

TRANSISTOR STEREO TAPE RECORDER

MODEL TRQ-707

SERVICE MANUAL

No. 156

1968

SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

POWER SUPPLY RATING.....AC:117V 60% or
210V/230V 50%
POWER CONSUMPTION.....60W
RECORDING SYSTEM.....AC bias
ERASING SYSTEM.....AC erase
AUDIO OUTPUT2.5W x 2
FREQUENCY RANGE50~15,000 cps at 7 $\frac{1}{2}$ ips speed
50~9,500 cps at 3 $\frac{3}{4}$ ips speed
50~5,500 cps at 1 $\frac{7}{8}$ ips speed

INPUT IMPEDANCE

MICROPHONE TERMINAL.....6k Ω
LINE-IN TERMINAL330k Ω
REC./P.B. TERMINAL6k Ω

OUTPUT IMPEDANCE

EXT. SPEAKER TERMINAL...8 Ω
REC./P.B. TERMINAL600 Ω

MECHANICAL CHARACTERISTICS

TAPE SPEED.....7 $\frac{1}{2}$ ips (19cm/s)
3 $\frac{3}{4}$ ips (9.5cm/s)
1 $\frac{7}{8}$ ips (4.75cm/s)
TAPE REEL 7" (18cm), 5" (13cm) &
3 $\frac{1}{3}$ " (8.5cm)

RECORDING OR PLAYING

TIME.....Stereo (using 7", 35 μ tape)
1.5 hr at 7 $\frac{1}{2}$ ips speed
3 hr at 3 $\frac{3}{4}$ ips speed
6 hr at 1 $\frac{7}{8}$ ips speed
Monaural (using 7", 35 μ tape)
3 hr at 7 $\frac{1}{2}$ ips speed
6 hr at 3 $\frac{3}{4}$ ips speed
12 hr at 1 $\frac{7}{8}$ ips speed
REWINDING TIME4 min. using 7", 50 μ tape
FAST FORWARDING TIME...4 min. using 7", 50 μ tape

COMPONENTS USED

TRANSISTORS2SB73 (B) x 2, 2SB75 (C) x 4
2SB89 (C) x 2, 2SB367 (B) x 4
2SB370 (A) x 3, 2SC281 (C) x 4
2SC156 (A)
DIODES.....IN34A x 4, OA90 x 2, IS314
IS310 x 6
TERMISTORS.....D IE x 5, 3ID46
LOUDSPEAKER.....6 $\frac{1}{4}$ " PM x 2
MICROPHONE.....Dynamic microphone

MISCELLANEOUS

TRACK SYSTEM4 track stereo
DIMENSIONS8 $\frac{11}{16}$ " (H) x 14 $\frac{3}{4}$ " (W) x
14" (D)
(22 x 37.5 x 35.5cm)
WEIGHT31 lbs (14kg)

DESCRIPTION

Special Features

1. 4-track, 2-channel system for stereo recording and reproducing.
2. Autostopper (Automatic stopping device)
When playing back, fast forwarding or rewinding, the recording tape used with this set will automatically come to a complete stop at any optional position by means of the automatic control device.
3. Levelmatic device
Since the level adjustment during recording is automatic, a recording without distortion can be performed, even when a sound of great intensity enters the machine suddenly.
4. All-transistor system, intensive total output of 5W.

5. Satellite speaker system
Hitachi's high-performance speaker, positioned symmetrically on the right and left, ensures enjoyment of perfectly-balanced stereo sound.
6. Tone quality control
Depending on preference, the machine can be controlled for soft or sharp tones or for a variation of tone in between.
7. Recording and playback terminals according to DIN standard
If the stereo set has recording and playback terminals of the same standard, the connection for recording and player can be performed with one cord, regardless of stereo or monaural sound.

