

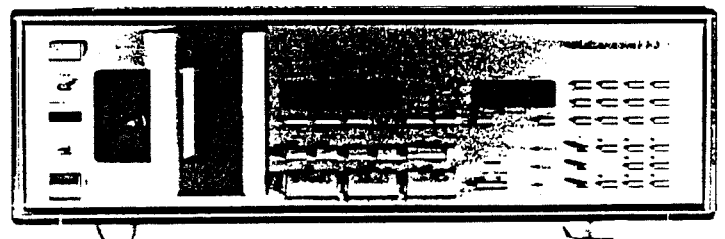


Nakamichi

Service Manual

Nakamichi 1000

Digital Audio Recorder



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1. GENERAL

1.1. Application

This service manual applies to the Models bearing serial Nos. A50101051 and greater.

1.2. CAUTIONS/WARNINGS

(1) Product Safety Notice

Parts marked with the symbol  in the schematic diagram have critical characteristics.

Use ONLY replacement parts recommended by the manufacturer.

It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

(2) Leakage Current Check/Resistance Check

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from the chassis to either side of the power cord is less than 240 K ohms, the unit is defective.

WARNING - DO NOT return the unit to the customer until the problem is located and corrected.

1.3. Destinations

USA - U.S.A.	UK - United Kingdom
CAN - Canada	AUS - Australia
EP - Europe	OTR - Other
SWT - Switzerland	JPN - Japan

1.4. Consumer Version/Professional Version

In the consumer version and professional version, some parts differ. Parts for consumer version are indicated as [N-1000] in the parts list, and those for professional version are indicated as [N-1000 Pro.].

Ref. No.	Part No.	Description	Q'ty
	-	Package Ass'y	
01	-	Accessory Ass'y	1
02	OF04246A	Packing Top Left	1
03	OF04247A	Packing Top Right	1
04	OF04241B	Soft Sheet	1
05	OF04245B	Packing Bottom	1
06	OF04235A	Inner Carton	1
07	OF04229A	Top Sheet	1
08	OF04232A	Outer Carton	1

Ref. No.	Part No.	Description	Q'ty
	-	Accessory Ass'y	1
	OF04239B	Accessory Box	1
	OD03092B	Poly Bag (For Accessory)	1
	OD04212A	Poly Bag (For Knob)	1
	OF04238A	Poly Bag (For Drum Window)	1
	OD04939A	Owner's Manual (English/German/French)	1
	OD04940A	Owner's Manual (Japanese)	1
	OH05484B	Drum Window Aluminum	1
	OD04935A	Optical Cable (TOCP175ZL1.0)	2
	OD04937A	Coaxial Cable (QDX-101SL1.0)	2
	DA04259A	Tape Accessory Ass'y	1
	OE03535A	M4x12 + Countersunk [N-1000 Pro.]	6
	HA05720A	Handle Ass'y [N-1000 Pro.]	2

1.5. Package Ass'y and Accessory Ass'y

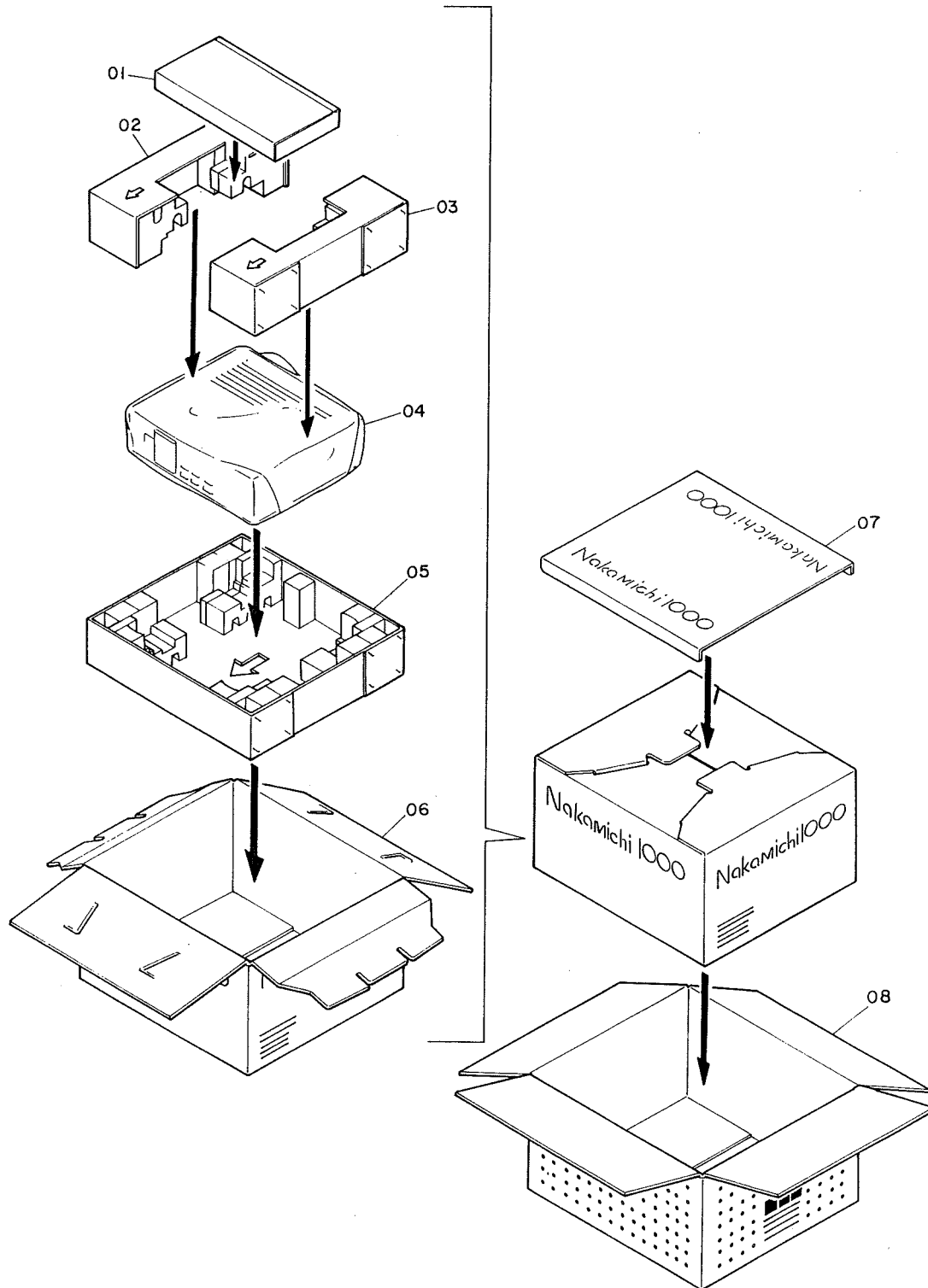


Fig. 1 Package Ass'y

2. REMOVAL PROCEDURES

2.1. Top Cover Front/Rear Ass'y

Refer to Fig. 2.1.

- (1) Loosen screws F01 (3 pcs.) and remove F02 (Top Cover Rear Ass'y).
- (2) Loosen screws F03 (2 pcs.), and slide F04 (Top Cover Front Ass'y) rearward to remove it.

2.2. Bottom Cover Front/Rear Ass'y

Refer to Fig. 2.2.

- (1) Loosen screws F01 (4 pcs.) and F02 (1 pce.), and remove F03 (Bottom Cover Front Ass'y).
- (2) Loosen screws F04 (4 pcs.) and F05 (1 pce.), and remove F06 (Bottom Cover Rear Ass'y).

2.3. Cassette Lid Ass'y and Drum Window

Refer to Figs. 2.3.1 and 2.3.2.

- (1) Turn the power ON and press the EJECT button.
- (2) Remove F01 (Cassette Lid Ass'y) in the direction of the arrow. See Fig. 2.3.1.
- (3) Close the Cassette Compartment by hand and remove F03 (Drum Window) in the direction of the arrow. See Fig. 2.3.2.

2.4. Front Panel Ass'y

Refer to Fig. 2.4.

- (1) Remove the Top Cover Front/Rear Ass'y referring to item 2.1.
- (2) Remove the Bottom Cover Front Ass'y referring to item 2.2.
- (3) Remove the Cassette Lid Ass'y referring to item 2.3.
- (4) Loosen screws F01 (6 pcs.) and remove F02 (Front Panel Ass'y).
- (5) Disconnect connectors of F02 (Front Panel Ass'y) from the main body.

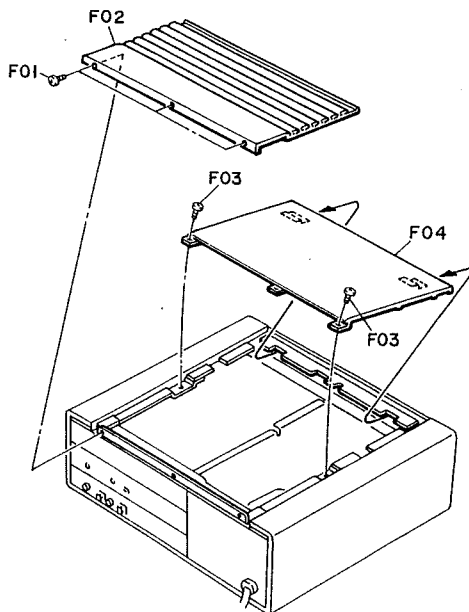


Fig. 2.1

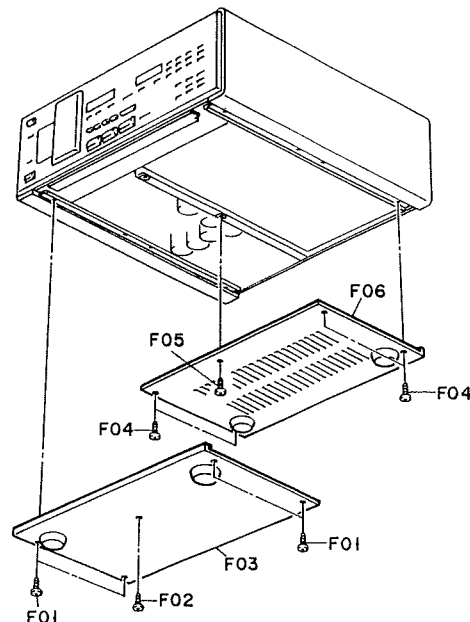


Fig. 2.2

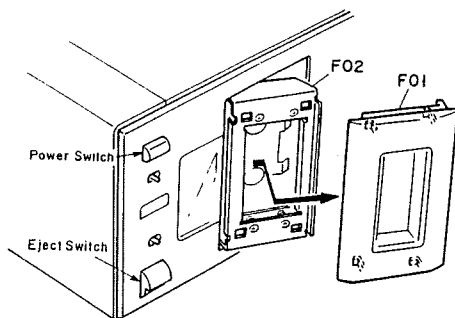


Fig. 2.3.1

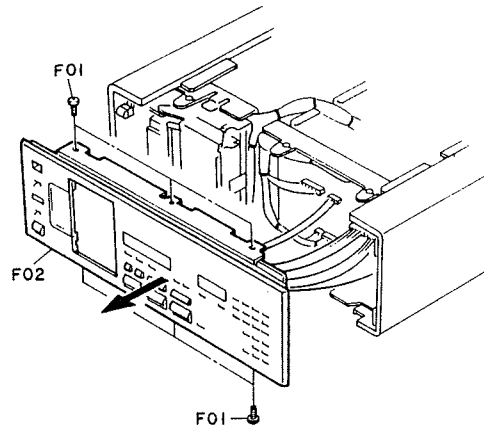


Fig. 2.4

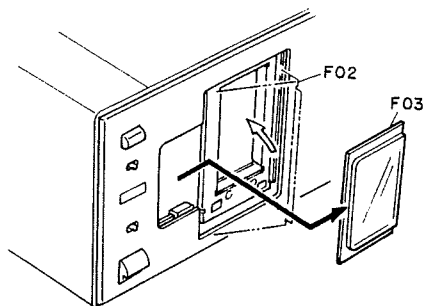


Fig. 2.3.2

2.5. Transport Mechanism Ass'y

Refer to Fig. 2.5.

- (1) Remove the Front Panel Ass'y referring to item 2.4.
- (2) Loosen screws F01 (3 pcs.) and remove F02 (Shield Cover).
- (3) Loosen screws F03 (1 pce.) and F04 (2 pcs.).
- (4) Disconnect connectors A and B, and other connectors of F05 (Transport Mechanism Ass'y) from the main body.

2.6. Side Panel Left/Right

Refer to Fig. 2.6.

- (1) Remove the Top Cover Front/Rear Ass'y referring to item 2.1.
- (2) Remove the Bottom Cover Front/Rear Ass'y referring to item 2.2.
- (3) Loosen screws F01 (5 pcs.) and remove F02 (Side Panel Left).
- (4) Loosen screws F03 (5 pcs.) and remove F04 (Side Panel Right).

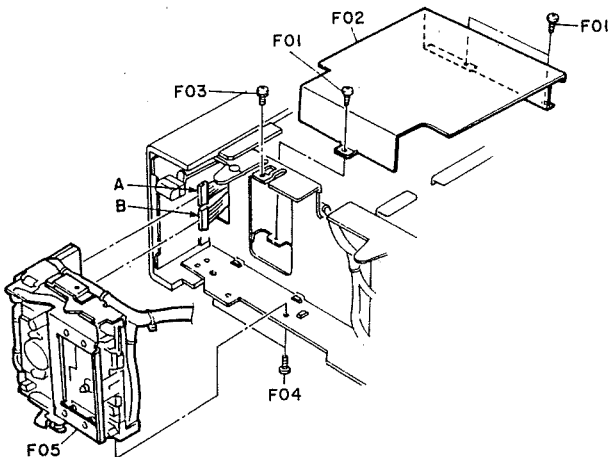


Fig. 2.5

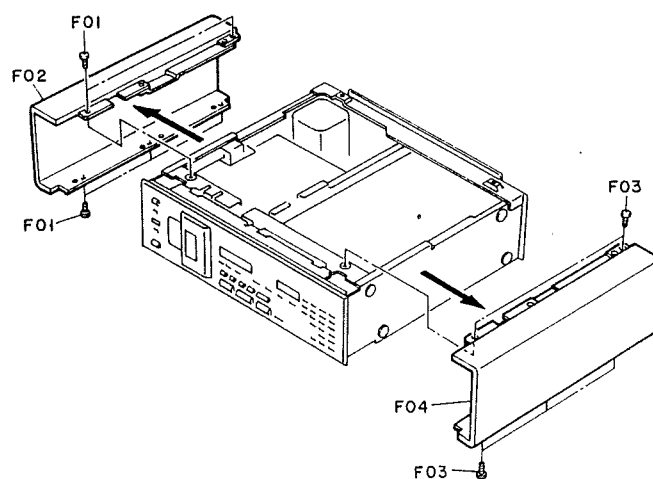


Fig. 2.6

2.7. u-COM P.C.B. Ass'y and DAIF-D P.C.B. Ass'y

Refer to Figs. 2.7.1 and 2.7.2.

- (1) Loosen screws F01 (2 pcs.) and screw them into holes A. See Fig. 2.7.1.
- (2) Hold the screw heads and pull out P.C.B. Ass'y along card rails. See Fig. 2.7.2.

2.8. Servo P.C.B. Ass'y

Refer to Fig. 2.8.

- (1) Remove the Side Panel Right referring to item 2.6.
- (2) Loosen screws F01 (1 pce.) and F02 (2 pcs.), disconnect connectors, and remove F03 (Servo P.C.B. Ass'y) along card rails.

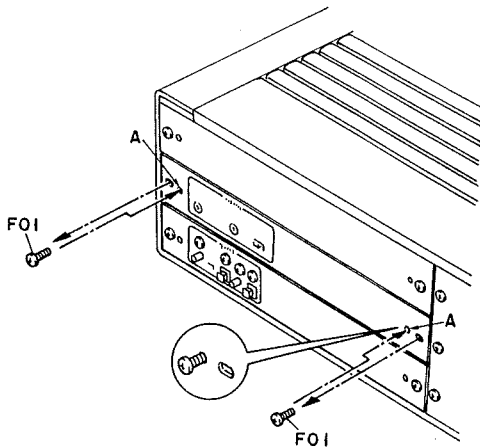


Fig. 2.7.1

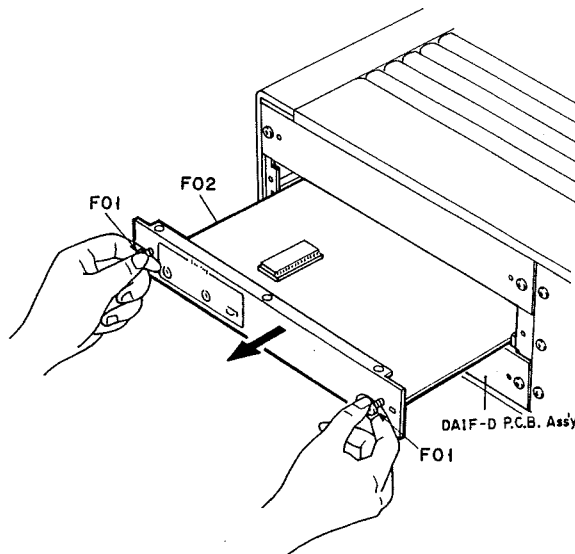


Fig. 2.7.2

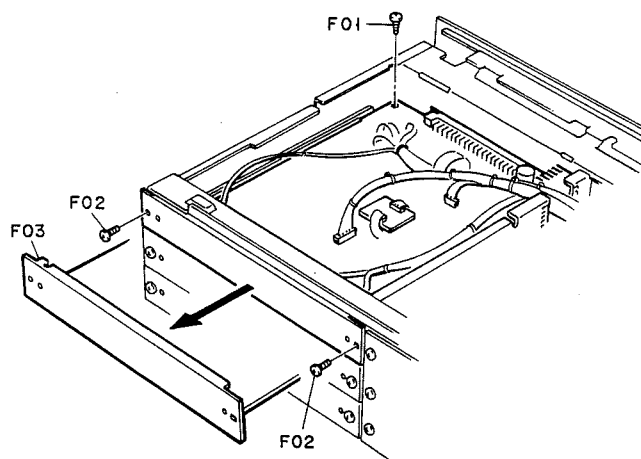


Fig. 2.8

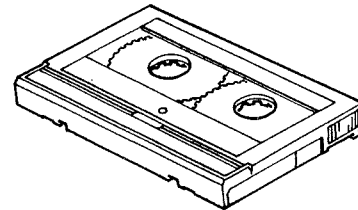
3. MEASUREMENT INSTRUMENTS

- (1) Frequency Counter (8-Digit)
- (2) Digital Voltmeter (DC Voltmeter)
- (3) Oscilloscope with delay trigger function (100 MHz or more)
- (4) Digital Signal Generator (Fs: 48 kHz/44.1 kHz/32 kHz)

4. TEST TAPES, JIGS AND GAUGES

4.1. Test Tapes

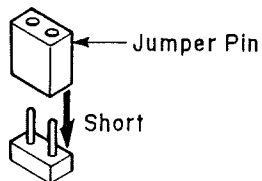
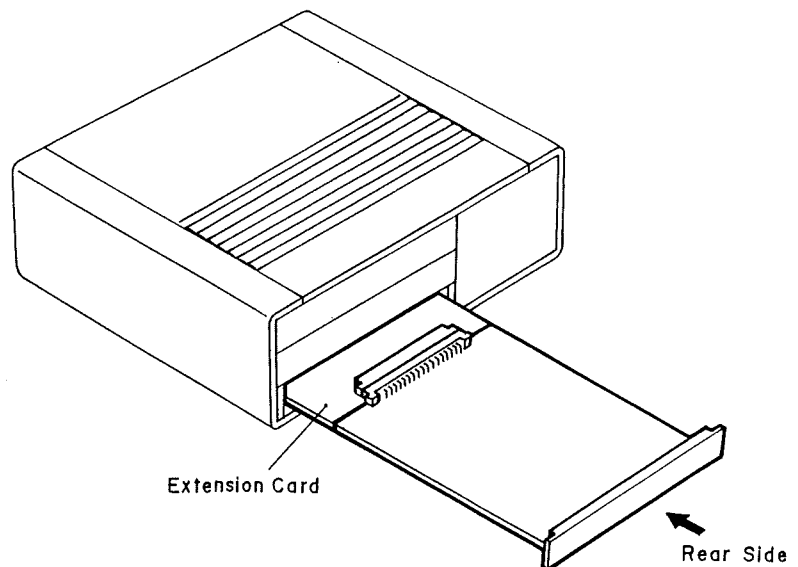
<u>Part No.</u>	<u>Description</u>
DA09140A	Sony TW-7131 (Torque Meter)
DA09141A	Sony TY-7111 (Level Check Tape)
DA09142A	Sony TY-7251 (Tracking Check Tape)
DA09145A	Fs48 kHz Tape
DA09146A	Fs44.1 kHz Tape
DA09143A	Fs32 kHz Tape
DA09144A	TS Link Cassette (Take-up reel and supply reel are directly engaged with gears. Rotational frequency ratio between both reels is 1:1.)
DA09147A	Reference Tape (120 min.)



TS Link Cassette

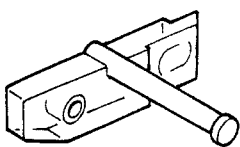
4.2. Jigs for Electrical Adjustments

<u>Part No.</u>	<u>Description</u>
OB84118A	Jumper Pin (Used for shorting jumper connector on the P.C. Board.)
DA09139A	Extension Card (Can check μ -COM P.C.B. Ass'y or DAIF-D P.C.B. Ass'y as shown below. This Extension Card can be used for Nakamichi 1000P Digital Audio Processor.)

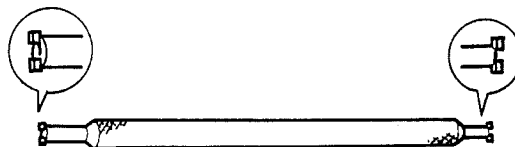


4.3. Jigs and Gauges for Mechanical Adjustments

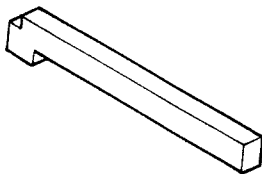
Part No.	Description
DA09152A	Adjustment Kit
	Consists of the following items:
(OD09050A	Pilot Gauge)
(OD09055A	Guide Adjuster)
(OD09056A	Preset Bar)
(OD09057A	Preset Spacer 0.4)
(OD09059A	Sensor Adjuster Bit)
(OD09060A	Stroke Adjuster Bit)
(OD09061A	Adjuster Grip)
DA09149A	Stroke Check Gauge



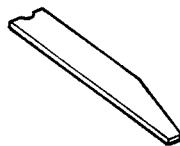
Pilot Gauge



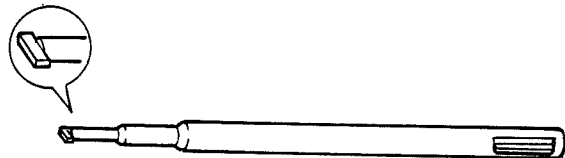
Guide Adjuster



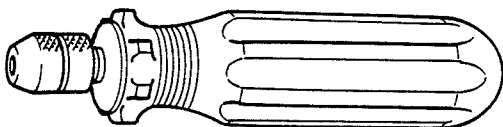
Preset Bar



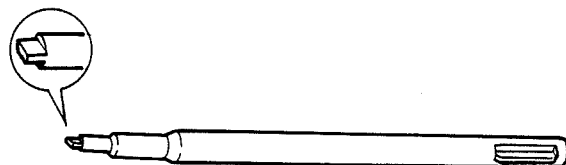
Preset Spacer 0.4



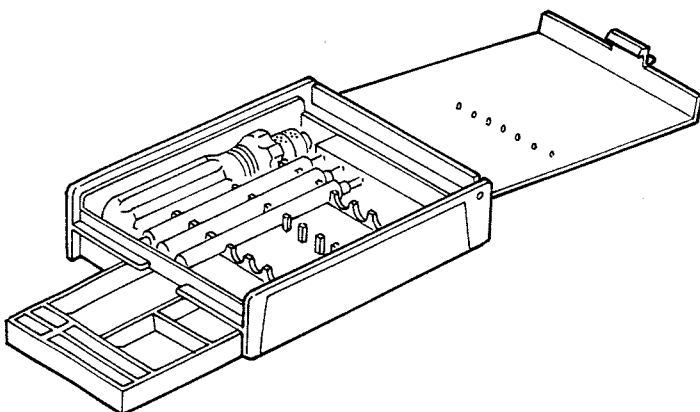
Stroke Adjuster Bit



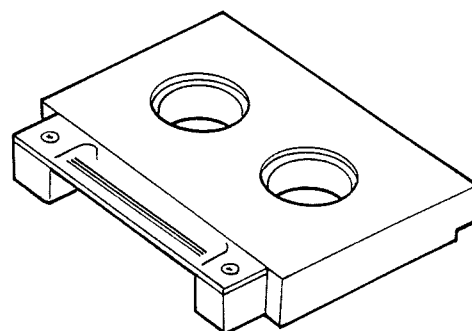
Adjuster Grip



Sensor Adjuster Bit



Adjuster Kit



Stroke Check Gauge

5. ELECTRICAL ADJUSTMENTS

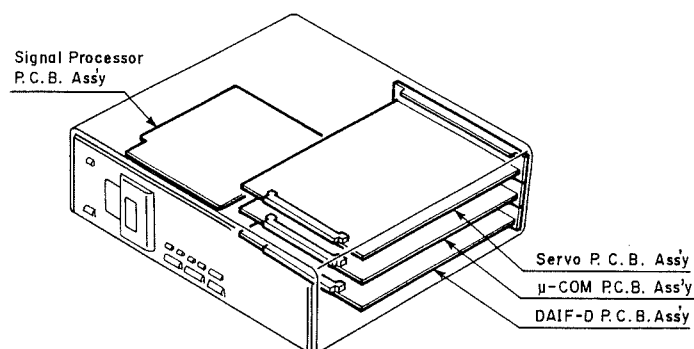
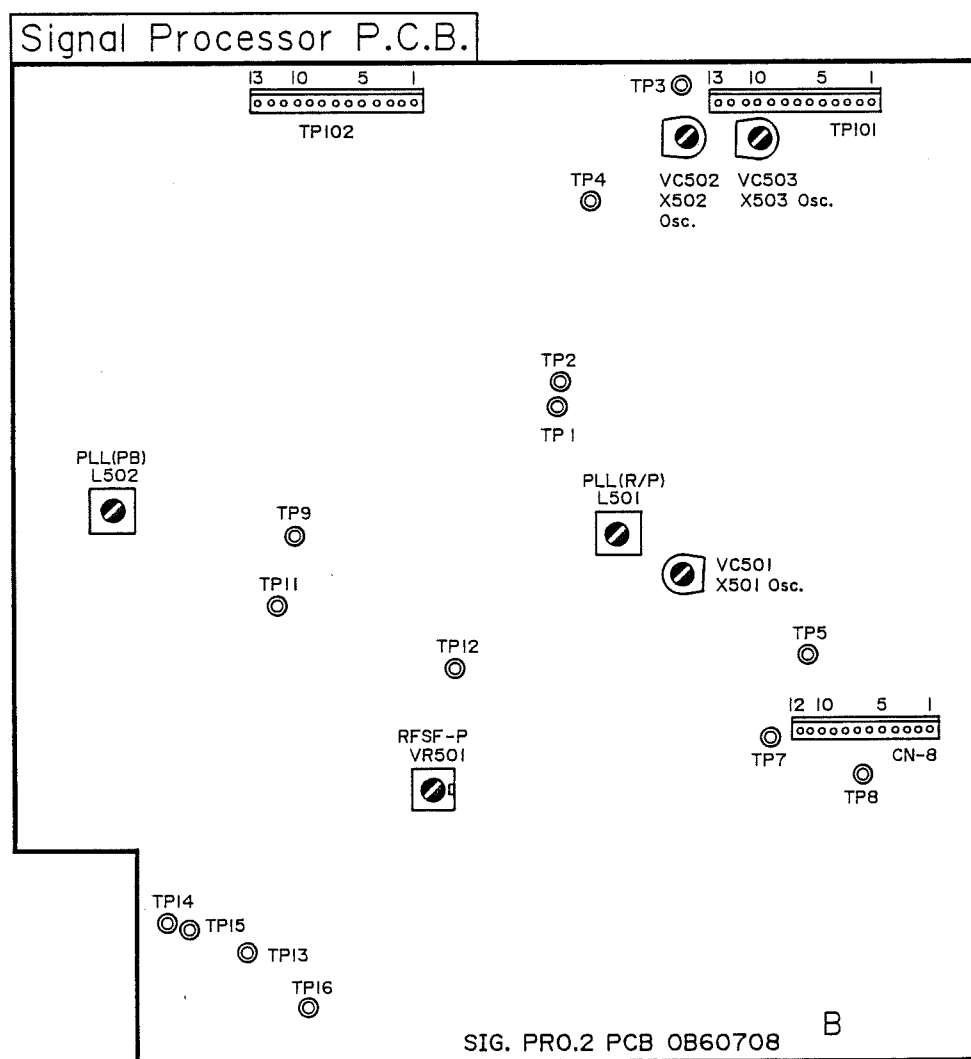


Fig. 5.1 Nakamichi 1000 (Front View)

5.1. Parts Location for Electrical Adjustment



(Front Side)

Fig. 5.2.1 Signal Processor P.C.B. Ass'y (Pattern B)

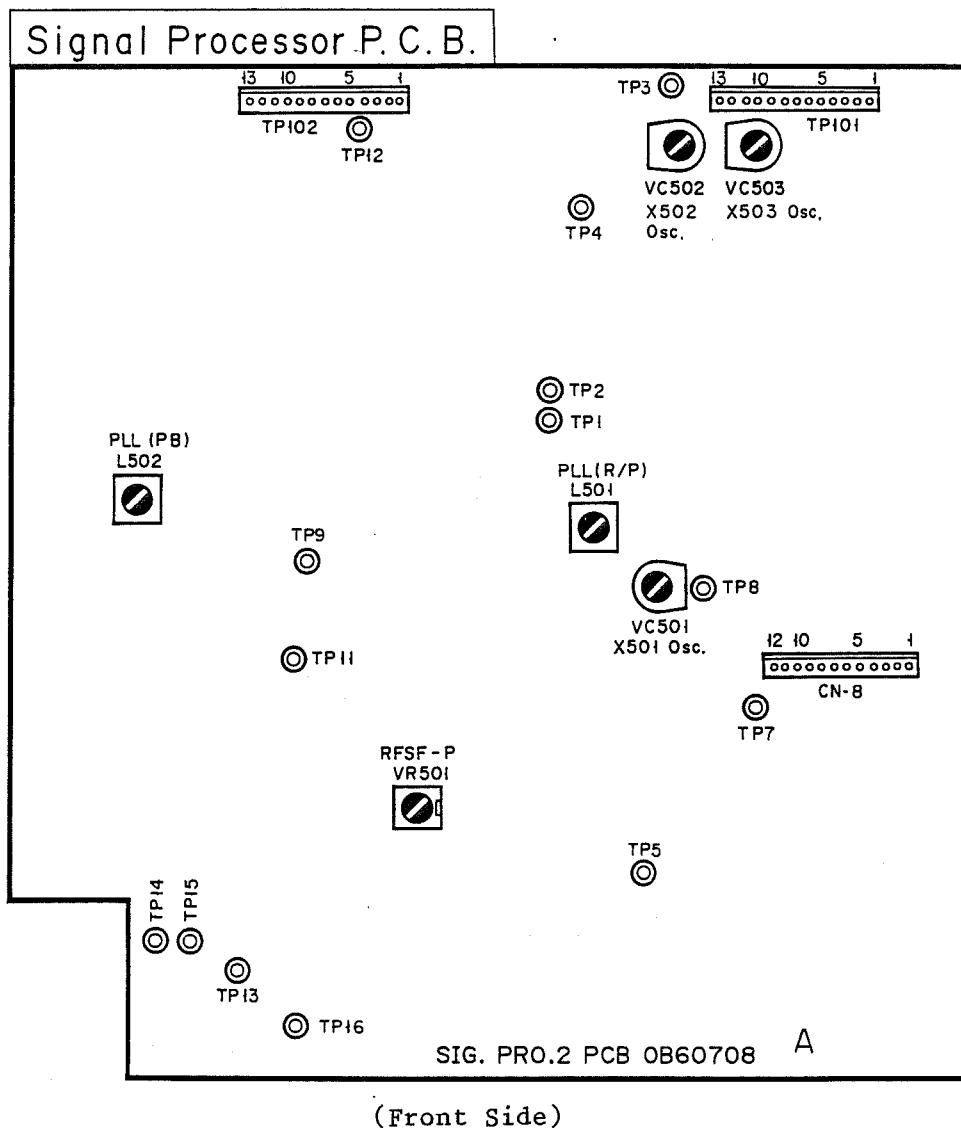
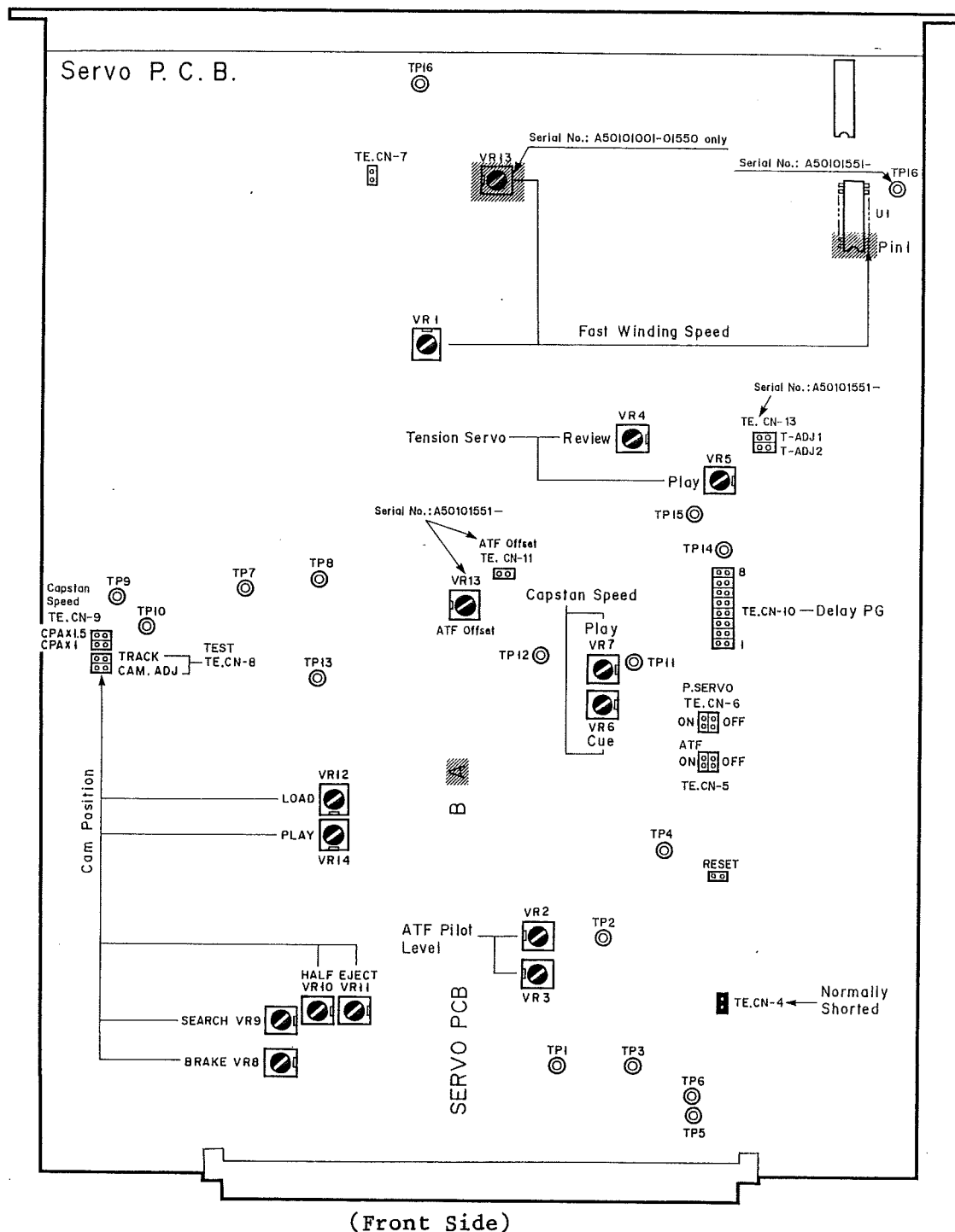


Fig. 5.2.2 Signal Processor P.C.B. Ass'y (Pattern A)

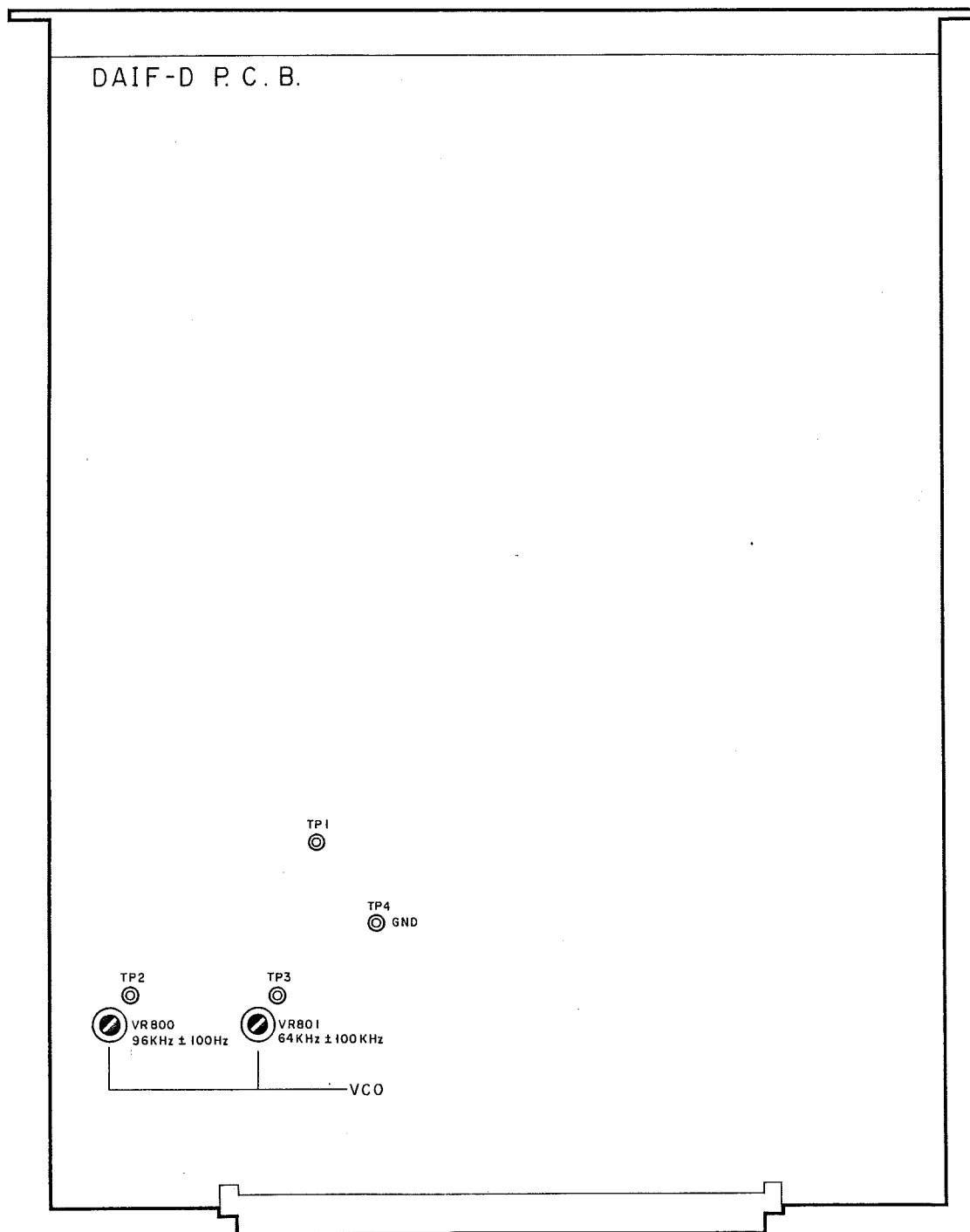


For serial No. A50101051 - 01550 : Pattern No. 0B60710A

For serial No. A50101551 - : Pattern No. 0B60710B

- o TP16 (same as pin 1 of U1) is added.
- o Former VR13 is removed. New VR13 is added together with TE.CN-11 (ATF OFFSET) for ATF offset adjustment.
- o TE.CN-13 (T-ADJ1/2) is added.

Fig. 5.3 Servo P.C.B. Ass'y



(Front Side)

Fig. 5.4 DAIF-D P.C.B. Ass'y

5.2. Test Points, Jumper Connectors and LEDs

(1) Test Points

TP No.	Signal Name	Description
(Servo P.C.B. Ass'y)		
TP1	RF IN	PB (Playback) envelope signal
TP2	PILOT	ATF (Automatic Track Finding) Pilot level
TP3	GND	GND
TP4	SVRF	Servo Reference signal (100/3Hz)
TP5	SWP	Switching Pulse
TP6	DPG	DPG (Delay PG (Phase Generator)) signal
TP7	DRUM FG	Drum Frequency Generator signal
TP8	DRUM PG	Drum Phase Generator signal
TP9	CAPSTAN FG	Capstan Motor Frequency Generator signal
TP10	GND	GND
TP11	CAP SV ERR	Capstan phase servo error signal
TP12	ATF ERR	ATF (Auto Track Following) error signal
TP13	CAP MTRV	Capstan motor voltage
TP14	DRUM CONT	Drum control voltage
TP15	TENS SENSE	Tension Sensor output voltage
TP16	TREEL PULSE	Take-up side Reel Pulse (Serial No.:A50101551 -)

(Signal Processor P.C.B. Ass'y)		
TP1	SWP	Switching Pulse
TP2	SVRF	Servo Reference Signal (100/3 Hz)
TP3	CLKO	Pin for monitoring 18.816 MHz (X501)
TP4	DFCK	Pin for monitoring halved frequency (128Fs) of 24.576 MHz (X502)/22.5792 MHz (X503)
TP5	PCM.EQ OUT (R/P)	Envelope on R/P (Record/Playback) side
TP7	BIT PLL CONT (R/P)	PLL control voltage on R/P side
TP8	GND (R/P)	GND on R/P side
TP9	PCM EQ OUT (PB)	Envelope on PB (Playback) side
TP11	BIT PLL CONT (PB)	PLL control voltage on PB side
TP12	GND (PB)	GND on PB side
TP13	EXSY-P	EXSY signal on PB side
TP14	SWP-P	Switching Pulse on PB side
TP15	DPG-P	DPG (Delay PG) signal on PB side
TP16	RFSF-P	RFSF signal on PB side

(2) Jumper Connectors (Servo P.C.B. Ass'y)

When adjusting, jumper connectors should be shorted with jumper pins as required.

CN No.	Description
TE.CN-4	PLLK

Note: This connector must be shorted normally.

TE.CN-5	ATF setting
	<ul style="list-style-type: none"> o ATF OFF: ATF turns OFF forcedly. o ATF ON : ATF turns ON forcedly. (But, turns OFF in Record mode.) o Open : Normal setting

<u>CN No.</u>	<u>Description</u>
TE.CN-6	Capstan phase servo setting <ul style="list-style-type: none"> o Phase serve OFF: Phase servo turns OFF forcedly. o Phase servo ON : Phase servo turns ON forcedly. (But, turns OFF in Cue/Rew. mode.) o Open : Normal setting
TE.CN-7 (SH TAPE TEST)	Shock protection at tape end in FF/REW mode <ul style="list-style-type: none"> o Open : Normal setting o Short: When fast-winding (FF/REW) a shorter tape (less than 30 min.) such as test tapes TY-7111 and TY-7251, this connector <u>must be shorted</u> to avoid damages on the Transport Mechanism Ass'y and the tape at the tape end.
TE.CN-8	Test mode select connector <ul style="list-style-type: none"> o CAM ADJ short: For cam position check o Open : Normal setting o TRACK short : For testing tracking using TY-7251 <p>Note: Turn OFF the power and then ON when selecting this connetor.</p>
TE.CN-9 (CAP SPEED)	Capstan speed setting <ul style="list-style-type: none"> o CAPx1 : Forcedly selects one time speed (Rec./Play/Cue/Review). o Open : AUTO (Normal setting) o CAPx1.5: Forcedly selects one and a half times speed (Rec./Play/Cue/Review).
TE.CN-10	Delay PG (Phase Generator) pulse width setting (8-pin connector) Jumper pin setting depends on the characteristics of the Transport Mechanism Ass'y. (One or more jumper pins are inserted.)
TE.CN-11 (ATF OFFSET)	ATF offset adjustment With the jumper inserted, ATF offset adjustment by VR13 becomes possible at ATF ON condition.
TE.CN-13 (T-ADJ)	Tension servo (tension sensor offset) adjustment Adjustable range of VR5 varies with the jumper pins T-ADJ1/T-ADJ2 setting.
RESET	Drum serve alarm reset <ul style="list-style-type: none"> o Open : Normal setting o Short: Resets alarm, but not used normally.

(3) LEDs (Servo P.C.B. Ass'y)

LEDs on the Servo P.C.B. Ass'y show condition of the Nakamichi 1000. So LEDs are useful for service work to see whether circuits including the Transport Mechanism Ass'y operate correctly or not.

<u>LED</u>	<u>Meaning of LED ON</u>
ED23 (Red)	Drum brake is working.
ED24 (Yellow)	PLLK (If OFF in Playback mode, signal process system will be defective.)

<u>LED</u>	<u>Meaning of LED ON</u>
ED26 (Red)	Alarm (Lights in Search mode when lock-failed though RF (Radio Frequency) exists.) In this case, RESET connector on the Servo P.C.B. Ass'y must be shorted to release the alarm.
ED27 (Orange)	Drum Just Lock. Drum phase servo locked. (If OFF in Playback mode, the Transport Mechanism Ass'y or servo system will be defective.)
ED28 (Green)	Drum Just Speed. Drum speed servo locked. (If OFF in Playback mode, the Transport Mechanism Ass'y or servo system will be defective.) *: ED28 will turn ON when speed is established, and then ED27 will turn ON when phase lock is established in drum rotational frequency control system.
ED35 (Green)	ATF ON (During ON, sound is output in Playback mode.)
ED36 (Red)	Capstan Phase Servo ON (Lights when capstan phase servo is ON in Record/Playback mode.)
ED40 (Red)	Cam Position Change (from Play to Eject direction) (Pulsively lights when mode is changed and cam moves.)
ED41 (Green)	Cam Position Change (from Eject to Play direction) (Pulsively lights when mode is changed and cam moves.)

The following Table shows the relationship between modes and LEDs on the Servo P.C.B. Ass'y. (o: ON, -: OFF)

<u>Mode</u>	<u>ED23</u> <u>RED</u>	<u>ED24</u> <u>YEL</u>	<u>ED26</u> <u>RED</u>	<u>ED27</u> <u>ORN</u>	<u>ED28</u> <u>GRN</u>	<u>ED35</u> <u>GRN</u>	<u>ED36</u> <u>RED</u>	<u>ED40</u> <u>RED</u>	<u>ED41</u> <u>GRN</u>
Stop	-	-	-	-	-	-	-	-	-
Play	-	o	-	o	o	o	-	-	-
F.Fwd.	-	o	-	-	-	-	-	-	-
Rew.	-	o	-	-	-	-	-	-	-
Search	-	o	-	-	-	-	-	-	-
Rec./Play	-	o	-	o	o	-	o	-	-
Pause	-	o*	-	o	o	-	-	-	-
Rec./Pause	-	o**	-	o	o	-	-	-	-

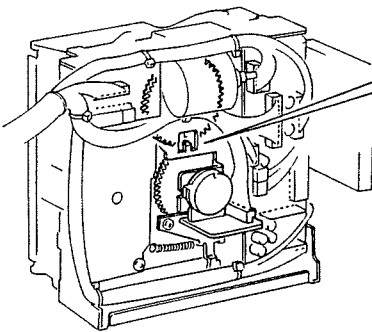
*: OFF in case a brand new tape is used.

** : ON or OFF (indefinite)

5.3. Adjustment Instructions

- Notes: 1. Perform the adjustment in the order of Steps (1) through (14).
2. Connection of probes of measurement instruments and insertion of jumper pins must be done after turning OFF the power.
3. Note that jumper pins for testing must be removed after adjustment. (TE.CN-4: Normally short, TE.CN-10: DPG setting pin (do not remove.))
4. When replacing the Servo P.C.B. Ass'y with new one, pay attention to the followings:
o Jumper pin setting must be the same as for the current Ass'y.
o Semi-fixed volume setting angle must be the same as for the current Ass'y.
5. Revision History for the Provisional Service Manual
o Step 5 has been modified.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Preparation for Adjustment					1. Remove the Top Cover. 2. Check that the jumper connector TE.CN-4 on the Servo P.C.B. Ass'y is shorted with a jumper pin. 3. Set the Nakamichi 1000 as follows: Timer Switch -- OFF Auto Play Switch -- OFF Auto Start ID Switch -- OFF Skip Switch -- OFF Auto Switch -- OFF Digital Input Selector (on Rear Panel) -- Coaxial
2	VCO Adjustment (DAIF-D P.C.B.)	Digital Signal Generator (Fs=48kHz/44.1 kHz/32 kHz) to Digital Input (Coaxial) Jack on Rear Panel	Frequency Counter: TP2, TP3 & TP4 (GND) (10:1 probe) Oscilloscope: TP1 & TP4 (GND) (DAIF-D P.C.B.)	Stop	DAIF-D P.C.B. VR800 (96 kHz) VR801 (64 kHz)	1. Connect the DAIF-D P.C.B. Ass'y through an Extension Card. 2. Remove a digital input signal. 3. Adjust VR800 to obtain 96 kHz $\pm$ 100 Hz on the Frequency Counter at TP2. 4. Adjust VR801 to obtain 64 kHz $\pm$ 100 Hz on the Frequency Counter at TP3. Operational Check: 1. Connect a digital input signal. 2. Feed in Fs 48 kHz/32 kHz/44.1 kHz and check that the voltage at TP1 is in a range of 2 to 7 V on the oscilloscope. Note: Voltage at TP1 will be 0 V, or more than 8.5 V if lock of PLL fails. 3. Remove the Extension Card and connect the DAIF-D P.C.B. Ass'y in place.
3	Cam Position Adjustment (Servo P.C.B.)	None	None	Stop/Play/Eject/Pause/F.Fwd./Rew.	Servo P.C.B. VR12 (Load) VR14 (PLAY) VR11 (EJECT) VR10 (HALF) VR9 (SEARCH) VR8 (BRAKE) Jumper Pin TE.CN-8 CAM ADJ short	1. Turn the power OFF and insert a jumper pin into TE.CN-8 (CAM ADJ side). 2. Turn the power ON and check that the LED of Remote Control Sensor on the Front Panel flashes as shown below. 3. Press the STOP button and adjust VR12 so that the Cam Position Indicator indicates "L (Load)" viewing from the rear side of the Transport Mechanism Ass'y. See the left. 4. Press the PLAY button and adjust VR14 so that the Cam Position Indicator indicates "P (Play)". 5. Repeat 3 and 4 two to three times. 6. Press the EJECT button and adjust VR11 so that the Cam Position Indicator indicates "E (Eject)". 7. Press the PLAY button and then PAUSE button, and adjust VR10 so that the Cam Position Indicator indicates "H (Half)". In this condition, check the followings: (to be continued.)

