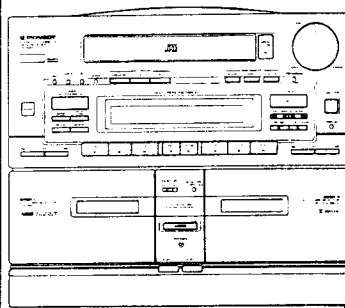


Service Manual



ORDER NO.
ARP1996

STEREO CD CASSETTE DECK RECEIVER

XR-P500

XR - P500 HAS FOLLOWING VERSIONS :

Type	Power requirement	Export destination
HE	AC220V, 240V (switchable) *	European continent
HB	AC220V, 240V (switchable) *	United Kingdom
HEWZI	AC220V, 240V (switchable) *	European continent
SD	AC110V, 120 - 127V, 220V, 240V (switchable)	Kingdom of Saudi Arabia and General market
YPW	AC240V only	Australia
KUC	AC120V only	U.S.A. and Canada

* Change the position of the jumper wire and fuse in transformer assembly.

● This manual is applicable to the HE, HB, HEWZI, SD and YPW types.

● As to the HB, YPW, SD and HEWZI types, refer to pages 144 - 146.

1

1

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1. SAFETY 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.

WARNING!

OSYNLIG LASERSTRÅLING 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 RADIATION
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

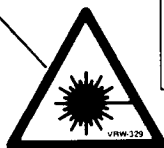
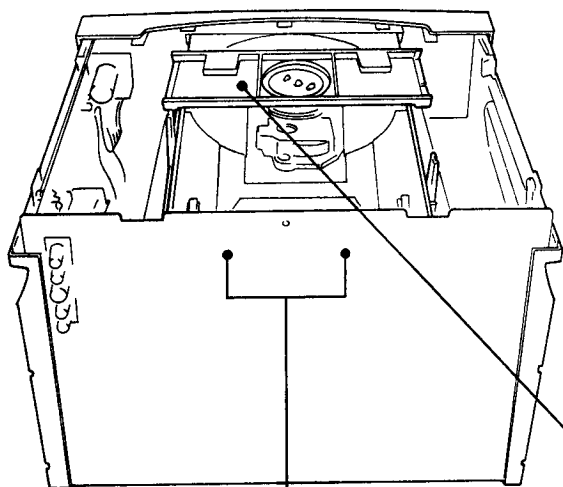
IMPORTANT

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: 5 mw
WAVELENGTH: 780-785 nm

LABEL CHECK



HB, HE, HEWZI, SD and YPW types

Additional Laser Caution

1. Laser Interlock Mechanism

The position of the switch (S601) for detecting loading completion is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S601) is not in CLMP terminal side (when the mechanism is not clamped and CLMP signal is high level).

Thus, the interlock will no longer function if the switch (S601) is deliberately set to CLMP terminal side (if CLMP signal is low level).

In the test mode*, the interlock mechanism will not function.

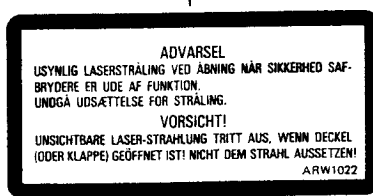
Laser diode oscillation will continue if pin 4, 5, or 29 of CXA1081S (ICI) is connected to ground or the terminals of Q1 are shorted to each other (fault condition).

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

* Refer to page 91.



HB type



HE, HEWZI, SD and YPW types



HB, HE, HEWZI, SD and
YPW types

2. DISASSEMBLY

● Removal of CD Player Section

1. Remove the top panel ① (this should be pulled out by lifting its rear side) and the side panels ② and ③ (L and R).
2. Remove the tray while pushing the claw of the tray from the opening sections ④ and ⑤ after moving it to OPEN position. (Refer to Note 1 for the method of opening the tray manually.)
3. Remove four setscrews of the CD player section and two setscrews of the ground lead to take the CD player section out.
 - The CD player can be dismounted in its entirety by removing CN4 and CN5.

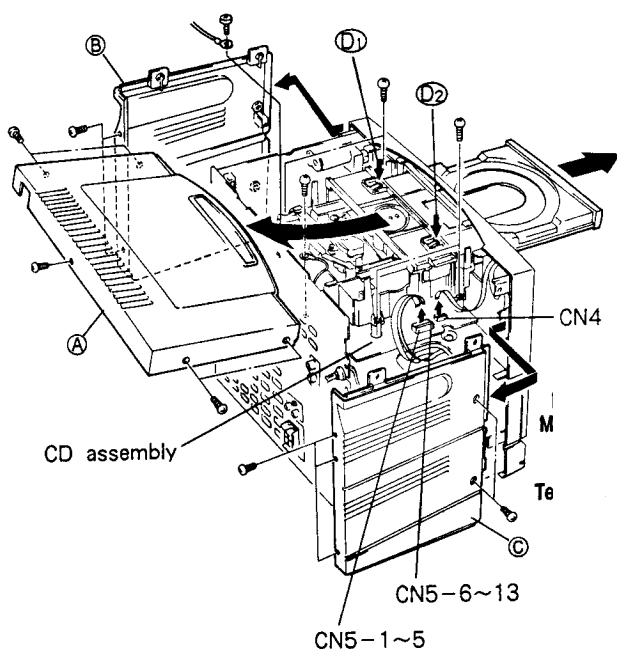


Fig. 1.

● Removal of Servo Mechanism Assembly

1. Remove the tray. (Refer to Step 2 of Removal of CD Player Section.)
2. Remove setscrew ① to ④ (4 pieces) securing the servo mechanism assembly in place with it held down (in the tray open position). (Fig. 2.)
3. Move the rack toward the front by hand and put the servo mechanism assembly in the lifted state.

Note) When moving the rack, it is sometimes probable that the rack cannot be moved if the gear A and the gear section of the rack are not properly engaged with each other at the point marked ⊗. In such a case, turn the gear B by hand from the side and align the gear A with the gear section of the rack at the point ⊗ to ensure proper engagement. (Fig. 2.)

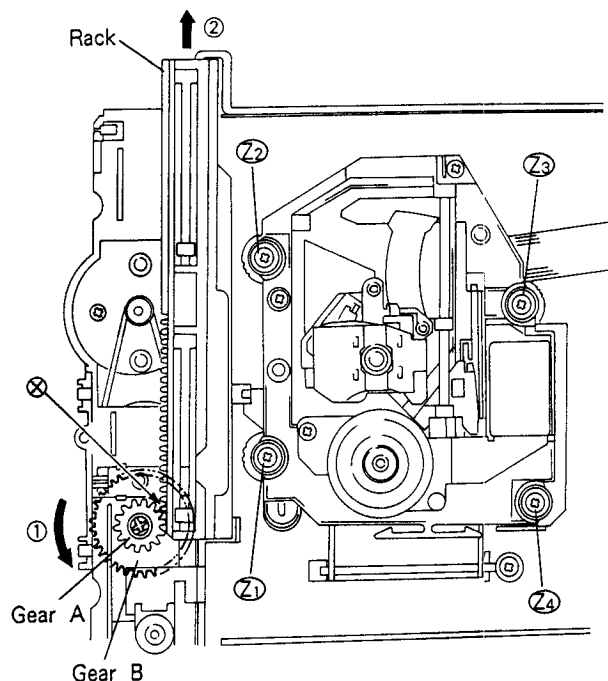


Fig. 2.

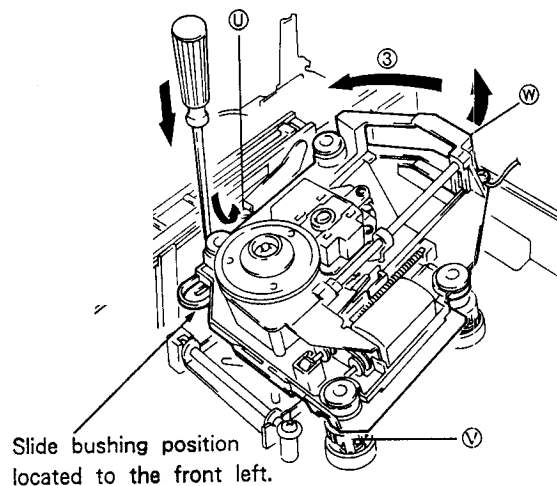


Fig. 3.

4. Push the slide bushing located to the front left using a slotted screwdriver or the like. (See Fig. 3.)
5. Lift the rear section marked ① of the servo mechanism assembly. (Fig. 3)
6. Turn the servo mechanism assembly counter-clockwise (in the direction of arrow ③) with point ④ of the slide bushing as a fulcrum to unlock the hooked section marked ① of the servo mechanism assembly.

● Removal of Swing Lever

1. Move the rack by hand to bring it to the tilted section of the groove in which the ⑤ section of the swing lever is seated.
2. Remove the screw ⑧ which holds the shaft in place.
3. Lift the right side (the screw ⑧ side) of the shaft a little and extract it in the direction of arrow ②.

● Removal of Slide Bushing

1. Push the slide bushing from three directions to compress it as shown in Fig. 4.
2. Remove the slide bushing by turning it in the direction of ③.

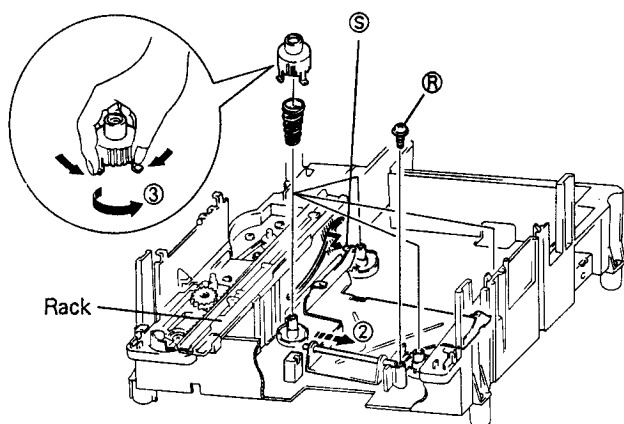


Fig. 4.

● Removal of AF Assembly

1. Remove the CD player section.
2. Remove the rear panel ⑤.
3. Remove the shield plate ⑥.
4. Remove nylon rivet ④ of the AF assembly front side (at two points). (See Fig. 5)
5. Remove connectors CN22 and CN7 connecting the TX, SOUND CTRL assembly.

Note) Care should be taken to avoid applying stress to chip parts due to the warped TX, SOUND CTRL assembly.

Note1) Method of opening the tray manually.

- Turn the gear B of Fig. 2 in the direction of arrow ① by hand.
- When the servo mechanism assembly began to go down to move the tray to the OPEN position, the tray should be moved to the OPEN position by hand.

Note2) To mount the tray, proceed only with the servo mechanism assembly in the fully lowered state (that is, with the rack moved to the rearmost position). Otherwise, the up and down motions of the servo mechanism assembly cease to be synchronized with each other.

When the tray is mounted in by mistake, attempt to mount it in the following manner once again.

1. Remove the tray according to Step 2 of "Removal of CD Player".
2. Move the rack fully toward the back (in the direction of arrow ② shown in Fig. 2).
3. Mount the tray.

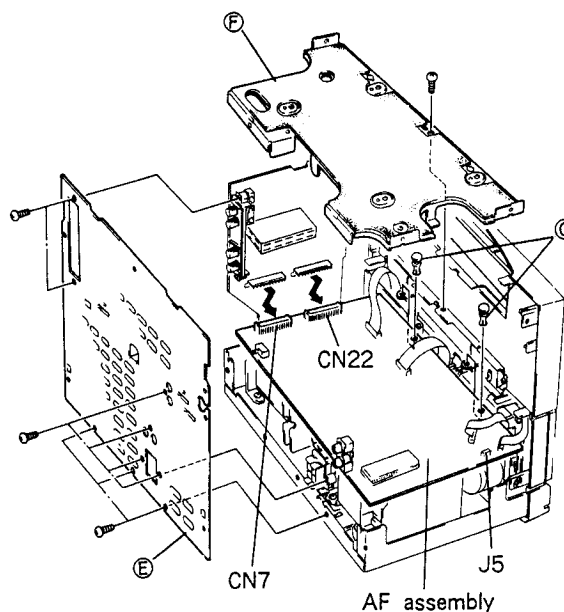


Fig. 5.

● Removal of TX. SOUND CTRL Assembly

1. Remove the top panel, side panels (L and R), and rear panel.
2. Remove the volume control knob ⑧ and hexagonal nut ①.
3. Remove CN6 and CN7 connecting the POWER assembly to CN11, CN12, and AF assembly. (Care should be taken to avoid applying the stress to chip parts due to the warped TX. SOUND CTRL assembly.)
4. Remove the volume control shaft in an extracting manner while tilting the front panel toward the front.

● Removal of Cassette Mechanism Assembly

1. Remove the CD player section, AF assembly, and TX. SOUND CTRL assembly.
2. Remove the front panel from the chassis.
3. Remove cassette setscrews (four pieces each) to dismount the cassette mechanism.

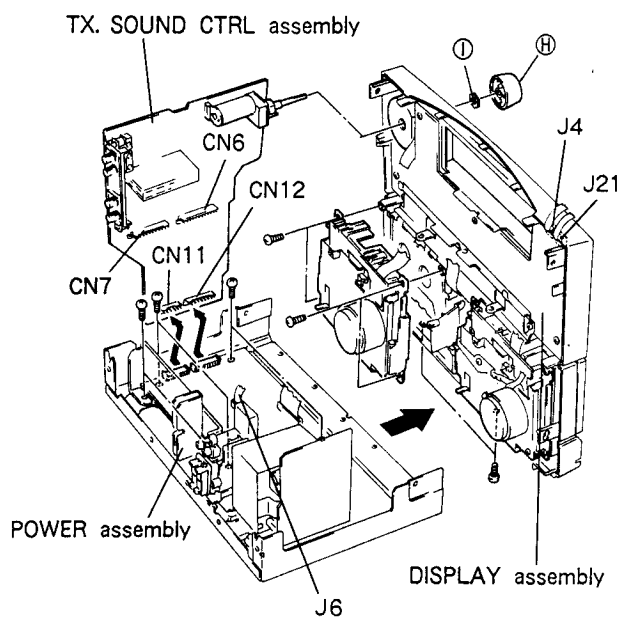


Fig. 6.

3. BOARD DIAGNOSTIC METHOD

3.1 FOR BOARD EXTENSION CORD

The following cords are necessary to repair this product.

Jig. No.	Name	Use (Connectors/Jumper No. are shown in the parentheses.)
GGF1049	4P extension cord	CD Assembly (CN4) → DISPLAY Assembly (J4)
GGF1050	8P+5P extension cord	CD Assembly (CN5-1 to 5), (CN5-6 to 13) → POWER Assembly (J6), AF Assembly (J5)
GGF1051	9P extension cord	TX. SOUND Control Assembly (CN11) → POWER Assembly (CN11)
GGF1052	12P extension cord	TX. SOUND Control Assembly (CN12) → POWER Assembly (CN12)
GGF1053	15P extension cord	TX. SOUND Control Assembly (CN7) → AF Assembly (CN7)
GGF1054	14P extension cord	TX. SOUND Control Assembly (CN6) → AF Assembly (CN22)

Notes :

- Refer to Fig. 1, Fig. 5 and Fig. 6 of "DISASSEMBLY" for the locations of above CN (connector) and J (flat cable).
- Pages 6 to 13 describe the functions of the CN and J terminals for each board.
- When the rear panel or the shield plate is removed, the cassette mechanism chassis ground is disconnected. If the operation check is carried out in this condition, the playback signal may be disturbed by noise.
- When connecting CN6 and CN7 during reassembling, support the area around CN6 and CN7 by hand to avoid bending of the TX. SOUND CTRL assembly which may stress the chip section. Be also to avoid bending the board and stressing the chip section, when mounting or removing the AF assembly and the DISPLAY assembly.
- With the CD player section removed, it is possible to check other parts. In this case the display does not show correct indications. Be careful not to short the flat cable ends connected to CN4 and CN5 of the CD player section.

3.2 CONNECTING PINS FUNCTION TABLE
POWER Assembly (AWZ2880 : for HE, HB, SD and YPW types)
(AWZ2890 : for HEWZI type)

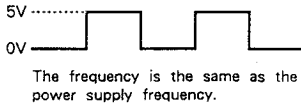
No.	Name	Function
CN11-1	+12V	Signal system +12V power supply output
2	NC	Not used
3	-12	Signal system -12V power supply output
4	GND	Chassis GND
5	TX GND	Tuner GND
6	R	Rch power amplifier input
7	GND	Signal GND
8	L	Lch power amplifier input
9	SP B	Not used
CN12-1	SP A	Relay control input for speaker ("L" when standby and using a headphone.)
2	M +12	Motor system +12V power supply output
3	M GND	Motor GND
4	M -12	Motor system -12V power supply output
5	D GND	Digital GND
6	GND	Signal GND
7	+5.6	Microcomputer +5.6V power supply output
8	-30	-30V power supply output for FL
9	STAND BY	"H" when standby
10	STAND BY	"H" when standby
11	FL AC1	AC power supply output for FL
12	FL AC2	AC power supply output for FL
J6-1	+5	+5V power supply output for CD
2	-5	-5V power supply output for CD
3	GND	GND
4	μ +5	+5V power supply output for microprocessor
5	M +12	Motor system +12V power supply output
6	M -12	Motor system -12V power supply output
7	GND	Motor system GND
8	GND	GND

AF Assembly (AWZ2881 : for HE, HB and YPW types)
(AWZ2891 : for HEWZI type)
(AWZ3013 : for SD type)

No.	Name	Function
CN7-1	TX R	Tuner Rch input
2	TX GND	Tuner GND
3	TX L	Tuner Lch input
4	GND	Chassis GND
5	R OUT	Rch output
6	GND	Signal GND
7	L OUT	Lch output
8	-12	Signal system -12V power supply (-12V±0.5V) reception
9	+5	Signal system +5V power supply (+5V±0.5V) reception
10	+12	Signal system +12V power supply (+12V±0.5V) reception
11	SP B	Not used
12	SP A	Relay control output for speaker ("L" when standby and using a headphone.)
13	HP L	Headphone Lch input
14	HP GND	Headphone GND
15	HP R	Headphone Rch input
CN16-1	DOLBY ON/OFF	Dolby ON/OFF switch input ("L" when Dolby ON.)
2	L	Headphone Lch output
3	GND	Headphone GND
4	R	Headphone Rch output
5	CTRL	Headphone switch input ("H" when inserting to PHONE.)
6	+5	Signal system +5V output
7	DISCO IND	Not used
8	FADE IND	ASES IND control ("L" when IND ON.)
9	K02	Key matrix output
10	KI3	Key matrix input
11	KI2	Key matrix input
12	KI1	Key matrix input
CN17-1	SABO A	Mechanism I motor speed adjustment
2	SABO B	Mechanism I motor speed adjustment
3	+12	Mechanism I motor power supply (12V output when motor ON.)
4	REEL	Reel pulse input from mechanism I
5	GND	Motor GND
6	CrOz	KI2 (key matrix input) chrome detection
7	MODE	KI1 (key matrix input) PLAY mode switch
8	SOL B	Solenoid B drive
9	COM	K00 output
10	SOL A	Solenoid A drive
11	HALF	KI0 (key matrix input) half detection

No.	Name	Function
CN18-1	REC F	KI3 (key matrix input) FWD, REC claw detection
2	SABO A	Mechanism II motor speed adjustment
3	SABO B	Mechanism II motor speed adjustment
4	+12	Mechanism II motor power supply
5	REEL	Reel pulse input from mechanism II
6	GND	Motor GND
7	CrO ₂	KI2 (key matrix input) chrome detection
8	MODE	KI1 (key matrix input) PLAY mode switch
9	SOL B	Solenoid B drive
10	COM	K01 output
11	SOL A	Solenoid A drive
12	HALF	KI0 (key matrix input) half detection
13	NC	
14	REC R	KI4 (key matrix input) REV, REC claw detection
CN19-1	I HEAD Lch	Deck I Lch input
2	GND	Deck I signal GND
3	I HEAD Rch	Deck II Rch input
CN20-1	II HEAD Rch	Deck II Rch input
2	II HEAD Lch	Deck II Lch input
3	GND	Deck II signal GND
4	GND	Deck II bias GND
5	EH	Erase bias output
CN21-1	AC	AC detection signal input (Refer to Note 1.)
2	+5.6	Microprocessor system +5.6 output
3	D GND	Digital GND
4	S CLK	Serial clock
5	S DATA 1	Serial data
6	S DATA 2	Serial data
7	MUTE IN	Mute control signal input (PDE034-A)
8	RESET	Reset pulse input

Note 1 :



Display Assembly

No.	Name	Function
CN22-1	P. BASS 2	Low frequency output signal mute control ("L" output when P. BASS or EXCITE.)
2	EXCITE	High frequency output signal addition control ("L" output when EXCITE.)
3	BGM	High frequency output signal subtraction control ("L" output when BGM.)
4	P. BASS 1	Low frequency output signal level control ("L" output when P. BASS or EXCITE.)
5	M +12	Motor system +12V power supply (+12V±0.5V) reception
6	M GND	Motor GND
7	M -12	Motor system -12V power supply (-12V±0.5V) reception
8	D GND	Digital GND
9	+5.6	Microprocessor system (+5.6±0.5V) reception
10	VOL	Signal input for VR position detection (0 to 0.7V) input
11	MUTE	Signal mute control ("H" output when signal mute.)
12	STAND BY	Standby control
13	VR DOWN	VR down control ("H" output when VR down.)
14	VR UP	VR up control ("H" output when VR up.)
J5-1	CD L	CD Lch input
2	CD GND	CD GND
3	CD R	CD Rch input
4	RESET	Reset pulse output
5	TRCH	Pulse input between CD tracks

No.	Name	Function
J4-1	REQ	Serial data transfer request input for display
2	CD CLK	Serial clock input for display
3	CD DATA	Serial data input for display
4	SR OUT	SR data output for CD control
J10-1	STEREO	Stereo detection signal input ("L" when stereo.)
2	DUAL	Not used
3	PLL CLK	CLK output for PLL IC
4	PLL DATA	DATA output for PLL IC
5	PLL CE	CE output for PLL IC
6	FM MONO	FM MONO control output ("H" when FM MONO.)
7	TV MONO	Not used
8	TUNE	Tuned signal input ("L" when tuned.)
9	LOCAL	Not used
10	VFDP (-30V)	-30V power supply input for FL (-30V±1V) reception
11	FL AC2	AC power supply reception for FL +5.2V±0.2V (AC) input, 50 Hz or 60 Hz
12	FL AC1	AC power supply reception for FL
J21-1	AC	AC detection signal output, 50 Hz to 60 Hz rectangular wave output (Refer to Note 1 on page 8.)
2	u +5.6	Microprocessor system +5.6 power supply reception
3	D GND	Digital GND
4	SCLK	Serial clock output
5	S DATA 1	Serial data
6	S DATA 2	Serial data
7	MUTE	Mute control signal
8	RESET	Reset pulse output

Deck Switch Assembly

No.	Name	Function
J16-1	DOLBY ON/OFF	Dolby ON/OFF switch output ("L" output when Dolby ON.)
2	PHONE L	Headphone Lch output
3	PHONE GND	Headphone GND
4	PHONE R	Headphone Rch output
5	CTRL (PHONE)	Headphone switch ("L" when not inserting headphone.)
6	+5	Microprocessor system +5V power supply, applies +5V±0.5V
7	DISCO IND	Not used
8	FADE IND	ASES IND control, "L" when IND ON.
9	KO2	Key matrix output
10	KI3	Key matrix input
11	KI2	Key matrix input
12	KI1	Key matrix input

TX. SOUND Control Assembly (AWM1248 : for HE and HB types)
(AWM1255 : for SD type)
(AWM1256 : for HEWZI type)
(AWM1259 : for YPW type)

No.	Name	Function
CN7-1	TX R	Tuner Rch output
2	TX GND	Tuner GND
3	TX L	Tuner Lch output
4	GND	Chassis GND
5	R OUT	Rch input
6	GND	Signal GND
7	L OUT	Lch input
8	-12	Signal system -12V power supply output
9	+5	Signal system +5V power supply output
10	+12	Signal system +12V power supply output
11	SP B	Not used
12	SP A	Relay control input for speaker ("L" when standby and using headphone.)
13	HP L	Headphone Lch output
14	HP GND	Headphone GND
15	HP R	Headphone Rch output
CN10-1	STEREO	Stereo signal output ("L" when stereo.)
2	9K/10K	9K/10K switching signal output ("L" when 9K.)
3	CLK	CLK for PLL IC
4	DATA	DATA for PLL IC
5	CE	CE for PLL IC
6	FM MONO	FM MONO control ("H" when FM MONO.)
7	TV MONO	Not used
8	TUNED	Tuner signal output ("L" when tuned.)
9	LOCAL	Not used
10	-30	-30V power supply output for FL
11	FL AC2	AC power supply output for FL
12	FL AC1	AC power supply output for FL
CN11-1	+12	Signal system +12V power supply (+12V±0.5V) reception
2	V _T	Not used
3	-12	Signal system -12V power supply (-12V±0.5V) reception
4	GND	Chassis GND
5	TX GND	Tuner GND
6	R	Rch flat amplifier
7	GND	Signal GND
8	L	Lch flat amplifier
9	SP B	Not used

No.	Name	Function
CN12-1	SP A	Relay control output for speaker
2	M +12	Motor system +12V power supply (+12V±0.5V) reception
3	M GND	Motor GND
4	M -12	Motor system -12V power supply reception
5	D GND	Digital GND
6	GND	Signal GND
7	+5.6	Microprocessor system +5.6V power supply reception
8	-30	-30V power supply reception for FL
9	NC	Not used
10	STAND BY	Standby control
11	FL AC1	AC power supply reception for FL
12	FL AC2	AC power supply reception for FL
CN6-1	P. BASS 2	Low frequency output signal mute control ("L" when P. BASS or EXCITE.)
2	EXCITE	High frequency output signal addition control ("L" when
3	BGM	High frequency output signal subtraction control ("L" when BGM.)
4	P. BASS 1	Low frequency output signal level control ("L" when P. BASS or EXCITE.)
5	M +12	Motor system +12V power supply output
6	M GND	Motor GND
7	M -12	Motor system -12V power supply output
8	D GND	Digital GND
9	+5.6	Microprocessor system +5.6V power supply
10	VOL	Signal output for VR position detection
11	MUTE	Signal mute control ("H" when signal mute.)
12	STAND BY	Standby control
13	VR DOWN	VR down control ("H" when VR down.)
14	VR UP	VR up control ("H" when VR up.)

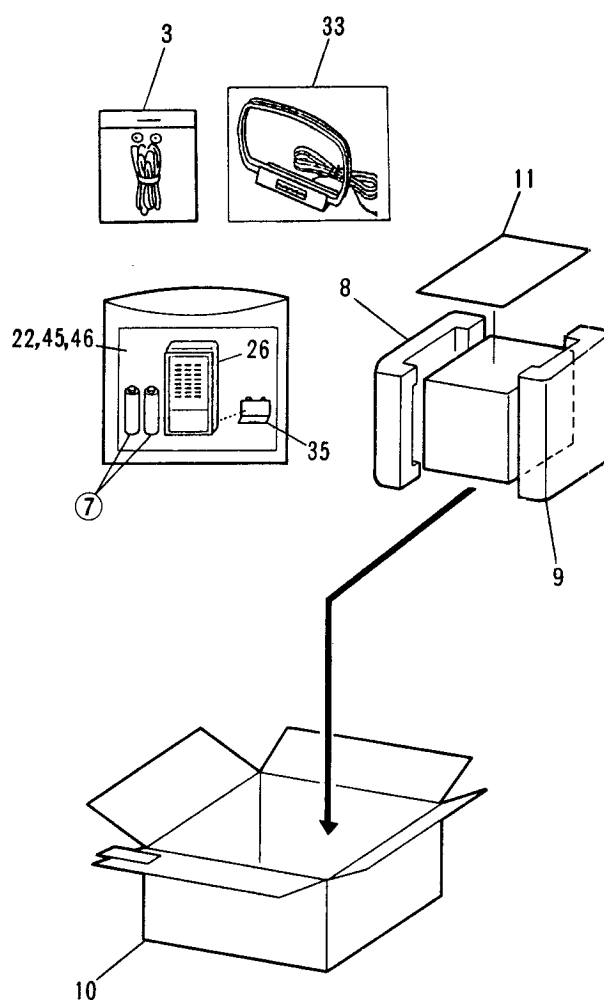
4. EXPLODED VIEWS, PACKING AND PARTS LIST

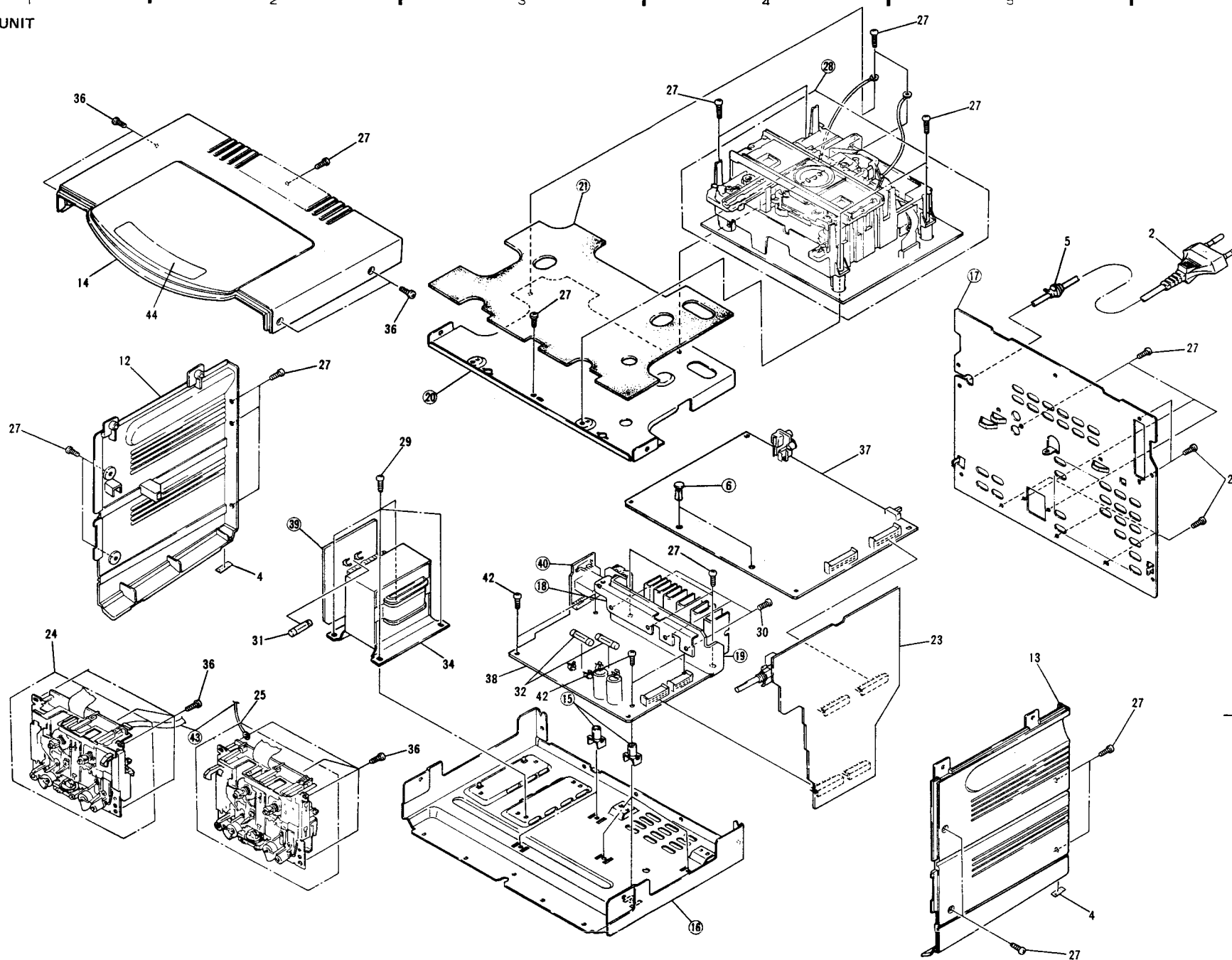
NOTES :

- 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.

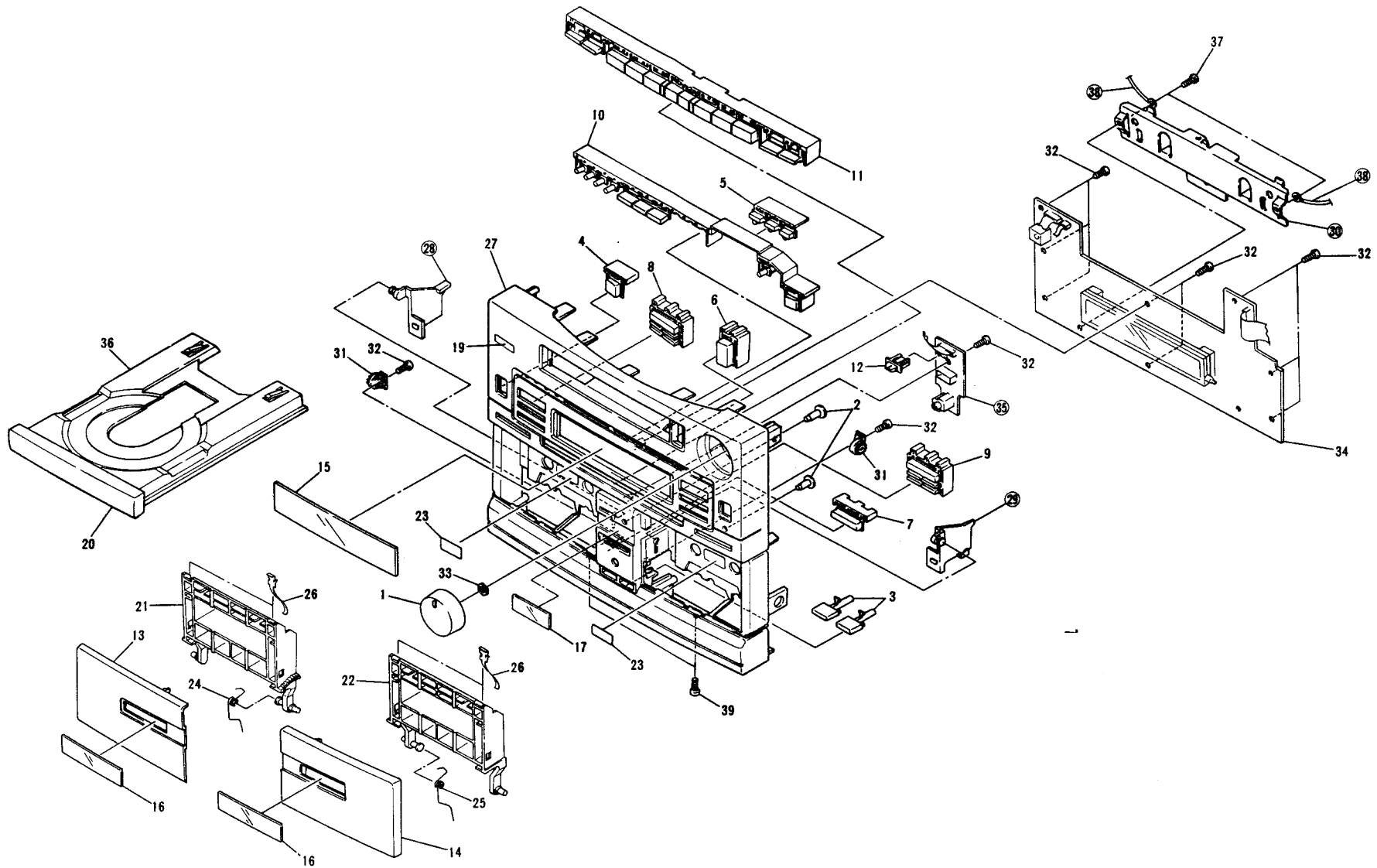
Parts List of Main Unit and Packing for HE type

Mark	No.	Part No.	Description
	1		.....
Δ	2	ADG1019	Power cord
	3	ADH1005	FM simple antenna
	4	AEB1111	Stopper
	5	AEC-882	AC cord stopper
	6		Nylon rivet
	7		UM-4 dry cell
	8	AHA1321	Pad (L)
	9	AHA1322	Pad (R)
	10	AHD1821	Packing case
	11	AHG1172	Packing sheet
	12	AME1051	Side panel (L)
	13	AME1052	Side panel (R)
	14	AME1069	Top panel
	15		PCB mold
	16		Chassis
	17		Rear panel
	18		Pack mounting bracket
	19		Heat sink
	20		Shield plate
	21		Heat protector
	22	ARC1208	Instruction manual
⊙	23	AWM1248	TX.SOUND control assembly
⊙	24	AWY1065	Mechanism unit (PB)
⊙	25	AWY1066	Mechanism unit (R/PB)
	26	AXD1138	Remote controller
	27	BBZ30P080FZK	Screw
	28		CD player
	29	VBZ30P060FMC	Screw
	30	VBZ30P160FMC	Screw
Δ	31	AEK-031	FU201 Fuse
Δ	32	AEK-405	FU202, 203 Fuses
	33	ATB1006	L loop antenna assembly
Δ	34	ATS1256	T power supply transformer
	35	AZN2006	Battery lid
	36	BPZ30P100FZK	Screw
⊙	37	AWZ2881	AF assembly
⊙	38	AWZ2880	Power assembly
	39		Transformer assembly
	40		.....
	41		.....
	42	BBZ30P180FMC	Screw
	43		Ground lead wire
	44	AAK1867	CD ornamental plate
	45	ARE1160	Instruction manual
	46	ARM1003	Caution card





4.2 FRONT PANEL SECTION



Parts List of Front Panel Section for HE type

Mark	No.	Part No.	Description
	1	AAB1151	Volume knob
	2	AAD1398	Tact knob
	3	AAD1701	Eject button
	4	AAD1702	Power button
	5	AAD1767	S.C. button
	6	AAD1704	O/C button
	7	AAD1768	ASES button
	8	AAD1820	Tuner button
	9	AAD1707	CD button
	10	AAD1708	Timer button
	11	AAD1709	Deck button
	12	AAE1127	Slide knob
	13	AAK1861	Cassette panel (L)
	14	AAK1862	Cassette panel (R)
	15	AAK1863	Amplifier ornamental plate
	16	AAK1864	Door ornamental plate
	17	AAK1922	Deck ornamental plate
	18		.....
	19	AAK1868	Remote control filter
	20	AAN1174	Tray cap
	21	AAN1175	Half pocket (L)
	22	AAN1176	Half pocket (R)
	23	AAX1301	Fluorescent sheet
	24	ABH1060	Door spring (L)
	25	ABH1061	Door spring (R)
	26	ABK1011	Keep plate
	27	AMB1632	Front panel
	28		Eject lever (L)
	29		Eject lever (R)
	30		Board mounting bracket
	31	AXA1008	Damper assembly
	32	BPZ26P080FMC	Screw
	33	NK90FUC	Nut
⊙	34	AWZ2883	Display assembly
	35		Deck switch assembly
	36	PNW1682	Tray
	37	BPZ30P100FZK	Screw
	38		Ground lead wire
	39	BBZ30P080FZK	Screw

4.3 Mechanism Unit I (AWY1065)

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	AZE1018	Hall IC	51	AZN1976		Gear arm R
	2	AZX1019	Motor	52	AZN1977		Gear arm L
	3	AZS1054	Leaf switch (Mode)	53	AZN1326		Head lever caulking assembly
	4	AZS1034	Leaf switch				FW assembly
	5	AZN1286	Drive arm assembly	54	AZN1327		Head board
	6	AZN1287	FM assembly A	55			
	7	AZN1288	Cam gear	56			Flywheel receiving plate
	8	AZN1289	Reel claw	57	AZN1328		Azimuth plate
	9	AZN1971	FR arm	58			Switch arm
	10	AZN1972	Pinch roller L assembly	59	AZN1988		Arm eject L
				60	AZN1989		Arm eject R
	11	AZN1973	Pinch roller R assembly	61	AZN1330		Head arm
	12	AZN1293	Gear	62	AZN1331		Azimuth spring
	13	AZN1294	H gear	63	AZN1332		Cassette stopper
	14	AZN1793	Cue arm	64	AZN1978		Trigger arm
	15	AZB1079	Screw	65	AZN1334		Head frame
	16	AZB1080	Screw	66	AZN1335		Cassette guide L
	17	AZN1984	Collar	67	AZN1336		Cassette guide R
	18	AZN1297	Motor pulley	68	AZN1337		Cassette guide
	19	AZN1298	Flat belt	69	AZN1338		Cam gear
	20	AZN1299	Tension spring	70	AZN1994		Head holder
	21	AZN1300	FR lever spring	71	AZN1340		Head gear
	22	AZN1301	FWF spring	72	AZN1980		Eject arm 2
	23	AZN1302	FWR spring	73	AZN1342		Select lever
	24	AZN1303	Pressure spring	74	AZN1343		Brake
	25		.....	75	AZN1468		Tube
	26	AZN1305	Cable holder	76	AZN1985		Latch lever R
	27	AZN1306	Tension spring	77	AZN1346		Metal
	28	AZN1307	Tension spring	78	AZN1347		Metal
	29	AZN1308	Tension spring	79	AZN1348		Cushion
	30	AZN1309	Tension spring	80	AZN1349		Trigger arm
	31	AZN1310	Tension spring	81			.....
	32	AZN1311	Tension coil spring	82	AZS1085		Solenoid
	33	AZN1312	Spring	83			.....
	34	AZN1313	Spring	84	AZP1022		P head
	35	AZN1314	Spring	85	AZB1099		Step screw
	36	AZN1315	Spring	86	AZN1352		Tension spring
	37	AZB1081	Step screw	87	AZN1304		Spacer
	38	AZN1316	Nylon band	88	AZN1470		Corner tube
	39	AZN1996	PC board	89	AZB1100		Step screw
	40		Jumper wire	90	AZS1087		Solenoid
	41		Head lead wire	91	AZB1101		Screw
	42		Lead wire	92	AZB1102		Screw washer
	43		Wire	93	AZN1471		Head spring
	44		.....	94	AZB1298		Screw
	45		Mechanism board caulking assembly	95	AZN1833		Holder capstan
	46	AZN1319	R reel assembly	96	AZN1834		Holder capstan
	47	AZN1320	F reel assembly	97	AZN1344		Eject lever L
	48	AZN1321	Reverse arm caulking assembly	98			.....
				99			Holder
	49		FR lever assembly	200	AZB1084		Hexagonal nut
	50	AZN1975	PLAY lever caulking assembly	201	AZB1085		E ring
				202	AZB1086		D screw
				203	AZB1121		P washer
				204	AZB1087		N washer

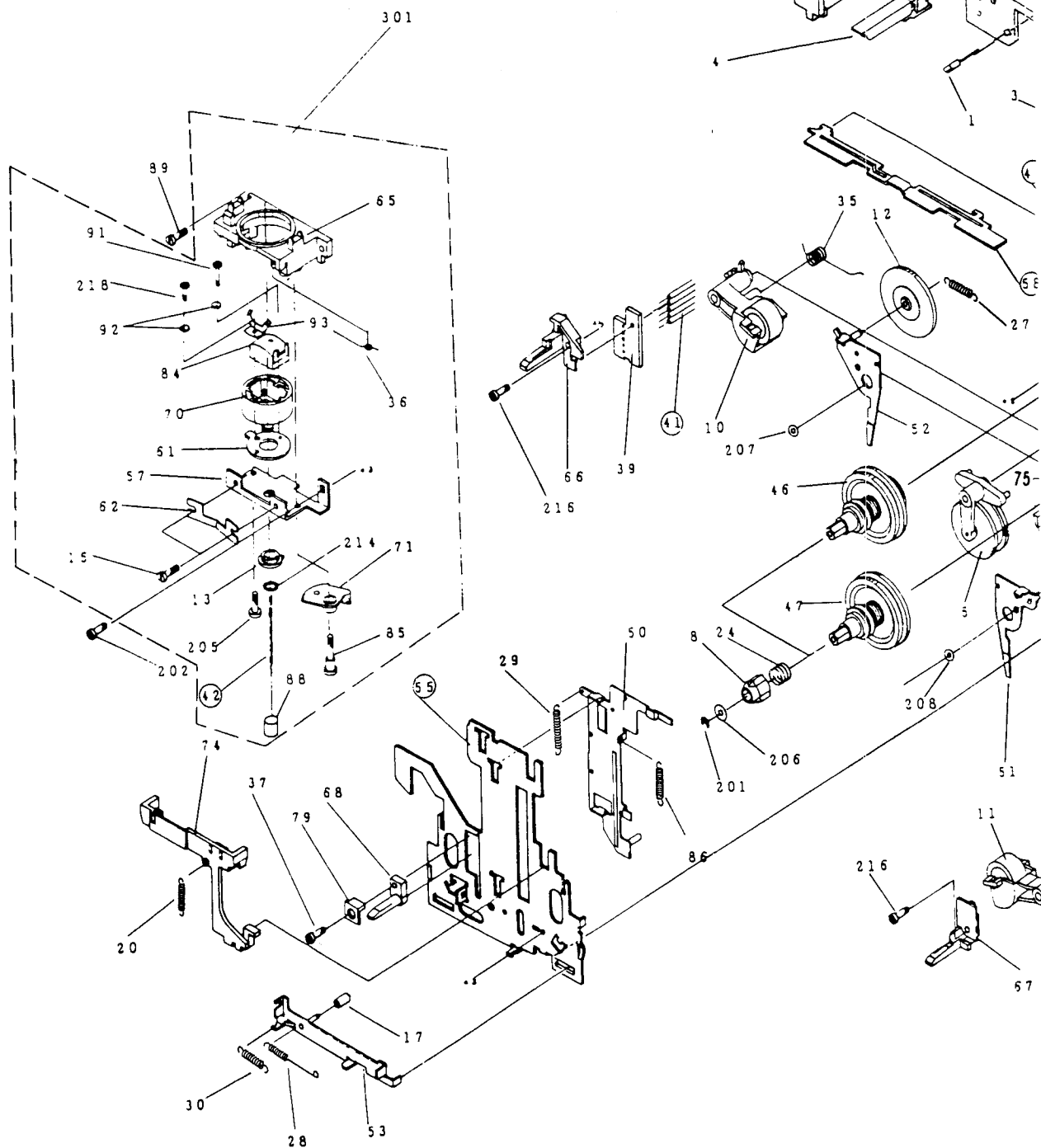
Mark	No.	Part No.	Description
	205	AZB1089	U bind screw
	206	AZB1090	P washer
	207	AZB1091	Oil cut
	208	AZB1092	Oil cut
	209		.....
A	210	AZB1094	P washer
	211	AZB1095	D screw
	212		.....
	213	AZB1097	P washer
	214	AZB1098	M washer
	215	AZB1105	P screw
	216	AZB1106	D bind screw
	217		.....
	218	AZB1164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

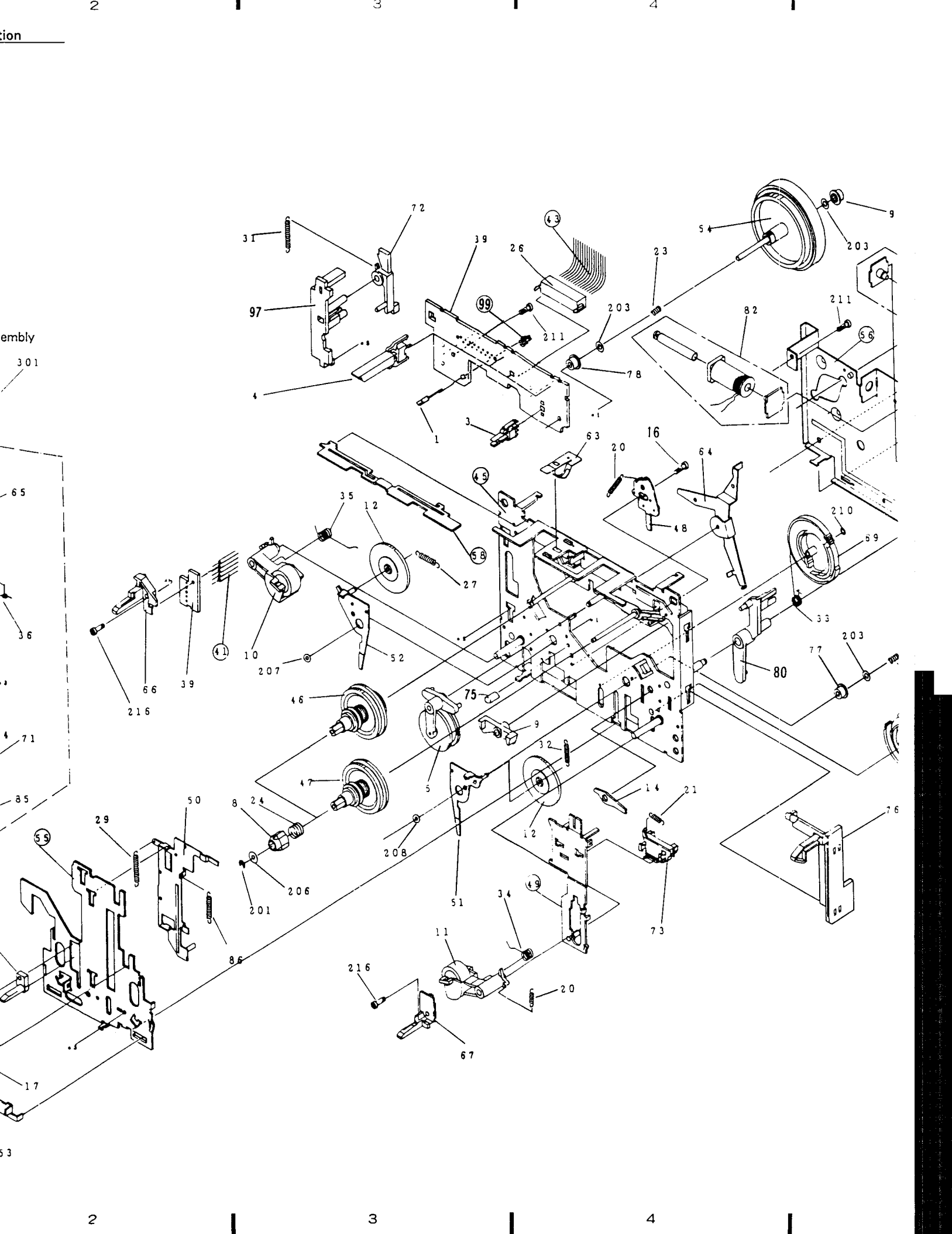
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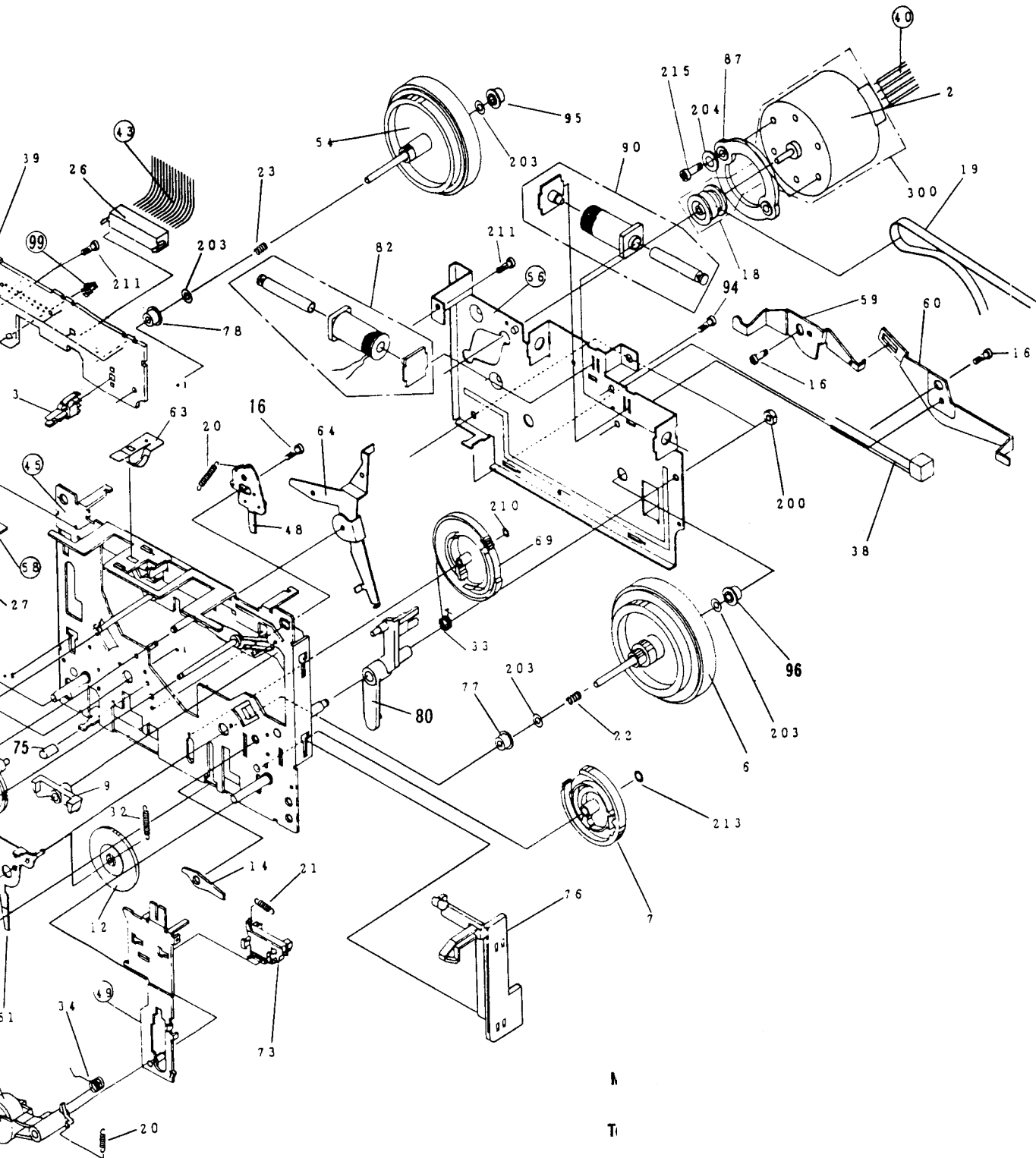
B

C

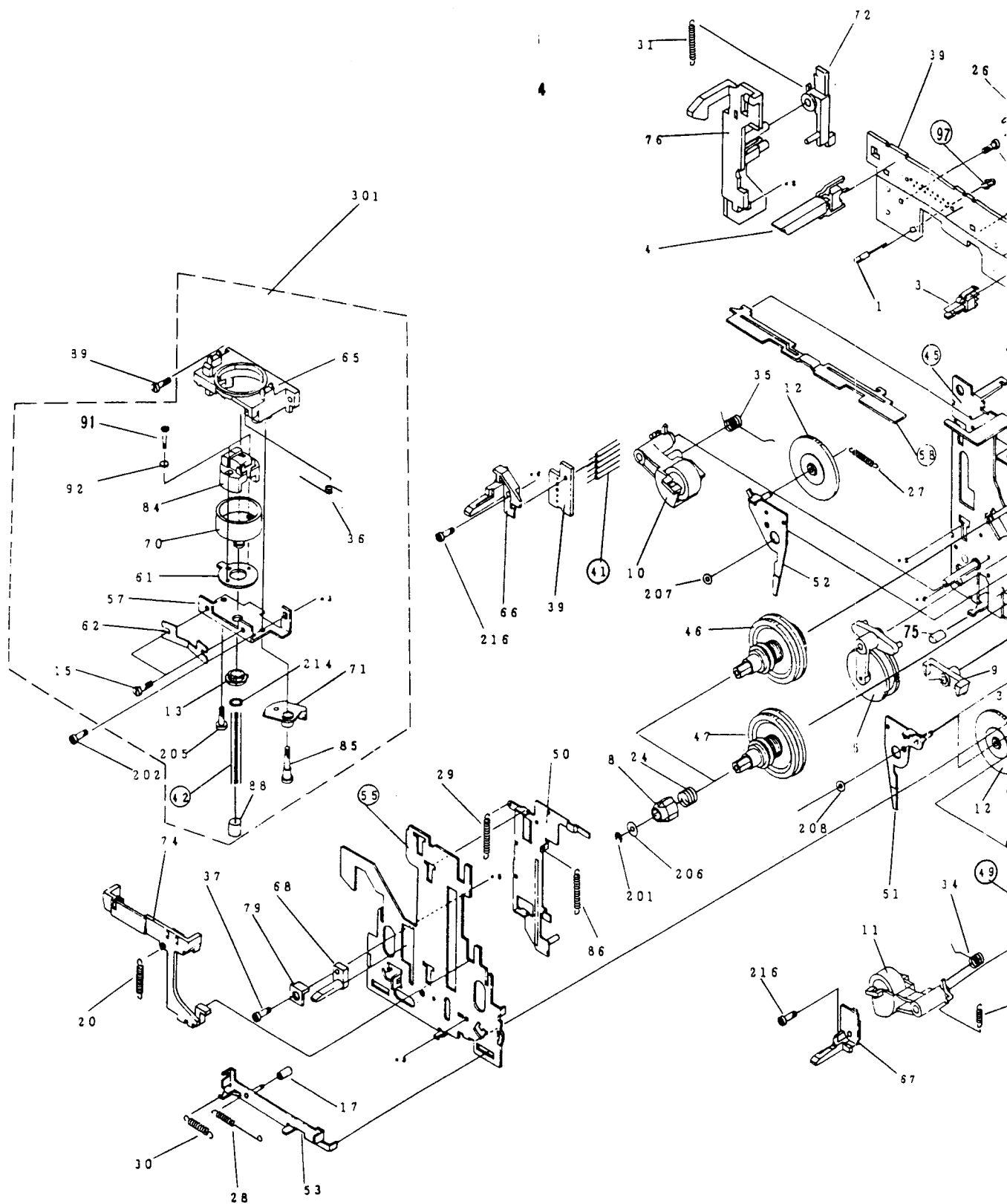
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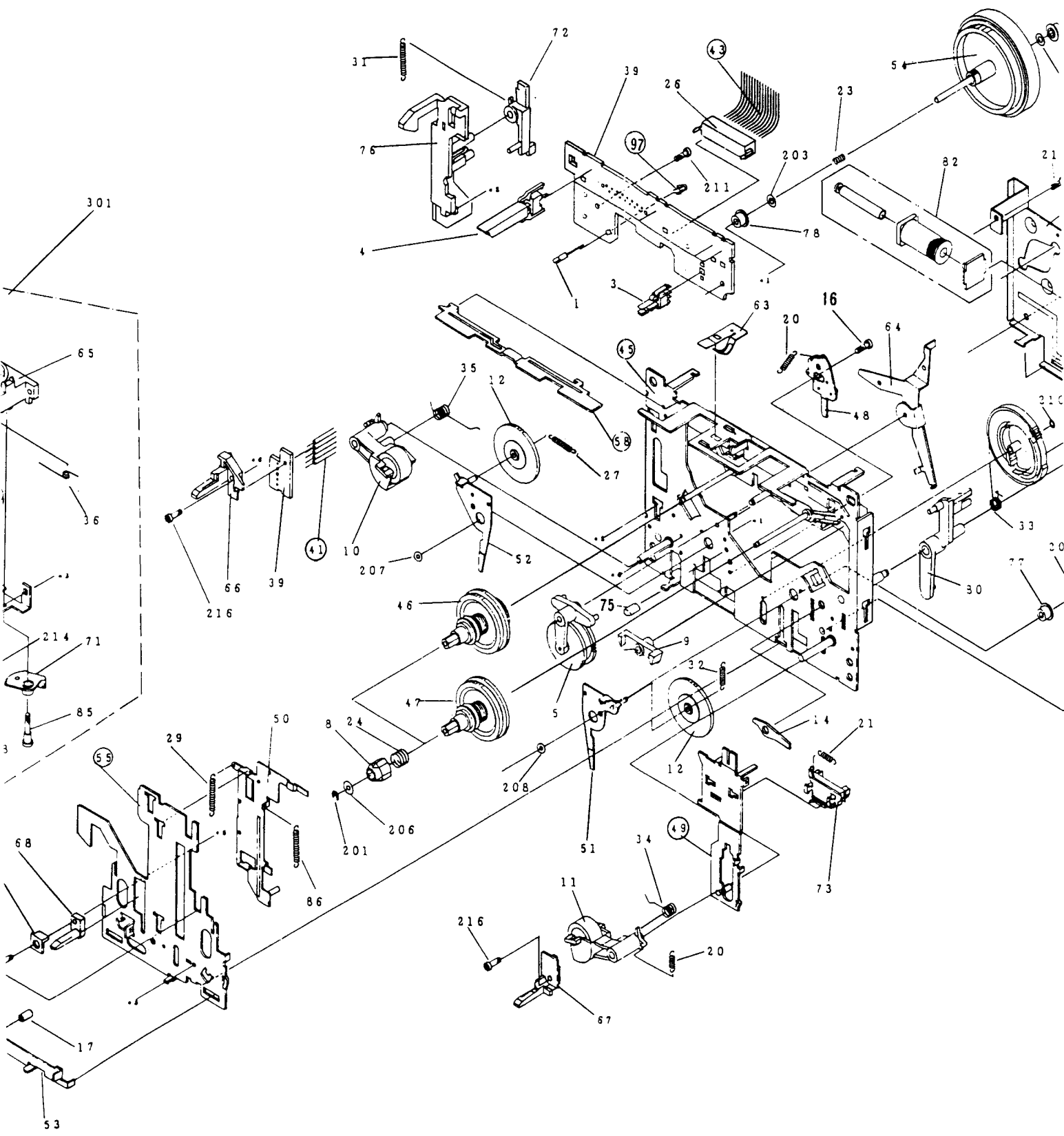


