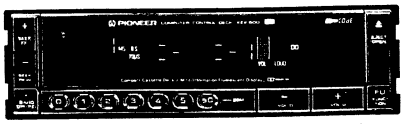
PIONEER®

Service Manual

REPAIR & ADJUSTMENTS



The photo shows the model KEX-500/EW.

ORDER NO.
CRT 1075

CENTRATE COMPONENT CAR STEREO
CASSETTE DECK

KEX-500 EW
KEX-500SDK WG

- For the circuit descriptions, please refer to the KEX-500 service manual (CRT1076).

Note:
- See the separate manual CRT-467 for the cassette mechanism description.

SPECIFICATIONS

General

Power source	14.4 V DC (10.8 – 15.6 V allowable)
Grounding system	Negative type
Dimensions	180 (W) × 50 (H) × 163 (D) mm
Weight	1.5 kg
Tone controls (bass)	±10 dB (100 Hz)
(treble)	±10 dB (10 kHz)
Loudness contour	±10 dB (100 Hz), +7 dB (10 kHz) (volume: –30 dB)
Maximum output level	200 mV
Output impedance	1 kΩ

Tape player

Tape	Compact cassette tape (C-30 – C-90)
Tape speed	4.76 cm/sec. (+0.14 cm/sec., –0.05 cm/sec.)
Fast forward/rewind time	Approx. 100 sec. for C-60
Wow & flutter	0.09 % (WRMS)
Frequency response	Metal: 30 – 19,000 Hz (±3 dB)
	Normal: 30 – 16,000 Hz (±3 dB)
Stereo separation	45 dB
Signal-to-noise ratio	Dolby NR IN: 63 dB (IEC-A network)
	Dolby NR OUT: 55 dB (IEC-A network)

Note:
Specifications and the design are subject to possible modification without notice due to improvements.

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CONTENTS

1. PARTS LOCATION

NOTE:

- *For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

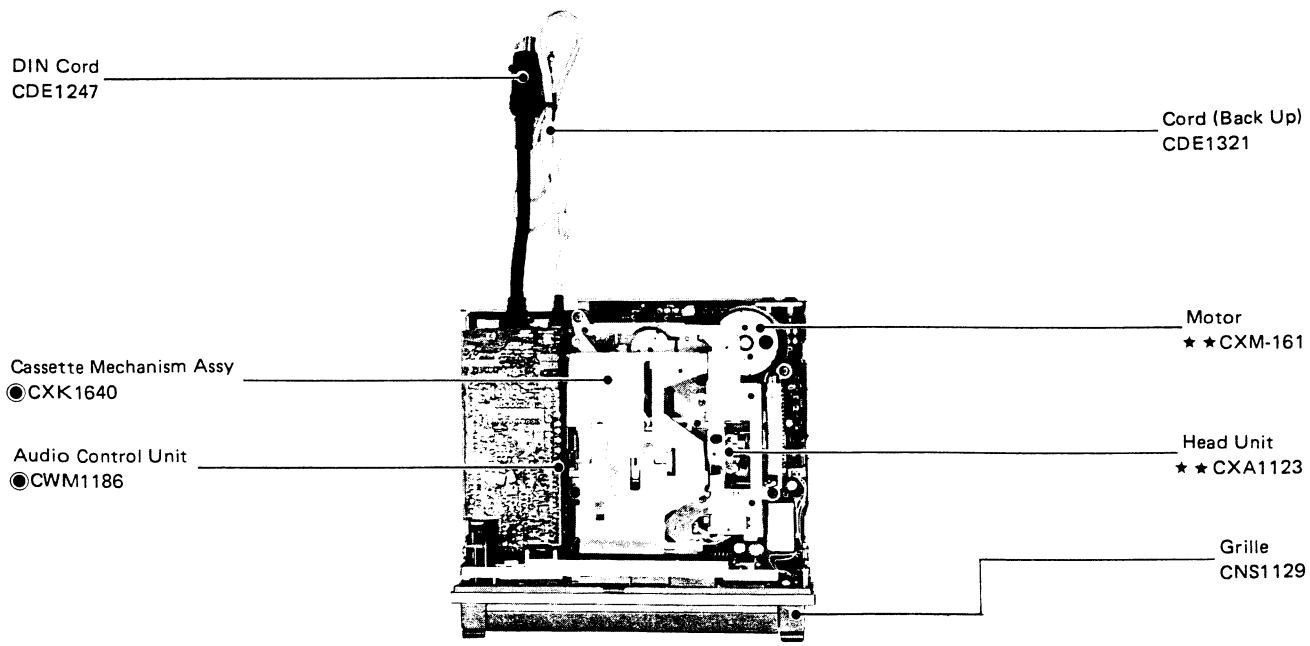


Fig. 1

- **Removal of Right Switch (R. SW) Unit (Fig. 6)**

1. Remove 2 screws, then remove the [illegible]per unit.
2. Remove 2 screws, then remove the [illegible]t switch unit.

- **Removal of Left Switch (L. SW) Unit (Fig. 6)**

1. Remove 2 screws, then remove the solenoid unit.
2. Remove 2 screws, then remove the left switch unit.

- **Removal of Display Unit**

1. Remove 1 screw, then remove the holder.
2. Remove the display unit.

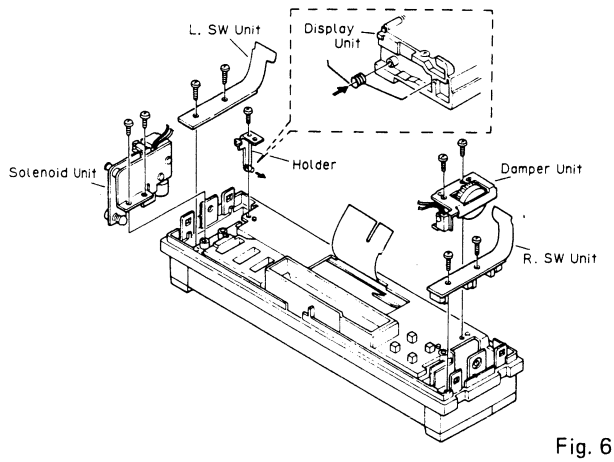


Fig. 6

- **Removal of Display P.C. Board (Fig. 7)**

1. Remove 2 "C.. screws, then remove the plate unit.
2. Remove 1 "D" [illegible]ew and 3 "E" screws, then remove the display p.c. boa[illegible].

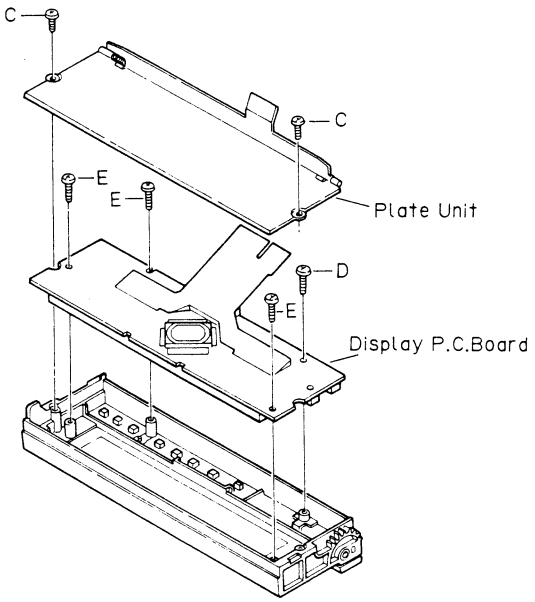


Fig. 7

3. ADJUSTMENT

3.1 AZIMUTH A[illegible]USTMENT

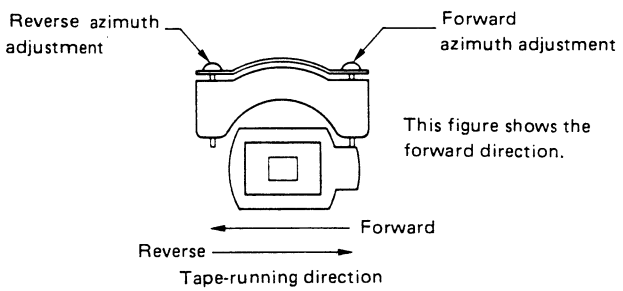


Fig. 8

- **Adjustm[illegible]t Procedure**

1. Play back Side A of ST[illegible]11A (10dHz, −20dB), and adjust the respective a[illegible]ting screws for maximum output in the forward and reverse directions.
2. Play back Side B in the forward and reverse directions, then confirm the respective output.

3.2 TAPE SPEED ADJUSTMENT

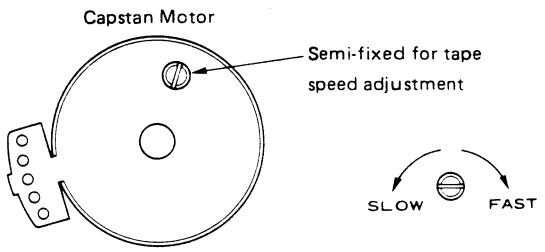


Fig. 9

- **Adjustment Procedure**

1. Play back STD-301 (3kHz, −10dB), then adjust the semifixed resistor so that the value of the frequency counter display is whthin 3,010Hz ±30Hz.

2. DISASSEMBLY

• Case Removal (Fig. 2)

1. Remove 4 screws, then remove the case unit.

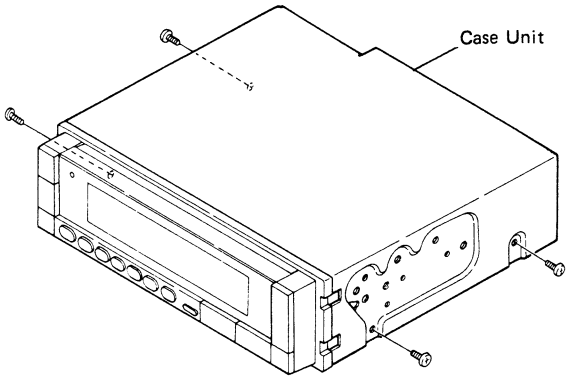


Fig. 2

• Removal of Cassette Mechanism Assy (Fig. 3)

1. Remove 4 screws, disconnect the connector, then remove the cassette mechnism assy.

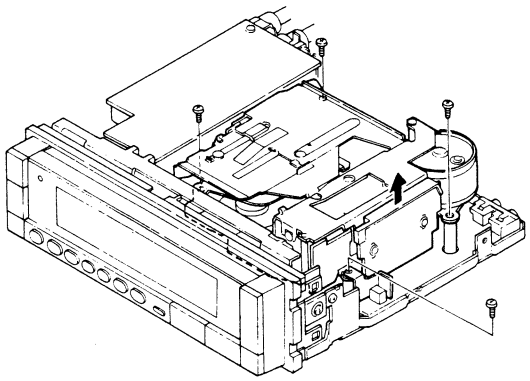


Fig. 3

• Removal of Audio P.C. Board (Fig. 4)

1. Remove 1 "B" screw.
2. The audio p. c. board is connected to the control p. c. board by the connector indicated by the arrow, so remove the board by lifting if upward.

• Chassis Removal (Fig. 4)

1. Remove 3 "A" screws, then remove the chassis unit.

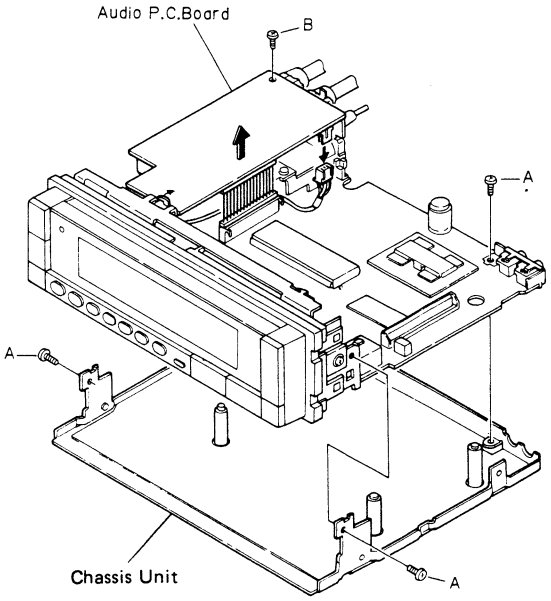


Fig. 4

• Grille Assy Removal (Fig. 5)

1. Remve 2 screws and the soldering indicated by the arrow.
2. Remove the connector indicated by the arrow, then remove the grille assy.

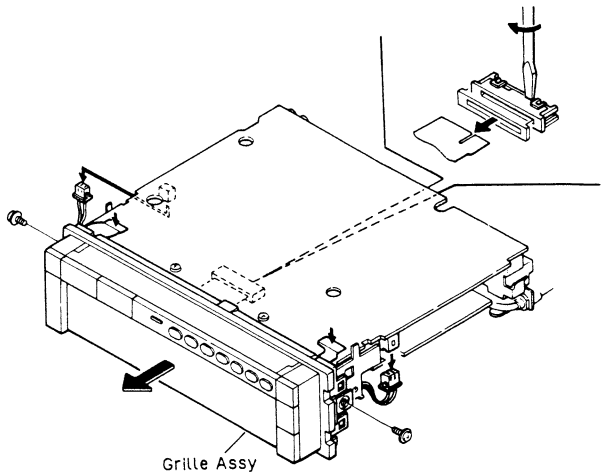
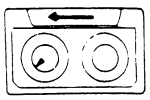
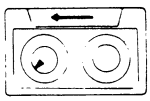
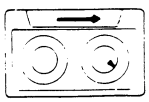
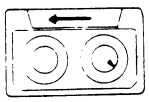


Fig. 5

3.3 CHECK POINTS OF CASSETTE MECHANISM

Confirm the following items when replacing parts of the cassette mechanism.	■ Tape speed deviation: 3,000 $\pm^{90}_{30}$ Hz (4.76 cm/s $\pm^{3}_{1}$ %) Using an STD-301, measure the speed at the start and end of winding and see that a deviation remains within the limits each time. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5∼6 seconds.	■ Wow and flutter: Less than 0.15% (WRMS) Using an STD-301, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 ∼ 6 seconds.
■ Fast forward and rewinding time: 95 ∼ 115 seconds Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.	■ Winding torque: 37 ∼ 63g•cm  Using a cassette type torque meter (100 g·cm), measure the minimum value while in the play mode. Measuring time shall be 5 ∼ 6 seconds.	■ F.F. torque: 67 ∼ 130g•cm  Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the F.F. mode.
■ REW torque: 67 ∼ 130g•cm  Using a cassette type torque meter (120 g•cm), measure the value when the tape stops in the REW mode.	■ Back tension torque: 1.8 ∼ 4.2g • cm  After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.	■ Cassette loading force: 450 ∼ 550 g Push the center of the cassette and measure the force with a tension meter (1 kg).

3.4 DOLBY NR LEVEL ADJUSTMENT

- **Connection Diagram**

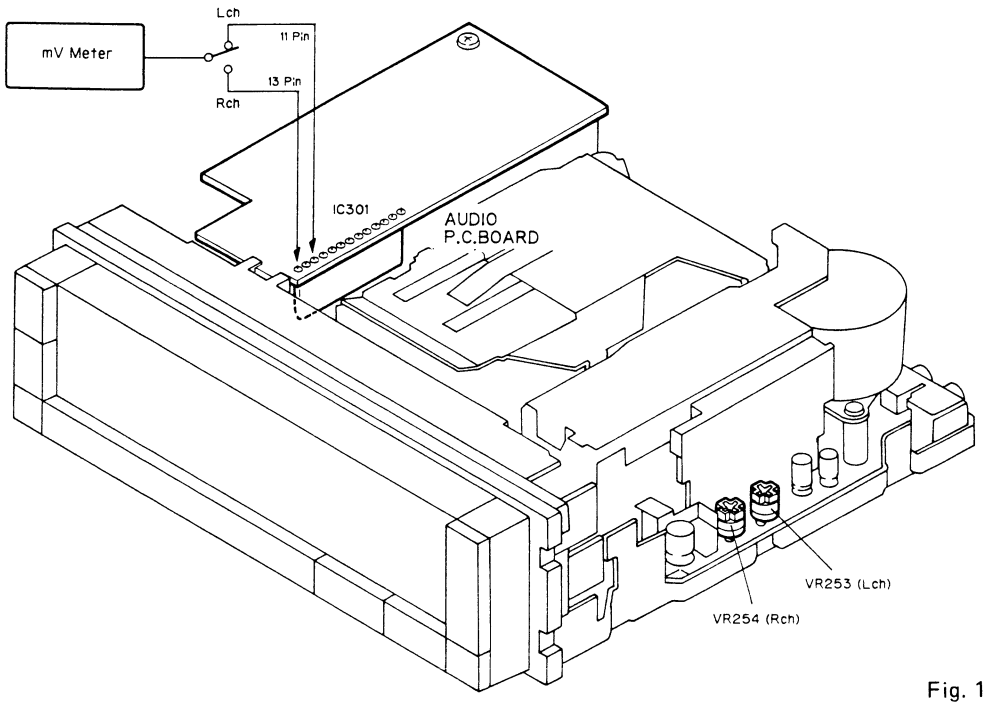


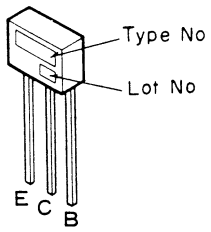
Fig. 10

- **To Adjust**

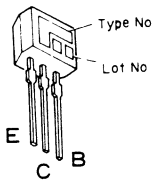
1. Set the DOLBY NR switch to OFF.
2. Play back NCT-150 (400 Hz, 200 nwb/m), and adjust VR253 (L ch) and VR254 (R ch) so that the value of the mV meter is within 300mV ± 1dB. (300mV=–8.24dBs)

• ICs and Transistors

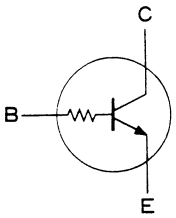
UN4122
UN4215



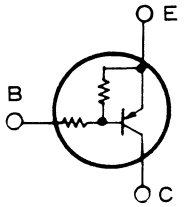
DTA143ES
DTC114TS



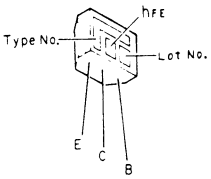
UN4215
DTC114TC



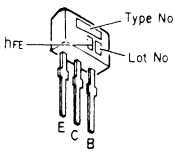
UN4122
DTA143ES



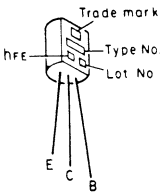
2SA933S
2SC2872S



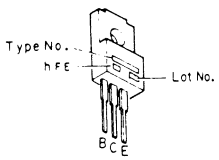
2SD1227M



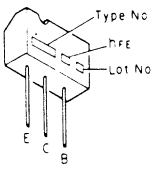
2SC2634NC



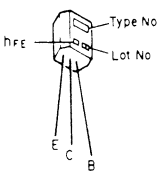
2SB945



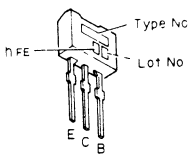
2SD1055F



2SA1048
2SC1740S
2SC2458
2SC2458L
2SC3113

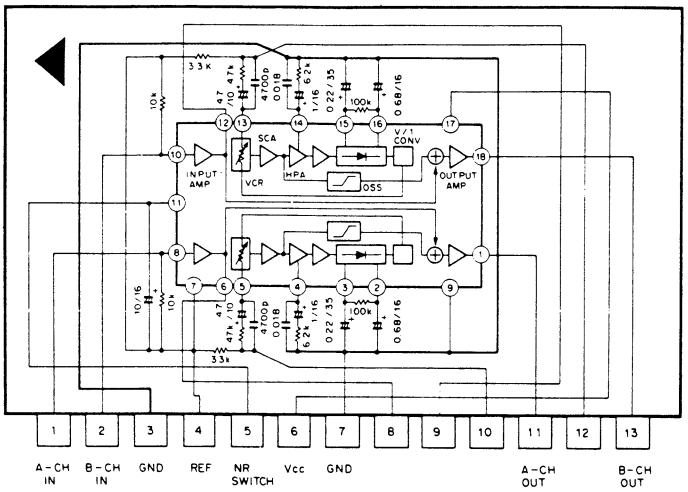


2SB1066M

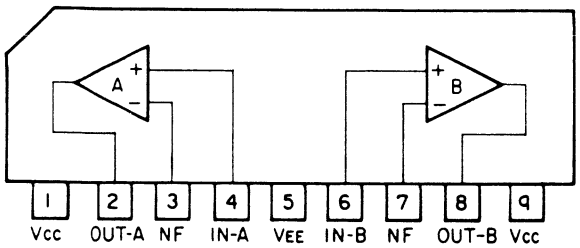


• Audio P. C. Board

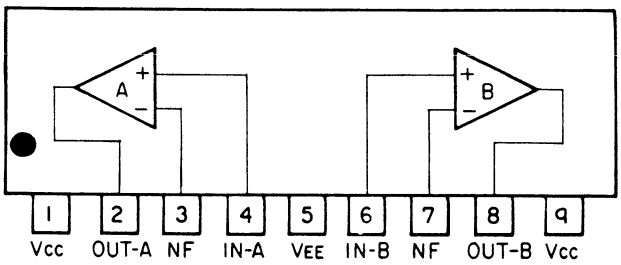
IC301 : NR8810



IC601 : TA75558S

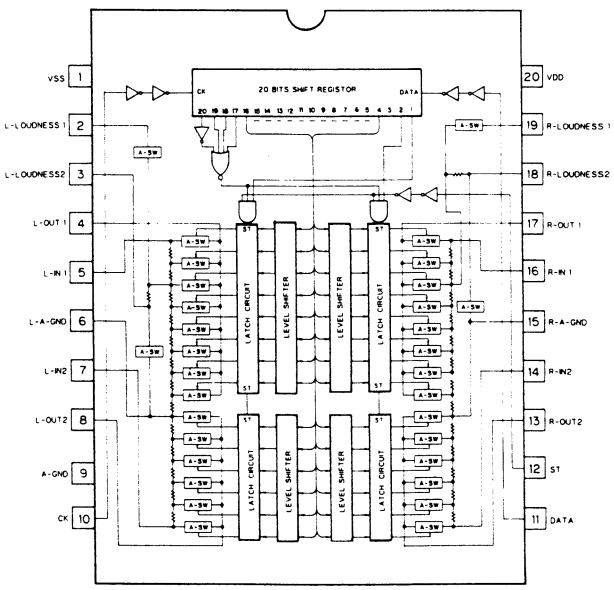


IC603 : μPC4570HA



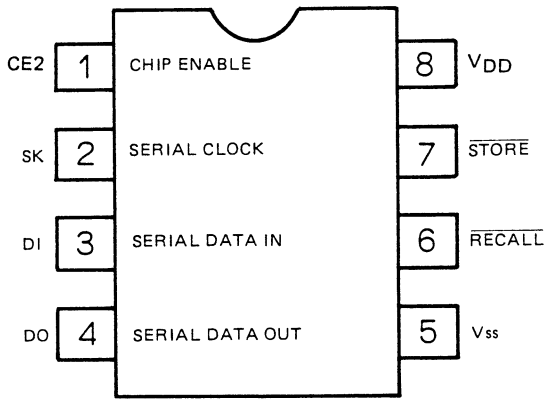
IC602: TC9177P

Due to the circuit configuration of KEX-500, Lch and Rch of input and output are used in reverse position.

