

DTC-690

SERVICE MANUAL

US Model
Canadian Model
AEP Model



SPECIFICATIONS

Tape	Digital audio tape
Recording head	Rotary head
Recording time	Standard: 120 minutes. Long-play mode: 240 minutes (with DT-120)
Tape speed	Standard: 8.15 mm/s, Long play mode: 4.075 mm/s
Drum rotation	Standard: 2,000 rpm, Long-play mode: 1,000 rpm
Error correction	Double Read Solomon code
Tape	
Track pitch	13.6 μ m (20.4 μ m)
Sampling frequency	48 kHz, 44.1 kHz, 32 kHz
Modulation system	8-10 Modulation
Transfer rate	2.46 Mbit/sec.
Number of channel	2 channels, stereo
D/A conversion (Quantization)	Standard: 16-bit linear Long-play mode: 12-bit non-linear
Frequency response	Standard: 2-22,000 Hz (\pm 0.5 dB) Long-play mode: 2-14,500 Hz (\pm 0.5 dB)
Signal to noise ratio	Standard: more than 90 dB Long-play mode: more than 90 dB
Dynamic range	Standard: more than 90 dB Long-play mode: more than 90 dB
Total harmonic distortion	Standard: less than 0.005% (1 kHz) Long-play mode: less than 0.08% (1 kHz)
Wow and flutter	Below measurable limit (\pm 0.001% W. PEAK)

Model Name Using Similar Mechanism	DTC-59ES
Tape Transport Mechanism Type	DATM-102

Input

	Jack type	Impedance	Rated input level
LINE IN	phono jack	47 kohms	-4 dBs
DIGITAL IN	phono jack	75 ohms	0.5 Vp-p, \pm 20%
DIGITAL IN	optical jack	—	—

Output

	Jack type	Impedance	Rated output	Load impedance
LINE OUT	phono jack	470 ohms	-4 dBs	More than 10 kohms
PHONES	stereo phone jack	220 ohms	1.3 mW	32 ohms

DIGITAL OUT (optical jack): wavelength 660 nm

- continued on next page -

DIGITAL AUDIO TAPE DECK
SONY[®]



TABLE OF CONTENTS

General

Power requirements	120V AC, 60Hz (US, Canadian model) 220/230V AC, 50/60Hz 110 - 120V or 220/240V AC 50/60Hz
Power consumption	31 W
Dimensions	Approx. 430 x 110 x 350 mm (w/h/d) (16 ¹⁵ / ₁₆ x 4 ³ / ₈ x 13 ⁷ / ₈ inches)
Weight	Approx. 5 kg (11 lb)

Remote commander (supplied)

Remote control system	Infrared control
Power requirements	3V DC, with two size AA (R6) batteries
Dimensions	Approx. 40 x 20 x 175 mm (w/h/d) (1 ⁹ / ₁₆ x ¹³ / ₁₆ x 7 inches)
Weight	Approx. 100 g (4 oz) incl. batteries.

Supplied accessories

Remote commander RM-D690A	(1)
Sony batteries SUM-3(NS)	(2)
Audio connecting cords (2 phono plugs - 2 phono plugs, stereo for line inputs and outputs)	(2)

Design and specifications are subject to change without notice.

Accessories not supplied

Optical cable	POC-15, POC-10HS etc.
Connecting cord	RK-C710HS, etc. (2 phono plugs - 2 phono plugs: connectors plated with gold, high fidelity LC-OFC line cord) VMC-1ES, etc. (phono plug - phono plug): for digital connection
Cleaning cassette	DT-10CL

SAFETY-RELATED COMPONENT WARNING!!

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

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

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

<u>Section</u>	<u>Title</u>	<u>Page</u>
1. GENERAL		
	Features	4
	Location and Function of Controls	5
	Connections	9
2. DISASSEMBLY		11
3. ADJUSTMENTS		14
3-1.	Electrical Adjustments	16
4. DIAGRAMS		
4-1.	Circuit Boards Location	19
4-2.	Block Diagram	20
4-3.	Waveforms	23
4-4.	Semiconductor Lead Layouts	25
4-5.	Printed Wiring Boards - MD / Power supply / Display section -	27
4-6.	Schematic Diagram - MD / Power supply / Display section -	31
4-7.	Printed Wiring Boards - Main section -	36
4-8.	Schematic Diagram - Main section -	39
4-9.	IC Block Diagrams	43
4-10.	Pin Functions	47
5. EXPLODED VIEWS		
5-1.	Cabinet Section	55
5-2.	Front Panel Section	56
5-3.	Chassis Section	57
5-4.	Mechanism Section 1	58
5-5.	Mechanism Section 2	59
5-6.	Mechanism Section 3	60
5-7.	Mechanism Section 4	61
6. ELECTRICAL PARTS LIST		62

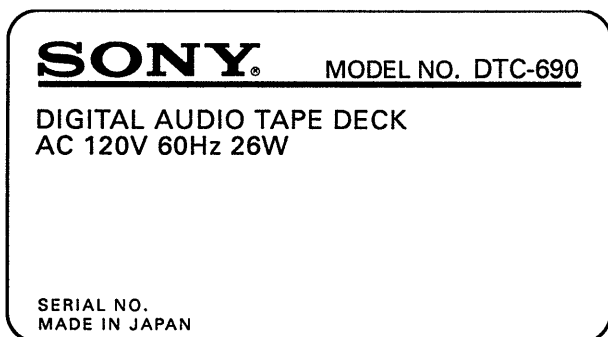
PRECAUTIONS FOR INSPECTIONS AND REPAIR WITH POWER OFF

Before beginning repair work after turning OFF the main switch, be sure to first remove CN932 (EH8P) of the power board. When assembling the equipment, be sure to plug this connector last.

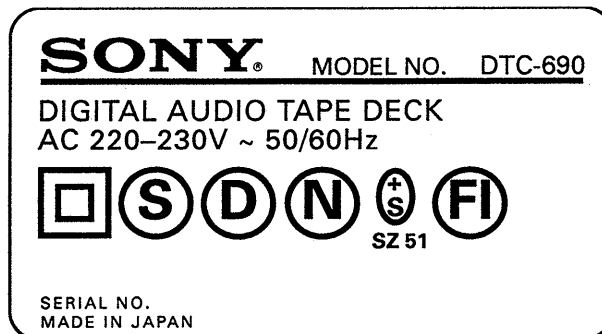
Even with the main switch turned off, there still remain electrical charges in part of the power circuit. Therefore, plugging in or removing the connector could cause the power supply terminal to short with an adjacent terminal. This could cause possible component damage.

MODEL IDENTIFICATION

– Model Number Label –



US, Canadian model



AEP model

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer: Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

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

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a

VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig.A)

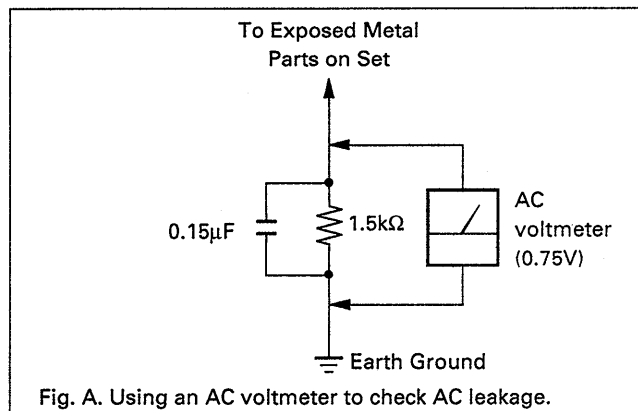


Fig. A. Using an AC voltmeter to check AC leakage.

Features

Serial copy management system (SCMS)

This unit utilizes the serial copy management system that permits digital-to-digital recording for one generation. You can record CD sound or other digital formats through a digital-to-digital connection. (See page 54.)

Three sampling frequencies

Recording/playback can be done with three sampling frequencies (48 kHz, 44.1 kHz and 32 kHz).

48 kHz: For analog and digital input signals in a standard mode.

44.1 kHz: For compact disc and pre-recorded DAT tape.

32 kHz: For analog input signals in a long-play mode.

Long play mode

This unit can operate in a long-play mode. Analog input signals can be recorded or playback for up to four consecutive hours when the DT-120 DAT cassette tape is used. The sampling frequency will be 32 kHz in the long-play mode.

Visible cassette loading

You can view the tape operation through the lid of the cassette compartment. Due to a revolutionary new transport mechanism, cassette loading time has been significantly reduced.

Excellent sound quality

1-bit A/D converter

For the A/D converter section which converts analog input signals to digital signals, the unit employs a 1-bit A/D converter which theoretically generates no zero-cross distortion for a clear, elegant sound quality.

Pulse D/A converter

Superior playback performance is achieved with a pulse D/A converter.

Rich variety of subcode information

This unit can record subcode information such as Start IDs, program numbers, Skip IDs, and absolute time data, enabling you to quickly locate tunes and display the playback time in the same manner as when playing compact discs.

Post edit recording of sub codes

You can record or rewrite the following sub codes after the audio signal recording has been completed.

Start ID: Signifies the beginning of a selection.

Program number: Gives a number to the selection.

Skip ID: Signifies the beginning of a portion to be skipped.

End ID: Signifies the end position of recording/playback.

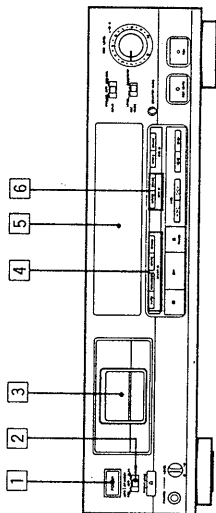
Since sub codes are written on the tape separately from audio signals, the audio signals are not affected.

Location and Function of Controls

Refer to the pages indicated in parenthesis for details.

Front Panel/Remote Commander

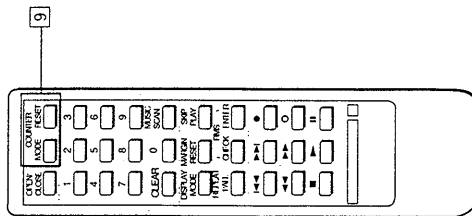
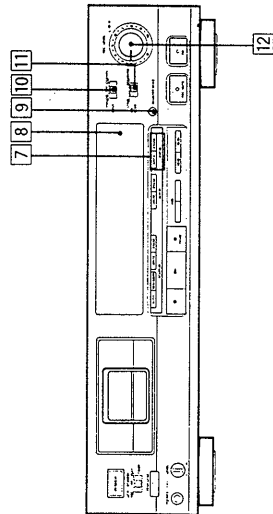
- 1 POWER button
Turns the power on and off.
- 2 TIMER switch
Normally set to the OFF position. When recording or playing back at the desired time using a commercially available audio timer, set to the REC position or the PLAY position respectively. (51)
- 3 Cassette compartment
Insert a cassette with the window side up and the safety tab facing you. (16)
- 4 START ID buttons
AUTO: Press to turn on and off the AUTO indicator. When the AUTO indicator is lit, the start ID will automatically be written during recording. When the AUTO indicator is not lit, press the START ID WRITE button at the point where you want to write a start ID. (30)
WRITE: Press to write the start ID at the desired point during recording or playback. (31)
ERASE: Press to erase a start ID. When a start ID and a program number are written on the tape, both codes are simultaneously erased by pressing this button. (33)
RENUMBER: Press to renumber all programs on the tape. When only the start IDs are written, pressing this button will insert the proper program numbers beginning with "1". The tape will rewind and start from the beginning to accomplish this function. (36)
- 5 Display window
- 6 SKIP ID buttons
WRITE: Press at the beginning of the portion you may wish to skip later. A skip ID will be written from the point where you pressed this button. (38)
ERASE: Press to erase the nearest skip ID which is before the current position. (39)



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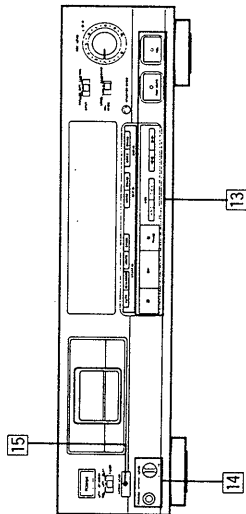
Location and Function of Controls

- 7 END ID buttons
WRITE: Press to write the ID signifying the end of playback or recording. (40)
ERASE: Press to erase the end ID. (42)
- 8 Remote sensor
Receives the signal from the remote commander.
- 9 COUNTER MODE button
Selects the display mode among the absolute time, remaining time to the end of whole tape and linear counter (tape running time). Each time you press the button, the display changes sequentially. (44)
RESET button (only with the remote commander)
Resets the linear counter to "0M 00S" (44)
- 10 INPUT selector
Set according to the signal to be recorded. (21)
ANALOG: For recording from the equipment connected to the LINE IN jacks.
OPT: For recording from the equipment connected to the DIGITAL IN (OPTICAL) jack.
COAXIAL: For recording from the equipment connected to the DIGITAL IN (COAXIAL) jack.
- 11 REC MODE selector
Normally set to the STANDARD position. When this selector is set to the LONG position, you can record analog input signals or digital signals with 32 kHz in the long-play mode. (21, 24)
- 12 REC LEVEL (recording level) controls
Adjust the recording levels and balance for the analog input signals.
The outer knob controls the L (left) channel level and the inner knob the R (right) channel level. The knobs can be adjusted together. To adjust each channel independently, turn the knob while holding the other knob.
When recording digital signals, it is not necessary to adjust the recording levels. (21, 23)

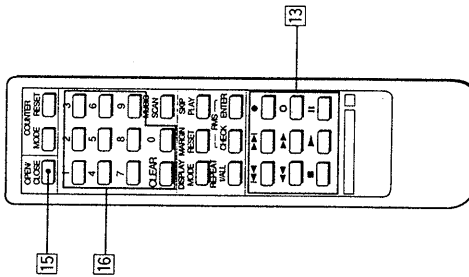


Location and Function of Controls

- 13** Tape operating buttons
- (stop): Press to stop recording or playback.
 - ▶ (play): Press to start playback or recording.
 - ⏸ (PAUSE (pause)): Press to stop for a moment during recording or playback. To restart recording or playback, press this button again or press the ▶ button.
 - ⏪ (rewind): If the unit is left in the pause mode for about 10 minutes, it will automatically be released and the deck will enter the stop mode. To restart recording or playback from the stop mode, press the ●REC or ▶ button respectively.
 - ⏩ (FMS): Press to locate the beginning of the selection during playback or in the stop mode.
 - ⏮ (rewind/review, fast-forward/cue): In the stop mode, press to rewind/fast-forward the tape.
 - ⏭ (During playback, press to rewind or fast-forward the tape while listening to the sound.
 - ⏴ (MUTE (record muting)): Inserts a sound-muted portion (space).
 - REC (recording): Press to enter the record-pause mode. After pressing this button, press the ⏸ (pause) or ▶ button.

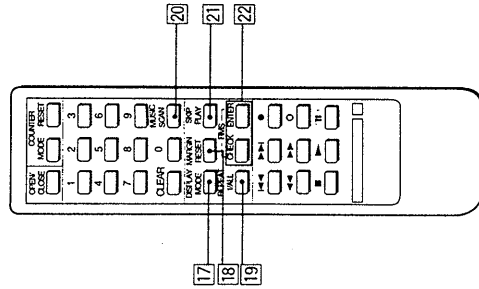


- 14** PHONES jack and LEVEL control
Insert the headphones plug to this jack and turn the control to adjust the headphones volume level. (43)
- 15** ▲OPEN/CLOSE button
Press to open or close the cassette compartment. (18)
This button does not function during recording or in the record muting mode.
- 16** Numeric buttons (0-9) and CLEAR button
Designate the desired program number to be played back before starting playback. Designate the desired number in the record-pause mode; the program number is written consecutively from the designated number. (35)
Press the CLEAR button to cancel the program number which has been mistakenly entered.



Location and Function of Controls

- 17** DISPLAY MODE button
Changes the display mode. (10)
- 18** MARGIN RESET button
Press to reset the margin of peak level. "--" appears at the MARGIN display. (23)
- 19** REPEAT 1/ALL button
Press to play a desired portion repeatedly. Each time you press the button, the indicator changes as follows:
REPEAT 1 → REPEAT ALL → off (45)
- 20** MUSIC SCAN button
Press to listen to the beginning of each selection successively. (47)
- 21** SKIP PLAY button
Press to activate the skip ID code function. The portion of the tape previously marked will be skipped. (49)
- 22** RMS play buttons
ENTER: To program the selections in a desired order, press this button after pressing the numeric buttons. (50)
CHECK: Press to check the programmed contents. (50)

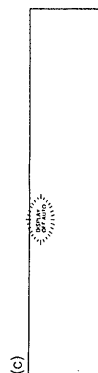
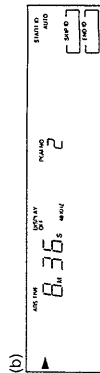
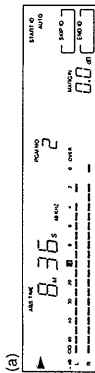


A

A

Location and Function of Controls

C



Display Window

To turn off the display window

When the power is turned on, the display window also is turned on. During recording or playback, all display or some parts of the display can be turned off as follows:

This operation can be performed only with the remote commander. Each time you press the DISPLAY MODE button, the display changes as follows:

- Normal indicators (a) ←
- Peak level meters and margin indicators go off. (b)
- (The DISPLAY OFF indicator lights.)
- All the indicators go off during recording or playback* (c)
- (The DISPLAY OFF AUTO indicator lights momentarily just before the indicators go off.)

* When pressing the DISPLAY MODE button except during recording or playback, the DISPLAY OFF AUTO indicator lights. In this case, all the indicators go off immediately after recording or playback starts.

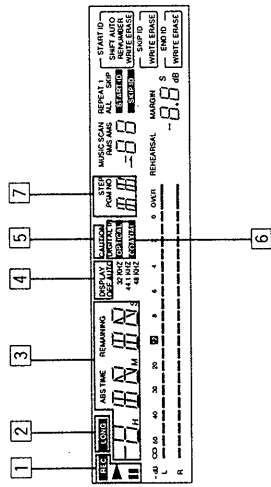
To change the brightness of the display window

While pressing the COUNTER MODE button, press one of the numeric buttons 1, 2 and 3 on the remote commander. The greater number pressed, the darker the display window becomes.

Location and Function of Controls

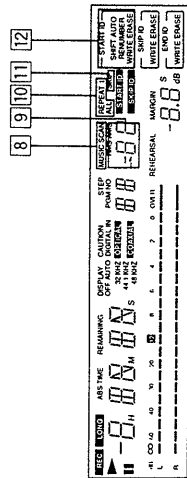
Fig. D

- 1 Tape operation indicators
 [RECORD]: Lights during recording or in the record-pause mode. Flashes in the record-muting mode.
 ▶: Lights during recording or playback. It also lights in the record-pause, the play-pause mode or in the record-muting mode.
 II: Lights in the record-pause mode or in the play-pause mode.
- 2 LONG play mode indicator
 Lights when recording or playback is being performed in the long play mode.
- 3 Time indicator
 Indicates the tape running time, absolute time or remaining time. Each time you press the COUNTER MODE button, the display is changed.
 When only the time display appears: Shows the tape running time.
 When the REMAINING (remaining time) indicator appears: Shows the remaining time of the tape.
 When the ABS TIME (absolute time) indicator appears: Shows the elapsed time from the beginning of the tape.
- 4 DISPLAY OFF/AUTO indicators
 The DISPLAY OFF indicator lights when peak level meters and margin indicators are turned off. The DISPLAY OFF AUTO indicator lights momentarily before all the indicators are turned off.
- 5 CAUTION indicator
 Lights when moisture condensation occurs. If this happens, the deck stops functioning automatically. (4)
- 6 INPUT selector indicators
 The DIGITAL IN OPTICAL or DIGITAL IN COAXIAL indicator lights according to the position of the INPUT selector. No indicator lights when the INPUT selector is set to the ANALOG position.
- 7 STEPPING NO. indicator
 Shows the program number of the selection being played. When programming the desired selection with the RMS operation (50), the display shows the step number of the programmed selection.



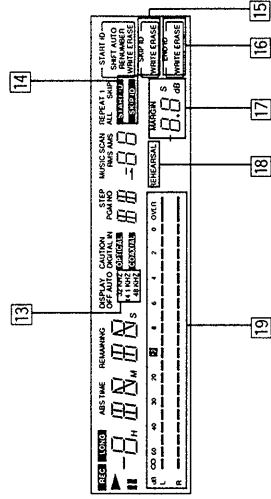
Location and Function of Controls

- 8** MUSIC SCAN indicator
Lights after you press the MUSIC SCAN button to listen to the beginning of each selection successively.
- 9** RMS (Random Music Sensor)/AMS (Automatic Music Sensor) indicators
Show the number of selections to be skipped ahead or behind in the AMS operation. When designating a selection directly by the numeric button and the button, the display shows the program number of the target selection while the selection is being searched for. When programming the desired selections in the RMS operation (50), the display shows the program number of the selection to be programmed.
- 10** REPEAT indicators
REPEAT 1: Lights when a desired selection is played back repeatedly.
REPEAT ALL: Lights when all the selections are played back repeatedly.
- 11** SKIP indicator
When this indicator is lit during playback, the portion marked by the skip ID is skipped and playback continues from the next start ID.
- 12** START ID mode indicators
AUTO: Lights when the AUTO button is pressed to write the start ID automatically.
WRITE: Lights when writing the start ID manually.
ERASE: Lights when erasing the start ID.
AUTO RENUMBER: Lights when renumbering program numbers automatically.
SHIFT RENUMBER: Lights when shifting the start ID and program number position.



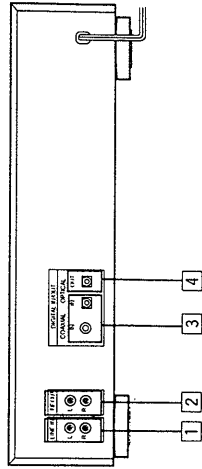
Location and Function of Controls

- 13** Sampling frequency indicator
48 kHz: Lights when recording or playing back analog input signals (standard mode).
44.1 kHz: Lights when recording or playing back a CD or a pre-recorded DAT cassette tape.
32 kHz: Lights when recording or playing back analog input signals (long-play mode).
- 14** START ID indicator
Flashes when writing (for 9 or 18 seconds) or erasing a start ID code, and lights when the start ID is detected during playback.
SKIP ID indicator
Lights when writing (for 1 or 2 seconds) or erasing a skip ID code or when the skip ID is detected during playback.
- 15** SKIP ID mode indicator
WRITE: Lights when writing the skip ID.
ERASE: Lights when erasing the skip ID.
- 16** END ID mode indicator
WRITE: Lights when writing the end ID.
ERASE: Lights when erasing the end ID.
- 17** MARGIN indicator
Shows how much margin there is between the peak level of input audio signal and 0 dB.
- 18** REHEARSAL indicator
Lights while the rehearsal function is activated (32).
- 19** Peak level meters
Indicate the signal levels during playback and recording. There are separate meters for each left and right channel. These meters have a peak hold function which indicates the peak level momentarily.



Location and Function of Controls

E



Rear Panel Jacks **E**

- 1** **LINE IN** (line input) jacks (phono jack)
Connect to the recording outputs of an amplifier. Signals supplied by the amplifier can be recorded using the standard play mode or 32 kHz in the long play mode.
- 2** **LINE OUT** (line output) jacks (phono jack)
Connect to the DAT or tape inputs of an amplifier. The playback signal of this deck will be output.
- 3** **COAXIAL/OPTICAL DIGITAL IN** (digital input) jacks (coaxial phono jack/optical jack)
Connect to the digital outputs of an amplifier having a built-in D/A converter or other digital source, such as a CD player for digital-to-digital recording.
- 4** **OPTICAL DIGITAL OUT** (digital output) jack (optical jack)
Connect to the digital inputs of an amplifier having a built-in D/A converter or another DAT deck, for playback of a DAT cassette or digital-to-digital recording.

Notes on connection

- Use the connecting cords specified in the illustrations.
- Turn off the power for all equipments before making connections.
- Be sure to insert the plugs firmly into the jacks. Loose connections may cause hum and noise. When unplugging, grasp the plug and not the cord.

Note on sound signals

When connecting an optical cable to the DIGITAL IN/DIGITAL OUT jacks, sound signals (L/R) are transmitted together through the cable.

Connections

Connecting Cords

There are following three types of connecting jacks at the rear of the deck. Each type of jack requires a different type of connecting cord.

For LINE IN/OUT (analog input/output) jacks **A**

Use the supplied or an optional audio signal connecting cord such as RK-C710HS, RK-C715HS, RK-C910ES, RK-C915ES etc.

Note

Red plugs and jacks are for the right channel (R) and white ones for the left channel (L).

For COAXIAL IN (digital input) jacks **B**

Use an optional coaxial connecting cord such as VMC-1ES, VMC-10ES etc.

For OPTICAL IN/OUT (optical transmission digital input/output) jacks **C**

Use an optional optical cable such as POC-15, POC-10HS etc.

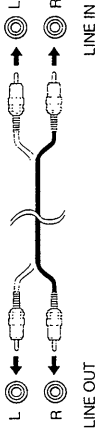
How to connect the optical cable **D**

Remove the cap and plug it in firmly.

Notes on the optical cable

- Do not bend the cord. When the cord is not used, curl it with a diameter of more than 15 cm (5 7/8 inches).
- Do not use it under high temperatures.
- When the optical cable is not connected, cover the OPTICAL IN/OUT jacks with the supplied caps.

A



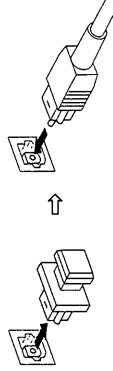
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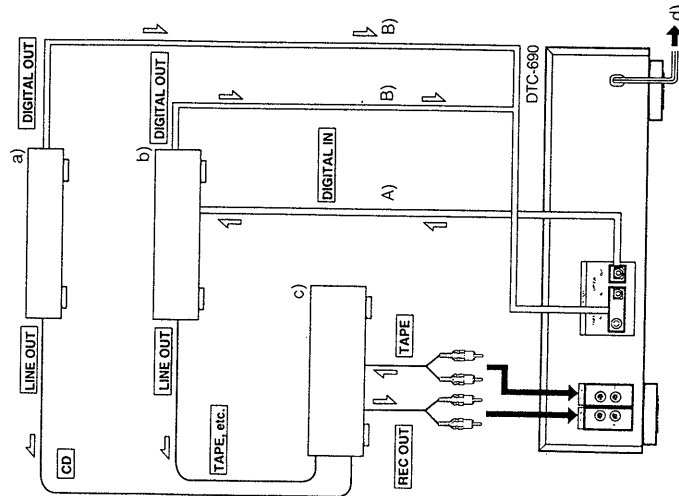
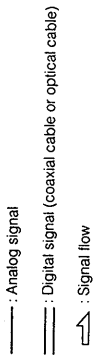
C



D



Connections



Connection Examples

If your amplifier is not equipped with digital signal jacks

- a) CD player
- b) DAT deck
- c) Amplifier
- d) to a wall outlet

A) When recording via digital-to-digital connection, connect a DAT deck (the digital input) to DIGITAL OUT OPTICAL of the DTC-690.

B) When recording via digital-to-digital connection, connect the sound source equipment (the digital output) to DIGITAL IN (COAXIAL or OPTICAL) of the DTC-690.

When connecting a microphone

Connecting a stereo microphone amplifier (the analog output) to LINE IN of the DTC-690.

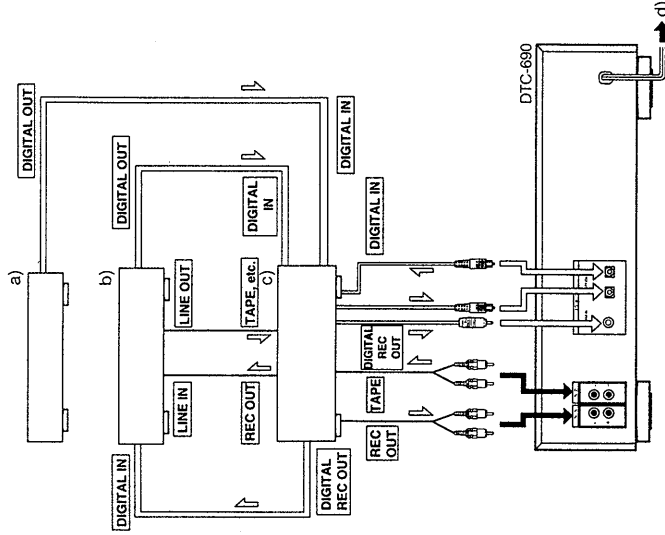
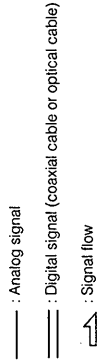
Note
 If "PROH" appears on the display, recording via digital-to-digital connection cannot be performed. In this case, connect the sound source equipment using LINE IN and OUT jacks.

Connections

If your amplifier is equipped with digital signal jacks

- a) CD player
- b) DAT deck
- c) Amplifier
- d) to a wall outlet

Note
 If "PROH" appears on the display, recording via digital-to-digital connection cannot be performed. In this case, connect the sound source equipment using LINE IN and OUT jacks.



SECTION 2 DISASSEMBLY

- Remove the following devices shown by ❶, etc. In the order of the numbers.

