

SONY®

HD DIGITAL VIDEOCASSETTE RECORDER

SRW-5800

DIGITAL BETACAM/HDCAM PROCESSOR BOARD
HKSR-5802

RGB SQ PROCESSOR BOARD
HKSR-5803SQ

ADVANCED HQ PROCESSOR BOARD
HKSR-5803HQ

NETWORK INTERFACE BOARD
HKSR-5804

HDCAM SR™

 **Tele-File**




MEMORY STICK

MAINTENANCE MANUAL

Volume 1 1st Edition (Revised 4)

⚠ 警告

このマニュアルは、サービス専用です。

お客様が、このマニュアルに記載された設置や保守、点検、修理などを行うと感電や火災、人身事故につながる可能性があります。

危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

⚠ WARNING

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠ WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠ AVERTISSEMENT

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

Attention-when the product is installed in Rack:

1. Prevention against overloading of branch circuit

When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

2. Providing protective earth

When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. Internal air ambient temperature of the rack

When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. Prevention against achieving hazardous condition due to uneven mechanical loading

When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

5. Install the equipment while taking the operating temperature of the equipment into consideration

For the operating temperature of the equipment, refer to the specifications of the Operation Manual.

6. When performing the installation, keep the following space away from walls in order to obtain proper exhaust and radiation of heat.

Right, Left: 4 cm (1.6 inches) or more
Rear: 40 cm (16 inches) or more

SRW-5800 (SY)	Serial No. 10001 and Higher
HKSR-5802 (SY)	Serial No. 10001 and Higher
HKSR-5803SQ (SY)	Serial No. 10001 and Higher
HKSR-5803HQ (SY)	Serial No. 10001 and Higher
HKSR-5804 (SY)	Serial No. 10001 and Higher

When using a Ethernet cable:

For safety,do not connect to the connector for peripheral device wiring that might have excessive voltage.

注意

指定以外の電池に交換すると、破裂する危険があります。
使用済の電池は、説明書に従って処理してください。

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.
Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

ADVARSEL!

Lithiumbatteri-Eksplodingsfare ved fejlagtig håndtering.

Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri - Eksplosjonsfare.

Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en likvärdig typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt gällande föreskrifter.

VAROITUS

Paristo voi räjähtää jos se on virheellisesti asennettu.

Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

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Appendix A Setting Check Sheet

Appendix B Servo/DT/RF Systems Adjustment Check Sheet

Manual Structure

Purpose of this manual

This manual is the Maintenance manual volume 1 of the HD Digital Videocassette Recorder SRW-5800.

This maintenance manual (Volume 1, 2, and 3) is intended for use by trained system and service engineers, and provides the information of maintenance and detailed service (parts replacement, guideline for adjustment, schematic diagrams, board layouts, detailed parts list).

This manual (volume 1) explains about maintenance information, parts replacement, and guideline for adjustment.

Related manuals

Besides this “Maintenance manual”, the following manuals are available.

- **Operation Manual CD-ROM (Supplied with this unit.)**

This manual is necessary for application and operation (and installation) of this unit.

- **Installation Manual (Supplied with this unit.)**

This manual describes the information on installing this unit.

- **Protocol Manual of Remote (9-pin) Connector (available on request)**

This manual explains the protocol for controlling the VTR via the RS-422A (9-pin serial remote). If this manual is required, please contact your local Sony Sales Office/Service Center.

- **Interface Manual of Parallel I/O (50-pin) Connector (available on request)**

This manual explains the protocol for controlling the VTR via the parallel (50-pin). If this manual is required, please contact your local Sony Sales Office/Service Center.

- **“Semiconductor Pin Assignments” CD-ROM (Available on request)**

This “Semiconductor Pin Assignments” CD-ROM allows you to search for semiconductors used in Broadcast and Professional equipment.

This manual contains a complete list of semiconductors and their ID Nos., and thus should be used together with the CD-ROM.

Part number: 9-968-546-06

Trademark

Registered trademark used in this manual is as follows.

- Ethernet is a registered trademark of Xerox Corporation.

Section 1

Service Overview

1-1. Notes on Power Supply Block

Warning on Primary Circuit Block and Electric Shock

WARNING

The primary circuit consists of the AC inlet, the POWER switch, and the power supply unit.

Be careful not to receive an electric shock when performing the maintenance and service works with the power turned on.

A primary voltage remains applied to the AC inlet, and POWER switch even if the POWER switch is turned off. For the work that requires no current conduction, therefore, turn off the POWER switch and disconnect the power cord.

1-2. Cleaning when the Heads are Clogged

Clean using a cleaning cassette tape (specified product: BCT-HD12CL) when the video heads are clogged. For the cleaning, refer to “4-2-1. Cleaning using Cleaning Tape”.

WARNING

Clean the video heads in the prescribed procedure using a specified cleaning cassette tape. If not, the video heads may be abrasive or damaged.

If the head clogging is not solved using a cleaning cassette tape, use cleaning cloth.

For the cleaning using a cleaning cloth, clean according to the procedure of “4-2-3. Rotary Heads Cleaning” and “4-2-4. Tape Running Surface of Upper Drum Cleaning” after confirming the cautions and preparation in “4-2-2. General Information for Cleaning using Cleaning Cloth”.

1-3. Removing/Reattaching Cabinet

Note

Turn off the power and unplug the power cord before removing/reattaching.

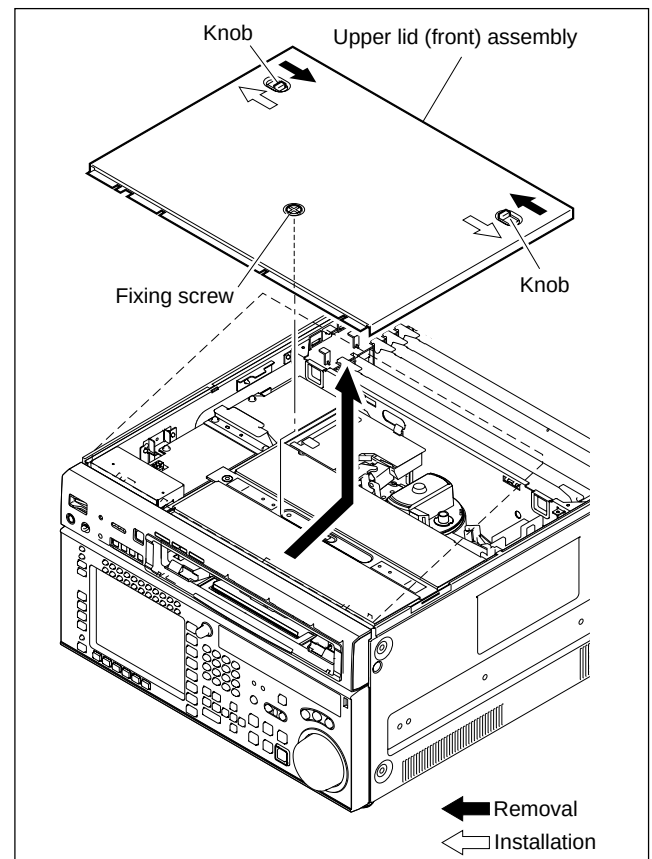
1-3-1. Removing/Reattaching the Upper Lid

Note

When removing only the upper lid (front) assembly, perform the steps 1 to 3.

Upper lid (front) assembly

1. Fully loosen the fixing screw.
2. Slide the knobs on the upper lid (front) assembly each in the inside. (Move the knobs to the outside to fix the upper lid (front) assembly.)
3. Remove the upper lid (front) assembly in the arrow direction.



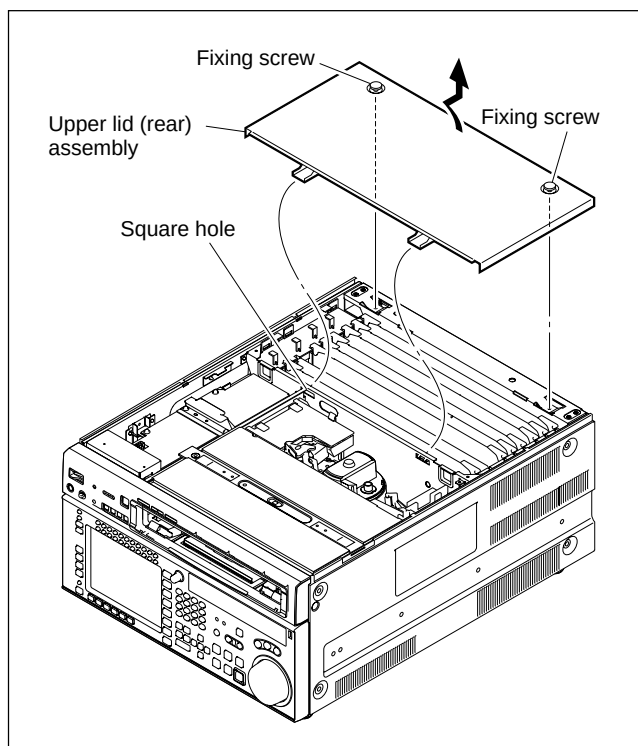
When reattaching the upper lid (front) assembly, install in the reverse order of removal.

Note

Tighten the fixing screw as following torque.

Tightening torque: $120 \times 10^{-2} \text{ N} \cdot \text{m}$ {12.0 kgf·cm}

4. Fully loosen the two fixing screws.
5. Remove the upper lid (rear) assembly by moving in the direction indicated by the arrow.



When reattaching, install in the reverse order of removal.

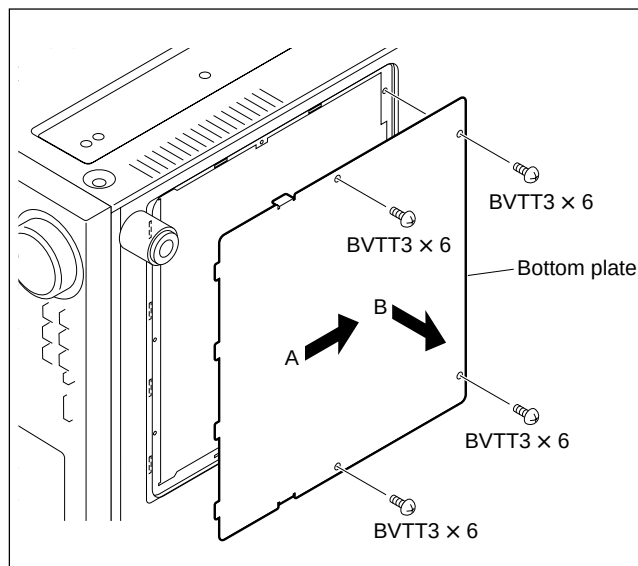
Note

Tighten the fixing screws as following torque.

Tightening torque: $120 \times 10^{-2} \text{ N}\cdot\text{m}$ {12.0 kgf·cm}

1-3-2. Removing/Reattaching Bottom Plate

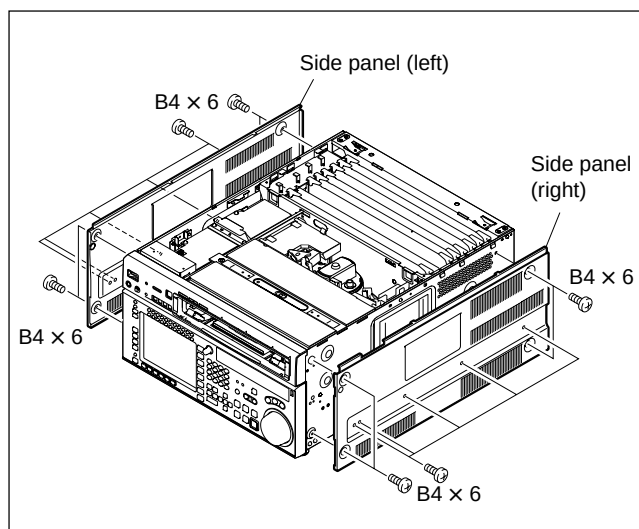
1. Place the unit with the side facing down.
2. Remove the four screws securing the bottom plate.
3. Slide the bottom plate in the arrow A direction, and remove it in the arrow B direction.



When reattaching, install in the reverse order of removal.

1-3-3. Removing/Reattaching Side Panels

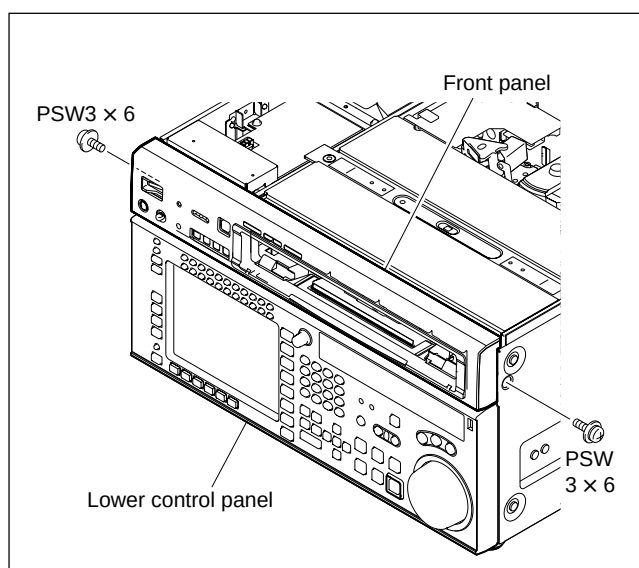
1. Remove the upper lid (front) assembly and upper lid (rear) assembly. (Refer to Section 1-3-1.)
2. Remove the nine screws, and side panels (right and left).



When reattaching, install in the reverse order of removal.

1-3-4. Removing/Reattaching Front Panel

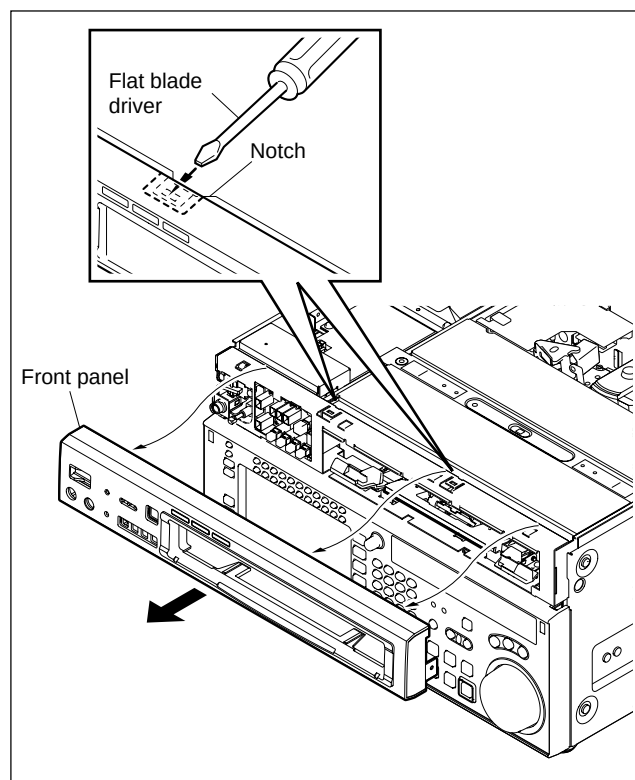
1. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
2. Remove the left and right screws (one each) securing the front panel.



3. Pull the front panel forward while pushing it up.

Note

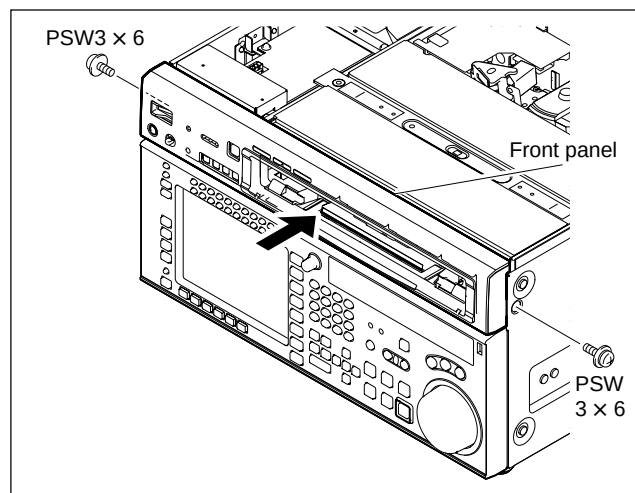
When the front panel is not removed easily, release the front panel upward, inserting the tip of the flat blade driver into the notches shown in the figure, and then remove the front panel in the arrow direction.



When reattaching, install in the reverse order of removal.

Note

When reattaching the front panel, press it tightly against the chassis in parallel.



Note

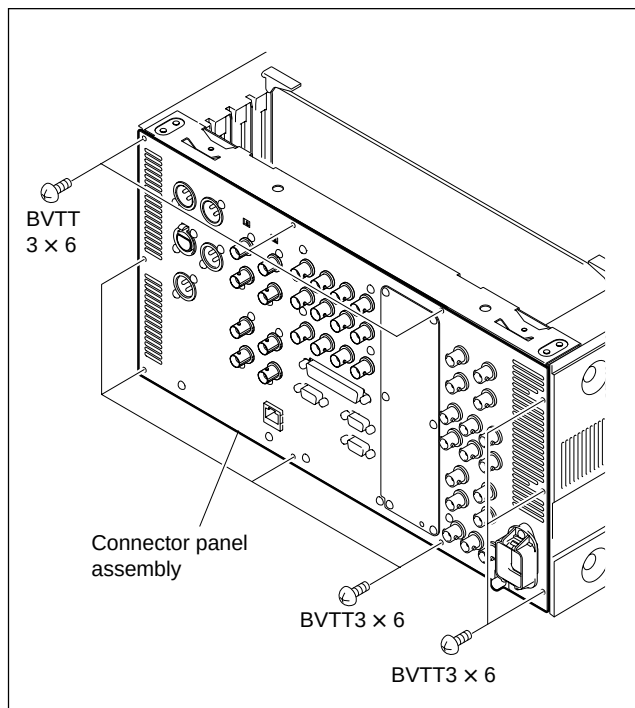
Use of screws other than specified will cause damage of the internal mechanism. Be sure to use the specified screws.

1-4. Removing/Reattaching Connector Panel Assembly

WARNING

For your safety against electric hazards, be sure to turn off the power and unplug the power cord before removing/reattaching.

1. Remove the upper lid (front) assembly and upper lid (rear) assembly. (Refer to Section 1-3-1.)
2. Remove the SS-102 board and APR-81/91 board. (Refer to Section 1-12.)
3. Remove the ten screws shown in the figure.



4. Open the edge holder.

Note

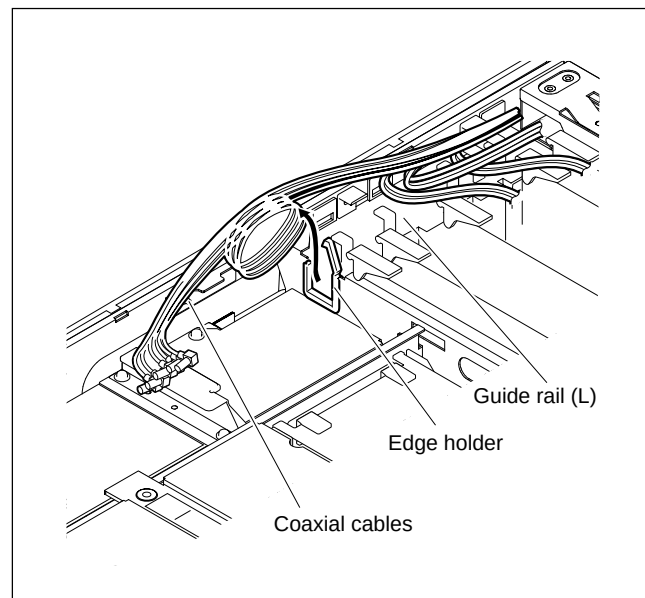
This step is not required when option HKSR-5001 is installed.

5. Disconnect the all coaxial cables connected to the plug-in boards.

Note

Hold the plug to remove the coaxial cables in disconnecting the coaxial cables from the connector on the boards. (Refer to Section 1-12.)

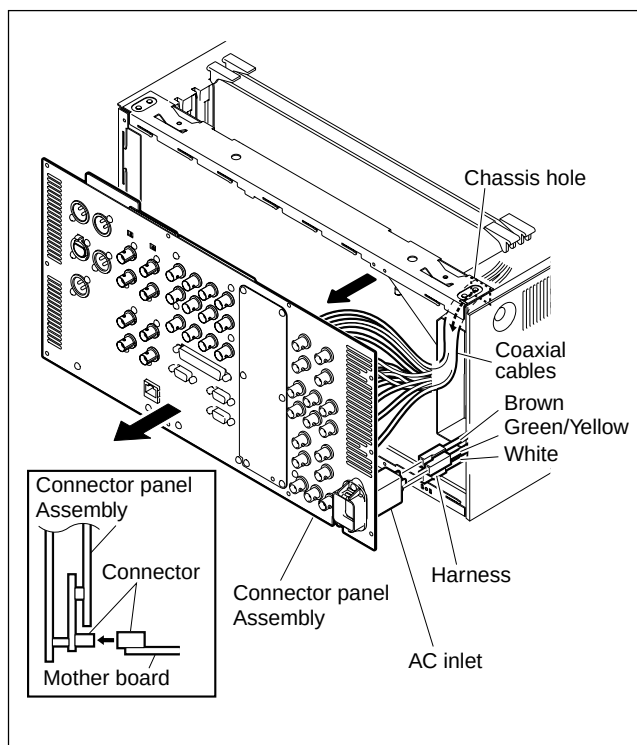
6. Remove the coaxial cables from the guide rail (L).



7. Push out the connector panel assembly from inside the unit in the arrow direction, and disconnect the connectors connected to the mother board.
8. Disconnect the harnesses from the AC inlet.
9. Pull out the all coaxial cables from the chassis hole and correctly remove the connector panel assembly.

Note

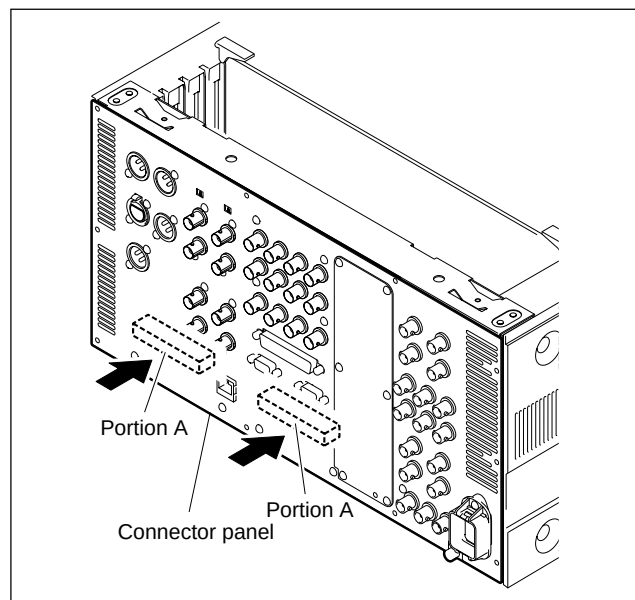
Do not pull the coaxial cables forcibly.



When reattaching, install in the reverse order of removal.

Notes

- Push in portions A of the connector panel assembly, and connect it firmly to the connector of the mother board.
- Connect the harnesses to the AC inlet correctly.
- For connecting connector of the coaxial cables, refer to Section 1-12.



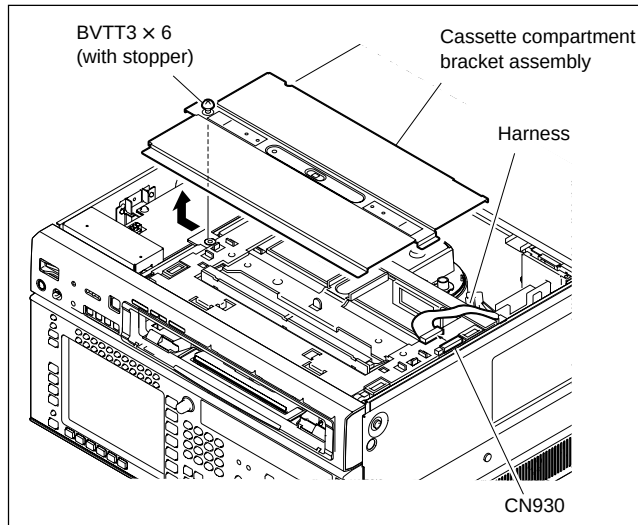
1-5. Removing/Reattaching Cassette Compartment

Notes

- Turn off the power before starting the removal/installation.
- The cassette compartment cannot be removed with the cassette tape inserted. Press the EJECT button with the power turned on to eject the cassette tape. If the cassette compartment does not operate due to an electric trouble, take out the cassette tape manually. (Refer to “1-11. Taking Out the Cassette in Tape Slack-ing”.)

Removal

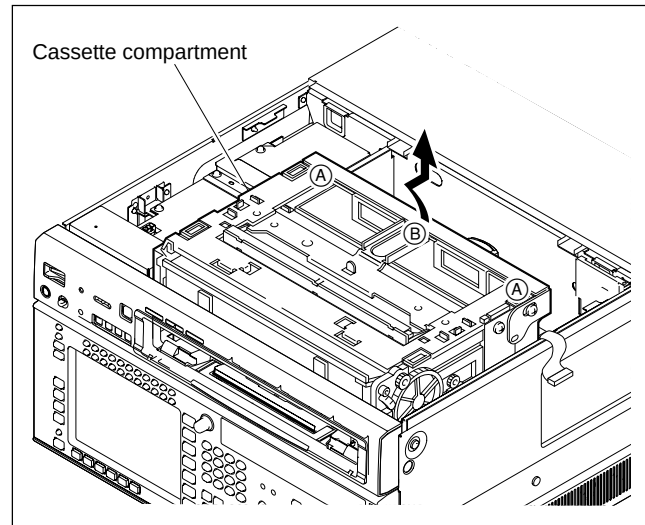
1. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
2. Loosen the screw, then remove the cassette compartment bracket assembly in the arrow direction.
3. Disconnect the harness from the connector (CN930) on the CL-29 board. Keep the harness out of the way of the removal.



4. Hold the cassette compartment at the portions (A) and lift up the cassette compartment slightly (by 1 cm). When the four cassette compartment positioning legs come off from the four positioning holes on a mechanical deck, shift the cassette compartment backward (by 1 cm) to the position where the cassette lid can be completely seen when viewed from just above.
5. Hold the cassette compartment at the portions (B), then slowly raise the cassette compartment upward to remove it.

Notes

- Being careful not to contact the gear on the right of the cassette compartment with the chassis, slowly raise the cassette compartment while slightly sliding it back-and-forth.
- Never move the cassette compartment to the right and left. If unnecessary force is applied to right and left, the gear or part may come off.
- Place the cassette compartment with the cassette lid up or with cassette compartment positioning legs down. (If it is put with the cassette lid down, the flexible card wire/board might be damaged.)



Installation

- Place the cassette compartment into the unit in the direction as shown in the figure (with the cassette lid down).

Notes

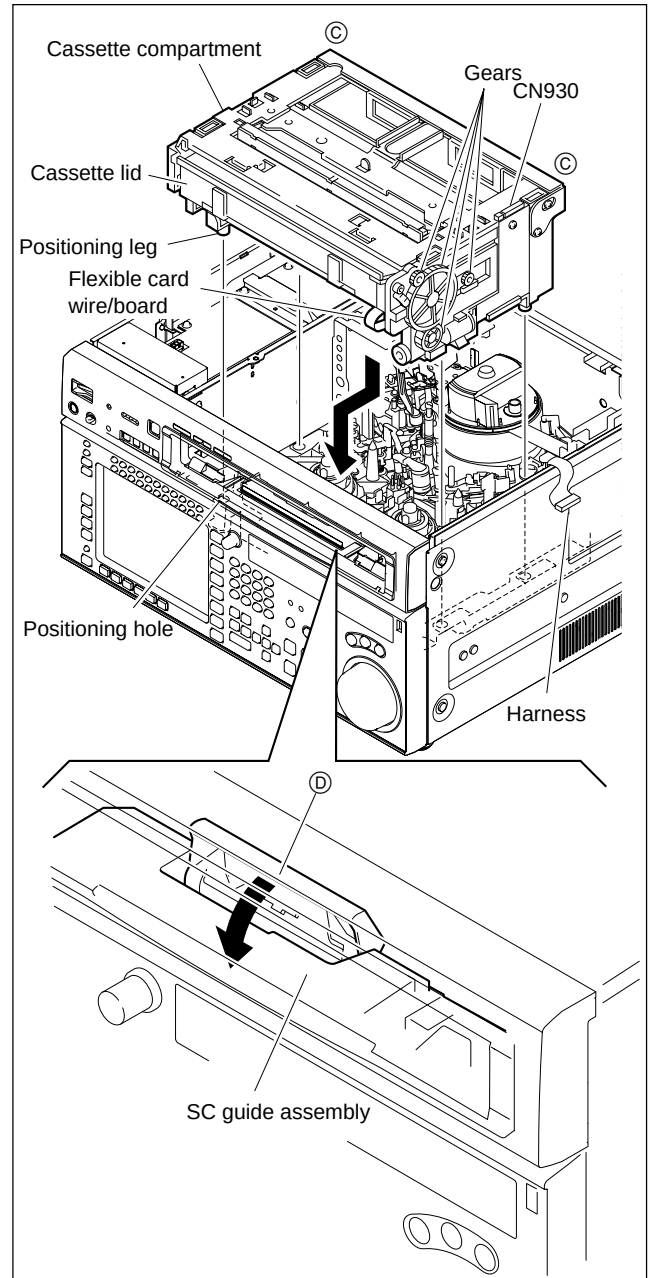
- Being careful not to contact the gear on the right of the cassette compartment with the chassis, slowly insert the cassette compartment into the unit while slightly sliding it back-and-forth.
- Never move the cassette compartment to the right and left. If unnecessary force is applied to the right and left, the gear or part may come off.

- Press the portions ③ of the cassette compartment as shown in the figure, and then fit the four positioning legs into the four positioning holes in the mechanical deck.

Note

Be sure to attach the cassette compartment while pressing down the portion ④ of the SC Guide Assembly by fingers.

If not, the cassette compartment cannot be attached properly because the back of the stage end of the cassette compartment blocks portion ④.



- Connect the harness to the connector (CN930) on the CL-29 board.
- Being careful not to pinch the harness, reattach the cassette compartment bracket assembly.
- Reattach the upper lid (front) assembly.

1-6. Removing/Reattaching Lower Control Panel Unit

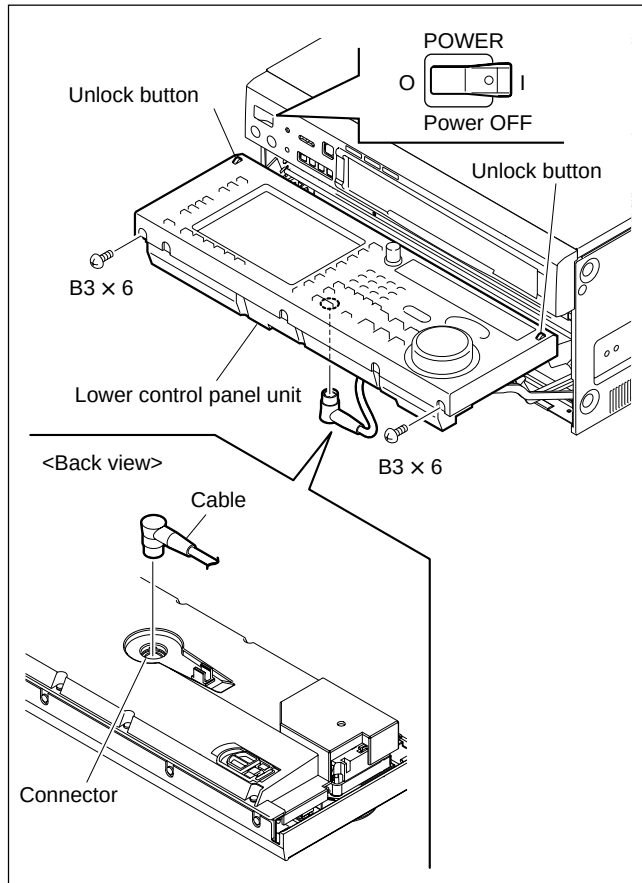
Removal

1. Turn off the power of the VTR.
2. Push the left and right unlock buttons, and open the lower control panel as shown in the figure below.
3. Disconnect the cable from the connector on the back side of the lower control panel unit.

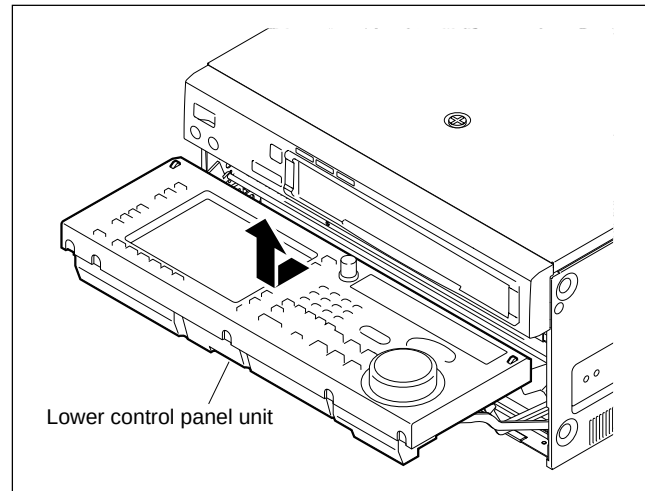
Note

Check that the power of the VTR is turned off before disconnecting cable. Disconnecting or connecting the cable in the power-on state will damage the control panel.

4. Remove the two screws shown in the figure.



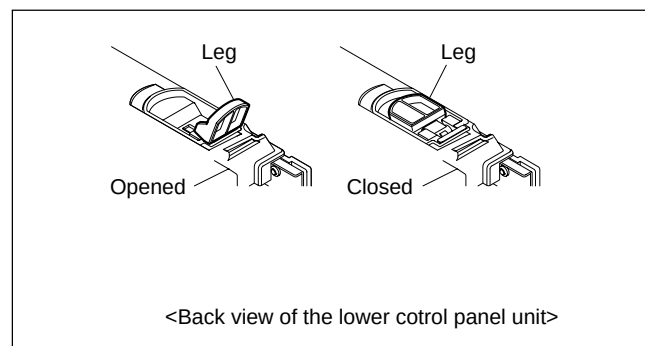
5. Lightly draw the lower control panel unit toward you, and then lift it upward.



Installation

When reattaching, install the reverse order of removal, and use care about following points.

- If the arms are not protruded, press the left and right unlock buttons, then secure the arms to the 90° position.
- When reattaching the lower control panel unit to the arms, place the lower control panel with square holes of the panel aligned to the unlock buttons, slide it slightly to the VTR to attach.
- Check that the left and right unlock buttons are protruded, and then secure the two screws.
- Check that the two legs on the back of the lower control panel unit are closed, and then close the lower control panel unit.
- When closing the lower control panel unit, be careful so that the cables are not caught.



1-7. Circuit Function

System configuration	Board name	Circuit function	Location No.
Digital process and	DLP-27 (HKSR-5803HQ)	Advanced HQ processor	②
Video process	DVP-43 (HKSR-5802)	HDCAM/Digital Betacam ECC outer decoder, HDCAM PB processor (BRR decoder, Concealment, post filter, line converter, slow processor), Digital Betacam PB processor (BRR decoder), SD signal processor	⑱
	FC-91/111 (HKSR-5001)	Video format converter, Character superimpose	⑲
	HIF-46/56	HDSDI INPUT/OUTPUT signal processor, HD video signal processor, HD-SD down converter, SDSDI output interface, HD/SD character superimpose, Internal video signal generator	⑰
	HPR-22/35	HDCAM-SR REC (BRR encode)/PB (BRR decode) processor	⑮
	MY-115 (HKSR-5804)	Network interface	⑯
	SQ-20 (HKSR-5803SQ)	RGB SQ processor	②
HD SDI module	TX-96/127 (HKSR-5001)	HD SDI Tx module (HD SDI output interface)	①
Audio process	APR-81/91	Audio signal processor, AES/EBU interface, Audio signal D-A, Master timing generator, Internal audio signal generator	⑳
	AE-31H	HDCAM/Digital Betacam CUE PB	④
	CUE-13	HDCAM CUE PB	⑫
RF process	EQ-102/109	RF equalizer, HDCAM-SR ECC encoder/decoder, HDCAM/Digital Betacam ECC inner decoder	⑭
System/servo control	SS-102	System control, Servo control, DT control	㉑
	DR-508	Solenoids driver (Pinch, Brakes, Cleaning), Motors driver (Drum, Capstan, Reels, Threading, Reel shift, Cassette up/down), REC inhibit sensors, Reel position sensors	⑤
	DT-47/48	DT driver	③
	TC-104A/112A	TC REC/PB circuit, TC/FULL erase OSC	⑪
Mech, deck driver/sensor	CCM-15	Threading motor	㉓
	HN-268	Pinch and Cleaning sloenoids connection, Tape end sensor connection	㉗
	PTC-99	Cassette's holes sensor	㉔
	PTC-102	Threading FG	㉘
	SE-606A	Loop antenna board	㉕
	TR-119	S tension sensor	㉖
	TR-120	T tension sensor, Threading-end and Unthreading-end sensors	㉚
Cassette compartment	LP-81	Lamp of cassette compartment	㉙
	PC-70	Cassette-in sensors, Cassette size sensor	㉛
	CL-29	Cassette up/down motor, Cassette down sensors	㉜
Front panel	DIO-86	Connection board, Memory label reader/writer	⑧
	FP-155/163	Memory card slot and interface, NV-RAMs, Lower control panel connection Memory card slot	⑨
	HP-135	Upper control panel function (PHONES)	⑥
	LED-455	Upper control panel function (Format indicators)	㉔
	SWC-46	Upper control panel function (Remote/Eject SW, CH-condition/Error/Warning indicators)	㉔

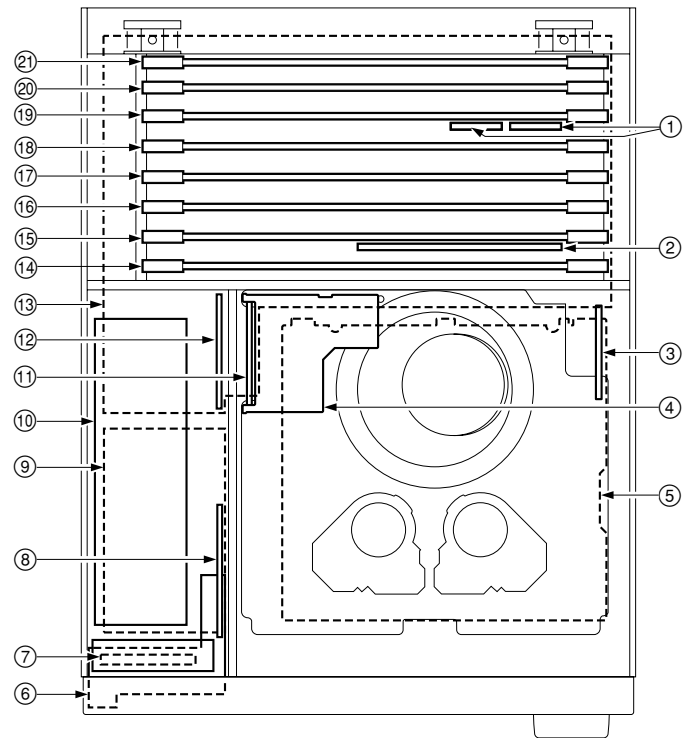
(Continued)

System configuration	Board name	Circuit function	Location No.
Lower control panel	CN-2511	LCD connection board	②⑤
	CP-393/405	Lower control panel function controller, LCD driver	②④
	KY-526G	Menu selection keys	②⑥
	KY-527	VTR function keys	②②
	PTC-101	Search dial	②③
Connector panel	CP-397	Connector board (Analog audio, Monitor, Time code, CUE)	②⑨
	CP-398	Connector board (Analog video, Ethernet)	③⑩
	CP-399	Connector board (Digital audio (AES/EBU), Remote control connectors)	③①
	IF-1071 (HKSR-5804)	Connector board (Network 2)	③②
Other	FL-350	Line filter	⑦
	MB-1101	Motherboard	⑬

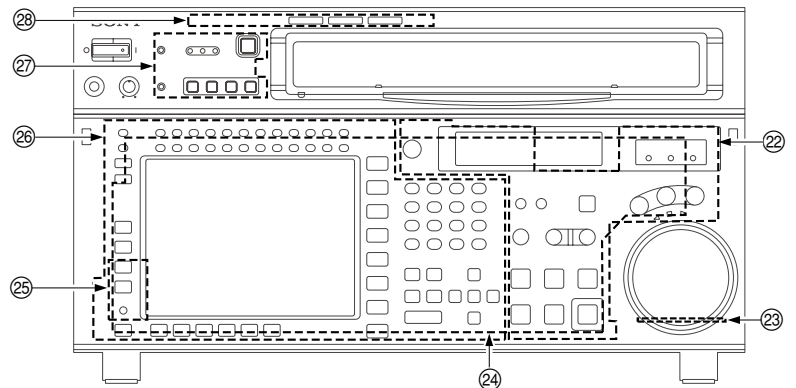
1-8. Location of Main Parts

1-8-1. Printed Circuit Boards and Power Supply Unit Locations

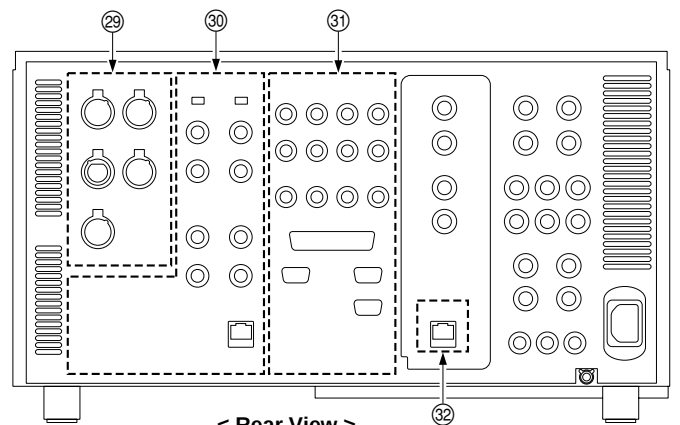
AE-31H	④
APR-81/91	②①
CN-2511	②⑤
CP-393/405	②④
CP-397	②⑨
CP-398	③①
CP-399	③①
CUE-13	①②
DIO-86	①⑧
DLP-27 (HKSR-5803HQ)	①②
DR-508	①⑤
DT-47/48	①③
DVP-43 (HKSR-5802)	①⑧
EQ-102/109	①④
FC-91/111 (HKSR-5001)	①⑨
FL-350	①⑦
FP-155/163	①⑨
HIF-46/56	①⑦
HP-135	①⑥
HPR-22/35	①⑤
IF-1071 (HKSR-5804)	③②
KY-526G	②⑥
KY-527	②②
LED-455	②⑧
MB-1101	①③
MY-115 (HKSR-5804)	①⑥
PTC-101	②③
SQ-20 (HKSR-5803SQ)	①②
SS-102	②①
SWC-46	②⑦
TC-104A/112A	①①
TX-96/127 (HKSR-5001)	①①
Power supply unit	①①①



< Top View >

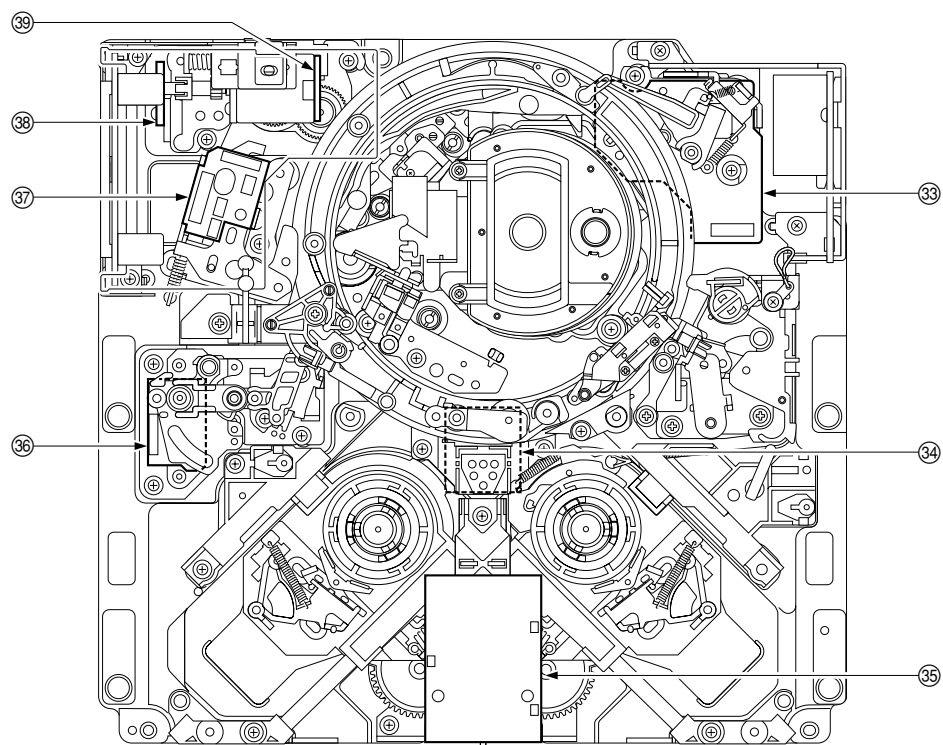


< Front View >

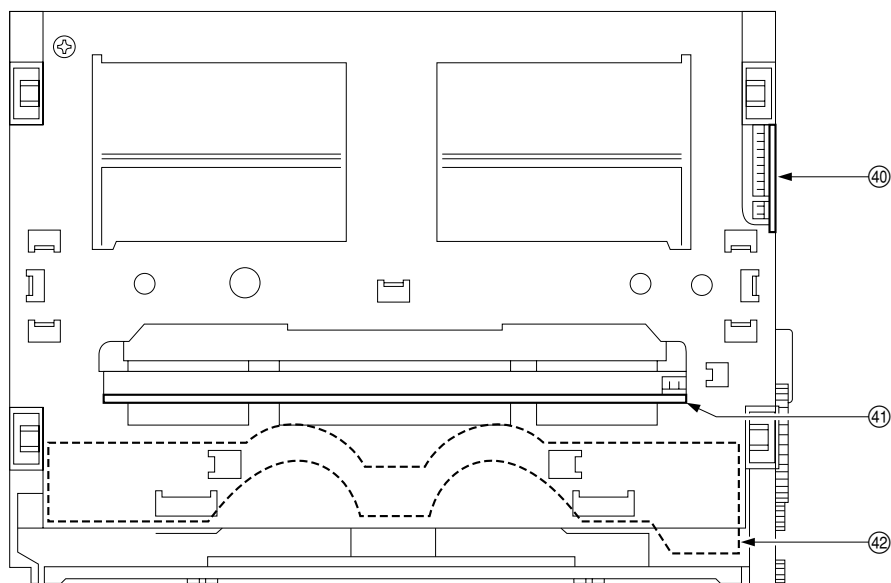


< Rear View >

- CCM-15 ③⑨
- CL-29 ④①
- HN-268 ③⑦
- LP-81 ④②
- PC-70 ③④
- PTC-99 ③⑧
- PTC-102 ③⑤
- SE-606A ③⑥
- TR-119 ③③
- TR-120 ③③

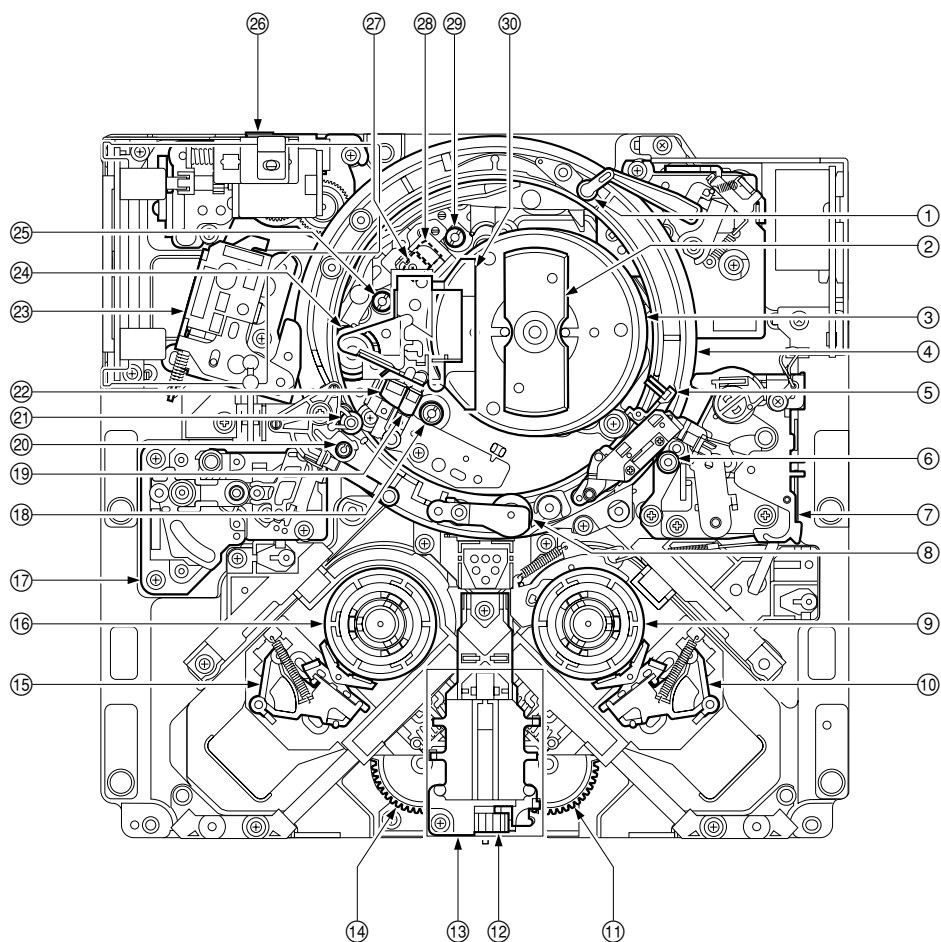


< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

1-8-2. Main Mechanical Part Locations

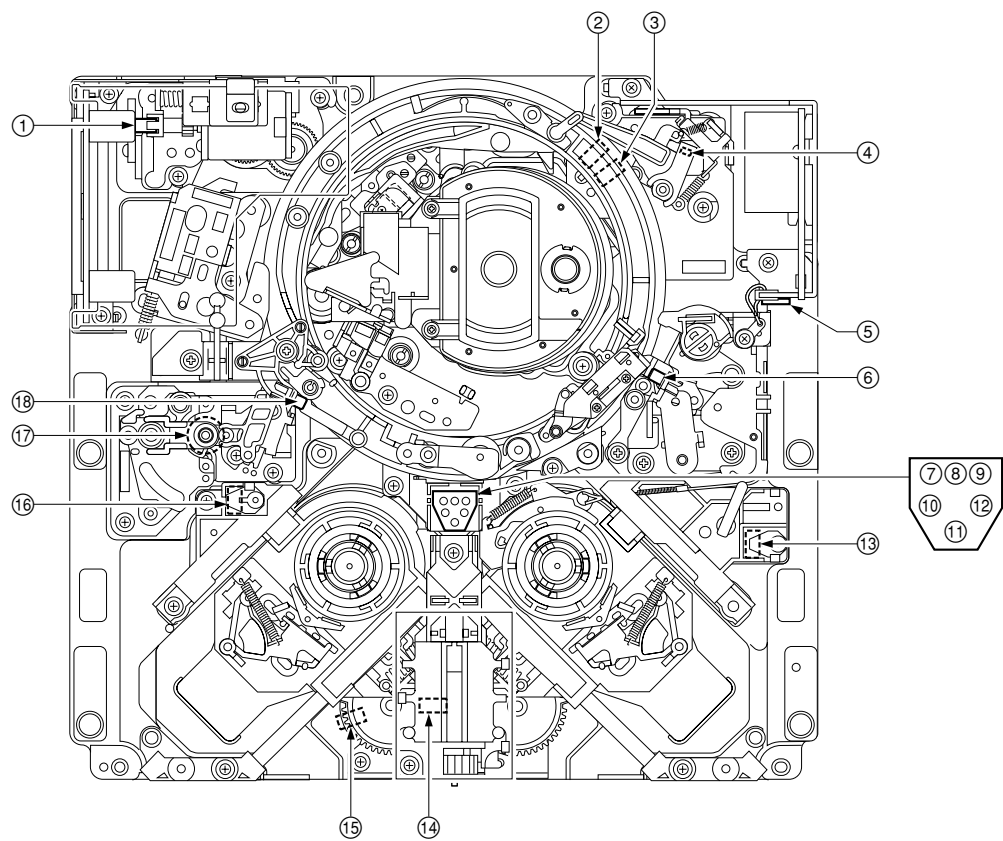


< Top View of Mechanical Deck >

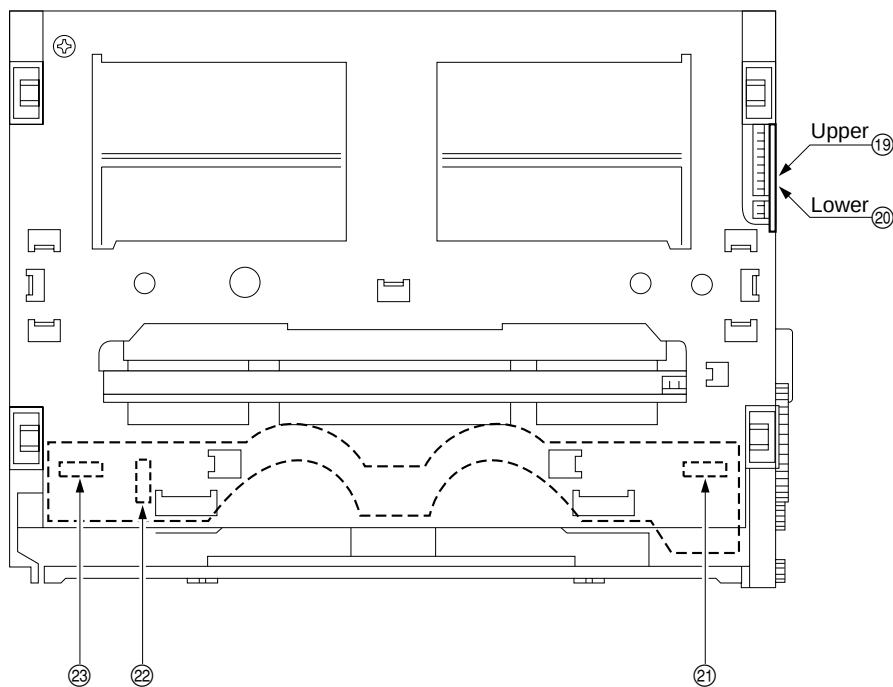
INDEX

① T tension regulator assembly	⑩ T brake assembly
② Brush slipping assembly	⑪ T drive gear
③ Head drum	⑫ Worm assembly
④ Threading ring	⑬ Motor holder assembly
⑤ Audio/TC head cleaner	⑭ S drive gear
⑥ TG-10 tape guide	⑮ S brake assembly
⑦ T drawer arm assembly	⑯ S reel table
⑧ Pinch roller assembly	⑰ S tension regulator assembly
⑨ T reel table	⑱ TG-2 tape guide
	⑲ CTL head
	⑳ Tape cleaner
	㉑ TG-0 tape guide
	㉒ Full-erase head
	㉓ Pinch press assembly
	㉔ Capstan motor
	㉕ TG-4 tape guide
	㉖ Gear box assembly
	㉗ Audio/TC head
	㉘ Audio/TC erase head
	㉙ TG-3 tape guide
	㉚ Video head cleaner assembly

1-9. Function and Location of Sensors



< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

① **Threading motor FG sensor**

This sensor detects the rotation speed of the threading motor. The output signal of this sensor enters the threading motor servo circuit, and controls the threading/unthreading speed to protect the tape during threading and unthreading operation.

② **Unthreading-end sensor**

③ **Threading-end sensor**

These sensors detect whether the threading ring reaches the threading-end or unthreading-end position.

④ **T tension regulator arm sensor**

This sensor detects the position of a T tension regulator arm. During recording and playback, the output signal of this sensor enters the T reel motor servo circuit, and controls the reel torque to keep a constant T tape tension.

⑤ **Condensation sensor**

This sensor detects whether the dew condensation occurs in the unit.

⑥ **Tape top sensor**

This sensor detects the beginning of the tape, and in addition detects the end of the tape that runs in the reverse direction.

⑦ **Reel hub diameter sensor***

This sensor detects the reel hub diameter detection tab of a cassette.

The reel hub with two types of diameters (thin and thick) is available according to the length of a tape stored in a cassette. This sensor is used to discriminate the diameter. The output signal of this sensor enters the servo circuit of take-up and supply reel motors, and controls the reel rotation speed and torque during tape transport.

⑧ **Metal/oxide tape sensor**

Not used.

⑨ **HDCAM SR cassette detection sensor***

When the cassette classification sensor detected the HDCAM SR or MPEG IMX cassette, this sensor is used to discriminate whether it is the HDCAM SR cassette.

⑩⑪⑫ **Cassette classification sensors***

These sensors detect the three cassette type detection tabs of a cassette.

These sensors are used to discriminate whether a cassette can be used in this unit.

⑬ **L cassette REC inhibit sensor***

This sensor (switch) detects the condition of a REC inhibit plug for the large cassette.

⑭ **Reel S position sensor**

⑮ **Reel L position sensor**

These sensors detect whether the reel tables move to the correct position according to the size of the inserted cassette.

⑯ **S cassette REC inhibit sensor***

This sensor (switch) detects the condition of a REC inhibit plug for the small cassette.

⑰ **S tension regulator arm sensor**

This sensor detects the position of an S tension regulator arm. During recording and playback, the output signal of this sensor enters the S reel motor servo circuit, and controls the reel torque to keep a constant S tape tension.

⑱ **Tape end sensor**

This sensor detects the end of the tape that runs in the forward direction.

⑲ **Cassette-down (1) sensor**

⑳ **Cassette-down (2) sensor**

These sensors detect the movement (position) of a cassette compartment by the combination of the detection state of the two sensors and a cassette-in sensor.

㉑ **Cassette-in sensor (R)**

This sensor detects whether a cassette is inserted.

㉒ **Cassette size sensor**

This sensor detects whether the inserted cassette is L size or S size.

㉓ **Cassette-in sensor (L)**

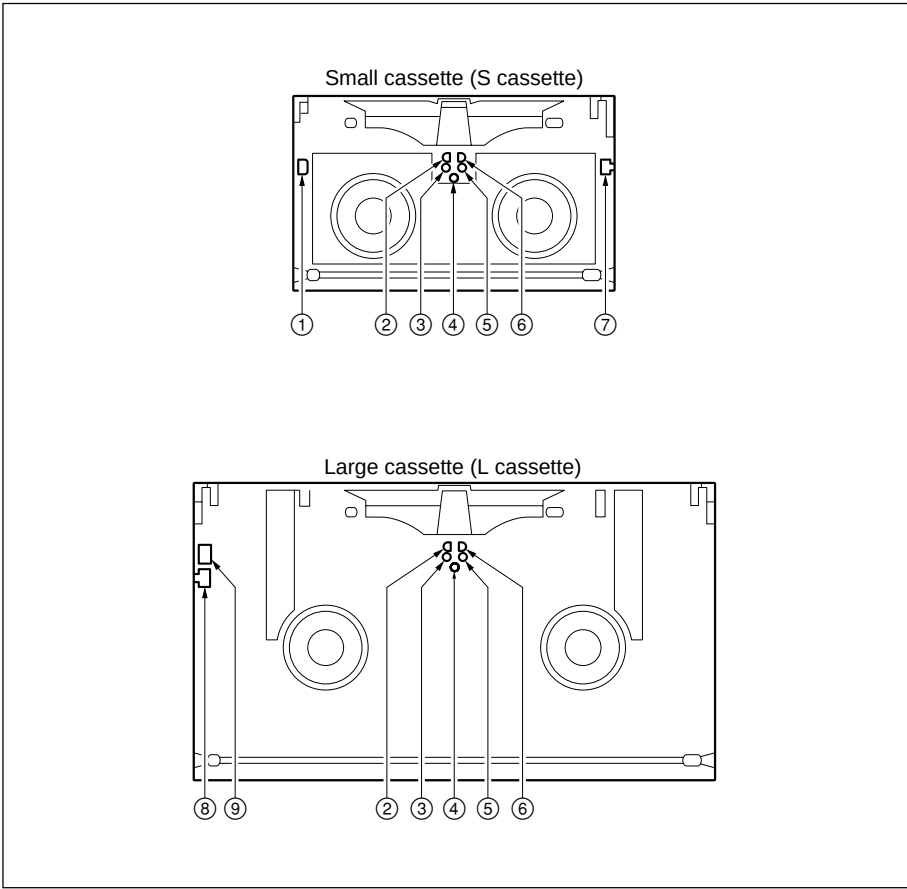
This sensor detects whether a cassette is inserted.

*: Also refer to “1-10. System of Cassettes”.

1-10. System of Cassettes

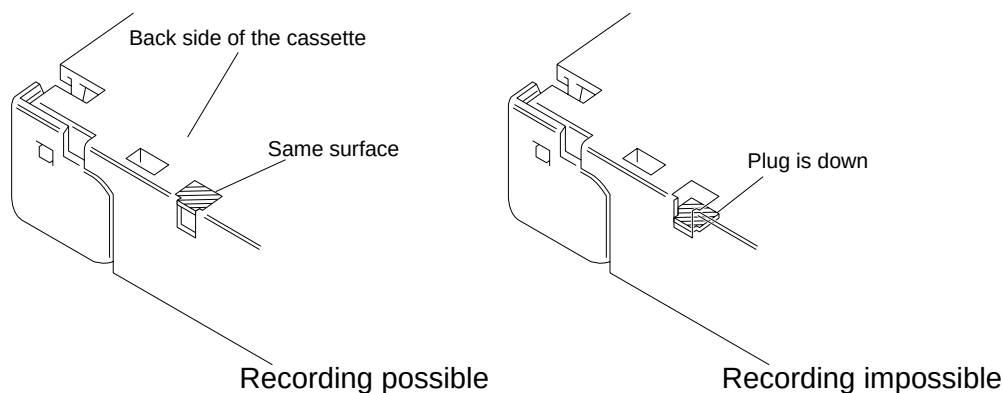
As shown in the figure below, plugs and tabs are provided at the back side of the cassette.

1/2 Inch Digital Video Cassettes



No.	Usage
①	S cassette analog REC inhibit hole
②	Tape thickness detection tab With tab (close hole): Standard (except HDCAM SR) Without tab (open hole): Very thin (HDCAM SR only)
③	Cassette classification detection tabs (See next page)
④	Cassette classification detection tabs (See next page)
⑤	Cassette classification detection tabs (See next page)
⑥	Reel hub diameter detection tab With tab (close hole): Small hub Without tab (open hole): Large hub (Cleaning tape etc.)
⑦	S cassette digital REC inhibit tab
⑧	L cassette digital REC inhibit tab
⑨	L cassette analog REC inhibit hole

REC Inhibit Plugs



Note

The upper figure: L cassette

Cassette classification detection tabs

○ : with tab (close hole), ● : without tab (open hole)

Represents the cassette classification by combination of three tabs.

State of Tabs ^{③⑤} _④	Cassette Class	Remark
○○	Betacam or Betacam SP	Unusable
●○	Betacam SX	Unusable
●○	Digital Betacam	Playback is enabled when the option HKSR-5802 is installed.
○○	HDCAM	Playback is enabled when the option HKSR-5802 is installed.
●●	HDCAM SR or MPEG IMX	The MPEG IMX is unusable. The tape thickness detection tab ② detects the HDCAM SR cassette. ② Without tab: HDCAM SR With tab: Other than HDCAM SR
●●, ●●, ●●,	Except the above class	Unusable

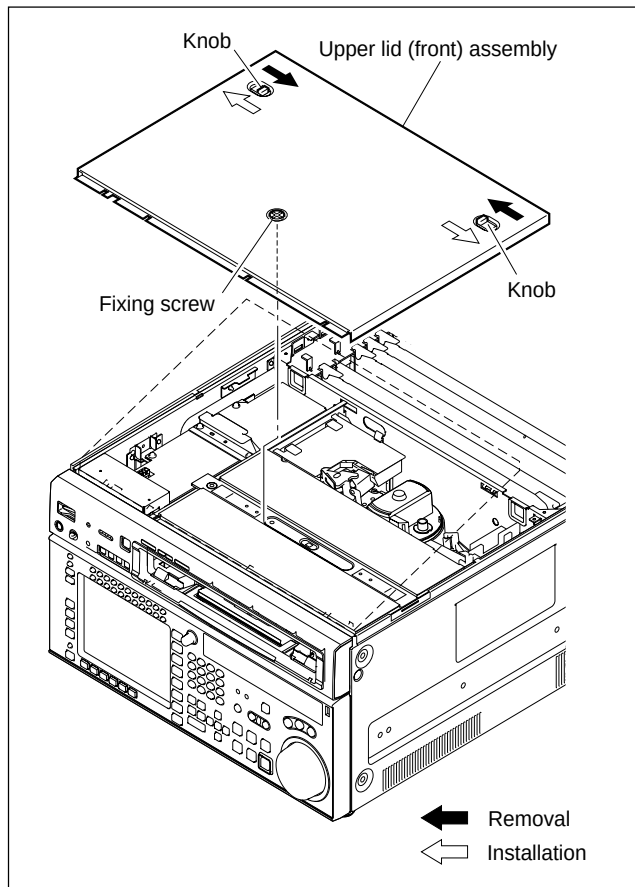
1-11. Taking Out the Cassette in Tape Slacking

When slacking the tape in this unit, follow the steps below to take out the cassette tape.

Notes

- Turn off the power and unplug the power cord before starting operation.
- Being careful not to damage the tape, take out the cassette tape with care.

1. Fully loosen the fixing screw.
2. Slide the knobs on upper lid (front) assembly each in the inside. (Move the knobs to the outside to fix the upper lid (front) assembly.)
3. Remove the upper lid (front) assembly.



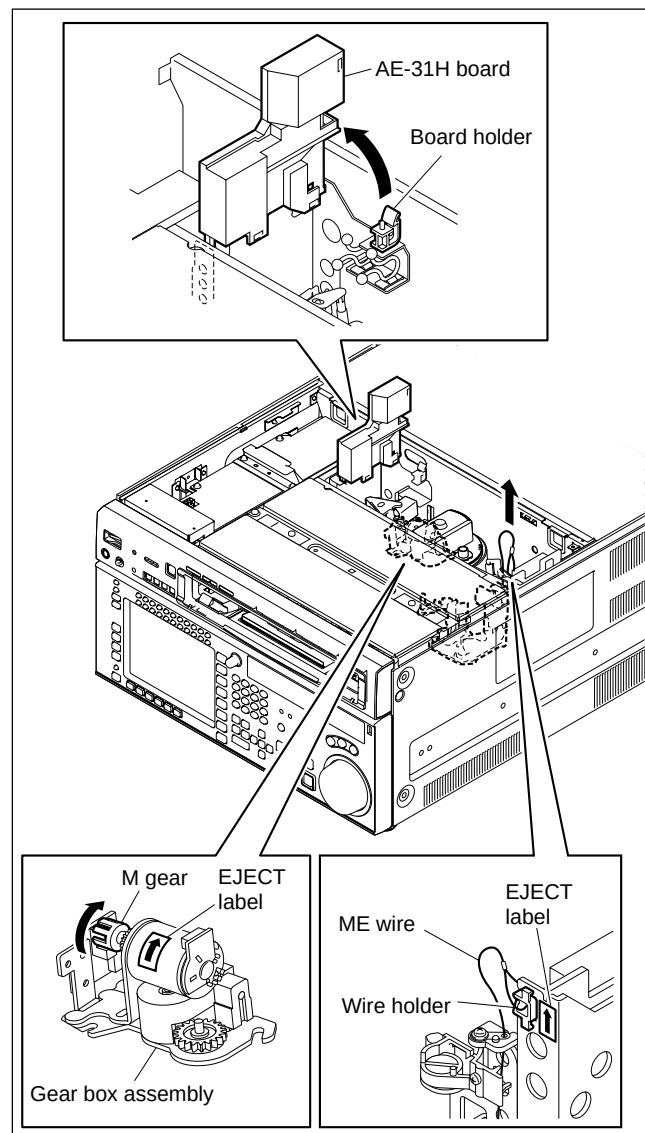
4. Release the lock of the board holder and open the AE-31H board in the arrow direction.
5. Check by eye that the unit is in the state to be able to wind manually the tape.
6. Pull the ME wire for a few times with short steps to take up the tape inside the cassette.

Notes

- Be careful for the tape not to catch in parts such as a flange of a tape guide.
- Don't take the ME wire off the wire holder.
- The ME wire links with the T real table.

The T real table rotates about 1/24 turns clockwise (take-up direction) by pulling the ME wire about 6 mm.

7. Rotate the M gear of the gear box assembly in the arrow direction on the EJECT label by about a half turn to slack off the tape.
8. Pull the ME wire for a few times with short steps in the arrow direction on the EJECT label to take up the tape inside the cassette.

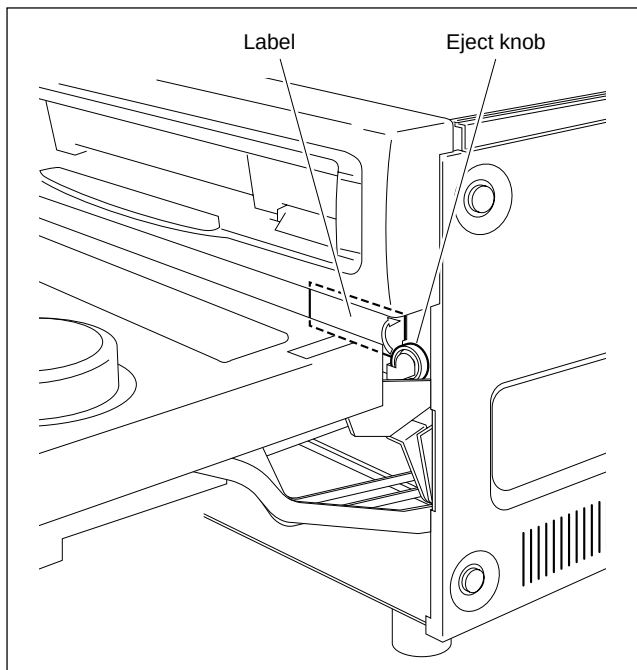


9. To wind up the tape into the cassette, repeat steps 7 and 8.

Note

On completely winding up the tape into the cassette, the M gear will be tighten.
(Unthreading end state)

10. Check that the ME wire is slacken.
11. Open the lower control panel.
12. Turn the eject knob in the arrow direction (clockwise) on the label until the cassette is completely ejected.



1-12. Removing/Reattaching Plug-in Board

Notes

- Turn off the power and unplug the power cord before removing/reattaching the board.
- When the plug-in board is replaced, refer to the Section 1-26.

Removing

1. Remove upper lid (front) assembly and upper lid (rear) assembly. (Refer to Section 1-3-1.)
2. Disconnect the coaxial cables and connection cord (with modular plugs) before removing the HIF-46/56, FC-91/111 (HKSR-5001) or MY-115 (HKSR-5804) board.

HIF-46/56 board: Disconnect the ten black coaxial cables and the three white coaxial cables from the HIF-46/56 board.

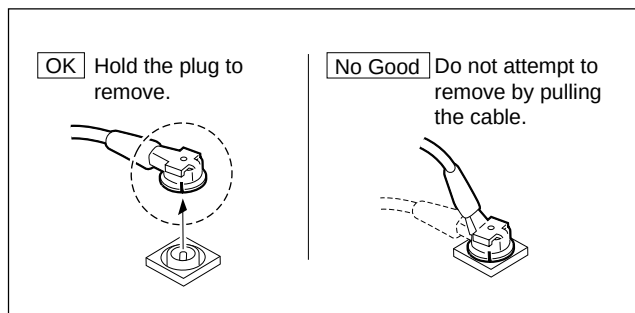
FC-91 board: Disconnect the four black coaxial cables from the sub board, TX-96/127 board.

FC-111 board: Disconnect the four black coaxial cables.

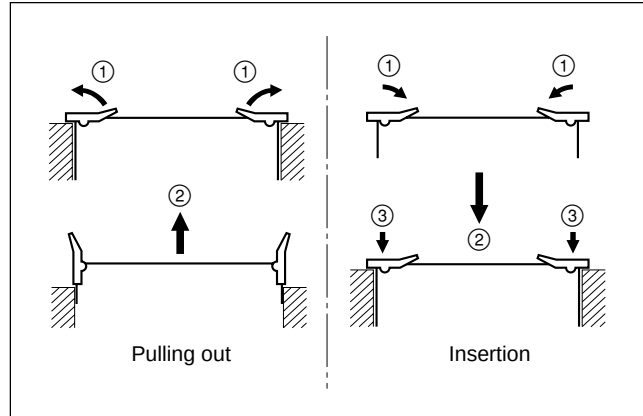
MY-115 board: Disconnect the four black coaxial cables and one connection cord (with modular plugs).

Note

When removing the coaxial cables, hold the plug to remove. Do not attempt to remove by pulling the cable.



3. Open the eject levers on both ends of the board in the direction of the arrows.
4. Hold the eject levers and slowly pull the board out.
5. For the EQ-102/109 board.
Release the four harnesses from the wire holder.
Remove the two beaded ties.
Disconnect the eleven harnesses from the connectors.



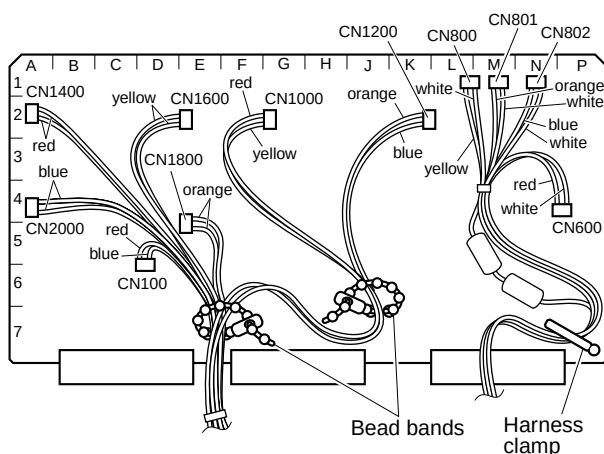
Reattaching

When reattaching the board, install in the reverse order of removal.

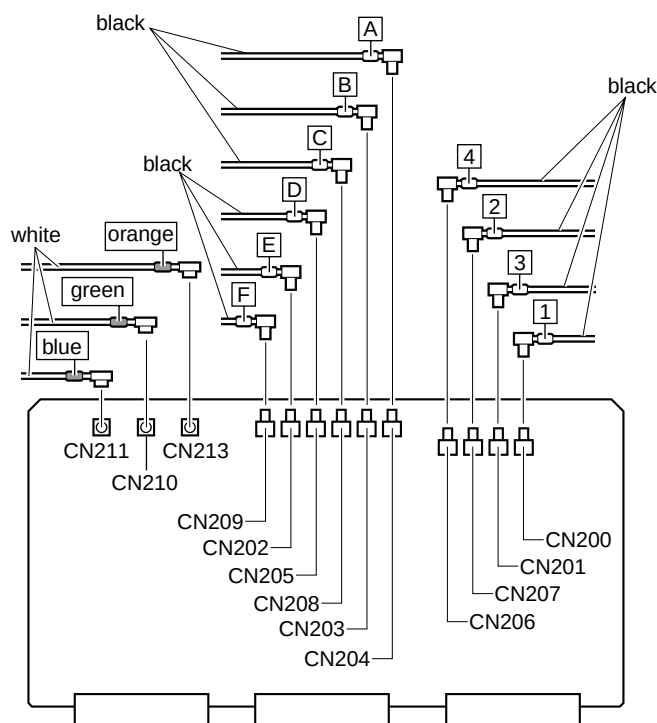
Notes

- After inserting the board, push in the two folded eject levers simultaneously to firmly connect the plug-in board to the connector on the motherboard.
- Connect the cables and harnesses as shown in the figure.
- When reattaching the upper lid (rear) assembly, be sure to insert the protrusions in the square holes on the chassis, and then secure the lid.
- Tighten the fixing screws as following torque.
Tightening torque: $120 \times 10^{-2} \text{ N}\cdot\text{m}$ {12.0 kgf·cm}

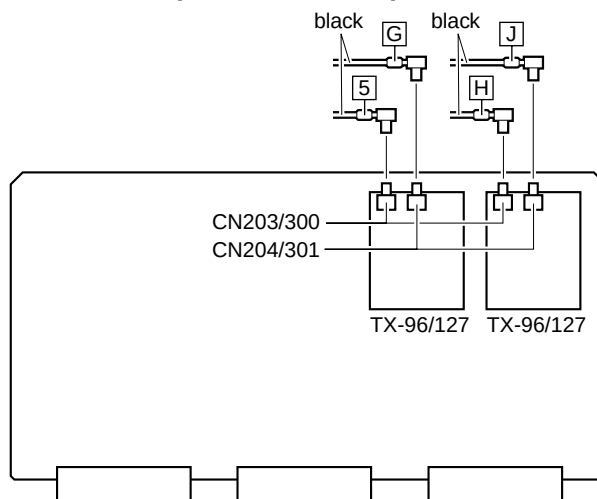
EQ-102/109 Board



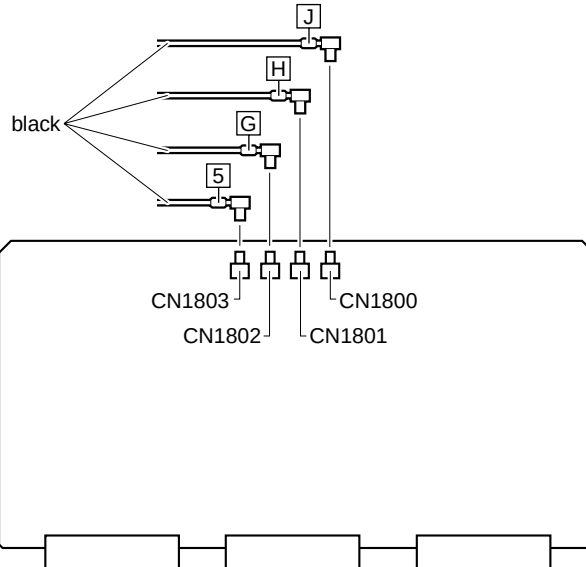
HIF-46/56 Board



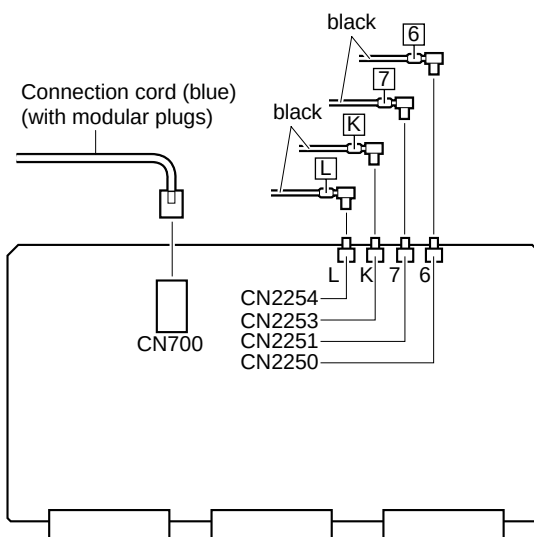
FC-91 Board (TX-96/127 Board) : HKSR-5001



FC-111 Board : HKSR-5001

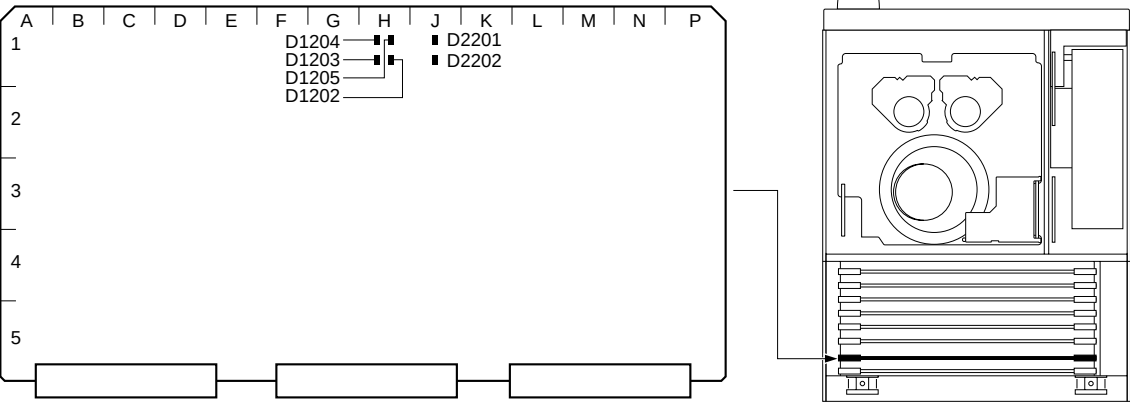


MY-115 Board : HKSR-5804



1-13. Function of LEDs on Circuit Boards

APR-81/91 Board

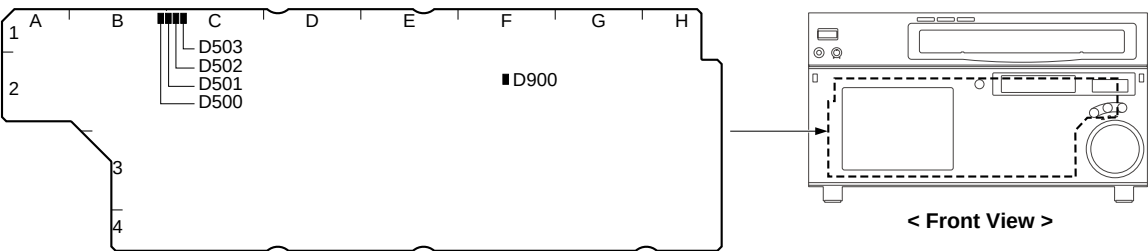


APR-81/91 Board (Side A)

< Top View >

LED No.	Name	Color	Description	Normal state (Power: ON)
D1202	—	Red	Factory use	OFF
D1203	—	Green	Factory use	ON
D1204	—	Green	Factory use	ON
D1205	—	Green	Factory use	ON
D2201	—	Green	Blinks when the PLD2 (IC2000/APR-81, 91 board) is operating normally.	Blinks
D2200	—	Green	Lights when configuration of the PLD2 (IC2000/APR-81, 91) is normally done.	ON

CP-393/405 Board

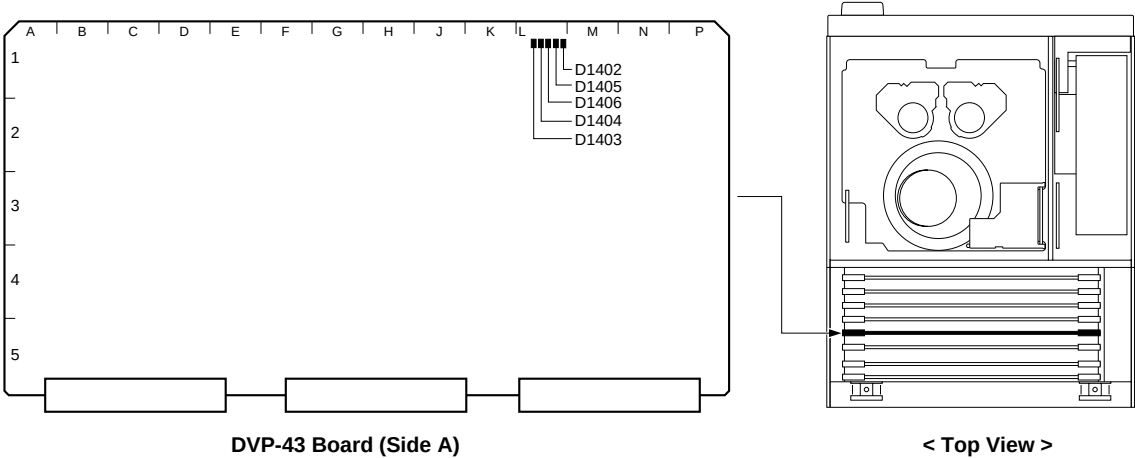


CP-393/405 Board (Side A)

< Front View >

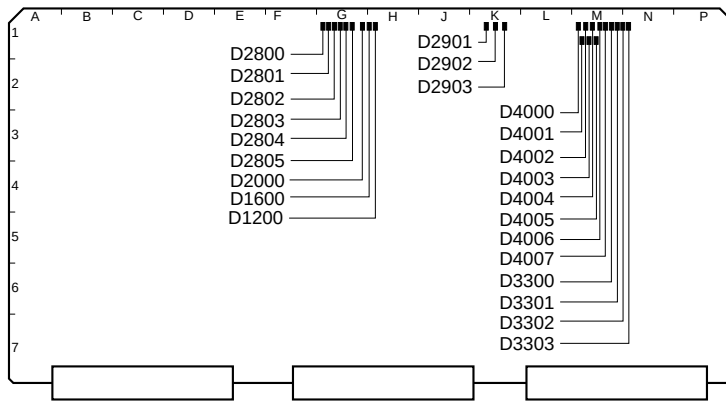
LED No.	Name	Color	Description	Normal state (Power: ON)
D500	—	Green	Blinks when the control panel is operating normally. 1 second light and 1 second off.	Blinks
D501	—	Green	High-speed blinks when the control panel is operating normally.	Blinks
D502	—	Green	Not used	OFF
D503	—	Red	Not used	OFF
D900	—	Green	Blinks when the CP PLD (IC900/CP-393, 405 board) is operating normally.	Blinks

DVP-43 Board (HKSR-5802)

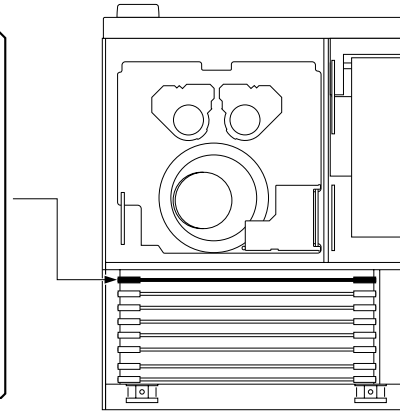


LED No.	Name	Color	Description	Normal state (Power: ON)
D1402	—	Green	Lights when the PLD3 (IC1000/DVP-43 board) configuration.	OFF
D1403	—	Red	Factory use	OFF
D1404	—	Green	Blinks when the PLD1 (IC100/DVP-43 board) is operating normally.	Blinks
D1405	—	Red	Factory use	OFF
D1406	—	Green	Blinks when the PLD2 (IC200/DVP-43 board) is operating normally.	Blinks

EQ-102/109 Board



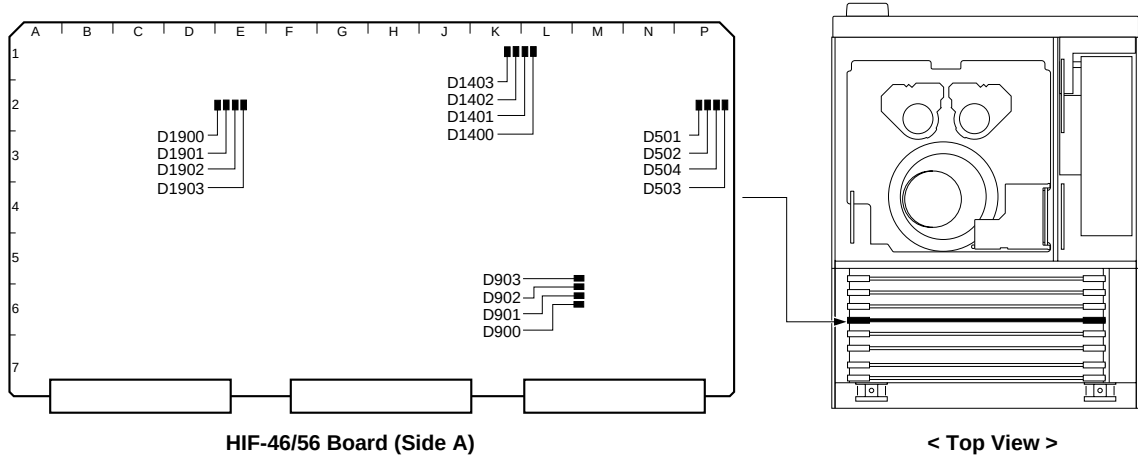
EQ-102/109 Board (Side A)



< Top View >

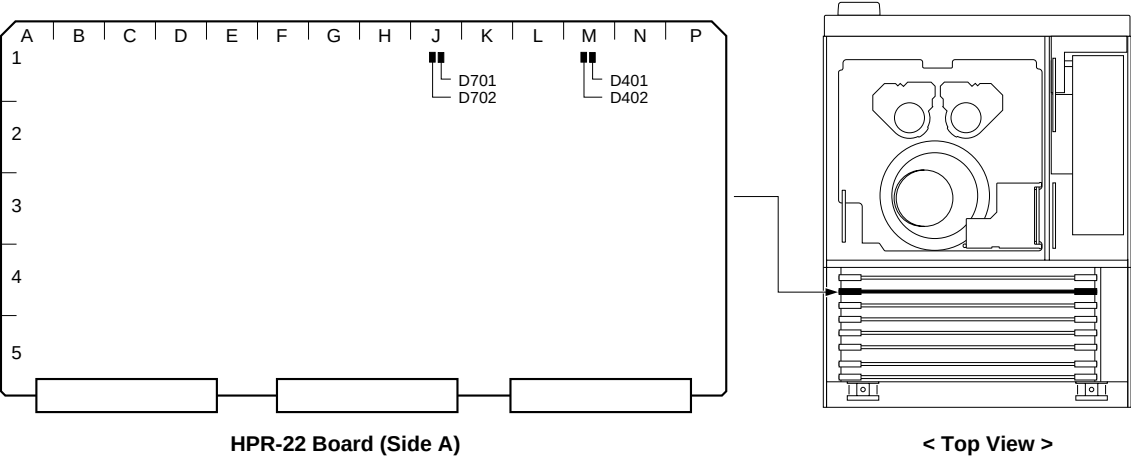
LED No.	Name	Color	Description	Normal state (Power: ON)
D1200	NOSIG1	Green	Factory use	OFF
D1600	NOSIG2	Green	Factory use	OFF
D2000	NOSIG3	Green	Factory use	OFF
D2800	AAC2_ERR	Green	Factory use	OFF
D2801	AVC2_ERR	Green	Factory use	OFF
D2802	AVC2_ERI	Green	Factory use	OFF
D2803	BAC2_ERR	Green	Factory use	OFF
D2804	BVC2_ERR	Green	Factory use	OFF
D2805	BVC2_ERI	Green	Factory use	OFF
D2901	EQ EXT	Green	Factory use	OFF
D2902	EQ MODE	Green	Lights when REC mode.	OFF
D2903	CPU ERR	Green	Blinks when the communication with the SS-102 board is normal.	Blinks
D3300	MPX MODE 0	Green	Factory use	OFF
D3301	MPX MODE 1	Green	Factory use	OFF
D3302	MPX MODE 2	Green	Factory use	OFF
D3303	MPX MODE 3	Green	Factory use	OFF
D4000	Factory use	Green	Factory use	Indetermination
D4001	Factory use	Green	Factory use	Indetermination
D4002	Factory use	Green	Factory use	Indetermination
D4003	Factory use	Red	Factory use	Indetermination
D4004	Factory use	Green	Factory use	Indetermination
D4005	Factory use	Green	Factory use	Indetermination
D4006	Factory use	Green	Factory use	Indetermination
D4007	Factory use	Red	Factory use	Indetermination

HIF-46/56 Board



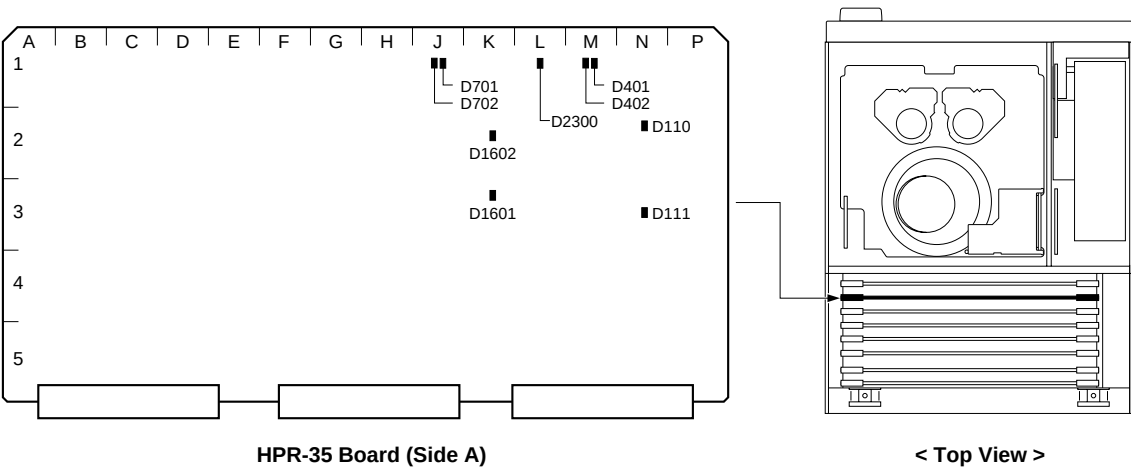
LED No.	Name	Color	Description	Normal state (Power: ON)
D501	—	Red	Factory use	OFF
D502	—	Red	Factory use	OFF
D503	—	Green	Factory use	ON
D504	—	Green	Blinks when the PLD1 (IC3000/HIF-46, 56 board) is operating normally. Blinks	
D900	—	Green	Factory use	ON
D901	—	Green	Blinks when the PLD2 (IC3001/HIF-46, 56 board) is operating normally. Blinks	
D902	—	Red	Factory use	OFF
D903	—	Red	Factory use	OFF
D1400	—	Green	Blinks when the PLD3 (IC2000/HIF-46, 56 board) is operating normally. Blinks	
D1401	—	Green	Factory use	ON
D1402	—	Red	Factory use	OFF
D1403	—	Red	Factory use	OFF
D1900	—	Green	Blinks when the PLD4 (IC1111/HIF-46, 56 board) is operating normally. Blinks	
D1901	—	Green	Factory use	ON
D1902	—	Red	Factory use	OFF
D1903	—	Red	Factory use	OFF

HPR-22 Board



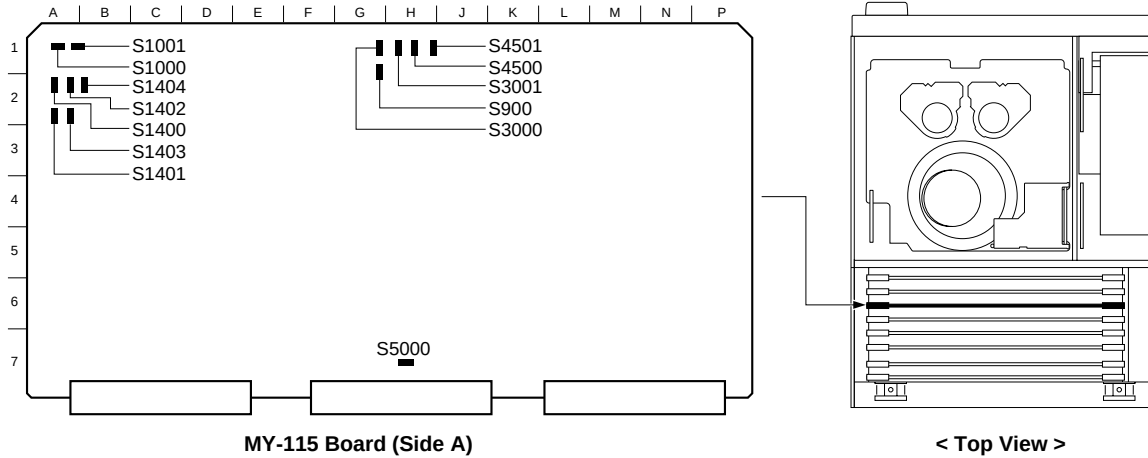
LED No.	Name	Color	Description	Normal state (Power: ON)
D401	—	Red	Factory use	OFF
D402	—	Green	Blinks when the PLD1 (IC100/HPR-22 board) is operating normally.	Blinks
D701	—	Green	Blinks when the PLD2 (IC700/HPR-22 board) is operating normally.	Blinks
D702	—	Red	Factory use	OFF

HPR-35 Board



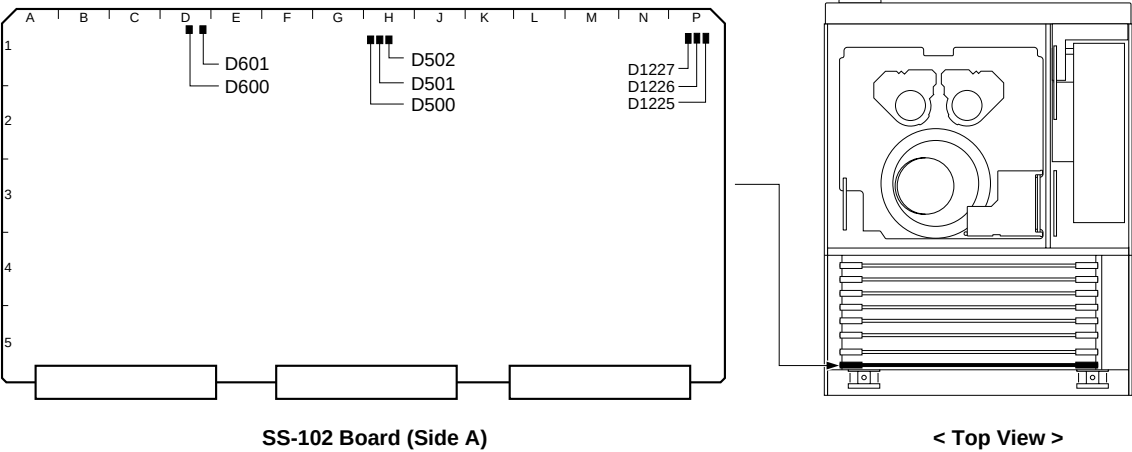
LED No.	Name	Color	Description	Normal state (Power: ON)
D110	—	Green	Factory use	Blinks
D111	—	Green	Factory use	Blinks
D401	—	Red	Factory use	OFF
D402	—	Green	Blinks when the PLD1 (IC100/HPR-35 board) is operating normally.	Blinks
D701	—	Green	Blinks when the PLD2 (IC103/HPR-35 board) is operating normally.	Blinks
D702	—	Red	Factory use	OFF
D1601	—	Green	Factory use	Blinks
D1602	—	Green	Factory use	Blinks
D2300	—	Green	Factory use	Blinks

MY-115 Board



LED No.	Name	Color	Description	Normal state (Power: ON)
D701	TX	Yellow green	Lights when transmitting the packet	Indetermination
D702	RX	Yellow green	Lights when transmitting the packet	Indetermination
D703	FDX	Yellow green	Lights in the full duplex mode	Indetermination
D704	1000	Yellow green	Lights when connected with 1000BASE-T	Indetermination
D705	100	Yellow green	Lights when connected with 100BASE-T	Indetermination
D706	10	Yellow green	Lights when connected with 10BASE-T	Indetermination
D1400	ERROR	Red	Factory use	OFF
D1401	LED4	Yellow green	Factory use	ON
D1402	LED3	Yellow green	Blinks when NWCPU is normal	Blinks
D1403	LED2	Yellow green	Factory use	ON
D1404	LED1	Yellow green	Factory use	ON
D3000	—	Yellow green	Factory use	OFF
D3001	—	Yellow green	Factory use	OFF
D3002	—	Red	Factory use	OFF
D4500	—	Yellow green	Factory use	OFF
D4501	—	Yellow green	Factory use	OFF
D4502	—	Red	Factory use	OFF
D5000	—	Yellow green	Factory use	OFF
D5001	—	Yellow green	Factory use	OFF
D5002	—	Red	Factory use	OFF

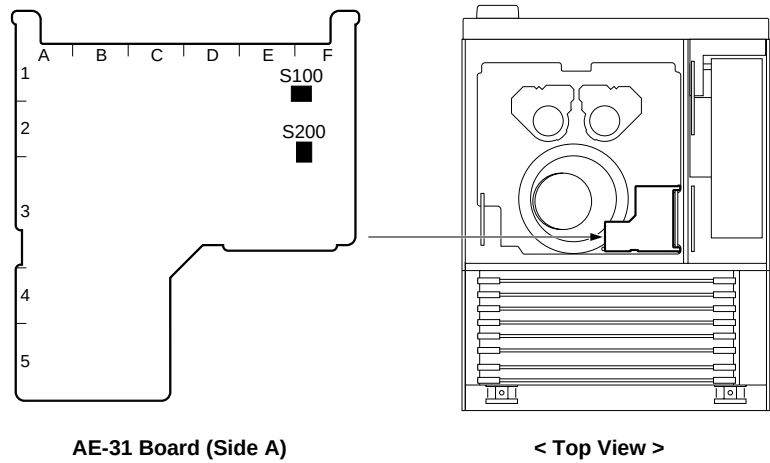
SS-102 Board



LED No.	Name	Color	Description	Normal state (Power: ON)
D500	CPU	Green	Blinks when the SYS1 CPU (IC101/SS-102 board) is operating normally.	Blinks
D501	—	Green	Lights when interruption processing of the SYS1 CPU (IC101/SS-102 board) is normal.	ON
D502	ERR	Red	Lights when the SYS1 CPU (IC101/SS-102 board) is not operating normally.	OFF
D600	CPU	Green	Blinks when interruption processing of the SYS2 CPU (IC500/SS-102 board) is normal.	Blinks
D601	ERR	Red	Lights when the SYS2 CPU (IC500/SS-102 board) is not operating normally.	OFF
D1225	LOG	Green	Lights when updating the servo log. Off when stopping.	ON
D1226	CPU	Green	Blinks when the servo CPU (IC801/SS-102 board) is operating normally.	Blinks
D1227	ERR	Red	Lights when servo errors have occurred. Blinks when downloading the servo software.	OFF

1-14. Description of Switch Functions

AE-31H Board

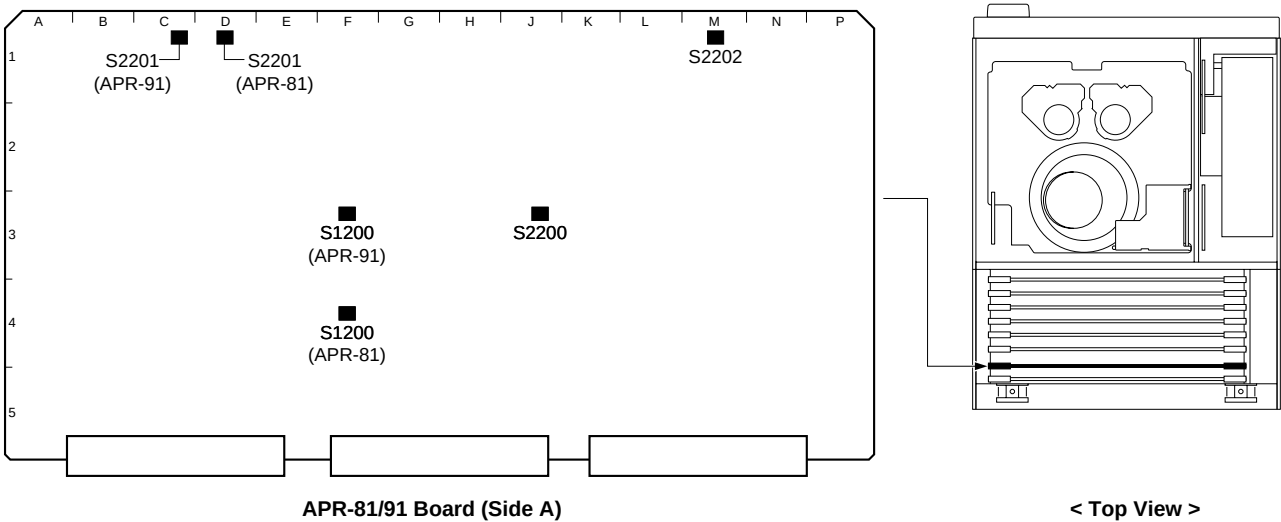


The switches S100, S200 on the AE-31H board are not used for the unit.
It is not necessary to change the setting of these switches.

APR-81/91 Board

Notes

- Never change the setting of the factory use switches.
- S2201 and S2202 are switches used for adjusting analog audio output. Never change the switch setting except for adjustment.
- Refer to Section 1-12 for removing and reattaching the plug-in boards.



Ref. No.	Bit	Name	Description	Factory setting
S1200	1 to 4	—	Factory use	OFF
S2200	1 to 4	—	Factory use	OFF
S2201	—	Monitor Level Lch	Factory use	*
S2202	—	Monitor Level Rch	Factory use	*

※: Factory settings vary from board to board.

CP-393/405 Board

Note

Never change the setting of the factory use switches.

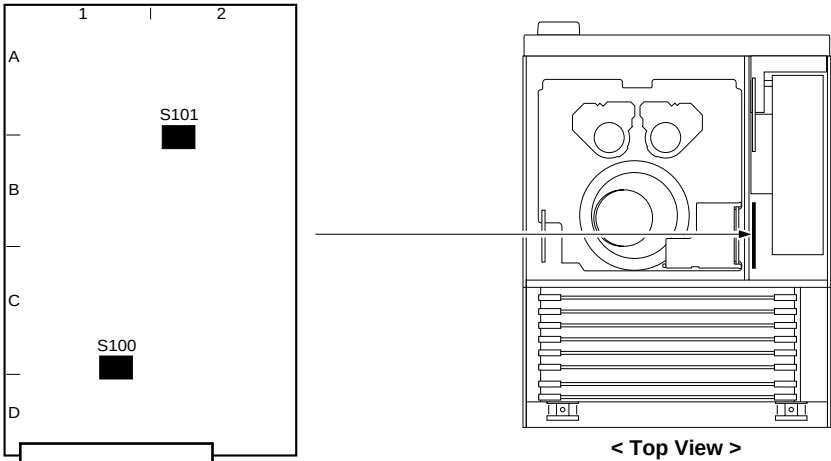


CP-393/405 Board (Side A) < Front View >

Ref. No.	Bit	Name	Description	Factory setting
S1	1	—	Factory use	OFF
	2, 3	—	Factory use	ON
	4 to 8	—	Factory use	OFF
S2	1 to 8	—	Factory use	OFF
S300 (CP-393 only)	1 to 4	—	Factory use	ON

CUE-13 Board

If necessary, perform the following settings using the switches on the CUE-13 board.



CUE-13 Board (Side A)

< Top View >

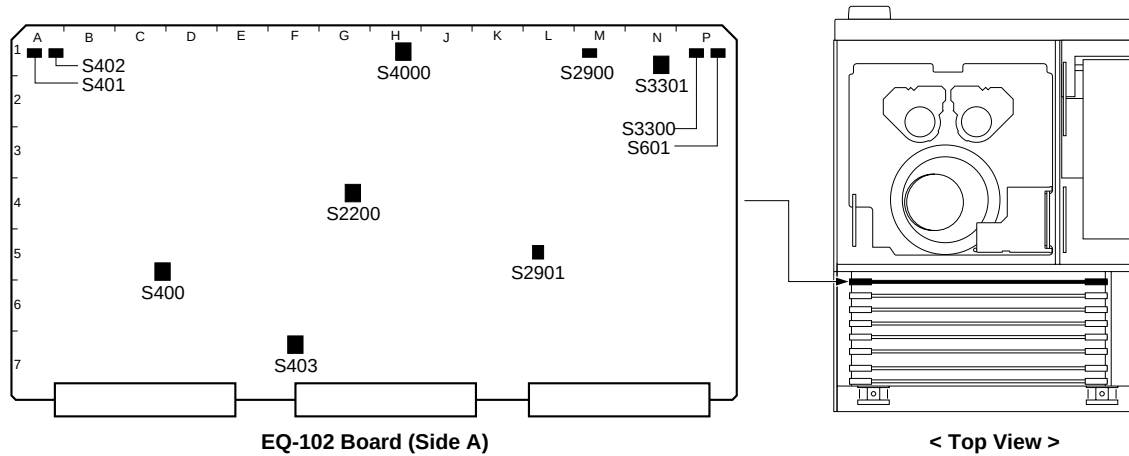
CUE output level settings

Ref. No.	Switches state (■ : Knob position)			
S100 (Not used in this unit.)				
S101				
	+4 dBm/600 Ω (Factory setting)	0 dBm/600 Ω	−3 dBm/600 Ω	−20 dBm/600 Ω

EQ-102 Board

Notes

- Never change the setting of the factory use switches.
- Refer to Section 1-12 for removing/reattaching the plug-in board.

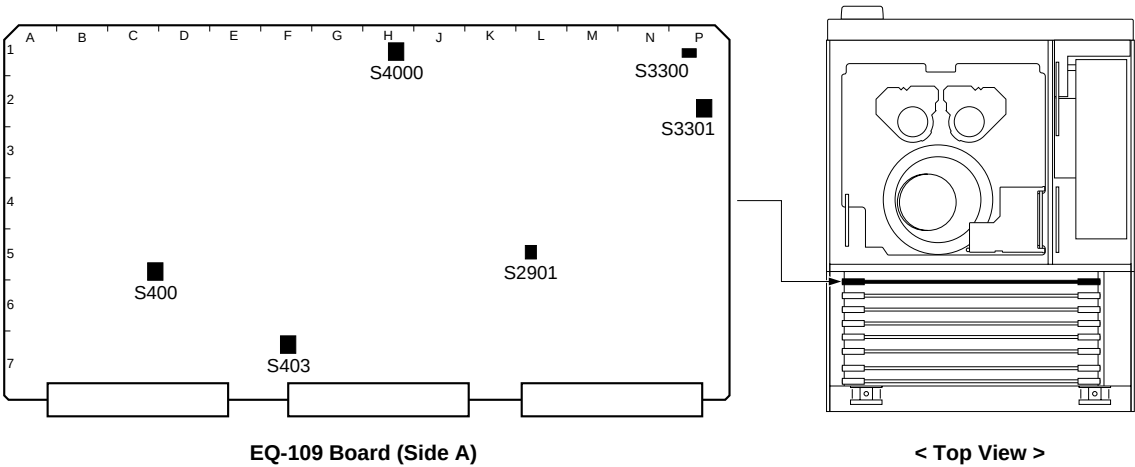


Ref. No.	Bit	Name	Description	Factory setting
S400	1 to 3	DEVICE RESET	Factory use	OFF
	4	DEVICE RESET	Factory use	ON
S401	—	—	Factory use	—
S402	—	—	Factory use	—
S403	1 to 4	—	Factory use	OFF
S601	1	STRATIX CONFIG	Factory use	OFF
	2 to 4	STRATIX CONFIG	Factory use	ON
S2200	1	STRATIX CONFIG	Factory use	OFF
	2 to 4	STRATIX CONFIG	Factory use	ON
S2900	—	CPU CONFIG	Factory use	—
S2901	1 to 4	CPU RESET	Factory use	OFF
S3300	1 to 3	MPX TEST	Factory use	OFF
	4	MPX TEST	Factory use	ON
S3301	—	MPX TEST MODE	Factory use	0
S4000	1 to 4	—	Factory use	OFF

EQ-109 Board

Note

Never change the setting of the factory use switches.

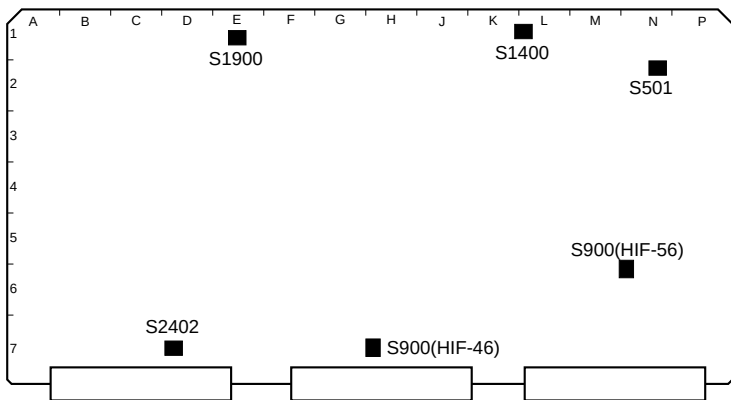


Ref. No.	Bit	Name	Description	Factory setting
S400	1 to 3	DEVICE RESET	Factory use	OFF
	4	DEVICE RESET	Factory use	ON
S403	1 to 4	—	Factory use	OFF
S2901	1 to 4	CPU RESET	Factory use	OFF
S3300	1 to 3	MPX TEST	Factory use	OFF
	4	MPX TEST	Factory use	ON
S3301	—	MPX TEST MODE	Factory use	0
S4000	1 to 4	—	Factory use	OFF

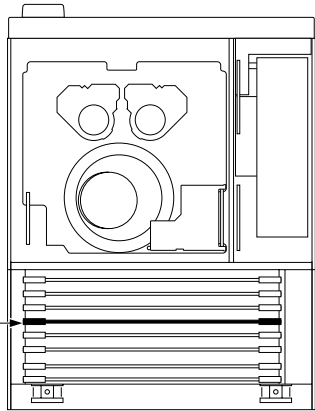
HIF-46/56 Board

Notes

- Never change the settings of the factory use switches.
- Refer to Section 1-12 for removing/reattaching the plug-in board.



HIF-46/56 Board (Side A)



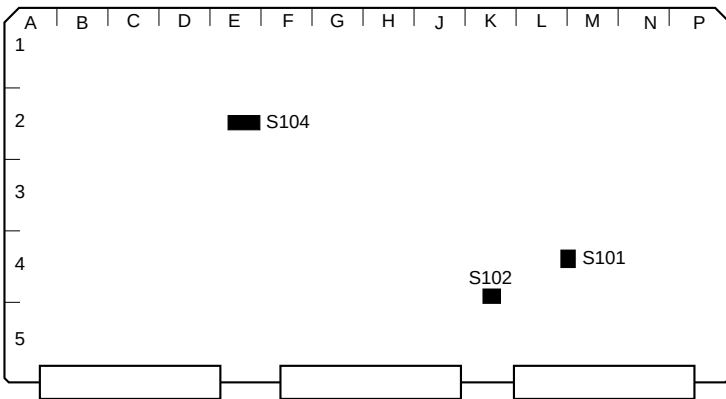
< Top View >

Ref. No.	Bit	Name	Description	Factory setting
S501	1 to 4	—	Factory use	OFF
S900	1 to 4	—	Factory use	OFF
S1400	1 to 4	—	Factory use	OFF
S1900	1 to 4	—	Factory use	OFF
S2402	1 to 4	—	Factory use	OFF

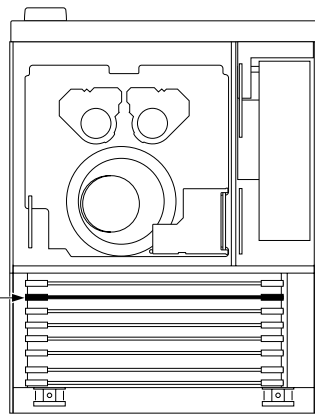
HPR-22 Board

Notes

- Never change the setting of the factory use switches.
- Refer to Section 1-12 for removing/reattaching the plug-in board.



HPR-22 Board (Side A)



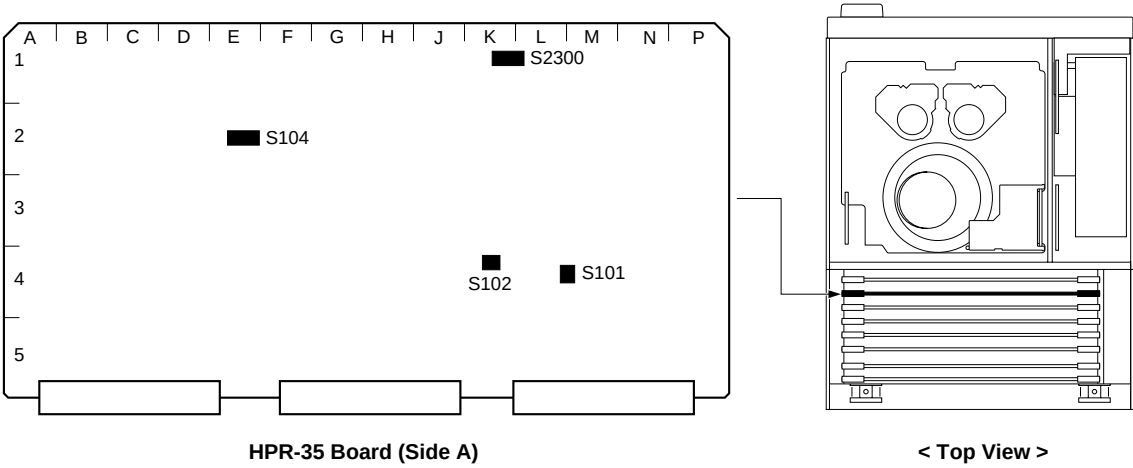
< Top View >

Ref. No.	Bit	Name	Description	Factory setting
S101	1 to 4	—	Factory use	OFF
S102	1 to 4	—	Factory use	OFF
S104	1 to 4	—	Factory use	OFF

HPR-35 Board

Notes

- Never change the setting of the factory use switches.
- Refer to Section 1-12 for removing/reattaching the plug-in board.

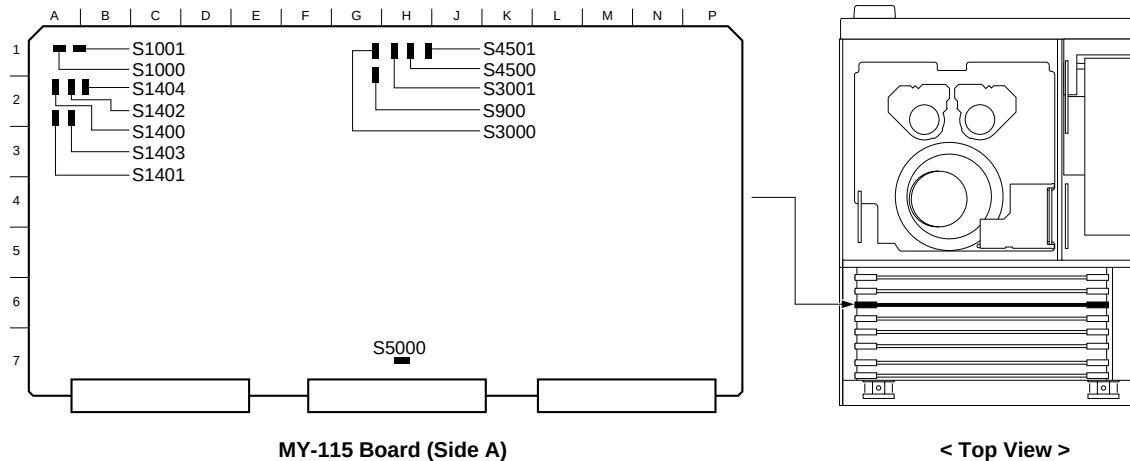


Ref. No.	Bit	Name	Description	Factory setting
S101	1 to 4	—	Factory use	OFF
S102	1 to 4	—	Factory use	OFF
S104	1 to 4	—	Factory use	OFF
S2300	1 to 4	—	Factory use	OFF

MY-115 Board (HKS-5804)

Notes

- Never change the settings of the factory use switches.
- Refer to Section 1-12 for removing/reattaching the plug-in board.

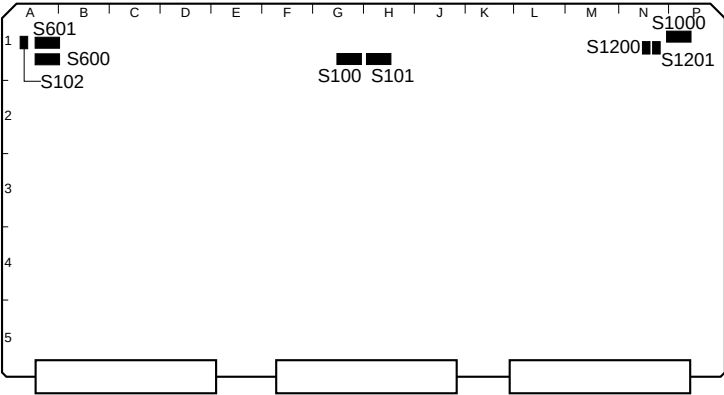


Ref. No.	Bit	Name	Description	Factory setting
S900	1 to 4	PCI	Factory use	OFF
S1000		Reset	System reset	-
S1001		—	Factory use	-
S1400	1, 2	—	Factory use	ON
	3, 4	—	Factory use	OFF
	5	—	Factory use	ON
	6	—	Factory use	OFF
	7	—	Factory use	ON
	8	—	Factory use	OFF
S1401	1 to 7	—	Factory use	OFF
	8	—	Factory use	ON
S1402	1	—	Factory use	ON
	2 to 8	—	Factory use	OFF
S1403	1	—	Factory use	OFF
	2	—	Factory use	ON
	3 to 8	—	Factory use	OFF
S1404	1	—	OFF : Normal start ON : Start by program of boot	OFF
	2 to 8	—	Factory use	OFF
S3000	1 to 4	SW A	Factory use	OFF
S3001	1 to 4	SW B	Factory use	OFF
S4500	1 to 4	SW C	Factory use	OFF
S4501	1 to 4	SW D	Factory use	OFF
S5000	1 to 4	PLD SW A	Factory use	OFF

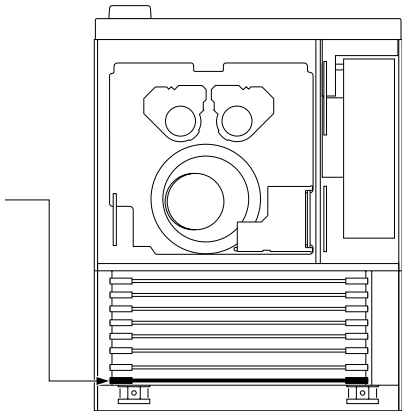
SS-102 Board

Notes

- Never change the settings of the factory use switches.
- Refer to Section 1-12 for removing/reattaching the plug-in board.



SS-102 Board (Side A)



< Top View >

Ref. No.	Bit	Name	Description	Factory setting
S100	1 to 8	—	Factory use	OFF
S101	1	—	Factory use	OFF
	2, 3	—	Factory use	ON
	4 to 8	—	Factory use	OFF
S102	—	SYSTEM RESET	Press to reset this unit	—
S600	1 to 8	—	Factory use	OFF
S601	1	—	Factory use	OFF
	2 to 4	—	Factory use	ON
	5 to 8	—	Factory use	OFF
S1000	1	TRACKING CONTROL	ON : Activates the tracking control VR OFF : Disables the tracking control VR Note Tracking control VR: RV1200 on SS-102 board.	OFF
	2	SAT CONTROL	ON : Disables the SAT operation OFF : Activates the SAT operation	OFF
	3	DT OPERATION	ON : Disables the DT operation OFF : Activaes the DT operation	OFF
	4 to 8	—	Factory use	OFF
S1200	—	LOG	Press to stop/update SV log	—
S1201	—	R-SHFT	Press to change reel position Note Does not function when the cassette is inserted in this unit.	—

1-15. Circuit Protection Parts (Fuse/IC Link)

This unit is equipped with circuit protection parts such as fuse and IC link. These parts melt when overcurrent flows or the unit overheats when problems occur. When replacing these parts, be sure to use the following designated parts. Correct the cause resulting in the melting of these parts before replacement.

WARNING

Use Designated Parts

The fuse/IC link is an important part for ensuring safety. Replacement with parts other than those designated will result in fire hazards and electric hazards. Therefore be sure to use only designated parts.

Note

The brackets () show the address on the side A of the board. * mark shows the side B of the board.

Board	Ref. No.	Part No./Description
AE-31H	PS850 (B-4)	△ 1-533-282-21
	PS851 (A-1)	On-chip IC link 2 A
	PS852 (A-1)	
APR-81	F100 (G-5)	△ 1-533-999-21 On-chip fuse 2 A, 125 V
	F101 (G-5)	△ 1-576-270-21 On-chip fuse 4 A, 125 V
	F102 (H-5)	△ 1-533-627-21 On-chip fuse 5 A, 125 V
	F105 (H-5)	△ 1-533-999-21
	F106 (H-4)	On-chip fuse 2 A, 125 V
	F400 (A-4)	
	F401 (A-4)	△ 1-576-270-21 On-chip fuse 4 A, 125 V
	F402 (B-3)	△ 1-533-804-21
APR-91	F403 (B-4)	On-chip fuse 2.5 A, 125 V
	F101 (G-4)	△ 1-576-270-21 On-chip fuse 4 A, 125 V
	F102 (H-5)	△ 1-533-627-21 On-chip fuse 5 A, 125 V
	F105 (J-5)	△ 1-533-999-21
	F106 (J-5)	On-chip fuse 2 A, 125 V
	F401 (A-4)	△ 1-576-270-21 On-chip fuse 4 A, 125 V
	F402 (B-3)	△ 1-533-804-21
	F403 (B-4)	On-chip fuse 2.5 A, 125 V
CP-393/405	F700 (E-3)	△ 1-533-999-21
	F701 (E-3)	On-chip fuse 2 A, 125 V
CP-399	PS200 (A-6)	△ 1-576-259-21
	PS300 (C-6)	On-chip IC link 0.6 A

Board	Ref. No.	Part No./Description
CUE-13	PS300 (D-2)	△ 1-533-282-21
	PS301 (D-2)	On-chip IC link 2 A
	PS302 (D-2)	
DR-508	F1 (D-2)	△ 1-576-328-21 On-chip fuse 8 A, 125 V
	F400 (A-3)	△ 1-576-269-21
	F500 (A-3)	On-chip fuse 3.15 A, 125 V
	F700 (E-2)	△ 1-533-627-21 On-chip fuse 5 A, 125 V
	F701 (D-1)	△ 1-576-270-21 On-chip fuse 4 A, 125 V
	F702 (D-1)	△ 1-576-212-21
	F703 (D-1)	On-chip fuse 1.25 A, 125 V
	F704 (D-1)	
	F705 (C-1)	
DT-47	F706 (E-4)	△ 1-533-627-21
	F800 (C-3)	On-chip fuse 5 A, 125 V
	F1000 (E-3)	
DT-47	F1 (D-3)	△ 1-533-483-21 On-chip fuse 1.6 A, 125 V
DT-48	F300 (D-3)	△ 1-576-269-21 On-chip fuse 3.15 A, 125 V
DVP-43 (HKSR-5802)	F1400 (B-5)	△ 1-533-804-21 On-chip fuse 2.5 A, 125 V
	F1401 (B-5)	△ 1-533-627-21 On-chip fuse 5 A, 125 V
	F1402 (A-5)	△ 1-533-804-21 On-chip fuse 2.5 A, 125 V
EQ-102	F100 (B-7)	△ 1-533-626-21 On-chip fuse 1.25 A, 125 V
	F101 (B-7)	△ 1-533-627-21
	F102 (A-7)	On-chip fuse 5 A, 125 V
EQ-109	F103 (A-7)	△ 1-533-626-21 On-chip fuse 1.25 A, 125 V
EQ-109	F100 (B-7)	△ 1-533-626-21 On-chip fuse 1.25 A, 125 V
	F101 (B-7)	△ 1-576-329-21 On-chip fuse 10 A, 125 V
	F102 (A-7)	△ 1-533-627-21 On-chip fuse 5 A, 125 V
	F103 (A-7)	△ 1-533-626-21 On-chip fuse 1.25 A, 125 V
FC-91/111 (HKSR-5001)	Refer to SRW-5000/5500 Maintenance Manual.	
FP-155	F301 (A-1)	△ 1-533-999-21
	F302 (A-1)	On-chip fuse 2 A, 125 V
FP-163	F301 (C-2)	△ 1-533-999-21
	F302 (C-1)	On-chip fuse 2 A, 125 V

Board	Ref. No.	Part No./Description
HIF-46/56	F2600 (C-6)	△ 1-576-270-21
	F2601 (B-7)	On-chip fuse 4 A, 125 V
	F2602 (A-6)	△ 1-533-804-21
		On-chip fuse 2.5 A, 125 V
	F2603 (A-7)	△ 1-533-626-21
		On-chip fuse 1.25 A, 125 V
	F2604 (B-7)	△ 1-576-270-21
		On-chip fuse 4 A, 125 V
HPR-35	F1 (C-7)	△ 1-533-627-21
	F2 (B-7)	On-chip fuse 5 A, 125 V
HP-135	F1 (C-2)	△ 1-533-282-21
		On-chip IC link 2 A
HPR-22	F1 (B-5)	△ 1-533-627-21
	F2 (A-5)	On-chip fuse 5 A, 125 V
	F3 (B-5)	△ 1-533-804-21
		On-chip fuse 2.5 A, 125 V
MY-115 (HKSR-5804)	F7000 (C-7)	△ 1-576-329-21
	F7001 (B-7)	On-chip fuse 10 A, 125 V
SS-102	F100 (B-5)	△ 1-533-927-21
		On-chip fuse 5 A, 125 V
	F101 (A-5)	△ 1-576-626-21
	F102 (A-5)	On-chip fuse 1.25 A, 125 V
	F103 (B-5)	
TC-104A/ 112A	PS400 (D-4)	△ 1-533-282-21
	PS401 (D-4)	On-chip fuse 2 A, 125 V
	PS402 (D-2)	

1-16. Memory IC with Backup Battery

Memory IC (IC206/CP-393, IC214/SS-102) with backup battery is used on the CP-393 board and the SS-102 board. This IC is used to store the setting data of setup menu, etc. Besides it has an RTC (Real Time Clock) function, which is also used in the VTR.

Owing to this battery, even if the external power is cut off, this IC can maintain the stored data and the RTC continues operating.

However, if the battery life comes to end with the external power was cut off, memory can not maintain the stored data and the RTC is failing to function.

In the memory, the following data is stored. When the battery is dead, or replaced with a new one, resetting current menu, menu banks, and calender/clock is required. For details on how to reset the current menu and menu banks, refer to the operation manual supplied with the unit. When the battery is dead or replaced, error log data and shot-mark detection list data are all cleared.

IC214/SS-102 board

- Current menu
- Menu banks 1 to 8
- System banks 1 to 8
- Calendar/Clock
- ID-code data
- CUE menu setting data
- REMOTE 2 PARALLEL I/O (50P) setting data
- Error log data
- Network information

IC206/CP-393 board

- RGB gain adjustment value of the color display
- POWER ON BANK RECALL setting data

Backup battery

Refer to Section 1-17 for its replacement.

1-17. Memory Backup Battery Replacement

The CP-393 board and the SS-102 board contain the part equipped with the lithium battery for the memory backup. This part is mounted on the IC206/CP-393 board (NV-RAM) and IC214/SS-102 board (NV-RAM/RTC) to be backed up.

CAUTION

When replacing the part, be sure to use the specified one below.

Replacement with a part other than the specified part will result in fire hazards and electric hazards.

Replacement part

Part description: M4T28-BR12SH1 (lithium battery integrated crystal oscillator)

Part No.: Δ 1-767-156-11

Recommended replacement period:
Every seven years

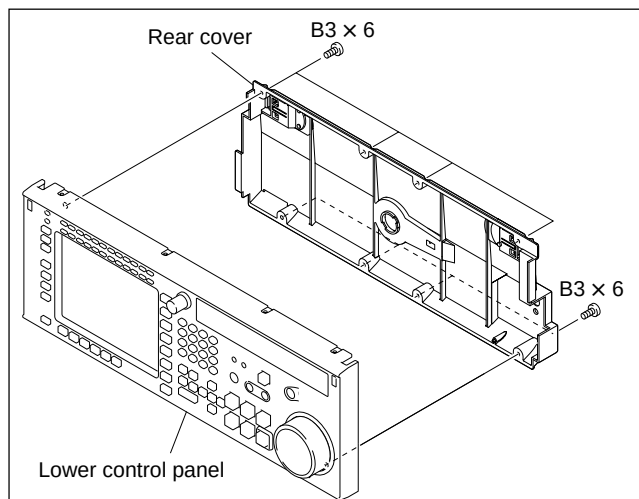
Replacement

Note

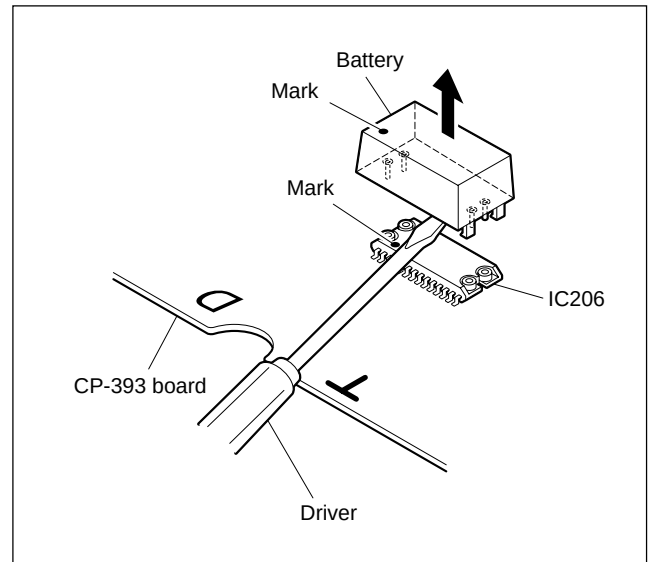
When replacing the battery, ensure that a mark on the battery is correctly oriented.

For IC206 on the CP-393 board (Not CP-405 board)

1. If possible, take notes of the following setting data:
 - RGB gain adjustment value of the color display
 - POWER ON BANK RECALL setting data
2. Remove the lower control panel from the unit.
(Refer to Section 1-6.)
3. Remove the eight screws, and remove the rear cover of the lower control panel.



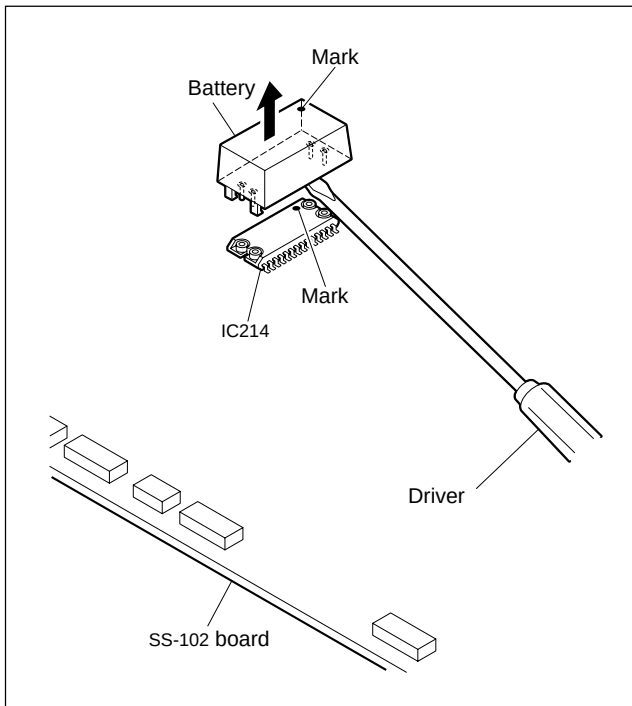
4. Insert a flat blade driver between the battery and IC206 to remove the battery.
5. Install a new battery, ensuring that the marks on the battery and IC206 are aligned.



6. Reattach the rear cover to the lower control panel using the eight screws.
7. Reattach the lower control panel to the unit.
(Refer to Section 1-6.)
8. Perform the following settings again. (Refer to the "Service action after replacing" in Section 1-18.)
 - RGB gain adjustment value of the color display
 - POWER ON BANK RECALL setting data

For IC214 on the SS-102 board

1. If possible, save the settings of the Setup menu (current and all banks) into a Memory Stick. (Refer to Section 1-27.)
2. If possible, take notes of the following setting data:
 - Headroom of the audio level meter
 - Network information
3. Remove the SS-102 board. (Refer to Section 1-12.)
4. Insert a flat blade driver between the battery and IC214 to remove the battery.
5. Install a new battery, ensuring that the marks on the battery and IC214 are aligned.



6. Reinstall the SS-102 board.
7. Turn on the power of the unit while holding down the **[0]**, **[SET]**, and **[CLR]** keys simultaneously.

Note

Keep down the keys until the confirmation sound is beeped. This operation initializes the NV-RAM without a system error caused by its data loss. (The setting is reset to the value fixed in the ROM.)

8. Upload the settings of the Setup menu from the Memory Stick to the unit.
9. Perform the following settings again. (Refer to the “Service action after replacing” in Section 1-18.)
 - Headroom of the audio level meter
 - Calendar/Clock
 - Network information

1-18. NV-RAM

There are the NV-RAMs (EEP-ROM, and RAM with backup battery) used on the boards in this unit. These devices store the adjustment data, various setting data for this unit, data for the hours meter and error log respectively, etc.

EEP-ROM: Electric Erasable P-ROM

After replacing above-mentioned device, take the following service actions.

IC206 on the CP-393 board and IC214 on the SS-102 board are the NV-RAM with backup battery.

Notes

- After replacing the NV-RAM, the error (error code 97, or A8) will occur at power-on.
After replacing IC214/SS-102: Occurs Error code A8. (Then, settings are reset to factory setting.)
After replacing IC101/DR-508: Occurs Error code 97.
- After IC2221 on the HIF-46/56 board has been replaced, the COMPOSITE signal and SYNC signal are not output correctly.

Board / Ref.No.	Type	Stored data	Service action after replacing
CP-393 / IC206 CP-405/IC4	NV-RAM	RGB gain adjustment value of the color display	Readjust the gain of the color display by the [F8] (LCD GAIN) of the OTHERS CHECK menu. (Refer to Section 3-3-9.)
		POWER ON BACK RECALL setting data	Set by the [ALT] + [F4] (POW-ON RECALL) of the VTR BANK menu again. (Refer to the operation manual for resetting.)
DR-508 / IC101	NV-RAM	Servo/DT adjustment data	Readjust the servo/DT systems. (Perform Section 8-3.)
		Hours meter data	None
EQ-102, 109 / IC2907, 2908	NV-RAM	Adjustment data for the EQ-102/109 board	Readjust the EQ-102/109 board (RF system). (Perform Section 8-4.)
HIF-46, 56 / IC2221	NV-RAM	Pedestal level/video output level adjustment values of the COMPOSITE output and SYNC output	Readjust the HIF-46/56 board. (Perform Section 8-6.)
SS-102 / IC214	NV-RAM	Setting data of setup menu (Current and banks 1 to 8)	Set the setup menu again. (Refer to the operation manual for resetting.)
		Error log data	None (All data are lost.)
		CUE point list data	None (All data are lost.)
		Calendar/clock	Set the calendar and clock again by the [ALT] + [F9] (REAL TIME) of the ERROR LOG menu. (Refer to Section 3-2-3.)
		Setting data of VTR bank	Set the VTR bank again. (Refer to the operation manual for resetting.)
		Setting data of System bank	Set the system bank again. (Refer to the operation manual for resetting.)
		Headroom of audio level meter	Set by the [F4] (HEAD ROOM) of the OTHERS CHECK menu. (Refer to Section 3-3-9.)
		50-pin remote setting data	Set the 50-pin remote again. (Refer to the operation manual for resetting.)
		Network information	Set by the [F3] (NETWORK SETUP) of the OTHERS CHECK menu. (Refer to Section 3-3-9.)

Refer to Section 3 for the menu of the maintenance mode.

1-19. Equipment and Fixtures List for Check/Adjustment

1-19-1. Equipment for Check/Adjustment

It is recommended to use the equipment listed below or the equivalents.

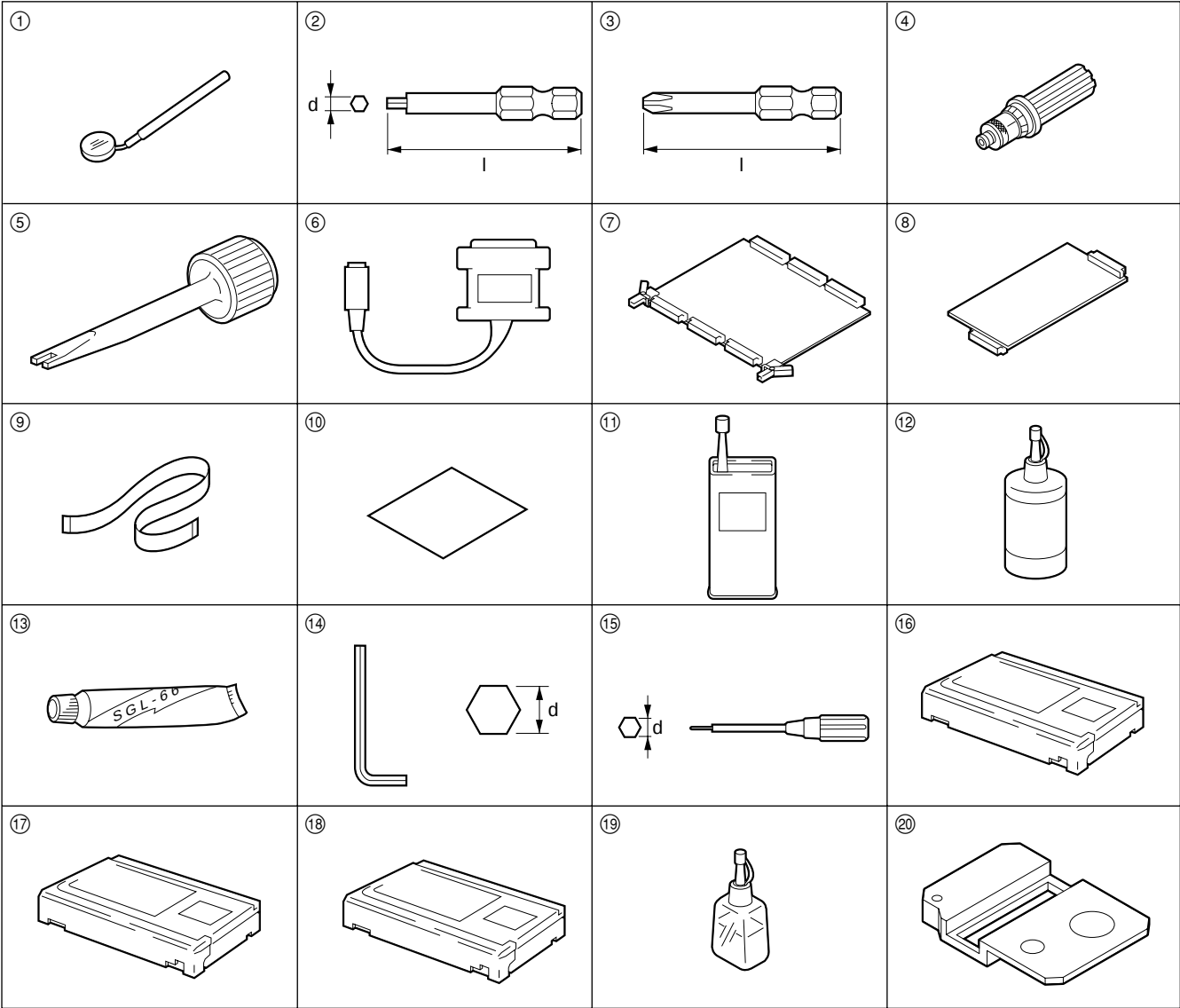
Each equipment listed below is available as a standard product. However, it may not be produced now.

Equipment	Model name	Remarks
Oscilloscope	Tektronix TDS3054B	
Analog composite waveform/vector monitor	Tektronix 1741C	For measuring analog composite signal (For 525/60, 625/50 system)
Serial digital component waveform monitor	Tektronix WFM6120, WFM7120	
HD digital video signal generator	Tektronix TG700 (with optional accessory HDVG7, DVG7, AGL7, AG7)	SMPTE274M
HD digital waveform monitor	Tektronix WFM7120	
HD digital input monitor	Sony BVM-L230	
Audio analyzer	Audio Precision System One, System Two, System Two Cascade, System Two Cascade Plus or AP2700	
Frequency counter	Advantest R5362B	
Digital voltmeter	Advantest R6441B	
Serial digital input monitor	Sony BVM-L230	(For 525/60, 625/50 system)
Time code generator	Sony BVG-1600	(For 525/60 system)
	Sony BVG-1600PS	(For 625/50 system)
Time code reader	Sony BVG-1500	(For 525/60 system)
	Sony BVG-1500PS	(For 625/50 system)
Terminator	—	75 Ω , BNC type
BNC T adapter	—	75 Ω
Recording tape	Sony BCT-SR series	S cassette tape for HDCAM SR
	Sony BCT-SRL series	L cassette tape for HDCAM SR For check/adjust the tape path.
Memory stick	—	For updating the software (Refer to Section 1-27.)
Memory stick PC card adapter	Sony MSAC-PC4	For updating the software (Refer to Section 1-27.)
Shortting clip	—	

1-19-2. Fixtures

Fig. No.	Part No.	Description	[Inscription No.]	Usage
①	J-6080-029-A	Small dental mirror (round type $\phi 12$)	—	Tape path adjustment
②	J-6251-090-A	Torque screwdriver's hexagonal bit (d = 2.5 mm, l = 120 mm)	—	Tightening screws to fix a drum assembly
③	J-6323-420-A	Torque screwdriver's bit (+2 mm, l = 75 mm)	—	Tightening screws to fix a brush/slip ring assembly
	J-6323-430-A	Torque screwdriver's bit (+3 mm, l = 90 mm)	—	Tightening screws to fix a reel motor assembly or a ring roller
④	J-6252-510-A	Torque screwdriver (6 kg•cm) (0.6 N•m)	[JB-5251]	Tightening screws
	J-6252-520-A	Torque screwdriver (12 kg•cm) (1.2 N•m)	[JB-5252]	Tightening screws
	J-6252-530-A	Torque screw driver (26 kg•cm) (2.6 N•m)	[JB-5253]	Tightening screws
⑤	J-6322-610-A	Tape guide adjustment driver	[MW-261]	Tape path alignment
⑥	J-7120-140-A	PLD download tool (DU-162)	—	For writing the PLD internal data (e-Production system)
⑦	A-8346-141-*	Extension board, EX-873	—	Extension of the plug-in board
⑧	A-8347-714-A	Extension board, EX-949	—	Extension of the CUE-13 board
⑨	1-677-293-21	Extension flexible board (FL-276)	—	Extension of the DR-508 board
⑩	3-184-527-01	Cleaning cloth (15 cm × 15 cm)	—	Cleaning
⑪	7-432-114-11	Locking compound (200 g)	—	Inhibits loosening of screws
⑫	7-640-015-58	Oil (Sony BC oil)	—	
⑬	7-651-000-10	Sony grease SGL-601 (50 g)	—	
⑭	7-700-736-05	L-shaped hexagonal wrench (d = 1.5 mm)	—	
	7-700-736-06	L-shaped hexagonal wrench (d = 0.89 mm)	—	
⑮	7-700-766-04	Hexagonal wrench driver (d = 2.5 mm)	—	
⑯ *1	8-960-073-01	Alignment tape, ZR5-1	—	Video/audio alignments (for 525/60 Digital Betacam system)
	8-960-073-51	Alignment tape, ZR5-1P	—	Video/audio alignments (for 625/50 Digital Betacam system)
⑰ *1	8-960-076-01	Alignment tape, HR5-1A	—	Video/audio alignments (for HDCAM system)
	8-960-076-11	Alignment tape, HR2-1A	—	Tracking adjustment (for HDCAM system)
⑱	8-960-076-31	Alignment tape, HR5-1B	—	Video/audio adjustment (for HDCAM SR)
	8-960-076-41	Alignment tape, HR2-1B	—	Tracking adjustment (for HDCAM SR)
⑲	9-919-573-01	Cleaning liquid	—	Cleaning
⑳	J-6605-770-A	Positioning pin setting tool	—	Adjusting the positioning pin position
㉑	-----	Cleaning tape (Sony BCT-HD12CL)	—	Cleaning

*1 : These tapes are required for the HKSR-5802 installed model.



1-20. Alignment Tapes

Describes the alignment tapes used for adjusting the unit.

1. HR5-1B (SONY part No. 8-960-076-31) : For HDCAM SR

Used for video/audio adjustment of the unit.

Time (min. : sec.)	Digital video	Digital audio	CUE track	CTL track
00:00 -	100 % color-bar	1 kHz sine wave, -20 dB FS	1 kHz 0 VU	CTL
02:00 -	100 % color-bar	1 kHz sine wave, 0 dB FS	1 kHz -20 VU	CTL
04:00 -	100 % color-bar	-∞ dB FS	12 kHz -20 VU	CTL
06:00 -	100 % color-bar	20 Hz sine wave, -20 dB FS	Repeat	CTL
08:00 -	100 % color-bar	20 kHz sine wave, -20 dB FS	Repeat	CTL
10:00 -	Ramp	Repeat	Repeat	CTL
20:00 -	Multi Burst	Repeat	-	CTL
30:00 - 38:00	100 % color-bar	-∞ dB FS	-	CTL

2. HR2-1B (SONY part No. 8-960-076-41) : For HDCAM SR

Used for servo adjustment of the unit.

Time (min. : sec.)	Digital video/Digital audio	CUE track	CTL track
00:00 - (Pulse*)	8T (C CH only) Marker to SAT IN point of the first frame	-	CTL
20:00 - 27:00	2T (All CH)	-	CTL

※: The time code data is not recorded on the time code track during pulse portion (00:00 to 20:00). The duty 7:3 pulse is recorded on the CTL track of this portion. Therefore, when playing back this portion, time data which is interpolated by the time code signal is displayed.

3. HR5-1A (SONY part No. 8-960-076-01) : For HDCAM

Used for video/audio adjustment of the unit (HKSR-5802 installed model only)

Time (min. : sec.)	Digital video	Digital audio	CUE track	CTL track
00:00 -	100 % color-bar	1 kHz sine wave, -20 dB FS	1 kHz 0 VU	CTL
01:25 -	100 % color-bar	1 kHz sine wave, -20 dB FS	Blank	CTL
01:30 -	100 % color-bar	1 kHz sine wave, -20 dB FS	1 kHz -20 VU	CTL
02:00 -	100 % color-bar	1 kHz sine wave, 0 dB FS	1 kHz -20 VU	CTL
02:25 -	100 % color-bar	1 kHz sine wave, 0 dB FS	Blank	CTL
02:30 -	100 % color-bar	1 kHz sine wave, 0 dB FS	3 kHz -20 VU	CTL
02:55 -	100 % color-bar	1 kHz sine wave, 0 dB FS	Blank	CTL
03:00 -	100 % color-bar	1 kHz sine wave, 0 dB FS	7 kHz -20 VU	CTL
03:25 -	100 % color-bar	1 kHz sine wave, 0 dB FS	Blank	CTL
03:30 -	100 % color-bar	1 kHz sine wave, 0 dB FS	10 kHz -20 VU	CTL
03:55 -	100 % color-bar	1 kHz sine wave, 0 dB FS	Blank	CTL
04:00 -	100 % color-bar	-∞ dB FS	12 kHz -20 VU	CTL
04:25 -	100 % color-bar	-∞ dB FS	Blank	CTL
04:30 -	100 % color-bar	-∞ dB FS	90 Hz -20 VU	CTL
04:55 -	100 % color-bar	-∞ dB FS	Blank	CTL
05:00 -	100 % color-bar	-∞ dB FS	Repeat	CTL
06:00 -	100 % color-bar	20 Hz sine wave, -20 dB FS	Repeat	CTL
08:00 -	100 % color-bar	20 kHz sine wave, -20 dB FS	Repeat	CTL
10:00 -	Ramp	Repeat	Repeat	CTL
20:00 - 30:00	Multi Burst	-	-	CTL

4. HR2-1A (SONY part No. 8-960-076-11) : For HDCAM

Used for servo adjustment of the unit (HKSR-5802 installed model only)

Time (min. : sec.)	Digital video/Digital audio	CUE track	CTL track
00:00 - (Pulse*)	5.875 MHz (A CH only)	1 kHz 0 VU	CTL
15:00 -	5.875 MHz (A/C CH only)	12 kHz 0 VU	CTL
20:00 - 25:00	First half : 5.875 MHz Latter half : 23.5 MHz (A/C CH only) First half : 23.5 MHz Latter half : 5.875 MHz (B/D CH only)	12 kHz 0 VU	CTL
25:00 - 30:00	23.5 MHz (All CH)	12 kHz 0 VU	CTL

※: The time code data is not recorded on the time code track during pulse portion (00:00 to 15:00). The duty 7:3 pulse is recorded on the CTL track of this portion. Therefore, when playing back this portion, time data which is interpolated by the time code signal is displayed.

5. ZR5-1 (SONY part No. 8-960-073-01) : For 525/60 Digital Betacam system
ZR5-1P (SONY part No. 8-960-073-51) : For 625/50 Digital Betacam system

Used for video/audio adjustment of the unit (HKSR-5802 installed model only).

Time (min. : sec.)	Digital video	Digital audio	CUE track	CTL track
00:00 -	100 % color-bar	1 kHz sine wave, -20 dB FS	1 kHz 0 VU	CTL
01:25 -	100 % color-bar	1 kHz sine wave, -20 dB FS	Blank	CTL
01:30 -	100 % color-bar	1 kHz sine wave, -20 dB FS	1 kHz -20 VU	CTL
02:00 -	100 % color-bar	1 kHz sine wave, 0 dB FS	1 kHz -20 VU	CTL
02:25 -	100 % color-bar	1 kHz sine wave, 0 dB FS	Blank	CTL
02:30 -	100 % color-bar	1 kHz sine wave, 0 dB FS	3 kHz -20 VU	CTL
02:55 -	100 % color-bar	1 kHz sine wave, 0 dB FS	Blank	CTL
03:00 -	100 % color-bar	1 kHz sine wave, 0 dB FS	7 kHz -20 VU	CTL
03:25 -	100 % color-bar	1 kHz sine wave, 0 dB FS	Blank	CTL
03:30 -	100 % color-bar	1 kHz sine wave, 0 dB FS	10 kHz -20 VU	CTL
03:55 -	100 % color-bar	1 kHz sine wave, 0 dB FS	Blank	CTL
04:00 -	100 % color-bar	-∞ dB FS	12 kHz -20 VU	CTL
04:25 -	100 % color-bar	-∞ dB FS	Blank	CTL
04:30 -	100 % color-bar	-∞ dB FS	90 Hz -20 VU	CTL
04:55 -	100 % color-bar	-∞ dB FS	Blank	CTL
05:00 -	100 % color-bar	-∞ dB FS	Repeat	CTL
06:00 -	100 % color-bar	20 Hz sine wave, -20 dB FS	Repeat	CTL
08:00 -	100 % color-bar	20 kHz sine wave, -20 dB FS	Repeat	CTL
10:00 - 20:00	Ramp	Repeat	Repeat	CTL

1-21. Tools for Board Extension

The three sets of extension tools as follows are used for maintenance.

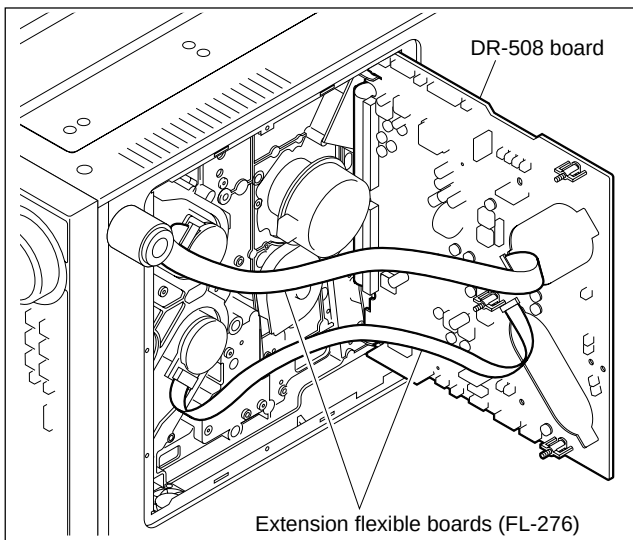
For Large Plug-in Board

Description: Extension board, EX-873
SONY part No.: A-8346-141-*

For DR-508 Board

By replacing the two flexible boards between the DR-508 board and reel motors with the extension flexible boards, the maintenance operation can be easily performed with the opened DR-508 board.

Description: Extension flexible board (FL-276)
SONY part No.: 1-677-293-22



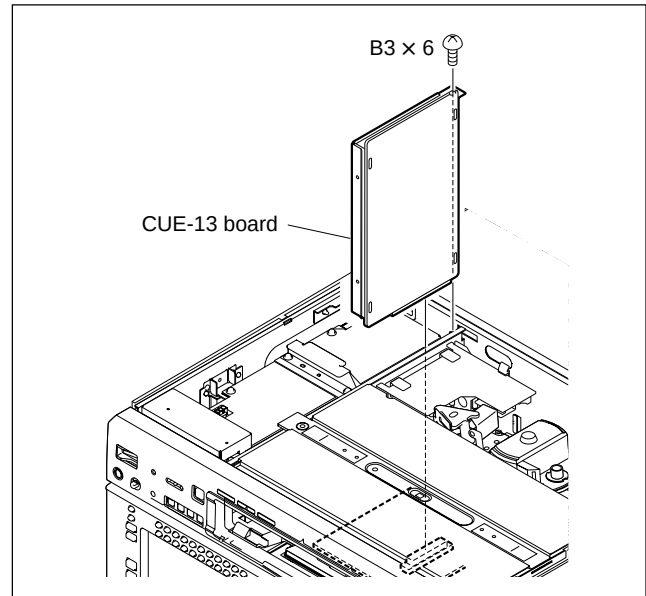
For CUE-13 board

Used for extending the CUE-13 board.

