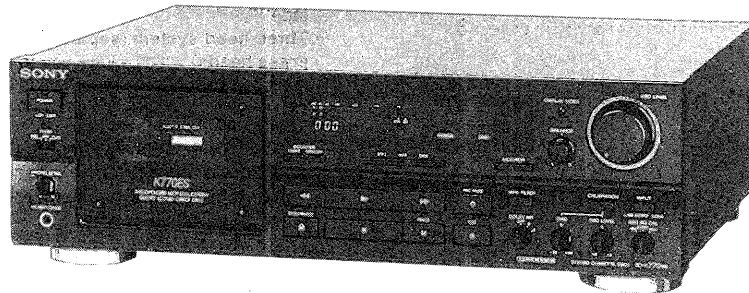


TC-K770ES

SERVICE MANUAL

AEP Model



Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen. "DOLBY", the double-D symbol $\square\square$ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mecanism	TC-K970ES
Tape Transport Mechanism Type	TCM-200D6

SPECIFICATIONS

Recording system	4-track 2-channel stereo
Fast winding time	Approx. 90 sec. (with Sony C-60 cassette)
Bias	AC bias
Heads	Erasing head \times 1 (S&F head) Recording head \times 1 (Permalloy head) Playback head \times 1 (Permalloy head)
Motors	Capstan motor \times 1 (direct drive linear torque BSL motor) Reel motor \times 1 (DC motor) DC motor \times 1

Signal-to-noise ratio (at peak level)

Dolby NR switch Cassette	OFF	B-Type ON	C-Type ON
	Type IV (Sony METAL-S)	61 dB	70 dB
Type II (Sony UX-S)	59 dB	68 dB	74 dB
Type I (Sony HF-S)	57 dB	66 dB	72 dB

Total harmonic distortion 1.0% (with Sony METAL-S cassettes)
Frequency response (DOLBY NR OFF)

Type IV cassette (Sony METAL-S)	20 - 21,000 Hz (\pm 3 dB, IEC) 20 - 16,000 Hz [\pm 3 dB 0VU recording]
Type II cassette (Sony UX-S)	20 - 19,000 Hz (\pm 3 dB, IEC)
Type I cassette (Sony HF-S)	20 - 17,000 Hz (\pm 3 dB, IEC)

Wow and flutter	\pm 0.05% W.Peak (IEC)
	0.025% WRMS (NAB)
	\pm 0.07% W.Peak (DIN)

Inputs

Line inputs (phono jacks) CD DIRECT INPUT	Sensitivity	77.5 mV
	Input impedance	47 k ohms

Outputs

Line outputs (phono jacks)	Rated output level	0.44 V at a load impedance of 47 k ohms
	Load impedance	Over 10 k ohms
Headphones (stereo phone jack)	Output level	0 - 2.5 mW at a load impedance of 32 ohms

General

Power requirements	220 - 230 V AC, (or 240 V AC adjustable by Sony personnel), 50/60Hz
Power consumption	23 W
Dimensions	Approx. 430 \times 135 \times 350 mm (w/h/d) (17 \times 5 $\frac{3}{8}$ \times 13 $\frac{7}{8}$ inches) including projecting parts and controls
Weight	Approx. 6.7 kg (14 lbs 13 oz)
Supplied accessory	Audio connecting cord (2)

Design and specifications subject to change without notice.

STEREO CASSETTE DECK
SONY[®]

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Features

For higher quality recording/playback

- **The Dolby HX PRO* system** which improves the linearity of the tape's high-range response during recording.
- **B and C type Dolby NR* systems** which reduce tape noise.
- **Bias and recording level calibration** which ensures optimum recording conditions to bring out the best in every tape.
- **Three-head system (separate recording, playback and erase heads)** which allows you to instantly check the recorded sound while recording is in progress.



For your convenience

- **The AMS and Memory Play functions** which provide easy access to a desired selection.
- **Timer-activated playback and recording** through the use of an optional timer.

For easier operation

- **Easy-to-read digital linear counter** which shows the elapsed recording or playing time.

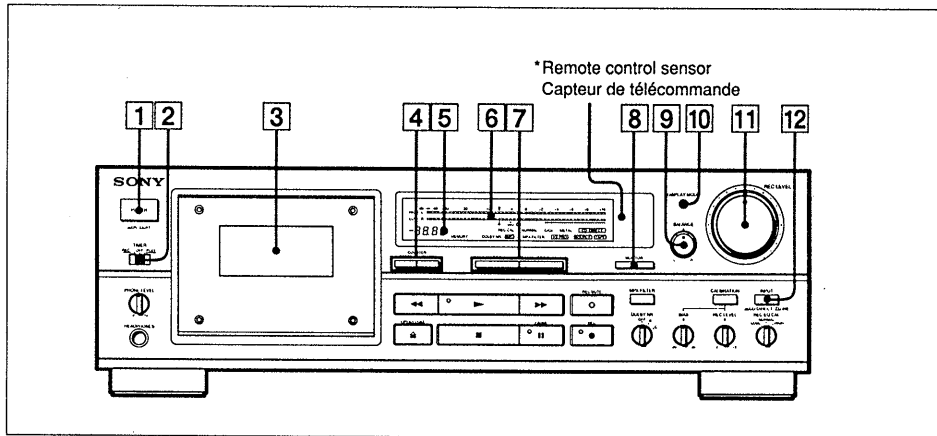
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  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 PUBLISHED BY SONY.

**SECTION 1
GENERAL**

This section is extracted from instruction manual.

Identification of Front Panel Parts



For details, refer to the page number indicated in ●.

- 1 POWER switch
- 2 TIMER switch ④
- 3 Cassette holder
- 4 Counter buttons
RESET button ②
MEMORY button ② ③
- 5 LINEAR COUNTER ③
- 6 PEAK PROGRAM METER ③
- 7 AMS (Automatic Music Sensor) buttons ②

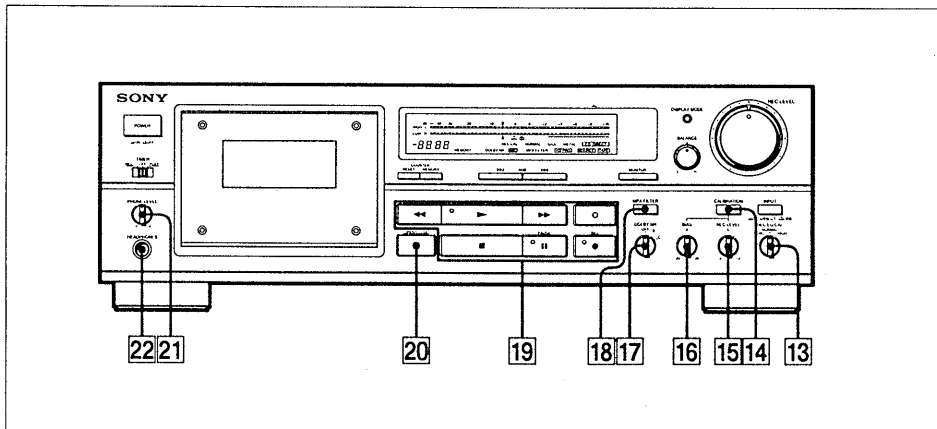
*** Remote control sensor**

You can remotely control this cassette deck with:

- A remote commander that came with a Sony amplifier or receiver if it has the mark and cassette deck control capability.
- An optional Sony remote commander with the mark and cassette deck control capability.

- 8 MONITOR button ④
- 9 BALANCE control ③
- 10 DISPLAY MODE button ④
- 11 REC (recording) LEVEL control ② ③
- 12 INPUT button ③

(Continued on next page.)



For details, refer to the page number indicated in ●.

(Continued from previous page.)

- 13 REC EQ CAL (recording equalizing calibration) switch (LOW, NORMAL, HIGH) ④
- 14 CALIBRATION button ③
- 15 REC (recording) LEVEL control for calibration ③ ④
- 16 BIAS control ③ ④
- 17 DOLBY NR (noise reduction) switch ④ ⑤
- 18 MPX FILTER button ③

19 Tape operation buttons and indicators

- ◀ (rewind) button
- ▶ (play) button and indicator
- (stop) button
- ▶▶ (fast-forward) button
- REC MUTE (record muting) button ④
- || PAUSE button and indicator
- REC (recording) button and indicator

- 20 ▲ OPEN/CLOSE button
- 21 PHONE (headphones) LEVEL control
- 22 HEADPHONES jack (stereo phone jack) ④

Recording

Recording FM Broadcasts with the Dolby NR System

When recording FM broadcasts with the DOLBY NR system, set the MPX FILTER button to ON (the "FILTER" indicator appears).

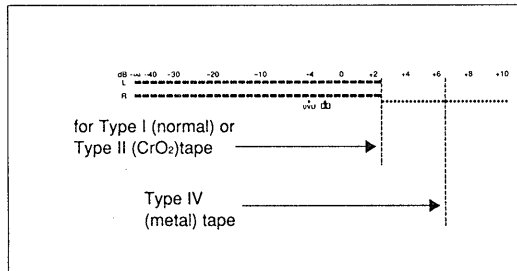
The MPX filter eliminates remnants of the 19-kHz stereo carrier and 38-kHz subcarrier signals which may impair the operation of the DOLBY NR system. Be sure that the Dolby NR button is turned on since the MPX filter will not function otherwise. During recording with the Dolby NR system, use this button only if the tuner is not equipped with its own MPX filter or the equipped filter does not function effectively.

Adjusting the Recording Level

The optimum recording level, which differs according to the tape type, is indicated on the PEAK PROGRAM METER for each tape type.

Adjust the REC LEVEL control as high as possible without exceeding the recommended range for the tape type being used.

Recommended maximum PEAK PROGRAM METER reading



Tips on recording level adjustment

- If the recording level setting is too high, the recording will be distorted; if it is too low, the tape will produce a hissing sound. Therefore, the recording level should be set as high as possible without causing distortion.
- If the program source to be recorded has many high frequency signals, set the level to a relatively low position.

Monitoring the Recorded Sound

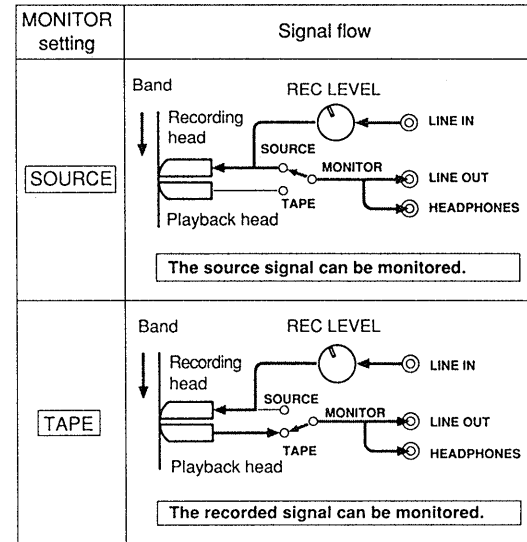
As this unit has three separate heads for recording, playback and erasure, you can check the quality of a recorded sound by comparing it with the input source signal.

To listen to the input source signal, set the MONITOR button to SOURCE.

To listen to the sound recorded on the tape, set the MONITOR button to TAPE.

While recording, use this monitoring function to check that there is no distortion due to excessive level settings or sound degradation due to head contamination.

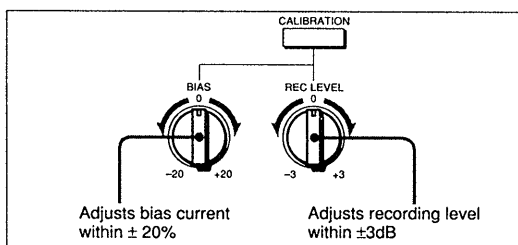
MONITOR button setting and signal flow



Making an Optimum Recording According to the Tape Type

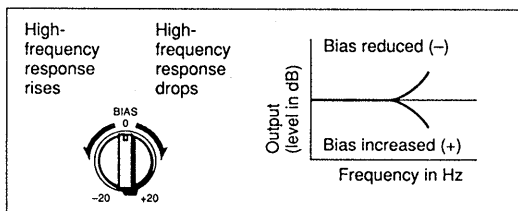
Bias and Recording Level Calibration

There are many different types of cassettes on the market, each with varying magnetic properties. Although your unit is equipped with the ATS (Automatic Tape Selection) system which sets the appropriate equalization characteristics and bias current for each tape type, an additional calibration adjustment can often produce even better results. Use the bias current and recording level calibration function to obtain the optimum recording conditions for your tape.



Bias calibration

Choosing the optimum bias current for a tape ensures minimum distortion and flat frequency response. Lowering the bias current boosts high-frequency response, but also results in higher distortion. Raising the bias, on the other hand, reduces distortion, but also dampens high-frequency response. Optimum bias is thus obtained when the bias current and high-frequency response are well balanced.

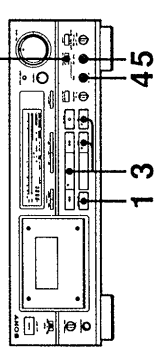


- If the bias current is higher or lower than the optimum setting for a certain tape, the frequency response changes as shown in the chart above. Changing the bias can thus be used to tailor the response to your liking, for example by slightly emphasizing the upper or lower end.
- The frequency response of metal tapes is much less affected by changes in the bias current than other tape types. With some tapes, the adjustment range of this deck ($\pm 20\%$) may therefore not be sufficient to cover every possible requirement.

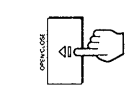
Recording level calibration

Even when the recording level is adjusted correctly, using a tape with low sensitivity will result in a low playback level. The REC LEVEL calibration control allows you to compensate for sensitivity differences among tapes to equalize both recording and playback levels. This is especially important when using the Dolby NR system, since it is most effective when recording and playback levels are the same.

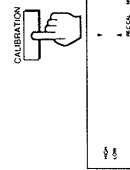
Making an Optimum Recording According to the Tape Type



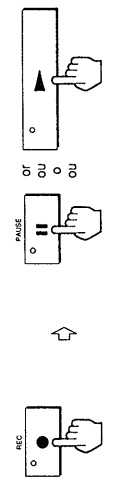
1 Insert the cassette to be used for recording.



2 Press CALIBRATION.



3 Activate the recording test tones:



Playback level for an 8-kHz signal

Playback level for a 400-Hz signal

4 Adjust BIAS until both meters indicate equal playback levels.

A high reading on the upper meter indicates a low bias current.

A low reading on the upper meter indicates a high bias current.

An equal reading on both meters indicates the optimum bias current condition.

5 Adjust REC LEVEL CALIBRATION until both meters reach the recommended level (REC CAL).

The bias current is now adjusted to the optimum level and the tape sensitivity compensation has been set. Press **■**, then set CALIBRATION to OFF. Rewind the tape and start the actual recording.

Recommended level
Niveau recommandé
Nivel recomendado

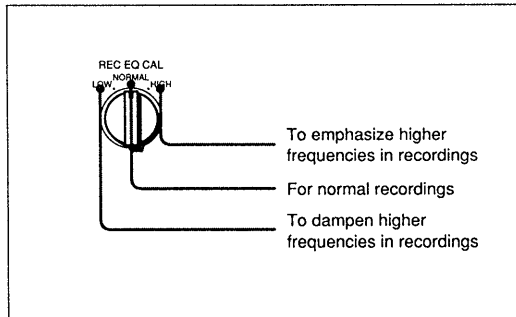
Note

- The sound cannot be monitored during the calibration operation.
- It takes 2 to 3 seconds to stabilize the test tone level.

Making an Optimum Recording According to the Tape Type

Recording Equalization Calibration

Although bias current and equalization are automatically set by the Automatic Tape Selection (ATS) function for the tape being used, you can use the REC EQ CAL switch to change the recording characteristics according to the nature of the source material or to compensate for the particular characteristics of the tape.



Bias Calibration Recording

To modify bands of sound as required, use the REC EQ CAL switch in conjunction with bias calibration, which enables you to record according to the tape's characteristics.

- **When recording music which has strong middle and low frequencies**

Set the bias at flat with the REC EQ CAL switch set in the HIGH position to increase the bias current. Adjust BIAS so that the HIGH and LOW meters indicate equal readings.

- **When recording music which has strong high frequencies**

Set the bias at flat with the REC EQ CAL switch set in the LOW position to decrease the bias current. Adjust BIAS so that the HIGH and LOW meters indicate equal readings.

Note

With metal tape, because the amount of frequency characteristic modulation is not in proportion to that of the bias, the optimum bias current may not be obtained using the methods above.

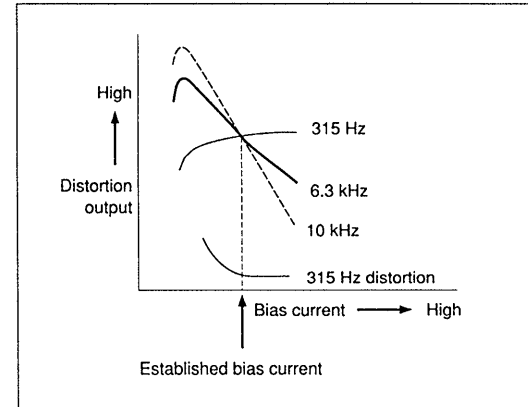
Another use of the REC EQ CAL switch

When using a special tape, the BIAS control with the REC EQ CAL switch set in the NORMAL position may not cause the HIGH and LOW meters to indicate equal readings. If this occurs, adjust the BIAS control after setting the REC EQ CAL switch to HIGH or LOW.

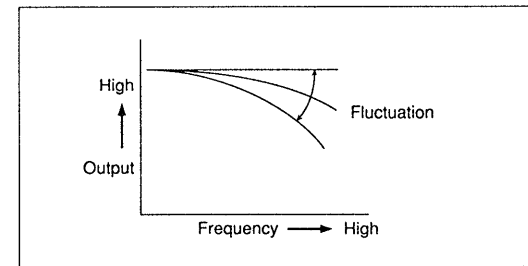
Recording

What is the Dolby HX PRO System?

The Dolby HX PRO system provides improved linearity in high-range frequency response during recording. Tapes recorded with this system retain the same high quality even when played back on other tape decks.



As shown above, characteristics such as output level and distortion differ widely according to the bias (high-frequency) current. In conventional systems, the bias current is susceptible to variations in certain recording signals (see diagram below) which may cause fluctuations in frequency response, distortion, or other unwanted characteristics.

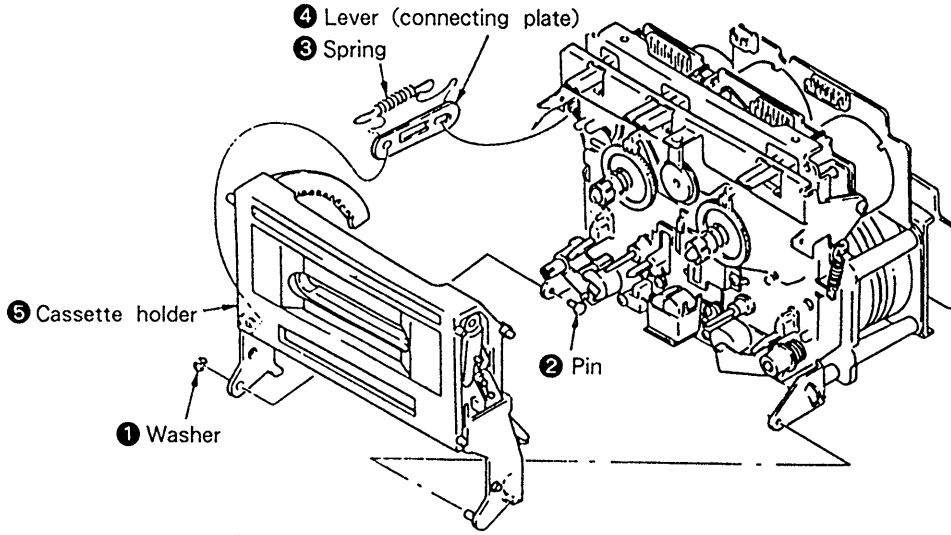


With the Dolby HX PRO system, the effective bias amount added to the bias current is controlled in millisecond units to greatly reduce distortion, improving linearity in high-range response and ensuring high-intensity recording with minimal distortion and noise.

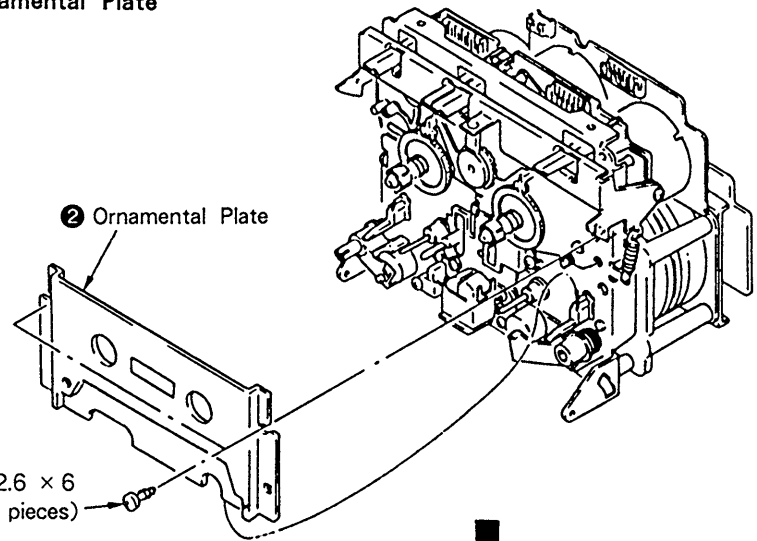
SECTION 2 DISASSEMBLY

• If the parts are marked with the numbers ①, etc., remove them in the order of the number.