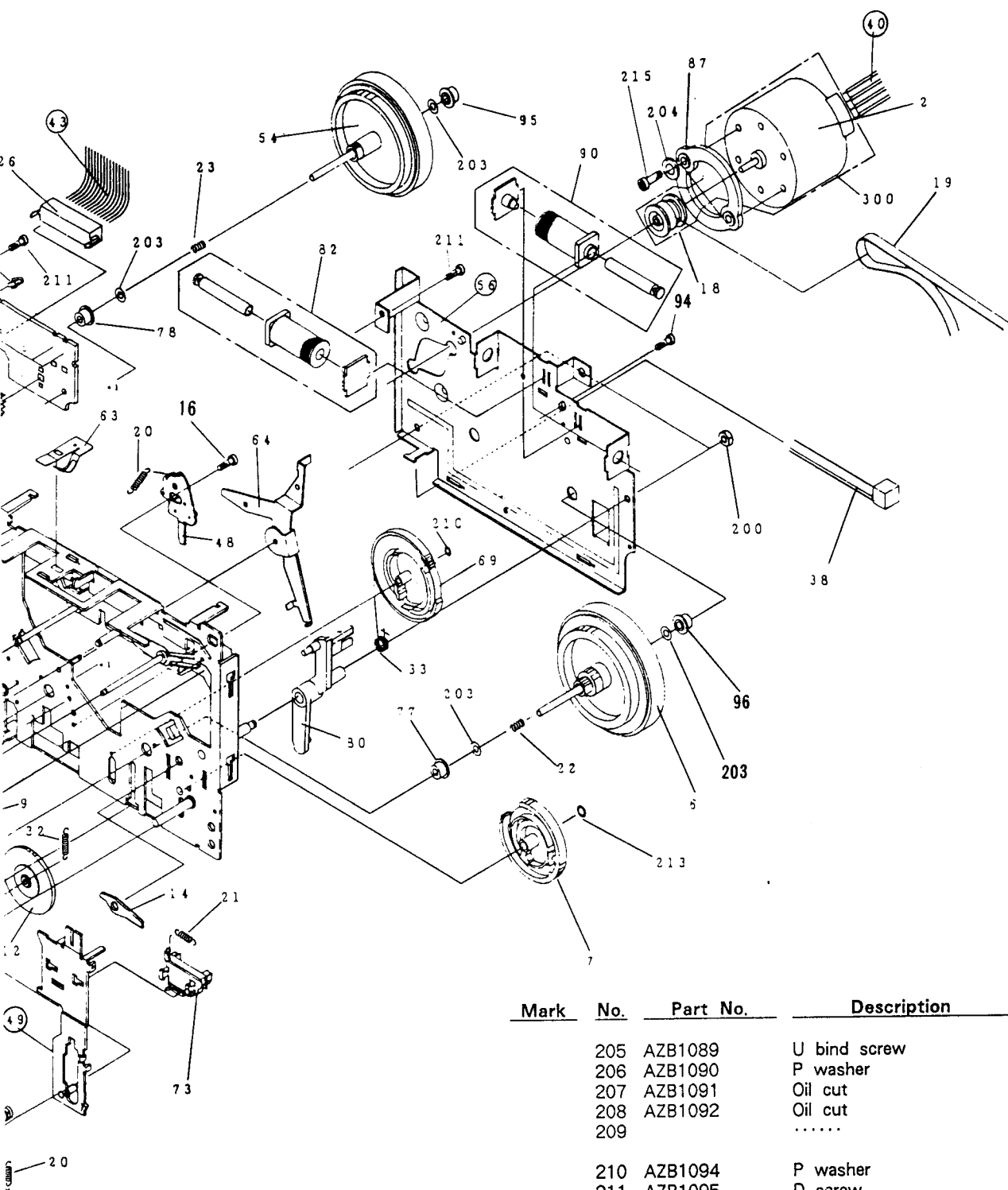




4.4 MECHANISM UNIT II (AWY1066)







Mark	No.	Part No.	Description
	205	AZB1089	U bind 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 bind screw
	300	AZX1020	Motor assembly
	301	AZP1041	Head frame assembly

Mechanism Unit II (AWY1066)

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	AZE1018	Hall IC		51	AZN1976	Gear arm R
	2	AZX1019	Motor		52	AZN1977	Gear arm L
	3	AZS1054	Leaf switch (Mode)		53	AZN1326	Head lever caulking assembly
	4	AZS1034	Leaf switch (ARF, HALF, METAL, CrO2, ARR)		54	AZN1327	FW assembly
	5	AZN1286	Drive arm assembly		55		Head board
	6	AZN1287	FW assembly A		56		Flywheel receiving plate
	7	AZN1288	Cam gear		57	AZN1328	Azimuth plate
	8	AZN1289	Reel claw		58		Switch arm
	9	AZN1971	FR arm		59		.....
	10	AZN1972	Pinch roller L assembly		60		.....
	11	AZN1973	Pinch roller R assembly		61	AZN1330	Head arm
	12	AZN1293	Gear		62	AZN1331	Azimuth spring
	13	AZN1294	H gear		63	AZN1332	Cassette stopper
	14	AZN1793	Cue arm		64	AZN1978	Trigger arm
	15	AZB1079	Screw		65	AZN1334	Head frame
	16	AZB1080	Screw		66	AZN1335	Cassette guide L
	17	AZN1984	Collar		67	AZN1336	Cassette guide R
	18	AZN1297	Motor pulley		68	AZN1337	Cassette guide
	19	AZN1298	Flat belt		69	AZN1338	Cam gear
	20	AZN1299	Tension spring		70	AZN1979	Head holder
	21	AZN1300	FR lever spring		71	AZN1340	Head gear
	22	AZN1301	FWF spring		72	AZN1980	Eject arm 2
	23	AZN1302	FWR spring		73	AZN1342	Select lever
	24	AZN1303	Pressure spring		74	AZN1343	Brake
	25		.....		75	AZN1468	Tube
	26	AZN1305	Cable holder		76	AZN1981	Latch lever L
	27	AZN1306	Tension spring		77	AZN1346	Metal
	28	AZN1307	Tension spring		78	AZN1347	Metal
	29	AZN1308	Tension spring		79	AZN1348	Cushion
	30	AZN1309	Tension spring		80	AZN1349	Trigger arm
	31	AZN1310	Tension spring		81		.....
	32	AZN1311	Tension spring		82	AZS1085	Solenoid
	33	AZN1312	Spring		83		.....
	34	AZN1313	Spring		84	AZP1014	R/P/E head
	35	AZN1314	Spring		85	AZB1099	Step screw
	36	AZN1315	Spring		86	AZN1352	Tension spring
	37	AZB1081	Step screw		87	AZN1304	Spacer
	38	AZN1316	Nylon band		88	AZN1470	Corner tube
	39	AZN1997	PC board		89	AZB1100	Step screw
	40		Jumper wire		90	AZS1087	Solenoid
	41		Head lead wire		91	AZB1101	Screw
	42		Lead wire		92	AZB1102	Screw washer
	43		Lead wire		93		.....
	44		.....		94	AZB1298	Screw
	45		Mechanism board caulking assembly		95	AZN1833	Holder capstan
	46	AZN1319	R reel assembly		96	AZN1834	Holder capstan
	47	AZN1320	F reel assembly		97		Holder
	48	AZN1321	Reverse arm caulking assembly		200	AZB1084	Hexagonal nut
	49		FR lever caulking assembly		201	AZB1085	E ring
	50	AZN1975	PLAY lever caulking assembly		202	AZB1086	D screw
					203	AZB1121	P washer
					204	AZB1087	N washer

Parts List of CD Player Block, Servo Mechanism Block

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	PBA1042	Floating screw (FE)		51	PCP1008	Semi-fixed VR
	2	PBH1085	Coil spring		52	CKSYF105Z16	Chip capacitor
	3	PEB1127	Rubber belt		53	PMZ26P040FMC	Screw
	4		Shaft (FE)		54	WT26D047D050	Washer
	5		Magnet		55	WA62D095D013	Washer
	6		Yoke (FE)		56	PBZ30P080FMC	Screw
	7		Swing lever (FE)		57		Mechanism chassis
	8		Shield plate (FE)		58	PPZ30P100FMC	Screw
	9		Clamper S (ABS)		59	ZMK20H040FBT	Screw
	10	PNW1634	Motor pulley (POM)				
	11	PNW1673	Clamper base (ABS)				
	12	PNW1674	Rack (ABS)				
	13	PNW1675	Sync plate (POM)				
	14	PNW1676	Gear A (POM)				
	15	PNW1677	Gear B (POM)				
	16	PNW1678	Gear pulley (POM)				
	17	PNW1679	Sensor head (ABS)				
	18	PNW1680	Slide bush (POM)				
	19		Loading base (ABS)				
	20		Servo mechanism assembly				
	21	PXM1017	DC motor/0.75W				
	22	BPZ26P080FMC	Screw				
	23	IPZ30P080FMC	Screw				
	24	DSK1001	Lever switch				
	25		Main board assembly				
	26	BPZ20P080FZK	Screw				
	27	JFZ20P025FMC	Screw				
	28	PBH1009	Ground spring				
	29	PBH1084	Drive spring (steel)				
	30	PBK1057	Plate spring				
	31	PEB1072	Belt				
	32	PLA1003	Drive screw				
	33	PLA1071	Guide bar (steel)				
	34	PMZ20P030FMC	Screw				
	35		Motor base (FE)				
	36	PNW1066	Pulley				
	37	PNW1605	Half nut (plastic)				
	38	PNW1608	Disk table (PC)				
	39	PNW1634	Motor pulley (POM)				
	40	PEA1030	Pickup assembly				
	41		Mechanism base				
	42	PEA1028	Spindle DC motor assembly				
	43	PXM1013	DC motor/1.7W				
	44	PSH1003	Slide switch				
	45	PEB1014	Floating rubber				
	46	PEB1132	Floating rubber				
	47		Actuator cover				
	48		Connector assembly (5P)				
	49		Ground lead unit				
	50		Connector assembly (6P)				

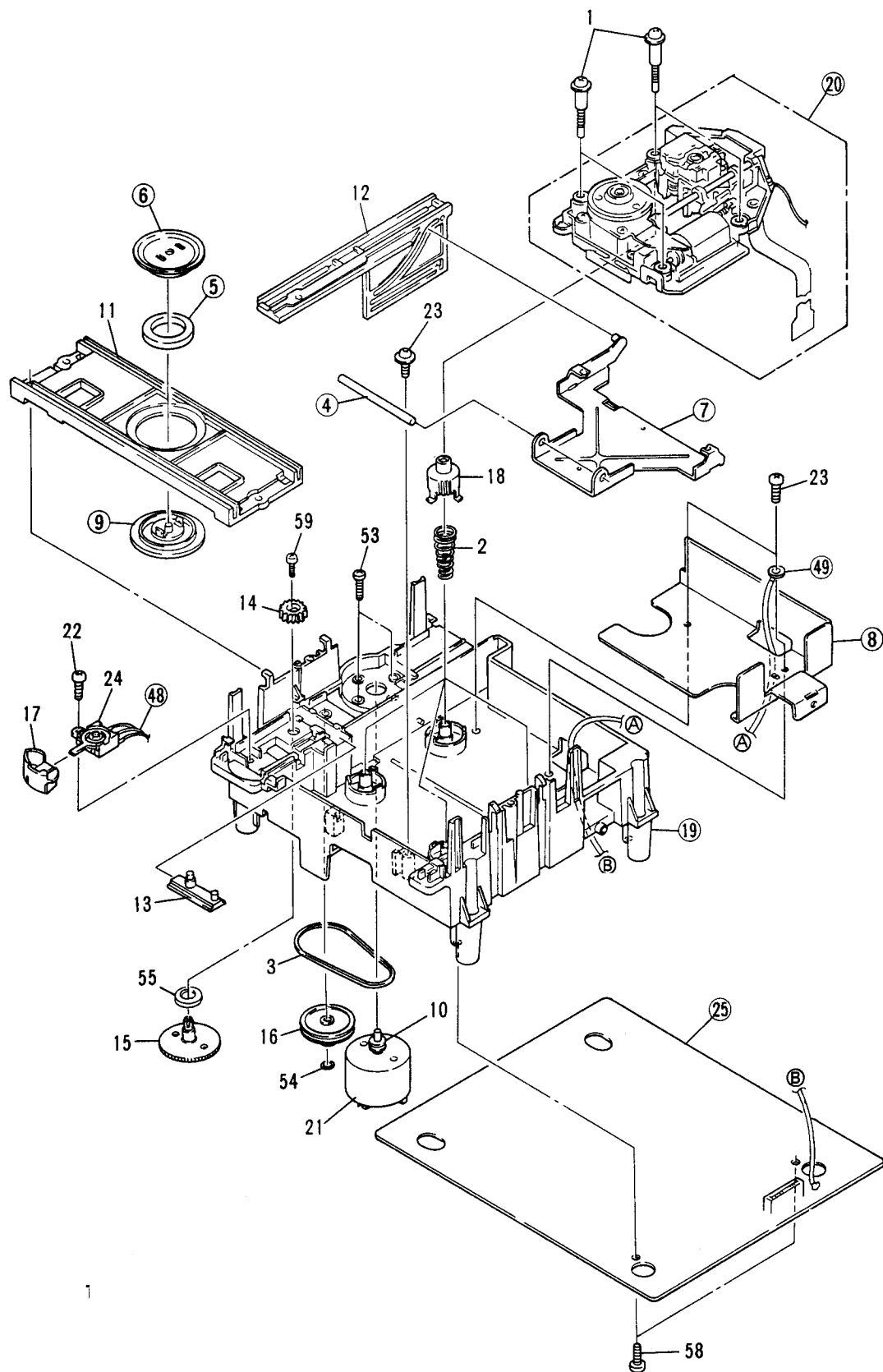
4.5 CD PLAYER BLOCK, SERVO MECHANISM BLOCK

A

B

C

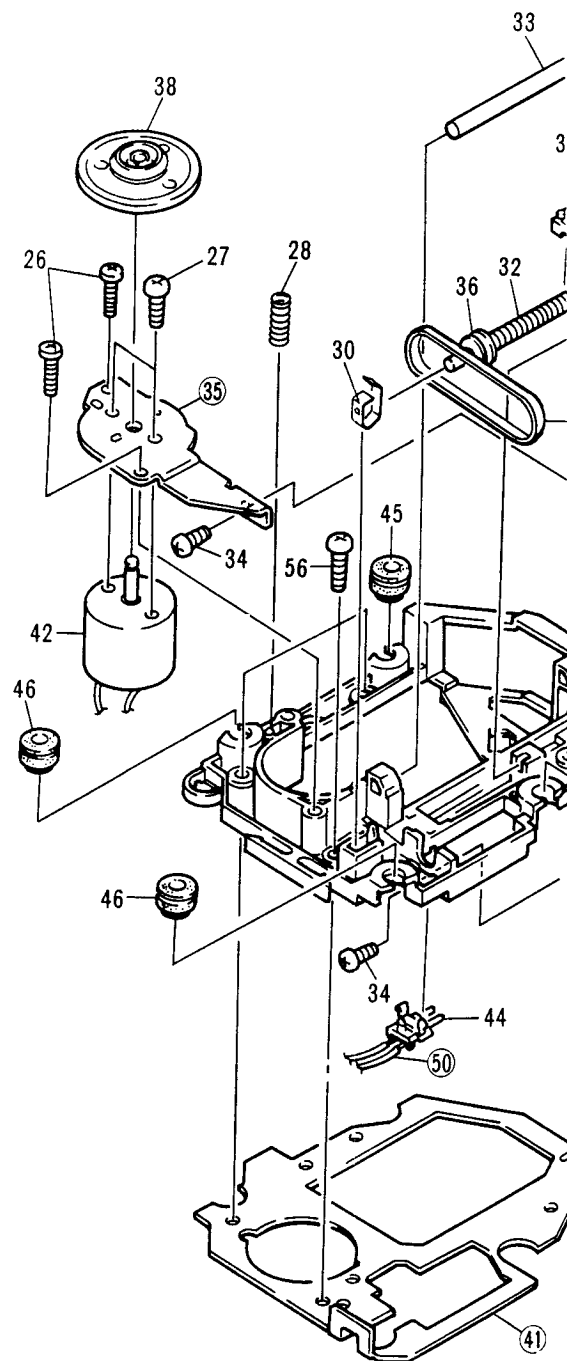
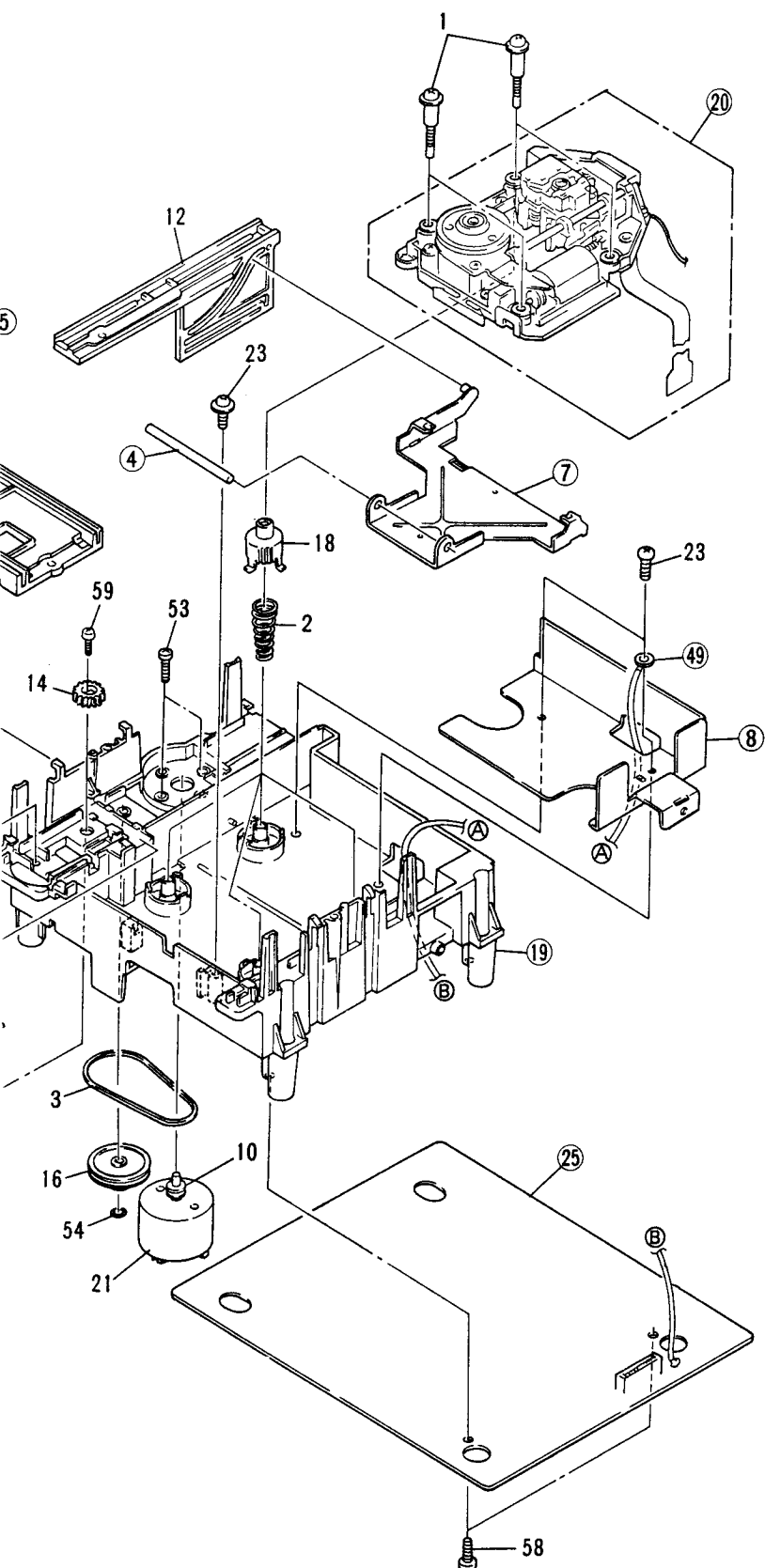
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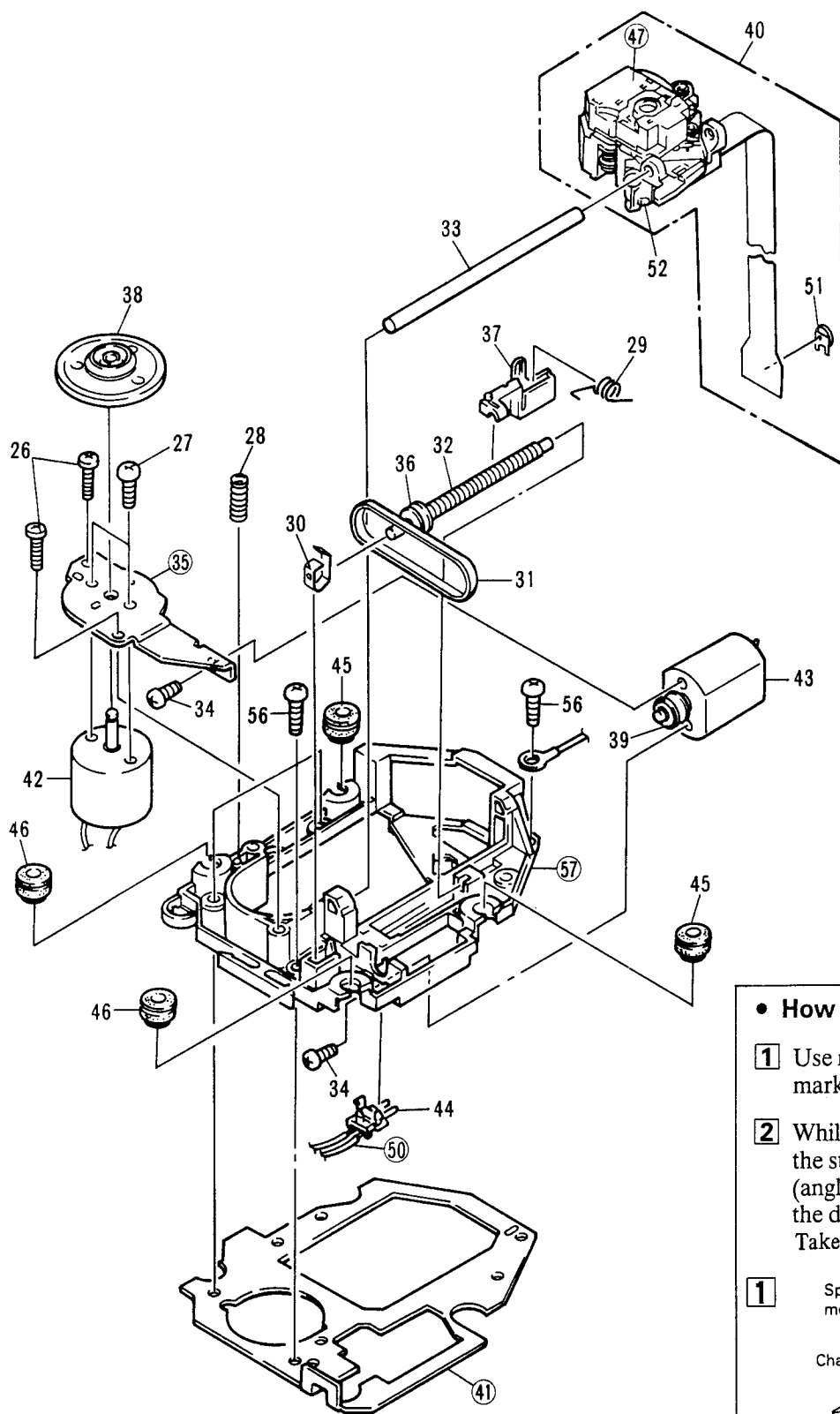


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42

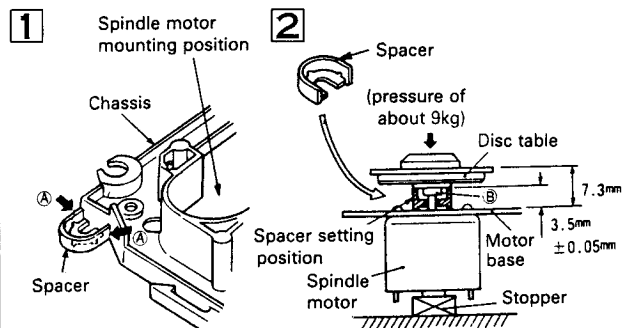
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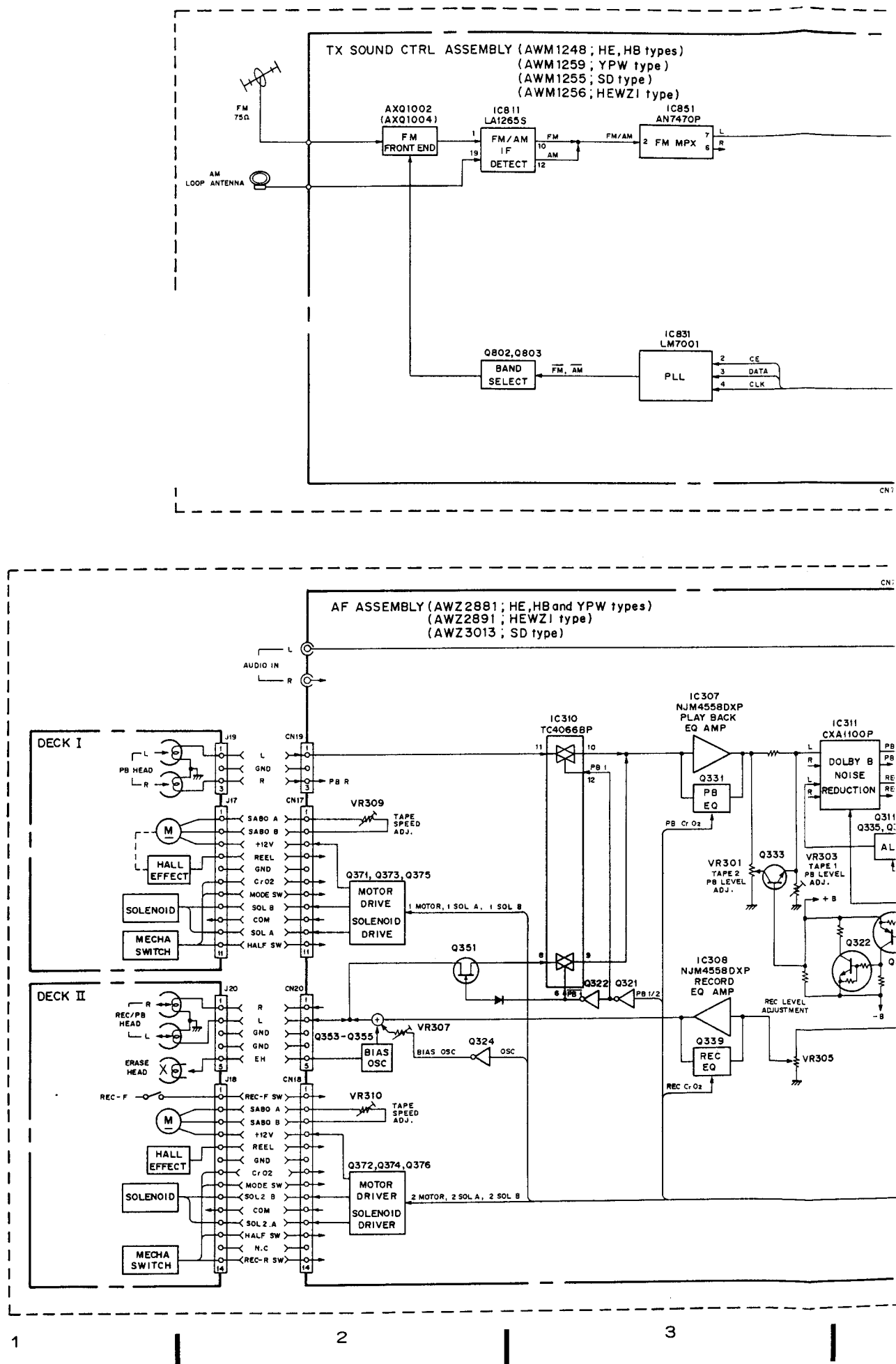


• How to install the disc table

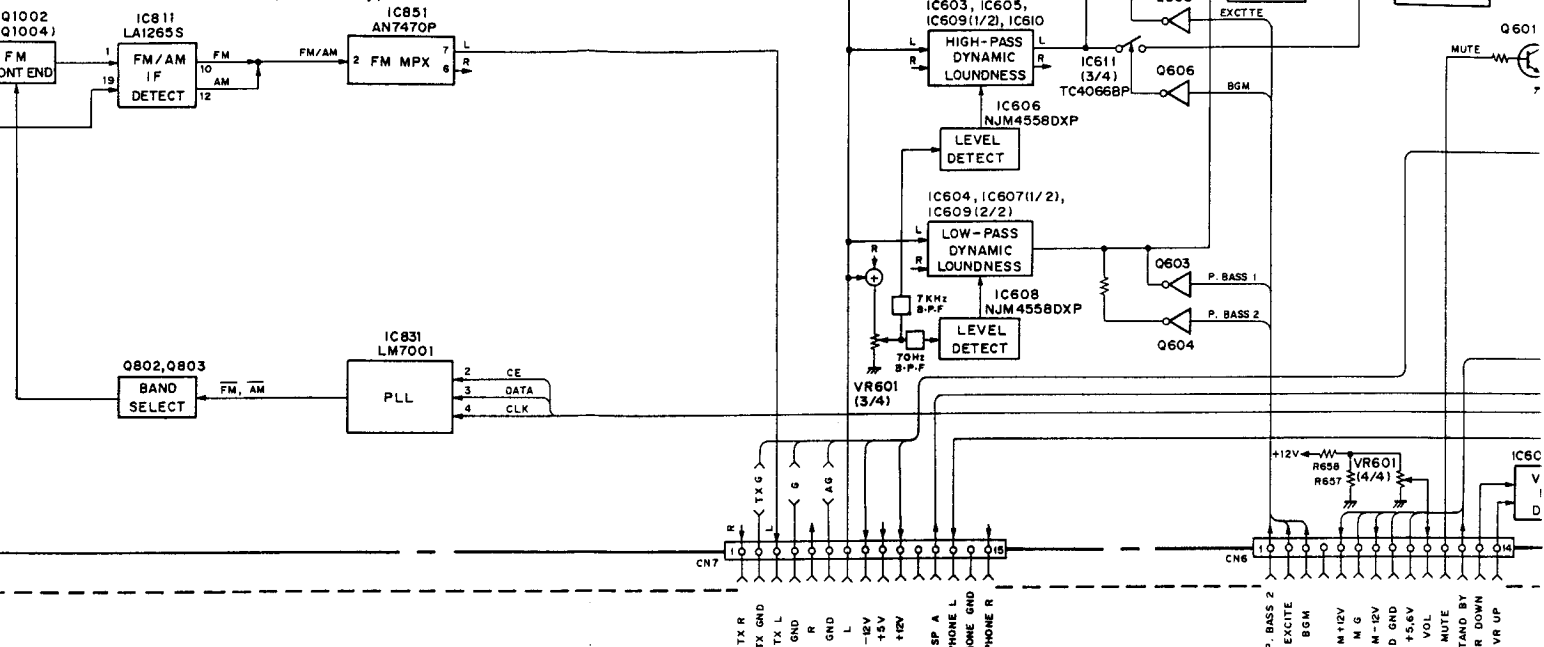
- 1** Use nippers or other tool to cut the two sections marked **A** in figure **1**. Then remove the spacer.
- 2** While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base (angled so it doesn't touch section **B**), and stick the disc table on top (takes about 9kg pressure). Take off the spacer.



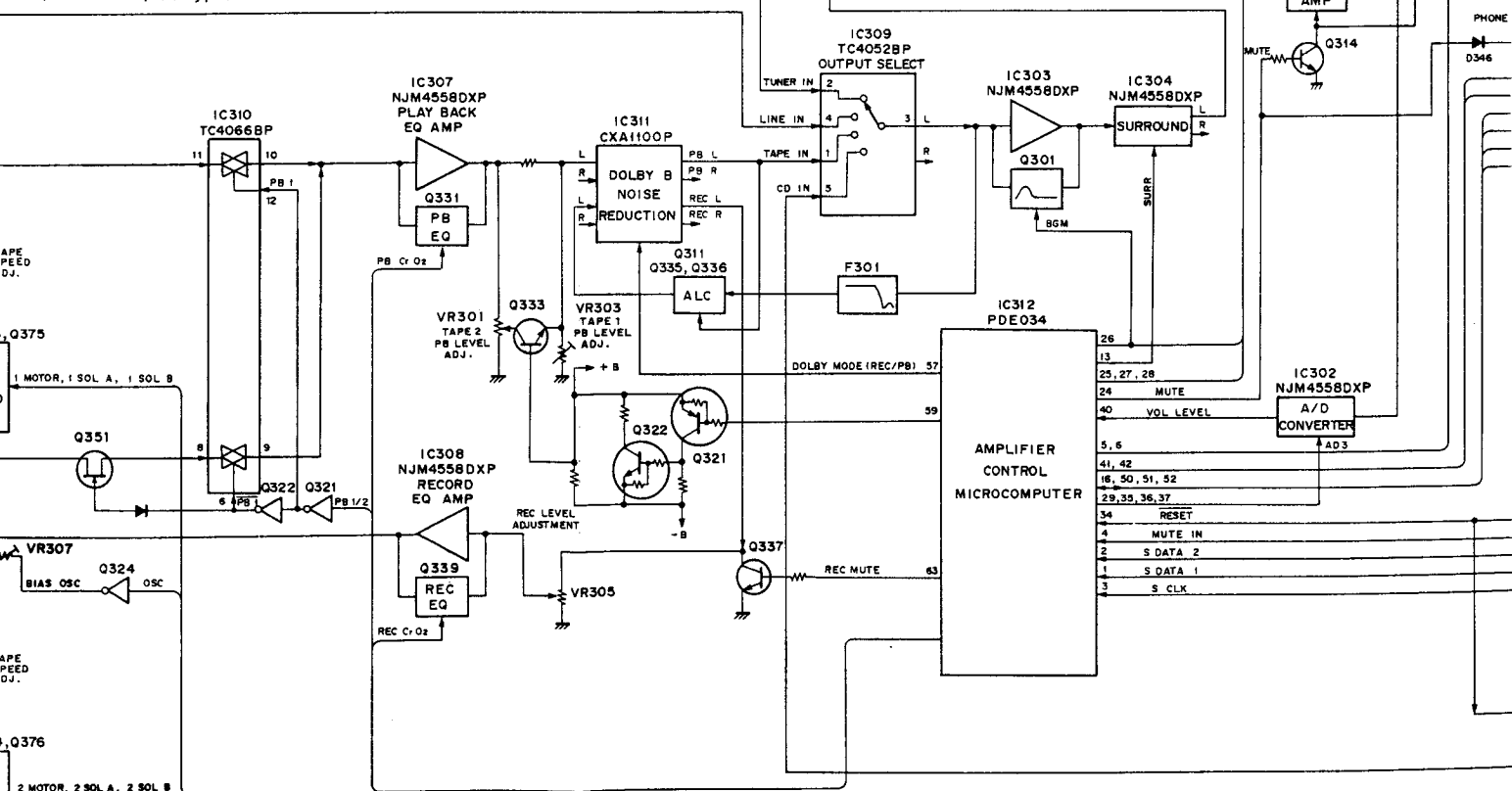
5. OVER ALL SCHEMATIC DIAGRAM

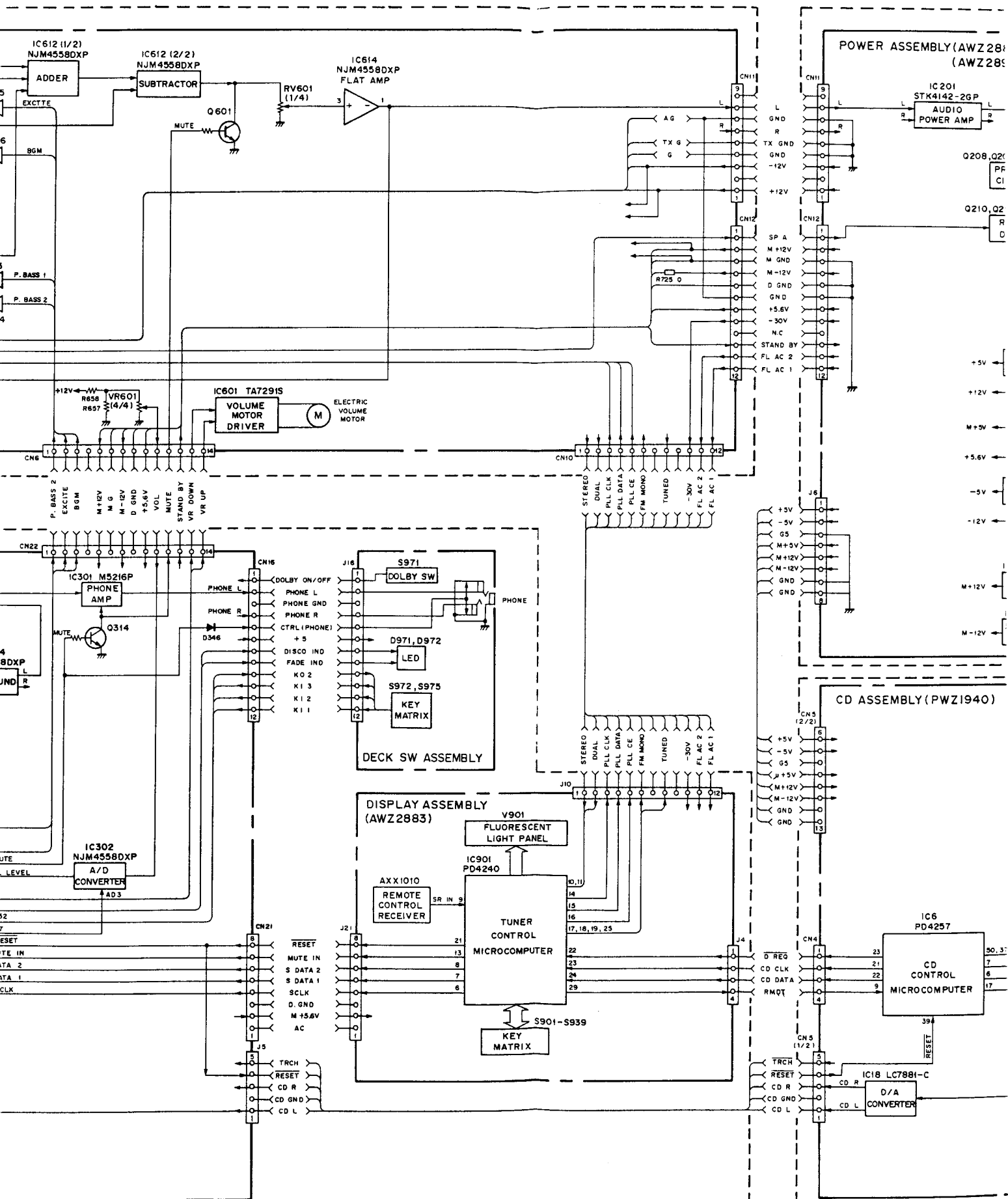


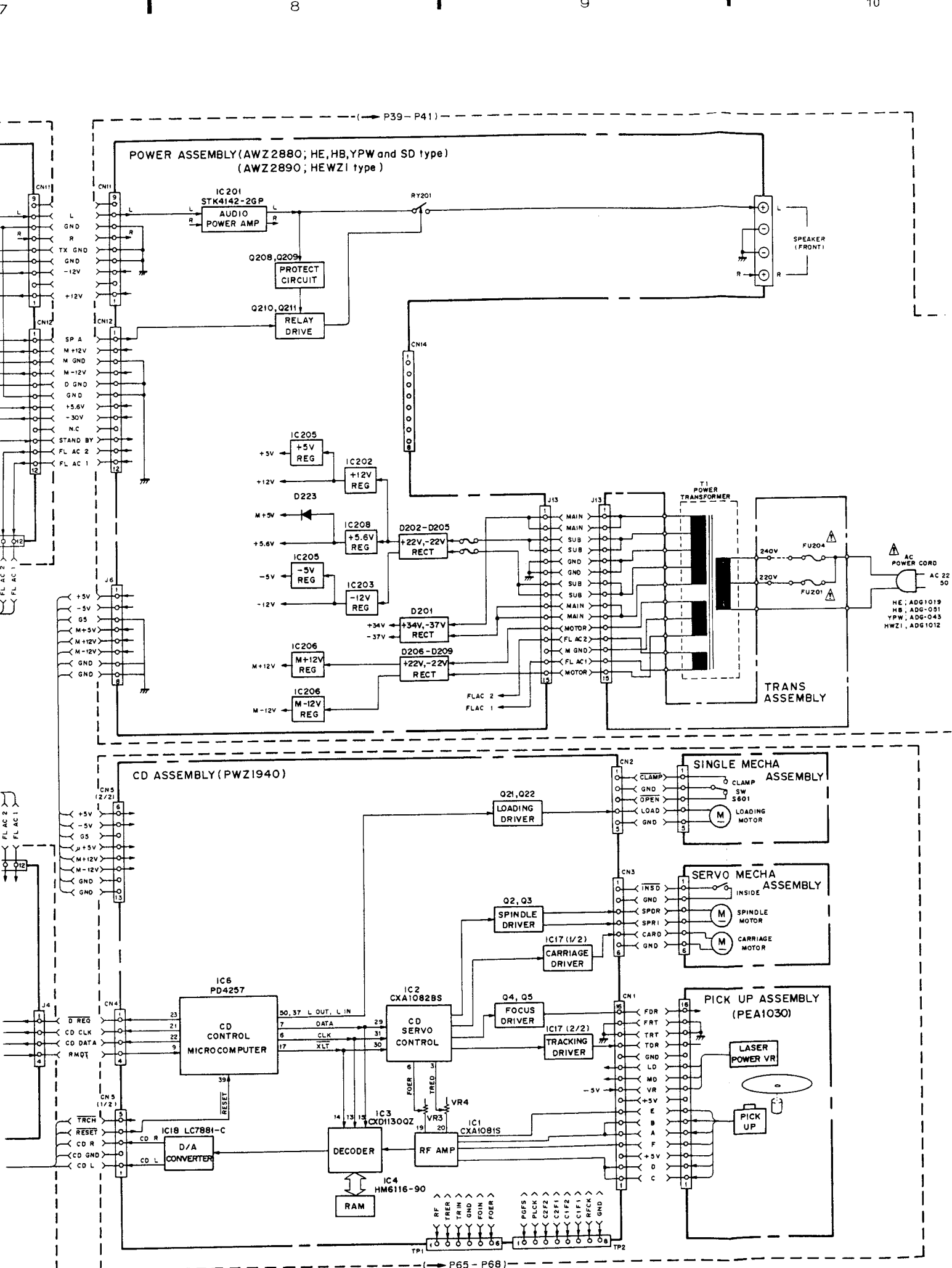
CTRL ASSEMBLY (AWM1248; HE, HB types)
(AWM1259; YPW type)
(AWM1255; SD type)
(AWM1256; HEWZ1 type)

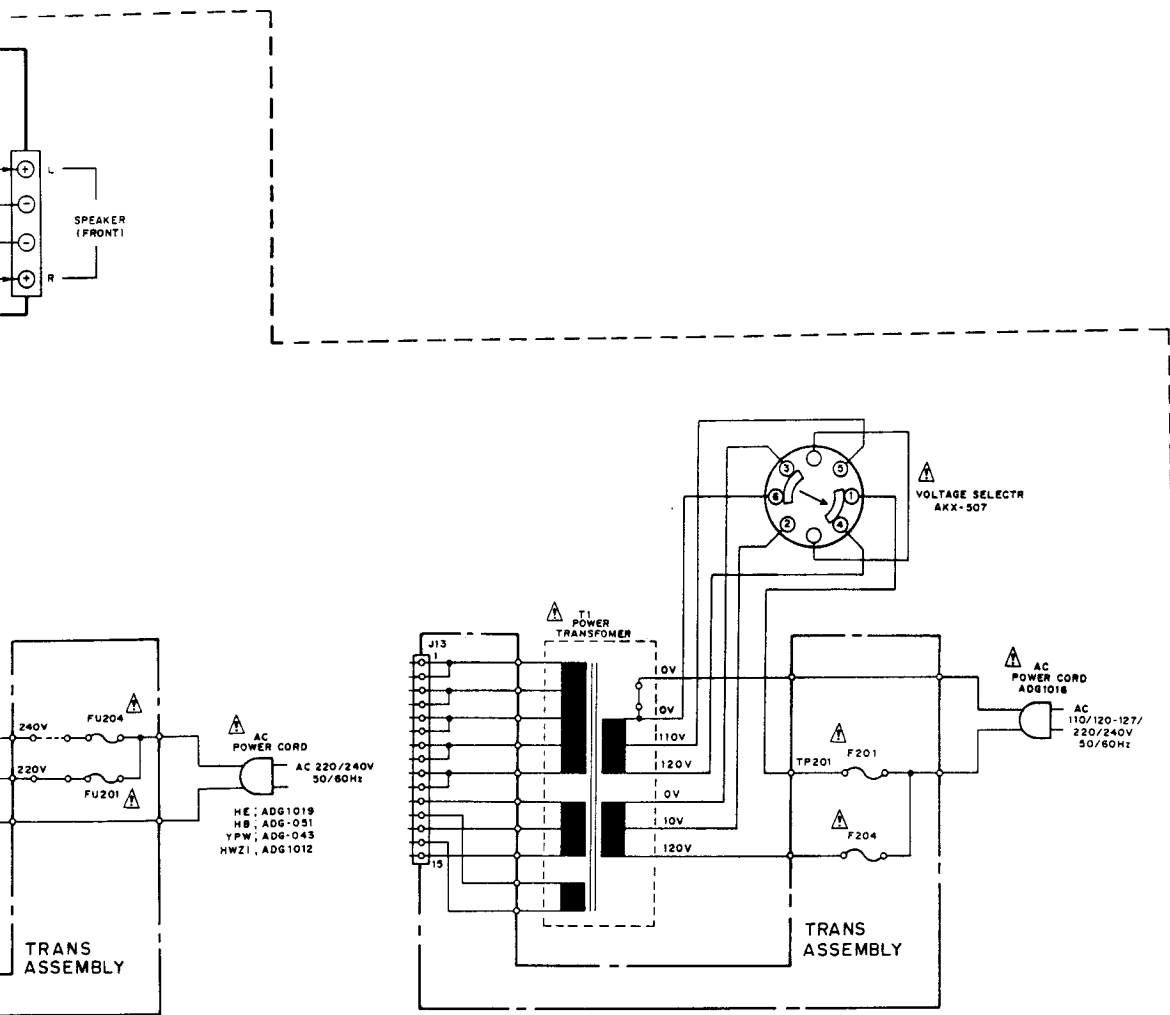


BY (AWZ2881; HE, HB and YPW types)
(AWZ2891; HEWZ1 type)
(AWZ3013; SD type)









TECHA
ASSEMBLY

ING
TOR

TECHA
ASSEMBLY

NDLE
TOR

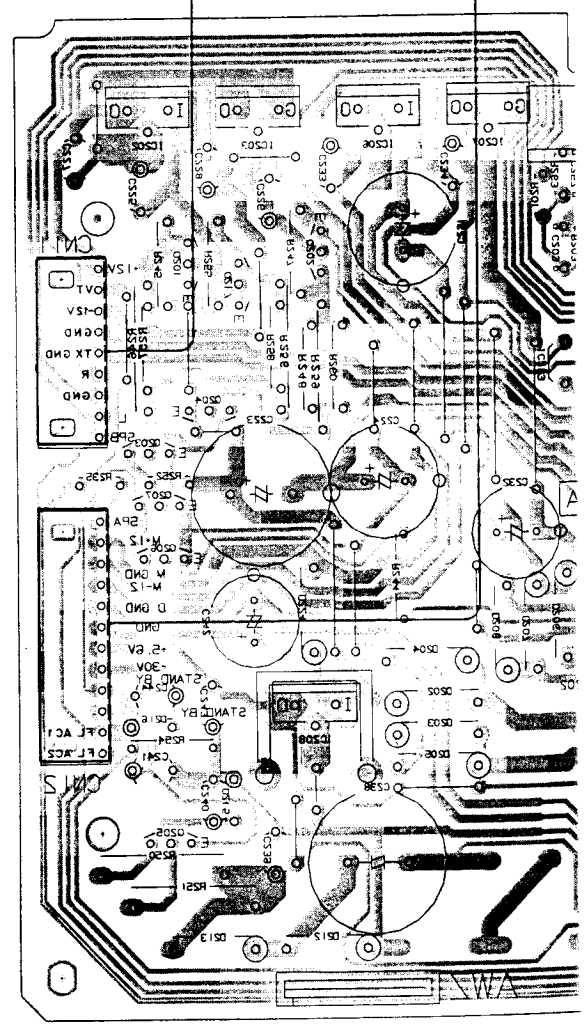
RIAGE
TOR

P ASSEMBLY
(A1030)

SER
ER VR

1
K
5

TO CNIS TX SOUND ASSEMBLY
TO CN11 TX SOUND ASSEMBLY



IC501 IC502 IC503 IC504 IC505 IC506 IC507 IC508 IC509 IC510 IC511 IC512 IC513 IC514 IC515 IC516 IC517 IC518 IC519 IC520 IC521 IC522 IC523 IC524 IC525 IC526 IC527 IC528 IC529 IC530 IC531 IC532 IC533 IC534 IC535 IC536 IC537 IC538 IC539 IC540 IC541 IC542 IC543 IC544 IC545 IC546 IC547 IC548 IC549 IC550 IC551 IC552 IC553 IC554 IC555 IC556 IC557 IC558 IC559 IC560 IC561 IC562 IC563 IC564 IC565 IC566 IC567 IC568 IC569 IC570 IC571 IC572 IC573 IC574 IC575 IC576 IC577 IC578 IC579 IC580 IC581 IC582 IC583 IC584 IC585 IC586 IC587 IC588 IC589 IC590 IC591 IC592 IC593 IC594 IC595 IC596 IC597 IC598 IC599 IC600

A

B

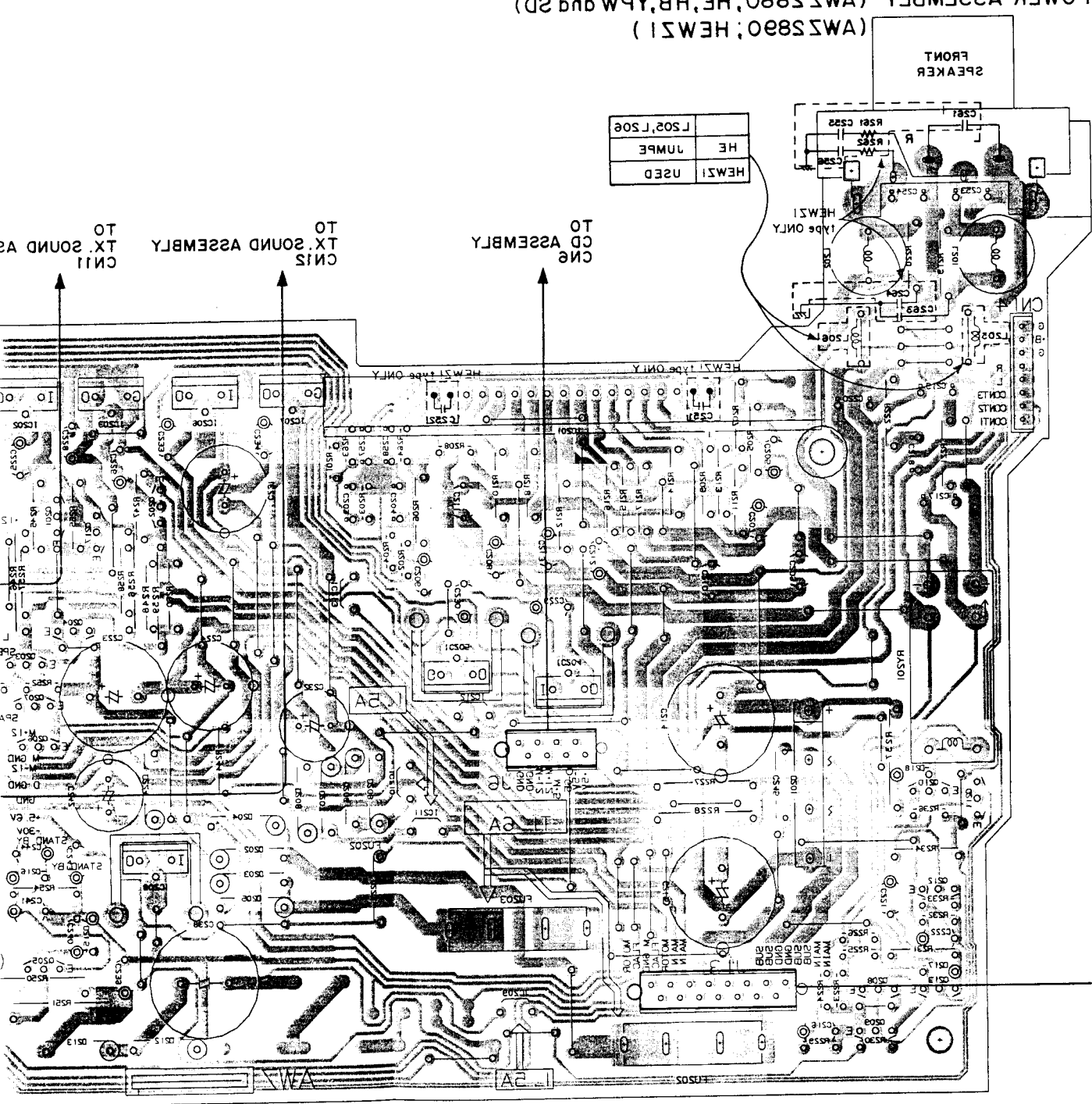
C

D

8

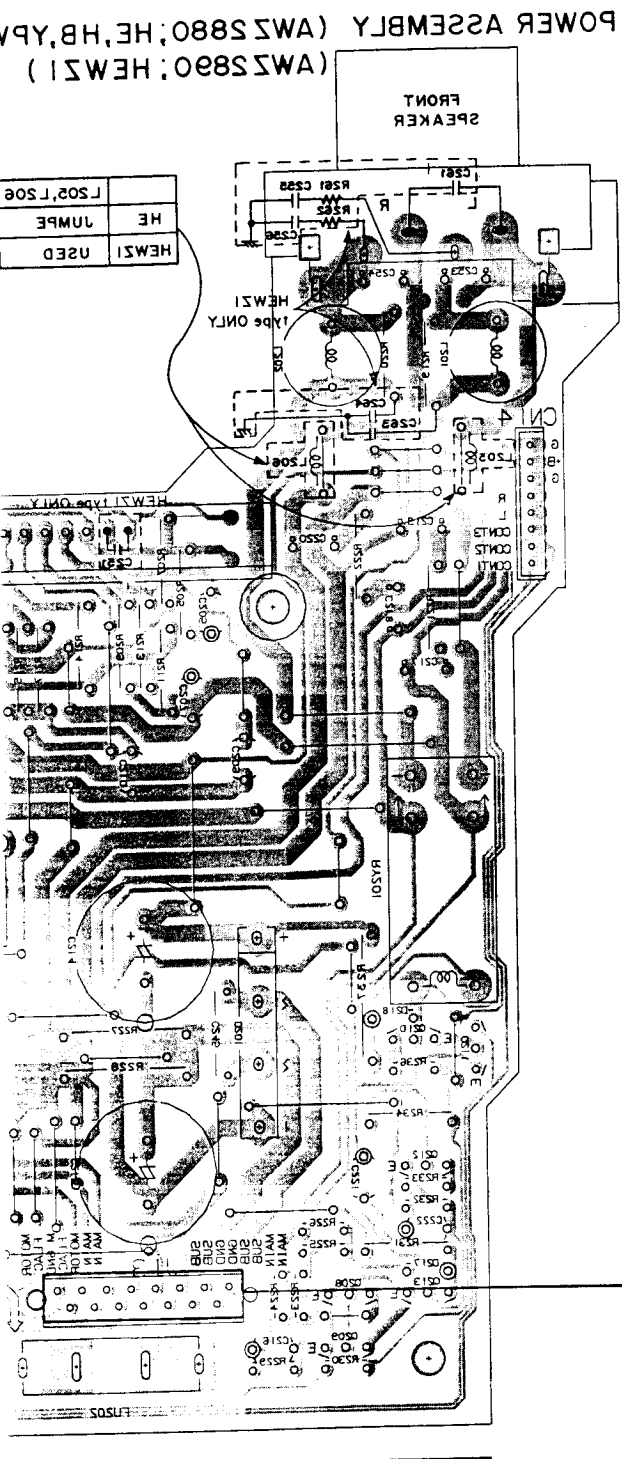
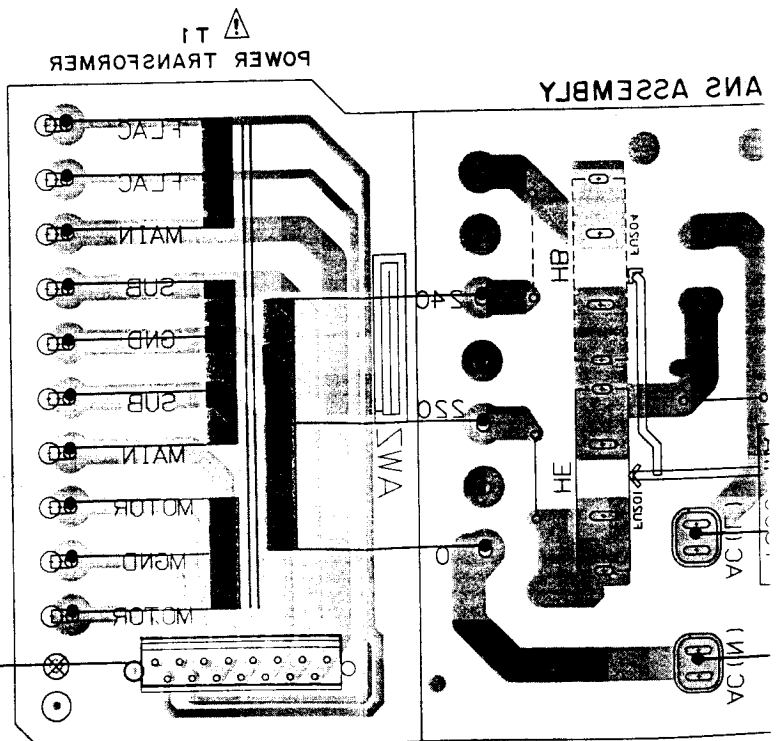
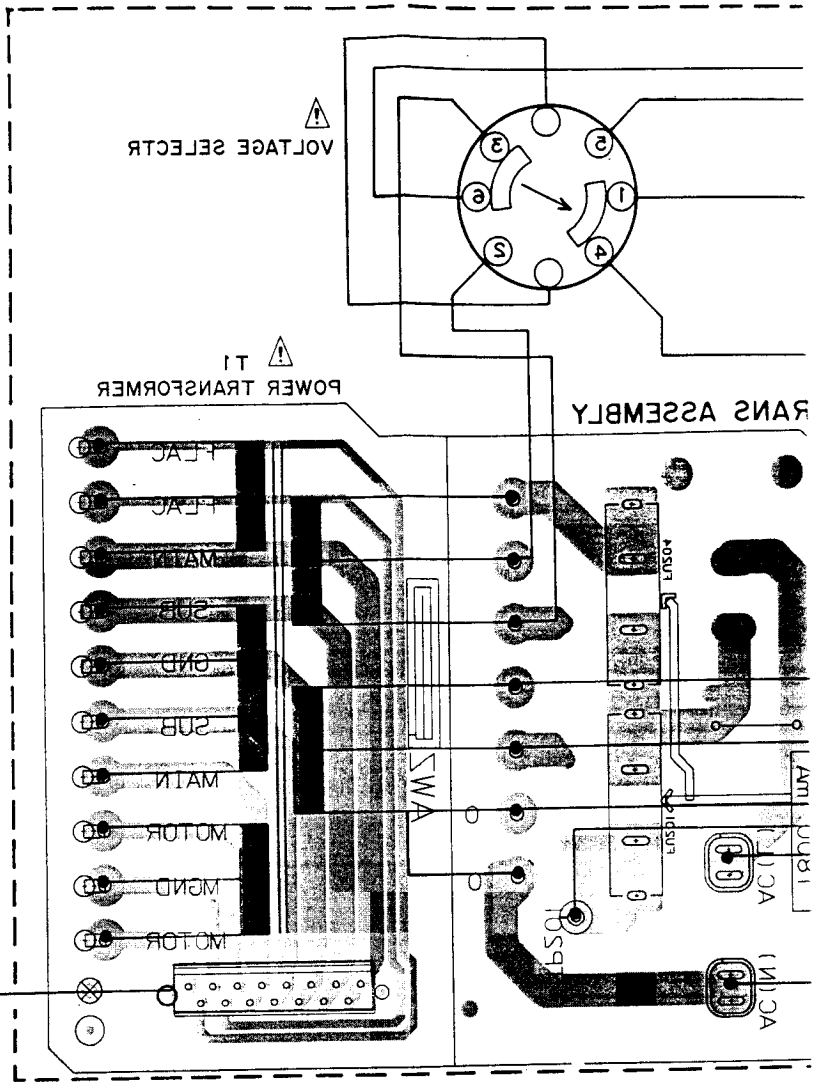
8

2 0508 0512 0515
 0508 0512 0515
 0502 0508 0512 0515
 1CS08 1CS12 1CS15
 1CS02 1CS08 1CS12 1CS15
 1CS01 1CS02 1CS03 1CS04 1CS05 1CS06 1CS07 1CS08 1CS09 1CS10 1CS11 1CS12 1CS13 1CS14 1CS15 1CS16 1CS17 1CS18 1CS19 1CS20 1CS21 1CS22 1CS23 1CS24 1CS25 1CS26 1CS27 1CS28 1CS29 1CS30 1CS31 1CS32 1CS33 1CS34 1CS35 1CS36 1CS37 1CS38 1CS39 1CS40 1CS41 1CS42 1CS43 1CS44 1CS45 1CS46 1CS47 1CS48 1CS49 1CS50 1CS51 1CS52 1CS53 1CS54 1CS55 1CS56 1CS57 1CS58 1CS59 1CS60 1CS61 1CS62 1CS63 1CS64 1CS65 1CS66 1CS67 1CS68 1CS69 1CS70 1CS71 1CS72 1CS73 1CS74 1CS75 1CS76 1CS77 1CS78 1CS79 1CS80 1CS81 1CS82 1CS83 1CS84 1CS85 1CS86 1CS87 1CS88 1CS89 1CS90 1CS91 1CS92 1CS93 1CS94 1CS95 1CS96 1CS97 1CS98 1CS99 1CS100



(AW55890; HEW1)
 POWER ASSEMBLY (AW55880; HE, HB, YPW and 2D)

