

HCD-H550/H550M

SERVICE MANUAL



Photo: HCD-H550

AEP Model
E Model
Australian Model
PX Model
HCD-H550
US Model
Canadian Model
AEP Model
UK Model
HCD-H550M

HCD-H550/H550M are the CD player and stereo deck receiver in FH-B511/B550/MHC-550.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol $\square\square$ are trademarks of Dolby Laboratories Licensing Corporation.

SPECIFICATIONS

CD player section

System Compact disc digital audio system
 Laser Semiconductor laser
 Wavelength 780 - 790 nm

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range
 Except CIS, EE
 JE, PX model : 87.5 - 108.0 MHz
 CIS, EE model : 65.0 - 74.0 MHz
 87.5 - 108.0 MHz
 JE, PX model : 76.0 - 108.0 MHz

Antenna

HCD-H550 : Telescopic antenna
 HCD-H550M : FM lead antenna

Antenna terminals

75 ohm unbalanced

Intermediate frequency
 10.7 MHz

AM tuner section

Tuning range
 US, CND model : AM530 - 1,710 kHz

AEP, UK, CIS,

EE model : MW531 - 1,602 kHz
 LW153 - 279 kHz

G model : AM531 - 1,602 kHz
 IT model : AM522 - 1,611 kHz

AUS model : MW531 - 1,602 kHz
 SW5.95 - 17.9 MHz

E, EA, MX, MY, SP,

PX, JE model : MW531 - 1,602 kHz
 (at 9 kHz step)
 MW530 - 1,710 kHz
 (at 10 kHz step)
 SW5.95 - 17.9 MHz

Antenna AM loop antenna
 External antenna terminals

Intermediate frequency
 450 kHz

Cassette deck section

Recording system
 4-track 2-channel stereo

Frequency response
 (DOLBY NR OFF)
 60 - 13,000 Hz (± 3 dB),
 using TYPE I cassette (Sony HF-S)

60 - 14,000 Hz (± 3 dB),
 using TYPE II cassette
 (Sony UX-S)

Wow and flutter

0.1% WRMS $\pm 0.3\%$ (DIN)

Amplifier section

Continuus RMS Power output:
 30+30 watts (6 ohms at
 1 kHz, 5% THD)

Peak music power output:
 300 watts (2 speakers
 driven)

Inputs

MIX MIC (mini jack)
 (EXCEPT H550: AEP, G, CIS/H550M):
 Sensitivity 1 mV,
 impedance 600 ohms
 VIDEO/AUX (H550: EXCEPT AEP, G/
 H550M: US, CND): Sensitivity 450 mV,
 impedance 47 kilo ohms
 PHONO (phono jack)
 (AEP, UK, EE, G, IT): sensitivity 5 mV,
 impedance 47 kilohms

- Continued on next page -

MINI Hi-Fi COMPONENT SYSTEM
SONY®



Outputs

HEADPHONES (stereo mini jack):

accept headphones of
8 ohms or more.

SPEAKER: accept impedance of 6 to
16 ohms.

Supplied accessories

AM loop antenna (1)

Remote commander (1)

Sony SUM-3 (NS) batteries (2)

General

| Destination | Power requirements | Power consumption |
|---------------------------|--|-------------------|
| US, CND model | 120 V AC, 50/60 Hz | 80 W |
| AEP, CIS, EE, G, IT model | 220 - 230 V AC, 50/60 Hz | 80 W |
| UK model | 240 V AC, 50 Hz | 80 W |
| AUS model | 220 - 240 V AC, 50 Hz | 80 W |
| Other model | 110 - 120/ 220 - 240 V AC, adjustable, 50/60 Hz | 80 W |

Dimensions Approx. 225 x 285 x 275
mm (w/h/d)
incl. projecting parts and
controls

Mass Approx. 5.7 kg

Design and specifications are subject to
change without notice.

• Abbreviations

| | |
|--------------------|----------------|
| AUS : Australian | IT : Italian |
| CND : Canadian | JE : Tourist |
| EA : Saudi Arabia | MX : Mexican |
| EE : East European | MY : Malaysia |
| G : German | SP : Singapore |

SAFETY CHECK-OUT

After correcting the original service problem,
perform the following safety check before releasing
the set to the customer:

Check the antenna terminals, metal trim, "metallized"
knobs, screws, and all other exposed metal parts for
AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to
earth ground and from all exposed metal parts to any
exposed metal part having a return to chassis, must
not exceed 0.5 mA (500 microamperes). Leakage
current can be measured by any one of three
methods.

1. A commercial leakage tester, such as the
Simpson 229 or RCA WT-540A. Follow the
manufacturers' instructions to use these instru-
ments.
2. A battery-operated AC milliammeter. The Data
Precision 245 digital multimeter is suitable for
this job.
3. Measuring the voltage drop across a resistor by
means of a VOM or battery-operated AC volt-
meter. The "limit" indication is 0.75 V, so
analog meters must have an accurate low-
voltage scale. The Simpson 250 and Sanwa
SH-63Trd are examples of a passive VOM that
is suitable. Nearly all battery operated digital
multimeters that have a 2V AC range are
suitable. (See Fig. A)

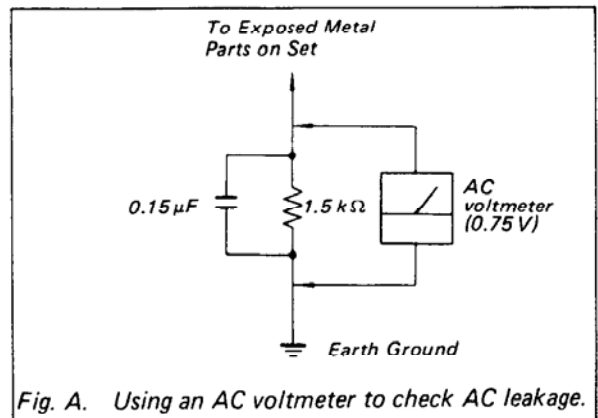


Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED
LINE WITH MARK \triangle ON THE SCHEMATIC DIAGRAMS
AND IN THE PARTS LIST ARE CRITICAL TO SAFE
OPERATION. REPLACE THESE COMPONENTS WITH
SONY PARTS WHOSE PART NUMBERS APPEAR AS
SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUB-
LISHED BY SONY.

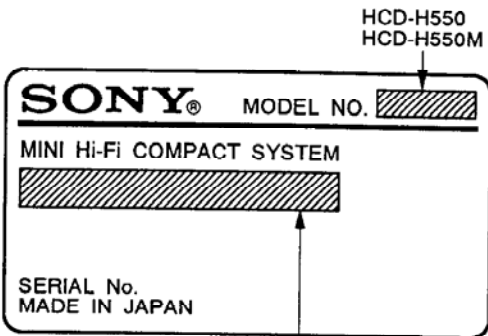
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE \triangle
SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE
DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ
DE FONCTIONNEMENT. NE REMPLACER CES COM-
POSANTS QUE PAR DES PIÈCES SONY DONT LES
NUMÉROS SONT DONNÉS DANS CE MANUEL OU
DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SERVICING NOTE

MODEL IDENTIFICATION

— Specification Label —



US, CND model: AC 120 V, 50/60 Hz, 80 W
 AEP, CIS, EE, G, IT model: AC 220–230 V ~50/60 Hz, 80 W
 UK model : AC 240 V, 50 Hz, 80 W
 E, EA, JE, MX, MY, PX, SP model: AC 110–120, 220–240 V, 50/60 Hz, 80 W
 AUS model : AC 240 V, 50 Hz, 80 W

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

CLASS 1 LASER PRODUCT
 LUOKAN 1 LASERLAITE
 KLAS 1 LASERAPPARAT

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

| | |
|----------|---|
| CAUTION | : INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM. |
| ADVARSEL | : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING. |
| VARO! | : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTIIINA LASERSÄTEILYLLE. |
| VARNING | : LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. |
| ADVARSEL | : USYNLIG LASERSTRÅLING NÅR DEKSEL APNES. UNNGÅ EKSPONERING FOR STRÅLEN. |

This caution label is located inside the unit.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.

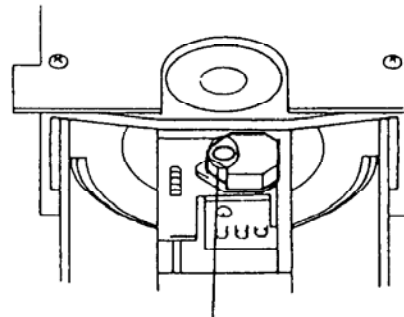
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

1. Make POWER switch on with no disc inserted and disc table closed.
2. Confirm that the following operation is performed while observing the objective lens.



- ① Confirm that laser beam is spread.
- ② Up and down motion of the objective lens. (3 times)

SECTION 1 GENERAL

TABLE OF CONTENTS

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|--|--------------|-------------|
| Specifications | | 1 |
| Safety Check-out | | 2 |
| Model Identification | | 3 |
| Servicing Note | | 3 |
| 1. GENERAL | | |
| Index to Parts and Controls | | 4 |
| 2. DISASSEMBLY | | 6 |
| 3. MECHANICAL ADJUSTMENTS | | 9 |
| 4. ELECTRICAL ADJUSTMENTS | | |
| Deck Section | | 9 |
| Tuner Section | | 11 |
| CD Section | | 13 |
| 5. DIAGRAMS | | |
| 5-1. CD Section Block Diagram | | 15 |
| 5-2. Other Section Block Diagram | | 17 |
| 5-3. Main, Display Section Printed Wiring Boards | | 22 |
| 5-4. Main Section Schematic Diagram | | 27 |
| 5-5. Display Section Schematic Diagram | | 31 |
| 5-6. Polar Printed Wiring Board and Schematic Diagram | | 35 |
| 5-7. CD Section Printed Wiring Boards | | 37 |
| 5-8. CD Section Schematic Diagram | | 39 |
| 5-9. Tape Section Schematic Diagram | | 42 |
| 5-10. Tape Section Printed Wiring Boards | | 45 |
| 5-11. IC Pin Function | | 52 |
| 6. EXPLODED VIEWS | | 54 |
| 7. ELECTRICAL PARTS LIST | | 60 |

This section is extracted from instruction manual.

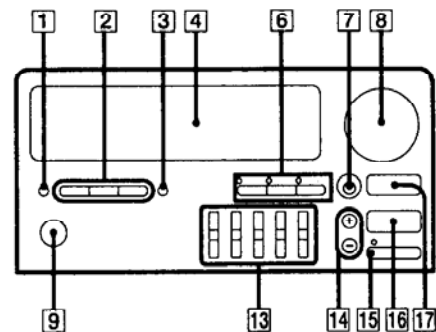
Index to Parts and Controls

Refer to the pages indicated in parentheses for how to use the controls.

Controls with an asterisk have indicators on themselves.

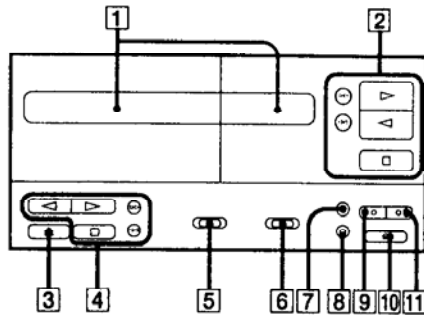
Front Panel

Tuner/Amplifier



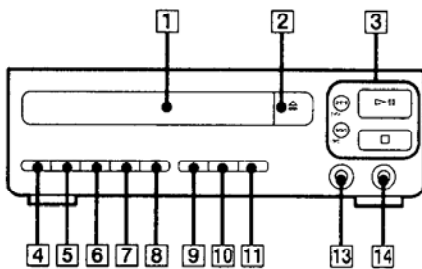
- 1** Remote sensor
- 2** TIMER SET button (19, 20)
 DAILY button (19)
 REC TIMER button (20)
- 3** CLOCK SET button (6)
- 4** Display window (7)
- 6** KARAOKE PON button (21)
 DBFB button (18)
 S-SUR button (18)
- 7** MEMORY/NEXT button (6, 11, 19, 20)
- 8** VOLUME control (7, 18, 21)
- 9** SYSTEM POWER ON/STANDBY switch (7)
- 13** Graphic equalizer (18)
- 14** TUNER/TIMER (+/-) button (6, 10, 11, 19, 20)
- 15** PRESET/TUNING buttons (10, 11)
- 16** TUNER/BAND button (10, 11, 16)
- 17** FUNCTION button (8, 21)

