

SERVICE MANUAL

4-CHANNEL
STEREO TAPE DECK

QT-74
F

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1. SPECIFICATIONS

Operation	One motor, belt drive for capstan and reels Center capstan mechanism Automatic and manual reversing, for recording and playback modes
Heads	Four-track four-channel record-playback head x 1 Four-track two-channel record-playback head x 1 (reverse) Four-track two-channel erase head x 2 Four-track two-channel erase head x 1 (reverse)
Motor	Synchronous motor (hysteresis type)
Transistors	28
Diodes	7
Tape speeds	7½ in. (19 cm)/sec, 3¾ in. (9.5 cm)/sec.
High speed wind times	110 sec. at 370m (1200 feet) tape
Wow and flutter	0.10% RMS (7½ ips), 0.08% WRMS (7½ ips)
Signal to noise ratio	56dB (LH tape), 53dB (normal tape)
Distortion	1.0% (LH tape), 1.2% (normal tape)
Frequency response	30 ~ 20,000 Hz (7½ ips) 50 ~ 15,000 Hz (±2dB 7½ ips)
Input	Microphone: 0.3mV ~ 240mV (50kΩ) x 4 Line input: 30mV ~ 24V (330kΩ) x 4
Output	Line output: 0.775V/50kΩ (at level meter zero position) x 4 Record-playback connector: DIN Headphone jack: Front and Rear, impedance of 8Ω
Subfunctions	Tape selector switch. LH and standard (normal) tape Auto-reverse switch Pause lever Four-channel recording master level control Playback level controls Four-digit counter Hinged head cover
Power requirements	AC. 110V, 120V, 130V, 220V and 240V (Switchable) 50Hz or 60Hz
Power consumption	80W
Dimensions	434(W) x 478(H) x 212(D) mm 17-1/8(W) x 18-13/16(H) x 8-3/8(D) in.
Weight	Without package: 17kg (37 lb 6 oz) With package: 21kg (46 lb 3 oz)

Furnished parts		Empty reel (Pioneer PR-75)	1
		Reel clampers	2
		Connection cables	4
		Splicing tape	1
		Sensing tape	1
		Cleaning kit	1
		Cleaning ribbon	1
		Acryl dust cover	1
		Fuse (1A)	1
		Motor pulley (50 or 60Hz)	1
		Hex. wrench	1
		Operating instructions	1

NOTE: Specifications and the design subject to possible modification without notice due to improvements.

2. PARTS IDENTIFICATION

POWER SWITCH

Push this button to turn the unit ON: push it again and release it to turn the power OFF.

AUTO-REVERSE SWITCH

Please note that in the ON position the use of sensing tape enables recording and playback with automatic reverse, and continuously repeated playback, etc.

NOTE:

In the OFF position the auto reverse does not function. When the MODE switch is set for 4 CH. STEREO, the auto reverse does not also function.

TAPE COUNTER

Depressing the button will reset the tape counter to "0000."

LEVEL METERS

This indicates the signal level during playback and recording.

MIC INPUT JACKS (FRONT MIC)

These are the input jacks for the FRONT channels, and are clearly marked LEFT and RIGHT.

MIC INPUT JACKS (REAR MIC)

These are the input jacks for the REAR channels, and are clearly marked LEFT and RIGHT.

RECORDING LEVEL CONTROLS (REC)

These controls are used in setting the balance between each channel when recording.

PLAYBACK LEVEL CONTROLS (P.B.)

These controls are used to adjust the volume of sound played back.

RECORDING INDICATOR LAMPS

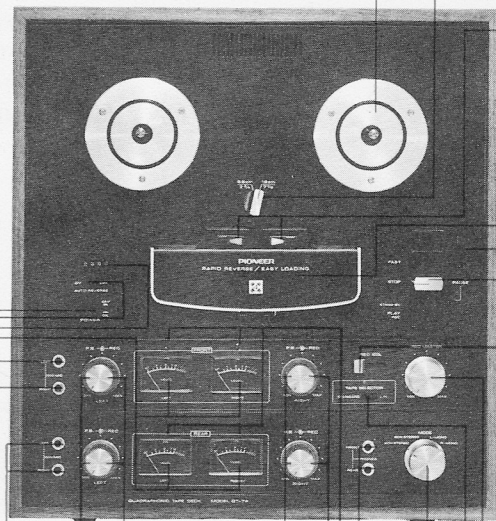
This gives a visible indication that recording is taking place.

NOTE:

The red indicator lamps comes on as soon as the RECORDING lever is pulled to the right, but recording will not actually take place until the FUNCTION lever is in the PLAY- REC position.

HEADPHONE JACKS (PHONES)

These are jacks for stereo headphones. The FRONT jack will give the sound playback or monitoring recorded sound on the front left and right channels, and use of the REAR jack will give the sound playback or monitoring recorded sound on the rear left and right channels.



REEL BASE

Reel sizes up to 7-inch can be accommodated.

TAPE SPEED SELECTOR

Turn fully to the left for 3-3/4 ips (9.5 cm/s) and fully to the right for 7-1/2 ips (19 cm/s). Make this adjustment only when the FUNCTION LEVER is set at PLAY-REC.

TAPE DIRECTION SELECTOR BUTTONS

Push the left-hand button and the tape will travel from right to left.

Push the right-hand button and the tape will travel from left to right.

NOTE:

With the MODE switch set at 4 CH. STEREO and the FUNCTION LEVER at PLAY-REC, the tape will only travel from left to right.

HEAD COVER

This is hinged for ready access to head assembly.

PAUSE LEVER

This lever is for temporarily stopping the tape travels. Bringing down the PAUSE lever will stop the tape travels while the unit remains in its previous mode, recording or playback. Restart the tape travels with the FUNCTION lever in the PLAY-REC position.

FUNCTION LEVER

At FAST the tape will be wound on or rewound at maximum speed.

At STOP tape travel will be arrested.

At STAND-BY the tape is ready to travel.

At PLAY-REC the tape will either play back or be recorded at the predetermined speed (7½ips or 3¾ips).

RECORDING LEVER (REC)

Pull the lever all the way to the right to make the unit ready for recording.

RECORDING MASTER LEVEL CONTROL (REC MASTER)

This control is used to set the level when recording. It affects all of the channels.

TAPE SELECTOR

L.H. setting is used with low noise, high output tapes. STANDARD setting is used with normal tapes.

MODE SWITCH (MODE)

At 4 CH. STEREO: 4-channel playback and recording.

At 2 CH. STEREO: 2-channel playback and recording.

At L-MONO: LEFT channel monophonic playback and recording.

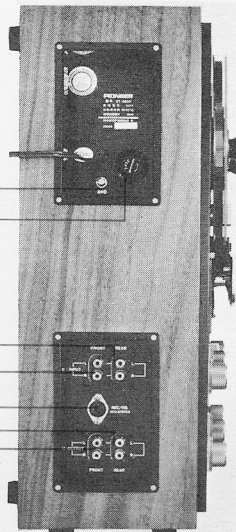
At R-MONO: RIGHT channel monophonic playback and recording.

LINE VOLTAGE SELECTOR & FUSE

Refer to LINE VOLTAGE SETTING AND FUSE on page 46.

GROUND TERMINAL

Where hum or externally induced noise is obtrusive this terminal should be used to ground the deck.



LINE OUTPUT JACKS (OUTPUT FRONT)

These jacks deliver the FRONT channel (FRONT LEFT, FRONT RIGHT) output. The particular output signal will be determined by the MODE switch setting.

LINE OUTPUT JACKS (OUTPUT REAR)

These jacks deliver only the sound for the REAR channels (REAR LEFT, REAR RIGHT) of 4-channel stereo playback. They deliver no output if the MODE switch is set to 2 CH. STEREO, L-MONO, or R-MONO.

DIN CONNECTOR (REC/P.B.)

This is for use with 2-channel stereo. Direct monitoring is impossible in playback.

LINE INPUT JACKS (INPUT FRONT)

These are the input jacks for the FRONT channels. The input signal will be determined by the MODE switch setting.

LINE INPUT JACKS (INPUT REAR)

These are the input jacks for the REAR channels of 4-channel stereo. They cannot be used if the MODE switch is set at 2 CH. STEREO, L-MONO, or R-MONO.

3. DISASSEMBLY

3.1 DECK PANEL

For mechanism checks:

1. Remove the three knobs (FUNCTION lever, TAPE SPEED SELECTOR knob, PAUSE lever).
2. Open the head cover.
3. Remove screws 1, 2, 3, 4, in Fig. 1.

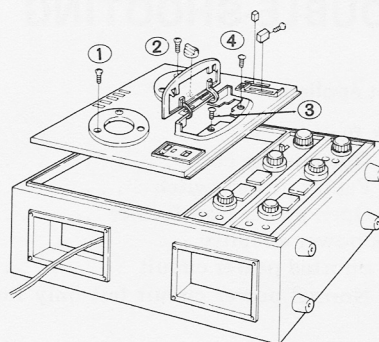


Fig. 1

3.2 AMPLIFIER PANEL

For checking lamps and LEVEL meters:

1. Remove all knobs in Fig. 2.
2. Remove the lock nuts from the four control shafts.

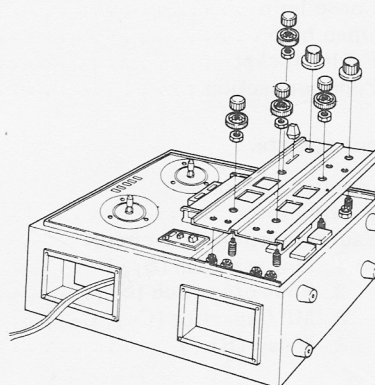


Fig. 2

3.3 BOTTOM PANEL

For checking motor, plunger and power supply:
Remove the six screws (1 ~ 6) shown in Fig. 3, then remove the hard board bottom panel.

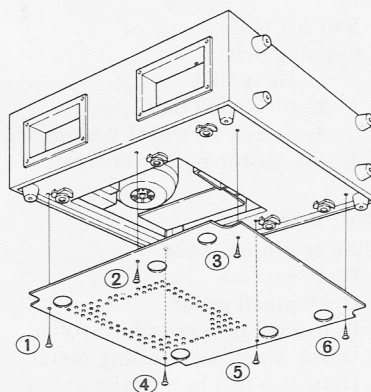


Fig. 3

3.4 WOODEN CABINET

For checks and alignments of electric circuits:

1. Remove the six screws (7 ~ 12) and the claw washers shown in Fig. 4, then lift the unit from the wooden cabinet.
2. Pull off the metal shield cover as shown in Fig. 5.

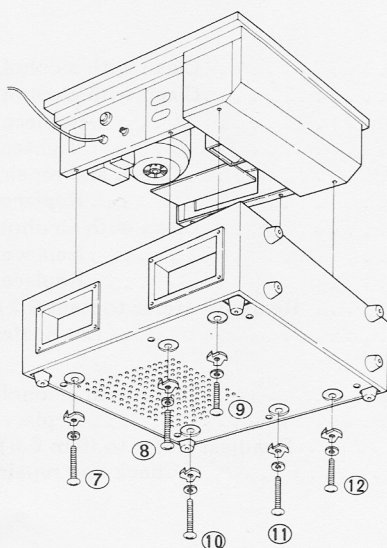


Fig. 4

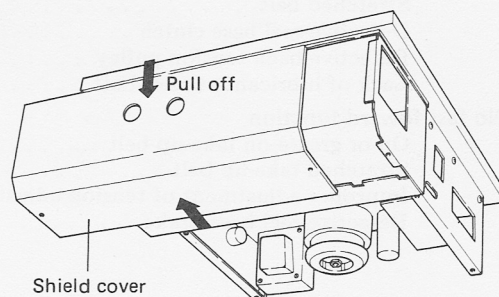


Fig. 5

4. TROUBLE-SHOOTING

Power is not applied.

1. Check fuse.
 - Open power cord Replace.
 - Faulty power switch Replace.
 - Open power transformer Replace.
2. Check power circuitry.
 - Shorted power circuit Repair.
 - Normal power circuit but only fuse blows Replace fuse.

Lamp does not light.

- Loose bulb Tighten.
- Open bulb Replace.
- Faulty socket Replace.
- Poor connection Reconnect.

Motor does not operate.

- Is voltage applied to motor?
 - Yes: Faulty motor Replace.
 - No : Faulty motor power circuit
 - 1. Motor switch (S_{10}) Replace.
 - 2. Shut-off switch (S_{11}) Replace.
 - 3. MP Capacitor (C_{71} , C_{72}) Replace.
 - 4. Relay (RL_1) Replace.

Capstan does not turn (motor does operate).

- Check belt.
 - Belt off pulleys Re-install.
 - Slipping belt
 - 1. Dirty belt Clean with alcohol.
 - 2. Stretched belt Replace.
 - 3. Seized flywheel bearing Replace.
 - Loose motor pulley setscrew Tighten.

Tape transport trouble

a. Not feeding at proper speed

- Dirty capstan Clean with alcohol.
- Dirty pinch roller Clean with alcohol.
- Deformed or worn pinch roller Replace.
- Loose pinch arm raising metal Tighten.
- Defective reel base brake Check and repair.
- Seized reel shaft Replace.
- Oil or grease on belt Clean with alcohol.
- Stretched belt Replace.
- Defective reel base clutch Replace.
- Defective back tension pulley Readjust (refer to item 6.2).
- Lack of lubricant at reel shaft Lubricate.

b. No fast forward function

- Oil or grease on take-up belt Clean with alcohol.
- Stretched take-up belt Replace.
- Improper adjustment of tension adjust screw Readjust (refer to item 6.6).
- Defective reel base brake Check and repair.

c. Malfunction of tape direction selector

Faulty switch (S_8) Repair or replace.
 Faulty switch (S_7) Replace.
 Faulty relay (RL_1) Replace.

Tape slackens when in STOP position.

Defective brake Check and repair.
 Brake spring not in place Hook spring in place.
 Dirty reel base side Clean

Tape speed will not change.

Defective speed selector cam ass'y Check and repair
 NOTE: Do not move TAPE SPEED SELECTOR knob in STOP and FAST position.

FUNCTION lever will not turn to PLAY position.

Slide stopper spring not in place Hook spring in place.
 Deformed slide stopper Repair or replace.

Counter does not operate.

Counter belt not in place Place over pulleys.
 Faulty counter Replace.

Excessively mechanical noise

Faulty motor Replace.
 Lack of lubricant at rotating parts Lubricate.
 Drive belt touching speed selector arm Check and repair.

PAUSE lever sticks

Pause lever spring not in place Hook spring in place.

No sound (mechanical parts function normally)

Do level meter pointers deflect?

No : Attempt to play unrecorded tape Change tape.
 Defective power circuit Repair.
 Defective amplifier circuit Repair or replace P.C. board.
 Faulty muting switch (S_6) Replace.
 Yes: Connecting cables
 1. Not connected Reconnect.
 2. Poor connection Reconnect or replace.
 3. Open Repair or replace.

No recording function (playback okay).

Connecting input cables
 1. Not connected Reconnect.
 2. Poor connection Repair or replace.
 3. Open Repair or replace.
 No input signal (microphone, other input source) Check.
 NOTE: Inserting a plug into a microphone opens the LINE INPUT connection.
 Defective switch (S_1 , S_2 , S_{101} , S_{102}) Replace P.C. board.
 Faulty oscillator circuit Check and repair.

Low sound output

a. Playback

Dirty head Clean with alcohol.
 Worn head Replace.
 Defective amplifier circuit Repair or replace P.C. board.
 Playback of tape recorded at low level.

b. Recording and playback

Check quality

Normal: Low recording level

1. Improper settings of level controls Raise levels.
2. Low input level Raise levels.
3. Improper adjustment of record levels Readjust (refer to item 10.2).
4. Improper adjustment of level meters Readjust (refer to item 9.3).

Abnormal: Incorrect recording bias

1. Improper operation of oscillator circuit Check and repair.
2. Improper adjustment of recording bias Readjust (refer to item 8.2).
3. Defective capacitor ($C_{51} \sim C_{54}$) Replace.
4. Defective potentiometer ($VR_9 \sim VR_{14}$) Replace.

Excessive distortion

Excessive recording levels

1. Excessive settings Reduce levels.
2. Excessive input levels Reduce levels.

Low bias level Readjust (refer to item 8.2).

Low power supply voltage Check source.

Defective amplifier circuit Check and repair.

No high response

a. Playback

Head

1. Improper adjustment of head slit angle Readjust (refer to item 7).
2. Worn Replace.
3. Dirty Clean with alcohol.

Improper adjustment of playback equalizer Readjust (refer to item 9.2).

b. Record and playback

Improper recording bias Readjust (refer to item 8.2).

Improper use of TAPE SELECTOR switch.

No low response

Defective playback equalizer amplifier element Replace.

No low range in recorded information

No erasing function

Erase head

1. Open Replace.
2. Dirty Clean with alcohol.

Defective oscillator circuit Check and repair.

Excessive drop-out

Dirty head Clean with alcohol.

Use of defective tape Replace with new tape.

Poor signal-to-noise ratio

a. Excessive hum

Floating ground side of connecting cables Repair.

Faulty power circuit Check and repair.

Deck located in strong magnetic field Relocate deck.

b. Excessive noise

Magnetized head Demagnetize with demagnetizer.

Faulty circuit elements Check and repair.

Poor solder connection Check and resolder.

Poor contact Check and recontact.

Faulty tape Replace with new tape.

5. SCHEMATIC DIAGRAMS, P.C.BOARD PATTERNS AND PARTS LIST

5.1 MISCELLANEOUS PARTS

- CAPACITORS: IN μ F UNLESS OTHERWISE NOTED p: pF
 • RESISTORS: IN Ω , $\frac{1}{4}$ W UNLESS OTHERWISE NOTED k: k Ω , M: M Ω

CAPACITORS

Symbol	Description			Part No.
C1	Mylar	0.068	50V	CQMA 683K 50
C2	Mylar	0.068	50V	CQMA 683K 50
C68	Mylar	0.1	50V	CQMA 104K 50
C69	Electrolytic	100	50V	CEB 101P 50
C70	Ceramic	0.01	1.4kV	C43-003-0
C71/C72	MP	1+3	250V	C22-403-A
C101	Mylar	0.068	50V	CQMA 683K 50
C102	Mylar	0.068	50V	CQMA 683K 50

RESISTORS

Symbol	Description			Part No.
R1	Carbon film	3.3k		RD $\frac{1}{4}$ PS 332J
R2	Carbon film	330k		RD $\frac{1}{4}$ PS 334J
R3	Carbon film	3.3k		RD $\frac{1}{4}$ PS 332J
R4	Carbon film	330k		RD $\frac{1}{4}$ PS 334J
R5	Carbon film	33k		RD $\frac{1}{4}$ PS 333J
R6	Carbon film	33k		RD $\frac{1}{4}$ PS 333J
R7	Carbon film	120		RD $\frac{1}{4}$ PS 121J
R8	Carbon film	120		RD $\frac{1}{4}$ PS 121J
R65	Wire wound	75	10W	RCN-001-0
R66	Wire wound	75	10W	RCN-001-0
R67	Carbon film	5.6	$\frac{1}{4}$ W	RD $\frac{1}{4}$ PW 5R6J
R101	Carbon film	3.3k		RD $\frac{1}{4}$ PS 332J
R102	Carbon film	330k		RD $\frac{1}{4}$ PS 334J
R103	Carbon film	3.3k		RD $\frac{1}{4}$ PS 332J
R104	Carbon film	330k		RD $\frac{1}{4}$ PS 334J
R107	Carbon film	120		RD $\frac{1}{4}$ PS 121J
R108	Carbon film	120		RD $\frac{1}{4}$ PS 121J

POTENTIOMETERS

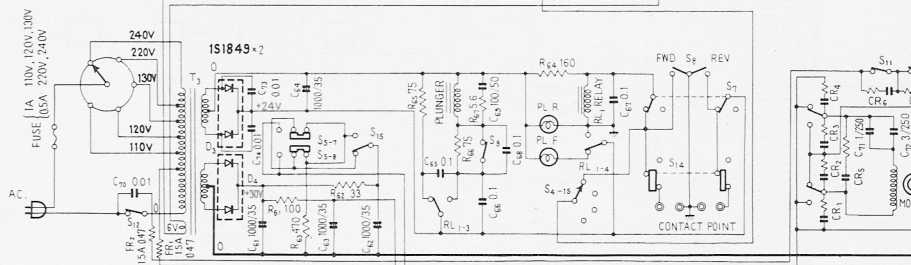
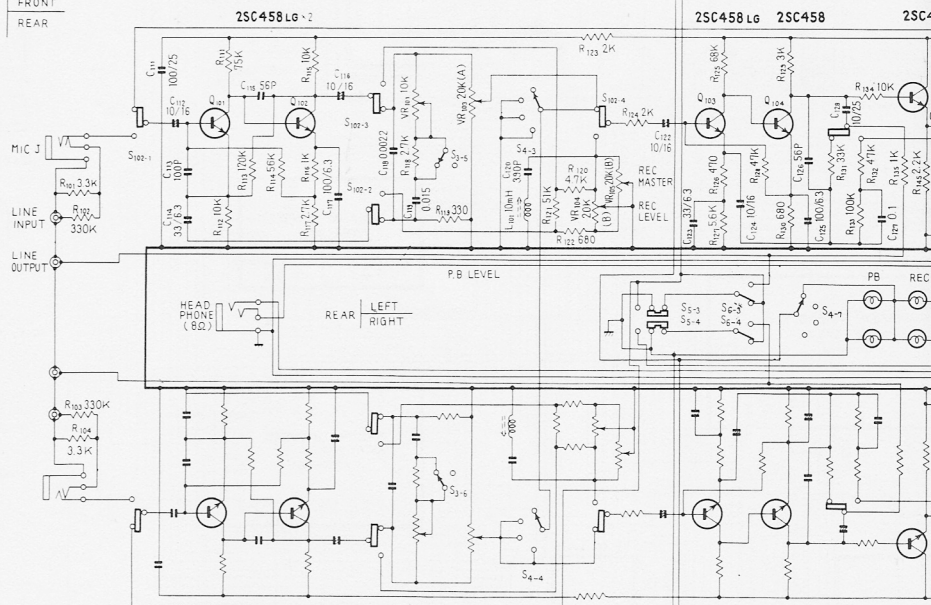
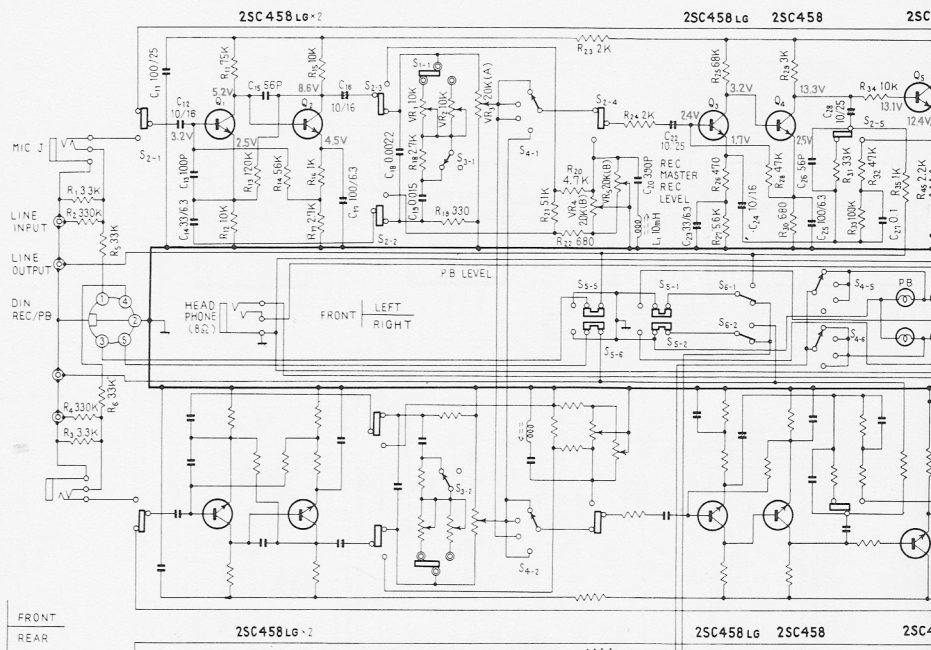
Symbol	Description			Part No.
VR3	VR	} dual	20k-A (P.B. level)	RCV-002-0
VR4	VR		20k-B (REC. level)	
VR103	VR	} dual	20k-A (P.B. level)	RCV-002-0
VR104	VR		20k-B (REC. level)	
VR5	} VR	4-gang	20k-B (REC MASTER)	RCV-001-0
VR105				