BOARD PATTERNS



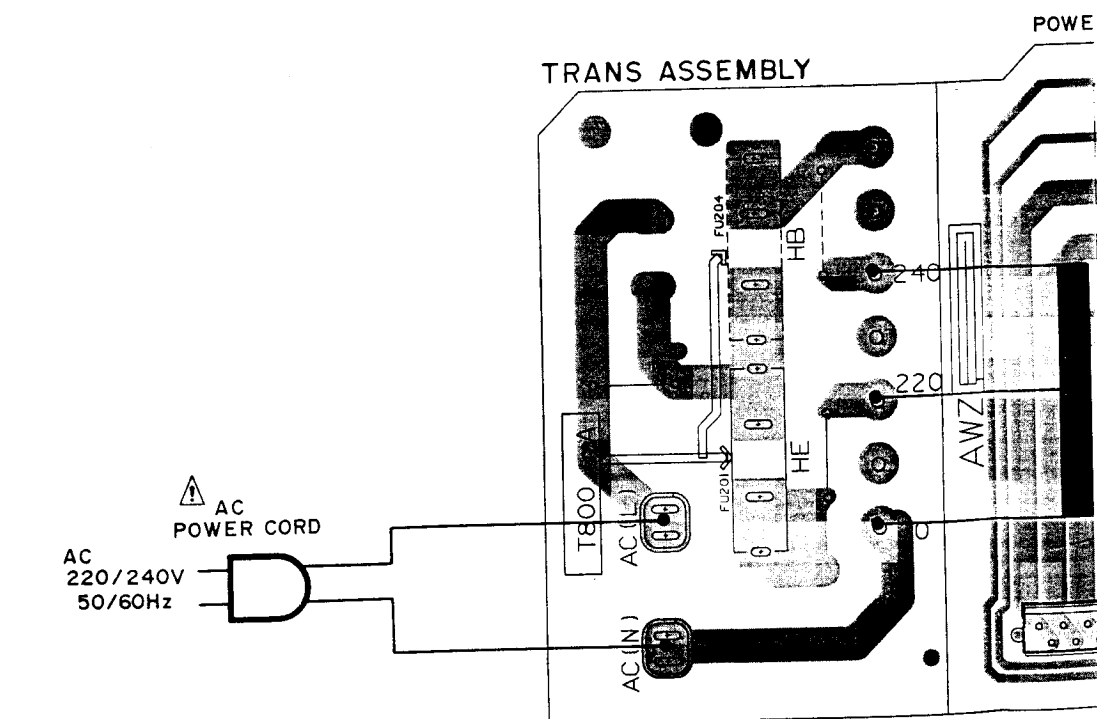
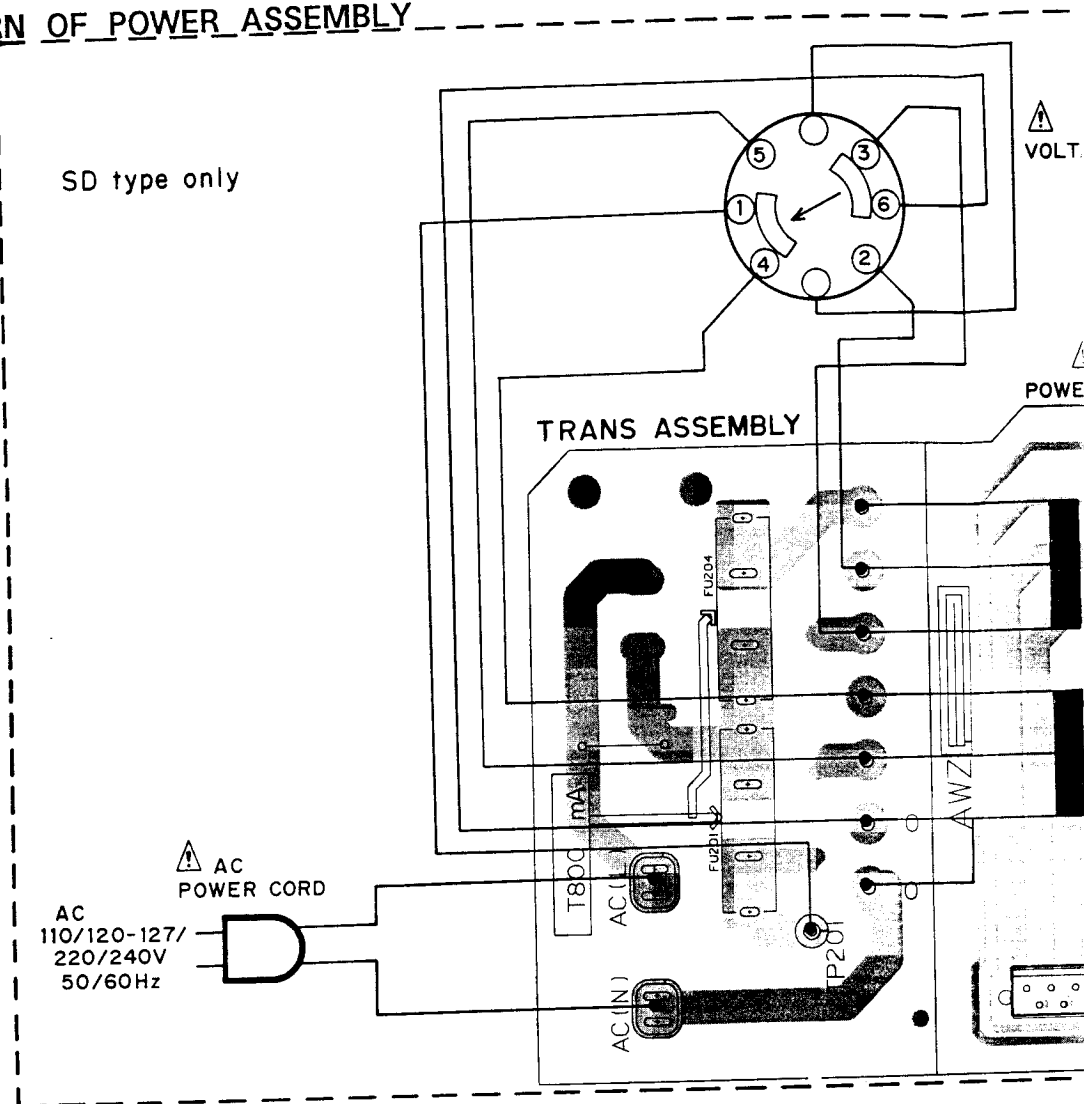
HEW1	USED
HE	1UMPE
LS02	LS06

0508
0513
0515
0510

6. SCHEMATIC DIAGRAMS AND P.C. BOARD PATTERNS

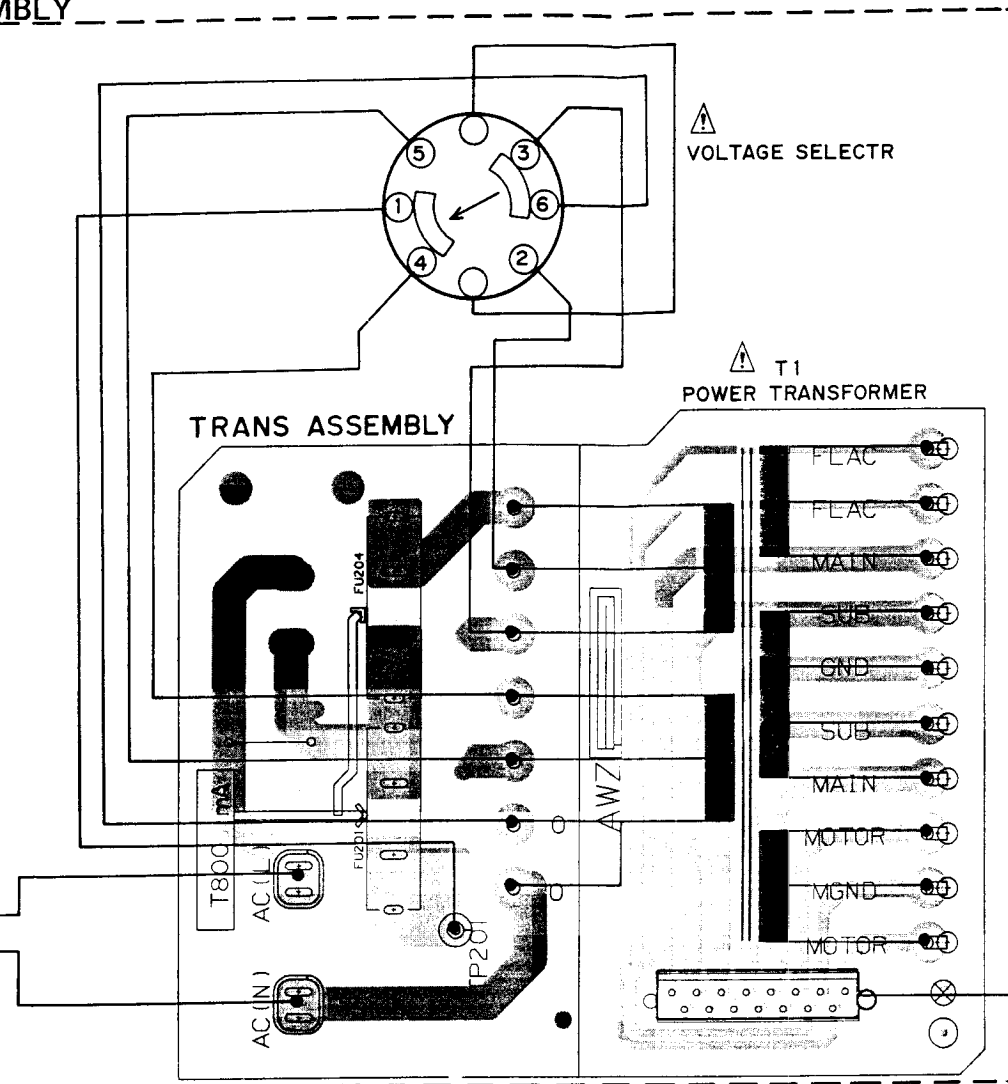
6.1 P.C. BOARD PATTERN OF POWER ASSEMBLY

- View from component side

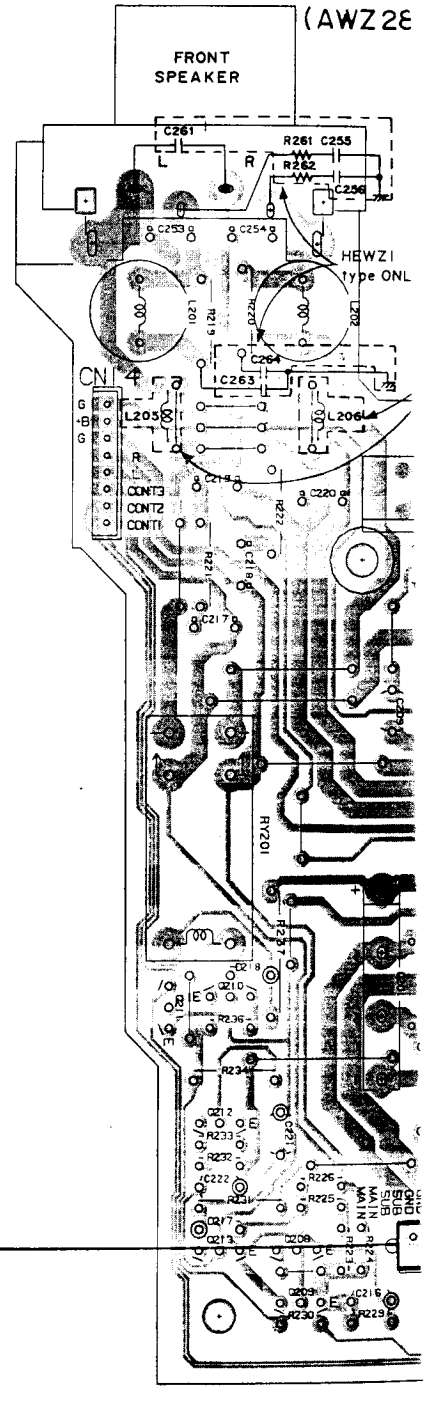


ND P.C. BOARD PATTERNS

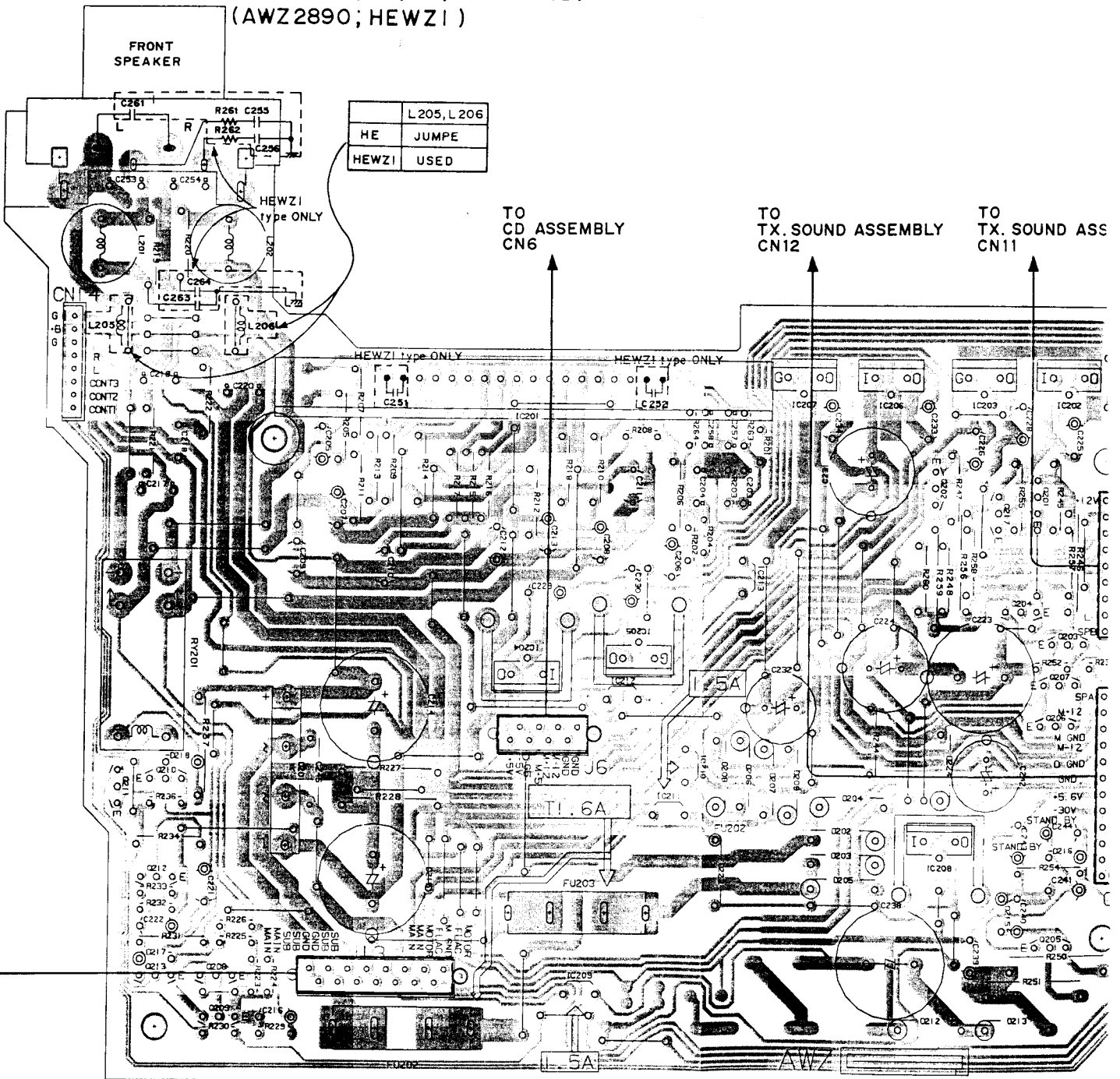
MBLY



POWER ASSEMBLY (AWZ 26)
(AWZ 26)



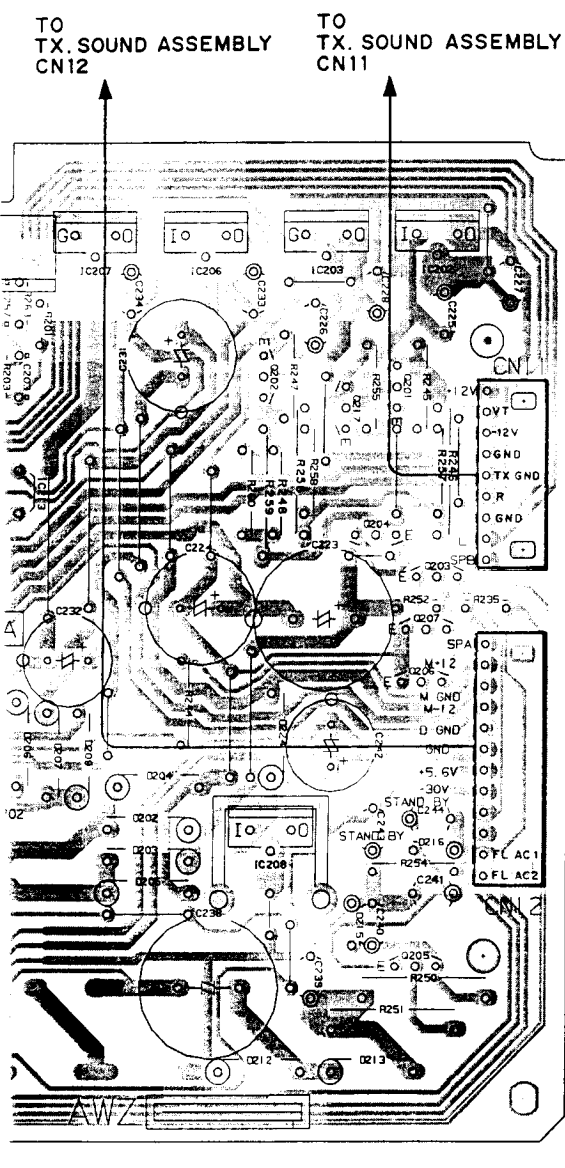
POWER ASSEMBLY (AWZ2880; HE, HB, YPW and SD)
(AWZ2890; HEWZI)



Q211 Q210
Q212
Q213 Q208
5 Q209

IC201
IC204
IC205
IC212
IC211 IC210
6 IC209

IC207
IC213
IC206
IC203
IC202
Q202 Q217 Q201
Q204 Q203
IC208
Q207
7 Q205 Q206



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
Q504		Transistor
Q215		Radiator type transistor
D203		Diode
R237		Resistor
C513		Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

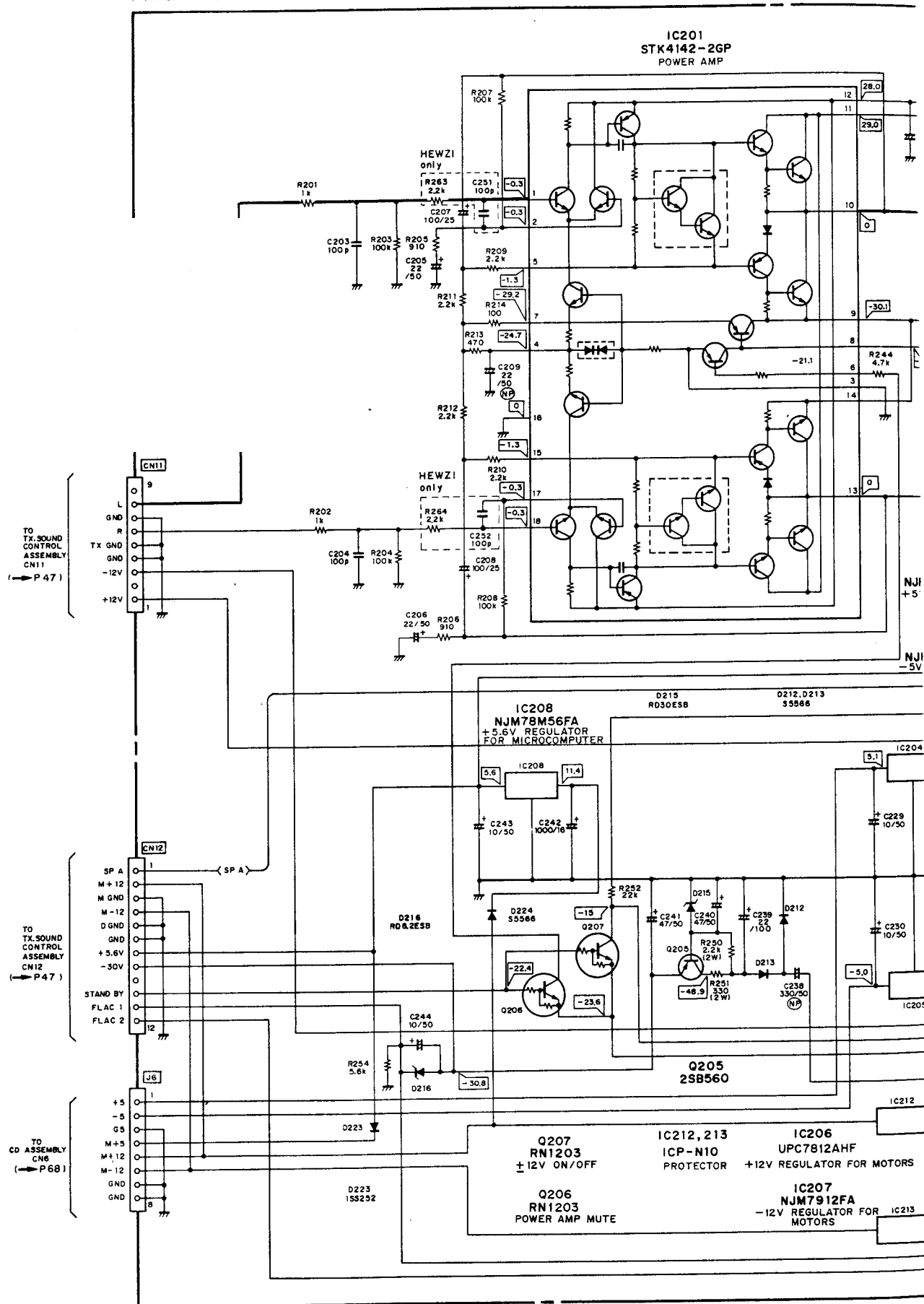
P.C.B. pattern diagram indication	
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

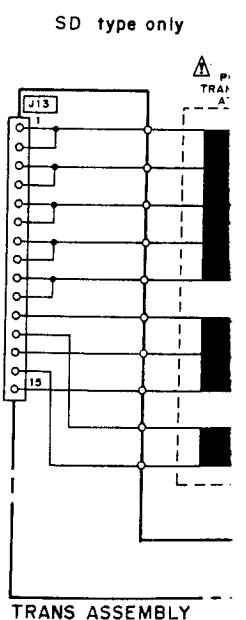
3. The capacitor terminal marked with (double circles) shows negative terminal.
4. The diode terminal marked with (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

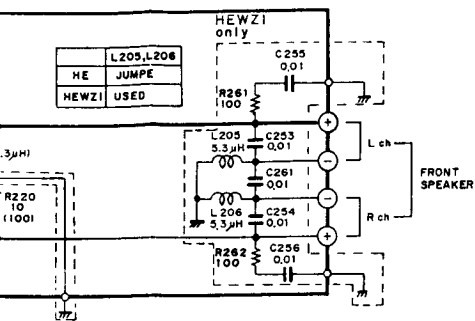
IC207 IC206 IC203 IC202
213 Q202 Q217 Q201
Q204 Q203
IC208 Q207
Q205 Q206

6.2 SCHEMATIC DIAGRAM OF POWER ASSEMBLY

(AWZ2880; HE, HB, YPW and SD type)
POWER ASSEMBLY (AWZ2890; HEWZI type)

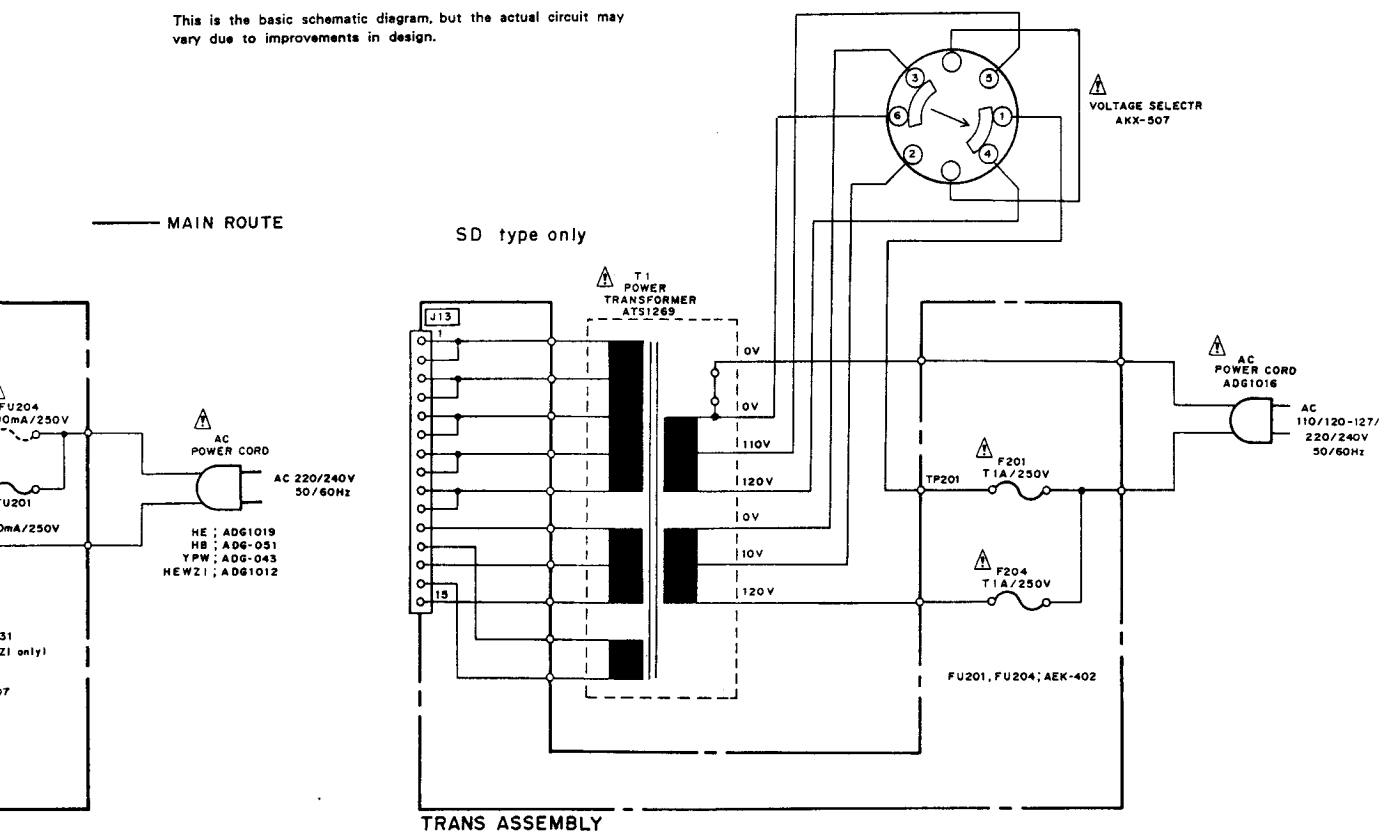






1. RESISTORS:
Indicated in Ω , $1/4W$, $1/8W$, $\pm 5\%$ tolerance unless otherwise noted k; k Ω , M; M Ω , (F); $\pm 1\%$, (G); $\pm 2\%$, (K); $\pm 10\%$, (M); $\pm 20\%$ tolerance.
2. CAPACITORS:
Indicated in capacity (μF) / voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE CURRENT:
□: DC voltage (V) at no input signal.
Value in () is DC voltage at rated power.
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.

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



6.3 SCHEMATIC DIAGRAM OF TX.SOUND CTRL ASSEMBLY (1/2)

1. RESISTORS:
Indicated in Ω , 1/4W, 1/8W, $\pm 5\%$ 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 (μ F) /voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT:
□: DC voltage (V) at no input signal.
Value in () is DC voltage at rated power.

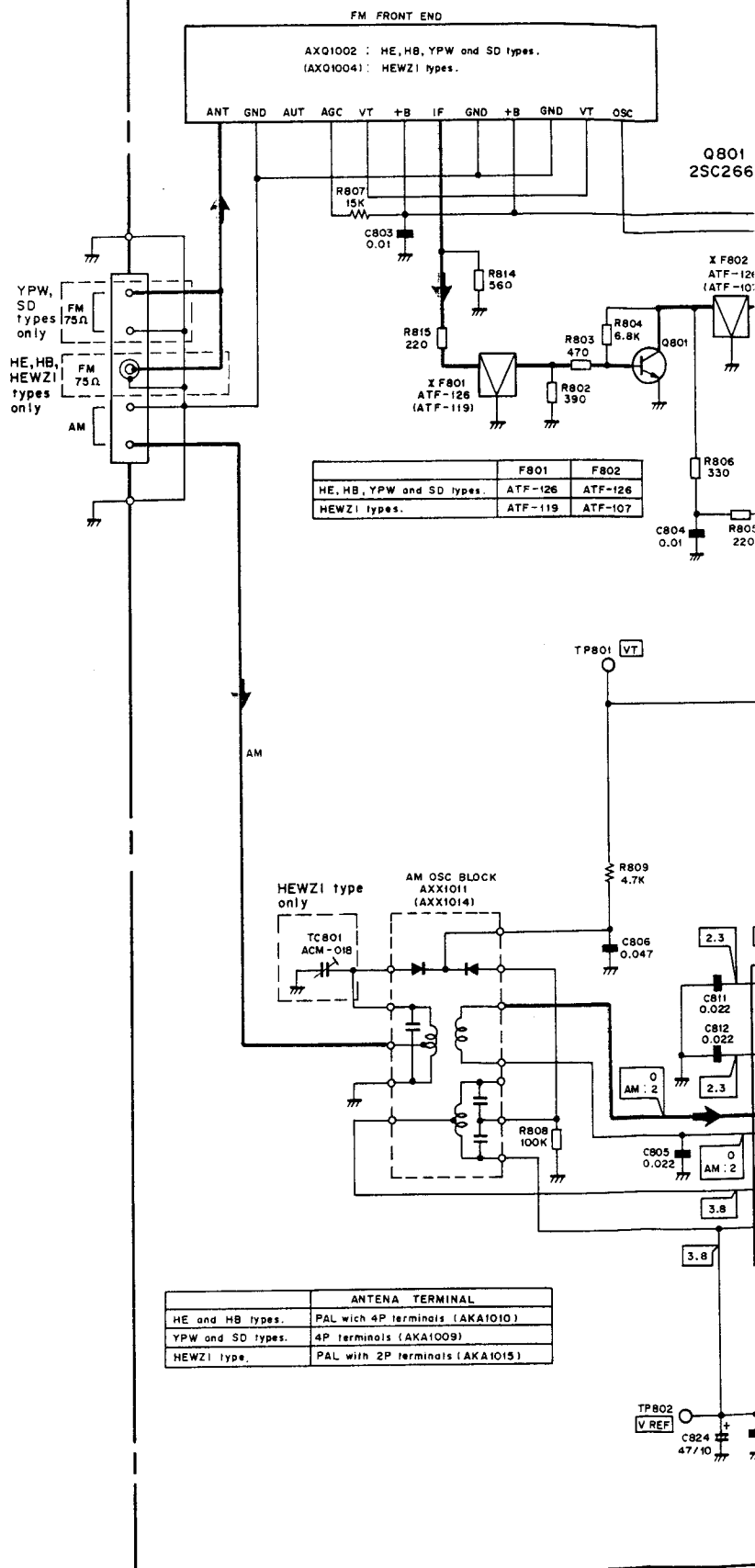
4. OTHERS
→: Signal route.
⊙: Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
*marked capacitors and resistors have parts numbers.

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

5. CHIP PARTS

- Indicates a chip resistor.
- Indicates a chip capacitor.
- Indicates a chip transistor.
- Indicates a chip diode.
- Indicates a chip inductor.
- Diode

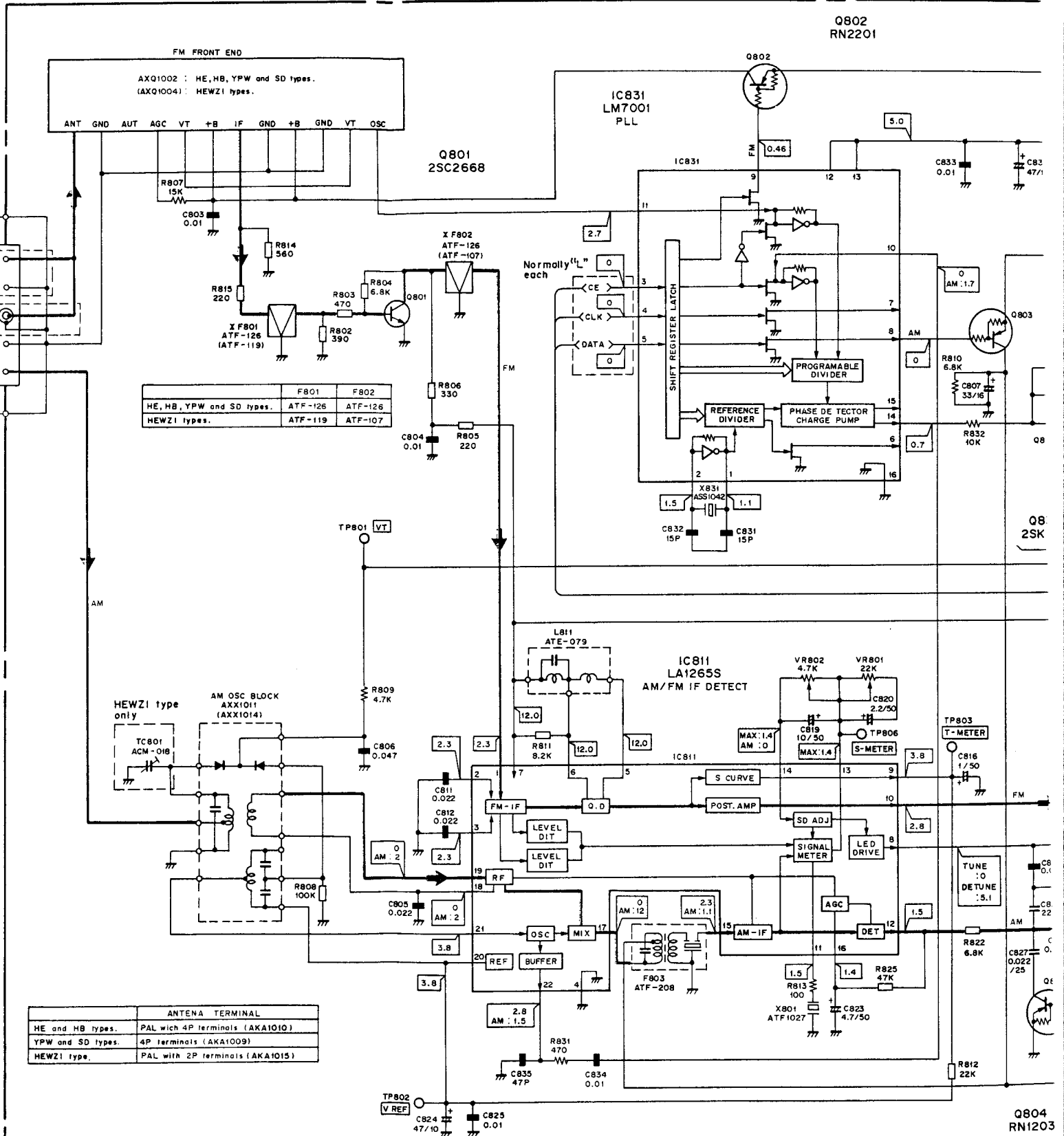
TX. SOUND CONTROL (1/2) ASSEMBLY (AWM1248; HE, HB type)
(AWM1259; YPW type)
(AWM1255; SD type)
(AWM1256; HEWZI typ



ASSEMBLY (1/2)

(AWM1248; HE, HB type)
 (AWM1259; YPW type)
 (AWM1255; SD type)
 (AWM1256; HEWZI type)

TX. SOUND CONTROL (1/2) ASSEMBLY

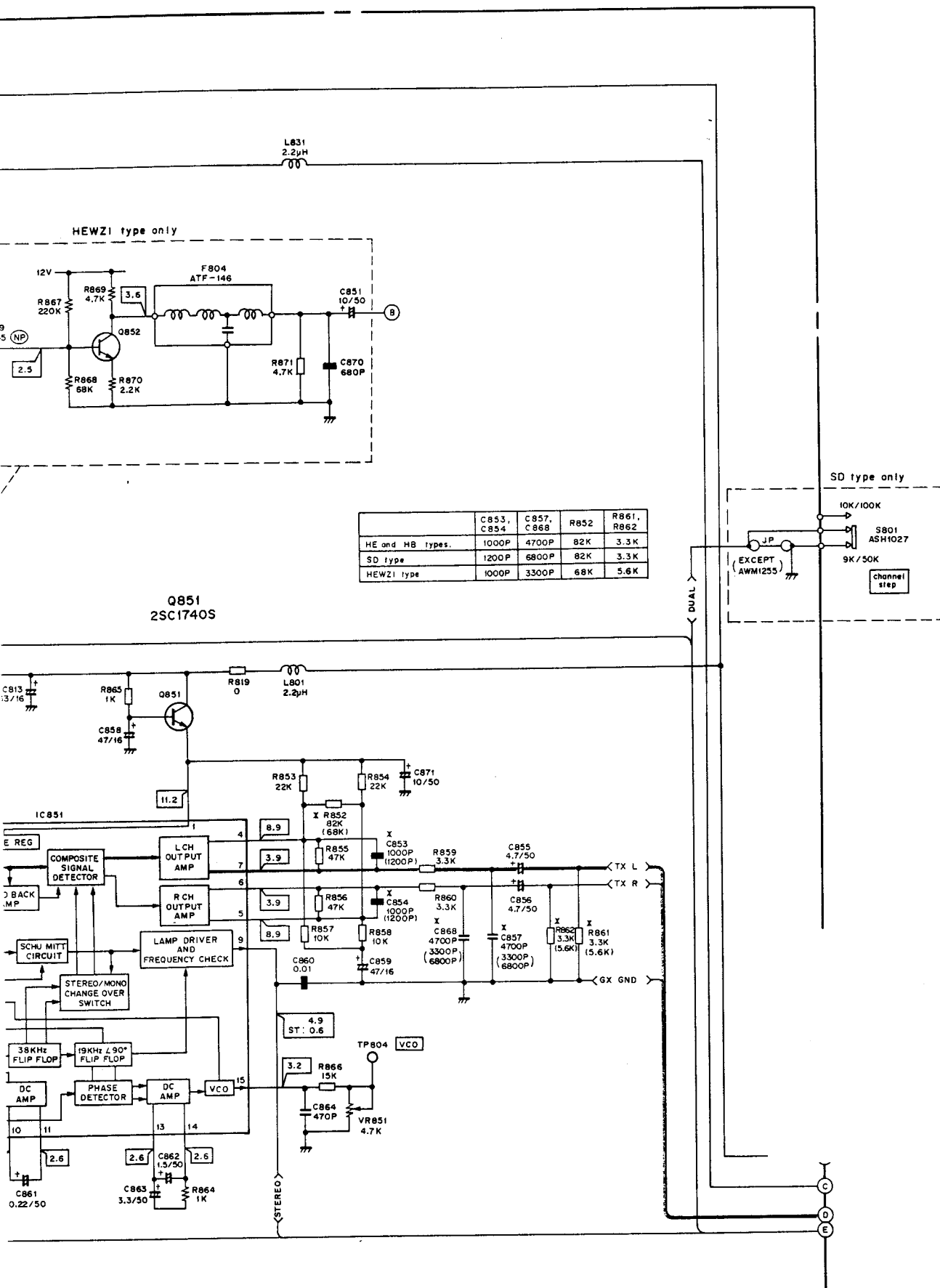


A

B

C

D



6.4 SCHEMATIC DIAGRAM OF TX.SOUND CTRL ASSEMBLY (2/2)

(AWM1248; HE, HB type)

(AWM1259; YPW type)

(AWM1255; SD type)

TX. SOUND CONTROL (2/2) ASSEMBLY (AWM1256; HEWZI type)

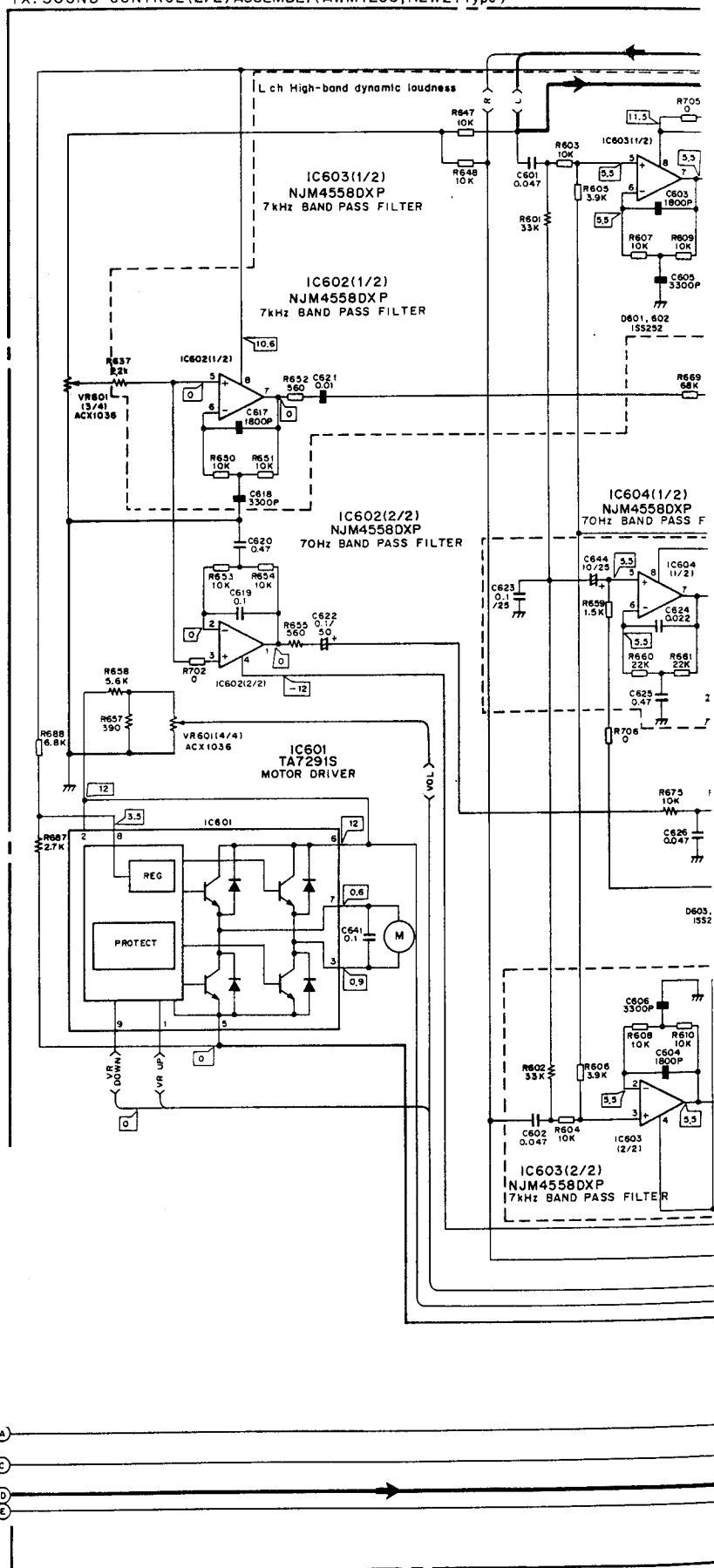


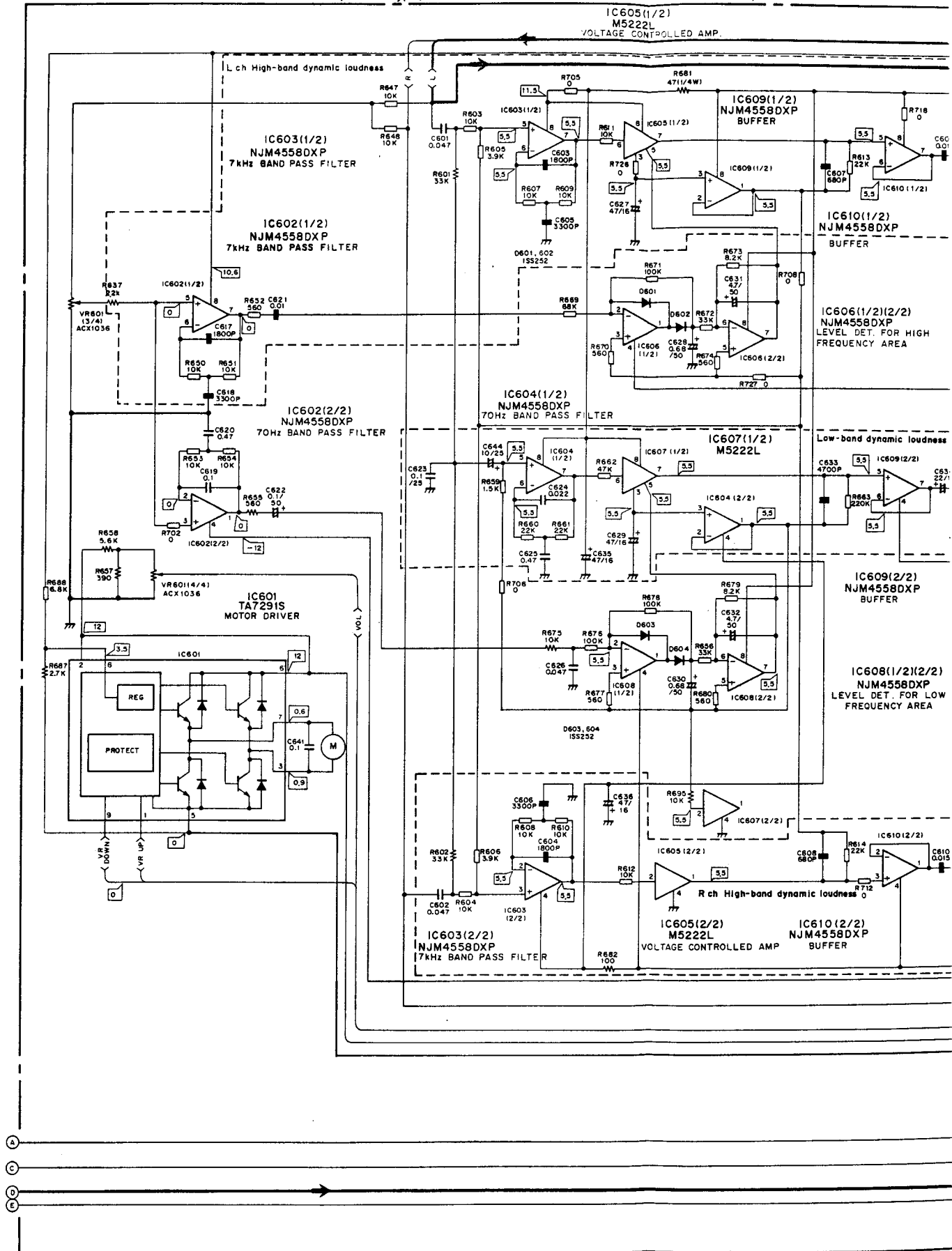
DIAGRAM OF TX.SOUND CTRL ASSEMBLY (2/2)

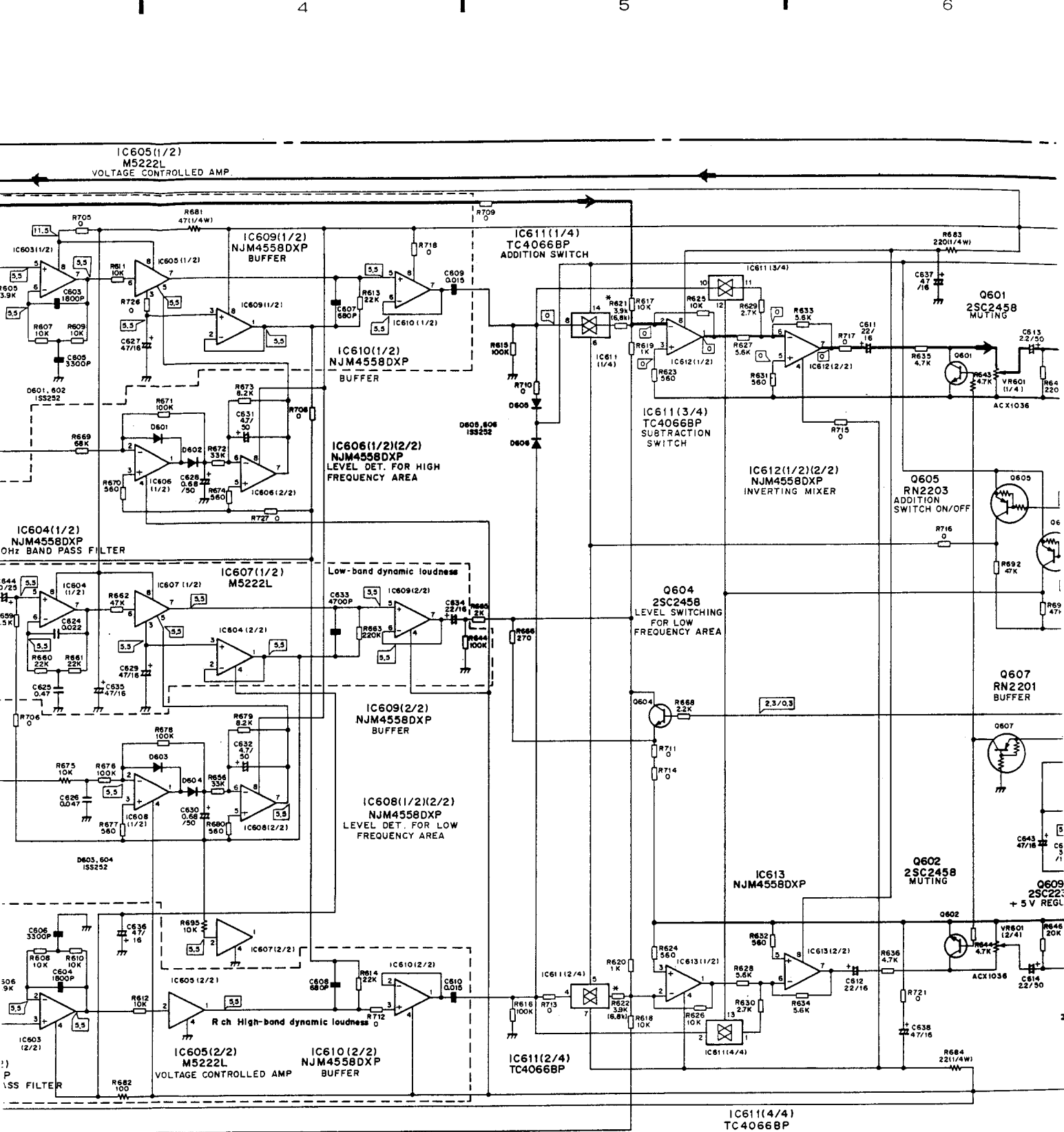
(AWM1248; HE, HB type)

(AWM1259; YPW type)

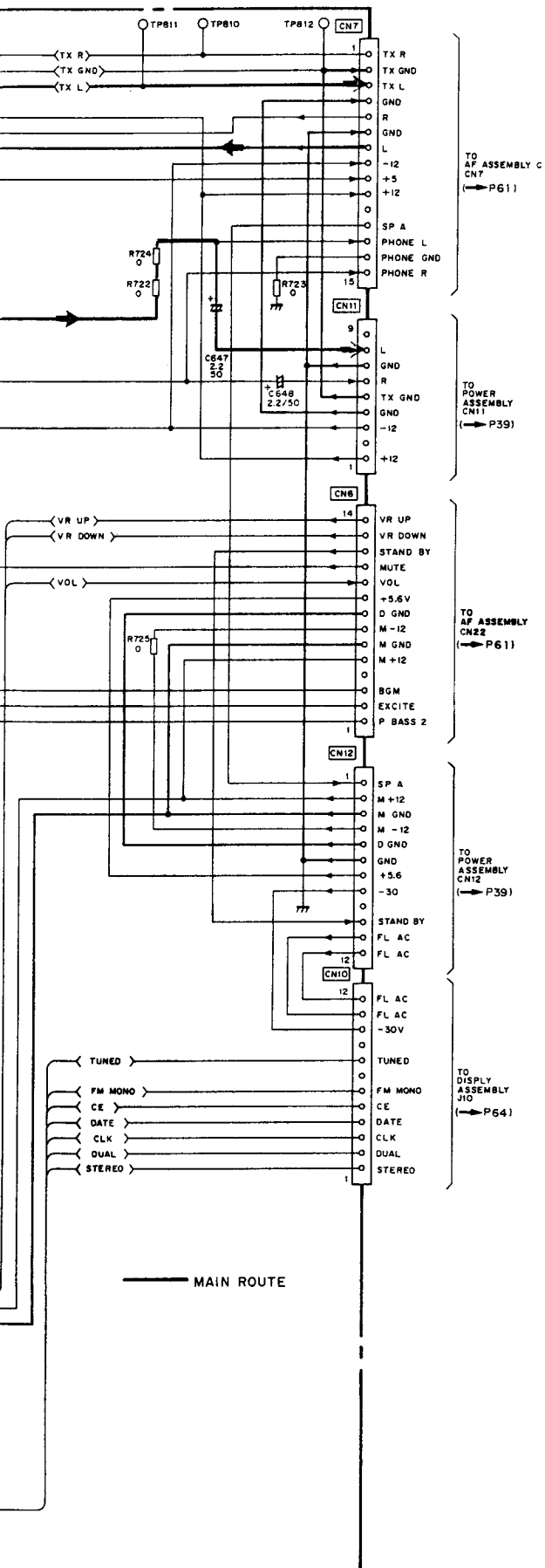
(AWM1255; SD type)

TX. SOUND CONTROL (2/2) ASSEMBLY (AWM1256; HEWZ1 type)





	R621
HE, HS, YPW and HEWZ1 types	5.9k
SD type	6.8k



A

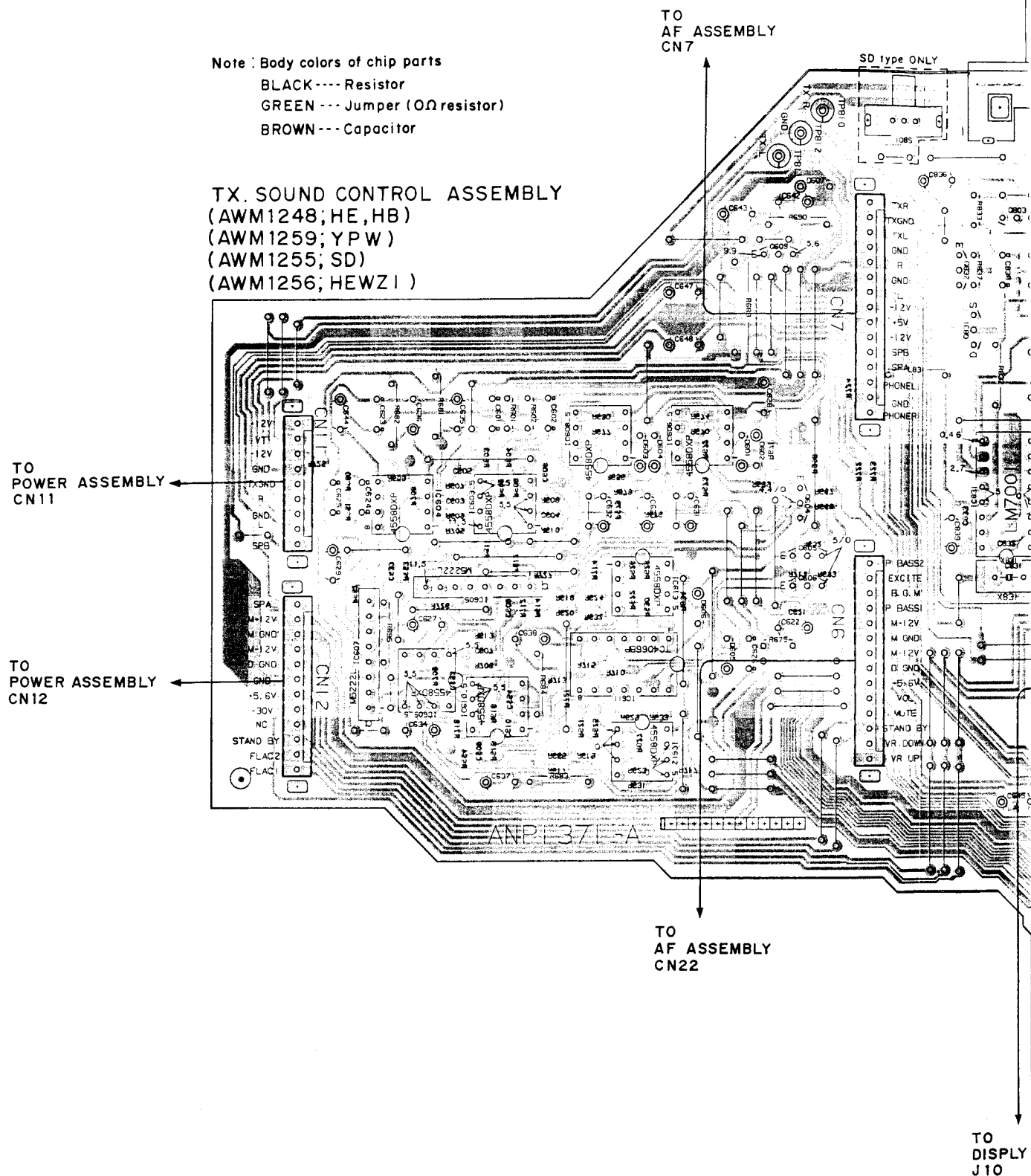
B

C

D

6.5 P.C. BOARD PATTERN OF TX.SOUND CTRL ASSEMBLY

- View from component side



TO
F ASSEMBLY
N7

TO
F ASSEMBLY
N22

TO
DISPLY ASSEMBLY
J10

FM 75Ω

AM LOOP

SD type ONLY

FM FRONT END

VR802

VR801

VR851

VR601

Q803

Q601

Q832

Q609

Q831

Q1

IC608 IC606

Q603

IC

IC604 IC603

Q604

Q8

Q605

Q606

IC605 IC613

IC607 IC611

IC609 IC610

IC612

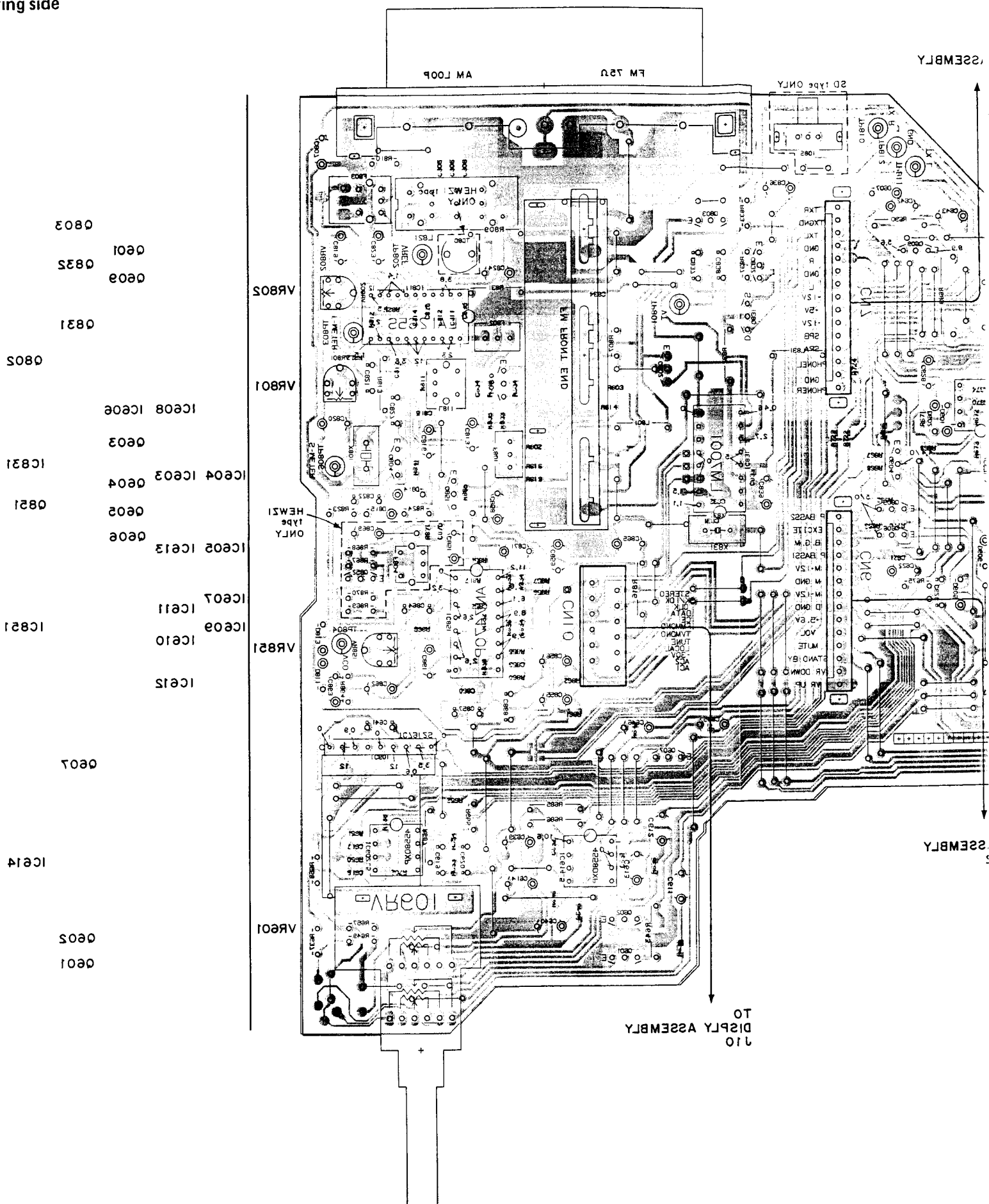
IC

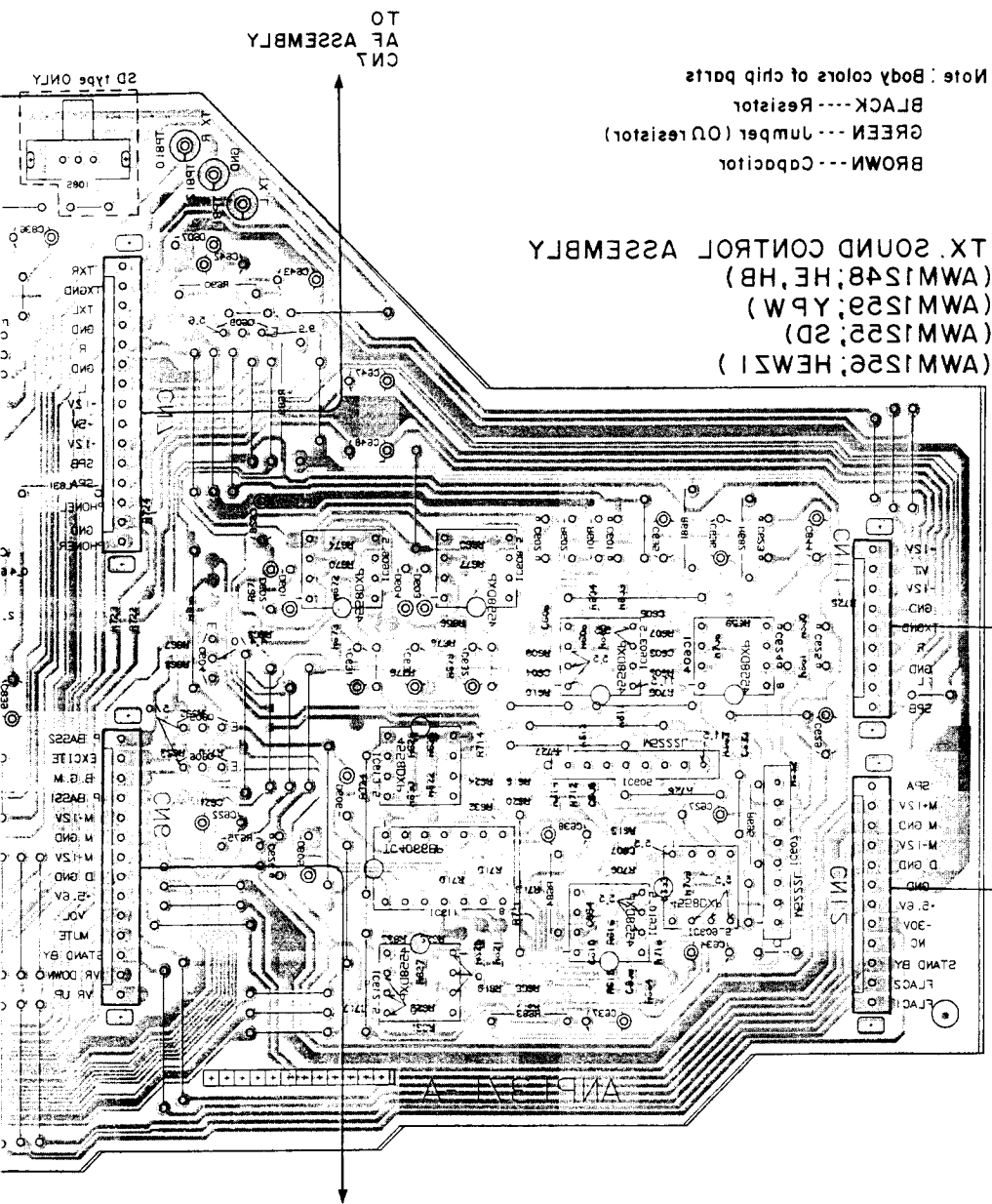
Q607

IC

Q602

Q601





TX SOUND CONTROL ASSEMBLY
 (AWM1556; HEW1)
 (AWM1555; 2D)
 (AWM1559; YPW)
 (AWM1548; HE, HB)