Tape player



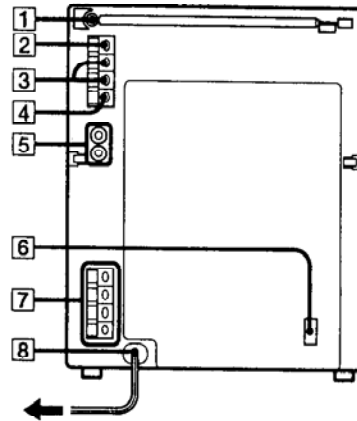
- 1 Tape compartments (12)
- 2 Tape operating buttons and lamp (for deck B)
 - ▷ (front side play) (12)
 - ◁ (reverse side play) (12)
 - (stop play) (12)
 - ▶▶ (fast rightward) (12)
 - ◀◀ (fast leftward) (12)
- 3 ▲ button (for deck A) (12)
- 4 Tape operating buttons and lamp (for deck A)
 - ▷ (front side play) (12)
 - ◁ (reverse side play) (12)
 - (stop play) (12)
 - ▶▶ (fast rightward) (12)
 - ◀◀ (fast leftward) (12)
- 5 DIRECTION switch (12)
- 6 DOLBY NR switch (12)
- 7 || PAUSE button (12)
- 8 ● REC button (14, 16)
- 9 HIGH SPEED DUBBING button (17)
- 10 ▲ button (for deck B) (12)
- 11 CD SYNCHRO button (13, 14, 15)

CD player



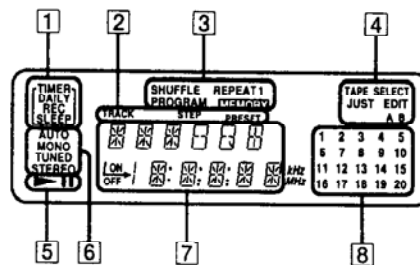
- 1 CD tray (7)
- 2 ▲ OPEN/CLOSE button (7)
- 3 CD player operating buttons
 - ▶|| (play and pause) (7)
 - (stop play) (7)
 - ◀◀/▶▶ (manual search/AMS) (7)
- 4 CONTINUE button (8)
- 5 SHUFFLE button (8)
- 6 PROGRAM button (8)
- 7 REPEAT button (9)
- 8 TIME button (8)
- 9 CHECK button (9)
- 10 CLEAR button (9)
- 11 EDIT button (14)
- 13 MIX MIC 2 jack (21)
- 14 HEADPHONES jack (18)

Rear Panel



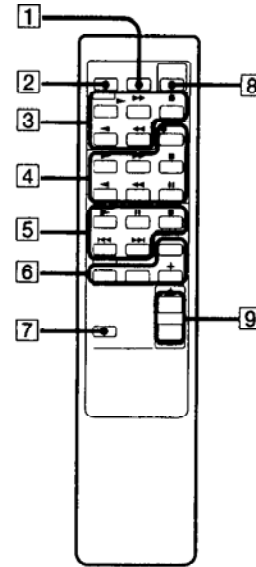
- 1 FM telescopic antenna
- 2 FM 75Ω terminal (4)
- 3 ⏏ earth terminals (4)
- 4 AM terminal (4)
- 5 VIDEO/AUX jacks (21)
- 6 VOLTAGE SELECTOR (5)
- 7 SPEAKER connector (5)
- 8 AC power cord (5)

Display Window



- 1 Timer indications (19)
- 2 TRACK/STEP/PRESET indication (8, 11)
- 3 CD play and MEMORY indications (8, 11)
- 4 CD recording indications (14)
- 5 CD play and pause indication (7)
- 6 Tuner indications (10)
- 7 Time/frequency indication (6, 10)
- 8 Music calendar/preset radio station numbers (7, 11)

Remote commander

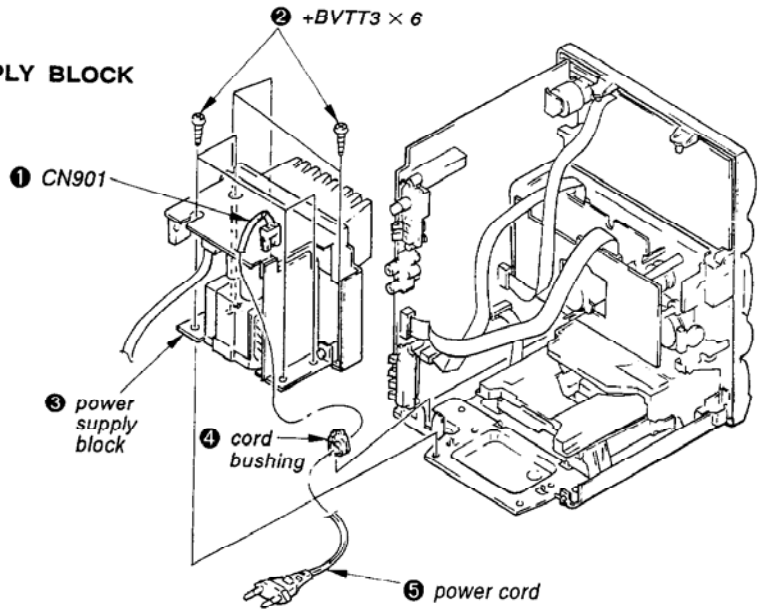


- 1 SLEEP button (19)
- 2 FUNCTION button (7, 21)
- 3 Deck A operating buttons
 - ▷ (front side play) (12)
 - ◁ (reverse side play) (12)
 - ▶▶ (fast rightward) (12)
 - ◀◀ (fast leftward) (12)
 - (stop) (12)
- 4 Deck B operating buttons
 - ▷ (front side play) (12)
 - ◁ (reverse side play) (12)
 - ▶▶ (fast rightward) (12)
 - ◀◀ (fast leftward) (12)
 - || (pause) (12)
 - (stop) (12)
 - REC (recording) (14, 16)
- 5 CD operating buttons
 - ▶ (play) (7)
 - ◀◀/▶▶ AMS* (7)
 - || (pause) (7)
 - (stop) (7)
- * AMS: Automatic Music Sensor
- 6 Tuner operating buttons
 - BAND button (10)
 - PRESET (+/-) buttons (11)
 - STEREO/MONO button (10)
- 7 CLOCK DISPLAY (6)
- 8 SYSTEM POWER button (7)
- 9 VOL. (+/-) (volume) buttons (7, 18, 21)

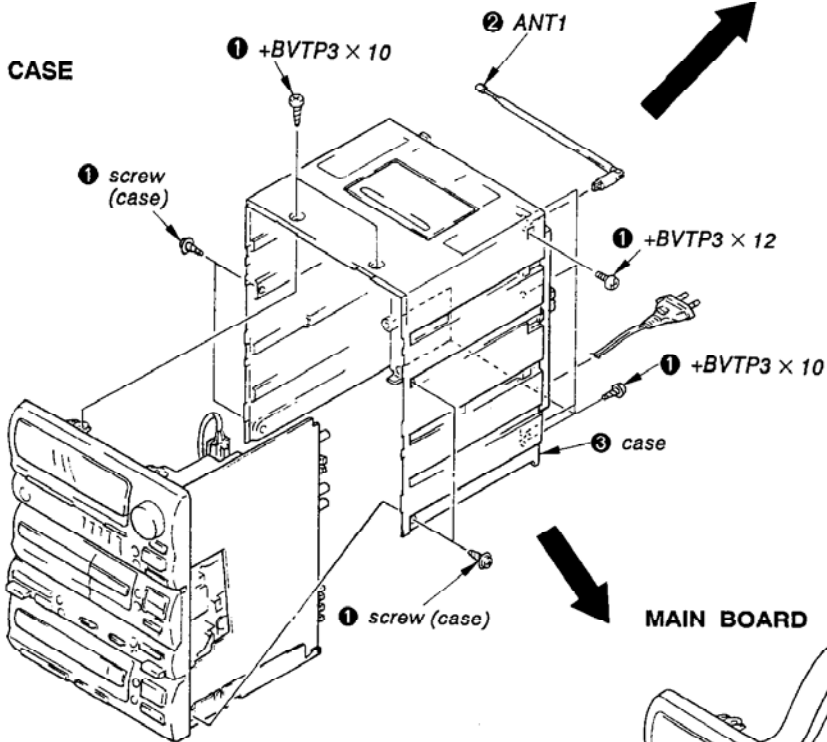
SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