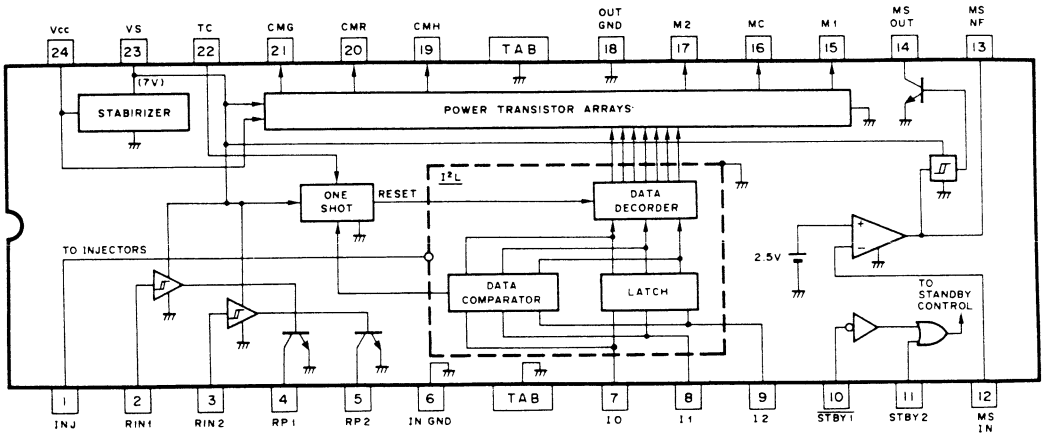


• Control P. C. Board

IC704: PDH001



PA3019(Driver Unit)

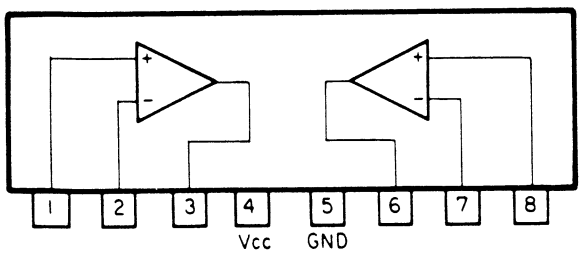


• PA3019(Deck Driver) Pin Function

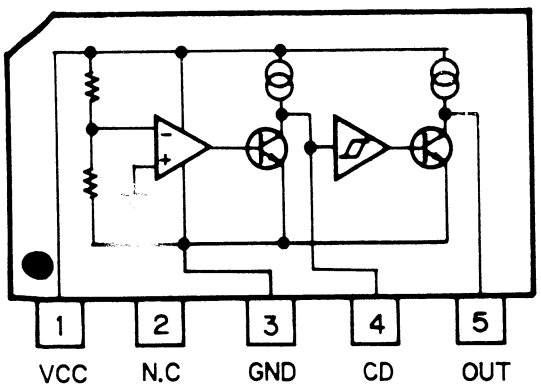
Pin No.	Pin Name	I/O	Function and Operation
1	INJ	Input	Power supply for internal logic (I^2L).
2	R IN 1	Input	Input terminal for Relay Table Rotation Sensor (MR1) signal.
3	R IN 2	Input	Input terminal for Relay Table Rotation Sensor (MR2) signal.
4	RP 1	Output	Waveform output of Relay Sensor Input 1 (2 Pin) signal.
5	RP 2	Output	Waveform output of Relay Sensor Input 2 (3 Pin) signal.
6	IN GND	—	GND terminal of small-signal series.
7	I 0	Input	Logic input terminal for motor control
8	I 1	Input	
9	I 2	Input	
10	$\overline{\text{STBY 1}}$	Input	Standby control. At active "L" (0.7V or less), the IC current is switched OFF.
11	STBY 2	Input	Standby control. At active "H" (3.5V or more), the IC current is switched OFF.
12	MS IN	Input	Amplifier input (inverted input) terminal for Music Sensing (MS).
13	MS NF	I/O	Output of the MS amplifier and input of the MS Schmitt circuit.
14	MS OUT	Output	Output of Schmitt circuit for MS. MS OUT outputs a pulse when the signal level of the MSNF terminal exceeds 0dBm or enters OPEN staturs when it is 0 dBm or less.

Pin No.	Pin Name	I/O	Function and Operation
15	M1	Output	+ terminal drive output of motor M1 for the head table drive.
16	MC	Output	Drive output of the common terminal of motors M1 and M2.
17	M2	Output	+ terminal drice output of drive motor M2 of the FF/REW selecting gear.
18	OUT GND	–	GND terminal of the motor drive circuit.
19	CMH	Output	H (+) terminal drive output of capstan motor M3. Output voltage: During speed control = approx. Vcc-1.7V During LOAD or EJECT = 6.9V
20	CMR	Output	R terminal drive output of capstan motor M3. (1) During speed control: OPEN (2) During LOAD: approx. 0V (3) During EJECT: approx. 7V
21	CMG	Output	GND (–) terminal drive output of capstan motor M3. (1) During speed control: approx. 0V (2) During LOAD/EJECT: OPEN
22	TC	Output	Connecting terminal of capacitor for setting the timer that switches OFF the power transistor for constant motor drive at a change in logic input I0, I1. I2.
23	VS	Output	Power supply for relay table rotation sensor. Approx. 7V.
24	Vcc	Input	Power supply terminal for IC.

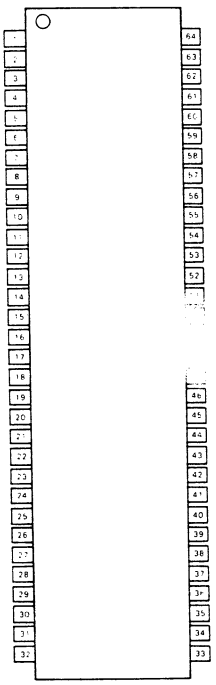
M51522AL(Pre Amp Unit)



IC4 : M51954AL

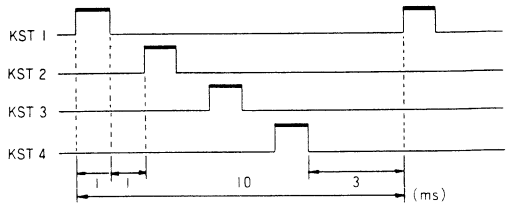


IC701 : *PD3069B



*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

• PD3069B Pin Function

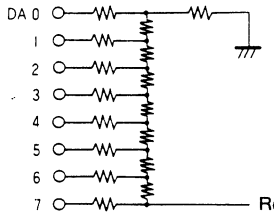
Pin No.	Pin name	I/O	I/O Format	Logic	Function and Operation	At RESET
1	APWIN	Input	Gate	H	• Audio power supply ON/OFF input terminal. • When "⌐" input, performs output of 200-ms standby data to the mechanical driver and inhibits VSENSE output. * At Audio Power ON, APWIN prevents mulfunction of mechanical driver PA3019 by dropping the power voltage at Power Amp ON and also prevents error in judging the VSENSE status.	Z
2	DROPEN	Output	P	H	• Door open solenoid control terminal. • At Acc ON in the DOOR CLOSE (DOOR SW: Make) status, EROPCN performs 100-ms pulse output when the DOOR OPEN key is switched ON. • While remaining in DOOR CLOSE status, only one DOOR OPEN key data is received per second. • MUTE output terminal.	Z
3	MUTE	Output	P	H	• In Acc OFF status, MUTE performs "L" output. In Acc ON status, "L" is output only in TAPE OFF or TAPE PLAY status. TAPE OFF staus: During system ALL OFF, TUNER AUX, DK interrupt.	Z
4	TAPW	Output	P	H	• TAPE AUDIO (pre-amp, Dolby) power supply control terminal. • Performs constant "H" output during tape operation.	Z
5	N.C					
6	KST 1	Output	P	H	• Strobe output for key scanning.  Scan cycle: 10ms Pulse width: 1 ms	Z
7	KST 2	Output	P	H		Z
8	KST 3	Output	P	H		Z
9	KST 4	Output	P	H		Z
10	MPA	Output	P	H	• Multiplexer control output. • At Acc ON, constant output is performed.	Z
11	MPB	Output	P	H		Z
12	MPC	Output	P	H		Z
13	ALIVE	Output	P	H	• Runaway detection output terminal for IC. • At Acc ON, ALIVE changes from "H" to "L" at each 8-bit clock input. • In normal Acc ON status, ALIVE repeats H/L output.	Z
14	K1	Input	Gate	H	• Key input terminal. • Matrix configuration.	Z
15	K2	Input	Gate	H		Z
16	K3	Input	Gate	H		Z
17	K4	Input	Gate	H		Z
18	LEVEL	Input	Gate		• Spare analogue level input terminal. • Connects comparator output A/D conversion.	Z
19	VDISP				• Connected to GND.	
20	Dolby ON/$\overline{\text{OFF}}$	Output	CMOS	H	• Dolby ON/OFF control output terminal. • Outputs the "Dolby ON/OFF memory" contents during TAPE operation. • Performs "H" output by Dolby B or C.	H
21	Dolby $\overline{\text{B}}$/C	Output	CMOS	H	• Dolby B/C selection output terminal. * Outputs the "Dolby B/C momory" contents during TAPE operation. Dolby B or Dolby B and C common OFF →"L" Dolby C →"H"	H

	MPC	MPB	MPA	TC4051BF Pin
63Hz	0	1	0	15
125Hz	0	0	1	14
250Hz	0	0	0	13
500Hz	0	1	1	12
1kHz	1	0	0	1
3kHz	1	1	0	2
10kHz	1	0	1	5
OFF	1	1	1	4

	KST 1	KST 2	KST 3	KST 4
K 1	DOOR SW	DR BAND	C AUTO	SP/GEQ
K 2	VOL DWN	REW DWN	BS LOC	FUN
K 3	VOL UP	FF UP	LOUD	OP/EJ
K 4	——	(SCAN)	B	(DK)

Signals with parentheses are valid only in TEST mode.

Pin No.	Pin Name	I/O	I/O Format	Logic	Function and Operation	At RESET
22	MS	Input	Gate	L	• Music signal input terminal. • Uses an internal timer to judge the presence/absence of a Song signal based on the "H"/"L" change in the terminal. • Input provided with trailing latch.	
23	N.C					
24	DA 0	Output	CMOS		• Reference voltage data output terminal for spare analogue A/D conversion. • With an externally installed ladder resistor, DA0-DA7 outputs the reference voltage below:	H
25	DA 1	Output	CMOS			H
26	DA 2	Output	CMOS			H
27	DA 3	Output	CMOS			H
28	DA 4	Output	CMOS			H
29	DA 5	Output	CMOS			H
30	DA 7	Output	CMOS			H
31	DA 7	Output	CMOS			H
32	VDD		—	—	• Connected to +5V power supply.	
33	$\overline{SCK}$	I/O	Gate input CMOS Output		• 8-bit serial data communication clock I/O terminal. • SCK is in high-impedance in INPUT mode, and performs CMOS output in mode.	Z
34	SI	Input	Gate input		• 8-bit serial data input terminal.	Z
35	SO	Output	CMOS		• 8-bit serial data output terminal	H
36	900/$\overline{500}$	Input	RUP		• KEX-900/KEX-500 model-selection input terminal. • KEX-900 = "H": KEX-500 = "L". • Built-in pull-up resistor.	Z
37	70μ	Output	CMOS	H	• Output terminal for the 70 ON/OFF memory contents during deck operation. • 70μ = mechanical auto sensing.	H
38	$\overline{STOP}$	Output	CMOS	L	• Main motor ON/OFF control terminal. • Outputs "L" during Deck OFF status or Power Loading. • "L" is output during the mechanical transition of the deck operating state from mechanical Fast-Forward (Rewind) to PLAY, RLS or EJECT. In other states, "H" is output.	H
39	$\overline{PLAY}$	Output	CMOS	L	• Filter-switching output terminal of MS in PLAY/FF modes. • "L" is output during deck operating state of PLAY; "H" is output in other states. * "L" is output during Deck OFF status and during Power Loading.	H
40	STBY2	Output	CMOS	H	• Connects and controls STBY2 of mechanical motor driver PA3019. • "H" is output only during hard reset of IC; "L" is output in all other cases.	H
41	$\overline{STBY1}$	Output	CMOS	L	• Connects and controls STBY1 of mechanical motor driver PA3019. • "H" is output only during hard reset of IC; "L" is output in all other cases.	H



DA7	6	5	4	3	2	1	0	Refernce voltage
0	0	0	0	0	0	0	0	0.0
0	0	0	1	0	0	0	0	0.38
0	0	0	1	1	1	0	0	0.60
0	0	1	0	1	1	0	1	0.96
0	1	0	0	0	1	1	0	1.50
0	1	1	0	1	1	1	1	2.38
1	0	1	1	0	0	0	1	3.78

Pin No.	Pin Name	I/O	I/O Format	Logic	Function and Operation	At RESET
42	I 2	Output	CMOS		• Control data output terminal with respect to mechanical motor driver PA3019. 6 The output pattern is as below:	H
43	I 1	Output	CMOS			H
44	I 0	output	CMOS			H
45	RES	Input	RUP	L	• Reel table rotation pulse input terminal. • Detects rotation according to "H"/"L" change. • A continuous "H" status for 1.2 s is regarded as the TAPE END status.	H
46	NES	Input	RUP	L		
47	$\overline{AUX}$	Input	RUP	L	• AUX mode input terminal. • Detects AUX+B and performs input. • Transmits data by data communication to the system controller.	H
48	$\overline{DIM}$	Input	RUP	L	• Dimmer input terminal. * Detects and inputs the illumination line. • Transmits data by data communication to the system controller. (The system controller lowers the luminance of the FL display.)	H
49	RESET	Input	Gate input	H	• Initialize/Reset input terminal of ICs.	Z
50	$\overline{TEST}$	Input	Gate input	L	• Test input terminal for IC mechanisms.	Z
51	OSC 1	Input			• Terminal for generating the ICclock.	
52	OSC 2	Output			• Employs a 4-MHz ceramic oscillator element.	
53	VSS				• Power supply terminal. • Connected to GND.	
54	CHECK 0	Input	RUP	L	• Setting of CHECK0, CHECK1 selects the CHECK mode.	H
55	CHECK 1	Input	RUP	L	1 Unit Check mode 2 Communication OFF mode When RESET is initiated in the above modes, the respective mode is entered. 1 is used with the unit checker (control checker). (Not used in actual servicing) 2 is mode enabling independent mechanical operation of the control p. c. board and can be controlled by usual key input.	H
56	VSENSE	Input	Gate	H	• PA3019 supply voltage sensor input terminal. • At "H" input, the mechanism is stopped and the system controller is informed by data communication of the Emergency status.	Z
57	DIS	Output	CMOS	H	• Control output terminal of Disable B line. • Constant "H" output during TAPE or TUNER. • "H" is output for about 1 s at Acc ON/OFF. • ON/OFF switching is done by a command from the system controller.	
58	SW 4	Input	Gate		• Mechanical switch matrix input terminal. • Detects the status of the head position, gear position, etc. by a matrix with Strobe signals ST1-ST3. • ON chatter (⌐‾) 20 ms • OFF chatter (‾⌐) 1s (• "H" is output in the cases below: (1) By loss of power at PA3019 (2) By excess voltage at PA3019 (3) By excess current at PA3019)	Z
59	SW 3	Input	Gate			Z
60	SW 2	Input	Gate			Z
61	SW 1	Input	Gate			Z
62	ST 1	Output	P	H	• Strobe signal output terminals for the mechanical switch matrix. • ST1: head position sensing strobe; ST2: FF/RES gear position sensing strobe; ST3: $\overline{LOAD}$, SET, 70μ switch sensing strobe.	Z
63	ST 2	Output	P	H		Z
64	ST 3	Output	P	H		Z

CM			M1 · M2
12	11	10	Control mode
0	0	0	OFF
0	0	1	Power LOAD forward rotation
0	1	0	Power LOAD forward ratation
0	1	1	SPEED CONT
1	0	0	↑ M1 Positive rotation
1	0	1	↑ M1 Reverse rotation
1	1	0	↑ M2 Positive rotation
1	1	1	↑ M2 Reverse rotation

I/O Format
P: P-ch OPEN drain output
RUP: Input with built-in Pull-up resistor

At RESET
Z: High-impedance state

• Communication OFF Mode

The deck controller (IC701: PD3069B) and system controller (IC901: PD4092A) usually conduct data communication. In this mode, however, the cassette mechanism can be operated by only the deck controller despite the ceasing of communication.

• How to Enter the Communication OFF Mode:

1. Perform grounding of 55 Pin of IC701.
2. Switch ON the back-up power supply and ACC power supply.
3. Disconnect Pin 55 of IC701 from ground.
4. Insert a cassette tape.
5. When the cassette tape is loading, the cassette mechanism stops once. It recommences operation by pressing a Function key and enters PLAY mode.
6. Operation can be confirmed by usual key input.

• Cancellation of the Communication OFF Mode

This mode can be cancelled by switching OFF the back-up power supply and ACC power supply, and ACC power supply, then switching them ON again.

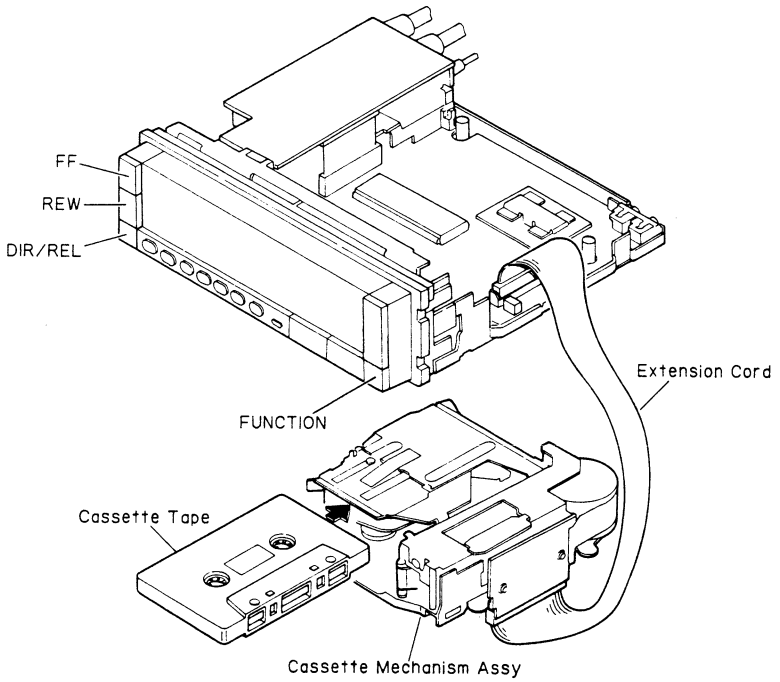
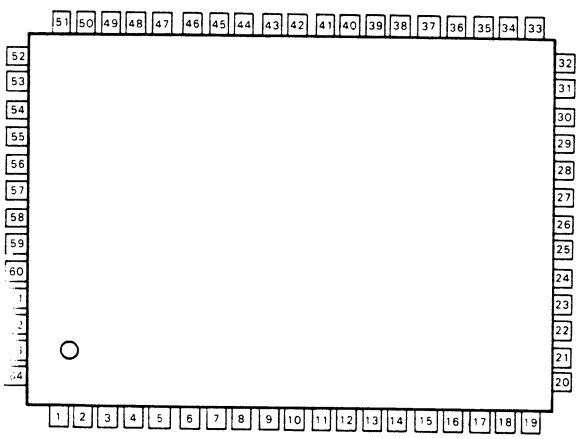


Fig. 11

• Display Unit

IC901 : *PD4091



*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

● Terminal Functions of PD4091

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Function and Operation</th></tr>
<tr><td>1</td><td>N. C</td><td>–</td><td>Not used.</td></tr>
<tr><td>2</td><td>MRQ</td><td>Input</td><td>MUTE request input terminal. At "H" input, the amount of electronic volume attenuation is maximized and Isolate Mute is concurrently output from the MUTE terminal (53 Pin).</td></tr>
<tr><td>3</td><td>SCK</td><td>I/O</td><td>Shift clock input/output terminal for the serial interface. Frequency during clock output: 65.5kHz.</td></tr>
<tr><td>4</td><td>Tr B</td><td>Output</td><td>Data output terminal for the serial interface.</td></tr>
<tr><td>5</td><td>Tr C</td><td>Input</td><td>Data input terminal for the serial interface.</td></tr>
<tr><td>6</td><td>$\overline{\text{ACC}}$</td><td>Input</td><td>Acc sensing input terminal. Active low.</td></tr>
<tr><td>7</td><td>MOD 0</td><td rowspan="2">Input</td><td rowspan="2">Input terminal for selecting the application destination.
<table><tr><th>MOD 0</th><th>MOD 1</th><th>Destination</th></tr><tr><td>L</td><td>L</td><td>Commercial model</td></tr><tr><td>L</td><td>H</td><td>ES</td></tr><tr><td>H</td><td>L</td><td>EW</td></tr><tr><td>H</td><td>H</td><td>WG</td></tr></table>EW and WG use the dedicated microcomputer PD4091 and are thus not used with PD4092A.</td></tr>
<tr><td>8</td><td>MOD 1</td></tr>
<tr><td>9</td><td>SEC</td><td>Input</td><td>Not used. (Data input terminal for anti-theft use)</td></tr>
<tr><td>10</td><td>NC</td><td>Output</td><td>Set to OPEN.</td></tr>
<tr><td>11</td><td>STB 0</td><td rowspan="3">Output</td><td rowspan="3">Key matrix input terminals. Active high.</td></tr>
<tr><td>12</td><td>STB 1</td></tr>
<tr><td>13</td><td>STB 2</td></tr>
<tr><td>14</td><td>K0</td><td rowspan="4">Input</td><td rowspan="4">Key matrix input terminals. Active high.
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<tr><td>17</td><td>K 3</td></tr>
<tr><td>18 – 21</td><td>NC</td><td>Input</td><td>Not used. Set to V or Vss level.</td></tr>
<tr><td>22</td><td>EVENT</td><td>Input</td><td>Not used. Connected to GND.</td></tr>
<tr><td>23</td><td>X 2</td><td>Output</td><td>Crystal oscillating element connection terminal.</td></tr>
<tr><td>24</td><td>X 1</td><td>Input</td><td>Oscillating frequency: 4.19MHz.</td></tr>
<tr><td>25</td><td>Vss</td><td>–</td><td>Power supply terminal. Connected to GND.</td></tr>
<tr><td>26</td><td>VDD</td><td>–</td><td>Power supply terminal. +5V input.</td></tr>
<tr><td>27</td><td>P5</td><td rowspan="13">Output</td><td rowspan="13">Display segment drive output. Active high.
P-ch OPEN drain output.
Internally pulled-down by VLOAD (–28V).</td></tr>
<tr><td>28</td><td>P1</td></tr>
<tr><td>29</td><td>P6</td></tr>
<tr><td>30</td><td>P3</td></tr>
<tr><td>31</td><td>P4</td></tr>
<tr><td>32</td><td>P2</td></tr>
<tr><td>33</td><td>P7</td></tr>
<tr><td>34</td><td>P12</td></tr>
<tr><td>35</td><td>P13, 14</td></tr>
<tr><td>36</td><td>P11</td></tr>
<tr><td>37</td><td>P10</td></tr>
<tr><td>38</td><td>P9</td></tr>
<tr><td>39</td><td>P8</td></tr>
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<tr><td>10</td><td>NC</td><td>Output</td><td>Set to OPEN.</td></tr>
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12
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STB 1
STB 2</td><td>Output</td><td>Key matrix input terminals. Active high.</td></tr>
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28
29
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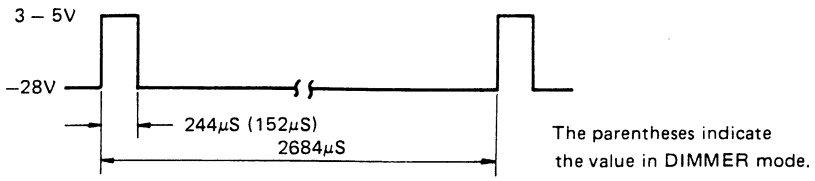
37
38
39</td><td>P5
P1
P6
P3
P4
P2
P7
P12
P13, 14
P11
P10
P9
P8</td><td>Output</td><td>Display segment drive output. Active high.
P-ch OPEN drain output.
Internally pulled-down by VLOAD (–28V).</td></tr>
</table>

Pin No.	Pin Name	I/O	Function and Operation
40 – 50	G11 – G1	Output	Display timing driving output. Active high. P-ch OPEN drain output. Internally pulled-down by VLOAD (–28V). 
51	VLOAD	Input	Display driver power supply input terminal. Connected to D/D converter DC output (–28V)
52	VPRE	Input	Display pre-driver power supply terminal. Connected to GND.
53	MUTE	Output	Isolator MUTE output teminal. Active high. Output when the source is switched. Pre-muting: approx. 50ms Post-muting: approx. 1.5s Output when MRQ is input. Output at VR MIN status.
54	CE 1	Output	Hideaway tuner control output. Active high. Output when the tuner is connected.
55	ST	Output	Control data latch output for electronic volume ad electronic GEQ. Active high. Output when electronic volume and electronic GEQ are set.
56	N. C	Output	Not used. Set to OPEN.
57	INT 1	Input	Not used. Connected to GND.
58	VDD	–	Power supply terminal. +5V.
59	AUC	Output	Control data output terminal for electronic volume and electronic GEQ. Active high. AUC also functions as the data shift clock terminal for anti-theft use.
60	SK	Output	Control data shift clock output for electronic volume and elecrronic GEQ. Active high. Output when electronic volume and electronic GEQ are set. SK also functions as the data shift clock output terminal for anti-theft use.
61	CE 2	Output	Not used. Non-voltatile RAM PDH001 chip for anti-theft use. Enable output terminal. Active high.
62	TUON	Output	BT+B control terminal. Active high. "H" output when the source is ON.
63	RESET	Input	Reset signal input terminal. Active high. During Reset status, all input/output terminals are in high-impedance state.
64	BEEP	Output	BEEP waveform output terminal. Frequency: approx. 4kHz. Output time: approx. 40ms.