SWITCHES

Symbol	Description	Part No.	
S7	Lever switch (Contact point off)	S42-403-A	
S9	Spring switch (Plunger)	S48-855-0	
S10	Microswitch (Motor)	S21-411-0	
S11	Microswitch (Shut off)	S21-851-0	
S12	Push switch (POWER)	RSA-009-0	
S14	Slide switch (AUTO-REVERSE)	S41-854-0	
S15	Microswitch (Oscillator)	S21-418-0	
S16	Slide switch (TAPE SELECTOR)	RSH-006-0	

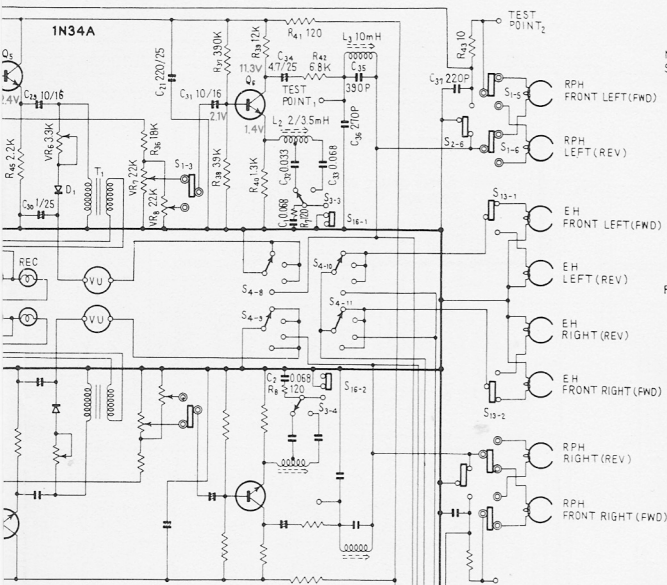
OTHERS

Symbol	Description	Part No.	
	Power supply circuit assembly	RWR-020-A	
	Equalizer switch assembly	RWX-008-A	
	Amplifier A assembly	RWF-003-B	
	Amplifier B assembly	RWF-004-B	
	Oscillator assembly	RWA-002-B	
	Mode switch circuit assembly	RWX-001-A	
	REC switch circuit assembly	RWX-002-0	
	Muting switch assembly	RWX-003-0	
	Lamp board	RWX-004-0	
	Power transformer	RTT-007-A	
	Motor	RXM-003-A	
	REC./P.B. head (4ch)	RPB-003-0	
	REC./P.B. head (2ch)	RPB-004-0	
	Erasing head	RPB-005-A	
	Plunger	N15-852-0	
	Level meter	RAW-013-0	
	Phone jack (MIC.)	K72-024-0	
	Phone jack (Headphone)	RKN-002-A	
	Connector (DIN type 5P)	K93-003-B	
	Phono jack (4 Jacks)	RKB-001-A	
	Line voltage selector (Fuse holder)	AKR-001-0	
	Fuse 0.5A	E21-007-0	
	Power cord	D11-003-E	
	Pilot lamp (Meter)	REL-002-0	
	Pilot lamp	E22-851-B	
FR2	Connection cable	D53-851-0	
	Fuse metallized resistor	REK-006-0	



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NOTES:
SWITCHES

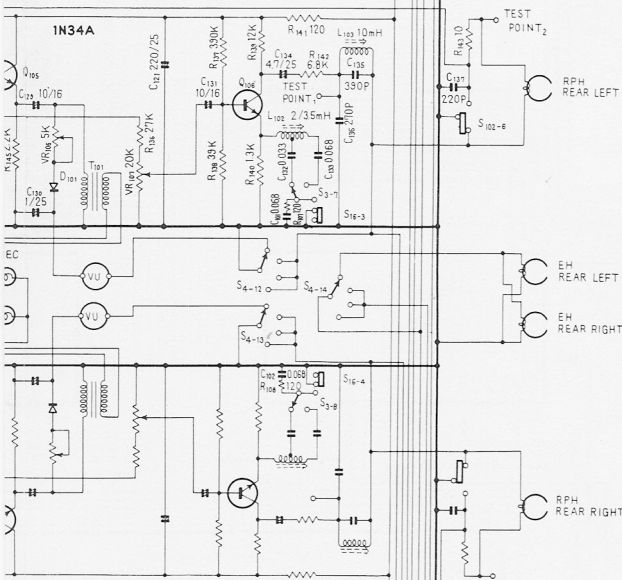
S _{1,13}	FWD-REV SELECTOR SW (FWD POSITION)
S _{2,5,102}	REC - P.B. SELECTOR SW (P.B. POSITION)
S ₃	EQUALIZER SELECTOR SW (13cm/6 POSITION)
S ₄	MODE SW (4-CHANNEL POSITION)
S ₆	MUTING SW (PLAY POSITION)
S ₇	CONTACT POINT OFF SW (PLAY/STOP POSITION)
S ₈	PRESET SW
S ₉	PLUNGER SW
S ₁₀	MOTOR SW
S ₁₁	SHUT OFF SW
S ₁₂	POWER SW
S ₁₄	AUTO REVERSE SW
S ₁₅	OSC SW
S ₁₆	TAPE SELECTOR SW (LH POSITION)
RL ₁	FWD-REV SELECTOR SW (FWD POSITION)

POTENTIOMETERS

VR _{1,101}	FWD - EQUALIZER ADJUSTER
VR ₂	REV - EQUALIZER ADJUSTER
VR _{3,103}	P.B. LEVEL CONTROL
VR _{4,104}	REC LEVEL CONTROL
VR _{5,105}	REC MASTER LEVEL CONTROL
VR _{6,106}	VU LEVEL ADJUSTER
VR _{7,107}	FWD-REC LEVEL ADJUSTER
VR ₈	REV-REC LEVEL ADJUSTER
VR ₉	FWD LEFT BIAS ADJUSTER
VR ₁₀	REV LEFT BIAS ADJUSTER
VR ₁₁	FWD RIGHT BIAS ADJUSTER
VR ₁₂	REV RIGHT BIAS ADJUSTER
VR ₁₃	REAR LEFT BIAS ADJUSTER
VR ₁₄	REAR RIGHT BIAS ADJUSTER
VR ₁₅	OSC INTENSITY ADJUSTER

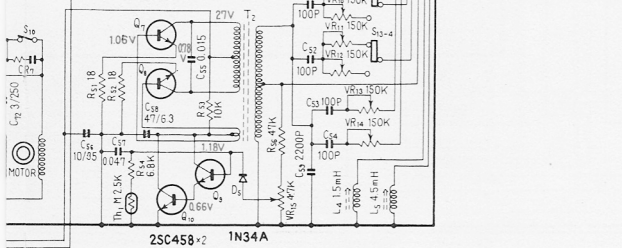
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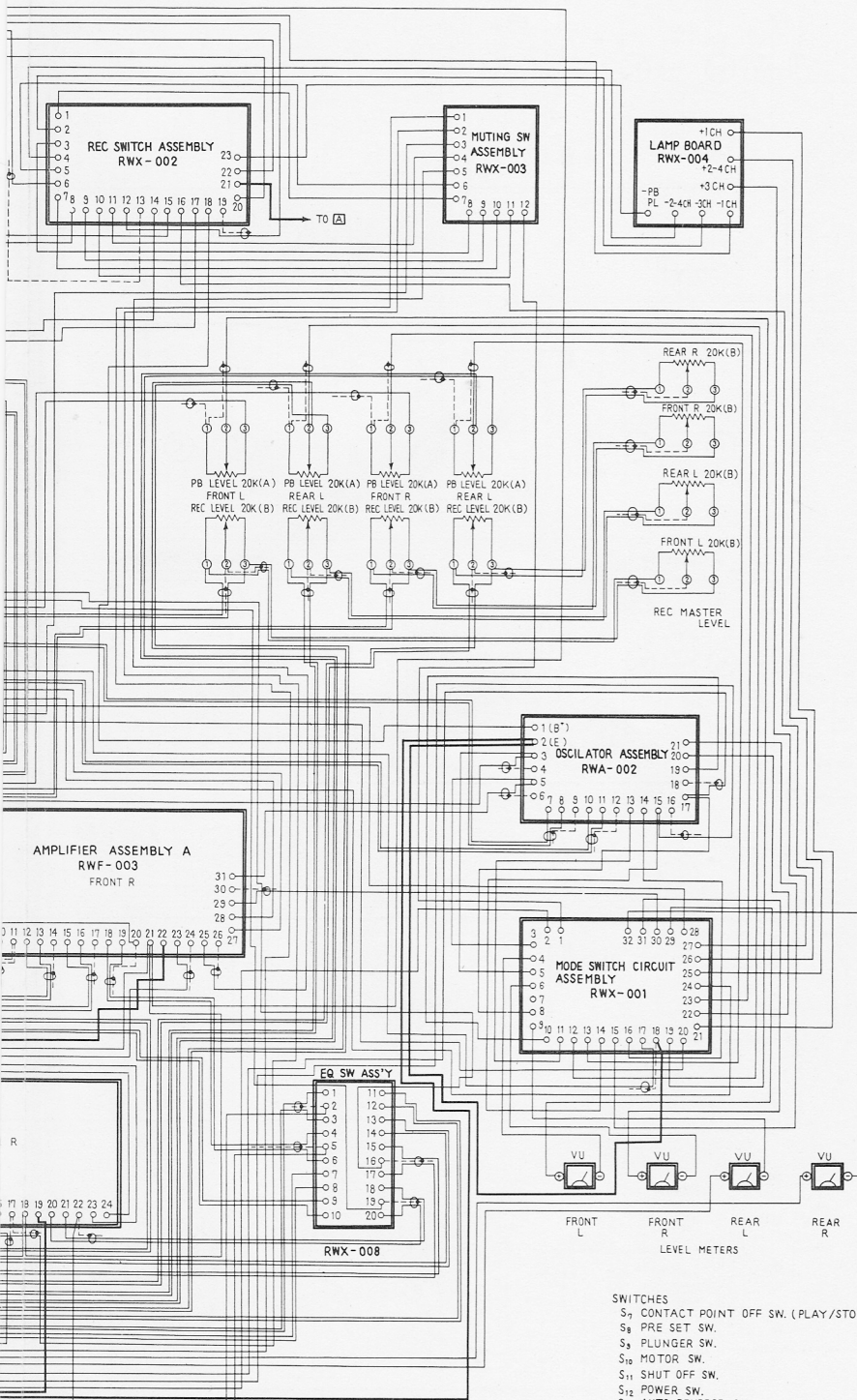


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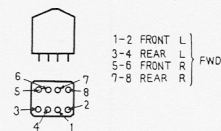




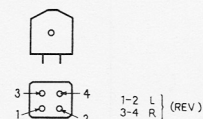


HEAD CONNECTION

④ 4CH HEAD



② 2CH HEAD



① E. HEAD



$R_7, R_8, R_{101}, R_{108} \dots 120\Omega$
 $C_1, C_2, C_{101}, C_{102} \dots 0.066\mu F$

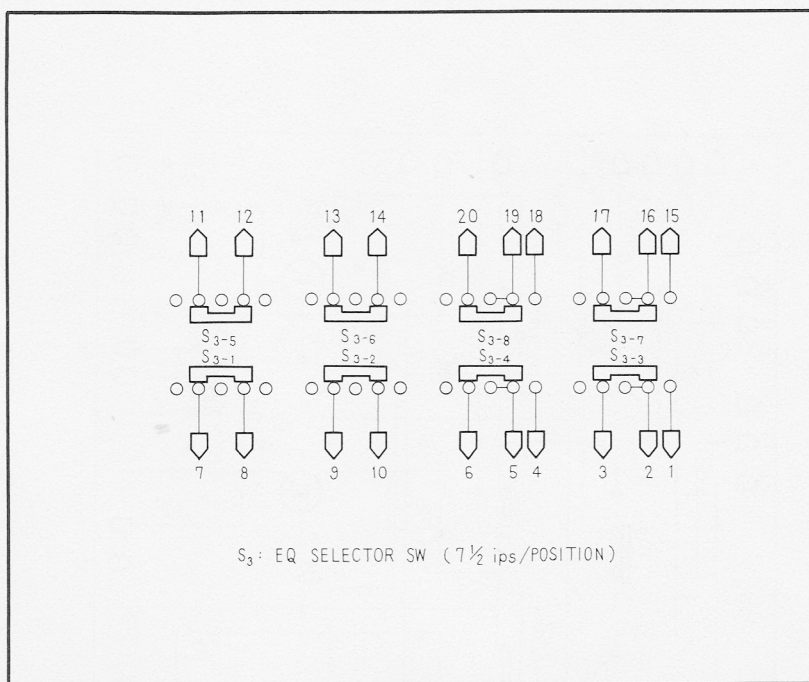
SHIELDED CABLE

TWO CONDUCTOR SHIELDED CABLE

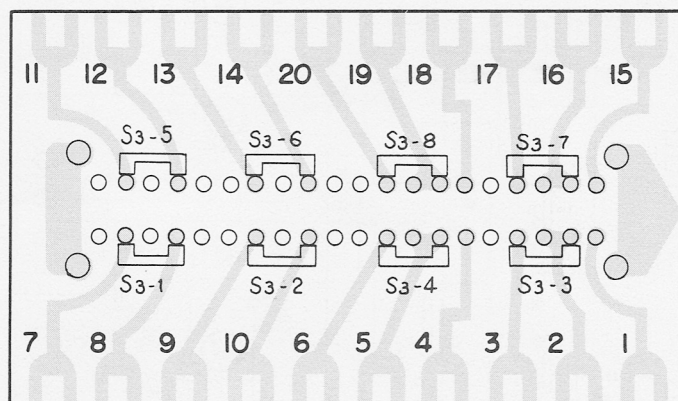
SWITCHES

- S_7 CONTACT POINT OFF SW. (PLAY/STOP POSITION)
- S_8 PRE SET SW.
- S_9 PLUNGER SW.
- S_{10} MOTOR SW.
- S_{11} SHUT OFF SW.
- S_{12} POWER SW.
- S_{14} AUTO REVERSE SW.
- S_{15} OSC. SW.
- S_{16} TAPE SELECTOR SW.

5.2 EQUALIZER SWITCH ASSEMBLY (RWX-008-A)

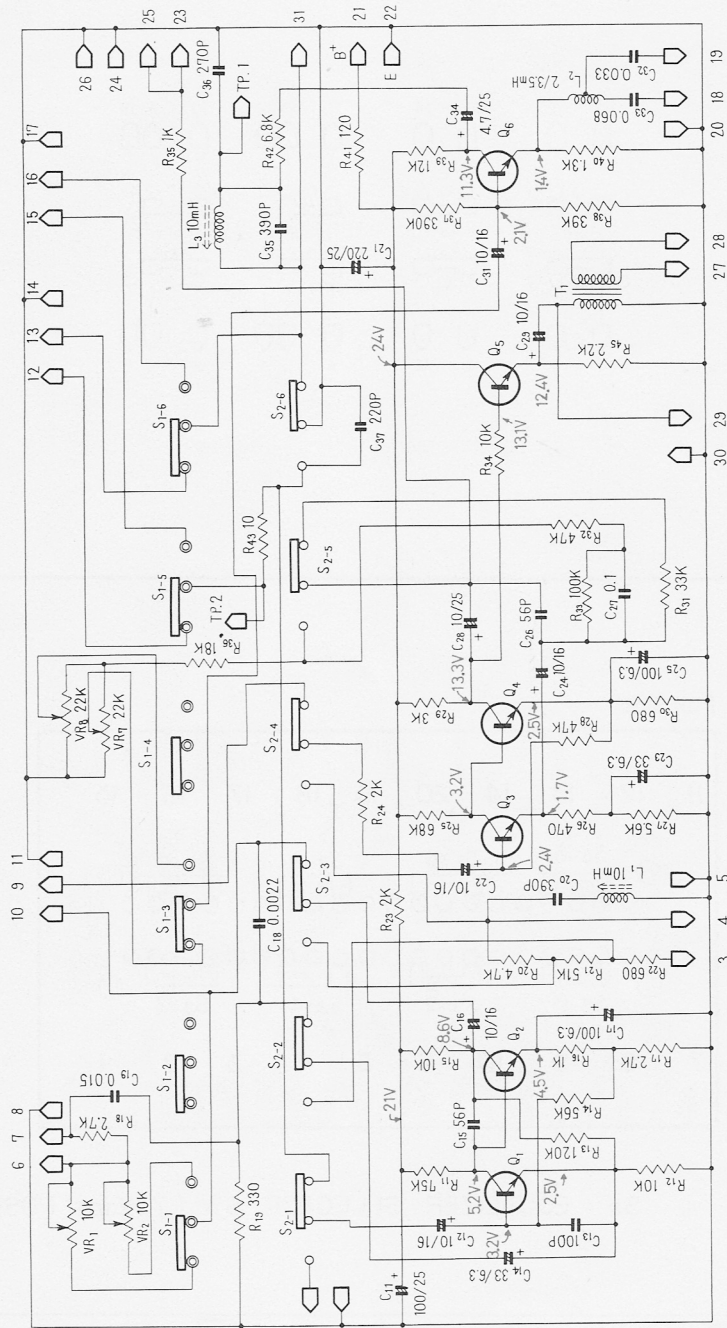


Foil Side



Symbol	Description	Part No.	
S3	Rotary switch	RSB-004-0	

5.3 AMPLIFIER-A ASSEMBLY (RWF-003-B)



Q₁ ~ Q₃ : TRANSISTOR 2SC458LG
Q₄ ~ Q₆ : TRANSISTOR 2SC458

S₁ : FWD-REV SELECTOR SW (FWD POSITION)
S₂ : REC-PB. SELECTOR SW (PB. POSITION)

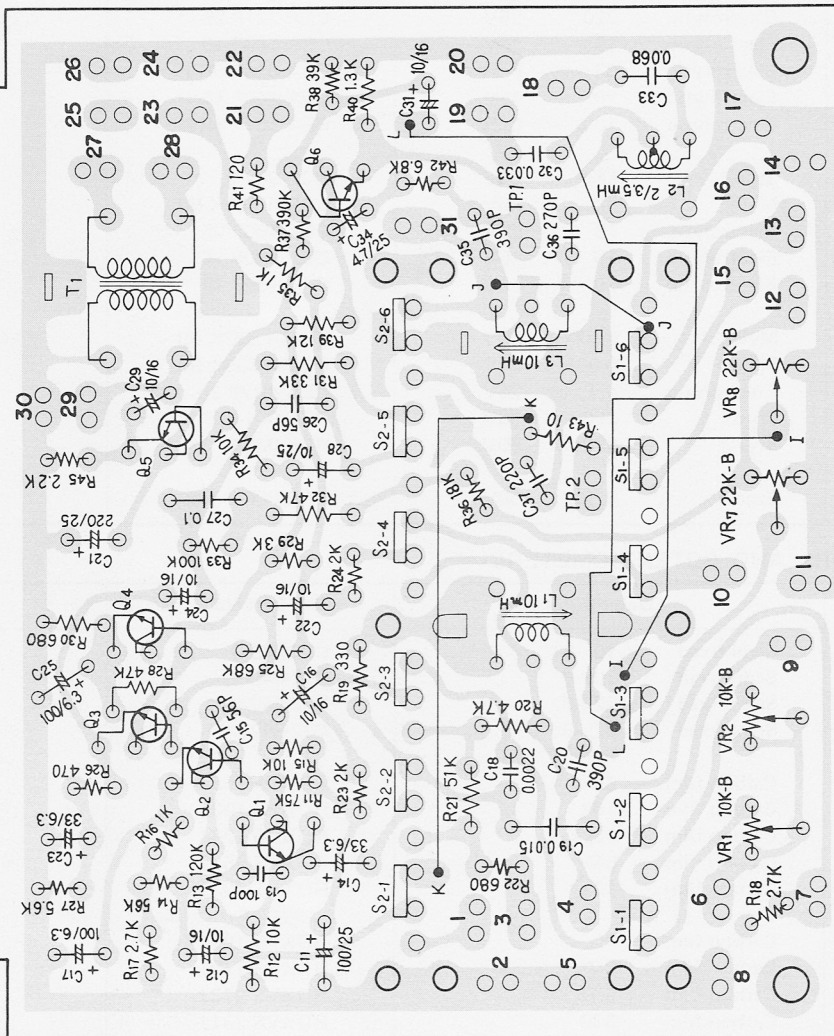
L₁ : TRAP COIL

L₂ : PEAKING COIL

L₃ : TRAP COIL

T₁ : MATCHING TRANSFORMER

Foil Side



Q₁ ~ Q₃ 2SC458LG (B) or (C)
 Q₄ ~ Q₆ 2SC458 (C) or (D)
 S₁ : FWD-REV SELECTOR SW (FWD POSITION)
 S₂ : REC-PB SELECTOR SW (PB. POSITION)
 L₁ : TRAP. COIL
 L₂ : PEAKING COIL
 L₃ : TRAP COIL
 T₁ : MATCHING TRANSFORMER

2SC 458LG
 2SC 458



- CAPACITORS: IN μ F UNLESS OTHERWISE NOTED p: pF
- RESISTORS: IN Ω , $\frac{1}{4}$ W UNLESS OTHERWISE NOTED k: k Ω , M: M Ω

Parts List of Amplifier-A Assembly

CAPACITORS

Symbol	Description			Part No.
C11	Electrolytic	100	25V	CEA 101P 25
C12	Electrolytic	10	16V	CEA 100P 16
C13	Styrol	100p	50V	RCE-003-0
C14	Electrolytic	33	6.3V	CEA 330P 6R3
C15	Styrol	56p	50V	RCE-004-0
C16	Electrolytic	10	16V	CEA 100P 16
C17	Electrolytic	100	6.3V	CEA 101P 6R3
C18	Mylar	0.0022	50V	CQMA 222K 50
C19	Mylar	0.015	50V	CQMA 153K 50
C20	Styrol	390p	50V	RCE-001-0
C21	Electrolytic	220	25V	CEA 221P 25
C22	Electrolytic	10	16V	CEA 100P 16
C23	Electrolytic	33	6.3V	CEA 330P 6R3
C24	Electrolytic	10	16V	CEA 100P 16
C25	Electrolytic	100	6.3V	CEA 101P 6R3
C26	Styrol	56p	50V	RCE-004-0
C27	Mylar	0.1	50V	CQMA 104K 50
C28	Electrolytic	10	25V	CEA 100P 25
C29	Electrolytic	10	16V	CEA 100P 16
C31	Electrolytic	10	16V	CEA 100P 16
C32	Mylar	0.033	50V	CQMA 333K 50
C33	Mylar	0.068	50V	CQMA 683K 50
C34	Electrolytic	4.7	25V	CEA 4R7P 25
C35	Styrol	390p	50V	RCE-001-0
C36	Styrol	270p	50V	RCE-002-0
C37	Styrol	220p	50V	RCE-006-0