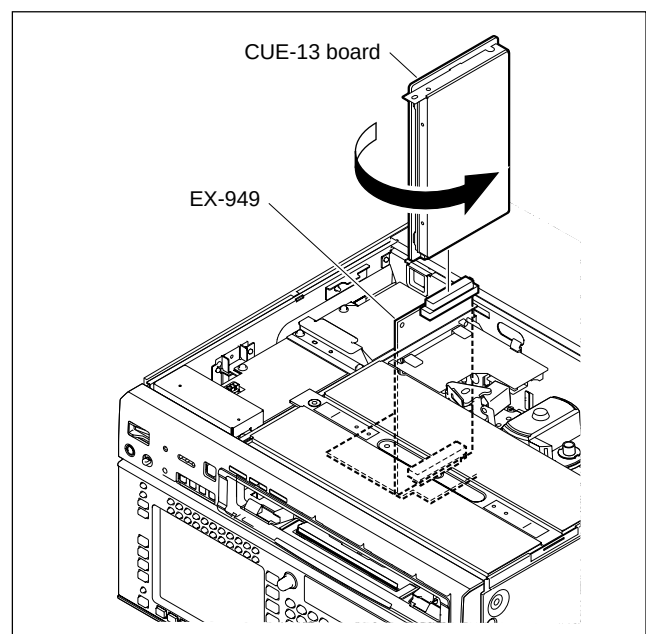
Description: Extension board, EX-949
SONY Part No.: A-8347-714-A

Extending procedure

- (1) Remove one screw and remove the CUE-13 board.



- (2) Attach the extension board (EX-949).
(3) Reverse the CUE-13 board as shown in the figure and attach to the extension board (EX-949).



1-22. Writing and Rewriting the PLD Internal Data

This unit uses the PLD (Programmable Logic Device). Writing and rewriting the PLD internal data shown below supported by the e-Production (EPR) system. If the PLD needs to be upgraded, contact your Sony Sales Office/Service Center.

Note

The PLD not supported by the e-Production (ERR) system is upgraded by the ROM MAINTENANCE menu using the Memory Stick.

For details, refer to Section 1-27.

e-Production system has the advantages shown below.

- To write/rewrite the PLD internal data:
 1. The standard fixture (cable) can be used.
 2. The standard software (PLD Download Tool) can be used.
- The PLD internal data is controlled in the Sony Database Server under the name Project file (E_XXX_XXX_XX_XX).
- The printed circuit board is equipped with the standard connector (EPR connector) to write the PLD internal data. The indication “EPR” is shown on the printed circuit board.

PLD supported by the e-Production

Board	EPR connector Ref. No.	PLD Ref. No.	Project File No.
CP-393	CN951	IC900	E_000_004_11_XX
CP-405	CN951	IC900	E_000_004_95_XX
SS-102	CN300	IC301 (PLD3) IC900 (PLD4)	E_000_004_12_XX

Equipment required

- PLD download fixture
(Sony part number: J-7120-140-A)
The cable connects a PC to this unit.
- PC
A PC having parallel port.
A PC in which the PLD Download Tool software is already installed.
For the applicable OS and the operating environment, refer to “Download Tool Operating Instruction for Device Programming”.

Data write procedure

Data write procedure in the PLD is outlined below. For details of data write procedure, refer to “Download Tool Operating Instruction for Device Programming” which is available in the same site where the PLD Download Tool software is available.

1. Prepare the Project file.

Note

Download the Project file from the Sony Database Server.

2. Turn off the power of this unit. Connect the PC parallel port to the EPR connector of the target board using the PLD download fixture (cable).
3. Turn on the power of this unit.
Start the Download Tool software and read the Project file.
4. Program the PLD with the Download Tool software.
5. Upon completion of programming, check that error message is not displayed. Turn off the power of this unit and back on.

1-23. Internal Video Test Signal

VTR has the internal video test signal generator. There are two ways to generate the test signal with this generator.

Note

The test signals other than the Pathological signal can be recorded on a tape.

HD video test signals

- Setup menu
ITEM-T02 : INTERNAL VIDEO SIGNAL GENERATOR (HD)
For details, refer to the operation manual.
- Maintenance mode
[F2] (VIDEO TST SG) of the A/V CHECK menu.
For details, refer to Section 3-3-8.

SD video test signals

- Maintenance mode
[F2] (VIDEO TST SG) of the SDOUT CHECK menu.
For details, refer to Section 3-3-6.

1-24. Unleaded Solder

Boards requiring use of unleaded solder are printed with a lead free mark (LF) indicating the solder contains no lead. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

 : LEAD FREE MARK

Notes

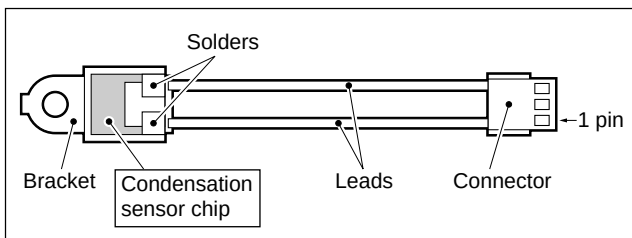
- Be sure to use the unleaded solder for the printed circuit board printed with the lead free mark.
- The unleaded solder melts at a temperature about 40 °C higher than the ordinary solder, therefore, it is recommended to use the soldering iron having a temperature regulator.
- The ordinary soldering iron can be used but the iron tip has to be applied to the solder joint for a slightly longer time. The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful.

1-25. Precautions for use of Condensation Sensor

Due to the foreign substances adhering to the condensation sensor chip (see figure below), the sensor fails to measure the correct value of residence to humidity. This prevents the unit from functioning properly. If any foreign substance gets adhered to the chip, replace the condensation sensor with a new one.

Notes

- Do not touch the chip with bare hands.
- Do not clean the chip with alcohol or other similar agents.



1-26. Service Action after Replacing or Repairing the Board

After replacing or repairing the mounted circuit board, be sure to perform the following adjustment or function check.

Moreover, if the SS-102 board has been replaced, settings must be checked.

1-26-1. AE-31H Board

After replacing and repairing this board, adjust the CUE playback system (Section 8-5-4).

1-26-2. APR-81/91 Board

After replacing and repairing this board, adjust the analog audio output system (Section 8-5-3).

1-26-3. CCM-15 Board

Note

As the mounted CCM-15 board is not a specified service part, it must be replaced together with the whole gear box assembly.

After replacing the gear box assembly, check that the threading motor operates normally using **F7** (THREAD MOTOR) of the SERVO CHECK menu. (Refer to Section 3-3-4.)

1-26-4. CL-29 Board

After replacing and repairing this board, check that the cassette compartment moves up and down normally using **F8** (CCM MOTOR) of the SERVO CHECK menu. (Refer to Section 3-3-4.)

1-26-5. CP-393/405 Board

After repairing this board (except for NV-RAM replacement)

1. Check that the lower control panel functions normally.
2. Check that the video output signal is correctly displayed on the color display (LCD) of the lower control panel, using the following procedure:
 - (1) Play back a video tape.
 - (2) Press the DISPLAY key on the lower control panel to check that the images being played back are displayed on the color display.
 - (3) If necessary, adjust the RGB gain of the color display. (Refer to Section 3-3-9.)

After replacing the NV-RAM

1. If necessary, adjust the RGB gain of the color display. (Refer to Section 3-3-9.)
2. If necessary, set the POWER ON BANK RECALL setting data again. (Refer to the operation manual.)

Board Replacement

Before replacing this board, perform the following.

1. If possible, take notes of the following setting data:
 - POWER ON BANK RECALL setting data
2. Confirm that each DIP switch on the new board is the factory setting. (Refer to Section 1-14.)
5. Remove the backup battery from IC206 on the new board, and install it again after a while. (Refer to Section 1-17.)

After the board replacement, perform the procedure of “After replacing the NV-RAM” above.

1-26-6. CP-397 Board

After replacing and repairing this board, perform the following checks.

Tools

- Audio analyzer:
Audio Precision System One /System Two/System Two Cascade/System Two Cascade Plus/AP2700, or equivalent
- Time code generator:
Sony BVG-1600/1600PS or equivalent
- Time code reader:
Sony BVG-1500/1500PS or equivalent
- Recorded tape(HR5-1B, etc.)

Checks

1. Set the setup menu as follows.

MENU No.	Name	Customer Setting	Setting
T04	INTERNAL AUDIO SIGNAL GENERATOR	_____	⇒ 1 kHz sine
606	TCG MODE select	_____	⇒ regene
607	TCG REGENE SOURCE select	_____	⇒ ext-LTC

2. Set the audio output signals using the MONITOR L/R button as follows:
MONITOR OUTPUT L connector: CH1
MONITOR OUTPUT R connector: CH2
3. Connect the time code generator to the TIME CODE IN connector and the time code reader to the TIME CODE OUT connector.
4. Press the INPUT CHECK button to check that the TCG value on the color display (LCD) accords with the value of the time code generator.
5. Play back the recorded tape.
6. Check that the TCR value on the color display (LCD) accords with the value of the time code reader.
7. Return the settings of the analog audio and monitor output level/headroom and setup menu, which were changed for the checks, to the customer settings.

1-26-7. CP-398 Board

After replacing and repairing this board, perform the following checks.

Tools

- HD digital video signal generator:
Tektronix TG700 or equivalent
- Analog composite waveform monitor:
Tektronix 1741C or equivalent
- Oscilloscope

Checks

1. Set the setup menu as follows.

MENU No.	Name	Customer Setting	Setting
005	SERVO/AV REFERENCE select	_____	⇒ external
006	EXTERNAL REFERENCE select	_____	⇒ extrn HD
T02	INTERNAL VIDEO SIGNAL GENERATOR (HD)	_____	⇒ COLOR BARS (100%)

2. Set the **F9** (SYSTEM MENU) of the OTHERS CHECK menu as follows. (Refer to Section 3-3-9.)

Setting item	Customer Setting	Setting
F1 (SYSTEM MODE)	_____	⇒ 1080
F2 (SYSTEM SCAN)	_____	⇒ Interlace
F3 (SYSTEM FRAME)	_____	⇒ 29.97 Hz or 25 Hz*

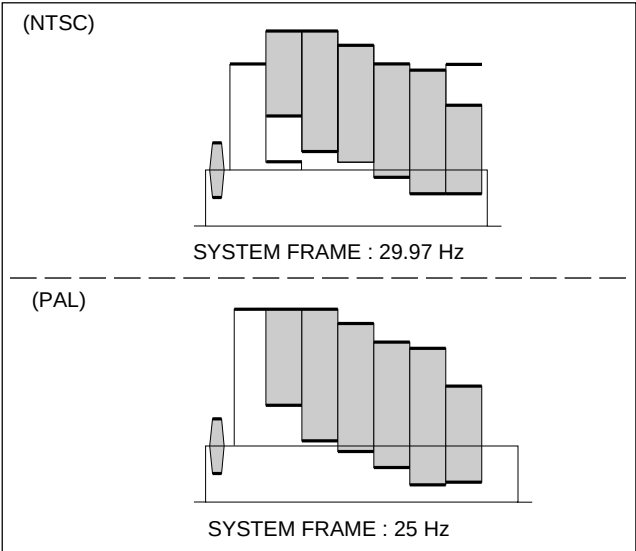
*: NTSC (525/60 system): 29.97 Hz
PAL (625/50 system): 25 Hz

3. Connect the HD digital signal generator to the REF.INPUT 1 connector (75 Ω termination switch: ON) to input the HD tri-level sync signal.

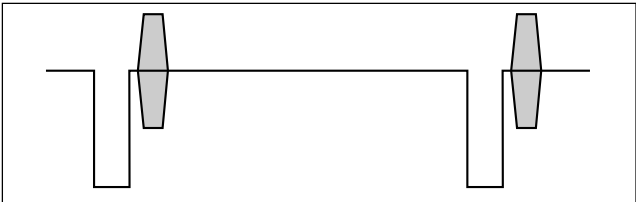
Note

Confirm that the STOP lamp does not blink on the control panel.
If the STOP lamp blinks, check that the ITEM-005 setting in the setup menu is correct and that the sync signal is correctly input to the REF.INPUT 1 connector.

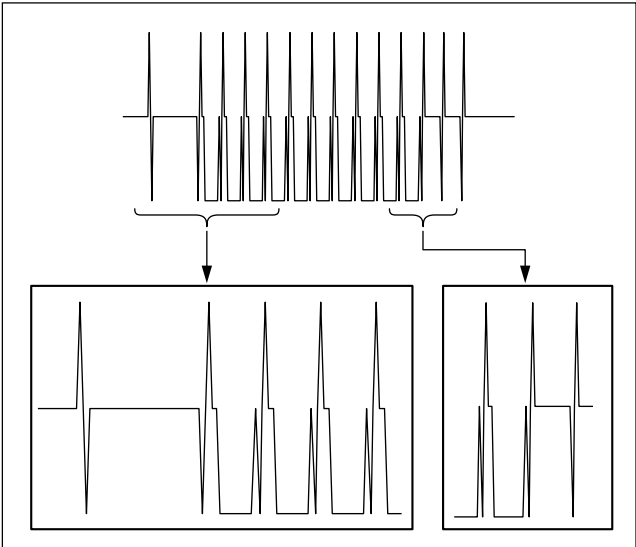
4. Connect the SD OUTPUT COMPOSITE connector with the composite waveform monitor to check that it outputs the normal COLOR BARS signal.



5. Connect the SD OUTPUT SYNC connector with the composite waveform monitor to check that it outputs the normal BLACK BURST signal.



6. Connect the HD REF.OUTPUT 1/2 connector with the oscilloscope to check that it outputs the normal HD tri-level sync signal.
7. Return the settings of the setup menu and the system setting, which were changed for the checks, to the customer settings.



1-26-8. CP-399 Board

After replacing and repairing this board, perform the following checks.

Tools

- Audio analyzer:
Audio Precision System One /System Two/System Two Cascade/System Two Cascade Plus/AP2700, or equivalent

Checks

1. In the AUDIO menu, perform the following to set all the audio inputs to AES/EBU. (Refer to the Operation Manual.)

AUDIO → **[F1]** (AUDIO IN) → **[F7]** (AUDIO IN ALL): AES/EBU

Notes

- Confirm that the input displays on the top of the audio meter are turned into A/E.
- Before this menu operation, write down the customer settings to the following table:

Channel	Customer Setting	Channel	Customer Setting
CH1	☐ SDI ☐ AES/EBU	CH7	☐ SDI ☐ AES/EBU
CH2	☐ SDI ☐ AES/EBU	CH8	☐ SDI ☐ AES/EBU
CH3	☐ SDI ☐ AES/EBU	CH9	☐ SDI ☐ AES/EBU
CH4	☐ SDI ☐ AES/EBU	CH10	☐ SDI ☐ AES/EBU
CH5	☐ SDI ☐ AES/EBU	CH11	☐ SDI ☐ AES/EBU
CH6	☐ SDI ☐ AES/EBU	CH12	☐ SDI ☐ AES/EBU

2. Connect the DIGITAL I/O (AES/EBU) INPUT CH1/2 connector with the AES/EBU output connector of the audio analyzer.
Also, connect the DIGITAL I/O (AES/EBU) OUTPUT CH1/2 connector with the AES/EBU input connector of the audio analyzer.
3. Input the -20 dBfs/1 kHz signal from the audio analyzer, and check that the audio level meters for CH1 and CH2 indicate -20 dB on the color display (LCD).
4. Confirm that the level of the AES/EBU input connector of the audio analyzer is -20 dBfs for both the CH1 and CH2.
5. Perform the same checks for the DIGITAL I/O (AES/EBU) INPUT/OUTPUT CH3/4 to CH11/12 connectors.
6. Return the settings of the AUDIO menu, which were changed for the checks, to the customer settings.

1-26-9. CUE-13 Board

After replacing and repairing this board, adjust the CUE playback system (Section 8-5-4).

1-26-10. DIO-86 Board

After replacing and repairing this board, adjust the Tele-File system (Section 8-9).

1-26-11. DR-508 Board

After replacing this board and NV-RAM

Perform the servo/DT system adjustment.
(Refer to Section 8-3.)

After repairing this board

(except for NV-RAM replacement)

Perform the servo/DT system adjustment.
(Refer to Section 8-3.)

1-26-12. DT-47/48 Board

After replacing and repairing this board, adjust the servo/DT system (Section 8-3).

1-26-13. EQ-102/109 Board

After replacing and repairing this board, adjust the RF system (Section 8-4).

1-26-14. FL-350 Board

After replacing this board, adjustments and checks are none.

1-26-15. FP-155/163 Board

After replacing and repairing this board, perform the following checks.

1. Check that the lower control panel functions normally.
2. Check the operations of the following boards:
LED-455 board: Refer to Section 1-26-21.
SWC-46 board: Refer to Section 1-26-30.
3. Check that the output video signals are correctly displayed on the color display (LCD) of the lower control panel, using the following procedure:
(1) Play back a video tape.
(2) Press the DISPLAY key on the lower control panel, and check that the images being played back are displayed on the color display.
4. Check that the data can be written to or read from a Memory Stick.

1-26-16. HIF-46/56 Board

After replacing and repairing this board, perform the following adjustment and checks.

1. Adjust the SD video system. (Refer to Section 8-6.)
2. Check that the analog composite output is normal.
3. Check that each channel output from the HD SDI OUTPUT and SD SDI OUTPUT connectors and the color display video are normal.

1-26-17. HN-268 Board

After replacing and repairing this board, check that the pinch solenoid moves normally using **[F3]** (PINCH PLG) of the ALT SERVO CHECK menu.
(Refer to Section 3-3-4.)

1-26-18. HP-135 Board

After replacing or repairing this board, check the PHONES control functions normally as the following steps.

1. Turn the PHONES control fully counterclockwise.
2. Connect the headphones to the PHONES jack.
3. Generates the test signal (1 kHz SINE) using **[F3]** (AUDIO TST SG) of the SD OUTPUT CHECK menu. (Refer to Section 3-3-6.)
4. Turn the PHONES control, check that the audio level heard from the headphones varies according to the PHONES control position.

1-26-19. HPR-22/35 Board

After replacing and repairing this board, check that audio data and video data can be normally recorded on and played back from the HDCAM-SR tape.

1-26-20. KY-526G/527 Board

After replacing the KY-526G/527 board, check that the switches and indicators function normally using **[F2]** (MFD), **[F7]** (KEY), **[F8]** (LED) of the PANEL MAINTENANCE menu. (Refer to Section 3-3-3.)

1-26-21. LED-455 Board

Check that when cassette tapes recorded in a certain format is loaded, the corresponding format indicator lights up.

1-26-22. LP-81 Board

After replacing and repairing this board, check the followings.

1. When a cassette tape is loaded, the cassette compartment operates normally.
2. When a cassette tape is loaded, all cassette compartment LEDs light up.

1-26-23. MB-1101 Board

After replacing and repairing this board, check that this unit operates normally.

1-26-24. PC-70 Board

After replacing and repairing this board, check the following.

1. Check that the cassette compartment is operating normally using **[F8]** (CCM MOTOR) of the SERVO CHECK menu. (Refer to Section 3-3-4.)
2. Check that the cassette size sensor and cassette-in sensor of the cassette compartment are operating normally using **[F2]** (CASSTT CMP SW) of the SERVO CHECK menu. (Refer to Section 3-3-4.)

1-26-25. PTC-101 Board

Note

As the mounted PTC-101 board is not a specified service part, it must be replaced together with the whole dial assembly.

After replacing the dial assembly, check that the dial operates normally in the jog mode and shuttle mode.

1-26-26. PTC-102 Board

Note

As the mounted PTC-102 board is not a specified service part, it must be replaced together with the whole gear box assembly.

After replacing the gear box assembly, check that the threading motor operates normally using **[F7]** (THREAD MOTOR) of the SERVO CHECK menu. (Refer to Section 3-3-4.)

1-26-27. PTC-99 Board

Note

As the mounted PTC-99 board is not a specified service part, it must be replaced together with the whole MC sensor assembly.

After replacing the MC sensor assembly, check that the cassette tab sensor functions normally using **[F1]** (CASSTT SW) of the SERVO CHECK menu. (Refer to Section 3-3-4.)

1-26-28. SE-606A Board

After replacing and repairing this board, adjust the Tele-File system (Section 8-9).

1-26-29. SS-102 Board

After repairing this board (except for NV-RAM replacement)

Perform the servo/DT system adjustment (Section 8-3).

After replacing the NV-RAM

1. Turn on the unit of the power while holding down the **[0]**, **[SET]**, and **[CLR]** keys simultaneously.

Note

Keep down the keys until the confirmation sound is beeped. This operation initializes the NV-RAM without a system error caused by its data loss. (The setting is reset to the value fixed in the ROM).

2. Take the following service actions, referring to "Section 1-18. NV-RAM".
 - Setting data of setup menu
 - Setting data of VTR bank
 - Setting data of system bank
 - Headroom of audio level meter
 - Calendar/clock
 - 50-pin remote setting data
 - Network information

Board Replacement

Before replacing this board, perform the following.

1. Check that the setup menus (basic and extended menus) functions normally.
2. Save the settings of the setup menus into a Memory Stick. (Refer to “Section 1-27. Memory Stick”.)
When the Memory Stick cannot be used, take notes of the settings of the setup menus.
3. Take notes of the following settings:
 - Setting data of VTR bank
 - Setting data of system bank
 - Headroom of audio level meter
 - 50-pin remote setting data
 - Network information
4. Check that each DIP switch on the new board is the factory setting. (Refer to Section 1-14.)
5. Remove the backup battery from IC214 on the new board, and install it again after a while. (Refer to Section 1-17.)

After the board replacement, perform the following.

1. Turn on the power of the unit while holding down the **[0]**, **[SET]**, and **[CLR]** keys simultaneously.

Note

Keep down the keys until the confirmation sound is beeped.

2. Perform the servo/DT system adjustment (Section 8-3).
3. Set the setting values of the setup menus (basic and extended menus) saved in step 2 of “Board Replacement” again.
4. Take the following service actions, referring to “Section 1-18. NV-RAM”.
 - Setting data of VTR bank
 - Setting data of system bank
 - Headroom of audio level meter
 - Calendar/clock
 - 50-pin remote setting data
 - Network information

1-26-30. SWC-46 Board

After replacing and repairing this board, check that the switches and indicators function normally.

1-26-31. TC-104A/112A Board

After replacing and repairing this board, adjust the LTC system and full-erase current (Section 8-8).

1-26-32. TR-119 Board

Note

As the mounted TR-119 board is not a specified service part, it must be replaced together with the whole S tension regulator assembly.

After replacing the S tension regulator assembly, check and adjust tape running (Section 6-12).

1-26-33. TR-120 Board

Note

As the mounted TR-120 board is not a specified service part, it must be replaced together with the whole T tension regulator assembly.

After replacing the T tension regulator assembly, check and adjust tape running (Section 6-12).

1-27. Memory Stick

The Memory Stick can be used to save and read the menu, and update internal software from the menu of the unit.

- Memory Stick (8 MB to 2 GB)
- Memory card adapter:
Memory stick PC card adapter MSAC-PC4 or equivalents

Note

In serial No. 11001 higher, Memory card adapter is not required.

Formatting the Memory Stick

Before using a Memory Stick with this unit, format it beforehand.

This formatting deletes all the data.

For details, refer to the Operation Manual of this unit.

1. Connect the Memory Stick to the unit.
(For the connection, refer to the OPERATION MANUAL)
2. Turn on the power, and display the MEMORY CARD menu.
(HOME menu → SET UP → **F2** → MEMORY CARD menu)
Note
MEMORY CARD menu is displayed only when the memory card is inserted in the unit.
3. Press the **F1** (FORMAT CARD) key.
 - A confirmation message appears.
 - To cancel formatting, press the **CLR** key while the confirmation message is being displayed.
4. While pressing the **SFT** key, press the **F1** (FORMAT CARD) key.

Saving/Reading the Setup Menu

The current settings can be saved on the Memory Stick before changing the settings of the setup menu temporarily during maintenance of the unit, etc.

After the maintenance is completed, the contents can be downloaded and easily returned to the original settings. For details, refer to the Operation Manual of this unit.

Note

The setting items of the setup menu for saving data to the Memory Stick are common to SRW-5800 and SRW-5100. The same data can be set to SRW-5800 and SRW-5100 using the Memory Stick.

Saving Setup Menu Settings

1. Insert a Memory Stick with available space into the exclusive slot of the unit.
2. Turn on the power, and display the MEMORY CARD menu.
(HOME menu → SET UP → **F2** → MEMORY CARD menu)
Note
MEMORY CARD menu is displayed only when the memory card is inserted in the unit.
3. Press the **F8** (DIRECTION) key to select the ← direction.
4. Move the cursor to the VTR side using the **→** key, and place the cursor on the bank No. to be saved using the **↑**/**↓** keys.
 - To save all the VTR memory banks, press the **F7** (SELECT ALL) key.
5. Move the cursor to the Memory Stick side using the **←** key, and place the cursor on the bank No. to be saved using the **↑**/**↓** keys.
 - To change the title, press the **F6** (EDIT TITLE) key.
6. Press the **F9** (COPY) key.
 - A confirmation message appears.
7. Press the **F9** (COPY) key, while holding down the **SFT** key.
8. Press the **F10** (EXIT) key to return to the SETUP menu.

Downloading Saved Data

1. Insert a Memory Stick with setup menu settings saved into the exclusive slot of the unit.
2. Turn on the power, and display the MEMORY CARD menu.
(HOME menu → SET UP → **F2** → MEMORY CARD menu)
3. Press the **F8** (DIRECTION) key to select the → direction.
4. Move the cursor to the Memory Stick side using the **←** key, and place the cursor on the bank No. to be downloaded using the **↑**/**↓** keys.
 - To change the title, press the **F6** (EDIT TITLE) key.
5. Move the cursor to the VTR side using the **→** key, and place the cursor on the memory bank where the data is to be saved using the **↑**/**↓** keys.
 - To replace the contents of all the VTR memory banks with those of the Memory Stick, press the **F7** (SELECT ALL) key.
6. Press the **F9** (COPY) key.
 - The confirmation message appears.
7. Press the **F9** (COPY) key, while holding down the **SFT** key.
8. Press the **F10** (EXIT) key to return to the SETUP menu.

Saving/Reading the Setup Menu of SRW-5000/5500

Setup menu settings of SRW-5000/5500 can be download to SRW-5800 with a Memory Stick.

For details on how to save setup menu settings of SRW-5000/5500 into a Memory Stick, refer to the maintenance manual of SRW-5000/5500.

Downloading the Setup Menu of SRW-5000/5500

1. Insert a Memory Stick with SRW-5000/5500 setup menu settings saved into the exclusive slot of the unit.
2. Turn on the power, and display the IMPORT DATA menu.
(HOME menu → SETUP → **ALT** → **F4** IMPORT DATA menu)
3. Press the **F1** (SRW-5000/5500) key to display the MC5000/5500 menu.
4. Move the cursor to the SRW-5000/5500 side using the **←** key, and place the cursor on the bank No. to be downloaded using the **↑**/**↓** keys.
5. Press the **F9** (COPY) key.
The confirmation message appears.
6. Press the **F9** (COPY) key, while holding down the **SFT** key.
7. Press the **F10** (EXIT) key to return to the IMPORT DATA menu.

Updating the Software

Note

A Memory Stick with the new version software is required for updating the software.

Please contact your local Sony Sales Office/Service Center to memorize the updating software.

It is possible to update the following incorporated software.

The time required for downloading is according to the software.

SYS1:	System control ROM (IC115/SS-102 board)
SYS2:	System control ROM (IC507/SS-102 board)
SV:	Servo control ROM (IC806/SS-102 board)
CP:	Function control ROM (IC205, IC207/CP-393, 405 board)
EQ:	RF control ROM (MPU IC2912/EQ-102, 109 board)
FC:	FC control ROM (IC1404/FC-91, 111 board)
FC CTRL:	FC control file for FC ROM (IC1404/FC-91, 111 board)

Also, it is possible to update the following PLD.

Note

Actually, the internal data of the ROM which operates the PLD is updated.

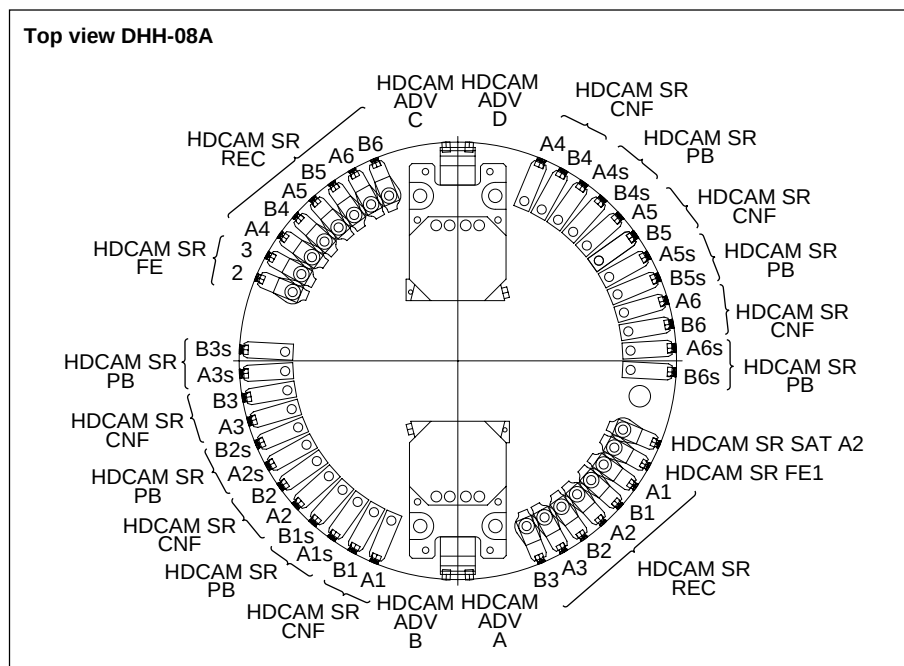
Board	PLD	ROM
APR-81/91	PLD1 (IC1000) PLD2 (IC2000)	IC3200
	PLD3 (IC3000)	
EQ-102/109	PLD1 (IC100) PLD2 (IC2200) PLD3 (IC402)	IC503
HIF-46/56	PLD1 (IC3000) PLD2 (IC3001)	IC2303
	PLD3 (IC2000) PLD4 (IC1111)	IC2304
	PLD5 (IC2301) PLD6 (IC2302) PLD7 (IC2400)	
HPR-22	PLD1 (IC100) PLD2 (IC700)	IC1402
	PLD3 (IC1401) PLD4 (IC1500)	
HPR-35	PLD1 (IC100) PLD2 (IC103)	IC3004
	PLD3 (IC3000) PLD4 (IC3113)	
	PLD5 (IC2300)	
SS-102	PLD1 (IC400)	IC9001
FC-91/111 (HKSR-5001)	Refer to SRW-5000/5500 Maintenance Manual.	
DVP-43 (HKSR-5802)	PLD1 (IC100) PLD2 (IC200)	IC1011
	PLD3 (IC1000) PLD4 (IC1300)	
MY-115 (HKSR-5804)	FPGA1 (IC3000) FPGA2 (IC4000)	IC5016

The update of the software is performed in the ROM DATA DOWNLOAD menu. (Refer to Section 3-3-2.)

1-28. Video Head Location

This section describes the video head locations and tape formats which can be recorded and played back by SRW-5800.

Recording format	HDCAM SR
Playback format	HDCAM SR HDCAM Digital Betacam



Section 2

Error Messages

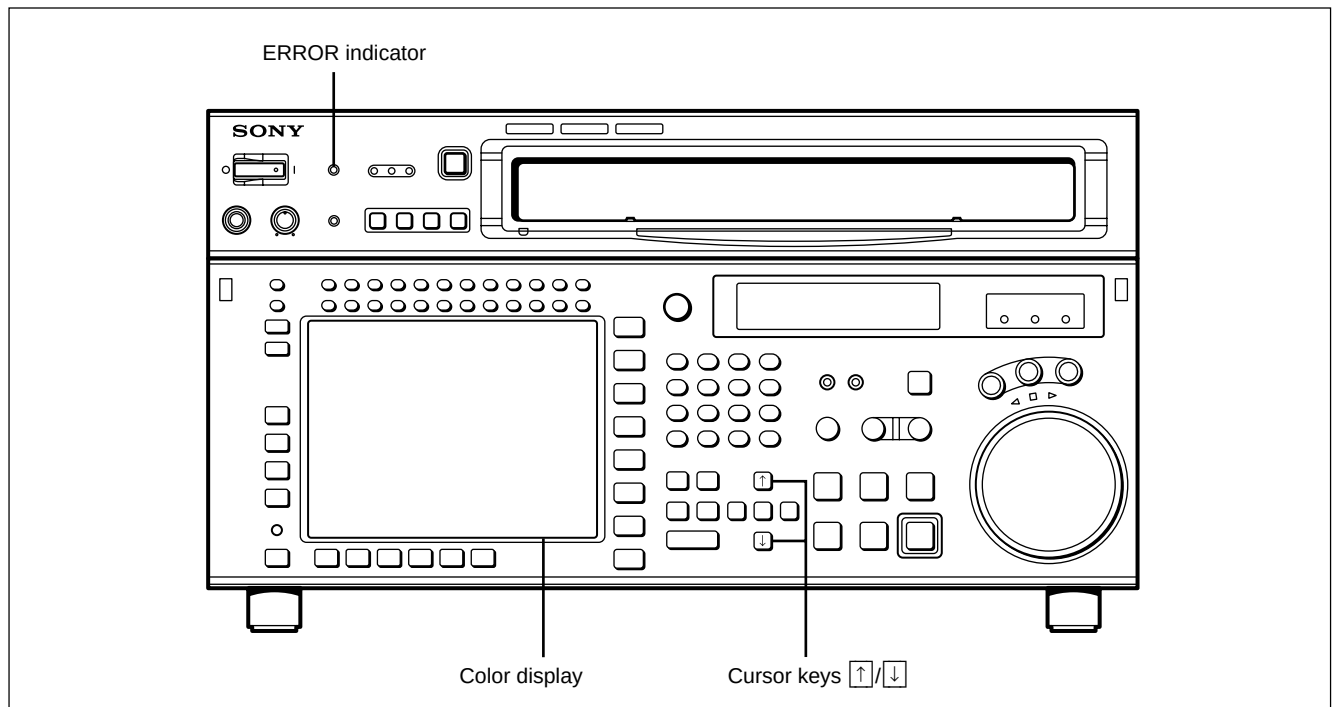
2-1. Overview of Error Messages

This unit has self-diagnostics function.

When trouble is detected, an ERROR indicator is lighted immediately on the upper control panel, and an error code and error message are displayed in the color display.

Notes

- The error messages are memorized to NV-RAM (Non-volatile RAM) as the error logging data. Check the error logging data in the error logger menu.
(Refer to Section 3-2-3 for the error logger menu.)
- When the two or more errors are detected simultaneously, the only one of them is displayed in the color display.
The others are displayed by pressing the cursor keys /.



Color Display and ERROR Indicator

Error messages are described on Section 2-2 in the order of list.

Error Messages

Code	Message	Page	Description
01	REEL SLACK THREAD ERROR	2-3	Tape slacking is detected in the threading or unthreading operation.
02	REEL SLACK SHTL ERROR	2-4	Tape slacking or tape breaking is detected in the SEARCH, FF, or REW mode.
03	REEL SLACK VAR ERROR	2-5	Tape slacking, tape breaking, or supply or take-up reel locking is detected in the REC or PLAY mode.
04	REEL SPEED ERROR	2-6	A malfunctional tape transport speed is detected in the FF or REW mode.
05	REEL FG ERROR	2-6	The malfunctional operation of the supply or take-up reel is detected during cassette insertion.
06	TENSION ERROR	2-7	Abnormal tape tension is detected in the REC, PLAY or shuttle mode.
07	CAPSTAN ERROR	2-7	Malfunction of capstan motor is detected.
08	DRUM ERROR	2-8	Malfunction of drum motor is detected.
09	THREAD TIME OVER	2-8	Malfunction of threading or unthreading operation is detected.
0A	FULL TOP ERROR	2-9	It is detected that the tape top processing is not completed in the threading mode.
10	HUMID DETECT	2-9	Dew condensation is detected.
11	TOP END BOTH DETECT	2-10	The tape top and tape end are detected simultaneously.
12	TAPE TOP ERROR	2-10	Malfunction of tape top sensor is detected.
13	TAPE END ERROR	2-11	Malfunction of tape end sensor is detected.
14	FAN MOTOR ERROR	2-11	Malfunction of cooling fan motor is detected.
20	CC TIME OVER	2-12	Malfunction of cassette compartment-up or down operation is detected.
21	SHIFT TIME OVER	2-12	Malfunction of movement of the reel table corresponding to the cassette size is detected.
22	POSITION BOTH DETECT	2-13	The L-cassette and S-cassette positions of the reel table are detected simultaneously.
23	THREAD BOTH DETECT	2-13	The thread end and unthread end states of the threading ring are detected simultaneously.
24	DT HARD ERROR	2-13	Malfunction of DT circuit is detected.
26	POWER SUPPLY ALARM	2-14	Malfunction of power supply fan motor or abnormal temperature is detected.
93	DR IF ERROR	2-14	Abnormality in the interface between SV CPU (on SS-102 board) and DR MPU (on DR-508 board) is detected.
97	NVRAM CHECK SUM ERROR	2-14	The abnormal operation of the NV-RAM (on DR-508 board) for the servo system is detected.
A0	SY UNDEFINED ERROR	2-14	System control errors other than the follows are detected.
A2	SY1-SY2 DPRAM ERROR	2-15	The abnormal operation of the DPRAM (on SS-102 board) between SYS1 and SYS2 is detected.
A5	SY-FC DPRAM ERROR	2-15	The abnormal operation of the DPRAM (on FC-91/111 board) between SYS1 and FC is detected. (HKSR-5001 installed model only)
A8	SY NVRAM CHECK SUM ERROR	2-15	The abnormal operation of the NV-RAM (on SS-102 board) for system control is detected.
B3	xxx PLDx INITIAL ERROR	2-16	PLD initialization error is detected. "x" depends on the detected error.
B8	SY1-SY2 INTERFACE ERROR	2-16	The communication error of SYS1 and SYS2 CPUs (on SS-102/109 board) is detected.
B9	SY-SV INTERFACE ERROR	2-17	The communication error of SV CPU (on SS-102 board) is detected.
BA	SY-EQ INTERFACE ERROR	2-17	The communication error of EQ CPU (on EQ-102 board) is detected.
BB	SY-FC INTERFACE ERROR	2-17	The communication error of FC CPU (on FC-91/111 board) is detected. (HKSR-5001 installed model only)
BC	SY-50PIN INTERFACE ERROR	2-17	The communication error of CPU (on CP-399 board) for the 50-pin parallel remote interface is detected.
FF	SV UNDEFINED ERROR	2-17	Servo system errors other than the above are detected.

Note

Error codes 01 through 14, 24 and 26 are detected in both/one of the SS-102 and/or DR-508 boards.
 Error codes 20 through 23 are detected in the DR-508 board.
 Error codes 93 and 97 are detected in the SS-102 board.

2-2. Details of Error Messages

Precaution

The “protection mode” described in this section means the servo control system automatically stops the tape transport and drum motor rotation, and maintains this state. The VTR cannot be automatically recovered to the normal state after the VTR once switched to the protection mode. To recover it, turn the power off, and then turn it back on with the cassette tape out.

If the protection mode is worked with the cassette tape inserted, be sure to take out the cassette tape manually with reference to “1-11. Taking Out the Cassette in Tape Slacking”. Never turn on the power again with the cassette tape in to avoid damage the tape.

ERROR-01 REEL SLACK THREAD ERROR

Description:	Tape slacking was detected during threading or unthreading.
Detecting conditions:	1) When no take-up reel FG can be detected in the unthread operation just after activation. 2) When the relation between the take-up reel FG and threading FG is out of the specification in operations other than unthread just after activation.
Sub error message:	None
Possible causes:	• Cassette compartment trouble or installation defect * The reel did not rotate because the cassette was lifted-up from the specified position. • Take-up reel FG waveform shaper circuit (SS-102 board) trouble • Take-up reel motor trouble • Take-up reel motor drive circuit (DR-508 board) trouble • Take-up reel brake trouble • Take-up reel brake solenoid drive circuit (DR-508 board) trouble • Servo adjustment defect on take-up reel • Harness disconnection • Take-up reel table height adjustment defect
Protecting operation:	Switches to the protection mode. CAUTION Be sure to take out the cassette manually (refer to Section 1-11). Do not turn on the power again with the cassette tape in to avoid damage the tape.

ERROR-02 REEL SLACK SHTL ERROR

Description:	Tape slacking or tape breaking was detected in SEARCH, FF, or REW mode.
Detecting conditions:	1) When the take-up value is lower than the specified value with respect to the tape supply value. 2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification. 3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than one second.
Sub error message:	None
Possible causes:	• Cassette compartment trouble or installation defect * The reel did not rotate because the cassette was lifted-up from the specified position. • Supply or take-up reel FG waveform shaper circuit (SS-102 board) trouble • Supply or take-up reel motor trouble • Supply or take-up reel motor drive circuit (DR-508 board) trouble • Capstan motor trouble • Capstan motor drive circuit (DR-508 board) trouble • Capstan FG waveform shaper circuit (SS-102 board) trouble • Take-up torque insufficiency during REW due to supply tension sensor or supply tension detector circuit (SS-102 board) trouble • Servo adjustment defect on capstan, reel(s), and supply tension sensor • Supply or take-up reel brake trouble • Supply or take-up reel brake solenoid drive circuit (DR-508 board) trouble • Harness disconnection • Reel table height adjustment defect • Tape path and drum troubles • Tape abnormality (The winding state has a problem.)
Protecting operation:	Switches to the protection mode. If this error occurred at the tape end, the VTR may be recovered to the normal state automatically from the protection mode. CAUTION Be sure to take out the cassette manually (refer to Section 1-11). Do not turn on the power again with the cassette tape in to avoid damage the tape.

ERROR-03 REEL SLACK VAR ERROR

Description: Tape slacking, tape breaking, or supply or take-up reel locking was detected in the REC or PLAY mode.

Detecting conditions:

- 1) When the take-up value is lower than the specified value with respect to the tape supply value.
- 2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification.
- 3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than one second.
- 4) When the tension value calculated from the supply tension sensor output is less than 15 g continuously for more than three seconds.

Sub error message: None

Possible causes:

- Cassette compartment trouble or installation defect
 - * The reel did not rotate because the cassette was lifted-up from the specified position.
- Supply or take-up reel FG waveform shaper circuit (SS-102 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-508 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-508 board) trouble
- Capstan FG waveform shaper circuit (SS-102 board) trouble
- Servo adjustment defect on capstan, reel(s), and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (DR-508 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Switches to the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to Section 1-11). Do not turn on the power again with the cassette tape in to avoid damage the tape.

ERROR-04 REEL SPEED ERROR

Description:	Abnormal tape transport speed was detected in the FF or REW mode.
Detecting condition:	When the tape speed calculated from the supply reel FG and take-up reel FG is under a half of the specified tape speed continuously for more than four seconds.
Sub error message:	None
Possible causes:	• Cassette compartment trouble or installation defect * The reel did not rotate because the cassette was lifted-up from the specified position. • Supply or take-up reel motor trouble • Supply or take-up reel FG waveform shaper circuit (DR-508 board) trouble • Supply or take-up reel motor drive circuit (DR-508 board) trouble • Servo adjustment defect on supply or take-up reel • Supply or take-up reel brake trouble • Supply or take-up reel brake solenoid drive circuit (DR-508 board) trouble • Harness disconnection • Reel table height adjustment defect • Tape path and drum troubles • Tape abnormality (The winding state has a problem.)
Protecting operation:	Stops the tape transport and switches to the rest state.

ERROR-05 REEL FG ERROR

Description:	Abnormal supply reel or take-up reel operation was detected in a diagnosis during cassette insertion.
Detecting conditions:	1) When the supply reel FG or take-up reel FG count is less than the specified value with the reel rotated. 2) When the supply reel FG or take-up reel FG count is more than the specified value with the reel stopped.
Sub error message:	None
Possible causes:	• Supply or take-up reel FG sensor trouble in reel motor • Supply or take-up reel FG waveform shaper circuit (DR-508 board) trouble • Supply or take-up reel motor drive circuit (DR-508 board) trouble • Servo adjustment defect on supply or take-up reel • Supply or take-up reel brake trouble • Supply or take-up reel brake solenoid drive circuit (DR-508 board) trouble • Harness disconnection
Protecting operation:	Ejects the cassette.

ERROR-06 TENSION ERROR

Description:	Abnormal tape tension was detected in the REC, PLAY or shuttle mode.
Detecting conditions:	When the tension value calculated from the supply tension sensor output is • REC, PLAY : More than specified value continuously for more than three second. • Shuttle : Less than specified value continuously for more than ten seconds.
Sub error message:	None
Possible causes:	• Cassette compartment trouble or installation defect * The reel did not rotate because the cassette was lifted-up from the specified position. • Supply tension sensor or its related circuit (SS-102 board) trouble • Supply reel motor trouble • Supply reel motor drive circuit (DR-508 board) trouble • Servo adjustment defect on supply reel and supply tension sensor • Supply reel brake trouble • Supply reel brake solenoid drive circuit (DR-508 board) trouble • Harness disconnection • The tape does not correctly wrap the supply tension sensor guide.
Protecting operation:	Stops the tape transport and switches to the rest state.

ERROR-07 CAPSTAN ERROR

Description:	Malfunction of capstan motor was detected.
Detecting conditions:	1) When the capstan FG count is less than the specified value in a diagnosis during cassette insertion. 2) When the frequency calculated from the capstan FG is out of the specification in the REC, PLAY, or SEARCH mode.
Sub error message:	None
Possible causes:	• Capstan motor trouble • FG sensor trouble in capstan motor • Capstan motor drive circuit (DR-508 board) trouble • Capstan motor FG waveform shaper circuit (SS-102 board) trouble • Capstan FG duty adjustment defect
Protecting operations:	Ejects the cassette for No. 1 in detecting conditions. Stops the tape transport and switches to the rest state for No. 2 in detecting conditions.

ERROR-08 DRUM ERROR

Description:	Malfunction of drum motor was detected.
Detecting condition:	When the drum FG cycle is shifted more than about ± 20 % continuously for more than 10 seconds as compared with during normal rotation.
Sub error message:	None
Possible causes:	• Drum motor trouble • SV CPU (IC1000 on SS-102 board) trouble • DR MPU (IC100 on DR-508 board) trouble • Drum motor drive circuit (Q302 on DR-508 board) trouble • Drum FG/PG waveform shaper circuit (IC303 on DR-508 board) trouble • Assembly defect during upper drum replacement
Protecting operation:	Stops the tape transport and switches to the rest state in the unthread end state.

ERROR-09 THREAD TIME OVER

Description:	Malfunction of threading or unthreading operation was detected.
Detecting conditions:	1) When no operation is completed within about six seconds after operation start. 2) When states other than unthread end are continued for more than six seconds in case that the unit should be in the unthread end state.
Sub error message:	None
Possible causes:	• Unthread end sensor (TR-120 board) trouble • Thread end sensor (TR-120 board) trouble • Thread end/unthread end input port (IC1000 on SS-102 board) trouble • Threading motor trouble • Threading FG sensor (PTC-102 board) trouble • Threading FG waveform shaper circuit (IC207 on DR-508 board) trouble • Threading motor drive circuit (IC500 on DR-508 board) trouble • Threading mechanism trouble
Protecting operations:	Ejects the cassette during cassette insertion or ejection. Switches to the protection mode during tape threading/unthreading. Stops the tape transport and switches to the rest state in cases except the above.

ERROR-0A FULL TOP ERROR

Description: It was detected that the tape top processing in the thread state is not completed.

Detecting condition: When the tape top is detected again after it is processed.

Tape top processing

In this processing, the tape is slightly forwarded without taking out the tape after unthread because the tape top was detected during threading.

(Short FF)

Sub error message: None

Possible causes:

- Take-up reel motor trouble
- Servo adjustment defect on take-up reel
- Take-up reel motor drive circuit (DR-508 board) trouble
- Tape top sensor trouble
- Tape top detection circuit (IC600 on DR-508 board) trouble
- Tape top input port (IC1000 on SS-102 board) trouble
- Tape abnormality

Protecting operation: Switches to the rest state in the unthread end state.

ERROR-10 HUMID DETECT

Description: Dew condensation was detected.

Detecting condition: When the condensation sensor detects dew condensation continuously for about two seconds.

Sub error message: None

Possible causes:

- Actual dew detection (When the operating environment rapidly changes from low temperature to high temperature and high humidity)
- Condensation sensor trouble
- Dew input port (IC206 on DR-508 board) trouble

Protecting operations: Prohibits the cleaning roller operation.
Stops the tape transport and eject the cassette tape, then switches to the rest state when the tape is threaded in states other than PLAY and REC mode.
Prohibits the tape threading. (Rotates the drum at low speed.)
Prohibits the cassette insertion.

ERROR-11 TOP END BOTH DETECT

Description:	The tape top and tape end were detected simultaneously.
Detecting condition:	When the simultaneous detection of the tape end and tape top is continued for more than seven seconds.
Sub error message:	None
Possible causes:	• Tape top sensor or tape end sensor trouble • Tape top or tape end detection circuit (IC600, IC601 on DR-508 board) trouble • Tape top/tape end input port (IC1000 on SS-102 board) trouble • Harness disconnection
Protecting operation:	Stops the tape transport and switches to the rest state during tape transport.

ERROR-12 TAPE TOP ERROR

Description:	Malfunction of tape top sensor was detected.
Detecting condition:	When the tape top is detected continuously for more than seven seconds.
Sub error message:	None
Possible causes:	• Tape top sensor trouble • Tape top detection circuit (IC600 on DR-508 board) trouble • Tape top input port (IC1000 on SS-102 board) trouble • Harness disconnection • The tape cannot move at the tape top due to troubles other than the tape sensor.
Protecting operations:	In the FF mode, continues the operation until the tape end is detected and stops the tape transport and switches to the rest state when the tape end is detected. During tape transport in forward direction, the FF mode can be entered only while the total tape quantity is observed. Stops the tape transport and switches to the rest state during tape transport except the above.

ERROR-13 TAPE END ERROR

Description:	Malfunction of tape end sensor was detected.
Detecting condition:	When the tape end is detected continuously for more than seven seconds.
Sub error message:	None
Possible causes:	• Tape end sensor trouble • Tape end detection circuit (IC601 on DR-508 board) trouble • Tape end input port (IC1000 on SS-102 board) trouble • Harness disconnection • The tape cannot move at the tape end due to troubles other than the tape sensor.
Protecting operations:	In the REW mode, continues the operation until the tape top is detected, and stops the tape transport and enters the rest state when the tape top is detected. During the tape transport in reverse direction, the REW mode can be entered only while the total tape quantity is observed. Stops the tape transport and switches to the rest state during tape transport except the above.

ERROR-14 FAN MOTOR ERROR

Description: Malfunction of cooling fan motor was detected.

CAUTION

If this error occurred, stop operation of the unit immediately, and turn off the power.

If the unit is used continuously without fan operation, overheating inside the unit can cause a fire or failure.

Detecting condition:	When the fan motor FG frequency is less than the specified value continuously for more than one second.
Sub error message:	None
Possible causes:	• Fan motor trouble • Fan motor FG input circuit (IC1105, 1106, 1112, 1114, 1115 on SS-102 board) trouble
Protecting operation:	None

Note

This unit has 11 fan motors including two fan motors on the MY-115 board (Option HKSR-5804).

FAN3 and FAN4 run while the drum is rotating. The other fan motors continue to run while the power is turned on.

When the above detecting condition is satisfied by any fan motor, this error occurs.

ERROR-20 CC TIME OVER

Description:	Malfunction of cassette compartment-up or down operation was detected.
Detecting condition:	When no operation is completed within about six seconds after operation start.
Sub error message:	None
Possible causes:	• Cassette compartment block trouble • Harness (CL-29 board – DR-508 board) trouble • Cassette compartment motor drive circuit (DR-508 board) trouble • Cassette-down sensor (CL-29 board) trouble • Cassette-down input port (IC100 on DR-508 board) trouble
Protecting operation:	Stops the movement of the cassette compartment and reel table until a cassette eject button is pushed.

ERROR-21 SHIFT TIME OVER

Description:	Malfunction of movement of the reel table corresponding to the cassette size was detected.
Detecting condition:	When no operation is completed within about 18 seconds after operation start.
Sub error message:	None
Possible causes:	• Reel shift mechanism trouble • Reel shift motor trouble • Reel shift motor drive circuit (IC501 on DR-508 board) trouble • Reel position sensor (PH203, PH204 on DR-508 board) trouble (S position sensor or L position sensor) • Reel position input port (IC100 on DR-508 board) trouble
Protecting operation:	Stops the movement of the reel table and ejects the cassette during cassette loading.

ERROR-22 POSITION BOTH DETECT

Description:	The L and S cassette positions of the reel table were detected simultaneously.
Detecting condition:	When the L and S position sensors detect the L and S cassette positions, respectively at the same time.
Sub error message:	None
Possible causes:	• S position sensor (PH203 on DR-508 board) trouble • L position sensor (PH204 on DR-508 board)) trouble • Reel position input port (IC100 on DR-508 board) trouble
Protecting operation:	When an error occurs during cassette insertion, ejects the cassette, if possible. Prohibits the cassette insertion.

ERROR-23 THREAD BOTH DETECT

Description:	The thread end and unthread end states were detected simultaneously.
Detecting condition:	When the thread end and unthread end sensors detect the thread end and unthread end states, respectively at the same time.
Sub error message:	None
Possible causes:	• Thread end sensor (TR-120 board) trouble • Unthread end sensor (TR-120 board) trouble • Thread end or unthread end input port (IC1000 on SS-102 board) trouble
Protecting operations:	Ejects the cassette during cassette insertion or ejection. Switches to the protection mode during tape threading/unthreading. Stops the tape transport and switches to the rest state in cases except the above.

ERROR-24 DT HARD ERROR

Description:	Malfunction of DT circuit was detected.
Detecting condition:	When the HDCAM (and Digital BETACAM) DT adjustments are abnormally done.
Sub error message:	None
Possible causes:	• Slip ring trouble • DT-47/48 board trouble • DT head trouble • Drum trouble

ERROR-26 POWER SUPPLY ALARM

Description: Malfunction of power supply fan motor or abnormal temperature was detected.

CAUTION

If this error occurred, stop operation of the unit immediately, and turn off the power.

If the unit is used continuously without fan operation, overheating inside the unit can cause a fire or failure.

Possible causes: Power supply unit trouble

Protecting operation: None

ERROR-93 DR IF ERROR

Description: Abnormality was detected in the communication between SV CPU (IC1000 on SS-102 board) and DR MPU (IC100 on DR-508 board).

Sub error message and Detecting condition:

DR: When the communication with DR MPU (IC100 on DR-508 board) at power-on is in abnormal state.

Possible cause: **DR:** IC100 and its peripheral circuit on DR-508 board trouble

Protecting operation: Prohibits the cassette insertion.

ERROR-97 NVRAM CHECK SUM ERROR

Description: The abnormal operation of the NV-RAM (DR-508 board) for the servo system was detected.

Detecting condition: When the checksum of NV-RAM data does not coincide during activation.

Sub error message: None

Possible cause: NV-RAM (IC101 on DR-508 board) trouble

Protecting operation: Switches to the protection mode.

ERROR-A0 SY UNDEFINED ERROR

Description: The undefined error was detected in the system control.

ERROR-A2 SY1-SY2 DPRAM ERROR

Description: The abnormal operation of the DPRAM (IC608 on SS-102 board) between SYS1 and SYS2 was detected.

Possible cause: DPRAM (IC608 on SS-102 board) trouble

Protecting operation: Displays only this error.

ERROR-A5 SY-FC DPRAM ERROR

Description: The abnormal operation of the DPRAM (IC1425 on FC-91/111 board) between SYS1 and FC was detected.

Possible cause: DPRAM (IC1425 on FC-91/111 board) trouble

Protecting operation: Displays only this error.

ERROR-A8 SY NVRAM CHECK SUM ERROR

Description: The abnormal operation of the NV-RAM (IC214 on SS-102 board) for system control was detected.

Possible cause:

- NV-RAM (IC214 on SS-102 board) trouble
- Backup battery for NV-RAM is out of life.

Protecting operation: Resets the setting data of the setup menu data to the factory settings.

ERROR-B3 xxx PLDx INITIAL ERROR

Description: The PLD initialization error was detected.

Possible cause: • Corresponding PLD trouble

xxx PLDx

Board PLD No.

- Flash memory that accompanies PLD trouble
- Upgrade Failure

Corresponding PLD and Flash memory

Board	PLD	Flash memory
APR	PLD1 (IC1000)	IC3200
	PLD2 (IC2000)	IC3200
	PLD3 (IC3000)	—
EQ	PLD1 (IC602)	IC412
	PLD2 (IC2205)	IC412
	PLD3 (IC402)	—
FC	PLD1 (IC300)	IC1423/FC-91 IC1428/FC-111
	PLD2 (IC500)	IC1423/FC-91 IC1428/FC-111
HIF	PLD1 (IC3000)	IC2303
	PLD2 (IC3001)	IC2303
	PLD3 (IC2000)	IC2304
	PLD4 (IC1111)	IC2304
	PLD5 (IC2301)	—
	PLD6 (IC2302)	—
	PLD7 (IC2400)	—

Board	PLD	Flash memory
HPR-22	PLD1 (IC100)	IC1402
	PLD2 (IC700)	IC1402
	PLD3 (IC1401)	—
	PLD4 (IC1500)	—
HPR-35	PLD1 (IC100)	IC3004
	PLD2 (IC103)	IC3004
	PLD3 (IC3000)	—
	PLD4 (IC3110)	—
SS	PLD5 (IC2300)	IC3004
	PLD1 (IC500)	IC501
	PLD2 (IC700)	IC703

Protecting operation: Displays only this error.

ERROR-B8 SY1-SY2 INTERFACE ERROR

Description: The communication error of SYS1 and SYS2 CPUs was detected.

Possible cause: • SYS2 CPU (IC600 on SS-102 board) trouble
• When the SYS2 CPU (IC600 on SS-102 board) initialization is in abnormal state.

Protecting operation: Displays only this error.

ERROR-B9 SY-SV INTERFACE ERROR

- Description: The communication error of SV CPU (IC1000 on SS-102 board) was detected.
- Possible cause:
- SV CPU (IC1000 on SS-102 board) trouble
 - When the SV CPU (IC1000 on SS-102 board) initialization is in abnormal state.
- Protecting operation: Displays only this error.

ERROR-BA SY-EQ INTERFACE ERROR

- Description: The communication error of EQ CPU (IC2912 on EQ-102/109 board) was detected.
- Possible cause:
- EQ CPU (IC2912 on EQ-102/109 board) trouble
 - When the EQ CPU (IC2912 on EQ-102/109 board) initialization is in abnormal state.
- Protecting operation: Displays only this error.

ERROR-BB SY-FC INTERFACE ERROR

- Description: The communication error of FC CPU (IC1404 on FC-91/111 board) was detected.
- Possible cause:
- FC CPU (IC1404 on FC-91/111 board) trouble
 - When the FC CPU (IC1404 on FC-91/111 board) initialization is in abnormal state.
- Protecting operation: Displays only this error.

ERROR-BC SY-50PIN INTERFACE ERROR

- Description: The communication error of CPU (IC320 on CP-399 board) for the 50-pin parallel remote interface was detected.
- Possible cause:
- CPU (IC320 on CP-399 board) trouble
 - When the CPU (IC320 on CP-399 board) initialization is in abnormal state.
- Protecting operation: Displays only this error.

ERROR-FF SV UNDEFINED ERROR

- Description: The undefined error was detected in the servo system (servo control system).

Section 3 Maintenance Mode

3-1. Overview of Maintenance Mode

This unit has the maintenance mode that is useful for maintenance and trouble diagnosis.

This maintenance mode consists of the following menus. The contents of each menu are displayed on the color display (LCD).

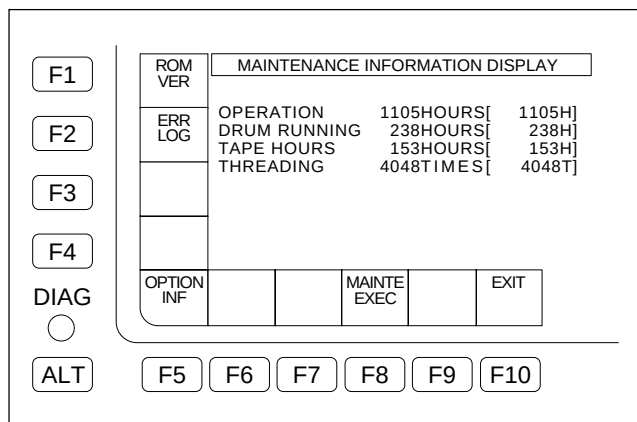
The menu can be operated using the keys/buttons on the control panel.

Note

All the status and numerical values displayed in the illustration are examples.

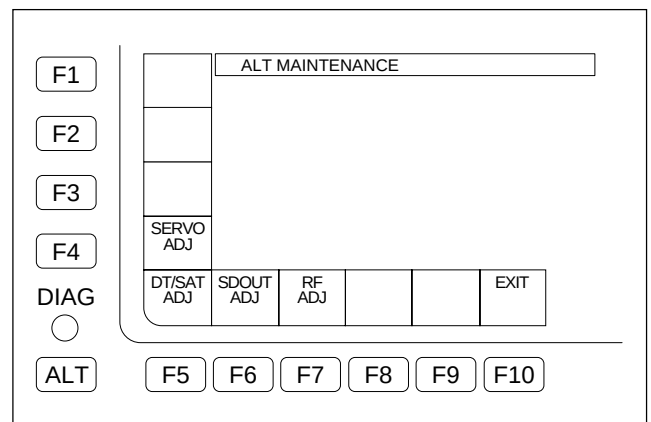
MAINTENANCE INFORMATION menu (Section 3-2)

This menu is used to display maintenance information about this unit.



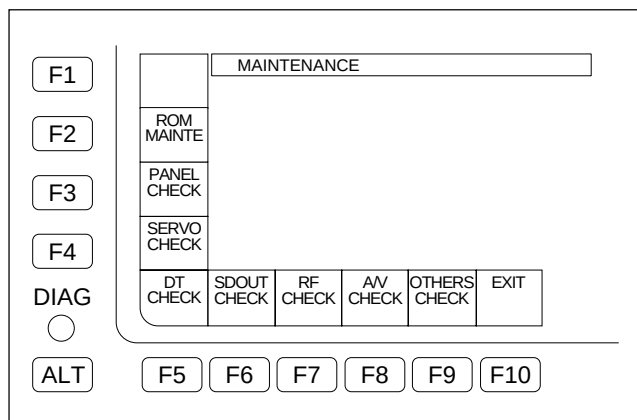
ALT MAINTENANCE menu (Section 3-4)

This menu is mainly used for adjustments of this unit.



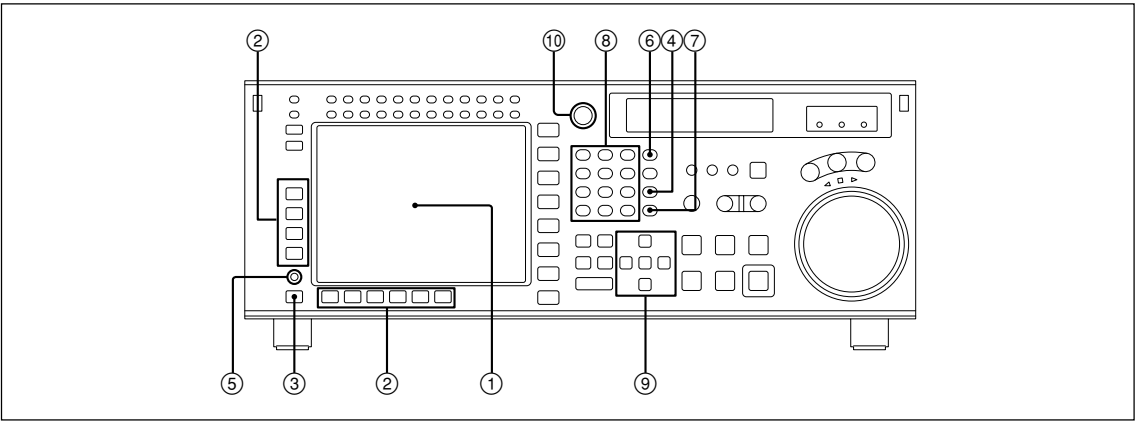
MAINTENANCE menu (Section 3-3)

This menu is mainly used for checks of this unit.



Operation Keys

The following are descriptions of the keys and other items used in maintenance mode.



Number	Name	Function
①	Color display (LCD)	Displays the menu window selected from a menu. Each menu window displays the functions assigned to the function keys ([F1] to [F10]) and the information necessary for the settings, such as a time code.
②	Function keys	Set a function displayed on the menu window. These keys are disabled when no function is displayed.
③	[ALT] (alternative) key	Switches setting items displayed on the menu window.
④	[CLR] (clear) key	Reset /Clear the input value.
⑤	DIAG (diagnostic) button	Used when the maintenance mode starts up.
⑥	[SFT] (SHIFT) key	Used as an auxiliary key for setting items.
⑧	Numeric keys and + (plus)/ – (minus) keys	Enters numeric values. When the keys 0 to 5 is pressed while holding down the [SFT] key, the hexadecimals A to F, used for the user bit, are entered. The + (plus)/– (minus) keys can be used for the modification of a numeric value.
⑨	Cursor keys	Moves the cursor (displayed in reverse video) on the color display. Also used to change a set value.
⑩	MULTI CONTROL knob	Moves the cursor (displayed in reverse video) on the color display. Also used to change a set value.

Activating the maintenance mode

1. On the HOME menu, press DIAG button while holding down the **[SFT]** key. The MAINTENANCE INFORMATION menu is displayed.
2. On the MAINTENANCE INFORMATION menu, press **[F8]** (MAINT EXEC) key holding down the **[SFT]** key.
The MAINTENANCE menu is displayed.
3. On the MAINTENANCE menu, press the **[ALT]** key.
The ALT MAINTENANCE menu is displayed.

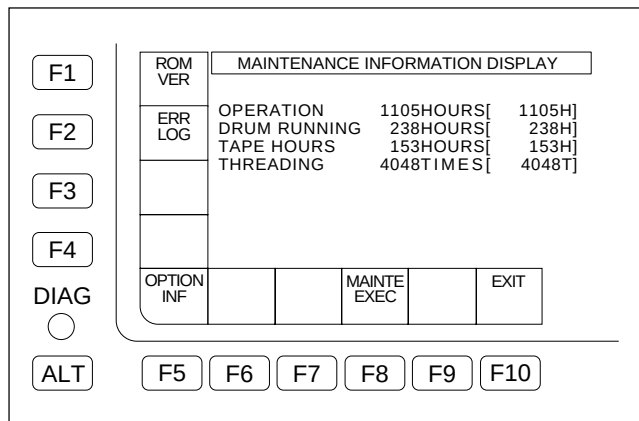
Exiting maintenance mode

On each menu, press the **[F10]** (EXIT) key several times until the HOME menu appears on the color display.

3-2. MAINTENANCE INFORMATION Menu

3-2-1. Overview

The MAINTENANCE INFORMATION menu is used to display maintenance information about this unit.
On the HOME menu, press the DIAG button while holding down the **[SFT]** key.
The MAINTENANCE INFORMATION menu is displayed.



[F1] (ROM VER) Key

Displays the ROM version of each board.
(Refer to Section 3-2-2.)

[F2] (ERR LOG) Key

Detects error(s) occurring in a defective system of the unit, and displays the list of the logged errors.
Also, performs the settings, such as a time setting.
(Refer to Section 3-2-3.)

[F5] (OPTION INF) Key

Displays option board(s) installed on this unit and their functions. (Refer to Section 3-2-4.)

[F8] (MAINT EXEC) Key

Press the **[F8]** (MAINT EXEC) key while holding down the **[SFT]** key to display the MAINTENANCE menu.
(Refer to Section 3-3.)

[F10] (EXIT) Key

Exits the MAINTENANCE INFORMATION menu and returns to the HOME menu.

3-2-2. ROM VERSION Menu

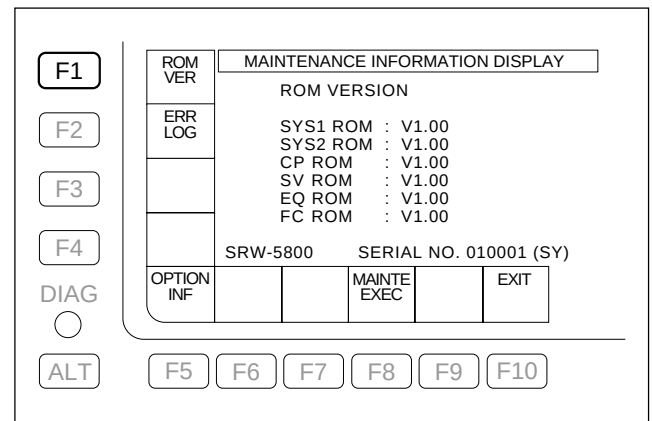
The ROM VERSION menu is used to display the ROM version of each board.

To display the ROM version:

On the MAINTENANCE INFORMATION menu, press the **[F1]** (ROM VER) key.

Note

The FC ROM version is shaded as “V0.00” when the option HKSR-5001 is not installed.



- Each time the **[F1]** (ROM VER) key is pressed, the display switches as follows to display all the ROM versions: ROM → PLD (six displays) → PLD/DATA → ROM/PLD.

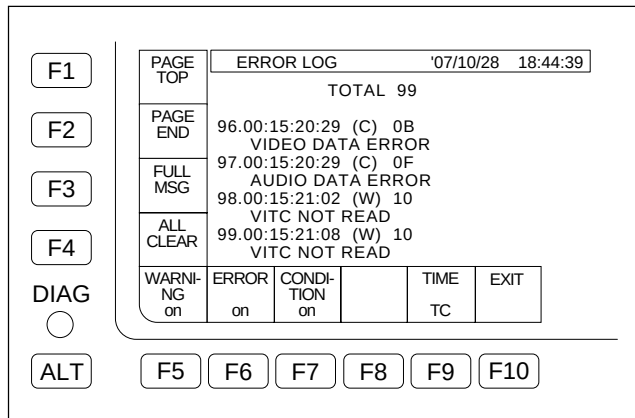
3-2-3. ERROR LOG Menu

The ERROR LOG menu detects error(s) occurring in a defective system of the unit, and displays the list of the logged error and warning messages.

This menu is also used for the settings, such as a time setting.

For details about error and warning messages, refer to Section 2.

To display the ERROR LOG menu, press the **[F2]** (ERROR LOG) key on the MAINTENANCE INFORMATION menu.



[F1] (PAGE TOP) Key

Moves the cursor to the top page.

[F2] (PAGE END) Key

Moves the cursor to the page where the last message exists.

[F3] (FULL MSG) Key

Displays a message (on which the cursor is placed) in the full message.

[F4] (ALL CLEAR) Key

Deletes the saved messages (LOG DATA).

[F5] (WARNING) Key

Selects whether to display warning messages.
on (factory setting)/off

[F6] (ERROR) Key

Selects whether to display error messages.
on (factory setting)/off

[F7] (CONDITION) Key

Selects whether to display condition messages.
on (factory setting)/off

[F9] (TIME) Key

Switches the display between time code and real time.
TC (factory setting)/REAL

[F10] (EXIT) Key

Exits the ERROR LOG menu and returns to the MAINTENANCE INFORMATION menu.

[ALT] + [F8] (CANCEL EDIT) Key

Cancels the display of a selected warning message.

[ALT] + [F9] (REAL TIME) Key

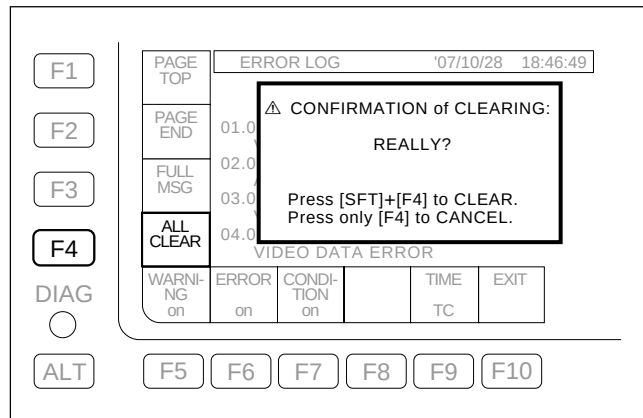
Sets a date and time.

[F4] (ALL CLEAR) Key

Deletes the saved messages (LOG DATA).

Execution Procedure

1. On the ERROR LOG menu, press the **[F4]** (ALL CLEAR) key.



2. Press the **[F4]** (ALL CLEAR) key while holding down the **[SFT]** key. Then the saved messages (LOG DATA) are deleted.
To cancel the execution, press the **[F4]** (ALL CLEAR) key only.

ALT + F8 (CANCEL EDIT) Key

Cancels the display of a selected warning message.

Note

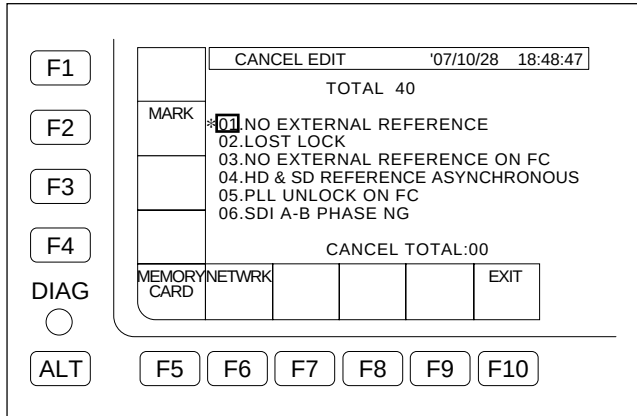
This function is used to hide an unnecessary message, depending on the type of usage of this unit.

Once a selected warning message is canceled, the unit does not issue and display it even if the same condition occurs next time.

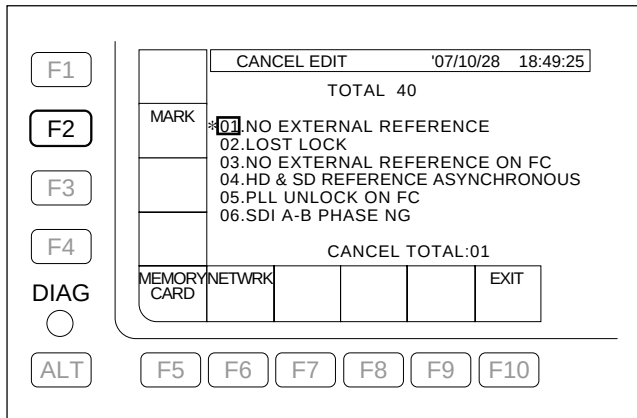
Use this function according to the type of usage of the system.

Execution Procedure

1. On the ERROR LOG menu, press the **ALT** key, and then press the **F8** (CANCEL EDIT) key. The CANCEL EDIT menu appears.

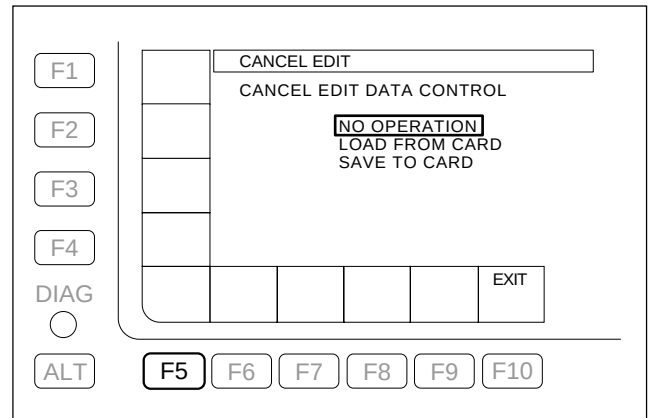


2. Select a warning message to be canceled using the **↑/↓** key, and confirm it using **F2** (MARK) key.
 - * is displayed with the confirmed message. If the **F2** (MARK) key is pressed again, the setting is canceled and the * disappears.



Saving the CANCEL EDIT setting into a Memory Stick and loading it from the Memory Stick

1. On the CANCEL EDIT menu, press the **F5** (CANCEL EDIT) key to display the CANCEL EDIT DATA CONTROL menu.



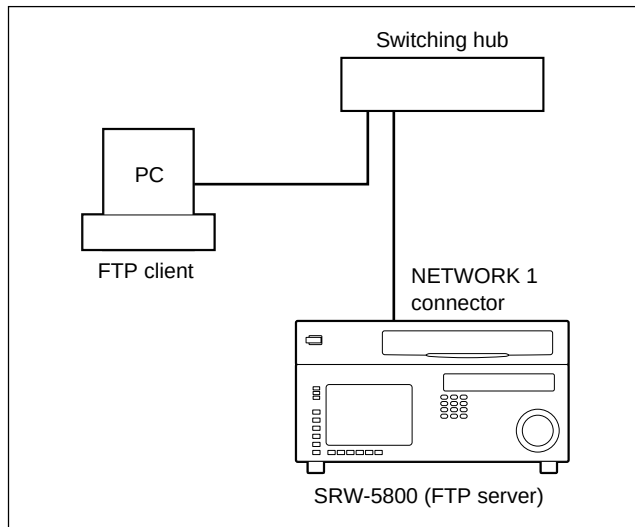
2. To save the setting data into a Memory Stick, select "SAVE TO CARD" and press the **F10** (EXIT) key. To load the setting data from the Memory Stick, select "LOAD FROM CARD" and press the **F10** (EXIT) key.
3. Press the **F10** (EXIT) key to return to the CANCEL EDIT menu.

Saving and loading the CANCEL EDIT setting using a network

1. Setting up a network

When a network has already been set up, this procedure is not necessary.

- (1) Connect the SRW-5800 (FTP server) to the FTP client (PC) as shown below.



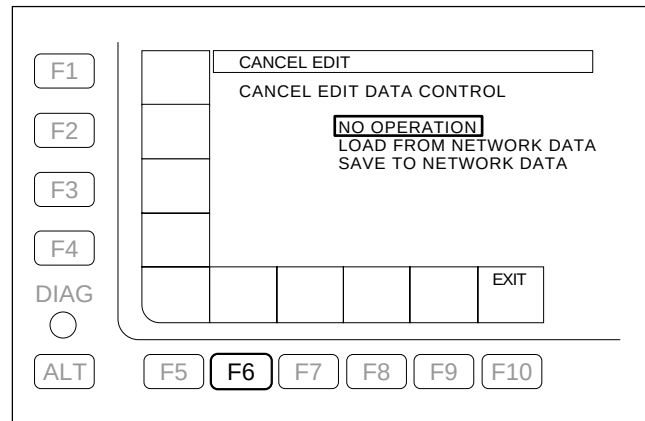
- (2) On the NETWORK1 SETUP menu, set the IP address, subnet mask, and default gateway. (Refer to Section 3-3-9.)

2. Saving and loading the CANCEL EDIT setting on the FTP client (PC)

- (1) Connect the FTP client (PC) to the FTP server (this unit).
Use the following user name and password for connection to the FTP server (this unit).
User name: srw5800
Password: srw5800
- (2) Save the setup file “srw5800cancel.dat” in the VTRBANK folder of the FTP server (this unit) in the FTP client (PC).
Or load the setup file from the FTP client (PC) to the VTRBANK folder of the FTP server (this unit).

3. Saving and loading from this unit to the FTP server (this unit)

- (1) On the CANCEL EDIT menu, press the **F6** (NETWORK) key to display the CANCEL EDIT DATA CONTROL menu.



- (2) To save the setting data in the FTP server (this unit), select “SAVE TO NETWORK DATA” and press the **F10** (EXIT) key.
To load the setting data from the FTP server (this unit), select “LOAD FROM NETWORK DATA” and press the **F10** (EXIT) key.

Notes

- If the setup file “srw5800cancel.dat” does not exist in the VTRBANK folder of the FTP server (this unit), “LOAD FROM NETWORK DATA” is shaded and is not selectable. Exit the CANCEL EDIT DATA CONTROL menu, and then copy the setup file “srw5800cancel.dat” to the VTRBANK folder of the FTP server (this unit) or format the VTRBANK folder on the network system bank menu. (Refer to Section 3-3-9.)
- When the VTRBANK folder has been formatted, existing files are deleted and a default file is created.
- All files in the VTRBANK folder are deleted during the power-on procedure.

- (3) Press the **F10** (EXIT) key to return to the CANCEL EDIT menu.

[ALT] + [F9] (REAL TIME) Key

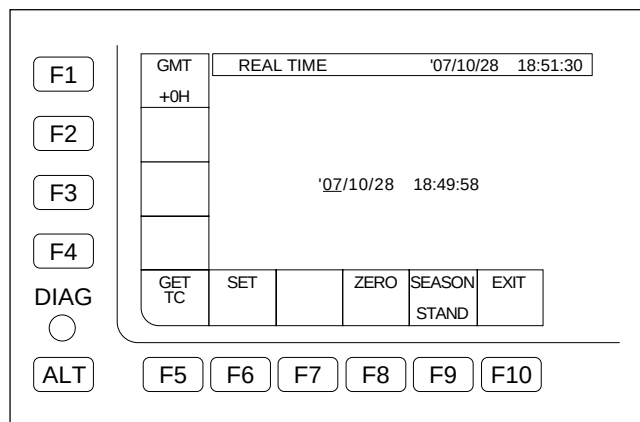
Sets a date and time.

Note

When the setting is switched between standard time and daylight saving time, the time shifts by one hour.
When time is switched across 00:00 A.M, the date is not changed.

Execution Procedure

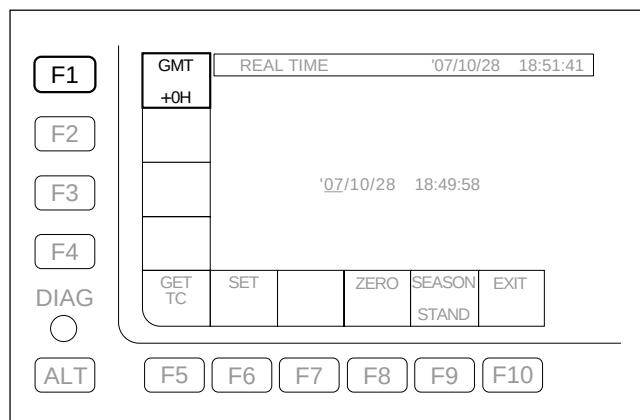
1. On the ERROR LOG menu, press the **[ALT]** key, and press the **[F9]** (REAL TIME) key to display the REAL TIME menu.



2. Perform one of the following operations according to the setting.

To perform the GMT (Greenwich Mean Time) setting:

- (1) Press the **[F1]** (GMT) key.



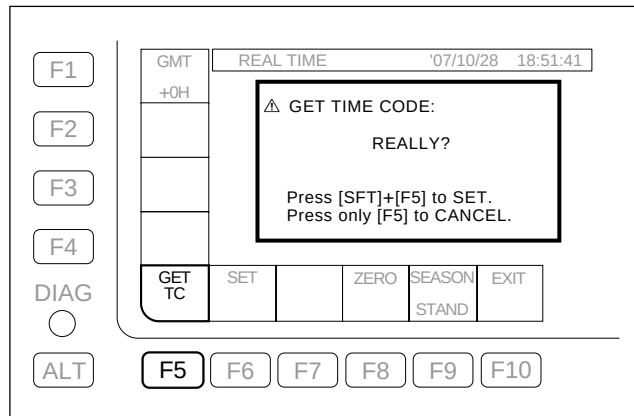
- (2) Set the time difference with the GMT using the **[↑]/[↓]** key.

Note

Setting range is +24 H to -24 H.
The factory setting is +0 H.

To load a current time code:

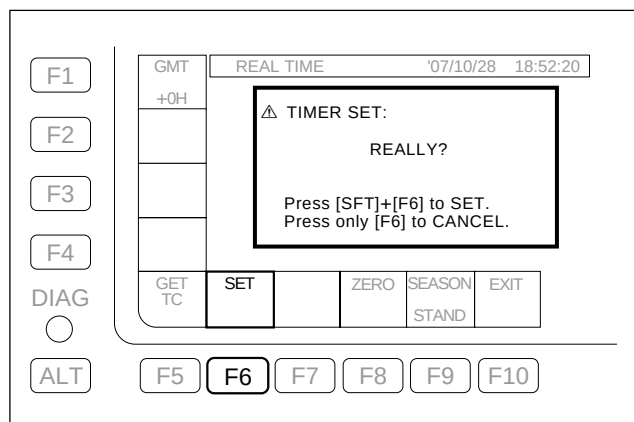
- (1) Press the **[F5]** (GET TC) key.



- (2) Press the **[F5]** (GET TC) key while holding down the **[SFT]** key.
To cancel the setting, press the **[F5]** (GET TC) key only.

To set a date and time:

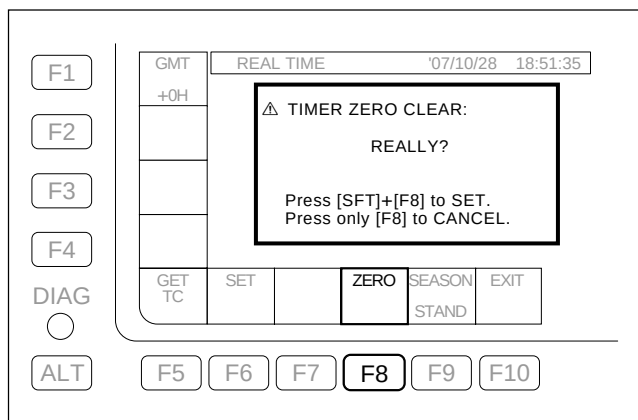
- (1) Move the underscore to a value to be changed using **[←]/[→]** key, and change the value using numeric keys.
- (2) Press the **[F6]** (SET) key.



- (3) Press the **[F6]** (SET) key while holding down the **[SFT]** key.
To cancel the setting, press the **[F6]** (SET) key only.

To perform the zero adjustment of minute/second of the system clock:

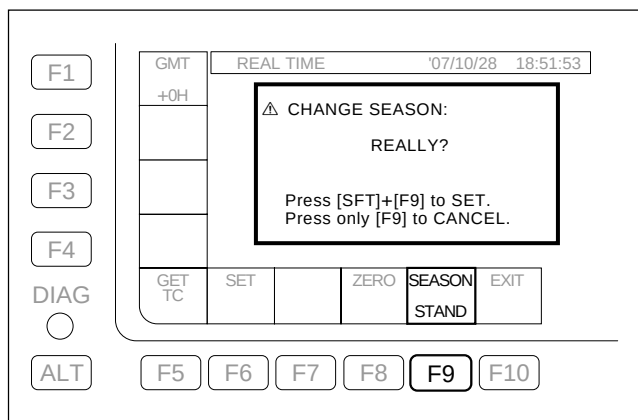
- (1) Press the **F8** (ZERO) key.



- (2) Press the **F8** (ZERO) key while holding down the **SFT** key.
To cancel the setting, press the **F8** (ZERO) key only.

To switch between standard time and daylight saving time:

- (1) Press the **F9** (SEASON) key.



- (2) Press the **F9** (SEASON) key while holding down the **SFT** key.
STAND: Standard time
SUMMER: Daylight saving time (The time preceding standard time by one hour)

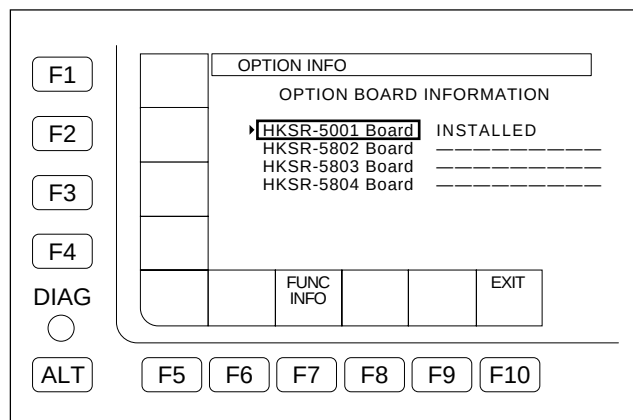
3-2-4. OPTION INFO Menu

The OPTION INFO menu is used to display an option board being installed and their functions.

Press the **F5** (OPTION INF) key on the MAINTENANCE INFORMATION menu.

The OPTION INFO menu appears.

The installed option is displayed as "INSTALLED".



F7 (FUNC INFO) Key

Displays functions of the option board.

F10 (EXIT) Key

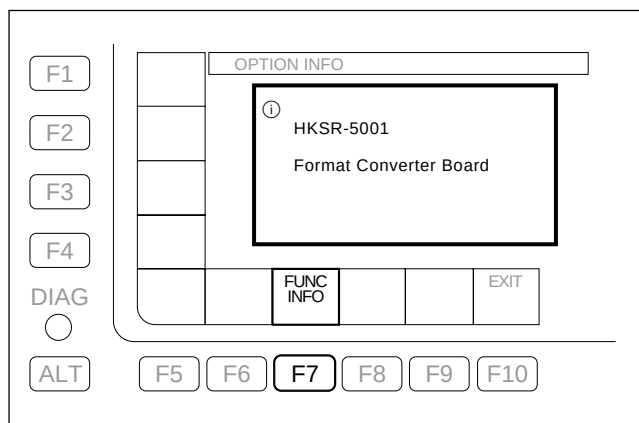
Exits the OPTION INFO menu, and returns to the MAINTENANCE INFORMATION menu.

F7 (FUNC INFO) Key

Displays the function of the option board.

To display the functions of the option board:

1. On the OPTION INFO menu, select an option board to display its function using **↑**/**↓** key.
2. Press the **F7** (FUNC INFO) key or the center key.
When the key is pressed again, the display returns to the OPTION INFO menu.



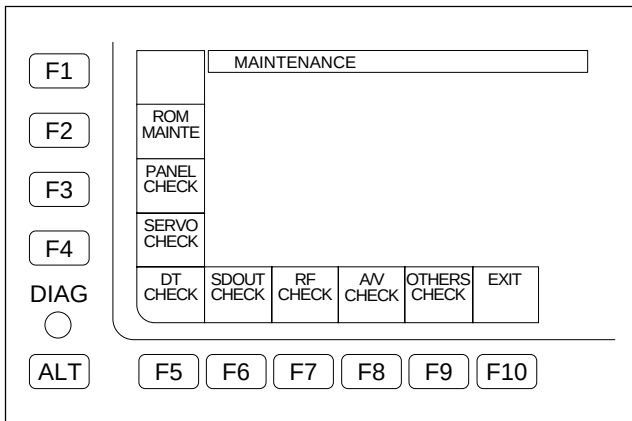
3-3. MAINTENANCE Menu

3-3-1. Overview

The MAINTENANCE menu is mainly used to check the unit.

On the MAINTENANCE INFORMATION menu, press the **F8** (MAINT E EXEC) key while holding down the **SFT** key.

The MAINTENANCE menu appears.



F2 (ROM MAINT) Key

Downloads ROM data on this unit.
(Refer to Section 3-3-2.)

F3 (PANEL CHECK) Key

Performs the self-diagnosis of the control panel.
(Refer to Section 3-3-3.)

F4 (SERVO CHECK) Key

Checks the servo system. (Refer to Section 3-3-4.)

F5 (DT CHECK) Key

Checks the DT system. (Refer to Section 3-3-5.)

F6 (SDOUT CHECK) Key

Checks the down converter system.
(Refer to Section 3-3-6.)

F7 (RF CHECK) Key

Checks the RF system. (Refer to Section 3-3-7.)

F8 (A/V CHECK) Key

Sets up system E-E function and the audio/video test signal generator built in this unit for the maintenance mode.
(Refer to Section 3-3-8.)

F9 (OTHERS CHECK) Key

Sets the system and the network of this unit.
(Refer to Section 3-3-9.)

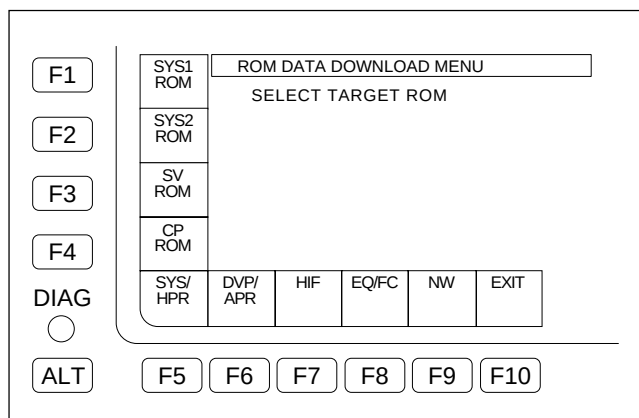
F10 (EXIT) Key

Exits the MAINTENANCE menu, and returns to the MAINTENANCE INFORMATION menu.

3-3-2. ROM DATA DOWNLOAD Menu

The ROM DATA DOWNLOAD menu is used to download ROM data of this unit.

To display the ROM DATA DOWNLOAD menu, press the **F2** (ROM MAINT) key in the MAINTENANCE menu.



F1 (SYS1 ROM) Key

Performs the downloading of SYS1 ROM data.

F2 (SYS2 ROM) Key

Performs the downloading of SYS2 ROM data.

F3 (SV ROM) Key

Performs the downloading of SV ROM data.

F4 (CP ROM) Key

Performs the downloading of CP ROM data.

F5 (SYS/HPR) Key

Performs the downloading of ROM data* on the HPR-22/35 and SS-102 boards.

F6 (DVP/APR) Key

Performs the downloading of ROM data* on the DVP-43 (Option HKSR-5802) and APR-81/91 boards.

F7 (HIF) Key

Performs the downloading of ROM data* on the HIF-46/56 board.

F8 (EQ/FC) Key

Performs the downloading of ROM data* on the EQ-102/109 and FC-91/111 (Option HKSR-5001) boards.

F9 (NW) Key

Performs the downloading of ROM data* on the MY-115 board (Option HKSR-5804).

F10 (EXIT) Key

Exits the ROM DATA DOWNLOAD menu and returns to the MAINTENANCE menu.

*: Besides the program for PLD, includes the internal program of the MPU. (Refer to Section 1-27.)

However, the program for PLD supported by the e-production system cannot be downloaded with these menus.

For downloading the program for PLD supported by the e-production system, refer to Section 1-22.

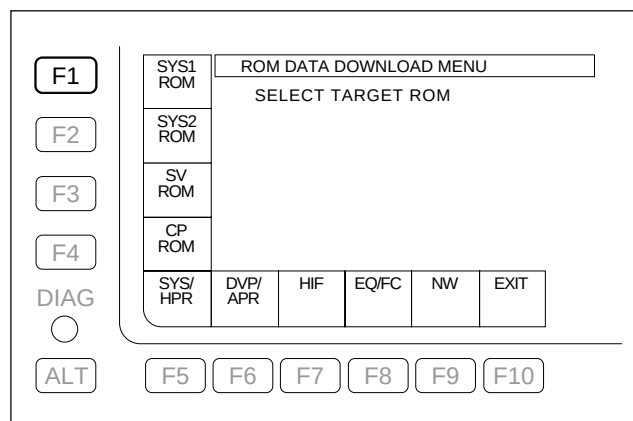
Execution Procedure

Note

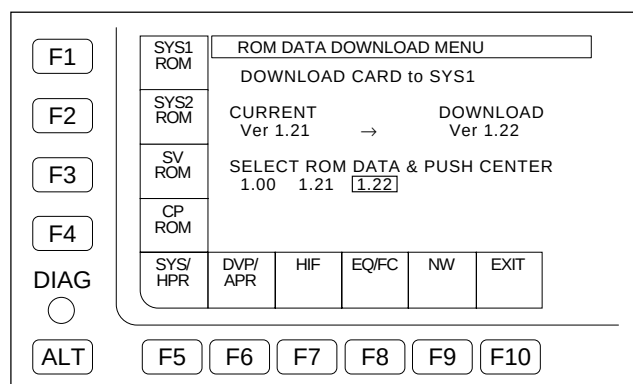
A Memory Stick with the new version software is required for updating the software.

Please contact your local Sony Sales Office/Service Center to update the software.

1. Connect a Memory Stick that the new version software is written in, to the unit. (For the connection, refer to the OPERATION MANUAL Section 3-4.)
2. When a tape has been inserted, eject it.
3. In the ROM DATA DOWNLOAD menu, press the **F1** (SYS1 ROM) Key to **F9** (NW) key to select a ROM to be downloaded.



4. Select ROM data to be downloaded using **←** or **→** key, and check the current ROM version and the ROM version to be downloaded.

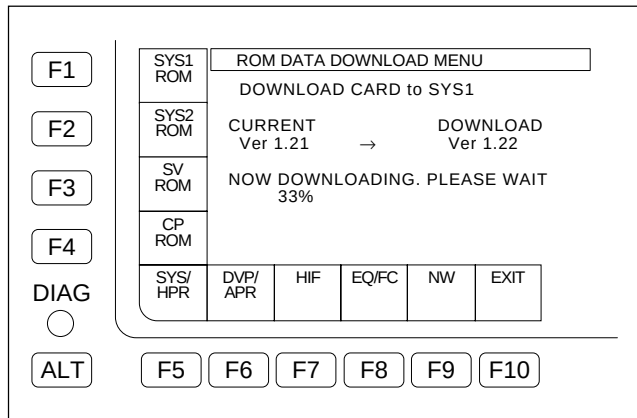


5. Press the center key.
 - The downloading confirmation message appears.
6. Press the center key while holding down the **[SFT]** key.

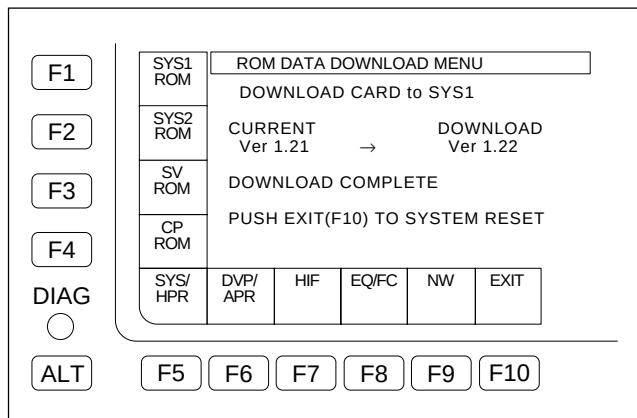
To cancel the downloading, press **[CLR]** or **[F10]** (EXIT) key.

Note

Be sure not to turn off the power or remove the Memory Stick while downloading.



7. After the downloading is completed, the message “DOWNLOAD COMPLETE” is displayed.



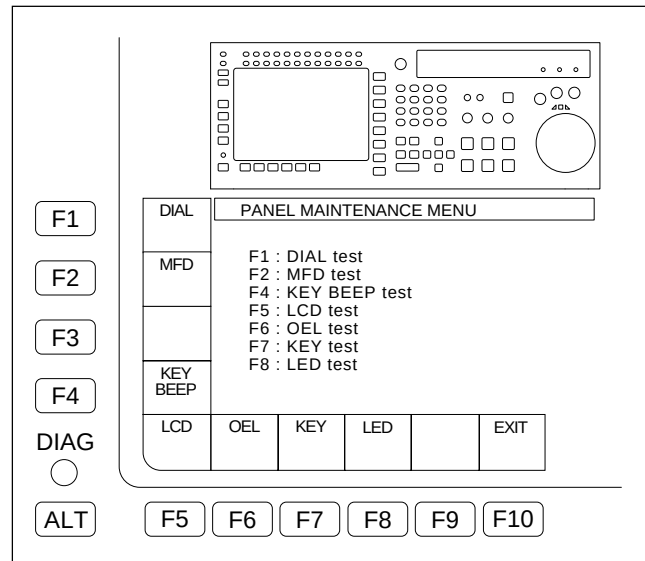
8. Press the **[F10]** (EXIT) key
 - The system restarts automatically.
9. Confirm that the system has restarted. Then turn off the power, and turn it on again.

3-3-3. PANEL MAINTENANCE Menu

The PANEL MAINTENANCE menu is used to perform the self-diagnosis of the control panel on this unit.

On the MAINTENANCE menu, press the **[F3]** (PANEL CHECK) key.

The PANEL MAINTENANCE menu is displayed.



[F1] (DIAL) Key

Performs operation checks for the search dial.

[F2] (MFD) Key

Performs operation checks for the MULTI CONTROL knob.

[F4] (KEY BEEP) Key

Performs tests for the beep sounds of the keys.

[F5] (LCD) Key

Performs the display test for the color display (LCD).

[F6] (OEL) Key

Performs the display test for the OEL.

[F7] (KEY) Key

Performs operation checks for the keys.

[F8] (LED) Key

Performs lighting checks for the LEDs.

[F10] (EXIT) Key

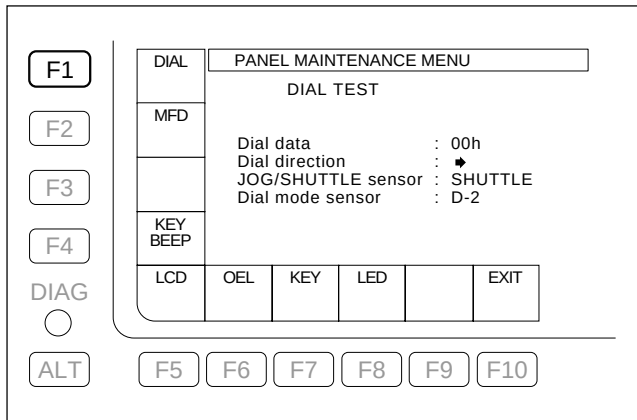
Exits the PANEL MAINTENANCE menu, and returns to the MAINTENANCE menu.

F1 (DIAL) Key

Performs the operation checks for the search dial.

Execution Procedure

1. On the PANEL MAINTENANCE menu, press the **F1** (DIAL) key.
 - The status of the search dial is displayed.



2. Turn the search dial to check the change of the status display.

Dial data: The number changes by turning the search dial.
00h is displayed for the center position.

Dial direction: The arrow changes as follows by turning the search dial:
⇒ is displayed for the right position from the center.
⇐ is displayed for the left position from the center.

JOG/SHUTTLE sensor:
JOG is displayed while the search dial is pressed.
SHUTTLE is displayed when the search dial is released.

Note

When the Dial mode sensor is D-2, not become the indication to the JOG mode even it the search dial is pressed.

Dial mode sensor: The setting status of the Dial mode is displayed.

D-2: The mode does not become the JOG mode even if the search dial is pressed. (factory setting)

BETACAM: Pressing the Search dial switches between the SHUTTLE/VAR mode (displayed as "SHUTTLE") and the JOG mode alternately.

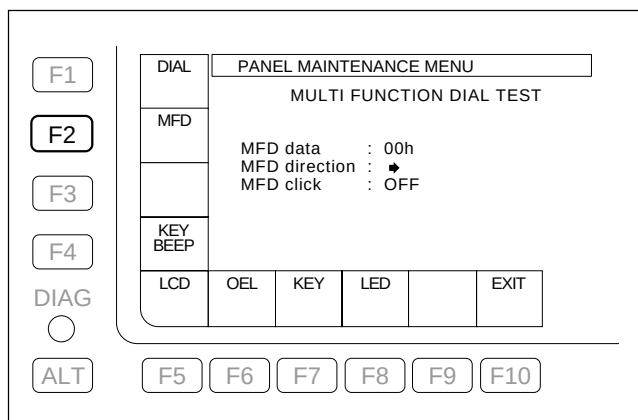
Refer to 3. Attaching the Dial Assembly of Section 5-25. Dial Assembly Replacement to change the Dial mode.

F2 (MFD) Key

Performs the operation checks for the MULTI CONTROL knob.

Execution Procedure

1. On the PANEL MAINTENANCE menu, press the **F2** (MFD) key.
 - The status of the MULTI CONTROL knob is displayed.



2. Turn the MULTI CONTROL knob to check the change of the status display.

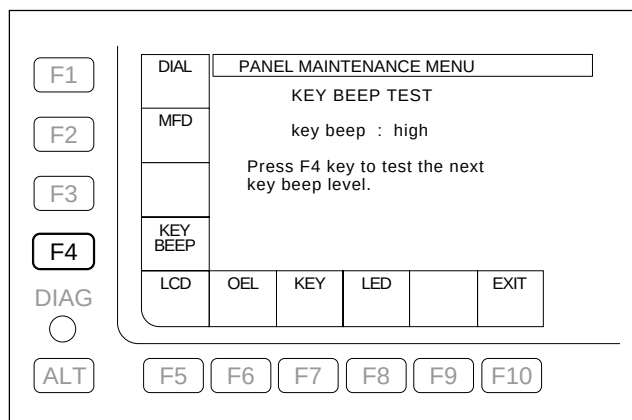
MFD data:	The number changes by turning the MULTI CONTROL knob.
MFD direction:	The arrow changes in the rotational direction by turning the MULTI CONTROL knob.
MFD click:	When pressing the MULTI CONTROL knob, "ON" is displayed.

F4 (KEY BEEP) Key

Performs the beep sound tests for the keys.

Execution Procedure

- On the PANEL MAINTENANCE menu, press the **F4** (KEY BEEP) key.
- Each time the **F4** (KEY BEEP) key is pressed, the setting changes as follows: high → mid → low → high, and the sound is output at the displayed volume.

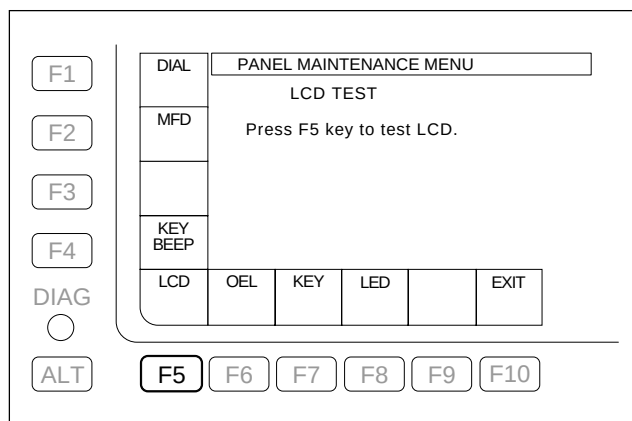


F5 (LCD) Key

Performs the display test for the color display.

Execution Procedure

- On the PANEL MAINTENANCE menu, press the **F5** (LCD) key.
- When the **F5** (LCD) key is pressed, the color display changes black → white, and then returns to the PANEL MAINTENANCE menu.

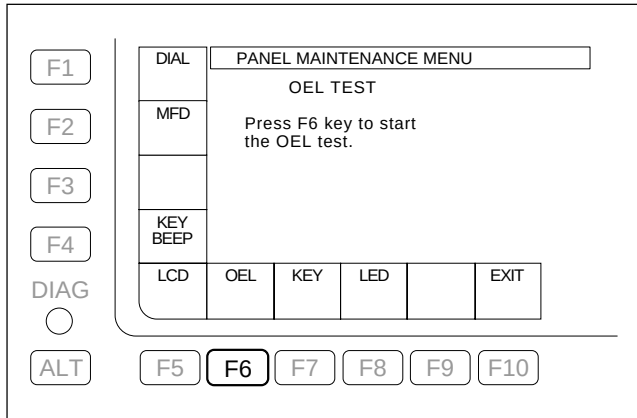


F6 (OEL) Key

Performs the display test for the OEL.

Execution Procedure

1. On the PANEL MAINTENANCE menu, press the **F6** (OEL) key.



2. Each time the **F6** (OEL) key is pressed, the display changes as follows: on → off → V lines → H lines, and test pattern is displayed on the OEL.

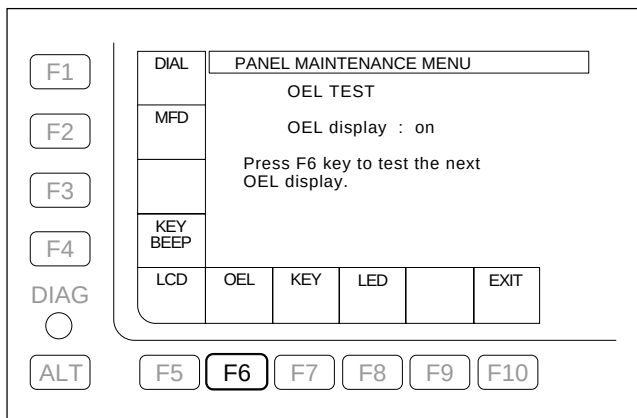
On (Factory setting):

The whole OEL display is illuminated.

Off: The whole OEL display is extinguished.

V lines: The test pattern consisting of vertical lines is displayed on the OEL.

H lines: The test pattern consisting of horizontal lines is displayed on the OEL.

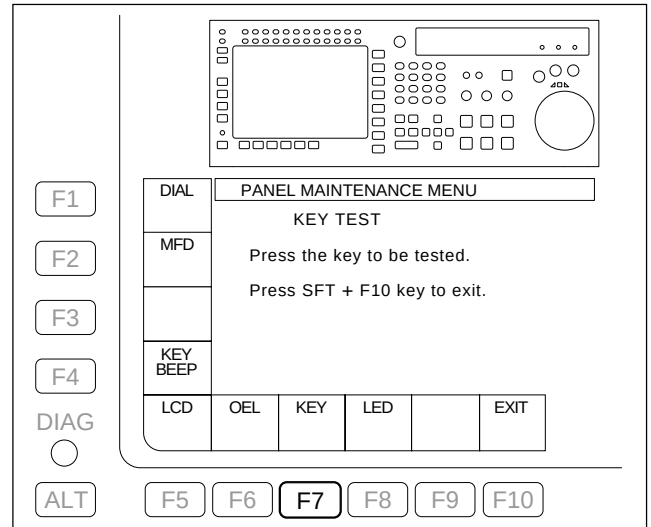


F7 (KEY) Key

Performs the operation checks for the keys.

Execution Procedure

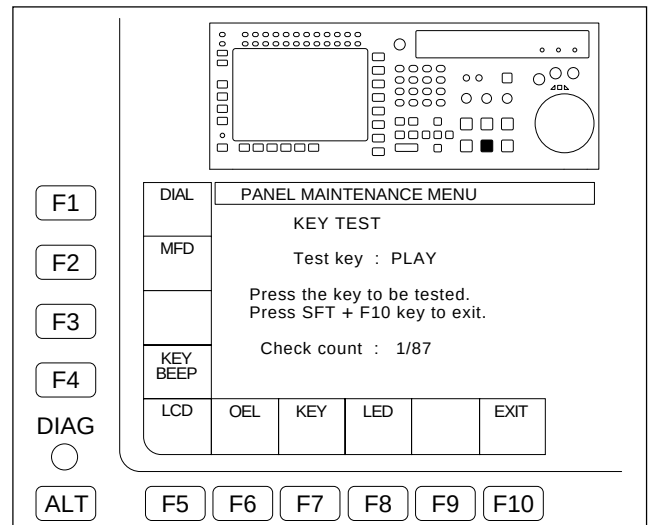
1. On the PANEL MAINTENANCE menu, press the **F7** (KEY) key.



2. Press a key or switch to be checked.
 - The relevant position is illuminated on the illustration of the control panel.

Note

If a key or switch is abnormal, the relevant position on the illustration of the control panel is not illuminated.



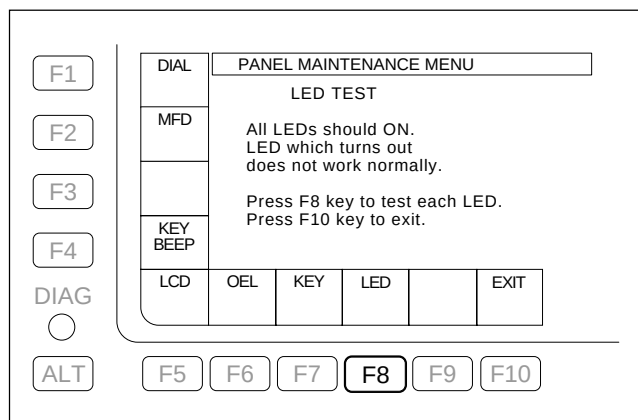
3. To cancel or exit the check, press the **F10** (EXIT) key while holding down the **SFT** key.
 - The KEY TEST menu is closed, and the menu returns to the PANEL MAINTENANCE menu.

F8 (LED) Key

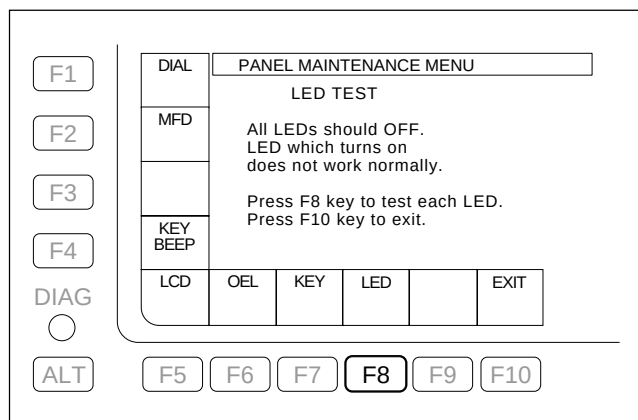
Performs the LED lighting checks.

Execution Procedure

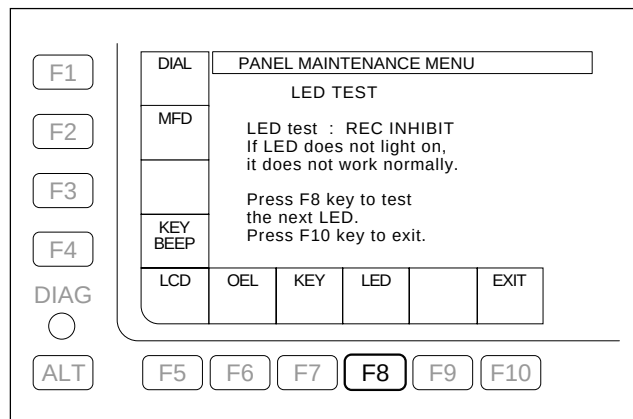
1. On the PANEL MAINTENANCE menu, press the **F8** (LED) key.
 - All the LEDs on the control panel are illuminated.
An LED that is not illuminated is abnormal.



2. Press the **F8** (LED) key again.
 - All the LEDs on the control panel are extinguished.
An LED that is not extinguished is abnormal.



3. Press the **F8** (LED) key repeatedly to perform the lighting checks of the LEDs, from REC INHIBIT to FORWARD lamps in order.
 - The LEDs on the control panel are illuminated.
An LED that is not illuminated is abnormal.

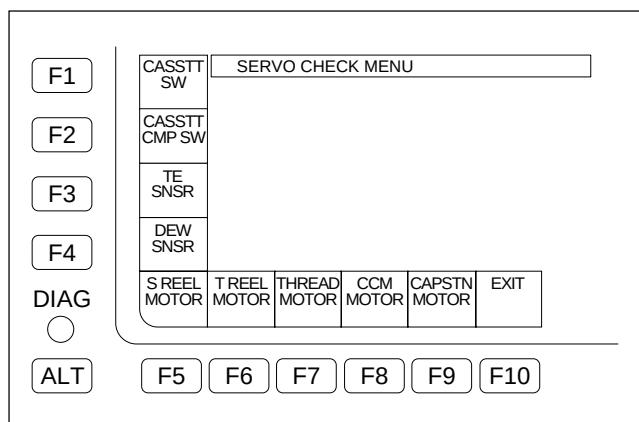


4. To cancel or exit the check, press the **F10** (EXIT) key.
 - The LED TEST menu is closed, and the menu returns to the PANEL MAINTENANCE menu.
 - To perform the LED lighting checks again, return to step 1.

3-3-4. SERVO CHECK Menu

The SERVO CHECK menu is used to check the servo system of this unit.

To display the SERVO CHECK menu, press the **F4** (SERVO CHECK) key on the MAINTENANCE menu.



1. SERVO CHECK Menu

F1 (CASSTT SW) Key

Performs the function checks for the cassette tab sensors and the REC inhibit sensors (switches).

F2 (CASSTT CMP SW) Key

Performs the function check for the cassette compartment sensors (switches).

F3 (TE SNSR) Key

Performs the function checks for the tape top sensor and the tape end sensor.

F4 (DEW SNSR) Key

Performs the function check for the dew condensation (DEW) sensor.

F5 (S REEL MOTOR) Key

Performs the function check for the S reel motor.

F6 (T REEL MOTOR) Key

Performs the function check for the T reel motor.

F7 (THREAD MOTOR) Key

Performs the function checks for the threading motor and the threading end sensor/unthreading end sensor.

F8 (CCM MOTOR) Key

Performs the function checks for the cassette compartment motor and the cassette down sensors.

F9 (CAPSTN MOTOR) Key

Performs the function check for the capstan motor.

F10 (EXIT) Key

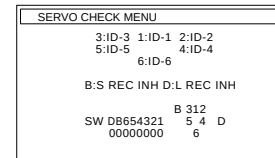
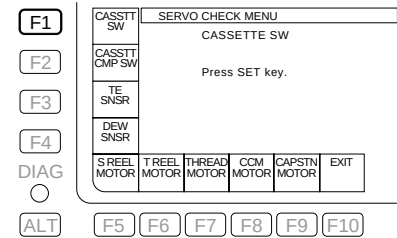
Exits the SERVO CHECK menu and returns to the MAINTENANCE menu.

F1 (CASSTT SW) key

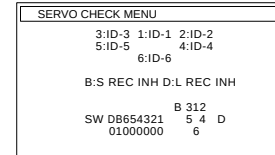
This menu checks the functions of cassette tab sensors and REC inhibit sensors (switches).

Checking

1. Press the **F1** (CASSTT SW) key on the SERVO CHECK menu to display the CASSETTE SW menu.
2. Press the **SET** key.
3. Push a sensor (switch) with a finger, and hold it.
 - Check the superimposed display to see that a character below the corresponding SW number changes from “0” to “1”.
4. Release the sensor (switch).
 - Check the superimposed display to see that above-mentioned “1” returns to “0”.
5. To finish the check, press the **F10** (EXIT) key.
6. Press the **F10** (EXIT) key while holding down the **SFT** key.
7. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the SERVO CHECK menu.



(Ex.) When pushing the switch ⑥



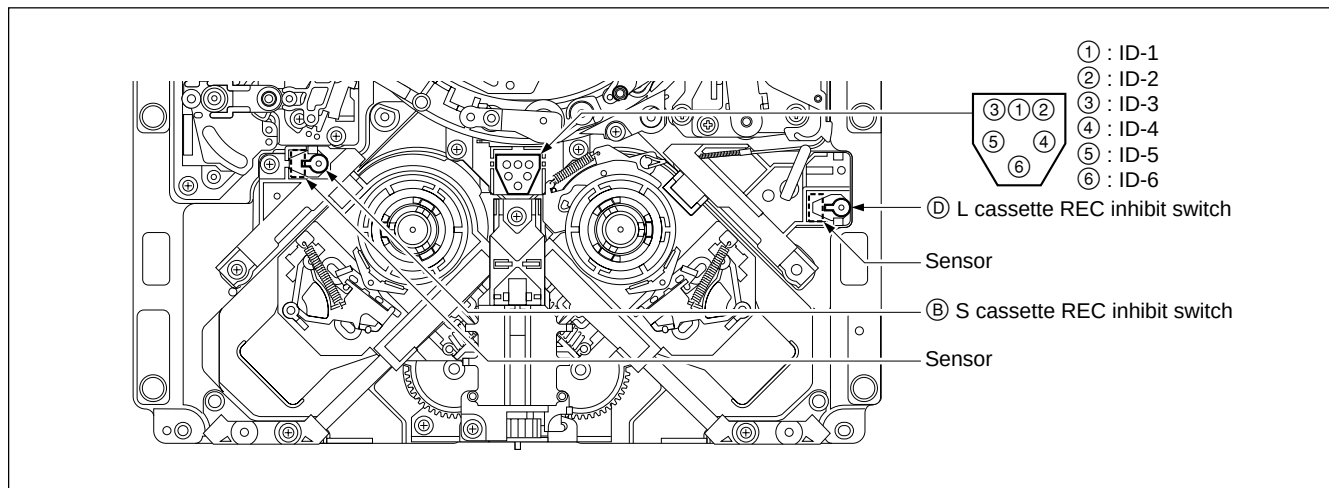
In case of NG

When any cassette tab sensor (① to ⑥) is NG:

- Check the corresponding sensor on the PTC-99 board.
- Check the corresponding sensor input port of MPU (IC100 on the DR-508 board).

When any REC inhibit sensor (Ⓑ and Ⓓ) is NG:

- Check the corresponding sensor on the DR-508 board.
- Check the corresponding sensor input port of MPU (IC100 on the DR-508 board).



Locations of Sensors (Switches)

F2 (CASSTT CMP SW) key

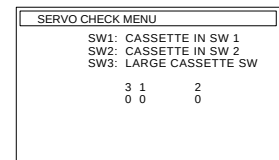
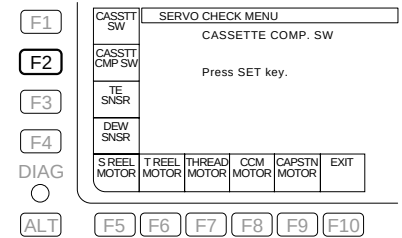
This menu checks the functions of sensors (switches) in the cassette compartment.

Checking

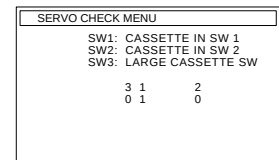
1. Press the **F2** (CASSTT CMP SW) key on the SERVO CHECK menu to display the CASSETTE COMP. SW menu.
2. Press the **SET** key.
3. Push up the cassette door to the inside with your finger, and hold it.
4. Push a switch in the direction indicated by the arrow with another finger, and hold it.

Switch	Sensor
SW1 : Cassette-in switch 1	Cassette-in sensor (L)
SW2 : Cassette-in switch 2	Cassette-in sensor (R)
SW3 : L cassette detection switch	Cassette size sensor

- Check the superimposed display to see that the indication corresponding to the SW number changes from “0” to “1”.
5. Release the switch.
 - Check to see that above-mentioned “1” returns to “0”.
 6. To finish the check, press the **F10** (EXIT) key.
 7. Press the **F10** (EXIT) key while holding down the **SFT** key.
 8. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the SERVO CHECK menu.

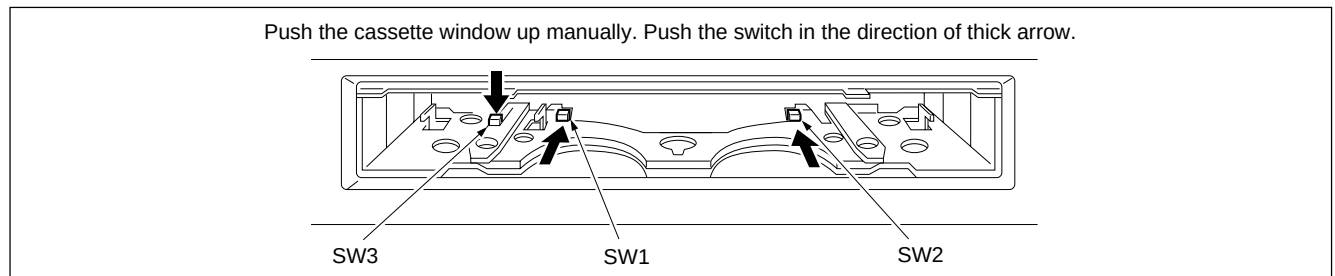


(Ex.) When pushing SW1 in the direction of the arrow

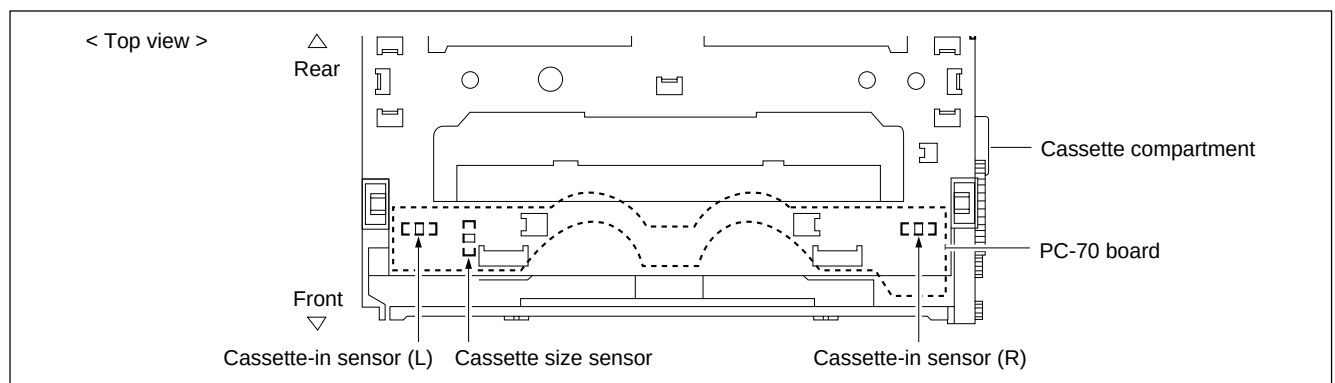


In case of NG

- Check the cassette compartment and its harness.
- Check the corresponding sensor input port of MPU (IC100 on the DR-508 board).



Locations of Switches in Cassette Compartment



Locations of Sensors

F3 (TE SNSR) key

This menu checks the functions of the tape top (beginning) sensor and the tape end sensor.

Checking

1. Press the **F3** (TE SNSR) key on the SERVO CHECK menu to display the TOP/END SENSOR menu.
2. Press the **SET** key.
3. Approach a metallic screwdriver to a sensor.
 - Check the superimposed display to see that a character string below the corresponding sensor name changes from “OFF” to “ON”.

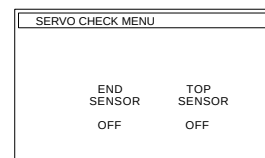
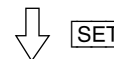
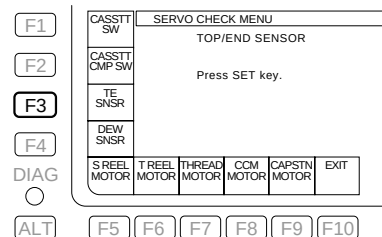
Note

Do not bring the screwdriver in contact with each sensor.

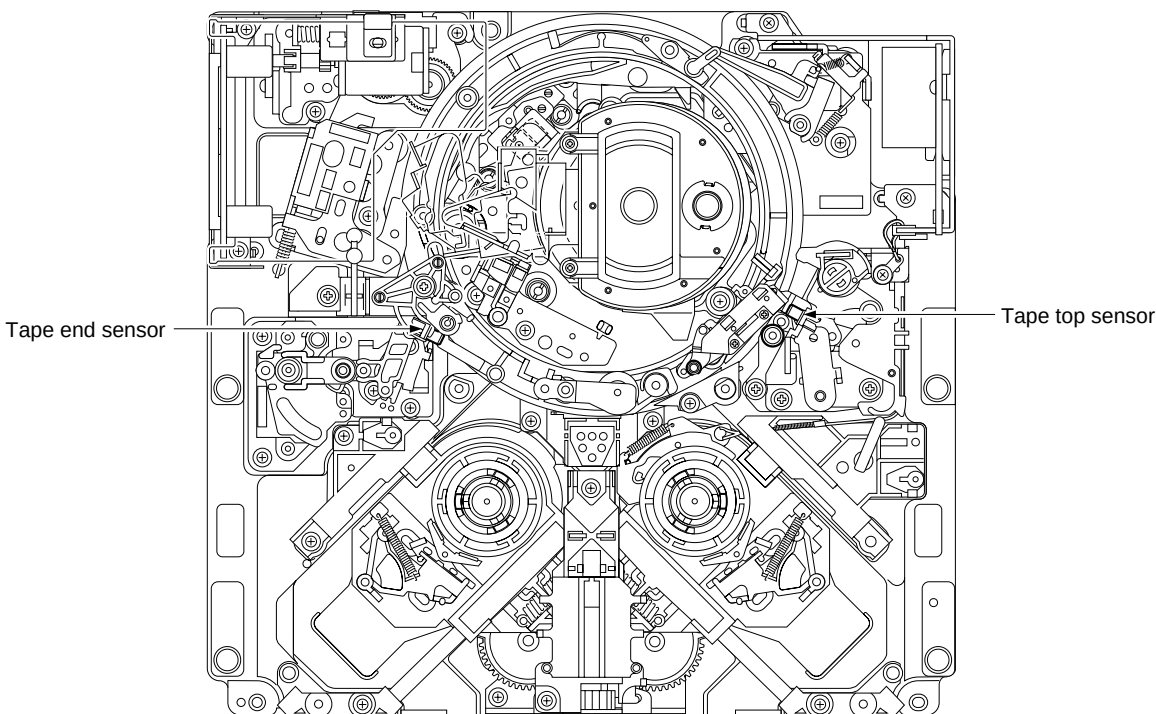
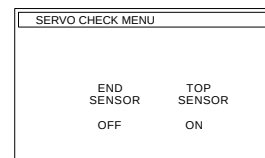
4. Distance the screwdriver from the sensor.
 - Check to see that above-mentioned “ON” returns to “OFF”.
5. To finish the check, press the **F10** (EXIT) key.
6. Press the **F10** (EXIT) key while holding down the **SFT** key.
7. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the SERVO CHECK menu.

In case of NG

- Check the sensor itself.
 - Check the oscillator and detection circuit on the DR-508 board for sensors.
 - Check the corresponding sensor input port (IC1000 on the SS-102 board).
- Actually, draw out the SS-102 board with the EX-873 extension board and check TP B-21 (for END sensor) and TP A-120 (for TOP sensor) on the extension board.



(Ex.) When approaching a metallic screwdriver to the sensor



Locations of Tape Top/End Sensors

F4 (DEW SNSR) Key

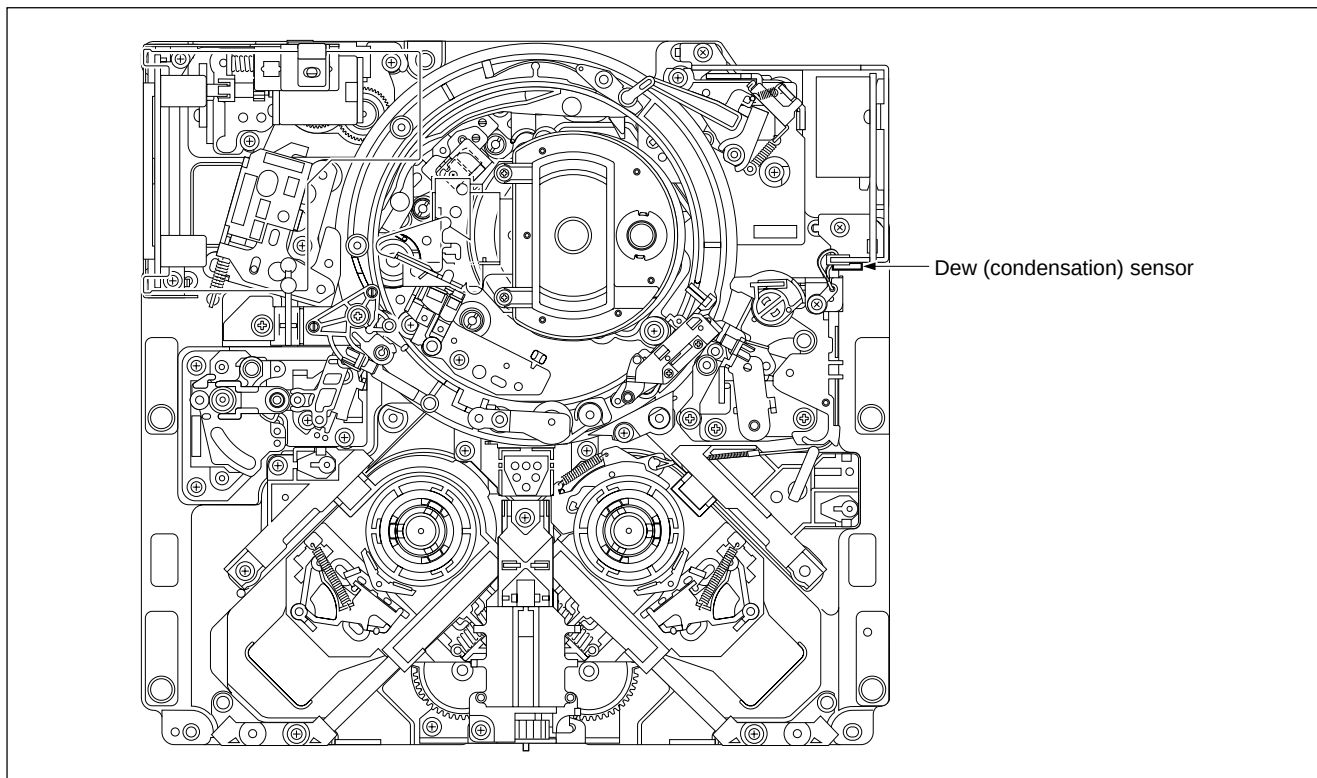
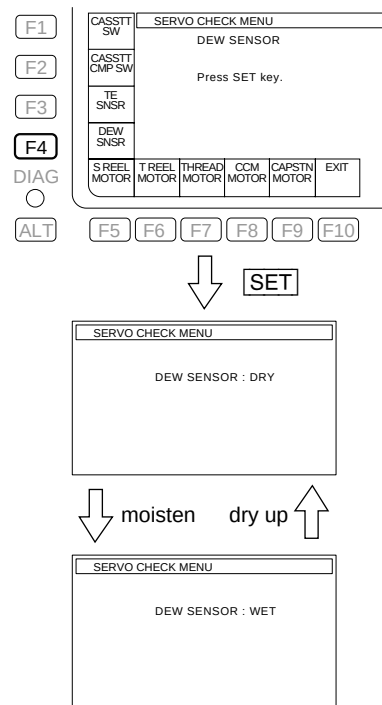
This menu checks the function of a dew (condensation) sensor.

Checking

1. Press the **F4** (DEW SNSR) key on the SERVO CHECK menu to display the DEW SENSOR menu.
2. Press the **SET** key.
3. Slightly touch the sensor using a cotton swab moistened by water.
 - Check the superimposed display to see that a character string changes from “DRY” to “WET”.
4. Wipe the sensor using a dry cotton swab to eliminate the moisture or evaporating the moisture completely using a blower.
 - Check to see that “WET” returns to “DRY”.
5. To finish the check, press the **F10** (EXIT) key.
6. Press the **F10** (EXIT) key while holding down the **SFT** key.
7. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the SERVO CHECK menu.

In case of NG

- Check each sensor itself.
- Check the detection circuit on the DR-508 board.
- Check the sensor input port of MPU (IC206 on the DR-508 board).



Location of Dew (Condensation) Sensor

F5 (S REEL MOTOR) key

F6 (T REEL MOTOR) key

These menus check the function of an S reel motor or T reel motor.

Checking

1. Press the **F5** (S REEL MOTOR) or **F6** (T REEL MOTOR) key on the SERVO CHECK menu to display the S REEL MOTOR or T REEL MOTOR menu.
2. Press the **SET** key.
3. Turn the search dial (in JOG mode).
 - Check to see that the reel table rotates in the specified direction at a speed displayed after releasing the reel brake.

Rotating direction of search dial	Rotating direction of reel table	Color display
FORWARD (↻)	Clockwise (↻)	1.00 (r. p. s)
REVERSE (↻)	Counterclockwise (↻)	-1.00 (r. p. s)

4. Stop rotating the search dial.
 - Check to see that the reel table stops or the speed displayed on the color display becomes 0.00 (r. p. s).
5. To finish the check, press the **F10** (EXIT) key.
6. Press the **F10** (EXIT) key while holding down the **SFT** key.
7. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the SERVO CHECK menu.

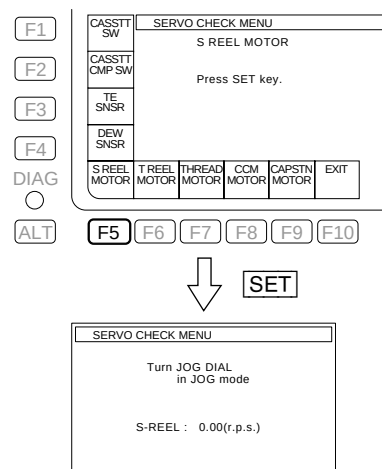
In case of NG

When the reel table operation is defective:

- Check the reel motor driver circuit on the DR-508 board.
- Check the reel motor.

When the reel table rotation is not constant at the fixed speed:

- Execute the **F3** (S REEL FG) or **F4** (T REEL FG) of the SERVO ADJUST menu. (Refer to Section 3-4-2.)
- Check the FG output from a reel table FG sensor.
- Check the reel FG shaping circuit on the SS-102 board.



F7 (THREAD MOTOR) key

This menu checks the functions of the threading motor, threading end sensor, and unthreading end sensor.

Checking

1. Press the **F7** (THREAD MOTOR) key on the SERVO CHECK menu to display the THREADING MOTOR menu.
2. Press the **SET** key.
3. Turn the search dial (in JOG mode) slowly continuously in FORWARD (↻) direction.
 - Check to see that the threading ring rotates counterclockwise (↻) and that the message on the color display changes from “UNTHREAD END” to “.....”.
 - Check to see that the threading ring stops in the threading end state and that the message changes from “.....” to “THREAD END”.

Note

When the search dial pauses halfway, the threading ring also stops.

4. Turn the search dial (in JOG mode) slowly continuously in REVERSE (↻) direction.
 - Check to see that the threading ring rotates clockwise (↻) and that the message changes from “THREAD END” to “.....”.
 - Check to see that the threading ring stops in the unthreading end state and that the message changes from “.....” to “UNTHREAD END”.

Note

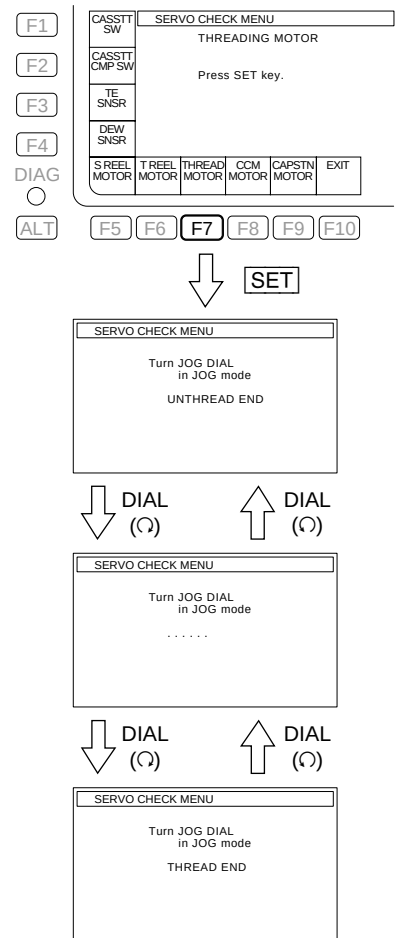
When the search dial pauses halfway, the threading ring also stops.

5. To finish the check, press the **F10** (EXIT) key.

Note

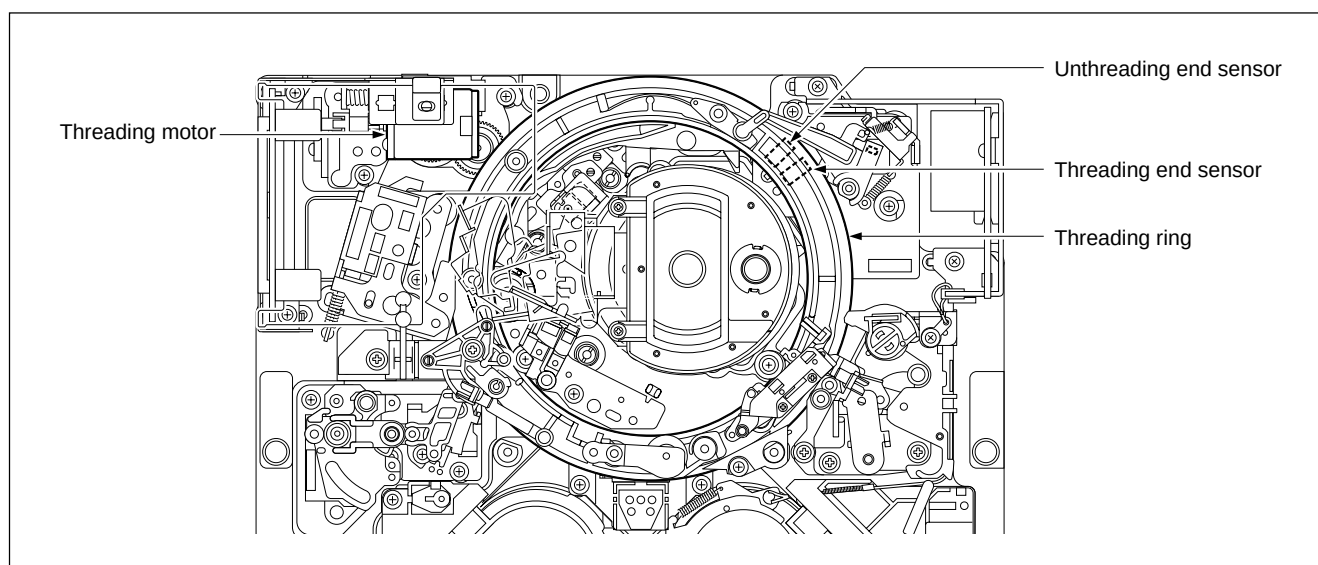
Unless the unthreading end state, the threading ring will automatically return to the unthreading end position on pressing the **F10** (EXIT) key.

6. Press the **F10** (EXIT) key while holding down the **SFT** key.
7. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the SERVO CHECK menu.



In case of NG

- Check the mechanical abnormality.
- Check the threading motor driver circuit on the DR-508 board.
- Check the threading motor.
- Check the threading end sensor or unthreading end sensor on the TR-120 board.
- Check the sensor input port of MPU (IC1000 on the SS-102 board).



Locations of Threading End and Unthreading End Sensors

F8 (CCM MOTOR) key

This menu checks the functions of a cassette compartment motor and cassette-down sensors.

CAUTION

Be careful not to execute this menu with your finger or the foreign matter put into the cassette compartment.

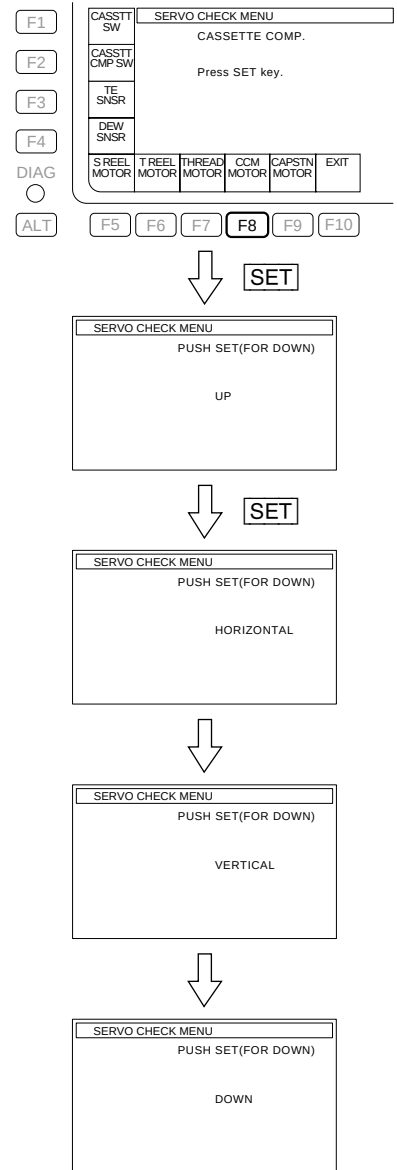
When a cassette tape is located in the cassette insertion slot, remove the cassette tape. If this menu executes without removing, the cassette tape will be caught halfway.

Notes

- If the cassette compartment has stopped halfway due to abnormality, “HORIZONTAL” or “VERTICAL” will be displayed on the superimposed display on selecting this menu.
- The power supply to the motor stops to protect the motor and movable parts when the driving time of the motor continuously exceeds about six seconds.

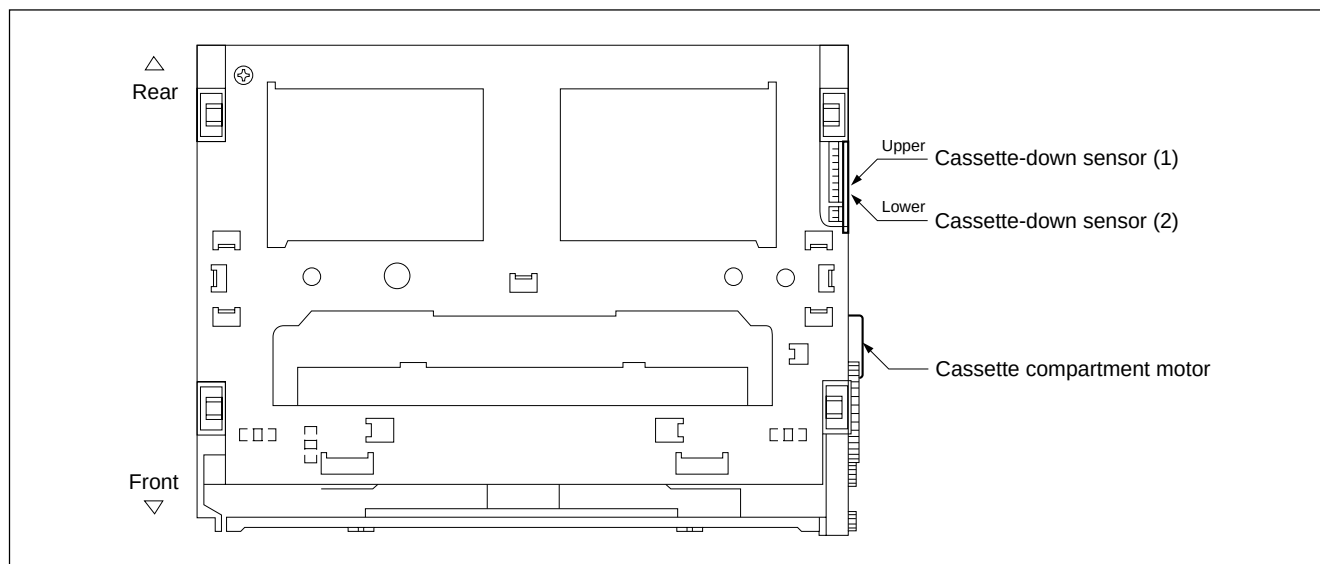
Checking

1. Press the **F8** (CCM MOTOR) key on the SERVO CHECK menu to display the CASSETTE COMP. menu.
2. Press the **SET** key.
3. When displaying “UP” on the color display, press the **SET** key.
 - Check to see that the compartment goes down.
 - Check to see that “UP” changes as follows:
UP ⇒ HORIZONTAL ⇒ VERTICAL ⇒ DOWN
4. When displaying “DOWN”, press the **SET** key.
 - Check to see that the compartment goes up.
 - Check to see that “DOWN” changes as follows:
DOWN ⇒ VERTICAL ⇒ HORIZONTAL ⇒ UP
5. To finish the check, press the **F10** (EXIT) key.
6. Press the **F10** (EXIT) key while holding down the **SFT** key.
7. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the SERVO CHECK menu.



In case of NG

- Check the mechanical abnormality.
- Check the cassette compartment motor driver circuit on the DR-508 board.
- Check the cassette compartment motor.
- Check the sensor input port of MPU (IC100 on the DR-508 board).



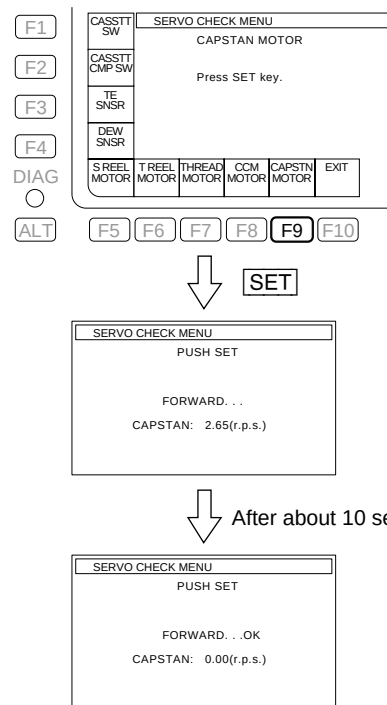
Top View of Cassette Compartment

F9 (CAPSTN MOTOR) key

This menu checks the function of the capstan motor.

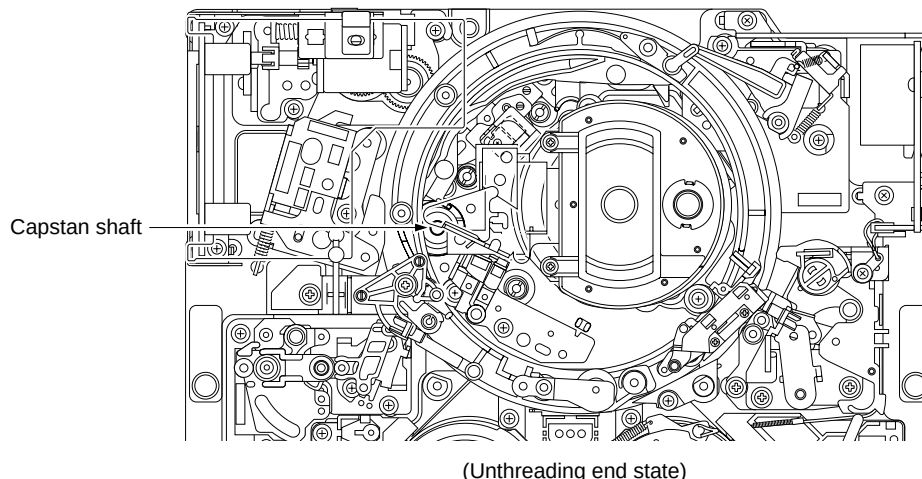
Checking

1. Press the **F9** (CAPSTN MOTOR) key on the SERVO CHECK menu to display the CAPSTAN MOTOR menu.
2. Press the **SET** key.
 - Check to see that a capstan shaft rotates in the forward (↻) direction.
 - Check to see that the capstan shaft stops after displaying a message “FORWARD...OK” on the color display.
3. Press the **SET** key again.
 - Check to see that the capstan shaft rotates in the reverse (↻) direction.
 - Check to see that the capstan shaft stops after displaying a message “REVERSE...OK” on the color display.
4. To finish the check, press the **F10** (EXIT) key.
5. Press the **F10** (EXIT) key while holding down the **SFT** key.
6. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the SERVO CHECK menu.



In case of NG

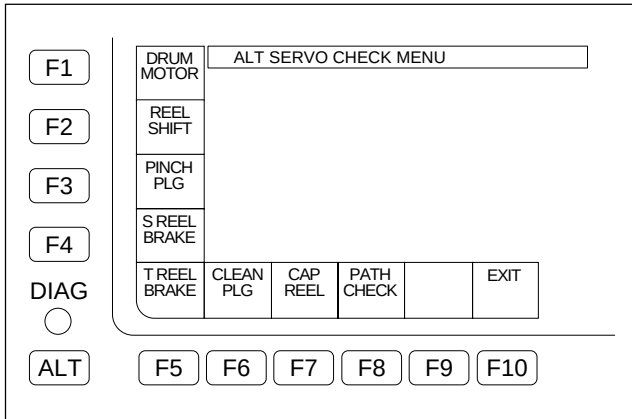
- Check the mechanical abnormality.
- Check the capstan motor driver circuit on the DR-508 board.
- Check the FG output from the capstan motor.
- Check the capstan FG shaping circuit on the SS-102 board.
- Check each circuit that processes the capstan FG on the SS-102 board.
- Check the capstan motor.



Location of Capstan Shaft

2. ALT SERVO CHECK Menu

To display the ALT SERVO CHECK menu, press the **ALT** key in the SERVO CHECK menu.



F1 (DRUM MOTOR) Key

Performs the function check for the drum motor.

F2 (REEL SHIFT) Key

Performs the function checks for the reel shift motor and the reel position sensor.

F3 (PINCH PLG) Key

Performs the function check for the pinch roller solenoid.

F4 (S REEL BRAKE) Key

Performs the function check for the S reel brake solenoid.

F5 (T REEL BRAKE) Key

Performs the function check for the T reel brake solenoid.

F6 (CLEAN PLG) Key

Performs the function check for the cleaning roller solenoid.

F7 (CAP REEL) Key

Performs the checks for the duty ratio of the S reel FG/T reel FG/capstan FG, the offset/friction level of the S reel/T reel, and the torque of the S reel/T reel.

F8 (PATH CHECK) Key

Performs adjustments of the tape path system.

F10 (EXIT) Key

Exits the ALT SERVO CHECK menu and returns to the MAINTENANCE menu.

F1 (DRUM MOTOR) key

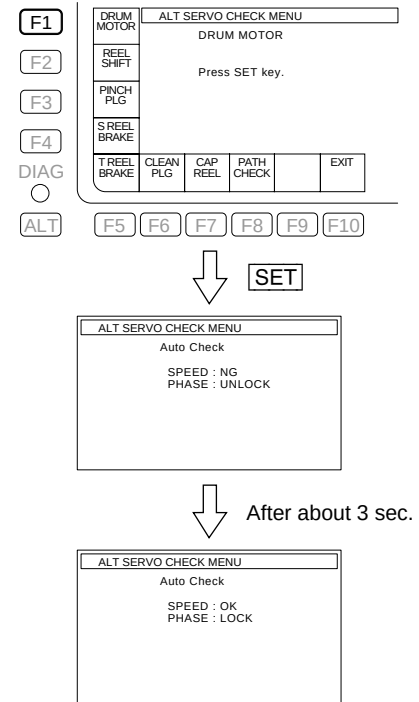
This menu checks the function of the drum motor.

Checking

1. Press the **F1** (DRUM MOTOR) key on the ALT SERVO CHECK menu to display the DRUM MOTOR menu.
2. Press the **SET** key.
 - Check to see that the drum rotates.
 - Check to see that the superimposed display changes as shown on the right.
3. To finish the check, press the **F10** (EXIT) key.
 - Check to see that the drum stops.
4. Press the **F10** (EXIT) key while holding down the **SFT** key.
5. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the ALT SERVO CHECK menu.

In case of NG

- Check the mechanical abnormality.
- Check the drum motor driver circuit on the DR-508 board.
- Check the FG and PG outputs from the drum motor.
- Check the drum FG/PG shaping circuit on the DR-508 board.
- Check each circuit that processes the drum FG/PG on the SS-102 board.



F2 (REEL SHIFT) key

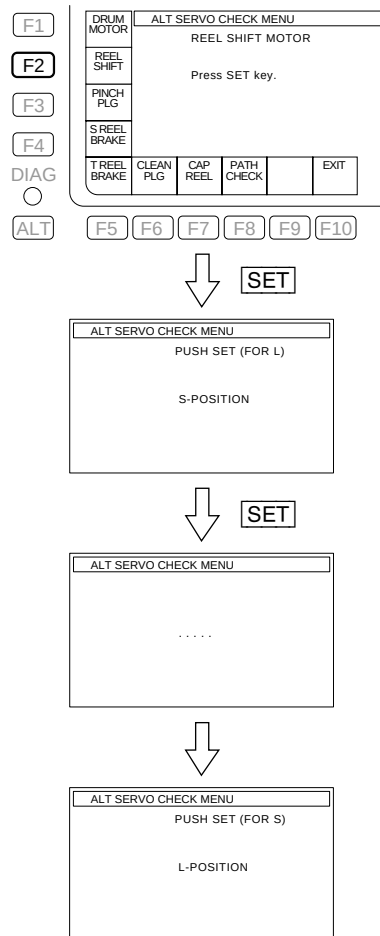
This menu checks the functions of the reel shift motor and two reel position sensors.

Note

The power supply to the motor stops to protect the motor and movable parts when the driving time of the motor continuously exceeds about six seconds.

Checking

1. Press the **F2** (REEL SHIFT) key on the ALT SERVO CHECK menu to display the REEL SHIFT MOTOR menu.
2. Press the **SET** key.
3. When displaying "S-POSITION" on the color display, press the **SET** key.
 - Check to see that an S and T reel tables move from the S position (S cassette position) to the L position (L cassette position).
 - Check to see that "S-POSITION" changes as follows:
S-POSITION ⇒ ⇒ L-POSITION
4. When displaying "L-POSITION", press the **SET** key.
 - Check to see that the S and T reel tables move from the L position (L cassette position) to the S position (S cassette position).
 - Check to see that "L-POSITION" changes as follows:
L-POSITION ⇒ ⇒ S-POSITION
5. To finish the check, press the **F10** (EXIT) key.
6. Press the **F10** (EXIT) key while holding down the **SFT** key.
7. Press the **F10** (EXIT) key after the message "Check Complete" is displayed to return to the ALT SERVO CHECK menu.



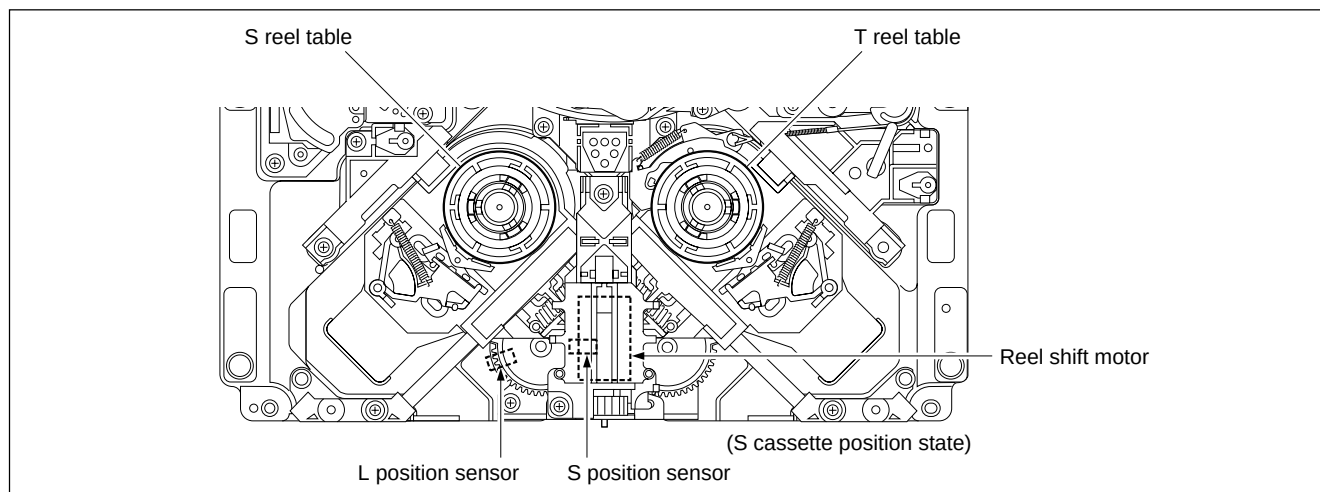
In case of NG

When the reel table (reel shift motor) operation is defective:

- Check the mechanical abnormality.
- Check the reel shift motor driver circuit on the DR-508 board.
- Check the reel shift motor.