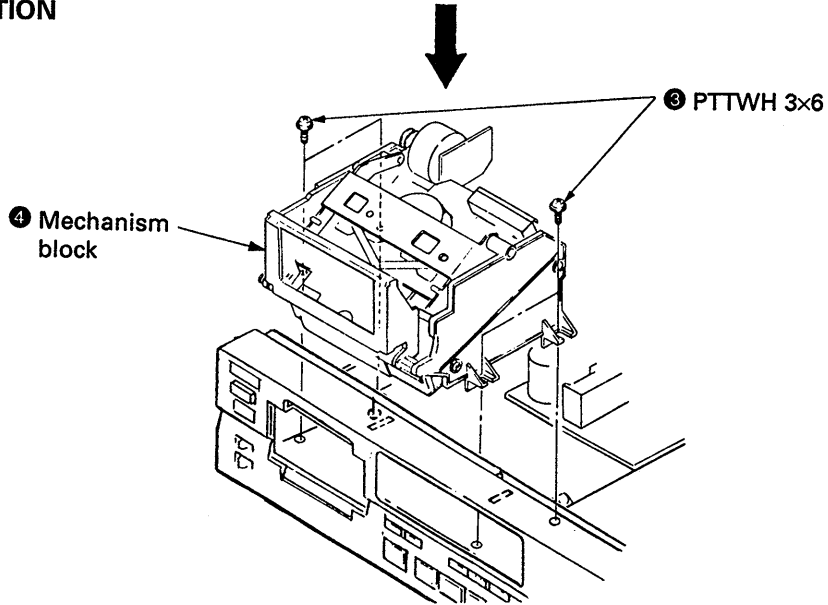
[CASE]

Unscrew the four case attachment screws and remove the case.

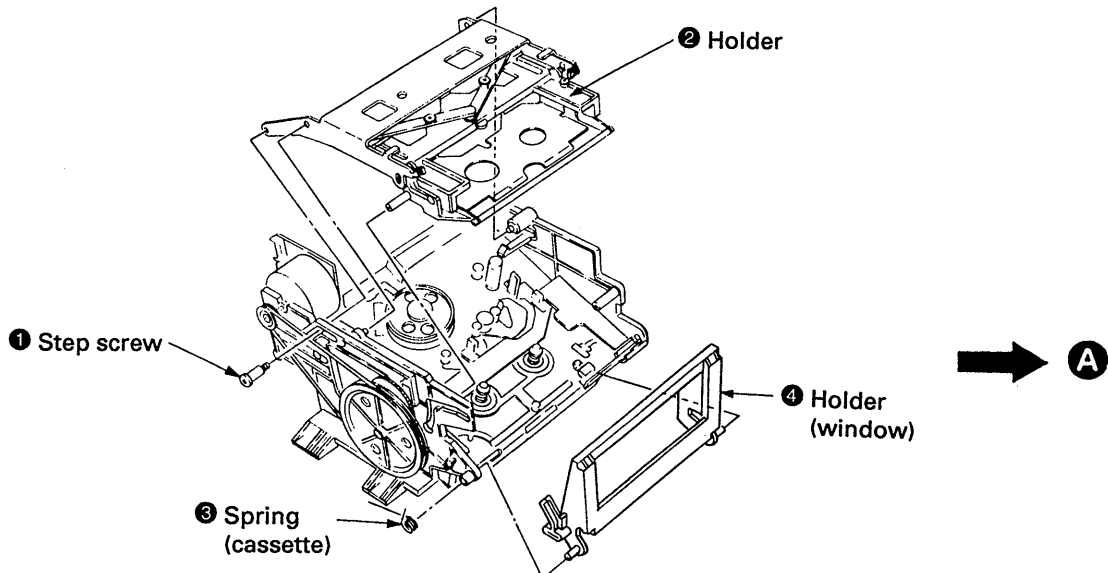
[CASSETTE WINDOW]

- Press the OPEN/CLOSE switch to effect LOADING OUT STATE (if power is not supplied) rotate the pulley in the left side of the Mechanism Deck counterclockwise.)
- Remove the cassette by lifting the window up.

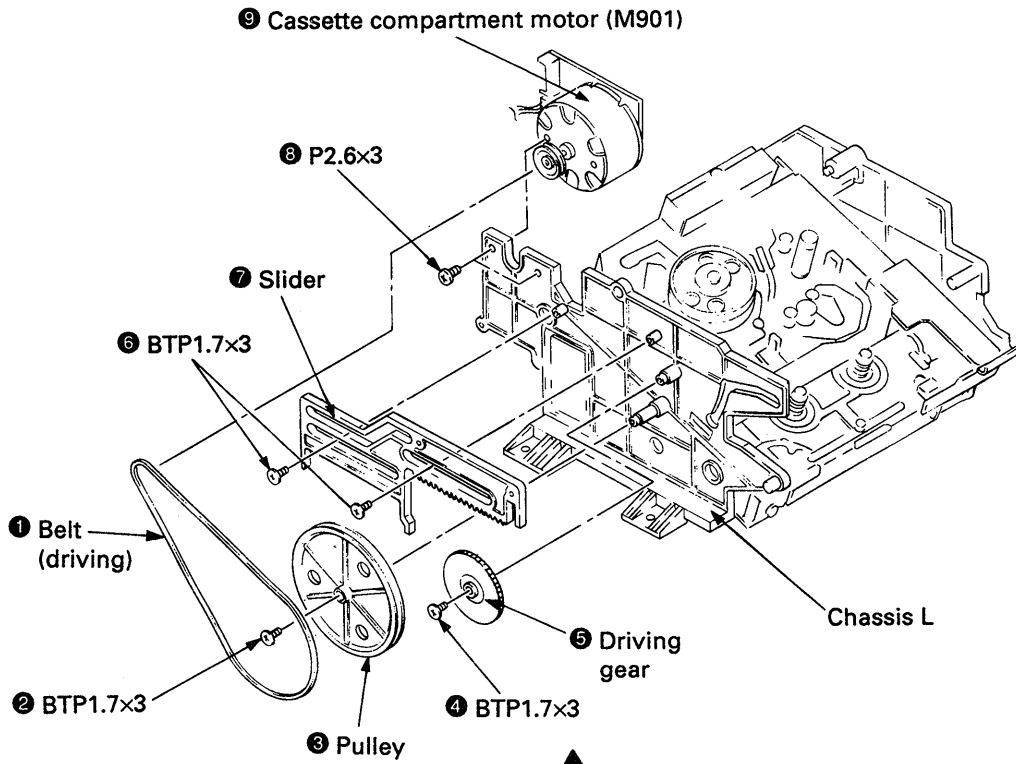
MECHANISM SECTION



HOLDER



CASSETTE COMPARTMENT MOTOR (M901), PULLEY, GEAR (CAM) AND SLIDER

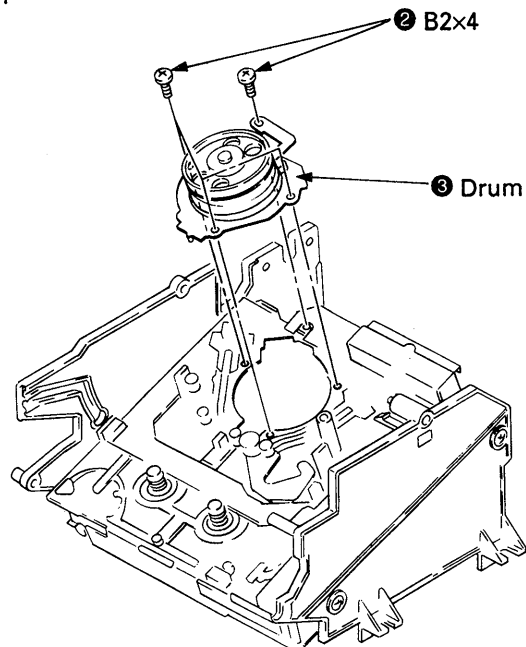


A



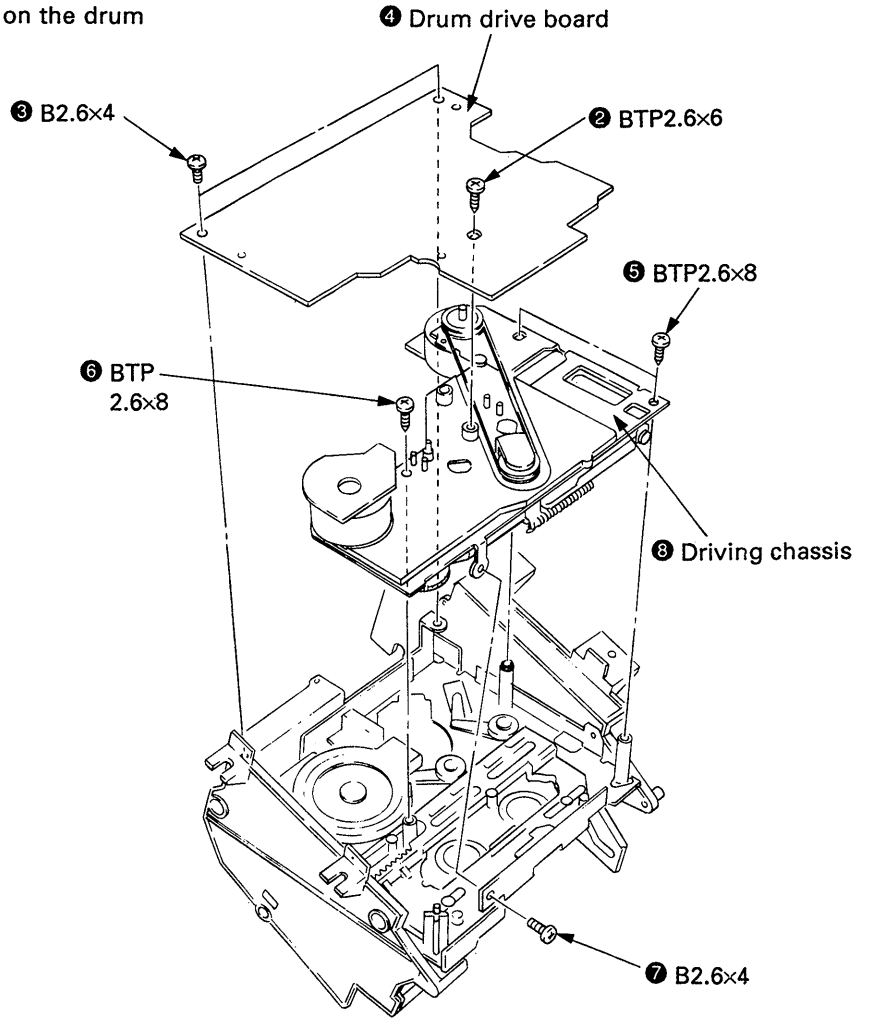
DRUM

- 1 Remove the drum lead wires from connectors.

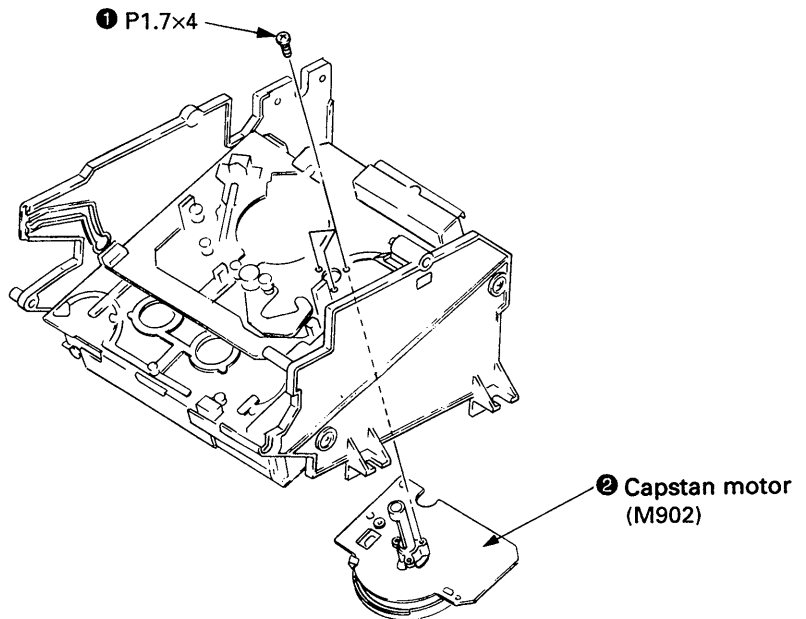


DRUM DRIVE BOARD, DRIVING CHASSIS

- 1 Remove the lead wires from connectors on the drum drive board.



CAPSTAN MOTOR (M902)



SECTION 3 ADJUSTMENTS

Notes When Making Adjustments

- Adjustments should be performed in the order listed.
- Use the following test tapes :

TY-7111 (8-909-812-00)	Level
TY-7252 (8-909-822-00)	Tracking
TY-7551 (8-909-814-00)	Functions
TY-30B (8-892-358-00)	Blank

Use the following torque meter:

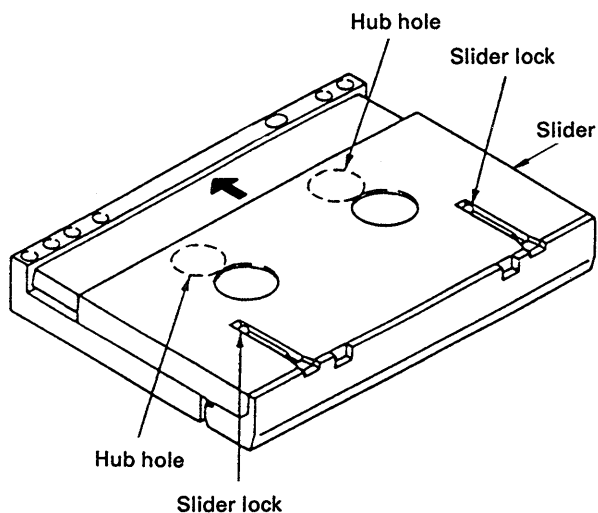
TW-7131 (8-909-708-71)FWD

- Switches and controls should be set as follows unless otherwise specified.

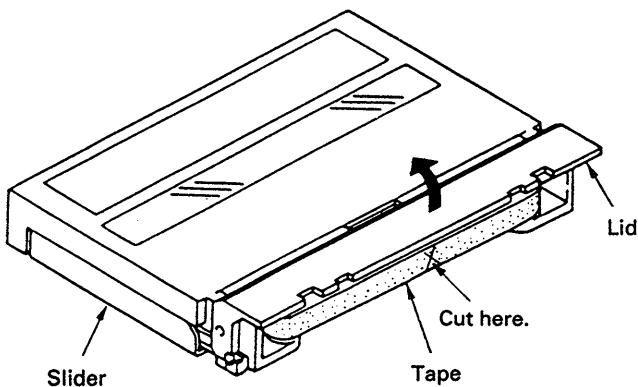
TIMER switch	: OFF
REC MODE switch	: LONG
INPUT switch	: COAXIAL
REC LEVEL control	: Min.
PHONES LEVEL control	: Min.

- Creating an end sensor cassette

- Press the tape slider lock and move the slider in the direction indicated by the arrow.



- Open the lid and cut the tape.



- Turn the hubs until the tape is completely inside the cassette (both T and S sides).

The end sensor cassette for end sensor adjustment is now ready for use.

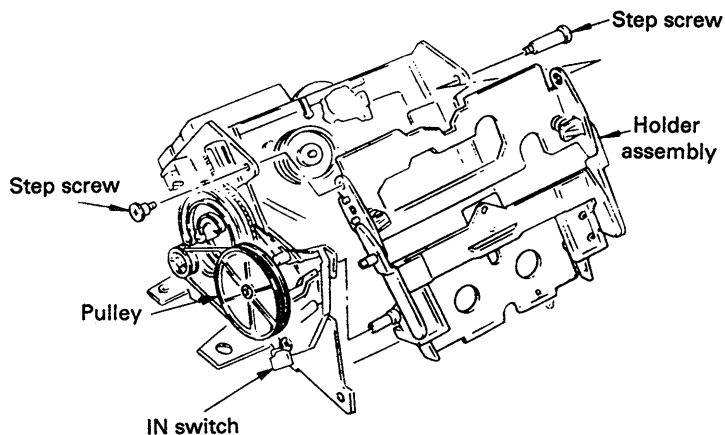
- Cleaning of the Revolving Drum

- Fold a chamois (2-034-697-00) or a knit cloth into 4 or more files, slightly impregnate it with a cleaning liquid (9-919-573-00), and softly touch the drum with it and manually rotate the drum slowly counterclockwise by 2 to 3 turns for cleaning.
- At that time, be careful not to move the chamois vertically to the head tip. Otherwise, the head tip may probably be damaged.

- Be careful not to move RV1 and RV2 on the RF AMP board in the mechanism assembly.

- To adjust the tape path and guides, remove the holder assembly as shown in the diagram and use the DAT holder jig (J-8000-002-A). This will make it easier to perform adjustments.

- First turning the pulley counterclockwise to put it in loading out status will make removal and reattachment of the holder assembly easier.
- To perform adjustments, turn the pulley clockwise to put it in loading in status, load the cassette tape and set the IN switch to the ON position.



- Test mode

The test mode is effected by shorting TP (XTEST MAIN, XTEST SERVO and XTEST DISP) on the main board and the control switch board and GND.

- Test mode (main • servo)

Turn OFF the power switch, connect XTEST MAIN and XTEST SERVO on the main board to GND and perform the following adjustments.

- Tape path fine adjustment
- DPG adjustment
- ATF pilot (GCA) checking
- End sensor checking
- FWD torque checking
- FWD back tension checking and adjustment

- Test mode (display)

You can check the following FL display tube and the panel switch by turning OFF the power switch, disconnecting CN932 on the MAIN board, connecting XTEST DISP to GND, connecting CN932 again and then turning ON the power switch.

Each grid of the FL display tube sequentially lights up while all tubes being lighted up finally.



Level meters go out one after one.



Press any of the remote controller for DAT in this state. Thus, all level meters go out. (It may sometimes occur that one or two meters remain lighting up according to switch setting at that time.)



Everytime a switch on the panel is pressed, display tubes light up sequentially one after one. With all keys once pressed, all level meters go out.

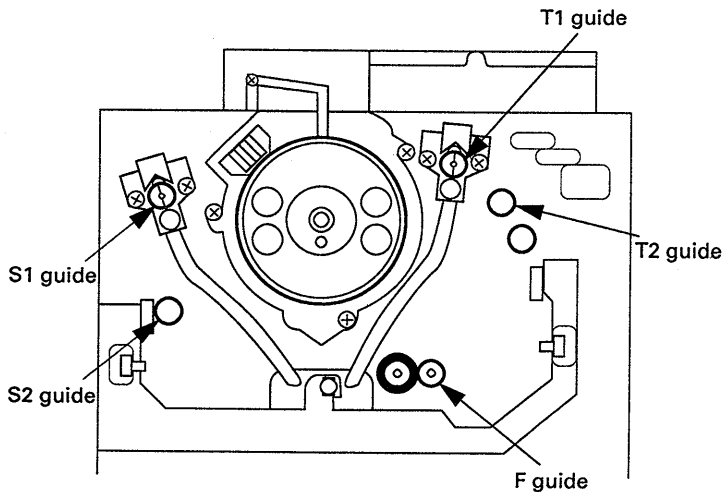
- To reset the test mode, disconnect the wire shorting XTEST and GND. After completion of adjusting, be sure to reset the test mode.

9. Check the following items for correct tape speed, after completion of adjusting.

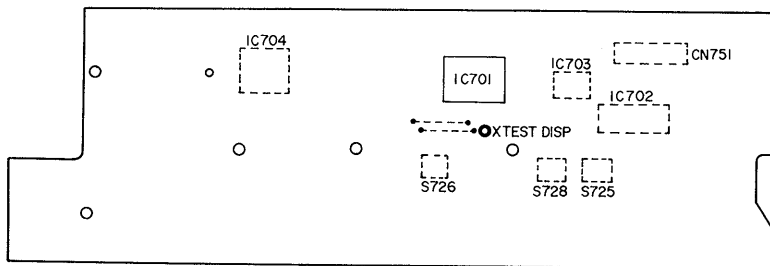
- (1) Set the REC MODE switch to STANDARD and check for normal recording and playback. (× 1)
- (2) Set the REC MODE switch to LONG and check for normal recording and playback. (× 0.5)
- (3) With QUE (▶ + ▶▶) or REVIEW (▶ + ◀◀), check that qurrr, qurrr sound is heard. (× 3, × 8)
- (4) Check that correct time is displayed after FF (▶▶) or REV (◀◀). (× 16)
- (5) Check that SEARCH (▶◀, ◀▶) is normal.

Adjust Parts Location

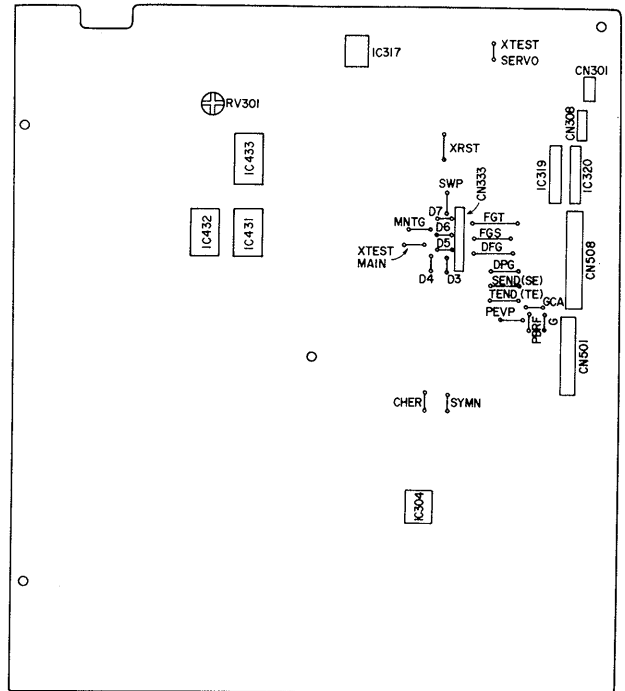
— Mechanism assembly —



— Control sw board —



— Main board —
(Component side)



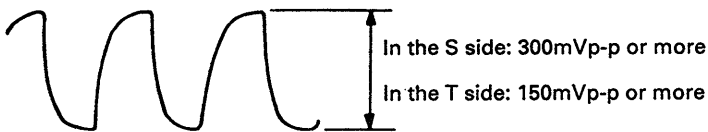
3-1. ELECTRICAL ADJUSTMENTS

End Sensor Check

Perform the following adjustment when the holder has been removed or part of the mechanism deck section replaced.

Check Procedure:

1. Connect an oscilloscope to the test land SE (in the S side) and TE (in the T side) of the main board.
2. Actuate the test mode (main · servo), mount an end sensor cassette and effect the STOP (■) mode.
3. Check that p-p values of waveform of the oscilloscope satisfy the following.



FWD Torque Check

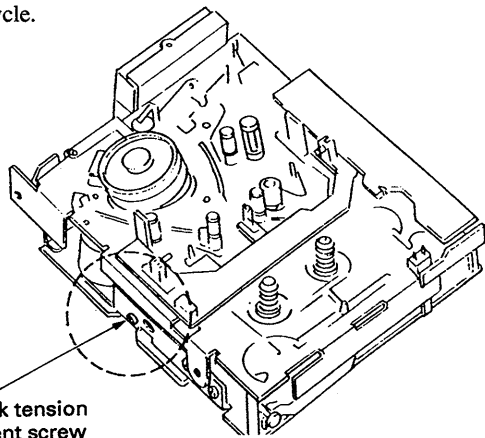
Check Procedure:

1. Put the set into the test mode (main · servo) and load the FWD torque meter TW-7131 (8-909-708-71).
2. Put the set into the PLAY (▶) mode.
3. Adjust RV301 so that the minimum value of FWD take up torque (take-up side rewinding torque) is between 10 – 11g·cm (0.14 – 0.15 oz·inch).
Also, make sure that the maximum reading does not exceed 16g·cm (does not exceed 0.22oz·inch).
4. Confirm that the value indicated by the torque meter is maintained for one full cycle.

FWD Back Tension Check and Adjustment

Check procedure:

1. Put the set into the test mode (main · servo) and load the FWD torque meter TW-7131 (8-909-708-71)
2. Put the set into the PLAY (▶) mode.
3. Turn the FWD back tension adjustment screw locked on the mechanical deck side so that the minimum value of FWD back tension torque (supply side) is between 4 – 5g·cm (0.06 – 0.07oz·inch).
Also, make sure that the maximum reading does not exceed 8g·cm (does not exceed 0.11oz·inch).
After completion of adjusting, be sure to apply screw lock.
4. Confirm that value indicated by the torque meter is maintained for one full cycle.



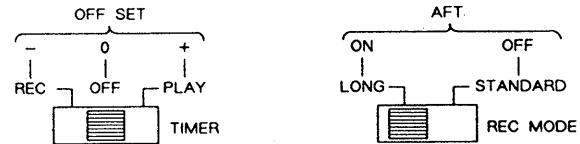
To tighten (clockwise) — back tension becomes larger.
To loosen (counterclockwise) — back tension becomes smaller.

Tape Path Fine Adjustments (× 1.5 FWD Mode)

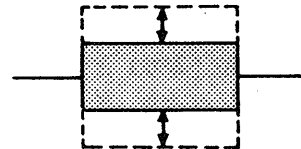
Perform the following adjustment when the drum has been replaced.

Adjustment Procedure :

1. Connect an oscilloscope CH-1 to TP (PBRF) and CH-2 to TP (SWP) on the main board.
2. Put the set into the test mode (main · servo) and load test tape TY-7252 (8-909-822-00).
3. Press the AMS (▶▶) key.
Each part of switches on Test Mode.

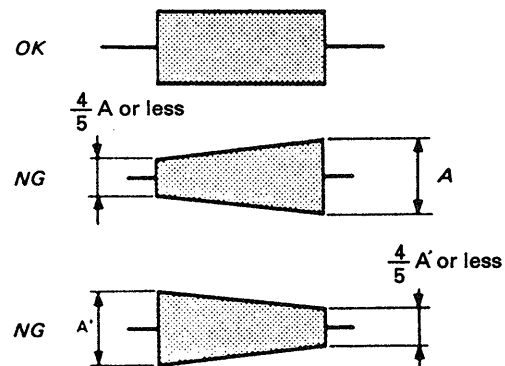


4. With the REC MODE switch set to STANDARD (ATF: OFF) and the TIMER switch set to PLAY or REC (OFFSET: + or -), fine adjust the S1 and T1 guides so that the oscilloscope RF signal waveform remains the same when high-low is repeated.



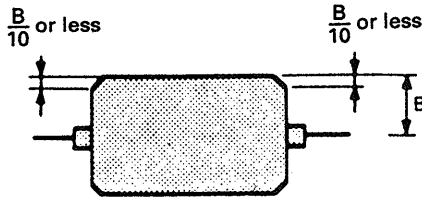
* Finish the adjustment by screwing in.

5. Check the RF signal waveform with the REC MODE switch set to LONG (ATF: ON) and the TIMER switch set to PLAY or REC (OFFSET: + or -).



6. Check the RF signal waveform with the REC MODE switch set to LONG (ATF: ON) and the TIMER switch set to PLAY or REC (OFFSET: 0).
(1) Confirm that the RF signal waveform peak value (B) is 80 mV or more.

- Confirm that the undershoot level of the RF signal waveform's flat portion is within 10%.



- When the measured values are not within the above tolerance, repeat items 3 – 6 above.

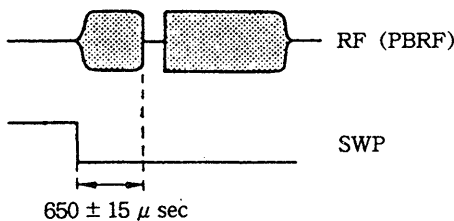
Adjustment Point: mechanism assembly

DPG Adjustment

Perform the following adjustment without fail when the drum has been replaced.

Adjustment Procedure:

- Connect oscilloscope CH-1 to TP (PBRF) and CH-2 to TP (SWP) on the main board. (Use CH-2 as the trigger. When the CH-2 signal is inverted, the trailing edge can be used for synchronization.)
- Put the set into the test mode (main · servo) and load test tape TY-7252 (8-909-822-00).
- Set the REC MODE switch to LONG (ATF: ON) and the TIMER switch to OFF (OFFSET: 0).
- Press the AMS (>>) key.
- Press the << and >> keys as appropriate so that the gap between the oscilloscope SWP and RF signals becomes $650 \pm 15 \mu\text{sec}$. (Hold the << and >> keys down for more than 1 second to perform rough adjustment. Hold them down for approximately 0.2 seconds for fine adjustment.)



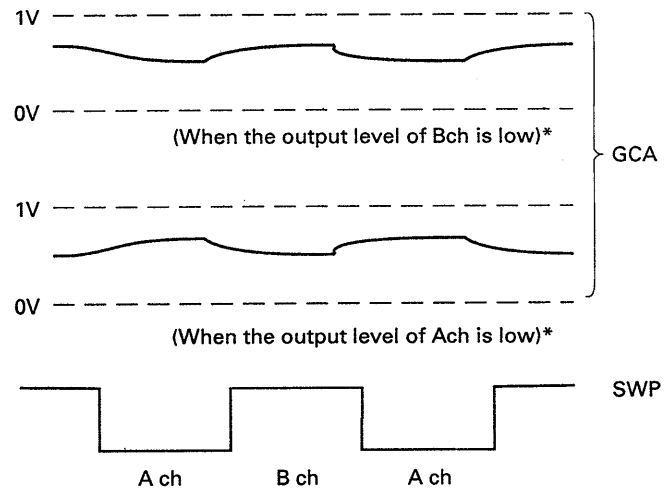
ATF Pilot (GCA) Check

Perform this adjustment after cleaning the heads with a cleaning cassette.

Check Procedure:

- Connect oscilloscope CH-1 to TP (GCA: Gain Control Amp.) and CH-2 to TP (SWP) on the main board. (When the CH-2 signal is inverted, the trailing edge can be used for synchronization.)
- Put the set into the test mode (main · servo) and load test tape TY-7111 (8-909-812-00).