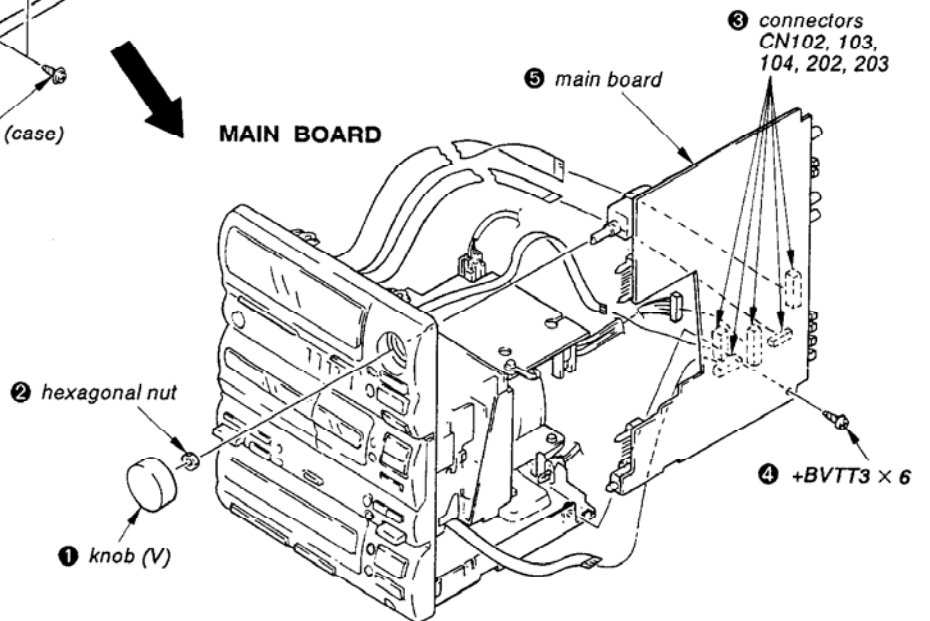
POWER SUPPLY BLOCK



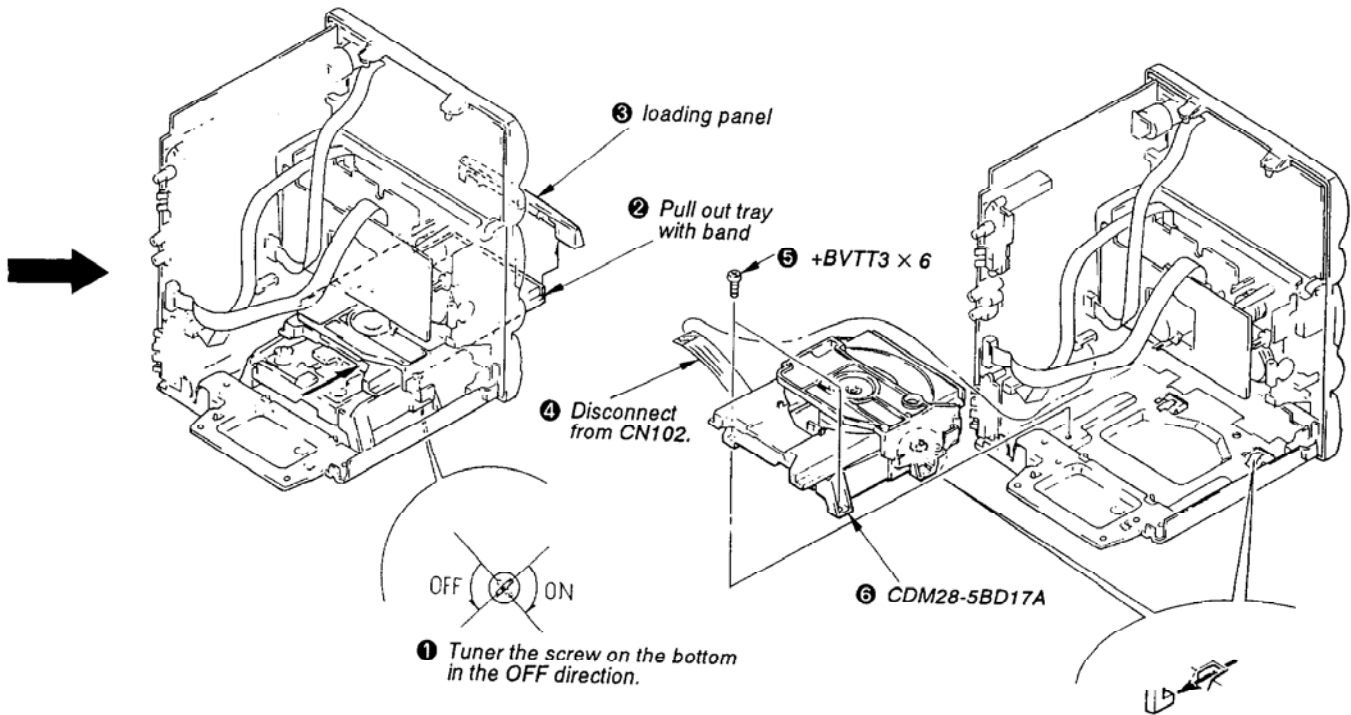
CASE



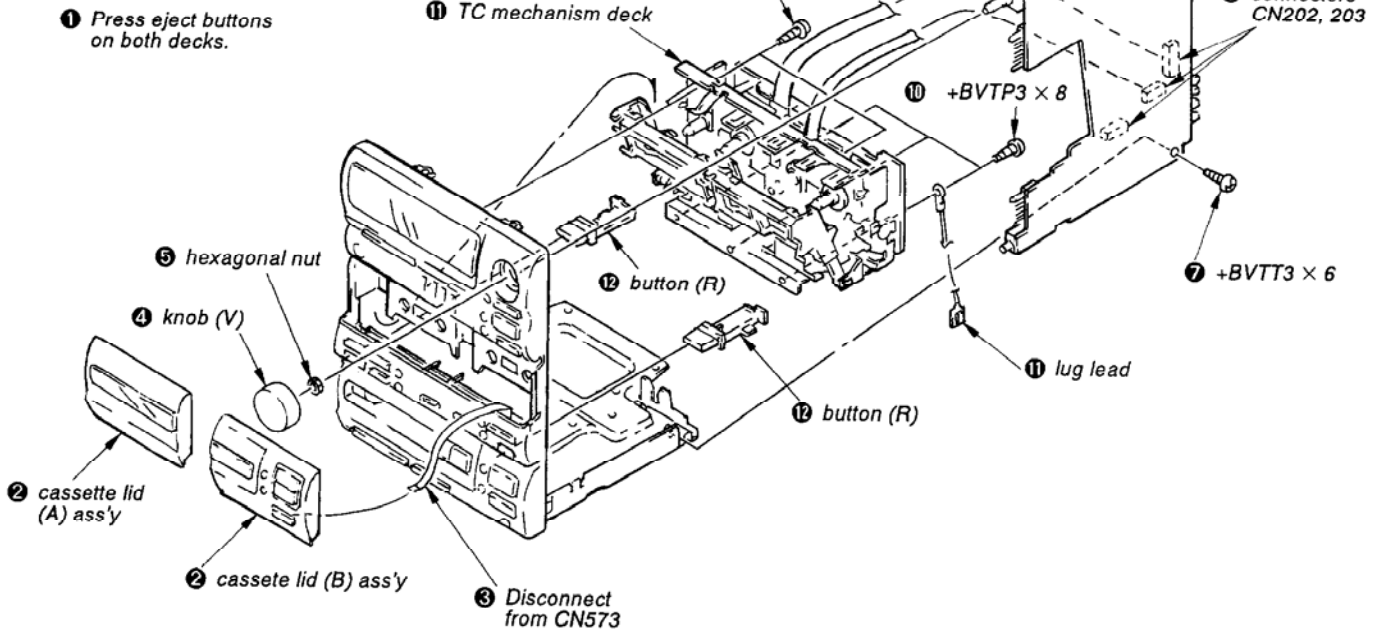
MAIN BOARD



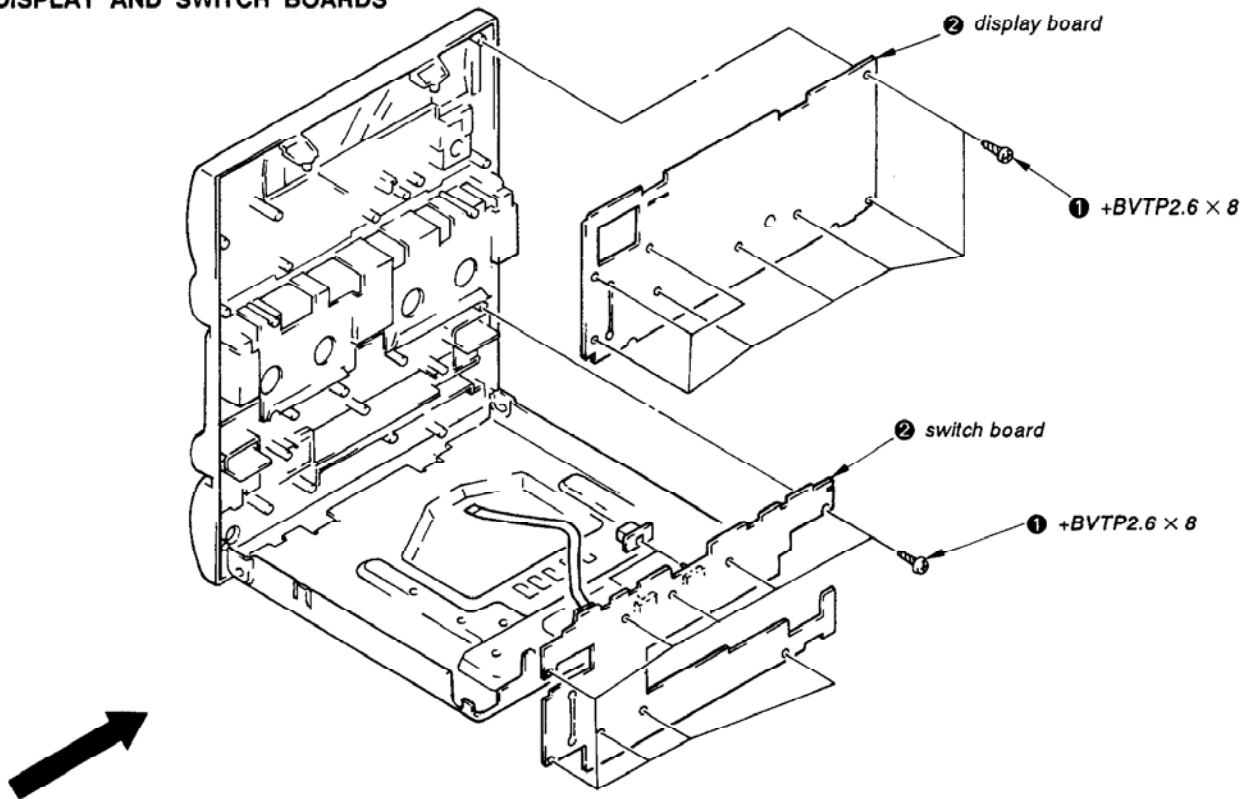
CDM28-5BD17A



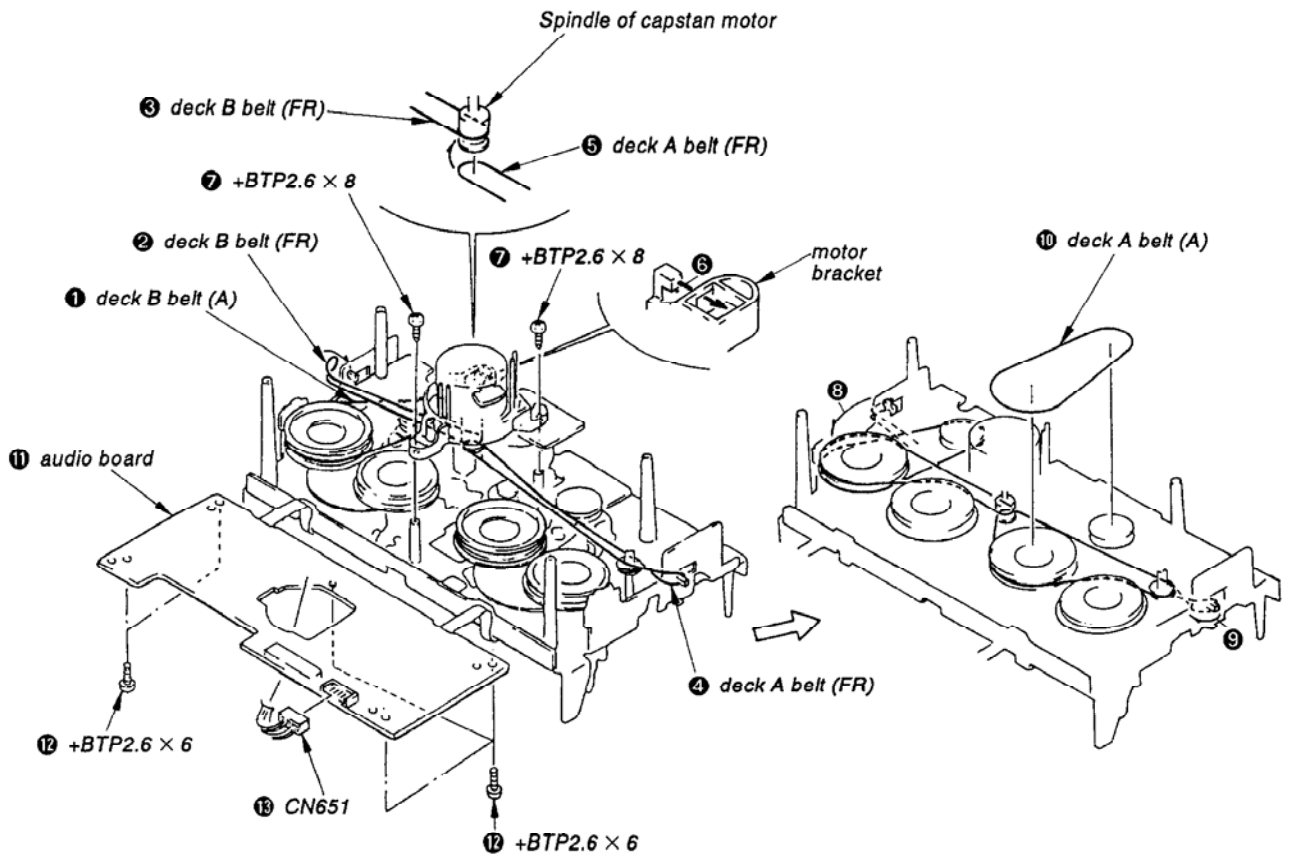
TC MECHANISM DECK



DISPLAY AND SWITCH BOARDS



BELTING, CAPSTAN MOTOR (M1) INSTALLATION



SECTION 3 MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

| | |
|----------------------|--------------|
| record/playback head | pinch roller |
| erase head | rubber belts |
| capstan | idlers |
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustment.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustment should be performed with the rated power supply voltage unless otherwise noted.

• Torque Measurement

| Torque | Torque Meter | Meter Reading |
|----------------------|--------------|--|
| Forward | CQ-102C | 28 to 60 g•cm (0.39 to 0.83 oz•inch) |
| Forward back tension | CQ-102C | 2 to 6 g•cm (0.028 to 0.08 oz•inch) |
| Reverse | CQ-102RC | 28 to 60 g•cm (0.39 to 0.83 oz•inch) |
| Reverse back tension | CQ-102RC | 2 to 6 g•cm (0.028 to 0.08 oz•inch) |
| FF/REW | CQ-201B | 70 to 140 g•cm (0.98 to 1.94 oz•inch) |

SECTION 4 ELECTRICAL ADJUSTMENTS

DECK SECTION

1. The adjustment should be performed in the publication (Be sure to make playback adjustment at first.)
2. The adjustment and measurement should be performed for both L-CH and R-CH.
 - Switch position
DOLBY NR SWITCH: OFF
3. Prior to electrical adjustments, short the connector TP201 (test mode).
4. After adjustments, release short circuit on TP201.

• Test Tape

| Tape | Contents | Use |
|----------|----------------|--|
| P-4-A100 | 10 KHz, -10 dB | Head Azimuth Adjustment Level Adjustment Tape Speed Adjustment |
| P-4-L300 | 315 Hz, 0 dB | |
| WS-48A | 3 kHz, 0 dB | |

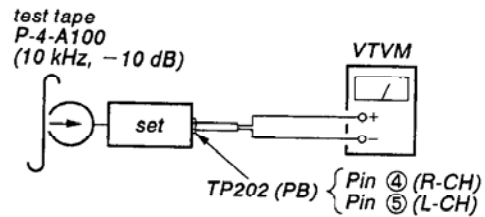
0 dB = 0.775 V

Record/Playback Head Azimuth Adjustment

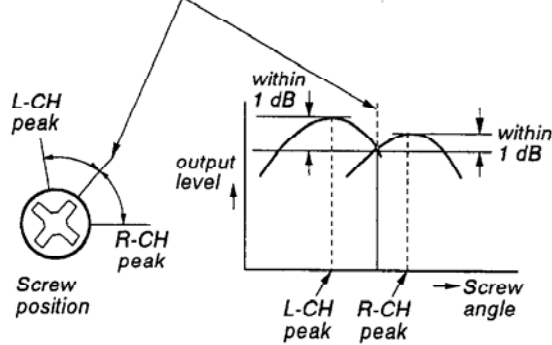
DECK A DECK B

Procedure:

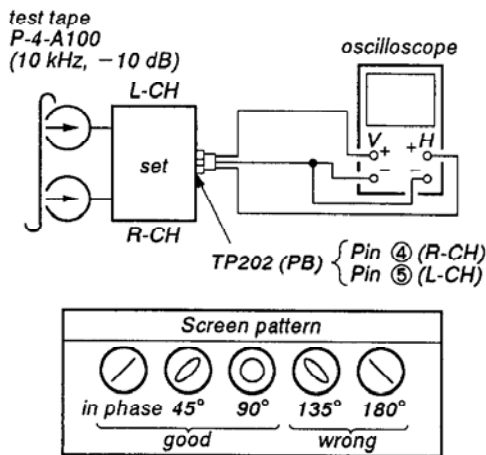
1. Forward Playback Mode
Reverse Playback Mode



- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.