Note: Body colors of chip parts
 BROWN --- Capacitor
 GREEN --- Number (OU resistor)
 BLACK --- Resistor

TO
 AF ASSEMBLY
 CN2

TO
 POWER ASSEMBLY
 CN11

TO
 POWER ASSEMBLY
 CN12

TO
 AF ASSEMBLY
 CN1

A

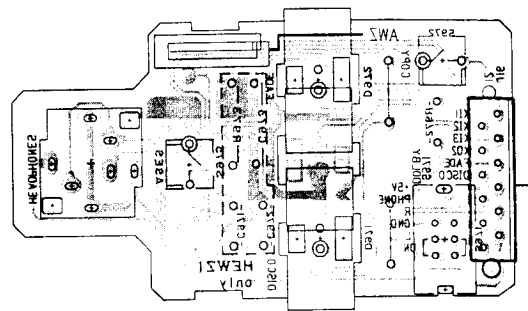
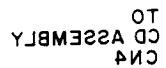


C

D

↑↑

01



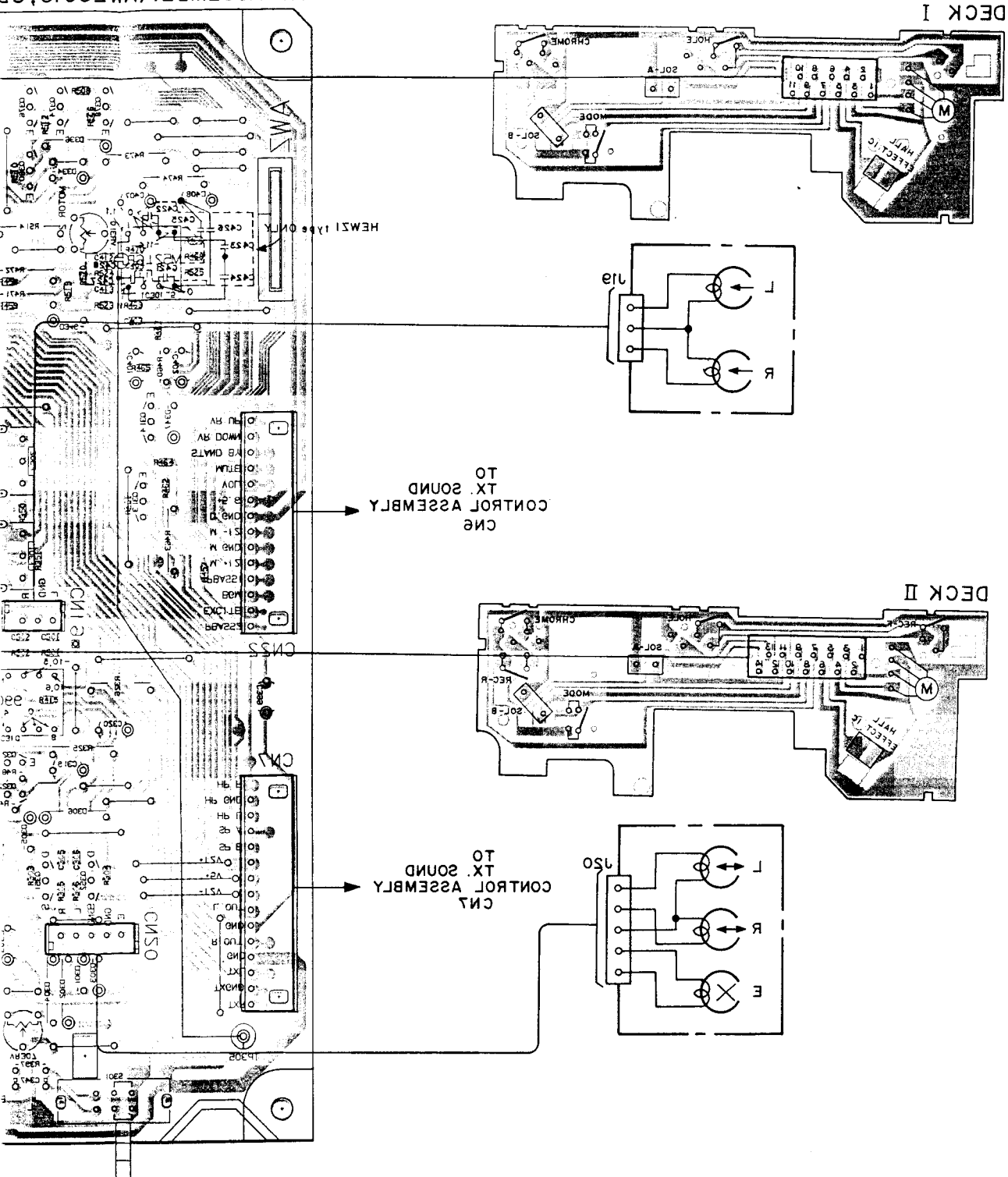
DECK SW ASSEMBLY

Note: Body colors of chip parts
BLACK ---- Resistor
GREEN ---- Number (0 Ω resistor)
BROWN --- Capacitor

4 2 a

- **View from soldering side**

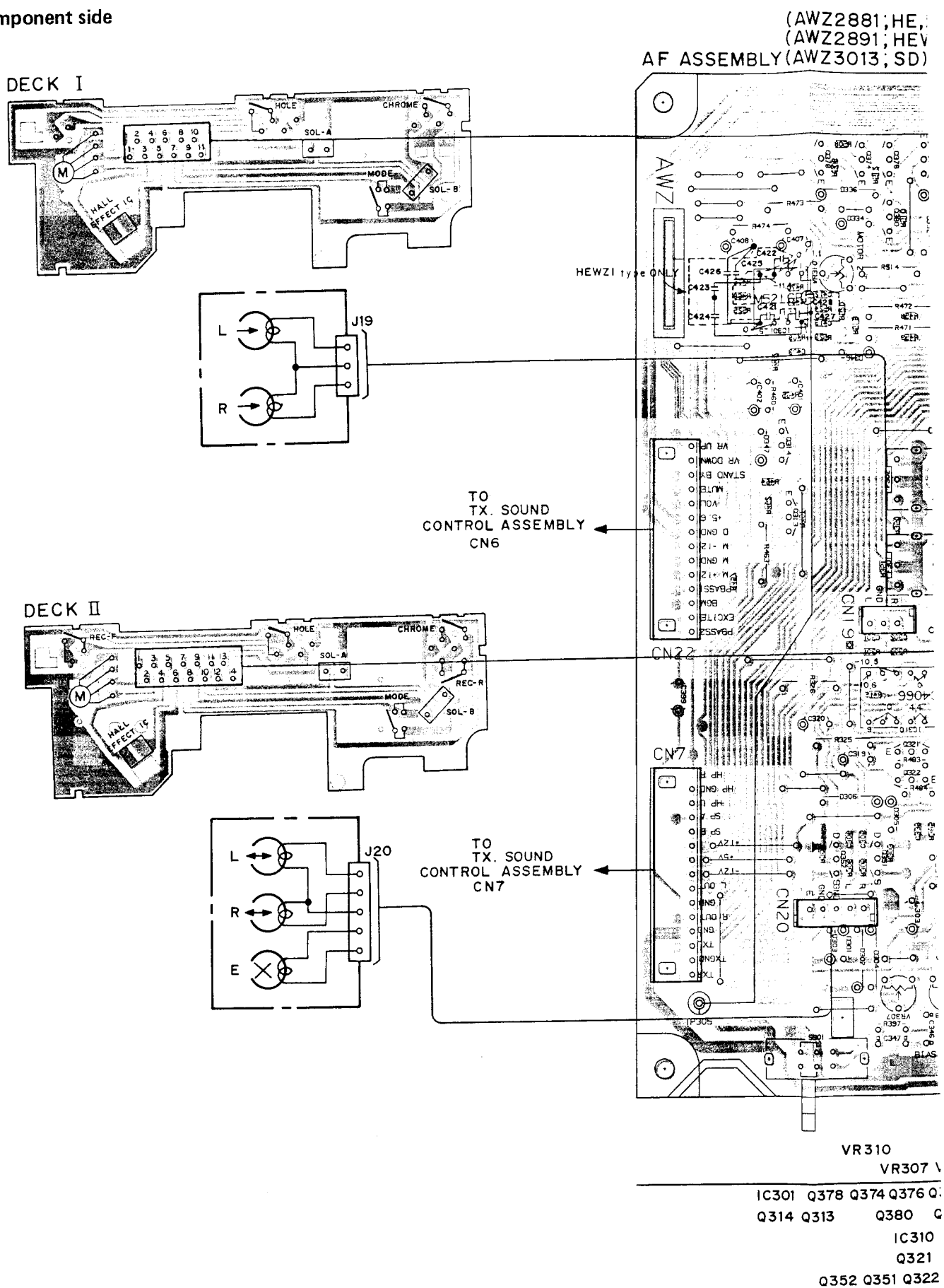
AF ASSEMBLY(AWZ3013;2D
(AWZ891;HE
(AWZ881;HE



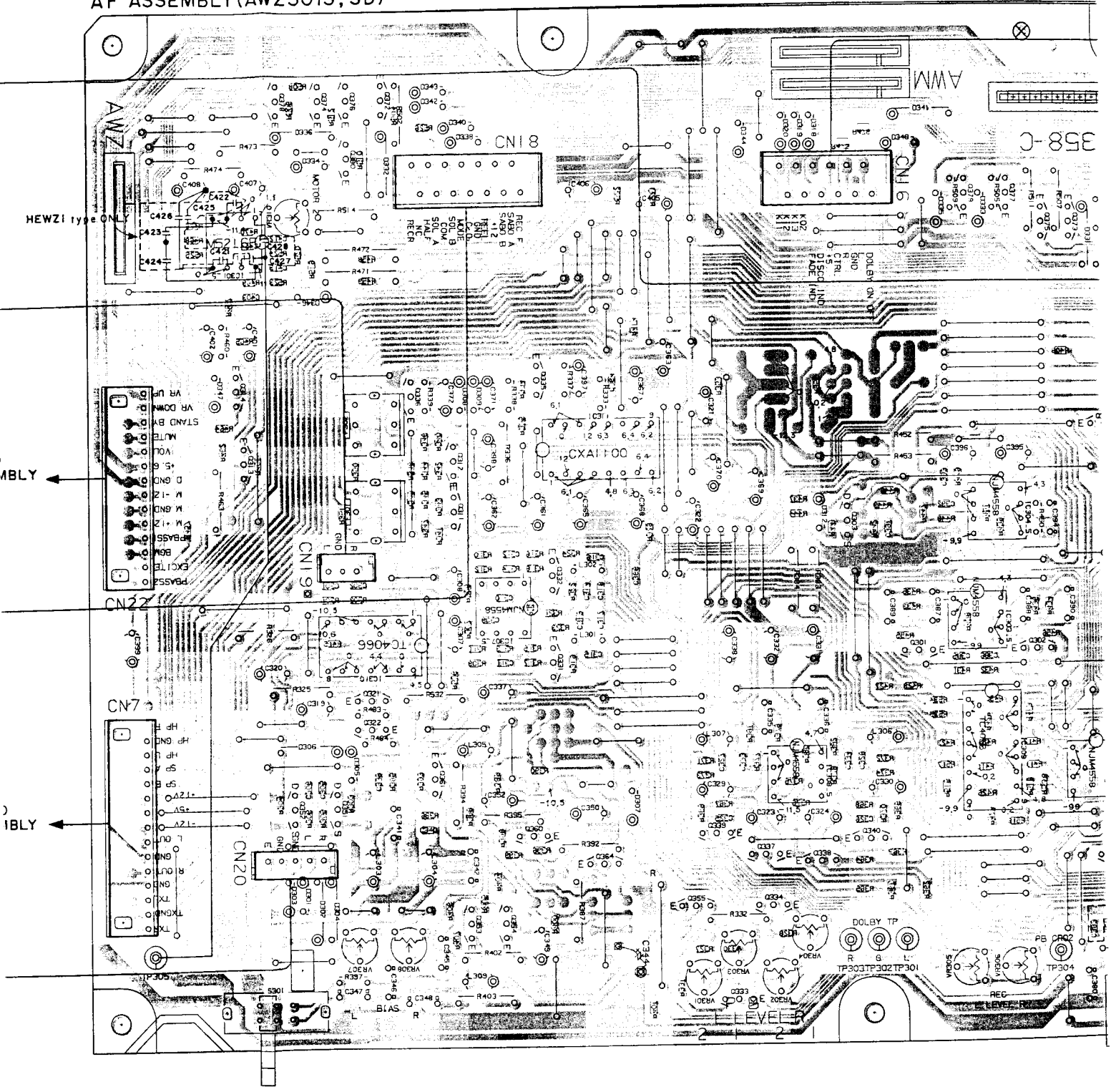
0137V
037V
1707370 870 10301
0800 3100 4100
1001
1300
10 1200 0200

6.6 P.C. BOARD PATTERN OF AF ASSEMBLY

- View from component side



(AWZ2881; HE, HB and YPW)
(AWZ2891; HEWZ1)
AF ASSEMBLY (AWZ3013; SD)



MBLY

IBLY

VR310
VR307 VR308

VR303 VR304
VR301 VR302

VR305 VR306

IC301 Q378 Q374 Q376 Q372
Q314 Q313 Q380 Q336 Q312 Q335 Q322 IC311
IC310 IC307 Q331
Q321
Q352 Q351 Q322 Q361
Q353 Q354

Q360 Q364

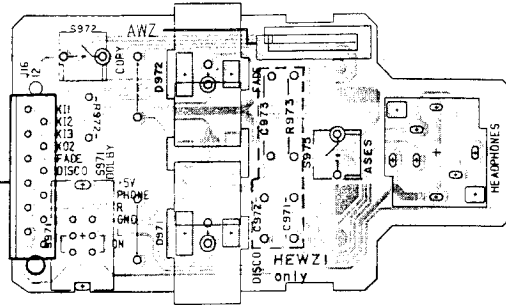
Q339 Q337 Q338 Q340
Q355 Q333 Q334

Q303

Q301

Q379 Q377 Q375 Q372
IC304
IC303 Q302
IC309
IC30

DECK SW ASSEMBLY

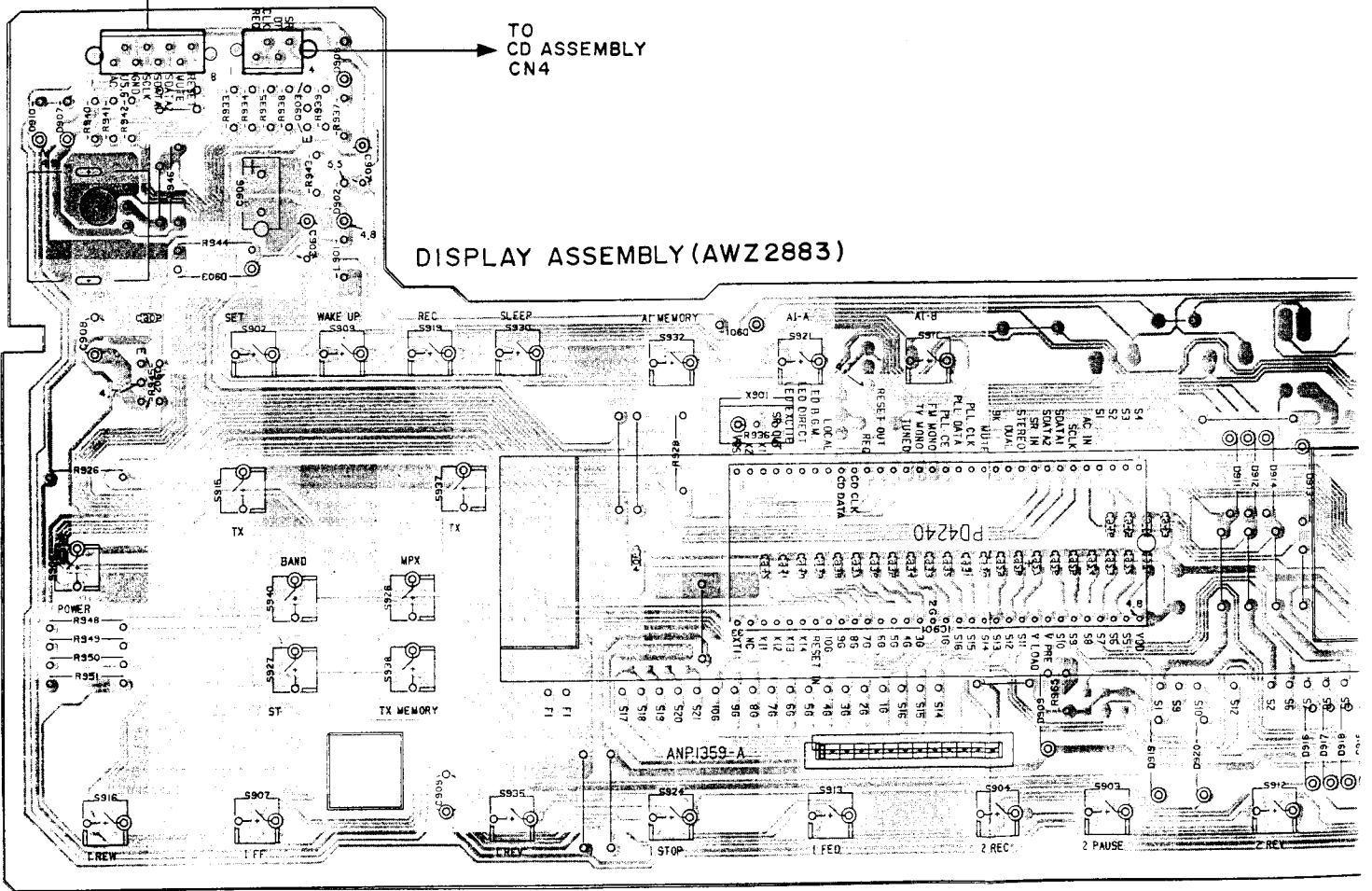


Note: Body colors of chip parts
 BLACK ---- Resistor
 GREEN ---- Jumper (0Ω re
 BROWN --- Capacitor

TO
 CD ASSEMBLY
 CN5

TO
 CD ASSEMBLY
 CN4

DISPLAY ASSEMBLY (AWZ2883)



Q902

Q903

IC901

A

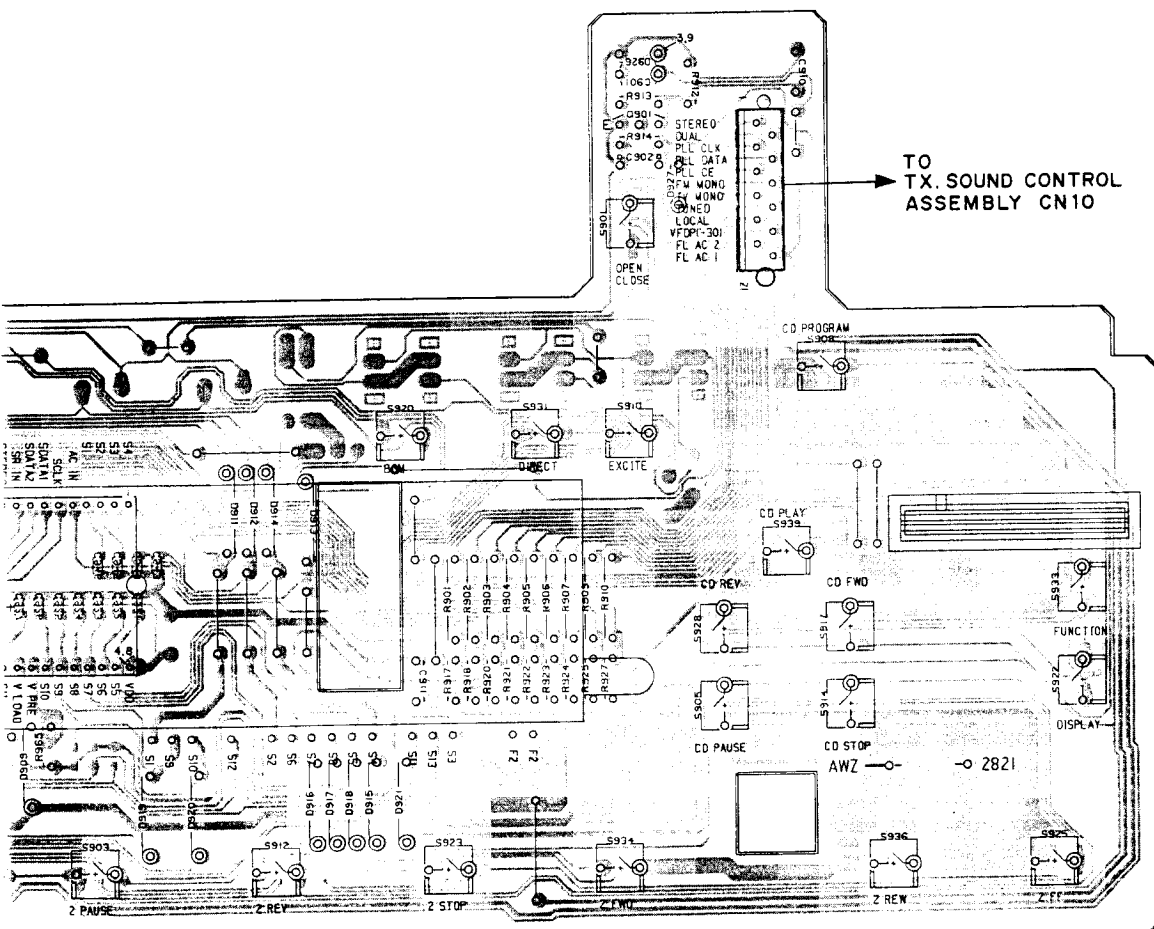
Note: Body colors of chip parts

BLACK---- Resistor

GREEN---- Jumper (0Ω resistor)

BROWN--- Capacitor

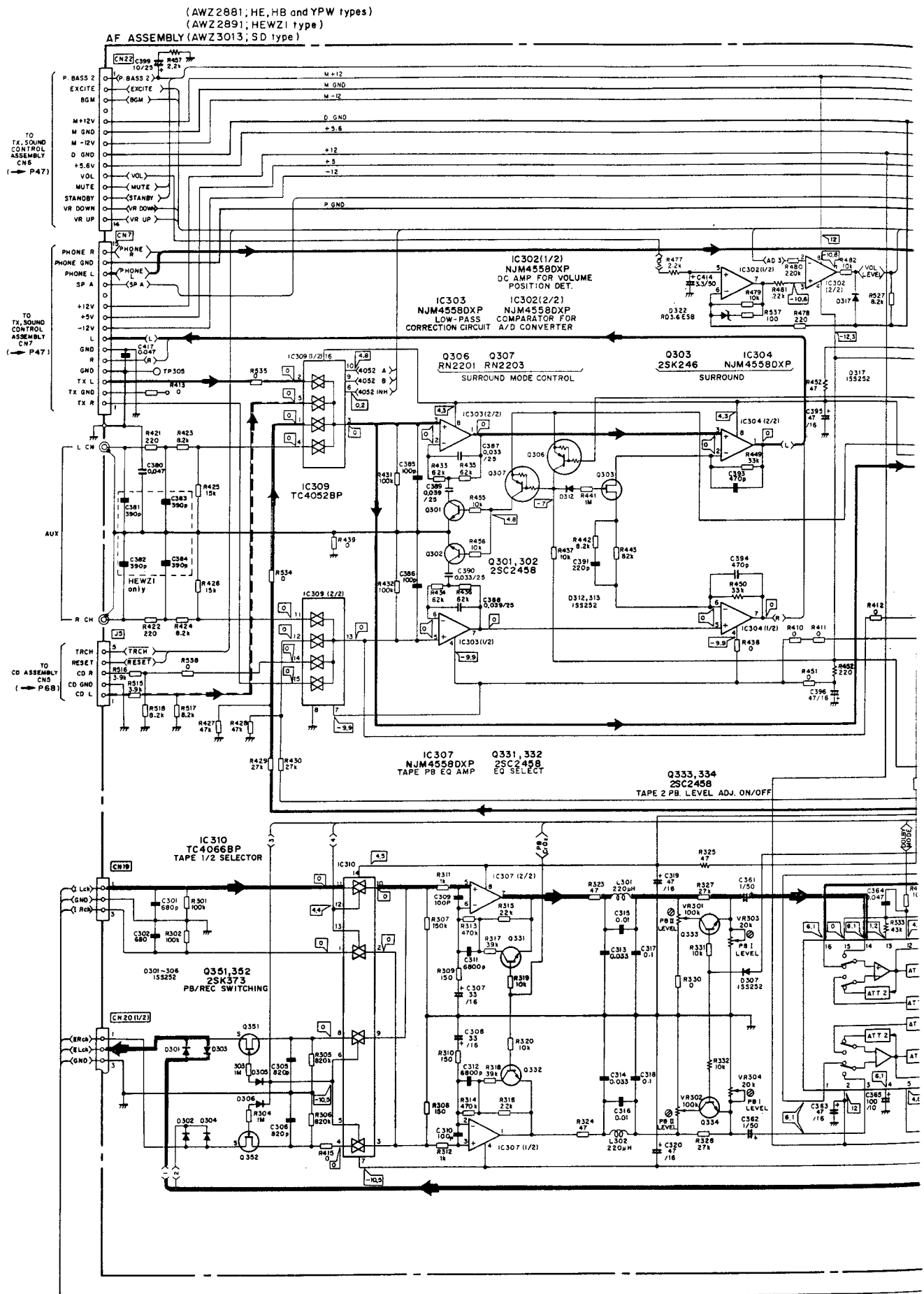
B

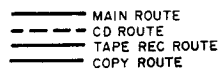


C

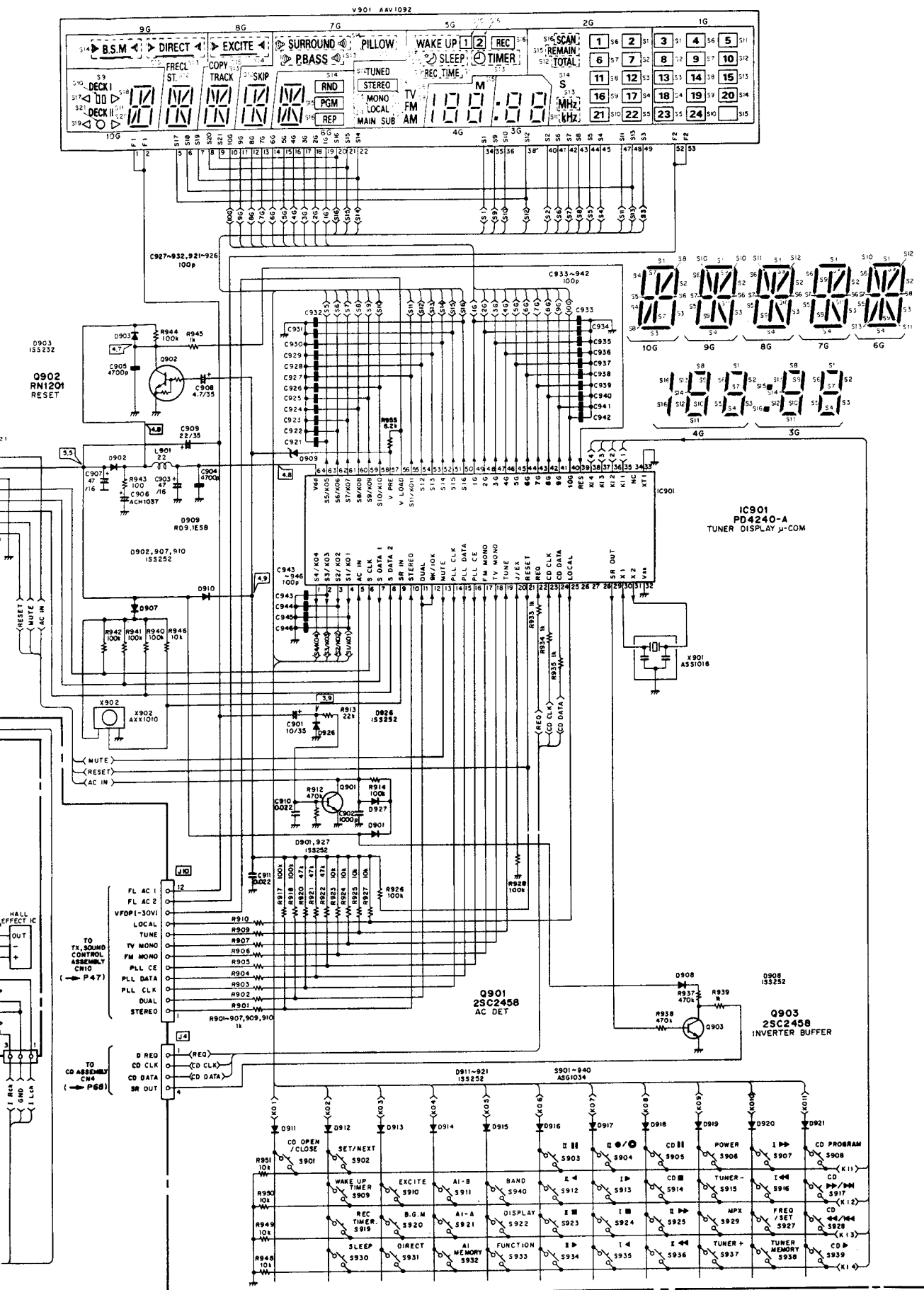
D

6.7 SCHEMATIC DIAGRAM OF AF ASSEMBLY







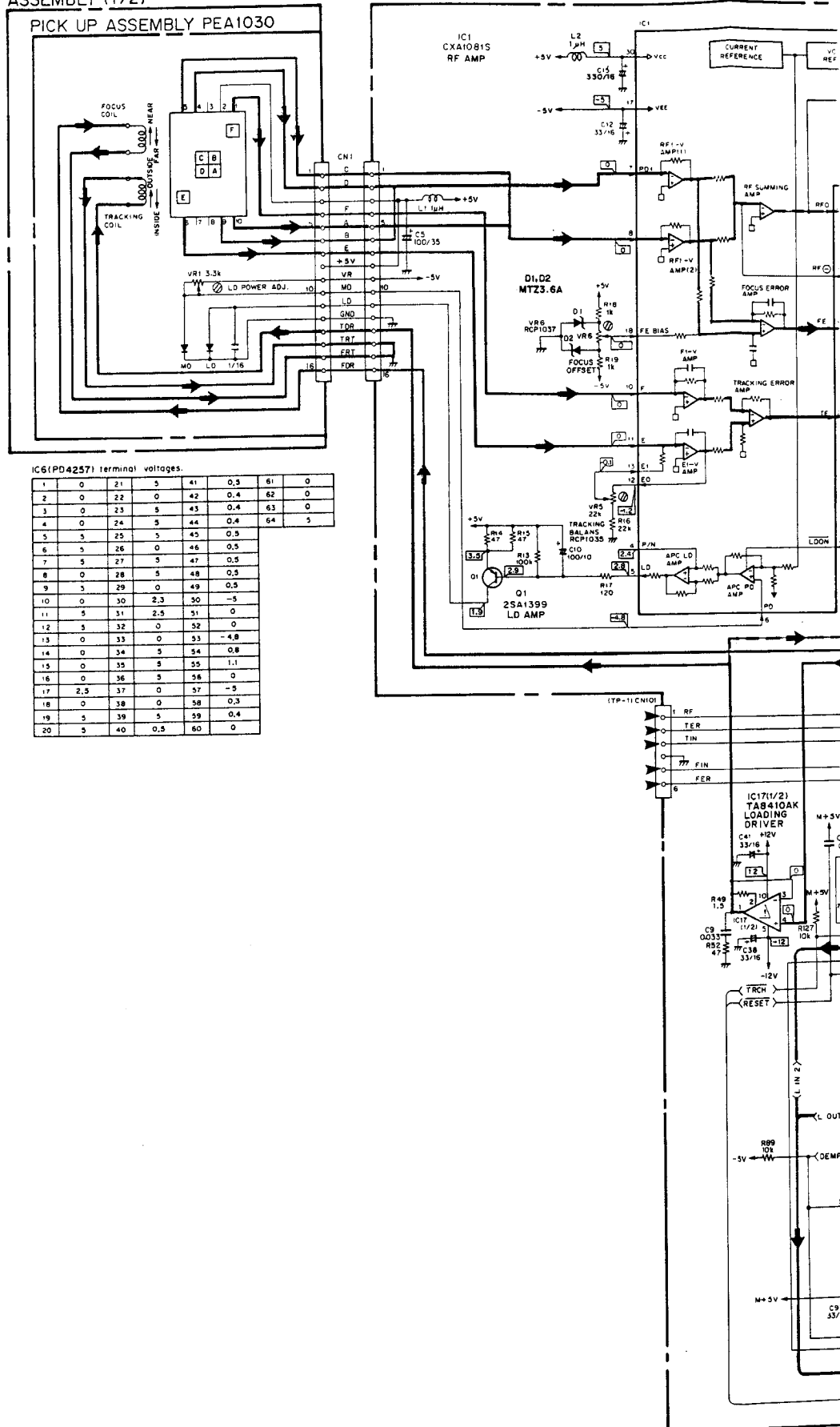


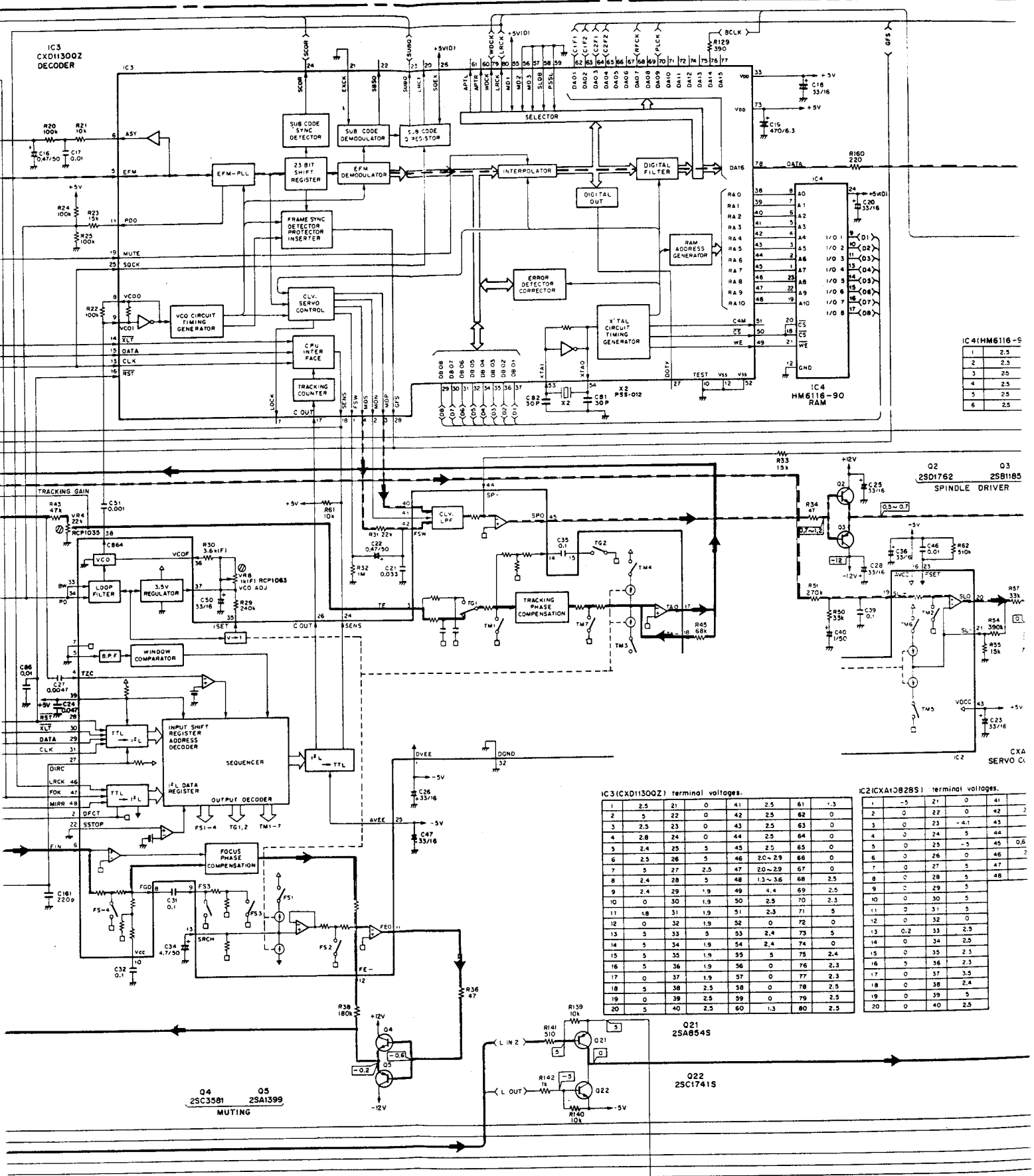
6.8 SCHEMATIC DIAGRAM OF CD ASSEMBLY

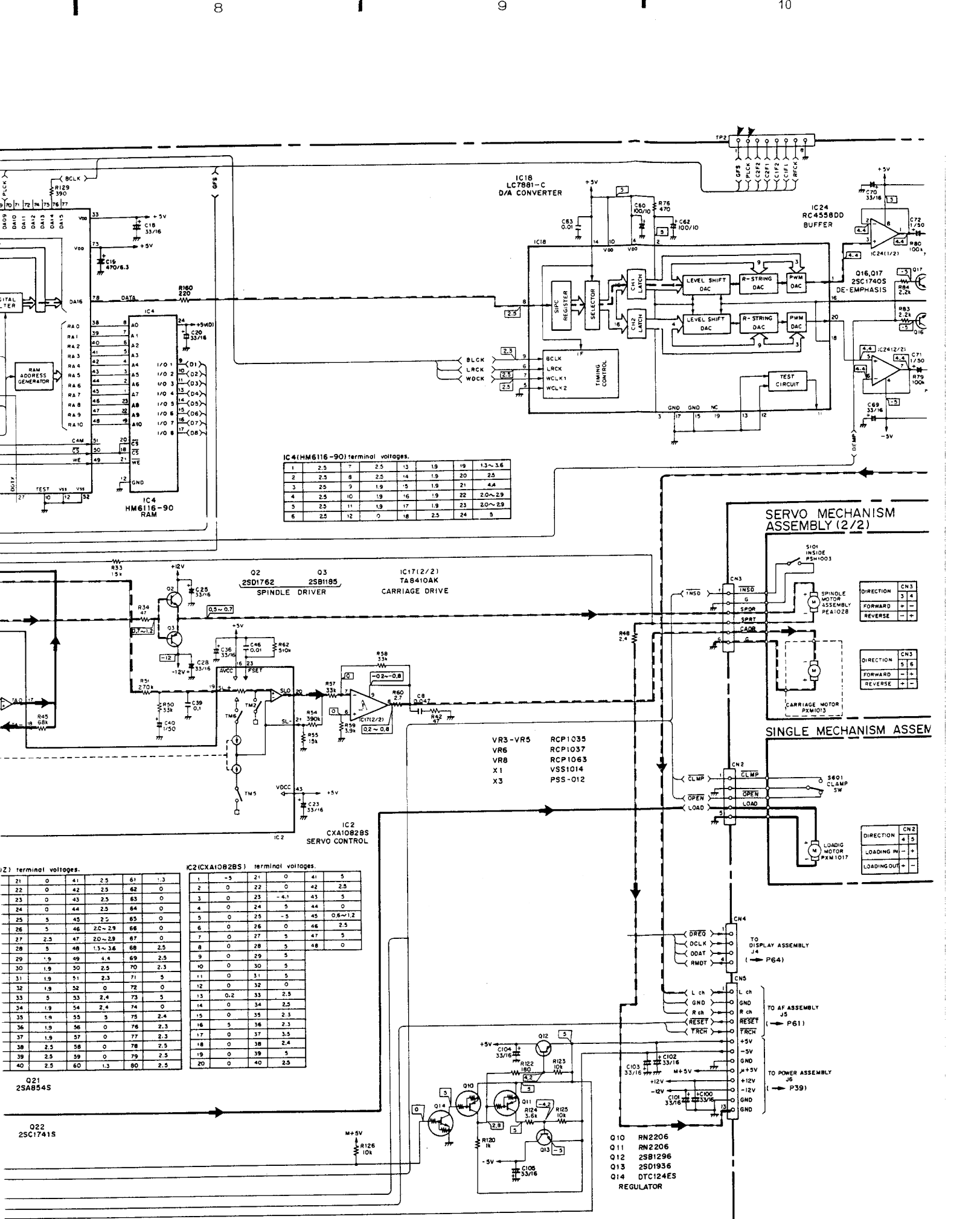
SERVO MECHANISM
ASSEMBLY (1/2)

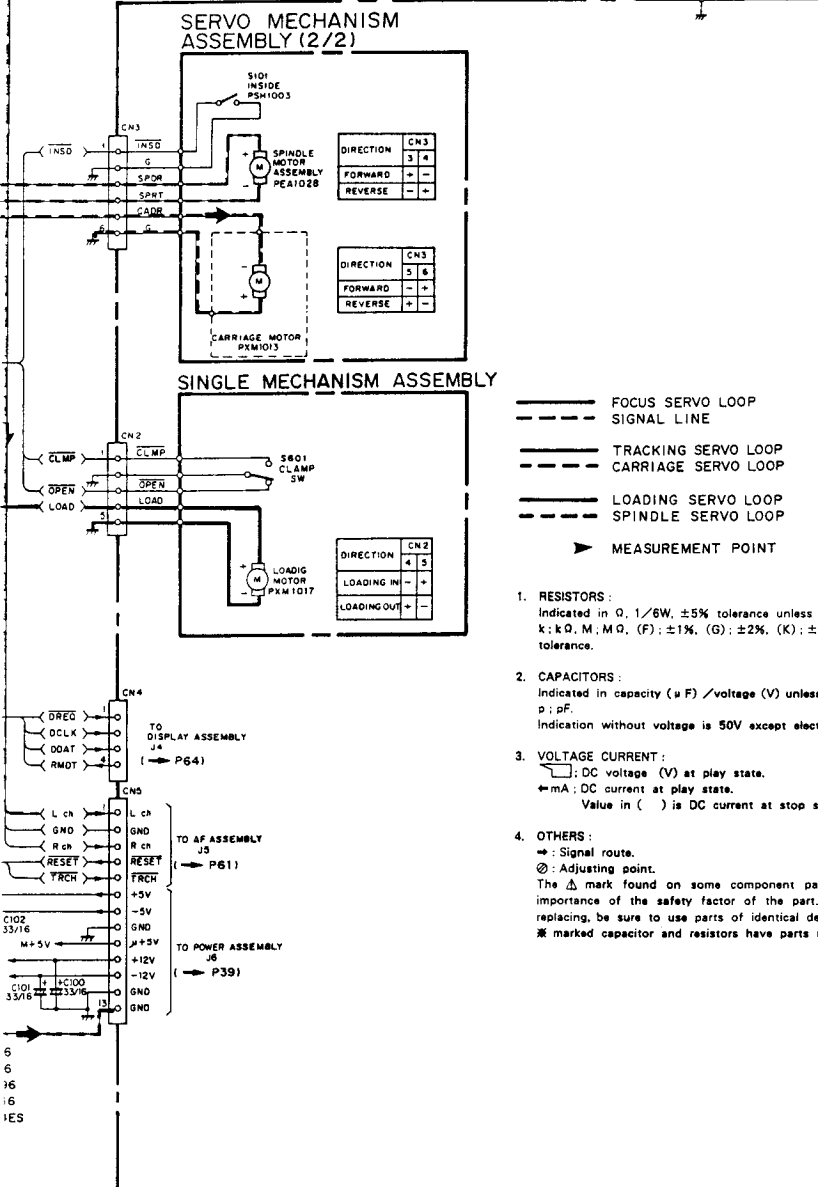
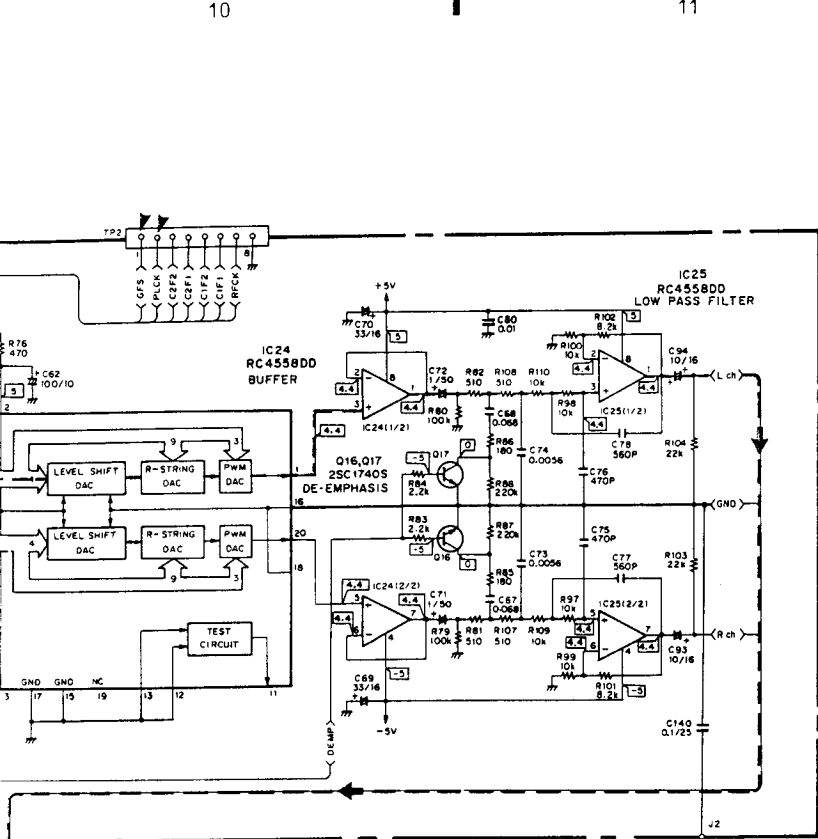
MAIN BOARD ASSEMBLY PWZ1940

PICK UP ASSEMBLY PEA1030







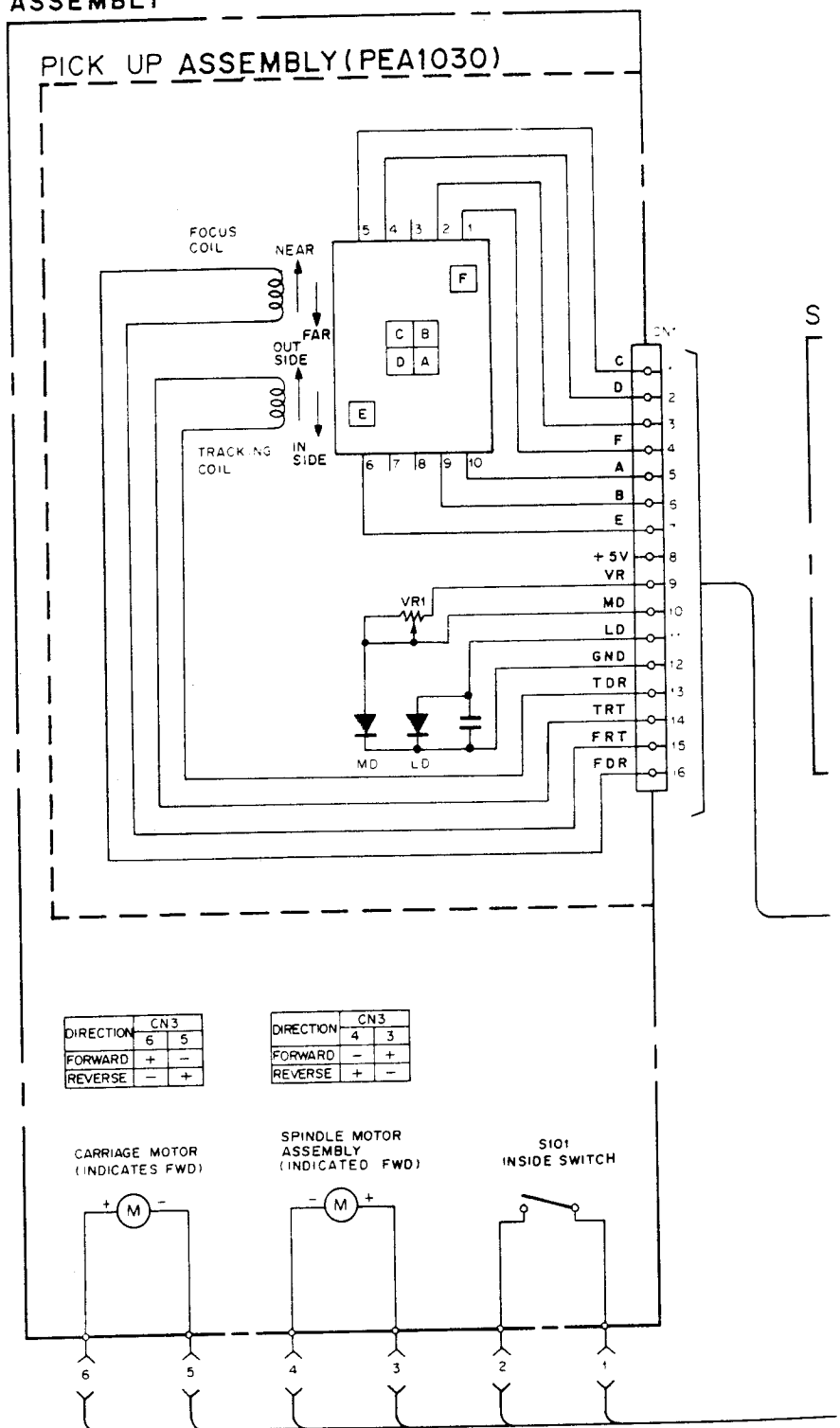


6.9 P.C. BOARD PATTERN OF CD ASSEMBLY

- View from component side

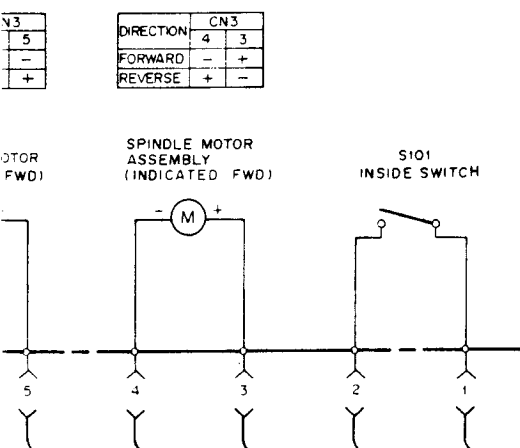
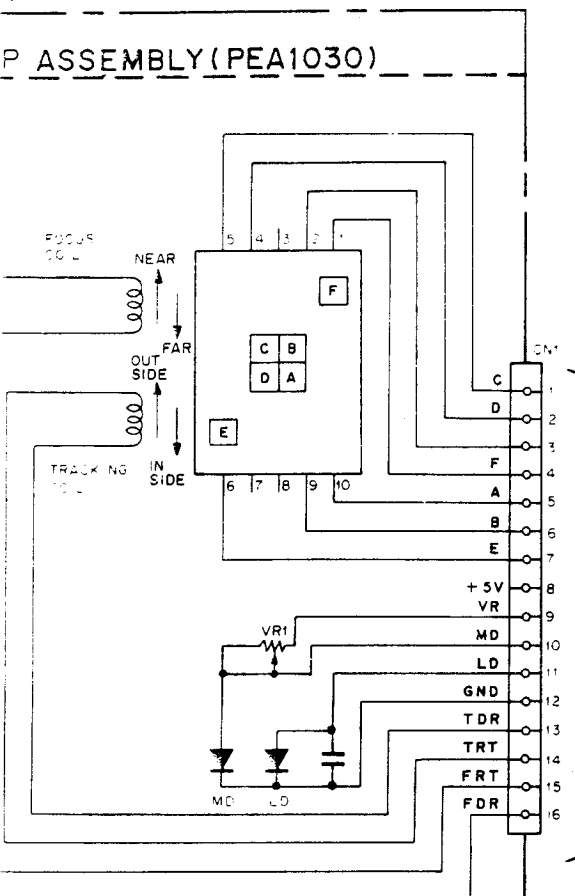
SERVO MECHANISM ASSEMBLY

PICK UP ASSEMBLY (PEA1030)

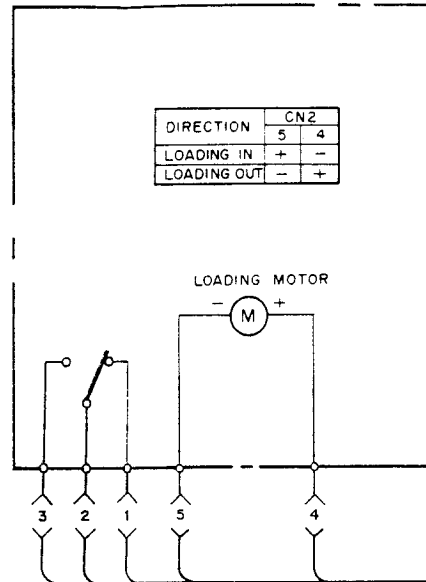


MECHANISM
Y

P ASSEMBLY (PEA1030)



SINGLE MECHANISM ASSEMBLY

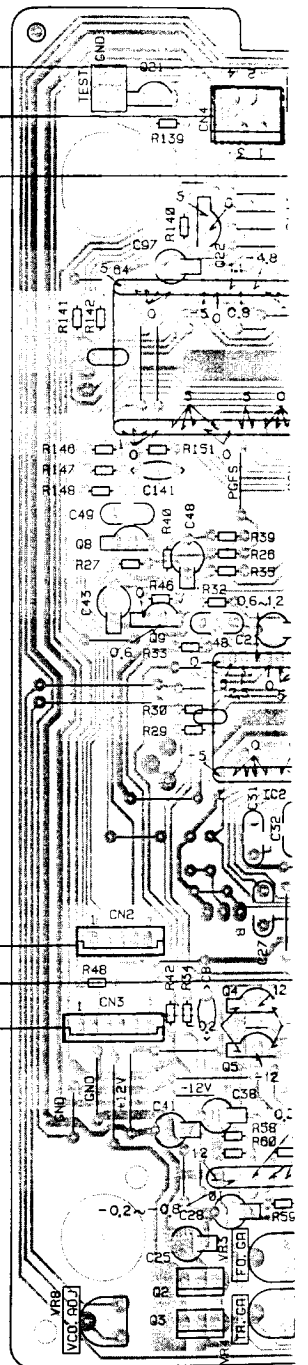


MAIN BOARD ASS

TO
POWER ASSEMBLY
J6

TO
DISPLAY ASSEMBLY
J4

TO
AF ASSEMBLY
J5



VR3
VR4

VR8

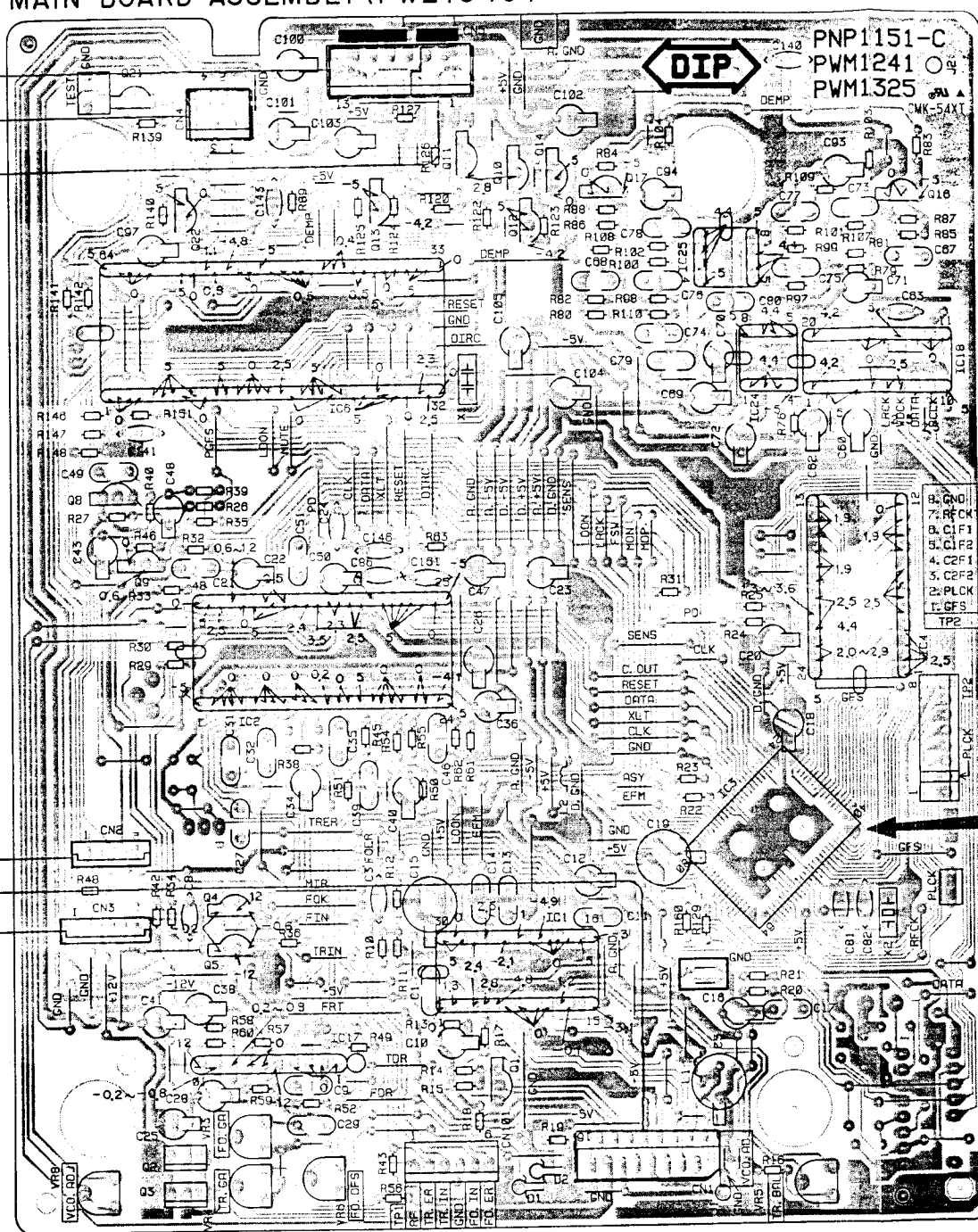
Q21 Q22

Q8 Q9

Q19 Q4

Q2 Q3

ASSEMBLY

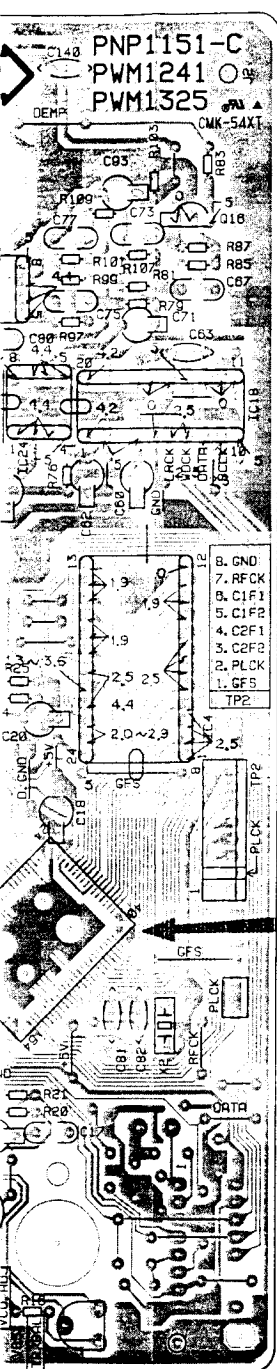


	VR3	
VR8	VR4	VR6

VR 5

Q21	Q22			IC31	IC30	Q17	IC25	Q16
			IC6	Q13	Q10 Q14		IC24	IC18
Q8	Q9		IC2		Q12			IC4
	Q19	Q4	Q5		IC1		IC3	
Q2	Q3	IC17			Q1			

IC 3 (CXD113) TERMINAL	
1	
2	
3	
4	
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10	
11	
12	
13	
14	
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43	
44	
45	
46	
47	2.
48	1.
49	
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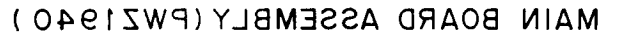