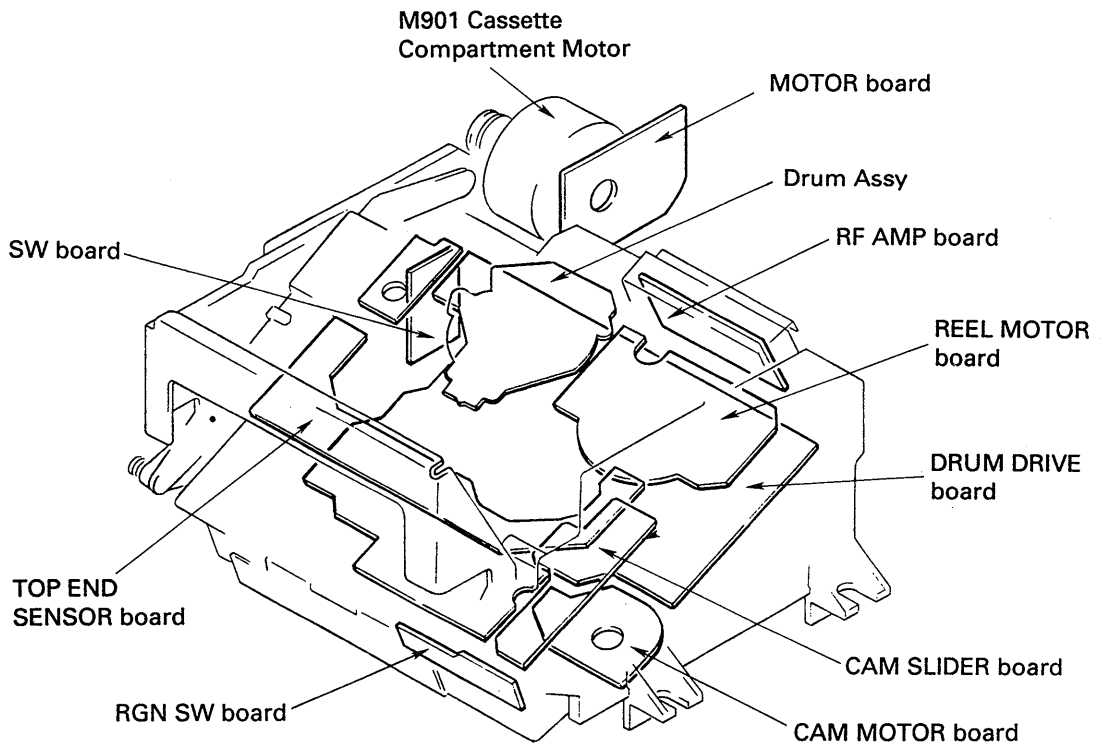
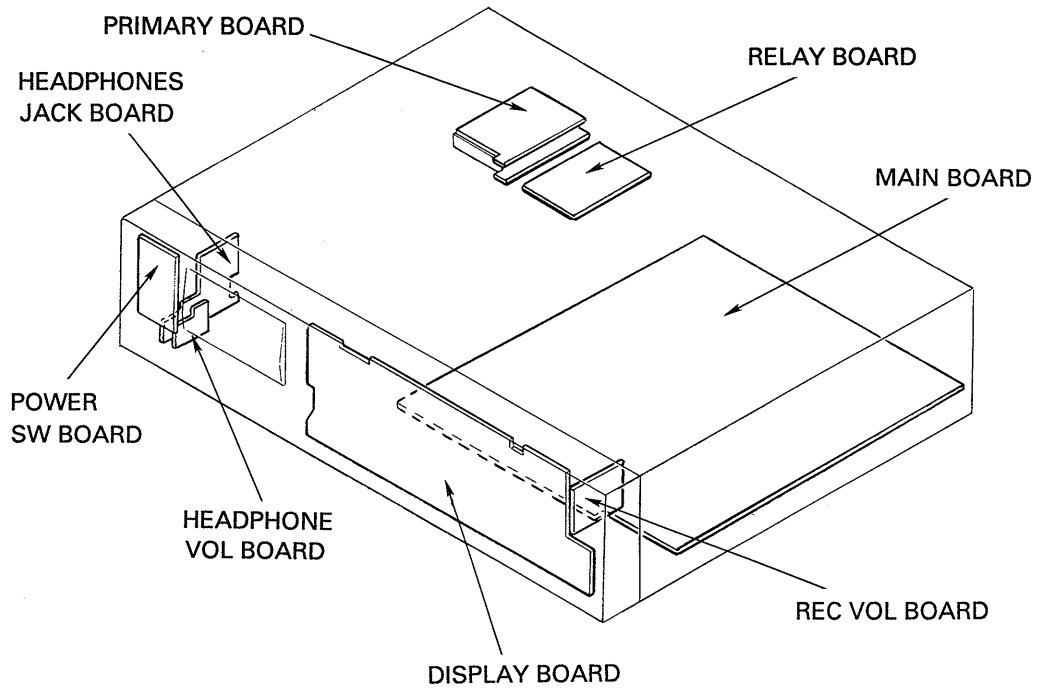
- Actuate the PLAY (▶) mode and check that the GCA waveform on the oscilloscope is as follows.



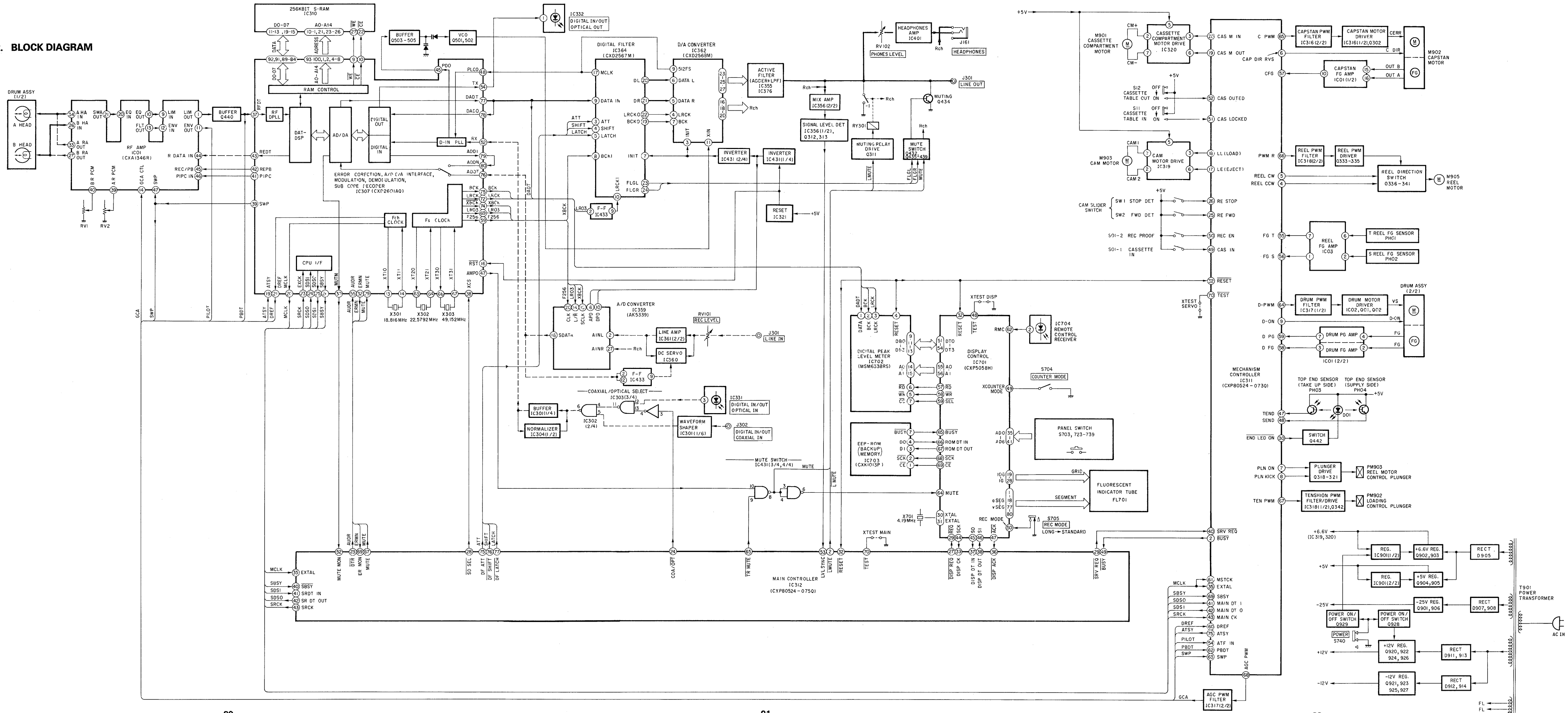
* Slightly changes depending on the state of the head. NG if the GCA waveform is 1V or more or equal to the GND level.

SECTION 4 DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION

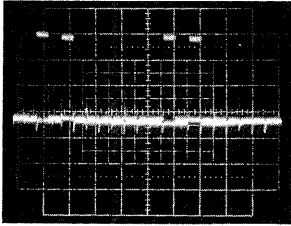


4-2. BLOCK DIAGRAM

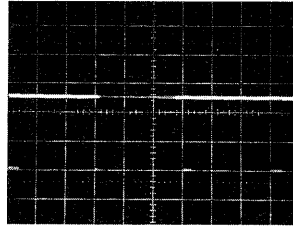


4-3. WAVEFORMS

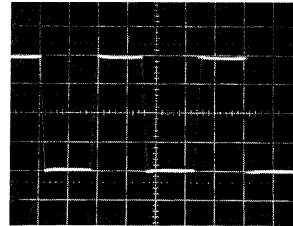
① FL701 ⑤-⑭pin
(1G-10G)
32Vp-p, 2.5ms



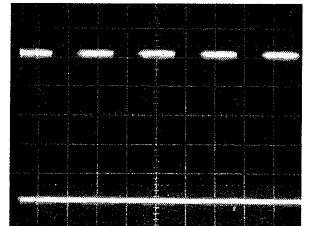
⑥ IC701 ④⑥pin,
IC312 ③⑧pin (SI)
5.2Vp-p, 30ms



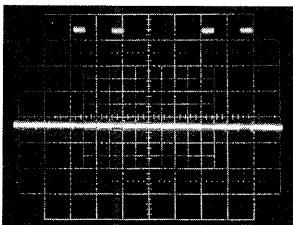
⑪ IC01 ①,⑦pin, IC311
⑤⑤,⑤⑥pin (FGT, FGS)
FF, REW mode
4Vp-p, 2ms



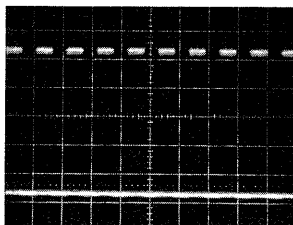
⑯ IC307 ⑦⑧pin
(DADO)
5Vp-p, 5μs



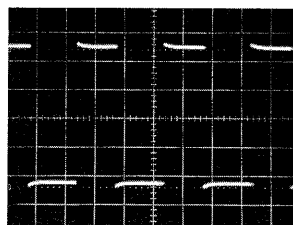
② IC701 ⑩-⑲pin
(10G-1G)
34Vp-p, 2.45ms



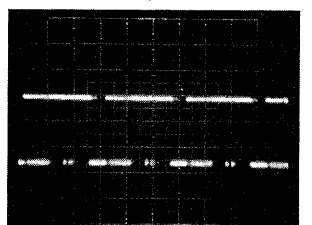
⑦ IC702 ①pin
(DATA)
5Vp-p, 10μs



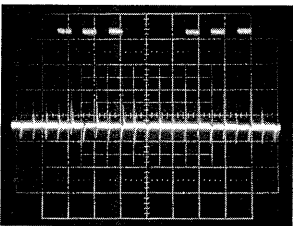
⑫ IC01 ⑩pin, IC311
⑤⑦pin (CFG)
PLAY mode
5Vp-p, 1.5ms



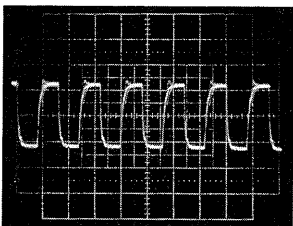
⑰ IC307 ⑦⑥pin, IC359
⑩⑥pin (ADDT)
REC mode
5.6Vp-p, 1μs



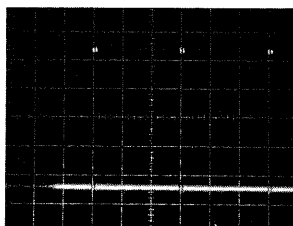
③ IC701 ⑦⑦-⑧⑧pin,
①-⑩⑨pin (a-v)
38Vp-p, 1.2ms



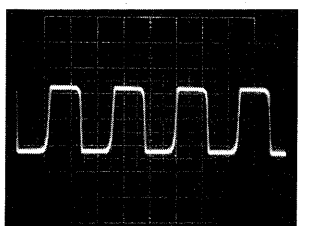
⑧ IC702 ②pin
(BCK)
5Vp-p, 0.35μs



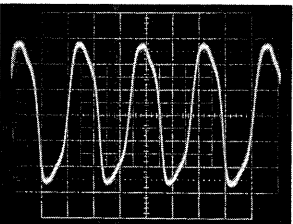
⑬ IC01 ⑦⑦pin, IC311
⑤⑨pin (DPG)
PLAY mode
5Vp-p, 30ms



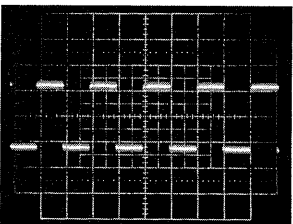
⑱ IC307 ⑦⑤pin
(BCK)
5.2Vp-p, 0.3μs



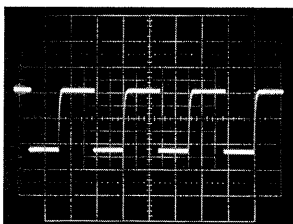
④ IC701 ⑩⑩pin
(XTAL)
5.5Vp-p, 2.5μs



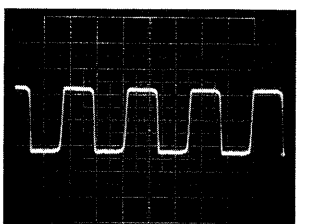
⑨ IC702 ③③pin
(LRCK)
5Vp-p, 20μs



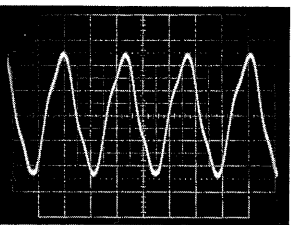
⑭ IC01 ③③pin, IC311
⑤⑧pin (DFG)
PLAY mode
5Vp-p, 1.5ms



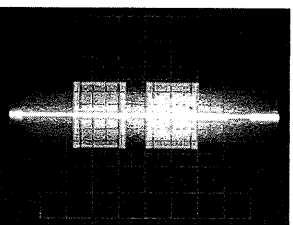
⑲ IC307 ⑦④pin, IC359
⑩⑤pin (XBCK)
5Vp-p, 0.48μs



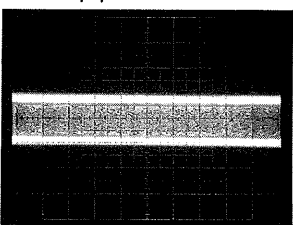
⑤ IC701 ⑩⑩pin
(EXTAL)
5Vp-p, 2.5μs



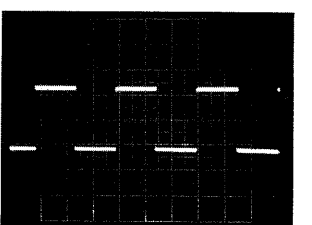
⑩ IC01 ②⑦, ③③pin
(HEAD) REC mode
4.2Vp-p



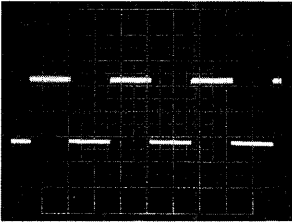
⑮ IC01 ①①pin, Q440
Base (PBDT)
PLAY mode
1Vp-p



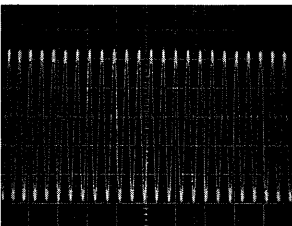
⑳ IC307 ⑦②pin
(LRCK)
5Vp-p, 32μs



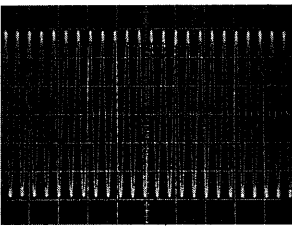
21 IC307 69pin, IC359
14pin (LR03)
5Vp-p, 20μs



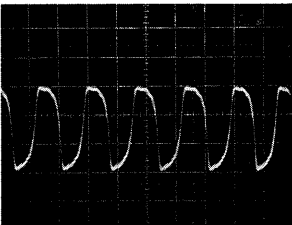
22 IC307 67pin
(XT3I)
1.4Vp-p, 0.12μs



23 IC307 66pin
(XT3O)
6Vp-p, 0.2μs



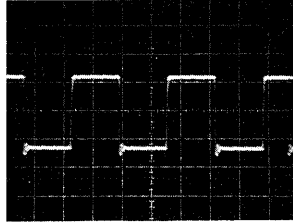
24 IC307 59pin, IC359
20pin
5Vp-p, 0.05μs



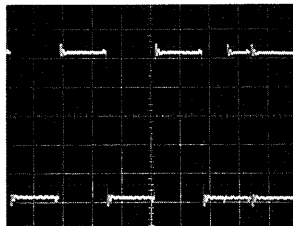
25 IC307 58pin
(F128)
5.8Vp-p, 0.17μs



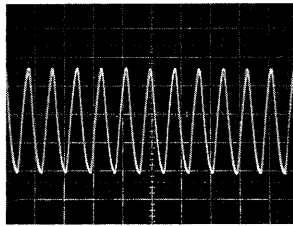
26 IC307 54pin
(TX)
PLAY mode
5Vp-p, 0.64μs



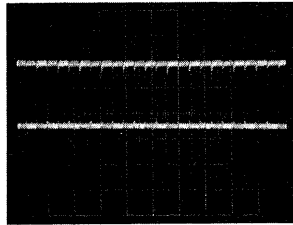
27 IC307 52pin
(RX)
5.2Vp-p, 0.64ms



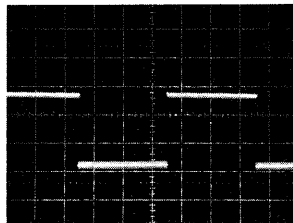
28 IC307 49pin
(PLCO)
3.7Vp-p, 0.052ms



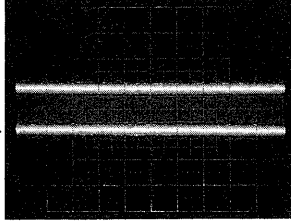
29 IC307 43pin
(REDT)
REC mode
5Vp-p, 0.84μs



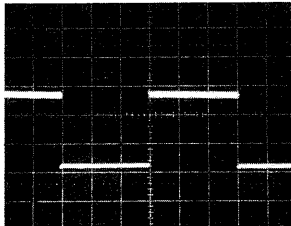
30 IC307 39pin, IC311
33pin (SWP)
PLAY mode
5.2Vp-p, 30ms



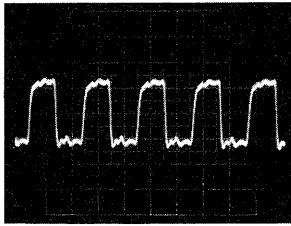
31 IC307 37pin, IC311
62pin (RFDT)
PLAY mode
1mVp-p, 2ms



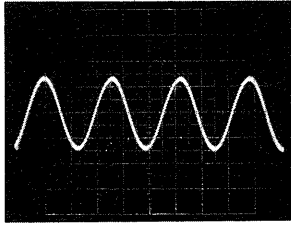
32 IC307 21pin, IC311
60pin (DREF)
5Vp-p, 30ms



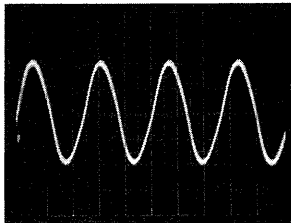
33 IC307 20pin, IC311
35, 61pin IC312 35pin
(MCLK)
5.5Vp-p, 0.15μs



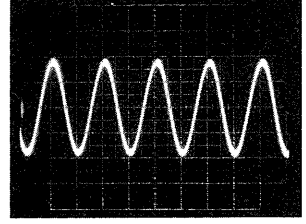
34 IC307 14pin
(XT1I)
2.8Vp-p, 18.816MHz



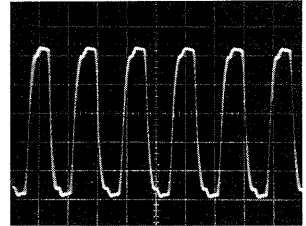
35 IC307 13pin
(XT10)
4.4Vp-p, 18.816MHz



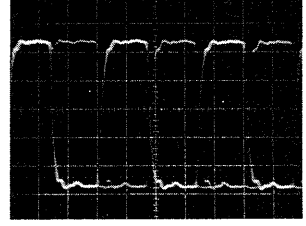
36 IC362 11pin, IC502
1, 6pin (XIN)
3Vp-p, 0.5μs



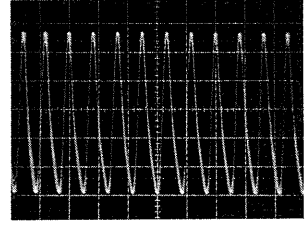
37 IC362 7pin
(BCK)
5.4Vp-p, 80ns



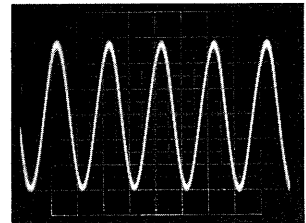
38 IC362 6, 5pin
(DATAL, DATAR)
5.4Vp-p, 0.18μs



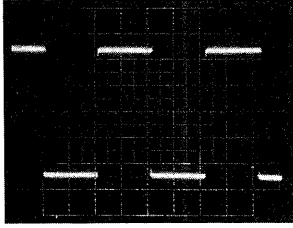
39 IC362 4pin
(LRCK)
5.6Vp-p, 0.52μs



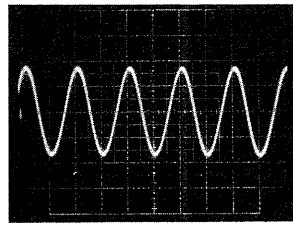
40 IC364 17pin
(MCLK)
3.6Vp-p, 52ns



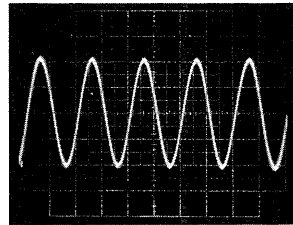
41 IC364 ⑩pin
(LRCKI)
5Vp-p, 21μs



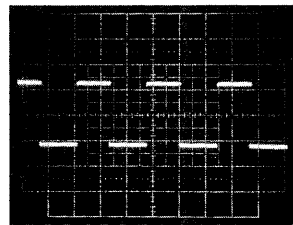
42 IC501 CATHODE
(VCO)
3Vp-p, 0.75μs



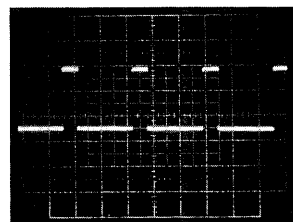
43 Q502 SOURCE
(VCO)
3Vp-p, 0.52μs



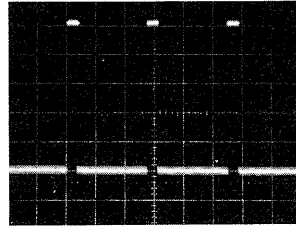
44 IC311 ⑥9pin
(D PWM)
PLAYmode
5Vp-p, 28μs



45 IC311 ⑥5,⑥6pin
(CPWM, PWMR)
PLAY mode
5.2Vp-p, 28μs

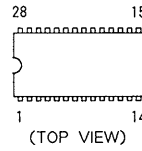


46 IC311 ⑥7,⑥8pin
(TEN PWM, AGC
PWM) PLAY mode
5Vp-p, 28μs

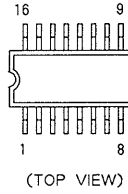


4-4. SEMICONDUCTOR LEAD LAYOUTS

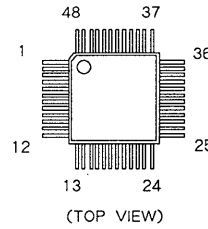
AK5339



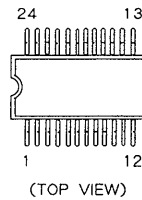
CX20115A



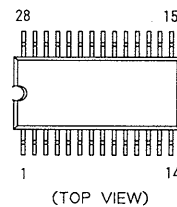
CXA1364R



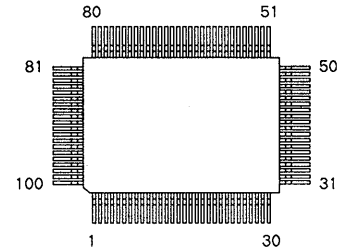
CXD2560M



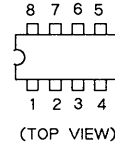
CXD2561BM-1
CXK58257AM-12L



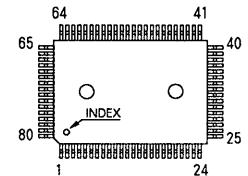
CXD2601AQ



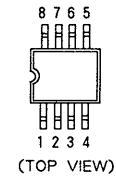
CXK1013P
M5238P
NE5532P
μPC358C



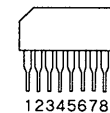
CXP5058H-660Q
CXP80524-073Q
CXP80524-075Q



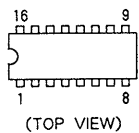
LM358M



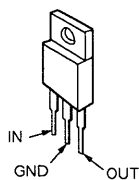
M5218AL
M54641L



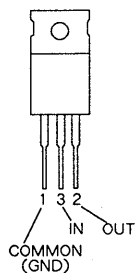
MSM6338RS



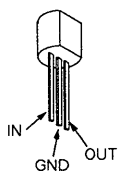
**M5F7805L
M5F7905**



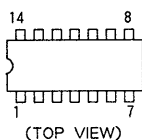
**M5F7905L
TA7912S**



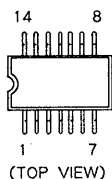
PST529E



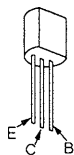
**SN74HCU0AN
TC74HC00AP**



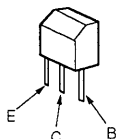
SN74HC74AN



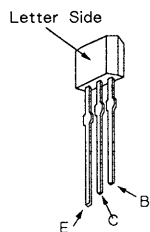
**DTA114ES
DTC114ES
2SC2603-EF
2SD1387**



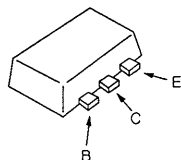
KSA708



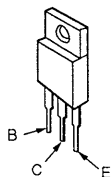
**2SA1585S-QR
2SC4115S-QR**



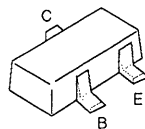
2SB798-DL



**2SB1094-LK
2SD2012**



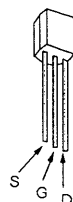
2SC1623



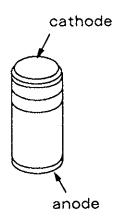
2SK241-GR



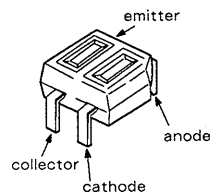
2SK246-GR



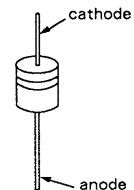
GL-453



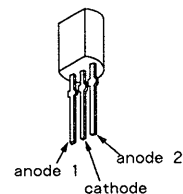
GP2S09-C



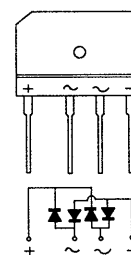
**HZS6A1L
UZ-7L2
10E2N
11ES2**



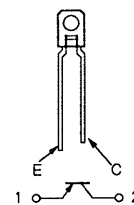
KV1260



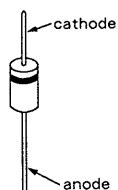
RBA406B



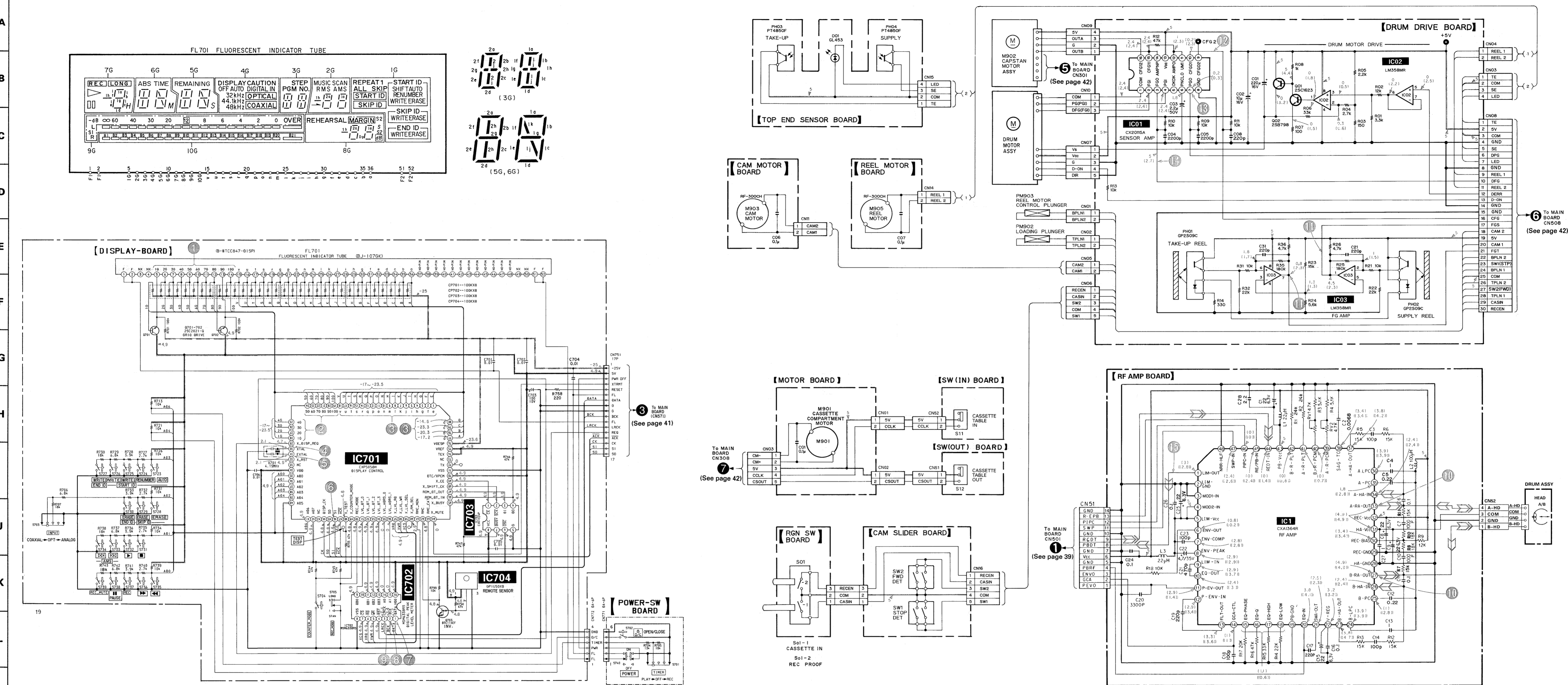
PT4850F



1N4148M



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



Notes on schematic diagram:

