocidad de como 3 cm/seg. Ya que no existe un mecanismo de seguridad para detener el carro, libere la tecla cuando el carro llegue al final.
	STOP	PARADO	Todos los servos están abiertos.
	EJECT	(Cargador de discos compactos)	El cargador de discos compactos. Sin embargo, el captador no regresa a su posición de aparcamiento. Además, aun cuando se cierra el disco el captador permanece tal como está.

Tabla 9-1

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
1 AJUSTES DE COMPENSATION DE SEGUIMIENTO, FOCO Y RF						
			Patilla 2 de TP1 (TRK. ERR)	VR5 (TRK.BAL) VR7 (TRK.OFS)	45° 0V±50 mV	- Ajuste el modo de prueba. ✕ - Gire el volumen de TRK.BAL (Equilibrio de seguimiento) de VR5 en el sentido de las manecillas del reloj 45° del centro. - Ajuste VR7 TRK.ERR (de seguimiento) de modo que el voltaje en TRK.ERR (desviación de seguimiento) de la patilla 2 de TP1 se ponga en 0V±50 mV.
			Patilla 6 de TP1 (FCS. ERR)	VR6 (FCS. OFS)	Compens. de foco 0V ± 50mV	Ajuste VR6 FCS.OFS (compensación de foco) de modo que el voltaje de FCS.ERR (error de foco) en la patilla 6 de TP1 sea 0V ± 50mV.
			Patilla 1 de TP1 (RF OUTPUT)	VR2 (RF OFS)	Compens. de RF 100mV ± 50mV	Ajuste VR2 RF.OFS (compensación de RF) de modo que el voltaje de salida de RF en la patilla 1 de TP1 sea 100 mV ± 50 mV.
2 AJUSTE DEL NIVEL DE RF						
			Patilla 1 de TP1 (RF)	Alimentación del laser VR1	1.5Vp-p ^{+0.2} ₋₀ V	- Ajuste el mode de TEST. ✕ - Reproduzca el disco de TEST y conecte la sonda de un osciloscopio a la RF de la patilla 1 (Salida de RF) de TP1 y mida el voltaje de P-P de la forma de onda de RF. - Ajuste UR1 (alimentación del láser) que el valor sea 1.5Vp-p^{+0.2}₋₀ V.
3 CONFIRMACION DE ALIMENTACION DE ALIDA DE LD (DIODO LASER)						
					Confirmación Menos de 0,13 mW	- Ajuste el modo de prueba. ✕ - Presione la tecla de TRACK FWD (▷) y encienda el LD (Diodo láser). - Ubique el sensor del medidor de potencia del láser inmediatamente arriba del objetivo, y confirme que la potencia de salida del LD sea menos de 0,13 mW. NOTA: Medir después de retirar el servomecanismo.
4 CONFIRMACION DE BLOQUEO DE ENFOQUE Y DEL EJE						
	0.5V/div	100 mseg/div	Patilla 1 de TP1 (Salida de RF)		Existe salida de RF Rotación normal	- Ajuste del disco de TEST. - Ajuste del mode de TEST. ✕ - Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷). - Tenga en cuenta que este paso deberá ser ejecutado. - Observe RF (Radio frecuencia) de la patilla 1 de TP1 con un osciloscopio y confirme que se saque la señal de RF después de presionar la tecla de TRACK.ERR (▷). - Presione la tecla de PLAY (▷) y asegúrese que el disco rota en la dirección normal casi a la velocidad especificada (tal como está cerca del centro del disco. la velocidad de rotación es alrededor de 30 rpm) y que no rote anormalmente o inversamente.

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
5	AJUSTE DE LA MIRA					
	 Fig. 9-2  Fig. 9-3					• Ajuste el mode TEST. ✕ • Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (↗) de modo que el tornillo de ajuste de retículo del captador pueda ser visto a través del orificio oval en el lado superior del servomecanismo. • Inserte el tornillo (—) en el orificio del lado superior o del mecanismo como se muestra en la Fig. 9-2, y confirme que gira el tornillo de retículo. • Presione la tecla de TRACK FWD (↗) y la tecla de PLAY (→) secuencialmente y cierre el servo de enfoque y el del eje. (No cierre el servo de seguimiento.) • Observe la forma de onda en TRCK ERR (Error de seguimiento) de la patilla 2 de TP1 con un osciloscopio. Luego inserte un filtro de paso bajo de corte. (Fig. 9-3)
0.5V/div	5 ms/div	TRK.ERR de la patilla 2 de TP1	Retículo	Punto cero Amplitud máxima	• Gire el tornillo (—) y encuentre el punto cero (Foto. 9-1) • Luego, gire lentamente el tornillo (—) hacia el sentido contrario del reloj desde el punto cero y ajuste en el punto donde la forma de onda (señal de error de seguimiento) primeramente se ponga a una amplitud máxima. (Vea Foto 9-3) Nota: Si el tornillo (—) se presiona fuertemente, el captador se mueve hacia el centro del disco, por consiguiente el ajuste resulta difícil. • Finalmente, asegúrese de confirmar que la señal de error de seguimiento (en este momento, no se ha insertado el filtro de paso bajo de corte de 4 kHz) cuando el captador se mueve hacia el centro del disco y el voltaje de P-P de la señal de error de seguimiento en la circunferencia exterior del disco no haya variado considerablemente. Cuando se desvía el nivel arriba de ±10%, ajuste de nuevo girando el tornillo de retículo a un punto de amplitud de error mínimo.	

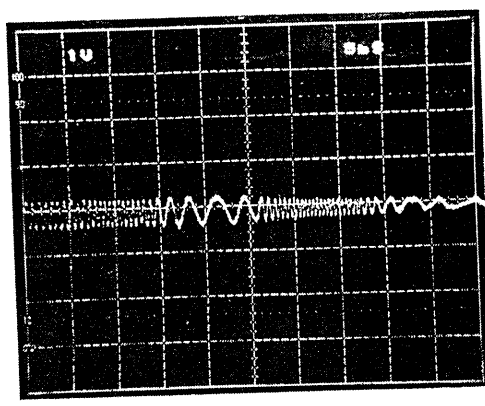


Foto. 9-1 Punto cero

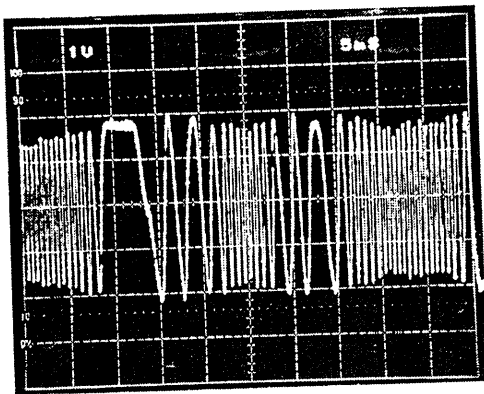


Foto. 9-3 Amplitud máxima

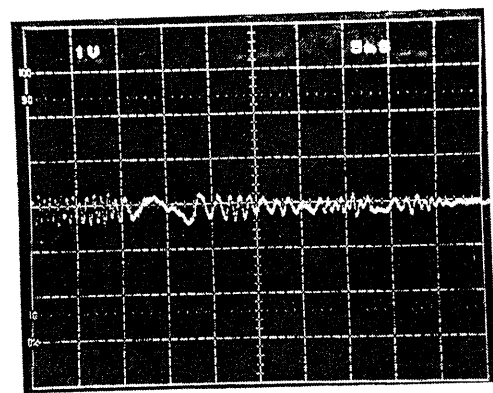
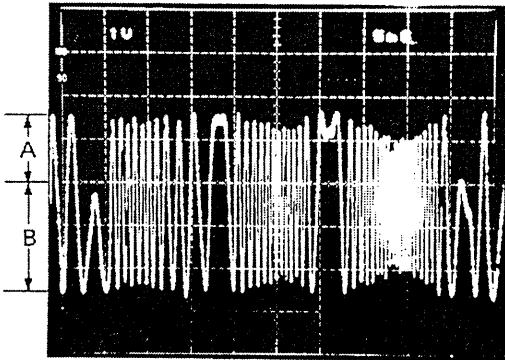


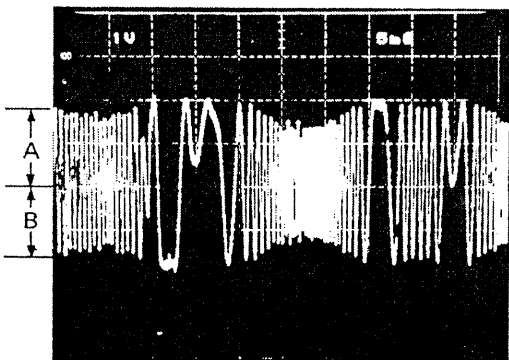
Foto. 9-2 Forma de onda de un punto no cero

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
6 AJUSTE DE EQUILIBRIO DE SEGUIMIENTO						
	0,5V/div	5 mseg /div	Patilla 2 de TP1 (TRK.ERR)	VR5 (TRK.BAL)	TRK.ERR	• Ajuste el disco de TEST. • Ajuste el mode de TEST. ✕ • Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD ($\rightarrow$). • Presione la tecla de TRACK FWD ($\rightarrow$) y la tecla de PLAY ($\rightarrow$) para comenzar a voltear el disco. • Observe TRK.ERR (Error de seguimiento) de la patilla 2 de TP1 con un osciloscopio y ajuste con el volumen de TRK.BAL (Equilibrio de seguimiento) de VR5 de modo que la componente de CC del error de seguimiento desaparezca. Nota: Antes de realizar los ajustes indicados arriba, asegúrese de compensar el error de seguimiento.



A ≠ B

→

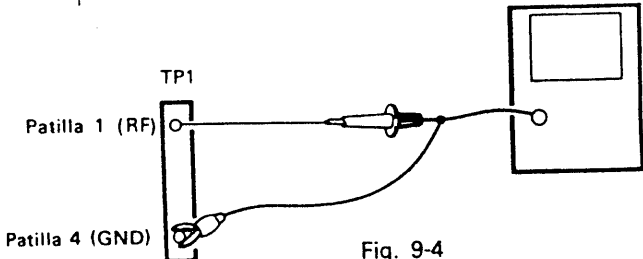


A = B

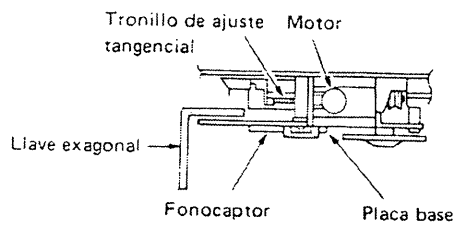
Foto. 9-4 Existe componente de CC

Foto. 9-5 No existe componente de CC

✕ Vea la página 68

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
7	AJUSTE TANGENCIAL					
			200 nS	Patilla 1 de TP1 (Salida de RF)	Tornillo de ajuste de la tangencial	Mejor imagen de prueba • Ajuste el disco de TEST. • Ajuste el mode de TEST. ✕ • Cambie el carro cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (⏩). • Presione la tecla de TRAK FWD (⏩), la tecla de PLAY (▶) y la tecla de PAUSE (⏸) secuencialmente, y cierre todos los servos. (El indicador de pausa se enciende.) • Observe el RF de la patilla 1 (Salida de RF) de TP1 con un osciloscopio y ajuste con el tornillo de la tangencial de modo que la imagen de prueba resulte nítida. (Fig. 9-4) • El punto de ajuste es el punto medio entre el punto donde la imagen de prueba se deteriora girando el tornillo de la tangencial en el sentido de las manecillas del reloj, y el punto donde la imagen de prueba se deteriora girando el tornillo de la tangencial en contra del sentido de las manecillas del reloj. Como un criterio, observe que la forma de onda en conjunto sea nítida y que una de las figuras de diamante esté dentro de la imagen de prueba (Foto. 9-6), y ajuste al punto óptimo donde la forma de diamante se vea relativamente como una línea fina.  Fig. 9-4 (Nota) Durante el ajuste, sostenga la llave hexagonal hacia arriba para evitar que el cuerpo del captador vaya hacia abajo.

✕ Vea la página 68



En la figura siguiente, las partes superior e inferior son opuestas a las del producto real.

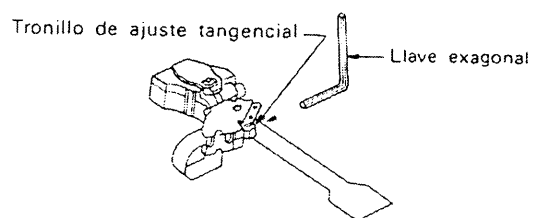


Fig. 9-5 Ajuste tangencial

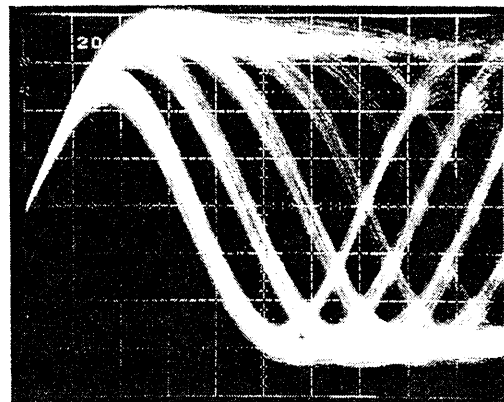
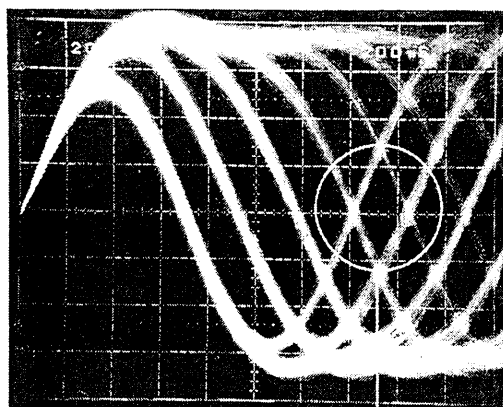
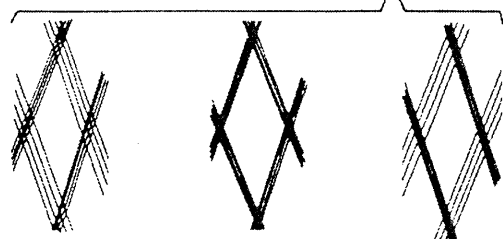


Foto. 9-7



Parte a ser observada



No es óptimo

Óptimo

No es óptimo

Foto. 9-6

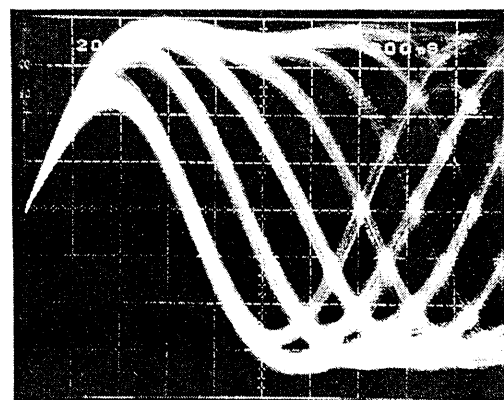


Foto. 9-8

No. de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
8 AJUSTE DE GANANCIA DE ENFOQUE						
	20 mV/div.5/mV/div CH1 (X). CH2 (Y) (SONDA 10:1)		Eje X Patilla 5 de TP1 (FCS IN) Eje Y Patilla 6 de TP1 (FCS.ERR)	VR3 (GANACIA FCS)	Diferencia de fase 90°	- En el estado de POWER OFF (apagado), conecte el osciloscopio y el oscilador como se muestra en la Fig. 9-6. - Ajuste el modo de PLAY. - Encienda el power del oscilador y extraiga 1,2kHz 1 Vp-p. Nota: (Dependiendo en los osciladores, algunos de ellos producen CC cuando son encendidos. Por lo tanto, es conveniente conectar el oscilador después del encendido.) - Ajuste con el volumen de FCS.GAN (Ganancia de enfoque) de VR3 de modo que la figura de Lissajous del osciloscopio a ser un círculo horizontal (90° de diferencia de fase).

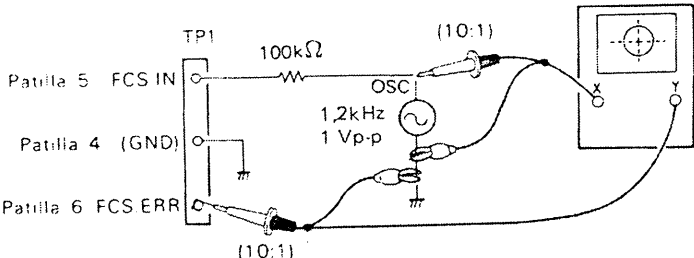


Fig. 9-6

Fig. 9-6

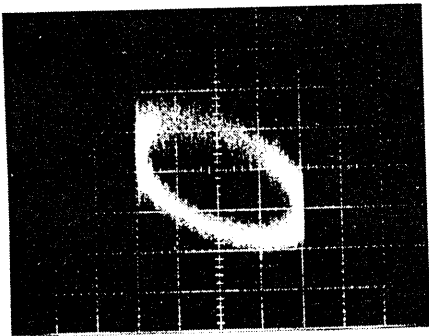


Foto. 9-9 Alta ganancia

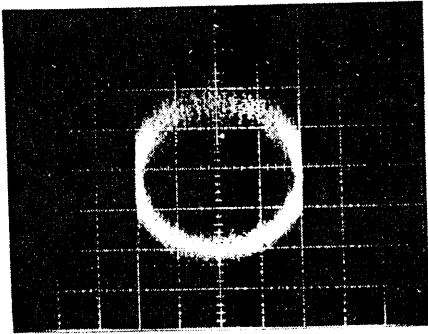


Foto. 9-10 Ganacia óptima

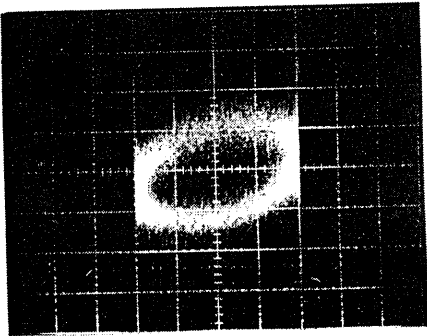


Foto. 9-11 Baja ganancia

No de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
9 AJUSTE DE GANANCIA DE SEGUIMIENTO						
	50 mV/div. 5 mV/div. CN1 (X), CH2 (Y) (SONDA 10:1)		Eje X Patilla 3 de TP1 (TRK.ERR) Eje Y Patilla 2 de TP1 (TRK.ERR)	VR4 (TRK.GAN)	90° de diferencia	- En el estado de POWER OFF (apagado), conecte un osciloscopio y un oscilador como se muestra en la Fig. 9-7. - Ajuste el modo de TEST.  - Presione la tecla de TRACK FWD (), la tecla de PLAY (), y la tecla de PAUSE () secuencialmente, y encienda el servo del enfoque, el del eje y el de seguimiento. - Encienda el oscilador y extraiga 1.2 kHz 2 Vp-p. Nota: (Dependiendo en los osciladores, algunos de ellos producen CC cuando son encendidos. Por la tanto, es conveniente conectar el oscilador después del encendido) - - Ajuste con el volumen de TRAK GAN de VR4 (Ganancia de seguimiento) de modo que la figura de Lissajous del osciloscopio llege a ser un círculo horizontal (90° de diferencia de fase).

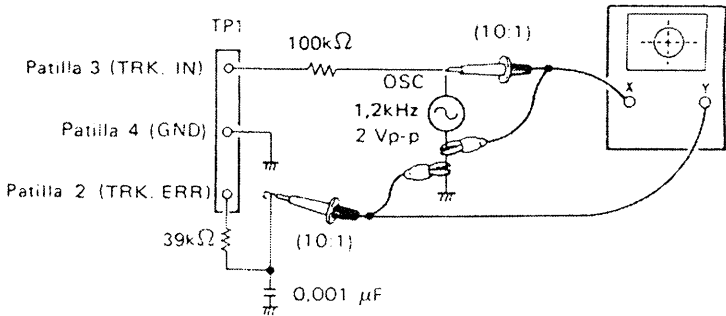


Fig. 9-7

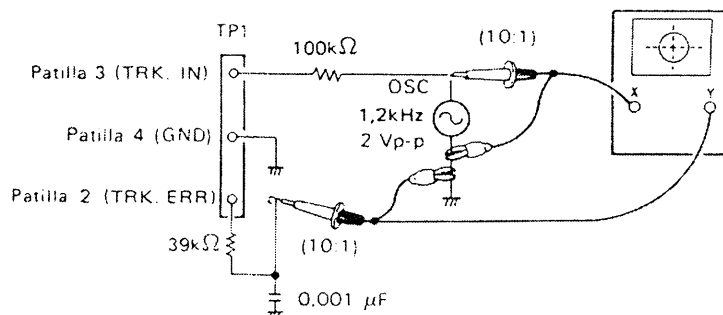


Fig. 9-7

$\times$ Vea la página 68

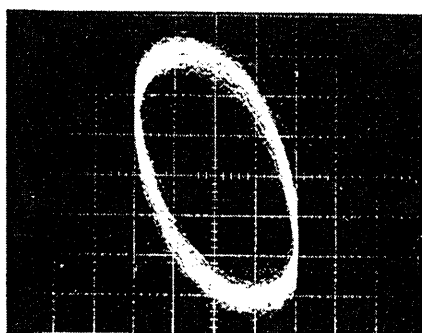


Foto. 9-12 Alta ganancia

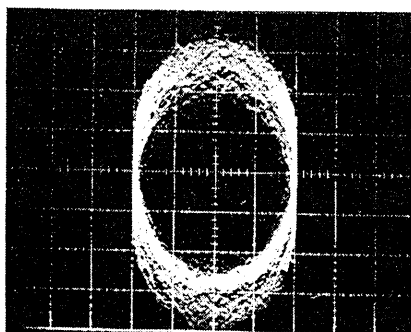


Foto. 9-13 Ganancia óptima

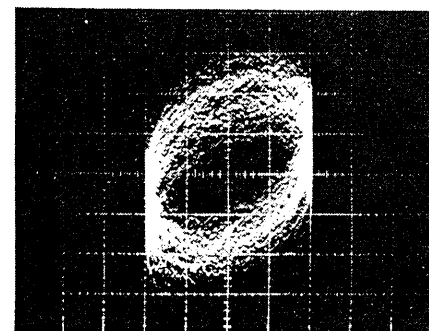
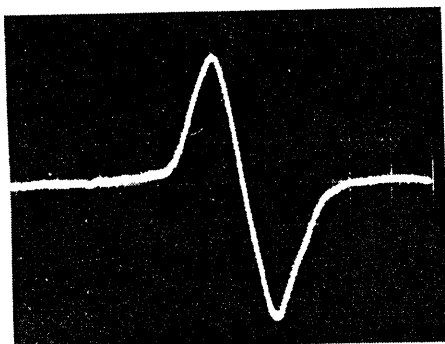


Foto. 9-14 Baja ganancia

No de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
10	AJUSTE DE LA FRECUENCIA PROPIA DE VCO					
			Patilla 2 de TP2 (PLCK)	VR8 (VCO.ADJ)	4.275 ±0.025 MHz	• Ajuste el modo de TEST. ✕ • Haga un cortocircuito entre ASY y la conexión volante de GND con impulsor de retículo, etc. (Fig. 9-1) • Conecte el frecuencímetro, que pueda medir arriba de 10 MHz, a la patilla 2 de TP2. • Ajuste con el volumen VCO ADJ (ajuste de VCO) de VR8 de modo que el valor del frecuencímetro se ponga en 4,275 ±0.025 MHz.
11	METODO PARA CONFIRMAR EL CARACTER S (ERROR DE ENFOQUE)					
						• Ajuste el modo de TEST. ✕ • Haga un cortocircuito entre FCS.IN (Entrada de enfoque) de la patilla 5 de TP1 y GND. • Presione la tecla de TRACK FWD (⏩) y observe la forma de onda de FCS.ERR (Error de enfoque) de la patilla 6 de TP1 con un osciloscopio.

✖ Vea la página 68



Error de enfoque

Foto. 9-15

10. DECK AMPLIFIER BLOCK

10.1 EXPLODED VIEWS AND PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- The $\triangle$ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts list of Deck amplifier blok

Mark	No.	Description	Parts No.	Mark	No.	Des
	1	KNOB (VOLUME)	AAB1135		46	.....
	2	BUTTON (REC)	AAD1668		47	PLA
	3	BUTTON (POWER)	AAD1674		48	PLA
	4	BUTTON (COPY)	AAD1676		49	PLA
	5	BUTTON (EJECT)	AAD1716		50	.....
	6	BUTTON (PLAY)	AAD1718		51	PLA
	7	BUTTON (FUNCTION)	AAD1724		52	PLA
	8	SLIDE KNOB	AAE1128		53	PLA
	9	INDICATOR LENS	AAK1801		54	HEA
	10	DECORATIVE PLATE (DOOR R)	AAK1873		55	SHI
					56	.....
	11	DECORATIVE PLATE (DOOR L)	AAK1882		57	.....
					58	.....
	12	DECORATIVE PLATE (DECK)	AAK1904		59	FUI
	13	.....			60	AF
	14	CASSETTE DOOR (L)	AAN1177		61	HEA
	15	CASSETTE DOOR (R)	AAN1190		62	TR
	16	.....				ASS
	17	.....			63	MA
	18	LABEL	AAX1301		64	DEA
	19	SCREW 3×8	ABA1084		65	DEA
	20	SCREW (STEEL)	ABA1095			
	21	SPRING 1	ABH1062		66	DEA
	22	SPRING 2	ABH1063		67	DEA
	23	KEEP PLATE	ABK1011		68	AM
	24	EARTH LEAD			69	POV
	25	EARTH LEAD			70	COI
	26	.....			71	ME
	27	AC POWER CORD	ADG1052		72	ME
	28	NYLON BINDER			73	DA
	29	STRAIN RELIEF	AEC-882		74	.....
	30	NYLON RIVET			75	SCI
	31	CLAMPER			76	.....
	32	.....			77	SCI
	33	.....			78	SCI
	34	.....			79	SCI
	35	.....			80	NU
	36	.....			81	SCI
	37	.....			82	WA
	38	TERMINAL SCREW			83	.....
	39	FRONT PANEL	AMB1639	$\triangle$	84	FU
	40	PCB MOLD		$\triangle$	85	FU
	41	EJECT ARM (L)	AMR2031	$\triangle$	86	FU
	42	EJECT ARM (R)	AMR2032	$\triangle$	87	FU
	43	CHASSIS			88	2P
	44	REAR PANEL A				
	45	.....		$\triangle$	89	PO

DECK AMPLIFIER BLOCK

EXPLODED VIEWS AND PARTS LIST

5:

without part number cannot be supplied.

