

Service Manual

MASH*
multi-stage noise shaping

COMPACT
disc
DIGITAL AUDIO

Portable Stereo Component CD System

RX-DT650

Colour

(K) ... Black Type

Area

Suffix for Model No.	Area	Colour
(P)	U.S.A.	(K)
(PC)	Canada	

* MASH is a trademark of NTT.



TAPE DECK : SG-20W MECHANISM SERIES
TRAVERSE DECK : RAE0113Z MECHANISM SERIES

■ Specifications

■ RADIO

Frequency range	
FM	87.9 – 107.9 MHz (200kHz step) 87.5 – 108.0 MHz (100kHz step) 520 – 1710 kHz (10kHz step)
AM	
Intermediate Frequency	
FM	10.7 MHz
AM	455 kHz
Sensitivity	
FM	14.5 dB/50 mW
AM	52 dB/m/50 mW

■ TAPE RECORDER

Track system	4 track, 2 channel, stereo
Recording system	AC bias
Erasing system	Multi Pole Magnet
Monitor system	Variable sound monitor
Frequency range	
Normal	80 – 14000 Hz

■ CD PLAYER

Sampling frequency	44.1 kHz
Decoding	16 bit linear
Beam source	Semiconductor laser (wavelength 780 nm)
No. of channels	2 channels, stereo
Frequency Response	20 Hz – 20 kHz(0, -2 dB)
S/N ratio	95 dB (JIS. A)
Dynamic Range	86 dB
Digital Filter	4 fs
Wow and flutter	Less than possible measurement data
D/A converter	MASH (1 bit DAC)

■ GENERAL

Power requirement

AC

120 V, 60 Hz

Power consumption: 50 W

15V (Ten "D" size, R20/L20 batteries)

Battery

Memory back-up for computer/clock

6V (Four "AA" size, R6/LR6 batteries)

Speakers

2 Woofers; 12cm (4³/₄"

2 Tweeters; 1.5cm (5/₈"

Jacks

Output

Speaker; 2.7Ω

Headphones; 32 Ω

Dimensions (W x H x D)

643 x 251 x 239 mm

(25⁵/₁₆" x 9⁷/₈" x 9⁷/₁₆"

Main unit; 313 x 251 x 223 mm

(12⁵/₁₆" x 9⁷/₈" x 8³/₄"

Speaker box; 170 x 240 x 201 mm

(6¹¹/₁₆" x 9⁷/₁₆" x 7¹⁵/₁₆"

Weight

6.9 kg (15 lb. 3 oz.) without batteries

Notes :

Specifications are subject to change without notice.
Weight and dimensions shown are approximate.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

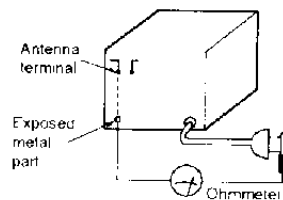
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Contents

	Page		Page
SAFETY PRECAUTIONS	2	TERMINAL GUIDE OF ICs TRANSISTORS AND DIODES	19
PRECAUTION OF LASER DIODE	2	WIRING CONNECTION DIAGRAM	20
OPERATION CHECKS AND MAIN COMPONENT REPLACEMENT	3 ~ 5	PRINTED CIRCUIT BOARD	21 ~ 24
HANDLE PRECAUTIONS FOR TRAVERSE DECK	5	SCHEMATIC DIAGRAMS	25 ~ 35
LOCATION OF CONTROLS	6 ~ 8	MECHANISM PARTS LOCATION (RAA0906)	36 ~ 37
DIGITAL SERVO SYSTEM	9	MECHANISM PARTS LIST	38 ~ 39
SELF-DIAGNOSTIC DISPLAY FUNCTION	10 ~ 11	CABINET PARTS LOCATION	40 ~ 41
DISPLAY FUNCTION OF AUTOMATICALLY-ADJUSTED RESULTS	12	REPLACEMENT PARTS LIST	42 ~ 45
MEASUREMENTS AND ADJUSTMENTS	13 ~ 15	TROUBLESHOOTING GUIDE	46
TERMINAL FUNCTION OF ICs	16 ~ 19	RESISTORS & CAPACITORS	47 ~ 51

Safety Precautions (This "Safety Precaution" is applied only in U.S.A.)

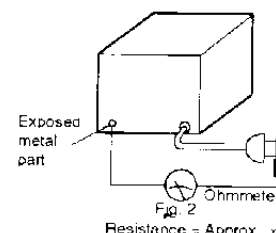
1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.



Resistance = $3M\Omega$ - $5.2M\Omega$

Insulation Resistance Test

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
 2. Turn on the power switch.
 3. Measure the resistance value with ohmmeter between the jumper AC plug and each exposed metal cabinet part, such as screwheads, antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between $3M\Omega$ and $5.2M\Omega$ to all exposed parts* (Fig. 1). Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. 2)
- *Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.
4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.



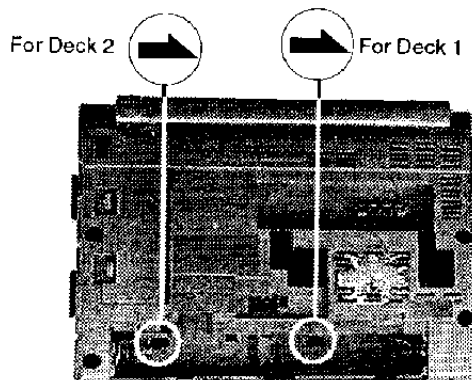
Resistance = Approx. ∞

Precaution of Laser Diode

CAUTION: This unit utilizes a class 1 laser. Invisible laser radiation is emitted from the optical pick up lens. When the unit is turned on:

1. Do not look directly into the pick up lens.
2. Do not use optical instruments to look at the pick up lens.
3. Do not adjust the preset variable resistor on the pick up lens.
4. Do not disassemble the optical pick up unit.
5. If the optical pick up is replaced, use the manufacturer's specified replacement pick up only.
6. Use of control or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

What to do when the tape is entangled



When a tape is caught in the pinch roller, etc., release the tape by turning the pulley on the motor with a screwdriver in the direction of arrow.

BATTERY SERVICE LIFE

UM-1 (D-size) Batteries

Approx. $4\frac{3}{4}$ hours of CD playback (EIAJ).

Approx. 12 hours of tape recording (EIAJ).

Approx. $7\frac{1}{4}$ hours of tape playback (EIAJ).

The above battery service life is measured according to the conditions set forth by EIAJ (Electronic Industries Association of Japan). As the battery service life varies with the method of operation and environmental conditions, use these values as reference.

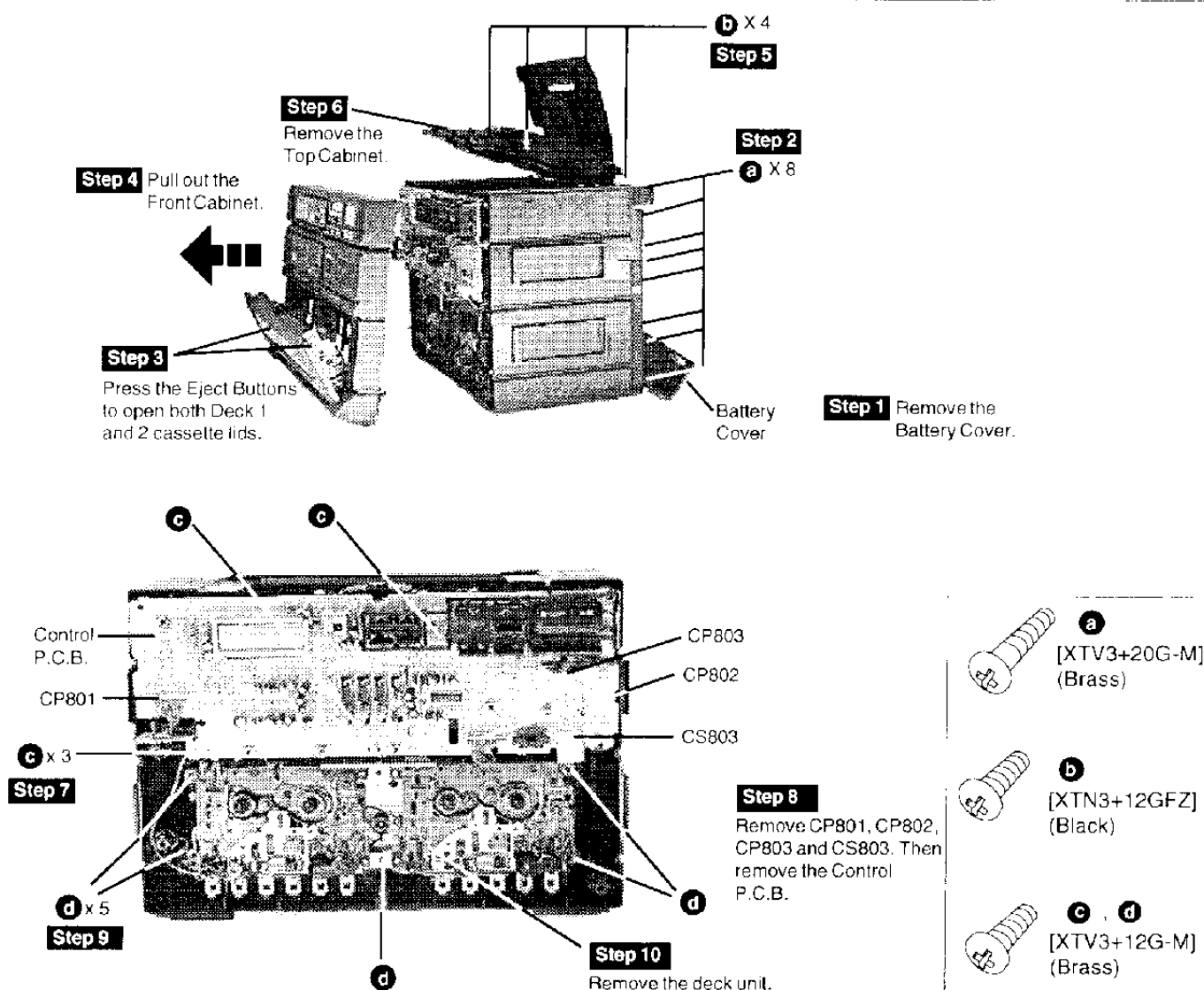
■ Operation Checks and Main Component Replacement Procedures

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Refer the Parts No. on the page of "Main Component Replacement Procedures", if necessary.

• Contents

	page
• Disassembly of the Front Cabinet, Top Cabinet, Control P.C.B. and Deck Unit.	3
• Checking Procedure for each major P.C.B.	
1. Checking for the Servo P.C.B.	4
2. Checking for the Main P.C.B.	4
• Main Component Replacement Procedures	
1. Replacement of Regulator IC and Power Amplifier IC	4
2. Replacement of the Traverse Deck	5

■ Disassembly of the Front Cabinet, Top Cabinet, Control P.C.B. and Deck Unit.

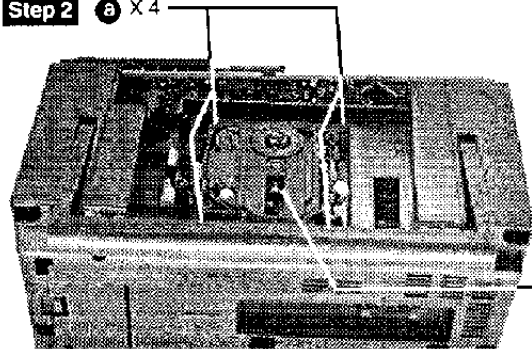


■ Checking Procedure for each major P.C.B.

1. Checking of the Servo P.C.B.

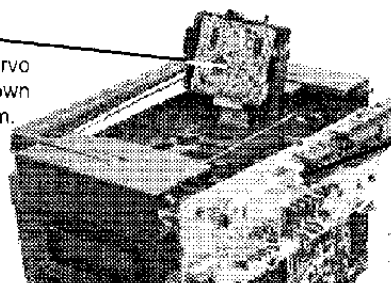
Step 1 Disassemble the Front Cabinet and Top Cabinet (from step 1 to 6 on page 3).

Step 2 a X 4



Step 5

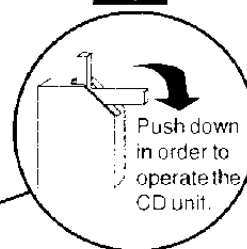
Check the Servo P.C.B. as shown in this diagram.



Step 3

Position the CD unit as shown in the diagram on the right.

Step 4



Push down in order to operate the CD unit.



a

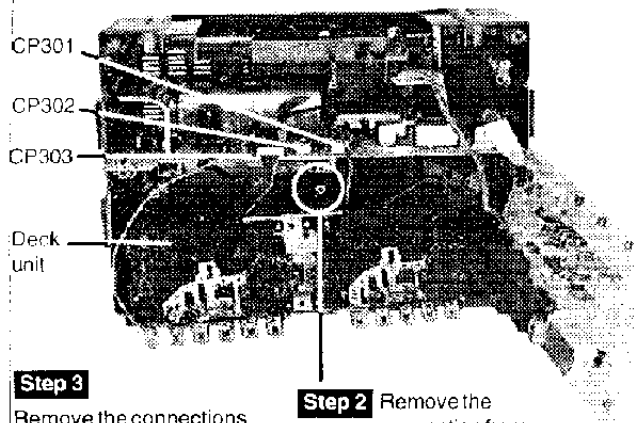
[XTV3+12G-M]
(Brass)

2. Checking of the Main P.C.B.

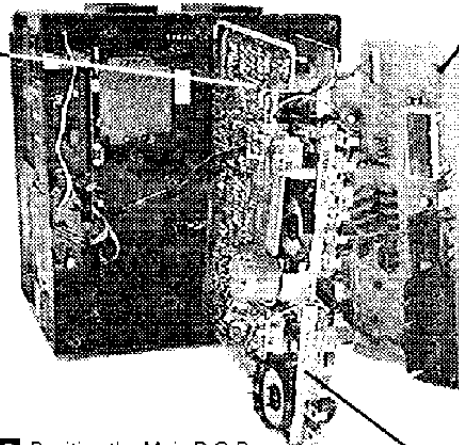
Step 4 Slide out the Main P.C.B.

Step 5 Replace back all the connections (CS901, CP301, CP302, CP303, CS803, CP801, CP802, CP803 and CS803)

Step 1 Disassemble the Front Cabinet, Top Cabinet, Control P.C.B and Deck Unit. (from step 1 to 10 on page 3).



Main P.C.B.



Panel P.C.B.

Deck unit

Step 3

Remove the connections from CP301, CP302 and CP303. Then remove the Deck unit.

Step 2

Remove the connection from CS901.

Step 6

Position the Main P.C.B., Deck unit and Control P.C.B. as shown above.

■ Main Component Replacement Procedures

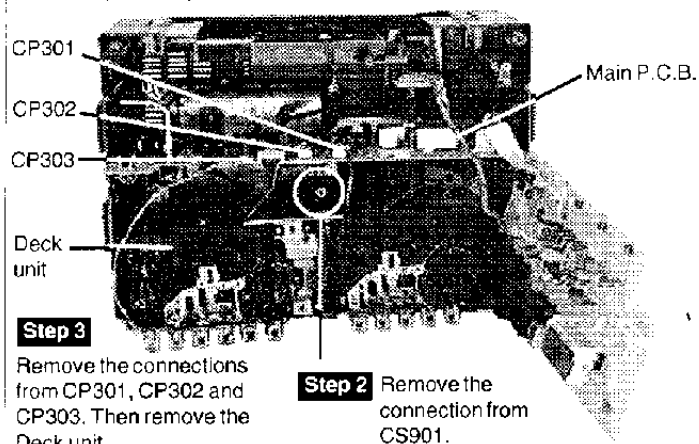
1. Replacement of Regulator IC and Power Amplifier IC

Step 4 Slide out the Main P.C.B.

Step 8

Remove the Power Amplifier IC

Step 1 Disassemble the Front Cabinet, Top Cabinet, Control P.C.B and Deck Unit. (from step 1 to 10 on page 3).



Main P.C.B.

Step 5

a X 2

Step 6

Remove the Regulator IC

Step 7 b X 2



a

[XTW3+10F]
(Brass)



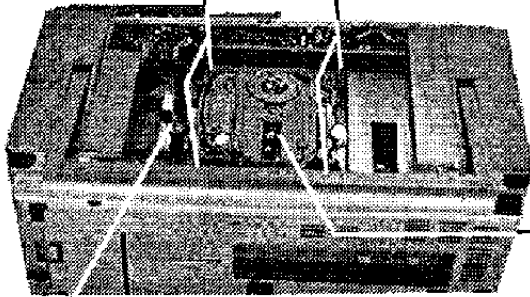
b

[XTV3+8F]
(Brass)

2. Replacement of the Traverse Deck

Step 1 Disassemble the Front Cabinet and Top Cabinet (from step 1 to 6 on page 3).

Step 2 a X 4



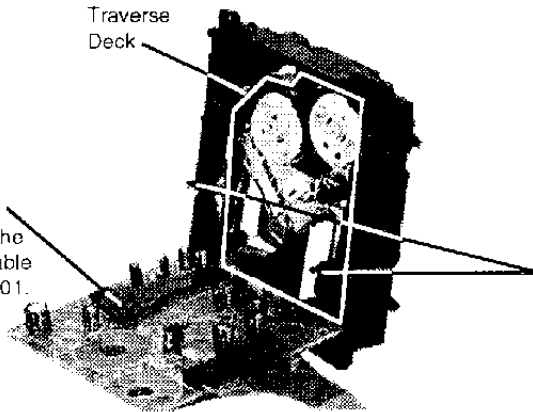
Step 3

Pull out the FPC cable.

Traverse Deck

Step 7

Remove the flexible cable from CN701.

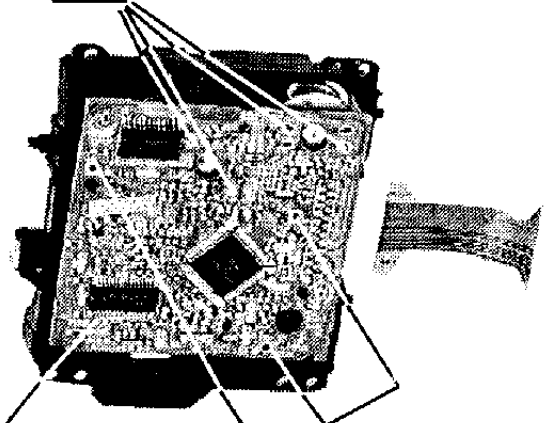


Step 4

Take out the CD unit.

Servo P.C.B.

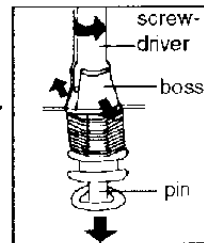
Step 6 Desolder the 4 motor legs.



Step 5 b X 3

Step 8

Widen the 2 bosses with a screwdriver and pull out the 2 pins. Then remove the Traverse Deck.



a

[XTV3+12G-M]
(Brass)



b

[XTV2+6G]
(Brass)

■ Handling Precautions for Traverse Deck

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body. So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

• Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic shorting pin is inserted into the flexible board (FPC board). When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FPC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

• Grounding for electrostatic breakdown prevention

1. Human body grounding
Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

Caution :

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).

Variable resistor
(Do not turn)

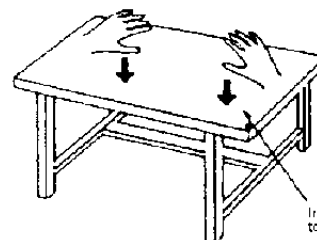
Optical pickup
Lens (Do not touch)

FPC board
(Handle it carefully)

Be sure to short this position
(Use the shorting pin or clip)



Shorting pin

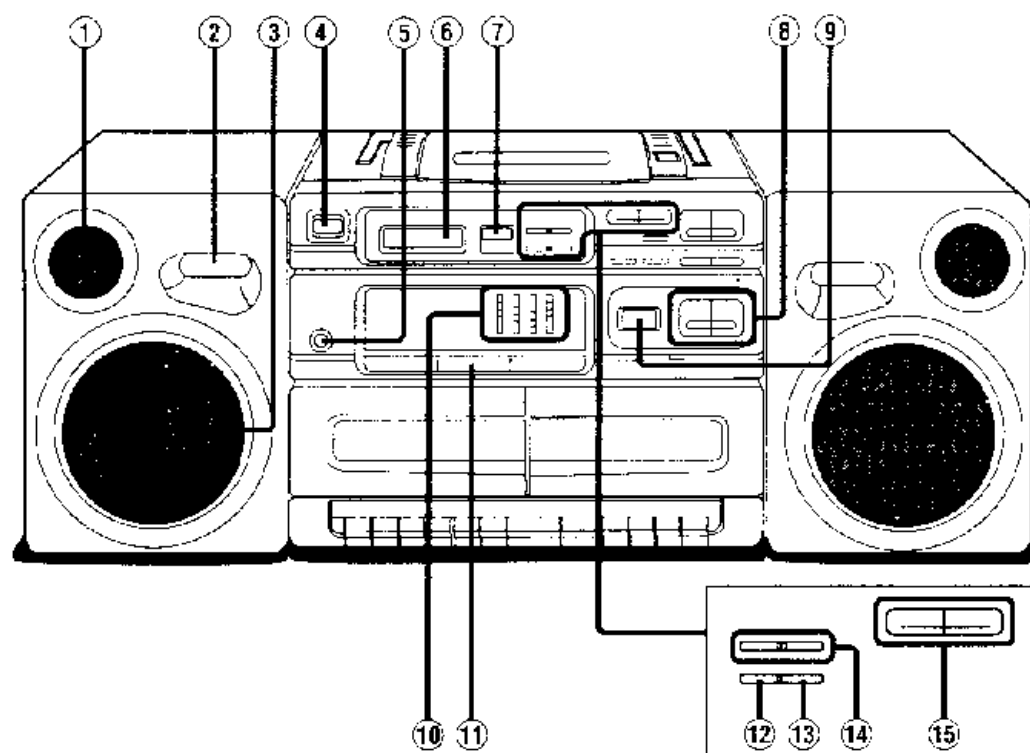


Wrist strap
(Anti-static bracelet)