When the super imposed display does not indicate the actual status even though the reel tables is located in the S cassette or L cassette position:

- Check the S or T position sensor on the DR-508 board.
- Check the sensor input port of MPU (IC100 on the DR-508 board).



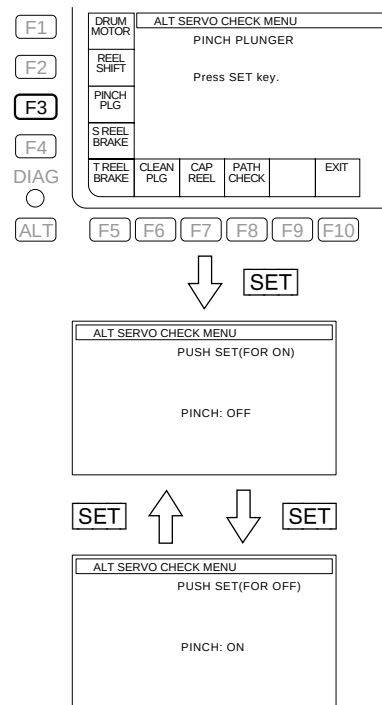
Locations of S and L Position Sensors and Reel Shift Motor

F3 (PINCH PLG) key

This menu checks the function of the pinch roller solenoid.

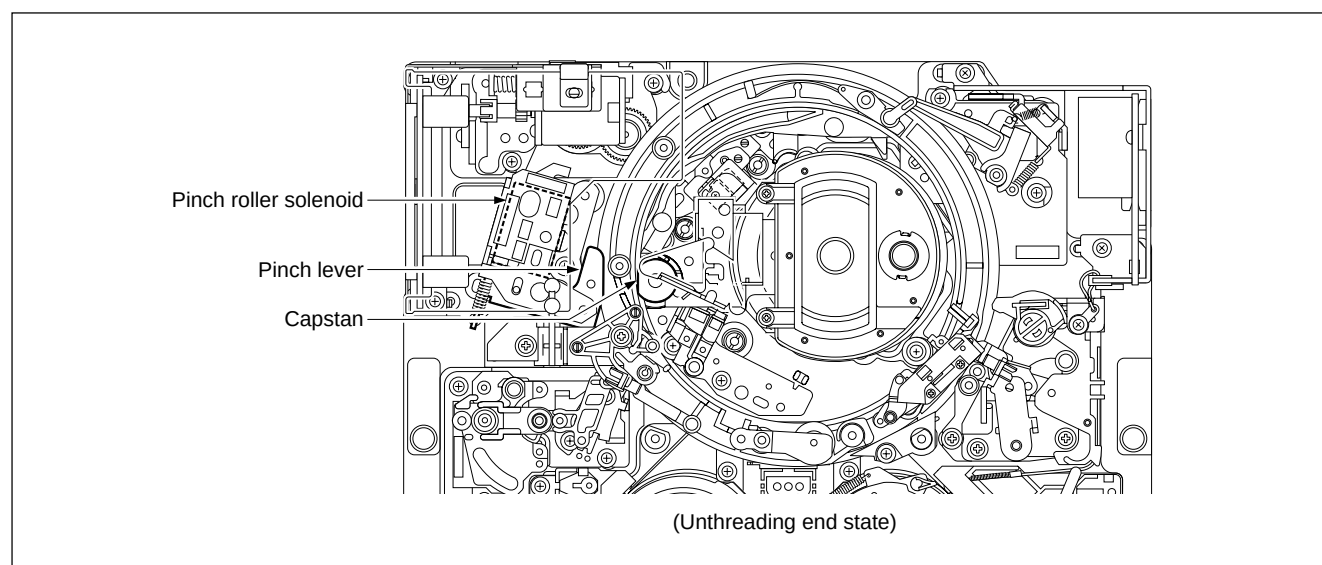
Checking

1. Press the **F3** (PINCH PLG) key on the ALT SERVO CHECK menu to display the PINCH PLUNGER menu.
2. Press the **SET** key.
Check that the threading ring rotates and stops at the thread end position and “PUSH SET (FOR ON)” and “PINCH: OFF” are displayed.
3. Press the **SET** key.
“PINCH: OFF” changes to “PINCH: ON”.
Check the click sound generated by mechanism when the pinch roller solenoid is activated.
4. Press the **SET** key.
“PINCH: ON” changes to “PINCH: OFF”.
Check that the pinch roller solenoid is released.
5. Press the **F10** (EXIT) key to finish the check.
The pinch roller solenoid is released if it is activated, and the threading ring returns to the unthreading end position.
6. Press the **F10** (EXIT) key while holding down the **SFT** key.
7. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the ALT SERVO CHECK menu.



In case of NG

- Check the mechanical abnormality.
- Check the pinch roller solenoid driver circuit on the DR-508 board.
- Check the pinch roller solenoid itself.



Locations of Pinch Roller Solenoid and Pinch Lever

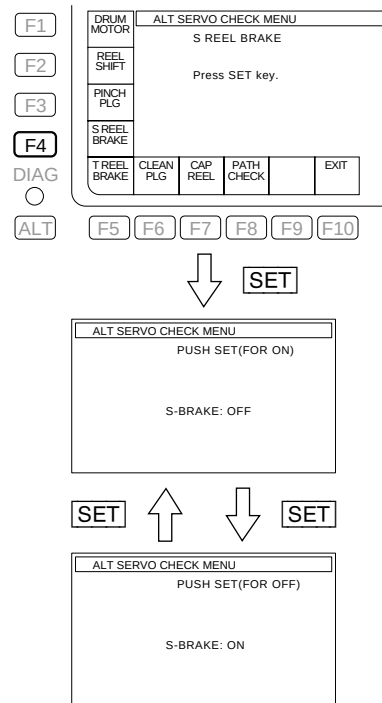
F4 (S REEL BRAKE) key

F5 (T REEL BRAKE) key

These menus check the function of the S or T reel brake solenoid.

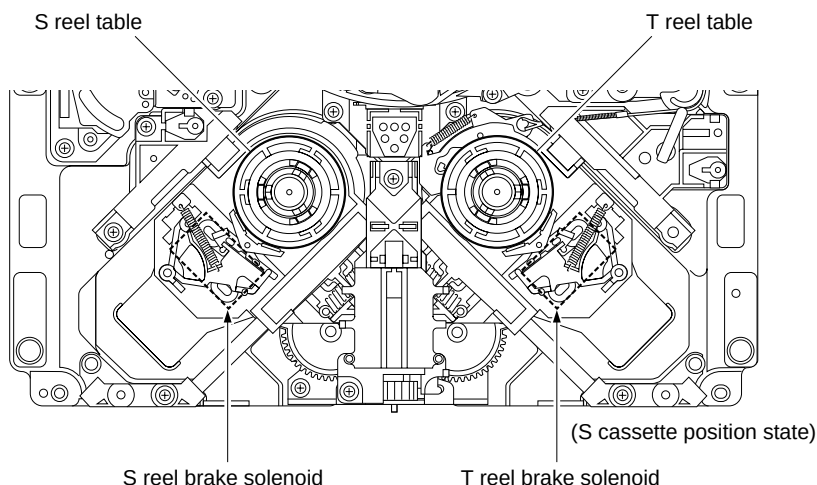
Checking

1. Press the **F4** (S REEL BRAKE) key or **F5** (T REEL BRAKE) key on the ALT SERVO CHECK menu to display the S REEL BRAKE or T REEL BRAKE menu.
2. Press the **SET** key.
“PUSH SET” and “BRAKE: OFF” are displayed.
Check that the reel table can be smoothly turned with a hand because the brake is released.
3. Press the **SET** key.
“BRAKE: OFF” changes to “BRAKE: ON”.
Check a click sound when the reel brake solenoid is activated.
Check that the brake is applied to the reel table by attempting to turn the reel table by fingers.
4. Press the **F10** (EXIT) key to finish the check.
5. Press the **F10** (EXIT) key while holding down the **SFT** key.
6. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the ALT SERVO CHECK menu.



In case of NG

- Check the mechanical abnormality.
- Check the reel brake solenoid driver circuit on the DR-508 board.
- Check the reel brake solenoid itself.



Locations of Reel Brake Solenoids

F6 (CLEAN PLG) key

This menu checks the function of the cleaning roller solenoid.

CAUTION

While checking, the drum is rotating. So never touch the drum.

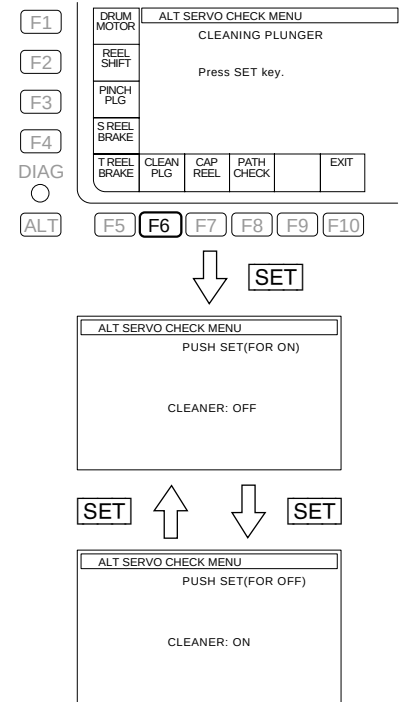
Checking

1. Press the **F6** (CLEAN PLG) key on the ALT SERVO CHECK menu to display the CLEANING PLUNGER menu.
2. Press the **SET** key.
Check to see that the cleaning roller momentarily touches the drum and then away from the drum at once.

CAUTION

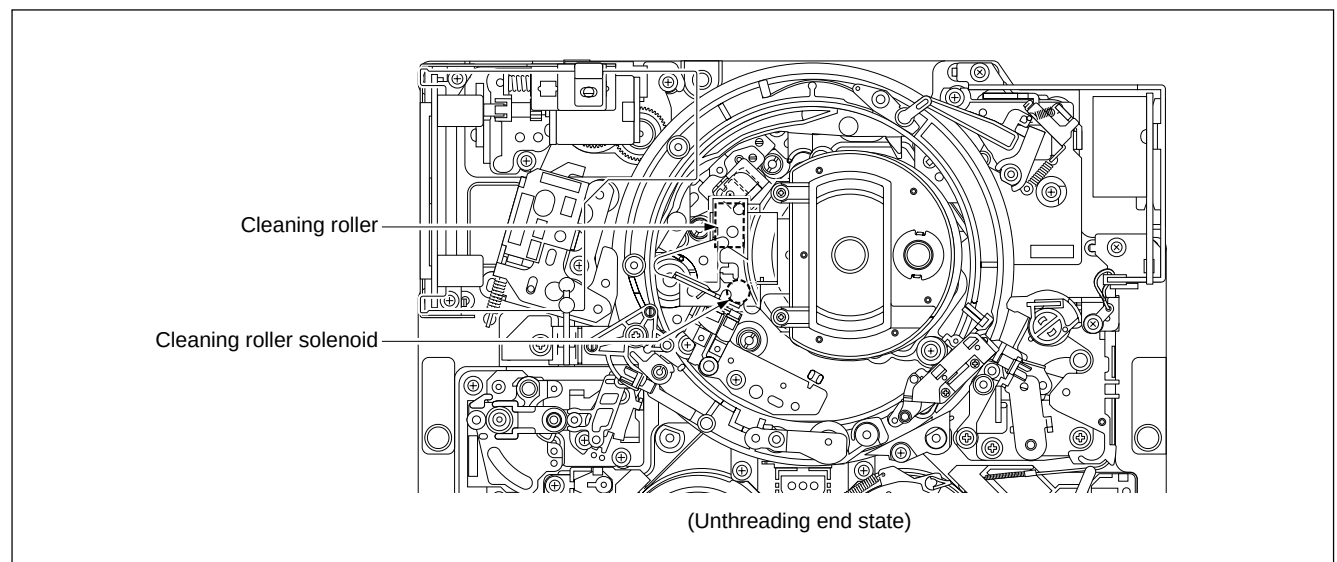
The cleaning roller solenoid causes burning when it remains activating.
Turn off the power immediately, if the cleaning roller is not away from the drum.

3. To finish the check, press the **F10** (EXIT) key.
 - The drum rotation will stop.
4. Press the **F10** (EXIT) key while holding down the **SFT** key.
5. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the ALT SERVO CHECK menu.



In case of NG

- Check the mechanical abnormality.
- Check the cleaning roller solenoid driver circuit on the DR-508 board.
- Check the cleaning roller solenoid itself.



Locations of Cleaning Roller and Cleaning Roller Solenoid

F7 (CAP REEL) key

This menu checks the following items by performing the same operations as the adjusting menus from the **F3** (S REEL FG) to **F9** (T REEL TORQUE) on SERVO ADJUST menu.

- If automatic adjustment is possible in each menu of the **F3** (S REEL FG) to **F9** (T REEL TORQUE).
- If the adjustment data value obtained by the automatic adjustment is proper.

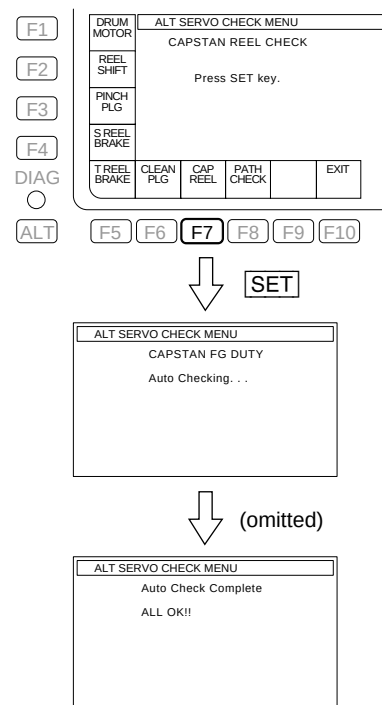
Note

After exiting this menu, the adjustment data value will be returned to the original value.

When actually performing the adjustment, execute the adjusting menu.

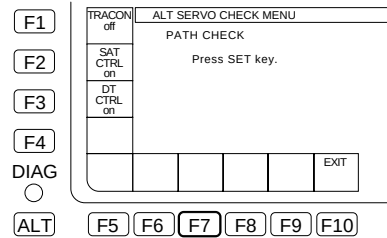
Checking

1. Press the **F7** (CAP REEL) key on the ALT SERVO CHECK menu to display the CAPSTAN REEL CHECK menu.
2. Press the **SET** key.
 - When the **SET** key is pressed, checking will be started.
 - The message “Auto Checking...” will be displayed on the color display.
3. Confirm the result.
 - When checking completes with no errors, the message “All OK!!” will be displayed on the color display.
 - When checking could not be performed or the displays of NG items are displayed, refer to “For Automatic Adjustment Failure” on page 3-90.
4. To finish the check, press the **F10** (EXIT) key.
5. Press the **F10** (EXIT) key while holding down the **SFT** key.
6. Press the **F10** (EXIT) key after the message “Check Complete” is displayed to return to the ALT SERVO CHECK menu.



F8 (PATH CHECK) Key

This menu is used to adjust the tape path system of the unit.
For details of adjustments, refer to Section 6.



F1 (TRACON) Key

When the **F1** (TRACON) key is pressed, the menu display is reversed and changed from “off” to “unity.”

When the MULTI CONTROL knob is turned in this state, the display changes to “VAR” and the TRACON value varies by three steps.

When the MULTI CONTROL knob is pressed, the TRACON value varies by one step.

When the MULTI CONTROL knob is pressed again, the TRACON value varies by three steps again.

F2 (SAT CTRL) Key

Enables or disables the SAT control.

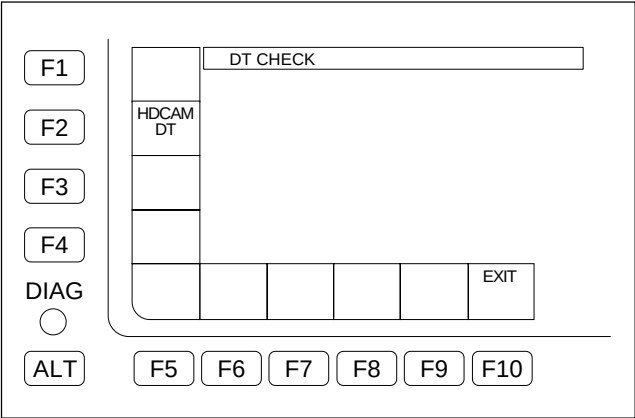
F3 (DT CTRL) Key

Enables or disables the DT control.

3-3-5. DT CHECK Menu

The DT CHECK menu is used to check the DT system operation.

To display the DT CHECK menu, press the **F5** (DT CHECK) key on the MAINTENANCE menu.



F2 (HDCAM DT) Key

Performs the operation checks of the DT heads for the HDCAM and Digital BETACAM format playback.

F10 (EXIT) Key

Exits the DT CHECK menu and returns to the MAINTENANCE menu.

F2 (HDCAM DT) Key

Performs the operation checks of the DT heads for the HDCAM and Digital BETA-CAM format playback.

Note

This check requires the alignment tape HR5-1A.

Cue up the alignment tape to the time code 00:10:00:00 in advance.

When using the alignment tape not located to the time code 00:10:00:00, exit the maintenance mode and cue it up. Then eject the alignment tape once.

Execution Procedure

1. On the DT CHECK menu, press the **F2** (HDCAM DT) key to display the HDCAM DT CHECK menu.
2. Press the **SET** key.
3. Insert the alignment tape HR5-1A located to the time code 00:10:00:00.
 - When the alignment tape is inserted, the check starts automatically. The message “Auto Checking...” is displayed during check.
4. Confirm the result of the check.
The message “Auto Adjust Complete” will be displayed and the alignment tape will be ejected automatically when the check is completed normally.

Note

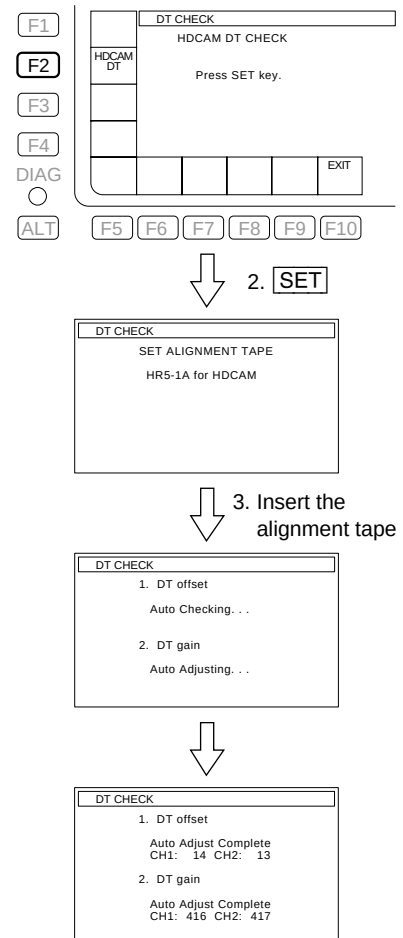
If “Auto Adjust Failure” is displayed, refer to “If the check failed”.

5. Press the **F10** (EXIT) key to exit the menu.

If the check failed:

If “Auto Adjust Failure” is displayed during the check, check the following:

1. Check the bimorph driving circuit on the DT-47/48 board.
2. Check the bimorph driving control circuit on the SS-102 board.
3. Check the signal transmission system (slip ring etc.).



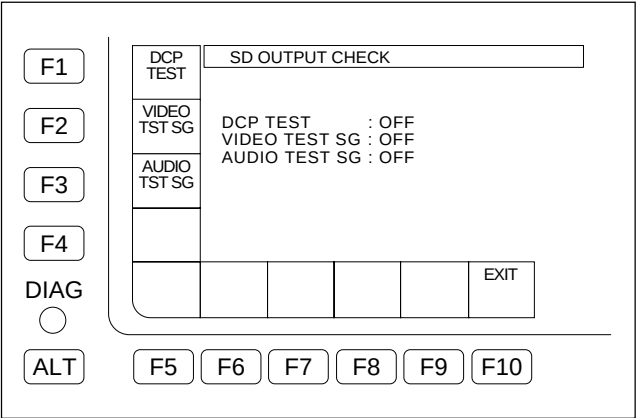
3-3-6. SD OUTPUT CHECK Menu

The SD OUTPUT CHECK menu is used to check the down converter system and the VIDEO/AUDIO of the SD on this unit.

To display the SD OUTPUT CHECK menu, press the **F6** (SDOUT CHECK) key on the MAINTENANCE menu.

Note

The changed setting is retained until you exit the SD OUTPUT CHECK menu or the setting is changed again. These settings are set to OFF when the SD OUTPUT CHECK menu starts up.



F1 (DCP TEST) Key

Changes the settings related to the SD VIDEO, such as the down converter, to the settings for test.

F2 (VIDEO TST SG) Key

Select an SD video test signal to be generated from the built-in video test signal generator of this unit.

F3 (AUDIO TST SG) Key

Select a signal to be generated from the built-in audio test signal generator of this unit.

F10 (EXIT) Key

Exits the SD OUTPUT CHECK menu and returns to the MAINTENANCE menu.

F1 (DCP TEST) Key

Changes the settings related to the SD VIDEO, such as the down converter, to the test settings.

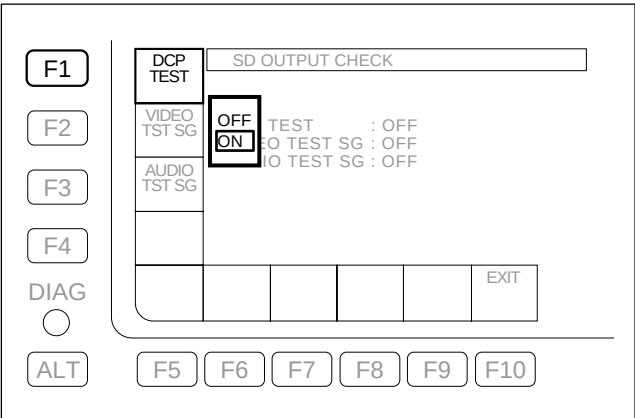
Execution Procedure

On the SD OUTPUT CHECK menu, press the **F1** (DCP TEST) key several times to change the settings related to the SD VIDEO.

OFF: Normal setting

ON: Returns the setting related to the SD VIDEO, such as the down converter, to the initial value.

However, the SETUP for the composite output is set to "0".



F2 (VIDEO TST SG) Key

Select a test signal for the operation check of the down converter to be generated from the built-in video test signal generator on this unit.

Execution Procedure

On the SD OUTPUT CHECK menu, press the **F2** (VIDEO TST SG) key several times to select the SD video test signal.

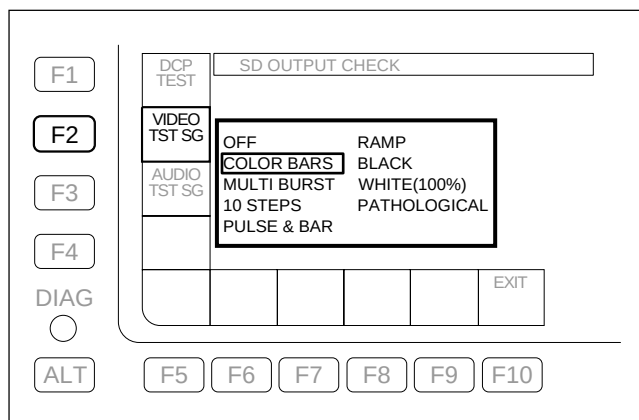
OFF: The video test signal generator stops the operation.

Other than OFF: The video test signal generator outputs a selected signal (below).
(Also refer to Section 1-23.)

- SD video test signal
- COLOR BARS
- MULTI BURST
- 10 STEPS
- PULSE & BAR
- RAMP
- BLACK
- WHITE (100 %)
- PATHOLOGICAL

Note

The signals output from the test signal generator can be recorded on a tape; however, the PATHOLOGICAL is not recordable on a tape because it is a transmission test signal output from the SD SDI and is generated from the output circuit of this unit.



F3 (AUDIO TST SG) Key

Selects a signal to be generated from the built-in audio test signal generator of this unit.

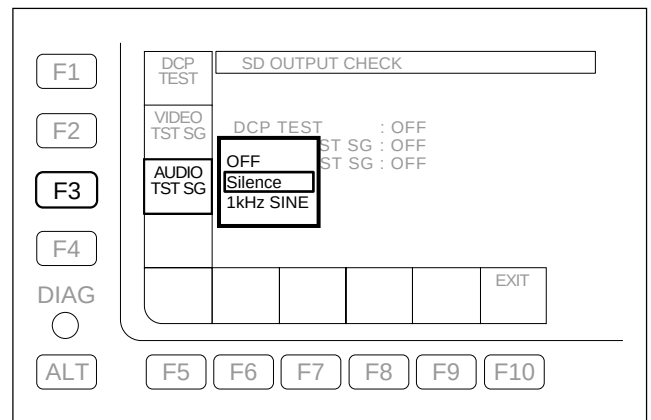
Execution Procedure

On the SD OUTPUT CHECK menu, press the **F3** (AUDIO TST SG) key several times to select the audio test signal.

OFF: The audio test signal generator stops the operation.

Other than OFF: The audio test signal generator outputs a selected signal (below).

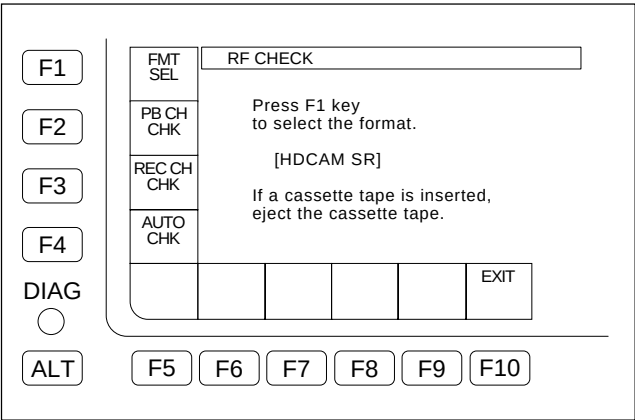
- Silence
- 1 kHz SINE



3-3-7. RF CHECK Menu

The RF CHECK menu is used to check the playback RF system in various recording formats.

To display the RF CHECK menu, press the **F7** (RF CHECK) key on the MAINTENANCE menu.



F1 (FMT SEL) Key

Selects a format for RF check.

F2 (PB CH CHK) Key

Checks an error condition by channel when performing the tracking playback of a tape recorded in selected format.

F3 (REC CH CHK) Key

Checks the error conditions of the confidence PB head in insert REC mode and the confidence PB head in crash REC mode, using the tape recorded in selected format.

F4 (AUTO CHK) Key

Performs the checks for all the channels automatically.

ALT + F1 (TRKING TMRHLD) Key

Sets the holding time of the tracking timer.

Note

This function is factory use only. Never use this function.

F10 (EXIT) Key

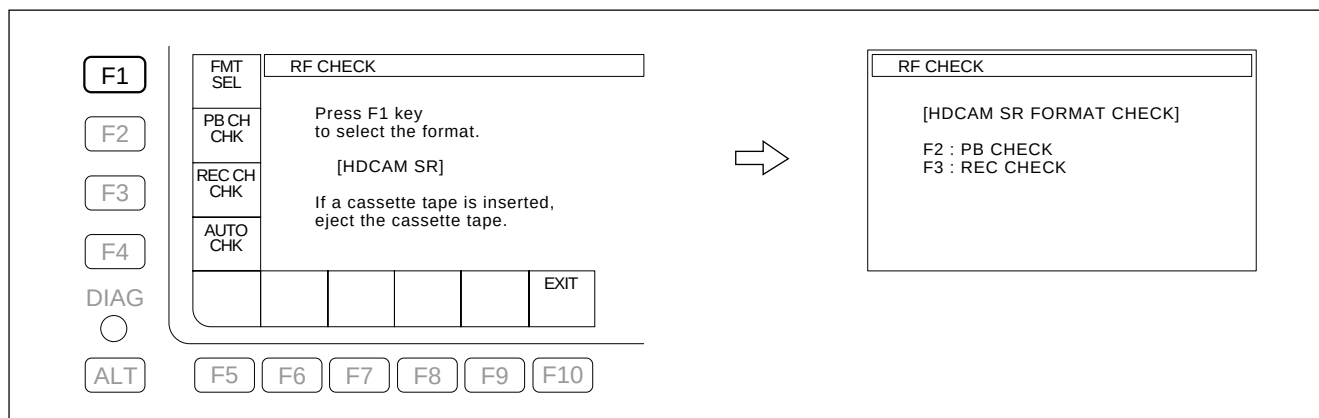
Exits the RF CHECK menu and returns to the MAINTENANCE menu.

To perform the RF check:

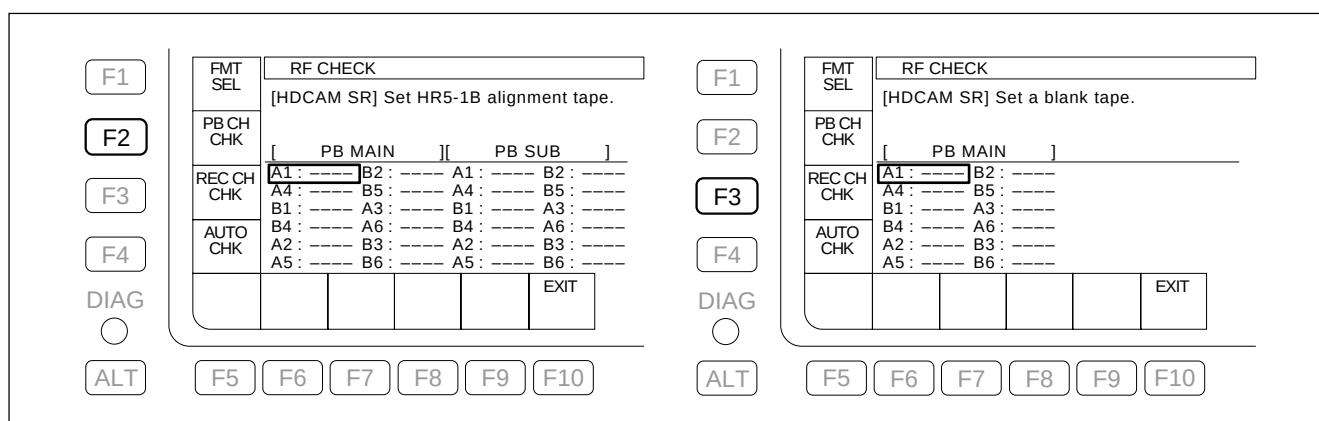
1. Press the **F1** (FMT SEL) key several times to select a format to be checked.

Note

When a cassette has been inserted, eject it before selecting a format.



2. Press the **F2** (PB CH CHK) or **F3** (REC CH CHK) key to select a mode to be checked.



3. To perform the RF checks for all the channels automatically:

- Press the **F4** (AUTO CHK) key

To perform the RF check for a selected channel:

- Select a channel to be checked, using **↑/↓** key or the MULTI CONTROL knob.

To perform the RF checks for all the channels automatically

F1

F2

F3

F4

DIAG

ALT

FMT SEL

RF CHECK

[HDCAM SR] Set HR5-1B alignment tape.

PB CH CHK

[PB MAIN][PB SUB]

REC CH CHK

A1 : ---- B2 : ---- A1 : ---- B2 : ----
A4 : ---- B5 : ---- A4 : ---- B5 : ----
B1 : ---- A3 : ---- B1 : ---- A3 : ----
B4 : ---- A6 : ---- B4 : ---- A6 : ----
A2 : ---- B3 : ---- A2 : ---- B3 : ----
A5 : ---- B6 : ---- A5 : ---- B6 : ----

EXIT

To perform the RF check for a selected channel

F1

F2

F3

F4

DIAG

ALT

FMT SEL

RF CHECK

[HDCAM SR] Set HR5-1B alignment tape.

PB CH CHK

[PB MAIN][PB SUB]

REC CH CHK

A1 : ---- B2 : ---- A1 : ---- B2 : ----
A4 : ---- B5 : ---- A4 : ---- B5 : ----
B1 : ---- A3 : ---- B1 : ---- A3 : ----
B4 : ---- A6 : ---- B4 : ---- A6 : ----
A2 : ---- B3 : ---- A2 : ---- B3 : ----
A5 : ---- B6 : ---- A5 : ---- B6 : ----

EXIT

Note

The displayed channel name represents the following head.

Heads		Channel	Selected format
HDCAM SR	Confidence head A1	PB MAINA1	HDCAM SR
	Confidence head A4	PB MAINA4	
	Confidence head B1	PB MAINB1	
	Confidence head B4	PB MAINB4	
	Confidence head A2	PB MAINA2	
	Confidence head A5	PB MAINA5	
	Confidence head B2	PB MAINB2	
	Confidence head B5	PB MAINB5	
	Confidence head A3	PB MAINA3	
	Confidence head A6	PB MAINA6	
	Confidence head B3	PB MAINB3	
	Confidence head B6	PB MAINB6	
	PB head A1	PB SUB A1	HDCAM SR
	PB head A4	PB SUB A4	
	PB head B1	PB SUB B1	
	PB head B4	PB SUB B4	
	PB head A2	PB SUB A2	
	PB head A5	PB SUB A5	
	PB head B2	PB SUB B2	
	PB head B5	PB SUB B5	
	PB head A3	PB SUB A3	
	PB head A6	PB SUB A6	
	PB head B3	PB SUB B3	
	PB head B6	PB SUB B6	
HDCAM	Advance head A	ADVANCE A	HDCAM (HKSR-5802) Digital BETACAM (HKSR-5802)
	Advance head C	ADVANCE C	
	Advance head B	ADVANCE B	
	Advance head D	ADVANCE D	

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4. Insert a cassette tape recorded in the selected format.

Notes

- Generally, use the following alignment tapes:

Selected format	HDCAM SR	HDCAM (HKS-5802 installed model only)	Digital BETACAM (HKS-5802 installed model only)
Alignment tape	HR5-1B	HR5-1A	ZR5-1 (SYSTEM FRAME 29.97 Hz) ZR5-1P (SYSTEM FRAME 25 Hz)

- The cassette tape should have tape amount to be played back more than the check execution time.

To perform the RF checks for all the channels automatically:

Selected format / mode	Total check time for all channels
HDCAM SR/PB CH CHK	3 minutes
HDCAM SR/REC CH CHK	2 minutes
HDCAM/PB CH CHK	1 minute
Digital BETACAM/PB CH CHK	1 minute

To perform the RF check for a selected channel:

Normally, the check takes about 15 seconds for each channel.

To perform the RF checks for all the channels automatically												To perform the RF check for a selected channel											
F1		FMT SEL		RF CHECK																			
				[HDCAM SR] Press SET key.																			
F2		PB CH CHK		[PB MAIN] [PB SUB]																			
F3		REC CH CHK		A1 : --- B2 : --- A1 : --- B2 : --- A4 : --- B5 : --- A4 : --- B5 : --- B1 : --- A3 : --- B1 : --- A3 : --- B4 : --- A6 : --- B4 : --- A6 : ---																			
F4		AUTO CHK		A2 : --- B3 : --- A2 : --- B3 : --- A5 : --- B6 : --- A5 : --- B6 : ---																			
DIAG																							
ALT				EXIT																			
				F5 F6 F7 F8 F9 F10																			

To perform the RF check for a selected channel																			
F1		FMT SEL		RF CHECK															
				[HDCAM SR] Press SET key.															
F2		PB CH CHK		[PB MAIN] [PB SUB]															
F3		REC CH CHK		A1 : GRN B2 : --- A1 : --- B2 : --- A4 : --- B5 : --- A4 : --- B5 : --- B1 : --- A3 : --- B1 : --- A3 : --- B4 : --- A6 : --- B4 : --- A6 : ---															
F4		AUTO CHK		A2 : --- B3 : --- A2 : --- B3 : --- A5 : --- B6 : --- A5 : --- B6 : ---															
DIAG																			
ALT				EXIT															
				F5 F6 F7 F8 F9 F10															

5. Press the **SET** key.

- The tape runs automatically in PLAY mode to start checking.

To perform the RF checks for all the channels automatically:

- All the channels are checked in order, and “GRN”, “GRN.”, “YEL”, or “RED” is displayed on the right of each channel. When the checks of all the channels are completed, “Complete” appears.

To perform the RF check for a selected channel:

- After the check, “GRN”, “GRN.”, “YEL”, or “RED” is displayed on the right of the specified channel, and “Complete” appears.

To perform the RF checks for all the channels automatically

F1	FMT SEL	RF CHECK									
		[HDCAM SR] [Complete]									
F2	PB CH CHK	[PB MAIN] [PB SUB]									
F3	REC CH CHK	A1 : GRN B2 : GRN A1 : GRN B2 : GRN A4 : GRN B5 : GRN A4 : GRN B5 : GRN B1 : GRN A3 : GRN B1 : GRN A3 : GRN B4 : GRN A6 : GRN B4 : GRN A6 : GRN A2 : GRN B3 : GRN A2 : GRN B3 : GRN A5 : GRN B6 : GRN A5 : GRN B6 : GRN									
F4	AUTO CHK										
DIAG	○										
ALT		F5	F6	F7	F8	F9	F10				

To perform the RF check for a selected channel

F1	FMT SEL	RF CHECK									
		[HDCAM SR] [Complete]									
F2	PB CH CHK	[PB MAIN] [PB SUB]									
F3	REC CH CHK	A1 : GRN B2 : --- A1 : --- B2 : --- A4 : --- B5 : --- A4 : --- B5 : --- B1 : --- A3 : --- B1 : --- A3 : --- B4 : --- A6 : --- B4 : --- A6 : --- A2 : --- B3 : --- A2 : --- B3 : --- A5 : --- B6 : --- A5 : --- B6 : ---									
F4	AUTO CHK										
DIAG	○										
ALT		F5	F6	F7	F8	F9	F10				

To cancel the check halfway:

(1) Press the **F10** (EXIT) key

The message “Cancel the check?” is displayed.

F1	FMT SEL	RF CHECK									
F2	PB CH CHK	Cancel the check ? [F10] : No [SFT]+[F10] : Yes									
F3	REC CH CHK										
F4	AUTO CHK										
DIAG	○										
ALT		F5	F6	F7	F8	F9	F10				

(2) Press the **F10** (EXIT) key while holding down the **SFT** key, and then press the **F10** (EXIT) key again to return to the RF CHECK menu.

To continue the adjustment, press the **F10** (EXIT) key only.

6. Confirm the result of the check and eject the alignment tape.

If it is normal, “GRN” is displayed on the right of the channel.

Note

If an indication other than “GRN” is displayed on the right of the channel, refer to “For Check Failure” on the next page.

7. Press the **F10** (EXIT) key to exit the RF CHECK menu.

- To check another channel or mode in the same format, return to step 2.
- To perform a check in another format, press the **F10** (EXIT) key once to return to step 1.

For Check Failure

Recheck after changing the portion on the tape.

If no check failure occurs again, a trouble is considered to exist on the tape portion used in the previous check.

1. Cassette tape check
Check failure will occur on the tape recorded in the failed VTR. Confirm that the tape can be correctly played back in the other normal operating VTR.
2. If no trouble is found on the used tape
The possible cause below are considered.
 - Heads clogging
 - ⇒ Recheck and clean the drum (rotary heads) following the procedures below.
For Failure during the **F2** (PB CH CHK)
Perform steps (1) to (5) on the next page.
For Failure during the **F3** (REC CH CHK)
Perform steps (6) to (10) on the next page.
 - Servo system adjustment defect or circuit defect
 - ⇒ Readjust the servo system. (Refer to Section 3-4-2.)
F2 (AUTO ADJ) of the SERVO ADJUST menu.
 - ⇒ Check the servo system. (Refer to Section 3-3-4.)
F5 (S REEL MOTOR) of the SERVO CHECK menu.
F6 (T REEL MOTOR) of the SERVO CHECK menu.
F9 (CAPSTN MOTOR) of the SERVO CHECK menu.
F1 (DRUM MOTOR) of the ALT SERVO CHECK menu.
 - Brush/slip ring assembly defect or its part installation/ connection defect
 - ⇒ Replace or reinstall the brush/slip ring assembly
 - Harness (between EQ-102/109 board and drum assembly) connection defect
 - PB RF system adjustment defect
 - ⇒ Readjust the RF system. (Refer to Section 3-4-5.)
F2 (RF ALL ADJ) of the RF ADJUST menu.
 - Worn PB head in the drum assembly
 - ⇒ Replace the drum assembly if required.
 - In the tape transport system, adjustment defect or component part installation defect
 - ⇒ Readjust the tape transport system or reinstall the part.
 - EQ-102/109 board defect
 - Drum assembly defect

For Failure during the **F2** (PB CH CHK)

- (1) If a check is performed without using an alignment tape, recheck using an alignment tape.
When no abnormality is found, the check is completed.
Note
When no abnormality is found during the check using the alignment tape, a trouble (tape is damaged or recording is not done properly) is considered to exist on the tape portion used in the previous check.
- (2) Change the playback portion on the alignment tape.
Recheck in the menu **F2** (PB CH CHK). When no abnormality is found, the check is completed.
- (3) Clean the drum using a cleaning tape according to Section 4-2-1 (the amount of the tape used is 5 seconds).
Recheck in the menu **F2** (PB CH CHK) using the alignment tape.
When no abnormality is found, the check is completed.
- (4) Clean the drum using the cleaning tape again (the amount of the tape used is 15 seconds).
Recheck in the menu **F2** (PB CH CHK) using the alignment tape.
When no abnormality is found, the check is completed.
- (5) Clean the drum (rotary heads) with a cleaning cloth referring to Sections 4-2-2 and 4-2-3.
Recheck in the menu **F2** (PB CH CHK) using the alignment tape.
When no abnormality is found, the check is completed.

For Failure during the **F3** (REC CH CHK)

- (6) Check in the **F2** (PB CH CHK) with alignment tape. When the result is OK, perform (7) and later.
- (7) Adjust the recording current in the **F5** (REC ADJ) of the RF ADJUST menu referring to Section 3-4-5.
Recheck in the **F3** (REC CH CHK) after recording any video signal again for two minutes or more.
When no abnormality is found, the check is completed.
Note
The recorded data on the tape will be overwritten in checking in the **F3** (REC CH CHK). Before the recheck, record any video signal again on the tape for two minute or more.
- (8) Clean the drum using a cleaning tape according to Section 4-2-1 (the amount of the tape used is 5 seconds).
Recheck in the **F3** (REC CH CHK) after re-recording any video signal on the tape for two minutes or more.
When no abnormality is found, the check is completed.
- (9) Clean the drum using the cleaning tape again (the amount of the tape used is 15 seconds).
Recheck in the **F3** (REC CH CHK) after re-recording any video signal on the tape for two minutes or more.
When no abnormality is found, the check is completed.
- (10) Clean the drum (rotary heads) with a cleaning cloth referring to Sections 4-2-2 and 4-2-3.
Recheck in the **F3** (REC CH CHK) after re-recording any video signal on the tape for two minutes or more.
When no abnormality is found, the check is completed.

3-3-8. A/V CHECK Menu

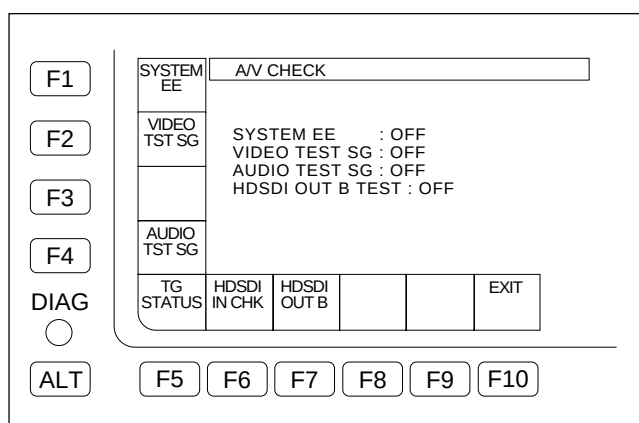
The A/V CHECK menu is used to set the system EE function of the maintenance mode and the operations of the A/V test signal generator built in this unit for the maintenance mode.

To display the A/V CHECK menu, press the **F8** (A/V CHECK) key on the MAINTENANCE menu.

Note

The changed setting is retained until you exit the A/V CHECK menu or the setting is changed again.

The settings are set to OFF when the A/V CHECK menu starts up.



F1 (SYSTEM EE) Key

Sets the system EE function of the maintenance mode.

F2 (VIDEO TST SG) Key

Selects a HD video test signal to be generated from the built-in video test signal generator of this unit.

F4 (AUDIO TST SG) Key

Selects a test signal to be generated from the built-in audio test signal generator of this unit.

F5 (TG STATUS) Key

Displays the status of the timing generator built in this unit.

F6 (HDSDI IN CHK) Key

Checks a CRCC error of the HDSDI input.

F7 (HDSDI OUT B) Key

Checks the hardware by outputting the same signals through HDSDI OUT B as those that are outputting through HDSDI OUT A when optional HKSR-5803SQ or HKSR-5803HQ is not installed to units of serial numbers 10001 to 12000.

F10 (EXIT) Key

Exits the A/V CHECK menu and returns to the MAINTENANCE menu.

F1 (SYSTEM EE) Key

Selects enable/disable of the system EE function of the maintenance mode.

When the system EE function is enabled, selects a signal path.

Note

When enabling the system EE function, be sure to eject a cassette tape.

Setting system EE

On the A/V CHECK menu, press the **F1** (SYSTEM EE) key several times to select one of the following signal paths for the system EE.

OFF: Normal state (Non system EE state)

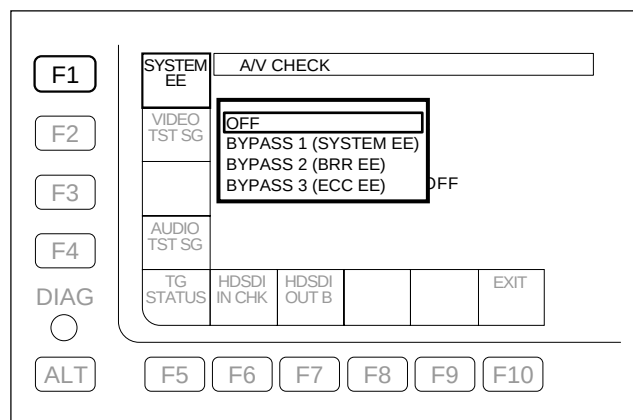
BYPASS 1: Loops back a video signal on the HIF-46/56 board.

BYPASS 2: Loops back the video signal from IC101 (BRR ENCODER) on the HPR-22 board to IC702 (BRR DECODER) on the HPR-22 board.

or

Loops back the video signal from IC101 (BRR ENCODER) on the HPR-35 board to IC104 (BRR DECODER) on the HPR-35 board.

BYPASS 3: Loops back a video signal on the EQ-102/109 board.



F2 (VIDEO TST SG) Key

Selects an operation of the video test signal generator built in this unit for the maintenance mode.

Execution Procedure

On the A/V CHECK menu, press the **F2** (VIDEO TST SG) key several times to select the HD video test signal.

OFF: The video test signal generator stops the operation.

Other than OFF: The video test signal generator outputs a selected signal (below).

(Also refer to Section 1-23.)

HD video test signal

COLOR BARS

MULTI BURST (1)

MULTI BURST (2)

10 STEPS

PULSE & BAR

RAMP

BLACK

PATHOLOGI (1)

PATHOLOGI (2)

Note

The signals output from the test signal generator can be recorded on a tape; however, the PATHOLOGI (1) and the PATHOLOGI (2) are not recordable on a tape because they are transmission test signals output from the HD SDI and are generated from the output circuit of this unit.

F4 (AUDIO TST SG) Key

Select a signal to be generated from the built-in audio test signal generator of this unit.

Execution Procedure

On the A/V CHECK menu, press the **F4** (AUDIO TST SG) key several times to select the audio test signal.

OFF: The audio test signal generator stops the operation.

Other than OFF: The audio test signal generator outputs a selected signal (below).

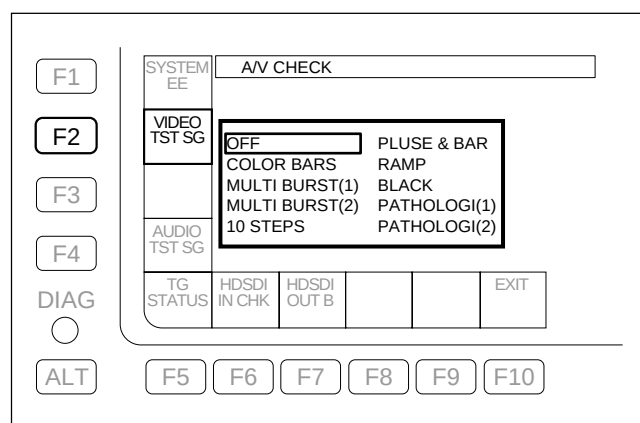
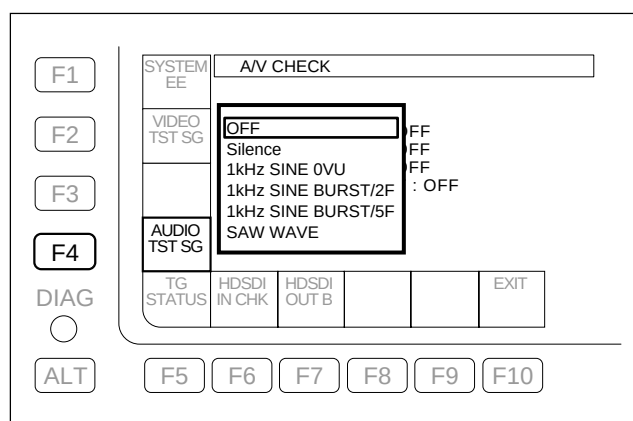
Silence

1 kHz SINE 0VU

1 kHz SINE BURST/2F

1 kHz SINE BURST/5F

SAW WAVE

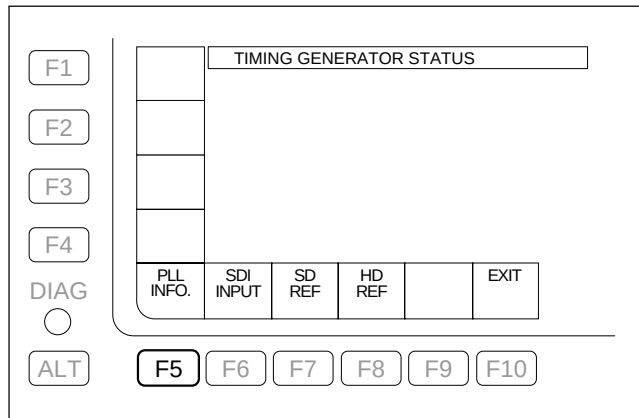


F5 (TG STATUS) Key

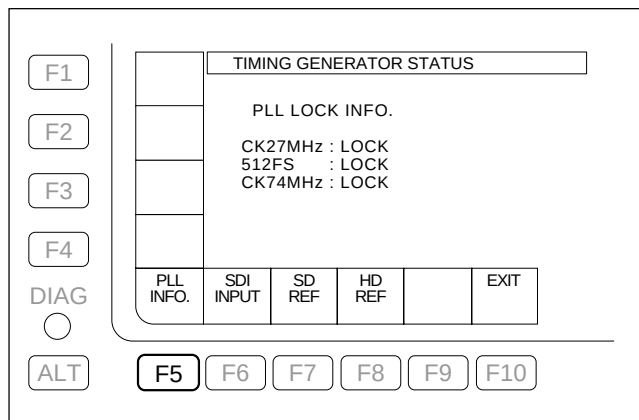
Displays a status of the timing generator built in this unit.

Execution Procedure

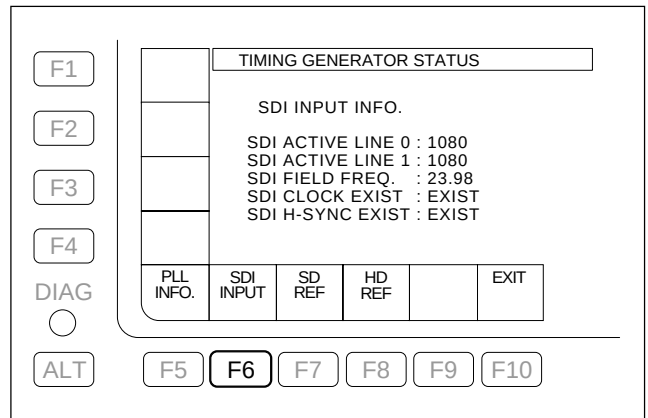
1. On the A/V CHECK menu, press the **F5** (TG STATUS) key to display the TIMING GENETATOR STATUS menu.
2. Perform the following operations if necessary:



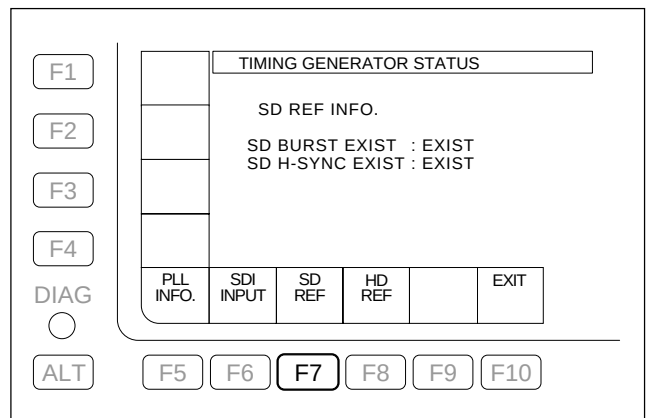
To display the PLL LOCK status:
press the **F5** (PLL INFO.) key.



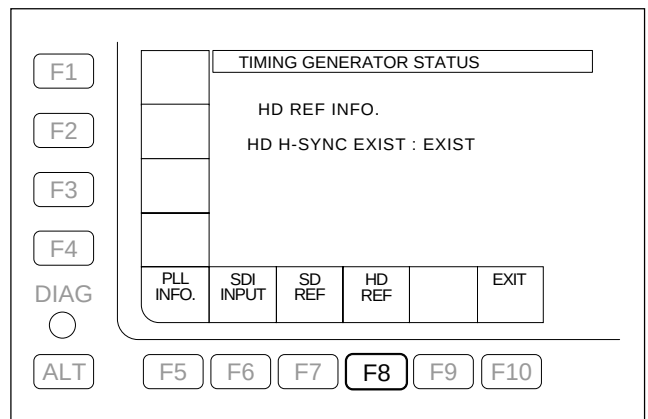
To display the SDI input status:
press the **F6** (SDI INPUT) key.



To display the status of the SD system reference signal:
press the **F7** (SD REF) key.



To display the status of the HD system reference signal:
press the **F8** (HD REF) key.



F6 (HDSDI IN CHK) Key

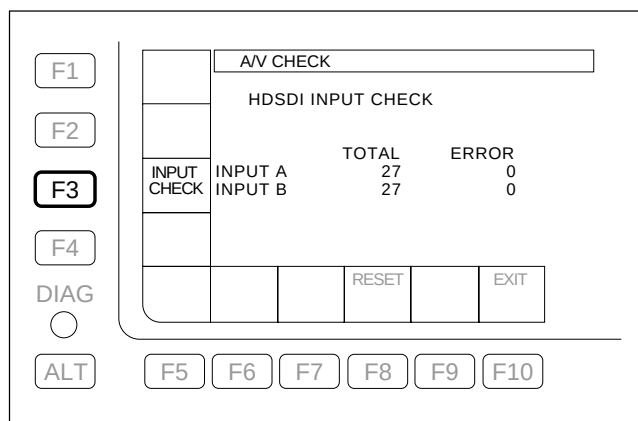
Checks a CRCC error of the HDSDI input.

Execution Procedure

On the A/V CHECK menu, press the **F6** (HDSDI IN CHK) key. When the HDSDI IN CHK menu appears, a CRCC error check starts.

F8 (RESET) Key: Resets all values to 0.

F3 (INPUT CHECK) Key: Stops checking temporarily and restarts checking.



F7 (HDSDI OUT B) Key

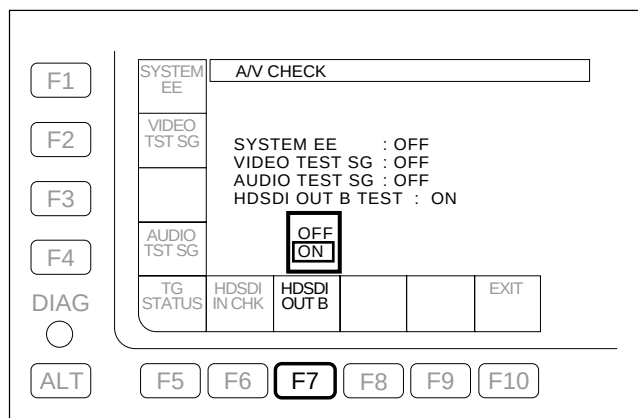
Selects whether to output the same signals as HDSDI OUT A to HDSDI OUT B when optional HKSR-5803SQ or HKSR-5803HQ is not installed to units of serial numbers 10001 to 12000.

Execution Procedure

On the A/V CHECK menu, press the **F7** (HDSDI OUT B) key several times to select OFF or ON.

OFF: Does not output the same signals as HDSDI OUT A to HDSDI OUT B.

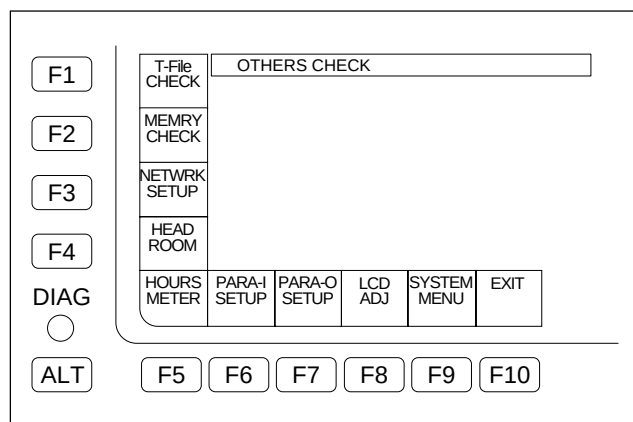
ON: Outputs the same signals as HDSDI OUT A to HDSDI OUT B.



3-3-9. OTHERS CHECK Menu

The OTHERS CHECK menu is used to set the system and the network of this unit.

To display the OTHERS CHECK menu, press the **F9** (OTHERS CHECK) key on the MAINTENANCE menu.



F1 (T-File CHECK) Key

Applies power to the Tele-File circuit during its adjustment.

Also performs the read/write checks for the Tele-File.

F2 (MEMRY CHECK) Key

Reads and changes internal data on this unit.

Note

This function is factory use only. Never use this function.

F3 (NETWRK SETUP) Key

Sets the network for this unit.

F4 (HEAD ROOM) key

Sets the head room of the audio level meter.

F5 (HOURS METER) Key

Displays and resets the resettable hours meter and the thread counter.

F6 (PARA-I SETUP) Key

Changes the setup data (function settings for input pins) of the 50-pin parallel remote interface. Also displays the logic level of the input pin.

F7 (PARA-O SETUP) Key

Changes the setup data (function settings for output pins) of the 50-pin parallel remote interface. Also displays the logic level of the output pin.

F8 (LCD ADJ) Key

Performs the gain adjustment and brightness adjustment of the color display.

F9 (SYSTEM MENU) Key

Sets the operation mode of this unit.

ALT + F1 (META DATA) Key

Sets meta data.

ALT + F2 (PHASE SET) Key

Sets the phase of each input/output.

ALT + F4 (INFO SELECT) Key

Performs setting for displaying (or not displaying) displayable pages in the information display field.

ALT + F5 (SYSTEM BANK) Key

Stores and reads the system settings in/from the system bank.

ALT + F6 (SYSTEM CARD) Key

Stores and reads the system settings in/from a Memory Stick.

ALT + F7 (SYSTEM NETWRK) Key

Saves system settings in and loads system settings from the FTP server (this unit) using a network.

F10 (EXIT) Key

Exits the OTHERS CHECK menu and returns to the MAINTENANCE menu.

F1 (T-File CHECK) Key

Applies power to the Tele-File circuit during its adjustment. Also, performs the read/write checks for the Tele-File.

Note

When the writing check is performed, the current data in the Tele-File is changed.

To make the Tele-File ON:

1. On the OTHERS CHECK menu, press the **F1** (T-File CHECK) key to display the Tele-File CHECK menu.

OTHERS CHECK	
Tele-File CHECK	
RF	
OFF	
READ TEST	READ TOTAL PASS FAIL
WRITE TEST	WRITE 0 0 0
RESET EXIT	

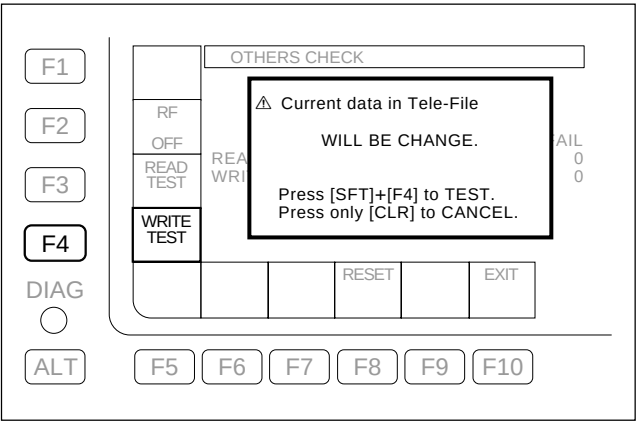
2. Press the **F2** (RF) key several times to select "ON".
 - The Tele-File circuit is powered on.
3. Press the **F10** (EXIT) key to return to the OTHERS CHECK menu.
 - The power to the Tele-File circuit becomes OFF (normal state).

To perform the reading check:

1. Insert a cassette tape.
2. On the Tele-File CHECK menu, press the **F3** (READ TEST) key.
 - The check details are displayed. Pressing the **F8** (RESET) key returns all the values to "0".
TOTAL: Reading check counts
PASS: OK counts for reading checks
FAIL: NG counts for reading checks

To perform the writing check:

- 1. Insert a cassette tape.
- 2. On the Tele-File CHECK menu, press the **F4** (WRITE TEST) key.



- 3. Press the **F4** (WRITE TEST) key while holding down the **SET** key.
 - The check details are displayed. Pressing the **F8** (RESET) key returns all the values to “0”.

TOTAL: Writing check counts
PASS: OK counts for writing checks
FAIL: NG counts for writing checks

F3 (NETWRK SETUP) Key

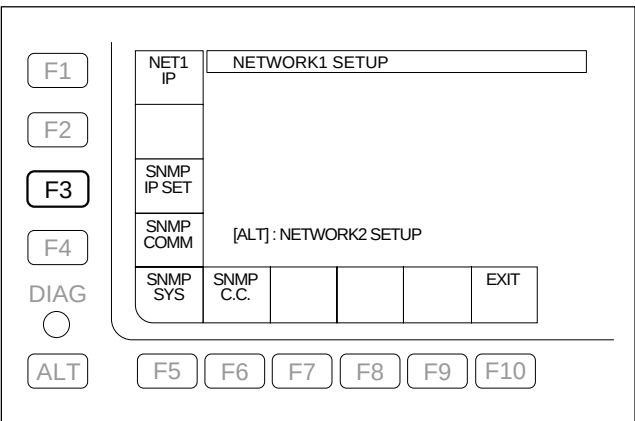
Sets the network for this unit.

NETWORK1 SETUP menu

- 1. On the OTHERS CHECK menu, press the **F3** (NETWRK SETUP) key to display the NETWORK1 SETUP menu.

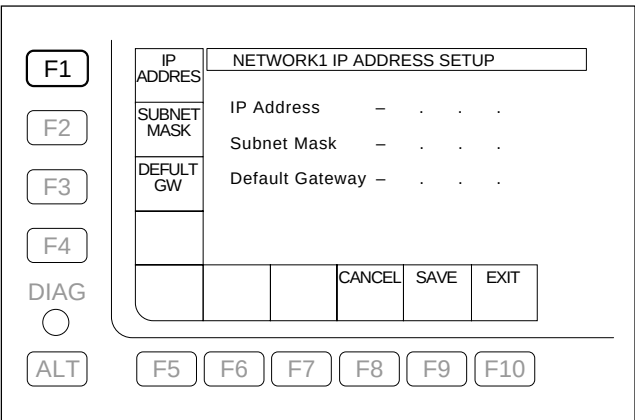
Note

On the NETWORK1 SETUP menu, press the **ALT** key to display the NETWORK2 SETUP menu. Press the **ALT** key again to return to the NETWORK1 SETUP menu.



Setting IP address, subnet mask, and default gateway

- 1. Press the **F1** (NET1 IP) key to display the NETWORK1 IP ADDRESS SETUP menu.



- Press the function key corresponding to an item to be set.
 - F1** (IP ADDRESS) Key: Sets an IP address.
 - F2** (SUBNET MASK) Key: Sets a subnet mask.
 - F3** (DEFAULT GW) Key: Sets a default gateway.
- Set a value using numeric keys or **←**/**→** keys.

Note

Pressing the **CLR** key returns the value to “0”.

F1	IP ADDRESS	NETWORK1 IP ADDRESS SETUP			
F2	SUBNET MASK	IP Address	-	0	0. 0. 0
F3	DEFAULT GW	Subnet Mask	-	.	.
F4		Default Gateway	-	.	.
DIAG				CANCEL	SAVE
ALT					EXIT
		F5	F6	F7	F8
		F9	F10		

- Press the **F9** (SAVE) key to save the values.
 - When the saving is completed, the set values are deselected and displayed.
- Note**
- When a value is not set, no set value is displayed.
- To cancel the setting, press the **F8** (CANCEL) key to return to the NETWORK1 IP ADDRESS SETUP menu.
- Press the **F10** (EXIT) key to return to the NETWORK1 SETUP menu.

Note

Unless NETWORK SETUP is completed, settings for each SNMP are disabled.

When setting SNMP following NETWORK SETUP, power OFF and ON the unit.

Setting SNMP IP Address

- On the NETWORK1 SETUP menu, press the **F3** (SNMP IP SET) key to display the SNMP IP SETUP menu.

F1	READ ONLY	SNMP IP SETUP			
F2	READ WRITE	Read Only Host IP	-	.	.
F3	TRAP1 IP	Read/Write Host IP	-	.	.
F4	TRAP2 IP	Trap1 IP Address	-	.	.
DIAG	TRAP3 IP	Trap2 IP Address	-	.	.
ALT	TRAP4 IP	Trap3 IP Address	-	.	.
		Trap4 IP Address	-	.	.
			CANCEL	SAVE	EXIT
		F5	F6	F7	F8
		F9	F10		

- Press the function key corresponding to an item to be set.
 - F1** (READ ONLY) Key: Sets a read-only host IP address.
 - F2** (READ WRITE) Key: Sets a read/write host IP address.
 - F3** (TRAP1 IP) Key: Sets a network IP address to receive an SNMP trap.
 - F4** (TRAP2 IP) Key: Sets a network IP address to receive an SNMP trap.
 - F5** (TRAP3 IP) Key: Sets a network IP address to receive an SNMP trap.
 - F6** (TRAP4 IP) Key: Sets a network IP address to receive an SNMP trap.

Note

When an IP address is set for the **F1** (READ ONLY) or **F2** (READ WRITE) key, an SNMP trap is sent to the IP address.

When it is necessary to send an SNMP trap to another ID address, set IP addresses of the **F4** to **F6** keys.

- Set a value using numeric keys or $\leftarrow/\rightarrow$ keys.

Note

Pressing the **CLR** key returns the value to "0".

The interface shows the 'SNMP IP SETUP' menu. On the left, there are function keys F1 through F4, a DIAG key with a circle icon, and an ALT key. The main display area has a table with columns for 'READ ONLY', 'READ WRITE', 'TRAP1 IP', 'TRAP2 IP', 'TRAP3 IP', and 'TRAP4 IP'. The 'Read Only Host IP' field is currently set to '0'. Below the table are buttons for 'CANCEL', 'SAVE', and 'EXIT'. At the bottom, there are numeric keys F5 through F10.

- Press the **F9** (SAVE) key to save the set values.

- When the saving is completed, the set values are deselected and displayed.

Note

When a value is not set, no set value is displayed.

- To cancel the setting, press the **F8** (CANCEL) key to return to the SNMP IP SETUP menu.
- Press the **F10** (EXIT) key to return to the NETWORK1 SETUP menu.

Setting SNMP COMMUNITY NAME INFORMATION

- On the NETWORK1 SETUP menu, press the **F4** (SNMP COMM) key to display the SNMP COMMUNITY NAME INFO SETUP menu.

The interface shows the 'SNMP COMMUNITY NAME INFO SETUP' menu. On the left, there are function keys F1 through F4, a DIAG key with a circle icon, and an ALT key. The main display area has a table with columns for 'READ ONLY', 'READ WRITE', and 'TRAP ONLY'. The 'Read Only Community Name' field is currently empty. Below the table are buttons for 'EXIT'. At the bottom, there are numeric keys F5 through F10.

- Press the function key corresponding to an item to be set.

F1 (READ ONLY) Key: Sets a read-only host community name.

F2 (READ WRITE) Key: Sets a read/write host community name.

F3 (TRAP ONLY) Key: Sets Trap1 to Trap4 community names to receive an SNMP trap.

- The TEXT EDIT window is displayed.

- Enter a text.

(For details on how to enter the text, refer to the operation manual.)

The interface shows a text edit window for the 'READ ONLY COMMUNITY NAME'. The window has a title bar 'SNMP COMMUNITY NAME INFO SETUP' and a list of function keys F1 through F4, a DIAG key with a circle icon, and an ALT key. The main display area has a table with columns for 'SPACE', 'BACK SPACE', 'SET LETTER', 'CANCEL', and 'SAVE/EXIT'. The 'READ ONLY COMMUNITY NAME' field is currently empty. Below the table are buttons for 'SPACE', 'BACK SPACE', 'SET LETTER', 'CANCEL', and 'SAVE/EXIT'. At the bottom, there are numeric keys F5 through F10.

- Press the **F10** (SAVE/EXIT) key to confirm the entry.

- The confirmed text is displayed.

- Press the **F10** (SAVE/EXIT) key again to return to the NETWORK1 SETUP menu.

Setting SNMP SYS INFORMATION

- On the NETWORK1 SETUP menu, press the **F5** (SNMP SYS) key to display the SNMP SYS INFO SET UP menu.

SNMP SYS INFO SETUP

[SYS CONTACT]

[SYS NAME]

[SYS LOCATION]

EXIT

- Press the function key corresponding to an item to be set.
 - F1** (SYS CONTACT) Key: Setting of administrator's information
 - F2** (SYS NAME) Key: Setting of SNMP system name.
 - F3** (SYS LOCATE) Key: Setting of installation location
 - The TEXT EDIT window is displayed.
- Enter a text.
(For details on how to enter the text, refer to the operation manual.)

SYS CONTACT

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789[]()<>@+-*=?!?:;
\$#%&.,'\^_/'~`{} HD1D2CAM

SPACE BACK SPACE SET LETTER CANCEL SAVE/EXIT

- Press the **F10** (SAVE/EXIT) key to confirm the entry.
 - The confirmed text is displayed.
- Press the **F10** (SAVE/EXIT) key again to return to the NETWORK1 SETUP menu.

Setting CHANNEL CONDITION THRESHOLD

- On the NETWORK1 SETUP menu, press the **F6** (SNMP C.C.) key to display the CHANNEL CONDITION THRESHOLD SETUP menu.

CHANNEL CONDITION THRESHOLD SETUP

[VIDEO C.C. THRESHOLD]

[AUDIO C.C. THRESHOLD]

SAVE EXIT

- Press the function key corresponding to an item to be set.
 - F1** (VIDCC) Key: Sets VIDEO CHANNEL CONDITION THRESHOLD.
 - F2** (AUDCC) Key: Sets AUDIO CHANNEL CONDITION THRESHOLD.
- Press the function key several times to select the channel condition threshold.

CHANNEL CONDITION THRESHOLD SETUP

[VIDEO C.C. THRESHOLD]

[AUDIO C.C. THRESHOLD]

SAVE EXIT

- Press the **F9** (SAVE) key.
- Press the **F10** (EXIT) key to return to the NETWORK1 SETUP menu.

NETWORK2 SETUP menu

1. On the NETWORK1 SETUP menu, press the **ALT** key to display the NETWORK2 SETUP menu.

Note

On the NETWORK2 SETUP menu, press the **ALT** key to display the NETWORK1 SETUP menu. Press the **ALT** key again to return to the NETWORK2 SETUP menu.

Setting IP address, subnet mask, default gateway, host name, and MTU

1. Press the **F1** (NET2 IP) key to display the NETWORK2 IP ADDRESS SETUP menu.

2. Press the function key corresponding to the item to be set.

F1 (IP ADDRESS) Key : *Sets an IP address of the VTR.

F2 (SUBNET MASK) Key : *Sets a subnet mask of the VTR.

F3 (DEFAULT GW) Key : Sets a default gateway of the VTR.

F4 (HOST NAME) Key : Sets a host name.

F5 (MTU) Key : *Sets a maximum bytes of forwarding data.

*: Mandatory item

3. Set a value using numeric keys on **←/→** keys.

Note

Pressing the **CLR** key returns the value to “0”.

4. Press the **F9** (SAVE) key to save the set values.

- When the saving is completed, the set values are deselected and displayed.

Note

When a value is not set, no set value is displayed.

- To cancel the setting, press the **F8** (CANCEL) key to return to the NETWORK2 IP ADDRESS SETUP menu.

5. Press the **F10** (EXIT) key to return to the NETWORK2 SETUP menu.

Setting user ID and group ID

1. On the NETWORK2 SETUP menu, press the **F2** (UID/GID) key to display the NETWORK2 UID/GID SETUP menu.

This menu sets the user ID and group ID to read/write a file from/to an NFS server.

NETWORK2 UID/GID SETUP	
UID	User ID -
GID	Group ID -
(Settable range : 1 to 65535)	
CANCEL SAVE EXIT	

2. Press the function key corresponding to an item to be set.
 - F1** (UID) Key: Sets a user ID of the VTR.
 - F2** (GID) Key: Sets a group ID of the VTR.
3. Set a value using numeric keys on **←**/**→** keys.

Note

Pressing the **CLR** key returns the value to "0".
4. Press the **F9** (SAVE) key to save the set values.
 - When the saving is completed, the set values are deselected and displayed.

Note

When a value is not set, no set value is displayed.

 - To cancel the setting, press the **F8** (CANCEL) key to return to the NETWORK2 UID/GID SETUP menu.
5. Press the **F10** (EXIT) key to return to the NETWORK2 SETUP menu.

Setting domain name and DNS server IP address

1. On the NETWORK2 SETUP menu, press the **F3** (DOMAIN) key to display the NETWORK2 DOMAIN SETUP menu.

NETWORK2 DOMAIN SETUP	
DOMAIN NAME	Domain Name -
DNS1	DNS Server 1 - . . .
DNS2	DNS Server 2 - . . .
DNS3	DNS Server 3 - . . .
DNS4	DNS Server 4 - . . .
CHANGE DATA CANCEL SAVE EXIT	

2. Press the function key corresponding to an item to be set.
 - F1** (DOMAIN NAME) Key: Sets a domain name of the network.
 - F2** (DNS1) Key: Sets an IP address of the DNS server 1.
 - F3** (DNS2) Key: Sets an IP address of the DNS server 2.
 - F4** (DNS3) Key: Sets an IP address of the DNS server 3.
 - F5** (DNS4) Key: Sets an IP address of the DNS server 4.
3. Set a value using numeric keys or **←**/**→** keys.

Note

Pressing the **CLR** key returns the value to "0".
4. Press the **F9** (SAVE) key to save the set values.
 - When the saving is completed, the set values are deselected and displayed.

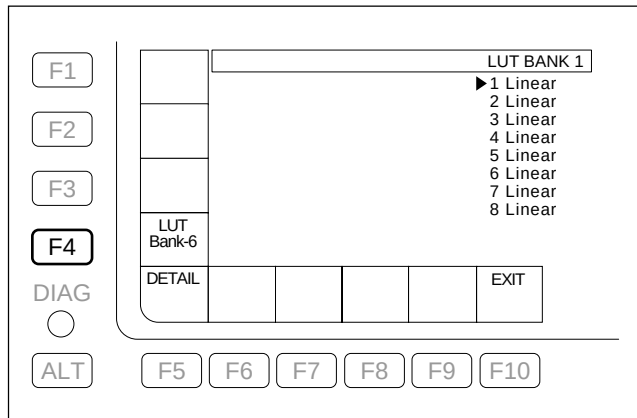
Note

When a value is not set, no set value is displayed.

 - To cancel the setting, press the **F8** (CANCEL) key to return to the NETWORK2 DOMAIN SETUP menu.
5. Press the **F10** (EXIT) key to return to the NETWORK2 SETUP menu.

Setting LUT bank

1. On the NETWORK2 SETUP menu, press the **F7** (NETWORK LUT) key to display the LUT BANK menu.



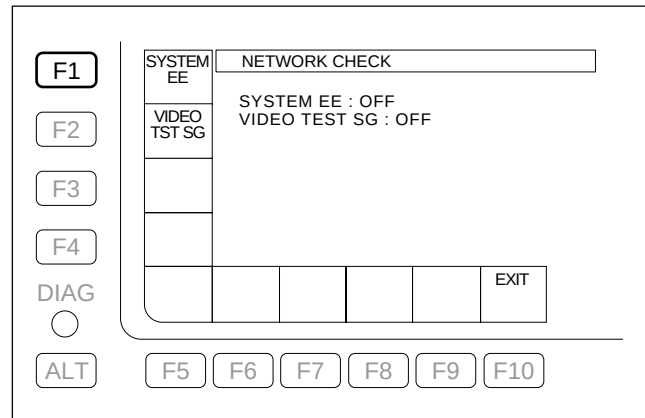
F4 (LUT) Key: Each time when the **F4** (LUT) key is pressed, the LUT bank changes sequentially. The red “*” mark appears at the right of the selected LUT bank. When it is off, the “*” disappears.

F5 (DETAIL) Key: All names of the highlighted LUT bank are displayed in maximum 64 characters. The highlighted bank can be changed by pressing the **↑**/**↓** or MFD.

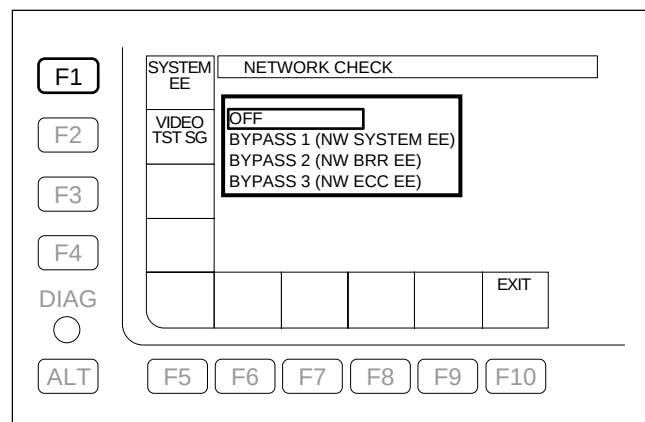
2. Press the **F10** (EXIT) key to return to the NETWORK2 SETUP menu.

Setting AUX I/O EE path and NETWORK2 test SG

1. On the NETWORK2 SETUP menu, press the **F8** (NETWORK CHECK) key to display the NETWORK CHECK menu.



2. Press **F1** (SYSTEM EE) key several times to select the path of the system EE signal of the AUX input/output.



OFF : Normal state

BYPASS 1 : Loops back the video signal on the HIF-46 board.

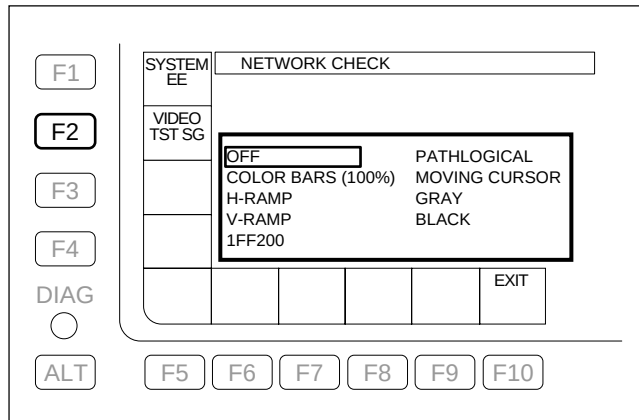
BYPASS 2 : Loops back the video signal from IC101 (BRR ENCODER) on the HPR-22 board to IC702 (BRR DECODER) on the HPR-22 board.

or

Loops back the video signal from IC101 (BRR ENCODER) on the HPR-35 board to IC104 (BRR DECODER) on the HPR-35 board.

BYPASS 3: Loops back the video signal on the EQ-102/109 board.

- Press the **F2** (VIDEO TST SG) key several times to select the internal SG output signal for the NETWORK2 system.



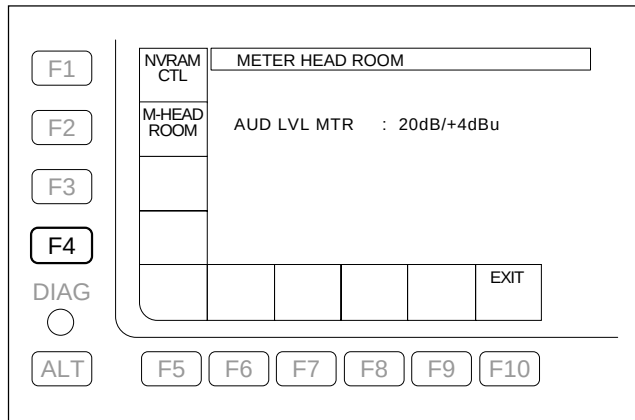
- Press the **F10** (EXIT) key to return to the NETWORK2 SETUP menu.

F4 (HEAD ROOM) Key

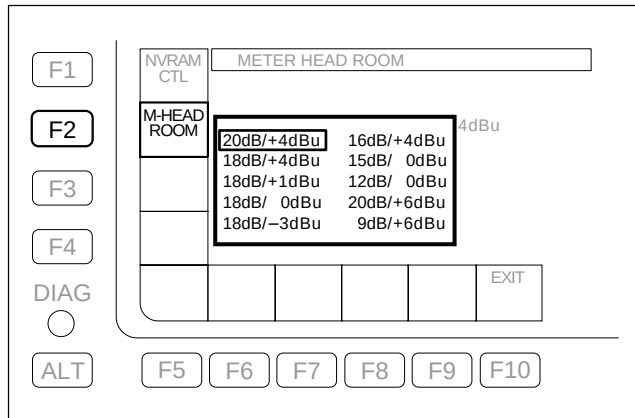
Sets the head room of the audio level meter.

Execution Procedure

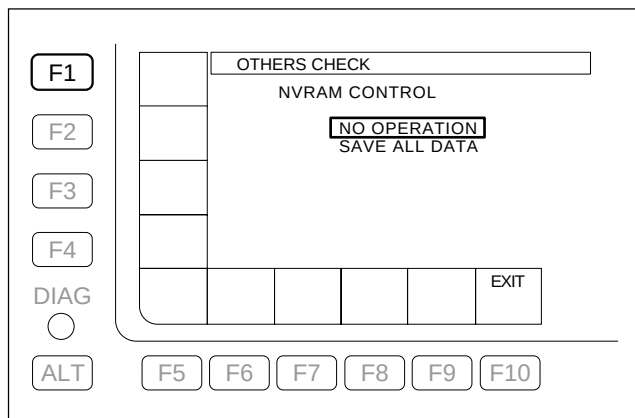
1. On the OTHERS CHECK menu, press the **F4** (HEAD ROOM) key to display the METER HEAD ROOM menu.



2. Press the **F2** (M-HEAD ROOM) key several times to set the head room of the audio level meter.



3. Press the **F1** (NVRAM CTL) key.



4. Select “SAVE ALL DATA” using **↑/↓** key, and press the **F10** (EXIT) key.
 - The changed data is written on the NV-RAM, and the menu returns to the METER HEAD ROOM menu.

When the changed data is not to be saved, select “NO OPERATION”, and press the **F10** (EXIT) key.

5. Turn off and then on the power.

F5 (HOURS METER) Key

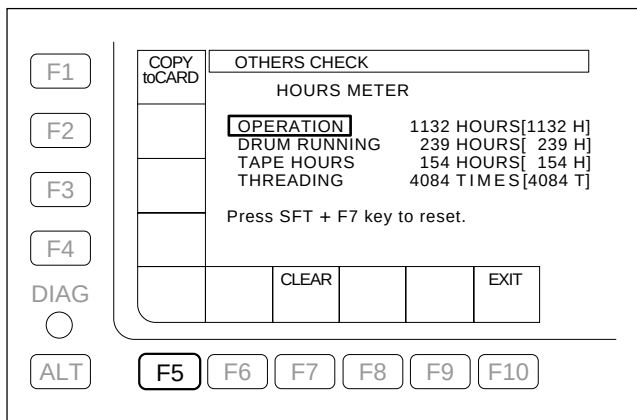
Displays and resets the resettable hours meter and the thread counter. Also saves total hours meter data and thread counter data into a Memory Stick.

Execution Procedure

Note

When the settings are reset by pressing the **F7 (CLEAR)** key while holding down the **SFT** key, they are not returned to the previous settings.

- On the OTHERS CHECK menu, press the **F5** (HOURS METER) key to display the HOURS METER menu.
OPERATION: Total power-distribution hours
DRUM RUNNING: Total drum-running hours
TAPE HOURS: Total tape-running hours

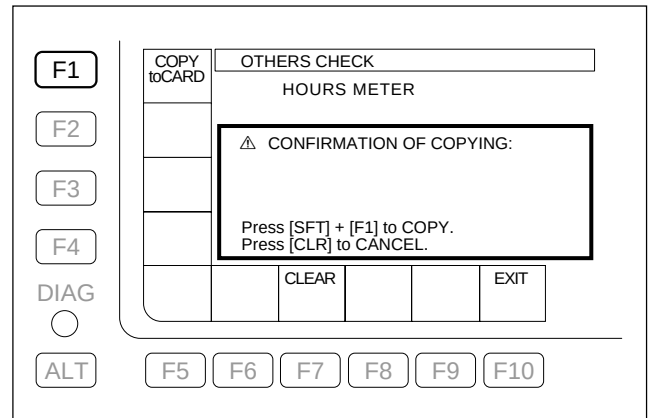


THREADING: Total threading counts

- Select an item to be reset, using **↑/↓** key or the MULTI CONTROL knob.
- Press the **F7 (CLEAR)** key while holding down the **SFT** key to reset the value being displayed.
- Press the **F10 (EXIT)** key to return to the OTHERS CHECK menu.

To save data into a Memory Stick

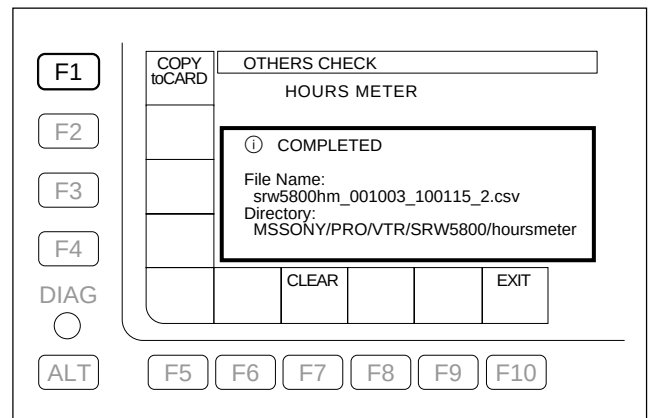
- On the OTHERS CHECK menu, press the **F5** (HOURS METER) key to display the HOURS METER menu.
- Press the **F1** (COPY to CARD) key.
A confirmation message appears.



To cancel saving

Press the **CLR** key while the confirmation message is displayed.

- Press the **F1** (COPY to CARD) key while holding down the **SFT** key.
Saving data starts. Upon completion of saving, the saved file name and save directory are displayed.



- Press the **F10 (EXIT)** key twice to return to the OTHERS CHECK menu.

F6 (PARA-I SETUP) Key
F7 (PARA-O SETUP) Key

Changes the setup data (function settings for input/output pins) of the 50-pin parallel remote interface.
 Also, displays the logic levels of the input/output pins.

How to change setting data

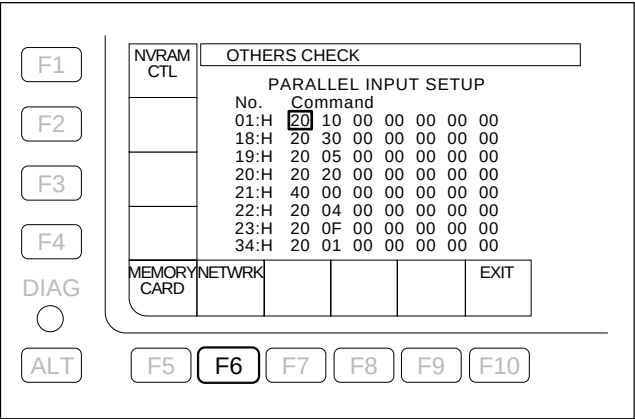
Note

Inadvertent change to the set up data may cause trouble. To change setting data, be sure to refer to the interface manual for parallelremote (50-pin) of the unit.
 If you change the setup data inadvertently, press the **F1** (NVRAM CTL) key to execute “ALL DATA PREVIOUS”, or turn off the power of the unit without executing NVRAM CONTROL.
 Strictly avoid to execute SAVE ALL DATA command.

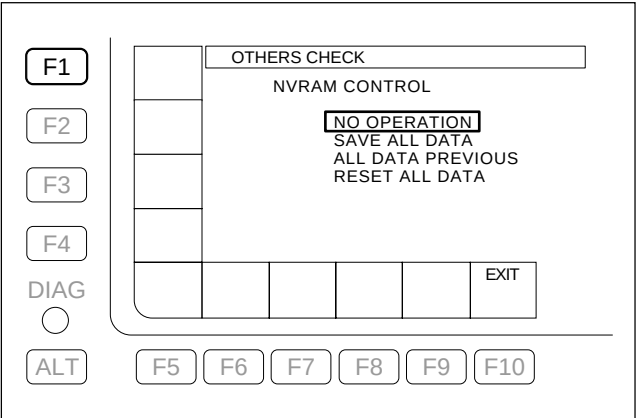
1. On the OTHERS CHECK menu, press the **F6** (PARA-I SETUP) key or **F7** (PARA-O SETUP) key to display the PARALLEL INPUT SETUP/PARALLEL OUTPUT SETUP menu.

Descriptions of indications

“No.” column displays pin numbers. Also, H (Hight) or L (Low) on the right of the pin number is displayed as a logic level.



2. Select data to be changed, using cursor keys.
3. Enter data in hexadecimal, using numeric keys.
 - To enter the values A to F, press the numeric keys 0 to 5 while holding down the **SFT** key respectively.
 - The changed value is displayed in yellow.
4. Press the **F1** (NVRAM CTL) key.



5. Select “SAVE ALL DATA” using **↑/↓** key, and press the **F10** (EXIT) key.
 - The changed data is written on the NV-RAM, and the menu returns to the PARALLEL INPUT SETUP/PARALLEL OUTPUT SETUP menu.

When the changed data is not to be stored, select “NO OPERATION”, and press the **F10** (EXIT) key.

- The menu returns to the PARALLEL INPUT SETUP/PARALLEL OUTPUT SETUP menu, and the changed value remains in yellow.

To return data to the previous values, select “ALL DATA PREVIOUS”, and press the **F10** (EXIT) key.

- The menu returns to the PARALLEL INPUT SETUP/PARALLEL OUTPUT SETUP menu.

To reset the NV-RAM to the data stored when the unit was shipped, select “RESET ALL DATA” and press the **F10** (EXIT) key. Turn off and then on the power.

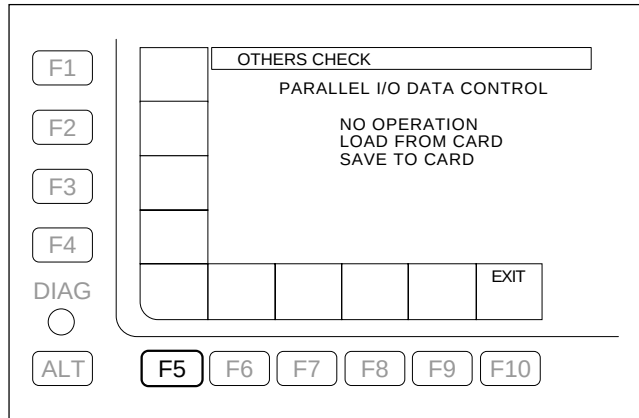
6. Turn off and then on the power.

How to Save to/Read from Memory Stick

Note

The both input and output-pin setting data are saved/read.

1. On the PARALLEL INPUT SETUP/PARALLEL OUTPUT SETUP menu, press the **F5** (MEMORY CARD) key to display the PARALLEL I/O DATA CONTROL menu.



2. To save data into the Memory Stick, select “SAVE TO CARD”, and press the **F10** (EXIT) key.
To read data from the Memory Stick, select “LOAD FROM CARD”, and press the **F10** (EXIT) key.
3. Press the **F10** (EXIT) key to return to the OTHERS CHECK menu.

Note

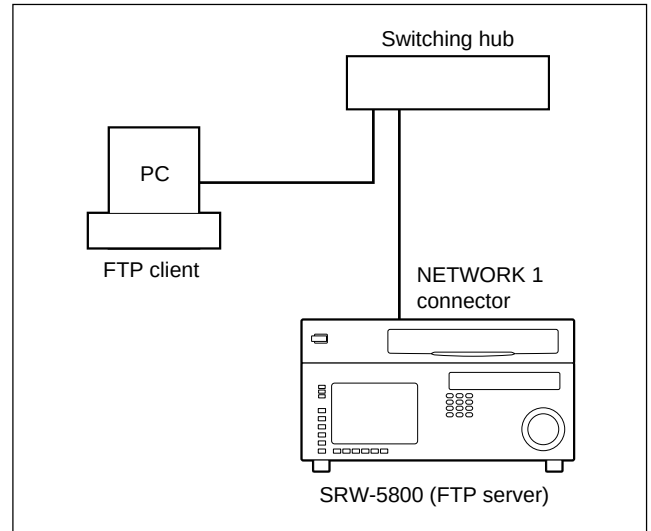
The input/output settings of the 50-pin parallel remote connector are saved or read at a time, regardless whether PARA-I SETUP or PARA-O SETUP is made.

Saving and loading the PARALLEL I/O setting using a network

1. Setting up a network

When a network has already been set up, this procedure is not necessary.

- (1) Connect the SRW-5800 (FTP server) to the FTP client (PC) as shown below.



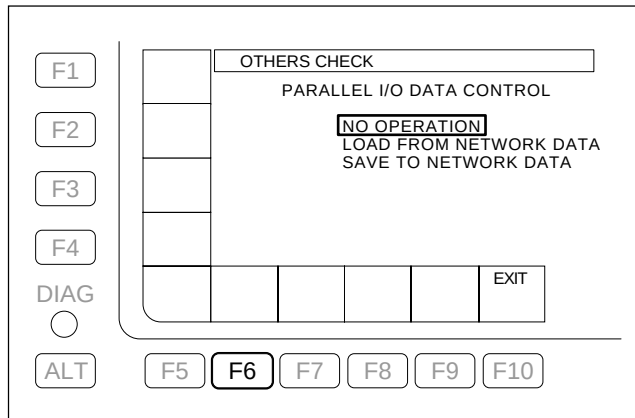
- (2) On the NETWORK1 SETUP menu, set the IP address, subnet mask, and default gateway. (Refer to Section 3-3-9.)

2. Saving and loading the PARALLEL I/O setting on the FTP client (PC)

- (1) Connect the FTP client (PC) to the FTP server (this unit).
Use the following user name and password for connection to the FTP server (this unit).
User name: srw5800
Password: srw5800
- (2) Save the setup file “srw5800p50.dat” in the VTRBANK folder of the FTP server (this unit) in the FTP client (PC).
Or load the setup file from the FTP client (PC) to the VTRBANK folder of the FTP server (this unit).

3. Saving and loading from this unit to the FTP server (this unit)

- On the PARALLEL INPUT SETUP/PARALLEL OUTPUT SETUP menu, press the **F6** (NETWRK) key to display the PARALLEL I/O DATA CONTROL menu.



- To save the setting data in the FTP server (this unit), select “SAVE TO NETWORK DATA” and press the **F10** (EXIT) key.

To load the setting data from the FTP server (this unit), select “LOAD FROM NETWORK DATA” and press the **F10** (EXIT) key.

Notes

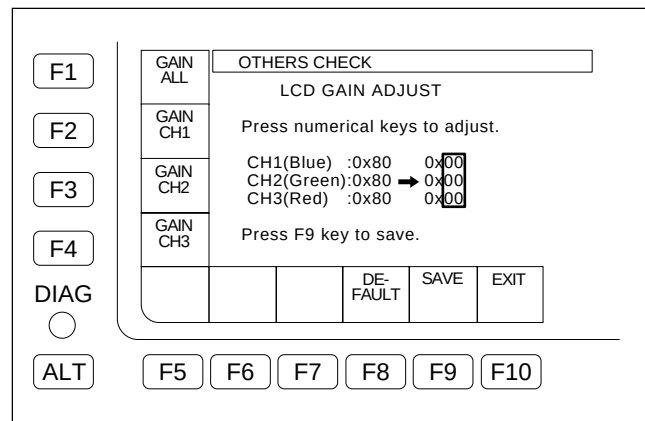
- If the setup file “srw5800p50.dat” does not exist in the VTRBANK folder of the FTP server (this unit), “LOAD FROM NETWORK DATA” is shaded and is not selectable. Exit the PARALLEL I/O DATA CONTROL menu, and then copy the setup file “srw5800p50.dat” to the VTRBANK folder of the FTP server (this unit) or format the VTRBANK folder on the network system bank menu. (Refer to **ALT** + **F7** (SYSTEM NETWRK) key of “OTHERS CHECK Menu in Section 3-3-9.”)
 - When the VTRBANK folder has been formatted, existing files are deleted and a default file is created.
 - All files in the VTRBANK folder are deleted during the power-on procedure.
- Press the **F10** (EXIT) key to return to the PARALLEL I/O DATA CONTROL menu.

F8 (LCD ADJ) Key

Performs the gain adjustment and brightness adjustment of the color display.

Performing Gain Adjustment

- On the OTHERS CHECK menu, press the **F8** (LCD ADJ) key to display the LCD ADJUST menu.
- Press the **F1** (LCD GAIN) key to display the LCD GAIN ADJUST menu.



- To perform the gain adjustments for all channels in one operation.
 - Press the **F1** (GAIN ALL) key
 To perform the gain adjustment for a specified channel.
 - Press the **↑/↓** key, or **F2** (GAIN CH1), **F3** (GAIN CH2), or **F4** (GAIN CH3) key to select a channel to execute its gain adjustment.
- Enter a gain adjustment value in hexadecimal, using numeric keys. (0x00 to 0xff)
 - To enter the values A to F, press the numeric keys 0 to 5 while holding down the **SFT** key respectively.
 To return the gain adjustment value to the initial value, press the **F8** (DE-FAULT) key.

Note

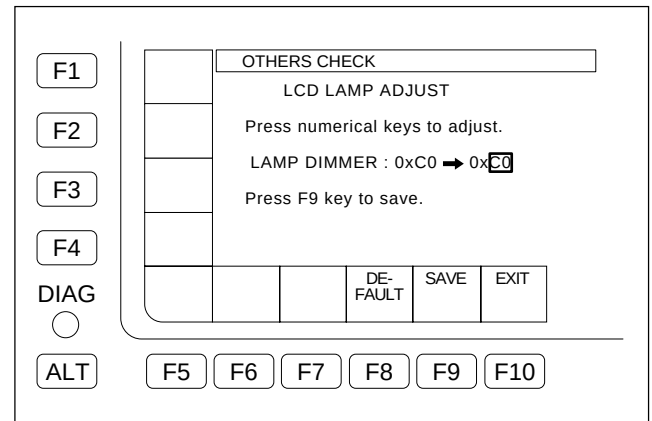
To change the adjustment value and save it to the NV-RAM in one operation, set the value using the MULTI CONTROL knob.

Clockwise (↻): The data value increases.
 Counterclockwise (↻): The data value decreases.
 Press: Sets the data to the initial value.

5. Press the **F9** (SAVE) key
 - The gain value is changed and saved onto the NV-RAM.
6. Press the **F10** (EXIT) key twice to return to the OTHERS CHECK menu.

Performing Brightness Adjustment

1. On the OTHERS CHECK menu, press the **F8** (LCD ADJ) key to display the LCD ADJUST menu.
2. Press the **F2** (LCD LAMP) key to display the LCD LAMP ADJUST menu.



3. Enter a brightness adjustment value in hexadecimal, using numeric keys. (0x00 to 0xff)
 - To enter the values A to F, press the numeric keys 0 to 5 while holding down the **SFT** key respectively.
 To return the brightness adjustment value to the initial value, press the **F8** (DE-FAULT) key.

Note

To change the adjustment value and save it to the NV-RAM in one operation, set the value using the MULTI CONTROL knob.

Clockwise (↻): The data value increases.
 Counterclockwise (↻): The data value decreases.
 Press: Sets the data to the initial value.

4. Press the **F9** (SAVE) key
 - The brightness value is changed and saved onto the NV-RAM.
5. Press the **F10** (EXIT) key twice to return to the OTHERS CHECK menu.

F9 (SYSTEM MENU) Key

Sets the operation mode of this unit.

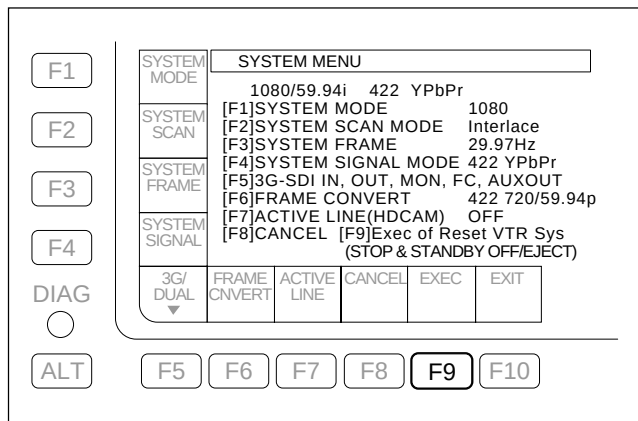
Note

The selectable systems differ according to the VTR settings or option boards.

The unselectable system setting items are shaded.

Execution Procedure

- On the OTHERS CHECK menu, press the **F9** (SYSTEM MENU) key to display the SYSTEM menu.

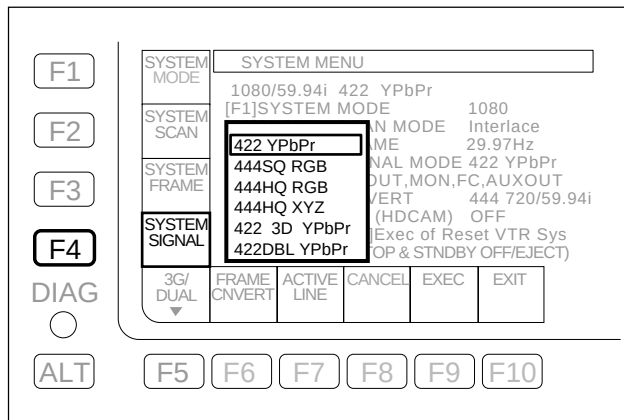


- Press the **F4** (SYSTEM SIGNAL) key several times to set the signal format.

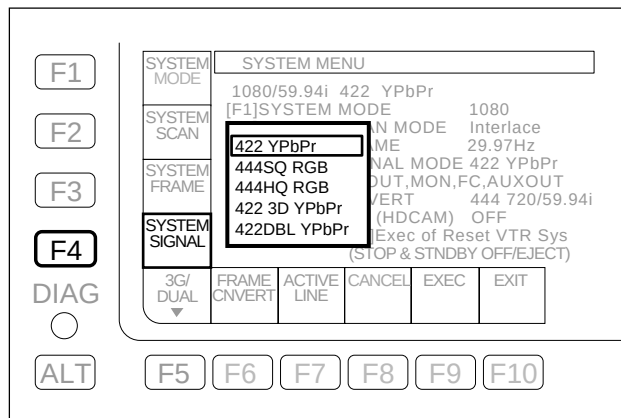
Notes

- When the optional HKSR-5803SQ or HKSR-5803HQ is not installed to units of serial numbers 10001 to 12000, the **F4** (SYSTEM SIGNAL) key is disabled.
- Each setting item can also be selected using the **↑/↓** key or the MULTI CONTROL knob.

Serial No. 12001 and higher



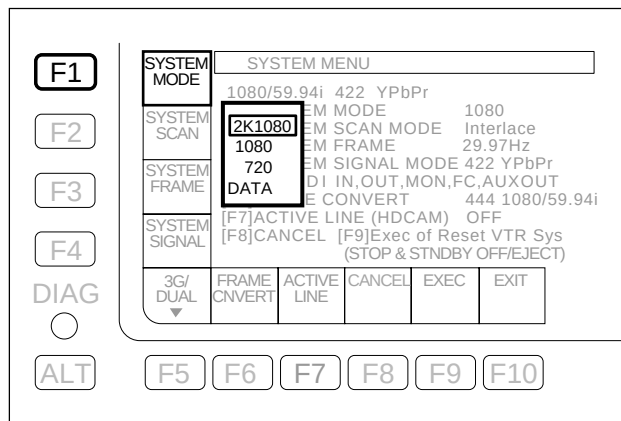
Serial No. 10001 to 12000



- For serial number 12001 and higher, press the **F1** (SYSTEM MODE) key several times to set 2K × 1080, 1080 × 1920, 720 × 1280, or DATA (2K/4K (DPX file) uncompressed data).

Notes

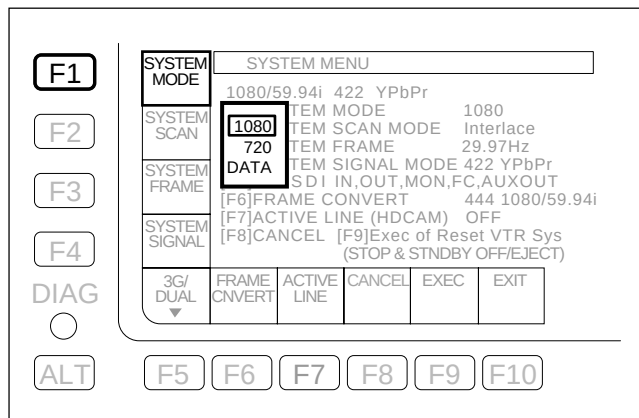
- When the option HKSR-5803HQ is not installed, 2K1080 cannot be set.
- When the option HKSR-5804 is not installed, DATA cannot be set.



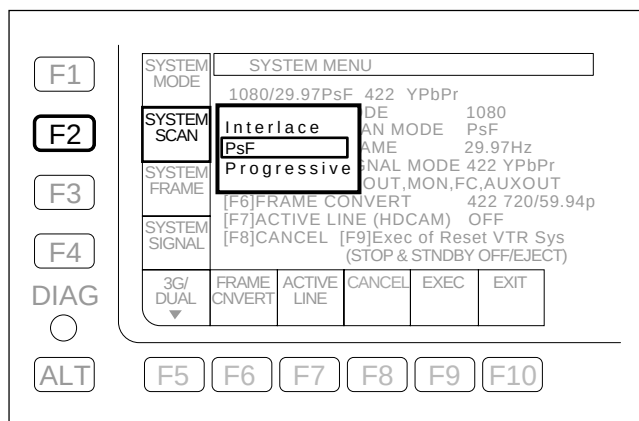
For serial numbers 10001 to 12000, press the **[F1]** (SYSTEM MODE) key several times to set 1080 × 1920, 720 × 1280, or DATA (2K/4K (DPX file) uncompressed data).

Note

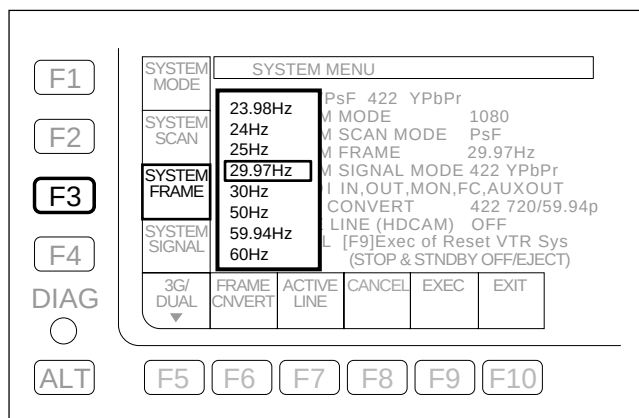
When the option HKSR-5804 is not installed, DATA cannot be set.



- Press the **[F2]** (SYSTEM SCAN) key several times for setting to the Interlace, Progressive or PsF (Progressive Segmented Frame).



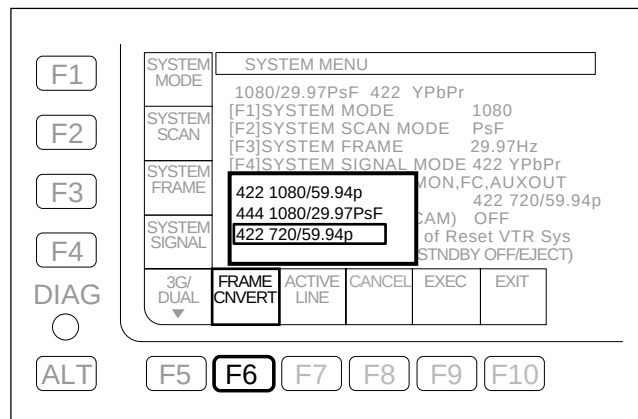
- Press the **[F3]** (SYSTEM FRAME) key several times to set the frame rate.



- Press the **[F6]** (FRAME CNVERT) key several times to set the image format of the format converter output.

Note

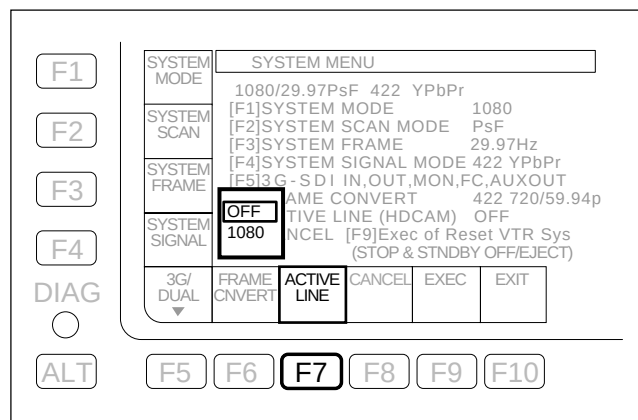
This item can be set when the option HKSR-5001 is installed.



- Press the **[F7]** (ACTIVE LINE) key several times for setting the active line of HD SDI output to 1080 or OFF.

Note

This becomes effective only when the VTR is set to 4:2:2 1080 × 1920 Interlace 29.97 or 30 frames.



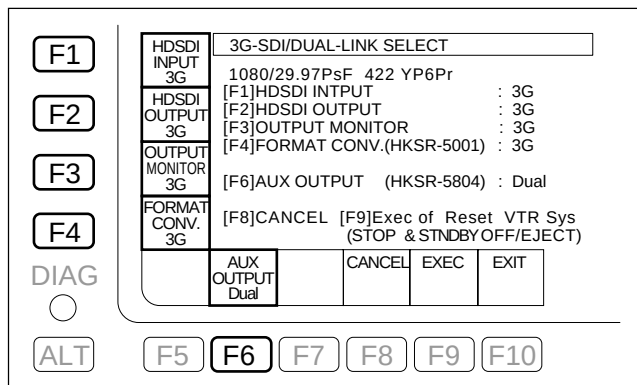
8. Press the **[F5]** key (3G/DUAL) to display the 3G-SDI/DUAL-LINK SELECT menu.
9. Press any of the following I/O keys to be set several times to set 3G or Dual (dual-link HD SDI).

- **[F1]** (HDSOI INPUT) key*³
- **[F2]** (HDSOI OUTPUT) key*³
- **[F3]** (OUTPUT MONITR) key*³
- **[F4]** (FORMAT CONV.) key*¹
- **[F5]** (AUX OUTPUT) key*²

*1: Settable only when the 3G-SDI compatible option HKSR-5001 (FC-111 board) is installed.

*2: Settable only when the option HKSR-5804 (network interface board) is installed.

*3: For serial No.10001 to 11000, the system setting is disabled.

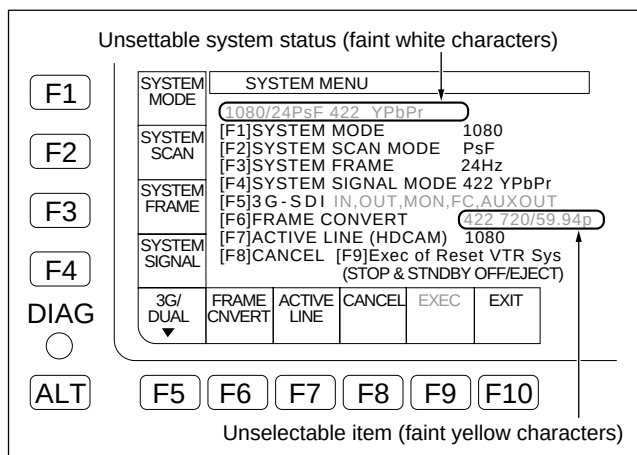


10. Check that the content of system setting performed after saving is displayed with white characters in the first line of the system menu. Check further that the items to be updated from the current system setting are displayed with yellow characters to the right of respective setting items.

Note

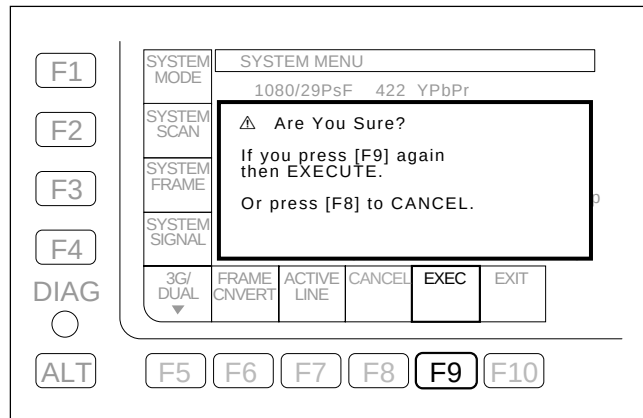
The faint white characters in the first line of the system menu mean that a combination of unsettable system items is selected.

Recheck the settings.



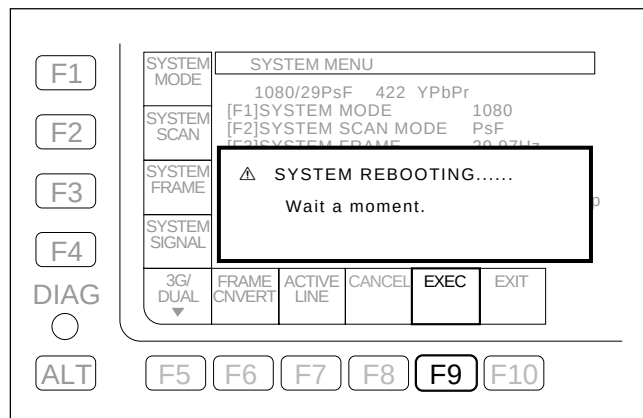
11. Press the **[F9]** (EXEC) key.

- The message “Are You Sure?” is displayed.



12. Press the **[F9]** (EXEC) key again.

- The message “SYSTEM REBOOTING.....” is displayed.
- On completing the store of the settings, the system is restarted automatically.

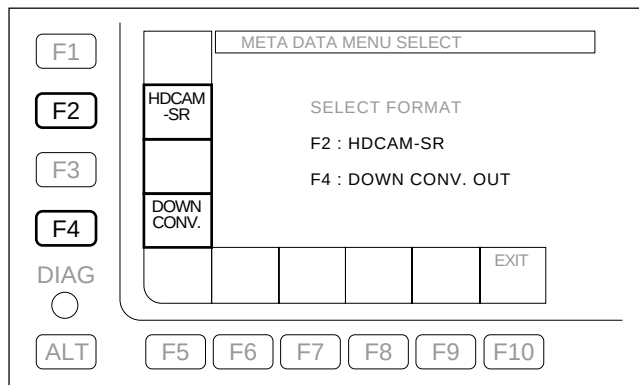


13. Check that the system is restarted, and turn OFF and ON the POWER switch.

ALT + F1 (META DATA) Key

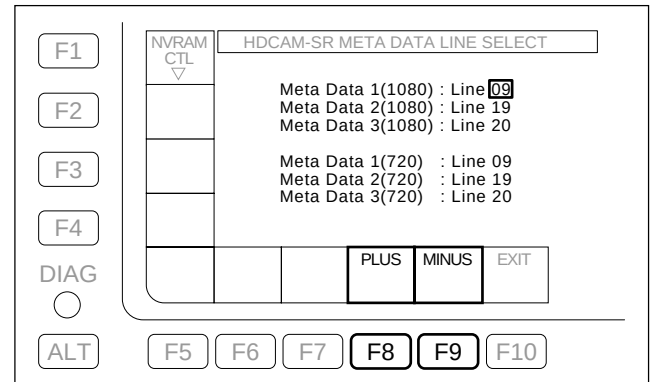
Format selection

- Press the **F2** (HDCAM-SR) key or **F4** (DOWN CONV.) key according to your system.
F2 (HDCAM-SR): The meta data line setting menu appears. Perform “M-DATA LINE Setting”.
F4 (DOWN CONV.): The meta data line setting menu of down convert output appears. Perform “Setting the meta data line of down convert output”.



In Selecting F2 (HDCAM-SR)

M-DATA LINE Setting



Select the three lines to write the meta data in the HD-CAM-SR recording.

Execution Procedure

- Move the cursor to the item to be set using the **↑/↓** keys.
- Perform the line setting using the **F8** (PLUS)/**F9** (MINUS) keys, MULTI CONTROL knob, or the **←/→** keys.

1080, 2K1080 system

Recording

Records the line that is set by Meta Data 1 (1080), Meta Data 2 (1080) or Meta Data 3 (1080) as a non-compressed line.

Note

This is not affected by Meta Data 1 (720), Meta Data 2 (720) or Meta Data 3 (720).

Playback

Plays back non-compressed lines recorded in a tape (1080 or 2K1080) and outputs them.

Note

They are not affected by Meta Data 1 (1080), Meta Data 2 (1080) or Meta Data 3 (1080) and Meta Data 1 (720), Meta Data 2 (720) or Meta Data 3 (720).

When performing 1080 to 720 conversion with HKSR-5001, the non-compressed lines are multiplexed sequentially with the HKSR-5001 720 output as non-compressed lines according to the Meta Data 1 (720)/Meta Data 2 (720)/Meta Data 3 (720) setting.

Note

They are not affected by Meta Data 1 (1080), Meta Data 2 (1080) or Meta Data 3 (1080).

720 system

Recording

Records the line that is set by Meta Data 1 (720), Meta Data 2 (720) or Meta Data 3 (720) as a non-compressed line.

Note

This is not affected by Meta Data 1 (1080), Meta Data 2 (1080) or Meta Data 3 (1080).

Playback

Plays back non-compressed lines recorded in a tape (720) and outputs them.

Note

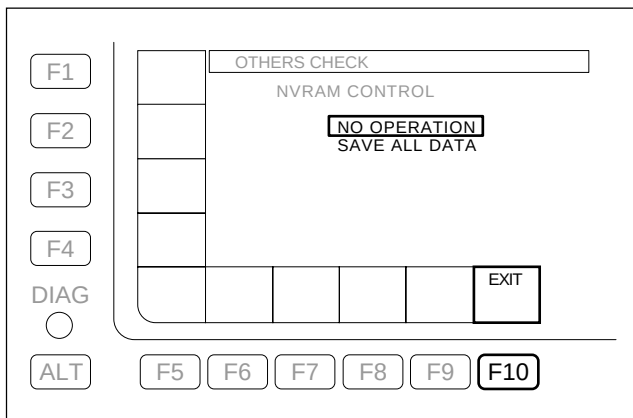
They are not affected by Meta Data 1 (1080), Meta Data 2 (1080) or Meta Data 3 (1080) and Meta Data 1 (720), Meta Data 2 (720) or Meta Data 3 (720).

When performing 720 to 1080 conversion with HKSR-5001, the non-compressed lines are multiplexed sequentially with the HKSR-5001 1080 output as non-compressed lines according to the Meta Data 1 (1080)/Meta Data 2 (1080)/Meta Data 3 (1080) setting.

Note

They are not affected by Meta Data 1 (720), Meta Data 2 (720) or Meta Data 3 (720).

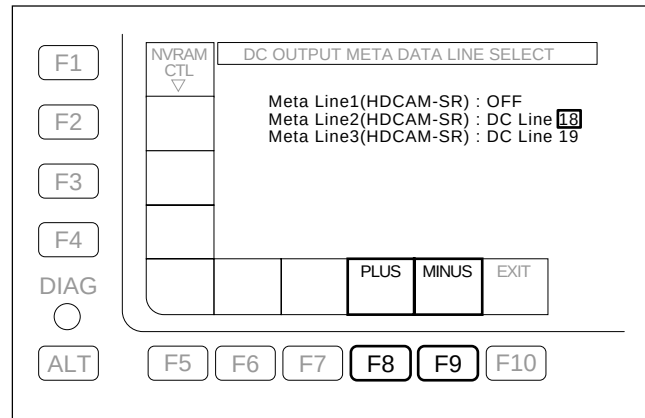
- Press the **F1** (NVRAM CTL) key.



- Select "SAVE ALL DATA" using the **↑/↓** keys, and press the **F10** (EXIT) key.
 - The changed data is written in the NV-RAM, and the menu returns to the META DATA SETUP menu.
 - When the changed data is not to be saved, select "NO OPERATION", and press the **F10** (EXIT) key.
- Turn OFF the POWER switch and turn ON again.

In selecting **F4** (DOWN CONV.)

Setting the meta data line of down convert output



Execution Procedure

- Move the cursor to the item to be set using the **↑/↓** keys.
- Perform the line setting using the **F8** (PLUS)/**F9** (MINUS) keys, MULTI CONTROL knob, or the **←/→** keys.

EE mode

The input data multiplexed with the three lines specified in "M-DATA LINE setting" is converted sequentially and is multiplexed with the SD SDI output, according to the settings of Meta Line 1 (HDCAM-SR), Meta Line 2 (HDCAM-SR), and Meta Line 3 (HDCAM-SR).

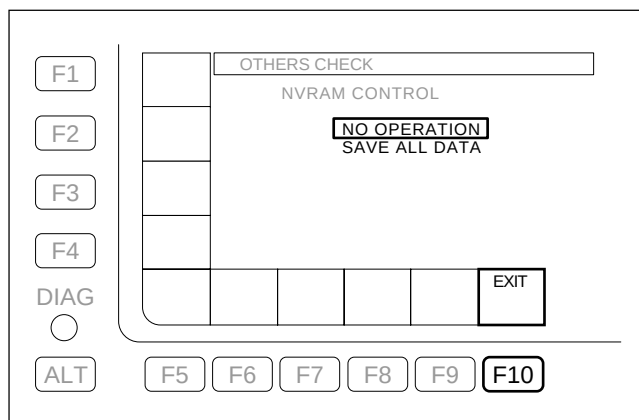
HDCAM-SR playback mode

The data of the three non-compressed lines stored on the tape is converted sequentially and is multiplexed with the SD SDI output, according to the settings of Meta Line 1 (HDCAM-SR), Meta Line 2 (HDCAM-SR), and Meta Line 3 (HDCAM-SR).

Notes

- When OFF is selected, the signal of corresponding non-compressed line is not converted or multiplexed.
- The setting range is OFF and Line 9 to 22, but the multiplexable range with NTSC output is Line 12 to 19.
For NTSC output, the signals of non-compressed lines corresponding to Line 9 to 11/Line 20 to 22 are not converted or multiplexed. (They are treated as OFF in the unit.)
- If the output line of SD VITC (set by the Setup Menu Items 611, 612, 617, 618) overlaps meta data line setting, the meta data is not multiplexed with the line.
- In case of the Pull Down conversion processing mode of HKS-R-5001, the meta data is not multiplexed with the down-conversion output.

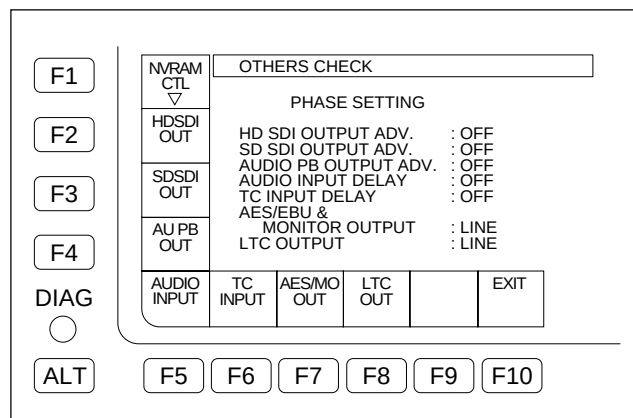
- Press the **F1** (NVRAM CTL) key.
- Select "SAVE ALL DATA" using the **↑/↓** keys, and press the **F10** (EXIT) key.
 - The changed data is written in the NV-RAM, and the menu returns to the DC OUTPUT META DATA LINE SELECT menu.
 - When the changed data is not to be saved, select "NO OPERATION", and press the **F10** (EXIT) key.



- Turn OFF the POWER switch and turn ON again.

ALT + **F2** (PHASE SET) Key

Performs phase settings for various inputs and outputs.



F1 (NVRAM CTL) key

Stores the phase data that was set with the PHASE SETTING menu in the NV-RAM.

F2 (HDSDI OUT) key

Performs phase setting for HD SDI output.

OFF: Outputs in the same phase as reference.
 -90H: Outputs 90H (HD) ahead of reference.
 (Only 1080 system is effective.)

F3 (SDSDI OUT) key

Performs phase setting for SD SDI output.

OFF: Outputs in the same phase as reference.
 -2H: Outputs 2H (SD) ahead of reference.

F4 (AU PB OUT) key

Performs phase setting for playback audio output.

OFF: Outputs in the same phase as reference.
 -1FRAME: Outputs one frame ahead of reference.

F5 (AUDIO INPUT) key

Performs phase setting for record audio input.

OFF: Records in the same phase as reference.
 +1FRAME: Records with one-frame delay of reference.

F6 (TC INPUT) key

Performs phase setting for record time code input.

OFF: Records in the same phase as reference.
 +1FRAME: Records with one-frame delay of reference.

F7 (AES/MO OUT) key

Performs phase setting for AES/EBU and MONITOR output.

LINE: Outputs in the same phase as the main line.

SD: Outputs in the same phase as SD output.

FC: Outputs in the same phase as FC output.

F8 (LTC OUT) key

Performs phase setting for LTC output.

LINE: Outputs in the same phase as the main line.

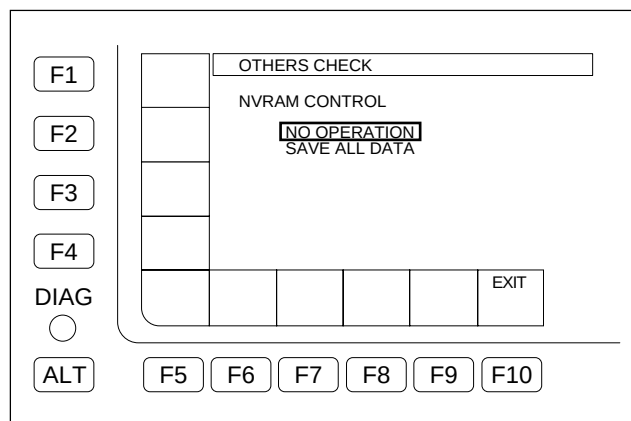
FC: Outputs in the same phase as FC output.

F9 (EXIT) key

Exits the PHASE SETTING menu and returns to the ALT OTHERS CHECK menu.

Execution Procedure

1. Change setting values for a desired item using a corresponding key (**F2** to **F8**).
The changed item is displayed in yellow.
2. Press the **F1** (NVRAM CTL) key.



3. Select “SAVE ALL DATA” with the $\uparrow/\downarrow$ key, and press the **F10** (EXIT) key.
The updated data is written in the NV-RAM, and the screen returns to the PHASE SETTING menu.

Note

If it is not necessary to save the updated data, select “NO OPERATION” and press the **F10** (EXIT) key.

4. Turn OFF the POWER switch and turn ON again.

Note

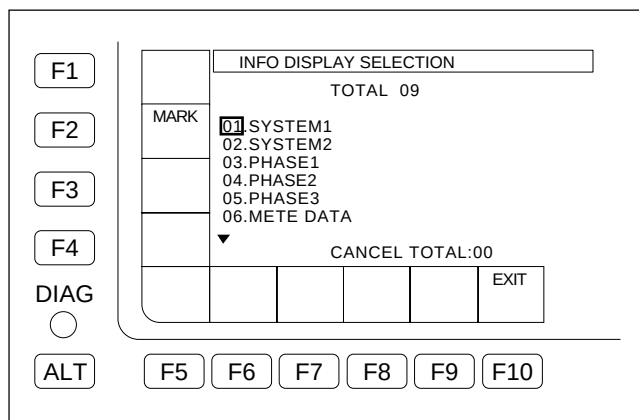
The real input/output phase status is displayed on pages 3 to 5 in the information display field.

For more information, refer to the following in the Operation Manual.

- “2-1-2 Lower Control Panel” - ”**4** Display section” - “① Information display”

[ALT] + [F4] (INFO SELECT) Key

Performs setting for displaying (or not displaying) displayable pages in the information display field.



Execution procedure

1. Select the page you do not want to display using the **[↑]/[↓]** key or the MULTI CONTROL knob.
2. Press the **[F2]** (MARK) key.
A * mark is attached to the determined page, and the page is not displayed in the information display field.

To clear the non-display setting

Place the cursor at the non-display page and press the **[F2]** (MARK) key. The non-display setting is cleared and the * mark disappears.

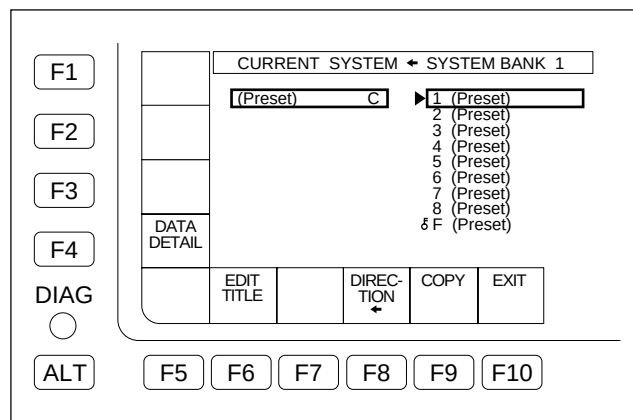
[ALT] + [F5] (SYSTEM BANK) Key

Stores and reads the system settings in/from the system bank.

Storing the settings in the system bank

Note

No data can be written in the factory setting **[F]**.



Execution Procedure

1. Press the **[F8]** (DIRECTION) key on the SYSTEM BANK menu, and choose **→** direction.
The right cursor bar blinks.
2. Position the blinking cursor bar at a bank number (1 to 8) to store the current settings using the **[↑]/[↓]** keys.
3. Press the **[F9]** (COPY) key.
A confirmation message appears.

To cancel storing

Press the **[CLR]** key while the confirmation message is displayed.

4. Press the **[F9]** (COPY) key while holding down the **[SFT]** key.
Storing the settings starts. The save origin title appears at the save destination upon completion of the saving.

To give or change a title after saving

Edit system bank titles referring to “Editing Titles of the System Bank”.

To protect the system bank after saving (protection against wrong deletion)

Position **▶** at a bank number to be protected, and press the **[ALT]** key.
Press the **[F2]** (PROTECT) key to light up a key mark to the left of the bank number.

- Press the **F10** (EXIT) key several times to return to the HOME menu.

Reading the settings from the system bank

Note

No data can be read from the system bank in the standby mode.

Confirm that the standby mode is set to off before reading data.

Execution Procedure

- Press the **F8** (DIRECTION) key on the SYSTEM BANK menu, and choose ← direction.
The left cursor bar blinks.
- Position the lighting cursor bar at a bank number (1 to 8) for reading with the **↑/↓** keys.
- Press the **F9** (COPY) key.
A confirmation message appears.

To cancel reading

Press the **CLR** key on the confirmation message is displayed.

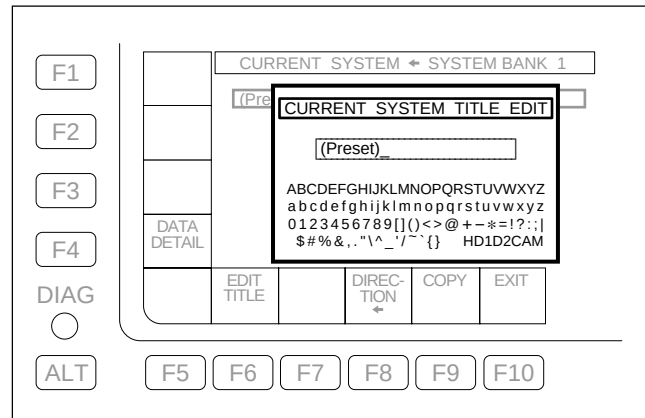
- Press the **F9** (COPY) key while holding down the **SFT** key.
Upon completion of writing the setting to the current system settings, the system is reset with a beep and the unit restarts.
After the unit restarts, the title of the read bank number appears at the left item **C**.

Note

If the system settings are updated after reading, the title displayed at **C** remains unchanged.

- Press the **F10** (EXIT) key several times to return to the HOME menu.

Editing Titles of the System Bank



Execution Procedure

- Press the **F6** (EDIT TITLE) key.
A window for editing text opens.
- Type characters.
For typing characters, refer to 4-1-6 of the operation manual.
- Press the **F10** (SAVE/EXIT) key.
The entered title is fixed.

Checking Saved System Bank Data in Detail

F1	<CURRENT SYSTEM> (Preset)				
F2	SYSTEM : 1080 59.94i 422 YPbPr				
F3	FC FORMAT : 444 1080 59.94i				
F4	ACTIVE LINE (HDCAM) : OFF				
DIAG	HDCAM-SR META (1080) : 10/19/20				
○	HDCAM-SR META (720) : 09/19/20				
ALT	DATA DETAIL	F4 : NEXT PAGE			
	EDIT TITLE	DIREC- TION	COPY	EXIT	
	F5	F6	F7	F8	F9
	F10				

Execution Procedure

- Press the **F4** (DATA DETAIL) key to display details of the selected system bank data.
Setting items different from the current system settings of the unit are displayed with yellow characters.
Further, setting items that cannot be loaded to the current system settings due to options are displayed with red characters.
Note
The system bank data including setting item with red characters cannot be loaded to the current system settings, but can be copied (between Memory Stick and system bank of the unit).
- Press the **F4** (DATA DETAIL) key continuously to display further detailed data and to return to the SYSTEM BANK menu or SYSTEM CARD BANK menu.

Compatibility of System Bank Data

The data saved in a Memory Stick on the unit is also available for other SRW-5800 and SRW-5100.
However, the data cannot be loaded to the current settings of another unit in some cases due to options or other reasons.

If the data cannot be read, check the details of the system bank data of the unit from which the data is read.

Note

The data is not available for SRW-5000 and SRW-5500.

ALT + **F6** (SYSTEM CARD) Key

Stores and reads the system settings in/from a Memory Stick.

Loading the settings from the system bank to a Memory Stick

F1	FORMAT CARD					SYS CARD BANK 1 ← CURRENT SYSTEM				
F2	(Preset) 1					1 (Preset)				
F3	(Preset) 2					2 (Preset)				
F4	(Preset) 3					3 (Preset)				
DIAG	(Preset) 4					4 (Preset)				
○	(Preset) 5					5 (Preset)				
ALT	(Preset) 6					6 (Preset)				
	(Preset) 7					7 (Preset)				
	(Preset) 8					8 (Preset)				
	DATA DETAIL					5 F (Preset)				
	EDIT TITLE	SELECT ALL	DIREC- TION ←	COPY	EXIT					
	F5	F6	F7	F8	F9	F10				

Notes

- No Memory Stick can be used unless it is formatted by the unit.
Format a Memory Stick to be used before storing the system settings.
- When a Memory Stick is formatted, its data is cleared completely.

- Press the **F1** (FORMAT CARD) key with the SYSTEM CARD BANK menu.
A confirmation message appears.

To cancel formatting

Press the **CLR** key while the confirmation message is displayed.

- Press the **F1** (FORMAT CARD) key while holding down the **SFT** key.
Formatting the Memory Stick starts and a directory is created.

Execution Procedure

1. Insert a Memory Stick into the slot of the unit, and display the SYSTEM CARD BANK menu.
2. Press the **[F8]** (DIRECTION) key with the SYSTEM CARD BANK menu, and choose **←** direction.
The left cursor bar blinks.
3. Press the **[→]** key to move **▶** to the right (unit data side), and position the lighting cursor bar at the item to be stored in a Memory Stick using the **[↑]/[↓]** keys.

To store current system settings in a Memory Stick

Position the lighting cursor bar at the item **[C]**.

To store eight pieces of system bank data collectively in a Memory Stick

Press the **[F7]** (SELECT ALL) key.

Note

If protected bank number exists in the Memory Stick, the **[F7]** (SELECT ALL) key cannot be selected.

4. Press the **[←]** key to move **▶** to the left (Memory Stick side), and position the blinking cursor bar at the bank number of the save destination (system bank of Memory Stick) using the **[↑]/[↓]** keys.
5. Press the **[F9]** (COPY) key.
A confirmation message appears.

To cancel storing

Press the **[CLR]** key while the confirmation message is displayed.

6. Press the **[F9]** (COPY) key while holding down the **[SFT]** key.
Storing the settings starts. The title of the save origin appears at the save destination (Memory Stick side) upon completion of the storing.

To give or change a title after saving

Edit system bank titles referring to “Editing Titles of the System Bank”.

To protect the system bank after saving (protection against wrong deletion)

Position **▶** at a bank number to be protected, and press the **[ALT]** key.

Press the **[F2]** (PROTECT) key to light up a key mark to the left of the bank number.

7. Press the **[F10]** (EXIT) key several times to return to the HOME menu.

Loading the settings from Memory Stick to the system bank

Note

When updating the current system settings to those stored in a Memory Stick, eject the tape and confirm that the standby mode is set to off before reading the data.

Execution Procedure

1. Insert the Memory Stick storing the data to be loaded into the slot, and display the SYSTEM CARD BANK menu.
2. Press the **[F8]** (DIRECTION) key with the SYSTEM CARD BANK menu, and choose **→** direction.
The right cursor bar blinks.
3. Press the **[←]** key to move **▶** to the left (Memory Stick side), and position the lighting cursor bar at the bank number of the save origin (system bank of Memory Stick) using the **[↑]/[↓]** keys.

To collectively read eight pieces of system bank data stored in a Memory Stick

Press the **[F7]** (SELECT ALL) key.

Note

If any protected bank number exists in the system bank, the **[F7]** (SELECT ALL) key cannot be selected.

4. Press the **[→]** key to move **▶** to the right (unit data side), and position the blinking cursor bar at the bank number of the save origin (unit system bank) using the **[↑]/[↓]** keys.

To update the current system settings

Position the blinking cursor bar at the item **[C]**.

5. Press the **[F9]** (COPY) key.
A confirmation message appears.

To cancel reading

Press the **[CLR]** key while the confirmation message is displayed.

6. Press the **F9** (COPY) key while holding down the **SFT** key.

Reading the settings starts, and the title of the save origin appears at the save destination (unit data side) upon completion of the reading.

To update the current system settings

Upon completion of writing the setting to the current system settings, the system is reset with a beep and the unit restarts.

After the unit restarts, the title of the read bank number appears at the right item **C**.

7. Press the **F10** (EXIT) key several times to return to the HOME menu.

Editing Titles of the System Bank

Refer to **ALT** + **F5** (SYSTEM BANK) key.

Checking Saved System Bank Data in Detail

Refer to **ALT** + **F5** (SYSTEM BANK) key.

Compatibility of System Bank Data

Refer to **ALT** + **F5** (SYSTEM BANK) key.

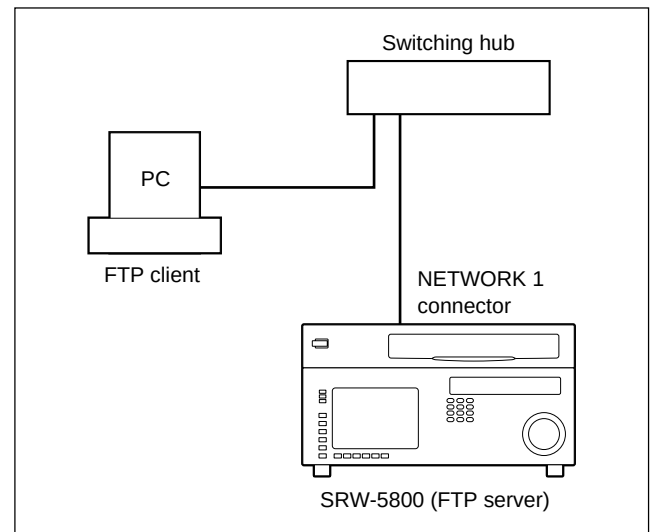
ALT + **F7** (SYSTEM NETWRK) Key

Saves system settings in and loads system settings from the FTP server (this unit) using a network.

1. Setup of network

When a network has already been set up, this procedure is not necessary.

- (1) Connect the unit (FTP server) to the FTP client (PC) as shown in the figure below.



- (2) Set the IP address, subnet mask, and default gateway on the NETWORK1 SETUP menu. (Refer to Section 3-3-9.)

2. Storing and loading system settings on the FTP client (PC)

- Connect the FTP client to the FTP server (this unit).
Use the following user name and password for connection to the FTP server.
User name: srw5800
Password: srw5800
- Store the system settings file “srw5800sysbank.dat” in the VTRBANK folder of the FTP server (this unit) in the FTP client (PC) or load the system settings file from the FTP client (PC) to the VTRBANK folder of the FTP server.

3. Displaying NETWORK SYSTEM BANK menu

- Press the DIAG button while pressing the **[SFT]** (SHIFT) key with the HOME menu.
- Press the **[F8]** (MAINT EXEC) key while pressing the **[SFT]** (SHIFT) key.
- Press the **[F9]** (OTHERS CHECK) key.
- Press the **[ALT]** key.
- Press the **[F7]** (SYSTEM NETWRK) key to display the NETWORK SYSTEM BANK menu.

Window Description

The right item shows the data of the unit, **[C]** shows current settings, 1 to 8 show system bank data, and **[F]** shows factory settings.

The left item shows FTP server (this unit) data, and 1 to 8 show system bank data of the FTP server (this unit).

The item of the lighting cursor bar shows the save origin, and the item of the blinking cursor bar shows the save destination.

► shows an item for title editing, etc.

Use the **[←]**/**[→]**/**[↑]**/**[↓]** keys to choose the item pointed by ►.

4. Formatting the VTRBANK folder

Notes

- If the system settings file “srw5800sysbank.dat” is not found in the VTRBANK folder of the FTP server (this unit), a message “NO NETWORK DATA” appears on the FTP server.
Exit the NETWORK SYSTEM BANK menu and copy the system settings file “srw5800sysbank.dat” to the VTRBANK folder of the FTP server (this unit) or format the VTRBANK folder.
- Formatting the VTRBANK folder deletes existing files and creates a default file.
- All files in the VTRBANK folder are deleted in the power-on startup process.

- Press the **[F1]** (FORMAT DATA) key with the NETWORK SYSTEM BANK menu.
A confirmation message appears.

To cancel formatting

Press the **[CLR]** (CLEAR) key while the confirmation message is displayed.

- Press the **[F1]** (FORMAT DATA) key while pressing the **[SFT]** (SHIFT) key.
Formatting the VTRBANK folder starts and a default file is created in the VTRBANK folder.

5. Loading the settings from the system bank to the FTP server (this unit)

- Display the NETWORK SYSTEM BANK menu.
- Press the **[F8]** (DIRECTION) key with the NETWORK SYSTEM BANK menu, and choose ← direction.
The left cursor bar blinks.
- Press the **[→]** key to move ► to the right, and position the lighting cursor bar at the item to be stored in the FTP server (this unit) using the **[↑]**/**[↓]** keys.

To store current system settings in the FTP server (this unit)

Position the lighting cursor bar at the item **[C]**.

To store eight pieces of system bank data collectively in the FTP server (this unit)

Press the **[F7]** (SELECT ALL) key.

Note

If any protected bank number exists in the FTP server (this unit), the **[F7]** (SELECT ALL) key cannot be selected.

- (4) Press the **←** key to move ► to the left, and position the blinking cursor bar at the bank number of the save destination using the **↑**/**↓** keys.

- (5) Press the **F9** (COPY) key.
A confirmation message appears.

To cancel storing

Press the **CLR** (CLEAR) key while the confirmation message is displayed.

- (6) Press the **F9** (COPY) key while pressing the **SFT** (SHIFT) key.
Storing the settings starts. The title of the save origin appears at the save destination upon completion of the storing.

To give or change a title after saving

Edit system bank titles referring to **ALT** + **F5** (SYSTEM BANK) key of “OTHERS CHECK Menu in Section 3-3-9.”

To protect the system bank after saving (protection against wrong deletion)

Position ► at a bank number to be protected, and press the **ALT** key.
Press the **F2** (PROTECT) key to light up a key mark to the left of the bank number.

- (7) Press the **F10** (EXIT) key several times to return to the HOME menu.

6. Loading the settings from the FTP server (this unit) to the system bank

Note

When updating the current system settings to those stored in the FTP server (this unit), eject the tape and confirm that the standby mode is set to off before reading the data.

- (1) Display the NETWORK SYSTEM BANK menu.
(2) Press the **F8** (DIRECTION) key with the NETWORK SYSTEM BANK menu, and choose → direction.
The right cursor bar blinks.
(3) Press the **←** key to move ► to the left, and position the lighting cursor bar at the bank number of the save origin using the **↑**/**↓** keys.

To collectively read eight pieces of system bank data stored in the FTP server

Press the **F7** (SELECT ALL) key.

Note

If any protected bank number exists in the system bank of the save origin, the **F7** (SELECT ALL) key cannot be selected.

- (4) Press the **→** key to move ► to the right, and position the blinking cursor bar at the bank number of the save origin using the **↑**/**↓** keys.

To update the current system settings

Position the blinking cursor bar at the item **C**.

- (5) Press the **F9** (COPY) key.
A confirmation message appears.

To cancel reading

Press the **CLR** (CLEAR) key while the confirmation message is displayed.

- (6) Press the **F9** (COPY) key while pressing the **SFT** (SHIFT) key.
Reading the settings starts, and the title of the save origin appears at the save destination upon completion of the reading.

To update the current system settings

Upon completion of writing the setting to the current system settings, the system is reset with a beep and the unit restarts.

After the unit restarts, the title of the read bank number appears at the current system settings **C**.

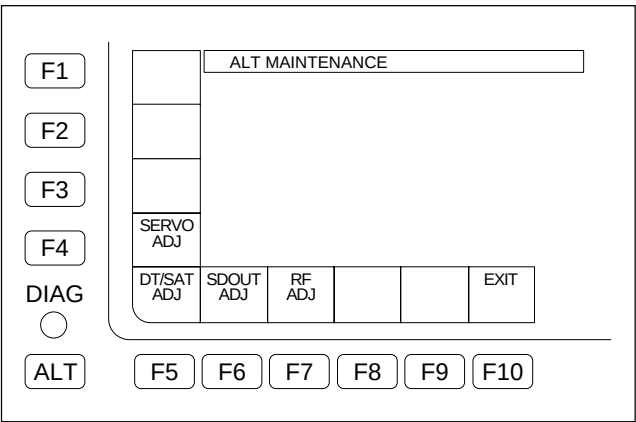
- (7) Press the **F10** (EXIT) key several times to return to the HOME menu.

3-4. ALT MAINTENANCE Menu

3-4-1. Overview

The ALT MAINTENANCE menu is mainly used for adjustments of this unit.

On the MAINTENANCE menu, press the **[ALT]** key. The ALT MAINTENANCE menu is displayed.



[F4] (SERVO ADJ) Key

Performs the servo system adjustment .
(Refer to Section 3-4-2.)

[F5] (DT/SAT ADJ) Key

Performs the DT system and SAT operation adjustments.
(Refer to Section 3-4-3.)
SAT: Supplementary Auto Tracking

[F6] (SDOUT ADJ) Key

Performs the setting for the electrical adjustment of the down converter. (Refer to Section 3-4-4.)

[F7] (RF ADJ) Key

Performs the RF system adjustment.
(Refer to Section 3-4-5.)

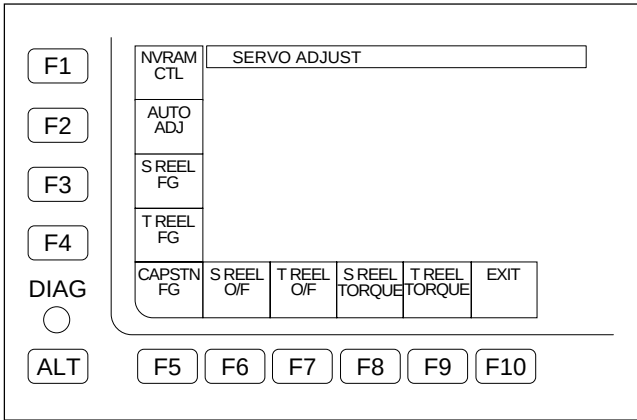
[F10] (EXIT) Key

Exits the ALT MAINTENANCE menu and returns to the MAINTENANCE menu.

3-4-2. SERVO ADJUST Menu

The SERVO ADJUST menu is used to adjust the servo system of this unit.

To display the SERVO ADJUST menu, press the **[F4]** (SERVO ADJ) key on the ALT MAINTENANCE menu.



1. SERVO ADJUST Menu

[F1] (NVRAM CTL) Key

Saves the servo system data adjusted in the SERVO ADJUST menu onto the NV-RAM.

[F2] (AUTO ADJ) Key

Performs all the adjustments except the RF switching position adjustment.

[F3] (S REEL FG) Key

Performs the S reel FG duty adjustment.

[F4] (T REEL FG) Key

Performs the T reel FG duty adjustment.

[F5] (CAPSTN FG) Key

Performs the capstan FG duty adjustment.

[F6] (S REEL O/F) Key

Performs the S reel offset/friction adjustment.

[F7] (T REEL O/F) Key

Performs the T reel offset/friction adjustment.

[F8] (S REEL TORQUE) Key

Performs the S reel torque adjustment.

[F9] (T REEL TORQUE) Key

Performs the T reel torque adjustment.

F10 (EXIT) Key

Exits the SERVO ADJUST menu and returns to the ALT MAINTENANCE menu.

F1 (NVRAM CTL) Key

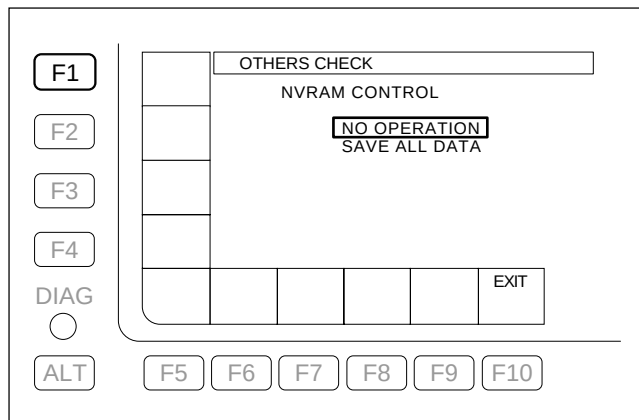
Saves the servo system data adjusted in the SERVO ADJUST menu onto the NV-RAM.

Notes

- If the automatic adjustment is abnormal (if “Auto Adjust Failure” is displayed), do not save the adjusted data.
- If the adjusted data is not saved with this menu, the data returns to the previous data when the unit is powered OFF.

Execution Procedure

1. On the SERVO ADJUST menu, press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.



2. Select an operation for the adjusted data, using **↑/↓** key.
NO OPERATION: Performs no operation.
SAVE ALL DATA: Saves adjusted data on the NV-RAM. Normally select this operation.
3. Press the **F10** (EXIT) key to save the adjusted data to the NV-RAM.
 - When the saving of the adjusted data is completed, the menu returns to the SERVO ADJUST menu.
4. Turn off and then on the power.

F2 (AUTO ADJ) Key

Performs all the adjustments except the RF switching position adjustment in the following order continuously.

Capstan FG duty adjustment
S reel FG duty adjustment
T reel FG duty adjustment
S/T reel offset/friction adjustments
S/T reel torque adjustments
Capstan QPL gain adjustment
T reel QPL gain adjustment
S/T tension offset adjustments

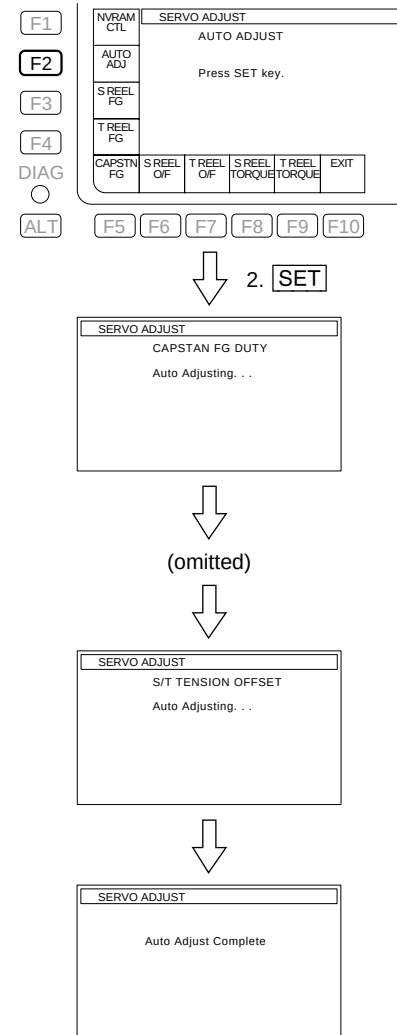
Execution Procedure

1. On the SERVO ADJUST menu, press the **F2** (AUTO ADJ) key to display the AUTO ADJUST menu.
2. Press the **SET** key to start the automatic adjustments. (About 3 minutes)
 - The adjustment menu name and the message “Auto Adjusting...” is displayed during each adjustment.
 - When each adjustment is completed normally, the message “Auto Adjust Complete” is displayed for a moment, and the next adjustment starts.

Note

If “Auto Adjust Failure” is displayed, refer to “For Automatic Adjustment Failure” on page 3-90.

4. Confirm the result of the adjustments.
 - When the adjustments are completed normally, the message “Auto Adjust Complete” is displayed.
5. To save the adjusted data, press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu, and execute “SAVE ALL DATA”.
6. Turn off and then on the power.

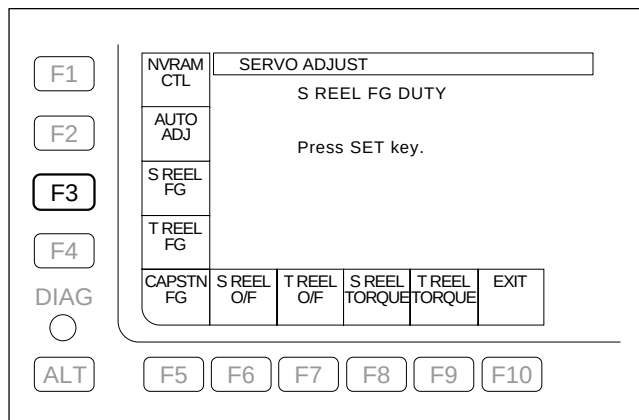


- F3 (S REEL FG) Key**
- F4 (T REEL FG) Key**
- F5 (CAPSTN FG) Key**
- F6 (S REEL O/F) Key**
- F7 (T REEL O/F) Key**
- F8 (S REEL TORQUE) Key**
- F9 (T REEL TORQUE) Key**

These are the menus for the servo system automatic adjustments.

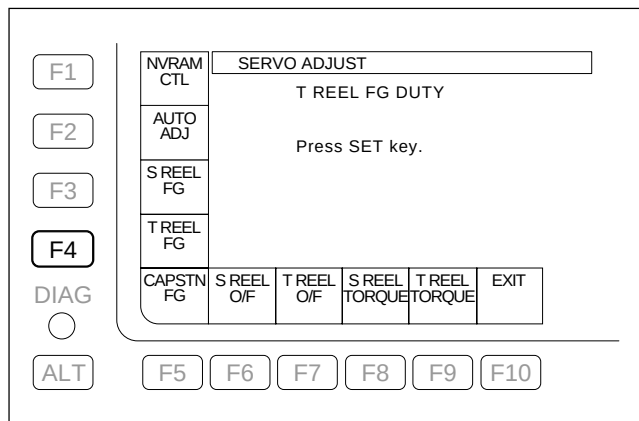
F3 (S REEL FG) Key

Performs the S reel FG duty adjustment.



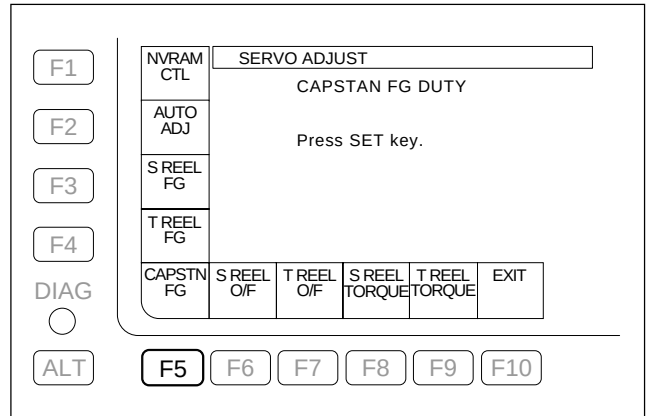
F4 (T REEL FG) Key

Performs the T reel FG duty adjustment.