- All capacitors are in μF unless otherwise noted. pF: μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W or less unless otherwise noted.
- Δ : Internal component
- W : Fuse resistor

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

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

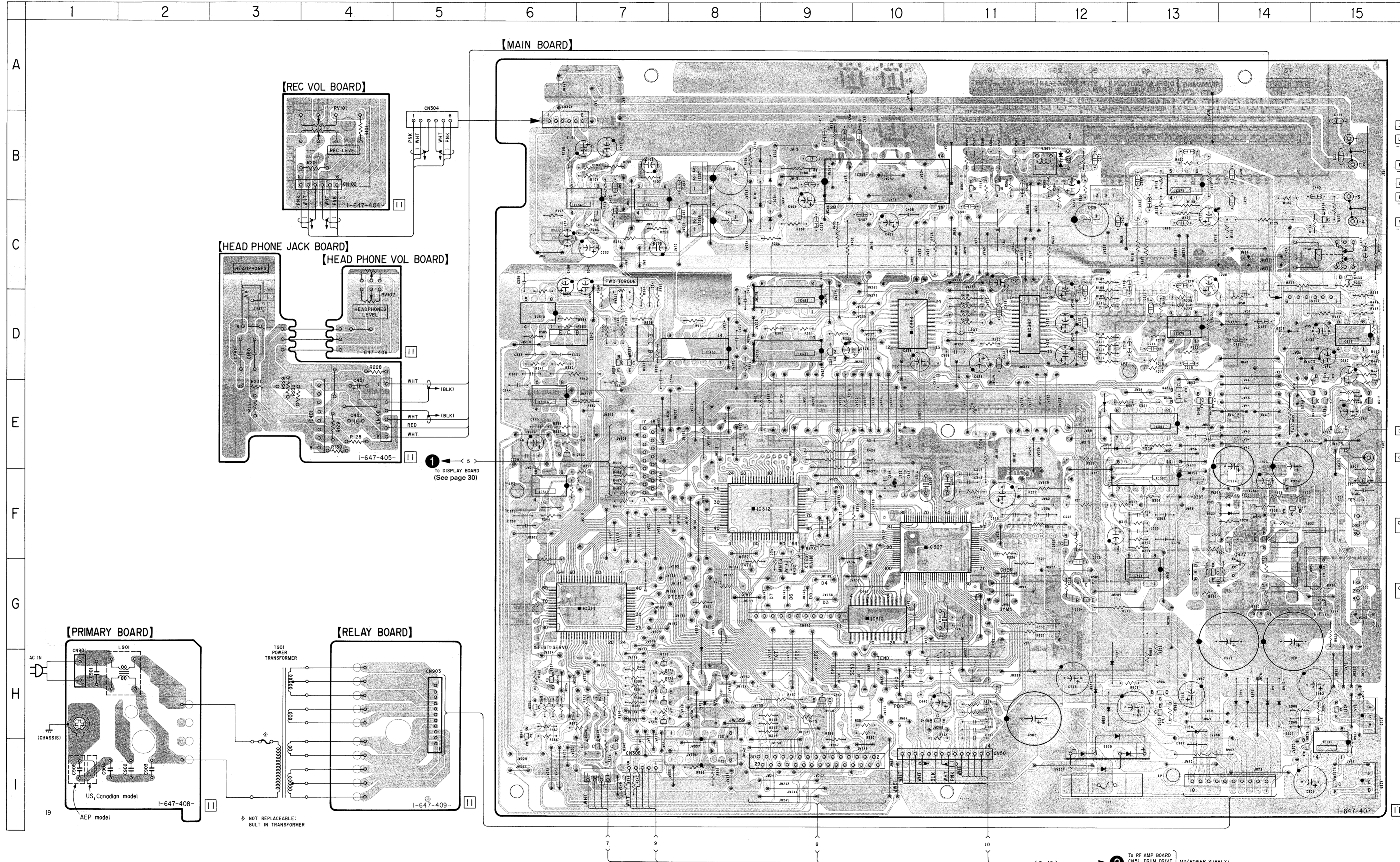
Legend:

- : B+ Line
- ==== : B- Line
- ==== : Adjustment for repair
- Voltage are dc with respect to ground under no-signal (STOP) conditions.
- No mark: Stop
- () : PLAY
- (|) : REC
- < : FF
- > : REW
- [] : MOMENTARILY WHEN and BUTTON IS PRESSED.
- [] : MUTING
- Waveforms are taken with a VOM (input impedance 10M Ω). Voltage variations, may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path
- ~ : PB
- ~ : REC

4-7. PRINTED WIRING BOARDS - MAIN SECTION - See page 19 for circuit boards location and 26 for semiconductor lead layouts.

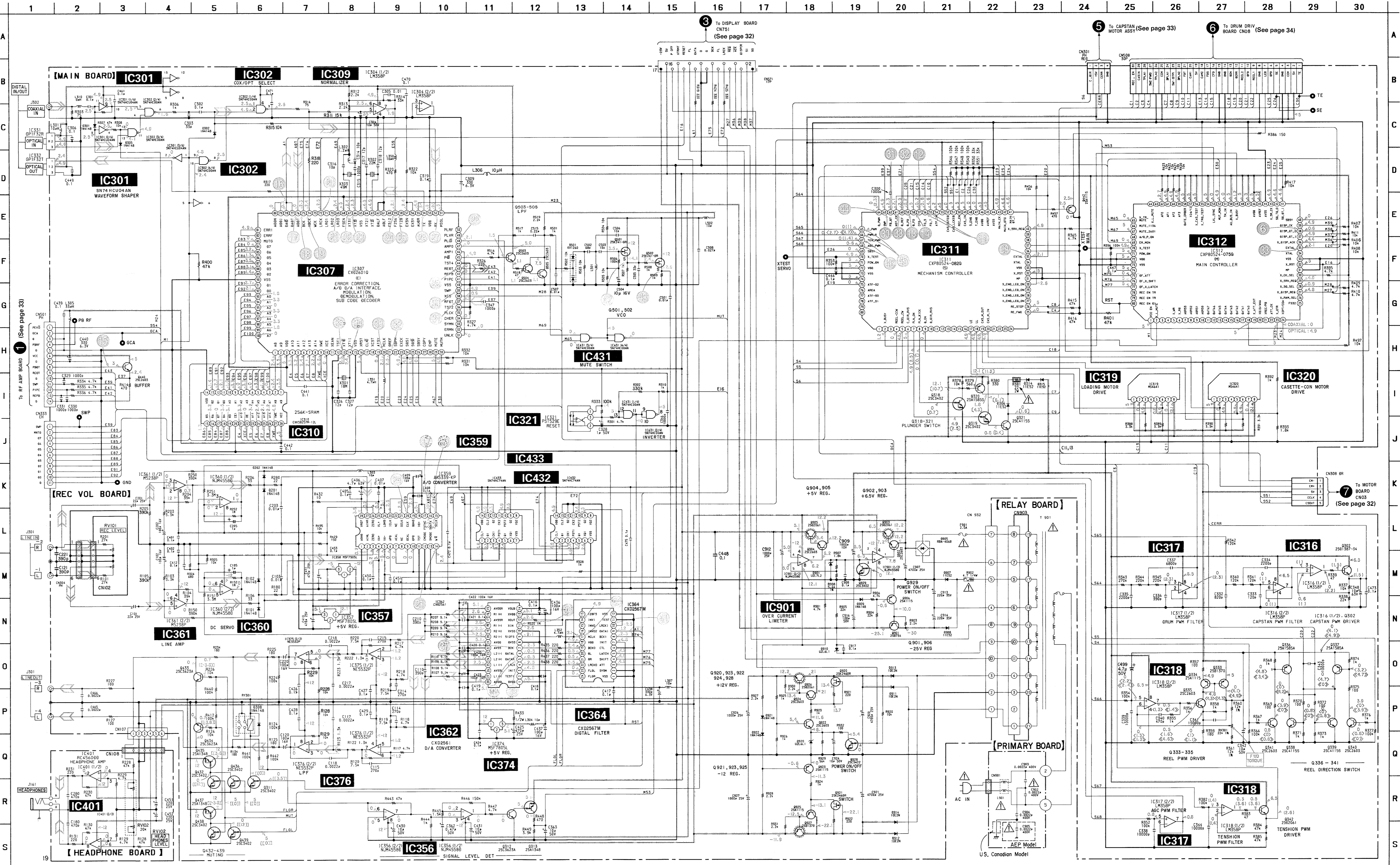
● SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D101	C-8	IC432	D-9
D102	B-8	IC433	D-8
D201	C-9	IC901	I-15
D202	B-9		
D301	E-11	Q302	E-6
		Q311	D-15
D302	E-12	Q312	E-15
D305	F-13	Q313	E-15
D306	H-7	Q318	H-7
D308	D-14		
D314	H-7	Q319	H-7
		Q320	H-7
D315	G-7	Q321	H-7
D501	B-12	Q333	D-8
D901	H-14	Q334	D-7
D905	I-12		
D907	H-11	Q335	D-7
		Q336	H-6
D908	H-11	Q337	H-6
D909	H-11	Q338	I-7
D910	H-13	Q339	I-7
D911	H-14		
D912	H-14	Q340	I-7
		Q341	H-6
D913	H-14	Q342	D-6
D914	H-14	Q432	E-13
D920	F-14	Q433	C-15
D921	F-14		
D922	F-14	Q434	C-15
		Q435	E-15
IC301	E-13	Q436	E-13
IC302	F-13	Q437	E-15
IC304	G-13	Q438	E-13
IC307	F-10		
IC310	G-10	Q439	E-13
		Q440	H-10
IC311	G-6	Q442	H-8
IC312	F-8	Q501	B-11
IC316	E-6	Q502	B-11
IC317	F-6		
IC318	D-6	Q503	F-11
		Q504	G-12
IC319	H-7	Q505	G-12
IC320	I-8	Q901	H-13
IC321	D-9	Q902	I-15
IC331	F-14		
IC332	G-14	Q903	I-15
		Q904	H-15
IC356	D-15	Q905	H-15
IC357	B-8	Q906	H-13
IC358	C-8	Q920	G-14
IC359	B-10		
IC360	B-7	Q921	G-13
		Q922	F-14
IC361	B-7	Q923	F-14
IC362	D-10	Q924	G-15
IC364	D-10	Q925	G-13
IC374	B-12		
IC375	D-13	Q926	G-14
		Q927	G-13
IC376	B-13	Q928	F-14
IC401	E-4	Q929	I-14
IC431	D-9		



Notes on printed wiring board:
 ○ : Indicated a lead wire mounted on the component side.
 ● : Parts mounted on the conductor side
 ■ : Pattern from the side which enables seeing

4-8. SCHEMATIC DIAGRAM - MAIN SECTION - See page 19 for waveforms, 39 for IC block diagrams and 43 for pin functions.



Notes on schematic diagram:

- All capacitors are in μF unless otherwise noted. pF: μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W or less unless otherwise noted.
- $\text{---}\text{---}\text{---}$: Fuse resistor

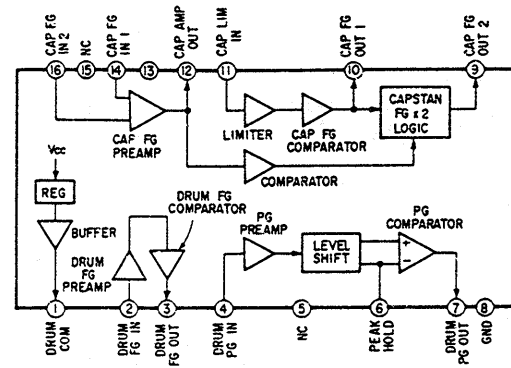
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ ou une ligne pointillée avec une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

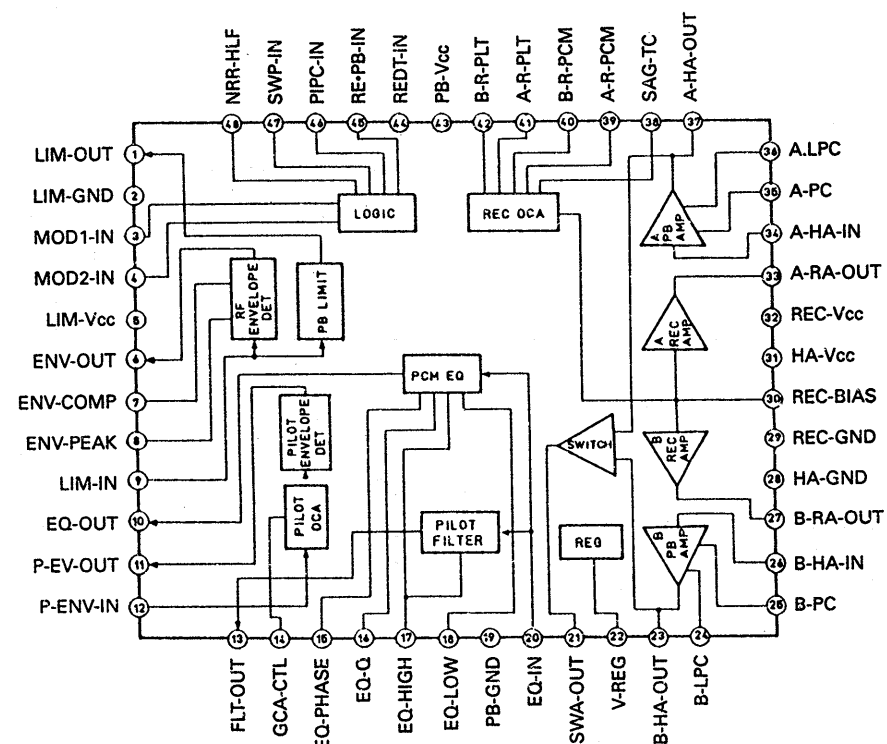
- - - : Stop
 () : PLAY
 () : REC
 < > : FF
 < > : REW
 [] : MOMENTARILY WHEN BUTTON IS PRESSED.
 [] : WAITING
 Voltage are taken with a VOM (input impedance 10M Ω).
 Voltage variations may be noted due to normal production tolerances.
 Circled numbers refer to waveforms.
 Waveforms are taken with an oscilloscope.
 Voltage variations may be noted due to normal production tolerances.
 Signal path
 : FB
 : REC

4-9. IC BLOCK DIAGRAMS

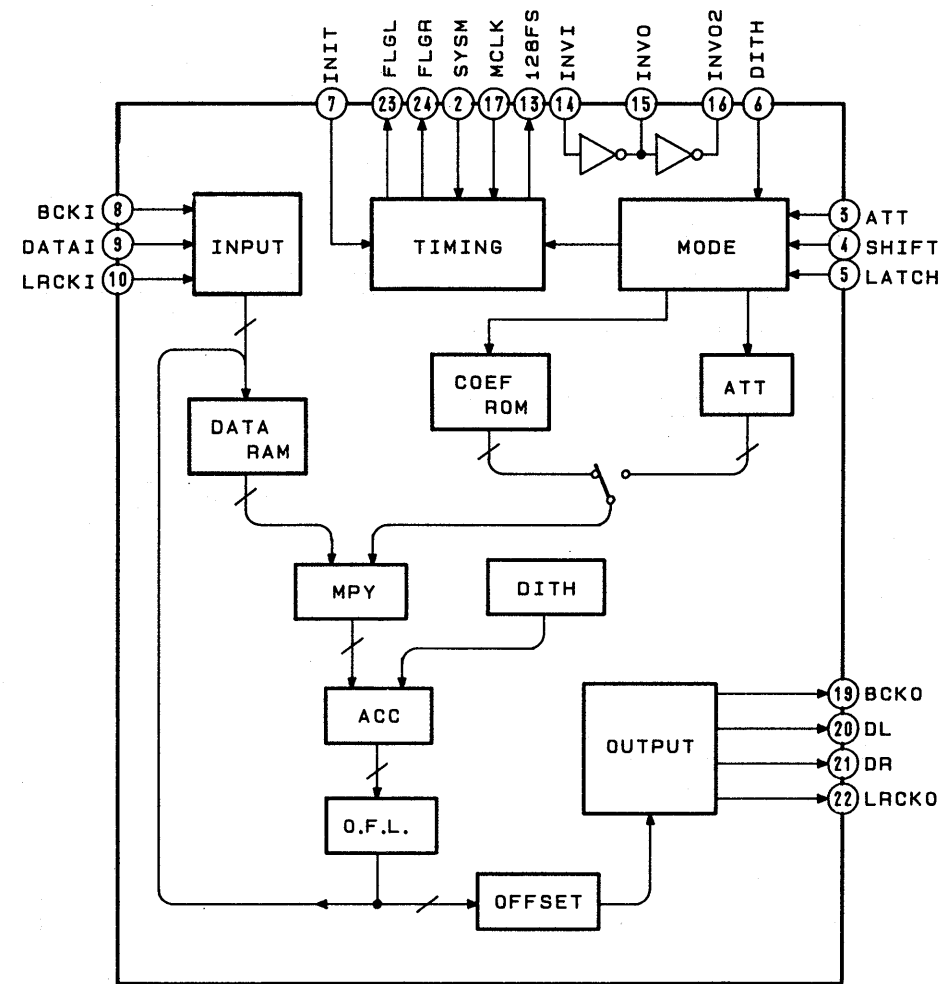
• DRUM DRIVE BOARD
IC01 CX20115A



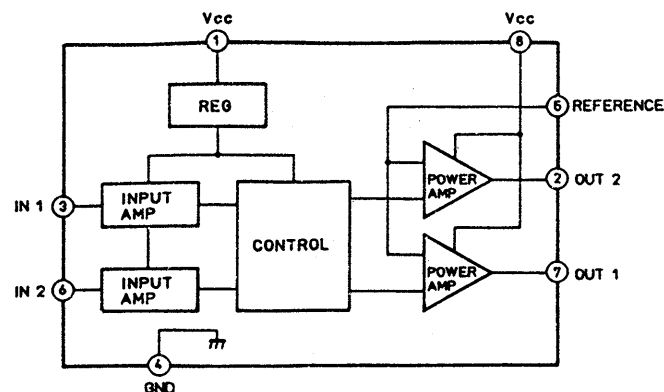
• RF AMP BOARD
IC1 CXA1364R



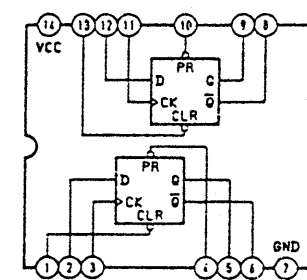
• MAIN BOARD
IC364 CXD2567M



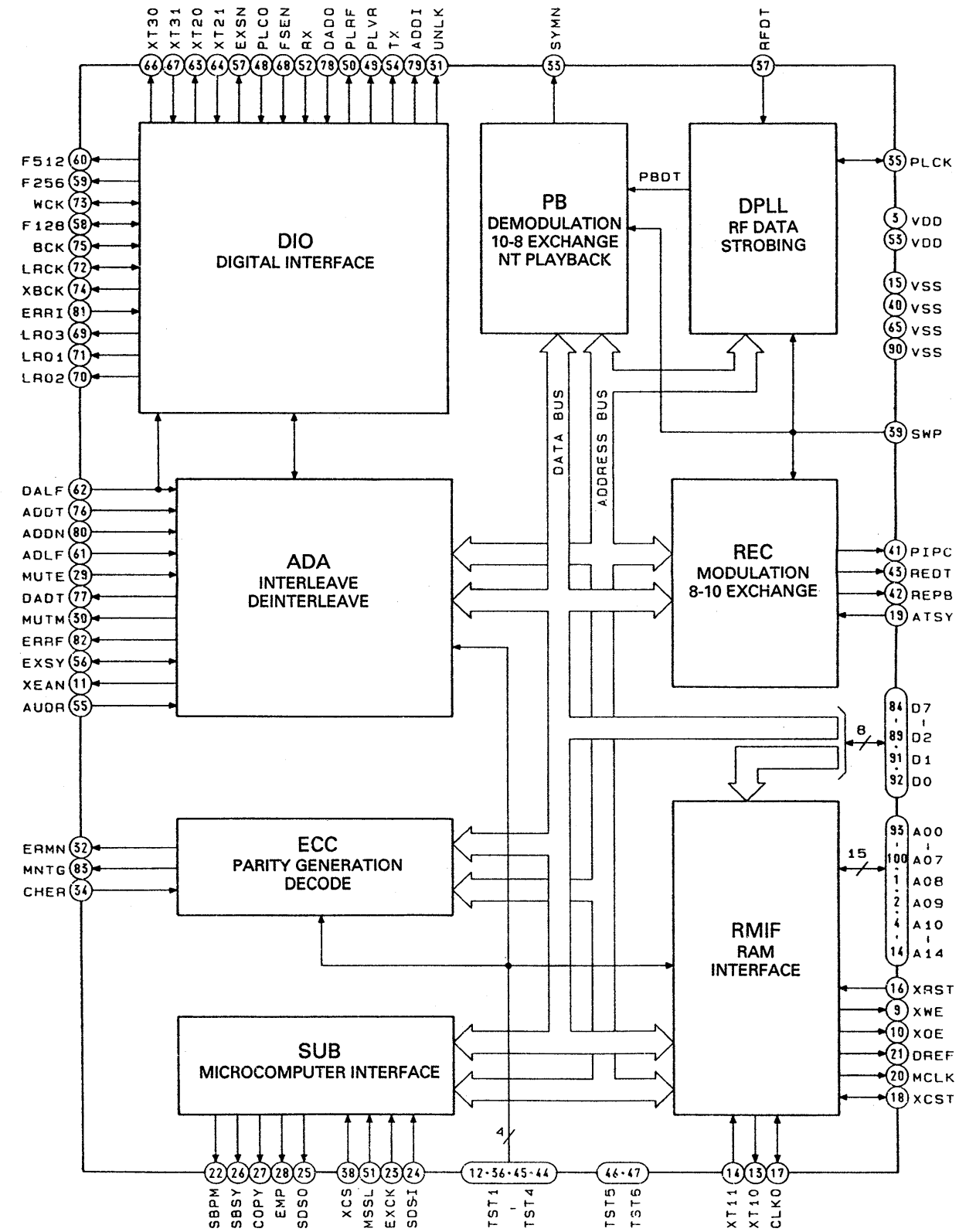
IC319,320 M54641L



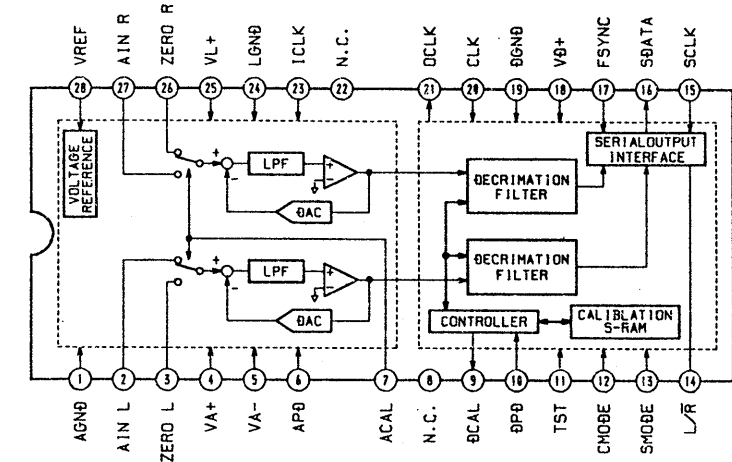
IC309 SN74HC74ANS



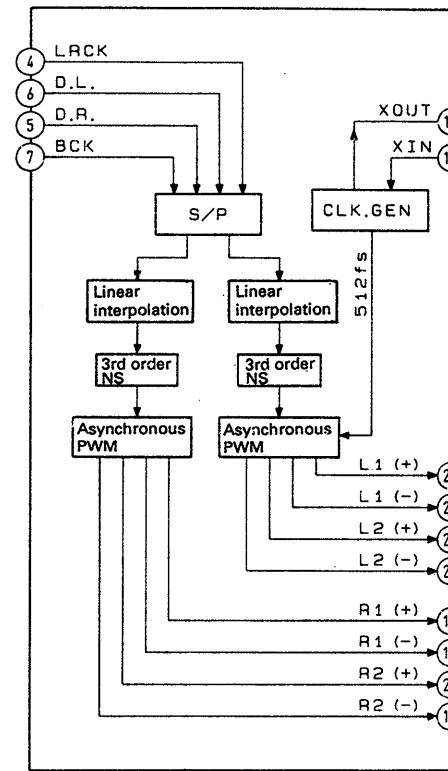
IC307 CXD2601AQ



IC359 AK5339



IC362 CXD2561M



4-10. PIN FUNCTIONS

IC307 DAT Signal Processor (CXD2601AQ)

This processor is an LSI to process recording and playback signals of the R-DAT system, in a single chip and provided with digital PLL, modem, error correction circuit, digital I/O, RAM control circuit, etc.

Pin No.	Pin Name	I/O	Description
1, 2 3	A08, A09 VDD	I/O —	RAM address A08, A09 5 V
4-6 7, 8 9	A10-A12 A13, A14 XWE	I/O O O	RAM address A10-A12 RAM address A13, A14 RAM write enable signal
10 11 12 13 14	XOE XEAN TST1 XT1O XT1I	O O I O I	RAM output enable signal External addressing bus interrupt enable signal (Not in use) Test pin (normally "L") 18.816 MHz crystal oscillator output 18.816 MHz crystal oscillator input
15 16 17 18 19	VSS XRST CLKO XCST ATSY	— I I/O I/O I	GND Reset pin (normally "H") 18.816 MHz clock output (Not in use) SYEK (internal system clock) generation CLKO division timing signal (Not in use) ATF sync signal input
20 21 22 23 24	MCLK DREF SBPM EXCK SDSI	O O O I I	9.408 MHz clock output Drum servo reference signal Discrimination signal determining whether the subcode I/O clock (EXCK) is accepted ("L": accept, "H": ignore) (Not in use) Subcode I/O data transfer clock (DUTY50) Subcode serial data input
25 26 27 28 29	SDSO SBSY COPY EMP MUTE	O O O O I	Subcode serial data output Subcode I/O sync signal Copy data output (Not in use) Emphasis data output (Not in use) Mute pin
30 31 32 33 34	MUTM UNLK ERMN SYMN CHER	O O O O I	Mute discrimination signal ("H": muted) RX PLL lock discrimination signal ("H": locked) Detects presence or absence of RF ("H": RF present, "L" during REC) C1 check result for RF ("H": OK) (Not in use) Signal for discriminating whether C2 is 1 or 2 times (C2 → C1 → C2 or C1 → C2) ("H": 1 time, "L": 2 times) (Not in use)
35 36 37 38 39	PLCK TST2 RFDT XCS SWP	I/O I I I I	RF PLL clock output (Not in use) Test pin (normally "L") RF signal input Subcode I/O chip select ("L": select) RF switching pulse ("L": A-CH, "H": B-CH)
40 41 42 43 44	VSS PIPC REPB REDT TST4	— O O O I	GND REC data PILOT/PCM discrimination signal ("H": PILOT, during playback: always "L") Record/playback switching signal ("H": record) Recording signal output, fixed "L" during playback Test pin (normally "L")
45 46 47 48	PDO AMPI AMPO PLCO	O I O I	RX APLL PD output (comparator output) RX APLL oscillator cell amp input RX APLL oscillator cell amp inverted output RX APLL external VCO clock input

Pin No.	Pin Name	I/O	Description
49	PLVR	O	RX APLL comparison signal when external comparator is active (Vin) Not in use
50	PLVF	O	RX APLL comparison signal when external comparator is active (Rin) Not in use
51	MSSL	I	Master/slave setting ("H": master (fixed with the equipment), "L": slave)
52	RX	I	Digital input
53	VDD	—	5 V
54	TX	O	Digital output
55	AUDR	I	Audio mode/data recorder mode setting ("H": audio mode, "L": data recorder mode)
56	EXSY	I/O	Complete copy sync signal (25/3 - 100/3 Hz)
57	EXSN	I/O	Complete copy sync signal (25/3 - 100/3 Hz)
58	F128	I/O	128fsCK (normal)/256fsCK (×2) (DUTY50)
59	F256	O	256fsCK (normal)/512fsCK (×2) (DUTY50)
60	F512	O	512fsCK (normal)/512fsCK (×2) (DUTY50)
61	ADLF	I	Signal for discriminating whether ADDT serial data is MSB first or LSB first ("H": LSB first)
62	DALF	I	Signal for discriminating whether DADT serial data is MSB first or LSB first ("H": LSB first)
63	XT20	O	22.5792 MHz crystal oscillator output
64	XT21	I	22.5792 MHz crystal oscillator input
65	VSS	—	GND
66	XT30	O	49.152 MHz crystal oscillator output (24.576 MHz in B mode)
67	XT31	I	49.152 MHz crystal oscillator input (24.576 MHz in B mode)
68	FSEN	I	F128, BCK, LRCK input/output switch ("H": output)
69	LR03	O	LR02 inversion
70	LR02	O	LRCK 16BCK delay signal
71	LR01	O	LRCK 15BCK delay signal
72	LRCK	I/O	fs (normal)/2fs (×2) ("L": L-CH, "H": R-CH)
73	WCK	I/O	2fs (normal)/4fs (×2) (input mode only for testing)
74	XBCK	O	BCK inversion
75	BCK	I/O	64fs (normal)/128fs (×2)
76	ADDT	I	Serial AD data (complement of 2)
77	DADT	O	Serial DA data (complement of 2)
78	DADO	I	Digital output (DA) data input (normally connected to DADT)
79	ADDI	O	Digital input (AD) data output (normally connected to ADDN)
80	ADDN	I	Digital input (DA) data input
81	ERRI	I	Digital output V-FLAG data input (normally connected to ERRF)
82	ERRF	O	Signal output for discriminating whether or not DADT has interpolated data ("H": interpolated data)
83	MUTG	O	Error correction status monitor trigger
84-89	D7-D2	I/O	RAM data bus D7-D2
90	VSS	—	GND
91, 92	D1, D0	I/O	RAM data bus D1, D0
93-100	A00-A07	I/O	RAM address A00-A07

IC311 Mechanism/Servo Micon (CXP80524-073Q)

The mechanical deck servo systems are controlled by the captioned micon according to instructions from the main micon (IC312).