4. SCHEMATIC CIRCUIT DIAGRAM (KEX-500/EW)

SWITCHES

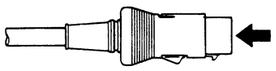
○ **SWITCH P.C. BOARD**

S1 : CST SET SWITCH ..... ON – OFF

S2 : CST IN SWITCH ..... ON – OFF

S3 : 70μS SWITCH ..... ON (120μS) – OFF (70μS)

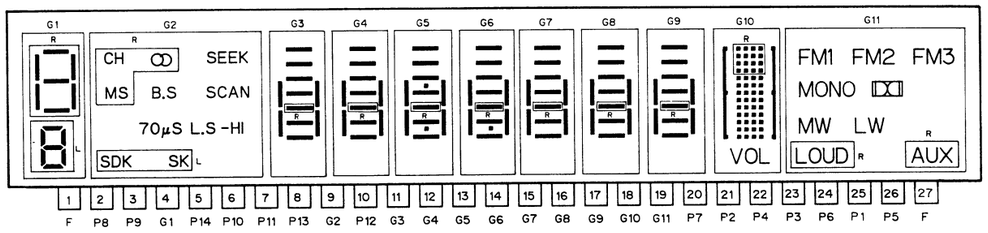
The underlined indicates the switch position.



Connection is viewed from the direction of the arrow.

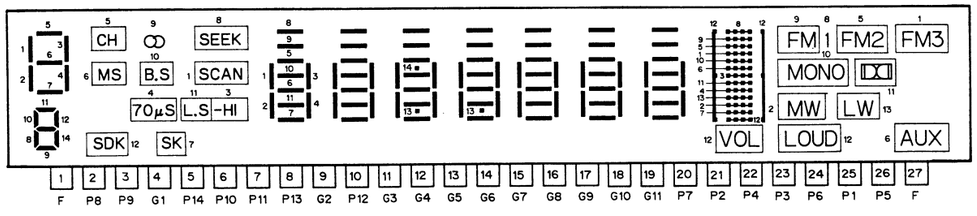
Audio Control Unit
Consists of
Dolby NR. P.C. Board
G.E. P.C. Board
C. Switch P.C. Board

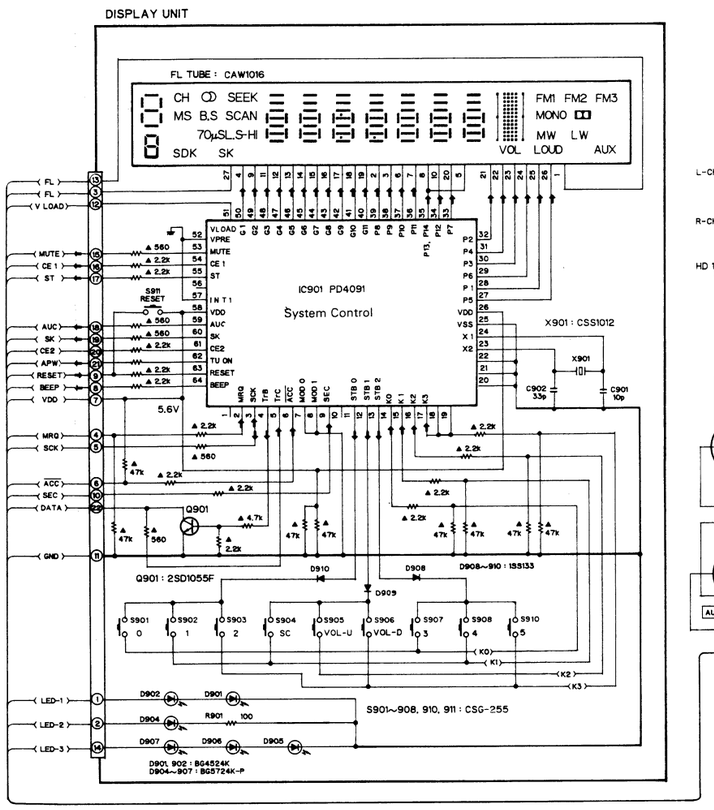
FL Tube : CAW1016

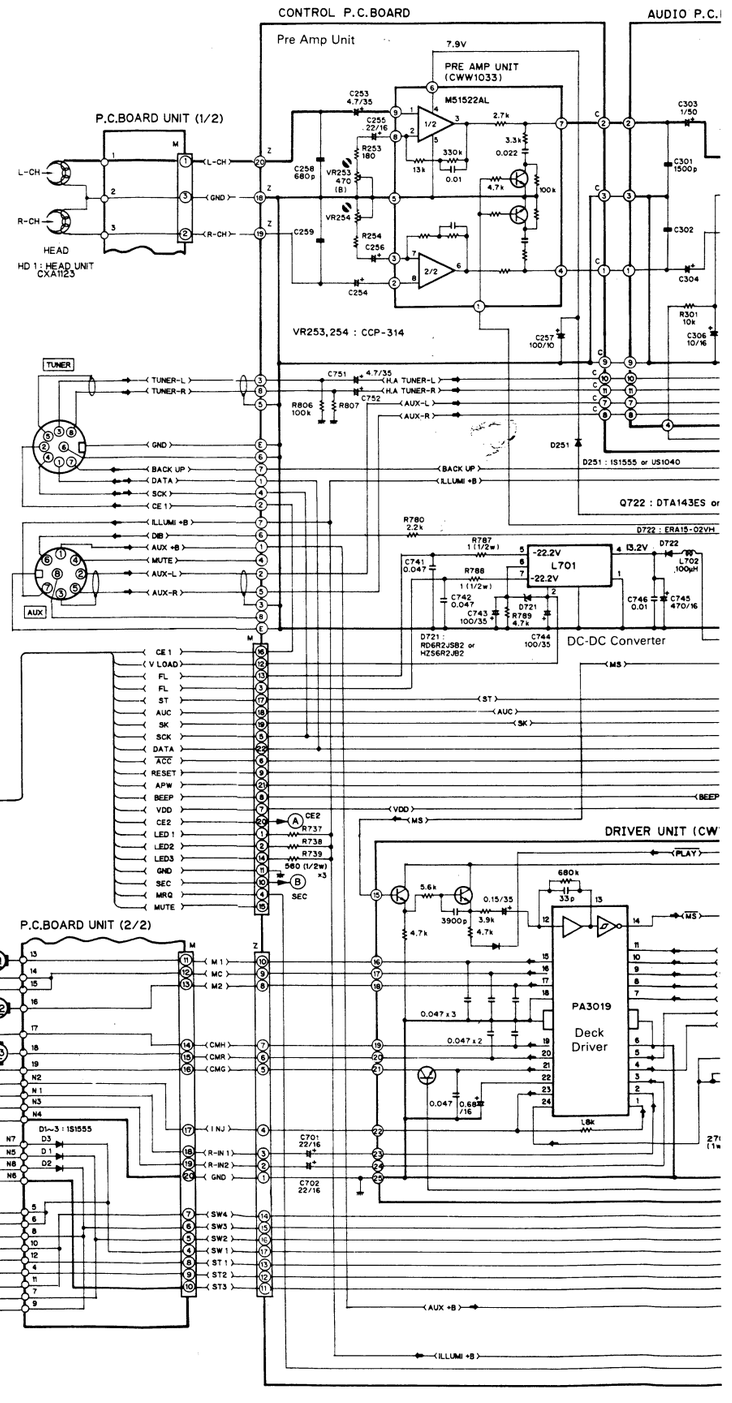


COLOR OF ILLUMINATION

G : BLUE-GREEN (OTHERWISE SPECIFIED SEGMENTS.)
L : LEMON
R : RED







NOTE :

Indicates a chip resistor.
Indicates a chip capacitor.
Indicates a printed resistor

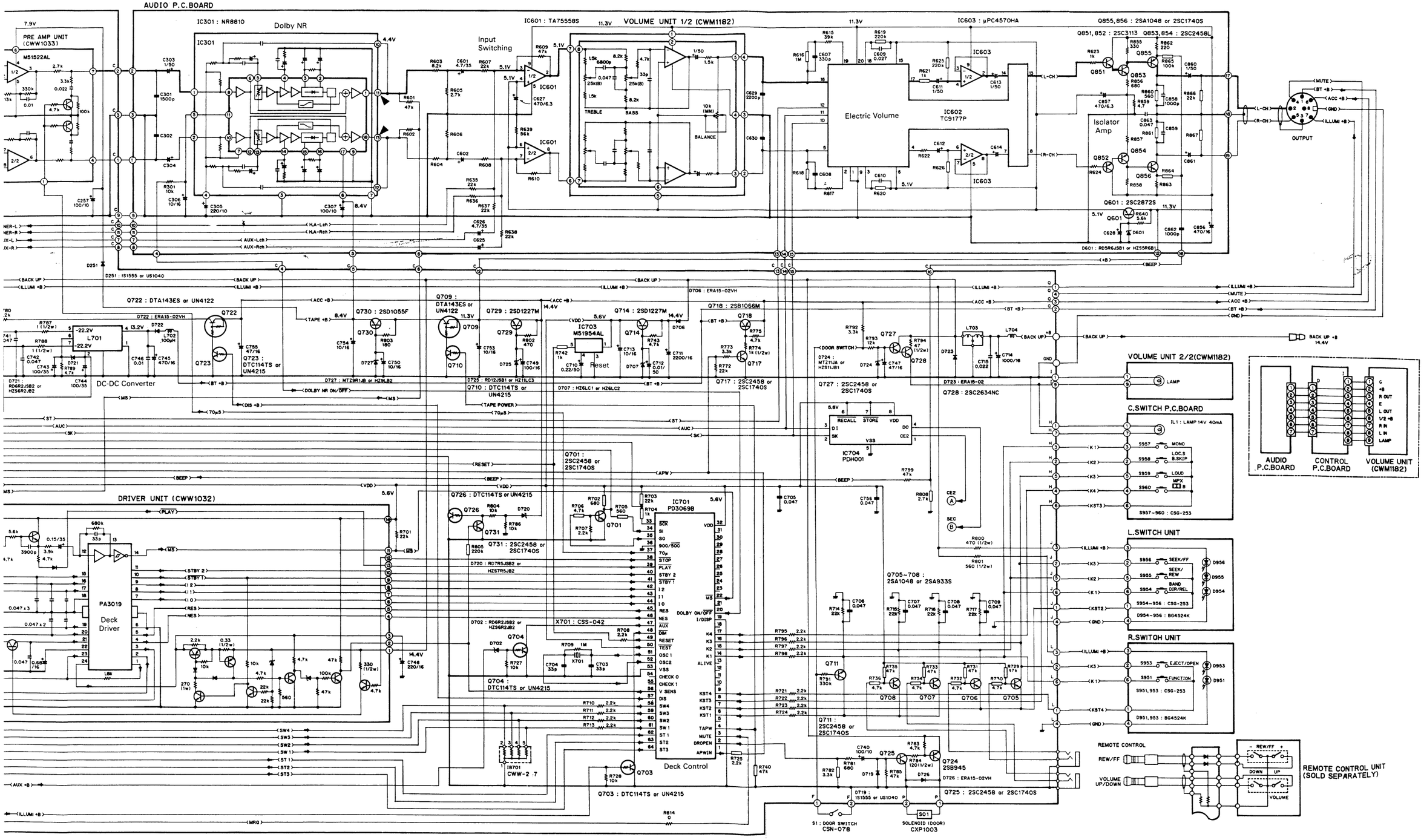
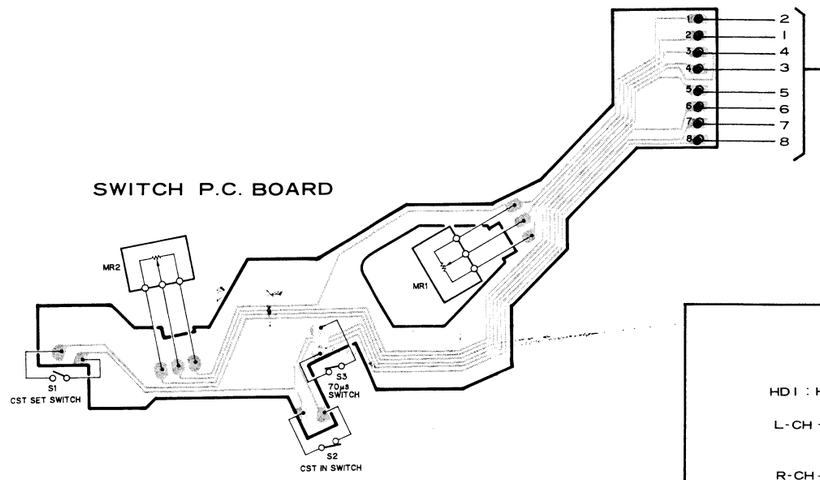

AUDIO P.C.BOARD
PRE AMP UNIT (CWW1033)
M51522AL
IC301 : NR8810
Dolby NR
Input Switching
IC601 : TA75558S
VOLUME UNIT 1/2 (CWM1182)
Electric Volume
IC602 TC9177P
IC603 : μPC4570HA
IC603
Q855,856 : 2SA1048 or 2SC1740S
Q851,852 : 2SC3113 Q853,854 : 2SC2458L
Isolator Amp
OUTPUT
Q601 : 2SC2872S
D601 : RD5R6JSB1 or HZS5R6B1
D251 : 1S1555 or US1040
Q722 : DTA143ES or UN4122
Q709 : DTA143ES or UN4122
Q729 : 2SD1227M
Q714 : 2SD1227M
Q718 : 2SB1066M
Q730 : 2SD1055F
Q723 : DTC114TS or UN4215
Q710 : DTC114TS or UN4215
D727 : MTZ9R1JB or HZ9L82
D725 : RD12JSB1 or HZ11L3
D707 : HZ6LC1 or HZ6LC2
D706 : ERA15-02VH
D722 : ERA15-02VH
D721 : RD6R2JSB2 or HZS6R2JB2
DC-DC Converter
IC703 M51954AL
Reset
Q717 : 2SC2458 or 2SC1740S
Q727 : 2SC2458 or 2SC1740S
Q728 : 2SC2634NC
D724 : MTZ11JA or HZS11JB1
D723 : ERA15-02
IC704 PDH001
VOLUME UNIT 2/2(CWM1182)
C.SWITCH P.C.BOARD
IL1 : LAMP 14V 40mA
L.SWITCH UNIT
R.SWITCH UNIT
AUDIO P.C.BOARD
CONTROL P.C.BOARD
VOLUME UNIT (CWM1182)
DRIVER UNIT (CWW1032)
PA3019
Deck Driver
Q701 : 2SC2458 or 2SC1740S
Q726 : DTC114TS or UN4215
Q731 : 2SC2458 or 2SC1740S
D720 : RD7R5JSB2 or HZS7R5JB2
D702 : RD6R2JSB2 or HZS6R2JB2
Q704 : DTC114TS or UN4215
X701 : CSS-042
IC701 PD3069B
Deck Control
Q703 : DTC114TS or UN4215
Q705~708 : 2SA1048 or 2SA933S
Q711 : 2SC2458 or 2SC1740S
Q724 2SB945
Q725 : 2SC2458 or 2SC1740S
D726 : ERA15-02VH
D719 : 1S1555 or US1040
S1 : DOOR SWITCH CSN-078
SOLENOID (DOOR) CXP1003
REMOTE CONTROL
REMOTE CONTROL UNIT (SOLD SEPARATELY)
CWW-27

Fig. 12

5. CONNECTION DIAGRAM (KEX-500/EW)

DRIVER U

SWITCH P.C. BOARD



MOTOR (HEAD) M1

MOTOR (FF/REW) M2

MOTOR (CAPSTAN) M3

CONT

HD1 : HEAD UNIT

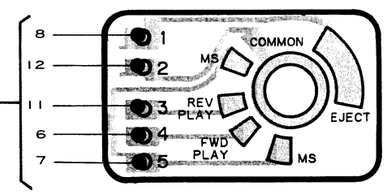
L-CH 1

2

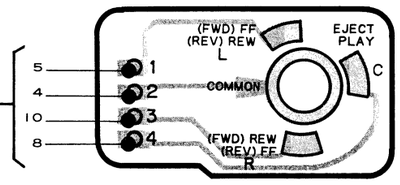
R-CH 3

P.C. BOARD UNIT

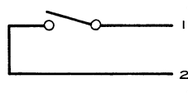
SENSE P.C. BOARD(A)



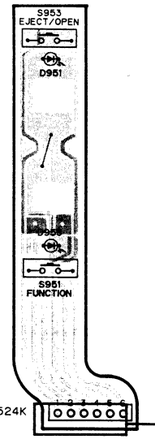
SENSE P.C. BOARD(B)



SI : DOOR SWITCH

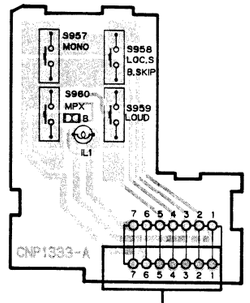


R.SWITCH UNIT

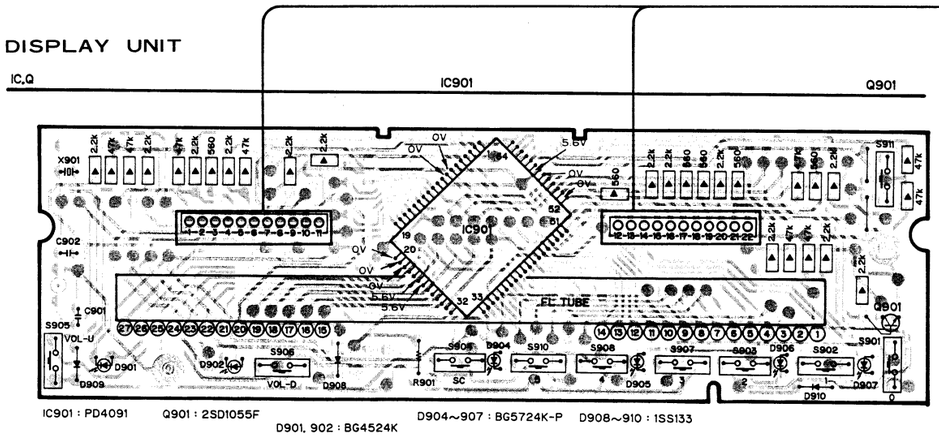


D951, 953 : BG4524K

C.SWITCH P.C. BOARD



DISPLAY UNIT



IC901 : PD4091 Q901 : 2SD1055F D904~907 : BG5724K-P D908~910 : 1SS133

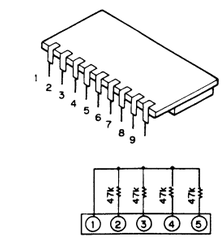
D901, 902 : BG4524K

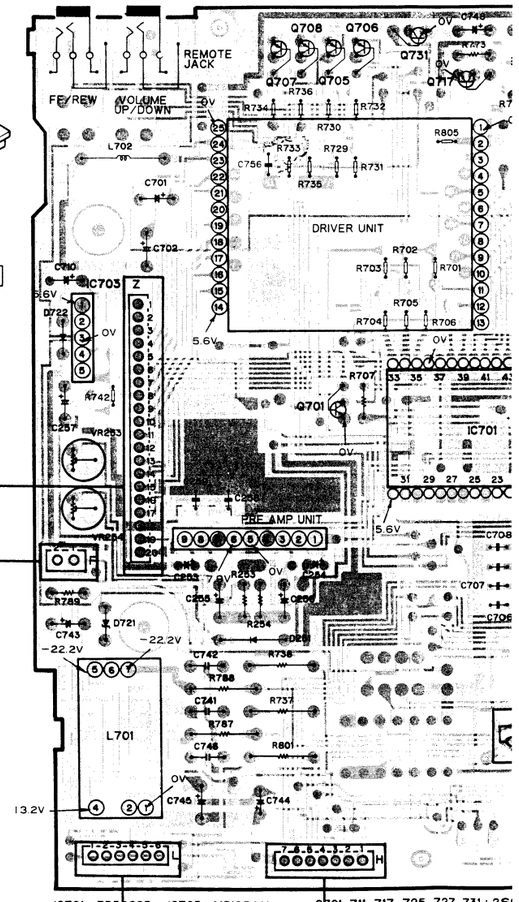
CONTROL P.C. BOARD

IC, Q IC703 Q708 Q701 Q706 Q707 Q705 Q731 Q717

ADJ VR253 VR254

PRE AMP UNIT





IC701 : PD3069B IC703 : M51954AL Q701, 711, 717, 725, 727, 731 : 2S

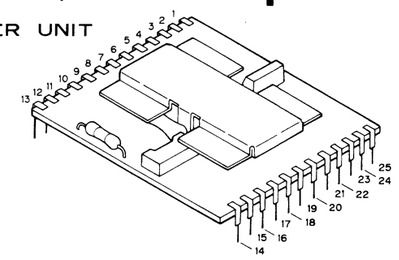
Q709, 722 : DTA143ES or UN4122 Q714, 729 : 2SD1227M Q718 : 2SB106

D251, 719 : 1S1555 or US1040 D702, 721 : RD6R2JSB2 or HZS6R2JB2 D7

D724 : MTZ11JA or HZS11JB1 D725 : RD12JSB1 or HZ11LC3 D727 : MTZ9R1

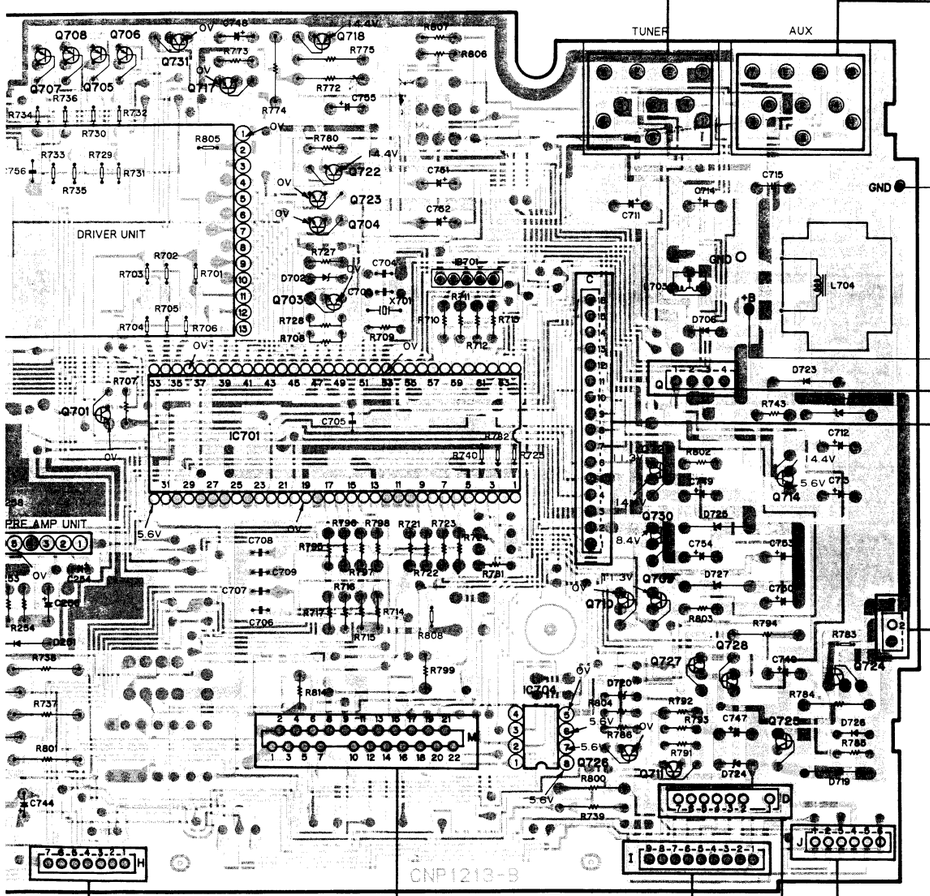
IC704 : PDH001

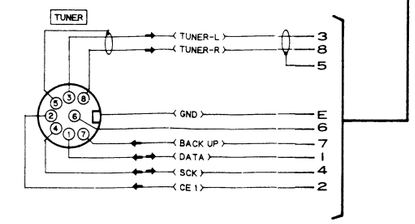
DRIVER UNIT

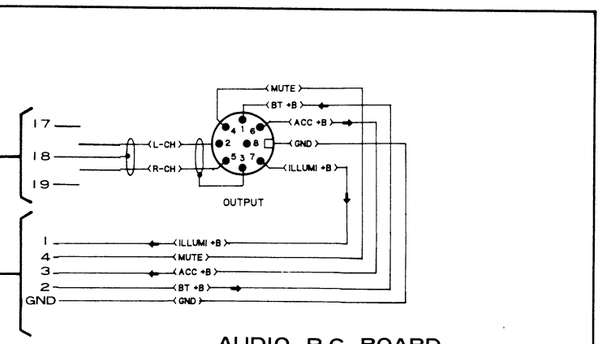


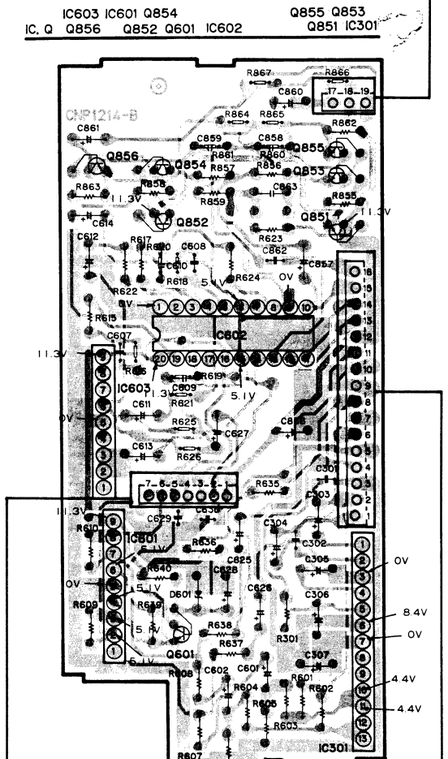
BOARD

Q708 Q701 Q706 Q707 Q705 Q731 Q717 Q723 Q718 Q703 Q704 Q722 IC701 IC704 Q730 Q710 Q729 Q727 Q726 Q709 Q711 Q728 Q714 Q725 Q724