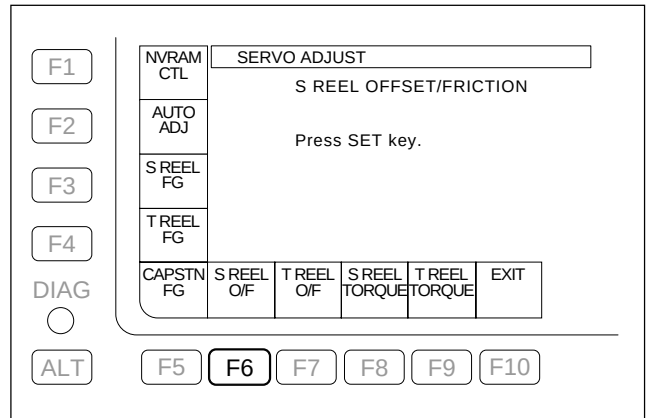
F5 (CAPSTN FG) Key

Performs the capstan FG duty adjustment.



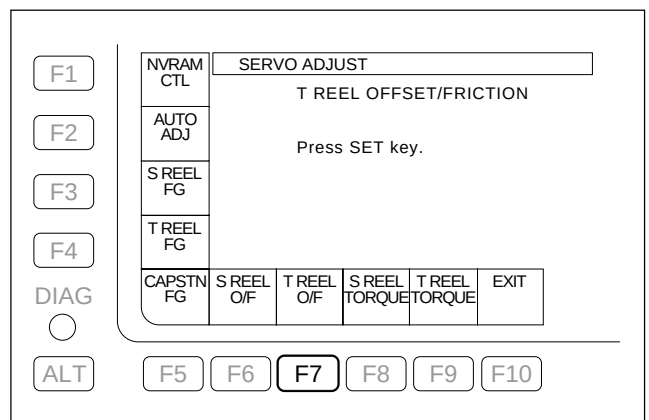
F6 (S REEL O/F) Key

Performs the S reel offset/friction adjustment.



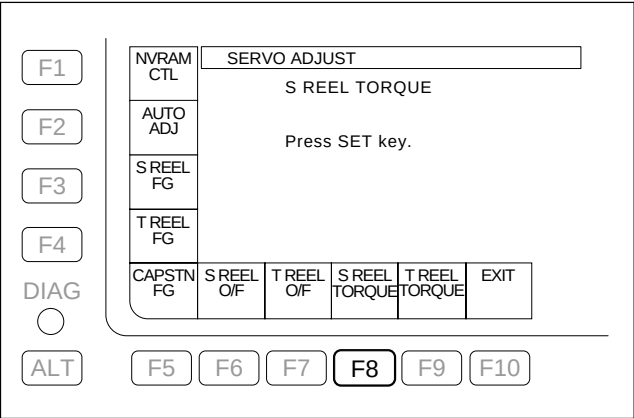
F7 (T REEL O/F) Key

Performs the T reel offset/friction adjustment.



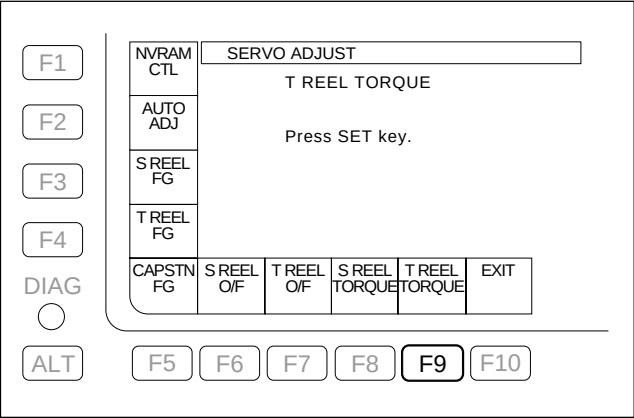
F8 (S REEL TORQUE) Key

Performs the S reel torque adjustment.



F9 (T REEL TORQUE) Key

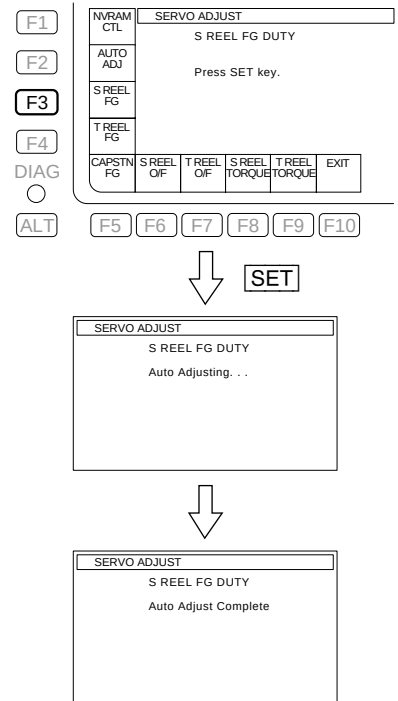
Performs the T reel torque adjustment.



Execution Procedure

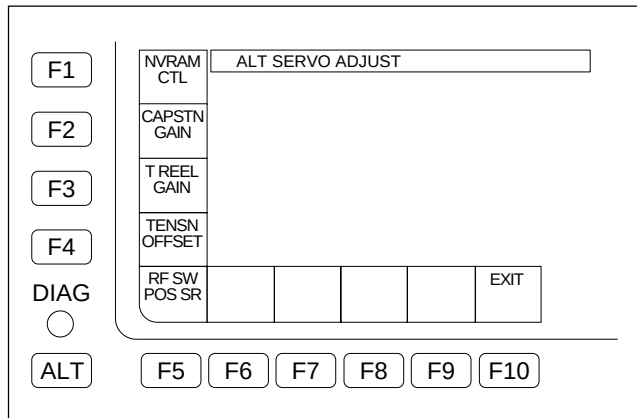
The following procedure describes the adjustment for the S REEL FG DUTY menu. Adjust the other menus using the same procedure.

1. On the SERVO ADJUST menu, press the **F3** (S REEL FG) key to display the S REEL FG DUTY menu.
 2. press the **SET** key.
 - Pressing **SET** key starts the automatic adjustment.
 - F3** to **F5**: About 15 seconds
 - F6** to **F9**: About 20 seconds
 - The message “Auto Adjusting...” is displayed during adjustment.
 3. Confirm the result of the adjustment.
 - When the adjustment is completed normally, the message “Auto Adjust Complete” is displayed.
- Note**
- If “Auto Adjust Failure” is displayed, refer to “For Automatic Adjustment Failure” on page 3-90.
4. To save the adjusted data, press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu, and execute “SAVE ALL DATA”.
 5. Turn off and then on the power.



2. ALT SERVO ADJUST Menu

To display the ALT SERVO ADJUST menu, press **ALT** key on the SERVO ADJUST menu.



F1 (NVRAM CTL) Key

Saves the servo system data adjusted in the ALT SERVO ADJUST menu onto the NV-RAM.

F2 (CAPSTN GAIN) Key

Performs the capstan QPL gain adjustment.

F3 (T REEL GAIN) Key

Performs the T reel QPL gain adjustment.

F4 (TENSN OFFSET) Key

Performs the S/T tension offset adjustments.

F5 (RF SW POS SR) Key

Performs the RF switching position adjustment in HDCAM SR format.

F10 (EXIT) Key

Exits the ALT SERVO ADJUST menu and returns to the ALT MAINTENANCE menu.

F1 (NVRAM CTL) Key

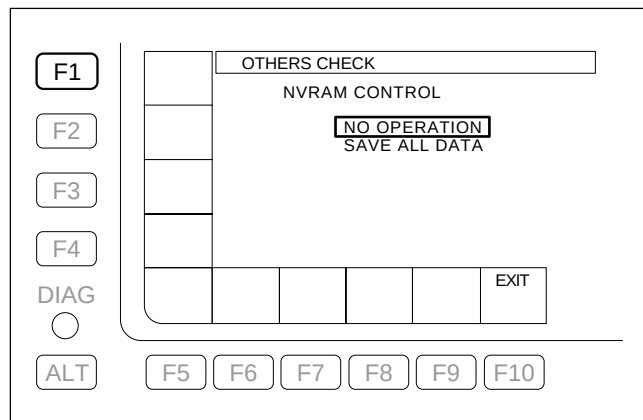
Saves servo system data adjusted in the ALT SERVO ADJUST menu onto the NV-RAM.

Notes

- If the automatic adjustment is abnormal (if “Auto Adjust Failure” is displayed), do not save the adjusted data.
- If the adjusted data is not saved in this menu, the data returns to the previous data when the unit is powered OFF.

Execution Procedure

1. On the ALT SERVO ADJUST menu, press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.



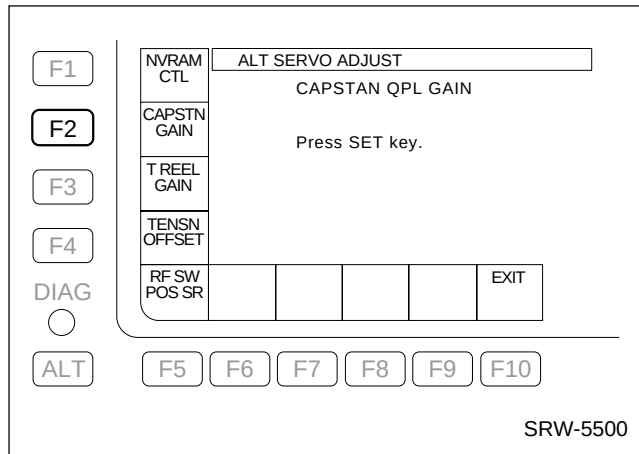
2. Select an operation for the adjusted data, using **↑**/**↓** key.
 NO OPERATION: Performs no operation.
 SAVE ALL DATA: Saves adjusted data on the NV-RAM. Normally select this operation.
3. Press the **F10** (EXIT) key to save the adjusted data to NV-RAM.
 - When the saving of the adjusted data is completed, the menu returns to the ALT SERVO ADJUST menu.
4. Turn off and then on the power.

- F2 (CAPSTN GAIN) Key**
- F3 (T REEL GAIN) Key**
- F4 (TENSN OFFSET) Key**

These are the menus for the servo system adjustments.

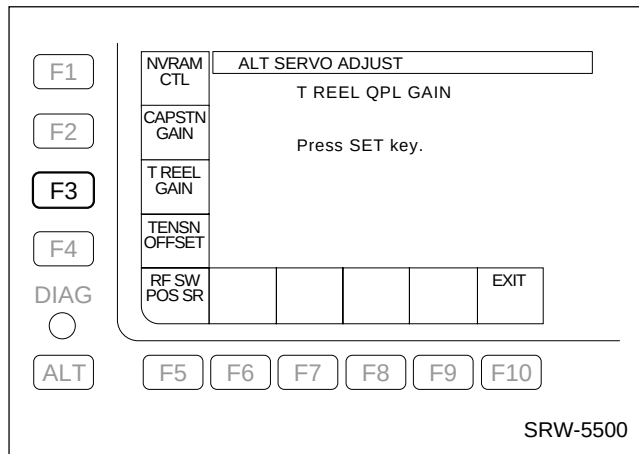
F2 (CAPSTN GAIN) Key

Performs the capstan QPL gain adjustment.



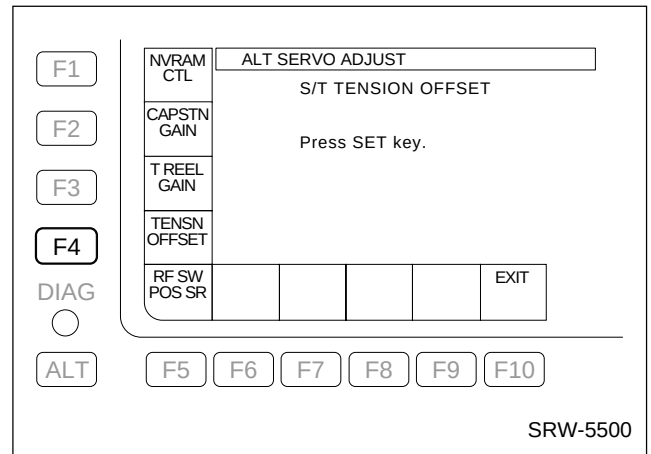
F3 (T REEL GAIN) Key

Performs the T reel QPL gain adjustment.



F4 (TENSN OFFSET) Key

Performs the S/T tension offset adjustments.



Execution Procedure

The following procedure describes the adjustment for the CAPSTAN QPL GAIN menu.

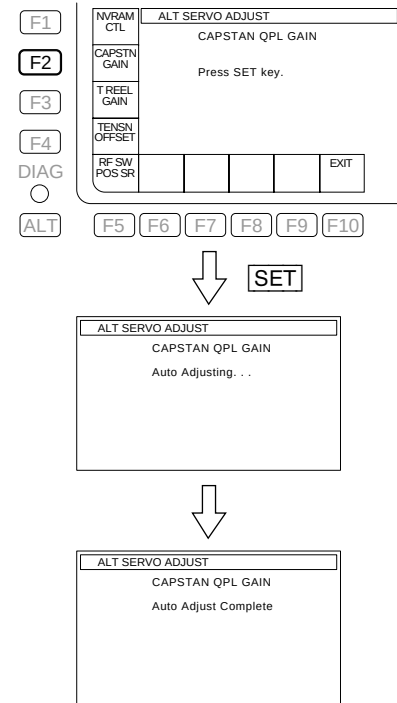
Adjust the other menus using the same procedure.

1. On the ALT SERVO ADJUST menu, press the **F2** (CAPSTN GAIN) key to display the CAPSTAN QPL GAIN menu.
2. Press the **SET** key.
 - Pressing the **SET** key starts the automatic adjustment. (About 20 seconds)
 - The message “Auto Adjusting...” is displayed during adjustment.
3. Confirm the result of the adjustment.
 - When the adjustment is completed normally, the message “Auto Adjust Complete” is displayed.

Note

If “Auto Adjust Failure” is displayed, refer to “For Automatic Adjustment Failure” on page 3-90.

4. To save the adjusted data, press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu, and execute “SAVE ALL DATA”.
5. Turn off and then on the power.



F5 (RF SW POS SR) Key

Performs the RF switching position adjustment.

Notes

- Perform this adjustment in the following system settings.
SYSTEM MODE : 1080
SYSTEM SCAN : Interlace
SYSTEM FRAME : 29.97 Hz
SYSTEM SIGNAL : 422 YPbPr
Adjustment except for the above system settings is not necessary.
However, when the unit is used in the setting other than SYSTEM FRAME 29.97 Hz, it is recommended to perform check in the setting.
- Use the alignment tape HR2-1B for the adjustment. The adjustment cannot be performed correctly with a non-specified cassette tape.
- Rewind the alignment tape to the tape beginning in advance.

Execution Procedure

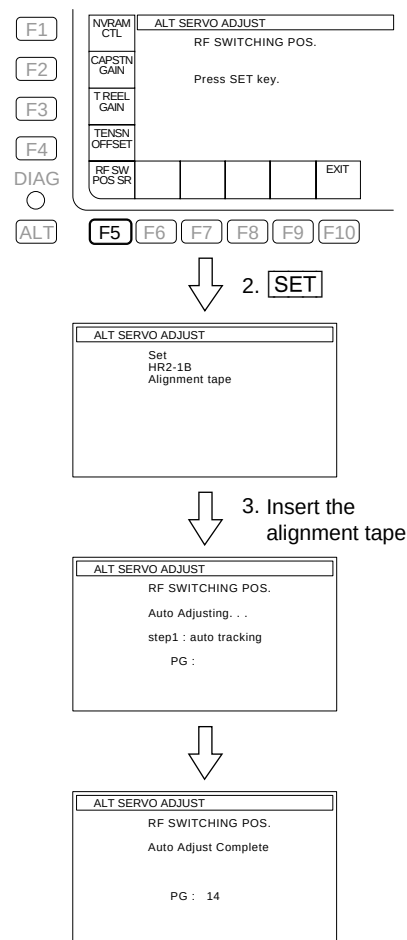
1. On the ALT SERVO ADJUST menu, press the **F5** (RF SW POS SR) key to display the RF SWITCHING POS. menu.
2. Press the **SET** key.
3. Insert the alignment tape HR2-1B rewound to the tape beginning.
 - Adjustment is executed automatically when the alignment tape is inserted. The message “Auto Adjusting...” is displayed during the adjustment.

Note

The automatic adjustment is made in the following order, and a message appears in each step.

Auto tracking (step1 : auto tracking) → Rough adjustment (step2 : rough adjustment) → Fine adjustment (step3 : fine adjustment)

4. Confirm the result of the adjustment.
 - When the adjustment is completed normally, the message “Auto Adjust Complete” is displayed, and the alignment tape is ejected automatically.
- Note**
If “Auto Adjust Failure” is displayed, refer to “For Automatic Adjustment Failure” on page 3-90.
5. To save the adjusted data, press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu, and execute “SAVE ALL DATA”.
6. Turn off and then on the power.



For Automatic Adjustment Failure

The circuit in which failure occurred can be traced to some degree by the trouble message displayed together when the message “Auto Adjust Failure” is displayed during execution of Servo System adjustment menus.

Note

The trouble message display indicates that no adjustment could be performed because the circuit described below did not operate normally. Moreover, other circuits (e.g., control signal system) in which failure actually occurred may also exist.

SERVO ADJUST Menu

F2 (AUTO ADJ)

Refer to the description as follows.

F3 (S REEL FG)

When “# S REEL FG () NG! #” is displayed:

- ⇒ Check the S reel FG amplifier circuit on the SS-102 board.
- ⇒ Check the S reel motor driver circuit on the DR-508 board.

F4 (T REEL FG)

When “# T REEL FG () NG! #” is displayed:

- ⇒ Check the T reel FG amplifier circuit on the SS-102 board.
- ⇒ Check the T reel motor driver circuit on the DR-508 board.

F5 (CAPSTN FG)

When “CAPSTAN FG AMP TROUBLE” is displayed:

- ⇒ Check the capstan FG amplifier circuit on the SS-102 board.
- ⇒ Check the capstan motor driver circuit on the DR-508 board.

F6 (S REEL O/F)

F8 (S REEL TORQUE)

When “# S REEL TROUBLE #” is displayed:

- ⇒ Execute the S reel FG duty adjustment:
F3 (S REEL FG) again.
- ⇒ Check the S reel motor driver circuit on the DR-508 board.

F7 (T REEL O/F)

F9 (T REEL TORQUE)

When “# T REEL TROUBLE #” is displayed:

- ⇒ Execute the T reel FG duty adjustment:
F4 (T REEL FG) again.
- ⇒ Check the T reel motor driver circuit on the DR-508 board.

ALT SERVO ADJUST Menu

F2 (CAPSTN GAIN)

When “CAPSTAN FG AMP TROUBLE” is displayed:

- ⇒ Check the capstan FG amplifier circuit on the SS-102 board.
- ⇒ Check the capstan motor driver circuit on the DR-508 board.

F3 (T REEL GAIN)

When “# T REEL FG () NG! #” is displayed:

- ⇒ Check the T reel FG amplifier circuit on the SS-102 board.
- ⇒ Check the T reel motor driver circuit on the DR-508 board.

F4 (TENSN OFFSET)

When “S REEL DRIVER TROUBLE” is displayed:

- ⇒ Check the S tension detection circuit on the SS-102 board.
- ⇒ Check the S reel motor driver circuit on the DR-508 board.

When “T REEL DRIVER TROUBLE” is displayed:

- ⇒ Check the T tension detection circuit on the SS-102 board.
- ⇒ Check the T reel motor driver circuit on the DR-508 board.

F5 (RF SW POS SR)

Check to see that the played back tape is the alignment tape HR2-1B.

When “# SERVO UNLOCKED NG #” is displayed:

⇒ Check the servo system. (Refer to Section 3-3-4.)

F5 (S REEL MOTOR) of the SERVO CHECK menu.

F6 (T REEL MOTOR) of the SERVO CHECK menu.

F9 (CAPSTN MOTOR) of the SERVO CHECK menu.

F1 (DRUM MOTOR) of the ALT SERVO CHECK menu.

⇒ Check the FG amplifier circuit and the driver circuit of the device considered abnormal.

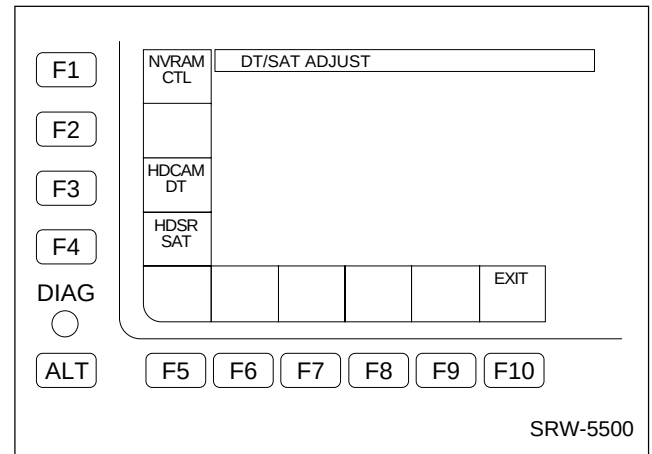
When “# SW’ POS. RANGE OVER #” is displayed:

⇒ Check that the waveform of the EQ_REC_AC_PH signal fed to the SS-102 board is same as that of ENV of the alignment tape and it is clean.

3-4-3. DT/SAT ADJUST Menu

The DT/SAT ADJUST menu is used to adjust the DT system and the SAT (Supplementary Auto Tracking) operations.

To display the DT/SAT ADJUST menu, press the **F5** (DT/SAT ADJ) key on the ALT MAINTENANCE menu.



F1 (NVRAM CTL) Key

Stores the DT/SAT system data adjusted in the DT/SAT ADJUST menu onto the NV-RAM.

F3 (HDCAM DT) Key

Performs the automatic adjustments of the DT system offset level and the gain for the HDCAM and Digital BETACAM format playback.

F4 (HDSR SAT) Key

Performs the automatic adjustment of the SAT signal playback gain in HDCAM SR format.

F10 (EXIT) Key

Exits the DT/SAT ADJUST menu and returns to the ALT MAINTENANCE menu.

F1 (NVRAM CTL) Key

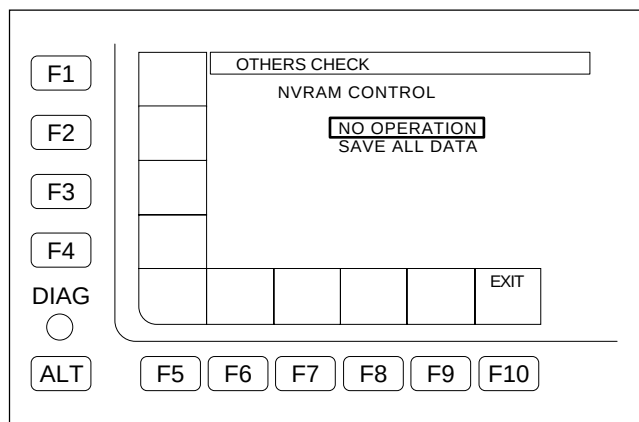
Stores the DT/SAT system data adjusted in the DT/SAT ADJUST menu onto the NV-RAM.

Notes

- If the automatic adjustment is abnormal (if “Auto Adjust Failure” is displayed), do not save the adjusted data.
- If the adjusted data is not saved in this menu, the data returns to the previous data when the power is OFF.

Execution Procedure

1. On the DT/SAT ADJUST menu, press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.



2. Select an operation for the adjusted data, using **↑**/**↓** key.
NO OPERATION: Performs no operation.
SAVE ALL DATA: Saves the adjusted data on the NV-RAM. Normally select this operation.
3. Press the **F10** (EXIT) key to save the adjusted data to the NV-RAM.
 - When the saving of the adjusted data is completed, the menu returns to the DT/SAT ADJUST menu.
4. Turn off and then on the power.

F3 (HDCAM DT) Key

Performs the automatic adjustments of the DT system offset level and the gain for the HDCAM and Digital BETACAM format playback.

Notes

- Perform this adjustment in SYSTEM FRAME 29.97 Hz. This adjustment does not need to be adjusted in other SYSTEM FRAME.
- Use the alignment tape HR5-1A for the adjustment. The adjustment cannot be performed correctly with a non-specified cassette tape.
- Cue up the alignment tape to the time code 00:10:00:00 in advance.
When using the alignment tape not located to the time code 00:10:00:00, exit the maintenance mode and cue it up. Then eject the alignment tape once.

Execution Procedure

1. On the DT/SAT ADJUST menu, press the **F3** (HDCAM DT) key to display the HDCAM DT ADJUST menu.
2. Press the **SET** key.
3. Insert the alignment tape HR5-1A located to the time code 00:10:00:00 (color-bar signal).
 - When the alignment tape is inserted, the check starts automatically. The message “Auto Adjusting...” is displayed during the adjustment.
 - After the automatic adjustment for the DT offset is completed, the automatic adjustment for the DT gain starts. (About 2 minutes)
4. Confirm the result of the adjustments.
 - When the adjustments are completed normally, the message “Auto Adjust Complete” and the adjusted value are displayed, and the alignment tape is automatically ejected.

Note

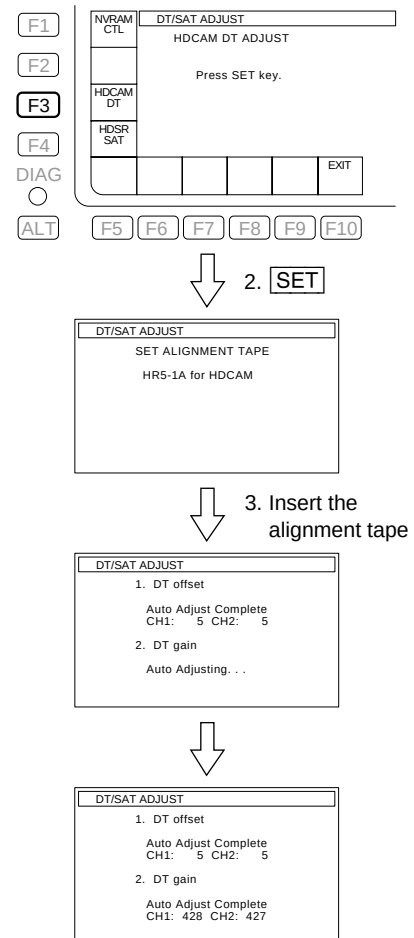
If “Auto Adjust Failure” is displayed, refer to “If automatic adjustments failed”.

5. To save the adjusted data, press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu, and execute “SAVE ALL DATA”.
6. Turn off and then on the power.

If automatic adjustments failed

If “Auto Adjust Failure” is displayed while the adjustment menu is being executed, perform the following:

1. On the DT CHECK menu, press the **F2** (HDCAM DT) key to perform the operation check for the DT head. (Refer to Section 3-3-5.)
2. When no malfunction was found in step 1, perform the adjustment again. If the automatic adjustments failed again, perform the following step 3 or 4.
3. If the DT offset adjustment failed
Check that the RF ENVELOPE signal exists at the test point TP1600/1601 on the SS-102 board.
 - If it does not: Check the EQ-102/109 board.
 - If it does: Check the SS-102 board.
4. If the DT gain adjustment failed
Check the SS-102 and DT-47 boards.



F4 (HDSR SAT) Key

Performs the automatic adjustment for the SAT signal playback gain in HDCAM SR format.

Notes

- Perform this adjustment in SYSTEM FRAME 23.98 Hz, 25 Hz, and 29.97 Hz, respectively.
- When the option HKSR-5803HQ is installed, perform this adjustment in the SYSTEM FRAME for SQ and also HQ.
- Use the alignment tape HR5-1B for the adjustment. The adjustment cannot be performed correctly with a non-specified cassette tape.
- Perform this adjustment after the RF adjustment.
- Because the adjusted data is automatically saved on the NV-RAM of the EQ-102/109 board after the automatic adjustment is completed, the saving operation is not required.
- Cue up the alignment tape to the time code 00:10:00:00 in advance.
When using the alignment tape not located to the time code 00:10:00:00, exit the maintenance mode and cue it up. Then eject the alignment tape once.

Execution Procedure

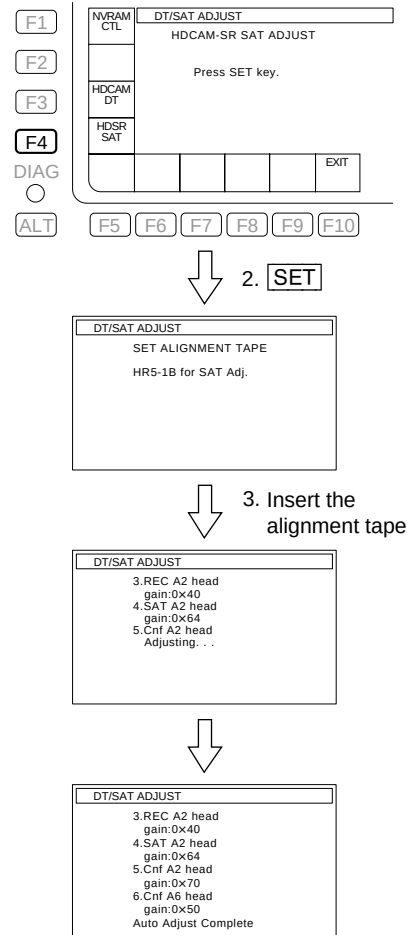
1. On the DT/SAT ADJUST menu, press the **F4** (HDSR SAT) key to display the HDCAM-SR SAT ADJUST menu.
2. Press the **SET** key, and insert the alignment tape HR5-1B located to the time code 00:10:00:00 (color-bar signal).
 - When the alignment tape is inserted, the adjustments start automatically.
 - Performs REC A2 head gain adjustment → SAT A2 head gain adjustment → CNF A2 head gain adjustment → CNF A6 head gain adjustment in order. (About 4 minutes)
3. Confirm the result of the adjustments.
 - When the adjustment is completed normally, the message “Auto Adjust Complete” is displayed, and the alignment tape is ejected automatically.

Note

If “Auto Adjust Complete” is not displayed, refer to “If automatic adjustments failed”.

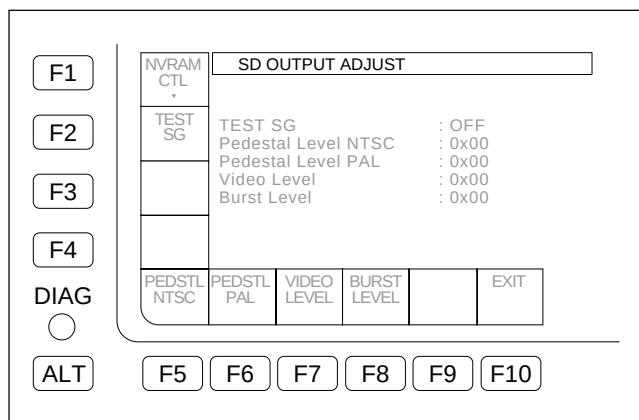
If automatic adjustments failed

1. Check if the tape reached to the end during the adjustments.
If it did not, cue up the alignment tape to the time code 00:10:00:00 (color-bar signal), and perform the adjustments again.
If normal, the adjustments are completed.
2. Check that the switches S1000-1 to 8 are all OFF on the SS-102 board, referring to Section 1-14.
If not, set all the switches to OFF, and perform the adjustments again.
If normal, the adjustments are completed.
3. Play back the alignment tape, and check that the SAT envelope signal exists at TP1200/1201 on the SS-102 board.
 - If it does not: Check the EQ-102/109 board.
 - If it does: Check if the alignment tape is abnormal (recording error or CTL variation).



3-4-4. SD OUTPUT ADJUST Menu

The SD OUTPUT ADJUST menu is used to electrical adjustment setting for the down converter output. To display the SD OUTPUT ADJUST menu, press the **F6** (SDOUT ADJ) key on the ALT MAINTENANCE menu.



F1 (NVRAM CTL) Key

Stores the down converter output adjustment data obtained with the SD OUTPUT ADJUST menu in the NV-RAM.

F2 (TEST SG) Key

Outputs the test signal (COLOR BARS) for composite output adjustment.

F5 (PEDSTL NTSC) Key

Adjusts the pedestal level of the composite (NTSC) output.

F6 (PEDSTL PAL) Key

Adjusts the pedestal level of the composite (PAL) output.

F7 (VIDEO LEVEL) Key

Adjusts the video level of the composite output.

F8 (BURST LEVEL) Key

Adjusts the SYNC output level.

F10 (EXIT) Key

Exits the SD OUTPUT ADJUST menu and returns the display to the ALT MAINTENANCE menu.

Note

When no adjustment data is stored in the NV-RAM, the adjustment data before adjustment is restored.

F1 (NVRAM CTL) Key

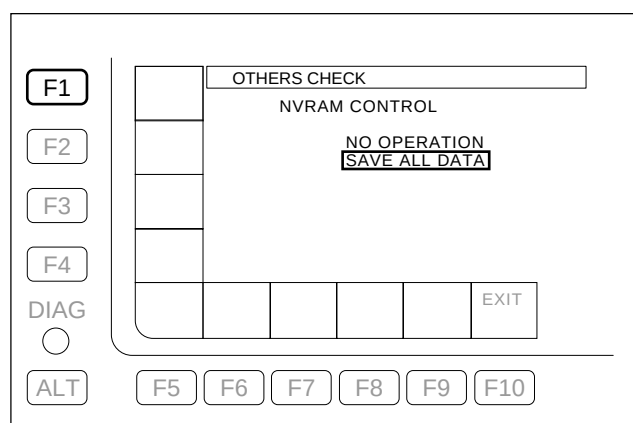
Stores the down converter output adjustment data obtained with the SD OUTPUT ADJUST menu in the NV-RAM.

Note

If the unit exits the SD OUTPUT ADJUST menu or is turned off without storing the adjustment data with this menu, the adjustment data before adjustment is restored.

Execution Procedure

1. On the SD OUTPUT ADJUST menu, press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.



2. Select an operation with the **↑**/**↓** keys.
NO OPERATION: Performs no operation.
SAVE ALL DATA: Stores the adjustment data in the NV-RAM.
Select this usually.
3. Press the **F10** (EXIT) key to store the adjustment data in the NV-RAM.
 - After the adjustment data has been stored, the SD OUTPUT ADJUST menu appears again.

F2 (TEST SG) Key

Outputs the test signal (COLOR BARS) for composite output adjustment.

Execution Procedure

On the SD OUTPUT ADJUST menu, press the **F2** (TEST SG) key several times to change the setting.

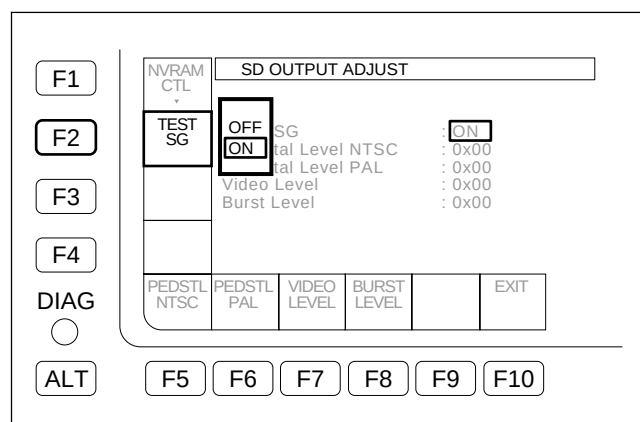
OFF: Normal state

ON: Outputs the test signal (COLOR BAS).

Note

The test signal is output to the HD SDI and SD SDI connectors, and can be recorded on the tape.

When the unit exits the SD OUTPUT ADJUST menu, this setting changes to OFF.



F5 (PEDSTL NTSC) Key

Adjusts the pedestal level of the composite (NTSC) output.

Note

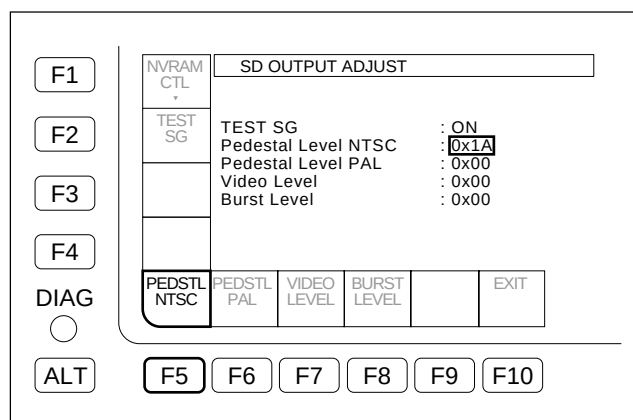
Perform this adjustment only in the 1080/59.94i mode. No adjustment is required in other modes.

Execution Procedure

1. On the SD OUTPUT ADJUST menu, press the **F5** (PEDSTL NTSC) key to reverse the display of the Pedestal Level NTSC adjustment value.
2. Turn the MULTI CONTROL knob to change the adjustment value.

Note

For details of the adjustment, refer to Section 8-6.



F6 (PEDSTL PAL) Key

Adjusts the pedestal level of the composite (PAL) output.

Note

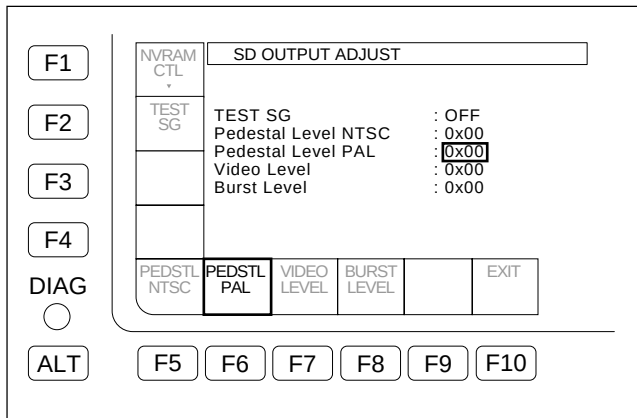
Perform this adjustment only in the 1080/50i mode. No adjustment is required in other modes.

Execution Procedure

1. On the SD OUTPUT ADJUST menu, press the **F6** (PEDSTL PAL) key to reverse the display of the Pedestal Level PAL adjustment value.
2. Turn the MULTI CONTROL knob to change the adjustment value.

Note

For details of the adjustment, refer to Section 8-6.



F7 (VIDEO LEVEL) Key

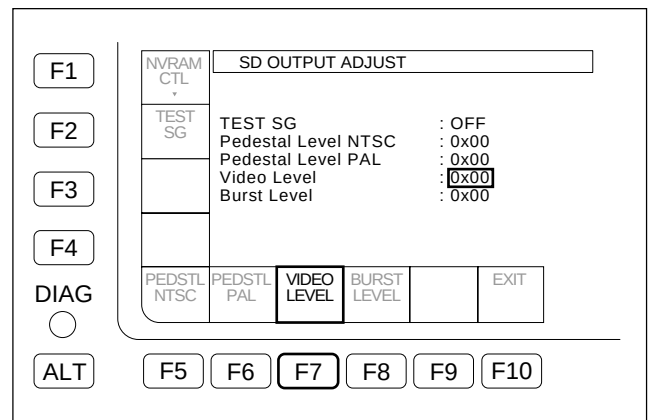
Adjusts the video level of the composite output.

Execution Procedure

1. On the SD OUTPUT ADJUST menu, press the **F7** (VIDEO LEVEL) key to reverse the display of the Video Level adjustment value.
2. Turn the MULTI CONTROL knob to change the adjustment value.

Note

For details of the adjustment, refer to Section 8-6.



F8 (BURST LEVEL) Key

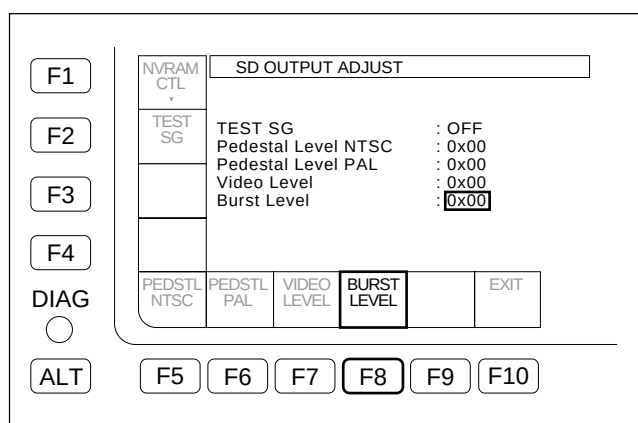
Adjusts the SYNC output level.

Execution Procedure

1. On the SD OUTPUT ADJUST menu, press the **F8** (BURST LEVEL) key to reverse the display of the Burst Level adjustment value.
2. Turn the MULTI CONTROL knob to change the adjustment value.

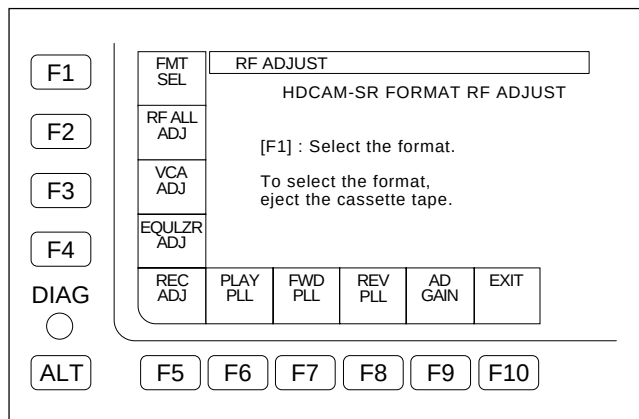
Note

For details of the adjustment, refer to Section 8-6.



3-4-5. RF ADJUST Menu

The RF ADJUST menu is used to adjust the RF system. To display the RF ADJUST menu, press the **[F7]** (RF ADJ) key on the ALT MAINTENANCE menu.



[F1] (FMT SEL) Key

Selects a format for the RF adjustment.

- Perform adjustments for the formats listed below.

Cassette	Signal	Frame rate	Alignment tape
HDCAM SR	4:2:2SQ	29.97 Hz	HR5-1B
		25 Hz	
		23.98 Hz	
	4:4:4HQ	29.97 Hz	HR5-1B
		25 Hz	
		23.98 Hz	
HDCAM	—	29.97 Hz	HR5-1B
		25 Hz	
		23.98 Hz	
Digital BETACAM	—	29.97 Hz	ZR5-1
	—	25 Hz	ZR5-1P

[F2] (RF ALL ADJ) Key

Automatically performs all the adjustments required for the RF adjustment.

Also, initializes the RF adjustment value.

[F3] (VCA ADJ) Key

Performs the playback RF level adjustment.

[F4] (EQUILZR ADJ) Key

Adjusts the frequency characteristic and phase of the playback equalizer circuit.

[F5] (REC ADJ) Key

Adjusts the recording current and recording frequency characteristic for each recording head.

- Use the blank tape erased using a tape eraser in advance or a new blank tape as a recording tape for the adjustment.

[F6] (PLAY PLL) Key

Adjusts the VCO free-running frequency of the playback PLL circuit for the PLAY mode.

[F7] (FWD PLL) Key

Adjusts the VCO free-running frequency of the playback PLL circuit for the FWD mode.

[F8] (REV PLL) Key

Adjusts the VCO free-running frequency of the playback PLL circuit for the REV mode.

[F9] (AD GAIN) Key

Adjusts the gain for the A/D conversion of the playback RF signal.

[ALT] + [F1] (TRKING TMRHLD) Key

Sets the holding time of the tracking timer.

Note

This function is factory use only. Never use this function.

[F10] (EXIT) Key

Exits the RF ADJUST menu and returns to the ALT MAINTENANCE menu.

F2 (RF ALL ADJ) Key

Automatically performs all the adjustments required for the RF adjustment, in the following order.

1. **F6** : PLAY PLL ADJ
2. **F9** : AD GAIN ADJ
3. **F3** : VCA ADJ
4. **F4** : EQULZR ADJ
5. **F9** : AD GAIN ADJ
6. **F7** : FWD PLL ADJ
7. **F8** : REV PLL ADJ
8. **F5** : REC ADJ

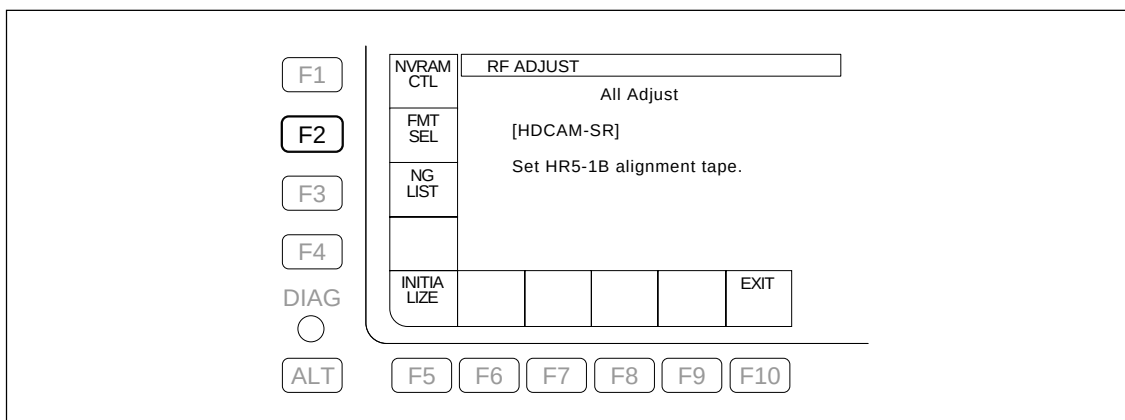
Execution Procedure

1. On the RF ADJUST menu, press the **F2** (FMT SEL) key several times to select a format to be adjusted.

Note

When a cassette tape has been inserted, eject it before selecting a format.

2. Press the **F2** (RF ALL ADJ) key to display the All Adjust menu.



- Cue up an alignment tape of the selected format to the time code 00:10:00:00, and insert it.

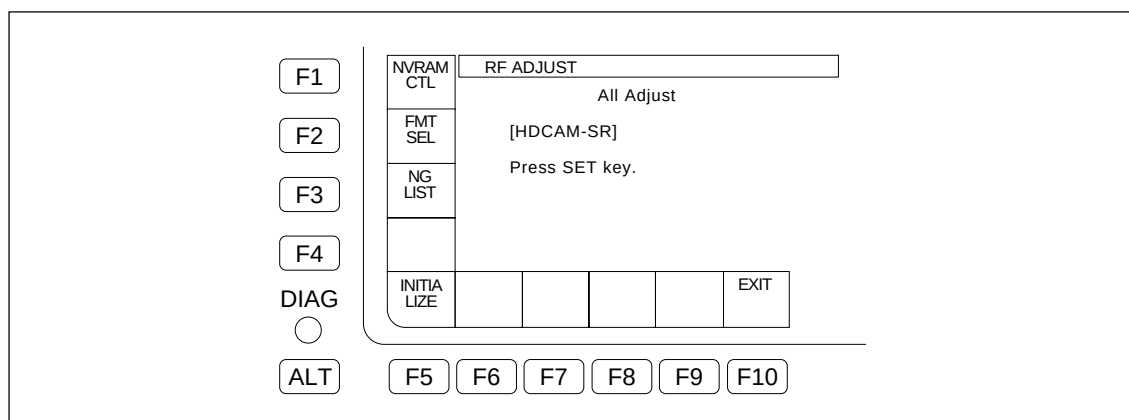
Notes

- The adjustment cannot be performed correctly with a non-specified cassette tape. Be sure to use the following alignment tapes:

Selected format	HDCAM SR	HDCAM (HKSR-5802 installed model only)	Digital BETACAM (HKSR-5802 installed model only)
Alignment tape	HR5-1B	HR5-1A	ZR5-1 (SYSTEM FRAME 29.97 Hz) ZR5-1P (SYSTEM FRAME 25 Hz)

- Pay attention to the transport start position of the tape so that the end and beginning of the tape are not detected during adjustment. If the cassette is forcibly ejected during the automatic adjustment, the adjustment is cancelled, its result is lost, and the display returns to the initial window. The minimum tape amount required for a normal automatic adjustment is shown in the following table; however, the tape amount increases or decreases if the adjustment is abnormal.

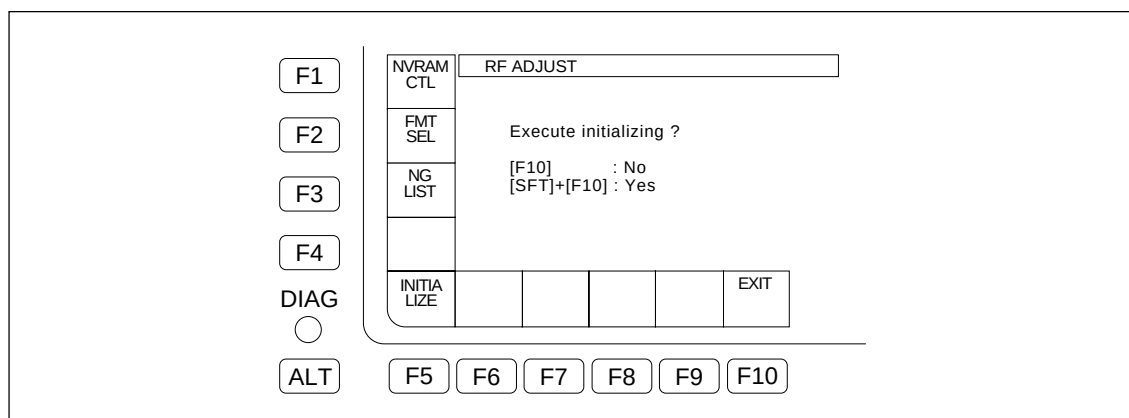
Menu	Normal adjustment time		Tape amount required (Transport mode)
All Adjust	HDCAM SR:	About 10 minutes/ALL	Adjustment time (PLAY)
	HDCAM:	About 1 minutes/ALL	Adjustment time (PLAY)
	Digital BETACAM:	About 1 minutes/ALL	Adjustment time (PLAY)



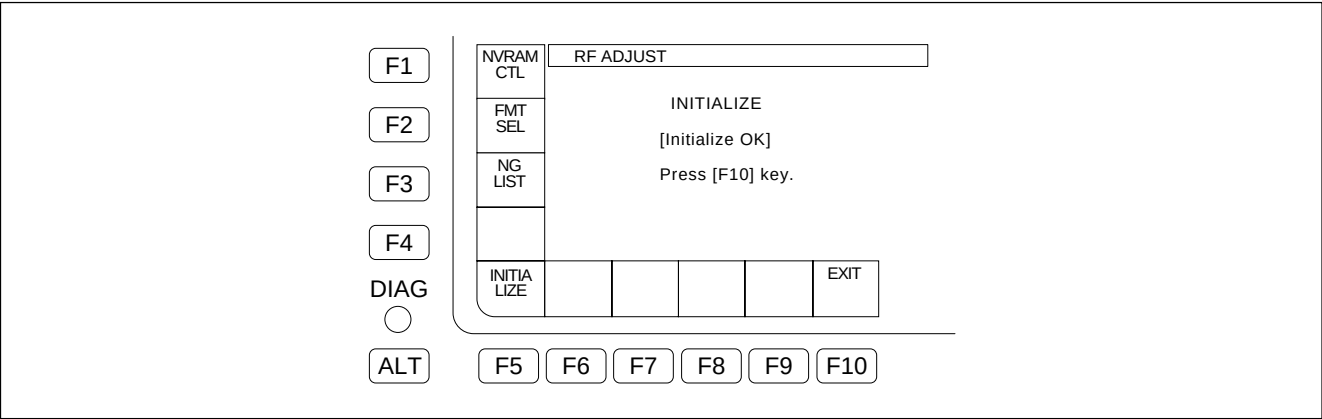
To initialize the all adjustment values of RF system.

- Press the **F5** (INITIALIZE) key.

The message “Execute initializing ?” is displayed.



- (2) Press the **F10** (EXIT) key while holding down the **SET** key.
The initialization of the adjustment value is executed, and then “Initialize OK” or “Initialize NG” is displayed.



- (3) Press the **F10** (EXIT) key to return to the All Adjust menu.
4. Press the **SET** key.
- The tape starts running in PLAY mode automatically to perform the automatic adjustment for the playback system.
“OK” or “NG” is displayed as an adjustment result and the adjustment is completed to the **F8** :
REV PLL ADJ.

When all adjustment results up to REV PLL ADJ are normal

When the HDCAM SR format is selcted, the message “Continue REC CURRENT?” is displayed.

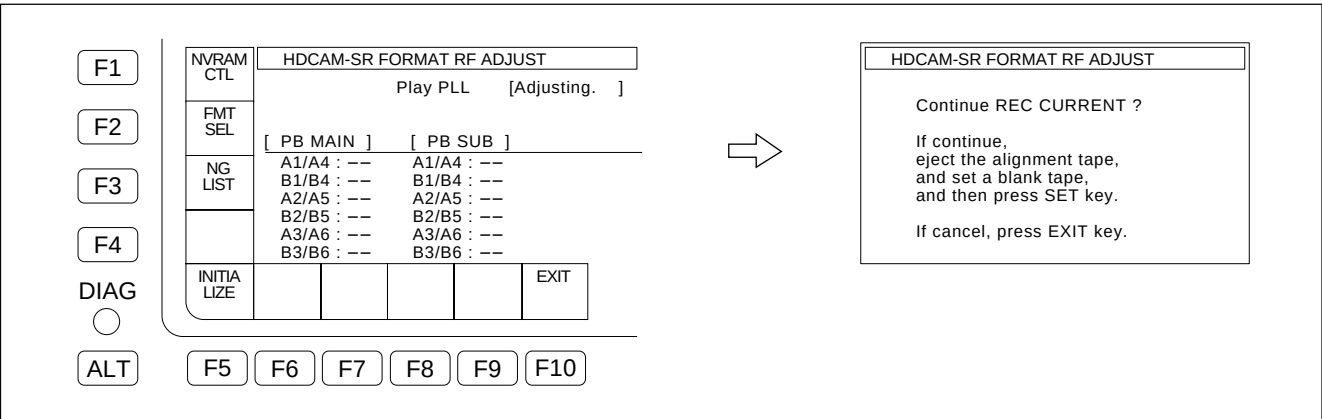
If any of the adjustment results up to REV PLL ADJ is NG

An NG item list is displayed. Readjust the NG items following the procedure in “To readjust NG items” on page 3-106.

When the HDCAM SR format is selected, a message “Continue REC CURRENT?” appears when all adjustment results are normal.

Note

Be careful not to change the tape transport mode during automatic adjustment.
The adjustment cannot be performed correctly in other modes than the tape transport mode that was set automatically.



Note

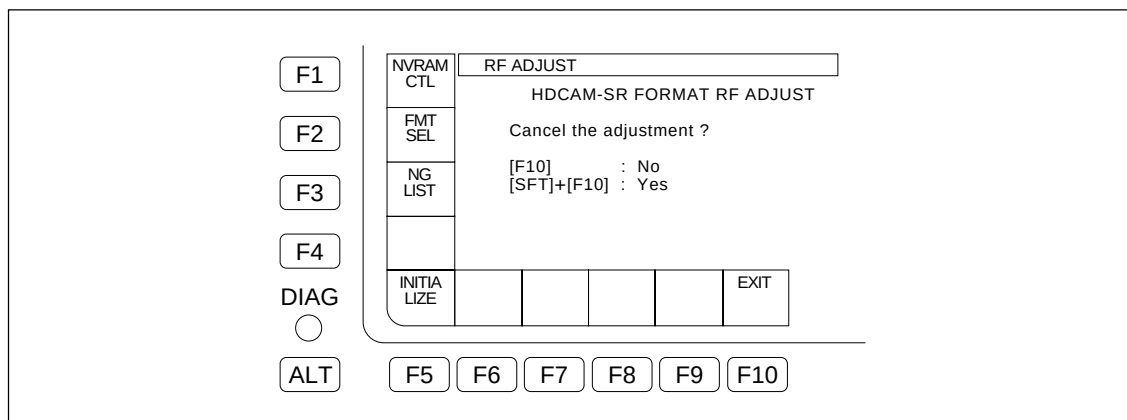
The displayed channel name represents the following heads.

Heads		Channel	Selected format
HDCAM SR	Confidence head A1	PB MAINA1	HDCAM SR
	Confidence head A4	PB MAINA4	
	Confidence head B1	PB MAINB1	
	Confidence head B4	PB MAINB4	
	Confidence head A2	PB MAINA2	
	Confidence head A5	PB MAINA5	
	Confidence head B2	PB MAINB2	
	Confidence head B5	PB MAINB5	
	Confidence head A3	PB MAINA3	
	Confidence head A6	PB MAINA6	
	Confidence head B3	PB MAINB3	
	Confidence head B6	PB MAINB6	
	PB head A1	PB SUB A1	HDCAM SR
	PB head A4	PB SUB A4	
	PB head B1	PB SUB B1	
	PB head B4	PB SUB B4	
	PB head A2	PB SUB A2	
	PB head A5	PB SUB A5	
	PB head B2	PB SUB B2	
	PB head B5	PB SUB B5	
	PB head A3	PB SUB A3	
	PB head A6	PB SUB A6	
	PB head B3	PB SUB B3	
	PB head B6	PB SUB B6	
	REC head A1	REC HEAD A1	HDCAM SR
	REC head A4	REC HEAD A4	
	REC head B1	REC HEAD B1	
	REC head B4	REC HEAD B4	
	REC head A2	REC HEAD A2	
	REC head A5	REC HEAD A5	
	REC head B2	REC HEAD B2	
	REC head B5	REC HEAD B5	
	REC head A3	REC HEAD A3	
	REC head A6	REC HEAD A6	
	REC head B3	REC HEAD B3	
	REC head B6	REC HEAD B6	
HDCAM	Advance head A	ADVANCE A	HDCAM (HKSR-5802) Digital BETACAM (HKSR-5802)
	Advance head C	ADVANCE C	
	Advance head B	ADVANCE B	
	Advance head D	ADVANCE D	

To cancel the automatic adjustment halfway:

(1) Press the **F10** (EXIT) key.

The message “Cancel the adjustment ?” is displayed.



(2) Press the **F10** (EXIT) key while holding down the **SFT** key, and then press the **F10** (EXIT) key again to return to the All Adjust menu.

To continue the adjustment, press the **F10** (EXIT) key only.

5. Eject the alignment tape.

When the HDCAM SR format is selected, perform the following steps 6 to 10.

6. Insert a recordable cassette tape.

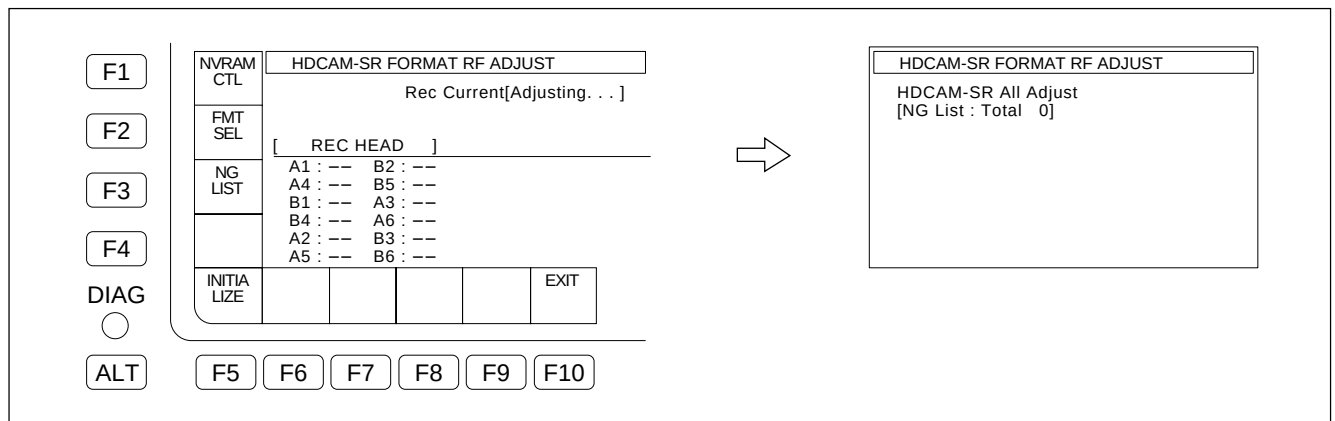
- To cancel the adjustment, press the **F10** (EXIT) key twice to return to the All Adjust menu.

Notes

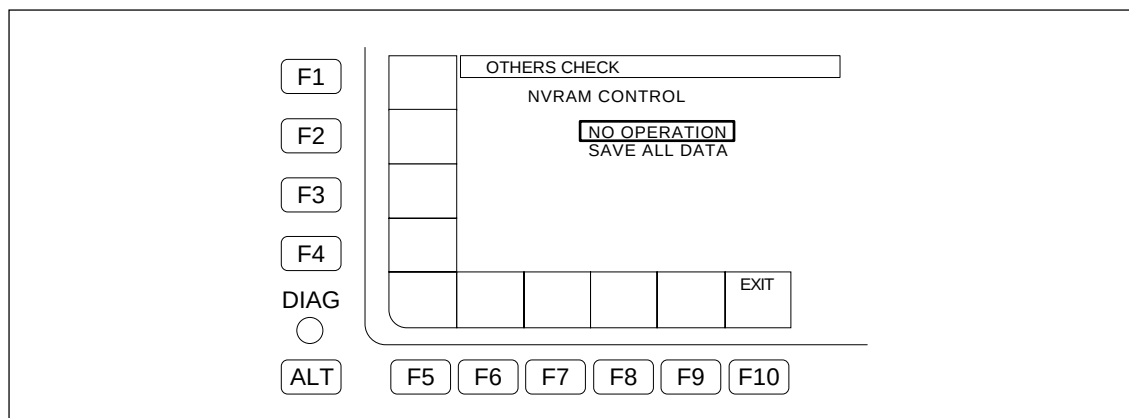
- Use the blank tape erased using a tape eraser in advance or a new blank tape as a recording tape for the adjustment.
- Pay attention to the transport start position of the tape so that the end and beginning of the tape are not detected during adjustment. If the cassette is forcibly ejected during the automatic adjustment, the adjustment is cancelled, its result is lost, and the display returns to the initial window. The minimum tape amount required for a normal automatic adjustment is shown in the following table: however, the tape amount increases or decreases if the adjustment is abnormal.

Menu	Normal adjustment time	Tape amount required (Transport mode)
REC ADJUST	HDCAM SR: About 4 minutes/ALL	Adjustment time (REC)

7. Press the **SET** key.
 - The tape runs in REC mode automatically to start automatic adjustment for the recording system. “OK” or “NG” is displayed as an adjustment result. When the adjustment is completed, the message [NG List : Total 0] is displayed.
 - If “NG” is displayed, refer to “For Automatic Adjustment Failure” on page 3-115.



8. Press the **F1** (NVRAM CTL) key.



9. Select “SAVE ALL DATA” using **↑/↓** key, and press the **F10** (EXIT) key.

When the adjusted data is not to be saved, select “NO OPERATION”, and press the **F10** (EXIT) key.

 - When the saving of the adjusted data is completed, the message “Save Complete” is displayed and returns to the All Adjust menu.
10. Eject the tape.

To readjust NG items:

11. To readjust NG items of the REC ADJUST menu, insert a recordable cassette tape.
To readjust NG items of the menus other than the REC ADJUST menu, insert an alignment tape with format to be adjusted.
12. Select an NG item to be readjusted, using $\uparrow/\downarrow$ key or the MULTI CONTROL knob.

F1	NVRAM CTL	HDCAM-SR FORMAT RF ADJUST					
F2	FMT SEL	HDCAM-SR All Adjust [NG List : Total 1] Press SET key.					
F3	NG LIST	1 EQ : PB MAIN A1					
F4							
DIAG	INITIALIZE					EXIT	
ALT		F5	F6	F7	F8	F9	F10

13. Press the **SET** key.
 - The reajustment of the NG item is started.
 - “OK” or “NG” is displayed as an adjustment result. When the adjustment is completed, the message “Complete” is displayed.
 - To perform the reajustment for another NG item, return to step 11.

F1	NVRAM CTL	HDCAM-SR FORMAT RF ADJUST					
F2	FMT SEL	HDCAM-SR All Adjust [Complete] [NG List : Total 0]					
F3	NG LIST	1 EQ : PB MAIN A1 : OK					
F4							
DIAG	INITIALIZE					EXIT	
ALT		F5	F6	F7	F8	F9	F10

14. To save the adjusted data, perform the above steps 8 to 10.

Note

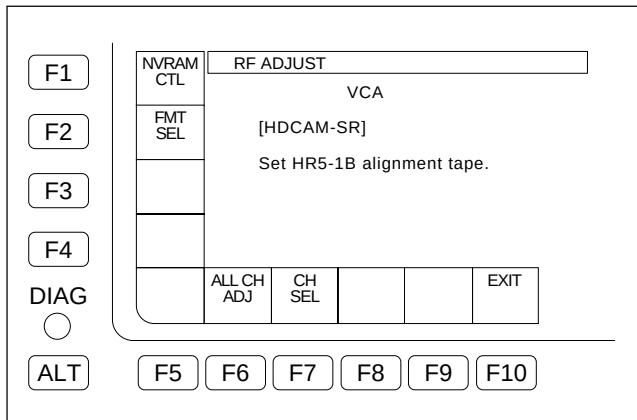
If the adjustment result has an NG, do not save the adjusted data on the NV-RAM.

- F3 (VCA ADJ) Key**
- F4 (EQUULZR ADJ) Key**
- F5 (REC ADJ) Key**
- F6 (PLAY PLL) Key**
- F7 (FWD PLL) Key**
- F8 (REV PLL) Key**
- F9 (AD GAIN) Key**

These are menus for the RF automatic adjustment.

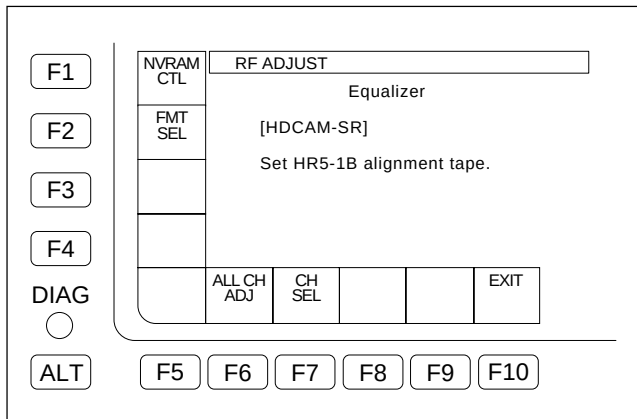
F3 (VCA ADJ) Key

Performs the playback RF level adjustment.



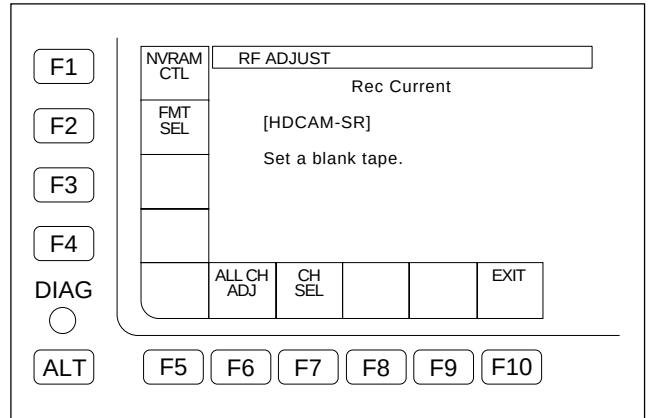
F4 (EQUULZR ADJ) Key

Adjusts the frequency characteristic and phase of the playback equalizer circuit.



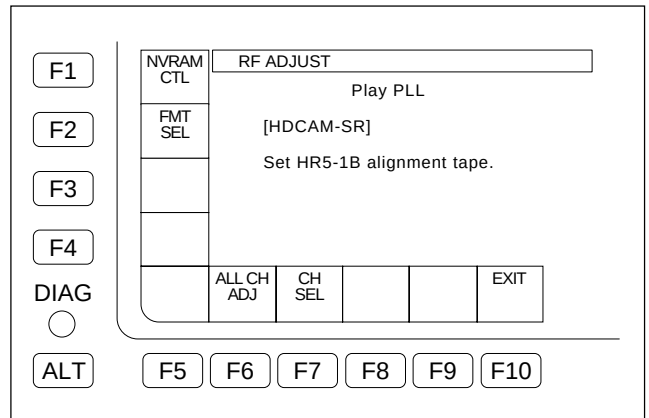
F5 (REC ADJ) Key

Adjusts the recording current and recording frequency characteristic for each recording head.



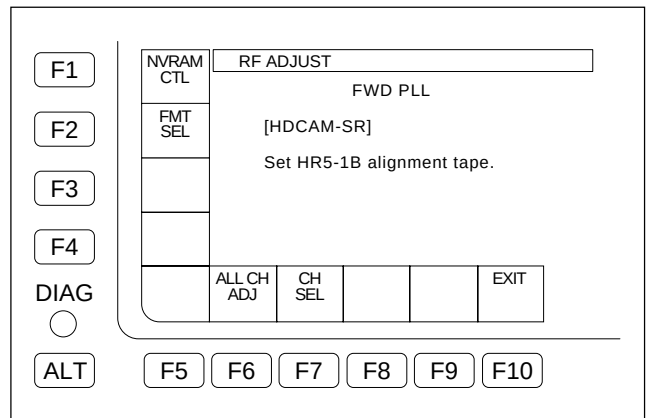
F6 (PLAY PLL) Key

Adjusts the VCO free-running frequency of the playback PLL circuit for the PLAY mode.



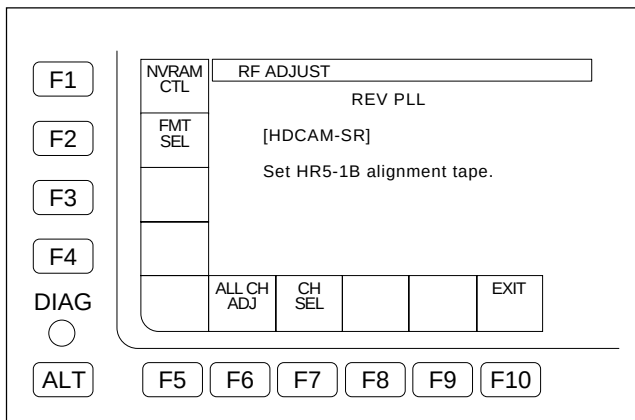
F7 (FWD PLL) Key

Adjusts the VCO free-running frequency of the playback PLL circuit for the FWD mode.



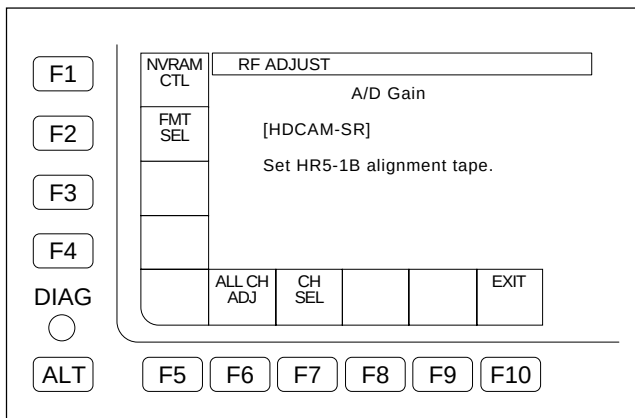
F8 (REV PLL) Key

Adjusts the VCO free-running frequency of the playback PLL circuit for the REV mode.



F9 (AD GAIN) Key

Adjusts the gain for the A/D conversion of the playback RF signal.



Execution Procedure

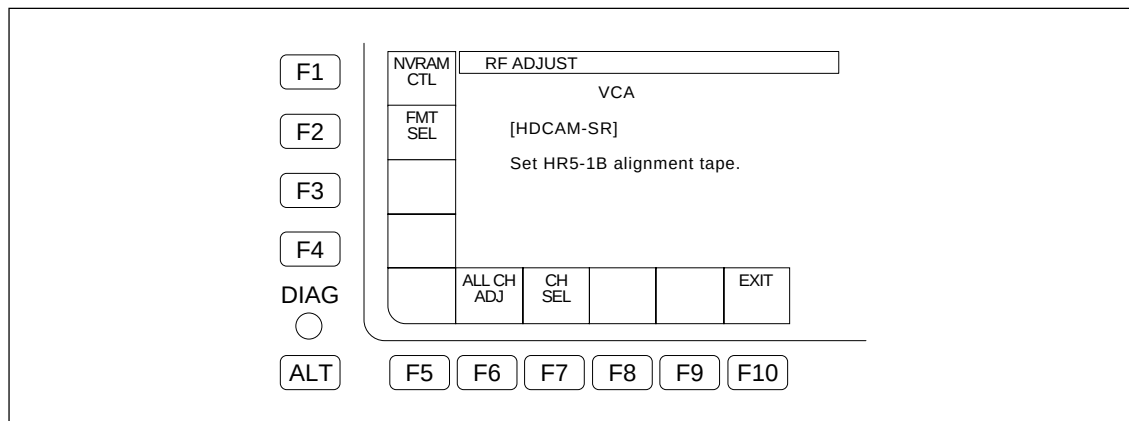
The following procedure describes the adjustment for the VCA menu.
Adjust other menus using the same procedure.

1. On the RF ADJUST menu, press the **F1** (FMT SEL) key several times to select a format to be adjusted.

Note

When a cassette tape has been inserted, eject it before selecting a format.

2. Press the **F3** (VCA ADJ) key to display the VCA menu.



3. Cue up an alignment tape of the selected format to the time code 00:10:00:00, and insert it.
When **[F5]** (REC ADJ) is selected, insert a recordable cassette tape.

Note

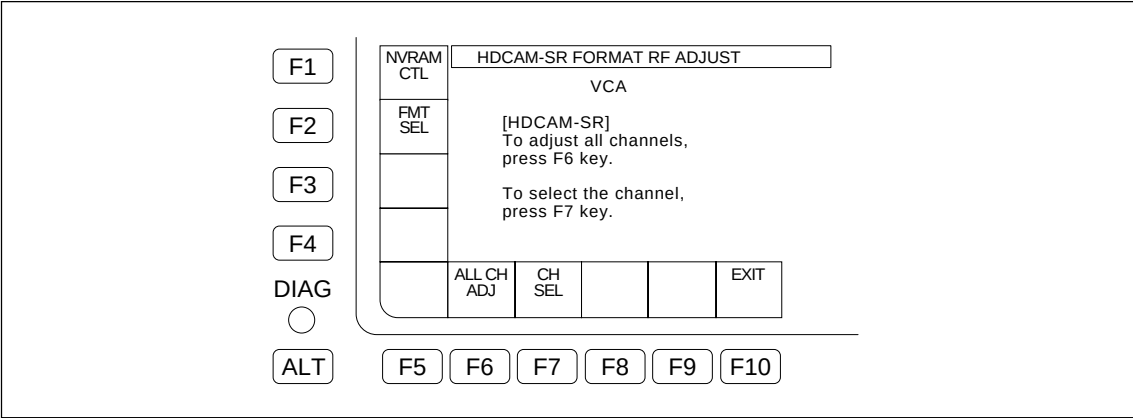
- The adjustment cannot be performed correctly with a non-specified cassette tape. Be sure to use the following alignment tapes:

Selected format	HDCAM SR	HDCAM (HKSr-5802 installed model only)	Digital BETACAM (HKSr-5802 installed model only)
Alignment tape	HR5-1B	HR5-1A	ZR5-1 (SYSTEM FRAME 29.97 Hz) ZR5-1P (SYSTEM FRAME 25 Hz)

Notes

- Use the blank tape erased using a tape eraser in advance or a new blank tape as a recording tape for the adjustment.
- Pay attention to the transport start position of the tape so that the end and beginning of the tape are not detected during adjustment. If the cassette is forcibly ejected during the automatic adjustment, the adjustment is cancelled, its result is lost, and the display returns to the initial window. The minimum tape amount required for the normal automatic adjustment is shown in the following table: however, the tape amount increases or decreases when the adjustment is abnormal.

Menu	Upper level: Normal adjustment time Lower level: Tape amount required (Transport mode)
VCA	About 10 min./ALL, about 25 sec./channel Adjustment time (PLAY)
Equalizer	About 12 min./ALL, about 30 sec./channel Adjustment time (PLAY)
REC Current	About 8 min./ALL, about 1 min./channel Adjustment time (REC)
Play PLL	About 12 min./ALL, about 30 sec./channel Adjustment time (PLAY)
FWD PLL	About 30 sec./ALL, about 30 sec./channel Adjustment time (FWD)
REV PLL	About 30 sec./ALL, about 30 sec./channel Adjustment time (REV)
A/D GAIN	About 10 min./ALL, about 25 sec./channel Adjustment time (PLAY)

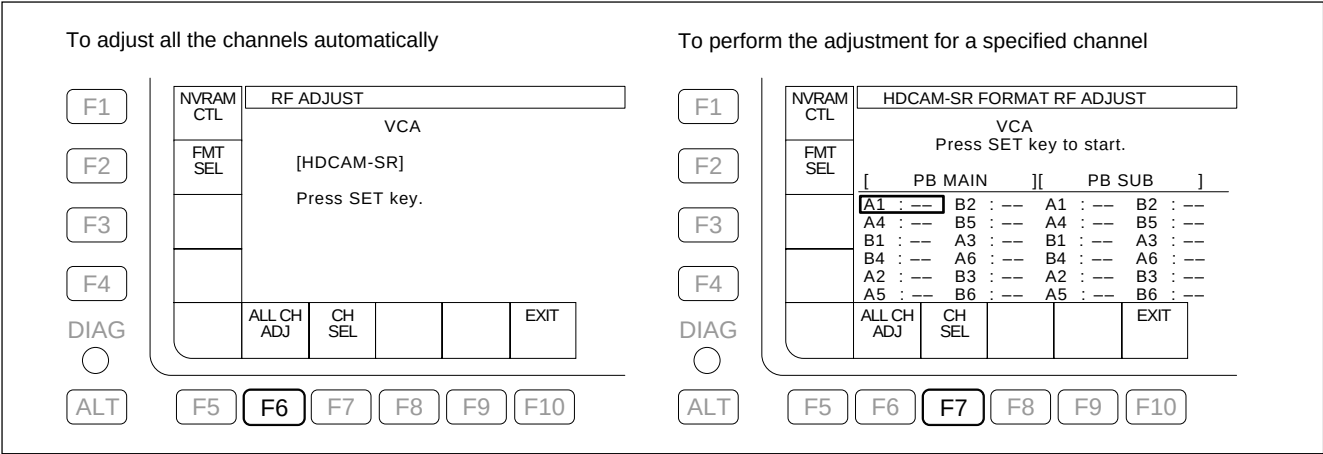


4. **To adjust all the channels automatically:**

- Press the **F6** (ALL CH ADJ) key

To perform the adjustment for a specified channel:

- (1) Press the **F7** (CH SEL) key
- (2) Press the **F7** (CH SEL) key several times, or using the **↑/↓** key, MULTI CONTROL knob to select a channel to be adjusted.



Note

The displayed channel name represents the following head:

Heads		Channel	Selected format
HDCAM SR	Confidence head A1	PB MAINA1	HDCAM SR
	Confidence head A4	PB MAINA4	
	Confidence head B1	PB MAINB1	
	Confidence head B4	PB MAINB4	
	Confidence head A2	PB MAINA2	
	Confidence head A5	PB MAINA5	
	Confidence head B2	PB MAINB2	
	Confidence head B5	PB MAINB5	
	Confidence head A3	PB MAINA3	
	Confidence head A6	PB MAINA6	
	Confidence head B3	PB MAINB3	
	Confidence head B6	PB MAINB6	
	PB head A1	PB SUB A1	HDCAM SR
	PB head A4	PB SUB A4	
	PB head B1	PB SUB B1	
	PB head B4	PB SUB B4	
	PB head A2	PB SUB A2	
	PB head A5	PB SUB A5	
	PB head B2	PB SUB B2	
	PB head B5	PB SUB B5	
	PB head A3	PB SUB A3	
	PB head A6	PB SUB A6	
	PB head B3	PB SUB B3	
	PB head B6	PB SUB B6	
	REC head A1	REC HEAD A1	HDCAM SR
	REC head A4	REC HEAD A4	
	REC head B1	REC HEAD B1	
	REC head B4	REC HEAD B4	
	REC head A2	REC HEAD A2	
	REC head A5	REC HEAD A5	
	REC head B2	REC HEAD B2	
	REC head B5	REC HEAD B5	
	REC head A3	REC HEAD A3	
	REC head A6	REC HEAD A6	
	REC head B3	REC HEAD B3	
	REC head B6	REC HEAD B6	
HDCAM	Advance head A	ADVANCE A	HDCAM (HKSR-5802) Digital BETACAM (HKSR-5802)
	Advance head C	ADVANCE C	
	Advance head B	ADVANCE B	
	Advance head D	ADVANCE D	

5. Press the **SET** key.
- The tape runs automatically in the following mode to start the adjustment.
 REC ADJUST menu: REC mode
 FWD PLL ADJUST menu: FWD mode
 REV PLL ADJUST menu: REV mode
 Menus other than the above menus: PLAY mode

Note

Be careful not to change the tape transport mode during automatic adjustment.

The adjustment cannot be performed correctly in other modes than the tape transport mode that was set automatically.

To adjust all the channels automatically:

- All channels are adjusted in order. “OK” or “NG” is displayed as an adjustment result. When the adjustment is completed, the message “Complete” is displayed.

To perform the adjustment for a specified channel:

- “OK” or “NG” is displayed on the right of the specified channel, and “Complete” appears.

To adjust all the channels automatically										To perform the adjustment for a specified channel																								
F1	F2	F3	F4	DIAG ○	ALT		F5	F6	F7	F8	F9	F10		F1	F2	F3	F4	DIAG ○	ALT		F5	F6	F7	F8	F9	F10								
					NVRAM CTL					HDCAM-SR FORMAT RF ADJUST										NVRAM CTL					HDCAM-SR FORMAT RF ADJUST									
					VCA					[Complete]										VCA					[Complete]									
					[PB MAIN]					[PB SUB]										[PB MAIN]					[PB SUB]									
					A1 : OK B2 : OK A1 : OK B2 : OK										A1 : OK B2 : -- A1 : -- B2 : --																			
					A4 : OK B5 : OK A4 : OK B5 : OK										A4 : -- B5 : -- A4 : -- B5 : --																			
					B1 : OK A3 : OK B1 : OK A3 : OK										B1 : -- A3 : -- B1 : -- A3 : --																			
					B4 : OK A6 : OK B4 : OK A6 : OK										B4 : -- A6 : -- B4 : -- A6 : --																			
					A2 : OK B3 : OK A2 : OK B3 : OK										A2 : -- B3 : -- A2 : -- B3 : --																			
					A5 : OK B6 : OK A5 : OK B6 : OK										A5 : -- B6 : -- A5 : -- B6 : --																			
					ALL CH ADJ CH SEL										ALL CH ADJ CH SEL																			
					EXIT										EXIT																			

To cancel the adjustment halfway:

- (1) Press the **F10** (EXIT) key
 The message “Cancel the adjustment ?” is displayed.

F1	F2	F3	F4	DIAG ○	ALT		F5	F6	F7	F8	F9	F10
				NVRAM CTL				RF ADJUST				
				HDCAM-SR FORMAT RF ADJUST								
				Cancel the adjustment ?								
				[F10] : No								
				[SFT]+[F10] : Yes								
				ALL CH ADJ CH SEL								
				EXIT								

- (2) Press the **F10** (EXIT) key while holding down the **SFT** key, and then press the **F10** (EXIT) key again to return to the VCA menu.
 To continue the adjustment, press the **F10** (EXIT) key only.

6. Confirm the result of the adjustment.

- If the channel is normal, “OK” is displayed on the right of the channel.

Note

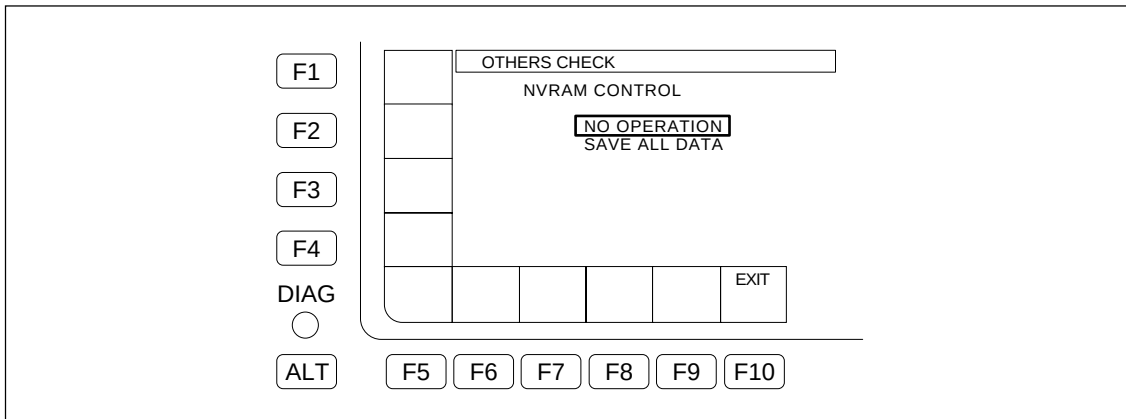
If “NG” is displayed on the right of the channel, refer to “For Automatic Adjustment Failure” on the next page.

7. To save the adjusted data, perform the following steps 8 and 9.

Note

If the adjustment result has an NG, do not save the adjusted data on the NV-RAM.

8. Press the **F1** (NVRAM CTL) key.



9. Select “SAVE ALL DATA” using **↑/↓** key, and press the **F10** (EXIT) key.

When the adjusted data is not to be saved, select “NO OPERATION”, and press the **F10** (EXIT) key.

- When the saving of the adjusted data is completed, the message “Save Complete” is displayed and returns to the VCA menu.

10. Eject the tape.

For Automatic Adjustment Failure

Check according to the procedures below when the message “NG” is displayed in the adjustment menus **F2** (RF ALL ADJ) to **F9** (AD GAIN).

- (1) Confirm whether the specified alignment tape is used.
If the specified alignment tape is not used, execute the automatic adjustment by the specified one.
- (2) Clean the drum (rotary heads) according to the “For Check Failure NG” in “3-3-7. RF CHECK Menu”.
This operation is not required when the drum has been already cleaned.
- (3) When message “NG” is displayed during execution of menus other than the **F2** (RF ALL ADJ) or **F6** (PLAY PLL), perform the **F2** (RF ALL ADJ).
When no abnormality is found, the adjustment is completed.

If the message “NG” is still displayed, the possible cause below are considered.

- Servo system adjustment defect or circuit defect
 - ⇒ Readjust the servo system. (Refer to Section 3-4-2.)
F2 (AUTO ADJ) of the SERVO ADJUST menu.
 - ⇒ Check the servo system. (Refer to Section 3-3-4.)
- Brush/slip ring assembly defect or its part installation/ connection defect
 - ⇒ Replace or reinstall the brush/slip ring assembly.
- Harness (between the EQ-102/109 board and drum assembly) connection defect
- RF system adjustment defect
 - ⇒ Readjust the RF system.
F2 (RF ALL ADJ)
- Worn PB head in the drum assembly
 - ⇒ Replace the drum assembly as required.
- In the tape transport system adjustment defect or component part installation defect
 - ⇒ Readjust the tape transport system or reinstall the part.
- EQ-102/109 board defect
- Drum assembly defect

Section 4

Periodic Maintenance and Inspection

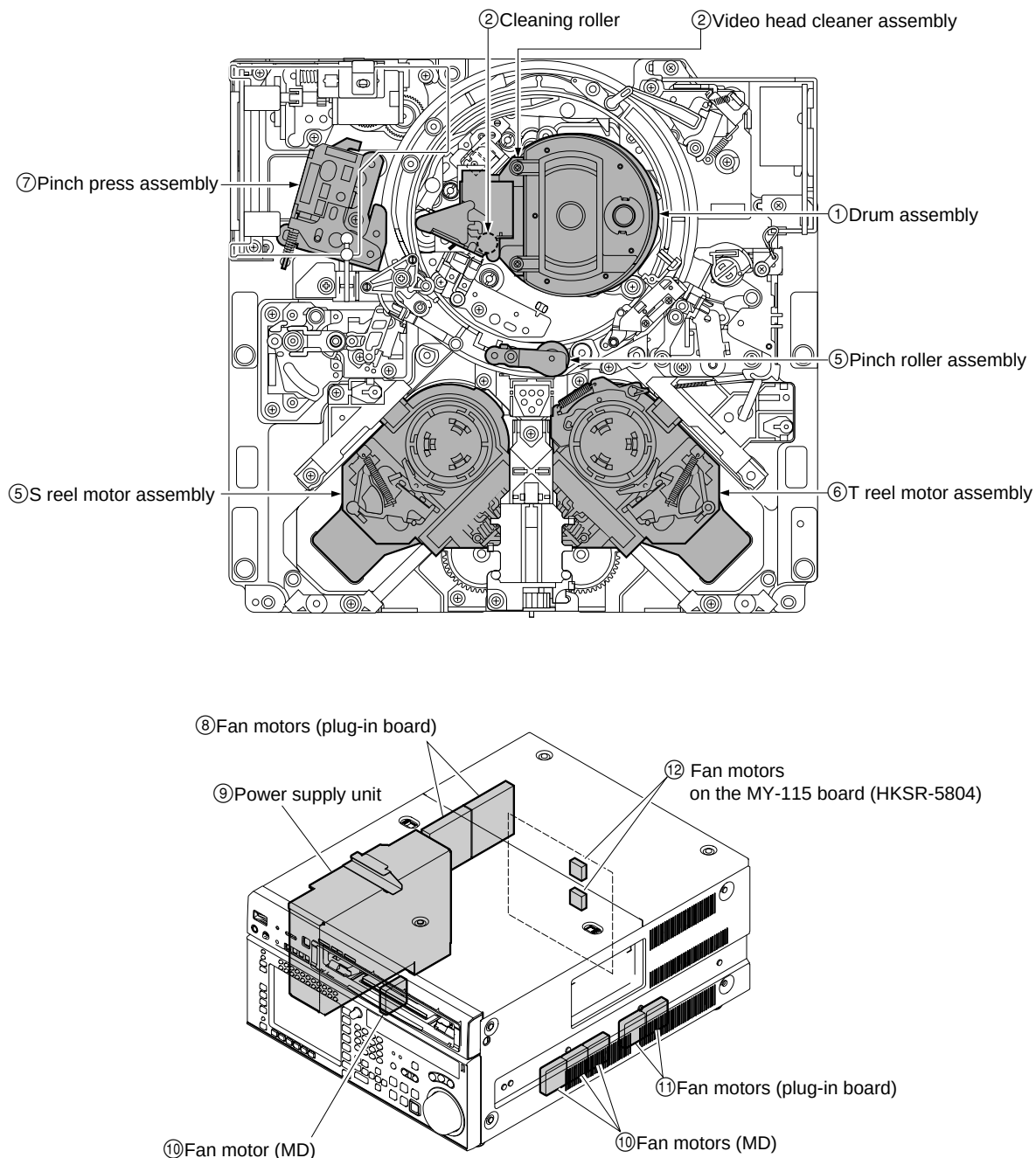
This section explains about periodic maintenance and how to clean.

4-1. Periodic Maintenance

To make the most of the functions, fully realize the performances of this unit and to lengthen the life of the unit, periodic check and parts replacement are recommended.

4-1-1. Index

It is necessary to check and replace periodically to the following parts.
The numbers in the illustration correspond to the table in the next page.



4-1-2. Periodic Replacement and Check Item Table

The replacement time shown in the following table is not the guarantee term of parts. The replacement time of parts varies depending on the operating environment and conditions of the unit.

Especially the pinch roller and cleaning roller, may be required replacing earlier than replacement period shown in the table depending on the degree of their dirt or abrasion.

As for the hours meter, refer to Section 4-1-3.

As for replacing each part, refer to Section 5.

Symbols in table

R: Replace the part.

C: Check (adjust) the part. If abnormal or outside specification, replace the part.

↕ (or ↗): Indicates replaced together with part shown in the below or above column.

No.	Replacement parts	Hours meter (Menu item)	Inspection hours (1000h)/ Replacement period						Reference (Section)	Part No. /Part name	Q'ty
			1	2	3	4	5	6			
①	Drum assembly ^{*2}	Drum rotating time (DRUM RUNNING)	—	C ^{*3}	R	—	—	R ^{*1}	5-2 (Check: 6) (Adjust: 8-4)	△ A-1439-230-A DRUM DHH-08A-R	1
②	Cleaning roller	Drum rotating time (DRUM RUNNING)	—	—	R	—	—	R↕	5-4	A-8320-546-A ROLLER (B) ASSY (RP), CLEANING	1
			Replace when used 3000 hours							3-182-765-02 SPACER, CR	1
③	Video head cleaner assembly	Drum rotating time (DRUM RUNNING)	—	—	—	—	—	R	5-4	A-8320-545-B CLEANER (B) ASSY (RP), HEAD	1
④	Pinch roller assembly	Tape running time (TAPE HOURS)	—	—	R	—	—	R	5-8	X-3167-054-8 ASSY, PINCH ARM	1
⑤	S reel motor assembly	Tape running time (TAPE HOURS)	—	—	—	—	—	R	5-13	A-1063-067-C SM-RM (S) ASSY (RP)	1
⑥	T reel motor assembly	Tape running time (TAPE HOURS)	—	—	—	—	—	R	5-13	A-1063-068-C SM-RM (T) ASSY (RP)	1
⑦	Pinch press assembly	Tape running time (TAPE HOURS)	—	—	—	—	—	R	5-9	A-8324-938-A PRESS ASSY, PINCH	1
⑧	Fan motor (80 SQUARE) (For plug-in board)	Energized time (OPERATION)	Replace when used 40,000 hours						5-23-1	△ 1-787-433-13 FAN, DC (80 SQUARE)	2
⑨	Power supply unit	Energized time (OPERATION)	Replace when used 40,000 hours						5-24	△ A-1441-529-A SWITCHING REGULATOR	1
⑩	Fan motor (40 SQUARE) (For mechanical deck)	Energized time (OPERATION)	Replace when used 40,000 hours						5-23-3 5-23-4	△ 1-787-725-11 FAN, DC (40 SQUARE)	4
⑪	Fan motor (40 SQUARE) (For plug-in board)	Energized time (OPERATION)	Replace when used 40,000 hours						5-23-2	△ 1-787-725-11 FAN, DC (40 SQUARE)	2
⑫	Fan motor (30 SQUARE) (on the MY-115 board)	Energized time (OPERATION)	Replace when used 40,000 hours							△ 1-787-146-11 FAN, DC (30 SQUARE)	2

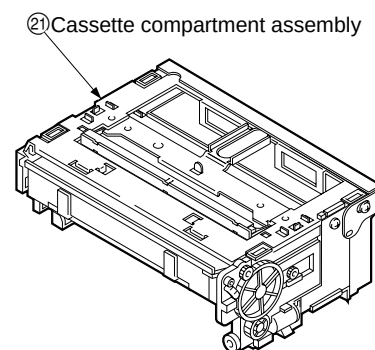
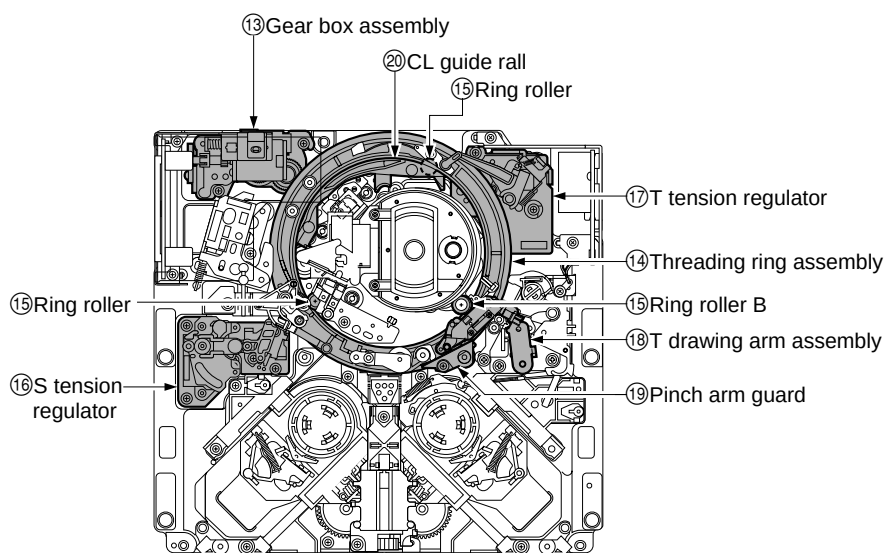
*1: Carry out the check every 1000 h after a lapse of 6000 h.

*2: Drum assembly includes a brush slip ring assembly.

*3: Carry out the RF system alignment (Section 8-4) every 1000h after a lapse of 2000h.

Replace the parts shown in the table below periodically when the threading/un-threading operation is repeated frequently.

No.	Replacement parts	Hours meter (Menu item)	Replacement period	Reference (Section)	Part No. /Part name	Q'ty
⑬	Gear box assembly	Threading times (THREADING)	200,000 times	5-17	A-8325-414-D BOX, ASSY GEAR (RP)	1
⑭	Threading ring assembly	Threading times (THREADING)	200,000 times	5-18	A-8324-937-F RING ASSY	1
⑮	Ring roller	Threading times (THREADING)	200,000 times	5-18	3-180-677-01 ROLLER, RING 3-180-679-01 ROLLER (B), RING	2 1
⑯	S tension regulator	Threading times (THREADING)	200,000 times	5-19	A-8325-409-C REGULATOR ASSY (RP), S TENSION	1
⑰	T tension regulator	Threading times (THREADING)	200,000 times	5-20	A-8325-410-C T TEN ASSY (RP)	1
⑱	T drawing arm assembly	Threading times (THREADING)	200,000 times	5-21	A-8347-625-A DRAWER ASSY (RP), T	1
⑲	Pinch arm guard	Threading times (THREADING)	200,000 times	5-18	3-625-217-01 GUARD, PA	1
⑳	CL guide rail	Threading times (THREADING)	200,000 times	5-7	3-624-986-01 RAIL, GUIDE, CL	1
㉑	Cassette compartment assembly	Threading times (THREADING)	200,000 times	1-5	A-8347-841-F CASSETTE COMPARTMENT ASSY (S-RP)	1



4-1-3. Hours Meter

This unit can display an hours meter on the color display.
Perform a periodic check with this hours meter as a reference.

Note

For resetting the hours meter, perform the **F5** (HOURS METER) of the OTHERS CHECK menu.
(For the OTHERS CHECK menu, refer to Section 3-3-9.)

1. Contents of display

Item	Contents
OPERATION	Sum of energized time/[] shows the sum of energized time after reset
DRUM RUNNING	Sum of drum rotating time/[] shows the sum of drum rotating time after reset
TAPE HOURS	Sum of tape running time/[] shows the sum of tape running time after reset
THREADING	Sum of threading/[] shows the sum of threading after reset

2. Display procedure

- Press the DIAG button while pressing the **SFT** (SHIFT) key in the HOME menu to display the MAINTENANCE INFORMATION menu.
 - The hours meter will be displayed on the color display.
- To exit the MAINTENANCE INFORMATION menu, press the **F10** (EXIT) key.

4-2. Cleaning

To make the most of the functions, fully realize the performance of this unit, and to lengthen the life of the unit and tape, clean the components often.

4-2-1. Cleaning using Cleaning Tape

If the video heads are clogged, clean the video head as the following procedure. Make sure to use the specified cleaning tape. If other tape is used, unusual abrasion or damage of the video heads may occur.

Specified cleaning tape: BCT-HD12CL

Procedure

1. Insert the cleaning tape BCT-HD12CL into the unit.
At the same time, the cleaning tape is played back for approx. 10 seconds. After that, the cleaning tape will be ejected automatically.

Notes

- If the cleaning tape is not ejected after playing back more than 10 seconds, press the EJECT button immediately to eject the cleaning tape.
 - Do not fast-forward or rewind the cleaning tape and leave it into the unit in the STOP mode to avoid damage to the video head.
2. Check to see that the head clogging is clear.

If the video heads are still clogged after cleaning using a cleaning tape, clean them using a cleaning cloth. (Refer to Section 4-2-3.)

4-2-2. General Information for Cleaning using Cleaning Cloth

1. Precautions

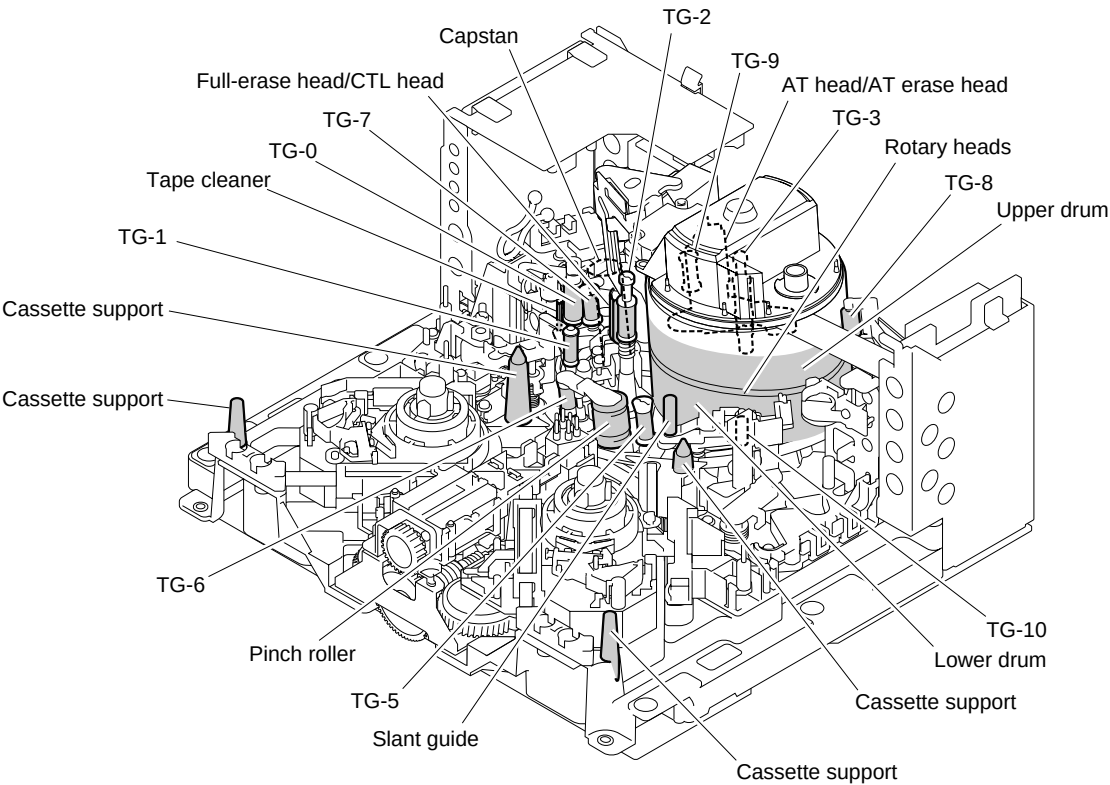
- Be sure to turn the power off before cleaning.
- Each block in the mechanical deck consists of a precision part and is adjusted precisely. Be careful not to damage each part and to apply an excessive force during cleaning.
- Wear thin fingerstalls or thin industrial gloves when cleaning the rotary heads.
- Do not contact the greased portions during cleaning. If the grease smears to a cleaning cloth, use a new cloth to avoid allow the grease to contact places where it should not.
- Do not use a dirty cleaning cloth, fingerstalls, or gloves to prevent sebum, sweat, fiber of cleaning cloth, or foreign matters from adhering to the rotary heads.
- Wipe with a dry cleaning cloth immediately after cleaning. Insert a cassette tape after the cleaning fluid completely evaporates.

2. Preparation

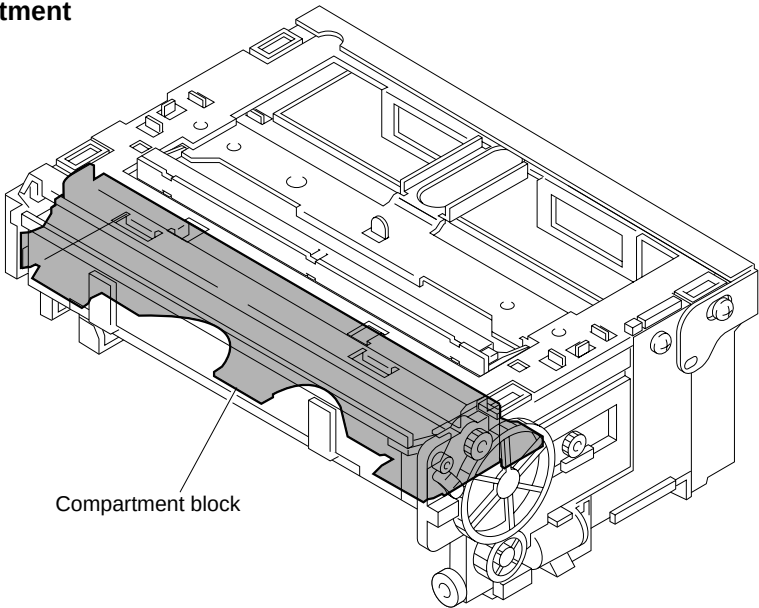
1. Turn the power off.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)
4. Open the AE-31 board. (Refer to a figure in Section 5-1-2.)

3. Cleaning Parts

Mechanical deck block



Cassette compartment



4-2-3. Rotary Heads Cleaning

WARNING

Never contact the rotating drum.

Be sure to turn off the power and wait until the drum comes to a complete stop before cleaning.

Precaution

The rotary heads are the part that can be damaged easily. Be careful not to damage the rotary heads during cleaning. Do not touch the rotary heads with bare hands.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Note

Never use a cotton swab to clean the video heads.

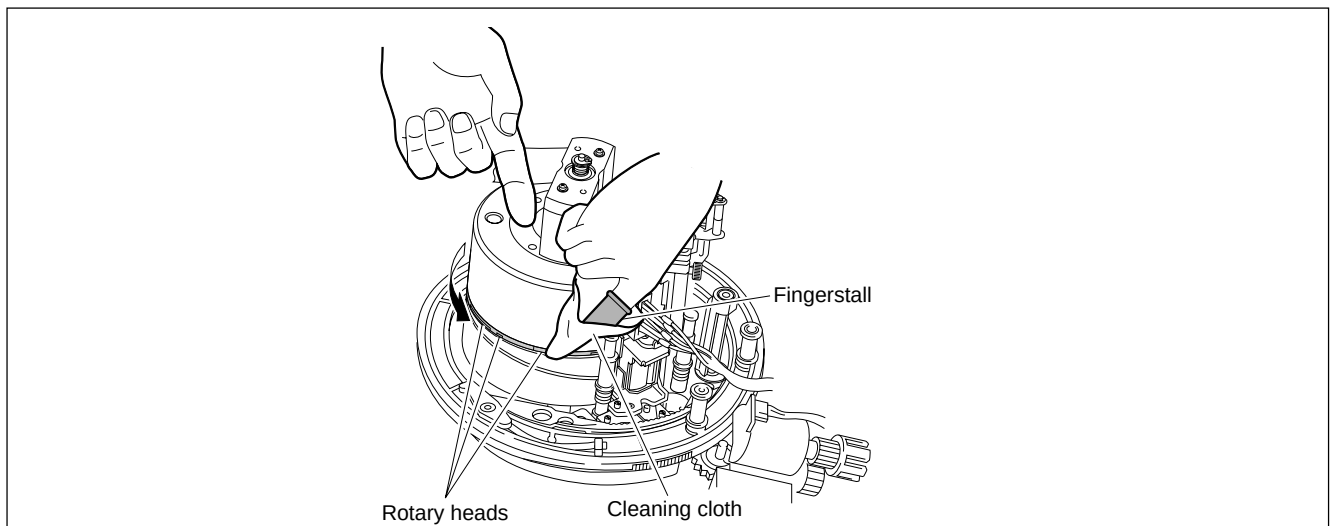
Procedure

1. Remove the upper drum cover assembly (Refer to Section 5-2.)
2. Hold the cleaning cloth moistened with a cleaning fluid keeping it without becoming wrinkled. And then slightly press the cleaning cloth against the rotary heads.
3. Slowly rotate the inner drum counterclockwise two or three turns and clean the rotary heads without moving the cleaning cloth.

Note

Be sure to rotate the inner drum counterclockwise and clean the rotary heads along the circumference. Do not rotate it in the opposite direction (clockwise) or clean the rotary heads in the vertical direction to avoid damaging the rotary heads and brush slip ring assembly.

4. After cleaning, wipe them using a dry cleaning cloth two or three times.
5. Attach the upper drum cover assembly. (Refer to Section 5-2.)



Rotary Heads Cleaning

4-2-4. Tape Running Surface of Upper Drum Cleaning

Precaution

Be careful not to damage the upper drum during cleaning.

Pay careful attention when cleaning the bottom edge of the upper drum because it is located near the rotary heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

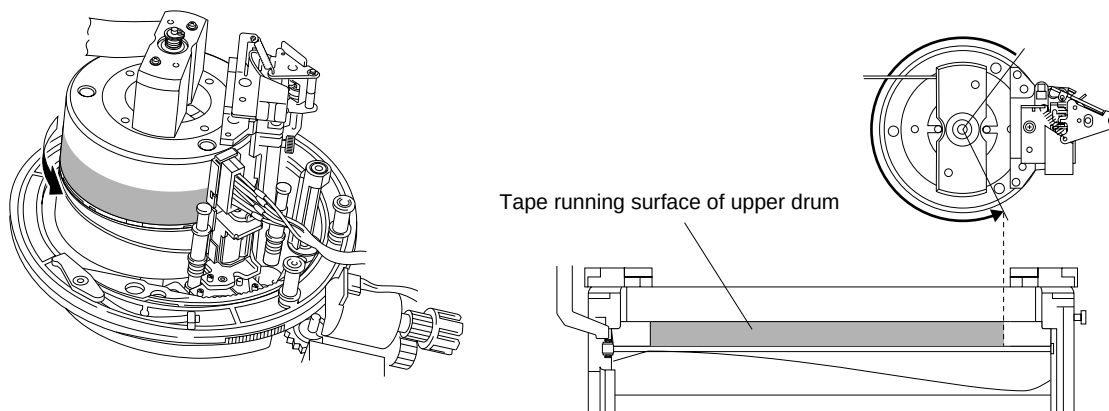
Procedure

1. Hold the cleaning cloth moistened with a cleaning fluid slightly against the tape-running surface of the upper drum. (shaded portion in the figure)

2. Clean along the circumference counterclockwise two or three times.

Notes

- Pay careful attention when cleaning the bottom edge of the upper drum.
 - Also, careful for the flexible card wire of the brush slip ring assembly.
3. After cleaning, wipe them using a dry cleaning cloth two or three times.



Tape Running Surface of Upper Drum Cleaning

4-2-5. Tape Running Surface of Lower Drum and Lead Surface Cleaning

Precaution

Be careful not to damage the lower drum (especially lead surface) during cleaning. Pay careful attention when cleaning the edge portion above the lower drum because it is located near the rotary heads.

Tools

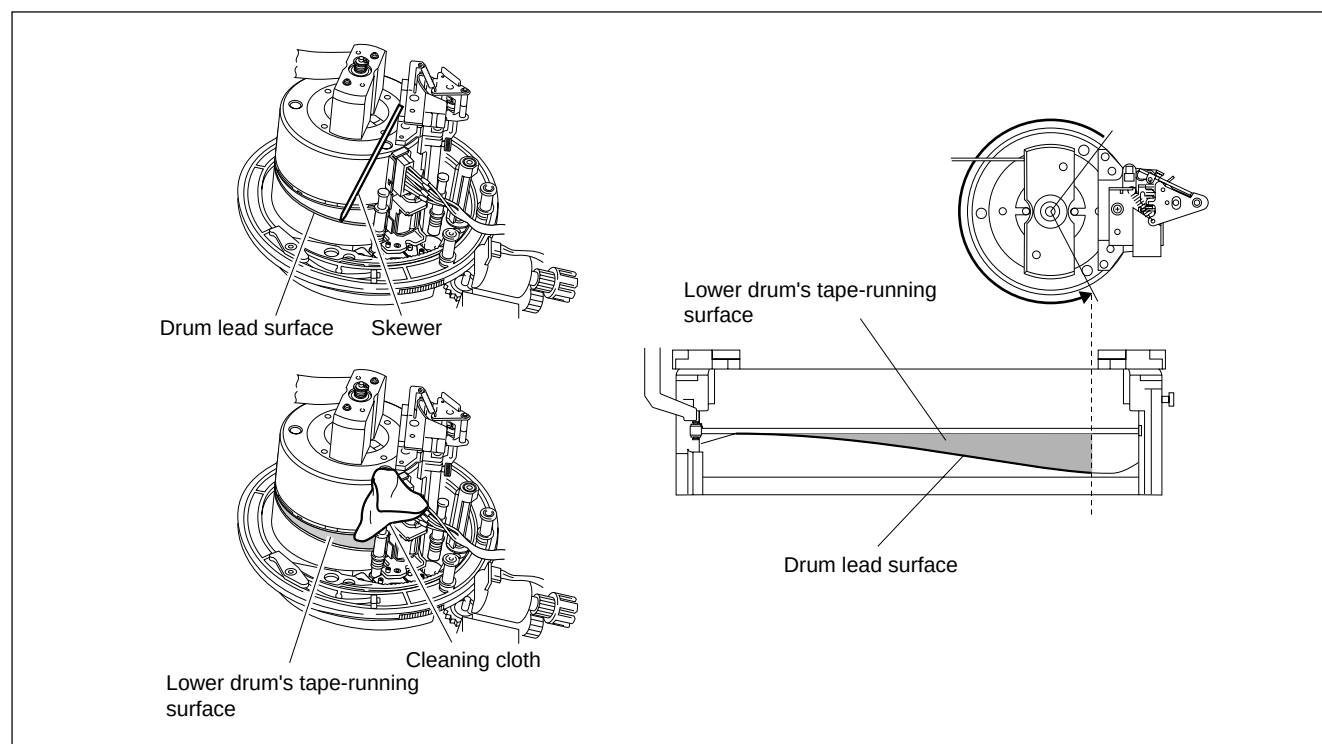
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Skewer or an equivalent (Not metallic)

Procedure

1. As shown in the figure, remove the magnetic powder using a skewer, running the skewer on the drum lead surface.

Notes

- Never use a metallic skewer to avoid damaging the tape-running surface.
 - Be sure to remove the magnetic powder completely. Tracking may be badly influenced if magnetic powder attaches to the drum lead surface.
2. Clean the drum lead surface and lower drum's tape-running surface (shaded portion in the figure) using a cleaning cloth moistened with a cleaning fluid.
 3. After cleaning, wipe them using a dry cleaning cloth two or three times.



Tape-running Surface of Lower Drum and Lead Surface Cleaning

4-2-6. Stationary Heads Cleaning

Precaution

Be careful not to damage the head surface when cleaning the stationary heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Procedure

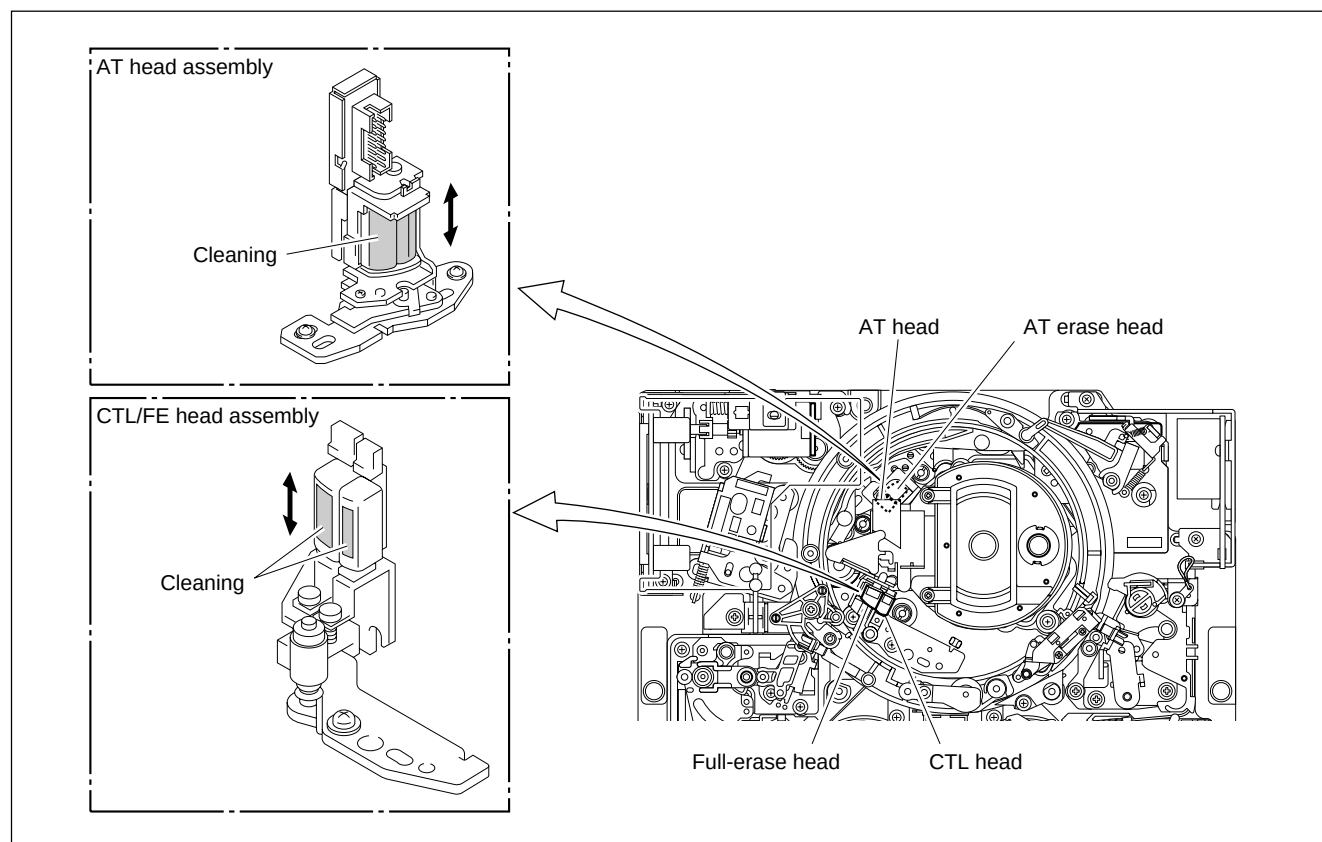
1. Clean the tape-running surfaces (shaded portion in the figure) of the AT, AT erase, CTL, and full-erase heads in the vertical direction using a cleaning cloth moistened with a cleaning fluid.

Note

Be sure to remove the magnetic powder completely.

An error may occur in the recording or playback if magnetic powder attaches to the head gap portion of the AT, AT erase, CTL, and full-erase heads.

2. After cleaning, wipe them using a dry cleaning cloth two or three times.



Stationary Heads Cleaning

4-2-7. Tape Running System and Tape Cleaner Cleaning

WARNING

Keep bare hands away from the sharp edge of the tape cleaner to avoid cuts and injuries.

Pay careful attention when cleaning the tape cleaner.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Procedure

1. Wipe off the surfaces of the tape cleaner using paper (such as paper for a copy machine) to remove the magnetic powder adhered on the tape cleaner.

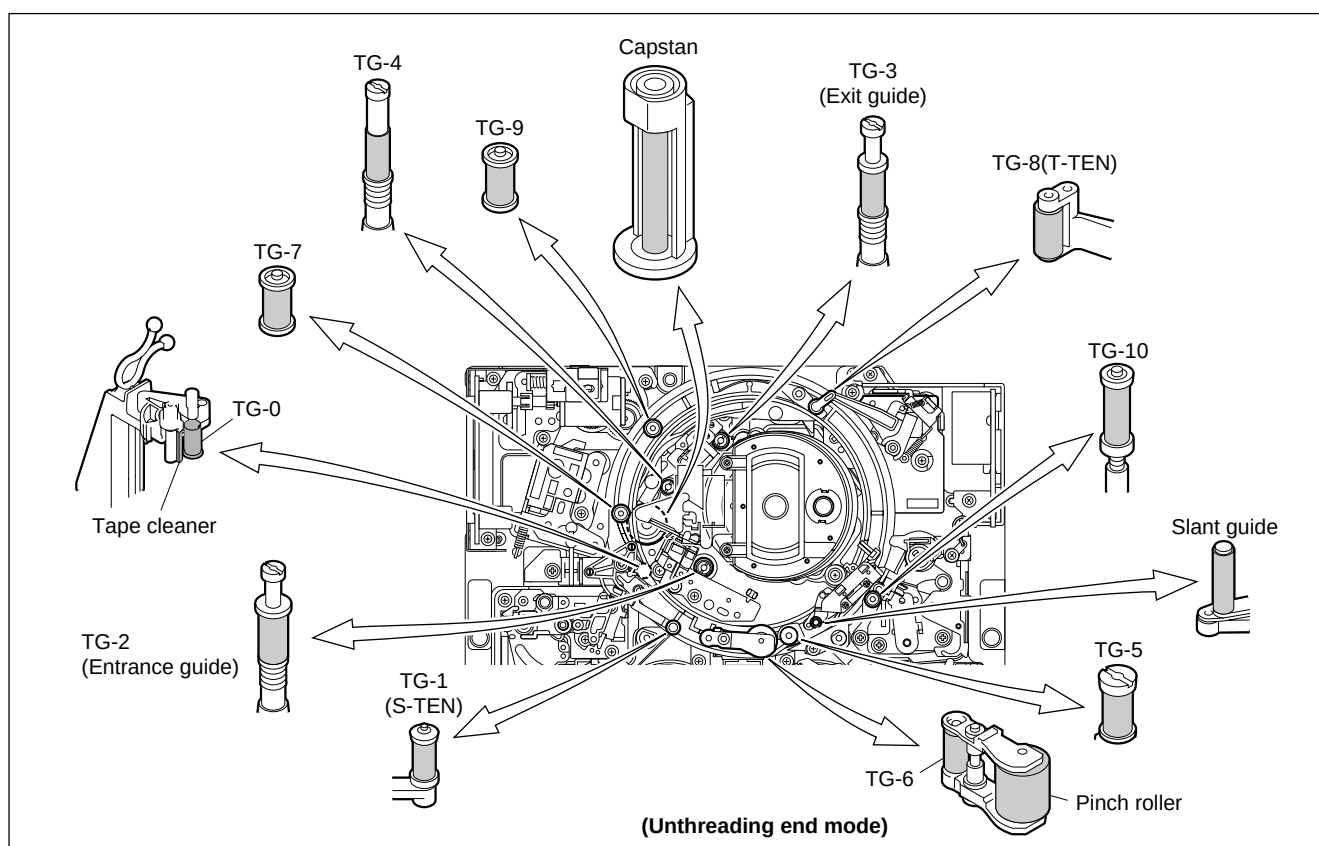
WARNING

Do not contact the edge portion of the tape cleaner with bare hands.

Note

Do not apply an excessive force to the tape cleaner to avoid damaging it.

2. Clean the tape-running surfaces (shaded portions in the figure) of each guide and the tape cleaner using cleaning cloth moistened with a cleaning fluid.
3. After cleaning, clean them using a dry cleaning cloth two or three times.



Tape-running System and Tape Cleaner Cleaning

4-2-8. Cassette Compartment and Cassette Supports Cleaning

Precautions

- Being careful not to apply an excessive force to the compartment block or mirror, clean the cassette compartment.
- Do not use an alcoholic chemical in cleaning of the door and mirror to avoid cracking them.

Tools

- Cloth (or Gauze)
- Vacuum cleaner

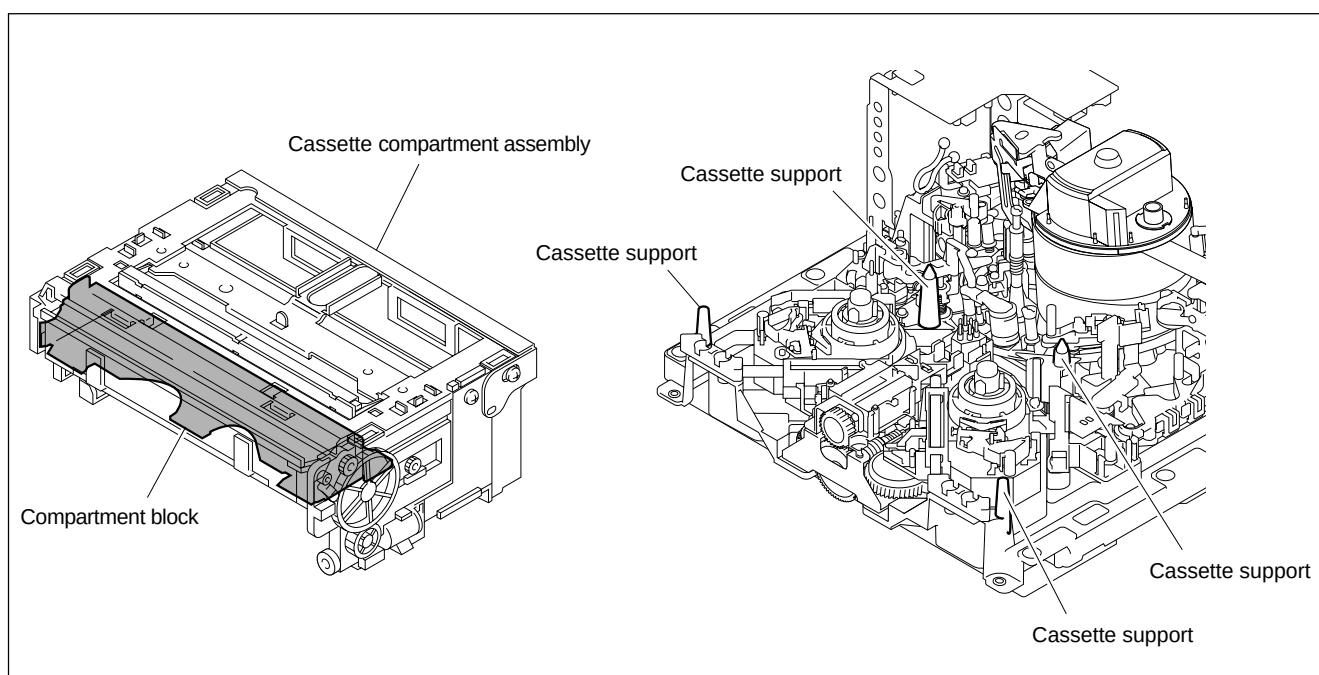
Procedure

1. Remove the cassette compartment from the unit. (Refer to Section 1-5.)
2. Remove the dust on the cassette compartment from the cassette insertion inlet using a vacuum cleaner.
3. Clean the compartment (shaded portion in the figure) using a dry cloth (or gauze).

Note

Do not apply an excessive force to the compartment block.

4. Clean the four cassette supports on the mechanical deck using a dry cloth (or gauze).
5. Reattach the cassette compartment. (Refer to Section 1-5.)



Cassette Compartment Cleaning

Section 5

Replacement of Main Parts

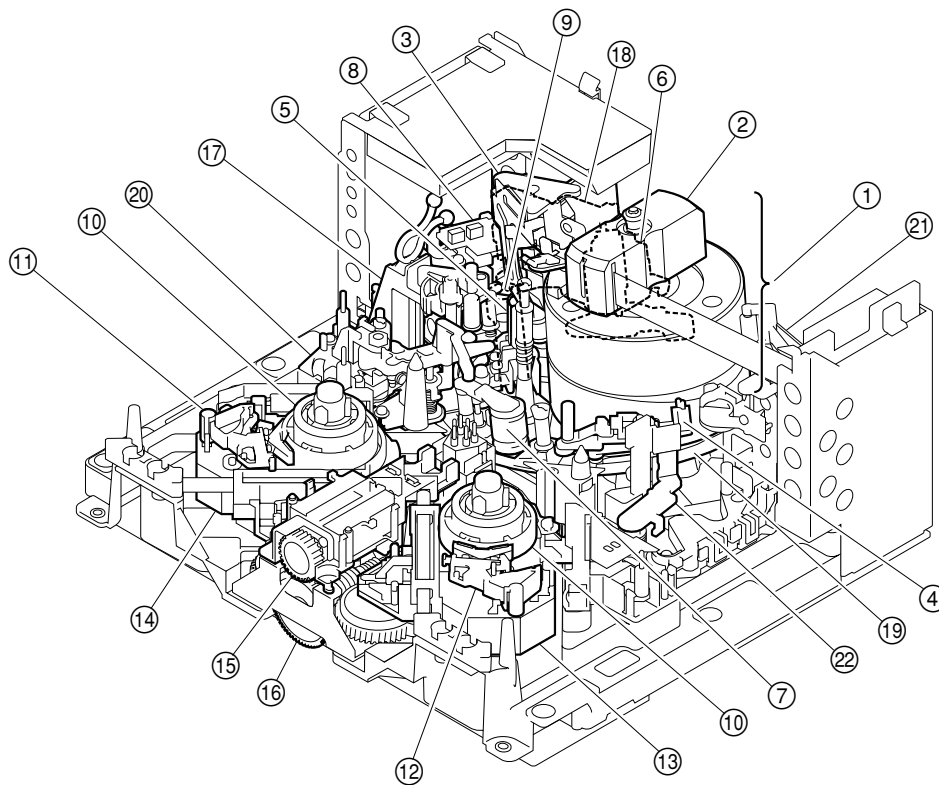
This section explains the replacement procedures of periodic replacement parts, main mechanical parts, power supply unit, and circuit boards.

5-1. General Information for Parts Replacement

5-1-1. Index

The parts that are explained each replacement procedure in this section are shown below.

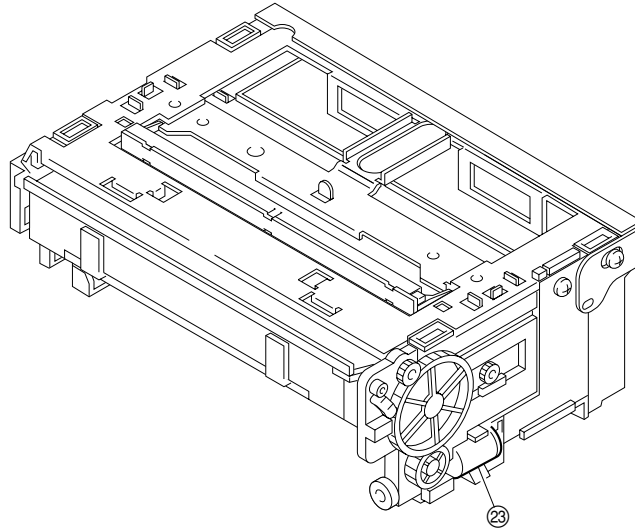
(1) Mechanical parts and power supply unit



No.	Part name	Section
①	Drum Assembly	5-2
②	Brush Slip Ring Assembly	5-3
③	Cleaning Roller and Video Head Cleaner Assembly	5-4
④	AT Head Cleaner	5-5
⑤	CTL/FE Head Assembly	5-6
⑥	AT Head Assembly	5-7
⑦	Pinch Roller	5-8
⑧	Pinch Press Assembly	5-9
⑨	Capstan Motor	5-10
⑩	Reel Table Assembly	5-11
⑪	Brake Assembly (S)	5-12

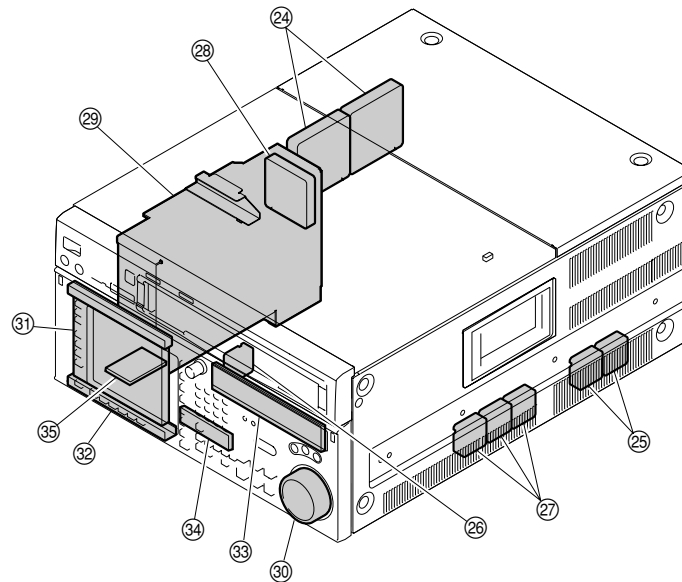
No.	Part name	Section
⑫	Brake Assembly (T)	5-12
⑬	Reel Motor Assembly (S)	5-13
⑭	Reel Motor Assembly (T)	5-13
⑮	Motor Holder Assembly	5-14
⑯	Worm Assembly	5-15
—	Tape Guide	5-16
⑰	S Plate Assembly	5-16-1
⑱	Gear Box Assembly/Threading Motor	5-17
⑲	Threading Ring Assembly	5-18
⑳	S Tension Regulator Assembly	5-19
㉑	T Tension Regulator Assembly	5-20
㉒	T Drawer Assembly	5-21

<Cassette Compartment>



No.	Part name	Section
②③	Cassette Compartment Motor	5-22

<Overall Block>



No.	Part name	Section
②④	Fan Motor 80 Square (Plug-in Boards)	5-23-1
②⑤	Fan Motor 40 Square (Plug-in Boards)	5-23-2
②⑥	Fan Motor (MD)	5-23-3
②⑦	Fan Motor Right Side (MD)	5-23-4
②⑧	Fan Motor (Power Supply Unit)	5-23-5
②⑨	Power Supply Unit	5-24

No.	Part name	Section
③⑩	Dial Assembly	5-25
③①	LCD Unit	5-26-1
③②	Lamp Unit	5-26-2
③③	Organic EL Indicator Module	5-27
③④	Inverter Unit	5-28
③⑤	PC Card Adaptor	5-29

(2) Mounted Circuit Boards

Note

After replacing the mounted circuit boards (or the assembling parts including them), perform the steps after replacement. (Refer to Section 1-26.)

Board name	Procedure	Steps after replacement
AE-31H	Section 5-30-1	Section 1-26-1
APR-81/91	Section 1-12 (Plug-in board)	Section 1-26-2
CCM-15	Section 5-17 (Replace by the Gear Box Assembly.)	Section 1-26-3
CL-29	Section 5-30-2	Section 1-26-4
CP-393/405	Section 5-30-3	Section 1-26-5
CP-397	Section 5-30-4	Section 1-26-6
CP-398	Section 5-30-5	Section 1-26-7
CP-399	Section 5-30-6	Section 1-26-8
CUE-13	Section 5-30-7	Section 1-26-9
DIO-86	Section 5-30-8	Section 1-26-10
DR-508	Section 5-30-9	Section 1-26-11
DT-47/48	Section 5-30-10	Section 1-26-12
EQ-102/109	Section 1-12 (Plug-in board)	Section 1-26-13
FL-350	Section 5-30-11	Section 1-26-14
FP-155/163	Section 5-30-12	Section 1-26-15
HIF-46/56	Section 1-12 (Plug-in board)	Section 1-26-16
HN-268	Refer to the exploded views	Section 1-26-17
HP-135	Section 5-30-13	Section 1-26-18
HPR-22/35	Section 1-12 (Plug-in board)	Section 1-26-19
KY-526G	Section 5-30-14	Section 1-26-20
KY-527	Section 5-30-15	Section 1-26-20
LED-455	Section 5-30-16	Section 1-26-21
LP-81	Refer to Section 1-5 (Removing/Installing the cassette compartment) and the exploded views	Section 1-26-22
MB-1101	Section 5-30-18	Section 1-26-23
PC-70	—	Section 1-26-24
PTC-101	Refer to Section 5-25 (Replace by the Search Dial Assembly.)	Section 1-26-25
PTC-102	Section 5-17 (Replace by the Gear Box Assembly.)	Section 1-26-26

Board name	Procedure	Steps after replacement
PTC-99	Refer to the exploded views (Replace by the MC sensor Assembly.)	Section 1-26-27
SE-606A	Section 5-13	Section 1-26-28
SS-102	Section 1-12 (Plug-in board)	Section 1-26-29
SWC-46	Section 5-30-17	Section 1-26-30
TC-104A/112A	Section 5-30-19	Section 1-26-31
TR-119	Section 5-19 (Replace by the S tension regulator.)	Section 1-26-32
TR-120	Section 5-20 (Replace by the T tension regulator.)	Section 1-26-33

For the exploded views, refer to the maintenance manual volume 2.

5-1-2. Threading End Mode and Unthreading End Mode

1. Threading End Mode

Threading end mode means that the threading ring rotates counterclockwise, then stops.

There are two ways of putting the unit into the threading end mode with the cassette compartment taken off the unit.

Method 1 (When power on) :

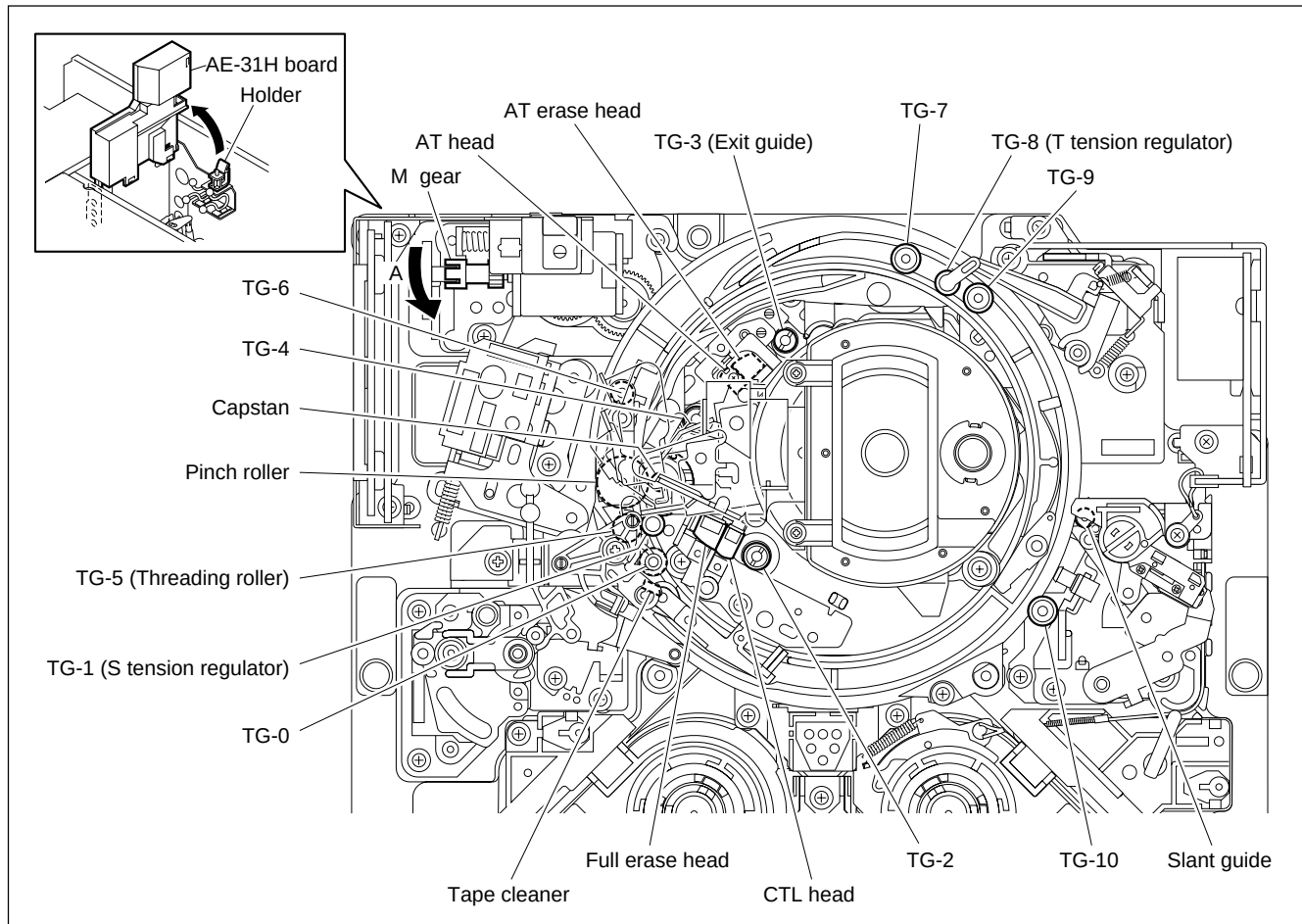
- (1) Display the SERVO CHECK menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[F4]** → SERVO CHECK menu)
(For the SERVO CHECK menu, refer to Section 3-3-4.)
- (2) Using **[F7]** (THREAD MOTOR), put the unit into the threading end state.

Note

The unit will return to the unthreading end state when exiting **[F7]** (THREAD MOTOR).

Method 2 (When power off) :

- (1) Release the lock of the board holder and open the AE-31H board in the arrow direction.
- (2) Turn the M gear of the gear box assembly in the direction of the arrow A.



2. Unthreading End Mode

Unthreading end mode means that the threading ring rotates clockwise, then stops.
(It is same state as EJECT completion mode.)

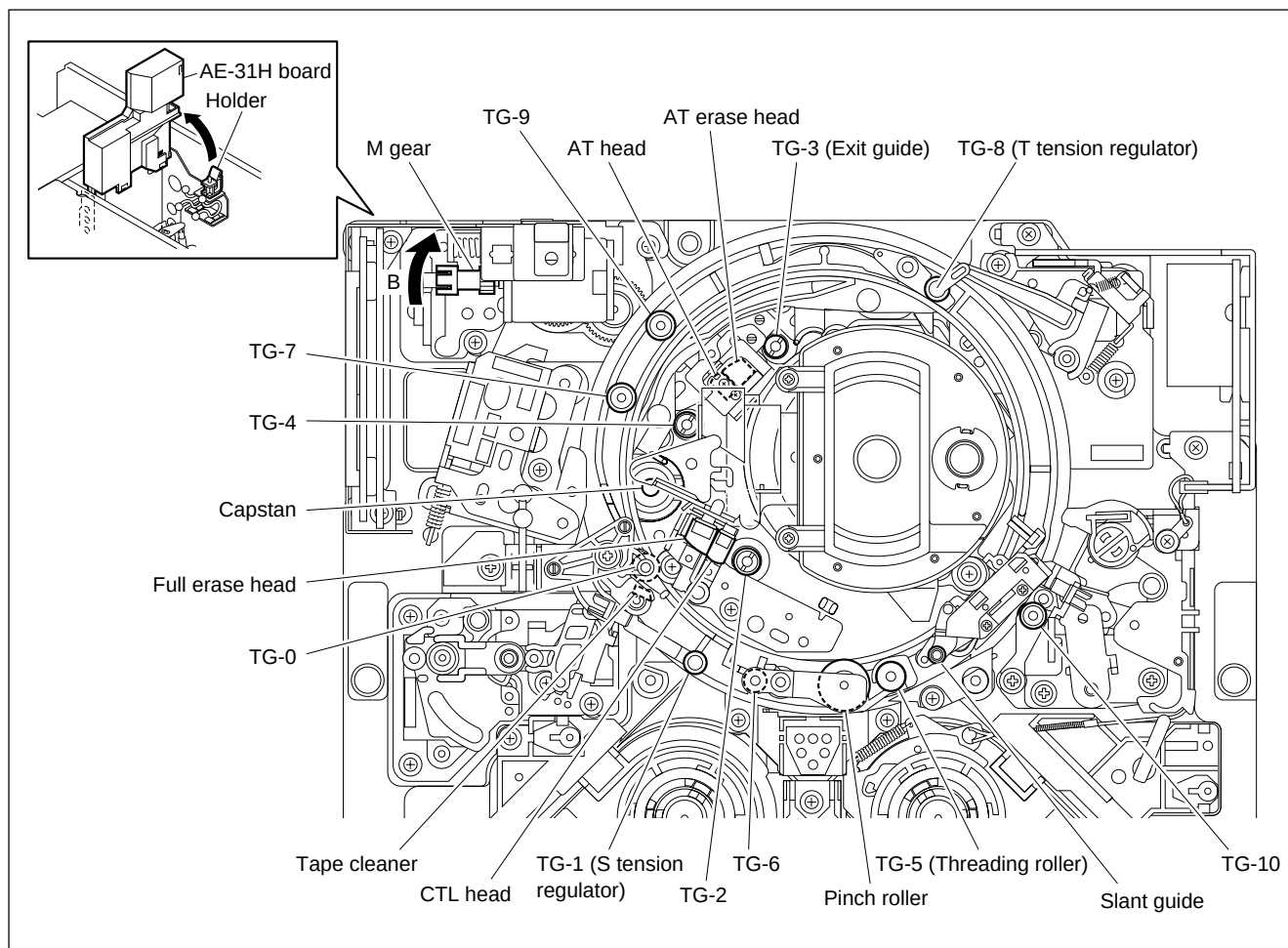
There are two methods of putting the unit into the unthreading end mode with the cassette compartment taken off the unit.

Method 1 (When power on) :

- (1) Display the SERVO CHECK menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[F4]** → SERVO CHECK menu)
(For the SERVO CHECK menu, refer to Section 3-3-4.)
- (2) Using **[F7]** (THREAD MOTOR), put the unit into the unthreading end state.

Method 2 (When power off) :

- (1) Release the lock of the board holder and open the AE-31H board in the arrow direction.
- (2) Turn the M gear of the gear box assembly in the direction of the arrow B.



Unthreading End Mode

5-1-3. L Cassette Position and S Cassette Position

1. L Cassette Position

L cassette position means that the reel tables are in the position of L cassette tape.

There are three methods of putting the reel tables into the L cassette position from the S cassette position with the cassette compartment taken off the unit.

Method 1 (When power on) :

Press the switch S1201 on the SS-102 board.
(Press once again to return to the S cassette position.)

Method 2 (When power on) :

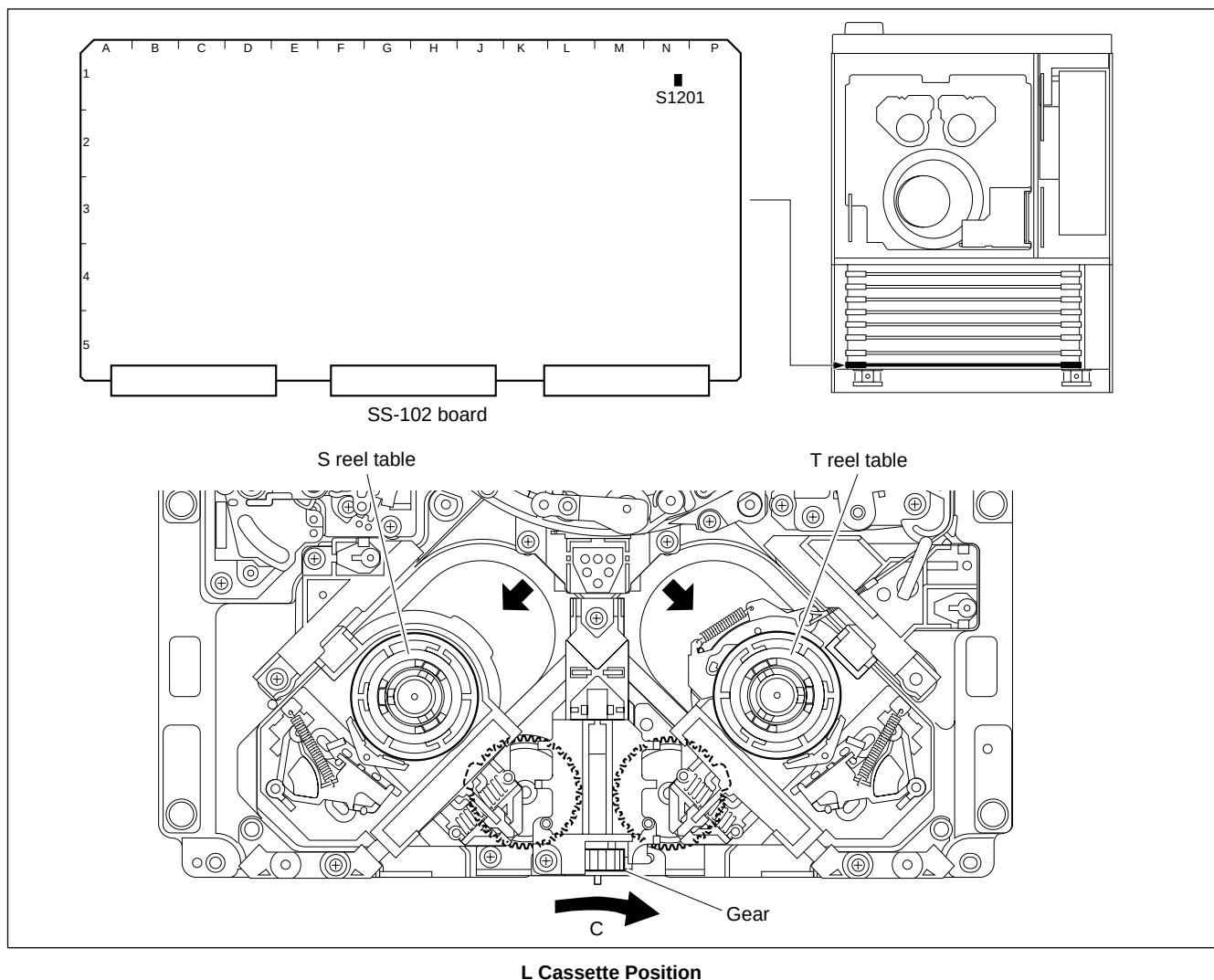
- (1) Display the ALT SERVO CHECK menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → ALT SERVO CHECK menu)
(For the ALT SERVO CHECK menu, refer to Section 3-3-4.)
- (2) Using **F2** (REEL SHIFT), put the reel tables into the L cassette position.

Method 3 (When power off) :

Turn the gear of the motor holder assembly in the direction of the arrow C until it stops lightly by fingers.

Note

Be careful not to turn the gear excessively. Or the gear locks and the reel shift operation can not be made.



2. S Cassette Position

S cassette position means that the reel tables are in the position of S cassette tape.

There are three methods of putting the reel tables into the S cassette position from the L cassette position with the cassette compartment taken off the unit.

Method 1 (When power on) :

Press the switch S1201 on the SS-102 board.

(Press once again to return to the L cassette position.)

Method 2 (When power on) :

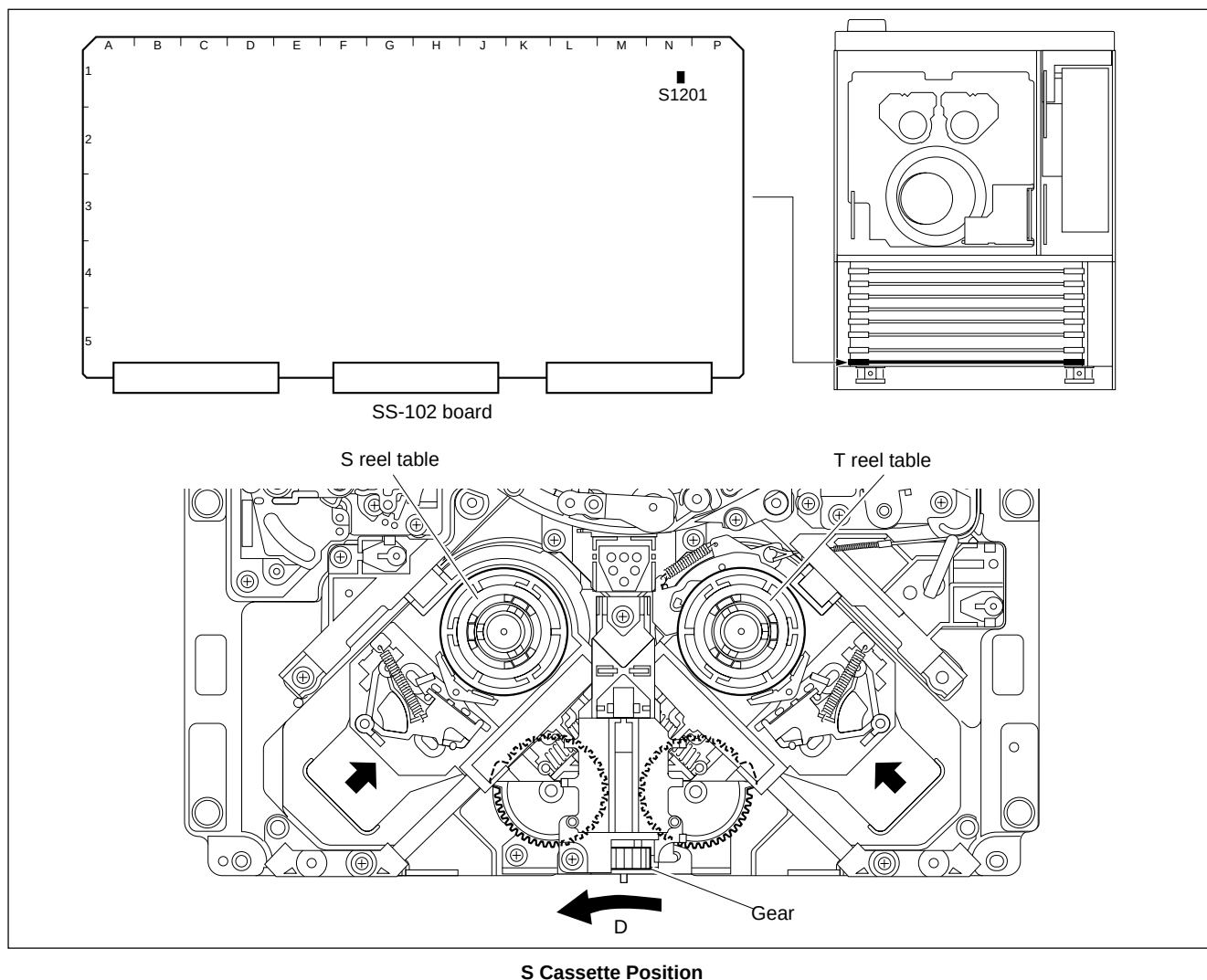
- (1) Display the ALT SERVO CHECK menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → ALT SERVO CHECK menu)
(For the ALT SERVO CHECK menu, refer to Section 3-3-4.)
- (2) Using **F2** (REEL SHIFT), put the reel tables into the S cassette position.

Method 3 (When power off) :

Turn the gear of the motor holder assembly in the direction of the arrow D until it stops lightly by fingers.

Note

Be careful not to turn the gear excessively. Or the gear locks and the reel shift operation can not be made.



5-1-4. Basic Knowledge

1. Tape Cleaner

CAUTION

Never touch the edge of the tape cleaner with bare hands.

It is in danger of cutting your finger because the tape cleaner has a sharp edge.

Pay careful attention when replacing or adjusting the peripheral parts.

2. Tools

Before using a tool, clean the surface of the tool using a cleaning cloth moistened with cleaning fluid.

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Be careful not to damage the tool. If the flawed tool is used, adjustment cannot be performed correctly.

3. Grease and Oil

Do not use the grease and oil except for specified portions.

Please use only the specified grease and oil.

If the different grease or oil is used, major malfunctions may be caused due to differences in viscosity and ingredients.

And if the grease or oil that has been mixed with dust is used, major malfunctions may be caused.

Use the following grease and oil.

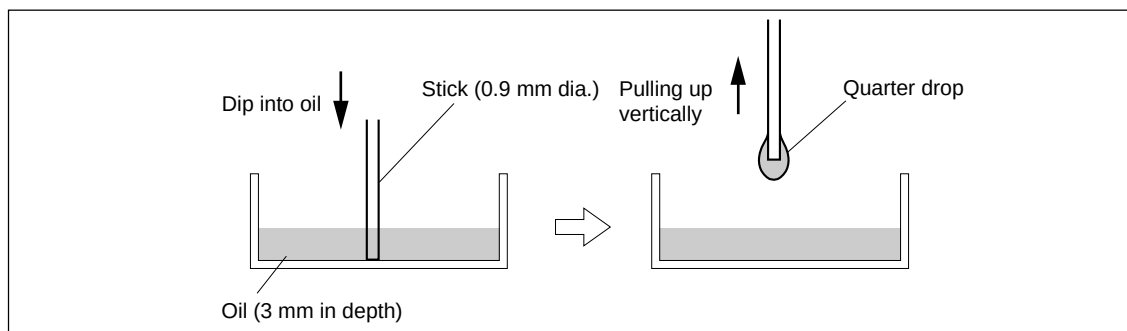
- Grease (SGL-601): 7-651-000-10
- Oil (SONY BC oil): 7-640-015-58

Apply just enough grease to create a thin film on the surface of the part.

Any grease that adheres to other surrounding parts must be wipe using a gauze or soft cloth.

Quarter drop of oil is defined as follows:

About the amount that will adhere to the end of a stick 0.9 mm in diameter, as shown in the figure.



Oil

4. Stop Washer and E Ring

It should not be used the stop washer and E ring once again.

It is recommended checking a required stop washer and E ring before replacement, and preparing more than required number.

5-2. Drum Assembly Replacement

Outline

Replacement

1. Removing the Video Head Cleaner Assembly
(Refer to steps 1 and 2 in Section 5-4.)
2. Removing the Upper Drum Cover Assembly
3. Removing the Drum Assembly
4. Cleaning (Drum assembly mounting surfaces and Chassis mounting surfaces)
5. Attaching the Drum Assembly
6. Cleaning (Video heads, Upper drum's tape running surface and Lower drum's tape running surface)
7. Reattaching the Video Head Cleaner Assembly
(Refer to steps 4 to 6 in Section 5-4.)
8. Reattaching the Upper Drum Cover Assembly

Adjustment after Replacement

9. Confirming the Drum Motor Operation (Refer to Section 3-3-4.)
F1 (DRUM MOTOR) of the ALT SERVO CHECK menu
10. Adjusting the Tape Running (Refer to Sections 6-2 to 6-11.)
11. Confirming the Tape Running (Refer to Section 6-12.)
12. Electrical Adjustment after Replacing the Drum (Refer to Section 7-2.)