Pin No.	Pin Name	I/O	Connected to	Description
1		O		Not in use
2	<u>BUSY</u>	O	Main Micon	Busy (Active "L") to the Main Micon
3		O		Not in use
4	REEL_CCW	O	Mechanism	Reel motor CCW ("L": RVS direction) } *1 Reel motor CW ("H": FWD direction)
5	REEL_CW	O	Mechanism	
6	C_DIR_RVS	O	Mechanism	Capstan Direction ("L": FWD, "H": RVS)
7	PLN_ON	O	Mechanism	Plunger On
8	PLN_KICK	O	Mechanism	Plunger Kick
9	D_ON	O	Mechanism	Drum On ("H": The drum is revolving)
10	D_DIR_RVS	O	Mechanism	Not in use
11-16		O		Not in use
17	LE	O	Mechanism	Loading Motor Eject } *2 Loading Motor Load
18	LL	O	Mechanism	
19	CAS_M_OUT	O	Mechanism	Cassette control motor Out } *3 Cassette control motor In
20	CAS_M_IN	O	Mechanism	
21-24		—		Not in use
25	RE_FWD	I	Mechanism	Encoder SW2 } *4 Encoder SW1
26	RE_STOP	I	Mechanism	
27-30	<u>END_LED_ON</u>	O	Mechanism	End sensor ON Illuminated upon "L" (rectangular wave of about 500kHz). It is not output unless a cassette is mounted ("H").
31	MP	I		Microprocessor mode selected (the equipment is fixed at "L").
32	<u>RST</u>	I		System Reset (low active)
33	Vss	—		Power terminal (GND)
34	XTAL	O		System Clock Output (Not in use)
35	EXTAL	I	CXD2601AQ	System Clock Input (9.408 MHz)
36-39		—		Not in use
40	X_SRV_REQ	I	Main Micon	Request for communication from the Main Micon
41	MAIN_DT_I	I	Main Micon	Serial Input from the Main Micon
42	MAIN_DT_O	O	Main Micon	Serial Output to the Main Micon
43	MAIN_CK	I	Main Micon	Serial Clock with the Main Micon
44	AVss	—		GND for A/D
45	AVref	—		Reference Voltage for A/D (+5 V)
46	AVdd	—		Power Supply for A/D (+5 V)
47	T_END	I	Mechanism	Take-up side end sensor input (analog) } Magnetic matter: 0V, Supply side end sensor input (analog) } Leader tape: AC (*5)
48	S_END	I	Mechanism	
49	CAS_IN	I	Mechanism	Cassette-in switch (S01). "H": Cassette is mounted.
50	REC_EN	I	Mechanism	Rec-enable switch (S01). "H": REC enabled.
51	CAS_LCKed	I	Mechanism	Casecon locked Upon completion of loading: "H"
52	CAS_OUTed	I	Mechanism	Casecon outed Upon completion of loading OUT: "H"
53		I		Not in use
54	ATF_IN	I	RF Amp	ATF PILOT input
55	FG_T	I	Mechanism	Reel FG (T Side) } 6/24Hz (Small reel diameter) - Reel FG (S Side) } 15/24Hz (Large reel diameter) (In SP FWD)
56	FG_S	I	Mechanism	
57	C_FG	I	Mechanism	Capstan FG SP: 674 Hz, LP: 337 Hz
58	D_FG	I	Mechanism	Drum FG 400 Hz: LP REC, 800 Hz: Other modes
59	D_PG	I	Mechanism	Drum PG } Other than LP REC: 800/24Hz Drum Reference } In LP REC: 400/24Hz
60	D_REF	I	CXD2601AQ	

Pin No.	Pin Name	I/O	Connected to	Description
61	MST_CK	I	CXD2601AQ	Master clock (9.408MHz)
62	PB_DT	I	RF Amp	PB Data input to create ATF Sync
63	SWP	O	CXD2601AQ	Switching Pulse "L": Ach, "H": Bch
64	D_PWM	O	Mechanism	PWM Out for Drum
65	C_PWM	O	Mechanism	PWM Out for Capstan
66	PWM_R	O	Mechanism	PWM Out for Reel
67	TEN_PWM	O	Mechanism	PWM Out for Tension Regulator Plunger
68	AGC_PWM	O	RF Amp	PWM Out for AGC
69	SBSY	I	CXD2601AQ	↓ of subsync is detected (XINT2).
70	TEST	I	Pull-up	Test Mode (active "L")
71	POW_DN	I		Not in use
72	Vdd	—		Power terminal (+5 V)
73	Vss	—		Power terminal (GND)
74		—		Not in use
75	ATF_S2	O	CXD2601AQ	ATF Sampling Pulse
76-80		—		Not in use

* 1 Reel motor control

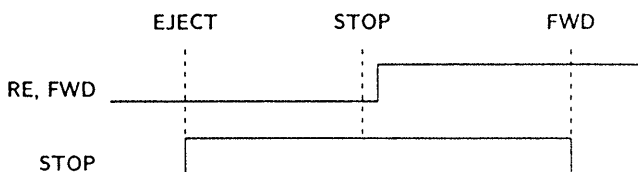
	CCW (counterclockwise)	CW (clockwise)
STOP (only in POWER ON)	L	L
FWD	L	H
RVS	H	L
Prohibit	H	H

*4 Encoder

RF-FWD	RE_STOP	Position
L	L	EJECT
L	H	STOP UNLD-STOP
H	L	FWD
H	H	STOP-FWD

*2 Loading motor control

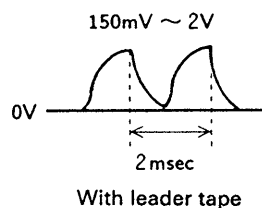
	LE	LL
—	L	L
LOAD	L	H
EJECT	H	L
Brake	H	H



*3 Casecon motor control

	OUT	IN
—	L	L
IN	L	H
OUT	H	L
Brake	H	H

*5 End sensor



IC312 Main Micon (CXP80524-075Q)

This Micon generally controls the operation of the equipment while exchanging data with the display micon (IC701) and mechanism/servo micon (IC311) in serial communications, including the DAT signal processor (IC307), digital filter (IC363) and other IC.

Pin No.	Pin Name	I/O	Connected to	Description
1		O		Not in use
2	<u>L_MUTE</u>	O	Line Out	Line Mute (Active "L")
3		O		Not in use
4		O		Not in use
5	<u>WRT</u>	O	Clock IC	Write request (Active "L")
6	<u>RD</u>	O	Clock IC	Read request (Active "L")
7-10	<u>ADRS_3-0</u>	O	Clock IC	Address 3-0 (Address BUS)
11-14	<u>DATA_7-4</u>	I/O		DATA 7-4 (DATA BUS). Not in use with the equipment
15-18	<u>DATA_3-0</u>	I/O	Clock IC	DATA 3-0 (DATA BUS)
19	<u>ATT_EXT</u>	O	CXD1136Q	Fade attenuator ck externally selected (Active "L")
20	<u>DIG/ANA</u>	O	CXD1136Q	Fade In/Out switching for DIG ("L")/ANA ("H")
21	<u>REC/PB</u>	O	CXD1136Q	Fade In/Out REC switching for ("L")/PB ("H")
22	<u>ATT_CK</u>	O	CXD1136Q	Clock for fade In/Out
23	<u>DTR</u>	O	CXD2601AQ	Audio use ("H")/Data Recorder use ("L"). Becomes "L" in after-recording and searching.
24	<u>OPT/COA</u>	O	Digital I/O	Switching for Optical ("L")/Coaxial ("H")
25	<u>FS32</u>	O	1Bit DAC	"H" upon Fs = 32kHz. "L" for others.
26	<u>RAM_SEL</u>	O		Not in use
27	<u>DISP_REQ</u>	O	Display Micon	Request for communication with the Display Micon ("L" Active)
28	<u>SD_SEL</u>	O	CXD2601AQ	Request for communication with CXD2601 ("L" Active)
29	<u>SRV_REQ</u>	O	Mechanism Micon	Request for communication with the Mechanism Micon ("L" Active)
30	<u>CLOCK_SEL</u>	O	Clock IC	Clock IC chip selected
31	<u>MP</u>	I		Microprocessor mode selected (fixed at "L" with the equipment)
32	<u>RST</u>	I		System Reset ("L" Active)
33	V _{ss}	—		Power terminal (GND)
34	<u>XTAL</u>	O		System Clock Output (Not in use)
35	<u>EXTAL</u>	I	CXD2601AQ	System Clock Input (9.048 MHz)
36	<u>DISP_ACK</u>	I	Display Micon	ACKnowledge (Active "L")
37	<u>DISP_DT_I</u>	I	Display Micon	Serial Input
38	<u>DISP_DT_O</u>	O	Display Micon	Serial Output
39	<u>DISP_CK</u>	I	Display Micon	Serial clock
40	<u>SBSY</u>	I	CXD2601AQ	Subcode sync
41	<u>SR_DT_IN</u>	I	}CXD2601AQ & Mechanism Micon	Serial Data In
42	<u>SR_DT_OUT</u>	O		Serial Data Out
43	<u>SR_CK</u>	I/O		Serial clock (In/Out) to Sub Code Interface
44	A _{Vss}	—		GND for A/D
45	A _{Vref}	—		Reference Voltage for A/D (+5 V)
46	A _{Vdd}	—		Power Supply for A/D (+5 V)
47		I		Not in use
48		I		Not in use
49	<u>BUSY</u>	I	Mechanism Micon	Mechanism servo micon Busy (Active "L")
50	<u>AU_BUS_IN</u>	I	Audio Bus	Not in use

Pin No.	Pin Name	I/O	Connected to	Description
51	TM_IN	I	Clock IC	TM_OUT for clock IC
52	MUT_MON	I	CXD2601AQ	Mute monitor (Active "H")
53	LVL_SYNC	I	Audio Block	Start ID is written by entering Level Sync Input audio.
54		I		Not in use
55	TRQ_TEST	I	Pull-up	Not in use
56	NO_CAS_TEST	I	Pull-up	Not in use
57	TIME_24/12	I	Pull-up	Time indication "H": 12 hours (AM, PM) "L": 24 hours display
58	DATE_ORDER	I	Pull-up	Order of DATA display "H": Year, month and day "L": Month, day and year
59-62	AF_3-0	I	Pull-up	Not in use
63		O	Pull-up	Not in use
64	L_MUTE	O		Line Mute (Active "L"). Not in use with the equipment (Not in use)
65	TR_MUTE	O	Line Out	Transistor Mute (Active "L")
66	MUTE_1136	O		Not in use
67	MUTE_2601	O	CXD2601AQ	Mute for CXD2601 (Active "H")
68	A_D_PWR_DWN	O	CS5339	A/D Converter Power Down Mode (Active "H"). The AD converter is turned OFF upon digital input/output.
69	ER_MON	I	CXD2601AQ	Error Monitor (Data Valid)
70	TEST	I	Pull-up	Test Mode (Active "L")
71	POW_DN	I	+5 V	Not in use
72	Vdd	—		Power terminal (+5V)
73	Vss	—		Power terminal (GND)
74		—		Not in use
75	D_F_ATT	O	CXD2560M	Communication line (Serial Data) with Digital Filter
76	D_F_SHIFT	O	CXD2560M	Communication line with Digital Filter (Shift Clock; shifted by ↓ and taken in by ↑)
77	D_F_LATCH	O	CXD2560M	Communication line (Latch Pulse) with Digital Filter
78, 79	MODE2, 1	O		Mode Control of the RF amplifier (Not in use)
80		O		Not in use

IC362 Pulse D/A Converter (CXD2561M-1)

The Converter is a small, high-performance 1 bit pulse D/A converter that provides 4 asymmetrical PWM wave outputs in each ch of L/R.

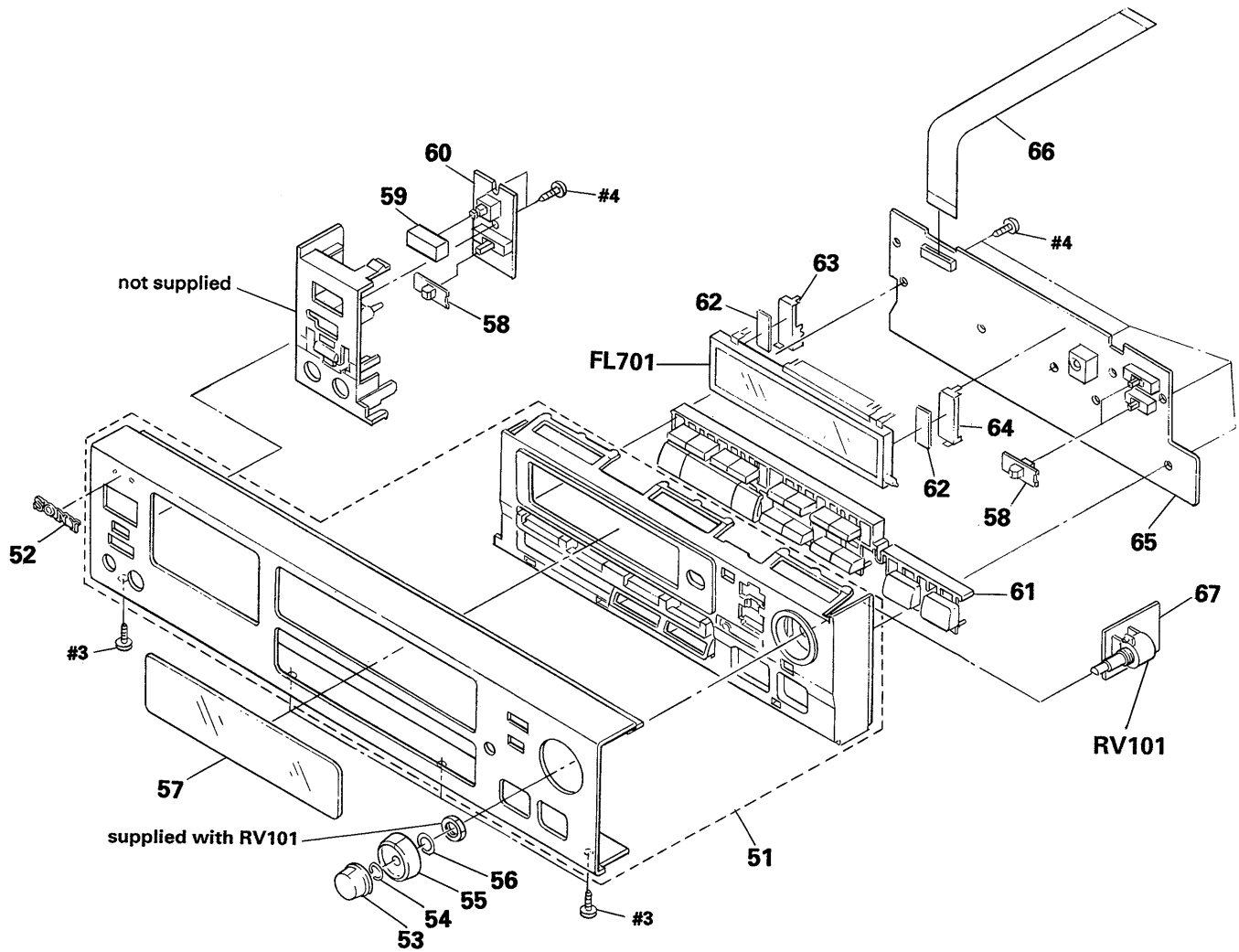
Pin No.	Pin Name	I/O	Description
1	DV _{DD}	—	Digital power supply
2	TEST	I	Test terminal. Normally fixed at "L."
3	INIT	I	Again synchronized at the buildup edge of the signal.
4	LRCKI	I	LRCK input
5	DRI	I	Rch data input
6	DLI	I	Lch data input
7	BCKI	I	BCK input
8	DV _{SS}	—	Digital GND
9	512Fs	O	512Fs output
10	XV _{SS}	—	Clock GND
11	XIN	I	X'tal oscillator input terminal (512Fs)
12	XOUT	O	X'tal oscillator output terminal
13	XV _{DD}	—	Clock power supply
14	V _{SUB}	—	Substrate. Connected to GND.
15	AV _{DDR}	—	Analog power supply
16	R1 (+)	O	Rch PLM output 1 (normal phase)
17	AV _{SSR}	—	Analog GND
18	R1 (-)	O	Rch PLM output 1 (reverse phase)
19	R2 (+)	O	Rch PLM output 2 (normal phase)
20	R2 (-)	O	Rch PLM output 2 (reverse phase)
21	AV _{DD}	—	Analog power supply
22	AV _{SS}	—	Analog GND
23	L2 (-)	O	Lch PLM output 2 (reverse phase)
24	L2 (+)	O	Lch PLM output 2 (normal phase)
25	L1 (-)	O	Lch PLM output 1 (reverse phase)
26	AV _{SSL}	—	Analog GND
27	L1 (+)	O	Lch PLM output 1 (normal phase)
28	AV _{DDL}	—	Analog power supply

IC701 Display Micon (CXP5058H-660Q)

The Micon controls key input, FL tube display, remote control signal input, level meter (IC702) and EEPROM (IC703) according to instructions from the Main Micon (IC312).

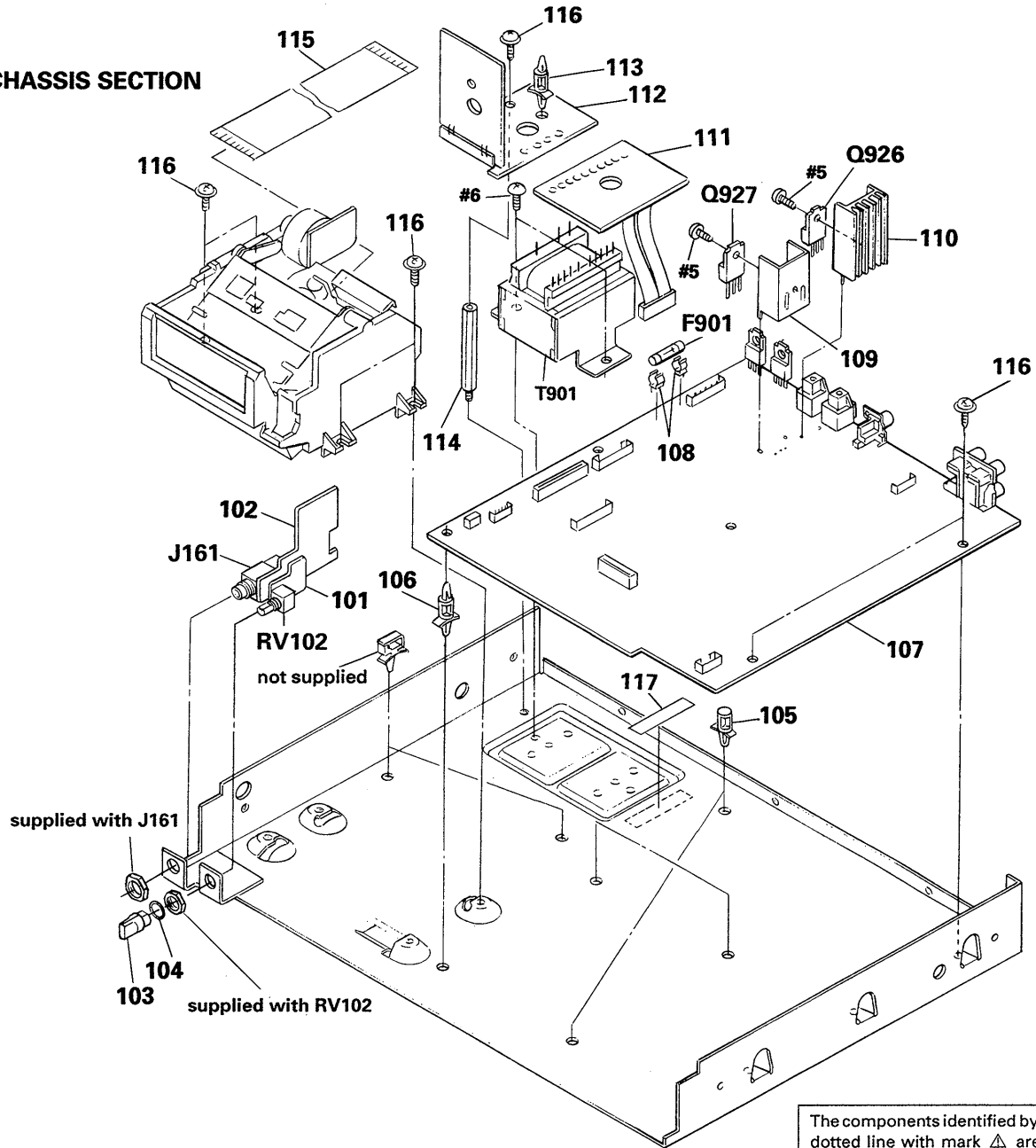
Pin No.	Pin Name	I/O	Connected to	Description
1-18	e_-v_SEG	O	FL tube FL701	FL Segment 'e'-'v'
19-28	10_-1_G	O	FL tube FL701	FL Grid #10-#1
29	DSP_REQ	I	MAIN Micon	Communication request ("L" Active)
30	XTAL	—	Ceramic oscillator	
31	EXTAL	I	Ceramic oscillator	4.19MHz ceramic oscillator
32	RST	I		System Reset ("L" active)
33	NC	—		Not in use
34	Vdd	I		Power terminal (+5 V)
35-42	AD_0-7	I	Panel switch	Key input A/D converter input #0 - #7
43	NC	—		Not in use
44	DISP_CK	O	MAIN Micon	Shift clock
45	SO	O	MAIN Micon	Serial data OUT
46	SI	I	MAIN Micon	Serial data IN
47	DSP_ACK	O	MAIN Micon	Acknowledge (Active "L")
48	REC_MODE	I	S703	REC MODE "H": Standard, "L": Long
49	TEST	I	Pull-down	Test mode (Active "L")
50	CLOCK_SET	I		Not in use
51-54	LVL_DT_0-3	I/O	Level Meter IC	Level Meter Data 0-3
55, 56	LVL_ADRS_0, 1	O	Level Meter IC	Level Meter Data 0, 1
57	LVL_RD	O	Level Meter IC	Level Meter Read Mode (Active "L")
58	LVL_WR	O	Level Meter IC	Level Meter Write Mode (Active "L")
59	LVL_SEL	O	Level Meter IC	Level Meter IC Select (Active "L")
60	RM_SEL	O	Open	External remote controller selected (not in use)
61	PY2	I	Pull-up	Not in use
62	RMC	I	Open	Not in use
63	RMC_CAT	I	Pull-down	Remote control category "L": DAT1, "H": DAT2. Fixed at "L" with the equipment.
64	TR_MUTE	I	IC431	Level meter mute (Active "L")
65	BUSY	I	EEPROM	BUSY signal (Active "L")
66	ROM_DT_IN	I	EEPROM	Data input
67	ROM_DT_OUT	O	EEPROM	Data output
68	SHIFT_CK	O	EEPROM	Shift clock
69	CE	O	EEPROM	Chip enable
70	DTC/XPCM	I	Pull-up	Equipment model discrimination input. Fixed at "H" with the equipment
71	Vss	I		Power terminal (GND)
72	TX	—	Open	Not in use
73	NC	—	Open	Not in use
74	TEX	—	+5 V	Not in use
75	Vref	I	+5 V	Analog board reference voltage
76	Vfdp	I	-25 V	FL display tube driving voltage
77-80	a_-d_SEG	O	FL tube	FL Segment 'a'-'d'

5-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	A-2004-170-A	PANEL ASSY, FRONT (US, Canadian)		* 60	1-647-403-11	POWER SW BOARD	
51	A-2004-249-A	PANEL ASSY, FRONT (AEP, UK)		61	3-386-568-01	BUTTON	
52	4-942-568-01	EMBLEM (NO. 5), SONY		62	9-911-839-XX	CUSHION	
53	3-382-635-01	KNOB (REC-R)		* 63	4-922-524-01	HOLDER (LEFT)	
54	3-356-957-01	SPRING		* 64	4-922-523-01	HOLDER (RIGHT)	
55	3-382-634-01	KNOB (REC-L)		* 65	A-2006-879-A	DISPLAY BOARD, COMPLETE	
56	3-382-627-01	SPRING, RING		66	1-751-031-11	WIRE (FLAT TYPE) (17 CORE)	
57	3-386-572-01	WINDOW (FL TUBE)		* 67	1-647-404-11	REC VOL BOARD	
58	3-382-651-01	KNOB		FL701	1-517-111-11	INDICATOR TUBE, FLUORESCENT	
59	4-922-921-01	BUTTON (POWER)		RV101	1-241-937-11	RES, VAR, CARBON 20K/20K (REC LEVEL)	