RESISTORS AND POTENTIOMETERS

Symbol	Description			Part No.
VR1	Semi-fixed	10k-B		C92-049-0
VR2	Semi-fixed	10k-B		C92-049-0
VR7	Semi-fixed	22k-B		C92-857-0
VR8	Semi-fixed	22k-B		C92-857-0
R11	Carbon film	75k		RD $\frac{1}{4}$ VS 753J
R12	Carbon film	10k		RD $\frac{1}{4}$ VS 103J
R13	Carbon film	120k		RD $\frac{1}{4}$ VS 124J
R14	Carbon film	56k		RD $\frac{1}{4}$ VS 563J
R15	Carbon film	10k		RD $\frac{1}{4}$ VS 103J
R16	Carbon film	1k		RD $\frac{1}{4}$ VS 102J
R17	Carbon film	2.7k		RD $\frac{1}{4}$ VS 272J
R18	Carbon film	2.7k		RD $\frac{1}{4}$ VS 272J
R19	Carbon film	330		RD $\frac{1}{4}$ VS 331J
R20	Carbon film	4.7k		RD $\frac{1}{4}$ VS 472J

Symbol	Description	Part No.
R21	Carbon film 51k	RD¼VS 513J
R22	Carbon film 680	RD¼VS 681J
R23	Carbon film 2k	RD¼VS 202J
R24	Carbon film 2k	RD¼VS 202J
R 25	Carbon film 68k	RD¼VS 683J
R26	Carbon film 470	RD¼VS 471J
R27	Carbon film 5.6k	RD¼VS 562J
R28	Carbon film 47k	RD¼VS 473J
R29	Carbon film 3k	RD¼VS 302J
R30	Carbon film 680	RD¼VS 681J
R31	Carbon film 33k	RD¼VS 333J
R32	Carbon film 47k	RD¼VS 473J
R33	Carbon film 100k	RD¼VS 104J
R34	Carbon film 10k	RD¼VS 103J
R35	Carbon film 1k	RD¼VS 102J
R36	Carbon film 18k	RD¼VS 183J
R37	Carbon film 390k	RD¼VS 394J
R38	Carbon film 39k	RD¼VS 393J
R39	Carbon film 12k	RD¼VS 123J
R40	Carbon film 1.3k	RD¼VS 132J
R41	Carbon film 120	RD¼VS 121J
R42	Carbon film 6.8k	RD¼VS 682J
R43	Carbon film 10	RD¼VS 100J
R45	Carbon film 2.2k	RD¼VS 222J

SEMICONDUCTORS

Symbol	Description	Part No.
Q1	Transistor 2SC458LG B or C	
Q2	Transistor 2SC458LG B or C	
Q3	Transistor 2SC458LG B or C	
Q4	Transistor 2SC458 C or D	
Q5	Transistor 2SC458 C or D	
Q6	Transistor 2SC458 C or D	

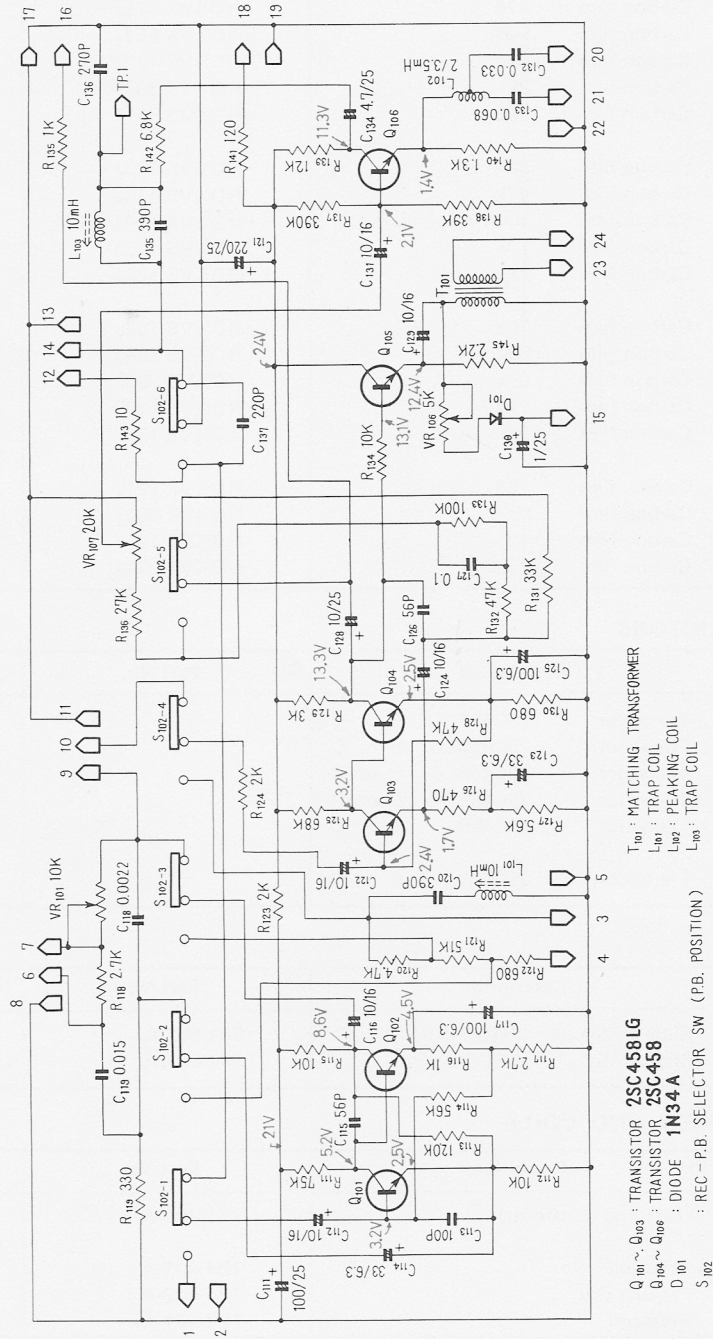
SWITCHES

Symbol	Description	Part No.
S1	Slide switch (FWD/REV)	S41-852-A
S2	Slide switch (REC/PB)	S41-852-A

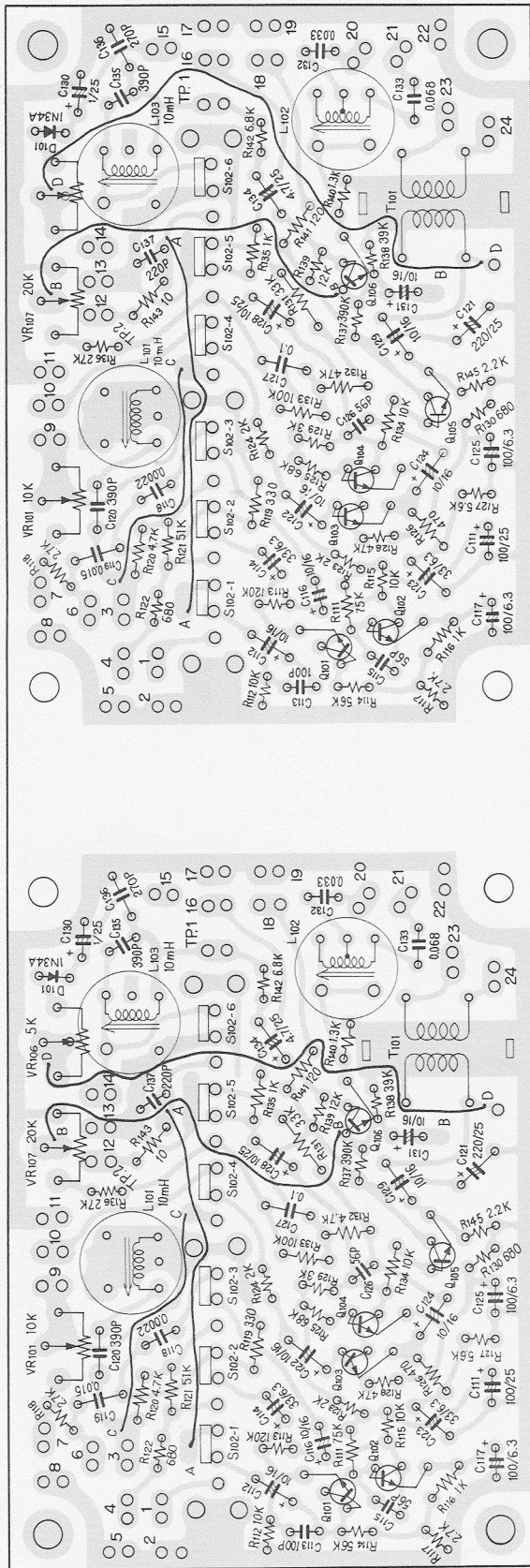
TRANSFORMER AND COILS

Symbol	Description	Part No.
T1	Matching transformer	T61-408-A
L1	Trap coil	T84-401-A
L2	Peaking coil	T84-402-A
L3	Trap coil	T84-401-A

5.4 AMPLIFIER-B ASSEMBLY (RWF-004-B)



Foil Side



- A — A : JUMP WIRE
 B — B : JUMP WIRE
 C — C : JUMP WIRE
 D — D : JUMP WIRE
 Q101 ~ Q103 : 2SC458LG (B or C)
 Q104 ~ Q106 : 2SC458 (C or D)
 T101 : MATCHING TRANSFORMER
 L101 : TRAP COIL
 L102 : PEAKING COIL
 L103 : TRAP COIL
 S102 : REC-P.B. SELECTOR SW (P.B. POSITION)
 VR101 : FWD EQUALIZER
 VR106 : VU LEVEL
 VR107 : FWD REC LEVEL

2SC 458LG
2SC 458



- CAPACITORS: IN μ F UNLESS OTHERWISE NOTED p: pF
- RESISTORS: IN Ω , $\frac{1}{4}$ W UNLESS OTHERWISE NOTED k: k Ω , M: M Ω

Parts List of Amplifier-B Assembly

CAPACITORS

Symbol	Description			Part No.	
C111	Electrolytic	100	25V	CEA 101P 25	
C112	Electrolytic	10	16V	CEA 100P 16	
C113	Styrol	100p	50V	RCE-003-0	
C114	Electrolytic	33	6.3V	CEA 330P 6R3	
C115	Styrol	56p	50V	RCE-004-0	
C116	Electrolytic	10	16V	CEA 100P 16	
C117	Electrolytic	100	6.3V	CEA 101P 6R3	
C118	Mylar	0.0022	50V	CQMA 222K 50	
C119	Mylar	0.015	50V	CQMA 153K 50	
C120	Styrol	390p	50V	RCE-001-0	
C121	Electrolytic	220	25V	CEA 221P 25	
C122	Electrolytic	10	16V	CEA 100P 16	
C123	Electrolytic	33	6.3V	CEA 330P 6R3	
C124	Electrolytic	10	16V	CEA 100P 16	
C125	Electrolytic	100	6.3V	CEA 101P 6R3	
C126	Styrol	56p	50V	RCE-004-0	
C127	Mylar	0.1	50V	CQMA 104K 50	
C128	Electrolytic	10	25V	CEA 100P 25	
C129	Electrolytic	10	16V	CEA 100P 16	
C130	Electrolytic	1	25V	CEA 010P 25	
C131	Electrolytic	10	16V	CEA 100P 16	
C132	Mylar	0.033	50V	CQMA 333K 50	
C133	Mylar	0.068	50V	CQMA 683K 50	
C134	Electrolytic	4.7	25V	CEA 4R7P 25	
C135	Styrol	390p	50V	RCE-001-0	
C136	Styrol	270p	50V	RCE-002-0	
C137	Styrol	220p	50V	RCE-006-0	

RESISTORS

Symbol	Description			Part No.	
VR101	Semi-fixed	10k-B		C81-417-0	
VR106	Semi-fixed	5k-B		C81-415-0	
VR107	Semi-fixed	20k-B		C81-428-0	
R111	Carbon film	75k		RD $\frac{1}{4}$ VS 753J	
R112	Carbon film	10k		RD $\frac{1}{4}$ VS 103J	
R113	Carbon film	120k		RD $\frac{1}{4}$ VS 124J	
R114	Carbon film	56k		RD $\frac{1}{4}$ VS 563J	
R115	Carbon film	10k		RD $\frac{1}{4}$ VS 103J	
R116	Carbon film	1k		RD $\frac{1}{4}$ VS 102J	
R117	Carbon film	2.7k		RD $\frac{1}{4}$ VS 272J	
R118	Carbon film	2.7k		RD $\frac{1}{4}$ VS 272J	
R119	Carbon film	330		RD $\frac{1}{4}$ VS 331J	
R120	Carbon film	4.7k		RD $\frac{1}{4}$ VS 472J	

Symbol	Description		Part No.	
R121	Carbon film	51k	RD¼VS 513J	
R122	Carbon film	680	RD¼VS 681J	
R123	Carbon film	2k	RD¼VS 202J	
R124	Carbon film	2k	RD¼VS 202J	
R125	Carbon film	68k	RD¼VS 683J	
R126	Carbon film	470	RD¼VS 471J	
R127	Carbon film	5.6k	RD¼VS 562J	
R128	Carbon film	47k	RD¼VS 473J	
R129	Carbon film	3k	RD¼VS 302J	
R130	Carbon film	680	RD¼VS 681J	
R131	Carbon film	33k	RD¼VS 333J	
R132	Carbon film	47k	RD¼VS 473J	
R133	Carbon film	100k	RD¼VS 104J	
R134	Carbon film	10k	RD¼VS 103J	
R135	Carbon film	1k	RD¼VS 102J	
R136	Carbon film	27k	RD¼VS 273J	
R137	Carbon film	390k	RD¼VS 394J	
R138	Carbon film	39k	RD¼VS 393J	
R139	Carbon film	12k	RD¼VS 123J	
R140	Carbon film	1.3k	RD¼VS 132J	
R141	Carbon film	120	RD¼VS 121J	
R142	Carbon film	6.8k	RD¼VS 682J	
R143	Carbon film	10	RD¼VS 100J	
R145	Carbon film	2.2k	RD¼VS 222J	

SEMICONDUCTORS

Symbol	Description		Part No.	
Q101	Transistor	2SC458LG B or C		
Q102	Transistor	2SC458LG B or C		
Q103	Transistor	2SC458LG B or C		
Q104	Transistor	2SC458 C or D		
Q105	Transistor	2SC458 C or D		
Q106	Transistor	2SC458 C or D		
D101	Diode	1N34A		

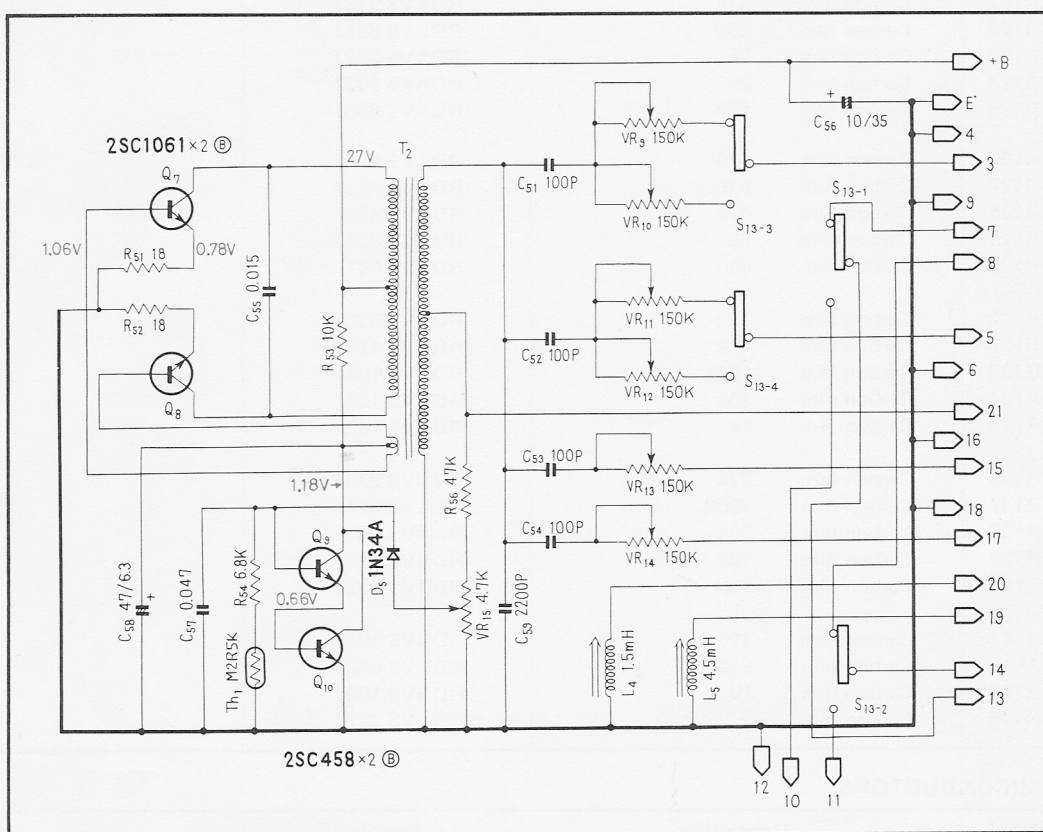
SWITCH

Symbol	Description		Part No.	
S102	Slide switch	(REC/PB)	RSH-002-0	

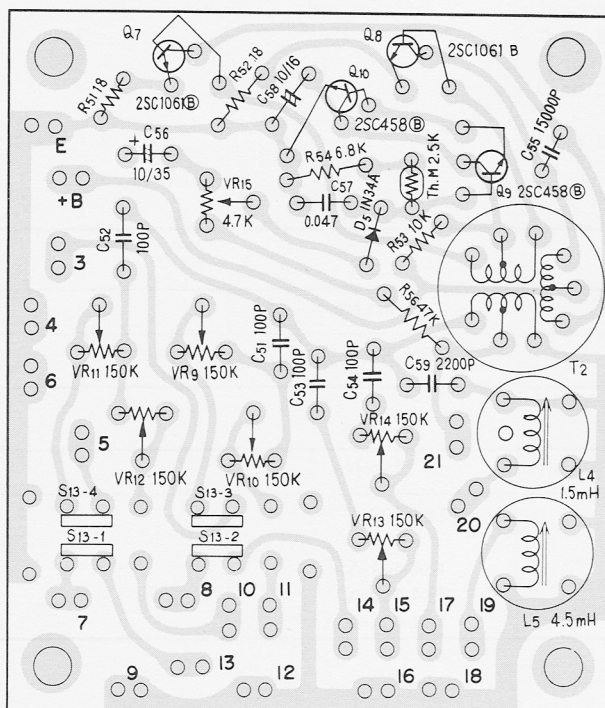
TRANSFORMER AND COILS

Symbol	Description		Part No.	
T101	Matching transformer		T61-408-A	
L101	Trap coil		T84-401-A	
L102	Peaking coil		T84-402-A	
L103	Trap coil		T84-401-A	

5.5 OSCILLATOR ASSEMBLY (RWA-002-B)

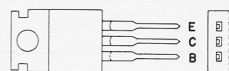


Foil Side



VR₉ : FWD LEFT BIAS
VR₁₀ : REV LEFT BIAS
VR₁₁ : FWD RIGHT BIAS
VR₁₂ : REV RIGHT BIAS
VR₁₃ : REAR LEFT BIAS
VR₁₄ : REAR RIGHT BIAS
VR₁₅ : OSC INTENSITY
S₁₃ : FWD-REV SELECTOR SW
(FWD POSITION)
T₂ : OSC TRANSFORMER
L₄ : FRONT DUMMY COIL
L₅ : REAR DUMMY COIL

2SC 1061



2SC 458



- CAPACITORS: IN μ F UNLESS OTHERWISE NOTED p: pF
- RESISTORS: IN Ω , $\frac{1}{4}$ W UNLESS OTHERWISE NOTED k: k Ω , M: M Ω

Parts List of Oscillator Assembly

CAPACITORS

Symbol	Description			Part No.
C51	Styrol	100p	50V	RCE-003-0
C52	Styrol	100p	50V	RCE-003-0
C53	Styrol	100p	50V	RCE-003-0
C54	Styrol	100p	50V	RCE-003-0
C55	Styrol	0.015	50V	CQSA 153K 50
C56	Electrolytic	10	35V	CEA 100P 35
C57	Mylar	0.047	50V	CQMA 473K 50
C58	Electrolytic	47	6.3V	CEA 470P 6R3
C59	Styrol	2200p	50V	RCE-005-0

POTENTIOMETERS AND RESISTORS

Symbol	Description			Part No.
VR9	Semi-fixed	150k-B		C92-860-0
VR10	Semi-fixed	150k-B		C92-860-0
VR11	Semi-fixed	150k-B		C92-860-0
VR12	Semi-fixed	150k-B		C92-860-0
VR13	Semi-fixed	150k-B		C92-860-0
VR14	Semi-fixed	150k-B		C92-860-0
VR15	Semi-fixed	4.7k-B		C92-051-0
R51	Carbon film	18		RD $\frac{1}{4}$ VS 180J
R52	Carbon film	18		RD $\frac{1}{4}$ VS 180J
R53	Carbon film	10k		RD $\frac{1}{4}$ VS 103J
R54	Carbon film	6.8k		RD $\frac{1}{4}$ VS 682J
R56	Carbon film	47k		RD $\frac{1}{4}$ VS 473J

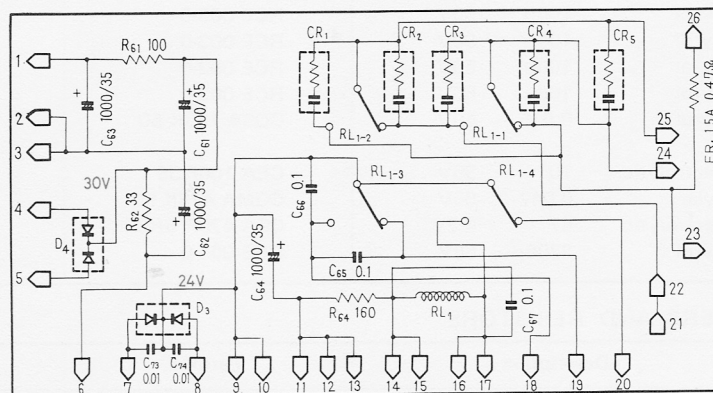
SEMICONDUCTORS

Symbol	Description			Part No.
Q7	Transistor	2SC1061	B or C	
Q8	Transistor	2SC1061	B or C	
Q9	Transistor	2SC458	B or C	
Q10	Transistor	2SC458	B or C	
D5	Diode	1N34A		
TH1	Thermistor	M2R5K		

SWITCH, TRANSFORMER AND COILS

Symbol	Description			Part No.
S13	Slide switch	(FWD/REV)		S41-856-B
T2	Oscillator transformer			RTD-001-0
L4	Dummy coil A			RTD-002-0
L5	Dummy coil B			RTD-003-0