Note

- Be sure to perform the tape path alignment after replacing the drum assembly.
(Do not finish the alignment only checking.)
- Be careful not to damage the AT head and peripheral tape guides when removing/ installing the drum assembly.

Basic Knowledge

Except in the periodic replacement time, replace the drum assembly in the following cases.

- The lower drum's tape running surface is damaged and cannot be repaired.
- A correct RF signal waveform cannot be obtained due to the worn lower drum even if the tracking adjustment is performed.
- The performance of the unit deteriorates because of the noise or jitter caused by the bearing life.

Tools

• Hexagonal wrench driver (2.5 mm):	7-700-766-04
• Torque screwdriver (6 kg•cm) (JB-5251):	J-6252-510-A
• Torque screwdriver (12 kg•cm) (JB-5252):	J-6252-520-A
• Torque screwdriver's hexagonal bit (d = 2.5 mm, l = 120 mm):	J-6251-090-A
• Cleaning cloth:	3-184-527-01
• Cleaning fluid:	9-919-573-01

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front and rear) assemblies. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)
4. Open the AE-31H board. (Refer to the figure in Section 5-1-2.)

Removal

1. Removing the Video Head Cleaner Assembly

Remove the video head cleaner assembly.
(Refer to steps 1 and 2 in Section 5-4.)

2. Removing the Upper Drum Cover Assembly

Loosen the two screws, then remove the upper drum cover assembly.

Note

These screws cannot be removed because of stoppers.

3. Removing the Drum Assembly

- (1) Turn the inner drum assembly manually counterclockwise and align the $\Rightarrow$ mark of the board cover with the fixing screw position on the drum assembly.

Note

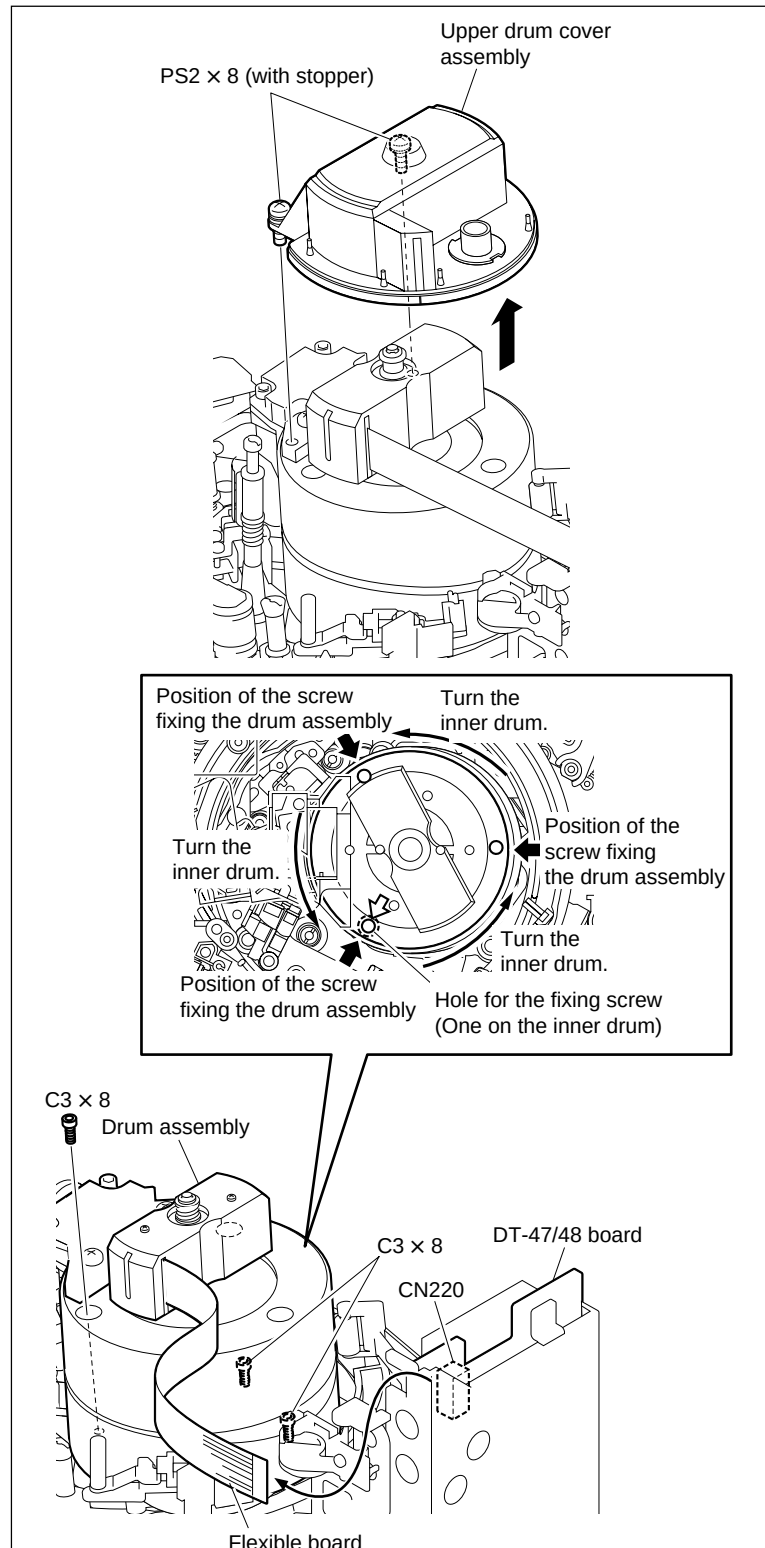
The drum assembly is fixed to the MD base assembly with the three fixing screws (C3 $\times$ 8) in the screw hole.

- (2) Fully loosen the screw using a hexagonal wrench driver.

Note

These screws cannot be removed because of stoppers.

- (3) Fully loosen other two screws in the same way in steps (1) and (2).
- (4) Disconnect the flexible board from the connector CN220 on the DT-47/48 board.



- (5) Pull out the EQ-102/109 board and set the board onto the other plug-in boards without disconnecting the harnesses from the EQ-102 board.

(Refer to Section 1-12.)

- (6) Remove the screw and remove the EQ harness retainer.
- (7) Open the edge holder.
- (8) Send down the harnesses (drum harnesses) fixed by the edge holder into the reverse-side of the mechanical deck at the portion * fully as shown in the figure.

Note

When raising the drum assembly, the drum harnesses are drawn into the underside of the mechanical deck. Therefore, slack off the drum harnesses at the underside of the mechanical deck in advance.

- (9) Raise the drum assembly uprightly.

Note

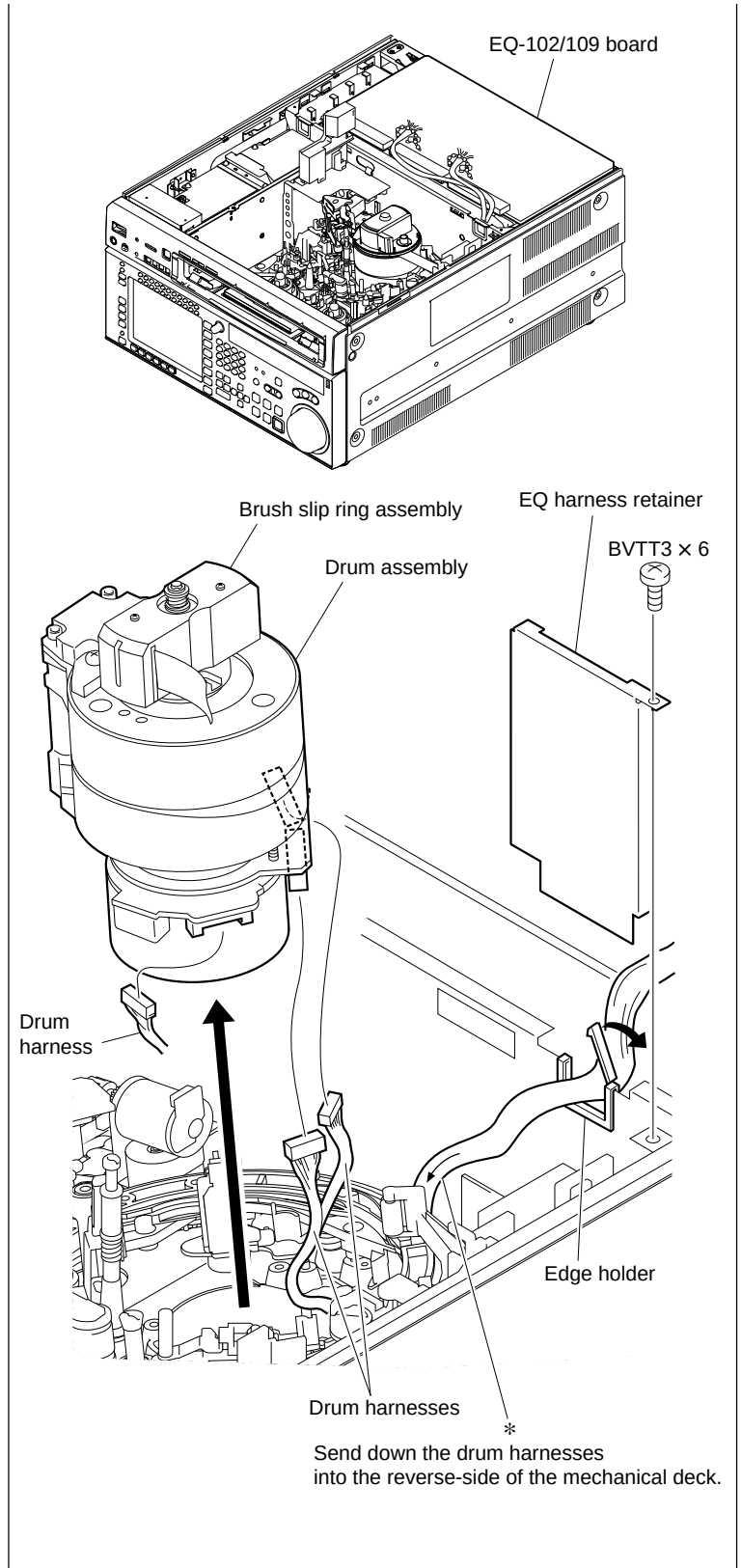
Be careful not to raise the drum assembly by holding the brush slip ring assembly.

- (10) Disconnect the three drum harnesses from the three connectors of the drum assembly while keeping state of step (9).

According the drum assembly can be removed.

Notes

- Be careful not to touch the drum assembly to the AT head or peripheral tape guides.
- Be careful not to touch the disconnected harnesses to the AT head or peripheral tape guides.



Remove the Drum Assembly

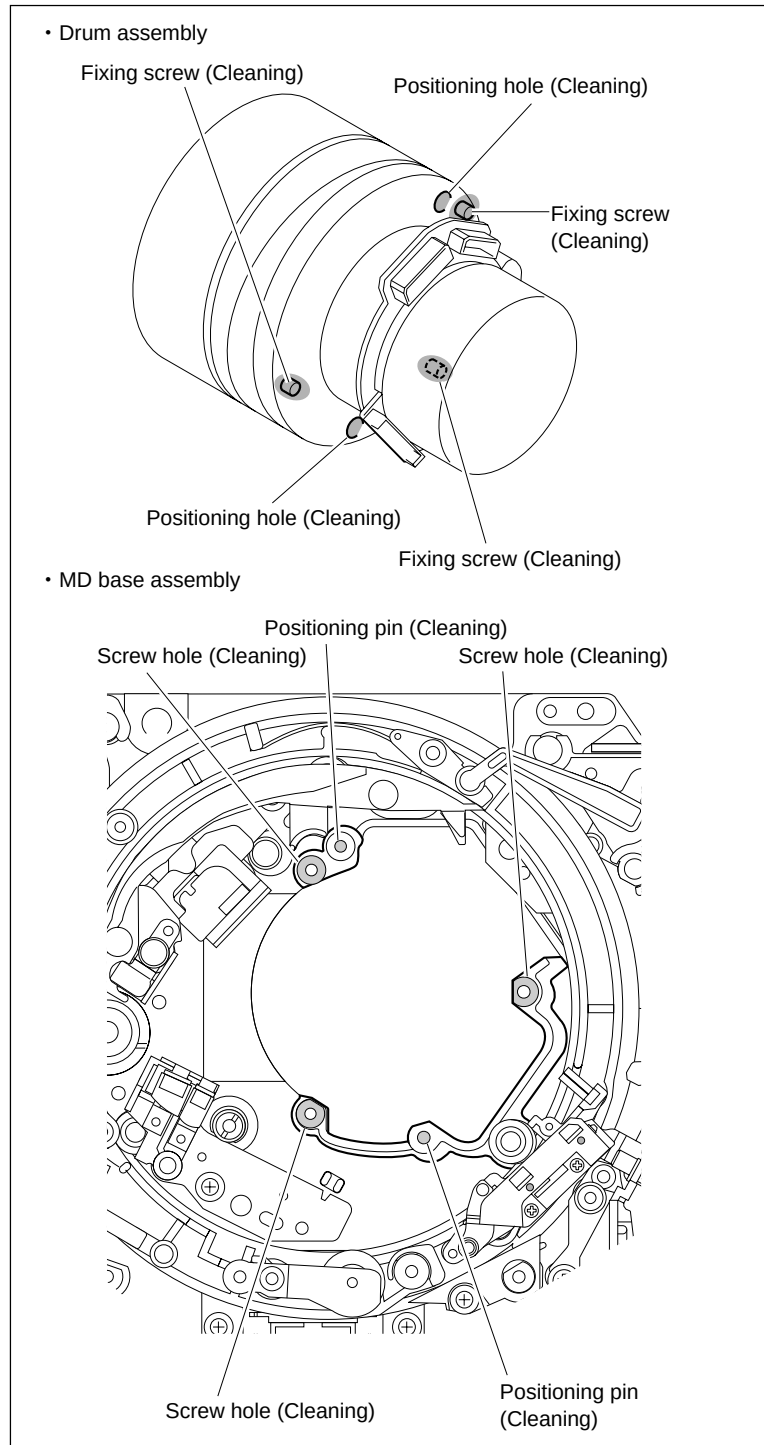
Installation

4. Cleaning

Clean the new drum assembly mounting surfaces and MD base assembly mounting surfaces with a cleaning cloth moistened with cleaning fluid.

CAUTION

After cleaning, wipe with a dry cleaning cloth.



Cleaning

5. Attaching the Drum Assembly

- (1) Hold the drum assembly as shown in the figure and connect the three drum harnesses disconnected in (10) of step 3 to the connectors of drum assembly.

Notes

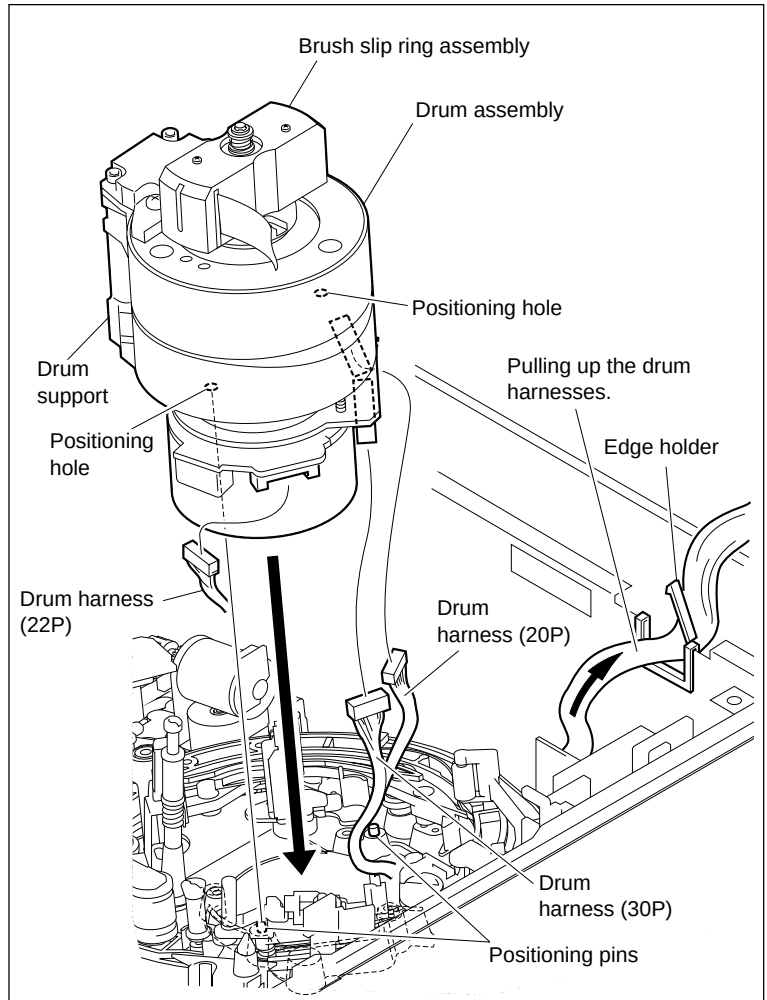
- Hold the drum support, not to hold the upper drum portion and the brush slip ring assembly.
- Pay attention to the orientation of the connectors.

- (2) Align the two positioning holes of the drum assembly with the two positioning pins of the MD base assembly while pulling up the three drum harnesses shown in the figure.

Notes

- Avoid pulling the three drum harnesses forcibly, or the harnesses may come off the drum assembly.
- Be careful not to touch the drum assembly to the AT head or peripheral tape guides at that time.
- Be careful not to put the harnesses between the drum motor portion and the MD base assembly.

- (3) Confirm that the drum assembly is firmly inserted into the positioning pins.



- (4) Turn the inner drum assembly manually counterclockwise and align the $\Rightarrow$ mark of the board cover with the fixing screw position.
- (5) Tighten the screw temporarily.
- (6) Tighten other two screws temporarily in the same way in steps (4) and (5).
- (7) Tighten the three screws in turns counterclockwise for each by two or three turns.
Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
 $\{8.0 \text{ kgf}\cdot\text{cm}\}$

- (8) Retract the drum harnesses to the EQ-102/109 board side, and fix them by closing the edge holder.
- (9) Attach the EQ-102/109 board.
- (10) Reattach the EQ harness retainer, then fix it with a screw.

Note

Put the hook of the EQ harness retainer into the square hole of the chassis.

- (11) Connect the flexible board into the connector CN220 on the DT-47/48 board, then lock.

6. Cleaning

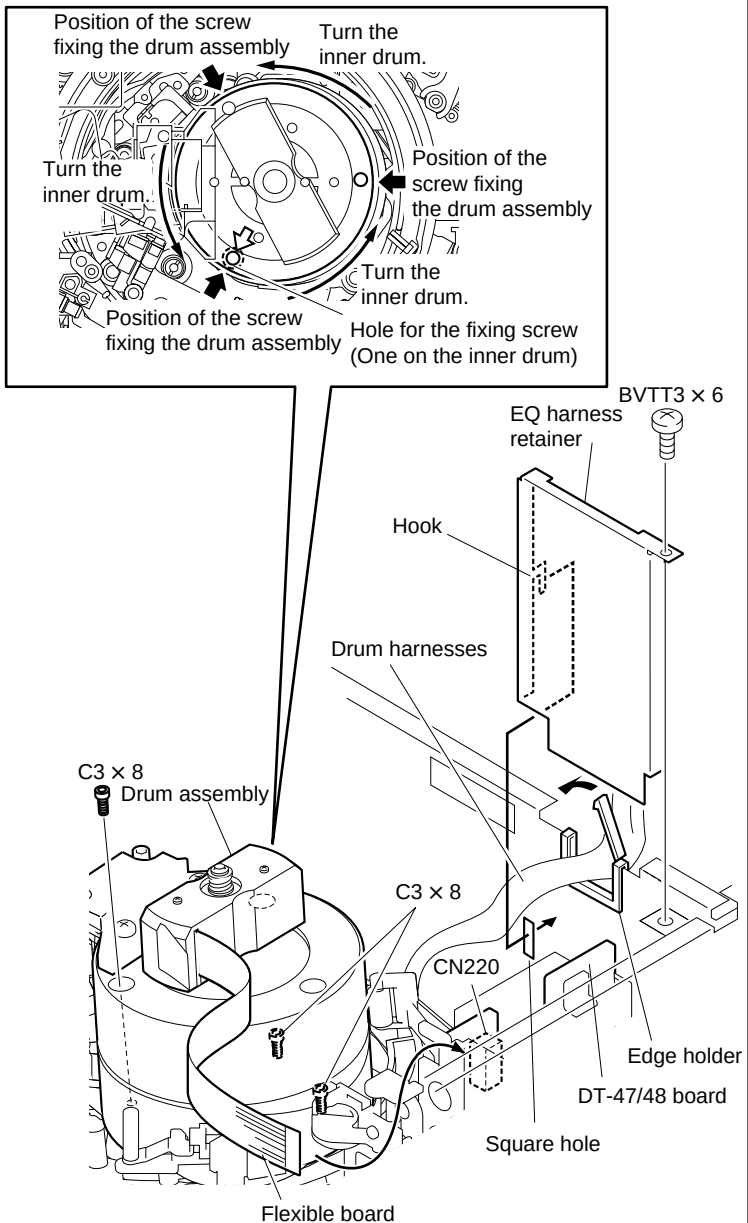
Clean the portions below.

- (1) Rotary heads and upper drum's tape running surface (Refer to Sections 4-2-3 and 4-2-4.)
- (2) Lower drum's tape running surface and lead surface (Refer to Section 4-2-5.)

Note

After cleaning, wipe with a dry cleaning cloth.

- When installing the drum assembly



Attach the Drum Assembly

7. Reattaching the Video Head Cleaner Assembly

Reattach the video head cleaner assembly.
(Refer to steps 4 to 6 in Section 5-4.)

8. Reattaching the Upper Drum Cover Assembly

- (1) Tighten the two screws while pressing the upper drum cover assembly toward the height determining plate.

Tightening torque: $14.7 \times 10^{-2} \text{ N}\cdot\text{m}$
(1.5 kgf·cm)

- (2) Check that the rubber of the upper drum cover assembly is not turned up.
- (3) Check that there is no gap between the upper drum cover assembly and the upper drum.

Adjustment after Replacement

9. Confirming the Drum Motor Operation

Refer to Section 3-3-4.

F1 (DRUM MOTOR) of the ALT SERVO CHECK menu

10. Adjusting the Tape Running

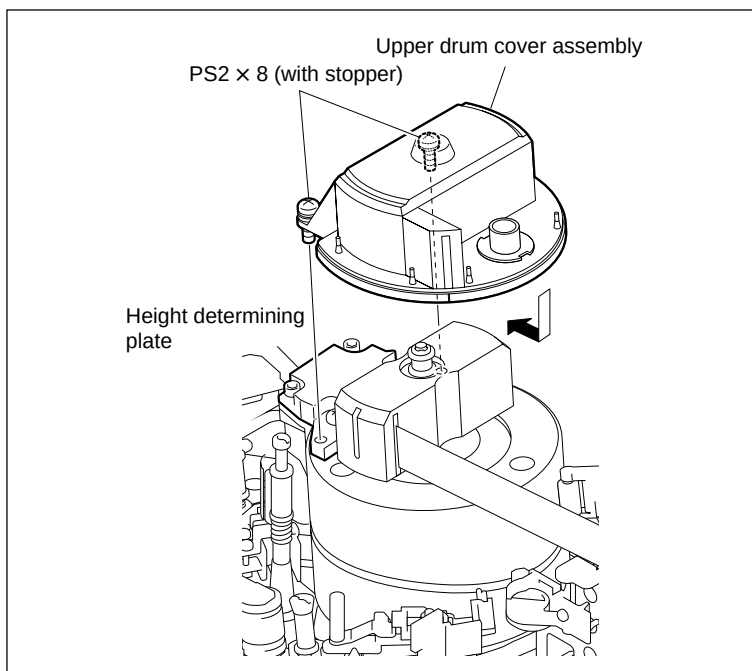
Refer to Sections 6-2 to 6-11.

11. Confirming the Tape Running

Refer to Section 6-12.

12. Electrical Adjustment after Replacing the Drum

Refer to Section 7-2.



5-3. Brush Slip Ring Assembly Replacement

Outline

Replacement

1. Removing the Upper Drum Cover Assembly (Refer to step 2 in Section 5-2.)
2. Removing the Brush Slip Ring Assembly
3. Cleaning (internal board's contacting points of the drum and Brush slip ring assembly mounting surface)
4. Attaching the Brush Slip Ring Assembly
5. Attaching the Upper Drum Cover Assembly (Refer to step 8 in Section 5-2.)

Note

When the brush or slip ring was worn or damaged, replace the brush slip ring assembly. A single brush or slip ring cannot be replaced.

Tools

- Torque screwdriver (6 kg•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l = 75 mm): J-6323-420-A
- Cleaning cloth: 3-184-527-01

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the Upper Drum Cover Assembly

Remove the upper drum cover assembly.
(Refer to step 2 in Section 5-2.)

2. Removing the Brush Slip Ring Assembly

- (1) Disconnect the flexible board from the connector CN220 on the DT-47/48 board.
- (2) Fully loosen the two screws, then remove the brush slip ring assembly.

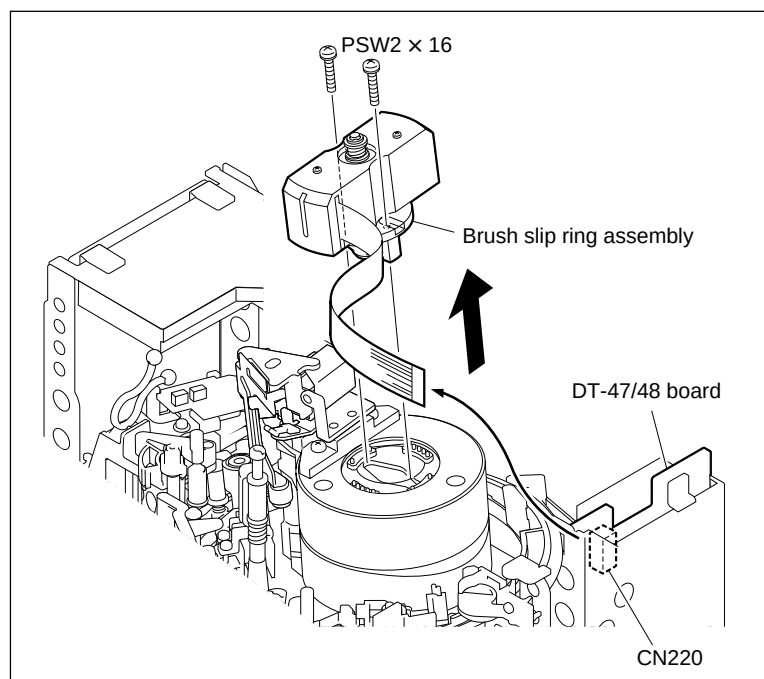
Note

Do not apply excessive force to the brush slip ring assembly at that time.

- (3) Turn the brush slip ring assembly upside down, and take out the two screws.

Note

Use care not to fall the screws into the cover of the brush slip ring assembly.



Remove the Brush Slip Ring Assembly

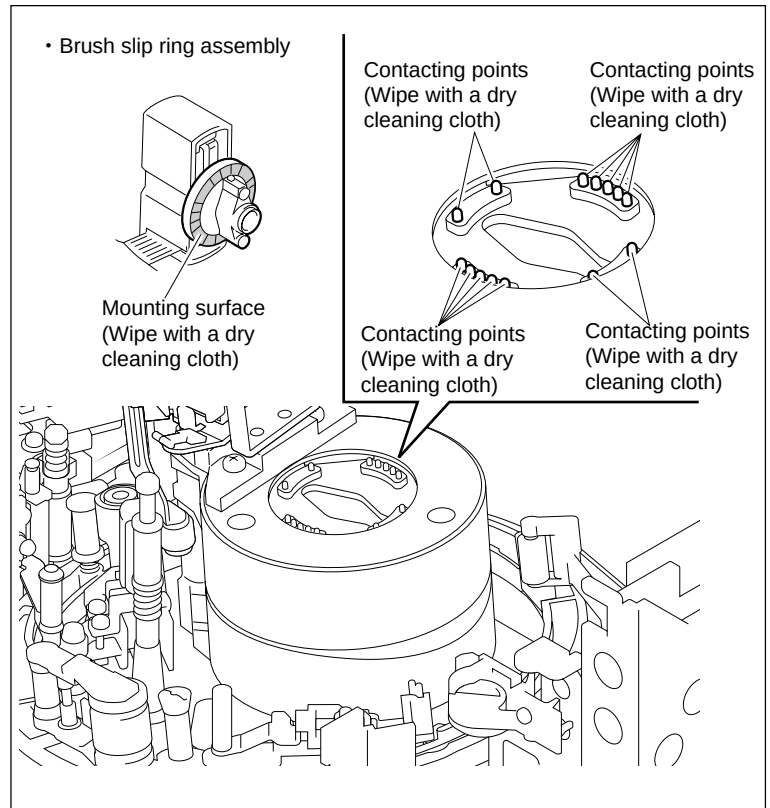
Installation

3. Cleaning

Wipe the brush slip ring assembly mounting surface (shaded portion in the figure) and the contacting points at the drum side with a dry cleaning cloth.

Note

Never apply the cleaning fluid to the contacting points.



Cleaning

4. Attaching the Brush Slip Ring Assembly

- (1) Insert the two screws taken out in (3) of step 2 into the screw holes of the brush slip ring assembly.
- (2) Insert the brush slip ring assembly into the upper drum assembly as shown in the figure.
- (3) Tighten the two screws alternately while pushing both sides of the flange equally from above.

Tightening torque: $14.7 \times 10^{-2} \text{ N}\cdot\text{m}$
{1.5 kgf•cm}

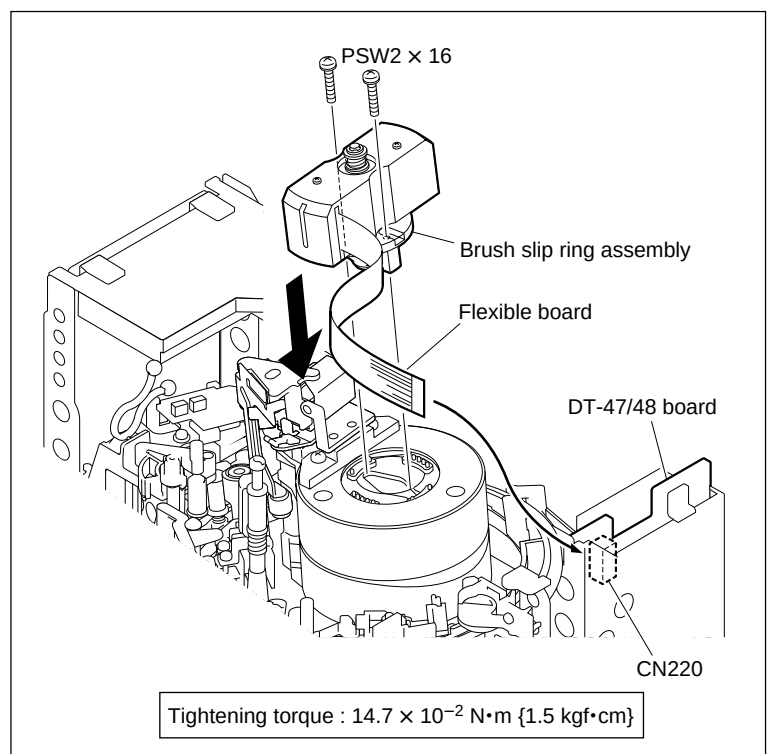
Note

Never apply excessive force to the cover.

- (4) Connect the flexible board into the connector CN220 on the DT-47/48 board, then lock.

5. Attaching the Upper Drum Cover Assembly

Attach the upper drum cover assembly.
(Refer to step 8 in Section 5-2.)



Attach the Brush Slip Ring Assembly

5-4. Cleaning Roller and Video Head Cleaner Assembly Replacement

Replace the cleaning roller every 3,000 hours of the drum rotating.

Replace the video head cleaner assembly every 6,000 hours of the drum rotating.

The cleaning roller is included in the video head cleaner assembly.

Outline

Replacement

1. Remove the Harness (CN231/HN-268 Board)
2. Remove the Video Head Cleaner Assembly
3. Replace the Cleaning Roller
4. Attach the Video Head Cleaner Assembly
5. Confirming the Cleaning Roller Position
6. Connect the Harness (CN231/HN-268 Board)

Adjustment after Replacement

7. Confirm the Cleaning Solenoid Operation (Refer to Section 3-3-4.)
 [F6] (CLEAN PLG) of the ALT SERVO CHECK menu

Note

When the cleaning roller is replaced, it is recommended to replace the CR spacer at the same time.

Tools

- CR spacer: 3-182-765-02
- Bundling band (or equivalent): 3-655-653-01

Preparation

1. Turn off the power.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)
4. Open the AE-31H board. (Refer to the figure in Section 5-1-2.)

Removal

1. Remove the Harness

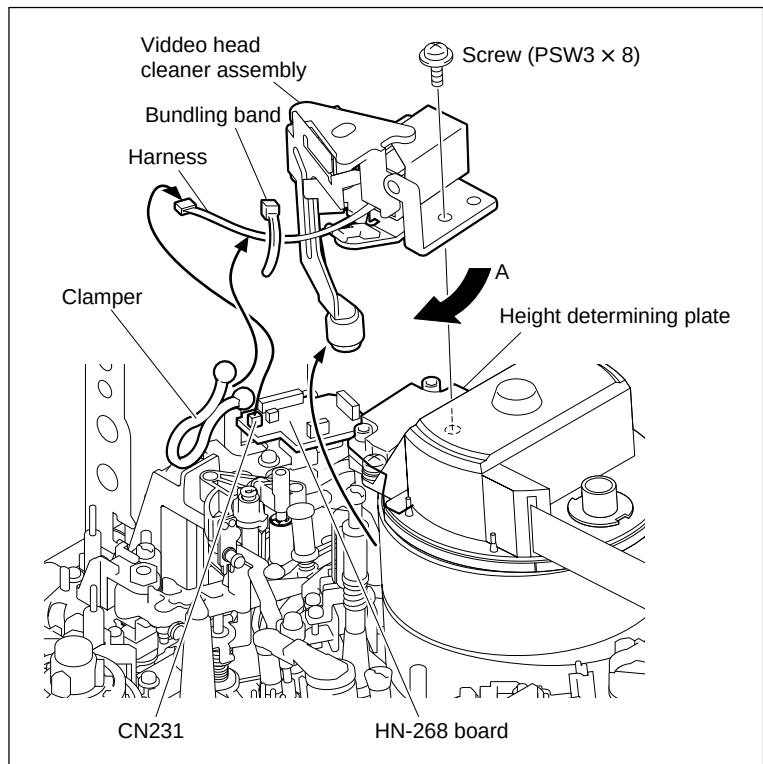
- (1) Disconnect the harness from the connector CN231 on the HN-268 board.
- (2) Release the bundling band.
- (3) Remove the harness from the clamber.

2. Remove the Video Head Cleaner Assembly

Remove the screw, shift the video head cleaner assembly in the direction indicated by the arrow A, and remove it from the height determining plate.

Notes

- Be careful not to touch the arm portion of the video head cleaner assembly to the peripheral tape guides.
- When replacing the video head cleaner assembly, perform step 4 and later.
When replacing the cleaning roller, perform step 3 and later.



Remove the Video Head Cleaner Assembly

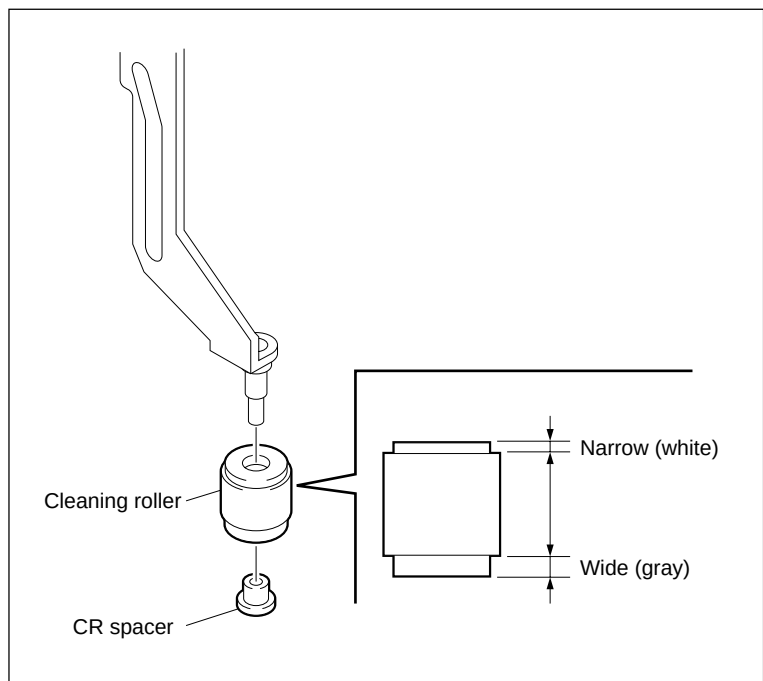
3. Replace the Cleaning Roller

- (1) Remove the CR spacer, and remove the cleaning roller.
- (2) Pass a new cleaning roller through the shaft as shown in the figure. Then fix the cleaning roller by new CR spacer.
- (3) Move the cleaning roller in the vertical direction.

At this time, confirm that there is no vertical play.

Note

Do not reverse the direction of the cleaning roller. The height between the cleaning roller and head is shifted in this case.



Replace the Cleaning Roller

Installation

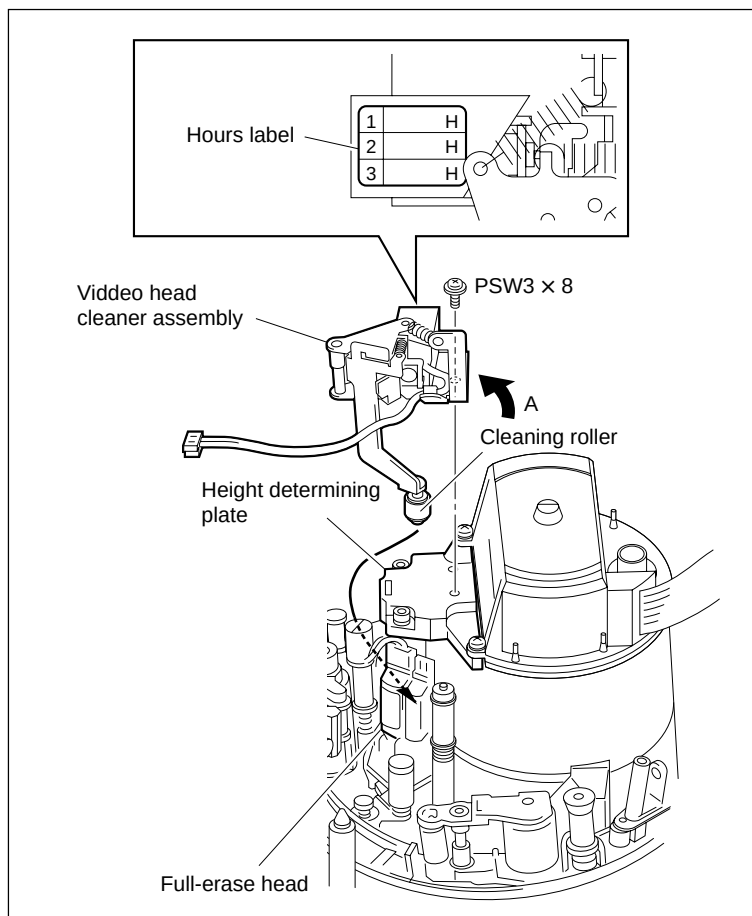
4. Attach the Video Head Cleaner Assembly

- (1) Insert the cleaning roller from the clearance between the height determining plate and the full-erase head.

Note

Be careful not to touch the arm portion of the video head cleaner assembly to the peripheral tape guides.

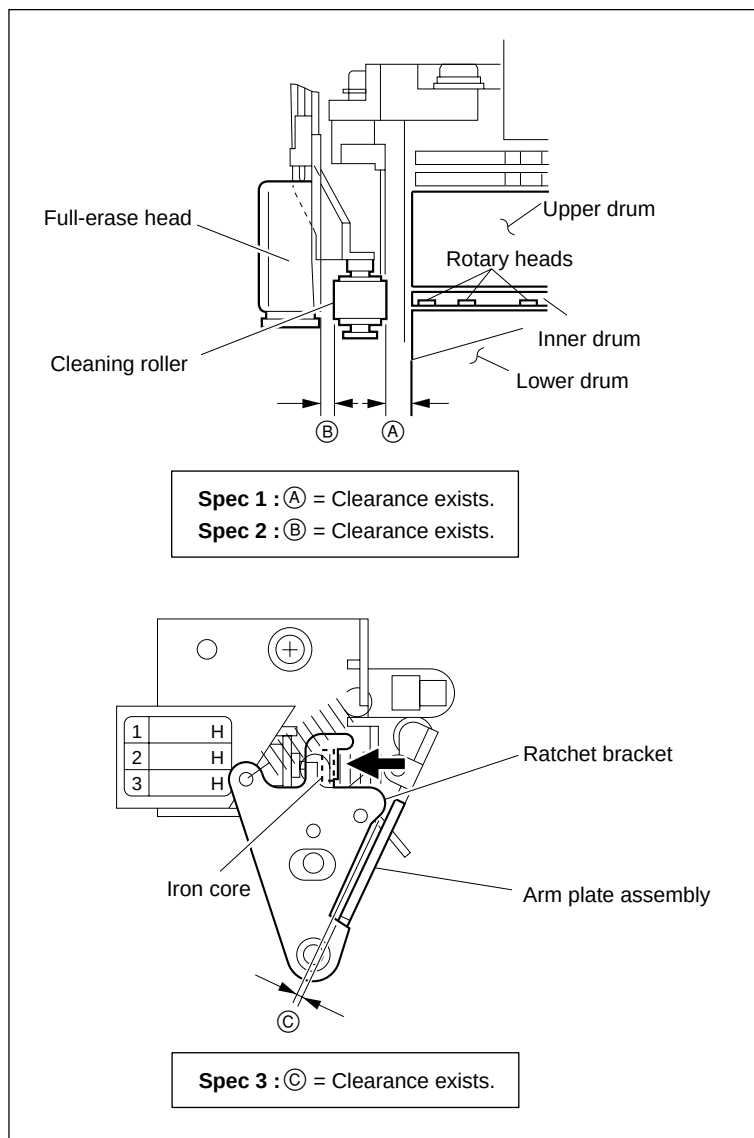
- (2) Align the two pins of the video head cleaner assembly to the two holes of the height determining plate.
- (3) Tighten the screw while moving the video head cleaner assembly in the direction indicated by the arrow A (counterclockwise).
- (4) Fill in the hours of the cleaning roller replacement on the hours label stuck on the video head cleaner assembly.



Attach the Video Head Cleaner Assembly

5. Confirming the Cleaning Roller Position

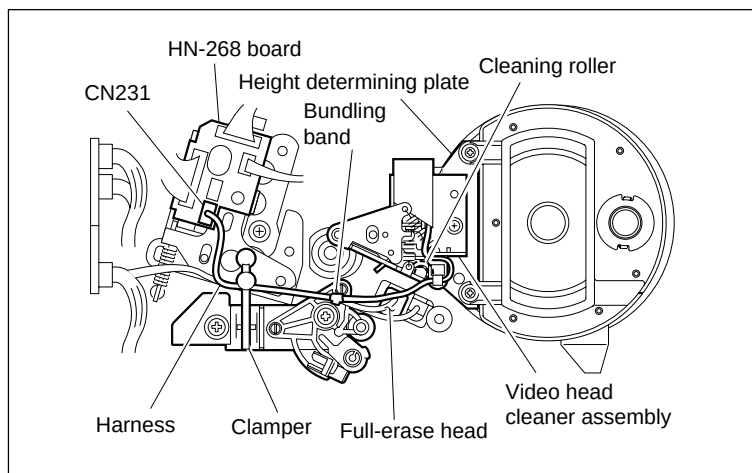
- (1) Check that the cleaning roller does not come in contact with the upper drum and rotary heads of the inner drum as visual. (Specification 1)
- (2) Check that the cleaning roller does not come in contact with the terminal on the full-erase head as visual. (Specification 2)
- (3) Press the iron core in the direction of the arrow. At that time, check that clearance exists between the ratchet bracket and the arm plate assembly. (Specification 3)



Adjust the Cleaning Roller Position

6. Connect the Harness

- (1) Fix the harness by the clumper as shown in the figure.
- (2) Connect the harness of the video head cleaner assembly to the connector CN231 (white) on the HN-268 board.
- (3) Bind the two harnesses of the video head cleaner assembly and the full-erase head with a new bundling band.



Connect the Harness

Adjustment after Replacement

7. Confirm the Cleaning Solenoid Operation

Refer to Section 3-3-4.

F6 (CLEAN PLG) of the ALT SERVO
CHECK menu

5-5. AT Head Cleaner Replacement

When the AT head cleaner becomes dirty or is damaged, replace the CL arm assembly.

Outline

Replacement

1. Removing the CL Arm Assembly
2. Attaching the CL Arm Assembly

Adjustment after Replacement

3. Confirming the CL Arm Assembly Operation
4. Confirming the Threading Operation (Refer to Section 3-3-4.)
F7 (THREAD MOTOR) of the SERVO CHECK menu

Note

- Adjustment after the CL arm assembly replacement is not required. However, confirm the CL arm assembly operation.
- Prepare a new stop washer when replacing the CL arm assembly.
Stop washer (2.3): 3-669-596-01

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)
4. Open the AE-31H board. (Refer to the figure in Section 5-1-2.)

Removal

1. Removing the CL Arm Assembly

- (1) Turn the M gear of the gear box assembly manually in the direction of the arrow to move the CL arm assembly to the position shown in the figure.

Note

Move the CL arm assembly to the front of the DT-47/48 board. Otherwise, the CL arm assembly cannot be removed because the stop washer is hidden by other parts.

- (2) Remove the stop washer at the top of the CL arm assembly.

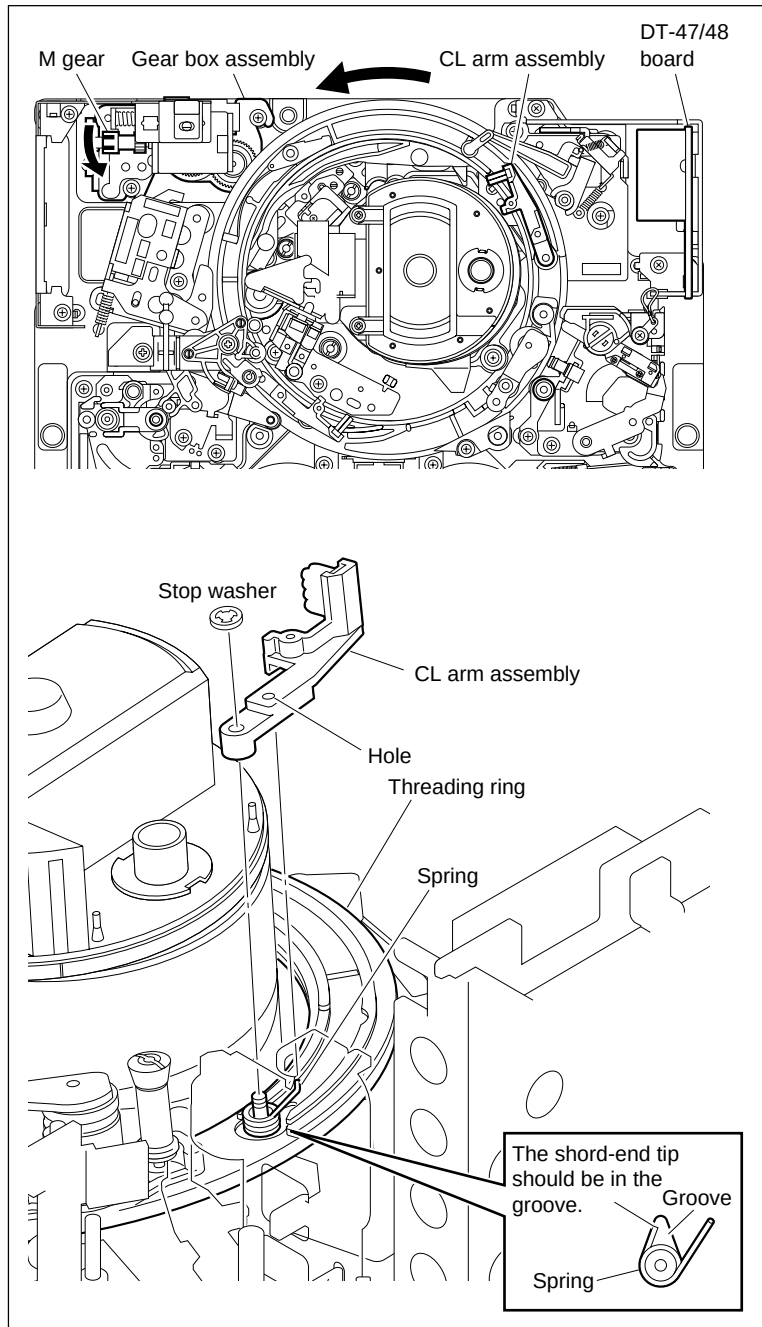
Note

Be careful not to touch the tools to the drum or peripheral tape guides when removing the stop washer.

- (3) Remove the CL arm assembly from the threading ring.

Note

Do not remove the spring at the bottom of the CL arm assembly from the shaft.



Remove/Attach the CL Arm Assembly

Installation

2. Attaching the CL Arm Assembly

- (1) Pass a new CL arm assembly through the shaft while hooking the spring as shown in the figure.

Note

Insert the short-end of spring into the groove of the threading ring and the long-end of spring into the hole of the CL arm assembly.

- (2) Fix the CL arm assembly by a new stop washer.

Stop washer (2.3): 3-669-596-01

Note

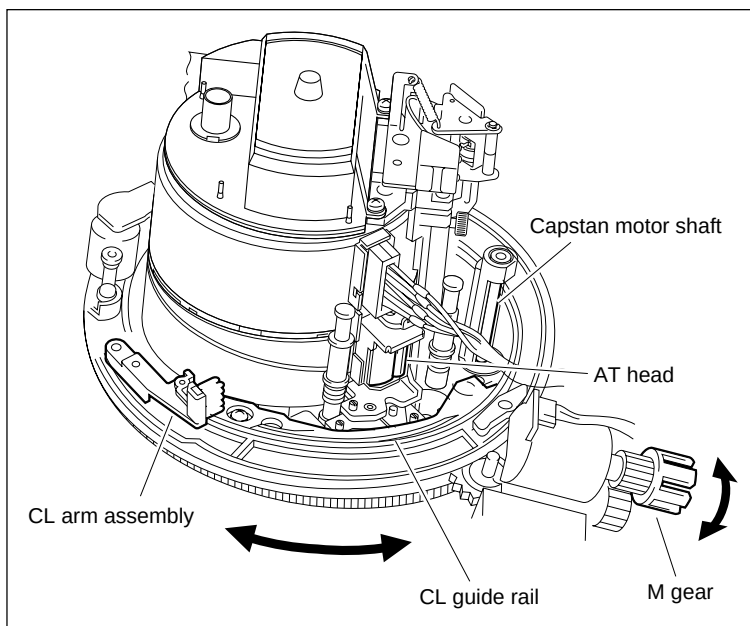
Be careful not to touch the tools to the drum or peripheral tape guides when attaching the stop washer.

Adjustment after Replacement

3. Confirming the CL Arm Assembly Operation

Turn the M gear of the gear box assembly manually and confirm the items below while repeating the threading and unthreading.

- The CL arm assembly moves along the CL guide rail.
- The cleaning roller cleans the AT head and capstan motor shaft.



Confirm the CL Arm Assembly Operation

4. Confirming the Threading Operation

Refer to Section 3-3-4.

F7 (THREAD MOTOR) of the SERVO
CHECK menu

5-6. CTL Head or Full-erase Head Replacement

When it is necessary to replace the CTL head or the full-erase head, replace with the CTL/FE head assembly.

Outline

Replacement

1. Removing the CTL/FE Head Assembly
2. Attaching the CTL/FE Head Assembly
3. Cleaning (Full-erase head and CTL head)

Adjustment after Replacement

4. Adjusting the Tape Running (Refer to Sections 6-2 to 6-11.)
5. Confirming the Tape Running (Refer to Section 6-12.)
6. Adjusting the Drum Phase (Refer to Section 7-2-3.)
7. Full Erasure Current Check (Refer to Section 8-8-4.)

Note

Head azimuth, etc. of the CTL/FE head assembly are adjusted when shipping from the factory.

Never turn the screws in the CTL/FE head assembly. (Except when adjustment)

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Torque screwdriver (6 kgf•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l = 75 mm): J-6323-420-A

Preparation

1. Turn the power off and disconnect the power code.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the CTL/FE Head Assembly

- (1) Disconnect the two harnesses from the connectors of the CTL/FE head assembly.
- (2) Remove the one screw.
- (3) Remove the CTL/FE head assembly from the MD base assembly.

Note

Be careful not to touch the drum or peripheral tape guides.

Installation

2. Attaching the CTL/FE Head Assembly

- (1) Peel off the protection tape from the new CTL/FE head assembly.
- (2) Confirm that the threading ring is in the unthreading end state.
- (3) Put the slotted holes A and B of the CTL/FE head assembly into the bosses of the chassis.

Note

Be careful not to touch the drum or peripheral tape guides.

- (4) Place the boss of the chassis in the left side of the slotted hole A and tighten the screw.
- (5) Connect the two harnesses to the connectors of CTL/FE head assembly.

3. Cleaning

Clean the tape-running surfaces of the CTL head and the full-erase head using a cleaning cloth moistened with cleaning fluid.

(Refer to Section 4-2-5.)

Adjustment after Replacement

4. Adjusting the Tape Running

Refer to Sections 6-2 to 6-11.

5. Confirming the Tape Running

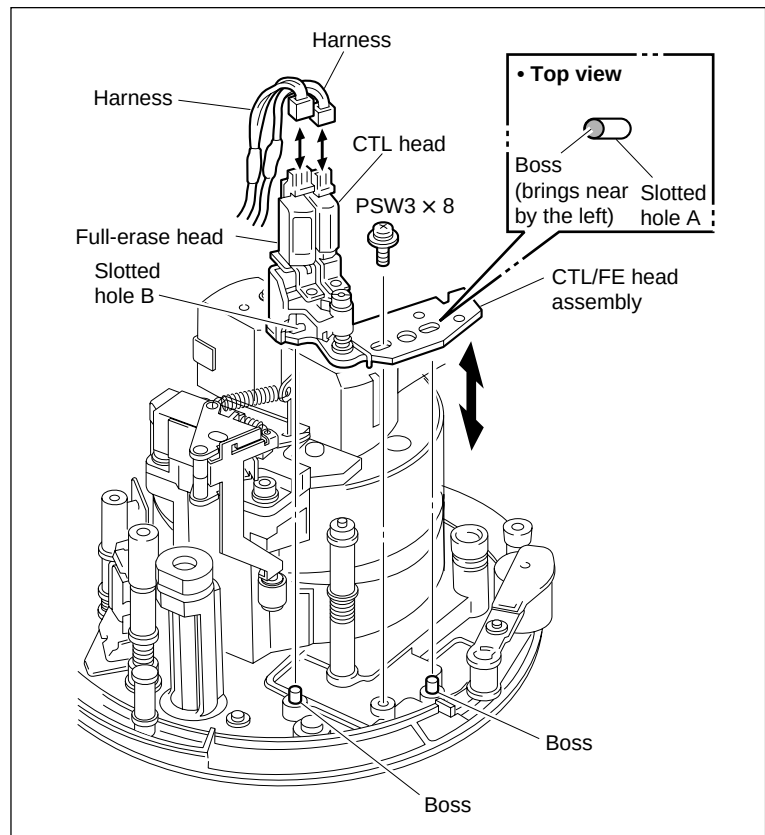
Refer to Section 6-12.

6. Adjusting the Drum Phase

Refer to Section 7-2-3.

7. Full Erasure Current Check

Refer to Section 8-8-4.



Remove/Attach the CTL/FE Head Assembly

5-7. AT Head Assembly Replacement

When it is necessary to replace the AT head or the AT erase head, replace with the AT head assembly.

Outline

Replacement

1. Removing the CL Guide Rail
2. Removing the AT Head Assembly
3. Attaching the AT Head Assembly
4. Reattaching the CL Guide Rail
5. Cleaning (AT Head)

Adjustment after Replacement

6. Adjusting the Tape Running (Refer to Sections 6-2 to 6-11.)
7. Electrical Adjustment after Replacing the AT Head (Refer to Section 7-3.)

Note

Never turn the screw in the AT head assembly. (Except when adjustment)

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Torque screwdriver (6 kg•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l = 75 mm): J-6323-420-A

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

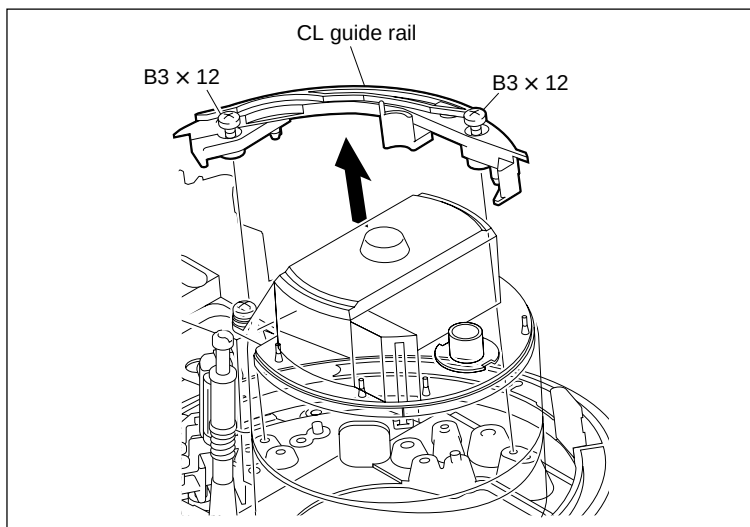
Removal

1. Removing the CL Guide Rail

Loosen the two screws to remove the CL guide rail.

Note

Never pull out the screws from the CL guide rail, because the screw section is designed not to fall.



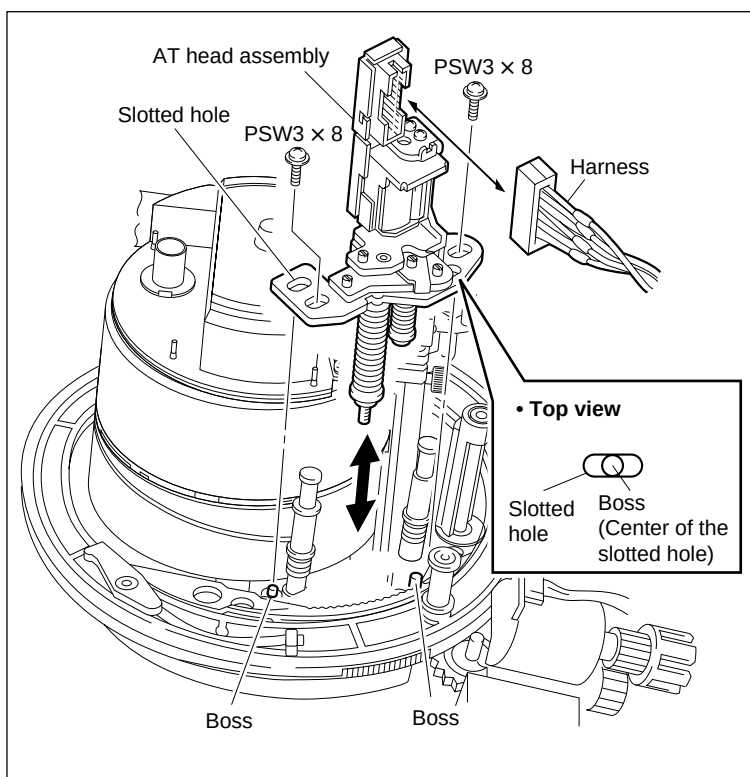
Remove the CL Guide Rail

2. Removing the AT Head Assembly

- (1) Disconnect the harness from the connector of the AT head assembly.
- (2) Remove the two screws.
- (3) Remove the AT head assembly from the MD base assembly.

Note

Be careful not to touch the drum or peripheral tape guides.



Remove/Attach the AT Head Assembly

Installation

3. Attaching the AT Head Assembly

- (1) Remove the protection tape from the new AT head assembly.
- (2) Align the two slotted holes of the AT head assembly with the two bosses of the chassis.

Notes

- Be careful not to touch the drum or peripheral tape guides.
- Be careful not to damage the AT head surface.

- (3) Align the bosses of the chassis in the center of slotted holes and tighten with the two screws.
- (4) Connect the harness to the connector of the AT head assembly.

4. Reattaching the CL Guide Rail

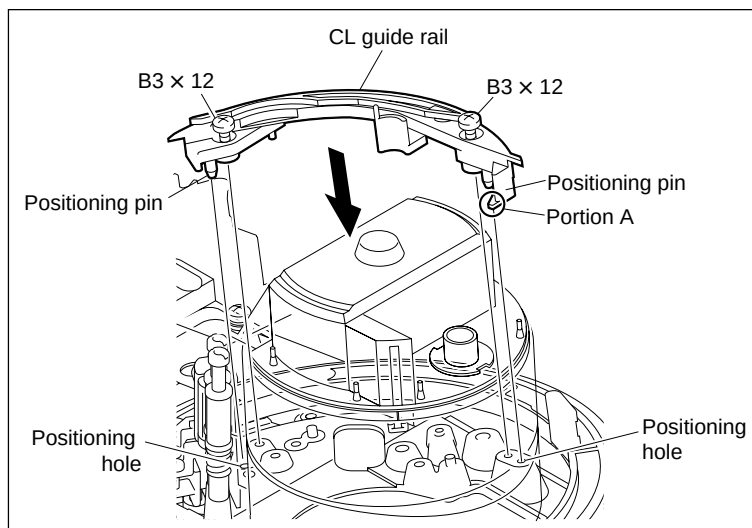
- (1) Check if the deck is in the unthreading end state.
- (2) Insert the portion A of the CL guide rail to the bottom of the drum.
- (3) Match and attach the positioning pin of the CL guide rail to the positioning hole of the MD base assembly.
- (4) Tighten the two screws.

5. Cleaning

Clean the AT head surfaces with a cleaning cloth moistened with cleaning fluid.

Note

After cleaning, wipe with a dry cleaning cloth.



Reattach the CL Guide Rail

Adjustment after Replacement

6. Adjusting the Tape Running

Refer to Sections 6-2 to 6-11.

7. Electrical Adjustment after Replacing the AT Head

Refer to Section 7-3.

5-8. Pinch Roller Replacement

When the pinch roller is damaged or worn, replace the pinch arm assembly.

Outline

Replacement

1. Removing the Pinch Arm Assembly
2. Cleaning and Confirming
3. Attaching the Pinch Arm Assembly
4. Adjusting the Pinch Arm Assembly Vertical Play
5. Cleaning (Pinch roller and TG-5)

Adjustment after Replacement

6. Confirming the Pinch Press Clearance
7. Confirming the Pinch Roller Solenoid Operation (Refer to Section 3-3-4.)
 [F3] (PINCH PLG) of the ALT SERVO CHECK menu
8. Adjusting the Tape Running at Drum Exit Side (Refer to Section 6-12-2.)

Notes

- Prepare the new stop washers when replacing the pinch arm assembly.

Stop washer (2.3): 3-669-596-01

Note

When adjusting the vertical play, the four stop washers at least are required for every replacement of the poly-slider washer.

- The poly-slider washer for adjusting the vertical play may be required.

Poly-slider washer (t = 0.13 mm): 3-701-439-01

Poly-slider washer (t = 0.25 mm): 3-701-439-11

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the Pinch Arm Assembly

- (1) Remove the stop washer at the top of the pinch arm assembly.

Notes

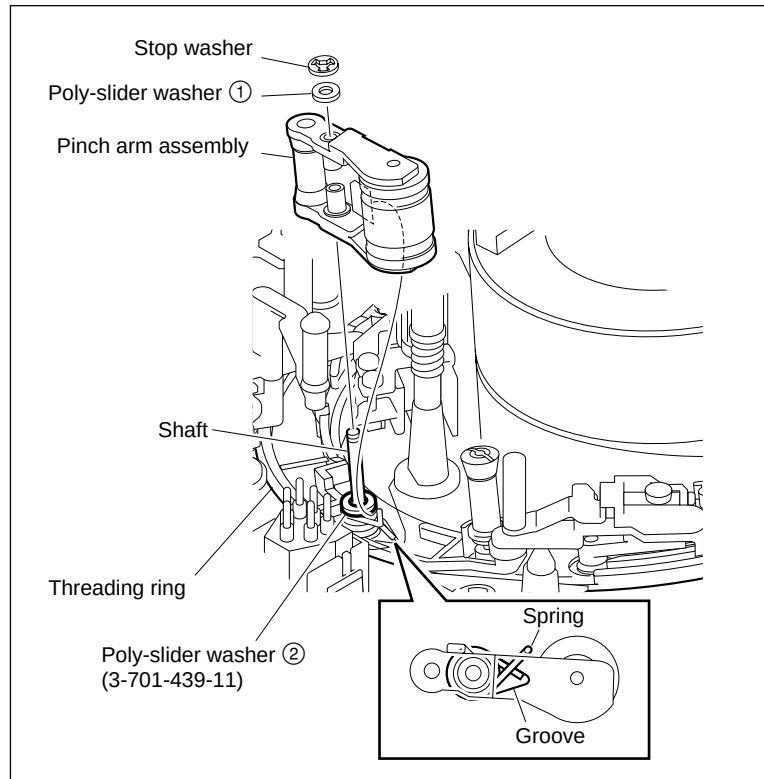
- Be careful not to touch the tools to the peripheral tape guides when removing the stop washer.
 - If a poly-slider washer ① (for vertical play adjustment) is inserted between the pinch arm assembly and the stop washer, use care not to lose it.
- (2) Remove the pinch arm assembly from the threading ring.

Note

Do not remove the poly-slider washer ② ($t = 0.25 \text{ mm}$) and spring at the bottom of the pinch arm assembly from the shaft.

2. Cleaning and Confirming

- (1) Clean the shaft of threading ring with a cleaning cloth moistened with cleaning fluid.
- (2) Check that there are no scratches feelable with a fingernail on the shaft.
If any such scratch is present, replace the threading ring. (Refer to Section 5-18.)
- (3) Clean the shaft with gauze moistened with oil.



Remove/Attach the Pinch Arm Assembly

Installation

3. Attaching the Pinch Arm Assembly

- (1) Pass a new pinch arm assembly through the shaft while hooking the spring as shown in the figure.

Notes

Insert the short-end of the spring into the groove of the threading ring and hook the long-end of the spring to the pinch arm assembly.

- (2) If the poly-slider washer ① (for vertical play adjustment) was removed in (1) of step 1, pass it again through the shaft.

- (3) Fix the pinch arm assembly by a new stop washer.

Stop washer (2.3): 3-669-596-01

Note

Be careful not to touch the tools to the peripheral tape guides when attaching the stop washer.

4. Adjusting the Pinch Arm Assembly Vertical Play

- (1) Push the pinch arm assembly manually in the direction of drum, then release.

At that time, confirm that the pinch arm assembly smoothly returns to the former position.

If the pinch arm assembly does not return smoothly, perform the steps (2) to (4) below.

- (2) Remove the stop washer.

Note

Be careful not to touch the tools to the peripheral tape guides when removing the stop washer.

- (3) Confirm that the poly-slider washer ② is under the pinch arm assembly.

- (4) Replace the poly-slider washer ① in the following order and meet the specification in step (1).

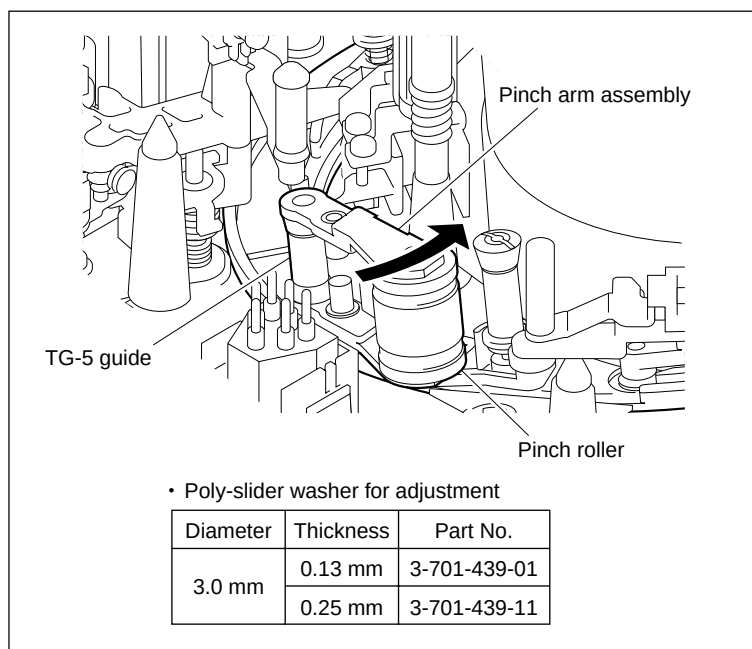
1. Poly-slider washer (t = 0.25 mm)
2. Poly-slider washer (t = 0.13 mm)
3. No poly-slider washer

Note

Be sure to perform the confirmation after fixing the pinch arm assembly by the new stop washer.

5. Cleaning

Clean the pinch roller and TG-5 guide surfaces with a cleaning cloth moistened with cleaning fluid. (Refer to Section 4-2-7.)



Adjust the Pinch Arm Assembly Vertical Play

Adjustment after Replacement

6. Confirming the Pinch Press Clearance

- (1) Confirm the pinch press clearance with the pinch pressed using one of the following methods A or B.

Method A

- (a) Turn the M gear of the gearbox assembly by manual to set to the threading end state.
- (b) Push the iron core of the pinch solenoid with a finger in the attraction direction.

Method B

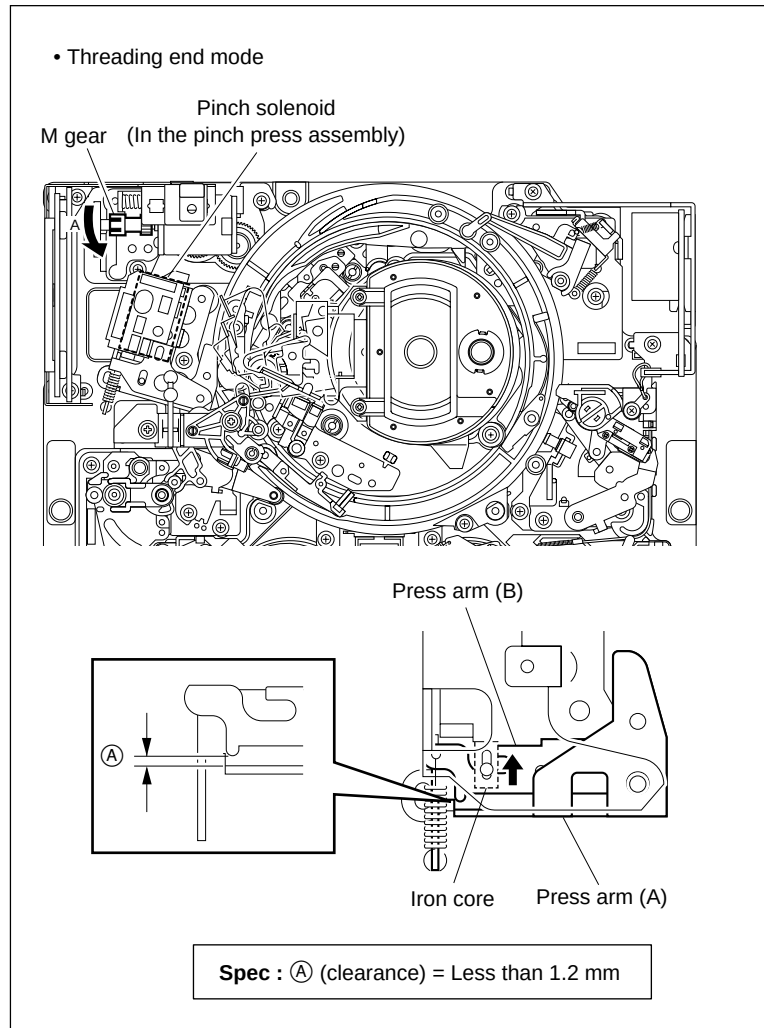
Refer to Section 3-3-4.

Drive the unit to the PINCH ON state with the **[F3]** (PINCH PLG) key in the ALT SERVO CHECK menu.

- (2) Check that the clearance between press arm (A) and press arm (B) meets the specification.

If the clearance does not meet the specification, check the installation of the following parts.

- Pinch arm assembly (Refer to Section 5-8.)
- Pinch press assembly (Refer to Section 5-9.)
- Capstan motor assembly (Refer to Section 5-10.)



Confirm the Pinch Press Clearance

7. Confirming the Pinch Roller Solenoid Operation

Refer to Section 3-3-4.

[F3] (PINCH PLG) of the ALT SERVO CHECK menu

8. Adjusting the Tape Running at Drum Exit Side

Refer to Section 6-12-2.

5-9. Pinch Press Assembly Replacement

Outline

Replacement

1. Disconnecting the Harnesses (CN216, CN231, CN233/HN-268 board)
2. Removing the Pinch Press Assembly
3. Attaching the Pinch Press Assembly
4. Reconnecting the Harnesses (CN216, CN231, CN233/HN-268 board)
5. Confirming the Pinch Press Clearance

Adjustment after Replacement

6. Confirming the Pinch Roller Solenoid Operation (Refer to Section 3-3-4.)
F3 (PINCH PLG) of the ALT SERVO CHECK menu
7. Adjusting the Tape Running at Drum Exit Side
(Refer to Section 6-12-2.)

Note

The solenoid position, etc. of the pinch press assembly is already adjusted at the factory.

Never turn the screws other than the mounting screws when removing/attaching.

Tool

Bundling band (or equivalent): 3-655-653-01

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)
4. Open the AE-31H board. (Refer to the figure in Section 5-1-2.)

Removal

1. Disconnecting the Harnesses

- (1) Release the bundling band.
- (2) Disconnect the three harnesses from the connectors CN216, CN231 and CN233 on the HN-268 board.

2. Removing the Pinch Press Assembly

- (1) Remove the screw.
- (2) Remove the pinch press assembly from the MD base assembly.

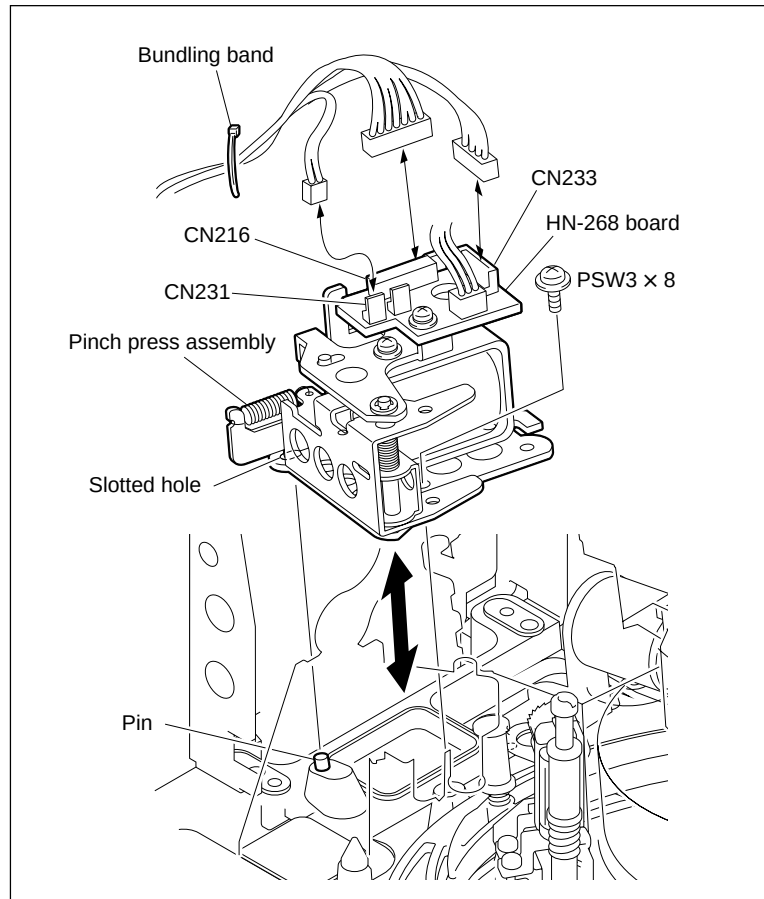
Installation

3. Attaching the Pinch Press Assembly

- (1) Align the slotted hole of the pinch press assembly with the pin of the MD base assembly.
- (2) Fix the pinch press assembly with one screw.
Tightening torque : $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

4. Reconnecting the Harnesses

- (1) Reconnect the harnesses to the connectors CN216, CN231 and CN233 on the HN-268 board.
- (2) Fix the harnesses with the bundling band avoiding contact with the drive portion of the gearbox assembly.



Remove/Attach the Pinch Press Assembly

5. Confirming the Pinch Press Clearance

- (1) Confirm the pinch press clearance with the pinch pressed using one of the following methods A or B.

Method A

- (a) Turn the M gear of the gearbox assembly by manual to set to the threading end state.
- (b) Push the iron core of the pinch solenoid with a finger in the attraction direction.

Method B

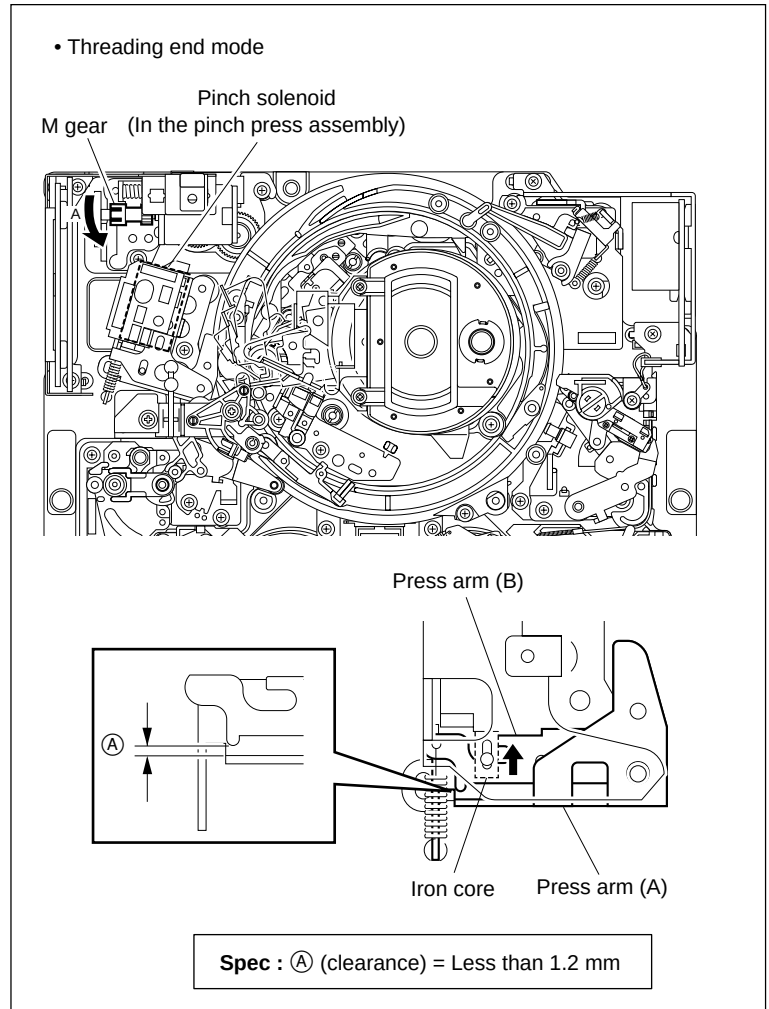
Refer to Section 3-3-4.

Drive the unit to the PINCH ON state with the **F3** (PINCH PLG) key in the ALT SERVO CHECK menu.

- (2) Check that the clearance between press arm (A) and press arm (B) meets the specification.

If the clearance does not meet the specification, check the installation of the following parts.

- Pinch arm assembly (Refer to Section 5-8.)
- Pinch press assembly (Refer to Section 5-9.)
- Capstan motor assembly (Refer to Section 5-10.)



Confirm the Pinch Press Clearance

Adjustment after Replacement

6. Confirming the Pinch Roller Solenoid Operation

Refer to Section 3-3-4.

F3 (PINCH PLG) of the ALT SERVO CHECK menu

7. Adjusting the Tape Running at Drum Exit Side

Refer to Section 6-12-2.

5-10. Capstan Motor Replacement

Outline

Replacement

1. Removing the Video Head Cleaner Assembly
(Refer to steps 1 and 2 in Section 5-4.)
2. Opening the DR-508 Board
3. Removing the Capstan Motor
4. Attaching the Capstan Motor
5. Closing the DR-508 Board
6. Cleaning (Capstan Motor Shaft)
7. Reattaching the Video Head Cleaner Assembly
(Refer to steps 4 to 6 in Section 5-4.)

Adjustment after Replacement

8. Confirming the Pinch Press Clearance (Refer to Section 5-9.)
9. Confirming the Capstan Motor Operation (Refer to Section 3-3-4.)
 [F9] (CAPSTN MOTOR) of the SERVO CHECK menu
10. Performing the Servo Adjustment (Refer to Section 3-4-2.)
 [F2] (AUTO ADJ) of the SERVO ADJUST menu
11. Adjusting the Tape Running at Drum Exit Side (Refer to Section 6-12-2.)

Note

Replace the capstan motor with the side panel of the unit down.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Tape guide adjusting screw driver (MW-261): J-6322-610-A

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)
4. Open the AE-31H board. (Refer to the figure in Section 5-1-2.)

Removal

1. Removing the Video Head Cleaner Assembly

Remove the video head cleaner assembly.
(Refer to steps 1 and 2 in Section 5-4.)

Note

To remove the fixing screws of the capstan motor, remove the video head cleaner assembly.

2. Opening the DR-508 Board

- (1) Place the unit with its one side down to remove the bottom plate.
(Refer to Section 1-3-2.)
- (2) Disconnect the flexible boards from each connector on the reel motors.

Note

Setting the reel tables at the S cassette position will ease the operation.
(Refer to Section 5-1-3.)

- (3) Fully loosen the three screws on the DR-508 board.

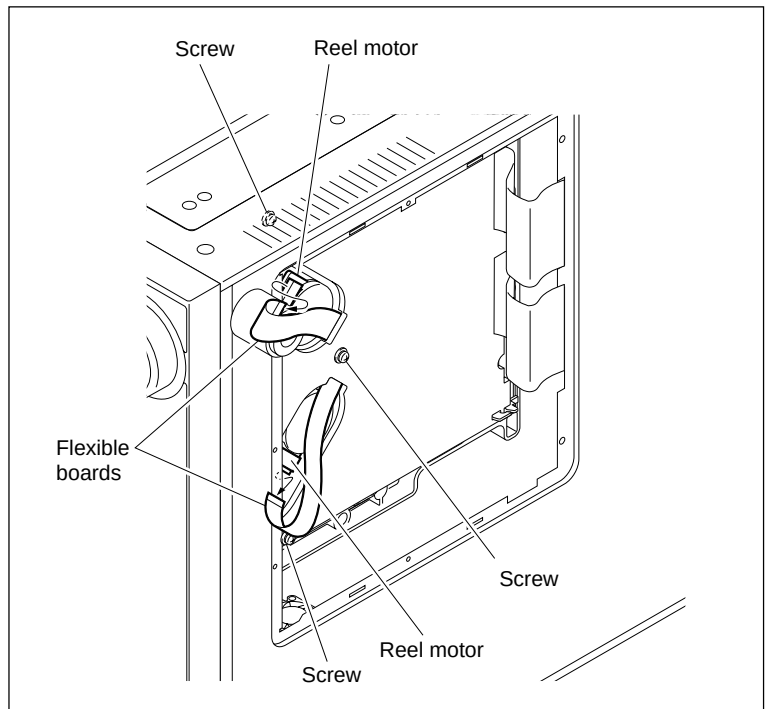
Note

These screws should not be removed necessarily.

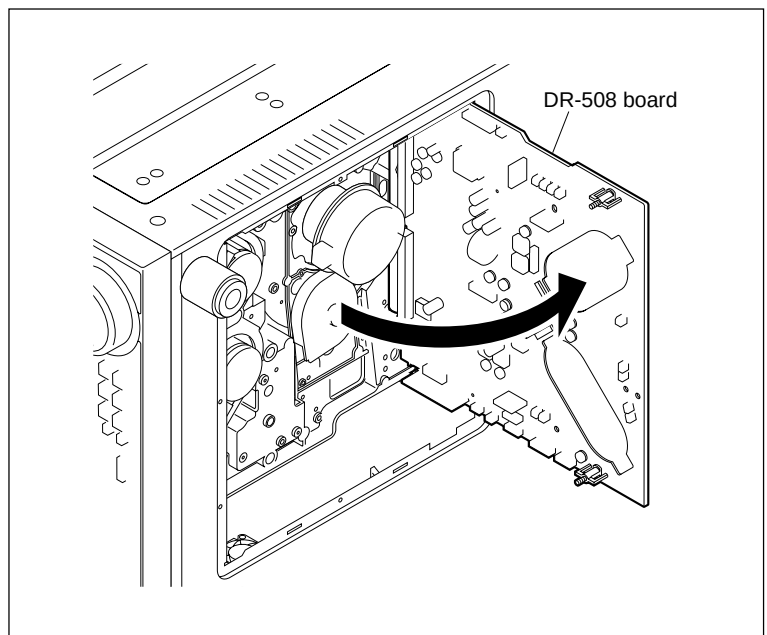
- (4) Open the DR-508 board in the arrow direction.

Note

Open the board slowly so that excessive force is not applied to the connected harnesses.



Remove the Flexible Board



Open the DR-508 Board

3. Removing the Capstan Motor

- (1) Disconnect the harness from the connector on the capstan motor. (Bottom side)
- (2) Remove the two screws while holding the capstan motor by hand.

Note

Be careful not to drop the capstan motor.

- (3) Remove the capstan motor.

Installation

4. Attaching the Capstan Motor

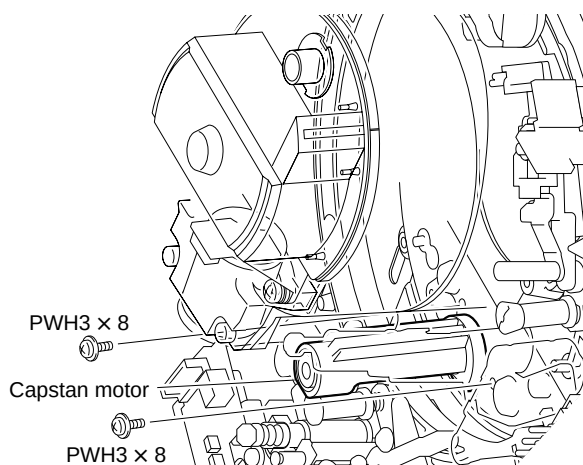
- (1) Pass a new capstan motor through the hole of the MD base assembly positioning as shown in the figure.

Note

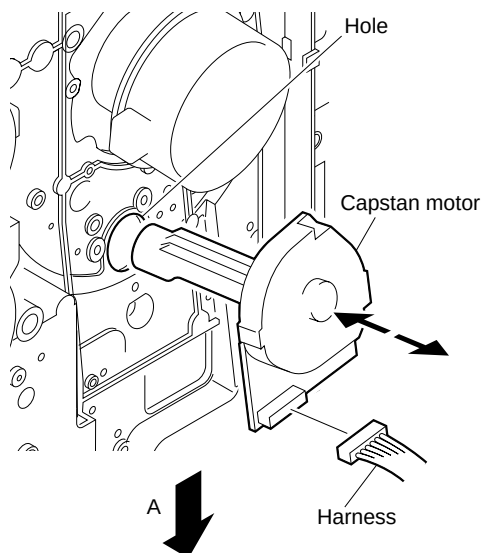
Be careful not to damage the capstan motor shaft when passing the capstan motor through the hole of the MD base assembly.

- (2) Hold the capstan motor by hand and fix it temporarily with the two screws.
- (3) Tighten the two screws while holding the capstan motor in the arrow A direction to remove the play.
- (4) Reconnect the harness disconnected in (1) of step 3 to the connector of the capstan motor.

• Upper side



• Bottom side



Remove/Attach the Capstan Motor

5. Closing the DR-508 Board

- (1) Turn the gear of the reel shift motor to move the reel table at the middle position between the S and L cassette positions.

(Refer to Section 5-1-3.)

Note

Be careful not to close the DR-508 board while the reel table is left at the S or L cassette position. Or the reel position sensor may damage.

- (2) Arrange the harnesses connected to the DR-508 board. (Refer to figure in step 13 of Section 5-30-9.)

Note

Be sure to check the arranging the harnesses.

- (3) Close the DR-508 board.

Notes

- Match the positioning hole of the DR-508 board with the positioning boss.
- Be sure not to be caught the harness at the hinge portion.

- (4) Tighten the three screws on the DR-508 board.
- (5) Reconnect the flexible boards in step 2 to each connector on the reel motors.

CAUTION

The connecting direction of the flexible board is specified. When disconnecting the flexible boards from both reel motor and DR-508 board, be sure to connect them so that the character "PWB" on the flexible boards are shown at the connector sides of the DR-508 board. (Fig. 1.) If opposite side is connected, the DR-508 board will fail.

- (6) Reattach the bottom plate.
(Refer to Section 1-3-2.)
- (7) Restore the unit to the original position.

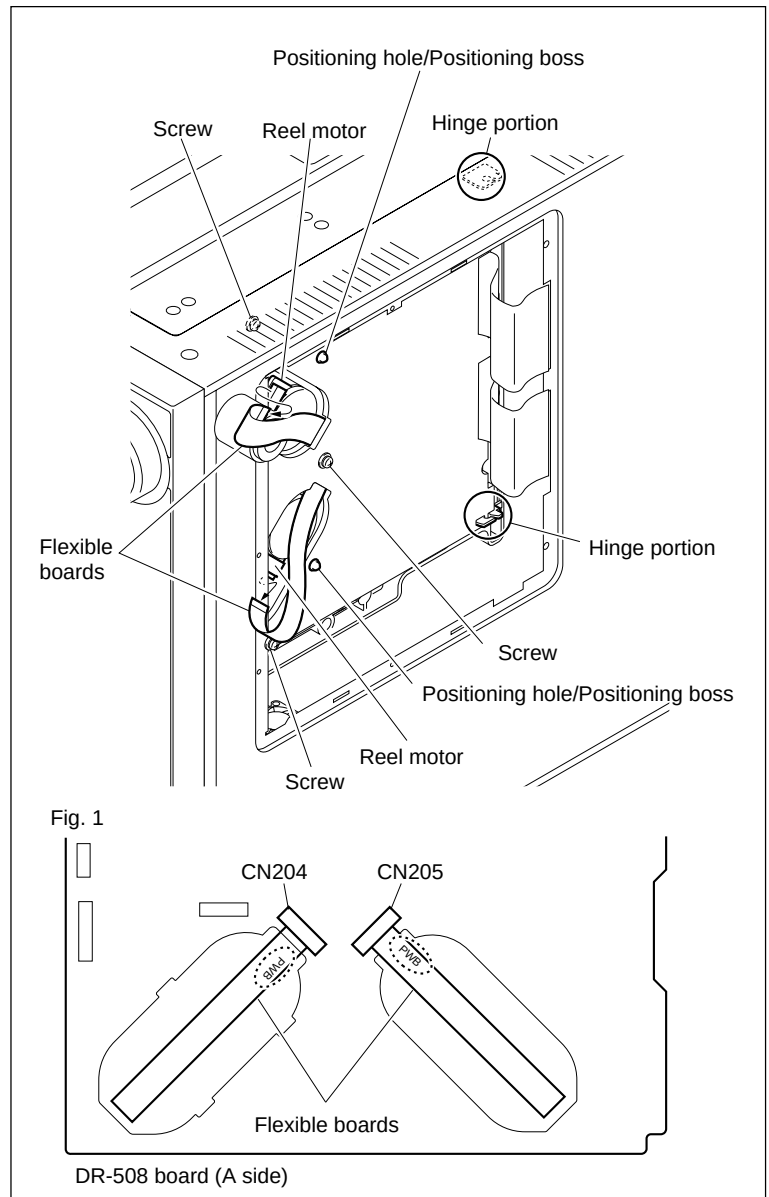
6. Cleaning

Clean the capstan motor shaft with a cleaning cloth moistened with cleaning fluid.

(Refer to Section 4-2-7.)

Note

After cleaning, wipe with a dry cleaning cloth.



Close the DR-508 Board

7. Reattaching the Video Head Cleaner Assembly

Reattach the video head cleaner assembly.
(Refer to steps 4 to 6 in Section 5-4.)

Adjustment after Replacement

8. Confirming the Pinch Press Clearance

Refer to step 5 in Section 5-9.

9. Confirming the Capstan Motor Operation

Refer to Section 3-3-4.

F9 (CAPSTN MOTOR) of the SERVO
CHECK menu

10. Performing the Servo Adjustment

Refer to Section 3-4-2.

F2 (AUTO ADJ) of the SERVO ADJUST
menu

11. Adjusting the Tape Running at Drum Exit Side

Refer to Section 6-12-2.

5-11. Reel Table Assembly Replacement

Outline

Replacement

1. Removing the Reel Table Assembly
2. Attaching the Reel Table Assembly

Adjustment after Replacement

3. Confirming the Tape Running (Refer to Section 6-12.)

Note

How to replace the reel table assembly is the same on the supply and take-up sides.

Tools

- L-shaped wrench (1.5 mm): 7-700-736-05
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the Reel Table Assembly

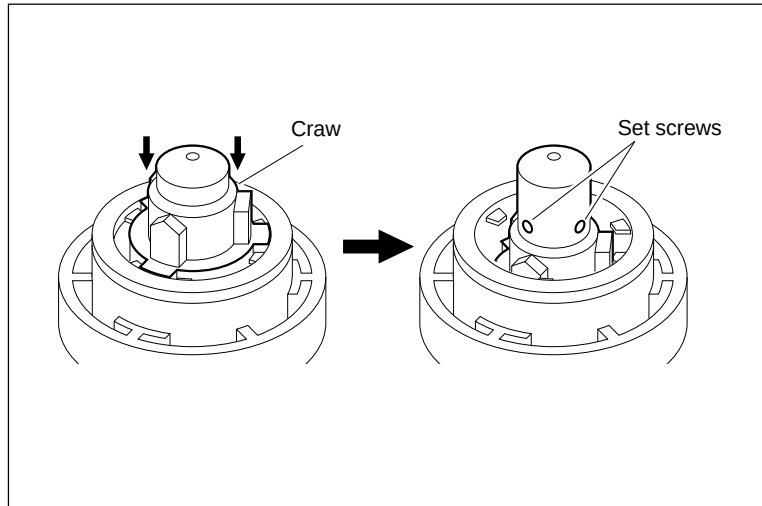
- (1) Hold down the claws of reel table assembly and loosen the two set screws.
- (2) Remove the reel table assembly.

Note

When the reel table assembly is removed, a poly-slider washer for reel table height adjustment may adhere to it.

Be sure to check if the poly-slider washer exists, and return it to the reel motor shaft.

If the poly-slider washer is lost, the height of the reel table can not be met the specification and that will cause the abnormal tape running.



Set Screws of the Reel Table Assembly

Installation

2. Attaching the Reel Table Assembly

- (1) Clean the perimeter of the reel table assembly with a cleaning cloth moistened with cleaning fluid.
- (2) Confirm that the number of the poly-slider washers inserted in the reel motor shaft is the same as in the removal.

Note

When the poly-slider washer is lost, insert the following number of poly-slider washers into the reel motor shaft.

S-reel: Poly-slider washer (t = 0.13 mm) ×1

Sony part No. : 3-701-441-01

Poly-slider washer (t = 0.25 mm) ×1

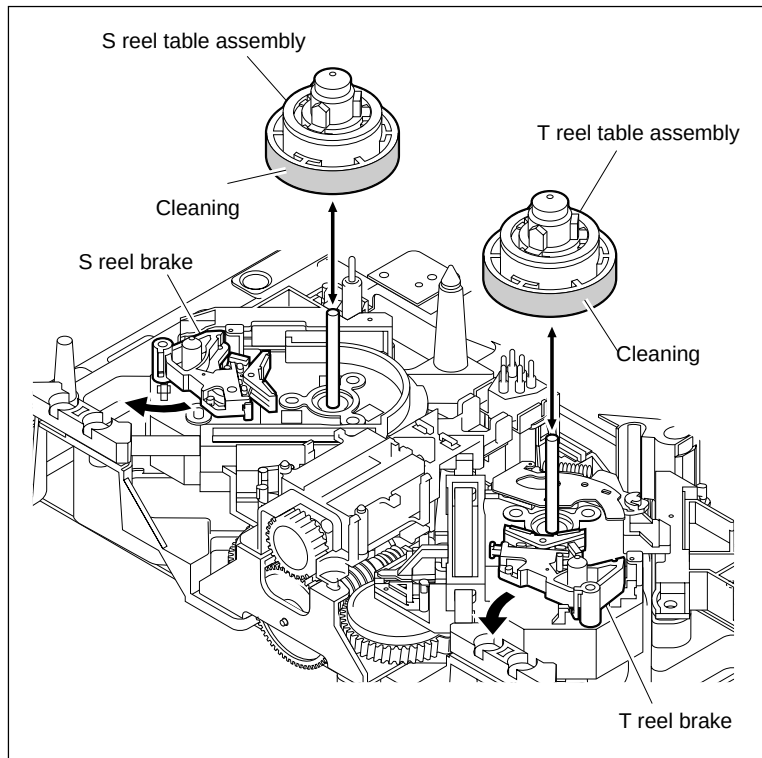
Sony part No. : 3-701-441-11

T-reel: Poly-slider washer (t = 0.13 mm) ×1

Sony part No. : 3-701-441-01

- (3) Release the reel brake in the arrow direction and pass the reel table assembly through the reel motor shaft.
- (4) Hold down the claws and tighten the two set screws.

Tightening torque: $58.8 \times 10^{-2} \text{ N}\cdot\text{m}$
{6.0 kgf·cm}



Remove/Attach the Reel Table Assembly

Adjustment after Replacement

3. Confirming the Tape Running

Refer to Section 6-12.

5-12. Brake Assembly Replacement

Outline

Replacement

1. Removing the Brake Assembly
2. Attaching the Brake Assembly

Adjustment after Replacement

3. Reel brake clearance check

Note

- When the brake lining is worn, replace the whole brake assembly.
- The parts making up the brake assembly is different between S side and T side.
However, how to replace the brake assembly is the same for both sides.

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the Brake Assembly

- (1) Unhook the spring put on the reel motor assembly.
- (2) Release the claw by pressing in the arrow direction, then remove the brake assembly.

Installation

2. Attaching the Brake Assembly

- (1) Pass a new brake assembly through the shaft of the reel motor assembly and fix it with the claw.
- (2) Hook the spring to the reel motor assembly.

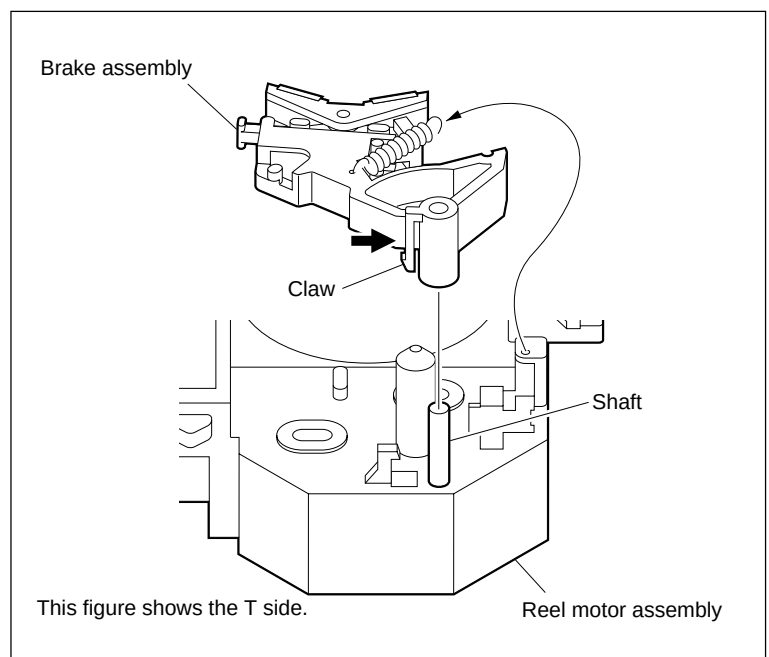
Adjustment after Replacement

3. Reel brake clearance check

Note

Perform this check while the cassette compartment is removed.

- (1) Turn on the power.
- (2) While the reel table is rotating, check that the brake lining does not contact the reel table at the reel tables of S and T sides.



Remove/Attach the Brake Assembly

5-13. Reel Motor Assembly Replacement

Outline

Replacement

1. Removing the SE-606A Board
2. Removing the ME Wire (T-side only)
3. Removing the Shaft Holder
4. Remove the Reel Motor Assembly
5. Reconnecting the Flexible Board
6. Inserting the Slide Shaft
7. Attaching the Reel Motor Assembly
8. Reattaching the Shaft Holder
9. Applying Grease to the Slide Shaft
10. Attaching the ME Wire (T-side only)
11. Attaching the SE-606A Board

Adjustment after Replacement

12. Confirming the Reel Motor Operation (Refer to Section 3-3-4.)
 [F5] (S REEL MOTOR) and [F6] (T REEL MOTOR) of the SERVO CHECK menu
13. Performing the Servo Adjustment (Refer to Section 3-4-2.)
 [F2] (AUTO ADJ) of the SERVO ADJUST menu
14. Adjusting the Tape Running at Drum Entrance Side (Refer to Section 6-12-1.)

Note

- In this unit, it is not necessary to perform the traditional reel motor shaft slantness adjustment after the reel motor assembly replacement.
- When replacing the reel motor, be sure to perform the replacement as the reel motor assembly. Never replace the single reel motor.
- The parts making up the reel motor assembly is different between S side and T side. However, how to replace the reel motor assembly is the same for both sides.

Tools

- Torque screwdriver (12 kg•cm)(JB-5252): J-6252-520-A
- Torque screwdriver's bit (+3 mm, l = 90 mm): J-6323-430-A
- Grease (SGL-601): 7-651-000-10
- Cleaning cloth: 3-184-527-01

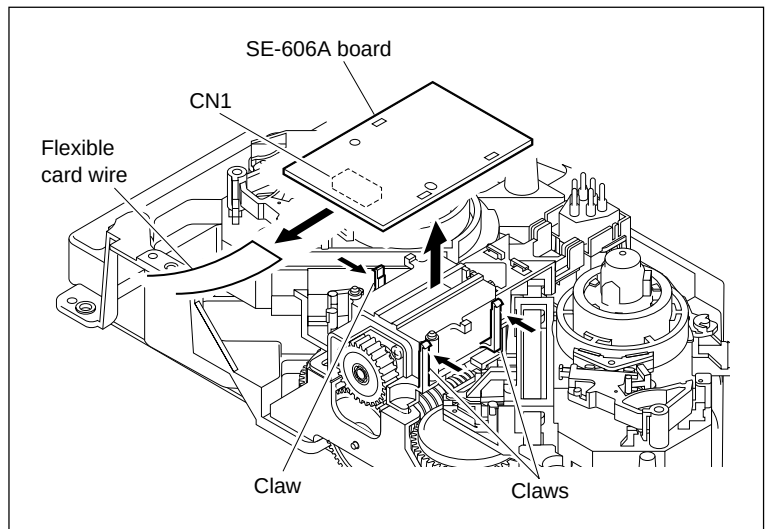
Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the SE-606A Board

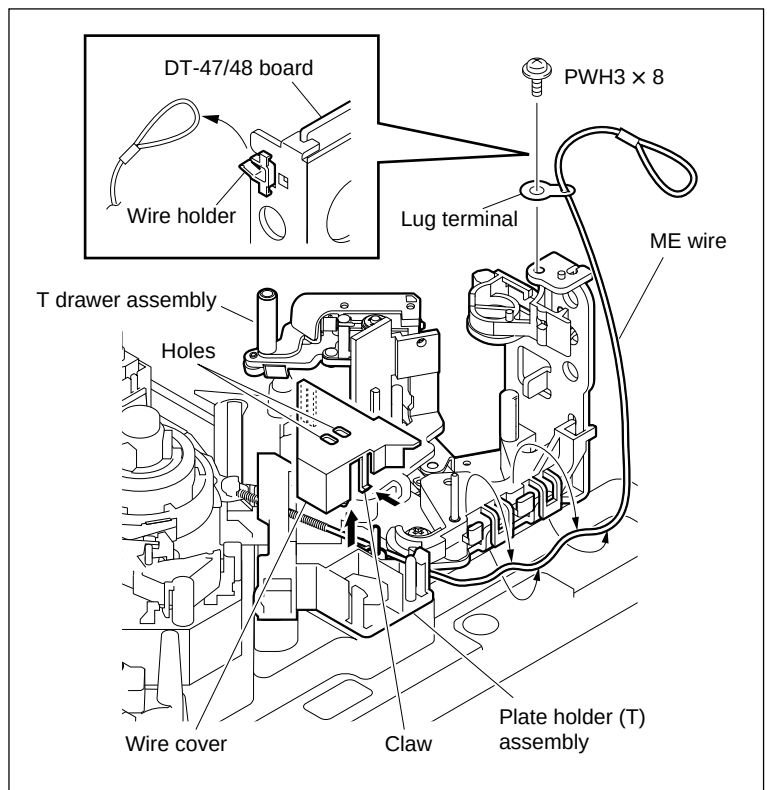
- (1) Hold the three claws in the arrow directions to remove the SE-606A board.
- (2) Disconnect the flexible card wire from the connector CN1 on the SE-606A board.



Remove the SE-606A Board

2. Removing the ME Wire (T-side only)

- (1) Remove the ME wire from the wire holder.
- (2) Remove the screw securing the lug terminal of the ME wire.
- (3) Grasp the hole of the wire cover with a pair of pliers, hold the claw on the cover in the arrow direction, and remove the wire cover from the plate holder (T) assembly.
- (4) Remove the ME wire from the T drawer assembly as shown in the figure.



Remove the ME Wire

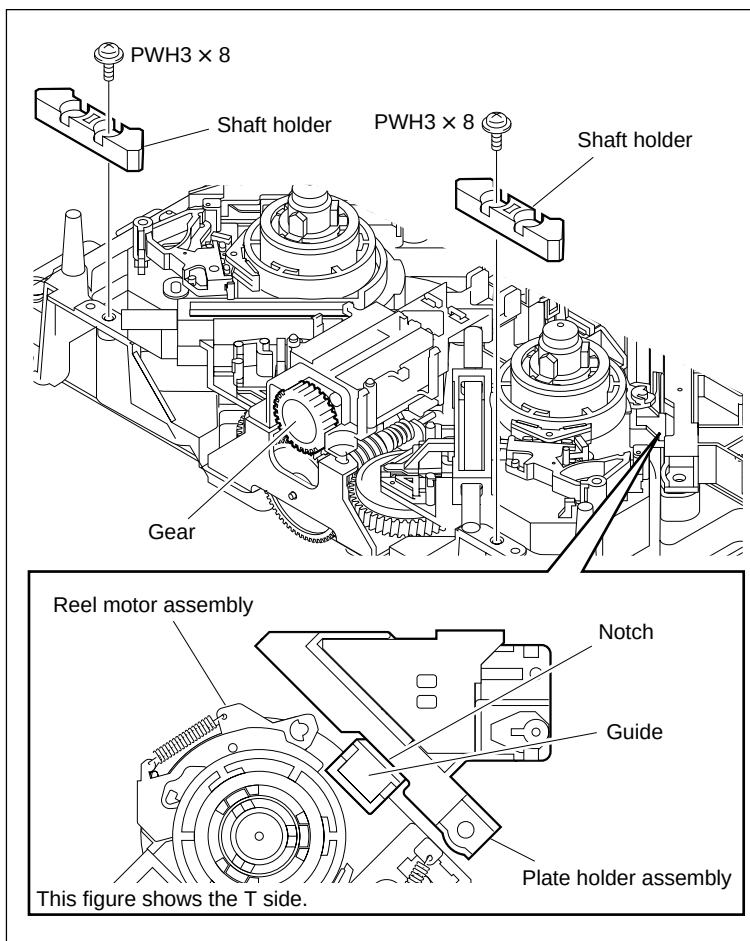
3. Removing the Shaft Holder

- (1) Shift the reel motor assembly by turning the gear of reel shift motor.
- (2) Align the guide portion of the reel motor assembly with the notch of the plate holder assembly.

Note

The reel motor assembly cannot be removed in the S or T cassette position.

- (3) Remove the screw to remove the shaft holder.



Remove the Shaft Holder

4. Removing the Reel Motor Assembly

- (1) Pull the slide shaft toward the front panel and take it off the motor holder assembly.
- (2) Slide the reel motor assembly to the arrow (A) so that the guide portion is removed from the plate holder assembly.
- (3) Lift straight up the reel motor assembly.
- (4) Disconnect the flexible board from the connector of the reel motor.
- (5) Pull out the slide shaft from the reel motor assembly.
- (6) Wipe off grease remained on the surface of the slide shaft with a cloth.

CAUTION

- Be careful not to adhere grease seared the slide shaft to another parts.
- Be careful not to cause damage to the slide shaft during removal.

Installation

5. Reconnecting the Flexible Board

- (1) Clean the edge of the flexible board with a dry cloth.
- (2) Connect the flexible board to connector of a new reel motor assembly.

CAUTION

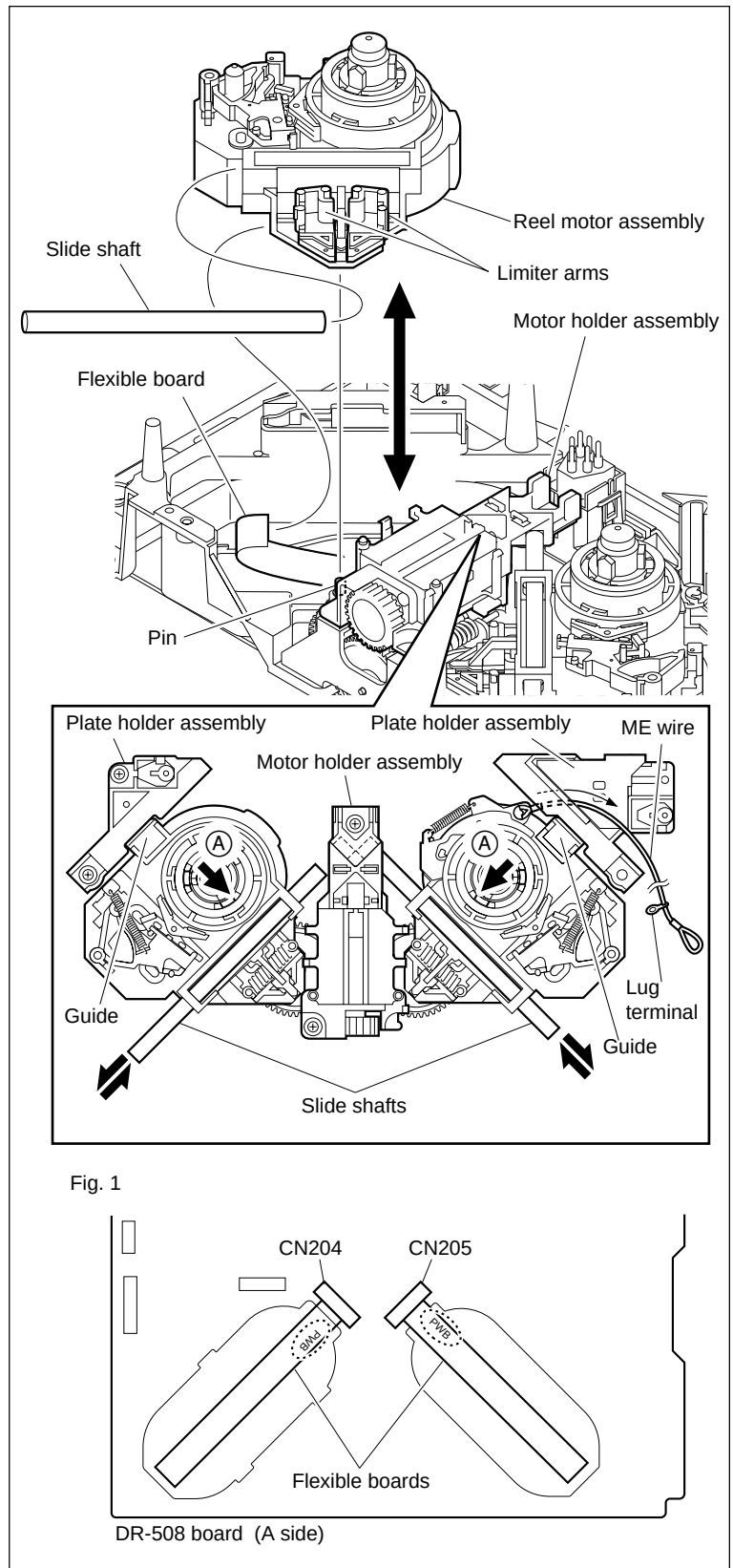
The connecting direction of the flexible board is specified. When disconnecting the flexible boards from both reel motor and DR-508 board, be sure to connect them so that the character "PWB" on the flexible boards are shown at the connector sides of the DR-508 board. (Fig. 1.) If opposite side is connected, it causes damage to the DR-508 board.

6. Inserting the Slide Shaft

Insert the slide shaft removed in step 4 in the hole of the reel motor assembly.

7. Attaching the Reel Motor Assembly

- (1) Keeping the both states that the guide portion of the reel motor assembly is aligned with the notch of the plate holder assembly and the pin of drive gear assembly will be able to be insert between the limiter arms, install the reel motor assembly.
- (2) Pass the ME wire and the lug terminal through the plate holder (T) assembly.
- (3) Insert the slide shafts in the motor holder assembly.



Remove/Attach the Reel Motor Assembly

8. Reattaching the Shaft Holder

- (1) Match the boss of the shaft holder to the hole of the MD base assembly.
- (2) Holding the shaft holder to the arrow direction, tighten it with one screw for each.

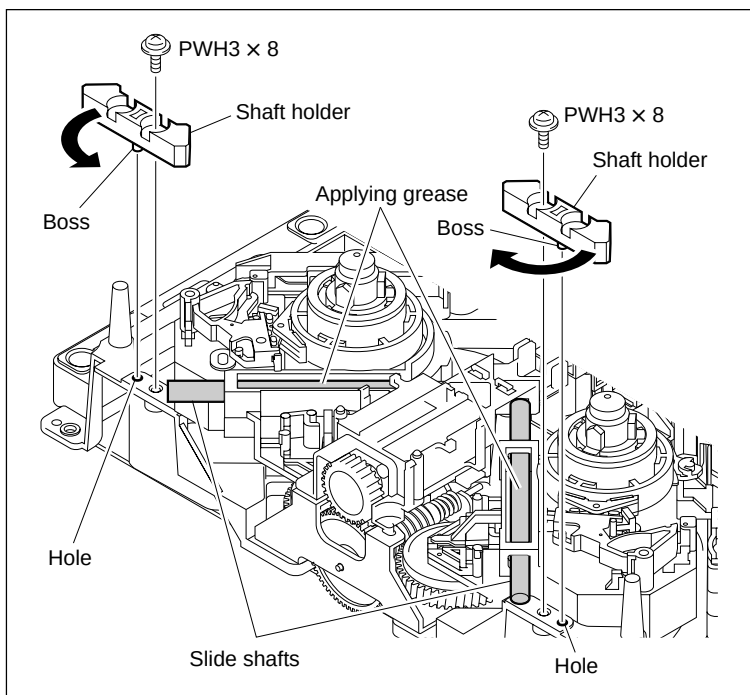
9. Applying Grease on the Slide Shaft

- (1) Apply a very small portion of grease on the slide shaft and spread grease over the whole shaft.

Note

Use care not to put grease on other parts in vicinity.

- (2) Confirm that the reel motor assembly moves smoothly when bringing to the S cassette position and L cassette position.
(As for the method of shifting the reel motor assembly, refer to Section 5-1-3.)



Reattach the Shaft Holder and Apply Grease

10. Attaching the ME Wire (T-side only)

- (1) Hook the ME wire in the T drawer assembly as shown in the figure and fix the lug terminal with the screw.

Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

- (2) Set the reel motor assembly to the S cassette position. (Refer to Section 5-1-3.)
Next, mount the wire cover to the plate holder (T) assembly from the top, and secure with the claw of the wire cover.

Note

Make sure the ME wire does not protrude out of the wall of the wire cover. (See the figure.)

- (3) Confirm that the ME wire moves smoothly and the reel table rotates when the tip of the ME wire is drawn. (Refer to (1) and (2) of step 5 in Section 5-21.)
- (4) Hang the tip of the ME wire on the wire holder and close the wire holder.

11. Reattaching the SE-606A Board

Reattach the SE-606A board in the reverse order of step 1.

Adjustment after Replacement

12. Confirming the Reel Motor Operation

Refer to Section 3-3-4.

[F5] (S REEL MOTOR) and [F6] (T REEL MOTOR) of the SERVO CHECK menu

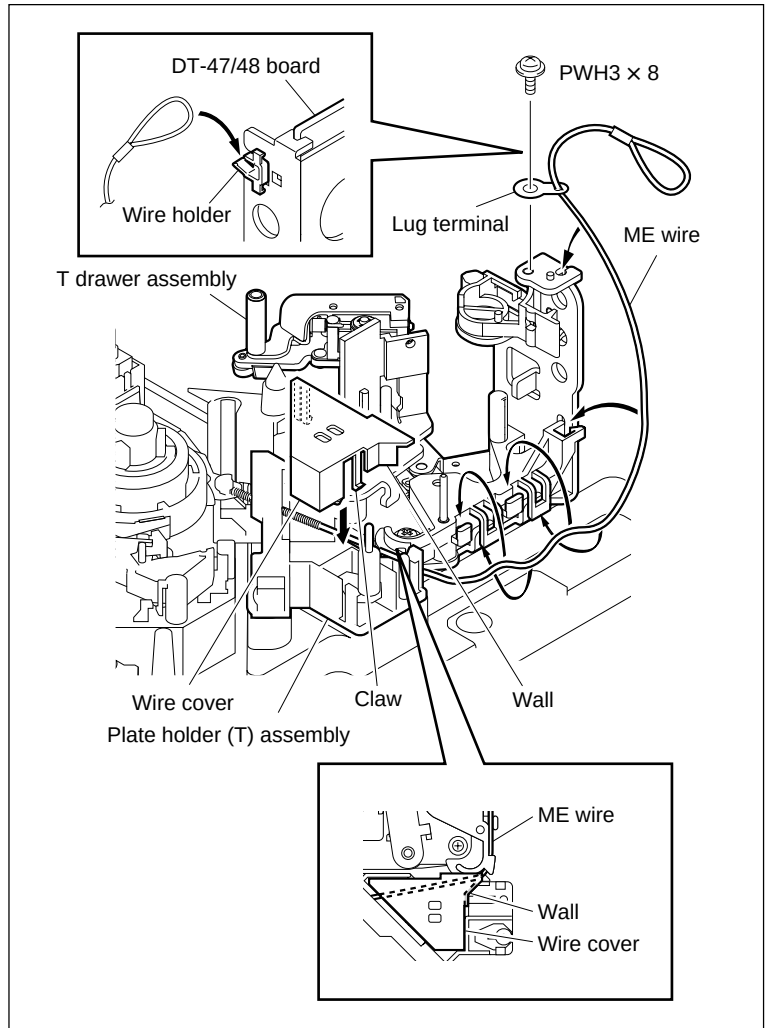
13. Performing Servo Adjustment

Refer to Section 3-4-2.

[F2] (AUTO ADJ) of the SERVO ADJUST menu

14. Adjusting the Tape Running at Drum Entrance Side

Refer to Section 6-12-1.



Attach the ME Wire

5-14. Reel Shift Motor Replacement

When a reel shift motor needs replacing, replace the whole motor holder assembly.

Outline

Replacement

1. Removing the Reel Motor Assemblies (Refer to steps 1 to 4 in Section 5-13.)
2. Removing the Motor Holder Assembly
3. Attaching the Motor Holder Assembly
4. Reattaching the Reel Motor Assemblies (Refer to steps 5 to 11 in Section 5-13.)

Adjustment after Replacement

5. Confirming the Reel Shift Motor Operation
6. Confirming the Tape Running at Drum Entrance Side (Refer to Section 6-12-1.)

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the Reel Motor Assemblies

Remove the reel motor assemblies of the S side and T side.

(Refer to steps 1 to 4 in Section 5-13.)

2. Removing the Motor Holder Assembly

- (1) Remove the two screws and shift the MC sensor assembly in the arrow direction.
- (2) Disconnect the harness from the connector CN2 of the MC sensor assembly.
- (3) Remove the two screws fixing the motor holder assembly.
- (4) Remove the hook from the slotted hole to remove the motor holder assembly.

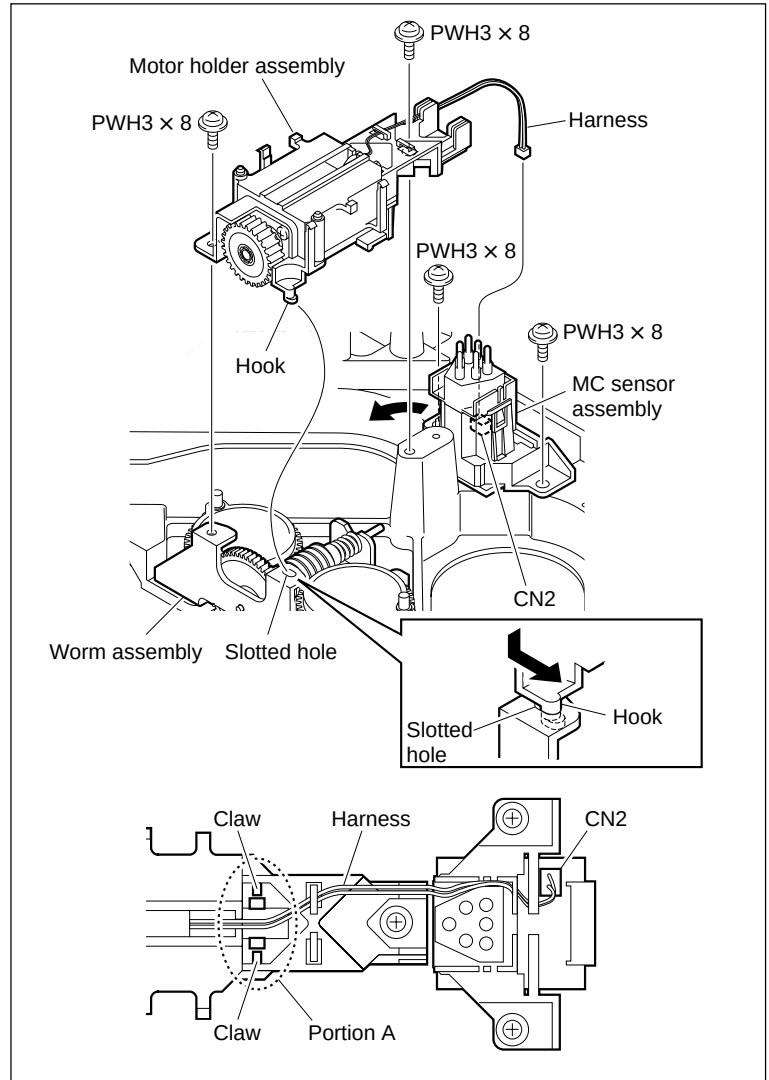
Installation

3. Attaching the Motor Holder Assembly

- (1) Insert the hook of a new motor holder assembly to the slotted hole of the worm assembly.
- (2) Shift the motor holder assembly to the arrow direction so that the hook is inserted in the slotted hole.
- (3) Fix the motor holder assembly with two screws in the state of step (2).
Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}
- (4) Connect the harness of the motor holder assembly to the connector CN2 of the MC sensor assembly and route the harness as shown in the figure.

Note

Arrange the too long harness in portion A with claws so that it will not contact the driving section of the reel motor assembly, etc.



Remove/Attach the Motor Holder Assembly

- (5) Fix the MC sensor assembly with the two screws.

4. Reattaching the Reel Motor Assemblies

Reattach the reel motor assemblies of the S side and T side.

(Refer to steps 5 to 11 in Section 5-13.)

Adjustment after replacement

5. Confirming the Reel Shift Motor Operation

- (1) Turn the power on.
- (2) Press the switch S1201 on the SS-102 board and check if the reel shift motor operates smoothly. (Refer to Section 5-1-3.)

6. Confirming the Tape Running at Drum Entrance Side

Refer to Section 6-12-1.

5-15. Reel Shift Gear Replacement

When replacing the reel shift gear, replace the drive gear (S) assembly, drive gear (T) assembly and the worm assembly.

Outline

Replacement

1. Removing the Reel Motor Assemblies (Refer to steps 1 to 4 in Section 5-13.)
2. Removing the Motor Holder Assembly (Refer to step 2 in Section 5-14.)
3. Removing the Drive Gear Assemblies
4. Removing the Worm Assembly
5. Attaching the Worm Assembly
6. Attaching the Drive Gear Assemblies
7. Reattaching the Motor Holder Assembly (Refer to step 3 in Section 5-14.)
8. Reattaching the Reel Motor Assemblies (Refer to steps 5 to 11 in Section 5-13.)

Adjustment after Replacement

9. Confirming the Reel Shift Motor Operation
10. Confirming the Tape Running at Drum Entrance Side (Refer to Section 6-12-1.)

Note

When replacing the drive gear (S) assembly, drive gear (T) assembly and the worm assembly, prepare a new stop washer.

Tools

- Stop washer: 3-650-537-01
- Grease (SGL-601): 7-651-000-10
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the Reel Motor Plate Assemblies

Remove the reel motor assemblies of the S side and T side. (Refer to steps 1 to 4 in Section 5-13.)

2. Removing the Motor Holder Assembly

Remove the motor holder assemblies of the S side and T side. (Refer to step 2 in Section 5-14.)

3. Removing the Drive Gear Assemblies

Remove the each stop washer to remove the driving gear (S) assembly and driving gear (T) assemblies.

4. Removing the Worm Assembly

Remove the two screws to remove the worm assembly.

Installation

5. Attaching the Worm Assembly

- (1) Wipe off grease from a new worm assembly and clean it.
- (2) Apply grease on the worm gear of the worm assembly.
- (3) Align the positioning hole of the worm assembly with the positioning pin of the MD base assembly and fix it with the two screws. Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

6. Attaching the Drive Gear Assemblies

- (1) Pass the driving gear (S) and (T) assemblies on the shafts of the MD base assembly respectively.
- (2) Re-engage the marked portions gear of both driving gear (S) and (T) assemblies with the same groove of the worm gear.
- (3) Fix the driving gear (S) and (T) assemblies with a new stop washer.

7. Reattaching the Motor Holder Assembly

Reattach the motor holder assembly.
(Refer to step 3 in Section 5-14.)

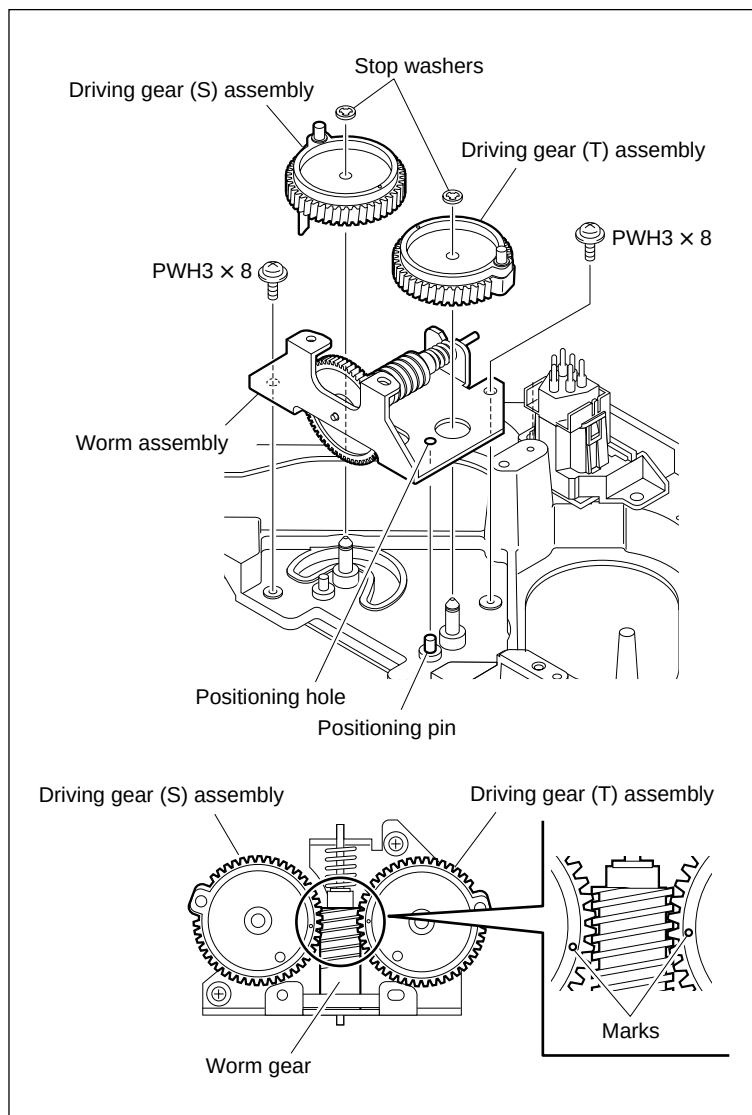
8. Reattaching the Reel Motor Assemblies

Reattach the reel motor assemblies of the S side and T side.
(Refer to steps 5 to 11 in Section 5-13.)

Adjustment after Replacement

9. Confirming the Reel Shift Motor Operation

- (1) Turn the power on.
- (2) Press the switch S1201 on the SS-102 board and check if the reel shift motor operates smoothly. (Refer to Section 5-1-3.)



Remove/Attach the Drive Gear Assemblies and the Worm Assembly

10. Confirming the Tape Running at Drum Entrance Side

Refer to Section 6-12-1.

5-16. Tape Guide Replacement

Replace the each tape guide with the unit of parts shown in the following List of Tape Guide.

Note

When replacing the tape guide, use extreme care not to damage the drum.

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

List of Tape Guide

Name	Parts to be replaced	Method	Adjustment after replacement
TG-0	S plate assembly	Refer to Section 5-16-1.	Refer to "Adjustment after Replacement" in Section 5-16-1.
TG-1	S tension regulator assembly	Refer to Section 5-19.	Refer to "Adjustment after Replacement" in Section 5-19.
TG-2	TG-2 assembly	Refer to the Exploded views	Refer to Sections 6-2 to 6-12.
TG-3	TG-3 assembly	Refer to the Exploded views	
TG-4	TG-4 assembly	Refer to the Exploded views	
TG-5	Ring assembly	Refer to Section 5-18.	Refer to "Adjustment after Replacement" in Section 5-18.
TG-6	Pinch arm assembly	Refer to Section 5-8.	Refer to "Adjustment after Replacement" in Section 5-8.
TG-7	Ring assembly	Refer to Section 5-18.	Refer to "Adjustment after Replacement" in Section 5-18.
TG-8	T tension regulator assembly	Refer to Section 5-20.	Refer to "Adjustment after Replacement" in Section 5-20.
TG-9	Ring assembly	Refer to Section 5-18.	Refer to "Adjustment after Replacement" in Section 5-18.
TG-10	T drawer assembly	Refer to Section 5-21.	Refer to "Adjustment after Replacement" in Section 5-21.
Slant guide			

For the exploded views, refer to the maintenance manual volume 2.

5-16-1. S Plate Assembly Replacement

Outline

Replacement

1. Removing the S Plate Assembly
2. Attaching the S Plate Assembly

Adjustment after Replacement

3. Adjusting the Tape Running at Drum Entrance Side (Refer to Section 6-12-1.)

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)
4. Open the AE-31H board. (Refer to figure in Section 5-1-2.)

Removal

1. Removing the S Plate Assembly

- (1) Disconnect the all harnesses from the clamber of the S plate assembly.
- (2) Disconnect the harness from the connector of the tape end sensor.
- (3) Remove the screw to remove the S plate assembly.

CAUTION

As the edge of tape cleaner is sharp, use great care to avoid a hand cut.

Installation

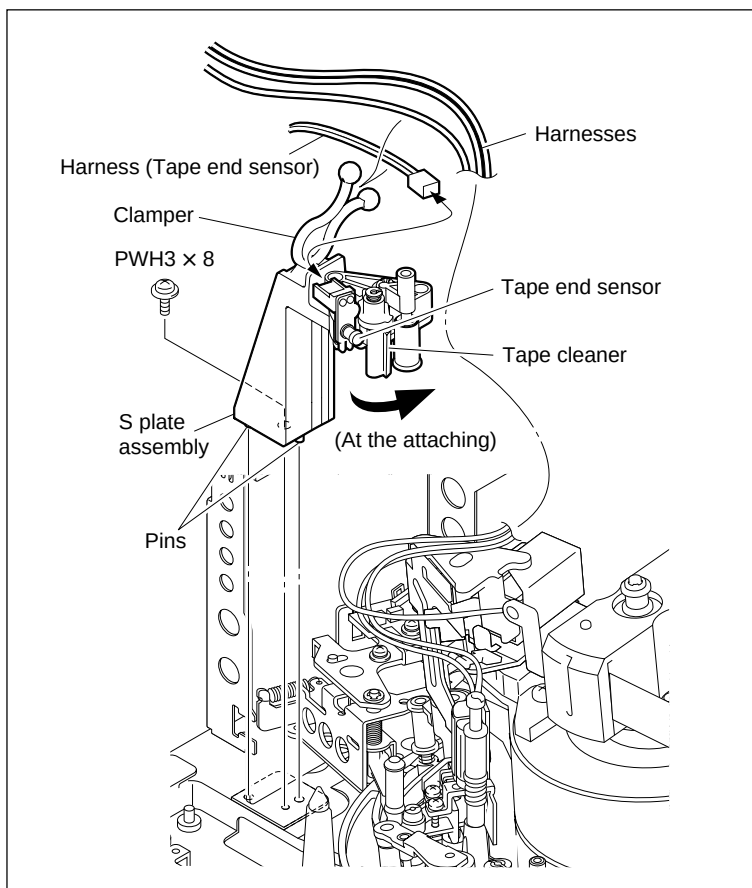
2. Attaching the S Plate Assembly

- (1) Insert the pins of the S plate assembly into the holes of the chassis and tighten the screw while holding the assembly counterclockwise.

Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

CAUTION

As the edge of tape cleaner is sharp, use great care to avoid a hand cut.



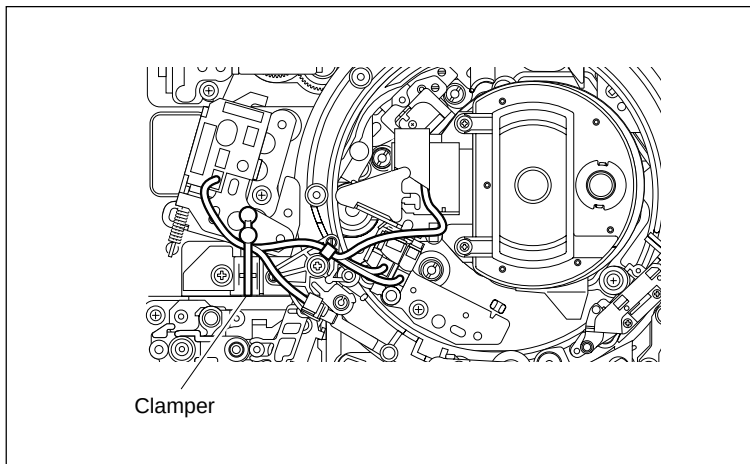
Remove/Attach the S Plate Assembly

- (2) Connect the harness (tape end sensor) to the connector of the tape end sensor and fix it to the clamber.
- (3) Fix the remaining harnesses disconnected in (2) of step 1 to the clamber

Adjustment after Replacement

3. Adjusting the Tape Running at Drum Entrance Side

Refer to Section 6-12-1.



Fix the Harnesses

5-17. Gear Box Assembly Replacement

Outline

Replacement

1. Removing the Video Head Cleaner Assembly
(Refer to steps 1 and 2 in Section 5-4.)
2. Shifting the TG-9
3. Disconnecting the Harness (CN233, CN920/HN-268 Board)
4. Removing the Gear Box Assembly
5. Attaching the Gear Box Assembly
6. Reconnecting the Harness (CN233, CN920/HN-268 Board)
7. Reattaching the Video Head Cleaner Assembly
(Refer to steps 4 to 6 in Section 5-4.)

Adjustment after Replacement

8. Confirming the Threading Motor Operation (Refer to Section 3-3-4.)
F7 (THREAD MOTOR) of the SERVO CHECK menu

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)
4. Open the AE-31H board. (Refer to the figure in Section 5-1-2.)

Removal

1. Removing the Video Head Cleaner Assembly

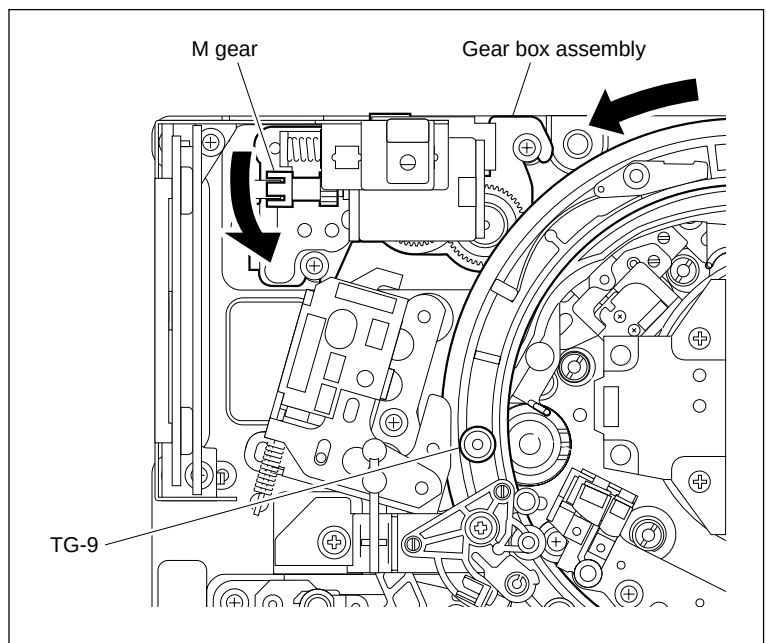
(Refer to steps 1 and 2 in Section 5-4.)

2. Shifting the TG-9

Turn the M gear of the gear box assembly in the arrow direction to shift the TG-9 to the position as shown in the figure.

Note

Move the TG-9 so that enough space to remove the gear box assembly is made.



Shift the TG-9

3. Disconnecting the Harness

Disconnect the harness from the connectors CN233 and CN920 of the gearbox assembly.

4. Removing the Gearbox Assembly

- (1) Remove the two screws.
- (2) While lifting up the threading ring assembly to the arrow A direction, move the gearbox assembly to the arrow B direction to remove the positioning bosses (A) and (B) from the MD base assembly.
- (3) Remove the gearbox assembly while paying attention not to contact the capstan shaft, AT head, and TG-4.

Installation

5. Attaching the Gearbox Assembly

- (1) While lifting up the threading ring assembly, insert the positioning bosses (A) and (B) of the gear box assembly in the each positioning hole (A) and (B) of the MD base assembly.
- (2) Press the gearbox assembly from above with fingers and confirm that the positioning bosses (A) and (B) are inserted into the positioning holes (A) and (B) of the MD base assembly. (The gear box assembly should make no rattles when pressed with fingers.)
- (3) Fix the gear box assembly with the two screws.

Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

6. Reconnecting the Harness

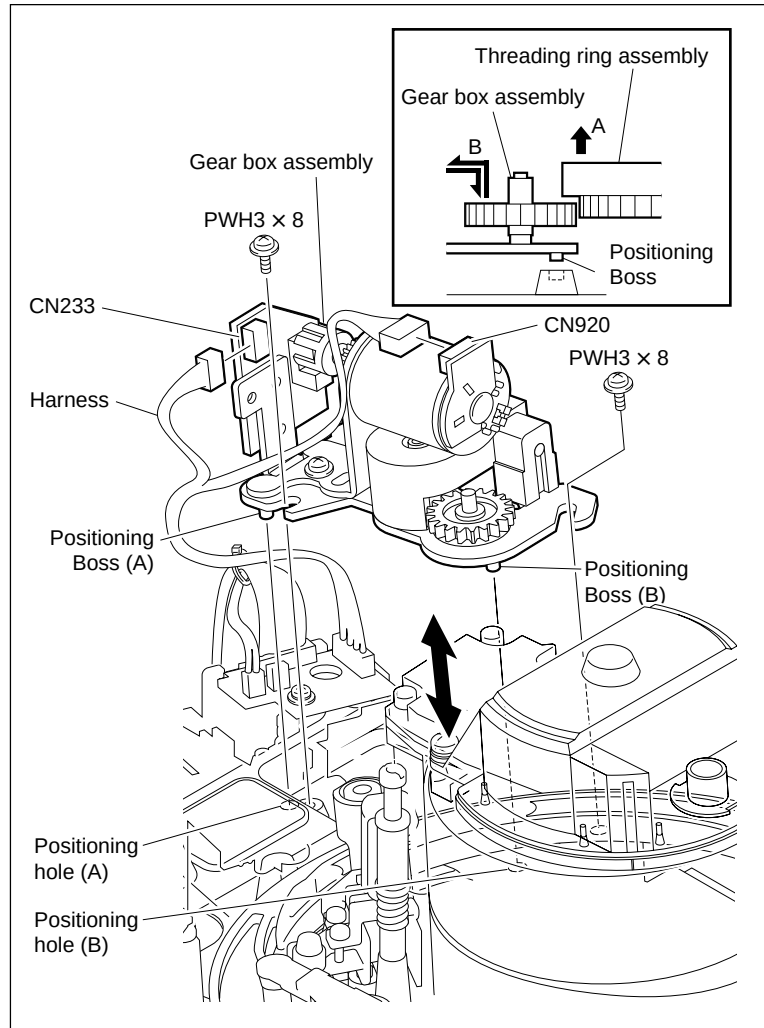
Reconnect the harness to the connectors CN233 and CN920 of the gearbox assembly.

Note

Avoid that the harness contacts the drive portion of the gear box assembly.

7. Reattaching the Video Head Cleaner Assembly

Reattach the video head cleaner assembly.
(Refer to steps 4 to 6 in Section 5-4.)



Remove/Attach the Gear Box Assembly

Adjustment after Replacement

8. Confirming the Threading Motor Operation

Refer to Section 3-3-4.

F7 (THREAD MOTOR) of the SERVO CHECK menu

5-18. Threading Ring Assembly Replacement

Outline

Replacement

1. Removing the Video Head Cleaner Assembly
(Refer to steps 1 and 2 in Section 5-4.)
2. Disconnecting the Flexible Board (CN220/DT-47, 48 board)
3. Disconnecting the Harnesses (AT head, full-erase head, CTL head)
4. Removing the PA Guard
5. Removing the CL Guide Rail
6. Removing the Pinch Press Assembly (Refer to steps 1 and 2 in Section 5-9.)
7. Removing the S Plate Assembly (Refer to steps 1 in Section 5-16-1.)
8. Removing the S Tension Regulator Assembly
(Refer to steps 1 and 2 in Section 5-19.)
9. Removing the T Drawer Assembly (Refer to steps 1 and 2 in Section 5-21.)
10. Removing the Gear Box Assembly (Refer to steps 1 to 4 in Section 5-17.)
11. Removing the Ring Roller (B)
12. Removing the Threading Ring Assembly
13. Cleaning (Threading Ring Assembly, Ring Roller)
14. Attaching the Threading Ring Assembly
15. Attaching the Ring Roller (B)
16. Confirming the Threading Ring Operation
17. Reattaching the Gear Box Assembly (Refer to steps 5 and 6 in Section 5-17.)
18. Reattaching the Pinch Press Assembly (Refer to steps 3 and 4 in Section 5-9.)
19. Putting the Unit into the Unthreading End Mode
20. Reattaching the S Tension Regulator Assembly (Refer to step 3 in Section 5-19.)
21. Reattaching the S Plate Assembly (Refer to step 2 in Section 5-16-1.)
22. Reattaching the T Drawer Assembly (Refer to steps 3 to 6 in Section 5-21.)
23. Reattaching the CL Guide Rail
24. Confirming the CL Arm Assembly Operation (Refer to step 3 in Section 5-5.)
25. Reattaching the PA Guard
26. Reconnecting the Flexible Board (CN220/DT-47, 48 Board)
27. Reconnecting the Harness (AT head, full-erase head, CTL head)
28. Reattaching the Video Head Cleaner Assembly
(Refer to steps 4 to 6 in Section 5-4.)

Adjustment after Replacement

29. Confirming the Cleaning Solenoid Operation (Refer to Section 3-3-4.)
 [F6] (CLEAN PLG) of the ALT SERVO CHECK menu
30. Performing the Tension Offset Adjustment (Refer to Section 3-4-2.)
 [F4] (TENSN OFFSET) of the ALT SERVO ADJUST menu
31. Confirming the Pinch Press Clearance (Refer to step 5 in Section 5-9.)
32. Adjusting the Tape Running (Refer to Sections 6-2 to 6-12.)

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)
4. Open the AE-31H board. (Refer to figure in Section 5-1-2.)

Removal

1. Removing the Video Head Cleaner Assembly

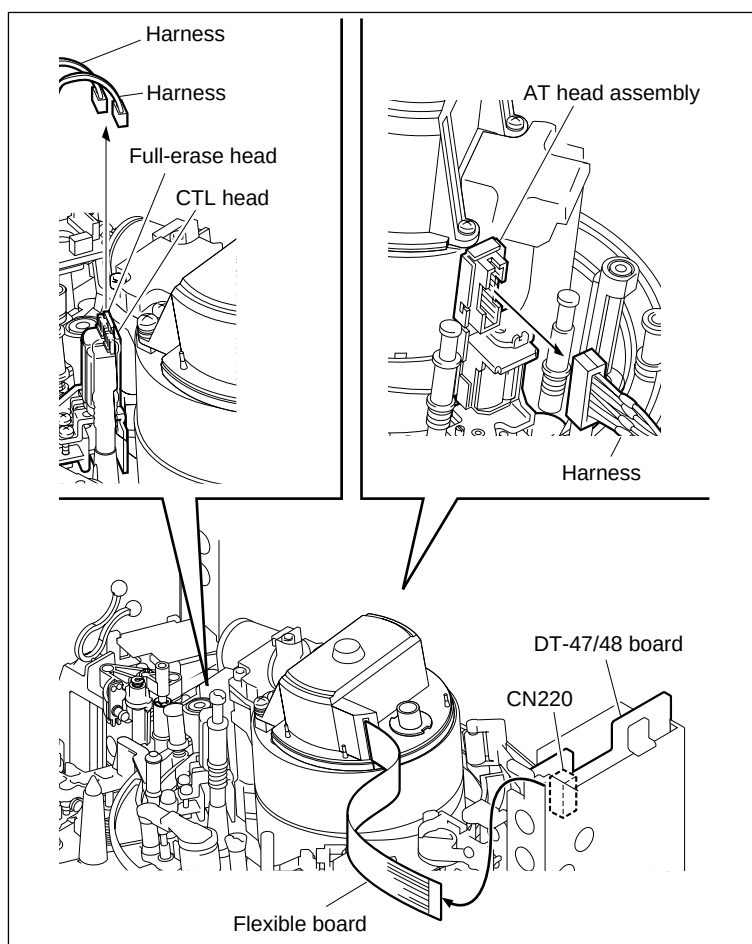
Remove the video head cleaner assembly.
(Refer to steps 1 and 2 in Section 5-4.)

2. Disconnecting the Flexible Board

Disconnect the flexible board from the connector CN220 on the DT-47/48 board.

3. Disconnecting the Harnesses

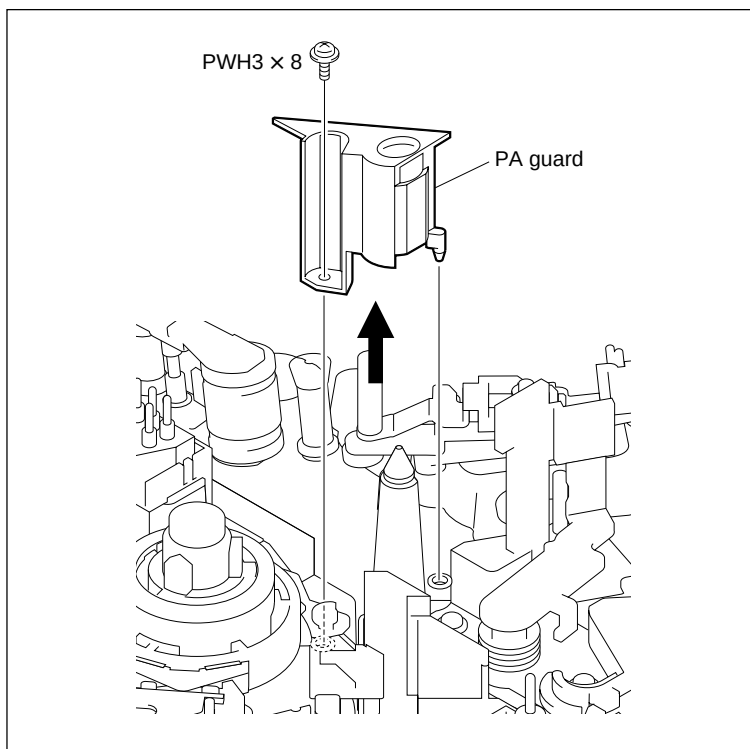
- (1) Disconnect the harness from the connector of the AT head assembly.
- (2) Disconnect the harness from the connector of the full-erase head.
- (3) Disconnect the harness from the connector of the CTL head.



Disconnect the Flexible Board and the Harnesses

4. Removing the PA Guard

Remove the one screw to remove PA guard.



Remove the PA Guard

5. Removing the CL Guide Rail

Fully loosen the two screws to remove the CL guide rail.

Note

Never pull out the screws from the CL guide rail, because the screw section is designed not to fall.

6. Removing the Pinch Press Assembly

Remove the pinch press assembly.

(Refer to steps 1 and 2 in Section 5-9.)

7. Removing the S Plate Assembly

Remove the S plate assembly.

(Refer to step 1 in Section 5-16-1.)

8. Removing the S Tension Regulator Assembly

Remove the S tension regulator assembly.

(Refer to steps 1 and 2 in Section 5-19.)

9. Removing the T Drawer Assembly

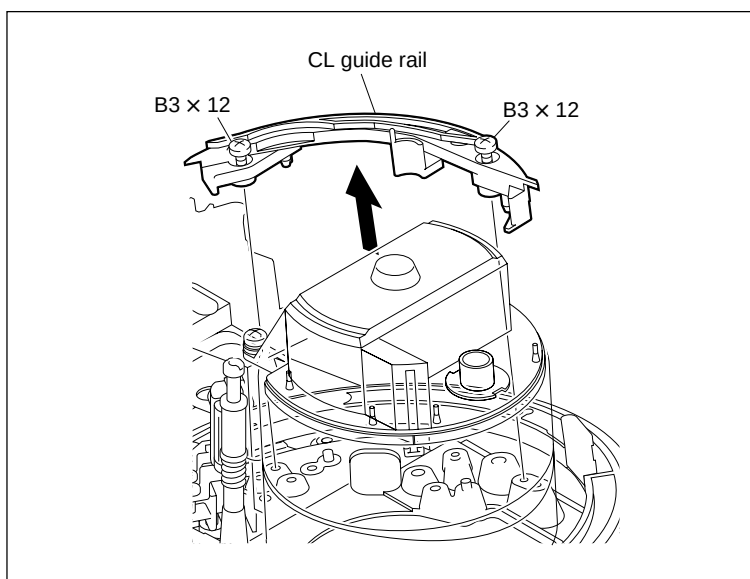
Remove the T drawer assembly.

(Refer to steps 1 and 2 in Section 5-21.)

10. Removing the Gear Box Assembly

Remove the gear box assembly.

(Refer to steps 1 to 4 in Section 5-17.)



Remove the CL Guide Rail

11. Removing the Ring Roller (B)

Remove the screw, then remove the ring roller (B).

Note

Be careful not to touch the drum and peripheral tape guides

12. Removing the Threading Ring Assembly

Remove the threading ring assembly from the MD base assembly, while holding the T tension arm in the arrow direction.

Note

Be careful not to touch the drum and the capstan motor shaft.

Installation

13. Cleaning

Clean the inside of a new threading ring assembly and contacting surface of the ring rollers (A), (B), and (C) with a cleaning cloth moistened with cleaning fluid.

14. Attaching the Threading Ring Assembly

Hold the T tension arm in the arrow direction, and install the threading ring assembly while attempting to fit it to the grooves of the ring rollers (A) and (C).

15. Attaching the Ring Roller (B)

- (1) Pass the ring roller (B) through the roller shaft while holding the threading ring assembly so that it does not come off from the grooves of the ring rollers (A) and (C). Then tighten the screw.

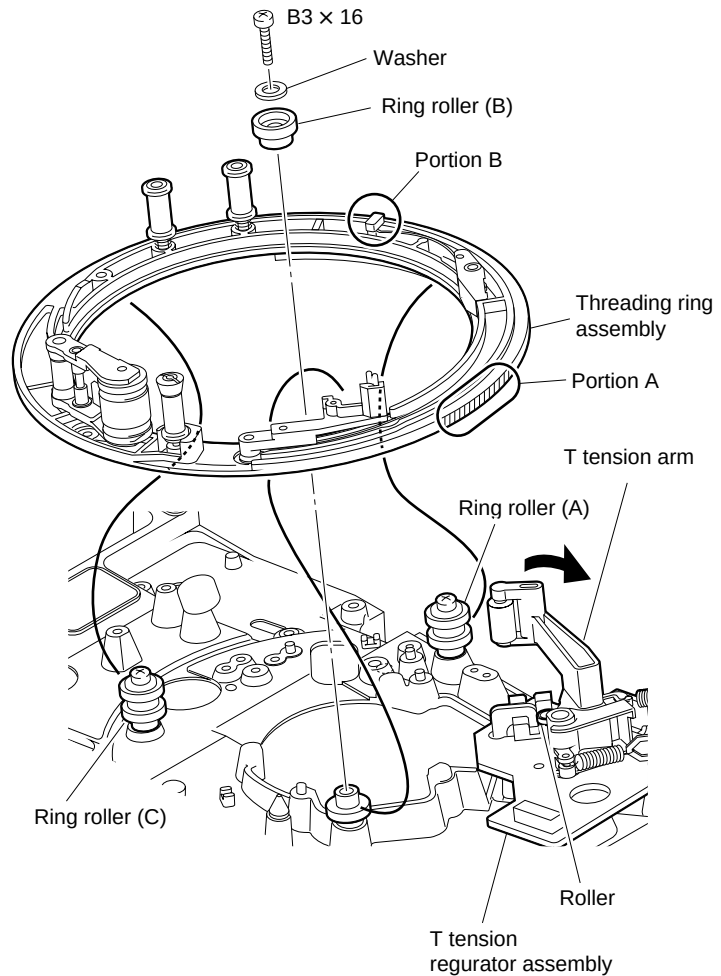
Tightening torque: $49.0 \times 10^{-2} \text{ N}\cdot\text{m}$
{5.0 kgf·cm}

- (2) Check that the threading ring assembly does not come off from the three ring rollers. And check that the roller of the T tension regulator assembly is set along the side of the threading ring as shown in the figure (portion A).

16. Confirming the Threading Ring Operation

Confirm that the threading ring and the three ring rollers rotate smoothly while turning the portion B of the threading ring assembly right and left with fingers.

* Omits the illustration of the drum and peripheral tape guides.



Remove/Attach the Threading Ring Assembly

17. Reattaching the Gear Box Assembly

Reattach the gear box assembly.

(Refer to steps 5 and 6 in Section 5-17.)

18. Reattaching the Pinch Press Assembly

Reattach the pinch press assembly.

(Refer to steps 3 and 4 in Section 5-9.)

19. Putting the Unit into the Unthreading End Mode

(Refer to step 2 in Section 5-1-2.)

20. Reattaching the S Tension Regulator Assembly

Reattach the S tension regulator assembly.

(Refer to step 3 in Section 5-19.)

21. Reattaching the S Plate Assembly

Reattach the S plate assembly.

(Refer to step 2 in Section 5-16-1.)

22. Reattaching the T Drawer Assembly

Reattach the T drawer assembly and confirm the T drawer assembly operation.

(Refer to steps 3 to 6 in Section 5-21.)

23. Attaching the CL Guide Rail

- (1) Check if the unit is in the unthreading end state.
- (2) Insert the portion A of the CL guide rail to the bottom of the drum.
- (3) Match and attach the positioning pin of the CL guide rail to the positioning hole of the MD base assembly.
- (4) Tighten the two screws.