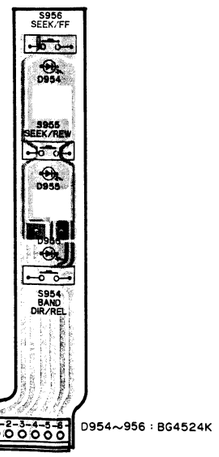




BACK UP
BACK UP +B 14.4V

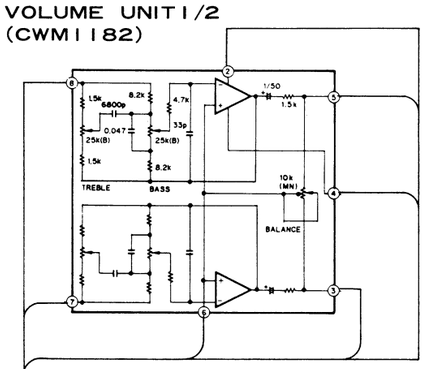
SOLENOID(DOOR)
SOL

L.SWITCH UNIT

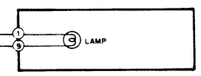


D954~956 : BG4524K

VOLUME UNIT1/2
(CWM1182)



VOLUME UNIT2/2
(CWM1182)



Q701, 711, 717, 725, 727, 731 : 2SC2458 or 2SC1740S Q703, 704, 710, 723, 726 : DTC114TS or UN4215 Q705~708 : 2SA1048 or 2SA933S
Q714, 729 : 2SD1227M Q718 : 2SB1066M Q724 : 2SB945 Q728 : 2SC2634NC Q730 : 2SD1055F
D702, 721 : RD6R2JSB2 or HZS6R2JB2 D706, 722, 726 : ERA15-02VH D707 : HZ6LC1 or HZ6LC2 D720 : RD7R5JSB2 or HZS7R5JB2 D723 : ERA15-02
D725 : RD12JSB1 or HZ11LC3 D727 : MTZ9R1JB or HZ9LB2

IC301 : NR8810 IC601 : TA75558S IC602 : TC9177P
IC603 : μPC4570HA Q601 : 2SC2872S
Q851, 852 : 2SC3113 Q853, 854 : 2SC2458L
Q855, 856 : 2SA1048 or 2SA933S
D601 : RD5R6JSB1 or HZS5R6B1

Fig. 13

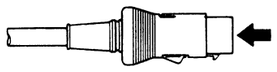
6. SCHEMATIC CIRCUIT DIAGRAM (KEX-500SDK/WG)

SWITCHES

○ **SWITCH P.C. BOARD**

S1 : CST SET SWITCH ..... ON – OFF
S2 : CST IN SWITCH ..... ON – OFF
S3 : 70μS SWITCH ..... ON (120μS) – OFF (70μS)

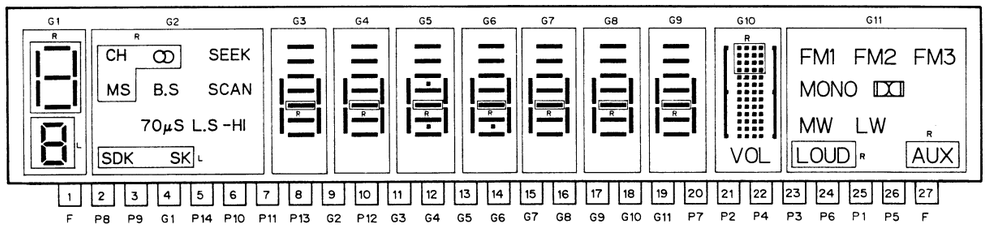
The underlined indicates the switch position.



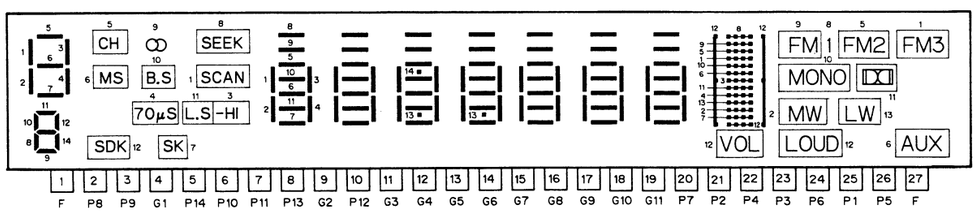
Connection is viewed from the direction of the arrow.

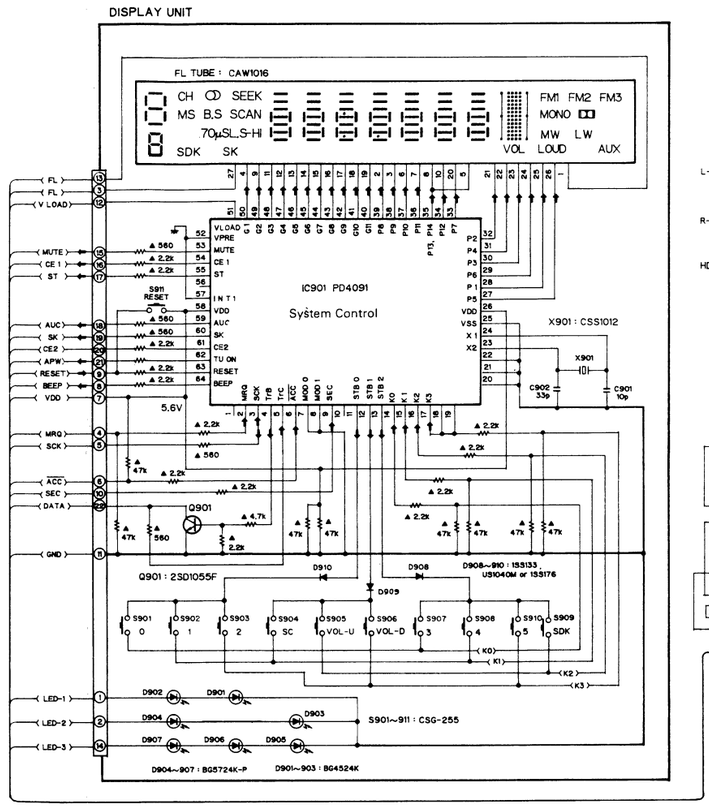
Audio Control Unit
Consists of
Dolby NR. P.C. Board
G.E. P.C. Board
C. Switch P.C. Board

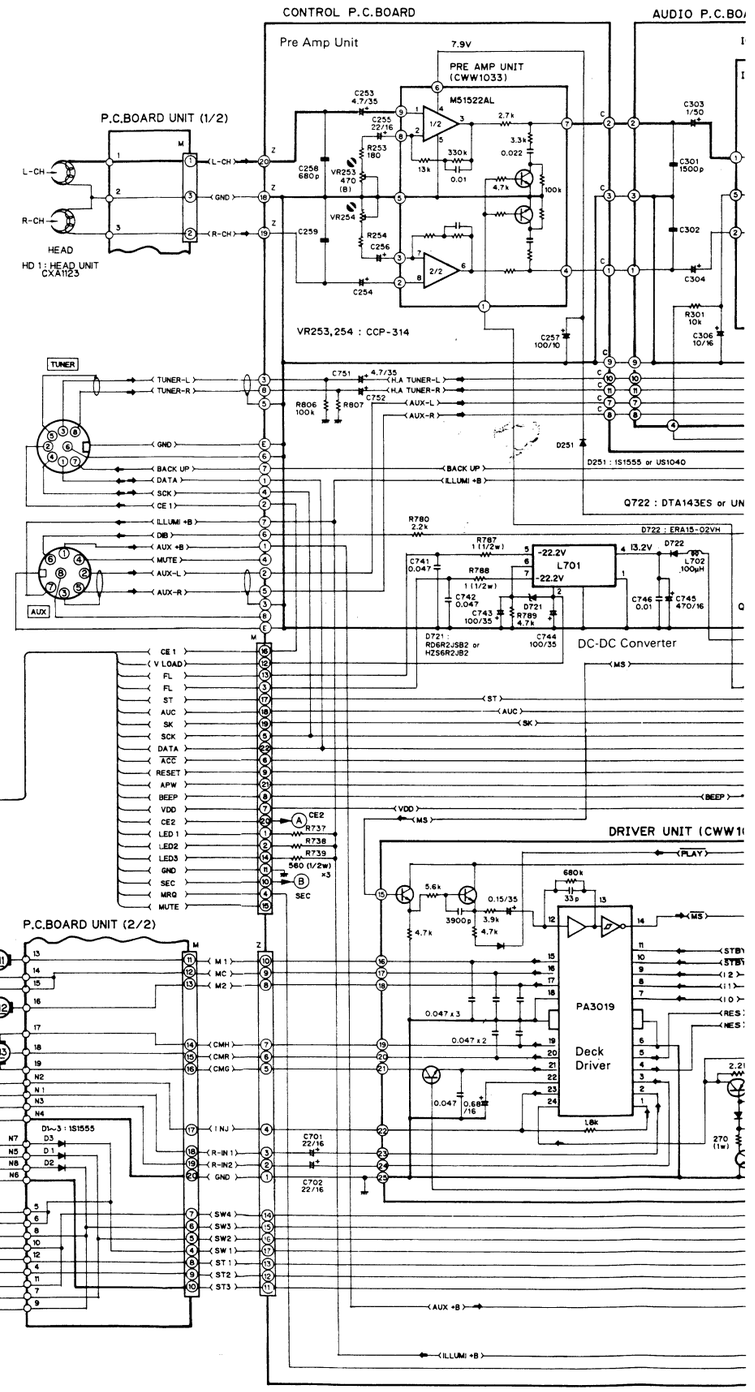
FL Tube : CAW1016



COLOR OF ILLUMINATION
G : BLUE-GREEN (OTHERWISE SPECIFIED SEGMENTS.)
L : LEMON
R : RED







NOTE :

Indicates a chip resistor.
Indicates a chip capacitor.
Indicates a printed resistor

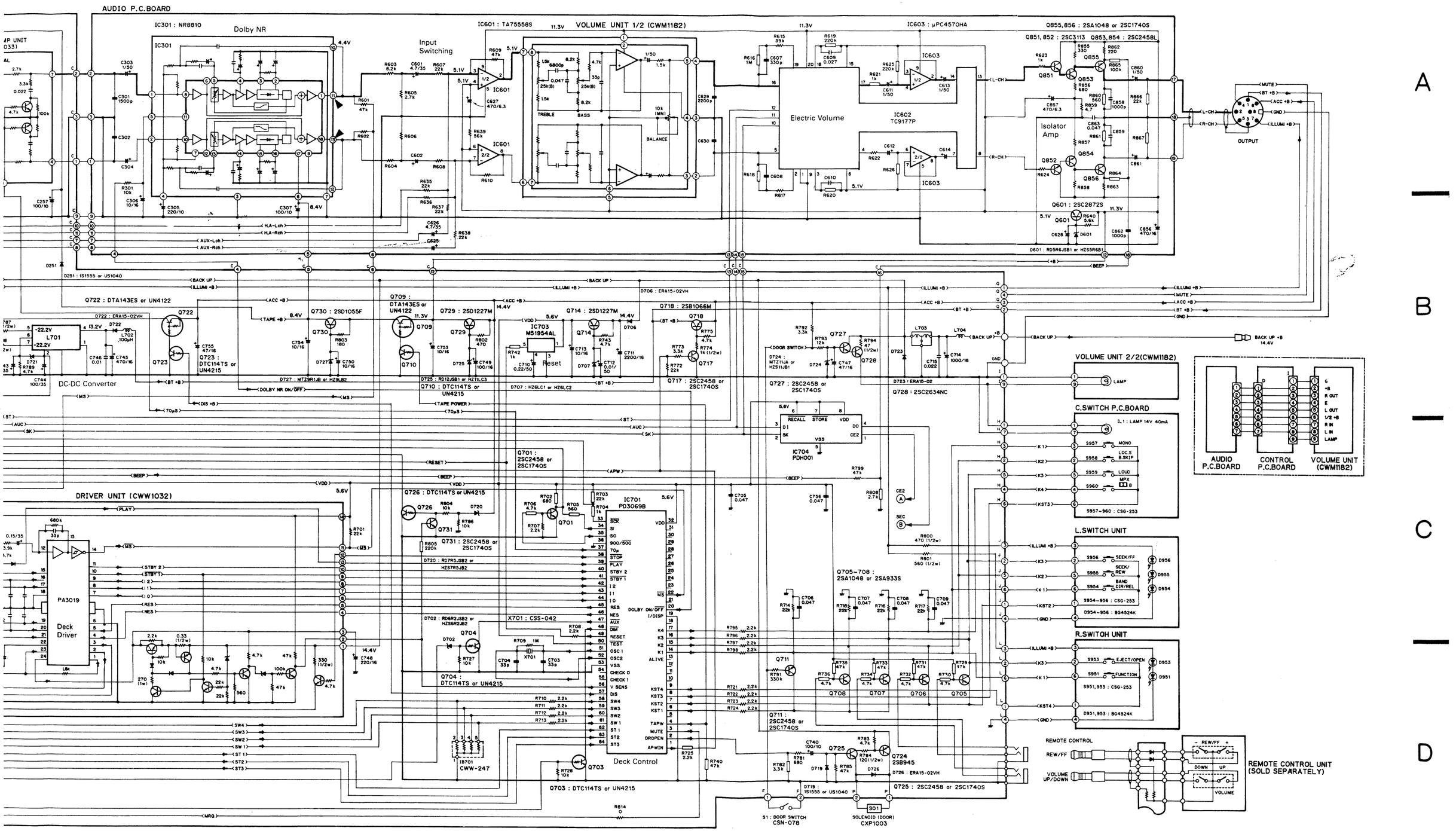

AUDIO P.C.BOARD
IC301 : NR8810
Dolby NR
IC301
Input Switching
IC601 : TA75558S
VOLUME UNIT 1/2 (CWM1182)
TREBLE
BASS
BALANCE
IC601
IC603 : μPC4570HA
IC603
Electric Volume
IC602 TC9177P
Q855,856 : 2SA1048 or 2SC1740S
Q851,852 : 2SC3113 Q853,854 : 2SC2458L
Isolator Amp
OUTPUT
Q601 : 2SC2872S
D601 : RD5R6JSB1 or HZS5R6B1
D251 : IS1555 or US1040
Q722 : DTA143ES or UN4122
Q722
Q723
Q723 : DTC114TS or UN4215
L701
L702 100μH
DC-DC Converter
Q730
Q730 : 2SD1055F
Q709 : DTA143ES or UN4122
Q709
Q710
Q710 : DTC114TS or UN4215
Q729 : 2SD1227M
Q729
D725 : RD12JSB1 or HZ11LC3
Q714 : 2SD1227M
Q714
D707 : HZ6LC1 or HZ6LC2
IC703 M51954AL
Reset
Q718 : 2SB1066M
Q718
Q717
Q717 : 2SC2458 or 2SC1740S
D706 : ERA15-02VH
D722 : ERA15-02VH
D727 : MTZ9R1JB or HZ9LB2
Q727 : 2SC2458 or 2SC1740S
Q728 : 2SC2634NC
Q724 : MTZ11JA or HZ11JB1
D724
Q727
Q728
D723 : ERA15-02
VOLUME UNIT 2/2(CWM1182)
LAMP
C.SWITCH P.C.BOARD
IL1 : LAMP 14V 40mA
S957 MONO
S958 LOC.S B.SKIP
S959 LOUD
S960 MPX
S957~960 : CSG-253
L.SWITCH UNIT
S956 SEEK/FF
S955 SEEK/REW
S954 BAND DIR/REL
S954~956 : CSG-253
S954~956 : BG4524K
R.SWITOH UNIT
S953 EJECT/OPEN
S951 FUNCTION
S951,953 : CSG-253
D951,953 : BG4524K
AUDIO P.C.BOARD
CONTROL P.C.BOARD
VOLUME UNIT (CWM1182)
DRIVER UNIT (CWW1032)
PA3019
Deck Driver
IC701 PD3069B
Deck Control
Q726 : DTC114TS or UN4215
Q731 : 2SC2458 or 2SC1740S
Q704 : DTC114TS or UN4215
Q703 : DTC114TS or UN4215
X701 : CSS-042
IC8701 CWW-247
Q705~708 : 2SA1048 or 2SA933S
Q705
Q706
Q707
Q708
Q711 : 2SC2458 or 2SC1740S
Q725 : 2SC2458 or 2SC1740S
Q724 2SB945
D726 : ERA15-02VH
D719 : 1S1555 or US1040
S1 : DOOR SWITCH CSN-078
SOLENOID (DOOR) CXP1003
REMOTE CONTROL
REW/FF
VOLUME UP/DOWN
REMOTE CONTROL UNIT (SOLD SEPARATELY)

Fig. 14

7. CONNECTION DIAGRAM (KEX-500SDK/WG)

DRIVER UNI

SWITCH P.C. BOARD

MR2
MR1
S1 CST SET SWITCH
S3 70as SWITCH
S2 CST IN SWITCH

MOTOR (HEAD) M1
MOTOR (FF/REW) M2
MOTOR (CAPSTAN) M3
CONT

HD1 : HEAD UNIT
L-CH
R-CH

P.C. BOARD UNIT

CONTROL P.C. BOARD

IC, Q IC703
ADJ VR253 VR254

PRE AMP UNIT

IB701 : CWW-247

REMOTE JACK
FF/REW
VOLUME UP/DOWN
DRIVER UNIT
PRE AMP UNIT
IC703
IC701
L701

SENCE P.C. BOARD(A)

COMMON
MS
REV PLAY
EJECT
FWD PLAY
MS

SENSE P.C. BOARD(B)

(FWD) FF (REV) REW
EJECT PLAY
COMMON
(FWD) REW (REV) FF

SI : DOOR SWITCH

R.SWITCH UNIT

S953 EJECT/OPEN
D951
D952
S951 FUNCTION
D951, 953 : BG4524K

C.SWITCH P.C. BOARD

S957 MONO
S958 LOC.S S.SKIP
S960 MPX
S959 LOUD
CNP1333-A

DISPLAY UNIT

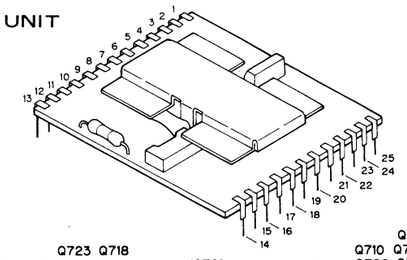
IC,Q IC901 Q901

FL TUBE
X901
IC901
Q901
S901
S902
S903
S904
S905
S906
S907
S908
S909
S910
S911
D901
D902
D903
D904
D905
D906
D907
D908
D909
D910

IC901 : PD4091 Q901 : 2SD1055F D901~903 : BG4524K D904~907 : BG5724K-P D908~910 : 1SS133 , US1040M or 1SS176

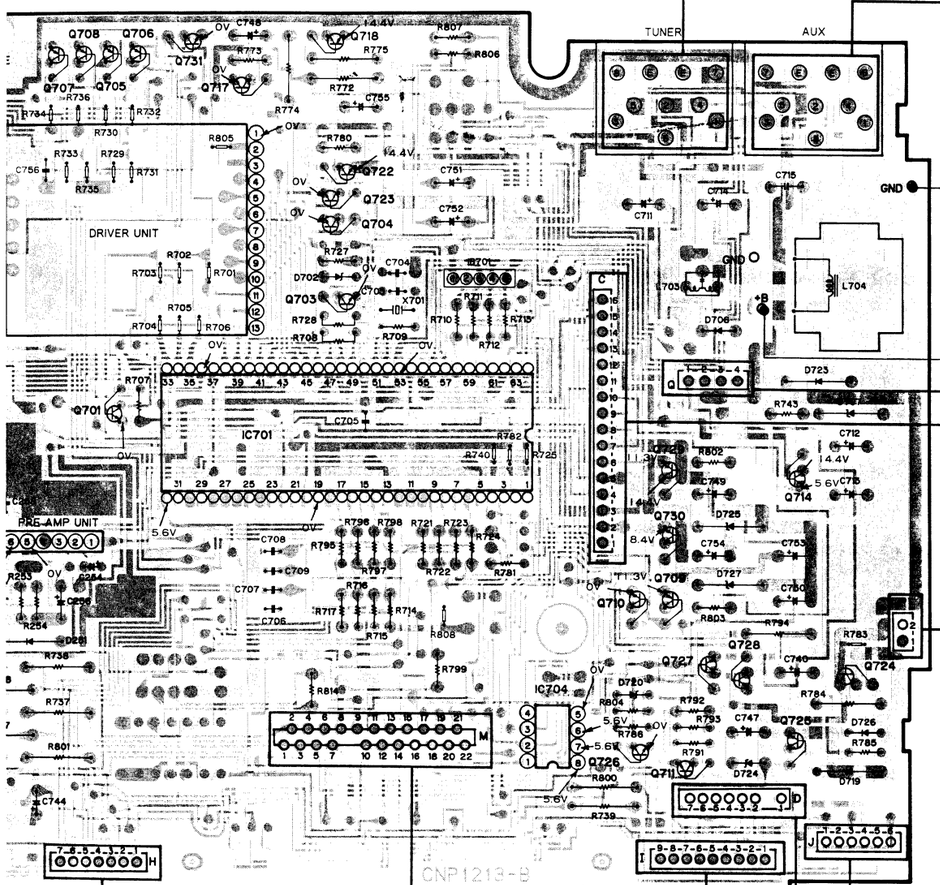
IC701 : PD3069B IC703 : M51954AL Q701, 711, 717, 725, 727, 731 : 2SC
Q709, 722 : DTA143ES or UN4122 Q714, 729 : 2SD1227M Q718 : 2SB1066
D251, 719 : S1555 or US1040 D702, 721 : RD6R2JSB2 or HZS6R2JB2 D7
D724 : MTZ11JA or HZS11JB1 D725 : RD12JSB1 or HZ11LC3 D727 : MTZ9R1J
IC704 : PDH001

DRIVER UNIT



BOARD

Q708 Q701 Q706 Q707 Q705 Q731 Q717 Q723 Q718 Q703 Q704 Q722 IC701 IC704 Q730 Q710 Q729 Q727 Q726 Q709 Q711 Q728 Q725 Q714 Q724



TUNER
- TUNER-L → 3
- TUNER-R → 8
- 5
- GND → E
- 6
- BACK UP → 7
- DATA → 1
- SCK → 4
- CE1 → 2

AUX
- ILLUMI +B → 7
- DIB → 6
- AUX +B → 1
- MUTE → 4
- AUX-L → 2
- AUX-R → 5
- 3
- 8
- E

OUTPUT
- 17 — L-CH — MUTE
- 18 — R-CH — BT +B
- 19 — ACC +B
- GND
- ILLUMI +B
- 1 ← ILLUMI +B
- 4 ← MUTE
- 3 ← ACC +B
- 2 ← BT +B
- GND ← GND

BACK UP → BACK UP +B 14.4V

SOLENOID(DOOR)
- 1 — SOI
- 2

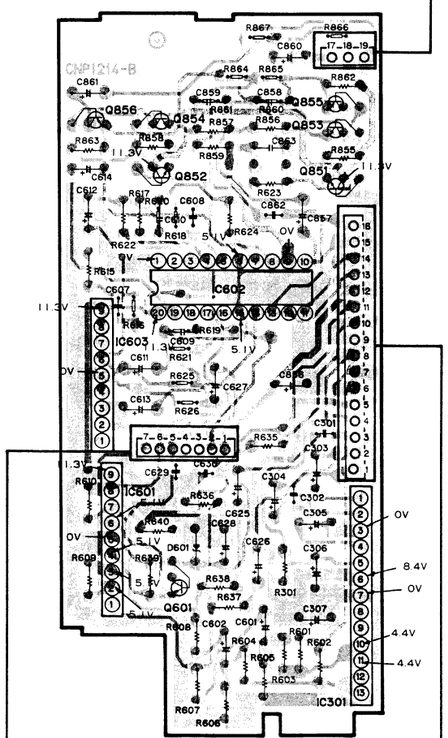
L.SWITCH UNIT
- S956 SEEK/FF — D954
- S955 SEEK/REW — D955
- D956
- S954 BAND DIR/REL
- D954~956 : BG4524K