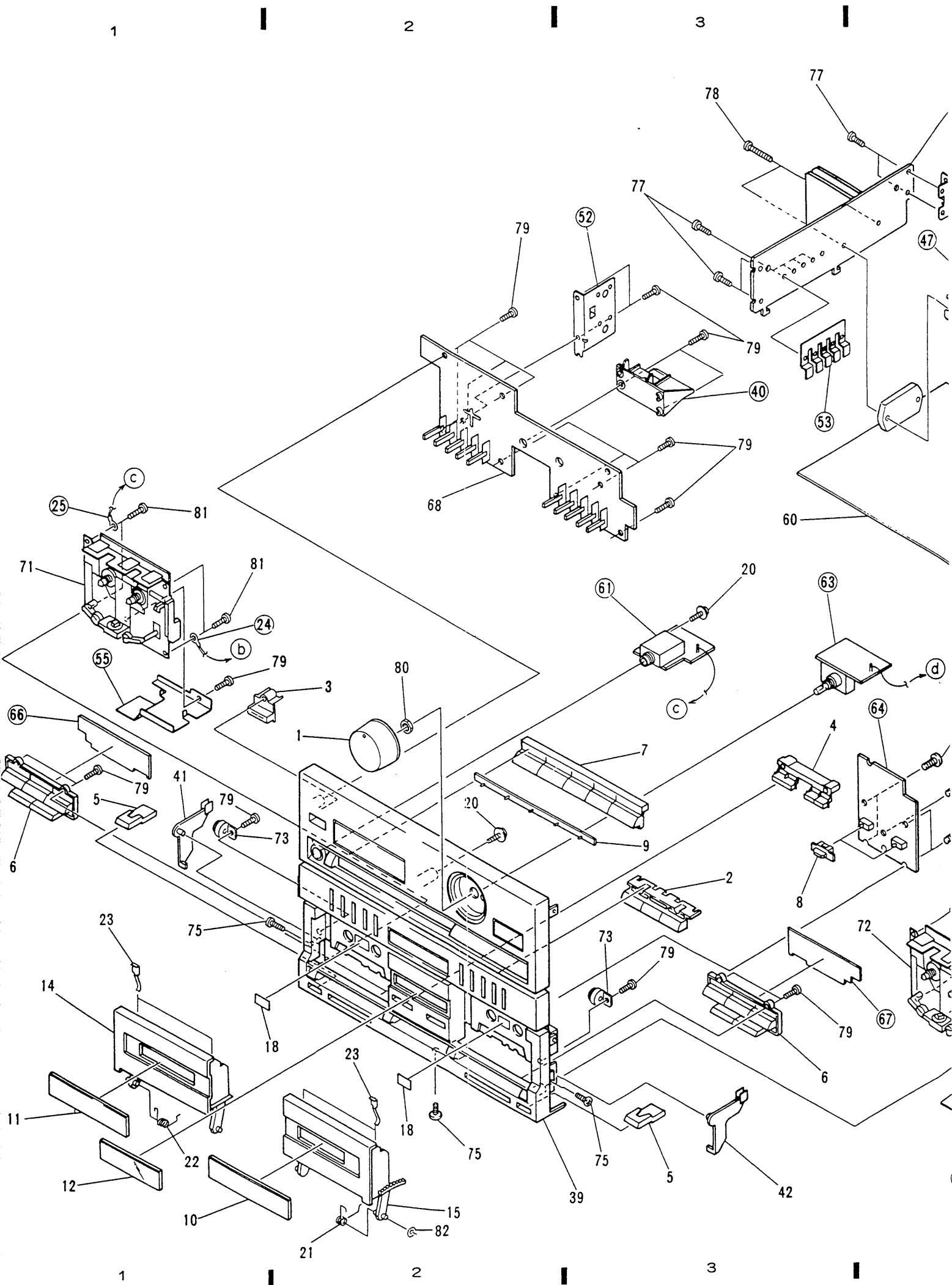
△ mark found on some component parts indicates the importance of the safety of the part. Therefore, when replacing, be sure to use parts of identical designa-

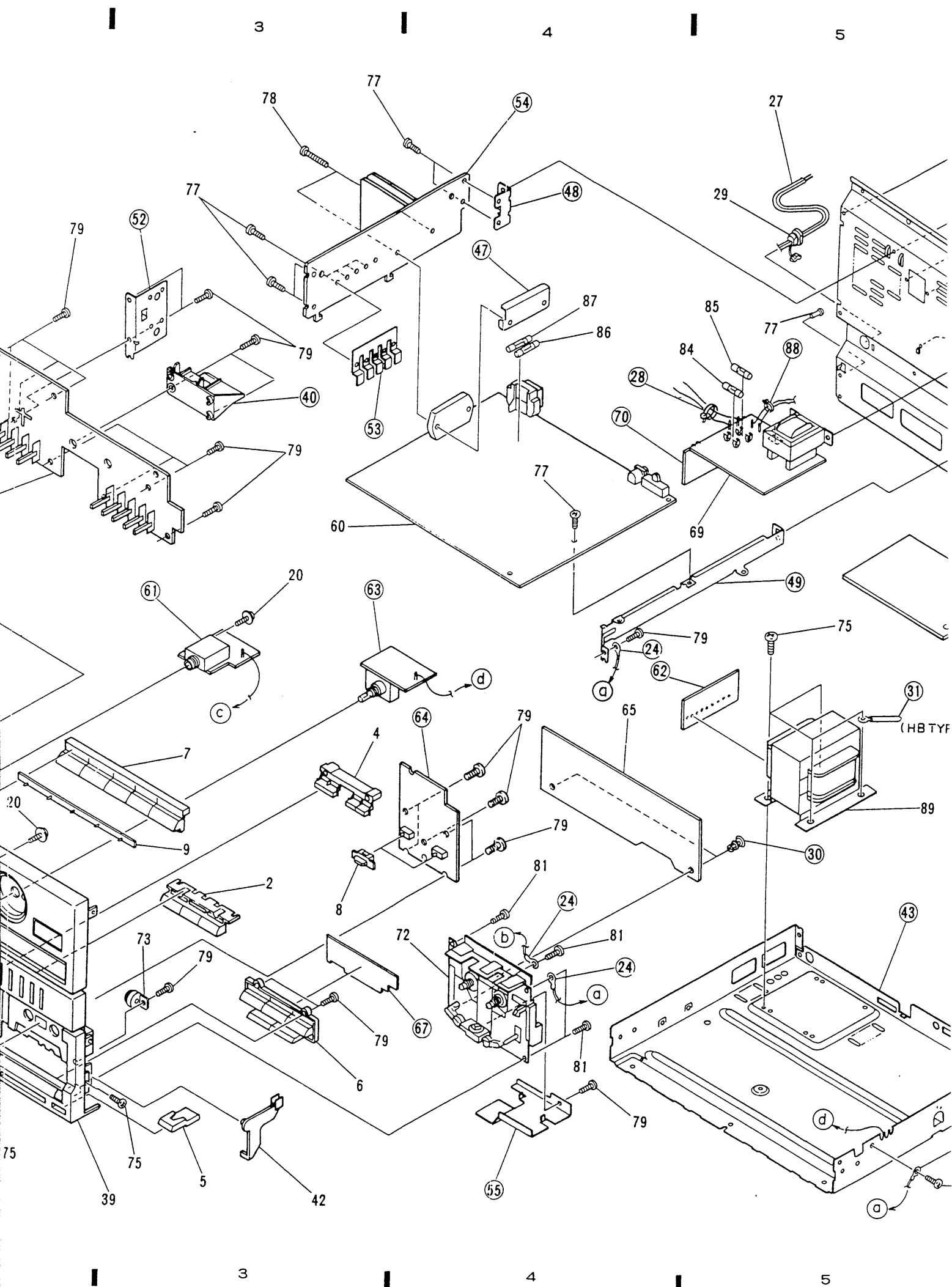
marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

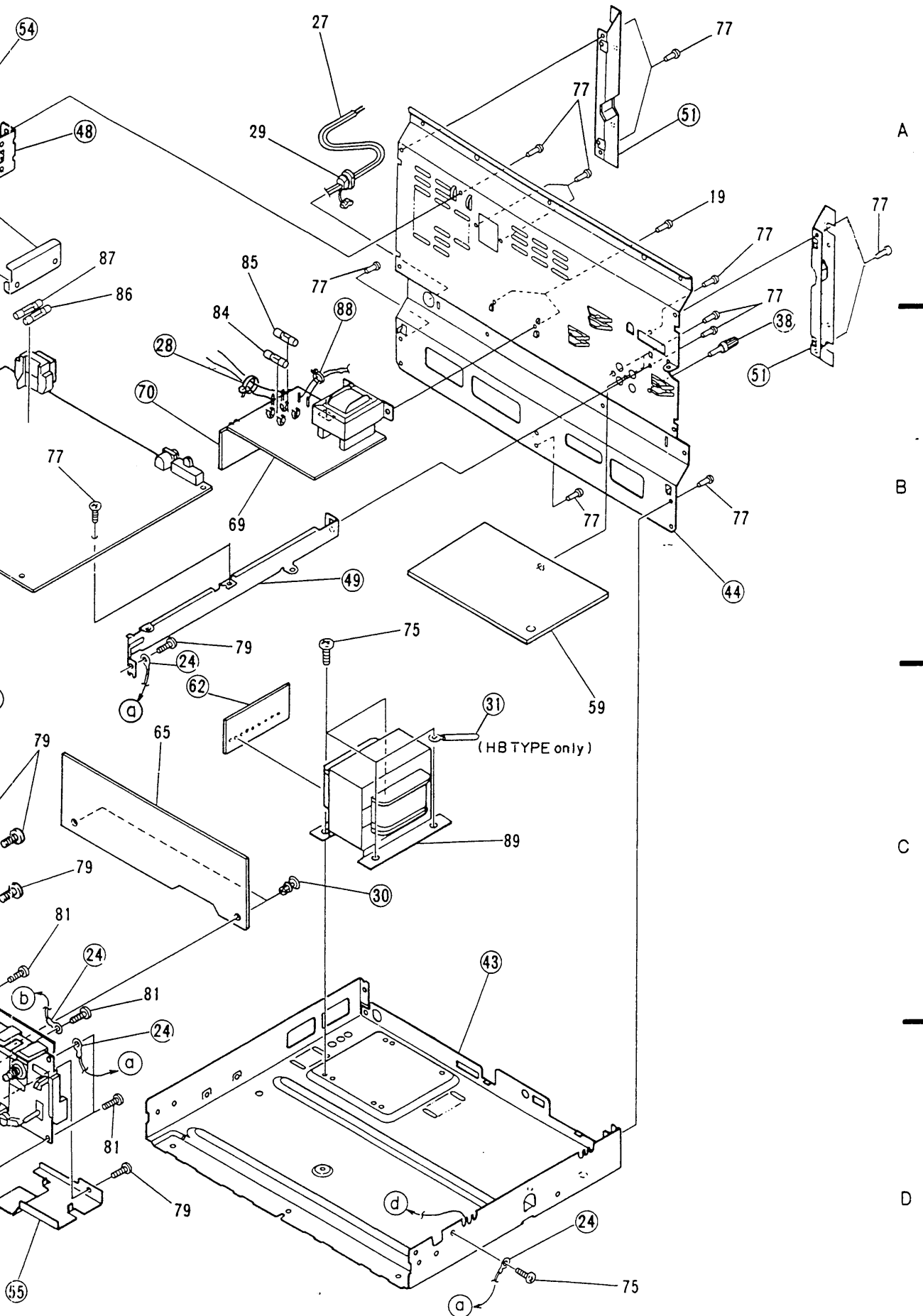
list of Deck amplifier blok

No.	Description	Parts No.	Mark	No.	Description	Parts No.
1	KNOB (VOLUME)	AAB1135		46	.....	
2	BUTTON (REC)	AAD1668		47	PLATE	
3	BUTTON (POWER)	AAD1674		48	PLATE B	
4	BUTTON (COPY)	AAD1676		49	PLATE	
5	BUTTON (EJECT)	AAD1716		50	.....	
6	BUTTON (PLAY)	AAD1718		51	PLATE	
7	BUTTON (FUNCTION)	AAD1724		52	PLATE A	
8	SLIDE KNOB	AAE1128		53	PLATE	
9	INDICATOR LENS	AAK1801		54	HEAT SINK	
10	DECORATIVE PLATE (DOOR R)	AAK1873		55	SHIELD PLATE	
				56	.....	
11	DECORATIVE PLATE (DOOR L)	AAK1882		57	.....	
				58	.....	
12	DECORATIVE PLATE (DECK)	AAK1904		59	FUNCTION ASS'Y	AWK1287
13	.....			60	AF ASSEMBLY	AWZ2627
14	CASSETTE DOOR (L)	AAN1177		61	HEAD PHONE ASSEMBLY	
15	CASSETTE DOOR (R)	AAN1190		62	TRANS CONNECT ASSEMBLY	
16	.....			63	MAIN VR ASSEMBLY	
17	.....			64	DECK CENTER ASSEMBLY	
18	LABEL	AAX1301		65	DECK CTRL ASSEMBLY	AWZ2635
19	SCREW 3×8	ABA1084				
20	SCREW (STEEL)	ABA1095		66	DECK-1 SW ASSEMBLY	
21	SPRING 1	ABH1062		67	DECK-2 SW ASSEMBLY	
22	SPRING 2	ABH1063		68	AMP,GEQ CTRL ASSEMBLY	AWZ2639
23	KEEP PLATE	ABK1011		69	POWER SUPPLY ASSEMBLY	AWZ2247
24	EARTH LEAD			70	CONNECT ASSEMBLY	
25	EARTH LEAD					
				71	MECHA UNIT 1	AWY1052
26	.....			72	MECHA UNIT 2	AWY1053
27	AC POWER CORD	ADG1052		73	DAMPER ASSEMBLY	AXA1008
28	NYLON BINDER			74	.....	
29	STRAIN RELIEF	AEC-882		75	SCREW	BBZ30P060FMC
30	NYLON RIVET					
				76	.....	
31	CLAMPER			77	SCREW	BBZ30P080FZK
32	.....			78	SCREW	BBZ30P180FMC
33	.....			79	SCREW	BPZ26P080FMC
34	.....			80	NUT	NK90FUC
35	.....					
				81	SCREW	VPZ30P080FMC
36	.....			82	WASHER	ABE1013
37	.....			83	.....	
38	TERMINAL SCREW		△	84	FU2001 FUSE (T1.25A)	AEK-509
39	FRONT PANEL	AMB1639	△	85	FU2003 FUSE (T800MA)	AEK-507
40	PCB MOLD					
			△	86	FU2004 FUSE (T1.25A)	AEK-509
41	EJECT ARM (L)	AMR2031	△	87	FU2005 FUSE (T1.25A)	AEK-509
42	EJECT ARM (R)	AMR2032	△	88	2P WIRE ASSEMBLY	
43	CHASSIS					
44	REAR PANEL A					
45	.....		△	89	POWER TRANSFORMER	ATS1253

Description	Parts No.
TE	
TE B	
TE	
TE	
TE A	
TE	
T SINK	
LD PLATE	
CTION ASS'Y	AWK1287
ASSEMBLY	AWZ2627
D PHONE ASSEMBLY	
NS CONNECT	
EMBL Y	
N VR ASSEMBLY	
K CENTER ASSEMBLY	
K CTRL ASSEMBLY	AWZ2635
K-1 SW ASSEMBLY	
K-2 SW ASSEMBLY	
GEQ CTRL ASSEMBLY	AWZ2639
ER SUPPLY ASSEMBLY	AWZ2247
NECT ASSEMBLY	
HA UNIT 1	AWY1052
HA UNIT 2	AWY1053
PER ASSEMBLY	AXA1008
EW	BBZ30P060FMC
EW	BBZ30P080FZK
EW	BBZ30P180FMC
EW	BPZ26P080FMC
	NK90FUC
EW	VPZ30P080FMC
HER	ABE1013
01 FUSE (T1.25A)	AEK-509
03 FUSE (T800MA)	AEK-507
04 FUSE (T1.25A)	AEK-509
05 FUSE (T1.25A)	AEK-509
TRE ASSEMBLY	
ER TRANSFORMER	ATS1253







10.1.2 Mecha unit 1 (AWY1052)

Mark	No.	Parts No.	Description	Mark	No.	Parts No.
	1	AZE1018	Hall IC		51	AZN1976
	2	AZX1019	Motor		52	AZN1977
	3	AZS1054	Leaf SW (MODE)		53	AZN1326
	4	AZS1034	Leaf SW (CrO2)		54	AZN1327
	5	AZN1286	Drive arm assembly		55	
	6	AZN1287	FW assembly A		56	
	7	AZN1288	Cam gear		57	AZN1328
	8	AZN1289	Reel		58	
	9	AZN1971	FR arm		59	...
	10	AZN1972	Pinch roller L assembly		60	...
	11	AZN1973	Pinch roller R assembly		61	AZN1330
	12	AZN1293	Gear		62	AZN1331
	13	AZN1294	H Gear		63	AZN1332
	14	AZN1793	CUE arm		64	AZN1978
	15	AZB1079	Screw		65	AZN1334
	16	...	...		66	AZN1335
	17	AZN1984	Collar C		67	AZN1336
	18	AZN1297	Motor pully		68	AZN1337
	19	AZN1298	Belt		69	AZN1338
	20	AZN1299	Spring		70	AZN1994
	21	AZN1300	FR lever spring		71	AZN1340
	22	AZN1301	FWF spring		72	AZN1980
	23	AZN1302	FWR spring		73	AZN1342
	24	AZN1303	Spring		74	AZN1343
	25	AZB1080	Screw		75	...
	26	AZN1305	Cable holder		76	AZN1981
	27	AZN1306	Spring		77	AZN1348
	28	AZN1307	Spring		78	AZN1347
	29	AZN1308	Spring		79	AZN1348
	30	AZN1309	Spring		80	AZN1349
	31	AZN1310	Spring		81	...
	32	AZN1311	Spring		82	AZS1085
	33	AZN1312	Spring		83	...
	34	AZN1313	Spring		84	AZP1022
	35	AZN1314	Spring		85	AZB1099
	36	AZN1315	Spring		86	AZN1352
	37	AZB1081	Screw		87	AZN1304
	38	AZN1316	Nylon band		88	AZN1470
	39	AZN1995	P.C.board		89	AZB1100
	40		Jumper wire		90	AZS1087
	41		Wire assembly		91	AZB1101
	42		Lead wire		92	AZB1102
	43		Lead wire		93	AZN1471
	44	AZN1468	Tube		94	AZB1298
	45		Mecha P.C.board calking assembly		95	AZN1833
					96	AZN1834
	46	AZN1319	R reel assembly		97	
	47	AZN1320	F reel assembly		200	AZB1084
	48	AZN1321	Reverse arm calking assembly		201	AZB1085
	49		FR lever assembly		202	AZB1086
	50	AZN1976	PLAY lever calking assembly		203	AZB1121
					204	AZB1087

Description

Gear arm R calking assembly
Gear arm L calking assembly
Head lever calking assembly
FW assembly
Head P.C.board

Plate (FLY WHEEL)
Azimuth plate
SW arm

...
...

Head arm
Azimuth spring
Cassette stopper
Trigger arm
Head frame

Cassette guide L
Cassette guide R
Cassette guide
Cam gear
Head holder

Head gear
Eject arm 2
Select lever
Brake
...

Ratch lever L
Metal
Metal
Cushion
Trigger arm

...
Solenoid
...

P Head
Screw

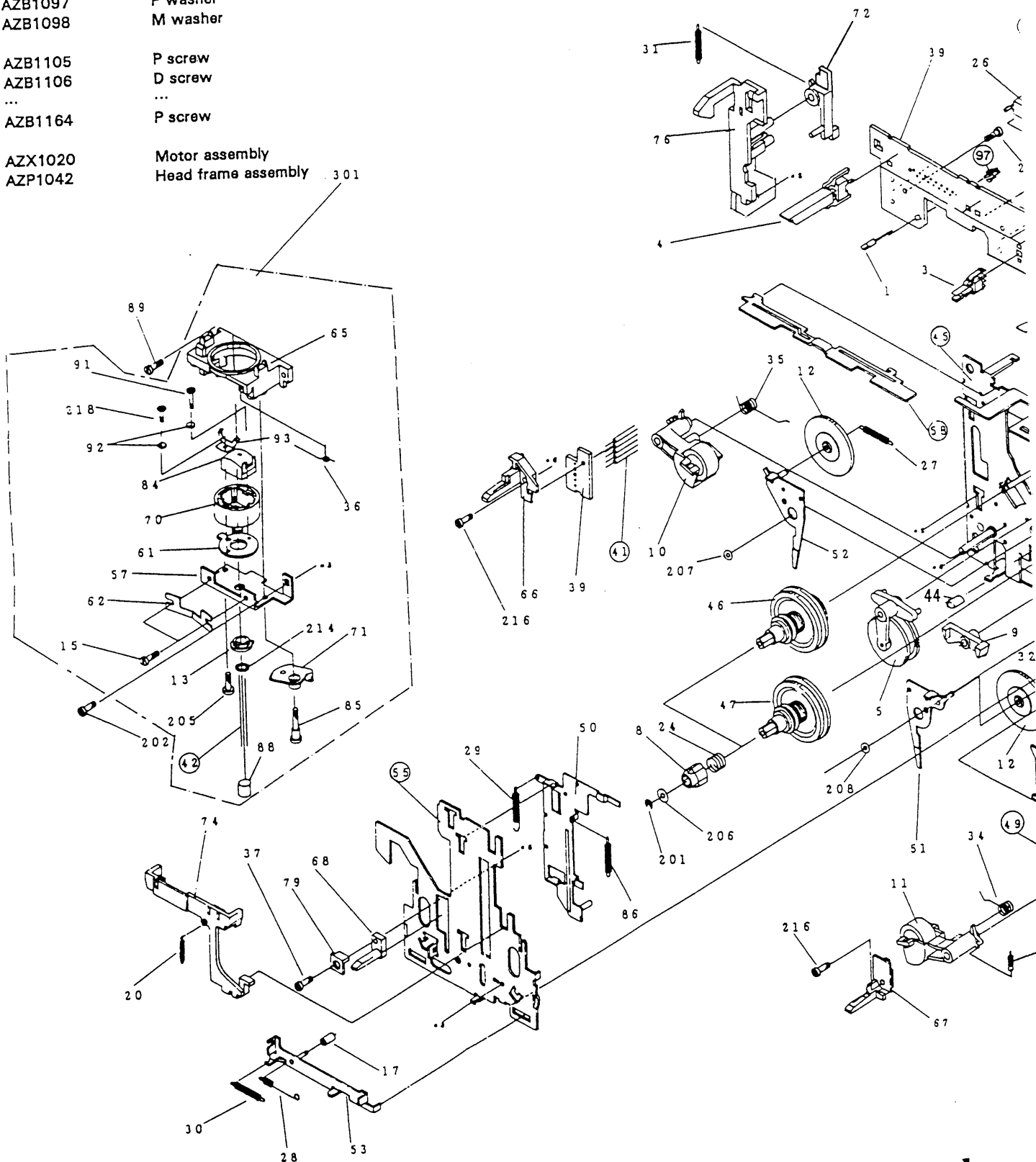
Spring
Spacer
Tube
Screw
Solenoid

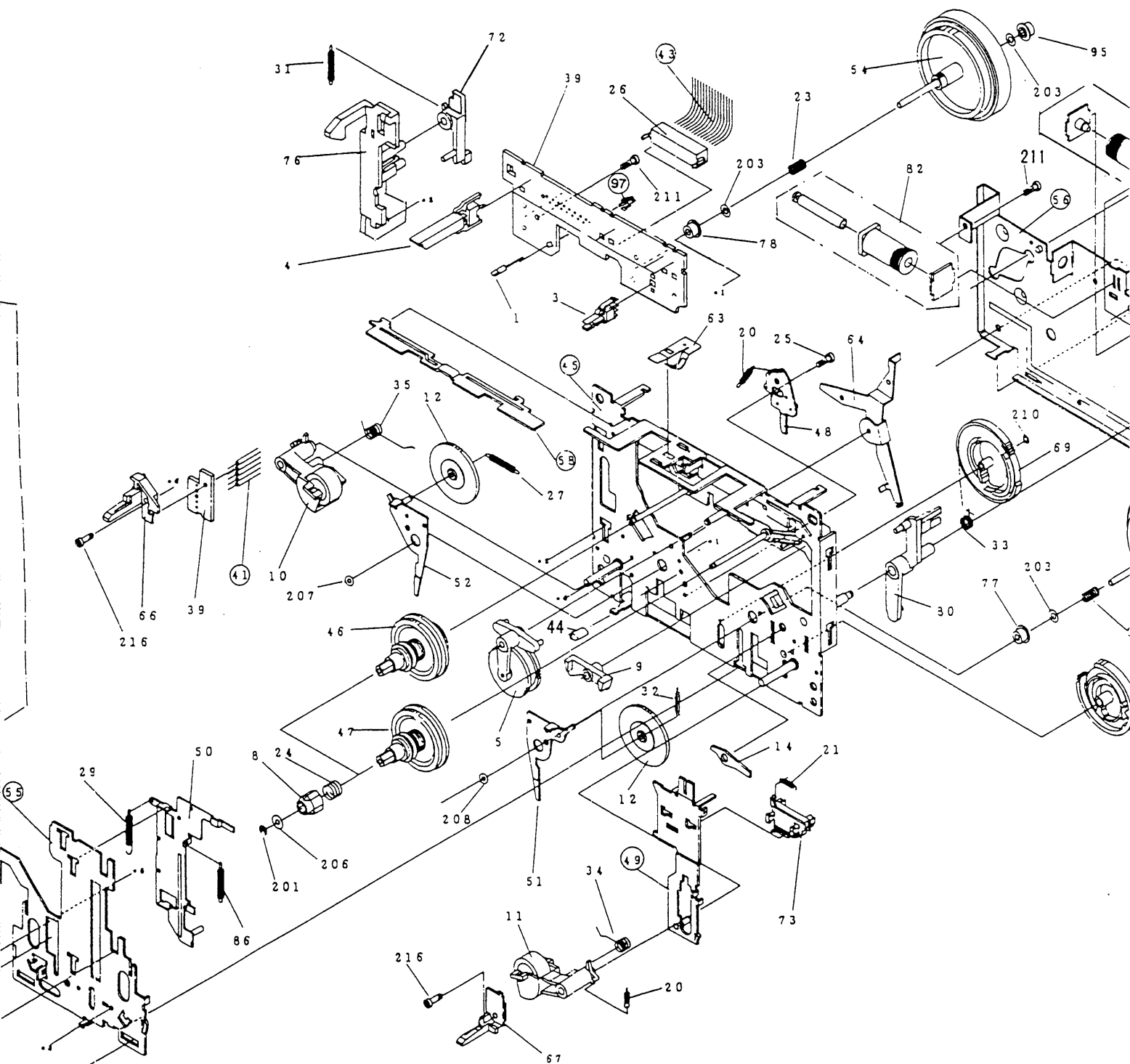
Screw
Spring washer
Head spring
Screw
Capstan holder

Capstan holder
Holder

Nut
E ring
O screw
P washer
V washer

Mark	No.	Parts No.	Description
	205	AZB1089	U screw
	206	AZB1090	P washer
	207	AZB1091	Oil cut
	208	AZB1092	Oil cut
	209	...	...
	210	AZB1094	P washer
	211	AZB1095	D screw
	212	...	...
	213	AZB1097	P washer
	214	AZB1098	M washer
	215	AZB1105	P screw
	216	AZB1106	D screw
	217	...	...
	218	AZB1164	P screw
	300	AZX1020	Motor assembly
	301	AZP1042	Head frame assembly



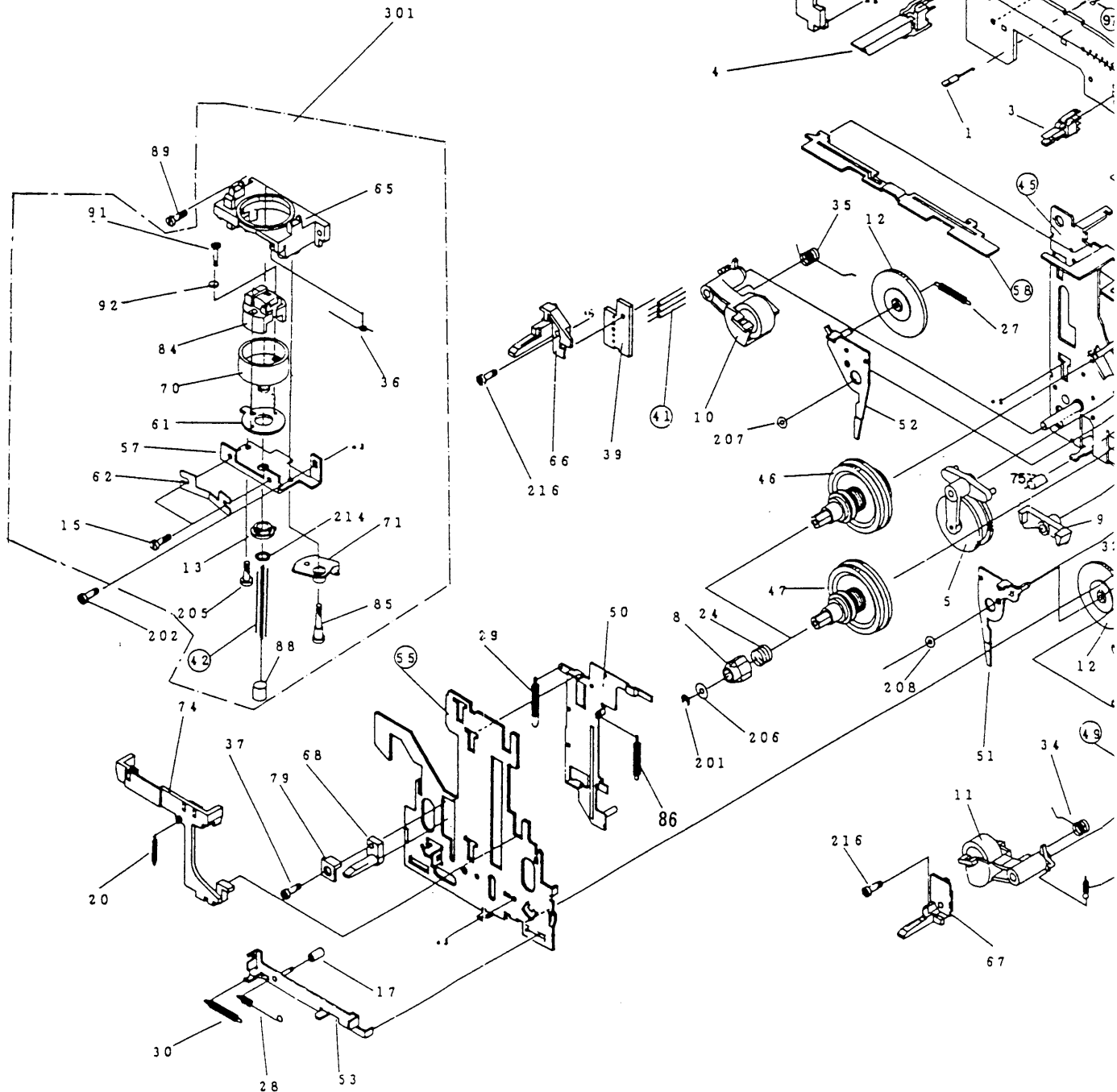


10.1.3 Mecha unit 2 (AWY1053)

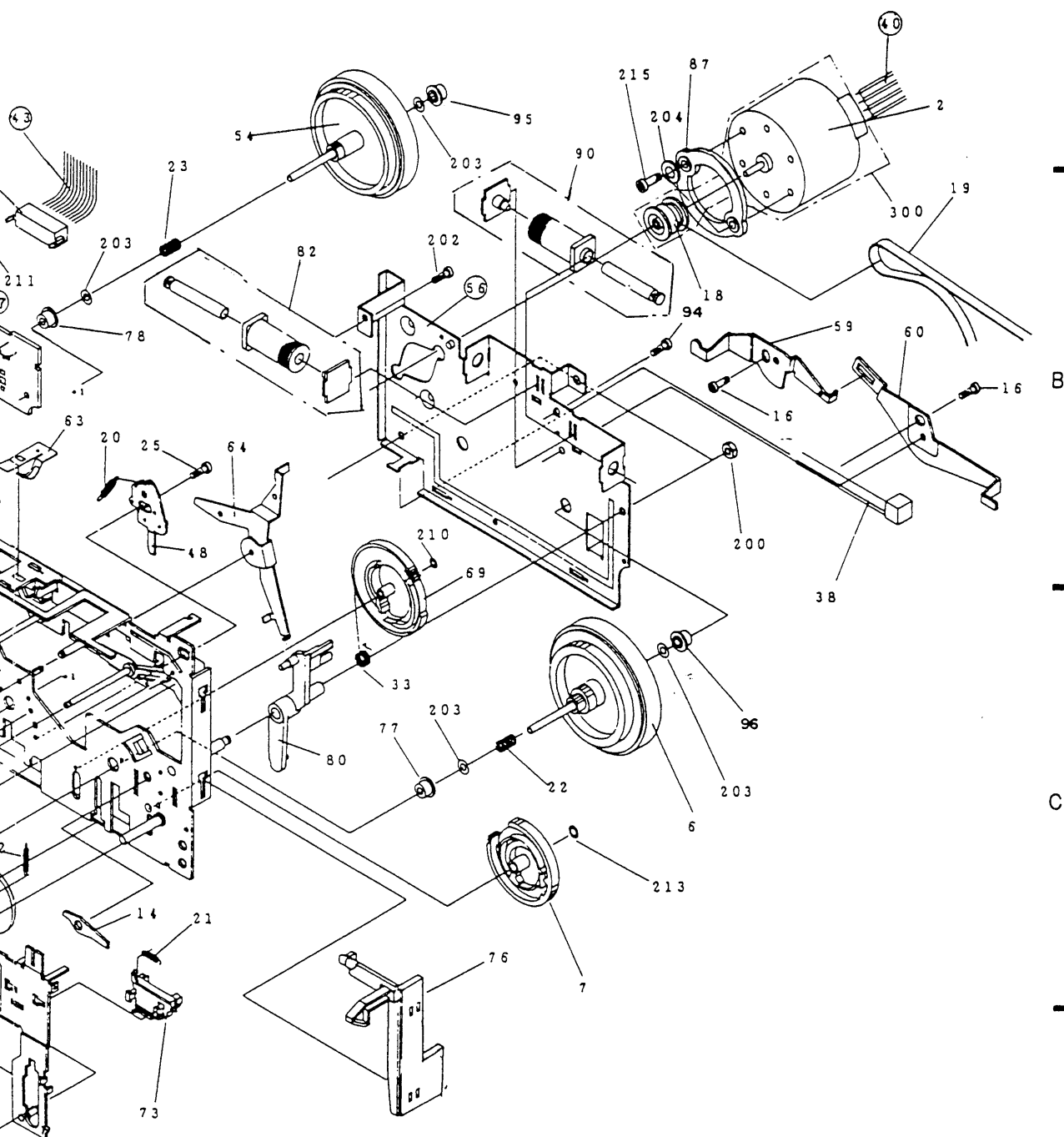
Mark	No.	Parts No.	Description	Mark	No.	Parts No.
	1	AZE1018	Half IC		51	AZN1976
	2	AZX1019	Motor		52	AZN1977
	3	AZS1054	Leaf SW (MODE)		53	AZN1326
	4	AZS1034	Leaf SW (CrO2)		54	AZN1327
	5	AZN1286	Drive arm assembly		55	
	6	AZN1287	FW assembly A		56	
	7	AZN1288	Cam gear		57	AZN1328
	8	AZN1289	Reel		58	
	9	AZN1971	FR arm		59	AZN1988
	10	AZN1972	Pinch roller L assembly		60	AZN1989
	11	AZN1973	Pinch roller R assembly		61	AZN1330
	12	AZN1293	Gear		62	AZN1331
	13	AZN1294	H Gear		63	AZN1332
	14	AZN1793	CUE arm		64	AZN1978
	15	AZB1079	Screw		65	AZN1334
	16	AZB1080	Screw		66	AZN1335
	17	AZN1984	Collar C		67	AZN1336
	18	AZN1297	Motor pully		68	AZN1337
	19	AZN1298	Belt		69	AZN1338
	20	AZN1299	Spring		70	AZN1979
	21	AZN1300	FR lever spring		71	AZN1340
	22	AZN1301	FWF spring		72	AZN1980
	23	AZN1302	FWR spring		73	AZN1342
	24	AZN1303	Spring		74	AZN1343
	25	AZB1080	Screw		75	AZN1468
	26	AZN1305	Cable holder		76	AZN1985
	27	AZN1306	Spring		77	AZN1346
	28	AZN1307	Spring		78	AZN1347
	29	AZN1308	Spring		79	AZN1348
	30	AZN1309	Spring		80	AZN1349
	31	AZN1310	Spring		81	...
	32	AZN1311	Spring		82	AZS1085
	33	AZN1312	Spring		83	...
	34	AZN1313	Spring		84	AZP1014
	35	AZN1314	Spring		85	AZB1099
	36	AZN1315	Spring		86	AZN1352
	37	AZB1081	Screw		87	AZN1304
	38	AZN1316	Nylon band		88	AZN1470
	39	AZN1983	P.C.board		89	AZB1100
	40		Jumper wire		90	AZS1087
	41		Wire assembly		91	AZB1101
	42		Lead wire		92	AZB1102
	43		Lead wire		93	
	44	AZN1344	Eject lever L		94	AZB1298
	45		Mecha P.C.board calking assembly		95	AZN1833
					96	AZN1834
	46	AZN1319	R reel assembly		97	
	47	AZN1320	F reel assembly			
	48	AZN1321	Reverse arm calking assembly		200	AZB1084
	49		FR lever assembly		201	AZB1085
	50	AZN1975	PLAY lever calking assembly		202	AZB1086
					203	AZB1121
					204	AZB1087