1 MΩ

Iron plate or some metals
to conduct electricity

■ Location of Controls

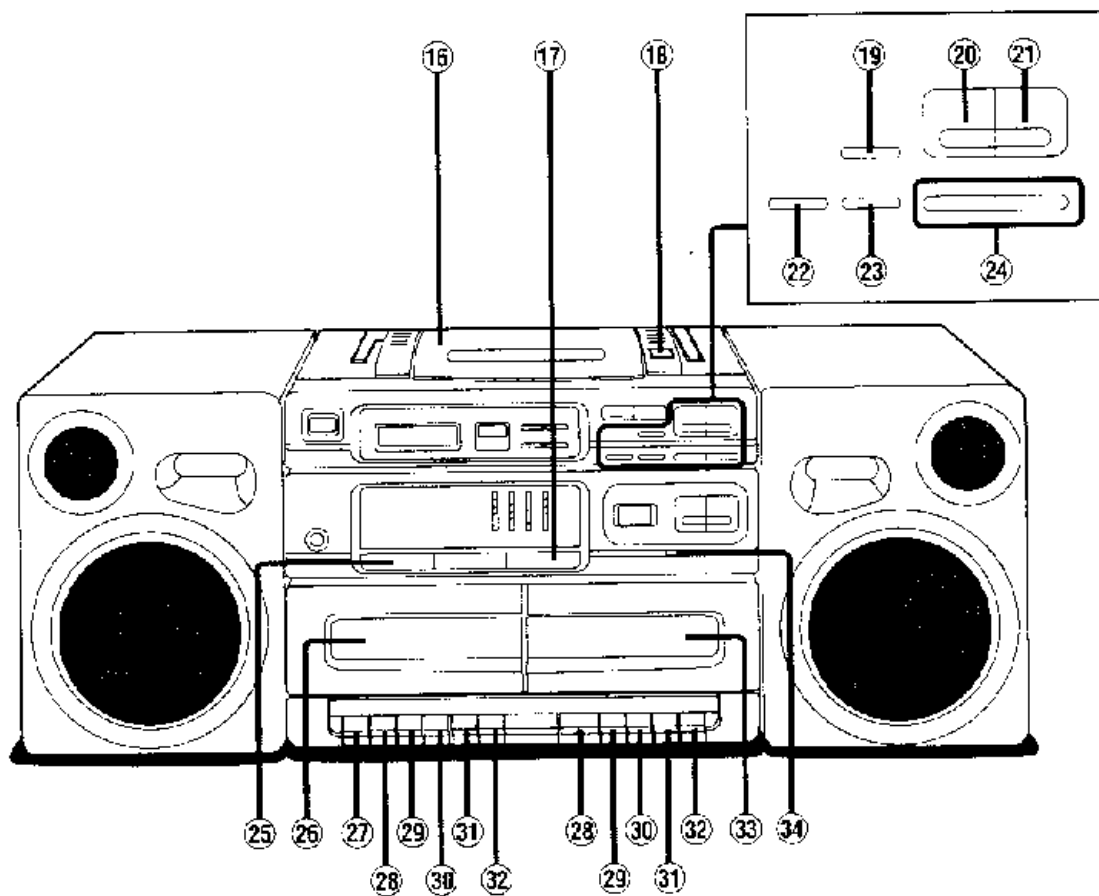


Basic controls

No.	Name
①	Speakers (Tweeter)
②	Bass reflex ports
③	Speaker (Woofer)
④	Power button (POWER)
⑤	Headphones jack (PHONES)
⑥	Display panel
⑦	Remote control signal sensor (REMOTE SENSOR)
⑧	Volume control buttons (- VOLUME +)
⑨	Extra bass system control (XBS MULTI-POSITION)
⑩	Graphic equalizer controls (GRAPHIC EQUALIZER)

Tuner controls

No.	Name
⑪	Tuner button (TUNER/BAND)
⑫	FM mode/ beat proof button (FM MODE/ B.P)
⑬	Tuning memory button (TUNING MEMORY)
⑭	Tuning buttons (- TUNING +)
⑮	Preset tuning button (∨ PRESET TUNING ∧)

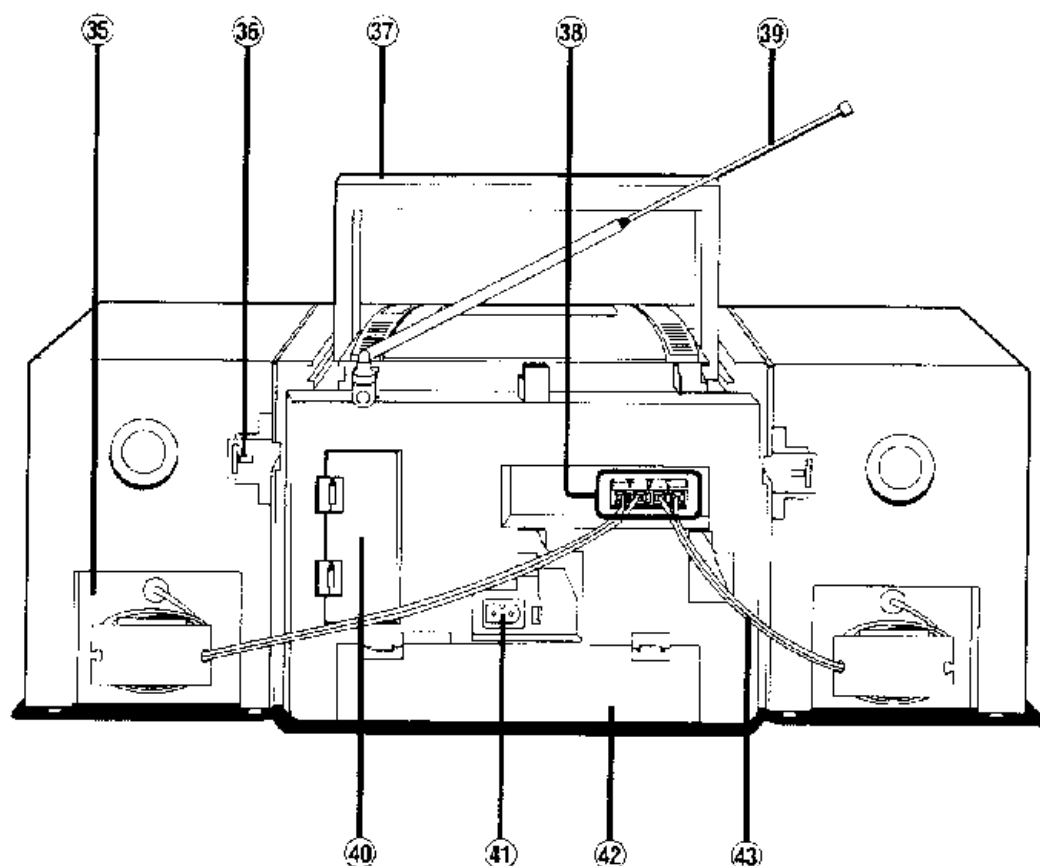


CD controls

<i>No.</i>	<i>Name</i>
16	CD lid
17	CD button (CD)
18	CD lid open button (▲)
19	Easy CD recording button (EASY CD REC)
20	Stop/clear button (■/CLEAR)
21	Play/pause button (▶/II)
22	Memory button (MEMORY)
23	Repeat button (REPEAT)
24	Skip/search buttons (◀◀SKIP/SEARCH▶▶)

Cassette deck controls

<i>No.</i>	<i>Name</i>
25	Tape button (TAPE)
26	Deck 1 cassette holder (DECK 1)
27	Record button (● REC)
28	Playback button (▶ PLAY)
29	Rewind/review button (◀◀ REW/REV)
30	Fast forward/cue button (▶▶ FF/CUE)
31	Stop/eject button (■/▲ STOP/EJECT)
32	Pause button (II PAUSE)
33	Deck 2 cassette holder (DECK 2)
34	Edit recording selector (EDITING)



Rear panel section

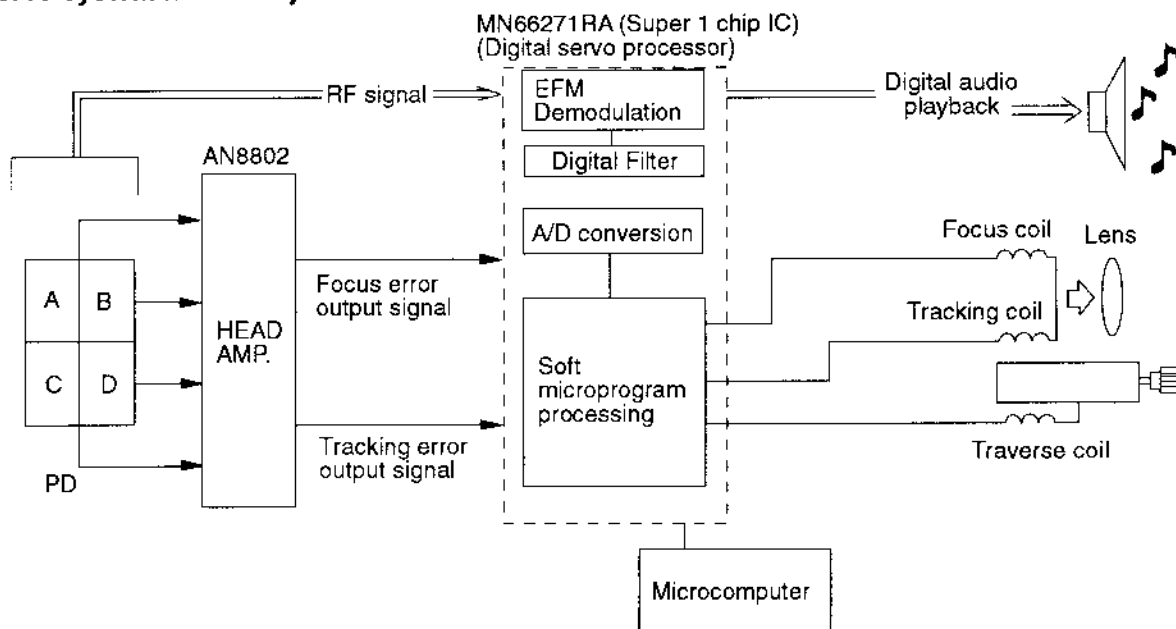
<i>No.</i>	<i>Name</i>
③⑤	Speaker cable compartments
③⑥	Speaker release levers (RELEASE)
③⑦	Handle
③⑧	Speaker terminals
③⑨	Telescopic antenna
④①	Memory back-up battery compartment cover

<i>No.</i>	<i>Name</i>
④①	AC socket (AC IN-)
④②	Battery compartment cover
④③	Speaker cables

Digital Servo System

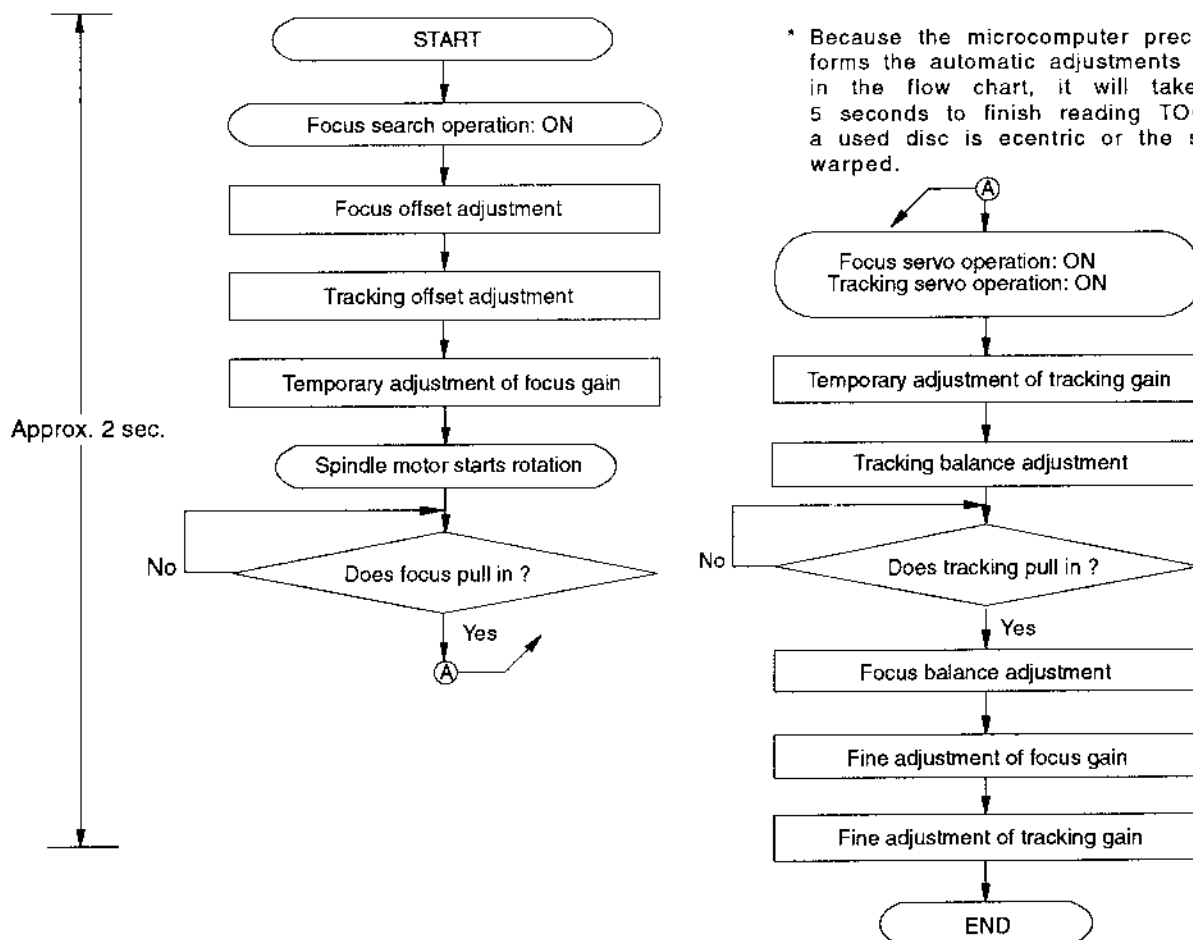
DIGITAL SERVO SYSTEM

This servo system has no adjustment VRs.



The following flow chart shows the sequence of automatic adjustments.

Flow chart on automatic adjustment sequence



■ Self-Diagnostic Display Function

This unit has a self-diagnostic function to indicate malfunction. You should take advantage of this function when performing maintenance.

•How to enter Self-Diagnostic Mode

1. Press the "■ / CLEAR" button for more than 2 seconds and hold it.
2. Press the "▶/||" button for more than 2 seconds and release both to obtain TEST 1.
3. Repeat the first 2 steps to obtain TEST 2 to 4 and back to TEST 1. (This cycle repeats itself)

TEST 1 : Inspection for LCD terminal short test.

TEST 2 : Indication of all LCD segments are functioning.

TEST 3 : Inspection of operation key switches.

TEST 4 : Self-Diagnostic Display.

•How to release from TEST Mode.

Press " POWER/BATT " button at any test mode except TEST 3.

•Test Mode

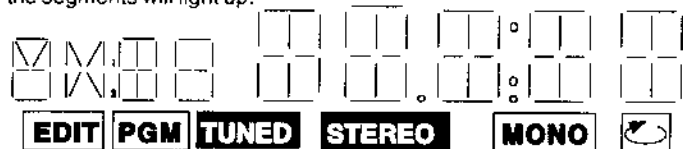
TEST 1 Inspection for LCD terminal short test.

The LCD will display the following :



TEST 2 Indication of all LCD segments are functioning.

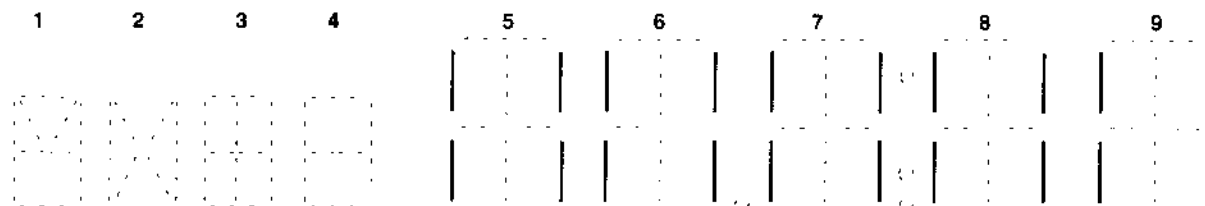
All the segments will light up.



TEST 3 Inspection of Operation Key switches.

No segment will light up at the beginning. But as one after another operation buttons are pressed, the respective segments will light up.

Segment Light Up	Key Pressed (from the unit)
5f	SKIP / SEARCH ▶▶
5e	◀◀SKIP / SEARCH
5b	MEMORY
5c	EASY CD RECORD
6f	REPEAT
6e	▶/
6b	■/CLEAR
6c	TUNING +
7f	FM MODE/BP
7e	- TUNING
7b	V/PRESET TUNING
7c	PRESET TUNING Δ
8f	TUNING MEMORY
8e	XBS (MULTI - POSITION)
8b	-VOLUME
8c	VOLUME +
9f	POWER
9e	TAPE
9b	TUNER/BAND
9c	CD



TEST 4 Self - Diagnostic Display (F15, F75, F69, H16 Test)

1. "T-4" will be displayed on the LCD.
2. Open the CD lid and close it.
3. Load in a blank cassette in DECK 1 and press "●" Record button. Then press "■/▲" stop/eject button of DECK 1.
4. Press "■/CLEAR" button.
5. "PASS" will appear on the LCD if no problem is found, otherwise error code will display (H16 or F69).
6. Press "■/CLEAR" button to check if there is any more error code displays.

Interpretation of error codes.

Error code	Problem condition	Correction procedure
F15	Relatively long time (about 8 seconds) is required to begin play when the CD play/pause (▶/) button is pressed from the power-off state or from a function other than CD player.	Faulty contact on CD mechanism optical pick-up rest switch [S701 of Servo unit]. (Check and replace)
F75	"NO DISC" indication show in the FL display even CD is loaded.	Faulty power supply circuit of CD [IC302 or circuit for power supply]. (Check and replace) Faulty servo processor IC [IC702 of Servo unit]. (Check and replace)
F69	No recording is made when REC button is pressed.	Faulty Rec / Playback switch (S603) or power supply. (Check and replace)
F16	CD traverse "UP" switch faulty. eg. CD traverse push up the rotary tray.	Faulty contact on switch S501. (Check and replace)

• Battery and Power Test (U01, U02)

U01 or U02 will appear on the display automatically after "POWER/BATT" button is pressed. It will disappear after 10 seconds and 5 seconds respectively.

Interpretation of error codes.

Error code	Problem condition	Correction procedure
U01	When the unit is operating on batteries, power supply ceases soon after the POWER button is set to ON.	It is due to consumption of batteries. Replace the batteries with new ones.
U02	Settling the POWER button to ON causes no supply of power.	Check the power plug (AC), or insert batteries (DC).

■ Display Functions of Automatically-Adjusted Results (Self-Check Function)

The unit contains a function which displays the result of the automatically adjustment of the servo circuits (tracking, focus servo, etc.) as an error code on the FL display.

The error code display serves as a repair guide showing the automatically adjustment circuit is at fault. The procedures for displaying the error codes are given below.

• Procedures to display the error code

1. Switch the unit to "ON".
2. Press the "MEMORY" button, then simultaneously press "◀ SKIP / SEARCH" and "SKIP / SEARCH ▶".
3. "E-00" will appear if no error is found.
4. The error code provides a rough indication of which servo circuit is malfunctioning.

• Error code based troubleshooting

- The unit is satisfactory if the error code is E-00.
- Before testing, make sure that the test disc is free of scratches and dirt and optical pickup is clean.

FL error code display	Symptom	Probable cause	Signal to check		Normal the values of voltage and waveform	
			Signal name	Location	PLAY	STOP
E01	Focus and tracking offset adjustments did not complete in the specified time period.	① Clocks X1 and X2, power supply VDD, and reset/RST, all on IC702. ② MDATA, MCLK, MLD and SENSE signals to/from the mechanism controller.	MDATA	IC702 ⑧ pin		4.8V
			MCLK	IC702 ⑦ pin		4.8V
			MLD	IC702 ⑨ pin		
			SENSE	IC702 ⑩ pin	0V	0V
			/RST	IC702 ⑱ pin	4.9V	4.9V
			X1	IC702 ⑤⑧ pin		
			X2	IC702 ⑤⑨ pin		
E03 E05 E07 E09 E0B E0D E0F	Disc play unstable	① Scratches or contaminants on disc surface. ② Focus and tracking servo circuits (check waveforms, voltages, and part constants). ③ Spindle driver circuit. ④ Optical pickup.	FE	IC702 ③② pin		2.4V
			TE	IC702 ③③ pin		2.4V
			FOD	IC702 ②⑧ pin	2.4V	2.4V
			TRD	IC702 ②⑦ pin	2.4V	2.4V
			KICK	IC702 ②⑥ pin	2.4V	2.4V
			/FLOCK	IC702 ①① pin	0V	4.9V
			/RF DET	IC702 ③⑧ pin	0V	4.8V
			RF	TJ701		3.4V
			STAT	IC702 ①⑦ pin	3.5V	0V
E04 E06 E0C E0E	Best Eye (PD Balance) adjustment did not complete in specified time period.	① Scratches or contaminants on disc surface. ② Focus and tracking servo circuits (check waveforms, voltages, and part constants). ③ Optical pickup.	FBAL	IC702 ③⑩ pin	2.5 ± 1.25V	2.5 ± 1.25V
			RF	TJ701		3.4V
			FE	IC702 ③② pin		0V
			/TLOCK	IC702 ①② pin	0V	0V
			OFT	IC702 ③⑥ pin	0V	0V
E08 E0A	Focus or tracking gain adjustment did not complete in the specified time period.	① Scratches or contaminants on disc surface. ② Focus and tracking servo circuits (check waveforms, voltages, and part constants). ③ Optical pickup.	FE	IC702 ③② pin		2.4V
			TE	IC702 ③③ pin		2.4V
			/TLOCK	IC702 ①② pin	0V	0V
			OFT	IC702 ③⑥ pin	0V	0V

■ Measurements and Adjustments

■ ALIGNMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume to maximum.
2. Set XBS level to minimum.
3. Set power source voltage to 15V DC.
4. Set GEQ controls to center.
5. Output of signal generator should be no higher than necessary to obtain an output reading.

< TUNER SECTION >

■ AM-RF ALIGNMENT

SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Shown in Fig. 1)	REMARKS
CONNECTIONS	FREQUENCY				
Fashion a loop of several turns of wire and radiate a signal into the loop ant. of receiver.	600kHz	Tune to signal	TP8...(+) TP9...(-)	(*1) L2 (AM ANT Coil)	Adjust for maximum output. Adjust L2 by moving coil along the ferrite core.
"	1,400kHz	"	"	CT1 (AM ANT Trimmer)	Adjust for maximum output.

(*1) Fix antenna coil with wax after completing alignment.

■ FM STEREO ALIGNMENT & "ZERO" VOLTAGE ALIGNMENT

SIGNAL GENERATOR or SWEEP GENERATOR	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT (Shown in Fig. 1)	SPECIFICATION	REMARKS
97.9 MHz, 60 dB(CW) Connect to test point TP1 through FM dummy antenna. Negative side to TP2.	Connect the DC Voltmeter between TP6 & TP7	T2	$0 \pm 50\text{mV}$	Align coil T2 for "ZERO" voltage to be in the range of $0 \pm 50\text{mV}$

< CASSETTE DECK SECTION >

■ TAPE SPEED ADJUSTMENT

TEST TAPE	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT (Shown in Fig. 3)	REMARKS
QZZCWAT (3 kHz)	Headphones Jack (32Ω) (Fabricate the plug as shown in Fig. 2 and then connect the lead wires of the plug to the measuring instrument.)	Deck 2 Normal Speed VR601	1. Insert test tape (QZZCWAT) in Deck 1 and start playback in forward direction. 2. Adjust VR601 until the frequency is set to $3000 \pm 50\text{Hz}$. (The frequency for Deck 1 on normal speed is (Deck 2 $\pm 50\text{Hz}$) and the frequency for High Speed recording is 5100Hz.)

■ RECORD BIAS VOLTAGE & FREQUENCY CHECK

TEST TAPE	EQUIPMENT CONNECTION ELECTRONIC COUNTER (refer to Fig. 4)	ADJUSTMENT	SPECIFICATION	REMARKS
Use Normal tape	TP101...(+) TP102...(-)	—	$11.0 \pm 2.0\text{mV}$	• Record mode
Use Normal tape	TP101...(+) TP102...(-)	—	$95 \pm 10\text{kHz}$	1. Set to Record mode 2. Confirm sine-wave appears without distortion/ abnormal oscillation.