VOLUME UNIT1/2 (CWM1182)
- 1.5k, 6800p, 0.047, 25k(B), 8.2k, 4.7k, 33p, 1/50, 1.5k
- TREBLE, BASS, BALANCE, 10k (MN)

VOLUME UNIT2/2 (CWM1182)
- 1 — 9 — LAMP

AUDIO P.C. BOARD

IC603 IC601 Q854 IC, Q Q856 Q852 Q601 IC602 Q855 Q853 Q851 IC301



1954AL Q701, 711, 717, 725, 727, 731 : 2SC2458 or 2SC1740S Q703, 704, 710, 723, 726 : DTC114TS or UN4215 Q705~708 : 2SA1048 or 2SA933S
1122 Q714, 729 : 2SD1227M Q718 : 2SB1066M Q724 : 2SB945 Q728 : 2SC2634NC Q730 : 2SD1055F
D702, 721 : RD6R2JSB2 or HZS6R2JB2 D706, 722, 726 : ERA15-02VH D707 : HZ6LC1 or HZ6LC2 D720 : RD7R5JSB2 or HZS7R5JB2 D723 : ERA15-02
D725 : RD12JSB1 or HZ11LC3 D727 : MTZ9R1JB or HZ9LB2

IC301 : NR8810 IC601 : TA75558S IC602 : TC9177P
IC603 : μPC4570HA Q601 : 2SC2872S
Q851, 852 : 2SC3113 Q853, 854 : 2SC2458L
Q855, 856 : 2SA1048 or 2SA933S
D601 : RD5R6JSB1 or HZS5R6B1

Fig. 15

8. CABINET EXPLODED VIEW

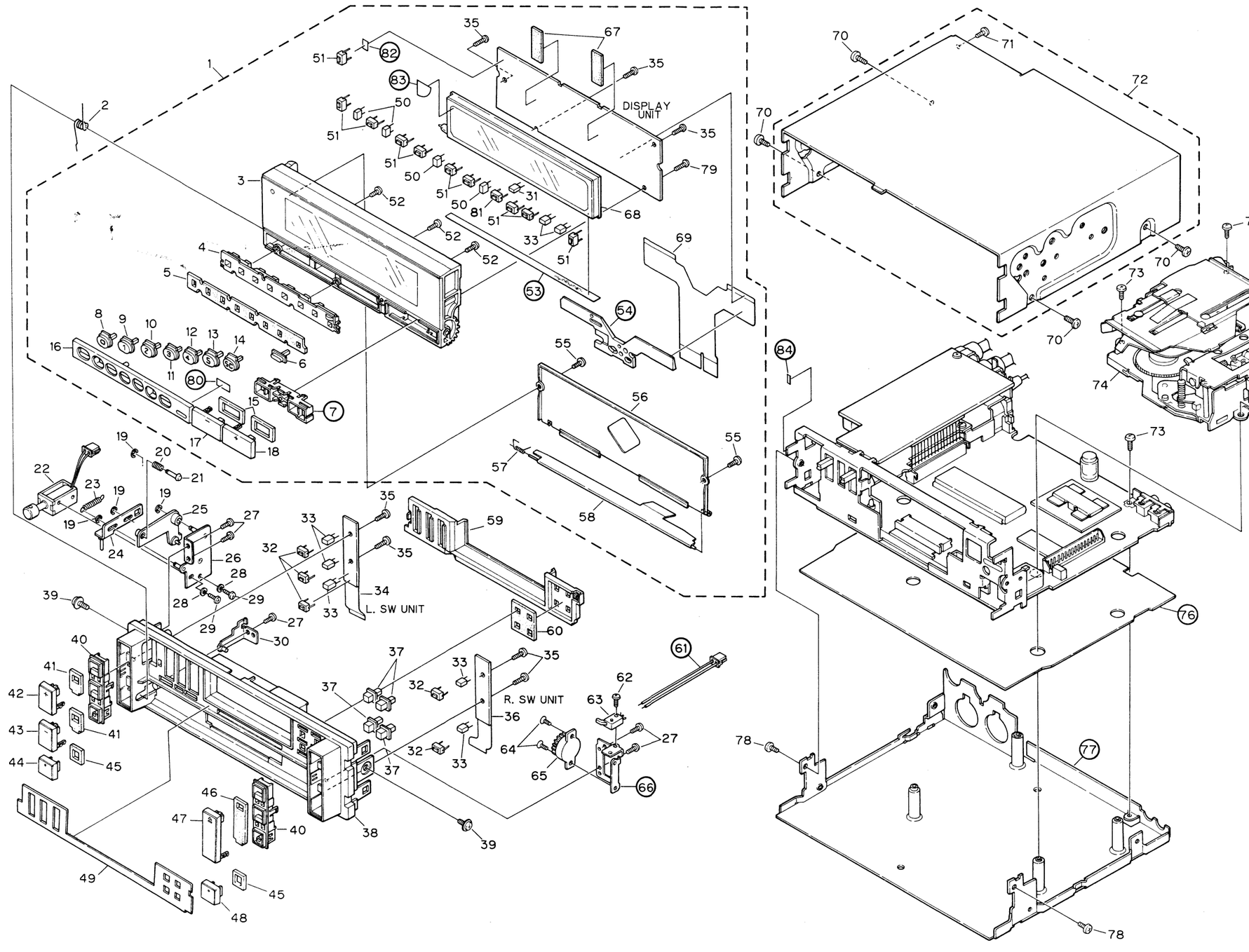


Fig. 16

- **Parts List**

NOTE:
- *For your p*
marks ★★ a
★★: GENEI
This classif
model num
- *Parts whos*
- *Parts mark*
longer than

Mark	No.
◉	1.
	2.
	3.
	4.
	5.
	6.
★	7.
★	8.
★	9.
★	10.
★	11.
★	12.
★	13.
★	14.
	15.
	16.
★	17.
★	18.
	19.
	20.
	21.
★	22.
	23.
	24.
	25.
	26.
	27.
	28.
	29.
	30.
★	31.
★★	32.
★	33.
	34.
	35.
	36.

• Parts List

NOTE:

- *For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Mark	No.	Part No.	Description
◉	1.	CWS1045	Display Unit (EW)
		CWS1044	Display Unit (WG)
	2.	CBH1037	Spring
	3.	CXA1463	Grille Unit (EW)
		CXA1541	Grille Unit (WG)
	4.	CNV1169	Holder
	5.	CNM1193	Cushion
	6.	VACANT	(EW)
★		CAC1233	Button (WG)
	7.		Holder
★	8.	CAC1153	Button (0)
★	9.	CAC1154	Button (1)
★	10.	CAC1155	Button (2)
★	11.	CAC1156	Button (3)
★	12.	CAC1157	Button (4)
★	13.	CAC1158	Button (5)
★	14.	CAC1177	Button (SC)
	15.	CNM1266	Cushion
	16.	CNS1269	Escutchion (EW)
		CNS1188	Escutchion (WG)
★	17.	CAC1174	Button
★	18.	CAC1175	Button
	19.	YE15FUC	Washer
	20.	CBH1088	Spring
	21.	CLA1111	Shaft
★	22.	CXP1003	Solenoid
	23.	CBH-909	Spring
	24.	CXA1153	Lever Unit
	25.	CXA1558	Arm Unit
	26.	CXD-868	Bracket Unit
	27.	BPZ20P050FMC	Screw
	28.	WB20FMC	Washer
	29.	BMZ20P025FMC	Screw
	30.	CNC1199	Holder
★	31.	BG4524K	LED (WG)
★★	32.	CSG-253	Switch
★	33.	BG4524K	LED
	34.	CNP1211	P.C. Board
	35.	PPZ20P080FMC	Screw
	36.	CNP1210	P.C. Board
★	37.	CAE-121	Button
	38.	CNS1129	Grille
	39.	PMS30P040FMC	Screw
	40.	CNV1202	Holder
	41.	CNM1249	Cushion
★	42.	CAC1285	Button (FF)
★	43.	CAC1286	Button (REW)
★	44.	CAC1224	Button (DIR/REL)
	45.	CNM1250	Cushion
	46.	CNM1160	Cushion
★	47.	CAC1225	Button (EJECT)
★	48.	CAC1226	Button (FUNCTION)
	49.	CNM1199	Cover
★	50.	BG5724K-P	LED
★★	51.	CSG-255	Switch
	52.	PPZ20P050FMC	Screw
	53.		Cover
	54.		Spacer
	55.	BTZ20P060FZK	Screw
	56.	CXA1457	Plate Unit
	57.	CBH1001	Spring
	58.	CAT1029	Door
	59.	CNV1167	Lens
	60.	CNM1186	Cushion
	61.		Connector
	62.	CBA-172	Screw
★★	63.	CSN-078	Switch
	64.	CMZ20P040FMC	Screw
	65.	CXD-766	Damper Unit
	66.		Holder
	67.	CNM1189	Cushion
	68.	CAW1016	FL Tube
	69.	CNP1212	P.C. Board
	70.	CBA-178	Screw
	71.	BMZ26P040FZK	Screw
	72.	CXA1352	Case Unit
	73.	BMZ26P050FMC	Screw
◉	74.	CXK1640	Cassette Mechanism Assy
	75.		Shield Plate Assy
	76.		Insulator
	77.		Chassis Unit
	78.	BMZ26P040FMC	Screw
	79.	BPZ20P100FMC	Screw
	80.		Filter (WG)
★★	81.	CSG-255	Switch (WG)
	82.		Spacer
	83.		Cover
	84.		Spacer

9. CHASSIS EXPLODED VIEW

• Parts List

Mark	No.	Part No.	Description
	1.	CWM1182	Volume Unit (Complex Unit)
	2.	CNV1288	Cover
	3.		Frame
★	4.	CAC1228	Knob
	5.	BMZ26P050FMC	Screw
	6.		Plug
	7.		Plug
	8.		Plug
★★	9.	CSG-253	Switch
★★	10.	CEL-180	Lamp, 14V 40mA
	11.		Connector
	12.		Shield Plate
	13.	CTF-002	Choke Coil
	14.		Connector
	15.		Plug
	16.		Plug
	17.	CKS1127	Connector
	18.		Spacer
	19.		Plug
	20.		Bracket
	21.		Plug
	22.		Connector
	23.	CDE1247	DIN Cord
	24.	CDE1321	Cord
	25.	CNV1308	Cap
	26.	CNV1309	Cap
	27.	CKS-549	Socket
	28.	CKS-550	Socket
	29.	CWW1032	Driver Unit
	30.		Bracket
	31.	HKN-151	Jack
	32.		Plug
	33.	CWW1033	Pre Amp Unit
◉	34.	CWM1186	Audio Control Unit

- **Chassis**

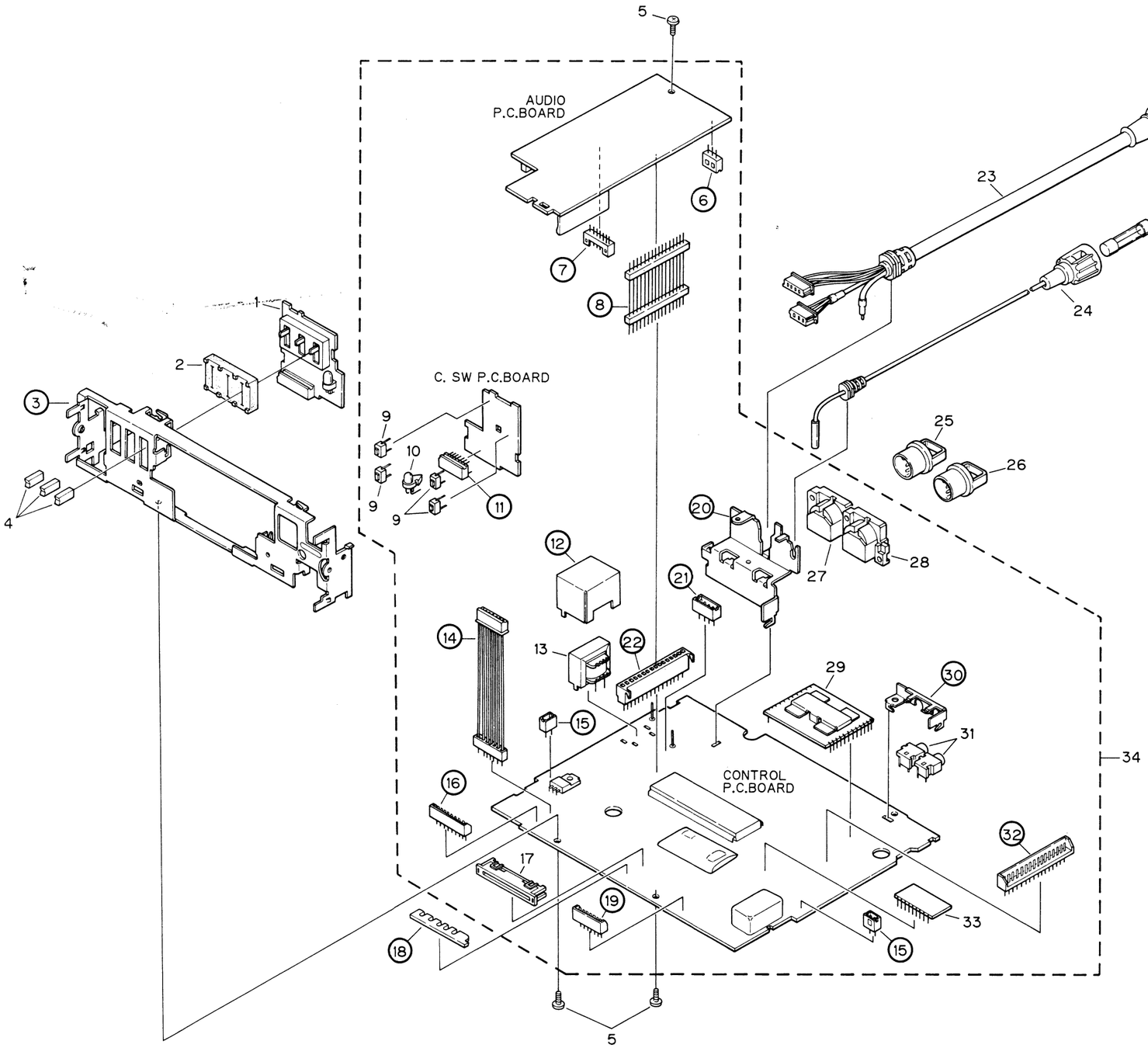


Fig. 17

10. CASSETTE MECHANISM ASSEMBLY EXPLODED VIEW

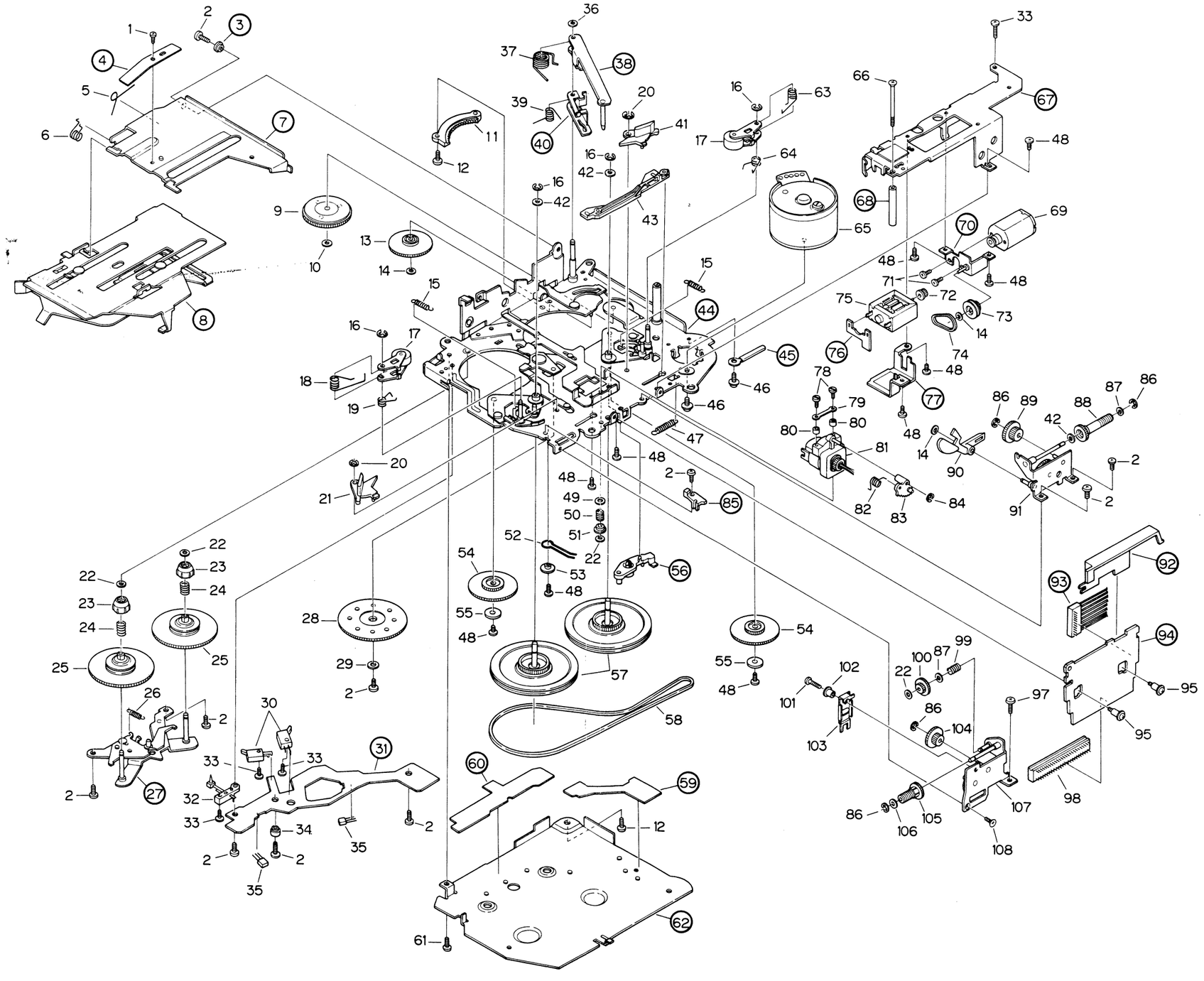


Fig. 18

• Parts List

Mark	No.	Part No.	Description
	1.	HBA-147	Screw, M1.4 x 1.4
	2.	BMZ20P040FMC	Screw
	3.		Bush
	4.		Spring
	5.	CBH-867	Spring
	6.	CBH-837	Spring
	7.		Arm
	8.		Holder Unit
	9.	CXD-900	Gear Unit
	10.	HBF-119	Washer
	11.	CNV1075	Gear
	12.	CBA1004	Screw, M2 x 6
	13.	CNY-271	Gear
	14.	CBF-126	Washer
	15.	CBH-835	Spring
	16.	CBG1001	E type Washer
★★	17.	CXD-387	Pinch Roller Unit
	18.	CBH-832	Spring
	19.	CBH-834	Spring
	20.	YE25FUC	Washer
	21.	CNW-930	Arm
	22.	CBF-135	Washer
	23.	CNW-932	Collar
	24.	CBH-827	Spring
★★	25.	CXD-877	Reel Unit
	26.	CBH-868	Spring
	27.		Bracket Unit
	28.	CNW-944	Gear
	29.	CLA1109	Collar
★★	30.	CSN-091	Switch (70μS, CST IN)
	31.		P.C. Board
★★	32.	CSN-089	Switch (CST SET)
	33.	CBA-172	Screw, M1.7 x 5.5
	34.	CLA1087	Collar
	35.	SDME106A	Magnetic Resistive Device
	36.	CBF-046	Washer
	37.	CBH-887	Spring
	38.		Arm Unit
	39.	CBH-886	Spring
	40.		Arm
	41.	CNW-931	Arm
	42.	HBF-179	Washer
	43.	CNY-263	Lever
	44.		Chassis Unit
	45.		Clamper
	46.	PMS26P030FMC	Screw
	47.	CBH-830	Spring
	48.	HBA-175	Screw, M2 x 2.5
	49.	CBE-123	Washer
	50.	CBH-902	Spring
	51.	HNC-953	Holder
	52.	CBH-893	Spring
	53.	CLA1110	Collar
	54.	CNV1178	Gear
	55.	CLA1108	Collar
	56.		Clamper
	57.	CNV1332	Flywheel
★★	58.	CNT-111	Belt
	59.		Insulator
	60.		Insulator
	61.	BMZ20P030FMC	Screw
	62.		Cover
	63.	CBH-831	Spring
	64.	CBH-833	Spring
★★	65.	CXM-161	Motor (Capstan)
	66.	CBA-165	Screw, M2 x 25
	67.		Guide
	68.		Spacer
★★	69.	CXM-452	Motor (Head Position)
	70.		Bracket Unit
	71.	HBA-244	Screw, M1.4 x 1.6
	72.	CNW-941	Gear
	73.	CNY-075	Pulley
★★	74.	CNT-114	Belt
	75.	CXM-351	Motor (Gear Position)
	76.		P.C. Board
	77.		Bracket
	78.	CBA-173	Screw, M1.4 x 8
	79.	CBE-114	Spring
	80.	CNY-134	Azimuth Rubber
★★	81.	CXA1123	Head Unit
	82.	CBH-829	Spring
	83.	CNW-939	Gear
	84.	YE15FUC	E type Washer
	85.		Spacer
	86.	YE12FUC	E type Washer
	87.	HBF-116	Washer
	88.	CNW-956	Gear
	89.	CNW-955	Gear
	90.	CNV1260	Arm
	91.	CXA1432	Holder Assy
	92.		Holder
	93.		Connector (8P)
	94.		P.C. Board
	95.	CBA1022	Screw, M2 x 2 x 3
	96.	VACANT	
	97.	BMZ20P060FMC	Screw
	98.	CKS-678	Connector (40P)
	99.	CBH-866	Spring
	100.	CNW-954	Gear
	101.	HBA-158	Screw, M1.4 x 5
	102.	CLB-750	Collar
	103.	CNH-004	Arm
	104.	CNY-077	Gear
	105.	CNY-148	Gear
	106.	CBF-088	Washer
	107.	CXA1433	Holder Assy
	108.	HBA-209	Screw, M2 x 2

11. ELECTRICAL PARTS LIST

NOTE:
When ordering resistors, first convert resistance values into code form as shown in the following examples.

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

560Ω	*56 × 10¹*	*561*	*..... RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*..... RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*..... RN2H 0 R 5 K*
1Ω	*010*		*..... RS1P 0 1 0 K*

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

5.62kΩ	*562 × 10¹*	*..... RN1/4SR 5 6 2 1 F*

- *For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*
  Chip Resistor
  RS1/8S □□□J; RS1/10S □□□J
  Chip Capacitor (except for CQS.....)
  CKS....., CCS....., CSZS.....