Description	
Gear arm R	A
Gear arm L	
Head lever calking assembly	
FW assembly	
Head P.C.board	
Plate (FLY WHEEL)	—
Azimuth plate	
SW arm	
Eject arm L	
Eject arm R	
Head arm	
Azimuth spring	
Cassette stopper	
Trigger arm	
Head frame	
Cassette guide L	B
Cassette guide R	
Cassette guide	
Cam gear	
Head holder	
Head gear	—
Eject arm 2	
Select lever	
Brake	
Tube	
Ratch lever R	
Metal	
Metal	
Cushlon	
Trigger arm	
...	C
Solenoid	
...	
R/P/E Head	
Screw	
Spring	—
Spacer	
Tube	
Screw	
Solenoid	
Screw	
Washer	
...	
Screw	
Capstan holder	
Capstan holder	D
Holder	
Nut	
E ring	
D screw	
P washer	
N washer	

Mark	No.	Parts No.	Description
	205	AZB1089	U screw
	206	AZB1090	P washer
	207	AZB1091	Oil cut
	208	AZB1092	Oil cut
	209	...	...
	210	AZB1094	P washer
	211	AZB1095	D screw
	212	...	...
	213	AZB1097	P washer
	214	AZB1098	M washer
	215	AZB1105	P screw
	216	AZB1106	D screw
	300	AZX1020	Motor assembly
	301	AZP1041	Head frame assembly







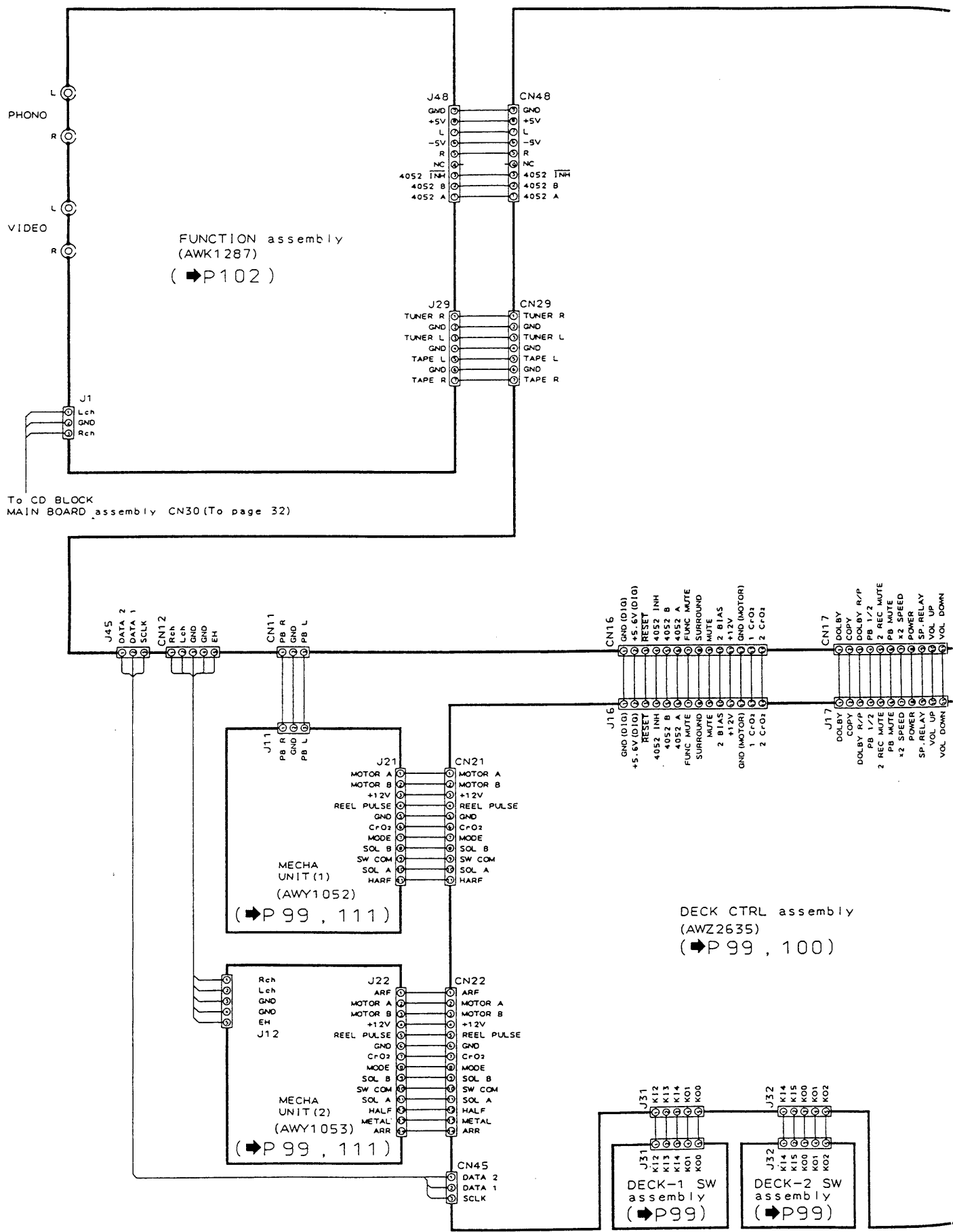
10.2 SCHEMATIC DIAGRAMS AND P.C.BOARD CONNECTION DIAGRAMS
10.2.1 Over all schematic diagram

A

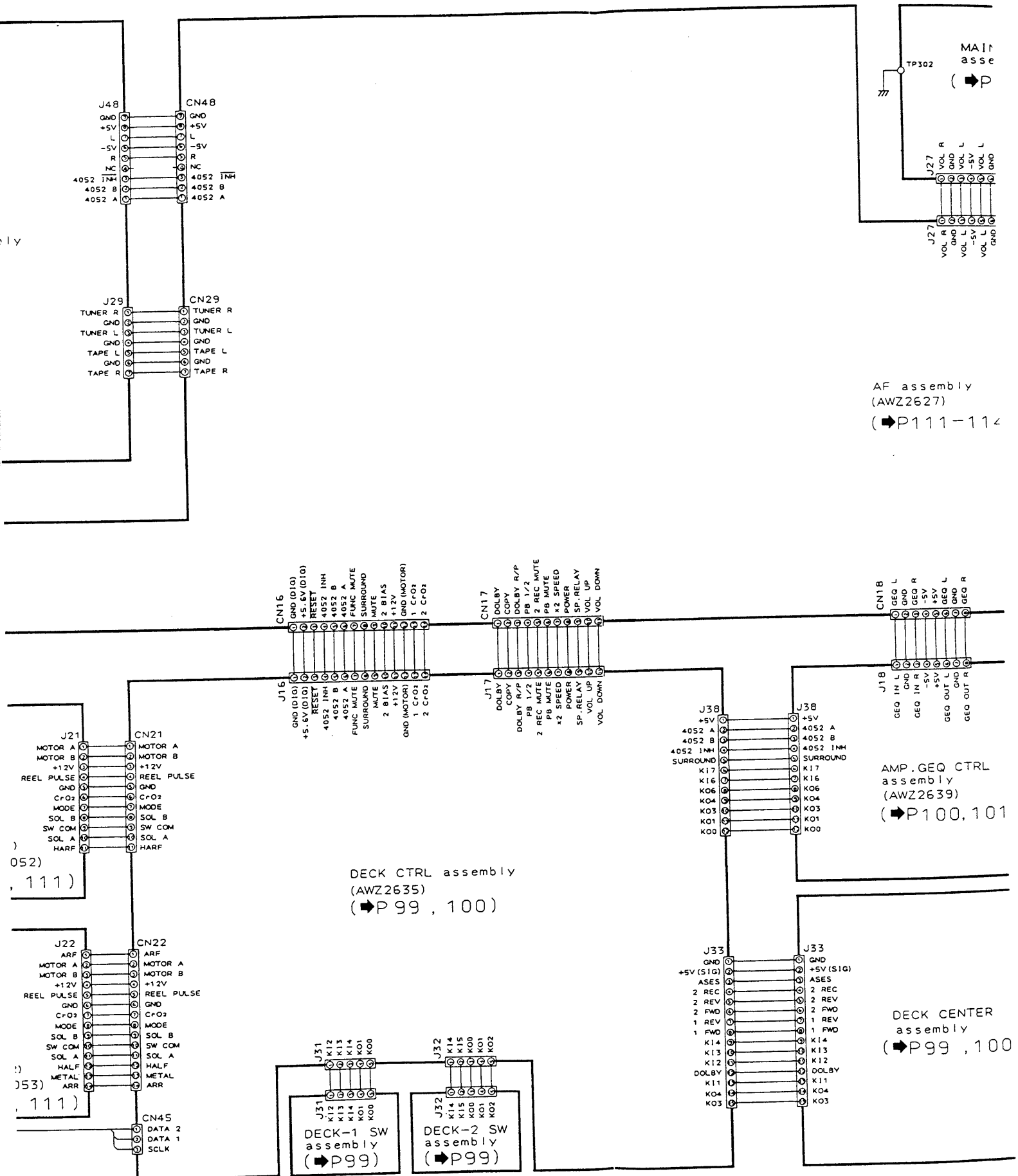
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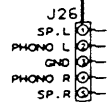
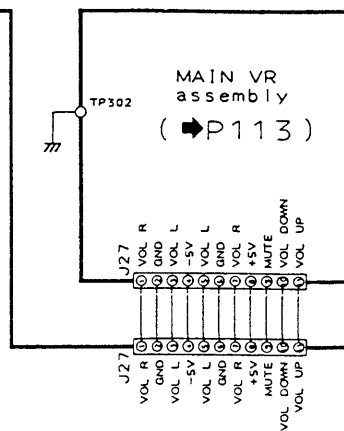
C

D

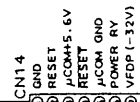
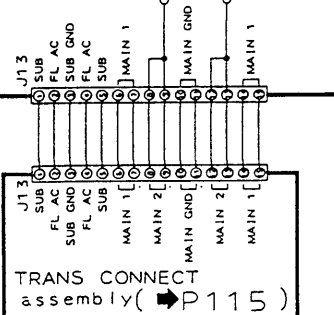
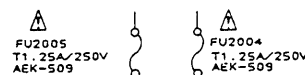


BOARD CONNECTION DIAGRAMS

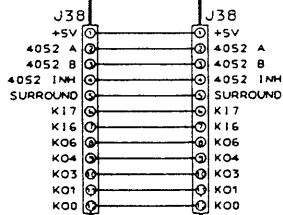
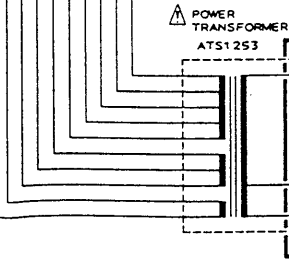




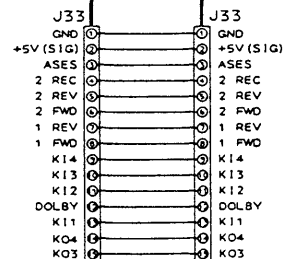
AF assembly
(AWZ2627)
(P111-114)



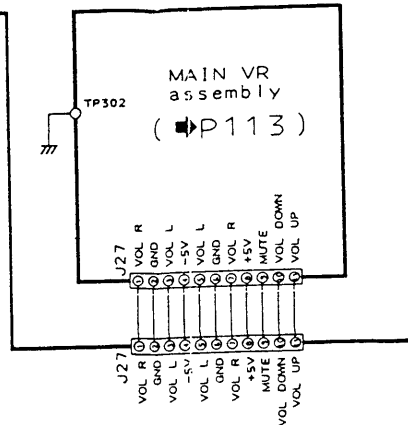
POWER
assem
(AWZ22)



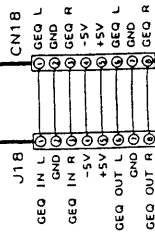
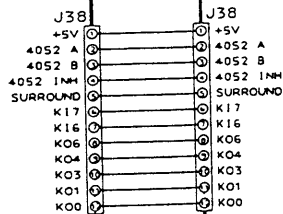
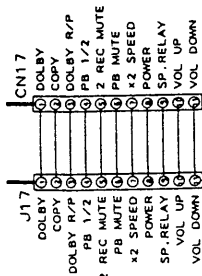
AMP. GEQ CTRL
assembly
(AWZ2639)
(P100, 101)



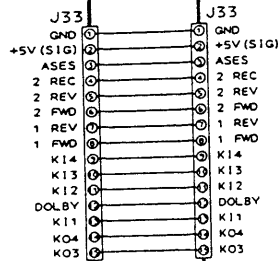
DECK CENTER
assembly
(P99, 100)



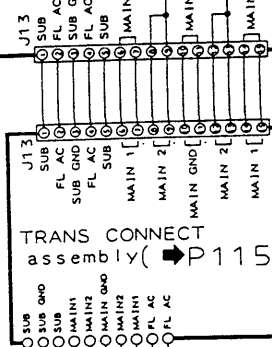
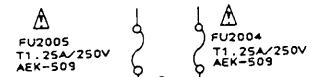
AF assembly
(AWZ2627)
(P111-114)

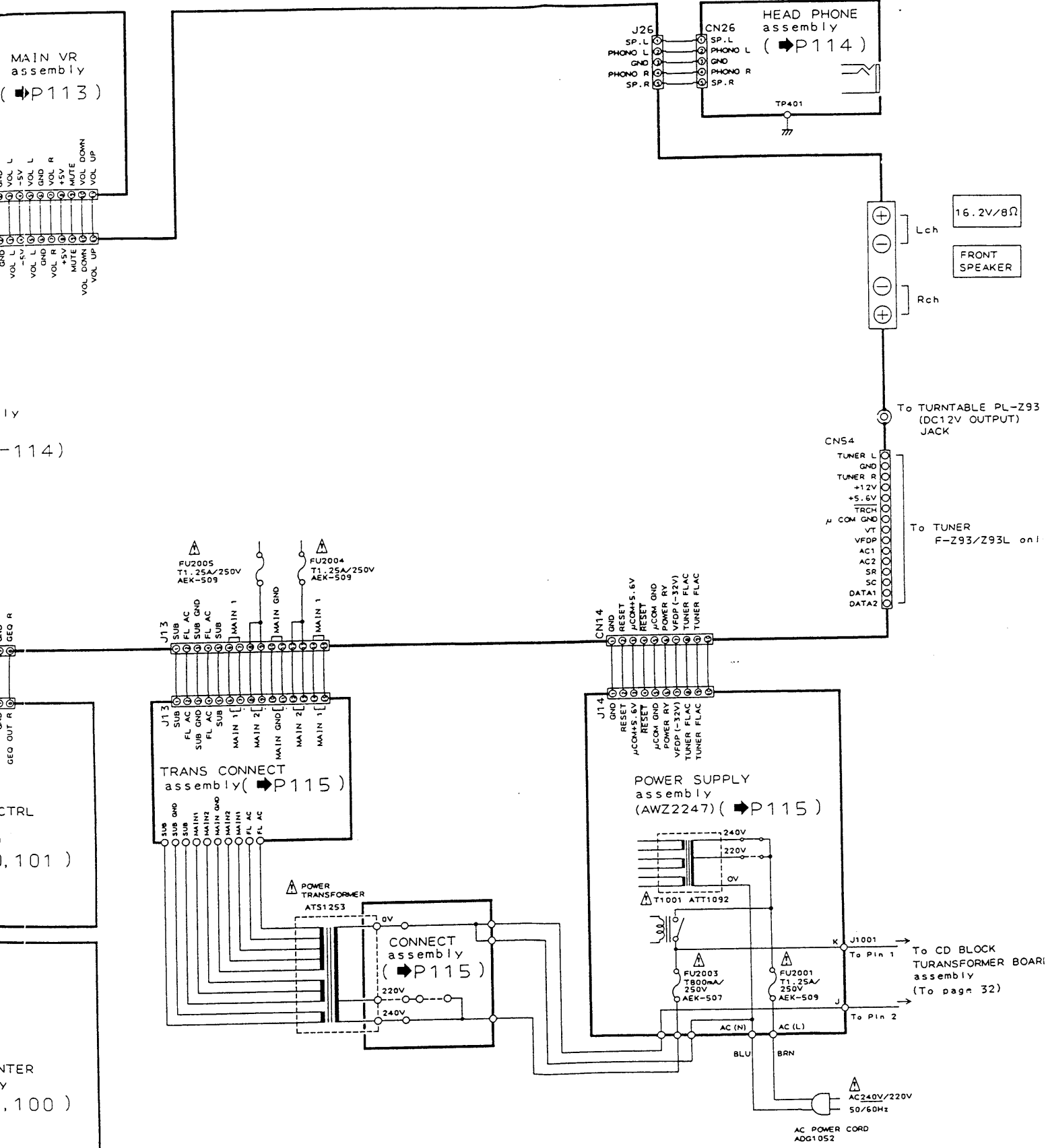


AMP. GEQ CTRL
assembly
(AWZ2639)
(P100, 101)



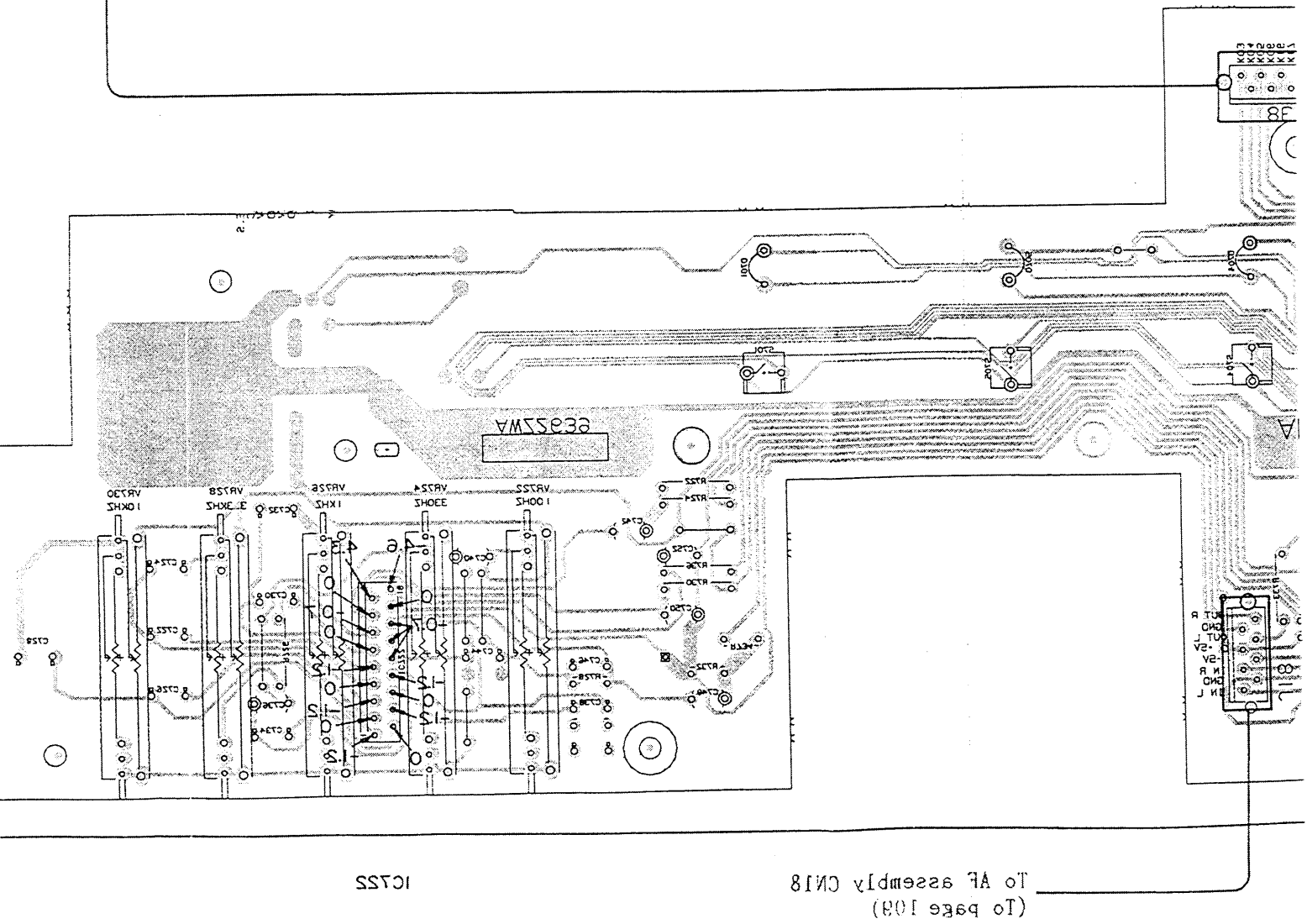
DECK CENTER
assembly
(P99, 100)

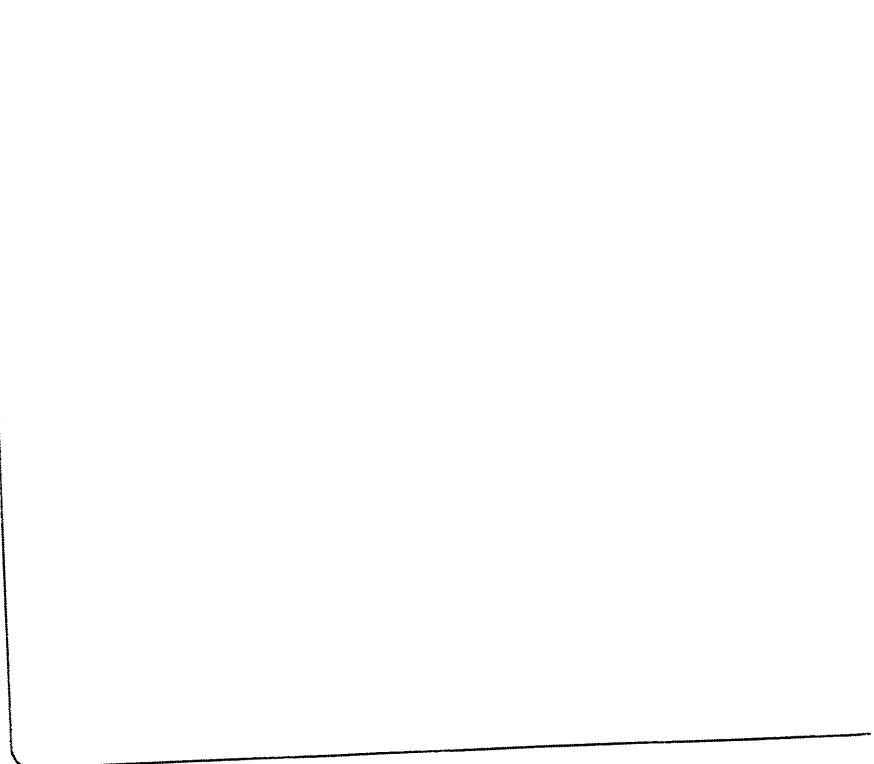
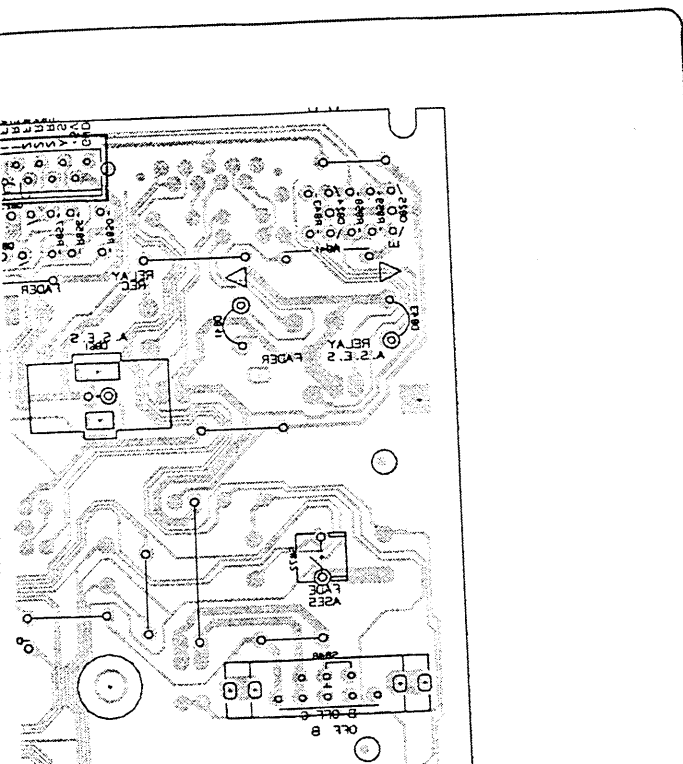
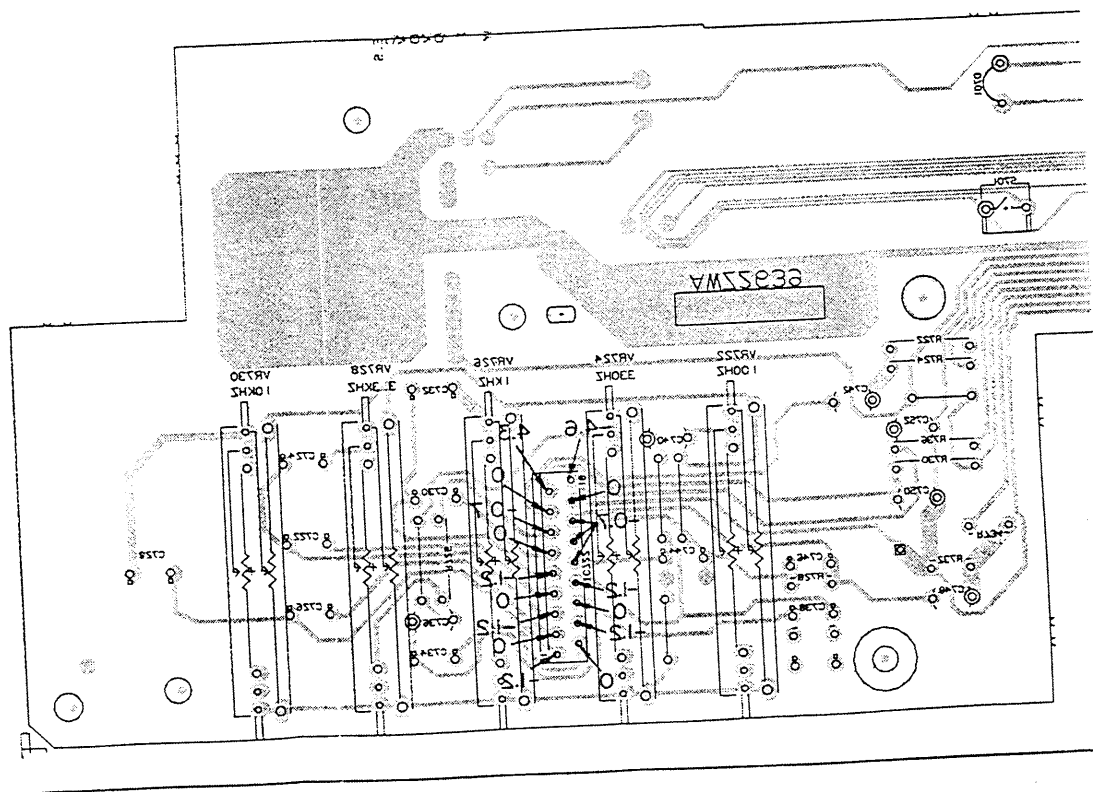
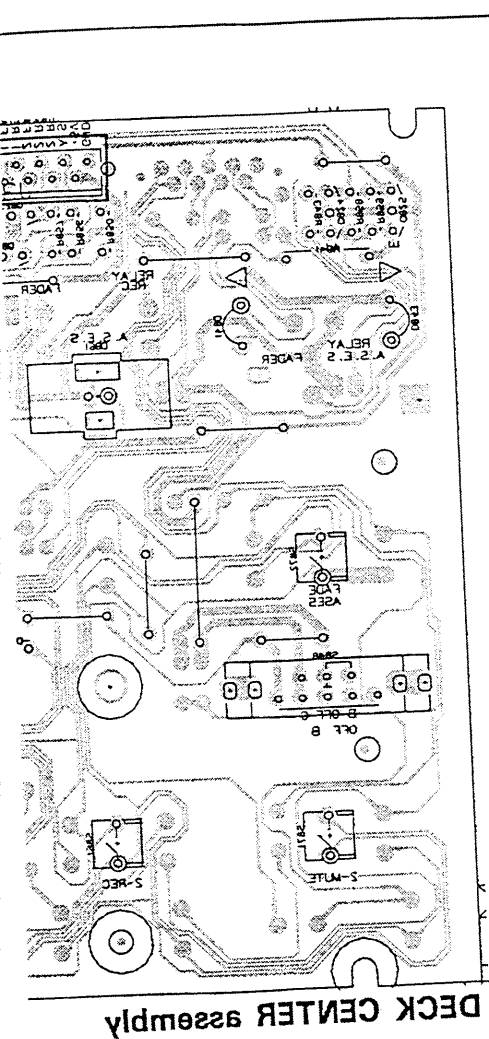