CONTROLS

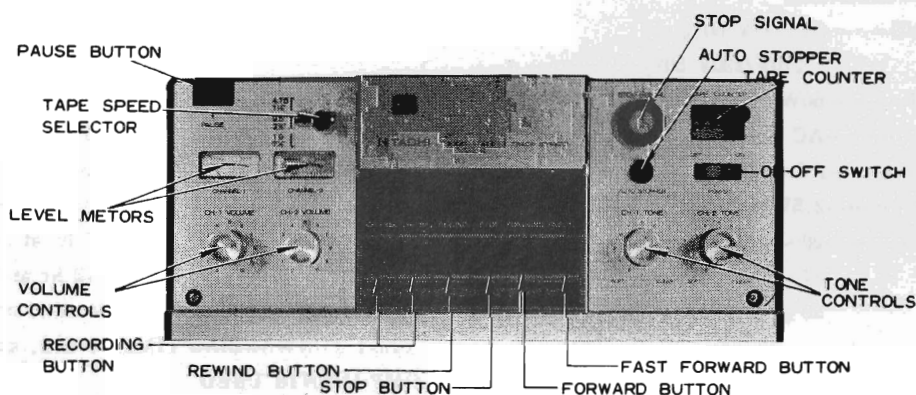


Fig.

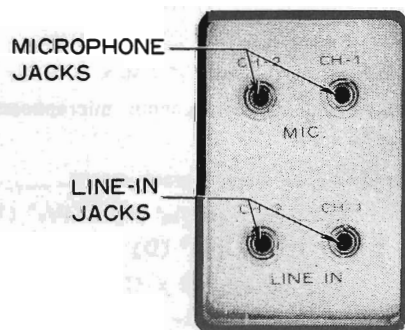


Fig. 2

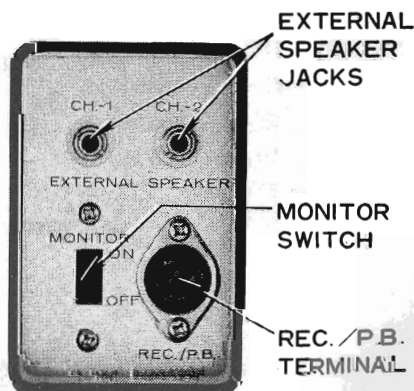


Fig. 3

OPERATION PRINCIPLE OF AUTOMATIC STOPPING DEVICE

The automatic stopping device has a magnetic head (for recording and reproducing of automatic stop signal) which is installed at an inclined angle, and is separated from the recording and reproducing head as shown in Fig.7. Ordinary voice signals recorded in this head are not detected because of the inclined position.

This head only detects signals purposely designed to be recorded through it. Accordingly, when a stop signal is recorded on an optional track position of the tape through this head, that signal is detected in a playback condition and the signal is amplified in the transistor circuit and energizes the relay. This relay is connected to a circuit which actuates the powerful electromagnet. As shown in Fig.6, when the relay is not actuated, it is connected to A, and the condenser (100 μ F) is charged. When the current flows to the relay, however, the relay is actuated, becomes connected to B, and the electric charge accumulated in the condenser flows to the electromagnet, thus actuating it. Because of the operation of this electromagnet, the lock on the stopping mechanism is released, creating a stop in the same way as if the stop button were depressed manually.