Cassette Holder

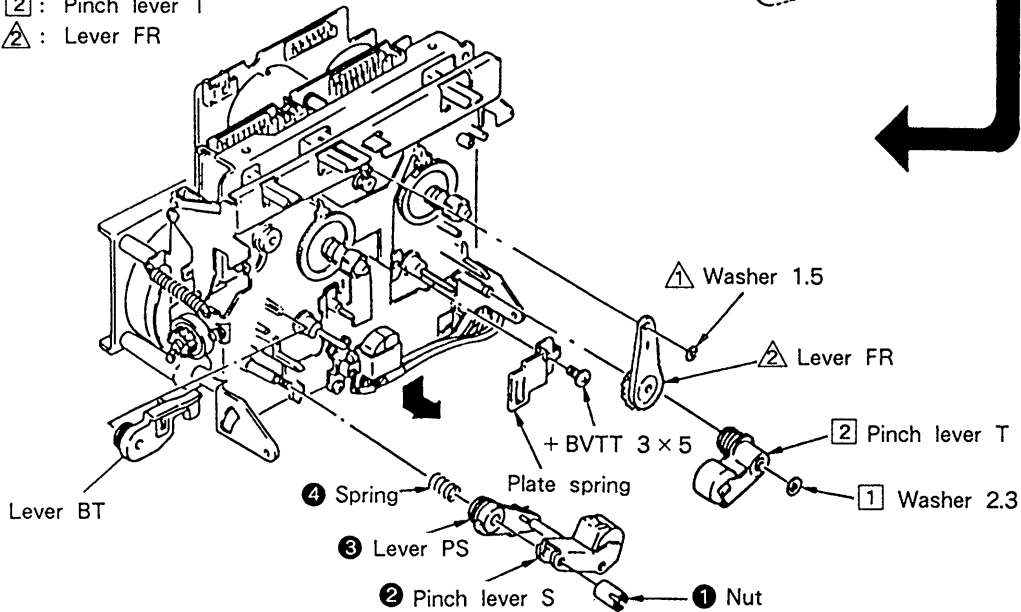


Ornamental Plate



Pinch Lever/Lever FR

① - ④ : Pinch lever S
 ① and ② : Pinch lever T
 △ and △ : Lever FR



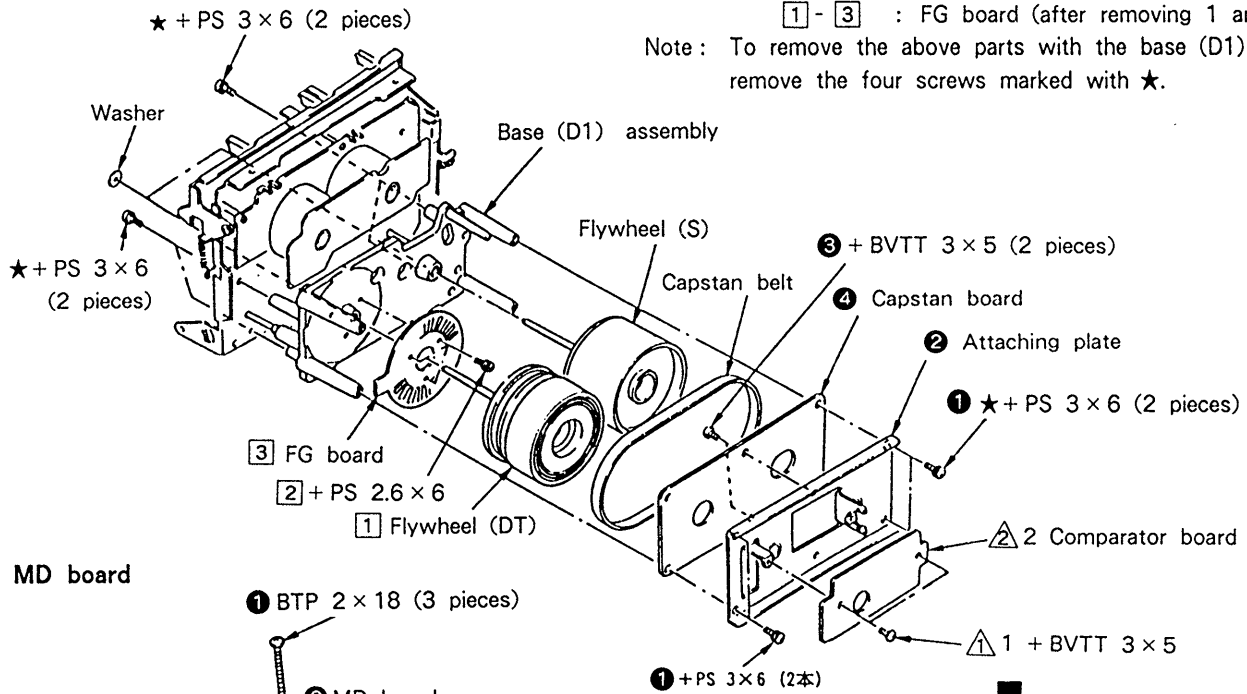
Comparator Board/Capstan Board/Flywheel/FG Board

△ and ▽ : Comparator board

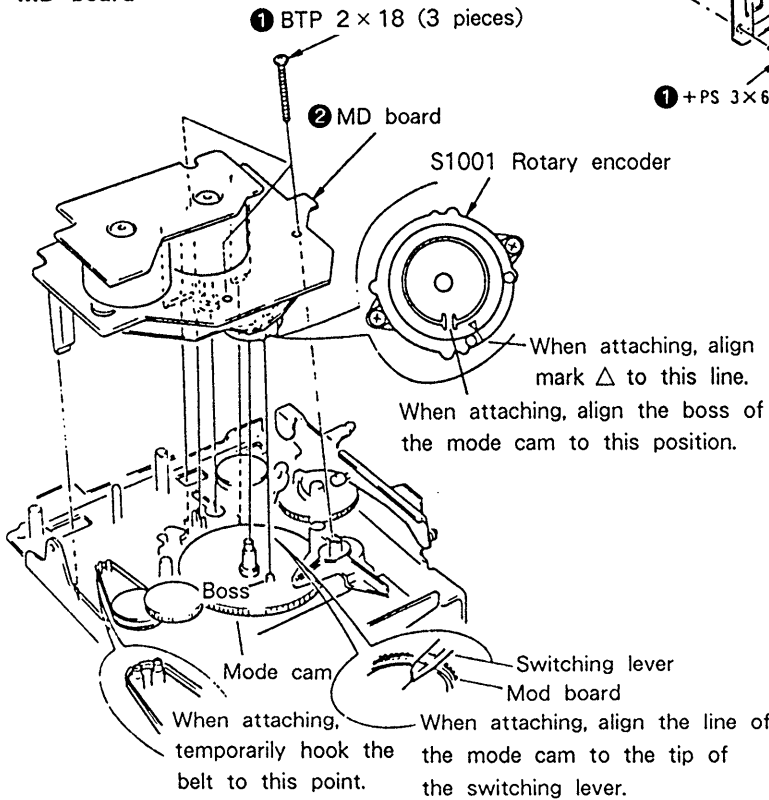
① - ④ : Capstan board

① - ③ : FG board (after removing 1 and 2)

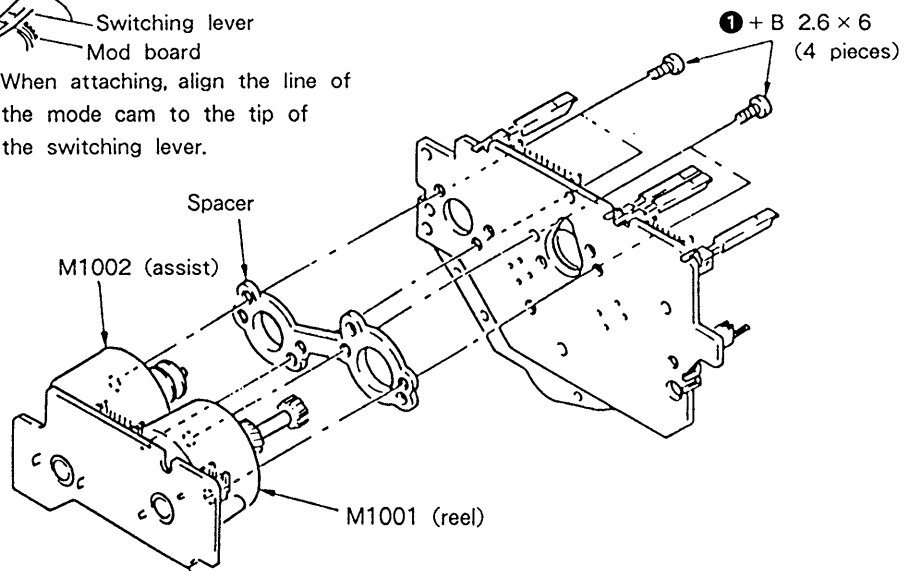
Note : To remove the above parts with the base (D1) assembly, remove the four screws marked with ★.



MD board



Reel Motor Board



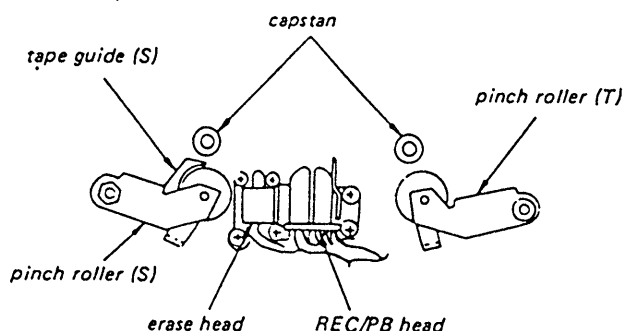
SECTION 3 ADJUSTMENTS

3-1. 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 and erase head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.



Tape Path Adjustment

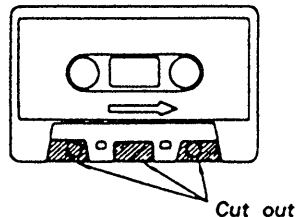
- Refer to Adjustment Position on page 12.

Note: When using the adjustment methods for other than replacement reasons, please do not tamper unnecessarily with the adjustment screws or the erasehead because either the supply pinch roller guide or the record/playback head will be made the standard tape paths. Moreover, when it is necessary to adjust and replace two or more of any of the heads and/or pinch rollers, replace them one by one, completely taking out the first tape path, and then replacing the second one.

Preparation :

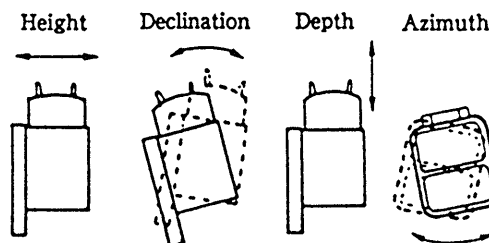
1. Mirror cassette CQ009C 8-909-708-01
(or CQ012C 8-909-708-02)

If one does not have this, cut out the sections of a 120-minute cassette shell as indicated below and use that cassette.



2. Phillips screwdriver (medium-size) :
For the head adjustment screws
Blade-type screwdriver (large-size) :
For the supply pinch roller adjustment screws
3. Pen light
4. WS-48B (3 kHz, 0 dB)
5. P-4-A100 (10 kHz, -10 dB)

Definition of Terms: The figures are of a record/playback head.



Adjustment Method :

Supply Pinch Roller

Note: Only perform this adjustment when the supply pinch roller is to be replaced.

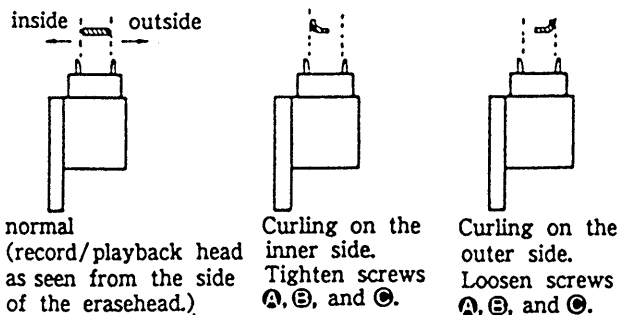
1. Insert the mirror cassette and put the unit in record/playback mode.
2. Check to see whether the tape is curling at the record/playback head guide or the pinch roller guide.
If it is curling, remove the curl by adjusting the tape curl adjustment screw. Then, check that the tape is running past the middle of the erasehead.

Record/playback Head

Note: Only perform this adjustment when the record/playback head is to be replaced.

1. Insert the mirror cassette and put the unit in record/playback mode.
2. (**Height Adjustment**) Check to see if the tape is curling at the tape guide of the head. If it is curling, tighten screws , , and , respectively by the same angle, moving the head so that it

remains at the same angle throughout the procedure. If it curls on the bottom side of the mirror cassette (actually the inner side), tighten all the screws equally ; but loosen them if the tape begins to curl on the top side (outer side).



3. (**Declination Adjustment**) While in the record/playback position, set the back tension to 0 (wind the supply reel with something thin like a pencil in a counterclockwise direction) and make sure there is no curling or shifting (shifting up/shifting down) at the guide of the record/playback head.

Because shifting can only occur due to a difference in the width of the tape and that of the tape guides (curling will otherwise occur), it is necessary to pay close attention since it can be easily overlooked.

When there is a shift, tighten screws Ⓑ and Ⓒ equally and change the declination of the head. If the tape is shifting up, tighten the screws, and if it is shifting down, loosen them.

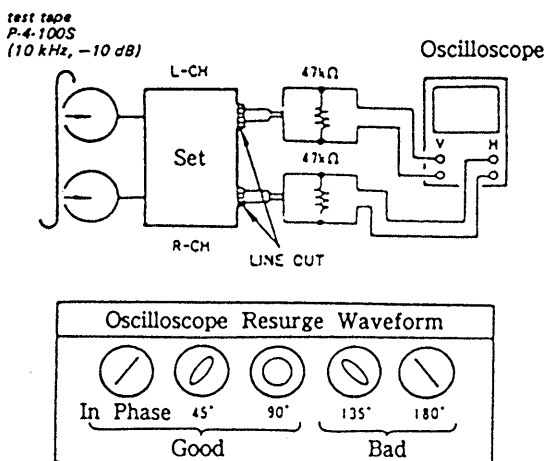
4. Repeat the adjustments in steps 2 and 3 and fine adjust the height and the declination.

5. (**Preliminary Azimuth Adjustment**) After demagnetizing and cleaning the adjustment head, play back WS-48B (3 kHz, 0 dB).

Turn screw Ⓒ so that the reading on the level meter of the unit or that of the level meter connected to LINE OUT is maximized.

If the screw is turned at least half a revolution, repeat the adjustments from step 1.

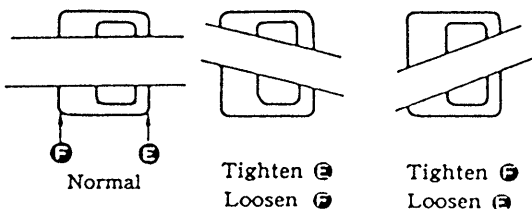
6. (**Tape Path Check**) Connect the oscilloscope to LINE OUT and play back P-4-A100 (10 kHz, -10 dB) to display a resurge waveform. After 20 seconds of record/playback (after the tension within the loop has been increased sufficiently), make sure the variation in the resurge is within ± 90 degrees (within ± 45 degrees is desired). If the variation is greater than this, it is because the declination and/or the height adjustment is not perfect. Repeat the adjustments from step 1.



Erasehead

Note: Only perform this adjustment when the erasehead is to be replaced.

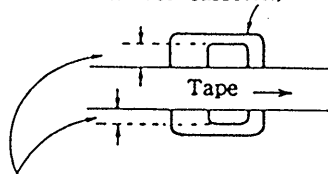
1. Insert the mirror cassette and put the unit in record/playback mode.
2. (**Azimuth Adjustment**) Adjust the azimuth of the erasehead by adjusting screws Ⓐ and Ⓑ so that the tape runs as evenly as possible.



(The erasehead as seen when erasing the mirror cassette.)

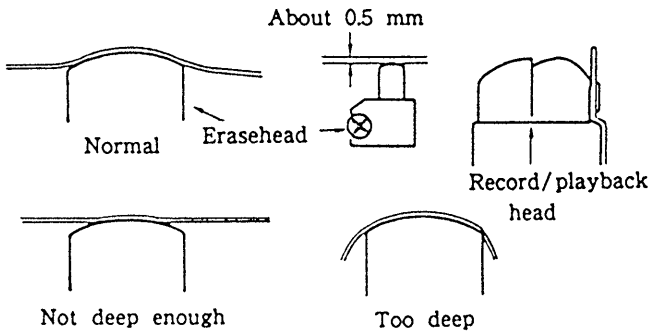
3. (**Height adjustment**) Turn screws Ⓓ, Ⓔ, and Ⓕ all by the same angle so that the portions of the erasehead visible at top and bottom are nearly of equal width. If the width at the top is greater, tighten the screws ; if the width at the bottom is greater, loosen the screws.

Erasehead (The erasehead as seen through the mirror cassette.)



Make these the same width.

4. (**Declination Adjustment**) Leaving it in the playback position, put the back tension to 0 and make certain the erasehead part and supply pinch roller guide part do not shift. If there is a shift, turn the screw ④ and change the declination. Looking at it using the mirror cassette, if the tape shifts up, tighten the screw, and if it shifts down, loosen the screw.
5. Repeat the adjustments beginning with step 2 and fine adjust the height and declination. And make sure the tape does not curl up on the pinch roller guide or the guide part of the record/playback head.
6. (**Depth Adjustment**) In order to make the entire head play the tape smoothly, and to make sure the depth of the erasehead is neither too shallow nor too deep, loosen screw ⑤ a bit.



Pinch Roller Pressing Force Measurement

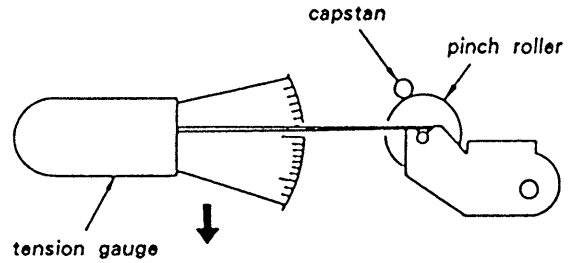
Mode : playback

Hook needle of the tension gauge to the pinch roller shaft and push back pinch roller to detach it from capstan. Then, return it gradually to capstan and read the gauge when the pinch roller begins turning.

Standard Limits :

Tape-up side : 270 - 350g (9.5 - 12oz)

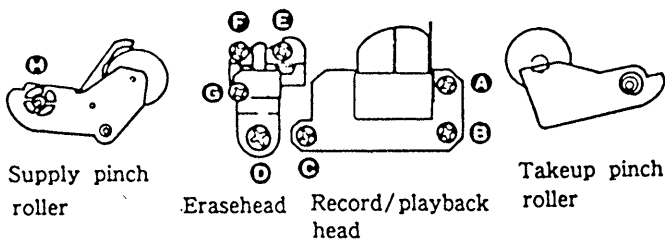
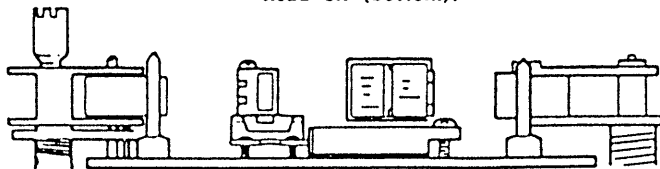
Supply side : 180 - 280g (6.4 - 9.9oz)



Check

1. Check to make sure that there are no curls or shifts throughout the whole tape path and that the tape runs smoothly.
2. Reapply the locking compound to the adjusted screws. (The locking compound should only be applied to screw ⑤ after the azimuth has been adjusted.)

Adjustment Position : As seen from the cassette, side (top) and MD as seen head on (bottom).



3-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual.

The adjustments should be performed for both L-CH and R-CH.

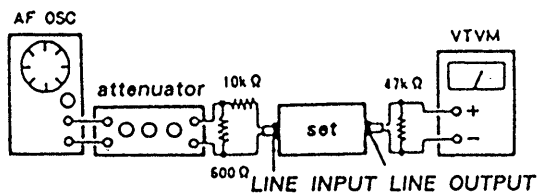
- **Simultaneous REC/PB Mode:**
Input the signals to LINE IN terminal and set to REC mode. Set the monitor switch to TAPE, and monitor the recorded signal from LINE OUT terminal.
- **Switch Position:**
DOLBY NR..... OFF
TIMER..... OFF
MONITOR..... TAPE
HX PRO..... OFF
CALIBRATION..... OFF
CD DIRECT..... OFF
BIAS..... CENTER CLICK
REC LEVEL..... CENTER CLICK
- **Standard Record:**
Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

Input Terminal	LINE IN
source impedance	10 kΩ
input level	0.25 V (-10 dB)

Standard Output Level

Output Terminal	LINE OUT
load impedance	47 kΩ
output level	0.44 V (-5 dB)



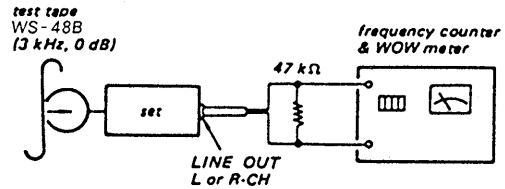
Torque Adjustment and Measurement

1. Insert a tape for torque measurement, CQ-102C, and put the set to PLAY mode. Adjust RV801 so that the reading of the torque meter is $40 \pm 3g \cdot cm$.
2. After the adjustment, measure the back-tension and the FF/REW torque and check that the following specifications are satisfied.