24. Confirming the CL Arm Assembly Operation

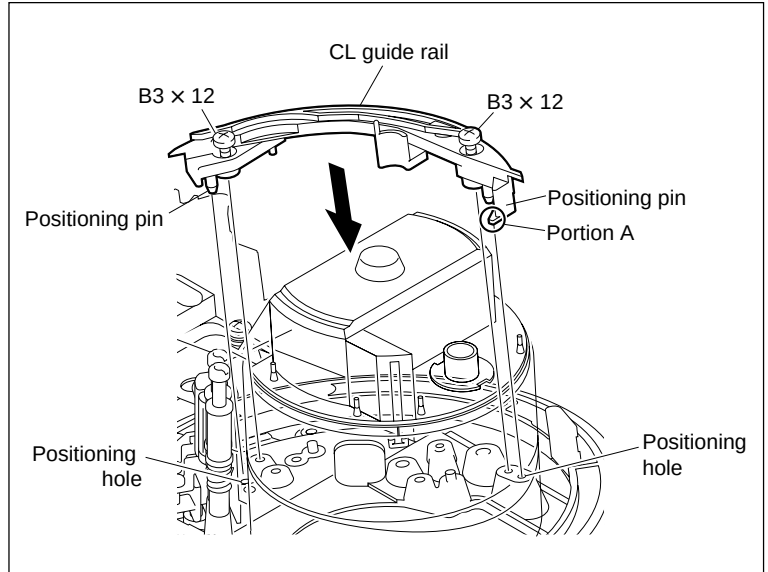
Confirm the CL arm assembly operation.

(Refer to step 3 in Section 5-5.)

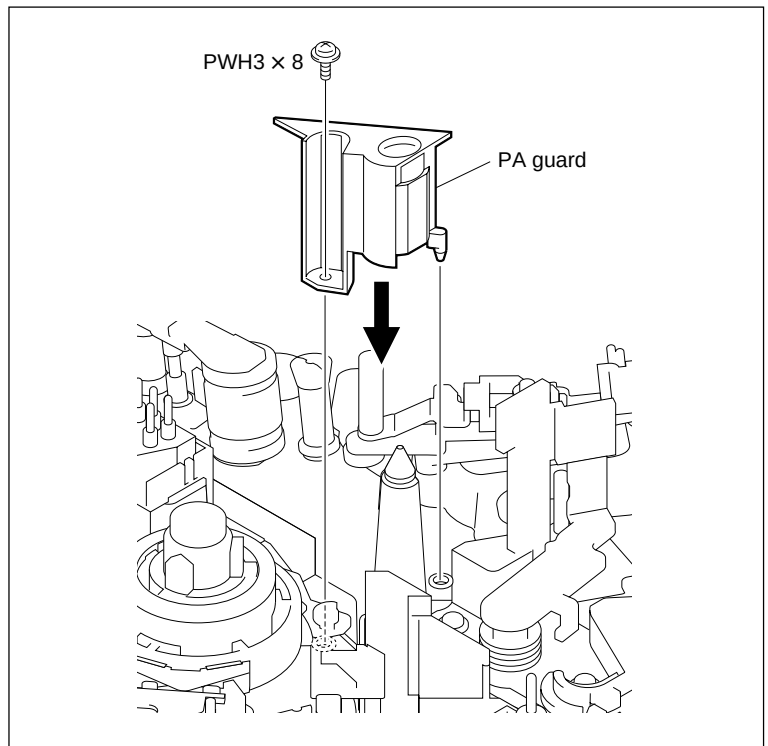
25. Reattaching the PA Guard

- (1) Put the PA guard through the cassette brace, then match the pin with the hole of the MD base assembly.
- (2) Tighten the one screw.

Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}



Attach the CL Guide Rail



Attach the PA Guard

26. Reconnecting the Flexible Board

Reconnect the flexible board to the connector CN220 on the DT-47/48 board and lock it.

27. Reconnecting the Harnesses

- (1) Reconnect the harness to the connector of the AT head assembly.
- (2) Reconnect the harness to the connector of the full-erase head.
- (3) Reconnect the harness to the connector of the CTL head.

28. Reattaching the Video Head Cleaner Assembly

Reattach the video head cleaner assembly.
(Refer to steps 4 to 6 in Section 5-4.)

Adjustment after Replacement

29. Confirming the Cleaning Solenoid Operation

Refer to Section 3-3-4.

[F6] (CLEAN PLG) of the ALT SERVO CHECK menu

30. Performing the Tension Offset Adjustment

Refer to Section 3-4-2.

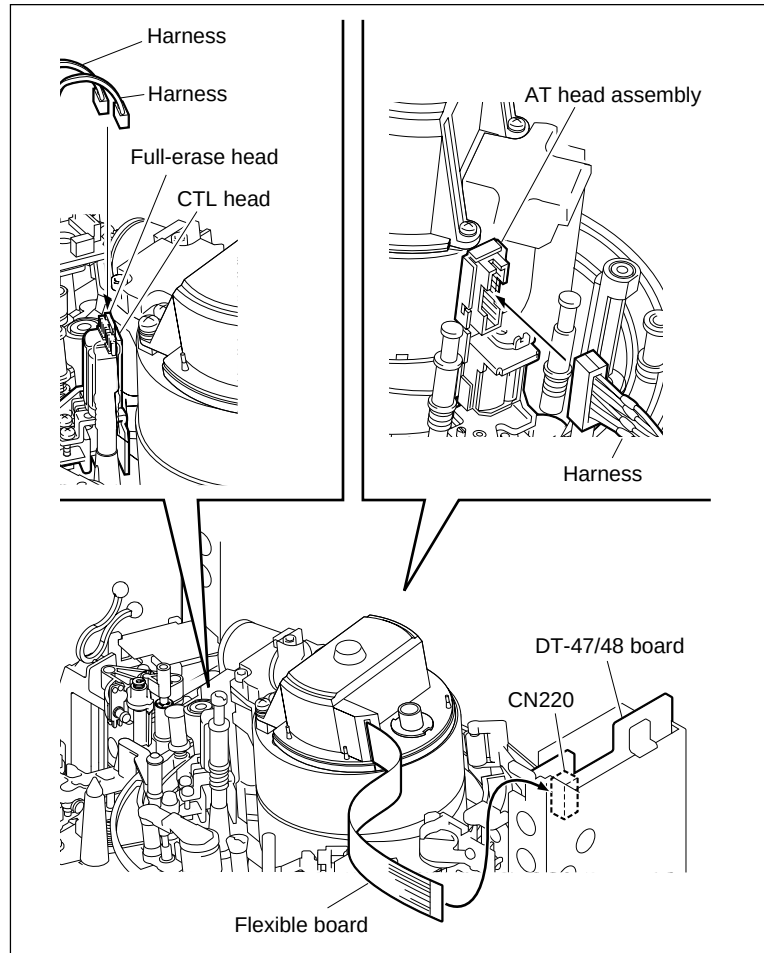
[F4] (TENSN OFFSET) of the ALT SERVO ADJUST menu

31. Confirming the Pinch Press Clearance

Refer to step 5 in Section 5-9.

32. Adjusting the Tape Running

Refer to Sections 6-2 to 6-12.



Connect the Flexible Board and the Harnesses

5-19. S Tension Regulator Assembly Replacement

Outline

Replacement

1. Removing the S Plate Assembly (Refer to step 1 in Section 5-16-1.)
2. Removing the S Tension Regulator Assembly
3. Attaching the S Tension Regulator Assembly
4. Reattaching the S Plate Assembly (Refer to step 2 in Section 5-16-1.)

Adjustment after Replacement

5. Performing the Tension Offset Adjustment (Refer to Section 3-4-2.)
 [F4] (TENSN OFFSET) of the ALT SERVO ADJUST menu
6. Adjusting the Tape Running (Refer to Sections 6-2 to 6-12.)

Note

The S tension regulator assembly comprises of precision components and is adjusted strictly. When removing/installing, use extreme care to turn only screws specified.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Set the unit into the unthreading end mode. (Refer to step 2 in Section 5-1-2.)
2. Turn the power off and disconnect the power cord.
3. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
4. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the S Plate Assembly

Remove the S plate assembly.

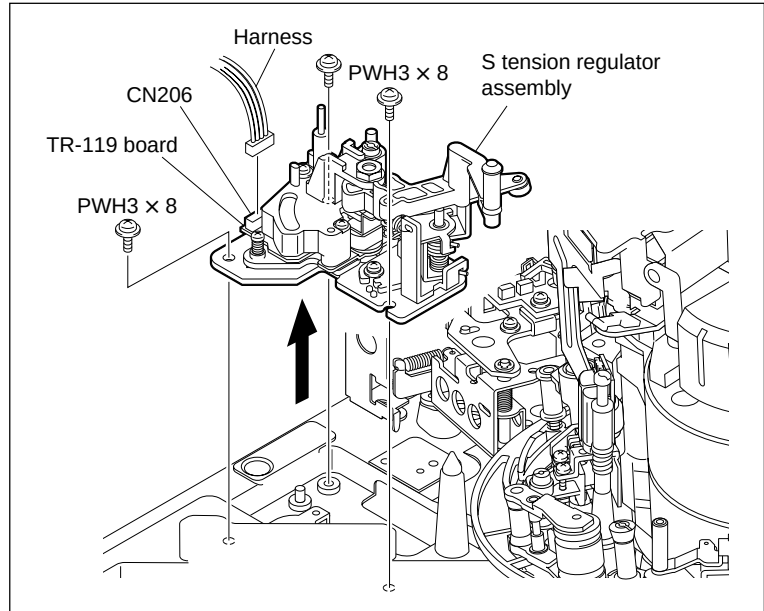
(Refer to step 1 in Section 5-16-1.)

2. Removing the S Tension Regulator Assembly

- (1) Remove the three screws to remove the S tension regulator assembly.
- (2) Disconnect the harness from the connector CN206 on the TR-119 board.

Note

Be careful not to apply excessive force to the board when removing the harness.



Remove the S Tension Regulator Assembly

Installation

3. Attaching the S Tension Regulator Assembly

- (1) Clean the mounting surfaces between the S tension regulator assembly and the MD base assembly (three contact surfaces).
- (2) Connect the harness to the connector CN206 on the TR-119 board.
- (3) Hook the harness on the portion A of the S tension regulator.
- (4) Match the S tension regulator assembly with the positioning pin and the positioning hole of the MD base assembly then fasten with three screws so that the roller portion comes to the position as shown in the figure of the threading ring assembly.

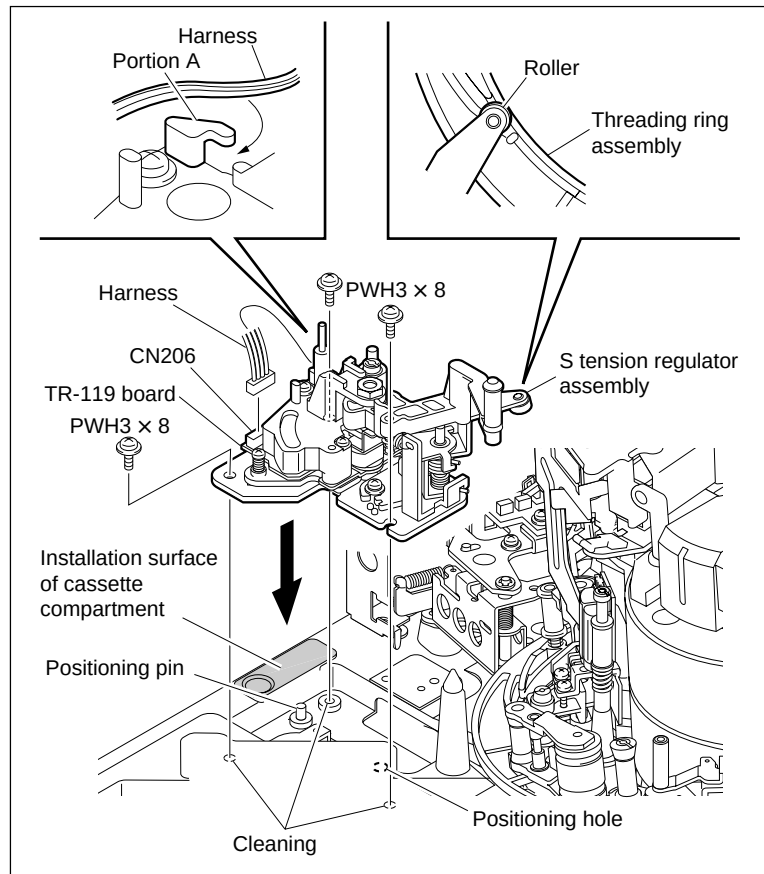
Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

- (5) Check that the harness is not on the cassette compartment mounting surface (shaded portion in the figure).

4. Reattaching the S Plate Assembly

Reattach the S plate assembly.

(Refer to step 2 in Section 5-16-1.)



Attach the S Tension Regulator Assembly

Adjustment after Replacement

5. Performing the Tension Offset Adjustment

Refer to Section 3-4-2.

F4 (TENSN OFFSET) of the ALT SERVO ADJUST menu

6. Adjusting the Tape Running

Refer to Sections 6-2 to 6-12.

5-20. T Tension Regulator Assembly Replacement

Outline

Replacement

1. Shifting the TG-6
2. Disconnecting the Flexible Board (CN220/DT-47, 48 Board)
3. Removing the EQ Harness Retainer
4. Removing the DT-47/48 Board
5. Removing the T Tension Regulator Assembly
6. Attaching the T Tension Regulator Assembly
7. Confirming the T Tension Regulator Assembly Operation
8. Reattaching the DT-47/48 Board
9. Reattaching the EQ Harness Retainer
10. Reconnecting the Flexible Board (CN220/DT-47, 48 Board)

Adjustment after Replacement

11. Performing the Tension Offset Adjustment (Refer to Section 3-4-2.)
 [F4] (TENS OFFSET) of the ALT SERVO ADJUST menu
12. Confirming the Tape Running at Drum Exit Side (Refer to Section 6-12-2.)

Note

The T tension regulator assembly comprises of precision components and is adjusted strictly. When removing/installing, use extreme care to turn only screws specified.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Preparation

1. Set the unit into the unthreading end mode. (Refer to step 2 in Section 5-1-2.)
2. Turn the power off and disconnect the power cord.
3. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
4. Remove the cassette compartment. (Refer to Section 1-5.)
5. Open the AE-31H board. (Refer to the figure in Section 5-1-2.)

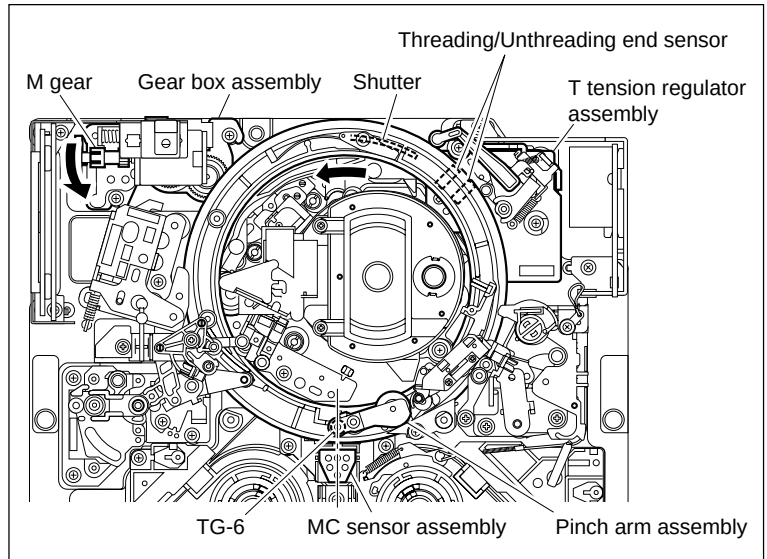
Removal

1. Shifting the TG-6

Turn the M gear of the gearbox assembly in the arrow direction to shift the TG-6 to the position as shown in the figure.

Note

The shutter for detecting the threading/unthreading end will be released from the T tension regulator assembly by turning the threading ring assembly.



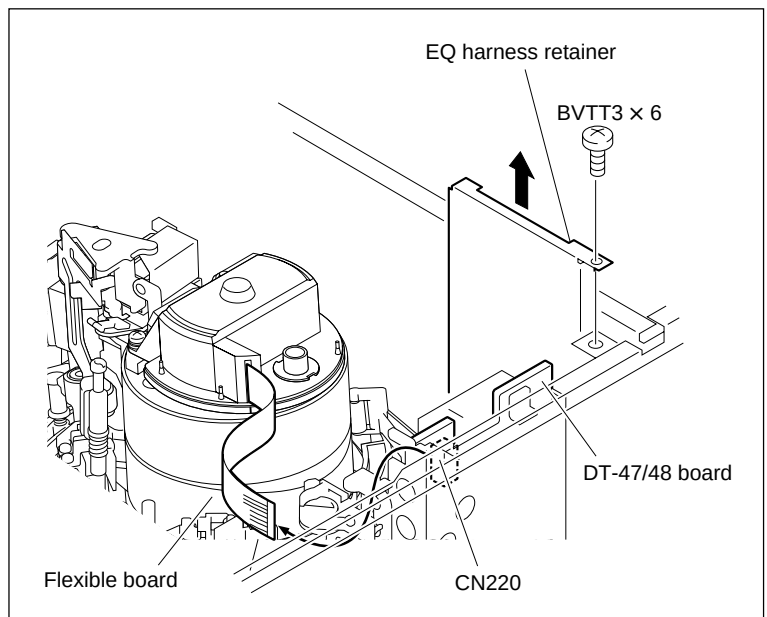
Shift the TG-6

2. Disconnecting the Flexible Board

Disconnect the flexible board from the connector CN220 on the DT-47/48 board.

3. Removing the EQ Harness Retainer

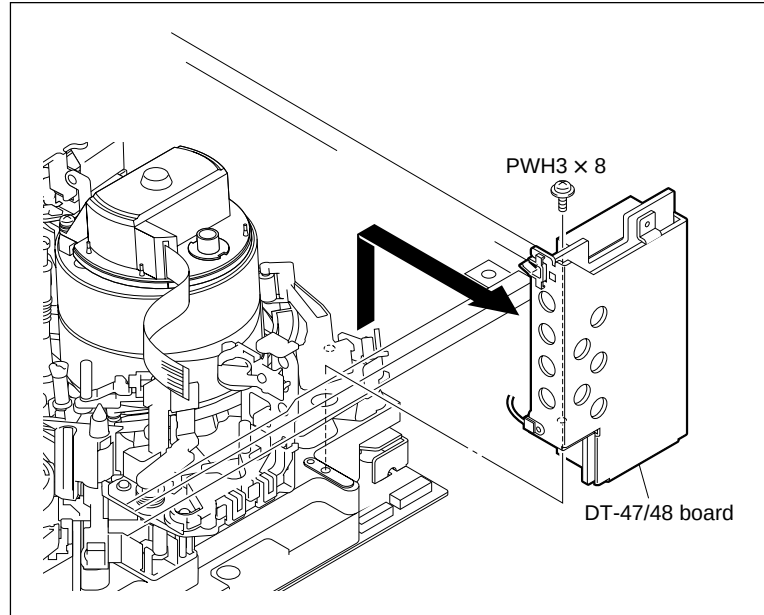
Remove the screw and remove the EQ harness retainer.



Disconnect the Flexible Board and Remove EQ Harness Retainer

4. Removing the DT-47/48 Board

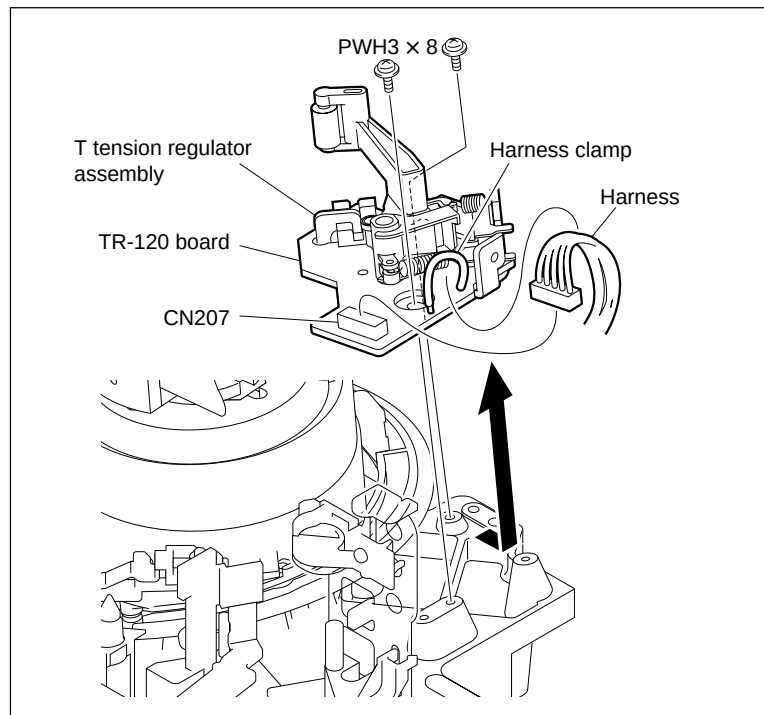
- (1) Remove the remaining screw fixing the DT-47/48 board.
- (2) Remove the DT-47/48 board and shift it to the arrow direction.
Secure the space to remove the T tension regulator assembly.



Remove the DT-47/48 Board

5. Removing the T Tension Regulator Assembly

- (1) Unfasten the harness clamp, then disconnect the harness from the connector CN207 on the TR-120 board.
- (2) Remove the two screws and remove the T tension regulator assembly in the arrow direction.



Remove the T Tension Regulator Assembly

Installation

6. Attaching the T Tension Regulator Assembly

- (1) Align the two positioning bosses of the T tension regulator assembly with the positioning holes of the MD base assembly and install it.

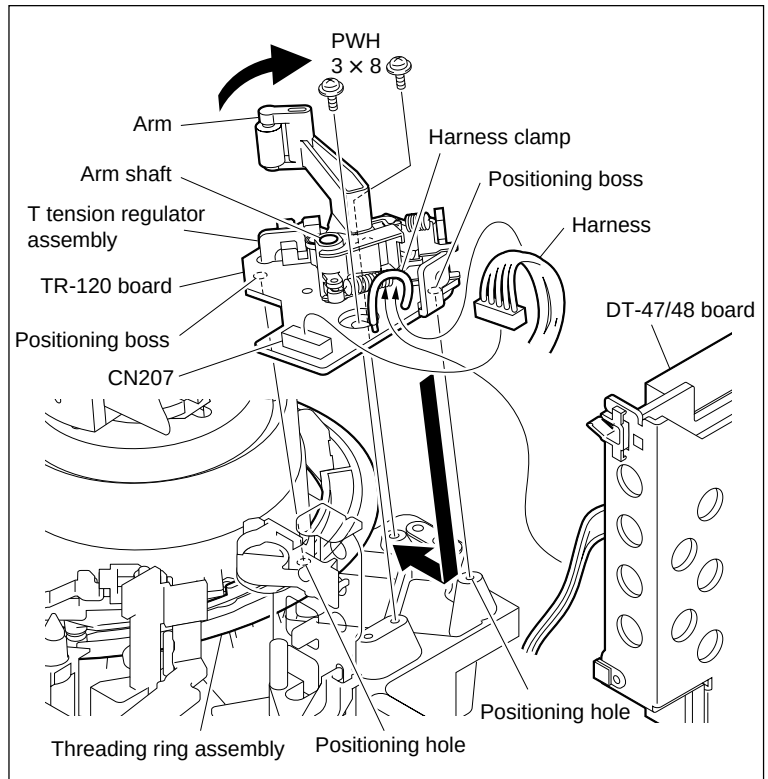
Note

Match the position while setting the mounting screw hole as a reference.

- (2) Tighten temporarily the two screws to fix the T tension regulator assembly.
- (3) While keeping apart the threading ring assembly by pushing the arm to the arrow direction and slightly press the arm shaft from above with fingers, confirm that the positioning bosses are securely within the positioning holes of the MD base assembly and fasten with two screws.
- (4) Connect the harness to the connector CN207 on the TR-120 board.
- (5) Fasten the harness connected to the TR-120 board together with the harness connected to the DT-47/48 board with the harness clamp.

Note

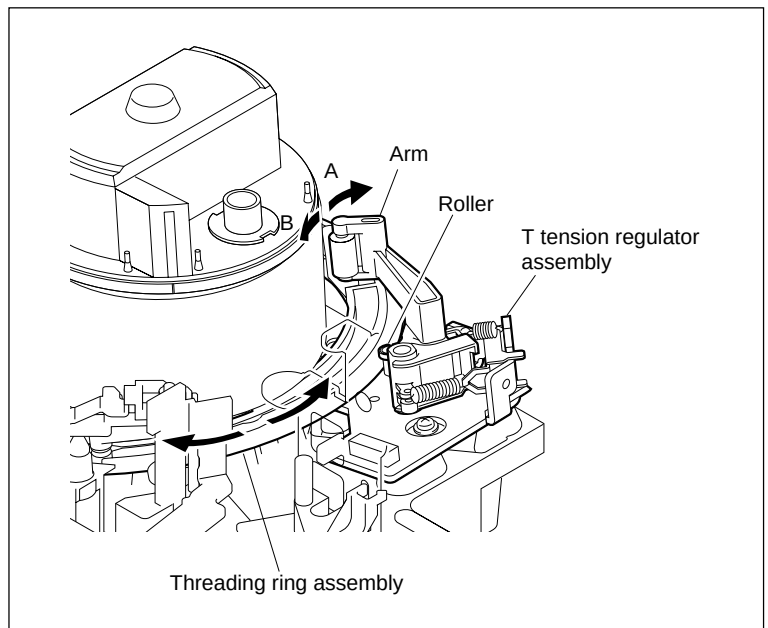
Be careful that harnesses does not contact the moving section of the T tension regulator assembly.



Attach the T Tension Regulator Assembly

7. Confirming the T Tension Regulator Assembly Operation

- (1) Turn the M gear of the gear box assembly to let the threading end state.
Confirm the following items at this time:
 - The arm of the T tension regulator assembly is set at its normal position. (Refer to Section 5-1-2.)
 - The arm will smoothly return when fingers are released after the arm is lightly pressed in the arrow A direction with fingers.
 - The arm will move to the threading ring assembly with no contact when lightly pressed in the arrow B direction with fingers.
- (2) Confirm that the roller of the T tension regulator assembly does not come off from the threading ring and operates normally while repeating the threading and unthreading.

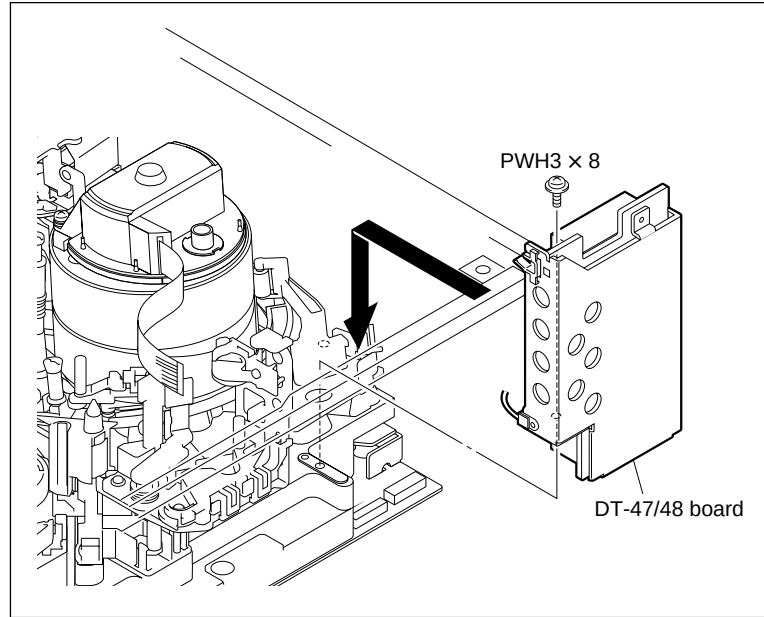


T Tension Regulator Assembly Operation

If the above items cannot be satisfied, remove and attach the T tension regulator assembly again.

8. Reattaching the DT-47/48 Board

Reattach the DT-47/48 board to the MD base assembly, then tighten it with the screw.



Reattach the DT-47/48 Board

9. Reattaching the EQ Harness Retainer

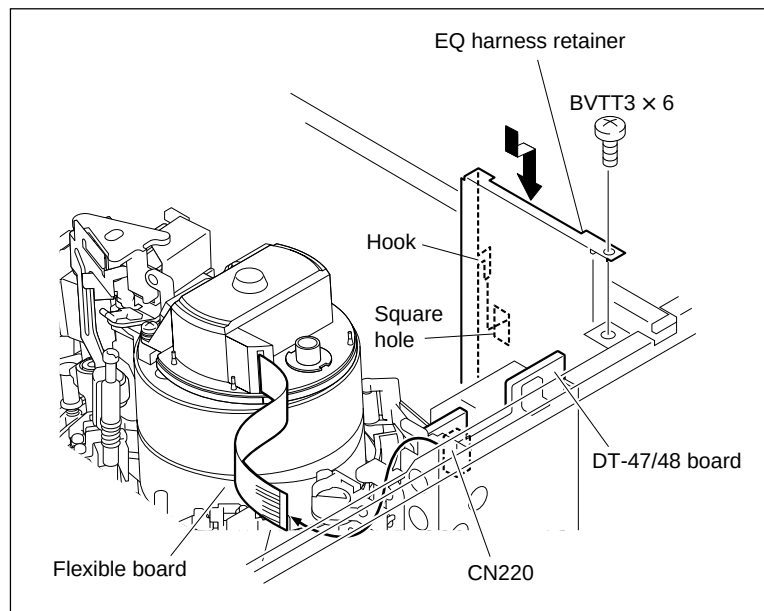
Reattach the EQ harness retainer as shown in the figure, then tighten it with the screw.

Note

Put the hook of the EQ harness retainer into the square hole of the chassis.

10. Reconnecting the Flexible Board

Insert and lock the flexible board to the connector CN220 on the DT-47/48 board.



Reattaching the EQ Harness Retainer and Flexible Board

Adjustment after Replacement

11. Performing the Tension Offset Adjustment

Refer to Section 3-4-2.

F4 (TENSIN OFFSET) of the ALT SERVO ADJUST menu

12. Confirming the Tape Running at Drum Exit Side

Refer to Section 6-12-2.

5-21. T Drawer Assembly Replacement

Outline

Replacement

1. Removing the ME Wire
2. Removing the T Drawer Assembly
3. Attaching the T Drawer Assembly
4. Attaching the ME Wire
5. Confirming the ME Wire Operation
6. Confirming the T Drawer Assembly Operation
7. Confirming the Tape Running at TG-10 Guide
8. Adjusting the Slant Guide Slantness
9. Reconfirming the Tape Running at TG-10 Guide

Note

The T Drawer Assembly is adjusted for the roller height, slant guide, etc. at shipping.

Never turn the mounting screws when removing/attaching.

Tools

- L-shaped wrench (1.5 mm): 7-700-736-05
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- HDCAM SR cassette (L cassette)

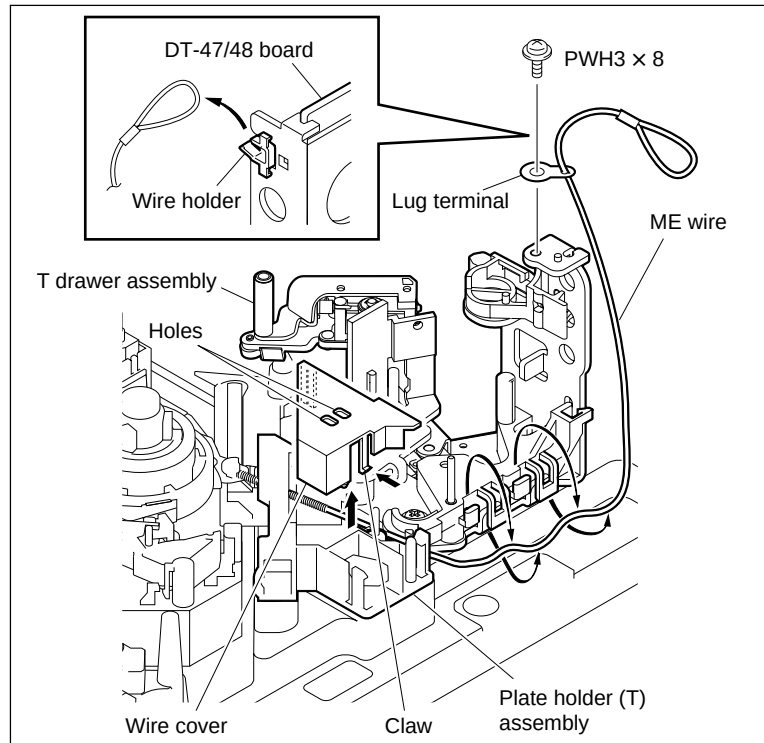
Preparation

1. Set the unit into the unthreading end mode. (Refer to step 2 in Section 5-1-2.)
2. Turn the power off and disconnect the power cord.
3. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
4. Remove the cassette compartment. (Refer to Section 1-5.)

Removal

1. Removing the ME Wire

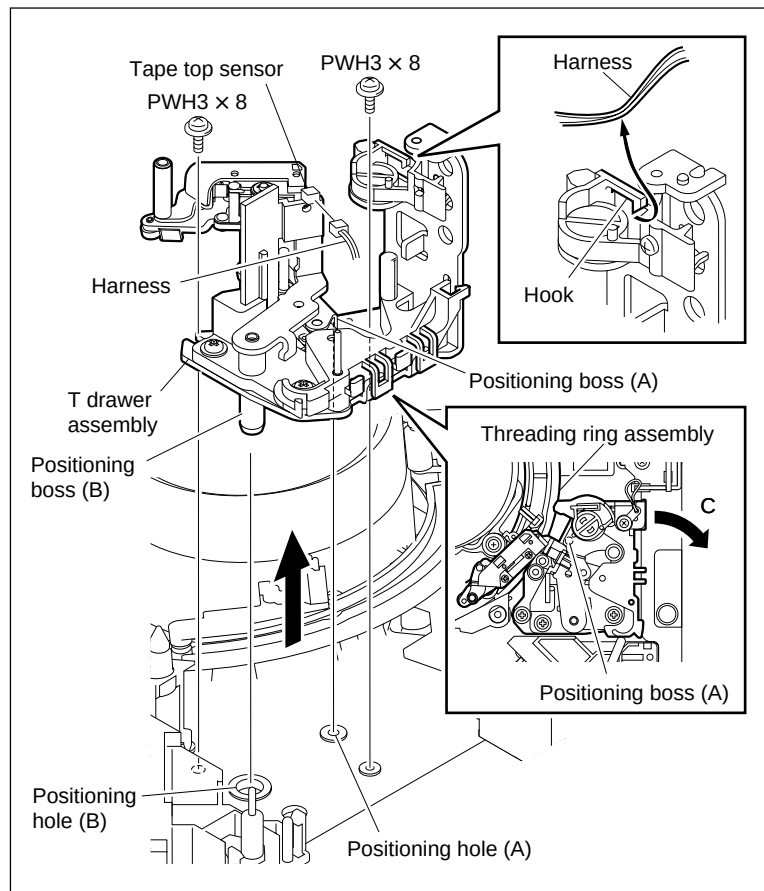
- (1) Release the tip of the ME wire from the wire holder.
- (2) Remove the screw securing the lug terminal of the ME wire.
- (3) Grasp the hole of the wire cover with a pair of pliers, press the claw on the cover in the arrow direction, and remove the wire cover from the plate holder (T) assembly.
- (4) Remove the ME wire from the T drawer assembly as shown in the figure.



Remove the ME Wire

2. Removing the T Drawer Assembly

- (1) Disconnect the harness from the connector of the tape top sensor.
- (2) Release the harness from the hook of the T drawer assembly.
- (3) Remove the two screws.
- (4) Remove the positioning boss (A) from the positioning hole (A) of the MD base assembly by lifting up the T drawer assembly.
- (5) Remove the positioning boss (B) from the positioning hole (B) while turning the T drawer assembly in the arrow C direction.



Remove the T Drawer Assembly

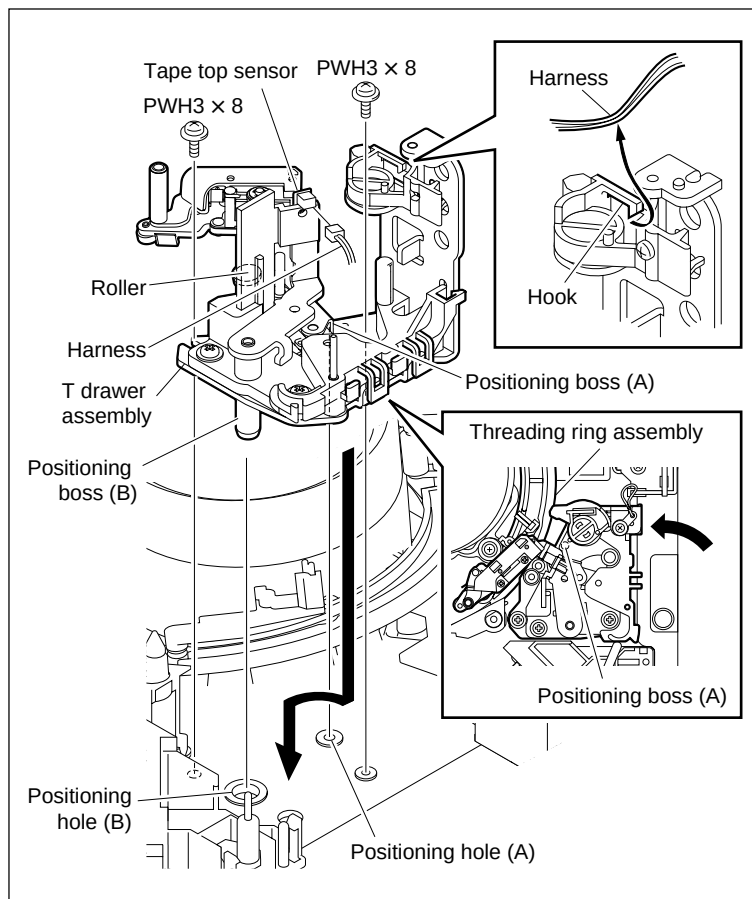
Installation

3. Attaching the T Drawer Assembly

- (1) Clean the mounting surfaces between the T drawer assembly and the MD base assembly.
- (2) Insert the positioning boss (B) of the T drawer assembly into the positioning hole (B) at a shallow depth. Fit the positioning boss (A) to the positioning hole (A) by pushing and turning from outside of the thread ring assembly.
- (3) Fix the T drawer assembly with the two screws.
Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}
- (4) Connect the harness to the connector of the tape top sensor.
- (5) Hang the harness on the hook of the T drawer assembly to fasten it.

Note

Be careful not to apply excessive force to the adjusting arm.



Attach the T Drawer Assembly

4. Attaching the ME Wire

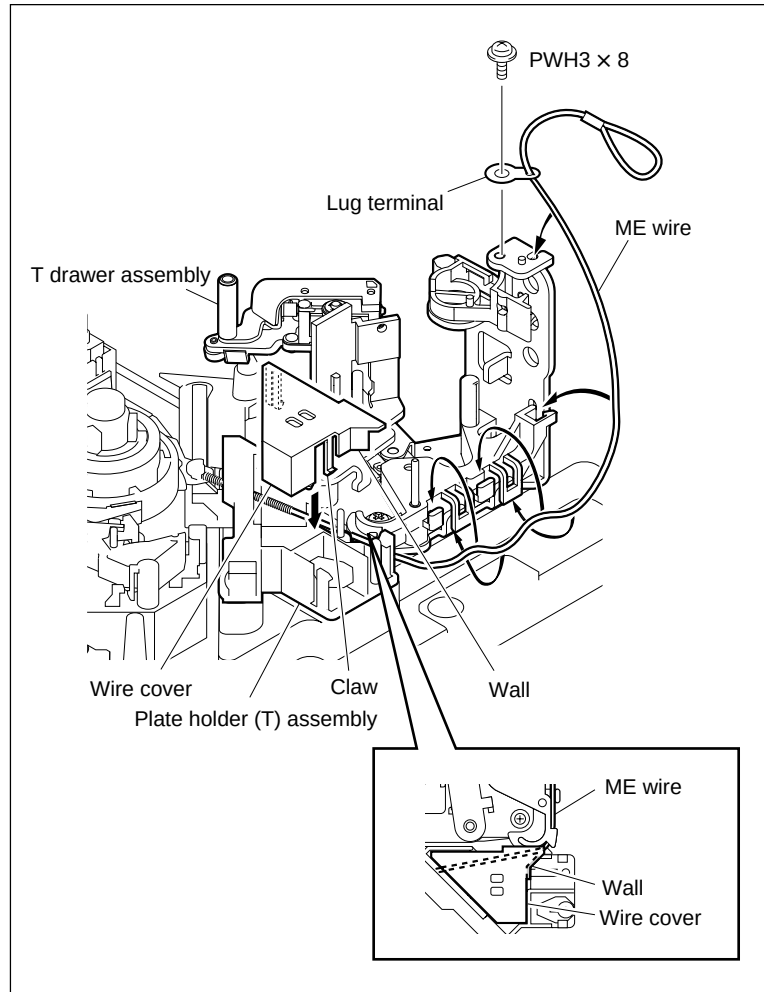
- (1) Hook the ME wire in the T drawer assembly as shown in the figure and fix the lug terminal with the screw.

Tightening torque: $78.4 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf•cm}

- (2) Set the reel motor assembly to the S cassette position. (Refer to Section 5-1-3.)
Next, mount the wire cover to the plate holder (T) assembly from the top, and secure with the claw of the wire cover.

Note

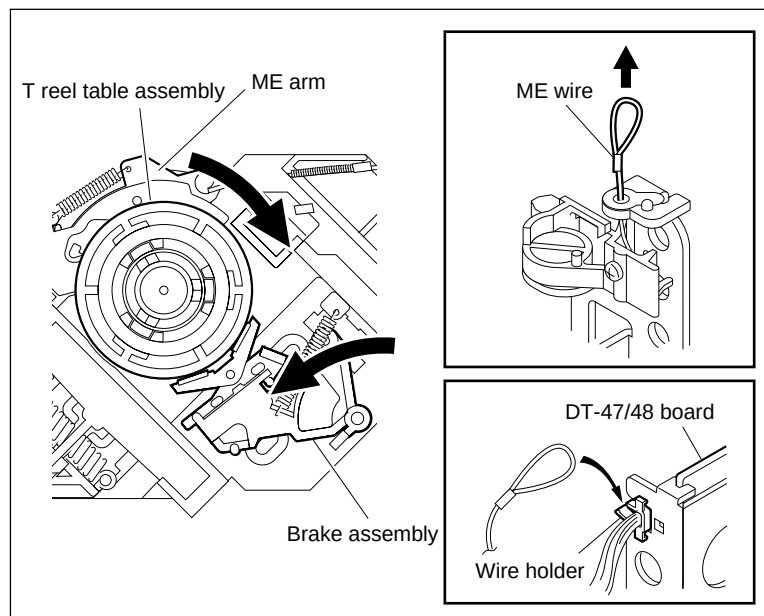
Make sure the ME wire does not protrude out of the wall of the wire cover. (See the figure.)



Attach the ME Wire

5. Confirming the ME Wire Operation

- (1) Confirm that the ME arm and T reel table assembly are in mesh and the T-side reel table rotates when lifting the loop of the ME wire upwardly.
Perform the check each at the L cassette position and S cassette position. (As for the method of shifting the reel table, refer to Section 5-1-3.)
- (2) After confirmation, hang the loop of the ME wire on the wire holder and close the wire holder.
- (3) Turn the T reel table while holding the reel brake assembly in the arrow direction, and confirm that the T reel table rotates smoothly without contacting the ME arm.



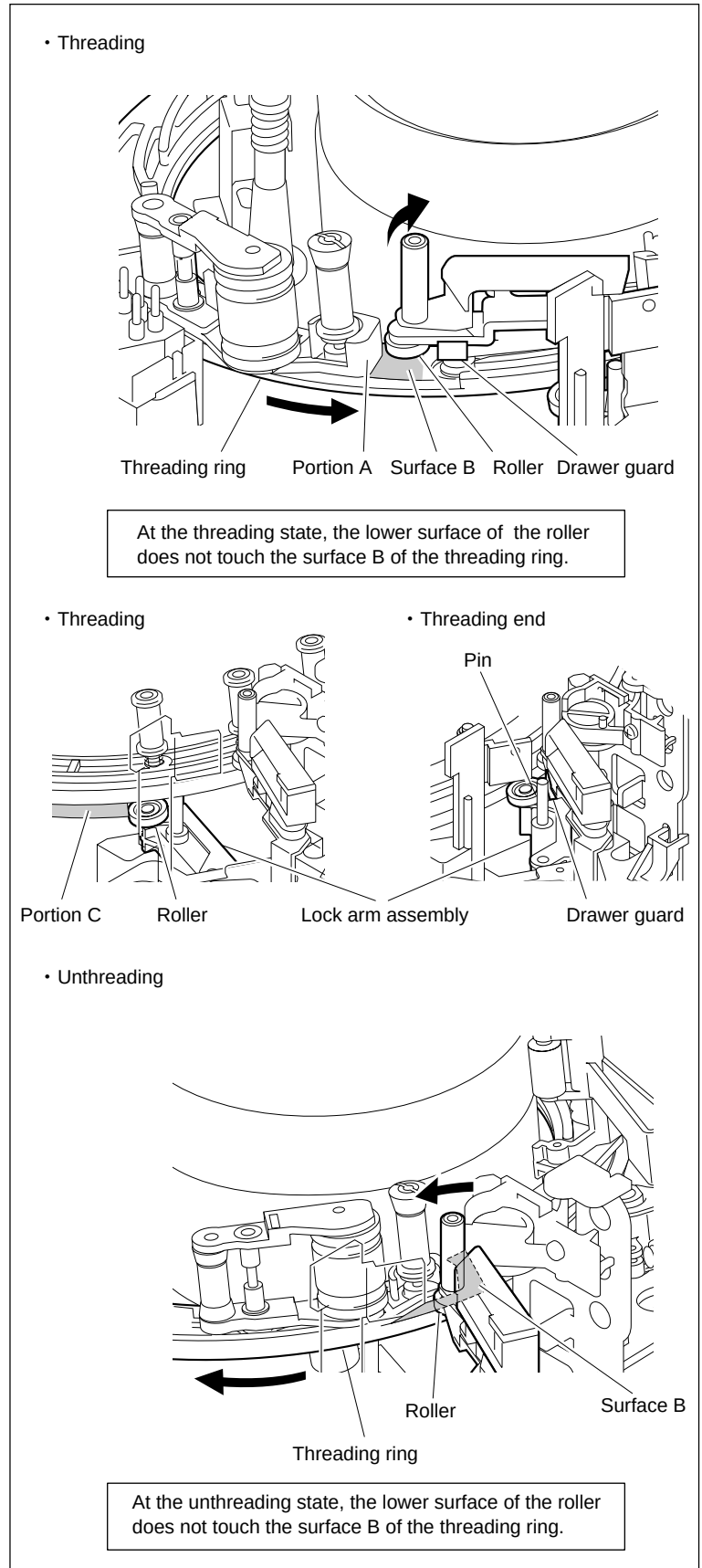
Confirm the ME Wire Operation

6. Confirming the T Drawer Assembly Operation

- (1) When the threading ring rotates toward the threading end direction, check that the portion A of the threading ring pushes the roller of the T drawer assembly and the drawer guard certainly. And at this time, check that the lower surface of the roller does not come in contact with the surface B of the threading ring (shaded portion in the figure).
- (2) When threading, check that the portion C of the threading ring pushes certainly the roller of the lock arm assembly, and also check that the pin of the lock arm assembly pushes certainly the drawer guard.

- (3) When the threading ring rotates toward the unthreading end direction, check that the roller of the T drawer assembly moves inside to the threading ring smoothly. And at this time, check that the lower surface of the roller does not come in contact with the surface B of the threading ring (shaded portion in the figure).
- (4) When unthreading, check that the lock arm assembly of the T drawer assembly returns smoothly.

If the above items cannot be satisfied, remove and attach the T drawer assembly again.



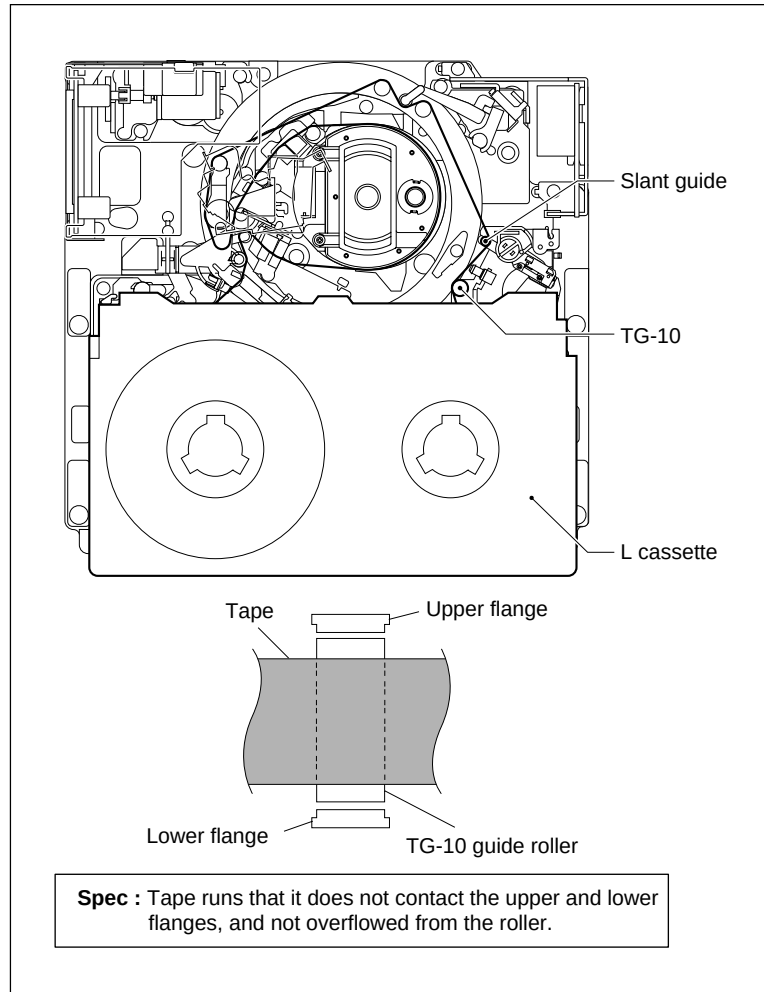
Confirm the T Drawer Assembly Operation

7. Checking the Tape Running at TG-10 Guide

- (1) Turn on the power then place the reel motor plate assembly in the L cassette position.
(Refer to Section 5-1-3.)
- (2) Set the L cassette and put a weight on the cassette so that it does not rise up.
- (3) Put the unit into F. FWD mode once. About three seconds later, put the unit into FWD mode.
- (4) Check that the tape running condition satisfies the specification at TG-10 guide.

If the specification is not satisfied, confirm the T drawer assembly attachment and the cassette that has been used for the tape running.

After confirmation, again perform the step 7. If the specification was not satisfied, perform the steps 8 and 9.



Tape Running Check at TG-10 Guide

8. Adjusting the Slant Guide Slantness

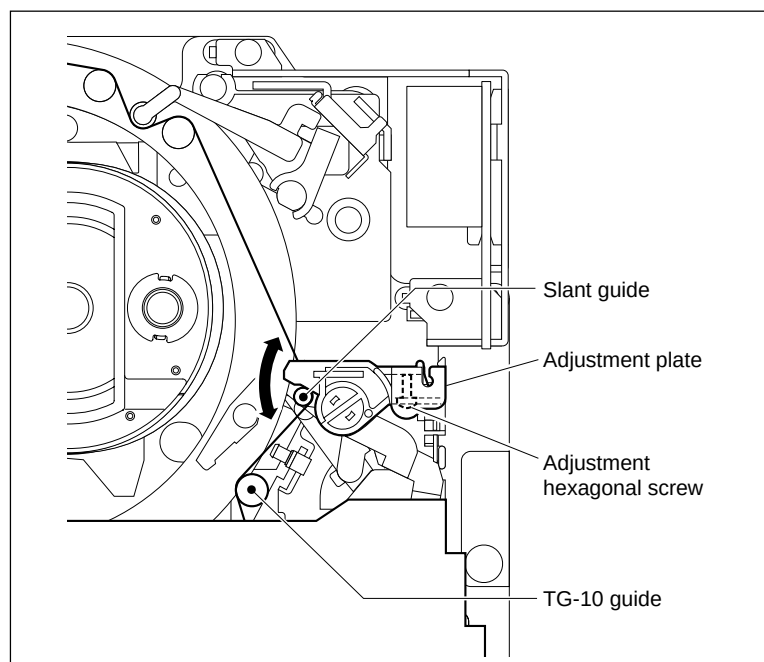
Adjust the adjustment plate position by turning the adjustment hexagonal screw so that the specification is satisfied.

- If the tape runs in contact with the upper flange of TG-10 : Turn the adjustment screw counterclockwise.
- If the tape runs in contact with the lower flange of TG-10 : Turn the adjustment screw clockwise.

9. Rechecking the Tape Running at TG-10 Guide

- (1) Put the unit into the unthreading end mode.
- (2) Then put the unit into PLAY mode, and check again that the tape running condition satisfies the specification at TG-10 guide.

If the specification is not satisfied, repeat steps 8 and 9 mentioned above.



Adjust the Slant Guide Slantness

5-22. Cassette Compartment Motor Replacement

Outline

Replacement

1. Disconnecting the Harness (CN935/CL-29 Board)
2. Removing the Worm
3. Removing the Cassette Compartment Motor
4. Removing the Motor Joint
5. Removing the Spacer and Disconnecting the Harness
6. Soldering the Harness
7. Attaching the Motor Joint
8. Attaching the Spacer and Worm
9. Attaching the Cassette Compartment Motor
10. Applying the Grease
11. Reconnecting the Harness (CN935/CL-29 Board)

Adjustment after Replacement

12. Checking the Cassette Compartment Motor Operation (Refer to Section 3-3-4.)
 [F8] (CCM MOTOR) of the SERVO CHECK menu

Preparation

1. Turn off the power and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the cassette compartment. (Refer to Section 1-5.)

Tools

- L wrench (Across flat has 0.89 mm): 7-700-736-06
- Grease (SGL-601): 7-651-000-10
- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Calipers (or equivalent)

Removal

1. Disconnecting the Harness

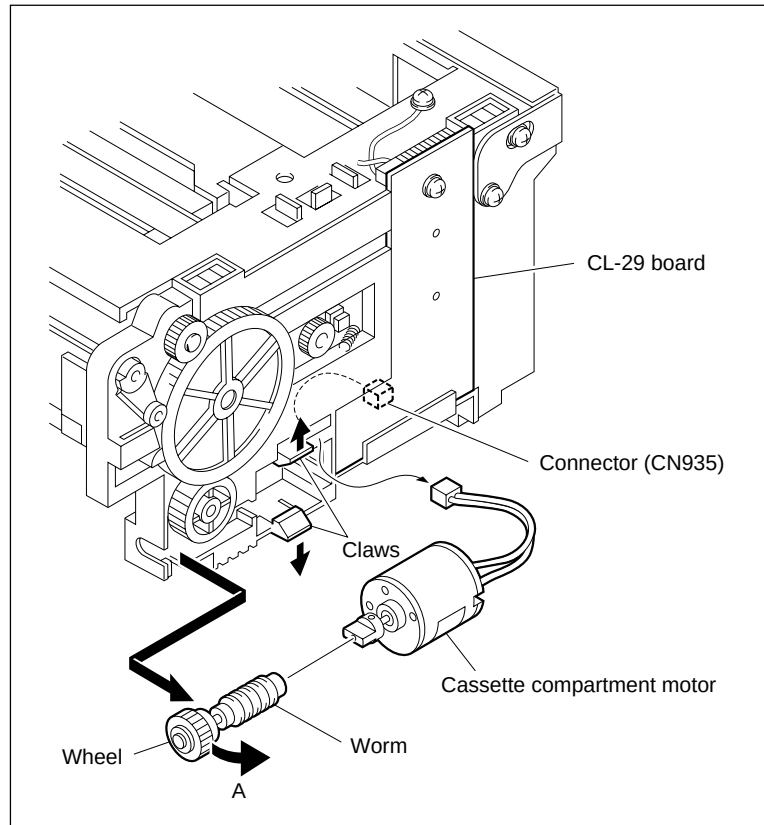
Disconnect the harness from the connector CN935 on the CL-29 board.

2. Removing the Worm

Push the wheel in the direction indicated by arrow A and take out the worm.

3. Removing the Cassette Compartment Motor

Spread the claws of the chassis and push out the cassette compartment motor from the inside of the cassette compartment.



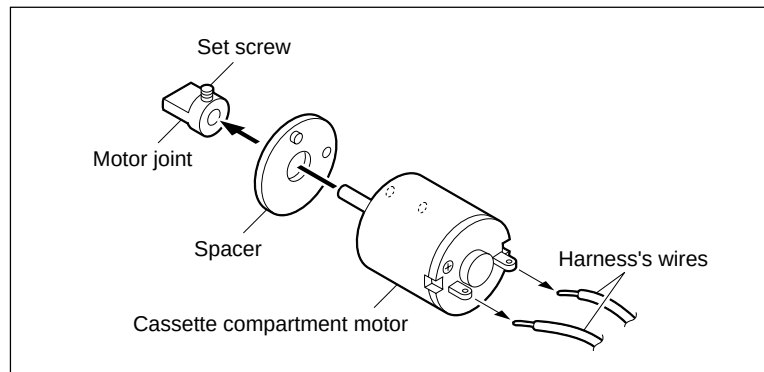
Remove the Cassette Compartment Motor (1)

4. Removing the Motor Joint

Loosen the set screw by two to three turns and remove the motor joint.

5. Removing the Spacer and Disconnecting the Harness

- (1) Remove the spacer.
- (2) Unsolder and disconnect the harness's wires from the motor.



Remove the Cassette Compartment Motor (2)

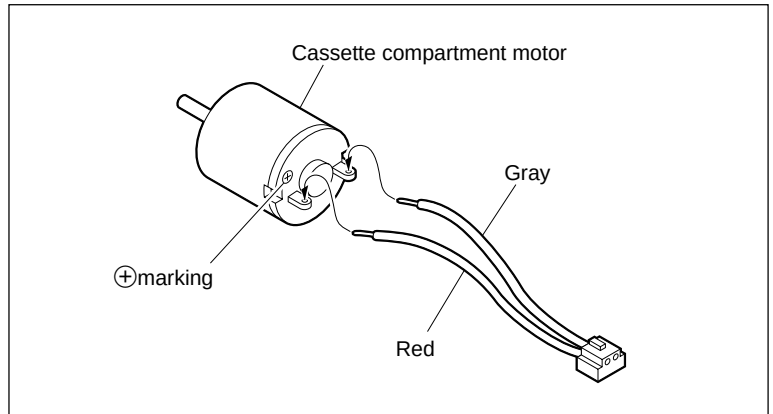
Installation

6. Soldering the Harness

Solder the harness's wires disconnected in (2) of step 5 to a new motor.

Note

Solder a red wire to the side of marking “+” of the motor.

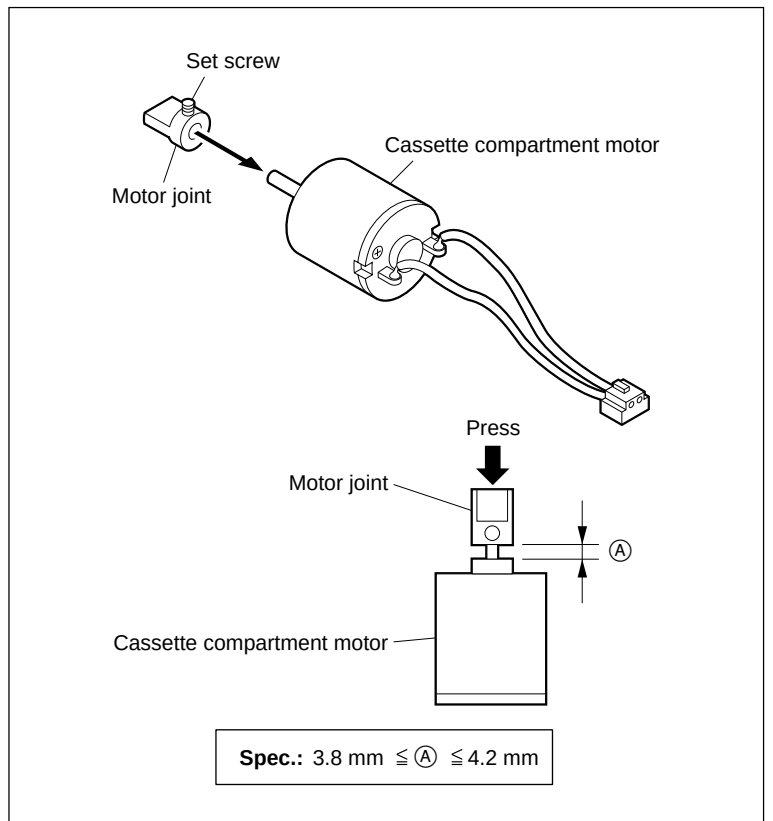


Harness Soldering

7. Attaching the Motor Joint

- (1) Pass the motor joint through the shaft of the motor and temporarily tighten the set screw.
- (2) Confirm that the clearance between the motor joint and motor satisfies the specification when the motor joint is pushed toward the motor, and tighten the set screw.

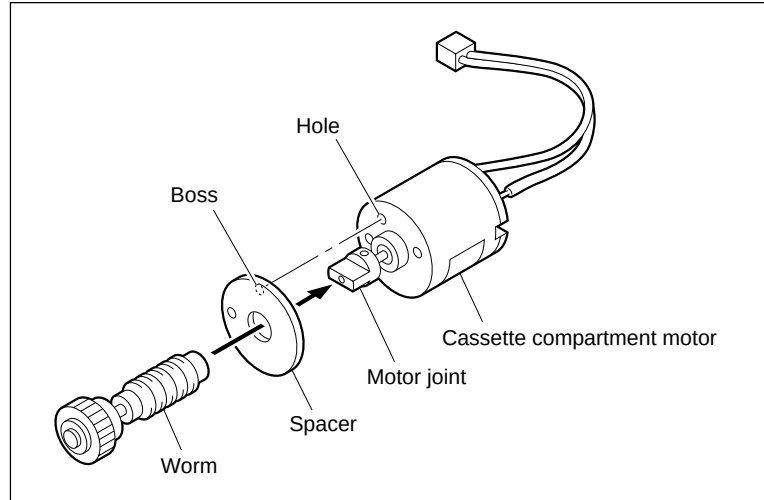
Tightening torque: $60 \times 10^{-2} \text{ N}\cdot\text{m}$
{6.0 kgf·cm}



Attach the Motor Joint

8. Attaching the Spacer and Worm

- (1) Fit the boss of the spacer in the hole of the motor.
- (2) Insert the worm to with the motor joint.
- (3) Wipe the grease on the worm and clean it.



Attach the Spacer and Worm

9. Attaching the Cassette Compartment Motor

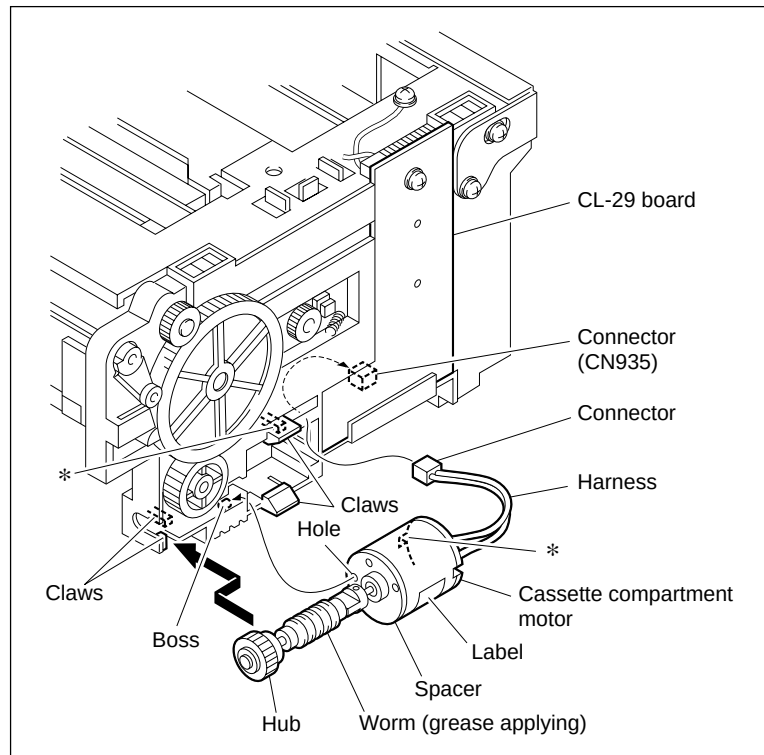
- (1) Position the motor as shown in the figure and pass the harness through the hole of the chassis.
- (2) Match the * marked portion of the motor with the * marked portion of the chassis and fit the motor in the two claws while inserting the hole of the spacer into the boss of the chassis. Simultaneously, fit the hub of the worm in the two claws of the chassis.
- (3) Confirm that the motor has been fixed.

10. Applying the Grease

Slightly apply the grease to the worm.

11. Reconnecting the Harness

Reconnect the harness of the cassette compartment motor to the connector CN935 on the CL-29 board.



Attach the Cassette Compartment Motor

Adjustment after Replacement

12. Checking the Cassette Compartment Motor Operation

Refer to Section 3-3-4.

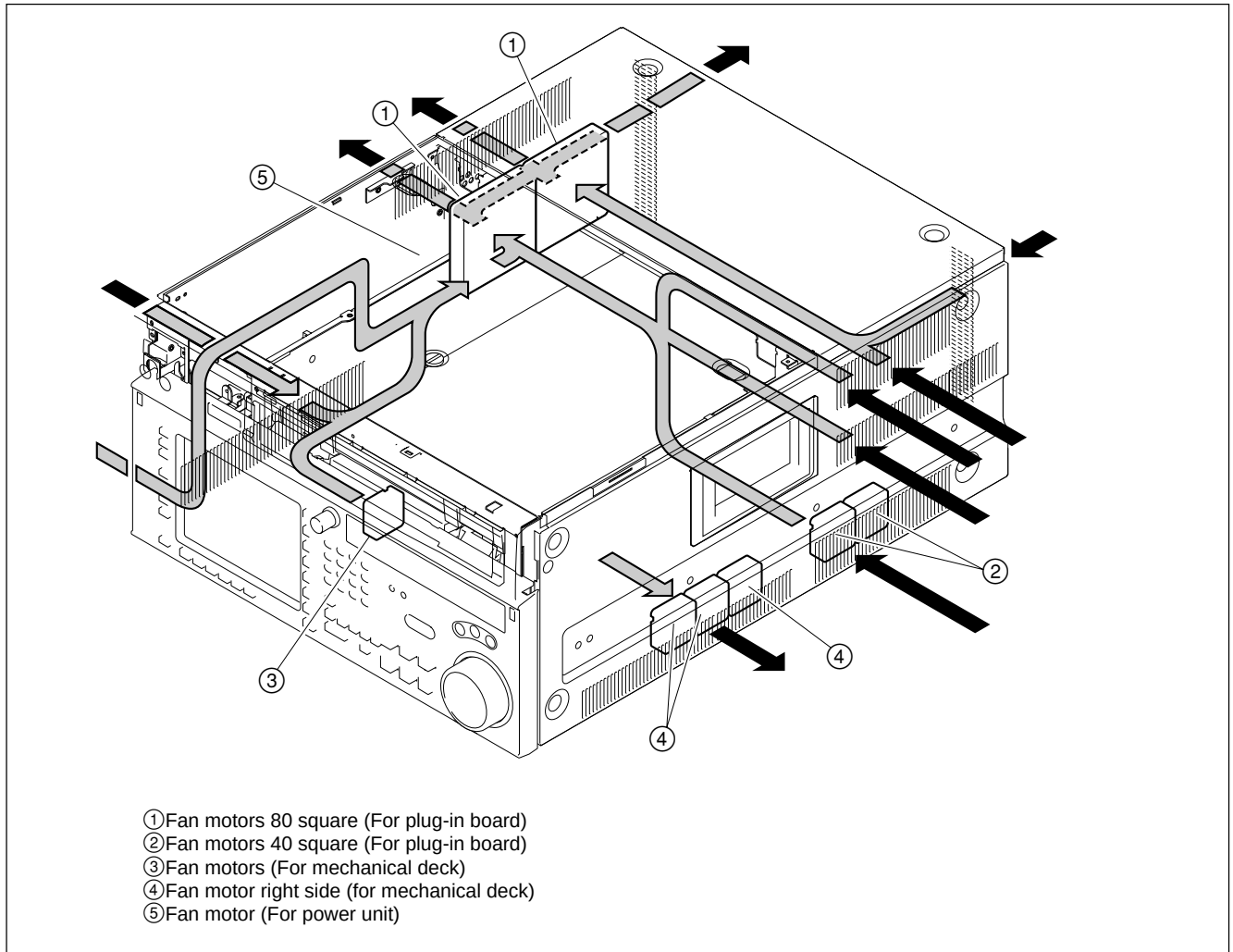
F8 (CCM MOTOR) of the SERVO CHECK menu

Note

Perform this check with the cassette compartment installed in the unit.

5-23. Fan Motor Replacement

This unit has nine fan motors. (Besides them, two fan motors are used on the MY-115 board (Option HKSR-5804)). Replace each fan motors except the fan motor for power unit every 40,000 hours of energizing.



1. Index

2. Notes

- Replace the fan motors when displaying a alarm informing for fan motor in addition to the periodic replacement.
- When the fan motor stops because of trouble, some components inside the unit may be heated to high temperatures.
Take care not to burn your hands by touching these components.
In service operation, turn off the power and perform the service operation after the temperatures turns to ordinary state.

5-23-1. Fan Motor 80 Square (for Plug-in Board) Replacement

Outline

Replacement

1. Removing the Plug-in Boards
2. Removing the Guide Rail (L)
3. Removing the Fan Motor
4. Attaching the Fan Motor
5. Reattaching the Guide Rail (L)
6. Reinstalling the Plug-in Boards

Note

With respect to the airflow, check the index in Section 5-23.

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly and upper lid (rear) assembly.
(Refer to Section 1-3-1.)

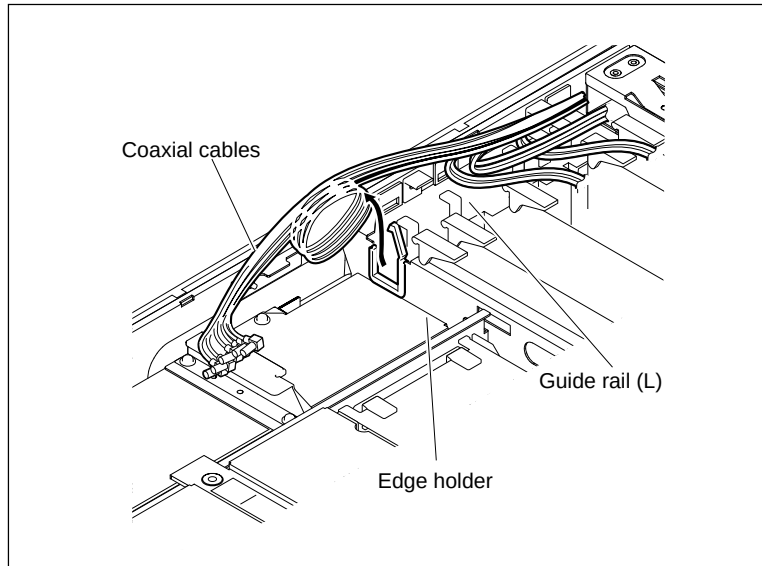
Replacement

1. Removing the Plug-in Boards

- (1) Open the edge holder.
- (2) Remove the coaxial cables from the guide rail (L).
- (3) Remove all the plug-in boards.
(Refer to Section 1-12.)

Note

Disconnect the harnesses or coaxial cables connected to the plug-in boards according to necessary. Hold the plug to remove the coaxial cables in disconnecting the coaxial cables from the connector on the boards.



Remove the Plug-in Boards

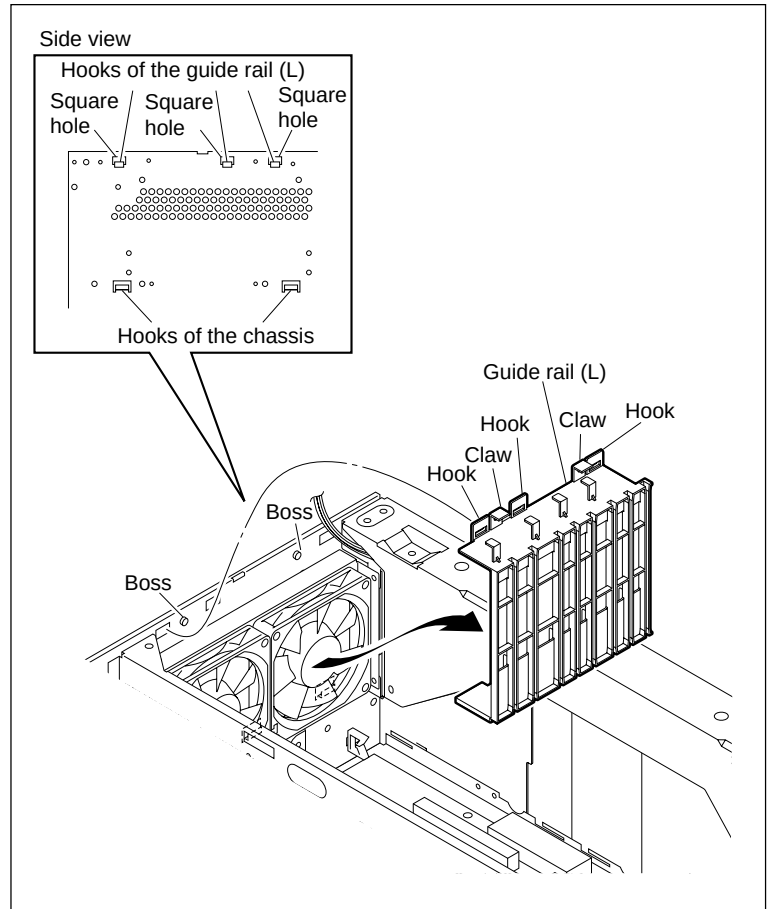
2. Removing the Guide Rail (L)

- (1) Lift up the bottom part of the guide rail (L) and remove the guide rail (L) from two hooks of the chassis.

Note

The guide rail (L) can be removed easier from two hooks of the chassis if you hold it with a thumb up and other fingers down then lift up the bottom while pressing with a thumb.

- (2) Remove the two claws of guide rail (L) from the bosses of the chassis.
- (3) Remove the three hooks from the square holes of the chassis while lifting up the whole guide rail (L).
- (4) Remove the guide rail (L) in the arrow direction.



Remove the Guide Rail (L)

3. Removing the Fan Motor

- (1) Disconnect the fan harness from the connector CN71 or CN72 on the MB-1101 board.
- (2) Remove the two screws to remove the fan motor.

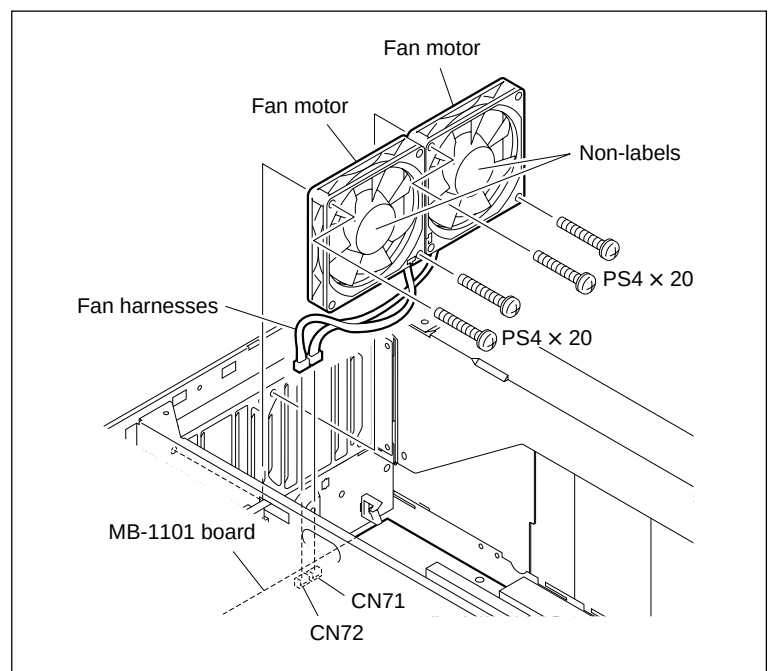
4. Attaching the Fan Motor

Attach a new fan motor in the direction as shown in the figure, then tighten it with two screws.

Tightening torque: $140 \times 10^{-2} \text{ N}\cdot\text{m}$
{ 14.0 kgf•cm }

Note

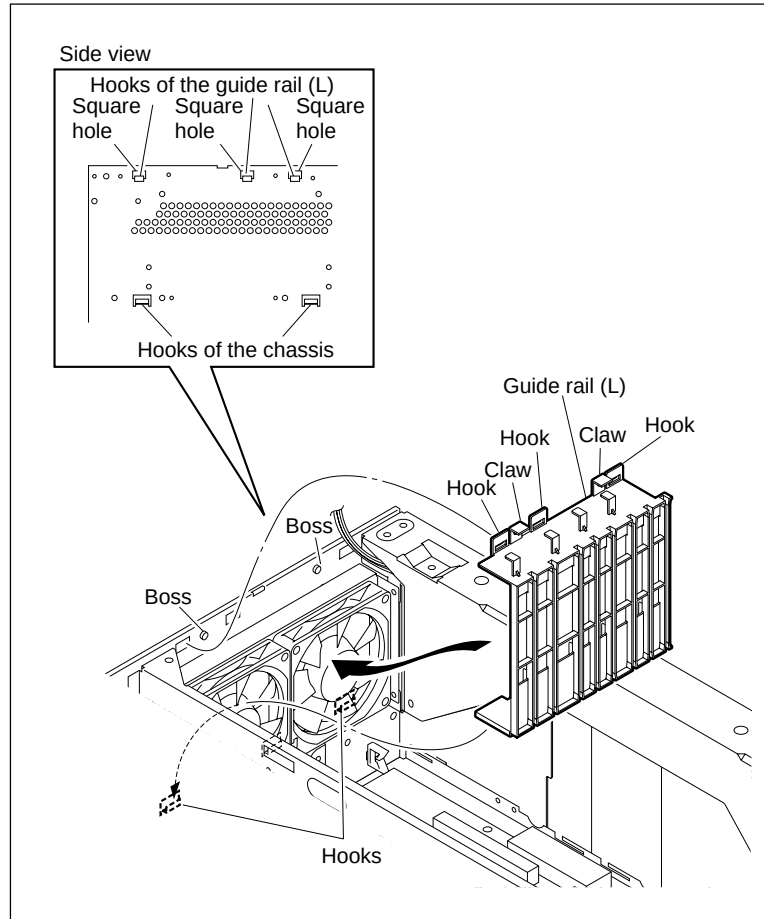
Pay attention not to mistake the direction of the labeled side and the harness direction.



Remove/Attach the Fan Motor

5. Reattaching the Guide Rail (L)

- (1) Cover the fan motor with the guide rail (L).
- (2) Match the three hooks of the guide rail (L) to the square holes of the chassis, and match the two hooks of the chassis to the bottom part of the guide rail (L).
- (3) Viewing from the side, check if the three hooks of the guide rail (L) are fit in the square holes of the chassis.
- (4) Push the guide rail (L) downward and fix it to the chassis with two claws.



Attach the Guide Rail (L)

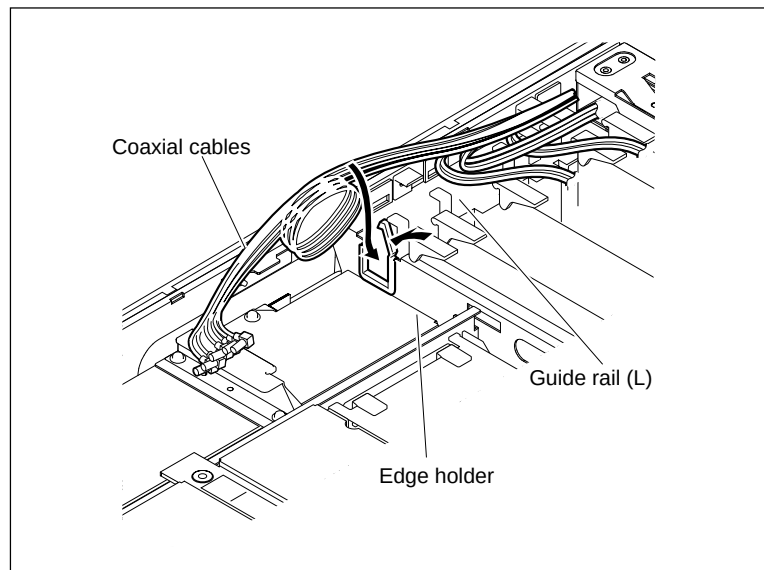
6. Reinstalling the Plug-in Boards

- (1) Reinstall the plug-in board removed.
(Refer to Section 1-12.)

Note

Reconnect the harnesses or coaxial cables correctly.

- (2) Arrange the coaxial cables, and fix them by the edge holder as shown in the figure.



Attach the Plug-in Boards

5-23-2. Fan Motor 40 Square (for Plug-in Board) Replacement

Outline

Replacement

1. Removing the Plug-in Boards
2. Removing the Fan Bracket
3. Removing the Fan Motors
4. Attaching the Fan Motors
5. Attaching the Fan Bracket
6. Attaching the Plug-in Boards

Note

With respect to the airflow, check the index in Section 5-23.

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly and upper lid (rear) assembly.
(Refer to Section 1-3-1.)

Replacement

1. Removing the Plug-in Boards

Remove all the plug-in boards.

(Refer to Section 1-12.)

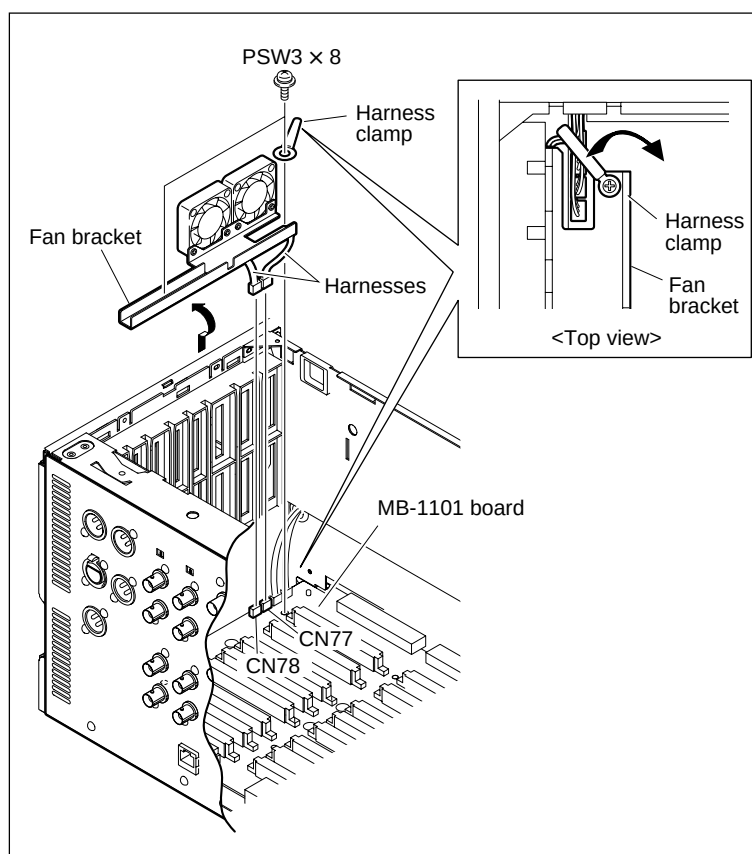
Note

Disconnect the harnesses or coaxial cables connected to the plug-in boards according to necessary.

Hold the plug to remove the coaxial cables in disconnecting the coaxial cables from the connector on the boards.

2. Removing the Fan Bracket

- (1) Disconnect the harnesses of the fan motors from the connectors CN77 and CN78 on the MB-1101 board.
- (2) Remove the two screws, and remove the fan bracket and harness clamp in the arrow direction.



Remove the Fan Bracket

3. Removing the Fan Motors

Remove the two screws, and detach the fan motors from the fan bracket.

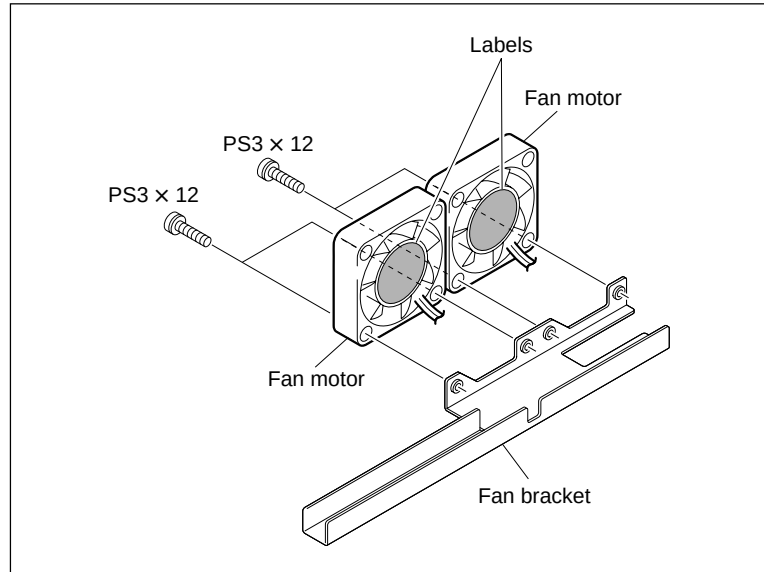
4. Attaching the Fan Motors

Attach the new fan motors in the orientation shown in the figure, and secure them with two screws.

Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$ {8.0 kgf•cm}

Note

Pay attention not to mistake the direction of the labeled side and the harness direction.



Remove/Attach the Fan Motor

5. Attaching the Fan Bracket

- (1) Attach the fan bracket with two screws and a harness clamp.

Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf•cm}

Note

Be sure not to catch the harnesses in the fan bracket.

- (2) Connect the each harness of the fan motor to the connectors CN77 and CN78 on the MB-1101 board.
- (3) Bind the harness of the fan motor with the harness clamp.

6. Reinstalling the Plug-in Boards

Reinstall the plug-in board removed.

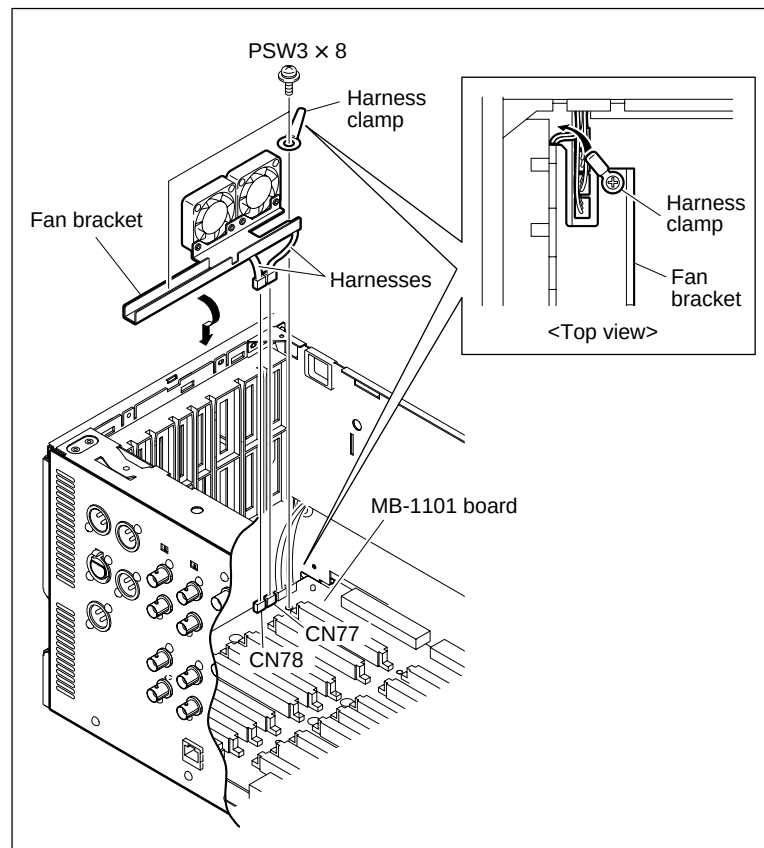
(Refer to Section 1-12.)

Note

Reconnect the harnesses or coaxial cables correctly.

If the coating of the harness clamp is damaged, replace it with new are.

Harness clamp : 3-703-379-02



Attach the Fan Bracket

5-23-3. Fan Motor (for Mechanical Deck) Replacement

Outline

Replacement

1. Disconnecting the Harness
2. Removing the Fan Motor
3. Attaching the Fan Motor
4. Connecting the Harness

Note

With respect to the airflow, check the index in Section 5-23.

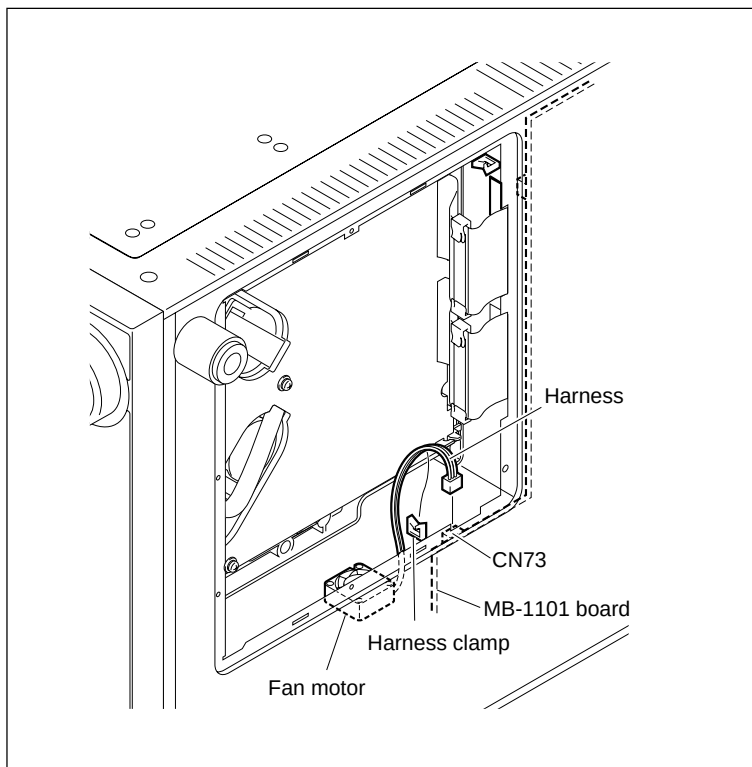
Preparation

1. Turn the power off, then disconnect the power cord.
2. Place the unit with the side facing down, and remove the bottom plate.
(Refer to Section 1-3-2.)

Replacement

1. Disconnecting the Harness

- (1) Disconnect the harness of the fan motor from the connector CN73 on the MB-1101 board.
- (2) Remove the harness of the fan motor from the harness clamp.



Disconnect the Harness

2. Removing the Fan Motor

Remove the two screws to remove the fan motor.

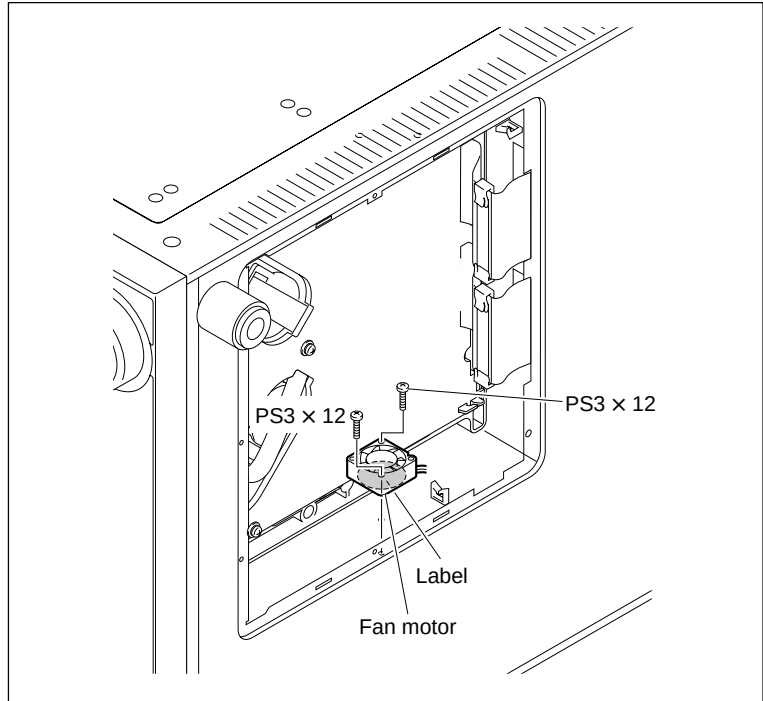
3. Attaching the Fan Motor

Attach a new fan motor in the direction as shown in the figure, then fix it with two screws.

Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

Notes

- Pay attention not to mistake the direction of the labeled side and the harness direction.
- Be sure not to catch the harness in the chassis.



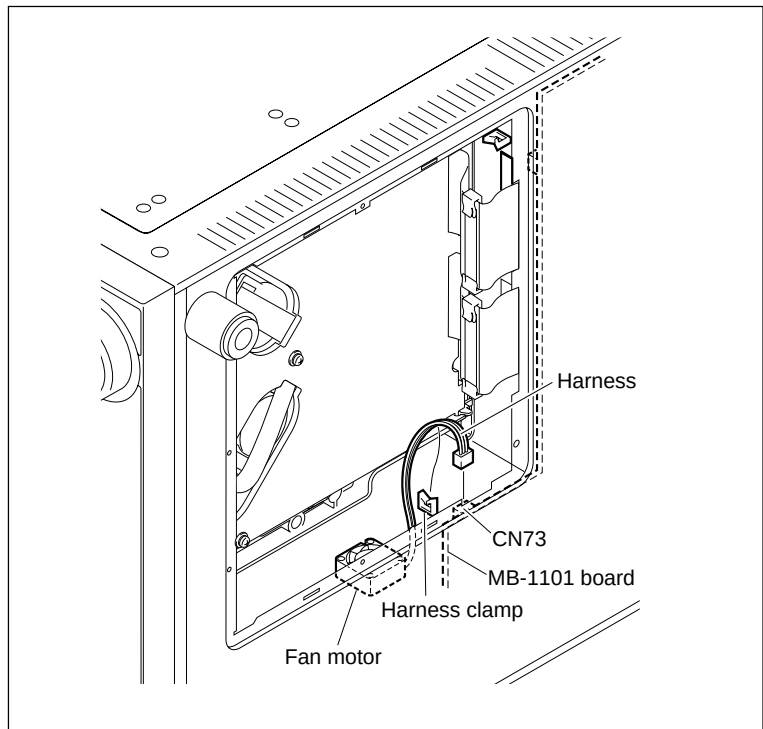
Remove/Attach the Fan Motors

4. Connecting the Harness

- (1) Connect the harness of the fan motor to the connector CN73 on the MB-1101 board.
- (2) Hook the harnesses to harness clamp.

Note

The fan motor connected to CN73 runs only while the drum is rotating.



Connect the Harness

5-23-4. Fan Motor Right Side (for Mechanical Deck) Replacement

Outline

Replacement

1. Removing the Plug-in Boards
2. Disconnecting the Harnesses
3. Removing the Fan Motors
4. Attaching the Fan Motors
5. Connecting the Harnesses
6. Attaching the Plug-in Boards

Note

With respect to the airflow, check the index in Section 5-23.

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (rear) assembly.
(Refer to Section 1-3-1.)

Replacement

1. Removing the Plug-in Boards

Remove all the plug-in boards.

(Refer to Section 1-12.)

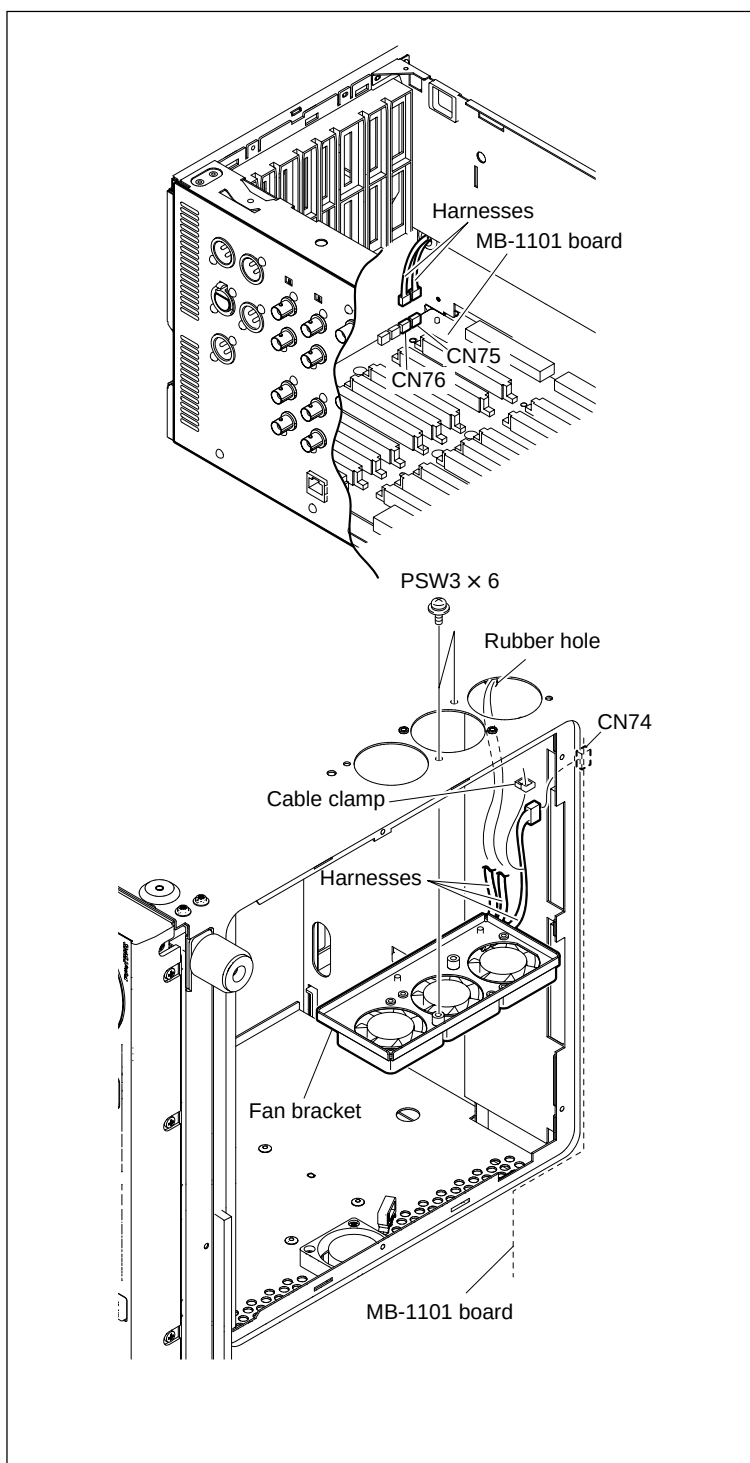
Note

Disconnect the harnesses or coaxial cables and harness clamp connected to the plug-in boards according to necessary.

Hold the plug to remove the coaxial cables in disconnecting the coaxial cables from the connector on the boards.

2. Disconnecting the Harnesses

- (1) Disconnect the harnesses of the fan motors from the connectors CN75 and CN76 on the MB-1101 board.
- (2) Remove the side panel (right).
(Refer to Section 1-3-3.)
- (3) Place the unit with the side facing down, and remove the bottom plate.
(Refer to Section 1-3-2.)
- (4) Disconnect the harness of the fan motor from the connector CN74 on the MB-1101 board.



Disconnect the Harnesses

- (5) Remove the harness of the fan motor from the harness clamp.
- (6) Remove the two screws to remove the fan bracket.
- (7) Pull the two harnesses out of the rubber hole.

Note

Do not pull out the two harnesses together.
Pull them out one by one.

3. Removing the Fan Motors

- (1) Remove the harnesses of the fan motors from the each harness clamp.
- (2) Remove the two screws to remove the each fan motor.

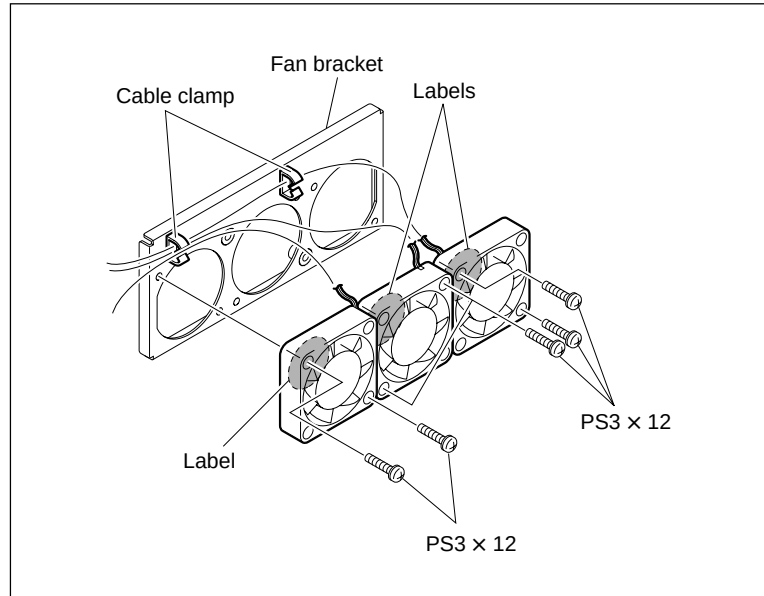
4. Attaching the Fan Motors

- (1) Attach the new fan motors in the orientation shown in the figure, and secure them with two screws.

Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

Notes

- Pay attention not to mistake the direction of the labeled side and the harness direction.
- Be sure not to catch the harnesses in the fan bracket.



Remove/Attach the Fan Motors

- (2) Hook the harnesses to each harness clamp.

5. Connecting the Harnesses

- (1) Insert the two harnesses of the fan motors A and C into the rubber hole.
- (2) Attach the fan bracket with two screws.
- (3) Connect the harness of the fan motor B to the connectors CN74 on the MB-1101 board.

Note

The fan motor connected to CN74 runs only while the drum is rotating.

- (4) Hook the harness to harness clamp.
- (5) Attach the bottom plate, and place the unit with its top surface facing up.
(Refer to Section 1-3-2.)
- (6) Connect the harness of the fan motor C to the connectors CN75 on the MB-1101 board.
- (7) Connect the harness of the fan motor A to the connector CN76 on the MB-1101 board.
- (8) Bind the harness of the fan motor with the harness clamp (Refer to page 5-89).

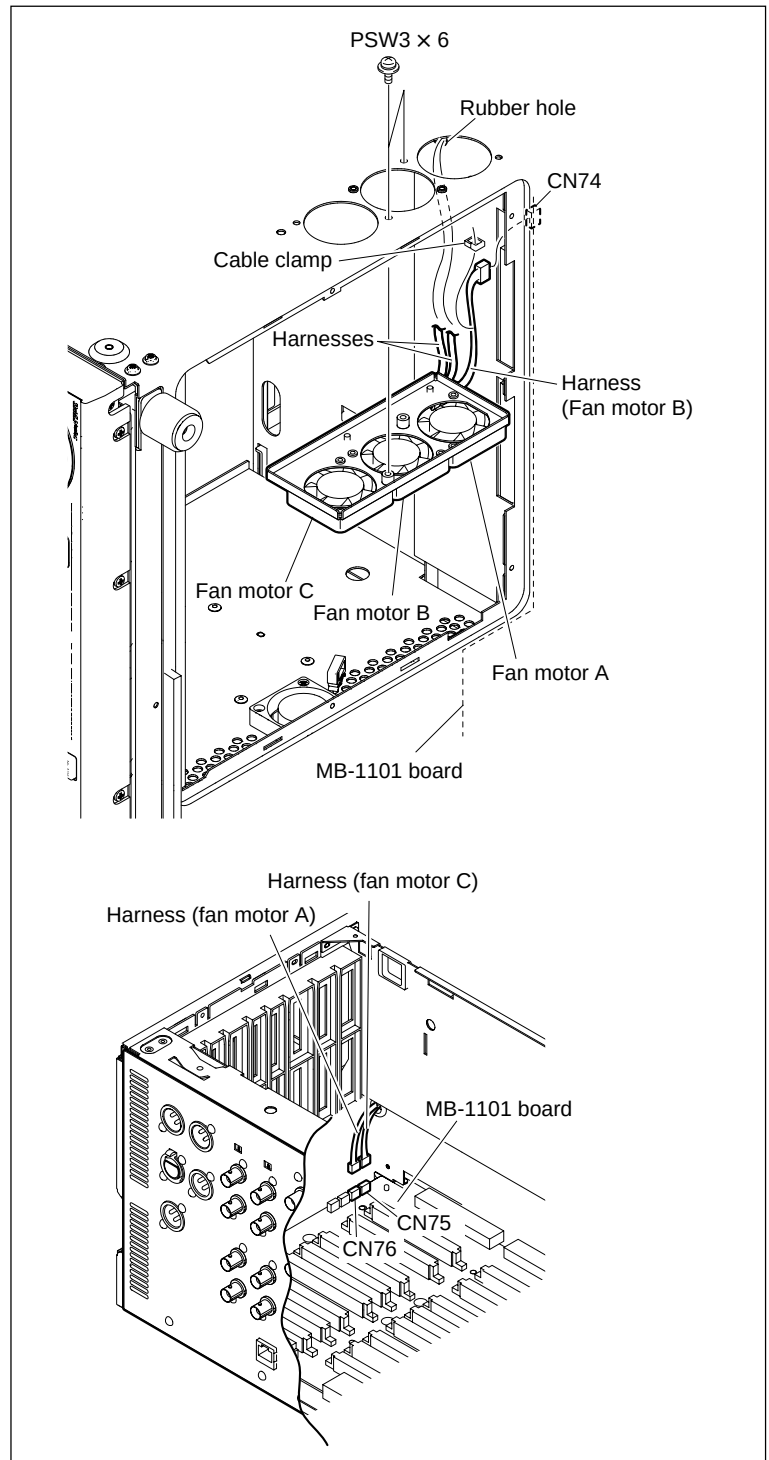
6. Reinstalling the Plug-in Boards

Reinstall the plug-in board removed.

(Refer to Section 1-12.)

Note

Reconnect the harnesses or coaxial cables correctly.



Connect the Harnesses

5-23-5. Fan Motor (for Power Supply Unit) Replacement

Outline

Replacement

1. Removing the Power Supply Unit (Refer to step 1 in Section 5-24.)
2. Disconnecting the Harness
3. Removing the Fan Motor
4. Attaching the Fan Motor
5. Connecting the Harness
6. Attaching the Power Supply Unit (Refer to step 2 in Section 5-24.)

Note

With respect to the airflow, check the index in Section 5-23.

Tool

Bundling band (or equivalent): 3-671-893-01

Preparation

1. Turn the power off and wait more than 30 seconds.
2. Disconnect the power cord from the outlet.
3. Remove the upper lid (front) assembly and upper lid (rear) assembly.
(Refer to Section 1-3-1.)

Replacement

1. Removing the Power Supply Unit

Remove the power supply unit.
(Refer to step 1 in Section 5-24.)

2. Disconnecting the Harness

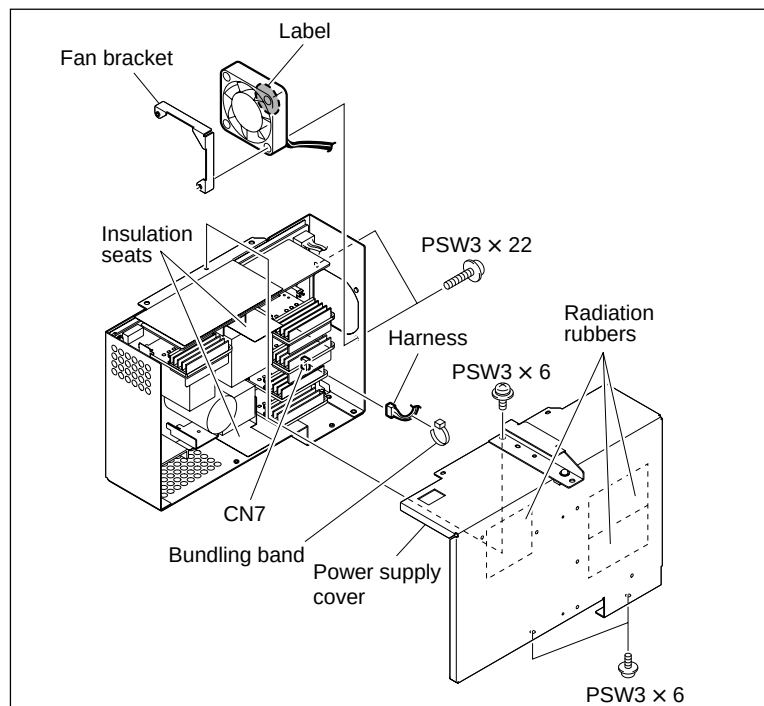
- (1) Remove the three screws (PSW3 × 6) and remove the power supply cover.
- (2) Release the bundling band.
- (3) Disconnect the fan harness from the connector CN7.

Note

Be careful for the two insulation seats and the three radiation rubbers not to fall out.

3. Removing the Fan Motor

- (1) Remove the two screws (PSW3 × 22) and remove the fan motor and fan bracket.



Remove/Attach the Fan Motors

4. Attaching the Fan Motor

- (1) Attach the new fan motor and the fan bracket in the orientation shown in the figure, and secure them with two screws.

Tightening torque: $140 \times 10^{-2} \text{ N}\cdot\text{m}$
{ 14.0 kgf•cm }

Note

Pay attention not to mistake the direction of the labeled side and the harness direction.

5. Connecting the Harness

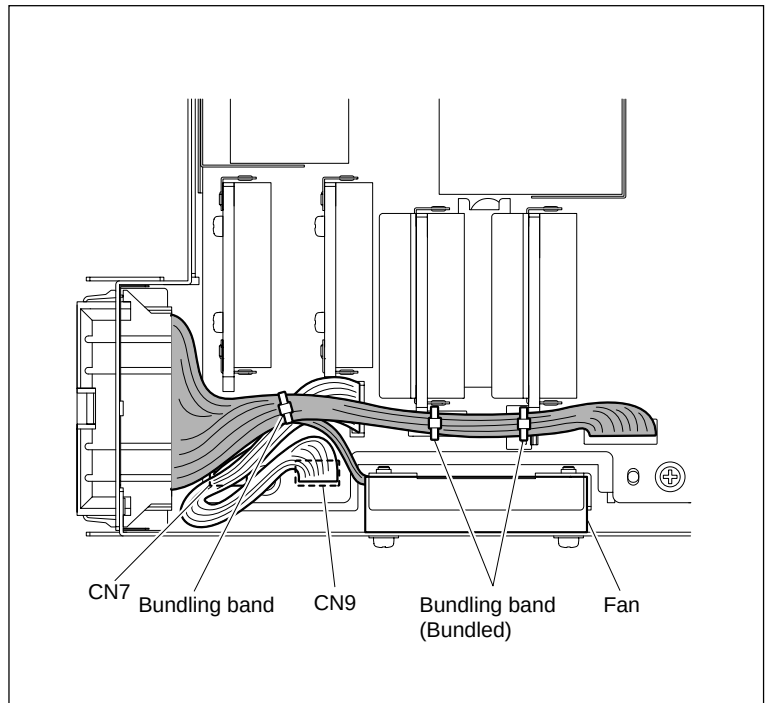
- (1) Connect the fan harness to the connector CN7.
- (2) Clamp the bundled harnesses and the fan harness with a bundling band.
- (3) Attach the power supply cover with three screws.

Note

Before attaching the power supply cover, check that the two insulation seats and the three radiation rubbers are attached as shown in the figure on the previous page.

6. Attaching the Power Supply Unit

Attach the Power Supply Unit (Refer to step 2 in Section 5-24.)



Connect the Harness

5-24. Power Supply Unit Replacement

Outline

Replacement

1. Removing the Power Supply Unit
2. Attaching the Power Supply Unit
3. Checking the Power Supply Output Voltage (Refer to Section 8-2.)

Preparation

1. Turn the power off and wait more than 30 seconds.
2. Disconnect the power cord from the outlet.
3. Remove the upper lid (front) assembly and upper lid (rear) assembly.
(Refer to Section 1-3-1.)
4. Remove the coaxial cables and bead tie. (Refer to step 1 (1) in Section 5-23-1.)

Replacement

1. Removing the Power Supply Unit

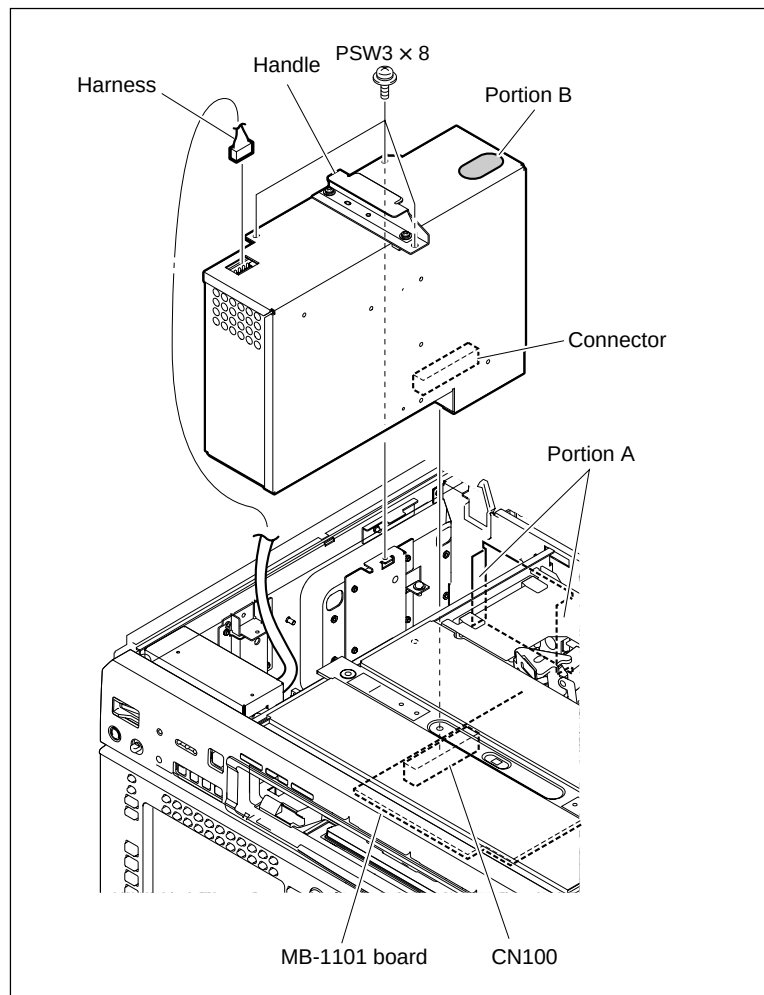
- (1) Remove the harness from the connector of the power supply unit.
- (2) Remove the three screws securing the power supply unit.
- (3) Lift up the power supply unit with holding the handle to disconnect the connector from CN100 on the MB-1101 board.
- (4) Remove the power supply unit from the chassis.

2. Attaching the Power Unit

- (1) Put in a new power supply unit along the portion A's of the chassis, then insert the connector at the bottom of the power unit to the connector CN100 on the MB-1101 board.
- (2) Press the portion B of the power supply unit to make a secure connection to the connector CN100 on the MB-1101 board.
- (3) Fix the power supply unit to the power supply installing plate and chassis with three screws.
Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

3. Checking the Power Supply Output Voltage

(Refer to Section 8-2.)



Remove/Attach the Power Supply Unit

5-25. Dial Assembly Replacement

Outline

Replacement

1. Removing the Rear Cover
2. Removing the Dial Assembly
3. Attaching the Dial Assembly
4. Reattaching the Rear Cover

Adjustment after Replacement

5. Confirming the Search Dial Operation (Refer to Section 3-3-3.)
 [F1] (DIAL) of the PANEL MAINTENANCE menu

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the control panel assembly. (Refer to Section 1-6.)

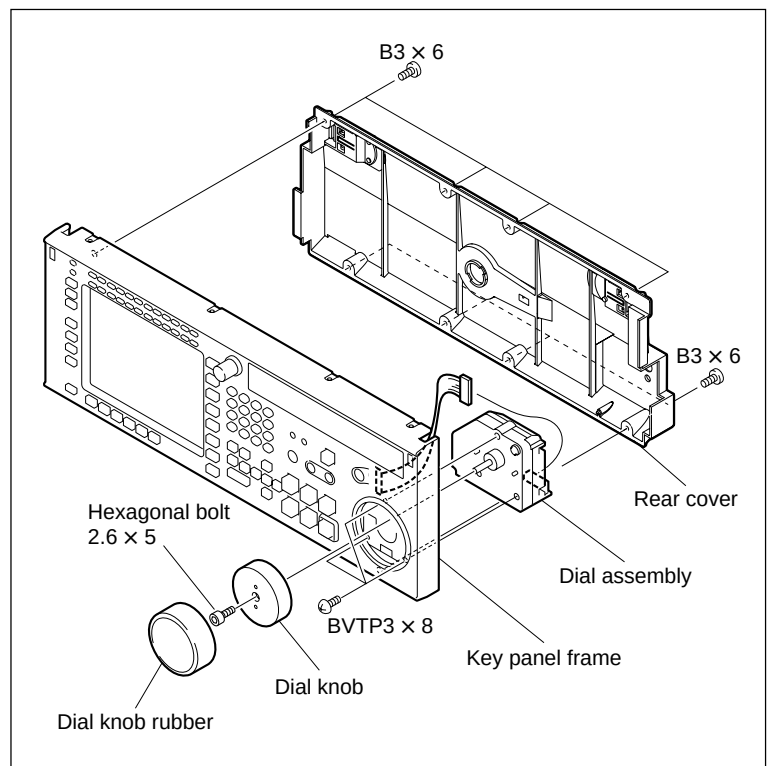
Removal

1. Removing the Rear Cover

Remove the eight screws and remove the rear cover.

2. Removing the Dial Assembly

- (1) Disconnect the harness from the dial assembly.
- (2) Remove the dial knob rubber.
- (3) Remove the hexagonal bolt and remove the dial knob.
- (4) Remove the three screws and remove the dial assembly.



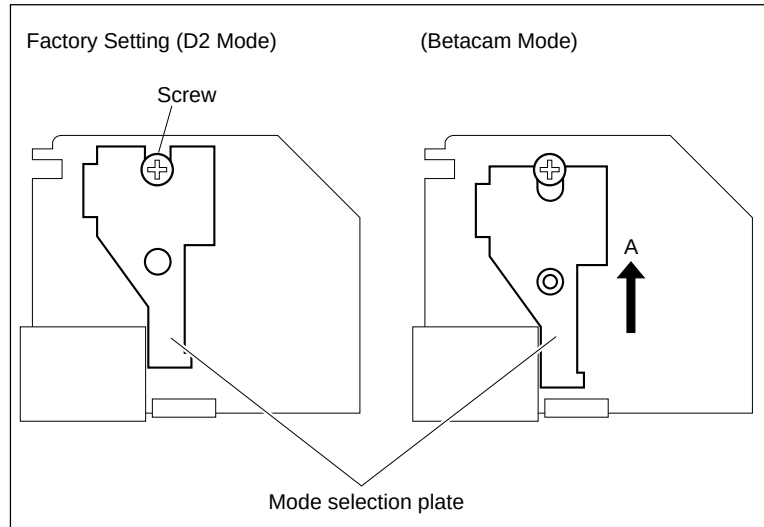
Remove the Dial Assembly

Installation

3. Attaching the Dial Assembly

- (1) Check that the mode selection plate position of a new dial assembly is set as shown in the figure.

If the mode selection plate is NG, loosen the screw shown in the figure, and then tighten the screw after sliding the mode selection plate in the arrow direction A to set the D2 mode.



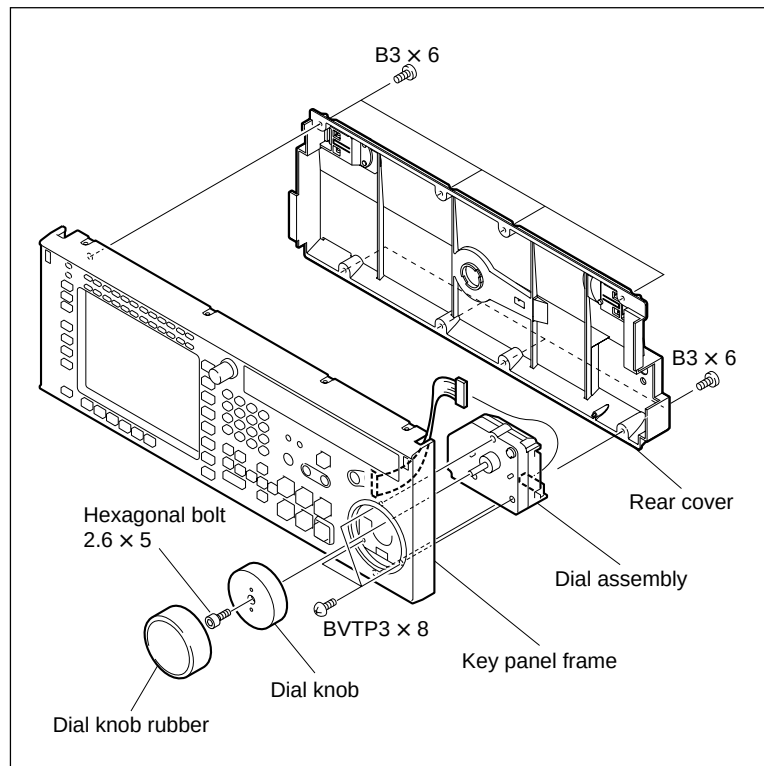
Check the Mode Selection Plate

- (2) Fix a new dial assembly to the key panel frame with three screws.
Tightening torque: $50 \times 10^{-2} \text{ N}\cdot\text{m}$
{5.0 kgf·cm}
- (3) Reattach the dial knob to the dial assembly with the hexagonal bolt.
Tightening torque: $53 \times 10^{-2} \text{ N}\cdot\text{m}$
{5.5 kgf·cm}
- (4) Reattach the dial knob rubber to the dial knob.
- (5) Connect the harness to the dial assembly.

4. Reattaching the Rear Cover

Reattach the rear cover to the key panel frame, then fix it with eight screws.

Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}



Attach the Dial Assembly

Adjustment after Replacement

5. Confirming the Search Dial Operation

Refer to Section 3-3-3.

[F1] (DIAL) of the PANEL MAINTENANCE menu

5-26. LCD Unit Assembly and Lamp Unit/LED Unit Replacement

5-26-1. LCD Unit Assembly Replacement

Outline

Replacement

1. Removing the Rear Cover (Refer to step 1 in Section 5-25.)
2. Removing the Key Panel Assembly
3. Removing the LCD Unit Assembly
4. Attaching the LCD Unit Assembly
5. Reattaching the Key Panel Assembly
6. Reattaching the Rear Cover (Refer to step 4 in Section 5-25.)

Adjustment after Replacement

7. Color Display Indication Test (Refer to Section 3-3-3.)

F5 (LCD) of the PANEL MAINTENANCE menu

Note

The LCD unit assembly as the spare part includes the lamp unit or LED unit.

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the control panel assembly. (Refer to Section 1-6.)

Removal

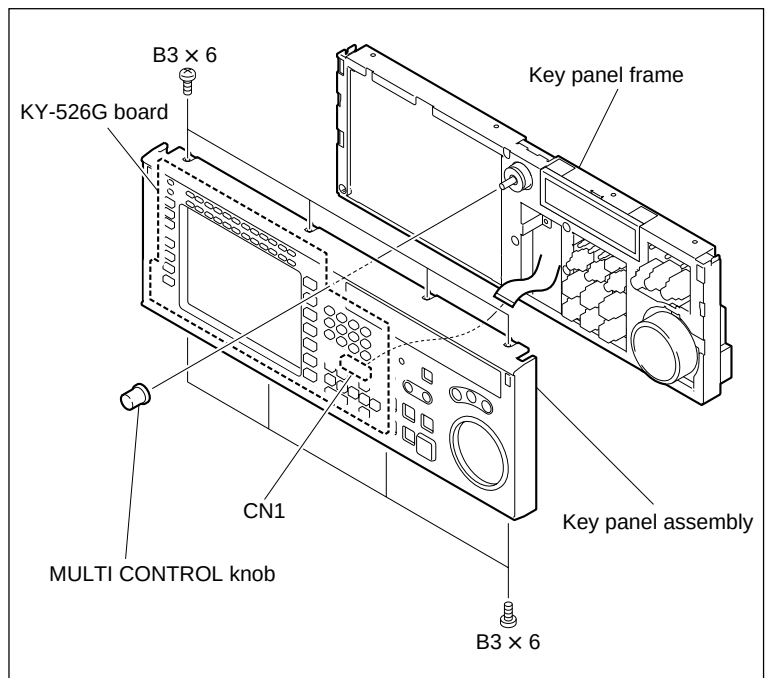
1. Removing the Rear Cover

Remove the rear cover.

(Refer to step 1 in Section 5-25.)

2. Removing the Key Panel Assembly

- (1) Remove the MULTI CONTROL knob.
- (2) Remove the eight screws and remove the key panel assembly.
- (3) Disconnect the flexible card wire from the connector CN1 on the KY-526G board.



Remove/Attach the Key Panel Assembly

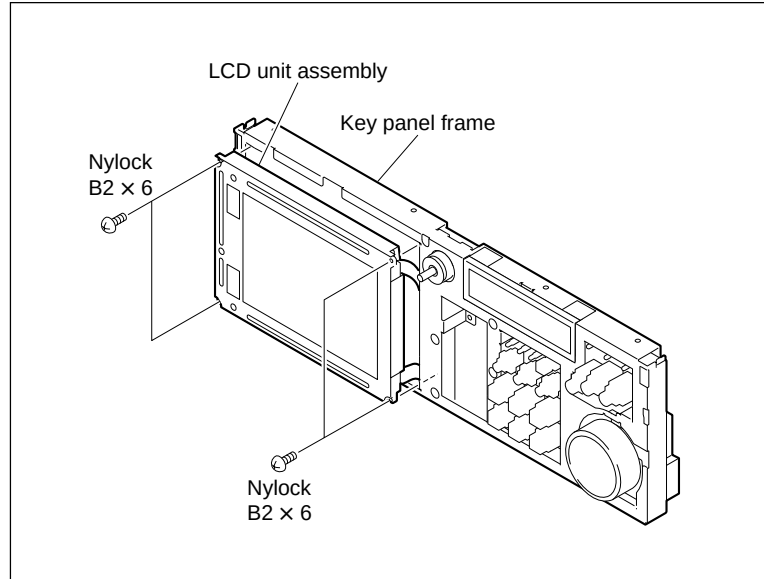
3. Removing the LCD Unit Assembly

In the case of LCD unit assembly for CP-393 board (S/N 10001 to 12000)

- (1) Remove the four screws and remove the LCD unit assembly.

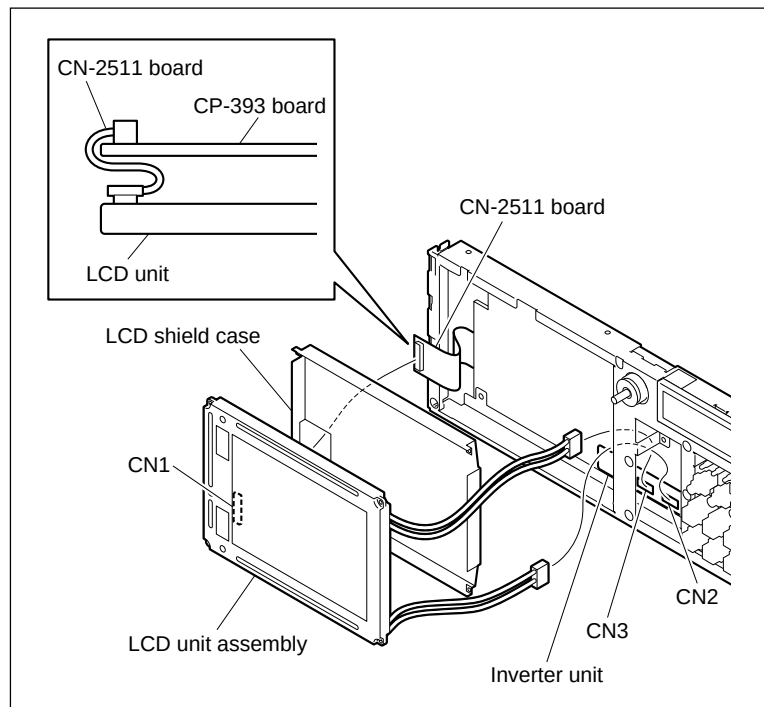
Note

Be careful not to lose the screws to be removed.



**Remove/Attach the LCD Unit Assembly
(LCD Unit Assembly for CP-393 Board)**

- (2) Disconnect the harnesses from the connectors CN2 and CN3 on the inverter unit.
- (3) Disconnect the CN-2511 board from the connector CN1 on the LCD unit assembly.
- (4) Remove the LCD shield case from the LCD unit assembly.



**Replace the LCD Unit Assembly
(LCD Unit Assembly for CP-393 Board)**

In the case of LCD unit assembly for CP-405 board (S/N 12001 and higher)

- (1) Remove the four screws.
- (2) Disconnect the harness (LCD bright) and the harness (Video) from the LCD unit assembly.
- (3) Remove the two LCD shields 1 from the LCD unit assembly.

Installation

4. Attaching the LCD Unit Assembly

In the case of LCD unit for CP-393 board (S/N 10001 to 12000)

- (1) Reattach the LCD shield case to a new LCD unit assembly.
- (2) Connect the CN-2511 board to the connector CN1 on the LCD unit assembly.
- (3) Connect the harnesses of the LCD unit assembly to the connectors CN2, CN3 on the inverter unit.
- (4) Reattach the LCD unit assembly, spacers, and LCD cover to the key panel frame, then fix it with four screws. (Refer to the figure in step 3.)

Tightening torque: $20 \times 10^{-2} \text{ N}\cdot\text{m}$
 $\{2.0 \text{ kgf}\cdot\text{cm}\}$

In the case of LCD unit assembly for CP-405 board (S/N 12001 and higher)

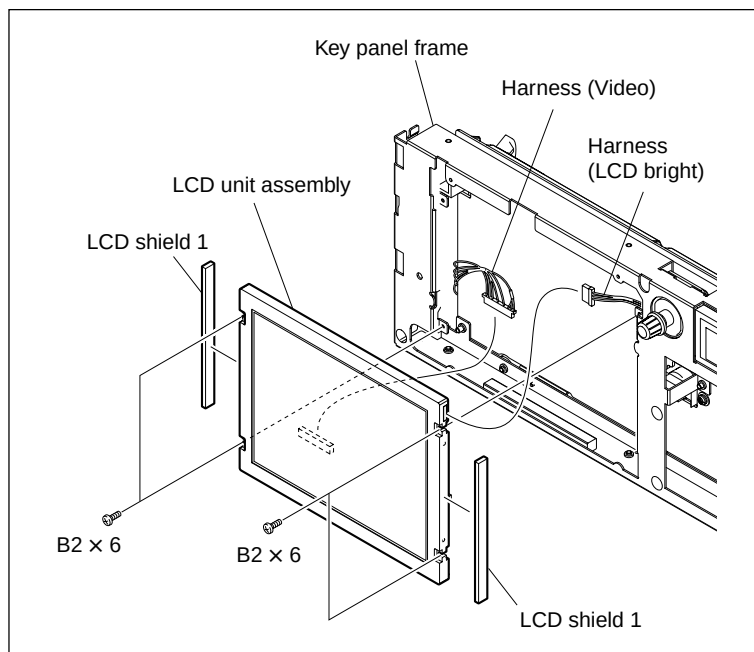
- (1) Install two LCD shields 1 to the new LCD unit assembly.
- (2) Connect the harness (LCD bright) and the harness (Video) to the LCD unit assembly.

Note

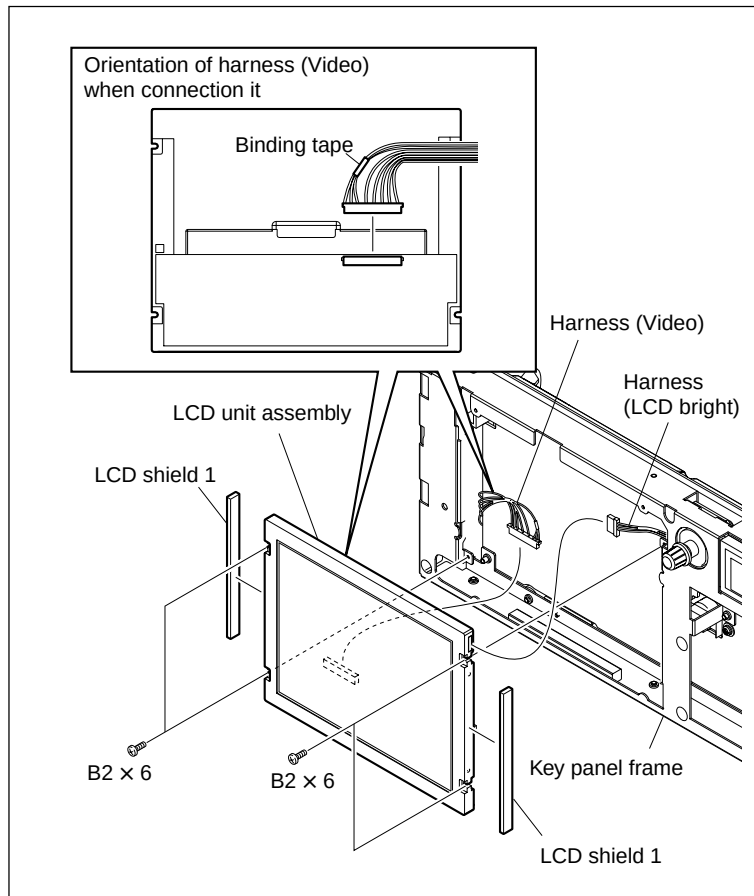
Connect the harness (Video) in the orientation shown in the figure.

- (3) Install the LCD unit assembly with four screws.

Tightening torque: $20 \times 10^{-2} \text{ N}\cdot\text{m}$
 $\{2.0 \text{ kgf}\cdot\text{cm}\}$



Remove/Attach the LCD Unit (LCD Unit Assembly for CP-405 Board)



Replace the LCD Unit (LCD Unit Assembly for CP-405 Board)

Refer to the figure in the “2.Removing the Key Panel Assembly”.

- Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$
 $\{8.0 \text{ kgf}\cdot\text{cm}\}$

Reattach the rear cover.

Adjustment after Replacement

Refer to Section 3-3-3.

menu

5-26-2. Lamp Unit/LED Unit Replacement

Notes

- The lamp unit is used in the LCD unit assembly*¹ for the CP-393 board.
- The LED unit is used in the LCD unit assembly*² for the CP-405 board.

*1: LCD unit assembly for CP-393 board
S/N 10001 to 12000

*2: LCD unit assembly for CP405 board
S/N 12001 and Higher

Outline

Replacement

1. Removing the Rear Cover (Refer to step 1 in Section 5-25.)
2. Removing the Key Panel Assembly (Refer to step 2 in Section 5-26-1.)
3. Removing the LCD Unit Assembly (Refer to step 3 in Section 5-26-1.)
4. Removing the Lamp Unit/LED Unit
5. Attaching the Lamp Unit/LED Unit
6. Reattaching the LCD Unit Assembly (Refer to step 4 in Section 5-26-1.)
7. Reattaching the Key Panel Assembly (Refer to step 5 in Section 5-26-1.)
8. Reattaching the Rear Cover (Refer to step 4 in Section 5-25.)

Adjustment after Replacement

9. Color Display Indication Test (Refer to Section 3-3-3.)
F5 (LCD) of the PANEL MAINTENANCE menu

Note

The two lamp units are located on the top and bottom at the back side of the LCD unit assembly.

It is recommended to replace both lamp units at the same time.

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the control panel assembly. (Refer to Section 1-6.)

• For LCD unit assembly for CP-393 board

Removal

1. Removing the Rear Cover

Remove the rear cover.

(Refer to step 1 in Section 5-25.)

2. Removing the Key Panel Assembly

Remove the key panel assembly.

(Refer to step 2 in Section 5-26-1.)

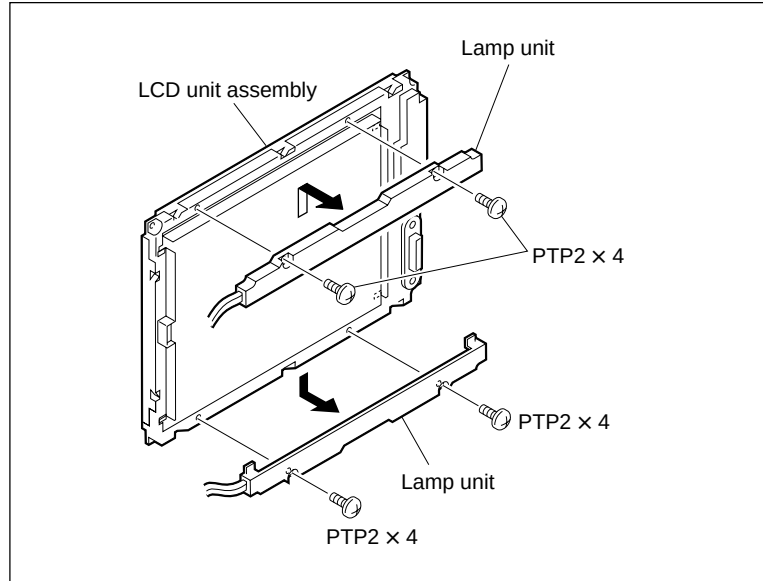
3. Removing the LCD Unit Assembly

Remove the LCD unit assembly.

(Refer to step 3 in Section 5-26-1.)

4. Removing the Lamp Unit

Remove the four screws, and remove the lamp units in the arrow direction.



Remove the Lamp Unit

Installation

5. Attaching the Lamp Unit

Put the hooks of the new lamp units into the holes on the LCD unit, and move them in the arrow directions. Then fix them with four screws.

6. Reattaching the LCD Unit Assembly

Reattach the LCD unit assembly.

(Refer to step 4 in Section 5-26-1.)

7. Reattaching the Key Panel Assembly

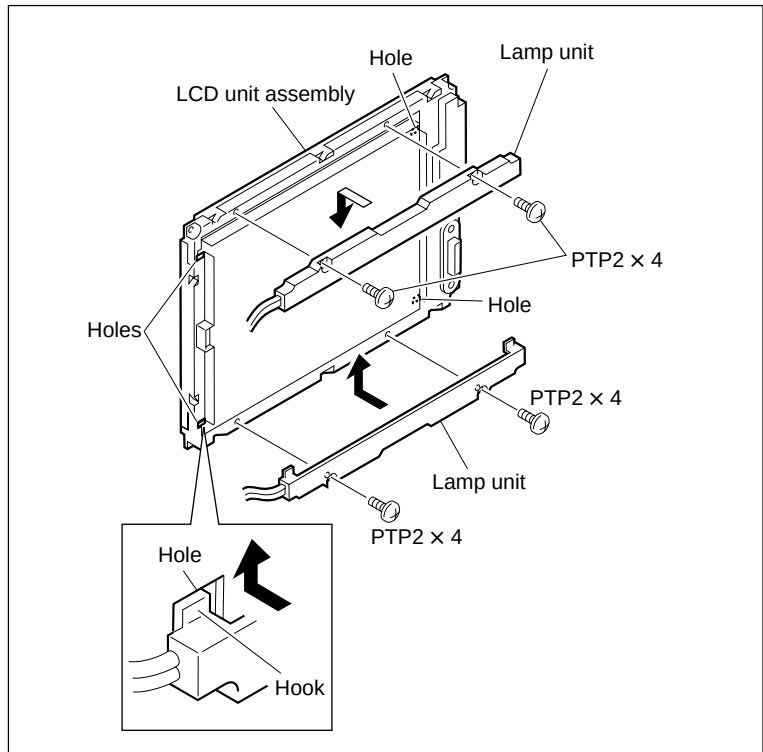
Reattach the key panel assembly.

(Refer to step 5 in Section 5-26-1.)

8. Reattaching the Rear Cover

Reattach the rear cover.

(Refer to step 4 in Section 5-25.)



Attach the Lamp Unit

Adjustment after Replacement

9. Color Display Indication Test

Refer to Section 3-3-3.

[F5] (LCD) of the PANEL MAINTENANCE menu

• For LCD unit assembly for CP-405 board

Removal

1. Removing the Rear Cover

Remove the rear cover.

(Refer to step 1 in Section 5-25.)

2. Removing the Key Panel Assembly

Remove the key panel assembly.

(Refer to step 2 in Section 5-26-1.)

3. Removing the LCD Unit Assembly

Remove the LCD unit assembly.

(Refer to step 3 in Section 5-26-1.)

4. Removing the LED Unit

Remove the three screws, and remove the LED unit.

Installation

5. Attaching the LED Unit

Attach the new LED unit, and fix it with three screws.

6. Reattaching the LCD Unit Assembly

Reattach the LCD unit assembly.

(Refer to step 4 in Section 5-26-1.)

7. Reattaching the Key Panel Assembly

Reattach the key panel assembly.

(Refer to step 5 in Section 5-26-1.)

8. Reattaching the Rear Cover

Reattach the rear cover.

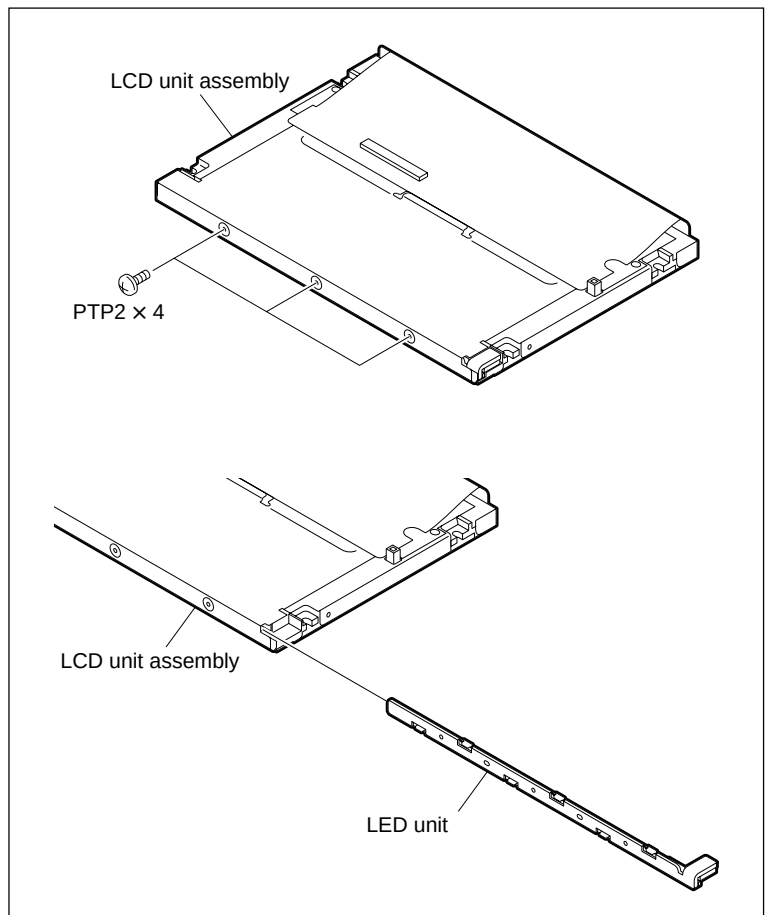
(Refer to step 4 in Section 5-25.)

Adjustment after Replacement

9. Color Display Indication Test

Refer to Section 3-3-3.

F5 (LCD) of the PANEL MAINTENANCE menu



Remove/Attach the LED Unit

5-27. Organic EL Indicator Module Replacement

Outline

Replacement

1. Removing the Rear Cover (Refer to step 1 in Section 5-25.)
2. Removing the Key Panel Assembly (Refer to step 2 in Section 5-26-1.)
3. Removing the Organic EL Indicator Module
4. Attaching the Organic EL Indicator Module
5. Reattaching the Key Panel Assembly (Refer to step 5 in Section 5-26-1.)
6. Reattaching the Rear Cover (Refer to step 4 in Section 5-25.)

Adjustment after Replacement

7. OEL Indication Test (Refer to Section 3-3-3.)
 [F6] (OEL) of the PANEL MAINTENANCE menu

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the control panel assembly. (Refer to Section 1-6.)

Removal

1. Removing the Rear Cover

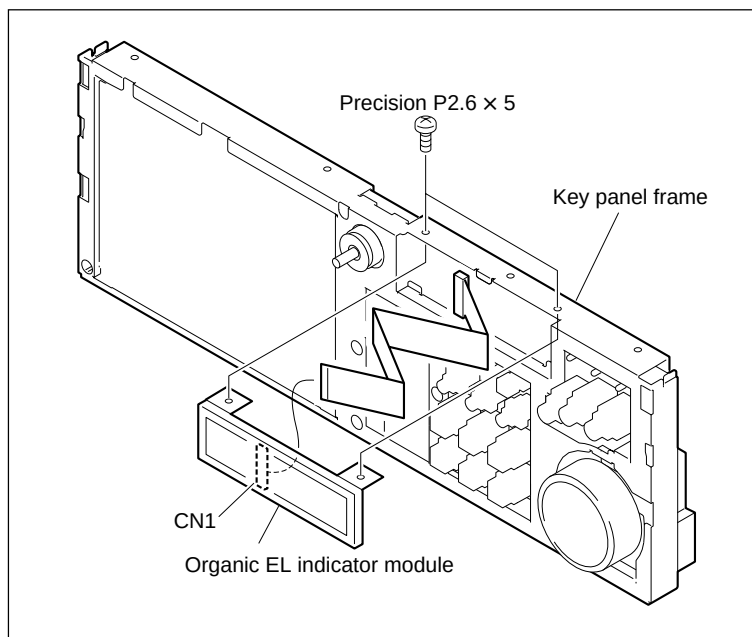
Remove the rear cover.
(Refer to step 1 in Section 5-25.)

2. Removing the Key Panel Assembly

Remove the key panel assembly.
(Refer to step 2 in Section 5-26-1.)

3. Removing the Organic EL Indicator Module

- (1) Remove the two screws and remove the organic EL indicator module.
- (2) Disconnect the flexible card wire from the connector CN1 on the organic EL indicator module.



Remove the Organic EL Indicator Module

- (3) Bend the six claws of the organic EL indicator module as shown in the figure by the pliers, and remove the OEL holder and OEL insulating sheet.

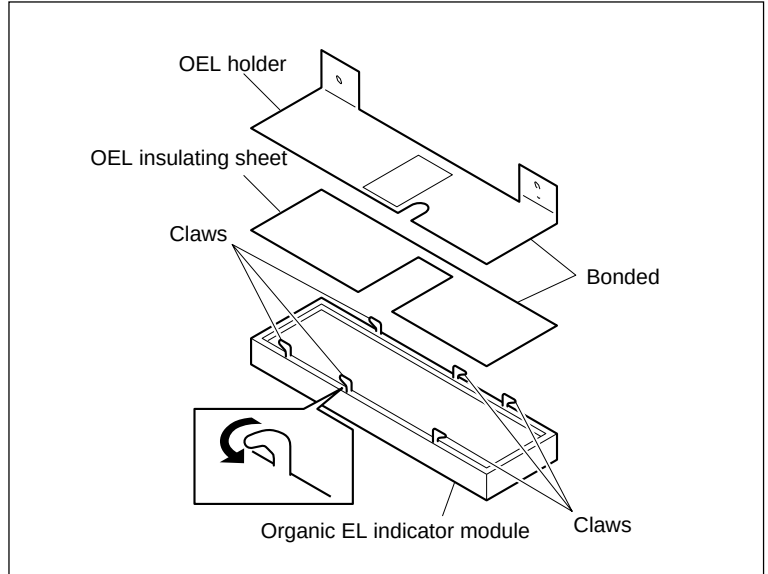
Note

The OEL holder and OEL insulating sheet are bonded.

Installation

4. Attaching the Organic EL Indicator Module

- (1) Attach the OEL holder and OEL insulating sheet to a new organic EL indicator module, then fix it with six claws of the organic EL indicator module.



Replace the Organic EL Indicator Module

- (2) Connect the flexible card wire to the connector CN1 on the organic EL indicator module.

Note

When replacing the flexible card wire, form the wire as shown in the figure by hands.

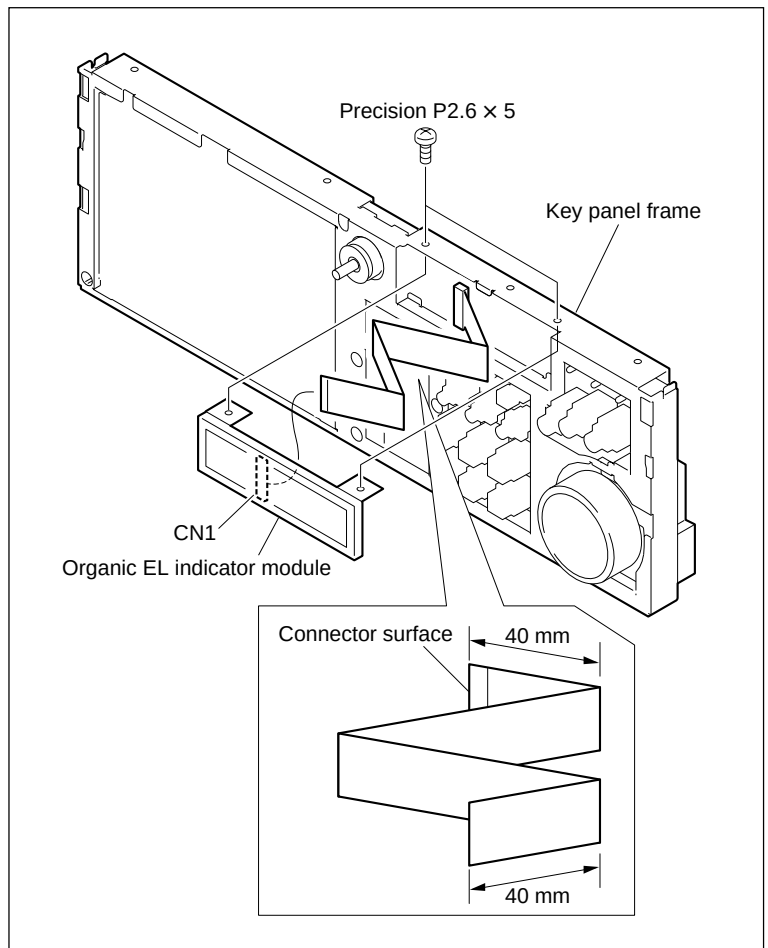
- (3) Attach the organic EL indicator module to the key panel frame, then fix it with two screws. Tightening torque: $50 \times 10^{-2} \text{ N}\cdot\text{m}$ {5.0 kgf·cm}

5. Reattaching the Key Panel Assembly

Reattach the key panel assembly.
(Refer to step 5 in Section 5-26-1.)

6. Reattaching the Rear Cover

Reattach the rear cover.
(Refer to step 4 in Section 5-25.)



Attach the Organic EL Indicator Module

Adjustment after Replacement

7. OEL Indication Test

Refer to Section 3-3-3.

F6 (OEL) of the PANEL MAINTENANCE menu

5-28. Inverter Unit Replacement

Note

Serial No. 10001 to 12000 are object.

Outline

Replacement

1. Removing the CP-393 Board (Refer to step 3 to 8 in Section 5-30-3.)
2. Removing the Inverter Unit
3. Attaching the Inverter Unit
4. Reinstalling the CP-393 Board (Refer to step 16 to 20 in Section 5-30-3.)

Adjustment after Replacement

5. Color Display Indication Test (Refer to Section 3-3-3.)
 [F5] (LCD) of the PANEL MAINTENANCE menu

Preparation

1. Turn the power off and disconnect the power cord.
2. Remove the control panel assembly. (Refer to Section 1-6.)

Removal

1. Removing the CP-393 Board

Perform the steps 3 to 8 in Section 5-30-3 to remove the CP-393 board.

2. Removing the Inverter Unit

- (1) Disconnect the harness from the connector CN1 on the inverter unit.
- (2) Remove the two nylon rivets and remove the inverter unit and insulating sheet.

Installation

3. Attaching the Inverter Unit

- (1) Fix a new inverter unit and insulating sheet to the CP-393 with the two nylon rivets.

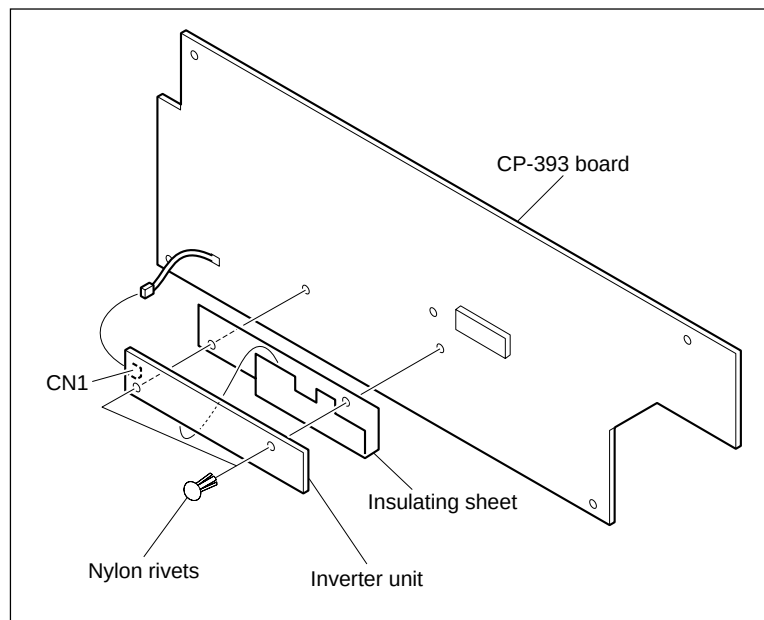
Note

Insert the inverter unit to the insulating sheet.

- (2) Connect the harness to the connector CN1 on the inverter unit.

4. Reinstalling the CP-382 Board

Perform the steps 16 to 20 in Section 5-30-3 to reinstall the CP-393 board.



Remove/Attach the Inverter Unit

Adjustment after Replacement

5. Color Display Indication Test

Refer to Section 3-3-3.

F5 (LCD) of the PANEL MAINTENANCE menu

5-29. PC Card Adaptor Replacement

Note

Serial No. 10001 to 11000 are object.

Outline

Replacement

1. Removing the PC Card Adaptor
2. Attaching the PC Card Adaptor

Preparation

1. Turn the power off and disconnect the power cord.
2. Secure the lower control panel to the 90° position. (Refer to Section 1-6.)

Removal

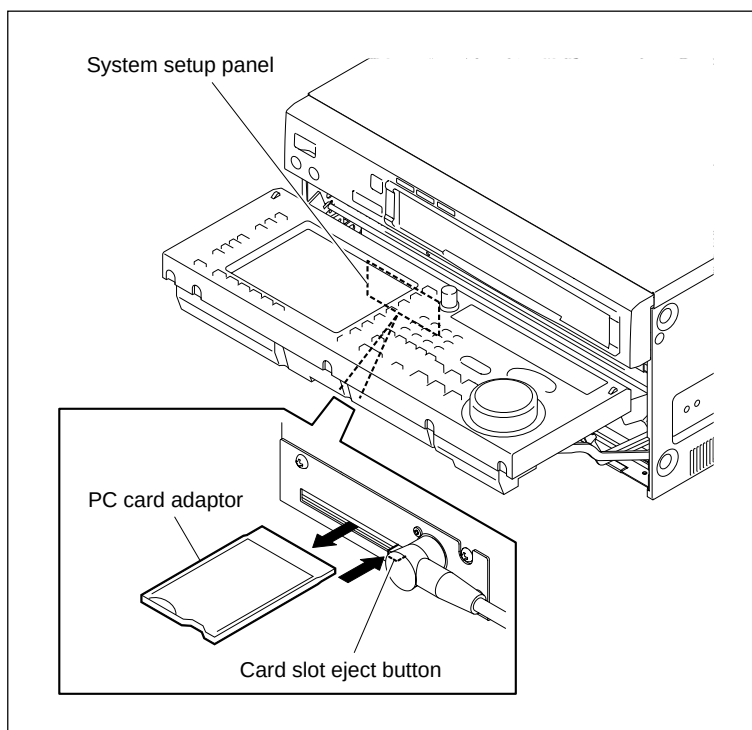
1. Removing the PC Card Adaptor

Press the card slot eject button of the system setup panel, and eject the PC card adaptor.

Installation

2. Attaching the PC Card Adaptor

Insert a new PC card adaptor to the card slot of the system setup panel.



Remove/Attach the PC Card Adaptor

5-30. Mounting Board Replacement

The replacing method about mounting board other than plug-in board is described here. As to replacement of the plug-in board, refer to the section 1-12.

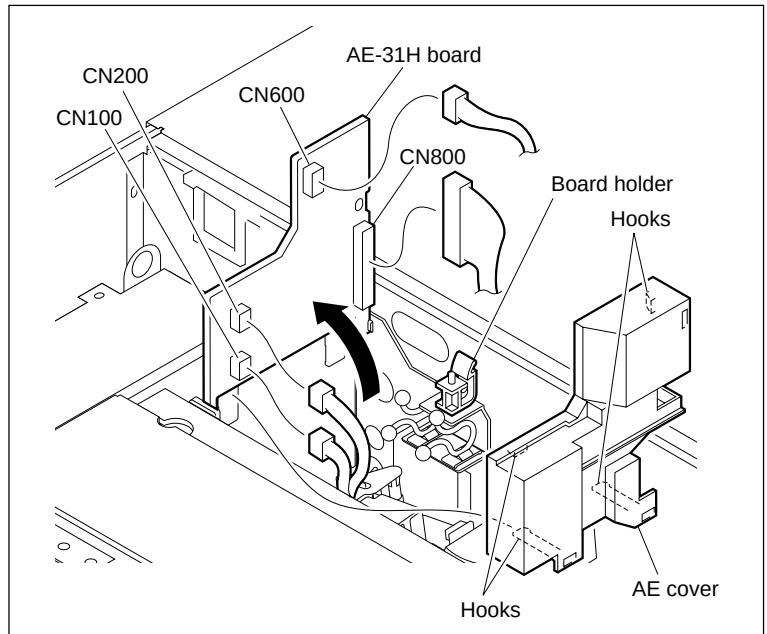
5-30-1. AE-31H Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Unlock the board holder, and open the AE-31H board in the arrow direction.
4. Release the four hooks and then remove the AE cover from the AE-31H board.
5. Disconnect the four harnesses from the connectors CN100, CN200, CN600, and CN800.