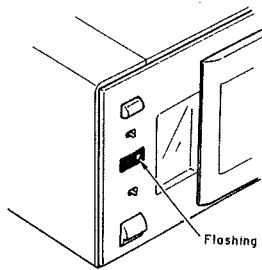


Cam Position Indicator

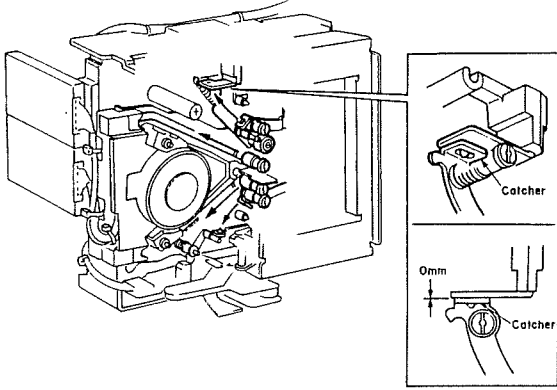
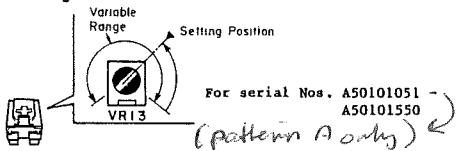


↑ markdan in Spiegelbild des:



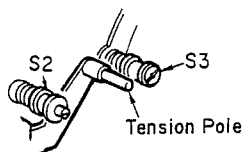


Flashing

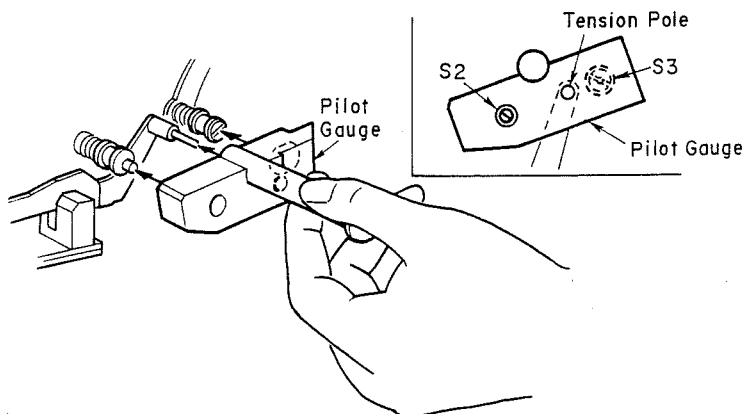
STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
						 <p>o The Catcher of Guide Roller engages with the other party and no gap exists as shown in the left.</p> <p>o Press the PLAY button and then PAUSE button, and make sure that guides T3 and S3 do not move at all. If they don't move, no gap condition is still maintained. (Guide T3 tends to move.)</p> <p>Note: If gap is found, re-adjust VR10. Re-adjustment causes the cam position "H (Half)" to shift. However, gap adjustment has priority over the cam position "H (Half)" adjustment.</p> <p>8. Press the F.FWD button and adjust VR9 so that the Cam Position Indicator indicates "S (Search)".</p> <p>9. Press the REW button and adjust VR8 so that the Cam Position Indicator indicates "B (Brake)".</p> <p>10. Repeat 3 through 9 once and check for correct cam positions.</p> <p>11. Press the STOP button, turn the power OFF, and remove the jumper pin of TE.CN-8.</p>
4	Fast-winding Speed Adjustment (Servo P.C.B.)	TS Link Cassette (DA09144A)	Frequency Counter: Pin 1 of U1 (4069) (or TP16 for serial Nos. A50101551 and greater) (Time Base -- 0.1 sec) (Servo P.C.B.)	F.Fwd./Rew. (Normal Fast-winding Speed, 200 times)	Servo P.C.B. VR1	<p>1. Load a TS Link Cassette and press the F.FWD button once.</p> <p>2. Adjust VR1 to obtain 405 ± 5 Hz on the Frequency Counter.</p> <p>3. Press the REW button once and check whether the Frequency Counter reads 395 to 415 Hz.</p> <p>Note: Press the F.FWD/REW button once to set the Nakamichi 1000 in normal fast-winding speed (200 times) mode. If the button is pressed twice, the Nakamichi 1000 will enter high-speed (400 times) winding mode.</p> <p>Caution: For serial Nos. A50101051 to 01550 only, turn VR13 fully clockwise and then return it by one-third of variable range as shown below before adjustment.</p>  <p>For serial Nos. A50101051 - A50101550 (pattern A only)</p>
5	Tension Servo Adjustment (Servo P.C.B.)	TS Link Cassette (DA09144A) Sony TW-7131 (Torque Meter)	Digital (DC) Voltmeter: TP15 (Servo P.C.B.)	Playback/Review	Servo P.C.B. VR5 (Playback) VR4 (Review) Jumper Pin TE.CN-13 T-ADJ1 T-ADJ2	<p>1. Load a TS Link Cassette and play it back.</p> <p>2. Adjust VR5 to obtain $0.4 \text{ V} \pm 0.05 \text{ V}$ on the Digital Voltmeter.</p> <p>Note: If satisfactory result is not obtained, remove TE.CN-13 T-ADJ1 or T-ADJ2 to shift the variable range level of VR5.</p> <p>3. Eject the TS Link Cassette, load a Torque Meter (TW-7131), play it back, and check the followings:</p> <ul style="list-style-type: none"> o Torque on supply side is $5\text{g} \pm 1\text{g}$ o Torque on take-up side is $8\text{g} \pm 2\text{g}$ o Digital Voltmeter reads $1.6 \text{ V} \pm 0.1 \text{ V}$. <p>If the supply side torque is out of the range, perform "Tension Sensor Position Adjustment" shown below.</p> <p>4. Press the REW button while in Play mode to enter the Review mode.</p> <p>5. Adjust VR4 to obtain $17\text{g} \pm 2\text{g}$ on supply side of the Torque Meter. (Set mean value of indication to 17g as the indication fluctuates.)</p>

Tension Sensor Position Adjustment

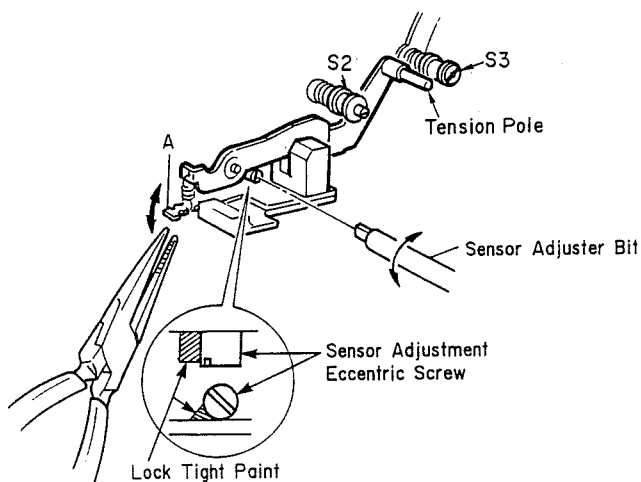
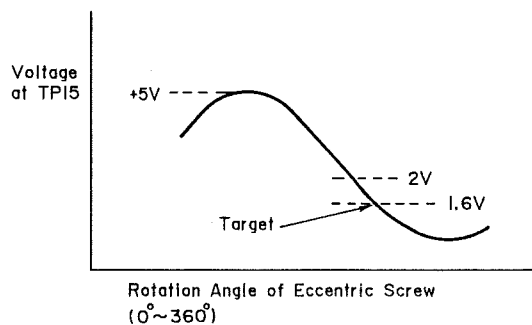
1. Remove the Front Panel Ass'y. Do not disconnect the cables as control switch operation is necessary.
2. Load a TS Link Cassette and press the STOP button.
3. Verticality Check of the Tension Pole
Visually check the verticality of the Tension Pole referring to S3 and S2.
If the Tension Pole is bent, correct it with holding the top with your finger tips.
Caution: Do not use pliers or tweezers to avoid damages onto the Tension Pole.



4. Press the PLAY button and gently insert a Pilot Gauge as shown below:
Caution: Do not insert a Pilot Gauge other than Play mode.



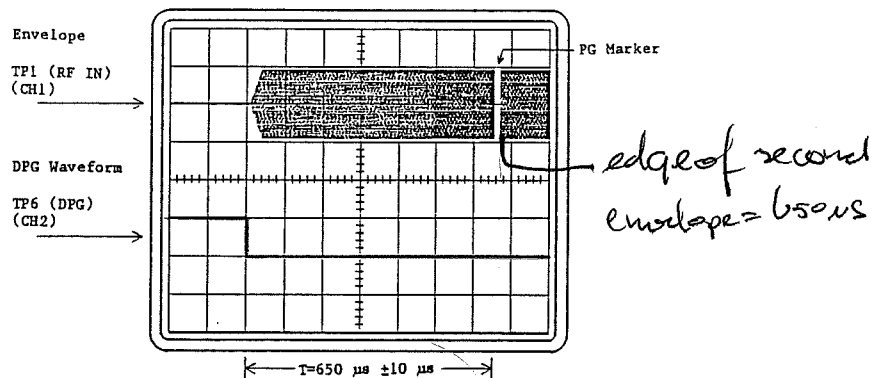
5. Adjustment of Sensor Adjustment Eccentric Screw
a. Slowly turn the Screw with a Sensor Adjuster Bit clockwise until the voltage at TP15 on the Servo P.C.B. Ass'y reaches a peak (approx. 5 V).



- b. Further slowly turn the Screw clockwise. And, when the voltage reaches approx. 2 V, turn the Screw more slowly, and find the position where the voltage is $1.6\text{ V} \pm 0.2\text{ V}$. If you turn the Screw excessively, turn it counterclockwise until the voltage reaches 2 to 3 V and try again.
 - c. Remove the Pilot Gauge gently in Play mode and re-check the verticality of the Tension Pole.
6. Press the EJECT button and remove the TS Link Cassette.
7. Load a Torque Meter (TW-7131) and play it back. Check the supply side torque for $5\text{g} \pm 1\text{g}$.
If out of the range, bend the plate A with pliers to adjust spring tension, i.e., supply side torque. See the figure in 5.
8. After adjustment, apply a quantity of lock tight paint to the Sensor Adjustment Eccentric Screw. See the figure in 5.
9. Mount the Front Panel Ass'y.

6	Capstan speed adj Servo PCB	Ref. Tape DA 00147A o.c. blank tape	Scope TP11 (servo PCB). 500mV/div 1ms/div.	rec 44000	VR7 No add. jumpers	1. Vcc atape 2. Ref to o.c. ground trace 3. adj. VR7 to TP11 stays on the ground reference trace.
STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST- MENT	REMARKS
6	Capstan Speed Adjustment (Servo P.C.B.) Zie boven	Fs48 kHz Tape (DA09145A)	Frequency Counter: TP9 (10:1 Probe) (Gate Time Range -- 0.1 sec) (Servo P.C.B.)	Playback/ Cue/Review Tape Counter Display Mode - Absolute Time	Servo P.C.B. VR7 (Play- back) VR6 (Cue) Jumper Pin TE.CN-5 ATF OFF short TE.CN-6 P.SERVO OFF short	1. Turn the power OFF and short ATF OFF side of TE.CN-5 and P.SERVO OFF side of TE.CN-6. 2. Turn the power ON and press the COUNTER MODE button to light the ABSOLUTE TIME Indicator. 3. Load an Fs48 kHz Tape (120 min). 4. Press the F.FWD (or REW) button to bring the Tape where the Tape Counter indicates 50 _M (50 min.) to 1 _H 10 _M (1 hr. 10 min.) (or approximately center of tape), and press the PLAY button. 5. In Playback mode, adjust VR7 to obtain 673.68 Hz on the Frequency Counter. (Reads the mean value as the indication fluctuates by some Hz.) 6. Keep press the F.FWD button while in Playback mode to enter Cue mode, and adjust VR6 to obtain 1.684 kHz ± 5 Hz on the Frequency Counter. 7. Keep press the REW button while in Playback mode to enter Review mode, and check whether the Frequency Counter reads 1.684 kHz ± 10 Hz. 8. Eject the Fs48 kHz Tape, turn the power OFF, and remove the jumper pins of TE.CN-5 and TE.CN-6.
7	X501 Oscillation Frequency Adjustment (Signal Processor P.C.B.)	None	Frequency Counter: TP3 (CLK0) and TP8 (GND) (10:1 probe) (Signal Processor P.C.B.)	Stop	Signal Processor P.C.B. VC501	1. Adjust VC501 to obtain 18.816000 MHz ± 400 Hz on the Frequency Counter. Screwdriver 2. 6mm ceramic.
8	X502 Oscillation Frequency Adjustment (Signal Processor P.C.B.)	Fs48 kHz Tape (DA09145A)	Frequency Counter: TP4 (DFCK) and TP8 (GND) (10:1 probe) (Signal Processor P.C.B.)	Playback	Signal Processor P.C.B. VC502	1. Playback an Fs48 kHz Tape. 2. Adjust VC502 to obtain 12.288000 MHz ± 300 Hz on the Frequency Counter.
9	X503 Oscillation Frequency Adjustment (Signal Processor P.C.B.)	Fs44.1 kHz Tape (DA09146A)	Frequency Counter: TP4 (DFCK) and TP8 (GND) (10:1 probe) (Signal Processor P.C.B.)	Playback	Signal Processor P.C.B. VC503	1. Playback an Fs44.1 kHz Tape. 2. Adjust VC503 to obtain 11.289600 MHz ± 280 Hz on the Frequency Counter.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
10	Delay PG Check (Servo P.C.B.)	Sony TY-7251	Connect an Oscilloscope at power OFF CH1: TP1 (RF IN) and TP3 (GND) CH2: TP6 (DPG) and TP3 (END)	Playback	Servo P.C.B. TE.CN-10 (if adjustment is necessary) Jumper Pin TE.CN-5 ATF ON short TE.CN-8 TRACK short TE.CN-4 Open TE.CN-7 Short	<ol style="list-style-type: none"> 1. Turn the power OFF, short ATF ON side of TE.CN-5 and TRACK side of TE.CN-8, and open TE.CN-4. 2. Short TE.CN-7 (SH TAPE TEST). 3. Turn the power ON and play back a Test Tape TY-7251. 4. Check that the period of time between falling edge of DPG (Delay Phase Generator) waveform on CH2 and the falling edge of the RF IN signal on CH1, i.e., the period of time "T" shown in below is 650 usec ± 10 usec. 5. If out of the range, proceed to "Re-adjustment". But, if in the range, eject the Test Tape, turn the power OFF, remove jumper pins of TE.CN-5, TE.CN-8, and TE.CN-7, and insert a jumper pin into TE.CN-4. <p>Note: The envelop waveform may deviate according to the test tape TY-7251 to be used, since the pilot level on the tape differs depending on the tape. So, to make the adjustment easier, turn VR3 to raise the ATF level.</p> <p>Caution: If connector TE.CN-7 is not shorted, the Transport Mechanism Ass'y (and the tape) will be damaged because of mechanical shock when the tape reaches the tape end in F.Fwd. or Rew. mode. This phenomenon occurs only for a short tape (less than 30 min.)</p>



Vertical:

- o CH1 Range: 10 mV/div (10:1 probe), AC
- o CH2 Range: 1 (or 0.5) V/div (10:1 probe), DC

Horizontal:

- o A Trigger (Main) Range : 0.2 ms/div Trigger Source: CH2 $\square$, AC Trigger Mode : Auto
- o B Trigger (Delay) Range : 0.1 ms/div Trigger Source: Run after Delay

Re-adjustment

If satisfactory result is not obtained in "Check", re-adjustment is necessary by changing jumper pin setting on TE.CN-10. TE.CN-10 has eight D.PG pins, D.PG1 to D.PG8.

The period of time "T" varies with shorting condition of pins D.PG1 to D.PG8. See Tables 1.1 and 1.2.

Table 1.1 For Serial No.: A50101551 - (Pattern B)

D.PG Pin No.	:	D.PG1	2	3	4	5	6	7	D.PG8
Change of DPG Pulse:									
		870.75	435.37	217.69	108.84	54.42	27.20	13.61	6.80
Width (usec)									

- o Pulse-width change amount according to shorting of pins D.PG1 to D.PG8

[illegible]

- o Shorting of D.PG pin shortens the DPG pulse width, i.e., the period of time "T" shown in STEP 10 becomes long.

Table 1.2 For Serial No.: A50101051 - 01550 (Pattern A)

D.PG Pin No.	:	D.PG1	2	6	5	4	3	8	D.PG7
Change of DPG Pulse: 870.75 435.37 217.69 108.84 54.42 27.20 13.61 6.80									
Width (usec)									

- o Pulse-width change amount according to shorting of pins D.PG1 to D.PG8

Largest D.PG1 - 2 - 6 - 5 - 4 - 3 - 8 - Smallest D.PG7

- o Shorting of D.PG pin shortens the DPG pulse width, i.e., the period of time "T" shown in STEP 10 becomes long.

Set jumper pins to TE.CN-10 referring to the flow chart shown in Fig. 5.5. Fig. 5.6 shows the relationship between -D.PG pin shorting and change in "T".

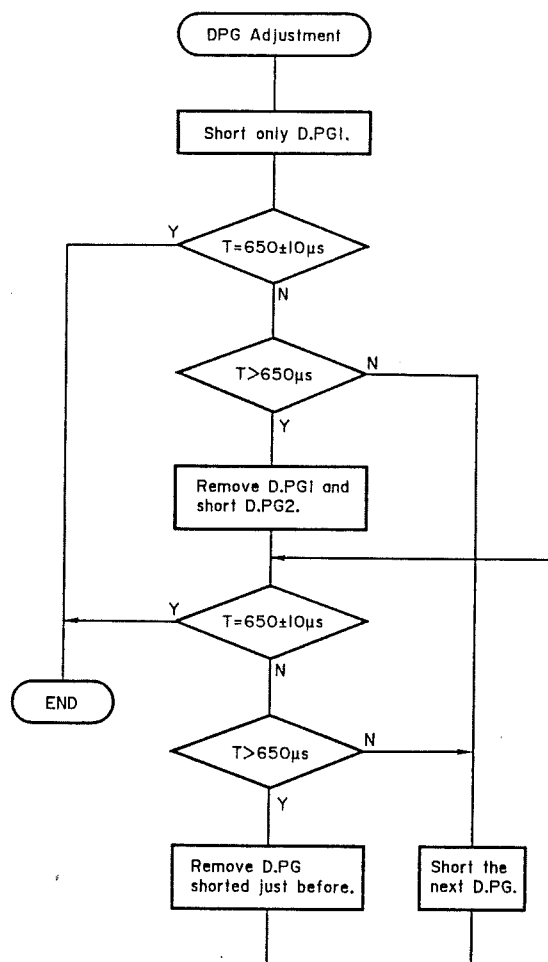


Fig. 5.5 DPG Adjustment Flow Chart

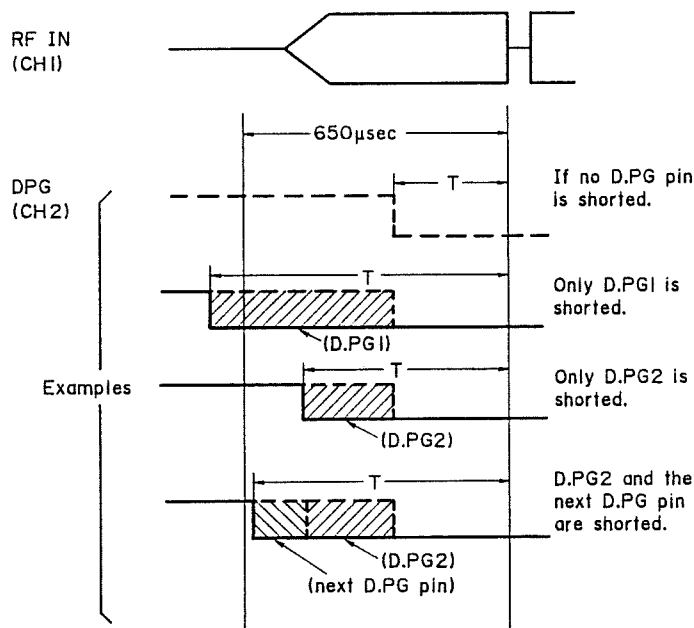
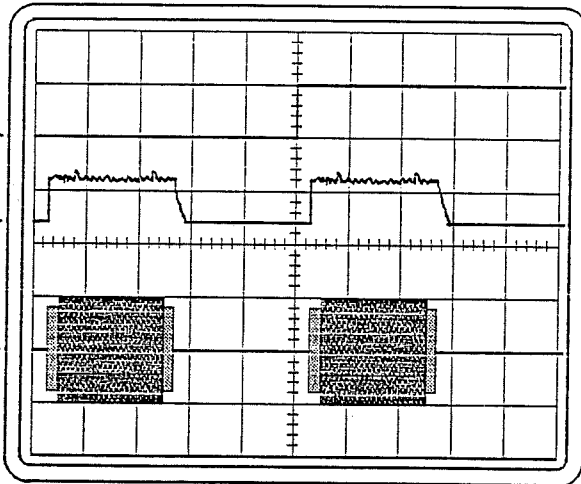
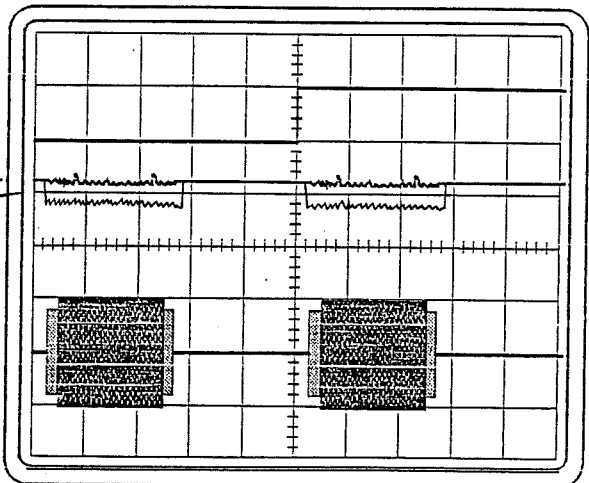


Fig. 5.6 Change in "T" according to Shorting of D.PG Pin (Example)

Example)

- Conditions:
- o Only D.PG1 is shorted with a jumper pin.
 - o $T > 650 \mu\text{sec}$

1. Following the flow chart in Fig. 5.5, remove the jumper pin of D.PG1 and then insert a jumper pin into D.PG2.
2. If "T" is smaller than 640 μsec , insert a jumper pin into the next D.PG (D.PG6 (or D.PG3)).
3. If "T" is still smaller than 640 μsec , insert a jumper pin into the next D.PG (D.PG5 (or D.PG4)).
4. If "T" is greater than 660 μsec , remove the jumper pin which is inserted in 3 (D.PG5 (or D.PG4) and then insert a jumper pin into the next D.PG (D.PG4 (or D.PG5)).
5. Repeat above steps in the same way until "T" is $650 \pm 10 \mu\text{sec}$.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
11	PLL (R/P) Adjustment (Signal Processor P.C.B.)	Fs48 kHz Tape (DA09145A)	Connect an Oscilloscope at power OFF CH1: TP5 (PCM EQ (R/P)) and TP12 (GND) CH2: TP7 (BIT PLL CONT (R/P)) and TP12 (GND) CH3: TP1 (SWP) and TP8 (GND)	Playback	Signal Processor P.C.B. L501	1. Play back an Fs48 kHz Tape. 2. Adjust L501 so that the BIT PLL CONT (R/P) waveform on CH2 is as shown "GOOD" below. Note: Note that the good waveform differs according to P.C.B. pattern Nos.
<p>Vertical:</p> <ul style="list-style-type: none"> CH1 Range: 10 mV/div (10:1 probe), AC CH2 Range: 0.1 V/div (10:1 probe), DC CH3 Range: 1 (or 0.5) V/div (10:1 probe), DC <p>Horizontal:</p> <ul style="list-style-type: none"> A Trigger Range : 2 ms/div (Uncal.) (See Note.) (Main) Trigger Source: CH3 , AC Trigger Mode : Auto <p>Note: Calibrate the range so that one whole cycle of SWP waveform on CH3 can be observed.</p>						
<p>Turn L501 CW to dat level on stork. Then CW idem. dat mit middleden.</p> <p>L501/502 1.3 mm screwdrivers (ceramic).</p> <p>TP1 SWP (CH3) →</p> <p>TP7 BIT PLL CONT (R/P) (CH2) →</p> <p>TP5 PCM EQ (R/P) (CH1) →</p> <p>GOOD</p> <p>Good Waveform →</p> <p>Pattern A (Old)</p> <p>Pattern B (New)</p> <p>0.2V ± 30mV</p>						
						
						

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
12	PLL (PB) Adjustment (Signal Processor P.C.B.)	Music Source to Digital Input Coaxial Jack (Music Source: e.g. CD Player Output)	Connect an Oscilloscope at power OFF CH1: TP9 (PCM EQ (PB)) and TP12 (GND) CH2: TP11 (BIT PLL CONT (PB)) and TP12 (GND) CH3: TP1 (SWP) and TP8 (GND)	Record/ Playback	Signal Processor P.C.B. L502	<ol style="list-style-type: none"> 1. With the power turned off, remove the Power Switch P.C.B. Ass'y to gain access to L502. 2. Load a Reference Tape (DA09147A), and record and play back an input signal. 3. Adjust L502 so that the BIT PLL CONT (PB) waveform on CH2 levels as shown "GOOD" below. 4. Mount the Power Switch P.C.B. Ass'y.

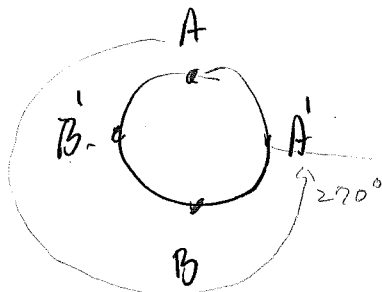
Vertical:

- o CH1 Range: 10 mV/div (10:1 probe), AC
- o CH2 Range: 0.1 V/div (10:1 probe), DC
- o CH3 Range: 1 (or 0.5) V/div (10:1 probe), DC

Horizontal:

- o A Trigger Range : 2 ms/div (Uncal.) (See Note.)
- (Main) Trigger Source: CH3 $\overline{\text{A}}$, AC
- Trigger Mode : Auto

Note: Calibrate the range so that one whole cycle of SWP waveform on CH3 can be observed.

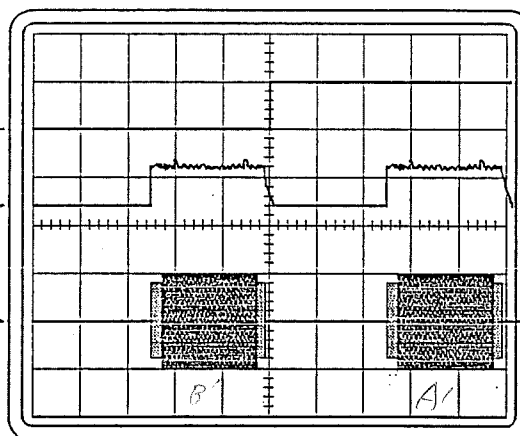


NO GOOD

TP1 SWP (CH3)

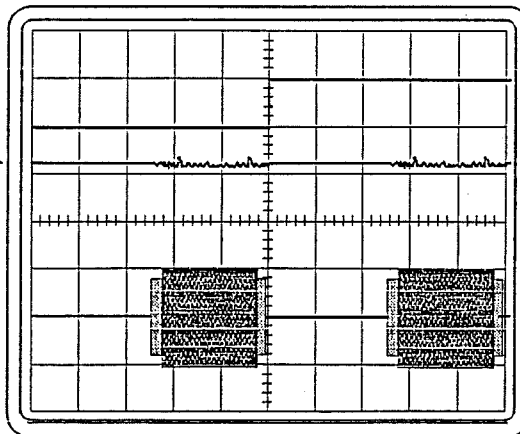
TP11 BIT PLL CONT (PB) (CH2)

TP9 PCM EQ (PB) (CH1)



GOOD

Levels the waveform.

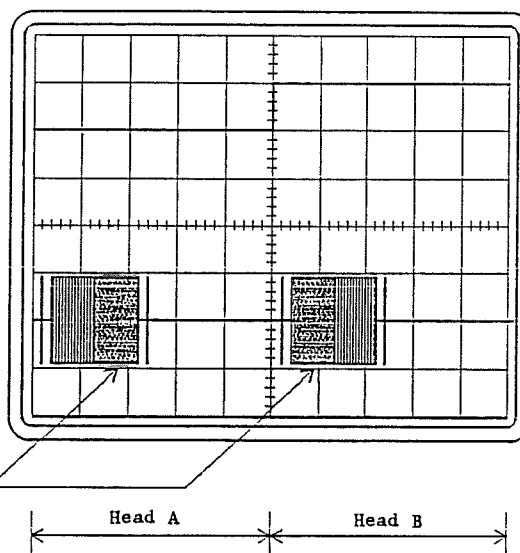


STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
13	ATF (Automatic Track Finding) Pilot Level Adjustment (Servo P.C.B.)	Sony TY-7111	Connect an Oscilloscope at power OFF CH1: TP2 (RF IN) and TP3 (GND) CH2: TP5 (SWP) and TP3 (GND)	Playback	Servo P.C.B. VR3 (A-Head Level) VR2 (B-Head Level) Jumper Pin TE.CN-5 ATF ON short TE.CN-4 Open TE.CN-7 Short	<ol style="list-style-type: none"> 1. Turn the power OFF, short ATF ON side of TE.CN-5, and remove the jumper pin from TE.CN-4. 2. Short TE.CN-7 (SH TAPE TEST). 3. Turn the power ON, load a Test Tape TY-7111, and play it back. 4. Adjust VR3 so that the peak-to-peak value of the latter half of Head-A's waveform (130 kHz) on CH1 is 200 mVp-p +20 mV -0 mV as shown below. 5. Adjust VR2 so that the peak-to-peak value of the first half of Head-B's waveform (130 kHz) on CH1 is 200 mVp-p +20 mV -0 mV. 6. Eject the Test Tape, turn the power OFF, remove the jumper pins of TE.CN-5 and TE.CN-7, and <u>insert</u> a jumper pin into TE.CN-4. <p>Caution: If connector TE.CN-7 is not shorted, the Transport Mechanism Ass'y (and the tape) will be damaged because of mechanical shock when the tape reaches the tape end in F.Fwd. or Rew. mode. This phenomenon occurs only for a short tape (less than 30 min).</p>

TP5 (SWP) (CH2) →

TP2 (RF IN) (CH1) →

200mV +20mV
-0mV
220 = better



Vertical:

- o CH1 Range: 10 mV/div (10:1 probe), AC
- o CH2 Range: 1 (or 0.5) V/div (10:1 probe), DC

Horizontal:

- o A Trigger Range : 2 ms/div (Uncal.) (See Note.)
- (Main) Trigger Source: CH2 $\neg$, AC
- Trigger Mode : Auto

Notes: 1. Calibrate the range so that one whole cycle of SWP waveform on CH2 can be observed.
2. It is recommended to use delay trigger function for easier observation since the envelope waveform contains noise.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
14	RFSF-P Adjustment (Signal Processor P.C.B.)	Music Source to Digital Input Coaxial Jack (Music Source: e.g. CD Player Output)	Connect an Oscilloscope at power OFF CH1: TP9 (PCM EQ (PB)) and TP12 (GND) CH2: TP11 (BIT PLL CONT (PB)) and TP12 (GND) CH3: TP1 (SWP) and TP8 (GND)	Record	Signal Processor P.C.B. VR501	1. Load a Reference Tape (DA09147A), and record and playback an input signal. 2. Turn VR501 fully counterclockwise. 3. Observe the BIT PLL CONT (PB) waveform on CH2 and adjust VR501 so that unwanted pulse noise (whiskers) just disappears. The noise will appear at the rising of envelope on CH1 (PCM EQ (PB) signal). See below. Note: Do not turn VR501 excessively.

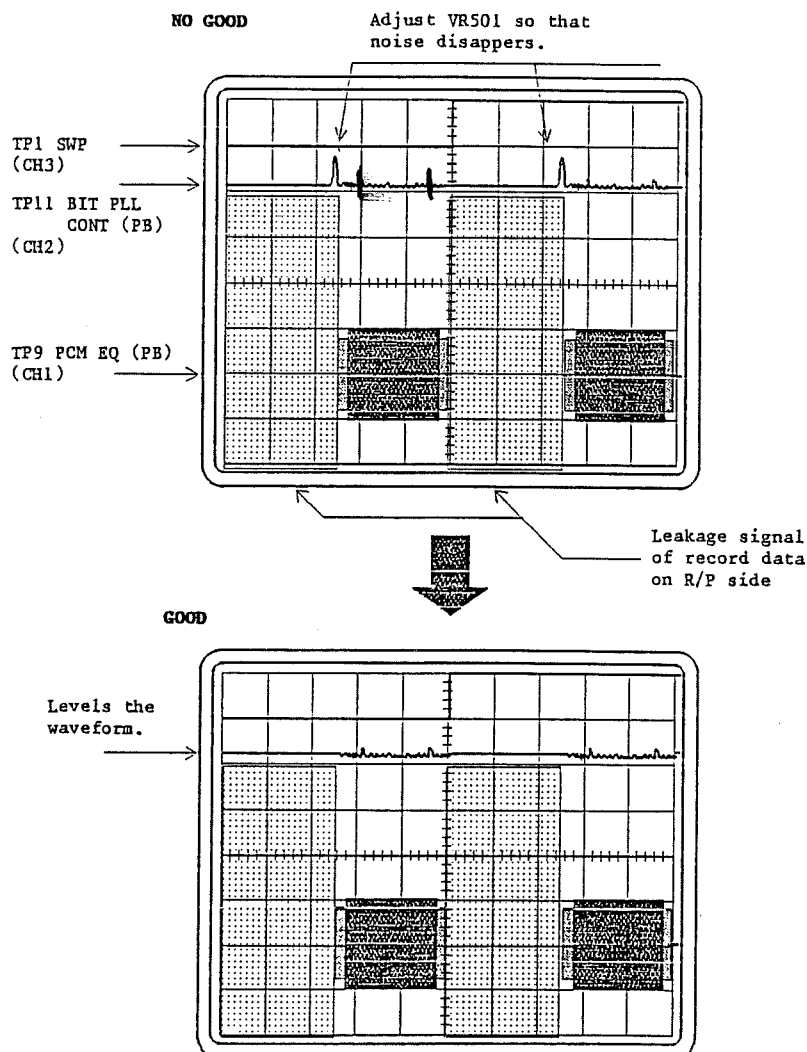
Vertical:

- o CH1 Range: 10 mV/div (10:1 probe), AC
- o CH2 Range: 0.1 V/div (10:1 probe), DC
- o CH3 Range: 1 (or 0.5) V/div (10:1 probe), DC

Horizontal:

- o A Trigger Range : 2 ms/div (Uncal.) (See Note.)
- (Main) Trigger Source: CH3 $\overline{L}$, AC
- Trigger Mode : Auto

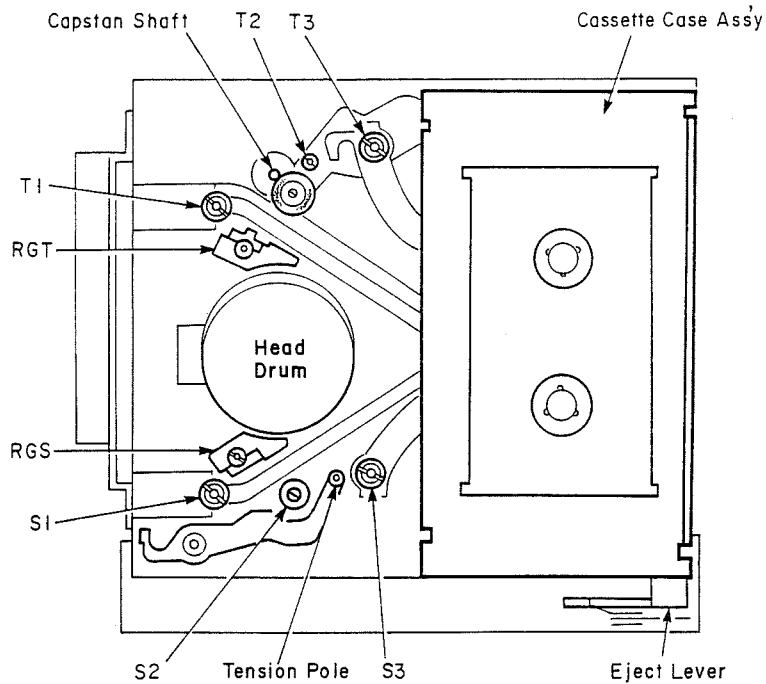
Note: Calibrate the range so that one whole cycle of SWP waveform on CH3 can be observed.



6. MECHANICAL ADJUSTMENTS

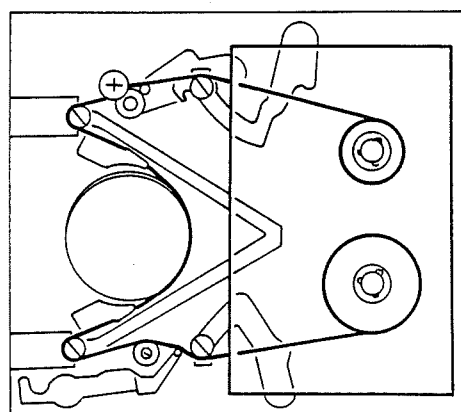
Figs. 6.1 to 6.4 show parts locations, tape path in Play, flow chart for mechanical adjustments, and relationship between tape and guides.

Note: Before adjustment, electrical adjustments must be completed as it is necessary to observe the envelope waveform for adjusting guide height.



(Front View)

Fig. 6.1 Parts Location for Mechanical Adjustment (Transport Mechanism Ass'y)



(Front View)

Fig. 6.2 Tape Path in Play

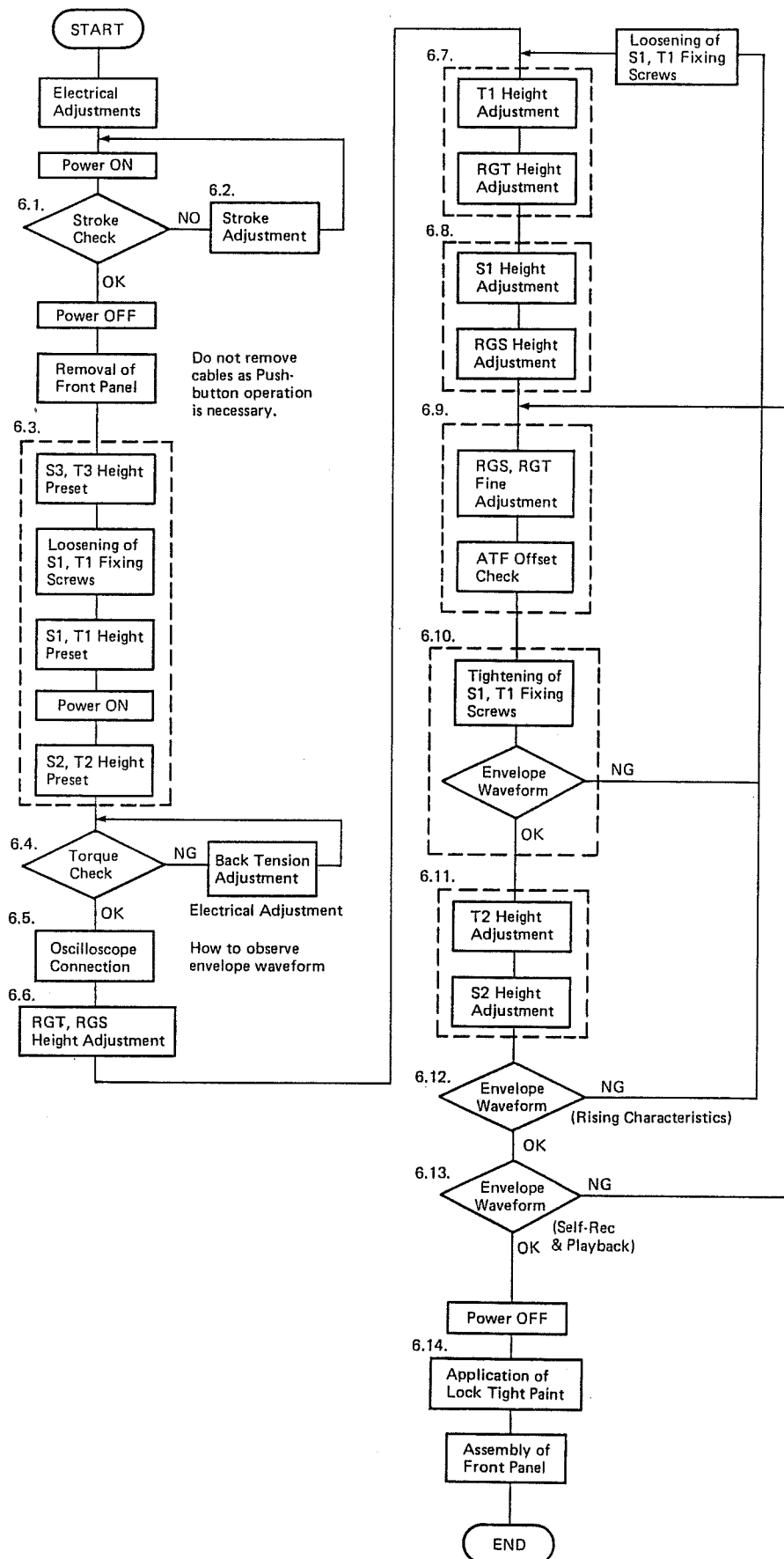


Fig. 6.3 Mechanical Adjustment Flow Chart

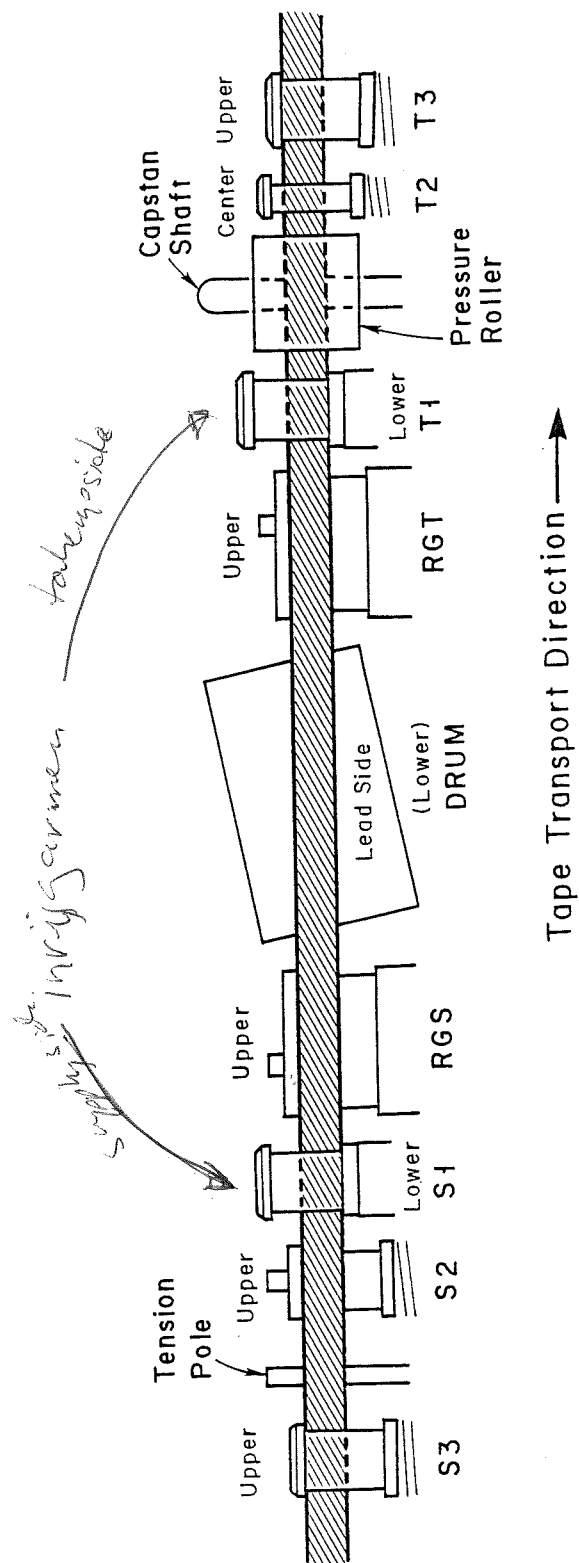
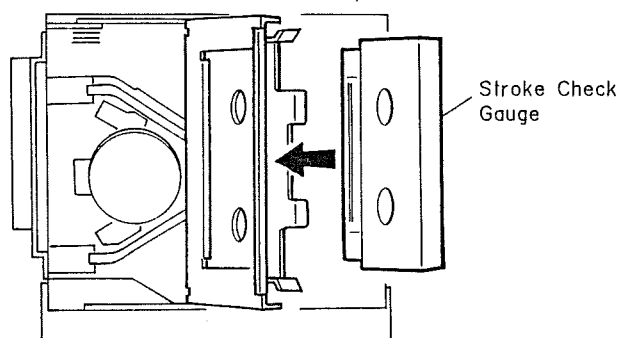


Fig. 6.4 Relationship between Tape and Guides

6.1. Stroke Check

1. Turn ON the power and press the EJECT button to open the Cassette Case Ass'y.
2. Turn OFF the power. (The Transport Mechanism Ass'y stays at "L (LOAD)" position by this procedure.)
3. Load a Stroke Check Gauge and close the Cassette Case Ass'y by hand.

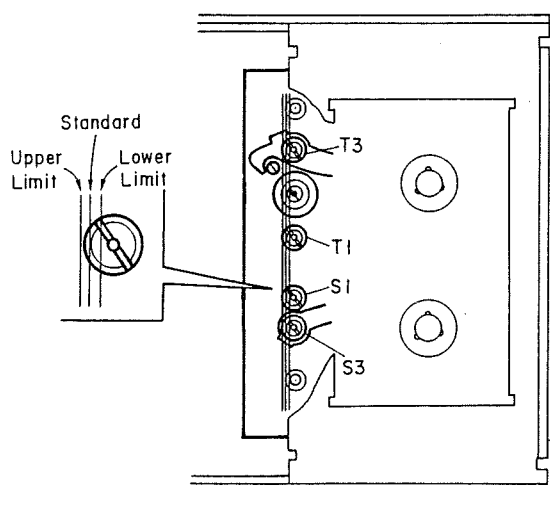


(Front View)

Fig. 6.5 Insertion of Stroke Check Gauge

4. Check whether each of the guide rollers (S3, S1, T1, T3) are within the upper and lower limit scribed lines on the Stroke Check Gauge. See Fig. 6.6.

Note: If satisfactory results are not obtained, proceed to 6.2."Stroke Adjustment".



(Front View)

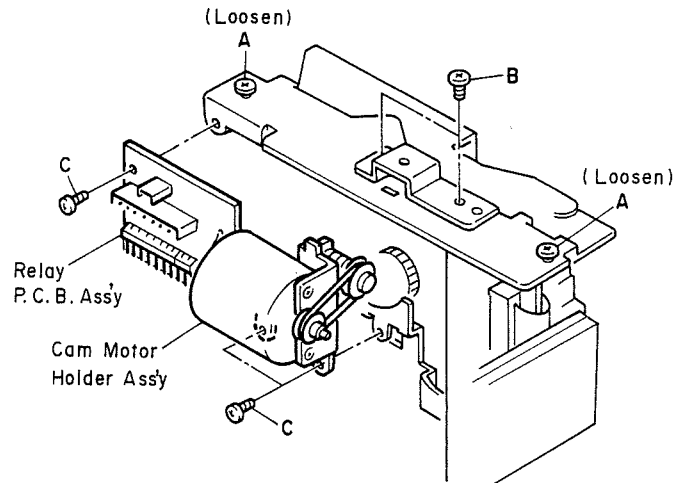
Fig. 6.6 Stroke Check of Guide Rollers

5. Turn ON the power, press the Eject button, and remove the Stroke Check Gauge.
6. Proceed to 6.3."Guide Height Preset".

6.2. Stroke Adjustment

Note: This adjustment is required only if satisfactory results are not obtained in 6.1. "Stroke Check".

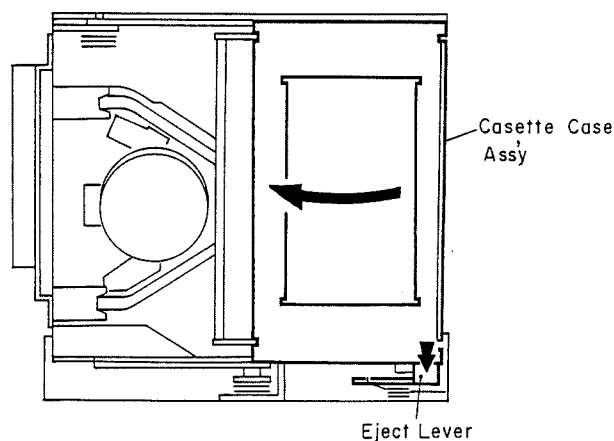
1. Turn OFF the power and remove the Front Panel Ass'y.
2. Remove the Transport Mechanism Ass'y.
3. Loosen two screws A by 1 to 2mm, remove two screws B, remove three screws C, and disassemble the Cam Motor Holder Ass'y together with the Relay P.C.B. Ass'y. See Fig. 6.7.



(Rear View)

Fig. 6.7 Removal of Cam Motor

4. Press the Eject Lever of the Transport Mechanism Ass'y to open the Cassette Case Ass'y manually. See Fig. 6.8.



(Front View)

Fig. 6.8 Push of Eject Lever

5. Load a Stroke Check Gauge and close the Cassette Case Ass'y by hand.

6. Turn the Cam Drive Gear B by hand to position the Cam Gear to "L".

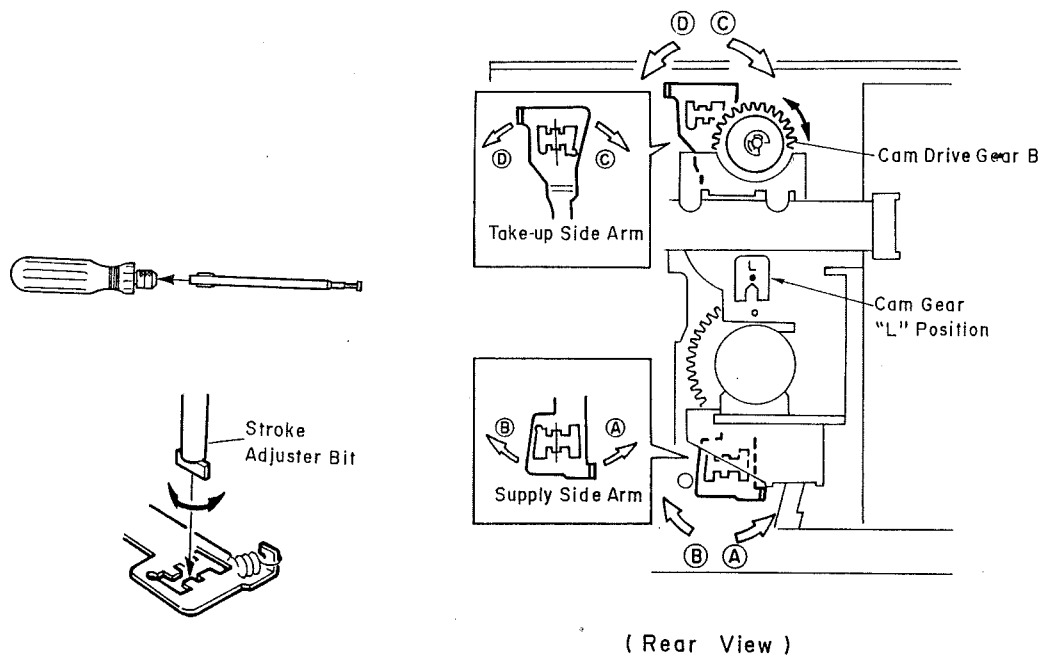


Fig. 6.9

7. Insert a Stroke Adjuster Bit (which is installed on the Adjuster Grip) into the Take-up Side Arm/Supply Side Arm as shown in Fig. 6.9, and slightly turn it so that the guide rollers S3, S1, T1 and T3 are within the upper and lower limit scribed lines on the Stroke Check Gauge. See Fig. 6.10. When you turn the Stroke Adjuster Bit in the direction of A or B in Fig. 6.9, the guide rollers move in the direction of A or B in Fig. 6.10. On the other hand, if you turn the Stroke Adjuster Bit in the direction of C or D in Fig. 6.9, the guide rollers move in the direction of C or D in Fig. 6.10.

Note: Do not turn the Bit excessively.

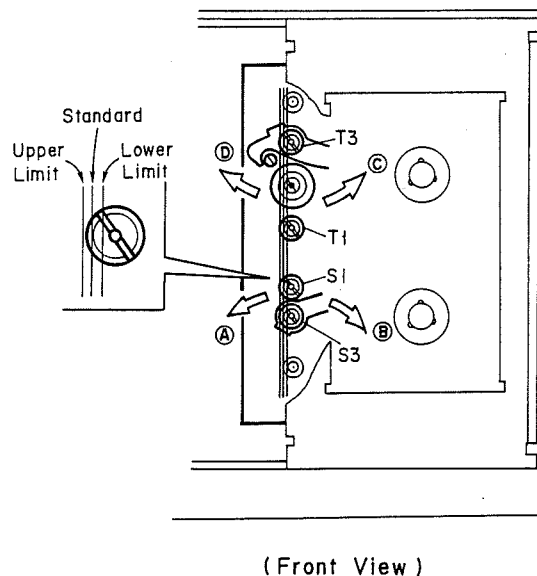


Fig. 6.10

8. Finely adjust the Take-up Side Arm in the direction of C or D so that the gap E between the flange metal of T2 and the Plate F is 0.05 to 0.2mm. After adjustment, check whether the guide rollers S3, S1, T1 and T3 are within the specified range. If not, repeat 7 and 8.