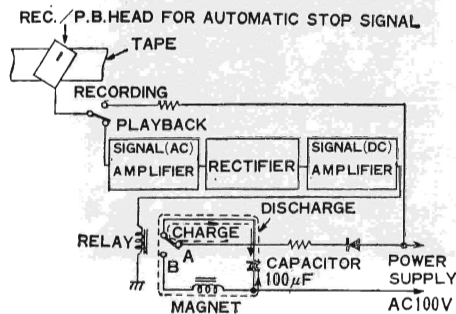


Fig. 6

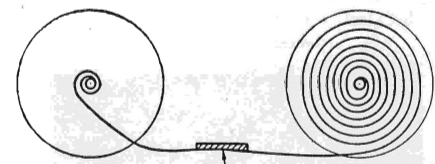


Fig4

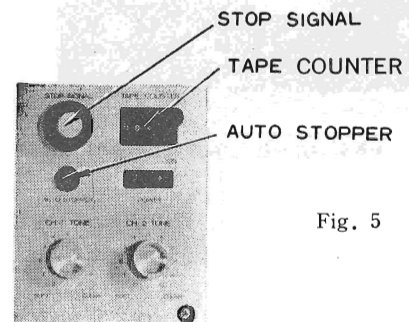


Fig. 5

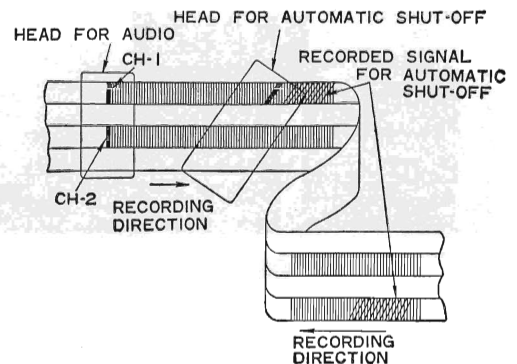


Fig 7

SERVICE POINTS

When inspecting, repairing and lubricating, disassemble the machine in the following manner:

1. Removing the front panel.

Remove setscrews (7 pcs) as shown in Fig.8, after removing the volume control knob, tone control knob, speed selector and head cover.

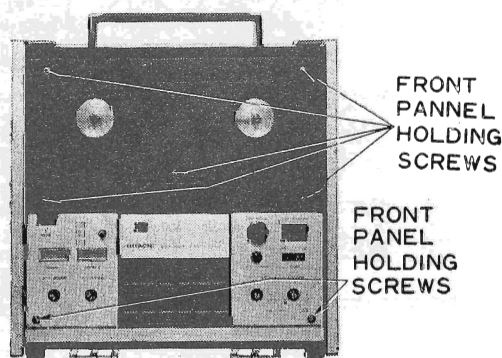


Fig. 8

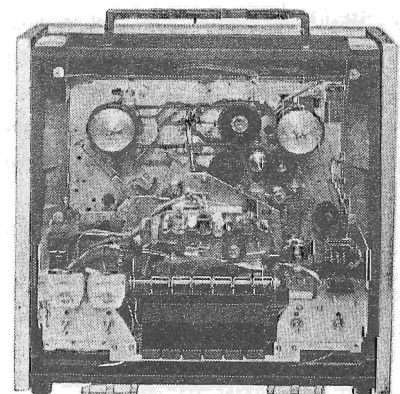
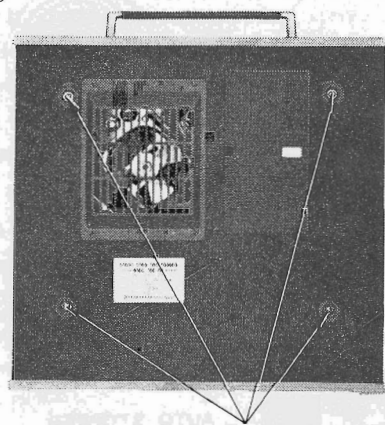


Fig. 9

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2. Pulling out the chassis

Upon removing the rubber legs and chassis setscrews (4 pcs) located on the bottom of the case, shown in

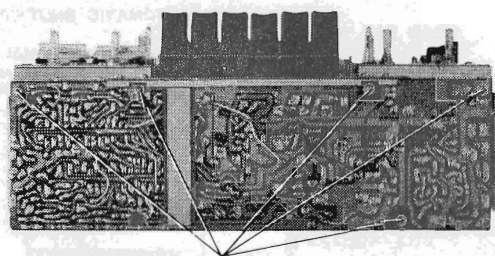


CHASSIS HOLDING SCREWS

Fig. 10

3. Removing the circuit board

Remove screws (5 pcs) shown in Fig. 12. When removing



CIRCUIT BOARD HOLDING SCREWS

Fig. 12

Fig. 10 and chassis holding screws (2 pcs) shown in Fig. 11, the chassis can be removed from the case body.