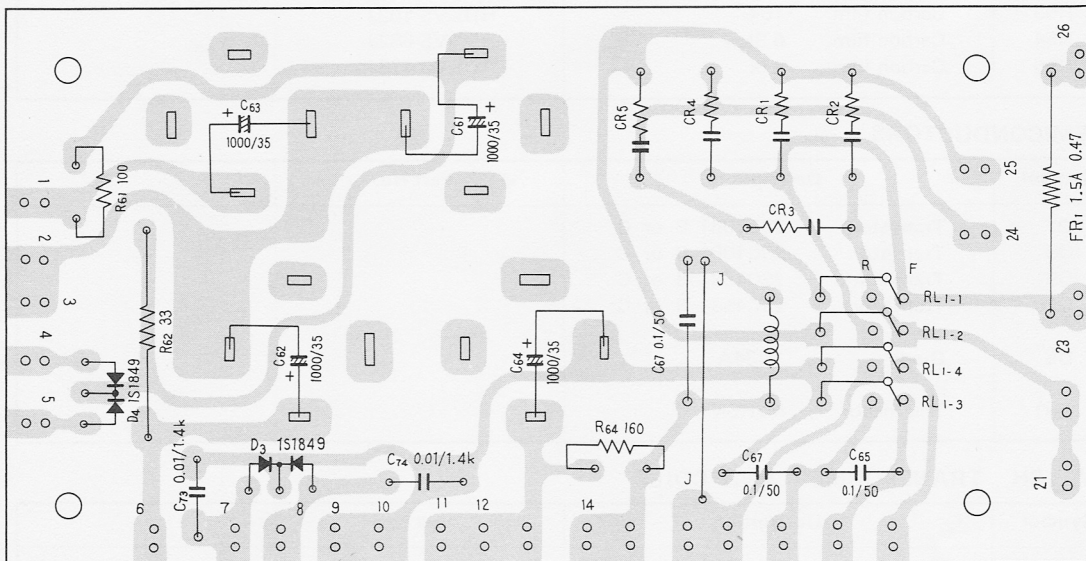
5.6 POWER SUPPLY CIRCUIT ASSEMBLY (RWR-020-A)



RL₁₋₁ ~ RL₁₋₄ : RELAY CONTACT
(FWD POSITION)

D₃~D₄: DIODE 1S1849

Foil Side



- CAPACITORS: IN μ F UNLESS OTHERWISE NOTED p: pF
- RESISTORS: IN Ω , $\frac{1}{2}$ W UNLESS OTHERWISE NOTED k: k Ω , M: M Ω

Parts List of Power Supply Circuit Assembly

CAPACITORS

Symbol	Description			Part No.	
C61	Electrolytic	1,000	35V	C52-068-0	
C62	Electrolytic	1,000	35V	C52-068-0	
C63	Electrolytic	1,000	35V	C52-068-0	
C64	Electrolytic	1,000	35V	C52-068-0	
C65	Mylar	0.1	50V	CQMA 104K 50V	
C66	Mylar	0.1	50V	CQMA 104K 50V	
C67	Mylar	0.1	50V	CQMA 104K 50V	
C73	Ceramic	0.01	DC1.4kV	C43-003-0	
C74	Ceramic	0.01	DC1.4kV	C43-003-0	

RESISTORS

Symbol	Description			Part No.	
R61	Carbon film	100	$\frac{1}{2}$ W	RD $\frac{1}{2}$ PS 101J	
R62	Carbon film	33	1W	RD1PS 330J	
R64	Metal oxide	160	3W	RS3P 161K	

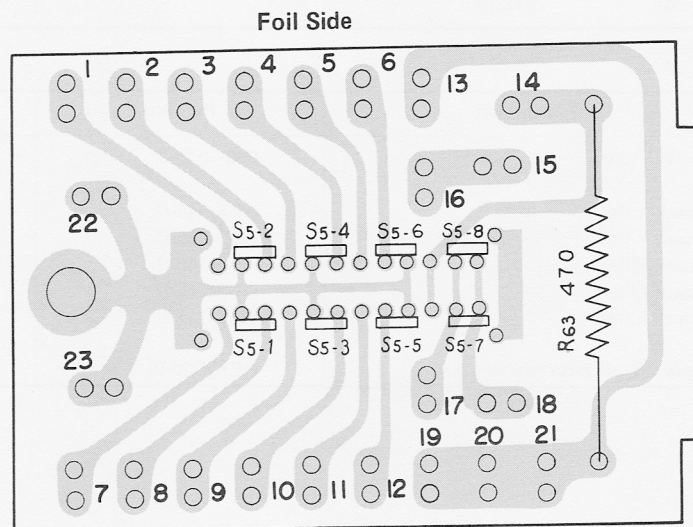
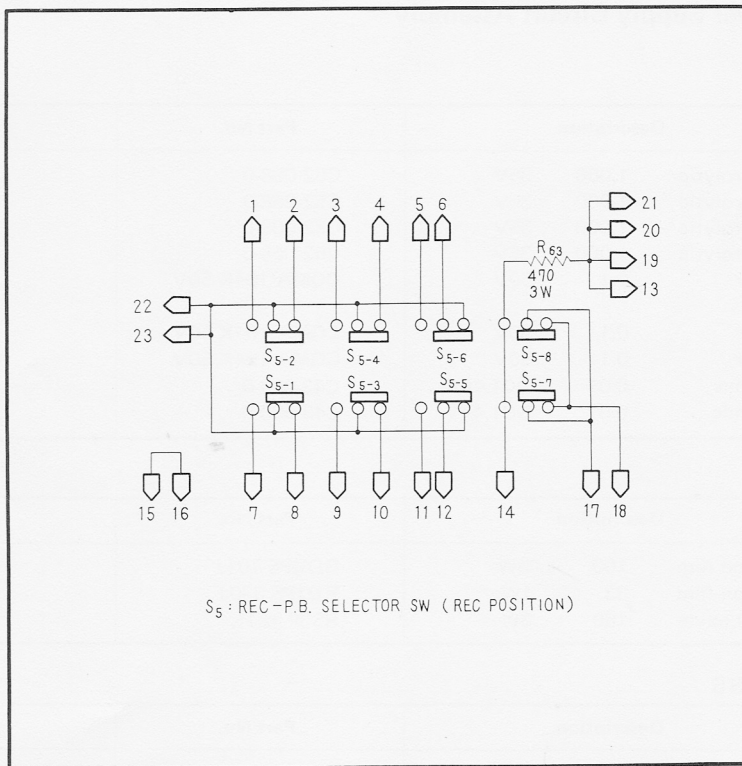
SEMICONDUCTORS

Symbol	Description			Part No.	
D3	Diode	1S1849			
D4	Diode	1S1849			

OTHERS

Symbol	Description			Part No.	
RL1	Relay (12V)			RSR-013-0	
CR1	Spark killer			W53-045-0	
CR2	Spark killer			W53-045-0	
CR3	Spark killer			W53-045-0	
CR4	Spark killer			W53-045-0	
CR5	Spark killer			W53-045-0	
FR1	Fuse metallized resistor 1.5A			REK-006-0	

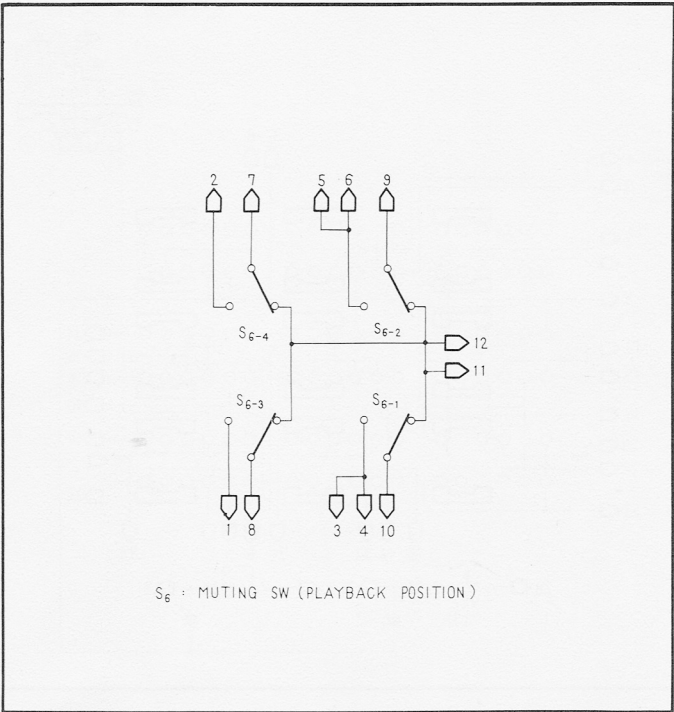
5.7 REC SWITCH ASSEMBLY (RWX-002-O)



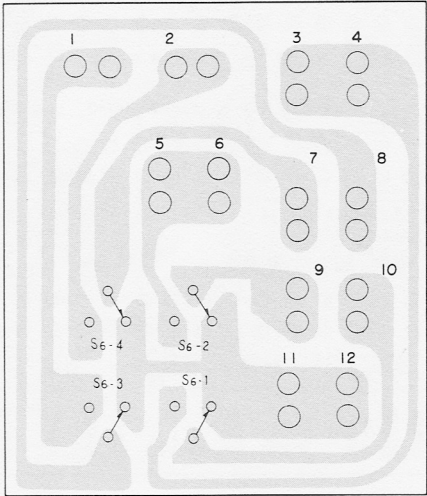
S₅ : REC - P.B. SELECTOR SW
(REC POSITION)

Symbol	Description			Part No.	
S5	Slide switch	(REC/PB)		RSH-004-A	
R63	Metal oxide	470	3W	RS3P 471K	

5.9 MUTING SWITCH ASSEMBLY (RWX-003-O)



Foil Side



S₆ : MUTING SW (PLAY POSITION)

Symbol	Description	Part No.	
S6	Lever switch	RSK-001-0	

6. MECHANICAL ADJUSTMENTS

Before Adjusting

1. Place the unit in the horizontal position.
2. Remove the deck panel (refer to 3.1 page 7).
3. Make sure there is no dirt or oil on the reel base or outer circumference of the rubber ring. Wipe clean with alcohol, etc., if necessary.
4. Make sure the play in the reel base is approximately 0.2 mm.
5. Move the reel base back tension pulley with the hands and see if it moves smoothly.
6. Make sure the tension plate spring and back tension pulley are parallel with the reel base.
7. Fasten a piece of thread to 60mm hub #7 reels and prepare a 110g and a 500g tension gauge.

6.1 CHECK IN PLAY MODE

With the FUNCTION lever at PLAY, adjust the gap between the brake arm and the back tension plate to 0.5mm or more by bending the part indicated by *.

Give some rotation to the supply reel with the hand in the direction of tape travel and see if the back tension pulley rotates smoothly.

With the FUNCTION lever at FAST see if the back tension pulley is separated from the reel base by 0.5 ~ 2mm.

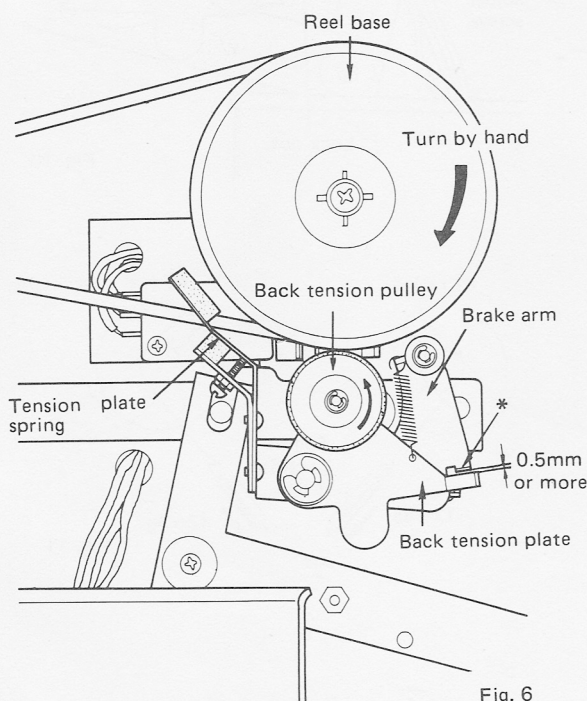


Fig. 6

6.2 CHECKING SUPPLY REEL BACK TENSION (PLAY)

1. Turn the POWER switch "ON" and place the #7 reel (60mm hub) with the thread attached on the supply side reel base.
2. Set the FUNCTION lever at PLAY, turn the SHUT-OFF switch "ON" to start the motor.
3. Attach the tension gauges to the ends of the thread. The tension gauge should read 40~80g when pulled at the speed of 1-7/8 ips (4.75 cm/s) or less (Fig. 7).
4. If the proper tension reading is not obtained, replace the back tension pulley assembly (RXX-051).
5. Repeat this check several times alternately on the left and right sides. Confirm that the tension gauge reads 40~80g.

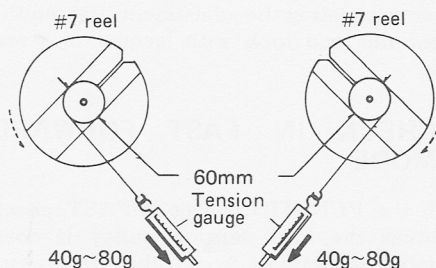


Fig. 7

6.3 ADJUSTING THE TAKE-UP TORQUE (PLAY)

With the FUNCTION lever set at PLAY, check whether the length of the tension adjustment spring is 12~14mm.

Measurement

1. Turn the POWER switch "ON" and set the #7 reel with the thread attached on the take-up side reel base.
2. Attach the tension gauges to the ends of the thread and set the FUNCTION lever at PLAY.
3. Set the SHUT-OFF switch to "ON" to start the motor.

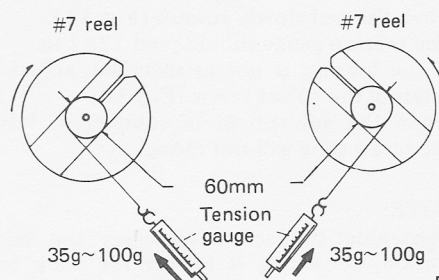


Fig. 8

4. Pull the tension gauge by taking up the thread at a stable speed of 1-7/8ips(4.75cm/s) or less.
5. The tension gauge should read between 35~100g.

Adjustment

1. Set the FUNCTION lever to PLAY.
2. Loosen the top nut holding the tension adjustment spring.
3. Adjust the lower nut so the length of the tension adjustment spring is 14mm.
4. Check the take-up torque. If it is less than 35g, adjust the nut further.
If the torque is insufficient when the length of the spring is less than 12mm, it is necessary to replace the tension adjustment spring, reel base drive pulley assembly and the clutch cam pulley.
5. Repeat this adjustment several times on the right and left sides until the value is between 35~100g.
6. After completing the adjustment, tighten the upper nut and lock with lacquer or screw lock.

6.4 CHECK IN FAST FORWARD MODE

1. With the FUNCTION lever at FAST, check whether the back tension pulley is completely separated from the reel base (0.5~2mm).
2. If it is contacting the reel base, replace as the reel base shaft may be tilted.
3. If the shaft contacts vertically, adjust by bending the * marked part in Fig. 10. This adjustment is related to the PLAY adjustments.

6.5 ADJUSTING THE FAST FORWARD BACK TENSION

1. Turn the POWER switch "ON" and load the #7 reel with the thread attached on the supply side reel base.
2. Attach the tension gauges to the ends of the thread and set the FUNCTION lever to FAST.
3. Pull the tension gauge and read the value when the reel slowly rotates (Fig. 11).
4. The tension gauge should read $12 \pm 4\text{g}$.
5. If the tension is not as specified, adjust by rotating the adjust screw (Fig. 10).
6. When the adjustment is completed, fasten the screw so it will not move.

NOTE:

Tightening the screw increases the back tension, loosening it lowers the back tension.

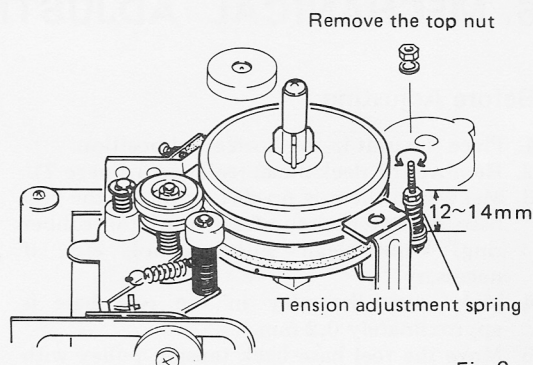


Fig. 9

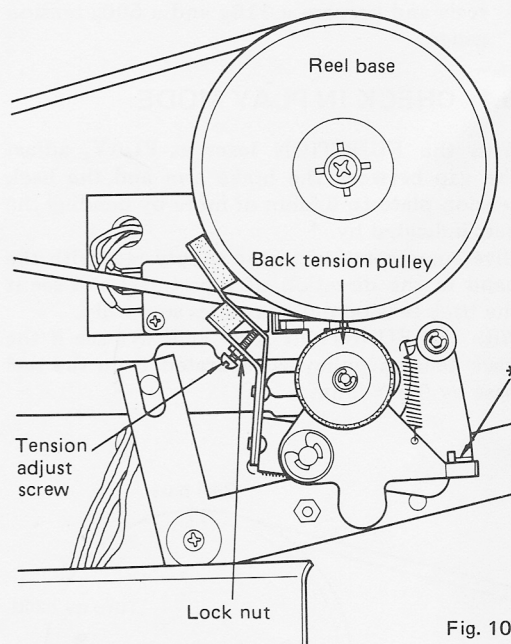


Fig. 10

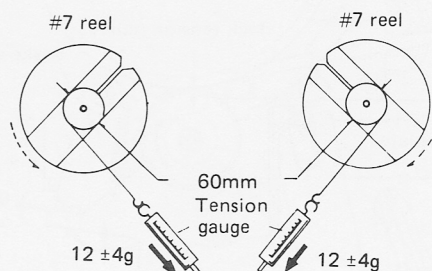


Fig. 11

6.6 ADJUSTING THE FAST FORWARD TAKE-UP TORQUE

(To be done after the adjustment in item 6.5 is completed.)

1. Push the POWER switch "ON" and load the #7 reel with the thread attached on the take-up side reel base.
2. Attach the tension gauges to the ends of the thread and set the FUNCTION lever to FAST.
3. Take-up the thread at a constant speed of 1-7/8 ips (4.75cm/s) or less and read the tension gauge after approximately 30 seconds.
4. The tension gauge should read between 180~200g. If the tension is not as specified, adjust by rotating the tension adjust screw (Fig. 12).

NOTES:

- * Loosen the lock nut before adjusting the tension adjust screw.
 - * Tighten the adjust screw to increase the tension, loosen it to lower the tension.
 - * After completing the adjustment, lock the screw so it will not come loose.
5. Repeat this adjustment on the right and left sides until the value is as specified.

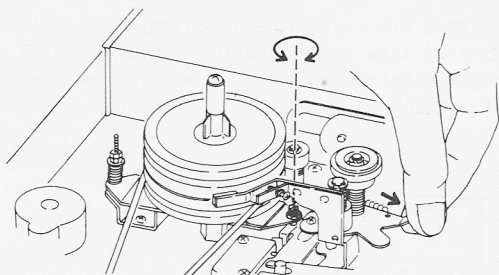


Fig. 12

After Adjustment

With the FUNCTION lever at STOP, make sure the back tension pulley and brake roller are contacting the reel base and the tension felt is completely separated from the reel base, as shown in Fig. 13.

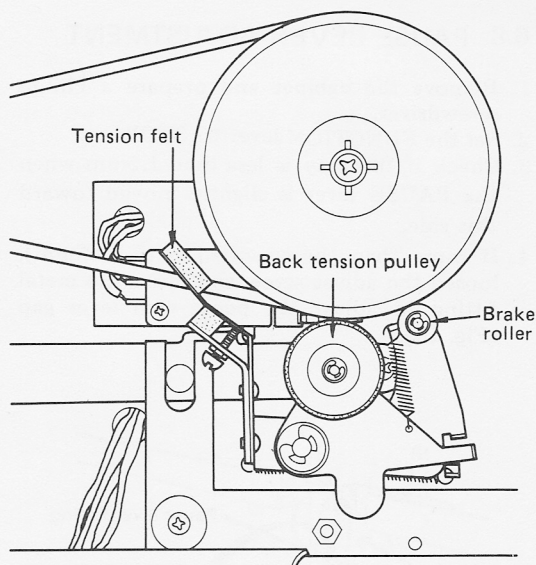


Fig. 13

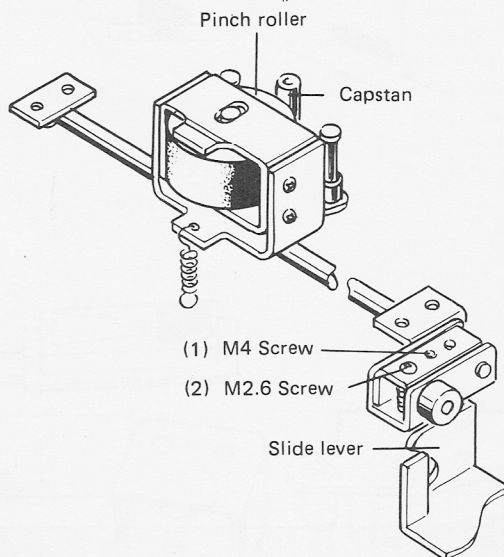


Fig. 14

6.7 ADJUSTING THE PINCH ROLLER PRESSURE

1. Prepare a hexagonal wrench (4φ) and Philips screwdriver.
2. Set the FUNCTION lever to PLAY to start the motor. Then loosen screw (2) as shown in Fig. 14, using adjust screw (1) adjust the pinch roller and capstan contact is even and retighten screw (2).
3. The pinch roller shaft has an automatic pressure regulator. Adjust the shaft to the position shown in Fig. 15.

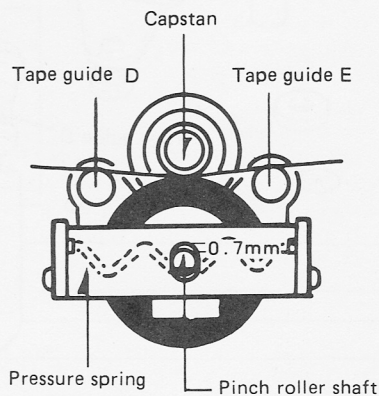


Fig. 15

6.8 PAUSE LEVER ADJUSTMENT

1. Remove the cabinet and prepare a Philips screwdriver.
2. Set the FUNCTION lever to STOP.
3. Check if the play is less than 1.5mm when the PAUSE lever is slightly moved toward this side.
4. If more than the specified value (1.5mm), loosen the adjust screw and move the metal fitting to adjust the pause cam lever gap (Fig. 16).

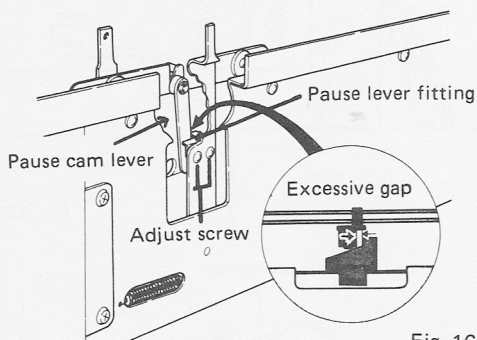


Fig. 16

6.9 ADJUSTMENT OF TAPE TRAVEL HEIGHT

The height at which the tape travels over the heads must be identical in both FORWARD and REVERSE travel at normal speed.

Re-adjustment will be required after replacement or adjustment of the pinch roller assembly.

1. Thread a tape. Set tape deck in PLAY mode at 7½ ips or 3¾ ips (19 or 9.5cm/sec).
2. While observing the tape's traveling height, reverse the travel direction.
3. If the traveling height changes, refer to the following table. Tilt the tape guides D or E in the directions indicated by arrows in Fig. 17.

Note that even a very slight tilt will result in a major change in the tape's traveling behavior.

Tape direction	If tape moves	Tape guide	Tilt direction
Forward	Up	D	II
	Down	D	I
Reverse	Up	E	II
	Down	E	I

4. Repeat these adjustments several times until correct tape travel height is obtained. This adjustment should be done with a new tape, if possible.