Torque	Torque Meter	Reading
FWD	CQ-102C	$35 - 45g \cdot cm$ (0.49 - 0.62oz · inch)
FWD Back tension	CQ-102C	$7 - 11g \cdot cm$ (0.097 - 0.15oz · inch)
FF/REW	CQ-201B	$65 - 90g \cdot cm$ (0.9 - 1.4oz · inch)

Tape Speed/WOW Check

Procedure:



1. Measure the output frequency and the WOW value while playing back the tape top of the test tape.
2. Turn over the test tape, measure the output frequency and the WOW value, and check the difference from the values of the step 1.

Adjustment Limits :

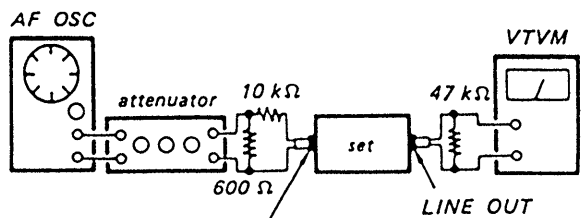
TAPE SPEED deviation : within 2,985 to 3,015Hz
 WOW (WRMS) : 0.05 % or less

MPX FILTER Check

Setting : DOLBY switch : OFF
MPX FILTER switch : OFF

Procedure :

1. Mode: stop



LINE IN
315 Hz, 0.25 V (-10dB)

2. Apply 315Hz, 0.25V (-10dB) signal and adjust REC LEVEL (RV502) control so that the LINE OUT level is 0.44V (-5dB).
3. Apply 19kHz 0.25V (-10dB) signal and confirm that the LINE OUT level is 0.013V (-35dB) or less.

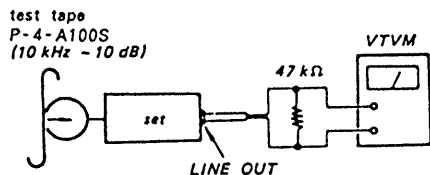
Adjustment Limits :

DOLBY NR switch : B or C
MPX FILTER switch : Line output level when ON.
315Hz : Within 0.49 to 0.39V (within -4dB to -6dB)
19kHz : 0.013V (-35dB) or less

Record/Playback Head Azimuth Adjustment

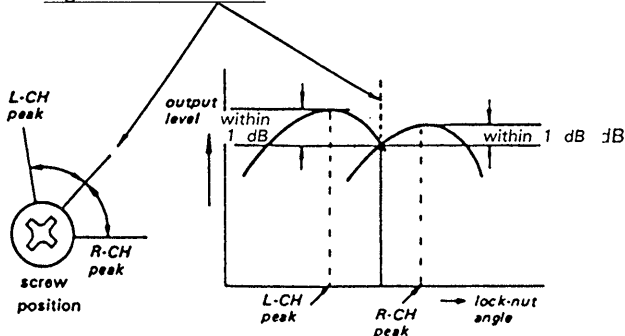
Procedure :

1. Mode : playback

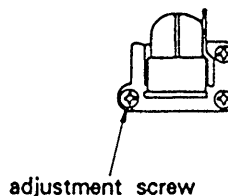


test tape
P-4-A100S
(10 kHz -10 dB)

2. 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 1dB.



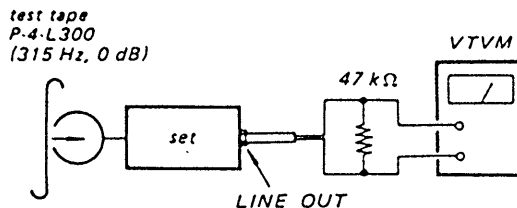
Adjustment Location :



Playback Level Adjustment

Procedure:

1. Mode : playback



test tape
P-4-L300
(315 Hz, 0 dB)

Adjust RV101 (L-CH) and RV201 (R-CH) to obtain the specified LINE OUT level.

Adjustment Limits :

LINE OUT level : 0.42 to 0.46 V
(-5.5 to -4.5 dB)

Level difference between channels :
less than 0.5 dB

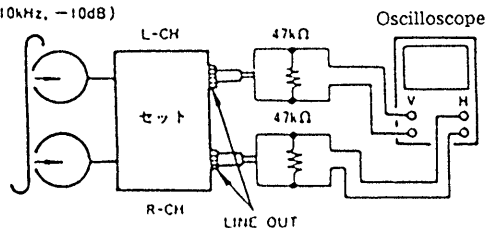
Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

3. Phase check

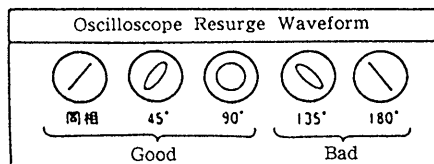
- Play mode -

Reference tape for adjustment

P-4-A100
(10kHz, -10dB)

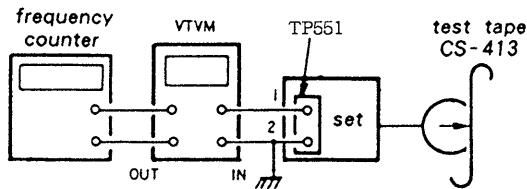


4. Check that the phase difference between L-ch and R-ch is within 0 ~ (same to 90°).



Erase Current Adjustment

1. Mode : record



2. Adjust RV553 so that the reading on VTVM is 110mV (erase current = 110mA).
3. And then confirm that the reading on the frequency counter is 160kHz.

Adjustment Limits :

Erase current : 105mA to 110mA
 Frequency : 160 ± 6kHz

Bias Current Adjustment

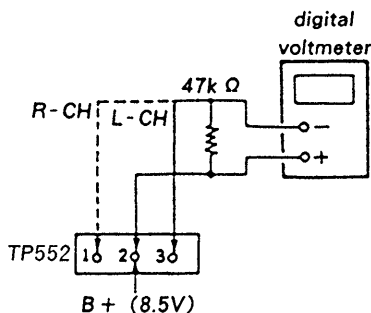
Note : This adjustment should be made before Record Bias Adjustment.

Procedure :

1. Preset RV303 (L-CH) and RV403 (R-CH) and RV554 in the center position, and record with no signal.
2. Adjust T401 (L-CH) and T301 (R-CH) for minimum readings on the digital voltmeter.

Adjustment Limits :

120mV or less. (reference)



CrO₂ Bias and Record Level Adjustment

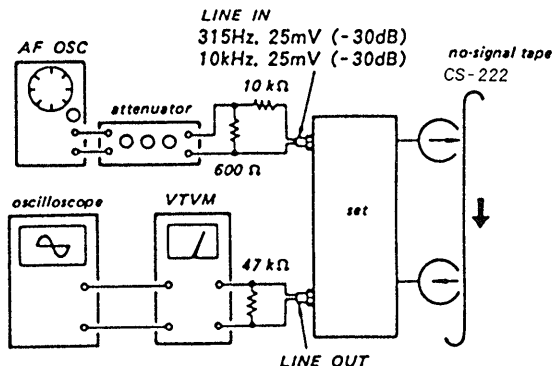
Note : This adjustment should be made before Record Bias Adjustment.

Setting:

REC LEVEL knob: standard record position
 (See page 12.)

Procedure:

1. Mode: simultaneous REC/PB



2. Adjust RV403 (L-CH) and RV303 (R-CH) so that the playback output level of 10kHz signal is 0.3dB - 0.3dB with respect to that of 315Hz. . . . Record Bias Adjustment.
3. Adjust RV401 (L-CH) and RV301 (R-CH) so that the playback output level of 315kHz is - 25.3dB to - 24.7dB. . . . Record Level Adjustment.

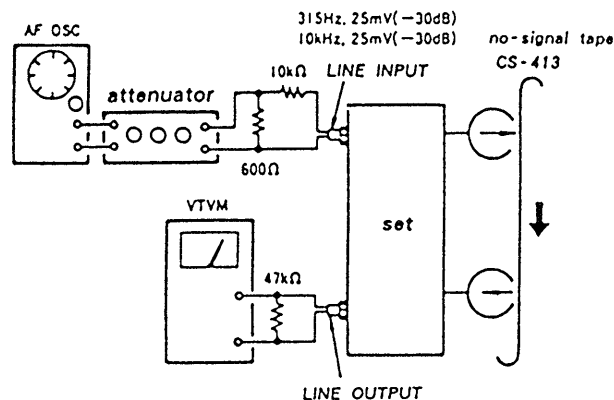
Metal Bias Adjustment

Setting :

REC LEVEL Knob : standard record position
 (See page 12.)

Procedure :

1. Mode : simultaneous REC/PB



2. Adjust RV554 so that the difference between the playback output at 315Hz and that of 10kHz in R-CH is within 0.3 dB to -0.3dB.

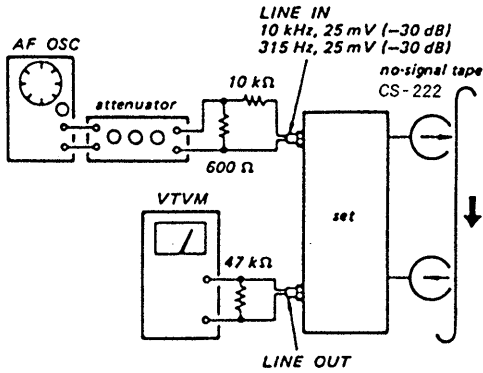
Normal Bias Adjustment

Setting:

REC LEVEL knob: standard record position
(See page 12.)

Procedure:

1. Mode: simultaneous REC/PB



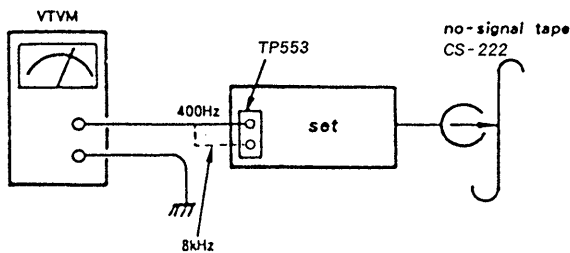
2. Adjust RV302 (L-CH) and RV402 (R-CH) so that the difference between the playback output at 315Hz and that of 10kHz in R-CH is within 0.3dB to -0.3dB.
3. Set the HXPRO switch to OFF.
4. Adjust RV104 (L-CH) and RV204 (R-CH) so that the difference between the playback output at 10kHz when the HXPRO is ON and that of 10kHz when ON is within 0.5dB to -0.5dB.

Calibration OSC and Calibration Meter Adjustment

Setting : CALBRATION switch : ON

Procedure (OSC OUT LEVEL) :

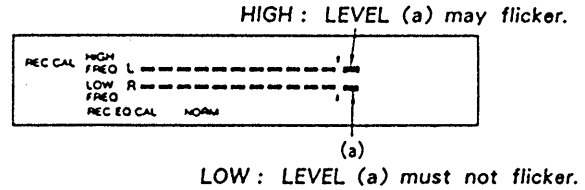
1. Mode : record (no-signal (LINE INPUT))



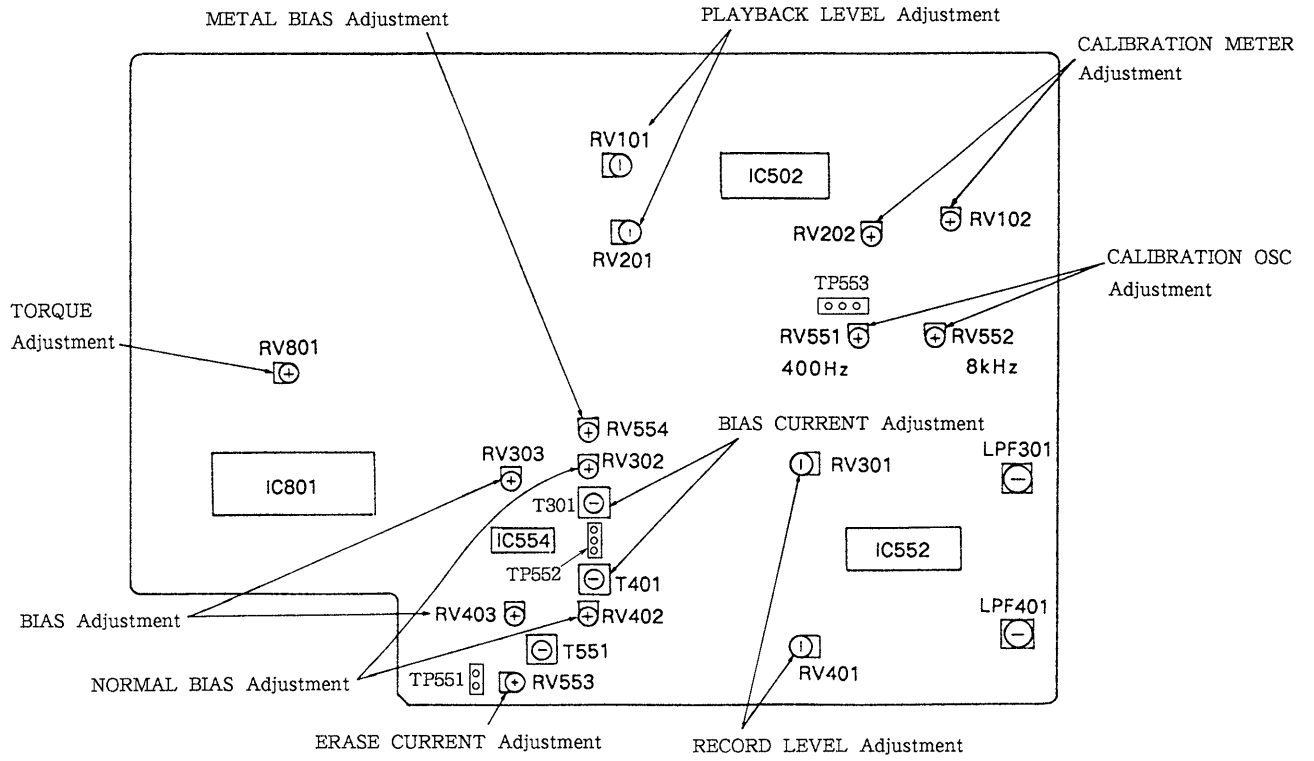
2. Adjust RV551 so that a check-point level at 400Hz is 9.5dB to 10.5dB.
3. Adjust RV552 so that a check-point level at 8kHz is 9.5dB to 10.5dB.

Procedure (CAL METER ADJ) :

1. Put the set in record mode and adjust RV202 (HIGH) so that HIGH FREQ segments in the CAL LEVEL meter light thoroughly up to 0 VU as shown in the figure below. Segment (a) may flicker.
2. Preset RV102 (LOW) so that segment (a) in LOW FREQ CAL LEVEL meter lights. Then adjust RV102 to the point where segment (a) goes out.



Adjustment Location : MAIN (A) BOARD (COMPONENT SIDE)



SECTION 4 DIAGRAMS

4-1. DESCRIPTION ON IC

IC502, IC552 (CX20188)

An electronic switch circuit for the operation mode control is included. Controls are performed by adding direct current voltages VH, VM, and VL to Dolby OFF/B/C and calibration/REC/Playback terminals.

CX20188	Pin name	Description
Pin No.		
1.	Vcc	Positive power supply terminal.
2, 41.	REC IN	Recording input terminal.
3.	I REF	Reference current input terminal.
4, 39.	PB IN	Playback input terminal.
5.	CAL/REC/PB	Calibration/recording/playback select terminal
6, 37.	PB FB	Playback feedback terminal.
7, 36.	REC FB	Recording feedback terminal.
8, 35.	GND	GND terminal.
9, 34.	LINE OUT	Line output (decode output) terminal.
10, 33.	SSK	Spectral skewing switch terminal.
11, 32.	VF IN	Encode circuit input terminal.
12, 31.	HPF H	HLS high-pass filter terminal.
13, 30.	TCH 2	HLS detector time constant terminal 2.
14, 29.	TCH 1	HLS detector time constant terminal 1.
15, 28.	WT H	HLS encoder error reduction terminal.
16, 27.	TCL 2	LLS detector time constant terminal 2.
17, 26.	TCL 1	LLS detector time constant terminal 1.
18, 25.	WT L	LLS encoder error reduction terminal.
19, 24.	HPF L	LLS high-pass filter terminal.
20, 23.	ANT S	Anti-saturation terminal.
21, 22.	REC OUT	Recording output (encode output) terminal.
38.	OFF/B/C	Dolby NR off/B type/C type select terminal.
40.	CAL IN	Calibration input terminal.
42.	Vee	Negative power supply terminal.

IC901 (M50940 - 313SP)

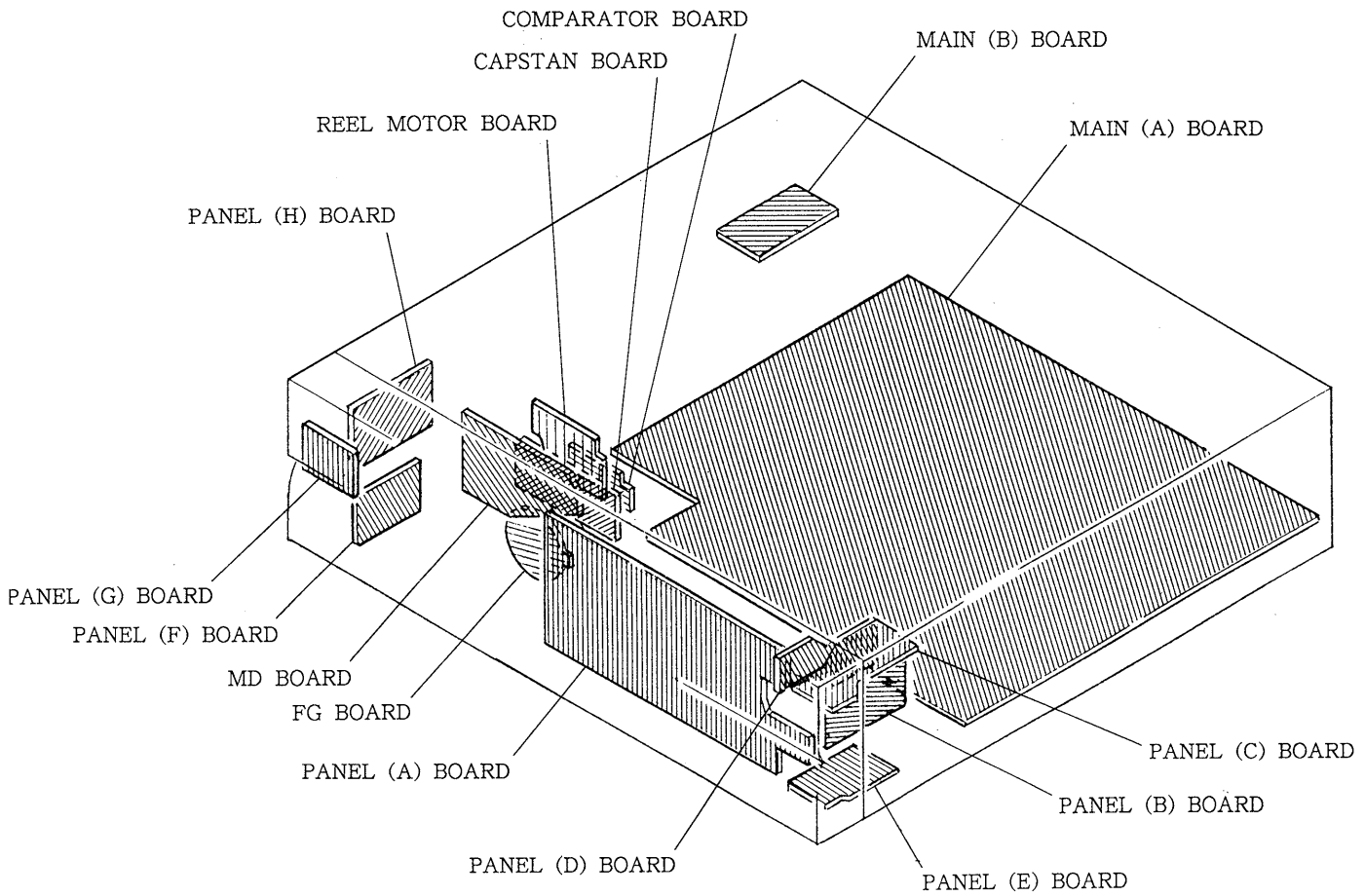
Level meter display of 24-segment fluorescent display, etc., are performed by receiving direction from the master microcomputer (IC801).