CHASSIS HOLDING SCREWS

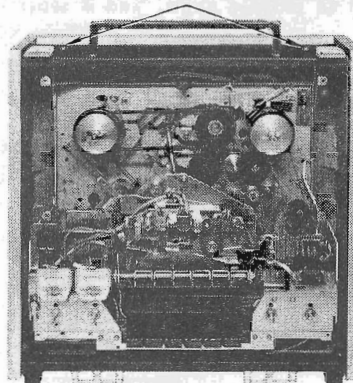


Fig. 11

the circuit board for automatic stopping device, remove holding screws (3pcs) as shown in Fig. 13.

CIRCUIT BOARD HOLDING SCREWS

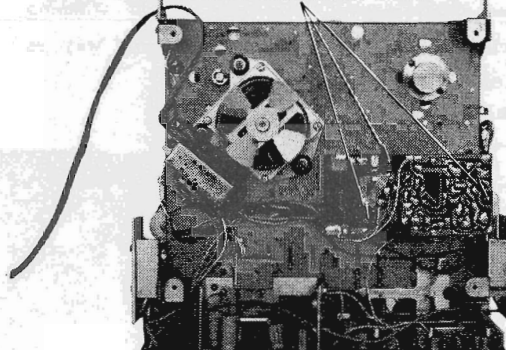


Fig. 13

LUBRICATING (Photo 1)

Lubricate each part shown in Fig. 14, when repairing.

Lubricate to each revolving part with one drop of pan motor oil and use a suitable quantity of grease on each sliding part.

On the shafts of the idler, pinch roller and capstan, oilless metal is used, ensuring stable operation without the use of feeding oil.

(Note) If oil is deposited on belts, idler, capstan, pinch roller and so on, they will slip. Be sure to remove the oil with alcohol.

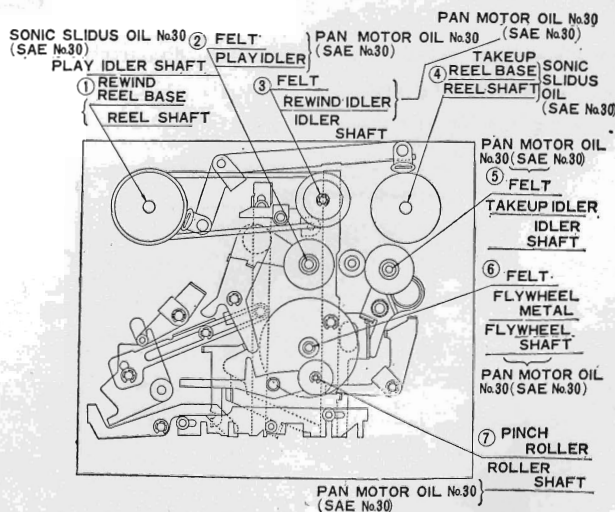


Fig. 14

ADJUSTMENT

1. Adjustment of electric circuit

1) Angle adjustment of recording and playback head

a) Adjustment of tape position

Check whether or not the tape is correctly positioned on the recording and playback head. This adjustment can be made by regulating the height of the tape guide ($\ominus$ screw).

b) Angle adjustment of the tape

Prepare a standard tape for angle adjustment (N AB standard, 4-track) and adjust the screw for angle adjustment so that the voltage of the reproducing output reaches the maximum. Further, connect the V.T.V.M. (vacuum tube voltmeter) on each output side of No. 1 channel and No. 2 channel to measure respective voltage, and at the same time, check whether or not there is a large difference in the output between both channels. Pay special attention to the pad pressing force and check to see if it is the same for both channels. After the adjustment, the output level should not change excessively if the pad is slightly pressed manually.

When using an ordinary recorded tape (4-track, 2-channel), adjust the volume of the right and left channels according to the desired volume of sound.

Adjustment is made under conditions of maximum sound volume and high-stressed, high-pitched tone by turning the volume control knob (VOLUME) and tone control knob (TONE) completely to the right (clockwise).