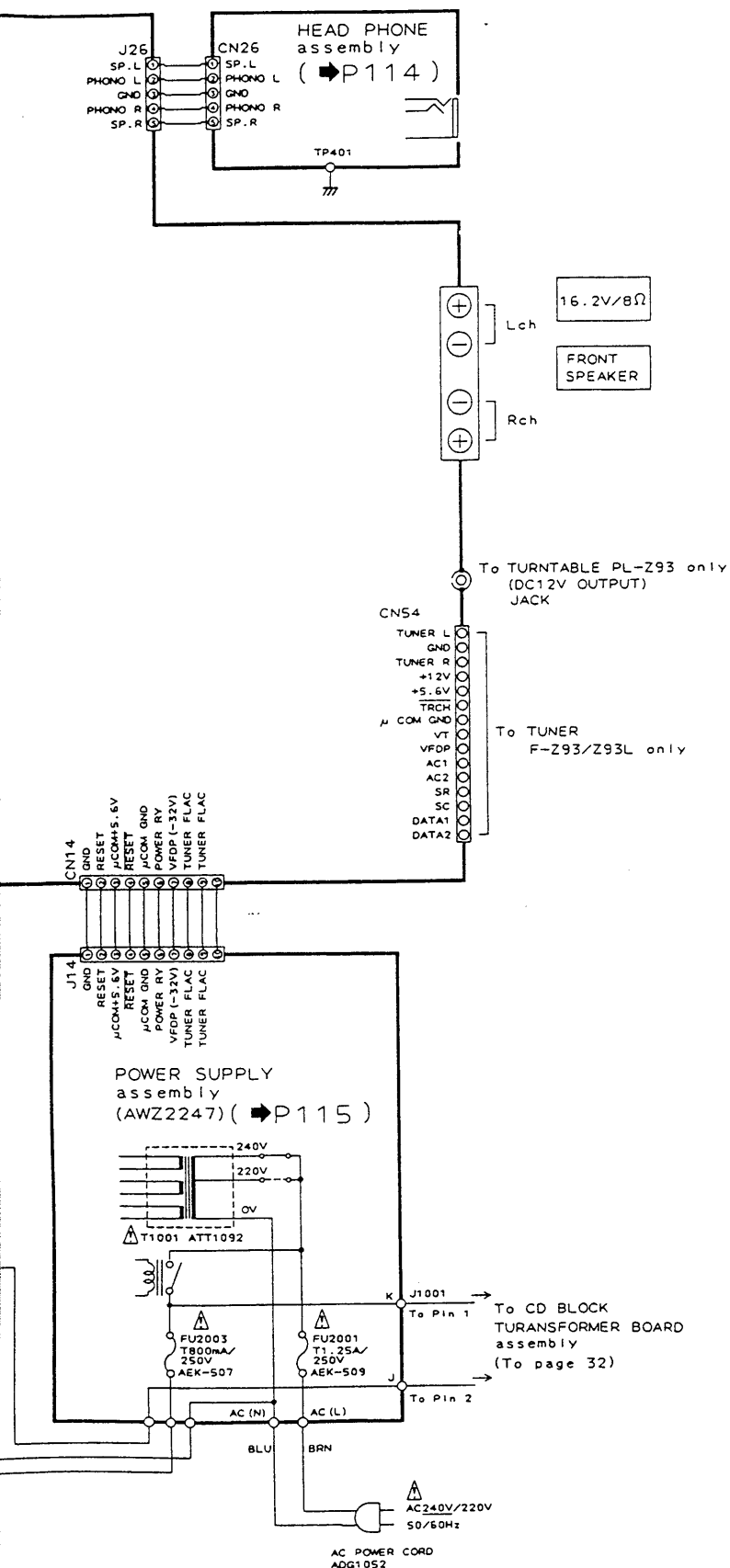


NOTE:
This picture shows the foil side of the
printed circuit.









1. RESISTORS:

Indicated in Ω, ¼W, ½W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% (M) : ±20% tolerance

2. CAPACITORS:

Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:

□ : Signal voltage at (33 W + 33 W 8Ω) output (1kHz)

□ : DC voltage (V) at no input signal

Value in () is DC voltage at rated power.

↪ mA : DC current at no input signal

4. OTHERS:

→ : Signal route.

⊗ : Adjusting point.

The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Δ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

DECK-1 SW assembly

S811 1FWD

S812 1REV

S813 1FF

S814 1REW

S815 1STOP

DECK-2 SW assembly

S821 2FWD

S822 2REV

S823 2FF

S824 2REW

S825 2STOP

DECK CENTER assembly

S848 DOLBY OFF-ON

S849 REVERSE MODE

S853 COPY

S861 DECK-2 REC

S862 HI-SPEED COPY

S871 DECK-2 MUTE

S872 A.S.E.S

S875 DECK-2 PAUSE

AMP, GEO CTRL assembly

S701 CD

S702 PHONO

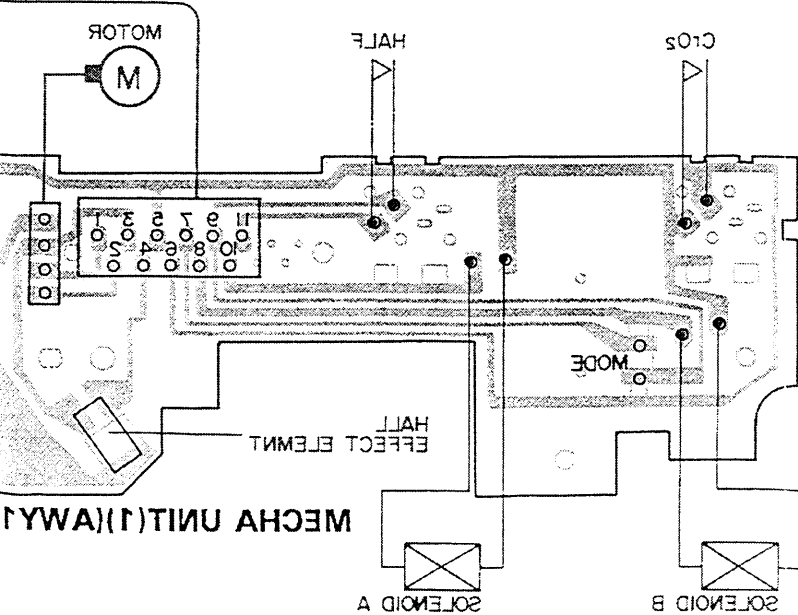
S703 TUNER

S704 TAPE

S705 VIDEO

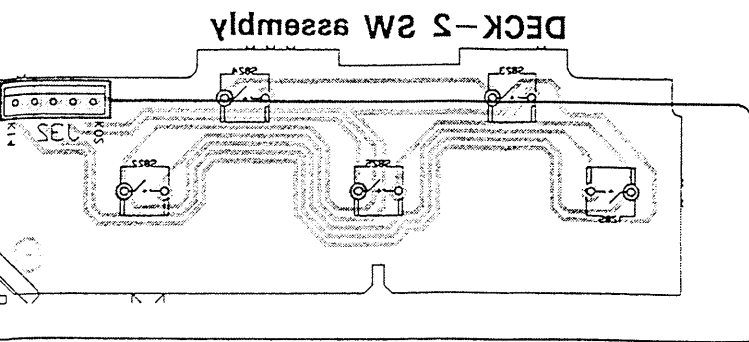
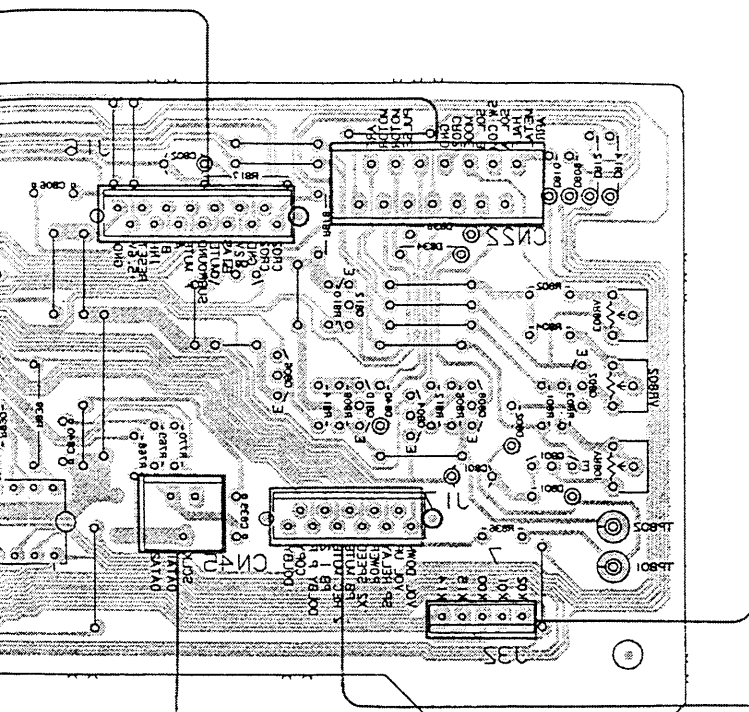
S707 POWER

The underline indicates the switch position



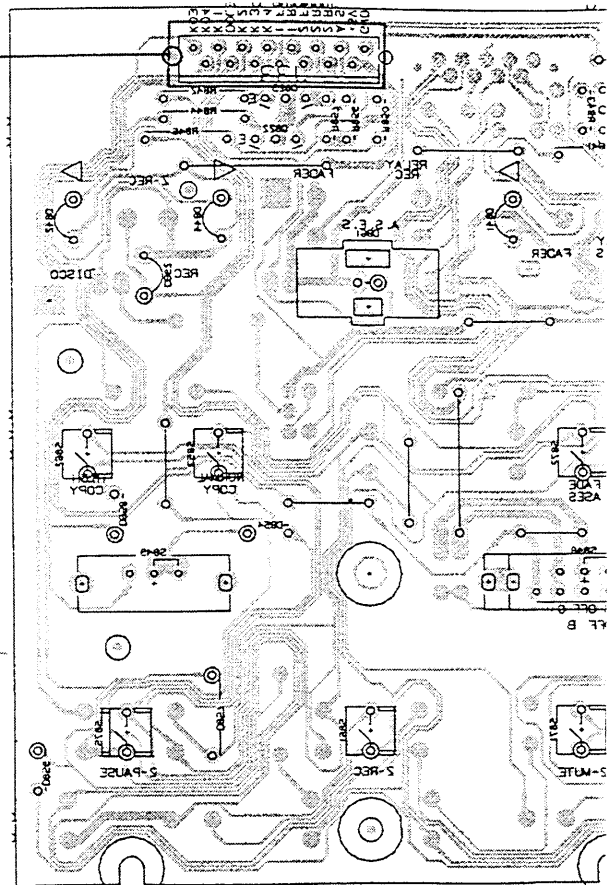
0810 0801 0805 0808 0804 0815 0806 0814

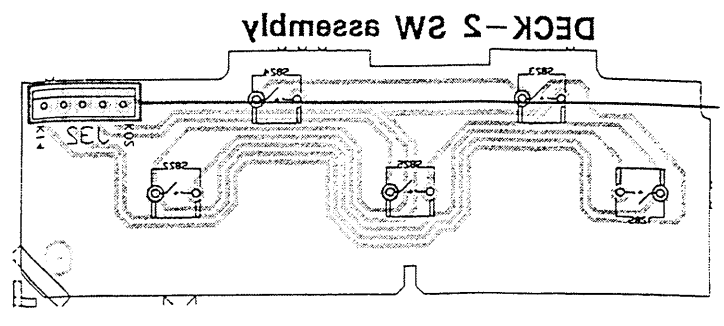
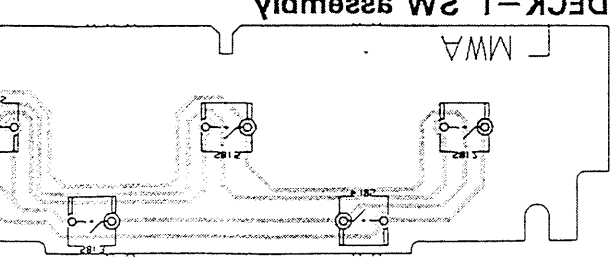
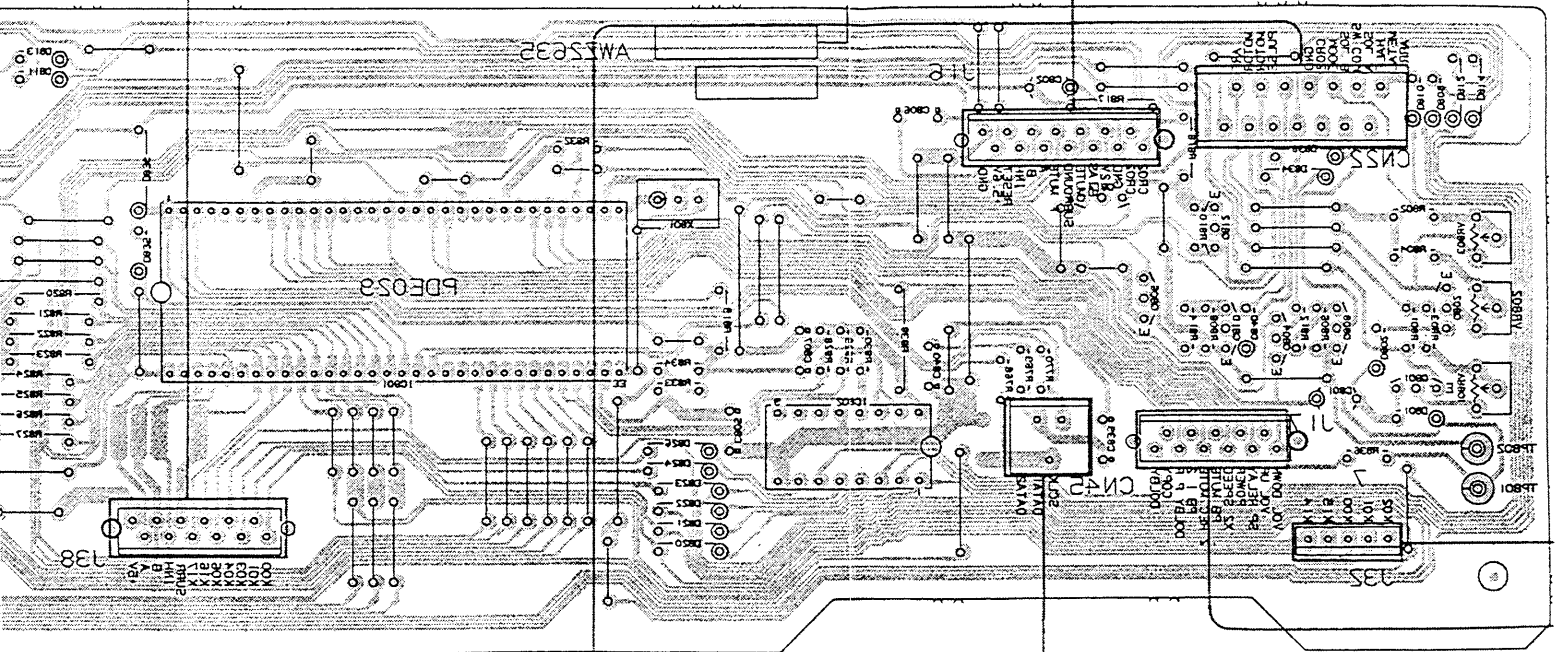
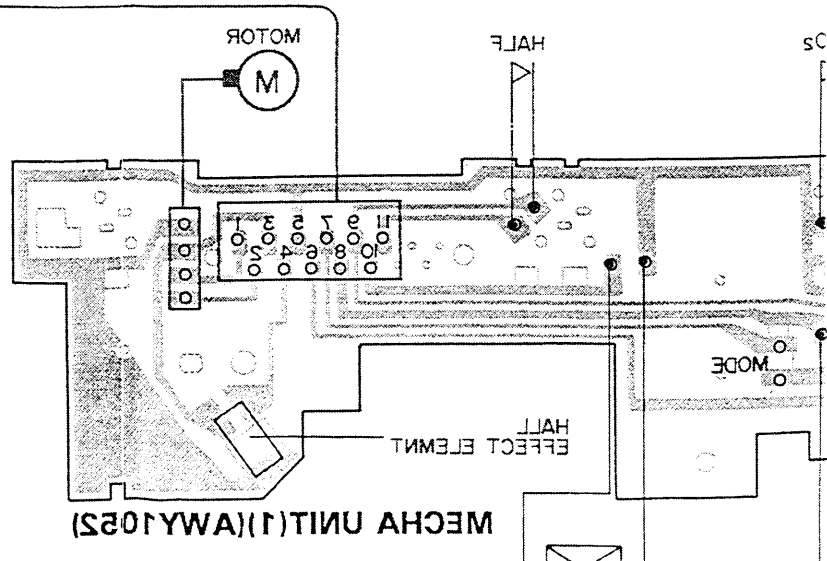
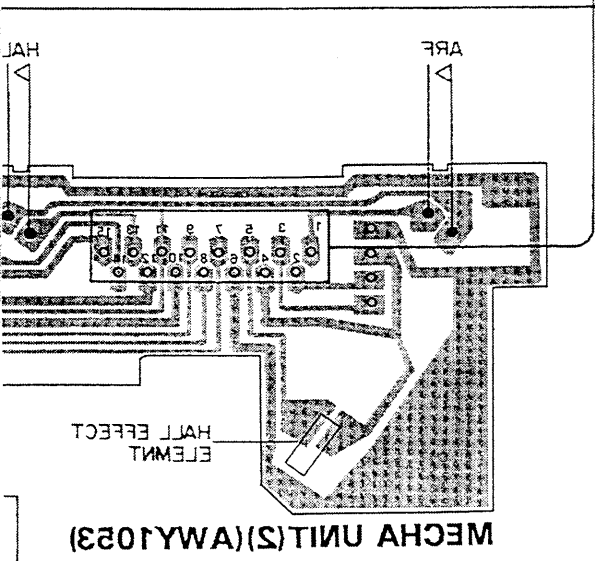
VR801-VR803



(To page 110)
To AF assembly 742

(To page 108)
To AF assembly 0817





IC801 0801 0805 0808 0804 0815 0806 0814

IC805

IC801

(To page 108)

To AF assembly CN18

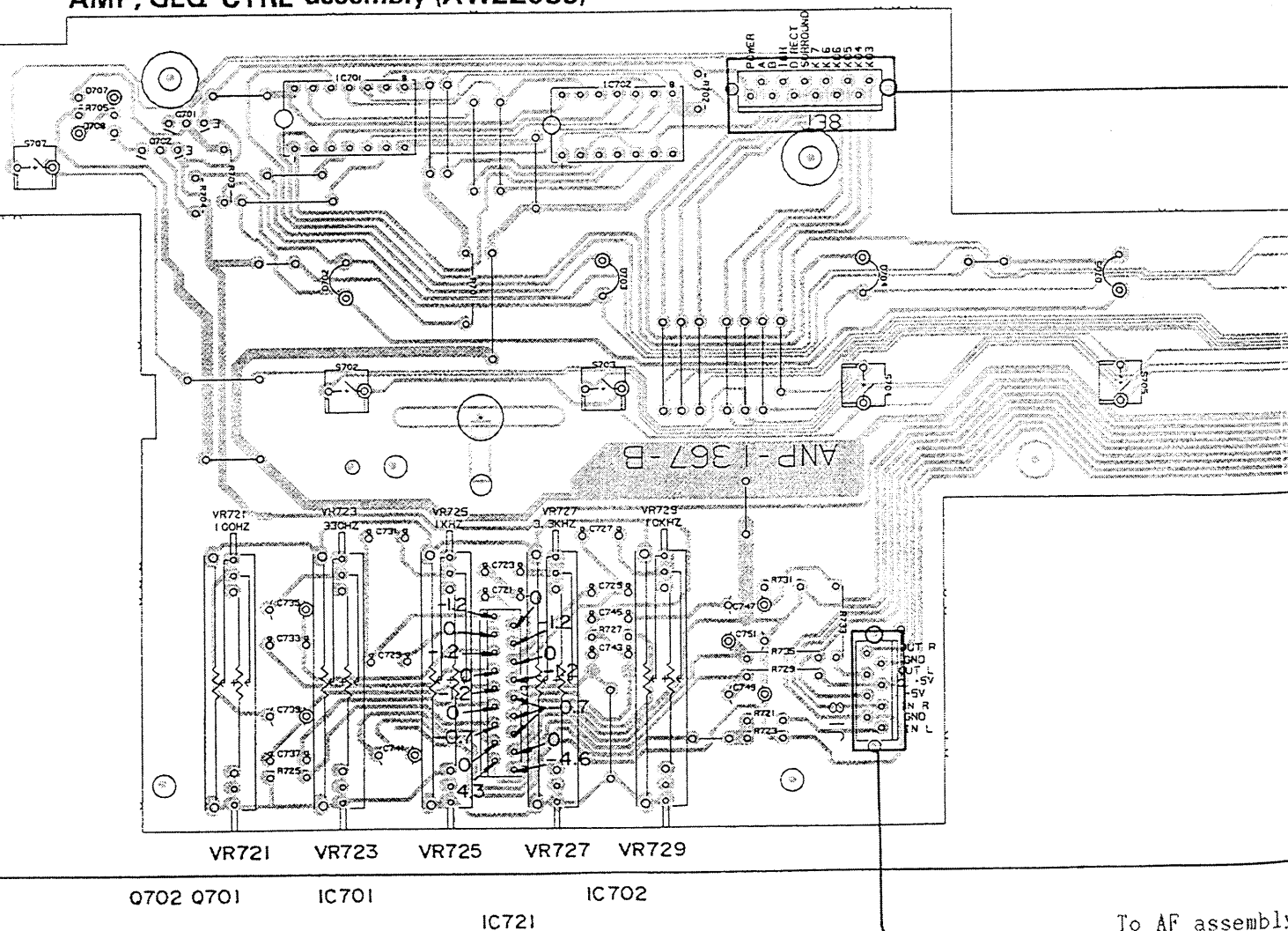
10.2.2 AMP, GEQ CTRL (AWZ2639), DECK-1 SW, DECK-2 SW, DECK CTRL (AWZ2635), DECK CENTER assembly, MECHA UNIT(1)(AWY1052) and MECHA UNIT(2)(AWY1053)

NOTE

1. This P.C.B. connection diagram is viewed from :
2. The parts which have been mounted on the board with the corresponding wiring symbols listed in

P.C.B. pattern diagram indication	Corresponding wiring symbol

AMP, GEQ CTRL assembly (AWZ2639)

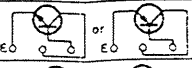
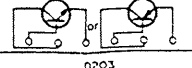


To AF assembly
(To page 109)

1 SW, DECK-2 SW,
ER assembly,
HA UNIT (2)(AWY1053)

NOTE

1. This P.C.B. connection diagram is viewed from the parts mounted side
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

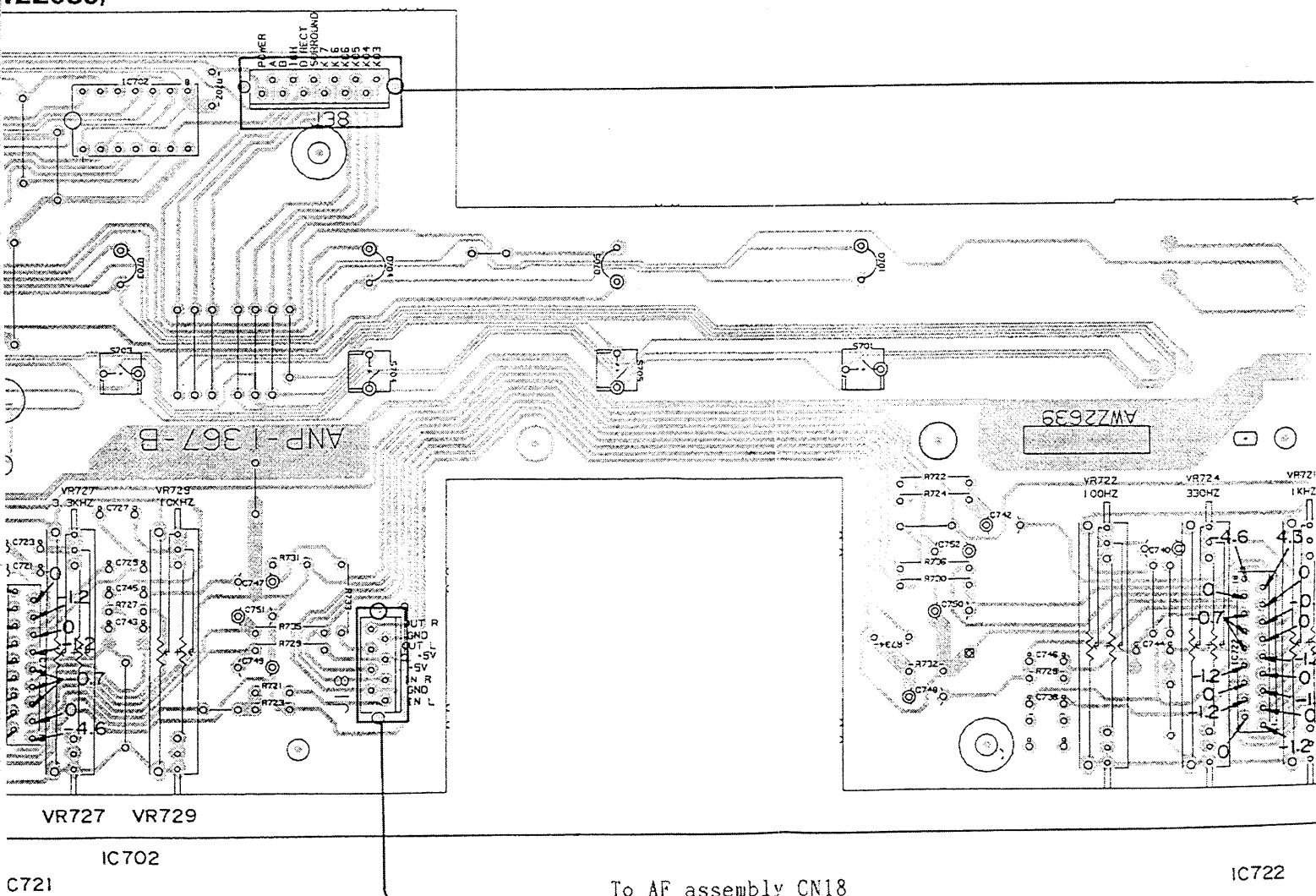
P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
		Transistor
		Radiator type transistor
		Diode
		Resistor
		Capacitor (Polarity)
		Capacitor (Non-polarity)

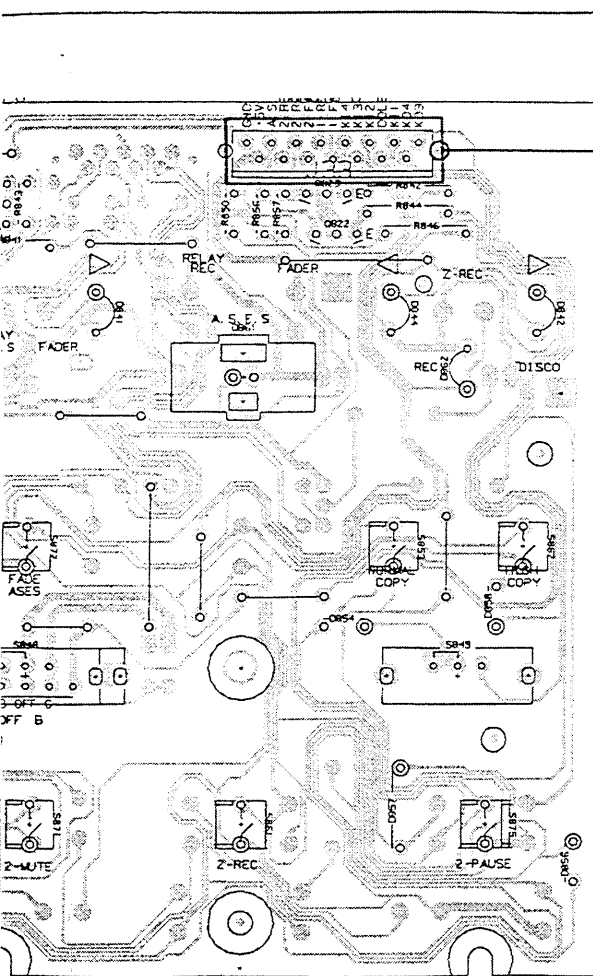
Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor Semi-fixed resistor

3. The capacitor terminal marked with ⊕ (double circles) is
4. The diode terminal marked with ⊕ (double circles) shows
5. The transistor terminal to which E is affixed shows the e

VZ2639)