BEATPROOF CHECK

TEST TAPE	EQUIPMENT CONNECTION ELECTRONIC COUNTER (refer to Fig. 4)	ADJUSTMENT	SPECIFICATION	REMARKS
Use Normal tape	TP101 ...(+) TP102 ...(-)	—	Frequency Shift from B.P. II — I (3.0 ~ 6.5 kHz)	1. Set the function selector to Tuner position. 2. Set to B.P. II 3. Confirm oscillating waveform to be sinusoidal without distortion/abnormal oscillation.

< CD UNIT SECTION >

Warning: This product uses a laser diode. Refer to caution statements on page 2.

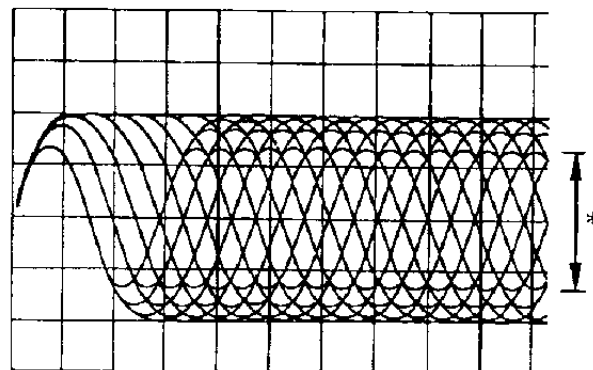
Caution: It is very dangerous to look or touch the laser beam. (laser radiation is invisible)
 With the unit turned "on", laser radiation is emitted from the pickup lens.
 Avoid exposure to the laser beam, especially when performing adjustments.

Measuring Instruments and Special Tools

- * Test discs
 1. Playability test disc (SZZP1054C).
 2. Uneven test disc (SZZP1056C).
- * Musical program disc (ordinary).
- * Dual-beam oscilloscope with bandwidth of 30 MHz or better (with EXT. trigger and 1 : 1 probe).
- * Allen wrench (M2.0) (SZZP1101C).
- * Lock paint (RZZ0L01)

(1) MECHANICAL ADJUSTMENT

- When the traverse deck is replaced, making adjustments is not necessary. (The traverse deck ass'y is already adjusted.)
 - Make adjustments to improve playability if the traverse deck has not been replaced.
1. Connect the oscilloscope's CH. 1 probe across **TJ701** (RF) (+) and **TJ702** (V-Ref.) (-) on the servo P.C.B. (Refer to Fig. 5)
Oscilloscope setting: VOLT200mV.
 SWEEP.....0.5μs.
 Input couplingAC.
 2. Switch the player power **ON**, and play track **19** on the test disc (SZZ1056C).
 (Playing any other track will prevent the HEX screws from being accessed.)
 3. Leave the player in play mode.
 4. Alternately adjust the HEX screws with the 2.0mm allen wrench (SZZP1101C) until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched. (Refer to Fig. 6)
 5. After completing the adjustment, lock the HEX screws with lock paint (RZZ0L01).



* Most stretched eye pattern

(3) CHECK OF PLAY OPERATION AFTER ADJUSTMENT

* Checking skip Search

1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

* Checking Manual Search

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

* Checking Playability

1. Play the 0.7mm black dot and the 0.7mm wedge on the test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc (SZZP1056C) and verify that no sound skip or noise occurs.

ALIGNMENT POINT

• Please refer to Circuit Board and Wiring Connection Diagram for test point locations.

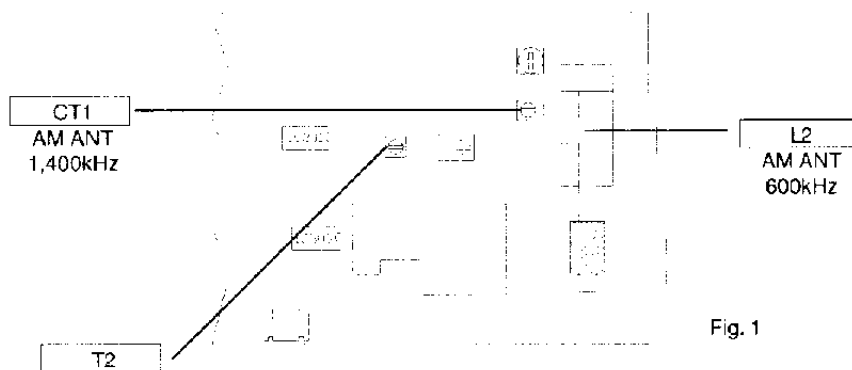


Fig. 1

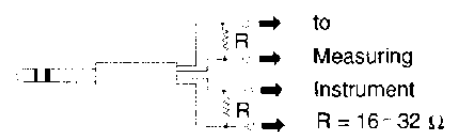


Fig. 2

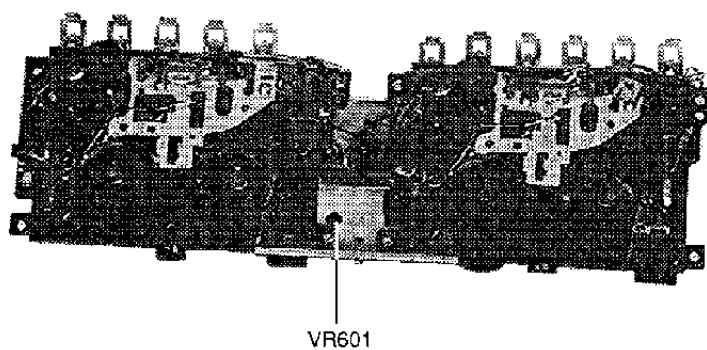


Fig. 3

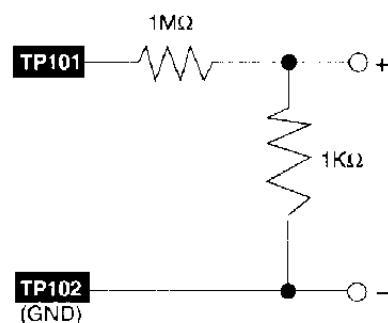


Fig. 4

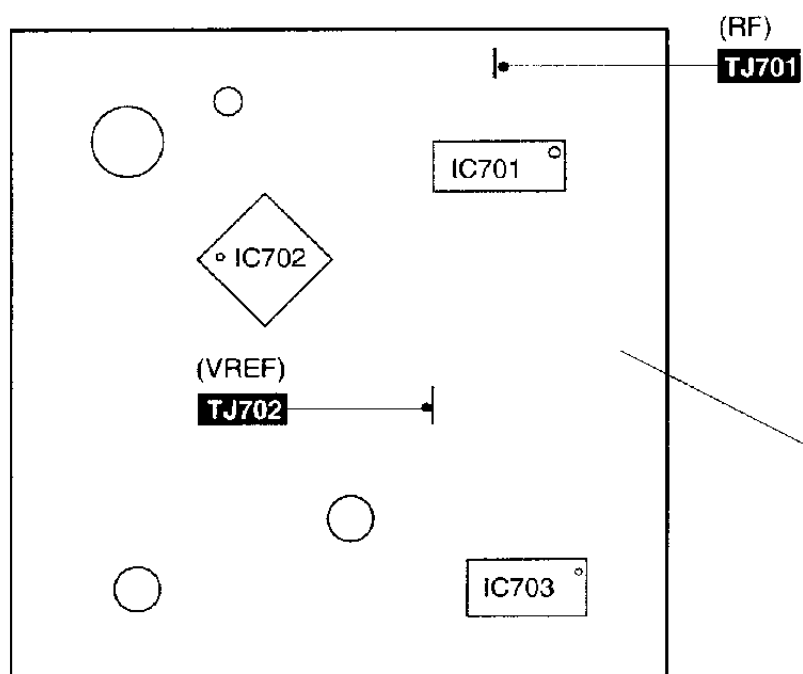


Fig. 5

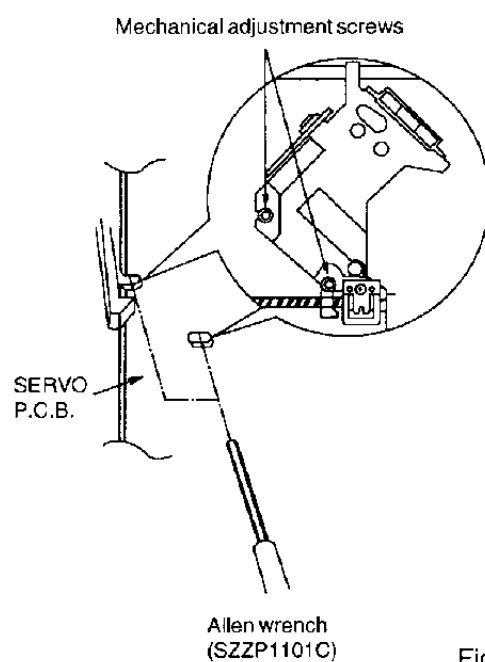


Fig. 6

Terminal Function of ICs

• IC702 (MN66271RA): Digital Servo processor/digital signal processor/digital filter/D/A converter

Pin No.	Mark	I/O Division	Function
1	BCLK	O	Serial bit clock terminal
2	LRCK	O	L/R discriminating signal
3	SRDATA	O	Serial data (Not used, open)
4	DV _{DD} 1	I	Power supply (digital circuit) terminal
5	DV _{SS} 1	—	GND (digital circuit) terminal
6	TX	O	Digital audio interface signal
7	MCLK	I	Command clock signal
8	MDATA	I	Command data signal
9	MLD	I	Command load signal ("L": LOAD)
10	SENSE	O	Sense signal (OFT, FESL, NACEND, NAJEND, POSAD, SFG)
11	/FLOCK	O	Optical servo condition (focus) ("L": lead-in)
12	/TLOCK	O	Optical servo condition (tracking) ("L": lead-in)
13	BLKCK	O	Sub-code block clock (f=75Hz)
14	SQCK	I	Sub-code Q register clock
15	SUBQ	O	Sub-code Q data
16	DMUTE	I	Muting input ("H": MUTE)
17	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
18	/RST	I	Reset signal ("L": reset)
19	SMCK	O	System clock (f=4.2336 MHz)
20	PMCK	O	Frequency division clock signal (Not used, open) ($f = \frac{1}{1.92} \times ck = 88.2 \text{ kHz}$)
21	TRV	O	Traverse servo control
22	TVD	O	Traverse drive signal
23	PC	O	Turntable motor drive signal ("L": ON)
24	ECM	O	Turntable motor drive signal (Forced mode)
25	ECS	O	Turntable motor drive signal (Servo error signal)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	I	D/A drive output (TVD, ECS, TRD, FOD, BAL, TBAL) normal voltage input terminal
30	FBAL	O	Focus balance adj. output
31	TBAL	O	Tracking balance adj. output

Pin No.	Mark	I/O Division	Function
32	FE	I	Focus error signal (analog input)
33	TE	I	Tracking error signal (analog input)
34	RFENV	I	RF envelope signal
35	VDET	I	Oscillation det. signal ("H": det.)
36	OFT	I	Off track signal ("H": Off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal ("L": detection)
39	BDO	I	Dropout detection signal ("H": dropout)
40	LDON	O	Laser power control ("H": ON)
41	TES	O	Tracking error shunt output ("H": dropout)
42	PLAY	O	Play signal ("H": play)
43	WVEL	O	Double velocity status signal ("H": double)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias terminal (Not used, open)
47	DSLIF	I/O	DSL loop filter terminal
48	PLLF	I/O	PLL loop filter terminal
49	VCOF	I/O	VCO loop filter terminal (Not used, open)
50	AV _{DD} 2	I	Power supply (analog circuit) terminal (2)
51	AV _{SS} 2	—	GND (analog circuit) terminal
52	EFM	O	EFM signal (Not used, open)
53	PCK	O	PLL extract clock (f = 4.3218 MHz)
54	PDO	O	Phase compared signal of EFM and PCK (Not used, open)
55	SUBC	O	Sub-code serial output data (Not used, open)
56	SBCK	I	Sub-code serial output clock (Not used, open)
57	V _{SS}	—	GND terminal
58	X1	I	Crystal oscillator terminal (f = 16.9344 MHz)
59	X2	O	Crystal oscillator terminal (f = 16.9344 MHz)
60	VDD	I	Power supply terminal
61	BYTCK	O	Byte clock signal
62	/CLDCK	O	Sub-code frame clock signal (f CLDCK = 7.35 kHz : Normal) (Not used, open)

Pin No.	Mark	I/O Division	Function
63	FCLK	O	Crystal frame clock (Not used, open)
64	IPFLAG	O	Interpolation flag terminal
65	FLAG	O	Flag terminal
66	CLVS	O	Turntable servo phase synchro signal ("H" : CLV, "L" : Rough servo)
67	CRC	O	Sub-code CRC check terminal ("H" : OK, "L" : NG)
68	DEMPH	O	De-emphasis ON signal ("H" : ON)
69	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
70	/RST2	I	Reset terminal after MASH [®] circuit
71	/TEST	I	Test terminal (Normal : "H")

Pin No.	Mark	I/O Division	Function
72	AV _{DD} 1	I	Power supply (analog circuit) terminal (1)
73	OUTL	O	Power supply (analog circuit) terminal (1)
74	AV _{SS} 1	—	GND (analog circuit) terminal (1)
75	OUTR	O	Rch audio signal
76	RSEL	I	Frequency control terminal of crystal oscillator
77	CSEL	I	Polarity direction control terminal of RF signal
78	PSEL	I	Test terminal (Normal : "L")
79	MSEL	I	"SUBQ" terminal mode select ("H" : Q code buffer)
80	SSEL	I	"SMCK" terminal frequency select ("L" : SMCK = 4.2336 MHz)

• IC701 (AN8802SCE1V) : Servo amp

Pin No.	Mark	I/O Division	Function
1	PDAD	I	Photo detection Bch input without delay
2	PDA	I	Photo detection Ach input without delay
3	LPD	I	Laser PD signal
4	LD	O	Laser power auto control output
5	AMPI	I	RF amp terminal
6	V _{CC}	I	Power supply terminal
7	AMPO	O	RF amp signal, not used.
8	CAGC	I	AGC detection capacitor input
9	ARF	O	RF signal
10	CENV	I	RF detect capacitor connection terminal
11	CEA	I	HPF-AMP capacitor connection terminal
12	GND	—	GND terminal
13	LDON	I	LD APC ON/OFF ("H" : ON, "L" : OFF)
14	TES	I	Tracking error shunt input ("H" : shunt)
15	PLAY	I	Play signal ("H" : ON, "L" : OFF)
16	WVEL	I	Double velocity ("H" : L double, "L" : single)

Pin No.	Mark	I/O Division	Function
17	BDO	O	Dropout detection control
18	/RFDET	O	RF det. signal ("L" : det.)
19	CROSS	O	Tracking error zero cross output
20	OFTR	O	Off track detection ("H" : det.)
21	VDET	O	Oscillation det. signal ("H" : det.)
22	ENV	O	Envelope output terminal
23	TEBPF	I	Oscillation detect input terminal
24	TE	O	Tracking error signal
25	FE	O	Focusing error signal
26	PTO	O	Potential amp output, not used.
27	PTI	I	Potential amp input, not used.
28	TBAL	I	Tracking balance adj. input
29	FBAL	I	Focus balance adj. input
30	VREF	O	Reference voltage output
31	PDB	I	Photo detection Ach input with delay
32	PDBD	I	Photo detection Bch input with delay

• IC801 (M38223M4203) : System Microprocessor

Pin No.	Mark	I/O Division	Function
1	VL2	I	LCD bias reference voltage input V2
2	VL1	I	LCD bias reference voltage input V1
3	PCNT	O	Power supply circuit control signal output
4	BATT	I	Battery state signal input
5	REGION	—	GND
6	KEY3	I	Key source input
7	KEY2		
8	KEY1		
9	TAPE L	O	Tape detect signal output
10	CD H	O	CD detect signal output
11	MTRSW	I	Motor switch
12	MUTE B	O	Muting control signal output
13	MUTE A	O	AF muting control signal output
14	REC H	O	REC detect signal output
15	RSTBY	I	Remote control sensor power control signal input
16	STEREO	I	PLL stereo signal input
17	RMT	I	Remote control pulse signal input
18	BLKCK	I	CD subcode block clock input
19	TUNED	I	PLL tuner signal input
20	SQCK	O	CD subcode clock output
21	MONO	O	PLL mono signal output
22	SUBQ	I	CD subcode data input
23	CD CLOSE	I	CD cover close detection switch signal input
24	PWR	I	Main switch control signal input
25	REGION 2	—	GND
26	RESET SW	I	Reset switch (S701) signal input
27	RST	I	System reset signal input
28	XC IN	I	Crystal oscillator input (32.768kHz)
29	XC OUT	O	Crystal oscillator output (32.768kHz)
30	XIN	I	Clock input (4.19MHz)

Pin No.	Mark	I/O Division	Function
31	XOUT	O	Clock input (4.19MHz)
32	VSS	—	GND
33	MBP1	O	Beatproof control signal output
34	MBP2	O	Beatproof control signal output
35	SENSE	I	CD sense signal input
36	FLOCK	I	CD focus signal input
37	TLOCK	I	CD tracking signal input
38	STATUS	I	CD status signal input
39	CD RST	I	CD reset signal input
40	DMUTE	O	CD muting control signal output
41	MCLK	O	CD clock control signal output
42	MDATA	O	CD data control signal output
43	MLD	O	CD loading control signal output
44	VOL DA	O	PMW data signal output for electric volume circuit (IC303)
45	VOL CK	O	PMW clock signal output for electric volume circuit (IC303)
46	PLL CL	O	PLL tuner clock signal output
47	PLL CE	O	PLL tuner strobe signal output
48	PLL DA	O	PLL tuner data signal output
49	SEG21	O	LCD segment signal output
50	SEG0		
71	—	—	Not used, open.
72	—	—	Not used, open.
73	VDD	I	Power supply (+5V)
74	VREF	I	A/D converter reference voltage
75	AVSS	—	GND
76	COM3	O	LCD common signal output
77	COM1		
79	COM0	O	LCD common signal output
80	VL3		

• IC703 (AN8389SE1) : Focus coil / tracking coil / traverse motor / spindle motor drive

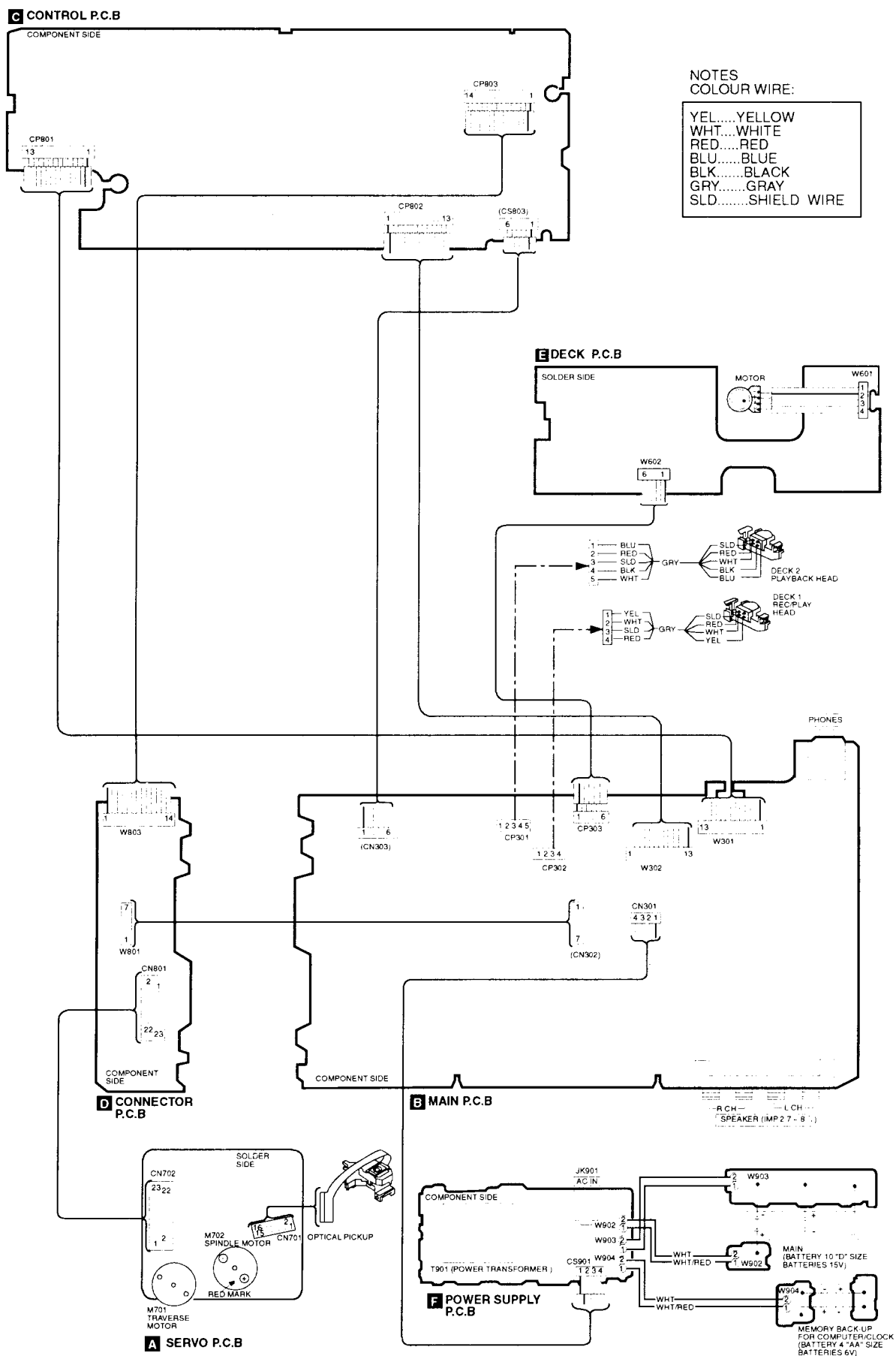
Pin No.	Mark	I/O Division	Function
1	V _{cc}	I	Power supply terminal
2	VREF	I	Reference voltage input
3	IN4	I	Motor driver (4) input
4	IN3	I	Motor driver (3) input
5	GND	—	GND terminal
6	NC	—	No connection
7	NRESET	I	Reset terminal
8	GND	—	GND terminal
9	IN2	I	Motor driver (2) input
10	PC2	I	PC2 (power cut) input
11	IN1	I	Motor driver (1) input
12	PC1	I	PC1 (power cut) input (Not used, open)

Pin No.	Mark	I/O Division	Function
13	PV _{cc} 1	I	Driver power supply (1)
14	PGND1	—	Driver GND terminal (1)
15	D1 -	O	Motor driver (1) output terminal (-)
16	D1 +	O	Motor driver (1) output terminal (+)
17	D2 -	O	Motor driver (2) output terminal (-)
18	D2 +	O	Motor driver (2) output terminal (+)
19	D3 -	O	Motor driver (3) output terminal (-)
20	D3 +	O	Motor driver (3) output terminal (+)
21	D4 -	O	Motor driver (4) output terminal (-)
22	D4 +	O	Motor driver (4) output terminal (+)
23	PGND2	—	Driver GND terminal (2)
24	PVCC2	I	Driver power supply (2)