TAPE GUIDE

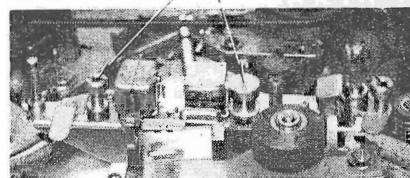


Fig.15

HEAD HOLDING SCREWS

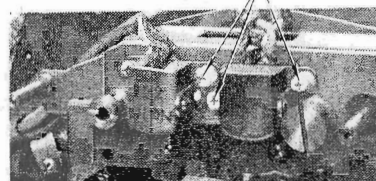


Fig.16

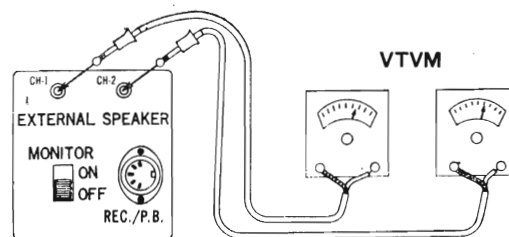


Fig.17

2) Adjustment of the recording level

a) Place the machine in the recording condition and transmit 1000 % low-frequency signals from the low-frequency oscillator to the microphone terminal or LINE 1-N terminal.

b) Place the monitor switch (MONITOR) of the set to ON position, and turn the volume control knob (VOLUME: CH-1 or CH-2) completely to the right (clockwise) to gain maximum volume. Then connect the V.T.V.M. (vacuum tube voltmeter) to the speaker terminal as shown in Fig.17. Adjust the output of the low-frequency oscillator so that the

output voltage reaches 0.45V (Adjust the intensity of input signals). Even when decreasing the input, if the output voltage does not decrease to the predetermined value (0.45V) try to decrease the volume output by turning the volume control knob (VOLUME) to the left (counterclockwise).

c) In this condition, adjust the semi-fixed resistors (VR3, VR6) so that deflection of the level meter pointer indicates a borderline position between black and red.

Adjust (VR3 for No.1 channel (CH-1)
VR6 for No.2 channel (CH-2)

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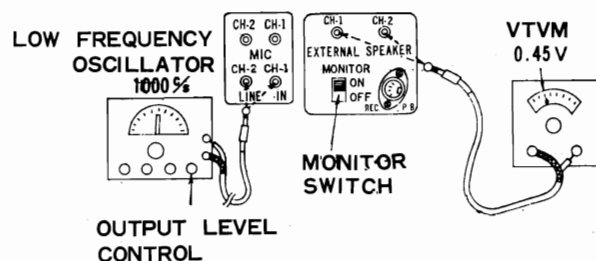


Fig. 18

3) Bias adjustment

Bias oscillating frequency of TRQ-707 is 50~60kc.
Adjust the bias in the following way:

- Place the machine in a recording condition.
- Remove the ground side lead wire of the recording and playback head terminal, then connect the resistor (100Ω) and connect the resistor to the ground side.
- Measure the voltage after connecting V.T.V.M. (vacuum tube voltmeter) as shown in Fig.20, and

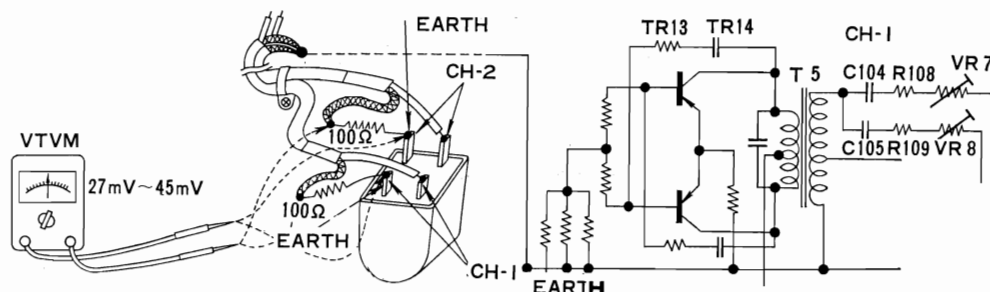


Fig. 20

4) Bias trap adjustment

This adjustment is made to eliminate high-frequency which leaks into the audio amplifier circuit from the bias oscillating circuit (oscillating frequency: 50-60KC).
Adjusting order