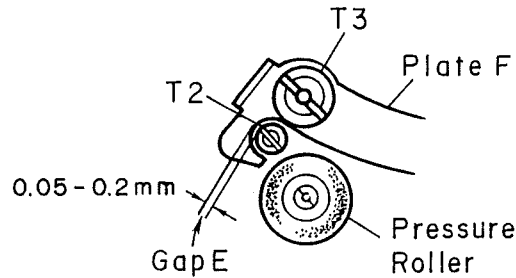
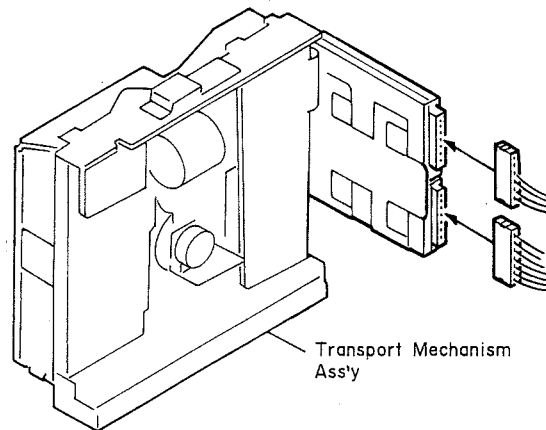


Fig. 6.11

9. Assemble the Cam Motor Holder Ass'y and Relay P.C.B. Ass'y by fastening screws. Turn the Cam Motor Pulley and check for correct rotation of the Cam Gear.
10. Press the Eject Lever and remove the Stroke Check Gauge.
11. Mount the Transport Mechanism Ass'y. In this case, do not make a mistake on connecting cables. The connector with less wire must be connected to the upper side.



(Rear View)

Fig. 6.12

12. Mount the Front Panel Ass'y.

6.3. Guide Height Preset

6.3.1. S3, T3 Height Preset

1. Turn OFF the power.
2. Remove the Front Panel Ass'y. But, do not disconnect cables to allow control switch operation.
3. Firmly place the N-1000 vertically. Use blocks to protect the power cord. See Fig. 6.13.

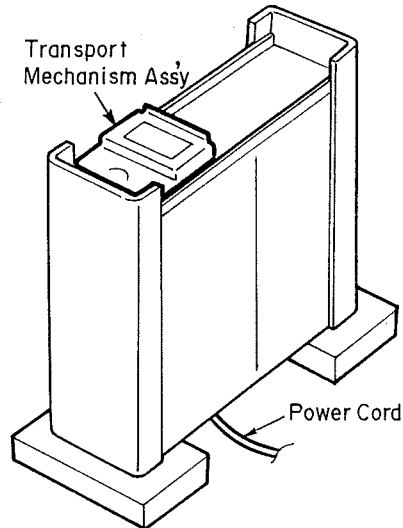


Fig. 6.13

4. Turn the Cam Motor Pulley by hand to position the Cam Gear to "H (Half Load)". See Fig. 6.14. (In the Half Load position, the guide rollers T3, T1, S1 and S3 are arranged in one line as shown in Fig. 6.16.)

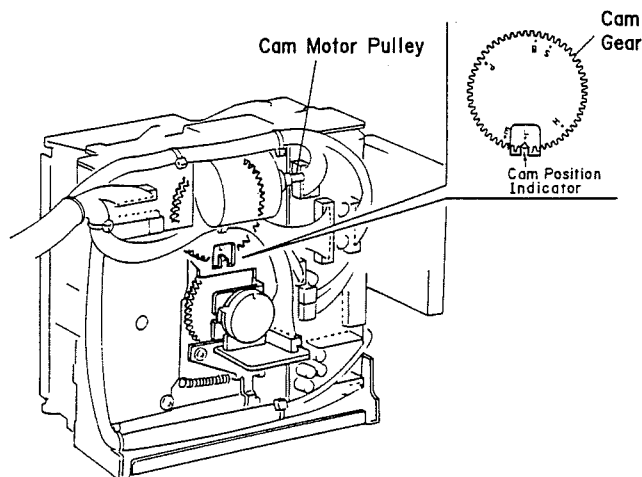


Fig. 6.14 Cam Gear Positioning by hand

5. Press the Eject Lever of the Transport Mechanism Ass'y to open the Cassette Case Ass'y manually. See Fig. 6.15.

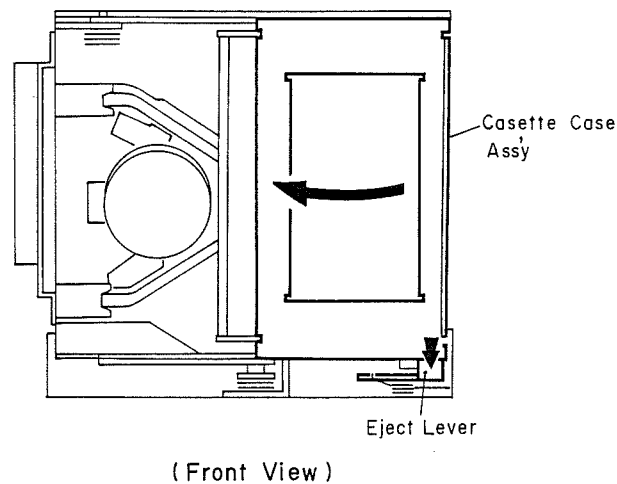


Fig. 6.15 Push of Eject Lever

6. Insert a Stroke Check Gauge. (Do not insert it into the Cassette Case Ass'y but place on the chassis.) See Fig. 6.16.
7. Place a Preset Bar on the Stroke Check Gauge. See Fig. 6.16.
8. With holding down both Stroke Check Gauge and the Preset Bar, adjust T3/S3 guide height with a Guide Adjuster so that the gaps between the Preset Bar and the top of T3/S3 and between the Preset Bar and the Stroke Check Gauge become zero. See Fig. 6.16.

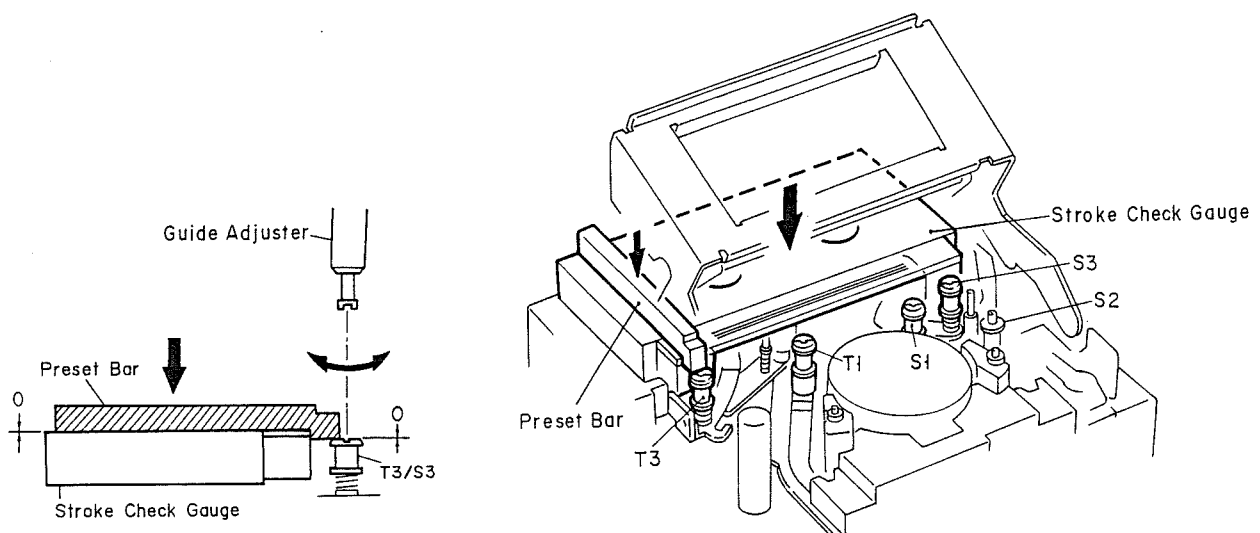


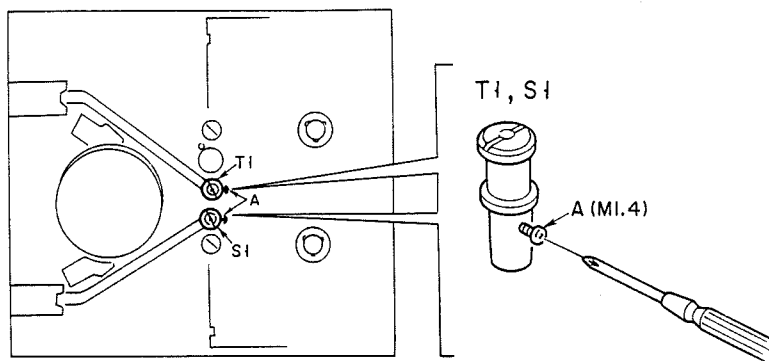
Fig. 6.16 S3/T3 Guide Height Preset

9. Remove the Gauges.

6.3.2. S1, T1 Height Preset

1. With the same condition as in 6.3.1 (power OFF, vertical placing of the N-1000), press the Eject Lever to open the Cassette Case Ass'y manually. (See Fig. 6.15.)
2. Turn the Cam Motor Pulley by hand to position the Cam Gear to "L (Load)". (See Fig. 6.14.)
3. Slightly loosen screws A (M1.4 philips Pan Head) with a clock screwdriver to allow turning of T1/S1. Then tighten screws A until T1/S1 can barely turn. See Fig. 6.17.

Caution: Pay attention so as not to give damages onto the head drum or guide rollers with the screwdriver.



(Front View)

Fig. 6.17

4. Turn the Cam Motor Pulley by hand and position the Cam Gear to "B (Brake)".
5. Insert a Preset Spacer 0.4 between the lower flange of T1/S1 and the Guide Roller as shown in Fig. 6.18.
6. Turn T1/S1 clockwise with a Guide Adjuster until the Preset Spacer is tightened. Then return the Guide Adjuster counterclockwise by approx. 5 degrees.

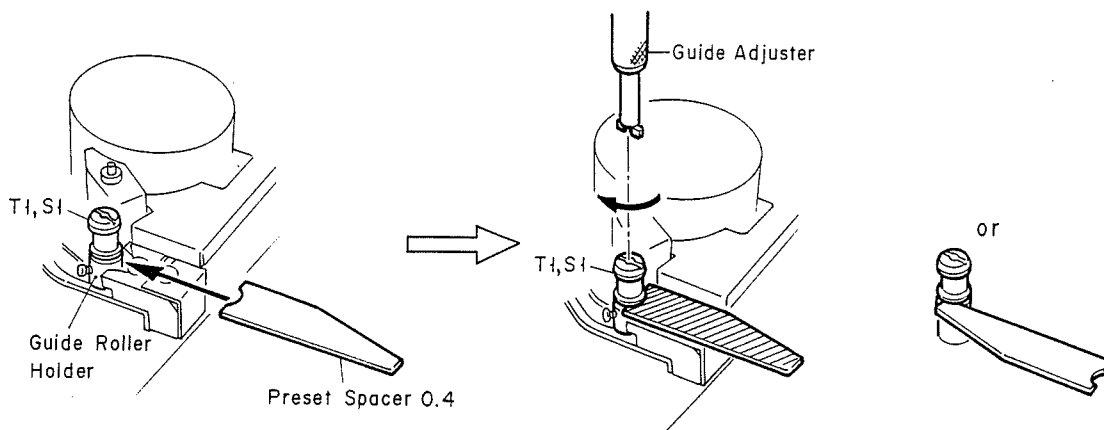


Fig. 6.18 S1, T1 Height Preset

7. Remove the Gauges.

6.3.3. S2, T2 Height Preset

1. Place the N-1000 horizontally.
2. With the Front Panel Ass'y still removed (but the cables are connected), turn ON the power.
3. Press the EJECT button on the Front Panel Ass'y.
4. Load a tape and play it back.
5. Visually check the tape travelling, and adjust S2/T2 guide height with a Guide Adjuster so that the tape travels in the middle of the guide as shown in Fig. 6.19.

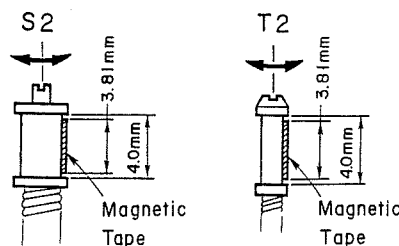


Fig. 6.19 S2, T2 Height Preset

6. Press the STOP button and remove the tape.

6.4. Torque Check

1. Turn ON the power.
2. Load a Torque Meter TW-7131, play it back, and check the following torque value.
 - o Back Tension Torque (Supply side) $5 \pm 1\text{g-cm}$
 - o Take-up Torque (Take-up side) $8 \pm 2\text{g-cm}$
3. Keep press the REW button while in Play mode to set the N-1000 in Review mode, and make sure that the supply side torque is $17 \pm 2\text{g-cm}$.
Note: If back tension is out of the range, re-adjust it referring to "Tension Servo Adjustment" in the Electrical Adjustments.

6.5. Connection of Oscilloscope

Connect an oscilloscope to the Servo P.C.B. Ass'y and Signal Processor P.C.B. Ass'y as follows:

Measuring Connection

- CH1: 10:1 probe between TP1 (RF IN) and TP3 (GND)
[Servo P.C.B. Ass'y]
- CH2: 10:1 probe between TP9 (PCM EQ OUT(PB)) and TP12 (GND)
[Signal Processor P.C.B. Ass'y]
- CH3: 10:1 probe between TP5 (SWP) and TP3 (GND)
[Servo P.C.B. Ass'y]

Caution: Connection must be made with the power OFF.

Setting of Oscilloscope

Vertical:

- o CH1 Range: 10 mV/div (10:1 probe), AC
- o CH2 Range: 10 mV/div (10:1 probe), AC
- o CH3 Range: 1 (or 0.5) V/div (10:1 probe), DC

Horizontal:

- o A Trigger Range : 2 ms/div (Uncal.) (See Note.)
(Main) Trigger Source: CH3 $\swarrow$, (DC)
Trigger Mode : Auto

Note: Calibrate the range so that one whole cycle on both CH2 and CH1 can be observed.

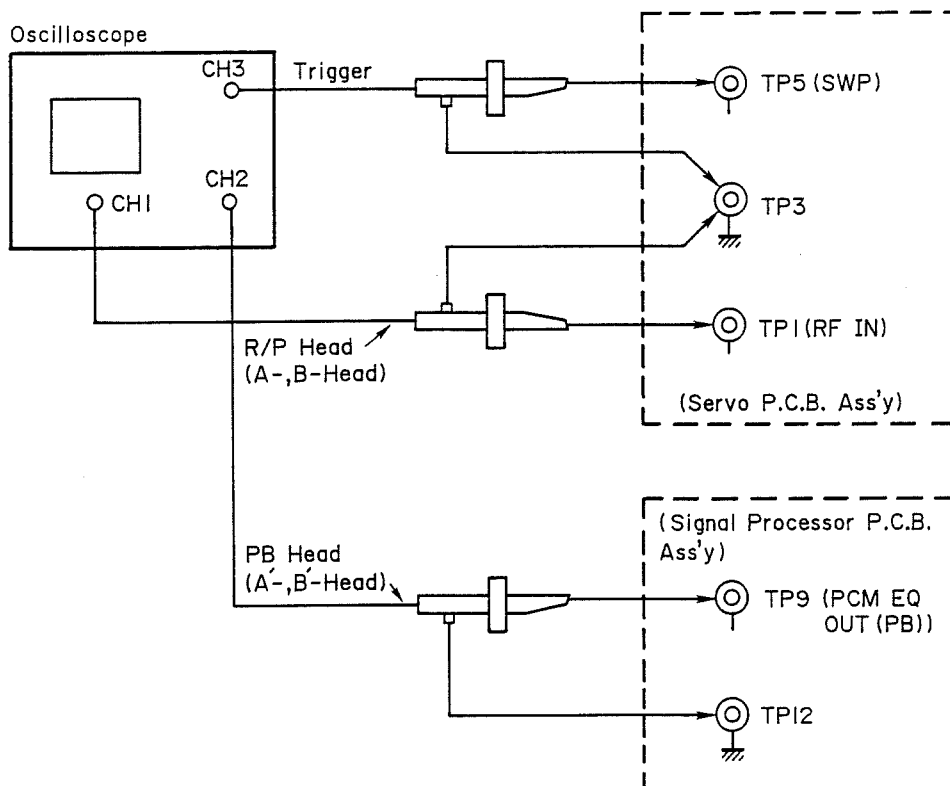


Fig. 6.20 Connection of Oscilloscope

Envelope Waveform Example when music tape is played back

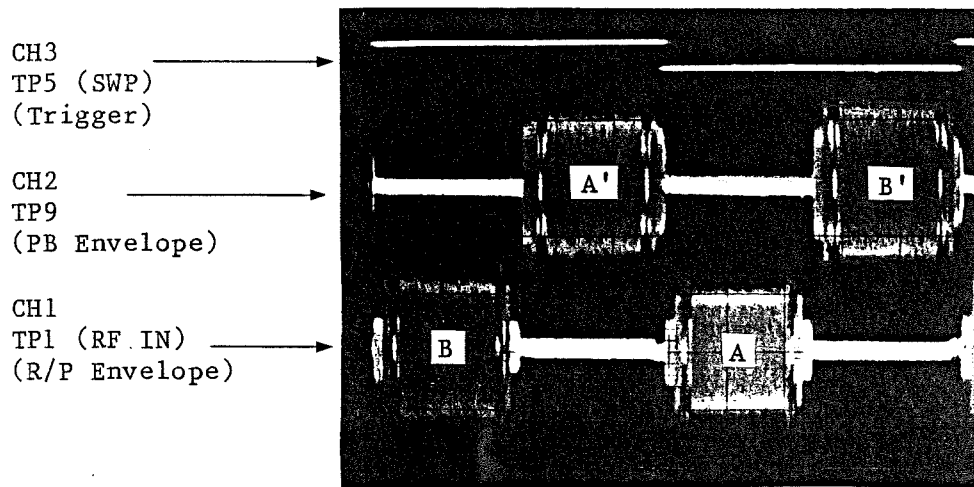


Fig. 6.21 Envelope Waveform (Music Tape Playback)

6.6. RGS, RGT Height Adjustment

Condition

Jumper Pin Setting (Set at Power OFF.):

TE.CN-8 TRACK short

TE.CN-5 ATF ON short

TE.CN-4 Open (Open when TY-7251 is used.)

Power: ON

Front Panel Ass'y: Removed, but cables are connected to allow control switch operation.

1. Load a Tracking Check Tape TY-7251 and play it back.
2. Turn RGS/RGT counterclockwise with a Guide Adjuster to raise the Reference Guide. See Fig. 6.22.
3. While checking tape travelling visually, lower RGS/RGT until the Reference Guide comes in contact with the running tape.
4. Adjust RGT height with the Guide Adjuster to obtain the best envelope waveform in this stage.
5. Next, adjust RGS height with the Guide Adjuster to obtain the best envelope waveform in this stage.
6. Adjust finely both RGT and RGS height repeatedly to obtain the best envelope waveform.

Note that, when TY-7251 is played back, only envelope waveforms A (R/P) and A'(PB) can be observed as shown in Fig. 6.23. Adjust so that both envelope waveforms A and A' become optimum. (The levels of A and A' may differ.)

Note: For optimum envelope waveform, see "Conditions for Optimum Envelope Waveform" on next page. "Basic Adjustment Procedures for Envelope Waveform" on later page shows the adjustment method applied in common.

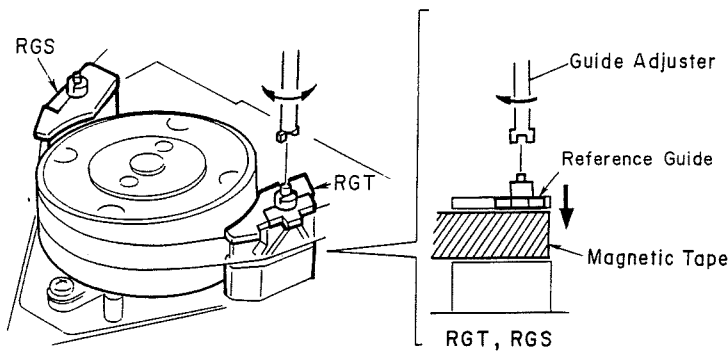


Fig. 6.22 RGS/RGT Height Adjustment

CH3
TP5 (SWP)
(Trigger)

CH2
TP9
(PB Envelope)

CH1
TP1 (RF IN)
(R/P Envelope)

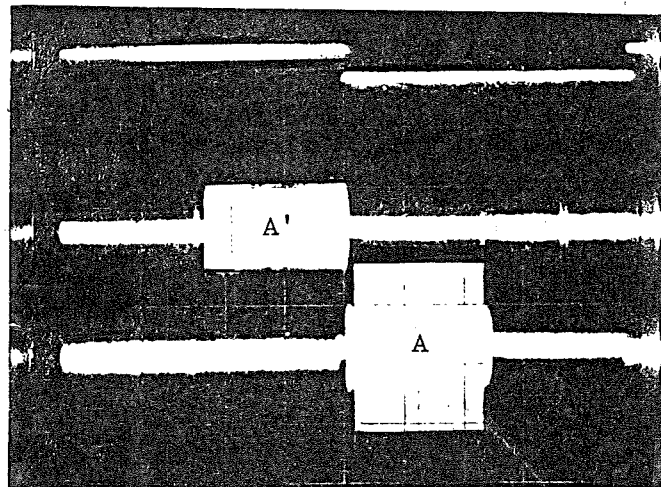


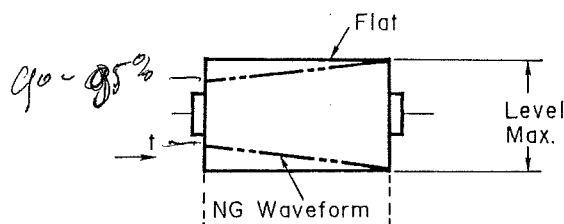
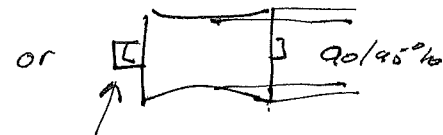
Fig. 6.23 Envelope Waveform during playing back TY-7251

Conditions for Optimum Envelope Waveform

Optimum envelope waveforms can be obtained if each head (A & B and A' & B') correctly traces track patterns on the tape.

The conditions for the optimum envelope waveform are as follows:

- 1) Level is max.
- 2) Waveform is flat. (Waveform shape from the rising edge (supply side) to the falling edge (take-up side) is flat so that waveform is rectangular.)



Sharp edge is
most important

Tracking	IN (Supply Side)	OUT (Take-up Side)
Guides to be mainly adjusted.	RGS,SI	RGT,TI

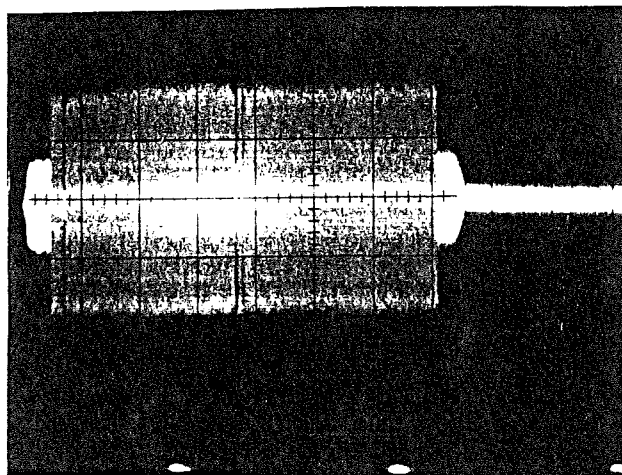


Fig. 6.24 Optimum Envelope Waveform

Deze afregeling moet
na 2 uur spelen
herhaald worden.

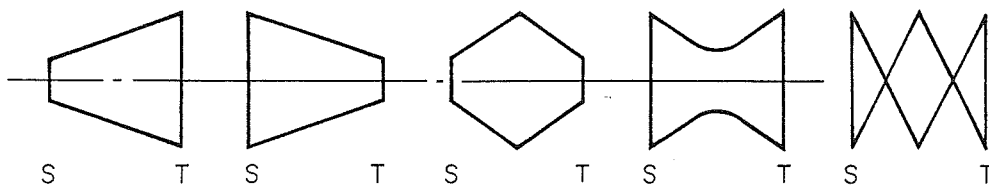


Fig. 6.25 No Good Waveforms

Basic Adjustment Procedures for Envelope Waveform

Use this procedures in common for adjusting envelope waveforms.

NG (Example)

GOOD

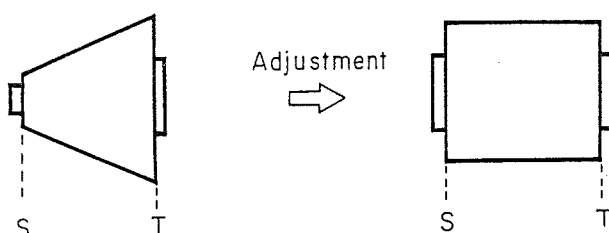


Fig. 6.26

- 1) First, make clear which side (S(Supply) or T(Take-up)) of level is small. (S side in case of Fig. 6.26.)
- 2) Remember the original angle of the guide to be turned.
- 3) Finely lower the guide whose level is smaller to obtain the best waveform. (e.g. Turn RGS CW.)
- 4) If satisfactory result is not obtained, finely raise the same guide to obtain the best waveform. (e.g. Turn RGS CCW.)
- 5) If no level changes or level decreases, return the guide to the original position (original angle).
- 6) Then, finely lower the guide whose level is higher to obtain the best waveform. (e.g. Turn RGT CW.)
- 7) If satisfactory result is not obtained, finely raise the same guide to obtain the best waveform. (e.g. Turn RGT CCW.)
- 8) Repeat 3) through 7) to obtain optimum waveform.

6.7. T1 Height Adjustment

Condition

Jumper Pin Setting (Set at power OFF.):

TE.CN-8 TRACK short

TE.CN-5 ATF ON short

TE.CN-4 Open

Power: ON

Front Panel Ass'y: Removed, but cables are connected to allow control switch operation.

1. Load a TY-7251 tape and play it back.
2. Turn RGT counterclockwise by 360 degrees with a Guide Adjuster to raise the Reference Guide.
3. Adjust T1 height with the Guide Adjuster so that the envelope waveform (I or II) becomes the waveform (III). Adjustment should be made so that peak-to-peak level A is 80% of the maximum peak-to-peak level of the waveform.

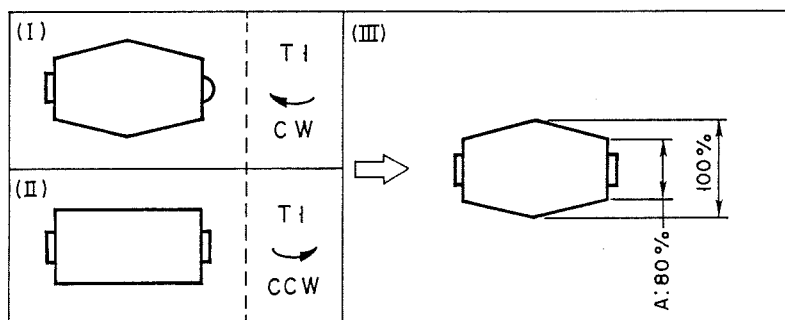


Fig. 6.27

Note: The waveform before adjustment is almost (I). In this case turn T1 clockwise. Excessive turning will cause the waveform to be (II). So, turn T1 counterclockwise to correct it.

4. Lower RGT and adjust it to obtain the best envelope waveform.

6.8. S1 Height Adjustment

Condition

Jumper Pin Setting (Set at power OFF.):

TE.CN-8 TRACK short

TE.CN-5 ATF ON short

TE.CN-4 Open

Power: ON

Front Panel Ass'y: Removed, but cables are connected to allow control switch operation.

1. Load a TY-7251 tape and play it back.
2. Turn RGS counterclockwise by 360 degrees with a Guide Adjuster to raise the Reference Guide.
3. Adjust S1 height with the Guide Adjuster so that the envelope waveform (I or II) becomes the waveform (III). Adjustment should be made so that peak-to-peak level A is 50% of the maximum peak-to-peak level of the waveform.

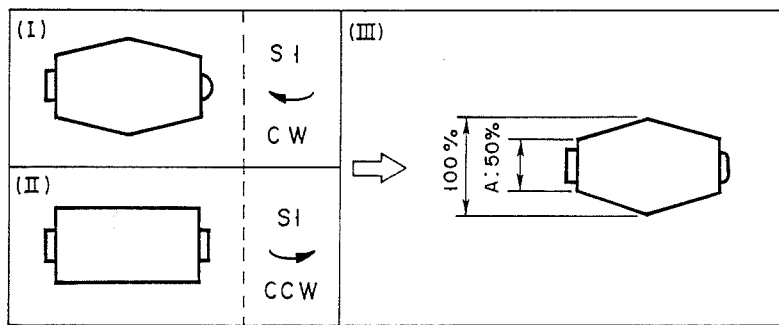


Fig. 6.28

Note: The waveform before adjustment is almost (I). In this case turn S1 clockwise. Excessive turning will cause the waveform to be (II). So, turn S1 counterclockwise to correct it.

4. Lower RGS and adjust it to obtain the best envelope waveform.

6.9. ATF Offset Check

Condition

Applicable Models: Models whose pattern revision No. of the Servo P.C.B. Ass'y is B (other than A).

(Consumer Version: A50101551-)

Note: The Servo P.C.B. Ass'y whose pattern revision No. A has also VR13. But this is not for ATF Adjustment.

Jumper Pin Setting (Set at power OFF.):

TE.CN-8 TRACK short

TE.CN-5 ATF ON short

TE.CN-4 Open

Power: ON

Front Panel Ass'y: Removed, but cables are connected to allow control switch operation.

Semi-fixed volume to be adjusted: VR13 on Servo P.C.B. Ass'y

6.9.1. RGS/RGT Fine Adjustment

1. Load a TY-7251 tape and play it back.
2. Finely adjust RGS and RGT to obtain optimum envelope waveform.
If satisfactory result is not obtained, repeat items 6.7 and 6.8.

6.9.2. ATF Offset Check

1. Short TE.CN-11 ATF OFFSET with a jumper pin at power OFF.
2. Load a TY-7251 tape and play it back.
3. Turn VR13 clockwise and counterclockwise to reduce the envelope waveform peak-to-peak level by approx. 10%. (Excessive turning may cause failure of ATF function.) And, check whether still waveform is flat as shown below.

Note: If satisfactory results are not obtained, adjust RGS, (S1), RGT, (T1) according to "Basic Adjustment Procedures for Envelope Waveform". At the same time, refer to "ATF Offset Patterns" on next page. It describes summary of how to adjust the guide.

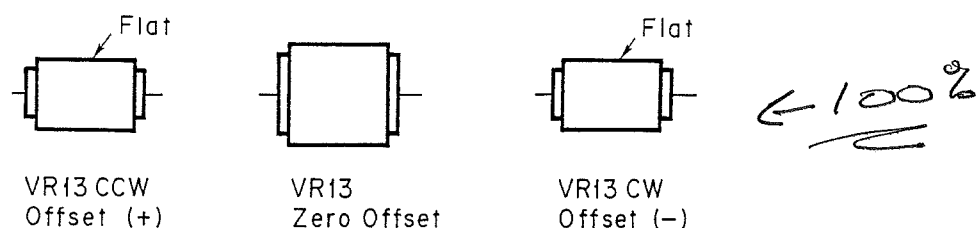
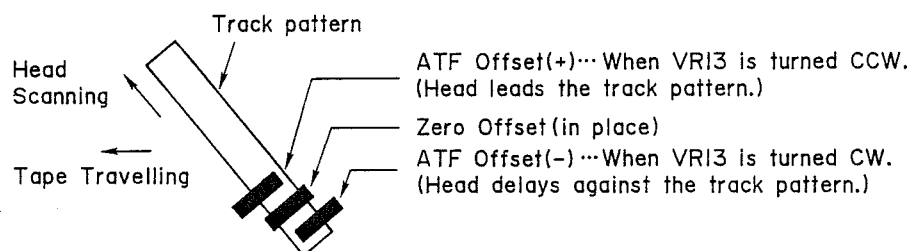


Fig. 6.29 ATF Offset Check

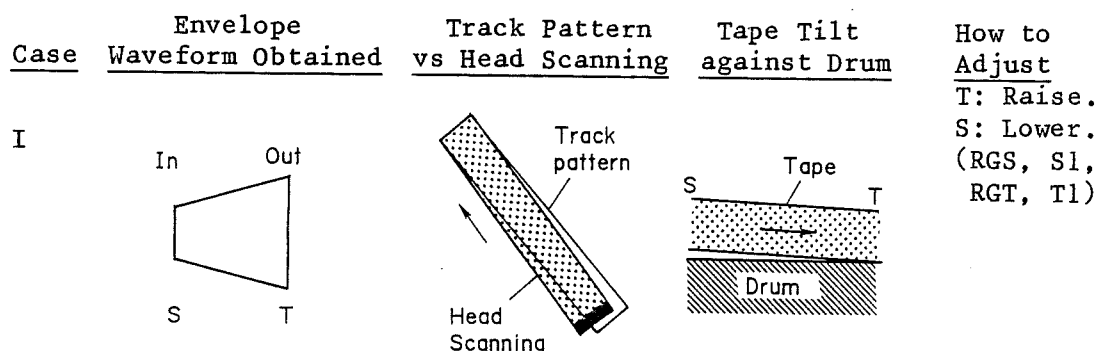
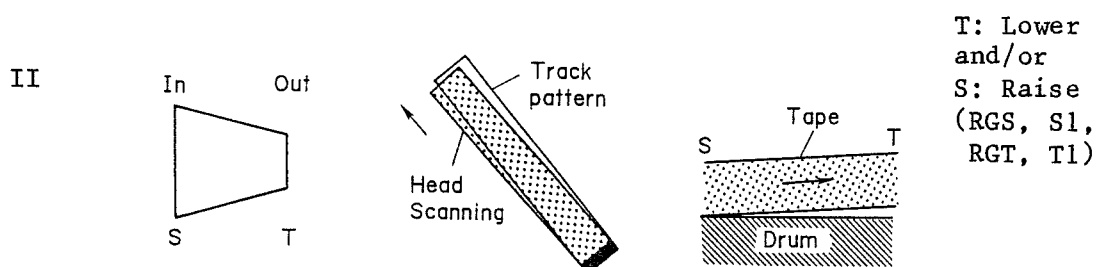
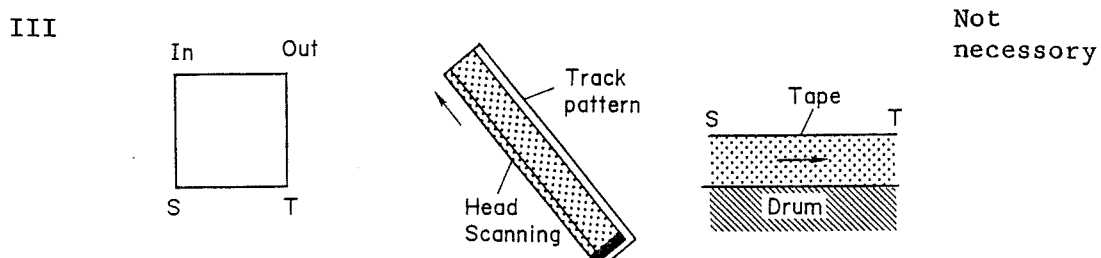
4. Adjust VR13 to obtain max. level.
5. After adjustment, unplug the jumper pin of TE.CN-11 ATF OFFSET.

ATF Offset Patterns

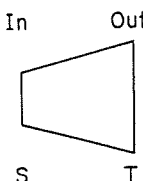
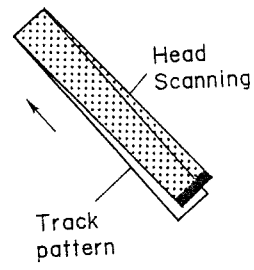
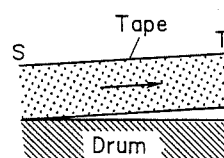
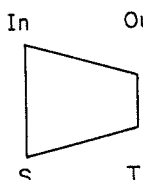
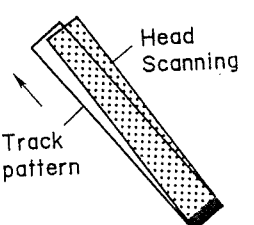
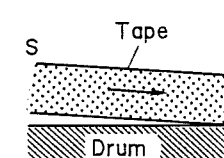
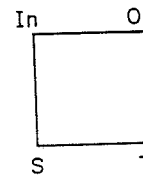
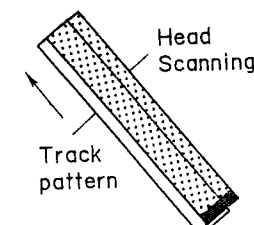
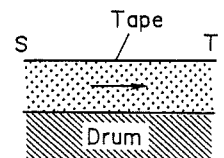
The following shows ATF offset patterns when VR13 is turned clockwise or counterclockwise. First, clarify which waveform is obtained when turning VR13. Then perform guide height adjustment (mainly for RGS, S1, RGT, T1). In case of III, no guide height adjustment is required.



1) When VR13 is turned counterclockwise, i.e., when head leads the track pattern



2) When VR13 is turned clockwise, i.e., when head delays against track pattern

Case	Envelope Waveform Obtained	Track Pattern vs Head Scanning	Tape Tilt against Drum	How to Adjust
I				T: Lower. and/or S: Raise. (RGS, S1, RGT, T1)
II				T: Raise. S: Lower. (RGS, S1, RGT, T1)
III				Not necessary

6.10. Envelope Waveform Check

Condition

Jumper Pin Setting (Set at power OFF.):

TE.CN-8 TRACK short

TE.CN-5 ATF ON short

TE.CN-4 Open

Power: OFF/ON

Front Panel Ass'y: Removed, but cables are connected to allow control switch operation.

1. Turn OFF the power.
2. Tighten S1 and T1 fixing screws by the following procedure.
 - a. Turn the Cam Motor Pulley by hand to position the Cam Gear to "L (LOAD)". (See Fig. 6.14)
 - b. Tighten two screws (M1.4 Philips Pan Head) to fix S1 and T1. (See Fig. 6.17)
- Caution:** Do not give damages onto the Head Drum and Guide Rollers with a screwdriver.
3. Turn ON the power.
4. Load a TY-7251 tape and play it back.
5. Check whether the envelope waveform is good.

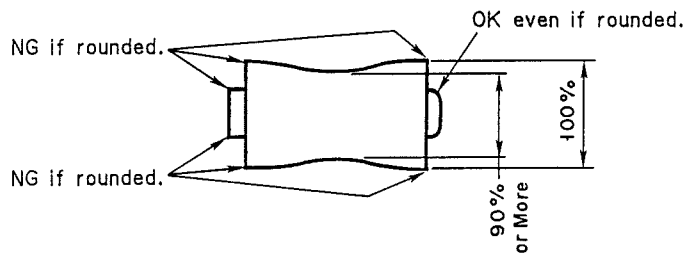


Fig. 6.30 Good Envelope Waveform

6. If satisfactory results are not obtained, loosen the screws (M1.4 Philips Pan Head) a little again following procedure shown below, and repeat 6.7 through 6.10.
 - a. Turn OFF the power, and turn the Cam Motor Pulley by hand to position the Cam Gear to "L". (See Fig. 6.14)
 - b. Slightly loosen the screws (M1.4 Philips Pan Head) to allow barely turning of S1 and T1.

6.11. T2, S2 Height Adjustment

Condition

Jumper Pin Setting (Set at power OFF.):

TE.CN-8 TRACK short

TE.CN-5 ATF ON short

TE.CN-4 Open

Power: ON

Front Panel Ass'y: Removed, but cables are connected to allow control switch operation.

6.11.1. T2 Height Adjustment

1. Load a TY-7251 tape and play it back.
2. While repeating Cue mode and Review mode alternately for approx. five seconds each, visually check the tape travelling on T2, and adjust T2 with a Guide Adjuster so that the tape slightly comes in contact with the lower flange of T2 as shown in Fig. 6.31.

Cue mode : Play + F.Fwd

Review mode: Play + Rew.

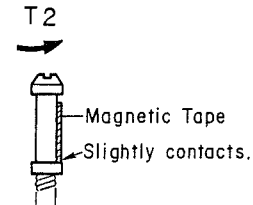


Fig. 6.31 T2 Height Adjustment

3. With repeating Eject and Playback, visually check the tape travelling on T2, and check that no curl occurs.

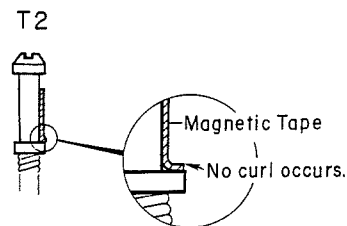


Fig. 6.32 Tape Curl on T2 (No good Condition)

6.11.2. S2 Height Adjustment

1. Load a TY-7251 tape and play it back.
2. While viewing the tape travelling visually, lower S2 with a Guide Adjuster until the tape curls slightly as shown in Fig. 6.33 (the left figure).
3. Next, raise S2 with the Guide Adjuster until the curl is released.

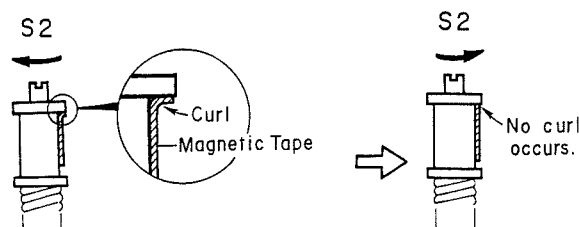


Fig. 6.33 S2 Height Adjustment

6.12. Envelope Waveform Check (Rising Characteristics)

Condition

Jumper Pin Setting (Set at power OFF.):

- TE.CN-8 TRACK short
- TE.CN-5 ATF ON short
- TE.CN-4 Open

Power: ON

Front Panel Ass'y: Removed, but cables are connected to allow control switch operation.

1. Load a TY-7251 tape and play it back.
2. Change the mode as follows, and check the rising characteristics of the envelope waveform.
 - o Cue (Play + F.Fwd) to Play
 - o Review (Play + Rew.) to Play
 - o Stop to Play

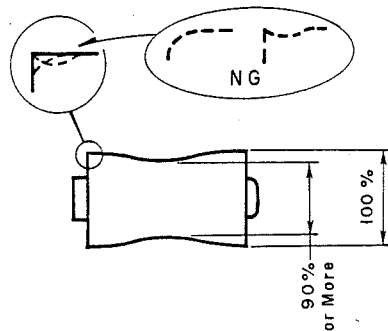


Fig. 6.34 Envelope Waveform Check (Rising Characteristics)

3. If the waveform waves as dotted line shown in Fig. 6.34, repeat 6.7 through 6.12 after slightly loosening S1, T1 fixing screws (M1.4 Philips Pan Head). For loosening the screws refer to 6.10-6.

6.13. Self Rec. & Playback Envelope Waveform Check

Note: This check assures exchangeability of tape with other DATs.

Condition

Jumper Pin Setting (Set at power OFF.):

TE.CN-8 TRACK short

TE.CN-5 ATF ON short

TE.CN-4 Short (Must be shorted as the TY-7251 tape is not used.)

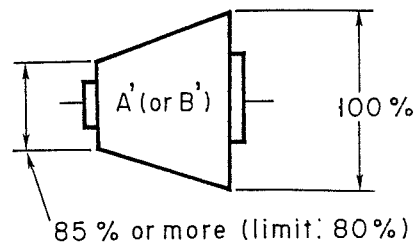
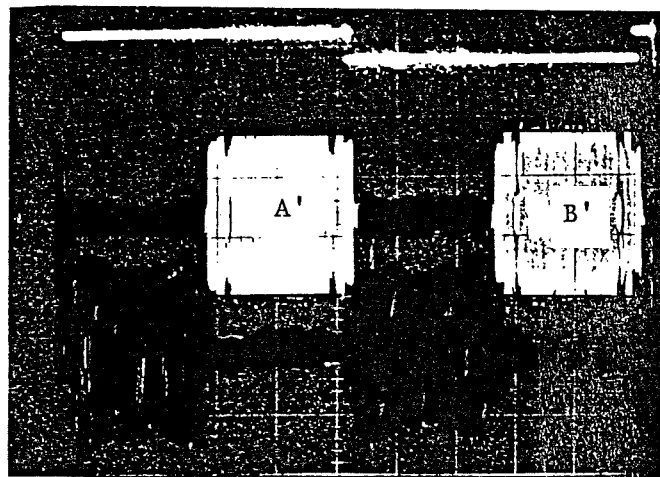
Power: ON

Front Panel Ass'y: Removed, but cables are connected to allow control switch operation.

Display Mode: Tape counter display mode. Select by pressing Counter button.

Input Signal: None

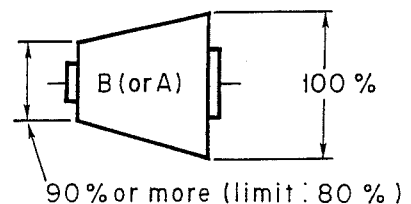
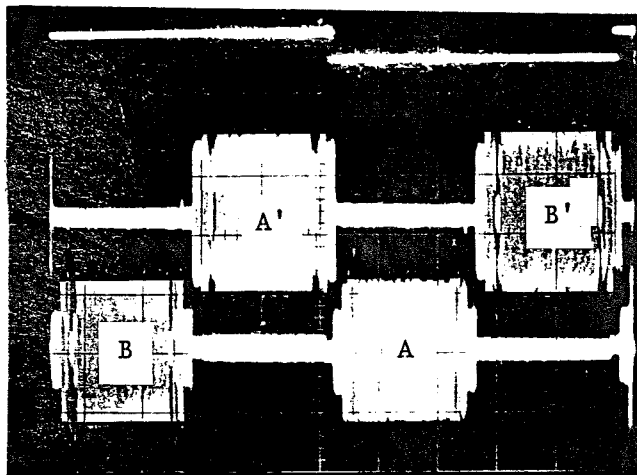
1. Load a reference tape.
2. Set the N-1000 to Rec.-Play mode and record the input signal (no signal is applied) for approx. 30 sec. While recording, check that envelope waveforms A' and B' are as shown in Fig. 6.35. (The min. level is 85% or more with respect to the max. level. Exchangeable limit is 80%.)



(Ideal Waveforms at TP9)

Fig. 6.35 Self Rec. & Playback (During Recording)

3. Press the Counter Search button of the N-1000. The tape is automatically rewound and stops at counter indication "00000".
4. Play back the tape, and check that envelope waveforms A and B are as shown in Fig. 6.36. (The min. level is 90% or more with respect to the max. level. Exchangeable limit is 80%.)



(Ideal Waveforms)

Fig. 6.36 Self Rec. & Playback (During Playback)

5. If satisfactory results are not obtained, repeat 6.9 through 6.13.
 6. After adjustment, remove the jumper pins of TE.CN-8 TRACK and TE.CN-5 ATF ON. Make sure that TE.CN-4 is shorted.
- 6.14. Application of Lock Tight Paint
1. After completion of mechanical adjustments, apply a quantity of lock tight paint to the following screws:
 - o RGS and RGT Height Adjustment Screws
 - o S1 and T1 fixing screws (M1.4 Philips Pan Head)

Note: It is recommended to use clear lock tight paint rather than colored one since user can see the RGS/RGT Height Adjustment Screws through the acrylic panel.

2. Install the Front Panel Ass'y.

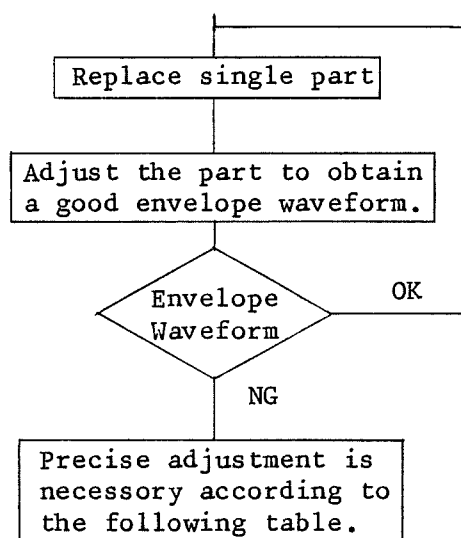
6.15. ADJUSTMENT ITEMS ACCORDING TO PARTS REPLACED

(1) Head Drum

- (a) Connect an oscilloscope to see envelope waveform referring to item 6.5.
- (b) Finely adjust both RGT and RGS height to obtain a good envelope waveform. See 6.6-6 "RGS, RGT Height Adjustment".
- (c) Perform items 6.7 through 6.14.

(2) Roller Guide(S3, S1, T1, T3)/S2 Guide/T2 Guide/Capstan

When replacing, do not replace all parts at the same time. Replace single part at one time and adjust the height of replaced part to obtain a good envelope waveform. After that, replace the next part.



- Notes: 1. Connect an oscilloscope to see envelope waveform referring to item 6.5.
2. After adjustment, apply a quantity of lock tight paint to RGS, RGT, and Fixing Screws (M1.4) for S1, T1, as required.

Guide	Adjustment Items
T3	6.3.1. "T3 Height Preset"
T2	6.3.3. "T2 Height Preset", 6.10. "T2 Height Adjustment"
T1 RGT RGS S1	6.5 through 6.14
S2	6.3.3. "S2 Height Preset", 6.10. "S2 Height Adjustment"
S3	6.3.1. "S3 Height Preset"
Capstan	6.9.2. "ATF Offset Check" through 6.14.

7. MECHANISM ASS'Y AND PARTS LIST

7.1. Synthesis

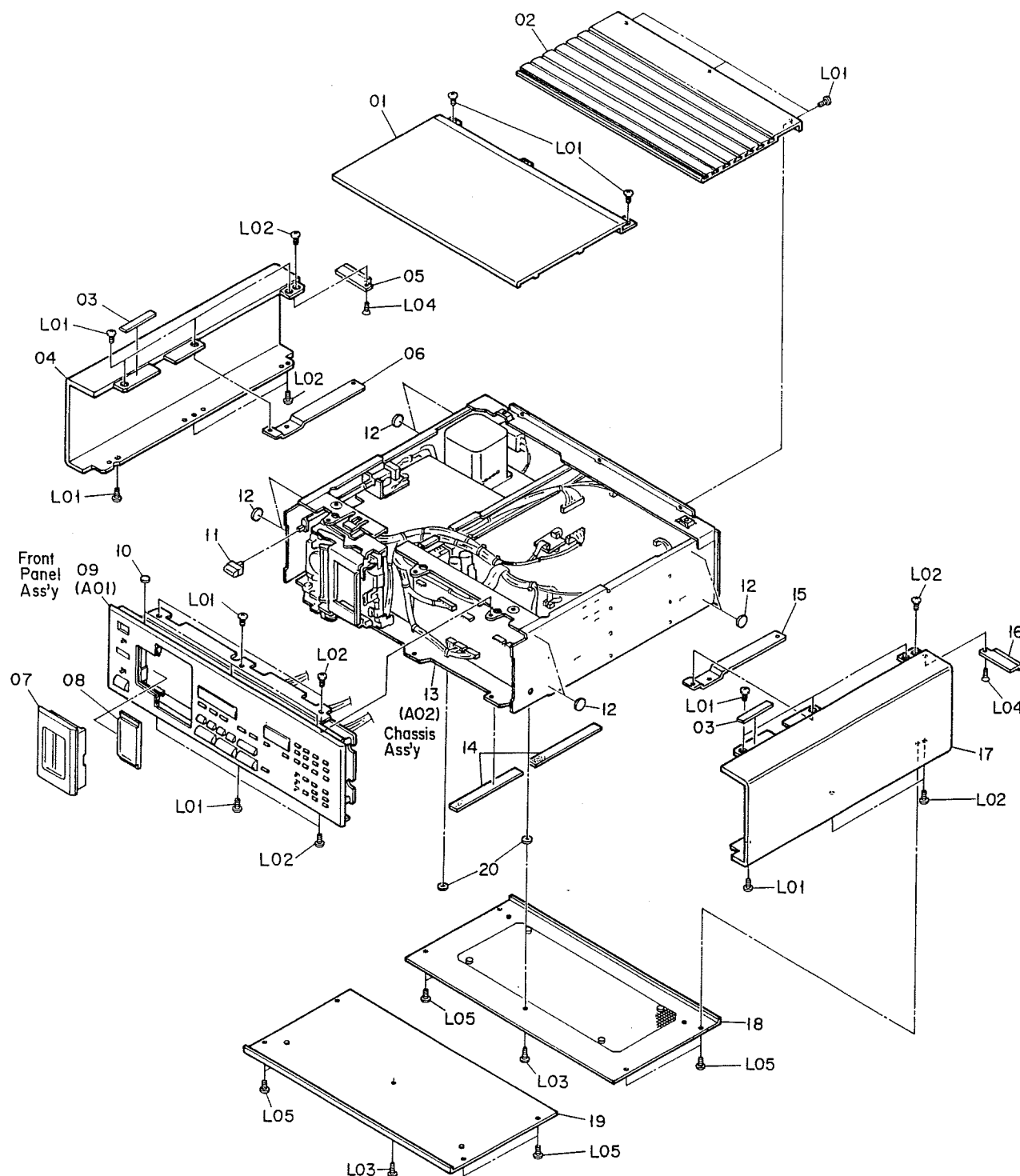


Fig. 7.1

<u>Ref.</u> <u>No.</u>	<u>Part No.</u>	<u>Description</u> <u>Synthesis</u>	<u>Q'ty</u>
01	HA05594A	Top Cover Front Ass'y	1
02	HA05595A	Top Cover Rear Ass'y	1
03	OJ05905A	Top Cover Cushion	2
04	OH05452B	Side Panel Left [N-1000]	1
	OH05567B	Side Panel Left [N-1000 Pro.]	1
05	OH05541B	Rear Plate Left	1
06	OJ05773C	Top Cover Holder L	1
07	HA05591A	Cassette Lid Ass'y	1
08	OH05483B	Drum Window (Acrylic Resin)	1
09	HA05590A	Front Panel Ass'y	1
10	OJ05938A	Top Spacer	3
11	HA05586A	Power Button Ass'y	1
12	OJ05909A	Side Spacer	8
13	-	Chassis Ass'y	1
14	OJ05907B	Bottom Cover Cushion	2
15	OJ05772C	Top Cover Holder R	1
16	OH05478B	Rear Plate Right	1
17	OH05453B	Side Panel Right [N-1000]	1
	OH05566B	Side Panel Right [N-1000 Pro.]	1
18	HA05596A	Bottom Cover Rear Ass'y [N-1000]	1
	HA05700A	Bottom Cover Rear Ass'y [N-1000 Pro.]	1
19	HA05617A	Bottom Cover Front Ass'y [N-1000]	1
	HA05701A	Bottom Cover Front Ass'y [N-1000 Pro.]	1
20	OJ05965A	Bottom Spacer	2
L01	OE03536A	M3x5 + Binding Projected	
L02	OE03522A	M3x5 + Binding	
L03	OE03526A	BT3x6 + Binding	
L04	OE00076A	M2.6x4 + Countersunk	
L05	OE03551A	M3x8 + Binding Projected	
-	OE03538A	M4x6 + Countersunk [N-1000 Pro.]	