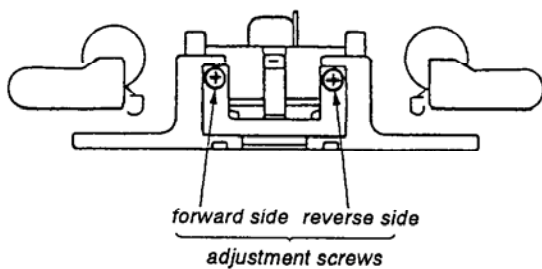
- Playback Mode



- Change the review playback mode and repeat the steps 1 to 3.
- After the adjustment, lock the adjustment screw with suitable locking compound.

Adjustment Location:

– recrod/playback head (deck A and B)

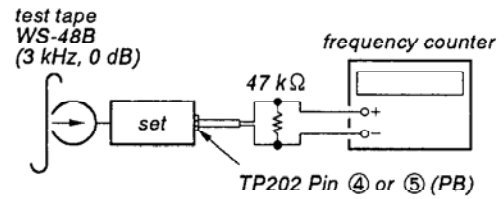


Tape Speed Adjustment

DECK A DECK B

Procedure:

– Forward Playback Mode –



(high speed adjustment)

- Connect pin 26 of IC801 to ground.
- Set to FWD playback mode.
- Keep on pressing the SYNCRO DUBBING switch.
- Adjust RV652 so that the frequency counter reading becomes $6,000 \pm 20$ Hz.
- Disconnect pin 26 of IC801 connected to ground in step 1.

(normal speed adjustment)

- Set to FWD playback mode.
- Adjust RV601 so that the frequency counter reading becomes $3,000 \pm 10$ Hz.

Frequency difference between the beginning and the end of the tape should be within 3%.

Frequency difference between the deck A and deck B the beginning of the tape should be within 1.5%.

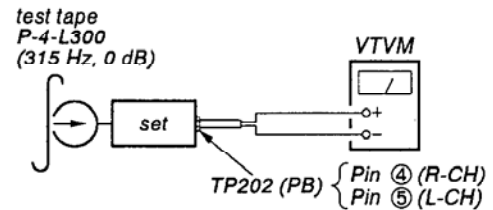
Adjustment Location: Audio board

Playback Level Adjustment

DECK A DECK B

Procedure:

Mode: Playback



Adjust deck A with RV311 (L-CH) and RV411 (R-CH), deck B with RV301 (L-CH) and RV401 (R-CH) to the adjustment level as follows.

Adjustment Level:

Playback level: -7.7 ± 0.5 dB (0.30 to 0.34 V)
Level Difference between Channels: within 0.5 dB

Confirm the PB level does not change in playback mode while changing the mode from playback to stop several times.

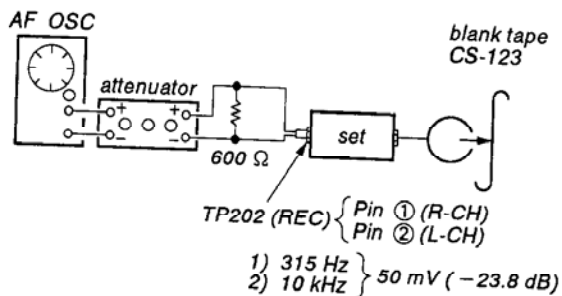
Adjustment Location: Audio board

Record Bias Adjustment

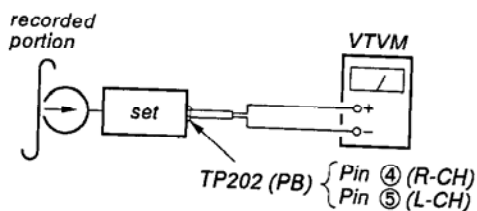
DECK B

Procedure:

1. record mode



2. playback mode



Confirm playback the signal recorded in step 1 becomes adjustment level as follows.

If these levels are out of order, adjust the RV341 (L-CH) and RV441 (R-CH) and repeat the steps 1 and 2.

Adjustment level: 10 kHz playback level relative to the 315 Hz level:
 0 ± 0.5 dB

Adjustment Location: Audio board

Record Level Adjustment

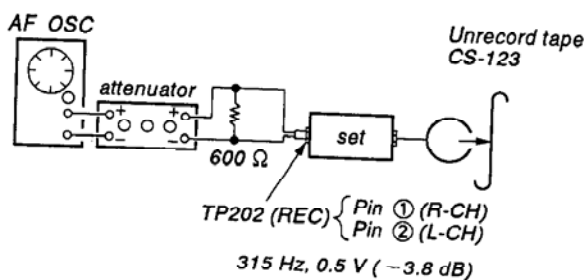
DECK B

Setting:

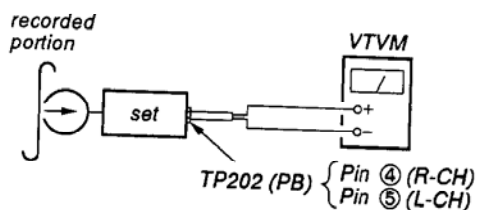
Set function to VIDEO or Phono.

Procedure:

1. record mode



2. playback mode



Confirm playback the signal recorded in step 1 becomes adjustment level as follows.

If these levels are out of order, adjust the RV351 (L-CH) and RV451 (R-CH) and repeat the steps 1 and 2.

Adjustment level:

Playback level: -3.8 dB ± 0.5 dB (0.47 to 0.53 V)

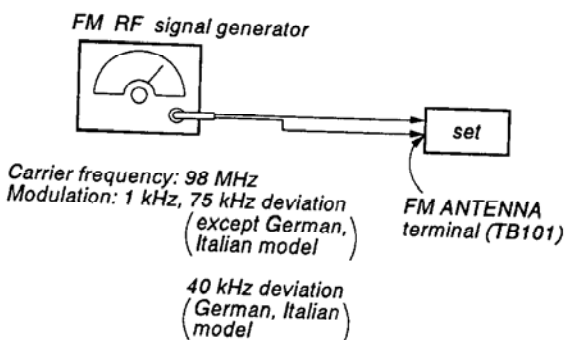
Adjustment Location: Main board

TUNER SECTION

Note: As a front-end (FE1) is difficult to repair if faulty, replace it with new one.

FM SECTION ADJUSTMENTS

Setting:



FM Tuned Indication Lighting Level Adjustment

Band: FM

Procedure:

1. Supply a $17.8 \mu\text{V}$ (25 dB μ) 98 MHz signal from the ANTENNA terminal.
2. Tune the set to 98 MHz.
3. Adjust RV51 so that the **TUNED** lights up.
4. Confirm that the **TUNED** doesn't light with FM RF signal generator output level set at $12.6 \mu\text{V}$ (22 dB μ).

AM SECTION ADJUSTMENTS

SW OSC Voltage Adjustment

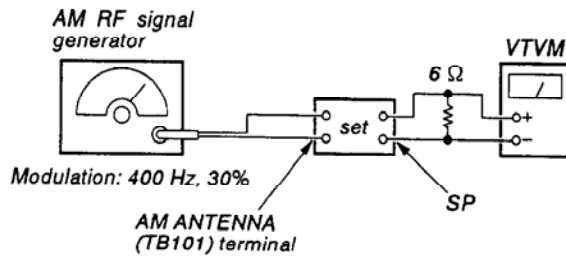
Band: SW

Procedure:

1. Connect the VOM to FE1 Pin ⑤ (VT).
2. Tune the set to 5.95 MHz.
3. Adjust T2 for 1.0 to 1.1 V reading on the VOM.
4. Tune the set to 17.90 MHz.
5. Adjust CV2 for 8.4 to 8.6 V reading on the VOM.

SW Tracking Adjustment

Band: SW



Procedure:

1. Connect the VOM to speaker terminal.
2. Adjust for a maximum reading on VOM (TB801).

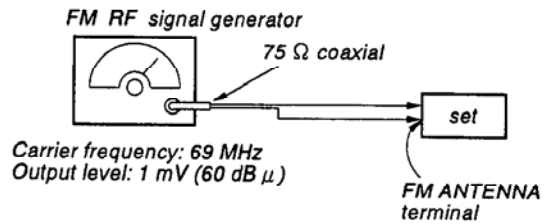
| Signal generator and Set frequency | Adjustment part |
|------------------------------------|-----------------|
| 7.0 MHz | T1 |
| 17.0 MHz | CV1 |

- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM POLAR Adjustment

Setting:

Band: FM

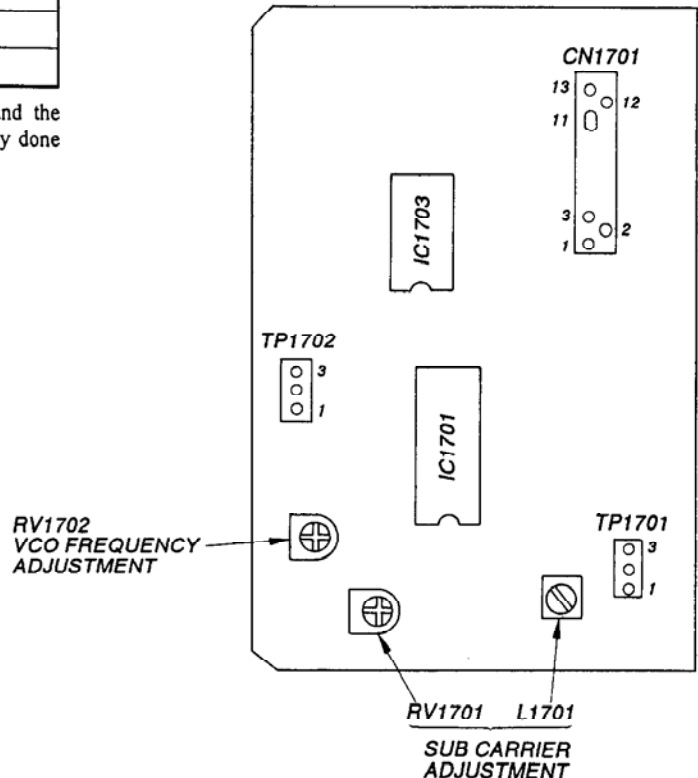


1. Connect the frequency counter to the TP1702 and adjust the RV1702 for a frequency of 31.25 kHz \pm 50 Hz.
2. Connect the VTVM to the TP1701, receive the signal of 69 MHz \pm 1 kHz (1 kHz dev.) and adjust the reading of the VTVM to 0 dB.
3. Set the modulation frequency of the FM RF signal generator to 31.25 kHz (10 kHz dev.) and adjust the L1701 so that the reading of the VTVM is 0 dB.
4. Adjust the RV1701 so that the reading of the VTVM to 14 dB.
5. Check that the separation between Pins ⑬ and ⑪ of the CN1701 is more than 18 dB.

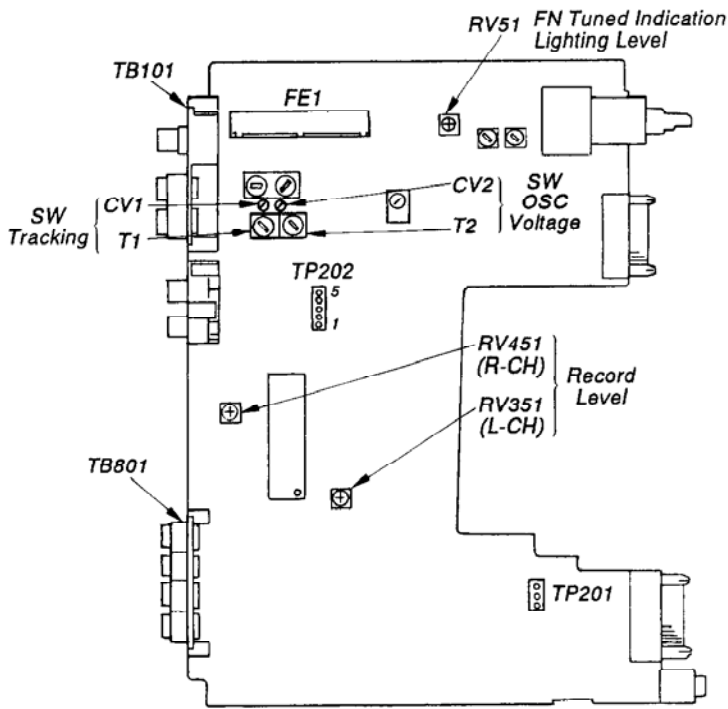
Adjustment Location: POLAR board

Adjustment Location:

POLAR BOARD
- Component Side -



MAIN BOARD
— Component Side —

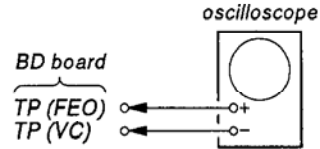


CD SECTION

Note:

1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use the oscilloscope with more than 10 MΩ impedance.
4. Clean the object lens using an applicator with neutral detergent when the signal level is low than specified value with the following checks.