- This is begun from No.1 channel (CH-1).
- Place the No. 1 channel (CH-1) in a playback condition and also place the No. 2 channel (CH-2) in a recording condition. Do not insert the microphone and auxiliary cord into the mic-jack (MIC) or the input jack (LINE IN) in a condition without applying the jack.
 - Turn the volume control knob (CH-1 VOLUME, CH-2 VOLUME) and the tone control knob (CH-1

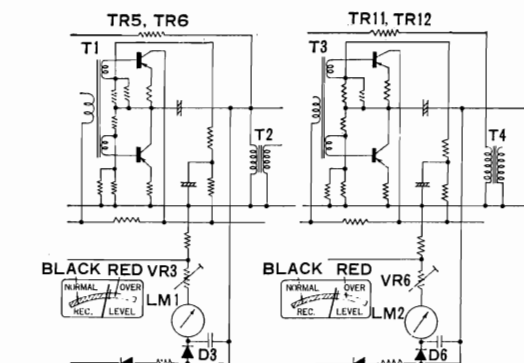


Fig. 19

adjust the semi-fixed resistors (VR7, VR8) so that the voltage shows the value indicated below.

Adjust (VR7 for No.1 channel
VR8 for No.2 channel

from serial no. 28200001~28200844	27mV
after serial no. 28200845	45mV

- Erasing current of the erasing head is normal when it is within 13-30mA.

TONE, CH-2 TONE) completely clockwise to produce a maximum output.

- Connect 8Ω pure resistor to the No.1 channel speaker jack (EXTERNAL SPEAKER CH-1) in a reproducing condition as shown in Fig.21, then connect V. T. V. M. (vacuum tube voltmeter) to both ends of it. A high-frequency voltage leaking from the oscillating circuit is indicated in this condition. Turn the core of the TRAP COIL (L1) to produce minimum voltage (under 40mV).
- Next, adjust the trap for No.2 channel (CH-2), following the same procedures as used in No.1 channel (CH-1) adjustment.

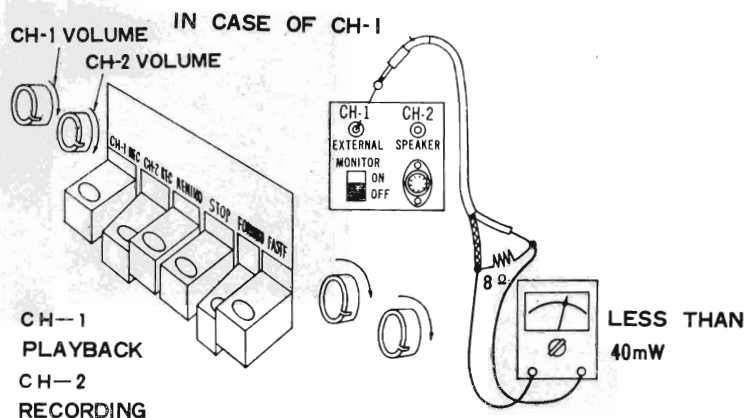


Fig. 21

5) Hum balance

- Place the set in a playback condition without applying tape.
- Turn the volume control knobs and tone quality control knobs for CH-1 and CH-2 fully clockwise.
- Adjust by moving the choke coils of L3 and L4 so that the induced noise heard from the speakers is reduced to a minimum.