7.2. Front Panel Ass'y (A01)

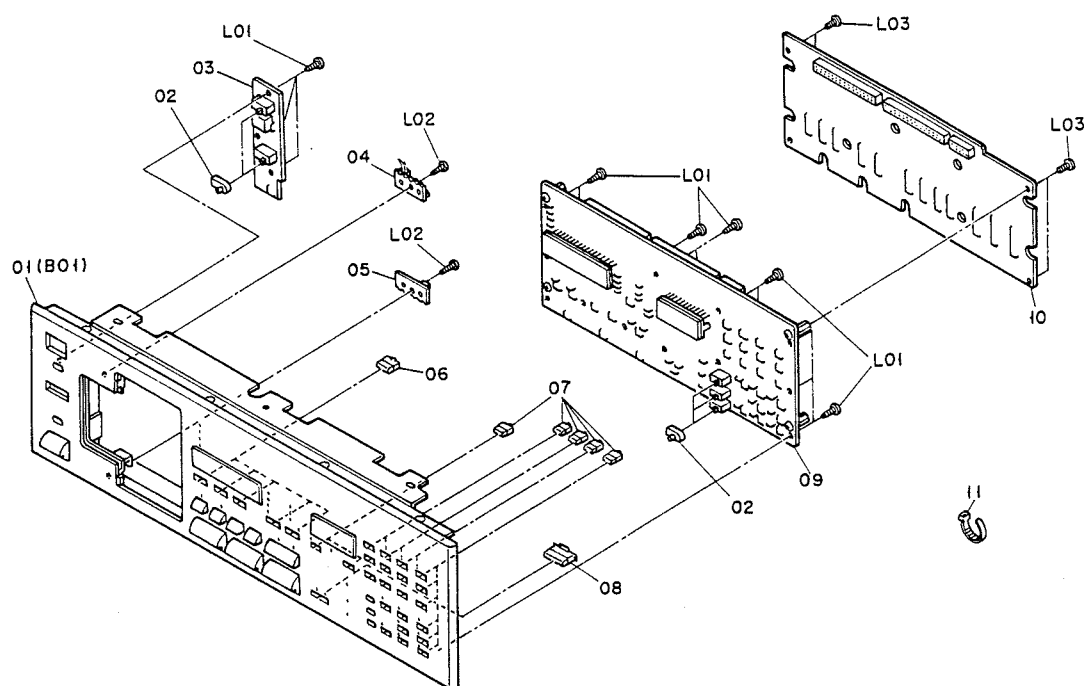


Fig. 7.2

Ref. No.	Part No.	Description	Q'ty
A01	HA05590A	Front Panel Ass'y	1
01	HA05619A	Front Panel Sub Ass'y	1
02	HA05597A	Slide Switch Knob Ass'y	5
03	BA07526A	Sense P.C.B. Ass'y	1
04	BA07527A	Lamp Upper P.C.B. Ass'y	1
05	BA07528A	Lamp Lower P.C.B. Ass'y	1
06	HA05603A	Sub Key 12 Ass'y	5
07	HA05602A	Sub Key 9 Ass'y	22
08	HA05604A	Sub Key 18 Ass'y	1
09	BA07524A	Switch P.C.B. Ass'y	1
10	BA07525A	Driver P.C.B. Ass'y	1
11	OB90019A	SK Binder	3
L01	OE00868A	BT3x8 + Binding	
L02	OE00853A	BT2x3 + Countersunk	
L03	OE00964A	M3x5 + Binding	

7.3. Chassis Ass'y (A02)

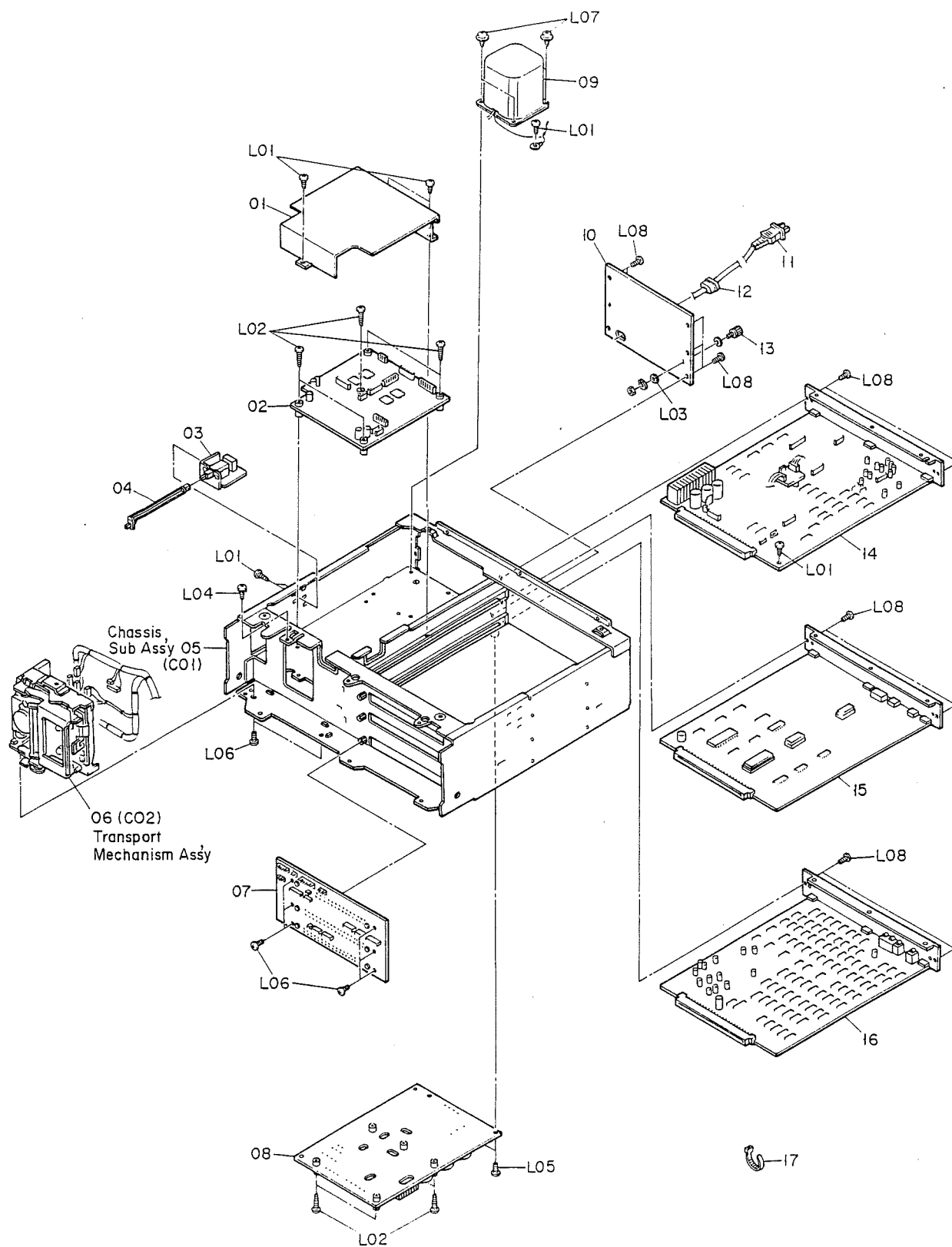
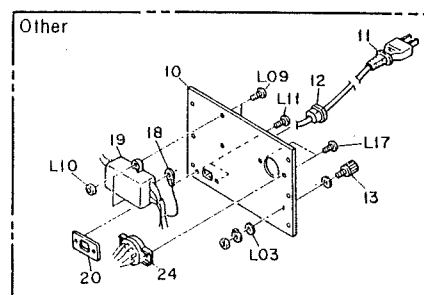


Fig. 7.3



Ref. No.	Part No.	Description	
18	OB83607A	GND Ass'y (JPN, OTR)	1
19	BA07697A	Noise Filter P.C.B. Ass'y (UK, AUS, EP, SWT, JPN, OTR)	1
20	OJ05939A	Bushing Plate (JPN, OTR)	1
21	OM03700A	Earth Mark Label (AUS, SWT)	1
22	OJ05694A	Insulator A (UK, AUS, EP, SWT)	1
23	OB81937A	Terminal B208 B-12 2P (UK, AUS, EP, SWT)	1
24	OB70049A	Voltage Selector (ESE-37202) (OTR)	1
L01	OE00857A	BT3x6 + Binding	
L02	OE03136A	BT3x16 + Binding	
L03	OE03537A	Washer 6mm Toothed Lock	
L04	OE03345A	M3x6 + Binding with Toohed-Lock Washer	
L05	OE00992A	M3x4 + Binding	
L06	OE00896A	M3x6 + Binding	
L07	OE03032A	BT4x8 + Pan Washer Faced (Black Chromate)	
L08	OE03522A	M3x5 + Binding	
L09	OE03517A	M3x5 + Binding (UK, AUS, EP, SWT, JPN, OTR)	
L10	OE00718A	Nut Hex. 3mm (UK, AUS, EP, SWT, JPN, OTR)	
L11	OE03519A	M3x6 + Binding (JPN, OTR)	
L12	OE03547A	M4x6 + Binding (UK, AUS, EP, SWT)	
L13	OE00506A	Nut Hex. 4mm (UK, AUS, EP, SWT)	
L14	OE00078A	Washer 4mm Toothed Lock (UK, AUS, EP, SWT)	
L15	OE03546A	M3x14 + Binding (UK, AUS, EP, SWT)	
L16	OE00172A	Washer 3mm Toothed Lock (UK, AUS, EP, SWT)	
-	OB83612A	13P Connector Ass'y (CN1)	1
-	OB83626C	12P Connector Ass'y (CN11)	1
-	OB83627B	13P Connector Ass'y (CN13)	1
-	OB83628B	8P Connector Ass'y (CN14)	1
-	OB83629C	3P Connector Ass'y (CN15)	1
-	OB83631C	6P Connector Ass'y (CN17)	1
-	OB83640A	10P Connector Ass'y (CN101)	1
-	OB83641A	14P Connector Ass'y (CN102)	1
-	OB83643A	7P Connector Ass'y (CN104)	1
-	OJ05940A	Insulator Sheet	1
-	OB83632B	9P Connector Ass'y (CN18)	1
-	OB83654B	8P Connector Ass'y (CN19)	1
-	OB83633B	6P Connector Ass'y (CN20)	1
-	OB83634B	10P Connector Ass'y (CN21)	1
-	OB83635B	4P Connector Ass'y (CN22)	1
-	OB83637A	6P Connector Ass'y (CN24)	1
-	OB83638B	2P Connector Ass'y (CN25)	1
-	OB83639B	4P Connector Ass'y (CN26)	1
-	OB83623C	13P Connector Ass'y (CN8/10)	1
-	OB83625B	13P Connector Ass'y (CN9)	1
-	OB83784A	7P Connector Ass'y (CN23)	1
		Serial No. : A50101501- [N-1000] A50401301- [N-1000 Pro.]	
-	OB83636B	10P Connector Ass'y (CN23)	1
		Serial Nos. : A50101001-01500 [N-1000] A50401001-01300 [N-1000 Pro.]	

7.4. Front Panel Sub Ass'y (B01)

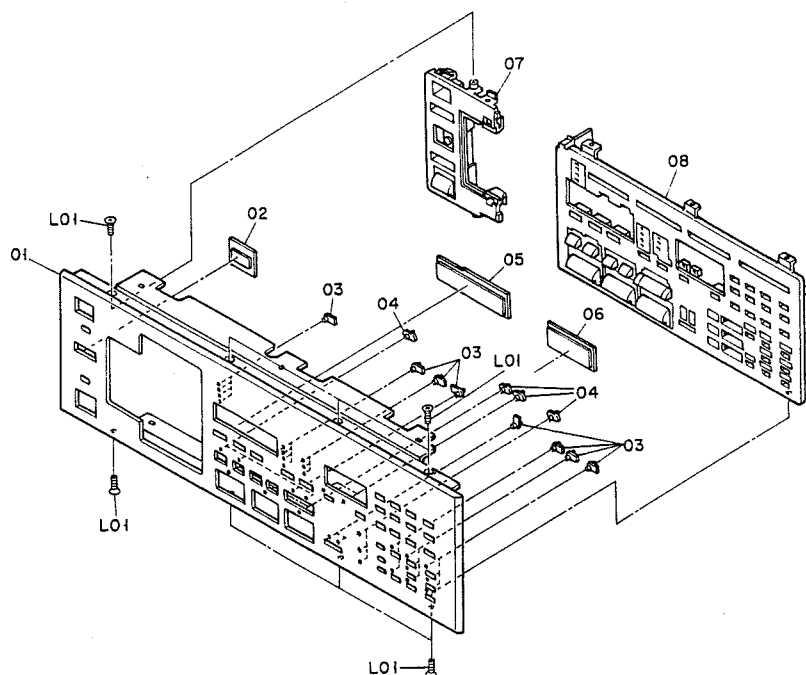


Fig. 7.4

Ref. No.	Part No.	Description	Q'ty
B01	HA05619A	Front Panel Sub Ass'y	1
01	OH05450C	Front Panel	1
02	OH05479A	Remote Lens	1
03	OH05488A	LED Lens B	22
04	OH05487A	LED Lens A	12
05	OH05480A	Counter Lens	1
06	OH05481A	Display Lens	1
07	HA05601A	Eject Escutcheon Ass'y	1
08	HA05600A	Front Chassis Ass'y	1
L01	OE03473A	BT2.6x6 + Countersunk	

7.5. Chassis Sub Ass'y (C01)

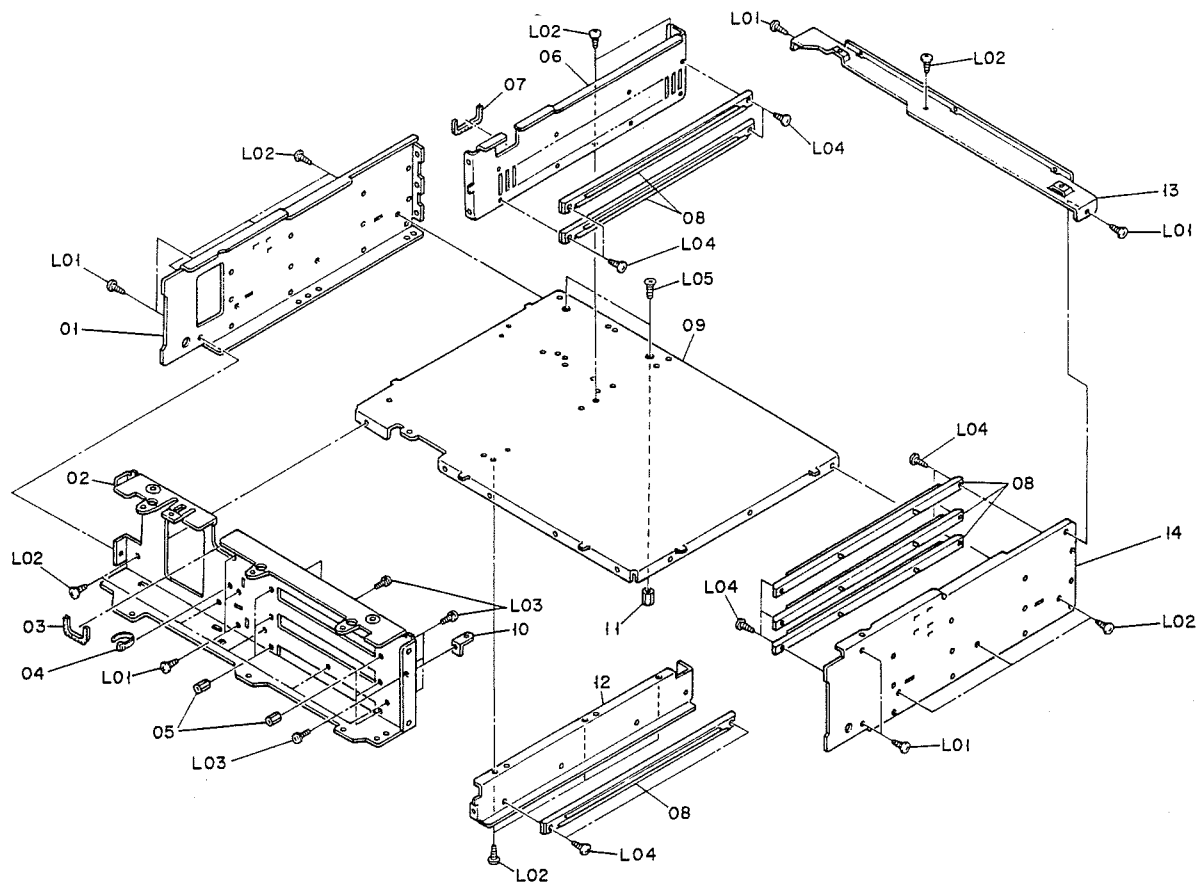


Fig. 7.5

Ref. No.	Part No.	Description	Q'ty
C01	-	Chassis Sub Ass'y	1
01	0J05766C	Side Chassis L	1
02	0J05763C	Front Chassis	1
03	0B90417A	Free Bushing 82mm (KG-016)	1
04	0B90398A	Insu-Lock (PLP-1.5I)	1
05	0J05793A	Stud 8.5mm	6
06	0J05768C	Center Chassis Upper	1
07	0B90416A	Free Bushing 72mm	1
08	0J05776A	Card Rail	6
09	0J05765B	Main Chassis	1
10	0J05822A	Servo P.C.B. Holder	1
11	0J05851A	Stud 7.5mm	2
12	0J05769D	Center Chassis Lower	1
13	0J05770A	Rear Angle	1
14	0J05767C	Side Chassis Rear	1
L01	0E03515A	BT3x8 + Binding (Copper)	
L02	0E03366A	BT3x8 + Binding	
L03	0E00612A	M3x6 + Pan (2A)	
L04	0E00857A	BT3x6 + Binding	
L05	0E00505A	M3x6 + Countersunk	

7.6. Transport Mechanism Ass'y (C02)

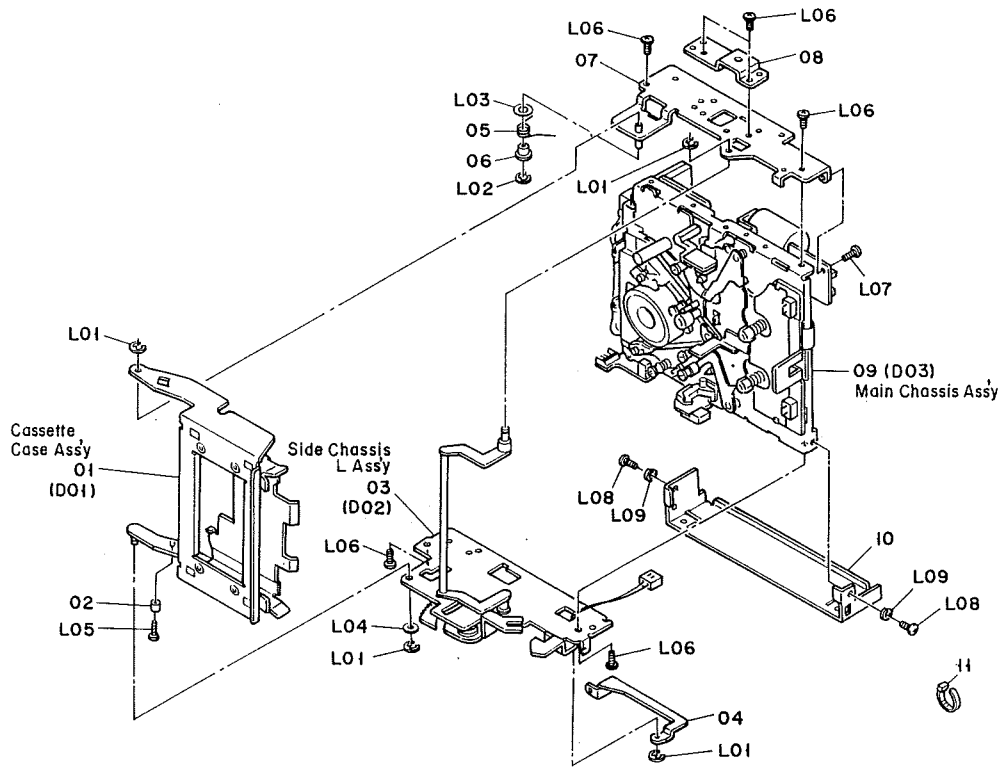


Fig. 7.6

<u>Ref.</u> <u>No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Q'ty</u>
C02	CA81437A	Transport Mechanism A Ass'y Serial No: Consumer Version: A50101501 - Professional Version: A50401301 -	1
01	CA81413B	Cassette Case Ass'y	1
02	OC83995A	Lid Stopper Pin	1
03	CA81521A	Side Chassis L Ass'y	1
04	OC83536A	Eject Link Plate	1
05	OC83971A	Eject Spring R	1
06	OC83542A	Lid Spring Collar	1
07	CA81522A	Side Chassis R Sub Ass'y	1
08	OC83541A	Mechanism Holder U	1
09	CA81549A	Main Chassis A Ass'y	1
10	OC83540A	Mechanism Holder L	1
11	OC85049A	Insu-Lock	3
L01	OE00222A	E-Ring 2mm	
L02	OE00042A	E-Ring 1.5mm	
L03	OC83966A	Washer 5.1x9x0.188 (Plastics)	
L04	OE03207A	Washer 3.1x6x0.25 (Plastics)	
L05	OC85071A	M1.7x3.5 BZn	
L06	OC85058A	ST2.6x4 BZn	
L07	OE00821A	M2x3 + Binding	
L08	OE03422A	M3x18 + Binding (Black Chromate)	
L09	OE00026A	Washer 2.6mm Spring	

<u>Ref.</u> <u>No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Q'ty</u>
C02	CA80957A	Transport Mechanism D Ass'y Serial Nos: Consumer Version: A50101226 - 01235 01238 - 01243 01245 - 01500 Professional Version: A50401086 - 01300	1
01	CA81413A	Cassette Case Ass'y	1
02	OC83995A	Lid Stopper Pin	1
03	CA81521A	Side Chassis L Ass'y	1
04	OC83536A	Eject Link Plate	1
05	OC83971A	Eject Spring R	1
06	OC83542A	Lid Spring Collar	1
07	CA81522A	Side Chassis R Sub Ass'y	1
08	OC83541A	Mechanism Holder U	1
09	CA80958A	Main Chassis D Ass'y	1
10	OC83540A	Mechanism Holder L	1
11	OC85049A	Insu-Lock	3
L01	OE00222A	E-Ring 2mm	
L02	OE00042A	E-Ring 1.5mm	
L03	OC83966A	Washer 5.1x9x0.188 (Plastics)	
L04	OE03207A	Washer 3.1x6x0.25 (Plastics)	
L05	OC85071A	M1.7x3.5 BZn	
L06	OC85058A	ST2.6x4 BZn	
L07	OE00821A	M2x3 + Binding	
L08	OE03422A	M3x18 + Binding (Black Chromate)	
L09	OE00026A	Washer 2.6mm Spring	

7.7. Cassette Case Ass'y (D01)

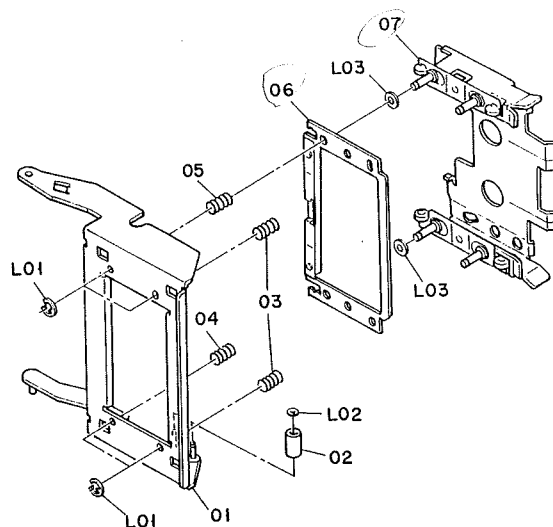


Fig. 7.7

Ref. No.	Part No.	Description	Q'ty
D01	CA81413B	Cassette Case Ass'y	1
CA81424A { 01	CA81415A	Lid Plate Ass'y	1
02	0C83974A	Lock Loller	2
03	0C83967A	Cassette Hold Spring A	1
04	0C83969A	Cassette Hold Spring C	1
05	0C83968A	Cassette Hold Spring B	2
06	CA81419A	Cassette Hold Plate C Ass'y	1
07	CA81416B	Cassette Holder Ass'y	1
L01	0E00222A	E-Ring 2mm	
L02	0C85048A	Washer 1.2x3x0.25 (Polyslider, Cut)	
L03	0E03270A	Washer 3.1x6x0.25 (Plastics)	

07 A

7.8. Side Chassis L Ass'y (D02)

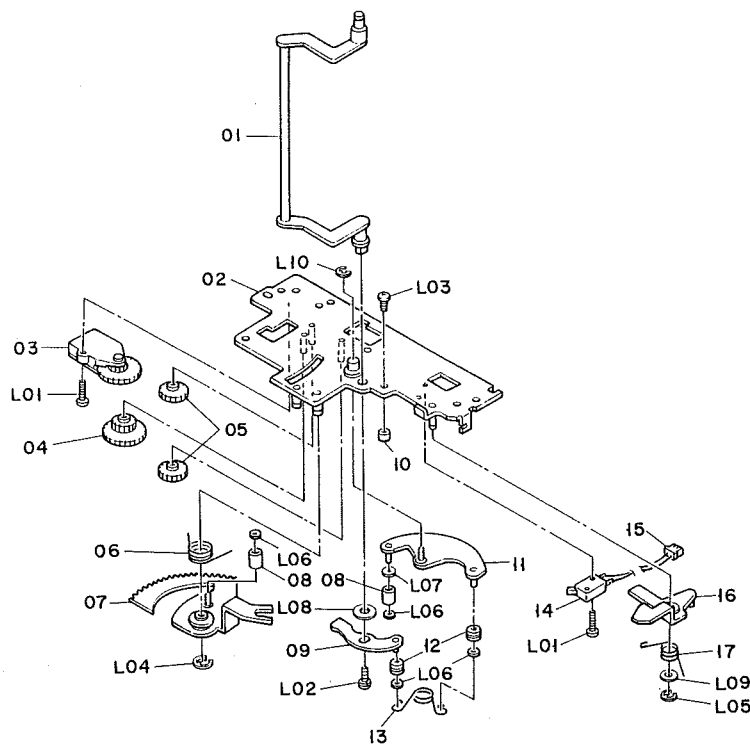


Fig. 7.8

Ref. No.	Part No.	Description	Q'ty
D02	CA81521A	Side Chassis L Ass'y	1
01	CA81524A	Eject Lever Ass'y	1
02	CA81517A	Side Chassis L Sub Ass'y	1
03	CA81516A	Damper Unit Ass'y	1
04	OC83538A	Damper Gear B	1
05	OC83537A	Damper Gear A	2
06	OC83972A	Eject Spring L	1
07	CA81525A	Swing Arm Ass'y	1
08	OC83974A	Lock Roller	2
09	CA81527A	Supporting Point Lever Ass'y	1
10	OC85107A	Stopper Pin	1
11	CA81529A	Reverse Lever Ass'y	1
12	OC83981A	Flip-Flop Spring Roller	1
	OC83980A	Flip-Flop Spring Roller	1
13	OC83973A	Flip-Flop Spring	1
14	OB70001A	Leaf Switch	1
15	CA81515A	2P Connector Ass'y	1
16	CA81531A	Lock Lever Ass'y	1
17	OC83970A	Lock Lever Spring	1
L01	OE03184A	M1.7x5.5 + Pan (Black Chromate)	
L02	OE03340A	M2.6x5 + Pan (2A)	
L03	OE00922A	M2x3 + Pan (Black Chromate)	
L04	OE00181A	E-Ring 3mm	
L05	OE00222A	E-Ring 2mm	
L06	OC85048A	Washer 1.2x3x0.25 (Polyslider, Cut)	
L07	OC85108A	Washer 1.7x3.2x0.5 (Plastics)	
L08	OE03357A	Washer 4.1x6x0.25 (Plastics)	
L09	OE03180A	Washer 2.6x6x0.25 (Plastics)	
L10	OE00165A	E-Ring 1.2mm	

7.9. Main Chassis Ass'y (D03)

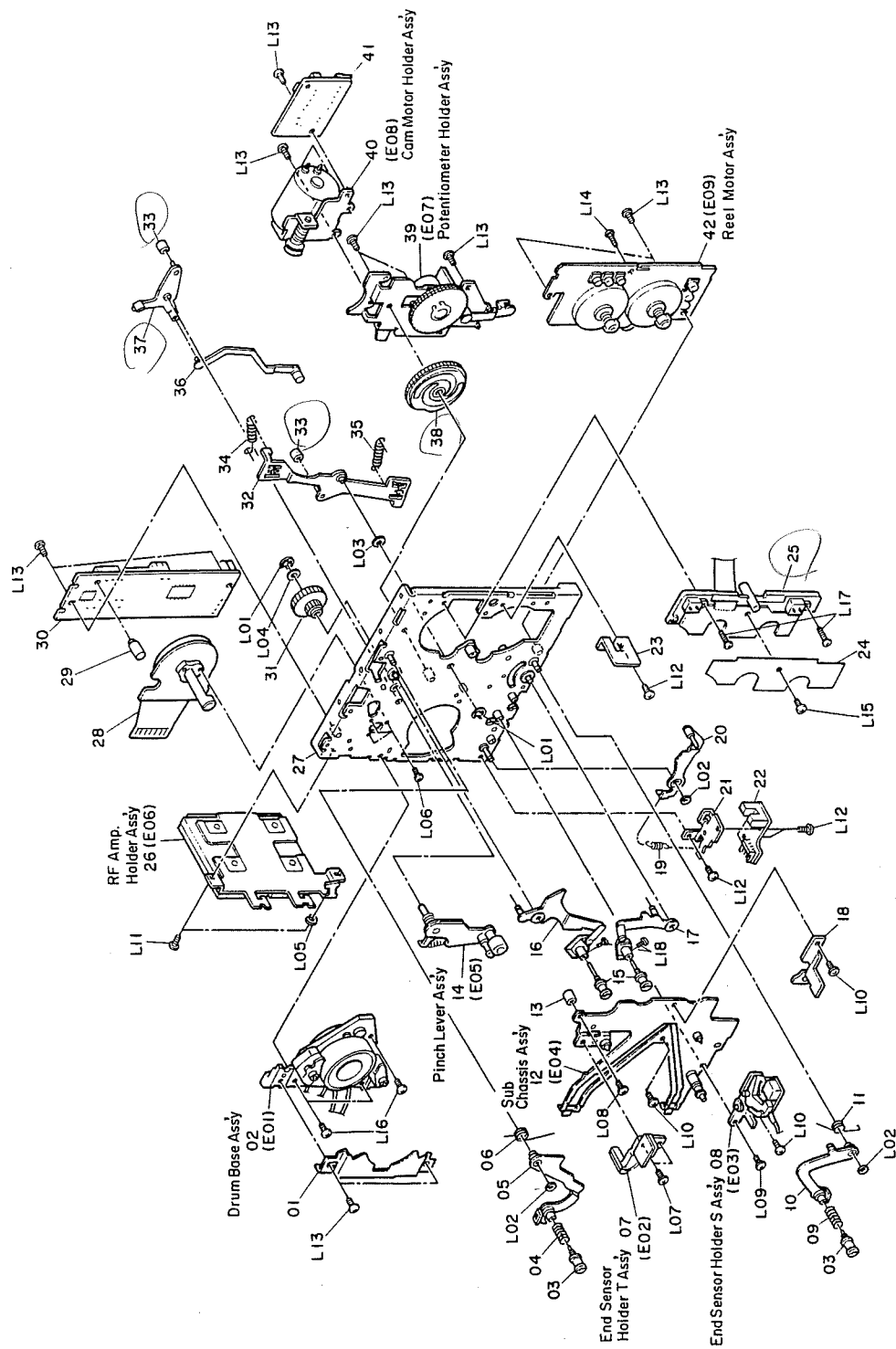


Fig. 7.9

Ref. No.	Part No.	Description	Q'ty
D03	CA81549B	Main Chassis A Ass'y Serial No: Consumer Version: A50101501 - Professional Version: A50401301 -	1
01	OC85063A	Shield Cover	1
02	CA81502A	Drum Base Ass'y	1
03	OC83879A	Guide Roller S3/T3	2
04	OC83889A	Guide Roller T3 Spring	1
05	CA81545A	Guide Roller T3 Arm Ass'y	1
06	OC83886A	Guide Roller Arm Spring T	1
07	CA81538A	End Sensor Holder T Ass'y	1
08	CA81532A	End Sensor Holder S Ass'y	1
09	OC83888A	Guide Roller S3 Spring	1
10	CA81544A	Guide Roller S3 Arm Ass'y	1
11	OC83887A	Guide Roller Arm Spring S	1
12	CA81511A	Sub Chassis Ass'y	1
13	OC83958A	Sub Chassis Collar	1
14	CA81533A	Pinch Lever Ass'y	1
15	OC83878A	Guide Roller S1/T1	2
16	CA81509A	Loading Lever T Ass'y	1
17	CA81513A	Loading Lever S Ass'y	1
18	OC83470A	Protect Plate B	1
19	OC83898A	Tension Arm Spring	1
20	CA81543A	Tension Arm Ass'y	1
21	OC83491A	Tension P.C.B. Holder	1
22	CA81535A	Tension Sensor P.C.B. Ass'y	1
23	OC83511A	Protect Plate A	1
24	OC83512A	Blind Plate	1
25	CA81507B	Switch Base Ass'y <i>Ch</i>	1
26	CA81539A	RF Amp. Holder Ass'y	1
27	CA81503A	Main Chassis Sub Ass'y	1
28	OC85040A	Capstan Motor	1
29	OC85041A	Drive P.C.B. Stud B	1
30	CA81484A	Drive P.C.B. Sub Ass'y	1
31	OC83474A	Cam Drive Gear B	1
32	CA81542A	Loading Arm Ass'y	1
33	OC85064A	Roller	2
34	OC83891A	Loading Spring T	1
35	OC83890A	Loading Spring S	1
36	CA81541A	TAD Link Ass'y	1
37	CA81510A	TAD Lever Ass'y <i>← new number OK</i>	1
38	OC85062A	Cam Gear (Aluminum)	1
39	CA81514A	Potentiometer Holder Ass'y	1
40	CA81504A	Cam Motor Holder Ass'y	1
41	CA81553A	Relay P.C.B. A Ass'y	1
42	CA81506A	Reel Motor A Ass'y	1
L01	OE00042A	E-Ring 1.5mm	
L02	OC85042A	Washer 1.8x3.8 (Polyslider, Cut)	
L03	OE03163A	Washer 3.1x5.4x0.13 (Polyslider)	
L04	OE03274A	Washer 2.1x4x0.125 (Plastics)	
L05	OE00026A	Washer 2.6mm Spring	
L06	OC85051A	M1.7x3 BZn	
L07	OC85052A	M2x1.5	
L08	OC85053A	M2x5.5	
L09	OC85055A	M2x2.2	
L10	OC85056A	M2x3.5	
L11	OC85058A	ST2.6x4 BZn	
L12	OE00692A	M2x2.5 + Pan (Black Chromate)	
L13	OE00821A	M2x3 + Binding	
L14	OE00841A	BT2x4 + Pan	

Ref.	No.	Part No.	Description	Q'ty
L15		OE00909A	M2x6 + Pan (Black Chromate)	
L16		OE00976A	M2x5 + Binding	
L17		OE03185A	M1.7x6 + Pan (Black Chromate)	
L18		OC85050A	M1.4x2.5 M1	

Ref.	No.	Part No.	Description	Q'ty
D03		CA80958A	Main Chassis D Ass'y	1
			Serial Nos:	
			Consumer Version: A50101226 - 01235	
			01238 - 01243	
			01245 - 01500	
			Professional Version: A50401086 - 01300	

01	OC85063A	Shield Cover	1
02	CA81502A	Drum Base Ass'y	1
03	OC83879A	Guide Roller S3/T3	2
04	OC83889A	Guide Roller T3 Spring	1
05	CA81545A	Guide Roller T3 Arm Ass'y	1
06	OC83886A	Guide Roller Arm Spring T	1
07	CA81538A	End Sensor Holder T Ass'y	1
08	CA81532A	End Sensor Holder S Ass'y	1
09	OC83888A	Guide Roller S3 Spring	1
10	CA81544A	Guide Roller S3 Arm Ass'y	1
11	OC83887A	Guide Roller Arm Spring S	1
12	CA81511A	Sub Chassis Ass'y	1
13	OC83958A	Sub Chassis Collar	1
14	CA81533A	Pinch Lever Ass'y	1
15	OC83878A	Guide Roller S1/T1	2
16	CA81509A	Loading Lever T Ass'y	1
17	CA81513A	Loading Lever S Ass'y	1
18	OC83470A	Protect Plate B	1
19	OC83898A	Tension Arm Spring	1
20	CA81543A	Tension Arm Ass'y	1
21	OC83491A	Tension P.C.B. Holder	1
22	CA81535A	Tension Sensor P.C.B. Ass'y	1
23	OC83511A	Protect Plate A	1
24	OC83512A	Blind Plate	1
25	CA81507B	Switch Base Ass'y	1
26	CA81539A	RF Amp. Holder Ass'y	1
27	CA81503A	Main Chassis Sub Ass'y	1
28	OC85040A	Capstan Motor	1
29	OC85041A	Drive P.C.B. Stud B	1
30	CA81484A	Drive P.C.B. Sub Ass'y	1
31	OC83474A	Cam Drive Gear B	1
32	CA81542A	Loading Arm Ass'y	1
33	OC85064A	Roller	2
34	OC83891A	Loading Spring T	1
35	OC83890A	Loading Spring S	1
36	CA81541A	TAD Link Ass'y	1
37	CA81510A	TAD Lever Ass'y	1
38	OC85062A	Cam Gear (Aluminum)	1
39	CA81514A	Potentiometer Holder Ass'y	1
40	CA81504A	Cam Motor Holder Ass'y	1
41	CA81536A	Relay P.C.B. D Ass'y	1
42	CA81485A	Reel Motor D Ass'y	1
L01	OE00042A	E-Ring 1.5mm	
L02	OC85042A	Washer 1.8x3.8 (Polyslider, Cut)	
L03	OE03163A	Washer 3.1x5.4x0.13 (Polyslider)	
L04	OE03274A	Washer 2.1x4x0.125 (Plastics)	
L05	OE00026A	Washer 2.6mm Spring	

<u>Ref.</u> <u>No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Q'ty</u>
L06	OC85051A	M1.7x3 BZn	
L07	OC85052A	M2x1.5	
L08	OC85053A	M2x5.5	
L09	OC85055A	M2x2.2	
L10	OC85056A	M2x3.5	
L11	OC85058A	ST2.6x4 BZn	
L12	OE00692A	M2x2.5 + Pan (Black Chromate)	
L13	OE00821A	M2x3 + Binding	
L14	OE00841A	BT2x4 + Pan	
L15	OE00909A	M2x6 + Pan (Black Chromate)	
L16	OE00976A	M2x5 + Binding	
L17	OE03185A	M1.7x6 + Pan (Black Chromate)	
L18	OC85050A	M1.4x2.5 M1	

7.10. Drum Base Ass'y (E01)

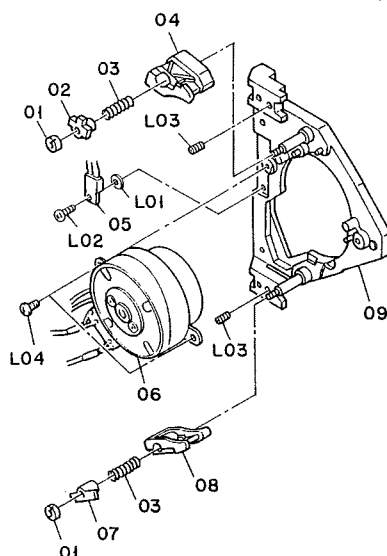


Fig. 7.10

<u>Ref.</u> <u>No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Q'ty</u>
E01	CA81502A	Drum Base Ass'y	1
01	OC83883A	Adjust Nut M2	2
02	OC83960A	Reference Guide T	1
03	OC85065A	Block Guide Hold Spring	2
04	OC83875A	Block Guide T	1
05	CA81501A	Shift Sensor Ass'y	1
06	CA81512A	Drum Ass'y	1
07	OC83961A	Reference Guide S	1
08	OC83874A	Block Guide S	1
09	CA81496A	Drum Base Sub Ass'y	1
L01	OC83965A	Washer 2.1x6x0.188 (Plastics)	
L02	OC85057A	M2x3 + Pan (Polycarbonate)	
L03	OC85059A	M2.6x7 Hex. Socket Head	
L04	OE00821A	M2x3 + Binding	

7.11. End Sensor Holder T Ass'y (E02)

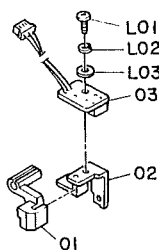


Fig. 7.11

Ref. No.	Part No.	Description	Q'ty
E02	CA81538A	End Sensor Holder T Ass'y	1
01	OC83521A	Protect Block	1
02	OC83492A	End Sensor Holder T	1
03	CA81489A	End Sensor P.C.B. T Ass'y	1
L01	OE00922A	M2x3 + Pan (Black Chromate)	
L02	OE00025A	Washer 2mm Spring	
L03	OC85109A	Plastic Washer 2.1x6x0.188	

7.12. End Sensor Holder S Ass'y (E03)

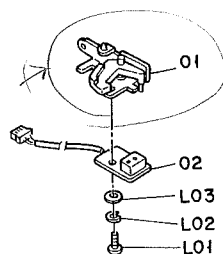


Fig. 7.12

Ref. No.	Part No.	Description	Q'ty
E03	CA81532A	End Sensor Holder S Ass'y	1
01	CA81491A	End Sensor Holder S Sub Ass'y	1
02	CA81488A	End Sensor P.C.B. S Ass'y	1
L01	OE00922A	M2x3 + Pan (Black Chromate)	
L02	OE00025A	Spring Washer 2mm	
L03	OC85109A	Plastic Washer 2.1x6x0.188	

7.13. Sub Chassis Ass'y (E04)

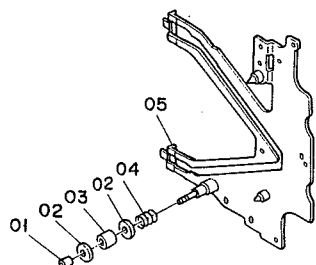


Fig. 7.13

Ref. No.	Part No.	Description	Q'ty
E04	CA81511A	Sub Chassis Ass'y	1
01	OC83905A	Adjust Nut M1.1	1
02	OC83929A	S2 Guide Flange	2
03	OC83931A	S2 Guide Collar	1
04	OC83892A	S2 Guide Spring	1
05	CA81495A	Sub Chassis Sub Ass'y	1

7.14. Pinch Lever Ass'y (E05)

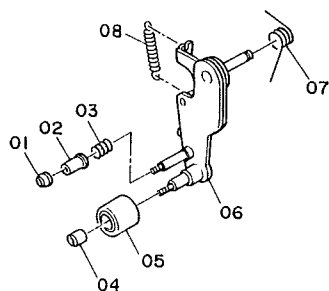


Fig. 7.14

Ref. No.	Part No.	Description	Q'ty
E05	CA81533A	Pinch Lever Ass'y	1
01	OC83905A	Adjust Nut M1.4	1
02	OC83899A	T2 Guide Collar	1
03	OC83885A	T2 Guide Spring	1
04	OC83906A	T2 Adjust Nut	1
05	OC83884A	Pressure Roller	1
06	CA81497A	Pinch Lever Sub Ass'y	1
07	OC83894A	Pressure Roller Arm Return Spring	1
08	OC83893A	Pressure Roller Arm Spring	1

7.15. RF Amp. Holder Ass'y (E06)

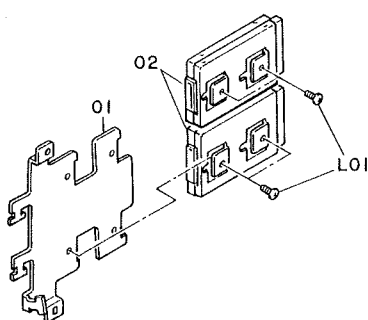


Fig. 7.15

Ref. No.	Part No.	Description	Q'ty
E06	CA81539A	RF Amp. Holder Ass'y	1
01	OC83469A	RF Amp. P.C.B. Holder	1
02	CA81033A	RF Amp. Unit	2
L01	OC85054A	ST2x2 YZn	

7.16. Potentiometer Holder Ass'y (E07)

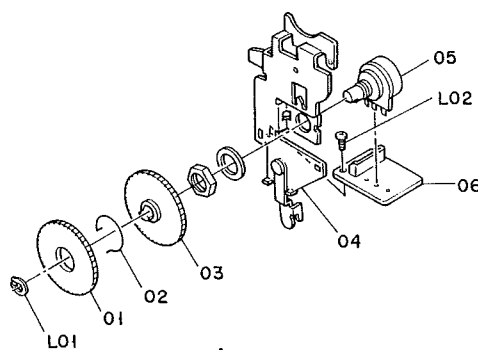


Fig. 7.16

Ref. No.	Part No.	Description	Q'ty
E07	CA81514A	Potentiometer Holder Ass'y	1
01	OC83472A	VR Gear B	1
02	OC83897A	VR Gear Spring	1
03	CA81534B	VR Gear A Ass'y	1
04	CA81493A	Potentiometer Holder Sub Ass'y	1
05	OC83963A	Potentiometer	1
06	CA81540A	Potentiometer P.C.B. Ass'y	1
L01	OC85077A	Glip 6mm	
L02	OE00821A	M2x3 + Binding	

7.17. Cam Motor Holder Ass'y (E08)

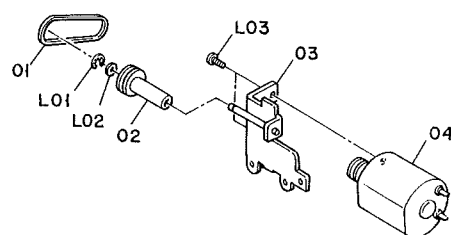


Fig. 7.17

Ref. No.	Part No.	Description	Q'ty
E08	CA81504A	Cam Motor Holder Ass'y	1
01	OC83524A	Loading Belt	1
02	OC83476A	Worm Gear B	1
03	CA81550A	Motor Holder Ass'y	1
04	CA81494A	Cam Motor Sub Ass'y	1
L01	OE00042A	E-Ring 1.5mm	
L02	OE03274A	Plastic Washer 2.1x4x0.125	
L03	OE03243A	M2x2.5 + Pan	

7.18. Reel Motor Ass'y (E09)

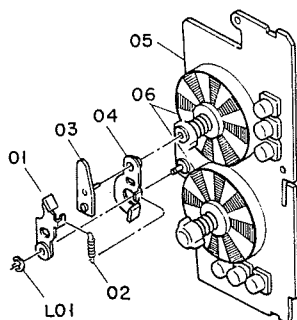


Fig. 7.18

Ref. No.	Part No.	Description	Q'ty
E09	CA81506A	Reel Motor A Ass'y Serial No: Consumer Version: A50101501 - Professional Version: A50401301 -	1
01	CA81546A	Brake Lever T Ass'y	1
02	OC83895A	Brake Arm Spring	1
03	CA81547A	Brake Drive Lever Ass'y	1
04	CA81548A	Brake Lever S Ass'y	1
05	CA81499A	Reel Motor A Sub Ass'y	1
06	OC85083A	Strobo Seal	2
L01	OE03182A	E-Ring 0.8mm	

Ref. No.	Part No.	Description	Q'ty
E09	CA81485A	Reel Motor D Ass'y Serial Nos: Consumer Version: A50101226 - 01235 01238 - 01243 01245 - 01500 Professional Version: A50401086 - 01300	1
01	CA81546A	Brake Lever T Ass'y	1
02	OC83895A	Brake Arm Spring	1
03	CA81547A	Brake Drive Lever Ass'y	1
04	CA81548A	Brake Lever S Ass'y	1
05	CA81486A	Reel Motor D Sub Ass'y	1
06	OC85083A	Strobo Seal	2
L01	OE03182A	E-Ring 0.8mm	

8. MAIN IC BLOCK DIAGRAMS

(1) CXD1146Q DAIF (Digital Audio Interface) U709 on DAIF-D P.C.B. Ass'y

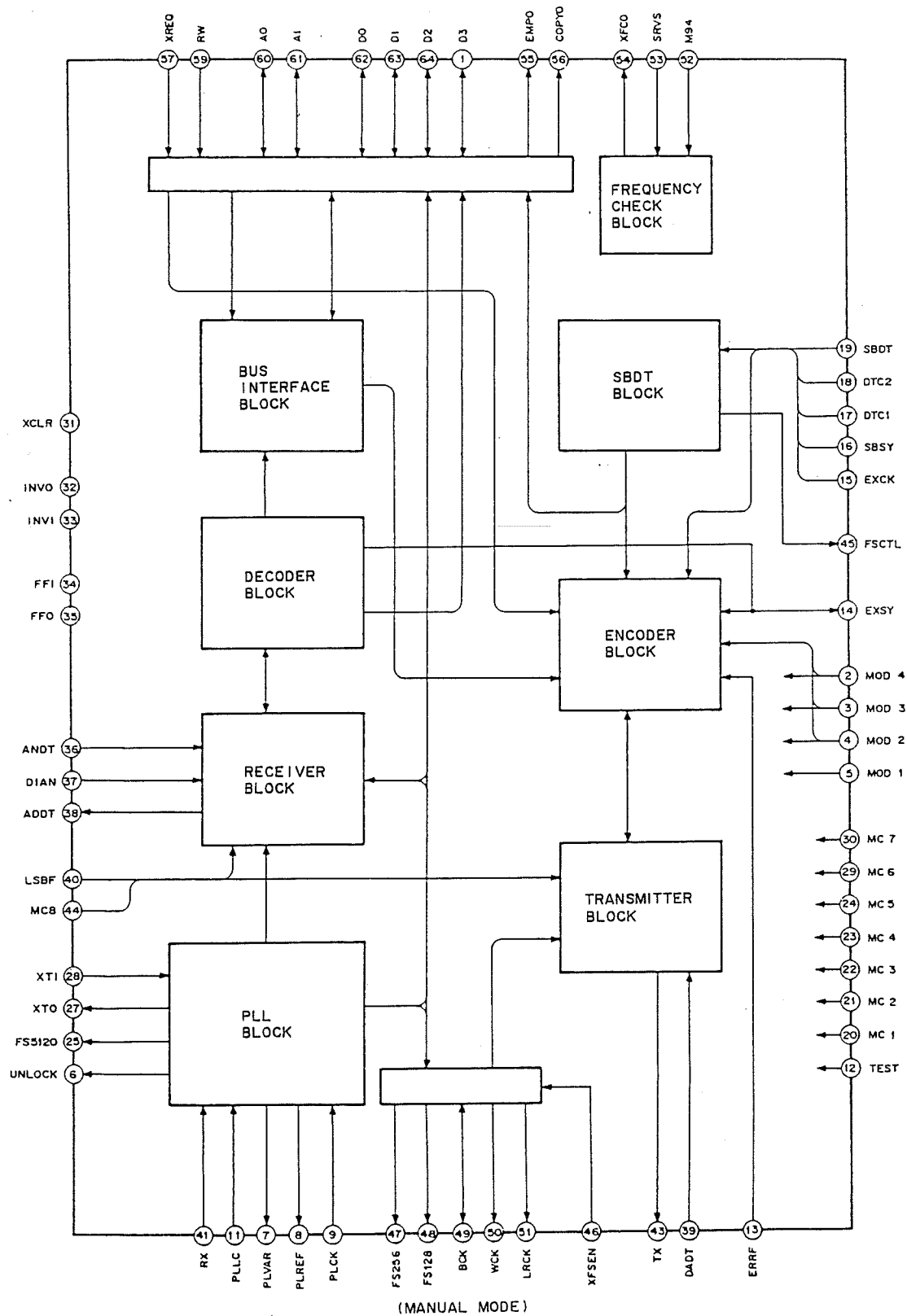


Fig. 8.1

(2) YM3615B Digital Volume Controller (Digital Fader)
U708 on DAIF-D P.C.B. Ass'y