Pin No.	Pin name	I/O	Description
1.	Vref	I	A/D input-port reference voltage input(+5V)
2.	ϕ L	I	Not used. (Connected to +5V)
3.	ϕ R	I	Not used. (Connected to +5V)
4.	DATA	I	Data input from the master microcomputer(IC801)(analog)
5.~6.	AD $\overline{B1}$ ~AD $\overline{R0}$	I	Data input from the master microcomputer(IC801)(analog)
7.	KEY	I	Not used. (Connected to +5V)
8.	LEVEL L	I	Level meter L-CH input(analog) from the meter amplifier(IC514)
9.	LEVEL R	I	Level meter R-CH input(analog) from the meter amplifier(IC514)
10.~13.	$\overline{\text{GRID6}}$ ~ $\overline{\text{GRID3}}$	0	Not used.
14.~15.	$\overline{\text{GRID2}}$ ~ $\overline{\text{GRID1}}$	0	Fluorescent display grid output
16.	$\overline{\text{CO0}}$	0	Not used.
17.	$\overline{\text{PLAY}}$	0	Not used. (Connected to pin ⑩.)
18.	$\overline{\text{PLAY}}$	0	Not used.
19.	$\overline{\text{PAUSE}}$	0	Not used.
20.	$\overline{\text{REC}}$	0	Not used.
21.	$\overline{\text{TAPE}}$	0	Fluorescent display segment output("TAPE" displayed). "L": TAPE displayed. "H": SOURCE displayed.
22.	$\overline{\text{OVER LEVEL}}$	0	Fluorescent display segment output("OVER LEVEL" displayed). It is displayed when "L".
23.	$\overline{\text{TYPE I}}$	0	Fluorescent display segment output("TYPE I" displayed). It is displayed when "L".
24.	$\overline{\text{TYPE II}}$	0	Fluorescent display segment output("TYPE II" displayed). It is displayed when "L".
25.	$\overline{\text{TYPE IV}}$	0	Fluorescent display segment output("TYPE III" displayed). It is displayed when "L".
26.	CNVss	-	Power supply terminal(GND)
27.	$\overline{\text{RESET}}$	I	Reset input
28.	XIN	I	Clock input(4MHz)
29.	XOUT	0	Clock output.
30.	XCIN	-	Not used. (Connected to GND)
31.	XCOU	-	Not used.
32.	Vss	-	Power supply terminal(GND)
33.	Φ	0	Not used.
34.	VER	I	Version switching input(Always set to "L")
35.	$\overline{\text{TEST}}$	I	Test mode input. "L": All the lamps of the meter are lit.
36.	CAL	I	Calibration switch(S602) input. "L": CAL mode. "H": Normal mode.
37.	IN	I	Not used. (Connected to GND.)
38.	VP	I	Fluorescent display segment output's pull-down power supply terminal(-22V)
39.~62.	S23~S0	0	Fluorescent display segment output(meter display)
63.	AVcc	-	Power supply terminal(+5V)
64.	Vcc	-	Power supply terminal(+5V)

IC801 (M50964-226SP)

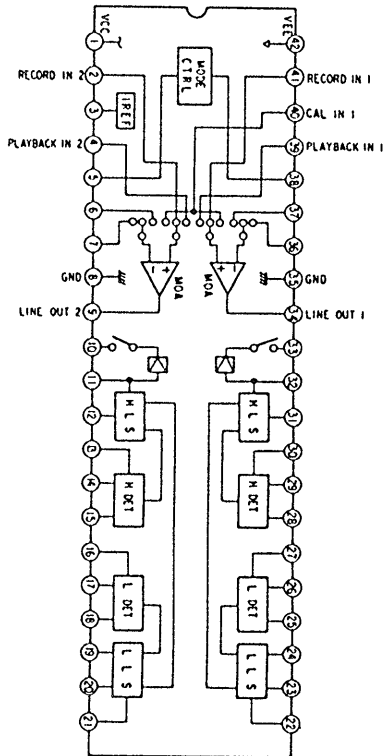
Pin No.	Pin name	I/O	Description
1.	VCC		Power supply: +5V.
2.	AVss		Analog GND.
3.	Vref	I	A/D port reference voltage input.
4.	DA		Not used for this model.
5.	PWM		Not used for this model.
6.	P. OFF		Not used for this model. Connected to GND.
7.	LED	O	PAUSE LED output.
8.	LED	O	REC LED output.
9.	LED	O	PLAY LED output.
10.	AD1	I	Key input. 0V=▲, 1V=■, 2V=◀, 3V=▶, 4V=●.
11.	AD2	I	Key input. 0V=▶, 1V=■, 2V=◀, 3V=▶, 4V=○.
12.	AMS SIG	I	AMS signal input. No song detected = Low. Song detected = High.
13.	AD4	I	Key input. 2V = DISPLAY. 3V = MONITOR.
14.	CODE	I	Remote control category select switch.
15.	ALB		Connected to 5V.
16.	φR	I	Take-up reel base sensor input.
17.	φL	I	Supply reel base sensor input.
18.	C RESET		Model select input. Connected to GND.
19.	C MEMORY		Model select input. Connected to GND.
20.	COO		Not used for this model.
21.	POWER IN	I	Power on and off detection.
22.	SIRW	I	SIRCS phase input.
23.	SIRE	I	SIRCS reverse phase input.
24.	T-REC	I	Timer REC switch input.
25.	T-PLAY	I	Timer PLAY switch input.
26.	INT	I	External interruption input. Interruption process is performed when the power is on or off.
27.	Vss		GND.
28.	RESET	I	Reset input.
29.	XIN	I	Clock input (4 MHz).
30.	XOUT	O	Clock output (4 MHz).
31.	φout		Not used for this model.
32.	Vss		GND.
33.	C1	I	Rotary encoder input to detect the position of the head base of the mechanical block.
34.	C2	I	Rotary encoder input to detect the position of the head base of the mechanical block.
35.	C3	I	Rotary encoder input to detect the position of the head base of the mechanical block.
36.	C4	I	Rotary encoder input to detect the position of the head base of the mechanical block.
37.	OPEN SW	I	OPEN switch input of the mechanical block.
38.	CLOSE SW	I	CLOSE switch input of the mechanical block.
39.	DOOR SW	I	DOOR switch input of the mechanical block.
40.	REC SW	I	REC switch input of the mechanical block.
41.	M PLAY	O	Reel motor rotates at PLAY speed.
42.	M FAST	O	Reel motor rotates at FF/REW speed.
43.	M FWD	O	Reel motor rotates.
44.	M REV	O	Reel motor rotates in reverse.
45.	CAM DOWN	O	Head base DOWN output of the mechanical block
46.	CAM UP	O	Head base UP output of the mechanical block
47.	C OFF	O	Counter light-off output
48.	M OFF	O	Meter light-off output
49.	BIAS	O	Bias oscillation on and off control
50.	R MUTE	O	REC MUTE.
51.	M MUTE		Not used for this model.
52.	T MUTE	O	Tape MUTE. Goes to low when the tape is being played.
53.	S MUTE	O	Source MUTE. Goes to low three seconds after the power is on.
54.	AMS	O	AMS switch output. Goes to low when AMS is being used.
55.	MONITOR		Not used for this model. Connected to GND.
56.	HALF		Not used for this model. Connected to GND.
57.	DAT3	O	Outputs parallel data for the counter display.
58.	DAT2	O	Outputs parallel data for the counter display.
59.	DAT1	O	Outputs parallel data for the counter display.
60.	DATO	O	Outputs parallel data for the counter display.
61.	DATD	O	Outputs parallel data for the counter display.
62.	CLK	O	Clock output to transmit the parallel data.
63.	LATCH	O	Output for latching the transmitted data.
64.	CAL IN	I	CAL switch input.

4-2. CIRCUIT BOARDS LOCATION

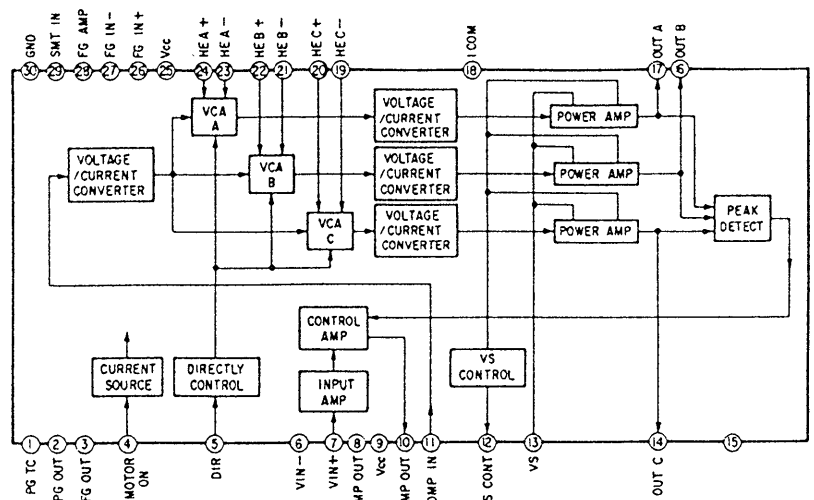


4-3. IC BLOCK DIAGRAMS

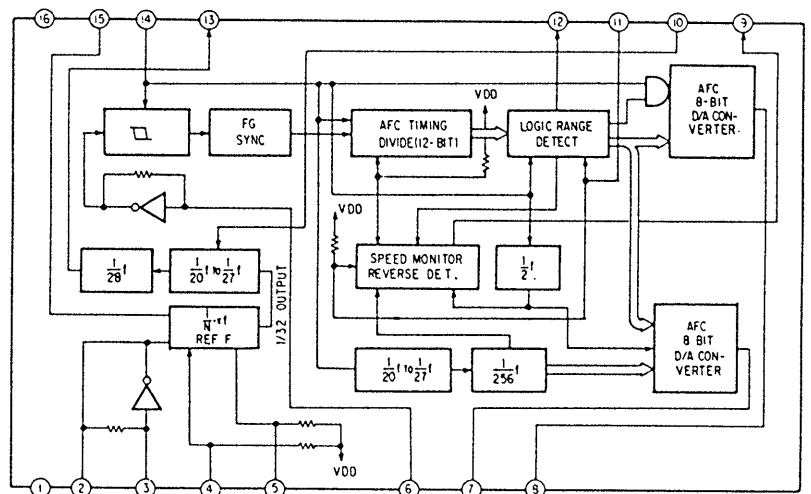
IC502, 552 CX20188



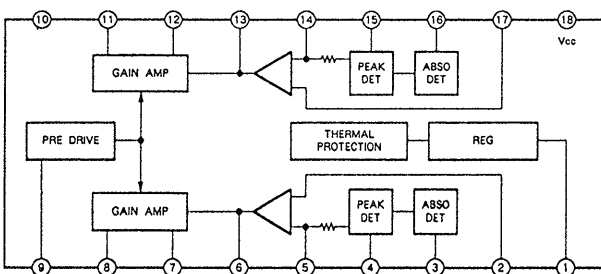
IC902 CX20174



IC952 TC-9142P

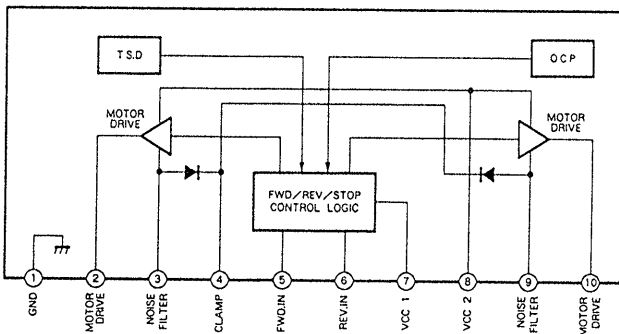


IC554 μ PC1297CA

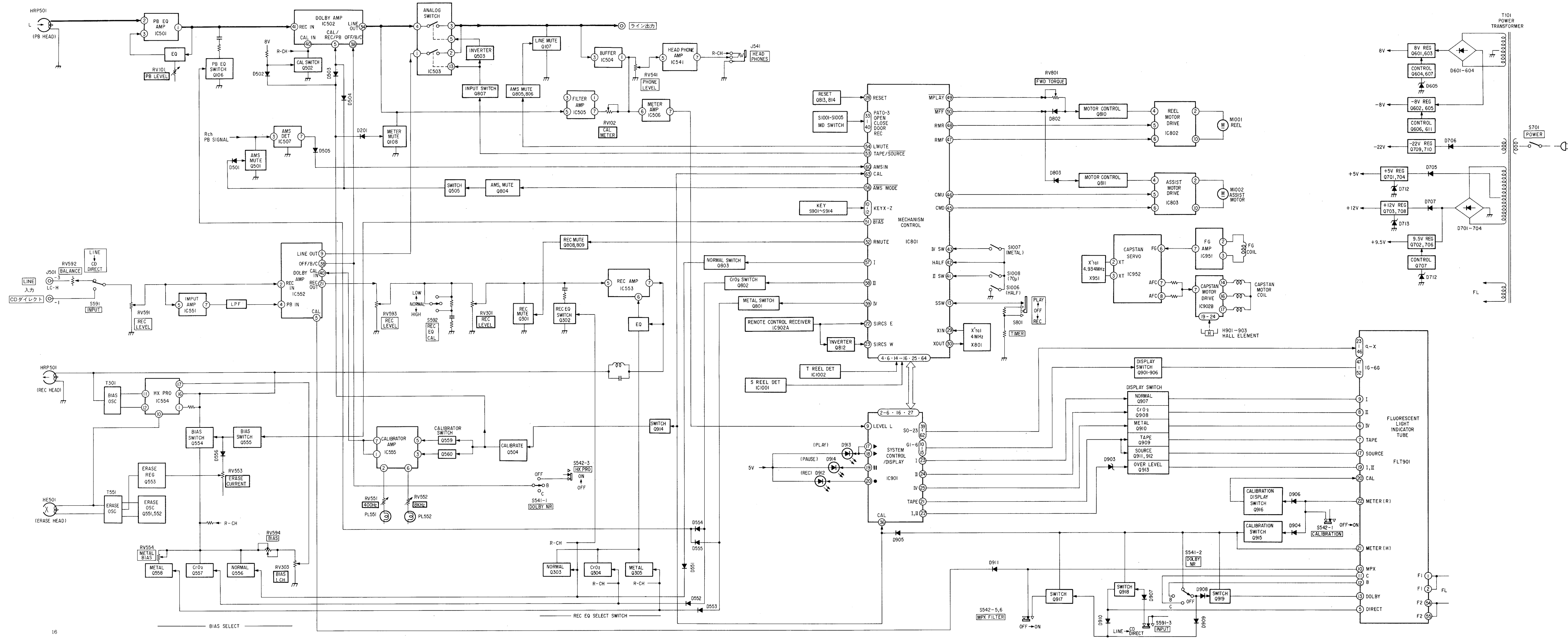


IC802 BA6219B

IC803 LB1641

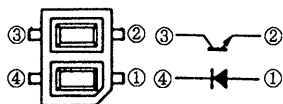


4-4. BLOCK DIAGRAMS

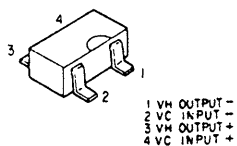


4-5. SEMICONDUCTOR LEAD LAYOUTS

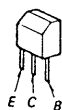
GP2S22B



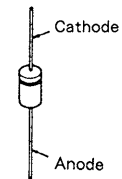
OH009



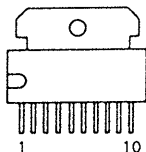
2SD1312-K



30DF2



LB1641



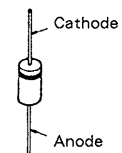
2SA1409-LK
2SB1116A-L
2SC945-Q



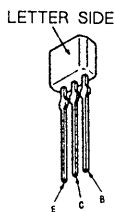
2SK170-BL



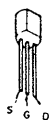
10E2N



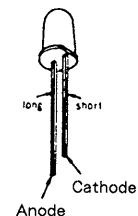
BN1L3Z-P
2SA1175-HFE



2SK246-GR



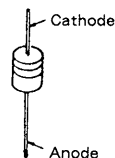
SEL1210S
SEL1210S-C
SEL1910A-C



2SB1094-LK
2SD1585-LK



HZS6C3L
HZS9B2L
UZP-8.2BB
ISS120



DTA114ES
DTA144ES
DTC114ES
DTC144ES
2SC2603-EF



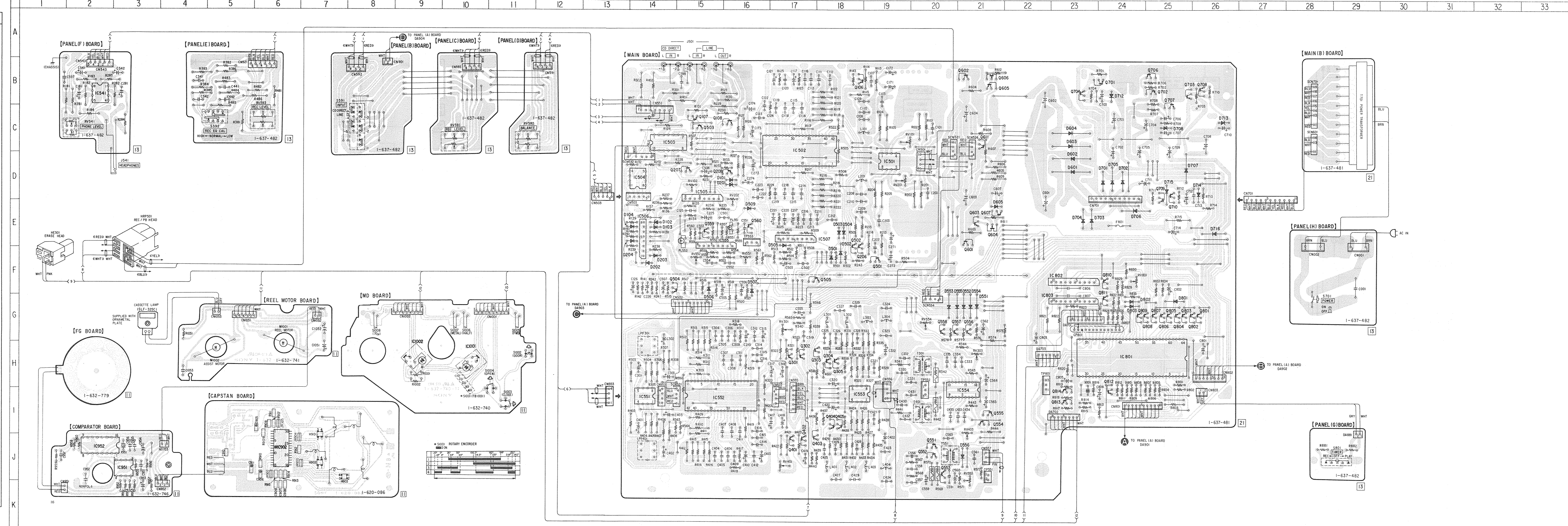
2SD756



4-6. PRINTED WIRING BOARDS - MAIN SECTION - See page 21 for Circuit Boards Location. See page 26 for Semiconductor Lead Layouts.

• Semiconductor Location

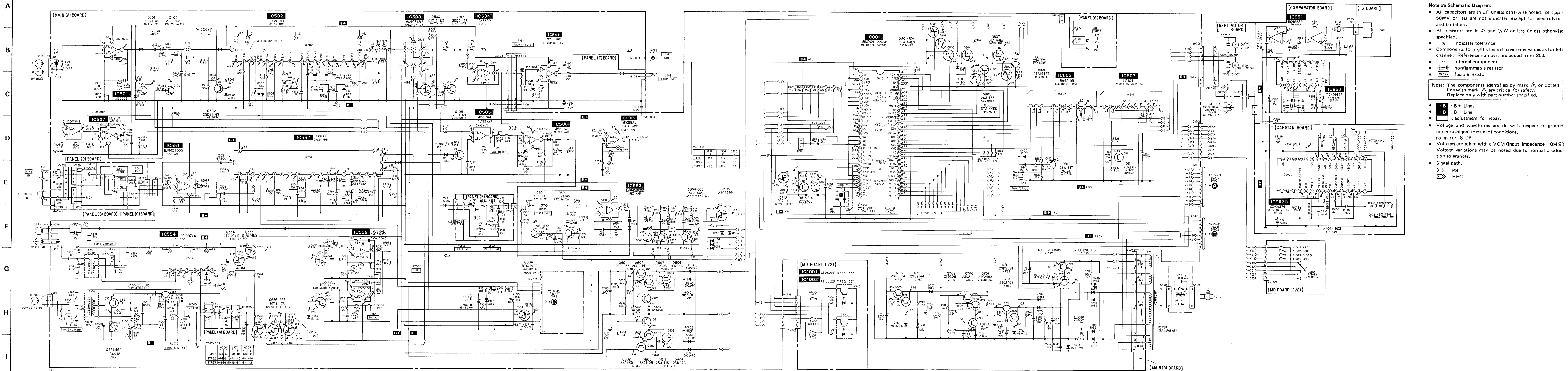
Ref. No.	Location	Ref. No.	Location
D101	D-16	Q105	B-20
D102	E-14	Q106	B-18
D103	E-14	Q107	C-15
D104	F-13	Q108	C-15
D201	D-16	Q201	E-19
D202	H-14	Q202	F-19
D203	F-14	Q203	F-20
D204	F-13	Q204	F-20
D501	F-18	Q205	F-18
D502	F-18	Q206	F-18
D503	F-18	Q207	D-15
D504	F-18	Q208	H-17
D505	F-18	Q301	H-17
D506	F-18	Q302	H-17
D507	F-16	Q303	H-17
D508	F-14	Q304	H-18
D509	F-16	Q305	H-18
D551	G-21	Q306	H-19
D552	G-21	Q401	J-17
D553	G-20	Q402	J-17
D554	G-21	Q403	J-17
D555	G-20	Q404	I-18
D556	J-21	Q405	I-18
D601	D-23	Q406	I-19
D602	D-23	Q501	F-19
D603	C-23	Q502	F-18
D604	C-23	Q503	C-15
D605	F-21	Q504	H-14
D701	D-24	Q505	F-17
D702	D-24	Q551	J-20
D703	F-23	Q552	J-20
D704	F-23	Q553	J-20
D705	D-24	Q554	I-21
D706	F-24	Q555	I-21
D707	D-25	Q556	G-21
D708	B-25	Q557	G-20
D712	B-24	Q558	G-20
D713	C-26	Q559	E-15
D714	D-26	Q560	E-16
D715	D-25	Q601	E-21
D716	E-26	Q602	B-21
D801	G-25	Q603	E-21
D802	G-24	Q604	E-21
D803	G-24	Q605	B-21
		Q606	B-21
		Q607	E-21
IC501	D-19	Q611	C-21
IC502	C-17	Q611	C-21
IC503	C-14	Q701	B-24
IC504	D-14	Q702	B-24
IC505	D-15	Q703	B-25
IC506	F-14	Q704	B-23
IC507	F-17	Q706	B-24
IC541	B-2	Q707	B-25
IC551	I-14	Q708	B-26
IC552	I-15	Q709	D-25
IC553	I-18	Q710	D-25
IC554	I-21	Q801	G-26
IC555	F-15	Q802	G-25
IC801	H-24	Q803	G-25
IC802	F-23	Q804	G-25
IC803	G-23	Q805	G-25
IC902A	J-6	Q806	G-25
IC951	J-3	Q807	G-24
IC952	J-2	Q808	G-24
IC1001	H-10	Q809	G-24
IC1002	H-9	Q810	F-24
		Q811	G-24
Q101	B-20	Q812	I-24
Q102	B-19	Q813	I-23
Q103	B-20	Q814	I-23
Q104	B-20		



Note on Mounting Diagram:
 • ○ : parts extracted from the component side.
 • ■ : parts mounted on the conductor side.