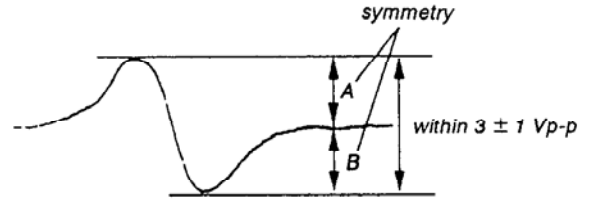
S-Curve Check



Procedure:

1. Connect oscilloscope to test point TP (FEO) on BD board.
2. Connect between test point TP (FES) and TP (VC) by lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and turn Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check if the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3 ± 1 Vp-p.

S-curve waveform

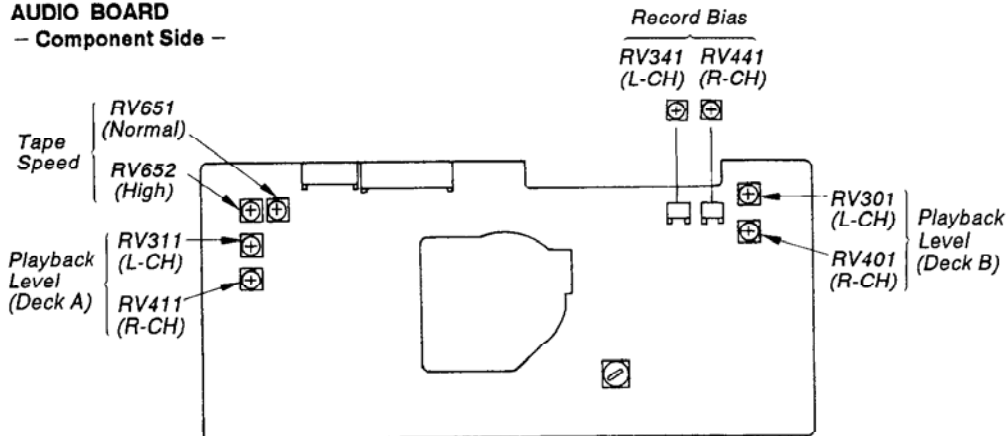


6. After check, remove the lead wire connected in step 2.

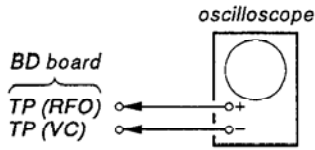
Note:

- Try to measure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.
- Set sweep time as long as possible and set the brightness to obtain best waveform.

AUDIO BOARD
— Component Side —



RF Level Check



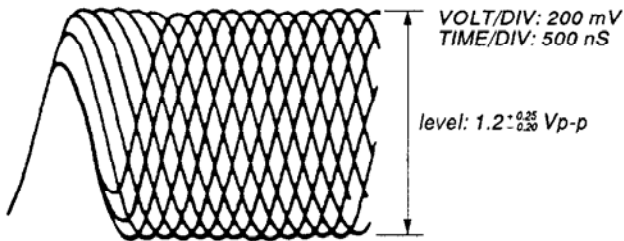
Procedure:

1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

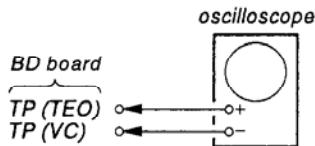
Note:

A clear RF signal waveform means that the shape "◇" can be clearly distinguished at the center of the waveform.

RF signal waveform



E-E Balance Check



Procedure:

1. Connect test point TP (ADJ) to ground and TP (TES) to TP (VC) with a lead wire.
2. Connect oscilloscope to test point TP (TEO) on BD board.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the oscilloscope waveform is symmetrical on the top and bottom in relation to 0 V, and check this level.

Traverse waveform

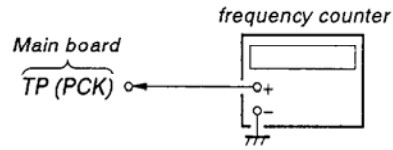


6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure:

1. Connect frequency counter to test point (PCK) with lead wire.



2. Turn Power switch on.
3. Confirm that reading on frequency counter is 4.3218 MHz.

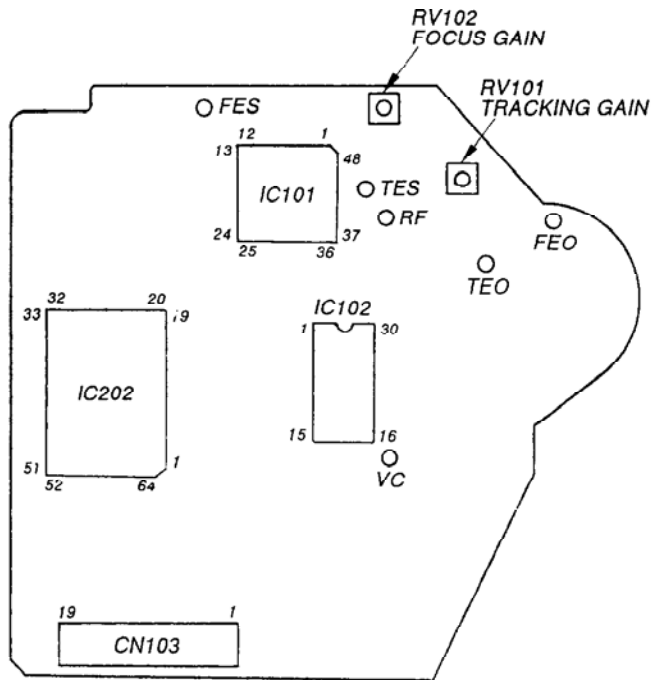
Focus/Tracking Gain

This gain has a margin, so even if it is slightly off. There is no problem. Therefore, do not perform, this adjustment.

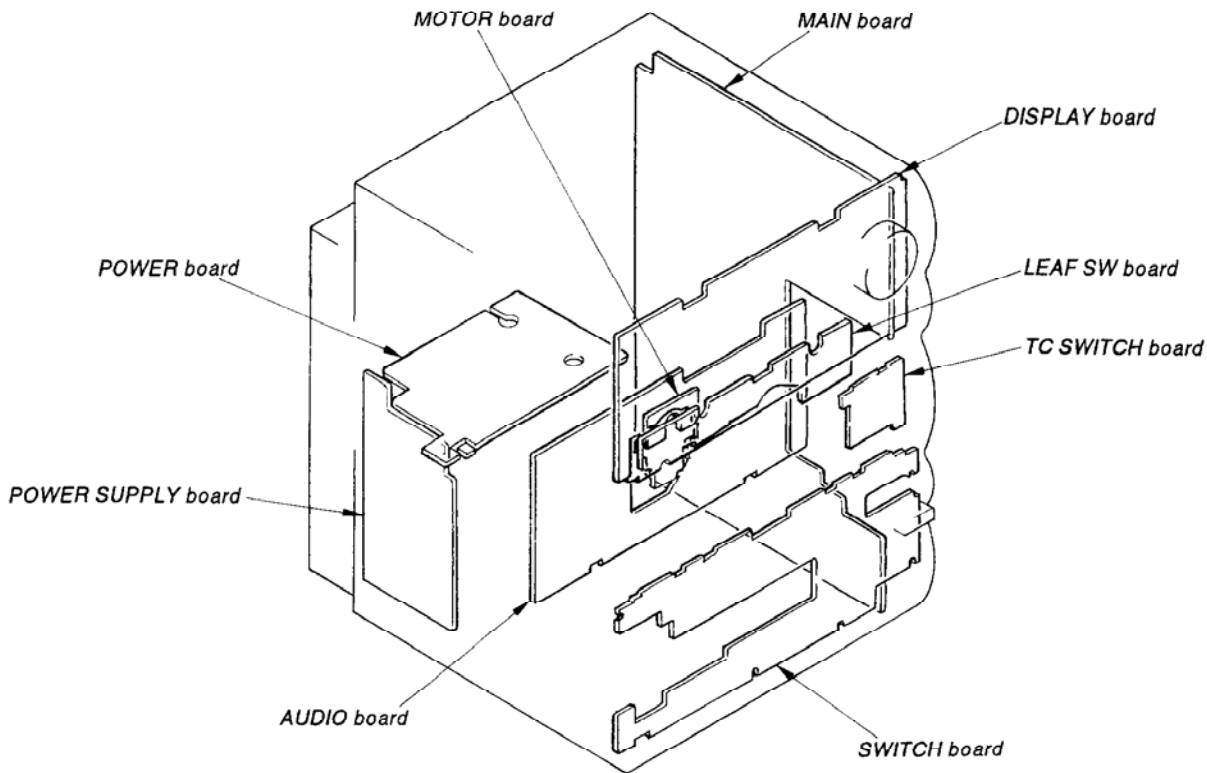
Please note that it should be fixed to mechanical center position when you moved and do not know original position.

Adjustment Location:

[BD BOARD] (SIDE B)

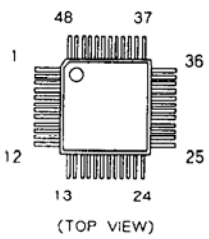


● Circuit Boards Location

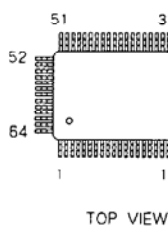


● Semiconductor Lead Layouts

CXA1372AQ



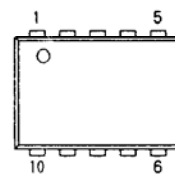
CXD2507Q
M38122M2-067FP
μ PD75116GF-J53-3BE



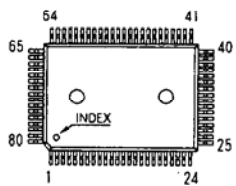
HA12172NT



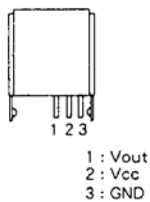
LA5601



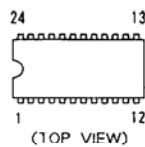
CXD2500BQ
μ PD78042GF-062-3B9



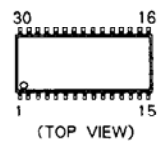
GP1U90XB



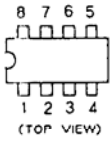
LA1831
LC7218
M65831PK



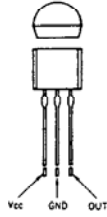
LA6525M



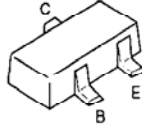
LB1639
M5218AP
μ PC4570C
X24C01P



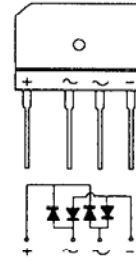
PST600D
PST600E
PST600K



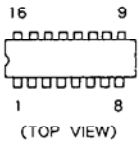
2SA1602-F
2SC3395
2SC4154-F



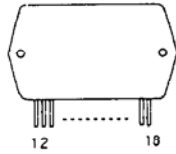
RBA-402



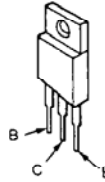
MC14052BCP
μ PD4053BC



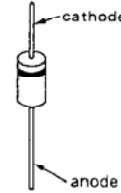
STK4132MK2



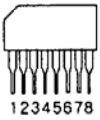
2SB1094-LK
2SD2012



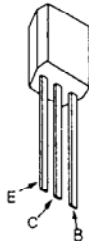
UZP-6.2BB
UZ-27BSB
UZ-4.7BSA
UZ-5.6BS
UZ6.3BSC
UZ8.2BSC
1N148M
11ES2



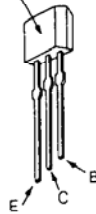
M5218AL
M5230L-A



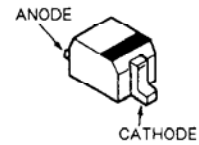
DTA114ES
DTC114ES
DTC143TS
DTC144ES
UN2213
2SC2669OY
2SC2724-CD
2SC2785-FEK
2SC3622A-LK



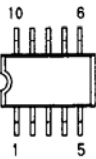
2SC403SP-51
LETTER SIDE



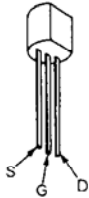
1SS352



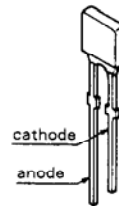
M54641FPP



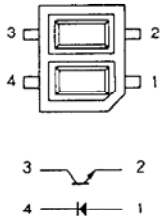
2SK246-GR3



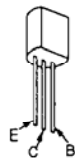
SEL5220S
SEL5420S
SEL5920A



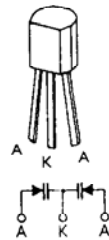
NJL5165K-A



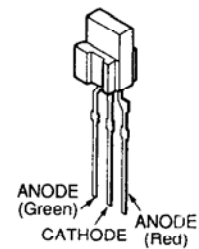
2SA1175-FEK
2SC2001-LK
2SC3112-A
2SD1387
2SD1513-K