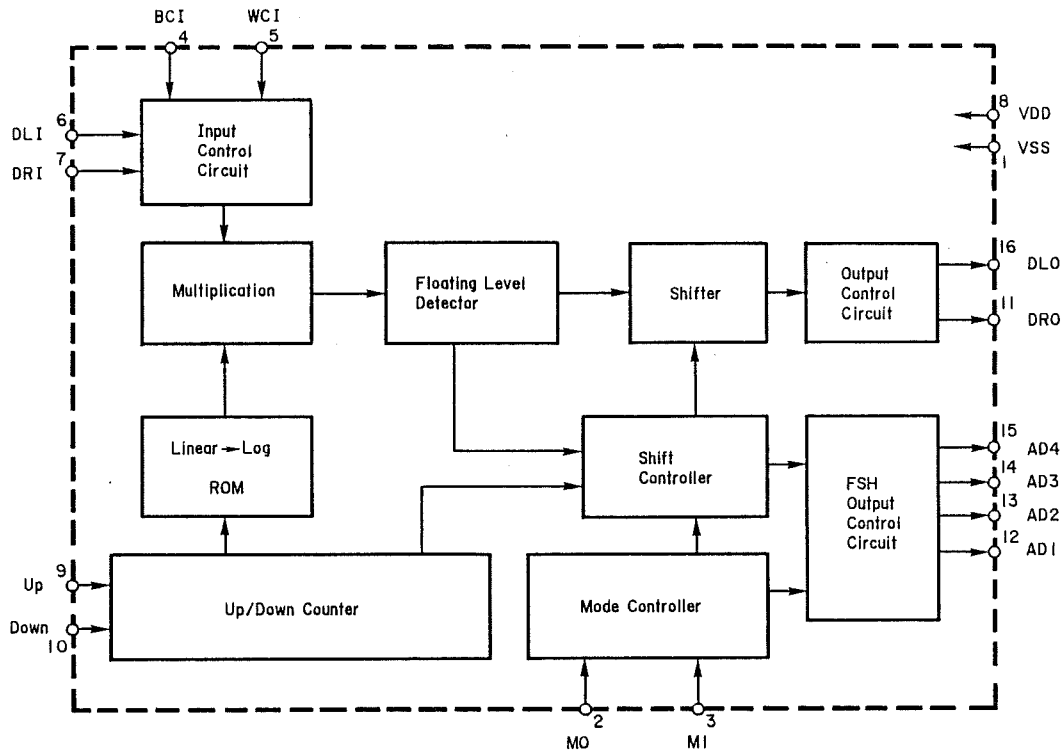


Fig. 8.2

(3) LA3373 MPX (Fs Detection)
U804, U805 on DAIF-D P.C.B. Ass'y

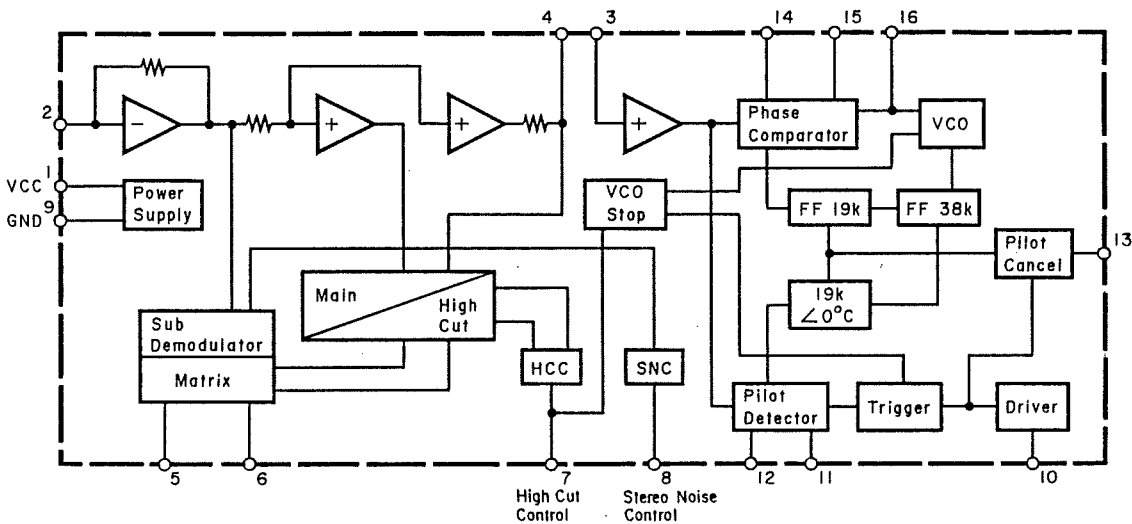


Fig. 8.3

(4) CX23065 Phase Compator (PLL)
U806 on DAIF-D P.C.B. Ass'y

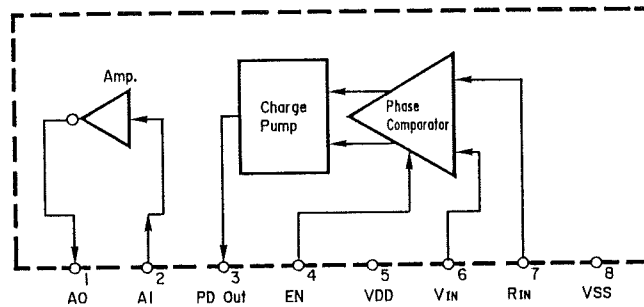


Fig. 8.4

(5) CXD1052Q Drum Servo Controller
U24 on Servo P.C.B. Ass'y

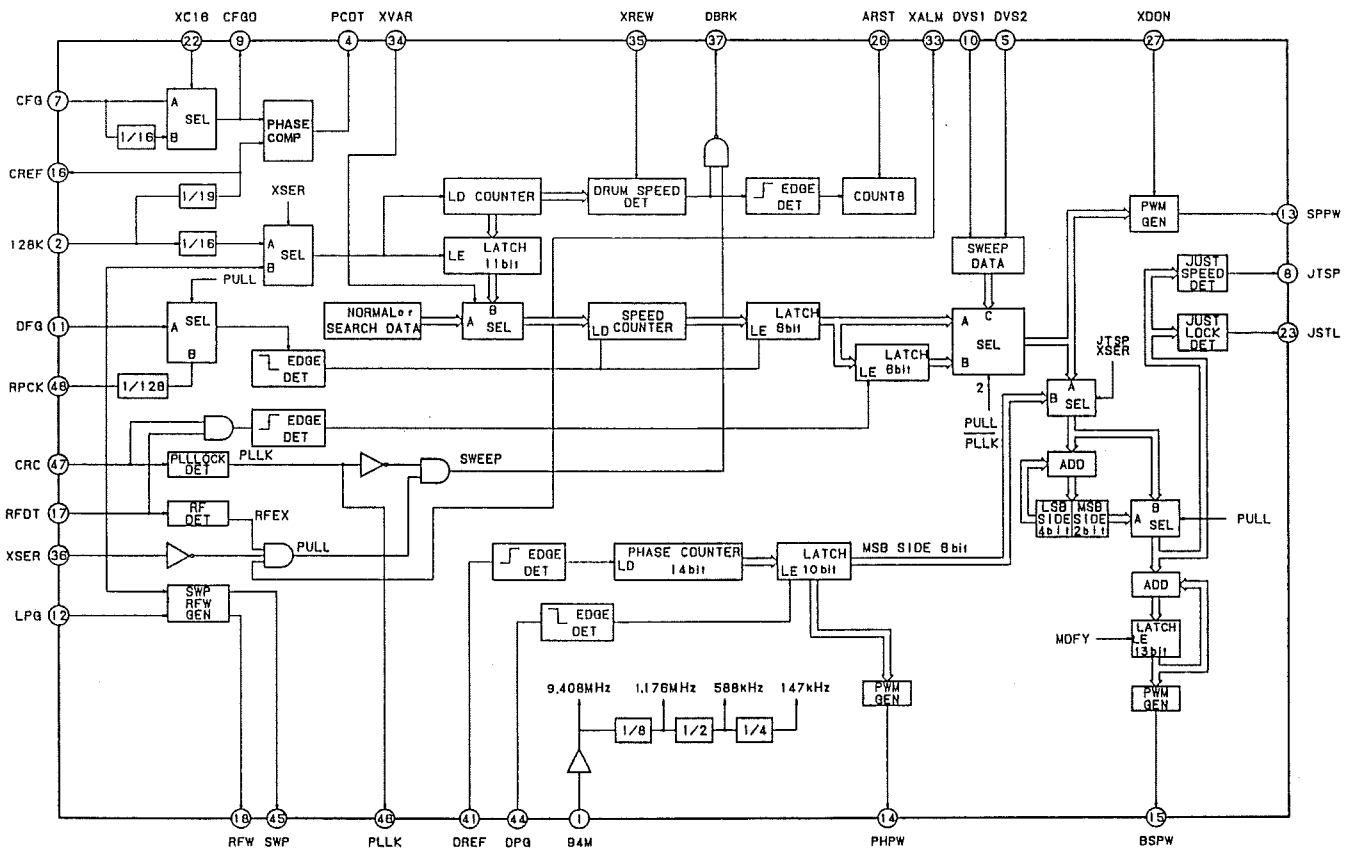


Fig. 8.5

(6) CX20084 Capstan Servo Control
U56 on Servo P.C.B. Ass'y

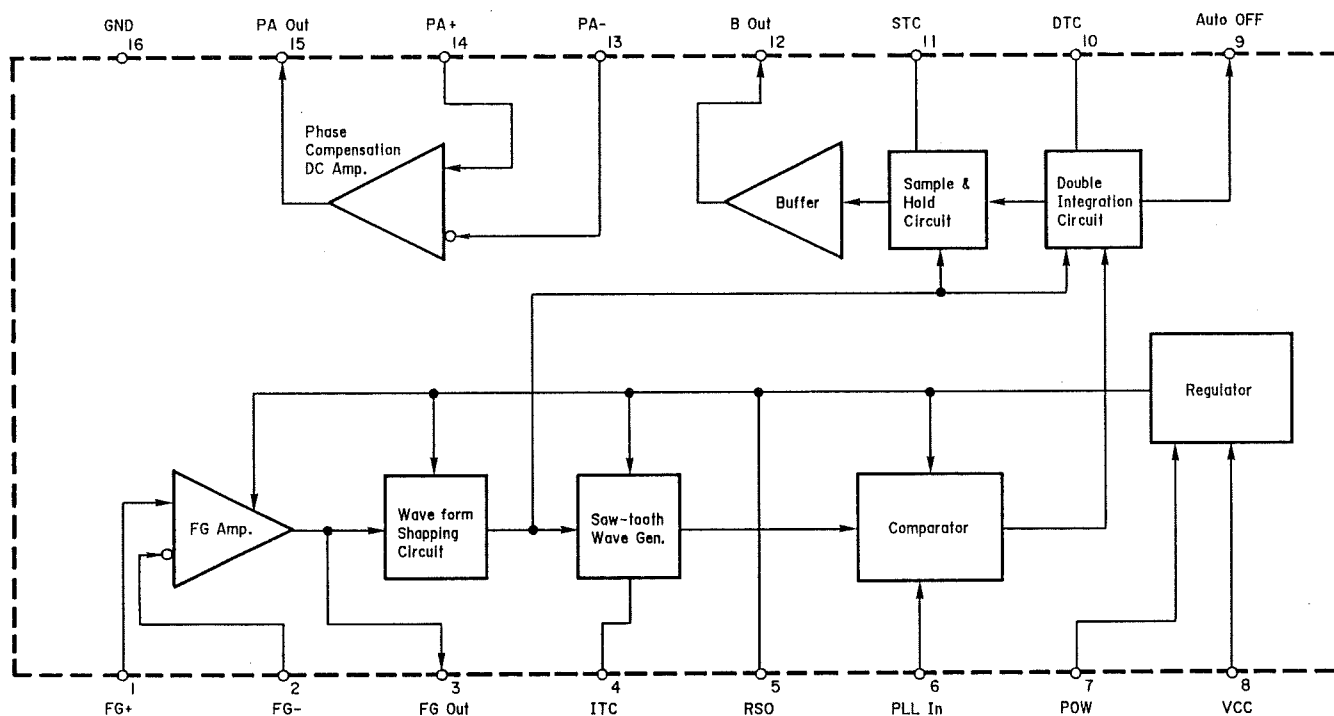


Fig. 8.6

(7) CXA1046M ATF (Auto Track Following) Controller
U23 on Servo P.C.B. Ass'y

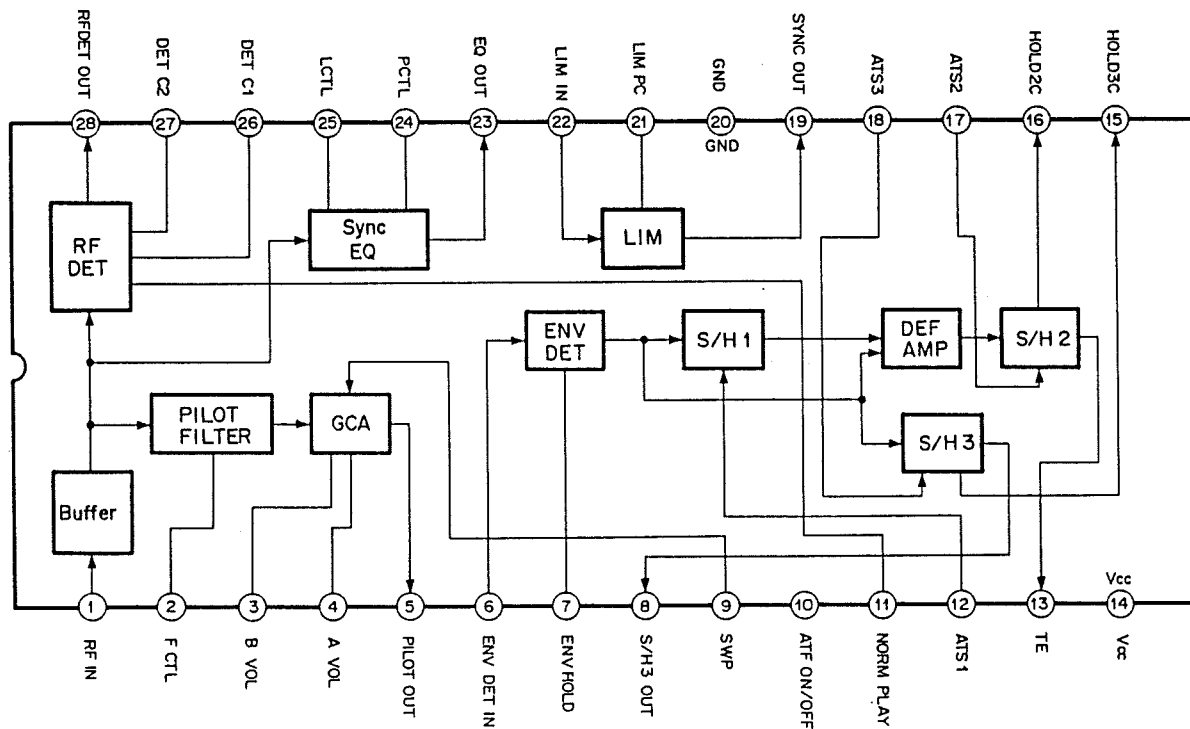


Fig. 8.7

(8) μ PD6326C D/A (Digital-to-Analog) Converter
U16 on Servo P.C.B. Ass'y

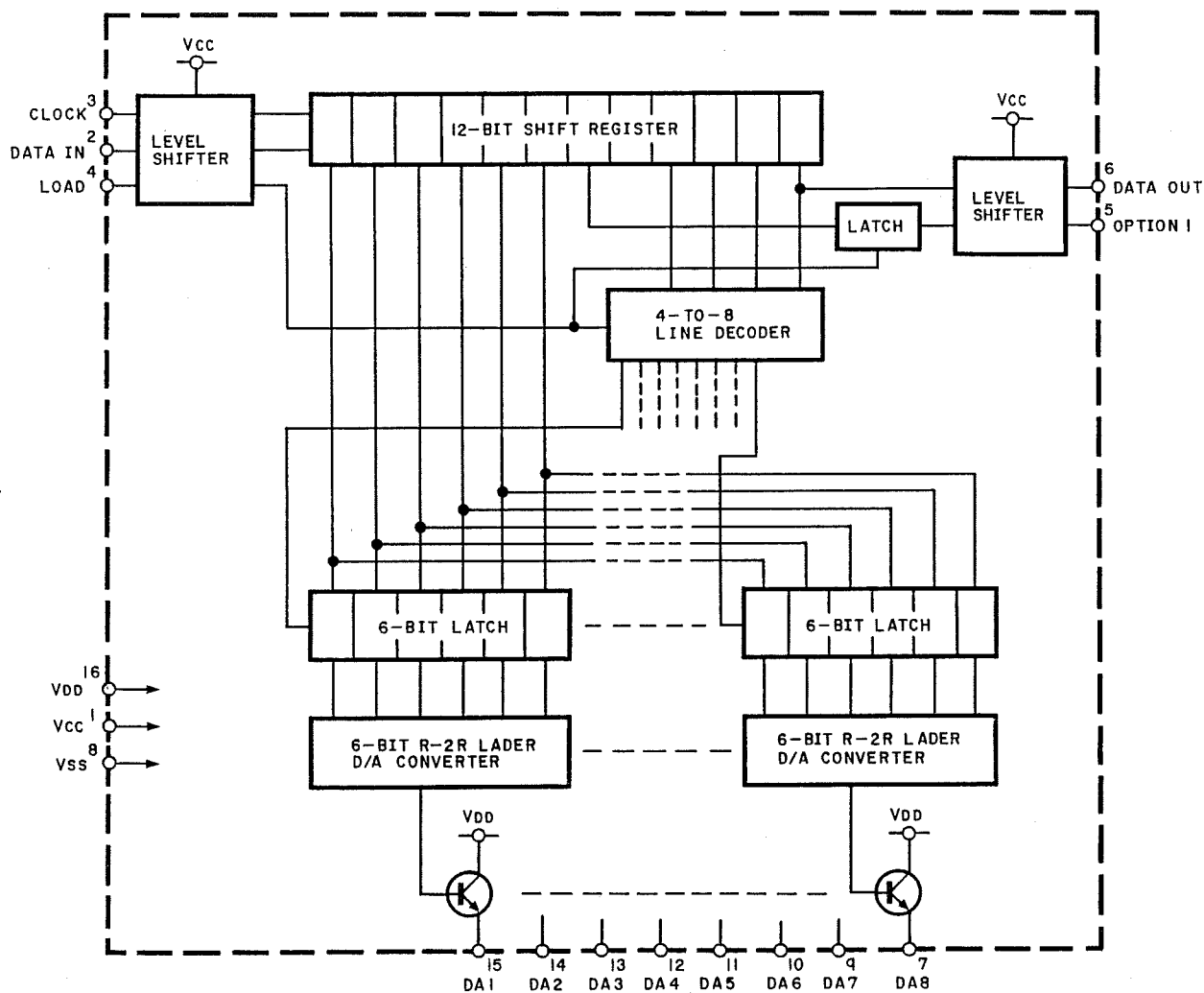


Fig. 8.8

(9) CXD1008Q Signal Processor (ECC (Error Correction Code))
U505 on Signal Processor P.C.B. Ass'y

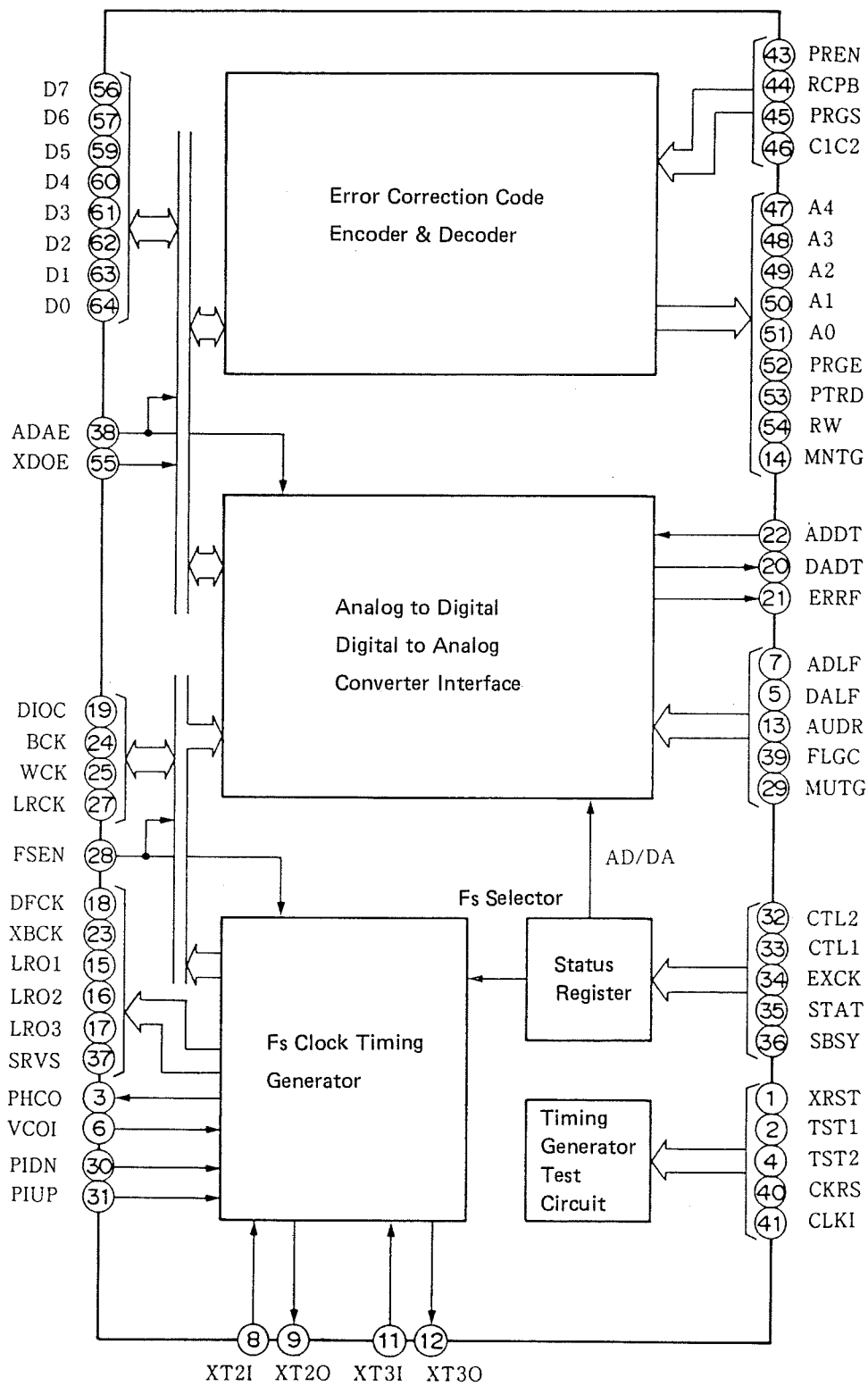


Fig. 8.9

(10) CXD1009Q Signal Processor (RAM Control, etc.)
U504 on Signal Processor P.C.B. Ass'y

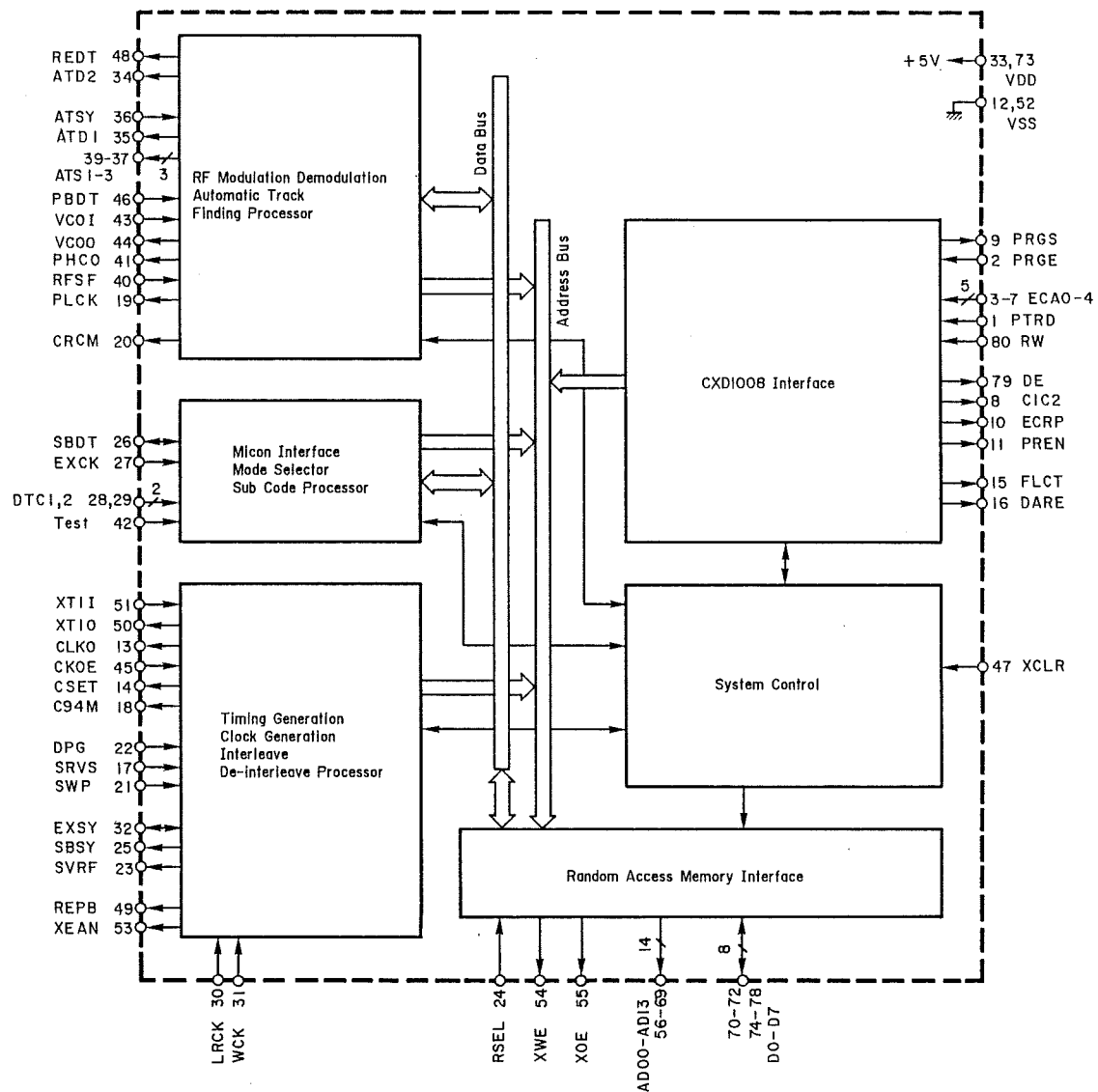


Fig. 8.10

(11) CXA1045Q RF Amp.
U01 (Transport Mechanism Ass'y)

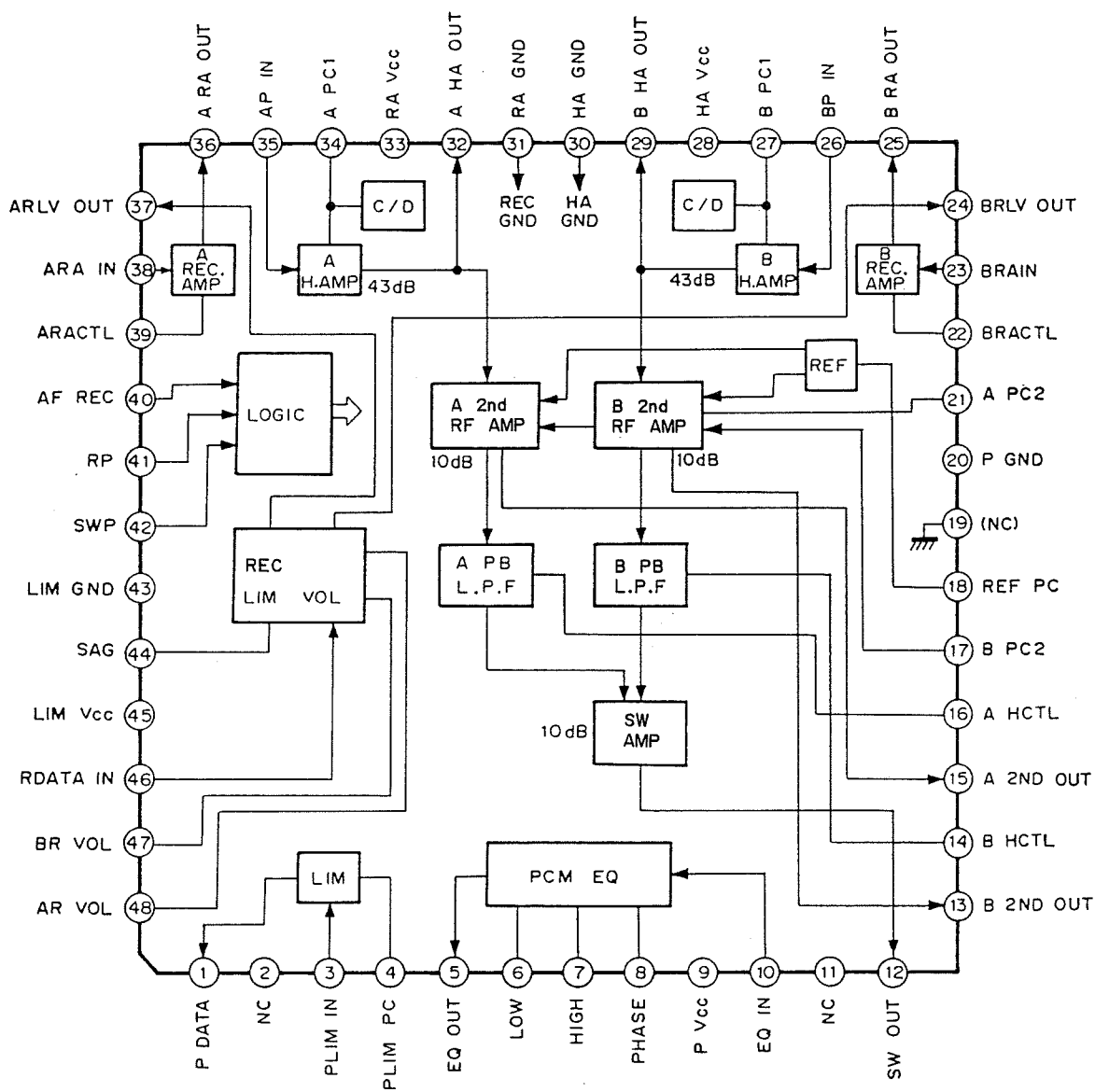


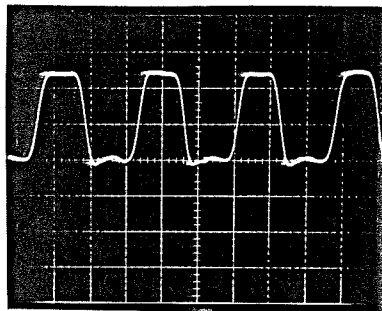
Fig. 8.11

9. WAVEFORMS

Notes: 1. Unless otherwise specified, horizontal center line is 0 V.

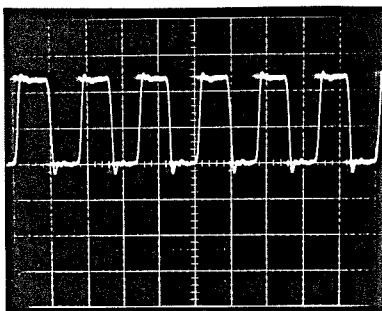
2. As to waveforms on TP1 and TP2 of Signal Processor P.C.B. Ass'y, refer to those on TP5 and TP4 of Servo P.C.B. Ass'y.

Signal Processor P.C.B. Ass'y



TP3, TP8 (GND)

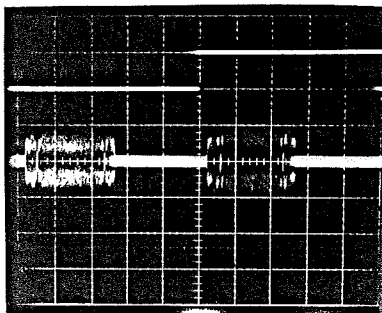
X=20ns/div
Y=5V/div DC



TP4, TP8 (GND)

X=50ns/div
Y=5V/div DC

- Fs32kHz or Fs48kHz Tape Playback
(Frequency differs for Fs44.1kHz Tape.)

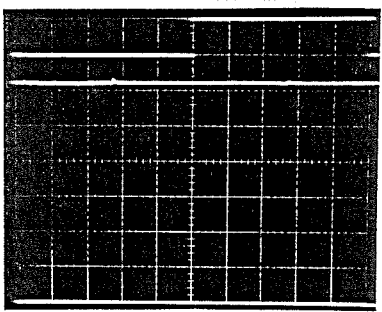


TP1, TP8 (GND)

TP5, TP8 (GND)

X=2ms/div UNCAL
TP5: Y=0.1V/div AC
TP1: Y=5V/div DC

- Fs48kHz Tape Playback



TP1, TP8 (GND)

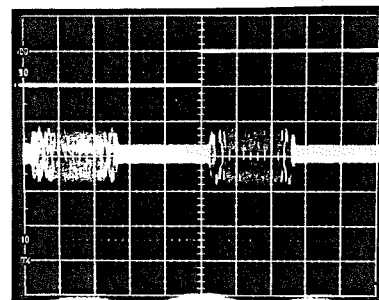
TP7, TP8 (GND)

(0V)

X=2ms/div UNCAL
TP7: Y=1V/div DC
TP1: Y=5V/div DC

- Fs48kHz Tape Playback

Signal Processor P.C.B. Ass'y

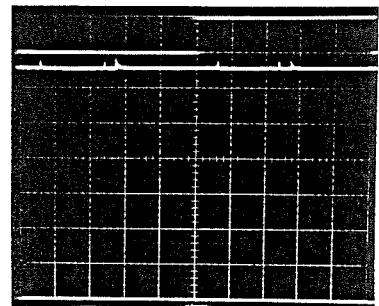


TP14, TP12 (GND)

TP9, TP12 (GND)

X=2ms/div UNCAL
TP9: Y=0.1V/div AC
TP14: Y=5V/div DC

- Fs48kHz Tape Playback



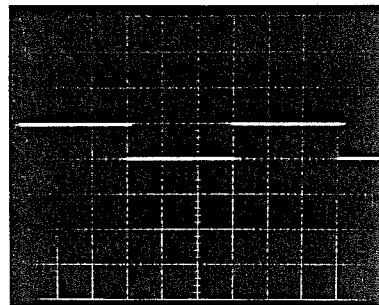
TP14, TP12 (GND)

TP11, TP12 (GND)

(0V)

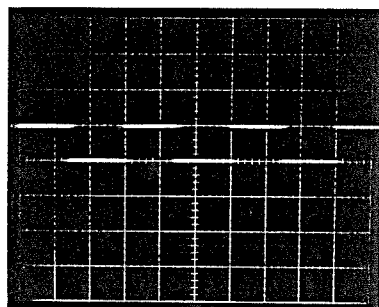
X=2ms/div UNCAL
TP11: Y=1V/div DC
TP14: Y=5V/div DC

- Fs48kHz Tape Playback



TP13, TP12 (GND)

X=10ms/div
Y=5V/div DC

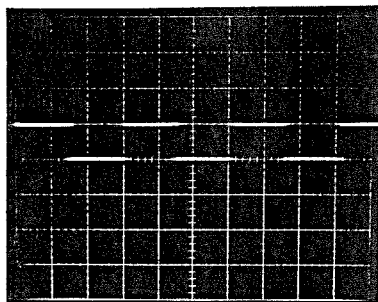


TP15, TP12 (GND)

X=10ms/div
Y=5V/div DC

- Fs48kHz Tape Playback

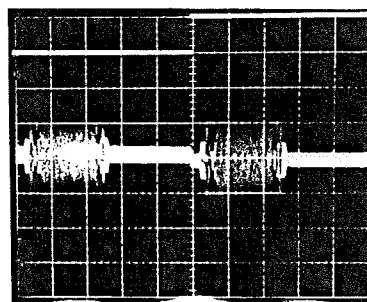
Signal Processor P.C.B. Ass'y



TP16, TP12 (GND)

X=5ms/div
Y=5V/div DC
● Fs48kHz Tape Playback

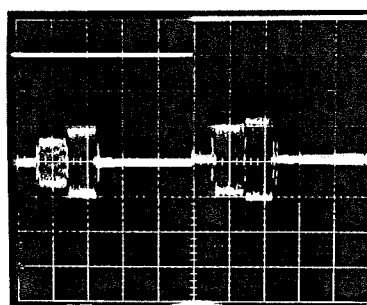
Servo P.C.B. Ass'y



TP5, TP3 (GND)

TP1, TP3 (GND)

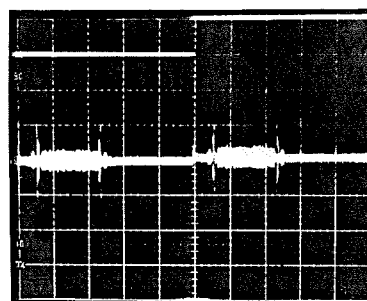
X=2ms/div UNCAL
TP1: Y=0.1V/div AC
TP5: Y=5V/div DC
● Fs48kHz Tape Playback



TP5, TP3 (GND)

TP2, TP3 (GND)

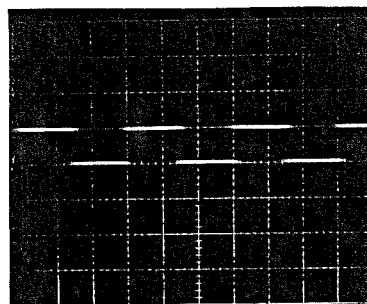
X=2ms/div UNCAL
TP2: Y=0.1V/div AC
TP5: Y=5V/div DC
● TY-7111 Playback
(ATF ON Pin shorted.)



TP5 TP3 (GND)

TP2, TP3 (GND)

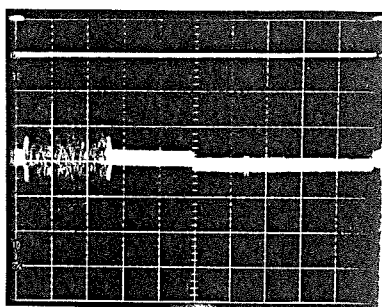
X=2ms/div UNCAL
TP2: Y=0.1V/div AC
TP5: Y=5V/div DC
● Fs48kHz Tape Playback



TP4, TP3 (GND)

X=10ms/div
Y=5V/div DC
● Fs48kHz Tape Playback

Servo P.C.B. Ass'y

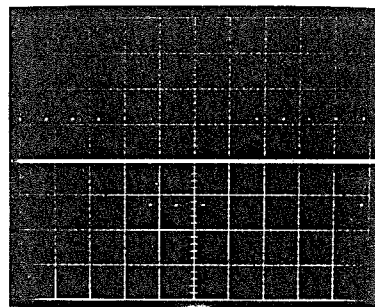


TP6, TP3 (GND)

TP1, TP3 (GND)

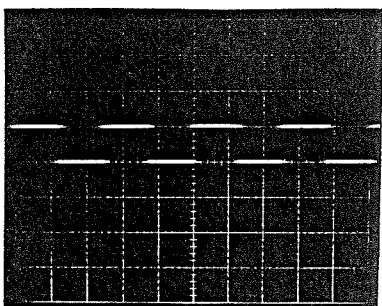
X=2ms/div UNCAL
TP6: Y=5V/div DC
TP1: Y=0.1V/div AC
● TY-7251 Playback
(Test Mode, ATF ON Pin shorted.)

Servo P.C.B. Ass'y



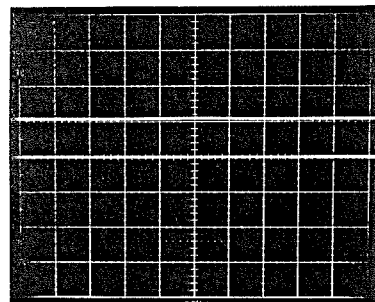
TP11, TP10 (GND)

X=2ms/div
Y=2V/div AC
● Rec./Play



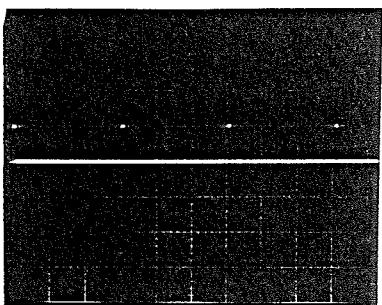
TP7, TP10 (GND)

X=0.5ms/div
Y=5V/div DC
● Fs48kHz Tape Playback



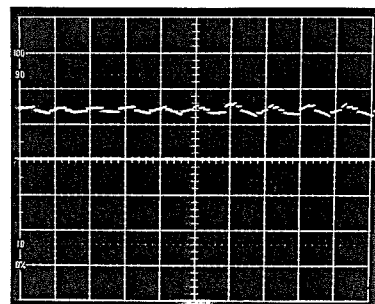
TP12, TP10 (GND)
(0V)

X=1ms/div
Y=1V/div DC
● Fs48kHz Tape Playback



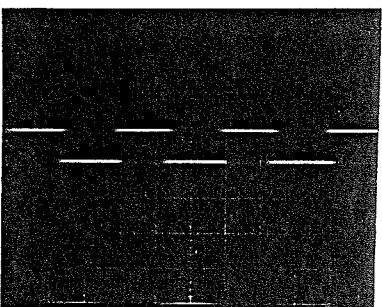
TP8, TP10 (GND)

X=10ms/div
Y=5V/div DC
● Fs48kHz Tape Playback



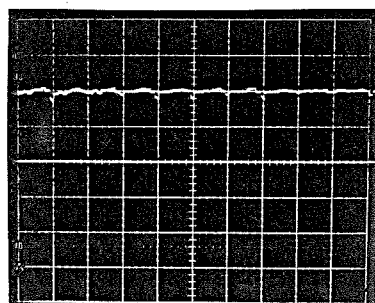
TP13, TP10 (GND)
(0V)

X=10ms/div
Y=0.5V/div DC
● Fs48kHz Tape Playback



TP9, TP10 (GND)

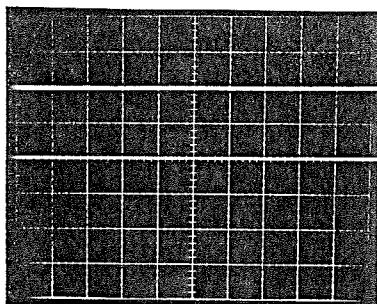
X=0.5ms/div
Y=5V/div
● Fs48kHz Tape Playback



TP14, TP10 (GND)
(0V)

X=10ms/div
Y=1V/div DC
● Fs48kHz Tape Playback

Servo P.C.B. Ass'y

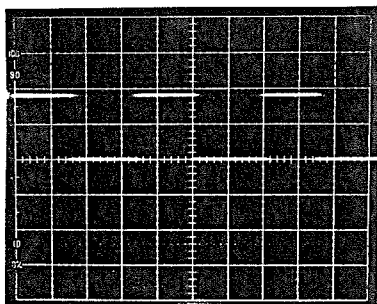


TP15, TP10 (GND)

(0V)

X=2ms/div
Y=0.2V/div DC

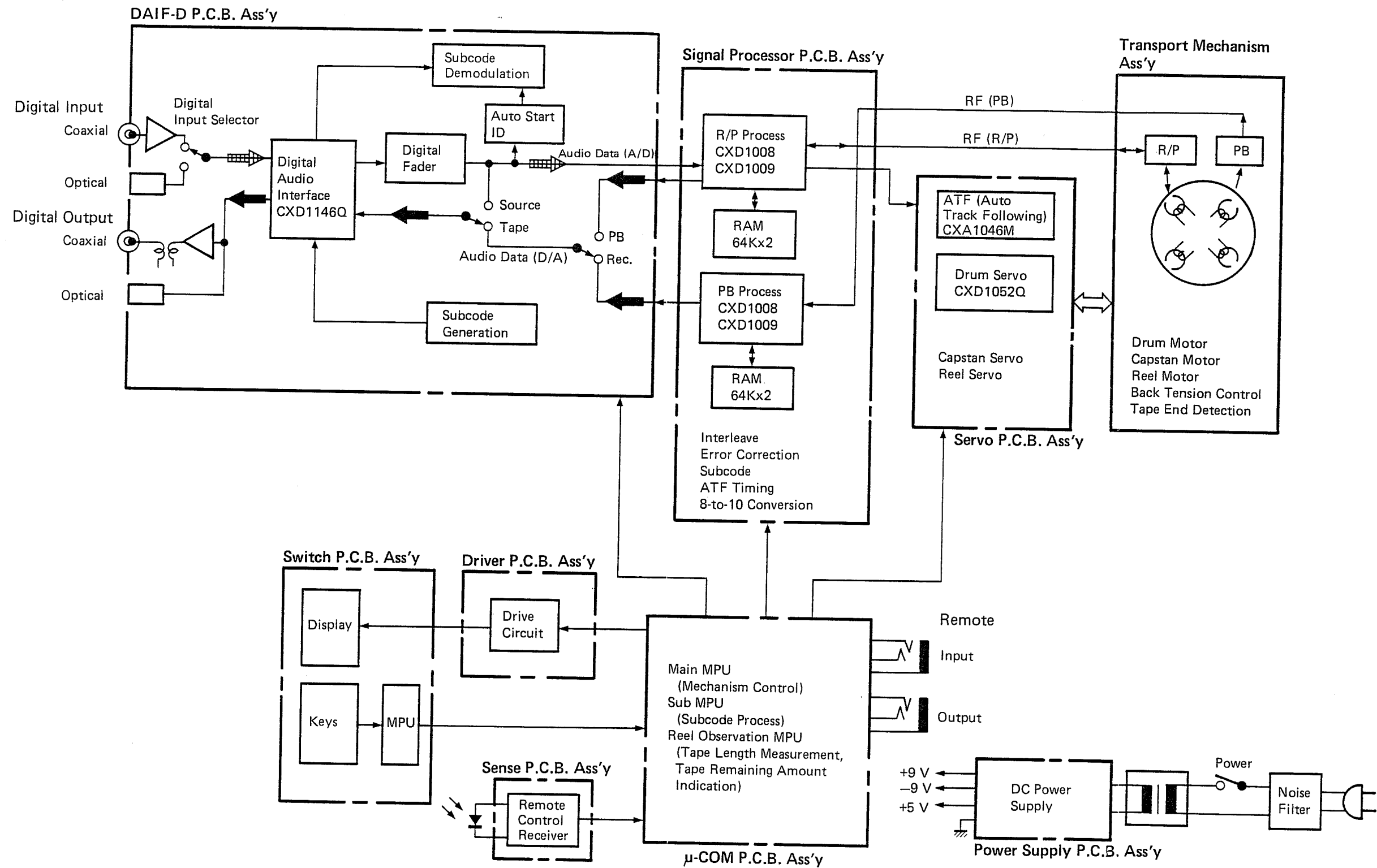
- TS Link Cassette



Pin 6 or 12 of U1
TP10 (GND)

X=0.1s/div
Y=5V/div DC

- Fs48kHz Tape Playback (Center of Tape)
(Frequency varies with modes
(F.Fwd, Rew., High-speed Winding)
and tape position.)