4-7. SCHEMATIC DIAGRAM - MAIN SECTION - See page 22 for IC Block Diagrams.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35



Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. $\text{pF} = \mu\text{F} \times 10^{-6}$ and $\text{nF} = \mu\text{F} \times 10^{-9}$.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- % : indicates tolerance.
- Components for right channel have same values as for left channel. Reference numbers are coded from 200.
- Δ : internal component.
- \square : nonflammable resistor.
- --- : fusible resistor.

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

- --- : B+ Line.
- --- : B- Line.
- --- : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- No mark : STOP
- Voltage variations may be noted due to normal production tolerances.
- Signal path.
- --- : PB
- --- : REC

SECTION 5 EXPLODED VIEWS

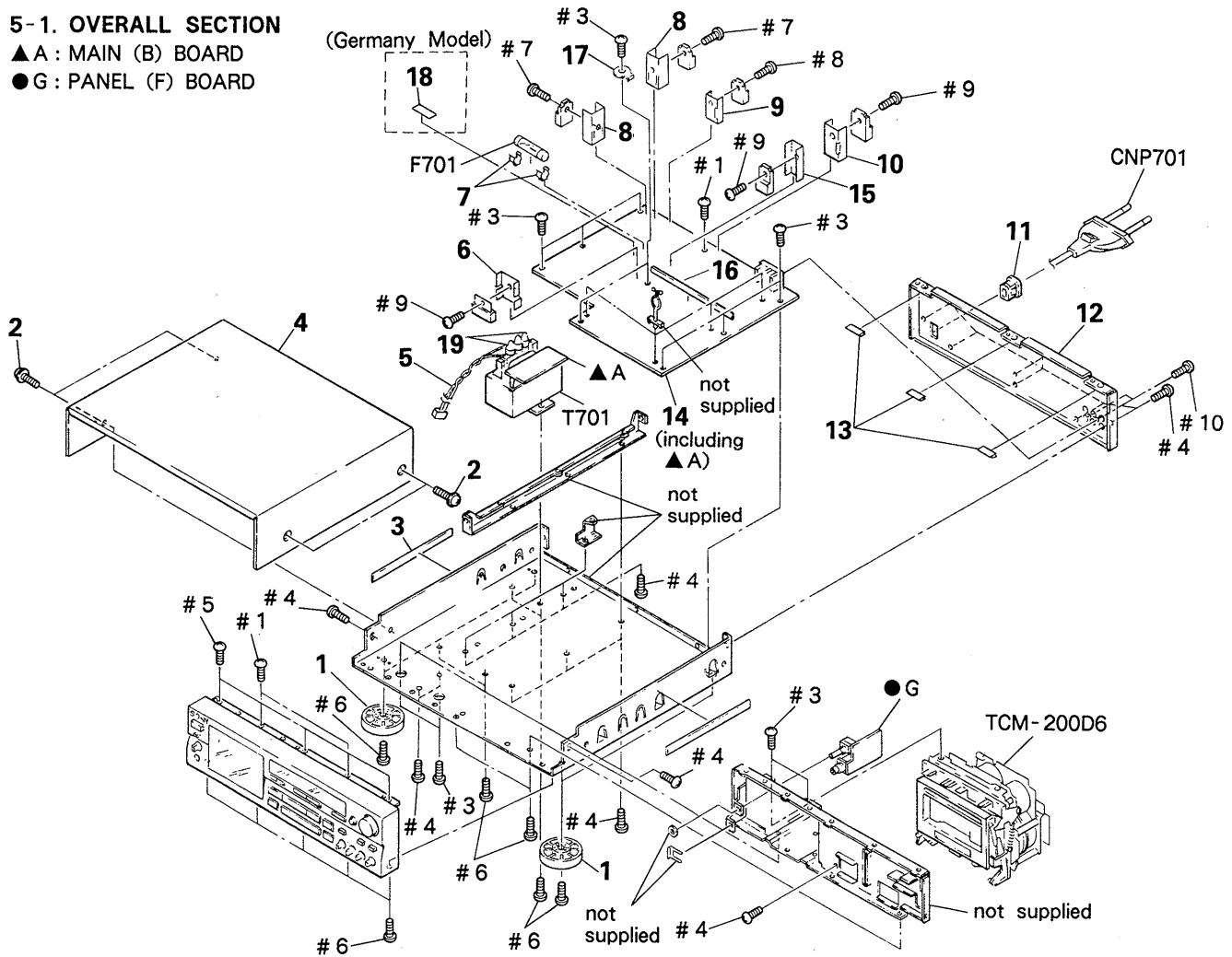
NOTE :

- - XX, - X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
Example :
KNOB, BALANCE (WHITE)...(RED)
 ↑ ↑
Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

5-1. OVERALL SECTION

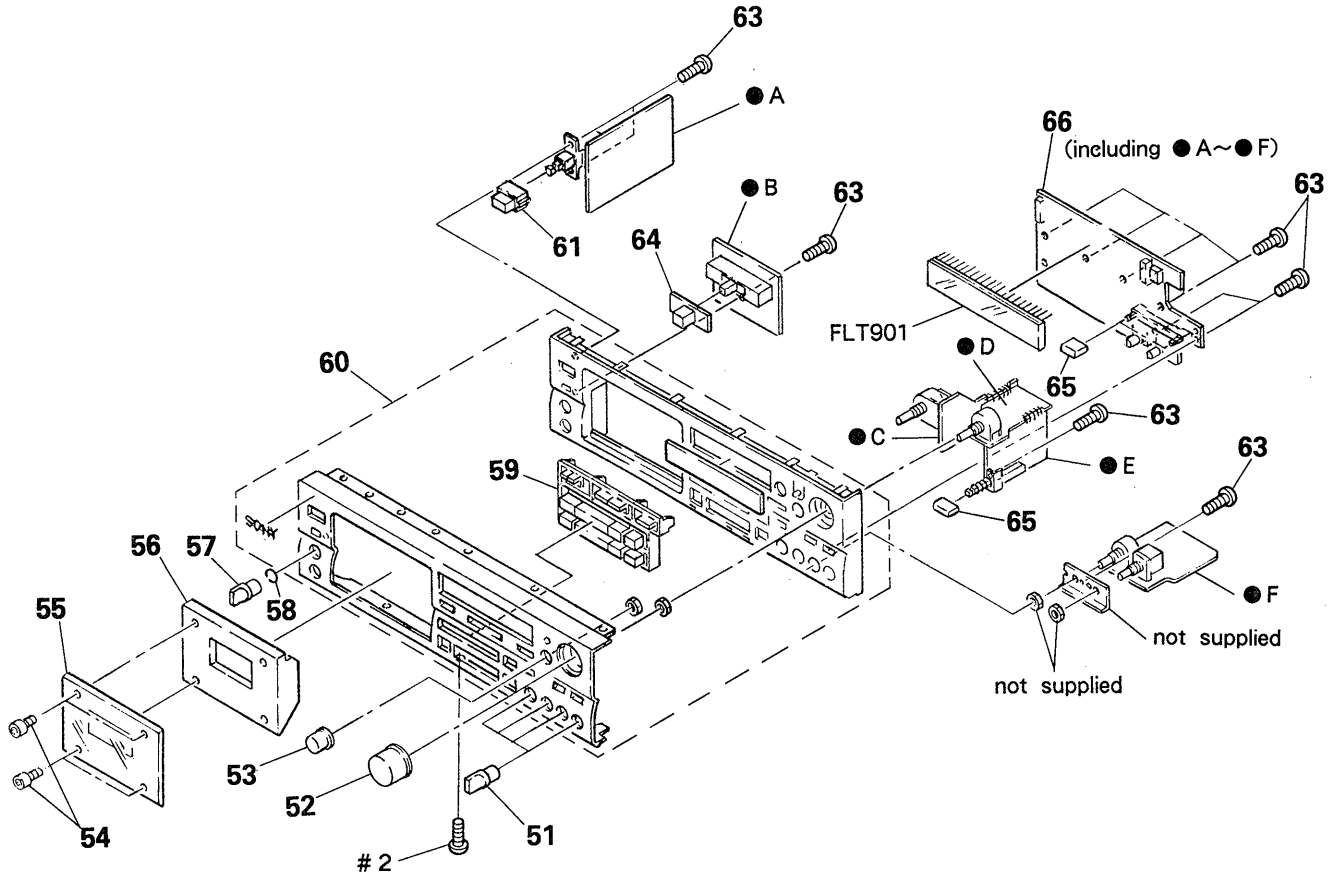
- ▲ A : MAIN (B) BOARD
- G : PANEL (F) BOARD



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3304-944-1	FOOT ASSY		12	* 3-350-460-81	PANEL, BACK (AEP)	
2	3-704-366-01	SCREW (CASE) (M3X8)			* 3-350-460-91	PANEL, BACK (Germany)	
3	* 3-657-780-00	CUSHION		13	3-831-441-XX	CUSHION, SPEAKER	
4	4-925-039-61	CASE		14	* A-2006-514-A	MAIN BOARD	
5	* 1-590-321-51	LEAD (WITH CONNECTOR)		15	* 4-880-403-21	HEAT SINK	
6	* 3-356-925-01	HEAT SINK		16	* 1-560-242-91	BUS BAR 10P	
7	* 1-533-213-31	HOLDER, FUSE		17	4-870-539-00	PLATE, GROUND	
8	4-902-345-01	HEAT SINK		18	3-701-947-12	CABEL (T1. 25A), FUSE (Germany)	
9	* 3-309-144-21	HEAT SINK		19	* 4-912-962-01	COVER (1P), TERMINAL	
10	* 4-880-403-11	HEAT SINK		CNP701	1-575-651-11	CORD, POWER	
11	* 3-703-244-00	BUSHING (2104), CORD		F701	1-532-285-00	FUSE, TIME-LAG	
				T701	1-450-512-11	TRANSFORMER, POWER	

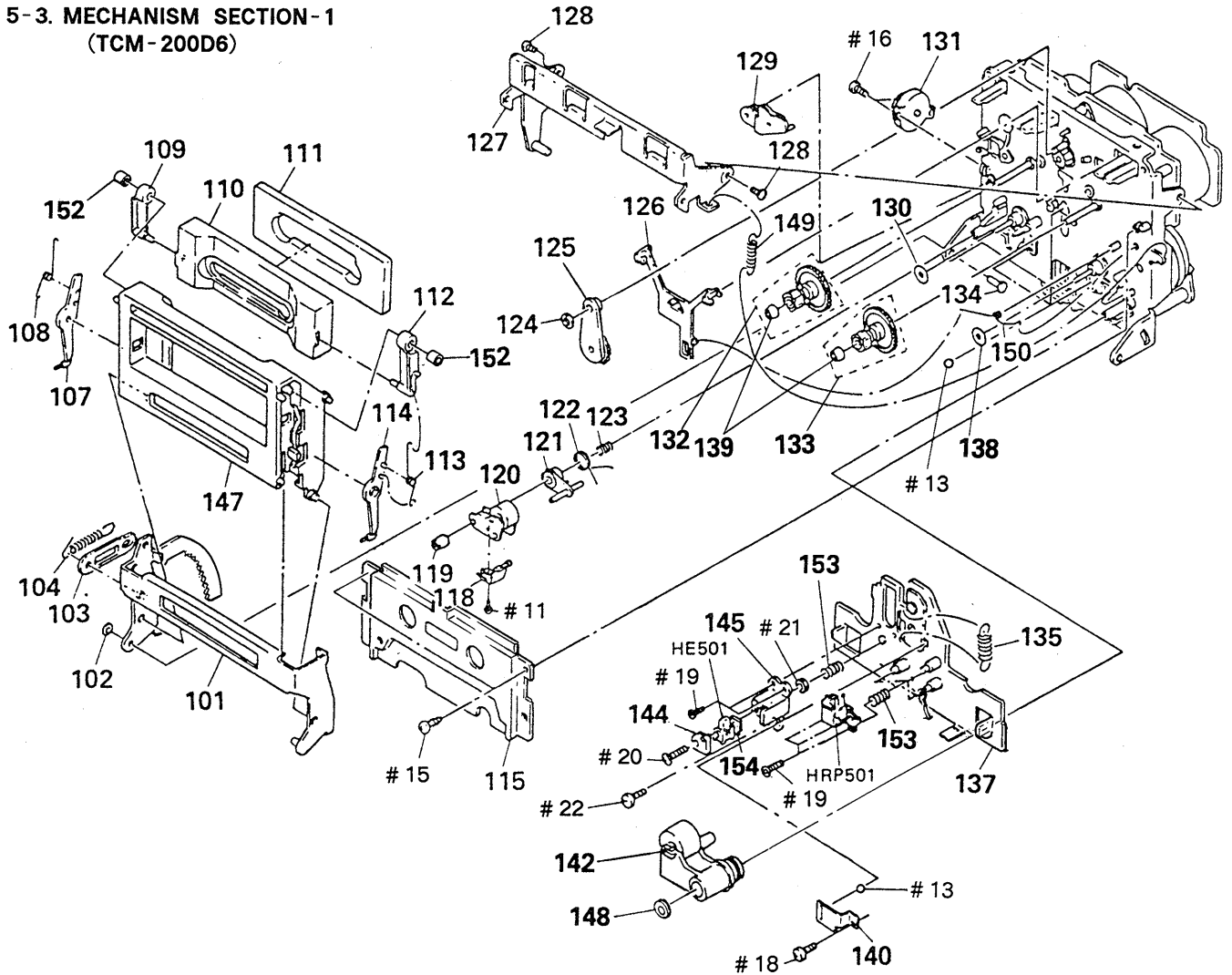
5-2. PANEL SECTION

- A : PANEL (H)
- B : PANEL (G)
- C : PANEL (D)
- D : PANEL (C)
- E : PANEL (B)
- F : PANEL (E)



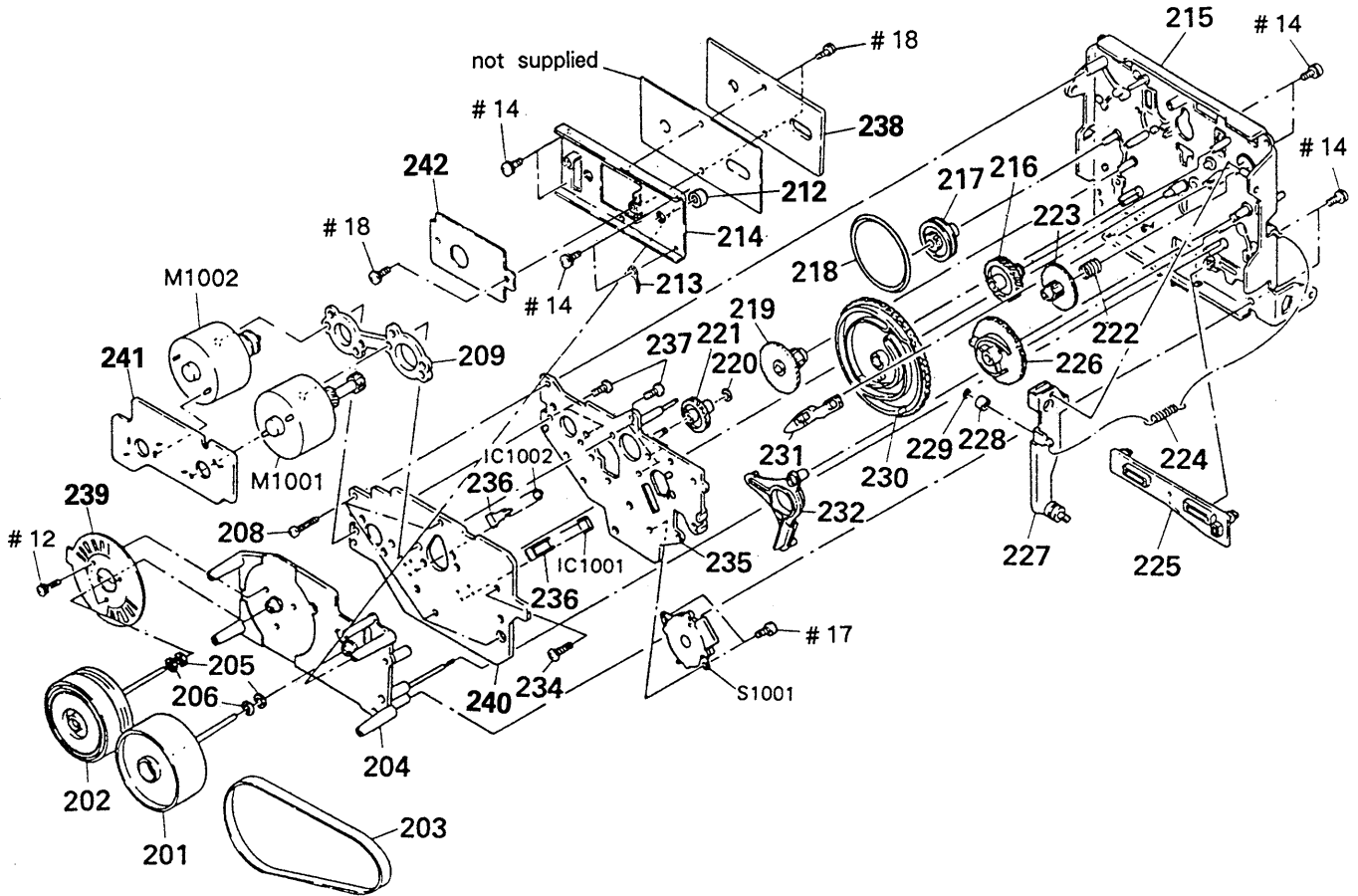
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-3362-818-1	KNOB (DIA.12) ASSY (B), SQUARE		59	X-3362-290-1	BUTTON (BLOCK) ASSY	
52	X-3362-289-1	KNOB (VOL.) ASSY		60	A-2003-827-A	PANEL ASSY, FRONT	
53	3-364-173-01	KNOB (BAL)		61	3-354-912-01	KNOB, POWER	
54	3-356-942-01	SCREW (2. 6X6), TAPPING		63	4-928-635-01	SCREW, +BV (2. 6X8) TAPPING	
55	3-364-177-21	WINDOW (CASSETTE)		64	4-922-518-01	KNOB (TIMER)	
56	3-356-923-01	L.I.D, CASSETTE		65	3-364-165-01	BUTTON (14X5)	
57	3-354-931-01	KNOB (DIA. 10)		66	* A-2006-515-A	PANEL BOARD	
58	3-354-981-01	SPRING (SUS), RING		FLT901	1-519-560-11	INDICATOR TUBE, FLUORESCENT	