■ Terminal Guide of ICs, Transistors and Diodes

AN7332STAE1	AN7135	BA3936	M62414SP	LA1831MSATEL (24P) LM7001M-TE-L (20P) AN8802SCE1V (32P)	TA7358FMATEL
M38223M4203 (80P) MN66271RA (80P)	BA7755A	AN7317	S81250PG-T	TC4052BP	2SA1175FTA BA1A4MTA BN1A4MTA
2SC2001KTA 2SC1684STA 2SC1684QTA 2SC1684RTA	2SA1680TPE6	2SC1740SRTA RVTDTCT114EST	2SC2785FTA BN1L3NTA 2SC2787F1TA 2SC2787LTA	2SK301QTA	2SB709S
2SJ40CDTA	MTZJ5R1CTA RVDMTZ16BTA RVDMTZ7R5CTA RVDMTZ6R8BTA	RVD1SS133TA MA700TA	KV1360NT KV1580NT	1N5402BM21 SVDS3V20LF	

Wiring Connection Diagram



Printed Circuit Board

1

2

3

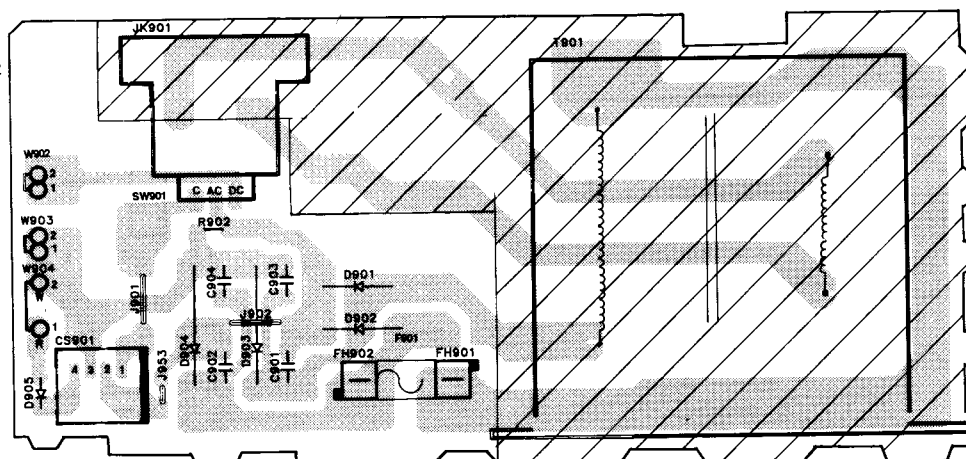
4

5

AC IN ~
120V 60Hz

A

B

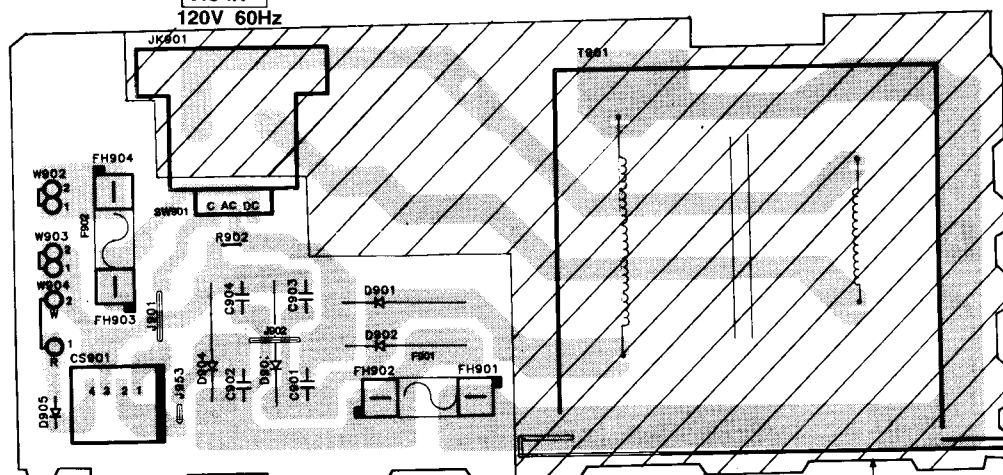


F POWER SUPPLY P.C.B (REPX0085D) . . . P

AC IN ~
120V 60Hz

C

D

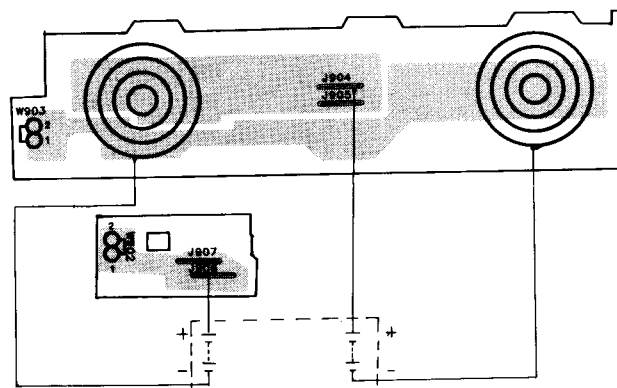
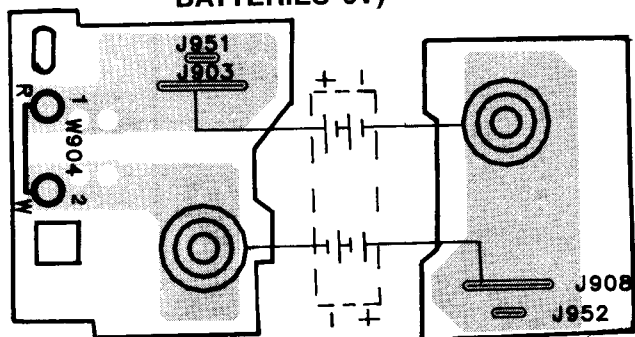


F POWER SUPPLY P.C.B (REPX0085E) . . . PC

BACK-UP
FOR COMPUTER / CLOCK
(BATTERY 4 "AA" SIZE
BATTERIES 6V)

E

F

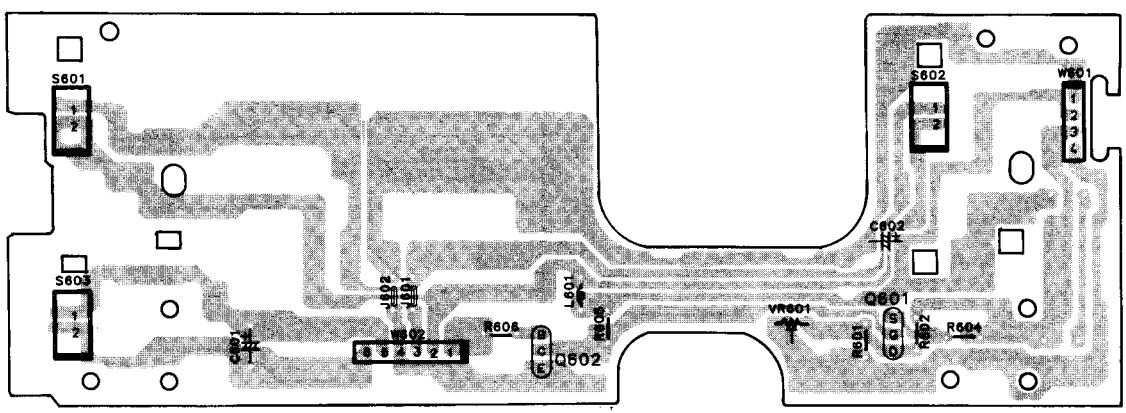


BATTERY 10 "D" SIZE
BATTERIES 15V

1 2 3 4 5

A

B



E DECK P.C.B (REPX0062)

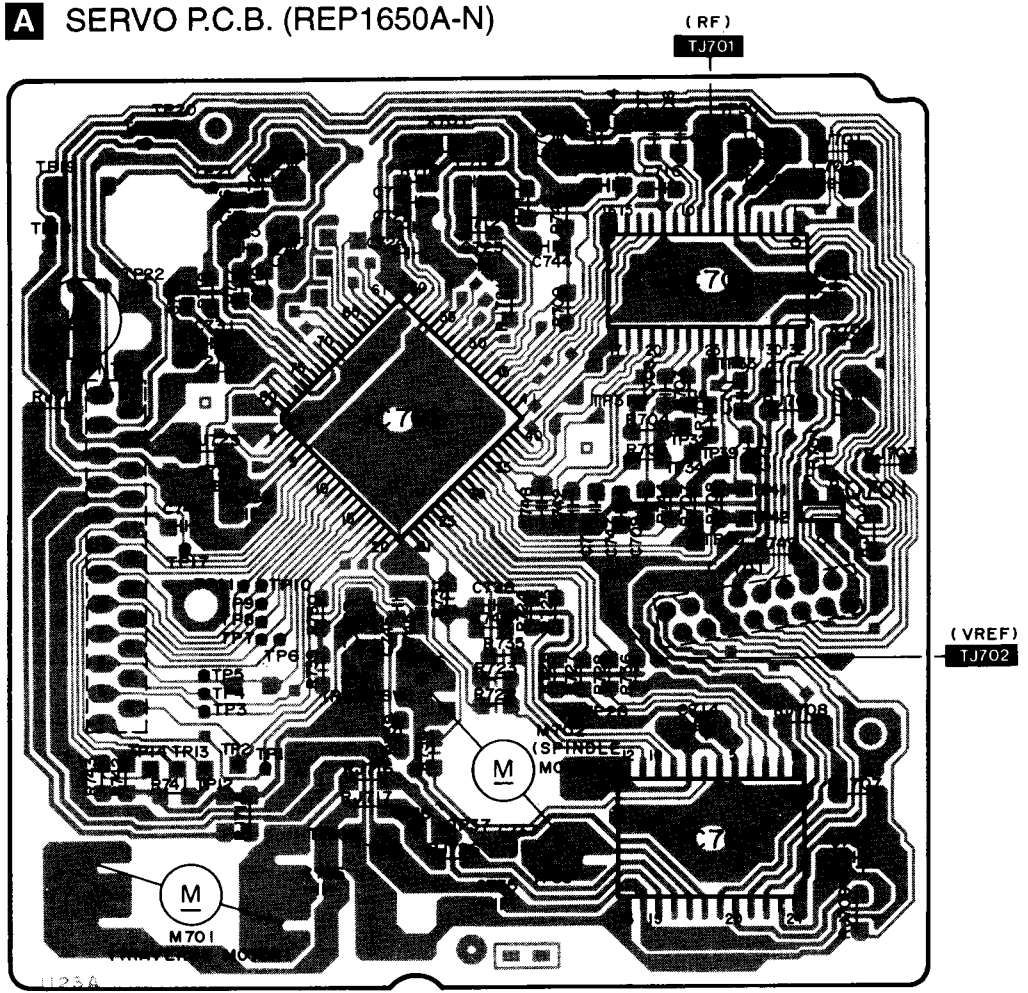
C

A SERVO P.C.B. (REP1650A-N)

D

E

F



1

2

3

4

5

A

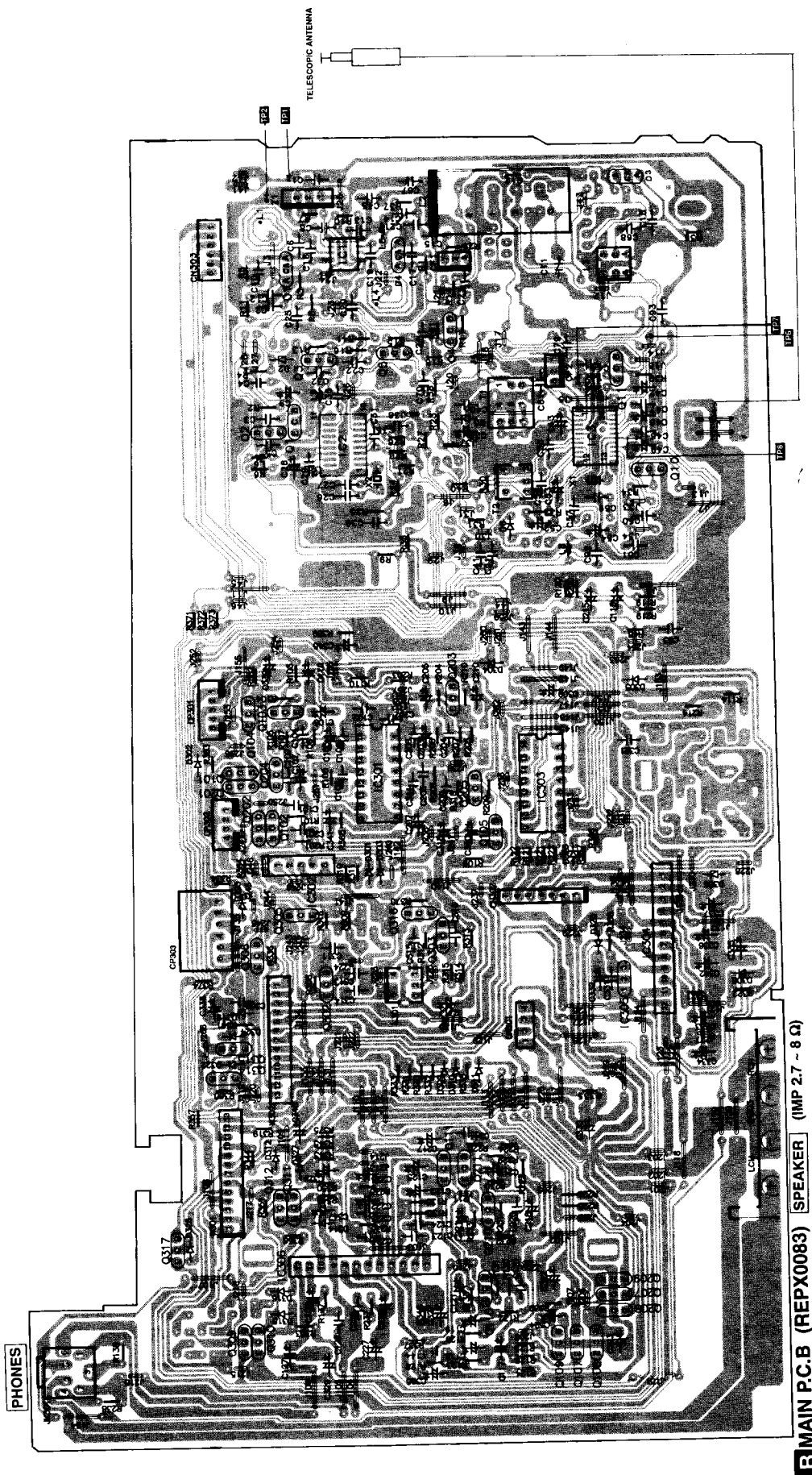
B

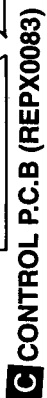
C

D

E

F





Schematic Diagrams

(All schematic diagrams may be modified at any time with the development of new technology)

Note :

< for Control circuit > (Page 26 - 27)

• S821	:	Edit HIGH/NORMAL speed switch
• SW801	:	Power switch
• SW802	:	Easy CD record switch
• SW803	:	Memory switch
• SW804	:	Reverse search switch
• SW805	:	Forward search switch
• SW806	:	Repeat switch
• SW807	:	Stop/clear switch
• SW808	:	Play/pause switch
• SW809	:	Volume down switch
• SW810	:	Volume up switch
• SW811	:	Preset down switch
• SW812	:	Preset up switch

• SW813	:	Tuning down switch
• SW814	:	Tuning up switch
• SW815	:	Tape switch
• SW816	:	Tuner/band switch
• SW817	:	CD switch
• SW818	:	XBS switch
• SW819	:	Tuning memory switch
• SW820	:	FM mode/B.P. switch
• VR301-1 ~ VR301-2	:	Equaliser control (330Hz)
• VR302-1 ~ VR302-2	:	Equaliser control (1kHz)
• VR303-1 ~ VR303-2	:	Equaliser control (3.3kHz)
• VR304-1 ~ VR304-2	:	Equaliser control (10kHz)

< for Servo circuit > (Page 28 - 29)

• S701	:	Reset switch
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< for Main circuit & Power circuit > (Page 30 - 34)

• S901	:	AC IN switch (JK901)
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< for Deck circuit and Connector circuit > (Page 35)

• S601	:	Deck 1 play switch.
• S602	:	Deck 2 playswitch.
• S603	:	Rec switch.
• SW851	:	CD open/close switch.
• VR601	:	Tape speed control.

< General >

• Battery Current

Vol. min	72.0mA (AM)	Vol. max	100.1mA (AM)
	72.0mA (FM)		111.1mA (FM)
	79.3mA (Tape)		148.0mA (Tape)
	100.7mA (CD)		180.0mA (CD)
Recording	163.3mA		

Measurement condition:	
Radio	: FM 60 dB, 30%mod
	AM 74 dB/m, 30%mod
Tape	: 315 Hz, 0dB
CD	: 400Hz, -10dB

CAUTION : FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE 4 A 125V FUSE.



RISK OF FIRE-REPLACE FUSE AS MARKED.

FUSE CAUTION



These symbols located near the fuse indicates that the fuse used is a fast operating type. For continued protection against fire hazard, replace with the same type fuse. For fuse rating, refer to the marking adjacent to the symbol.



Ce symbole indique que le fusible utilisé est à rapide. Pour une protection permanente, n'utiliser que des fusibles de même type. Ce dernier est indiqué là où le présent symbole est apposé.

• Signal line

	: +B line		: Playback signal line		: AM signal line
	: FM OSC signal line		: Record signal line		: AM OSC signal line
	: FM/AM signal line		: CD signal line		
	: Main signal line		: FM signal line		

• The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.

Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

No mark : Playback << >>.....Tape Recording (()) : CD () AM < > FM

• Importance safety notice:

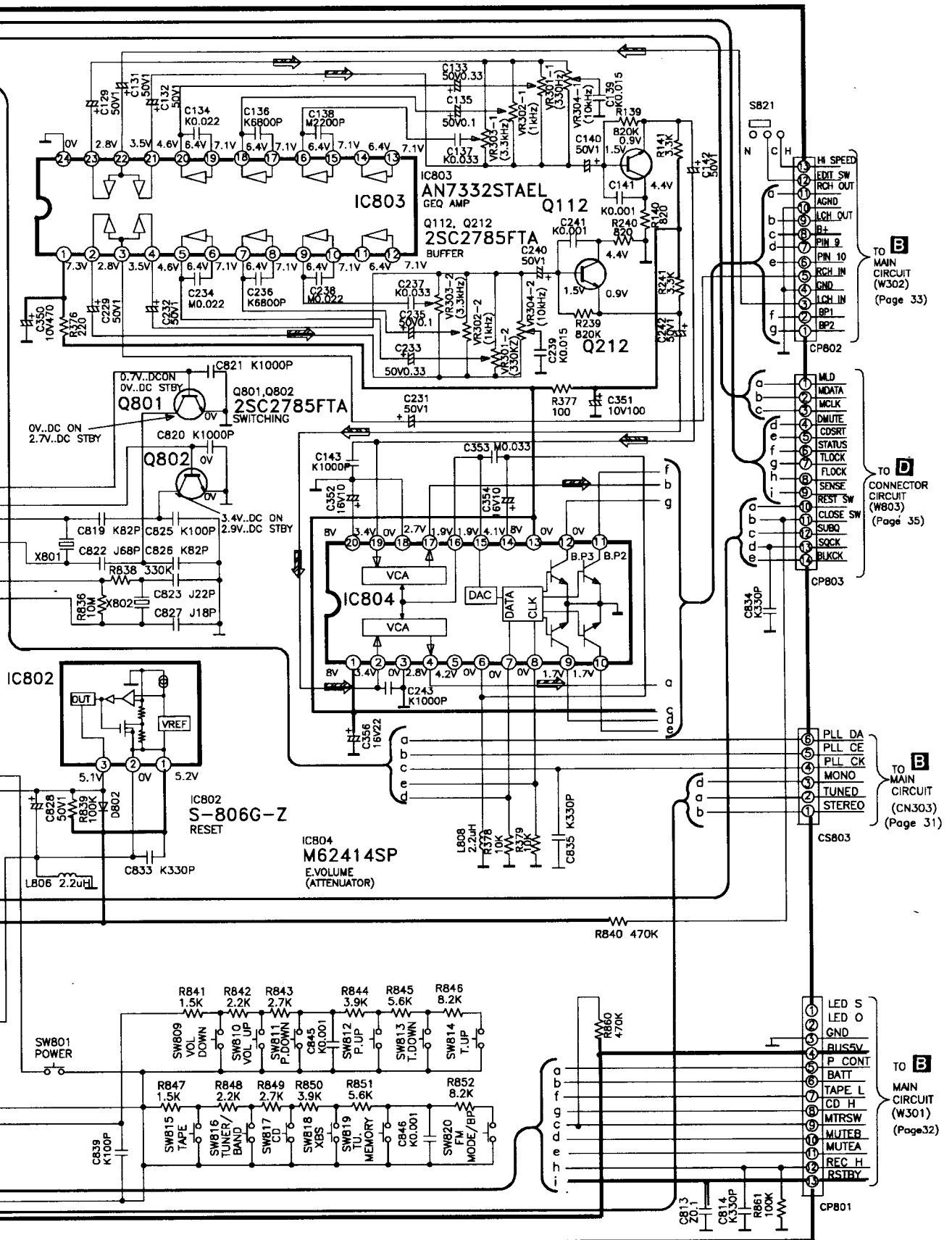
Components identified by mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

Caution !