6) Automatic stopping circuit

Adjust the power source voltage to 90% of the rated

voltage (as the rated voltage is 100V, 90% means 90V), and record the stopping signal after adjusting the tape speed to 4.75cm/sec. Next, connect the V.T.V.M. (vacuum tube voltmeter) between the C201 and the ground as shown in Fig. 22, and then playback. Monitor the signal level with the V.T.V.M. and adjust VR201 and VR202 so that the level actuating the stopping mechanism reaches +1.5dB. VR201 is for rough adjustment and VR202 is for fine adjustment.

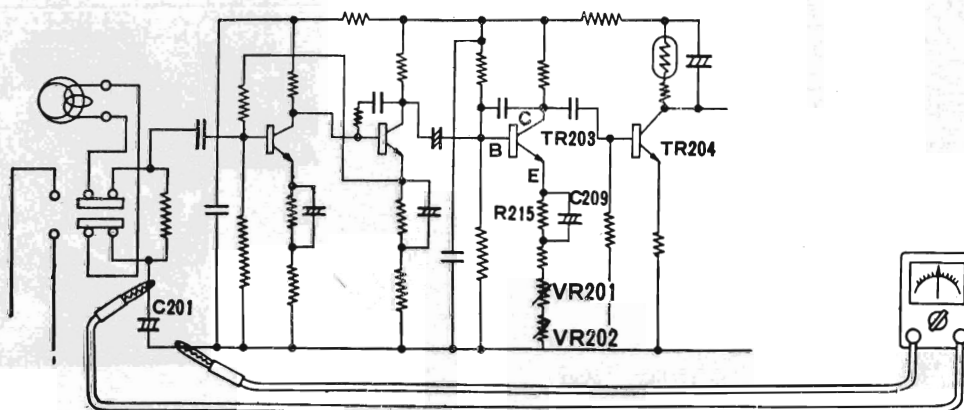


Fig. 22

2. Adjustment for mechanical sections

1) Pressing force on each section

- Pinch roller Pressing force.....1.0kg ± 0.3 kg.
 -0.1 kg.

Measuring method

Arrange so that the pinch roller presses against the capstan shaft (playback condition), and pull the pinch roller in a right angle direction against the pinch roller arm. Then measure the slight value remaining, occasioned by the by using a bar pressure of the pinch roller against the capstan shaft, gauge (rating 3kg or 5kg).

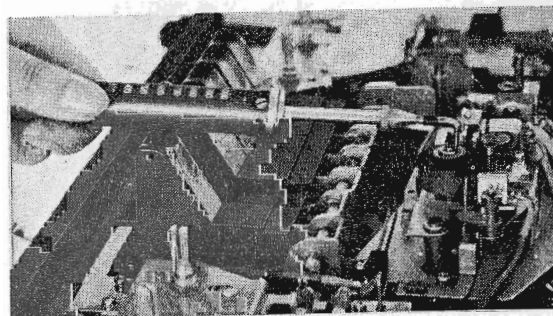


Fig. 23

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- b) Pad pressing force $50\text{gr} \pm 10\text{gr}$
- c) F-pad pressing force (for automatic stopping head)
..... $5 \sim 15\text{gr}$

Measuring method

This is a pad-pressing force for the purpose of pressing the tape against the head surface. The value is measured when the pad is disengaged from the head surface by applying the tension gauge (rating 30gr or 100gr) to the pad center and upper end.

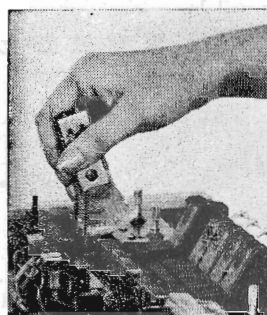


Fig. 24

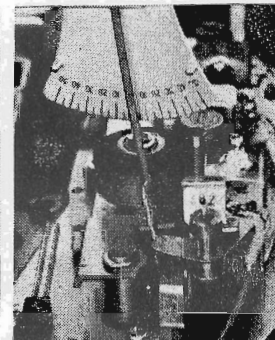


Fig. 25

- d) Winding idler pressing force $150\text{gr} \pm 30\text{gr}$

Measuring method

Lock the machine by depressing the play button (FORWARD) (play condition).