5-3. MECHANISM SECTION-1
(TCM-200D6)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	X-3362-671-1	HOLDER (BG) ASSY, CASSETTE		130	3-356-713-01	WASHER	
102	3-558-708-21	WASHER, STOPPER		131	3-319-224-31	DAMPER, SMALL	
103	* 3-356-717-01	LEVER (JOINT)		132	X-3356-629-1	GEAR (S) ASSY	
104	3-356-626-01	SPRING, TENSION		133	X-3356-627-1	GEAR (T) ASSY	
107	3-356-932-01	LEVER (LA)		134	3-356-710-01	SHAFT (LEFT) (CASSETTE HOLDER)	
108	3-356-927-01	SPRING (LEFT), TORSION		135	3-356-658-01	SPRING (LIMITER H), TENSION	
109	3-356-933-01	LEVER (LB)		137	* X-3362-199-1	SLIDER (HEAD CHASSIS D) ASSY	
110	3-356-928-01	PLATE (A), ORNAMENTAL		138	3-332-763-01	RING, OIL RESERVOIR	
111	3-356-731-01	ABSORBENT, VIBRATION		139	3-362-308-01	CAP (REEL)	
112	3-356-931-01	LEVER (RB)		140	3-356-656-01	SPRING (HEAD PC BOARD), LEAF	
113	3-356-926-01	SPRING (RIGHT), TORSION		142	X-3356-620-1	LEVER (PINCH LEVER T) ASSY	
114	3-356-930-01	LEVER (RA)		144	3-318-433-01	SPRING	
115	X-3356-613-1	PLATE ASSY, ORNAMENTAL		145	* 3-576-977-00	BRACKET, E. HEAD	
118	3-564-138-00	GUIDE (S), TAPE		147	X-3356-611-1	HOLDER (A) ASSY, CASSETTE	
119	3-356-652-01	NUT (PINCH LEVER S)		148	3-669-596-00	WASHER (2.3), STOPPER	
120	X-3356-621-1	LEVER (PINCH LEVER S) ASSY		149	3-356-625-01	SPRING, TENSION	
121	3-356-660-01	LEVER (PS)		150	3-356-619-01	SPRING (B), TORSION	
122	3-356-661-01	SPRING (PINCH LEVER S), TORSION		152	3-356-946-01	BUSHING	
123	3-356-657-01	SPRING (PS), COMPRESSION		153	3-564-121-00	SPRING, COMPRESSION	
124	3-669-465-00	WASHER (1.5), STOPPER		154	* 1-608-268-00	ERASE HEAD BOARD	
125	X-3356-641-1	LEVER (FR2) ASSY		HE501	1-543-358-11	HEAD, MAGNETIC (ERASE)	
126	3-356-614-01	SLIDER (BRAKE)		HRP501	1-543-742-11	HEAD, MAGNETIC (RECORD/PLAYBACK)	
127	* X-3356-608-1	LEVER (LIFTER) ASSY					
128	3-356-601-11	SCREW, STEP					
129	X-3356-623-1	LEVER (BT) ASSY					

5-4. MECHANISM SECTION-2
(TCM-200D6)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	X-3362-284-1	FLYWHEEL (S2.3) ASSY		225	3-356-653-01	SLIDER (PAUSE)	
202	X-3356-619-1	FLYWHEEL (DT) ASSY		226	3-356-616-01	GEAR (LOADING CAM)	
203	3-364-600-01	BELT (CAPSTAN)		227	* X-3356-606-1	LEVER (LOADING) ASSY	
204	X-3362-281-1	CHASSIS (D2.3) ASSY		228	3-356-630-01	ROLLER (LOADING)	
205	3-356-705-31	WASHER (CAPSTAN)		229	3-558-708-11	WASHER, STOPPER	
206	3-356-705-21	WASHER (CAPSTAN)		230	3-356-654-01	GEAR (MODE CAM C)	
208	3-355-801-01	SCREW (BTP 2X18)		231	3-356-617-01	LEVER (SELECTION)	
209	* 3-356-628-01	SPACER (MOTOR)		232	3-356-613-01	LEVER (MODE)	
212	3-364-135-01	RETAINER (S), THRUST		234	3-356-707-01	SCREW (+PTPMH 2X25)	
213	* 3-701-822-00	HOLDER, WIRE		235	* X-3356-616-4	BRACKET (MOTOR D) ASSY	
214	* X-3362-282-1	BRACKET (THRUST RETAINER) ASSY		236	3-356-631-01	HOLDER (SENSOR)	
215	X-3356-622-1	CHASSIS (C) ASSY, MECHANICAL		237	3-363-804-01	SCREW (+P 2.6X6.5)	
216	3-356-703-01	GEAR (COMMUNICATION C)		238	A-2006-154-A	CAPSTAN C. O. C BOARD	
217	3-356-607-01	PULLEY (MODE)		239	1-632-779-11	PC BOARD, FG	
218	3-356-603-01	BELT (MODE)		240	* 1-632-740-11	MD BOARD	
219	3-356-606-01	GEAR (MODE)		241	* 1-632-741-11	REAL MOTOR BOARD	
220	3-669-465-11	WASHER (1.5), STOPPER		242	* 1-632-745-11	COMPARATOR BOARD	
221	3-356-702-01	GEAR (COMMUNICATION B)		M1001	X-3356-638-1	MOTOR (REEL R) ASSY	
222	3-356-605-01	SPRING, COMPRESSION		M1002	X-3356-604-1	MOTOR (ASSIST) ASSY	
223	3-356-609-01	GEAR (LOADING)		S1001	1-466-238-11	ENCODER, ROTARY	
224	3-356-624-01	SPRING, TENSION					

SECTION 6
ELECTRICAL PARTS LIST

CAPSTAN C.O.C

COMPARATOR

MD

NOTE :

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...
- CAPACITORS:
uF: μ F
- COILS
uH: μ H

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-2006-154-A	CAPSTAN C. O. C BOARD *****				< CONNECTOR >	
	1-216-296-00	METAL CHIP 0 5% 1/8W < CAPACITOR >		CN951	* 1-564-718-11	PIN, CONNECTOR (SMALL TYPE) 2P	
C905	1-124-779-00	ELECT CHIP 10uF 20% 16v		CN952	* 1-564-518-11	PLUG, CONNECTOR 3P	
C906	1-135-091-00	TANTALUM CHIP 1uF 20% 16V				< IC >	
C907	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V		IC951	8-759-945-58	IC RC4558P	
C908	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V		IC952	8-759-201-58	IC TC9142P	
C909	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V				< RESISTOR >	
C910	1-163-205-00	CERAMIC CHIP 0.001uF 5% 50V		R951	1-249-413-11	CARBON 470 5% 1/4W	
C911	1-124-779-00	ELECT CHIP 10uF 20% 16v		R952	1-249-413-11	CARBON 470 5% 1/4W	
		< IC >		R953	1-247-881-00	CARBON 120K 5% 1/4W	
IC902	8-752-017-40	IC CX20174-T1 < TRANSISTOR >		R954	1-247-881-00	CARBON 120K 5% 1/4W	
H901	8-719-403-79	OH009-TW		R955	1-249-429-11	CARBON 10K 5% 1/4W	
H902	8-719-403-79	OH009-TW		R956	1-249-417-11	CARBON 1K 5% 1/4W	
H903	8-719-403-79	OH009-TW < RESISTOR >		R957	1-249-417-11	CARBON 1K 5% 1/4W	
R907	1-216-242-00	METAL GLAZE 68K 5% 1/8W		R958	1-247-891-00	CARBON 330K 5% 1/4W	
R908	1-216-246-00	METAL GLAZE 100K 5% 1/8W		R959	1-247-901-11	CARBON 820K 5% 1/4W	
R909	1-216-246-00	METAL GLAZE 100K 5% 1/8W		R960	1-249-441-11	CARBON 100K 5% 1/4W	
R910	1-216-238-00	METAL GLAZE 47K 5% 1/8W				< CRYSTAL >	
R911	1-216-182-00	METAL GLAZE 220 5% 1/8W		X951	1-577-615-11	VIBRATOR, CRYSTAL (4.934MHz)	
R912	1-216-182-00	METAL GLAZE 220 5% 1/8W				*****	
R913	1-216-150-00	METAL GLAZE 10 5% 1/8W			* 1-632-740-11	MD BOARD *****	
R914	1-216-150-00	METAL GLAZE 10 5% 1/8W			3-356-631-01	HOLDER (SENSOR)	
R915	1-216-150-00	METAL GLAZE 10 5% 1/8W				< CONNECTOR >	
		*****		CN1001	1-506-615-11	PIN, CONNECTOR 9P	
	* 1-632-746-11	COMPARATOR BOARD ***** < CAPACITOR >		CN1002	1-564-501-11	PIN, CONNECTOR 8P	
C951	1-136-157-00	FILM 0.022uF 5% 50V		TB1001	* 1-569-066-11	PIN, CONNECTOR 5P	
C952	1-124-282-00	ELECT 22uF 20% 25V				< IC >	
C953	1-124-478-11	ELECT 100uF 20% 25V		IC1001	8-749-920-97	IC PHOTO REFLECTOR GP2S22B	
C954	1-124-477-11	ELECT 47uF 20% 25V		IC1002	8-749-920-97	IC PHOTO REFLECTOR GP2S22B	
C955	1-162-203-31	CERAMIC 15PF 5% 50V				< RESISTOR >	
C956	1-162-203-31	CERAMIC 15PF 5% 50V		R1001	1-249-408-11	CARBON 180 5% 1/4W	
C957	1-136-159-00	FILM 0.033uF 5% 50V		R1002	1-249-408-11	CARBON 180 5% 1/4W	

MD

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		< SWITCH >					
S1002	1-570-953-11	SWITCH, PUSH(1 KEY)		C215	1-136-167-00	FILM 0.15uF 5% 50V	
S1003	1-571-958-11	SWITCH, PUSH(1 KEY)		C216	1-136-155-00	FILM 0.015uF 5% 50V	
S1004	1-572-126-11	SWITCH, PUSH(1 KEY)		C217	1-124-903-11	ELECT 1uF 20% 50V	
S1005	1-572-125-11	SWITCH, LEAF		C218	1-136-169-00	FILM 0.22uF 5% 50V	
S1006	1-572-202-11	SWITCH, LEAF		C219	1-136-163-00	FILM 0.068uF 5% 50V	
S1007	1-572-125-11	SWITCH, LEAF		C220	1-136-162-00	FILM 0.056uF 5% 50V	
S1008	1-572-125-11	SWITCH, LEAF		C221	1-124-903-11	ELECT 1uF 20% 50V	
		*****		C222	1-130-480-00	MYLAR 0.0056uF 5% 50V	
	* A-2006-514-A	MAIN BOARD		C223	1-136-153-00	FILM 0.01uF 5% 50V	
		*****		C225	1-124-925-11	ELECT 2.2uF 20% 100V	
	* 1-533-213-31	HOLDER, FUSE		C226	1-123-382-00	ELECT 3.3uF 20% 100V	
	* 1-560-242-91	BUS BAR 10P		C271	1-126-049-11	ELECT 22uF 20% 50V	
	7-682-147-15	SCREW, TR		C272	1-126-049-11	ELECT 22uF 20% 50V	
	4-902-345-01	HEAT SINK		C273	1-126-049-11	ELECT 22uF 20% 50V	
	* 3-309-144-21	HEAT SINK		C274	1-126-049-11	ELECT 22uF 20% 50V	
	* 3-356-925-01	HEAT SINK		C301	1-126-163-11	ELECT 4.7uF 20% 50V	
	4-870-539-00	PLATE, GROUND		C302	1-126-163-11	ELECT 4.7uF 20% 50V	
	* 4-880-403-11	HEAT SINK		C303	1-126-163-11	ELECT 4.7uF 20% 50V	
	7-682-548-09	SCREW +B 3X8		C304	1-130-475-00	MYLAR 0.0022uF 5% 50V	
	7-682-547-04	SCREW +BVTT 3X6(S)		C305	1-130-475-00	MYLAR 0.0022uF 5% 50V	
		< CAPACITOR >		C306	1-130-478-00	MYLAR 0.0039uF 5% 50V	
C101	1-110-340-11	MYLAR 270PF 5% 50V		C307	1-136-173-00	FILM 0.47uF 5% 50V	
C103	1-136-157-00	FILM 0.022uF 5% 50V		C308	1-136-167-00	FILM 0.15uF 5% 50V	
C107	1-136-159-00	FILM 0.033uF 5% 50V		C309	1-136-155-00	FILM 0.015uF 5% 50V	
C108	1-102-966-00	CERAMIC 43PF 5% 50V		C310	1-124-903-11	ELECT 1uF 20% 50V	
C109	1-130-474-00	MYLAR 0.0018uF 5% 50V		C311	1-136-169-00	FILM 0.22uF 5% 50V	
C110	1-130-474-00	MYLAR 0.0018uF 5% 50V		C312	1-136-162-00	FILM 0.056uF 5% 50V	
C111	1-130-475-00	MYLAR 0.0022uF 5% 50V		C313	1-124-903-11	ELECT 1uF 20% 50V	
C112	1-130-475-00	MYLAR 0.0022uF 5% 50V		C314	1-136-163-00	FILM 0.068uF 5% 50V	
C113	1-130-478-00	MYLAR 0.0039uF 5% 50V		C315	1-130-480-00	MYLAR 0.0056uF 5% 50V	
C114	1-136-173-00	FILM 0.47uF 5% 50V		C316	1-136-153-00	FILM 0.01uF 5% 50V	
C115	1-136-167-00	FILM 0.15uF 5% 50V		C317	1-126-059-11	ELECT 10uF 20% 50V	
C116	1-136-155-00	FILM 0.015uF 5% 50V		C318	1-126-059-11	ELECT 10uF 20% 50V	
C117	1-124-903-11	ELECT 1uF 20% 50V		C319	1-130-474-00	MYLAR 0.0018uF 5% 50V	
C118	1-136-169-00	FILM 0.22uF 5% 50V		C320	1-126-059-11	ELECT 10uF 20% 50V	
C119	1-136-163-00	FILM 0.068uF 5% 50V		C321	1-136-161-00	FILM 0.047uF 5% 50V	
C120	1-136-162-00	FILM 0.056uF 5% 50V		C322	1-126-049-11	ELECT 22uF 20% 50V	
C121	1-124-903-11	ELECT 1uF 20% 50V		C323	1-110-338-51	MYLAR 180PF 5% 50V	
C122	1-130-480-00	MYLAR 0.0056uF 5% 50V		C324	1-136-935-11	FILM 22PF 5% 630V	
C123	1-136-153-00	FILM 0.01uF 5% 50V		C325	1-136-155-00	FILM 0.015uF 5% 50V	
C125	1-136-165-00	FILM 0.1uF 5% 50V		C326	1-136-155-00	FILM 0.015uF 5% 50V	
C126	1-123-382-00	ELECT 3.3uF 20% 100V		C327	1-136-156-00	FILM 0.018uF 5% 50V	
C171	1-126-049-11	ELECT 22uF 20% 50V		C328	1-136-155-00	FILM 0.015uF 5% 50V	
C172	1-126-049-11	ELECT 22uF 20% 50V		C329	1-136-156-00	FILM 0.018uF 5% 50V	
C173	1-126-049-11	ELECT 22uF 20% 50V		C330	1-136-433-11	FILM 100PF 5% 630V	
C174	1-126-049-11	ELECT 22uF 20% 50V		C331	1-136-803-11	FILM 560PF 5% 630V	
C201	1-110-340-11	MYLAR 270PF 5% 50V		C332	1-130-468-00	MYLAR 560PF 5% 50V	
C203	1-136-157-00	FILM 0.022uF 5% 50V		C333	1-136-153-00	FILM 0.01uF 5% 50V	
C207	1-136-159-00	FILM 0.033uF 5% 50V		C334	1-136-157-00	FILM 0.022uF 5% 50V	
C208	1-102-966-00	CERAMIC 43PF 5% 50V		C335	1-136-165-00	FILM 0.1uF 5% 50V	
C209	1-130-474-00	MYLAR 0.0018uF 5% 50V		C401	1-126-163-11	ELECT 4.7uF 20% 50V	
C210	1-130-474-00	MYLAR 0.0018uF 5% 50V		C402	1-126-163-11	ELECT 4.7uF 20% 50V	
C211	1-130-475-00	MYLAR 0.0022uF 5% 50V		C403	1-126-163-11	ELECT 4.7uF 20% 50V	
C212	1-130-475-00	MYLAR 0.0022uF 5% 50V		C404	1-130-475-00	MYLAR 0.0022uF 5% 50V	
C213	1-130-478-00	MYLAR 0.0039uF 5% 50V		C405	1-130-475-00	MYLAR 0.0022uF 5% 50V	
C214	1-136-173-00	FILM 0.47uF 5% 50V		C406	1-130-478-00	MYLAR 0.0039uF 5% 50V	
				C407	1-136-173-00	FILM 0.47uF 5% 50V	
				C408	1-136-167-00	FILM 0.15uF 5% 50V	
				C409	1-136-155-00	FILM 0.015uF 5% 50V	
				C410	1-124-903-11	ELECT 1uF 20% 50V	

MAIN

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
C411	1-136-169-00	FILM	0.22uF	5%	50V	C707	1-124-927-11	ELECT	4.7uF	20%	100V
C412	1-136-162-00	FILM	0.056uF	5%	50V	C708	1-126-955-11	ELECT	4700uF	20%	35V
C413	1-124-903-11	ELECT	1uF	20%	50V	C709	1-124-556-11	ELECT	2200uF	20%	16V
C414	1-136-163-00	FILM	0.068uF	5%	50V	C710	1-124-927-11	ELECT	4.7uF	20%	100V
C415	1-130-480-00	MYLAR	0.0056uF	5%	50V	C711	1-124-122-11	ELECT	100uF	20%	50V
C416	1-136-153-00	FILM	0.01uF	5%	50V	C712	1-124-477-11	ELECT	47uF	20%	25V
C417	1-126-059-11	ELECT	10uF	20%	50V	C713	1-164-159-11	CERAMIC	0.1uF		50V
C418	1-126-059-11	ELECT	10uF	20%	50V	C714	1-124-927-11	ELECT	4.7uF	20%	100V
C419	1-130-474-00	MYLAR	0.0018uF	5%	50V	C801	1-124-443-00	ELECT	100uF	20%	10V
C420	1-126-059-11	ELECT	10uF	20%	50V	C802	1-124-472-11	ELECT	470uF	20%	10V
C421	1-136-161-00	FILM	0.047uF	5%	50V	C803	1-124-477-11	ELECT	47uF	20%	25V
C422	1-126-049-11	ELECT	22uF	20%	50V	C804	1-124-927-11	ELECT	4.7uF	20%	100V
C423	1-110-338-51	MYLAR	180PF	5%	50V	C805	1-124-907-11	ELECT	10uF	20%	50V
C424	1-136-935-11	FILM	22PF	5%	630V	C806	1-164-159-11	CERAMIC	0.1uF		50V
C425	1-136-155-00	FILM	0.015uF	5%	50V	C807	1-164-159-11	CERAMIC	0.1uF		50V
C426	1-136-155-00	FILM	0.015uF	5%	50V			< CONNECTOR >			
C427	1-136-156-00	FILM	0.018uF	5%	50V	CN501	* 1-560-062-00	PIN, CONNECTOR	4P		
C428	1-136-155-00	FILM	0.015uF	5%	50V	CN502	* 1-564-666-11	PIN, CONNECTOR	10P		
C429	1-136-156-00	FILM	0.018uF	5%	50V	CN503	* 1-560-063-00	PIN, CONNECTOR	5P		
C430	1-136-433-11	FILM	100PF	5%	630V	CN551	* 1-564-510-11	PLUG, CONNECTOR	7P		
C431	1-136-803-11	FILM	560PF	5%	630V	CN553	* 1-564-507-11	PLUG, CONNECTOR	4P		
C432	1-130-468-00	MYLAR	560PF	5%	50V	CN555	* 1-564-509-11	PLUG, CONNECTOR	6P		
C433	1-136-153-00	FILM	0.01uF	5%	50V	CN556	* 1-560-062-00	PIN, CONNECTOR	4P		
C434	1-136-157-00	FILM	0.022uF	5%	50V	CN557	* 1-560-061-00	PIN, CONNECTOR	3P		
C435	1-136-165-00	FILM	0.1uF	5%	50V	CN701	* 1-564-514-11	PLUG, CONNECTOR	11P		
C501	1-130-475-00	MYLAR	0.0022uF	5%	50V	CN801	* 1-564-666-11	PIN, CONNECTOR	10P		
C502	1-136-165-00	FILM	0.1uF	5%	50V	CN802	* 1-564-342-11	PIN, CONNECTOR	8P		
C503	1-124-902-00	ELECT	0.47uF	20%	50V	CN803	* 1-564-336-00	PIN, CONNECTOR	2P		
C505	1-124-907-11	ELECT	10uF	20%	50V			< COMPOSITION >			
C506	1-124-925-11	ELECT	2.2uF	20%	100V	CP801	1-236-984-11	COMPOSITION CIRCUIT BLOCK			
C507	1-124-925-11	ELECT	2.2uF	20%	100V			< DIODE >			
C508	1-124-477-11	ELECT	47uF	20%	25V	D101	8-719-912-20	DIODE	1SS120		
C551	1-136-157-00	FILM	0.022uF	5%	50V	D102	8-719-000-54	DIODE	UZL-6L3		
C552	1-136-157-00	FILM	0.022uF	5%	50V	D103	8-719-912-20	DIODE	1SS120		
C553	1-130-474-00	MYLAR	0.0018uF	5%	50V	D104	8-719-912-20	DIODE	1SS120		
C554	1-130-474-00	MYLAR	0.0018uF	5%	50V	D201	8-719-912-20	DIODE	1SS120		
C555	1-124-925-11	ELECT	2.2uF	20%	100V	D202	8-719-000-54	DIODE	UZL-6L3		
C556	1-136-228-11	FILM	0.0012uF	5%	100V	D203	8-719-912-20	DIODE	1SS120		
C557	1-136-233-11	FILM	0.0047uF	5%	100V	D204	8-719-912-20	DIODE	1SS120		
C558	1-136-228-11	FILM	0.0012uF	5%	100V	D501	8-719-912-20	DIODE	1SS120		
C559	1-124-907-11	ELECT	10uF	20%	50V	D502	8-719-912-20	DIODE	1SS120		
C560	1-124-925-11	ELECT	2.2uF	20%	100V	D503	8-719-912-20	DIODE	1SS120		
C561	1-136-559-11	FILM	0.0047uF	5%	630V	D504	8-719-912-20	DIODE	1SS120		
C562	1-124-907-11	ELECT	10uF	20%	50V	D505	8-719-912-20	DIODE	1SS120		
C563	1-107-045-00	MICA	3.9PF		500V	D506	8-719-912-20	DIODE	1SS120		
C564	1-126-059-11	ELECT	10uF	20%	50V	D507	8-719-912-20	DIODE	1SS120		
C565	1-124-477-11	ELECT	47uF	20%	25V	D509	8-719-912-20	DIODE	1SS120		
C591	1-162-282-31	CERAMIC	100PF	10%	50V	D551	8-719-912-20	DIODE	1SS120		
C598	1-161-494-00	CERAMIC	0.022uF		25V	D552	8-719-912-20	DIODE	1SS120		
C601	1-124-636-00	ELECT	3300uF	20%	25V	D553	8-719-912-20	DIODE	1SS120		
C602	1-124-636-00	ELECT	3300uF	20%	25V	D554	8-719-912-20	DIODE	1SS120		
C603	1-124-922-11	ELECT	1000uF	20%	63V	D555	8-719-912-20	DIODE	1SS120		
C604	1-124-922-11	ELECT	1000uF	20%	63V	D556	8-719-912-20	DIODE	1SS120		
C607	1-124-130-00	ELECT	100uF	20%	63V	D601	8-719-230-02	DIODE	30DF2		
C701	1-124-887-00	ELECT	3300uF	20%	16V	D602	8-719-230-02	DIODE	30DF2		
C702	1-124-471-00	ELECT	1000uF	20%	6.3V	D603	8-719-230-02	DIODE	30DF2		
C703	1-124-927-11	ELECT	4.7uF	20%	100V						
C704	1-126-105-11	ELECT	1000uF	20%	35V						
C705	1-124-473-11	ELECT	1000uF	20%	10V						
C706	1-124-927-11	ELECT	4.7uF	20%	100V						