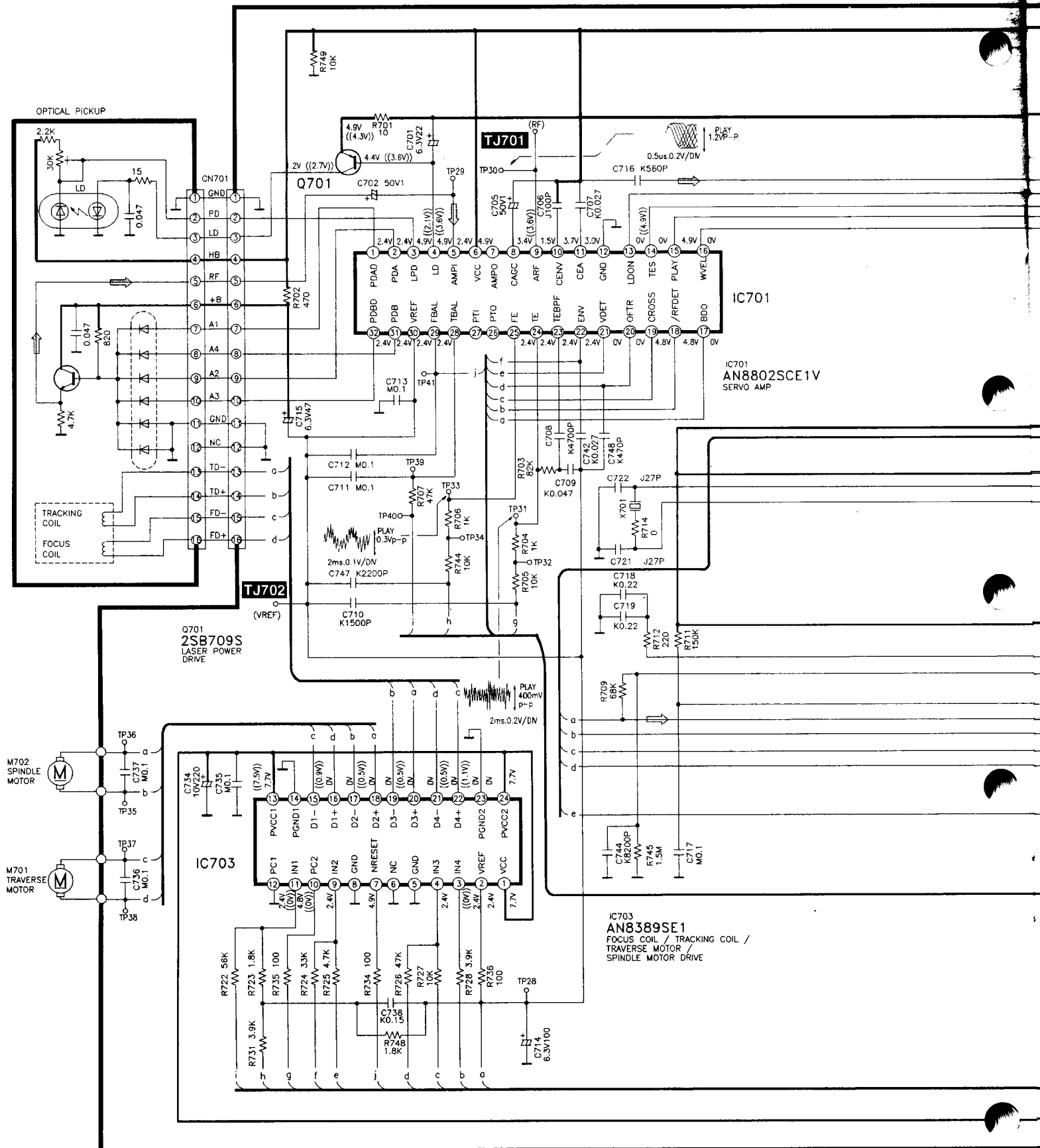
IC, LSI and VLSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
• Cover the parts boxes made of plastics with aluminium foil.
• Ground the soldering iron.

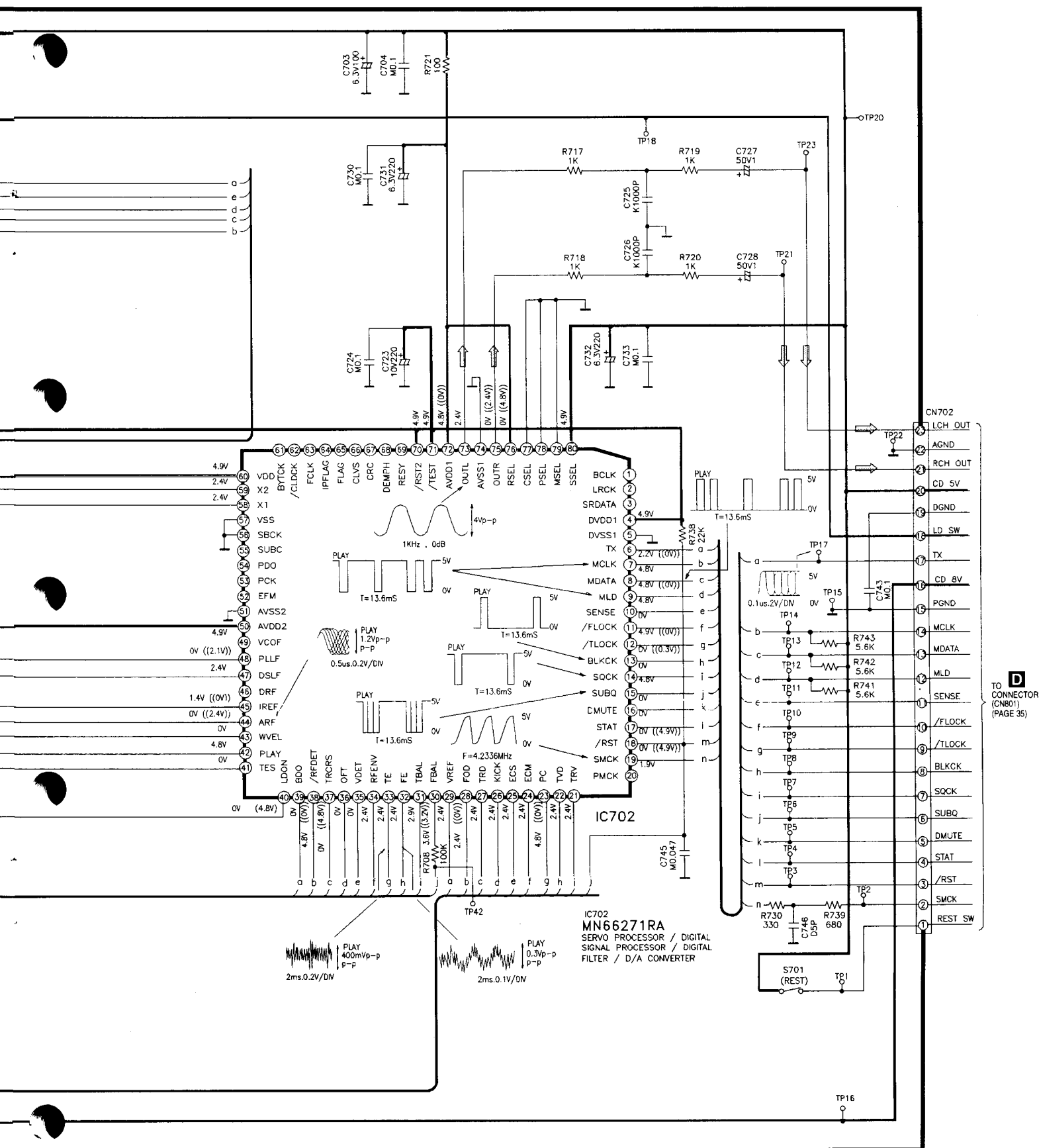
• Put a conductive mat on the work table.
• Do not touch the pins of IC, LSI or VLSI with fingers directly.



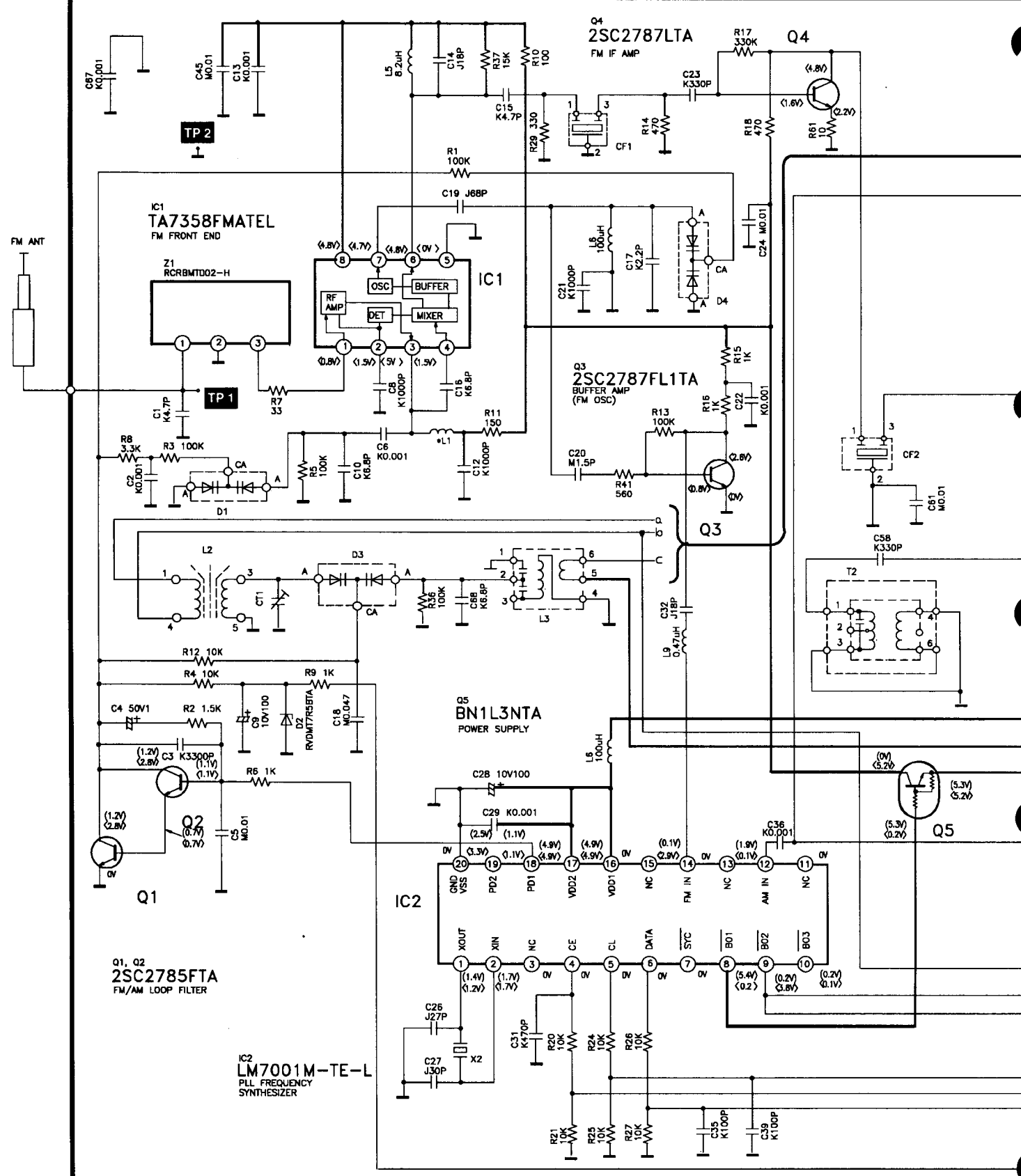


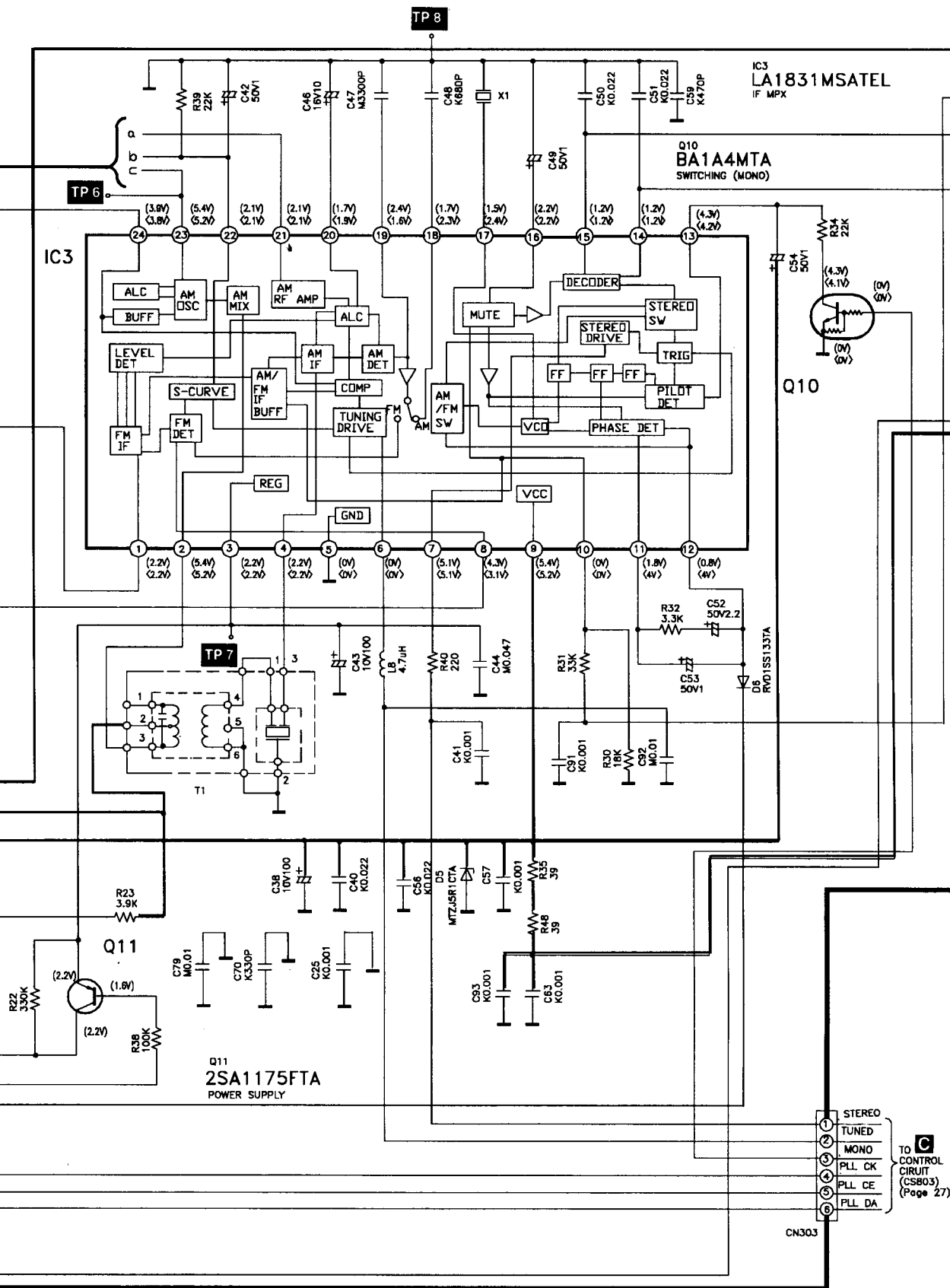
A SERVO CIRCUIT



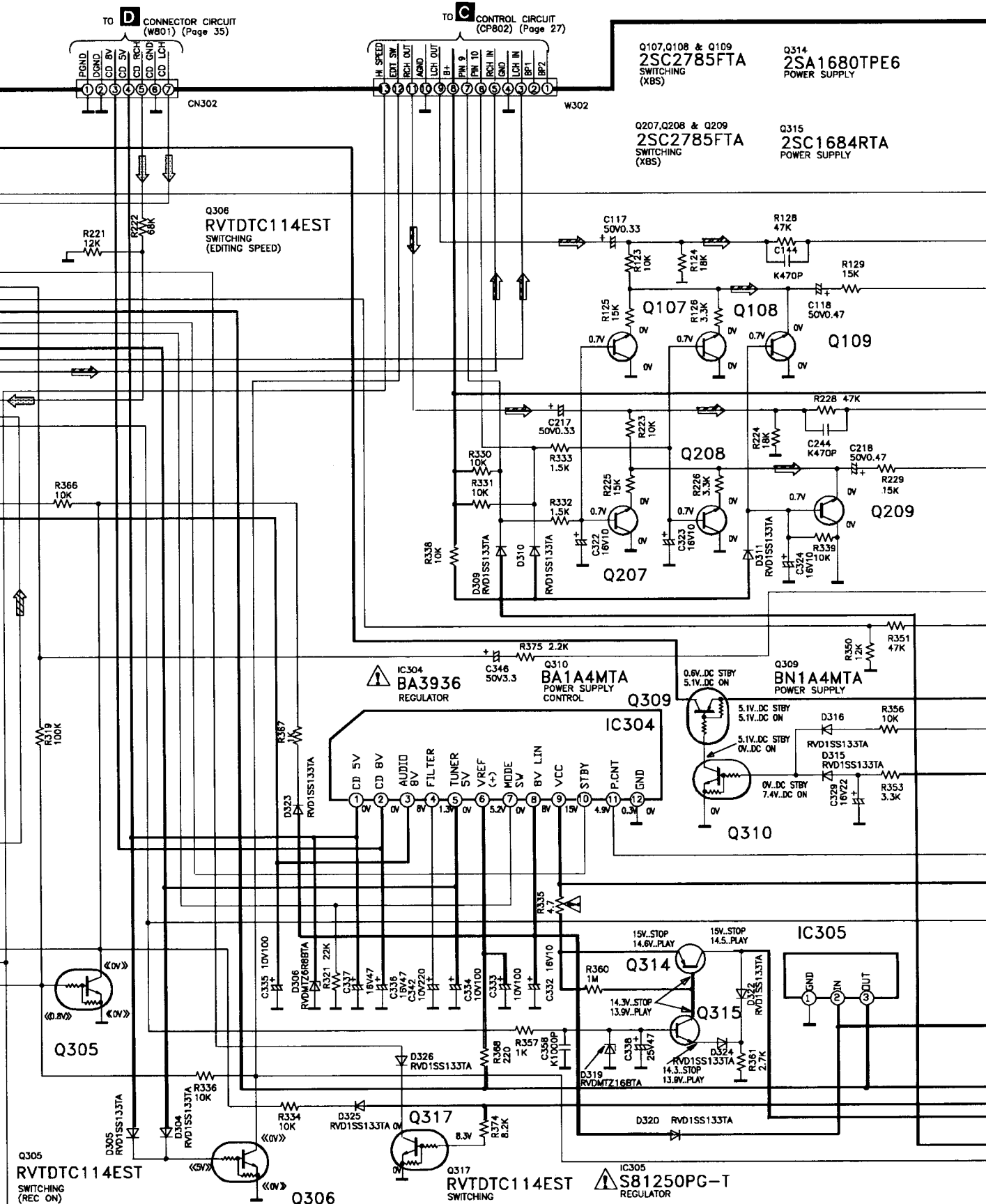


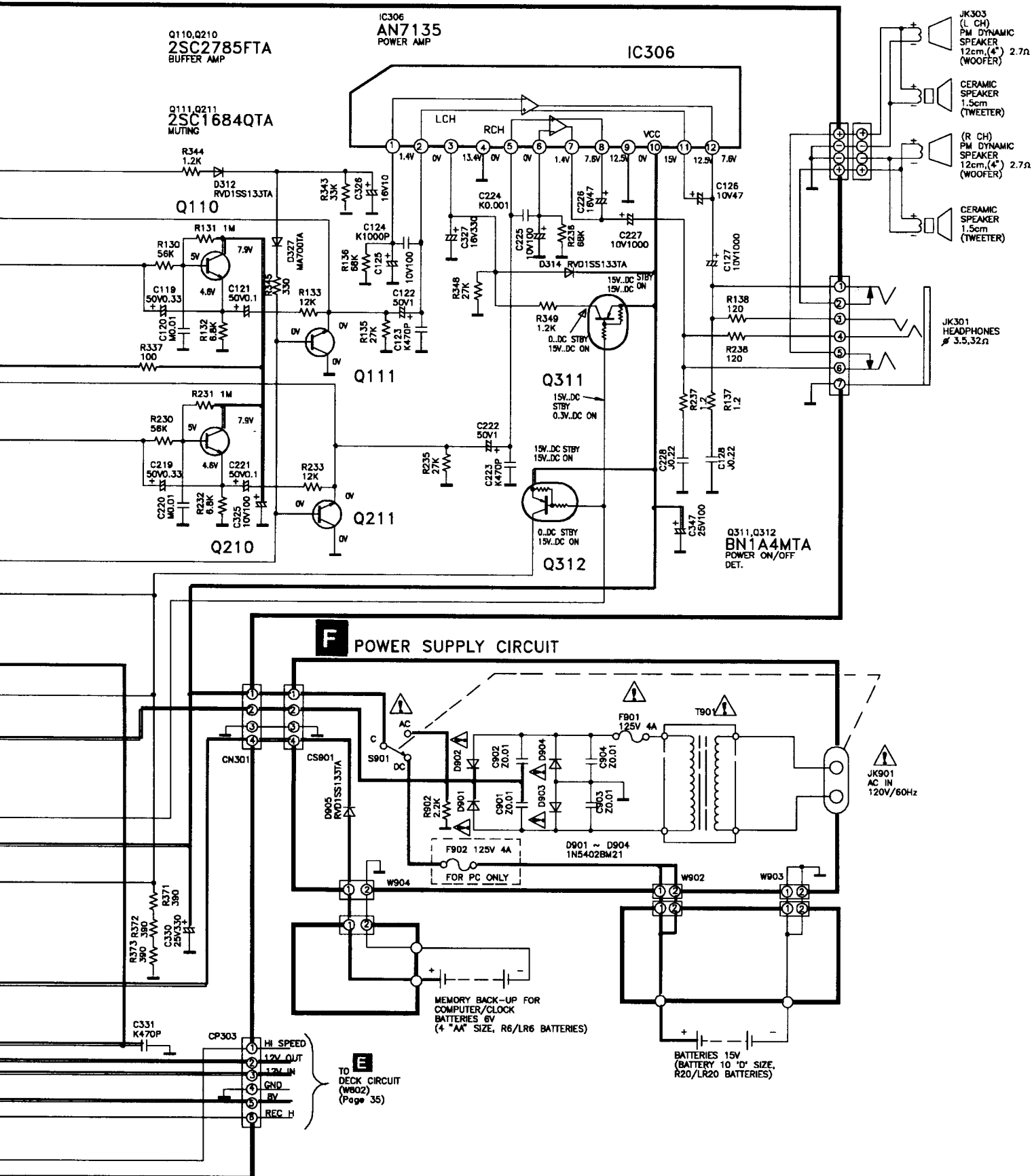
B MAIN CIRCUIT











Mechanism Parts Location (RAA0906)

1

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DECK 1 (RECORDING & PLAYBACK)

A

B

C

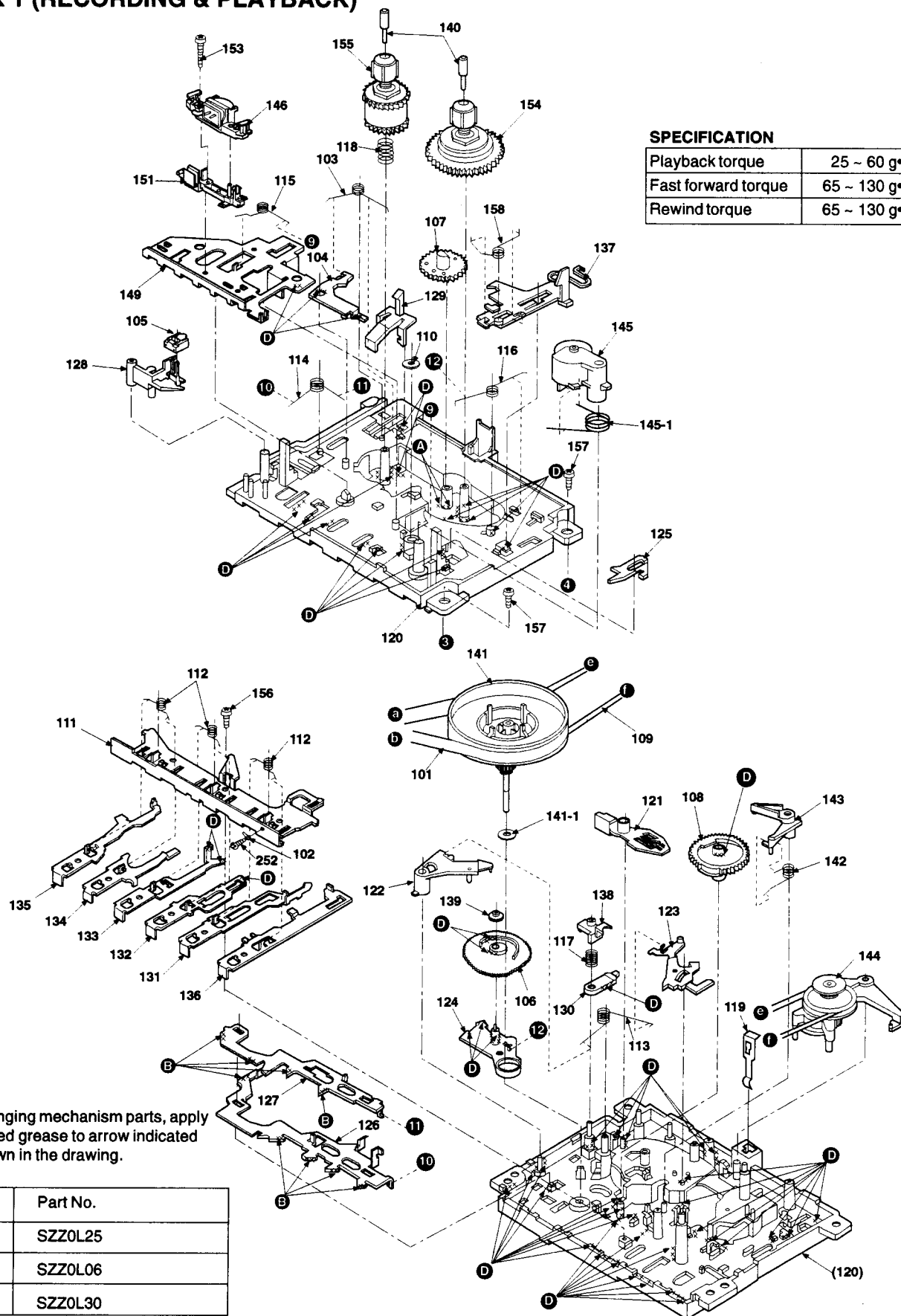
D

E

F

SPECIFICATION

Playback torque	25 ~ 60 g·cm
Fast forward torque	65 ~ 130 g·cm
Rewind torque	65 ~ 130 g·cm



Note:

When changing mechanism parts, apply the specified grease to arrow indicated areas shown in the drawing.