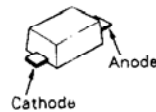
KV1560N



SML1260S
SML1460E

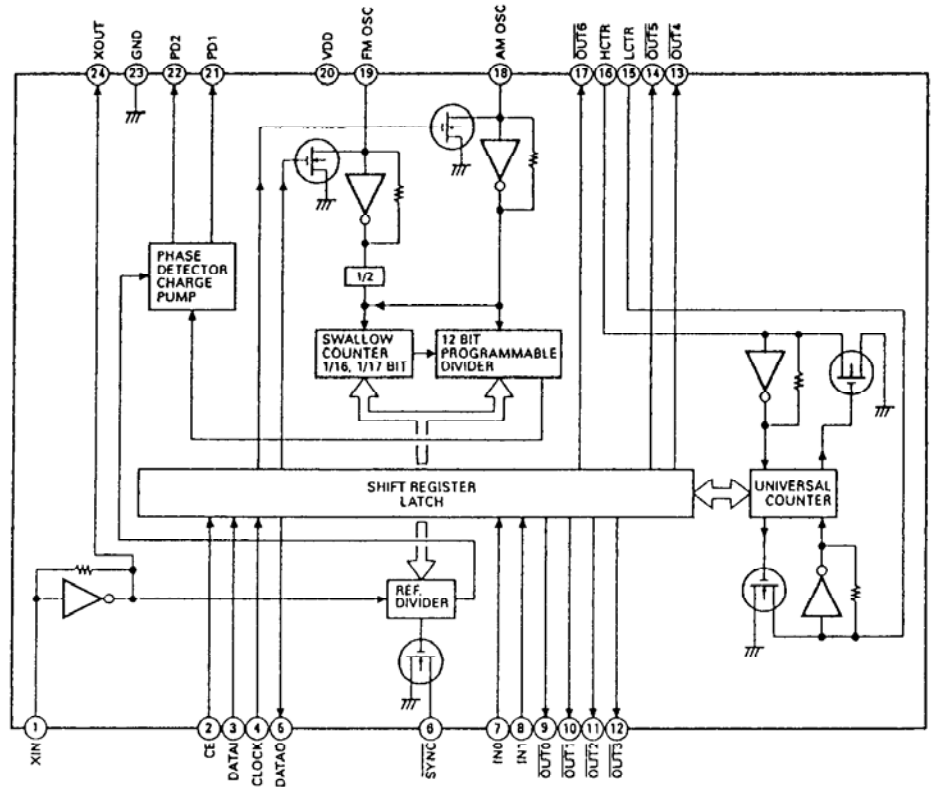


MA8043-M

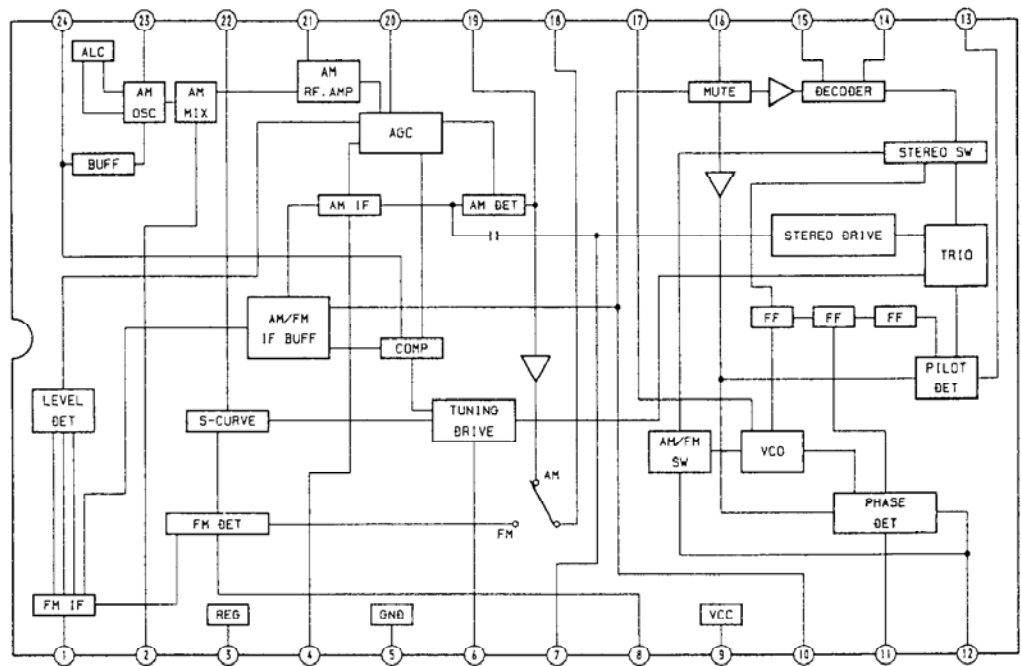


• IC Block Diagrams

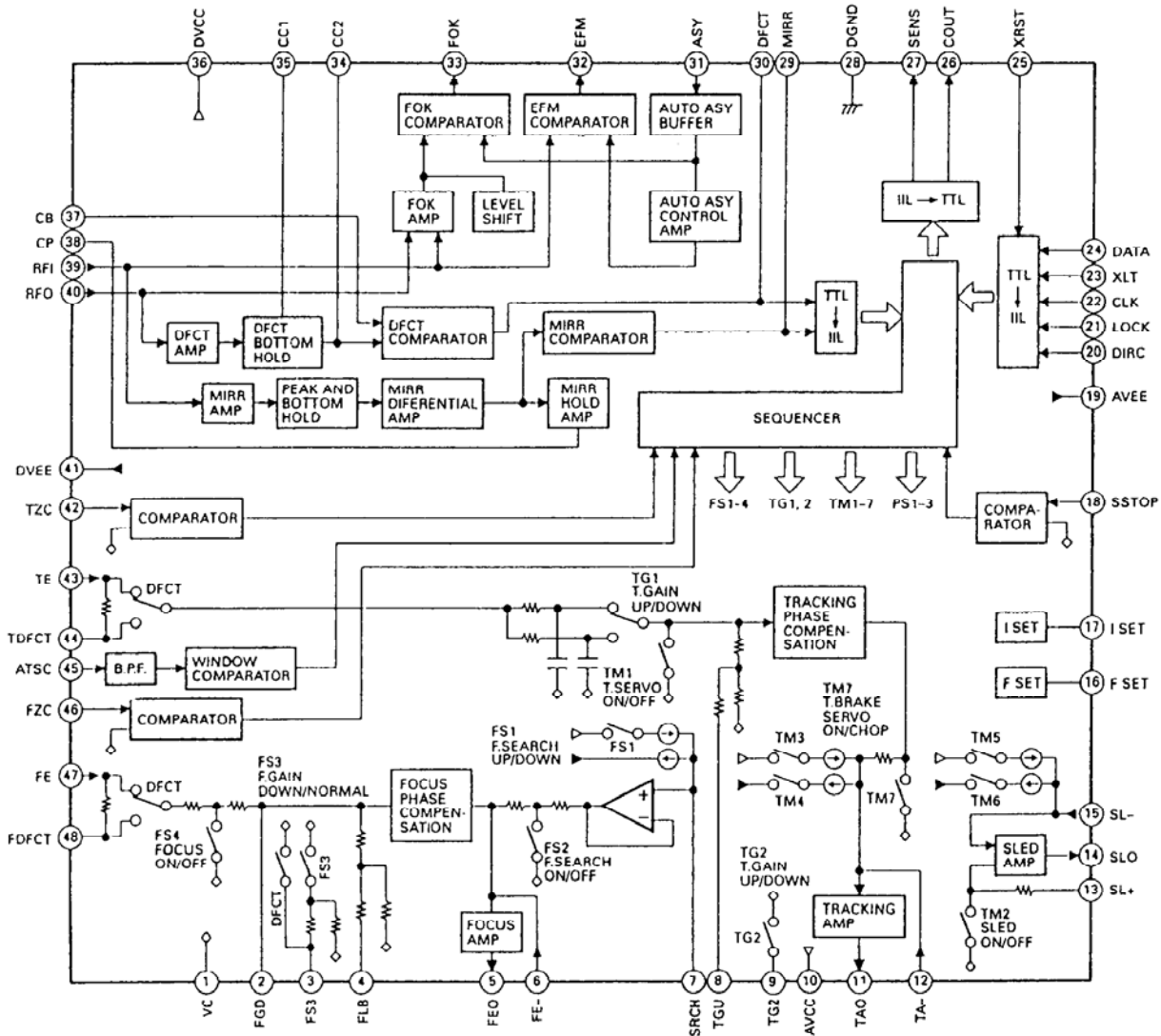
IC21 LC7218



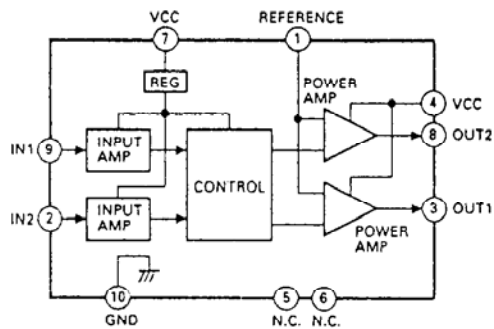
IC51 LA1831



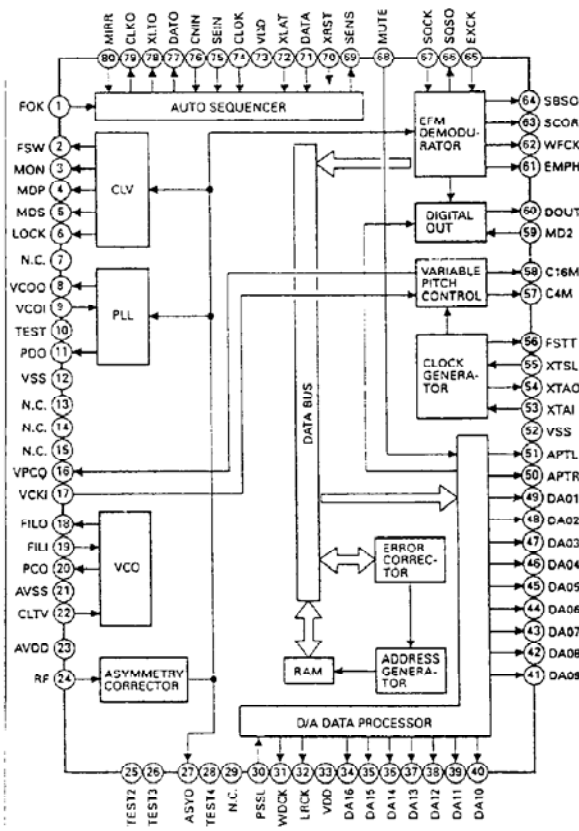
IC101 CXA1372AQ



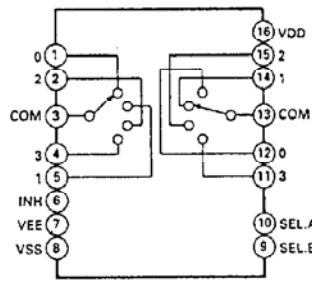
IC103 M54641FP



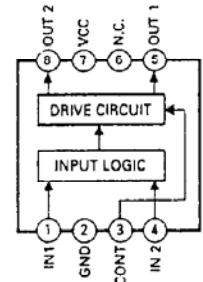
IC201 CXD2500BQ



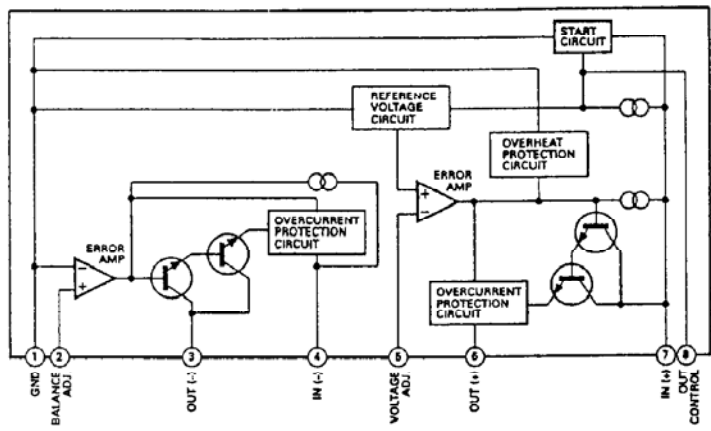
IC703 MC14052BCP



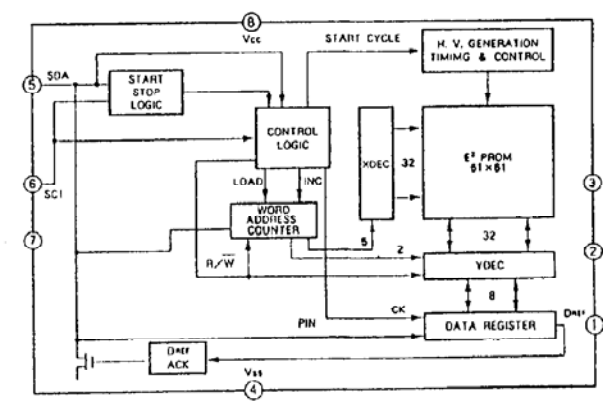
IC731 LB1639



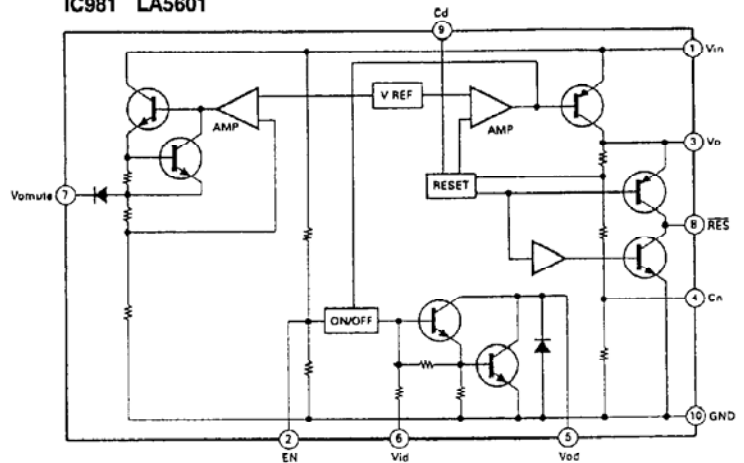
IC901 M5230L-A



IC502 X24C01P



IC981 LA5601



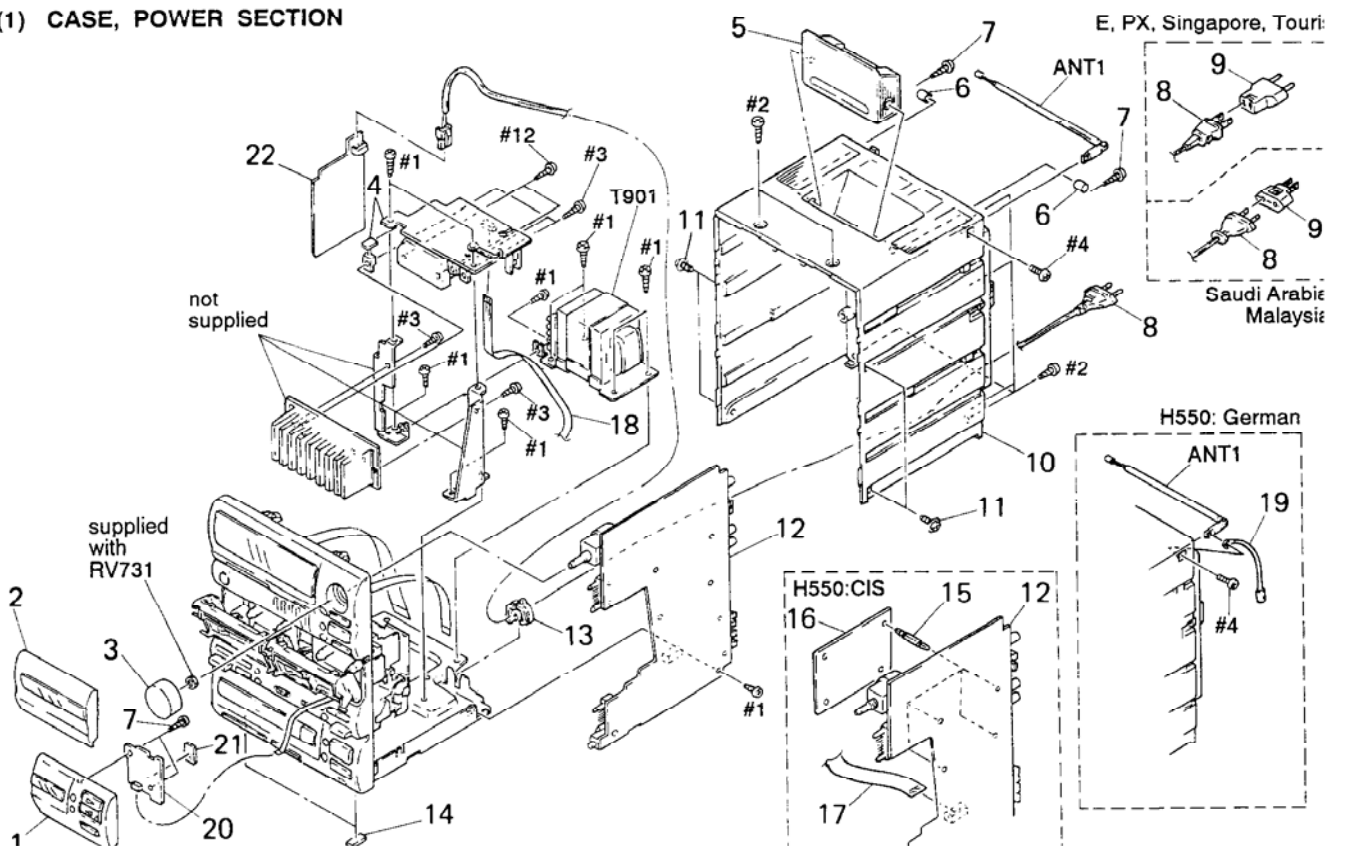
5-11. IC PIN FUNCTION

M38122M2-063FP (Main Board IC201)

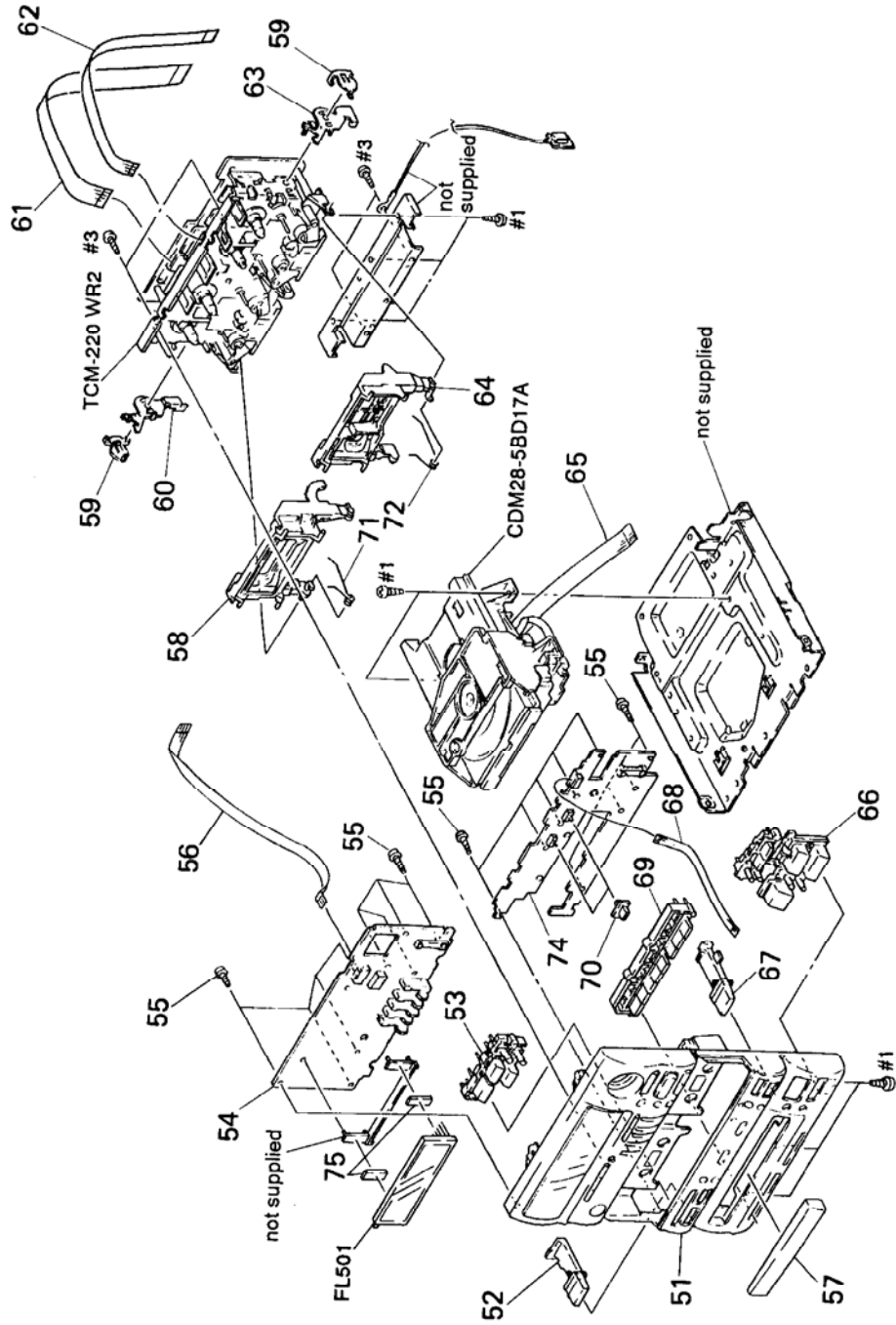
| Pin No. | Pin Name | I/O | Description |
|---------|-----------|-----|---|
| 1 | KEY4 | I | Key input terminal. |
| 2 | METAL L | I | Meter L-CH input terminal. |
| 3 | METAL R | I | Meter R-CH input terminal. |
| 4 | AMS-IN | I | +5 V |
| 5 | A*HALF | I | Half pawl input for DECK-A. "L" : Available |
| 6 | A*SHUT | I | Take up side reel rotation detection at DECK-A. |
| 7 | A*SHUMIT | O | Take up side reel rotation detection at DECK-A. |
| 8 | B*SHUT | I | Take up side reel rotation detection at DECK-B. |
| 9 | B*SHUMIT | O | Take up side reel rotation detection at DECK-B. |
| 10 | PB A/B | O | Playback A/B selector. "L": DECK-A. "H": DECK-B. |
| 11 | EQ H/L | O | Equalizer selector. "L": Normal, "H": High |
| 12 | REC MUTE | O | Recording mute ON/OFF. "L": Mute ON. "H": Mute OFF |
| 13 | REC/PB | O | Recording/Playback selector. "L": REC, "H": PB |
| 14 | LINE MUTE | O | Line/Meter mute terminal. "L": Mute ON, "H": Mute OFF |
| 15 | B*BIAS | O | Bias ON/OFF at B-deck. "L": Bias ON, "H": Bias OFF |
| 16 | SIRCS | I | Circs signal in terminal. |
| 17 | PW IN (2) | I | Power ON/OFF (2). "L": Power OFF. "H": Power ON |
| 18 | PW IN (1) | I | Power ON/OFF (1). "L": Power OFF. "H": Power ON |