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D604	8-719-230-02	DIODE 30DF2				(TRANSISTOR)	
D605	8-719-933-41	DIODE HZS6C3L		Q106	8-729-922-37	TRANSISTOR 2SD2144S	
D701	8-719-200-77	DIODE 10E2N		Q107	8-729-922-37	TRANSISTOR 2SD2144S	
D702	8-719-200-77	DIODE 10E2N		Q108	8-729-922-37	TRANSISTOR 2SD2144S	
D703	8-719-200-77	DIODE 10E2N		Q206	8-729-922-37	TRANSISTOR 2SD2144S	
				Q207	8-729-922-37	TRANSISTOR 2SD2144S	
D704	8-719-200-77	DIODE 10E2N		Q208	8-729-922-37	TRANSISTOR 2SD2144S	
D705	8-719-200-77	DIODE 10E2N		Q301	8-729-922-37	TRANSISTOR 2SD2144S	
D706	8-719-200-77	DIODE 10E2N		Q302	8-729-922-37	TRANSISTOR 2SD2144S	
D707	8-719-200-77	DIODE 10E2N		Q303	8-729-922-37	TRANSISTOR 2SD2144S	
D708	8-719-933-41	DIODE HZS6C3L		Q304	8-729-922-37	TRANSISTOR 2SD2144S	
				Q305	8-729-922-37	TRANSISTOR 2SD2144S	
D712	8-719-933-41	DIODE HZS6C3L		Q401	8-729-922-37	TRANSISTOR 2SD2144S	
D713	8-719-001-79	DIODE UZL-12H1		Q402	8-729-922-37	TRANSISTOR 2SD2144S	
D714	8-719-015-02	DIODE UZP-8.2BB		Q403	8-729-922-37	TRANSISTOR 2SD2144S	
D715	8-719-200-77	DIODE 10E2N		Q404	8-729-922-37	TRANSISTOR 2SD2144S	
D716	8-719-912-20	DIODE 1SS120					
D801	8-719-200-77	DIODE 10E2N		Q405	8-729-922-37	TRANSISTOR 2SD2144S	
D802	8-719-912-20	DIODE 1SS120		Q501	8-729-922-37	TRANSISTOR 2SD2144S	
D803	8-719-912-20	DIODE 1SS120		Q502	8-729-922-37	TRANSISTOR 2SD2144S	
		(IC)		Q503	8-729-900-89	TRANSISTOR DTC144ES	
IC501	8-759-602-01	IC M5220P		Q504	8-729-900-80	TRANSISTOR DTC114ES	
IC502	8-752-018-80	IC CX20188		Q505	8-729-900-89	TRANSISTOR DTC144ES	
IC503	8-759-000-49	IC MC14066BCP		Q551	8-729-194-57	TRANSISTOR 2SC945-P	
IC504	8-759-945-58	IC RC4558P		Q552	8-729-194-57	TRANSISTOR 2SC945-P	
IC505	8-759-634-50	IC M5218AL		Q553	8-729-281-52	TRANSISTOR 2SC1815-Y	
IC506	8-759-634-50	IC M5218AL		Q554	8-729-900-80	TRANSISTOR DTC114ES	
IC507	8-759-634-50	IC M5218AL		Q555	8-729-900-61	TRANSISTOR DTA114ES	
IC551	8-759-945-58	IC RC4558P		Q556	8-729-900-80	TRANSISTOR DTC114ES	
IC552	8-752-018-80	IC CX20188		Q557	8-729-900-80	TRANSISTOR DTC114ES	
IC553	8-759-710-59	IC NJM4580D-D		Q558	8-729-900-80	TRANSISTOR DTC114ES	
IC554	8-759-106-56	IC uPC1297CA		Q559	8-729-900-89	TRANSISTOR DTC144ES	
IC555	8-759-634-50	IC M5218AL		Q560	8-729-900-89	TRANSISTOR DTC144ES	
IC801	8-759-635-69	IC M50964-226SP		Q601	8-729-141-89	TRANSISTOR 2SD1585-LK	
IC802	8-759-973-95	IC BA6219B		Q602	8-729-141-83	TRANSISTOR 2SB1094-LK	
IC803	8-759-822-09	IC LB1641		Q603	8-729-922-37	TRANSISTOR 2SD2144S-TP-UVW	
		(JACK)		Q604	8-729-224-62	TRANSISTOR 2SK246-GR	
J501	1-565-320-61	JACK, PIN 6P(CD DIRECT/LINE)		Q605	8-729-141-32	TRANSISTOR 2SA1409-LK	
		(COIL)		Q606	8-729-224-62	TRANSISTOR 2SK246-GR	
L101	1-410-778-11	INDUCTOR 18mH		Q607	8-729-620-05	TRANSISTOR 2SC2603-EF	
L201	1-410-778-11	INDUCTOR 18mH		Q611	8-729-119-76	TRANSISTOR 2SA1175-HFE	
L301	1-410-771-11	INDUCTOR 4.7mH		Q701	8-729-111-55	TRANSISTOR 2SD1312-K	
L302	1-410-769-31	INDUCTOR 3.3mH		Q702	8-729-111-55	TRANSISTOR 2SD1312-K	
L303	1-410-767-11	INDUCTOR 2.2mH		Q703	8-729-111-55	TRANSISTOR 2SD1312-K	
				Q704	8-729-620-05	TRANSISTOR 2SC2603-EF	
L304	1-410-780-11	INDUCTOR 27mH		Q706	8-729-922-37	TRANSISTOR 2SD2144S-TP-UVW	
L401	1-410-771-11	INDUCTOR 4.7mH		Q707	8-729-620-05	TRANSISTOR 2SC2603-EF	
L402	1-410-769-31	INDUCTOR 3.3mH		Q708	8-729-922-37	TRANSISTOR 2SD2144S-TP-UVW	
L403	1-410-767-11	INDUCTOR 2.2mH		Q709	8-729-140-04	TRANSISTOR 2SB1116A-L	
L404	1-410-780-11	INDUCTOR 27mH		Q710	8-729-141-32	TRANSISTOR 2SA1409-LK	
		(FILTER)		Q801	8-729-900-65	TRANSISTOR DTA144ES	
LPF301	1-236-087-11	FILTER, LOW PASS		Q802	8-729-900-65	TRANSISTOR DTA144ES	
LPF401	1-236-087-11	FILTER, LOW PASS		Q803	8-729-900-65	TRANSISTOR DTA144ES	
		(PILOT LAMP)		Q804	8-729-900-65	TRANSISTOR DTA144ES	
PL551	1-518-471-31	LAMP, PILOT		Q805	8-729-119-76	TRANSISTOR 2SA1175-HFE	
PL552	1-518-471-31	LAMP, PILOT		Q806	8-729-900-65	TRANSISTOR DTA144ES	
				Q807	8-729-900-65	TRANSISTOR DTA144ES	
				Q808	8-729-119-76	TRANSISTOR 2SA1175-HFE	
				Q809	8-729-900-65	TRANSISTOR DTA144ES	
				Q810	8-729-119-76	TRANSISTOR 2SA1175-HFE	

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q811	8-729-119-76	TRANSISTOR	2SA1175-HFE	R228	1-249-681-11	CARBON	2.2K 5% 1/2W
Q812	8-729-900-61	TRANSISTOR	DTA114ES	R229	1-249-673-11	CARBON	1K 5% 1/2W
Q813	8-729-620-05	TRANSISTOR	2SC2603-EF	R230	1-249-461-11	CARBON	18K 5% 1/4W
Q814	8-729-620-05	TRANSISTOR	2SC2603-EF	R231	1-249-421-11	CARBON	2.2K 5% 1/4W
		< RESISTOR >		R232	1-249-429-11	CARBON	10K 5% 1/4W
R101	1-249-721-11	CARBON	100K 5% 1/2W	R233	1-249-433-11	CARBON	22K 5% 1/4W
R102	1-247-740-11	CARBON	120 5% 1/2W	R234	1-249-417-11	CARBON	1K 5% 1/4W
R104	1-249-724-91	CARBON	130K 5% 1/2W	R235	1-249-437-11	CARBON	47K 5% 1/4W
R105	1-247-761-11	CARBON	5.6K 5% 1/2W	R236	1-249-427-11	CARBON	6.8K 5% 1/4W
R113	1-247-717-11	CARBON	2.2K 5% 1/4W	R237	1-215-444-00	METAL	9.1K 1% 1/6W
R114	1-247-138-00	CARBON	2K 5% 1/4W	R238	1-215-465-00	METAL	68K 1% 1/6W
R115	1-247-720-11	CARBON	3.9K 5% 1/4W	R239	1-215-448-00	METAL	13K 1% 1/6W
R116	1-247-710-11	CARBON	560 5% 1/4W	R240	1-215-471-00	METAL	120K 1% 1/6W
R117	1-247-725-11	CARBON	10K 5% 1/4W	R241	1-249-408-11	CARBON	180 5% 1/4W
R118	1-247-148-00	CARBON	5.1K 5% 1/4W	R242	1-247-883-00	CARBON	150K 5% 1/4W
R119	1-247-718-11	CARBON	2.7K 5% 1/4W	R243	1-249-429-11	CARBON	10K 5% 1/4W
R120	1-246-545-00	CARBON	1.0M 5% 1/4W	R301	1-249-703-11	CARBON	18K 5% 1/2W
R121	1-247-710-11	CARBON	560 5% 1/4W	R302	1-249-490-11	CARBON	27K 5% 1/2W
R122	1-249-462-11	CARBON	22K 5% 1/4W	R303	1-249-469-11	CARBON	100K 5% 1/4W
R123	1-247-852-11	CARBON	7.5K 5% 1/4W	R304	1-247-723-11	CARBON	6.8K 5% 1/4W
R124	1-249-415-11	CARBON	680 5% 1/4W	R305	1-247-720-11	CARBON	3.9K 5% 1/4W
R125	1-247-854-11	CARBON	9.1K 5% 1/4W	R306	1-247-719-11	CARBON	3.3K 5% 1/4W
R126	1-249-465-11	CARBON	47K 5% 1/4W	R307	1-247-152-00	CARBON	7.5K 5% 1/4W
R127	1-249-465-11	CARBON	47K 5% 1/4W	R308	1-249-465-11	CARBON	47K 5% 1/4W
R128	1-249-681-11	CARBON	2.2K 5% 1/2W	R309	1-249-465-11	CARBON	47K 5% 1/4W
R129	1-249-673-11	CARBON	1K 5% 1/2W	R310	1-249-543-11	CARBON	430 5% 1/4W
R130	1-249-461-11	CARBON	18K 5% 1/4W	R311	1-247-725-11	CARBON	10K 5% 1/4W
R131	1-249-421-11	CARBON	2.2K 5% 1/4W	R312	1-247-718-11	CARBON	2.7K 5% 1/4W
R132	1-249-429-11	CARBON	10K 5% 1/4W	R313	1-247-148-00	CARBON	5.1K 5% 1/4W
R133	1-249-433-11	CARBON	22K 5% 1/4W	R314	1-246-545-00	CARBON	1.0M 5% 1/4W
R134	1-249-417-11	CARBON	1K 5% 1/4W	R315	1-247-710-11	CARBON	560 5% 1/4W
R135	1-249-437-11	CARBON	47K 5% 1/4W	R316	1-249-462-11	CARBON	22K 5% 1/4W
R136	1-249-427-11	CARBON	6.8K 5% 1/4W	R317	1-247-854-11	CARBON	9.1K 5% 1/4W
R137	1-215-444-00	METAL	9.1K 1% 1/6W	R318	1-247-852-11	CARBON	7.5K 5% 1/4W
R138	1-215-465-00	METAL	68K 1% 1/6W	R319	1-249-415-11	CARBON	680 5% 1/4W
R139	1-215-448-00	METAL	13K 1% 1/6W	R320	1-249-462-11	CARBON	22K 5% 1/4W
R140	1-215-471-00	METAL	120K 1% 1/6W	R321	1-247-719-11	CARBON	3.3K 5% 1/4W
R141	1-249-408-11	CARBON	180 5% 1/4W	R322	1-247-723-11	CARBON	6.8K 5% 1/4W
R142	1-247-883-00	CARBON	150K 5% 1/4W	R323	1-249-462-11	CARBON	22K 5% 1/4W
R143	1-249-429-11	CARBON	10K 5% 1/4W	R324	1-249-465-11	CARBON	47K 5% 1/4W
R201	1-249-721-11	CARBON	100K 5% 1/2W	R325	1-247-717-11	CARBON	2.2K 5% 1/4W
R202	1-247-740-11	CARBON	120 5% 1/2W	R326	1-249-469-11	CARBON	100K 5% 1/4W
R204	1-249-724-91	CARBON	130K 5% 1/2W	R327	1-249-593-11	CARBON	51K 5% 1/4W
R205	1-247-761-11	CARBON	5.6K 5% 1/2W	R328	1-247-721-11	CARBON	4.7K 5% 1/4W
R213	1-247-717-11	CARBON	2.2K 5% 1/4W	R329	1-247-703-11	CARBON	180 5% 1/4W
R214	1-247-138-00	CARBON	2K 5% 1/4W	R330	1-247-725-11	CARBON	10K 5% 1/4W
R215	1-247-720-11	CARBON	3.9K 5% 1/4W	R331	1-247-148-00	CARBON	5.1K 5% 1/4W
R216	1-247-710-11	CARBON	560 5% 1/4W	R332	1-247-701-11	CARBON	120 5% 1/4W
R217	1-247-725-11	CARBON	10K 5% 1/4W	R333	1-247-152-00	CARBON	8.2K 5% 1/4W
R218	1-247-148-00	CARBON	5.1K 5% 1/4W	R334	1-247-721-11	CARBON	4.7K 5% 1/4W
R219	1-247-718-11	CARBON	2.7K 5% 1/4W	R335	1-247-701-11	CARBON	120 5% 1/4W
R220	1-246-545-00	CARBON	1.0M 5% 1/4W	R336	1-249-429-11	CARBON	10K 5% 1/4W
R221	1-247-710-11	CARBON	560 5% 1/4W	R337	1-249-429-11	CARBON	10K 5% 1/4W
R222	1-249-462-11	CARBON	22K 5% 1/4W	R338	1-249-429-11	CARBON	10K 5% 1/4W
R223	1-247-852-11	CARBON	7.5K 5% 1/4W	R339	1-249-429-11	CARBON	10K 5% 1/4W
R224	1-249-415-11	CARBON	680 5% 1/4W	R340	1-249-421-11	CARBON	2.2K 5% 1/4W
R225	1-247-854-11	CARBON	9.1K 5% 1/4W	R341	1-249-604-11	CARBON	150K 5% 1/4W
R226	1-249-465-11	CARBON	47K 5% 1/4W	R342	△1-212-857-00	FUSIBLE	10 5% 1/4W F
R227	1-249-465-11	CARBON	47K 5% 1/4W	R343	1-249-435-11	CARBON	33K 5% 1/4W
				R344	1-249-426-11	CARBON	5.6K 5% 1/4W

Note: The components identified by mark Δ or dotted line with mark \uparrow are critical for safety. Replace only with part number specified.

MAIN

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R401	1-249-703-11	CARBON	18K	5%	1/2W	R516	1-249-437-11	CARBON	47K	5%	1/4W
R402	1-249-490-11	CARBON	27K	5%	1/2W	R517	1-249-437-11	CARBON	47K	5%	1/4W
R403	1-249-469-11	CARBON	100K	5%	1/4W	R518	1-249-429-11	CARBON	10K	5%	1/4W
R404	1-247-723-11	CARBON	6.8K	5%	1/4W	R519	1-249-429-11	CARBON	10K	5%	1/4W
R405	1-247-720-11	CARBON	3.9K	5%	1/4W	R520	1-249-437-11	CARBON	47K	5%	1/4W
R406	1-247-719-11	CARBON	3.3K	5%	1/4W	R521	1-249-429-11	CARBON	10K	5%	1/4W
R407	1-247-152-00	CARBON	7.5K	5%	1/4W	R522	1-249-437-11	CARBON	47K	5%	1/4W
R408	1-249-465-11	CARBON	47K	5%	1/4W	R523	1-249-421-11	CARBON	2.2K	5%	1/4W
R409	1-249-465-11	CARBON	47K	5%	1/4W	R550	1-215-472-00	METAL	130K	1%	1/6W
R410	1-249-543-11	CARBON	430	5%	1/4W	R551	1-249-432-11	CARBON	18K	5%	1/4W
R411	1-247-725-11	CARBON	10K	5%	1/4W	R552	1-249-433-11	CARBON	22K	5%	1/4W
R412	1-247-718-11	CARBON	2.7K	5%	1/4W	R553	1-249-406-11	CARBON	120	5%	1/4W
R413	1-247-148-00	CARBON	5.1K	5%	1/4W	R554	1-249-432-11	CARBON	18K	5%	1/4W
R414	1-246-545-00	CARBON	1.0M	5%	1/4W	R555	1-249-397-11	CARBON	22	5%	1/4W
R415	1-247-710-11	CARBON	560	5%	1/4W	R556	1-247-856-00	CARBON	11K	5%	1/4W
R416	1-249-462-11	CARBON	22K	5%	1/4W	R557	1-249-429-11	CARBON	10K	5%	1/4W
R417	1-247-854-11	CARBON	9.1K	5%	1/4W	R558	1-249-406-11	CARBON	120	5%	1/4W
R418	1-247-852-11	CARBON	7.5K	5%	1/4W	R559	1-247-856-00	CARBON	11K	5%	1/4W
R419	1-249-415-11	CARBON	680	5%	1/4W	R560	1-249-397-11	CARBON	22	5%	1/4W
R420	1-249-462-11	CARBON	22K	5%	1/4W	R561	1-247-887-00	CARBON	220K	5%	1/4W
R421	1-247-719-11	CARBON	3.3K	5%	1/4W	R562	1-247-887-00	CARBON	220K	5%	1/4W
R422	1-247-723-11	CARBON	6.8K	5%	1/4W	R563	1-249-407-11	CARBON	150	5%	1/4W
R423	1-249-462-11	CARBON	22K	5%	1/4W	R564	1-249-437-11	CARBON	47K	5%	1/4W
R424	1-249-465-11	CARBON	47K	5%	1/4W	R565	1-249-441-11	CARBON	100K	5%	1/4W
R425	1-247-717-11	CARBON	2.2K	5%	1/4W	R566	1-249-421-11	CARBON	2.2K	5%	1/4W
R426	1-249-469-11	CARBON	100K	5%	1/4W	R567	1-249-440-11	CARBON	82K	5%	1/4W
R427	1-249-593-11	CARBON	51K	5%	1/4W	R568	1-249-440-11	CARBON	82K	5%	1/4W
R428	1-247-721-11	CARBON	4.7K	5%	1/4W	R569	△1-212-853-00	FUSIBLE	6.8	5%	1/4W F
R429	1-247-703-11	CARBON	180	5%	1/4W	R570	△1-212-853-00	FUSIBLE	6.8	5%	1/4W F
R430	1-247-725-11	CARBON	10K	5%	1/4W	R571	1-249-427-11	CARBON	6.8K	5%	1/4W
R431	1-247-148-00	CARBON	5.1K	5%	1/4W	R572	1-249-381-11	CARBON	1	5%	1/4W
R432	1-247-701-11	CARBON	120	5%	1/4W	R573	1-249-421-11	CARBON	2.2K	5%	1/4W
R433	1-247-152-00	CARBON	8.2K	5%	1/4W	R574	1-249-417-11	CARBON	1K	5%	1/4W
R434	1-247-720-11	CARBON	3.9K	5%	1/4W	R576	1-249-413-11	CARBON	470	5%	1/4W
R434	1-247-721-11	CARBON	4.7K	5%	1/4W	R577	1-249-417-11	CARBON	1K	5%	1/4W
R435	1-247-701-11	CARBON	120	5%	1/4W	R578	1-249-421-11	CARBON	2.2K	5%	1/4W
R436	1-249-429-11	CARBON	10K	5%	1/4W	R603	1-247-717-11	CARBON	2.2K	5%	1/4W
R437	1-249-429-11	CARBON	10K	5%	1/4W	R604	1-247-717-11	CARBON	2.2K	5%	1/4W
R438	1-249-429-11	CARBON	10K	5%	1/4W	R605	1-247-706-11	CARBON	330	5%	1/4W
R439	1-249-429-11	CARBON	10K	5%	1/4W	R606	1-249-556-11	CARBON	1.5K	5%	1/4W
R440	1-249-421-11	CARBON	2.2K	5%	1/4W	R607	1-249-556-11	CARBON	1.5K	5%	1/4W
R441	1-249-604-11	CARBON	150K	5%	1/4W	R608	1-249-926-11	CARBON	1.3K	5%	1/4W
R442	△1-212-857-00	FUSIBLE	10	5%	1/4W F	R609	1-247-717-11	CARBON	2.2K	5%	1/4W
R443	1-249-435-11	CARBON	33K	5%	1/4W	R611	1-247-704-11	CARBON	220	5%	1/4W
R444	1-249-426-11	CARBON	5.6K	5%	1/4W	R612	1-247-704-11	CARBON	220	5%	1/4W
R501	1-249-433-11	CARBON	22K	5%	1/4W	R701	1-249-421-11	CARBON	2.2K	5%	1/4W
R502	1-249-433-11	CARBON	22K	5%	1/4W	R702	1-249-421-11	CARBON	2.2K	5%	1/4W
R503	1-249-469-11	CARBON	100K	5%	1/4W	R703	1-249-421-11	CARBON	2.2K	5%	1/4W
R504	1-249-465-11	CARBON	47K	5%	1/4W	R704	1-249-425-11	CARBON	4.7K	5%	1/4W
R505	1-215-472-00	METAL	130K	1%	1/6W	R706	1-249-425-11	CARBON	4.7K	5%	1/4W
R506	1-249-437-11	CARBON	47K	5%	1/4W	R707	1-249-421-11	CARBON	2.2K	5%	1/4W
R507	1-249-433-11	CARBON	22K	5%	1/4W	R708	1-249-421-11	CARBON	2.2K	5%	1/4W
R508	1-249-417-11	CARBON	1K	5%	1/4W	R709	1-249-427-11	CARBON	6.8K	5%	1/4W
R509	1-247-885-00	CARBON	180K	5%	1/4W	R710	1-249-425-11	CARBON	4.7K	5%	1/4W
R510	1-249-433-11	CARBON	22K	5%	1/4W	R711	1-249-431-11	CARBON	15K	5%	1/4W
R511	1-249-413-11	CARBON	470	5%	1/4W	R712	1-249-429-11	CARBON	10K	5%	1/4W
R512	1-249-413-11	CARBON	470	5%	1/4W	R713	1-249-441-11	CARBON	100K	5%	1/4W
R513	1-249-432-11	CARBON	18K	5%	1/4W	R714	1-249-425-11	CARBON	4.7K	5%	1/4W
R514	1-249-433-11	CARBON	22K	5%	1/4W	R715	1-247-752-11	CARBON	1K	5%	1/2W
R515	1-249-437-11	CARBON	47K	5%	1/4W	R801	1-249-429-11	CARBON	10K	5%	1/4W