Ref No.	Part No.
A	SZZ0L25
B	SZZ0L06
D	SZZ0L30

1

2

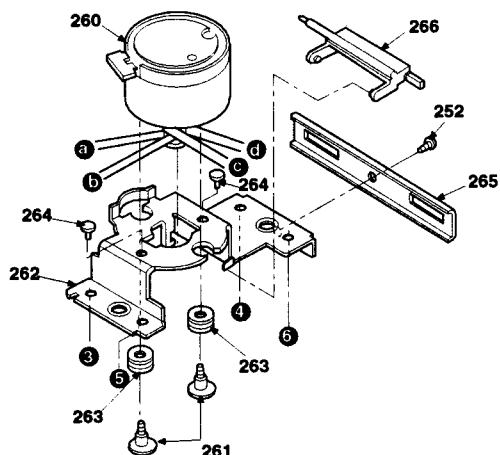
3

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DECK 2 (PLAYBACK)

A



B

C

SPECIFICATION

Playback torque	25 ~ 60 g·cm
Fast forward torque	65 ~ 130 g·cm
Rewind torque	65 ~ 130 g·cm

D

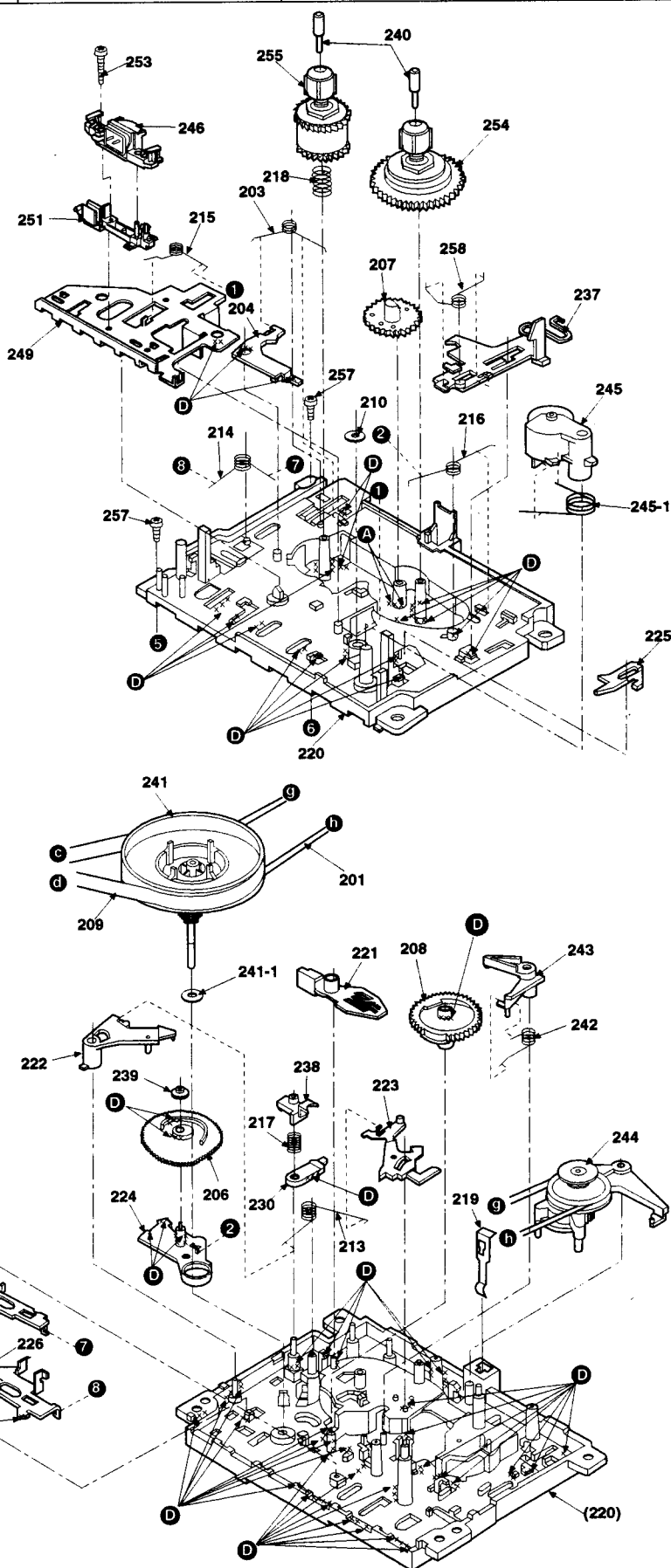
E

Note:

When changing mechanism parts, apply the specified grease to arrow indicated areas shown in the drawing.

F

Ref No.	Part No.
A	SZZ0L25
B	SZZ0L06
D	SZZ0L30



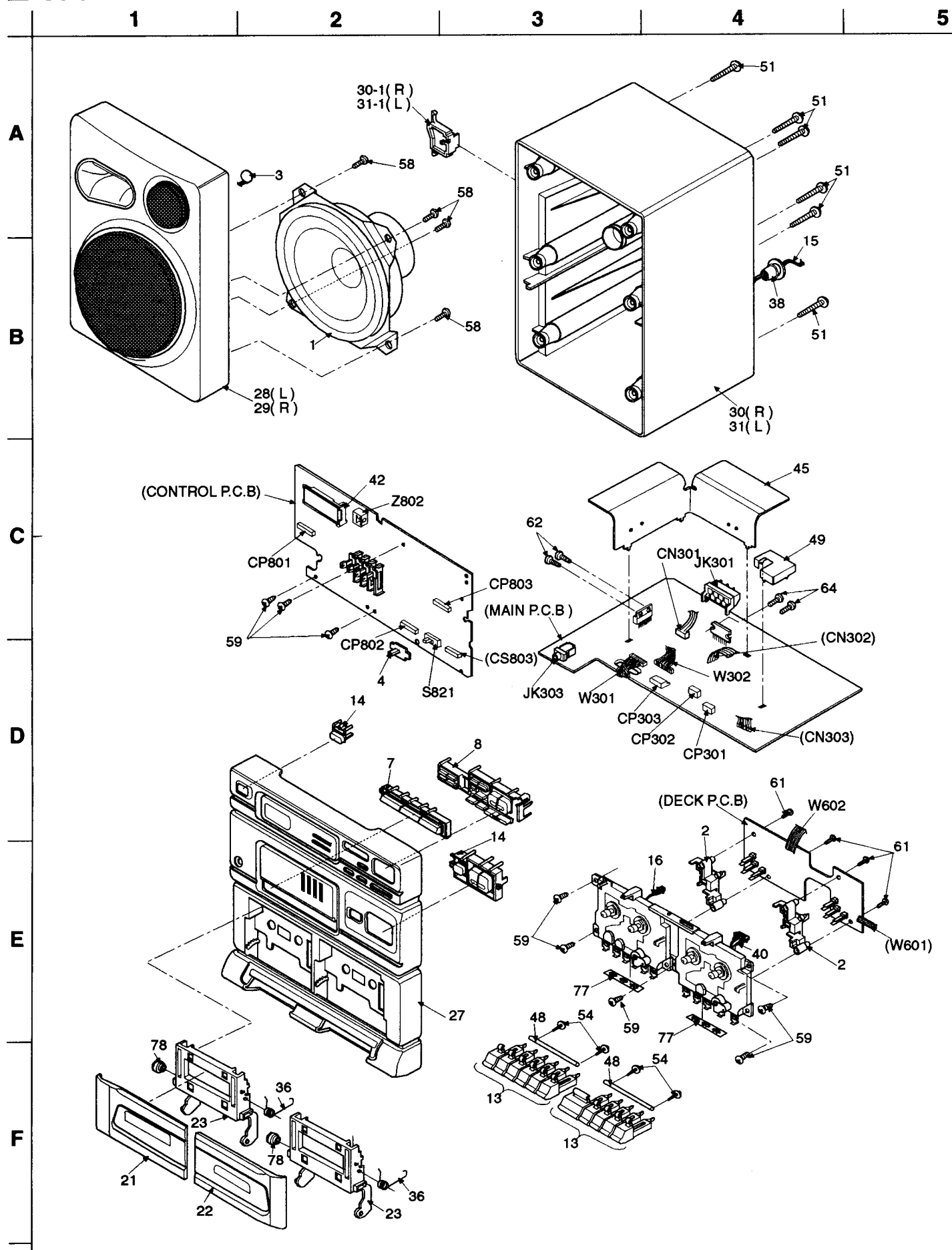
Mechanism Parts List

Note : [M] mark in Remarks column indicates parts that are supplied by MESA.

Ref. No	Part No.	Part Name & Description	Remarks	Ref. No	Part No.	Part Name & Description	Remarks
		CASSETTE DECK 1		142	RMB0044	TRIGGER SPRING	[M]
				143	RML0075	TRIGGER LEVER	[M]
				144	RXP0014	RF CLUTCH ASS'Y	[M]
101	RDV0007	MAIN BELT	[M]	145	RXP0015	PINCH ROLLER ASS'Y	[M]
102	RJR0033	EARTH LUG	[M]	145-1	RMB0049	PINCH ARM SPRING	[M]
103	RMB0109-1	BRAKE SPRING	[M]	146	RBR4CY016-M	R/P HEAD	[M]
104	RML0116	BRAKE	[M]	149	RMA0696	HEAD BASE ASS'Y	[M]
105	RBR2CY009	E HEAD	[M]	151	RMQ0384	HEAD BASE	[M]
106	RDG0057	IDLER GEAR	[M]	152	XTN2+4F	EARTH LUG SCREW	
107	RDG0059	FF RELAY GEAR	[M]	153	XTN2+12F	SCREW	[M]
108	RDK0005	CAM GEAR	[M]	154	RXR0004	TAKE UP REEL ASS'Y	[M]
109	RDV0006-1	RF BELT	[M]	155	RXR0005	SUPPLY REEL ASS'Y	[M]
110	RHW16009	CAPSTAN WASHER	[M]	156	XTN2+6J	SCREW	
111	RMA0109	BACK PLATE	[M]	157	XTW26+6L	SCREW	
112	RMB0043-1	ROD OPERATION SPRING	[M]	158	RME0098-2	SPRING	[M]
113	RMB0045	ASSPRING	[M]				
114	RMB0046-1	LOCK PLATE SPRING	[M]				
115	RMB0047	HEAD PANEL SPRING	[M]				
116	RMB0048	IDLER LEVER SPRING	[M]				
117	RMB0053	PAUSE LEVER SPRING	[M]				
118	RMB0125	BACK TENSION SPRING	[M]				
119	RMC0061	SPRING	[M]				
120	RFKRCT090P-K	CHASSIS ASS'Y	[M]				
121	RML0071	SWAY LEVER	[M]				
122	RML0072	AS RELEASE LEVER	[M]				
123	RML0073-1	AS PROTECT LEVER	[M]				
124	RML0074	IDLER LEVER	[M]				
125	RML0076	EJECT SELECTION LEVE	[M]				
126	RML0077	LOCK PLATE	[M]				
127	RML0078	FUNCTION PLATE	[M]				
128	RML0080	E HEAD ARM	[M]				
129	RML0081-1	LEVER	[M]				
130	RML0082	PAUSE LEVER	[M]				
131	RMM0023	PLAY ROD	[M]				
132	RMM0024	REW ROD	[M]				
133	RMM0025	FF ROD	[M]				
134	RMM0026	STOP ROD	[M]				
135	RMM0027	PAUSE ROD	[M]				
136	RMM0028	REC ROD	[M]				
137	RMM0029	EJECT SLIDE LEVER	[M]				
138	RMR0211	PAUSE BUSH	[M]				
139	RMR0227	IDLER GEAR BUSH	[M]				
140	RMS0055	REEL SHAFT	[M]				
141	RXF0012	FLYWHEEL ASS'Y	[M]				
141-1	RHW21008	WASHER	[M]				

Ref. No	Part No.	Part Name & Description	Remarks	Ref. No	Part No.	Part Name & Description	Remarks
		CASSETTE DECK 2		252	XTN2+4F	EARTH LUG SCREW	
				253	XTN2+12F	SCREW	[M]
201	RDV0009	MAIN BELT B	[M]	254	RXR0004	TAKE UP REEL ASS'Y	[M]
202	RJR0033	EARTH LUG	[M]	255	RXR0005	SUPPLY REEL ASS'Y	[M]
203	RMB0109-1	BRAKE SPRING	[M]	256	XTN2+6J	SCREW	
204	RML0116	BRAKE	[M]	257	XTW26+6L	SCREW	
206	RDG0057	IDLER GEAR	[M]	258	RME0098-2	SPRING	[M]
207	RDG0059	FF RELAY GEAR	[M]	260	RFKPXD610PK	DC MOTOR ASS'Y	[M]
208	RDK0005	CAM GEAR	[M]	261	RHD26002	SCREW	
209	RDV0006-1	RF BELT	[M]	262	RMA0122	ANGLE	[M]
210	RHW16009	CAPSTAN WASHER	[M]	263	RMG0102	RUBBER SPACE	[M]
211	RMA0109	BACK PLATE	[M]	264	RMG0131	RUBBER SPACE	[M]
212	RMB0043-1	ROD OPERATION SPRING	[M]	265	RMA0121	ANGLE	[M]
213	RMB0045	AS SPRING	[M]	266	RML0085	LEVER	[M]
214	RMB0046-1	LOCK PLATE SPRING	[M]				
215	RMB0047	HEAD PANEL SPRING	[M]				
216	RMB0048	IDLER LEVER SPRING	[M]				
217	RMB0053	PAUSE LEVER SPRING	[M]				
218	RMB0125	BACK TENSION SPRING	[M]				
219	RMC0061	SPRING	[M]				
220	RFKRCT090P-K	CHASSIS ASS'Y	[M]				
221	RML0071	SWAY LEVER	[M]				
222	RML0072	AS RELEASE LEVER	[M]				
223	RML0073-1	AS PROTECT LEVER	[M]				
224	RML0074	IDLER LEVER	[M]				
225	RML0076	EJECT SELECTION LEVE	[M]				
226	RML0077	LOCK PLATE	[M]				
227	RML0078	FUNCTION PLATE	[M]				
230	RML0082	PAUSE LEVER	[M]				
231	RMM0023	PLAY ROD	[M]				
232	RMM0024	REW ROD	[M]				
233	RMM0025	FF ROD	[M]				
234	RMM0026	STOP ROD	[M]				
235	RMM0027	PAUSE ROD	[M]				
237	RMM0029	EJECT SLIDE LEVER	[M]				
238	RMR0211	PAUSE BUSH	[M]				
239	RMR0227	IDLER GEAR BUSH	[M]				
240	RMS0055	REEL SHAFT	[M]				
241	RXP0012	FLYWHEEL ASS'Y	[M]				
241-1	RHW21008	WASHER	[M]				
242	RMB0044	TRIGGER SPRING	[M]				
243	RML0075	TRIGGER LEVER	[M]				
244	RXP0014	RF CLUTCH ASSY	[M]				
245	RXP0015	PINCH ROLLER ASSY	[M]				
245-1	RMB0049	PINCH ARM SPRING	[M]				
246	RBR4CY016-M	R/P HEAD	[M]				
249	RMA0696	HEAD BASE ASS'Y	[M]				
251	RMQ0383	HEAD BASE	[M]				

■ Cabinet Parts Location



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A

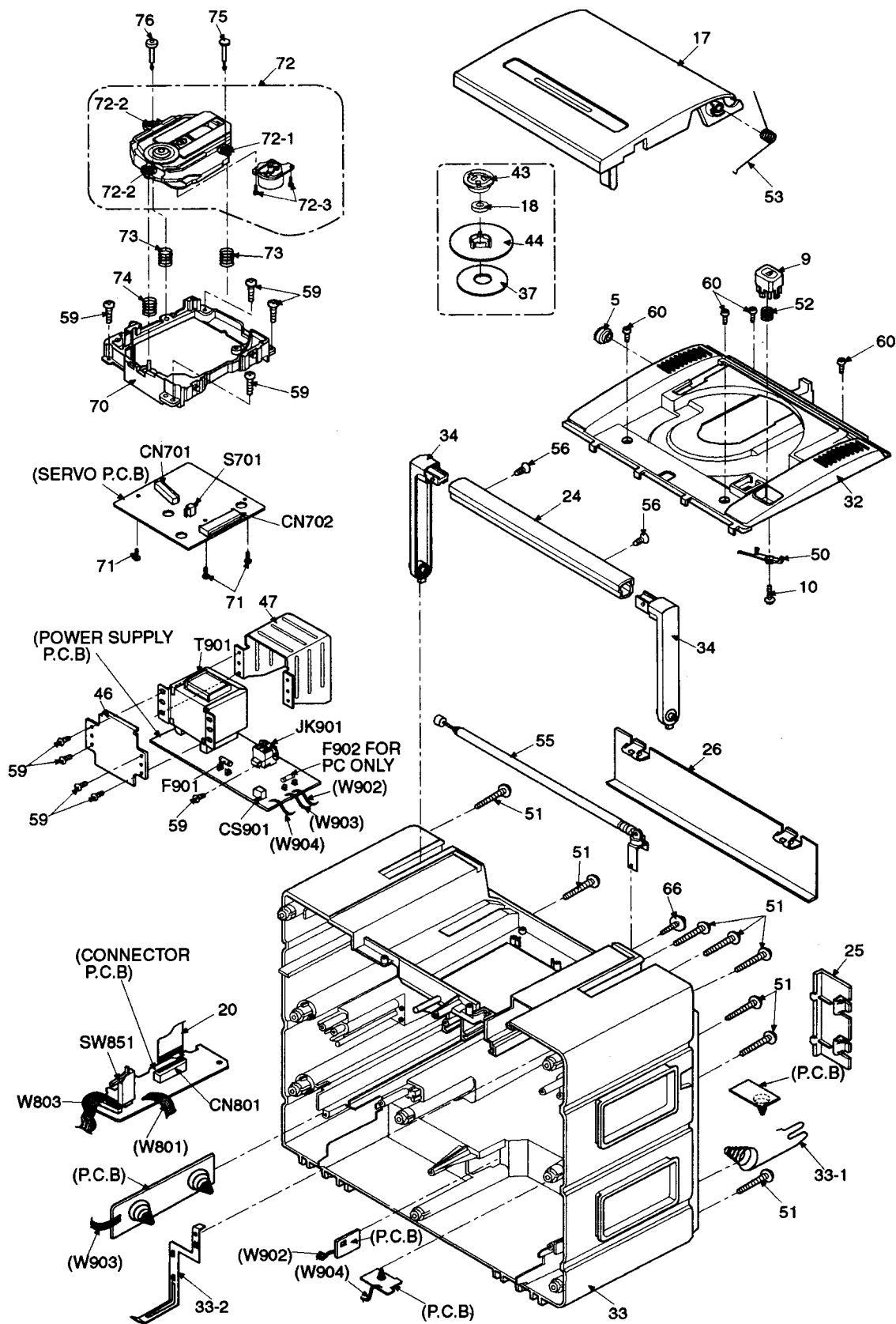
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■ Replacement Parts List

Notes:

- * Important safety notice :
Components identified by Δ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
- When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- * The parenthesized indications in the Remarks column specify the areas. (refer to the cover page for area.)
Parts without these indications can be used for all areas.
- * [M] indicates in Remarks column parts that are supplied by MESA.
- * The "(SF)" mark denotes the standard part.
- * Remote Control Unit :
Supply period for three years from terminal of production.
- * **Warning:** This product uses a laser diode. Refer to caution statements on page 2.