11. ELECTRICAL PARTS LIST

Abbreviation for part name:

TR — Transistor, SiD — Silicon Diode, ZD — Zener Diode, Varicap — Variable Capacitance Diode
 RK — Carbon Resistor, RM — Metal Film Resistor, RF — Fail Safe Type Resistor, RC — Cement Resistor
 CE — Electrolytic Capacitor, CML — Mylar Capacitor, CC — Ceramic Capacitor, CPP — PP Capacitor,
 CMM — Metalized Mylar Capacitor, CSP — Polystyrene Capacitor, C — Mica Capacitor
 CT — Tantalum Capacitor

11.1. Power Switch P.C.B. Ass'y

Ref. No.	Part No.	Description
	BA07515A	Power Switch P.C.B. Ass'y (USA, CAN)
	BA07574A	Power Switch P.C.B. Ass'y (UK, OTR, AUS, EP, SWT)
	BA07569A	Power Switch P.C.B. Ass'y (JPN)
	OB60675A	Power Switch P.C.B.
M401	OB08342A	Spark Killer (ECQ-JC187C) (USA, CAN)
M401	OB08363A	Spark Killer (AU120033) (JPN)
M401	OB90232A	Spark Killer (XE-473) (UK, OTR, AUS, EP, SWT)
S401	OB71006A	Power Switch (SDL1P)
	OE00868A	BT3x8 + Binding (1)
	OE00896A	M3x6 + Binding (2)
	OJ05778A	Power Switch Holder (1)

11.2. Lamp Upper P.C.B. Ass'y

Ref. No.	Part No.	Description
	BA07527A	Lamp Upper P.C.B. Ass'y
	OB60685A	Lamp Upper P.C.B.
PL1U	OB90363A	Lamp 50mA/8V
CN27A	OB84099A	2P S-Post Black

11.3. Lamp Lower P.C.B. Ass'y

Ref. No.	Part No.	Description
	BA07528A	Lamp Lower P.C.B. Ass'y
	OB60686A	Lamp Lower P.C.B.
PL1L	OB90363A	Lamp 50mA/8V
CN27B	OB84099A	2P S-Post Black

11.4. Sense P.C.B. Ass'y

Ref. No.	Part No.	Description
	BA07526A	Sense P.C.B. Ass'y
	OB60684A	Sense P.C.B.
RU691	OB19016A	IC (SBX1610-02) (Remote Receiver Unit)
ED691	OB12641A	LED Umber
R691, 692	OB09177A	RF 47 1/4W J
C691	OB40049A	CE 100u 6.3V
S691	OB07437A	Slide Switch 2-3
S692	OB70010A	Slide Switch 2-2
S693	OB70043A	Tact Switch
CN5	OB83616A	11P Connector Ass'y 230mm
CN27A, 27B	OB83651A	2P Connector Ass'y 60mm

11.5. Power Supply P.C.B. Ass'y

Ref. No.	Part No.	Description
	BA07518A	Power Supply P.C.B. Ass'y (JPN, USA, CAN)
	BA07576A	Power Supply P.C.B. Ass'y (UK, OTR, AUS, EP, SWT)
	OB60676D	Power Supply P.C.B.
U401	OB11610A	IC NJM7909A
U402, 403	OB11105A	IC NJM7805A
U404	OB11609A	IC NJM78M05FA
U405	OB11611A	IC TC4584BP
U406	OB11105A	IC NJM7805A
Q401	OB10022A	FET 2SK246
Q402	OB10270A	TR 2SA770
Q403	OB06316A	TR 2SD882 (P, Q)
Q404	OB06142A	TR 2SC2240 (BL)
Q408, 409	OB06322A	TR 2SC2002 (K, L)
Q410	OB06322A	TR 2SC2002 (K, L)
Q411	OB06452A	TR 2SD1406 (Y)
ZD401	OB12150A	ZD 5.6V RD5.6JSB2
D401, 402	OB12387A	Diode Bridge (RBV402)
D403	OB12387A	Diode Bridge (RBV402)
D404, 405	OB12362A	SiD S5566B
D406	OB12362A	SiD S5566B
D407, 408	OB06398A	SiD 1SS176
D409, 410	OB06398A	SiD 1SS176
D411	OB06398A	SiD 1SS176
D412	OB012362	SiD S5566B
R401	OB24216A	RF 0.22 1/2W J
R402	OB09632A	RK 13 1/6W J
R403	OB09673A	RK 680 1/6W J
R404	OB22264A	RM 2.15K 1/4W F
R405	OB22306A	RM 4.75K 1/4W F
R408, 409	OB09701A	RK 10K 1/6W J
R410	OB09749A	RK 1.0M 1/6W J
R411	OB09701A	RK 10K 1/6W J
R412, 413	OB09693A	RK 4.7K 1/6W J
R414	OB09749A	RK 1.0M 1/6W J
R415	OB09701A	RK 10K 1/6W J
R416	OB09749A	RK 1.0M 1/6W J
R417	OB09701A	RK 10K 1/6W J
R418, 419	OB09693A	RK 4.7K 1/6W J
R420	OB09749A	RK 1.0M 1/6W J
R421, 422	OB09701A	RK 10K 1/6W J
R423	OB09701A	RK 10K 1/6W J
R424	OB09693A	RK 4.7K 1/6W J
R425	OB09659A	RK 180 1/6W J
R426	OB09677A	RK 1.0K 1/6W J
C401, 402	OB41971A	CC 0.10u 50V Z
C403, 404	OB41971A	CC 0.10u 50V Z
C405, 406	OB41971A	CC 0.10u 50V Z
C407, 408	OB41971A	CC 0.10u 50V Z
C409, 410	OB41971A	CC 0.10u 50V Z
C411, 412	OB41971A	CC 0.10u 50V Z
C413, 414	OB40576A	CE 8200u 25V
C415	OB40576A	CE 8200u 25V
C416	OB40575A	CE 6800u 25V
C417, 418	OB40578A	CE 15000u 16V
C420	OB40558A	CE 2.2u 50V
C421	OB09280A	CC 47P 50V J
C422	OB40584A	CE 22u 16V
C423	OB40559A	CE 47u 16V
C424	OB41304A	CML 0.33u 50V J
C425	OB40280A	CT 4.7u 16V M
C426	OB41304A	CML 0.33u 50V J
C427	OB41971A	CC 0.10u 50V Z
C428	OB41304A	CML 0.33u 50V J
C429	OB41971A	CC 0.10u 50V Z
C430	OB41304A	CML 0.33u 50V J
C431	OB41971A	CC 0.10u 50V Z
C432	OB41304A	CML 0.33u 50V J
C434	OB41971A	CC 0.10u 50V Z
C435	OB40360A	CE 1000u 16V

Ref. No.	Part No.	Description
C436	OB41094A	CML 0.01u 50V J
C437	OB41300A	CML 0.15u 50V J
C438	OB41297A	CML 0.082u 50V J
C439	OB40583A	CE 3300u 25V
F401, 402	OB90379A	Fuse 4A/125V (GGS4) (JPN, USA)
F401, 402	OB90387A	Fuse 4A/250V (ES3-4000) (UK, OTR, AUS, EP, SWT)
F403	OB90376A	Fuse 2A/125V (GGS2) (JPN, USA)
F403	OB90384A	Fuse 2A/250V (ES3-2000) (UK, OTR, AUS, EP, SWT)
F404	OB90377A	Fuse 2.5A/125V (GGS2.5) (JPN, USA)
F404	OB90385A	Fuse 2.5A/250V (ES3-2500) (UK, OTR, AUS, EP, SWT)
CN101	OB81255A	10P T-Post White
CN102	OB84018A	14P T-Post White
CN401	OB81574A	7P Post (B7PVH)
	OB90366A	Fuse Clip (FP-217) (8)
	OE03319A	M3x8 + Binding (6)
	OJ05019A	P.C.B. Bushing N (NB-300) (5)
	OJ05812A	Heat Sink (MT-25-BS-AN-0) (3)
	OJ05813A	Heat Sink (DS-25-BS-AN-0) (2)
	OJ05816A	P.C.B. Coilar N (NA-307) (5)
	OJ05927A	Heat Sink (1)

11.6. Switch P.C.B. Ass'y

Ref. No.	Part No.	Description
	BA07524A	Switch P.C.B. Ass'y
	OB60682A	Switch P.C.B.
U601	OB11490A	IC LC6522H-3711
U602, 603	OB11620A	IC TC74HC4094F
U604	OB11620A	IC TC74HC4094F
Q601	OB10058A	TR DTA114ES
D601, 602	OB06398A	SiD 1SS176
D603, 604	OB06398A	SiD 1SS176
D605, 606	OB06398A	SiD 1SS176
D607, 608	OB06398A	SiD 1SS176
ED601	OB12642A	LED Display (SL-6674)
ED602	OB12643A	LED Display (SL-6954)
ED603, 604	OB12641A	LED Umber
ED605, 606	OB12641A	LED Umber
ED607, 608	OB12641A	LED Umber
ED609, 610	OB12641A	LED Umber
ED611, 612	OB12641A	LED Umber
ED613, 614	OB12641A	LED Umber
ED615, 616	OB12641A	LED Umber
ED617, 618	OB12641A	LED Umber
ED619, 620	OB12641A	LED Umber
ED621, 622	OB12641A	LED Umber
ED623, 624	OB12641A	LED Umber
ED625, 626	OB12641A	LED Umber
ED627, 628	OB12641A	LED Umber
ED629, 630	OB12641A	LED Umber
ED631, 632	OB12641A	LED Umber
ED633, 634	OB12641A	LED Umber
ED635, 636	OB12641A	LED Umber
X601	OB92026A	X'Tail 4.0000MHz
R601	OB09749A	RK 1.0M 1/6W J
R602, 603	OB09717A	RK 47K 1/6W J
R604, 605	OB09717A	RK 47K 1/6W J
R606	OB09701A	RK 10K 1/6W J
R607, 608	OB09693A	RK 4.7K 1/6W J
R609, 610	OB09693A	RK 4.7K 1/6W J
R611, 612	OB09693A	RK 4.7K 1/6W J
R613, 614	OB09693A	RK 4.7K 1/6W J
R615, 616	OB09663A	RK 270 1/6W J
R617, 618	OB09663A	RK 270 1/6W J
R619, 620	OB09663A	RK 270 1/6W J
R621, 622	OB09663A	RK 270 1/6W J
R623, 624	OB09663A	RK 270 1/6W J
R625, 626	OB09663A	RK 270 1/6W J
R627, 628	OB09663A	RK 270 1/6W J
R629, 630	OB09663A	RK 270 1/6W J
R631, 632	OB09663A	RK 270 1/6W J
R633, 634	OB09663A	RK 270 1/6W J

Ref. No.	Part No.	Description
R635	OB09663A	RK 270 1/6W J
R636	OB09701A	RK 10K 1/6W J
C601	OB40052A	CE 470u 6.3V
C602	OB41971A	CC 0.10u 50V Z
S601, 602	OB70043A	Tact Switch
S603, 604	OB70043A	Tact Switch
S605, 606	OB70043A	Tact Switch
S607, 608	OB70043A	Tact Switch
S609, 610	OB70043A	Tact Switch
S611, 612	OB70043A	Tact Switch
S613, 614	OB70043A	Tact Switch
S615, 616	OB70043A	Tact Switch
S617, 618	OB70043A	Tact Switch
S619, 620	OB70043A	Tact Switch
S621, 622	OB70043A	Tact Switch
S623, 624	OB70043A	Tact Switch
S625, 626	OB70043A	Tact Switch
S627, 628	OB70043A	Tact Switch
S629, 630	OB70043A	Tact Switch
S631, 632	OB70043A	Tact Switch
S633, 634	OB70043A	Tact Switch
S635, 636	OB70043A	Tact Switch
S637, 638	OB70010A	Slide Switch 2-2
S639	OB07437A	Slide Switch 2-3
CN2	OB83613A	6P Connector Ass'y 170mm
CN5	OB81034A	11P T-Post White
CN12	OB83652A	2P Connector Ass'y 150mm
CN16	OB83630A	12P Connector Ass'y 170mm
CN51A, 52A	OB84002A	FC-Connector 40P
CN53A	OB84004A	FC-Connector 16P
CN103	OB83642A	4P Connector Ass'y 160mm
	OE00859A	BT2.6x6 + Pan (4)
	OE00964A	M3x5 + Binding (4)
	OJ05048A	P.C.B. Spacer (4)

11.7. Driver P.C.B. Ass'y

Ref. No.	Part No.	Description
	BA07525A	Driver P.C.B. Ass'y
	OB60683A	Driver P.C.B.
U651, 652	OB11623A	IC TC74HC574P
U653	OB11623A	IC TC74HC574P
U654, 655	OB11622A	IC UPD4511BAC
U656, 657	OB11622A	IC UPD4511BAC
U658, 659	OB11622A	IC UPD4511BAC
U660, 661	OB11622A	IC UPD4511BAC
U662	OB11622A	IC UPD4511BAC
Q651, 652	OB10030A	TR 2SC1740S
RA651, 652	OB21058A	R-Network 330x8
RA653, 654	OB21058A	R-Network 330x8
RA655, 656	OB21058A	R-Network 330x8
RA657, 658	OB21058A	R-Network 330x8
RA659	OB21058A	R-Network 330x8
R651	OB09661A	RK 220 1/6W J
R652	OB09663A	RK 270 1/6W J
R653, 654	OB09661A	RK 220 1/6W J
R655, 656	OB09661A	RK 220 1/6W J
R657	OB09663A	RK 270 1/6W J
R658, 659	OB09661A	RK 220 1/6W J
R660	OB09661A	RK 220 1/6W J
R661, 662	OB09663A	RK 270 1/6W J
R663, 664	OB09663A	RK 270 1/6W J
R665, 666	OB09663A	RK 270 1/6W J
R667, 668	OB09663A	RK 270 1/6W J
R669, 670	OB09663A	RK 270 1/6W J
R671, 672	OB09663A	RK 270 1/6W J
R673, 674	OB09663A	RK 270 1/6W J
R675	OB09725A	RK 100K 1/6W J
C651	OB40052A	CE 470u 6.3V
C652, 653	OB41971A	CC 0.10u 50V Z
C654, 655	OB41971A	CC 0.10u 50V Z
C656, 657	OB41971A	CC 0.10u 50V Z
C658, 659	OB41971A	CC 0.10u 50V Z
C660, 661	OB41971A	CC 0.10u 50V Z
C662, 663	OB41971A	CC 0.10u 50V Z
C664	OB41971A	CC 0.10u 50V Z
CN3	OB83614A	8P Connector Ass'y 130mm
CN4	OB83615A	9P Connector Ass'y 130mm
CN51B, 52B	OB84001A	B-B Connector 40P
CN53B	OB84003A	B-B Connector 16P
CN105	OB83644A	6P Connector Ass'y 150mm

11.8. Mother P.C.B. Ass'y

Ref. No.	Part No.	Description
	BA07523A	Mother P.C.B. Ass'y
IP901	OB60681B	Mother P.C.B.
CN1	OB11248A	IC ICP-N5
CN2	OB84013A	13P T-Post White
CN3	OB81029A	6P T-Post White
CN4	OB81032A	8P T-Post White
CN12	OB81025A	9P T-Post White
CN13	OB81033A	2P T-Post White
CN14	OB81031A	10P T-Post White
CN15	OB81032A	8P T-Post White
CN16	OB81026A	3P T-Post White
CN101	OB81035A	12P T-Post White
CN102	OB81255A	10P T-Post White
CN103	OB84018A	14P T-Post White
CN104	OB81231A	4P T-Post White
CN105	OB81243A	7P T-Post White
CN200, 201	OB81239A	6P T-Post White
CN202	OB84006A	DIN Connector J100P (XC5B-0121)
	OB84006A	DIN Connector J100P (XC5B-0121)
	OE03502A	Spring Washer 2.6mm (6)
	OE03503A	Nut Hex. M2.6 (6)
	OE03504A	M2.6x8 + Pan (6)

11.9. Signal Processor P.C.B. Ass'y

Ref. No.	Part No.	Description
	BA07637A	Signal Processor P.C.B. Ass'y
	OB60708B	Signal Processor P.C.B.
U501	OB11603A	IC TC74HCU04AF
U502	OB11613A	IC TC74HCU00AF
U503	OB11001A	IC NJM4558M
U504	OB11596A	IC CXD1009Q
U505	OB11597A	IC CXD1008Q
U506, 507	OB11598A	IC LC3664NM-10
U508	OB11603A	IC TC74HCU04AF
U509	OB11001A	IC NJM4558M
U510	OB11596A	IC CXD1009Q
U511	OB11597A	IC CXD1008Q
U512	OB11606A	IC TC74HC123F
U513, 514	OB11604A	IC TC74HC74AF
U515	OB11605A	IC TC74HC86F
U516	OB11602A	IC TC74HC02AF
U517, 518	OB11607A	IC TC74HC161AF
U519	OB11608A	IC TC74HC164AF
U520, 521	OB11598A	IC LC3664NM-10
U522	OB11721A	IC TC74HC04AF
U523	OB11604A	IC TC74HC74AF
U524	OB11606A	IC TC74HC123F
U525	OB11608A	IC TC74HC164AF
U527	OB11602A	IC TC74HC02AF
U528	OB11604A	IC TC74HC74AF
Q501	OB10030A	TR 2SC1740S
Q502	OB10026A	TR 2SA933S
Q503	OB10030A	TR 2SC1740S
Q504	OB10026A	TR 2SA933S
Q505	OB10030A	TR 2SC1740S
Q506	OB10026A	TR 2SA933S
Q507	OB10030A	TR 2SC1740S
Q508	OB10026A	TR 2SA933S
IP501, 502	OB11335A	IC ICP-N15
IP503, 504	OB11725A	IC ICP-N10
D501	OB12639A	SID SVC321
D502	OB06398A	SID 1SS176
D503	OB12639A	SID SVC321
D504	OB06398A	SID 1SS176
D509, 510	OB06398A	SID 1SS176
X501	OB92023A	X'Tal 18.816MHz
X502	OB92025A	X'Tal 24.576MHz
X503	OB92024A	X'Tal 22.5792MHz
L501, 502	OB51331A	Coil 2.6uH
L503	OB51343A	Micro Coil 22uH
L504, 505	OB51344A	Micro Coil 47uH
L506	OB51346A	Micro Coil 8.2uH
L507	OB51344A	Micro Coil 47uH
L508	OB51343A	Micro Coil 22uH
L509	OB51344A	Micro Coil 47uH
L510, 511	OB51344A	Micro Coil 47uH
L512	OB51344A	Micro Coil 47uH

Ref. No.	Part No.	Description
L513	OB51346A	Micro Coil 8.2uH
L514, 515	OB51344A	Micro Coil 47uH
L516, 517	OB51344A	Micro Coil 47uH
L518	OB51343A	Micro Coil 22uH
L523, 524	OB51344A	Micro Coil 47uH
L525	OB51343A	Micro Coil 22uH
VR501	OB32148A	Semi-VR B50K
R501	OB09660A	RK 200 1/6W J
R502	OB09684A	RK 2.0K 1/6W J
R503	OB09660A	RK 200 1/6W J
R504	OB09684A	RK 2.0K 1/6W J
R505	OB09660A	RK 200 1/6W J
R506	OB09684A	RK 2.0K 1/6W J
R507	OB09660A	RK 200 1/6W J
R508	OB09690A	RK 3.6K 1/6W J
R509, 510	OB09693A	RK 4.7K 1/6W J
R511	OB09693A	RK 4.7K 1/6W J
R512	OB09680A	RK 1.3K 1/6W J
R513	OB09687A	RK 2.7K 1/6W J
R514	OB09661A	RK 220 1/6W J
R515	OB09677A	RK 1.0K 1/6W J
R516	OB22248A	RM 1.54K 1/4W F
R517	OB09658A	RK 160 1/6W J
R518	OB09685A	RK 2.2K 1/6W J
R519	OB22343A	RM 10K 1/4W F
R520	OB09677A	RK 1.0K 1/6W J
R521	OB09685A	RK 2.2K 1/6W J
R522	OB22343A	RM 10K 1/4W F
R523	OB09689A	RK 3.3K 1/6W J
R524, 525	OB09698A	RK 7.5K 1/6W J
R526, 527	OB09701A	RK 10K 1/6W J
R528	OB09705A	RK 15K 1/6W J
R529	OB09701A	RK 10K 1/6W J
R530	OB09725A	RK 100K 1/6W J
R531	OB09701A	RK 10K 1/6W J
R532, 533	OB09725A	RK 100K 1/6W J
R534	OB22248A	RM 1.54K 1/4W F
R535	OB09660A	RK 200 1/6W J
R536	OB09684A	RK 2.0K 1/6W J
R537	OB09660A	RK 200 1/6W J
R538	OB09684A	RK 2.0K 1/6W J
R539	OB09660A	RK 200 1/6W J
R540	OB09684A	RK 2.0K 1/6W J
R541	OB09660A	RK 200 1/6W J
R542	OB09690A	RK 3.6K 1/6W J
R543	OB09701A	RK 10K 1/6W J
R544	OB09687A	RK 2.7K 1/6W J
R545	OB09661A	RK 220 1/6W J
R546	OB09680A	RK 1.3K 1/6W J
R547, 548	OB09681A	RK 1.5K 1/6W J
R549	OB09667A	RK 1.0K 1/6W J
R550	OB09658A	RK 160 1/6W J
R551	OB09685A	RK 2.2K 1/6W J
R552	OB09701A	RK 10K 1/6W J
R553	OB09677A	RK 1.0K 1/6W J
R554	OB09685A	RK 2.2K 1/6W J
R555	OB09701A	RK 10K 1/6W J
R556	OB09689A	RK 3.3K 1/6W J
R557, 558	OB09698A	RK 7.5K 1/6W J
R559, 560	OB09701A	RK 10K 1/6W J
R561	OB09705A	RK 15K 1/6W J
R562	OB09701A	RK 10K 1/6W J
R563	OB09693A	RK 4.7K 1/6W J
R564, 565	OB09701A	RK 10K 1/6W J
R566	OB09713A	RK 33K 1/6W J
R567	OB09701A	RK 10K 1/6W J
R570	OB09725A	RK 100K 1/6W J
R571	OB09705A	RK 15K 1/6W J
R572	OB09725A	RK 100K 1/6W J
R574	OB09741A	RK 470K 1/6W J
R575, 576	OB09701A	RK 10K 1/6W J
VC501, 502	OB42018A	Trimmer Capacitor 20P
VC503	OB42018A	Trimmer Capacitor 20P
C501, 502	OB40556A	CE 470u 10V (LN)
C503	OB40556A	CE 470u 10V (LN)
C504, 505	OB41617A	CC 0.1u 25V Z
C506, 507	OB41617A	CC 0.1u 25V Z
C508, 509	OB41094A	CML 0.01u 50V J
C510	OB41094A	CML 0.01u 50V J
C511	OB40555A	CE 100u 10V (LN)
C512	OB41617A	CC 0.1u 25V Z
C513, 514	OB41944A	CC 1000P 50V K
C515	OB41944A	CC 1000P 50V K

Ref. No.	Part No.	Description
C516	OB09077A	CC 10P 50V F
C517	OB05905A	CC 5P 50V C
C518	OB01802A	CML 2200P 50V J
C519, 520	OB05892A	CC 100P 50V K
C521	OB05550A	CML 1000P 50V J
C522	OB09281A	CC 150P 50V K
C523	OB40544A	CE 47u 16V
C524	OB41617A	CC 0.1u 25V Z
C525, 526	OB01802A	CML 2200P 50V J
C527	OB40544A	CE 47u 16V
C528	OB41617A	CC 0.1u 25V Z
C529	OB05582A	CML 0.022u 50V J
C530	OB41617A	CC 0.1u 25V Z
C531	OB40555A	CE 100u 10V (LN)
C532	OB05905A	CC 5P 50V C
C533	OB09077A	CC 10P 50V F
C534	OB05905A	CC 5P 50V C
C535	OB09077A	CC 10P 50V F
C536, 537	OB41094A	CML 0.01u 50V J
C538	OB41094A	CML 0.01u 50V J
C539	OB01802A	CML 2200P 50V J
C540, 541	OB05892A	CC 100P 50V K
C542	OB05550A	CML 1000P 50V J
C543	OB09281A	CC 150P 50V K
C544	OB40544A	CE 47u 16V
C545	OB41617A	CC 0.1u 25V Z
C546, 547	OB01802A	CML 2200P 50V J
C548	OB40544A	CE 47u 16V
C549	OB41617A	CC 0.1u 25V Z
C550	OB05582A	CML 0.022u 50V J
C551	OB41944A	CC 1000P 50V K
C552	OB41617A	CC 0.1u 25V Z
C553	OB40555A	CE 100u 10V (LN)
C554	OB41617A	CC 0.1u 25V Z
C556	OB40544A	CE 47u 16V
C557, 558	OB41617A	CC 0.1u 25V Z
C559	OB05892A	CC 100P 50V K
C560	OB41296A	CML 0.068u 50V J
C561, 562	OB41617A	CC 0.1u 25V Z
C563, 564	OB41617A	CC 0.1u 25V Z
C565	OB41617A	CC 0.1u 25V Z
C566	OB40555A	CE 100u 10V (LN)
C567, 568	OB41617A	CC 0.1u 25V Z
C569, 570	OB41617A	CC 0.1u 25V Z
C571, 572	OB41617A	CC 0.1u 25V Z
C573	OB40555A	CE 100u 10V (LN)
C575	OB41617A	CC 0.1u 25V Z
C576	OB40544A	CE 47u 16V
C577, 578	OB41617A	CC 0.1u 25V Z
C579	OB40544A	CE 47u 16V
C580	OB41094A	CML 0.01u 50V J
C581	OB05892A	CC 100P 50V K
C582	OB40556A	CE 470u 10V (LN)
C583	OB09933A	CE 2.2u 50V (LN)
C584	OB41071A	CC 100P 50V J
TP1, 2	OB81734A	Check-Pin
TP3, 4	OB81734A	Check-Pin
TP5	OB81734A	Check-Pin
TP7, 8	OB81734A	Check-Pin
TP9	OB81734A	Check-Pin
TP11, 12	OB81734A	Check-Pin
TP13, 14	OB81734A	Check-Pin
TP15, 16	OB81734A	Check-Pin
TP101, 102	OB84013A	13P T-Post White
CN1	OB84013A	13P T-Post White
CN8	OB81034A	11P T-Post White
CN9	OB81029A	6P T-Post White
CN11	OB81035A	12P T-Post White
CN13	OB81033A	10P T-Post White
CN14	OB81031A	8P T-Post White
CN15	OB81026A	3P T-Post White
CN17	OB81029A	6P T-Post White
CN104	OB81030A	7P T-Post White
OJ05019A	P. C. B. Bushing T (TB-300) (4)	
OJ05816A	P. C. B. Coller (4)	

11.10. DAIF-D P.C.B. Ass'y

Ref. No.	Part No.	Description
	HA05583A	DAIF-D P. C. B. Ass'y
	OB60680D	DAIF-D P. C. B.
U701	OB11554A	IC CX23065
U702	OB11644A	IC TC74HC244AP
U703	OB11558A	IC TC74HC08AP
U704	OB11560A	IC TC74HC32AP
U705	OB11557A	IC TC74HC04AP
U706	OB11558A	IC TC74HC08AP
U707	OB11643A	IC TC74HC157P
U708	OB11652A	IC YM3615B
U709	OB11555A	IC CXD1146Q
U710	OB11645A	IC TC74HC595AP
U711, 712	OB11561A	IC TC74HC74AP
U713	OB11559A	IC TC74HC161AP
U714	OB11647A	IC TC74HC123P
U715	OB11557A	IC TC74HC04AP
U716	OB11558A	IC TC74HC08AP
U717	OB11560A	IC TC74HC32AP
U718	OB11651A	IC TC74HC86P
U719	OB11558A	IC TC74HC08AP
U720, 721	OB11561A	IC TC74HC74AP
U722, 723	OB11559A	IC TC74HC161AP
U724, 725	OB11645A	IC TC74HC595AP
U726, 727	OB11645A	IC TC74HC595AP
U728	OB11558A	IC TC74HC08AP
U729	OB11557A	IC TC74HC04AP
U730	OB11560A	IC TC74HC32AP
U731	OB11558A	IC TC74HC08AP
U732, 733	OB11643A	IC TC74HC157P
U734	OB11623A	IC TC74HC574P
U735	OB11648A	IC TC74HC125P
U736	OB11557A	IC TC74HC04AP
U737	OB11558A	IC TC74HC08AP
U738	OB11557A	IC TC74HC04AP
U739	OB11650A	IC TC74HC73AP
U740, 741	OB11559A	IC TC74HC161AP
U742, 743	OB11561A	IC TC74HC74AP
U744	OB11561A	IC TC74HC74AP
U745, 746	OB11646A	IC TC74HC597AP
U747, 748	OB11646A	IC TC74HC597AP
U749	OB11646A	IC TC74HC597AP
U750	OB11651A	IC TC74HC86P
U751	OB11558A	IC TC74HC08AP
U752	OB11557A	IC TC74HC04AP
U753	OB11645A	IC TC74HC595AP
U754, 755	OB11559A	IC TC74HC161AP
U756, 757	OB11645A	IC TC74HC595AP
U758	OB11561A	IC TC74HC74AP
U759, 760	OB11558A	IC TC74HC08AP
U761, 762	OB11557A	IC TC74HC04AP
U763	OB11649A	IC TC74HC30P
U764	OB11559A	IC TC74HC161AP
U765	OB11623A	IC TC74HC574P
U766	OB11646A	IC TC74HC597AP
U767, 768	OB11561A	IC TC74HC74AP
U769, 770	OB11561A	IC TC74HC74AP
U771	OB11568A	IC TC74HC04AP
U772	OB11558A	IC TC74HC08AP
U773	OB11651A	IC TC74HC86P
U774	OB11560A	IC TC74HC32AP
U775, 776	OB11651A	IC TC74HC86P
U777	OB11557A	IC TC74HC04AP
U778	OB11558A	IC TC74HC08AP
U779, 780	OB11568A	IC TC74HC04AP
U781	OB11558A	IC TC74HC08AP
U782	OB11560A	IC TC74HC32AP
U783	OB10274A	Tos Link 174 (TOTX174)
U784	OB10273A	Tos Link 174 (TORX174)
U785	OB11561A	IC TC74HC74AP
U787, 788	OB11623A	IC TC74HC574P
U789, 790	OB11651A	IC TC74HC86P
U791	OB11651A	IC TC74HC86P
U792, 793	OB11560A	IC TC74HC32AP
U794	OB11557A	IC TC74HC04AP
U795	OB11558A	IC TC74HC08AP
U796, 797	OB11561A	IC TC74HC74AP
U798	OB11651A	IC TC74HC86P
U799	OB11647A	IC TC74HC123P
U800	OB11564A	IC TC74HC00AP
U801	OB11557A	IC TC74HC04AP

Ref. No.	Part No.	Description		
U802	OB11564A	IC	TC74HC00AP	
U803	OB11561A	IC	TC74HC74AP	
U804, 805	OB11563A	IC	LA3373	
Q701	OB10060A	TR	DTA143ES	
Q801, 802	OB10030A	TR	2SC1740S	
Q803	OB10026A	TR	2SA933S	
Q804, 805	OB10030A	TR	2SC1740S	
Q806	OB10236A	TR	2SC1923 (Y)	
Q807	OB10026A	TR	2SA933S	
Q808	OB10127A	FET	2SK241 (GR)	
Q809	OB01600A	FET	2SK30 (Y)	
Q810	OB10030A	TR	2SC1740S	
D703, 704	OB06398A	SiD	1SS176	
D800, 801	OB06398A	SiD	1SS176	
D802, 803	OB06398A	SiD	1SS176	
D804, 805	OB06398A	SiD	1SS176	
D806, 807	OB12645A	SiD	HSM2694	
D809	OB12644A	Varicap	FC54-5	
X800	OB92030A	X'Tal	24.576MHz	
X801	OB92028A	X'Tal	16.384MHz	
X802	OB92029A	X'Tal	22.579MHz	
T701	OB51303A	Mini Transformer		
L701	OB51187A	Micro Coil	220uH	
L703	OB51040A	Micro Coil	1.0uH	
L704	OB51122A	Micro Coil	47uH	
L800	OB51108A	Micro Coil	3.3uH	
L801, 802	OB51108A	Micro Coil	3.3uH	
L803, 804	OB51108A	Micro Coil	3.3uH	
VR800, 801	OB32021A	Semi-VR	4.7k	
R710	OB09725A	RK	100K	1/6W J
R711	OB09745A	RK	680K	1/6W J
R712	OB09677A	RK	1.0K	1/6W J
R713	OB09741A	RK	470K	1/6W J
R716, 717	OB09677A	RK	1.0K	1/6W J
R718	OB09650A	RK	75	1/6W J
R719	OB09699A	RK	8.2K	1/6W J
R720	OB09685A	RK	2.2K	1/6W J
R721	OB09650A	RK	75	1/6W J
R722	OB09677A	RK	1.0K	1/6W J
R723	OB09701A	RK	10K	1/6W J
R724	OB09717A	RK	47K	1/6W J
R725	OB09677A	RK	1.0K	1/6W J
R726	OB09717A	RK	47K	1/6W J
R730	OB09725A	RK	100K	1/6W J
R800	OB09699A	RK	8.2K	1/6W J
R801	OB09703A	RK	12K	1/6W J
R802	OB09709A	RK	22K	1/6W J
R803	OB09737A	RK	330K	1/6W J
R804	OB09709A	RK	22K	1/6W J
R805	OB09737A	RK	330K	1/6W J
R806	OB09747A	RK	320K	1/6W J
R807, 808	OB09737A	RK	330K	1/6W J
R809, 810	OB09693A	RK	4.7K	1/6W J
R811	OB09689A	RK	3.3K	1/6W J
R812	OB09707A	RK	18K	1/6W J
R813	OB09695A	RK	5.6K	1/6W J
R814	OB09689A	RK	3.3K	1/6W J
R815, 816	OB09677A	RK	1.0K	1/6W J
R817	OB09677A	RK	1.0K	1/6W J
R818	OB09661A	RK	220	1/6W J
R819	OB09693A	RK	4.7K	1/6W J
R820	OB09719A	RK	56K	1/6W J
R821	OB09696A	RK	6.2K	1/6W J
R822	OB09689A	RK	3.3K	1/6W J
R823, 824	OB09695A	RK	5.6K	1/6W J
R825	OB09685A	RK	2.2K	1/6W J
R826	OB24002A	RF	47	1W J
R827	OB09719A	RK	56K	1/6W J
R828	OB09702A	RK	11K	1/6W J
R829	OB09689A	RK	3.3K	1/6W J
R830	OB09697A	RK	6.8K	1/6W J
R831	OB09703A	RK	12K	1/6W J
R832, 833	OB09695A	RK	5.6K	1/6W J
R834	OB09685A	RK	2.2K	1/6W J
R835	OB24002A	RK	47	1W J
R836	OB09693A	RK	4.7K	1/6W J
R837	OB09679A	RK	1.2K	1/6W J
R838	OB09695A	RK	5.6K	1/6W J
R839	OB09693A	RK	4.7K	1/6W J
R840, 841	OB09701A	RK	10K	1/6W J
R842	OB09695A	RK	5.6K	1/6W J
R843, 844	OB09701A	RK	10K	1/6W J
R845	OB09695A	RK	5.6K	1/6W J

Ref. No.	Part No.	Description		
R846	OB09701A	RK	10K	1/6W J
R847	OB09725A	RK	100K	1/6W J
R848	OB09677A	RK	1.0K	1/6W J
R849	OB09629A	RK	10	1/6W J
R850	OB09685A	RK	2.2K	1/6W J
R851	OB09701A	RK	10K	1/6W J
R852	OB09685A	RK	2.2K	1/6W J
R853	OB09681A	RK	1.5K	1/6W J
R854	OB09695A	RK	5.6K	1/6W J
R855	OB09677A	RK	1.0K	1/6W J
R856	OB09747A	RK	820K	1/6W J
R857	OB01679A	RK	100	1/4W J
R858	OB09701A	RK	10K	1/6W J
C701	OB40052A	CE	470u	6.3V
C702, 703	OB41971A	CC	0.10u	50V Z
C704, 705	OB41971A	CC	0.10u	50V Z
C706, 707	OB41971A	CC	0.10u	50V Z
C708, 709	OB41971A	CC	0.10u	50V Z
C710	OB41971A	CC	0.10u	50V Z
C711	OB09223A	CE	1.0u	50V (LN)
C713, 714	OB01862A	CE	22u	16V
C715	OB40564A	CE	100u	25V (LN)
C716	OB09292A	CC	0.10u	50V Z
C717	OB40566A	CE	10u	25V (LN)
C718	OB09292A	CC	0.10u	50V Z
C719, 720	OB41971A	CC	0.10u	50V Z
C721	OB05550A	CML	1000P	50V J
C722	OB05681A	CML	0.01u	50V J
C723, 724	OB41971A	CC	0.10u	50V Z
C725, 726	OB41971A	CC	0.10u	50V Z
C727, 728	OB41971A	CC	0.10u	50V Z
C729, 730	OB41971A	CC	0.10u	50V Z
C731, 732	OB41971A	CC	0.10u	50V Z
C733, 734	OB41971A	CC	0.10u	50V Z
C735, 736	OB41971A	CC	0.10u	50V Z
C737, 738	OB41971A	CC	0.10u	50V Z
C739, 740	OB41971A	CC	0.10u	50V Z
C741, 742	OB41971A	CC	0.10u	50V Z
C743, 744	OB41971A	CC	0.10u	50V Z
C745, 746	OB41971A	CC	0.10u	50V Z
C747, 748	OB41971A	CC	0.10u	50V Z
C749, 750	OB41971A	CC	0.10u	50V Z
C751, 752	OB41971A	CC	0.10u	50V Z
C753, 754	OB41971A	CC	0.10u	50V Z
C755, 756	OB41971A	CC	0.10u	50V Z
C757, 758	OB41971A	CC	0.10u	50V Z
C759, 760	OB41971A	CC	0.10u	50V Z
C761, 762	OB41971A	CC	0.10u	50V Z
C763, 764	OB41971A	CC	0.10u	50V Z
C765, 766	OB41971A	CC	0.10u	50V Z
C767, 768	OB41971A	CC	0.10u	50V Z
C769	OB41971A	CC	0.10u	50V Z
C770	OB40025A	CE	0.47u	50V
C780	OB41971A	CC	0.10u	50V Z
C800	OB41976A	CC	33P	50V J
C801	OB09993A	CML	820P	50V J
C802	OB41976A	CC	33P	50V J
C803	OB41977A	CC	39P	50V J
C804, 805	OB41071A	CC	100P	50V J
C806	OB41071A	CC	100P	50V J
C807	OB41299A	CML	0.12u	50V J
C808	OB41959A	CC	0.01u	50V Z
C809, 810	OB09394A	CE	0.15u	50V (LN)
C811	OB01802A	CML	2200P	50V J
C812	OB01405A	CE	1.0u	50V
C813	OB01804A	CML	3900P	50V J
C814	OB01802A	CML	2200P	50V J
C815	OB41980A	CML	1500P	50V J
C816	OB09332A	CE	2.2u	50V (LN)
C817, 818	OB09327A	CE	0.33u	50V (LN)
C819	OB01400A	CE	100u	16V
C820	OB40025A	CE	0.47u	50V
C821	OB01403A	CE	47u	16V
C822	OB01405A	CE	1.0u	50V
C823	OB01804A	CML	3900P	50V J
C824	OB01802A	CML	2200P	50V J
C825	OB41980A	CML	1500P	50V J
C826	OB09332A	CE	2.2u	50V (LN)
C827, 828	OB09327A	CE	0.33u	50V (LN)
C829	OB01400A	CE	100u	16V
C830	OB40025A	CE	0.47u	50V
C831	OB01403A	CE	47u	16V
C832	OB41963A	CC	0.022u	50V Z

Ref. No.	Part No.	Description
C833	OB41979A	CC 82P 50V J
C834	OB41978A	CC 68P 50V J
C835	OB41976A	CC 33P 50V J
C836, 837	OB41977A	CC 39P 50V J
C838	OB41975A	CC 10P 50V D
C839	OB01403A	CE 47u 16V
C840	OB41299A	CML 0.12u 50V J
C841	OB01405A	CE 1.0u 50V
C842	OB41963A	CC 0.022u 50V Z
C843	OB01412A	CE 10u 16V
C844, 845	OB41963A	CC 0.022u 50V Z
C846	OB01403A	CE 47u 16V
C847, 848	OB41963A	CC 0.022u 50V Z
C850	OB05681A	CML 0.01u 50V J
C851	OB01402A	CE 4.7u 25V
C852, 853	OB40052A	CE 470u 6.3V
C854	OB09292A	CC 0.10u 50V Z
C855	OB40052A	CE 470u 6.3V
C856	OB09292A	CC 0.10u 50V Z
S701	OB70146A	Slide Switch 2-2
TP1, 2	OB81734A	Check-Pin
TP3, 4	OB81734A	Check-Pin
PJ701, 702	OB81998A	1P Pin Jack
CN200	OB84005A	DIN Connector P100P (XC5A-0122)
	OE03502A	Washer 2.6mm (Spring) (2)
	OE03503A	Nut Hex. 2.6mm (2)
	OE03523A	M2.6x10 + Pan (2)
	OH05458C	DAIF Panel 101 (1)
	OJ05953A	Pin Jack Ground Plate (2)
	OE03526A	BT3x6 + Binding (4)
	OE03030A	M3x6 + Binding (Nickel) (3)

11.11. Servo P.C.B. Ass'y

Ref. No.	Part No.	Description
	HA05719A	Servo P.C.B. Ass'y
	OB60710C	Servo P.C.B.
U1	OB06270A	IC TC4069UBP
U2	OB06317A	IC UPD4030BC
U3	OB11493A	IC TC4538BP
U4	OB06124B	IC NJM4558D
U5	OB06169A	IC TC4066BP
U6	OB06124B	IC NJM4558D
U7	OB06270A	IC TC4069UBP
U8	OB06302A	IC TC4001
U9	OB11585A	IC TC4073BP
U10	OB11149A	IC TC4081 BP
U11	OB06302A	IC TC4001
U12	OB06169A	IC TC4066BP
U13	OB06308A	IC TC4011BP
U15	OB11584A	IC TC4052BP
U16	OB11191A	IC UPD6326C
U17, 18	OB06124B	IC NJM4558D
U19, 20	OB06124B	IC NJM4558D
U23	OB11580A	IC CX1046M
U24	OB11581A	IC CXD1052Q
U25, 26	OB06124B	IC NJM4558D
U27	OB11255A	IC MJM2903D
U28	OB11651A	IC TC74HC86P
U29	OB11561A	IC TC74HC74AP
U30	OB11582A	IC TC4024BP
U31	OB11146A	IC TC4053BP
U32	OB06169A	IC TC4066BP
U33	OB11583A	IC TC4028BP
U34	OB11584A	IC TC4052BP
U35	OB11240A	IC NJM78L05A
U36, 37	OB06124B	IC NJM4558D
U38	OB06124B	IC NJM4558D
U39	OB11255A	IC NJM2903D
U40, 41	OB11559A	IC TC74HC161AP
U42, 43	OB11559A	IC TC74HC161AP
U44	OB11564A	IC TC74HC00AP
U45	OB06215A	IC TC4049BP
U46	OB06169A	IC TC4066BP
U47	OB11557A	IC TC74HC04AP
U48	OB11726A	IC TC74HC02AP
U49	OB11558A	IC TC74HC08AP
U50	OB11255A	IC NJM2903D
U51	OB11240A	IC NJM78L05A
U52	OB11493A	IC TC4538BP
U53	OB11146A	IC TC4053BP

Ref. No.	Part No.	Description
U54, 55	OB11582A	IC TC4024BP
U56	OB11579A	IC CXD20084
U57	OB11255A	IC NJM2903D
Q1, 2	OB10039A	TR 2SC1740S (SE)
Q3, 4	OB10068A	TR DTC114ES
Q5	OB10068A	TR DTA114ES
Q6, 7	OB10068A	TR DTC114ES
Q8	OB10039A	TR 2SC1740S (SE)
Q9, 10	OB06316A	TR 2SD882 (P, Q)
Q11	OB06451A	TR 2SB1015 (Y)
Q12	OB10068A	TR DTC114ES
Q14, 15	OB10062A	TR DTC144ES
Q16, 17	OB10062A	TR DTC144ES
Q18	OB10039A	TR 2SC1740S (SE)
Q19	OB10029A	TR 2SA933S (S)
Q20	OB10039A	TR 2SC1740S (SE)
Q21	OB10062A	TR DTC144ES
Q22	OB10058A	TR DTA114ES
Q23	OB10039A	TR 2SC1740S (SE)
Q24	OB06051A	TR 2SA683
Q25, 26	OB10039A	TR 2SC1740S (SE)
Q27	OB10039A	TR 2SC1740S (SE)
Q28	OB10053A	TR DTA144ES
Q29	OB10062A	TR DTC144ES
Q30	OB06303A	TR 2SB772 (P, Q)
Q31, 32	OB06451A	TR 2SB1015 (Y)
Q33, 34	OB10062A	TR DTC144ES
Q35	OB10062A	TR DTC144ES
Q36	OB10058A	TR DTA114ES
Q37, 38	OB10068A	TR DTC114ES
Q39	OB10058A	TR DTA114ES
Q40, 41	OB10068A	TR DTC114ES
Q42	OB10125A	TR 2SC2259 (F, G, H)
Q43	OB10062A	TR DTC144ES
Q44, 45	OB10068A	TR DTC114ES
Q46	OB10068A	TR DTC114ES
Q47	OB06316A	TR 2SD882 (P, Q)
Q48	OB06303A	TR 2SB772 (P, Q)
Q49	OB10068A	TR DTC114ES
Q50	OB10058A	TR DTA114ES
Q51	OB06316A	TR 2SD882 (P, Q)
Q52	OB10039A	TR 2SC1740S (SE)
Q53	OB10029A	TR 2SA933S (S)
Q54	OB10068A	TR DTC114ES
Q55	OB10055A	TR DTA124ES
IP1	OB11640A	IC ICP-N38 1.5A
IP2	OB11639A	IC ICP-N25 1.0A
IP3	OB11638A	IC ICP-N20 0.8A
IP4, 5	OB11248A	IC ICP-N5
IP6, 7	OB11638A	IC ICP-N20
SCR1	OB12667A	SCR SF3D41
ZD1	OB12154A	ZD 6.2V B3
ED23	OB12275A	LED SLR-34VR3
ED24	OB12637A	LED SLR-34YY3F (YEL)
ED26	OB12275A	LED SLR-34VR3
ED27	OB12638A	LED SLR-34DU3F (ORN)
ED28	OB12636A	LED SLR-34MG3F (GRN)
ED35	OB12636A	SiD SLR-34MG3F (GRN)
ED36	OB12275A	LED SLR-34VR3
ED40	OB12275A	LED SLR-34VR3
ED41	OB12636A	LED SLR-34MG3F (GRN)
D1, 2	OB06398A	SiD 1SS176
D3, 4	OB06398A	SiD 1SS176
D5	OB06398A	SiD 1SS176
D6, 7	OB12362A	SiD S5566B
D8	OB06398A	SiD 1SS176
D9, 10	OB06398A	SiD 1SS176
D11, 12	OB06398A	SiD 1SS176
D13, 14	OB06398A	SiD 1SS176
D15, 16	OB06398A	SiD 1SS176
D17, 18	OB06398A	SiD 1SS176
D19, 20	OB06398A	SiD 1SS176
D21, 22	OB06398A	SiD 1SS176
D25	OB06398A	SiD 1SS176
D29, 30	OB06398A	SiD 1SS176
D33, 34	OB06398A	SiD 1SS176
D37	OB06398A	SiD 1SS176
D42	OB06398A	SiD 1SS176
D43, 44	OB06398A	SiD 1SS176
D45, 46	OB06398A	SiD 1SS176
D47, 48	OB06398A	SiD 1SS176
D49, 50	OB06398A	SiD 1SS176
D51	OB06398A	SiD 1SS176

Ref. No.	Part No.	Description		
D52	OB06398A	SiD ISS176		
D54, 55	OB06398A	SiD ISS176		
L2, 3	OB51183A	Coil 100uH		
L4, 5	OB51183A	Coil 100uH		
L6, 7	OB51183A	Coil 100uH		
L8, 9	OB51183A	Coil 100uH		
VR1, 2	OB32146A	Semi-VR 20K		
VR3	OB32146A	Semi-VR 20K		
VR4	OB32151A	Semi-VR 500K		
VR5	OB32145A	Semi-VR 10K		
VR6, 7	OB32149A	Semi-VR 100K		
VR8, 9	OB32144A	Semi-VR 2K		
VR10	OB32143A	Semi-VR 1K		
VR11	OB32142A	Semi-VR 500		
VR12, 13	OB32145A	Semi-VR 10K		
VR14	OB32149A	Semi-VR 100K		
R1	OB09659A	RK 180	1/6W	J
R2	OB09719A	RK 56K	1/6W	J
R3	OB09701A	RK 10K	1/6W	J
R4	OB09719A	RK 56K	1/6W	J
R5	OB09701A	RK 10K	1/6W	J
R6, 7	OB09725A	RK 100K	1/6W	J
R8, 9	OB09743A	RK 560K	1/6W	J
R10, 11	OB09725A	RK 100K	1/6W	J
R12, 13	OB09749A	RK 1.0M	1/6W	J
R14	OB09701A	RK 10K	1/6W	J
R15	OB09701A	RK 10K	1/6W	J
R16, 17	OB09691A	RK 3.9K	1/6W	J
R18, 19	OB22439A	RM 68.1K	1/4W	F
R20	OB22319A	RM 6.19K	1/4W	F
R21	OB09733A	RK 220K	1/6W	J
R22	OB22319A	RM 6.19K	1/4W	F
R23, 24	OB22304A	RM 4.64K	1/4W	F
R25, 26	OB09733A	RK 220K	1/6W	J
R27	OB09733A	RK 220K	1/6W	J
R28, 29	OB09709A	RK 22K	1/6W	J
R30	OB09725A	RK 100K	1/6W	J
R31, 32	OB09701A	RK 10K	1/6W	J
R33	OB09661A	RK 220	1/6W	J
R34	OB09719A	RK 56K	1/6W	J
R35	OB09713A	RK 33K	1/6W	J
R36	OB09711A	RK 27K	1/6W	J
R37	OB09707A	RK 18K	1/6W	J
R38	OB09719A	RK 56K	1/6W	J
R39, 40	OB09725A	RK 100K	1/6W	J
R41	OB09725A	RK 100K	1/6W	J
R42, 43	OB09701A	RK 10K	1/6W	J
R44	OB09701A	RK 10K	1/6W	J
R45	OB09693A	RK 4.7K	1/6W	J
R46	OB09689A	RK 3.3K	1/6W	J
R47	OB09681A	RK 1.5K	1/6W	J
R48	OB09705A	RK 15K	1/6W	J
R49, 50	OB09737A	RK 330K	1/6W	J
R51	OB09661A	RK 220	1/6W	J
R52	OB09673A	RK 680	1/6W	J
R53	OB09661A	RK 220	1/6W	J
R54	OB09673A	RK 680	1/6W	J
R55	OB24217A	RF 2.2	2W	
R56	OB09693A	RK 4.7K	1/6W	J
R57	OB09677A	RK 1.0K	1/6W	J
R58, 59	OB09660A	RK 200	1/6W	J
R60, 61	OB09677A	RK 1.0K	1/6W	J
R62	OB09685A	RK 2.2K	1/6W	J
R63	OB09713A	RK 33K	1/6W	J
R64	OB09747A	RK 820K	1/6W	J
R65	OB09713A	RK 33K	1/6W	J
R66	OB09747A	RK 820K	1/6W	J
R67	OB09693A	RK 4.7K	1/6W	J
R68, 69	OB09677A	RK 1.0K	1/6W	J
R70, 71	OB09693A	RK 4.7K	1/6W	J
R72, 73	OB09747A	RK 820K	1/6W	J
R74	OB09691A	RK 3.9K	1/6W	J
R75	OB09693A	RK 4.7K	1/6W	J
R76, 77	OB09725A	RK 100K	1/6W	J
R78, 79	OB09725A	RK 100K	1/6W	J
R80, 81	OB09685A	RK 2.2K	1/6W	J
R82, 83	OB09693A	RK 4.7K	1/6W	J
R84	OB09677A	RK 1.0K	1/6W	J
R85	OB09693A	RK 4.7K	1/6W	J
R86, 87	OB09701A	RK 10K	1/6W	J
R88	OB09693A	RK 4.7K	1/6W	J
R89	OB09677A	RK 1.0K	1/6W	J
R90	OB09697A	RK 6.8K	1/6W	J

Ref. No.	Part No.	Description		
R91, 92	OB09721A	RK 68K	1/6W	J
R93	OB09696A	RK 6.2K	1/6W	J
R94	OB09698A	RK 7.5K	1/6W	J
R95	OB09725A	RK 100K	1/6W	J
R96	OB09697A	RK 6.8K	1/6W	J
R97	OB09729A	RK 150K	1/6W	J
R98	OB09743A	RK 560K	1/6W	J
R99, 100	OB09733A	RK 220K	1/6W	J
R101	OB09687A	RK 2.7K	1/6W	J
R103	OB09671A	RK 560	1/6W	J
R104	OB09749A	RK 1.0M	1/6W	J
R105, 106	OB09725A	RK 100K	1/6W	J
R107	OB09693A	RK 4.7K	1/6W	J
R108	OB09749A	RK 1.0M	1/6W	J
R109	OB09725A	RK 100K	1/6W	J
R110, 111	OB09725A	RK 100K	1/6W	J
R112	OB09693A	RK 4.7K	1/6W	J
R113	OB09705A	RK 15K	1/6W	J
R114	OB09701A	RK 10K	1/6W	J
R115	OB09677A	RK 1.0K	1/6W	J
R116	OB09685A	RK 2.2K	1/6W	J
R117	OB09689A	RK 3.3K	1/6W	J
R118	OB09677A	RK 1.0K	1/6W	J
R119	OB09689A	RK 3.3K	1/6W	J
R120	OB09677A	RK 1.0K	1/6W	J
R121	OB09713A	RK 33K	1/6W	J
R122, 123	OB09749A	RK 1.0M	1/6W	J
R124, 125	OB09713A	RK 33K	1/6W	J
R126, 127	OB09693A	RK 4.7K	1/6W	J
R128, 129	OB09725A	RK 100K	1/6W	J
R130, 131	OB09725A	RK 100K	1/6W	J
R132	OB09677A	RK 1.0K	1/6W	J
R133	OB09725A	RK 100K	1/6W	J
R134, 135	OB09683A	RK 1.8K	1/6W	J
R136	OB09678A	RK 1.1K	1/6W	J
R137	OB09701A	RK 10K	1/6W	J
R138	OB09732A	RK 200K	1/6W	J
R139	OB09725A	RK 100K	1/6W	J
R140	OB09709A	RK 22K	1/6W	J
R141	OB09725A	RK 100K	1/6W	J
R142	OB09700A	RK 9.1K	1/6W	J
R143	OB09676A	RK 910K	1/6W	J
R144	OB09629A	RK 10	1/6W	J
R145	OB09685A	RK 2.2K	1/6W	J
R146	OB09725A	RK 100K	1/6W	J
R147	OB09693A	RK 4.7K	1/6W	J
R148	OB09665A	RK 330	1/6W	J
R149	OB09693A	RK 4.7K	1/6W	J
R150	OB09701A	RK 10K	1/6W	J
R151, 152	OB09665A	RK 330	1/6W	J
R153	OB09717A	RK 47K	1/6W	J
R154	OB09693A	RK 4.7K	1/6W	J
R155	OB09665A	RK 330	1/6W	J
R156	OB09693A	RK 4.7K	1/6W	J
R157	OB09665A	RK 330	1/6W	J
R158, 159	OB09701A	RK 10K	1/6W	J
R160, 161	OB09701A	RK 10K	1/6W	J
R162	OB09701A	RK 10K	1/6W	J
R163, 164	OB09673A	RK 680	1/6W	J
R165	OB09677A	RK 1.0K	1/6W	J
R166	OB09693A	RK 4.7K	1/6W	J
R168	OB09693A	RK 4.7K	1/6W	J
R169	OB09689A	RK 3.3K	1/6W	J
R170	OB24047A	RF 560	1W	
R171	OB09639A	RK 27	1/6W	J
R172, 173	OB24165A	RF 0.47	2W	J
R174	OB09725A	RK 100K	1/6W	J
R175, 176	OB09718A	RK 51K	1/6W	J
R177	OB09725A	RK 100K	1/6W	J
R178, 179	OB09718A	RK 51K	1/6W	J
R180	OB01706A	RK 47	1/4W	J
R181, 182	OB09689A	RK 3.3K	1/6W	J
R183	OB09725A	RK 100K	1/6W	J
R184	OB09677A	RK 1.0K	1/6W	J
R185	OB09693A	RK 4.7K	1/6W	J
R186	OB09729A	RK 150K	1/6W	J
R187	OB09701A	RK 10K	1/6W	J
R188	OB09650A	RK 75	1/6W	J
R189	OB09701A	RK 10K	1/6W	J
R190, 191	OB09701A	RK 10K	1/6W	J
R192, 193	OB09701A	RK 10K	1/6W	J
R194, 195	OB09701A	RK 10K	1/6W	J
R196, 197	OB09713A	RK 33K	1/6W	J