5-3. CHASSIS SECTION

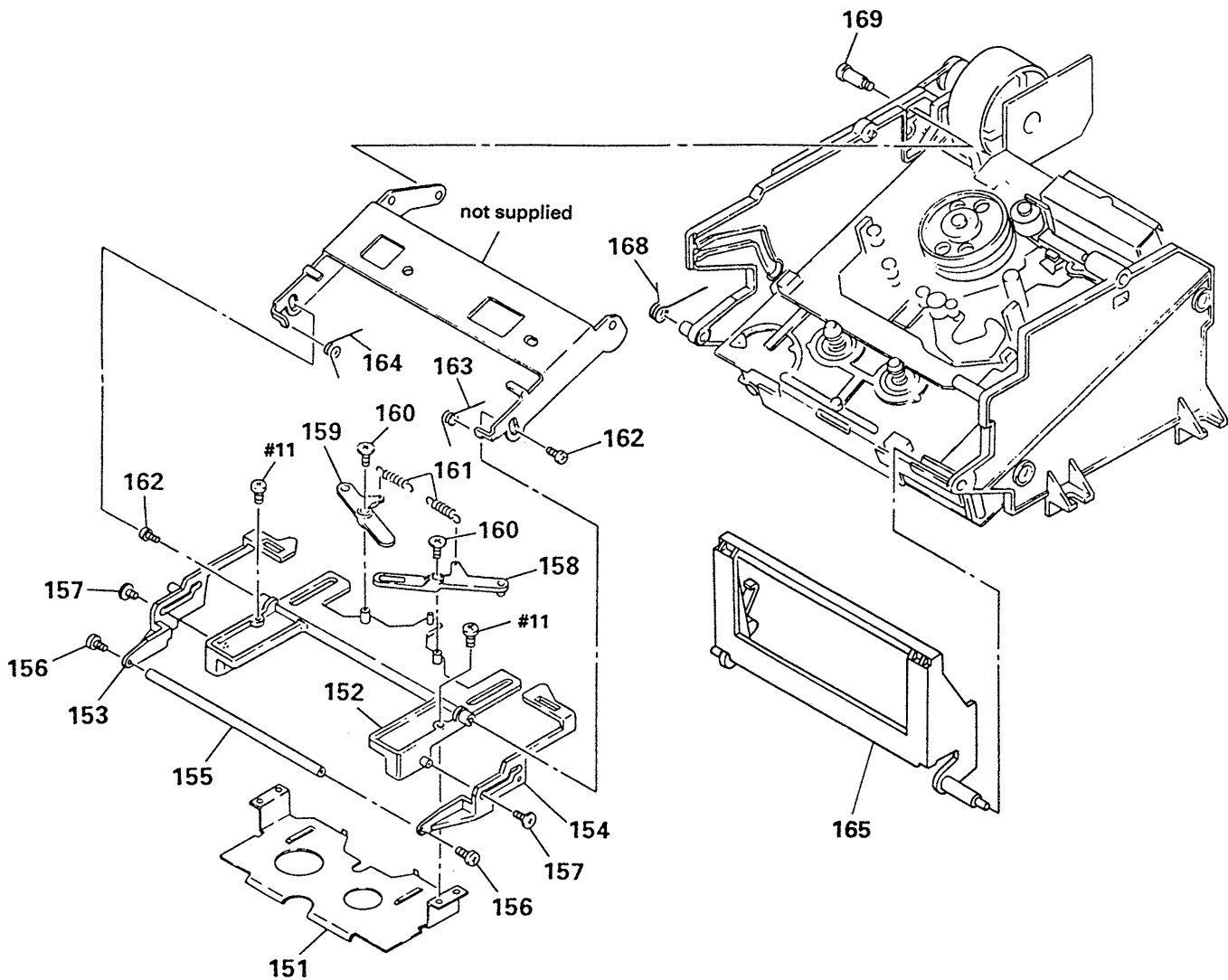


The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

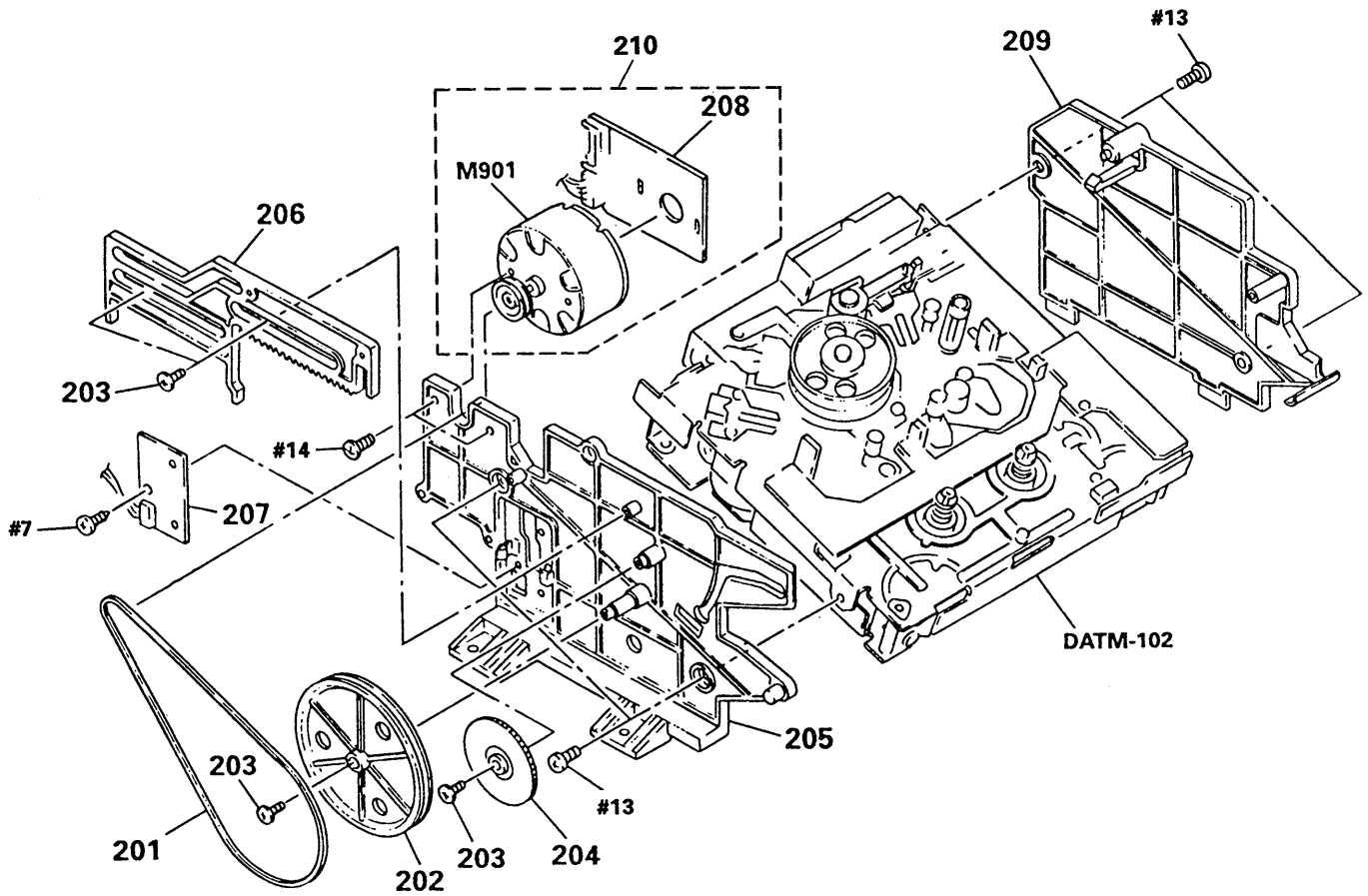
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* 101	1-647-406-11	HEADPHONE VOL BOARD		* 112	1-647-408-11	PRIMARY BOARD	
* 102	1-647-405-11	HEADPHONE JACK BOARD		* 113	3-346-265-11	HOLDER, PC BOARD	
103	3-354-931-01	KNOB (DIA. 10)		* 114	3-387-146-02	SUPPORT (TRANSFORMER)	
104	3-356-957-01	SPRING (SUS), RING		115	1-590-915-11	WIRE, FLAT TYPE (30 CORE)	
* 105	3-670-570-00	SPACER, SUPPORT		116	4-886-821-11	SCREW, S TIGHT, +PTWH 3X6	
106	4-924-098-01	HOLDER, PC BOARD		117	3-703-044-26	LABEL, CAUTION (US, Canadian)	
* 107	A-2006-882-A	MAIN BOARD, COMPLETE		Δ F901	1-532-286-11	FUSE, TIME-LAG (AEP, UK)	
* 108	1-533-213-31	HOLDER, FUSE		Δ F901	1-532-744-11	FUSE, GLASS TUBE (US, Canadian)	
* 109	4-880-403-11	HEAT SINK		J161	1-565-327-11	JACK, LARGE TYPE 1P (HEADPHONES)	
* 110	4-363-146-71	HEAT SINK, V. OUT		RV102	1-241-537-11	RES, VAR, CARBON 20K/20K (HEADPHONES LEVEL)	
* 111	1-647-409-11	POWER RELAY BOARD		Δ T901	1-423-558-11	TRANSFORMER, POWER (US, Canadian)	
				Δ T901	1-423-559-11	TRANSFORMER, POWER (AEP, UK)	

5-4. MECHANISM SECTION 1



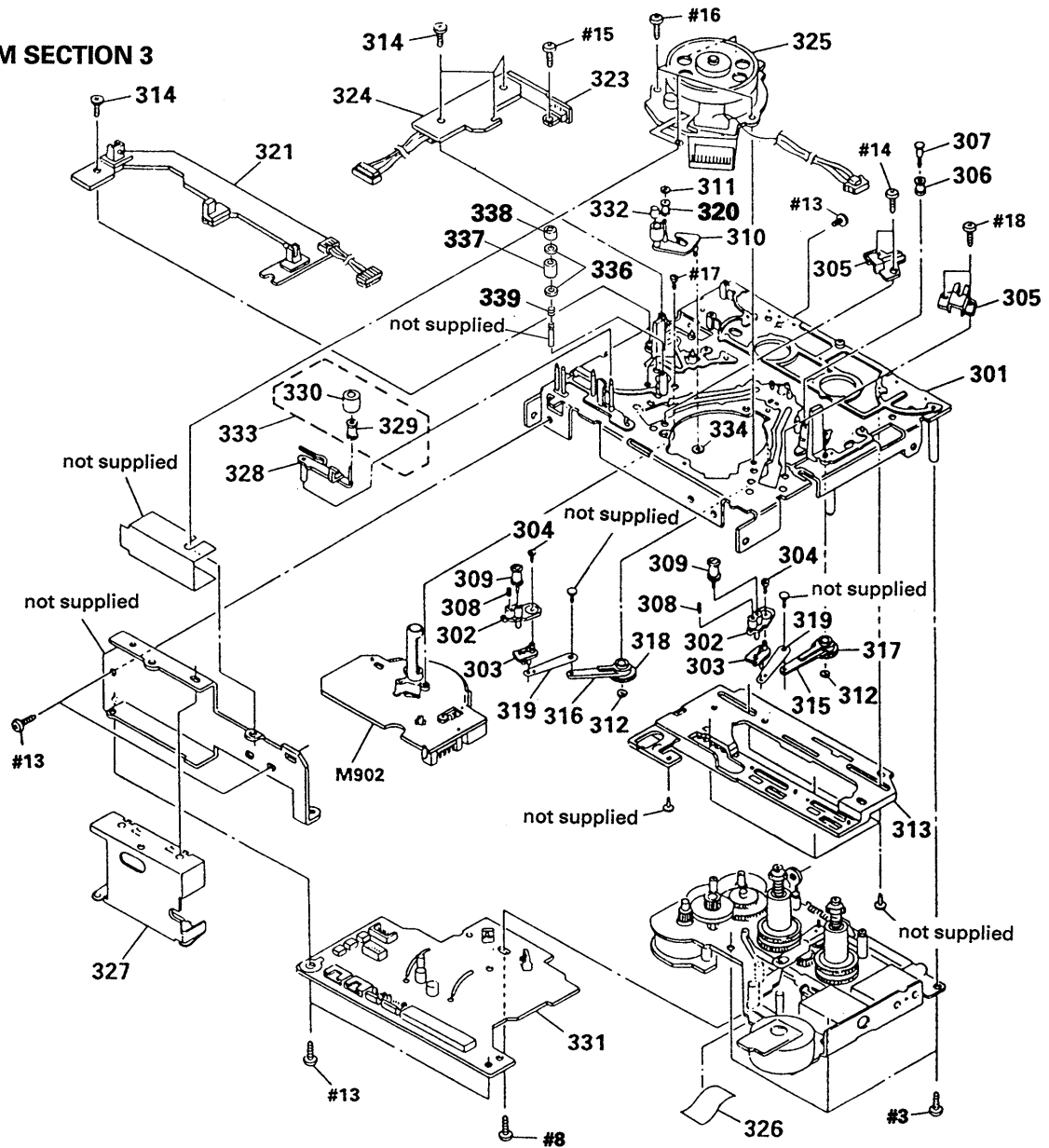
Ref.No.	Part No.	Description	Remarks	Ref.No.	Part No.	Description	Remarks
151	3-373-224-01	HOLDER (LOWER)		160	2-623-756-01	SCREW, (B1.7X3), TAPPING	
152	3-373-237-03	HOLDER (UPPER), CASSETTE		161	3-632-859-00	SPRING, BRAKE LEVER RETURN	
153	3-373-223-01	SLIDER (L)		162	3-318-203-61	SCREW (B1.7X4), TAPPING	
154	3-373-222-01	SLIDER (R)		163	3-373-215-01	SPRING (R), TORSION	
* 155	3-373-217-01	SHAFT (JOINT)		164	3-373-216-01	SPRING (L), TORSION	
156	3-345-648-01	SCREW (M1.4X3.0), TOOTHED LOCK		165	3-382-648-01	HOLDER (WINDOW)	
157	3-318-201-11	SCREW (B) (1.4X3), TAPPING		168	3-373-212-01	SPRING (CASSETTE)	
158	3-373-218-01	LEVER (R)		169	4-931-471-01	SCREW (STEP)	
159	3-373-219-01	LEVER (L)					

5-5. MECHANISM SECTION 2



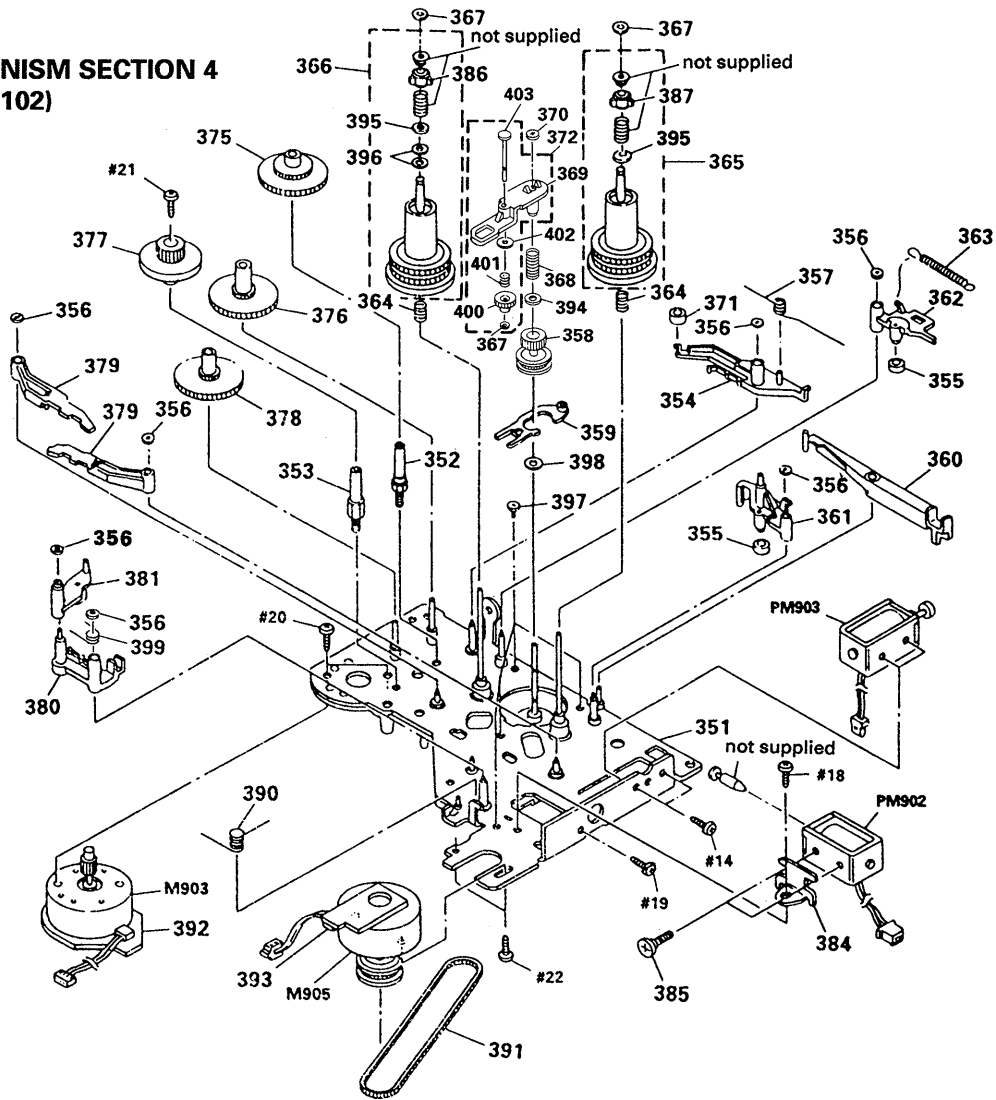
Ref.No.	Part No.	Description	Remarks	Ref.No.	Part No.	Description	Remarks
201	4-931-470-01	BELT (DRIVING)		* 207	1-641-487-11	SW BOARD	
202	3-373-214-01	PULLEY		* 208	1-641-486-11	MOTOR BOARD	
203	2-623-756-01	SCREW, (B1.7X3), TAPPING		* 209	3-373-235-01	CHASSIS (R)	
204	3-373-213-01	GEAR, DRIVING		210	A-2003-910-A	MOTOR ASSY, CASSETTE	
205	3-373-234-01	CHASSIS (L)		M901	1-541-632-11	MOTOR, DC	
206	3-373-221-01	SLIDER (RACK)					

**5-6. MECHANISM SECTION 3
(DATM-102)**



Ref.No.	Part No.	Description	Remarks	Ref.No.	Part No.	Description	Remarks
* 301	3-368-462-04	CHASSIS (OUTSERT), MECHANICAL		320	3-384-243-01	GUIDE (T3), ROLLER	
* 302	3-368-390-01	BASE (#1 GUIDE)		* 321	1-639-305-11	TOP END SENSOR BOARD	
303	3-368-409-01	JOINT (#1 GUIDE)		* 323	1-639-301-11	RGN SW BOARD	
304	3-368-413-01	SCREW (1.4), +P TAPPING (B)		* 324	1-639-306-11	CAM SLIDER BOARD	
* 305	3-368-442-01	CATCHER		325	8-848-567-11	DRUM ASSY DOU-03A	
306	3-368-399-01	GUIDE, ROLLER		326	9-911-835-XX	SPACER	
307	3-368-428-01	SHAFT (ROLLER GUIDE)		* 327	A-2001-587-A	RF COMPLETE ASSY	
308	3-368-436-01	SPRING (#1 GUIDE), COMPRESSION		328	3-368-459-01	LEVER (CLEANER)	
309	X-3337-643-1	GUIDE (RIC) ASSY, ROLLER		329	3-353-812-01	COLLAR (ROLLER)	
310	X-3363-025-1	PINCH LEVER ASSY		330	3-352-518-01	ROLLER (CLEANER)	
311	3-315-384-31	WASHER, STOPPER		* 331	A-2056-488-A	DRUM DRIVE BOARD, COMPLETE	
312	3-368-398-01	BUSHING		332	3-337-626-01	CAP, PINCH ROLLER	
* 313	A-2003-708-A	SLIDER ASSY, CAM		333	X-3337-655-1	ROLLER (CLEANER) ASSY	
314	3-372-761-01	SCREW (M1.7X4), TAPPING		334	3-321-813-01	WASHER, COTTER POLYETHYLENE	
315	3-368-427-01	LEVER (LOAD-T)		336	3-337-677-01	FLANGE	
316	3-368-426-01	LEVER (LOAD-S)		337	3-337-676-01	GUIDE, FIXED	
317	3-368-444-01	GEAR (LOAD-T)		338	3-337-605-01	NUT, ADJUSTMENT	
318	3-368-443-01	GEAR (LOAD-S)		339	3-389-294-01	SPRING (T2 300G), COMPRESSION	
319	3-368-415-01	SHAFT (LOAD LEVER JOINT)		M902	8-835-361-01	MOTOR, DC U-17B (CAPSTAN)	

**5-7. MECHANISM SECTION 4
(DATM-102)**



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* 351	A-2003-857-A	CHASSIS (REEL) ASSY		379	X-3363-024-1	LEVER (BT) ASSY	
352	3-368-420-04	SHAFT (CAM DRIVE GEAR C)		* 380	3-368-451-01	LEVER (BT SOLENOID)	
353	3-368-419-04	SHAFT (CAM DRIVE GEAR D)		* 381	3-368-454-01	LEVER (BT SELECTION)	
* 354	3-368-455-01	LEVER (GEAR LOCK)		* 384	3-368-416-01	BRACKET (B.T SOLENOID)	
355	3-368-418-01	TUBE (BREAK)		385	3-368-423-01	SCREW (M2.6), STEP	
356	3-368-398-01	BUSHING		386	2-623-736-01	CLAW (C) (LEFT), REEL	
357	3-368-430-01	SPRING (GEAR LOCK)		387	2-623-752-01	CLAW (C) (RIGHT), REEL	
358	X-3363-022-1	GEAR (REEL DRIVE) ASSY		390	3-368-431-01	SPRING (B.T SOLENOID)	
* 359	3-368-411-01	SLIDER (REEL LOCK)		391	3-368-417-01	BELT (170TN10-1.0T), TIMING	
* 360	3-368-453-01	LEVER (BRAKE SOLENOID)		* 392	1-639-303-11	CAM MOTOR BOARD	
* 361	3-368-447-01	LEVER (BRAKE S)		* 393	1-639-304-11	REEL MOTOR BOARD	
* 362	3-368-446-01	LEVER (BRAKE T)		394	3-368-422-11	POLY-SLIDER(DIA. 5.5-DIA. 1.5)	
363	3-368-438-01	SPRING (BREAK), TENSION		395	3-701-443-11	WASHER	
364	3-368-432-01	SPRING (FF/REW), COMPRESSION		396	3-701-443-21	WASHER, 5 DIA.	
365	A-2003-709-A	TABLE (S) ASSY, REEL		397	2-623-756-01	SCREW, (B1.7X3), TAPPING	
366	A-2003-710-B	TABLE (T) ASSY, REEL		398	3-701-436-01	WASHER, 1.6	
367	3-578-224-00	WASHER		399	3-383-478-01	SPRING (B.T LEVER RETURN)	
368	3-368-435-01	SPRING (FR LEVER), COMPRESSION		400	3-368-406-01	GEAR (GOOSENECK)	
369	3-368-450-01	LEVER (F/R)		401	3-368-437-01	SPRING(GEAR NECK), COMPRESSION	
370	3-315-384-31	WASHER, STOPPER		402	3-368-422-01	POLY-SLIDER(DIA. 5.5-DIA. 1.5)	
371	3-377-332-01	TUBE (BREAK2)		403	3-375-210-01	SHAFT (GOOSENECK GEAR)	
372	X-3364-581-2	LEVER (F/R) ASSY		M903	X-3363-109-1	MOTOR (CAM) ASSY	
375	3-368-421-01	GEAR (CAM DRIVE C)		M905	X-3363-110-2	MOTOR (REEL) ASSY	
376	3-373-039-01	GEAR (CAM DRIVE B)		PM902	1-454-536-11	SOLENOID, PLUNGER (BT CONTROL)	
377	3-368-403-01	GEAR (CAM DRIVE D)		PM903	1-454-535-11	SOLENOID, PLUNGER (BRAKE)	
378	3-368-402-01	GEAR (CAM DRIVE A, B)					

SECTION 6

ELECTRICAL PARTS LIST

NOTE:

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

Les composants identifiés par une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

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

CAM MOTOR

CAM SLIDER

DISPLAY

Ref.No.	Part No.	Description	Remarks	Ref.No.	Part No.	Description	Remarks
*	1-639-303-11	CAM MOTOR BOARD ***** < CAPACITOR >				< FILTER >	
	C06	1-163-077-00 CERAMIC CHIP	0.1uF 10% 25V *****	FL701	1-517-111-11	INDICATOR TUBE, FLUORESCENT < IC >	
*	1-639-306-11	CAM SLIDER BOARD ***** < JUMPER RESISTOR >		IC701	8-752-840-79	IC CXP5058H-660Q	
	JW04	1-216-296-00 METAL CHIP	0 5% 1/8W	IC702	8-759-995-09	IC MSM6338RS	
	JW05	1-216-296-00 METAL CHIP	0 5% 1/8W	IC703	8-752-330-61	IC CXK1013P	
		< SWITCH >		IC704	8-749-922-36	IC GP1U50XB	
	SW1	1-570-953-11 SWITCH, PUSH (1 KEY) (STOP DET)				< TRANSISTOR >	
	SW2	1-570-953-11 SWITCH, PUSH (1 KEY) (FWD DET)		Q701	8-729-902-11	TRANSISTOR 2SC2021	
*	A-2006-879-A	DISPLAY BOARD, COMPLETE ***** < CAPACITOR >		Q702	8-729-902-11	TRANSISTOR 2SC2021	
	C701	1-161-379-00 CERAMIC	0.01uF 20% 25V	Q703	8-729-900-45	TRANSISTOR DTC114EF	
	C702	1-161-379-00 CERAMIC	0.01uF 20% 25V			< RESISTOR >	
	C703	1-124-584-00 ELECT	100uF 20% 10V	R701	1-249-441-11	CARBON 100K 5% 1/4W	
	C704	1-161-379-00 CERAMIC	0.01uF 20% 25V	R702	1-249-441-11	CARBON 100K 5% 1/4W	
	C705	1-161-379-00 CERAMIC	0.01uF 20% 25V	R706	1-249-427-11	CARBON 6.8K 5% 1/4W	
	C706	1-161-379-00 CERAMIC	0.01uF 20% 25V	R707	1-249-432-11	CARBON 18K 5% 1/4W	
		< CONNECTOR >		R713	1-249-429-11	CARBON 10K 5% 1/4W	
	CN751	1-568-860-11 SOCKET, CONNECTOR 17P < COMPOSITION CIRCUIT BLOCK >		R721	1-249-429-11	CARBON 10K 5% 1/4W	
	CP701	1-239-598-11 COMPOSITION CIRCUIT BLOCK		R726	1-249-429-11	CARBON 10K 5% 1/4W	
	CP702	1-239-598-11 COMPOSITION CIRCUIT BLOCK		R727	1-249-422-11	CARBON 2.7K 5% 1/4W	
	CP703	1-239-598-11 COMPOSITION CIRCUIT BLOCK		R728	1-249-424-11	CARBON 3.9K 5% 1/4W	
	CP704	1-239-598-11 COMPOSITION CIRCUIT BLOCK		R729	1-249-427-11	CARBON 6.8K 5% 1/4W	
				R730	1-249-432-11	CARBON 18K 5% 1/4W	
				R731	1-249-429-11	CARBON 10K 5% 1/4W	
				R732	1-249-422-11	CARBON 2.7K 5% 1/4W	
				R733	1-249-424-11	CARBON 3.9K 5% 1/4W	
				R734	1-249-429-11	CARBON 10K 5% 1/4W	
				R735	1-249-422-11	CARBON 2.7K 5% 1/4W	
				R736	1-249-424-11	CARBON 3.9K 5% 1/4W	
				R737	1-249-427-11	CARBON 6.8K 5% 1/4W	
				R738	1-249-432-11	CARBON 18K 5% 1/4W	
				R739	1-249-429-11	CARBON 10K 5% 1/4W	
				R740	1-249-422-11	CARBON 2.7K 5% 1/4W	
				R741	1-249-424-11	CARBON 3.9K 5% 1/4W	

DISPLAY**POWER SW****REC VOL****HEADPHONE JACK****HEADPHONE VOL**

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R742	1-249-427-11	CARBON	6.8K 5% 1/4W	*	1-647-404-11	REC VOL BOARD	
R743	1-249-432-11	CARBON	18K 5% 1/4W			*****	
R744	1-249-437-11	CARBON	47K 5% 1/4W			< CONNECTOR >	
R745	1-249-437-11	CARBON	47K 5% 1/4W				
R746	1-249-437-11	CARBON	47K 5% 1/4W				
R747	1-249-437-11	CARBON	47K 5% 1/4W	* CN102	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P	
R750	1-249-437-11	CARBON	47K 5% 1/4W			< RESISTOR >	
R755	1-249-437-11	CARBON	47K 5% 1/4W				
R758	1-249-409-11	CARBON	220 5% 1/4W	R101	1-249-434-11	CARBON	27K 5% 1/4W
R791	1-247-752-11	CARBON	1K 5% 1/2W	R201	1-249-434-11	CARBON	27K 5% 1/4W
R799	1-249-429-11	CARBON	10K 5% 1/4W			< VARIABLE RESISTOR >	
		< SWITCH >		RV101	1-241-937-11	RES, VAR, CARBON 20K/20K (REC LEVEL)	
S703	1-571-520-11	SWITCH, SLIDE (INPUT ANALOG-OPT-COAXIAL)				*****	
S704	1-554-303-21	SWITCH, TACTILE (COUNTER MODE)		*	1-647-405-11	HEADPHONE JACK BOARD	
S705	1-570-974-11	SWITCH, SLIDE (REC MODE)				*****	
S723	1-554-303-21	SWITCH, TACTILE (START ID AUTO)				< CAPACITOR >	
S724	1-554-303-21	SWITCH, TACTILE (START ID RENUMBER)		C180	1-162-290-31	CERAMIC	470PF 10% 50V
S725	1-554-303-21	SWITCH, TACTILE (START ID WRITE)		C280	1-162-290-31	CERAMIC	470PF 10% 50V
S726	1-554-303-21	SWITCH, TACTILE (START ID ERASE)		C451	1-126-024-11	ELECT	220uF 20% 25V
S727	1-554-303-21	SWITCH, TACTILE (END ID WRITE)		C452	1-126-024-11	ELECT	220uF 20% 25V
S728	1-554-303-21	SWITCH, TACTILE (SKIP ID WRITE)				< IC >	
S729	1-554-303-21	SWITCH, TACTILE (SKIP ID ERASE)		IC401	8-759-634-50	IC M5218AL	
S730	1-554-303-21	SWITCH, TACTILE (END ID ERASE)				< JACK >	
S731	1-554-303-21	SWITCH, TACTILE (■)		J161	1-565-327-11	JACK, LARGE TYPE 1P (HEADPHONES)	
S732	1-554-303-21	SWITCH, TACTILE (►)				< RESISTOR >	
S733	1-554-303-21	SWITCH, TACTILE ([◀◀ AMS)		R128	1-249-437-11	CARBON	47K 5% 1/4W
S734	1-554-303-21	SWITCH, TACTILE (▶▶] AMS)		R129	1-249-425-11	CARBON	4.7K 5% 1/4W
S735	1-554-303-21	SWITCH, TACTILE (◀◀)		R130	1-249-437-11	CARBON	47K 5% 1/4W
S736	1-554-303-21	SWITCH, TACTILE (▶▶)		R131	1-249-409-11	CARBON	220 5% 1/4W
S737	1-554-303-21	SWITCH, TACTILE (● REC)		R228	1-249-437-11	CARBON	47K 5% 1/4W
S738	1-554-303-21	SWITCH, TACTILE (■ PAUSE)		R229	1-249-425-11	CARBON	4.7K 5% 1/4W
S739	1-554-303-21	SWITCH, TACTILE (REC MUTE)		R230	1-249-437-11	CARBON	47K 5% 1/4W
		< VIBRATOR >		R231	1-249-409-11	CARBON	220 5% 1/4W
X701	1-577-359-21	VIBRATOR, CERAMIC (4.19MHz)				*****	
		*****		*	1-647-406-11	HEADPHONE VOL BOARD	
		*****				*****	
		< RESISTOR >				< VARIABLE RESISTOR >	
R704	1-247-858-11	CARBON	13K 5% 1/4W	RV102	1-241-537-11	RES, VAR, CARBON 20K/20K (HEADPHONES LEVEL)	
R705	1-249-432-11	CARBON	18K 5% 1/4W			*****	
		< SWITCH >					
S701	1-571-520-11	SWITCH, SLIDE (TIMER PLAY-OFF-REC)					
S702	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE ☰)					
S740	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER)					