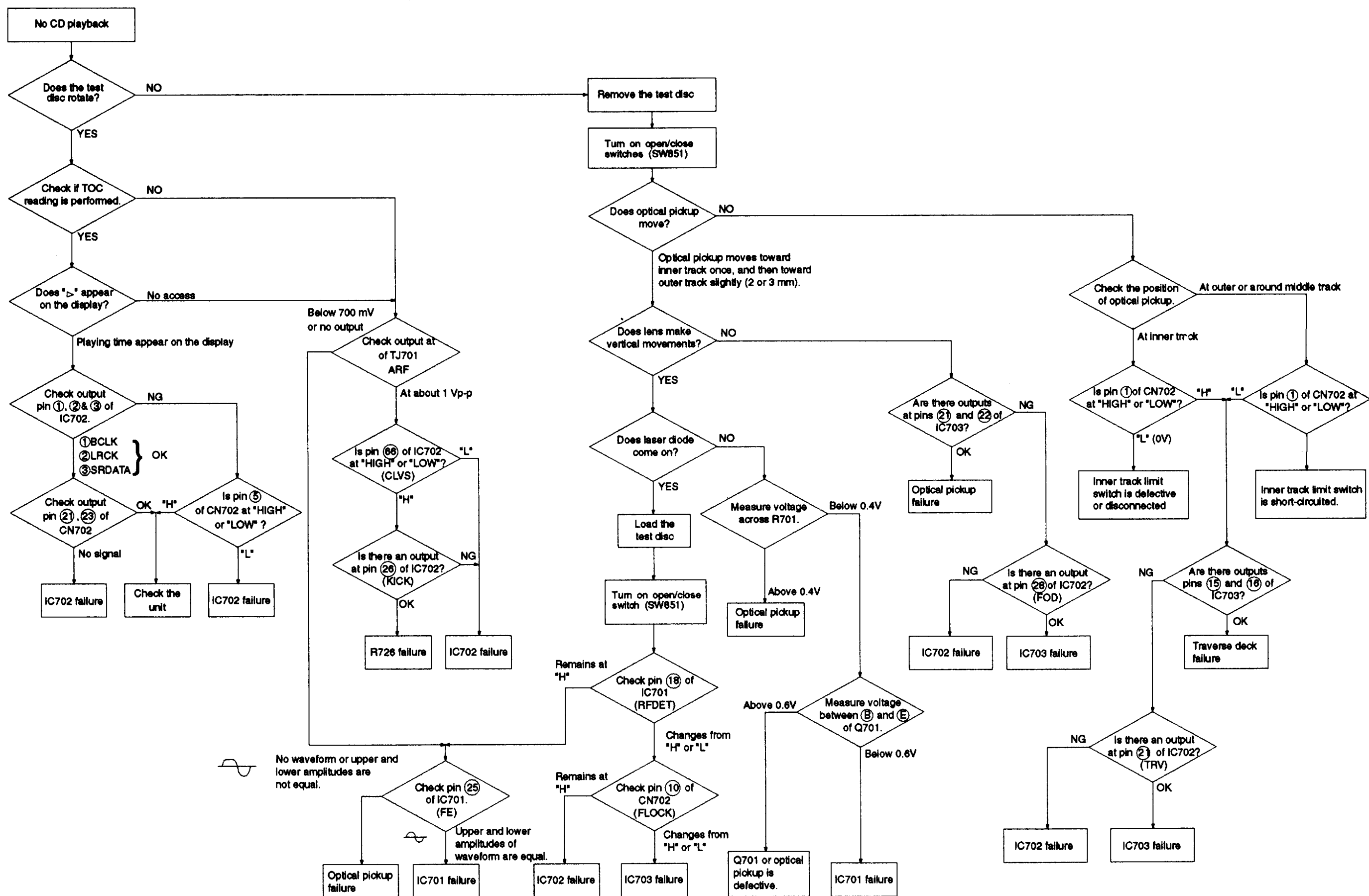
Ref. No	Part No.	Part Name & Description	Remarks	Ref. No	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS		34	RKX0021-H	HANDLE ARM	[M]
				36	RUS781ZA	OPEN SPRING	[M]
				37	RMG0144	CLAMPER RUBBER	
1	EASG12P520A2	WOOFER	[M]	38	RHG2152ZA	CORD BUSHING	[M]
2	RMR0368	PCB CHASSIS	[M]	40	REXX0069	WIRE, PLAY HEAD	[M]
3	EFBS10D49A3	SPEAKER TWEETER	[M]	42	RMNX0006	LCD HOLDER	[M]
4	RGVX0007-K	EDITING KNOB	[M]	43	RMQ0152-E	FIXTURE	[M]
5	RDG0183-L	DAMPER GEAR (CD)	[M]	44	RMQ0225-K	CLAMPER	[M]
7	RGUX0016A-K	FUNCTION BUTTON	[M]	45	RMY0056	HEAT SINK	[M]
8	RGUX0111-K	CD/PRESET BUTTON	[M]	46	RSC0094	TRANS SHIELD PLATE	[M]
9	RGUX0102-H	CD EJECT BUTTON	[M]	47	RSC0163-2	TRANS SHIELD PLATE	[M]
10	XTW3+10P	LEVER SCREW		48	SUX102	MECHA BUTTON SHAFT	[M]
13	RGZ0009-H2	MECHA BUTTON UNIT	[M]	49	RSC0314	SHIELD CAN	[M]
14	RGZX0018-K	POWER/XBS/VOL BUTTON	[M]	50	RUL1136ZA	CD EJECT LEVER	[M]
15	REXX0089	SPEAKER CORD	[M]	51	XTV3+20G-M	CASING SCREW	[M]
16	REXX0074	WIRE, R/P HEAD	[M]	52	RMB0244	CD EJECT SPRING	[M]
17	RFKKDT650PK	CD LID ASS'Y	[M]	53	RUW217ZA	OPEN SPRING	[M]
18	RHM245ZA	MAGNET		54	XTWS3+8T	SHAFT SCREW	
20	REE0397	FPC WIRE	[M]	55	XEARR175ED-Y	ROD ANTENNA	
21	RFKLDT650P1	CASS LID ASS'Y (L)	[M]	56	XTC3+10CFN	HANDLE SCREW	
22	RFKLDT650P2	CASS LID ASS'Y (R)	[M]	58	XTV3+10G	SPEAKER SCREW	
23	RFKLXDT610PK	CASS HOLDER ASS'Y	[M]	59	XTV3+12G-M	MOUNTING SCREW	[M]
24	RKH0012-H	HANDLE BAR	[M]	60	XTV3+12GFZ	TOP CAB SCREW	
25	RKK0035-H	BATTERY COVER (UM-3)	[M]	61	XTN2+14GF	SCREW FOR PCB	[M]
26	RKK347ZB-7	BATTERY COVER (UM-1)	[M]	62	XTV3+8F	TRANS. BRACKET SCREW	
27	RFKGD650PK1	FRONT CABINET ASS'Y	[M]	64	XTW3+10P	SCREW	
28	RFKGD650PK2	SP FRONT CB ASS'Y (L)	[M]	66	XYN3+F8FY	ROD ANTENNA SCREW	
29	RFKGD650PK3	SP FRONT CB ASS'Y (R)	[M]	70	RMR0698-K	TRAVERSE CHASSIS	
30	RFKHDT650PK3	SP REAR CB ASS'Y (R)	[M]	71	XTV2+6G	SCREW	
30-1	RMR0407	LOCK LEVER (R)	[M]	72	RAE0113Z	TRAVERSE UNIT	
31	RFKHDT650PK2	SP REAR CB ASS'Y (L)	[M]	72-1	SHGD112	FLOATING RUBBER (A)	
31-1	RMR0408	LOCK LEVER (L)	[M]	72-2	SHGD113-1	FLOATING RUBBER (B)	
32	RKQX0004-H	TOP CABINET	[M]	72-3	XQS2+A35FZ	SCREW	
33	RFKHDT650PK1	REAR CABINET ASS'Y	[M] (P)	73	RME0109	FLOATING SPRING A	
33	RFKHDT650PCK	REAR CABINET ASS'Y	[M] (PC)	74	RME0142	FLOATING SPRING B	
33-1	RJC931ZC	BATTERY SPRING	[M]	75	RMS0123-1	FIXED PIN A	
33-2	RMAX0015	ROD ANT. PLATE	[M]	76	RMS0350	FIXED PIN B	

Ref. No	Part No.	Part Name & Description	Remarks	Ref. No	Part No.	Part Name & Description	Remarks
77	RMXX0004	SPACER	[M]	Q208	2SC2785FTA	TRANSISTOR	
78	RDG5874ZA	DAMPER GEAR (CASS.)	[M]	Q209	2SC2785FTA	TRANSISTOR	
				Q210	2SC2785FTA	TRANSISTOR	
		INTEGRATED CIRCUITS		Q211	2SC1684QTA	TRANSISTOR	
				Q212	2SC2785FTA	TRANSISTOR	
IC1	TA7358FMATEL	IC,MP		Q302	2SC1740SRTA	TRANSISTOR	
IC2	LM7001M-TE-L	IC,FM MPX		Q303	2SC1684RTA	TRANSISTOR	
IC3	LA1831MSATEL	IC,PLL		Q305	RVTDTTC114EST	TRANSISTOR	
IC301	AN7317	IC,REC/PLAY AMP	[M]	Q306	RVTDTTC114EST	TRANSISTOR	
IC302	BA7755A	IC,R/P SWITCHING		Q309	BN1A4MTA	TRANSISTOR	[M]
IC303	TC4052BP	IC,INPUT SELECTOR	[M]	Q310	BA1A4MTA	TRANSISTOR	[M]
IC304	BA3936	IC,REGULATOR		Q311	BN1A4MTA	TRANSISTOR	[M]
IC305	S81250PG-T	IC,REGULATOR	[M]	Q312	BN1A4MTA	TRANSISTOR	[M]
IC306	AN7135	IC,POWER AMP		Q314	2SA1680TPE6	TRANSISTOR	[M]
IC701	AN8802SCE1V	IC,HEAD AMP		Q315	2SC1684RTA	TRANSISTOR	
IC702	MN66271RA	IC,DIGITAL LSI		Q316	2SC2001KTA	TRANSISTOR	
IC703	AN8389SE1	IC,4-CH DRIVER		Q317	RVTDTTC114EST	TRANSISTOR	
IC801	M38223M4203	IC,MICON	[M]	Q601	2SK301QTA	TRANSISTOR	[M]
IC802	S-806G-Z	IC,RESET	[M]	Q602	2SC1684STA	TRANSISTOR	
IC803	AN7332STAE1	IC,GEQ	[M]	Q701	2SB709S	TRANSISTOR	
IC804	M62414SP	IC,VOLUME		Q801	2SC2785FTA	TRANSISTOR	
				Q802	2SC2785FTA	TRANSISTOR	
		TRANSISTORS					
						DIODES	
Q1	2SC2785FTA	TRANSISTOR					
Q2	2SC2785FTA	TRANSISTOR		D1	KV1360NT	DIODE	
Q3	2SC2787FLITA	TRANSISTOR		D2	RVDMTZ7R5CTA	DIODE	[M]
Q4	2SC2787LTA	TRANSISTOR		D3	KV1580NT	DIODE	
Q5	BN1L3NTA	TRANSISTOR	[M]	D4	KV1360NT	DIODE	
Q10	BA1A4MTA	TRANSISTOR	[M]	D5	MTZJ5R1CTA	DIODE	[M]
Q11	2SA1175FTA	TRANSISTOR	[M]	D6	RVD1SS133TA	DIODE	
Q101	2SJ40CDTA	TRANSISTOR		D301	RVD1SS133TA	DIODE	
Q102	2SJ40CDTA	TRANSISTOR		D302	RVD1SS133TA	DIODE	
Q103	2SC1684RTA	TRANSISTOR		D303	RVD1SS133TA	DIODE	
Q104	2SC1684RTA	TRANSISTOR		D304	RVD1SS133TA	DIODE	
Q105	2SC1684RTA	TRANSISTOR		D305	RVD1SS133TA	DIODE	
Q107	2SC2785FTA	TRANSISTOR		D306	RVDMTZ6R8BTA	DIODE	
Q108	2SC2785FTA	TRANSISTOR		D308	RVD1SS133TA	DIODE	
Q109	2SC2785FTA	TRANSISTOR		D309	RVD1SS133TA	DIODE	
Q110	2SC2785FTA	TRANSISTOR		D310	RVD1SS133TA	DIODE	
Q111	2SC1684QTA	TRANSISTOR		D311	RVD1SS133TA	DIODE	
Q112	2SC2785FTA	TRANSISTOR		D312	RVD1SS133TA	DIODE	
Q201	2SJ40CDTA	TRANSISTOR		D314	RVD1SS133TA	DIODE	
Q202	2SJ40CDTA	TRANSISTOR		D315	RVD1SS133TA	DIODE	
Q203	2SC1684RTA	TRANSISTOR		D316	RVD1SS133TA	DIODE	
Q204	2SC1684RTA	TRANSISTOR		D319	RVDMTZ16BTA	DIODE	[M]
Q205	2SC1684RTA	TRANSISTOR		D320	RVD1SS133TA	DIODE	
Q207	2SC2785FTA	TRANSISTOR		D322	RVD1SS133TA	DIODE	

Ref. No	Part No.	Part Name & Description	Remarks	Ref. No	Part No.	Part Name & Description	Remarks
D323	RVD1SS133TA	DIODE		SW817	EVQ21405R	SW, CD	
D324	RVD1SS133TA	DIODE		SW818	EVQ21405R	SW, XBS	
D325	RVD1SS133TA	DIODE		SW819	EVQ21405R	SW, TUNING MEMORY	
D326	RVD1SS133TA	DIODE		SW820	EVQ21405R	SW, FM MODE/BP	
D327	MA700TA	DIODE		SW851	RSH1A012-U	SW, CD OPEN/CLOSE	
D802	RVD1SS133TA	DIODE					
D901	1N5402BM21	DIODE	⚠			CONNECTORS	
D902	1N5402BM21	DIODE	⚠				
D903	1N5402BM21	DIODE	⚠	CN701	RJU035T016-1	CONNECTOR (16P)	
D904	1N5402BM21	DIODE	⚠	CN702	RJS1A6723-1Q	CONNECTOR (23P)	
D905	RVD1SS133TA	DIODE		CN801	RJS1A6823	FFC SOCKET (23P)	
				CP301	RJP5G18ZA	CONNECTOR (5P)	
		VARIABLE RESISTORS		CP302	RJP4G18ZA	CONNECTOR (4P)	
				CP303	RJP6G9YA	CONNECTOR (6P)	
VR301	EWAJQBV05G54	VR, GEQ VR	[M]	CP801	RJP13G18ZA	CONNECTOR (13P)	[M]
VR302	EWAJQBV05G54	VR, GEQ VR	[M]	CP802	RJP13G18ZA	CONNECTOR (13P)	[M]
VR303	EWAJQBV05G54	VR, GEQ VR	[M]	CP803	RJP14G18ZA	CONNECTOR (14P)	[M]
VR304	EWAJQBV05G54	VR, GEQ VR	[M]	CS803	RJS1A5206	CONNECTOR (6P)	[M]
VR601	EVNDXAA00B24	VR, TAPE SPEED		CS901	RJS4T6ZA	CONNECTOR (4P)	
		TRIMMERS				COILS & TRANSFORMERS	
CT1	RCV10AF1T-S	TRIMMER CAP		L2	RLV2C016-0Z	FM ANT COIL	[M]
				L3	RL02B008-T	FM ANT COIL	
		SWITCHES		L5	RLQZP8R2JT-Y	AXIAL COIL	
				L6	RLQA101JT-D	AXIAL COIL	[M]
S601	RSH1A013-J	SW, DECK 1 PLAY	[M]	L8	RLQZP4R7KT-Y	AXIAL COIL	
S602	RSH1A013-J	SW, DECK 2 PLAY	[M]	L9	RLQZPR47KT-Y	AM OSC COIL	
S603	RSH1A004-1	SW, REC	[M]	L301	RL09B17-T	TUBULAR COIL	
S701	RSM0006-P	SW, RESET		L601	RLQZB470KT-D	COIL	
S821	RSS2B73ZA-H	SW, REC. NOR/HI SW		L801	RLQZN470KL-D	INDUCTOR	[M]
S901	RJI1SM02-H	SW, AC W/SW (JK901)	⚠	L802	RLQZP2R2KT-Y	AXIAL COIL	
SW801	EVQ21405R	SW, POWER		L803	RLQZP2R2KT-Y	CHOKE COIL	
SW802	EVQ21405R	SW, EASY CD REC		L804	RLQZP2R2KT-Y	CHOKE COIL	
SW803	EVQ21405R	SW, MEMORY		L806	RLQZP2R2KT-Y	CHOKE COIL	
SW804	EVQ21405R	SW, REV SEARCH		L808	RLQZP2R2KT-Y	CHOKE COIL	
SW805	EVQ21405R	SW, FWD SEARCH		T1	RLI2Z010-T	FM IFT	
SW806	EVQ21405R	SW, REPEAT		T2	RLI4B014-T	AM IFT	
SW807	EVQ21405R	SW, STOP/CLEAR		T901	RTP1L1C002-X	POWER TRANSFORMER	[M] ⚠
SW808	EVQ21405R	SW, PLAY/PAUSE					
SW809	EVQ21405R	SW, VOL DOWN				COMPONENT COMBINATION	
SW810	EVQ21405R	SW, VOL UP					
SW811	EVQ21405R	SW, PRESET DOWN		Z1	RCRBMT002-H	BPF	
SW812	EVQ21405R	SW, PRESET UP		Z801	RSL5130-L	LCD	[M]
SW813	EVQ21405R	SW, TUNING DOWN		Z802	RCDHC-278N	REMOTE SENSOR	
SW814	EVQ21405R	SW, TUNING UP					
SW815	EVQ21405R	SW, TAPE					
SW816	EVQ21405R	SW, TUNER/BAND					

Ref. No	Part No.	Part Name & Description	Remarks	Ref. No	Part No.	Part Name & Description	Remarks
		OSCILLATORS		P1	RPGX0184	GIFT BOX	[M] (PC)
				P2	RPHX0007-1	MIRAMAT SHEET	[M]
X1	RSXZ456KM01	CERALOCK		P3	RPNX0045	POLYFOAM	[M]
X2	RSXC7M20S04T	XTAL 7.2MHZ					
X701	RSXZ16M9M02T	CERAMIC OSC					
X801	RSXZ4M19M01T	CERAMIC RESONATOR					
X802	RSXD32K7L01	CRYSTAL RESONATOR	[M]				
		CERAMIC FILTERS					
CF1	RLFFETWLA02D	FM IF CF					
CF2	RLFFETWLA02D	FM IF CF					
		FUSES					
F901	XBA1C40NBAL	FUSE	[M] Δ				
F902	XBA1C40NBAL	FUSE	[M] (PC) Δ				
		FUSE HOLDERS					
FH901	EYF52BC	FUSE HOLDER					
FH902	EYF52BC	FUSE HOLDER					
FH903	EYF52BC	FUSE HOLDER	(PC)				
FH904	EYF52BC	FUSE HOLDER	(PC)				
		JACKS					
JK301	RJJ37TK01-C	JK, SPEAKER	[M]				
JK303	RJF1098ZA-H	JK, HEAD PHONE	[M]				
JK901	RJJ1SM02-H	JK, AC W/SW (S901)	Δ				
		WIRES					
W301	REXX0098	WIRE, MAIN TO MECHA	[M]				
W302	REXX0097	WIRE, MAIN TO CD	[M]				
W602	REX0641	WIRE, MECHA	[M]				
W803	REXX0018	WIRE, CNTRL TO CD					
		ACCESSORIES					
A1	RQT2837-P	INSTRUCTION BOOK	[M] (P)				
A1	RFKSDT650PCK	INSTRUC MANUAL ASS'Y	[M] (PC)				
A2	SJA172	ACCORD	(SF) Δ				
A3	EUR643821	REMOTE CONTROL UNIT	[M]				
		PACKING MATERIALS					
P1	RPGX0183	GIFT BOX	[M] (P)				

Troubleshooting Guide



Resistors & Capacitors

Notes : * Important safety notice:

Components identified by Δ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

* Capacitor values are in microfarad (μ F) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)

* Resistors values are in ohms, unless specified otherwise, 1k=1,000(OHM), 1M=1,000k(OHM)

* The parenthesized indications in the Values & Remarks column specify the areas. (refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
	RESISTORS							
R1	ERDS2TJ104T	100K 1/4W	R41	ERDS2TJ561T	560 1/4W	R208	ERDS2TJ223T	22K 1/4W
R2	ERDS2TJ152T	1.5K 1/4W	R48	ERDS2TJ390T	39 1/4W	R209	ERDS2TJ273T	27K 1/4W
R3	ERDS2TJ104T	100K 1/4W	R61	ERDS2TJ100T	10 1/4W	R210	ERDS2TJ103T	10K 1/4W
R4	ERDS2TJ103T	10K 1/4W	R101	ERDS2TJ183T	18K 1/4W	R214	ERDS2TJ273T	27K 1/4W
R5	ERDS2TJ104T	100K 1/4W	R103	ERDS2TJ103T	10K 1/4W	R219	ERDS2TJ223T	22K 1/4W
R6	ERDS2TJ102T	1K 1/4W	R104	ERDS2TJ562T	5.6K 1/4W	R220	ERDS2TJ123T	12K 1/4W
R7	ERDS2TJ330T	33 1/4W	R105	ERDS2TJ472T	4.7K 1/4W	R221	ERDS2TJ123T	12K 1/4W
R8	ERDS2TJ332T	3.3K 1/4W	R106	ERDS2TJ390T	39 1/4W	R222	ERDS2TJ683T	68K 1/4W
R9	ERDS2TJ102T	1K 1/4W	R107	ERDS2TJ102T	1K 1/4W	R223	ERDS2TJ103T	10K 1/4W
R10	ERDS2TJ101T	100 1/4W	R108	ERDS2TJ223T	22K 1/4W	R224	ERDS2TJ183T	18K 1/4W
R11	ERDS2TJ151T	150 1/4W	R109	ERDS2TJ273T	27K 1/4W	R225	ERDS2TJ153T	15K 1/4W
R12	ERDS2TJ103T	10K 1/4W	R110	ERDS2TJ103T	10K 1/4W	R226	ERDS2TJ332T	3.3K 1/4W
R13	ERDS2TJ104T	100K 1/4W	R114	ERDS2TJ273T	27K 1/4W	R228	ERDS2TJ473T	47K 1/4W
R14	ERDS2TJ471T	470 1/4W	R119	ERDS2TJ223T	22K 1/4W	R229	ERDS2TJ153T	15K 1/4W
R15	ERDS2TJ102T	1K 1/4W	R120	ERDS2TJ123T	12K 1/4W	R230	ERDS2TJ563T	56K 1/4W
R16	ERDS2TJ102T	1K 1/4W	R121	ERDS2TJ123T	12K 1/4W	R231	ERDS2TJ105T	1M 1/4W
R17	ERDS2TJ334T	330K 1/4W	R122	ERDS2TJ683T	68K 1/4W	R232	ERDS2TJ682T	6.8K 1/4W
R18	ERDS2TJ471T	470 1/4W	R123	ERDS2TJ103T	10K 1/4W	R233	ERDS2TJ123T	12K 1/4W
R20	ERDS2TJ103T	10K 1/4W	R124	ERDS2TJ183T	18K 1/4W	R235	ERDS2TJ273T	27K 1/4W
R21	ERDS2TJ103T	10K 1/4W	R125	ERDS2TJ153T	15K 1/4W	R236	ERDS2TJ683T	68K 1/4W
R22	ERDS2TJ334T	330K 1/4W	R126	ERDS2TJ332T	3.3K 1/4W	R237	ERDS2TJ1R2T	1.2 1/4W
R23	ERDS2TJ392T	3.9K 1/4W	R128	ERDS2TJ473T	47K 1/4W	R238	ERDS2TJ121T	120 1/4W
R24	ERDS2TJ103T	10K 1/4W	R129	ERDS2TJ153T	15K 1/4W	R239	ERDS2TJ824T	820K 1/4W
R25	ERDS2TJ103T	10K 1/4W	R130	ERDS2TJ563T	56K 1/4W	R240	ERDS2TJ821T	820 1/4W
R26	ERDS2TJ103T	10K 1/4W	R131	ERDS2TJ105T	1M 1/4W	R241	ERDS2TJ332T	3.3K 1/4W
R27	ERDS2TJ103T	10K 1/4W	R132	ERDS2TJ682T	6.8K 1/4W	R308	ERDS2TJ473T	47K 1/4W
R29	ERDS2TJ331T	330 1/4W	R133	ERDS2TJ123T	12K 1/4W	R309	ERDS2TJ221T	220 1/4W
R30	ERDS2TJ183T	18K 1/4W	R135	ERDS2TJ273T	27K 1/4W	R310	ERDS2TJ223T	22K 1/4W
R31	ERDS2TJ333T	33K 1/4W	R136	ERDS2TJ683T	68K 1/4W	R311	ERDS2TJ472T	4.7K 1/4W
R32	ERDS2TJ332T	3.3K 1/4W	R137	ERDS2TJ1R2T	1.2 1/4W	R312	ERDS2TJ221T	220 1/4W
R34	ERDS2TJ223T	22K 1/4W	R138	ERDS2TJ121T	120 1/4W	R313	ERDS2TJ681T	680 1/4W
R35	ERDS2TJ390T	39 1/4W	R139	ERDS2TJ824T	820K 1/4W	R314	ERDS2TJ563T	56K 1/4W
R36	ERDS2TJ104T	100K 1/4W	R140	ERDS2TJ821T	820 1/4W	R315	ERDS2TJ100T	10 1/4W
R37	ERDS2TJ153T	15K 1/4W	R141	ERDS2TJ332T	3.3K 1/4W	R316	ERDS2TJ182T	1.8K 1/4W
R38	ERDS2TJ104T	100K 1/4W	R201	ERDS2TJ183T	18K 1/4W	R318	ERDS2TJ106T	10M 1/4W
R39	ERDS2TJ223T	22K 1/4W	R203	ERDS2TJ103T	10K 1/4W	R319	ERDS2TJ104T	100K 1/4W
R40	ERDS2TJ221T	220 1/4W	R204	ERDS2TJ562T	5.6K 1/4W	R321	ERDS2TJ223T	22K 1/4W
			R205	ERDS2TJ472T	4.7K 1/4W	R322	ERDS2TJ183T	18K 1/4W
			R206	ERDS2TJ390T	39 1/4W	R330	ERDS2TJ103T	10K 1/4W
			R207	ERDS2TJ102T	1K 1/4W	R331	ERDS2TJ103T	10K 1/4W