IC3 (CXD1130QZ)
TERMINAL VOLTAGE

1	2.5
2	5
3	2.5
4	2.8
5	2.4
6	2.5
7	5
8	2.4
9	0
10	1.8
11	0
12	5
13	0
14	0
15	0
16	5
17	0
18	5
19	0
20	5
21	0
22	0
23	0
24	0
25	5
26	2.5
27	5
28	5
29	1.9
30	1.9
31	5
32	1.9
33	5
34	1.9
35	1.9
36	1.9
37	1.9
38	1.9
39	1.9
40	1.9
41	1.9
42	1.9
43	1.9
44	1.9
45	1.9
46	1.9
47	1.9
48	1.9
49	1.9
50	1.9
51	1.9
52	1.9
53	1.9
54	1.9
55	1.9
56	1.9
57	1.9
58	1.9
59	1.9
60	1.9
61	1.9
62	1.9
63	1.9
64	1.9
65	1.9
66	1.9
67	1.9
68	1.9
69	1.9
70	1.9
71	1.9
72	1.9
73	1.9
74	1.9
75	1.9
76	1.9
77	1.9
78	1.9
79	1.9
80	1.9

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

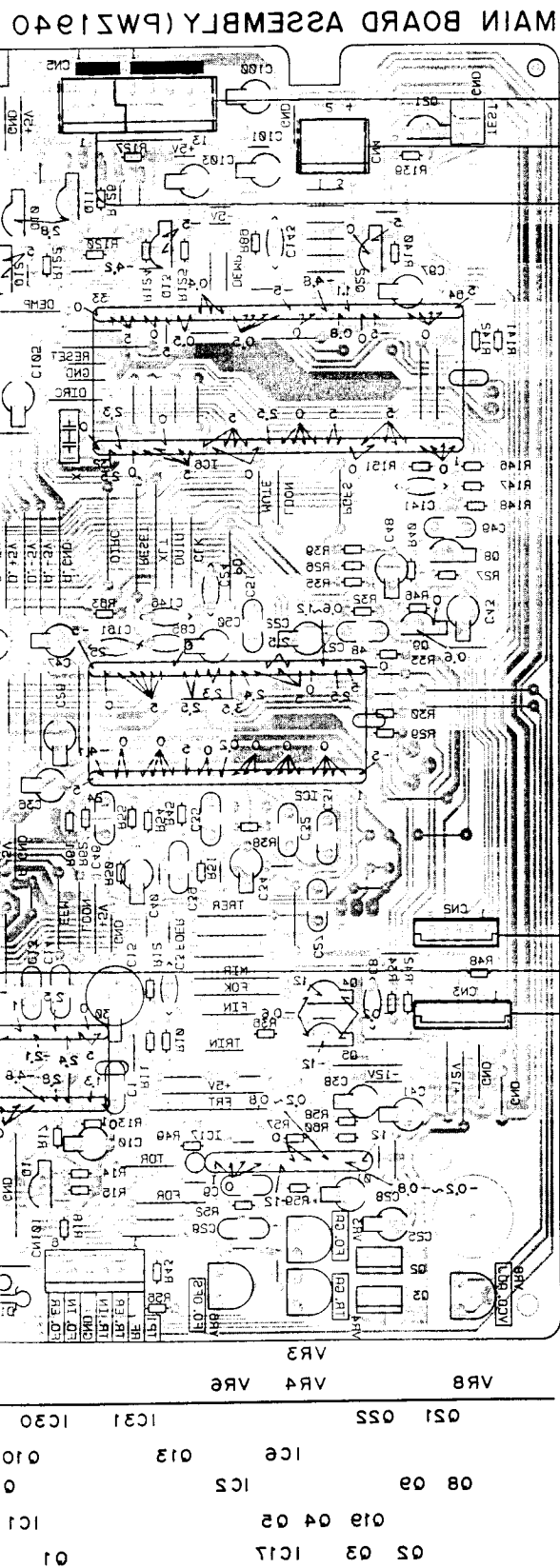
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked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



VR 5

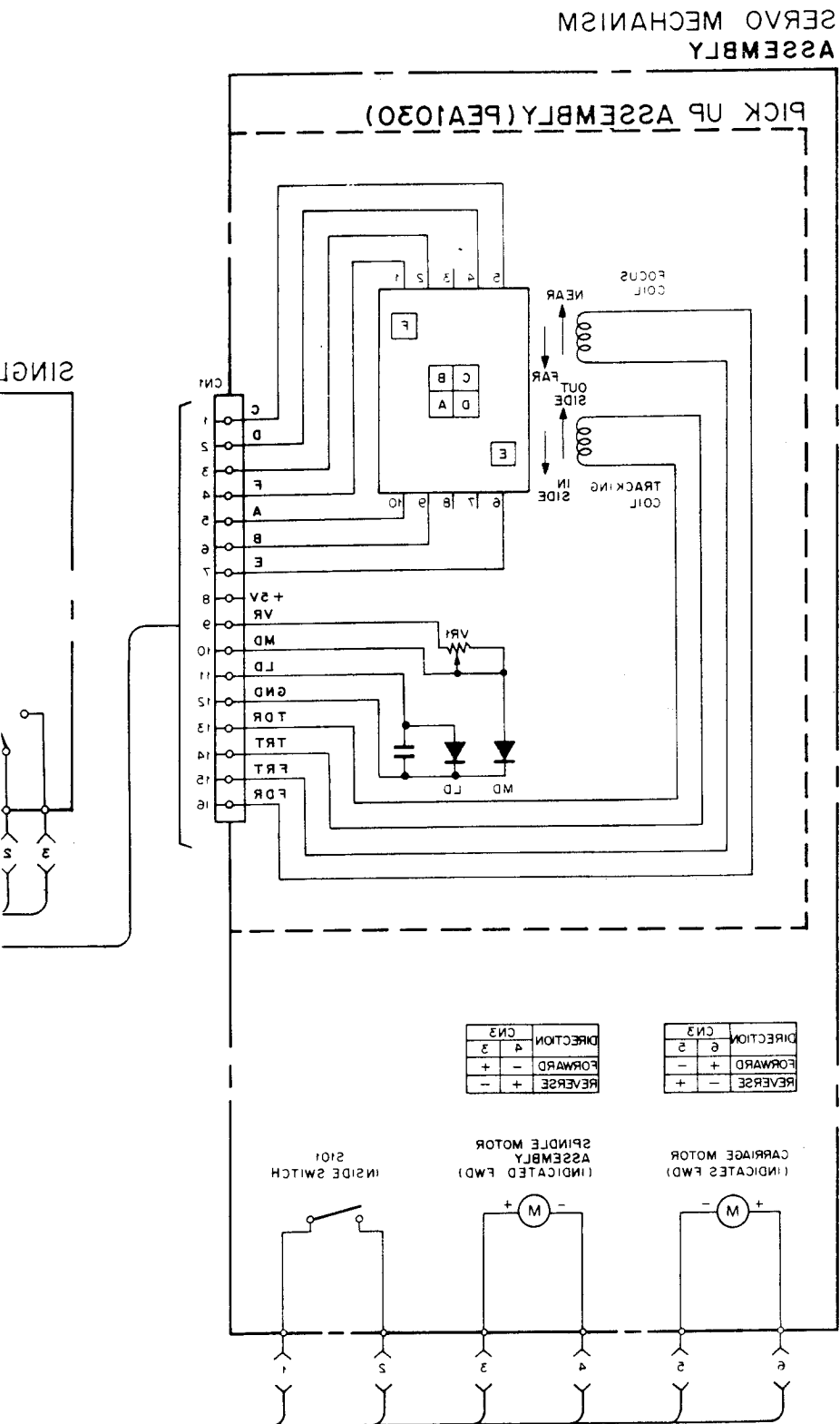
TERMINAL VOLTAGE IC3 (CXD1130Q2)

7



6.9 P.C. BOARD PATTERN OF CD ASSEMBLY

- View from soldering side



A

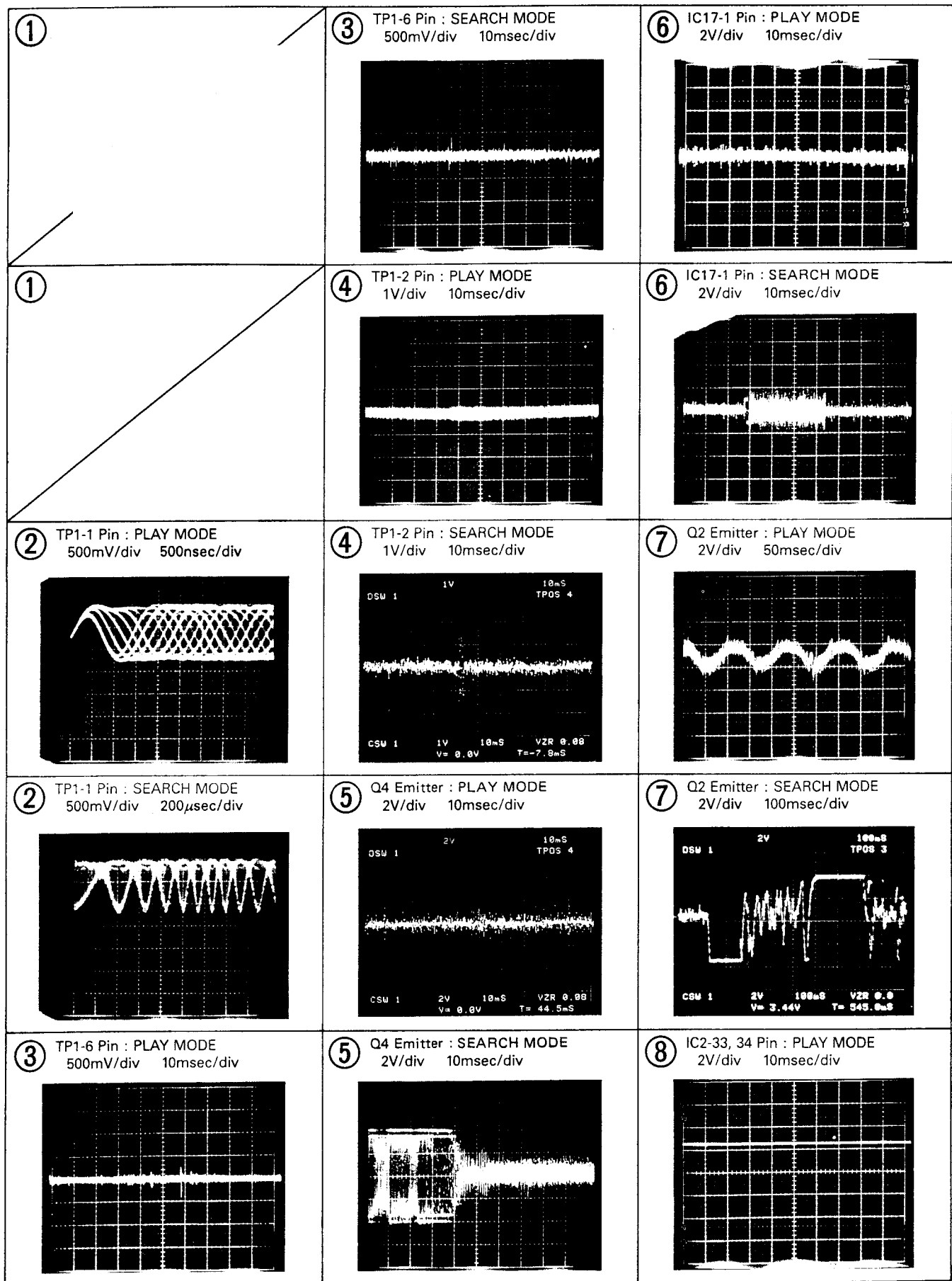
B

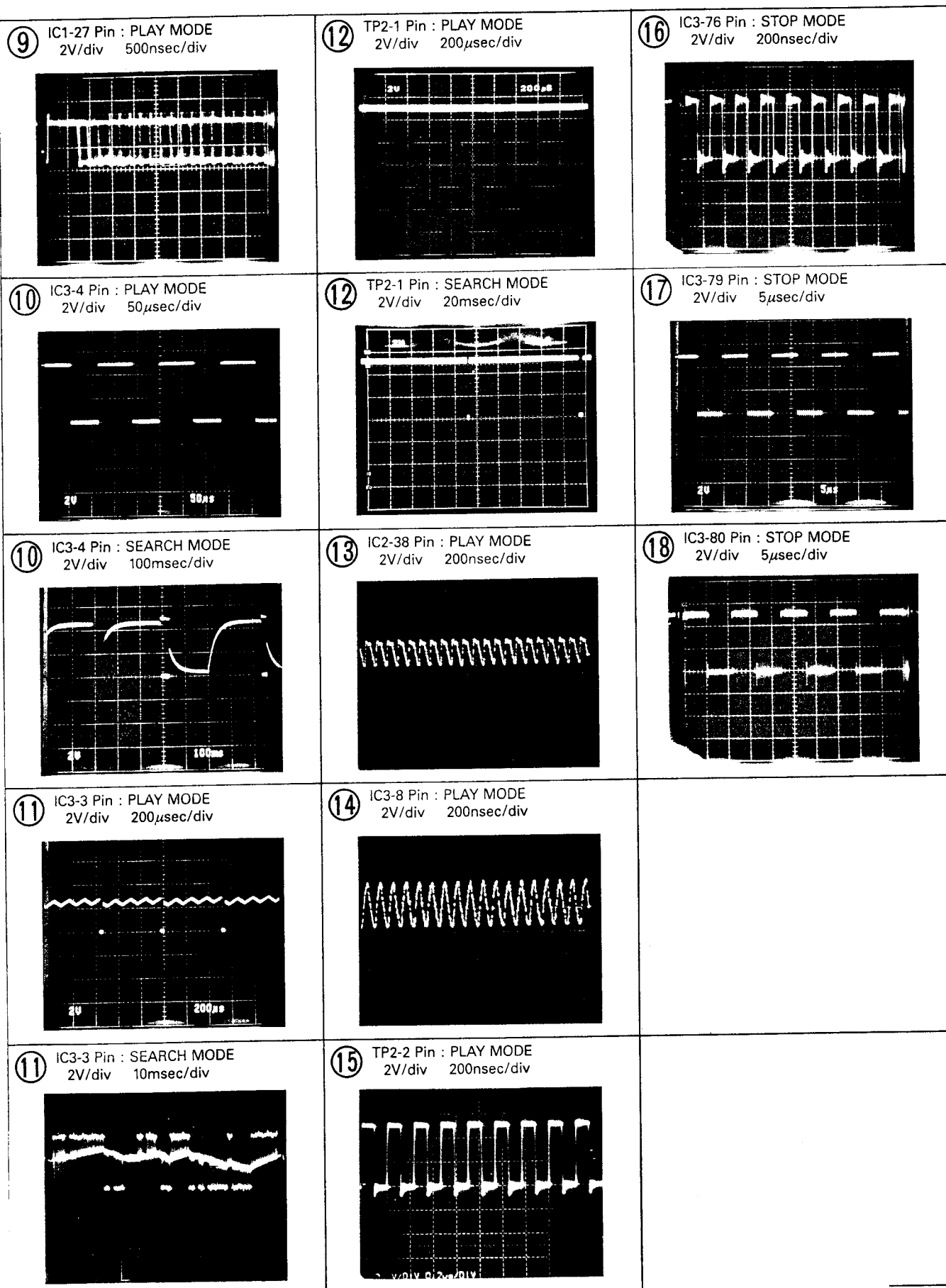
C

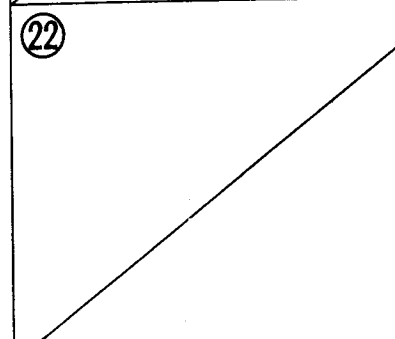
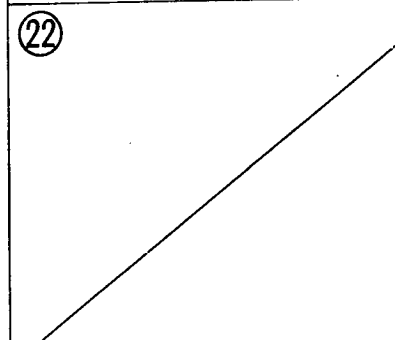
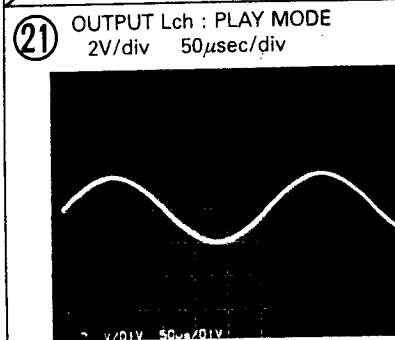
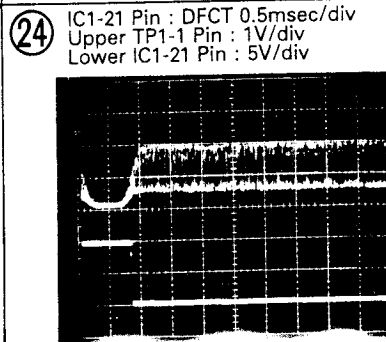
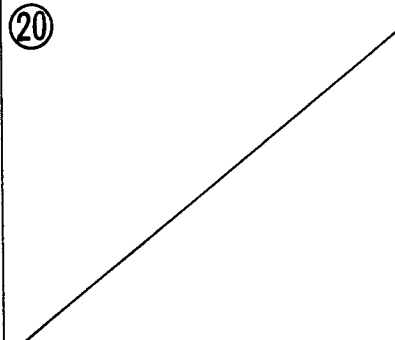
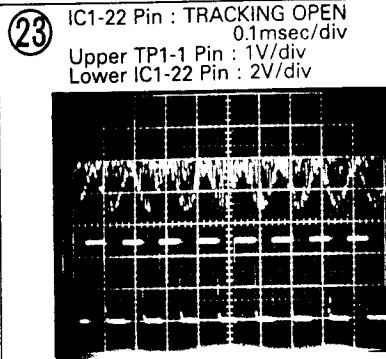
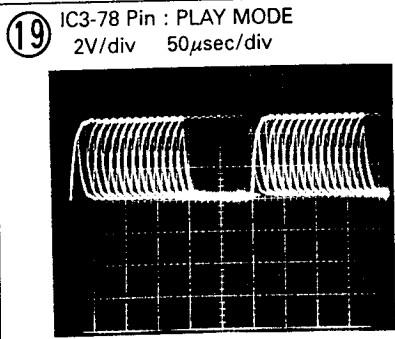
D

Wave Forms

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







7. 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 $\rightarrow 56 \times 10^1 \rightarrow 561$ RD1/4PS $\begin{bmatrix} 5 & 6 & 1 \end{bmatrix}$ J
 47k Ω $\rightarrow 47 \times 10^3 \rightarrow 473$ RD1/4PS $\begin{bmatrix} 4 & 7 & 3 \end{bmatrix}$ J
 0.5 Ω $\rightarrow 0R5$ RN2H $\begin{bmatrix} 0 & R & 5 \end{bmatrix}$ K
 1 Ω $\rightarrow 010$ RS1P $\begin{bmatrix} 0 & 1 & 0 \end{bmatrix}$ K

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

5.62k $\Omega \rightarrow 562 \times 10^1 \rightarrow 5621$ RN1/4SR $\begin{bmatrix} 5 & 6 & 2 & 1 \end{bmatrix}$ F

Mark	No.	Symbol & Description	Part No.	Mark	No.	Symbol & Description	Part No.
TX.SOUND CTRL ASSEMBLY(AWM1248)				C607, 608	CERAMIC CAPACITOR	CKSQYB681K50	
SEMICONDUCTORS				C609, 610	CERAMIC CAPACITOR	CKSQYB153K50	
IC601		TA7291S		C611, 612	ELECTR. CAPACITOR	CEAS220M16	
IC602-604		NJM4558DXP		C613, 614	ELECTR. CAPACITOR	CEAS2R2M50	
IC605 E-VR IC		M5222L		C617	CERAMIC CAPACITOR	CKSQYB182K50	
IC606		NJM4558DXP		C618	CERAMIC CAPACITOR	CKSQYB332K50	
IC607 E-VR IC		M5222L		C619	AUDIO FILM CAPACITOR	CFTXA104J50	
IC608-610		NJM4558DXP		C620	AUDIO FILM CAPACITOR	CFTXA474J50	
IC611		TC4066BP		C621	CERAMIC CAPACITOR	CKSQYB103K50	
IC612-614		NJM4558DXP		C622	ELECTR. CAPACITOR	CEAS0R1M50	
IC811		LA1265S		C623	CERAMIC CAPACITOR	CKCYX104M25	
IC831		LM7001		C624	CERAMIC CAPACITOR	CQMA223J50	
IC851		AN7470P		C625	AUDIO FILM CAPACITOR	CFTXA474J50	
Q601, 602 TRANSISTOR		2SC2458		C626	CERAMIC CAPACITOR	CKCYF473Z50	
Q604 TRANSISTOR		2SC2458		C627	ELECTR. CAPACITOR	CEAS470M16	
Q605, 606 TRANSISTOR		RN2203		C628	ELECTR. CAPACITOR	CEASR68M50	
Q607 TRANSISTOR		RN2201		C629	ELECTR. CAPACITOR	CEAS470M16	
Q609 TRANSISTOR		2SC2235		C630	ELECTR. CAPACITOR	CEASR68M50	
Q801 TRANSISTOR		2SC2668		C631, 632	ELECTR. CAPACITOR	CEAS4R7M50	
Q802, 803 TRANSISTOR		RN2201		C633	CERAMIC CAPACITOR	CKSQYB472K50	
Q804 TRANSISTOR		RN1203		C634	ELECTR. CAPACITOR	CEAS220M16	
Q831 N-FET		2SK246		C635-640	ELECTR. CAPACITOR	CEAS470M16	
Q832 TRANSISTOR		2SC1740SLN		C641	CERAMIC CAPACITOR	CKCYX104M25	
Q851 TRANSISTOR		2SC1740S		C642	ELECTR. CAPACITOR	CEAS330M16	
D601-606 DIODE		1SS252		C643	ELECTR. CAPACITOR	CEAS470M16	
D607 ZENER DIODE		RD5.6ESB		C644	ELECTR. CAPACITOR	CEAS100M25	
D811 DIODE		1SS252		C645-648	ELECTR. CAPACITOR	CEAS2R2M50	
D813-815 DIODE		1SS252		C803, 804		CKSQYF103Z50	
COILS/FILTERS				C805		CKSQYF223Z50	
L801 AXIAL INDUCTOR		LAU2R2M		C807	ELECTR. CAPACITOR	CEAS330M16	
L811 COIL		ATE-079		C811, 812		CKSQYF223Z50	
L831 AXIAL INDUCTOR		LAU2R2M		C813	ELECTR. CAPACITOR	CEAS330M16	
F801, 802 CERAMIC FILTER		ATF-126		C814	CERAMIC CAPACITOR	CKSQYF473Z50	
F803 CERAMIC FILTER		ATF-208		C815		CKSQYF103Z50	
CAPACITORS				C816	ELECTR. CAPACITOR	CEAS010M50	
C601, 602 CERAMIC CAPACITOR		CKCYF473Z50		C817	CERAMIC CAPACITOR	CCSQSL331J50	
C603, 604 CERAMIC CAPACITOR		CKSQYB182K50		C819	ELECTR. CAPACITOR	CEAS100M50	
C605, 606 CERAMIC CAPACITOR		CKSQYB332K50		C806		CKSQYB473K50	

Mark	No.	Symbol & Description	Part No.
	C820	ELECTR. CAPACITOR	CEAS2R2M50
	C821	CERAMIC CAPACITOR	CKCYB222K50
	C822	CERAMIC CAPACITOR	CKCYX473M25
	C823	ELECTR. CAPACITOR	CEAS4R7M50
	C824	ELECTR. CAPACITOR	CEAS470M10
	C825		CKSQYF103Z50
	C827	CERAMIC CAPACITOR	CKCYX223M25
	C831, 832	CERAMIC CAPACITOR	CCSQCH150J50
	C833, 834		CKSQYF103Z50
	C835		CCSQL470J50
	C836	ELECTR. CAPACITOR	CEAS330M16
	C837	AUDIO FILM CAPACITOR	CFTXA224J50
	C838	CERAMIC CAPACITOR	CKCYF103Z50
	C839	ELECTR. CAPACITOR	CEAS470M10
	C851	ELECTR. CAPACITOR	CEANP4R7M35
	C852	CERAMIC CAPACITOR	CKSQYF473Z50
	C853, 854		CKSQYB102K50
	C855, 856	ELECTR. CAPACITOR	CEAS4R7M50
	C857	CERAMIC CAPACITOR	CKCYB472K50
	C858, 859	ELECTR. CAPACITOR	CEAS470M16
	C860		CKSQYF103Z50
	C861	ELECTR. CAPACITOR	CEASR22M50
	C862	ELECTR. CAPACITOR	CEAS1R5M50
	C863	ELECTR. CAPACITOR	CEAS3R3M50
	C864		ACE1039
	C865	ELECTR. CAPACITOR	CEAS010M50
	C868	CERAMIC CAPACITOR	CKCYB472K50
	C871	ELECTR. CAPACITOR	CEAS100M50
RESISTORS			
	R601, 602	CARBONFILM RESISTOR	RD1/8PM□□□J
	R603-636		RS1/10S□□□J
	R637	CARBONFILM RESISTOR	RD1/8PM□□□J
	R641, 642		RS1/10S□□□J
	R643	CARBONFILM RESISTOR	RD1/8PM□□□J
	R644-648		RS1/10S□□□J
	R650-654		RS1/10S□□□J
	R655	CARBONFILM RESISTOR	RD1/8PM□□□J
	R656		RS1/10S□□□J
	R657, 658	CARBONFILM RESISTOR	RD1/8PM□□□J
	R659-666		RS1/10S□□□J
	R668-674		RS1/10S□□□J
	R675	CARBONFILM RESISTOR	RD1/8PM□□□J
	R676-680		RS1/10S□□□J
	R681-686	CARBONFILM RESISTOR	RD1/4PM□□□J
	R687	CARBONFILM RESISTOR	RD1/8PM□□□J
	R688		RS1/10S□□□J
	R689	METAL OXIDE RESISTOR	RS2LMF□□□J
	R690	CARBONFILM RESISTOR	RD1/4PM□□□J
	R692, 693		RS1/10S□□□J
	R695	CARBONFILM RESISTOR	RD1/8PM□□□J
	R702		RS1/10S□□□J
	R705, 706		RS1/10S□□□J
	R708-718		RS1/10S□□□J
	R721-727		RS1/10S□□□J

Mark	No.	Symbol & Description	Part No.
	R802-806		RS1/10S□□□J
	R807	CARBONFILM RESISTOR	RD1/8PM□□□J
	R808		RS1/10S□□□J
	R809, 810	CARBONFILM RESISTOR	RD1/8PM□□□J
	R811, 812		RS1/10S□□□J
	R813	CARBONFILM RESISTOR	RD1/8PM□□□J
	R814, 815		RS1/10S□□□J
	R816	CARBONFILM RESISTOR	RD1/8PM□□□J
	R817		RS1/10S□□□J
	R819		RS1/10S□□□J
	R822		RS1/10S□□□J
	R823, 824	CARBONFILM RESISTOR	RD1/8PM□□□J
	R825		RS1/10S□□□J
	R831-833	CARBONFILM RESISTOR	RD1/8PM□□□J
	R834-836		RS1/10S□□□J
	R837	CARBONFILM RESISTOR	RD1/8PM□□□J
	R838, 839		RS1/10S□□□J
	R841		RS1/10S□□□J
	R851-862		RS1/10S□□□J
	R864	CARBONFILM RESISTOR	RD1/8PM□□□J
	R865, 866		RS1/10S□□□J
	VR601		ACX1036
	VR801 VR		VRTB6VS223
	VR802 VR		VRTB6VS472
	VR851 VR		VRTB6VS472
OTHERS			
	ANTENNA TERMINAL 4-P		AKA1010
	PLUG 9-P		AKM-078
	PLUG 12-P		AKM-079
	PLUG 15-P		AKM-080
	PLUG 14-P		AKM1048
	CN10		KPE12
	F. E. MODULE ASSEMBLY		AXQ1002
	AM. RF. TURNING BLOCK		AXX1011
	X801		ATF1027
	X831	CRYSTAL RESONATOR	ASS1005
◎ DISPLAY ASSEMBLY(AWZ2883)			
SEMICONDUCTORS			
	IC901		PD4240-A
	Q901	TRANSISTOR	2SC2458
	Q902	TRANSISTOR	RN1201
	Q903	TRANSISTOR	2SC2458
	D901-903	DIODE	1SS252
	D907, 908	DIODE	1SS252
	D909	ZENER DIODE	RD9. 1ESB
	D910-921	DIODE	1SS252
	D926, 927	DIODE	1SS252
SWITCHES			
	S901-917	SWITCH	ASG1034
	S919-928	SWITCH	ASG1034
	S930-940	SWITCH	ASG1034
COILS			
	L901	AXIAL INDUCTOR	LAU220K

Mark	No.	Symbol & Description	Part No.
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CAPACITORS

C901 ELECTR. CAPACITOR	CEJA100M35
C902 CERAMIC CAPACITOR	CKDYB102K50
C903 ELECTR. CAPACITOR	CEAS470M16
C904, 905 CERAMIC CAPACITOR	CKSQYF473Z50
C906 CEA (47000/5.5V)	ACH1037
C907 ELECTR. CAPACITOR	CEAS470M16
C908 ELECTR. CAPACITOR	CEJA447M35
C909 ELECTR. CAPACITOR	CEJA220M35
C910, 911 CERAMIC CAPACITOR	ACG1022
C921-946	CCSQCH101J50

RESISTORS

R901-907 CARBONFILM RESISTOR	RD1/8PM□□□J
R909, 910 CARBONFILM RESISTOR	RD1/8PM□□□J
R912-914 CARBONFILM RESISTOR	RD1/8PM□□□J
R917, 918 CARBONFILM RESISTOR	RD1/8PM□□□J
R920-928 CARBONFILM RESISTOR	RD1/8PM□□□J
R933-935 CARBONFILM RESISTOR	RD1/8PM□□□J
R937-946 CARBONFILM RESISTOR	RD1/8PM□□□J
R948-951 CARBONFILM RESISTOR	RD1/8PM□□□J
R955 CARBONFILM RESISTOR	RD1/8PM□□□J
R963-969	RS1/10S□□□J

OTHERS

REMOTE RECEIVER UNIT	AXX1010
V901 FL TUBE	AAV1092
X901	ASS1018

DECK SW ASSEMBLY

SEMICONDUCTORS

D972 LED	AEL1091
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SWITCHES

S971 SLIDE SWITCH	ASH1019
S972 SWITCH	ASG1034
S975 SWITCH	ASG1034

RESISTORS

R972 CARBONFILM RESISTOR	RD1/8PM□□□J
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OTHERS

JACK	AKN1007
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⊙ POWER ASSEMBLY(AWZ2880)

SEMICONDUCTORS

IC201	STK4142-2GP
IC202	UPC7812AHF
IC203	NJM7912FA
IC204 REGULATOR IC	NJM78M05FA
IC205 REGULATOR IC	NJM79M05FA
IC206	UPC7812AHF
IC207	NJM7912FA
IC208	NJM78M56FA
IC209-211 IC PROTECTOR	ICP-N38
IC212, 213 IC PROTECTOR	ICP-N10
Q201 TRANSISTOR	2SA1515
Q202 TRANSISTOR	2SC3377
Q203 TRANSISTOR	RN1201

Mark	No.	Symbol & Description	Part No.
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Q204 TRANSISTOR	RN2201
Q205 TRANSISTOR	2SB560
Q206, 207 TRANSISTOR	RN1203
Q208-212 TRANSISTOR	2SC2458
Q213 TRANSISTOR	2SA1048
Q217 TRANSISTOR	2SA1515
D201 DIODE	D3SBA20
D202-209 DIODE	S5566
D212, 213 DIODE	S5566
D215 ZENER DIODE	RD30ESB
D216 ZENER DIODE	RD8. 2ESB
D217, 218 DIODE	1SS252

D223 DIODE	1SS252
D224 DIODE	S5566

RELAYS

RY201 RELAY	ASR1005
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COILS

L201, 202 COIL	ATH-133
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CAPACITORS

C203, 204 CERAMIC CAPACITOR	CCCSL101J50
C205, 206 ELECTR. CAPACITOR	CEAS220M50
C207, 208 ELECTR. CAPACITOR	CEAS101M25
C209 ELECTR. CAPACITOR	CEANP220M50
C210 ELECTR. CAPACITOR	CEANP100M50

C211 ELECTR. CAPACITOR	CEANP470M50
C212, 213 ELECTR. CAPACITOR	CEAS100M50
C214, 215 ELECTR. CAPACITOR(2200/42)	ACH1109
C216 ELECTR. CAPACITOR	CEAS221M10
C217-220 MYLOR FILM CAPACITOR	CQMA104K50

C222 ELECTR. CAPACITOR	CEAS100M50
C223 ELECTR. CAPACITOR	CEHAQ222M35
C224 ELECTR. CAPACITOR	CEHAQ102M35
C225-230 ELECTR. CAPACITOR	CEHAQ100M50
C231 ELECTR. CAPACITOR	CEHAQ102M35

C232 ELECTR. CAPACITOR	CEAS471M35
C233, 234 ELECTR. CAPACITOR	CEHAQ100M50
C238 ELECTR. CAPACITOR	CEANP331M50
C239 ELECTR. CAPACITOR	CEHAQ220M2A
C240, 241 ELECTR. CAPACITOR	CEHAQ470M50

C242 ELECTR. CAPACITOR	CEHAQ102M16
C243 ELECTR. CAPACITOR	CEHAQ100M50
C244 ELECTR. CAPACITOR	CEAS100M50
C245 CAPACITOR (CERAMIC)	ACG-009

RESISTORS

R201-208 CARBONFILM RESISTOR	RD1/8PM□□□J
R209-212 CARBONFILM RESISTOR	RD1/4PM□□□J
R213-215 CARBONFILM RESISTOR	RD1/4PMFL□□□J
R216, 217 CARBONFILM RESISTOR	RD1/4PM□□□J
R218-220 CARBONFILM RESISTOR	RD1/4PMFL□□□J
R221, 222 CARBONFILM RESISTOR	RD1/4PM□□□J
R223-226 CARBONFILM RESISTOR	RD1/8PM□□□J
R227, 228 METAL OXIDE RESISTOR	RS2LMF□□□J
R229-233 CARBONFILM RESISTOR	RD1/8PM□□□J
R234 CARBONFILM RESISTOR	RD1/4PM□□□J

Mark	No.	Symbol & Description	Part No.
	R235, 236	CARBONFILM RESISTOR	RD1/8PM□□□J
	R237	METAL OXIDE RESISTOR	RS2LMF□□□J
	R244, 245	CARBONFILM RESISTOR	RD1/8PM□□□J
	R246	METAL OXIDE RESISTOR	RS2LMF□□□J
	R247	CARBONFILM RESISTOR	RD1/8PM□□□J
	R248	METAL OXIDE RESISTOR	RS2LMF□□□J
	R250, 251	METAL OXIDE RESISTOR	RS2LMF□□□J
	R252	CARBONFILM RESISTOR	RD1/8PM□□□J
	R254	CARBONFILM RESISTOR	RD1/4PM□□□J
	R255	CARBONFILM RESISTOR	RD1/8PM□□□J
	R256	METAL OXIDE RESISTOR	RS2LMF□□□J
	R257-260	CARBONFILM RESISTOR	RD1/2PM□□□J

OTHERS

SPEAKER TERMINAL 4-P	AKE1012
SOCKET 9-P	AKP-046
SOCKET 12-P	AKP-047
SCREW	BBZ30P080FZK

◎ AF ASSEMBLY(AWZ2881)

SEMICONDUCTORS

IC301	M5216P
IC302-305	NJM4558DXP
IC307, 308	NJM4558DXP
IC309	TC4052BP
IC310	TC4066BP
IC311	CXA1100P
IC312	PDE034-B
Q301, 302 TRANSISTOR	2SC2458
Q303 N-FET	2SK246
Q306 TRANSISTOR	RN2201
Q307 TRANSISTOR	RN2203
Q311-314 TRANSISTOR	2SC2458
Q315 TRANSISTOR	2SA1048
Q318-320 TRANSISTOR	RN2201
Q321 TRANSISTOR	RN2203
Q322 TRANSISTOR	RN1203
Q323, 324 TRANSISTOR	RN2201
Q326 TRANSISTOR	2SC2458
Q327 TRANSISTOR	RN2201
Q331-336 TRANSISTOR	2SC2458
Q337, 338 TRANSISTOR	2SC2878
Q339, 340 TRANSISTOR	2SC2458
Q351, 352 N-FET	2SK373
Q353, 354 TRANSISTOR	2SC2235
Q355 TRANSISTOR	2SC3377
Q360, 361 TRANSISTOR	2SA1515
Q364 TRANSISTOR	RN1201
Q371, 372 TRANSISTOR	2SA1515
Q373-376 TRANSISTOR	RN2201
Q377-380 TRANSISTOR	2SC3377
D301-309 DIODE	1SS252
D312 DIODE	1SS252
D316-321 DIODE	1SS252
D322 ZENER DIODE	RD3. 6ESB
D331-344 DIODE	1SS252

Mark	No.	Symbol & Description	Part No.
	D346, 347	DIODE	1SS252
	D348	ZENER DIODE	RD5. 6ESB
SWITCHES			
	S301	SLIDE SWITCH	ASH1031
COILS/FILTERS			
	L301, 302	AXIAL INDUCTOR	LAU221K
	L303, 304	INDUCTOR	LTA822J
	L305	INDUCTOR	LTA102J
	L306, 307	INDUCTOR	LTA392J
	L308	AXIAL INDUCTOR	LAU220K
	L309	INDUCTOR	LTA102J
	F301, 302		ATF1064

CAPACITORS

C301, 302 CERAMIC CAPACITOR	CKSQYB681K50
C305, 306 CERAMIC CAPACITOR	CKSQYB821K50
C307, 308 ELECTR. CAPACITOR	CEAS330M16
C309, 310	CCSQCH101J50
C311, 312	CKSQYB682K50
C313, 314 CERAMIC CAPACITOR	CKSQYB333K50
C315, 316 CERAMIC CAPACITOR	CKSQYB103K50
C317, 318 CERAMIC CAPACITOR	CKSQYF104Z50
C319, 320 ELECTR. CAPACITOR	CEAS470M16
C321, 322 ELECTR. CAPACITOR	CEAS4R7M50
C323, 324 ELECTR. CAPACITOR	CEAS010M50
C325, 326 CERAMIC CAPACITOR	CKSQYB153K50
C327, 328 CERAMIC CAPACITOR	CKSQYB123K50
C329, 330 ELECTR. CAPACITOR	CEAS330M16
C331, 332 ELECTR. CAPACITOR	CEAS470M16
C333, 334	CKSQYB392K50
C335, 336 CERAMIC CAPACITOR	CKDYX393M25
C337, 338 ELECTR. CAPACITOR	CEAS2R2M50
C339, 340 CERAMIC CAPACITOR	CKSQYB681K50
C341, 342 CERAMIC CAPACITOR	CCCSL271K500
C344 ELECTR. CAPACITOR	CEAS101M16
C345 MYLOR FILM CAPACITOR	CQMA473J50
C346 CERAMIC CAPACITOR	CKDYB682K500
C347 MYLOR FILM CAPACITOR	CQMA273J50
C348 MYLOR FILM CAPACITOR	CQMA223J50
C349 ELECTR. CAPACITOR	CEAS101M16
C352 ELECTR. CAPACITOR	CEAS470M16
C361, 362 ELECTR. CAPACITOR	CEAS010M50
C363 ELECTR. CAPACITOR	CEAS470M16
C364 CERAMIC CAPACITOR	CKSQYB473K50
C365 ELECTR. CAPACITOR	CEAS101M10
C367, 368 ELECTR. CAPACITOR	CEASR68M50
C369, 370 ELECTR. CAPACITOR	CEAS4R7M50
C371 ELECTR. CAPACITOR	CEAS220M16
C372 ELECTR. CAPACITOR	CEAS010M50
C380 CERAMIC CAPACITOR	CKDYX473M25
C385, 386	CCSQCH101J50
C387, 388 CERAMIC CAPACITOR	CKCYX333M25
C389, 390 CERAMIC CAPACITOR	CKCYX393M25
C391 CERAMIC CAPACITOR	CCSQCH221J50

Mark	No.	Symbol & Description	Part No.
	C393	CERAMIC CAPACITOR	CKSQYB471K50
	C394	CERAMIC CAPACITOR	CKCYB471K50
	C395, 396	ELECTR. CAPACITOR	CEAS470M16
	C397, 398	ELECTR. CAPACITOR	CEAS010M50
	C399	ELECTR. CAPACITOR	CEAS100M25
	C400		CKSQYB102K50
	C401, 402	ELECTR. CAPACITOR	CEAS010M50
	C403, 404		CCSQCH391J50
	C405, 406	ELECTR. CAPACITOR	CEAS330M16
	C407, 408	ELECTR. CAPACITOR	CEAS470M16
	C409, 410	CERAMIC CAPACITOR	CKSQYB473K50
	C411	ELECTR. CAPACITOR	CEAS101M10
	C412, 413	CERAMIC CAPACITOR	CCSQCH151J50
	C414	ELECTR. CAPACITOR	CEAS3R3M50
	C416	ELECTR. CAPACITOR	CEAS100M25
	C417	CERAMIC CAPACITOR	CKSQYB473K50

RESISTORS

R301-320	RS1/10S□□□J
R323, 324	RS1/10S□□□J
R325, 326	CARBONFILM RESISTOR
R327, 328	RD1/4PM□□□J
R330, 331	RS1/10S□□□J
R332, 333	CARBONFILM RESISTOR
R334, 335	RD1/8PM□□□J
R336-339	CARBONFILM RESISTOR
R340-351	RS1/10S□□□J
R361-382	RS1/10S□□□J
R383, 384	CARBONFILM RESISTOR
R385, 386	RD1/4PM□□□J
R388	RS1/10S□□□J
R392	CARBONFILM RESISTOR
R393	RD1/8PM□□□J
R394, 395	CARBONFILM RESISTOR
R396	RS1/10S□□□J
R397	CARBONFILM RESISTOR
R401	RD1/8PM□□□J
R402, 403	CARBONFILM RESISTOR
R404-415	RS1/10S□□□J
R421-439	RS1/10S□□□J
R441-443	RS1/10S□□□J
R449	RS1/10S□□□J
R450	CARBONFILM RESISTOR
R451	RD1/8PM□□□J
R452, 453	CARBONFILM RESISTOR
R455-459	RS1/10S□□□J
R460	CARBONFILM RESISTOR
R461, 462	RD1/4PM□□□J
R463	CARBONFILM RESISTOR
R464-470	RS1/10S□□□J
R471, 472	METAL OXIDE RESISTOR
R473, 474	CARBONFILM RESISTOR
R475, 476	RS1/10S□□□J
R477	CARBONFILM RESISTOR
R478, 479	RD1/8PM□□□J

Mark	No.	Symbol & Description	Part No.
	R480	CARBONFILM RESISTOR	RD1/8PM□□□J
	R481, 482		RS1/10S□□□J
	R483, 484	CARBONFILM RESISTOR	RD1/8PM□□□J
	R485-497		RS1/10S□□□J
	R498	CARBONFILM RESISTOR	RD1/8PM□□□J
	R499		RS1/10S□□□J
	R501		RS1/10S□□□J
	R502, 503	CARBONFILM RESISTOR	RD1/8PM□□□J
	R504		RS1/10S□□□J
	R505	CARBONFILM RESISTOR	RD1/8PM□□□J
	R506		RS1/10S□□□J
	R507	CARBONFILM RESISTOR	RD1/8PM□□□J
	R508		RS1/10S□□□J
	R509	CARBONFILM RESISTOR	RD1/8PM□□□J
	R510		RS1/10S□□□J
	R511	CARBONFILM RESISTOR	RD1/8PM□□□J
	R512, 513		RS1/10S□□□J
	R514	CARBONFILM RESISTOR	RD1/8PM□□□J
	R515-528		RS1/10S□□□J
	R531, 532	CARBONFILM RESISTOR	RD1/8PM□□□J
	R533-538		RS1/10S□□□J
	VR301, 302	VR	VRTM6V104
	VR303-306	VR	VRTM6V203
	VR307, 308	VR	VRTM6V204
	VR309, 310	VR	VRTM6V203

OTHERS

PHONO JACK 2-P	AKB1059
SOCKET 15-P	AKP-048
SOCKET 14-P	AKP1056
CN16	KPE12
CN17	KPE11
CN18	KPE14
CN21	KPE8
X301	ASS1018

TRANS ASSEMBLY

There is no supply part in this assembly.

MAIN BOARD ASSEMBLY

SEMICONDUCTORS

△ IC1	PRE AMP IC	CXA1081S
△ IC17	OP AMP	TA8410AK
IC18	D/A CONVERTER	LC7881-C
IC2	SERVO CONTROLL IC	CXA1082BS
IC24, 25	OP-AMP IC	RC4558DD
IC3	EFM DEMODULATION IC	CXD1130QZ
IC4	MEMORY IC	HM6116-90
IC6	MICROCOMPUTER	PD4257
Q1	TRANSISTOR	2SA1399
Q10, 11	TRANSISTOR	RN2206
Q12	TRANSISTOR	2SB1296
Q13	TRANSISTOR	2SD1936
Q14	TRANSISTOR	DTC124ES
Q16, 17	TRANSISTOR	2SC1740S

Mark	No.	Symbol & Description	Part No.
	Q2		2SD1762
	Q21 TRANSISTOR		2SA854S
	Q22 TRANSISTOR		2SC1741S
	Q3		2SB1185
	Q4 TRANSISTOR		2SC3581
	Q5 TRANSISTOR		2SA1399
	Q8, 9 TRANSISTOR		2SC1740S
	D1, 2		MTZ3. 6A
COILS			
	L1, 2		LAU010K
CAPACITORS			
	C1 MYLOR FILM CAPACITOR		CQMA103K50
	C10 ELECTR. CAPACITOR		CEAS101M10
	C100-105 ELECTR. CAPACITOR		CEAS330M16
	C11 MYLOR FILM CAPACITOR		CQMA333K50
	C12 ELECTR. CAPACITOR		CEAS330M16
	C13 MYLOR FILM CAPACITOR		CQMA332J50
	C14 MYLOR FILM CAPACITOR		CQMA103K50
	C140 CERAMIC CAPACITOR		CGCYX104K25
	C141 CERAMIC CAPACITOR		CKCYF103Z50
	C143 CERAMIC CAPACITOR		CKCYF103Z50
	C146 CERAMIC CAPACITOR		CCCSL101J50
	C15 ELECTR. CAPACITOR		CEAS331M16
	C16 ELECTR. CAPACITOR		CEASR47M50
	C161 CERAMIC CAPACITOR		CCCSL221J50
	C17 MYLOR FILM CAPACITOR		CQMA103K50
	C18 ELECTR. CAPACITOR		CEAS330M16
	C19 ELECTR. CAPACITOR		CEAS471M6R3
	C20 ELECTR. CAPACITOR		CEAS330M16
	C21 MYLOR FILM CAPACITOR		CQMA333K50
	C22 ELECTR. CAPACITOR		CEASR47M50
	C23 ELECTR. CAPACITOR		CEAS330M16
	C24 CERAMIC CAPACITOR		CGCYX473K25
	C25, 26 ELECTR. CAPACITOR		CEAS330M16
	C27 MYLOR FILM CAPACITOR		CQMA472K50
	C28 ELECTR. CAPACITOR		CEAS330M16
	C29 MYLOR FILM CAPACITOR		CQMA222J50
	C3 CERAMIC CAPACITOR		CCCH100D50
	C31, 32 MYLOR FILM CAPACITOR		CQMA104K50
	C34 ELECTR. CAPACITOR		CEAS47M50
	C35 MYLOR FILM CAPACITOR		CQMA104K50
	C36 ELECTR. CAPACITOR		CEAS330M16
	C38 ELECTR. CAPACITOR		CEAS330M16
	C39 MYLOR FILM CAPACITOR		CQMA104K50
	C40 ELECTR. CAPACITOR		CEAS010M50
	C41 ELECTR. CAPACITOR		CEAS330M16
	C43 ELECTR. CAPACITOR		CEAS101M10
	C46 MYLOR FILM CAPACITOR		CQMA103K50
	C47 ELECTR. CAPACITOR		CEAS330M16
	C48 ELECTR. CAPACITOR		CEAS3R3M50
	C49 MYLOR FILM CAPACITOR		CQMA472K50
	C5 ELECTR. CAPACITOR		CEAS101M35
	C50 ELECTR. CAPACITOR		CEAS330M16

Mark	No.	Symbol & Description	Part No.
	C51 MYLOR FILM CAPACITOR		CQMA102J50
	C60 ELECTR. CAPACITOR		CEAS101M10
	C62 ELECTR. CAPACITOR		CEAS101M10
	C63 CERAMIC CAPACITOR		CKCYF103Z50
	C67, 68 MYLOR FILM CAPACITOR		CQMA683J50
	C69, 70 ELECTR. CAPACITOR		CEAS330M16
	C71, 72 ELECTR. CAPACITOR		CEAS010M50
	C73, 74 MYLOR FILM CAPACITOR		CQMA562J50
	C75, 76 MYLOR FILM CAPACITOR		CQMA471J50
	C77, 78 MYLOR FILM CAPACITOR		CQMA561J50
	C79 MYLOR FILM CAPACITOR		CQMA103K50
	C8 CERAMIC CAPACITOR		CGCYX473K25
	C80 MYLOR FILM CAPACITOR		CQMA103K50
	C81, 82 CERAMIC CAPACITOR		CCCH300J50
	C86 CERAMIC CAPACITOR		CKCYF103Z50
	C9 MYLOR FILM CAPACITOR		CQMA333K50
	C93, 94 ELECTR. CAPACITOR		CEAS100M16
	C97 ELECTR. CAPACITOR		CEAS330M16
RESISTORS			
	R10 CARBONFILM RESISTOR		RD1/6PM□□□J
	R100-104 CARBONFILM RESISTOR		RD1/6PM□□□J
	R107-109 CARBONFILM RESISTOR		RD1/6PM□□□J
	R11 CARBONFILM RESISTOR		RD1/6PM□□□J
	R110 CARBONFILM RESISTOR		RD1/6PM□□□J
	R12 CARBONFILM RESISTOR		RD1/6PM□□□J
	R120 CARBONFILM RESISTOR		RD1/6PM□□□J
	R122-127 CARBONFILM RESISTOR		RD1/6PM□□□J
	R129 CARBONFILM RESISTOR		RD1/6PM□□□J
	R13 CARBONFILM RESISTOR		RD1/6PM□□□J
	R139 CARBONFILM RESISTOR		RD1/6PM□□□J
	R14 CARBONFILM RESISTOR		RD1/6PM□□□J
	R140-142 CARBONFILM RESISTOR		RD1/6PM□□□J
	R146-148 CARBONFILM RESISTOR		RD1/6PM□□□J
	R15 CARBONFILM RESISTOR		RD1/6PM□□□J
	R151 CARBONFILM RESISTOR		RD1/6PM□□□J
	R16 CARBONFILM RESISTOR		RD1/6PM□□□J
	R160 CARBONFILM RESISTOR		RD1/6PM□□□J
	R17-27 CARBONFILM RESISTOR		RD1/6PM□□□J
	R29 CARBONFILM RESISTOR		RD1/6PM□□□J
	R30 METAL FILM RESISTOR		RN1/6PQ□□□□F
	R31-36 CARBONFILM RESISTOR		RD1/6PM□□□J
	R38-40 CARBONFILM RESISTOR		RD1/6PM□□□J
	R42, 43 CARBONFILM RESISTOR		RD1/6PM□□□J
	R45, 46 CARBONFILM RESISTOR		RD1/6PM□□□J
	R48-52 CARBONFILM RESISTOR		RD1/6PM□□□J
	R54-63 CARBONFILM RESISTOR		RD1/6PM□□□J
	R76 CARBONFILM RESISTOR		RD1/6PM□□□J
	R79-89 CARBONFILM RESISTOR		RD1/6PM□□□J
	R97-99 CARBONFILM RESISTOR		RD1/6PM□□□J
	VR3-5 VR		RCP1035
	VR6 VR		RCP1037
	VR8 VR		RCP1063
OTHERS			
	CN1 CONNECTOR		52045-1610

Mark	No.	Symbol & Description	Part No.
	CN4		KPE4
	CN5		KPE13
	X1	CERAMIC RESONATOR	VSS1014
	X2	CRYSTAL RESONATOR	PSS-012

8. ADJUSTMENTS

8.1 TUNER SECTION

Preparations

- Set the VOLUME control to minimum.
- Set to TUNER function.
- Refer to Fig. 8-3. for adjustment test points and controls.

FM tuner section adjustment

- Select the FM mode with the BAND selector switch.
- Connect as shown in Fig. 8-1.

Step	Adjustment name	FM SG (1 kHz $\pm$ 75 kHz dev.)		XR-P500 Reception frequency indication	Adjustment	
		Frequency (MHz)	Level (dB μ)		Adjusting point	Specification
1	T meter center adjustment	98	60	98 MHz	L801	Adjust so that the voltage between TP802 and TP803 becomes 0V $\pm$ 50 mV.
2	FM VCO free-run frequency adjustment	98	60 (No modulation)	98 MHz	VR851	Adjust so that the frequency between TP804 and GND becomes 78 $\pm$ 0.5 kHz.
3	Tuning indicator level adjustment	98	20	98 MHz	VR801	Adjust to the point where the tuning indicator just lights up.

AM tuner section adjustment

- AM SG level (dB μ /m) indicates the electric field strength of the loop antenna.
- Select the AM mode with the BAND selector switch.
- Connect as shown in Fig. 8-2.
- For the SD type only, set the CHANNEL STEP switch (S801) on the rear panel side to 9 kHz/50 kHz.
- * Perform steps 1 to 3 only for the HEWZI type.

Step	Adjustment name	AM SG (400 Hz, 30% modulation)		XR-P500 Reception frequency indication	Adjustment	
		Frequency (kHz)	Level (dB μ /m)		Adjusting point	Specification
1	Tracking adjustment	603	55	603 MHz	L821	Adjust so that the DC voltage between TP806 and GND becomes maximum.
2		1395	55	1395 MHz	TC801	Adjust so that the DC voltage between TP806 and GND becomes maximum.
3	Repeat steps 1 and 2 so that both steps are satisfied.					
4	IFT adjustment	603	55	603 MHz	F803	Adjust so that the DC voltage between TP806 and GND becomes maximum.
5	Tuning indicator level adjustment	999	55	999 MHz	VR802	Adjust to the point where the tuning indicator just lights up.

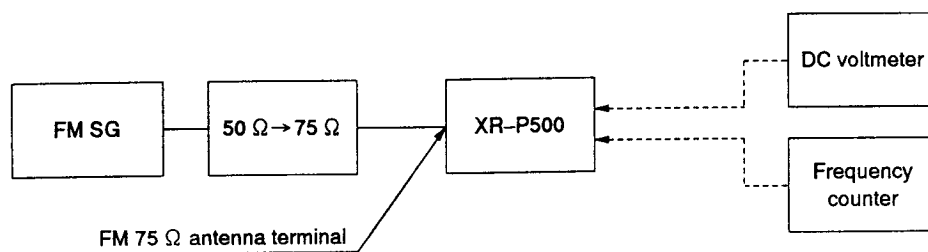


Fig. 8-1. FM Adjustment Connection Diagram

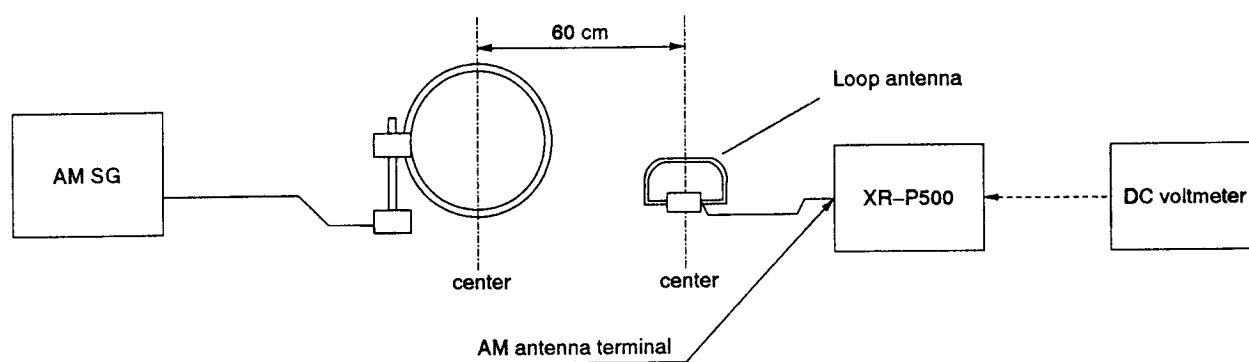


Fig. 8-2. AM Adjustment Connection Diagram

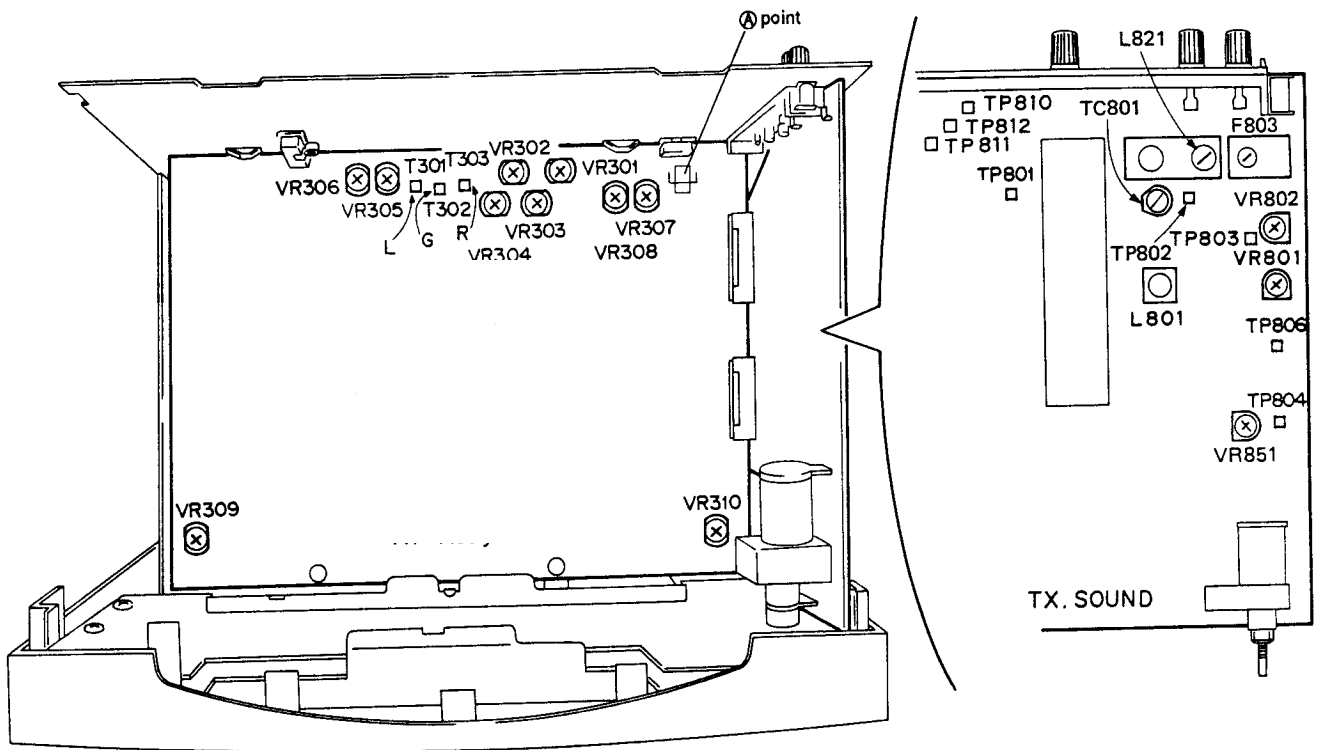


Fig. 8-3. Adjustment Points and Test Points

8.2 TAPE DECK

- Adjustment points and test points are shown in Fig. 8-2.

● Mechanical Adjustment

- Set the TAPE function.
- Test tape: STD-301 (3 kHz, 30 min.)

1. Tape Speed Adjustment							
No.	Mode	Test tape	Adjusting points		Measurement points	Adjustment procedure	Remarks
1	PLAY	STD-301 (playback 3 kHz)	Deck I	DECK CTRL Ass'y VR309	TP-R (Rch)	Press the PLAY SW and adjust so that the reading becomes 3010 ± 10 Hz. Confirm that wow & flutter level is below 0.2% (in the reverse direction, confirm that the reading is within 3010 ± 55 Hz).	
2	PLAY		Deck II	DECK CTRL Ass'y VR802	TP-R (Rch)	Press the PLAY SW and adjust so that the reading becomes 3010 ± 10 Hz. Confirm that wow & flutter level is below 0.2% (in the reverse direction, confirm that the reading is within 3010 ± 55 Hz).	

● Electrical Adjustment

Check the following before starting.

- Confirm that tape speed adjustment has been completed.
- Clean the heads and demagnetize them using a head eraser.
- Set the measurement level to 0 dBV=1 Vrms.
- Use the specified tape for adjustment. Use the labeled (A) side of the test tape.
STD-331B: for playback adjustment
STD-630: normal blank tape
- Provide yourself with the following measuring devices:
AC millivoltmeter, low-frequency oscillator, attenuator, oscilloscope
- Adjust both right and left channels unless otherwise specified.
- Turn the DOLBY NR switch off unless otherwise specified.
- Warm up the unit for several minutes before adjustment. In particular, be sure to warm up the unit in the REC/PLAY mode for 3 to 5 minutes before starting recording/playback frequency characteristics adjustment.

- Always follow the indicated adjustment order. Otherwise, a complete adjustment may not be achieved.