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

MAIN

DRUM DRIVE

Ref. No.	Part No.	Description	Remarks
*	A-2056-488-A	DRUM DRIVE BOARD, COMPLETE *****	
*	3-343-491-01	HOLDER (S SENSOR B)	
*	4-870-539-00	PLATE, GROUND	
< CAPACITOR >			
C01	1-126-176-11	ELECT 220uF	20% 10V
C02	1-126-157-11	ELECT 10uF	20% 16V
C03	1-124-257-00	ELECT 2.2uF	20% 50V
C04	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V
C05	1-164-161-11	CERAMIC CHIP 0.0022uF	10% 100V
C08	1-163-001-11	CERAMIC CHIP 220PF	10% 50V
C21	1-163-001-11	CERAMIC CHIP 220PF	10% 50V
C31	1-163-001-11	CERAMIC CHIP 220PF	10% 50V
C32	1-164-232-11	CERAMIC CHIP 0.01uF	50V
< CONNECTOR >			
* CN01	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P	
* CN02	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P	
* CN03	1-564-338-00	PIN, CONNECTOR 4P	
* CN04	1-564-336-00	PIN, CONNECTOR 2P	
* CN06	1-564-339-00	PIN, CONNECTOR 5P	
CN07	1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P	
* CN08	1-568-872-11	SOCKET, CONNECTOR 30P	
* CN09	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P	
* CN10	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P	
< IC >			
IC01	8-759-107-68	IC CX20115A	
IC02	8-759-502-80	IC LM358M	
IC03	8-759-502-80	IC LM358M	
< JUMPER RESISTOR >			
JW06	1-216-296-00	METAL CHIP 0 5%	1/8W
JW07	1-216-296-00	METAL CHIP 0 5%	1/8W
JW08	1-216-296-00	METAL CHIP 0 5%	1/8W
JW09	1-216-296-00	METAL CHIP 0 5%	1/8W
JW10	1-216-296-00	METAL CHIP 0 5%	1/8W
JW11	1-216-296-00	METAL CHIP 0 5%	1/8W
JW12	1-216-296-00	METAL CHIP 0 5%	1/8W
JW13	1-216-296-00	METAL CHIP 0 5%	1/8W
JW14	1-216-296-00	METAL CHIP 0 5%	1/8W
JW15	1-216-296-00	METAL CHIP 0 5%	1/8W
JW16	1-216-296-00	METAL CHIP 0 5%	1/8W
JW17	1-216-296-00	METAL CHIP 0 5%	1/8W
JW18	1-216-296-00	METAL CHIP 0 5%	1/8W
JW19	1-216-296-00	METAL CHIP 0 5%	1/8W
JW20	1-216-296-00	METAL CHIP 0 5%	1/8W
JW21	1-216-296-00	METAL CHIP 0 5%	1/8W

Ref. No.	Part No.	Description	Remarks
JW22	1-216-296-00	METAL CHIP 0 5%	1/8W
JW23	1-216-296-00	METAL CHIP 0 5%	1/8W
JW24	1-216-296-00	METAL CHIP 0 5%	1/8W
JW25	1-216-296-00	METAL CHIP 0 5%	1/8W
JW26	1-216-296-00	METAL CHIP 0 5%	1/8W
JW27	1-216-296-00	METAL CHIP 0 5%	1/8W
JW28	1-216-296-00	METAL CHIP 0 5%	1/8W
JW29	1-216-296-00	METAL CHIP 0 5%	1/8W
JW30	1-216-296-00	METAL CHIP 0 5%	1/8W
< PHOTO INTERRUPTER >			
PH01	8-719-939-23	DIODE GP-2S09-C	
PH02	8-719-939-23	DIODE GP-2S09-C	
< TRANSISTOR >			
Q01	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q02	8-729-101-07	TRANSISTOR 2SB798-DL	
< RESISTOR >			
R01	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R02	1-216-075-00	METAL CHIP 12K 5%	1/10W
R03	1-216-029-00	METAL CHIP 150 5%	1/10W
R04	1-216-059-00	METAL CHIP 2.7K 5%	1/10W
R05	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R06	1-216-085-00	METAL CHIP 33K 5%	1/10W
R07	1-216-025-00	METAL CHIP 100 5%	1/10W
R08	1-216-049-00	METAL CHIP 1K 5%	1/10W
R09	1-216-073-00	METAL CHIP 10K 5%	1/10W
R10	1-216-073-00	METAL CHIP 10K 5%	1/10W
R11	1-216-073-00	METAL CHIP 10K 5%	1/10W
R12	1-216-089-00	METAL CHIP 47K 5%	1/10W
R13	1-216-073-00	METAL CHIP 10K 5%	1/10W
R14	1-216-037-00	METAL CHIP 330 5%	1/10W
R21	1-216-073-00	METAL CHIP 10K 5%	1/10W
R22	1-216-081-00	METAL CHIP 22K 5%	1/10W
R23	1-216-077-00	METAL CHIP 15K 5%	1/10W
R24	1-216-067-00	METAL CHIP 5.6K 5%	1/10W
R25	1-216-103-00	METAL CHIP 180K 5%	1/10W
R26	1-216-065-00	METAL CHIP 4.7K 5%	1/10W
R31	1-216-073-00	METAL CHIP 10K 5%	1/10W
R32	1-216-081-00	METAL CHIP 22K 5%	1/10W
R35	1-216-103-00	METAL CHIP 180K 5%	1/10W
R36	1-216-065-00	METAL CHIP 4.7K 5%	1/10W

*	A-2006-882-A	MAIN BOARD, COMPLETE *****	
< CAPACITOR >			
C101	1-126-049-11	ELECT 22uF	20% 25V

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

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C102	1-126-023-11	ELECT	100uF 20% 16V	C341	1-162-306-11	CERAMIC	0.01uF 20% 16V
C103	1-136-153-00	FILM	0.01uF 5% 50V	C342	1-124-907-11	ELECT	10uF 20% 50V
C105	1-124-903-11	ELECT	1uF 20% 50V	C343	1-162-306-11	CERAMIC	0.01uF 20% 16V
C110	1-136-755-11	FILM	390PF 5% 630V	C344	1-162-306-11	CERAMIC	0.01uF 20% 16V
C114	1-136-438-11	FILM	270PF 5% 630V	C346	1-162-306-11	CERAMIC	0.01uF 20% 16V
C115	1-136-438-11	FILM	270PF 5% 630V	C347	1-162-294-31	CERAMIC	0.001uF 10% 50V
C117	1-130-475-00	MYLAR	0.0022uF 5% 50V	C348	1-124-907-11	ELECT	10uF 20% 50V
C118	1-130-475-00	MYLAR	0.0022uF 5% 50V	C362	1-124-902-00	ELECT	0.47uF 20% 50V
C120	1-126-023-11	ELECT	100uF 20% 16V	C363	1-124-907-11	ELECT	10uF 20% 50V
C121	1-136-755-11	FILM	390PF 5% 630V	C401	1-136-165-00	FILM	0.1uF 5% 50V
C201	1-126-049-11	ELECT	22uF 20% 25V	C402	1-136-165-00	FILM	0.1uF 5% 50V
C202	1-126-023-11	ELECT	100uF 20% 16V	C405	1-136-165-00	FILM	0.1uF 5% 50V
C203	1-136-153-00	FILM	0.01uF 5% 50V	C406	1-126-058-11	ELECT	4.7uF 20% 63V
C205	1-124-903-11	ELECT	1uF 20% 50V	C407	1-136-153-00	FILM	0.01uF 5% 50V
C210	1-136-755-11	FILM	390PF 5% 630V	C408	1-164-159-11	CERAMIC	0.1uF 50V
C214	1-136-438-11	FILM	270PF 5% 630V	C409	1-126-023-11	ELECT	100uF 20% 16V
C215	1-136-438-11	FILM	270PF 5% 630V	C410	1-126-026-11	ELECT	470uF 20% 25V
C217	1-130-475-00	MYLAR	0.0022uF 5% 50V	C411	1-126-026-11	ELECT	470uF 20% 25V
C218	1-130-475-00	MYLAR	0.0022uF 5% 50V	C412	1-136-165-00	FILM	0.1uF 5% 50V
C220	1-126-023-11	ELECT	100uF 20% 16V	C416	1-136-165-00	FILM	0.1uF 5% 50V
C221	1-136-755-11	FILM	390PF 5% 630V	C417	1-164-159-11	CERAMIC	0.1uF 50V
C300	1-162-294-31	CERAMIC	0.001uF 10% 50V	C418	1-136-165-00	FILM	0.1uF 5% 50V
C301	1-164-159-11	CERAMIC	0.1uF 50V	C419	1-136-165-00	FILM	0.1uF 5% 50V
C302	1-164-159-11	CERAMIC	0.1uF 50V	C420	1-136-165-00	FILM	0.1uF 5% 50V
C303	1-162-211-31	CERAMIC	33PF 5% 50V	C421	1-136-165-00	FILM	0.1uF 5% 50V
C304	1-124-907-11	ELECT	10uF 20% 50V	C422	1-126-023-11	ELECT	100uF 20% 16V
C305	1-162-306-11	CERAMIC	0.01uF 20% 16V	C423	1-126-023-11	ELECT	100uF 20% 16V
C306	1-164-159-11	CERAMIC	0.1uF 50V	C424	1-136-165-00	FILM	0.1uF 5% 50V
C309	1-124-442-00	ELECT	330uF 20% 6.3V	C425	1-126-026-11	ELECT	470uF 20% 25V
C314	1-162-199-31	CERAMIC	10PF 5% 50V	C426	1-136-165-00	FILM	0.1uF 5% 50V
C315	1-162-294-31	CERAMIC	0.001uF 10% 50V	C427	1-136-165-00	FILM	0.1uF 5% 50V
C316	1-162-199-31	CERAMIC	10PF 5% 50V	C428	1-136-165-00	FILM	0.1uF 5% 50V
C317	1-162-201-31	CERAMIC	12PF 5% 50V	C429	1-136-165-00	FILM	0.1uF 5% 50V
C318	1-162-201-31	CERAMIC	12PF 5% 50V	C430	1-124-907-11	ELECT	10uF 20% 50V
C319	1-164-159-11	CERAMIC	0.1uF 50V	C431	1-124-907-11	ELECT	10uF 20% 50V
C326	1-162-201-31	CERAMIC	12PF 5% 50V	C435	1-126-023-11	ELECT	100uF 20% 16V
C327	1-162-201-31	CERAMIC	12PF 5% 50V	C436	1-126-023-11	ELECT	100uF 20% 16V
C328	1-124-903-11	ELECT	1uF 20% 50V	C437	1-126-023-11	ELECT	100uF 20% 16V
C329	1-162-294-31	CERAMIC	0.001uF 10% 50V	C438	1-124-442-00	ELECT	330uF 20% 6.3V
C330	1-162-294-31	CERAMIC	0.001uF 10% 50V	C439	1-164-159-11	CERAMIC	0.1uF 50V
C331	1-162-294-31	CERAMIC	0.001uF 10% 50V	C440	1-124-442-00	ELECT	330uF 20% 6.3V
C332	1-162-293-31	CERAMIC	820PF 10% 50V	C441	1-164-159-11	CERAMIC	0.1uF 50V
C333	1-162-283-31	CERAMIC	120PF 10% 50V	C442	1-164-159-11	CERAMIC	0.1uF 50V
C334	1-161-375-00	CERAMIC	0.0022uF 20% 50V	C446	1-164-159-11	CERAMIC	0.1uF 50V
C335	1-161-375-00	CERAMIC	0.0022uF 20% 50V	C447	1-164-159-11	CERAMIC	0.1uF 50V
C336	1-162-289-31	CERAMIC	390PF 10% 50V	C448	1-164-159-11	CERAMIC	0.1uF 50V
C337	1-161-329-00	CERAMIC	0.0068uF 20% 16V	C449	1-164-159-11	CERAMIC	0.1uF 50V
C338	1-162-306-11	CERAMIC	0.01uF 20% 16V	C450	1-136-165-00	FILM	0.1uF 5% 50V
C339	1-162-306-11	CERAMIC	0.01uF 20% 16V	C451	1-136-165-00	FILM	0.1uF 5% 50V
C340	1-162-290-31	CERAMIC	470PF 10% 50V	C453	1-136-165-00	FILM	0.1uF 5% 50V

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MAIN

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks	
C461	1-164-159-11	CERAMIC	0. 1uF	50V	D306	8-719-200-82	DIODE 11ES2	
C465	1-130-475-00	MYLAR	0. 0022uF	5%	50V	D308	8-719-987-63	DIODE 1N4148M
C466	1-130-475-00	MYLAR	0. 0022uF	5%	50V	D314	8-719-200-82	DIODE 11ES2
C470	1-164-159-11	CERAMIC	0. 1uF	50V	D315	8-719-200-82	DIODE 11ES2	
C471	1-164-159-11	CERAMIC	0. 1uF	50V	D501	8-719-936-68	DIODE KV1260	
C472	1-164-159-11	CERAMIC	0. 1uF	50V	D901	8-719-000-78	DIODE UZL-7L2	
C473	1-164-159-11	CERAMIC	0. 1uF	50V	D905	8-719-312-47	DIODE RBA-406B	
C475	1-164-159-11	CERAMIC	0. 1uF	50V	D907	8-719-200-82	DIODE 11ES2	
C499	1-124-927-11	ELECT	4. 7uF	20%	100V	D908	8-719-200-82	DIODE 11ES2
C501	1-136-153-00	FILM	0. 01uF	5%	50V	D909	8-719-987-63	DIODE 1N4148M
C502	1-162-219-31	CERAMIC	68PF	5%	50V	D910	8-719-933-33	DIODE HZS6A1L
C503	1-162-199-31	CERAMIC	10PF	5%	50V	D911	8-719-200-77	DIODE 10E2N
C504	1-124-907-11	ELECT	10uF	20%	50V	D912	8-719-200-77	DIODE 10E2N
C505	1-162-211-31	CERAMIC	33PF	5%	50V	D913	8-719-200-77	DIODE 10E2N
C506	1-162-199-31	CERAMIC	10PF	5%	50V	D914	8-719-200-77	DIODE 10E2N
C507	1-136-153-00	FILM	0. 01uF	5%	50V	D920	8-719-933-33	DIODE HZS6A1L
C508	1-136-158-00	FILM	0. 027uF	5%	50V	D921	8-719-987-63	DIODE 1N4148M
C515	1-136-169-00	FILM	0. 22uF	5%	50V	D922	8-719-987-63	DIODE 1N4148M
C907	1-124-564-11	ELECT	4700uF	20%	25V		< FUSE >	
C908	1-164-159-11	CERAMIC	0. 1uF	50V				
C909	1-126-926-11	ELECT	1000uF	20%	10V	△F901	1-532-286-00	FUSE, TIME-LAG (AEP, UK)
C912	1-126-926-11	ELECT	1000uF	20%	10V	△F901	1-532-744-11	FUSE, GLASS TUBE (US, Canadian)
C913	1-124-484-11	ELECT	220uF	20%	35V		< IC >	
C914	1-124-484-11	ELECT	220uF	20%	35V			
C916	1-124-122-11	ELECT	100uF	20%	50V			
C917	1-164-159-11	CERAMIC	0. 1uF	50V				
C920	1-124-564-11	ELECT	4700uF	20%	25V	IC301	8-759-917-18	IC SN74HCU04N
C921	1-124-564-11	ELECT	4700uF	20%	25V	IC302	8-759-916-12	IC TC74HC00P
C924	1-126-059-11	ELECT	10uF	20%	50V	IC304	8-759-135-80	IC uPC358C
C926	1-126-027-11	ELECT	1000uF	20%	25V	IC307	8-752-339-43	IC CXD2601AQ
C927	1-126-027-11	ELECT	1000uF	20%	25V	IC310	8-752-337-80	IC CXK58257AM-12L
		< CONNECTOR >				IC311	8-752-840-65	IC CXP80524-073Q
* CN107	1-564-509-11	PLUG, CONNECTOR 6P				IC312	8-752-840-81	IC CXP80524-075Q
* CN301	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P				IC316	8-759-135-80	IC uPC358C
* CN304	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P				IC317	8-759-135-80	IC uPC358C
* CN308	1-564-339-00	PIN, CONNECTOR 5P				IC318	8-759-135-80	IC uPC358C
* CN333	1-564-514-11	PLUG, CONNECTOR 11P				IC319	8-759-633-65	IC M54641L
* CN501	1-564-716-11	PIN, CONNECTOR (SMALL TYPE) 14P				IC320	8-759-633-65	IC M54641L
* CN508	1-568-933-11	SOCKET, CONNECTOR 30P				IC321	8-759-520-90	IC PST572E
* CN571	1-568-836-11	SOCKET, CONNECTOR 17P				IC331	8-749-921-11	IC GP1F32R (OPTICAL IN)
* CN932	1-564-513-11	PLUG, CONNECTOR 10P				IC332	8-749-921-12	IC GP1F32T (OPTICAL OUT)
		< DIODE >				IC356	8-759-145-58	IC uPC4558C
D101	8-719-987-63	DIODE 1N4148M				IC357	8-759-231-53	IC M5F7805
D102	8-719-987-63	DIODE 1N4148M				IC358	8-759-245-79	IC M5F7905
D201	8-719-987-63	DIODE 1N4148M				IC359	8-759-504-36	IC AK5339
D202	8-719-987-63	DIODE 1N4148M				IC360	8-759-145-58	IC uPC4558C
D301	8-719-987-63	DIODE 1N4148M				IC361	8-759-602-83	IC M5238P
D302	8-719-987-63	DIODE 1N4148M				IC362	8-752-351-20	IC CXD2561BM-1
D305	8-719-987-63	DIODE 1N4148M				IC364	8-752-356-03	IC CXD2567M
						IC374	8-759-231-53	IC M5F7805
						IC375	8-759-900-72	IC NE5532P
						IC376	8-759-900-72	IC NE5532P
						IC431	8-759-916-12	IC TC74HC00P
						IC432	8-759-916-29	IC SN74HC74AN
						IC433	8-759-916-29	IC SN74HC74AN

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

Ref.No.	Part No.	Description	Remarks	Ref.No.	Part No.	Description	Remarks
IC901	8-759-145-58	IC uPC4558C		Q442	8-729-119-76	TRANSISTOR 2SA1175-HFE	
		< JACK >		Q501	8-729-200-56	TRANSISTOR 2SK241-GR	
J301	1-569-443-21	JACK, PIN 4P (LINE IN/OUT)		Q502	8-729-200-56	TRANSISTOR 2SK241-GR	
J302	1-568-750-21	JACK, PIN (1P SHIELD TYPE) (COAXIAL IN)		Q503	8-729-620-05	TRANSISTOR 2SC2603-EF	
		< COIL >		Q504	8-729-620-05	TRANSISTOR 2SC2603-EF	
L301	1-410-509-11	INDUCTOR 10uH		Q905	8-729-620-05	TRANSISTOR 2SC2603-EF	
L302	1-410-498-11	INDUCTOR 1. 2uH		Q901	8-729-140-97	TRANSISTOR KSA708	
L303	1-410-509-11	INDUCTOR 10uH		Q902	8-729-620-05	TRANSISTOR 2SC2603-EF	
L304	1-410-509-11	INDUCTOR 10uH		Q903	8-729-209-15	TRANSISTOR 2SD2012	
L305	1-410-515-11	INDUCTOR 33uH		Q904	8-729-620-05	TRANSISTOR 2SC2603-EF	
L306	1-410-509-11	INDUCTOR 10uH		Q905	8-729-209-15	TRANSISTOR 2SD2012	
L307	1-410-509-11	INDUCTOR 10uH		Q906	8-729-119-76	TRANSISTOR 2SA1175-HFE	
L310	1-410-397-21	FERRITE BEAD INDUCTOR		Q920	8-729-224-62	TRANSISTOR 2SK246-GR	
L350	1-410-509-11	INDUCTOR 10uH		Q921	8-729-224-62	TRANSISTOR 2SK246-GR	
L351	1-410-324-11	INDUCTOR 4. 7uH		Q922	8-729-620-05	TRANSISTOR 2SC2603-EF	
L352	1-410-324-11	INDUCTOR 4. 7uH		Q923	8-729-119-76	TRANSISTOR 2SA1175-HFE	
L501	1-424-604-11	COIL		Q924	8-729-620-05	TRANSISTOR 2SC2603-EF	
L502	1-410-509-11	INDUCTOR 10uH		Q925	8-729-119-76	TRANSISTOR 2SA1175-HFE	
		< TRANSISTOR >		Q926	8-729-209-15	TRANSISTOR 2SD2012	
Q302	8-729-801-93	TRANSISTOR 2SD1387		Q927	8-729-924-90	TRANSISTOR 2SB1370-EF	
Q311	8-729-900-80	TRANSISTOR DTC114ES		Q928	8-729-900-80	TRANSISTOR DTC114ES	
Q312	8-729-107-85	TRANSISTOR 2SC3623A-K		Q929	8-729-900-80	TRANSISTOR DTC114ES	
Q313	8-729-900-61	TRANSISTOR DTA114ES				< RESISTOR >	
Q318	8-729-900-80	TRANSISTOR DTC114ES		R103	1-249-423-11	CARBON 3. 3K 5% 1/4W	
Q319	8-729-900-80	TRANSISTOR DTC114ES		R104	1-249-436-11	CARBON 39K 5% 1/4W	
Q320	8-729-927-11	TRANSISTOR 2SA1585SQR		R105	1-247-893-11	CARBON 390K 5% 1/4W	
Q321	8-729-927-12	TRANSISTOR 2SC4115SQR		R106	1-249-399-11	CARBON 33 5% 1/4W	
Q333	8-729-924-90	TRANSISTOR 2SB1370-EF		R107	1-247-854-11	CARBON 9. 1K 5% 1/4W	
Q334	8-729-119-76	TRANSISTOR 2SA1175-HFE		R108	1-247-854-11	CARBON 9. 1K 5% 1/4W	
Q335	8-729-620-05	TRANSISTOR 2SC2603-EF		R109	1-247-854-11	CARBON 9. 1K 5% 1/4W	
Q336	8-729-927-11	TRANSISTOR 2SA1585SQR		R110	1-247-854-11	CARBON 9. 1K 5% 1/4W	
Q337	8-729-927-11	TRANSISTOR 2SA1585SQR		R117	1-249-425-11	CARBON 4. 7K 5% 1/4W	
Q338	8-729-927-12	TRANSISTOR 2SC4115SQR		R118	1-249-425-11	CARBON 4. 7K 5% 1/4W	
Q339	8-729-927-12	TRANSISTOR 2SC4115SQR		R119	1-247-852-11	CARBON 7. 5K 5% 1/4W	
Q340	8-729-620-05	TRANSISTOR 2SC2603-EF		R120	1-247-852-11	CARBON 7. 5K 5% 1/4W	
Q341	8-729-620-05	TRANSISTOR 2SC2603-EF		R122	1-247-834-11	CARBON 1. 3K 5% 1/4W	
Q342	8-729-209-15	TRANSISTOR 2SD2012		R123	1-247-834-11	CARBON 1. 3K 5% 1/4W	
Q432	8-729-900-80	TRANSISTOR DTC114ES		R124	1-249-441-11	CARBON 100K 5% 1/4W	
Q433	8-729-107-85	TRANSISTOR 2SC3623A-K		R125	1-249-408-11	CARBON 180 5% 1/4W	
Q434	8-729-107-85	TRANSISTOR 2SC3623A-K		R126	1-249-429-11	CARBON 10K 5% 1/4W	
Q435	8-729-900-61	TRANSISTOR DTA114ES		R127	1-249-405-11	CARBON 100 5% 1/4W	
Q436	8-729-900-80	TRANSISTOR DTC114ES		R128	1-249-429-11	CARBON 10K 5% 1/4W	
Q437	8-729-900-61	TRANSISTOR DTA114ES		R129	1-249-429-11	CARBON 10K 5% 1/4W	
Q438	8-729-900-80	TRANSISTOR DTC114ES		R134	1-249-408-11	CARBON 180 5% 1/4W	
Q439	8-729-900-80	TRANSISTOR DTC114ES		R150	1-247-893-11	CARBON 390K 5% 1/4W	
Q440	8-729-620-05	TRANSISTOR 2SC2603-EF		R151	1-259-882-11	CARBON 3. 3M 5% 1/4W	
				R152	1-247-903-00	CARBON 1M 5% 1/4W	
				R180	1-249-397-11	CARBON 22 5% 1/4W	
				R203	1-249-423-11	CARBON 3. 3K 5% 1/4W	

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MAIN

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R204	1-249-436-11	CARBON	39K 5% 1/4W	R334	1-249-425-11	CARBON	4.7K 5% 1/4W
R205	1-247-893-11	CARBON	390K 5% 1/4W	R335	1-249-425-11	CARBON	4.7K 5% 1/4W
R206	1-249-399-11	CARBON	33 5% 1/4W	R336	1-249-425-11	CARBON	4.7K 5% 1/4W
R207	1-247-854-11	CARBON	9.1K 5% 1/4W	R337	1-249-429-11	CARBON	10K 5% 1/4W
R208	1-247-854-11	CARBON	9.1K 5% 1/4W	R338	1-249-433-11	CARBON	22K 5% 1/4W
R209	1-247-854-11	CARBON	9.1K 5% 1/4W	R339	1-249-401-11	CARBON	47 5% 1/4W
R210	1-247-854-11	CARBON	9.1K 5% 1/4W	R340	1-247-881-00	CARBON	120K 5% 1/4W
R217	1-249-425-11	CARBON	4.7K 5% 1/4W	R341	1-247-881-00	CARBON	120K 5% 1/4W
R218	1-249-425-11	CARBON	4.7K 5% 1/4W	R342	1-247-881-00	CARBON	120K 5% 1/4W
R219	1-247-852-11	CARBON	7.5K 5% 1/4W	R343	1-247-889-00	CARBON	270K 5% 1/4W
R220	1-247-852-11	CARBON	7.5K 5% 1/4W	R344	1-247-887-00	CARBON	220K 5% 1/4W
R222	1-247-834-11	CARBON	1.3K 5% 1/4W	R345	1-247-887-00	CARBON	220K 5% 1/4W
R223	1-247-834-11	CARBON	1.3K 5% 1/4W	R346	1-249-441-11	CARBON	100K 5% 1/4W
R224	1-249-441-11	CARBON	100K 5% 1/4W	R347	1-249-441-11	CARBON	100K 5% 1/4W
R225	1-249-408-11	CARBON	180 5% 1/4W	R348	1-249-441-11	CARBON	100K 5% 1/4W
R226	1-249-429-11	CARBON	10K 5% 1/4W	R349	1-249-441-11	CARBON	100K 5% 1/4W
R227	1-249-405-11	CARBON	100 5% 1/4W	R350	1-249-435-11	CARBON	33K 5% 1/4W
R228	1-249-429-11	CARBON	10K 5% 1/4W	R351	1-249-435-11	CARBON	33K 5% 1/4W
R229	1-249-429-11	CARBON	10K 5% 1/4W	R352	1-249-441-11	CARBON	100K 5% 1/4W
R234	1-249-408-11	CARBON	180 5% 1/4W	R353	1-249-441-11	CARBON	100K 5% 1/4W
R250	1-247-893-11	CARBON	390K 5% 1/4W	R354	1-249-441-11	CARBON	100K 5% 1/4W
R251	1-259-882-11	CARBON	3.3M 5% 1/4W	R355	1-249-417-11	CARBON	1K 5% 1/4W
R252	1-247-903-00	CARBON	1M 5% 1/4W	R356	1-249-417-11	CARBON	1K 5% 1/4W
R280	1-249-397-11	CARBON	22 5% 1/4W	R357	1-249-405-11	CARBON	100 5% 1/4W
R301	1-249-425-11	CARBON	4.7K 5% 1/4W	R358	1-249-417-11	CARBON	1K 5% 1/4W
R302	1-247-891-00	CARBON	330K 5% 1/4W	R359	1-249-408-11	CARBON	180 5% 1/4W
R303	1-247-804-11	CARBON	75 5% 1/4W	R360	1-249-430-11	CARBON	12K 5% 1/4W
R304	1-249-415-11	CARBON	680 5% 1/4W	R361	1-249-430-11	CARBON	12K 5% 1/4W
R305	1-249-429-11	CARBON	10K 5% 1/4W	R365	1-249-425-11	CARBON	4.7K 5% 1/4W
R306	1-249-417-11	CARBON	1K 5% 1/4W	R366	1-249-441-11	CARBON	100K 5% 1/4W
R307	1-249-437-11	CARBON	47K 5% 1/4W	R367	1-249-417-11	CARBON	1K 5% 1/4W
R308	1-249-429-11	CARBON	10K 5% 1/4W	R368	1-249-417-11	CARBON	1K 5% 1/4W
R310	1-249-417-11	CARBON	1K 5% 1/4W	R369	1-249-405-11	CARBON	100 5% 1/4W
R311	1-249-431-11	CARBON	15K 5% 1/4W	R370	1-249-405-11	CARBON	100 5% 1/4W
R312	1-249-421-11	CARBON	2.2K 5% 1/4W	R371	1-249-417-11	CARBON	1K 5% 1/4W
R313	1-249-421-11	CARBON	2.2K 5% 1/4W	R372	1-249-405-11	CARBON	100 5% 1/4W
R314	1-249-435-11	CARBON	33K 5% 1/4W	R373	1-249-417-11	CARBON	1K 5% 1/4W
R315	1-249-429-11	CARBON	10K 5% 1/4W	R374	1-249-417-11	CARBON	1K 5% 1/4W
R316	1-247-804-11	CARBON	75 5% 1/4W	R375	1-249-405-11	CARBON	100 5% 1/4W
R317	1-249-409-11	CARBON	220 5% 1/4W	R376	1-249-417-11	CARBON	1K 5% 1/4W
R318	1-249-409-11	CARBON	220 5% 1/4W	R377	1-249-441-11	CARBON	100K 5% 1/4W
R319	1-249-409-11	CARBON	220 5% 1/4W	R378	1-249-429-11	CARBON	10K 5% 1/4W
R320	1-249-413-11	CARBON	470 5% 1/4W	R379	1-249-414-11	CARBON	560 5% 1/4W
R322	1-249-429-11	CARBON	10K 5% 1/4W	R380	1-249-411-11	CARBON	330 5% 1/4W
R326	1-249-409-11	CARBON	220 5% 1/4W	△R381	1-215-882-00	METAL OXIDE	22 5% 2W
R327	1-249-425-11	CARBON	4.7K 5% 1/4W	R382	1-249-441-11	CARBON	100K 5% 1/4W
R328	1-249-417-11	CARBON	1K 5% 1/4W	R383	1-249-401-11	CARBON	47 5% 1/4W
R331	1-249-429-11	CARBON	10K 5% 1/4W	R384	1-249-437-11	CARBON	47K 5% 1/4W
R332	1-249-429-11	CARBON	10K 5% 1/4W	R385	1-249-437-11	CARBON	47K 5% 1/4W
R333	1-249-441-11	CARBON	100K 5% 1/4W	R386	1-249-407-11	CARBON	150 5% 1/4W