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
R332	ERDS2TJ152T	1.5K 1/4W	R706	ERJ6GEYJ102V	1K 1/10W	R817	ERDS2TJ102T	1K 1/4W
R333	ERDS2TJ152T	1.5K 1/4W	R707	ERJ6GEYJ473V	47K 1/10W	R818	ERDS2TJ102T	1K 1/4W
R334	ERDS2TJ103T	10K 1/4W	R708	ERJ6GEYJ104V	100K 1/10W	R820	ERDS2TJ102T	1K 1/4W
R335	ERD2FCVJ4R7T	4.7 1/4W	R709	ERJ6GEYJ683V	68K 1/10W	R821	ERDS2TJ102T	1K 1/4W
R336	ERDS2TJ103T	10K 1/4W	R711	ERJ6GEYJ154V	150K 1/10W	R822	ERDS2TJ102T	1K 1/4W
R337	ERDS2TJ101T	100 1/4W	R712	ERJ6GEYJ221V	220 1/10W	R823	ERDS2TJ102T	1K 1/4W
R338	ERDS2TJ103T	10K 1/4W	R717	ERJ6GEYJ102V	1K 1/10W	R824	ERDS2TJ102T	1K 1/4W
R339	ERDS2TJ103T	10K 1/4W	R718	ERJ6GEYJ102V	1K 1/10W	R825	ERDS2TJ104T	100K 1/4W
R343	ERDS2TJ333T	33K 1/4W	R719	ERJ6GEYJ102V	1K 1/10W	R826	ERDS2TJ102T	1K 1/4W
R344	ERDS2TJ122T	1.2K 1/4W	R720	ERJ6GEYJ102V	1K 1/10W	R827	ERDS2TJ102T	1K 1/4W
R345	ERDS2TJ331T	330 1/4W	R721	ERJ6GEYJ101V	100 1/10W	R828	ERDS2TJ102T	1K 1/4W
R348	ERDS2TJ273T	27K 1/4W	R722	ERJ6GEYJ563V	56K 1/10W	R829	ERDS2TJ102T	1K 1/4W
R349	ERDS2TJ122T	1.2K 1/4W	R723	ERJ6GEYJ182V	1.8K 1/10W	R830	ERDS2TJ102T	1K 1/4W
R350	ERDS2TJ123T	12K 1/4W	R724	ERJ6GEYJ333V	33K 1/10W	R831	ERDS2TJ471T	470 1/4W
R351	ERDS2TJ473T	47K 1/4W	R725	ERJ6GEYJ472V	4.7K 1/10W	R832	ERDS2TJ471T	470 1/4W
R353	ERDS2TJ332T	3.3K 1/4W	R726	ERJ6GEYJ473V	47K 1/10W	R833	ERDS2TJ471T	470 1/4W
R356	ERDS2TJ103T	10K 1/4W	R727	ERJ6GEYJ103V	10K 1/10W	R834	ERDS2TJ472T	4.7K 1/4W
R357	ERDS2TJ102T	1K 1/4W	R728	ERJ6GEYJ392V	3.9K 1/10W	R835	ERDS2TJ102T	1K 1/4W
R360	ERDS2TJ105T	1M 1/4W	R730	ERJ6GEYJ331V	330 1/10W	R836	ERDS2TJ106T	10M 1/4W
R361	ERDS2TJ272T	2.7K 1/4W	R731	ERJ6GEYJ392V	3.9K 1/10W	R837	ERDS2TJ472T	4.7K 1/4W
R362	ERDS2TJ103T	10K 1/4W	R734	ERJ6GEYJ101V	100 1/10W	R838	ERDS2TJ334T	330K 1/4W
R363	ERDS2TJ334T	330K 1/4W	R735	ERJ6GEYJ101V	100 1/10W	R839	ERDS2TJ104T	100K 1/4W
R364	ERDS2TJ334T	330K 1/4W	R736	ERJ6GEYJ101V	100 1/10W	R840	ERDS2TJ474T	470K 1/4W
R365	ERDS2TJ101T	100 1/4W	R738	ERJ6GEYJ223V	22K 1/10W	R841	ERDS2TJ152T	1.5K 1/4W
R366	ERDS2TJ103T	10K 1/4W	R739	ERJ6GEYJ681V	680 1/10W	R842	ERDS2TJ222T	2.2K 1/4W
R367	ERDS2TJ102T	1K 1/4W	R741	ERJ6GEYJ562V	5.6K 1/10W	R843	ERDS2TJ272T	2.7K 1/4W
R368	ERDS2TJ221T	220 1/4W	R742	ERJ6GEYJ562V	5.6K 1/10W	R844	ERDS2TJ392T	3.9K 1/4W
R369	ERDS2TJ103T	10K 1/4W	R743	ERJ6GEYJ562V	5.6K 1/10W	R845	ERDS2TJ562T	5.6K 1/4W
R370	ERDS2TJ102T	1K 1/4W	R744	ERJ6GEYJ103V	10K 1/10W	R846	ERDS2TJ822T	8.2K 1/4W
R371	ERDS2TJ391T	390 1/4W	R745	ERJ6GEYJ155V	1.5M 1/10W	R847	ERDS2TJ152T	1.5K 1/4W
R372	ERDS2TJ391T	390 1/4W	R748	ERJ6GEYJ182V	1.8K 1/10W	R848	ERDS2TJ222T	2.2K 1/4W
R373	ERDS2TJ391T	390 1/4W	R749	ERJ8GEYJ103V	10K 1/8W	R849	ERDS2TJ272T	2.7K 1/4W
R374	ERDS2TJ822T	8.2K 1/4W	R801	ERDS2TJ822T	8.2K 1/4W	R850	ERDS2TJ392T	3.9K 1/4W
R375	ERDS2TJ222T	2.2K 1/4W	R802	ERDS2TJ562T	5.6K 1/4W	R851	ERDS2TJ562T	5.6K 1/4W
R376	ERDS2TJ221T	220 1/4W	R803	ERDS2TJ392T	3.9K 1/4W	R852	ERDS2TJ822T	8.2K 1/4W
R377	ERDS2TJ101T	100 1/4W	R804	ERDS2TJ272T	2.7K 1/4W	R858	ERDS2TJ103T	10K 1/4W
R378	ERDS2TJ103T	10K 1/4W	R805	ERDS2TJ222T	2.2K 1/4W	R859	ERDS2TJ103T	10K 1/4W
R379	ERDS2TJ103T	10K 1/4W	R806	ERDS2TJ152T	1.5K 1/4W	R860	ERDS2TJ474T	470K 1/4W
R601	ERDS2TJ123T	12K 1/4W	R807	ERDS2TJ104T	100K 1/4W	R861	ERDS2TJ104T	100K 1/4W
R602	ERDS2TJ273T	27K 1/4W	R808	ERDS2TJ104T	100K 1/4W	R862	ERDS2TJ274T	270K 1/4W
R604	ERDS2TJ273T	27K 1/4W	R809	ERDS2TJ104T	100K 1/4W	R870	ERDS2TJ102T	1K 1/4W
R605	ERDS2TJ105T	1M 1/4W	R810	ERDS2TJ153T	15K 1/4W	R871	ERDS2TJ563T	56K 1/4W
R606	ERDS2TJ472T	4.7K 1/4W	R811	ERDS2TJ153T	15K 1/4W	R872	ERDS2TJ103T	10K 1/4W
R701	ERJ6GEYJ100V	10 1/10W	R812	ERDS2TJ153T	15K 1/4W	R873	ERDS2TJ103T	10K 1/4W
R702	ERJ6GEYJ471V	470 1/10W	R813	ERDS2TJ224T	220K 1/4W	R878	ERDS2TJ102T	1K 1/4W
R703	ERJ6GEYJ823V	82K 1/10W	R814	ERDS2TJ102T	1K 1/4W	R879	ERDS2TJ102T	1K 1/4W
R704	ERJ6GEYJ102V	1K 1/10W	R815	ERDS2TJ102T	1K 1/4W	R880	ERDS2TJ102T	1K 1/4W
R705	ERJ6GEYJ103V	10K 1/10W	R816	ERDS2TJ102T	1K 1/4W	R881	ERDS2TJ102T	1K 1/4W

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
R902	ERDS2TJ222T	2.2K 1/4W	C51	ECFR1E223KR	0.022 25V	C138	ECBT1C222MR5	2200P 16V
			C52	ECEA1HKA2R2B	2.2 50V	C139	ECFR1C153KR	0.015 16V
	CAPACITORS		C53	ECEA1HKA010B	1 50V	C140	ECEA1HKA010B	1 50V
			C54	ECEA1HKA010B	1 50V	C141	ECBT1H102KB5	1000P 50V
C1	ECBT1H4R7KC5	4.7P 50V	C56	ECFR1E223KR	0.022 25V	C142	ECEA1HKA010B	1 50V
C2	ECBT1H102KB5	1000P 50V	C57	ECBT1H102KB5	1000P 50V	C143	ECBT1H102KB5	1000P 50V
C3	ECBT1C332MR5	3300P 16V	C58	ECBT1H331KB5	330P 50V	C144	ECBT1H471KB5	470P 50V
C4	ECEA1HN010SB	1 50V	C59	ECBT1H471KB5	470P 50V	C201	ECBT1H681KB5	680P 50V
C5	ECBT1C103MS5	0.01 16V	C61	ECBT1C103MS5	0.01 16V	C202	ECBT1H102KB5	1000P 50V
C6	ECBT1H102KB5	1000P 50V	C63	ECBT1H102KB5	1000P 50V	C203	ECEA1AU101B	100 10V
C8	ECBT1H102KB5	1000P 50V	C67	ECBT1H102KB5	1000P 50V	C204	ECFR1C333KR	0.033 16V
C9	ECEA1AU101B	100 10V	C68	ECBT1H6R8KC5	6.8P 50V	C205	ECEA1CU100B	10 16V
C10	ECBT1H6R8KC5	6.8P 50V	C70	ECBT1H331KB5	330P 50V	C206	ECBT1H101KB5	100P 50V
C12	ECBT1H102KB5	1000P 50V	C79	ECBT1C103MS5	0.01 16V	C207	ECEA1CU100B	10 16V
C13	ECBT1H102KB5	1000P 50V	C91	ECBT1H102KB5	1000P 50V	C208	ECBT1H101KB5	100P 50V
C14	ECBT1H180JC5	18P 50V	C92	ECBT1C103MS5	0.01 16V	C209	ECBT1H102KB5	1000P 50V
C15	ECBT1H4R7KC5	4.7P 50V	C93	ECBT1H102KB5	1000P 50V	C210	ECEA1CU100B	10 16V
C16	ECBT1H6R8KC5	6.8P 50V	C101	ECBT1H681KB5	680P 50V	C215	ECEA1HKA010B	1 50V
C17	ECBT1H2R2KC5	2.2P 50V	C102	ECBT1H102KB5	1000P 50V	C217	ECEA1HKAR33B	0.33 50V
C18	ECFR1C473MR	0.047 16V	C103	ECEA1AU101B	100 10V	C218	ECEA1HKAR47B	0.47 50V
C19	ECBT1H680J5	68P 50V	C104	ECFR1C333KR	0.033 16V	C219	ECEA1HKAR33B	0.33 50V
C20	ECBT1H1R5MC5	1.5P 50V	C105	ECEA1CU100B	10 16V	C220	ECFR1C103MR	0.01 16V
C21	ECBT1H102KB5	1000P 50V	C106	ECBT1H101KB5	100P 50V	C221	ECEA1HKA0R1B	0.1 50V
C22	ECBT1H102KB5	1000P 50V	C107	ECEA1CU100B	10 16V	C222	ECEA1HKA010B	1 50V
C23	ECBT1H331KB5	330P 50V	C108	ECBT1H101KB5	100P 50V	C223	ECBT1H471KB5	470P 50V
C24	ECBT1C103MS5	0.01 16V	C109	ECBT1H102KB5	1000P 50V	C224	ECBT1H102KB5	1000P 50V
C25	ECBT1H102KB5	1000P 50V	C110	ECEA1CU100B	10 16V	C225	ECEA1AU101B	100 10V
C26	ECBT1H270J5	27P 50V	C115	ECEA1HKA010B	1 50V	C226	ECEA1CU470B	47 16V
C27	ECBT1H300J5	30P 50V	C117	ECEA1HKAR33B	0.33 50V	C227	ECEA1AU102B	1000 10V
C28	ECEA1AU101B	100 10V	C118	ECEA1HKAR47B	0.47 50V	C228	ECQV1H224JZ3	0.22 50V
C29	ECBT1H102KB5	1000P 50V	C119	ECEA1HKAR33B	0.33 50V	C229	ECEA1HKA010B	1 50V
C31	ECBT1H471KB5	470P 50V	C120	ECFR1C103MR	0.01 16V	C231	ECEA1HKA010B	1 50V
C32	ECBT1H180JC5	18P 50V	C121	ECEA1HKA0R1B	0.1 50V	C232	ECEA1HKA010B	1 50V
C35	ECBT1H101KB5	100P 50V	C122	ECEA1HKA010B	1 50V	C233	ECEA1HKAR33B	0.33 50V
C36	ECBT1H102KB5	1000P 50V	C123	ECBT1H471KB5	470P 50V	C234	ECFR1E223KR	0.022 25V
C38	ECEA1AU101B	100 10V	C124	ECBT1H102KB5	1000P 50V	C235	ECEA1HKA0R1B	0.1 50V
C39	ECBT1H101KB5	100P 50V	C125	ECEA1AU101B	100 10V	C236	ECFR1C682KR	6800P 16V
C40	ECFR1E223KR	0.022 25V	C126	ECEA1CU470B	47 16V	C237	ECFR1C333KR	0.033 16V
C41	ECBT1H102KB5	1000P 50V	C127	ECEA1AU102B	1000 10V	C238	ECBT1C222MR5	2200P 16V
C42	ECEA1HKA010B	1 50V	C128	ECQV1H224JZ3	0.22 50V	C239	ECFR1C153KR	0.015 16V
C43	ECEA1AU101B	100 10V	C129	ECEA1HKA010B	1 50V	C240	ECEA1HKA010B	1 50V
C44	ECFR1C473MR	0.047 16V	C131	ECEA1HKA010B	1 50V	C241	ECBT1H102KB5	1000P 50V
C45	ECFR1C103MR	0.01 16V	C132	ECEA1HKA010B	1 50V	C242	ECEA1HKA010B	1 50V
C46	ECEA1CU100B	10 16V	C133	ECEA1HKAR33B	0.33 50V	C243	ECBT1H102KB5	1000P 50V
C47	ECBT1C332MR5	3300P 16V	C134	ECFR1E223KR	0.022 25V	C244	ECBT1H471KB5	470P 50V
C48	ECBT1H681KB5	680P 50V	C135	ECEA1HKA0R1B	0.1 50V	C309	ECEA1HKA010B	1 50V
C49	ECEA1HKA010B	1 50V	C136	ECFR1C682KR	6800P 16V	C311	ECBT1C103MS5	0.01 16V
C50	ECFR1E223KR	0.022 25V	C137	ECFR1C333KR	0.033 16V	C313	ECQP2A151JZT	150P 100V

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
C314	ECQB1H122JF3	1200P 50V	C710	ECUV1H152KBN	1500P 50V	C819	ECBT1H820KB5	82P 50V
C315	ECBT1C103MS5	0.01 16V	C711	ECUZ1E104MBN	0.1 25V	C820	ECBT1H102KB5	1000P 50V
C316	ECBT1C103MS5	0.01 16V	C712	ECUZ1E104MBN	0.1 25V	C821	ECBT1H102KB5	1000P 50V
C317	ECEA1AU101B	100 10V	C713	ECUV1C104MBM	0.1 16V	C822	ECBT1H680J5	68P 50V
C318	ECEA1EU4R7B	4.7 25V	C714	ECEA0JKA101I	100 6.3V	C823	ECBT1H220J5	22P 50V
C321	ECBT1H102KB5	1000P 50V	C715	ECEA0JKA470I	47 6.3V	C824	ECBT1C103MS5	0.01 16V
C322	ECEA1CU100B	10 16V	C716	ECUV1H561KBN	560P 50V	C825	ECBT1H101KB5	100P 50V
C323	ECEA1CU100B	10 16V	C717	ECUZ1E104MBN	0.1 25V	C826	ECBT1H820KB5	82P 50V
C324	ECEA1CU100B	10 16V	C718	ECUV1C224KBM	0.22 16V	C827	ECBT1H180JC5	18P 50V
C325	ECEA1AU101B	100 10V	C721	ECUV1H270JCN	27P 50V	C828	ECEA1HKA010B	1 50V
C326	ECEA1CU100B	10 16V	C722	ECUV1H270JCN	27P 50V	C829	ECBT1H331KB5	330P 50V
C327	ECEA1CU331B	330 16V	C723	ECEA1AKA221I	220 10V	C830	ECBT1H330J5	33P 50V
C329	ECEA1CKA220B	22 16V	C724	ECUV1C104MBM	0.1 16V	C831	ECEA1CKA220B	22 16V
C330	ECA1EM332EV	3300 25V [M]	C725	ECUV1H102KBN	1000P 50V	C832	ECBT1H331KB5	330P 50V
C331	ECBT1H471KB5	470P 50V	C726	ECUV1H102KBN	1000P 50V	C833	ECBT1H331KB5	330P 50V
C332	ECEA1CU100B	10 16V	C727	ECEA1HPK010I	1 50V	C834	ECBT1H331KB5	330P 50V
C333	ECEA1AU101B	100 10V	C728	ECEA1HPK010I	1 50V	C835	ECBT1H331KB5	330P 50V
C334	ECEA1AU101B	100 10V	C730	ECUZ1E104MBN	0.1 25V	C838	ECBT1H104ZF5	0.1 50V
C335	ECEA1AU101B	100 10V	C731	ECEA0JKA221I	220 6.3V	C839	ECBT1H101KB5	100P 50V
C336	ECEA1CU470B	47 16V	C732	ECEA0JKA221I	220 6.3V	C841	ECBT1H331KB5	330P 50V
C337	ECEA1CU470B	47 16V	C733	ECUZ1E104MBN	0.1 25V	C845	ECBT1H102KB5	1000P 50V
C338	ECEA1EU470B	47 25V	C734	ECEA1AKA221I	220 10V	C846	ECBT1H102KB5	1000P 50V
C339	ECEA1CKA220B	22 16V	C735	ECUZ1E104MBN	0.1 25V	C873	ECBT1H331KB5	330P 50V
C340	ECEA1CKA220B	22 16V	C736	ECUZ1E104MBN	0.1 25V	C876	ECBT1H331KB5	330P 50V
C341	ECEA1AU101B	100 10V	C737	ECUZ1E104MBN	0.1 25V	C881	ECBT1H331KB5	330P 50V
C342	ECEA1AU221B	220 10V	C738	ECUV1C154KBN	0.15 16V	C882	ECBT1H102KB5	1000P 50V
C344	ECFR1C473MR	0.047 16V	C742	ECUV1E273KBN	0.027 25V	C885	ECBT1H102KB5	1000P 50V
C345	ECEA1CU100B	10 16V	C743	ECUZ1E104MBN	0.1 25V	C887	ECBT1H102KB5	1000P 50V
C346	ECEA1HU3R3B	3.3 50V	C744	ECUV1E822KBN	8200P 25V	C888	ECBT1H102KB5	1000P 50V
C347	ECEA1EU101B	100 25V	C745	ECUV1C473MBN	0.047 16V	C901	ECKR1H103ZF5	0.01 50V
C350	ECEA1AU471B	470 10V	C746	ECUV1H050DCN	5P 50V	C902	ECKR1H103ZF5	0.01 50V
C351	ECEA1AU101B	100 10V	C747	ECUV1H222KBN	2200P 50V	C903	ECKR1H103ZF5	0.01 50V
C352	ECEA1CU100B	10 16V	C748	ECUV1H471KBM	470P 50V	C904	ECKR1H103ZF5	0.01 50V
C353	ECFR1C333KR	0.033 16V	C801	ECBT1H104ZF5	0.1 50V			
C354	ECEA1CU100B	10 16V	C803	ECEA1AU101B	100 10V		CLIPS JUMPERS	
C356	ECEA1CKA220B	22 16V	C804	ECEA1AU101B	100 10V			
C358	ECBT1H102KB5	1000P 50V	C805	ECBT1H104ZF5	0.1 50V	RJ701	ERJ8GEY0R00A	0 1/10W
C601	ECEA1CKA100B	10 16V	C806	ECBT0J223MS5	0.022 6.3V	RJ702	ERJ8GEY0R00A	0 1/10W
C602	ECEA1CKA101B	100 16V	C807	ECBT1C103MS5	0.01 16V	RJ703	ERJ8GEY0R00A	0 1/10W
C701	ECEA0JKA220I	22 6.3V	C809	ECBT1H104ZF5	0.1 50V	RJ704	ERJ8GEY0R00A	0 1/10W
C702	ECEA1HKA010I	1 50V	C810	ECBT1H331KB5	330P 50V	RJ707	ERJ8GEY0R00A	0 1/10W
C703	ECEA0JKA101I	100 6.3V	C811	ECBT1H104ZF5	0.1 50V	RJ708	ERJ8GEY0R00A	0 1/10W
C704	ECUZ1E104MBN	0.1 25V	C812	ECBT1H104ZF5	0.1 50V	RJ709	ERJ8GEY0R00A	0 1/10W
C705	ECEA1HKA010I	1 50V	C813	ECBT1H104ZF5	0.1 50V	RJ714	ERJ8GEY0R00A	0 1/10W
C706	ECUV1H101JCN	100P 50V	C814	ECBT1H331KB5	330P 50V	RJ715	ERJ8GEY0R00A	0 1/10W
C707	ECUV1E273KBN	0.027 25V	C815	ECBT1H331KB5	330P 50V	RJ716	ERJ8GEY0R00A	0 1/10W
C708	ECUV1H472KBN	4700P 50V	C816	ECBT1H331KB5	330P 50V	RJ717	ERJ8GEY0R00A	0 1/10W
C709	ECUV1C473KBN	0.047 16V	C817	ECBT1H102KB5	1000P 50V	RJ721	ERJ6GEY0R00A	0 1/10W

[illegible]