| 19 | RESET | I | Reset terminal. |
| 20 | POWER OUT | O | Power ON/OFF "L": Power hold |
| 21 | METAL | I | Metal tape selector terminal. |
| 22 | X IN | I | System clock input terminal (4 MHz). |
| 23 | X OUT | O | System clock output terminal (4 MHz). |
| 24 | GND | — | Power supply (GND) |
| 25 | B*RELAY | O | Recording/Playback selector at DECK-B. "L": REC |
| 26 | TEST | I | Test mode terminal. "L" : Test mode |
| 27 | B*STOP | I | Mechanism stop switch input for DECK'B. "H": ON |
| 28 | A*STOP | I | Mechanism stop switch input for DECK-A. "H": ON |
| 29 | - 22 V | O | VFD Power (- 22 V). |
| 30 | S15 | O | VFD Segment. |
| 31 | S14 | O | VFD Segment. |
| 32 | S13 | O | VFD Segment. |
| 33 | S12 | O | VFD Segment. |
| 34 | S11 | O | VFD Segment. |
| 35 | S10 | O | VFD Segment. |
| 36 | S9 | O | VFD Segment. |
| 37 | S8 | O | VFD Segment. |
| 38 | S7 | O | VFD Segment. |
| 39 | S6 | O | VFD Segment. |
| 40 | S5 | O | VFD Segment. |

| Pin No. | Pin Name | I/O | Description |
|---------|-------------|-----|--|
| 41 | S4 | O | VFD Segment. |
| 42 | S3 | O | VFD Segment. |
| 43 | S2 | O | VFD Segment. |
| 44 | S1 | O | VFD Segment. |
| 45 | G1 | O | VFD Grid. |
| 46 | G2 | O | VFD Grid. |
| 47 | G4 | O | VFD Grid. |
| 48 | G5 | O | VFD Grid. |
| 49 | G3 | O | VFD Grid. |
| 50 | G7 | O | VFD Grid. |
| 51 | G6 | O | VFD Grid. |
| 52 | CAP•H/L | O | Capstan motor speed selector. "L" : High, "H" : Normal |
| 53 | CAP•ON/OFF | O | Capstan motor ON/OFF. "H" :High, "L" ON |
| 54 | TRG•H/L | O | Trigger motor control. |
| 55 | A•TRG | O | Trigger motor control. |
| 56 | B•TRG | O | Trigger motor control. |
| 57 | Vcc | — | Power supply (+5 V) |
| 58 | VEE | — | Power supply (- 24 V) |
| 59 | A Vss (GND) | — | Power supply (GND) |
| 60 | VREF | — | A/D Reference voltage (+5V) |
| 61 | B•HALF | I | Half pawl input for deck-B. (REC pawl A/B side) |
| 62 | KEY1 | I | Key input terminal. |
| 63 | KEY2 | I | Key input terminal. |
| 64 | KEY3 | I | Key input terminal. |