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

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R388	1-249-423-11	CARBON	3. 3K 5% 1/4W	R503	1-249-429-11	CARBON	10K 5% 1/4W
R389	1-249-423-11	CARBON	3. 3K 5% 1/4W	R504	1-249-429-11	CARBON	10K 5% 1/4W
R390	1-249-423-11	CARBON	3. 3K 5% 1/4W	R505	1-249-429-11	CARBON	10K 5% 1/4W
R391	1-249-423-11	CARBON	3. 3K 5% 1/4W	R506	1-249-441-11	CARBON	100K 5% 1/4W
R392	1-249-417-11	CARBON	1K 5% 1/4W	R507	1-249-417-11	CARBON	1K 5% 1/4W
R393	1-249-420-11	CARBON	1. 8K 5% 1/4W	R508	1-249-417-11	CARBON	1K 5% 1/4W
R395	1-249-425-11	CARBON	4. 7K 5% 1/4W	R509	1-249-417-11	CARBON	1K 5% 1/4W
R396	1-249-441-11	CARBON	100K 5% 1/4W	R516	1-249-425-11	CARBON	4. 7K 5% 1/4W
R400	1-249-437-11	CARBON	47K 5% 1/4W	R517	1-249-417-11	CARBON	1K 5% 1/4W
R401	1-249-437-11	CARBON	47K 5% 1/4W	R518	1-249-401-11	CARBON	47 5% 1/4W
R406	1-249-429-11	CARBON	10K 5% 1/4W	R519	1-249-421-11	CARBON	2. 2K 5% 1/4W
R407	1-249-429-11	CARBON	10K 5% 1/4W	R520	1-247-903-00	CARBON	1M 5% 1/4W
R408	1-249-429-11	CARBON	10K 5% 1/4W	R901	1-249-425-11	CARBON	4. 7K 5% 1/4W
R409	1-249-425-11	CARBON	4. 7K 5% 1/4W	△R902	1-212-849-00	FUSIBLE	4. 7 5% 1/4W F
R410	1-249-425-11	CARBON	4. 7K 5% 1/4W	R903	1-249-421-11	CARBON	2. 2K 5% 1/4W
R411	1-249-429-11	CARBON	10K 5% 1/4W	R904	1-249-433-11	CARBON	22K 5% 1/4W
R412	1-249-441-11	CARBON	100K 5% 1/4W	R905	1-249-433-11	CARBON	22K 5% 1/4W
R414	1-249-413-11	CARBON	470 5% 1/4W	R906	1-249-425-11	CARBON	4. 7K 5% 1/4W
R415	1-249-437-11	CARBON	47K 5% 1/4W	R907	1-249-420-11	CARBON	1. 8K 5% 1/4W
R416	1-249-437-11	CARBON	47K 5% 1/4W	R908	1-215-439-00	METAL	5. 6K 1% 1/6W
R417	1-249-429-11	CARBON	10K 5% 1/4W	R920	1-249-429-11	CARBON	10K 5% 1/4W
R420	1-249-429-11	CARBON	10K 5% 1/4W	R921	1-249-409-11	CARBON	220 5% 1/4W
R421	1-249-429-11	CARBON	10K 5% 1/4W	R922	1-249-409-11	CARBON	220 5% 1/4W
R422	1-249-429-11	CARBON	10K 5% 1/4W	R923	1-249-417-11	CARBON	1K 5% 1/4W
R423	1-249-429-11	CARBON	10K 5% 1/4W	R924	1-249-417-11	CARBON	1K 5% 1/4W
R424	1-249-411-11	CARBON	330 5% 1/4W	R925	1-249-417-11	CARBON	1K 5% 1/4W
R425	1-249-411-11	CARBON	330 5% 1/4W	R926	1-249-417-11	CARBON	1K 5% 1/4W
R429	1-249-407-11	CARBON	150 5% 1/4W	R927	1-249-421-11	CARBON	2. 2K 5% 1/4W
R432	1-249-393-11	CARBON	10 5% 1/4W	R928	1-249-421-11	CARBON	2. 2K 5% 1/4W
R433	1-216-349-00	CARBON	1 5% 1/2W	R929	1-249-438-11	CARBON	56K 5% 1/4W
R435	1-249-409-11	CARBON	220 5% 1/4W	R930	1-249-421-11	CARBON	2. 2K 5% 1/4W
R436	1-249-409-11	CARBON	220 5% 1/4W	R931	1-249-421-11	CARBON	2. 2K 5% 1/4W
R437	1-249-409-11	CARBON	220 5% 1/4W	R932	1-249-405-11	CARBON	100 5% 1/4W
R438	1-249-409-11	CARBON	220 5% 1/4W			< VARIABLE RESISTOR >	
R440	1-249-441-11	CARBON	100K 5% 1/4W	RV301	1-241-631-11	RES, ADJ, CARBON 22K (FWD TORQUE)	
R441	1-249-441-11	CARBON	100K 5% 1/4W			< RELAY >	
R442	1-249-441-11	CARBON	100K 5% 1/4W	RY301	1-515-726-11	RELAY	
R443	1-249-437-11	CARBON	47K 5% 1/4W			< VIBRATOR >	
R444	1-249-417-11	CARBON	1K 5% 1/4W	X301	1-567-816-11	VIBRATOR, CRYSTAL (18MHz)	
R445	1-249-419-11	CARBON	1. 5K 5% 1/4W	X302	1-567-815-11	VIBRATOR, CRYSTAL (22MHz)	
R446	1-247-883-00	CARBON	150K 5% 1/4W	X303	1-578-667-11	VIBRATOR, CRYSTAL (49MHz)	
R447	1-249-425-11	CARBON	4. 7K 5% 1/4W			*****	
R448	1-249-413-11	CARBON	470 5% 1/4W				
R449	1-249-424-11	CARBON	3. 9K 5% 1/4W				
R456	1-249-429-11	CARBON	10K 5% 1/4W				
R457	1-249-413-11	CARBON	470 5% 1/4W				
R495	1-249-429-11	CARBON	10K 5% 1/4W				
R497	1-249-429-11	CARBON	10K 5% 1/4W				
R501	1-249-417-11	CARBON	1K 5% 1/4W				
R502	1-249-429-11	CARBON	10K 5% 1/4W				

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

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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

PRIMARY

POWER RELAY

MOTOR

REEL MOTOR

RF AMP

Ref. No.	Part No.	Description	Remarks		
*	1-647-408-11	PRIMARY BOARD *****			
		< CAPACITOR >			
△C902	1-161-742-00	CERAMIC	0.0022uF	20%	400V
△C903	1-161-742-00	CERAMIC	0.0022uF	20%	400V
△C904	1-161-742-00	CERAMIC	0.0022uF	20%	400V
△C905	1-161-742-00	CERAMIC	0.0022uF	20%	400V
		< CONNECTOR >			
* CN05	1-564-336-61	PIN, CONNECTOR 2P			
* CN901	1-580-230-11	PIN, CONNECTOR (PC BOARD) 3P			
		< COIL >			
△L901	1-421-915-11	COIL, LINE FILTER *****			
*	1-647-409-11	POWER RELAY BOARD *****			

*	1-641-486-11	MOTOR BOARD *****			

*	1-564-337-00	PIN, CONNECTOR 3P			
*	1-564-498-11	PIN, CONNECTOR 5P			
		< CAPACITOR >			
C01	1-162-851-11	CERAMIC	0.1MF		16V

*	1-639-304-11	REEL MOTOR BOARD *****			
		< CAPACITOR >			
C07	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V

		RF AMP BOARD, COMPLETE *****			
		< CAPACITOR >			
C1	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C2	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C3	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C4	1-162-638-11	CERAMIC CHIP	1uF		16V
C5	1-164-299-11	CERAMIC CHIP	0.22uF	10%	25V
C6	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C7	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C8	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C9	1-124-778-00	ELECT CHIP	22uF	20%	6.3V

Ref. No.	Part No.	Description	Remarks		
C10	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C11	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C12	1-164-299-11	CERAMIC CHIP	0.22uF	10%	25V
C13	1-162-638-11	CERAMIC CHIP	1uF		16V
C14	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C15	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C16	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C17	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C18	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C19	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C20	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C21	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C22	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C23	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C24	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C25	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C26	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C27	1-162-638-11	CERAMIC CHIP	1uF		16V
C28	1-164-505-11	CERAMIC CHIP	2.2uF		16V
		< CONNECTOR >			
* CN51	1-566-207-11	PIN, CONNECTOR (PC BOARD) 14P			
* CN52	1-564-720-11	PIN, CONNECTOR (SMALL TYPE) 4P			
		< IC >			
IC1	8-752-039-01	IC CXA1364R			
		< COIL >			
L1	1-408-781-00	INDUCTOR CHIP	22uH		
L2	1-408-789-21	INDUCTOR CHIP	100uH		
L3	1-408-781-00	INDUCTOR CHIP	22uH		
		< RESISTOR >			
R1	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R2	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R3	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R4	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R5	1-216-077-00	METAL CHIP	15K	5%	1/10W
R6	1-216-077-00	METAL CHIP	15K	5%	1/10W
R7	1-216-077-00	METAL CHIP	15K	5%	1/10W
R8	1-216-079-00	METAL CHIP	18K	5%	1/10W
R9	1-216-075-00	METAL CHIP	12K	5%	1/10W
R10	1-216-079-00	METAL CHIP	18K	5%	1/10W
R11	1-216-077-00	METAL CHIP	15K	5%	1/10W
R12	1-216-077-00	METAL CHIP	15K	5%	1/10W
R13	1-216-077-00	METAL CHIP	15K	5%	1/10W
R14	1-216-081-00	METAL CHIP	22K	5%	1/10W
R15	1-216-085-00	METAL CHIP	33K	5%	1/10W
R16	1-216-089-00	METAL CHIP	47K	5%	1/10W

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

RF AMP	RGN SW	SW	TOP END SENSOR
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Ref. No.	Part No.	Description	Remarks
R17	1-216-080-00	METAL CHIP 20K 5%	1/10W
R18	1-216-073-00	METAL CHIP 10K 5%	1/10W
< VARIABLE RESISTOR >			
RV1	1-238-181-11	RES, ADJ, CERMET 4.7K	
RV2	1-238-181-11	RES, ADJ, CERMET 4.7K	

*	1-639-301-11	RGN SW BOARD	*****
< SWITCH >			
S01	1-571-878-11	SWITCH, PUSH (2 KEY)	

*	1-641-487-11	SW BOARD	*****
	1-571-958-11	SWITCH, PUSH (1 KEY)	

*	1-639-305-11	TOP END SENSOR BOARD	*****
*	3-368-456-01	HOLDER (END SENSOR LIGHT)	
*	3-368-457-01	HOLDER (END SENSOR) (RECIEVE)	
< DIODE >			
D01	8-719-988-42	DIODE GL453S	
< PHOTO INTERRUPTER >			
PH03	8-729-907-25	TRANSISTOR PT4850F	
PH04	8-729-907-25	TRANSISTOR PT4850F	

MISCELLANEOUS			

△6	1-575-651-21	CORD, POWER (AEP)	
△6	1-590-836-11	CORD, POWER (US, Canadian)	
△6	1-696-586-11	CORD, POWER (UK)	
66	1-751-031-11	WIRE (FLAT TYPE) (17 CORE)	
115	1-590-915-11	WIRE, FLAT TYPE (30 CORE)	
325	8-848-567-11	DRUM ASSY DOU-03A	
M901	A-2003-910-A	MOTOR ASSY, CASSETTE	
M902	8-835-361-01	MOTOR, DC U-17B	
M903	X-3363-109-1	MOTOR (CAM) ASSY	
M905	X-3363-110-2	MOTOR (REEL) ASSY	
PM902	1-454-536-11	SOLENOID, PLUNGER (BT CONTROL)	
PM903	1-454-535-11	SOLENOID, PLUNGER (BRAKE)	

Ref. No.	Part No.	Description	Remarks
△T901-3	1-423-558-11	TRANSFORMER, POWER (US, Canadian)	
△T901-3	1-423-559-11	TRANSFORMER, POWER (AEP, UK)	

ACCESSORIES & PACKING MATERIALS			

	1-467-004-11	REMOTE COMMANDER (RM-D690A)	
	1-558-271-11	CORD, CONNECTION	
	1-696-170-11	CORD, CONNECTION	
	3-384-415-01	CUSHION	
	3-388-150-01	INDIVIDUAL CARTON	
	3-756-209-11	MANUAL, INSTRUCTION (AE2, UK)	
	3-756-209-21	MANUAL, INSTRUCTION (US, Canadian)	
	3-756-209-31	MANUAL, INSTRUCTION (Canadian)	
	3-756-209-41	MANUAL, INSTRUCTION (AE2)	
	3-756-209-51	MANUAL, INSTRUCTION (AE4)	
	4-941-762-11	COVER (MLY), BATTERY	

HARDWARE LIST

#1	7-682-548-09	SCREW +BVTT 3X8 (S)
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#3	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S
#4	4-951-620-01	SCREW +BVTP 2.6X8
#5	7-682-147-15	SCREW, TR
#6	7-682-560-04	SCREW +BVTT 4X6 (S)
#7	7-685-102-19	SCREW +P 2X4 TYPE2 NON-SLIT
#8	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S
#11	7-621-772-00	SCREW +B 2X3
#13	7-621-773-86	SCREW +B 2.6X4
#14	7-627-556-17	SCREW, PRECISION +P 2.6X3 TYPE1
#15	7-621-772-08	SCREW +B 2X3
#16	7-621-772-18	SCREW +B 2X4
#17	7-627-552-47	SCREW, PRECISION +P 1.7X4
#18	7-621-255-20	SCREW +BVTT 2X4 (S)
#19	7-627-854-07	PRECISION SCREW +P 2X2.5 TYPE3
#20	7-627-852-27	+P 1.7X3
#21	7-621-255-15	SCREW +P 2X3
#22	7-627-552-27	SCREW, PRECISION +P 1.7X2

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<p>When indicating parts by reference number, please include the board name.</p>
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DTC-690

SONY[®] **SERVICE MANUAL**

US Model
Canadian Model
AEP Model
UK Model

SUPPLEMENT-1

File this supplement with the service manual.

Subject : 1. Correction
2. Parts changed
3. Board change

(ECN-TC201118/TC500608/TC500800, SPM-95029)

1. CORRECTION

- Correct your service manual as shown below.

☛ : Indicates corrected portion.

Page	INCORRECT				CORRECT			
	Ref.No	Part No	Description	Remark	Ref.No	Part No	Description	Remark
59	205	3-373-234-01	CHASSIS (L)		205	A-2004-153-E	CHASSIS (L) ASSY	

2. PARTS CHANGED

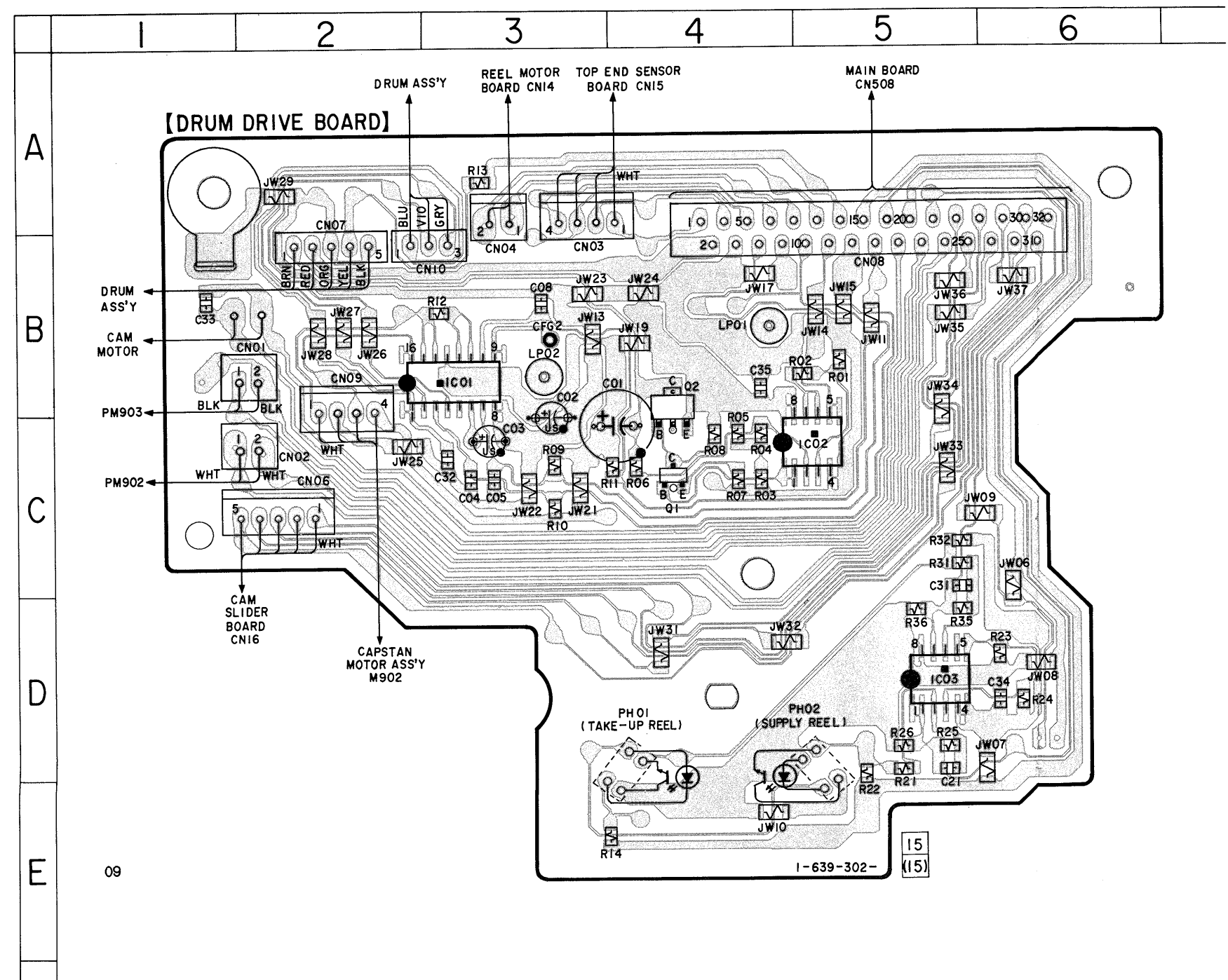
☛ : Changed portion.

Page	FORMER				NEW			
	Ref.No	Part No	Description	Remark	Ref.No	Part No	Description	Remark
60	307	3-368-428-01	SHAFT (ROLLER GUIDE) not supplied		307	3-908-644-01	SHAFT (ROLLER GUIDE)	
					340	3-337-674-01	SHAFT, GUIDE	
61	* 359	3-368-411-01	SLIDER (ROLLER LOCK)				not used	

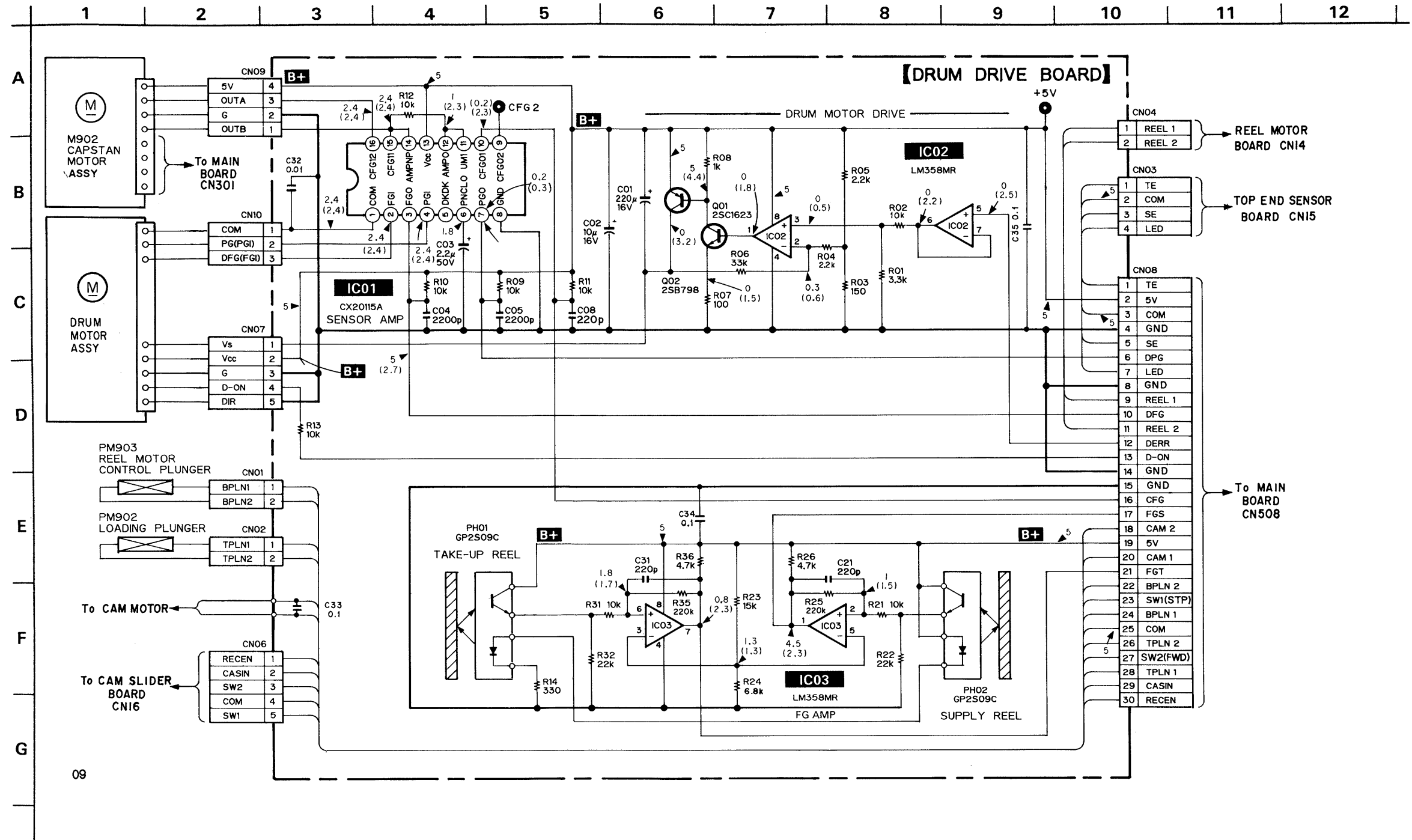
- Revise your service manual as shown below due to parts supply classification has been changed.

Page	CURRENT				REVISED			
	Ref.No	Part No	Description	Remark	Ref.No	Part No	Description	Remark
60	309	X-3337-643-1	GUIDE (RIC) ASSY, ROLLER		309	X-3371-518-1	ROLLER GUIDE ASSY	

3. BOARD CHANGE
PRINTED WIRING BOARD



SCHEMATIC DIAGRAM



• Semiconductor Location

Ref. No.	Location
IC01	B-3
IC02	C-5
IC03	D-5
PH01	D-4
PH02	D-4
Q01	C-4
Q02	B-4

Note:
 • ○ : parts extracted from the component side.
 • — : parts extracted from the conductor side.
 • □ : Pattern from the side which enable seeing.

Note:
 • All capacitors are in μF unless otherwise noted. pF; μF 50WV or less are not indicated except for electrolytics and tantalums.
 • All resistors are in Ω and 1/4W or less unless otherwise specified.
 • B+ : B+ Line
 • Voltage and waveforms are dc with respect to ground under no-signal conditions.
 • no mark : STOP
 • () : PLAY
 • Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.

DRUM DRIVE

ELECTRICAL PARTS LIST

NOTE:

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.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F : nonflammable
- 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-2056-488-A	DRUM DRIVE BOARD, COMPLETE *****		JW13	1-216-296-91	CONDUCTOR, CHIP	(3216)
				JW14	1-216-296-91	CONDUCTOR, CHIP	(3216)
*	3-343-491-01	HOLDER (S SENSOR B)		JW15	1-216-296-91	CONDUCTOR, CHIP	(3216)
*	4-870-539-00	PLATE, GROUND		JW17	1-216-296-91	CONDUCTOR, CHIP	(3216)
		< CAPACITOR >		JW19	1-216-296-91	CONDUCTOR, CHIP	(3216)
C01	1-126-176-11	ELECT 220uF 20% 10V		JW21	1-216-296-91	CONDUCTOR, CHIP	(3216)
C02	1-126-157-11	ELECT 10uF 20% 16V		JW22	1-216-296-91	CONDUCTOR, CHIP	(3216)
C03	1-124-257-00	ELECT 2.2uF 20% 50V		JW23	1-216-296-91	CONDUCTOR, CHIP	(3216)
C04	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V		JW24	1-216-296-91	CONDUCTOR, CHIP	(3216)
C05	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V		JW25	1-216-296-91	CONDUCTOR, CHIP	(3216)
C08	1-163-001-11	CERAMIC CHIP 220PF 10% 50V		JW26	1-216-296-91	CONDUCTOR, CHIP	(3216)
C21	1-163-001-11	CERAMIC CHIP 220PF 10% 50V		JW27	1-216-296-91	CONDUCTOR, CHIP	(3216)
C31	1-163-001-11	CERAMIC CHIP 220PF 10% 50V		JW28	1-216-296-91	CONDUCTOR, CHIP	(3216)
C32	1-164-232-11	CERAMIC CHIP 0.01uF 50V		JW29	1-216-296-91	CONDUCTOR, CHIP	(3216)
C33	1-163-038-91	CERAMIC CHIP 0.1uF 25V		JW31	1-216-296-91	CONDUCTOR, CHIP	(3216)
C34	1-163-038-91	CERAMIC CHIP 0.1uF 25V		JW32	1-216-296-91	CONDUCTOR, CHIP	(3216)
C35	1-163-038-91	CERAMIC CHIP 0.1uF 25V		JW33	1-216-296-91	CONDUCTOR, CHIP	(3216)
		< CONNECTOR >		JW34	1-216-296-91	CONDUCTOR, CHIP	(3216)
* CN01	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P		JW35	1-216-296-91	CONDUCTOR, CHIP	(3216)
* CN02	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P		JW36	1-216-296-91	CONDUCTOR, CHIP	(3216)
* CN03	1-564-338-00	PIN, CONNECTOR 4P		JW37	1-216-296-91	CONDUCTOR, CHIP	(3216)
* CN04	1-564-336-00	PIN, CONNECTOR 2P				< PHOTO INTERRUPTER >	
* CN06	1-564-339-00	PIN, CONNECTOR 5P		PH01	8-719-939-23	PHOTO INTERRUPTER GP-2S09-C	(TAKE UP REEL)
CN07	1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P		PH02	8-719-939-23	PHOTO INTERRUPTER GP-2S09-C	(SUPPLY REEL)
* CN08	1-568-872-11	SOCKET, CONNECTOR 30P				< TRANSISTOR >	
* CN09	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P		Q01	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
* CN10	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P		Q02	8-729-101-07	TRANSISTOR 2SB798-DL	
		< IC >				< RESISTOR >	
IC01	8-752-060-73	IC CX20115A-T4		R01	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
IC02	8-759-502-80	IC LM358M		R02	1-216-073-00	METAL CHIP 10K 5% 1/10W	
IC03	8-759-502-80	IC LM358M		R03	1-216-029-00	METAL CHIP 150 5% 1/10W	
		< JUMPER RESISTOR >		R04	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
JW06	1-216-296-91	CONDUCTOR, CHIP (3216)		R05	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
JW07	1-216-296-91	CONDUCTOR, CHIP (3216)		R06	1-216-085-00	METAL CHIP 33K 5% 1/10W	
JW08	1-216-296-91	CONDUCTOR, CHIP (3216)		R07	1-216-025-91	METAL GLAZE 100 5% 1/10W	
JW09	1-216-296-91	CONDUCTOR, CHIP (3216)		R08	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
JW10	1-216-296-91	CONDUCTOR, CHIP (3216)		R09	1-216-073-00	METAL CHIP 10K 5% 1/10W	
JW11	1-216-296-91	CONDUCTOR, CHIP (3216)		R10	1-216-073-00	METAL CHIP 10K 5% 1/10W	

DRUM DRIVE

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>		
R11	1-216-073-00	METAL CHIP	10K	5%	1/10W
R12	1-216-073-00	METAL CHIP	10K	5%	1/10W
R13	1-216-073-00	METAL CHIP	10K	5%	1/10W
R14	1-216-037-00	METAL CHIP	330	5%	1/10W
R21	1-216-073-00	METAL CHIP	10K	5%	1/10W
R22	1-216-081-00	METAL CHIP	22K	5%	1/10W
R23	1-216-077-00	METAL CHIP	15K	5%	1/10W
R24	1-216-069-00	METAL CHIP	6. 8K	5%	1/10W
R25	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R26	1-216-065-00	METAL CHIP	4. 7K	5%	1/10W
R31	1-216-073-00	METAL CHIP	10K	5%	1/10W
R32	1-216-081-00	METAL CHIP	22K	5%	1/10W
R35	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R36	1-216-065-00	METAL CHIP	4. 7K	5%	1/10W

DTC-690

SONY SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model

CORRECTION-1

Correct your service manual as shown below.

 : indicates corrected portion.

Page	INCORRECT	CORRECT
60		