Note

When handling the harnesses connected to the AT head assembly (CN100, CN200 and CN600), be sure not to apply the force to the AT head assembly. If the force is applied, perform the confirmation of the tape running at drum exit side. (Refer to Section 6-12-2.)

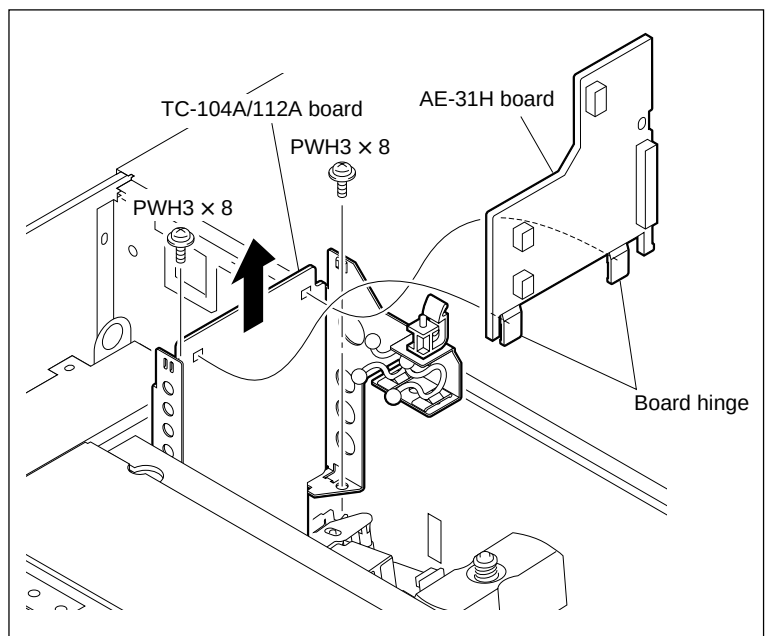


Remove the AE-31H Board (1)

6. Remove the two screws securing the TC-104A/112A board.
7. Pull out the TC-104A/112A board with the AE-31H board in the arrow direction (approx. 3 cm.)
8. Remove the board hinges of the AE-31H board from the TC-104A/112A board.
9. Perform the installation in the reverse order from steps 3 to 8.

Steps after Replacement

10. Perform the CUE playback system adjustment. (Refer to Section 8-5-4.)



Remove the AE-31H Board (2)

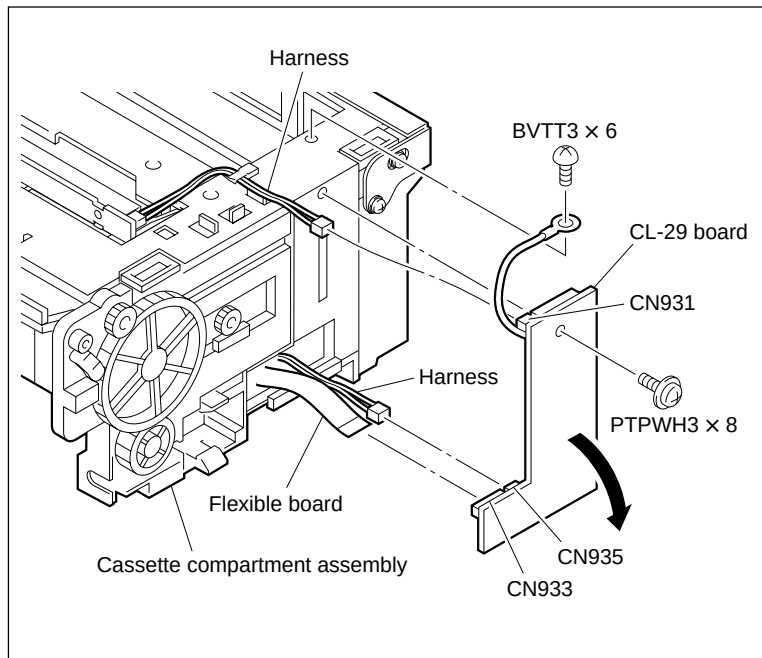
5-30-2. CL-29 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the cassette compartment assembly. (Refer to Section 1-5.)
3. Disconnect the harness from the connector CN931 on the CL-29 board.
4. Remove the two screws to remove the CL-29 board from the cassette compartment assembly, and then open the arrow direction.
5. Disconnect the flexible board from the connector CN933 on the CL-29 board.
6. Disconnect the harness from the connector CN935 on the CL-29 board.
7. Perform the installation in the reverse order from steps 2 to 6.

Steps after Replacement

8. Confirm that the compartment part of the cassette compartment assembly moves up and down normally by **F8** (CCM MOTOR) of the SERVO CHECK menu. (Refer to Section 3-3-4.)



Remove the CL-29 Board

5-30-3. CP-393/405 Board

Preparation

Before replacing the CP-393/405 board, perform the “Board Replacement” in Section 1-26-5.

• For CP-393 board

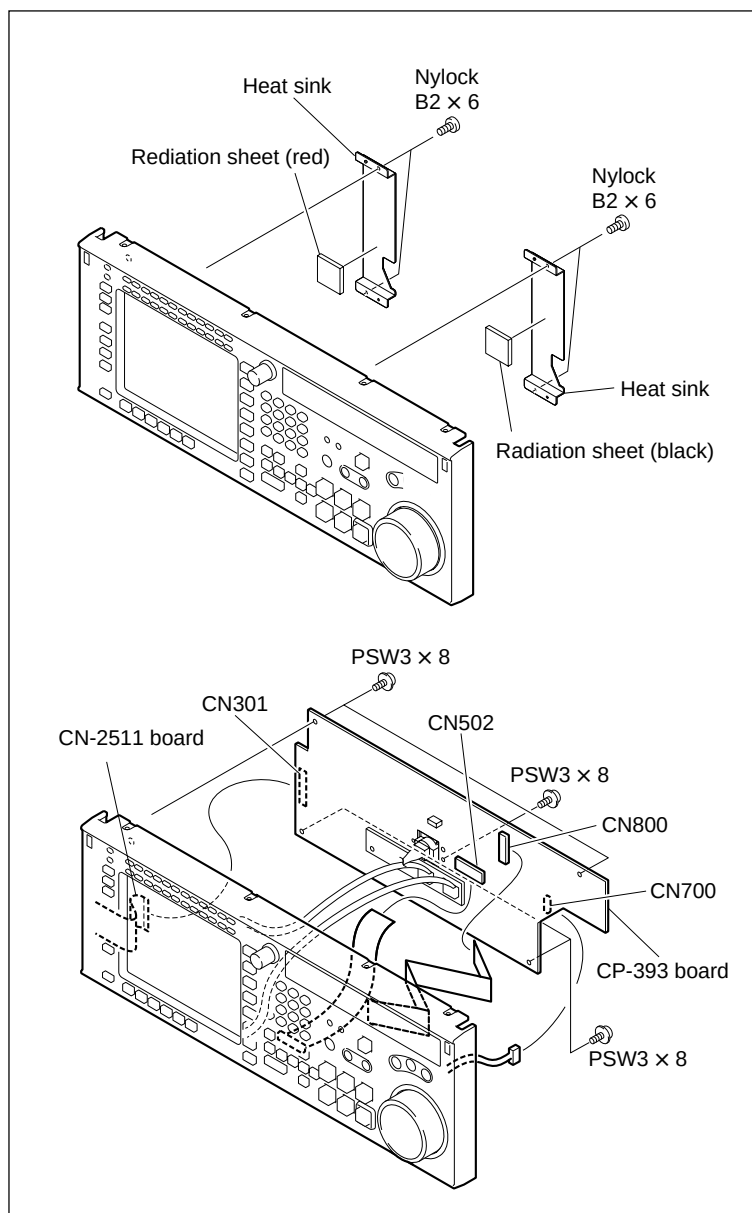
Removal

1. Turn the power off and disconnect the power cord.
2. Remove the control panel assembly. (Refer to Section 1-6.)
3. Remove the eight screws and remove the rear cover. (Refer to step 1 in Section 5-25.)
4. Remove the four screws and remove the heat sink.

Note

Radiation sheets are attached to the heat sink. Keep the radiation sheets clean.

5. Disconnect the CN-2511 board and harness from the connectors CN301 and CN700 on the CP-393 board.
6. Remove the five screws and remove the CP-393 board.
7. Disconnect the flexible card wires from the connectors CN502 and CN800 on the CP-393 board.



Remove the CP-393 Board

8. Disconnect the harnesses from the connectors CN2 and CN3 on the inverter unit.
9. Disconnect the harness from the connector CN300 on the CP-393 board.
10. Remove the two nylon rivets and remove the inverter unit and insulating sheet.
11. Disconnect the harness from the connector CN701 on the CP-393 board.
12. Remove the two screws and remove the connector bracket.

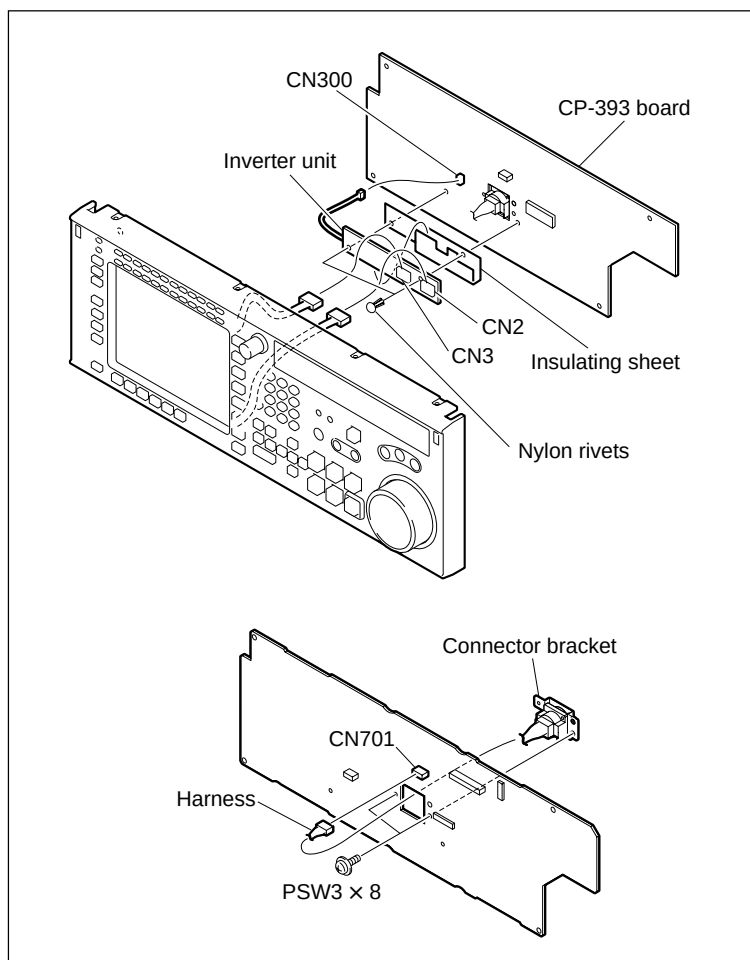
Installation

13. Reattach the connector bracket to a new CP-393 board with the two screws.
14. Reconnect the harness disconnected in step 11.
15. Reattach the inverter unit to a new CP-393 board, then fix it with the two nylon rivets.

Note

Insert the inverter unit to the insulating sheet.

16. Reconnect the three harnesses disconnected in steps 8 and 9.

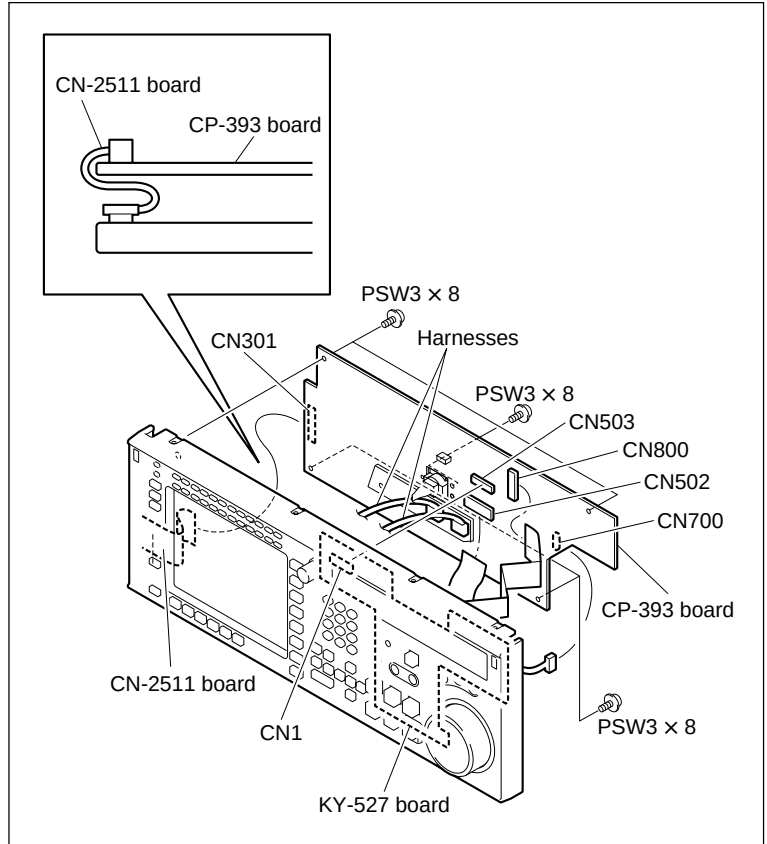


Remove/Attach the CP-393 Board

17. Connect the two flexible card wires disconnected in step 7.
18. Connect the CN-2511 board to the connector CN301 on the CP-393 board as shown in the figure.
19. Reinstall the CP-393 board to the key panel frame, then fix it with the five screws.
Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf•cm}

Notes

- Be sure not to catch the harnesses shown in the figure between the key panel frame and CP-393 board.
 - Connect the connector CN503 on the CP-393 board to the CN1 on the KY-527 board surely.
20. Connect the harness disconnected in step 5 to the connector CN700 on the CP-393 board.
 21. Reattach the radiation sheet (red) onto IC301 and radiation sheet (black) onto IC1 on the CP-393 board.
 22. Reattach the heat sinks to the control panel assembly, then fix it with the four screws.
Tightening torque: $19 \times 10^{-2} \text{ N}\cdot\text{m}$
{1.9 kgf•cm}
 23. Reattach the rear cover.
(Refer to step 4 in Section 5-25.)
 24. Reattach the control panel assembly to the unit. (Refer to Section 1-6.)



Attach the CP-393 Board

Steps after Replacement

25. After replacing the CP-393 board, perform the “After replacing the NV-RAM” in Section 1-26-5.

• For CP-405 board

Removal

1. Turn the power off and disconnect the power cord.
2. Remove the control panel assembly.
(Refer to Section 1-6.)
3. Remove the eight screws and remove the rear cover. (Refer to Step 1 in Section 5-25.)
4. Disconnect the harness from the connectors CN303 and CN700 on the CP-405 board.
5. Remove the five screws and remove the CP-405 board.
6. Disconnect the flexible card wire and the harness from the connectors CN304 and CN800 on the CP-405 board.
7. Disconnect the harness from the connector CN701 on the CP-405 board.
8. Remove the two screws and remove the connector bracket.

Installation

9. Reattach the connector bracket to a new CP-405 board with the two screws.
10. Reconnect the harness disconnected in step 7.
11. Reconnect the flexible card wire and the harness disconnected in step 6.
12. Reinstall the CP-405 board to the key panel frame, then fix it with the five screws.
Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf·cm}

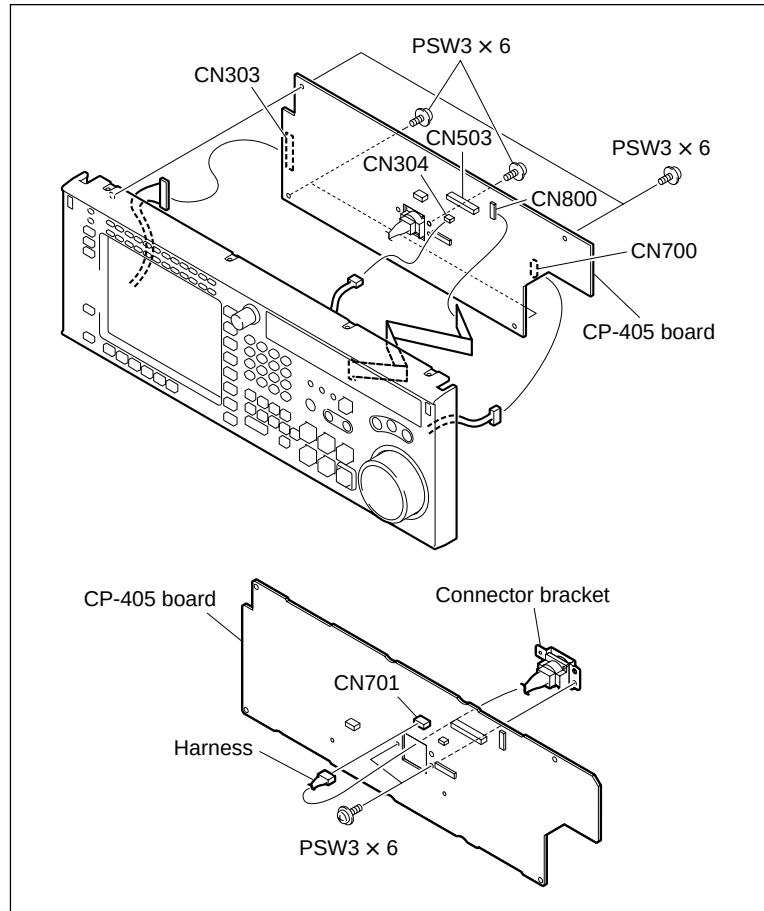
Note

Connect the connector CN503 on the CP-405 board to the CN1 on the KY-527 board surely.

13. Reconnect the harness disconnected in step 4.
14. Reattach the rear cover.
(Refer to step 4 in Section 5-25.)
15. Reattach the control panel assembly to the unit. (Refer to Section 1-6.)

Steps after Replacement

16. After replacing the CP-405 board, perform the “After replacing the NV-RAM” in Section 1-26-5.



Remove/Attach the CP-405 Board

5-30-4. CP-397 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the connector panel assembly.
(Refer to Section 1-4.)
3. Remove all the screws fixing the XLR connectors (8 pcs).
4. Disconnect the CP-397 board, from the connector on the CP-398 board.
5. Perform the installation in the reverse order from steps 2 to 4.

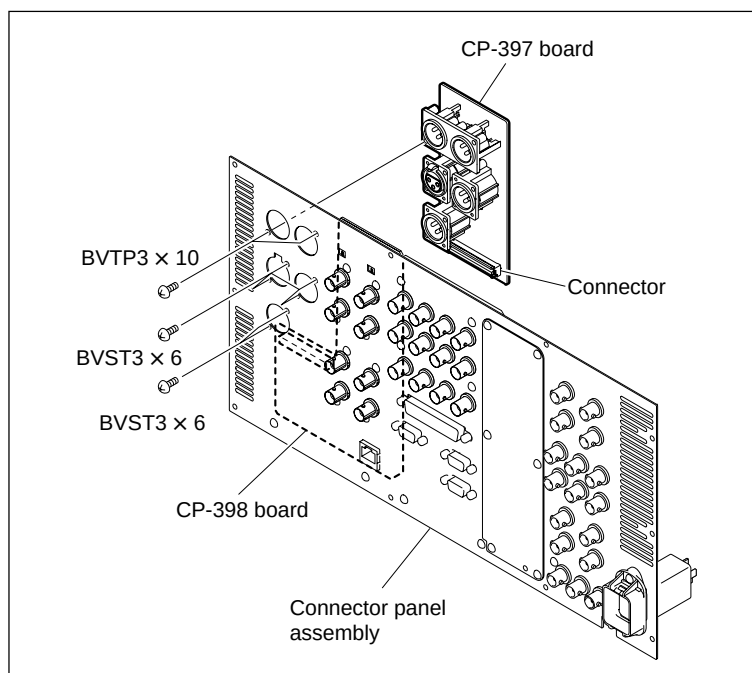
Note

The screws fixing the XLR connectors are two kinds.

Use the longer screws (BVTP3 × 10) for fixing the double-type connector.

Steps after Replacement

6. Check the output level of each analog audio.
(Refer to Section 1-26-6.)



Remove the CP-397 Board

5-30-5. CP-398 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the connector panel assembly.
(Refer to Section 1-4.)
3. Remove the CP-397 board.
(Refer to Section 5-30-4.)
4. Remove the two screws (PSW3 $\times$ 8).
5. Remove the eight screws (BVTP3 $\times$ 10) fixing the BNC connectors and remove the CP-398 board.

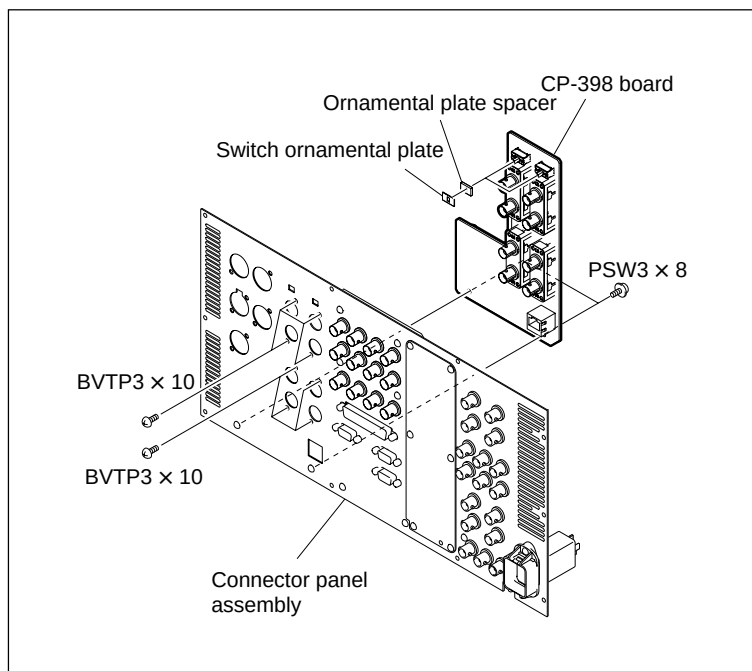
Note

Be careful not to loose the switch ornamental plates and the ornamental plate spacers at this time.

6. Perform the removal in the reverse order from steps 2 to 5.

Steps after Replacement

7. Check if the component video output signal and composite video output signal are normally output. (Refer to Section 1-26-7.)



Remove the CP-398 Board

5-30-6. CP-399 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the connector panel assembly.
(Refer to Section 1-4.)
3. Remove the two screws (PSW3 × 8).
4. Remove the four screws (BVST3 × 6) and six connector screws for RS232C to remove the CP-399 board.

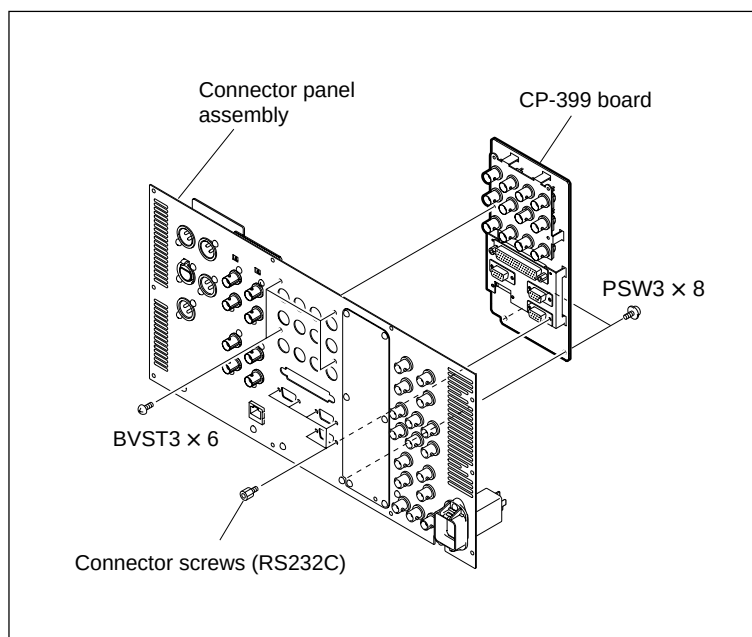
Note

It is not required to remove the fixing screws for the REMOTE-2 PARALLEL I/O connector.

5. Perform the attachment in the reverse order from steps 2 to 4.

Note

Be careful not to mistake the fixing screws for RS232C since these only are different from other connector fixing screws.



Remove the CP-399 Board

Steps after Replacement

6. Check the input/output level of the AES/EBU channel. (Refer to Section 1-26-8.)

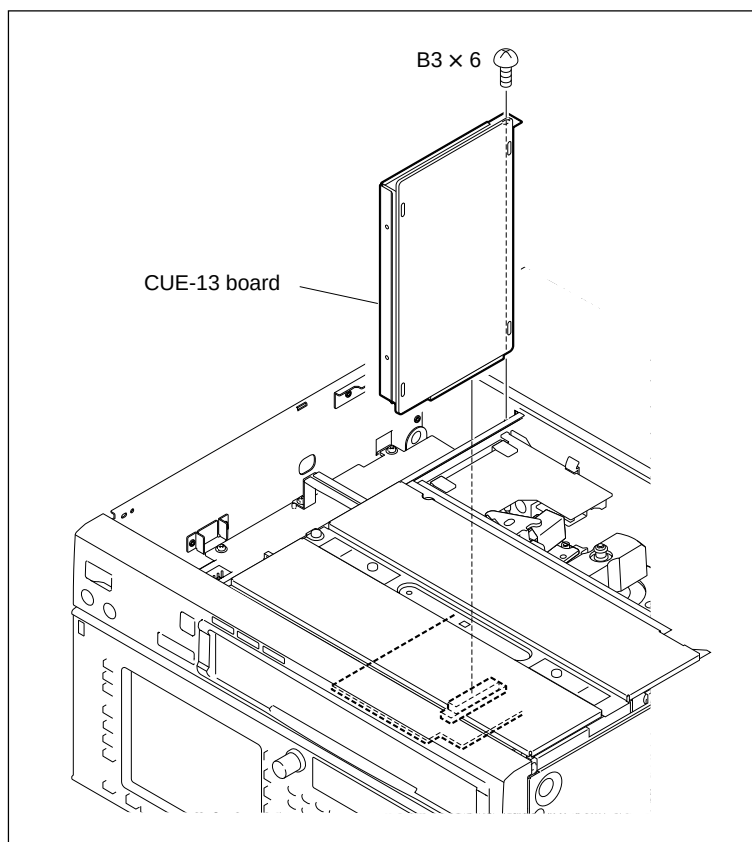
5-30-7. CUE-13 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly.
(Refer to Section 1-3-1.)
3. Remove one screw and remove the CUE-13 board in the arrow direction.
4. Perform the installation in the reverse order from steps 2 and 3.

Steps after Replacement

5. Perform the CUE playback system adjustment. (Refer to Section 8-5-4.)

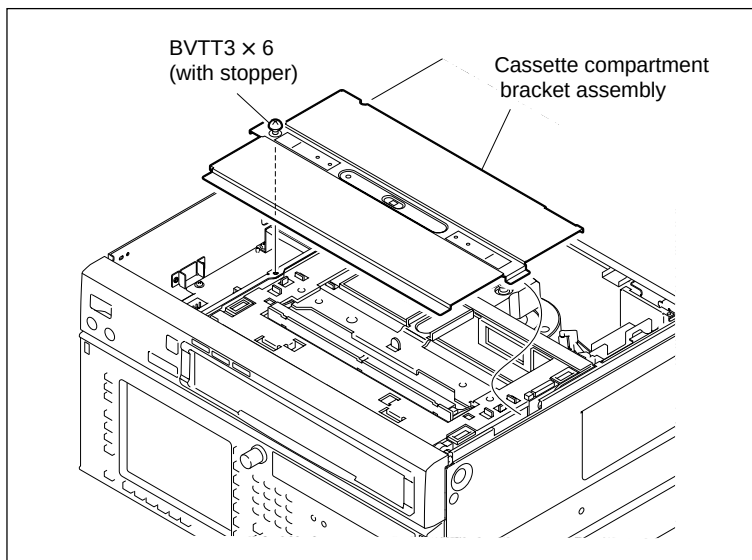


Remove the CUE-13 Board

5-30-8. DIO-86 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly.
(Refer to Section 1-3-1.)
3. Fully loosen one screw and remove the cassette compartment bracket assembly.
4. Remove the power supply unit.
(Refer to Section 5-24.)



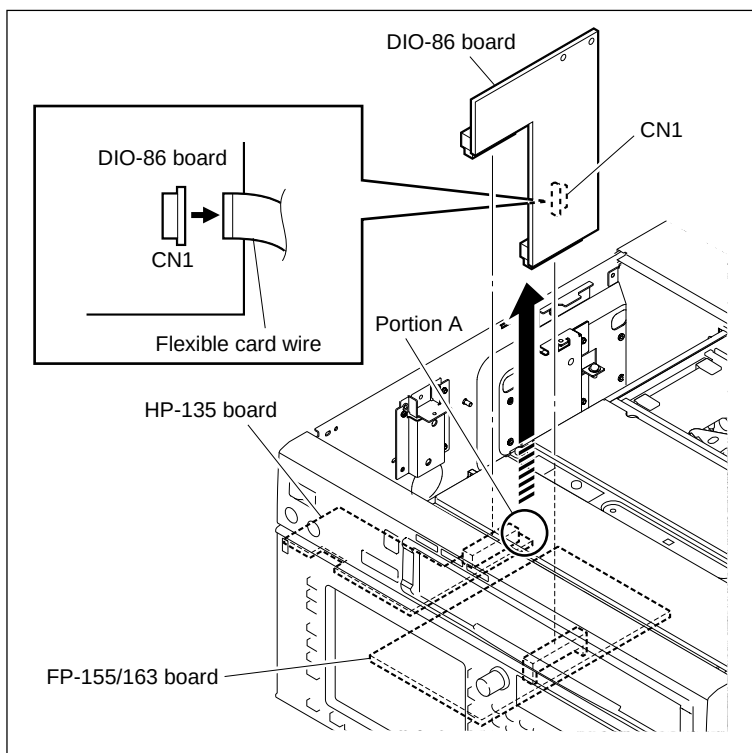
Remove the Cassette Compartment Bracket Assembly

5. Disconnect the flexible card wire from the connector CN1 on the DIO-86 board.
6. Disconnect the connection between the HP-135 and FP-155/163 boards, then remove the DIO-86 board in the arrow direction.

Note

Be careful when removing or installing the DIO-86 board, support the portion A of the HP-135 board with fingers so that excessive force is not applied to the HP-135 board.

7. Perform the installation in the reverse order from steps 2 to 6.



Remove the DIO-86 Board

Steps after Replacement

8. Perform the Tele-File system adjustment.
(Refer to Section 8-9.)

5-30-9. DR-508 Board

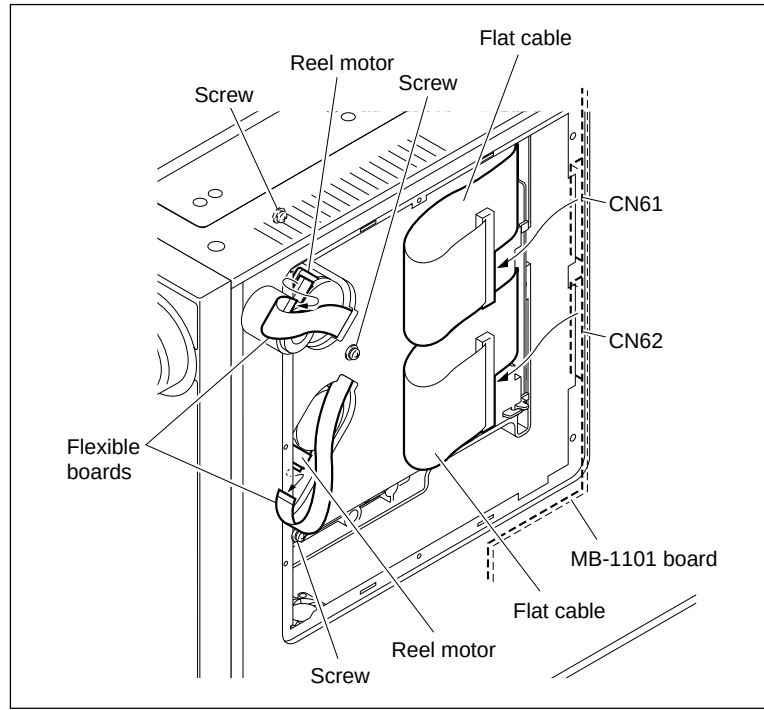
Removal

1. Turn the power off and disconnect the power cord.
2. Place the unit with its one side down and remove the bottom plate.
(Refer to Section 1-3-2.)
3. Disconnect the flat cables from the connectors CN61 and CN62 on the MB-1101 board.
4. Disconnect the flexible boards from the connectors on the reel motors.

Note

Setting the reel tables at the S cassette position will ease the operation.
(Refer to Section 5-1-3.)

5. Fully loosen the three screws on the DR-508 board.



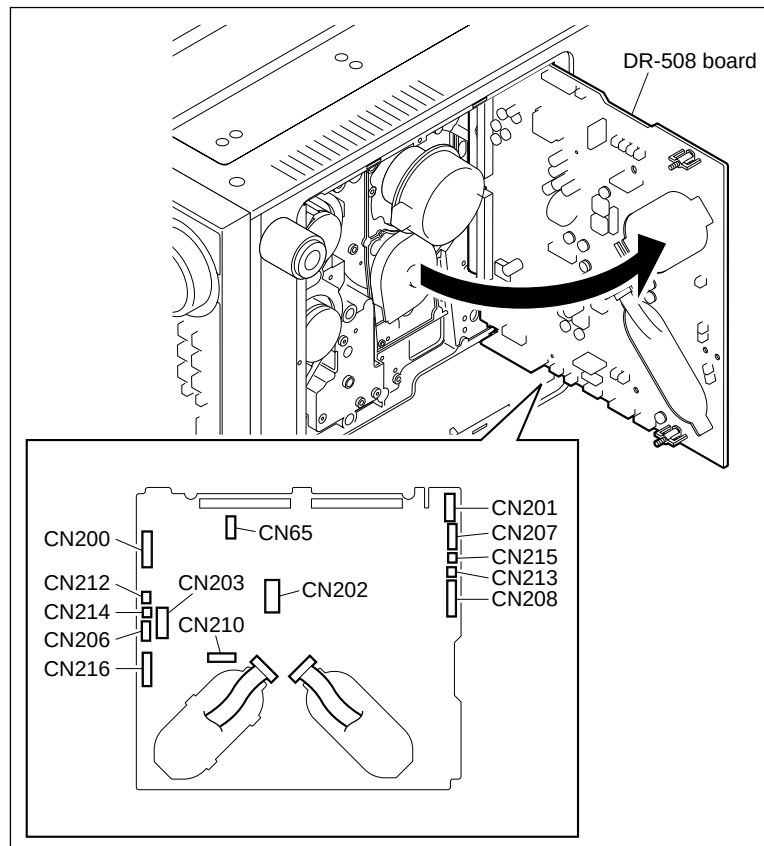
Disconnect the Flat Cables and Flexible Boards

6. Open the DR-508 board in the arrow direction.

Note

Open the board slowly so that excessive force is not applied to the connected harness.

7. Disconnect all the harnesses and flexible boards from the connectors (CN65, 200 to 203, 206 to 208, 210, 212 to 216) on the DR-508 board.



Disconnect the Harnesses

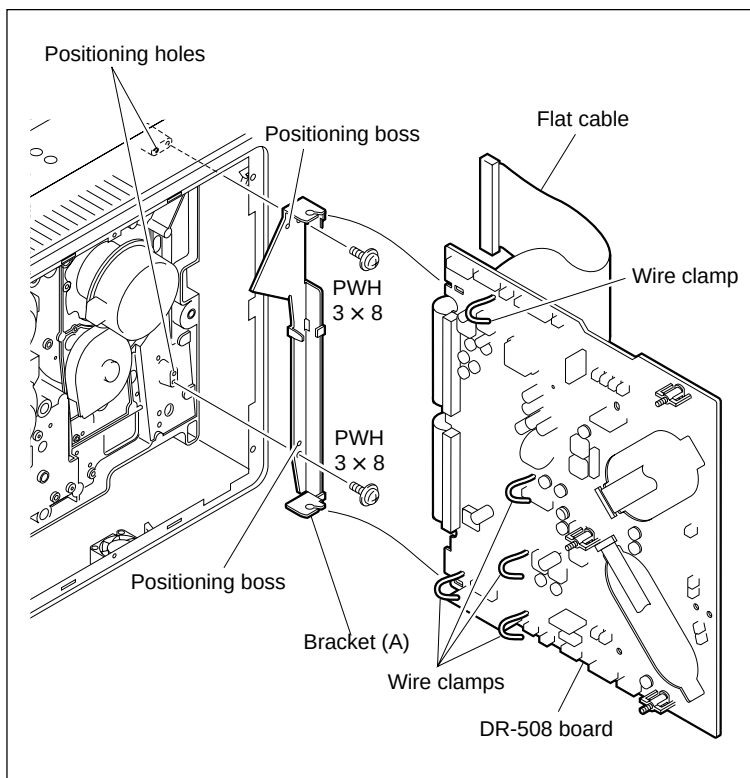
8. Remove the two screws and remove the DR-508 board.
9. Remove the bracket (A) from the DR-508 board.

Installation

10. Attach the bracket (A) to a new DR-508 board as shown in the figure.
11. Supporting the DR-508 board with a hand, match the two positioning bosses of the bracket (A) to the positioning holes on the MD base assembly and tighten with two screws.

Note

Be careful not to put the harnesses between the bracket (A) and the MD base assembly.



Remove the DR-508 Board

12. Connect all the harnesses and flexible boards that have been disconnected in step 7.
13. Arrange the harnesses and fasten with wire clamps as shown in the figure.

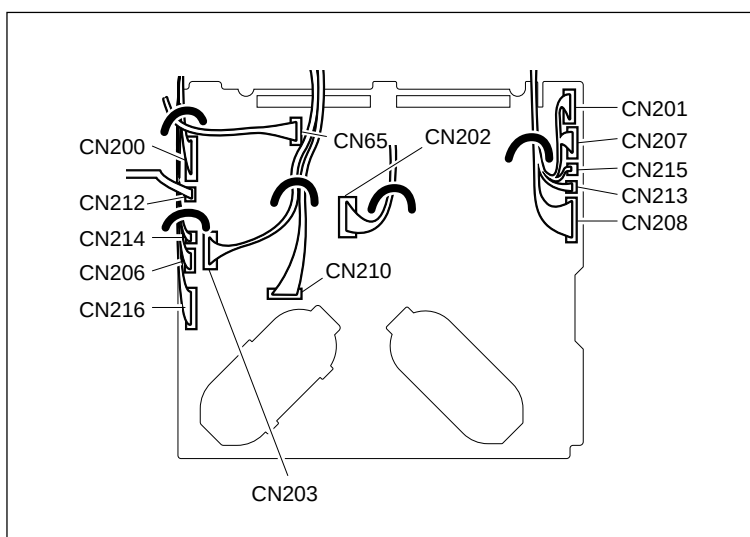
Note

Arrange the harnesses correctly.

14. Turn the gear of the reel shift motor to move the reel table at the middle position between the S and L cassette positions. (Refer to Section 5-1-3.)

Note

Be careful not to close the DR-508 board while the reel tables are left at the S or L cassette position. Or the reel position sensor may damage.



Arrange the Harnesses

15. Close the DR-508 board and tighten the three screws to fix it.
16. Connect the flexible boards that have been disconnected in step 4 to the connectors on the reel motors.

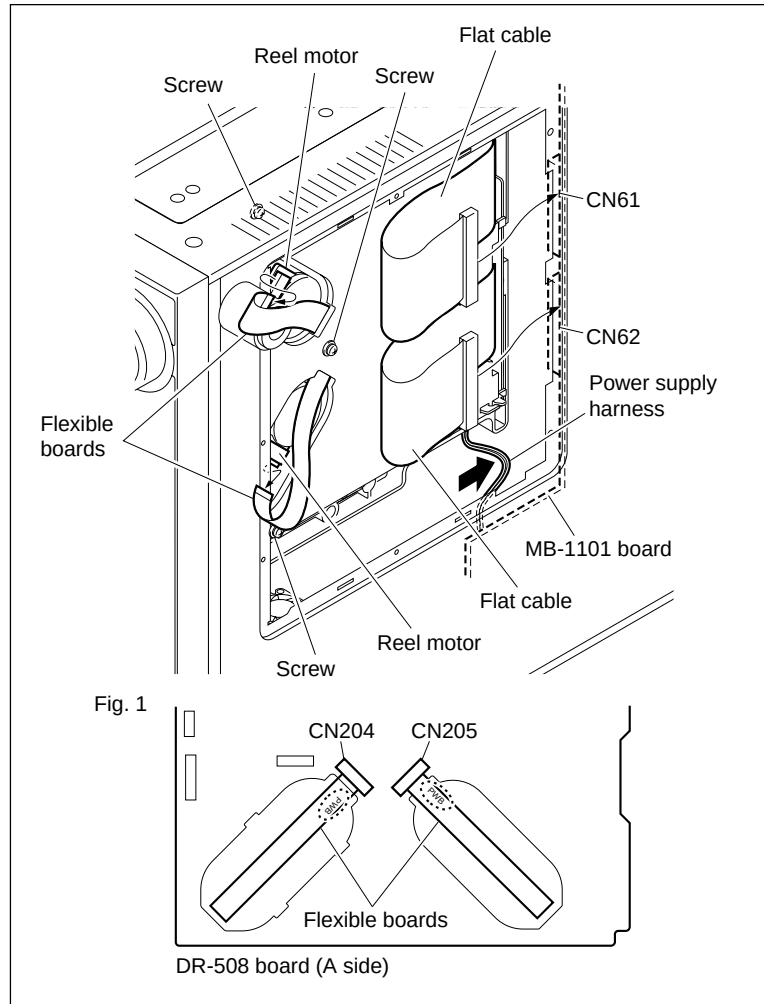
CAUTION

The connecting direction of the flexible board is specified. When disconnecting the flexible boards from both reel motors and DR-508 board, be sure to connect them so that the character “PWB” on the flexible boards are shown at the connector sides of the DR-508 board. (Fig. 1.) If connected opposite side, the DR-508 board will fail.

17. Connect the flat cables that have been removed in step 3 to the connectors CN61 and CN62 on the MB-1101 board.
18. Arrange the power supply harness between the DR-508 board and MB-1101 board in the arrow direction.
19. Reattach the bottom plate.
(Refer to Section 1-3-2.)

Steps after Replacement

20. Perform the servo/DT system adjustment.
(Refer to Section 8-3.)



Connect the Flat Cables and Flexible Boards

5-30-10. DT-47/48 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Place the unit with its one side down to remove the bottom plate.
(Refer to Section 1-3-2.)
3. Open the DR-508 board.
(Refer to steps 4 to 6 in Section 5-30-9.)
4. Disconnect the harness from the connector CN215 on the DR-508 board.
(Refer to step 7 in Section 5-30-9.)
5. Disconnect the harness and the flexible board from the connectors CN201 and CN220 on the DT-47/48 board.
6. Remove the ME wire and harness from the wire holder.
7. Remove the three screws and remove the EQ harness retainer and DT-47/48 board.

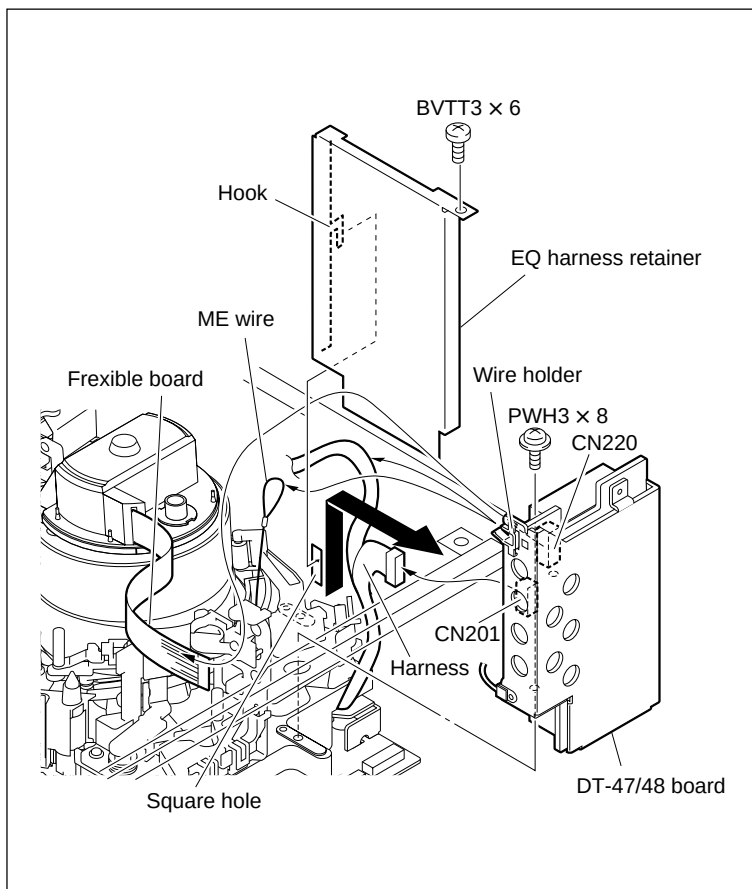
Note

When reattach the EQ harness retainer, put the hook of the EQ harness retainer into the square hole of the chassis.

8. Perform the installation in the reverse order from steps 2 to 7.

Steps after Replacement

9. Perform the servo/DT system adjustment.
(Refer to Section 8-3.)



Remove the DT-47/48 Board

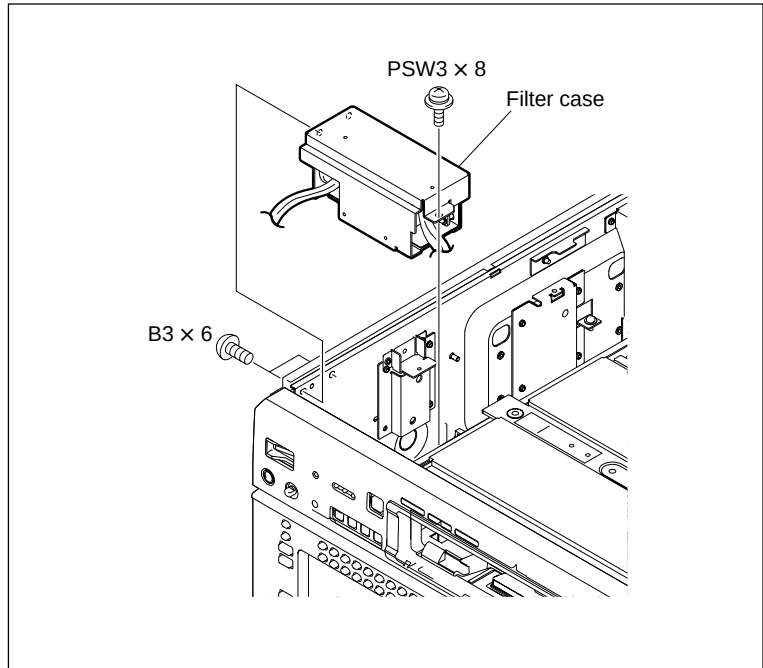
5-30-11. FL-350 Board

Removal

1. Turn off the power and disconnect the power cord.
2. Remove the upper lid (front and rear) assembly.
(Refer to Section 1-3-1.)
3. Remove the side panel (left).
(Refer to Section 1-3-3.)
4. Remove the harness from the connector of the power supply unit.
5. Remove the power supply unit.
(Refer to step 1 in Section 5-24.)
6. Remove the three screws and remove the filter case.

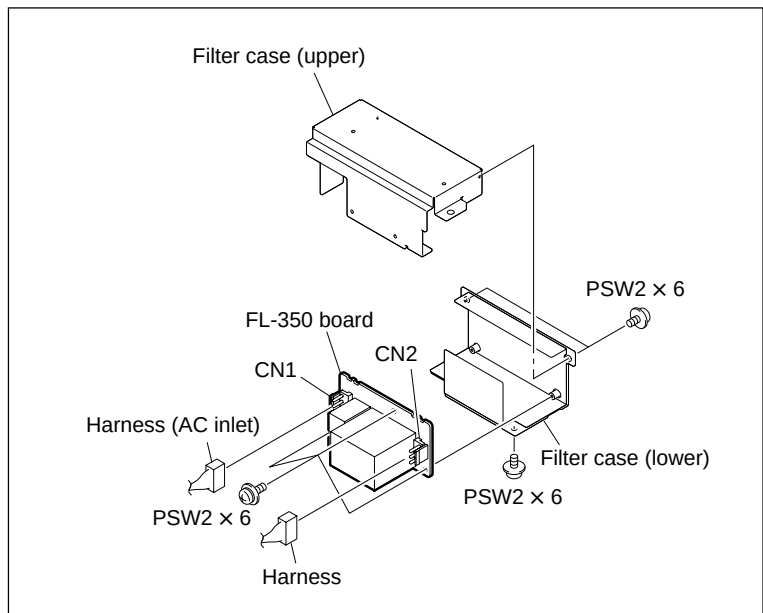
Note

Be careful not to apply excessive force to the harness when disconnecting.



Remove the Filter Case

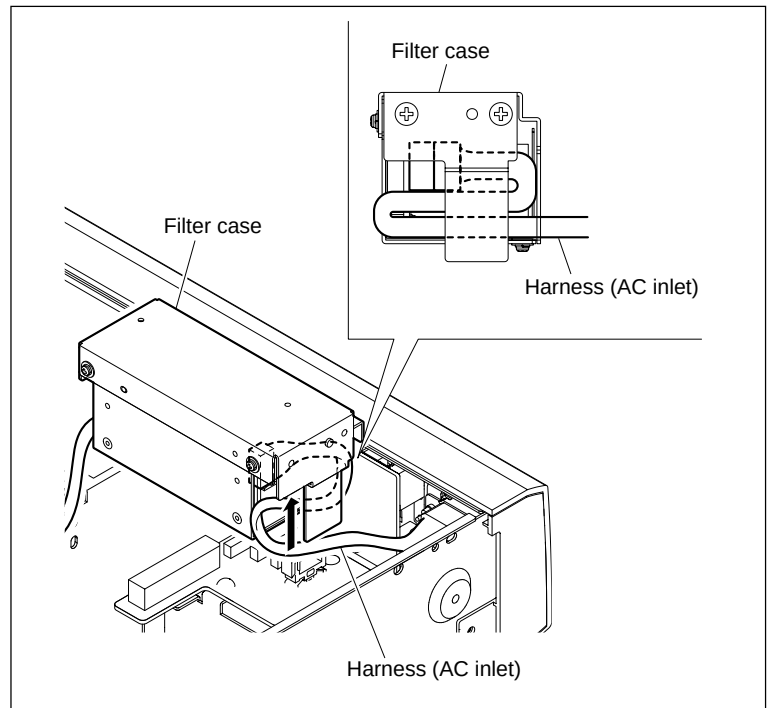
7. Remove the three screws and remove the filter case (upper).
8. Disconnect the harness connected to the AC inlet from the connector CN1 on the FL-350 board.
9. Disconnect the harness from the connector CN2 on the FL-350 board.
10. Remove the three screws and remove the FL-350 board.



Remove the FL-350 board

Installation

11. Perform the installation in the reverse order from steps 6 to 10.
12. Set the harness in the hollow of filter case as shown in the figure, and then reattach the filter case.
13. Perform the installation in the reverse order from steps 1 to 4.



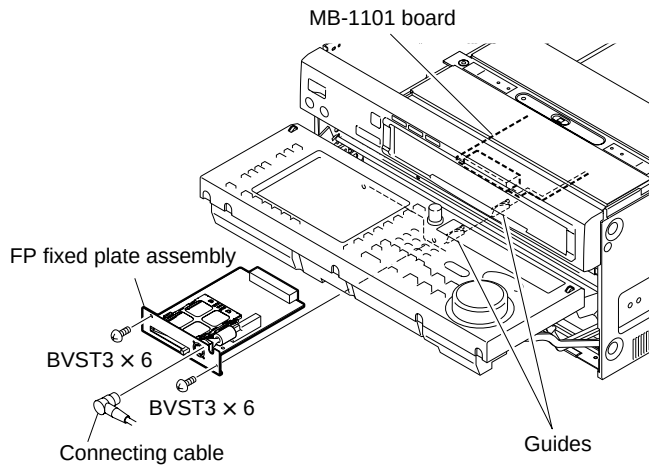
Install the Filter Case

5-30-12. FP-155/163 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly.
(Refer to Section 1-3-1.)
3. Remove the power supply unit.
(Refer to Section 5-24.)
4. Disconnect the DIO-86 board.
(Refer to Section 5-30-8.)
5. Open the lower control panel.
(Refer to Section 1-6.)
6. Disconnect the connecting cable of the control panel.
7. Remove the two screws fixing the FP fixed plate assembly.
8. Disconnect the FP fixed plate assembly from the MB-1101 board to pull out it from the chassis.

This figure shows the FP-155 board.



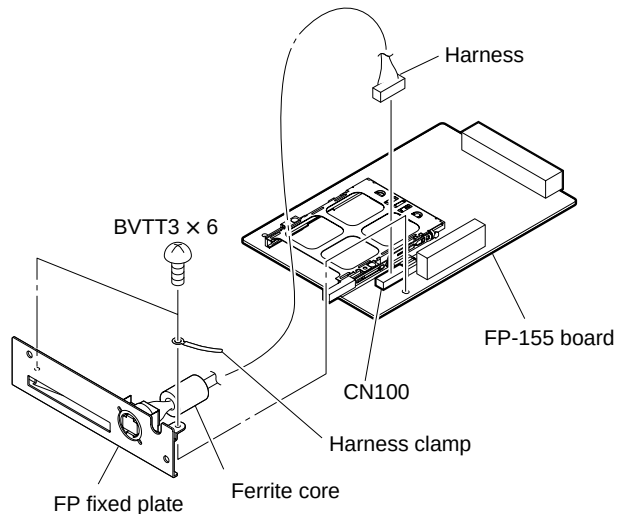
Remove the FP Fixed Plate Assembly

9. Release the harness clamp that clamps the ferrite core.
10. Disconnect the harness from the connector CN100 on the FP-155/163 board.
11. Remove the two screws to remove the FP fixed plate from the FP-155/163 board.
12. Perform the installation in the reverse order from steps 2 to 11.

Steps after Replacement

13. After replacing the FP-155/163 board, check the operation of the board.
(Refer to Section 1-26-15.)

This figure shows the FP-155 board.

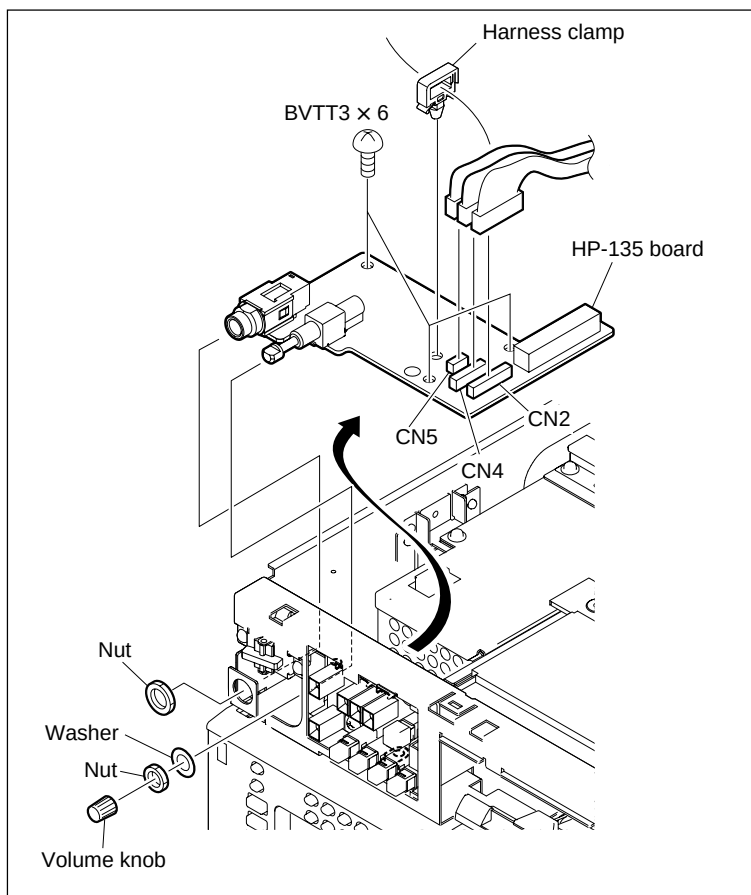


Remove the FP-155/163 Board

5-30-13. HP-135 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly.
(Refer to Section 1-3-1.)
3. Remove the left side panel and front panel.
(Refer to Section 1-3-3 and 1-3-4.)
4. Remove the DIO-86 board.
(Refer to Section 5-30-8.)
5. Remove the filter case
(Refer to Section 5-30-11.)
6. Release the harness clamp.
7. Disconnect the harnesses from the connectors CN2, CN4 and CN5 on the HP-135 board.
8. Remove the volume knob and the nuts (for fixing the headphone control and headphone jack.)
9. Remove the three screws and remove the HP-135 board.
10. Remove the harness clamp.
11. Reattach the harness clamp to a new HP-135 board.
12. Perform the installation in the reverse order from steps 2 to 9.



Remove the HP-135 Board

Steps after Replacement

13. Check if the headphone control functions.
(Refer to Section 1-26-18.)

5-30-14. KY-526G Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the control panel assembly.
(Refer to Section 1-6.)
3. Remove the rear cover.
(Refer to step 1 in Section 5-25.)
4. Remove the key panel assembly.
(Refer to Section 5-26-1.)
5. Remove the eight screws, and remove the insulator (KY) and KY-526G board from the key panel sub assembly.
6. Perform the installation in the reverse order from steps 1 to 5.

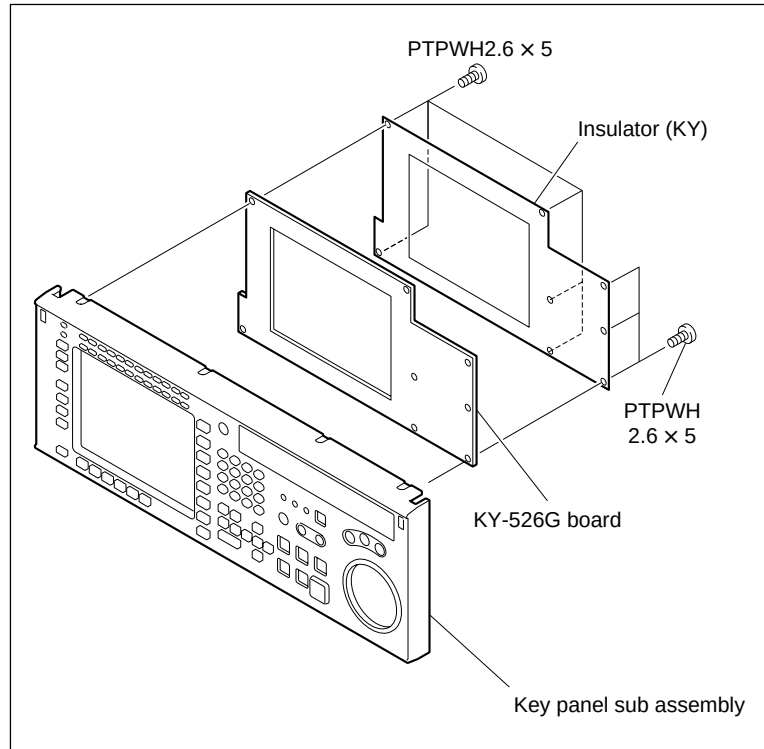
Note

Tighten the eight screws removed in step 5 as following torque.

Tightening torque: $46 \times 10^{-2} \text{ N}\cdot\text{m}$
{4.5 kgf•cm}

Steps after Replacement

7. Check the key operation.
(Refer to Section 3-3-3.)
F7 (KEY) of the PANEL MAINTENANCE menu



Replace the KY-526G Board

5-30-15. KY-527 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the control panel assembly.
(Refer to Section 1-6.)
3. Remove the CP-393 board.
(Refer to steps 3 to 8 in Section 5-30-3.)
Remove the CP-405 board.
(Refer to step 3 to 6 in Section 5-30-3.)
4. Remove the seven screws and remove the KY-527 board from the key panel frame in the arrow direction.
5. Perform the installation in the reverse order from steps 1 to 4.

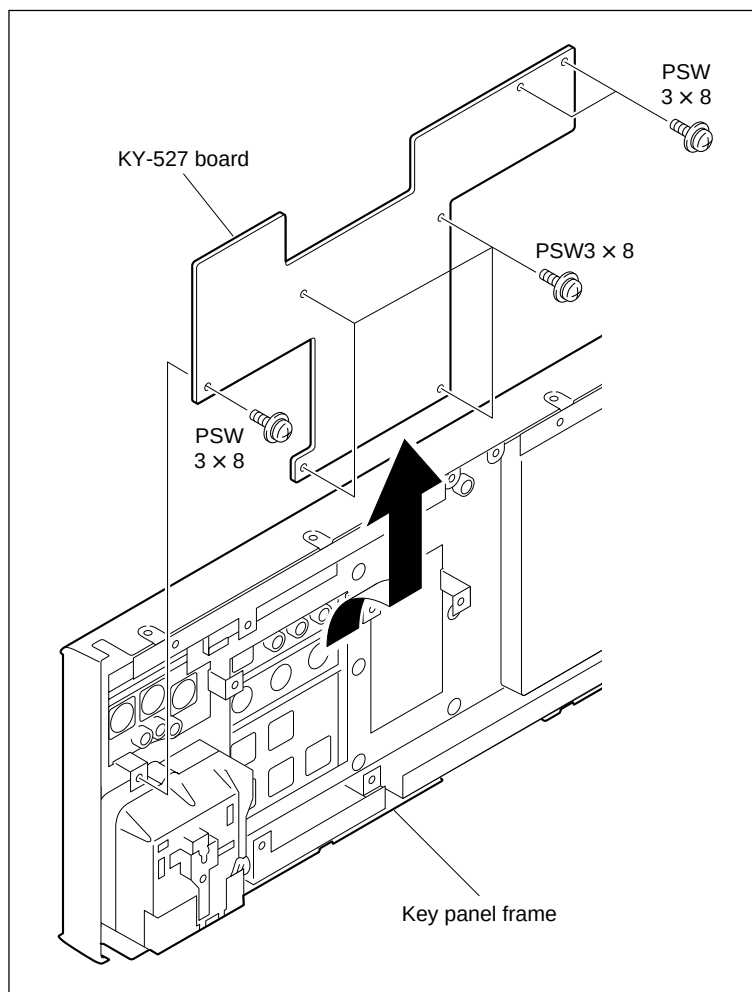
Note

Tighten the seven screws removed in step 4 as following torque.

Tightening torque: $80 \times 10^{-2} \text{ N}\cdot\text{m}$
{8.0 kgf•cm}

Steps after Replacement

6. Check the key operation.
(Refer to Section 3-3-3.)
F7 (KEY) of the PANEL MAINTENANCE menu



Replace the KY-527 Board

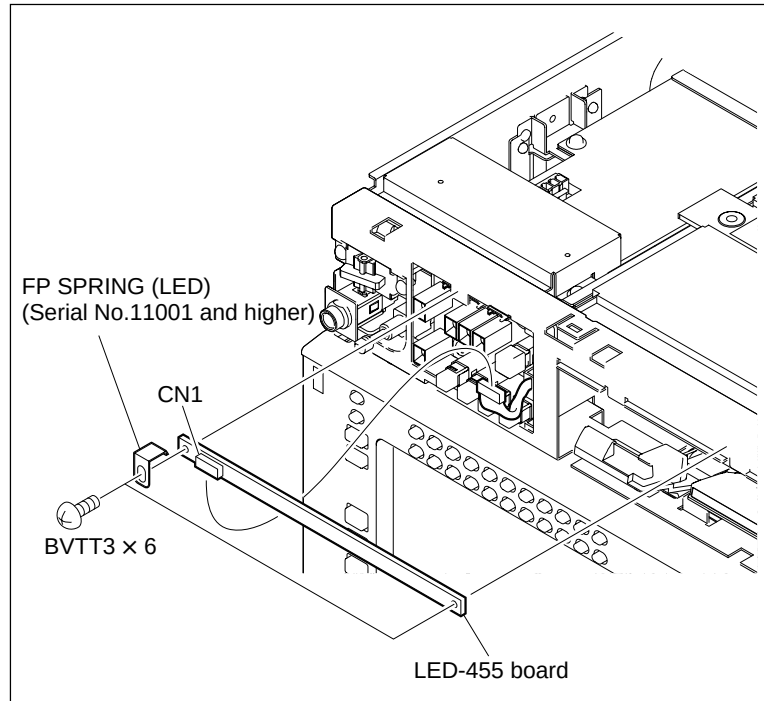
5-30-16. LED-455 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the front panel assembly.
(Refer to Section 1-3-4.)
3. Disconnect the harness from the connector CN1 on the LED-455 board.
4. Remove the two screws and the FP SPRING (LED) to remove the LED-455 board.
5. Perform the installation in the reverse order from steps 2 to 4.

Steps after Replacement

6. Confirm that the corresponding format lamp indicator will light up when the cassette tape recorded in each format is inserted.



Remove the LED-455 Board

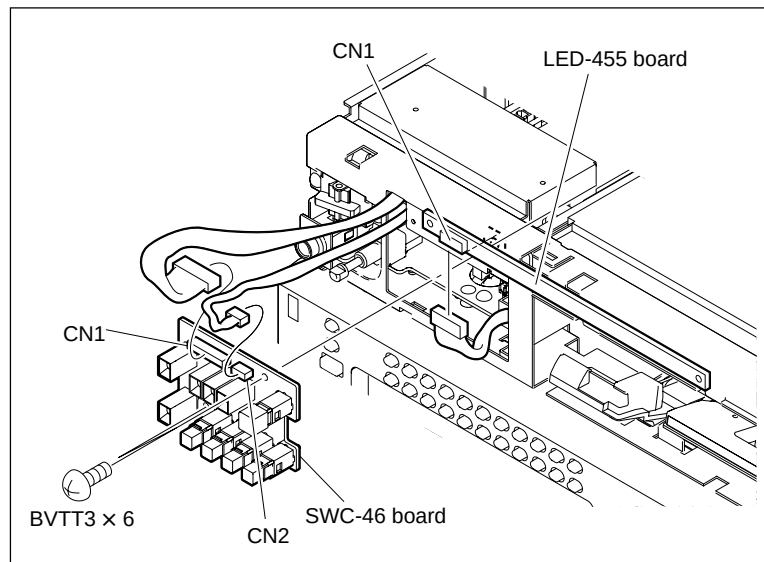
5-30-17. SWC-46 Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the front panel assembly.
(Refer to Section 1-3-4.)
3. Disconnect the harness from the connector CN1 on the LED-455 board.
4. Remove the two screws and remove the SWC-46 board.
5. Disconnect the harness from the connectors CN1 and CN2 on the SWC-46 board.
6. Perform the installation in the reverse order from steps 2 to 5.

Steps after Replacement

7. Check that the switches and indicators function normally.



Remove the SWC-46 Board

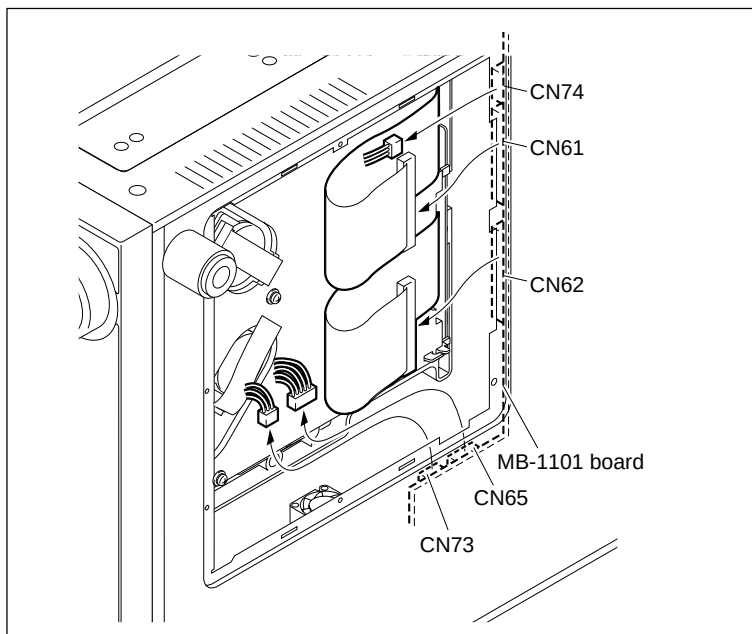
5-30-18. MB-1101 Board

Tool

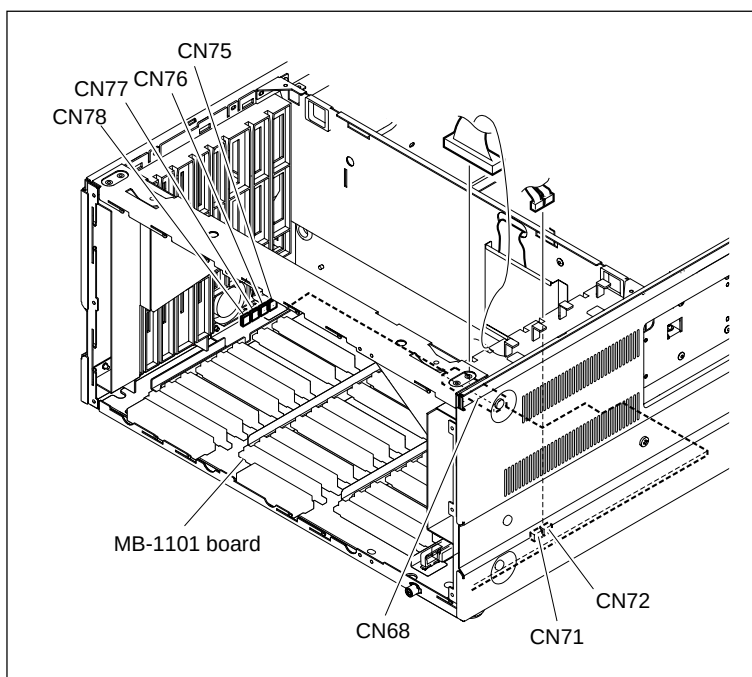
- Positioning pin setting tool: J-6605-770-A

Replacement

1. Turn the power off and disconnect the power cord.
2. Place the unit with its one side down to remove the bottom plate.
(Refer to Section 1-3-2.)
3. Disconnect the flat cables and harnesses from the connectors CN61, CN62, CN65, CN73, and CN74 on the MB-1101 Board.
4. Reattach the bottom plate temporarily.
5. Restore the unit to the original position.
6. Remove the upper lid (front) assembly and upper lid (rear) assembly.
(Refer to Section 1-3-1.)
7. Remove the power supply unit.
(Refer to Section 5-24.)
8. Remove the CUE-13 board.
(Refer to Section 5-30-7.)
9. Remove all the plug-in boards.
(Refer to Section 1-12.)
10. Remove the connector panel assembly.
(Refer to Section 1-4.)
11. Disconnect the harnesses from the connectors CN68, CN71, CN72, CN75, CN76, CN77 and CN78 on the MB-1101 board.

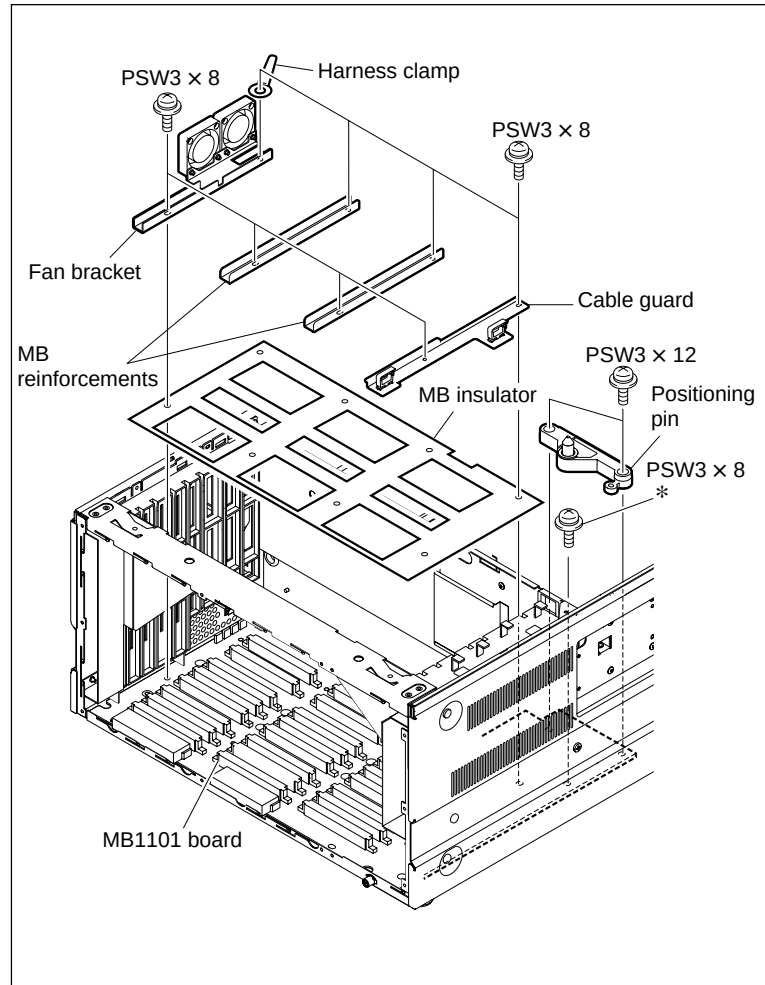


Disconnect the Flat Cables and Harnesses (1)



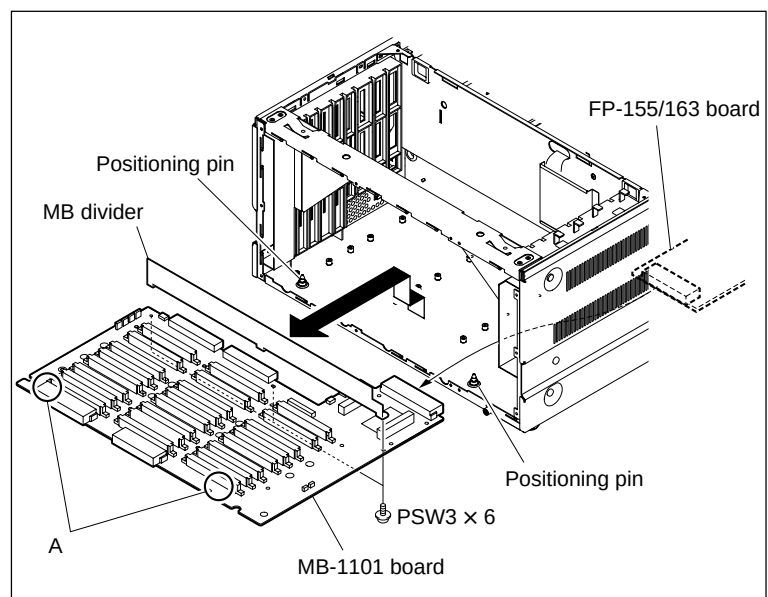
Disconnect the Harnesses (2)

12. Remove the screw (* mark).
13. Remove the two screws (PSW3 × 12) to remove the positioning pin.
14. Remove the eight screws (PSW3 × 8) to remove the fan bracket and harness clamp, MB reinforcements and cable guard.
(For the fan bracket, refer to Section 5-23-2.)



Remove the MB-1101 Board (1)

15. Slightly lift up the MB-1101 board at two A portions simultaneously, while removing the board from the positioning pins, slowly pull out the board until the connector connected to the FP-155/163 board is disconnected.
16. Pull out the MB-1101 board with the attention not to touch the board reverse side with the chassis.
17. Remove the three screws to remove the MB divider from the MB-1101 board.
18. Perform the installation in the reverse order from steps 14 to 17.

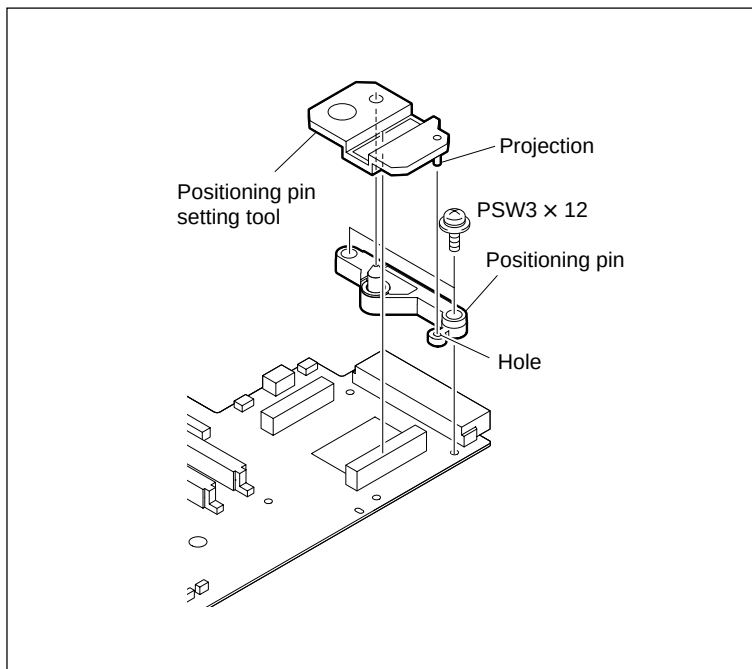


Remove the MB-1101 Board (2)

18. Fix the positioning pin temporarily with the two screws.
19. Insert the projection of the positioning pin setting tool into the hole of the positioning pin as shown in the figure.
20. Tighten the two screws.
21. Detach the positioning pin setting tool.
22. Perform the installation in the reverse order of steps 2 to 12.

Steps after Replacement

23. Check that the unit functions normally.



5-30-19. TC-104A/112A Board

Replacement

1. Turn the power off and disconnect the power cord.
2. Remove the upper lid (front) assembly. (Refer to Section 1-3-1.)
3. Remove the AE-31H board. (Refer to Section 5-30-1.)
4. Release the bundling band fixing the CTL harness.
5. Disconnect the harnesses from the connectors CN100, CN200, and CN300 on the TC-104A/112A board.

Note

When handling the harness connected to the AT head assembly (CN100), be sure not to apply the force to the AT head assembly. If the force is applied, perform the confirmation of the tape running at drum exit side. (Refer to Section 6-12-2.)

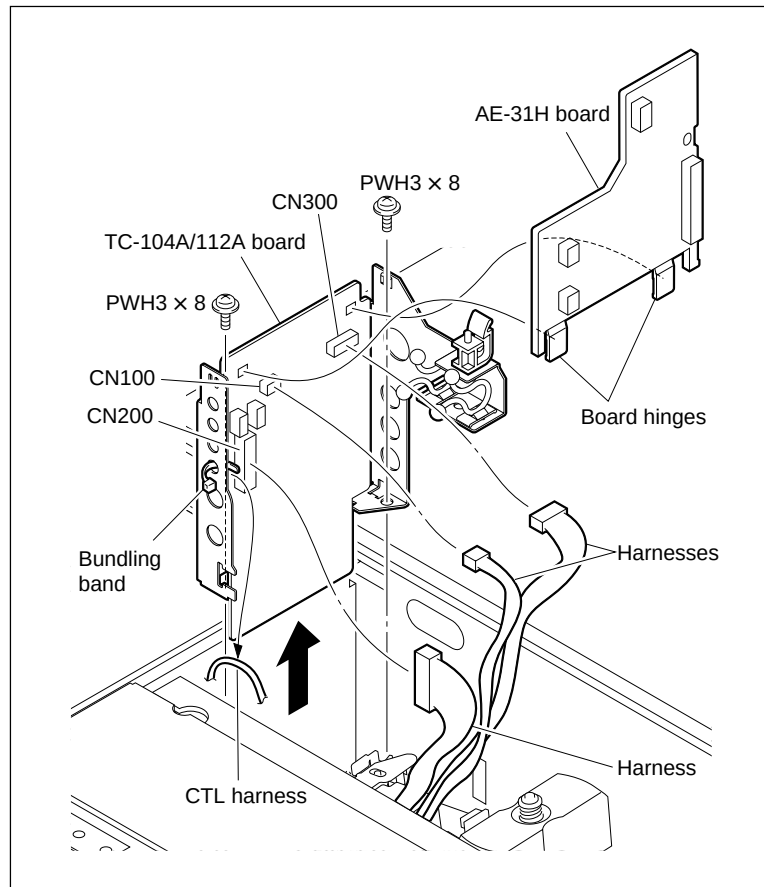
6. Remove the two screws fixing the TC-104A/112A board.
7. Remove the TC-104A/112A board from the MD base assembly.
8. Perform the installation in the reverse order from steps 2 to 7.

Note

Fix the CTL harness to the plate with a new bundling band (or equivalent) surely.

Steps after Replacement

9. Perform the LTC system and full erasure current adjustment. (Refer to Section 8-8.)



Remove the TC-104A/112A Board

Section 6

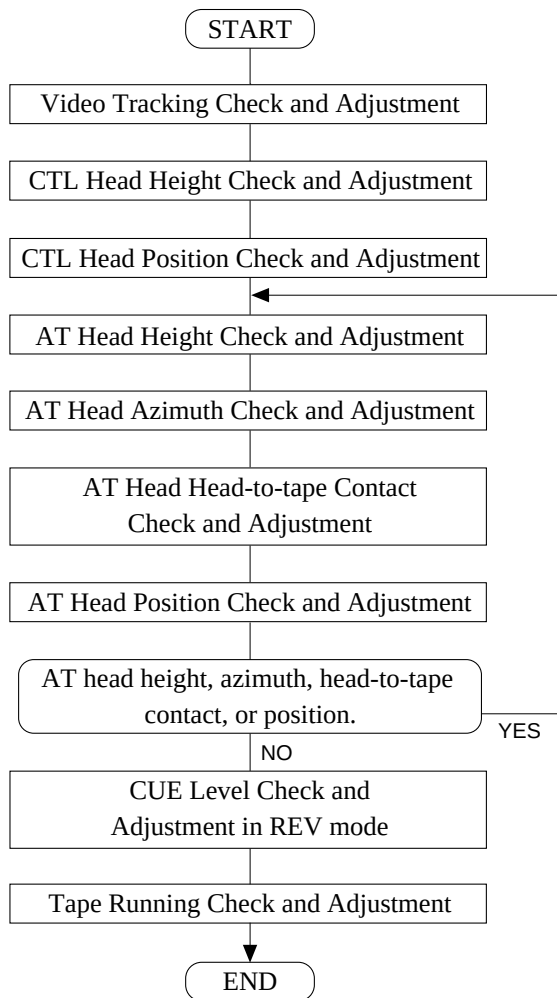
Tape Path Alignment

This section describes the checking and adjusting methods of the tape path system such as position, height, and slantness of tape guides and stationary heads.

6-1. Tape Path Adjustment Overview

This section describes the fundamental knowledge such as preparation prior knowledge to perform the tape path system check and adjustment.

6-1-1. Tape Path Adjustment Flow Chart



6-1-2. Precautions

- Perform the adjustments in the following system settings.

SYSTEM MODE : 1080

SYSTEM SCAN : Interlace

SYSTEM FRAME : 29.97 Hz

SYSTEM SIGNAL : 422 YPbPr

Adjustments are not necessary except for the above system settings.

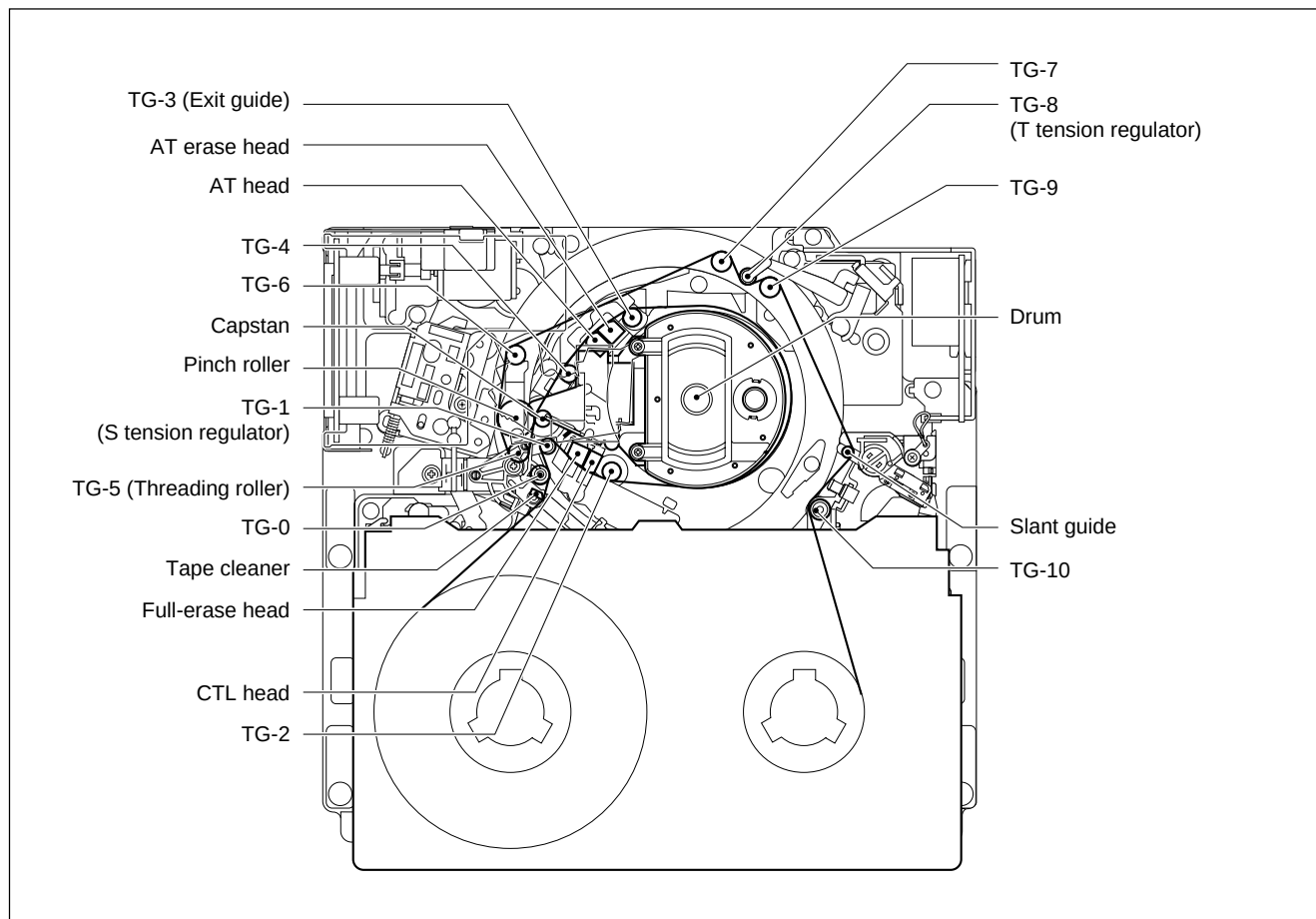
However, when the unit is usually used in the other SYSTEM FRAME, it is recommended to perform the tape path check in the usually used SYSTEM FRAME.

- The mechanism of the tape path system is composed of precision parts and adjusted precisely at shipment. During adjustments, do not rotate screws other than those specified. Rotating screws other than those specified will disable proper tape path adjustment and may result in abnormal tape-running performance. If screws that are not specified have been rotated accidentally, replace the whole block with a new one.
- Before replacing and loading a cassette tape or alignment tape with the cassette compartment removed, turn off the power of this unit once. When the unit has power applied to it and the reel motor is rotating slowly, the cassette tape cannot be inserted properly.

6-1-3. Parts Location of the Tape Path System

Following figure describes the names of each part of the tape path system.

It is illustrated in the threading end state. “TG” in the figure means the tape guide.



6-1-4. Cassette Compartment

- (1) The tape path adjustment should be performed under the state that the cassette compartment is removed. If not, some checks and adjustments may be impossible.
- (2) When the tape path adjustment is performed with the cassette compartment removed, the tape protection circuit is activated and the “ERROR” message may be displayed. In this case, turn the power off, then turn it on again.

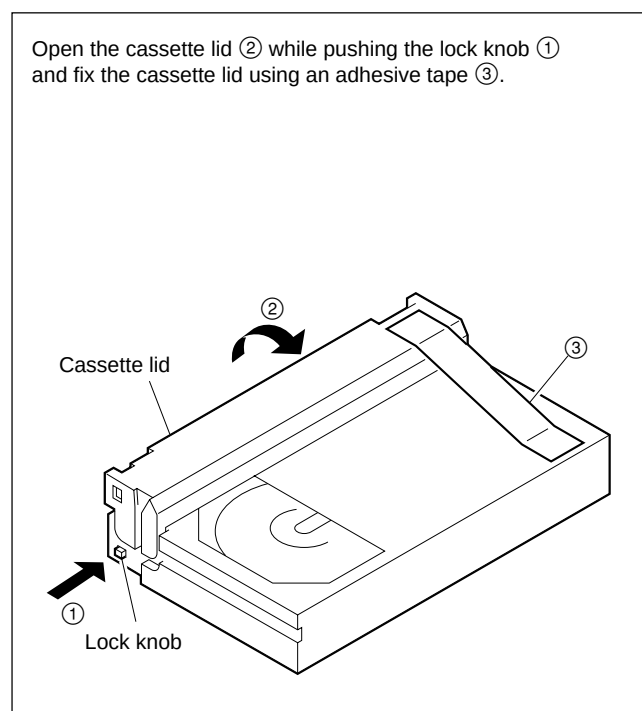
6-1-5. Cassette Tape

The tape path adjustment is performed after the cassette compartment removal. Then, it is necessary to make a modification to the cassette tape and alignment tape that are used for tape path adjustment as follows.

When setting the cassette tape or the alignment tape, align it to the cassette supports on the mechanical deck. And then, put a weight on the cassette so that it does not rise up. The weight about 1 kg is suitable.

Note

Never attempt to disassemble the cassette.

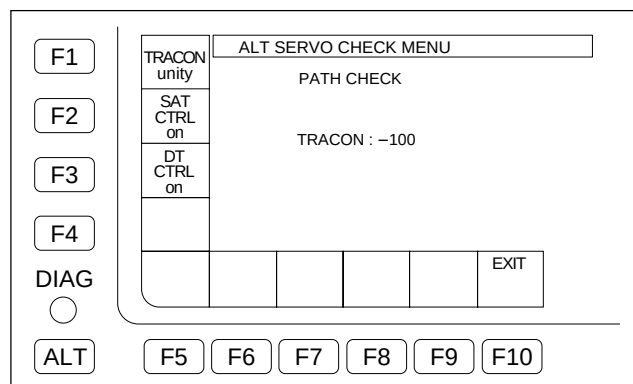


6-1-6. Tracking Control and HDCAM CUE Output

There are two methods to enable the tracking control in the playback mode, as shown in the following. Method (a) is recommended in this section to prevent the DIP switch from not being set to the previous setting after the adjustment.

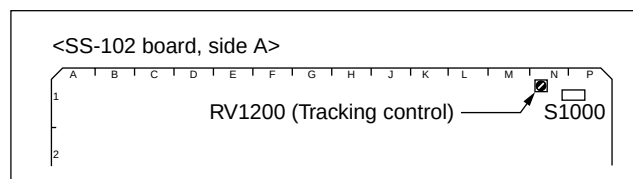
When the HKSR-5802 (DVP-board) is not installed, an HDCAM tape (and also Digital BETACAM tape) cannot run. However, the PATH Check menu described in (a) enables it.

- (a) Activate the ALT SERVO CHECK menu, and select the PATH CHECK menu. (Home menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** → PATH CHECK menu → **SET**)
- Press the **F1** (TRACON) key to change the setting from “off” to “unity”. The MULTI CONTROL knob is enabled as a tracking control. The sensitivity of the control can be changed each time the knob is pressed.



- (b) Set the Bit-1 of the DIP switch S1000 on the SS-102 board to ON (upper side).

The variable resistor RV1200 on the SS-102 board is enabled as a tracking control. After the adjustment, set the Bit-1 of S1000 to OFF (lower side) to fix the tracking control.



6-1-7. Preparation

- (1) Remove the cassette compartment. (Refer to Section 1-5.)
- (2) Remove the video head cleaner assembly. (Refer to Section 5-4.)

Note

If the video head cleaner assembly is attached, the tape-running condition may be difficult to check. Therefore, remove the video head cleaner assembly before checking.

- (3) Clean the following portions (Refer to Section 4-2):
 - Rotary heads (Section 4-2-3)
 - Tape-running surfaces of upper drum (Section 4-2-4)
 - Tape-running surface of lower drum and lead surface (Section 4-2-5)
 - Stationary heads (Section 4-2-6.)
 - Tape-running system and tape cleaner (Section 4-2-7)

6-1-8. Alignment Tapes

Alignment tapes for adjusting the tape path are listed below.

For the recording descriptions of each alignment tape, refer to Section 1-20.

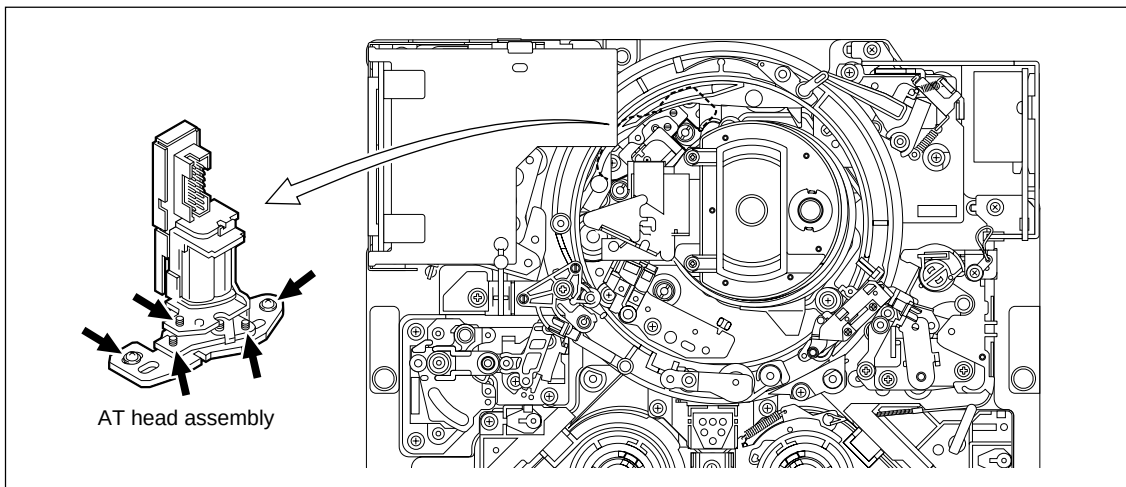
- HR2-1A (Part No. 8-960-076-11)
- HR2-1B (Part No. 8-960-076-41)
- HR5-1A (Part No. 8-960-076-01)
- HR5-1B (Part No. 8-960-076-31)
- ZR5-1 (Part No. 8-960-073-01)

6-1-9. Locking Compound

When loosening the following screws, apply the locking compound to the screws after adjustment is completed.

The locking compound that applied to other surrounding parts must be wiped off using gauze or soft cloth.

- Locking compound : 7-432-114-11



6-2. Video Tracking Check

Tools

- Alignment tapes HR2-1A: 8-960-076-11
HR2-1B: 8-960-076-41
HR5-1B: 8-960-076-31
- Recording tape (S cassette): BCT-40SR
- Oscilloscope (Tektronix TDS3054B or equivalent)
- Small mirror for adjustment (Round): J-6080-029-A
- Tape guide adjustment screwdriver (MW-261): J-6322-610-A

Note

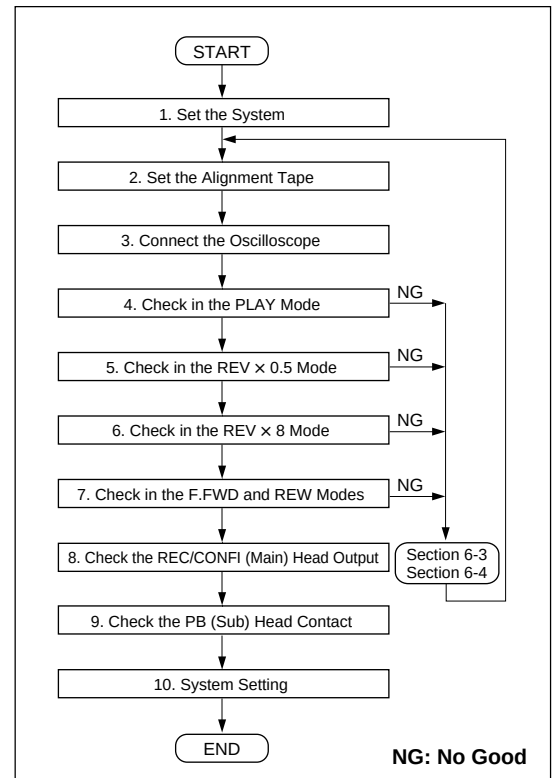
When checking video tracking, the RF envelope waveform (PLAY mode) should be made flat from the entrance to the exit. However it may not be completely flat in some cases. For such cases, there should be no problems only that the specifications are satisfied. Perform adjustments only when without the specifications.

System Setting

1. Set the System

- (1) Turn on the power, and display the SYSTEM menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[F9]** → SYSTEM menu)
(For the SYSTEM menu, refer to Section 3-3-9.)
- (2) Take notes of the customer settings for the following setting items.
- (3) Change the following setting items to the settings for adjustment.

Setting item	Setting for adjustment	Customer setting								
[F4] SYSTEM SIGNAL	4:2:2 (YPbPr)	☐ 4:2:2 (YPbPr)	☐ 4:2:2 3D (YPbPr)		☐ 4:4:4SQ (RGB)	☐ 4:4:4HQ (RGB)		☐ 4:4:4HQ (XYZ)		
[F1] SYSTEM MODE	1080	☐ 2K1080	☐ 1080	☐ 720	☐ DATA					
[F2] SYSTEM SCAN	Interlace	☐ Interlace		☐ PsF	☐ Progressive					
[F3] SYSTEM FRAME	29.97 Hz	☐ 23.98	☐ 24	☐ 25	☐ 29.97	☐ 30	☐ 50	☐ 59.94	☐ 60	
[F7] ACTIVE LINE	1080	☐ OFF	☐ 1080							



Video Tracking Check/Adjustment Flow Chart

Preparation

2. Set the Alignment Tape

- (1) Press the switch S1201 on the SS-102 board during power-on to set the reel tables to the S cassette position.
(Refer to Section 5-1-3.)
- (2) Turn off the power.
- (3) Set the alignment tape HR2-1B and put a weight (about 1 kg) onto it.

3. Connect the Oscilloscope

Connect the oscilloscope as follows:

CH-1: TP902/EQ-102, 109 board (SAT ENV signal)

CH-2: TP616/EQ-102, 109 board (SAT SWP signal)

TRIG: TP502/SS-102 board (REF signal)

Oscilloscope setting:

CH-1: 100 mV to 300 mV/DIV

CH-2: 5 V/DIV

TIME: 1 ms/DIV

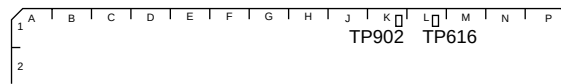
• Connection of the oscilloscope

CH-1: TP902/EQ-102, 109 board (SAT ENV signal)

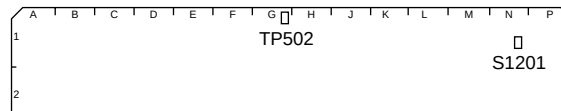
CH-2: TP616/EQ-102, 109 board (SAT SWP signal)

TRIG: TP502/SS-102 board (REF signal)

<EQ-102/109 board, side A>



<SS-102 board, side A>



Preparation

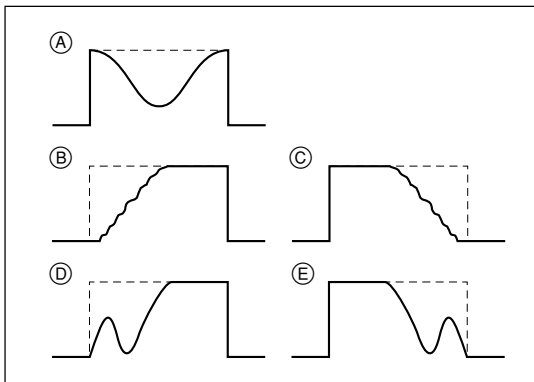
Check

4. Check in the PLAY Mode

- Play back the alignment tape HR2-1B (00:00 to 20:00) in the PLAY mode.

Note

- If extremely abnormal RF envelope waveform is output after replacing the drum assembly, remove and reattach the drum assembly. (Refer to Section 5-2.)



No Good examples of RF envelope waveform

- Activate the ALT SERVO CHECK menu, and display the PATH CHECK menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** → PATH CHECK menu → **SET**)
- Press the **F1** (TRACON) key to select the unity.
- Press the **F2** (SAT CTRL) key to select the off.
- Rotate the tracking knob (MULTI CONTROL knob) clockwise to set the center of the RF envelope waveform (SAT ENV signal) to 80 % of the maximum output level.
- In the step (5) state, check to see that the RF envelope waveform satisfies specification 1.

Note

If the level fluctuates, read the average value.

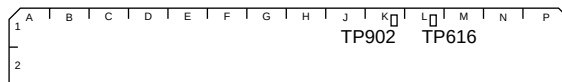
- If the level fluctuates, rotate the tracking knob (MULTI CONTROL knob) to maximize the output level at the center of the RF envelope waveform, and check that the fluctuation amount satisfies specification 2.

If specifications 1 and 2 are not satisfied, perform the adjustment in the Section 6-3 (Drum Entrance Side) or Section 6-4 (Drum Exit Side).

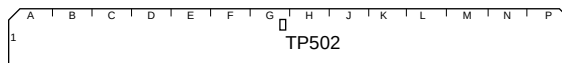
- Connection of the oscilloscope

CH-1 : TP902/EQ-102, 109 board (SAT ENV signal)
CH-2 : TP616/EQ-102, 109 board (SAT SWP signal)
TRIG : TP502/SS-102 board (REF signal)

<EQ-102/109 board, side A>

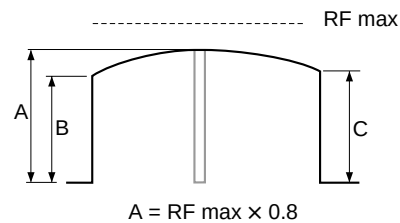


<SS-102 board, side A>



- Alignment tape : HR2-1B (00:00 to 20:00)
ALT SERVO CHECK MENU/PATH CHECK
TRACON : unity(Tracking control : Enabled)
SAT CTRL : off

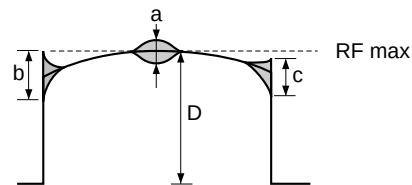
<Head-to-tape contact> CH-1 : TP902/EQ-102, 109 board



Spec.1 : Output levels (B and C) at the drum entrance side and exit side are more than 70 % of the center level (A).

$$\frac{B}{A} \times 100 \geq 70 \% \quad \frac{C}{A} \times 100 \geq 70 \%$$

<Fluctuation> CH-1 : TP902/EQ-102, 109 board



Spec.2 : Fluctuation amounts of the output levels (a, b, c) at the drum center portion, entrance side and exit side are less than 20 % of the average maximum level (D).

$$\frac{a}{D} \times 100 \leq 20 \% \quad \frac{b}{D} \times 100 \leq 20 \% \quad \frac{c}{D} \times 100 \leq 20 \%$$

Video Tracking Check (PLAY)

5. Check in the REV × 0.5 Mode

- (1) Play back the alignment tape HR2-1B (00:00 to 20:00).
- (2) Set the REV × 0.5 mode, and check that the RF envelope waveform satisfies specification 3.

If the waveform at the entrance is without the specification 3, adjust tracking at the drum entrance. (Refer to Section 6-3.)

If the waveform at the exit is NG (No Good), adjust the height of TG-5 first.

Note

Adjusting the height of TG-5

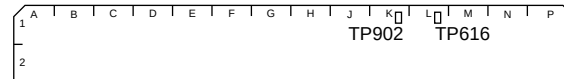
Be sure to make an adjustment within the height where no tape curl occur at upper and lower flanges.

If the specification is still not satisfied, adjust tracking at the drum exit. (Refer to Section 6-4.)

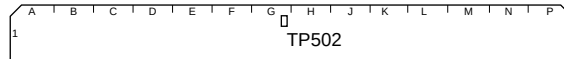
- Connection of the oscilloscope

CH-1 : TP902/EQ-102, 109 board (SAT ENV signal)
CH-2 : TP616/EQ-102, 109 board (SAT SWP signal)
TRIG : TP502/SS-102 board (REF signal)

<EQ-102/109 board, side A>



<SS-102 board, side A>

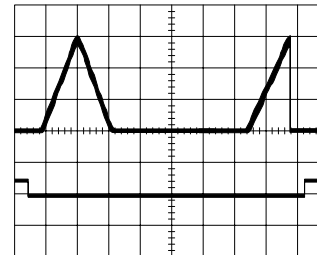


- Alignment tape : HR2-1B (00:00 to 20:00)

(OK)

CH-1 : TP902
/EQ-102, 109 board
(SAT ENV)

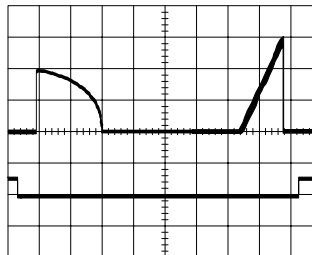
CH-2 : TP616
/EQ-102, 109 board
(SAT SWP)



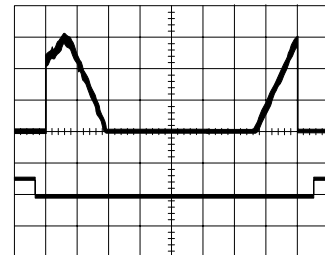
Spec.3 : Waveforms appear with no lacking.
Uniform waveforms without variation.

- In the case of the drum entrance side is NG (Example) :

(NG)

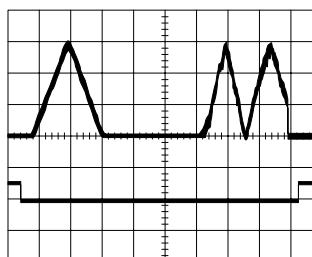


(NG)

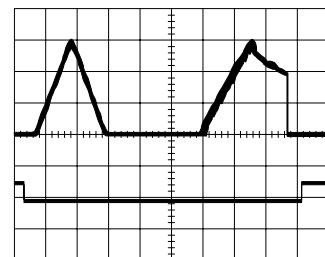


- In the case of the drum exit side is NG (Example) :

(NG)

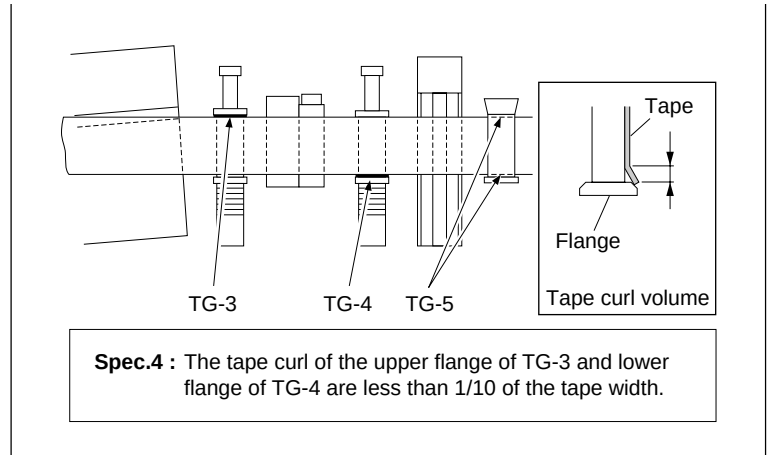


(NG)



- (3) Also check that the tape is running with maintaining the state of the specification 4.

When the specification 4 is not satisfied, adjust the tracking at drum exit. (Refer to Section 6-4.)



Video Tracking Check (REV x 0.5)

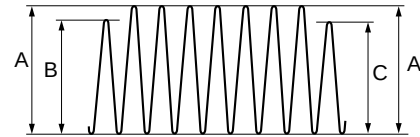
6. Check in the REV × 8 Mode

- (1) Play back the HR2-1B (00:00 to 20:00).
- (2) Set the REV × 8 mode, and check that the RF envelope waveform (SAT ENV signal) satisfies specification 5.

If specification 5 is not satisfied, perform the adjustment in the Section 6-3 (Drum Entrance Side) or Section 6-4 (Drum Exit Side).

- Alignment tape : HR2-1B (00:00 to 20:00)

CH-1 : TP902
/EQ-102, 109 board
(SAT ENV)



Spec.5 : Output levels (B and C) at the drum entrance side and exit side are more than 70 % of the center level (A).

$$\frac{B}{A} \times 100 \geq 70 \% \quad \frac{C}{A} \times 100 \geq 70 \%$$

Video Tracking Check (REV × 8)

7. Check in the F.FWD and REW Modes

- (1) Connect the oscilloscope as follows:
CH-1: TP1206/EQ-102, 109 board (CA25 ENV signal)
CH-2: TP1406/ EQ-102, 109 board (PA25 ENV signal)
TRIG: TP608/ EQ-102, 109 board (CA25 SWP signal)
Oscilloscope setting
CH-1: 100 to 300 mV/DIV
CH-2: 100 to 300 mV/DIV
TIME: 2 ms/DIV
- (2) Play back the HR2-1B (00:00 to 20:00).
- (3) Set the F.FWD mode, and check that the RF envelope waveform (CA25 ENV signal) of the CH-1 satisfies specification 6.
- (4) Set the REW mode, and check that the RF envelope waveform of the CH-1 satisfies specification 6.
- (5) Set the F.FWD mode, and check that the RF envelope waveform (PA25 ENV signal) of the CH-2 satisfies specification 6.
- (6) Set the REW mode, and check that the RF envelope waveform of the CH-2 satisfies specification 6.

If specification 6 is not satisfied, connect the oscilloscope as follows and perform the adjustment in the Section 6-3 (Drum Entrance Side) or Section 6-4 (Drum Exit Side).

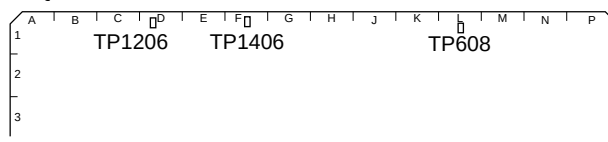
CH-1: TP902/EQ-102, 109 board (SAT ENV signal)
CH-2: TP616/ EQ-102, 109 board (SAT SWP signal)
TRIG: TP502/SS-102 board (REF signal)
Oscilloscope setting
CH-1: 100 to 300 mV/DIV
CH-2: 5V/DIV
TIME: 1 ms/DIV

- (7) Turn off the power, and remove the HR2-1B.

- Connection of the oscilloscope

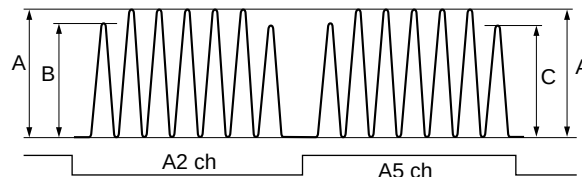
CH-1 : TP1206/EQ-102, 109 board (CA25 ENV signal)
CH-2 : TP1406/EQ-102, 109 board (PA25 ENV signal)
TRIG : TP608/EQ-102, 109 board (CA25 SWP signal)

<EQ-102/109 board, side A>



- Alignment tape : HR2-1B (00:00 to 20:00)

CH-1 : TP1206/EQ-102, 109 board
CH-2 : TP1406/EQ-102, 109 board
TRIG : TP608/EQ-102, 109 board



Spec.6 : Output levels (B and C) at the drum entrance side and exit side are more than 70 % of the center level (A).

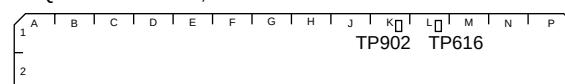
$$\frac{B}{A} \times 100 \geq 70 \% \quad \frac{C}{A} \times 100 \geq 70 \%$$

Video Tracking Check (F.FWD, REW)

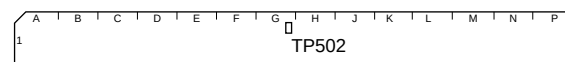
- Connection of the oscilloscope

CH-1 : TP902/EQ-102, 109 board (SAT ENV signal)
CH-2 : TP616/EQ-102, 109 board (SAT SWP signal)
TRIG : TP502/SS-102 board (REF signal)

<EQ-102/109 board, side A>



<SS-102 board, side A>



Oscilloscope Connection (Spec.6 is NG)

8. Check the REC/CONFI (Main) Head Output

- (1) Connect the oscilloscope as follows:

CH-1: TP1006/EQ-102, 109 board
(CA14 ENV signal)

CH-2: TP1002/EQ-102, 109 board
(CB14 ENV signal)

TRIG: TP608/EQ-102, 109 board
(CA25 SWP signal)

Oscilloscope setting:

CH-1: 100 to 300 mV/DIV

CH-2: 100 to 300 mV/DIV

TIME: 2 ms

- (2) Set the recording tape BCT-40SR and put a weight (about 1 kg) onto it.
- (3) Turn on the power.
- (4) While holding down the PLAY button, press the REC button to set the recording mode.
- (5) Check that the RF envelope waveform is output from CH-1 and CH-2 during recording as shown in the figure and that specification 8 is satisfied.
- (6) Change the connections of the CH-1 and CH-2, and repeat steps (3) to (5) for the other CONFI head.
- CH-1: TP1206/EQ-102, 109 board
(CA25 ENV signal)
TP1606/EQ-102, 109 board
(CA36 ENV signal)
- CH-2: TP1202/EQ-102, 109 board
(CB25 ENV signal)
TP1602/EQ-102, 109 board
(CB36 ENV signal)
- (7) Turn off the power, and remove the recording tape.

- Connection of the oscilloscope

CH-1: TP1006/EQ-102, 109 board (CA14 ENV signal)

TP1206/EQ-102, 109 board (CA25 ENV signal)

TP1606/EQ-102, 109 board (CA36 ENV signal)

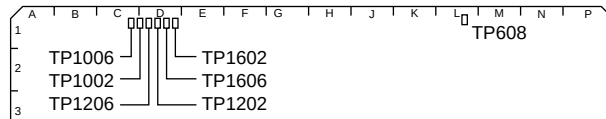
CH-2: TP1002/EQ-102, 109 board (CB14 ENV signal)

TP1202/EQ-102, 109 board (CB25 ENV signal)

TP1602/EQ-102, 109 board (CB36 ENV signal)

TRIG: TP608/EQ-102, 109 board (CA25 SWP signal)

<EQ-102/109 board, side A>



<CONFI output waveform>

CH-1: TP1006/EQ-102, 109 board (CA14 ENV)

TP1206/EQ-102, 109 board (CA25 ENV)

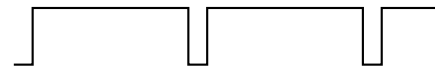
TP1606/EQ-102, 109 board (CA36 ENV)



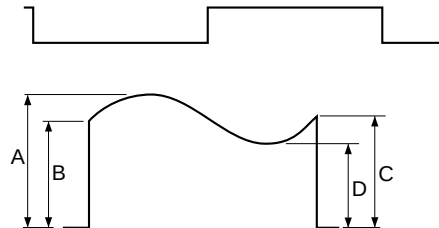
CH-2: TP1002/EQ-102, 109 board (CB14 ENV)

TP1202/EQ-102, 109 board (CB25 ENV)

TP1602/EQ-102, 109 board (CB36 ENV)



TRIG: TP608/EQ-102, 109 board (CA25 SWP)



Spec.8 : The whole RF envelope waveform should be 70 % output or more than the maximum level.

$$\frac{B}{A} \times 100 \geq 70 \% \quad \frac{C}{A} \times 100 \geq 70 \% \quad \frac{D}{A} \times 100 \geq 70 \%$$

B, C, and D are the output levels at rising edge, falling edge, and minimum level of the waveform, respectively.

REC/CONFI (Main) Head Output Check

9. Check the PB (sub) Head Contact

- (1) Turn off the power.
- (2) Set the alignment tape HR5-1B and put a weight (about 1 kg) onto it.
- (3) Play back the HR5-1B in the PLAY mode.
- (4) Activate the ALT SERVO CHECK menu, and display the PATH CHECK menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** → PATH CHECK menu → **SET**)
- (5) Press the **F1** (TRACON) key to select the unity.
- (6) Rotate the tracking knob (MULTI CONTROL knob) clockwise to maximize the RF envelope waveform A1/A4 of the CH-1.
CH-1: TP2006/EQ-102, 109 board (PA14 ENV signal)
TRIG: TP608/ EQ-102, 109 board (CA25 SWP signal)
- (7) Check that the RF envelope waveform of the CH-1 satisfy the specification 7.
- (8) Change the CH-1 connection of the oscilloscope to the follows, and repeat steps (5) to (7) for all signals.

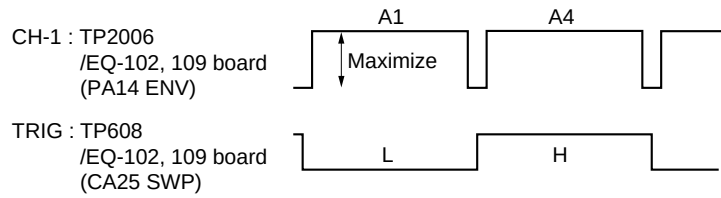
CH-1: TP2006/EQ-102, 109 board (PA14 ENV signal)
 TP2002/EQ-102, 109 board (PB14 ENV signal)
 TP1406/EQ-102, 109 board (PA25 ENV signal)
 TP1402/EQ-102, 109 board (PB25 ENV signal)
 TP1806/EQ-102, 109 board (PA36 ENV signal)
 TP1802/EQ-102, 109 board (PB36 ENV signal)

- (9) Turn off the power, and remove the HR5-1B.

10. System Setting

- (1) Turn on the power.
- (2) Return the SYSTEM menu setting to the customer setting noted down in (2) of step 1.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F9** → SYSTEM menu)

- Alignment tape : HR5-1B
 ALT SERVO CHECK MENU/PATH CHECK
 TRACON : unity (Tracking control : Enabled)
 SAT CTRL : on



Spec.7 : The whole RF envelope waveform should be 70 % output or more than the maximum level.

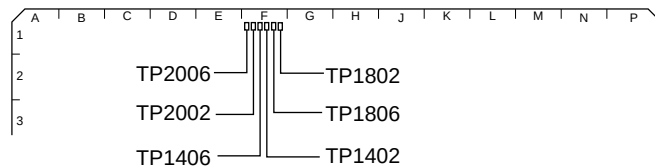
$$\frac{B}{A} \times 100 \geq 70 \% \quad \frac{C}{A} \times 100 \geq 70 \% \quad \frac{D}{A} \times 100 \geq 70 \%$$

B, C, and D are the output levels at rising edge, falling edge, and minimum level of the waveform, respectively.

- Oscilloscope

CH-1: TP2006/EQ-102, 109 board (PA14 ENV signal)
 TP2002/EQ-102, 109 board (PB14 ENV signal)
 TP1406/EQ-102, 109 board (PA25 ENV signal)
 TP1402/EQ-102, 109 board (PB25 ENV signal)
 TP1806/EQ-102, 109 board (PA36 ENV signal)
 TP1802/EQ-102, 109 board (PB36 ENV signal)

<EQ-102/109 board, A side>



PB (sub) Head Contact Check

6-3. Tracking Adjustment at the Drum Entrance Side

This adjustment should be performed when the specifications have not been satisfied in Section 6-2 (steps 4, 5, 6, and 7.)

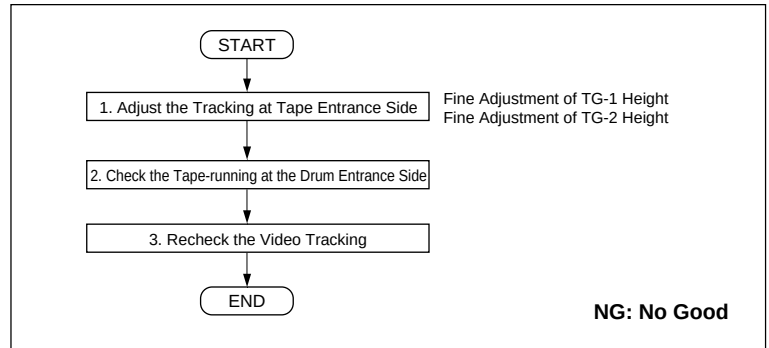
If you start the operation from this adjustment, perform the settings in the Sections 6-1-6, 6-1-7 and 6-2 (steps 2 and 3) first.

Note

In the video tracking adjustment, the RF envelope waveform should be made flat to the entrance and exit. However it may not be completely flat in some cases. For such cases, there should be no problems only that the specifications are satisfied. Perform adjustments paying attention to the followings:

- Perform only the adjustment indicated.
- Do not rotate screws other than those specified in the adjustments.

Take note that performing adjustments other than those required for making the RF envelope waveform flat may result in damages such as abnormal wear of mechanism parts and accompanying deterioration of electrical characteristics.



Flow Chart of Tracking Adjustment at the Drum Entrance Side

1. Adjust the Tracking at the Drum Entrance Side

- (1) Connect the oscilloscope as follows:
CH-1 : TP902/EQ-102, 109 board (SAT ENV signal)
TRIG : TP502/SS-102 board (REF signal)
Oscilloscope setting:
CH-1 : 100 to 300 mV/DIV
TIME : 1 ms/DIV
- (2) Activate the ALT SERVO CHECK menu, and display the PATH CHECK menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** → PATH CHECK menu → **SET**)
- (3) Press the **F1** (TRACON) key to select the unity.
- (4) Press the **F2** (SAT CTRL) key to select the off.
- (5) Play back the alignment tape HR2-1B (00:00 to 20:00) in the PLAY mode.
- (6) Rotate the tracking knob (MULTI CONTROL knob) clockwise to set the center of the RF envelope waveform (SAT ENV signal) to 80 % of the maximum output level.
- (7) Loosen the height adjustment nut of TG-2 (rotate it counterclockwise) so that the tape does not contact the upper flange. (Fig. 1)
- (8) Rotate the height adjustment nut of TG-1 to make the RF envelope waveform as shown in Fig. 2.
- (9) Rotate the height adjustment nut of TG-2 clockwise to adjust the height of TG-2 until the waveform satisfies the specification 9. (Fig. 3)

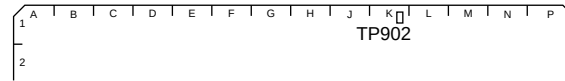
If the waveform does not satisfy the specification (does not become flat), perform the following adjustment (① and ②), and return to step (6).

- ① Clean the lower drum lead with a wooden stick. (Refer to Section 4-2-5.)
- ② While running the tape, press the tape lightly with the wooden stick and check that the tape does not float from the lead.

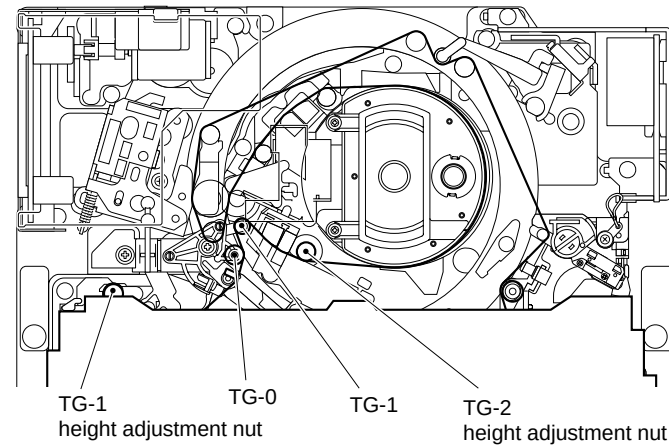
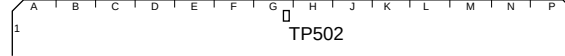
- Connection of the oscilloscope

CH-1 : TP902/EQ-102, 109 board (SAT ENV signal)
TRIG : TP502/SS-102 board (REF signal)

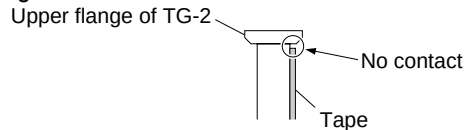
<EQ-102/109 board, side A>



<SS-102 board, side A>

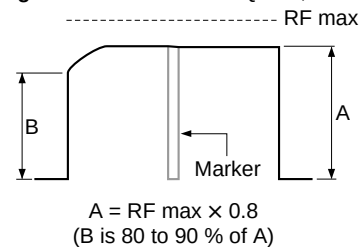


<Fig.1>



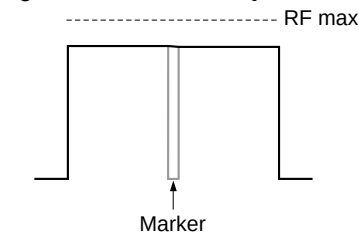
- Alignment tape : HR2-1B (00:00 to 20:00)
ALT SERVO CHECK MENU/PATH CHECK
TRACON : unity (Tracking control : Enabled)
SAT CTRL : off

<Fig.2> CH-1 : TP902/EQ-102, 109 board



If the pressure against the tape at TG-1 is too much, the waveform becomes as shown in the upper figure. (NG)

<Fig.3> CH-1 : TP902/EQ-102, 109 board



If the pressure against the tape at TG-2 is too much, the waveform becomes as shown in the upper figure. (NG)

Spec.9 : The RF envelope waveform is flat.

Tracking Adjustment at Drum Entrance Side (PLAY)

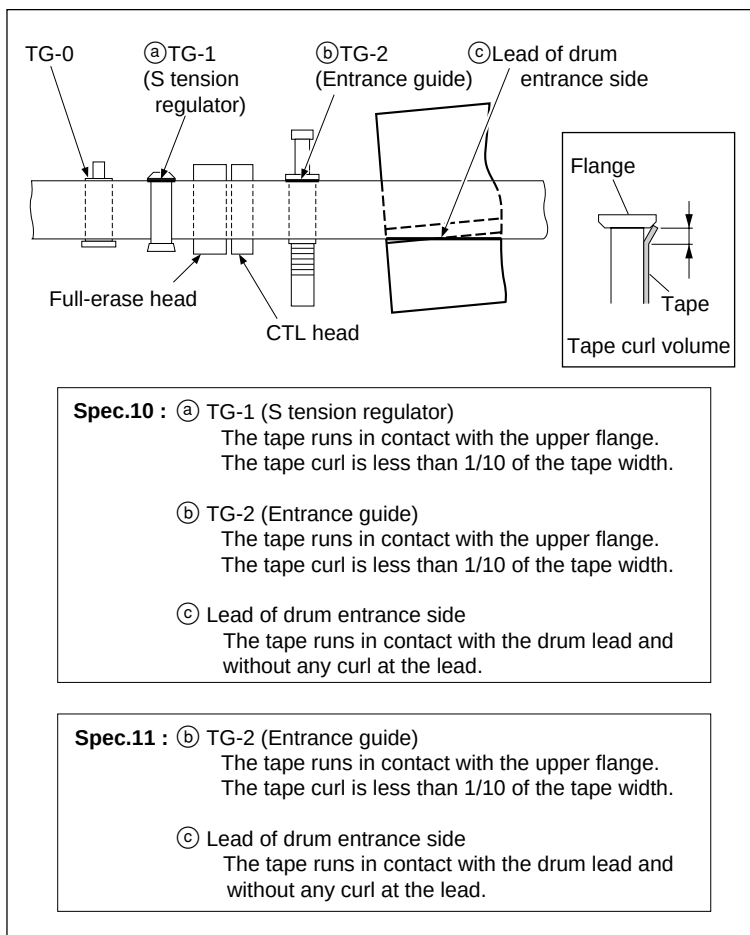
2. Check the Tape-running at the Drum Entrance Side

- (1) Set the HR2-1B and put a weight (about 1 kg) onto it.
- (2) Turn on the power.
- (3) Check the tape-running at the drum entrance side in each of the following modes:
 - PLAY mode
 - F.FWD mode

If the curl of any of the tape guides does not satisfy specification 10, perform the adjustment (2) of step 1 and later again.

- (4) Check the tape-running at the drum entrance in each of the following modes:
 - REW mode
 - REV $\times$ 8 mode
 - REV $\times$ 0.5 mode
 - REV $\times$ 1/30 mode

If the curl of any of the tape guides does not satisfy specification 11, perform the adjustment (2) of step 1 and later again.



Tape-running Check at the Drum Entrance Side

3. Recheck the Video Tracking

Perform steps from 4 to 10 in Section 6-2.

Note

After the adjustment, be sure to set Bit-1 of the DIP switch S1000 on the SS-102 board to OFF (lower side).

6-4. Tracking Adjustment at the Drum Exit Side

This adjustment should be performed when the specifications have not been satisfied in Section 6-2 (steps 4, 5, 6, and 7.)

If you start the operation from this adjustment, perform the settings in the Sections 6-1-6, 6-1-7 and 6-2 (steps 2 and 3) first.

Note

In the video tracking adjustment, the RF envelope waveform should be made flat from the entrance to the exit. However it may not be completely flat in some cases. For such cases, there should be no problems only that the specifications are satisfied. Perform adjustments paying attention to the following:

- Perform only the adjustment indicated.
- Do not rotate screws other than those specified in the adjustments.

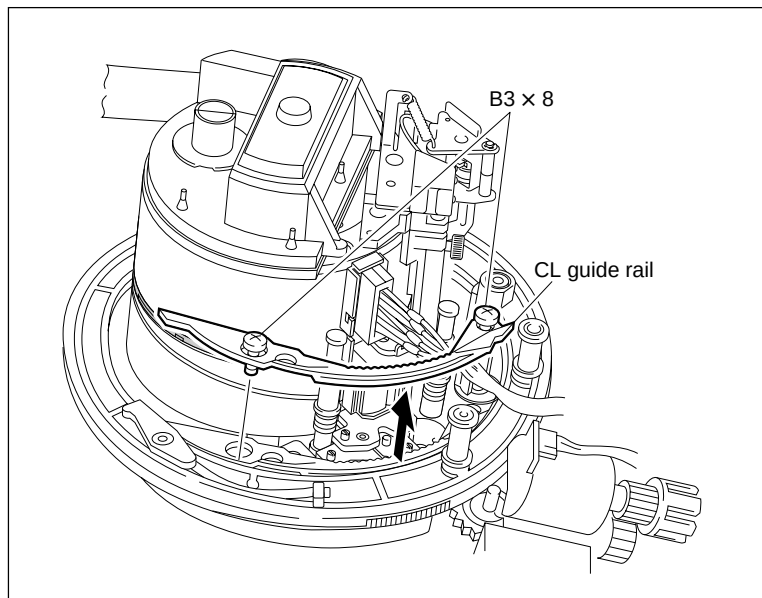
Take note that performing adjustments other than those required for making the RF envelope waveform flat may result in damages such as abnormal wear of mechanism parts and accompanying deterioration of electrical characteristics.

1. Remove the CL Guide Rail

- (1) Turn off the power.
- (2) Fully loosen the two screws to remove the CL guide rail.

Notes

- When removing the CL guide rail, be careful not to damage the tape.
- Do not pull out the screws because the screw holes on the CL guide rail are shaped in such a way to prevent screws from falling.



CL Guide Rail Removal

2. Adjust the Tracking at the Drum Exit Side

- (1) Connect the oscilloscope as follows:
 CH-1 : TP902/EQ-102, 109 board (SAT ENV signal)
 CH-2 : TP1206/EQ-102, 109 board (CA25 ENV signal)
 TRIG : TP502/SS-102 board (REF signal)
 Oscilloscope setting:
 CH-1 : 100 to 300 mV/DIV
 CH-2 : 100 to 300 mV/DIV
 TIME : 1 ms/DIV
- (2) Activate the ALT SERVO CHECK menu, and display the PATH CHECK menu.
 (HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** → PATH CHECK menu → **SET**)
- (3) Press the **F1** (TRACON) key to select the unity.
- (4) Press the **F2** (SAT CTRL) key to select the off.
- (5) Play back the alignment tape HR2-1B (00:00 to 20:00) in the PLAY mode.
- (6) Rotate the tracking knob (MULTI CONTROL knob) to set the center of the RF envelope waveform (SAT ENV signal) to the maximum output level.
- (7) Turn the height adjustment nut of TG-3 counterclockwise by one to two turns so that the tape does not contact the upper flange of TG-3.

Note

Don't turn excessively the nut, or the tape bottom edge contacts the lower flange of TG-3.

- (8) Turn the height adjustment nut of TG-4 clockwise so that the tape does not contact the lower flange of TG-4.
- (9) Check that the RF envelope waveform (CA25 ENV signal) satisfies the specification 12. (Fig. 1)

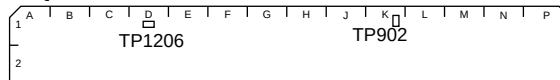
If the specification 12 is satisfied, go to the step (11).

If not, go to the step (10).

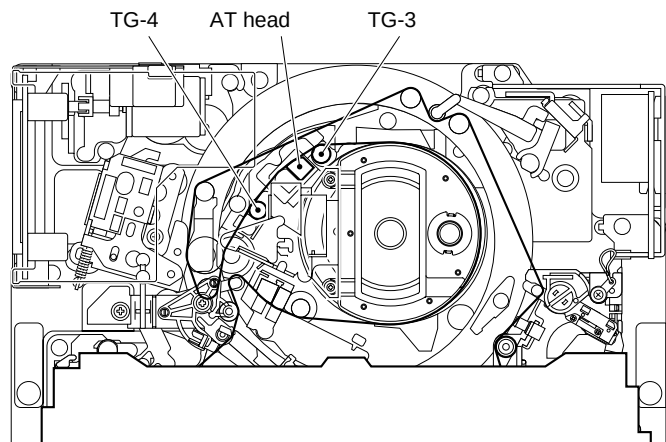
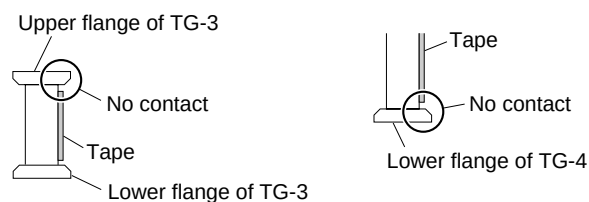
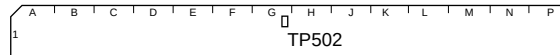
• Connection of the oscilloscope

CH-1 : TP902/EQ-102, 109 board (SAT ENV signal)
 CH-2 : TP1206/EQ-102, 109 board (CA25 ENV signal)
 TRIG : TP502/SS-102 board (REF signal)

<EQ-102/109 board, side A>

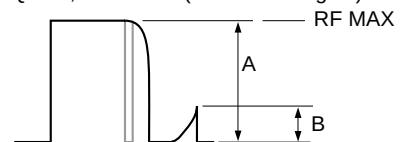


<SS-102 board, side A>



- Alignment tape : HR2-1B (00:00 to 20:00)
- ALT SERVO CHECK MENU/PATH CHECK
- TRACON : unity (Tracking control : Enabled)
- SAT CTRL : off

<Fig.1> CH-2 : TP1206/EQ-102, 109 board (CA25 ENV signal)



$$\text{Spec.12 : } \frac{B}{A} \times 100 = 50 \pm 50 \%$$

If B fluctuates, read the maximum level.

- (10) Turn the zenith adjustment screw of the AT head so that the right portion of the RF envelope waveform (CA25 ENV signal) becomes 0 to 100 % of the center output level. (specification 12)

At this time, check that the tape does not contact both upper flange of TG-3 and lower flange of TG-4.

If the tape contacts either flange, repeat step (7) or (8).

Note

If the tape moves upward or downward following the guide flange movement, perform the following adjustment.

This trouble cause is uneven tape tension at upside or downside of the tape caused by AT head zenith.

- If the tape moves upward at TG-3:
Turn the zenith adjustment screw counterclockwise.
- If the tape moves downward at TG-4:
Turn the zenith adjustment screw clockwise.

- (11) Turn the height adjustment nut of TG-3 clockwise so that the tape is in contact with the upper flange and the RF envelope waveform (SAT ENV signal) becomes flat. (Fig. 2) Simultaneously, ensure that the tape does not contact the lower flange of TG-4. (If contact, perform step (8).)

If the waveform does not become flat, perform the steps ① to ③ (check and adjustment) below:

- ① Clean the drum lead with a wooden stick. (Refer to Section 4-2-5.)
- ② Press down the tape by wooden stick very lightly and check to see that the tape is running without aparing from the drum lead.
- ③ If the waveform does not become flat even after performing steps ① and ②, adjust the height of TG-3 so that the RF envelope waveform is nearly flat within the range of the specification 13 shown in the Fig.3. At this time, do not over-press the tape at TG-3.

Note

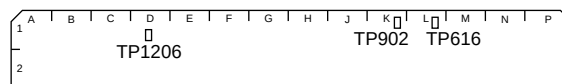
After adjusting the height of TG-3 in step ③ above, be sure to check the height of AT head (Refer to Section 6-7).

If the AT head height does not satisfy the specification, restart the video tracking adjustment.

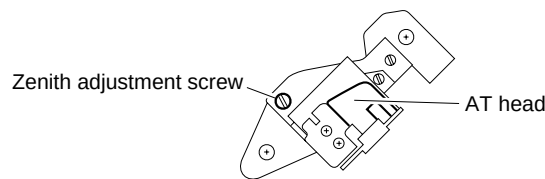
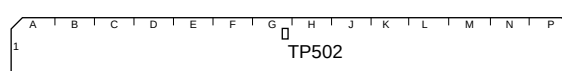
• Connection of the oscilloscope

CH-1 : TP902/EQ-102, 109 board (SAT ENV signal)
CH-2 : TP1206/EQ-102, 109 board (CA25 ENV signal)
TRIG : TP502/SS-102 board (REF signal)

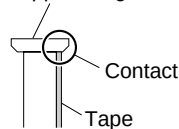
<EQ-102/109 board, side A>



<SS-102 board, side A>



Upper flange of TG-3

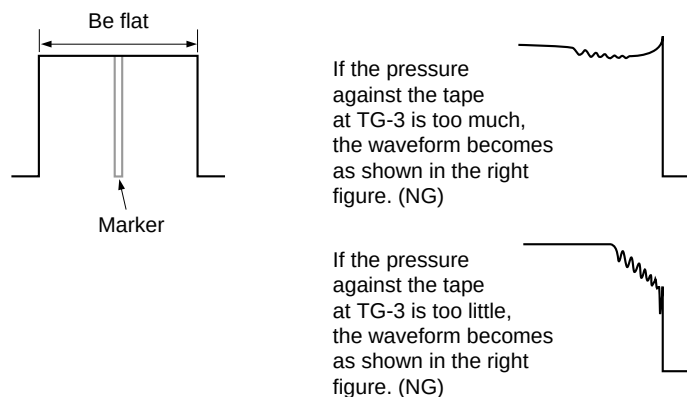


Tape

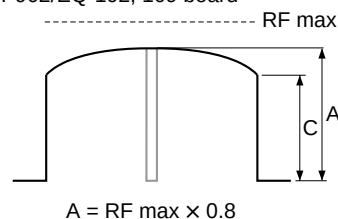
No contact



<Fig.2> CH-1 : TP902/EQ-102, 109 board



<Fig.3> CH-1 : TP902/EQ-102, 109 board



Spec.13 : $\frac{C}{A} \times 100 \geq 70 \%$

(12) Adjust the height of TG-4 so that the lower flange of TG-4 contacts the tape.

(13) Check the tape-running at the drum exit side in the following modes:

- PLAY mode
- F. FWD mode
- REW mode
- REV × 8 mode
- REV × 0.5 mode
- REV × 1/30 mode

If the tape curl at TG-3 does not satisfy the specification 14, perform the steps ① and ② (adjustment) below.

- ① Change the zenith of the AT head within the range of the specification 12. (Refer to step (10).)
- ② Perform the tracking adjustment for the exit side again. (Refer to steps (2) through (13).)

(14) If the AT head zenith was changed in above ①, perform the checks and adjustments described below:

- AT head height (Refer to Section 6-7.)
- AT head azimuth (Refer to Section 6-8.)
- AT head head-to-tape contact (Refer to Section 6-9.)
- AT head position (Refer to Section 6-10.)

3. Attach the CL Guide Rail

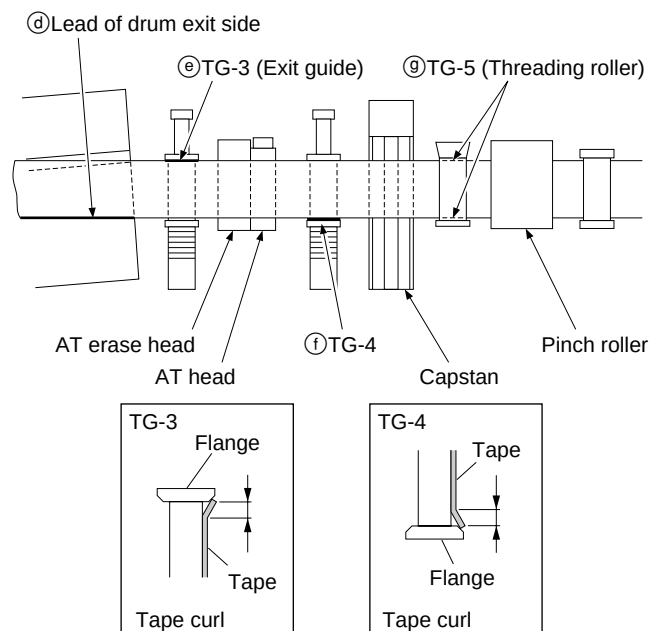
Turn off the power, then attach the CL guide rail.

4. Recheck the Video Tracking

Perform the Section 6-2 again.

Note

After the adjustment, be sure to set Bit-1 of the DIP switch S1000 on the SS-102 board to OFF (lower side).



Spec.14 : ④ Lead of drum exit side

The tape runs without any curl at the lead.

- ⑤ TG-3 (Exit guide)
The tape runs in contact with the upper flange.
The tape curl is less than 1/10 of the tape width.
- ⑥ TG-4
The tape runs in contact with the lower flange.
The tape curl is less than 1/10 of the tape width.
- ⑨ TG-5 (Threading roller)
The tape runs without any curl at the upper and lower flanges.

Tracking Adjustment at the Drum Exit Side

6-5. CTL Head Height Check and Adjustment

Tools

- Alignment tape HR2-1B: 8-960-076-41
- Oscilloscope (Tektronix TDS3054B or equivalent)
- Tape guide adjustment driver (MW-261): J-6322-610-A

Preparation

1. Set the Alignment Tape

- (1) Turn off the power.
- (2) Set the alignment tape HR2-1B and put a weight (about 1 kg) onto it.
- (3) Turn on the power.

2. Connect the Oscilloscope

Connect the oscilloscope as follows:

CH-1: TP400/TC-104A, 112A board (CTL PB signal)

TRIG: TP502/SS-102 board (REF signal)

Oscilloscope setting:

CH-1: 0.5 V/DIV

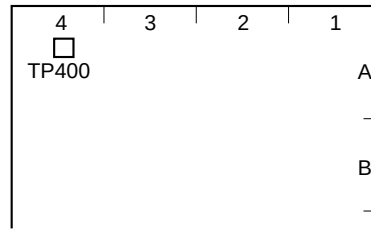
TIME: 5 ms/DIV

- Connection of the oscilloscope

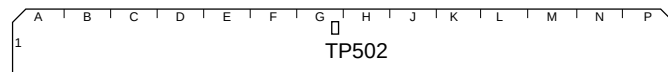
CH-1 : TP400/TC-104A, 112A board (CTL PB signal)

TRIG : TP502/SS-102 board (REF signal)

<TC-104A/112A board, side A>



<SS-102 board, side A>



Preparation

Check

3. Check the CTL Head Height

Note

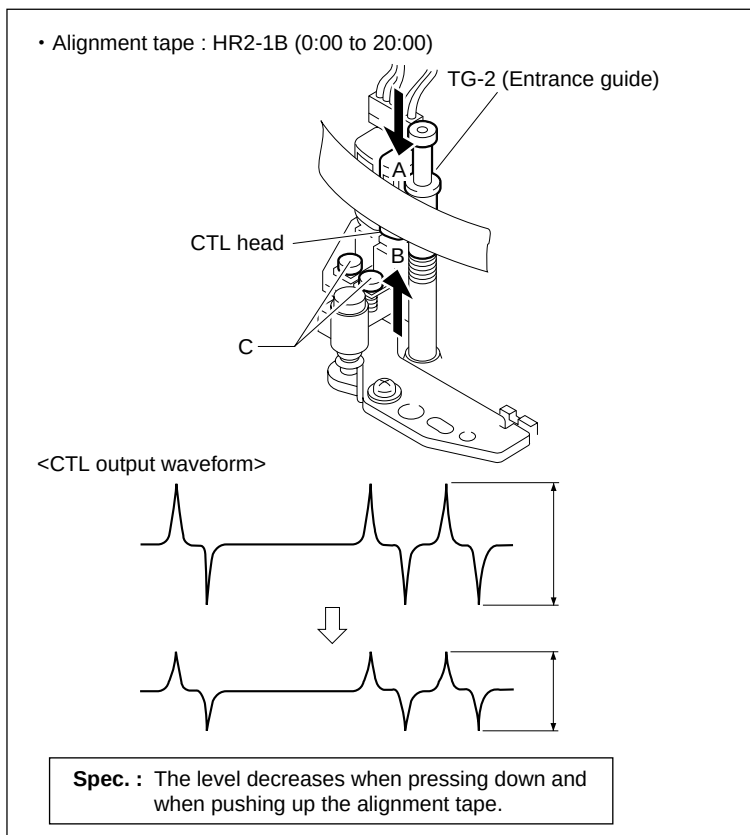
Never rotate the screw of portion C shown in the figure, or that might cause malfunctioning of tape running and head performance.

- (1) Play back the HR2-1B (0:00 to 20:00) in the PLAY mode.
- (2) Press down the portion A of the tape shown in figure, and then check to see that the level decreases by pressing the tape.

If the level increases, perform step 4-Ⓐ.

- (3) Push up the portion B of the tape, and then check to see that the level decreases by pushing the tape.

If the level increases, perform step 4-Ⓑ.



CTL Head Height Check

Adjustment

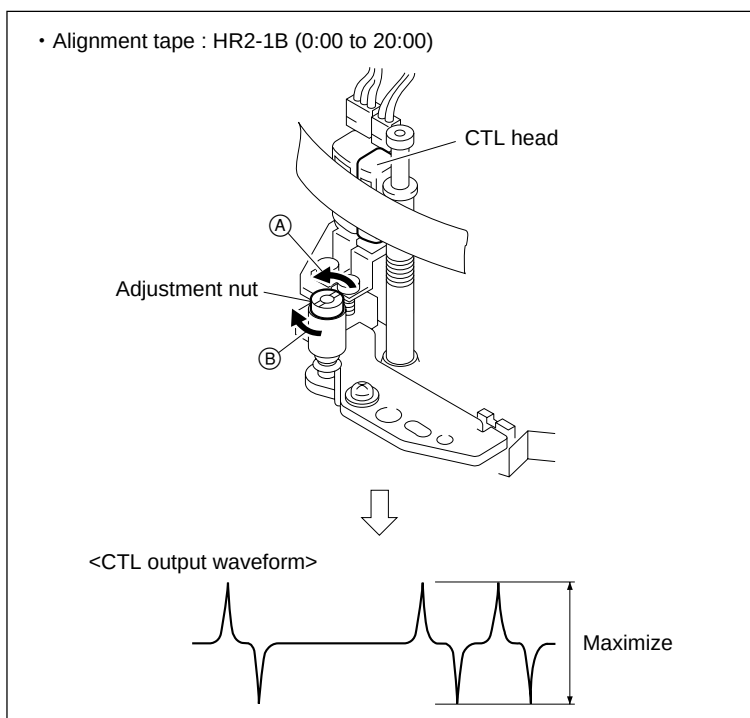
4. Adjust the CTL Head Height

Ⓐ When the Level Increases by Pressing Down the Tape

Turn the adjustment nut counterclockwise (in the arrow Ⓐ direction) so that the output waveform is maximum.

Ⓑ When the Level Increases by Pushing Up the Tape

Turn the adjustment nut clockwise (in the arrow Ⓑ direction) so that the output waveform is maximum.



CTL Head Height Adjustment

6-6. CTL Head Position Check and Adjustment

Precaution

The CTL head position adjustment is closely related to the AT head position adjustment.
Be sure to confirm the AT head position after adjusting the CTL head position.

Tools

- Alignment tape HR2-1B: 8-960-076-41
- Oscilloscope (Tektronix TDS3054B or equivalent)

Preparation

1. Set the Alignment Tape

- (1) Turn off the power.
- (2) Set the alignment tape HR2-1B and put a weight (about 1 kg) onto it.
- (3) Turn on the power.

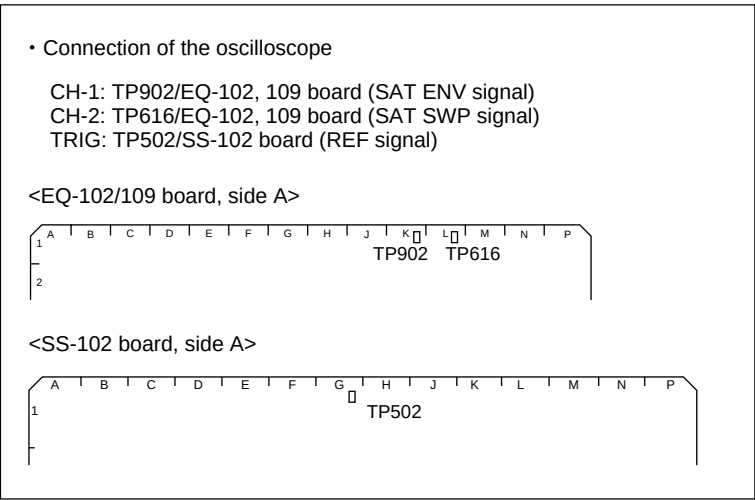
2. Connect the Oscilloscope

Connect the oscilloscope as follows:

- CH-1: TP902/EQ-102, 109 board (SAT ENV signal)
CH-2: TP616/EQ-102, 109 board (SAT SWP signal)
TRIG: TP502/SS-102 board (REF signal)

Oscilloscope setting:

- CH-1: 100 to 300 mV/DIV
CH-2: 5 V/DIV
TIME: 2 to 5 ms/DIV



Preparation

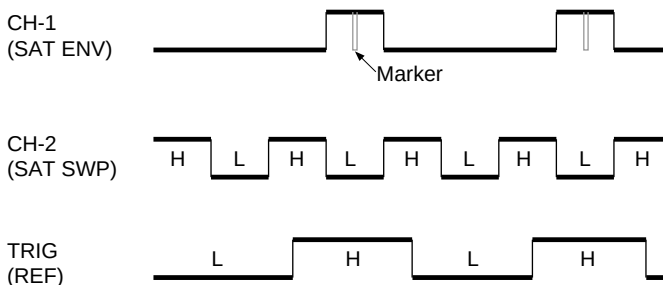
Check

3. Check the CTL Head Position

- (1) Play back the HR2-1B (00:00 to 20:00) in the PLAY mode.
- (2) Check that the RF envelope waveform with the marker shown in the figure appears at the high level of the REF signal and low level of the SAT SWP signal. (Specification 1)
- (3) Activate the ALT SERVO CHECK menu, and display the PATH CHECK menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** → PATH CHECK menu → **SET**)
- (4) Press the **F1** (TRACON) key to select the unity.
- (5) Press the **F2** (SAT CTRL) key to select the off.
- (6) Rotate the tracking knob (MULTI CONTROL knob) until the output level at the center of the RF envelope with the marker confirmed in step (2) becomes maximum, and read the level (L_V) at that time.
- (7) Press the **F1** (TRACON) key several times to select the off.
- (8) Read the output level (L_F) at the center of the RF envelope waveform.
- (9) Check that the level (L_V) read at step (6) and the level (L_F) read at step (8) satisfy specification 2.

If they do not satisfy the specifications 1 and 2, perform step 4 and later.

- Alignment tape : HR2-1B (00:00 to 20:00)
- ALT SERVO CHECK MENU/PATH CHECK
- TRACON : off (Tracking control : Disabled)
- SAT CTRL : off

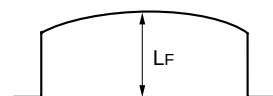
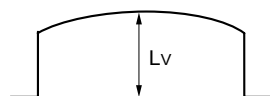


Spec.1 : The RF envelope waveform with the maker should appear at the high level of the REF signal and low level of the SAT SWP signal.

ALT SERVO CHECK MENU/PATH CHECK

TRACON : VAR
(Tracking control : Enabled)

TRACON : off (or unity)
(Tracking control : Disabled)



$$\frac{L_F}{L_V} \geq 0.8$$

Spec.2 : When the tracking control is disabled, the output level at the center portion of the RF envelope waveform (L_F) is 80 % or more against the maximum output level (L_V) under the enabling state of the tracking control.

CTL Head Position Check

Adjustment

Note

Make the following adjustment with the tracking control fixed (Bit-1 of S1000 on the SS-102 board is OFF and TRACON in the PATH CHECK menu set to off).

4. Adjust the CTL Head Position

- (1) Loosen the securing screw of the CTL/FE head assembly by 1/4 to 1/2 turn.
- (2) Insert a 3 mm flatbladed screwdriver into the notch of the CTL/FE head assembly.
- (3) Adjust the CTL/FE head assembly position so that the output level at the center portion is maximum and the marker appears in the RF envelope waveform at the high level of the REF signal and low level of the SAT SWP signal. (Specification 3)
- (4) Tighten the screw loosened in step (1).

Tightening torque: $98 \times 10^{-2} \text{ N}\cdot\text{m}$
{10.0 kgf · cm}

5. Recheck the CTL Head Position

Perform step 3 again.

Note

After the adjustment, be sure to check that Bit-1 of the DIP switch S1000 on the SS-102 board is set to OFF (lower side).

After the Adjustment

6. Adjust Drum Phase

Refer to Section 7-2-3.

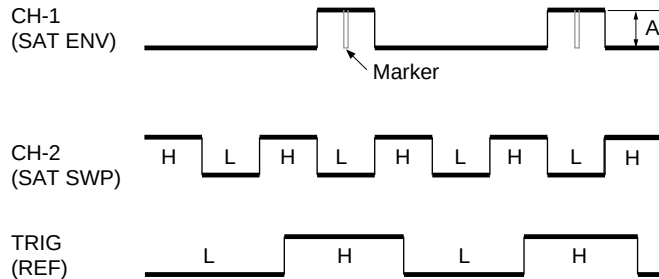
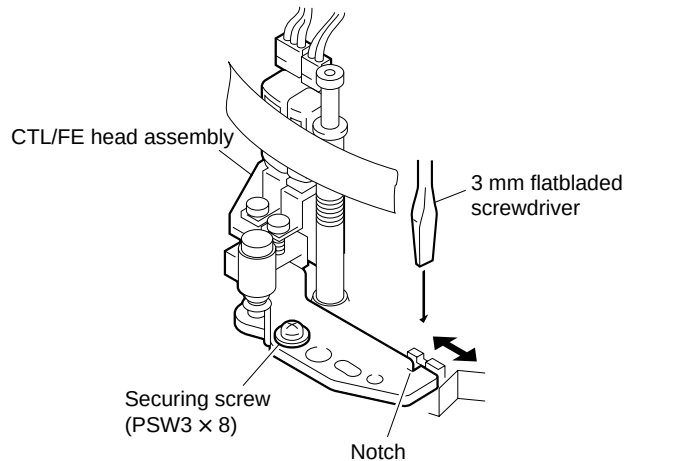
7. Adjust HDCAM DT System

Refer to Sections 7-2-4.

8. Adjust the AT Head Position

Refer to Section 6-10.

- Alignment tape : HR2-1B (00:00 to 20:00)
- ALT SERVO CHECK MENU/PATH CHECK
- TRACON : unity (Tracking control : Enabled)
- SAT CTRL : off



Spec.3 : The marker appears at the high level of the REF signal and low level of the SAT SWP signal.
The output level A at the center portion of the RF envelope waveform with this marker is maximum.

CTL Head Position Adjustment

6-7. AT Head Height Check and Adjustment

Precaution

The AT head height adjustment is closely related to the azimuth adjustment, head-to-tape contact adjustment, and head position adjustment.

Be sure to adjust (or check) these related portions according to “After the Adjustment” in this section after adjusting the AT head height.

Tools

- Alignment tape HR2-1A: 8-960-076-11
- Oscilloscope (Tektronix TDS3054B or equivalent)

Preparation

1. Set the Alignment Tape

- (1) Turn off the power.
- (2) Set the alignment tape HR2-1A and put a weight (about 1 kg) onto it.
- (3) Turn on the power.