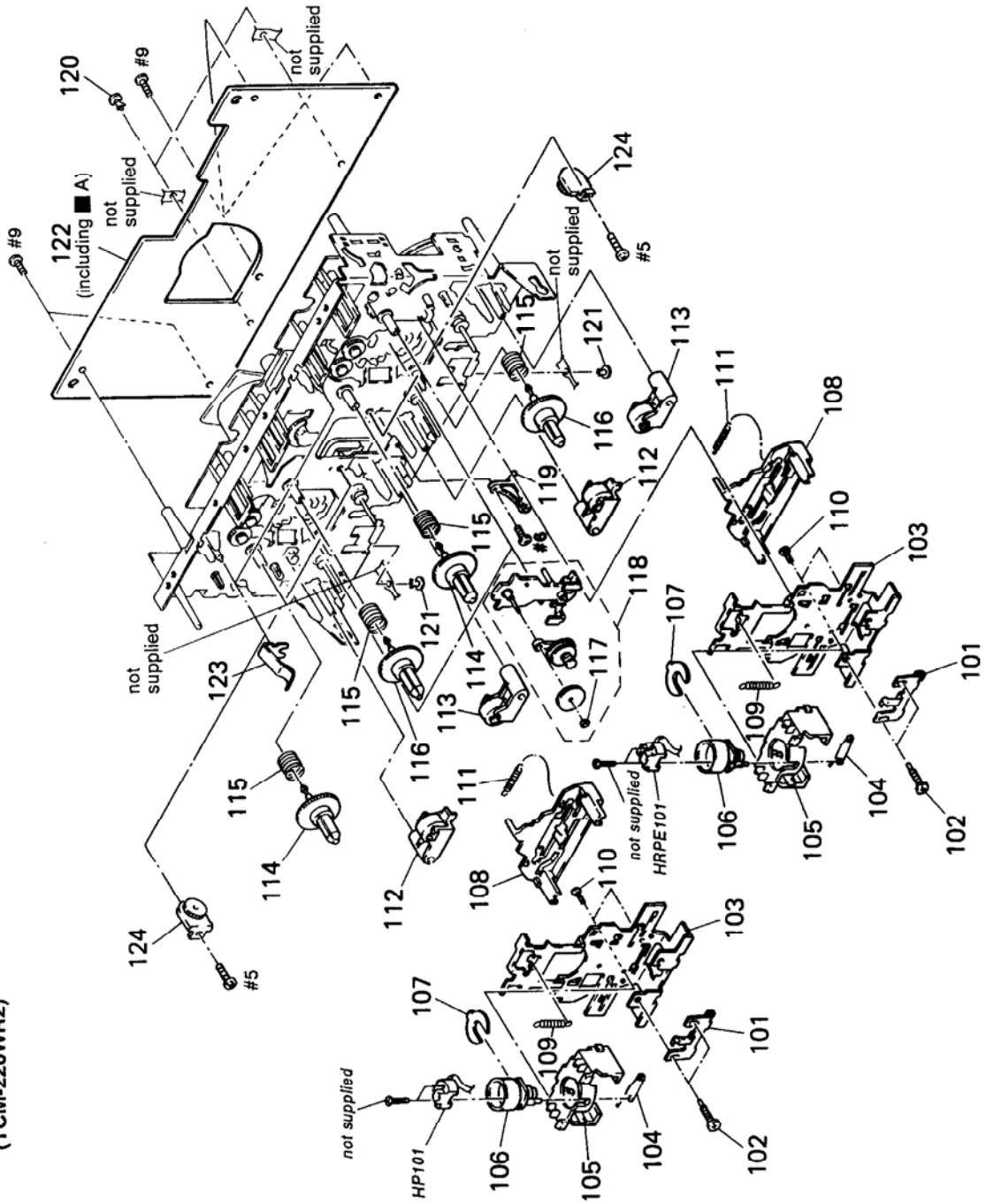
(1) CASE, POWER SECTION



(2) FRONT PANEL, CHASSIS SECTION

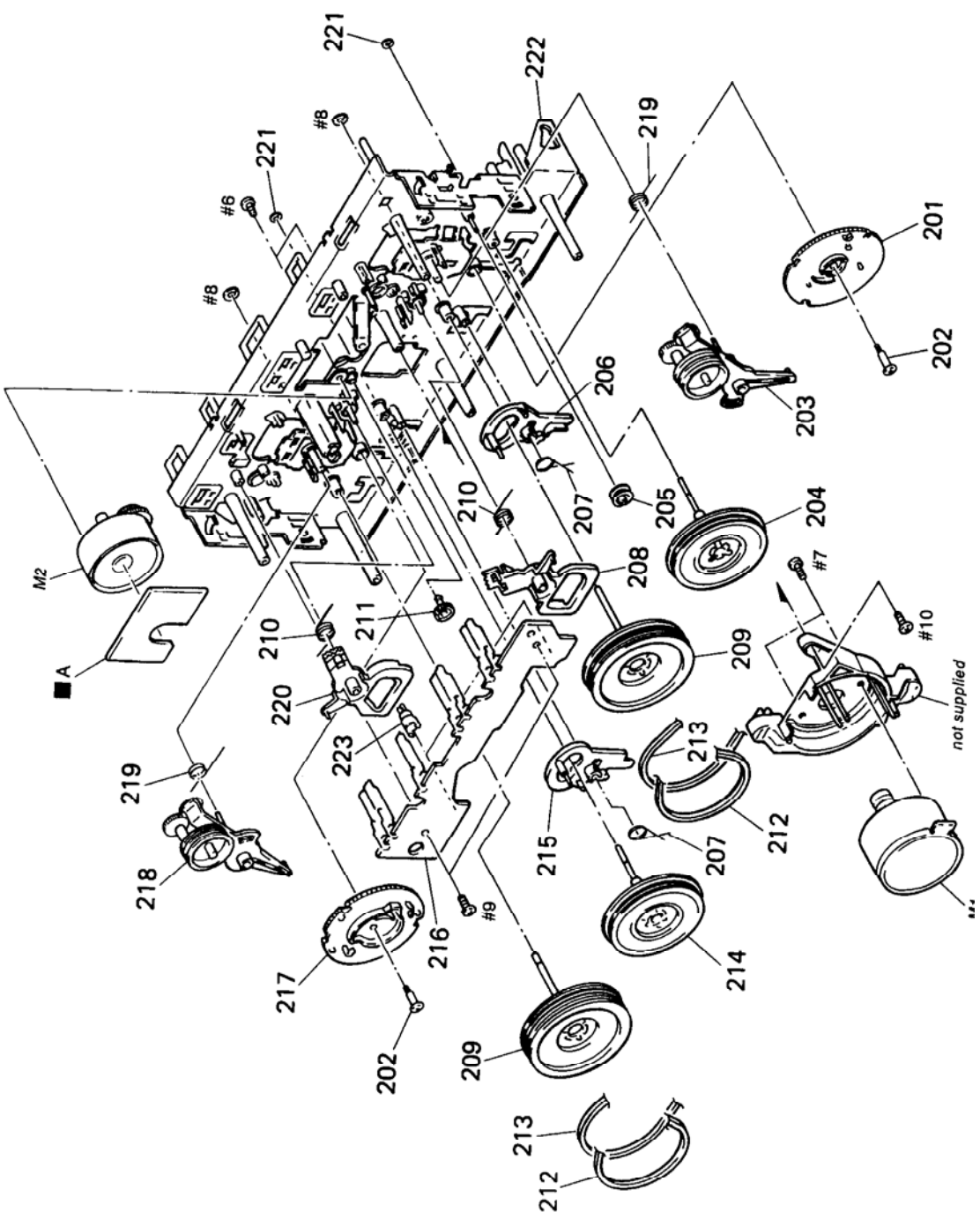


(3) MECHANISM SECTION 1
(TCM-220WR2)

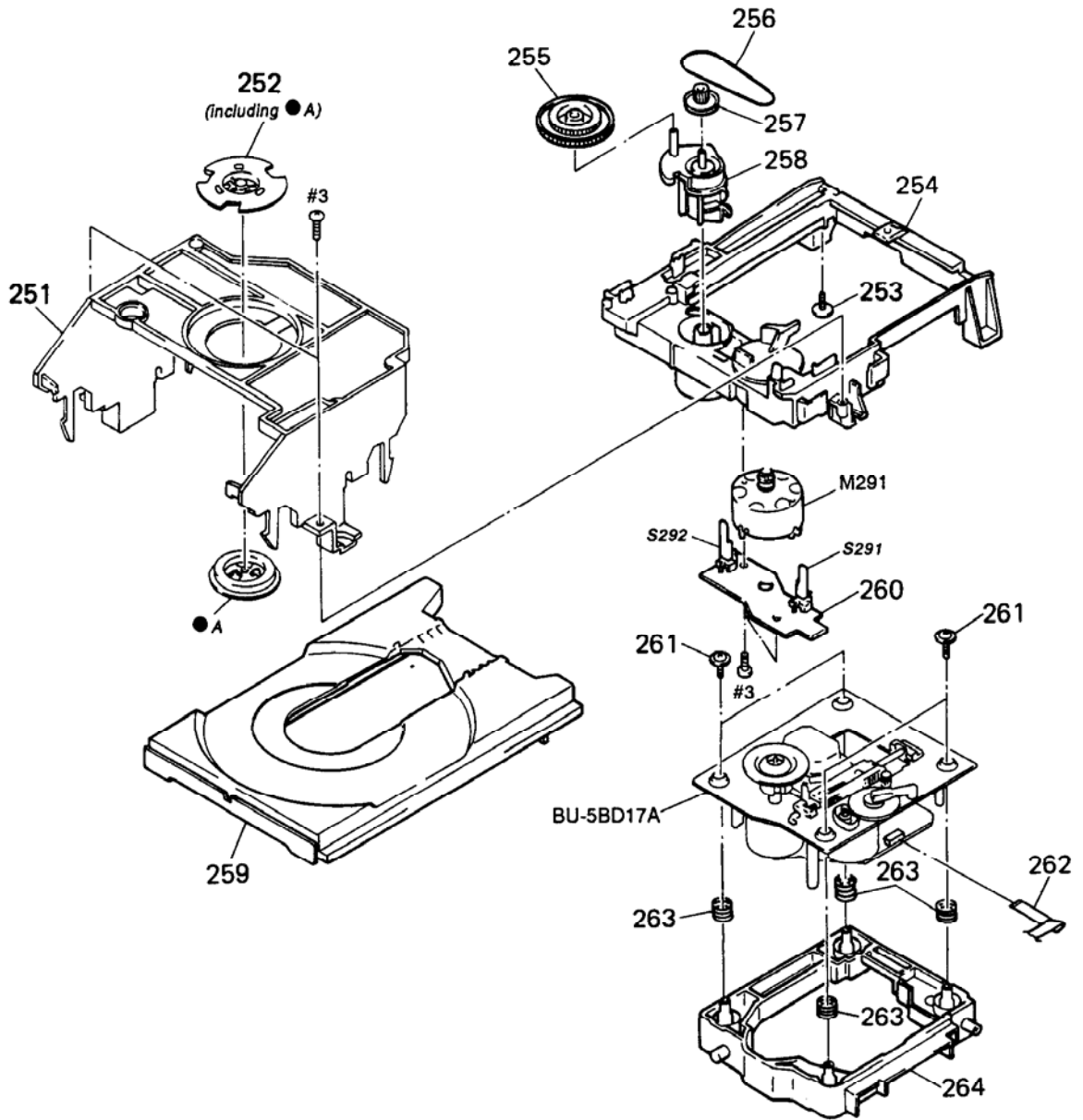


(4) MECHANISM SECTION 2
 (TCM-220WR2)

■ A: MOTOR BOARD



(5) CD MECHANISM SECTION-1
(CDM28-5BD17A)



(6) CD MECHANISM SECTION-2
(BU-5BD17A)