Playback Adjustment (decks I, II)

- Head angle adjustment
- Playback level adjustment

Recording Adjustment (decks I, II)

- Bias oscillation frequency check
- Recording/playback frequency characteristics adjustment
- Recording level adjustment
- ALC operation check

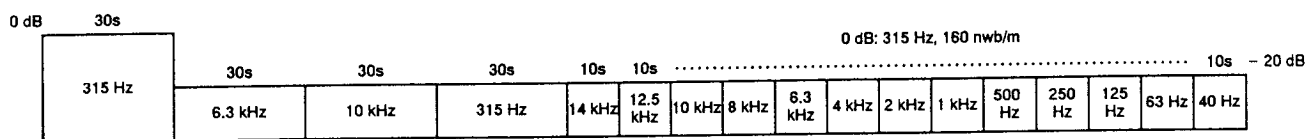


Fig. 8-3. STD-331B Test Tape

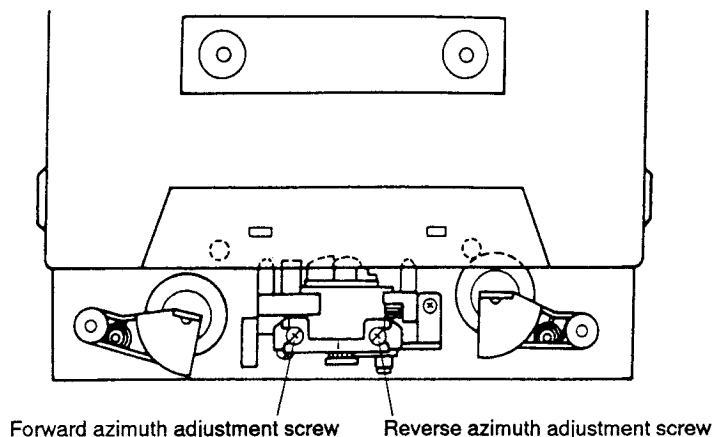
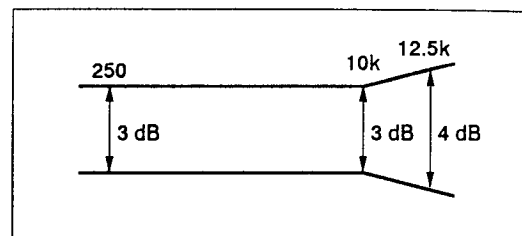


Fig. 8-4. Head Angle Adjustment

PLAYBACK



RECORDING

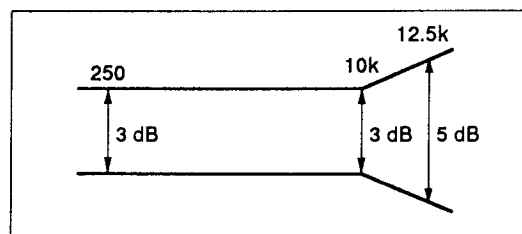


Fig. 8-5. Frequency Characteristics

● Playback Adjustment

1. Head Angle Adjustment

- This unit is equipped with auto tape selector.
- Do not switch between forward and reverse operation with the screwdriver inserted.

Step	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting points		Measurement points	Adjustment value	Remarks
1	NORMAL	PLAY	STD-331B test tape (playback 10 kHz, -20 dB)	Deck I	Head angle adjustment screw (Fig. 8-4)	TP-L (Lch) TP-R (Rch) (DOLBY TP)	Max. playback signal level	After adjustment, apply lock paint to the head angle adjustment screw.
				Deck II				

2. Playback Level Adjustment

- Since this adjustment determines playback Dolby NR level, perform it carefully.

Step	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting points		Measurement points	Adjustment value	Remarks
1	NORMAL	PLAY	STD-331B test tape (playback 315 kHz, 0 dB)	Deck I	VR303 (Lch) VR304 (Rch)	TP-L (Lch) TP-R (Rch) (DOLBY TP)	-6.2 dBV	
				Deck II	VR301 (Lch) VR302 (Rch)			

Note: Deck II level also changes when deck I level is adjusted.
Therefore, adjust deck I level first.

● Recording Adjustment

1. Bias Oscillation Frequency Check

Step	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting points		Measurement points	Adjustment value	Remarks
1	NORMAL	REC	Load the STD-630 test tape and set the recording mode.	Deck I			Oscillation frequency to be 106.5 ± 2 kHz with the rear panel beat-cut switch in the "1" position.	Frequency is 2 to 3 kHz lower with the rear panel beat-cut switch in the "2" position.
				Deck II	—	Between the ⑧ point in Fig. 8-2 and GND		

• Since this adjustment affects recording bias, prevent distortion from increasing due to underbias.

2. Recording/Playback Frequency Characteristics Adjustment

Step	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting points		Measurement points	Adjustment value	Remarks
1	NORMAL	REC	Apply 315 Hz to the audio input and set the VIDEO function.	Deck I		TP-L (Lch) TP-R (Rch) (DOLBY TP)	-26.2 dBV	
				Deck II	Input signal level			
2	NORMAL	REC/PLAY	Load the STD-630 test tape and record/playback the 315 Hz and 10 kHz signals (see the Note below).	Deck I		TP-L (Lch) TP-R (Rch) (DOLBY TP)	Repeat adjustment until playback level of the 10 kHz signal is within 0 ± 0.5 dB from that of the 315 Hz signal.	
				Deck II	VR307 (Lch) VR308 (Rch)			

Note: Set to the same level used for the 315 Hz input signal at step 1.

3. Recording Level Adjustment

Step	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting points		Measurement points	Adjustment value	Remarks
1	NORMAL	REC	Input a 315 Hz signal to the DAT/VIDEO playback terminal and set the DAT/VIDEO function.	Deck I	Input signal level	TP-L (Lch) TP-R (Rch) (DOLBY TP)	-6.2 dBV	
				Deck II				
2	NORMAL	REC/PLAY	STD-630 test tape and record/playback the 315 Hz signal.	Deck I		TP-L (Lch) TP-R (Rch) (DOLBY TP)	Repeat recording, playback and adjustment until playback level of the 315 kHz signal becomes -6.2 dBV.	
				Deck II	VR305 (Lch) VR306 (Rch) (REC Ass'y)			

4. ALC Operation Check

4. ALC Operation Check

Step	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting points	Measurement points	Adjustment value	Remarks
1	NORMAL	REC-PAUSE	Input a 315 Hz signal to the DAT/VIDEO playback terminal and set the DAT/VIDEO function.	Input signal level	TP-L (Lch) TP-R (Rch) (DOLBY TP)	-6.2 dBV	
2				Set to a level +10 dB above the input level at step 1.		-1.2 ± 2.5 dBV	

8.3 CD SECTION

Perform the following adjustments in the indicated order.

● Adjustments

1. Focus offset adjustment
2. Focus lock and spindle lock check
3. Grating adjustment
4. Tracking adjustment
5. Tangential/radial adjustment
6. RF level adjustment
7. Laser diode power check
8. Focus gain adjustment
9. Tracking gain adjustment
10. VCO free-running frequency adjustment

● Measuring Devices

1. Dual-trace oscilloscope
2. Light power meter
3. YEDS-7 test disc, 8 cm disc
4. Loop gain adjustment filter
5. Signal generator
6. Frequency counter
7. General-use tools

● The Test Mode

This unit is adjusted in the test mode.

Setting and Cancelling the Test Mode

- ① To set the test mode, plug the power cord with the J1 and J2 jumpers connected to each other, then turn the POWER switch ON.
- ② To cancel the test mode, turn the POWER switch OFF, then unplug the power cord.

In the test mode, unit controls work as shown in Table 1.

● Description of Variable Resistors used for Adjustment

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

Adjustment Points

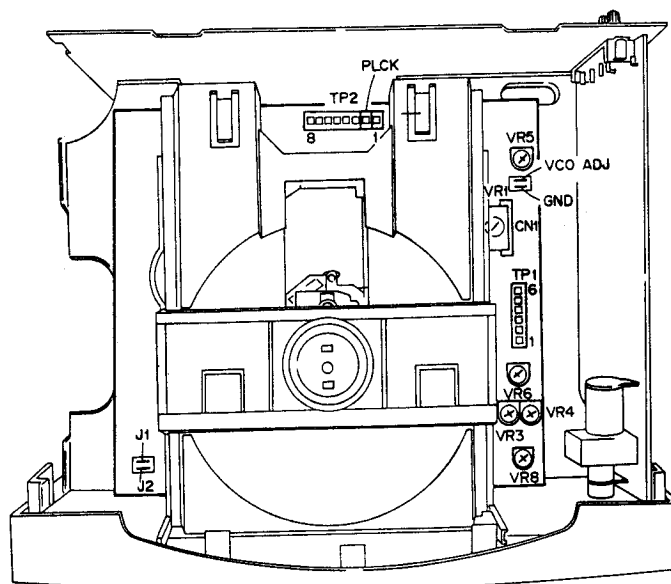
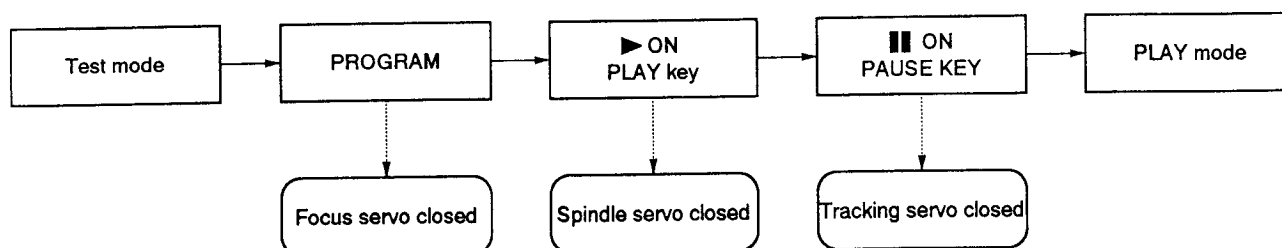


Fig. 1. Adjustment Points

In the test mode, opening and closing of servos is performed independently. Therefore, to set the play mode the servos have to be closed in (serial) sequence. Remember that the play mode cannot be set simply by pressing the PAUSE (■) key. To set the play mode from the stop mode, for example, press the following keys in the indicated order:

* In the test mode, servos keep a serial sequence.



● Function of Each Key In the Test Mode

Symbol	Key name	Function during test mode	Description
	PROGRAM	Focus servo close	Lights the laser diode and moves the focus actuator in the vertical direction to close the focus servo.
►	CD PLAY	Spindle servo close	After kicking the spindle motor, it closes the servo in the CLV-A mode.
■■	PAUSE	Tracking servo close/open	Performs a toggle operation. When pressed, the tracking servo is closed and the unit enters the play mode (the focus and spindle servos should be already closed). At this time the PAUSE indicator lights. If pressed again, the tracking servo opens.
◄◄	TRACK/ MANUAL SEARCH REV	Carriage reverse (inward)	Moves the carriage inwards at high (approx. 2 cm/s) speed. Since there is no safety device to stop the carriage, be sure to stop it manually in time (this operation starts approx. 0.5 second after the key is pressed).
►►	TRACK/ MANUAL SEARCH FWD	Carriage forward (outward)	Moves the carriage outwards at high (approx. 2 cm/s) speed. Since there is no safety device to stop the carriage, be sure to stop it manually in time (this operation starts approx. 0.5 second after the key is pressed).
■	STOP	Stop	Stops all servos and returns the unit to the initial condition.
▲	OPEN/CLOSE	(Disc tray) open/close	Opens and closes the disc tray. The pickup does not return, however, to the rest (inner) position when the tray is opened. It does not move either when the tray is closed.

Table 1. Test Mode Functions

Step	Oscilloscope setting		Test points	Adjusting points	Check Items/ adjustment specifications	Adjustment procedure
	V	H				
1	Focus offset adjustment					
			Pin 6 of TP1 (FCS. ERR)	VR6 (FCS. OFS)	Focus offset 0V ± 50 mV	● Set the test mode. (*) ● Adjust VR6 (FCS. OFS) so that FCS ERR (focus error) voltage at Pin 6 of TP1 becomes 0V ± 50 mV.
2	Focus lock and spindle lock check					
	V 0.5V/div	H 100 msec /div	Pin 1 of TP1 (RF output)		RF output Clockwise rotation	● Load the test disc. ● Set the test mode. (*) ● Move the pickup close to the center of the disc using the TRACK/MANUAL SEARCH FWD (▶▶) key. ● Observe the output from Pin 1 of TP1 with an oscilloscope and confirm that the RF signal is output when pressing the PROGRAM key. ● Press the PLAY key and confirm that the disc rotates clockwise at approx. normal speed (about 300 rpm around the center of the disc), without running wildly or in reverse direction.

* See page 91.

Step	Oscilloscope setting		Test points	Adjusting points	Check Items/ adjustment specifications	Adjustment procedure
	V	H				
3	Grating adjustment					
	V: 0.5V/div H: 5 msec/div		Pin 2 of TP1	Grating adjustment plate	Tracking error waveform null point Maximum amplitude	Note: This adjustment can be performed with an 8 cm disc having pits over a 35 mm radius, or a 12 cm disc having pits over a 57 mm radius. ● Set the test mode. (*) ● Connect Pin 2 of TP1 with an oscilloscope via a 4 kHz low-pass filter. ● Load the disc. ● Move the pickup to the outer track of the disc (stop it on the disc pit area at such a location that the grating adjustment point can be seen from above the servo mechanism). ● Press the PROGRAM and PLAY keys in that order to close the focus and spindle servos (the tracking servo will not close). ● Insert a screwdriver in the grating adjustment plate slot. ● Observe the tracking error waveform and move the grating adjustment plate to the point where waveform amplitude is minimum and the envelope is smooth (null point). ● Turn the screwdriver slowly counter-clockwise from the null point and stop at the first point where waveform amplitude is maximum. Note: In case there is a difference of more than 10% between tracking error waveform levels at the inner and outer tracks of the disc, repeat the adjustment without inserting the low-pass filter.

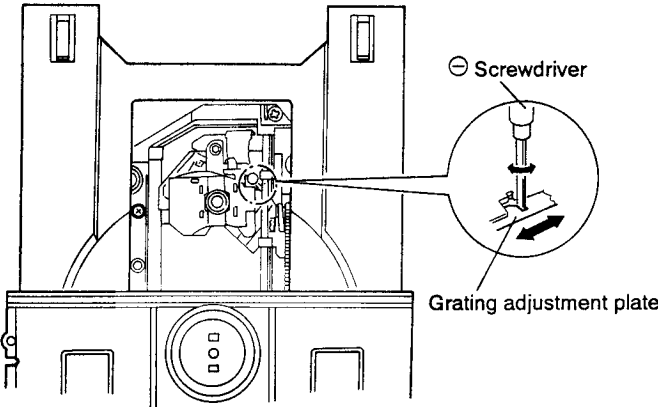


Fig. 2.

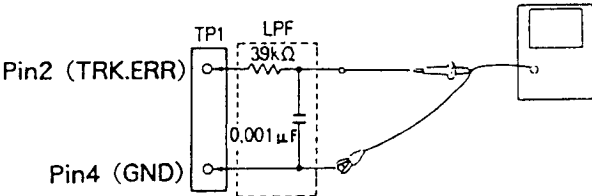
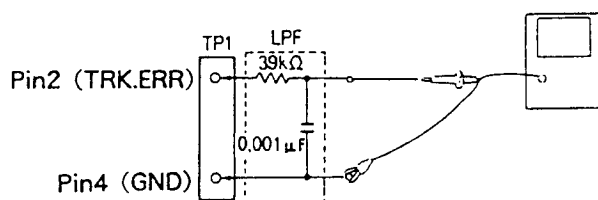
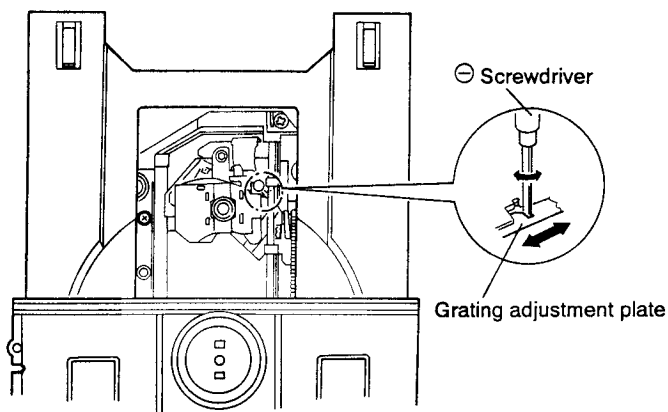


Fig. 3.



* See page 91.

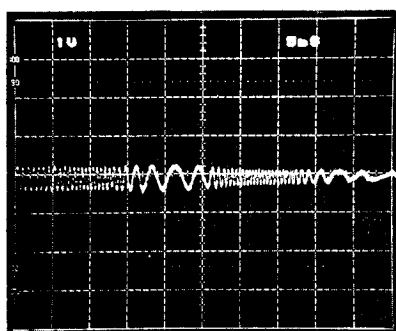


Photo-1 Null point

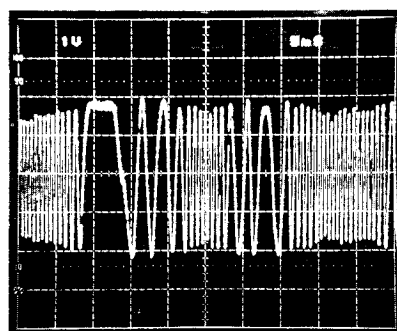


Photo-2 Maximum amplitude

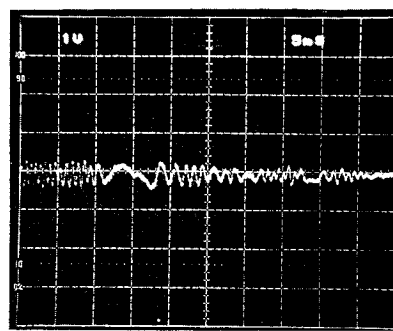


Photo-3

This is not the null-point waveform

Step	Oscilloscope setting		Test points	Adjusting points	Check Items/ adjustment specifications	Adjustment procedure
	V	H				
4	Tracking balance adjustment					
	V: 0.5V/div H: 5 msec/div		Pin 2 of TP1 (TRK. ERR)	VR5 (TR. BAL)		● Set oscilloscope ground to the center. ● Load the test disc. ● Set the test mode. (*) ● Press the TRACK/MANUAL SEARCH FWD key and move the pickup close to the middle track. ● Press the PROGRAM and PLAY keys in that order to turn the disc. ● Observe the tracking error waveform from Pin 2 of TP1 with the oscilloscope. ● Adjust VR5 (TR. BAL) so as to remove DC elements from the tracking error waveform (A=B).

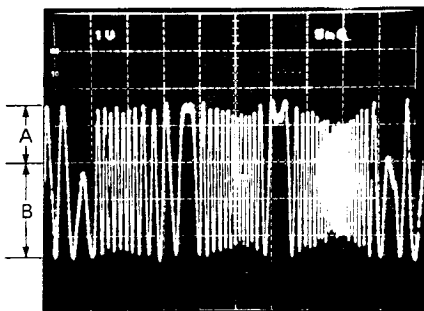


Photo-4 DC elements mixed in signal

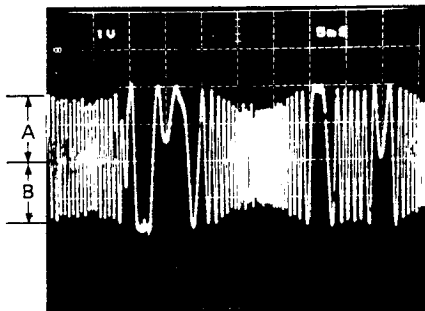


Photo-5 DC elements eliminated

* See page 91.

Step	Oscilloscope setting		Test points	Adjusting points	Check Items/ adjustment specifications	Adjustment procedure
	V	H				
5	Tangential/radial adjustment (pickup inclination adjustment)					Note: This adjustment can be performed with an 8 cm disc having pits over a 35 mm radius, or a 12 cm disc having pits over a 57 mm radius. The YEDS-7 test disc cannot be used. ● Set the test mode. (*) ● Load the disc. ● Press the TRACK/MANUAL SEARCH FWD key and move the pickup to the outer track of the disc (stop it on the disc pit area at such a location that the tangential and radial adjustment screws can be seen from above the servo mechanism). ● Press the PROGRAM, PLAY and PAUSE keys in that order to close all servos. ● Connect Pin 1 of TP1 to an oscilloscope and observe the eye pattern. ● If the eye pattern is not clear, adjust first the radial adjustment screw, then the tangential adjustment screw with a hex wrench. Repeat alternately two or more times. Note: The adjustment point is located around the middle location between the point where the eye pattern becomes blurred when turning the adjustment screw clockwise and the point where the eye pattern becomes blurred when turning the adjustment screw counterclockwise. Observe the overall clearness of the waveform and one of the diamond shapes in the eye pattern. Optimum adjustment is attained at the point where diamond shape lines are relatively thin (Photo 7). After tangential/radial adjustment, lock the screw with adhesive, etc.

The diagram shows a top-down view of the CD player's internal servo mechanism. Two circular callouts provide detailed views of the adjustment screws. The 'Radial' callout shows a hex wrench being used to turn a screw. The 'Tangential' callout shows a hex wrench being used to turn another screw. A label 'Hex wrench' points to the tool in the tangential callout.

Fig. 4.

The diagram illustrates the test setup for observing the eye pattern. It shows a component with two pins: 'Pin 1 (RF)' and 'Pin 4 (GND)'. A wire connects Pin 1 to a point labeled 'TP1 (short circuit)'. Another wire connects Pin 4 to the same 'TP1 (short circuit)' point. An oscilloscope is shown connected to these points to observe the waveform.

Fig. 5.

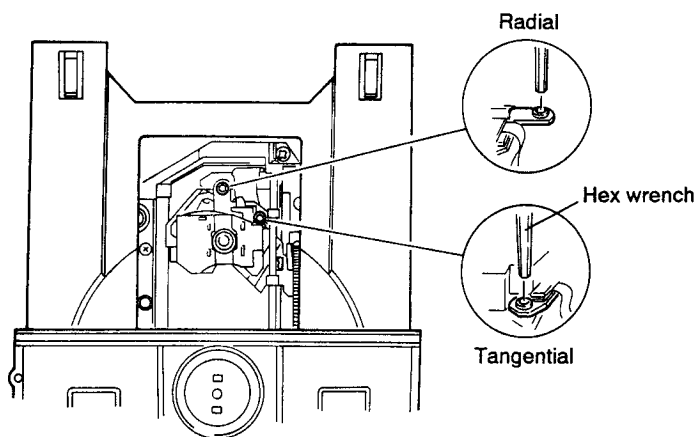


Fig. 4.

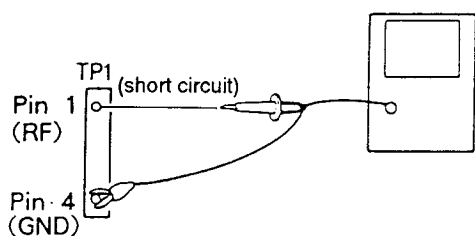


Fig. 5.

* See page 91.

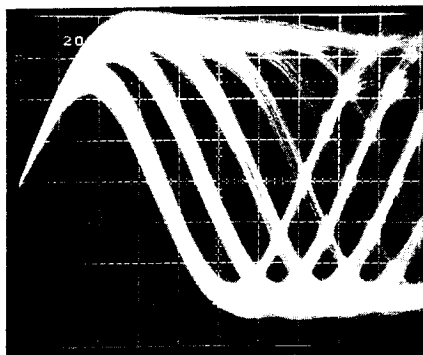


Photo-6

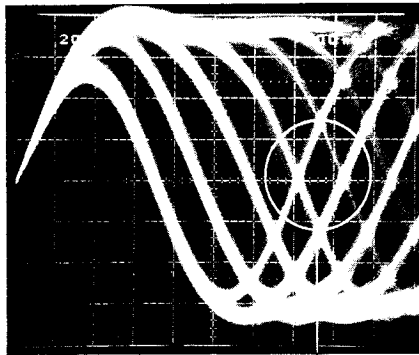


Photo-7

Part to be observed

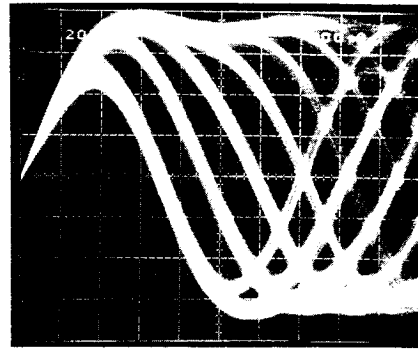
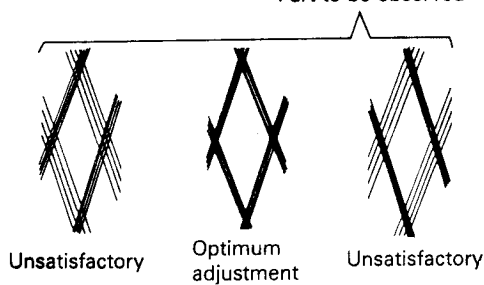


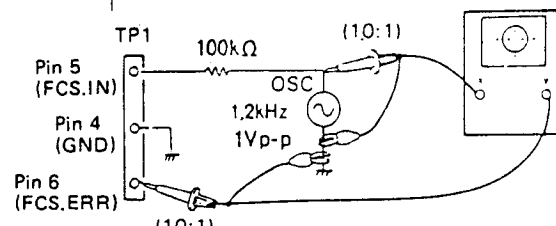
Photo-8

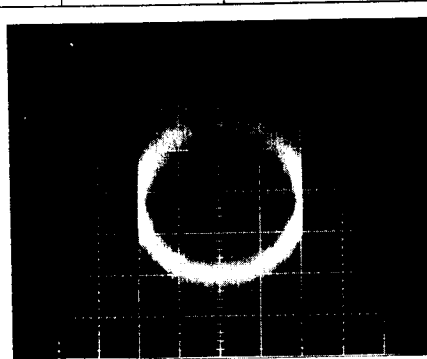
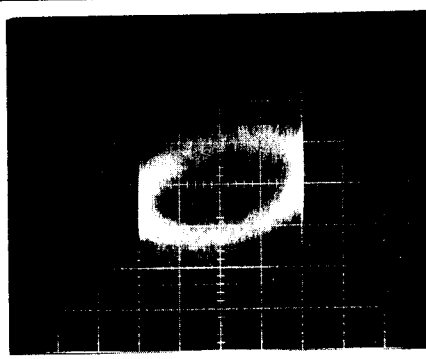


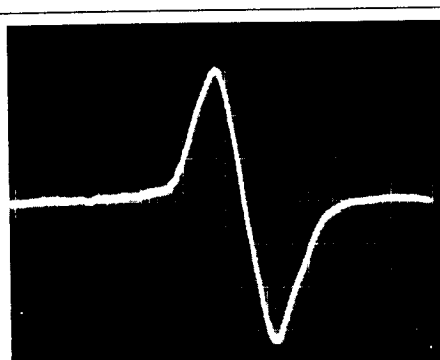
Eye Pattern

Step	Oscilloscope setting		Test points	Adjusting points	Check Items/ adjustment specifications	Adjustment procedure
	V	H				
6	RF level adjustment					
			Pin 1 of TP1 (RF output)	VR1 (laser power)	1.2 ± 0.2V	● Set the test mode. (*) ● Connect the oscilloscope to Pin 1 (RF output) of TP1, play back the test disc and measure the RF waveform p–p voltage. ● Adjust to 1.2 ± 0.2 V.
7	LD (laser diode) power check					
					0.41 mW or less	● Set the test mode. (*) ● Press the PROGRAM key and turn the LD (laser diode) on. ● Place the sensor of the light power meter directly above the objective lens and confirm that LD power is 0.31 mW or less.

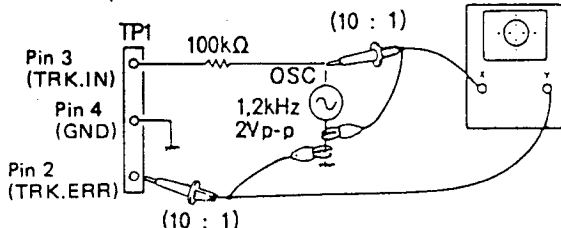
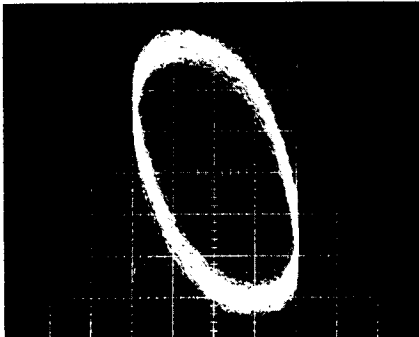
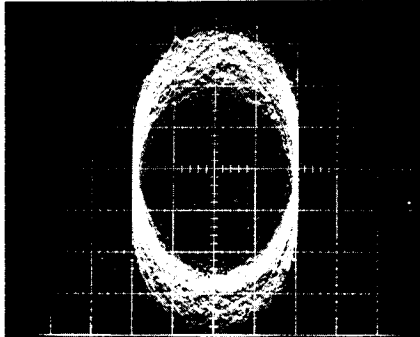
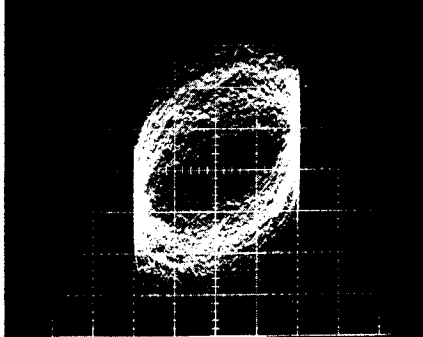
* See page 91.

Step	Oscilloscope setting		Test points	Adjusting points	Check Items/ adjustment specifications	Adjustment procedure
	V	H				
8	Focus gain adjustment					
	CH1 (X), CH2 (Y) 20 mV/div, 5 mV/div (probe 10:1)	X axis: Pin 5 of TP1 (FCS. IN) Y axis: Pin 6 of TP1 (FCS. ERR)	VR3 (FCS. GAIN)	Phase difference: 90°	● With the power off, connect the oscilloscope and the oscillator as shown in Fig. 6. ● Set the normal playback mode. ● Turn oscillator power on and set it to output a 1.2 kHz, 1 Vp-p signal. Note: Some oscillators output DC when turned on. In that case, connect the oscillator after turning it on. ● Adjust VR3 (FCS. GAN) so that the resurge waveform on the oscilloscope becomes an upright circle (phase difference 90°).  Fig. 6.	

		
Gain overcompensated Photo-9	Gain optimum Photo-10	Gain undercompensated Photo-11

	Note: Focus error (S-shaped) signal check ● Set the test mode. (*) ● Ground Pin 5 of TP1. ● Connect the oscilloscope to Pin 6 of TP1. ● Press the PROGRAM key twice in a row and observe the generated waveform.
Focus error	

* See page 91

Step	Oscilloscope setting		Test points	Adjusting points	Check Items/ adjustment specifications	Adjustment procedure
	V	H				
9	Tracking gain adjustment					
	CH1 (X), CH2 (Y) 50 mV/div, 5 mV/div (probe 10:1)	X axis: Pin 3 of TP1 (TRK. IN) Y axis: Pin 2 of TP1 (TRK. ERR)	VR4 (TRK. GAIN)	Phase difference: 90°	● With the power off, connect the oscilloscope and the oscillator as shown in Fig. 7. ● Set the normal playback mode. ● Turn oscillator power on and set it to output a 1.2 kHz, 2 Vp-p signal. Note: Some oscillators output DC when turned on. In that case, connect the oscillator after turning it on. ● Adjust VR4 (TRK. GAN) so that the resurge waveform on the oscilloscope becomes an upright circle (phase difference 90°).  Fig. 7.	
 Gain overcompensated Photo-12  Gain optimum Photo-13  Gain undercompensated Photo-14						
10	VCO free-running frequency adjustment					
		Pin 2 of TP2 (PLCK)	VR8 (VCO. ADJ)	4.275 ± 0.025 MHz	● Set the stop mode. ● Connect the VCO. ADJ and GND jumpers with a screwdriver, etc. (Fig. 1). ● Connect the PLCK jumper to a frequency counter capable of measuring frequencies above 10 MHz. ● Adjust VR8 (VCO. ADJ) so that the frequency counter reads 4.275 ± 0.025 MHz.	

* See page 91.

8. RÉGLAGES

8.1 PARTIE SYNTONISEUR

Préparatifs

- Régler le VOLUME au minimum.
- Régler sur la fonction TUNER.
- Pour les réglages des points d'essai et des commandes, se référer à la figure 8-3.

Réglage de la partie syntoniseur FM

- Appeler le mode FM avec le sélecteur BAND.
- Raccorder comme indiqué sur la figure 8-1.

Etape	Dénomination du réglage	FM SG (1 kHz $\pm$ 75 kHz dev.)		XR-P500 Indication de fréquence de réception	Réglage	
		Fréquence (MHz)	Niveau (dB μ)		Point de réglage	Spécification
1	Réglage de centre de compteur T	98	60	98 MHz	L801	Régler afin que la tension entre TP802 et TP803 devienne 0V $\pm$ 50 mV.
2	Réglage de fréquence de relaxation de l'OAT FM	98	60 (Absence de modulation)	98 MHz	VR851	Régler afin que la tension entre TP804 et GND devienne 76 $\pm$ 0,5 kHz.
3	Réglage de niveau de l'indicateur d'accord	98	20	98 MHz	VR801	Régler au point où l'indicateur d'accord s'allume juste.

Réglage de la partie syntoniseur AM

- Le niveau AM SG (dB μ /m) indique la force du champs électrique de l'antenne à boucle.
- Appeler le mode AM avec le sélecteur BAND.
- Raccorder comme indiqué sur la figure 8-2.
- Pour le type SD seulement, régler le commutateur CHANNEL STEP (S801) sur le panneau arrière à 9 kHz/50 kHz.
- * Pour le type HEWZI, exécuter seulement les étapes 1 à 3.

Etape	Dénomination du réglage	AM SG (400 Hz, modulation 30%)		XR-P500 Indication de fréquence de réception	Réglage	
		Fréquence (MHz)	Niveau (dB μ)		Point de réglage	Spécification
1	Réglage de piste	603	55	603 MHz	L821	Régler afin d'obtenir une tension CC maximale entre TP806 et GND.
2		1395	55	1395 MHz	TC801	Régler afin d'obtenir une tension CC maximale entre TP806 et GND.
3	Répéter les étapes 1 et 2 afin qu'elles répondent toutes deux aux spécifications.					
4	Réglage du transformateur FI	603	55	603 MHz	F803	Régler afin d'obtenir une tension CC maximale entre TP806 et GND.
5	Réglage de niveau d'indicateur d'accord	999	55	999 MHz	VR802	Régler au point où l'indicateur d'accord s'allume juste.

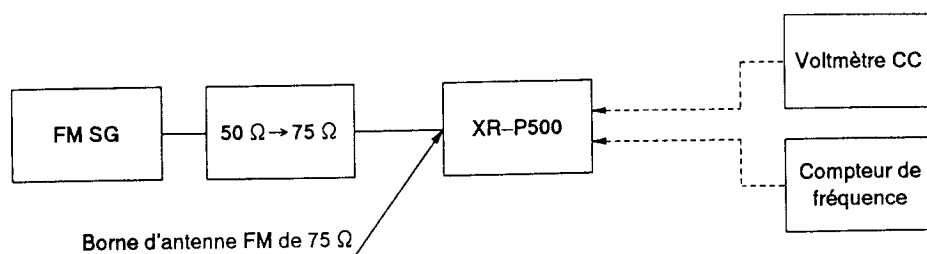


Fig. 8-1. Diagramme de Connexion de Réglage FM

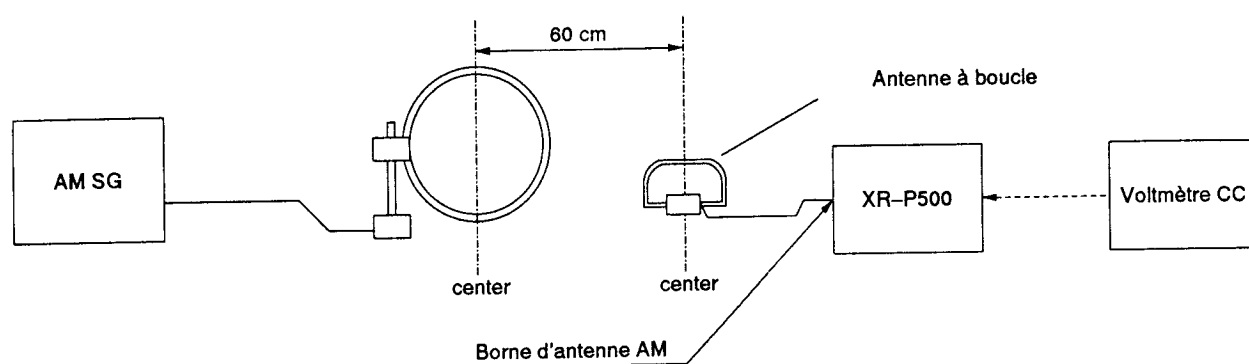


Fig. 8-2. Diagramme de Connexion de Réglage AM

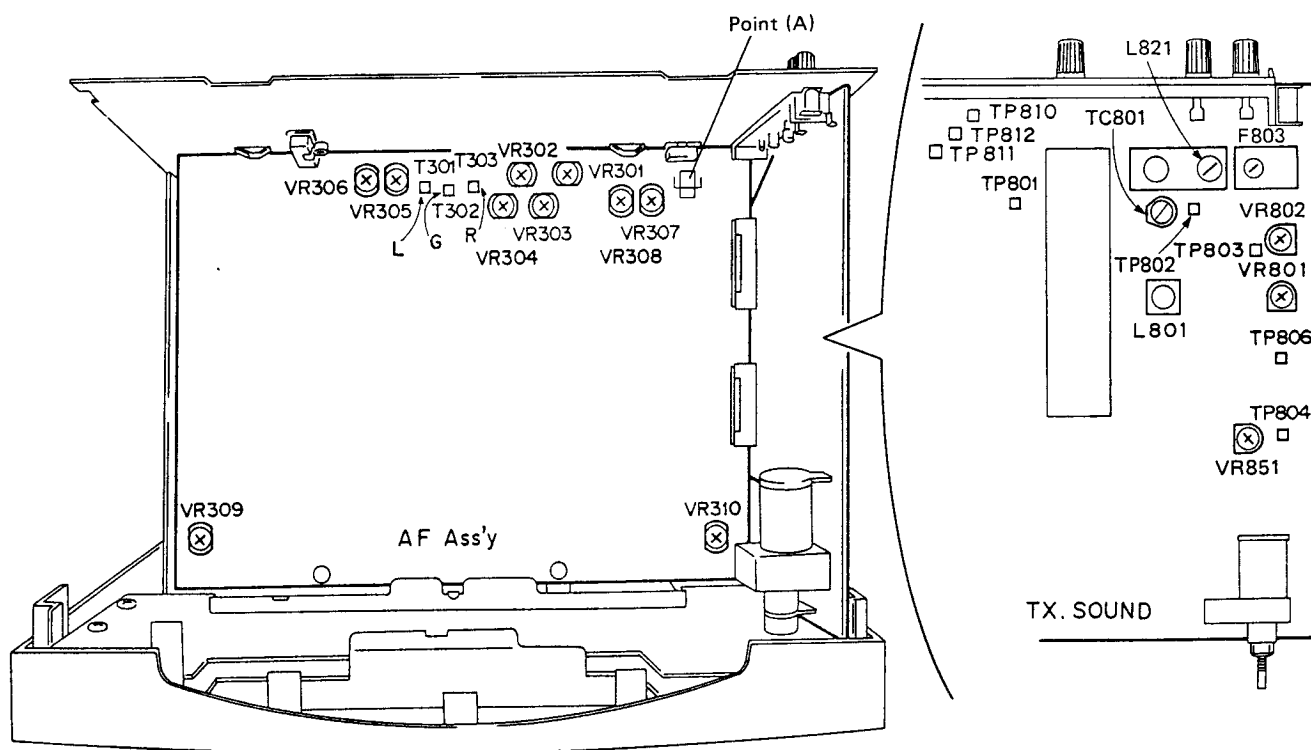


Fig. 8-3. Points de Réglage et Points D'essai

8.2 MAGNETOCASSETTE

- Les points de réglages et les points d'essais sont représentés à la figure 8-2.

● Réglage Mécanique

- Régler sur la fonction TAPE
- Bande d'essai: STD-301 (3 kHz, 30 mn)

1. Réglage de Vitesse de Bande							
No.	Mode	Bande d'essai	Points de réglage		Points de mesure	Procédure de réglage	Remarques
1	PLAY	STD-301 (lecture 3 kHz)	Platine I	Ensemble de COMMANDE DE PLATINE VR309	TP-R (Canal D)	Appuyer sur la touche de lecture PLAY et régler en sorte que la lecture deviennent 3010 ± 10 Hz. Contrôler que le niveau de pleurage est inférieur à 0,2% (dans la direction inverse, contrôler que la lecture est inférieure ou égale à 3010 ± 55 Hz).	
2	PLAY		Platine II	Ensemble de COMMANDE DE PLATINE VR802	TP-R (Canal D)	Appuyer sur la touche de lecture PLAY et régler de sorte que la lecture deviennent 3010 ± 10 Hz. Le niveau de pleurage doit être inférieur à 0,2% (dans la direction inverse, la lecture doit être inférieure ou égale à 3010 ± 55 Hz).	

● Réglage Électrique

Procéder aux contrôles suivants avant le commencement.

1. Contrôler si le réglage de vitesse de bande est bien terminé.
2. Nettoyer les têtes et les démagnétiser avec un démagnétiseur de tête.
3. Régler le niveau de mesure à 0 dBV=1 Vrms
4. Pour le réglage, utiliser la bande recommandée. Utiliser la face étiquetée (A) de la bande d'essai.
STD-331B: pour le réglage de la lecture
STD-630: bande vierge normale
5. Se munir des appareils de mesure suivants:
Millivoltmètre CA, oscillateur basse fréquence, atténuateur, oscilloscope
6. Régler les canaux droit et gauche, à moins qu'il n'en soit précisé autrement.
7. Mettre le commutateur DOLBY NR hors circuit, à moins qu'il n'en soit précisé autrement.
8. Échauffer l'unité quelques minutes avant de procéder au réglage.

En particulier, échauffer l'unité dans le mode d'enregistrement/lecture REC/PLAY 3 à 5 minutes avant de commencer le réglage des caractéristiques de fréquence d'enregistrement/lecture

9. Procéder toujours selon l'ordre de réglage indiqué. Sinon, le réglage complet peut être impossible à réaliser.

Réglage de Lecture (platines I et II)

1. Réglage d'angle de tête
2. Réglage du niveau de lecture

Réglage D'enregistrement (platines I et II)

1. Vérification de fréquence d'oscillation de polarisation
2. Réglage des caractéristiques de fréquence d'enregistrement/lecture
3. Réglage du niveau d'enregistrement
4. Contrôle d'opération CAN

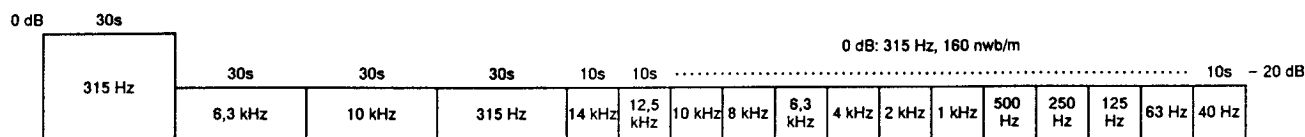


Fig. 8-3. Bande D'essai STD-331B

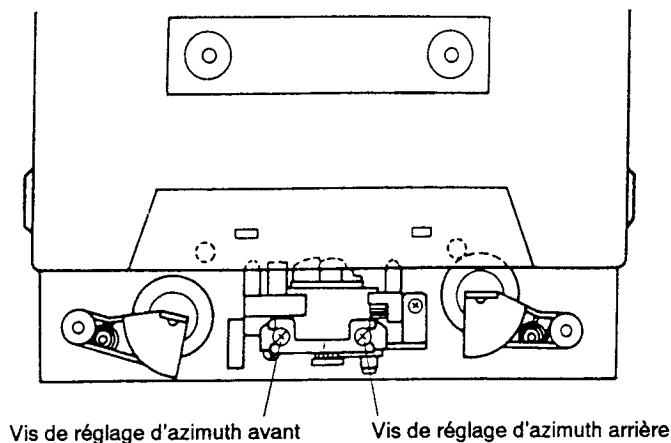
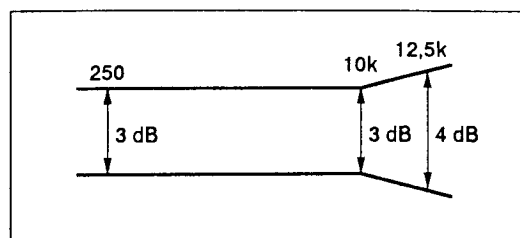


Fig. 8-4. Réglage D'angle de Tête

LECTURE (PLAY)



ENREGISTREMENT (REC)

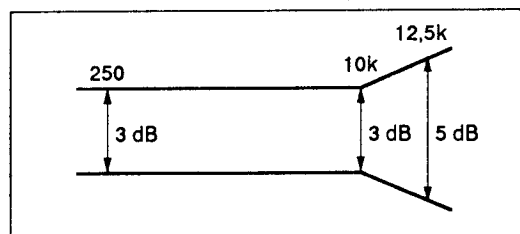


Fig. 8-5. Caractéristiques de Fréquence

● Réglage de Lecture

- Cette unité est équipée d'un sélecteur de bande automatique.
- Ne pas passer du défilement avant au défilement arrière lorsque le tournevis est inséré.

1. Réglage d'angle de tête

Etape	Sélecteur de bande (AUTO)	Mode	Signal d'entrée/bande d'essai	Point de réglage		Points de mesure	Valeur de réglage	Remarques
1	NORMAL	PLAY	Bande d'essai STD-331B (lecture 10 kHz, -20 dB)	Platine I	Vis de réglage d'angle de tête (Fig. 8-4)	TP-L (Canal G) TP-R (Canal D) (DOLBY TP)	Niveau de signal de lecture maxi.	Après le réglage, appliquer de la peinture de scellement sur la vis de réglage d'angle de tête.
				Platine II				

2. Réglage de niveau de lecture

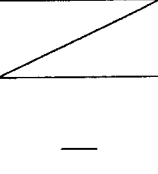
- Comme ce réglage détermine le niveau Dolby NR de lecture, l'effectuer avec soin.

Etape	Sélecteur de bande (AUTO)	Mode	Signal d'entrée/bande d'essai	Point de réglage		Points de mesure	Valeur de réglage	Remarques
1	NORMAL	PLAY	Bande d'essai STD-331B (lecture 315 kHz, 0 dB)	Platine I	VR303 (Canal G) VR304 (Canal D)	TP-L (Canal G) TP-R (Canal D) (DOLBY TP)	-8,2 dBV	
				Platine II	VR301 (Canal G) VR302 (Canal D)			

Remarque: Le niveau de platine II change quand le niveau de platine I est réglé. Par conséquent, régler d'abord le niveau de platine I.

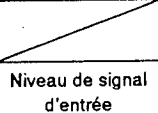
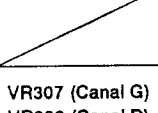
● Réglage D'enregistrement

1. Contrôle de Fréquence D'oscillation de Polarisation

Etape	Sélecteur de bande (AUTO)	Mode	Signal d'entrée/bande d'essai	Point de réglage		Points de mesure	Valeur de réglage	Remarques
1	NORMAL	REC	Charger la bande d'essai STD-630 et appeler le mode d'enregistrement	Platine I			Fréquence d'oscillation devant être $106,5 \pm 2$ kHz quand le commutateur de coupure de battement sur le panneau arrière est sur la position "1".	La fréquence est 2 ou 3 kHz inférieure quand le commutateur de coupure de battement sur le panneau arrière est sur la position "2".
				Platine II				

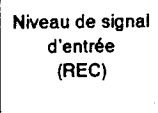
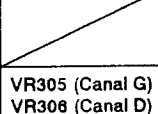
• Comme ce réglage affecte la polarisation d'enregistrement, éviter la distorsion en augmentant à cause de la sous-polarisation.

2. Réglage des Caractéristiques de Fréquence Enregistrement/Lecture

Etape	Sélecteur de bande (AUTO)	Mode	Signal d'entrée/bande d'essai	Point de réglage		Points de mesure	Valeur de réglage	Remarques
1	NORMAL	REC	Appliquer 315 Hz sur l'entrée audio et régler sur la fonction VIDEO.	Platine I		TP-L (Canal G)	-26,2 dBV	
				Platine II		TP-R (Canal D) (DOLBY TP)		
2	NORMAL	REC/PLAY	Charger la bande d'essai STD-630 et enregistrer/lire les signaux 315 Hz et 10 kHz (voir la remarque ci-dessous)	Platine I		TP-L (Canal G)	Répéter les réglages jusqu'à ce que le niveau de lecture du signal 10 kHz soit inférieur à $0 \pm 0,5$ dB de celui du signal 315 Hz.	
				Platine II		TP-R (Canal D) (DOLBY TP)		

Remarque: Régler le même niveau utilisé pour le signal d'entrée de 315 Hz à l'étape 1.

3. Réglage du Niveau D'enregistrement

Etape	Sélecteur de bande (AUTO)	Mode	Signal d'entrée/bande d'essai	Point de réglage		Points de mesure	Valeur de réglage	Remarques
1	NORMAL	REC	Appliquer un signal de 315 Hz aux bornes de lecture DAT/VIDEO et appeler la fonction DAT/VIDEO.	Platine I		TP-L (Canal G)	-6,2 dBV	
				Platine II		TP-R (Canal D) (DOLBY TP)		
2	NORMAL	REC/PLAY	Bande d'essai STD-630 (enregistrement et lecture 315 Hz)	Platine I		TP-L (Canal G)	Répéter l'enregistrement, la lecture et le réglage jusqu'à ce que le niveau de lecture du signal de 315 Hz devienne -6,2 dBV.	
				Platine II		TP-R (Canal D) (DOLBY TP)		

4. Contrôle de L'opération CAN

Etape	Sélecteur de bande (AUTO)	Mode	Signal d'entrée/bande d'essai	Point de réglage		Points de mesure	Valeur de réglage	Remarques
1	NORMAL	REC-PAUSE	Introduire un signal de 315 Hz à la borne de lecture DAT/VIDEO et appeler la fonction DAT/VIDEO.	Niveau de signal d'entrée		TP-L (Canal G)	-6,2 dBV	
2				Régler à un niveau de 10 dB au-dessus du niveau d'entrée à l'étape 1.		TP-R (Canal D) (DOLBY TP)	$-1,2 \pm 2,5$ dBV	

8.3 SECTION CD

Effectuer les réglages suivants dans l'ordre indiqué.

● Réglages

1. Réglage du décalage de focalisation
2. Vérification de verrouillage de mise au point et de verrouillage d'axe
3. Réglage de filtre
4. Réglage de suivi de piste
5. Réglage radial/tangentiel
6. Réglage de niveau RF
7. Contrôle de puissance de diode-laser
8. Réglage du gain de focalisation
9. Réglage du gain de suivi de piste
10. Réglage de fréquence de relaxation de l'OAT (oscillateur accordé par tension)

● Appareils de Mesure

1. Oscilloscope cathodique à deux voies
2. Mesure de puissance lumineuse
3. Disc d'essai YEDS-7, disc 8 cm
4. Filtre de réglage de gain en boucle
5. Générateur de signal
6. Fréquencemètre numérique
7. Outils à usage général

Points de Réglages

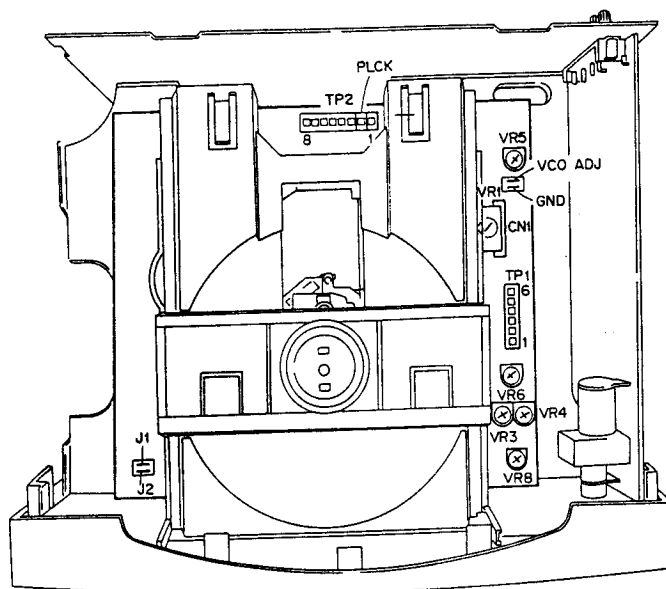


Fig. 1. Points de Réglages

● Le Mode D'essai

Cette unité est réglée sur le mode d'essai.

Réglage et Annulation du Mode D'essai

- ① Pour régler sur le mode d'essai, brancher le cordon d'alimentation sur les cavaliers J1 et J2 raccordés l'un à l'autre, puis mettre sous tension.
- ② Pour annuler le mode d'essai, éteindre l'interrupteur d'alimentation (POWER) puis débrancher le cordon d'alimentation.

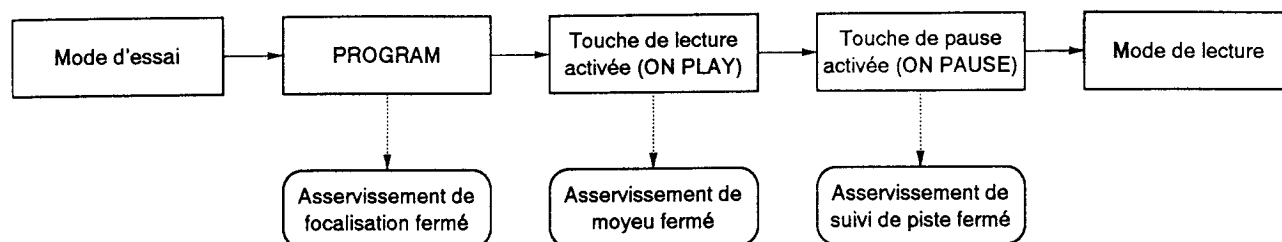
En mode d'essai, les commandes de l'unité fonctionnent comme indiqué sur le Tableau 1.

● Description des Résistances Variables utilisées pour les Réglages

- VR1: Puissance laser
 VR3: Gain de focalisation (FCS GAIN)
 VR4: Gain de suivi de piste (TRK GAIN)
 VR5: Equilibrage de suivi de piste (TRK BAL)
 VR6: Décalage de focalisation (FCS OFS)
 VR8: Relaxation de l'OAT (VCO ADJ)

Dans ce mode d'essai, l'ouverture et la fermeture des circuits d'asservissements sont exécutées individuellement. Par conséquent, pour régler sur le mode de lecture, les asservissements doivent être fermés l'un après l'autre (dans l'ordre numérique). Ne pas oublier que le mode de lecture ne se règle pas simplement en appuyant sur la touche PAUSE (■). Pour régler sur le mode de lecture à partir du mode d'arrêt, par exemple, appuyer sur les touches suivantes dans l'ordre indiqué :

* En mode d'essai, les circuits d'asservissements restent en ordre numérique.



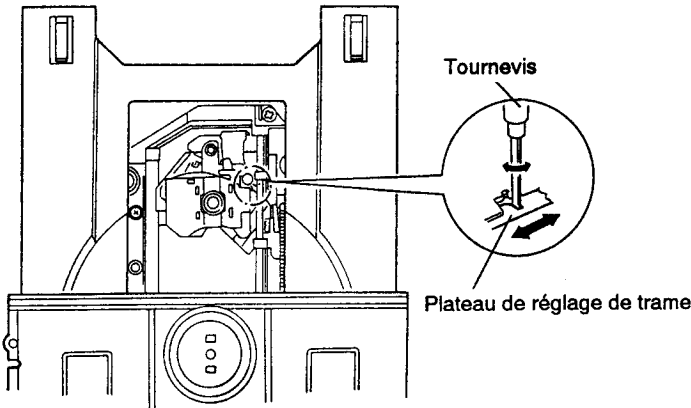
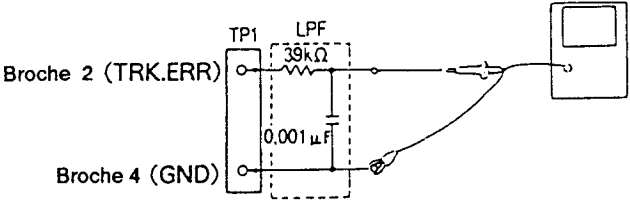
● Fonction de Chaque Touche Dans le Mode D'essai

Symbole	Touche	Fonction en mode d'essai	Explication
	PROGRAM	Fermeture d'asservissement de focalisation	Active la diode-laser et déplace le dispositif de commande de focalisation dans la direction verticale pour fermer l'asservissement de focalisation.
▶	CD PLAY	Fermeture d'asservissement de moyeu	Après le démarrage du moteur de moyeu, ferme l'asservissement dans le mode CLV-A.
■	PAUSE	Fermeture/ouverture d'asservissement de suivi de piste	Exécute une opération de bascule. Quand il est enfoncé, l'asservissement de suivi de piste est fermé et l'unité entre en mode de lecture (les asservissements de focalisation et de moyeu doivent déjà être fermés). A ce moment, le témoin de PAUSE s'allume. S'il est enfoncé à nouveau, l'asservissement de suivi de piste s'allume.
⏮	TRACK/ MANUAL SEARCH REV	Retour de chariot (vers l'intérieur)	Déplace à grande vitesse (2 cm/s) le chariot à l'intérieur. Comme il n'y a pas de mécanisme de sécurité pour arrêter le chariot, il faut donc l'arrêter manuellement à temps (cette opération doit commencer approximativement 0,5 s après avoir appuyé sur la touche).
⏭	TRACK/ MANUAL SEARCH FWD	Retour de chariot (vers l'extérieur)	Déplace à grande vitesse (2 cm/s) le chariot vers l'extérieur. Comme il n'y a pas de mécanisme de sécurité pour arrêter le chariot, il faut donc l'arrêter manuellement à temps (cette opération commence approximativement 0,5 s après avoir appuyé sur la touche).
■	STOP	Arrêt	Arrête tous les asservissements et remet l'unité à sa condition d'origine.
▲	OPEN/CLOSE	Ouverture/fermeture de plateau de disc	Ouvre et ferme le plateau de disc. Le capteur lecture ne revient pas, cependant, sur la position d'arrêt (intérieur) quand le plateau est ouvert. Ne se déplace pas non plus quand le plateau est fermé.

Tableau 1. Fonctions des Méthodes D'essais

Etape	Plage d'oscilloscope		Point d'essai	Point de réglage	Elément contrôlé/ spécifications de réglage	Procédure de réglage
	V	H				
1	Réglage de décalage de focalisation					
			Broche 6 de TP1 (FCS ERR)	VR6 (FCS OFS)	Décalage de focalisation 0V ± 50 mV	● Régler sur le mode d'essai (*) ● Ajuster VR6 (FCS OFS) afin que la tension FCS ERR (erreur de focalisation) à la broche 6 de TP1 devienne 0 V ± 50 mV
2	Vérification de verrouillage de mise au point et de verrouillage d'axe					
	V 0,5V/div	H 100 msec /div	Broche 1 de TP1 (sortie RF)		Sortie RF Rotation dans le sens des aiguilles d'une montre	● Charger le disc d'essai. ● Régler sur le mode d'essai. (*) ● Déplacer le capteur lecture près du centre du disc avec la touche d'avance de recherche manuelle/piste (TRACK/MANUAL SEARCH FWD) (▶▶) ● Observer la sortie à la broche 1 de TP1 avec un oscilloscope et confirmer que le signal RF est sorti lorsque la touche PROGRAM est enfoncée. ● Appuyer sur la touche de lecture PLAY pour s'assurer que le disc tourne dans le sens des aiguilles d'une montre à une vitesse normale approximativement (environ 300 t/mn près du centre du disc) sans le faire tourner irrégulièrement ou dans la direction inverse.

* Voir page 106.

Etape	Plage d'oscilloscope		Point d'essai	Point de réglage	Elément contrôlé/ spécifications de réglage	Procédure de réglage
	V	H				
3	Réglage de filtre					
	V: 0,5V/div H: 5 msec/div		Broche 2 de TP1	Plateau de réglage de trame	Point d'équilibre de la forme d'onde d'erreur de suivi de piste Amplitude maximum	Remarque: Ce réglage se réalise avec un disque de 8 cm doté de microcuvettes sur un rayon supérieur à 35 mm, ou un disque de 12 cm ayant des microcuvettes sur un rayon supérieur à 57 mm. ● Régler sur le mode d'essai (*). ● Raccorder la broche 2 de TP1 sur un oscilloscope via un filtre passe-bas de 4 kHz ● Charger le disc. ● Déplacer le capteur lecture sur la piste la plus extérieure du disc (l'arrêter sur la surface des microcuvettes du disc à un emplacement tel que le point de réglage du filtre puisse être vu du mécanisme d'asservissement). ● Appuyer sur les touches PROGRAM et PLAY et PAUSE dans cet ordre pour fermer les asservissements de focalisation et de moyeu (l'asservissement de suivi de piste ne sera pas fermé). ● Insérer un tournevis dans la fente du plateau de réglage du filtre. ● Observer la forme d'onde d'erreur de suivi de piste et déplacer le plateau de réglage du filtre au point où l'amplitude de forme d'onde est minimum et où l'enveloppe est filtrée (point d'équilibre). ● Tourner lentement le tournevis dans le sens contraire des aiguilles d'une montre à partir du point d'équilibre et arrêter au premier point où l'amplitude de la forme d'onde est maximale. Remarque: Au cas où il y aurait une différence supérieure à 10 % entre les niveaux de forme d'onde d'erreur de suivi aux pistes les plus intérieure et extérieure du disc, répéter le réglage sans insérer le filtre passe-bas.
						
Fig. 2.						
						
Fig. 3.						

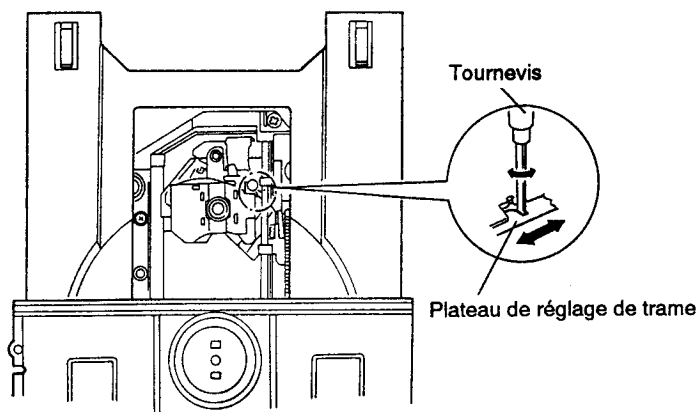


Fig. 2.

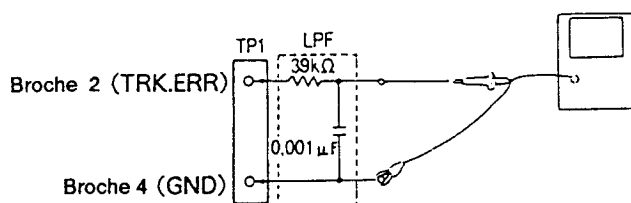


Fig. 3.

* Voir page 106.