2. Connect the Oscilloscope

Connect the oscilloscope as follows:

CH-1: TP300/AE-31H board (CUE signal)

Oscilloscope setting:

CH-1: 200 mV/DIV

TIME: 5 ms/DIV

3. Setting when HKSR-5802 is not installed

When HKSR-5802 (DVP board) is not installed, the HDCAM tape (and Digital Betacam tape) cannot usually run. However, PATH CHECK menu enables it.

Activate the ALT SERVO CHECK menu, and select the PATH CHECK menu.

HOME menu **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** PATH
CHECK menu → **SET**

- Connection of the oscilloscope
CH-1 : TP300/AE-31H board (CUE signal)

<AE-31H board, side A>



Preparation

Check

4. Check the AT Head Height

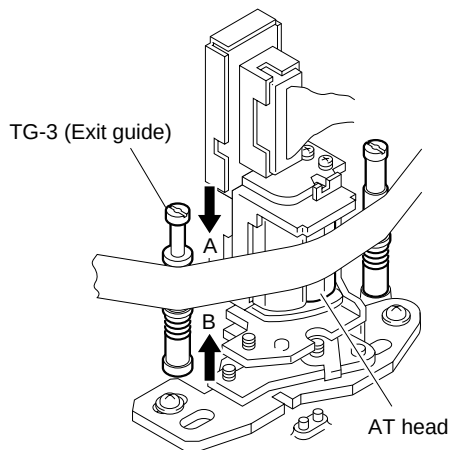
- (1) Play back the 1 kHz, 0 VU signal portion (00:00 to 15:00) on the HR2-1A in the PLAY mode.
- (2) Slightly press down the portion A shown in the figure, and check to see that the CUE level decreases.

If the level increases, perform step 5-Ⓐ of next page.

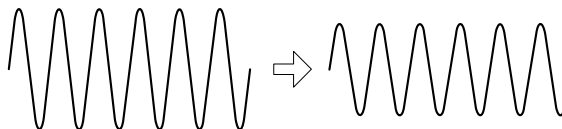
- (3) On the contrary, slightly push up the portion B of the tape, and check to see that the CUE level decreases.

If the level increases, perform the step 5-Ⓑ.

• Alignment tape : HR2-1B (00:00 to 15:00)



<CUE output waveform>



Spec. : The level decreases when the tape is moved up and down.

AT Head Height Check

Adjustment

5. Adjust the AT Head Height

Ⓐ When the Level Increases by Pressing Down the Tape

Turn the height adjustment screw clockwise so that the output level is maximum. (Fig. 1)

Ⓑ When the Level Increases by Pushing Up the Tape

- (1) Turn the height adjustment screw counter-clockwise to maximize the output level. Turn the height adjustment screw counter-clockwise furthermore to decrease the output level slightly. (Arrow ① in Fig. 2)
- (2) Turn the height adjustment screw clockwise and adjust so that the output level is maximum. (Arrow ② in Fig. 2)

Note

To stabilize the AT head height after the adjustment, set the maximum output level with the AT head moved upward (with the height adjustment screw turned clockwise).

After the Adjustment

6. Adjust the AT Head Azimuth

Refer to Section 6-8.

7. Adjust the AT Head Head-to-tape Contact

Refer to Section 6-9.

8. Adjust the AT Head Position

Refer to Section 6-10.

9. Recheck the AT Head Height

Refer to step 4 in this section.

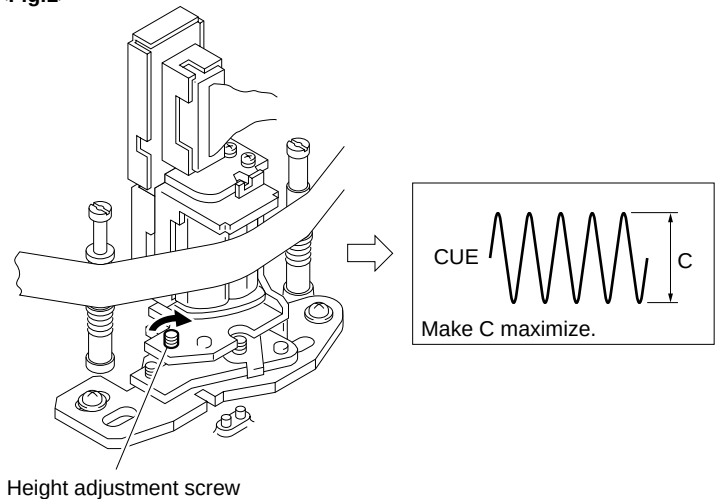
10. Recheck the AT Head

Perform the steps 6 through 8 again.

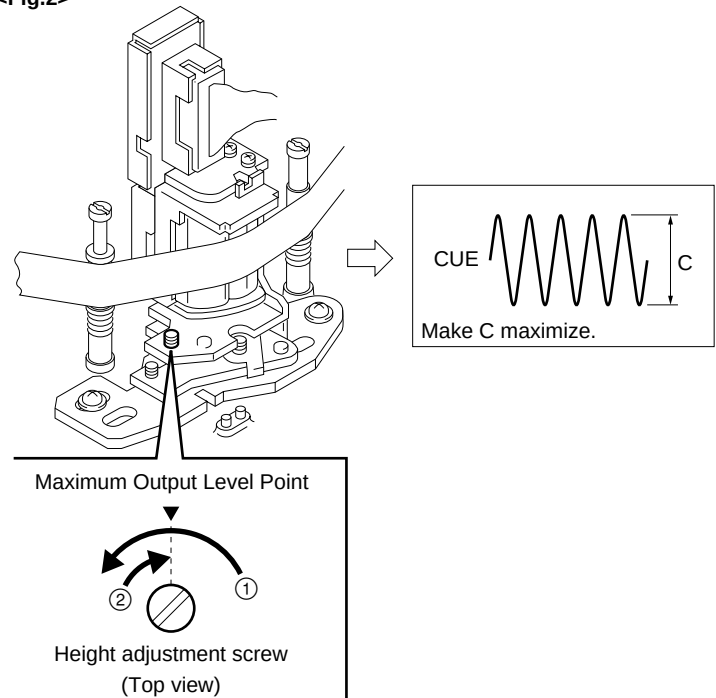
11. Apply the Locking Compound

Refer to Section 6-1-9.

<Fig.1>



<Fig.2>



AT Head Height Adjustment

6-8. AT Head Azimuth Check and Adjustment

Precautions

The AT head azimuth adjustment is closely related to the head-to-tape contact adjustment, head position adjustment, and head height adjustment.

Be sure to adjust (or check) these related portions according to “After the Adjustment” in this section after adjusting the AT head azimuth.

Tools

- Alignment tape HR2-1A: 8-960-076-11
- Oscilloscope (Tektronix TDS3054B or equivalent)

Preparation

1. Set the Alignment Tape

- (1) Turn off the power.
- (2) Set the alignment tape HR2-1A, and put a weight (about 1 kg) onto it.
- (3) Turn on the power.

2. Connect the Oscilloscope

Connect the oscilloscope as follows:

CH-1: TP300/AE-31H board (CUE signal)

Oscilloscope setting:

CH-1: 200 mV/DIV

TIME: 5 ms/DIV

3. Setting when HKSR-5802 is not installed

When HKSR-5802 (DVP board) is not installed, the HDCAM tape (and Digital Betacam tape) cannot usually run. However, PATH CHECK menu enables it.

Activate the ALT SERVO CHECK menu, and select the PATH CHECK menu.

HOME menu **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** PATH
CHECK menu → **SET**

- Connection of the oscilloscope
CH-1 : TP300/AE-31H board (CUE signal)

<AE-31H board, side A>



Preparation

Adjustment

4. Adjust the AT Head Azimuth

- (1) Play back the 12 kHz, 0 VU signal portion (15:00 to 30:00) on the HR2-1A in the PLAY mode.
- (2) Turn the azimuth adjustment screw so that the output waveform level becomes maximum.
- (3) Lightly strike the portions A and B shown in the figure with the tip of a screwdriver. Then check that the output waveform level is maximum.

After the Adjustment

5. Adjust the AT Head Head-to-tape Contact

Refer to Section 6-9.

6. Adjust the AT Head Position

Refer to Section 6-10.

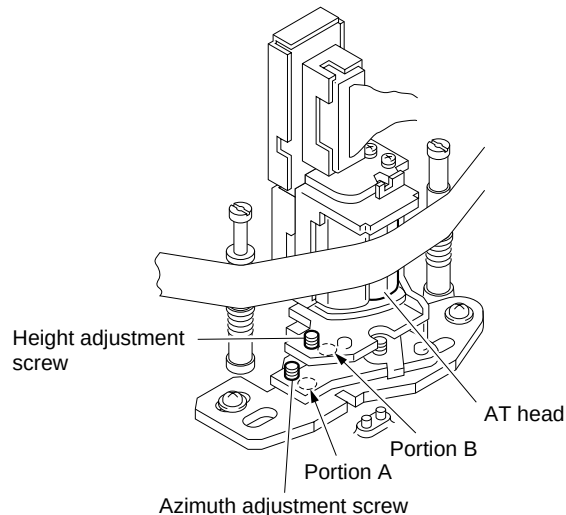
7. Check the AT Head Height

Refer to Section 6-7.

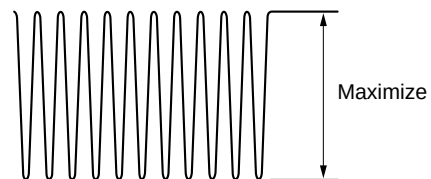
8. Apply the Locking Compound

Refer to Section 6-1-9.

- Alignment tape : HR2-1A (15:00 to 30:00)



<CUE output waveform>



AT Head Azimuth Adjustment

6-9. AT Head Head-to-tape Contact Check and Adjustment

Precaution

The AT head head-to-tape contact adjustment is closely related to the head position adjustment, head height adjustment, and head azimuth adjustment.

Be sure to adjust (or check) these related portions according to “After the Adjustment” in this section after adjusting the AT head head-to-tape contact.

Tools

- Alignment tape HR2-1A: 8-960-076-11
- Oscilloscope (Tektronix TDS3054B or equivalent)
- Torque screwdriver (6 kgf•cm) (JB-5251): J-6252-510-A
- Torque screwdriver's bit (+2 mm, l = 75 mm): J-6323-420-A

Preparation

1. Set the Alignment Tape

- (1) Turn off the power.
- (2) Set the HR2-1A, and put a weight (about 1 kg) onto it.
- (3) Turn on the power.

2. Connect the Oscilloscope

Connect the oscilloscope as follows:

CH-1: TP300/AE-31H board (CUE signal)

Oscilloscope setting:

CH-1: 200 mV/DIV

TIME: 5 ms/DIV

3. Setting when HKSR-5802 is not installed

When HKSR-5802 (DVP board) is not installed, the HDCAM tape (and Digital Betacam tape) cannot usually run. However, PATH CHECK menu enables it.

Activate the ALT SERVO CHECK menu, and select the PATH CHECK menu.

HOME menu **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[F4]** → **[ALT]** → **[F8]** PATH CHECK menu → **[SET]**

- Connection of the oscilloscope
CH-1 : TP300/AE-31H board (CUE signal)

<AE-31H board, side A>



Preparation

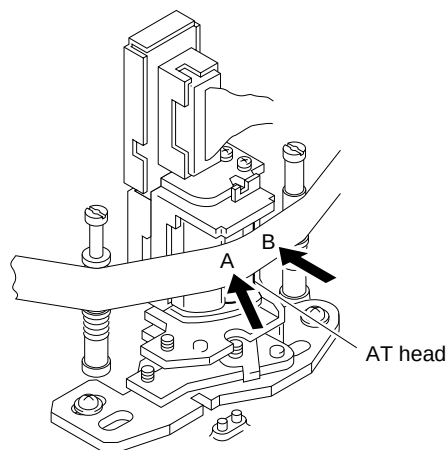
Check

4. Check the AT Head Head-to-tape Contact

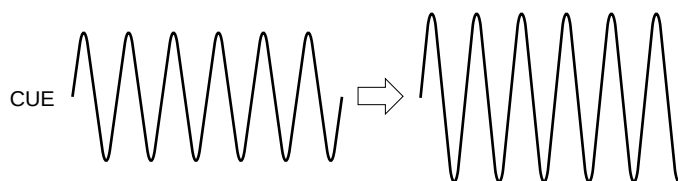
- (1) Play back the 12 kHz, 0 VU signal portion (15:00 to 30:00) on the HR2-1A in the PLAY mode.
- (2) Slightly push portions A and B of the tape shown in the figure to increase the tape's wrapping angle against the AT head.
- (3) Check that the increased amount of output level satisfies the specification.

If the specification is not satisfied, perform steps 5 and later.

• Alignment tape : HR2-1A (15:00 to 30:00)



<CUE output waveform>



Spec. : Increased amount of the output level is within 5 %.

AT Head Head-to-tape Contact Check

Adjustment

5. Adjust the AT Head Head-to-tape Contact

- (1) Loosen the two head securing screws by 1/4 to 1/2 turn.
- (2) Insert a 2 mm flatbladed screwdriver into the notch of the adjustment plate.
- (3) Adjust the AT head position to maximize the output level.
- (4) Tighten the two securing screws loosened in step (1).

Tightening torque: $19.6 \times 10^{-2} \text{ N}\cdot\text{m}$
{ 2 kgf•cm }

6. Recheck the AT Head Head-to-tape Contact

Perform to previous step 4 in this section again.

After the adjustment

7. Check the AT Head Position

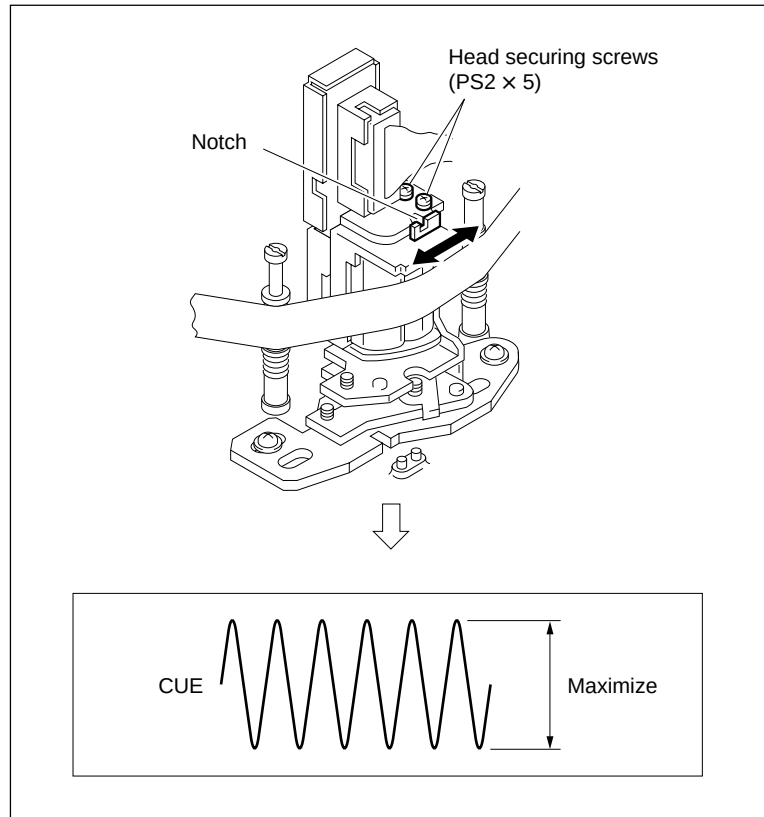
Refer to Section 6-10.

8. Check the AT Head Height

Refer to Section 6-7.

9. Check the AT Head Azimuth

Refer to Section 6-8.



AT Head Head-to-tape Contact Adjustment

6-10. AT Head Position Check and Adjustment

Precautions

- The CTL head position adjustment should be completed before performing this adjustment. The AT head position is adjusted relative to the CTL head position as reference.
- The AT head position adjustment is closely related to the head height adjustment, head azimuth adjustment, and head-to-tape contact adjustment. Be sure to adjust (or check) these related portions according to “After the Adjustment” in this section after adjusting the AT head position.

Tools

- Alignment tape HR2-1B: 8-960-076-41
- Oscilloscope (Tektronix TDS3054B or equivalent)

Preparation

1. Set the Alignment Tape

- (1) Turn off the power.
- (2) Set the alignment tape HR2-1B, and put a weight (about 1 kg) onto it.
- (3) Turn on the power.

2. Connect the Oscilloscope

Connect the oscilloscope as follows:

CH-1: TP400/TC-104A, 112A board (CTL PB signal)

CH-2: TP102/TC-104A, 112A board (TC PB signal)

TRIG: TP502/SS-102 board (REF signal)

Oscilloscope setting:

CH-1: 0.5 V/DIV

CH-2: 0.2 V/DIV

TIME: 10 ms to 500 μ s/DIV

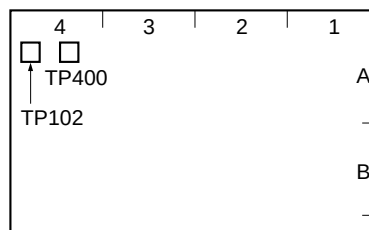
- Connection of the oscilloscope

CH-1 : TP400/TC-104A, 112A board (CTL PB signal)

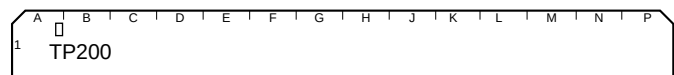
CH-2 : TP102/TC-104A, 112A board (TC PB signal)

TRIG : TP502/SS-102 board (REF signal)

<TC-104A/112A board, side A>



<SS-102 board, side A>



Preparation

Check

3. Check the AT Head Position

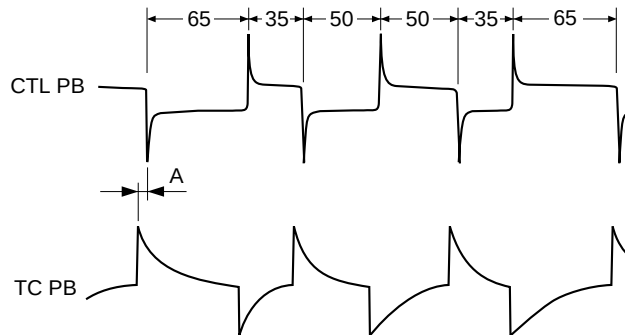
- (1) Play back the alignment tape HR2-1B (00:00 to 20:00) in the PLAY mode.
- (2) Check that the positional relationship between the falling edge of CTL's 65:35 pulse and the rising edge of the TC PB's 65:35 signal satisfies the specification.

If the specification is not satisfied, perform steps 4 and later.

Note

The TC signal is in 0.15 ms advance of the CTL signal.

• Alignment tape : HR2-1B (00:00 to 20:00)



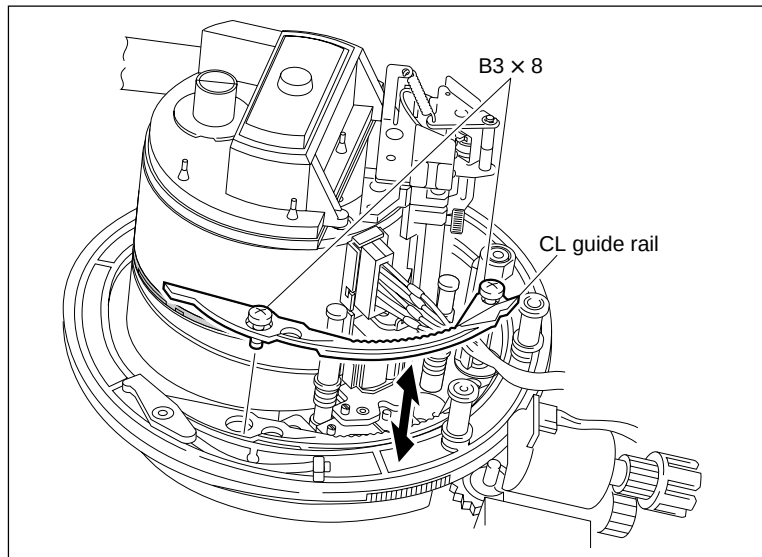
Spec. (for check) : $A = 0.15 \pm 2.40 \text{ ms}$

AT Head Position Check

Adjustment

4. Remove the CL Guide Rail

- (1) Turn off the power.
- (2) Fully loosen the two screws, then remove the CL guide rail.



CL Guide Rail Removal/Reattachment

5. Adjust the AT Head Position

- (1) Loosen the two securing screws of the AT head assembly by 1/4 to 1/2 turn.
- (2) Turn on the power, then play back the HR2-1B (00:00 to 20:00) in the PLAY mode.
- (3) Insert a 3 mm flatbladed screwdriver into the notch of the AT head assembly.
- (4) Adjust the AT head assembly position so that the specification is satisfied.

Notes

- The specifications in AT head position check and position adjustment differ. When adjusting, apply the specification in AT head position adjustment.
- The TC signal is in 0.15 ms advance of the CTL signal.

- (5) Tighten the two screws loosened in step (1).

Tightening torque: $98 \times 10^{-2} \text{ N}\cdot\text{m}$
{10.0 kgf·cm}

6. Recheck the AT Head Position

Perform previous step 3 in this section again.

7. Attach the CL Guide Rail

- (1) Turn off the power, then remove the alignment tape.
- (2) Attach the CL guide rail with two screws.

After the Adjustment

8. Check the AT Head Height

Refer to Section 6-7.

9. Check the AT Head Azimuth

Refer to Section 6-8.

10. Check the AT Head Head-to-tape Contact

Refer to Section 6-9.

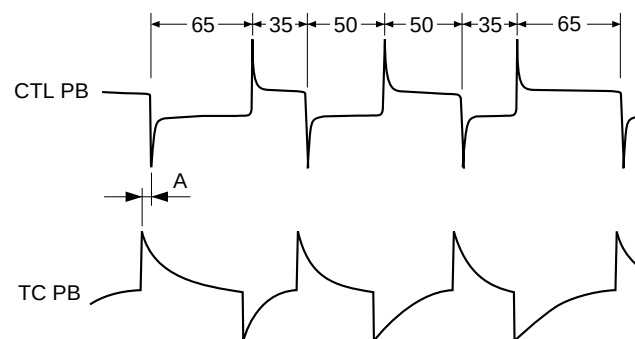
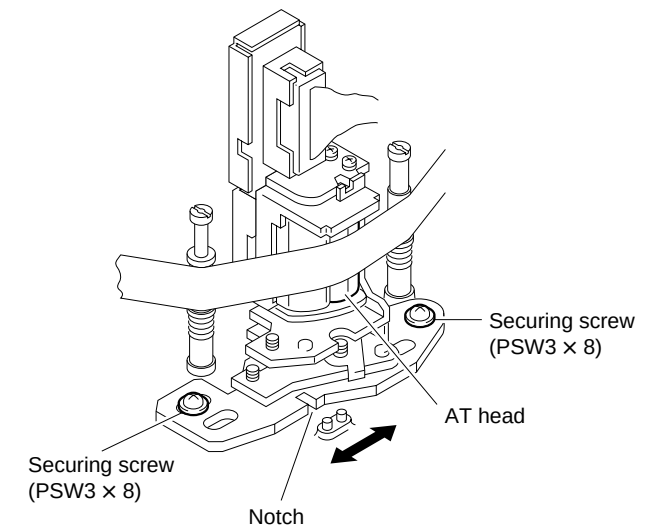
11. Check the AT Head Position

Refer to step 3 in this section.

12. Apply the Locking Compound

Refer to Section 6-1-9.

• Alignment tape : HR2-1B (00:00 to 20:00)



Spec. (for adjustment) : $A = 0.15 \pm 0.40 \text{ ms}$

AT Head Position Adjustment

6-11. CUE Level Check and Adjustment in REV Mode

Tools

- Alignment tape HR2-1A: 8-960-076-11
- Oscilloscope (Tektronix TDS3054B or equivalent)
- Adjustment mirror (circular): J-6080-029-A
- Tape guide adjustment driver (MW-261): J-6322-610-A

Preparation

1. Set the Alignment Tape

- (1) Turn off the power.
- (2) Set the alignment tape HR2-1A and put a weight (about 1 kg) onto it.
- (3) Turn on the power.

2. Connect the Oscilloscope

Connect the oscilloscope as follows:

CH-1: TP300/AE-31H board (CUE signal)

Oscilloscope setting:

CH-1: 200 mV/DIV

TIME: 5 ms/DIV

3. Setting when HKSR-5802 is not installed

When HKSR-5802 (DVP board) is not installed, the HDCAM tape (and Digital Betacam tape) cannot usually run. However, PATH CHECK menu enables it.

Activate the ALT SERVO CHECK menu, and select the PATH CHECK menu.

HOME menu **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[F4]** → **[ALT]** → **[F8]** PATH
CHECK menu → **[SET]**

- Connection of the oscilloscope
CH-1 : TP300/AE-31H board (CUE signal)

<AE-31H board, side A>



Preparation

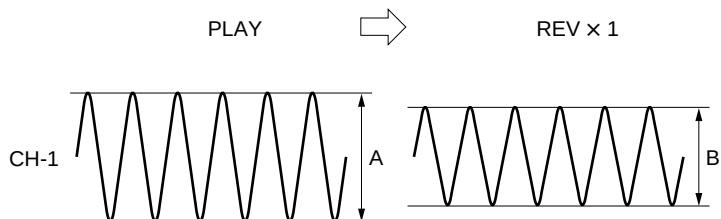
Check

4. Check the CUE Output Level

- (1) Play back the 1 kHz, 0 VU signal portion (00:00 to 15:00) on the HR2-1A in the PLAY mode.
- (2) Check the CUE output level A.
- (3) Set the REV × 1 mode.
- (4) Check that the CUE output level B satisfies the specification 1.

If specification 1 is not satisfied, perform following steps 5 and later.

- Alignment tape : HR2-1A (00 : 00 to 15 : 00)



$$\text{Spec.1 : } \frac{B}{A} \times 100 \geq 90 \%$$

CUE Level Check in REV Mode

Adjustment

5. Adjust the TG-5 (Threading Roller) Height

- (1) Play back the 1 kHz, 0 VU signal portion (00:00 to 15:00) on the HR2-1A.
- (2) Set the REV $\times$ 1 mode.
- (3) Slightly press down the portion A of the tape shown in figure, and check to see that the output level is not increased.

If the level is increased, press the EJECT button to unthread the tape, and then turn the upper flange of TG-5 clockwise using a tape guide adjustment driver.

- (4) Slightly push up the portion B of the tape, and check to see that the output level is not increased.

If the level is increased, press the EJECT button to unthread the tape, and then turn the upper flange of TG-5 counterclockwise using the tape guide adjustment driver.

- (5) Check the output level satisfies specification 1 of step 4.

If the specification 1 is not satisfied, repeat steps (1) through (4) mentioned above.

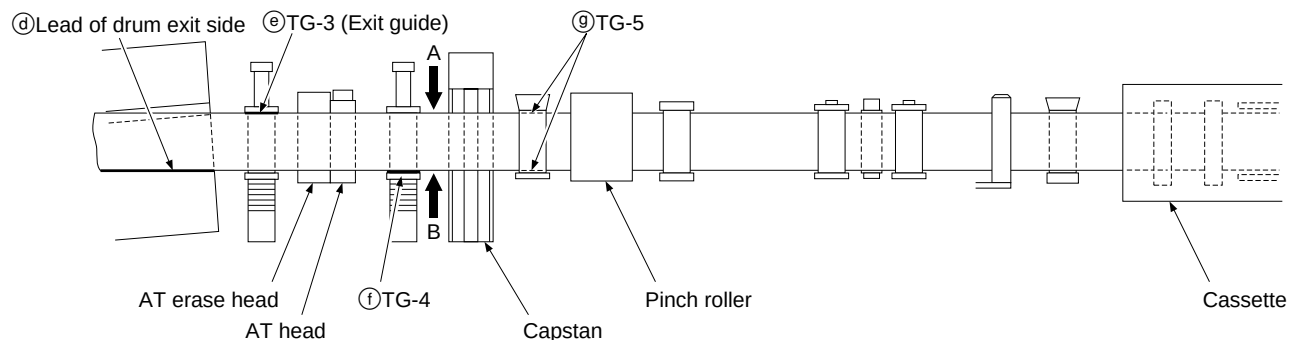
6. Check the Tape-running at Drum Exit Side

In the following modes, check that the tape-running condition satisfies specification 2.

- PLAY mode
- REV $\times$ 1 mode

If specification 2 is not satisfied, adjust the tape guides height at the drum exit side. (Refer to step 5 (at the Drum Exit Side) in Section 6-12-2.)

If the height of the tape guide is adjusted, perform the video tracking check. (Refer to Section 6-2.)



Spec.2 : ④ Lead of drum exit side

The tape runs in contact with the drum lead and without any curl at the lead.

⑤ TG-3 (Exit guide)

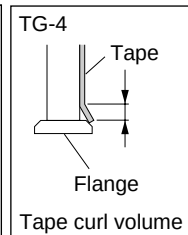
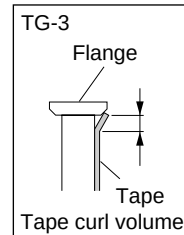
The tape runs in contact with the upper flange.
The tape curl is less than 1/10 of the tape width.

⑥ TG-4

The tape runs in contact with the lower flange.
The tape curl is less than 1/10 of the tape width.

⑦ TG-5

The tape runs without any curl at the upper and lower flanges.



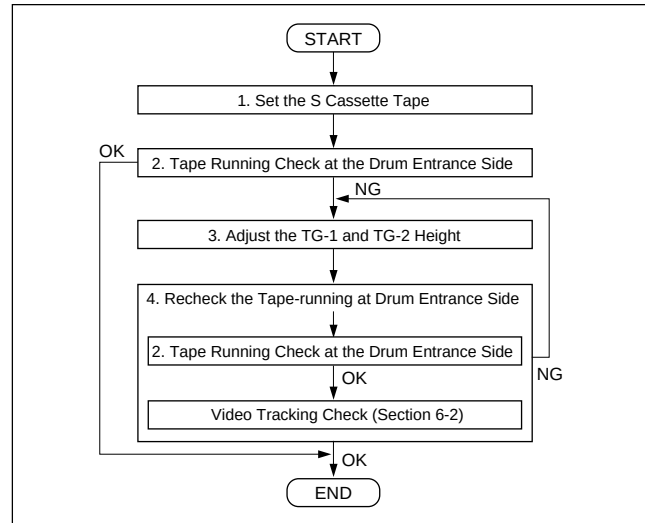
CUE Level Adjustment in REV Mode

6-12. Tape Running Check and Adjustment

6-12-1. Drum Entrance Side

Tools

- Recording tape (S cassette): BCT-40SR
- Adjustment mirror (circular): J-6080-029-A
- Tape guide adjustment driver (MW-261): J-6322-610-A



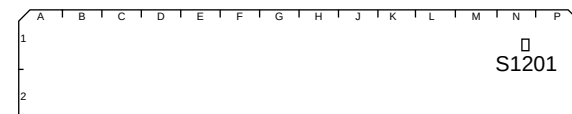
Flow Chart of Tape-running Check at Drum Entrance Side

Check

1. Set the S Cassette Tape

- (1) While turning on the power, press the switch S1201 on the SS-102 board to set the reel tables to the S cassette position. (Refer to Section 5-1-3.)
- (2) Turn off the power.
- (3) Set the S cassette and put a weight (about 1 kg) onto it.
- (4) Turn on the power.

<SS-102 board, side A>



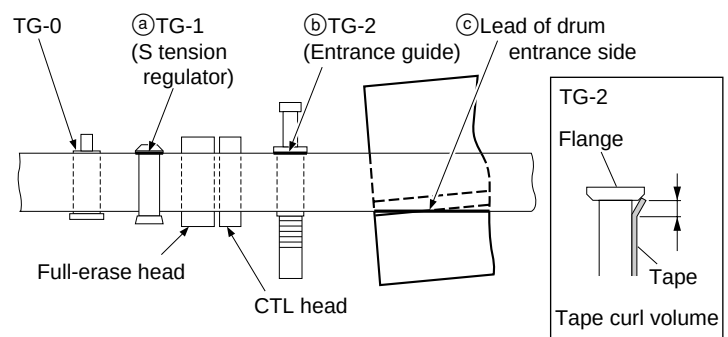
2. Tape Running Check at the Drum Entrance Side

- (1) In the PLAY mode, check that the tape-running condition satisfies specification 1.

If specification 1 is not satisfied, perform steps 3 and 4.

- (2) In the REV $\times$ 0.5 mode, check that the tape-running condition satisfies specification 2.

If specification 2 is not satisfied, perform steps 3 and 4.



Spec.1: ① TG-1 (S tension regulator)

The tape runs in contact with the upper flange.

② TG-2 (Entrance guide)

The tape runs in contact with the upper flange.

The tape curl is less than 1/10 of the tape width.

③ Lead of drum entrance side

The tape runs in contact with the drum lead and without any curl at the lead.

Spec.2: ② TG-2 (Entrance guide)

The tape runs in contact with the upper flange.

The tape curl is less than 1/10 of the tape width.

③ Lead of drum entrance side

The tape runs in contact with the drum lead and without any curl at the lead.

Tape-running Check at Drum Entrance Side

Adjustment

3. Adjust the TG-1 and TG-2 Height

- (1) Run the S cassette tape in the PLAY mode.
- (2) Turn the height adjustment nuts of TG-1 and TG-2 using a tape guide adjustment driver and adjust the height of TG-1 and TG-2 so that the specification 1 (previous page) is satisfied.

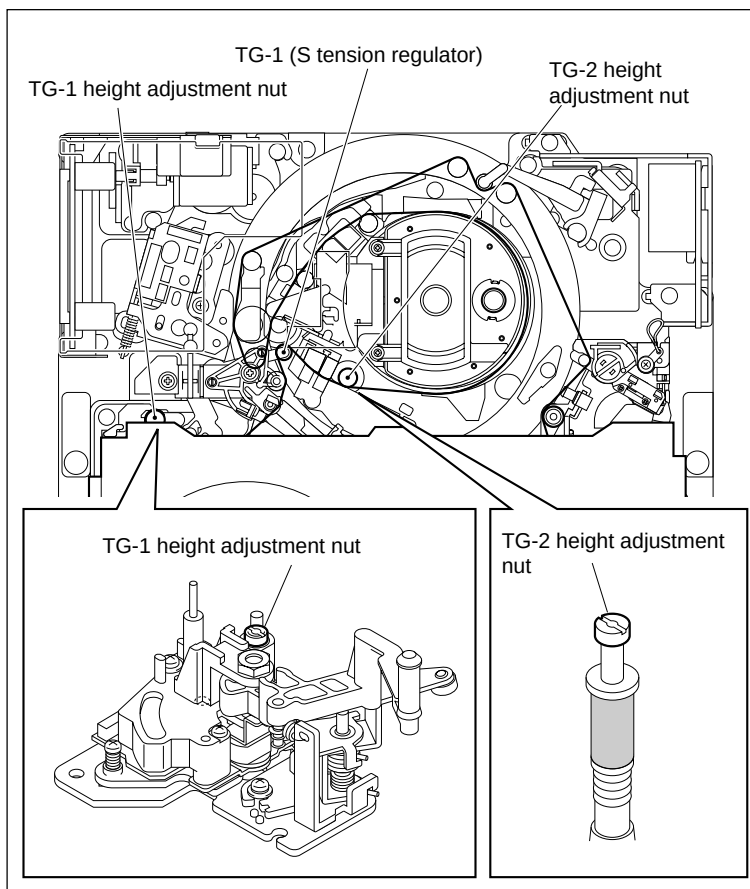
Note

Do not rotate screws other than the height adjustment nut. Otherwise this may result in abnormal tape-running or tape tension.

4. Recheck the Tape-running at Drum Entrance Side

Perform step 2 and the video tracking check.
(Refer to Section 6-2.)

If the specifications 1 and 2 on the previous page are not still satisfied, perform the adjustment in step 3 again.

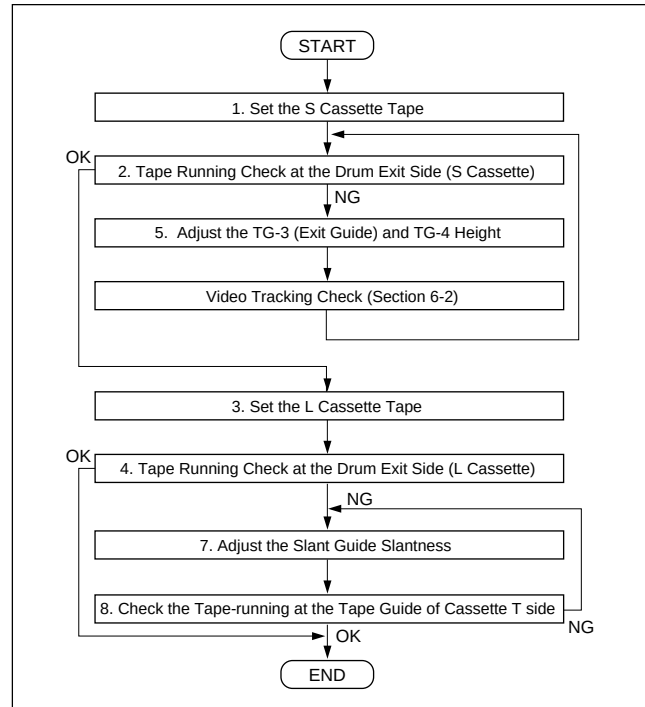


TG-1 and TG-2 Height Adjustment

6-12-2. Drum Exit Side

Tools

- Recording tape (S cassette): BCT-40SR
- Recording tape (L cassette): BCT-40SRL
- Adjustment mirror (circular): J-6080-029-A
- Tape guide adjustment driver (MW-261): J-6322-610-A

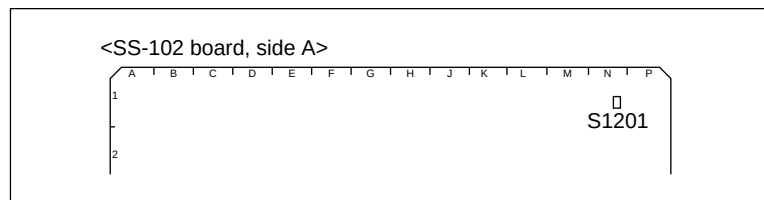


Flow Chart of Tape-running Check at Drum Exit Side

Check

1. Set the S Cassette Tape

- (1) While turning on the power, press the switch S1201 on the SS-102 board to set the reel tables to the S cassette position. (Refer to Section 5-1-3.)
- (2) Turn off the power.
- (3) Set the S cassette and put a weight (about 1 kg) onto it.
- (4) Turn on the power.



2. Tape Running Check at the Drum Exit Side (S Cassette)

- (1) In the PLAY mode, check that the tape-running condition satisfies specification 3.

If specification 3 is not satisfied, perform steps 5 and 6.

- (2) In the REV $\times 0.5$ mode, check that the tape-running condition satisfies specification 3.

If specification 3 is not satisfied, perform steps 5 and 6.

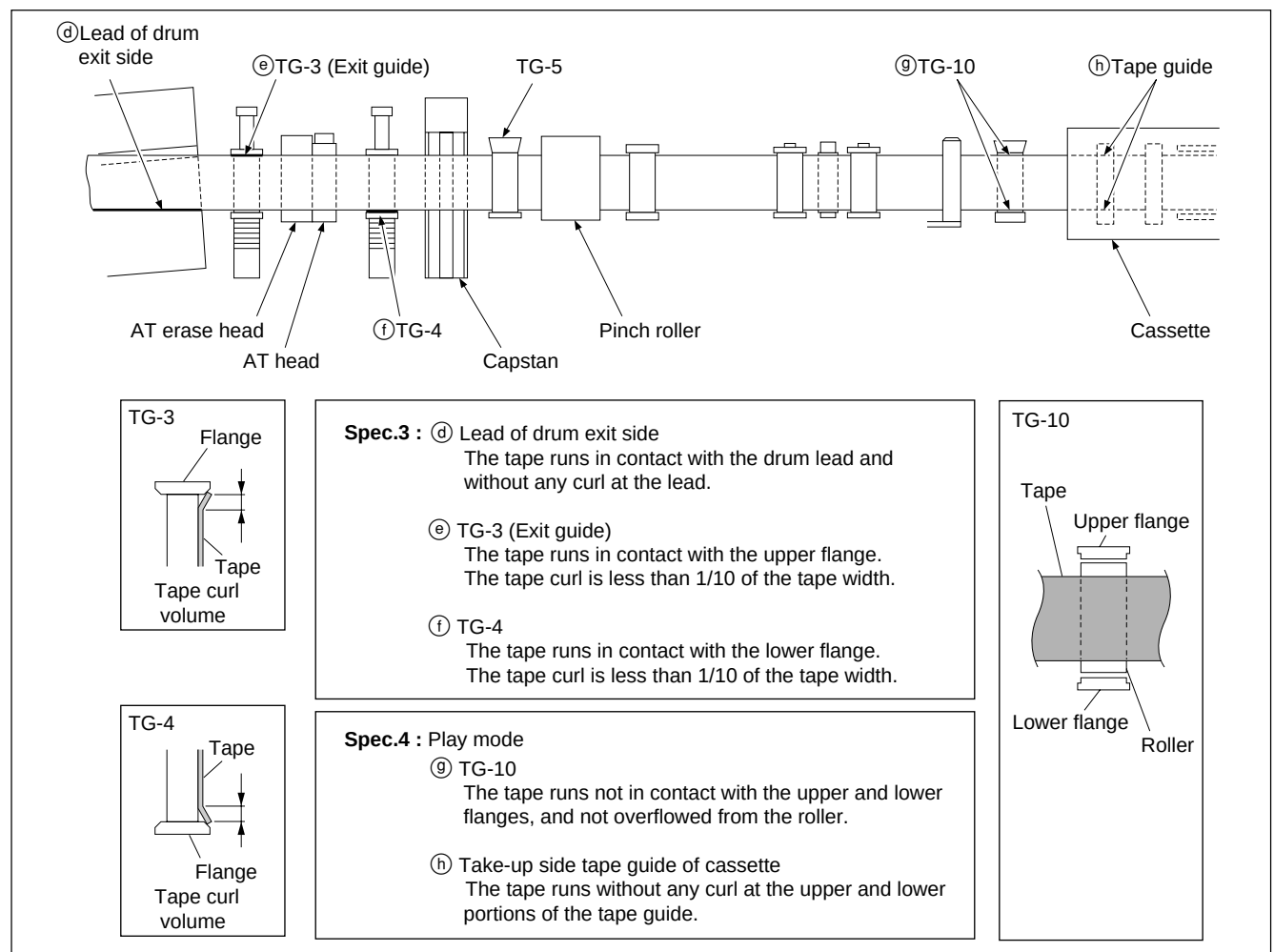
3. Set the L Cassette Tape

- (1) Turn off the power, then remove the S cassette.
- (2) Turn on the power.
- (3) Press the switch S1201 on the SS-102 board to set the reel tables to the L cassette position.
- (4) Turn off the power.
- (5) Set the L cassette and put a weight (about 1 kg) onto it.
- (6) Turn on the power.

4. Tape Running Check at the Drum Exit Side (L Cassette)

- (1) Run the tape beginning portion of the L cassette in the PLAY mode.
- (2) Check that the tape-running condition satisfies specification 4.

If specification 4 is not satisfied, perform step 7.



Tape-running Check at Drum Exit Side

Adjustment

5. Adjust the TG-3 (Exit Guide) and TG-4 Height

- (1) Run the S cassette tape in the PLAY and REV $\times 0.5$ mode.
- (2) Turn the height adjustment nuts of TG-3 and TG-4 using a tape guide adjustment driver and adjust the height of TG-3 and TG-4 so that the specification 3 (previous page) is satisfied.

If the specification 3 is not satisfied, adjust height of TG-5.

When TG-3 is No Good:

In the EJECT mode, rotate the upper flange of TG-5 clockwise.

When TG-4 is No Good:

In the EJECT mode, rotate the upper flange of TG-5 counterclockwise.

- (3) Perform the video tracking check. (Refer to Sections 6-2.)

6. Recheck the Tape-running at Drum Exit Side

Perform step 2 again.

If the specification 3 is not still satisfied, perform the adjustment in step 5 again.

7. Adjust the Slant Guide Slantness

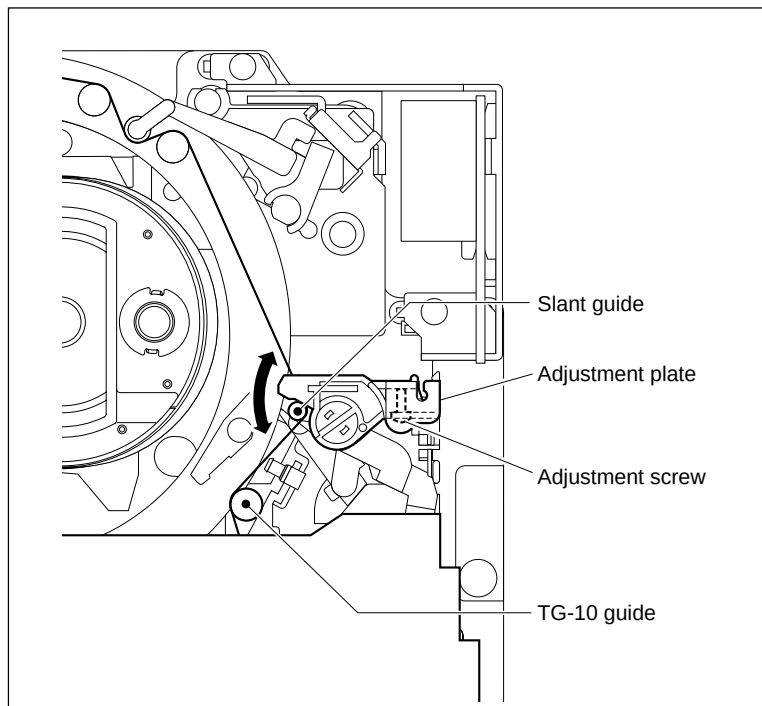
The T drawer assembly (RP) including the slant guide is adjusted precisely at shipment. (The slantness of the slant guide is also center-adjusted.) If specification 4 (previous page) is not satisfied, re-check the followings before adjusting the slantness.

- The L cassette used for checking is normal condition.
- The T drawer assembly is attached properly.
- The results of other tape-running checks are within each specification.

Adjustment

Rotate the adjustment screw of the T drawer assembly, and adjust the position of the adjustment plate so that specification 4 is satisfied.

- If the tape is touching the upper flange of the TG-10 guide, rotate the adjustment screw counterclockwise.
- If the tape is touching the lower flange of the TG-10 guide, rotate the adjustment screw clockwise.



Slant Guide Slantness Adjustment

8. Check the Tape-running at the Tape Guide of Cassette T side

- (1) Press the STOP button to set the unthreading end mode.
- (2) In the PLAY mode, check that the tape satisfies specification 4 (previous page) when running at the TG-10 guide.

If specification 4 is not satisfied, repeat steps 7 and 8 above.

Section 7

Electrical Alignment after Main Parts Replacement

7-1. Electrical Alignment Overview

7-1-1. Precautions

- Section 7 requires that Section 6 “Tape Path Alignment” has been completed.
- Be sure to perform the adjustment in order.
- Do not touch adjusting part when other than required.
- Do not execute automatic adjustment, and do not change adjustment data when other than required.
In case either of these is done unintentionally, turn off the power of the VTR so as not to save the data.
- For details on the maintenance mode, refer to Section 3.
- Before beginning adjustment, it is recommended to note the customer conditions. The settings can be easily returned to its customer condition after finishing adjustment.

Settings of switches on panels, circuit boards:

Use the setting check sheets.

(Refer to Appendix A in the end of this manual.)

Settings of the setup menu:

Use a Memory Stick. (Refer to “1-27. Memory Stick”.)

7-1-2. Outline of Electrical Alignment

In Section 7 explains the electrical alignment after replacing the following parts:

- Drum assembly Section 7-2
- AT head Section 7-3

7-1-3. System Setting

- (1) Turn on the power, and display the SYSTEM menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[F9]** → SYSTEM menu)
(For the SYSTEM menu, refer to Section 3-3-9.)
- (2) Take notes of the customer settings for the following setting items.
- (3) Change the following setting items to the settings for adjustment.

Setting item	Customer setting								
[F4] SYSTEM SIGNAL	☐ 4:2:2 (YPbPr)	☐ 4:4:4SQ (RGB)	☐ 4:4:4HQ (RGB)	☐ 4:4:4HQ (XYZ)					
	☐ 4:2:2 3D (YPbPr)	☐ 4:2:2DBL (YPbPr)							
[F1] SYSTEM MODE	☐ 2K1080	☐ 1080	☐ 720	☐ DATA					
[F2] SYSTEM SCAN	☐ Interlace	☐ PsF	☐ Progressive						
[F3] SYSTEM FRME	☐ 23.98	☐ 24	☐ 25	☐ 29.97	☐ 30	☐ 50	☐ 59.94	☐ 60	
[F7] ACTIVE LINE	☐ OFF	☐ 1080							

7-2. Electrical Adjustment after Replacing the Drum

7-2-1. Adjustment Overview

After replacing the drum assembly, perform the adjustments in Section 7-2.

All the adjustments after replacing the drum are adjusted using the menus in the maintenance mode.

Notes

- Before adjusting, attach the upper lid (front) assembly. When other than extending the plug-in board, also attach the upper lid (rear) assembly.
- For detail of each menu in the maintenance mode, refer to Section 3.
The countermeasures against the malfunction of an automatic adjustment (an error message “ADJUST INCOMPLETE” will be displayed on the color display of the unit) had been described to Section 3.

Tools

The following equipment (or equivalent) and fixtures are required:

Cleaning tape	BCT-HD12CL	(Commercially available)	
Alignment tapes	HR2-1B	(Part No. 8-960-076-41)	
	HR5-1A	(Part No. 8-960-076-01)	Option HKSR-5802 installed model only
	HR5-1B	(Part No. 8-960-076-31)	
	ZR5-1	(Part No. 8-960-073-01)	Option HKSR-5802 installed model only
	ZR5-1P	(Part No. 8-960-073-51)	Option HKSR-5802 installed model only
Recording tape	SONY BCT-SR series (HDCAM SR cassette: Commercially available)		

Note

Use the blank tape erased using a tape eraser in advance or a new blank tape as a recording tape for the adjustment.

Adjustments

Notes

- In Section 7-2-5, perform required adjustment according to the digital format that is practicable to play back in this unit.
- In Section 7-2-6, perform required adjustments for the HDCAM SR format only.

Section	Item		Adjustment point		Remarks
7-2-3	Drum phase adjustment		ALT SERVO ADJUST menu [F5] (RF SW POS SR)		(Automatic adjustment)
		Data saving	ALT SERVO ADJUST menu [F1] (NVRAM CTL)		
7-2-4	HDCAM DT system adjustment		DT/SAT ADJUST menu [F3] (HDCAM DT)	Option HKSR-5802 installed model only	(Automatic adjustment)
		Data saving	DT/SAT ADJUST menu [F1] (NVRAM CTL)		
7-2-5	PB equalizer adjustment	HDCAM SR	RF ADJUST menu [F4] (EQULZR ADJ)		(Automatic adjustment)
	1080/422 YPbPr	Data saving	Equalizer menu [F1] (NVRAM CTL)		
	29.97 Hz HDCAM				
	↓ Digital BETACAM 525	HDCAM	RF ADJUST menu [F4] (EQULZR ADJ)	Option HKSR-5802 installed model only	(Automatic adjustment)
	25 Hz HDCAM	Data saving	Equalizer menu [F1] (NVRAM CTL)		
	↓ Digital BETACAM 625				
	23.98 Hz HDCAM SR	Digital BETACAM	RF ADJUST menu [F4] (EQULZR ADJ)	Option HKSR-5802 installed model only	(Automatic adjustment)
	↓ HDCAM	Data saving	Equalizer menu [F1] (NVRAM CTL)		
	1080/422 3D YPbPr or 1080/422 × 2 YPbPr (Only HKSR-5803HQ installed)				
	29.97 Hz HDCAM SR				
	↓ 25 Hz HDCAM SR				
	↓ 23.98 Hz HDCAM SR				
7-2-6	Recording current adjustment	HDCAM SR	RF ADJUST menu [F5] (REC ADJ)		(Automatic adjustment)
	1080/422 YPbPr	Data saving	REC ADJUST menu [F1] (NVRAM CTL)		
	29.97 Hz HDCAM SR				
	↓ 25 Hz HDCAM SR				
	↓ 23.98 Hz HDCAM SR				
	↓ 1080/422 3D YPbPr or 1080/422 × 2 YPbPr (Only HKSR-5803HQ installed)				
	29.97 Hz HDCAM SR				
	↓ 25 Hz HDCAM SR				
	↓ 23.98 Hz HDCAM SR				

Section	Item	Adjustment point	Remarks
7-2-7	HDCAM SR SAT signal level adjustment	DT/SAT ADJUST menu [F4] (HDSR SAT)	(Automatic adjustment)
	1080/422 YPbPr		
	29.97 Hz HDCAM SR		
	↓		
	25 Hz HDCAM SR		
	↓		
	23.98 Hz HDCAM SR		
	↓		
	1080/422 3D YPbPr or 1080/422 × 2 YPbPr (Only HKSR-5803HQ installed)		
	29.97 Hz HDCAM SR		
	↓		
	25 Hz HDCAM SR		
	↓		
	23.98 Hz HDCAM SR		

7-2-2. Common Preparation

Set buttons, setup menu, and others specified before starting the adjustments.

After completing all the adjustments, be sure to reset them to the customer settings.

1. Warm up the VTR through the power for 20 minutes or more.
2. Check that this unit is set to the SYSTEM FRAME 29.97 Hz.
If not, change the system setting referring to Section 7-1-3.
3. Set the VTR's buttons and setup menu as follows:

Location	Item	Customer setting	Setting at adjustment	Remarks
Upper control panel	REMOTE	1 (9P)	_____ ⇒	OFF (Light off)
		2 (50P)	_____ ⇒	OFF (Light off)
		NETWORK1	_____ ⇒	OFF (Light off)
		NETWORK2	_____ ⇒	OFF (Light off)
Setup menu	ITEM-109 (KEY INHIBIT)	_____ ⇒	OFF	
HOME menu	[F2] (REC INH)	_____ ⇒	OFF	
Function menu	[F1] (TIMER SEL)	_____ ⇒	TC	
	[F5] (TCR SEL)	_____ ⇒	LTC	
	[F6] (REGENE SOURCE)	_____ ⇒	int-L	
	[F7] (TGC MODE)	_____ ⇒	regene	
	[F8] (RUN MODE)	_____ ⇒	rec	

7-2-3. Drum Phase Adjustment

Alignment tape: HR2-1B

Note

Rewind the alignment tape to the tape beginning in advance.

1. Activate the ALT MAINTENANCE menu, and display the ALT SERVO ADJUST menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **ALT** → **F4** → **ALT** → ALT SERVO ADJUST menu)
(For the ALT SERVO ADJUST menu, refer to Section 3-4-2.)
2. Press the **F5** (RF SW POS SR) key to display the RF SWITCHING POS. menu.
3. Press the **SET** key.
4. Insert the alignment tape HR2-1B rewound to the tape beginning.
 - Adjustment is executed automatically when the alignment tape is inserted.
 - The message “Auto Adjust Complete” will be displayed and the alignment tape will be ejected automatically when this automatic adjustment is completed normally.

Note

The automatic adjustment may be failed even in normal condition. If it is failed, turn off the power of the unit once, and perform the adjustment again.

Saving the Data

5. Press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.
6. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **F10** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
7. Press the **F10** (EXIT) key two times to exit the ALT SERVO ADJUST menu. (Display the ALT MAINTENANCE Menu.)
8. Perform the next adjustment (Section 7-2-4).

7-2-4. HDCAM DT System Adjustment (when the Option HKSR-5802 is installed)

Alignment tape: HR5-1A

Notes

Cue up the alignment tape to the time code 00:10:00:00 in advance.

When using the alignment tape not located to the time code 00:10:00:00, exit the maintenance mode and cue it up.

Then eject the alignment tape once.

1. Activate the ALT MAINTENANCE menu, and display the DT/SAT ADJUST menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **ALT** → **F5** → DT/SAT ADJUST menu)
(For the DT/SAT ADJUST menu, refer to Section 3-4-3.)
2. Press the **F3** (HDCAM DT) key to display the HDCAM DT ADJUST menu.
3. Press the **SET** key.
4. Insert the alignment tape HR5-1A located to the time code 00:10:00:00.
 - Adjustment is executed automatically when the alignment tape is inserted.
 - The message “Auto Adjust Complete” will be displayed and the alignment tape will be ejected automatically when this automatic adjustment is completed normally.

Saving the Data

5. Press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.
6. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **F10** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
7. Exit the maintenance mode.

7-2-5. PB Equalizer Adjustment

Note

Perform this adjustment in the SYSTEM FRAME 29.97 Hz, 25 Hz, and 23.98 Hz in the order under the following settings. Make adjustments in the SYSTEM FRAME 23.98 Hz for the HDCAM SR and HDCAM formats.

- SYSTEM MODE : 1080
- SYSTEM SCAN : Interlace
- SYSTEM SIGNAL : 422 YPbPr

And also, when HKSR-5803HQ is installed, perform the adjustment in the SYSTEM FRAME 29.97 Hz, 25 Hz, and 23.98 Hz under the following settings. (Only HDCAM SR)

- SYSTEM MODE: 1080
- SYSTEM SCAN: PsF
- SYSTEM SIGNAL: 422 3D YPbPr or 422 × 2 YPbPr

- For the system setting, refer to **[F9]** SYSTEM menu of “3-3-9. OTHER CHECK Menu”.
- When this adjustment is not finished normally, perform “6-2. Video Tracking Check”.

1. HDCAM SR Format

Tools

- Alignment tape: HR5-1B
- Recording tape: BCT-SR series

1. Activate the ALT MAINTENANCE menu, and display the RF ADJUST menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[ALT]** → **[F7]** → RF ADJUST menu)
(For the RF ADJUST menu, refer to Section 3-4-5.)
2. Press the **[F1]** (FMT SEL) key several times to select the HDCAM SR.
3. Press the **[F4]** (EQULZR ADJ) key to display the Equalizer menu.
4. Insert the alignment tape HR5-1B, then rewind it to the tape beginning.
5. To execute the automatic adjustments, press the **[F6]** (ALL CH ADJ) key then press the **[SET]** key.
 - After 12 minutes, the adjustments are completed, then the message [Complete] is displayed.

Saving the Data

Note

Do not save the adjustment data if any automatic adjustment was not completed properly.

6. Press the **[F1]** (NVRAM CTL) key to display the NVRAM CONTROL menu.
7. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **[F10]** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
8. Eject the alignment tape.
9. Perform the next adjustment “2. HDCAM Format”.
In case of the option HKSR-5802 is not installed, exit the maintenance mode and perform “4. Adjustment in the SYSTEM FRAME 25 Hz”.

2. HDCAM Format

(When the Option HKSR-5802 is Installed)

Alignment tape: HR5-1A

1. Press the **[F2]** (FMT SEL) key several times to select the HDCAM.
2. Insert the alignment tape HR5-1A, then rewind it to the tape beginning.
3. To execute the automatic adjustments, press the **[F6]** (ALL CH ADJ) key then press the **[SET]** key.
 - After 2 minutes, the adjustments are completed, then the message [Complete] is displayed.

Saving the Data

Note

Do not save the adjustment data if any automatic adjustment was not completed properly.

4. Press the **[F1]** (NVRAM CTL) key to display the NVRAM CONTROL menu.
5. Select the "SAVE ALL DATA" by pressing the cursor keys, then press the **[F10]** (EXIT) key to save data.
 - The message "Save Complete" will be displayed when this data save is completed normally.
6. Eject the alignment tape.
7. Perform the next adjustment "3. Digital BETACAM Format".

3. Digital BETACAM Format

(When the Option HKSR-5802 is Installed)

Alignment tape: for SYSTEM FRAME 29.97 Hz: ZR5-1
for SYSTEM FRAME 25 Hz: ZR5-1P

1. Press the **[F2]** (FMT SEL) key several times to select the DIGITAL BETACAM.
2. Insert the alignment tape, then rewind it to the tape beginning.
3. To execute the automatic adjustments, press the **[F6]** (ALL CH ADJ) key then press the **[SET]** key.
 - After 2 minutes, the adjustments are completed, then the message [Complete] is displayed.

Saving the Data

Note

Do not save the adjustment data if any automatic adjustment was not completed properly.

4. Press the **[F1]** (NVRAM CTL) key to display the NVRAM CONTROL menu.
5. Select the "SAVE ALL DATA" by pressing the cursor keys, then press the **[F10]** (EXIT) key to save data.
 - The message "Save Complete" will be displayed when this data save is completed normally.
6. Eject the alignment tape.
7. Exit the maintenance mode, and perform the "4. Adjustment in the SYSTEM FRAME 25 Hz".

4. Adjustment in the SYSTEM FRAME 25 Hz

1. Set the system to the SYSTEM FRAME 25 Hz referring to Section 7-1-3.
2. Perform the PB equalizer adjustment for each format.
3. Exit the maintenance mode, and perform the "5. Adjustment in the SYSTEM FRAME 23.98 Hz".

5. Adjustment in the SYSTEM FRAME 23.98 Hz

1. Set the system to the SYSTEM FRAME 23.98 Hz referring to Section 7-1-3.
2. Perform the PB equalizer adjustments for "1. HDCAM SR Format" and "2. HDCAM Format".
3. Reset the system to the SYSTEM FRAME 29.97 Hz referring to Section 7-1-3.

7-2-6. Recording Current Adjustment

Note

Perform this adjustment in the SYSTEM FRAME 29.97 Hz, 25 Hz, and 23.98 Hz in the order under the following settings.

- SYSTEM MODE : 1080
- SYSTEM SCAN : Interlace
- SYSTEM SIGNAL : 422 YPbPr

And also, when HKSR-5803HQ is installed, perform the adjustment in the SYSTEM FRAME 29.97 Hz, 25 Hz, and 23.98 Hz under the following settings. (Only HDCAM SR)

- SYSTEM MODE: 1080
- SYSTEM SCAN: PsF
- SYSTEM SIGNAL: 422 3D YPbPr or 422 × 2 YPbPr

For the system setting, refer to **[F9]** SYSTEM menu of “3-3-9. OTHER CHECK Menu”.

Tools

- Cleaning tape: BCT-HD12CL
(Commercially available)
- Recording tape: BCT-SR series
(Commercially available)

Note

Use the blank tape erased using the tape eraser, etc. in advance or a new blank tape.

Preparation

Clean with the cleaning tape.

Insert the cleaning tape (BCT-HD12CL).

- The EJECT button blinks, and the PLAY button light.
Then the cleaning tape is played back for about 10 seconds, then it is automatically ejected.

Recording Current Adjustment

1. Activate the ALT MAINTENANCE menu, and display the RF ADJUST menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[ALT]** → **[F7]** → RF ADJUST menu)
(For the RF ADJUST menu, refer to Section 3-4-5.)
2. Press the **[F1]** (FMT SEL) key several times to select the HDCAM SR.
3. Press the **[F5]** (REC ADJ) key to display the REC ADJUST menu.
4. Insert the recording tape.

5. To execute the automatic adjustment for the recording current, press the **[F6]** (ALL CH ADJ) key then press the **[SET]** key.
 - Message [Complete] will be displayed when this adjustment is completed normally.

Saving the Data

Note

Do not save the adjustment data if the automatic adjustment was not completed properly.

6. Press the **[F1]** (NVRAM CTL) key to display the NVRAM CONTROL menu.
7. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **[F10]** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
8. Eject the recording tape.
9. Change the system to the SYSTEM FRAME 25 Hz and 23.98 Hz referring to Section 7-1-3., then perform the steps 1 to 8 again for each SYSTEM FRAME.
10. Reset the system to the SYSTEM FRAME 29.97 Hz referring to Section 7-1-3.
11. Exit the maintenance mode.

Note

After adjusting in this section, be sure to perform the “7-2-7. HDCAM SR SAT Signal Level Adjustment”.

7-2-7. HDCAM SR SAT Signal Level Adjustment

Notes

- Be sure to perform this adjustment, after the “7-2-6. Recording Current Adjustment”.
- Perform this adjustment in the SYSTEM FRAME 29.97 Hz, 25 Hz, and 23.98 Hz in the order under the following settings.
 - SYSTEM MODE : 1080
 - SYSTEM SCAN : Interlace
 - SYSTEM SIGNAL : 422 YPbPr

And also, when HKSR-5803HQ is installed, perform the adjustment in the SYSTEM FRAME 29.97 Hz, 25 Hz, and 23.98 Hz under the following settings. (Only HDCAM SR)

- SYSTEM MODE: 1080
 - SYSTEM SCAN: PsF
 - SYSTEM SIGNAL: 422 3D YPbPr or 422 × 2 YPbPr
- For the system setting, refer to **[F9]** SYSTEM menu of “3-3-9. OTHER CHECK Menu”.
 - Because adjustment data is automatically saved in the NV-RAM on the EQ-102 board when the automatic adjustment is completed, saving the data is not required.

Alignment tape: HR5-1B

Note

Cue up the alignment tape to the time code 00:10:00:00 in advance.

When using the alignment tape not located to the time code 00:10:00:00, exit the maintenance mode and cue it up. Then eject the alignment tape once.

1. Set the system to the SYSTEM FRAME 29.97 Hz referring to Section 7-1-3.
2. Display the DT/SAT ADJUST menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[ALT]** → **[F5]** → DT/SAT ADJUST menu)
(For the DT/SAT ADJUST menu, refer to Section 3-4-3.)
3. Press the **[F4]** (HDSR SAT) key to display the HDSR SAT ADJUST menu.
4. Press the **[SET]** key.
5. Insert the alignment tape HR5-1B located to the time code 00:10:00:00.
 - Adjustment is executed automatically when the alignment tape is inserted.
 - The message “Auto Adjust Complete” will be displayed and the alignment tape will be ejected automatically when this automatic adjustment is completed normally.
6. Change the system to the SYSTEM FRAME 25 Hz and 23.98 Hz referring to Section 7-1-3, then perform the steps 2 to 5 again for each SYSTEM FRAME.
7. Reset the system to the SYSTEM FRAME 29.97 Hz referring to Section 7-1-3.
8. Exit the maintenance mode.

7-3. Electrical Adjustment after Replacing the AT Head

7-3-1. Adjustment Overview

Perform this section when the AT head was replaced.

For adjustment items and its order, refer to “Adjustments” on the next page.

Tools

The following equipment (or equivalent) and fixtures are required:

Audio signal generator	TEKTRONIX SG5010
Audio analyzer	AUDIO PRECISION System One/ System Two/System Two Cascade/System Two Cascade Plus/AP2700
Note	
The audio analyzer should be filtered through 80 kHz LPF throughout adjustment.	
Frequency counter	ADVANTEST R5362B
Band-pass filter (1 kHz)	
Time code generator	SONY BVG-1600 SONY BVG-1600PS
Time code reader	SONY BVG-1500 SONY BVG-1500PS
Oscilloscope	TEKTRONIX TDS3054B or equivalent
Extension board	EX-949 (Part No. A-8347-714-A)
Alignment tapes	HR5-1A (Part No. 8-960-076-01) HR5-1B (Part No. 8-960-076-31)
Recording tape	Sony BCT-SR series (HDCAM SR cassette: Commercially available)
Note	
Use the blank tape erased using a tape eraser in advance or a new blank tape as a recording tape for the adjustment.	
Shorting clip	

Adjustments

Section	Item	Adjustment point	Test point
7-3-2	Preparation		
7-3-3	Time Code System Adjustment		
	1. LTC Erasure Current Adjustment	●LV200/TC-104A, 112A	TP201/TC-104A, 112A
	2. LTC PB Level Check	check	TP102/TC-104A, 112A
	3. LTC OA Check	check	TP100/TC-104A, 112A TP102/TC-104A, 112A
	4. LTC Erase Ratio Check	check	TP102/TC-104A, 112A
7-3-4	CUE PB System Adjustment		
	1. CUE PB Lebel Adjustment	●RV300/AE-31H	TP102/CUE-13
	2. CUE Output Lebel Adjustment	●RV104/CUE-13	CUE OUT
	3. CUE PB VCA Adjutment	●RV102/CUE-13	CUE OUT
	4. CUE PB Frequency Response Adjustment	●RV203/AE-31H	CUE OUT
	5. TC Insert Cross-talk Adjustment	●RV701/AE-31H ●RV703/AE-31H	CUE OUT

7-3-2. Preparation

Set the buttons, setup menu, and others specified before starting the adjustments.
After completing all the adjustments, be sure to reset them to the customer settings.

1. After turning off the power, reset the DIP switches on the CUE-13 board to the factory settings.

Board	Ref. No. (Address)	Item	Customer setting	Setting at adjustment
CUE-13	S101 (A-2)	CUE output level	_____ ⇒	+4 dBm/600 Ω (only bit 1 to ON)

2. Turn on the power.
3. Activate the OTHERS CHECK menu, and display the HEAD ROOM menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[F9]** → **[F4]** → HEAD ROOM menu)
(For the HEAD ROOM menu, refer to Section 3-3-9.)
4. Press the **[F2]** (M-HEAD ROOM) key several times to select the 20dB/+4dBu.
5. Press the **[F1]** (NVRAM CTRL) key to display the NVRAM CONTROL menu.
6. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **[F10]** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
7. Turn off the power.
8. Open the AE-31H board. (Refer to the figure in Section 5-1-2.)
9. Turn on the power.
10. Check that this unit is set to the SYSTEM FRAME 29.97 Hz.
If not, change the system setting referring to Section 7-1-3.
11. Set the VTR’s buttons and setup menu as follows:

Location	Item	Customer setting	Setting at adjustment
Upper control panel	REMOTE	1 (9P)	_____ ⇒ OFF (Light off)
		2 (50P)	_____ ⇒ OFF (Light off)
		NETWORK1	_____ ⇒ OFF (Light off)
		NETWORK2	_____ ⇒ OFF (Light off)
Lower control panel	PB LEVEL (ITEM-833 AUDIO PB LEVEL)	CH1	_____ ⇒ PRESET (4000)
		CH2	_____ ⇒ PRESET (4000)
		CUE	_____ ⇒ PRESET (4000)
Setup menu	ITEM-109 (KEY INHIBIT)	_____ ⇒	OFF
HOME menu	[F2] (REC INH)	_____ ⇒	OFF
TC menu	[F1] (TIME SEL)	_____ ⇒	TC
	[F5] (TCR SEL)	_____ ⇒	LTC
	[F6] (REGENE SOURCE)	_____ ⇒	int-L
	[F7] (TGC MODE)	_____ ⇒	regene
	[F8] (RUN MODE)	_____ ⇒	rec

7-3-3. Time Code System Adjustment

Tools

- Audio signal generator:
TEKTRONIX SG5010 or equivalent
- Audio analyzer:
AUDIO PRECISION System One/Two
or equivalent
- Oscilloscope:
TEKTRONIX TDS3054B or equivalent
- Time code generator: SONY BVG-1600/1600PS or
equivalent
- Time code reader: SONY BVG-1500/1500PS or
equivalent
- Band-pass filter (1 kHz)
- Alignment tape: HR5-1B
- Recording tape: BCT-SR series

Note

For this recording tape, use a blank tape erased using the tape eraser, etc. in advance or a new blank tape.

Preparation

1. Check the settings

(Refer to “7-3-2. Preparation”.)

2. Check that the equipment has warmed up

Before starting the adjustment, warm up the VTR and equipment to be used through the power for 10 minutes or more.

1. LTC Erasure Current Adjustment

Measuring equipment: Audio analyzer

Recording tape: BCT-SR series

Note

For this recording tape, prepare a blank tape erased using the tape eraser, etc. in advance or a new blank tape.

1. Connect the audio analyzer (V rms measurement mode) to TP201 (A-2) on the TC-104A/112A board.
GND: E100/TC-104A, 112A (A-2)
2. Insert the recording tape.
3. Check the level on the audio level meter in the REC mode.
Adj. point: ●LV200/TC-104A, 112A (A-2)
Specification: 120 mV rms
(Note: 48.0 ± 1.0 kHz)
4. Eject the recording tape.

2. LTC PB Level Check

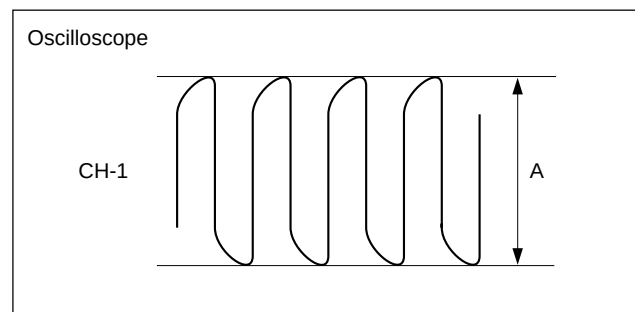
Measuring equipment: Oscilloscope

Alignment tape: HR5-1B

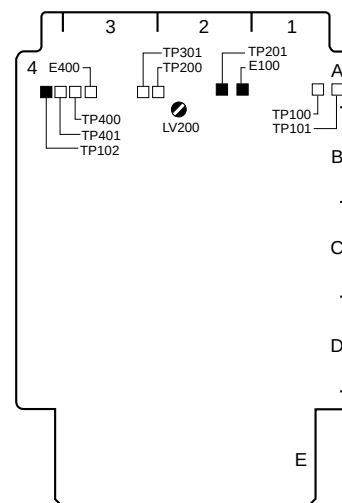
1. Set and connect the oscilloscope as follows:
CH-1: TP102/TC-104A, 112A (A-4), DC 100 mV/
DIV
GND: E100/TC-104A, 112A (A-2)
TIME: 100 μ s/DIV
2. Insert the alignment tape HR5-1B.
3. During play back the alignment tape in the PLAY mode, check the level on the oscilloscope.
Specification: $A \geq 250$ mV p-p

Note

If specification is not satisfied, perform the “Section 6 Tape Path Alignment”.



4. Eject the alignment tape.



TC-104A/112A Board (Side A)

3. LTC OA Check

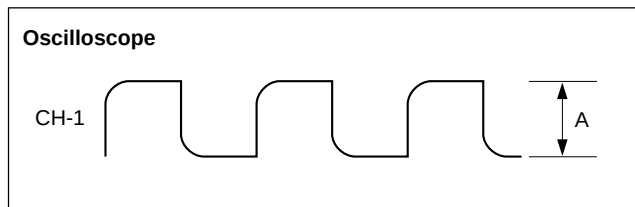
Measuring equipment: Oscilloscope
Time code generator and reader

Recording tape: BCT-SR series

Note

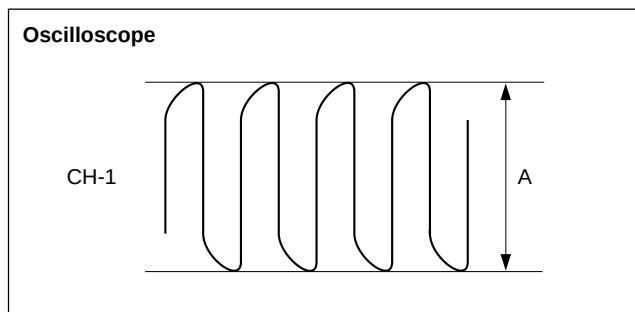
For this recording tape, prepare a blank tape erased using the tape eraser, etc. in advance or a new blank tape.

1. Connect the output of the time code generator to TIME CODE IN connector.
2. Connect and set the oscilloscope as follows:
CH-1: TP100/TC-104A, 112A (A-1), DC 100 mV/
DIV
GND: E100/TC-104A, 112A (A-2)
TIME: 100 μ s/DIV
3. Insert the recording tape.
4. Check the level on the oscilloscope in REC mode.



Specification: $A = 80 \pm 10$ mV p-p

5. Connect the LTC input of the time code reader to TIME CODE OUT connector.
6. Change the connection of oscilloscope as follows:
CH-1: TP102/TC-104A, 112A (A-4)
GND: E100/TC-104A, 112A (A-2)
7. Play back the recorded portion at step 4 in PLAY mode. And then check that the time code can be read on the time code reader.
8. Check each level on the oscilloscope while playing back the recorded portion at step 4 in PLAY mode.



Specification: $A \geq 250$ mV p-p

4. LTC Erase Ratio Check

Measuring equipment: Audio signal generator
Audio analyzer
Band-pass filter (1 kHz)

Recording tape: BCT-SR series

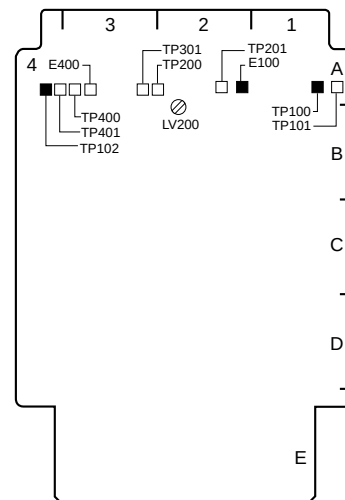
Note

For this recording tape, prepare a blank tape erased using the tape eraser, etc. in advance or a new blank tape.

1. Set the TC menu as follows:
F6 (REGENE SOURCE): ext-L
F7 (TCG MODE): prst
2. Feed the audio signal (1 kHz, +7 dBu) from the audio signal generator to TIME CODE IN connector.
(0 dBu $\approx$ 0.775 V rms)
3. Insert the recording tape, then record for 30 seconds.
(Record the audio signal to the time code track.)
4. Disconnect the audio signal generator from TIME CODE IN connector.
5. Rewind the recorded portion by 15 seconds and insert the no signal to the time code track for 15 seconds.
6. Connect the audio analyzer through a 1 kHz band-pass filter to TP102/TC-104A, 112A (A-4).
GND: E100/TC-104A, 112A (A-2)
7. Play back the audio-signal-recorded portion in PLAY mode. And then measure the PB level on the audio analyzer.
8. Check the PB level on the audio analyzer while playing back the no-signal-recorded portion in PLAY mode.

Specification: -40 dB or less

(Regard a level of the audio-signal-recorded portion as 0 dB.)



TC-104A/112A Board (Side A)

7-3-4. CUE PB System Adjustment/CUE-13, AE-31H Boards

Tools

- Audio analyzer:
Audio Precision System One/Two or equivalent
- Audio level meter:
Hewlett-Packard HP3400A or equivalent
- Digital voltmeter: Advantest TR6845 or equivalent
- Extension board: EX-949
- Shorting clip
- Alignment tapes: HR5-1A

Preparation

1. Check the switch settings on the CUE-13 board

Reset all the settings of CUE-13 board to the factory settings.
(Refer to “1. Switches Settings” in “7-3-2. Preparation”.)

2. Extend the CUE-13 board with an extension board EX-949

Note

After turning off the power, then remove the CUE-13 board.

3. Open the AE-31H board

(Refer to the figure in Section 5-1-2.)

4. Clean the AT head

Clean the tape running surface of the AT head.
(Refer to “4-2-6. Stationary Heads Cleaning”.)

Note

Perform the cleaning under the power off.

5. Setting when HKSR-5802 is not installed

When HKSR-5802 (DVP board) is not installed, the HDCAM tape (and Digital Betacam tape) cannot run. However, the PATH CHECK menu enables it. Activate the ALT SERVO CHECK menu, and select the PATH CHECK menu.

HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** PATH CHECK menu → **SET**

6. Check the other settings

Check that any setting on the panel or the menu on the VTR is well prepared for processing adjustments.
(Refer to “7-3-2. Preparation”.)

7. Check the warming up

Warming up of equipment to be used (20 minutes or more).

1. CUE PB Level Adjustment

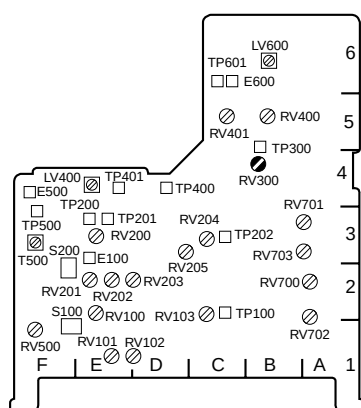
1. Short-circuit TP101/CUE-13 (D-1) and E100/CUE-13 (C-1) with a shorting clip.
2. Connect the audio level meter to TP102/CUE-13 (B-2).
GND: E103/CUE-13 (C-2)
3. Play back the portion of 1 kHz, +4 dBu of the alignment tape.
4. Check level using the audio level meter, and then adjust it.
Adjusting point: ⓈRV300/AE-31H (B-4)
Specification: -10.0 ± 0.2 dBu
5. With these terminals short-circuited, follow the next step.

2. CUE Output Level Adjustment

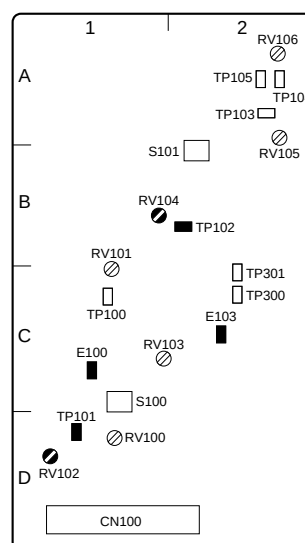
1. Be sure that TP101/CUE-13 (D-1) and E100/CUE-13 (C-1) are short-circuited.
2. Connect the audio analyzer to CUE OUT connector on the connector panel.
3. Set the audio analyzer as follows:
Measuring mode: LEVEL, dBu
Input filter: 80 kHz LPF
4. Play back the portion of 1 kHz, +4 dBu of the alignment tape.
5. Check level using the audio analyzer, and then adjust it.
Adjusting point: ●RV104/CUE-13 (B-1)
Specification: +4.0 ±0.2 dBu
6. Remove the shorting clip which is attached to TP101/CUE-13 (D-1) and E100/CUE-13 (C-1).

3. CUE PB VCA Adjustment

1. Connect the audio analyzer to CUE OUT connector on the connector panel.
2. Set the audio analyzer as follows:
Measuring mode: LEVEL, dBu
Input Filter: 80 kHz LPF
3. Play back the portion of 1kHz, +4 dBu of the alignment tape.
4. Check audio level using the audio analyzer, and then adjust it.
Adjusting point: ●RV102/CUE-13 (D-1)
Specification: +4.0 ±0.2 dBu



AE-31H Board (Side A)



CUE-13 Board (Side A)

4. CUE PB Frequency Response adjustment

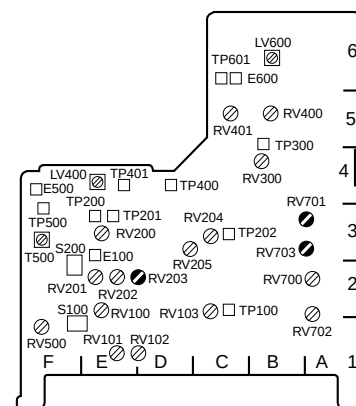
1. Connect the audio analyzer to CUE OUT connector on the connector panel.
2. Set the audio analyzer as follows:
Measuring mode: LEVEL, dBu
Input Filter: 80 kHz LPF
3. Play back the portion of 90 Hz to 12 kHz of the alignment tape.
4. Check this PB level using the audio analyzer, and then adjust it.

Adjusting point: ●RV203/AE-31H (D-2)

Specification: Each frequency (3 kHz, 7 kHz, 10 kHz, 12 kHz) level:
1 kHz level ± 0.8 dB
Firstly, adjust the level of 10 kHz until it equates with the level of 1 kHz. Then check each level of other frequency.

5. TC Insert Cross-talk Adjustment

1. Insert the Betacam cassette tape that recorded the no signal to the LAU tracks.
2. Set the audio analyzer as follows:
Function mode: LEVEL
Input filter: 80 kHz LPF
3. Connect the audio analyzer's input to CUE OUT CH2 connector.
4. Press the **F4** (INC TC) key of the HOME menu several times to set the TC insert editing mode to ON.
5. Press the PLAY button, then press the EDIT button.
6. Adjust the cross-talk level on the audio analyzer.
(Alternately adjust the following adj. points.)
Adj. points: ●RV701/AE-31H (A-3)
●RV703/AE-31H (A-3)
Specification: Minimize
(The level should be less than -18 dBu)
7. Stop the recording, then eject the cassette tape.



AE-31H Board (Side A)

Section 8

Electrical Alignment

8-1. Electrical Alignment Overview

8-1-1. Precautions

- Be sure to adjust each block in order unless any instructions are provided.
- Do not touch adjusting part when other than required.
- Do not execute automatic adjustment, and do not change adjustment data when other than required.
In case either of these is done unintentionally, do not save the data. To recover it, turn off the power of the VTR.
- For details on the maintenance mode, refer to Section 3.
- Before beginning adjustment, it is recommended to make a copy of setup conditions. If customer conditions are noted, the settings can be returned easily to its customer condition after finishing adjustment.

Settings of switches on panels, circuit boards:

Use the setting check sheets. (Refer to Appendix A in the end of this manual.)

Settings of the setup menu:

Use a Memory Stick. (Refer to “1-27. Memory Stick”.)

8-1-2. Outline of Electrical Alignment

In Section 8 explains the all electrical adjustment to each block.

Block	Reference	Contents	Object of adjustment
Power supply unit	Section 8-2	Output voltage check of power supply unit	———
Servo/DT	Section 8-3	Servo system and DT system alignment	DT-47/48, DR-508, SS-102
RF	Section 8-4	RF system alignment	EQ-102/109
Audio	Section 8-5	Adjustment of Analog audio output	APR-81/91
CUE	Section 8-5	Adjustment of CUE	AE-31H, CUE-13
SD Video	Section 8-6	Adjustments of Analog composite Video output	HIF-46/56
HD Video	Section 8-7	HD Video system adjustment	APR-81/91
Full erase, Time code	Section 8-8	LTC system adjustment and Full erasure current check	TC-104A/112A
Tele-File	Section 8-9	Tele-File system adjustment	DIO-86

8-1-3. System Setting

- (1) Turn on the power, and display the SYSTEM menu.
(HOME menu → [SFT] + [DIAG] → [SFT] + [F8] → [F9] → SYSTEM menu)
(For the SYSTEM menu, refer to [F9] SYSTEM MENU of “Section 3-3-9. OTHERS CHECK menu”.)
- (2) Take notes of the customer settings for the following setting items.
- (3) Change the following setting items to the settings for adjustment. (Refer to each adjustment)

Setting item	Customer setting				
[F4] SYSTEM SIGNAL	☐ 4:2:2 (YPbPr)	☐ 4:4:4SQ (RGB)	☐ 4:4:4HQ (RGB)	☐ 4:4:4HQ (XYZ)	
	☐ 4:2:2 3D (YPbPr)	☐ 4:2:2DBL (YPbPr)			
[F1] SYSTEM MODE	☐ 2K1080	☐ 1080	☐ 720	☐ DATA	
[F2] SYSTEM SCAN	☐ Interlace	☐ PsF	☐ Progressive		
[F3] SYSTEM FRAME	☐ 23.98	☐ 24	☐ 25	☐ 29.97	☐ 30
				☐ 50	☐ 59.94
					☐ 60
[F7] ACTIVE LINE	☐ OFF	☐ 1080			

8-2. Power Supply Output Voltage Check

Note

When the power supply unit in the VTR is replaced, perform the output voltage check.

Tools

- Digital voltmeter: ADVANTEST R6441B or equivalent
- Extension board: EX-873 (Part No. A-8346-141-*)

Preparation

1. Turn off the power.
2. If possible, install the following options.
 - HKSR-5001 : FC board
 - HKSR-5802 : DVP board
 - HKSR-5803SQ or HKSR-5803HQ :
SQ board or DLP board
(on HPR board)
 - HKSR-5804 : MY board
3. Extend the SS-102 board using the extension board EX-873.
4. Wait for 10 minutes after turning on the power.

Voltage Check

Check each output voltage of power supply lines.

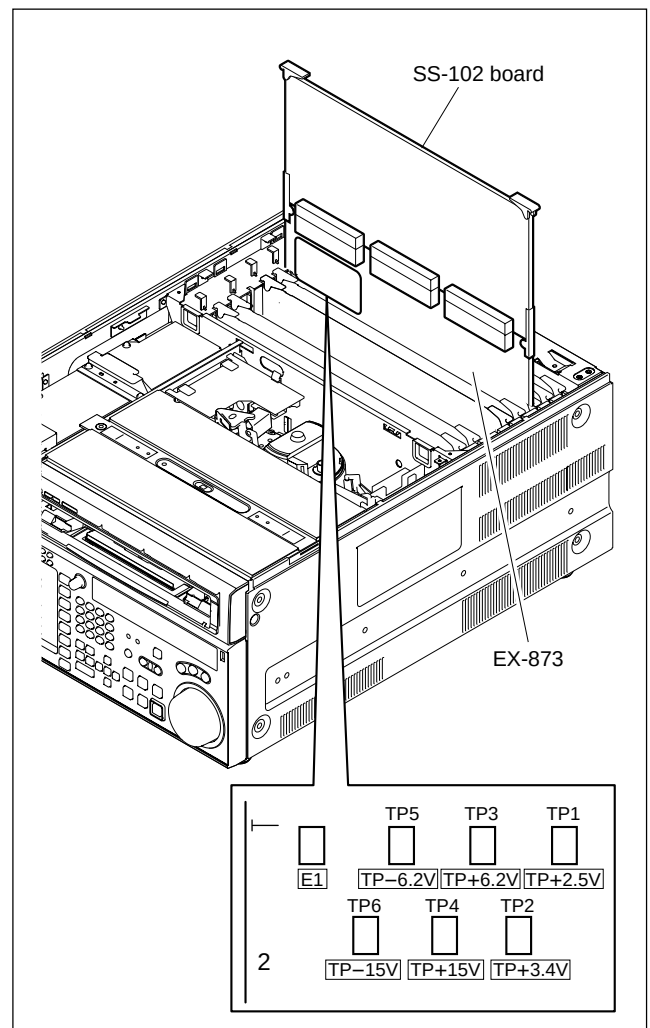
Note

It is no problem although checking voltage may exceed specified voltage when the options are not installed.

Output voltage	Specification	Test point
+2.5 V	+2.5 +0.25/-0.15 V	TP1/EX-873
+3.4 V	+3.4 +0.25/-0.15 V	TP2/EX-873
+6.2 V	+6.2 $\pm$ 0.3 V	TP3/EX-873
+15V	+15 +2.0/-0.1 V	TP4/EX-873
-6.2 V	-6.2 $\pm$ 0.6 V	TP5/EX-873
-15 V	-15 +2.0/-0.1 V	TP6/EX-873

If the specification is not satisfied

Make sure that repair of this unit had been completed.



8-3. Servo/DT Systems Alignment

8-3-1. Adjustment Overview

All the adjustments of the servo and DT systems are performed using the menus in the maintenance mode.

Notes

- Perform the adjustments and data saving in the SYSTEM FRAME 29.97 Hz for the servo and DT systems alignment. Adjustments in the other SYSTEM FRAME are not required.
- For detail of each menu in the maintenance mode, refer to Section 3.
The countermeasures against the malfunction of an automatic adjustment (an error message “ADJUST INCOMPLETE” will be displayed on the color display of the unit) had been described in Section 3.

Tools

The following alignment tapes are required:

Alignment tapes	HR2-1B	(Part No. 8-960-076-41)
	HR5-1A	(Part No. 8-960-076-01)

Adjustments

Section	Item (Section title)	Adjustment point	Remarks
8-3-2	HDCAM SR RF switching position adjustment	ALT SERVO ADJUST menu [F5] (RF SW POS SR)	
	Data saving	ALT SERVO ADJUST menu [F1] (NVRAM CTL)	
8-3-3	Servo continuity automatic adjustment	SERVO ADJUST menu [F2] (AUTO ADJ)	
	Data saving	SERVO ADJUST menu [F1] (NVRAM CTL)	
8-3-4	HDCAM DT system adjustment	DT/SAT ADJUST menu [F3] (HDCAM DT)	HDCAM format playback
	Data saving	DT/SAT ADJUST menu [F1] (NVRAM CTL)	

8-3-2. HDCAM SR RF Switching Position Adjustment

Alignment tape: HR2-1B

Note

Rewind the alignment tape to the tape beginning in advance.

1. Activate the ALT MAINTENANCE menu, and display the ALT SERVO ADJUST menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **ALT** → **F4** → **ALT** → ALT SERVO ADJUST menu)
(For the ALT SERVO ADJUST menu, refer to Section 3-4-2.)
2. Press the **F5** (RF SW POS SR) key to display the RF SWITCHING POS. menu.
3. Press the **SET** key.
4. Insert the alignment tape HR2-1B rewound to the tape beginning.
 - Adjustment is executed automatically when the alignment tape is inserted.
 - The message “Auto Adjust Complete” will be displayed and the alignment tape will be ejected automatically when this automatic adjustment is completed normally.

Note

The automatic adjustment may be failed even in normal condition. If it is failed, turn off the power of the unit once, and perform the adjustment again.

Saving the Data

5. Press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.
6. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **F10** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
7. Press the **ALT** key once to exit the ALT SERVO ADJUST menu. (Display the SERVO ADJUST menu.)
8. When the next adjustment (Section 8-3-3) is not performed, exit the maintenance mode.

8-3-3. Servo Continuity Automatic Adjustment

Notes

- This automatic adjustment does not use any alignment tape.
 - When performing this adjustment continuously from Section 8-3-2 start this adjustment from step 2.
1. Activate the ALT MAINTENANCE menu, and display the SERVO ADJUST menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **ALT** → **F4** → SERVO ADJUST menu)
(For the SERVO ADJUST menu, refer to Section 3-4-2.)
 2. Press the **F2** (AUTO ADJ) key to display the AUTO ADJUST menu.
 3. Press the **SET** key.
 - Continuity automatic adjustment is executed automatically. (about 3 minutes)
 - The message “Auto Adjust Complete” will be displayed when this automatic adjustment is completed normally.

Saving the Data

4. Press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.
5. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **F10** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
6. Press the **F10** (EXIT) key two times to exit the SERVO ADJUST menu.
7. When the next adjustment (Section 8-3-4) is not performed, exit the maintenance mode.

8-3-4. HDCAM DT System Adjustment (when the Option HKSR-5802 is installed)

Alignment tape: HR5-1A

Notes

- Cue up the alignment tape to the time code 00:10:00:00 in advance.

When using the alignment tape not located to the time code 00:10:00:00, exit the maintenance mode and cue it up. Then eject the alignment tape once.

- When performing this adjustment continuously from Section 8-3-3, start this adjustment from step 2.

1. Activate the ALT MAINTENANCE menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **ALT** → ALT MAINTENANCE menu)
2. Press the **F5** (DT/SAT ADJ) key.
(For the DT/SAT ADJUST menu, refer to Section 3-4-3.)
3. Press the **F3** (HDCAM DT) key to display the HDCAM DT ADJUST menu.
4. Press the **SET** key.
5. Insert the alignment tape located to the time code 00:10:00:00.
 - Adjustment is executed automatically when the alignment tape is inserted.
 - The message “Auto Adjust Complete” will be displayed and the alignment tape will be ejected automatically when this automatic adjustment is completed normally.

Saving the Data

6. Press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.
7. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **F10** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
8. Press the **F10** (EXIT) key to exit the DT/SAT ADJUST menu.
9. Exit the maintenance mode.

8-4. RF System Alignment/EQ-102, 109 Board

8-4-1. Adjustment Overview

All the adjustment of the RF system are performed using the menus in the maintenance mode.

Perform the adjustment about the all formats that can be recorded/played back.

The RF system consists of the following.

Record/Playback systems of the HDCAM SR format

Playback system of the HDCAM format (Option HKSR-5802 installed model only)

Playback system of the Digital BETACAM format (Option HKSR-5802 installed model only)

Notes

- The RF system adjustment is required in the SYSTEM FRAME 29.97 Hz, 25 Hz and the 23.98 Hz. And also, when HKSR-5803HQ is installed, perform the adjustment in the SYSTEM FRAME 29.97 Hz, 25 Hz, and 23.98 Hz in the following SYSTEM SIGNAL mode. (Only HDCAM SR)
SYSTEM SIGNAL: 422 3D YPbPr or 422 × 2 YPbPr
Adjust in the SYSTEM FRAME 29.97 Hz first, and then in the 25 Hz, and then in the 23.98 Hz.
- For detail of each menu in the maintenance mode, refer to Section 3.

The Servo/DT/RF Systems Adjustment Check Sheet attached to the end of this manual is useful for RF system adjustment.

Tools

The following tapes are required:

Cleaning tape	BCT-HD12CL	(Commercially available)	
Alignment tapes	HR5-1A	(Part No. 8-960-076-01)	Option HKSR-5802 installed model only
	HR5-1B	(Part No. 8-960-076-31)	
	ZR5-1	(Part No. 8-960-073-01)	Option HKSR-5802 installed model only
	ZR5-1P	(Part No. 8-960-073-51)	Option HKSR-5802 installed model only

Recording tape SONY BCT-SR series (HDCAM SR cassette: Commercially available)

Note

Use the blank tape erased using a tape eraser in advance or a new blank tape as a recording tape for the RF system alignment.

Adjustments

Note

This section describes the adjustments for the formats that can be played back by this unit.

Section	Item	Adjustment point	Remarks
8-4-2	Itemized Digital Format	RF System adjustments	
	HDCAM SR	RF ADJUST menu [F2] (RF ALL ADJ)	
	Data saving	RF ALL ADJUST menu [F1] (NVRAM CTL)	
	HDCAM	RF ADJUST menu [F2] (RF ALL ADJ)	Option HKSR-5802 installed model only
	Data saving	RF ALL ADJUST menu [F1] (NVRAM CTL)	
	Digital BETACAM	RF ADJUST menu [F2] (RF ALL ADJ)	Option HKSR-5802 installed model only
	Data saving	RF ALL ADJUST menu [F1] (NVRAM CTL)	
	HDCAM SR SAT signal level adjustment	DT/SAT ADJUST menu [F4] (HDSR SAT)	

When wish to single out adjusting only for recording current of the VTR, refer to Section “8-4-3. Recording Current Adjustment”.

Section	Item	Adjustment point	Remarks
8-4-3	Recording current adjustment		
	HDCAM SR	RF ADJUST menu [F5] (REC ADJ)	
	Data saving	RF ADJUST menu [F1] (NVRAM CTL)	

8-4-2. Itemized Digital Format RF System Adjustments

Preparation

1. Clean the Video Heads

(Refer to “4-2-3. and 4-2-4.”)

Note

Be sure to turn off the power while cleaning.

2. Check the Settings of the Function Menu

Item	Customer setting	Setting at adjustment
HOME menu	F2 (REC INH) _____	⇔ OFF

3. Warming Up

Before starting the adjustment, warm up the VTR through the power for 20 minutes or more.

4. Check the Operation Mode

Check that the unit is set to the following system.

SYSTEM MODE : 1080

SYSTEM SCAN : Interlace

SYSTEM FRAME : 29.97 Hz

SYSTEM SIGNAL : 422 YPbPr

If not, change the system setting referring to Section 8-1-3.

Precautions on the automatic adjustment

- Be careful not to touch the search dial and buttons which have an effect on tape running during the automatic adjustment. If tape running condition is changed, optimum adjustment can not be performed. Besides the automatic adjustment operation may freeze, or the result of automatic adjustment become “NG (No Good)”.
- If the “NG” is displayed, refer to “For Automatic Adjustment Failure” on page 3-115 in Section 3-4-5.

1. HDCAM SR Format RF System Adjustment

Tools

- Alignment tape: HR5-1B
- Recording tape: BCT-SR series

Playback system adjustment

1. Activate the ALT MAINTENANCE menu, and display the RF ADJUST menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **ALT** → **F7** → RF ADJUST menu)
(For the RF ADJUST menu, refer to Section 3-4-5.)
2. Press the **F1** (FMT SEL) key several times to select the HDCAM SR.
3. Press the **F2** (RF ALL ADJ) key to display the RF ALL ADJUST menu.
4. Insert the alignment tape HR5-1B, and rewind to the tape beginning.
5. To execute the automatic adjustments for PB system, press the **SET** key.
 - After 10 minutes, the PB system adjustments are completed.

Record system adjustment

6. After the message “Continue REC CURRENT ?” is displayed, eject the alignment tape, and then insert the recording tape.
7. To execute the automatic adjustment for the recording system, press the **SET** key.
 - After 4 minutes, the recording system adjustments are completed, then the message [NG List : Total 0] is displayed.

Saving the Data

Note

Do not save the adjustment data if any automatic adjustment was not completed properly.

8. Press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.
9. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **F10** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
10. Eject the recording tape.
11. When the next adjustment “2. HDCAM Format RF System Adjustment” is not performed, and perform the “4. HDCAM SR SAT Signal Level Adjustment”.

2. HDCAM Format RF System Adjustment (When the Option HKSR-5802 is Installed)

Note

When performing this adjustment continuously from “1. HDCAM SR Format RF System Adjustment” start this adjustment from step 2.

Alignment tape: HR5-1A

Playback system adjustment

1. Activate the ALT MAINTENANCE menu, and display the RF ADJUST menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **ALT** → **F7** → RF ADJUST menu)
(For the RF ADJUST menu, refer to Section 3-4-5.)
2. Press the **F1** (FMT SEL) key several times to select the HDCAM. When performing this adjustment continuously from “1. HDCAM SR Format”, press the **F2** (FMT SEL) key several times and perform step 4 and later.
3. Press the **F2** (RF ALL ADJ) key to display the RF ALL ADJUST menu.
4. Insert the alignment tape HR5-1A, and rewind to the tape beginning.
5. To execute the automatic adjustments, press the **SET** key.
 - After 1 minute, the adjustments are completed, then the message [NG List : Total 0] is displayed.

Saving the Data

Note

Do not save the adjustment data if any automatic adjustment was not completed properly.

6. Press the **F1** (NVRAM CTL) key to display the NVRAM CONTROL menu.
7. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **F10** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
8. Eject the alignment tape.
9. Perform the next adjustment “3. Digital BETACAM Format RF System Adjustment”.

3. Digital BETACAM Format RF System Adjustment (When the Option HKSR-5802 is Installed)

Note

When performing this adjustment continuously from “2. HDCAM Format RF System Adjustment”, start this adjustment from step 2.

Alignment tape: for SYSTEM FRAME 29.97 Hz : ZR5-1
for SYSTEM FRAME 25 Hz : ZR5-1P

Playback system adjustment

1. Activate the ALT MAINTENANCE menu, and display the RF ADJUST menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[ALT]** → **[F7]** → RF ADJUST menu)
(For the RF ADJUST menu, refer to Section 3-4-5.)
2. Press the **[F1]** (FMT SEL) key several times to select the DIGITAL BETACAM. When performing this adjustment continuously from “2. HDCAM Format”, press the **[F2]** (FMT SEL) key several times and perform step 4 and later.
3. Press the **[F2]** (RF ALL ADJ) key to display the RF ALL ADJUST menu.
4. Insert the alignment tape, and rewind to the tape beginning.
5. To execute the automatic adjustments, press the **[SET]** key.
 - After 1 minute, the adjustments are completed, then the message [NG List : Total 0] is displayed.

Saving the Data

Note

Do not save the adjustment data if any automatic adjustment was not completed properly.

6. Press the **[F1]** (NVRAM CTL) key to display the NVRAM CONTROL menu.
7. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the **[F10]** (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
8. Eject the alignment tape.
9. Perform the next adjustment “4. HDCAM SR SAT Signal Level Adjustment”.

4. HDCAM SR SAT Signal Level Adjustment

Note

Because adjustment data is automatically saved in the NV-RAM on the EQ-102/109 board when the automatic adjustment is completed, saving the data is not required.

Alignment tape: HR5-1B

Note

Cue up the alignment tape to the time code 00:10:00:00 in advance.

When using the alignment tape not located to the time code 00:10:00:00, exit the maintenance mode and cue it up. Then eject the alignment tape once.

1. Activate the ALT MAINTENANCE menu, and display the DT/SAT ADJUST menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[ALT]** → **[F5]** → DT/SAT ADJUST menu)
(For the DT/SAT ADJUST menu, refer to Section 3-4-3.)
2. Press the **[F4]** (HDSR SAT) key to display the HDSR SAT ADJUST menu.
3. Press the **[SET]** key.
4. Insert the alignment tape HR5-1B located to the time code 00:10:00:00.
 - Adjustment is executed automatically when the alignment tape is inserted.
 - The message “Auto Adjust Complete” will be displayed and the alignment tape will be ejected automatically when this automatic adjustment is completed normally.
5. Exit the maintenance mode, and perform the next adjustment “5. Adjustments in the 4:2:2 mode at 25 Hz.”

5. Adjustments in the 4:2:2 mode at 25 Hz

1. Set the system as follows.
SYSTEM SCAN: Interlace
SYSTEM FRAME: 25 Hz
SYSTEM SIGNAL: 422 YPbPr
2. Perform the following adjustments.
 - 1. HDCAM SR format RF system adjustment
 - 2. HDCAM format RF system adjustment
 - 3. Digital BETACAM format RF system adjustment
 - 4. HDCAM SR SAT signal level adjustment
3. Exit the maintenance mode and perform “6. Adjustments in the 4:2:2 mode at 23.98 Hz.”

6. Adjustments in the 4:2:2 mode at 23.98 Hz

1. Set the system as follows.
SYSTEM SCAN: PsF
SYSTEM FRAME: 23.98 Hz
SYSTEM SIGNAL: 422 YPbPr
2. Perform the following adjustments.
 - 1. HDCAM SR format RF system adjustment
 - 2. HDCAM format RF system adjustment
 - 4. HDCAM SR SAT signal level adjustment
3. Exit the maintenance mode.
4. Perform the following adjustments.
HKSR-5803HQ installed model: 7. Adjustments in the 4:2:2 3D mode at 29.97 Hz
Model without HKSR-5803HQ: Cleaning using a cleaning tape

7. Adjustments in the 4:2:2 3D mode at 29.97 Hz

1. Set the system as follows.
SYSTEM SCAN: PsF
SYSTEM FRAME: 29.97 Hz
SYSTEM SIGNAL: 422 3D YPbPr or 422 × 2 YPbPr
2. Perform the following adjustments.
 - 1. HDCAM SR format RF system adjustment
 - 4. HDCAM SR SAT signal level adjustment
3. Exit the maintenance mode and perform “8. Adjustments in the 4:2:2 3D mode at 25 Hz.”

8. Adjustments in the 4:2:2 3D mode at 25 Hz

1. Set the system as follows.
SYSTEM SCAN: PsF
SYSTEM FRAME: 25 Hz
SYSTEM SIGNAL: 422 3D YPbPr or 422 × 2 YPbPr
2. Perform the following adjustments.
 - 1. HDCAM SR format RF system adjustment
 - 4. HDCAM SR SAT signal level adjustment
3. Exit the maintenance mode and perform “9. Adjustments in the 4:2:2 3D mode at 23.98 Hz.”

9. Adjustments in the 4:2:2 3D mode at 23.98 Hz

1. Set the system as follows.
SYSTEM SCAN: PsF
SYSTEM FRAME: 23.98 Hz
SYSTEM SIGNAL: 422 3D YPbPr or 422 × 2 YPbPr
2. Perform the following adjustments.
 - 1. HDCAM SR format RF system adjustment
 - 4. HDCAM SR SAT signal level adjustment
3. Exit the maintenance mode and perform cleaning using a cleaning tape.

8-4-3. Recording Current Adjustment

When the recording current adjustment is required independently of the standard RF system alignment, perform this adjustment as described in this section.

(Refer to Section “8-4-2. Itemized Digital Format RF System Adjustments” regarding the standard recording current adjustment in the RF system adjustment.)

Tools

- Cleaning tape: BCT-HD12CL
(Commercially available)
- Recording tape: BCT-SR series
(Commercially available)

Note

Use the blank tape erased using the tape eraser, etc. in advance or a new blank tape.

Preparation

1. Cleaning with the cleaning tape

Insert the cleaning tape (BCT-HD12CL).

- The EJECT button blinks, and the PLAY button light. Then the cleaning tape is played back for about 10 seconds, then it is automatically ejected.

2. Check the Settings of the Function Menu

Item	Customer setting	Setting at adjustment
HOME menu	[F2] (REC INH)	⇒ OFF

3. Warming up

Before starting the adjustment, warm up the VTR through the power for 20 minutes or more.

4. Check the Operation Mode

Check that the unit is set to the following system.

SYSTEM MODE : 1080

SYSTEM SCAN : Interlace

SYSTEM FRAME : 29.97 Hz

SYSTEM SIGNAL : 422 YPbPr

If not, change the system setting referring to Section 8-1-3.

Recording Current Adjustment

1. Activate the ALT MAINTENANCE menu, and display the RF ADJUST menu.
(HOME menu → [SFT] + [DIAG] → [SFT] + [F8] → [ALT] → [F7] → RF ADJUST menu)
(For the RF ADJUST menu, refer to Section 3-4-5.)
2. Press the [F1] (FMT SEL) key several times to select the HDCAM SR.
3. Press the [F5] (REC ADJ) key to display the Rec Current menu.
4. Insert the recording tape.
5. To execute the automatic adjustment for the recording current, press the [F6] (ALL CH ADJ) key then press the [SET] key.
 - Message [Complete] will be displayed when this adjustment is completed normally.

Saving the Data

Note

Do not save the adjustment data if the automatic adjustment was not completed properly.

6. Press the [F1] (NVRAM CTL) key to display the NVRAM CONTROL menu.
7. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the [F10] (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
8. Eject the recording tape.
9. Perform the steps 1 to 8 in the SYSTEM FRAME 25 Hz.
10. Perform the steps 1 to 8 in the SYSTEM FRAME 23.98 Hz.
11. When HKSR-5803HQ is installed, change the setting to the following SYSTEM SIGNAL setting and make the adjustment in steps 1 to 10 again.
SYSTEM SIGNAL: 422 3D YPbPr or 422 × 2 YPbPr

HDCAM SR SAT Signal Level Adjustment

After adjusting recording current, be sure to perform the “4. HDCAM SR SAT Signal Level Adjustment in the Section 8-4-2”.

12. Exit the maintenance mode.

8-5. Audio System/CUE System Adjustment

8-5-1. Adjustment Overview

The audio system of this VTR needs to adjust the analog audio system only. For the digital audio system, any adjustment is not needed.

Tools

The following equipment (or equivalent) and fixtures are required for the audio system/CUE system adjustments.

Audio analyzer	AUDIO PRECISION System One/System Two/ System Two Cascade/System Two Cascade Plus/AP2700	
Digital Voltmeter	ADVANTEST R6441B	CUE system
Oscilloscope	TEKTRONIX TDS3054B	CUE system
Frequency Counter	ADVANTEST R5362B	CUE system
Extension boards	EX-873	(Part No. A-8346-141-*)
	EX-949	(Part No. A-8347-714-A)
Shorting clip (1 pc)		CUE system
Cleaning tape	BCT-HD12CL	(Commercially available)
Alignment tape	HR5-1A	(Part No. 8-960-076-01)

Adjustments

Section	Item	Adjustment point		Test point
8-5-3	Analog audio output system adjustment (APR-81/91 board)			
	Output level adjustment	L	S2201/APR-81, 91	MONITOR OUTPUT L
		R	S2202/APR-81, 91	MONITOR OUTPUT R
8-5-4	CUE PB System Adjustment (CUE-13/AE-31H boards)			
	CUE PB Lebel Adjustment	⌚RV300/AE-31H		TP102/CUE-13
	CUE Output Lebel Adjustment	⌚RV104/CUE-13		CUE OUT
	CUE PB VCA Adjutment	⌚RV102/CUE-13		CUE OUT
	CUE PB Frequency Response Adjustment	⌚RV203/AE-31H		CUE OUT
	TC Insert Cross-talk Adjustment	⌚RV701/AE-31H		CUE OUT
⌚RV703/AE-31H				

8-5-2. Common Preparation

Set switches on boards, control panel, function menu, and others specified before starting the adjustments.

Return the settings to the customer settings after completing the audio system adjustment.

1. Settings of the HEAD ROOM

- 1. Turn on the power.
- 2. Activate the OTHERS CHECK menu, and display the HEAD ROOM menu.
(HOME menu → [SFT] + [DIAG] → [SFT] + [F8] → [F9] → [F4] → HEAD ROOM menu)
(For the HEAD ROOM menu, refer to Section 3-3-9.)
- 3. Press the [F2] (M-HEAD ROOM) key several times to select the 20dB/+4dBu.
- 4. Press the [F1] (NVRAM CTRL) key to display the NVRAM CONTROL menu.
- 5. Select the “SAVE ALL DATA” by pressing the cursor keys, then press the [F10] (EXIT) key to save data.
 - The message “Save Complete” will be displayed when this data save is completed normally.
- 6. Turn off the power.

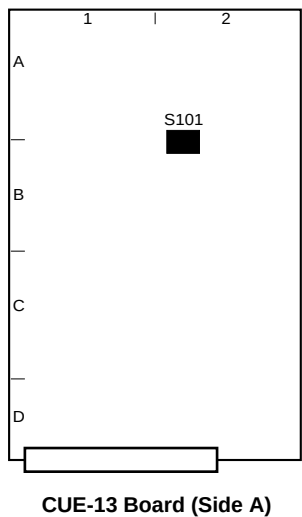
2. Switch setting of the CUE-13 board

To performing the CUE PB system adjustment, reset the switch on the CUE-13 board to the factory settings.

Note

Turn off the power before removing the CUE-13 board and changing the switch setting.

Ref. No.	(Address)	Item	Customer setting		Factory setting
S101	(A-2)	CUE output level		⇒	+4 dBm/600 Ω (only 1-bit to ON)



3. Check the Operation Mode

To performing the CUE PB system adjustment, check that the unit is set to the SYSTEM FRAME 29.97 Hz. If not, change the system setting referring to Section 8-1-3.

4. Other settings

Location	Item		Customer setting	Setting at adjustment	Remarks
Upper control panel	REMOTE	1 (9P)	_____⇒	OFF (Light off)	
		2 (50P)	_____⇒	OFF (Light off)	
		NETWORK1	_____⇒	OFF (Light off)	
		NETWORK2	_____⇒	OFF (Light off)	
Lower control panel	PB LEVEL button	CH1	_____⇒	PRESET	Audio System
		CH2	_____⇒	PRESET	
		CH3	_____⇒	PRESET	
		CH4	_____⇒	PRESET	
		CH5	_____⇒	PRESET	
		CH6	_____⇒	PRESET	
		CH7	_____⇒	PRESET	
		CH8	_____⇒	PRESET	
		CH9	_____⇒	PRESET	
		CH10	_____⇒	PRESET	
		CH11	_____⇒	PRESET	
		CH12	_____⇒	PRESET	
	REC LEVEL button	CH1	_____⇒	PRESET	
		CH2	_____⇒	PRESET	
		CH3	_____⇒	PRESET	
		CH4	_____⇒	PRESET	
		CH5	_____⇒	PRESET	
		CH6	_____⇒	PRESET	
		CH7	_____⇒	PRESET	
		CH8	_____⇒	PRESET	
		CH9	_____⇒	PRESET	
		CH10	_____⇒	PRESET	
		CH11	_____⇒	PRESET	
		CH12	_____⇒	PRESET	
	MONITOR	L	_____⇒	CH1	
		R	_____⇒	CH2	
Setup menu	ITEM-109 (KEY INHIBIT)		_____⇒	OFF	
TC menu	ALT + [F6] (CHARA SUPER)		_____⇒	ON	
OTHER CHECK menu (Refer to Section 3-3-9.)	[F4] (HEAD ROOM)		_____⇒	20 dB/+4 dBu	

8-5-3. Analog Audio Output System Adjustment/APR-81, 91 Board

Tools

- Audio analyzer:
AUDIO PRECISION System One/System Two/
System Two Cascade/System Two Cascade Plus/
AP2700 or equivalent
- Extension board: EX-873

Preparation

1. Check the settings

(Refer to “8-5-2. Common Preparation”)

2. Warming up

Before starting the adjustment, warm up the VTR and equipment to be used through the power for 20 minutes or more.

Output Level Adjustment

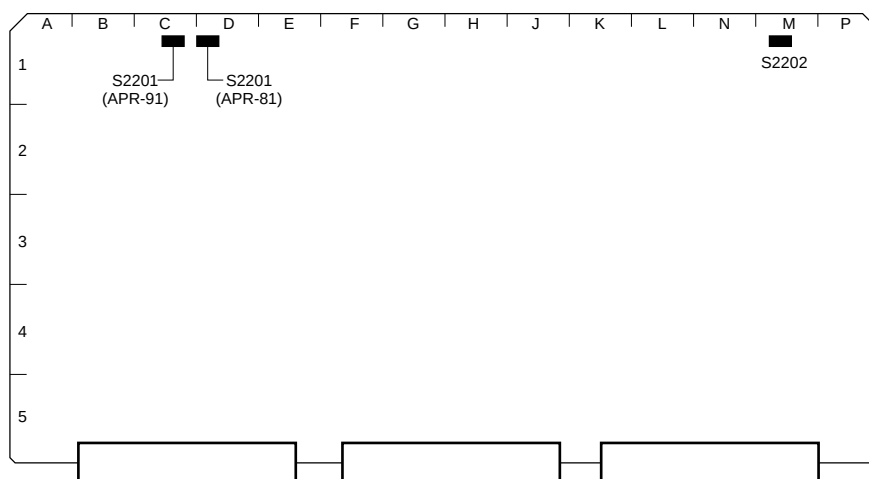
1. Turn on the power, and display the SD OUTPUT CHECK menu.
(HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F6** → SD OUTPUT CHECK menu)
(For the SD OUTPUT CHECK menu, refer to Section 3-3-6.)
2. Press the **F3** (AUDIO TST SG) key several times to select “1 kHz SINE” as test signal.
3. Set the audio analyzer as follows:
Function mode: LEVEL, dBm (600 Ω)
Input filter: 80 kHz LPF

MONITOR L channel adjustment

4. Connect the audio analyzer’s input to MONITOR OUTPUT L connector.
5. Adjust the audio level on the audio analyzer.
Adj. point: S2201/APR-81 (D-1), APR-91 (C-1)
Specification: $+4.0 \pm 0.1$ dBm (at 600 Ω load)

MONITOR R channel adjustment

6. Connect the audio analyzer’s input to MONITOR OUTPUT R connector.
7. Adjust the audio level on the audio analyzer.
Adj. point: S2202/APR-81, 91 (M-1)
Specification: $+4.0 \pm 0.1$ dBm (at 600 Ω load)
8. Exit the maintenance mode.



APR-81/91 Board (Side A)

8-5-4. CUE PB System Adjustment/CUE-13, AE-31H Boards

Tools

- Audio analyzer:
Audio Precision System One/System Two/System Two Cascade/System Two Cascade Plus/AP2700 or equivalent
- Audio level meter:
Hewlett-Packard HP3400A or equivalent
- Digital voltmeter: Advantest TR6845 or equivalent
- Extension board: EX-949
- Shorting clip
- Alignment tape: HR5-1A

Preparation

1. Check the switch settings on the CUE-13 board

Reset all the settings of CUE-13 board to the factory settings.

(Refer to “1. Switches Settings” in “8-5-2. Common Preparation”).)

2. Extend the CUE-13 board with an extension board EX-949

Note

After turning off the power, then remove the CUE-13 board.

3. Open the AE-31H board

(Refer to the figure in Section 5-1-2.)

4. Clean the AT head

Clean the tape running surface of the AT head.

(Refer to “4-2-6. Stationary Heads Cleaning”).)

Note

Perform the cleaning under the power off.

5. Setting when HKSR-5802 is not installed

When HKSR-5802 (DVP board) is not installed, the HDCAM tape (and Digital Betacam tape) cannot run.

However, the PATH CHECK menu enables it.

Activate the ALT SERVO CHECK menu, and select the PATH CHECK menu.

HOME menu → **SFT** + **DIAG** → **SFT** + **F8** → **F4** → **ALT** → **F8** PATH CHECK menu → **SET**

6. Check the other settings

Check that any setting on the panel or the menu on the VTR is well prepared for processing adjustments.

(Refer to “8-5-2. Common Preparation”).)

7. Check the warming up

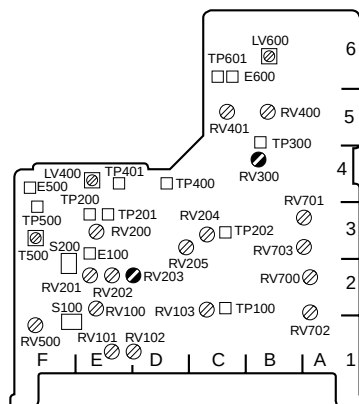
Warm up the unit and equipment to be used (20 minutes or more).

1. CUE PB Level Adjustment

1. Short-circuit TP101/CUE-13 (D-1) and E100/CUE-13 (C-1) with a shorting clip.
2. Connect the audio level meter to TP102/CUE-13 (B-2).
GND: E103/CUE-13 (C-2)
3. Play back the portion of 1 kHz, +4 dBu of the alignment tape.
4. Check level using the audio level meter, and then adjust it.
Adjusting point: ●RV300/AE-31H (B-4)
Specification: -10.0 ± 0.2 dBu
5. With these terminals short-circuited, follow the next step.

2. CUE Output Level Adjustment

1. Be sure that TP101/CUE-13 (D-1) and E100/CUE-13 (C-1) are short-circuited.
2. Connect the audio analyzer to CUE OUT connector on the connector panel.
3. Set the audio analyzer as follows:
Measuring mode: LEVEL, dBu
Input filter: 80 kHz LPF
4. Play back the portion of 1 kHz, +4 dBu of the alignment tape.
5. Check level using the audio analyzer, and then adjust it.
Adjusting point: ●RV104/CUE-13 (B-1)
Specification: $+4.0 \pm 0.2$ dBu
6. Remove the shorting clip which is attached to TP101/CUE-13 (D-1) and E100/CUE-13 (C-1).



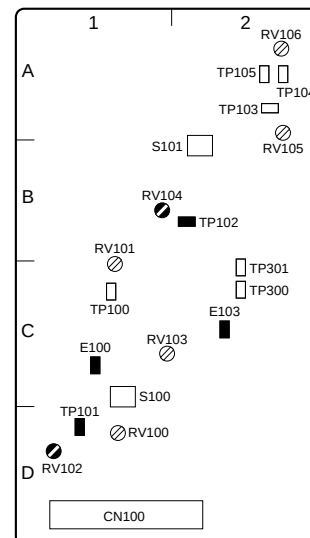
AE-31H Board (Side A)

3. CUE PB VCA Adjustment

1. Connect the audio analyzer to CUE OUT connector on the connector panel.
2. Set the audio analyzer as follows:
Measuring mode: LEVEL, dBu
Input Filter: 80 kHz LPF
3. Play back the portion of 1kHz, +4 dBu of the alignment tape.
4. Check audio level using the audio analyzer, and then adjust it.
Adjusting point: ●RV102/CUE-13 (D-1)
Specification: $+4.0 \pm 0.2$ dBu

4. CUE PB Frequency Response adjustment

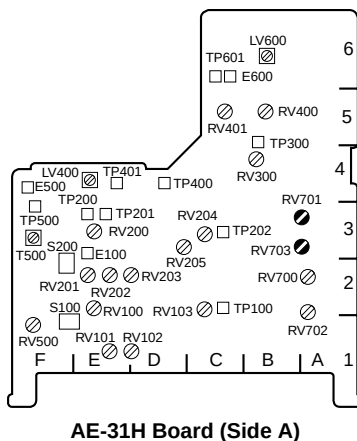
1. Connect the audio analyzer to CUE OUT connector on the connector panel.
2. Set the audio analyzer as follows:
Measuring mode: LEVEL, dBu
Input Filter: 80 kHz LPF
3. Play back the portion of 90 Hz to 12 kHz of the alignment tape.
4. Check this PB level using the audio analyzer, and then adjust it.
Adjusting point: ●RV203/AE-31H (D-2)
Specification: Each frequency (3 kHz, 7 kHz, 10 kHz, 12 kHz) level:
1 kHz level ± 0.8 dB
Firstly, adjust the level of 10 kHz until it equates with the level of 1 kHz. Then check each level of other frequency.



CUE-13 Board (Side A)

5. TC Insert Cross-talk Adjustment

1. Insert the Betacam cassette tape that recorded the no signal to the LAU tracks.
2. Set the audio analyzer as follows:
Function mode: LEVEL
Input filter: 80 kHz LPF
3. Connect the audio analyzer's input to CUE OUT CH2 connector.
4. Press the **F4** (INC TC) key of the HOME menu several times to set the TC insert editing mode to ON.
5. Press the PLAY button, then press the EDIT button.
6. Adjust the cross-talk level on the audio analyzer.
(Alternately adjust the following adj. points.)
Adj. points: ●RV701/AE-31H (A-3)
●RV703/AE-31H (A-3)
Specification: Minimize
(The level should be less than -18 dBu)
7. Stop the recording, then eject the cassette tape.



8-6. SD Video System Alignment (HIF-46/56 Board)

8-6-1. Adjustment Overview

All the adjustments of the SD video system are performed using the menus in the maintenance mode.
For details of each menu in the maintenance mode, refer to Section 3.

Tools

The following equipment (or equivalent) and fixtures are required:

Oscilloscope TEKTRONIX TDS3054B

75 Ω terminator (1 pc)

Adjustments

Notes

- Only if the specification is not satisfied, perform the adjustment.
- Either SD video output adjustment in Section 8-6-2 or that in 8-6-3 can be made first, but make these adjustments in succession.

Section	Item (Section title)		Adjustment menu	Test point	Remarks
8-6-2	SD video output adjustment (NTSC)				1080/59.94i
	COMPOSITE output	PEDESTAL	SD OUTPUT ADJUST [F5] (PEDSTL NTSC)	SD OUTPUT COMPOSITE	
		100 % VIDEO LEVEL	SD OUTPUT ADJUST [F7] (VIDEO LEVEL)		
	SYNC output	PEDESTAL	SD OUTPUT ADJUST [F5] (PEDSTL NTSC)	SD OUTPUT SYNC	
		100 % VIDEO LEVEL	SD OUTPUT ADJUST [F8] (BURST LEVEL)		
8-6-3	SD video output adjustment (PAL)				1080/50i
	COMPOSITE output	PEDESTAL	SD OUTPUT ADJUST [F6] (PEDSTL PAL)	SD OUTPUT COMPOSITE	
		100 % VIDEO LEVEL	SD OUTPUT ADJUST [F7] (VIDEO LEVEL)		
	SYNC output	PEDESTAL	SD OUTPUT ADJUST [F6] (PEDSTL PAL)	SD OUTPUT SYNC	
		100 % VIDEO LEVEL	SD OUTPUT ADJUST [F8] (BURST LEVEL)		

8-6-2. SD Video Output Adjustment (NTSC)

Tools

- Oscilloscope: TEKTRONIX TDS3054B or equivalent
- 75 Ω terminator

Preparation

1. System setting

Set the system to the 1080/59.94i mode (SYSTEM FRAME 29.97 Hz) referring to Section 8-1-3.

2. Warming up

Before starting the adjustment, warm up the VTR and other equipment by applying power to them for 30 minutes or more.

Composite Video Output Level Adjustment

1. Display the SD OUTPUT ADJUST menu.
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]** → **[ALT]** → **[F6]** → SD OUTPUT ADJUST menu)
(For the SD OUTPUT ADJUST menu, refer to Section 3-4-4.)
2. Press the **[F2]** (TEST SG) key several times for the setting to ON.

Composite Output Adjustment

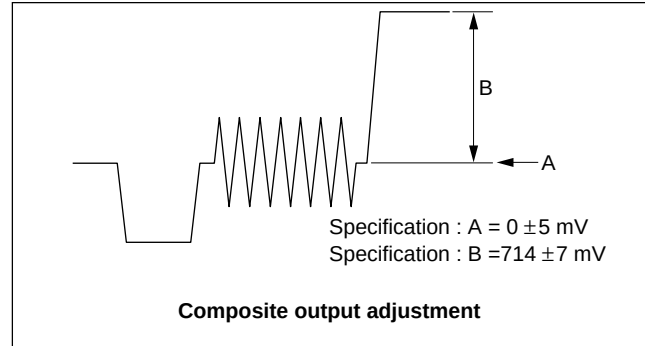
3. Connect the 75 Ω terminator to the SD OUTPUT COMPOSITE connector, then connect the oscilloscope.
4. Check the waveform on the oscilloscope, then adjust the pedestal level (A) and video output level (B).

Pedestal level

Press the **[F5]** (PEDSTL NTSC) key to reverse the display of the Pedestal Level NTSC value in the SD OUTPUT ADJUST screen, and then adjust the pedestal level with the MULTI CONTROL knob so that it satisfies the specification A below.

Video output level

Press the **[F7]** (VIDEO LEVEL) key to reverse the display of the Video Level value in the SD OUTPUT ADJUST screen, and then adjust the video output level with the MULTI CONTROL knob so that it satisfies the specification B below.



Note

The pedestal level adjustment and the video output level adjustment affect mutually. Adjust the pedestal level and video output level while checking both levels.

SYNC Output Adjustment

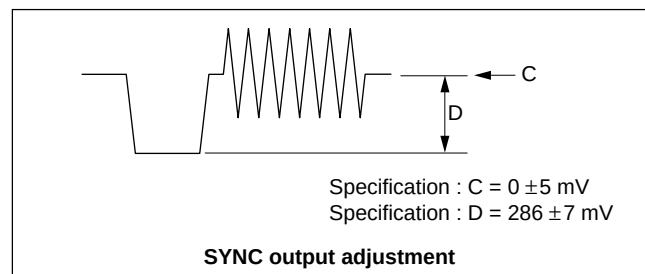
5. Connect the 75 Ω terminator to the SD OUTPUT SYNC connector, then connect the oscilloscope.
6. Check the waveform on the oscilloscope, then adjust the pedestal level (C) and SYNC output level (D).

Pedestal level

Press the **[F5]** (PEDSTL NTSC) key to reverse the display of the Pedestal Level NTSC value in the SD OUTPUT ADJUST screen, and then adjust the pedestal level with the MULTI CONTROL knob so that it satisfies the specification C below.

SYNC output level

Press the **[F8]** (BURST LEVEL) key to reverse the display of the Burst Level value in the SD OUTPUT ADJUST screen, and then adjust the SYNC output level with the MULTI CONTROL knob so that it satisfies the specification D below.



Note

The pedestal level adjustment and the SYNC output level adjustment affect mutually. Adjust the pedestal level and SYNC output level while checking both levels.

8-6-3. SD Video Output Adjustment (PAL)

Tools

- Oscilloscope: TEKTRONIX TDS3054B or equivalent
- 75 Ω terminator

Preparation

1. System setting

Set the system to the 1080/50i mode (SYSTEM FRAME 25 Hz) referring to Section 8-1-3.

2. Check that the equipment has warmed up

Before starting the adjustment, warm up the VTR and other equipment by applying power to them for 30 minutes or more.

Composite Video Output Level Adjustment

1. Display the SD OUTPUT ADJUST menu.
(HOME menu $\rightarrow$ [SFT] + [DIAG] $\rightarrow$ [SFT] + [F8] $\rightarrow$ [ALT] $\rightarrow$ [F6] $\rightarrow$ SD OUTPUT ADJUST menu)
(For the SD OUTPUT ADJUST menu, refer to Section 3-4-4.)
2. Press the [F2] (TEST SG) key several times for the setting to ON.

Composite Output Adjustment

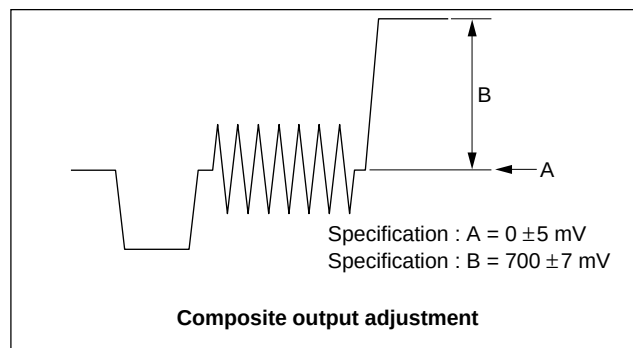
3. Connect the 75 Ω terminator to the SD OUTPUT COMPOSITE connector, then connect the oscilloscope.
4. Check the waveform on the oscilloscope, then adjust the pedestal level (A) and video output level (B).

Pedestal level

Press the [F6] (PEDSTL PAL) key to reverse the display of the Pedestal Level PAL value in the SD OUTPUT ADJUST screen, and then adjust the pedestal level with the MULTI CONTROL knob so that it satisfies the specification A below.

Video output level

Press the [F7] (VIDEO LEVEL) key to reverse the display of the Video Level value in the SD OUTPUT ADJUST screen, and then adjust the video output level with the MULTI CONTROL knob so that it satisfies the specification B below.



Note

The pedestal level adjustment and the video output level adjustment affect mutually. Adjust the pedestal level and video output level while checking both levels.

SYNC Output Adjustment

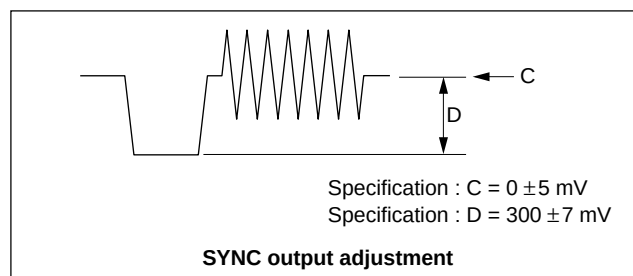
5. Connect the 75 Ω terminator to the SD OUTPUT SYNC connector, then connect the oscilloscope.
6. Check the waveform on the oscilloscope, then adjust the pedestal level (C) and SYNC output level (D).

Pedestal level

Press the [F6] (PEDSTL PAL) key to reverse the display of the Pedestal Level PAL value in the SD OUTPUT ADJUST screen, and then adjust the pedestal level with the MULTI CONTROL knob so that it satisfies the specification C below.

SYNC output level

Press the [F8] (BURST LEVEL) key to reverse the display of the Burst Level value in the SD OUTPUT ADJUST screen, and then adjust the SYNC output level with the MULTI CONTROL knob so that it satisfies the specification D below.



Note

The pedestal level adjustment and the SYNC output level adjustment affect mutually. Adjust the pedestal level and SYNC output level while checking both levels.

8-7. HD Video System Alignment (APR-81, 91 Board)

8-7-1. Adjustment Overview

Tools

The following equipment (or equivalent) and fixtures are required:

Oscilloscope	TEKTRONIX TDS3054B
75 Ω terminator (1 pc)	

Adjustments

Section	Item	Adjustment point	Test point
8-7-2	HD REF output adjustment		
	SYNC level	RV4200/APR-81, 91	HD REF OUTPUT 1

8-7-2. HD REF Output Adjustment

Perform this adjustment when the IC4008, IC4009, IC4020, IC4021, IC4023, IC4024, IC4216, D4001, or FL4000 on the APR-81, 91 board was replaced.

Tools

- Oscilloscope: TEKTRONIX TDS3054B or equivalent
- 75 Ω terminator

Preparation

Warming up

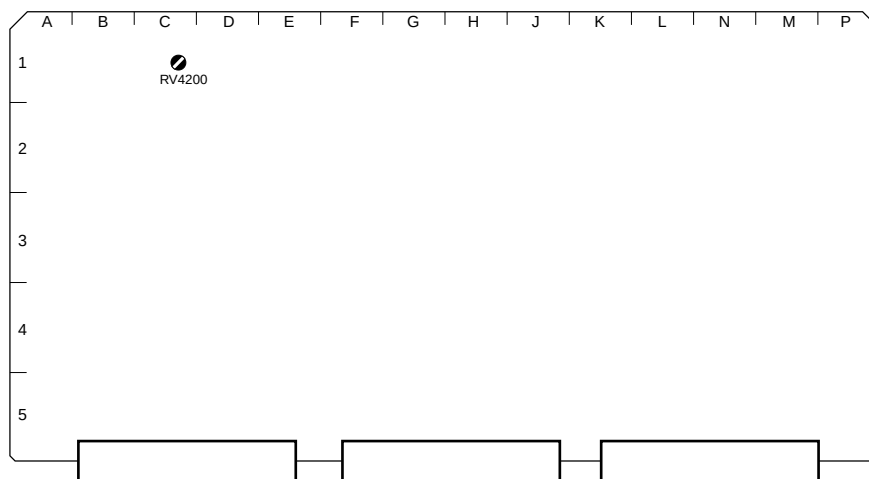
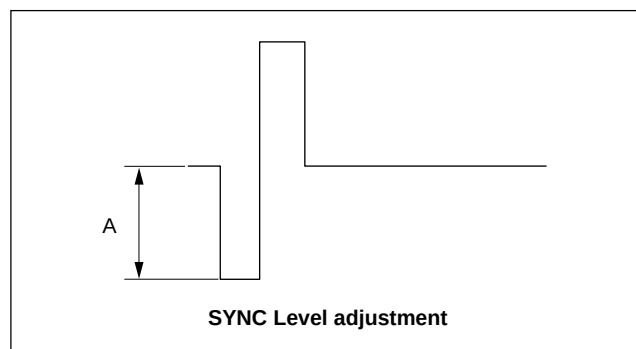
Before starting the adjustment, warm up the VTR and other equipment by applying power to them for 10 minutes or more.

SYNC Level Adjustment

1. Connect the 75 Ω terminator to the HD REF OUTPUT 1 connector, then connect the oscilloscope.
2. Check the waveform on the oscilloscope, then adjust the SYNC level (A).

Adjusting point: RV4200/APR-81, 91 (C-1)

Specification: A = 300 ± 5 mV



APR-81/91 Board (Side A)

8-8. LTC System Alignment and Full Erasure Current Check
(TC-104A/112A Board)

8-8-1. Adjustment Overview

When the TC-104A/112A board is repaired or replaced, perform the time code system alignment.

Note

Check that the unit is set to the SYSTEM FRAME 29.97 Hz. If not, change the system setting referring to Section 8-1-3.

Tools

To perform the time code system alignment for the VTR, prepare the following equipment (or equivalent) and fixtures.

Oscilloscope	TEKTRONIX TDS3054B
Audio analyzer	AUDIO PRECISION System One/System Two/ System Two Cascade/System Two Cascade Plus/AP2700
Alignment tape	HR5-1B (Part No. 8-960-076-41)
Recording tape	SONY BCT-SR series (HDCAM SR cassette: Commercially available)
Note	Use the blank tape erased using a tape eraser in advance or a new blank tape as a recording tape for the adjustment.

Adjustments

Section	Item	Adjustment point	Measurement point
8-8-2	LTC playback level check	—	TP102/TC-104A, 112A (A-4)
8-8-3	LTC recording level check	—	TP100/TC-104A, 112A (A-1)
8-8-4	Full erasure current check	—	TP301/TC-104A, 112A (A-3)
8-8-5	LTC erasure current adjustment	●LV200/TC-104A,112A (A-2)	TP201/TC-104A, 112A (A-2)

Common Preparation

Perform the settings of control panels' button and setup menu, before starting the adjustments.

Note

Reset all the settings to the customer settings after completing the alignment.

Location	Item	Customer setting	Setting at adjustment	Remarks
Switch panel	KEY INHIBIT switch	_____ ⇒	OFF	
Upper control panel	REMOTE: 1 (9P)	_____ ⇒	OFF (Light off)	
	2 (50P)	_____ ⇒	OFF (Light off)	
	NETWORK1	_____ ⇒	OFF (Light off)	
	NETWORK2	_____ ⇒	OFF (Light off)	
Setup menu	ITEM-109 (KEY INHIBIT)	_____ ⇒	OFF	
HOME menu	F2 (REC INH)	_____ ⇒	OFF	
TC menu	F1 (TIMER SEL)	_____ ⇒	TC	
	F5 (TCR SEL)	_____ ⇒	LTC	
	F6 (REGENE SOURCE)	_____ ⇒	int-L	
	F7 (TCG MODE)	_____ ⇒	regene	
	F8 (RUN MODE)	_____ ⇒	rec	

8-8-2. LTC Playback Level Check

Tools

- Oscilloscope: TEKTRONIX TDS3054B or equivalent
- Alignment tape: HR5-1B

Preparation

1. Check the settings for adjustment

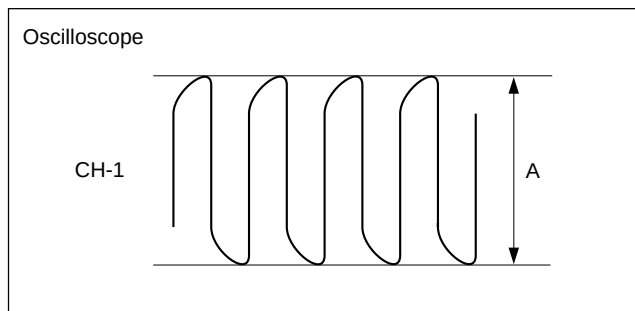
Refer to Section 8-8-1.

2. Warming up

Before starting the adjustment, warm up the VTR and oscilloscope through the power for 10 minutes or more.

Playback Level Check

1. Set and connect the oscilloscope as follows:
CH-1: TP102/TC-104A, 112A (A-4), DC 100 mV/
DIV
GND: E100/TC-104A, 112A (A-2)
TIME: 100 μ s/DIV
2. Insert the alignment tape HR5-1B.
3. During play back the alignment tape in the PLAY mode, check the level on the oscilloscope.
Specification: $A \geq 250$ mV p-p



4. Eject the alignment tape.

8-8-3. LTC Recording Level Check

Tools

- Oscilloscope: TEKTRONIX TDS3054B or equivalent
- Recording tape: BCT-SR series

Note

For this recording tape, use a blank tape erased using the tape eraser, etc. in advance or a new blank tape.

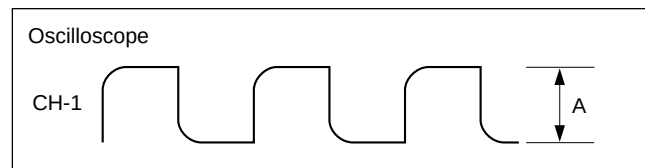
Preparation

1. Conditions to be kept

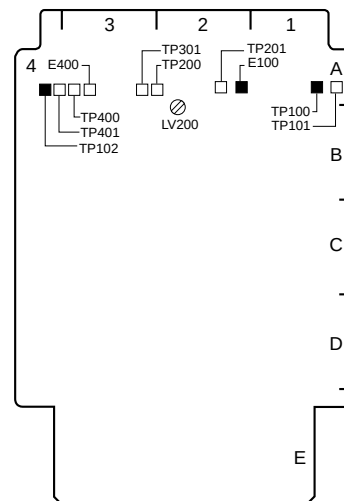
- Settings for adjustment. (Refer to Section 8-8-1.)
- Warming up of equipment to be used (10 minutes or more).

Recording Level Check

1. Set and connect the oscilloscope as follows:
CH-1: TP100/TC-104A, 112A (A-1), DC 100 mV/
DIV
GND: E100/TC-104A, 112A (A-2)
TIME: 100 μ s/DIV
2. Insert the recording tape.
3. Check the level on the oscilloscope in the REC mode.
Specification: $A = 80 \pm 10$ mV p-p



4. Eject the recording tape.



TC-104A/112A Board (Side A)

8-8-4. Full Erasure Current Check

Tools

- Audio analyzer:
AUDIO PRECISION System One/System Two/
System Two Cascade/System Two Cascade Plus/
AP2700 or equivalent
- Recording tape: BCT-SR series

Note

For this recording tape, use a blank tape erased using the tape eraser, etc. in advance or a new blank tape.

Preparation

1. Conditions to be kept

- Settings for adjustment. (Refer to Section 8-8-1.)
- Warming up of equipment to be used (10 minutes or more).

Full Erase Current Check

1. Connect the audio analyzer (V rms measurement mode) to TP301 (A-3) on the TC-104A/112A board.
GND: E100/TC-104A, 112A (A-2)
2. Insert the recording tape.
3. Check the level on the audio analyzer in the REC mode.
Specification: 120 mV rms or more
(Note: 40.5 ± 1.0 kHz)

8-8-5. LTC Erasure Current Check

Tools

- Audio analyzer:
AUDIO PRECISION System One/System Two/
System Two Cascade/System Two Cascade Plus/
AP2700 or equivalent
- Recording tape: BCT-SR series

Note

For this recording tape, prepare a blank tape erased using the tape eraser, etc. in advance or a new blank tape.

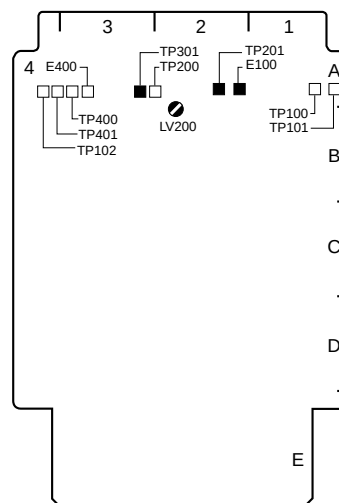
Preparation

1. Conditions to be kept

- Settings for adjustment. (Refer to Section 8-8-1.)
- Warming up of equipment to be used (10 minutes or more).

LTC Erase Current Check

1. Connect the audio analyzer (V rms measurement mode) to TP201 (A-2) on the TC-104A/112A board.
GND: E100/TC-104A, 112A (A-2)
2. Insert the recording tape.
3. Check the level on the audio analyzer in the REC mode.
Adj. point:  LV200/TC-104A, 112A (A-2)
Specification: 120 mV rms
(Note: 48.0 ± 1.0 kHz)
4. Eject the recording tape.



TC-104A/112A Board (Side A)

8-9. Tele-File System Adjustment (DIO-86 Board)

Notes

- Perform this adjustment when the DIO-86 or SE-606A board has been replaced.
- For detail of each menu in the maintenance mode, refer to Section 3.

Tools

- Oscilloscope: TEKTRONIX TDS3054B or equivalent

Note

Use a probe with input capacity of approx. 10.8 pF (TEK P6137 or equivalent).

- Adjusting driver (ceramic)
- Recording tape: BCT-SR series

Note

The HDCAM cassette tape with the Tele-File label can be used for adjustment/check.

Adjustment

Note

Pay careful attention to the following points to perform the correct adjustment.

- Be sure to remove the cassette tape from the unit.
- Keep the SE-606A board away from the piece of metal except for the chassis.

1. Set and connect the oscilloscope as follows:

Note

Never contact the ground probe with the DIO-86 board. This may cause damage to the circuit on the DIO-86 board.

CH-1: TP107/DIO-86 (A-2), AC 5 V/DIV
GND: Chassis

CH-2: TP108/DIO-86 (A-2), AC 5 V/DIV
GND: Chassis

MODE: CH2 INVERT, ADD,
20 MHz BW LIMIT = OFF

TIME: 20 nsec/DIV

TRIG: CH-1, AC

LEVEL: 1 V

2. Turn on the power, and display the Tele-File CHECK menu.

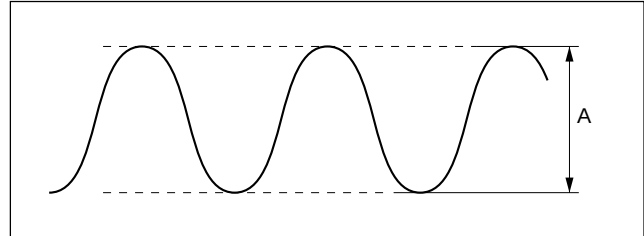
(HOME menu → **[SFT]** + **[DIAG]** → **[SFT]** + **[F8]**
→ **[F9]** → **[F1]** → Tele-File CHECK menu)

(For the Tele-File CHECK menu, refer to Section 3-3-9.)

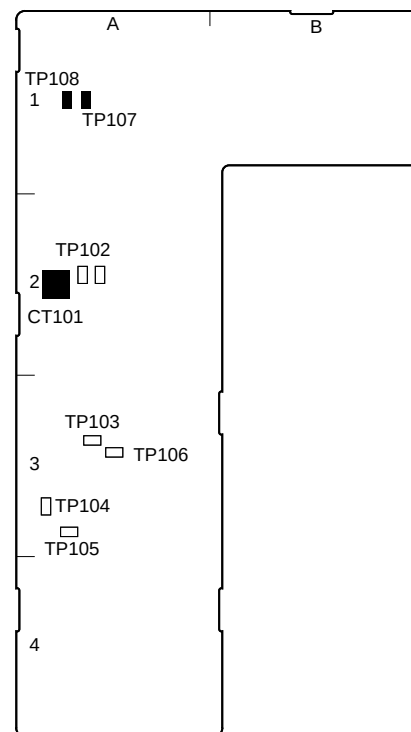
3. Press the **[F2]** (RF) key to the setting to ON.
4. While checking the 13.5 MHz waveform with the oscilloscope, adjust using the adjusting driver (ceramic) to maximize the amplitude.

Adj. point: **CT101/DIO-86 (A-2)**

Specification: A = maximum value (more than 14 V p-p of sine wave)



5. Insert the recording tape.
6. Press the **[F3]** (READ TEST) key.
7. Check that the FAIL is 0 after 10 seconds.
8. Press the **[F4]** (WRITE TEST) key.
9. Press the **[F4]** (WRITE TEST) key while holding down the **[SFT]** key.
10. Check that the FAIL is 0 after 10 seconds.
11. Exit the maintenance mode.
12. Eject the recording tape.



DIO-86 Board (Side A)

Appendix A

Setting Check Sheet

It is recommended to copy these check sheets and write down the setup conditions (switch and so on) under the application.

If the setting is changed temporarily by changing operating condition, the setting can be reset easily.

For the setup menu, store the setting values to the Memory Stick (Memory Card) before check, maintenance and repair. (Refer to the operation manual.)

It is recommended to attach the sheets to the unit when check, maintenance and repair.

If the unit is used frequently by changing the combination of each system, making the sheets are convenient.

(Make use of the check sheets in prevention of setting error.)

Model name: _____ Serial No.: _____

- Firmware

SYS1 ROM version: _____

SYS2 ROM version: _____

SY ROM version: _____

CP ROM version: _____

- RS-232C baud rate: _____ bps

- Hours meter

Write down the value of hours meter when checking, servicing, and maintaining.

ITEM	Date	Hours meter
H01: OPERATION HOURS	/	
H02: DRUM RUNNING HOURS	/	
H03: TAPE RUNNING HOURS	/	
H04: THREADING COUNTER	/	
H12: DRUM RUNNING HOURS (Resettable)	/	
H13: TAPE RUNNING HOURS (Resettable)	/	
H14: THREADING COUNTER (Resettable)	/	

Connector panel

Switch	Factory setting	Setting	
Reference video input 1 75 Ω	ON	☐ ON	☐ OFF
Reference video input 2 75 Ω	ON	☐ ON	☐ OFF

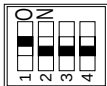
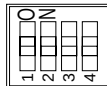
Upper control panel

Switch	Factory setting	Setting	
REMOTE 1 (9P)	LOCAL	☐ Lighting (REMOTE)	☐ OFF (LOCAL)
REMOTE 2 (50P)	LOCAL	☐ Lighting (REMOTE)	☐ OFF (LOCAL)

Switches on the board

Note

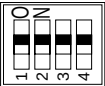
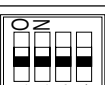
Never change the setting of Factory use switches.

Board	Name	Channel	Switch No.	Factory setting (■ : knob position)	Setting
AE-31	HEAD TUNE switch	CH1	S100	Factory use	—
		CH2	S200	Factory use	—
APR-81/91	Monitor output level/ output headroom	L	S2201	Factory use*1	—
		R	S2202	Factory use*1	—
CUE-13	CUE audio output level	—	S101	 +4 dBm/600 Ω	 (dBm/600 Ω)
MY-115 (HKSR-5804)	—	—	S1401-1		OFF: Normal start
			S1401-2 to 8		ON: Start by program of boot Factory use

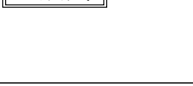
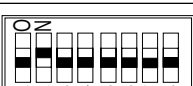
*1: Setting at shipping vary with the circuit board.

Note

The following switches are Factory use.
Never change the setting.

Board	Switch No.	Factory setting (■ : knob position)
APR-81/91	S1200	
	S2200	
CP-393/405	S1	
	S2	
	S300 (CP-393 only)	
CUE-13	S100	
DVP-43 (HKSR-5802)	S200 S800 S1301	
EQ-102/109	S400	
	S403	
	S601 (EQ-102 only) S2200 (EQ-102 only)	
	S2901	
	S3300	
	S3301	
	S4000	

(Continued)

Board	Switch No.	Factory setting (■ : knob position)
FC-91/111 (HKSR-5001)	S300 S500	
	S1400	
	S1401 S1402	
HIF-46/56	S501 S900 S1400 S1900 S2402	
	S101 S102 S104 S2300 (HPR-35 only)	
MY-115 (HKSR-5804)	S900 S3000 S3001 S4500 S4501 S5000	
	S1400	
	S1401	
	S1402	
	S1403	
SS-102	S100 S600 S1000	
	S101	
	S601	

Appendix B

Servo/DT/RF Systems Adjustment Check Sheet

SRW-5800 Serial No.: _____

Date: ____/____/____

☐ Drum Replace / ☐ EQ board Replace / ☐ overhaul

Signature: _____

Current Format: _____

1. 440M 29.97Hz set

- ☐ SYSTEM MENU
Format 4:2:2-59.94i

2. Drum PG Adjustment

*rewind HR2-1B to TapeTop

- ☐ RF SW POS SR
Tape HR2-1B



- ☐ NVRAM CTL
SAVE > F10:Exit

3. HDCAM DT Adjustment

with HKSR-5802 Option

*rewind HR5-1A to 00:10:00:00

- ☐ HDCAM DT
Tape HR5-1A



- ☐ NVRAM CTL
SAVE > F10:Exit

4. HDCAM-SR/HDCAM/D-Beta RF Adjustment

*rewind HR5-1B to TapeTop

- ☐ RF ALL ADJ (SR)
Tape HR5-1B
Tape Brank Tape (SR)



- ☐ NVRAM CTL
SAVE > F10:Exit

with HKSR-5802 Option

*rewind HR5-1A to TapeTop

- ☐ RF ALL ADJ (HDCAM)
Tape HR5-1A



- ☐ NVRAM CTL
SAVE > F10:Exit

with HKSR-5802 Option

*rewind ZR5-1 to TapeTop

- ☐ RF ALL ADJ (D-Beta)
Tape ZR5-1



- ☐ NVRAM CTL
SAVE > F10:Exit

5. HDCAM-SR SAT Adjustment

*rewind HR5-1B to 00:10:00:00

- ☐ HDSR SAT
Tape HR5-1B

6. 440M 25Hz set

- ☐ SYSTEM MENU
Format 4:2:2-50i

7. HDCAM-SR/HDCAM/D-Beta RF Adjustment

*rewind HR5-1B to TapeTop

- ☐ RF ALL ADJ (SR)
Tape HR5-1B
Tape Brank Tape (SR)



- ☐ NVRAM CTL
SAVE > F10:Exit

with HKSR-5802 Option

*rewind HR5-1A to TapeTop

- ☐ RF ALL ADJ (HDCAM)
Tape HR5-1A



- ☐ NVRAM CTL
SAVE > F10:Exit

with HKSR-5802 Option

*rewind ZR5-1P to TapeTop

- ☐ RF ALL ADJ (D-Beta)
Tape ZR5-1



- ☐ NVRAM CTL
SAVE > F10:Exit

8. HDCAM-SR SAT Adjustment

*rewind HR5-1B to 00:10:00:00

- ☐ HDSR SAT
Tape HR5-1B

9. 440M 23.98Hz set

- ☐ SYSTEM MENU
Format 4:2:2-23.98PsF

10. HDCAM-SR/HDCAM RF Adjustment

*rewind HR5-1B to TapeTop ☐ RF ALL ADJ (SR) Tape HR5-1B Tape Brank Tape (SR) ↓ ☐ NVRAM CTL SAVE > F10:Exit	with <u>HKSR-5802</u> Option *rewind HR5-1A to TapeTop ☐ RF ALL ADJ (HDCAM) Tape HR5-1A ↓ ☐ NVRAM CTL SAVE > F10:Exit

11. HDCAM-SR SAT Adjustment

- *rewind HR5-1B to 00:10:00:00
- ☐ HDSR SAT
 Tape HR5-1B

12. 880M 29.97Hz set with HKSR-5803HQ Option

- ☐ SYSTEM MENU
 Format 4:2:2 3D-29.97PsF or 4:2:2 × 2-29.97PsF

13. HDCAM-SR RF Adjustment with HKSR-5803HQ Option

- *rewind HR5-1B to TapeTop
- ☐ RF ALL ADJ (SR)
 Tape HR5-1B
 Tape Brank Tape (SR)
 ↓
☐ NVRAM CTL
 SAVE > F10:Exit

14. HDCAM-SR SAT Adjustment with HKSR-5803HQ Option

- *rewind HR5-1B to 00:10:00:00
- ☐ HDSR SAT
 Tape HR5-1B

15. 880M 25Hz set with HKSR-5803HQ Option

- ☐ SYSTEM MENU
 Format 4:2:2 3D-25PsF or 4:2:2 × 2-25PsF

16. HDCAM-SR RF Adjustment with HKSR-5803HQ Option

- *rewind HR5-1B to TapeTop
- ☐ RF ALL ADJ (SR)
 Tape HR5-1B
 Tape Brank Tape (SR)
 ↓
☐ NVRAM CTL
 SAVE > F10:Exit

17. HDCAM-SR SAT Adjustment with HKSR-5803HQ Option

- *rewind HR5-1B to 00:10:00:00
- ☐ HDSR SAT
 Tape HR5-1B

18. 880M 23.98Hz set with HKSR-5803HQ Option

- ☐ SYSTEM MENU
 Format 4:2:2 3D-23.98PsF or 4:2:2 × 2-23.98PsF

19. HDCAM-SR RF Adjustment with HKSR-5803HQ Option

- *rewind HR5-1B to TapeTop
- ☐ RF ALL ADJ (SR)
 Tape HR5-1B
 Tape Brank Tape (SR)
 ↓
☐ NVRAM CTL
 SAVE > F10:Exit

20. HDCAM-SR SAT Adjustment with HKSR-5803HQ Option

- *rewind HR5-1B to 00:10:00:00
- ☐ HDSR SAT
 Tape HR5-1B

21. Cleaning Tape

- ☐ Tape BCT-HD12CL

SAFETY CHECK-OUT

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

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

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. 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 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