Audio Control Unit
Consists of Audio P. C. Board Control P. C. Board C. Switch P. C. Board

Audio Control Unit

MISCELLANEOUS

Mark	Symbol & Description	Part No.
★★	IC301	NR8810
★★	IC601	TA75558S
★★	IC602	TC9177P
★★	IC603	μPC4570HA
★★	IC701	PD3069B
★★	IC703	M51954AL
★★	IC704	PDH001
★★	Q601	2SC2872S
★★	Q701, 711, 717, 725, 727, 731	2SC2458 or 2SC1740S
★★	Q703, 704, 710, 723, 726,	DTC114TS or UN4215
★★	Q705 – 708, 855, 856	2SA1048 or 2SA933S
★★	Q709, 722	DTA143ES or UN4122
★★	Q714, 729	2SD1227M
★★	Q718	2SB1066M
★★	Q724	2SB945
★★	Q728	2SC2634NC
★★	Q730	2SD1055F
★★	Q851, 852	2SC3113
★★	Q853, 854	2SC2458L
★	D251, 719	1S1555 or US1040
★	D601	RD5R6JSB1 or HZS5R6B1
★	D702, 721	RD6R2JSB2 or HZS6R2JB2
★	D706, 722, 726	ERA15-02VH
★	D707	HZ6LC1 or HZ6LC2
★	D720	RD7R5JSB2 or HZS7R5JB2
★	D723	ERA15-02
★	D724	MTZ11JA or HZS11JB1
★	D725	RD12JSB1 or HZ11LC3
★	D727	MTZ9R1JB or HZ9LB2
	L701 DC-DC Converter	CTX1007
	L702 Coil	CTF-113
	L703	CCG-081
	L704 Choke Coil	CTF-002
	IB701	CWW-247
	X701 Ceramic Oscillator	CSS-042
★★	VR253, 254 Semi-fixed, 470Ω (B)	CCP-314
★★	S957 – 960 Switch	CSG-253
★★	IL1 Lamp, 14V40mA	CEL-180

Mark	Symbol & Description	Part No.
	Pre Amp Unit	CWW1033
	Driver Unit	CWW1032

RESISTORS

Mark	Symbol & Description	Part No.
	R616, 618 – 621, 625, 626, 701 – 706, 725, 729 – 736, 740, 742, 782, 783, 805, 808, 860, 861, 864 – 867	RS1/8S□□□J
	R737 – 739, 774, 784, 787, 788, 800, 801	RD1/2PS□□□JL
	R772, 775, 794	RD1/4PM□□□J
	R814	RD1/6PS□□□J
	Other Resistors	RD1/4PS□□□JL

CAPACITORS

Mark	Symbol & Description	Part No.
	C253, 254	CEANL4R7M35LL
	C255, 256, 701, 702	CEA220M16LS
	C257, 305	CEA221M10L2
	C258, 259	CKSYB681K50
	C301, 302	CKSYB152K50
	C303, 304, 611 – 614, 860, 861	CEA010M50L2
	C306, 753, 754	CEA100M16L2
	C307	CEA101M10L2
	C601, 602, 625, 626	CEA4R7M35L2
	C607, 608	CKSYB331K50
	C609, 610	CQMA273J50L
	C627, 857	CEA471M6R3L2
	C628, 710	CEAR22M50L2
	C629, 630	CKSYB222K50
	C703, 704	CCSCH330J50
	C705 – 709, 756	CKSYB473K25
	C711 2200μF/16V	CCH1001
	C712	CEA0R1M50L2
	C713, 750	CEA100M16L2
	C714	CEA102M16L2
	C715	CQEA223J50
	C740	CEA101M10L2
	C741, 742	CQEA473J50
	C743, 744	CEA101M35L2
	C745 470μF/16V	CCH-114
	C746	CQEA104J50
	C747, 755	CEA470M16LS
	C748	CEA221M16L2
	C749	CEA101M16LL
	C751, 752	CEA4R7M35LS
	C856	CEA471M16L2
	C858, 859	CQMA102J50L
	C862	CKSYB102K50
	C863	CQMA473J50L

R. Switch Unit

Mark	Symbol & Description	Part No.
★	D951, 953 LED	BG4524K
★★	S951, 953 Switch	CSG-253

L. Switch Unit

Mark	Symbol & Description	Part No.
★	D954 – 956 LED	BG4524K
★★	S954 – 956 Switch	CSG-253

Display Unit

Mark	Symbol & Description	Part No.
★★	IC901	PD4091
★★	Q901	2SD1055F
★	D901, 902 LED	BG4524K
★	D903 (WG) LED	BG4524K
★	D904 – 907 LED	BG5724K-P
★	D908 – 910 (EW) LED	1SS133
★	D908 – 910 (WG) LED	1SS133 or US1040M or 1SS176
	X901 Crystal	CSS1012
★★	S901 – 908, 910, 911 Switch	CSG-253
★★	S909 (WG) Switch	CSG-253
	FL Tube	CAW1016
	R901 (EW)	RD1/4PS□□□JL
	C901, 902	CCDCH100D50L

Switch P. C. Board

Mark	Symbol & Description	Part No.
★★	S1 Switch (CST SET)	CSN-089
★★	S2, 3 Switch (CST IN, 70μs)	CSN-091
	MR1, 2 Magnetic Resistive Device	SDME106A

P. C. Board Unit

Mark	Symbol & Description	Part No.
★	D1 – 3	1S1555

Miscellaneous Parts List

Mark	Symbol & Description	Part No.
★★	HD1 Head Unit	CXA1123
★★	M1 Motor (Head)	CXM-452
★★	M2 Motor (Gear)	CXM-351
★★	M3 Motor (Capstan)	CXM-161
★★	S1 Switch (Door)	CSN-078
★	SO1 Solenoid (Door)	CXP1003
	Volume Unit (Complex Unit)	CWM1182

12. PACKING METHOD

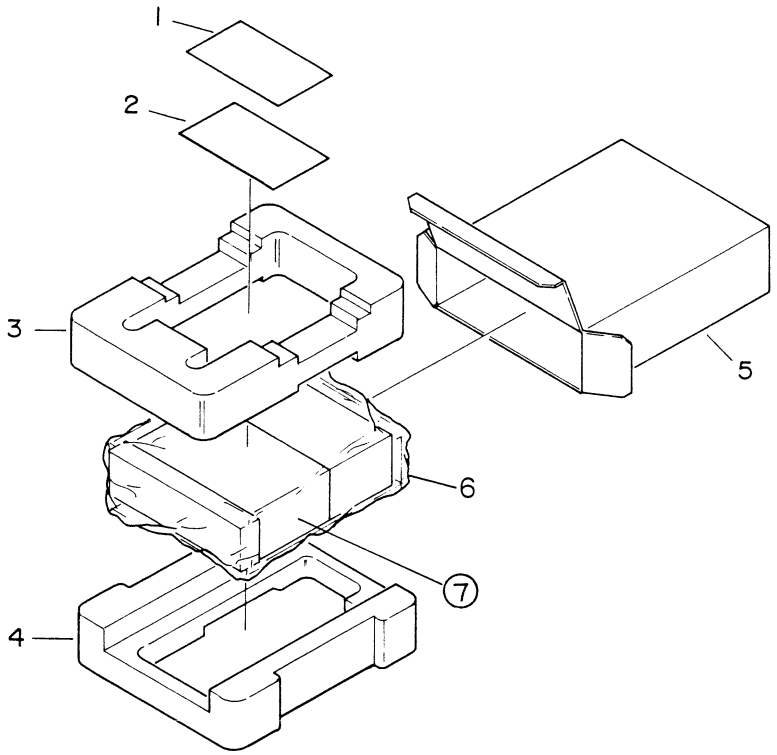


Fig. 19

• Parts List

Mark	No.	Part No.	Description
	1.	CRD1073	Owner's Manual (EW) (English, French, German, Spanish)
		CRD1074	Owner's Manual (EW) (Swedish, Norwegian, Dutch, Italian)
		CRD1075	Owner's Manual (WG) (French, German)
			Card
			Card
			Caution Card (WG)
		CNV[illegible]57	Holder
		CNF[illegible]044	Panel
			Double-sided seal
	2.	CEA1106	Accessory Assy

Mark	No.	Part No.	Description
	2-1.		Screw Assy
	2-1-1.	CBA-102	Screw
	2-1-2.	CBA1002	Screw
	2-1-3.	NF50FMC	Nut
	2-2.	CNF-111	Strap
	2-3.	CNF-382	Lever
	2-4.	CNV1009	Bush
	3.	CHP1042	Styrofoam
	4.	CHP1041	Styrofoam
	5.	CHG1233	Carton (EW)
		CHG1234	Carton (WG)
	6.	CEG-114	Cover
	7.		Holder

Service Manual

PIONEER

ORDER NO.
CRT-467-0

CASSETTE MECHANISM UNIT

CX-152/A, CX-152/B

- This service manual is for cassette mechanism units used in car stereo components.
- Refer to the service manual for individual models for details on sections other than the cassette mechanism unit.

Model	Service Manual	Cassette Mechanism Unit
KP-A200/US, CA	CRT-463	CX-152/A
KP-A300/US, CA	CRT-464	CX-152/A
KP-4700/ES		CX-152/A
KP-4600/ES		CX-152/A
KPH-4830/EW		CX-152/A
KPH-4800/EW, ES		CX-152/A
KPH-4800SDK/WG		CX-152/A
KP-4400/EW KP-4400SDK/WG KP-4400/ES KP-4430/EW	CRT-466	CX-152/A
KEH-7700/ES		CX-152/A
KEH-7730/EW		CX-152/A
KEH-7730SDK/WG		CX-152/A
KX-E40/EW	CRT-465	CX-152/B

Model	Service Manual	Cassette Mechanism Unit
KEH-8800/ES		CX-152/B
KEH-8830/EW		CX-152/B
KEH-8830SDK/WG		CX-152/B

CONTENTS

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TEL: [800] 421-1404, [800] 237-0424
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775·28·08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: [03] 580-9911

1. REPLACEMENT OF PARTS IN CASSETTE MECHANISM

• Replacement of Belt and Motor

1. Remove the four screws labeled "A" in Figure 1 and remove cover.

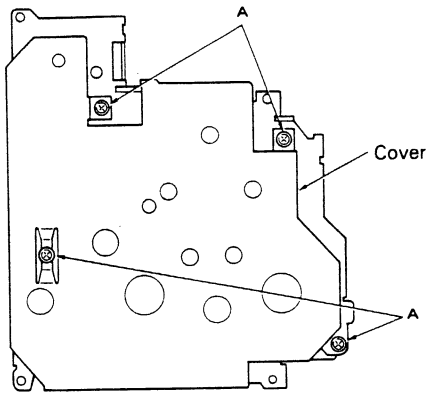


Fig. 1

2. Belt can be replaced as shown in Figure 2.
3. To replace the motor, remove the two screws labled "B" in Figure 2.

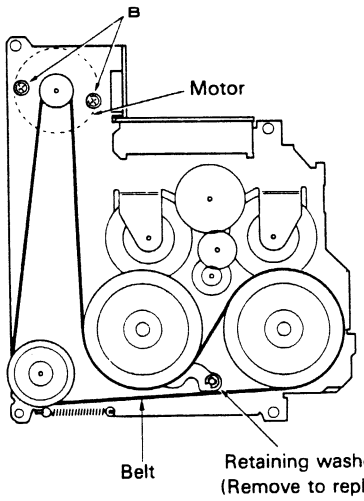


Fig. 2

• Replacement of Reel Unit

1. After removing the two screws retaining the loading assembly (labeled "C" in Figure 3), gently push the loading assembly in the direction indicated by the arrow. The loading assembly can now be removed by pulling upward.

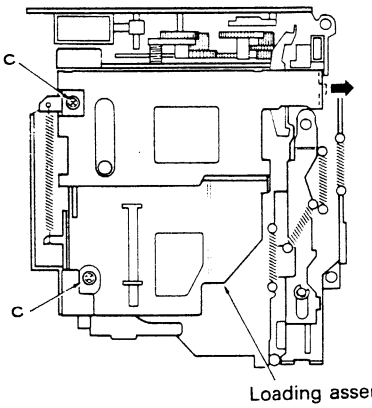


Fig. 3

2. Lift arm (B) (Figure 4), remove it from the pin on arm (A) (Figure 4), and move it in the direction indicated by the arrow (Figure 4). Next, remove the washer retaining the reel unit, and pull the ratchet in the direction indicated by the arrow. The reel unit can now be removed by lifting upward.

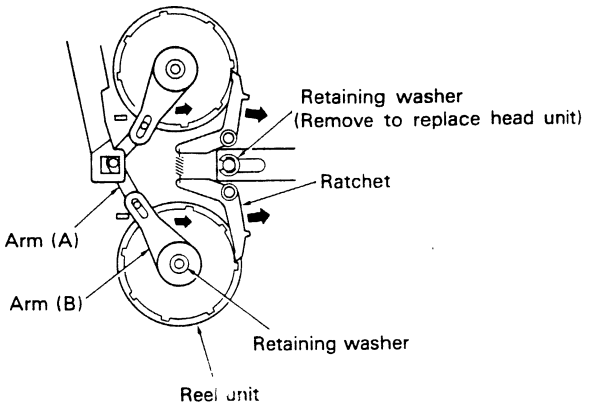


Fig. 4

• Replacement of FWD and REV Pinch Rollers

1. Remove the lever by removing the retaining washer (Figure 5). Next, remove the screws labeled "F" and "G" in the same figure and lift the lever assembly upward. Pull the head unit in the direction indicated by the capstan to remove the lever assembly.

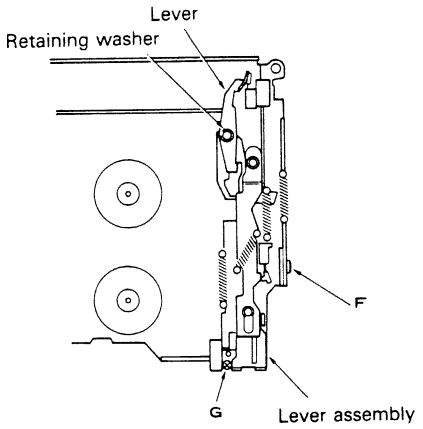


Fig. 5

2. To replace the FWD pinch roller unit, remove retaining washer A and remove arm (C) from the shaft. Spring (A) is also removed at the same time (Figure 6).
3. Remove retaining washer B (Figure 6) and remove the FWD pinch roller unit from its shaft. While removing this unit, remove the spring from the other shaft.
4. To replace the REV pinch roller unit, pull the slide plate in the direction indicated by the arrow in until it locks and remove retaining washer C (Figure 6).
5. Remove the REV pinch roller unit from its shaft in the same manner as when removing the FWD pinch roller unit from its shaft. While removing the REV pinch roller unit from its shaft, remove the spring from the other shaft.

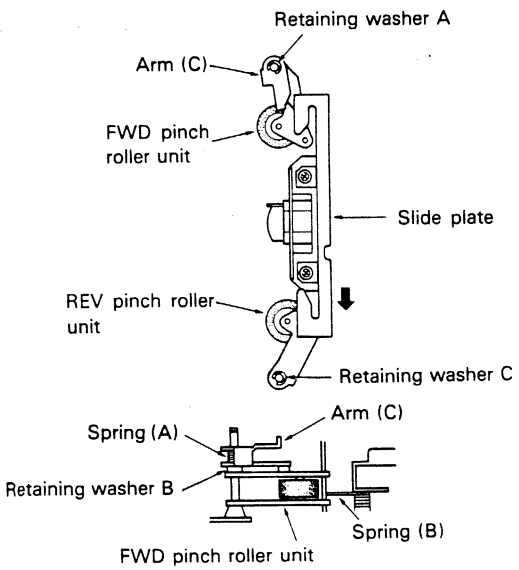


Fig. 6

• Replacement of Head Unit

1. Remove the head unit by removing the two retaining washers (Figures 2 and 4).
2. Remove the two screws labeled "H," and remove the azimuth plate by pulling it forward (Figure 7). When removing the azimuth plate, take care not to lose the springs which are held under compression beneath that plate.

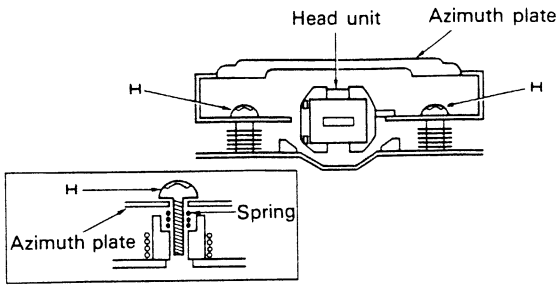


Fig. 7

3. Remove the spring and retaining washer (Figure 8), and remove the sector gear.
   Note: Install the sector gear with the head in a vertical position, aligning the mark on the sector gear with the mark on the head unit.

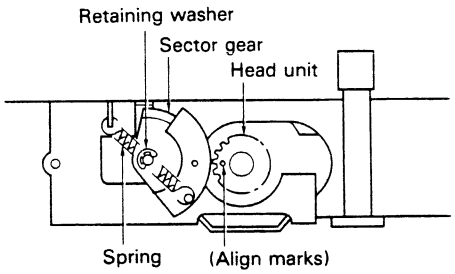


Fig. 8

4. Remove the two screws labeled "I" and the Mylar tape affixing the head leads (Figure 9). Unsolder the four head leads. The head unit can now be replaced.
   Note: When reassembling the unit, the head leads should be fixed in place with a moderate amount of slack using Mylar tape.

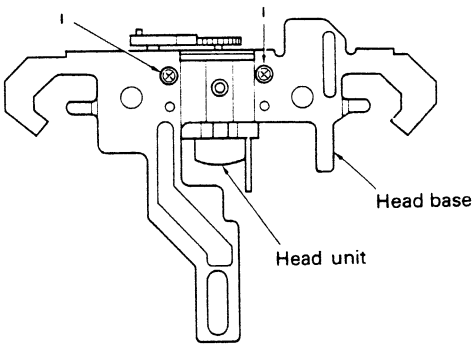


Fig. 9

• Replacement of Solenoid

1. Remove the pulley which is beneath the chassis (Figure 10). Remove the two screws (labeled "J") retaining the spring and gear assembly and lift that assembly upward. The gear assembly can now be removed from its pulley by pulling it in the direction indicated by the arrow.
   Note: Take care not to change the shape of the mute switch upon reassembly.

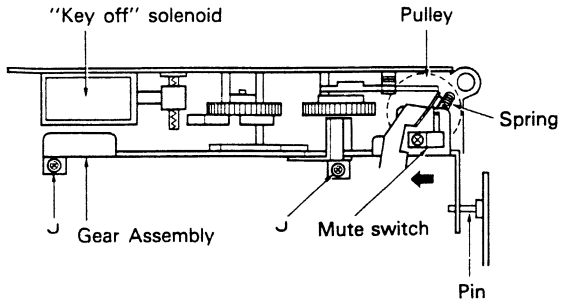


Fig. 10

2. To replace the "direction" solenoid, remove the two screws labeled "K" (Figure 11). To replace the "key-off" solenoid, remove the two screws labeled "L" in that figure.

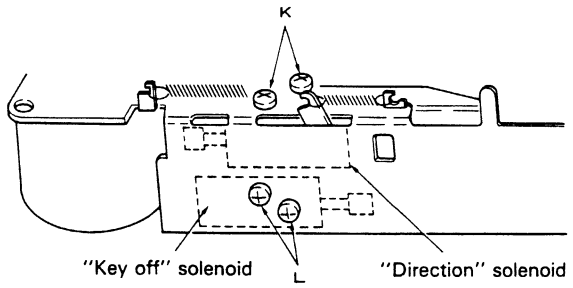


Fig. 11

2. MECHANISM DESCRIPTION

• CASSETTE LOADING AND EJECT MECHANISM

• Cassette Loading

1. When a cassette is inserted, the cassette guide moves in the direction indicated by arrow ❶ in Figure 12, moving arm (A) at its fulcrum in the direction indicated by arrow ❷.
2. When the cassette guide reaches point (A) (Figure 13), a downward force is applied to the loading arm. At this point, spring (A) forces the loading arm to ratate downward at its fulcrum, dropping the cassette into place. In this manner, loading is accomplished.
3. As arm (A) moves in the manner described at Paragraphs 1 and 2 above, a catch on that arm moves lever (A) in the direction indicated by the arrow in Figure 14, activating the switches as indicated.
4. As lever (A) shifts, it activates the switches as indicated in Figure 15. The tape/tuner switch is shifted to the "tape" position, the tape power switch is shifted to the "on" position, and the motor is activated.

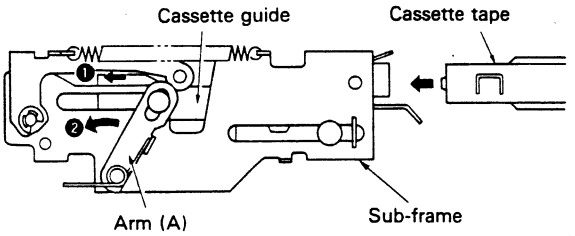


Fig. 12

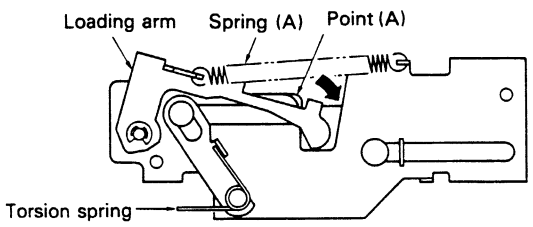


Fig. 13

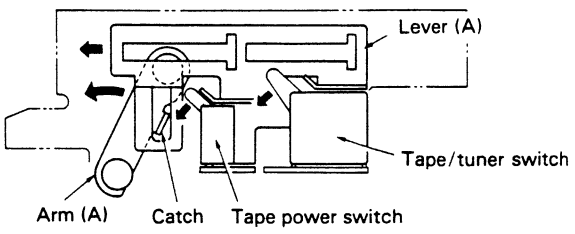


Fig. 14

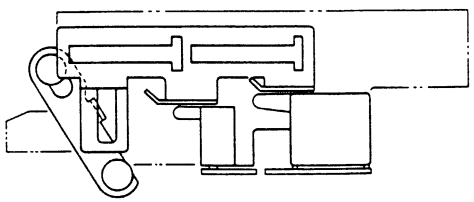


Fig. 15

• **Cassette Eject**

1. The cassette tape is ejected by simultaneously pressing the FF and REW levers. This causes lever (B) to move as indicated in Figure 16, switching the "key off" switch to the "off" position, and deactivating the "key off" solenoid. When this solenoid is deactivated, the tape heads, pinch rollers, and so forth retracted from the tape. Details concerning this action are set forth in the section entitled "Play Mechanism," below.

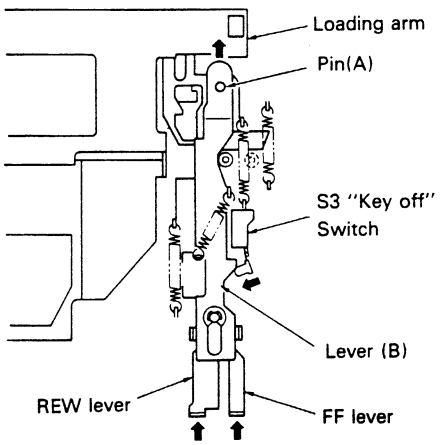


Fig. 16

2. The reason why simultaneous depression of the FF lever and the REW lever causes lever(B) to move is as follows: When the FF lever and REW lever are depressed simultaneously, spring (C) pulls lever (B) in the direction indicated by the arrow (Figure 17-①. Pin (B) on lever (B) then falls into indentations in the FF lever and the REW lever (Figure 17-③), moving from the position indicated in Figure 17-②. If either the FF lever or REW lever is depressed independently, pin (B) will not fall into the indentations and lever (B) will not move.

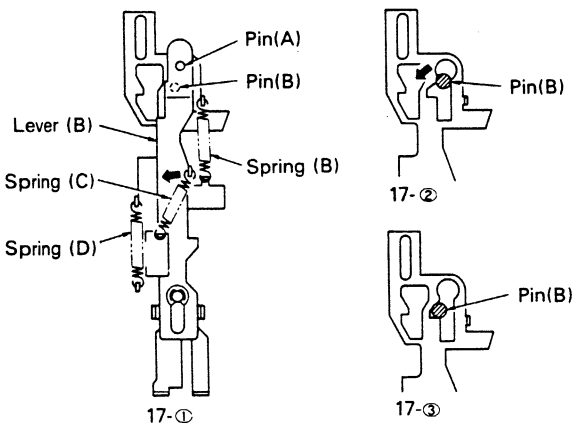


Fig. 17

3. When the FF lever and REW lever are depressed simultaneously, pin(A) (Figure 16) is pushed against the loading arm, starting the action shown in Figure 18 (the opposite action from that described in the section entitled "Cassette Loading," above). The loading arm then rotates at its fulcrum in the direction indicated by arrow ❸ (Figure 18). When the loading arm has rotated to point (A), torsion spring causes arm (A) to move in the direction of arrow ❹. This, in turn, causes the cassette guide to eject the cassette.

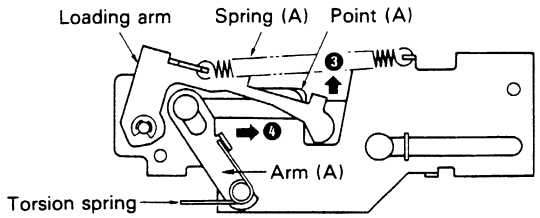


Fig. 18

4. As arm (A) moves, the tape/tuner switch and tape power switch are shifted in the opposite direction from that set forth in Paragraphs 3 and 4 of the section entitled "Cassette Loading," above. The tape/tuner switch is shifted to the "tuner" position and the tape power switch is shifted to the "off" position, causing the motor to stop.
5. A spring plate (Figure 19) prevents the cassette from springing out of the unit.

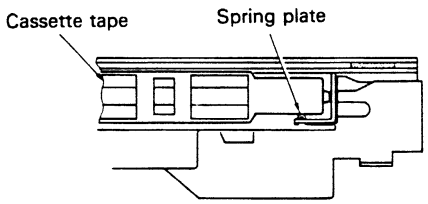


Fig. 19

• PLAY MECHANISM

1. Upon loading the cassette, the tape power switch is moved to the "on" position and the motor is activated, causing movement in the directions indicated by the arrows in Figure 20. Flywheel (A) moves in the FWD direction while flywheel (B) moves in the REV direction.