Ref. No.	Part No.	Description
R198	OB09713A RK	33K 1/6W J
R199	OB09749A RK	1.0M 1/6W J
R200	OB09687A RK	2.7K 1/6W J
R201	OB09713A RK	33K 1/6W J
R202	OB09677A RK	1.0K 1/6W J
R203	OB09687A RK	2.7K 1/6W J
R204	OB09725A RK	100K 1/6W J
R205	OB09677A RK	1.0K 1/6W J
R206, 207	OB09735A RK	270K 1/6W J
R208	OB09677A RK	1.0K 1/6W J
R209	OB09725A RK	100K 1/6W J
R210	OB09749A RK	1.0M 1/6W J
R211	OB09653A RK	100 1/6W J
R212	OB09715A RK	39K 1/6W J
R213, 214	OB09701A RK	10K 1/6W J
R215	OB09701A RK	10K 1/6W J
R216	OB09677A RK	1.0K 1/6W J
R217, 218	OB09701A RK	10K 1/6W J
R219	OB09749A RK	1.0M 1/6W J
R220	OB09725A RK	100K 1/6W J
R221, 222	OB09693A RK	4.7K 1/6W J
R223	OB09693A RK	4.7K 1/6W J
R224	OB09749A RK	1.0M 1/6W J
R225, 226	OB09701A RK	10K 1/6W J
R227, 228	OB09701A RK	10K 1/6W J
R229, 230	OB09701A RK	10K 1/6W J
R231	OB09701A RK	10K 1/6W J
R232	OB09693A RK	4.7K 1/6W J
R233	OB09701A RK	10K 1/6W J
R234	OB09689A RK	3.3K 1/6W J
R235	OB09693A RK	4.7K 1/6W J
R236	OB22248A RM	1.54K 1/4W F
R237	OB09667A RK	390K 1/6W J
R238	OB22248A RM	1.54K 1/4W F
R239	OB09701A RK	10K 1/6W J
R240	OB09697A RK	6.8K 1/6W J
R241	OB09701A RK	10K 1/6W J
R242	OB09697A RK	6.8K 1/6W J
R243, 244	OB09749A RK	1.0M 1/6W J
R245, 246	OB09673A RK	680 1/6W J
R247	OB09691A RK	3.9K 1/6W J
R248	OB09665A RK	330 1/6W J
R249	OB09684A RK	2.0K 1/6W J
R250	OB09679A RK	1.2K 1/6W J
R251	OB09675A RK	820 1/6W J
R252	OB09679A RK	1.2K 1/6W J
R253	OB09741A RK	470K 1/6W J
R254	OB09737A RK	330K 1/6W J
R255	OB09725A RK	100K 1/6W J
R256	OB09741A RK	470K 1/6W J
R257, 258	OB09713A RK	33K 1/6W J
R259	OB09701A RK	10K 1/6W J
R260, 261	OB09687A RK	2.7K 1/6W J
R262	OB09701A RK	10K 1/6W J
R263, 264	OB09725A RK	100K 1/6W J
R265	OB09687A RK	2.7K 1/6W J
R266	OB22457A RM	100K 1/4W F
R267	OB09717A RK	47K 1/6W J
R268	OB09725A RK	100K 1/6W J
R269, 270	OB09717A RK	47K 1/6W J
R271	OB09645A RK	47 1/6W J
R272	OB09673A RK	680 1/6W J
R273	OB09725A RK	100K 1/6W J
R274	OB09693A RK	4.7K 1/6W J
R275	OB09685A RK	2.2K 1/6W J
R276, 277	OB09693A RK	4.7K 1/6W J
R278	OB09727A RK	120K 1/6W J
R279	OB09707A RK	18K 1/6W J
R280	OB09721A RK	68K 1/6W J
R281	OB09684A RK	2.0K 1/6W J
R282	OB09723A RK	82K 1/6W J
R283	OB09716A RK	43K 1/6W J
R284	OB09731A RK	180K 1/6W J
R285	OB09719A RK	56K 1/6W J
R286	OB09713A RK	33K 1/6W J
R287	OB09707A RK	18K 1/6W J
R288	OB09694A RK	5.1K 1/6W J
R289	OB09665A RK	330 1/6W J
R290	OB09732A RK	200K 1/6W J
R291	OB09725A RK	100K 1/6W J
R292, 293	OB24016A RF	47 1W J
R294, 295	OB09701A RK	10K 1/6W J
R296, 297	OB09701A RK	10K 1/6W J

Ref. No.	Part No.	Description
R298	OB09701A RK	10K 1/6W J
R300, 301	OB09685A RK	2.2K 1/6W J
R302	OB09685A RK	2.2K 1/6W J
R303, 304	OB09685A RK	2.2K 1/6W J
R305, 306	OB09685A RK	2.2K 1/6W J
R307	OB09701A RK	10K 1/6W J
R308	OB09685A RK	2.2K 1/6W J
R309, 310	OB09725A RK	100K 1/6W J
R311	OB09647A RK	56 1/6W J
R312	OB09653A RK	100 1/6W J
R313	OB09669A RK	470 1/6W J
R314	OB09723A RK	82K 1/6W J
R316, 317	OB09725A RK	100K 1/6W J
R318	OB09669A RK	470 1/6W J
R319	OB24242A RF	0.47 1/2W J
R320, 321	OB09701A RK	10K 1/6W J
R322	OB09687A RK	2.7K 1/6W J
R323, 324	OB09701A RK	10K 1/6W J
R325	OB09719A RK	56K 1/6W J
R326	OB09687A RK	2.7K 1/6W J
R327	OB09669A RK	470 1/6W J
C1	OB41971A CC	0.10u 50V Z
C2, 3	OB09187A CE	1.0u 50V (BP)
C4	OB41971A CC	0.10u 50V Z
C5, 6	OB09077A CC	10P 50 F
C7, 8	OB41090A CML	4700P 50V
C9	OB41971A CC	0.10u 50V Z
C10, 11	OB09191A CPP	4700P 100V G
C12	OB41298A CML	0.1u 50V J
C13	OB41294A CML	0.047u 50V J
C14	OB41298A CML	0.1u 50V J
C15	OB41294A CML	0.047u 50V J
C16	OB09077A CC	10P 50V F
C17	OB41971A CC	0.10u 50V Z
C18, 19	OB09218A CE	47u 16V (LN)
C20	OB01403A CE	47u 16V
C21	OB01674A CE	10u 25V
C22	OB01402A CE	4.7u 25V
C23	OB01403A CE	47u 16V
C24, 25	OB01400A CE	100u 16V
C26, 27	OB09223A CE	1u 50V (LN)
C28, 29	OB41971A CC	0.10u 50V Z
C30	OB09372A CE	2.2u 50V
C31	OB41301A CML	0.18u 50V J
C33	OB41084A CML	1500P 50V
C34	OB41971A CC	0.10u 50V Z
C35	OB41088A CML	3300P 50V
C36, 37	OB41971A CC	0.10u 50V Z
C38	OB41944A CC	1000P 50V K
C39	OB41094A CML	0.01u 50V J
C40	OB01674A CE	10u 25V
C41	OB41944A CC	1000P 50V K
C42	OB01674A CE	10u 25V
C43	OB41971A CC	0.10u 50V Z
C44	OB01403A CE	47u 16V
C45	OB41090A CML	4700P 50V
C46, 47	OB41094A CML	0.01u 50V
C48	OB41094A CML	0.01u 50V
C49, C50	OB41098A CML	0.022u 50V
C51, 52	OB41094A CML	0.01u 50V
C53	OB09219A CE	6.8u 25V (LN)
C54	OB41090A CML	4700P 50V
C55	OB41098A CML	0.022u 50V
C56	OB41094A CML	0.01u 50V
C57	OB41304A CML	0.33u 50V
C58	OB41296A CML	0.068u 50V
C59	OB09144A CE	0.22u 50V (LN)
C60, 61	OB01403A CE	47u 16V
C62	OB41090A CML	4700P 50V
C63	OB01674A CE	10u 25V
C64	OB01400A CE	100u 16V
C65	OB41302A CML	0.22u 50V
C66	OB41094A CML	0.01u 50V
C67	OB09221A CE	1.5u 50V (LN)
C68	OB41096A CML	0.015u 50V
C69	OB41298A CML	0.1u 50V J
C70, 71	OB01400A CE	100u 16V
C72	OB01400A CE	100u 16V
C73	OB40569A CE	3300u 16V
C74	OB41971A CC	0.10u 50V Z
C75, 76	OB40569A CE	3300u 16V
C77, 78	OB41971A CC	0.10u 50V Z
C79	OB01400A CE	100u 16V

Ref. No.	Part No.	Description
C80	OB41298A	CML 0.1u 50V J
C81	OB41090A	CML 4700P 50V
C82	OB41302A	CML 0.22u 50V J
C83	OB41308A	CML 0.68u 50V J
C85	OB01400A	CE 100u 16V
C86	OB01674A	CE 10u 25V
C87, 88	OB41971A	CC 0.10u 50V Z
C89, 90	OB41971A	CC 0.10u 50V Z
C91, 92	OB01402A	CE 4.7u 25V
C93	OB41094A	CML 0.01u 50V
C94	OB41098A	CML 0.022u 50V
C95	OB01400A	CE 100u 16V
C96, 97	OB01674A	CE 10u 25V
C98, 99	OB01400A	CE 100u 16V
C100	OB01400A	CE 100u 16V
C101, 102	OB41971A	CC 0.10u 50V Z
C103, 104	OB41971A	CC 0.10u 50V Z
C105	OB01674A	CE 10u 25V
C106	OB09792A	CC 33P 50V J
C107	OB41971A	CC 0.10u 50V Z
C108	OB01674A	CE 10u 25V
C109	OB41971A	CC 0.10u 50V Z
C110	OB09989A	CC 120P 50V J
C111, 112	OB01400A	CE 100u 16V
C113	OB01403A	CE 47u 16V
C114, 115	OB41971A	CC 0.10u 50V Z
C116	OB01403A	CE 47u 16V
C117	OB09372A	CE 2.2u 50V
C118	OB41971A	CC 0.10u 50V Z
C119	OB09137A	CE 22u 25V (LN)
C120, 121	OB41971A	CC 0.10u 50V Z
C122, 123	OB41971A	CC 0.10u 50V Z
C124, 125	OB41971A	CC 0.10u 50V Z
C126, 127	OB41971A	CC 0.10u 50V Z
C128, 129	OB41971A	CC 0.10u 50V Z
C130, 131	OB41971A	CC 0.10u 50V Z
C132	OB01402A	CE 4.7u 25V
C133	OB40209A	CE 0.33u 50V
TE. CN1, 2	OB81026A	3P T-Post White
TE. CN3	OB81030A	7P T-Post White
TE. CN4	OB84127A	Header 9067 2x1
TE. CN5, 6	OB84128A	Header 9067 2x2
TE. CN7	OB84127A	Header 9067 2x1
TE. CN8, 9	OB84128A	Header 9067 2x2
TE. CN10	OB84134A	Header 2x8
TE. CN11	OB84127A	Header 9067 2x1
TE. CN13	OB84128A	Header 9067 2x2
RESET	OB84127A	Header 9067 2x1
TP1, 2	OB81734A	Check-Pin
TP3, 4	OB81734A	Check-Pin
TP5, 6	OB81734A	Check-Pin
TP7, 8	OB81734A	Check-Pin
TP9, 10	OB81734A	Check-Pin
TP11, 12	OB81734A	Check-Pin
TP13, 14	OB81734A	Check-Pin
TP15, 16	OB81734A	Check-Pin
CN10	OB81025A	2P T-Post White
CN11	OB81035A	12P T-Post White
CN17	OB81029A	6P T-Post White
CN18	OB81032A	9P T-Post White
CN19	OB81031A	8P T-Post White
CN20	OB81029A	6P T-Post White
CN21	OB81033A	10P T-Post White
CN22	OB84050A	4P T-Post Black
CN23	OB84052A	10P T-Post Black
CN24	OB84051A	6P T-Post Black
CN25	OB81025A	2P T-Post White
CN26	OB81027A	4P T-Post White
CN202	OB84005A	DIN Connector P100P (XC5A-0122)
JP-A	OB02365B	PD Connector Ass'y V150
	OB84118A	Receptacle 9067 (20)
	OE00966A	M3x5 + Binding (2)
	OE03502A	Washer 2.6mm (Spring) (2)
	OE03503A	Nut Hex. 2.6mm (2)
	OE03523A	M2.6x10 + Pan (2)
	OJ05813A	Heat Sink (DS-25-B5-AN-0) (2)
	OH05460C	Servo Panel (1)
	OE03030A	M3x6 + Binding (Nickel) (3)

11.12. u-Com P.C.B. Ass'y

Ref. No.	Part No.	Description
	HA05770A	u-COM P.C.B. 101 Ass'y [N1000] (Serial No. : A50101501-)
	HA05582A	u-COM P.C.B. 101 Ass'y [N1000] (Serial Nos. : A50101001-01500)
	HA05771A	u-COM P.C.B. 102 Ass'y [N-1000 Pro.] (Serial No. : A50401301)
	HA05702A	u-COM P.C.B. 102 Ass'y [N-1000 Pro.] (Serial Nos. : A50401001-01300)
	OB60679B	u-COM P.C.B.
U901	BA07740A	IC uPD75P108CW (BLU) [N-1000] (Serial No. : A50101501-)
	BA07715B	IC uPD75P108CW (GRN) [N-1000] (Serial Nos. : A50101001-01500)
	BA07741A	IC uPD75P108CW (BLU) [N-1000 Pro.] (Serial No. : A50401301-)
	BA07716B	IC uPD75P108CW (GRN) [N-1000 Pro.] (Serial Nos. : A50401001-01300)
U902	OB11624A	IC M50743SP
U903	OB11612A	IC LC6520H
U904	OB06396A	IC LC7800
U905	OB11636A	IC UPD4556BC
U906	OB11568A	IC TC74HC04AP
U907	OB11623A	IC TC74HC574P
U908	BA07757A	IC MBM27C128P (BLU) (Serial No. : A50101501-) (Serial No. : A50401301-)
	BA07717B	IC MBM27C128P (GRN) (Serial Nos. : A50101001-01500) (Serial Nos. : A50401001-01300)
U909	OB11627A	IC TC5565APL-15
U910	OB11631A	IC TC74HC154P
U911	OB11561A	IC TC74HC74AP
U912	OB11629A	IC TC74HC139P
U913	OB11632A	IC TC74HC4078P
U914	OB11630A	IC TC74HC27P
Q901	OB10058A	TR DTA114ES
Q902	OB10068A	TR DTC114ES
D901, 902	OB06398A	SiD 1SS176
D904	OB06398A	SiD 1SS176
X901	OB92027A	X'Tal 8.0000MHz
R901, 902	OB09701A	RK 10K 1/6W J
R903, 904	OB09693A	RK 4.7K 1/6W J
R905, 906	OB09693A	RK 4.7K 1/6W J
R907, 908	OB09701A	RK 10K 1/6W J
R909	OB09717A	RK 47K 1/6W J
R910	OB09701A	RK 10K 1/6W J
R911, 912	OB09669A	RK 470 1/6W J
R913, 914	OB09669A	RK 470 1/6W J
R915	OB09717A	RK 47K 1/6W J
R916	OB09701A	RK 10K 1/6W J
R917	OB09749A	RK 1.0M 1/6W J
R918	OB09717A	RK 47K 1/6W J
R919	OB09701A	RK 10K 1/6W J
R920	OB09717A	RK 47K 1/6W J
R921	OB09687A	RK 2.7K 1/6W J
R922, 923	OB09717A	RK 47K 1/6W J
R924, 925	OB09717A	RK 47K 1/6W J
R926, 927	OB09717A	RK 47K 1/6W J
R928	OB09717A	RK 47K 1/6W J
R929, 930	OB09693A	RK 4.7K 1/6W J
R931, 932	OB09693A	RK 4.7K 1/6W J
R933	OB09693A	RK 4.7K 1/6W J
R934	OB09685A	RK 2.2K 1/6W J
R935	OB09629A	RK 10 1/6W J
C901	OB41971A	CC 0.10u 50V Z
C902	OB40574A	CE 1000u 10V
C903, 904	OB41971A	CC 0.10u 50V Z
C905, 906	OB41971A	CC 0.10u 50V Z
C907, 908	OB41971A	CC 0.10u 50V Z
C909, 910	OB41971A	CC 0.10u 50V Z
C911, 912	OB41971A	CC 0.10u 50V Z
C913, 914	OB41971A	CC 0.10u 50V Z
C915, 916	OB41971A	CC 0.10u 50V Z
S901	OB70078A	Slide Switch 4-2
PJ901, 902	OB84028A	Stereo Mini Jack
CN201	OB84005A	DIN Connector P100P (XC5A-0122)
IS901	OB84027A	64P IC-Socket
IS908	OB84010A	28P IC-Socket

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
	OE03502A	Washer 2.6mm (Spring)	(2)
	OE03503A	Nut Hex. 2.6mm	(2)
	OE03523A	M2.6x10 + Pan	(2)
	OH05459C	CPU Panel [N-1000]	(1)
	OH05558B	CPU Panel [N-1000 Pro.]	(1)
	OE03030A	M3x6 + Binding (Nickel)	(3)

12. MOUNTING DIAGRAMS

Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.
2. Parts list is shown in Section 11.

12.1. Power Switch P.C.B. Ass'y

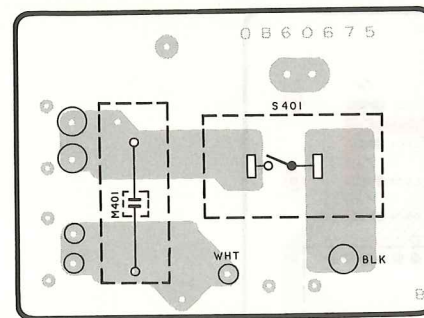


Fig. 12.1

12.2. Lamp Upper P.C.B. Ass'y

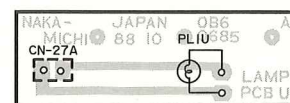


Fig. 12.2

12.3. Lamp Lower P.C.B. Ass'y

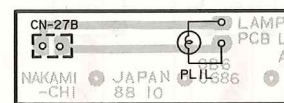


Fig. 12.3

12.4. Sense P.C.B. Ass'y

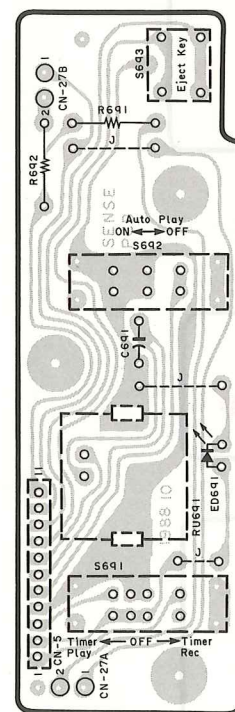


Fig. 12.4

12.5. Power Supply P.C.B. Ass'y

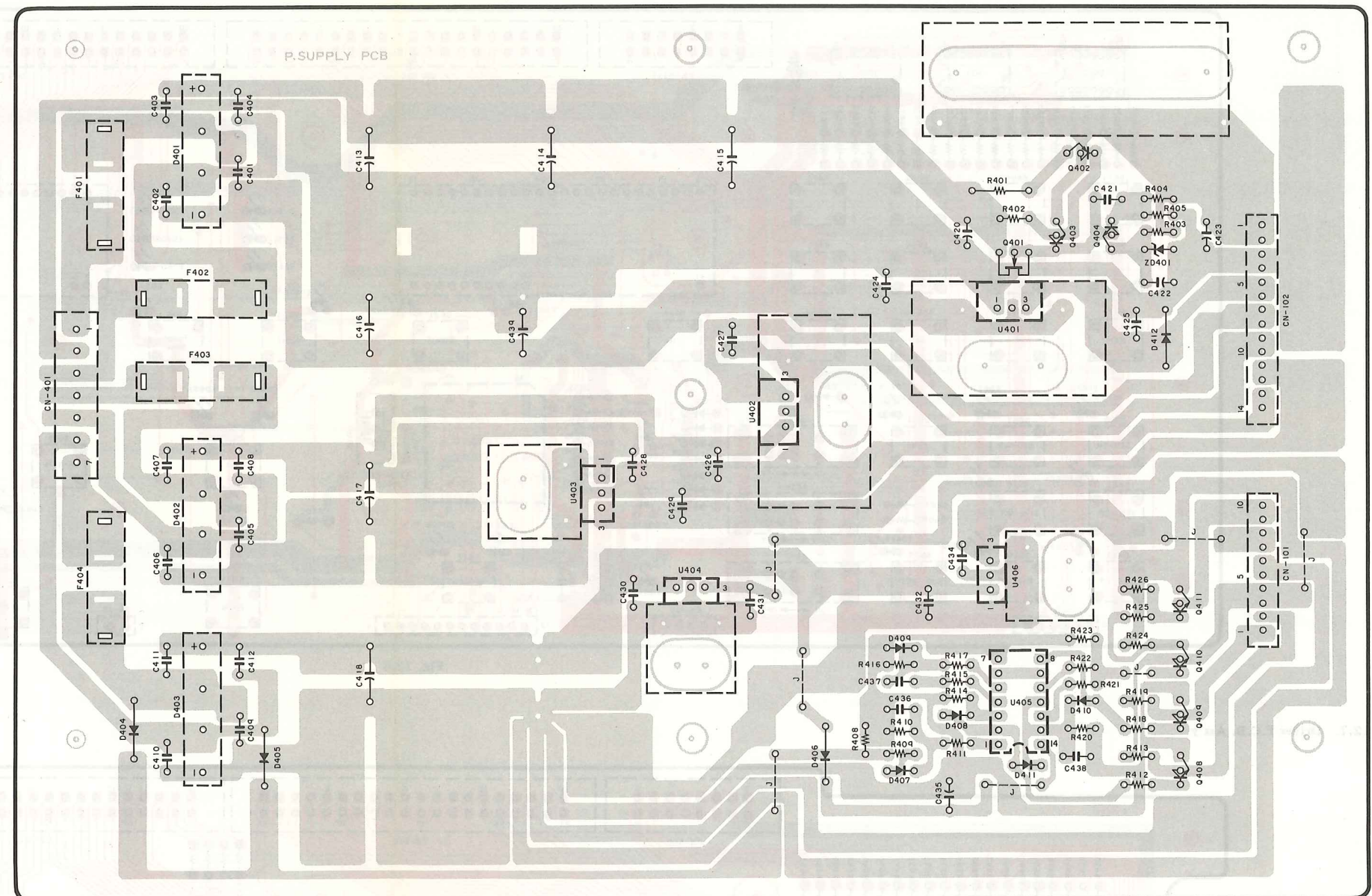
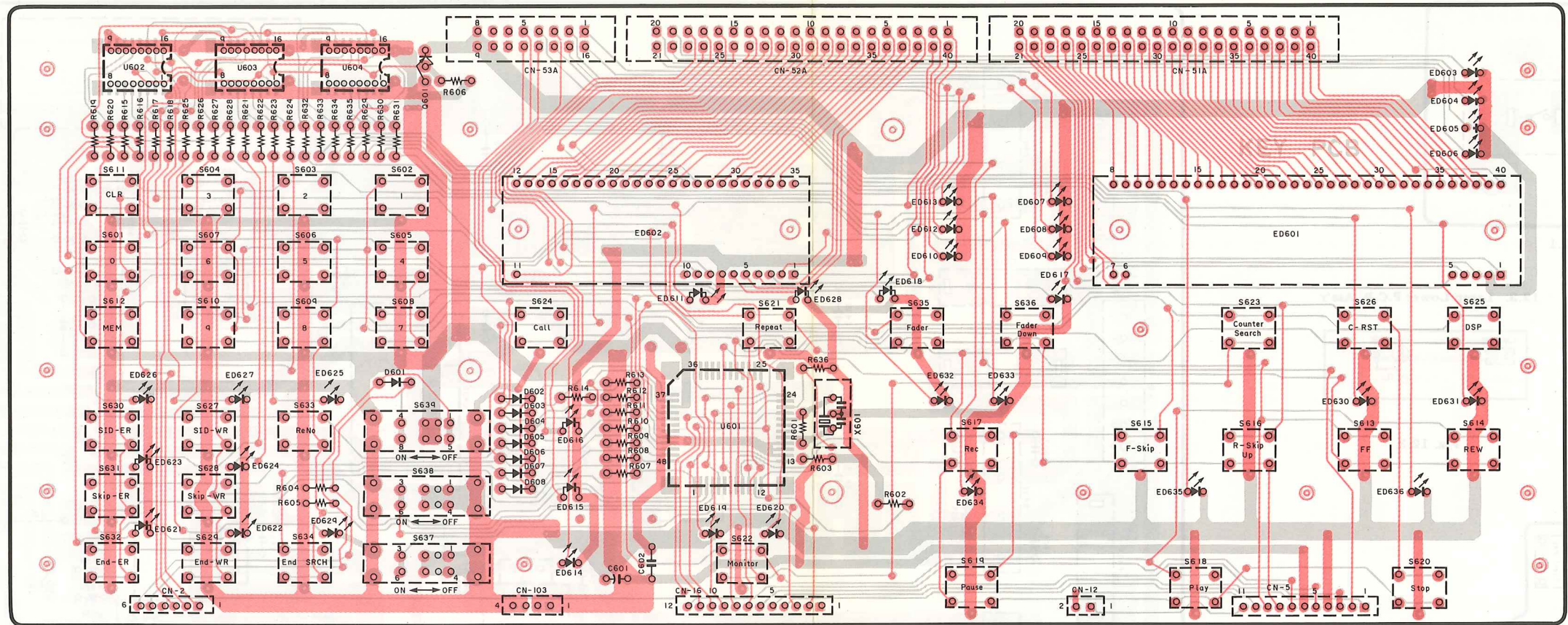


Fig. 12.5

12.6. Switch P.C.B. Ass'y



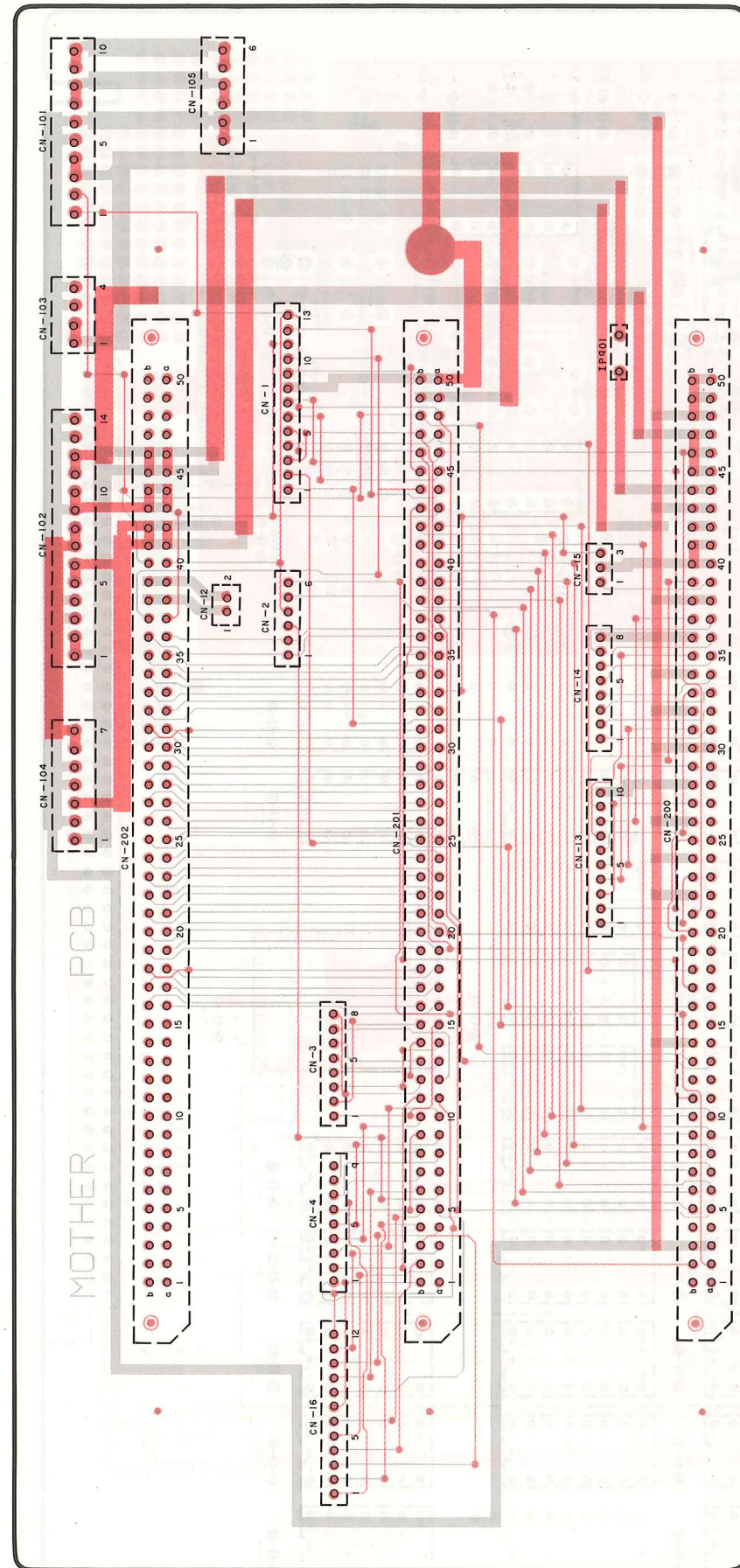


Fig. 12.8

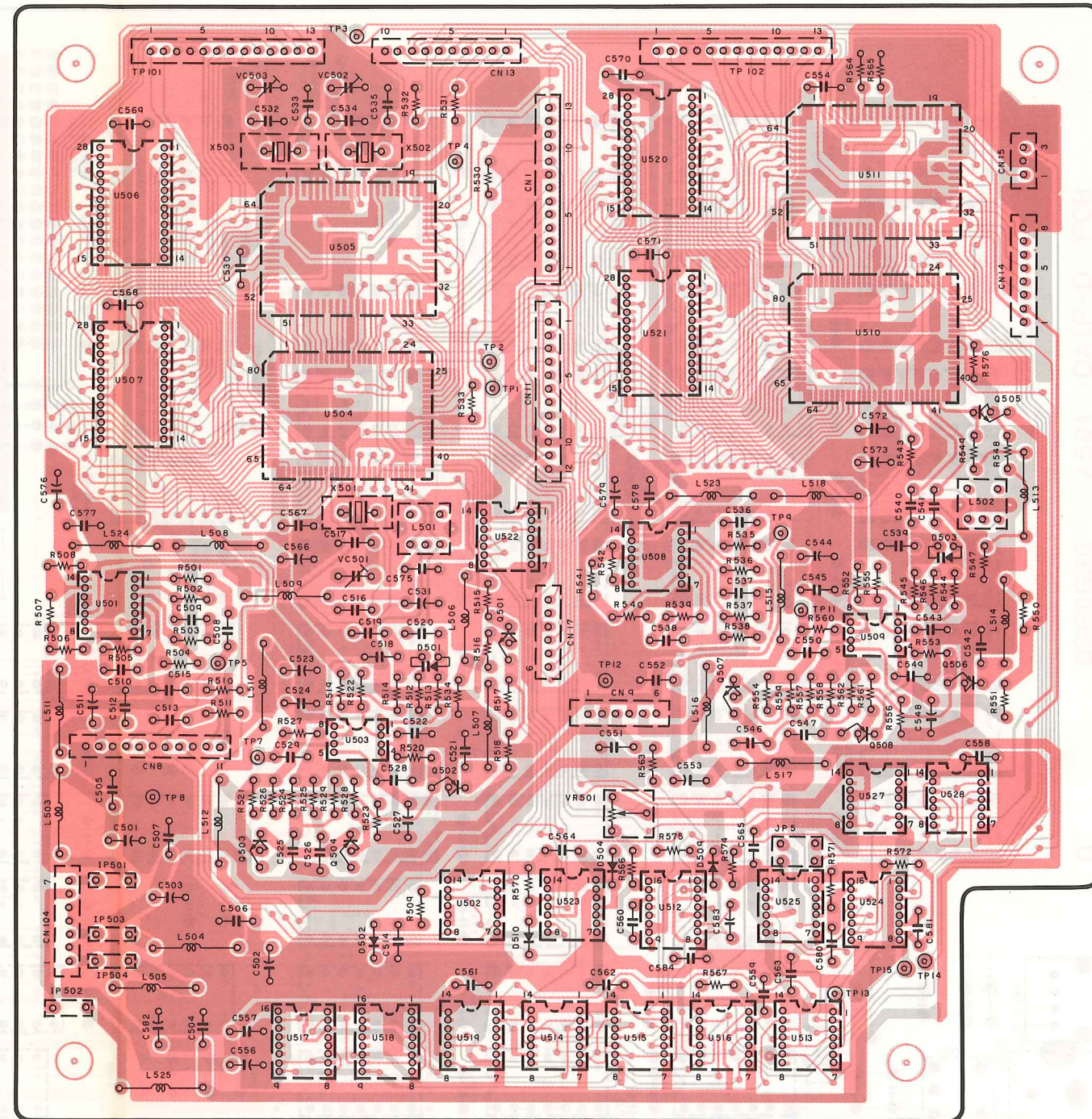
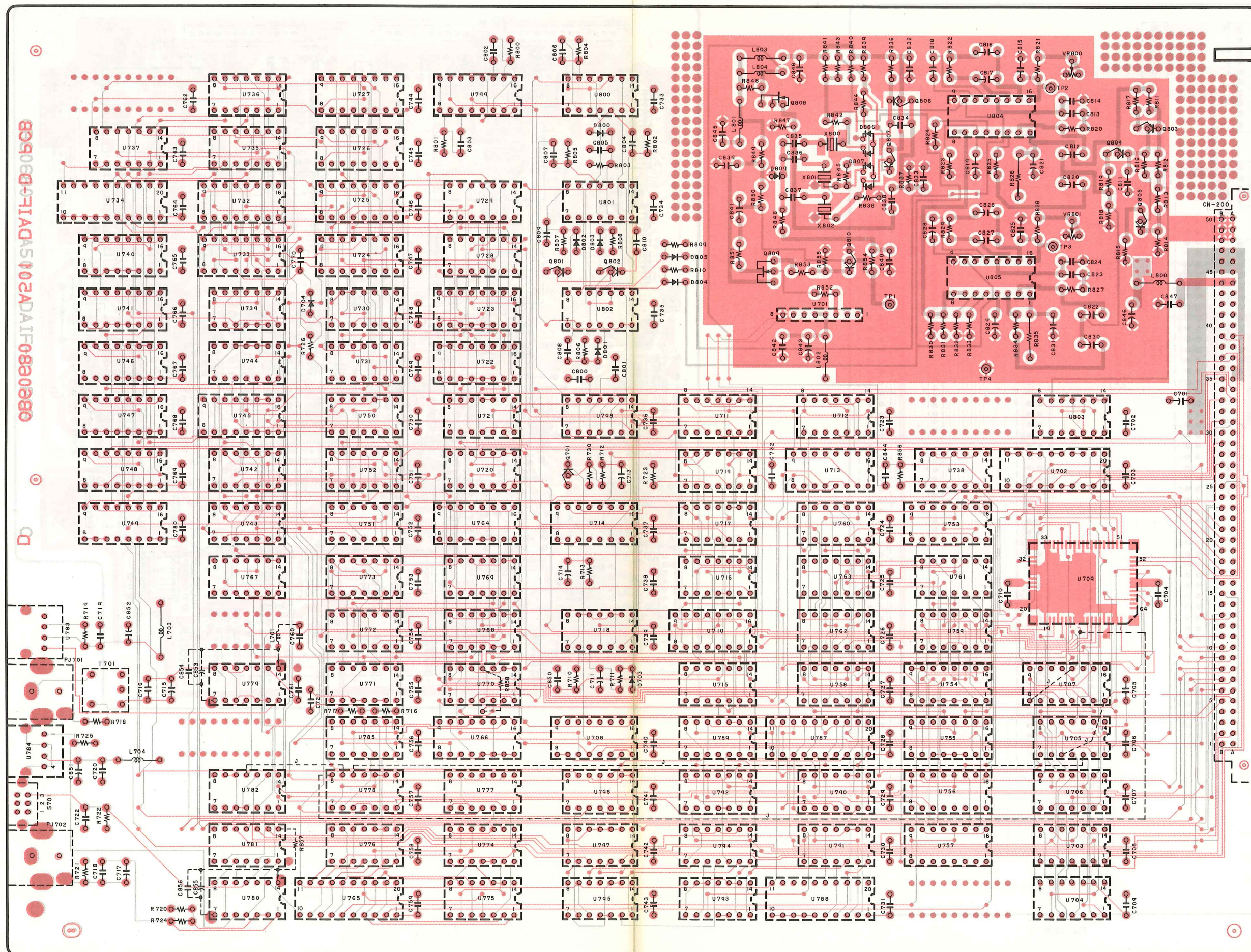


Fig. 12.9



12-4

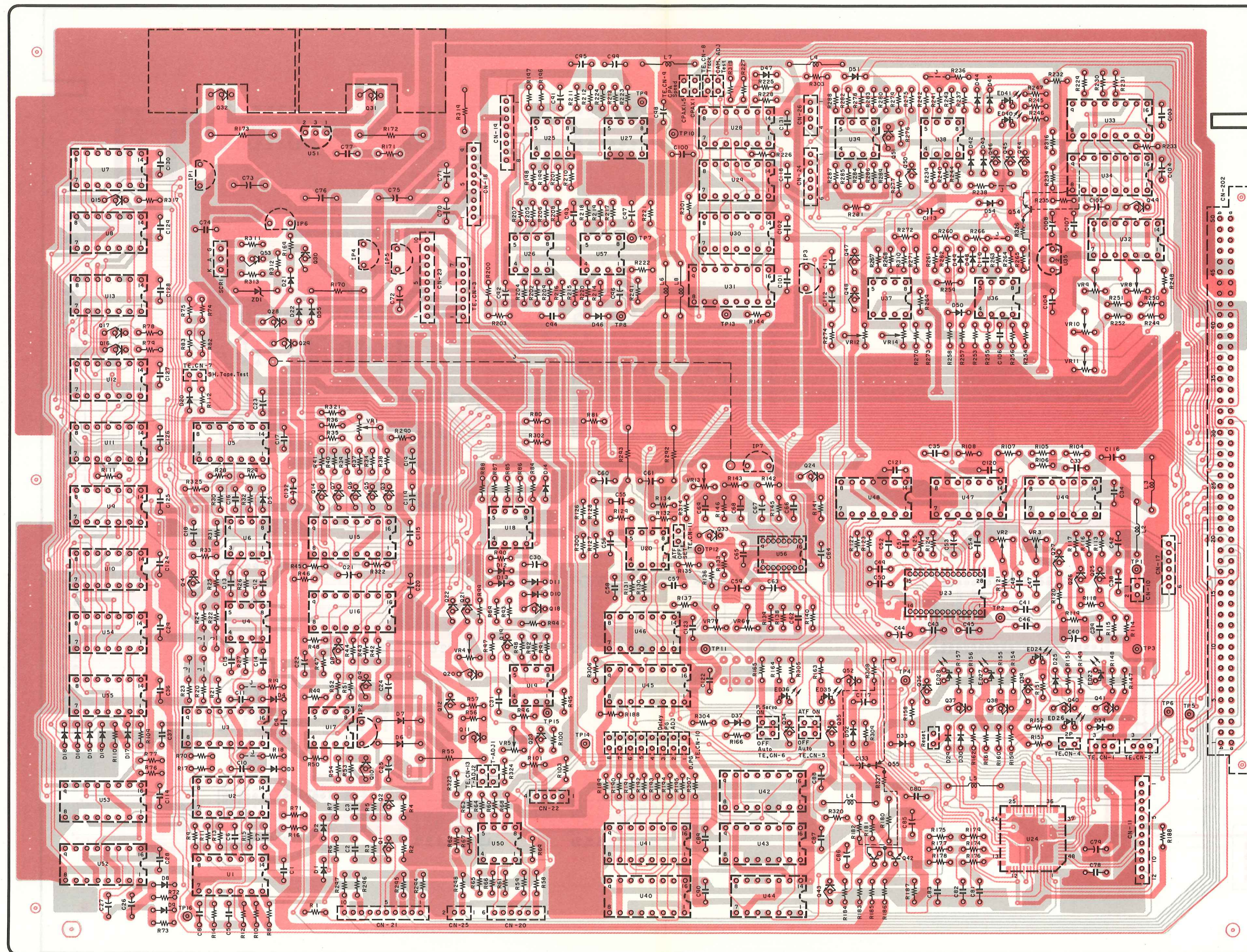


Fig. 12.11

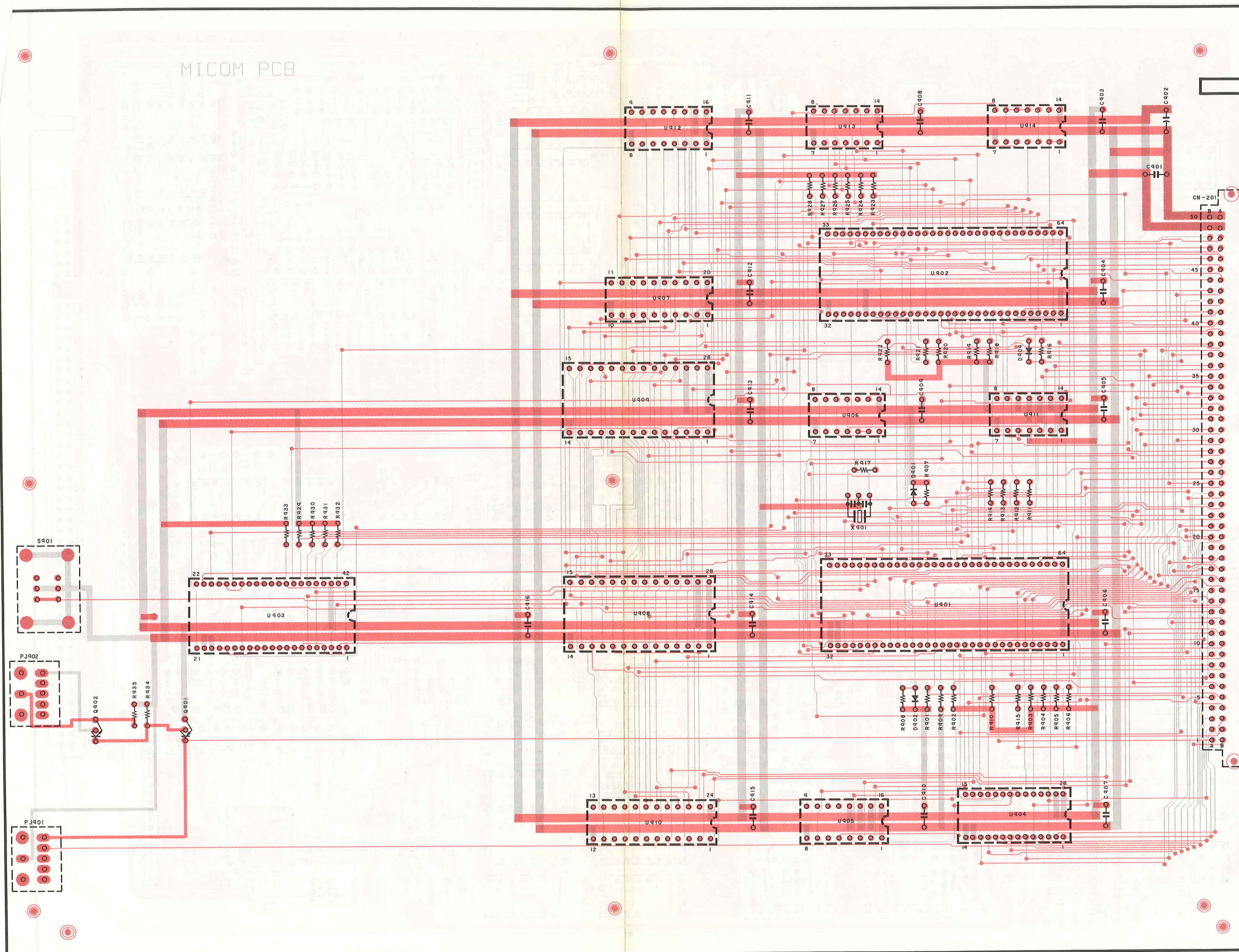


Fig. 12.12



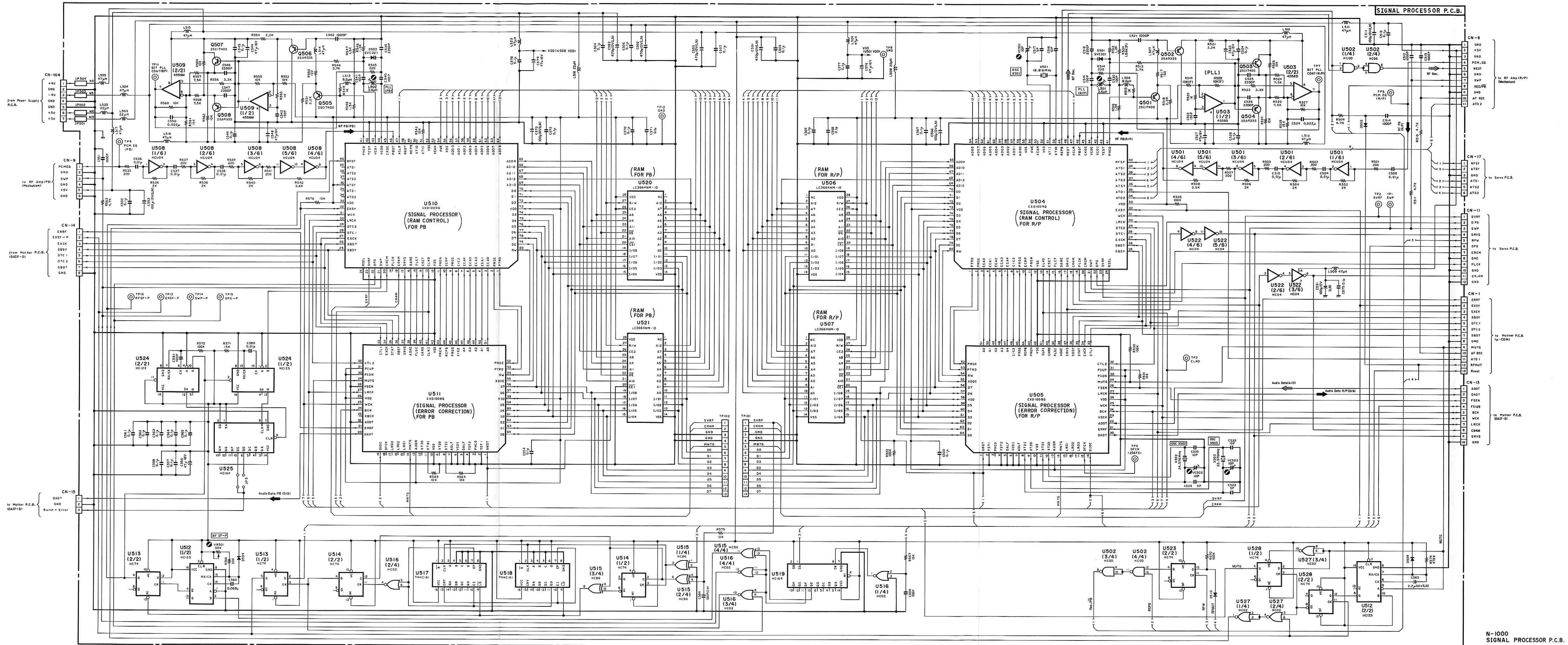


Fig. 13.2 Signal Processor Section

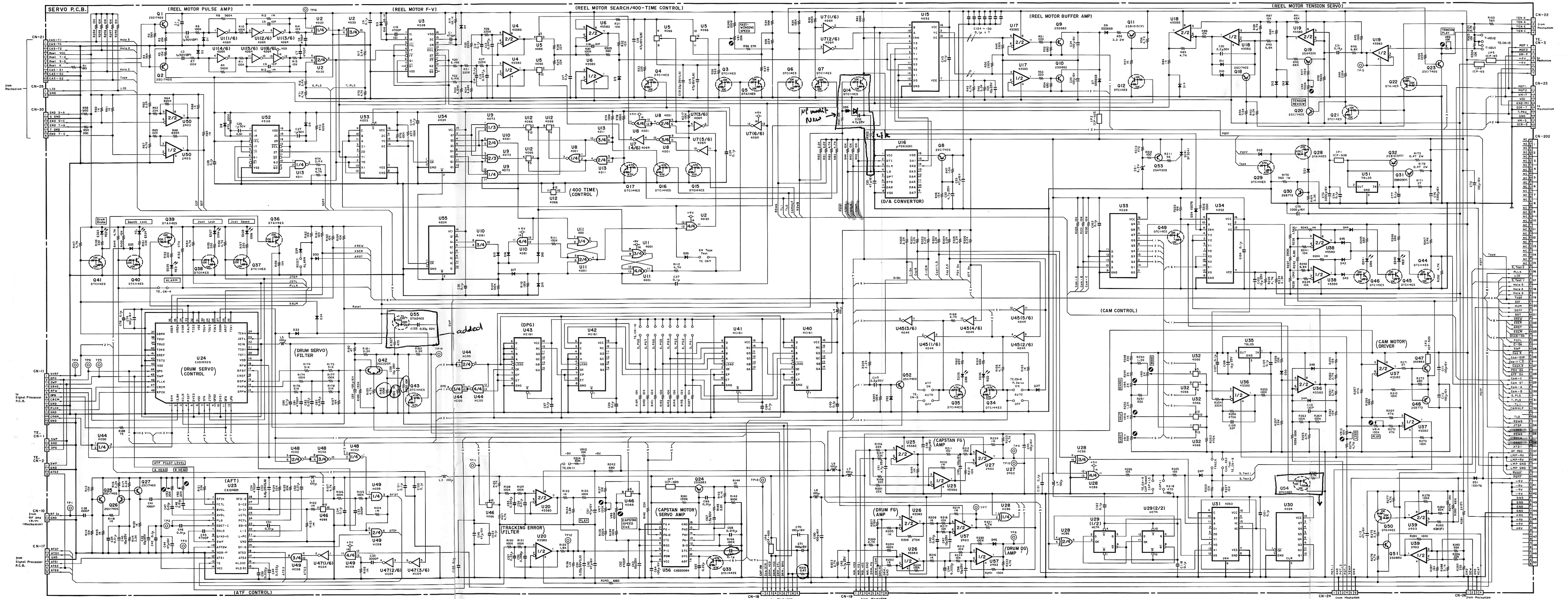


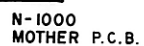
Fig. 13.3 Servo Section

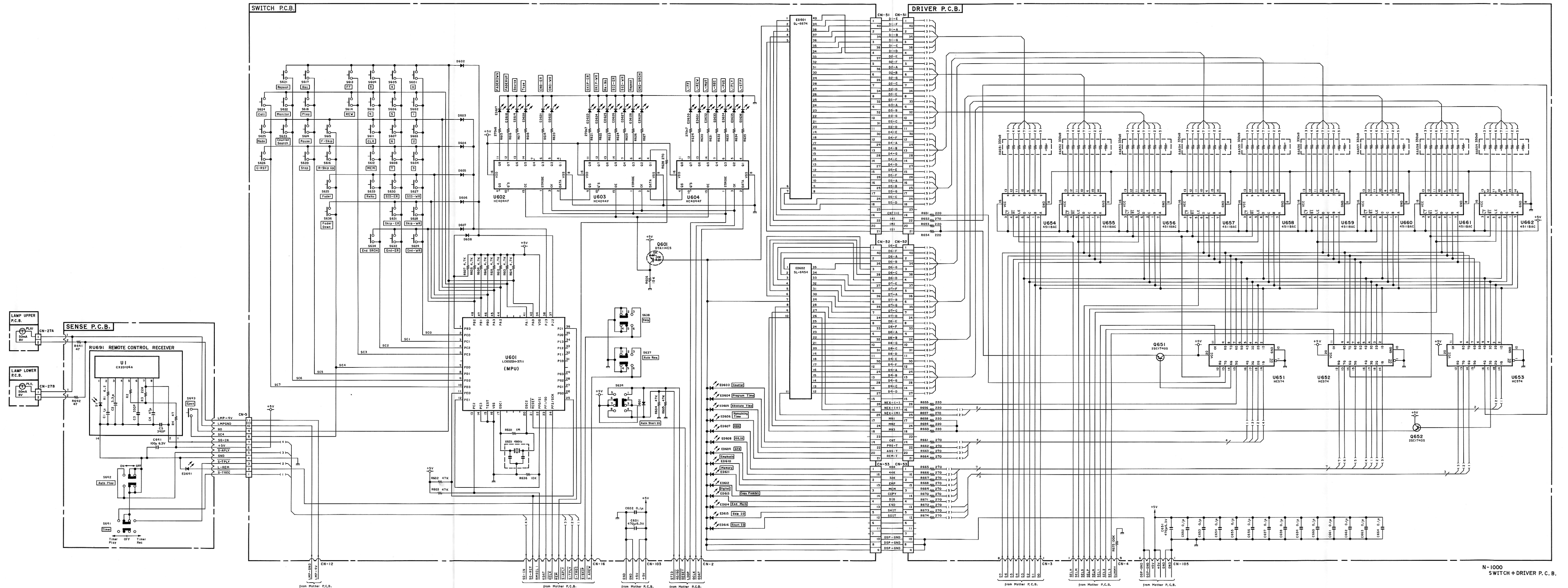
R 319 + 320 to be added to
pattern A PCB's
Capst. problemen

R 319 + 320 to be added to
pattern A PCB's

to get reception
from cam motor power
optocoupler bij reflect.
(plastic + aluminium).