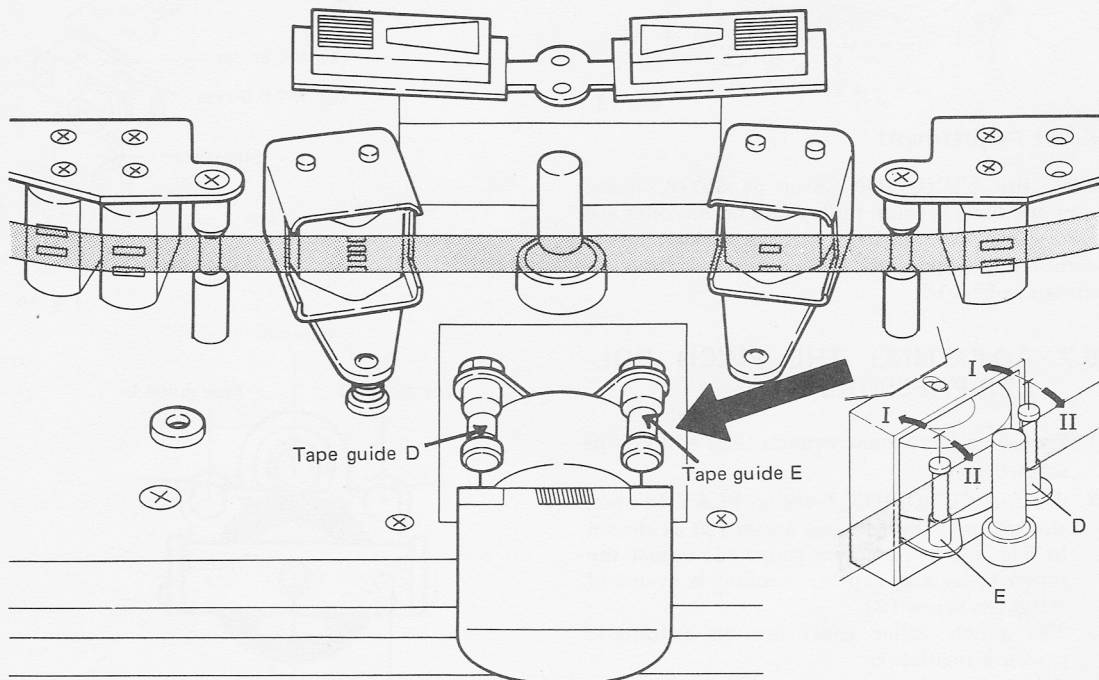


Fig. 17

7. TAPE HEAD ADJUSTMENTS

Height

Before adjusting the height of the tape heads, confirm that the tape traveling height is the same in both FORWARD and REVERSE motion. Refer to section item 6.9.

For the following adjustments, use transparent leader tape.

Also, note that the erase head units cannot be adjusted.

REC./P.B. HEAD A

1. Thread transparent tape, put tape deck in forward play motion.
2. Distances between the tape edges and the outer edges of track 1 and 4, respectively, should be exactly equal (Fig. 18).
3. To readjust, turn Philips head screws 1, 2 and 3 in Fig. 19.

REC./P.B. HEAD B

1. Distance between the lower tape edge and the bottom edge of track 4 should be the same as in case of head A.
2. To readjust, turn screws 4, 5 and 6 in Fig. 19.

CONFIRMATION BY TEST TAPE

Correct tape head height can be confirmed with a 4-track test tape (TT-500A) recorded only on tracks 1 & 3.

1. Connect two voltmeters (VTVMs) to LINE OUTPUT FRONT L and R, respectively.
2. Thread TT-500A test tape. Put tape deck in forward play motion.
3. The first portion of the test tape contains a 500Hz 0dB signal on tracks 1 and 3.
4. In forward tape motion, both VTVMs should indicate maximum output level. Re-adjustment: screws 1 and 3 in Fig. 19.
5. Turn test tape over, re-thread. Put tape deck in reverse play motion. Adjust screws 4 and 6 in Fig. 19 to obtain maximum reading on both VTVMs.

NOTE:

In this adjustment, output levels of both channels are not necessarily identical.

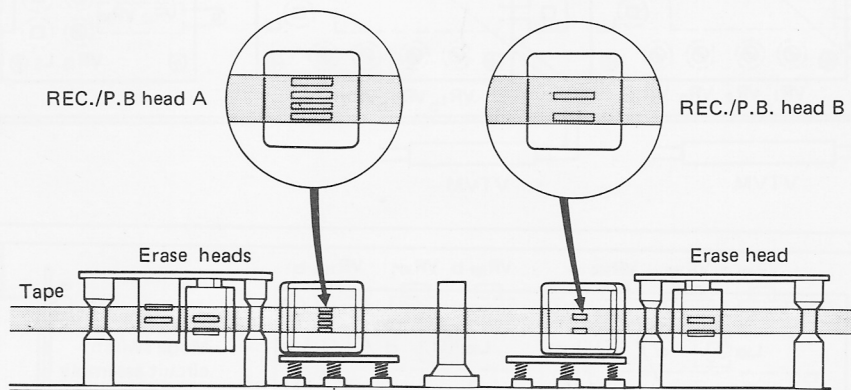


Fig. 18

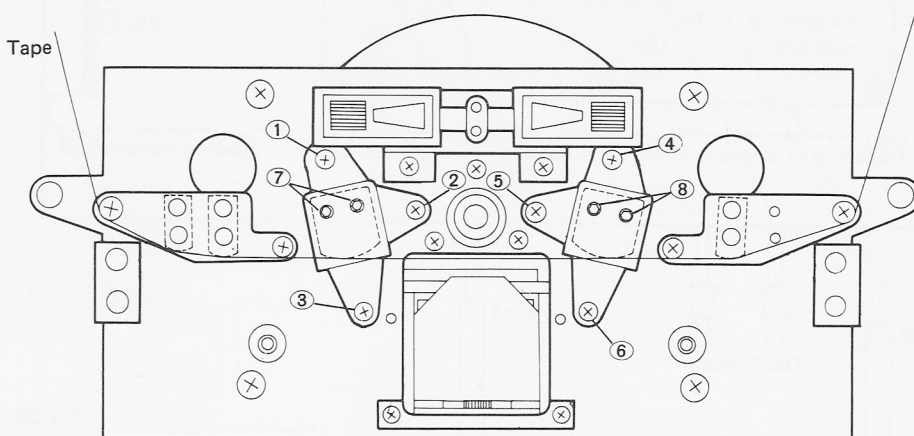


Fig. 19

Tilt

1. No tape is required.
2. Check if head surface is perpendicular to deck panel. To readjust, turn screws 1 or 3 for head A, screws 4 or 6 for head B.
3. Note that these adjusting screws also change the height of the heads (see Height).

Tangency

Clean heads scrupulously.

1. Connect two voltmeters (VTVMs) to LINE OUTPUT FRONT L and R. Thread Pioneer TT-500A test Tape. Put tape deck in forward play motion at 7½ ips (19cm/sec).
2. The second portion of the test tape contains a 10kHz, -10dB signal over its whole width (full track).
3. With your fingertip, push the traveling tape against head A. If the output level increases, tape-to-head contact has not been perfect. Loosen screws 7 in Fig. 21 slightly, then slightly twist core of head A left and right against tape. Re-tighten screws.
4. Reverse tape travel direction. Repeat the same procedure for head B. Re-adjustment is by screws 8.

Azimuth

This adjustment should be made alone or after all other head adjustments have been completed.

1. Connect two voltmeters (VTVMs) to LINE OUTPUT FRONT L and R. Thread test tape TT-500A.
2. Set playback levels of both channels to maximum.
3. Set the MODE switch at 2CH STEREO.
4. Put tape deck in forward play motion at 7½ ips (19cm/sec).
5. Play the second tape portion (10kHz, -10 dB). Adjust screw 2 in Fig. 20 to obtain maximum meter readings. If the two channels have different maximum points, adjust for average between these.
6. Reverse tape travel direction. Repeat the same adjustment with screw 5 in Fig. 20.

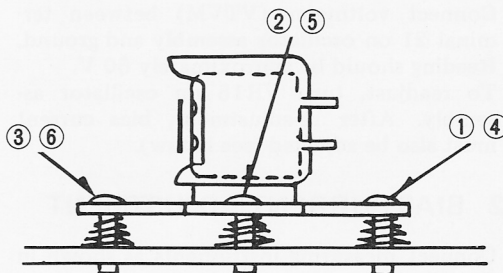


Fig. 20

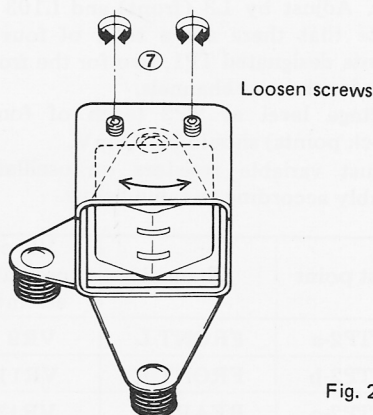


Fig. 21

8. RECORDING BIAS ADJUSTMENTS

8.1 OSCILLATOR OUTPUT LEVEL CHECK AND ADJUSTMENT

1. Connect voltmeter (VTVM) between terminal 21 on oscillator assembly and ground. Reading should be approximately 60 V.
2. To readjust, turn VR15 on oscillator assembly. After re-adjustment, bias current must also be adjusted (see below).

8.2 BIAS CURRENT ADJUSTMENT

1. Connect measuring instruments as shown in Fig. 22.
2. Set controls as follows:
MODE switch at 4CH STEREO.
REC MASTER level at minimum.
RECORDING lever in REC position.
FUNCTION lever at PLAY.
Then stop mechanism by PAUSE lever.
3. Amplitude at TP1 (Fig. 22) should be 3V or less. Adjust by L3 (front) and L103 (rear). Note that there are a total of four check points designated TP1, two for the front and two for the rear channels.
4. Voltage level at TP2 (each of four TP2 check points) should be 8.5mV.
Adjust variable resistors on oscillator assembly according to table below.

Test point	Channel	VR on oscillator assembly
TP2-a	FRONT-L	VR9
TP2-b	FRONT-R	VR11
TP2-c	REAR-L	VR13
TP2-d	REAR-R	VR14

5. Then set MODE switch to 2CH STEREO position. Observe oscilloscope connected to TP2-a.
Adjust L4 on oscillator assembly so that identical waveform is obtained with MODE switch in 4CH STEREO and in 2CH STEREO position.
6. With MODE switch in 2CH STEREO position, reverse tape travel direction. Again, adjust L4 to obtain identical waveforms from TP-1a for both tape travel directions.
7. With MODE switch in position 2CH STEREO, set tape deck for reverse tape travel direction. Measure voltage at TP2-a and TP2-b. Adjust VR10 (left) and VR12 (right) on oscillator assembly to obtain a reading of 8.5mV.

8. Set MODE switch to L-MONO (or R-MONO) position. Observe waveforms on oscilloscope connected to TP1-a. Adjust L5 on oscillator assembly to obtain identical waveforms in STEREO and MONO positions of MODE switch. Especially, observe amplitude.
9. Repeat all above adjustments (items 3 through 8) several times.

8.3 BIAS TRAP COIL ALIGNMENT

1. Connect two voltmeters (VTVMs) to the LINE OUTPUT of the FRONT L and R channels.
2. Set unit in recording mode, MODE switch in 4CH STEREO position. Turn REC MASTER level and the level controls (REC) for each channel to maximum.
3. Adjust L1-a and L1-b to obtain minimum (less than 80mV) meter readings.
4. Re-connect VTVMs to REAR channel LINE OUTPUT.
Repeat adjustment for L101-a and L101-b.

9. PLAYBACK AMPLIFIER ALIGNMENT

9.1 PLAYBACK EQUALIZATION CHECK

For these checks, portions 5 through 11 of the TT-500A test tape are used.

1. Connect two voltmeters (VTVMs) to the FRONT LEFT and FRONT RIGHT LINE OUTPUT. Make a note of each output level obtained at the different test frequencies on the test tape, both at 7½ ips (19cm/sec) and 3¼ ips (9.5cm/sec) tape speeds.
2. Response deviation should be within the range shown in Fig. 23.
3. If readings outside this range are obtained, proceed to the equalizer adjustment (on the next page) and slit angle adjustment.
4. Also, take the same readings for the rear channels.

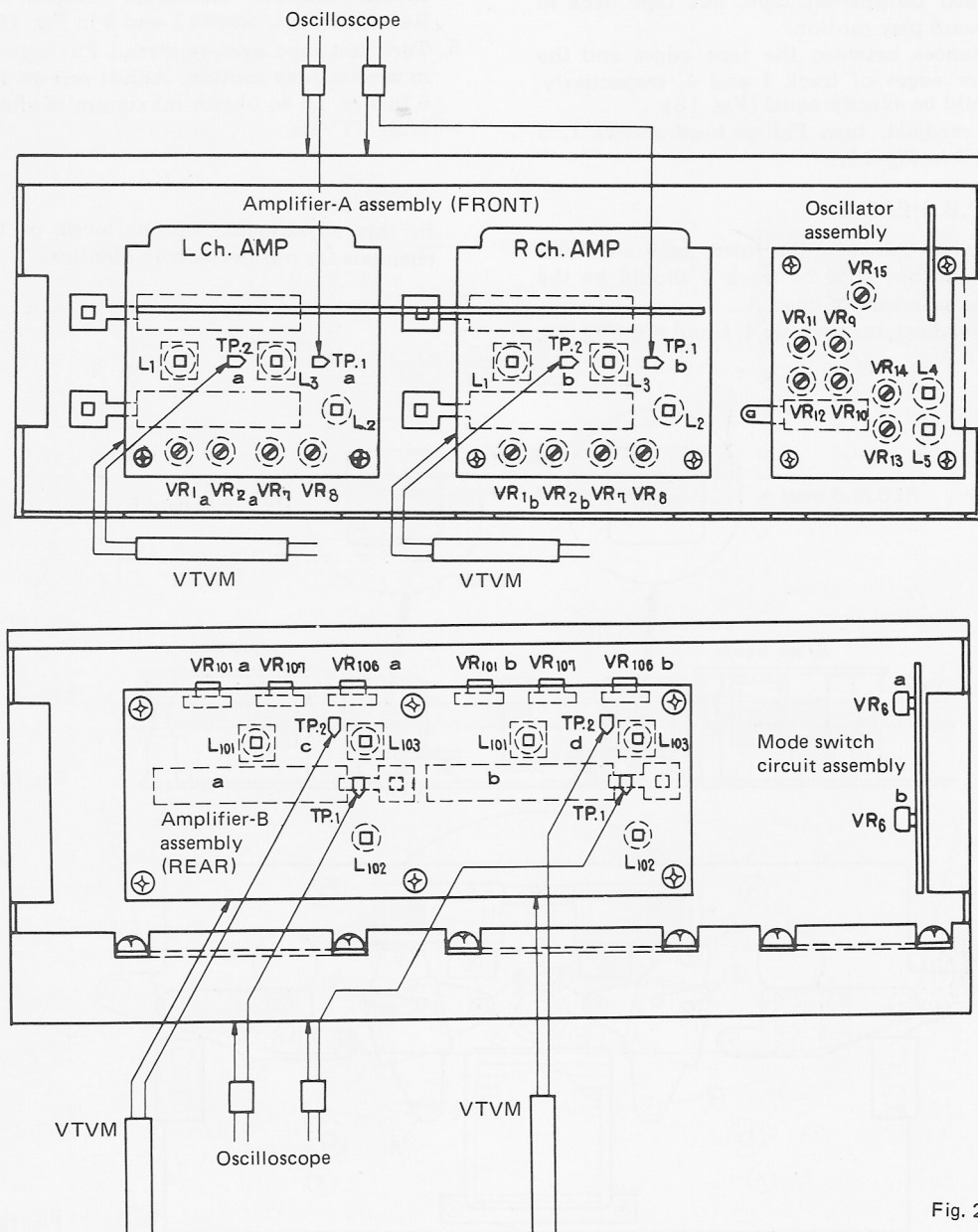


Fig. 22

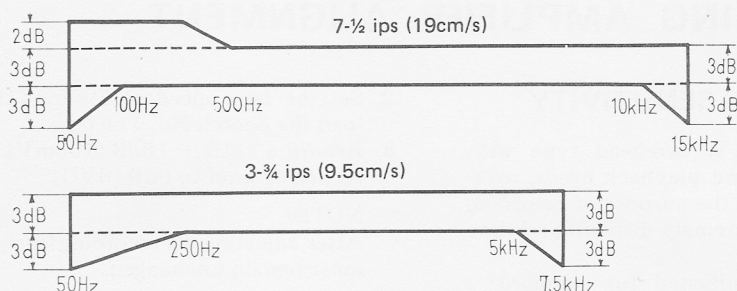


Fig. 23

9.2 EQUALIZER ADJUSTMENT

Equalizer adjustments are made in the sequence of the following table and may have to be repeated several times. ➤

➤ Required instruments:

Two voltmeters (VTVMs) of high sensitivity.
VTVM range 1.5V full scale.

Pioneer TT-500A test tape, portions 3 and 4.

Tape speed 7-1/2 ips (19cm/s)

Connect VTVM to	MODE selector	Tape direction	Level control (P.B) Knobs	Test tape frequency	Meter reading
LINE OUTPUT	L	4CH STEREO	Adjust for 0.775V	700Hz	0.775V
FRONT	R	4CH STEREO		700Hz	0.775V
LINE OUTPUT	L	4CH STEREO		700Hz	0.775V
REAR	R	4CH STEREO		700Hz	0.775V

Connect VTVM to	MODE selector	Tape direction	Level control (P.B) knobs	Test tape frequency	Adjust	Meter reading
LINE OUTPUT	L	4CH STEREO	Don't move after above adjusting	5,000Hz	VR1-a	0.775V
FRONT	R	4CH STEREO		5,000Hz	VR1-b	0.775V
LINE OUTPUT	L	4CH STEREO		5,000Hz	VR101-a	0.775V
REAR	R	4CH STEREO		5,000Hz	VR101-b	0.775V
LINE OUTPUT	L	2CH STEREO		5,000Hz	VR2-a	0.775V
FRONT	R	2CH STEREO		5,000Hz	VR2-b	0.775V

For confirmation, test according to following chart. If different readings are obtained at

forward and reverse tape travel, above adjustment must be repeated.

Connect VTVM to	MODE selector	Tape direction	Level control (P.B) knobs	Test tape frequency	Meter reading
LINE OUTPUT	L	2CH STEREO	Adjust for 0.775V	700Hz	0.775V
FRONT	R	2CH STEREO		700Hz	0.775V
LINE OUTPUT	L	2CH STEREO	—	700Hz	0.775V
FRONT	R	2CH STEREO	—	700Hz	0.775V

9.3 LEVEL METER CALIBRATION

The four LEVEL meters can be re-calibrated according to the following procedure.

Required instruments: VTVM.

Pioneer TT-500A test tape.

1. Connect VTVMs to FRONT and REAR LINE OUTPUT.
2. Set MODE switch at 4CH STEREO position.
3. Play portion 3 (700Hz 0dB full track) at 7 1/2 ips (19cm/sec).

4. LEVEL meter for channel being measured with VTVM should indicate "0" when VTVM reads 0.775V.

5. If not, adjust VR6-a (front left channel)
VR6-b (front right channel)
VR106-a (rear left channel)
VR106-b (rear right channel)

These are located in Mode switch circuit assembly and Amplifier-B assembly.

10. RECORDING AMPLIFIER ALIGNMENT

10.1 RECORDING SENSITIVITY

As this tape deck is a two-head type with combined recording and playback heads, over-tape measurements for the purpose of recording amp alignment are extremely difficult and time consuming.

The unit is factory-adjusted for standard recording tape SCOTCH 111 and should produce 0dB output level that recording is done with the LEVEL meter(s) indicating "0."

If adjustments must be made, observe the following channel relationships.

10.2 RELATION OF LEVEL METERS TO RECORDING AMPLIFIER SENSITIVITY

1. Set REC MASTER level control to maximum.

2. Set the tape speed at $7\frac{1}{2}$ ips (19cm/s) and load the Scotch No. 111 tape.
3. Record a 1kHz, -18dB (100mV). Adjust the recording level to 0dB (0VU).

NOTE:

After adjusting the recording level, the setting must remain unchanged.

4. Play back the recorded tape and adjust VR7, VR107 and VR8 so the output from the LINE OUTPUT terminal is 0dB (0.775V).

NOTE:

Do not move the playback level control after adjusting.

5. Repeat recording and playback several times until the output is 0dB (0.775V).

MODE Selector	Tape direction	Channel	VR and its location
4CH STEREO	Forward	FRONT L	VR7-a on amplifier-A assembly
4CH STEREO	Forward	FRONT R	VR7-b on amplifier-A assembly
4CH STEREO	Forward	REAR L	VR107-a on amplifier-B assembly
4CH STEREO	Forward	REAR R	VR107-b on amplifier-B assembly
2CH STEREO	Reverse	FRONT L	VR8-a on amplifier-A assembly
2CH STEREO	Reverse	FRONT R	VR8-b on amplifier-A assembly

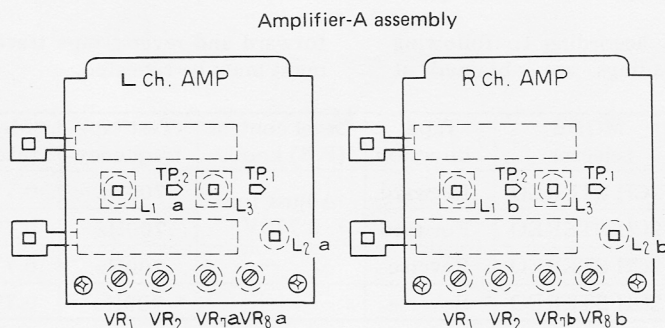


Fig. 24

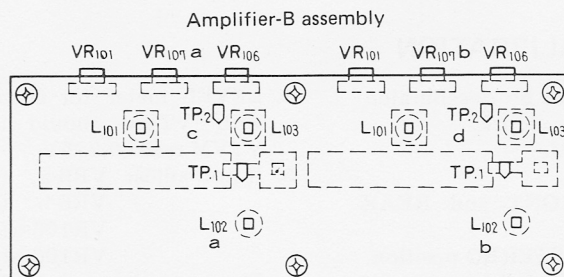


Fig. 25

10.3 RECORDING EQUALIZATION CHECK

For these checks, an audio signal generator, two voltmeters (VTVMs) and virgin tape (SCOTCH 111) are required.

1. Connect VTVMs to LINE OUTPUT FRONT L and R.
2. Turn REC MASTER and each-channel level controls (REC) to maximum.
3. Connect audio signal generator in parallel to LINE INPUT FRONT L and R.
4. Adjust audio signal generator for 10mV output. Record frequencies from 50Hz to 15kHz on standard tape at 7½ ips (19cm/sec). Then play this tape.
5. Take meter readings on VTVMs. They should be within the specified response range shown in Fig. 26.
6. Repeat this procedure at 3¾ ips (9.5cm/sec), with the highest recorded frequency at about 7.5kHz.
7. If only the high end of the frequency shows insufficient response, this can usually be corrected by slightly reducing the bias current (see item 8.2, p. 41).
8. Repeat this procedure for the rear channels by re-connecting audio signal generator and VTVMs.

If correct readings cannot be obtained, proceed to equalizer adjustment, at right column.