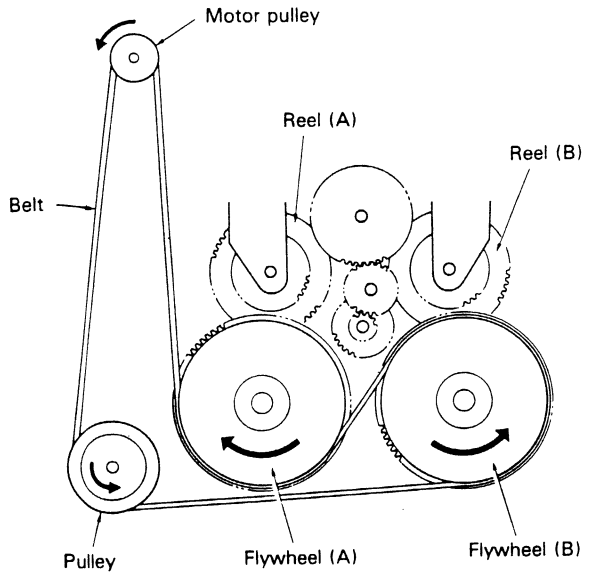


Fig. 20

2. As shown in Figure 21, the gears on flywheels (A) and (B) mesh with gears (A) and (B), which in turn mesh with the gears on reels (A) and (B).
3. Both reel (A) and reel (B) are now rotating, but at this point, the tape is not moving in either direction.

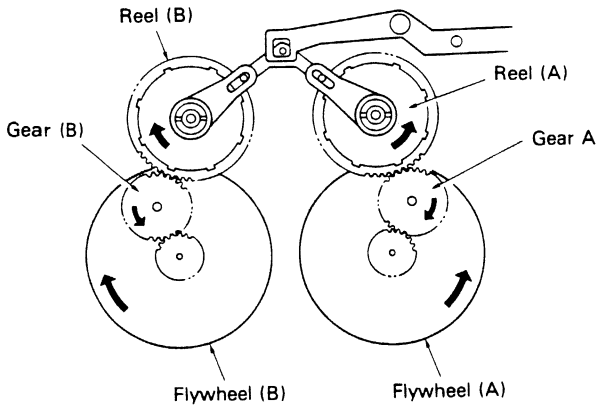


Fig. 21

4. Based upon a friction mechanism, part of the reel rotates while part is motionless. Motion is transferred from the flywheel by gear (C) (Figure 22). Pressure applied by spring (E) causes the transfer of motion from gear (C) to the reel unit. However, when a cassette tape has been inserted into the unit, both reels are pulling with equal force in opposite direction, resulting in the reel unit remaining motioness. Felt strip (A) (Figure 22) allows slippage in order to prevent stretching of the tape.
5. The fact that the reels are pulling in opposite directions, as described in Paragraph 4, above, also serves to eliminate slack in the tape within the cassette.

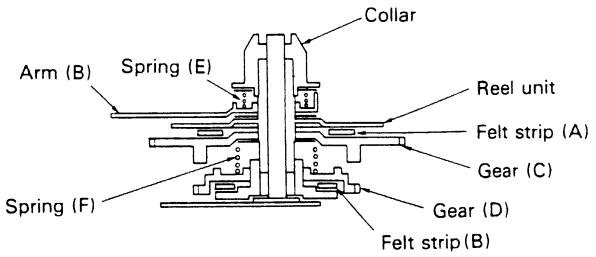


Fig. 22

6. In Figure 23, arms (B), (C) and (D) are at rest. However, the motor is driving a worm gear, which transfers motion to gear E through gears (D~G). The pin on lever (J) moves along the outside cam of gear (H) (Figure 24-①). However, at this point, because the tape is not yet running, arm (B) is motinless. Therefore, when the pin reaches the protruding section of gear (H), arm (D) moves in the direction of arrow ❶.
7. As a result of the movement of arm (D), arms (B) and (C) shift in the direction indicated by arrow ❷. At this point, because the reels are not moving, arms (B) and (C) will not

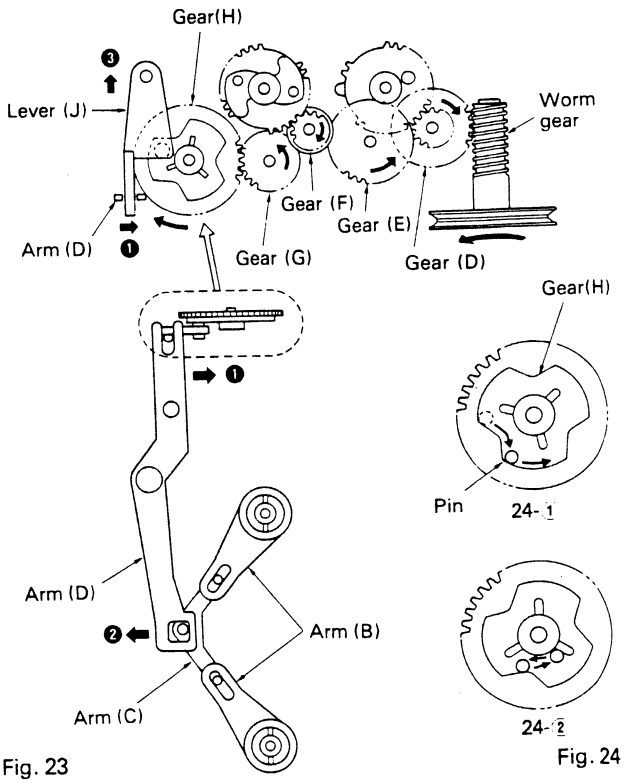


Fig. 23

Fig. 24

move in the direction oppsite that indicated by arrow ❷. Consequently, because arm (D) also is motionless, the pin on lever (J) shifts to the inside cam of gear (H) (Figure 24-②), and lever (J) begins to shift in the direction of arrow ❸ (Figure 23).

8. As lever (J) moves in the direction indicated by arrow ❹ in Figure 25, lever (J) moves in the direction indicated by → arrow ❺ and pushes against arm (G). Arm (G) moves in the direction of arrow ❻, releasing the pin on gear (I).

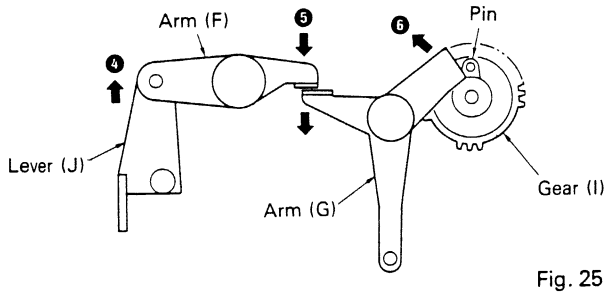


Fig. 25

9. As the pin on gear (I) is released, the spring pushes the roller on the opposite side in the direction of the arrow and point (B) on gear (I) meshes with the inside gear of gear (D), cansing it to rotate.

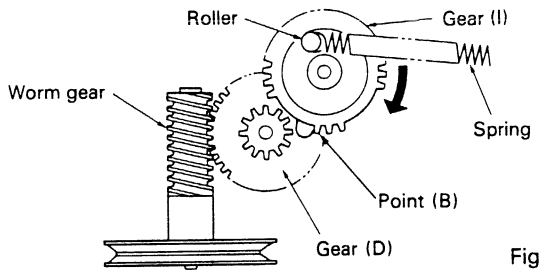


Fig. 26

10. As gear (I) rotates, pin (C) pushes lever (C) and lever (D) in the direction indicated by arrow in Figure 27-①. As it is pushed by lever (C) and pulled by spring (H), lever (E) moves in the direction indicated by the arrow in Figure 27-② and pushes against the arm (I) pin. At the same time, as lever (D) moves in the same way as lever (C), arm (H) is pulled by spring (G) in the direction indicated by the arrow. Because the "key off" solenoid is already in the "on" position, as arm (H) pushes against the solenoid lever, arm (H) is locked in place. This movement also causes lever (F) to move upward and lock in place. As a consequence, as long as the "key off" solenoid remains in the "on" position, arm (R) will not unlock, even if direction change, FF or REW operations are performed.
11. The mute switch moves from the "on" position to the "off" position as the pin on lever (C) moves along the cam. Pin (D) on lever (C) then falls into the notch on the cam and is locked in place.
12. As lever (E) moves, the arm (I) moves in the direction indicated by the arrow in Figure 28 and pushes the head base forward.

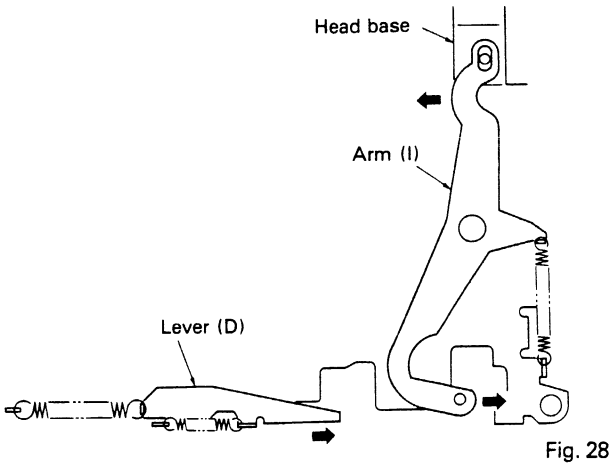


Fig. 28

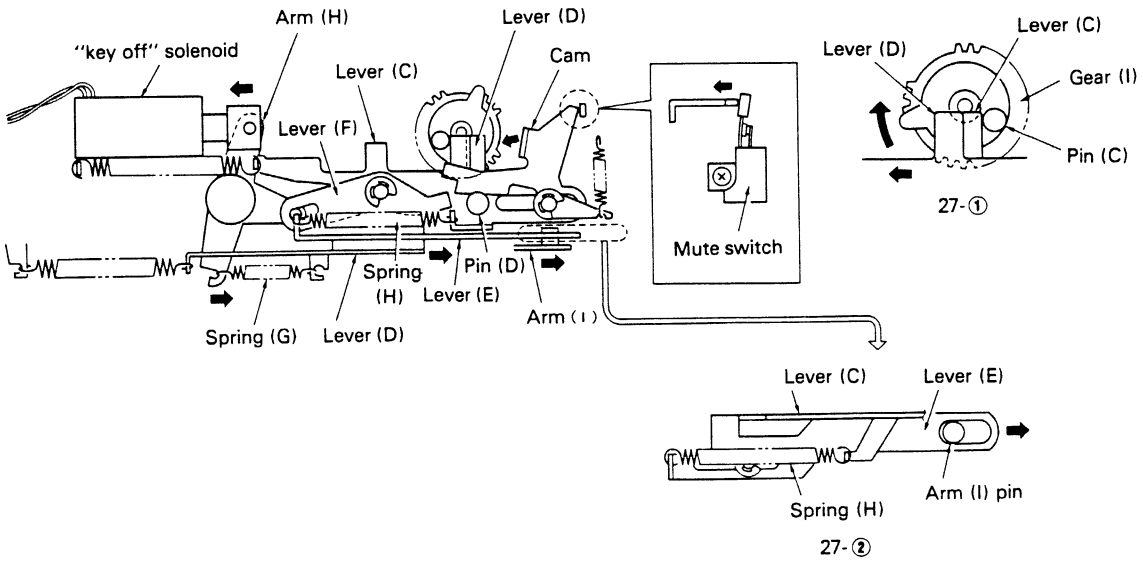


Fig. 27

13. As the head base (Figure 29) moves, the ratchet is pushed forwar and gear (C) is unlocked. In addition, arm (K) and the pinch roller begin to move.
14. As the head mount moves in the direction indicated by the arrow in Figure 29-①, pin (E) on arm (K) moves along the head base in the direction indicated by arrow ❼.
This causes arm (K) to move in the direction of arrow ❽, and gear (A) to separate from gear (C) and begin to rotate. The REV side moves in the same manner.

Next, as a result of the pull of spring (I) and the movement of pin (E) in the direction of arrow ❾ along the head base, arm (K) moves in the direction of arrow ❿. This action causes gear (A) to engage with gear (C). The motor thus drives gear (C)through gear (A), causing the reels to turn in the FWD direction. On the REV side, pin (E') moves in the direction indicated by the arrow in Figure 29-③. Because the head base is not moving, the arm (K') gear is disengaged from the reel gear.

15. The action of the pinch roller is shown in Figure 29-④. As a result of the pull of spring (J), pin (F) is pushed forward on the capstan side, but is held motionless by a catch on the head base. However, as the head base moves, pin (F) moves, and spring (J) causes pinch roller (A) to press the tape against the capstan, allowing the tape to turn on the FWD side at normal speed.

On the REV side, pin (G) is inserted in a notch in the slide plate, creating a gap between pinch roller (B) and the capstan.

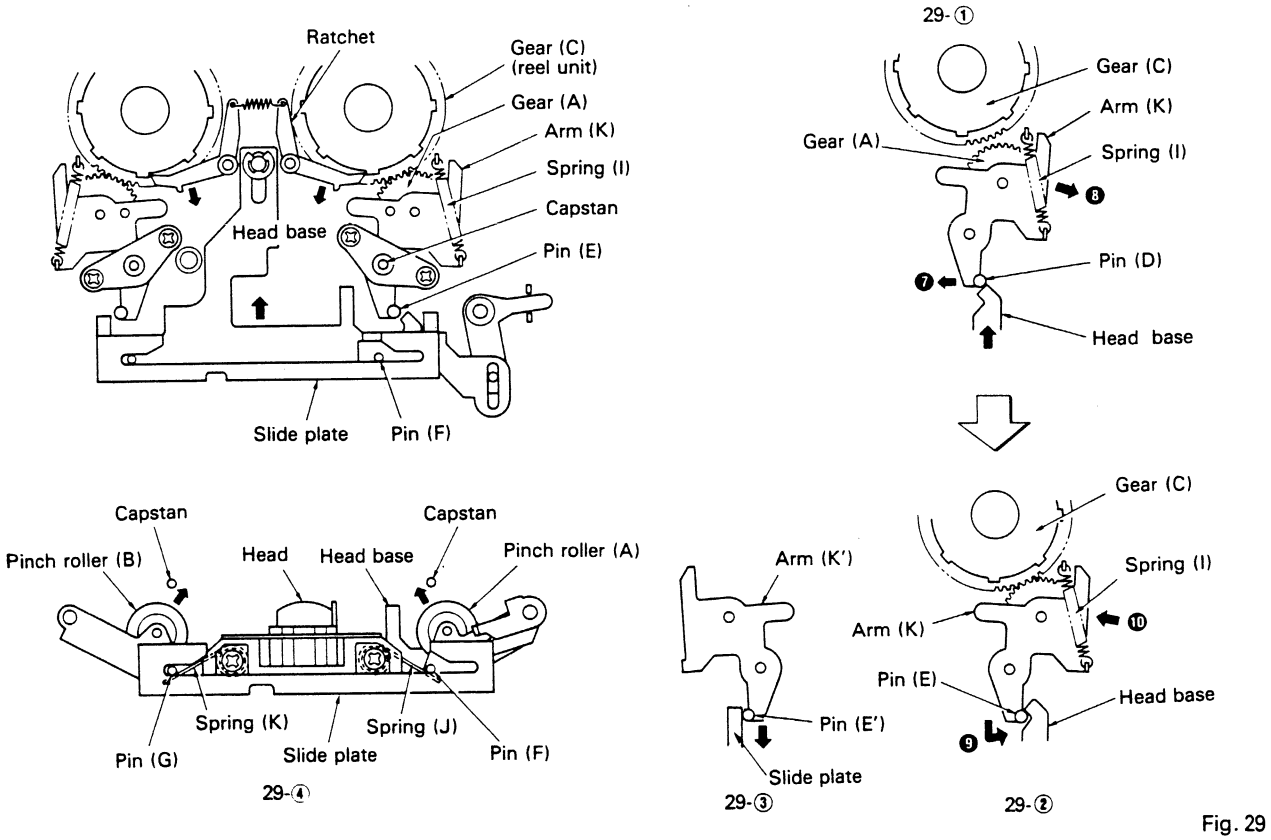


Fig. 29

• MECHANISM FOR SWITCHING BETWEEN FWD AND REV; AUTO REVERSE MECHANISM

• Mechanism for Switching from FWD to REV

1. When the "direction" switch is depressed, SO2 (the "direction" solenoid) is activated, pulling lever (G) in the direction indicated by arrow ❶ in Figure 30. Lever (G) in turn pushes against Arm (G).

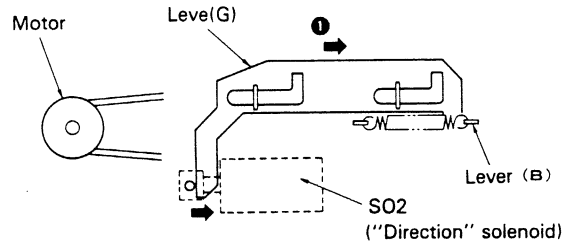


Fig. 30

2. As arm (G) is pushed, it moves in the direction indicated by arrow ❷ in Figure 31. As explained in the section entitled "Play Mechanism," gear (I) begins to rotate, and the catch on that gear pushes against the cam (arrow ❸). As the cam begins to turn in the direction of arrow ❹, pin (H) is unlocked.

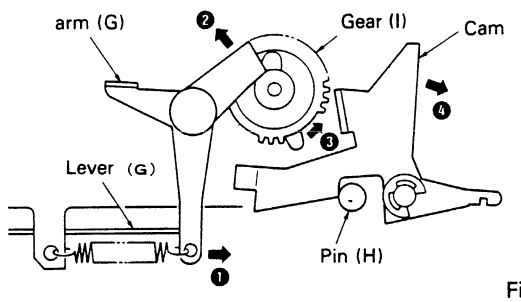


Fig. 31

3. When pin (H) is unlocked, lever (C) is pulled in the direction of arrow ❺ by spring (L) (Figure 32). Lever (C) is stopped by pin (J) connected with arm (H). (Lever (C) causes the heads to return to their original state by an action opposite that set forth undr "Play Function.")

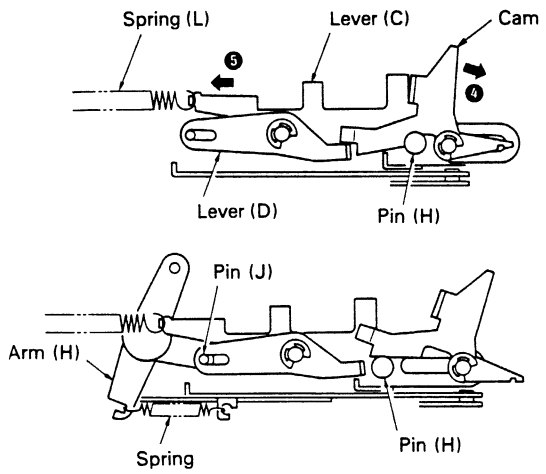


Fig. 32

4. As lever (C) moves in the direction indicated by arrow ❺ in Figure 33, pin (K) on gear (K) falls into the notch on lever (C). Gear (K) begins to turn as it meshes with gear (F). As gear (K) turns, pin (K) pushes against the catch on lever (C), pushing lever (C) in the direction indicated by arrow ❻. Just before pin (K) ceases pushing against the catch on lever (C), the pin on gear (H) takes over and continues to push against lever (C). The head base begins to move as described under the section entitled "Play Mechanism."

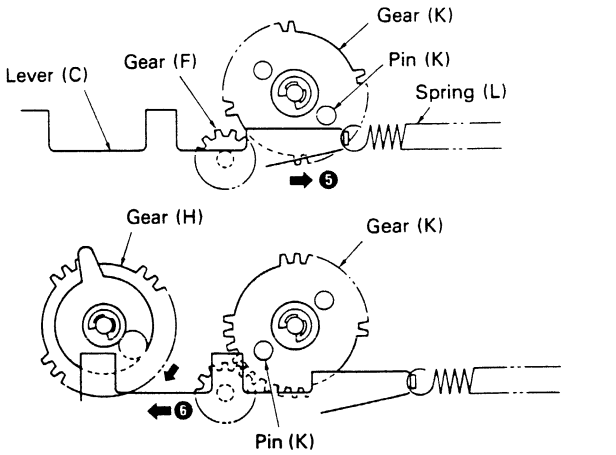


Fig. 33

5. Along with the action described under Paragraph 4, above, as gear (K) turns, pin (K') pushed against lever (H), which pushes arm (M) in the direction indicated by arrow ❽ in Figure 34. In addition, the FWD/REV switch is moved from the "FWD" position to the "REV" position (arrow ❾).

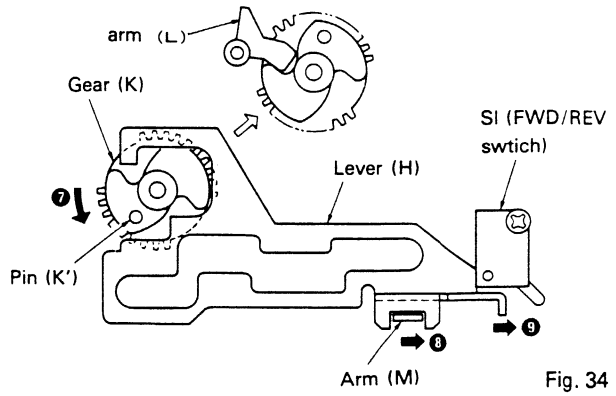


Fig. 34

6. As lever (H) moves, arm (M) moves in the direction indicated by arrow ⑩ in Figure 35. This, in turn, causes the pin on arm (M) to move the slide plate in the direction of arrow ⑪. At this point, the REV side reel is activated (see description of this action at "Play Mechanism").

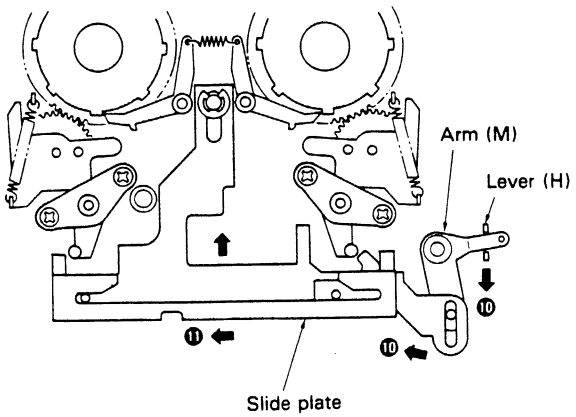


Fig. 35

7. Because the pin in the sector gear is in the notch in the slide plate at this time, the sector gear is in the notch in the slide plate in the direction indicated by arrow ⑫. Because the sector gear is meshed with the head unit gear, the head unit rotates half a revolution in the direction indicated by arrow ⑬. Figure 37 is view of this from tape side. When the head unit has ratated half a revolution, the catch on the head unit contacts the azimuth plate and pressure from the spring causes it to stop.
The above operations change the tape direction from FWD to REV, which, as described in "Play Mechanism", causes the head to move forward, starting tape reproduction in the REV direction.

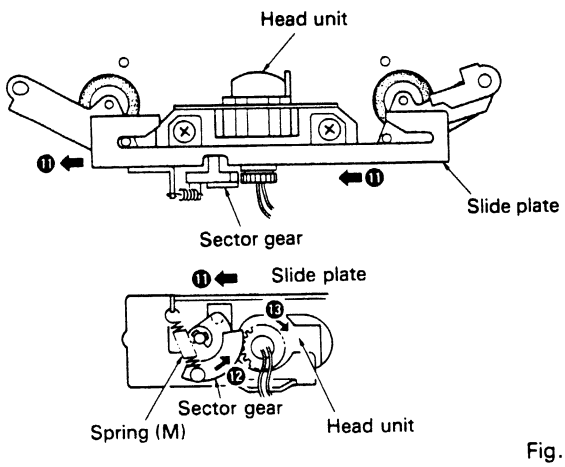


Fig. 36

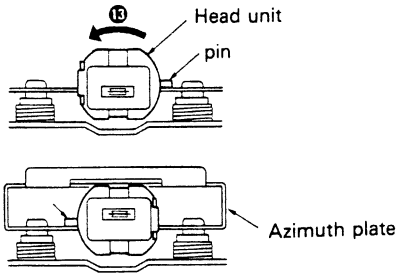


Fig. 37

• Mechanism for Switching from REV to FWD

1. When the "direction" switch is depressed, the actions described at Paragraphs 1-4 under the section entitled "Mechanism for Switching from FWD to REV" (above) take place.
2. As gear (K) turns (Figure 38) pin (K') pushes the catch on lever (H) in the direction indicated by the arrow.
3. As lever (H) moves, the FWD/REV switch is moved from the "REV" position to the "FWD" position. In addition, arm (M) moves in the direction indicated by the arrow, causing the head unit to change from REV to FWD (this action is the opposite of the action described at Paragraphs 6 and 7 of the section entitled "Mechanism for Switching from FWD to REV").