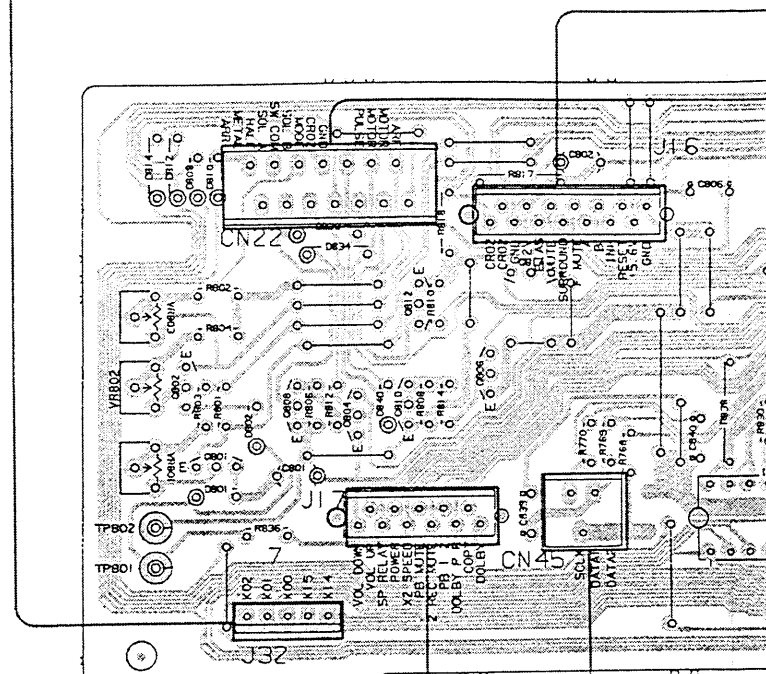
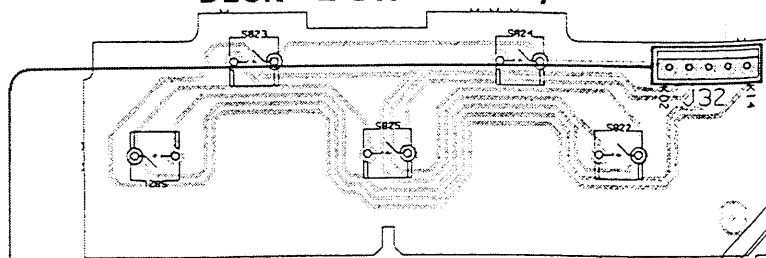


CENTER assembly

To AF assembly CN17
(To page 109)

To AF assembly J45
(To page 110)

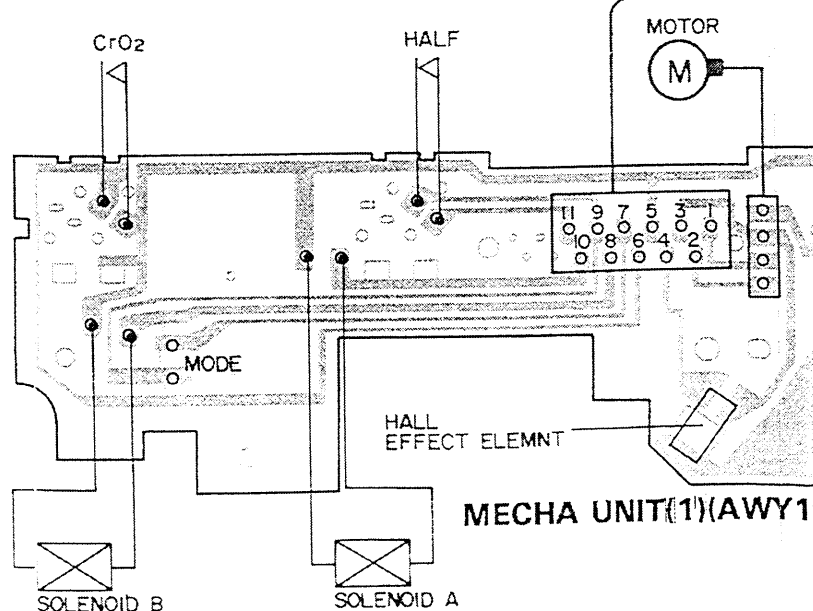
DECK - 2 SW assembly



VR801-VR803

Q802 Q808 Q804 Q812 Q806 Q814
Q801 Q810

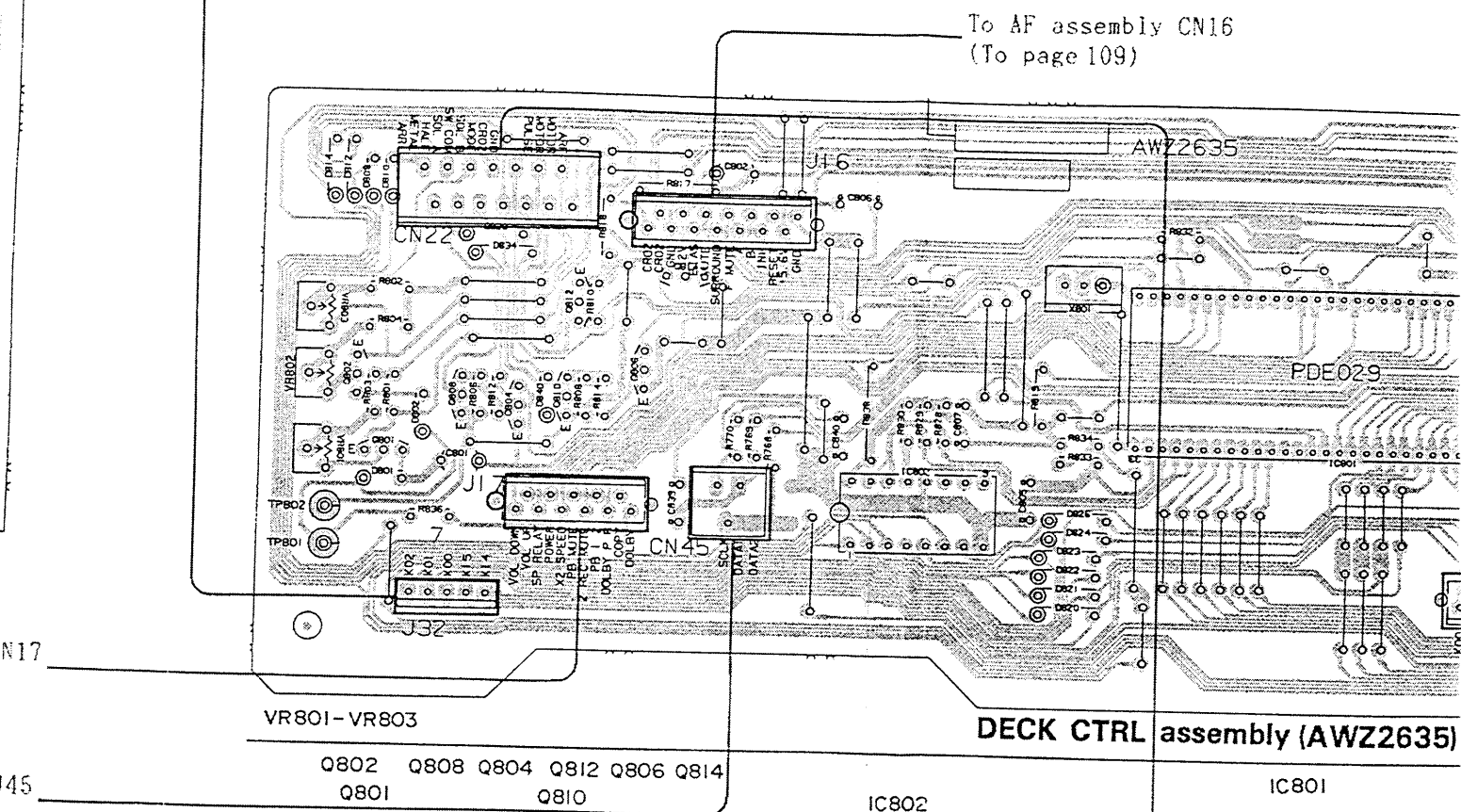
IC8



MECHA UNIT(1)(AWY1)

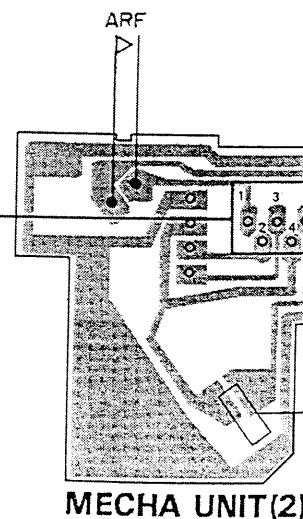
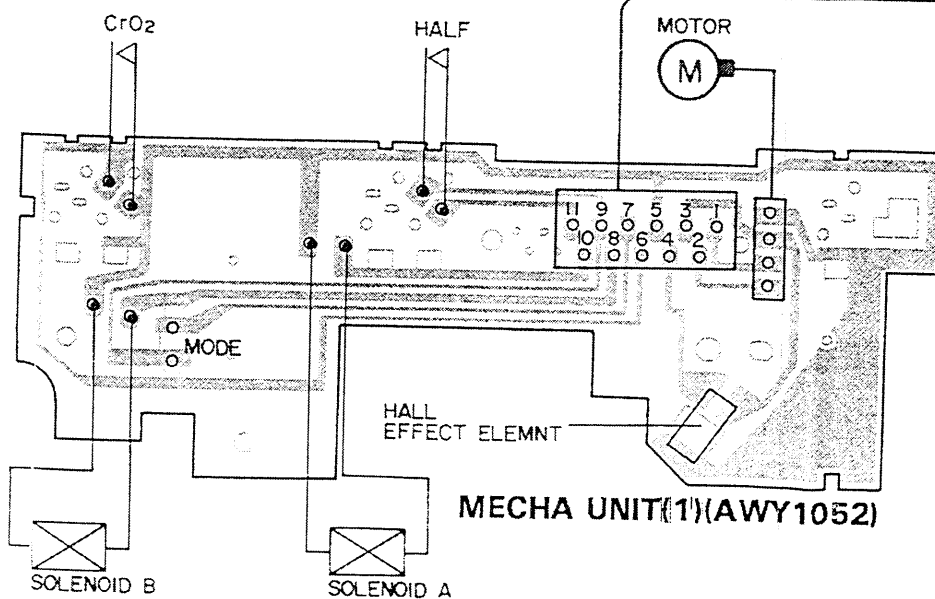
DECK-2 SW assembly

DECK-1 SW assembly

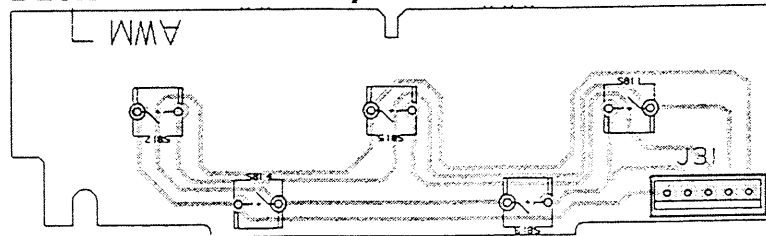


N17

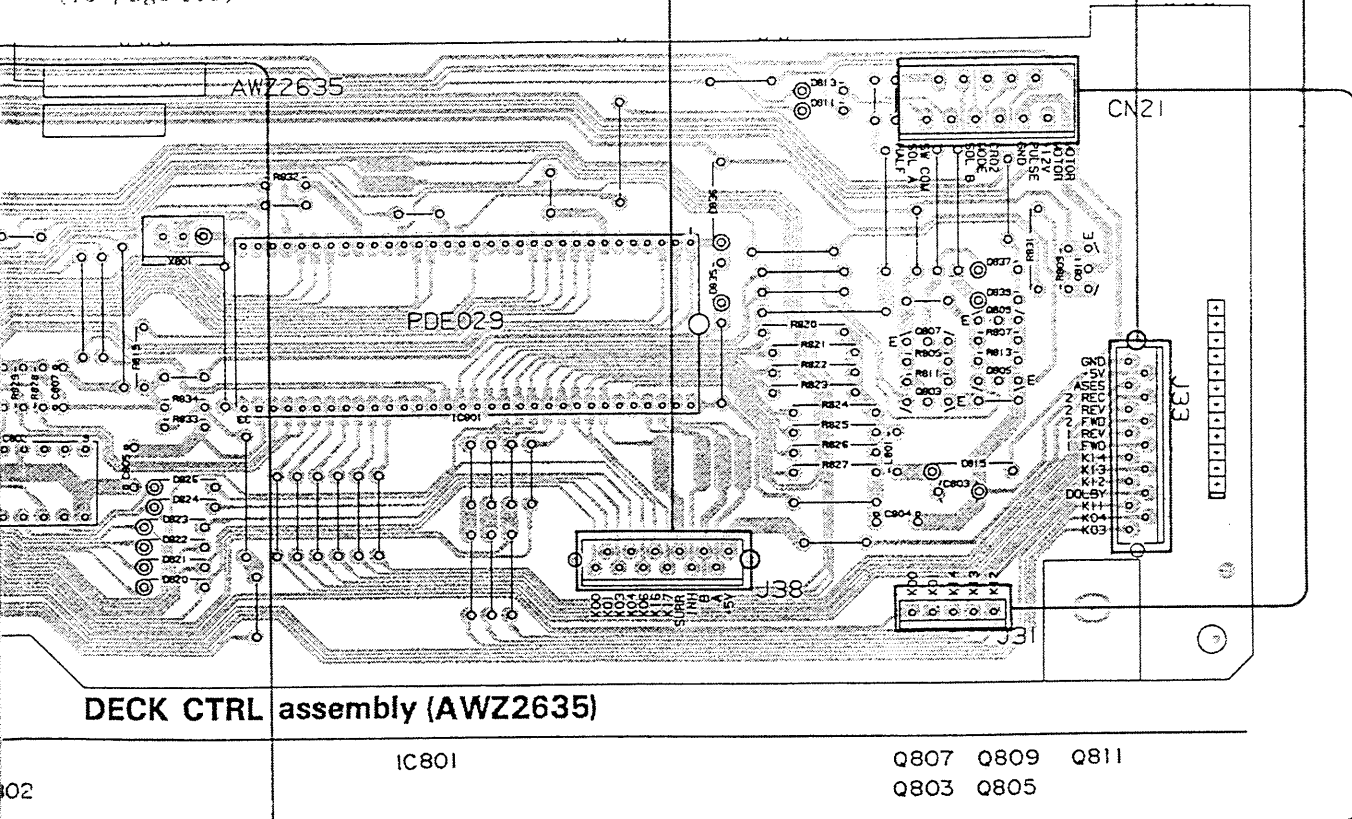
45



DECK-1 SW assembly



To AF assembly CN16
(To page 109)



DECK CTRL assembly (AWZ2635)

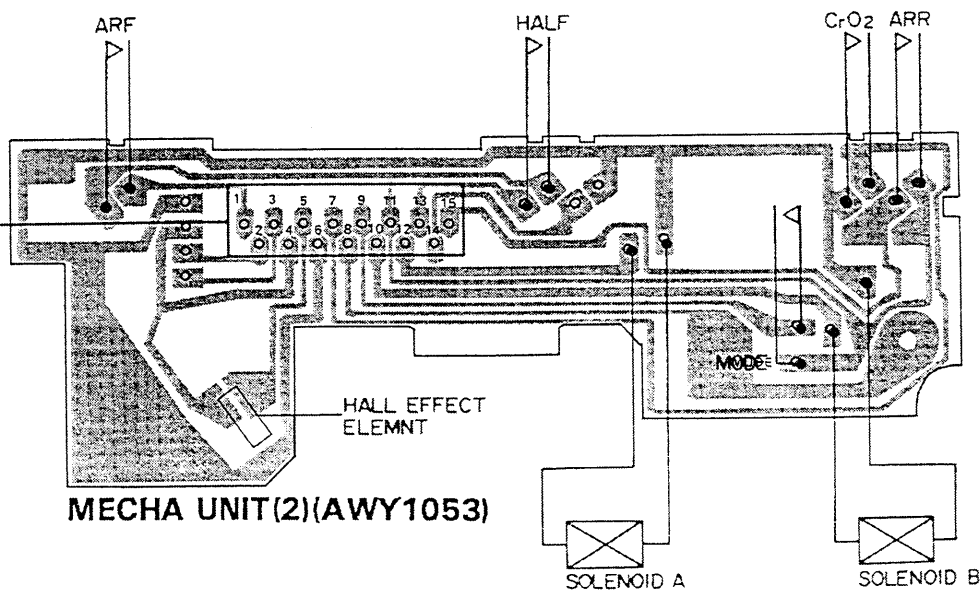
IC801

Q807 Q809 Q811
Q803 Q805

002



052)



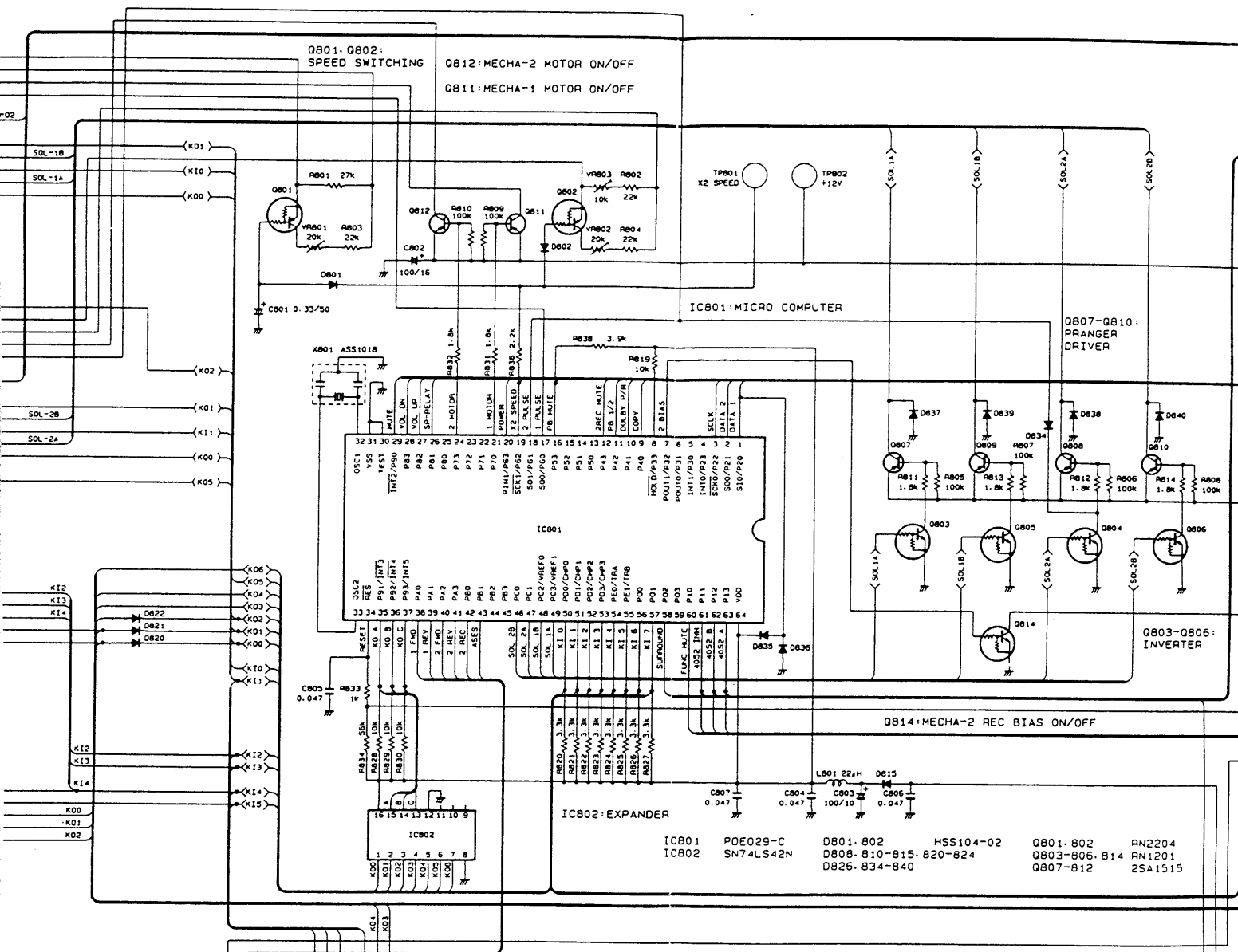
MECHA UNIT (2) (AWY1053)

SOLENOID A

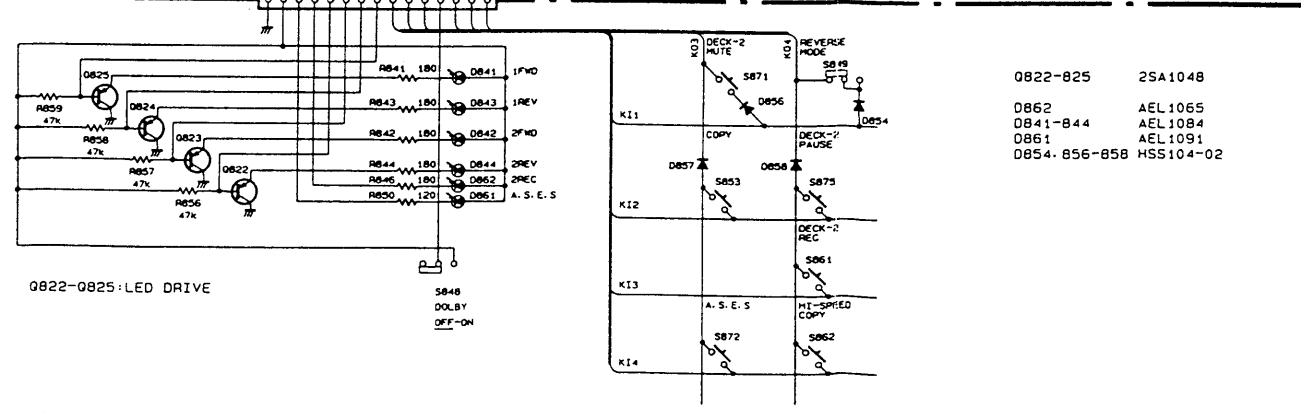
SOLENOID B

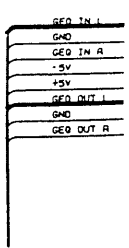


DECK CTRL assembly (AWZ2635)



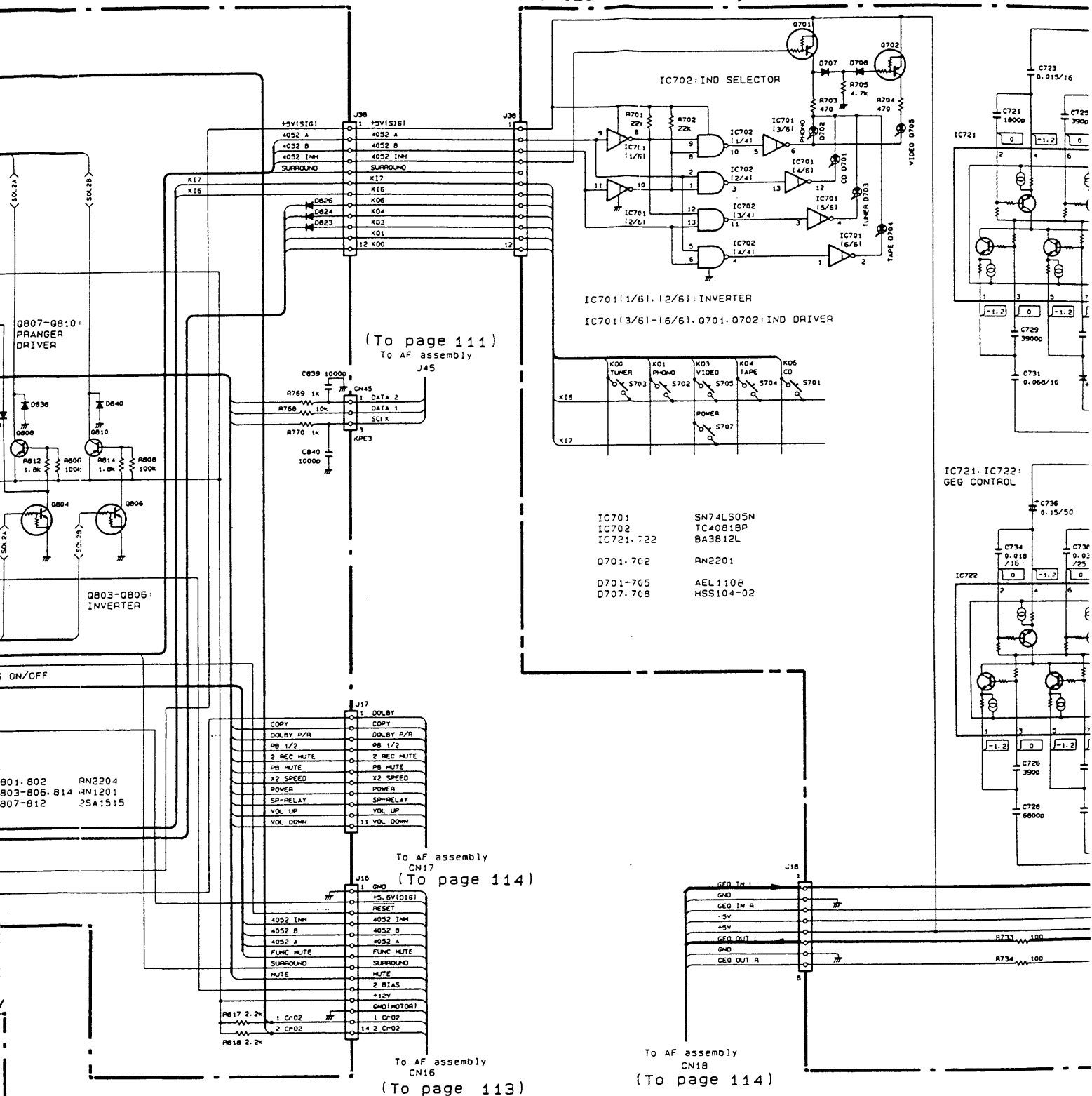
DECK CENTER assembly





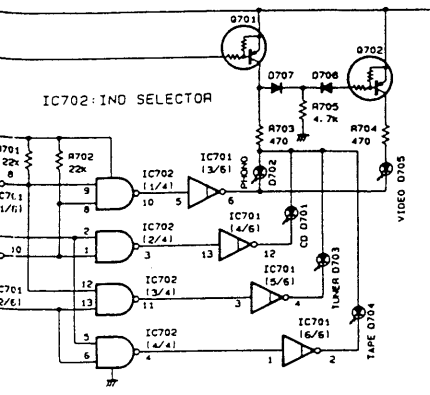


AMP. GEQ CTRL assembly (AWZ2639)

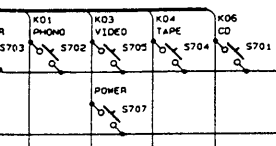


MECHA-2 Lch PLAY

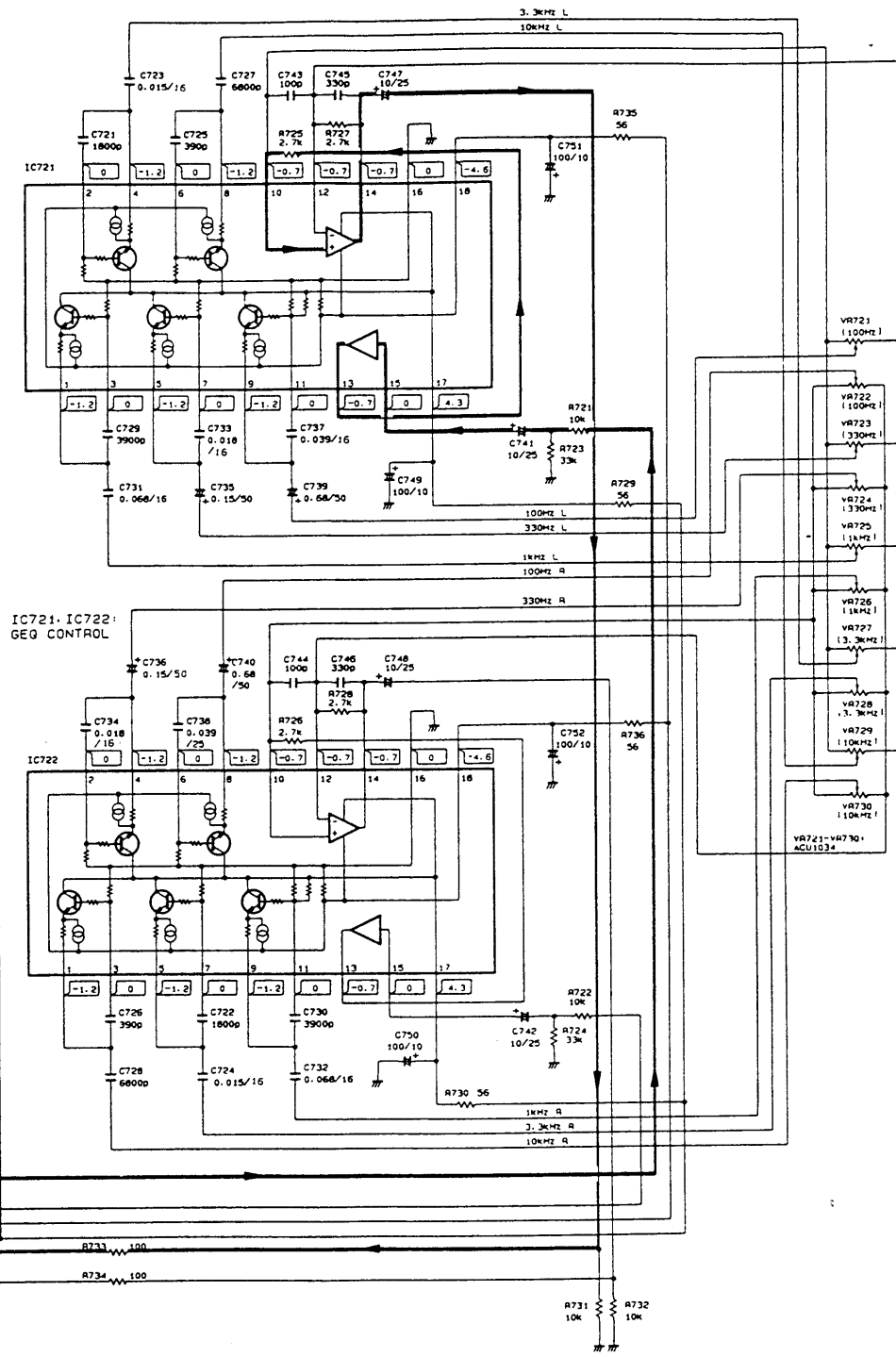
RL assembly (AWZ2639)



/6/1 (2/6): INVERTER
/6/1-(16/6): Q701, Q702: IND DRIVER



SN74LS05N
TC4081BP
BA3812L
RN2201
AEL1108
HSS104-02



To AF assembly
CN18
(To page 114)