10.4 RECORDING EQUALIZATION ALIGNMENT

Required instruments: audio signal generator, VTVM

1. Connect voltmeter (VTVM) to TP2-a.
2. Set controls as follows:
TAPE SPEED SELECTOR 7½ips (19cm/sec),
MODE switch at 4CH STEREO,
RECORDING lever in REC position,
All recording level controls at maximum,
FUNCTION lever at STOP.
3. Connect audio generator to LINE INPUT of FRONT L channel.
4. Adjust audio signal generator at 20kHz, 7.8mV.
5. Adjust L2-a on amplifier to obtain maximum VTVM reading.
6. Repeat this procedure for the other three channels by re-connecting VTVM and audio signal generator

Test point	LINE INPUT	Adjust coil
TP2-a	FRONT L	L2-a
TP2-b	FRONT R	L2-b
TP2-c	REAR L	L102-a
TP2-d	REAR R	L102-b

7. At 3¾ ips (9.5cm/sec) tape speed, maximum VTVM reading will be obtained at a frequency of approximately 11 kHz.
No adjustment is possible.

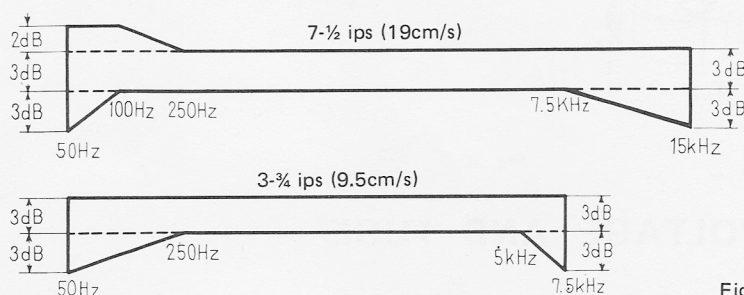


Fig. 26

11. SELECTION OF LINE FREQUENCY

If the line frequency in your area does not agree with the operation line frequency of the tape deck, change the operation line frequency of the deck in the following sequence:

1. Remove the deck panel (refer to page 7).
2. Remove the belts from the motor pulley.
3. Loosen the screw holding the motor pulley and replace the pulley. The pulley for 60Hz use has a groove as shown in Fig. 27.
4. Tighten the screw holding the pulley but not completely.

The pulley should be approximately 1.5mm above the chassis when tightened.

5. Attach the belts on the pulley, run the motor forward and reverse and change the tape speeds to make sure operation is correct. If necessary, reposition the pulley.
6. If there is grease or oil on the belts, clean with alcohol, etc.

7. Change the leads of the MP capacitor as follows:

50Hz → 60Hz . . . Cut the wire between the $1\mu\text{F}$ and $3\mu\text{F}$ terminals. Use only $3\mu\text{F}$.

60Hz → 50Hz . . . Connect the $1\mu\text{F}$ and $3\mu\text{F}$ terminals and use $4\mu\text{F}$.

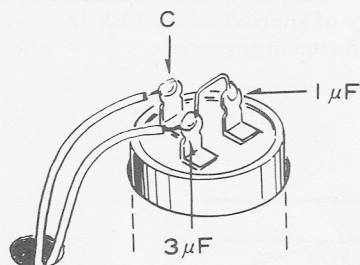


Fig. 30

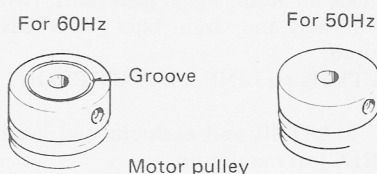


Fig. 27

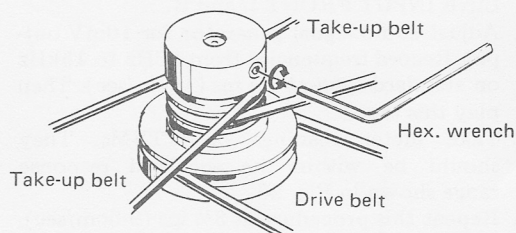


Fig. 28

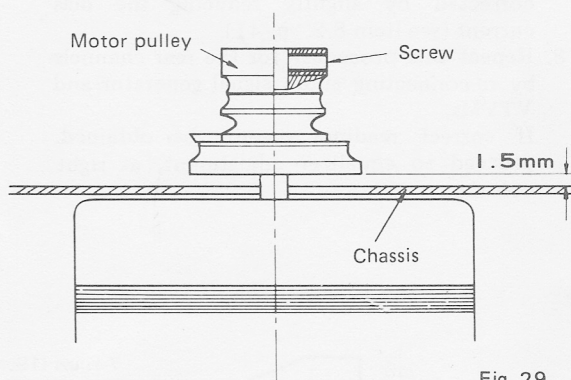


Fig. 29

12. LINE VOLTAGE AND FUSE

CHANGING LINE VOLTAGE SETTING AND FUSE

To remove the fuse, turn the fuse cap located on the line voltage selector in the direction indicated by the arrow. Then remove the fuse plug from the unit. Put the fuse plug back so that the proper line voltage marking can be seen through the cut in the edge of the plug. Whenever the position of the selector switch is changed, check the rating of the fuse. A 0.5A fuse is to be used for either 220V or 240V operation and a 1A rating for 110V, 120V or 130V operation. If the rating of the fuse is correct, replace cap.

FUSE REPLACEMENT

When the fuse blows, remove the fuse cap and replace the fuse with a new one.

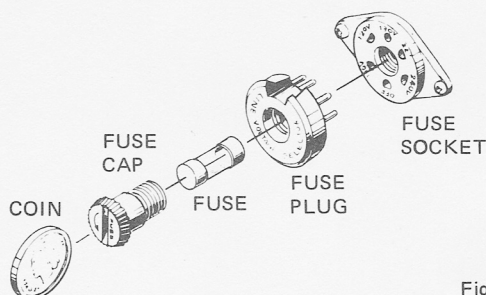
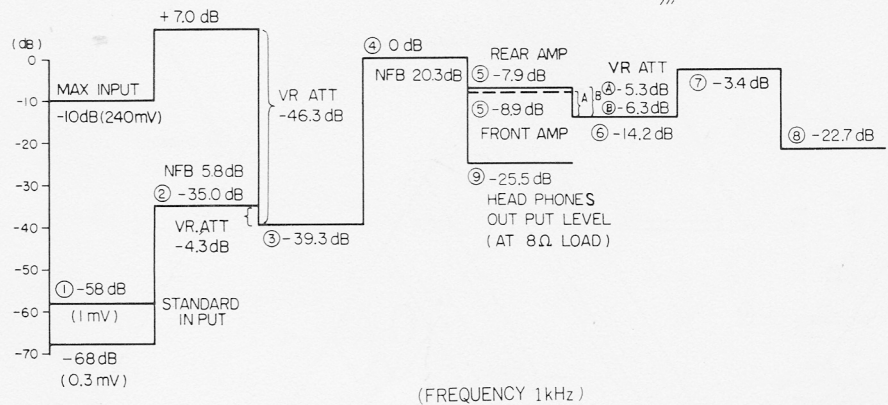
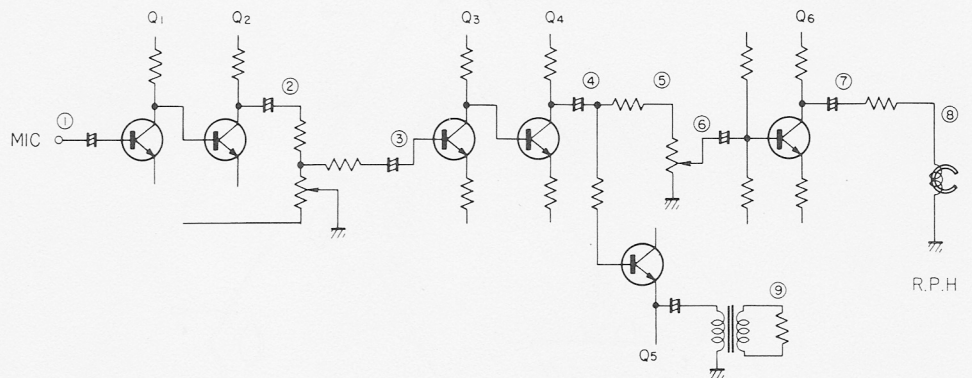


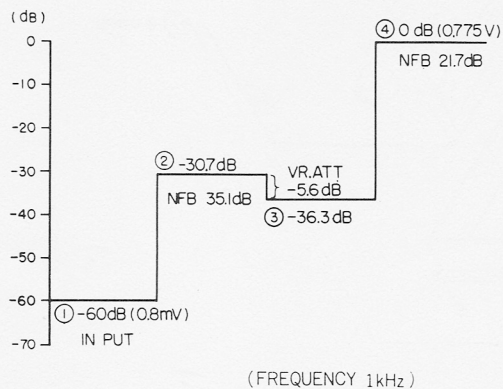
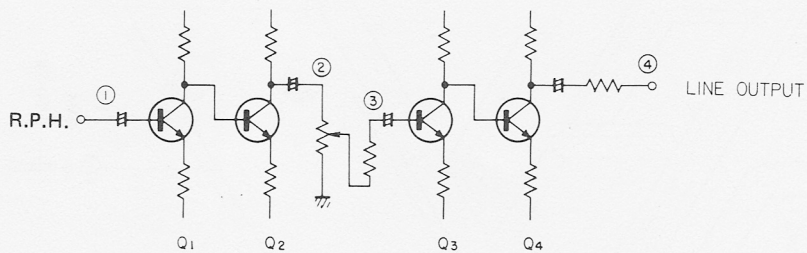
Fig. 31

13. LEVEL DIAGRAM

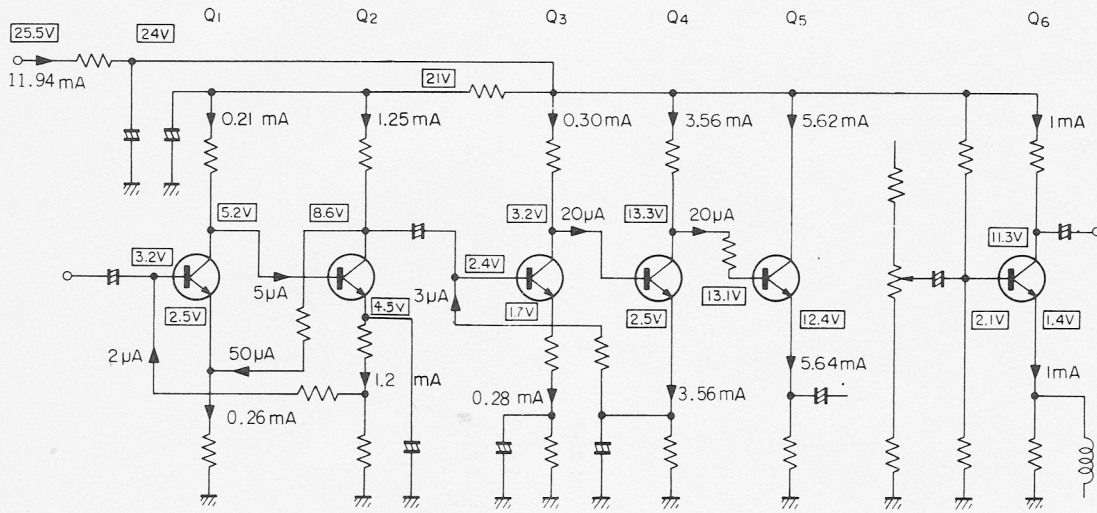
13.1 RECORDING



13.2 PLAYBACK



14. CURRENT AND VOLTAGE DIAGRAM



Q1~Q3 2SC458LG ⑥

Q4~Q6 2SC458 ⑦

15. EXPLODED VIEWS AND PARTS LIST

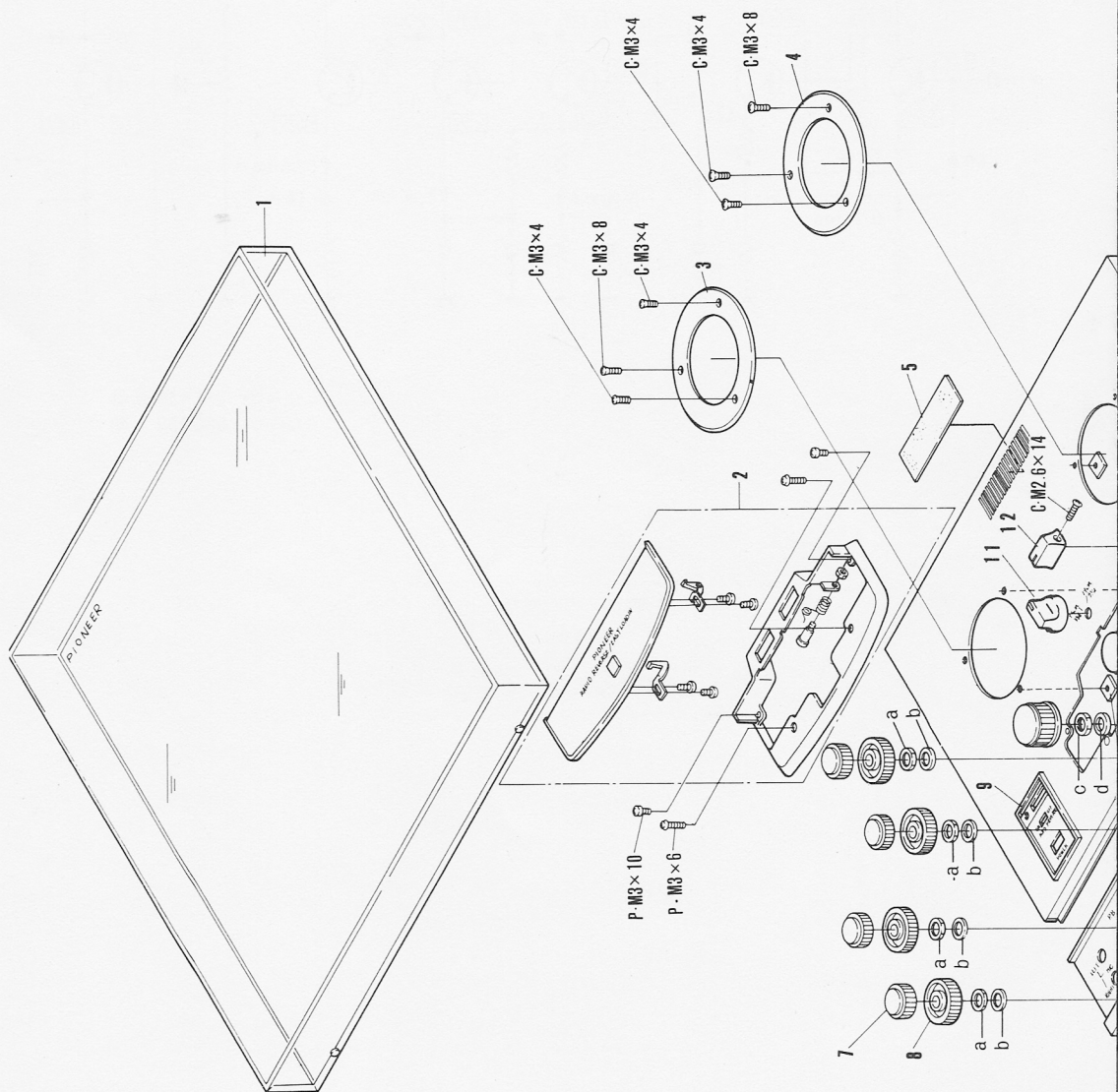
15.1 PANEL AND BASE

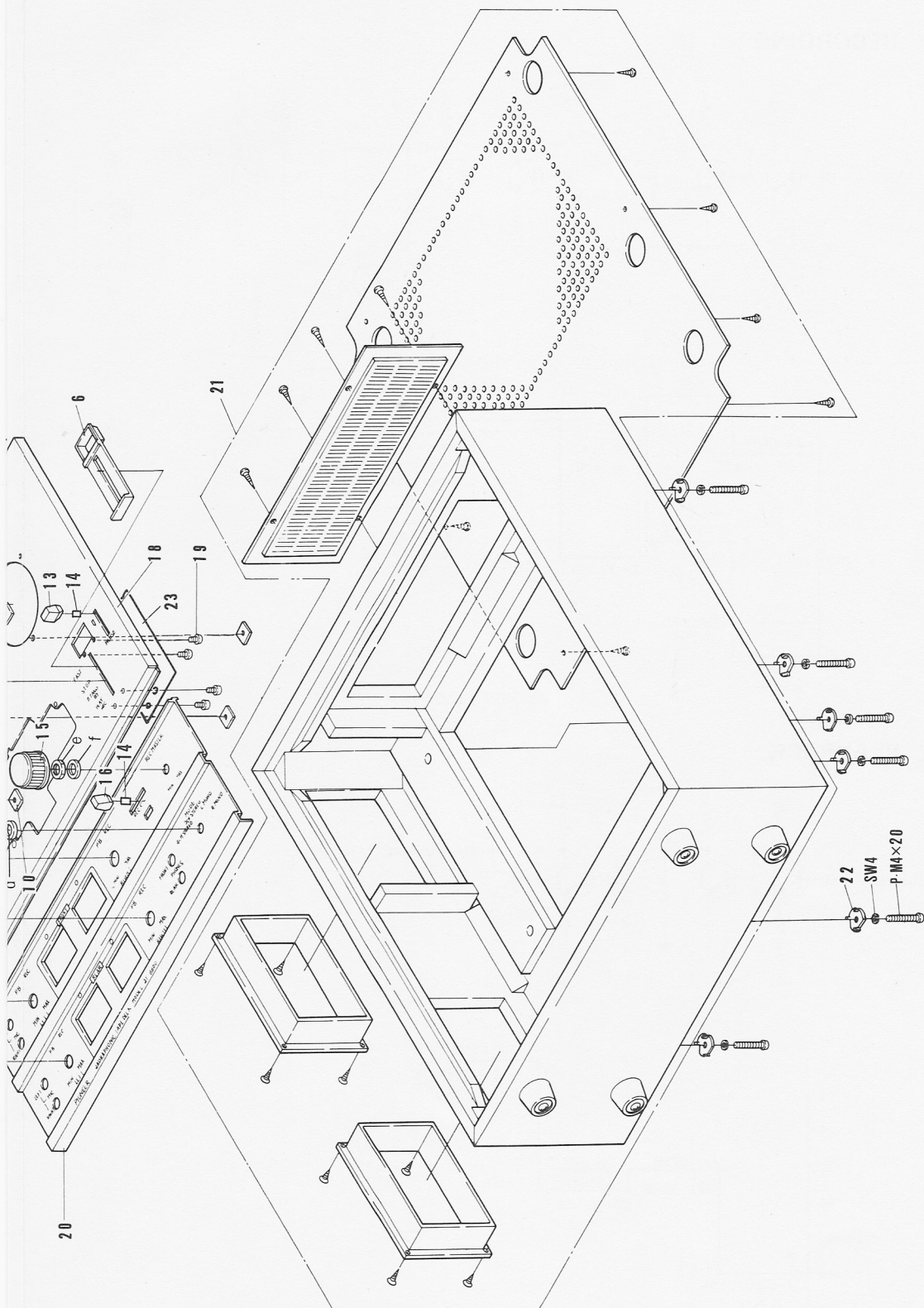
NOTES:

C Countersunk head screw

P Pan head screw

SW . . . Spring washer





Parts List of Panel and Base

NOTICE: Any parts asterisked (*) are subject to being not supplied.

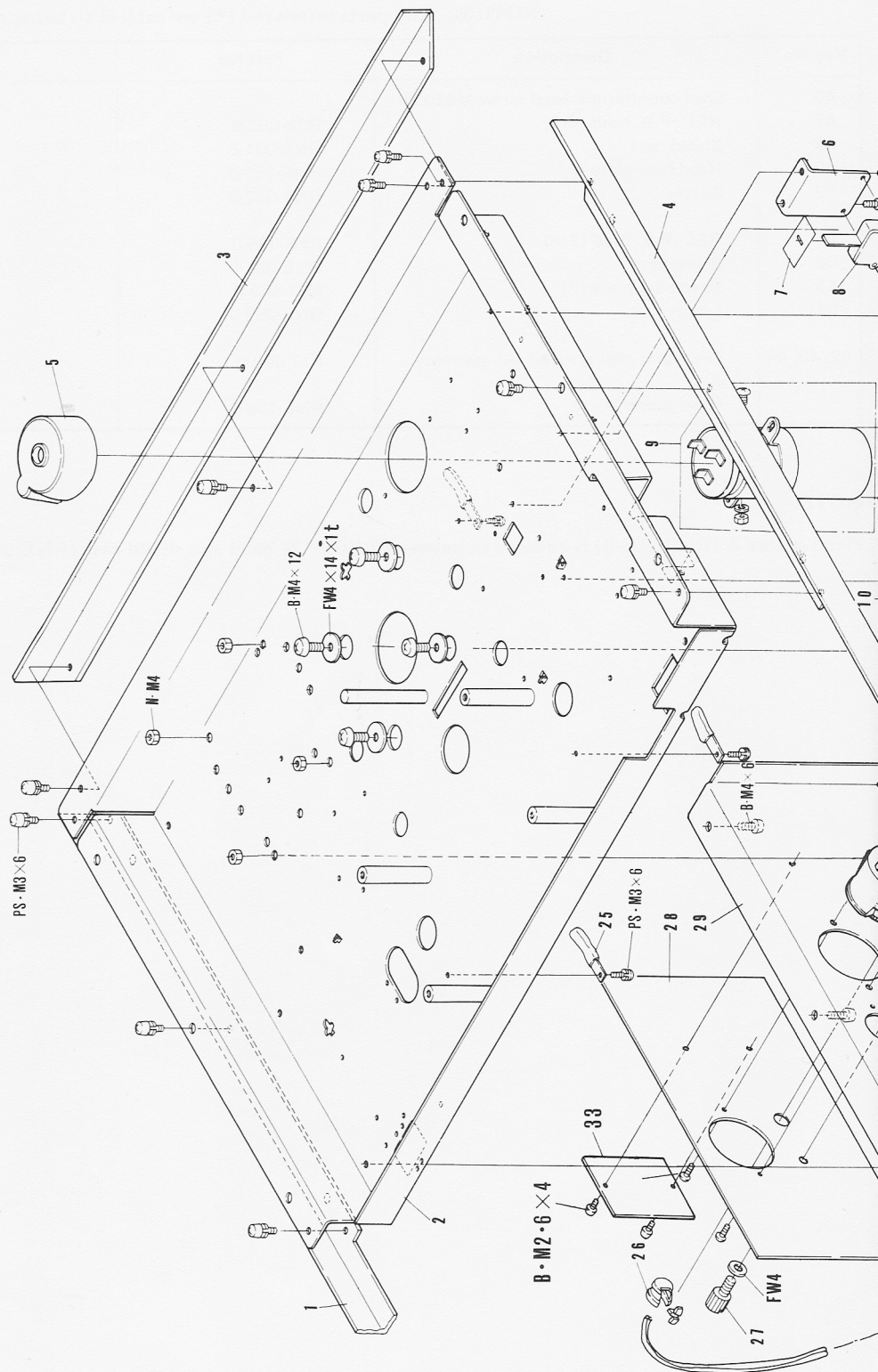
Key No.	Description	Part No.	
1	Dust cover assembly	RAX-001-C	
2	Head cover assembly	RXX-086-0	
3	Reel mount frame	RAH-058-0	
4	Reel mount frame	RAH-058-0	
5*	Cloth	E33-427-0	
6	Finger rest	A66-852-A	
7	Knob (P.B. Level control)	RAA-057-A	
8	Knob (REC. Level control)	RAA-004-A	
9*	Counter escutcheon	RAP-032-0	
10	Special nut	B71-856-0	
11	Knob (TAPE SPEED SELECTOR)	RAA-035-C	
12	Knob (FUNCTION lever)	RAA-045-C	
13	Knob (PAUSE lever)	A18-606-0	
14	Lock spring	RBK-055-0	
15	Knob (REC MASTER level control)	RAA-055-A	
16	Knob (REC lever)	RAA-034-0	
17			
18*	Deck panel	RAH-060-B	
19	Tapping screw M2x4		
20	Amplifier panel assembly	RXX-085-0	
21	Wooden cabinet assembly	RMM-022-0	
22	Claw washer	E35-407-A	
23*	Cloth	RED-050-0	
3, 4, 5, 6, 9, 10 18, 19, 23	} Deck panel assembly	RXX-062-0	
a	Nut M11		} Attached to REC/P.B. Level control
b	Washer		
c	Nut M7		} Attached to MODE switch
d	Washer		
e	Nut M8		} Attached to REC MASTER control
f	Washer		