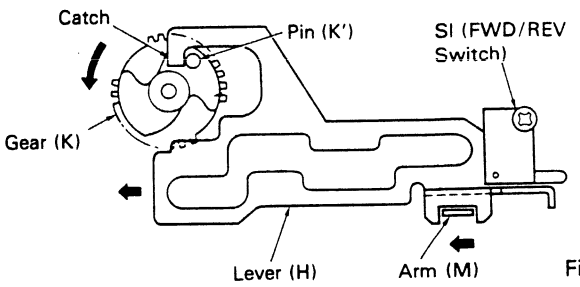


Fig. 38

• Auto-Reverse Mechanism

1. When the tape reaches the end of the reel within the cassette, the reel unit on both the FWD side and REV side stop moving. The actions set forth at Paragraphs 6-8 under the section entitled "Play Mechanism" then occur, causing the tape to automatically reverse direction pursuant to the actions set forth at Paragraph 2 et seq. under the section entitled "Mechanism for Switching from FWD to REV."

• FF AND REW MECHANISM

1. When the REW lever is depressed, the head base is pushed along the circumferance of the REW lever in the direction indicated by arrow ❶ in Fugure 39-①, causing the head to separate from the tape. At the same time, arm (N) moves along the circumferance of the REW lever as shown in Figure 39-②, switching the "mute" switch to the "on" position (the effect is the same when the FF lever is depressed).
2. Figure 39-③ illustrates the "play" mode. Figure 39-④ illustrates the action of arms (O) through (Q) when the REW lever is depressed. When the catch on the REW lever pushes against arm (O) (arrow ❷, the catch on the FF lever causes arm (O) to push against arm (P). The force applied to arm (O) causes it to move in the direction indicated by arrow ❸, thus moving arm (Q). As arm (Q) moves in the direction indicated by arrow ❹, lever (I) is moved.
3. When the FF lever is depressed, the effect similar to when the REW lever is depressed. As the FF lever moves in the direction indicated by arrow ❺, the catch on the REW lever causes arm (O) to push against arm (P). As arm (O) begins to move in the direction indicated by arrow ❻, arm (Q) moves in the direction indicated by arrow ❼, thus causing lever (I) to move.
4. When lever (I) moves in the REW or FF direction (arrows ❹ and ❼, Figure 39-⑥) the gear on lever (I) moves in the direction of arrow ❹ or arrow ❼. When the gear on lever (I) moves in the direction of arrow ❹ (REW side), the gear on the outer circumference of the FWD flywheel mesh with gear (L). Because the gear ratio is better than when in the "play" mode, gears (M) and (N) and the FWD reel mount revolve at high speed. The effect is similar when the FF lever is depressed.
5. The mechanism for locking the unit in either the FF or REW mode is based upon arm (R), which is attached above the pinch roller (Figure 39-⑦). Arm (R) is pressed against the pinch roller side by spring (N). Thus, when either the REW or FF lever is depressed, the catch on arm (R) moves along the circumference of the lever in the direction of the arrow until it enters point A, causing the lever to lock.

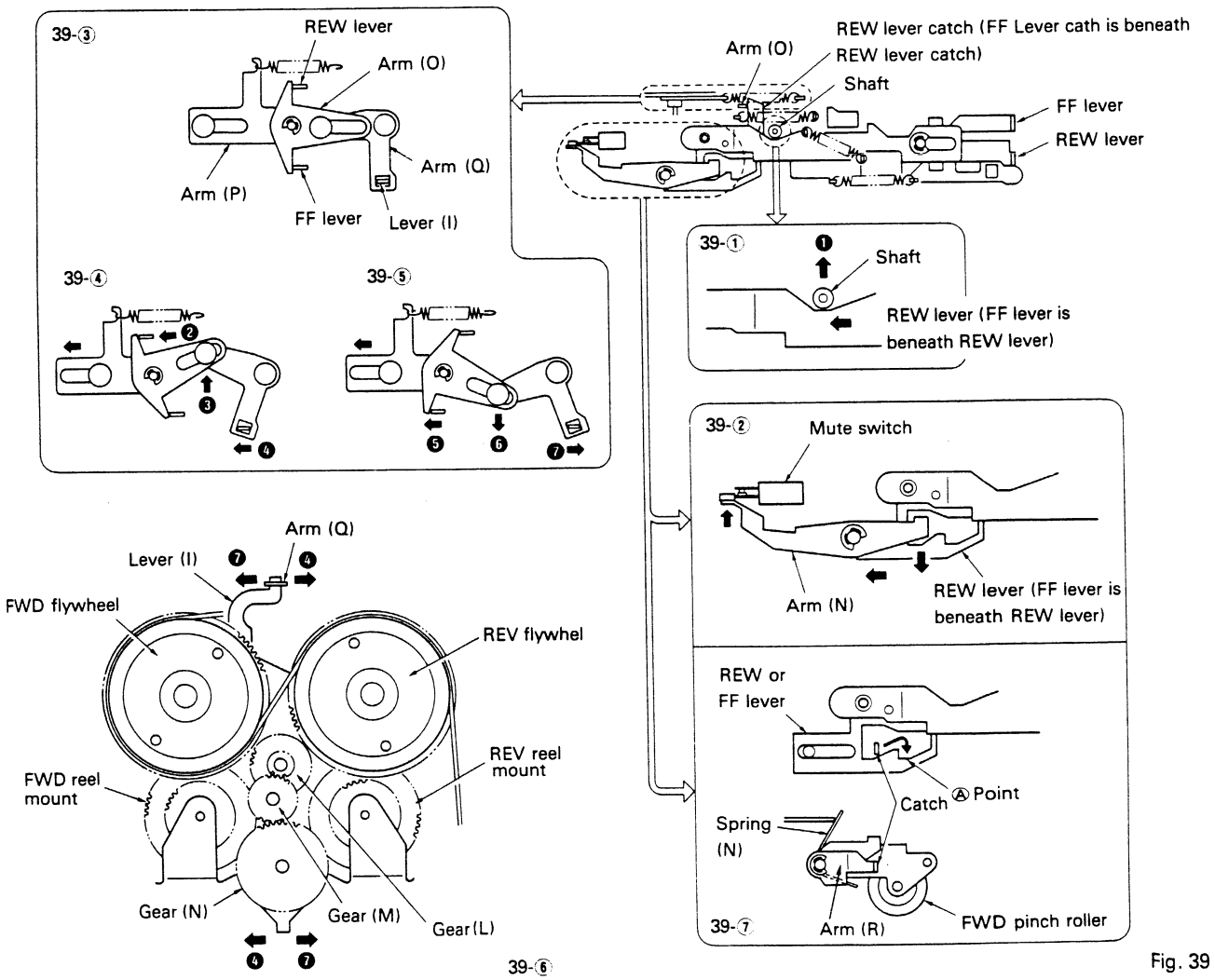
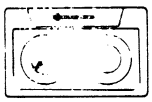
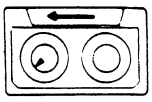
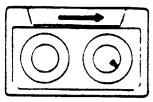
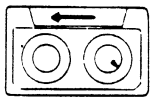


Fig. 39

3. ADJUSTMENT

• Check Points of Cassette Mechanism

Confirm the following items when replacing parts of the cassette mechanism.	■ Tape speed deviation: 3,000 $^{+90}_{-30}$ Hz (4.76 cm/s $^{+3}_{-1}$ %) Using an STD-301, measure the speed a the start and end of winding and take the maximum value. Measuring time shall be 5 ~ 6 seconds.	■ Wow and flutter: Less than 0.20% (WRMS) 0.30% (RMS) Using an STD-301, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 ~ 6 seconds.
■ Fast forward and rewinding time: 95~115 seconds Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.	■ Winding torque: 70~50 g·cm (CX-152/A) 60~45 g·cm (CX-152/B)  Using a cassette type torque meter (100 g·cm), measure the minimum value while in the play mode. Measuring time shall be 5 ~ 6 seconds.	■ F.F. torque: More than 50 g·cm (CX-152/A) 110~70 g·cm (CX-152/B)  Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the F.F. mode.
■ REW torque: More than 50 g·cm (CX-152/A) 110~70 g·cm (CX-152/B)  Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the REW mode.	■ Back tension torque: 2~5 g·cm  After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.	■ Cassette loading force: Less than 1.5 kg Push the center of the cassette and measure the force with a tension meter (3 kg).
■ Eject force: Less than 3 kg Using a tension meter (3 kg), measure eject force from play mode to point at which cassette is ejected.		

AZIMUTH ADJUSTMENT

- **Adjustment Method**

1. Play "A" side of STD-341A (10kHz, −20dB). Adjust each screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

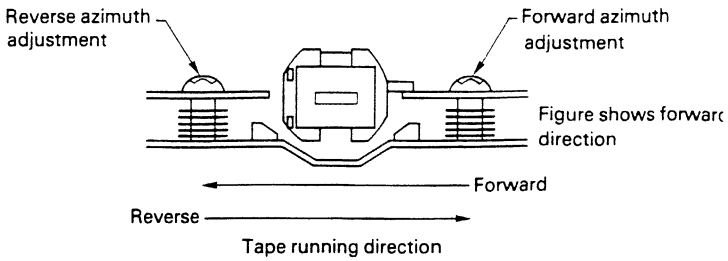


Fig. 40

4. SCHEMATIC CIRCUIT DIAGRAM

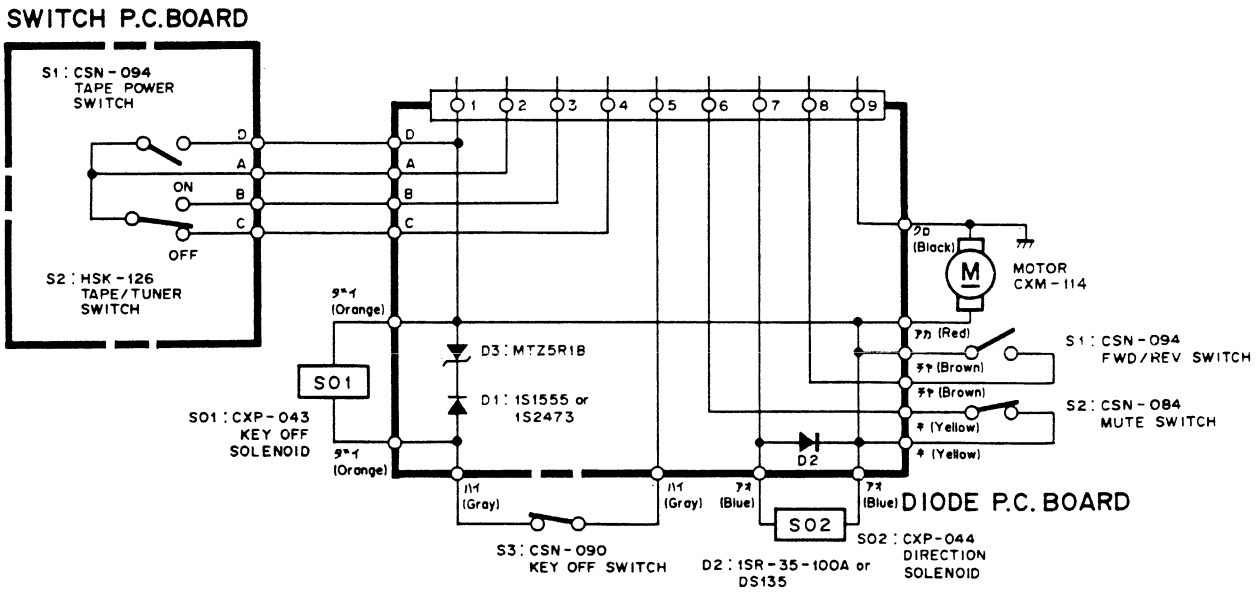


Fig. 41

5. CONNECTION DIAGRAM

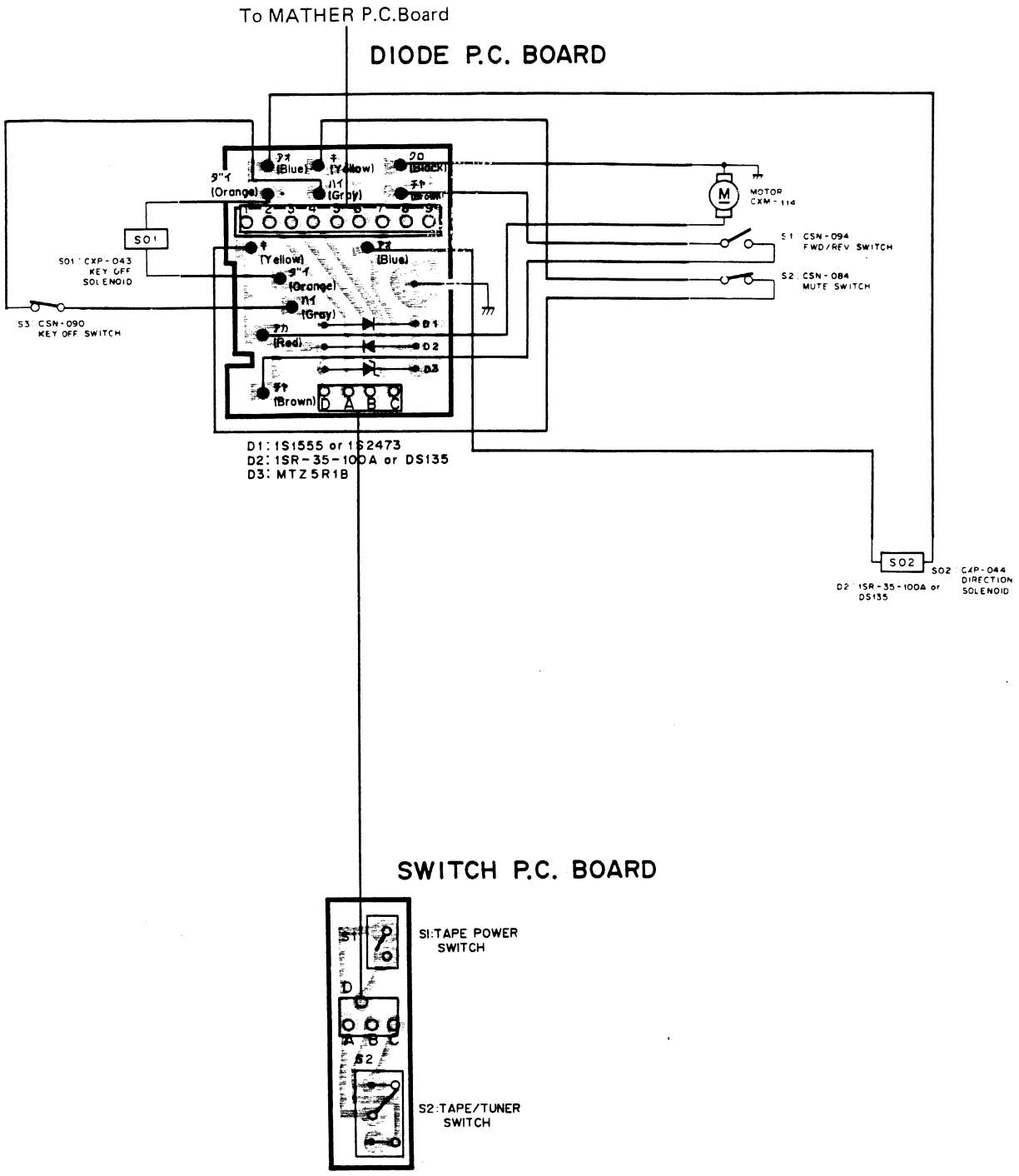


Fig. 42

6. EXPLODED VIEW

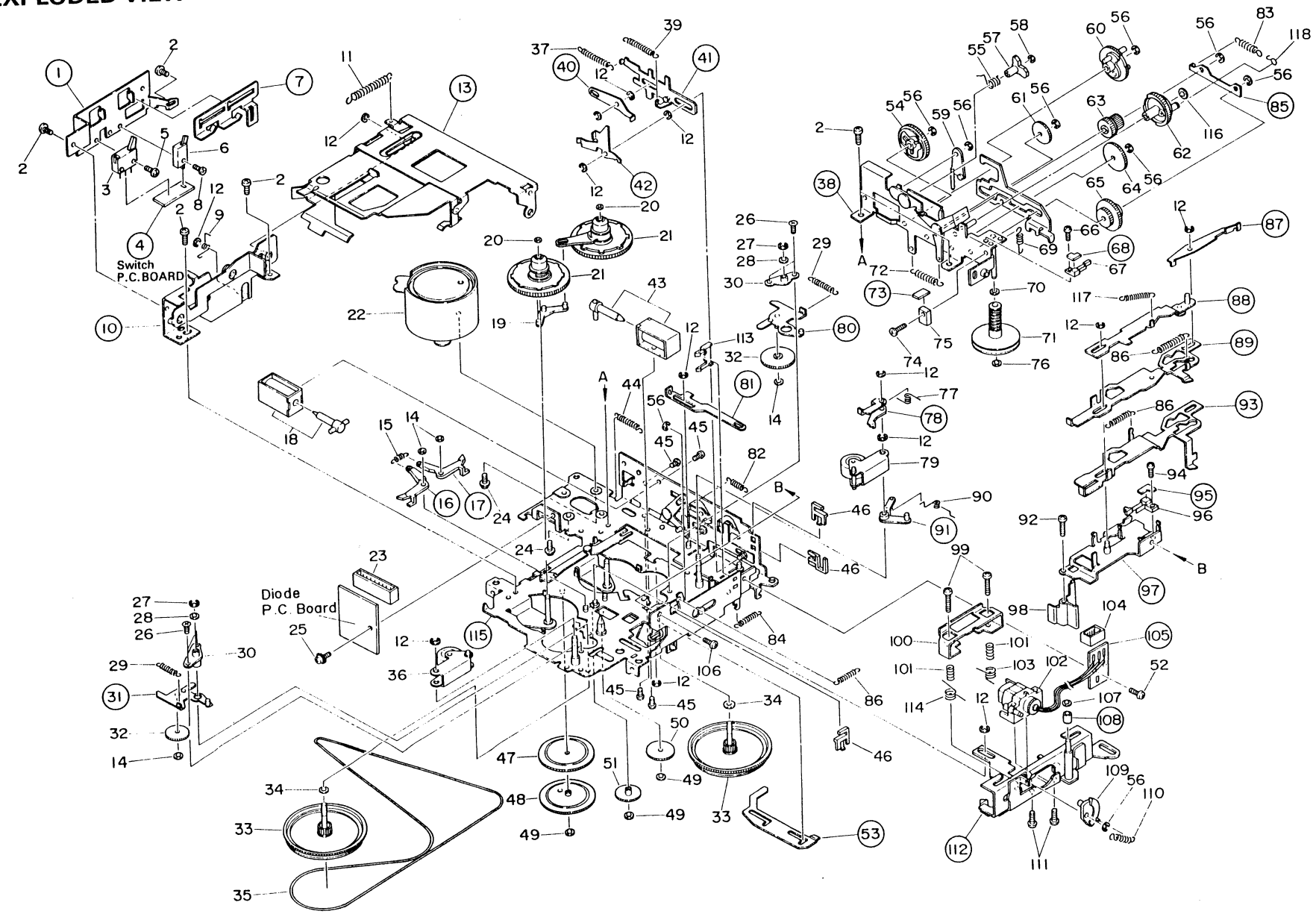


Fig. 43

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

• Parts List

Mark	No.	Part No.	Description
	1.		Bracket
	2.	BMZ26P030FBK	
★★	3.	HSK-126	Switch (Tape/Tuner)
	4.		P.C. Board
	5.	CBA-176	Screw
★★	6.	CSN-094	Switch (Tape Power)
	7.		Lever
	8.	CBA-172	Screw
	9.	CBH-860	Spring
	10.		Side Frame Unit
	11.	CBH-859	Spring
	12.	YE20FUC	Washer
	13.		Holder Unit
	14.	CBF-139	Washer
	15.	CBH-857	Spring
	16.		Ratchet
	17.		Ratchet
★	18.	CXP-043	Solenoid (Key off)
	19.	CNY-009	Arm
	20.	CBF-045	Washer
★★	21.	CXD-424	Reel Unit (CX-152/A)
★★		CXD-433	Reel Unit (CX-152/B)
★★	22.	CXM-114	Motor
	23.	CKS-475	Plug
	24.	PMS26P030FMC	Screw
	25.	CBA-104	Screw
	26.	CMZ20P030FMC	Screw
	27.	EBG-001	Washer
	28.	CBF-167	Washer
	29.	CBH-854	Spring
	30.	CNR-231	Bearing
	31.		Arm Unit
	32.	CNW-987	Gear
	33.	CNY-007	Flywheel
	34.	HBF-120	Washer
	35.	CNT-091	Belt
★★	36.	CXD-422	Pinch Roller Unit
	37.	CBH-848	Spring
	38.		Holder Unit
	39.	CBH-846	Spring
	40.		Arm
	41.		Lever Unit
	42.		Cam
★	43.	CXP-044	Solenoid (Direction)
	44.	CBH-845	Spring
	45.	BMZ20P025FMC	Screw
	46.	CNY-082	Cover
	47.	CNW-990	Gear (CX-152/A)
		CNY-016	Gear (CX-152/B)
	48.	CNY-015	Gear (CX-152/B Only)
	49.	CBF-126	Washer
	50.	CNW-989	Gear
	51.	CNW-988	Gear
	52.	PMS26P040FUC	Screw
	53.		Lever
	54.	CNW-997	Gear
	55.	CBH-838	Spring
	56.	YE15FUC	
	57.	CNY-081	Arm
	58.	YE12FUC	Washer
	59.	CNW-998	Lever
	60.	CNW-995	Gear
	61.	CNW-996	Gear
	62.	CNW-992	Gear
	63.	CNW-994	Gear
	64.	CNW-993	Gear
	65.	CNW-991	Gear
	66.	CBA-177	Screw
★★	67.	CSN-084	Switch (Mute)
	68.		P.C. Board
	69.	CBH-852	Spring
	70.	HBF-115	Washer
	71.	CNW-999	Pulley
	72.	CBH-847	Spring
	73.		P.C. Board
	74.	CBA-172	Screw
★★	75.	CSN-094	Switch (FWD/REV)
	76.	CBF-169	Washer
	77.	CBH-858	Spring

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Mark	No.	Part No.	Description
	78.		Arm
★★	79.	CXD-423	Pinch Roller Unit
	80.		Arm Unit
	81.		Lever
	82.	CBH-844	Spring
	83.	CBH-884	Spring
	84.	CBH-849	Spring
	85.		Holder
	86.	CBH-864	Spring
	87.		Arm
	88.		Lever Unit
	89.		Lever
	90.	CBH-851	Spring
	91.		Arm Unit
	92.	BMZ20P160FMC	Screw
	93.		Lever
	94.	CBA-177	Screw
	95.		P.C. Board
★★	96.	CSN-090	Switch (Key Off)
	97.		Bracket Unit
	98.	CNY-010	Guide
	99.	CBA-196	Azimuth Screw
	100.	CNG-771	Azimuth Plate
	101.	CBH-843	Spring
★★	102.	CXD-421	Head Unit
	103.	CBH-840	Spring
	104.	CKS-469	Plug
	105.		P.C. Board
	106.	PMS26P030FMC	Screw
	107.	CBF-135	Washer
	108.		Roller (CX-152/A) Roller (CX-152/B)
	109.	CNY-002	Gear
	110.	CBH-842	Spring
	111.	BMZ20P060FMC	Screw
	112.		Head Base Unit
	113.	CNY-115	Cover
	114.	CBH-841	Spring
	115.		Chassis Unit
	116.	CBF-046	Washer
	117.	CBH-885	Spring
	118.	CBH-891	Spring

Key No.	Description	Cassette Mechanism Unit	
		CX-152/A	CX-152/B
21.	Reel Unit	CXD-424	CXD-433
47.	Gear	CNW-990	CNY-016
48.	Gear	VACANT	CNY-015
108.	Roller	Non spare part	Non spare part

• Gear

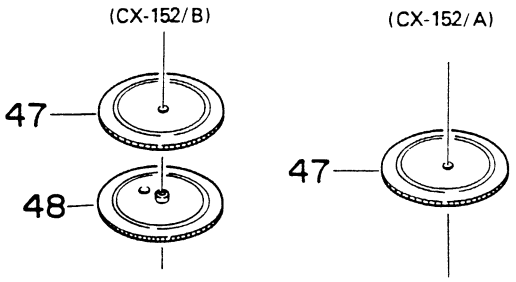

Fig. 44

Note:

- The differences between the CX-152/A and CX-152/B rollers (Key No. 108) are as follows:

	Roller Dia.	Music Search
CX-152/A	4.4 mm	No
CX-152/B	3.3 mm	Yes

- In addition to the differences listed above, some CX-152/A cassette mechanism units use CX-152/B gears (Key No. 47, 48) and reel units (Key No. 21).