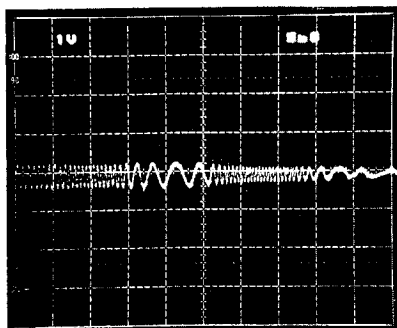


Photo-1 Point nul

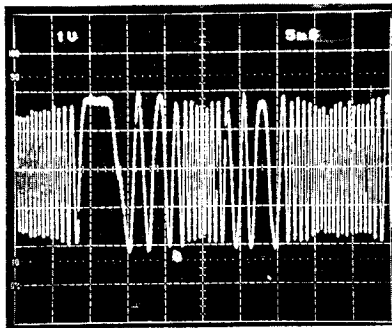


Photo-2 Amplitude maximale

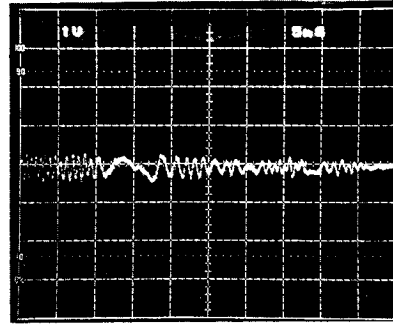
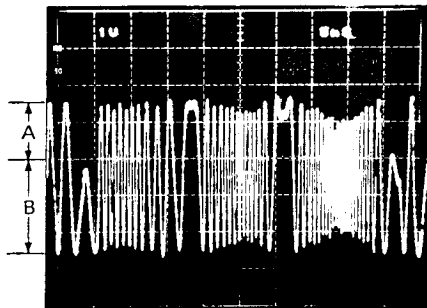
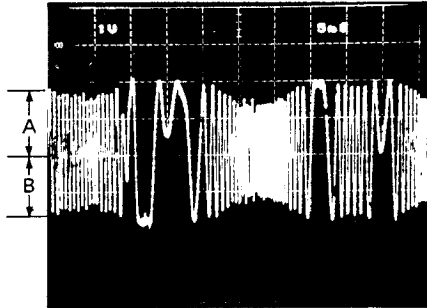


Photo-3 Ceci n'est pas la forme d'onde du point nul

Etape	Plage d'oscilloscope		Point d'essai	Point de réglage	Elément contrôlé/ spécifications de réglage	Procédure de réglage
	V	H				
4	Réglage de suivi de piste					
	V: 0,5V/div H: 5 msec/div		Broche 2 de TP1 (TRK ERR)	VR5 (TR BAL)		● Régler la mise à la terre de l'oscilloscope au centre. ● Charger le disc d'essai ● Régler sur le mode d'essai (*) ● Appuyer sur la touche d'avance de recherche manuelle de piste (TRACK MANUAL SEARCH FWD) et déplacer le capteur lecture près de la piste du milieu. ● Appuyer sur les touches PROGRAM et PLAY dans cet ordre pour faire tourner le disc. ● Avec l'oscilloscope, observer la forme d'onde d'erreur de suivi de piste à la broche 2 de TP1. ● Régler VR5 (TR BAL) afin d'enlever les éléments CC à la forme d'onde d'erreur de suivi de piste (A=B).



A ≠ B



A = B

Photo-4 Eléments CC mêlés au signal

Photo-5 Eléments CC éliminés

*Voir page 106.

Etape	Plage d'oscilloscope		Point d'essai	Point de réglage	Elément contrôlé/ spécifications de réglage	Procédure de réglage
	V	H				
5	Réglage radial/tangentiel (réglage d'inclinaison du capteur lecture)					Remarque: Ce réglage se réalise avec un disc de 8 cm doté de microcuvettes sur un rayon supérieur à 35 mm, ou un disc de 12 cm ayant des microcuvettes sur un rayon supérieur à 57 mm. Ne pas utiliser le disc d'essai YEDS-7. ● Régler sur le mode d'essai (*). ● Charger le disc. ● Appuyer sur la touche d'avance de recherche manuelle/piste (TRACK/MANUAL SEARCH FWD) et déplacer le capteur lecture sur la piste la plus extérieure du disc (l'arrêter sur la surface des microcuvettes du disc à un emplacement tel que les vis de réglages radial et tangentiel soient vues par-dessus le mécanisme d'asservissement). ● Appuyer sur les touches PROGRAM, PLAY et PAUSE dans cet ordre pour fermer tous les asservissements. ● Raccorder la broche 1 de TP1 sur un oscilloscope et observer la mire. ● Si la mire n'est pas nette, ajuster d'abord la vis de réglage radial, puis la vis de réglage tangentiel avec la clé hexagonale. Répéter alternativement deux ou plusieurs fois. Remarque: Le point de réglage est situé vers le milieu entre le point où la mire devient floue en tournant la vis de réglage dans le sens des aiguilles d'une montre et le point où la mire devient floue en tournant la vis de réglage dans le sens contraire des aiguilles d'une montre. Observer la netteté d'ensemble de la forme d'onde et l'une des formes en diamant de la mire. Le réglage optimal est obtenu au point où les lignes de la forme en diamant sont relativement minces (photo 7). Après les réglages radial/tangentiel, bloquer les vis avec un produit adhésif, etc.

The diagram shows a top-down view of the internal mechanism of the oscilloscope. Two circular callouts provide detailed views of the adjustment points. The 'Radial' callout shows a hand using a hex key to adjust a screw on a vertical plate. The 'Tangentiel' callout shows a hand using a hex key to adjust a screw on a horizontal plate. A label 'Clé hexagonale' points to the hex key in the tangential adjustment view.

Fig. 4.

The diagram shows a probe connected to the TP1 test point. The probe tip is touching the 'Broche 1 (RF)' pin, which is labeled '(Court-circuit)'. The other end of the probe is connected to the 'Broche 4 (GND)' pin. The oscilloscope screen is shown to the right, displaying a waveform.

Fig. 5.

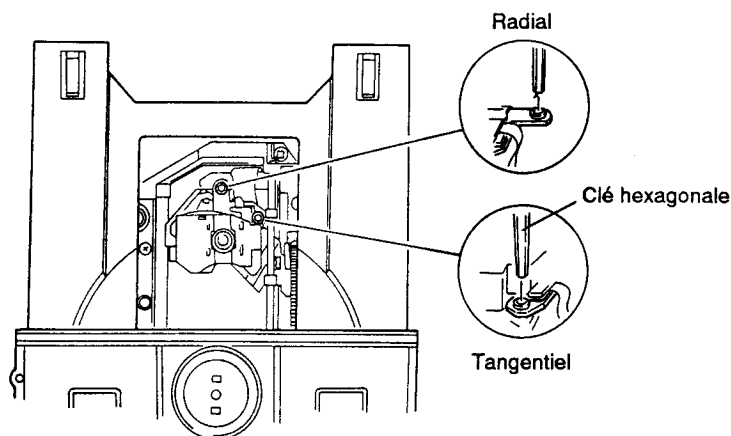


Fig. 4.

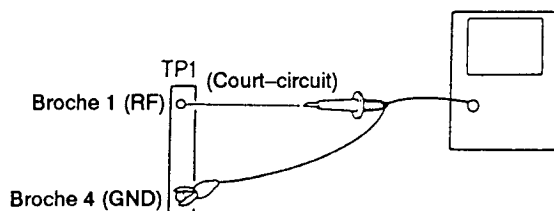


Fig. 5.

* Voir page 106.

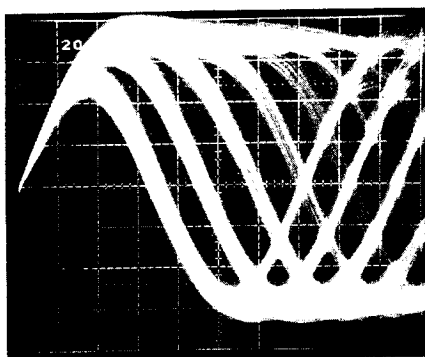


Photo-6

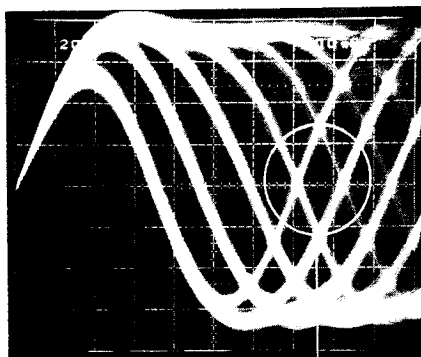


Photo-7

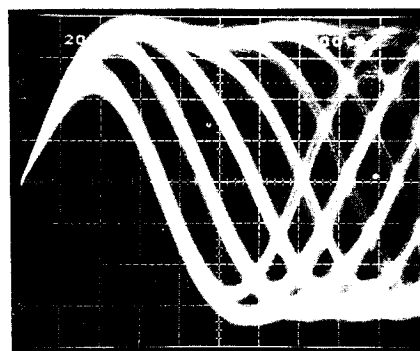
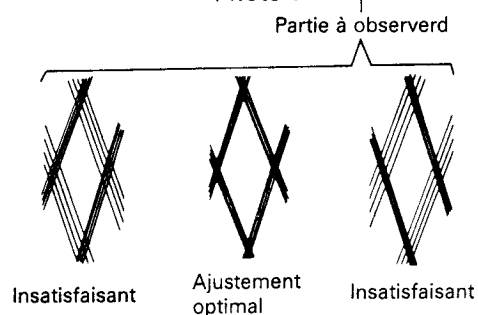


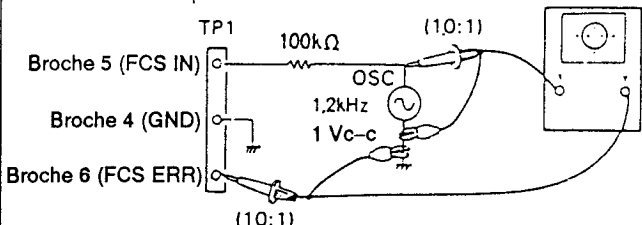
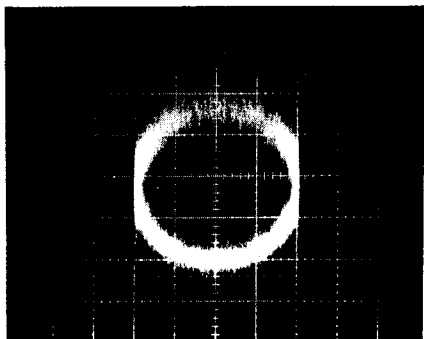
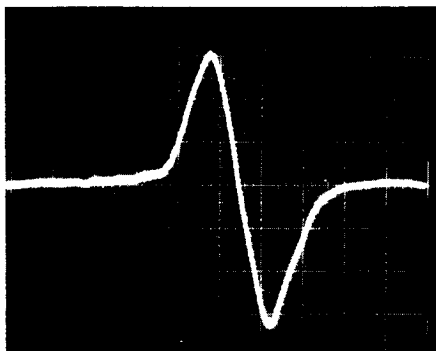
Photo-8



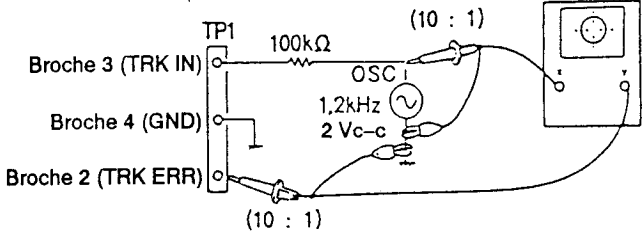
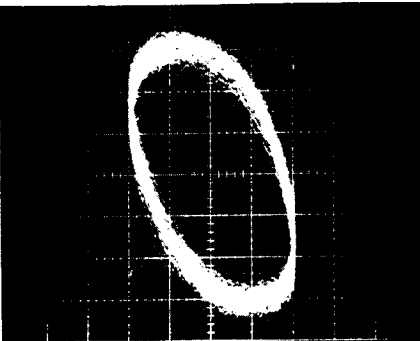
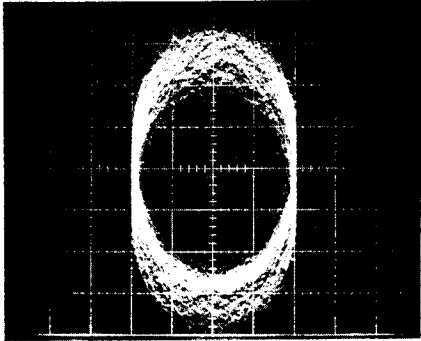
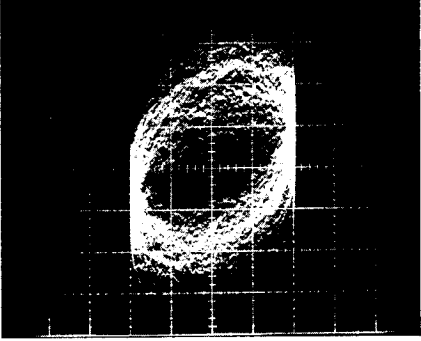
Mire

Etape	Plage d'oscilloscope		Point d'essai	Point de réglage	Elément contrôlé/ spécifications de réglage	Procédure de réglage
	V	H				
6	Réglage de niveau RF					
			Broche 1 de TP1 (sortie RF)	VR1 (puissance laser)	1,2 ± 0,2V	● Régler sur le mode d'essai (*). ● Raccorder l'oscilloscope sur la broche 1 (sortie RF) de TP1, lire le disc d'essai et mesurer la tension c-c de forme d'onde RF. ● Régler sur 1,2 ± 0,2 V
7	Contrôle de puissance de LD (diode-laser)					
					0,41 mW ou inférieur	● Régler sur le mode d'essai (*). ● Appuyer sur la touche de PROGRAM et mettre en circuit la LD (diode-laser). ● Placer le senseur de mesure de puissance lumineuse directement au-dessus de la lentille pour confirmer que la puissance LD est de 0,31 mW ou inférieure.

* Voir page 106.

Etape	Plage d'oscilloscope		Point d'essai	Point de réglage	Elément contrôlé/ spécifications de réglage	Procédure de réglage
	V	H				
8	Réglage du gain de focalisation					
	Canal 1 (CH1) (X), canal 2 (CH2) (Y) 20 mV/div, 5 mV/div (sonde 10:1)		Axe des X: Broche 5 de TP1 (FCS IN) Axe des Y: Broche 6 de TP1 (FCS ERR)	VR3 (FCS GAIN)	Différence de phase : 90°	● Lorsque l'appareil est hors tension, raccorder l'oscilloscope et l'oscillateur comme représenté sur la figure 6. ● Régler sur le mode de lecture normal ● Mettre l'oscillateur en circuit et le régler de manière à ce qu'il sorte un signal de 1,2 kHz, 1 Vc-c. Remarque: Certains oscillateurs sortent du courant continu à la mise en circuit. Dans ce cas, raccorder l'oscillateur après la mise en circuit. ● Régler VR3 (FCS GAN) afin que l'onde à pente raide sur l'oscilloscope devienne un cercle vertical (différence de phase 90°).  Fig. 6.
 Gain sur-compensé Photo-9  Gain optimal Photo-10  Gain sous-compensé Photo-11						
 Erreur de mise au point						Remarque: Contrôle de signal d'erreur de focalisation (à forme en S) ● Régler sur le mode d'essai (*). ● Mettre la broche 5 de TP1 à la terre ● Raccorder l'oscilloscope sur la broche 6 de TP1 ● Appuyer sur la touche PROGRAM deux fois d'affilée et observer la forme d'onde générée.

* Voir page 106.

Etape	Plage d'oscilloscope		Point d'essai	Point de réglage	Elément contrôlé/ spécifications de réglage	Procédure de réglage
	V	H				
9	Réglage du gain de suivi de piste					
	Canal 1 (CH1) (X), canal 2 (CH2) (Y) 50 mV/div, 5 mV/div (sonde 10:1)	Axe des X: Broche 3 de TP1 (TRK IN) Axe des Y: Broche 2 de TP1 (TRK ERR)	VR4 (TRK GAIN)	Différence de phase: 90°	● Lorsque l'appareil est hors tension, raccorder l'oscilloscope et l'oscillateur comme représenté sur la figure 7. ● Régler sur le mode de lecture normal. ● Mettre l'oscillateur en circuit et le régler de manière à ce qu'il sorte un signal de 1,2 kHz, 2 Vc-c. Remarque: Certains oscillateurs sortent du courant continu à la mise en circuit. Dans ce cas, raccorder l'oscillateur après la mise en circuit. ● Régler VR4 (TRK GAN) afin que l'onde à pente raide sur l'oscilloscope devienne un cercle vertical (différence de phase 90°). 	Fig. 7.
 Gain sur-compensé Photo-12  Gain optimal Photo-13  Gain sous-compensé Photo-14						
10	Réglage de fréquence de relaxation de l'OAT (oscillateur accordé par tension)					
		Broche 2 de TP2 (PLCK)	VR8 (VCO ADJ)	4,275 ± 0,025 MHz	● Régler sur le mode d'arrêt. ● Raccorder les cavaliers VCO ADJ et GND avec un tournevis, etc. (Fig. 1). ● Raccorder le cavalier PLCK à un fréquencemètre capable de mesurer des fréquences supérieures à 10 MHz. ● Régler VR8 (VCO ADJ) afin que le fréquencemètre indique 4,275 ± 0,025 MHz.	

* Voir page 106.

8. AJUSTES

8.1 SECCIÓN DEL SINTONIZADOR

Preparaciones

- Ponga el control VOLUME en mínimo.
- Escoja la función TUNER.
- Vea los puntos de prueba y los controles de ajuste en la Fig. 8-3.

Ajuste de la sección de sintonizador de FM

- Escoja el modo de FM con el selector BAND.
- Conecte como lo indica la Fig. 8-1.

Paso	Ajuste	FM SG (1 kHz $\pm$ 75 kHz dev.)		XR-P500 Indicación de frecuencia de recepción	Ajuste	
		Frecuencia (MHz)	Nivel (dB μ)		Punto de ajuste	Especificación
1	Ajuste central del medidor T	98	60	98 MHz	L801	Ajuste de modo que la tensión entre TP802 y TP803 sea $0V \pm 50$ mV.
2	Ajuste de la frecuencia propia del VCO de FM	98	60 (sin modulación)	98 MHz	VR851	Ajuste de modo que la frecuencia entre TP804 y masa sea $76 \pm 0,5$ kHz.
3	Ajuste del nivel del indicador de sintonía	98	20	98 MHz	VR801	Ajuste al punto en que el indicador de sintonía se ilumine apenas.

Ajuste de la sección de sintonizador de AM

- El nivel de AM SG (dB μ /m) indica la fuerza del campo eléctrico de la antena de cuadro.
- Escoja el modo de AM con el selector BAND.
- Conecte como lo indica la Fig. 8-2.
- Sólo para el tipo SD, coloque el conmutador CHANNEL STEP (S801) del panel trasero en 9 kHz/50 kHz.
- Siga los pasos 1 al 3 sólo para el tipo HEWZI.

Paso	Ajuste	AM SG (400 Hz, modulación del 30%)		XR-P500 Indicación de frecuencia de recepción	Ajuste	
		Frecuencia (kHz)	Nivel (dB μ /m)		Punto de ajuste	Especificación
1	Ajuste de seguimiento	603	55	603 MHz	L821	Ajuste de modo que la tensión de CC entre TP806 y masa sea máxima.
2		1395	55	1395 MHz	TC801	Ajuste de modo que la tensión de CC entre TP806 y masa sea máxima.
3	Repita los pasos 1 y 2 hasta que ambas condiciones sean satisfechas.					
4	Ajuste de IFT	603	55	603 MHz	F803	Ajuste de modo que la tensión de CC entre TP806 y masa sea máxima.
5	Ajuste del nivel del indicador de sintonía	999	55	999 MHz	VR802	Ajuste al punto en que el indicador de sintonía se ilumine apenas.

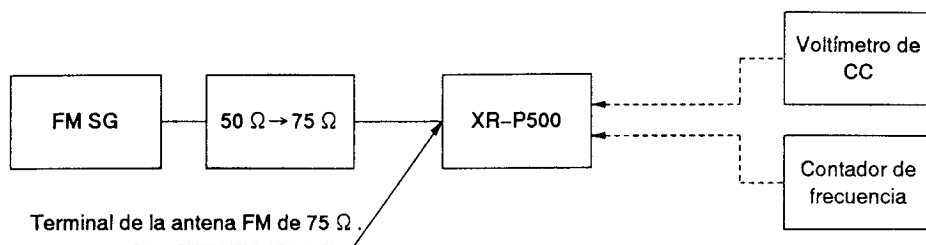


Fig. 8-1. Diagrama de Conexión Para el Ajuste de FM

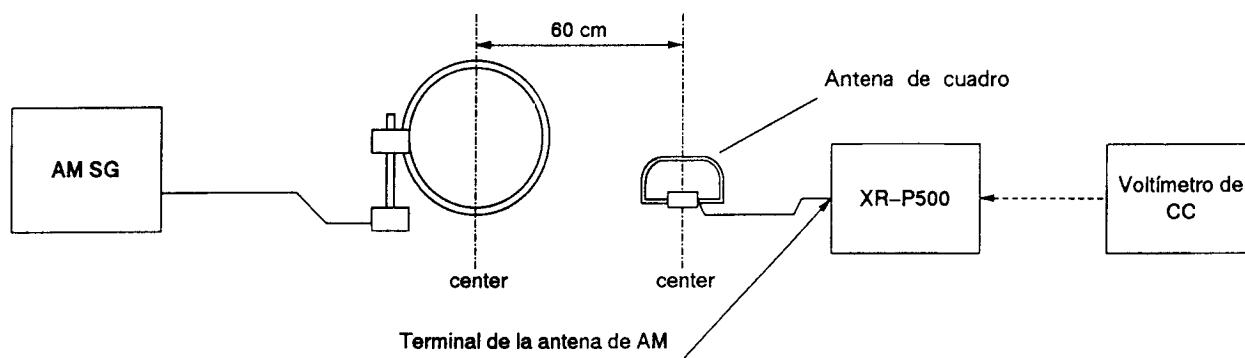


Fig. 8-2. Diagrama de Conexión Para el Ajuste de AM

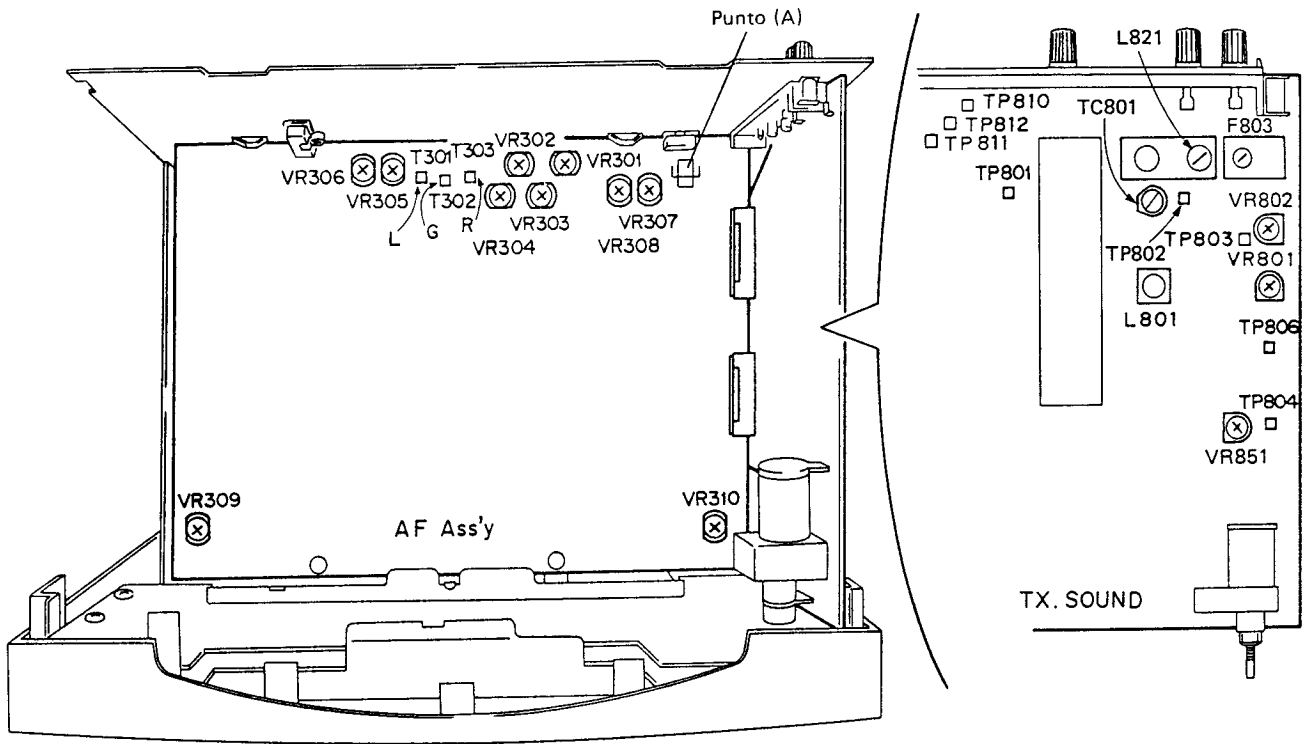


Fig. 8-3. Puntos de Ajuste y de Prueba

8.2 MAGNETOFONO DE CASETES

- Los puntos de ajuste y de prueba están indicados en la Fig. 8-2.

Ajuste Mecánico

- Active la función TAPE.
- Cinta de prueba: STD-301 (3 kHz, 30 min.)

1. Ajuste de la Velocidad de Cinta							
No.	Modo	Cinta de prueba	Puntos de ajuste		Puntos de medición	Procedimiento de ajuste	Comentarios
1	PLAY	STD-301 (reproducir 3 kHz)	Platina I	VR309 (conjunto control platina)	TP-R (der.)	Pulse la tecla PLAY y ajuste de modo que la lectura sea 3010 ± 10 Hz. Confirme que el nivel de lloro y tremolación esté por debajo del 0,2% (en dirección inversa, confirme que la lectura sea 3010 ± 55 Hz).	
2	PLAY		Platina II	VR802 (conjunto control platina)	TP-R (der.)	Pulse la tecla PLAY y ajuste de modo que la lectura sea 3010 ± 10 Hz. Confirme que el nivel de lloro y tremolación esté por debajo del 0,2% (en dirección inversa, confirme que la lectura sea 3010 ± 55 Hz).	

●Ajuste Eléctrico

Verifique lo siguiente antes de comenzar.

1. Confirme que se haya completado el ajuste de velocidad de la cinta.
2. Limpie los cabezales y desmagnetícelos mediante un desmagnetizador de cabezales.
3. Ajuste el nivel de ajuste a 0 dBV = 1 Vrms.
4. Use la cinta especificada para el ajuste. Utilice el lado rotulado (A) de la cinta de prueba.
STD-331B: para ajuste de reproducción
STD-630: cinta virgen normal
5. Hágase de los siguientes dispositivos de medición: Milivoltímetro de CA, oscilador de baja frecuencia, atenuador, osciloscopio.
6. Ajuste tanto el canal derecho como el izquierdo, a menos que se indique lo contrario.
7. Coloque el conmutador DOLBY NR en OFF a menos que se indique lo contrario.
8. Caliente la unidad por varios minutos antes del ajuste. Especialmente, asegúrese de calentarla en el modo de grabación/reproducción por 3 a 5 minutos antes de comenzar el ajuste de las características de frecuencia en grabación/reproducción.

9. Siga siempre el orden de ajuste indicado. De lo contrario, puede no ser posible lograr un ajuste completo.

Ajustes de Reproducción (platinas I y II)

1. Ajuste del ángulo del cabezal
2. Ajuste del nivel de reproducción

Ajustes de Grabación (platinas I y II)

1. Confirmación de la frecuencia de oscilación de polarización
2. Ajuste de las características de frecuencia en grabación/reproducción.
3. Ajuste del nivel de grabación
4. Confirmación de la función ALC.

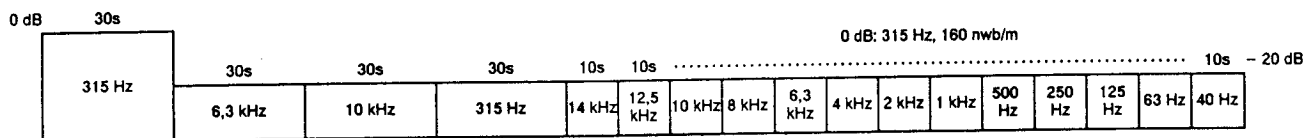


Fig. 8-3. Cinta de Prueba STD-331B

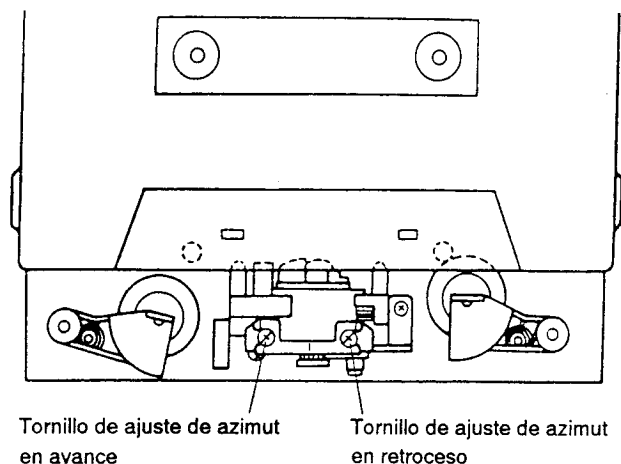


Fig. 8-4. Ajuste del Ángulo del Cabezal

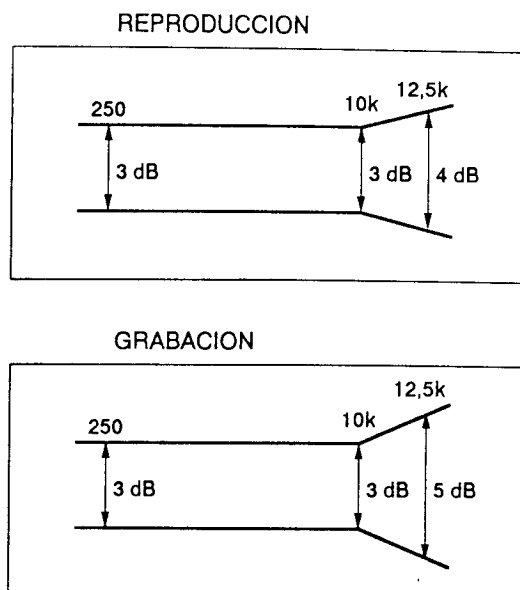


Fig. 8-5. Características de Frecuencia

● Ajustes de Reproducción

- Esta unidad está equipada con selector automático de cinta.
- No cambie entre ambas direcciones de funcionamiento con el destornillador insertado.

1. Ajuste del Ángulo del Cabezal

Paso	Selector de cinta (AUTO)	Modo	Señal de entrada/Cinta de prueba	Punto de ajuste		Puntos de medición	Valor de ajuste	Comentarios
1	NORMAL	PLAY	Cinta de prueba STD-331B (reproducir 10 kHz, -20 dB)	Platina I	Tornillo de ajuste del ángulo del cabezal (Fig. 8-4)	TP-L (izq.) TP-R (der.) (DOLBY TP)	Máx. nivel de la señal de reproducción	Después del ajuste, aplique pintura de fijación al tornillo de ajuste del ángulo del cabezal.
				Platina II				

2. Ajuste del Nivel de Reproducción

- Dado que este ajuste determina el nivel de reducción de ruido Dolby en reproducción, hágalo cuidadosamente.

Paso	Selector de cinta (AUTO)	Modo	Señal de entrada/Cinta de prueba	Punto de ajuste		Puntos de medición	Valor de ajuste	Comentarios
1	NORMAL	PLAY	Cinta de prueba STD-331B (reproducir 315 Hz, 0 dB)	Platina I	VR303 (izq.) VR304 (der.)	TP-L (izq.) TP-R (der.) (DOLBY TP)	-6,2 dBV	
				Platina II	VR301 (izq.) VR302 (der.)			

Nota: El nivel de la platina II cambia también al ajustar la platina I. Por lo tanto, ajuste primero esta última.

● Ajustes de Grabación

1. Confirmación de la Frecuencia de Oscilación de Polarización

Paso	Selector de cinta (AUTO)	Modo	Señal de entrada/Cinta de prueba	Punto de ajuste		Puntos de medición	Valor de ajuste	Comentarios
1	NORMAL	REC	Cargue la cinta de prueba STD-830 y ponga la unidad en el modo de reproducción	Platina I			La frecuencia de oscilación debe ser $108,5 \pm 2$ kHz con el conmutador de eliminación de batido del panel trasero en la posición "1".	La frecuencia es de 2 a 3 kHz menor con el conmutador en la posición "2".
				Platina II	—	Entre el punto (A) en la Fig. 8-2 y masa		

2. Ajuste de las Características de Frecuencia en Grabación/Reproducción

• Dado que este ajuste afecta la polarización de grabación, evite el aumento de la distorsión debido a la subpolarización.

Paso	Selector de cinta (AUTO)	Modo	Señal de entrada/Cinta de prueba	Punto de ajuste		Puntos de medición	Valor de ajuste	Comentarios
1	NORMAL	REC	Aplique 315 Hz a la entrada de audio y active la función VIDEO.	Platina I		TP-L (izq.) TP-R (der.) (DOLBY TP)	-26,2 dBV	
				Platina II	Nivel de la señal de entrada			
2	NORMAL	REC/PLAY	Cargue la cinta de prueba STD-830 y grabe/reproduzca las señales de 315 Hz y 10 kHz (vea la Nota al pie).	Platina I		TP-L (izq.) TP-R (der.) (DOLBY TP)	Repita el ajuste hasta que el nivel de reproducción de la señal de 10 kHz difiera no más que $0 \pm 0,5$ dB del nivel de la señal de 315 Hz.	
				Platina II	VR307 (izq.) VR308 (der.)			

Nota: Utilice el mismo nivel aplicado a la señal de entrada de 315 Hz en el paso 1.

3. Ajuste del Nivel de Grabación

Paso	Selector de cinta (AUTO)	Modo	Señal de entrada/Cinta de prueba	Punto de ajuste		Puntos de medición	Valor de ajuste	Comentarios
1	NORMAL	REC	Ingrese una señal de 315 Hz por el terminal de reproducción DAT/VIDEO y active la función DAT/VIDEO.	Platina I	Nivel de la señal de entrada	TP-L (izq.) TP-R (der.) (DOLBY TP)	-6,2 dBV	
				Platina II				
2	NORMAL	REC/PLAY	Cinta de prueba STD-830 (grabe y reproduzca 315 Hz)	Platina I		TP-L (izq.) TP-R (der.) (DOLBY TP)	Repita la grabación, la reproducción y el ajuste hasta que el nivel de reproducción de la señal de 315 Hz sea -6,2 dBV.	
				Platina II	VR305 (izq.) VR306 (der.) (conjunto de grab.)			

4. Confirmación de la Función ALC

Step	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting points	Measurement points	Adjustment value	Remarks
1	NORMAL	REC/PAUSE	Ingrese una señal de 315 Hz por el terminal de reproducción DAT/VIDEO y active la función DAT/VIDEO.	Nivel de la señal de entrada	TP-L (izq.) TP-R (der.) (DOLBY TP)	-6,2 dBV	
2				Utilice un nivel 10 dB por encima del nivel de entrada en el paso 1.		$-1,2 \pm 2,5$ dBV	

8.3 SECCION DE CD

Realice los siguiente ajustes en el orden indicado.

● Ajustes

1. Ajuste de compensación de foco
2. Comprobación de la sincronización del foco y del eje
3. Ajuste de la rejilla
4. Ajuste de seguimiento
5. Ajuste tangencial/radial
6. Ajuste del nivel de RF
7. Confirmación de la potencia del diodo laser
8. Ajuste de la ganancia de foco
9. Ajuste de la ganancia de seguimiento
10. Ajuste de la frecuencia propia del oscilador controlado por tensión

● Dispositivos de Medición

1. Osciloscopio de doble trazo
2. Medidor de potencia lumínica
3. Disco de prueba YEDS-7, disco de 8 cm
4. Filtro de ajuste de la ganancia de bucle
5. Generador de señales
6. Contador de frecuencia
7. Herramientas de uso general

● El Modo de Prueba

Este modo se utiliza para el ajuste de la unidad.

Estableciendo y Cancelando el Modo de Prueba

- ① Para establecer el modo de prueba, conecte los puentes J1 y J2 entre sí, enchufe el cable de alimentación y conecte el interruptor POWER.
- ② Para cancelar el modo de prueba, desconecte el interruptor POWER y desenchufe el cable de alimentación.

En el modo de prueba, los controles de la unidad funcionan como lo indica la Tabla 1.

● Descripción de Los Resistores Variables Empleados Para el Ajuste

- VR1: Potencia del laser
 VR3: Ganancia de foco (FCS GAN)
 VR4: Ganancia de seguimiento (TRK GAN)
 VR5: Equilibrio de seguimiento (TRK BAL)
 VR6: Compensación de foco (FCS OFS)
 VR8: Frecuencia propia del oscilador controlado por tensión (VCO ADJ)

Puntos de Ajuste

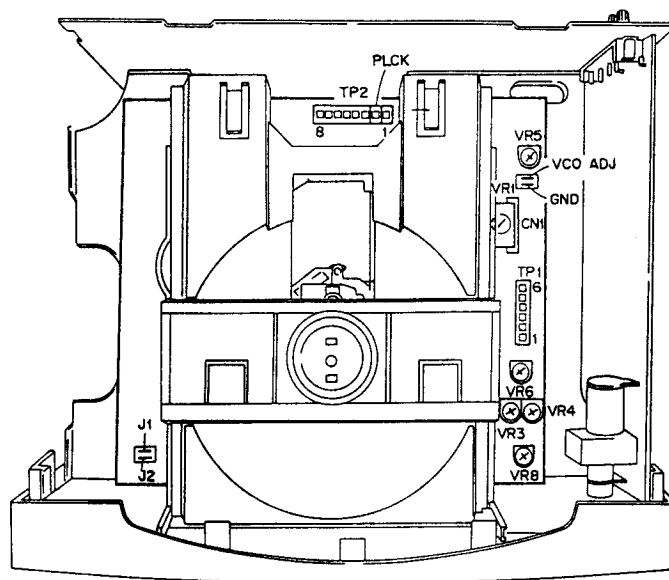
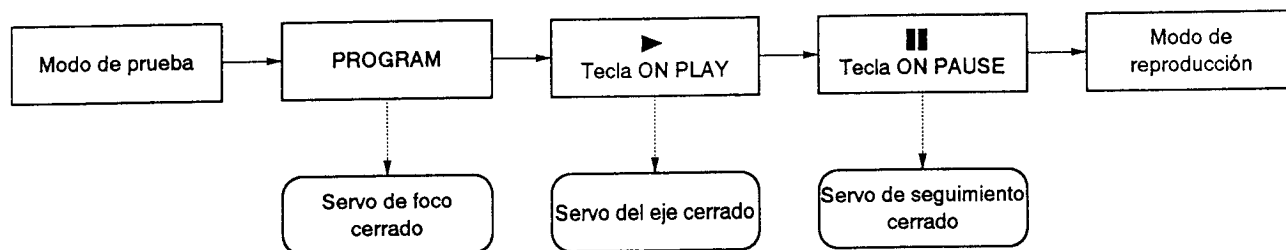


Fig. 1. Puntos de Ajuste

En el modo de prueba, la apertura y el cerrado de los servos se efectúa independientemente. Por lo tanto, para establecer el modo de reproducción los servos deben cerrarse en orden serial. Recuerde que el modo de reproducción no puede establecerse simplemente pulsando la tecla PAUSE (). Para entrar en el modo de reproducción a partir del modo de parada, por ejemplo, pulse las siguientes teclas en el orden indicado:

* En el modo de prueba, los servos mantienen un orden serial.



● Función de Cada Tecla en el Modo de Prueba

Símbolo	Tecla	Función de cada tecla en el modo de prueba	Explicación
	PROGRAM	Abrir servo de foco	Enciende el diodo laser y mueve el actuador del foco en dirección vertical para cerrar el servo del foco.
	CD PLAY	Abrir servo del eje	Después de arrancar el motor del eje, cierra el servo en el modo CLV-A.
	PAUSE	Abrir/cerrar servo de seguimiento	Ejecuta una conmutación. Al pulsar esta tecla, el servo de seguimiento se cierra y la unidad entra en el modo de reproducción (los servos del foco y del eje deben ser cerrados previamente). En ese momento se enciende el indicador PAUSE. Si se la pulsa nuevamente, se abre el servo de seguimiento.
	TRACK/ MANUAL SEARCH REV	Movimiento en retroceso (hacia adentro) del carro	Mueve el carro hacia adentro a alta velocidad (aprox. 2 cm/s). Dado que no existe un dispositivo de seguridad que detenga el carro, asegúrese de detenerlo manualmente a tiempo (esta operación comienza aprox. 0,5 segundo después de pulsar la tecla).
	TRACK/ MANUAL SEARCH FWD	Movimiento en avance (hacia afuera) del carro	Mueve el carro hacia afuera a alta velocidad (aprox. 2 cm/s). Dado que no existe un dispositivo de seguridad que detenga el carro, asegúrese de detenerlo manualmente a tiempo (esta operación comienza aprox. 0,5 segundo después de pulsar la tecla).
	STOP	Parada	Detiene todos los servos y vuelve la unidad a su condición inicial.
	OPEN/CLOSE	Abrir/cerrar bandeja del disco	Abre y cierra la bandeja del disco. El lector no vuelve, sin embargo, a la posición (interna) de reposo al abrirse la bandeja, y tampoco se mueve al cerrarse la bandeja.

Table 1. Funciones en el Modo de Prueba

Paso	Margen del osciloscopio		Punto de prueba	Punto de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	H	V				
1	Ajuste de compensación del foco					
			Contacto 6 de TP1 (FCS ERR)	VR6 (FCS OFS)	Compensación del foco 0V ± 50 mV	● Establezca el modo de prueba. (*) ● Ajuste VR6 (FCS OFS) de modo que la tensión FCS ERR (error de foco) en el contacto 6 de TP1 sea 0V ± 50 mV.
2	Comprobación de la sincronización del foco y del eje					
	V 0,5V/div	H 100 msec/ div	Contacto 1 de TP1 (salida de RF)		Salida de RF Rotación en sentido horario	● Cargue el disco de prueba ● Establezca el modo de prueba. (*) ● Aproxime el lector al centro del disco usando la tecla TRACK/MANUAL SEARCH FWD (▶▶). ● Observe la salida por el contacto 1 de TP1 con un osciloscopio y confirme que la señal de RF sea emitida al pulsar la tecla PROGRAM. ● Pulse la tecla PLAY y confirme que el disco rote en sentido horario a velocidad aprox. normal (alrededor de 300 rpm, por estar el lector cerca del centro del disco), sin correr descontroladamente ni en dirección inversa.

* Vea la página 121.

Paso	Margen del osciloscopio		Punto de prueba	Punto de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
3	Ajuste de la rejilla					
	V: 0,5V/div H: 5 msec/div	Contacto 2 de TP1	Placa de ajuste de la rejilla	Punto nulo de la onda del error de seguimiento Amplitud máxima	Nota: Este ajuste puede realizarse utilizando un disco de 8 cm con hoyos sobre un radio de 35 mm, o un disco de 12 cm con hoyos sobre un radio de 57 mm. ● Establezca el modo de prueba. (*) ● Conecte el contacto 2 de TP1 con un osciloscopio a través de un filtro pasabajos de 4 kHz. ● Cargue el disco. ● Mueva el lector a la pista externa del disco (deténgalo sobre el área con hoyos del disco en un lugar tal que el punto de ajuste de la rejilla pueda verse desde arriba del servomecanismo). ● Pulse las teclas PROGRAM y PLAY en ese orden para cerrar los servos del foco y del eje (el servo de seguimiento no se cerrará). ● Inserte un destornillador en la ranura de ajuste de la rejilla. ● Observe la onda del error de seguimiento y mueva la placa de ajuste de la rejilla al punto donde la amplitud de la onda es mínima y la envolvente es suave (punto nulo). ● Gire el destornillador lentamente en sentido antihorario a partir del punto nulo y deténgase en el primer punto donde la amplitud de la onda sea máxima. Nota: Si hubiera una diferencia mayor que el 10% entre los niveles de la onda del error de seguimiento en las pistas interior y exterior del disco, repita el ajuste sin insertar el filtro pasabajos.	

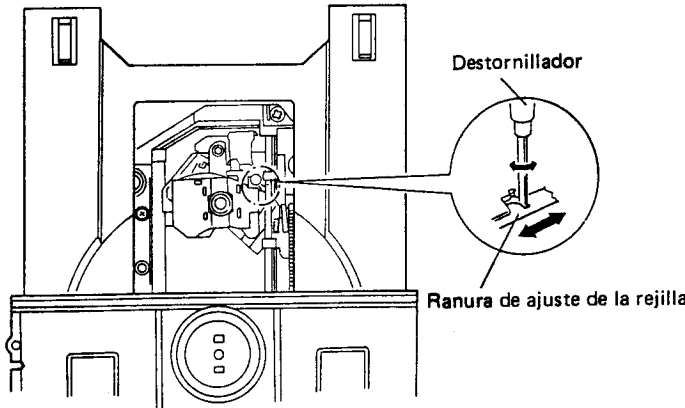


Fig. 2.

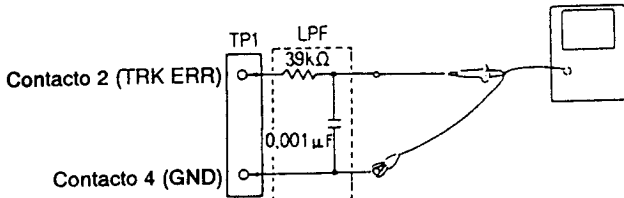


Fig. 3.

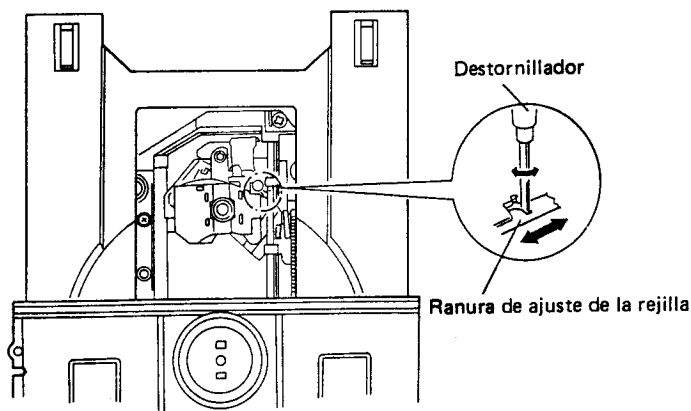


Fig. 2.

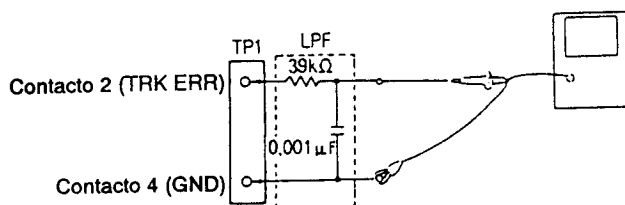
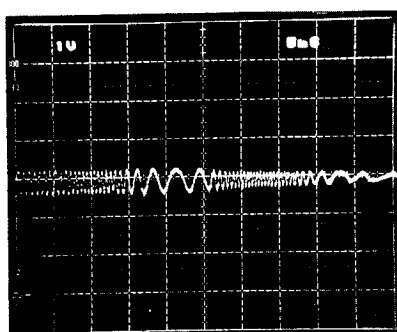
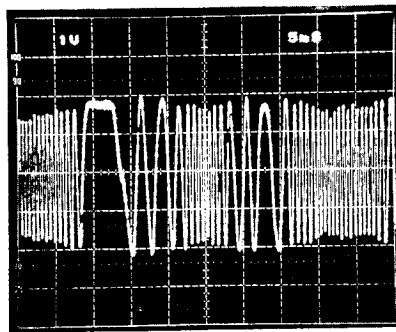


Fig. 3.

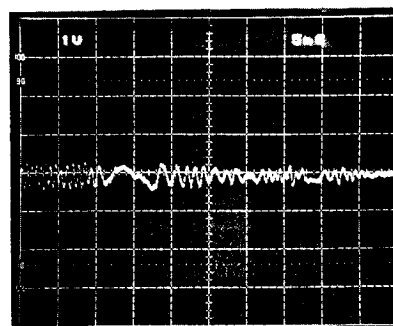
* Vea la página 121.



Fotografía-1 Punto nulo

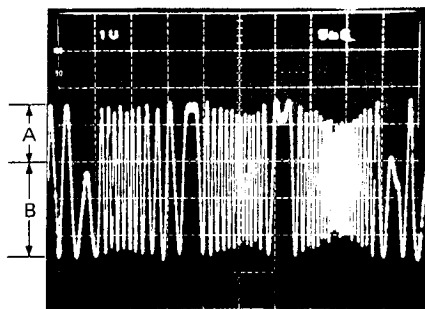


Fotografía-2 Amplitud máxima



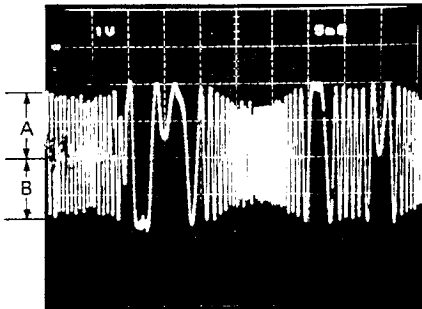
Fotografía-3 Esta no es la forma de onda de punto nulo

Paso	Margen del osciloscopio		Punto de prueba	Punto de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
4	Ajuste del equilibrio de seguimiento					
	V: 0,5V/div H: 5 msec/div	Contacto 2 de TP1 (TRK ERR)	VR5 (TR BAL)		● Disponga la masa del osciloscopio al centro. ● Cargue el disco. ● Establezca el modo de prueba. (*) ● Pulse la tecla TRACK MANUAL SEARCH FWD y mueva el lector hasta cerca de la pista media del disco. ● Pulse las teclas PROGRAM y PLAY en ese orden para hacer girar el disco. ● Observe la onda del error de seguimiento proveniente del contacto 2 de TP1 mediante el osciloscopio. ● Ajuste VR5 (TR BAL) de modo que desaparezcan los elementos de CC de la onda del error de seguimiento ($A = B$).	



A ≠ B

→



A = B

Fotografía-4 Elementos de CC mezclados en la señal

Fotografía-5 Elementos de CC eliminados

* Vea la página 121.

Paso	Margen del osciloscopio		Punto de prueba	Punto de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
5	Ajuste tangencial/radial (ajuste de la inclinación del lector)					Nota: Este ajuste puede realizarse utilizando un disco de 8 cm con hoyos sobre un radio de 35 mm, o un disco de 12 cm con hoyos sobre un radio de 57 mm. El disco de prueba YEDS-7 no puede utilizarse. ● Establezca el modo de prueba. (*) ● Cargue el disco. ● Pulse la tecla TRACK MANUAL SEARCH FWD y mueva el lector a la pista externa del disco (deténgalo sobre el área con hoyos del disco en un lugar tal que los tornillos de ajuste tangencial y radial puedan verse desde arriba del servomecanismo). ● Pulse las teclas PROGRAM, PLAY y PAUSE en ese orden para cerrar todos los servos. ● Conecte el contacto 1 de TP1 a un osciloscopio y observe la figura de ojo. ● Si la figura de ojo no fuera clara, ajuste primero el tornillo de ajuste radial, y luego el tornillo de ajuste tangencial con una llave hexagonal. Repita alternadamente dos o más veces. Nota: El punto de ajuste se encuentra cerca del punto medio entre el punto donde la figura de ojo se enturbia al girar el tornillo de ajuste en sentido horario y el punto donde la misma se enturbia al girar el tornillo en sentido antihorario. Observe la claridad general de la onda y una de las figuras de diamante en el "ojo". El ajuste óptimo se obtiene en el punto donde las líneas de la figura de diamante son relativamente delgadas (Foto 7). Después del ajuste tangencial /radial, fije los tornillos con adhesivo, etc.

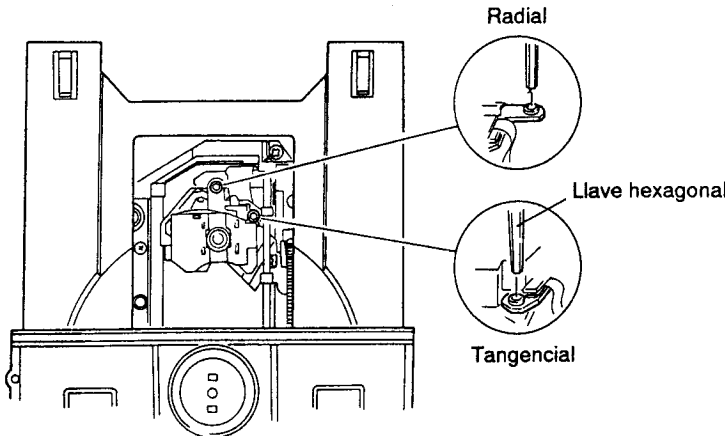


Fig. 4.

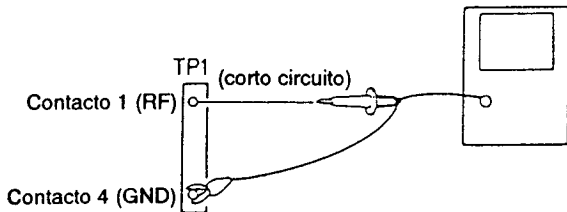
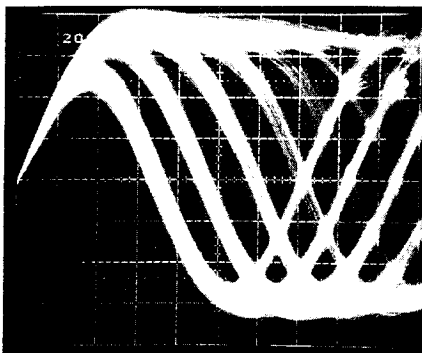
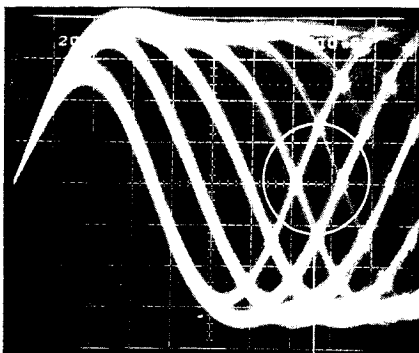


Fig. 5.

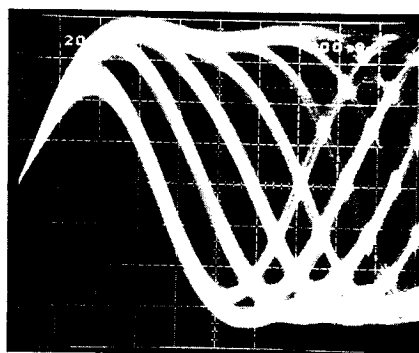
* Vea la página 121.



Fotografía-6



Fotografía-7



Fotografía-8

Parte que debe observar

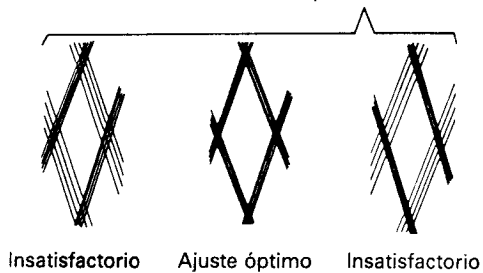
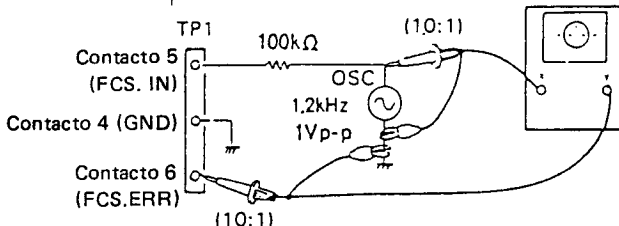
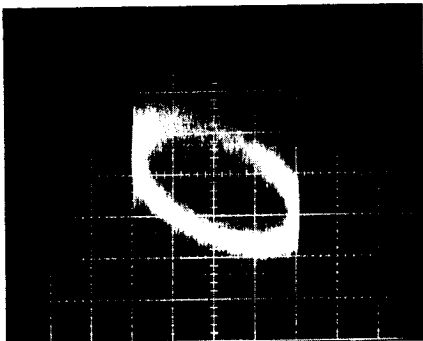
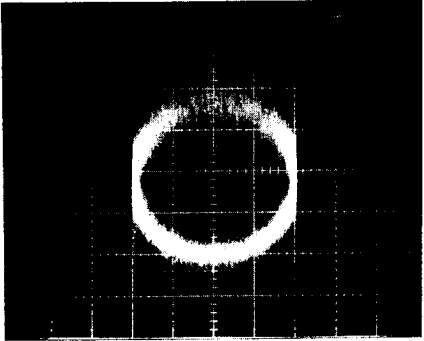
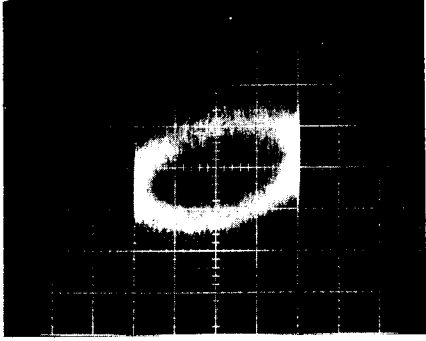
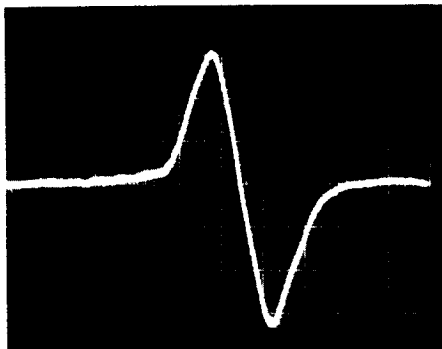


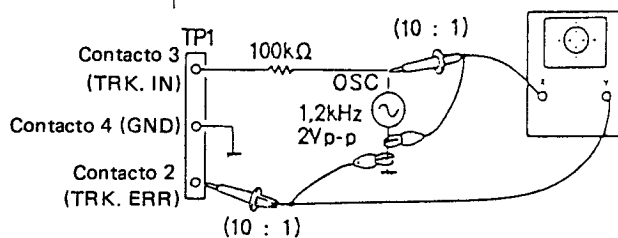
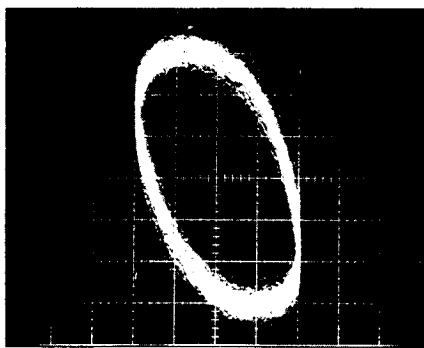
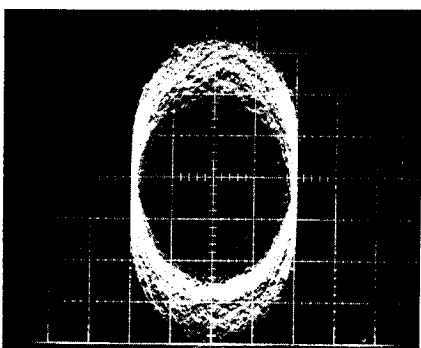
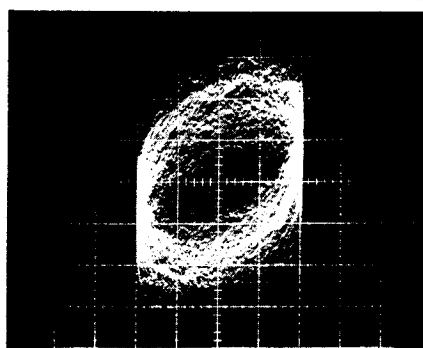
Figura de ojo

Paso	Margen del osciloscopio		Punto de prueba	Punto de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
6	Ajuste del nivel de RF					
			Contacto 1 de TP1 (salida de RF)	VR1 (potencia del laser)	1,2 ± 0,2V	●Establezca el modo de prueba. (*) ●Conecte el osciloscopio al contacto 1 de TP1 (salida de RF), reproduzca el disco de prueba y mida la tensión p-p de la onda de RF. ●Ajuste a 1,2 ± 0,2V.
7	Comprobación de la potencia del LD (diodo laser)					
					0,41 mW o menos	●Establezca el modo de prueba. (*) ●Pulse la tecla PROGRAM y encienda el LD (diodo laser). ●Ubique el sensor del medido de potencia lumínica directamente sobre el objetivo y confirme que la potencia del LD sea 0,31 mW o menos.

* Vea la página 121.

Paso	Margen del osciloscopio		Punto de prueba	Punto de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
8	Ajuste de la ganancia de foco					
	Canal 1 (X), canal 2 (Y) 20 mV/div, 5 mV/div (sonda 10:1)	Eje de las X: Contacto 5 de TP1 (FCS IN) Eje de las Y: Contacto 6 de TP1 (FCS ERR)	VR3 (FCS GAIN)	Diferencia de fase: 90°	● Con la unidad apagada, conecte el osciloscopio y el oscilador como lo ilustra la Fig. 6. ● Establezca el modo de reproducción normal. ● Encienda el oscilador y ajústelo para emitir una señal de 1,2 kHz, 1 Vp-p. Nota: Algunos osciladores emiten CC al ser encendidos. En este caso, encienda el oscilador antes de conectarlo. ● Ajuste VR3 (FCS GAN) de modo que la onda de resurgimiento en el osciloscopio se convierta en un círculo derecho (diferencia de fase 90°).  Fig. 6.	
 Ganancia sobrecompensada Fotografía-9  Ganancia óptima Fotografía-10  Ganancia subcompensada Fotografía-11						
 Error de enfoque					Nota: Comprobación de la señal de error del foco (en forma de S) ● Establezca el modo de prueba. (*) ● Conecte a masa el contacto 5 de TP1. ● Conecte el osciloscopio al contacto 6 de TP1. ● Pulse la tecla PROGRAM dos veces consecutivas y observe la onda generada.	

* Vea la página 121.