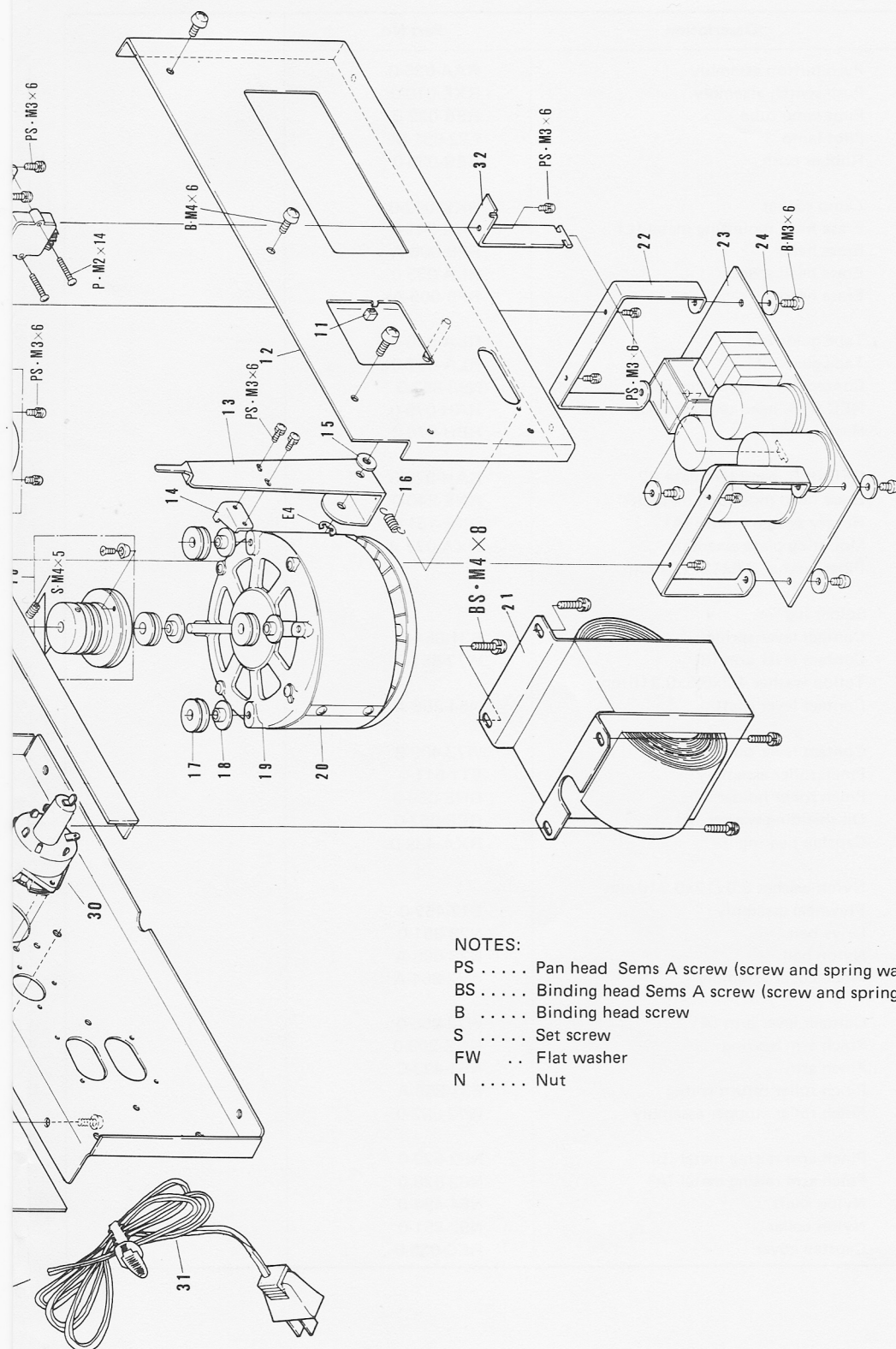
15.2 BOTTOM-SIDE COMPONENTS

NOTICE: Any parts asterisked (*) are subject to being not supplied.

Key No.	Description	Part No.	
1	Aluminum frame	RAP-033-0	
2*	Chassis	RXA-103-B	
3	Aluminum frame (A)	RAP-024-0	
4	Aluminum frame	RAP-034-0	
5	Capacitor cap	N93-438-0	
6*	Switch mounting plate	RNE-065-0	
7*	Switch cover	E34-404-0	
8	Switch (Contact point off)	S42-403-A	
9	MP capacitor 1 μ F+3 μ F 250V	C22-403-A	
10	Motor pulley 50Hz 60Hz	RXA-235-0 RXA-238-0	
11*	Rubber cushion	REB-004-0	
12*	Side chassis (B) assembly	RXA-232-0	
13*	Pause lever	N62-524-A	
14*	Pause lever metal	N62-525-A	
15	Nylon washer 5.2x1.0x0.5 (t)mm		
16	Pause lever spring	B31-443-A	
17	Motor cushion	E31-851-0	
18	Motor grommet	N51-857-0	
19	Motor	RXM-003-A	
20	Motor shield assembly	W72-888-B	
21	Power transformer	RTT-007-A	
22*	P.C. board stay	M45-408-0	
23	Power supply circuit assembly	RWR-020-A	
24	Fiber washer 3.2x12x1(t)mm		
25*	Cord fixer	M16-624-B	
26	Power cord grommet	E32-056-0	
27	Screw for grounding	B11-012-A	
28	Name plate	RAH-019-A	
29*	Side chassis	RNC-020-A	
30	Line voltage selector (Fuse holder)	AKR-001-0	
31	Power cord	D11-003-E	
32*	P.C. board stay	RNE-064-0	
33*	Model name plate	RAL-100-0	

Bottom-side Components





NOTES:

- PS Pan head Sems A screw (screw and spring washer)
- BS Binding head Sems A screw (screw and spring washer)
- B Binding head screw
- S Set screw
- FW . . . Flat washer
- N Nut

15.3 TAPE PATH AND FLYWHEEL

NOTICE: Any parts asterisked (*) are subject to being not supplied.

Key No.	Description	Part No.	
1	Push button assembly	RAA-036-0	
2	Push switch assembly	RXE-010-0	
3	Pilot lamp tube	REB-022-0	
4	Pilot lamp	E22-851-B	
5	Rubber bush	REB-039-0	
6	Lamp socket	RKK-002-0	
7*	Erase head mounting metal (L)	RNE-241-0	
8	Erase head	RPB-005-A	
9	Erase head spacer	RLA-035-0	
10	Erase head	RPB-005-A	
11	Tape guide 8M	RLA-036-0	
12	Tape guide 6M	RLA-037-0	
13*	Contact lever mounting base	N93-857-0	
14	REC./P.B. head template A2	RAH-075-0	
15	Head spring	RBH-076-0	
16	REC./P.B. head template B2	RAH-076-0	
17*	Erase head mounting metal (R)	RNE-240-0	
18	Rotary switch holder (A)	RNE-131-0	
19*	Mounting plate assembly	RXA-077-A	
20	Fiber washer 2.6x12x1(t)mm		
21	Solder lug		
22	Contact lever spring	B31-854-0	
23	Contact lever arm (B)	W72-851-0	
24	Teflon washer 4.2x6.5x0.3(t)mm		
25	Contact lever shaft	N54-856-A	
26	Contact lever pole assembly	W73-409-B	
27	Pinch roller assembly	E17-511-0	
28*	Pinch roller holder	RNE-069-0	
29	Oil shielding washer (A)	REB-052-0	
30	Capstan bearing	RXA-439-0	
31	Nylon washer 8.0x12x0.3(t)mm		
32	Flywheel assembly	E17-452-0	
33	Drive belt	N28-851-0	
34	Nylon ball	N28-608-A	
35	Pinch cover assembly	W72-864-A	
36	Contact lever arm (A)	W72-855-0	
37*	Pinch arm bearing	RNE-209-0	
38*	Pinch arm	N54-493-C	
39	Pinch roller return spring	B31-858-A	
40*	Pinch roller stopper assembly	W72-862-0	
41	Pinch arm raising metal (B)	N62-529-0	
42*	Pinch arm raising metal (A)	N62-528-0	
43*	Nylon shaft	N54-494-0	
44*	Nylon collar	N92-851-0	
45	Capstan cover	REC-035-0	

NOTICE: Any parts asterisked (*) are subject to being not supplied.

Key No.	Description	Part No.	
46	Oval countersunk head screw M2.6x16		
47	REC./P.B. head (4ch)	RPB-003-0	
48	Shield case	RNE-081-0	
49	Head base plate (A)	RNE-151-0	
50	Spacer	RNE-082-0	
51	REC./P.B. head (2ch)	RPB-004-0	
52	Shield case	RNE-081-0	
53	Head base plate (B)	N62-569-0	
54	Spacer	RNE-082-0	
42, 43, 44	Pinch arm raising metal (A) assembly	E17-409-0	
	Head spacer A	RNE-158-0	

NOTE:

Head spacer A (RNE-158-0) is encased in between REC./P.B. head and shield case (RNE-081-0).

This diagram shows an exploded view of a mechanical assembly. The components are numbered 1 through 54. Key callouts include:

- 1**: A rectangular plate with a central slot.
- 2**: A rectangular plate with a central slot.
- 3**: A cylindrical component.
- 4**: A cylindrical component.
- 5**: A cylindrical component.
- 6**: A cylindrical component.
- 7**: A rectangular plate with a central slot.
- 8**: A rectangular plate with a central slot.
- 9**: A rectangular plate with a central slot.
- 10**: A rectangular plate with a central slot.
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- 45**: A rectangular plate with a central slot.
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- 47**: A rectangular plate with a central slot.
- 48**: A rectangular plate with a central slot.
- 49**: A rectangular plate with a central slot.
- 50**: A rectangular plate with a central slot.
- 51**: A rectangular plate with a central slot.
- 52**: A rectangular plate with a central slot.
- 53**: A rectangular plate with a central slot.
- 54**: A rectangular plate with a central slot.

Callouts for specific parts and fasteners:

- P-M2.6x4**: A screw.
- C-M2x3**: A screw.
- C-M2x5**: A screw.
- C-M2.6x4**: A screw.
- C-M2.6x12**: A screw.
- C-M4x10**: A screw.
- C-M2.6x8**: A screw.
- PS-M2.6x6**: A screw.
- FW2.6**: A screw.

PS Pan head Sems A screw (screw and spring washer)
P Pan head screw
C Countersunk head screw
T Truss head screw
S Setscrew
FW . . . Flat washer
SW . . . Spring washer

PS Pan head Sems A screw (screw and spring washer)

P Pan head screw

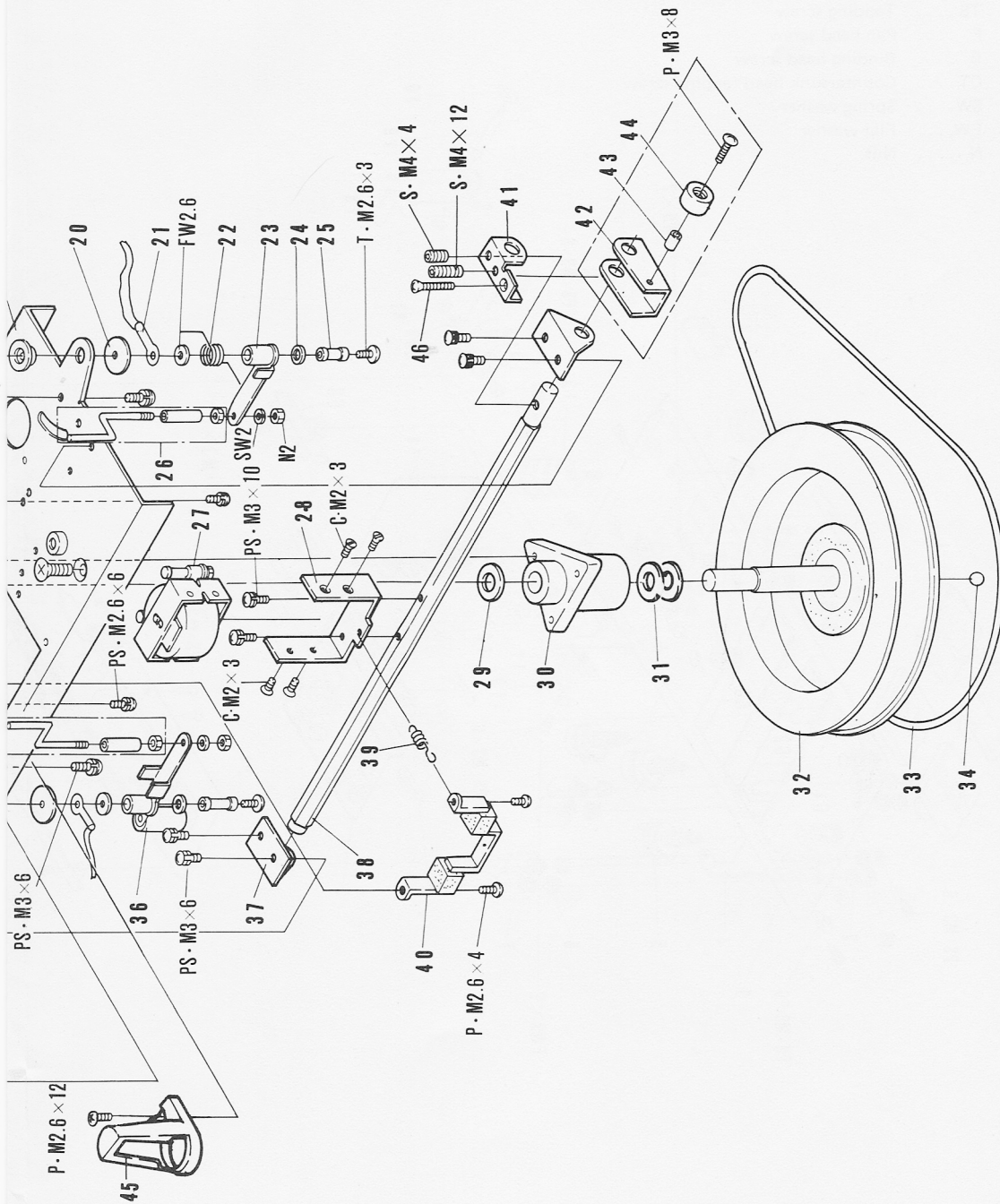
C Countersunk head screw

T Truss head screw

S Setscrew

FW ... Flat washer

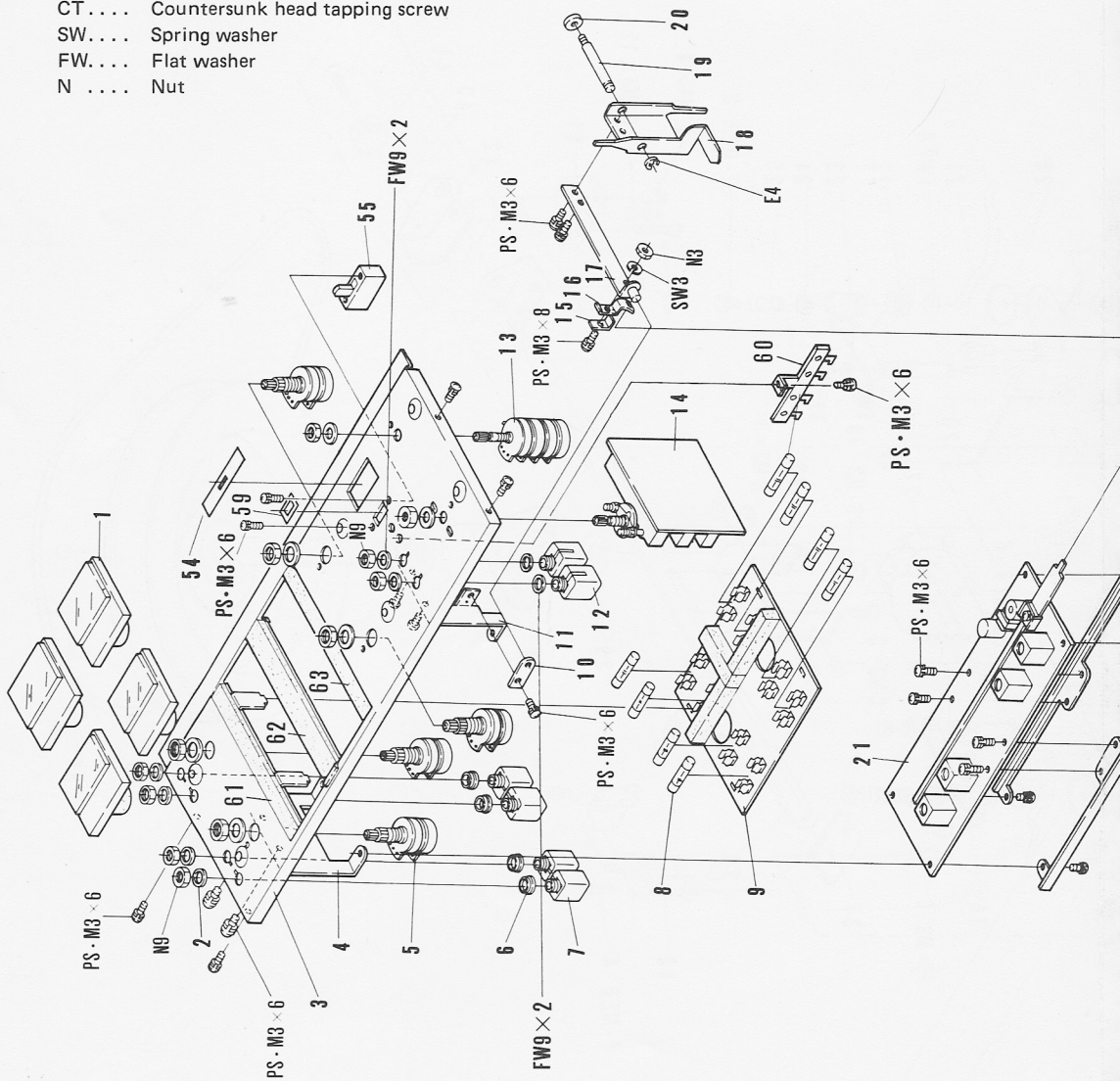
SW ... Spring washer

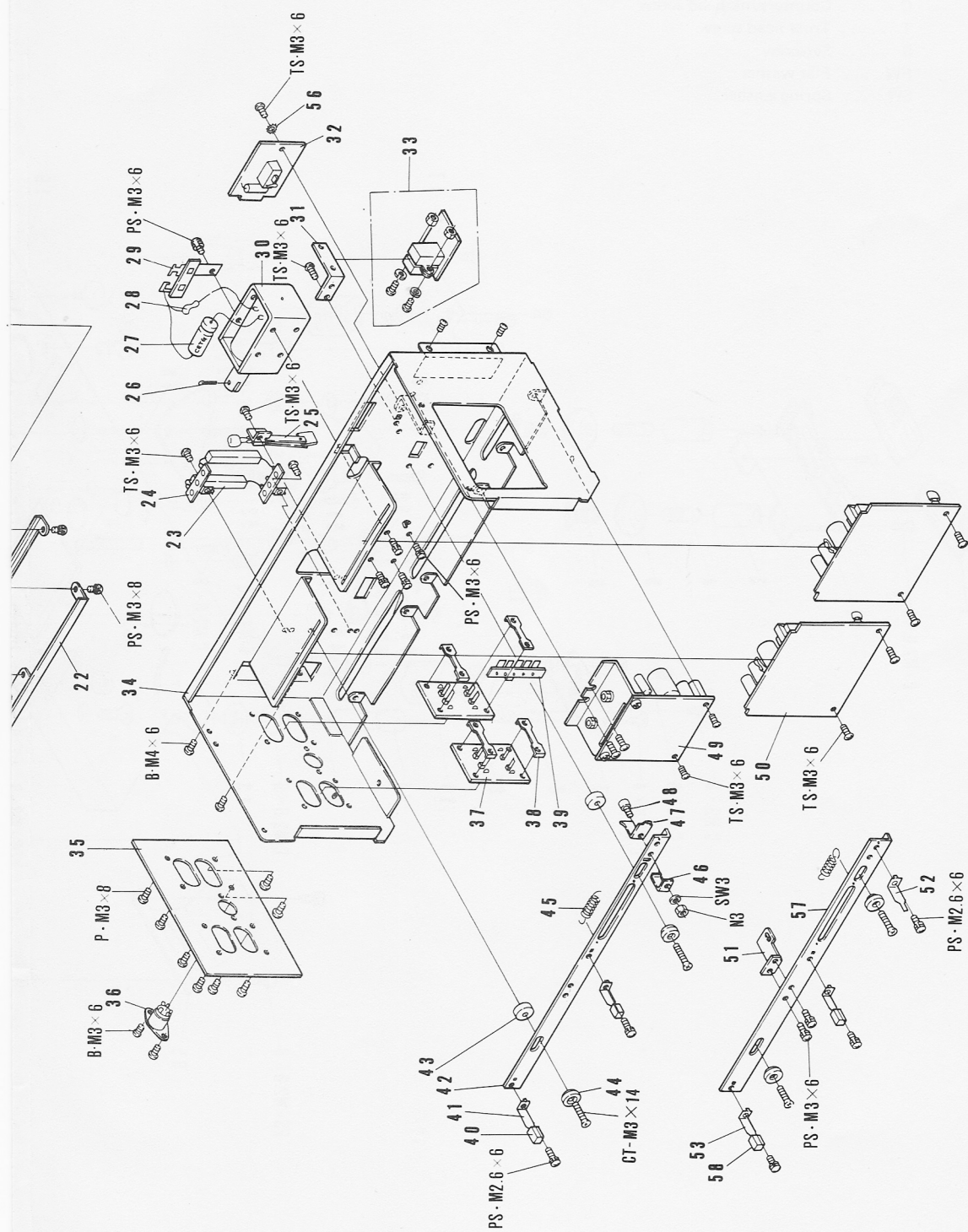


15.4 AMPLIFIER CHASSIS

NOTES:

- PS Pan head Sems A screw (screw and spring washer)
TS Tapping screw
P Pan head screw
B Binding head screw
CT Countersunk head tapping screw
SW Spring washer
FW Flat washer
N Nut





Parts List of Amplifier Chassis

NOTICE: Any parts asterisked (*) are subject to being not supplied.