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MAIN

REAL MOTOR

PANEL

Ref. No.	Part No.	Description	Remark
R802	1-249-429-11	CARBON 10K 5% 1/4W	
R803	1-249-440-11	CARBON 82K 5% 1/4W	
R804	1-249-429-11	CARBON 10K 5% 1/4W	
R805	1-249-429-11	CARBON 10K 5% 1/4W	
R806	1-249-429-11	CARBON 10K 5% 1/4W	
R807	1-249-429-11	CARBON 10K 5% 1/4W	
R808	1-249-421-11	CARBON 2.2K 5% 1/4W	
R809	1-249-421-11	CARBON 2.2K 5% 1/4W	
R810	1-249-429-11	CARBON 10K 5% 1/4W	
R811	1-249-435-11	CARBON 33K 5% 1/4W	
R812	1-249-429-11	CARBON 10K 5% 1/4W	
R813	1-249-413-11	CARBON 470 5% 1/4W	
R814	1-249-436-11	CARBON 39K 5% 1/4W	
R815	1-249-436-11	CARBON 39K 5% 1/4W	
R816	1-247-903-00	CARBON 1M 5% 1/4W	
R817	1-249-425-11	CARBON 4.7K 5% 1/4W	
R818	1-249-417-11	CARBON 1K 5% 1/4W	
R819	1-249-435-11	CARBON 33K 5% 1/4W	
R820	1-249-437-11	CARBON 47K 5% 1/4W	
R821	1-249-484-11	CARBON 6.8 5% 1/2W	
R822	1-249-484-11	CARBON 6.8 5% 1/2W	
R823	1-247-854-11	CARBON 9.1K 5% 1/4W	
R824	1-249-425-11	CARBON 4.7K 5% 1/4W	
R825	1-249-425-11	CARBON 4.7K 5% 1/4W	
R826	1-249-425-11	CARBON 4.7K 5% 1/4W	
R827	1-249-425-11	CARBON 4.7K 5% 1/4W	
R828	1-249-426-11	CARBON 5.6K 5% 1/4W	
R829	1-249-429-11	CARBON 10K 5% 1/4W	
R830	1-249-429-11	CARBON 10K 5% 1/4W	
R831	1-249-427-11	CARBON 6.8K 5% 1/4W	
R832	1-249-428-11	CARBON 8.2K 5% 1/4W	
R833	1-249-429-11	CARBON 10K 5% 1/4W	
R834	1-249-429-11	CARBON 10K 5% 1/4W	
R835	1-249-413-11	CARBON 470 5% 1/4W	
		< VARIABLE RESISTOR >	
RV101	1-241-338-11	RES, ADJ, CARBON 200	
RV102	1-238-602-11	RES, ADJ, CARBON 47K	
RV201	1-241-338-11	RES, ADJ, CARBON 200	
RV202	1-238-602-11	RES, ADJ, CARBON 47K	
RV301	1-228-993-00	RES, ADJ, METAL 4.7K	
RV303	1-238-601-11	RES, ADJ, CARBON 22K	
RV401	1-228-993-00	RES, ADJ, METAL 4.7K	
RV403	1-238-601-11	RES, ADJ, CARBON 22K	
RV551	1-238-595-11	RES, ADJ, CARBON 220	
RV552	1-238-595-11	RES, ADJ, CARBON 220	
RV553	1-238-599-11	RES, ADJ, CARBON 4.7K	
RV554	1-238-601-11	RES, ADJ, CARBON 22K	
RV801	1-238-599-11	RES, ADJ, CARBON 4.7K	
		< TRANSFORMER >	
T301	1-433-384-11	TRANSFORMER, BIAS OSCILLATOR	
T401	1-433-384-11	TRANSFORMER, BIAS OSCILLATOR	
T551	1-433-359-11	TRANSFORMER, BIAS OSCILLATION	
		< TEST PIN >	
TP551	* 1-564-505-11	PLUG, CONNECTOR 2P	
TP552	* 1-564-506-11	PLUG, CONNECTOR 3P	
TP553	* 1-564-506-11	PLUG, CONNECTOR 3P	
TP801	* 1-564-506-11	PLUG, CONNECTOR 3P	

Ref. No.	Part No.	Description	Remark
		< CRYSTAL >	
X801	1-577-358-21	VIBRATOR, CERAMIC(4MHZ)	

	* 1-632-741-11	REAL MOTOR BOARD	*****
		< CAPACITOR >	
C1051	1-124-907-11	ELECT 10uF 20% 50V	
C1052	1-124-907-11	ELECT 10uF 20% 50V	
C1053	1-164-159-11	CERAMIC 0.1uF 50V	
		< CONNECTOR >	
CN1051	* 1-564-499-11	PIN, CONNECTOR 6P	
CN1052	* 1-564-718-11	PIN, CONNECTOR(SMALL TYPE) 2P	
CN1053	* 1-564-718-11	PIN, CONNECTOR(SMALL TYPE) 2P	
		< RESISTOR >	
R1051	1-249-412-11	CARBON 390 5% 1/4W	

	* A-2006-515-A	PANEL BOARD, COMPLETE	*****
	8-719-933-57	DIODE UZL-9M1-TP	
	8-719-302-46	DIODE SEL1210S-C-TP2	
	8-719-302-45	DIODE SEL1410E-C-TP2	
	8-719-302-79	DIODE SEL1910A-C-TP2	
	8-729-119-76	TRANSISTOR 2SA1175-HFE	
	8-729-115-28	TRANSISTOR 2SA1511-TP	
	8-729-900-61	TRANSISTOR DTA114ES	
	8-729-900-61	TRANSISTOR DTA114ES	
	8-729-900-89	TRANSISTOR DTC144ES	
	8-729-900-89	TRANSISTOR DTC144ES	
		< CAPACITOR >	
C001	1-161-744-00	CERAMIC 0.01uF 400V	
C181	1-126-059-11	ELECT 10uF 20% 50V	
C281	1-126-059-11	ELECT 10uF 20% 50V	
C341	1-130-473-00	MYLAR 0.0015uF 5% 50V	
C342	1-130-471-00	MYLAR 0.001uF 5% 50V	
C441	1-130-473-00	MYLAR 0.0015uF 5% 50V	
C442	1-130-471-00	MYLAR 0.001uF 5% 50V	
C541	1-123-369-00	ELECT 4.7uF 20% 50V	
C542	1-123-369-00	ELECT 4.7uF 20% 50V	
C597	1-161-494-00	CERAMIC 0.022uF 25V	
C901	1-126-177-11	ELECT 100uF 20% 10V	
		< CONNECTOR >	
CN001	* 1-568-226-11	PIN, CONNECTOR 2P	
CN002	1-568-226-11	PIN, CONNECTOR 2P	
CN521	* 1-564-521-11	PLUG, CONNECTOR 6P	
CN543	* 1-560-070-00	BASE POST 5P	
CN591	* 1-564-519-11	PLUG, CONNECTOR 4P	
CN592	* 1-564-519-11	PLUG, CONNECTOR 4P	
CN593	* 1-564-519-11	PLUG, CONNECTOR 4P	
CN901	* 1-564-336-00	PIN, CONNECTOR 2P	

PANEL

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< COMPOSITION >				R281	1-249-429-11	CARBON 10K 5% 1/4W	
CP901	1-232-881-11	COMPOSITION CIRCUIT BLOCK		R282	1-249-433-11	CARBON 22K 5% 1/4W	
CP902	1-232-881-11	COMPOSITION CIRCUIT BLOCK		R283	1-249-423-11	CARBON 3.3K 5% 1/4W	
CP903	1-236-985-11	COMPOSITION CIRCUIT BLOCK		R284	1-247-704-11	CARBON 220 5% 1/4W	
< DIODE >				R381	1-247-721-11	CARBON 4.7K 5% 1/4W	
D901	8-719-912-20	DIODE 1SS120		R382	1-247-152-00	CARBON 8.2K 5% 1/4W	
D902	8-719-912-20	DIODE 1SS120		R383	1-247-725-11	CARBON 10K 5% 1/4W	
D903	8-719-933-57	DIODE HZS9B2L		R384	1-247-721-11	CARBON 4.7K 5% 1/4W	
D904	8-719-912-20	DIODE 1SS120		R385	1-246-545-00	CARBON 1.0M 5% 1/4W	
D905	8-719-912-20	DIODE 1SS120		R386	1-249-462-11	CARBON 22K 5% 1/4W	
D906	8-719-912-20	DIODE 1SS120		R481	1-247-721-11	CARBON 4.7K 5% 1/4W	
D907	8-719-912-20	DIODE 1SS120		R482	1-247-152-00	CARBON 8.2K 5% 1/4W	
D908	8-719-912-20	DIODE 1SS120		R483	1-247-725-11	CARBON 10K 5% 1/4W	
D909	8-719-912-20	DIODE 1SS120		R484	1-247-721-11	CARBON 4.7K 5% 1/4W	
D910	8-719-912-20	DIODE 1SS120		R485	1-246-545-00	CARBON 1.0M 5% 1/4W	
D911	8-719-912-20	DIODE 1SS120		R486	1-249-462-11	CARBON 22K 5% 1/4W	
D912	8-719-302-46	DIODE SEL1210S-C		R590	1-249-429-11	CARBON 10K 5% 1/4W	
D913	8-719-302-45	DIODE SEL1210S		R881	1-249-434-11	CARBON 27K 5% 1/4W	
D914	8-719-302-79	DIODE SEL1910A-C		R882	1-249-431-11	CARBON 15K 5% 1/4W	
< FILTER >				R901	1-249-421-11	CARBON 2.2K 5% 1/4W	
FLT901	1-519-560-11	INDICATOR TUBE, FLUORESCENT		R902	1-249-421-11	CARBON 2.2K 5% 1/4W	
< IC >				R903	1-247-895-00	CARBON 470K 5% 1/4W	
IC541	8-759-634-51	IC M5218AP		R904	1-249-433-11	CARBON 22K 5% 1/4W	
IC901	8-759-635-68	IC M50940-313SP		R905	1-249-433-11	CARBON 22K 5% 1/4W	
IC902	8-741-100-48	IC SBX1610-59		R906	1-249-429-11	CARBON 10K 5% 1/4W	
< JACK >				R907	1-249-425-11	CARBON 4.7K 5% 1/4W	
J541	1-507-796-71	JACK(HEADPHONES)		R908	1-249-431-11	CARBON 15K 5% 1/4W	
< TRANSISTOR >				R909	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q901	8-729-115-28	TRANSISTOR BN1L32-K		R910	1-249-424-11	CARBON 3.9K 5% 1/4W	
Q902	8-729-119-76	TRANSISTOR 2SA1175-HFE		R911	1-249-428-11	CARBON 8.2K 5% 1/4W	
Q903	8-729-900-61	TRANSISTOR DTA114ES		R912	1-249-434-11	CARBON 27K 5% 1/4W	
Q904	8-729-900-61	TRANSISTOR DTA114ES		R913	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q905	8-729-900-61	TRANSISTOR DTA114ES		R914	1-249-424-11	CARBON 3.9K 5% 1/4W	
Q906	8-729-900-61	TRANSISTOR DTA114ES		R915	1-249-428-11	CARBON 8.2K 5% 1/4W	
Q907	8-729-900-65	TRANSISTOR DTA144ES		R916	1-249-434-11	CARBON 27K 5% 1/4W	
Q908	8-729-900-65	TRANSISTOR DTA144ES		R917	1-249-431-11	CARBON 15K 5% 1/4W	
Q909	8-729-900-65	TRANSISTOR DTA144ES		R918	1-249-409-11	CARBON 220 5% 1/4W	
Q910	8-729-900-65	TRANSISTOR DTA144ES		R919	1-249-410-11	CARBON 270 5% 1/4W	
Q911	8-729-900-89	TRANSISTOR DTC144ES		R920	1-249-412-11	CARBON 390 5% 1/4W	
Q912	8-729-900-65	TRANSISTOR DTA144ES		R921	1-249-421-11	CARBON 2.2K 5% 1/4W	
Q913	8-729-900-65	TRANSISTOR DTA144ES		R922	1-249-421-11	CARBON 2.2K 5% 1/4W	
Q914	8-729-900-65	TRANSISTOR DTA144ES		R923	1-247-903-00	CARBON 1M 5% 1/4W	
Q915	8-729-900-89	TRANSISTOR DTC144ES		R925	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q916	8-729-900-65	TRANSISTOR DTA144ES		R926	1-249-441-11	CARBON 100K 5% 1/4W	
Q917	8-729-900-65	TRANSISTOR DTA144ES		R927	1-249-441-11	CARBON 100K 5% 1/4W	
Q918	8-729-119-76	TRANSISTOR 2SA1175-HFE		R928	1-249-441-11	CARBON 100K 5% 1/4W	
Q919	8-729-900-65	TRANSISTOR DTA144ES		R929	1-249-433-11	CARBON 22K 5% 1/4W	
< RESISTOR >				R930	1-249-441-11	CARBON 100K 5% 1/4W	
R181	1-249-429-11	CARBON 10K 5% 1/4W		R931	1-249-425-11	CARBON 4.7K 5% 1/4W	
R182	1-249-433-11	CARBON 22K 5% 1/4W		< VARIABLE RESISTOR >			
R183	1-249-423-11	CARBON 3.3K 5% 1/4W		RV541	1-241-330-11	RES, VAR, CARBON 20K/20K(PHONE LEVEL)	
R184	1-247-704-11	CARBON 220 5% 1/4W		RV591	1-238-833-21	RES, VAR, CARBON 20K/20K(REC LEVEL)	
< SWITCH >				RV592	1-238-687-11	RES, VAR, CARBON 50K/50K(BALANCE)	
S541	1-572-583-11	SWITCH, ROTARY(DOLBY NR)		RV593	1-241-329-11	RES, VAR, CARBON 5K/5K(REC LEVEL)	
< SWITCH >				RV594	1-241-328-11	RES, VAR, CARBON 10K/10K(BIAS)	

PANEL

Ref. No.	Part No.	Description	Remark
S542	1-572-764-11	SWITCH, PUSH(2 KEY) (CALIBRATION/MPX /MPX FILTER	
S591	1-572-153-11	SWITCH, PUSH (1 KEY) (INPUT)	
S592	1-572-582-11	SWITCH, ROTARY	
S701	1-572-267-51	SWITCH, PUSH(AC POWER) (1 KEY) (POWER)	
S801	1-572-268-11	SWITCH, SLIDE(TIMER)	
S901	1-554-303-21	SWITCH, TACTILE(COUNTER. MEMORY)	
S902	1-554-303-21	SWITCH, TACTILE(COUNTER. RESET)	
S903	1-554-303-21	SWITCH, TACTILE(COUNTER. DISPLAY MODE)	
S904	1-554-303-21	SWITCH, TACTILE(OPEN/CLOSE)	
S905	1-554-303-21	SWITCH, TACTILE(■)	
S906	1-554-303-21	SWITCH, TACTILE(◀◀)	
S907	1-554-303-21	SWITCH, TACTILE(▶▶)	
S908	1-554-303-21	SWITCH, TACTILE(REC)	
S909	1-554-303-21	SWITCH, TACTILE(▶)	
S910	1-554-303-21	SWITCH, TACTILE(PAUSE)	
S911	1-554-303-21	SWITCH, TACTILE([K])	
S912	1-554-303-21	SWITCH, TACTILE([X])	
S913	1-554-303-21	SWITCH, TACTILE(REC MUTE)	
S914	1-554-303-21	SWITCH, TACTILE(MONITOR)	
		< CRYSTAL >	
X901	1-577-358-21	VIBRATOR, CERAMIC(4MHz)	

		MISCELLANEOUS	

5	* 1-590-321-51	LEAD(WITH CONNECTOR)	
62	1-450-512-11	TRANSFORMER, POWER	
239	1-632-779-11	PC BOARD, FG	
CNP701	1-575-651-11	CORD, POWER	
F701	1-532-285-00	FUSE, TIME-LAG	
HE501	1-543-358-11	HEAD, MAGNETIC(ERASE)	
HRP501	1-543-742-11	HEAD, MAGNETIC(RECORD/PLAYBACK)	
M1001	X-3356-638-1	MOTOR(REEL R) ASSY	
M1002	X-3356-604-1	MOTOR(ASSIST) ASSY	
S1001	1-466-238-11	ENCODER, ROTARY	
T701	1-450-512-11	TRANSFORMER, POWER	

Ref. No.	Part No.	Description	Remark
		ACCESSORY & PACKING MATERIAL	

	1-558-271-11	CORD, CONNECTION	
	* 3-363-900-01	CUSHION	
	* 3-366-699-41	INDIVIDUAL CATRON	
	3-753-346-11	MANUAL, INSTRUCTION(AEP)	
	3-753-346-41	MANUAL, INSTRUCTION	

HARDWARE LIST			

# 1	7-682-547-09	SCREW +BV 3X6, S TIGHT	
# 2	7-685-133-19	SCREW +BTP 2. 6X6 TYPE2 N-2	
# 3	7-682-547-04	SCREW +BVTT 3X6(S)	
# 4	7-682-547-09	SCREW +BVTT 3X6(S)	
# 5	7-682-548-04	SCREW +BVTT 3X8(S)	
# 6	7-682-548-09	SCREW +BVTT 3X8(S)	
# 7	7-682-147-15	SCREW TR	
# 8	7-682-548-01	SCREW +B 3X8	
# 9	7-682-547-04	SCREW +BVTT 3X6(S)	
#10	7-621-849-00	SCREW (BV/RING)	
#11	7-628-253-00	SCREW +PS 2X4	
#12	7-628-254-10	SCREW +PS 2. 6X6	
#13	7-671-154-01	STENLESS BALL	
#14	7-682-648-09	SCREW +PS 3X8	
#15	7-685-133-19	SCREW +BTP 2. 6X6 TYPE2 N-S	
#16	7-621-255-20	SCREW +BVTT 2X4(S)	
#17	7-621-255-35	SCREW +BVTT 2X5(S)	
#18	7-685-870-01	SCREW +BVTT 3X5(S)	
#19	7-621-255-20	SCREW +P 2X4	
#20	7-621-772-70	SCREW +B 2X14	
#21	7-622-205-05	NUT M2 TYPE2	
#22	7-621-775-10	SCREW +B 2. 6X4	