N-1000
MOTHER P.C.B.





MECHANISM ASS'Y

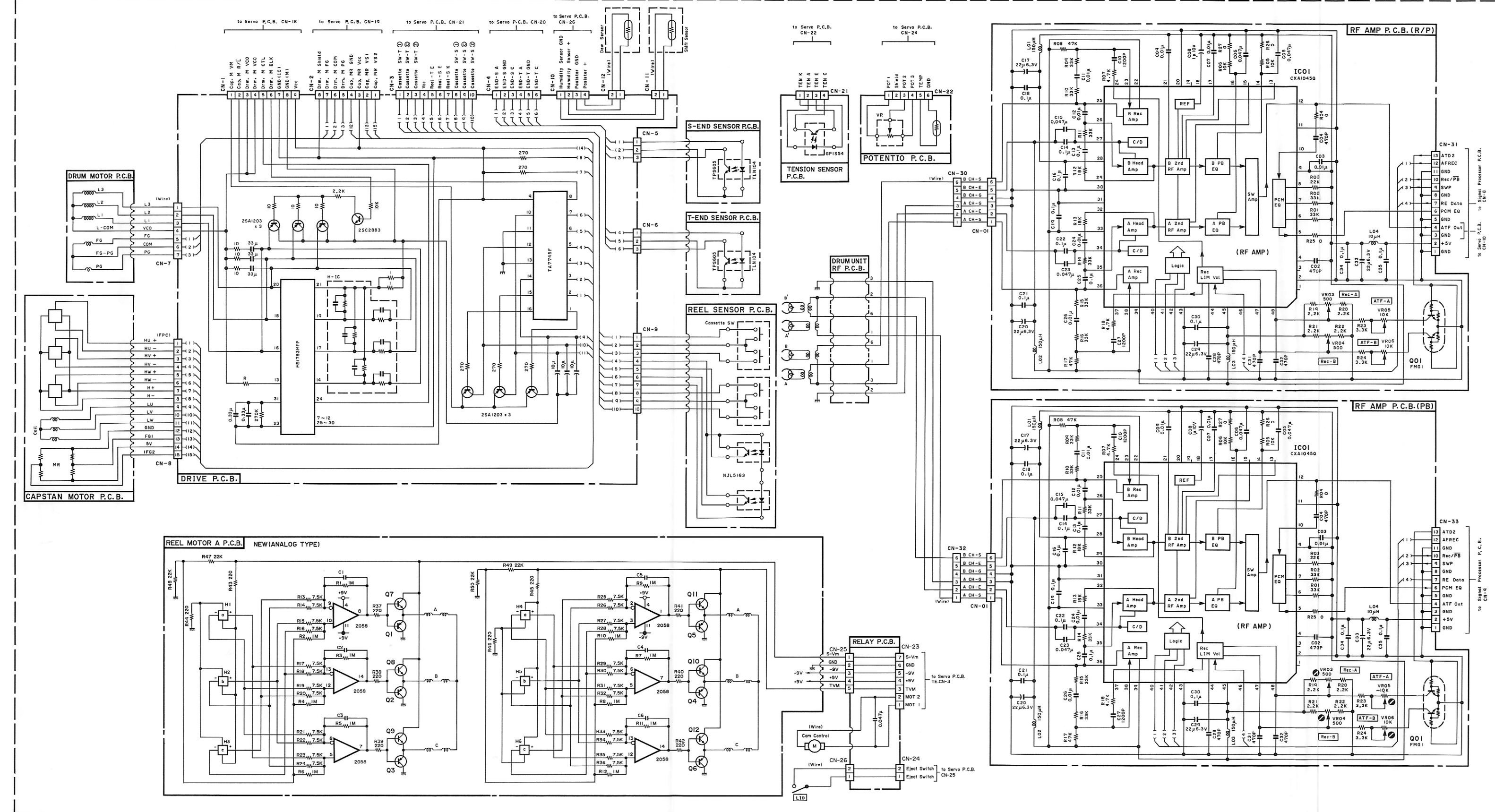
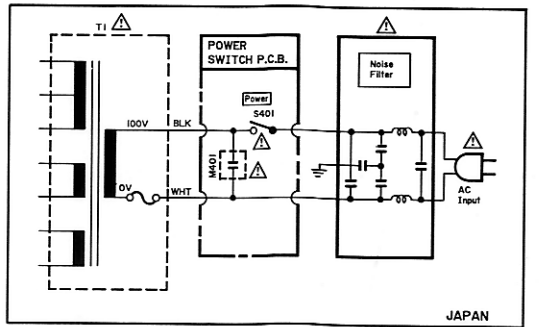


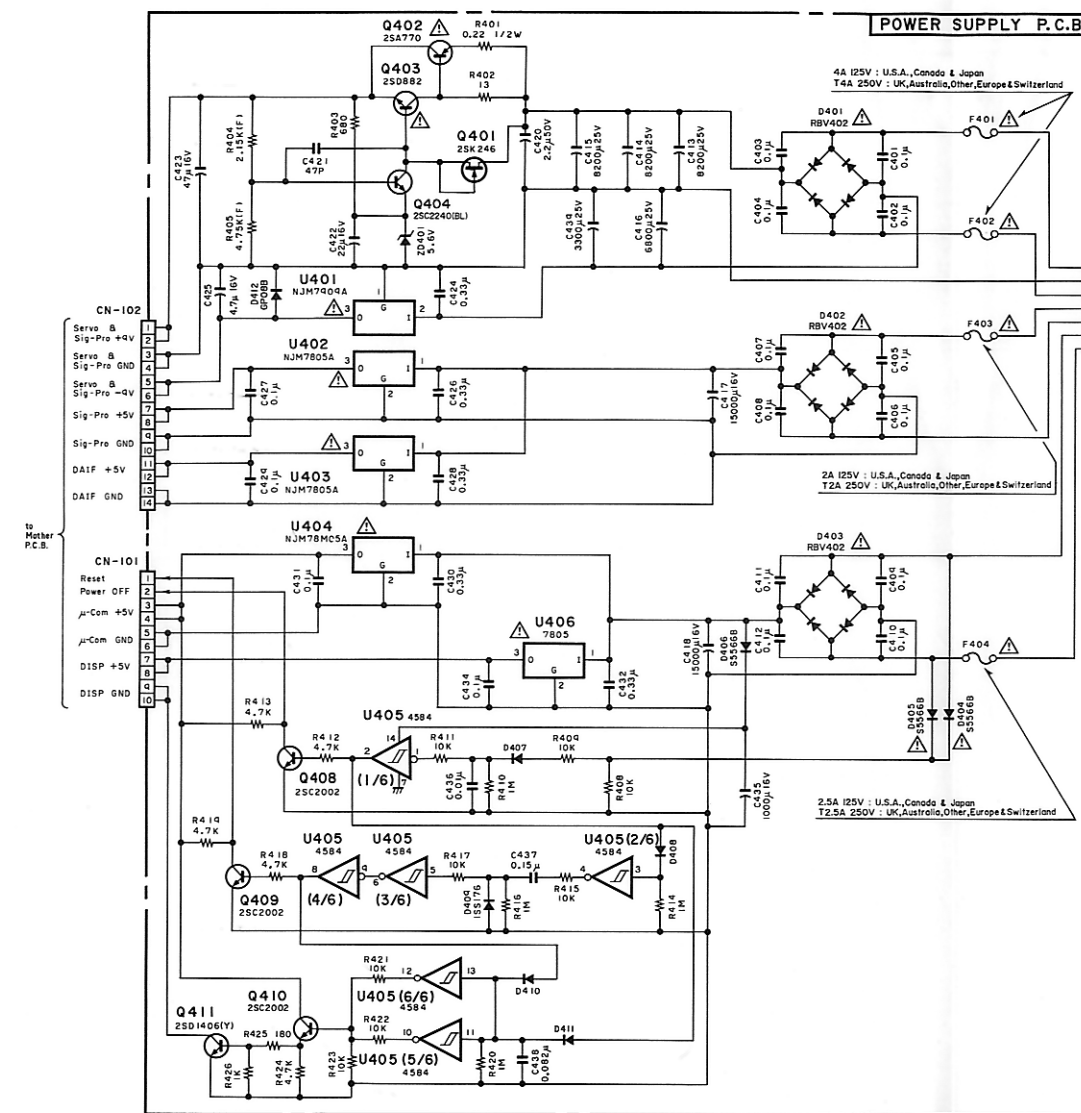
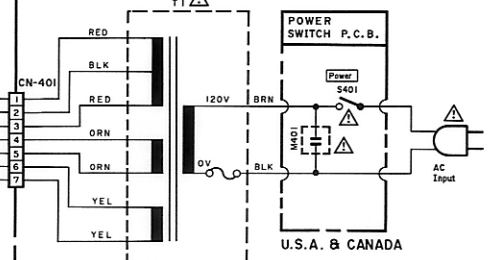
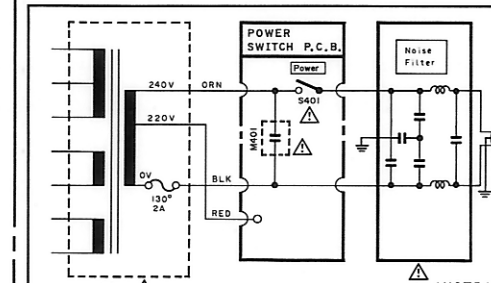
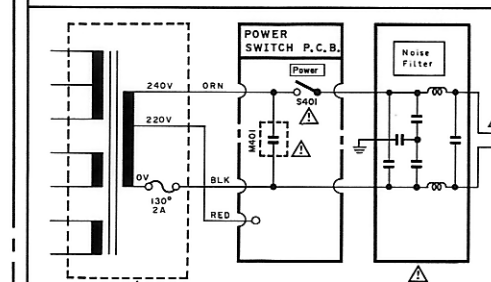
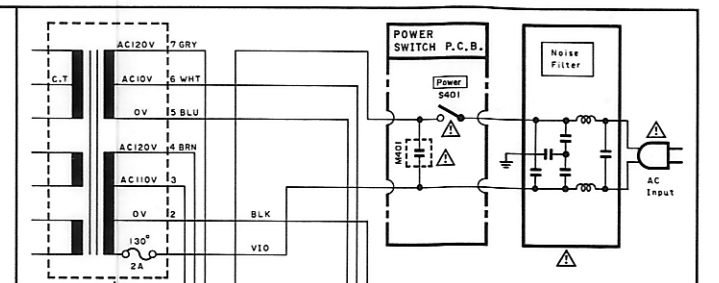
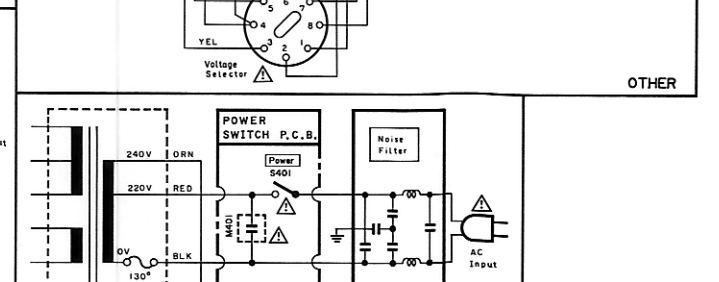
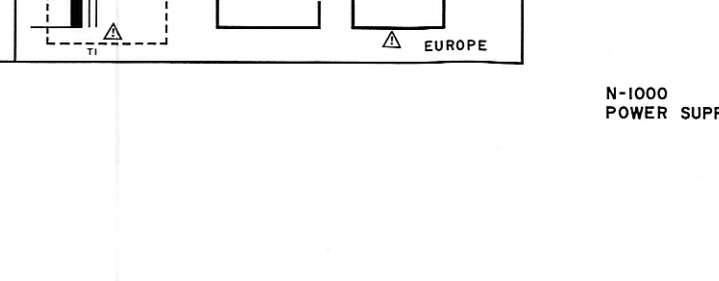
Fig. 13.6 Mechanism/Power Supply Section

TRANSPORT MECHANISM

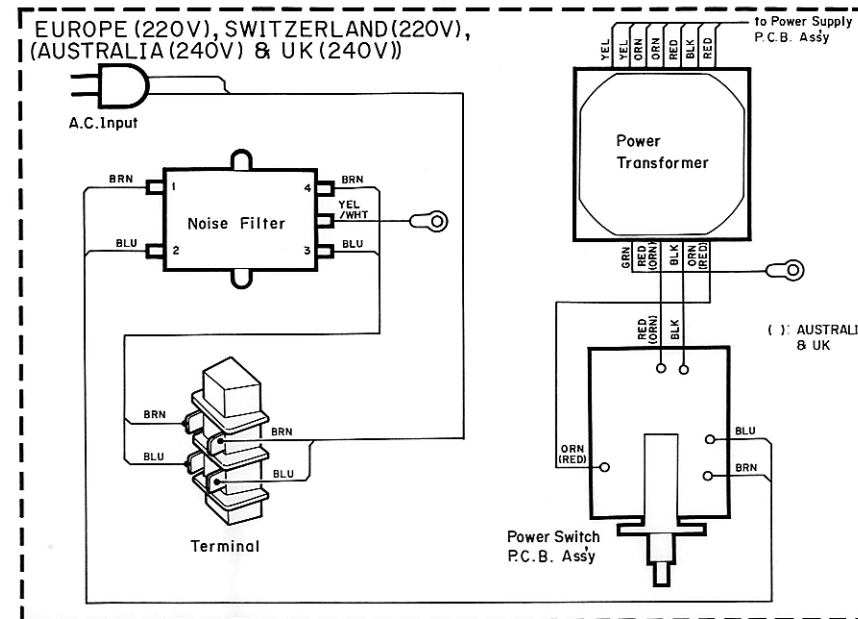
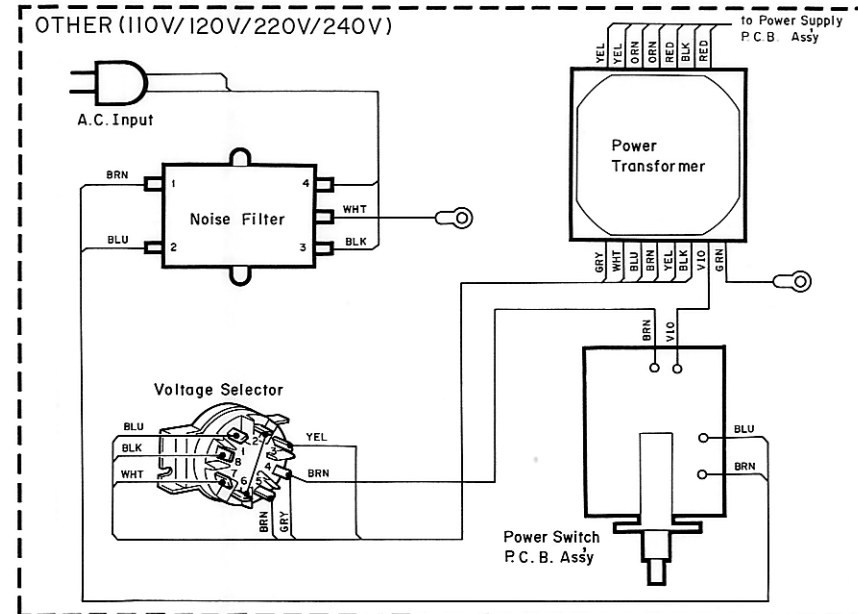
N-1000



WARNING:
Parts marked with the symbol Δ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.
It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.



N-1000 POWER SUPPLY P.C.B.



- Notes: 1. Table of wire colors
 BRN — Brown BLU — Blue
 RED — Red VIO — Violet
 ORN — Orange GRY — Gray
 YEL — Yellow WHT — White
 BRN — Green BLK — Black
2. Component side view of the P.C.B. is illustrated unless otherwise specified.

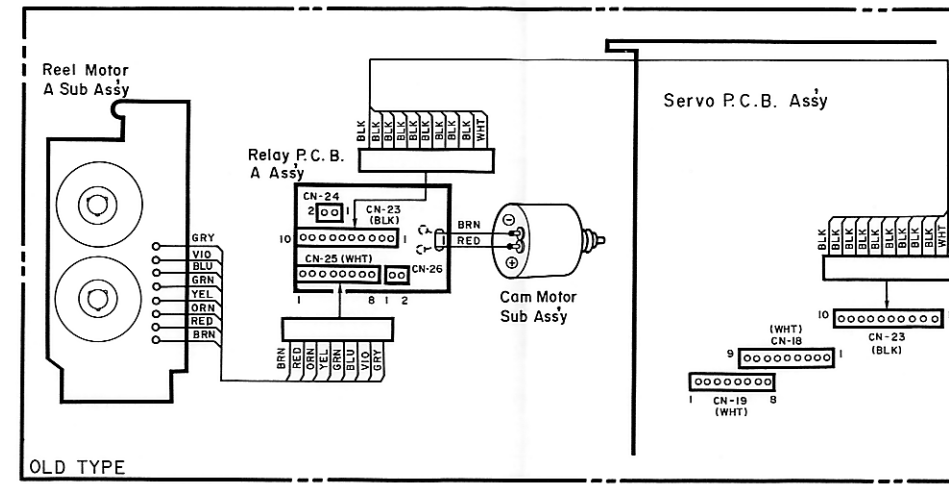
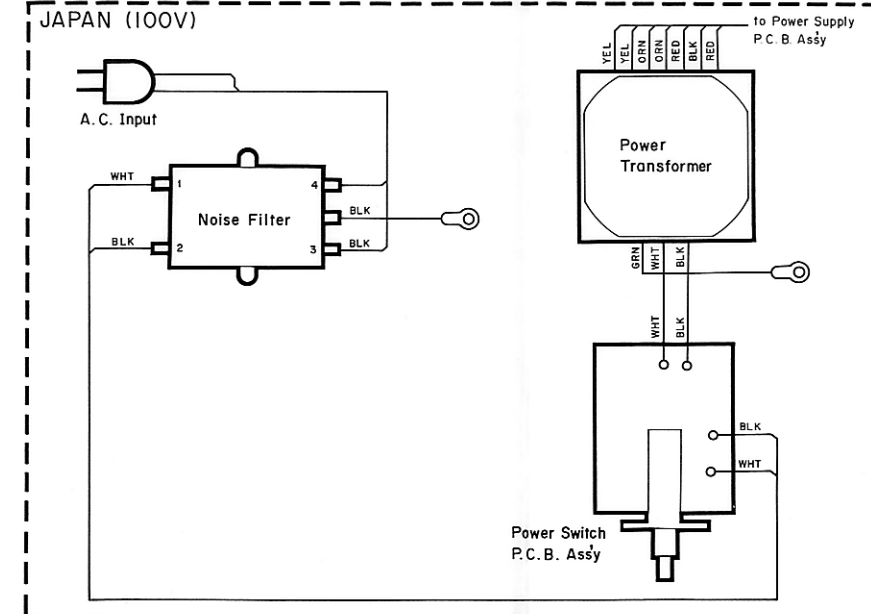
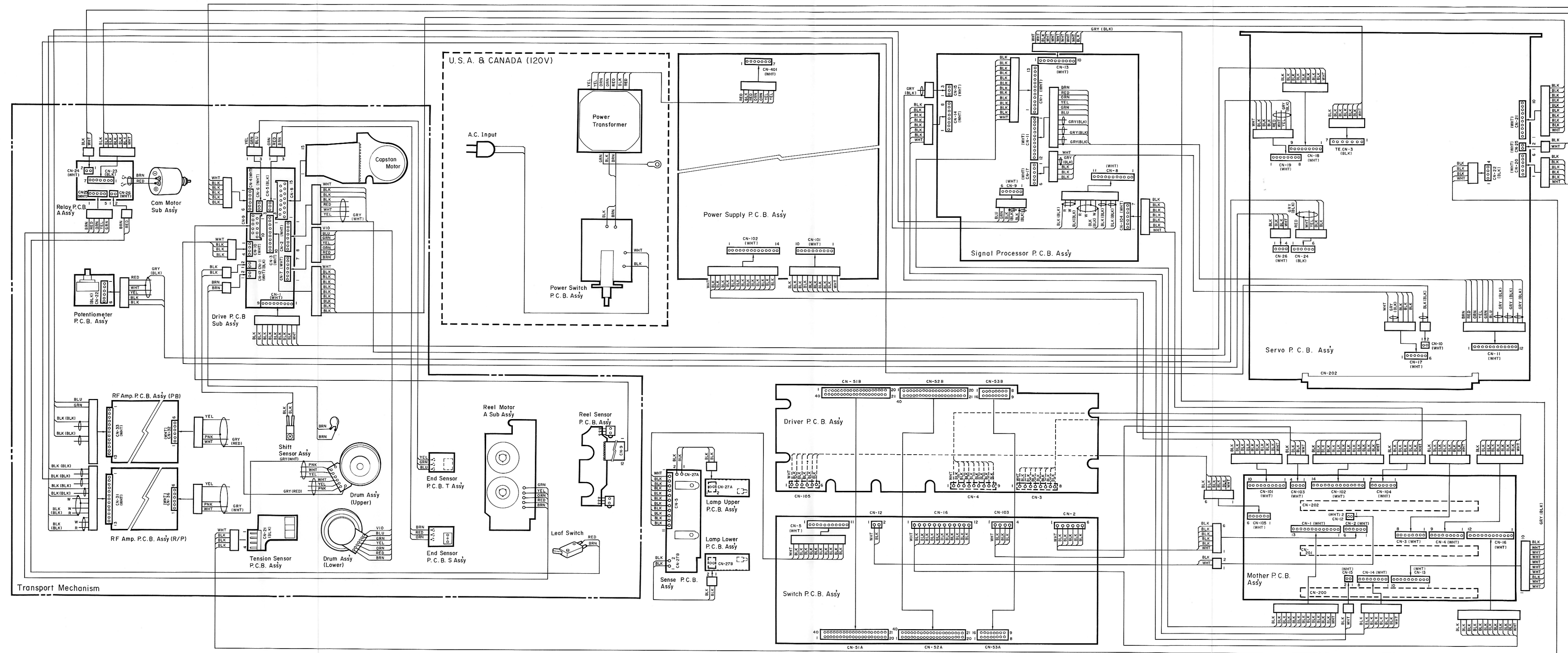


Fig. 14

15. REMOTE CONTROLLER 1000R

15.1. Package Ass'y

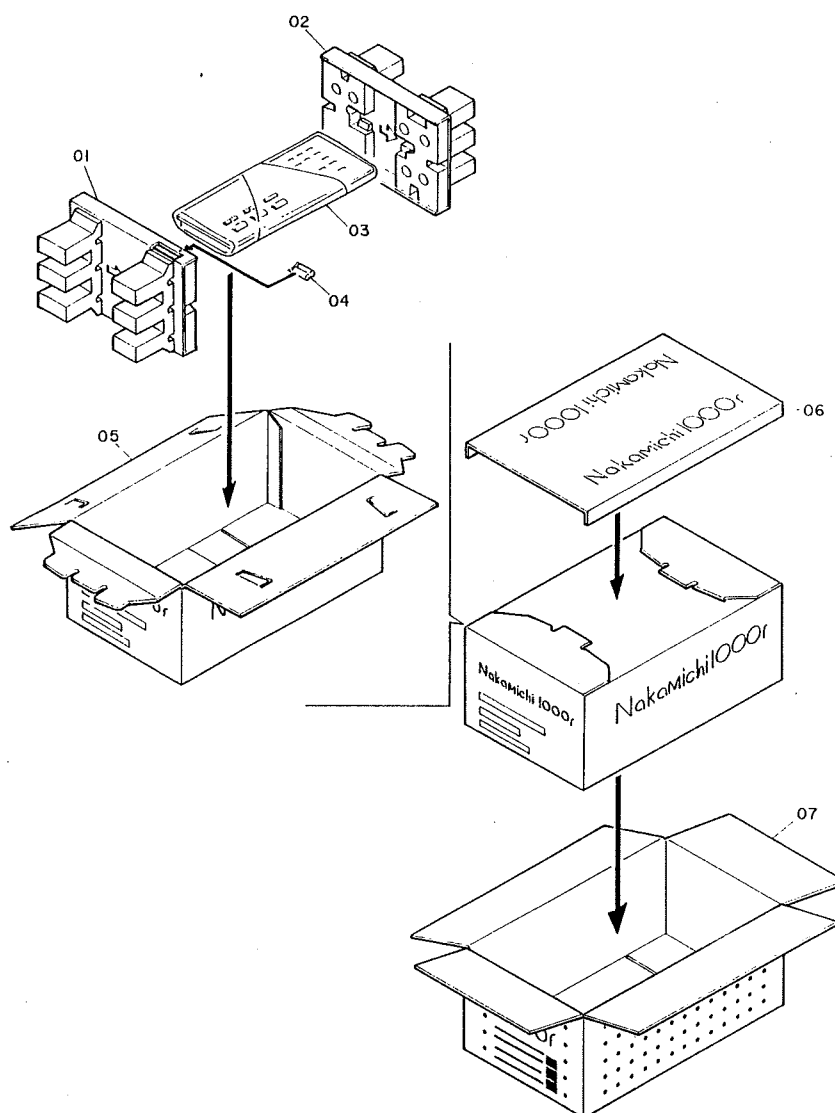


Fig. 15.1

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Q'ty</u>
	-	Package Ass'y	
01	0F04242B	Side Packing L	1
02	0F04243B	Side Packing R	1
03	0F04240A	Soft Sheet	1
04	0B90242A	Battery (UM3x2)	1
05	0F04237A	Inner Carton	1
06	0F04231A	Top Sheet	1
07	0F04234B	Outer Carton	1

15.2. Mechanism Ass'y and Parts List

(1) Synthesis

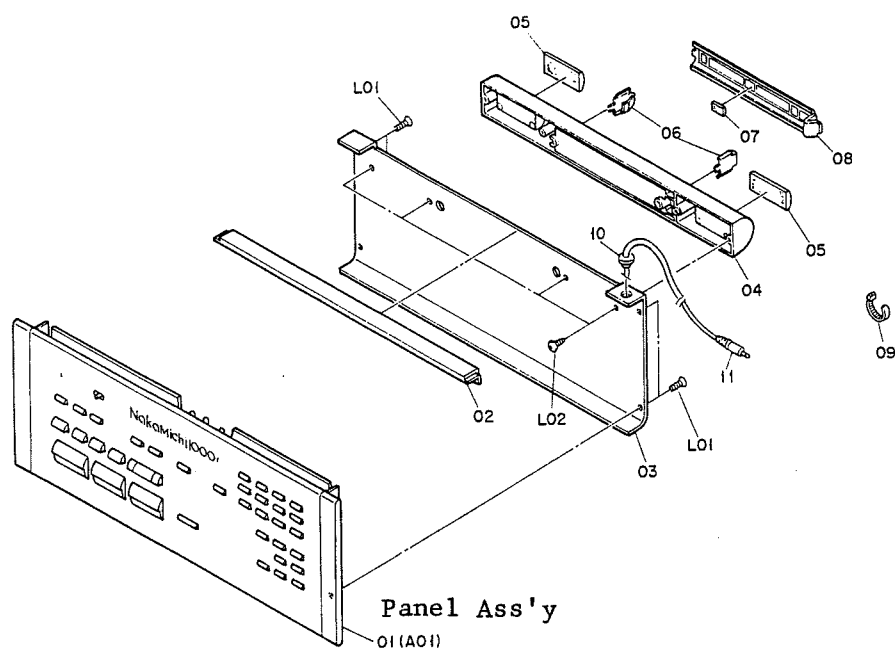


Fig. 15.2

Ref. No.	Part No.	Description Synthesis	Q'ty
01	HA05611A	Panel Ass'y (Wireless)	1
	HA05668A	Panel Ass'y (Wired)	1
02	OH05530A	Window	1
03	OH05527A	Bottom Cover (Wireless)	1
	OH05548A	Bottom Cover (Wired)	1
04	OH05536A	Battery Holder	1
05	OJ05861A	Leg Rubber	2
06	OJ05828B	Battery Spring +	2
07	OJ05862B	Battery Cushion	1
08	OH05537A	Battery Cap	1
09	OB08515A	Insu-Lock (Wired)	1
10	OJ05863A	Hole Guard (Wired)	1
11	OB83708A	Remote Cord 10m (Wired)	1
L01	OE03086A	M2.6x6 Countersunk (Black Chromate)	
L02	OE00828A	BT2.6x8 + Binding	

(2) Panel Ass'y (A01)

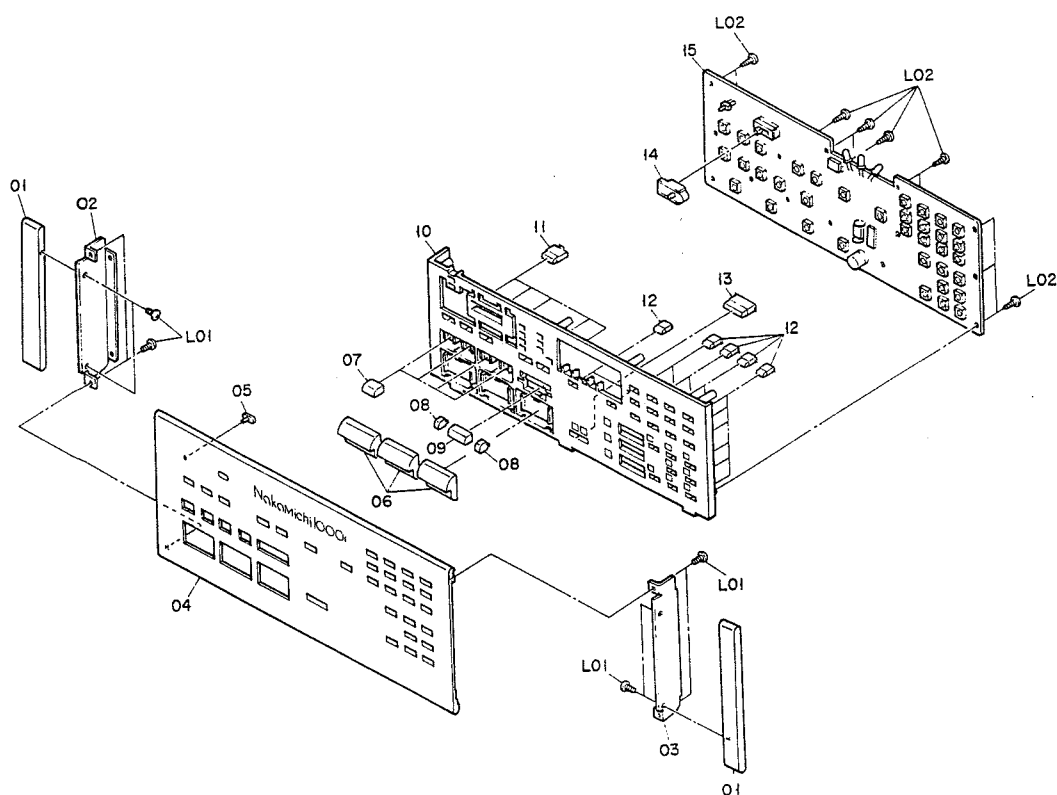


Fig. 15.3

Ref. No.	Part No.	Description	Q'ty
A01	HA05611A	Panel Ass'y (Wireless)	1
	HA05668A	Panel Ass'y (Wired)	1
01	OH05526A	Side Piece	2
02	OH05528B	Left Side Cover	1
03	OH05529B	Right Side Cover	1
04	OH05525A	Panel	1
05	OH05487A	LED Lens A	1
06	OH05531A	Transport Knob R	3
07	OH05532A	Sub Transport Knob R	4
08	OH05534A	Protect Knob R	2
09	OH05533A	Rec. Mute Knob R	1
10	OH05538A	Front Chassis	1
11	HA05603A	Sub Key 12 Knob Ass'y	5
12	HA05602A	Sub Key 9 Knob Ass'y	22
13	HA05604A	Sub Key 18 Knob Ass'y	1
14	HA05616A	Slide Switch Knob Ass'y	1
15	BA07539A	Remote P.C.B. Ass'y (Wireless)	1
	BA07592A	Remote P.C.B. Ass'y (Wired)	1
L01	OE03045A	M2. 6x3 + Binding	
L02	OE00868A	BT3x8 + Binding	

15.3 Electrical Parts List

(1) 1000R (Wireless)

Ref. No.	Part No.	Description
	BA07539A	Remote P. C. B. Ass'y (Wireless)
	OB60687C	Remote P. C. B.
U1	OB11653A	IC uPD6122G-001
Q1	OB06316A	TR 2SD882
Q2	OB01872A	TR 2SC945L
Q3	OB06013A	TR 2SA733
D1, 2	OB06398A	SiD 1SS176
D3, 4	OB06398A	SiD 1SS176
ED1, 2	OB12649A	LED SE1003
ED3	OB12649A	LED SE1003
ED4	OB12641A	LED Umber (SLP-667B-51)
X1	OB92001A	X'Tal 455kHz
R1, 2	OB09605A	RK 1 1/6W
R3	OB09605A	RK 1 1/6W
R4	OB09693A	RK 4.7K 1/6W
R5	OB09643A	RK 39 1/6W
R6	OB09685A	RK 2.2K 1/6W
R7	OB09725A	RK 100K 1/6W
R8	OB09645A	RK 47 1/6W
R9	OB09733A	RK 220K 1/6W
R12	OB09669A	RK 470 1/6W
C1	OB40207A	CE 470u 6.3V
C2, 3	OB41071A	CC 100P 50V J
S1, 2	OB70043A	Tact Switch
S3, 4	OB70043A	Tact Switch
S5, 6	OB70043A	Tact Switch
S7, 8	OB70043A	Tact Switch
S9, 10	OB70043A	Tact Switch
S11, 12	OB70043A	Tact Switch
S13, 14	OB70043A	Tact Switch
S19, 20	OB70043A	Tact Switch
S21, 22	OB70043A	Tact Switch
S23, 24	OB70043A	Tact Switch
S25, 26	OB70043A	Tact Switch
S27	OB70043A	Tact Switch
S30, 31	OB70043A	Tact Switch
S32, 33	OB70043A	Tact Switch
S34, 35	OB70043A	Tact Switch
S37, 38	OB70043A	Tact Switch
S39	OB70043A	Tact Switch
S41	OB70043A	Tact Switch
S43	OB70043A	Tact Switch
S49	OB70043A	Tact Switch
S50	OB70043A	Tact Switch
S65	OB70010A	Switch (ESD-14159)

(2) 1000R (Wired)

<u>No.</u>	<u>Part No.</u>	<u>Description</u>
	BA07592A	Remote P.C.B. Ass'y (Wired)
	OB60687C	Remote P.C.B.
U1	OB11653A	IC uPD6122G-001
U2	OB11493A	IC TC4538BP
D1, 2	OB06398A	SiD 1SS176
D3, 4	OB06398A	SiD 1SS176
ED4	OB12641A	LED Umber (SLP-667B-51)
X1	OB92001A	X'Tal 455kHz
Q3	OB06013A	TR 2SA733
Q4	OB01872A	TR 2SC945L
R7	OB09725A	RK 100K 1/6W
R8	OB09645A	RK 47 1/6W
R9	OB09733A	RK 220K 1/6W
R10	OB09725A	RK 100K 1/6W
R11	OB09693A	RK 4.7K 1/6W
R12	OB09669A	RK 470 1/6W
C1	OB40207A	CE 470u 6.3V
C2, 3	OB41071A	CC 100P 50V J
C4	OB41398A	CPP 330P 50V J
S1, 2	OB70043A	Tact Switch
S3, 4	OB70043A	Tact Switch
S5, 6	OB70043A	Tact Switch
S7, 8	OB70043A	Tact Switch
S9, 10	OB70043A	Tact Switch
S11, 12	OB70043A	Tact Switch
S13, 14	OB70043A	Tact Switch
S19, 20	OB70043A	Tact Switch
S21, 22	OB70043A	Tact Switch
S23, 24	OB70043A	Tact Switch
S25, 26	OB70043A	Tact Switch
S27	OB70043A	Tact Switch
S30, 31	OB70043A	Tact Switch
S32, 33	OB70043A	Tact Switch
S34, 35	OB70043A	Tact Switch
S37, 38	OB70043A	Tact Switch
S39	OB70043A	Tact Switch
S41	OB70043A	Tact Switch
S43	OB70043A	Tact Switch
S49	OB70043A	Tact Switch
S50	OB70043A	Tact Switch
S65	OB70010A	Switch (ESD-14159)
	OB83810A	GND Ass'y (1)

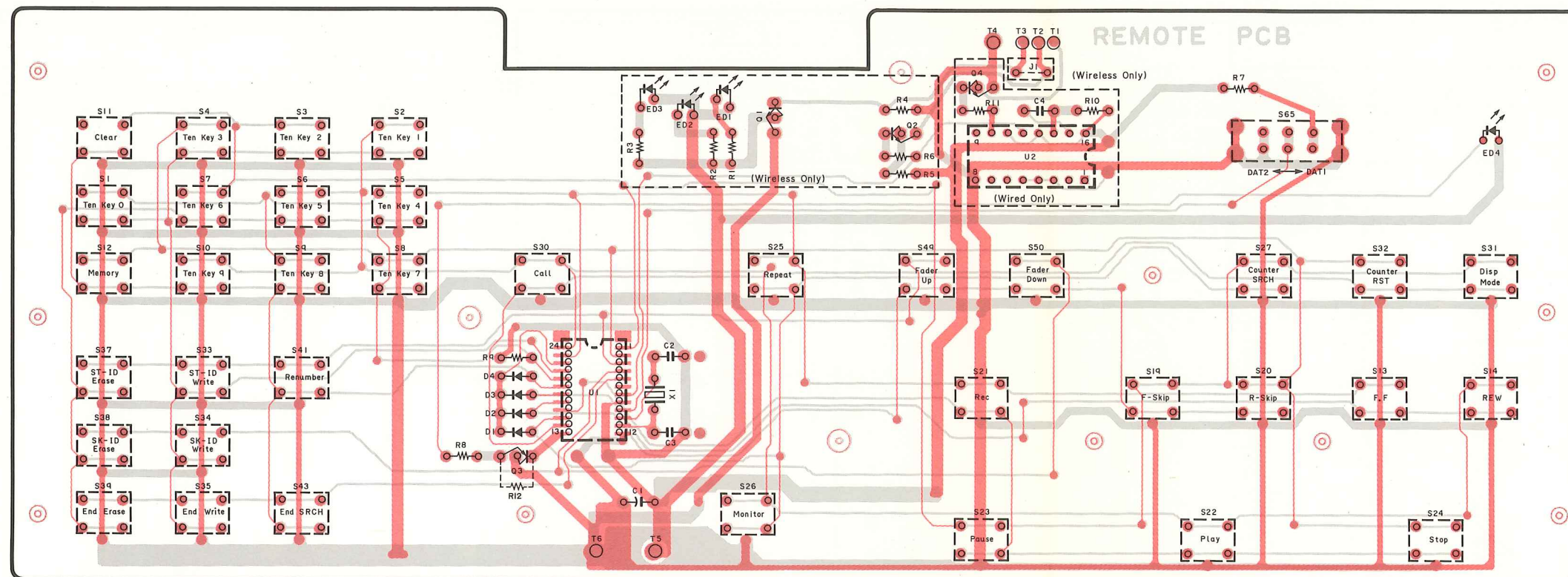


Fig. 15.4 Remote P.C.B. Ass'y (N-1000R)

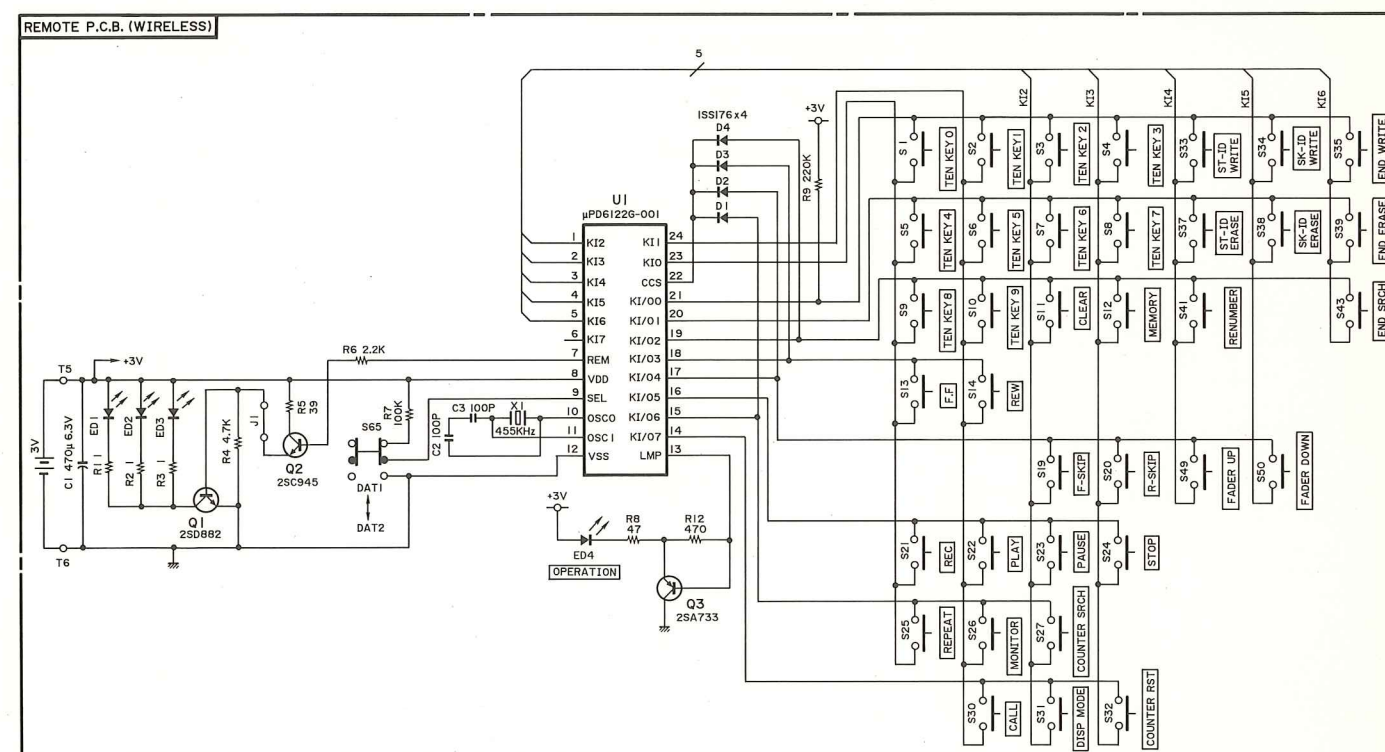


Fig. 15.5 N-1000R Wireless Type

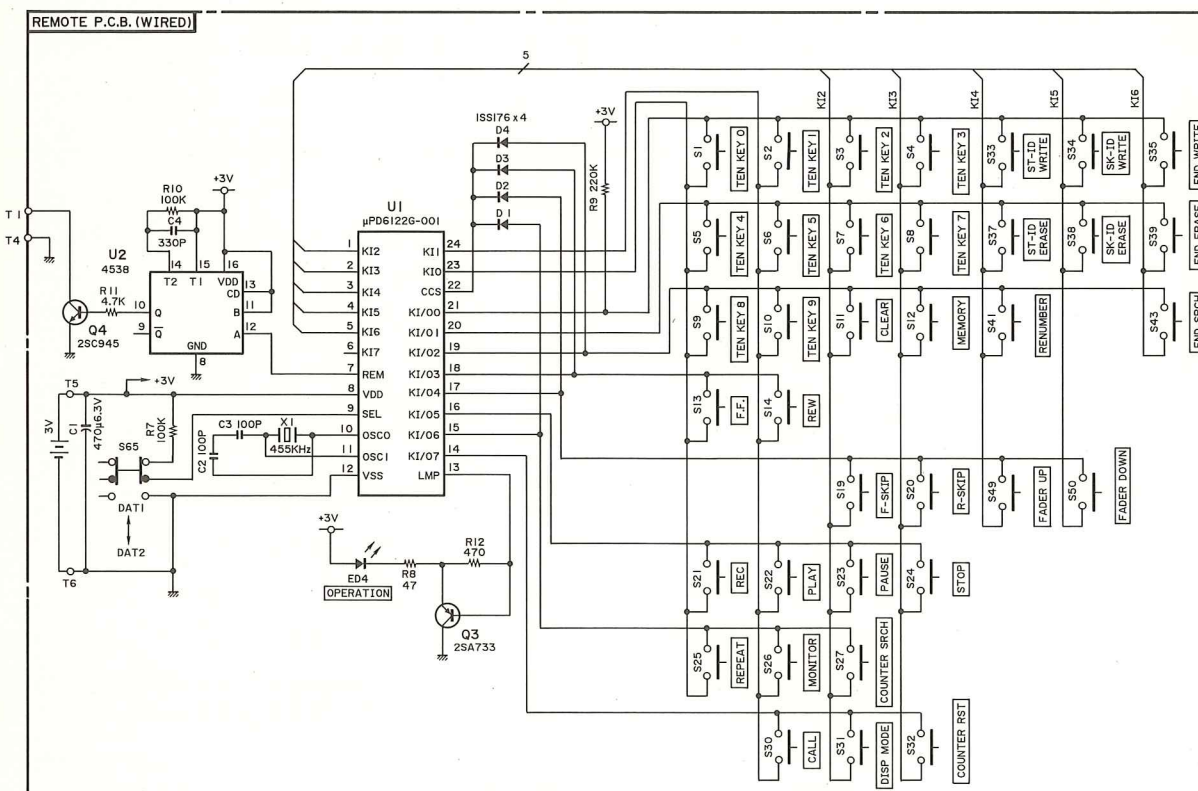


Fig. 15.6 N-1000R Wired Type

16. LUBRICATION

The Transport Mechanism Ass'y is of lubrication-free type. However, when the following parts are replaced, apply the specified lubricant for each replaced part.

(1) FLOIL 946P

No.	Part Name	Places
A	Pinch Lever Shaft	1
B	Loading Lever T Ass'y Shaft	1
C	Loading Lever S Ass'y Shaft	1
D	Shaft for Tension Arm Ass'y	1
E	Shaft for Guide Roller T3 Arm Ass'y	1
F	Shaft for Guide Roller S3 Arm Ass'y	1

(2) FLOIL G902M

No.	Part Name	Places
G	Cam Drive Gear B (Inside)	1
H	Loading Arm Ass'y Shafts/Slits	4
I	Rollers	3
J	Cam Gear Grooves	3
K	Brake Drive Lever Ass'y	1
L	VR Gear B/VR Gear A Ass'y	2
O	Lid Plate Ass'y Shaft	1
P	Side Chassis R Sub Ass'y Shaft	1
Q	Eject Lever Ass'y Shafts	2

(3) FLOIL G902

No.	Part Name	Places
M	Cam Drive Gear B (Small Gear Teeth)	1
N	Worm Gear B	1

Note: FLOIL 946P, G902M and G902 are made by Kanto Chemicals Co., Ltd. in Japan.
We suggest that you use the above or equivalent type. If unavailable please contact Kanto Chemicals Co., Ltd., 2-7, Kanda Sakuma-cho, Chiyoda-ku, Tokyo 101, Japan.

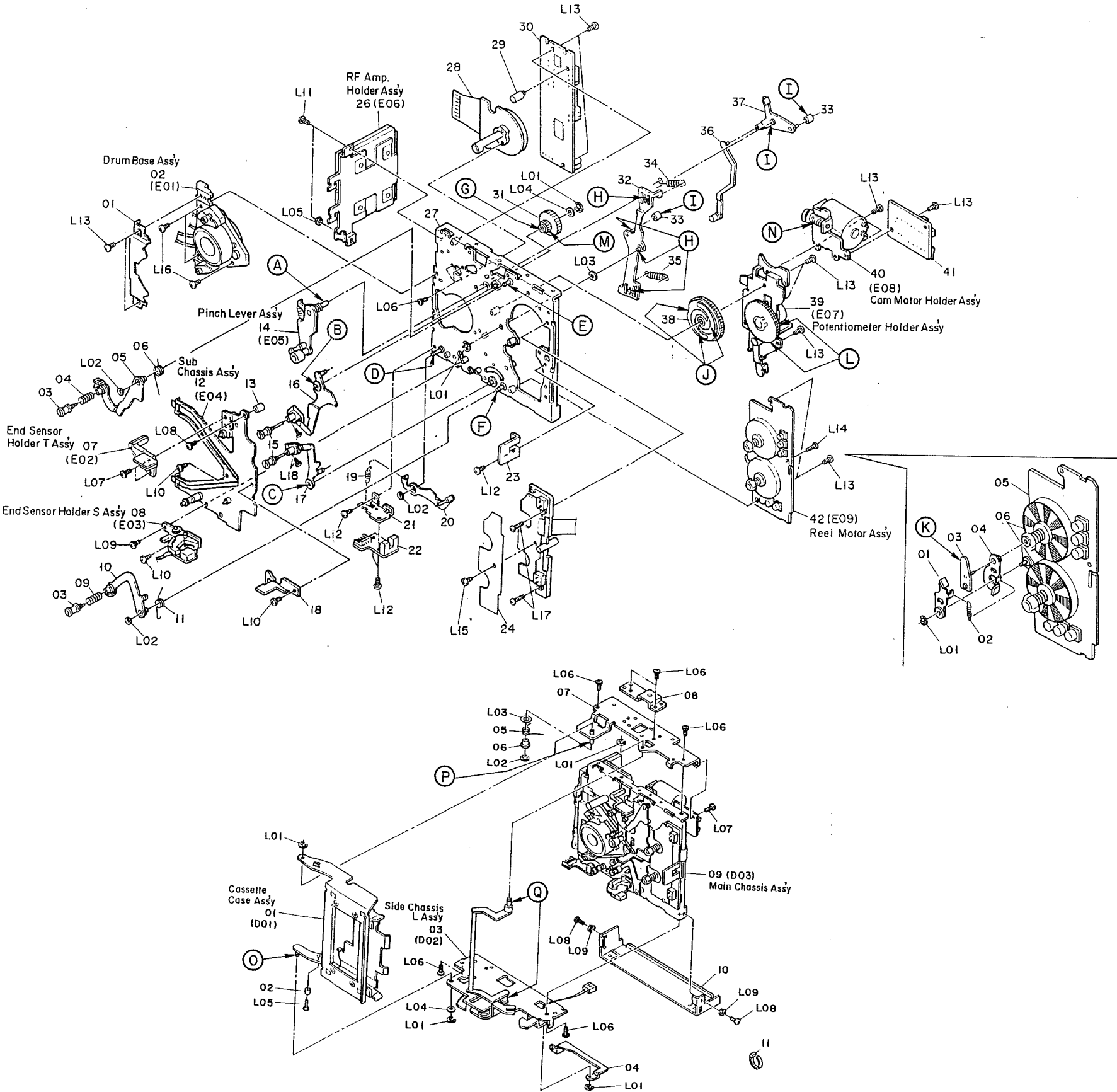


Fig. 16

17. SPECIFICATIONS

Nakamichi 1000 Digital Audio Recorder

System	Digital recorder with rotary head (using DAT cassettes)
Sampling Frequencies	48 kHz for recording/playback 44.1 kHz for playback 32 kHz for recording/playback
Drum Revolution Speed	2000 rpm
Tape Speed	8.15 mm/s
Wow-and-Flutter	Below measurement limit
Digital Input	75-ohm coaxial/optical (switchable)
Digital Output	75-ohm coaxial/optical (parallel)
Power Requirements	120, 220, 240 or 110/120/220/240 V AC, 50/60 Hz (According to country of sale)
Power Consumption	40W max.
Dimensions (excluding protruding parts and feet)	435 (W) × 133 (H) × 370 (D) mm 17-1/8 (W) × 5-1/4 (H) × 14-9/16 (D) inches
Approximate Weight	16 kg, 35 lbs. 4 oz.

Nakamichi 1000r Remote Controller

Power Supply	3 V DC (1.5 V × 2)
Dimensions (excluding protruding parts)	337 (W) × 50 (H) × 122 (D) mm 13-1/4 (W) × 1-15/16 (H) × 4-13/16 (D) inches
Approximate Weight	920 g, 2 lbs. (including batteries)
Supplied Accessories	Aluminum mechanism panel × 1 Digital coaxial cable × 2 Digital optical cable × 2 Blank DAT cassette (120 min.) × 1 Prerecorded DAT cassette × 1 Cleaning tape × 1 Polishing cloth × 1 IEC R6 batteries (size AA) × 2 for Nakamichi 1000r

- Specifications and design are subject to change for further improvement without notice.

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Nakamichi Canada
Nakamichi GmbH
Nakamichi Australia

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