MECHA-2 Lch PLAY

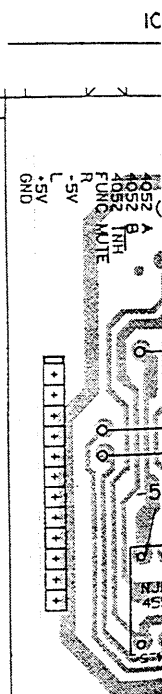
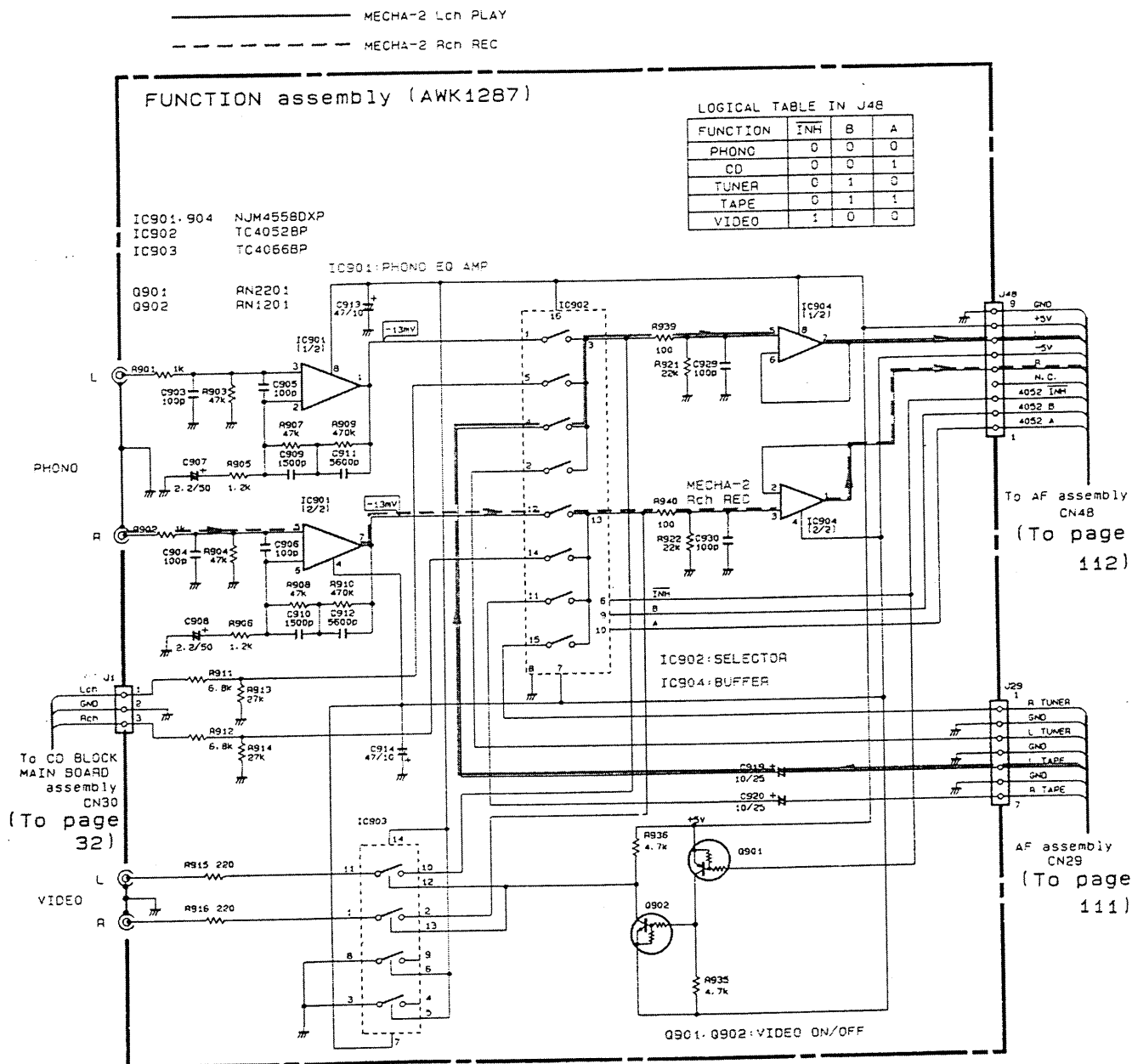
10.2.3 FUNCTION assembly (AWK1287)

A

B

C

D



NOTE

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
		Transistor
		Radiator type transistor
		Diode
		Resistor
		Capacitor (Polarity)
		Capacitor (Non-polarity)

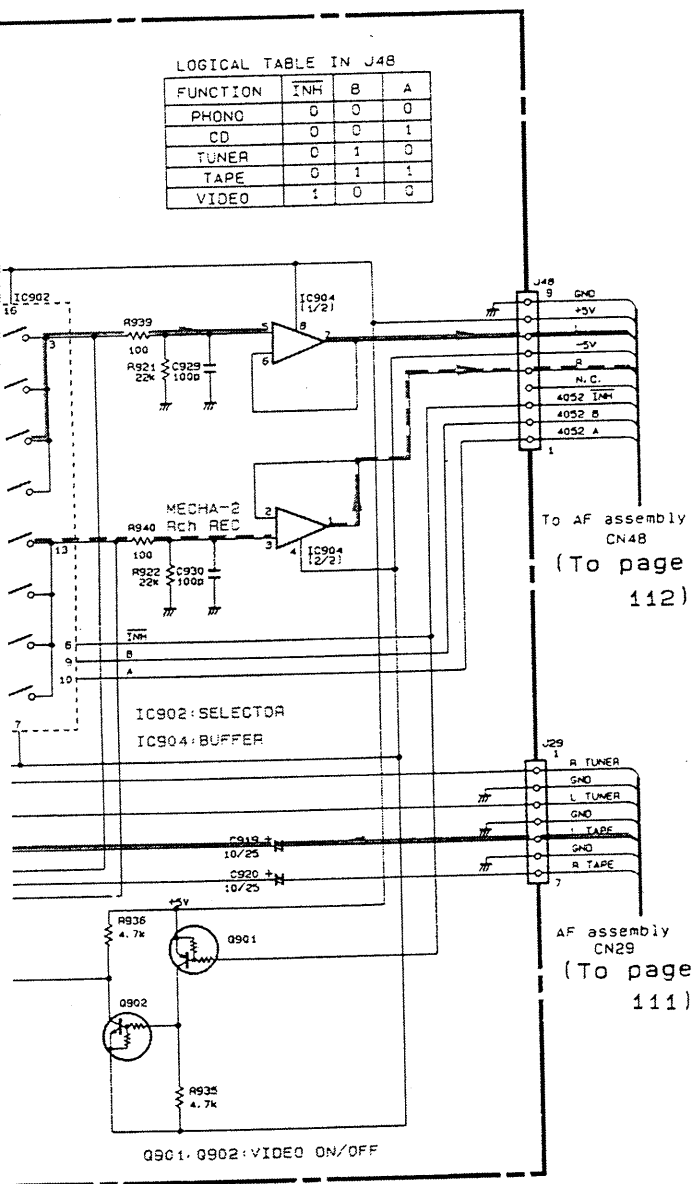
Others

P.C.B. pattern

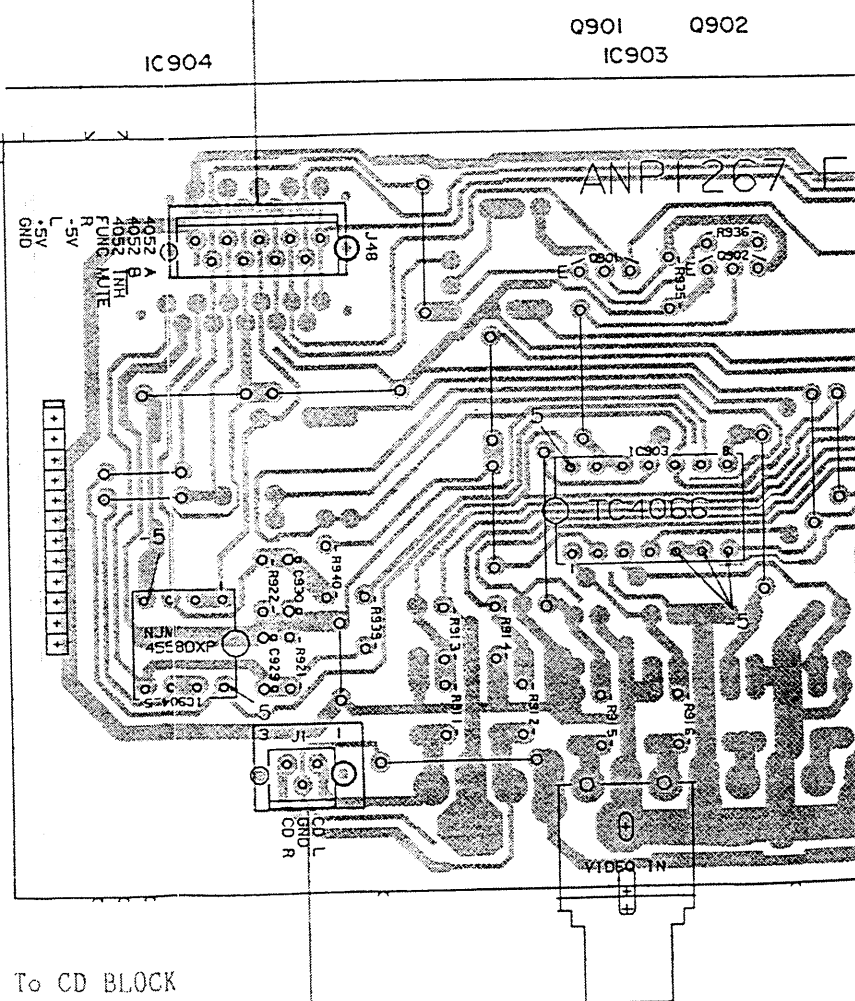
3. The capac
4. The diode
5. The trans

LOGICAL TABLE IN J48

FUNCTION	INH	B	A
PHONO	0	0	0
CD	0	0	1
TUNER	0	1	0
TAPE	0	1	1
VIDEO	1	0	0



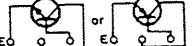
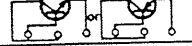
To AF assembly CN48
(To page 109)



To CD BLOCK
MAIN BOARD
assembly CN30
(To page 34)

NOTE

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
		Transistor
		Resistor type transistor
		Diode
		Resistor
		Capacitor (Polarity)
		Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ⊙ (double circles) shows negative terminal.
4. The diode terminal marked with ⊙ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

To AF assembly CN48
(To page 109)

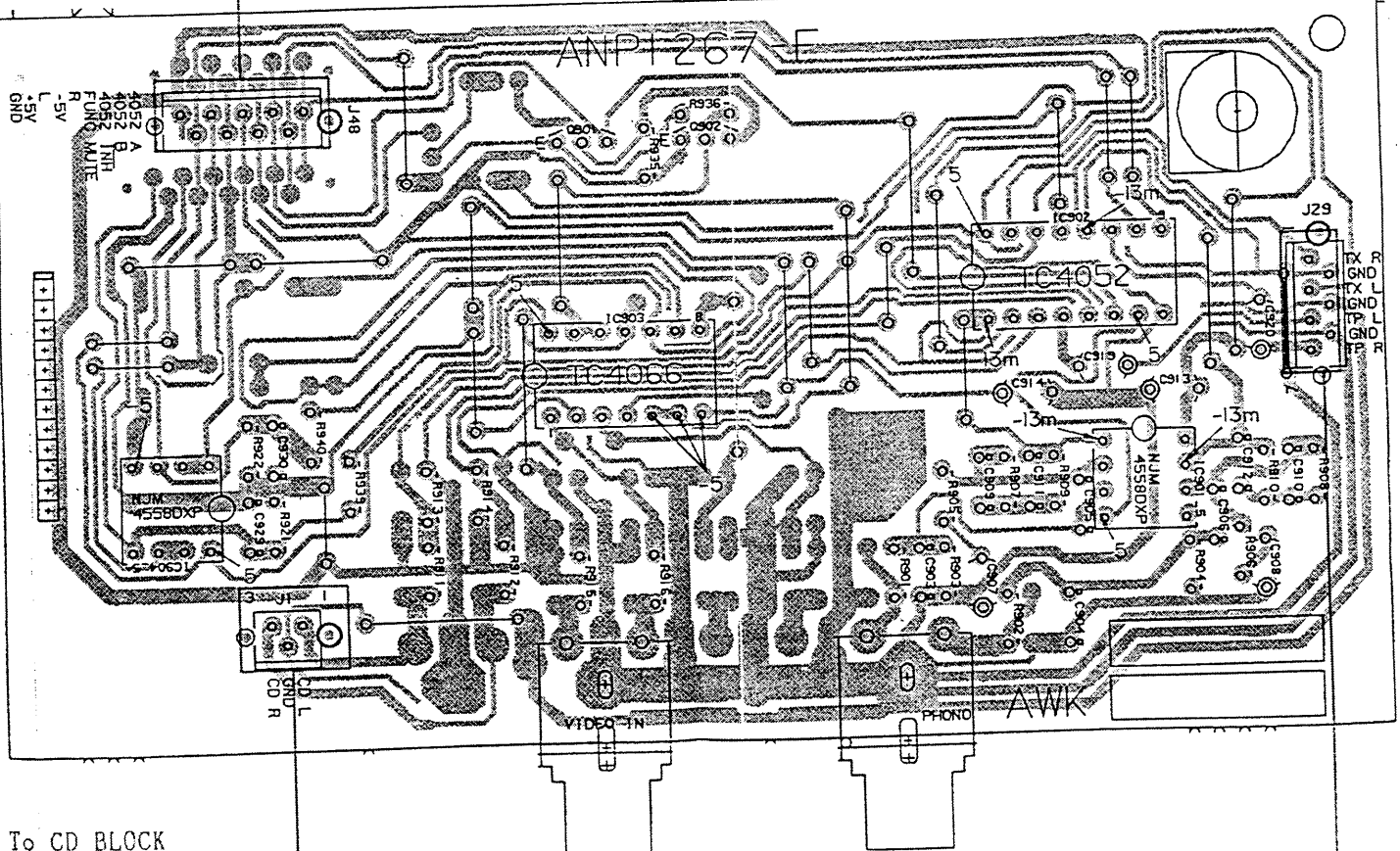
IC904

Q901 Q902
IC903

IC902
IC901

FUNCTION assembly (AWK1287)

(TE



Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ⊙ (double circles) shows negative terminal.
4. The diode terminal marked with ⊙ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

NOTE:
This picture shows
printed circuit.

48

8440 vId
(08)

002

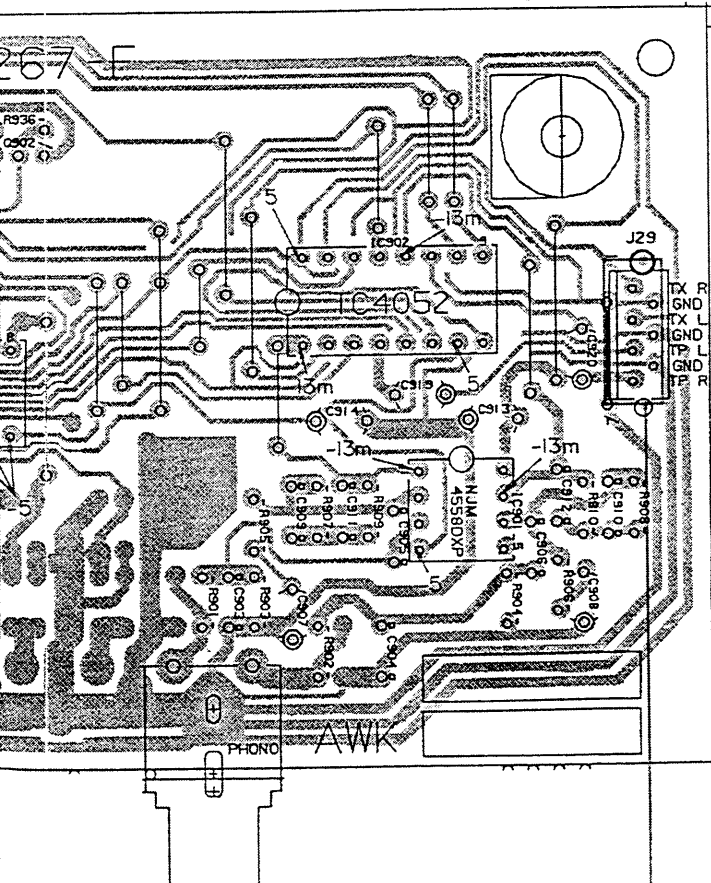
IC902
IC901

00201
IC901

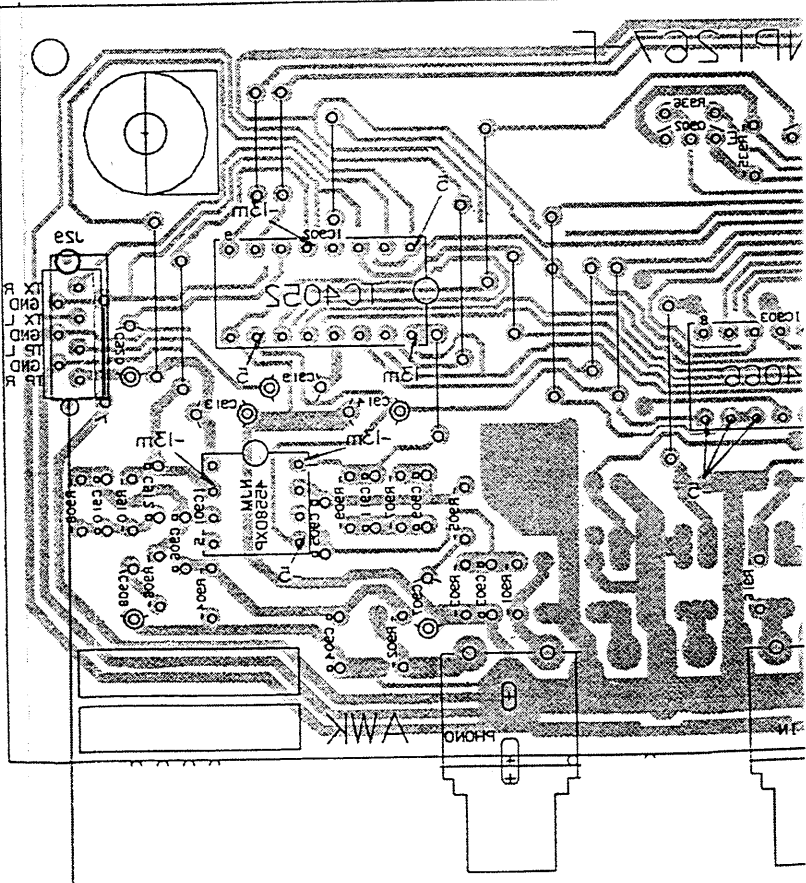
00201
IC901

FUNCTION assembly (AWK1287)

FUNCTION assembly (AWK1287)

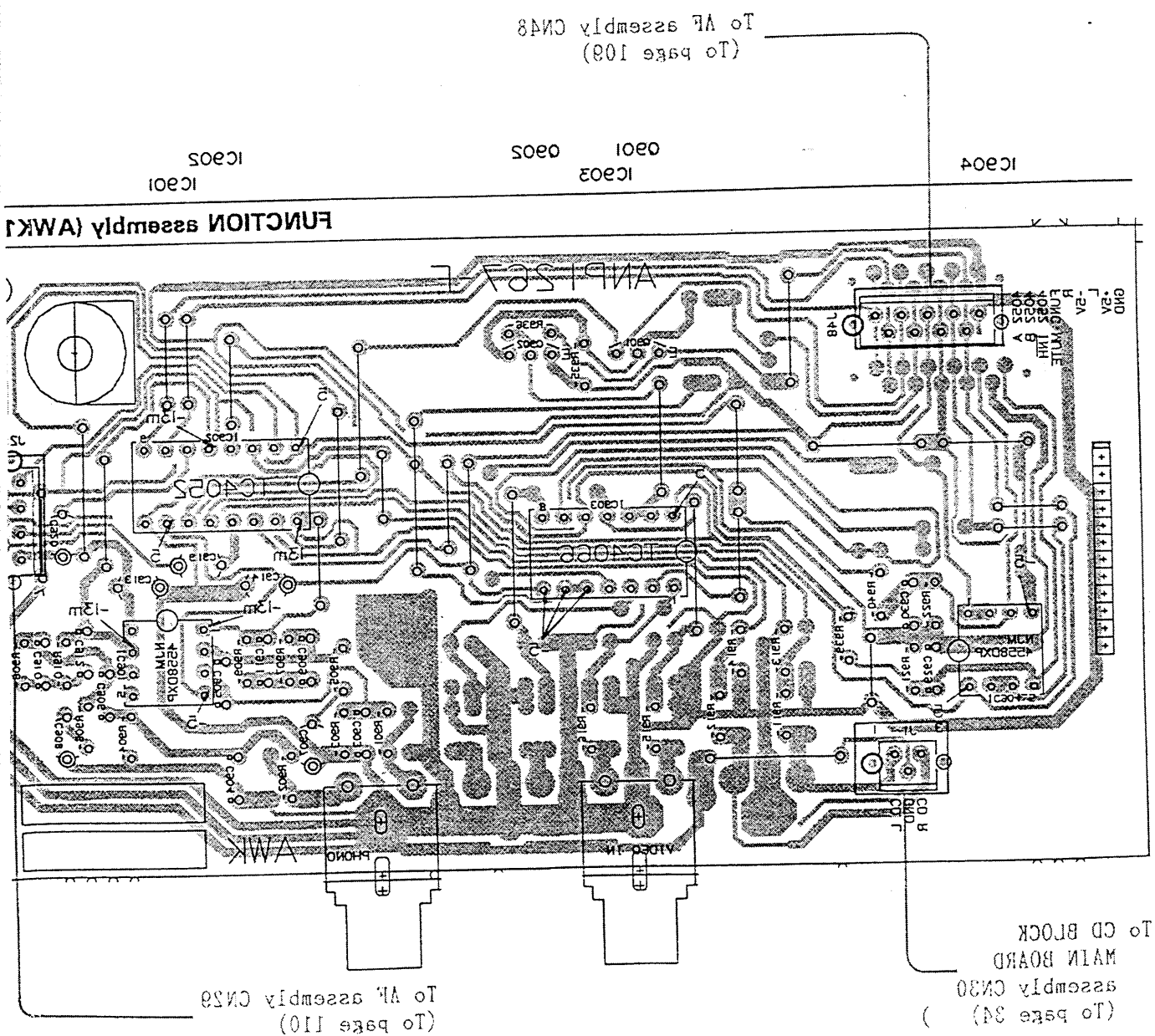


To AF assembly CN29
(To page 110)



To AF assembly CN29
(To page 110)

NOTE:
This picture shows the foil side of the
printed circuit.



IC431 0431-0433
0432-0438

To TURN TABLE PL-293 only (DC12V OUTPUT)

IC335

VR451-VR454

To TUNER F-293/293L only
To DECK CTRL assembly CND2
(To page 97)

To FUNCTION assembly 129
(To page 103)

MECHA UNIT (1)

HEAD

MAIN VR assembly

To DECK CTRL assembly 117
(To page 97)

To DECK CTRL assembly 116
(To page 97)

3.5V

A

B

C

D

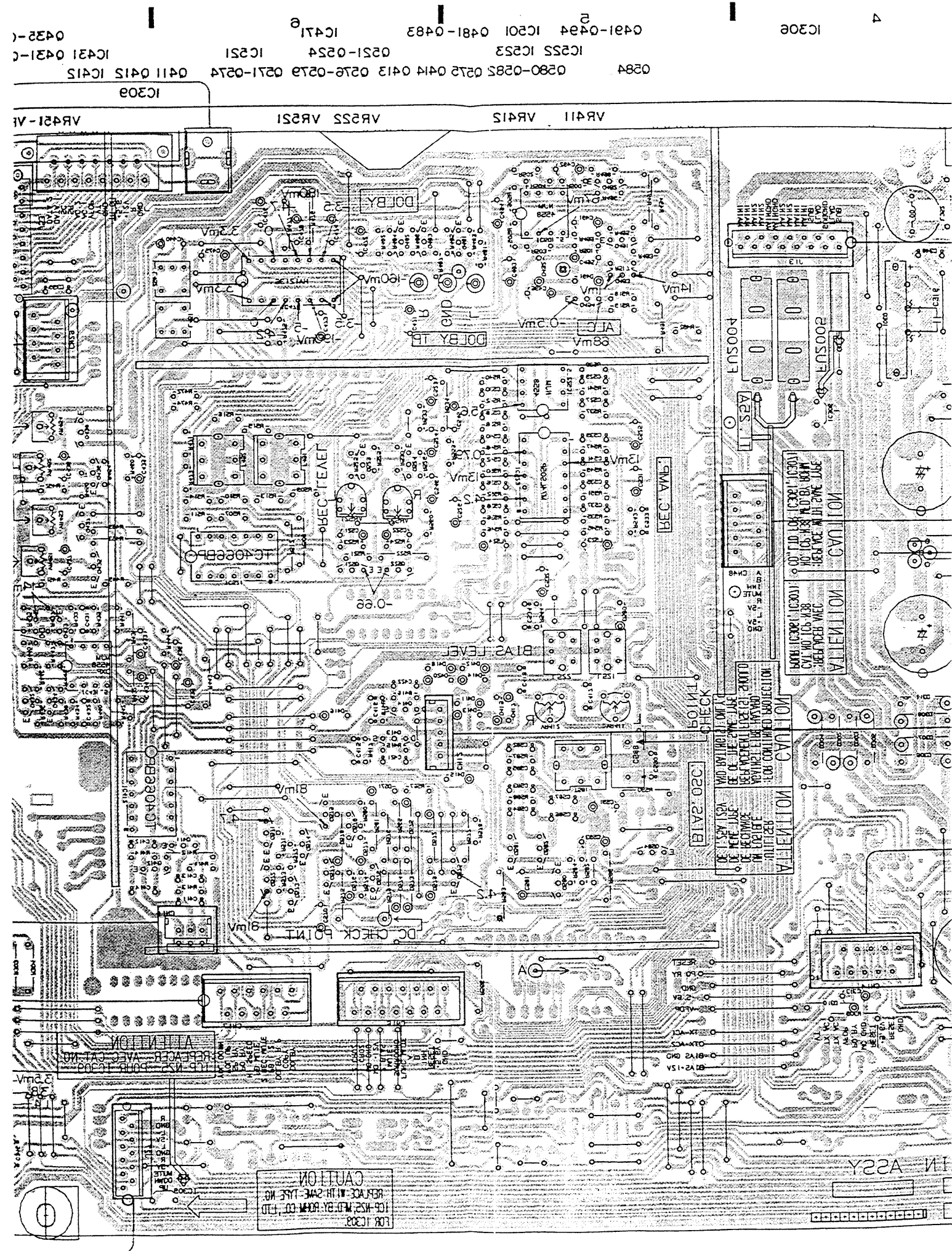
e

8

e

8

7

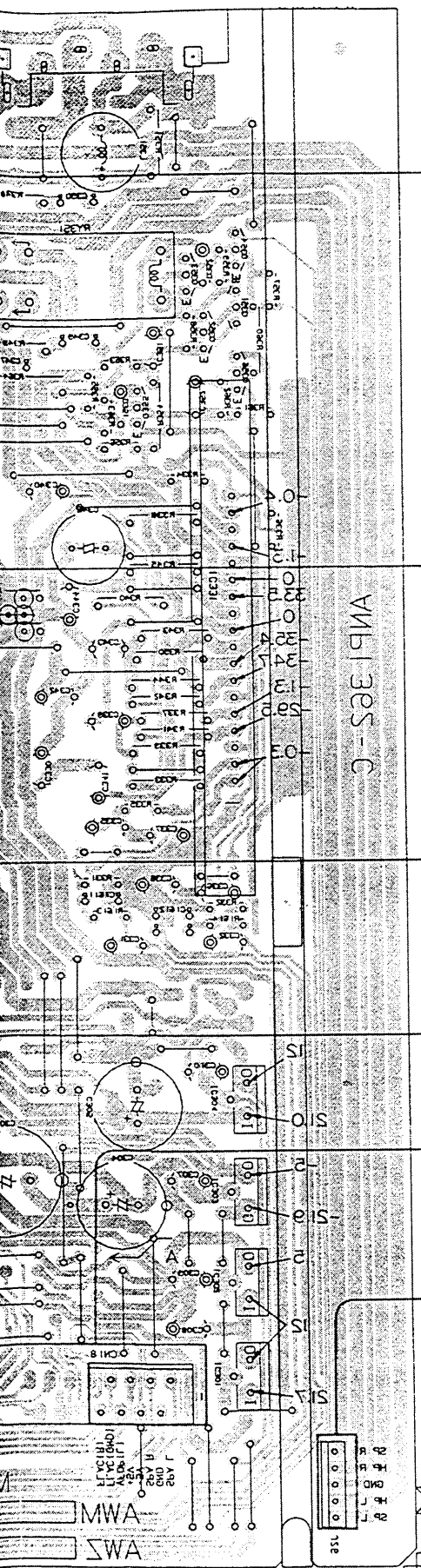


IC331
0321-0326

IC301-IC304

NOTE:

This picture shows the foil side of the printed circuit.