Paso	Margen del osciloscopio		Punto de prueba	Punto de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
9	Ajuste de la ganancia de seguimiento					
	Canal 1 (X), canal 2 (Y) 50 mV/div, 5 mV/div (sonda 10:1)	Eje de las X: Contacto 3 de TP1 (TRK IN) Eje de las Y: Contacto 2 de TP1 (TRK ERR)	VR4 (TRK GAIN)	Diferencia de fase: 90°	● Con la unidad apagada, conecte el osciloscopio y el oscilador como lo ilustra la Fig. 7. ● Establezca el modo de reproducción normal. ● Encienda el oscilador y ajústelo para emitir una señal de 1,2 kHz, 2 Vp-p. Nota: Algunos osciladores emiten CC al ser encendidos. En este caso, encienda el oscilador antes de conectarlo. ● Ajuste VR4 (TRK GAN) de modo que la onda de resurgimiento en el osciloscopio se convierta en un círculo derecho (diferencia de fase 90°).  Fig. 7.	
 Ganancia sobrecompensada Fotografía-12  Ganancia óptima Fotografía-13  Ganancia subcompensada Fotografía-14						
10	Ajuste de la frecuencia propia del oscilador controlado por tensión					
		Contacto 2 de TP2 (PLCK)	VR8 (VCO ADJ)	4,275 ± 0,025 MHz	● Establezca el modo de parada. ● Conecte los puentes VCO ADJ y GND con un destornillador, etc. (Fig. 1). ● Conecte el puente PLCK a un contador de frecuencia capaz de medir frecuencias superiores a los 10 MHz. ● Ajuste VR8 de modo que en el contador de frecuencia se lea 4,275 ± 0,025 MHz.	

* Vea la página 121.

9. IC INFORMATION

● PD4240-A (Tuner Display Microprocessor)

- Perform the key input process the all amplifier, tuner and CD (except ASES, COPY) to send always the serial data to each microprocessor.
- Receive each indicated data from the deck amplifier microprocessor (PDE034-A), CD microprocessor (PD4257) to indicate with FL.
- Perform the tuner and timer controls.

Pin No.	Name	I/O	Function	Active
1	S4/K04	O	FL segment output or key scan output	H
2	S3/K03			
3	S2/K02			
4	S1/K01			
5	AC IN	I	AC input (inputs 50/60 Hz.)	-
6	SCLK	I	Serial clock input	L
7	SDATA 1	O	Serial data output	-
8	SDATA 2	I	Serial data input	-
9	SR IN	I	Remote control signal input	-
10	STEREO	I	Stereo signal output	L
11	—	I	Not used	-
12	9K/10K	I	CH step switching AM-9K, FM-50K (L) / AM-10K, FM-100K (H) overseas only	-
13	MUTE	O	Mute signal output ⇒ to deck amplifier microprocessor (PDE034-B)	L
14	PLL CLK	O	Serial clock output	L
15	PLL DATA	O	Serial data output	-
16	PLL CE	O	Chip enable output	H
17	FM MONO	O	FM mode switching (AUTO (L) / MONO (H))	-
18	—	O	Not used	-
19	TUNE	I	Tuned signal input	L
20	J/EX	I	Version switching J (H) / Ex (L) ("L" when pulled down with R928.)	-
21	RESET	O	Reset signal output ⇒ to CD microprocessor (PD4257) and deck amplifier microprocessor (PDE034-B)	L
22	REQ	I	Request input	L
23	CD CLK	I	Serial clock input	L
24	CD DATA	I	Serial data input	-
25	—	O	Not used	-
26	LED B.G.M.	O	(Open)	H
27	LED DIRECT	O	(Open)	H
28	LED EXCITE	O	(Open)	H
29	SR OUT	O	SR signal output ⇒ to CD microprocessor (PD4257)	-
30	X1	I	Connect the 4.19 MHz ceramic oscillator terminal	-
31	X2	O		
32	Vss	-	GND	-

Pin No.	Name	I/O	Function	Active
33	XT1	I	GND	—
34	NC	O	NC	—
35	KI 1	I	Key scan input	H
36	KI 2			
37	KI 3			
38	KI 4			
39	RES	I	Reset input	L
40	10G	O	FL grid output	H
41	9G			
42	8G			
43	7G			
44	6G			
45	5G			
46	4G			
47	3G			
48	2G			
49	1G			
50	S16	O	FL segment output or key scan output	H
51	S15			
52	S14			
53	S13			
54	S12			
55	S11/K011			
56	V LOAD	—	Power supply for timing, segment pins pull-down	—
57	V PRE	—	FL controller, driver power supply pin	—
58	S10/K010	O	FL segment output or key scan output	H
59	S9/K09			
60	S8/K08			
61	S7/K07			
62	S6/K06			
63	S5/K05			
64	VDD	—	+5V	—

● PD4257 (CD Microprocessor)

- Performs CD control.
- Operates on serial data (SR signal) in response to key-in from the Tuner Display microprocessor (PD4240).
- Creates CD status display data and sends serial data to the Tuner Display microprocessor when and as needed.

Pin No.	Name	I/O	Function	Active
1	NC	O	Not used	—
2				
3				
4				
5	TEST	I	Test mode request input (L : TEST, H : NORM mode)	—
6	CLK	O*	Serial clock	H
7	DATA	O*	LSI control data serial output	H
8	SUBQ	I	Subcode Q data serial input	—
9	RMDT	I	Remote control data input	—
10	SCOR	I	Subcode sync S0+S1 input	—
11	GFS	I	Frame sync lock input (H : OK, L : NG)	—
12	SENS	I	LSI operation status MULTI mode input	—
13	NC	O	Not used	L
14				
15				
16				
17	LDON	O*	Laser diode output (L : ON, H : OFF)	H
18	MUTE	O*	Muting output (H : mute, L : OFF)	H
19	XLT	O*	LSI control data latch pulse	H
20	DIRC	O*	Direction reversing output for track jump	H
21	DCLK	O	Display data serial transfer clock	H
22	DDAT	O	Display data serial transfer data	H
23	DREQ	O	Display data serial transfer request	H
24	SW5V	I	LSI circuit power detection input (H : Power ON, L : OFF)	—
25	OPEN	I	Disc tray open end SW input (L : Open)	—
26	CLMP	I	Disc clamp end SW input (L : Clamp)	—
27	INSD	I	Slider inside SW input (L : Inside)	—
28	FOK	I	Focus OK input (H : OK, L : NG)	—
29	NC	O	Not used	L
30	X1		Main system clock oscillation (4.194304 MHz)	
31	X2			
32	Vss		GND	

Pin No.	Name	I/O	Function	Active
33	XT1		GND	
34	XT2		Not used	
35	$\overline{\text{LRST}}$	O	LSI reset (L : Reset, H : Release)	L
36	$\overline{\text{TRCH}}$	O	Track change pulse (L : Change pulse, 27 mS wide)	H
37	$\overline{\text{LIN2}}$	O	Disc tray loading (L : Loading)	H
38	$\overline{\text{POWSW}}$	O	LSI power ON (L : Power ON, H : OFF)	H
39	$\overline{\text{REST}}$		CPU reset (L : Reset)	
40	NC	O	Not used	
41				
42				
43				
44				
45				
46				
47				
48				
49				
50	LOUT	O	Disc tray eject (H : Eject)	—
51	LIN	O	Disc tray loading (H : Loading)	—
52	NC	O	Not used	—
53	DEMP	O	Deemphasis ON/OFF output (H : ON, L : OFF)	—
54	NC	O	Not used	—
55				
56	VLOAD		GND	
57	VPRE		−5V	
58	NC	O	Not used	—
59				
60				
61				
62				
63				
64	VDD		+5V	

Note) H : High level, L : Low level, — : High impedance

*Input port at high impedance in the power OFF mode.

●PDE034-B (DECK AMP Microprocessor)

- COPY and ASES keys only read by this microprocessor.
- Makes general control of amplifier and deck.
- Creates display data based on the deck status and sends it to the tuner microprocessor.

Note) I: CMOS input N: Nch open drain output
O: CMOS output UN: Pull-up MOS transistor equipped Nch open drain output

Pin No.	Name	I/O	Function	Active																				
1	SI	N	Used for data transmission to, and reception from, the tuner.	H/L																				
2	SO	O		H/L																				
3	SC	O		H/L																				
4	MUTE IN	I	Mute command signal input	L																				
5	VOL UP	O	Volume up control terminal	H																				
6	VOL DOWN	O	Volume down control terminal	H																				
7	TRCH	I	Not used	L																				
8	P33	I	Not used (Fixed to "H")	-																				
9	P40	-	Not used (open)	-																				
10	4052 INH	UN	<table border="1"><tr><td></td><td>B</td><td>A</td><td>INH</td></tr><tr><td>TAPE</td><td>L</td><td>L</td><td>L</td></tr><tr><td>CD</td><td>L</td><td>H</td><td>L</td></tr><tr><td>TUNER</td><td>H</td><td>L</td><td>L</td></tr><tr><td>VIDEO</td><td>H</td><td>H</td><td>L</td></tr></table> Note: When applying function mute, set INH to "H".		B	A	INH	TAPE	L	L	L	CD	L	H	L	TUNER	H	L	L	VIDEO	H	H	L	H/L
	B	A		INH																				
TAPE	L	L		L																				
CD	L	H	L																					
TUNER	H	L	L																					
VIDEO	H	H	L																					
11	4052 A	UN	Function mute control	H/L																				
12	4052 B	UN	Function control	H/L																				
13	SURROUND	UN	Not used	H																				
14	KO2	UN	Key scan out	H/L																				
15	KO1	UN		H/L																				
16	KO0	UN		H/L																				
17	AC IN	I	AC pulse input	H/L																				
18	STANDBY	O	Controls power ON and OFF	H																				
19	REEL1	I	Mechanism 1 reel pulse input	H/L																				
20	REEL2	I	Mechanism 2 reel pulse input	H/L																				
21	2. MOTOR	N	Controls mechanism 2 motor	L																				
22	SOL2A	N	Controls the solenoid for mechanism 2 play	L																				
23	SOL2B	N	Controls the solenoid for mechanism 2 FF/REW	L																				
24	MUTE	UN	Controls the line mute	L																				
25	P. BASS 1	O	<table border="1"><tr><th>MODE \ PORT</th><th>EXCITE</th><th>P.BASS 2</th><th>P.BASS 1</th><th>B.G.M</th></tr><tr><td>DIRECT</td><td>H</td><td>H</td><td>H</td><td>H</td></tr><tr><td>EXCITE</td><td>L</td><td>L</td><td>H</td><td>H</td></tr><tr><td>BGM</td><td>H</td><td>H</td><td>H</td><td>L</td></tr></table> Controls the tone quality control circuit.	MODE \ PORT	EXCITE	P.BASS 2	P.BASS 1	B.G.M	DIRECT	H	H	H	H	EXCITE	L	L	H	H	BGM	H	H	H	L	H/L
MODE \ PORT	EXCITE	P.BASS 2		P.BASS 1	B.G.M																			
DIRECT	H	H		H	H																			
EXCITE	L	L		H	H																			
BGM	H	H	H	L																				
26	BGM	O	H/L																					
27	EXCITE	O	H/L																					
28	P. BASS2	O	H/L																					
29	A/D0	O	Comparator for volume level detection (See Note 1 on page 136)	H/L																				
30	TEST	-	Not used (connected to GND)	-																				
31	Vss	-	GND	-																				
32	OSC1	-	4.19 MHz ceramic lock connection	-																				

Pin No.	Name	I/O	Function	Active
33	OSC2	—	4.19 MHz ceramic lock connection	—
34	RES	—	Reset terminal	—
35	A/D1	O	Comparator for volume level detection Outputs comparison voltage (See Note 1 on page 136)	L/H
36	A/D2	O		L/H
37	A/D3	O		L/H
38	SOL1A	N	Controls the solenoid for mechanism 1 play	L
39	SOL1B	N	Controls the solenoid for mechanism 1 FF/REW	L
40	1. MOTOR	N	Controls the mechanism motor	L
41	DISCO	N	Not used	L
42	ASES	N	Controls ASES LED	L
43	SPEAKER A	UN	Turns ON/OFF the relay based on surrounding information from the tuner microprocessor.	H/L
44	SPEAKER B	UN	Not used	H/L
45	PB3	N	Not used	—
46	VOL LEVEL	I	VOL comparator input terminal (See Note 1 on page 136)	H/L
47	PHONE	I	Headphone ON/OFF detection	H/L
48	PC2	N	Not used	—
49	MS PULSE	I	Not used	H/L
50	KI3	I	Key matrix input	H/L
51	KI2	I		H/L
52	KI1	I		H/L
53	KI0	I		H/L
54	KI4	I		H/L
55	PE1	I	Not used	—
56	MS CTRL	UN	Not used	H/L
57	DOLBY MODE	UN	Controls DOLBY mode P/R switchover	H/L
58	PB CrO ₂	UN	Control CrO ₂ tape during play	H/L
59	PB 1/2	UN	Controls switchover between mechanism 1 and 2	H/L
60	FADER	UN	Not used	H
61	BIAS	UN	Controls bias oscillation ON/OFF	L
62	REC CrO ₂	UN	When CrO ₂ tape exists in mechanism 2 : L	L
63	REC MUTE	UN	Controls REC mute	L
64	VDD	—	+5V	—

Note 1. Volume Control Position Detector Circuit

This circuit creates volume position data to make the SMART operation and wake up timer function possible.

It controls the volume position when a wide variety of functions are operated by using the data.

The volume position detection is done by A/D0 to A/D3 terminals of pins 29, 35 to 37 of the DECK AMP microprocessor (PDE034-B), volume level terminal of pin 46, DC AMP of IC302-1/2, and comparator of IC302-2/2.

The DC voltage (0V to 0.7V) output from VR601-4/4 for position detection interlocked with the volume control is amplified (see Note 2) by the DC AMP of IC302-1/2, following which it is fed to $\oplus$ terminal of the comparator of IC302-2/2. Also,

the digital data output from A/D0 to A/D3 of the DECK AMP microprocessor (PDE034-B) is converted into analog voltage by the ladder circuit and then fed to the $\ominus$ terminal of the comparator.

The results of comparison by the comparator are fed to pin 46 of the DECK AMP microprocessor (PDE034-B) for judgment of the comparison results. This process is performed four times, and the digital data of A/D0 to A/D3 output at the fourth time is used as volume position data.

(For further details, refer to "Note 1 : Spectrum analyzer display section" on page 97 given in the XR-Z82 Service Manual (ARP1712).

But judgment is made five times using 5 bits in the case of XR-Z82.

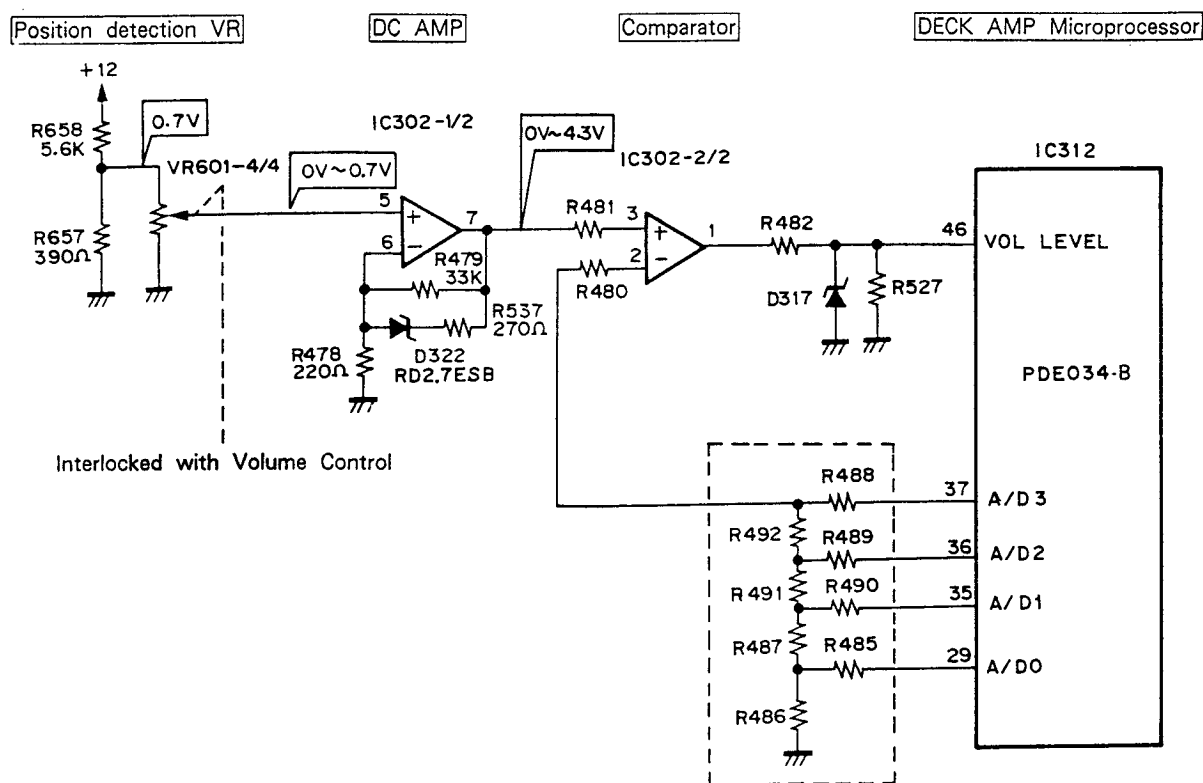


Fig. 9-1. Block Diagram of Volume Position Detection Section

Note 2. DC AMP for VR Position Detection Circuit

The volume control is normally used at a position below twelve hours. D322 (2.7V Zener diode) is inserted in the negative feedback circuit to improve accuracy at below twelve hours for switching the gain characteristics on the boundary of 2.7V.

The normal DC AMP characteristics are shown in Fig. 9-2 and the DC AMP characteristics of a circuit using D322 (RD2.7ESB) in Fig. 9-3.

If the design is made without inserting Zener diode D322 in the feedback circuit, the amplifier output is made linear. As a result, VR positions equally becomes a $1/16$ step.

The volume is varied at every $1/16$ step because the A/D conversion circuit at the next stage is a 4 bit type.

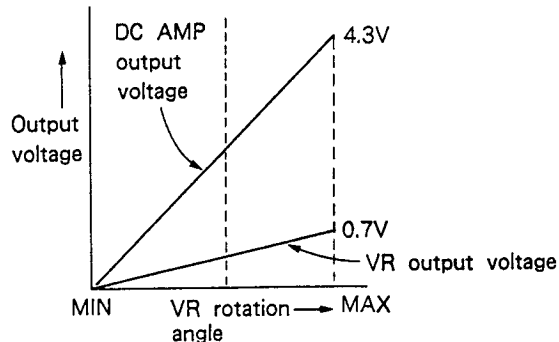


Fig. 9-2.

When the design is made with Zener diode D322 inserted into the negative feedback circuit, the gain of often used band range (below 2.7V output voltage) below the 12-hour position can be set large, which makes it possible to increase the number of steps for the VR rotation angle in that range.

In the range up to the 12-hour position from the minimum position, the resultant accuracy is improved to $1/10$ step (equivalent to $1/20$ step when compared with the DC AMP which shows linear characteristics).

(Because the Zener diode is turned On at below 2.7V, the gain becomes smaller.)

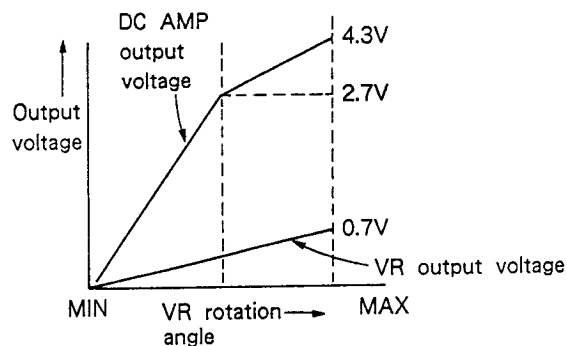


Fig. 9-3.

10. CIRCUIT OUTLINE

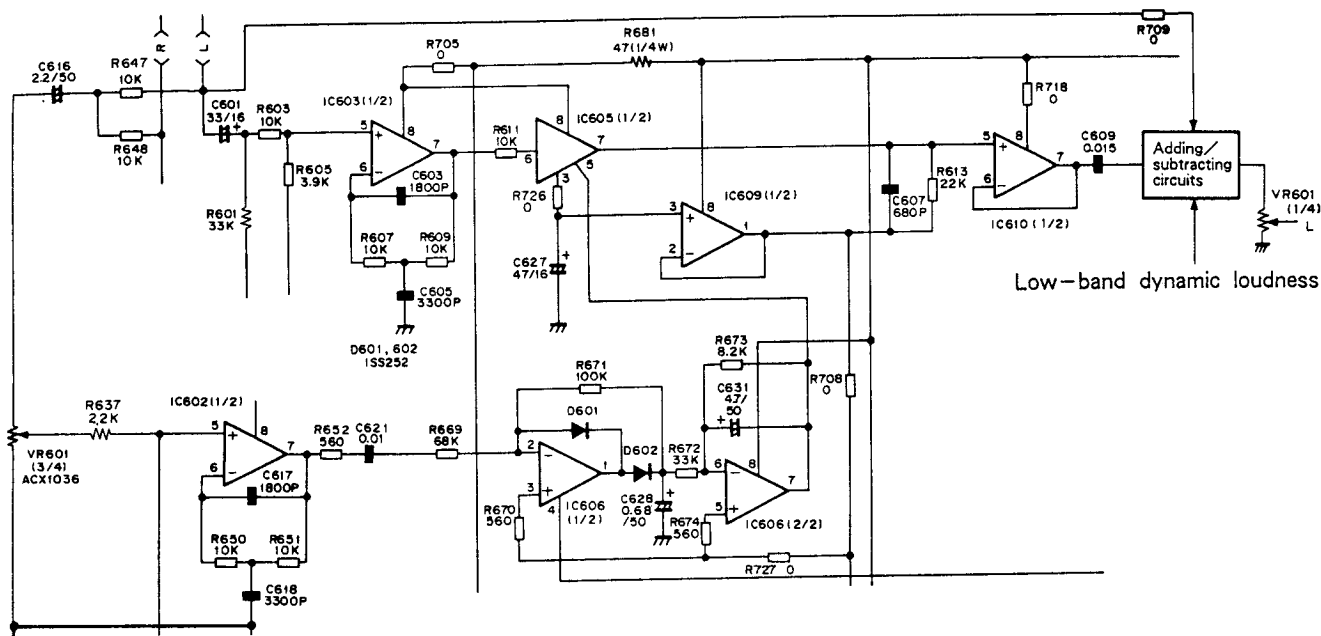
● Sound Control

The sound control of this unit is made by a combination of various circuits given below.

List of Using Circuit Blocks

Mode	Circuit block	High-band dynamic loudness		Low-band dynamic loudness	Surround	Low-band offset (+3 dB at 70 Hz) Note : SD type only : +4 dB
		Boost (Addition)	Cut (Subtraction)	Boost I	Surround I	
		IC611-1/4... "ON" IC611-2/4... "ON"	IC611-3/4... "ON" IC611-4/4... "ON"	Q604 only... "OFF"	Q303 only... "ON"	Q301, Q302... "ON"
DIRECT						○
EXCITE		○		○		○
B.G.M.			○		○	

● High-band Dynamic Loudness



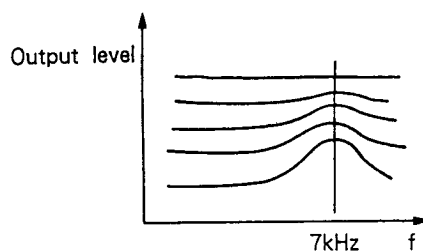
IC1, IC2 form a 7 kHz band (f_0) band-pass filter. These ICs are interlocked with VR1, VR2, to cause the level of the VCA control signal to coincide with an audible level.

The control signal level is detected by IC606 (1/2), IC606 (2/2), and VCA IC M5222L is controlled by the detection output.

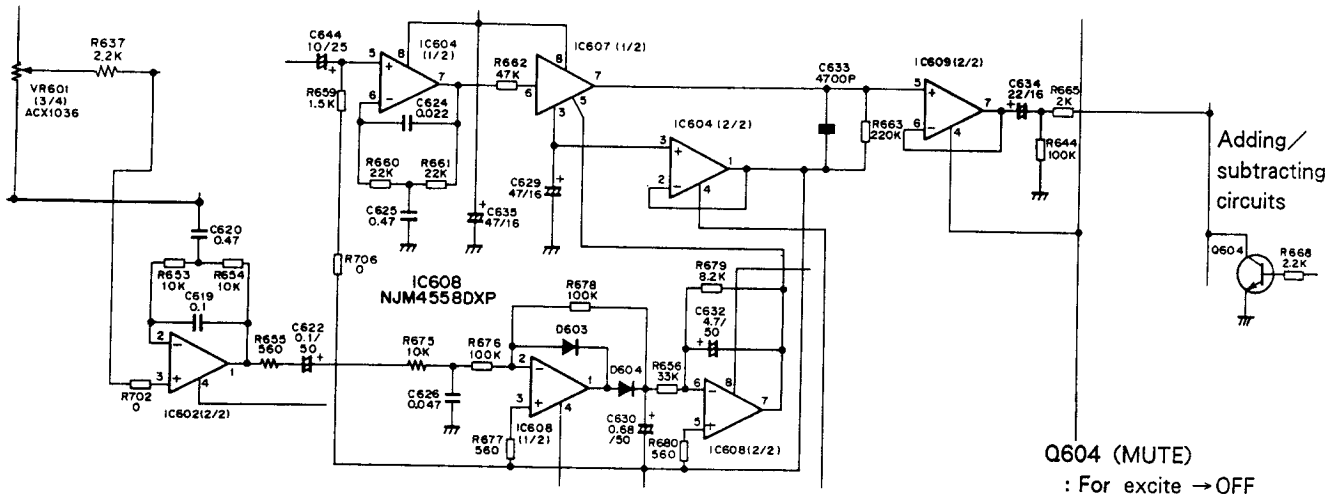
The signal level versus the VCA output becomes as shown below.

The amount of boost at the time of 10 mV input is about +4 dB during excite ON.

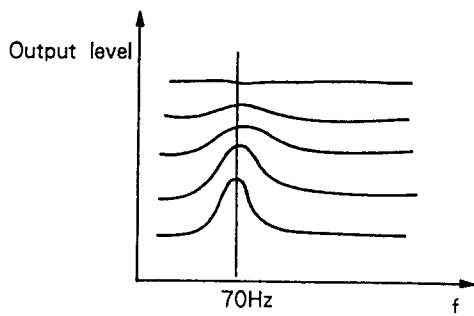
IC609 (1/2) is a buffer amplifier for operating all the circuits at the reference voltage of VCA IC.



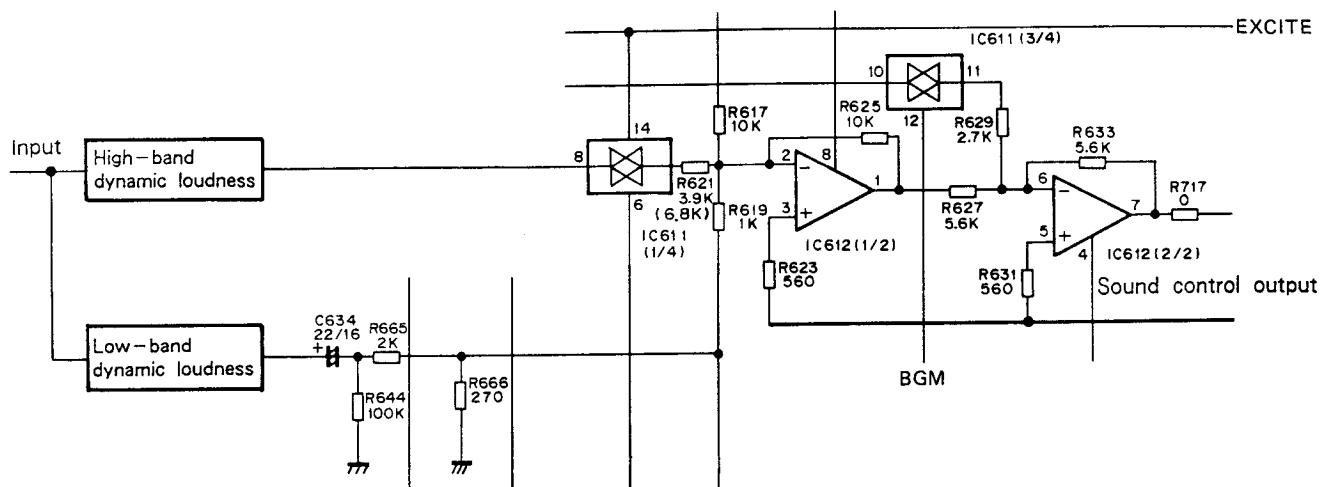
● Low-band Dynamic Loudness



The low-band dynamic loudness is basically the same as the high-band dynamic loudness. Q604 ($f_0=70$ Hz) serve to control the output levels. The amount of boost at the time of 10 mV input is about +6 dB during excite ON.



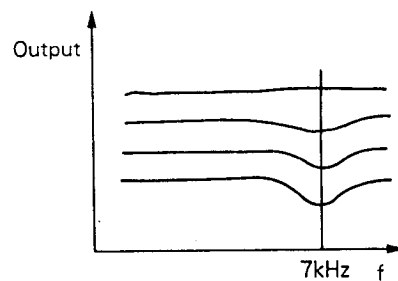
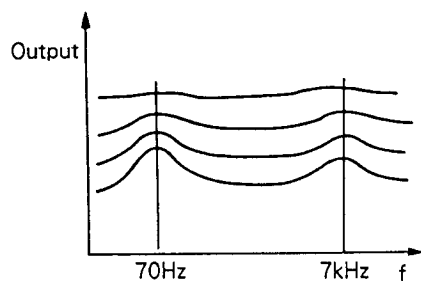
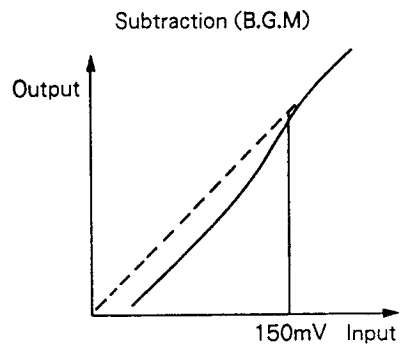
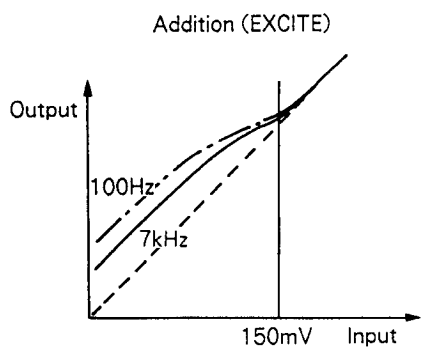
● Adding and Subtracting Circuits



The tone quality control of "EXCITE" and "BGM" is done by adding or subtracting the buffer (IC1) output, low-band dynamic loudness output, and high-band dynamic loudness output.

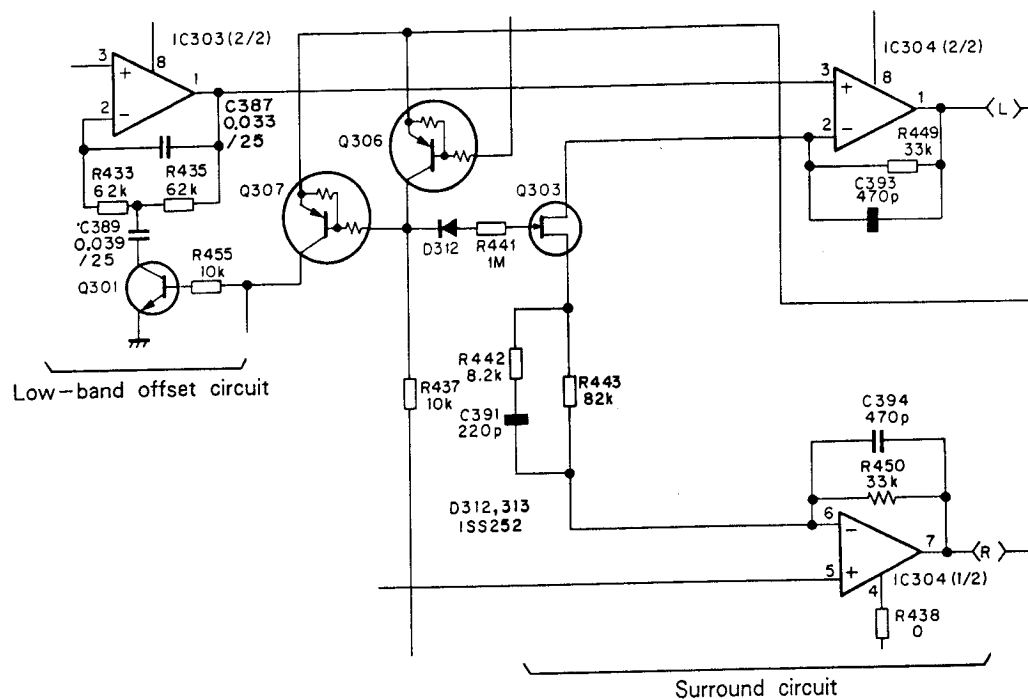
The selection of addition and subtraction is carried out by means of analog switches SW1 and SW2, and addition is made by IC612 (1/2) and subtraction by IC612 (2/2).

The input and output characteristics and frequency response as well in the case of addition and subtraction are shown in the figures below.



(Low-band dynamic loudness OFF)

● Surround Circuit and Low Band Offset Circuit



IC303 (2/2) boosts $f_0=70$ Hz. It causes Q301 to be normally turned on, raises the low pass level to the extent of 4 dB, and offsets the low band of the speaker.

During BGM play, Q301 is turned off (dropped to a low band).

The sound level is switched by Q303 and Q304.

During BGM	Q303	ON
During surround	Q304	ON
During BGM+surround	Q303, Q304	ON

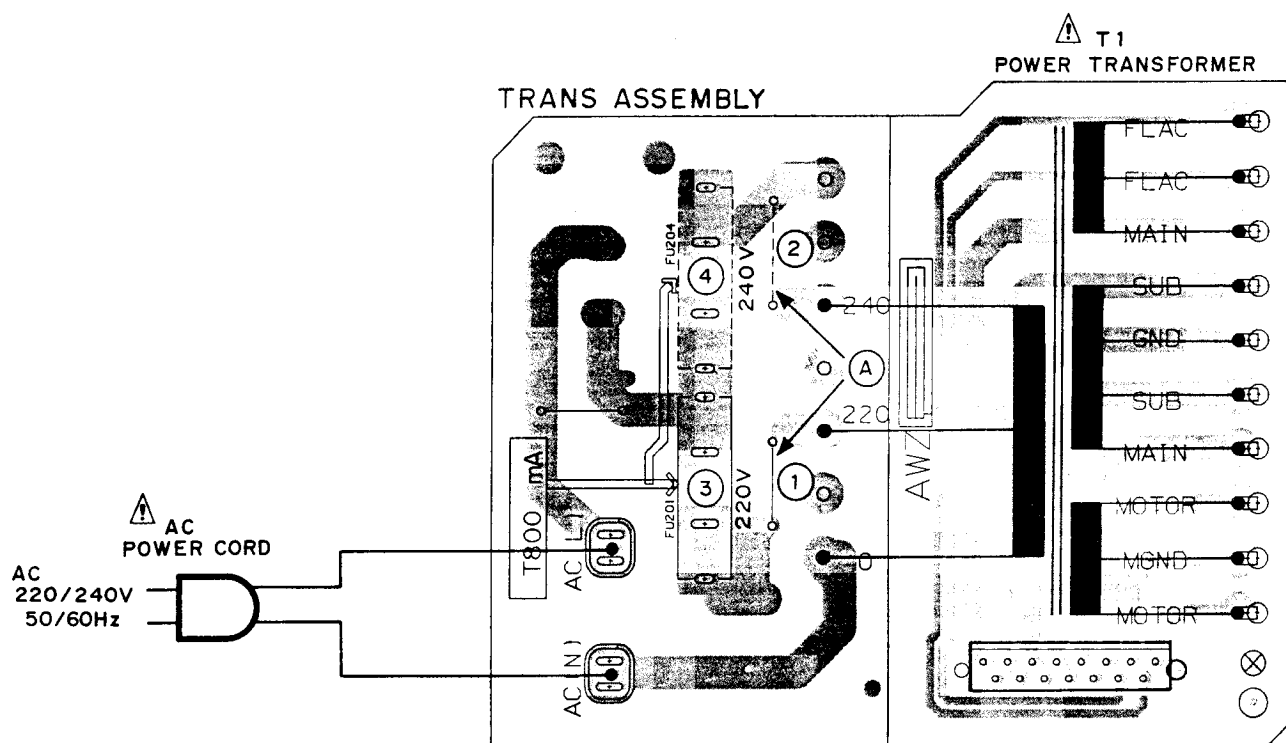
11. LINE VOLTAGE SELECTION FOR HE, HB AND HEWZI TYPES

1. Disconnect the AC power cord.
2. Remove the top panel, side panel (L), (R) and rear panel.
3. Change the position of the jumper $\textcircled{A}$ and fuse (T800mA/250V) as follows.

Voltage	Jumper $\textcircled{A}$ position	Fuse (T800mA/250V) position
220V	$\textcircled{1}$	$\textcircled{3}$ (FU204)
240V	$\textcircled{2}$	$\textcircled{4}$ (FU201)

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

Description	Part No.
220V label	AAX-193
240V label	AAX-192



12. FOR XR-P500/HB, HEWZI, YPW AND SD TYPES

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.

The XR-P500/HB, HEWZI, YPW and SD types are the same as the XR-P500/HE type with the exception of the following sections.

Mark	Symbol & Description	Part No.					Remarks
		XR-P500/ HE type	XR-P500/ HB type	XR-P500/ HEWZI type	XR-P500/ YPW type	XR-P500/ SD type	
	TX. SOUND CTRL assembly	AWM1248	AWM1248	AWM1256	AWM1259	AWM1255	
	Power assembly	Non supply	Non supply	Non supply	Non supply	Non supply	
	AF assembly	Non supply	Non supply	Non supply	Non supply	Non supply	
	TRANS assembly	Non supply	Non supply	Non supply	Non supply	Non supply	
	DECK SW assembly	Non supply	Non supply	Non supply	Non supply	Non supply	
Δ	AC power cord	ADG1019	ADG-051	ADG1012	ADG-043	ADG1016	
Δ	FU201 Fuse	AEK-031	.....	AEK-031	AEK-031	.....	
Δ	FU202, FU203 Fuse	AEK-405	.....	AEK-405	AEK-405	AEK-405	
Δ	FU201 Fuse	.....	AEK-507	.....	.....	.....	
Δ	FU202, FU203 Fuse	.....	AEK-510	.....	.....	.....	
Δ	FU201, FU204 Fuse	.....	.....	.....	.....	AEK-402	
Δ	Power transformer (AC220/240V)	ATS1256	ATS1256	ATS1256	ATS1256	.....	
Δ	Power transformer (AC110/120-127/220/240V)	.....	.....	.....	.....	ATS1269	
Δ	Voltage selector	.....	.....	.....	.....	AKX-507	
	Capacitor	.....	.....	ACG1003	.....	.....	
	Spacer	.....	.....	AEC1236	.....	.....	
	Packing case	AHD1821	AHD1821	AHD1821	AHD1851	AHD1851	
	FM antenna	ADH1005	ADH1005	.....	ADH1005	ADH1005	
	FM antenna assembly	.....	.....	ADH1002	.....	.....	
	Operating instructions	ARC1208	.....	.....	.....	.....	
	Operating instructions	ARE1160	.....	.....	.....	.....	
	Operating instructions	.....	ARB1231	.....	ARB1231	ARB1231	
	Operating instructions	.....	.....	ARC1211	.....	.....	
	Operating instructions	.....	.....	.....	.....	ARC1210	

TX. SOUND CTRL ASSEMBLY

The TX. SOUND CTRL assemblies of XR-P500/HEWZI, YPW and SD types are the same as the TX. SOUND CTRL assembly of XR-P500/HE type with the exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		AWM1248	AWM1256	AWM1259	AWM1255	
	C851	CEANP4R7M35	CEAS100M50	CEANP4R7M35	CEANP4R7M35	
	C857, C868	CKCYB472K50	CKCYB332K50	CKCYB472K50	CKDYB682K50	
	C869	.....	CEANP4R7M35	.....	.....	
	C870	.....	CKSQYB681K50	.....	.....	
	F801	ATF-126	ATF-119	ATF-126	ATF-126	
	F802	ATF-126	ATF-107	ATF-126	ATF-126	
	F804	.....	ATF-146	.....	.....	
	Q852	.....	2SC1740S	.....	.....	
	R852	$\frac{1}{2}$ S823J	RS $\frac{1}{2}$ S683J	RS $\frac{1}{2}$ S823J	RS $\frac{1}{2}$ S823J	
	R861, R862	$\frac{1}{2}$ S332J	RS $\frac{1}{2}$ S562J	RS $\frac{1}{2}$ S332J	RS $\frac{1}{2}$ S332J	
	R867	.....	RD $\frac{1}{2}$ PM224J	.....	.....	
	R868	.....	RD $\frac{1}{2}$ PM683J	.....	.....	
	R869	.....	RD $\frac{1}{2}$ PM472J	.....	.....	
	R870	.....	RD $\frac{1}{2}$ PM222J	.....	.....	
	R871	.....	RS $\frac{1}{2}$ S472J	.....	.....	
	F.E MODULE assembly	AXQ1002	AXQ1004	AXQ1002	AXQ1002	
	AM, RF turning	AXX1011	AXX1014	AXX1011	AXX1011	
	TC801	.....	ACM-018	.....	.....	
	Antenna terminal 4P (PAL)	AKA1010	.....	.....	AKA1010	
	Antenna terminal 2P (PAL)	.....	AKA1015	.....	.....	
	Antenna terminal 4P	.....	.....	AKA1009	AKA1009	
	C853, C854	CKSQYB102K50	CKSQYB102K50	CKSQYB102K50	CKSQYB122K50	
	R621, R622	RS $\frac{1}{2}$ S392J	RS $\frac{1}{2}$ S392J	RS $\frac{1}{2}$ S392J	RS $\frac{1}{2}$ S682J	
	S801 Slide switch	.....	.....	.....	ASH1009	

POWER ASSEMBLY

The POWER assembly of XR-P500/HEWZI type is the same as the POWER assembly of XR-P500/HE type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		XR-P500/ HE type	XR-P500/ HEWZI type	
	C251, C252, C263, C264	.....	CCDSL101J50	
	C253, C254	.....	CKCYF103Z50	
	C255, C256, C261	.....	CKDYF103Z50	
	L201, L202	ATH-133	ATH-059	
	L205, L206	.....	ATH-059	
	R219, R220	RD $\frac{1}{2}$ PMFL100J	RD $\frac{1}{2}$ PMFL101J	

AF ASSEMBLY

The AF assemblies of XR-P500/HEWZI and SD types are the same as the AF assembly of XR-P500/HE type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		XR-P500/ HE type	XR-P500/ HEWZI type	XR-P500/ SD type	
	C381-C384	.....	CCSQCH391J50	.....	
	C387, C388	CKCYX333M25	CKCYX333M25	CKCYX393M25	
	C389, C390	CKCYX393M25	CKCYX393M25	CKCYX333M25	
	C421, C422, C425-C428	.....	CCDSL101J50	.....	
	C423, C424	.....	CKDYX473M25	.....	

DECK SW ASSEMBLY

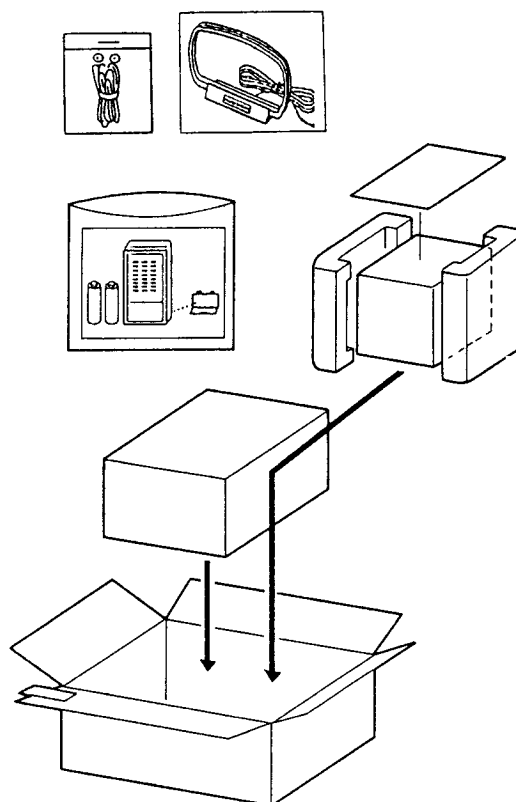
The DECK SW assembly of XR-P500/HEWZI type is the same as the DECK SW assembly of XR-P500/HE type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		XR-P500/ HE type	XR-P500/ HEWZI type	
	C971-C973	.....	CKDYX473M25	
	R973	.....	RD 1/8 PM100J	

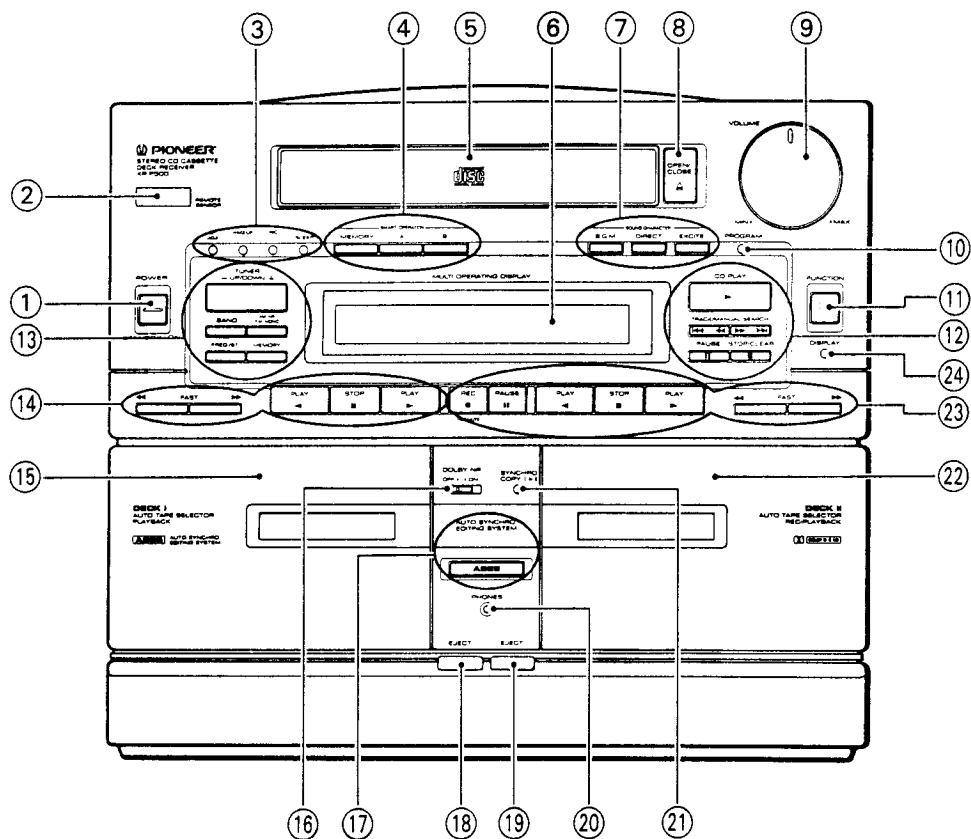
● PACKING FOR YPW AND SD TYPES

Note :

- XR-P500/YPW and SD types are packed with the speaker system (S-P500D/E).
- Refer to S-P500D/E service manual (Order No. ARP1925) for the speaker system.



13. PANEL FACILITIES



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 unit is on STANDBY when the display section indicates only the time.

② REMOTE SENSOR window

③ Timer operation switches

SET (ADJ):

Used for starting the clock adjustment (ADJ function).

Used for current time, timer playback and timer recording (SET function).

WAKE UP (-):

Used for timer playback setting (WAKE UP function).

Used for adjusting the clock, timer settings and its related adjustment (" - " function).

REC (+):

Used for timer recording setting (REC function).

Used for adjusting the clock, timer settings and its related adjustment (" + " function).

SLEEP:

Used for the sleep timer setting.

④ SMART OPERATION switches

Use these to memorize and recall your usual listening settings (function, SOUND CHARACTER, volume, etc.)

MEMORY: Use to memorize your favorite settings.

A, B: Use to memorize and recall your favorite settings.

⑤ CD disc tray

⑥ Display

⑦ SOUND CHARACTER switches

Recall just the sound you want by operating a switch.

B.G.M.: This gives you a wide sound with lowered bass and treble response.

DIRECT: This lets you listen to sound coming directly from the source by switching all sound adjusting circuitry off.

EXCITE: Use this to boost bass and treble for a powerful more dynamic sound.

⑧ OPEN/CLOSE (Δ) switch

Press when you wish to eject or load a disc. Each time the switch is pressed, the tray is alternately pushed out or pulled in.

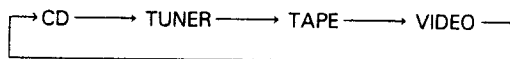
⑨ VOLUME control

⑩ PROGRAM switch

This is used for programming tracks to play in a desired sequence.

⑪ FUNCTION switch

Use to select the component you want to play. Each time you press the switch, the component changes in the following order.



⑫ CD operation switches

► CD PLAY:

Press to begin CD playback, and to cancel the pause mode.

◀◀, ▶▶ TRACK SEARCH/ ◀◀, ▶▶ MANUAL SEARCH: Press and release quickly, and it operates as the TRACK SEARCH function.

Continue pressing and it operates as the MANUAL SEARCH function.

■ PAUSE:

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

■ STOP/CLEAR:

When you press it, play and all other operations stop. If you press it when it is in the STOP mode, the program is cleared from memory.

⑬ Tuner operation switches

TUNER UP (+)/DOWN (-):

Use to locate stations.

If you select the frequency mode with the FREQ./ST. switch, frequency changes up/down.

If you select station mode with the FREQ./ST. switch, station number changes up/down.

BAND:

Each time this switch is pressed, FM or AM reception is selected alternately.

AM NR/FM MONO:

When receiving an AM broadcast, this operates as a noise reduction (AM NR) switch.

If you are listening to an FM stereo broadcast that has a lot of noise, you can use this switch to reduce the noise by changing reception to monaural reception (FM MONO).

FREQ./ST.:

Use to change the operation mode of the TUNER UP/DOWN switch.

MEMORY:

Use to memorize stations.

⑭ 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.

⑮ DECK I cassette door

⑯ 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.

⑰ A.S.E.S. (Auto Synchro Editing System) switch/indicator.

Use to automatically record a CD on a cassette tape.

Press once to switch to the FULL FILL mode. This assures that recording will continue until the tape is full.

Press twice to switch to the LINK mode. If the playing time of the disc is shorter than that of the tape, change the disc and resume recording.

⑱ DECK I EJECT switch

⑲ DECK II EJECT switch

⑳ PHONES (Headphones) jack

For stereo headphones.

NOTE:

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

㉑ SYNCHRO COPY (I ► II) switch

Used for tape copying.

㉒ DECK II cassette door

㉓ DECK II 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.

- **REC/REC MUTE** .. Press to set to recording standby mode. Press the PLAY switch (◀ or ▶) to begin recording. If you press it while recording, it operates as a REC MUTE switch, preventing anything being recorded until you release it. Releasing it puts you in the REC PAUSE mode.
- **PAUSE** Temporarily stops tape travel. Cancels pause mode when pressed again or press the PLAY switch.

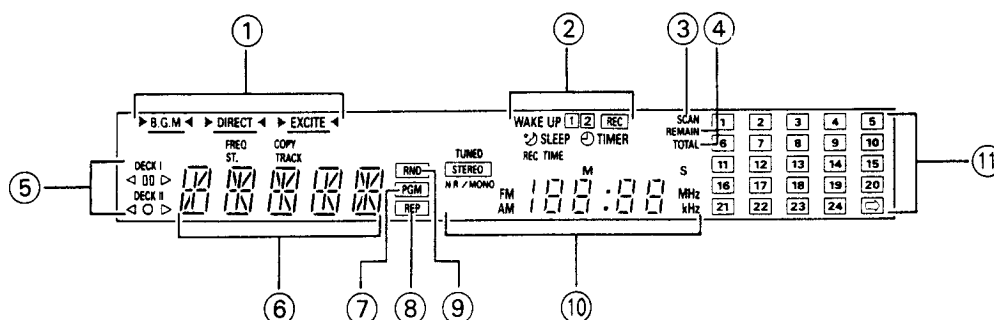
②④ DISPLAY switch

Use to switch between different display modes in the display section.

Display Section

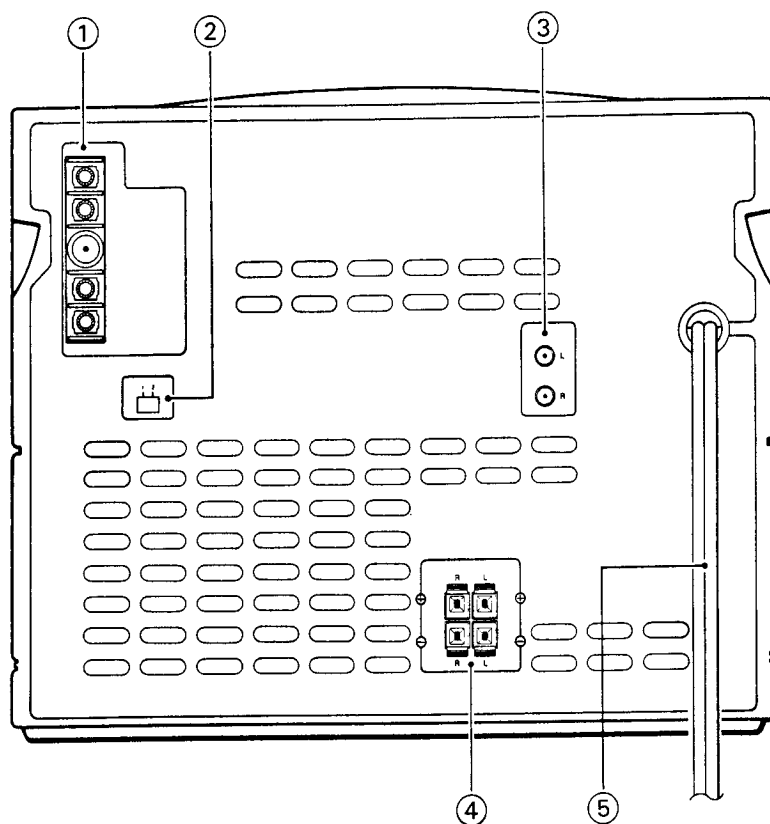
• Built-in Proper Bass Active Supply System

This system provides a rich, deep bass sound, even with small speakers, by boosting the bass at the amp stage. (The bass is boosted even if SOUND CHARACTER is in the DIRECT position.)



- ① Press one of the **SOUND CHARACTER** switches and it lights.
- ② Displays timer settings.
- ③ Lights during **SCAN** operation.
- ④ Switched with the **DISPLAY** switch.
REMAIN: Displays the track number and the time remaining for the track being played. Press again and the time remaining for of the discs is displayed.
During programmed play, only the time remaining for the track being played is displayed.
TOTAL: This displays the total number of tracks and total time for a disc or program.
- ⑤ Displays operations on **DECK I**, **DECK II** and **CD** player.
- ⑥ Displays the function. In the **TUNER** mode, this displays the Station No., and when playing a **CD** it displays the track number. (During programmed play it displays the step number).
- ⑦ Indicates **CD** programmed play is in progress.
- ⑧ Indicates **CD** repeat play is in progress.
- ⑨ Indicates **CD** random play is in progress.
- ⑩ This lights during **broadcast** reception.
In the **TUNER** mode, frequency is displayed. At any other time it displays the time.
STEREO: Lights during stereo broadcast reception.
NR/MONO: During **FM** reception, this lights to indicate that the **AM NR/FM MONO** switch is operating, converting reception to monaural.
During **AM** reception, this lights to indicate that the **AM NR/FM MONO** switch is operating and **AM NR** is ON.
- ⑪ When a **CD** is playing, this displays the track numbers for the remaining tracks. Any tracks after Track No.25 are displayed as →.
During **TUNER** operation, this displays the station number.

Illustration shows U.K. model.



① FM/AM ANTENNA terminals

Antennas must be connected to these terminals, otherwise you will be unable to receive broadcast signals.

② BEAT CUT switch

Set to the position that gives the least noise when recording AM broadcasts, or when noise is recorded when making tape copies during reception of AM broadcasts.

③ VIDEO AUDIO IN jacks

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

④ SPEAKERS terminals

L: Connect the left speaker system (left as seen from the listening position).

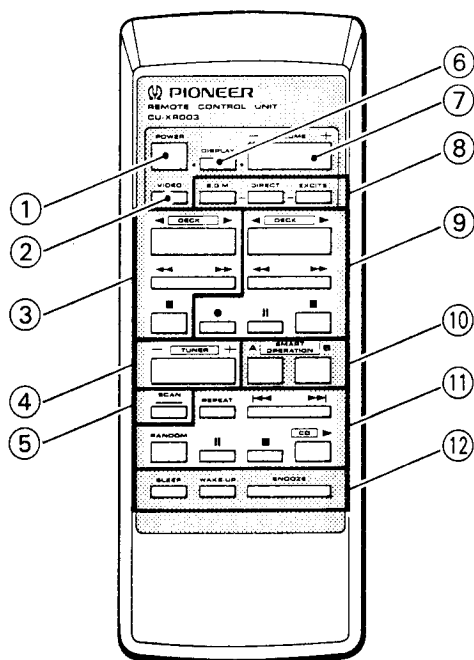
R: Connect the right speaker system (right as seen from the listening position).

NOTE:

Connect a speaker system having a nominal impedance ranging from 8 Ω to 16 Ω .

⑤ Power cord

Connect this to the AC wall socket.



① POWER key

② VIDEO key

Sets function to VIDEO.

③ DECK I operation keys

These have the same functions as the main unit's DECK I operation switches ⑭.

④ TUNER (-, +) key

Press once to switch to the TUNER function. After that it recalls memorized station numbers.

- + Stations change in order in the upward direction.
- ... Stations change in order in the downward direction.

⑤ SCAN key

- Press during broadcast reception, and stations memorized in station call will be received and change in order every three seconds. (memory scan). Press once more, and it stops operating.
- If you press this when the function is CD, and the CD player is in the STOP mode, it plays ten second sections of all tracks, about one minute into each track.
- If you press the SCAN key while a CD is playing, the elapsed time of the track playing is memorized, and then ten second sections of the following tracks are played in sequence from the memorized time.

⑥ DISPLAY key.

This changes the display section's display mode.

⑦ VOLUME -, + key

When pressed, VOLUME is actually moved by motor.

⑧ Sound character recall keys

⑨ DECK II operation keys

These have the same functions as the main unit's DECK II operation switches ⑮.

⑩ SMART OPERATION A, B keys.

Recalls smart operation memories A and B.

⑪ CD operation keys

RANDOM: Press to begin random playback.

▶ : Playback

◀, ▶▶: Track search

||: Pause

■: Stop

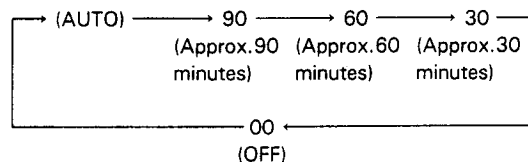
REPEAT: Press for all tracks repeat playback.

⑫ Timer operation keys

SLEEP:

Sets the sleep timer. Each time you press this key, the setting changes as shown here. The current setting is shown on the display section.

Power turns off when your set time has elapsed.



AUTO:

When recording and during tape playback, power switches OFF when the CD or tape finish.

If you press the SLEEP key during SLEEP operation, the display will show the time remaining till power turns off.

WAKE UP:

Timer playback setting/cancellation can be performed when the timer playback time has been set. This is shown in the display section.

SNOOZE:

Turns off power if pressed after timer playback begins. Timer playback begins again approx. 5 minutes later.

Range of remote control

When the remote control unit is pointed at the remote sensor window and any of its keys is pressed, XR-P500 can be operated by remote control.

Distance: Within a range of approx. 7 meters from the remote sensor window.

Angle: Within approx. 30 degrees from the center of the remote sensor window.

Remote control will not be possible if there is an obstacle between the remote control unit itself and the remote sensor window.

Performance of the remote control unit is adversely affected in the presence of strong fluorescent light. Keep such lights away, especially from the sensor window.

14. SPECIFICATIONS

Amplifier Section

Continuously Average Power Output is 15 Watts* per channel, min., at 8 ohms from 40 Hertz to 20,000 Hertz, with no more than 0.4 % total harmonic distortion.

* Measured pursuant to the Federal Trade Commission's Trade Regulation rules on Power Output Claims for Amplifiers.

Music power (DIN)	35 W + 35 W
Continuous Power Output (DIN).....	25 W + 25 W
	(1 kHz, T.H.D. 1%, 8 Ω)
[Multi-voltage model]	
Music power	50 W + 50 W
Peak music power	200 W
Hum & Noise (DIN, continuous Power/50 mW)	
.....	68 dB/60 dB
Total Harmonic Distortion	
(40 Hz to 20,000 Hz, 12.5 W, 8 ohms)**VIDEO	
.....	No more than 0.2%

FM/AM tuner section

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity... Mono: 12.8 dBf, IHF (1.2 μV/75 ohms)	
Sensitivity (DIN)	Mono S/N 26 dB: 0.8 μV/75 Ω
	Stereo S/N 46 dB: 31.5 μV/75 Ω
Signal-to-Noise Ratio (IHF, 85 dBf Input)	Mono: 74 dB
Signal-to-Noise Ratio (DIN)	Mono: 64 dB
	Stereo: 61 dB
Distortion.....	Stereo: 0.4 % (1kHz)
Stereo separation	40 dB (1kHz)
Antenna Input	75 ohms unbalanced

MW (AM) Tuner Section

Frequency Range	
With 10 kHz step	530 kHz to 1,700 kHz
With 9 kHz step	531 kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna).....	250 μV/m
Antenna	Loop Antenna

Cassette Deck Section

Systems	4 track, 2-channel stereo
Heads	Recording/playback head x 1
	Playback head x 1
	Erasing head x 1
Motor.....	DC servo motor x 2
Wow and Flutter	No more than 0.09 % (WRMS)
Frequency Response (– 20 dB recording):	
CrO ₂ tape.....	35 Hz to 15,000 Hz ± 6 dB
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
Signal to Noise ratio.....	98 dB or more (EIAJ)
Dynamic range.....	92 dB or more (EIAJ)
Wow and flutter	Limit of measurement
	(± 0.001% W.PEAK) or less (EIAJ)

Miscellaneous

Power requirements	
U.K. and Australian model..	a.c. 240 Volts ~ , 50/60 Hz
Multi-voltage models	
... AC 110/120–127/220/240 V (switchable), 50/60 Hz	
Power Consumption.....	170 W
Dimensions.....	300 (W) x 255 (H) x 246 (D) mm
	11-13/16 (W) x 10-1/16 (H) x 9-11/16 (D) in
Weight (without package).....	7.1 kg (15 lb 11 oz)

Furnished Parts

Operating Instructions.....	1
Remote Control Unit	1
Dry Cell Batteries	2