Key No.	Description	Part No.	
1	Level meter	RAW-013-A	
2	Insulator washer	E34-004-0	
3*	Front chassis	RNB-023-0	
4*	P.C. board holder (L)	RNE-142-0	
5	REC./P.B. level control	RCV-002-0	
6	Insulator washer	E32-045-0	
7	Phone jack (MIC)	K72-024-0	
8	Pilot lamp	REL-002-0	
9	Lamp board	RWX-004-0	
10	Bracket	RNE-091-0	
11*	P.C. board holder (R)	RNE-143-0	
12	Phone jack (HEADPHONE)	RKN-002-A	
13	REC MASTER level control	RCV-001-0	
14	Mode switch circuit assembly	RWX-001-A	
15*	Spring lever mounting plate	RNE-214-A	
16	Spring lever	RBK-034-A	
17	Joint lever assembly	RXA-080-A	
18*	Recording lever	RNE-088-A	
19*	Recording lever shaft	RLA-038-0	
20	Washer	RNE-089-0	
21	Amplifier-B assembly	RWF-004-B	
22*	P.C. board protector	RNE-093-A	
23	Wire wound resistor 75Ω 10W	RCN-001-0	
24	Terminal strip (2P)	RKC-004-0	
25	Spring switch	S48-855-0	
26	Slot pin	B28-851-0	
27	Electrolytic capacitor 100μF 50V	CEB 101P 50	
28	Carbon film resistor 5.6Ω ½W	RD½PS 5R6J	
29	Terminal strip (1P)	RKC-002-0	
30	Plunger	N15-852-0	
31*	MS plate	RNE-098-0	
32	REC switch assembly	RWX-002-0	
33	Muting switch assembly	RWX-003-0	
34*	Amplifier chassis	RNB-007-G	
35	Terminal name plate	RAK-001-0	
36	REC./P.B. connector (DIN type, 5P)	K93-003-B	
37	Phono jack (4 Jacks)	RKB-001-A	
38	Mounting plate	RNE-119-0	
39	Terminal strip (4P)	RKC-003-A	
40	Insulator tip	REB-069-0	
41*	Slide metal lever (A)	RNE-356-0	
42*	Slide metal (B)	RNE-215-0	
43	Side spacer	N54-866-A	
44	Stepped washer (D)	N51-873-0	
45	Slide metal spring	B31-864-0	

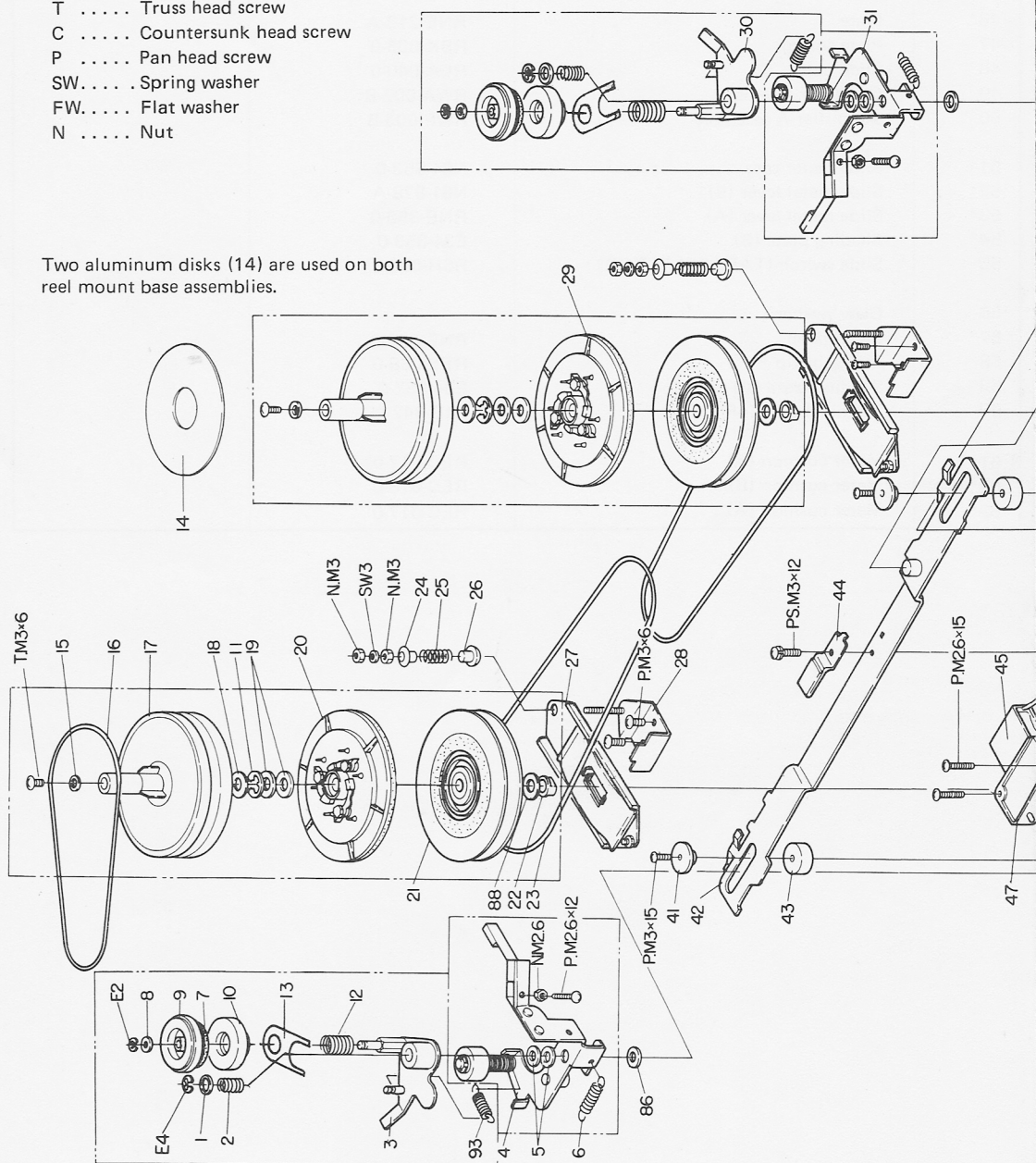
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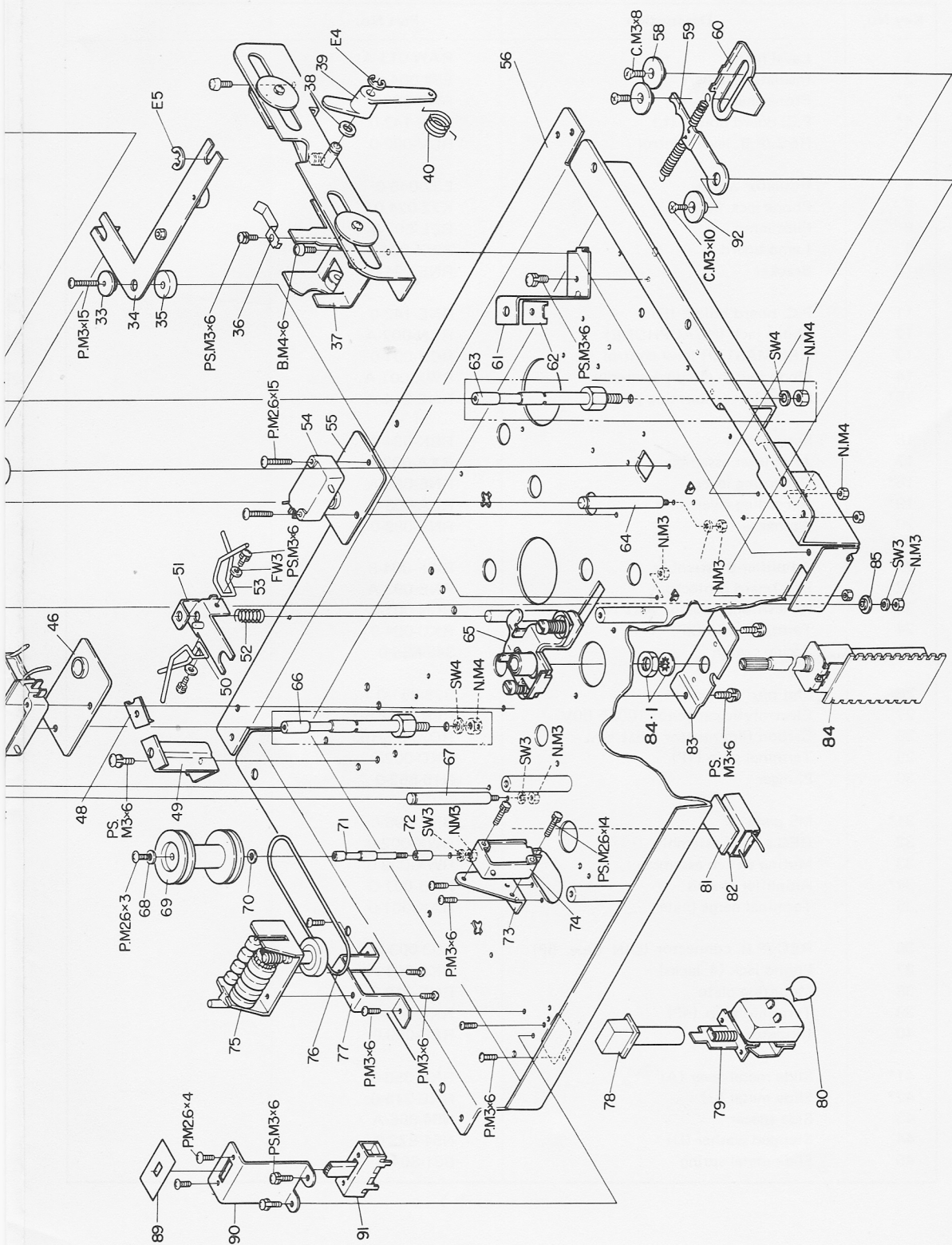
Key No.	Description	Part No.	
46*	Plate	RNE-213-A	
47	Plate spring	RBK-035-0	
48	Slide pole	RLA-040-0	
49	Oscillator assembly	RWA-002-B	
50	Amplifier-A assembly	RWF-003-B	
51*	Slide metal cam	N64-853-0	
52*	Slide metal lever (B)	N61-878-A	
53*	Slide metal lever (A)	RNE-356-0	
54*	Shading plate (B)	E34-853-0	
55	Slide switch (TAPE SELECTOR)	RSH-006-0	
56	Claw washer		
57*	Slide metal	RNE-092-0	
58	Insulator tip	REB-068-0	
59*	Shading plate (A)	E34-852-0	
60	Terminal strip (4P)	K13-042-A	
61*	Meter cushion (A)	REC-017-0	
62*	Meter cushion (B)	REC-018-0	
63*	Meter cushion (A)	REC-017-0	

15.5 TOP-SIDE COMPONENTS

NOTES:

- PS Pan head Sems A screw (screw and spring washer)
 T Truss head screw
 C Countersunk head screw
 P Pan head screw
 SW Spring washer
 FW Flat washer
 N Nut





Parts List of Top-side Components

NOTICE: Any parts asterisked (*) are subject to being not supplied.

Key No.	Description	Part No.	
1	Damper washer	RBE-005-0	
2	Damper spring	RBH-080-0	
3*	Back tension plate (L) assembly	RXA-327-0	
4	Brake arm (L) assembly	RXA-294-0	
5	Washer (5φ) BN 1	B22-424-0	
6	Brake spring	RBH-055-0	
7*	Back tension felt	RED-045-0	
8	Washer (3φ) BN 1	B22-420-0	
9*	Back tension pulley assembly	RXA-183-0	
10	Thrust pulley	RNK-039-0	
11	Special retaining washer	RBG-003-0	
12	Back tension spring	RBH-081-0	
13	Plate	RNE-562-A	
14	Aluminum disk	RAH-014-0	
15	Teflon washer 7x5.2x0.8(t)mm	B23-865-0	
16	Counter belt	N28-853-0	
17	Reel mount base assembly	RXX-056-0	
18	Washer (5φ) BN 1	B22-424-0	
19	Washer (5φ) BN 2	B22-423-0	
20	Clutch cam pulley assembly (A)	RXX-054-0	
21	Reel mount pulley assembly	RXX-052-0	
22	Take-up pulley spacer	RLA-197-0	
23	Take-up belt	REB-051-A	
24*	Eyelet (4φx4mm)		
25	Tension adjusting spring	B31-865-0	
26*	Eyelet (4φx4mm)		
27	Tension adjusting plate assembly	RXA-371-0	
28	Adjusting plate holder assembly	W72-883-0	
29	Clutch cam pulley assembly (B)	RXX-055-0	
30*	Back tension plate (R) assembly	RXA-328-0	
31	Brake arm (R) assembly	RXA-295-0	
32*			
33	Stepped washer (C)	N51-855-A	
34*	Stepper arm assembly	W72-869-A	
35	Stepper arm spacer	N54-867-0	
36	Slide stopper spring	B32-853-0	
37*	Slide lever assembly	RXA-435-0	
38	Nylon washer 5.2x8x0.2(t)mm		
39	Pause cam lever	N81-404-A	
40	Pause cam spring	B31-444-0	
41	Stepped washer (C)	N51-855-A	
42	Fast-forward cam	W72-477-B	
43	Slide spacer	N54-866-A	
44*	Speed selector stopper	RNE-308-0	
45	Spark killer	RWX-030-0	

NOTICE: Any parts asterisked (*) are subject to being not supplied.

Key No.	Description	Part No.	
46*	Insulator	M98-855-0	
47	Microswitch	S21-411-0	
48	Special nut (U)	B71-403-A	
49*	Panel holder	M48-401A	
50*	Speed selector arm (A)	N83-401-A	
51	Speed selector cam (B) assembly	RXA-241-0	
52*	Speed selector cam spring	RBH-050-0	
53*	Speed selector arm (B)	N83-402-A	
54	Microswitch	S21-418-0	
55*	Insulator	M98-855-0	
56*	Chassis	RXA-103-B	
57			
58	Stepped washer (B)	N51-854-0	
59*	Stepper cam assembly	W72-474-0	
60*	Slide stopper	N61-863-0	
61*	Panel holder	M48-401-A	
62	Special nut (U)	B71-403-A	
63	Reel mount shaft	RLA-077-B	
64*	Arm shaft	N54-862-0	
65	Speed selector assembly	RXX-053-0	
66	Reel mount shaft	RLA-077-B	
67*	Arm shaft	N54-862-0	
68	Teflon washer 6.5x4.2x0.3(t)mm	B23-854-0	
69	Counter pulley	N93-855-0	
70	Teflon washer 6.5x4.2x0.3(t)mm	B23-854-0	
71*	Counter pulley shaft	N54-863-A	
72	Counter pulley spacer	N54-864-0	
73*	Shut-off switch mounting plate	M44-851-0	
74	Microswitch	S21-851-0	
75	Counter	RAW-001-0	
76	Counter belt	N28-853-0	
77*	Counter mounting plate	RNE-034-0	
78	Knob (POWER)	RAA-003-A	
79	Push switch (POWER)	RSA-009-0	
80	Ceramic capacitor 0.01 μ F 1.4kV	C43-003-0	
81*	Double face tape		
82	Spark killer	RWX-030-0	
83*	Rotary switch holder	RNE-083-0	
84	Equalizer switch assembly	RWX-008-A	
84-1	Hexagonal nut, locking washer		Attached to 84
85	Fast-forward cam collar	RLA-328-0	
86	Washer (5 ϕ) BN 1	B22-424-0	
87*			
88	Washer (5 ϕ) BN 2	B22-423-0	
89*	Mask (A)	E34-852-0	
90*	Slide switch mounting plate	M46-857-0	
91	Slide switch	S41-854-0	
92	Stepped washer (B)	N51-854-0	
93	Tension pulley spring	RBH-121-0	

Key No.	Description	Part No.	
3,7~10 12, 93	Back tension assembly (L)	RXX-079-0	
7~10, 12 30, 93	Back tension assembly (R)	RXX-080-0	
11, 15 17~22	Reel base assembly (L)	RXX-077-0	
26, 66, 88 11, 15 17~19	Reel base assembly (R)	RXX-078-0	
21, 22, 29 63, 88			
4, 6	Brake arm assembly (L)	RXX-049-0	
6, 31	Brake arm assembly (R)	RXX-050-0	
7, 9	Tension pulley assembly	RXX-051-0	
50, 51, 53	Speed selector cam assembly	E17-512-0	

16. CIRCUIT DESCRIPTION

As the QT-74 employs the two-head system, all amplifier stages (except the bias oscillator and the final recording equalizer) are used both for recording and playback, with switchover effected by S2 (S102) and S5, sections S2-1 to S2-6, as shown in Fig. A. Switches S1 and S13 also select the head in accordance with tape travel direction, i.e. FORWARD or REVERSE.

16.1 PLAYBACK SIGNAL PATH

The signal from the head first enters the equalizer amplifier consisting of Q1 and Q2. Frequency characteristics of this stage depend on the CR network in the negative feedback (NFB) circuit, connected between S2-2 and S2-3. Next, the signal enters the flat response amplifier stage Q3 and Q4. Here, flat frequency response is obtained by the CR network at S2-5.

Output from this stage passes to the output terminals (LINE OUTPUT), while another portion of the signal is amplified in Q5 to drive the LEVEL meter (V.U.) and, through a matching transformer (T1) and the headphones.

16.2 RECORDING SIGNAL PATH AND BIAS

In recording function, the amplifier input is switched over from head (playback) to LINE INPUT or MIC INPUT (recording). This switching is done by S2, section S2-1. The input signal for the recording head is taken from the collector output of Q6.

Other circuit elements and signal paths are the same as in playback, except the CR networks in the NFB circuits which, selected by S2, sections S2-2, S2-3 and S2-5, are changed to obtain frequency characteristics as shown in the little boxes in Fig. A.

The single-stage Q6 amplifier functions as recording compensator only (high boost).

In addition, the TAPE SELECTOR switch (S16) changes the high range compensation to match STANDARD or L.H. (Low noise-High output) tape.

The bias oscillator Q7 and Q8 is activated to supply recording bias and erase current. Q9 and Q10 form a regulator for the bias current, to keep the bias current constant in any operation mode such as 4-channel, 2-channel and monophonic.

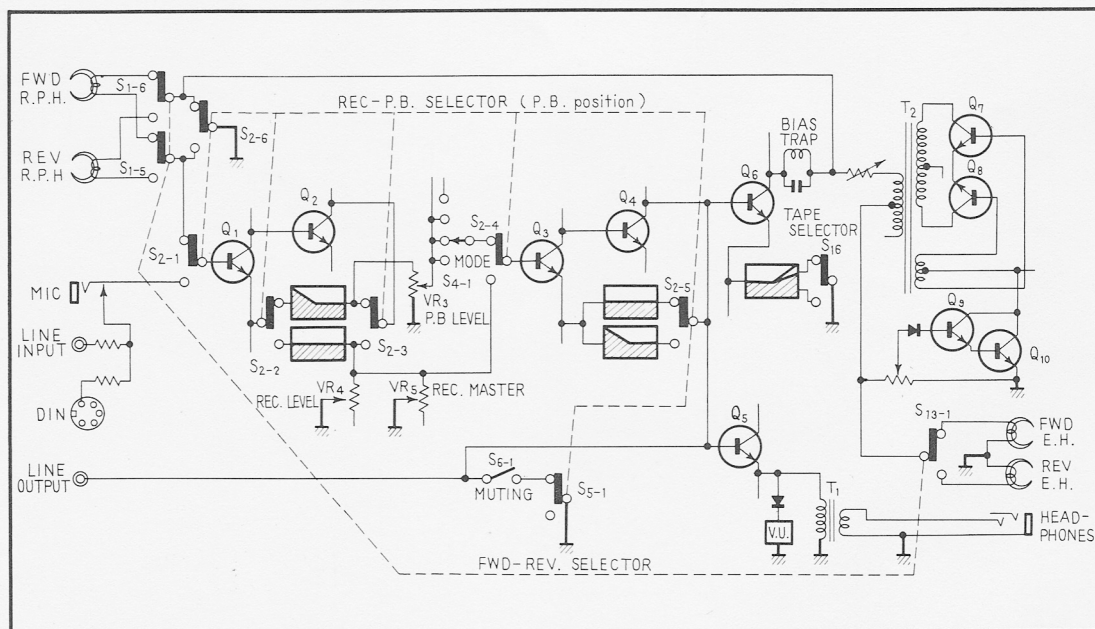
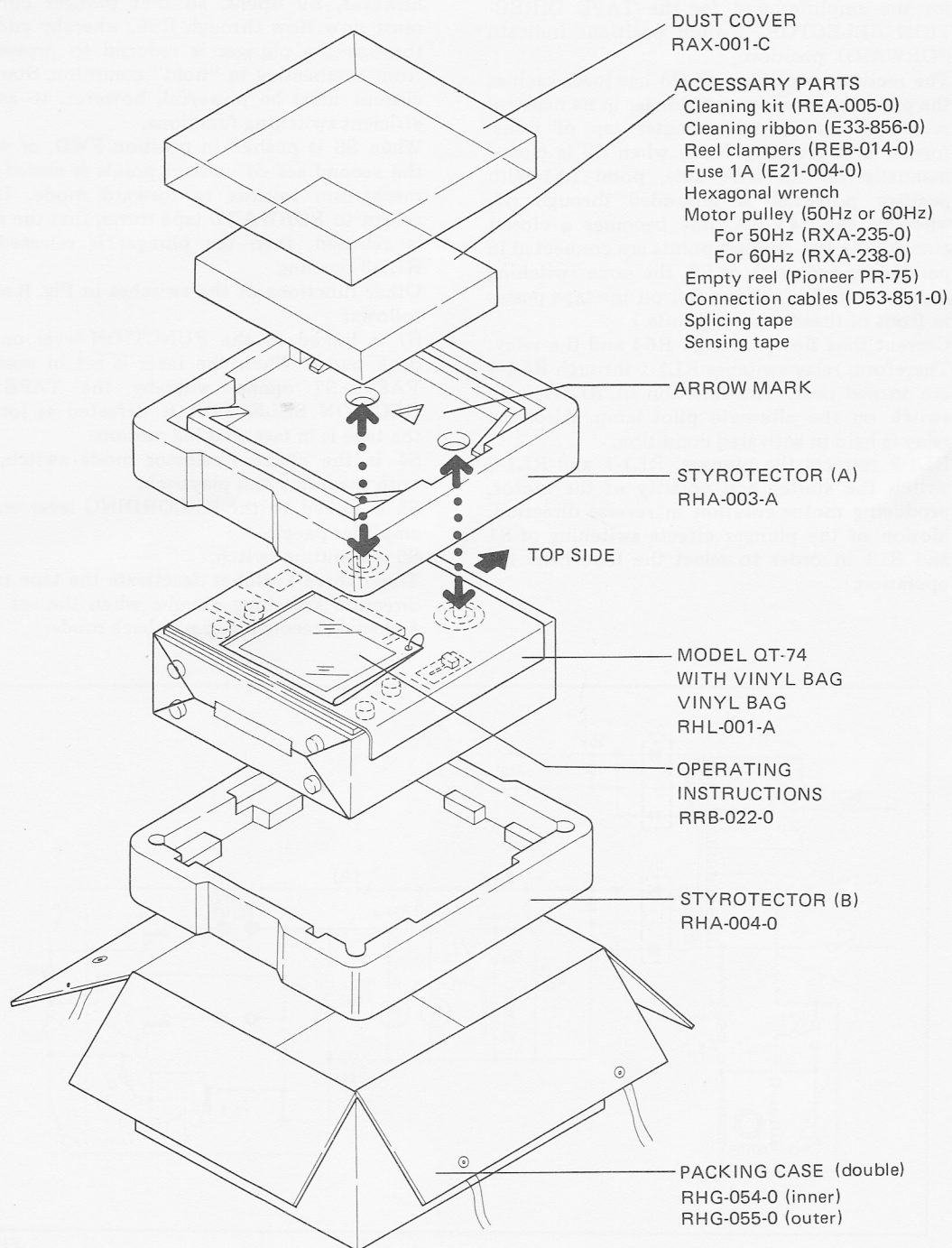


Fig. A

17. PACKING METHOD AND PART NUMBERS



NOTE:

In packing, do not fail to turn **STYROTECTORS (A) and (B)** in same direction of arrows as shown in this illustration.

PIONEER ELECTRONIC CORPORATION
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