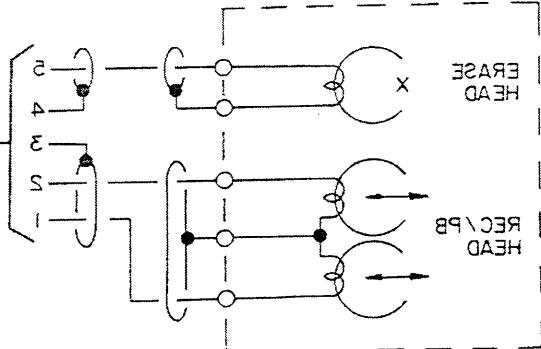
TO TRANS CONNECT assembly 113
(To page 117)

TO FUNCTION assembly 148
(To page 103)

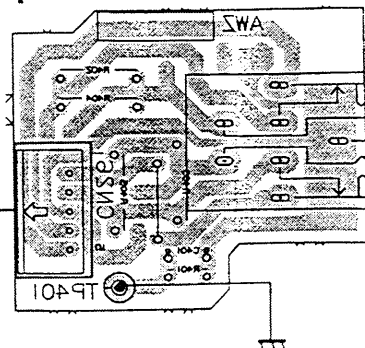
TO POWER SUPPLY assembly 114
(To page 116)

TO AMP GEO CTRL assembly 118
(To page 95)

MECHA UNIT(S)



HEAD PHONE assembly



AF assembly (AW2632)

E assembly

IC301-IC304

assembly J13

assembly J48

ANP1362-C

assembly J14

assembly J18

MAIN ASSY

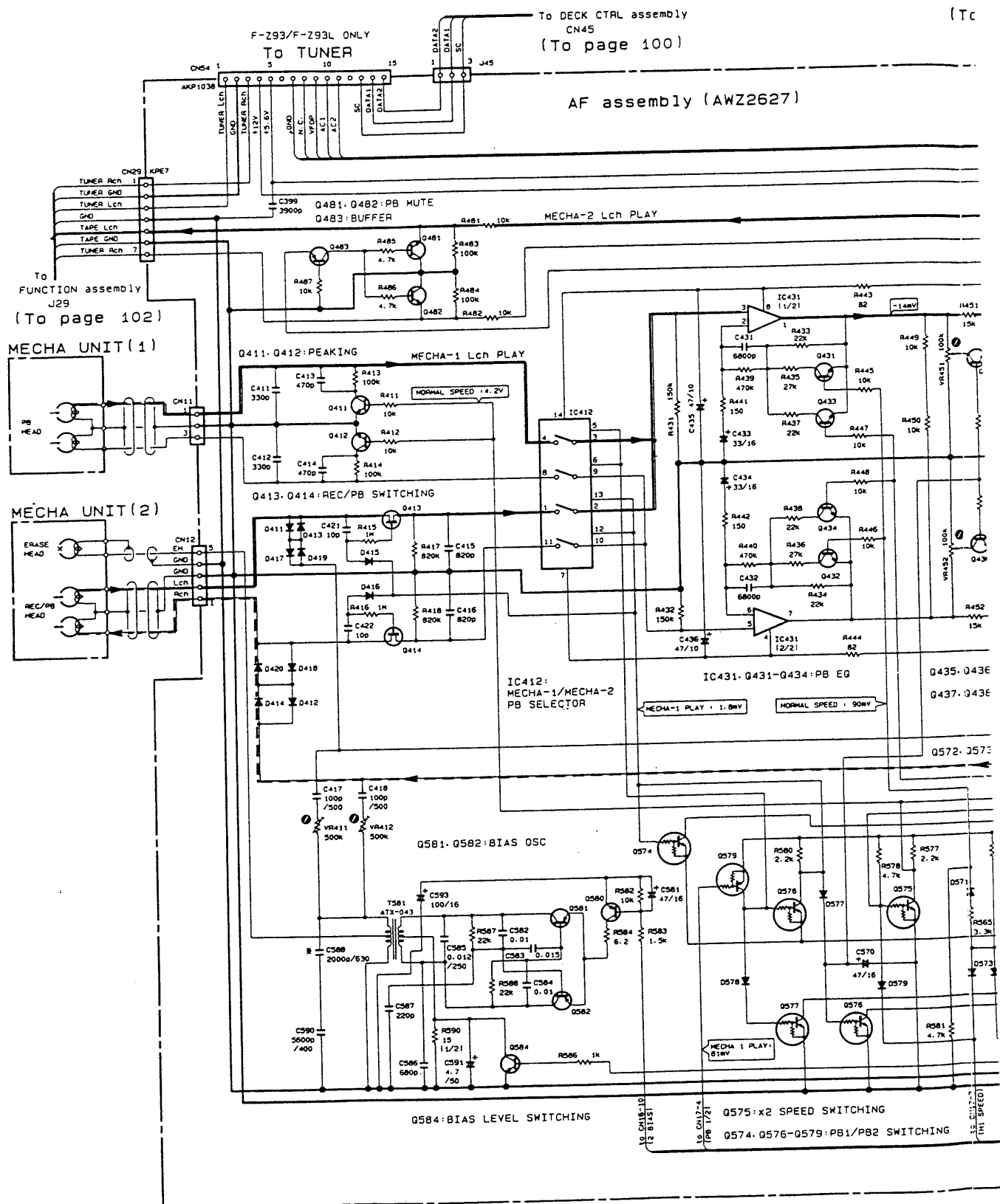
AF assembly (AWZ2627)



B

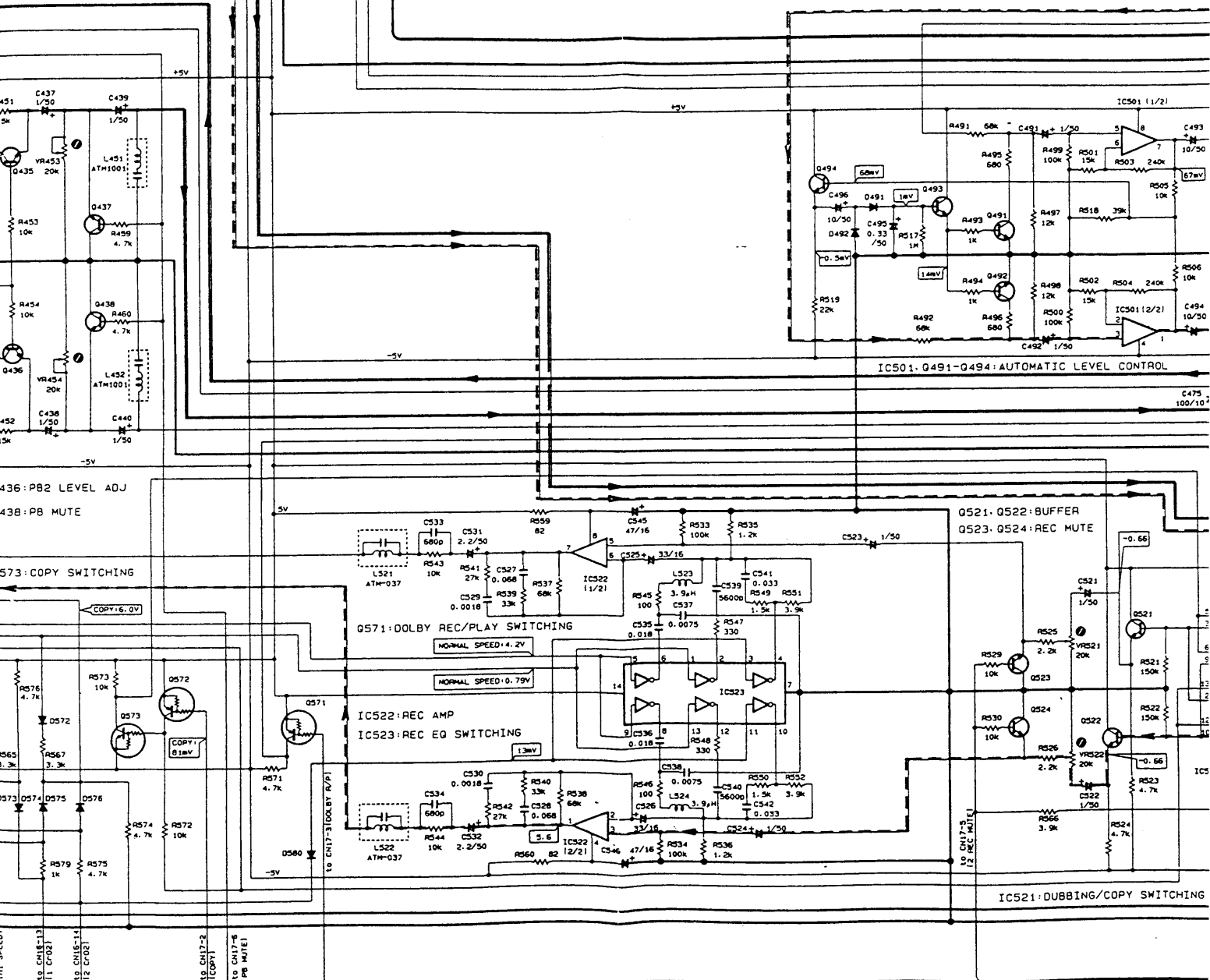
C

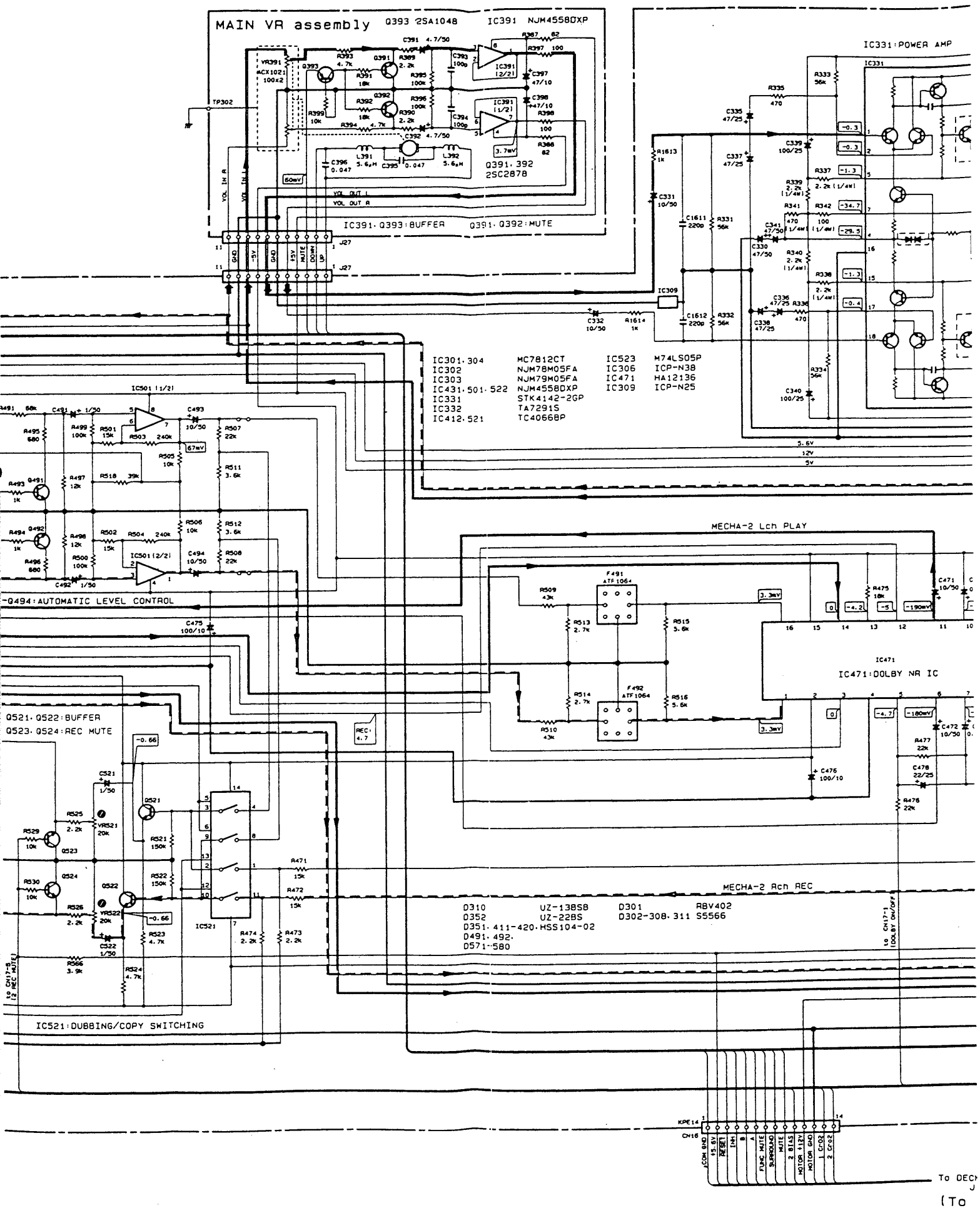
D

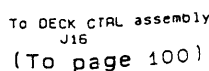
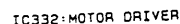
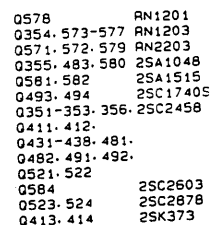


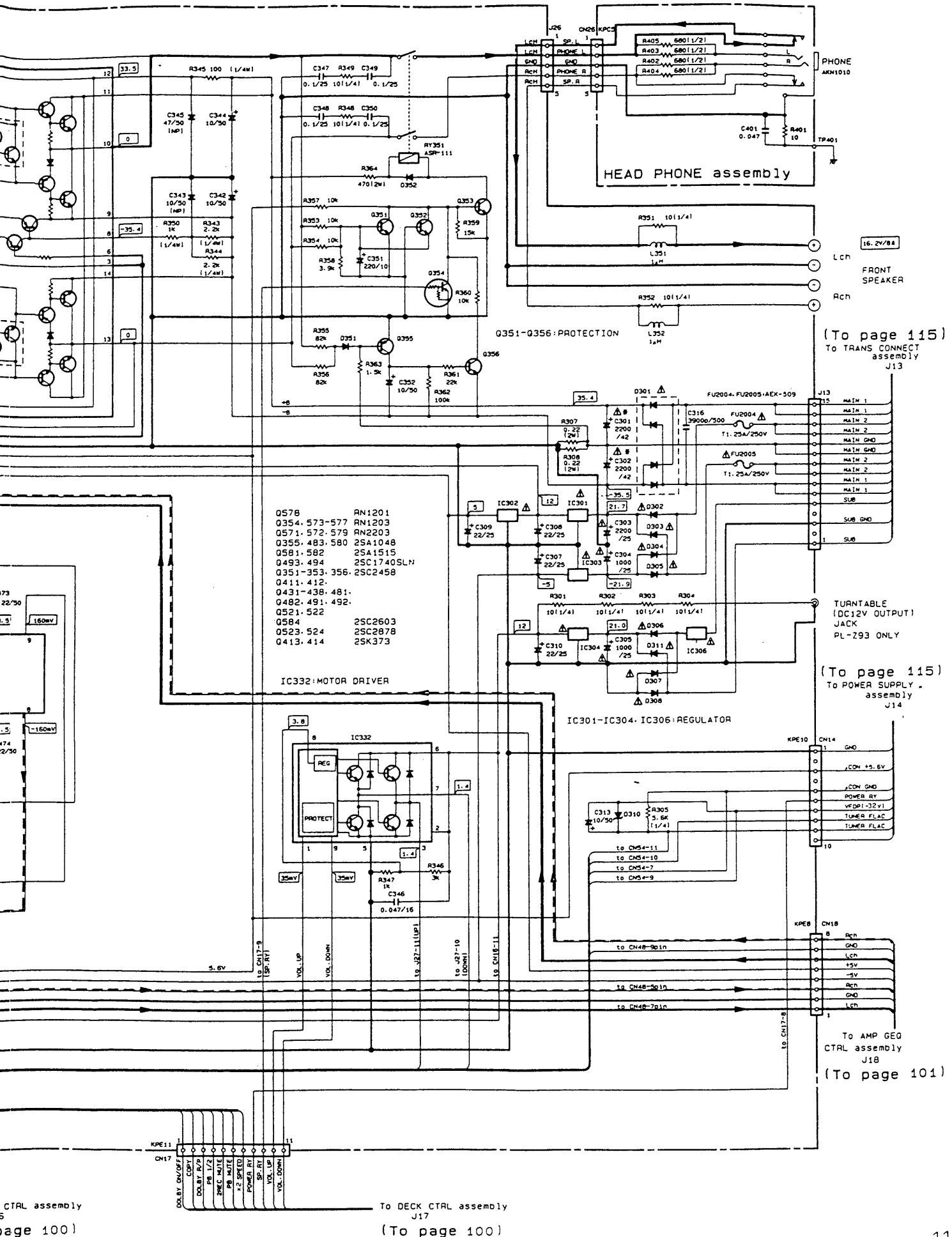
ei

MECHA-2 ASD REC

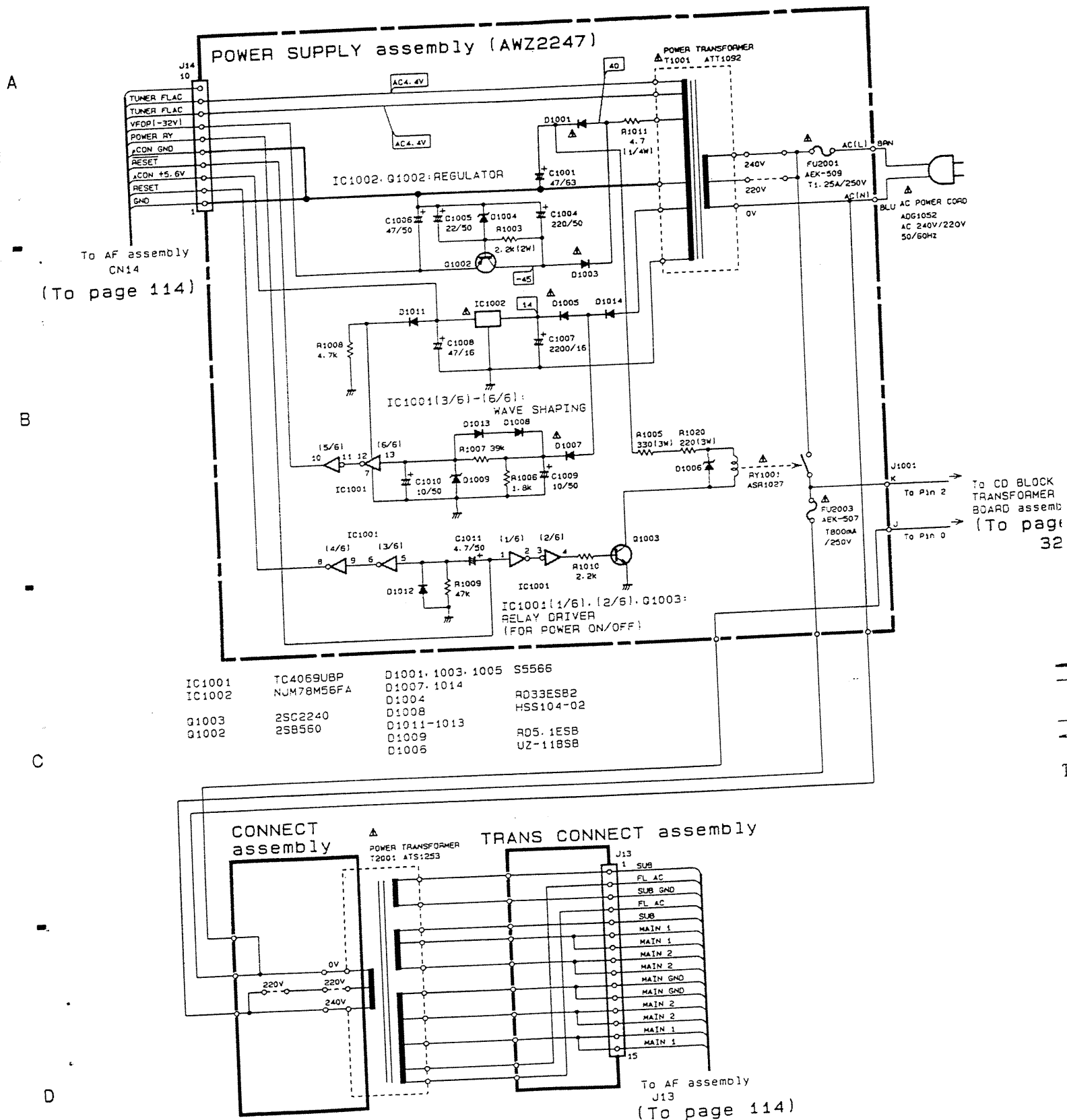




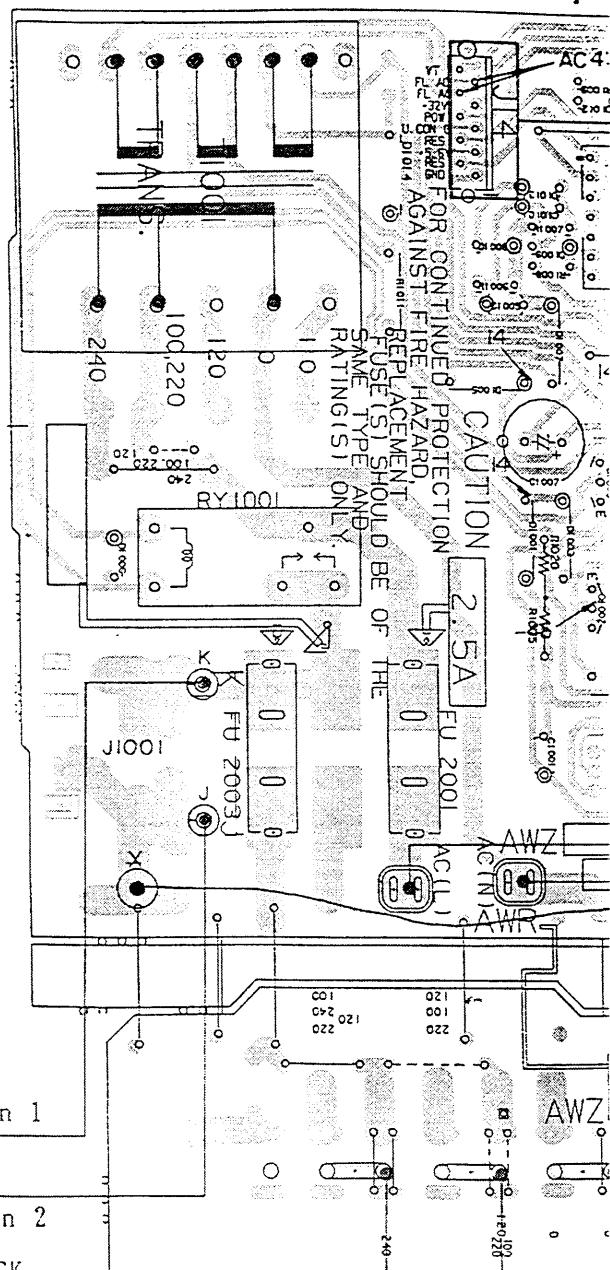
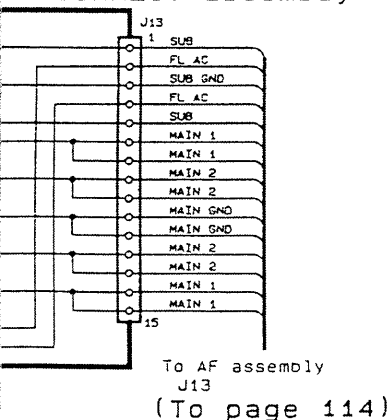
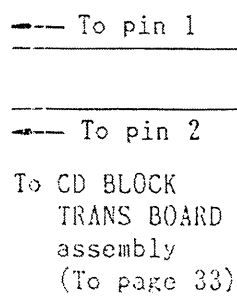




10.2.5 POWER SUPPLY (AWZ2247), TRANS CONNECT and CONNECT assembly

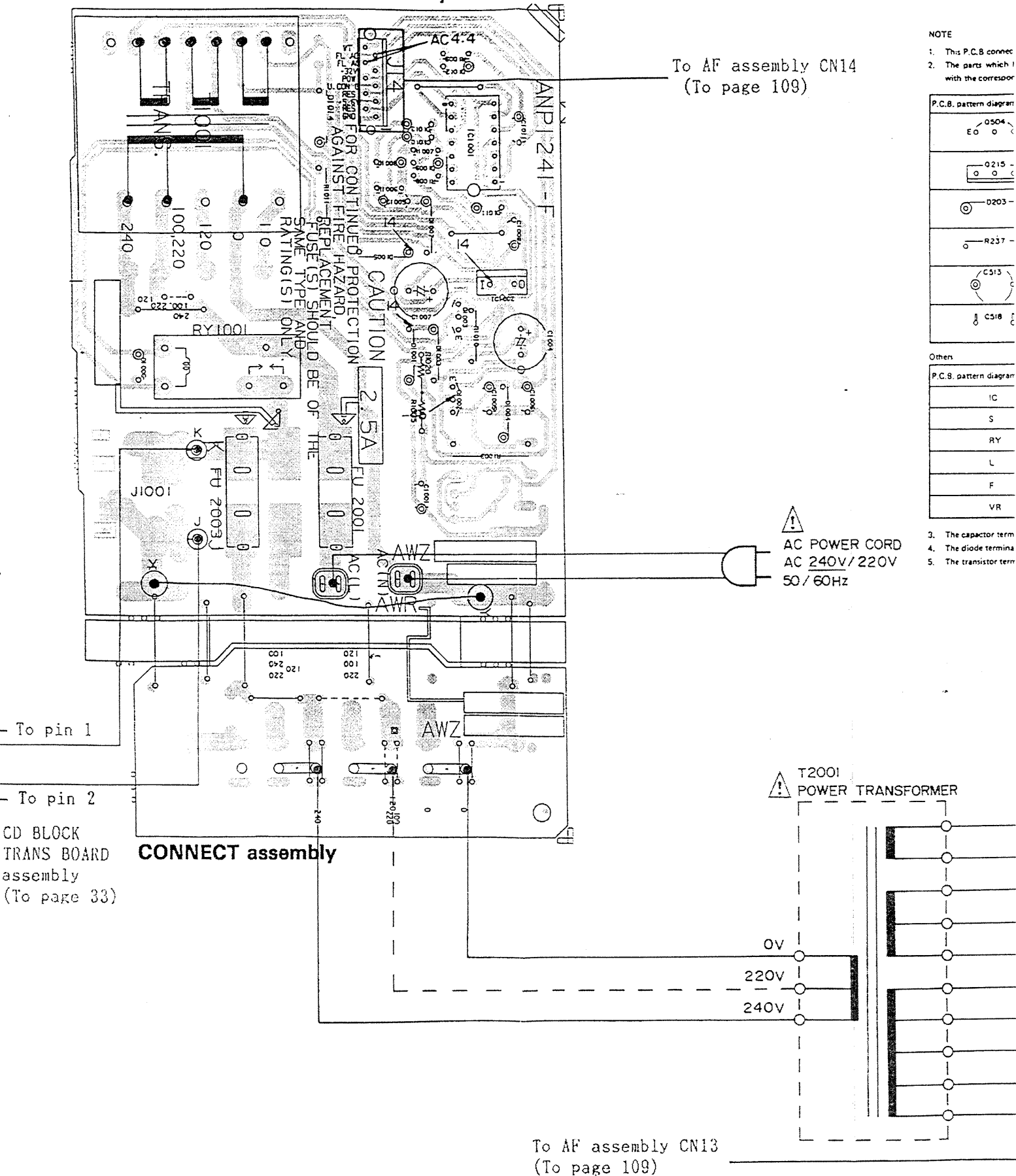


POWER SUPPLY assembly (



CONNECT assembly

POWER SUPPLY assembly (AWZ2247)



NOTE

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
		Transistor
		Radiator type transistor
		Diode
		Resistor
		Capacitor (Polarity)
		Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ⊕ (double circles) shows negative terminal.
4. The diode terminal marked with ⊕ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

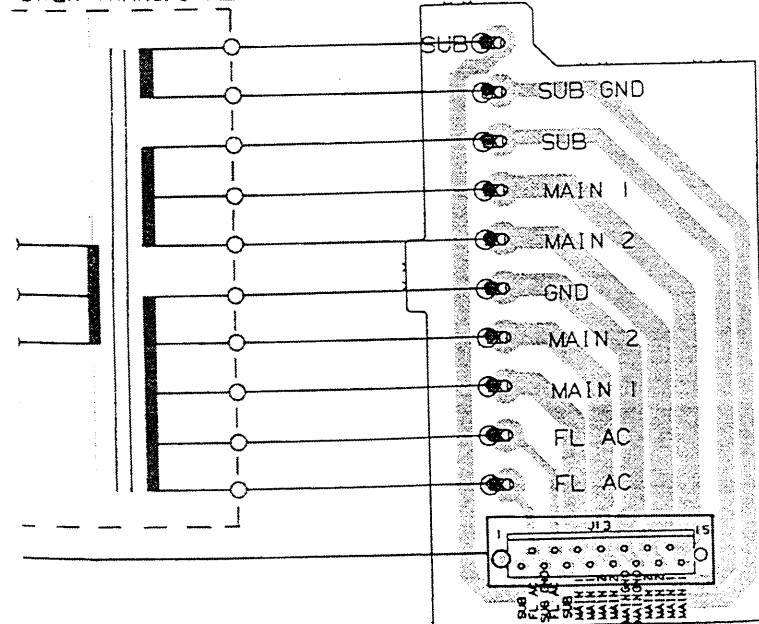
NOTE:

This picture shows printed circuit.

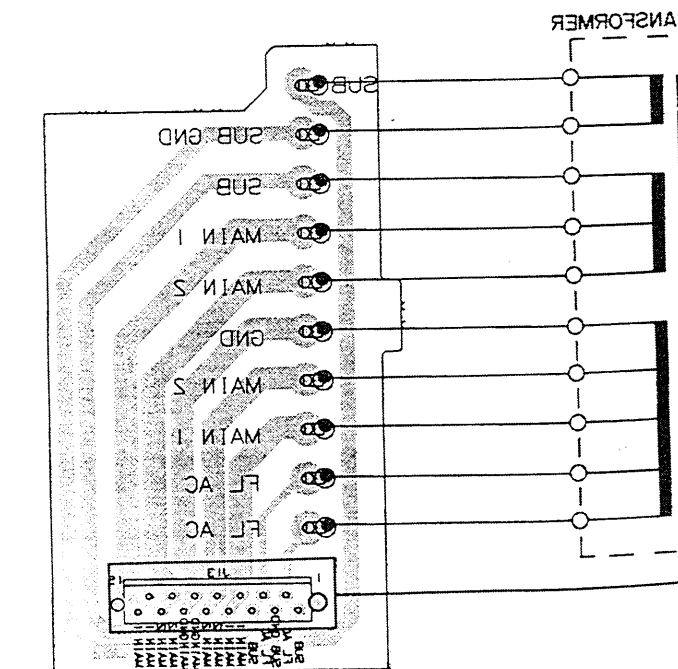
POWER CORD
240V/220V
/60Hz

ORD
VOS

POWER TRANSFORMER



TRANS CONNECT assembly



TRANS CONNECT assembly

with those shown

Part Name
Transistor
Radiator type transistor
Diode
Resistor
Capacitor (Polarity)
Capacitor (Non-polarity)

ermiani.

NOTE:

This picture shows the foil side of the printed circuit.

To AF assembly CN13
(To page 10)

ply (AW52547)

20 V 60 Hz
AC 240V/250V
AC POWER CORD

! POWER TRANSFORMER
T2001

0V
250V
240V

To AF assembly CN13
(To page 10)

TRANS CONNECT assembly

10.3 P.C.B 's PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560 Ω	56×10^1	561.....	RD1/4PS $\square$ $\square$ $\square$ J
47k Ω	47×10^3	473.....	RD1/4PS $\square$ $\square$ $\square$ J
0.5 Ω	0R5.....		RN2H $\square$ $\square$ $\square$ K
1 Ω	010.....		RS1P $\square$ $\square$ $\square$ K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω	562×10^1	5621.....	RN1/4SR $\square$ $\square$ $\square$ F
----------------	-------------------	-----------	---

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
FUNCTION assembly (AWK1287)				IC309	IC PROTECTOR	ICP-N25	
SEMICONDUCTOR				IC331	AUDIO IC	STK4142-2GP	
	IC901	OP-AMP IC	NJM4558DXP	IC332	MECHANISM DRIVER IC	TA7291S	
	IC902	LOGIC IC	TC4052BP	IC412	LOGIC IC	TC4066BP	
	IC903	LOGIC IC	TC4066BP	IC431	OP-AMP IC	NJM4558DXP	
	IC904	OP-AMP IC	NJM4558DXP				
	Q901	TRANSISTOR	RN2201	IC471	DOLBY-B IC	HA12136	
	Q902	TRANSISTOR	RN1201	IC501	OP-AMP IC	NJM4558DXP	
CAPACITORS				IC521	LOGIC IC	TC4066BP	
	C903-906	CERAMIC CAPACITOR	CCCSL101J50	IC522	OP-AMP IC	NJM4558DXP	
	C907,908	ELECTR.CAPACITOR	CEAS2R2M50	IC523	LOGIC IC	M74LS05P	
	C909,910	CERAMIC CAPACITOR	CKCYB152K50				
	C911,912	CERAMIC CAPACITOR	CKCYB562K50	Q351-353	TRANSISTOR	2SC2458	
	C913, 914	ELECTR.CAPACITOR	CEAS470M10	Q354	TRANSISTOR	RN1203	
	C919, 920	ELECTR.CAPACITOR	CEAS100M25	Q355	TRANSISTOR	2SA1048	
	C929, 930	CERAMIC CAPACITOR	CCCSL101J50	Q356	TRANSISTOR	2SC2458	
RESISTORS				Q411,412	TRANSISTOR	2SC2458	
	All resistors		RD1/8PM $\square$ $\square$ $\square$ J	Q413,414	N-FET	2SK373	
OTHERS				Q431-438	TRANSISTOR	2SC2458	
	JACK-2P (VIDEO)	AKB1086		Q481,482	TRANSISTOR	2SC2458	
	JACK 2-P (PHONO)	AKB1088		Q483	TRANSISTOR	2SA1048	
AF ASSY (AWZ2627)				Q491,492	TRANSISTOR	2SC2458	
SEMICONDUCTORS				Q493,494	TRANSISTOR	2SC1740SLN	
	IC301	REGURATOR IC	MC7812CT	Q521,522	TRANSISTOR	2SC2458	
	IC302	REGULATOR IC	NJM78M05FA	Q523,524	TRANSISTOR	2SC2878	
	IC303	REGULATOR IC	NJM79M05FA	Q571,572	TRANSISTOR	RN2203	
	IC304	REGURATOR IC	MC7812CT	Q573-577	TRANSISTOR	RN1203	
	IC306	IC PROTECTOR	ICP-N38	Q578	TRANSISTOR	RN1201	
				Q579	TRANSISTOR	RN2203	
				Q580	TRANSISTOR	2SA1048	
				Q581,582	TRANSISTOR	2SA1515	
				Q584	TRANSISTOR	2SC2603	
				D301	DIODE	RBV402	
				D302-308	DIODE	S5566	
				D310	ZENER DIODE	UZ-13BSB	
				D311	DIODE	S5566	
				D351	DIODE	HSS104-02	

Mark	No.	Description	Parts No.
	D352	ZENER DIODE	UZ-22BS
	D411-420	DIODE	HSS104-02
	D491,492	DIODE	HSS104-02
	D571-580	DIODE	HSS104-02

RELAY

RY351	RELAY	ASR-111
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COILS & TRANSFORMER

F491,492	DOLBY FILTER	ATF1064
L351,352	COIL(1 μ H)	ATH-133
L451,452	COIL	ATM1001
L521,522	COIL	ATM-037
L523,524	INDUCTOR (3.9 mH)	LTA392J
T581	OSC TRANSFORMER	ATX-043

CAPACITORS

C1611,1612	CERAMIC CAPACITOR	CCCSL221J50
C301,302	ELECTR.CAPACITOR (2200pF/42V)	ACH1109
C303	ELECTR.CAPACITOR	CEAS222M25
C304,305	ELECTR.CAPACITOR	CEAS102M25
C307-310	ELECTR.CAPACITOR	CEAS220M25
C313	ELECTR.CAPACITOR	CEAS100M50
C316	CERAMIC CAPACITOR	CKDYB392K500
C330	ELECTR.CAPACITOR	CEAS470M50
C331,332	ELECTR.CAPACITOR	CEAS100M50
C335	ELECTR.CAPACITOR	CEAS470M25
C336	ELECTR.CAPACITOR	CEHAQ470M25
C337,338	ELECTR.CAPACITOR	CEAS470M25
C339,340	ELECTR.CAPACITOR	CEAS101M25
C341	ELECTR.CAPACITOR	CEAS470M50
C342	ELECTR.CAPACITOR	CEAS100M50
C343	ELECTR.CAPACITOR	CEANP100M50
C344	ELECTR.CAPACITOR	CEAS100M50
C345	ELECTR.CAPACITOR	CEANP470M50
C346	CERAMIC CAPACITOR	CKDYX473M16
C347-350	CERAMIC CAPACITOR	CKCYX104M25
C351	ELECTR.CAPACITOR	CEAS221M10
C352	ELECTR.CAPACITOR	CEAS100M50
C399	CERAMIC CAPACITOR	CKDYB392K50
C411,412	CERAMIC CAPACITOR	CKMYB331K50
C413,414	CERAMIC CAPACITOR	CKMYB471K50
C415,416	CERAMIC CAPACITOR	CKMYB821K50
C417,418	CERAMIC CAPACITOR	CCCSL101K500
C421,422	CERAMIC CAPACITOR	CCMSL100D50
C431,432	MYLOR FILM CAPACITOR	CQMA682J50
C433,434	ELECTR.CAPACITOR	CEAS330M16
C435,436	ELECTR.CAPACITOR	CEAS470M10
C437,438	ELECTR.CAPACITOR	CEAS010M50
C439,440	ELECTR.CAPACITOR	CEAS010M50
C471,472	ELECTR.CAPACITOR	CEAS100M50
C473,474	ELECTR.CAPACITOR	CEASR22M50

Mark	No.	Description	Parts No.
	C475,476	ELECTR.CAPACITOR	CEAS101M10
	C478	ELECTR.CAPACITOR	CEAS220M25
	C491,492	ELECTR.CAPACITOR	CEAS010M50
	C493,494	ELECTR.CAPACITOR	CEAS100M50
	C495	ELECTR.CAPACITOR	CEASR33M50

C496	ELECTR.CAPACITOR	CEAS100M50
C521-524	ELECTR.CAPACITOR	CEAS010M50
C525,526	ELECTR.CAPACITOR	CEAS330M16
C527,528	AUDIO FILM CAPACITOR	CFTXA683J50
C529,530	CERAMIC CAPACITOR	CKCYB182K50

C531,532	ELECTR.CAPACITOR	CEAS2R2M50
C533,534	CERAMIC CAPACITOR	CKMYB681K50
C535,536	MYLOR FILM CAPACITOR	CQMA183J50
C537,538	MYLOR FILM CAPACITOR	CQMA752J50
C539,540	CERAMIC CAPACITOR	CKCYB562K50

C541,542	AUDIO FILM CAPACITOR	CFTXA333J50
C545,546	ELECTR.CAPACITOR	CEAS470M16
C570	ELECTR.CAPACITOR	CEAS470M16
C581	ELECTR.CAPACITOR	CEAS470M16
C582	MYLOR FILM CAPACITOR	CQMA103K50

C583	MYLOR FILM CAPACITOR	CQMA153K50
C584	MYLOR FILM CAPACITOR	CQMA103K50
C585	MYLOR FILM CAPACITOR	CQMA123K250
C586	CERAMIC CAPACITOR	CKMYB681K50
C587	CERAMIC CAPACITOR	CKMYB221K50

C588	CQPA (2000pF/630V)	ACE1020
C590	MYLOR FILM CAPACITOR	CQMA562K400
C591	ELECTR.CAPACITOR	CEAS4R7M50
C593	ELECTR.CAPACITOR	CEAS101M16

RESISTORS

R301-304	CARBON FILM RESISTOR	RD1/4PM100J
R305	CARBON FILM RESISTOR	RD1/4PM562J
R307,308	METAL OXIDE RESISTOR	RS2LMFR22J
R337-340	CARBON FILM RESISTOR	RD1/4PM222J
R341	CARBON FILM RESISTOR	RD1/4PMFL471J
R342	CARBON FILM RESISTOR	RD1/4PMFL101J
R343,344	CARBON FILM RESISTOR	RD1/4PM222J
R345	CARBON FILM RESISTOR	RD1/4PMFL101J

Mark	No.	Description	Parts No.
	R348,349	CARBON FILM RESISTOR	RD1/4PM100J
	R350	CARBON FILM RESISTOR	RD1/4PMFL102J
	R351,352	CARBON FILM RESISTOR	RD1/4PMFL100J
	R364	METAL OXIDE RESISTOR	RS2LMF471J
	R590	CARBON FILM RESISTOR	RD1/2PM150J
	VR411,412	VR (500k Ω)	VRTM6V504
	VR451,452	VR (100k Ω)	VRTM6H104
	VR453,454	VR (20k Ω)	VRTM6H203
	VR521,522	VR (22k Ω)	ACP1026
	Other resistors		RD1/8PM□□□J

OTHERS

	TERMINAL 4-P (SPEAKER)	AKE1012
	JACK (PL DC+12V)	AKN-203
	Socket 15-P (To TUNER)	AKP1038
CN14	JUMPER CONNECTOR 10P	KPE10
CN16	JUMPER CONNECTOR 14P	KPE14
CN17	JUMPER CONNECTOR 11P	KPE11
CN18	JUMPER CONNECTOR 8P	KPE8
CN29	JUMPER CONNECTOR 7P	KPE7
CN48	JUMPER CONNECTOR 9P	KPE9

HEAD PHONE assembly

CAPACITOR

C401	CERAMIC CAPACITOR	CKCYF473Z50
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RESISTORS

R401	CARBON FILM RESISTOR	RD1/8PM100J
R402-405	CARBON FILM RESISTOR	RD1/2PMF681J

OTHERS

CN26	JACK (HEAD PHONE) JUMPER CONNECTOR 5P	AKN1010 KPC5
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Mark	No.	Description	Parts No.
		TRANS CONNECT assembly	
		No parts are supplied with the TRANS CONNECT assembly.	

MAIN VR assembly

SEMICONDUCTORS

IC391	OP-AMP IC	NJM4558DXP
Q391,392	TRANSISTOR	2SC2878
Q393	TRANSISTOR	2SA1048

COILS

L391,392	AXIAL INDUCTOR (5.6 μ H)	LAU5R6K
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CAPACITORS

C391,392	ELECTR.CAPACITOR	CEAS4R7M50
C393,394	CERAMIC CAPACITOR	CCMSL101J50
C395,396	CERAMIC CAPACITOR	CKCYF473Z50
C397,398	ELECTR.CAPACITOR	CEAS470M10

RESISTORS

VR391	VR (100k Ω × 2)	ACX1021
Other resistors	--	RD1/8PM□□□J

DECK CENTER assembly

SEMICONDUCTORS

Q822-825	TRANSISTOR	2SA1048
D841-844	LED	AEL1084
D854	DIODE	HSS104-02
D856-858	DIODE	HSS104-02
D861	LED	AEL1091
D862	LED (RED)	AEL1065

SWITCHES

S848,849	SWITCH	ASH1014
S853	SWITCH	ASG1034
S861,862	SWITCH	ASG1034
S871,872	SWITCH	ASG1034
S875	SWITCH	ASG1034

RESISTORS

All resistors		RD1/8PM□□□J
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Mark	No.	Description	Parts No.
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DECK CTRL assembly (AWZ2635)
SEMICONDUCTORS

IC801			PDE029-C
IC802	LOGIC IC		SN74LS42N
Q801,802	TRANSISTOR		RN2204
Q803-806	TRANSISTOR		RN1201
Q807-812	TRANSISTOR		2SA1515
Q814	TRANSISTOR		RN1201
D801,802	DIODE		HSS104-02
D808	DIODE		HSS104-02
D810-815	DIODE		HSS104-02
D820-824	DIODE		HSS104-02
D826	DIODE		HSS104-02
D834-840	DIODE		HSS104-02

COIL

L801	AXIAL INDUCTOR (22μH)		LAU220K
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CAPACITORS

C801	ELECTR.CAPACITOR		CEASR33M50
C802	ELECTR.CAPACITOR		CEAS101M16
C803	ELECTR.CAPACITOR		CEAS101M10
C804-807	CERAMIC CAPACITOR		CKCYF473Z50
C839,840	CERAMIC CAPACITOR		CKCYB102K50

RESISTORS

VR801,802	VR (20kΩ)		VRTM6H203
VR803	VR (10kΩ)		VRTM6H103
Other resistors			RD1/8PM□□□J

OTHERS

CN21	JUMPER CONNECTOR		KPE11
	11P		
CN22	JUMPER CONNECTOR		KPE14
	14P		
CN45	JUMPER CONNECTOR		KPE3
	3P		
X801	Ceramic resonator		ASS1018

DECK-1 SW assembly
SWITCHES

S811-815	SWITCH		ASG1034
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DECK-2 SW assembly
SWITCHES

S821-825	SWITCH		ASG1034
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Mark	No.	Description	Parts No.
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AMP,GEQ CTRL assembly (AWZ2639)
SEMICONDUCTORS

IC701	LOGIC IC		SN74LS05N
IC702	LOGIC IC		TC4081BP
IC721,722	AUDIO IC		BA3812L
Q701,702	TRANSISTOR		RN2201
D701-705	LED(RED)		AEL1108
D707,708	DIODE		HSS104-02

SWITCHES

S701-705	SWITCH		ASG1034
S707	SWITCH		ASG1034

CAPACITORS

C721,722	CERAMIC CAPACITOR		CKDYB182K50
C723,724	CERAMIC CAPACITOR		CKDYX153M16
C725,726	CERAMIC CAPACITOR		CKDYB391K50
C727,728	CERAMIC CAPACITOR		CKDYB682K50
C729,730	CERAMIC CAPACITOR		CKDYB392K50
C731,732	CERAMIC CAPACITOR		CKCYX683M16
C733,734	CERAMIC CAPACITOR		CKDYX183M16
C735,736	ELECTR.CAPACITOR		CEJAR15M50
C737	CERAMIC CAPACITOR		CKDYX393M16
C738	CERAMIC CAPACITOR		CKDYX393M25
C739,740	ELECTR.CAPACITOR		CEJAR68M50
C741	ELECTR.CAPACITOR		CEJA100M25
C742	ELECTR.CAPACITOR		CEAS100M25
C743,744	CERAMIC CAPACITOR		CCMSL101J50
C745,746	CERAMIC CAPACITOR		CKDYB331K50
C747,748	ELECTR.CAPACITOR		CEAS100M25
C749-752	ELECTR.CAPACITOR		CEAS101M10

RESISTORS

VR721-730	VR (30kΩ)		ACU1034
Other resistors			RD1/8PM□□□J

POWER SUPPLY assembly (AWZ2247)
SEMICONDUCTORS

IC1001	LOGIC IC		TC4069UBP
IC1002	REGULATOR IC		NJM78M56FA
Q1002	TRANSISTOR		2SB560
Q1003	TRANSISTOR		2SC2240
D1001	DIODE		S5566
D1003	DIODE		S5566
D1004	ZENER DIODE		RD33ESB2
D1005	DIODE		S5566
D1006	ZENER DIODE		UZ-11BSB
D1007	DIODE		S5566
D1008	DIODE		HSS104-02
D1009	ZENER DIODE		RD5.1ESB

Mark	No.	Description	Parts No.
	D1011-1013	DIODE	HSS104-02
	D1014	DIODE	S5566
RELAY			
△	RY1001	RELAY	ASR1027
TRANSFORMER			
△	T1001	POWER TRANSFORMER	ATT1092
CAPACITORS			
	C1001	ELECTR.CAPACITOR	CEAS470M63
	C1004	ELECTR.CAPACITOR	CEAS221M50
	C1005	ELECTR.CAPACITOR	CEHAQ220M50
	C1006	ELECTR.CAPACITOR	CEAS470M50
	C1007	ELECTR.CAPACITOR	CEAS222M16
	C1008	ELECTR.CAPACITOR	CEAS470M16
	C1009,1010	ELECTR.CAPACITOR	CEAS100M50
	C1011	ELECTR.CAPACITOR	CEAS4R7M50
RESISTORS			
	R1003	METAL OXIDE RESISTOR	RS2LMF222J
	R1005	METAL OXIDE RESISTOR	RS3PMF331J
	R1011	CARBON FILM RESISTOR	RD1/4PMFL4R7J
	R1020	METAL OXIDE RESISTOR	RS3PMF221J
	Other resistors		RD1/8PM□□□J

CONNECT assembly

No parts are supplied with the CONNECT assembly.

10.4 ADJUSTMENTS

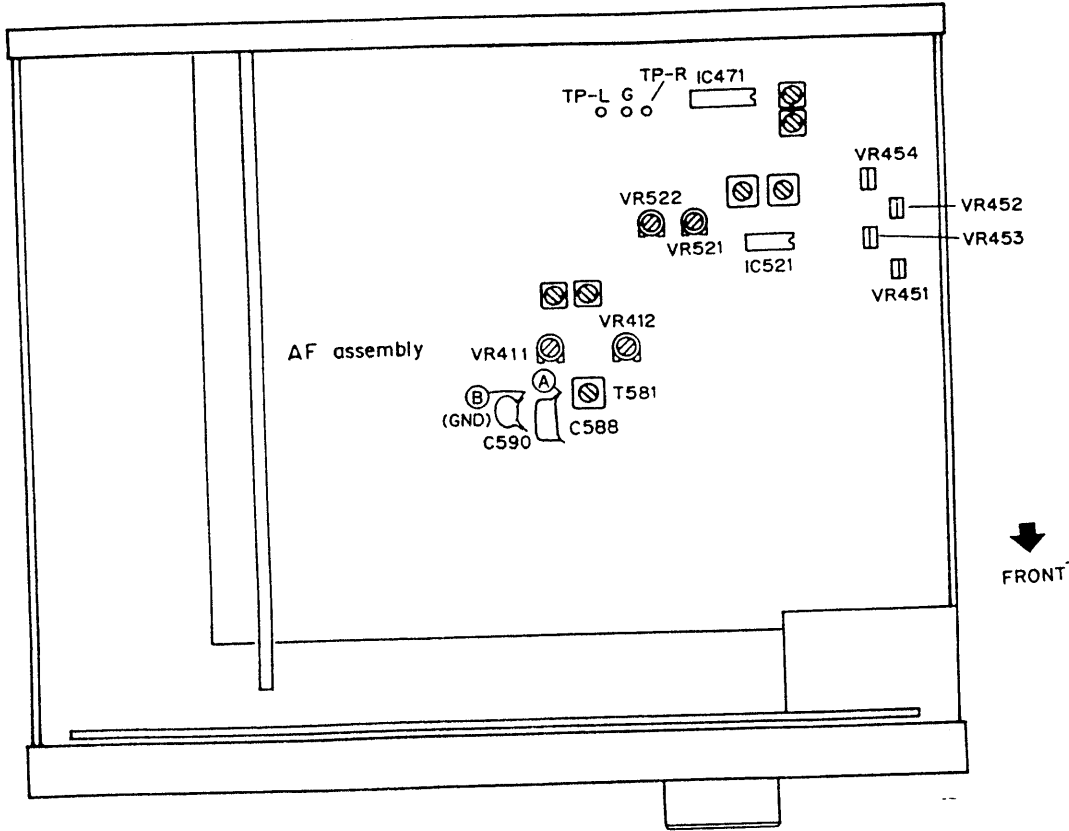


Fig. 10.1 Adjustment location

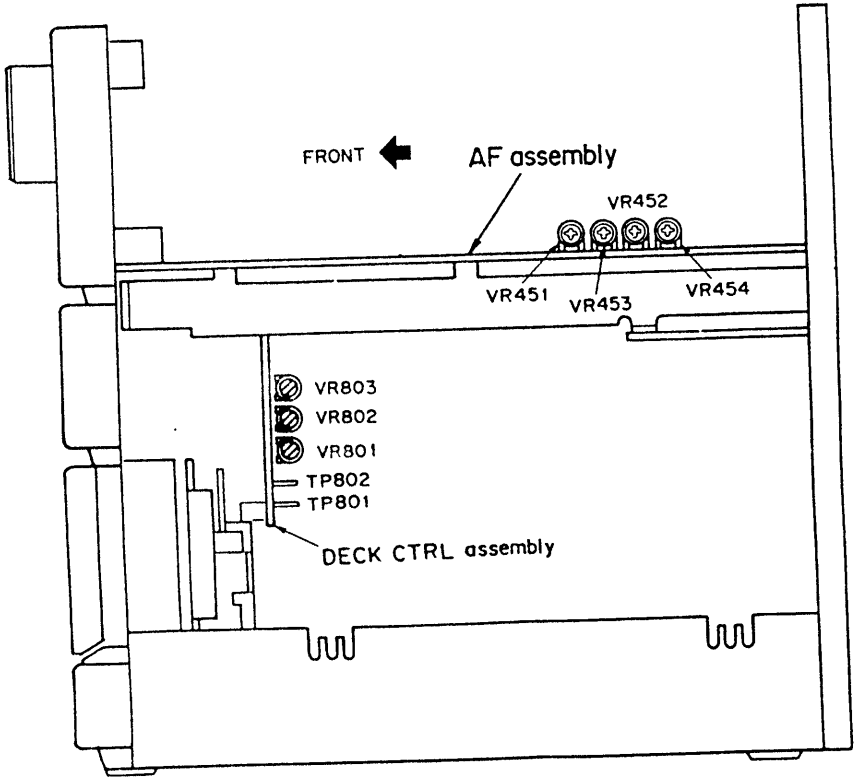


Fig. 10.2 Adjustment location

- Adjustment and measurement are usually made in the AF assembly, unless specified otherwise.
- Set the graphic equalizer to FLAT. Depending on the country of destination, the unit may be equipped with a MIC mixing volume control.
If a MIC mixing volume control is built in, please set to the MIN position.
- The function should always be set to "TAPE" unless otherwise specified.

Adjustment of Mechanical System

- Test tape: STD-301 (3 kHz, 30 min)
- Setting of double speed mode: Short-circuit TP801 and TP802 of the DECK CTRL assembly. To release the mode, break the short circuit.

1. Adjustment of tape speed							
No.	Mode	Input signal & Test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1	PLAY	Playback the STD-301 tape to 3 kHz.	Deck I	DECK CTRL Assembly VR801	TP-L (Lch)	Press the PLAY SW and adjust the frequency to 3010 Hz ± 10 Hz. Make sure that the wow and flutter is within 0.2 %.	
2	PLAY (Double speed mode)			—		Press the PLAY SW in double speed mode and confirm that the frequency is 6000 Hz ± 1000 Hz. Note down the figure.	Release the double speed mode after adjustment.
3	PLAY (Double speed mode)		Deck II	DECK CTRL Assembly VR803	TP-R (Rch)	Press the PLAY SW in double speed mode and adjust the frequency to be within ± 30 Hz of the figure recorded at step No. 2.	Release the double speed mode after adjustment.
4	PLAY			DECK CTRL Assembly VR802		Press the PLAY SW and adjust the frequency to 3010 Hz ± 10 Hz. Make sure that the wow and flutter is within 0.2 %.	

Adjustment of Electric System

■ Check and conduct the following before adjusting the electric system.

1. Adjustment of tape speed has been completed.
2. Clean and demagnetize the head using a head eraser.
3. When measured, the level should be 0 dBV = 1 Vrms.
4. Use side A of the specified tape for adjustment.
STD-331B: For adjustment of playback system.
STD-630: NORMAL blank tape
5. Prepare the following measuring devices:
AC millivoltmeter, Low-frequency oscillator, Attenuator, Oscilloscope
6. Adjust both L and R channels, unless specified otherwise.
7. Set the DOLBY NR switches to OFF, unless specified otherwise.
8. Warm up the unit for several minutes before adjustment. Especially before adjusting the frequency characteristics of recording and playback, warm up for 3 to 5 minutes in REC/PLAY mode.
9. Make sure to follow the proper order of the adjustment procedure. Any change in the order may cause an imperfect result.

List of Adjustment

Deck I

1. Head azimuth adjustment
2. Playback level adjustment

Deck II

1. Head azimuth adjustment
2. Playback level adjustment
3. Bias oscillation frequency adjustment
4. Recording level adjustment
5. Adjustment frequency characteristics of recording / playback

Checking of Deck II

1. Make sure the ALC is operating properly.

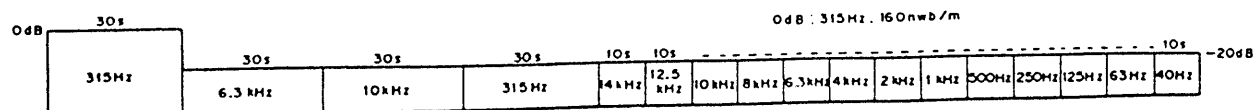


Fig. 10.3 Test tape STD-331B

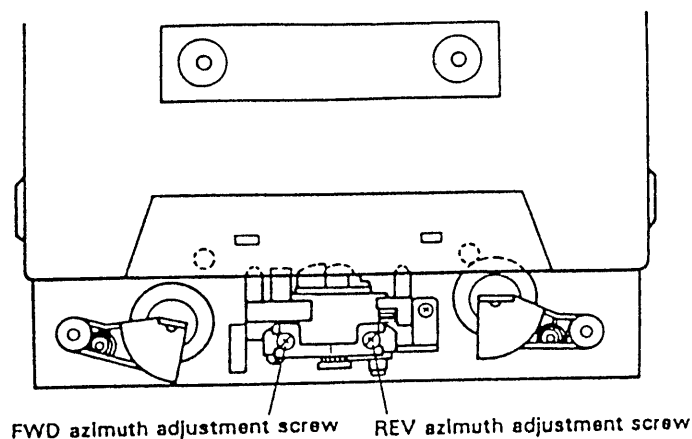


Fig. 10.4 Head azimuth adjustment

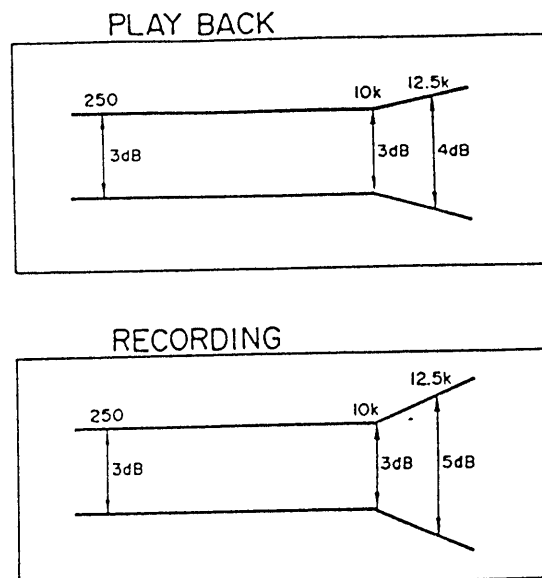


Fig. 10.5 Frequency characteristics

• Head Adjustment of Deck I

- Deck I is provided with an automatic tape selector mechanism.
- Note: Do not switch over FWD and REV while the driver is inserted.

1. Head Azimuth Adjustment

Pro-cedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (10 kHz, -20 dB).	Head azimuth adjustment screw (Fig.10-4)	TP-L (Lch) TP-R (Rch)	Maximum playback signal level	Lock the screw with screw lock after completing adjustment.

2. Playback Level Adjustment

- Be sure to make a careful adjustment, as the adjustment determines the DOLBY NR level for playback.

Pro-cedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (315 Hz, 0 dB).	VR453 (Lch) VR454 (Rch)	TP-L (Lch) TP-R (Rch)	-6.7 dBV	

• Head Adjustment of Deck II

- Deck II is provided with an automatic tape selector mechanism.
- Note: Do not switch over FWD and REV while the driver is inserted.

1. Head Azimuth Adjustment

Pro-cedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (10 kHz, -20 dB).	Head azimuth adjustment screw (Fig.10-4)	TP-L (Lch) TP-R (Rch)	Maximum playback signal level	Lock the screw with screw lock after completing adjustment.

2. Playback Level Adjustment

- Be sure to make a careful adjustment, as the adjustment determines the DOLBY NR level for playback.

Pro-cedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (315 Hz, 0 dB).	VR451 (Lch) VR452 (Rch)	TP-L (Lch) TP-R (Rch)	-6.7 dBV	

3. Bias oscillation frequency adjustment

Pro-cedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	REC	Load the test tape STD-630 and set to record mode.	—	Area between ① and ② (AF Assembly) shown in Fig.10-1.	The oscillation frequency is 105 kHz $\pm$ 1 kHz.	

4. Recording Level Adjustment

Pro-cedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	REC	Apply a signal of 315 Hz to the CD input terminal and set the function to "CD".	Input signal level	TP-L (Lch) TP-R (Rch)	-7.7 dBV	
2	NORM	REC / PLAY	Record and playback the test tape STD-630 (315 Hz).	VR521 (Lch) VR522 (Rch)	TP-L (Lch) TP-R (Rch)	Repeat the recording and correction so that the playback level of 315 Hz is -6.7 dBV.	

5. Adjustment of frequency characteristics of recording/playback

- As this procedure is for adjustment of the recording bias, be careful not to increase the distortion rate by under-adjusting the bias.

Pro-cedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	REC	Apply a signal of 315 Hz to the CD input terminal and set the function to "CD".	Input signal level	TP-L (Lch) TP-R (Rch)	-27.7 dBV	
2	NORM	REC / PLAY	Record and playback the test tape STD-630 (315 Hz and 10 kHz).	VR411 (Lch) VR412 (Rch)	TP-L (Lch) TP-R (Rch)	Repeat the correction so that the playback level of 10 kHz remains 0 $\pm$ 0.5 dB in relation to 315 Hz.	

• Checking Procedure for Deck II

1. Action of ALC

Pro-cedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Checking value	Remarks
1	NORM	REC	Apply a signal of 315 Hz to the CD input terminal and set the function to "CD".	Input signal level	TP-L (Lch) TP-R (Rch)	-7.7 dBV	
2				+10 dB against the input level of step 1.		-2.7 dBV $\pm$ 2.5 dB	