Measure the value when the winding idler disengages from the motor pulley and the winding pulley at the same time.

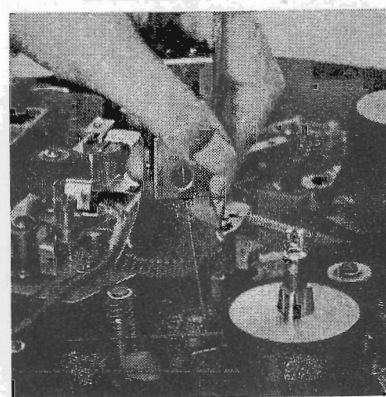


Fig. 26

- e) Playback idler pressing force

When the tape speed is 19 cm/sec $200\text{gr} \pm 40\text{gr}$

When the tape speed is 9.5 cm/sec $175\text{gr} \pm 40\text{gr}$

When the tape speed is 4.75 cm/sec ... $150\text{gr} \pm 40\text{gr}$

Measuring method

Lock the machine by depressing the play button (FORWARD) (play condition). Measure the value when the playback idler disengages from the flywheel and the motor pulley at the same time.

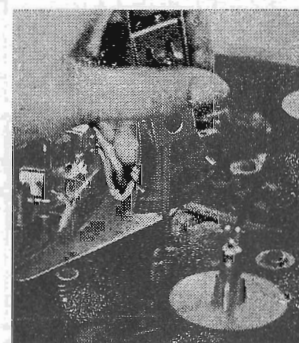


Fig. 27

- f) Rewinding (R) idler pressing force..... $550\text{gr} \pm 50\text{gr}$

Measuring method

Lock the machine by depressing the rewinding button (REWIND) (rewinding condition). Measure the value when the rewinding idler disengages from the motor pulley.

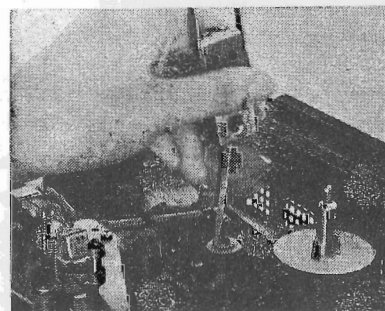


Fig. 28

2) Torque of each section

a) Winding torque.....50-90gr

Measuring method

Place the machine in a horizontal position and turn the power source to ON position: then place the 7" empty reel on the winding side reel shaft. Wind a thread inside it and measure the winding torque in a play condition (FORWARD).

b) Winding and supplying friction coupling torque

Takeup or rewinding torque.....200~300gr

Measuring method

Place the machine in a vertical position, and throw the power source to ON position. Wind a thread inside the 7" empty reel and measure the torque in a fast forwarding condition of the takeup. Place in a rewinding condition for the rewinding.

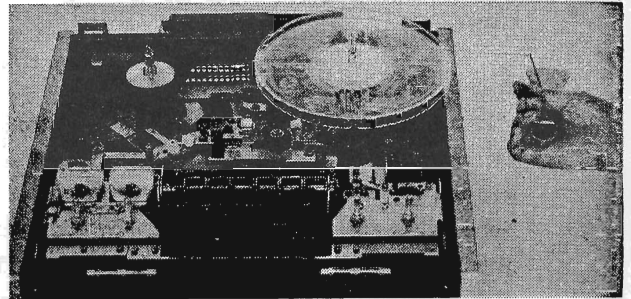


Fig. 29

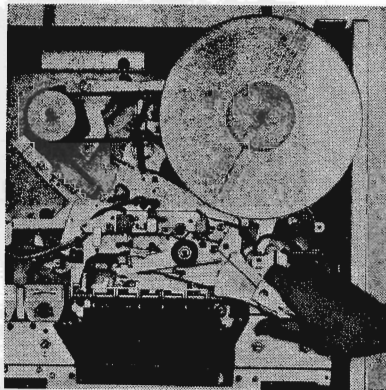


Fig. 30

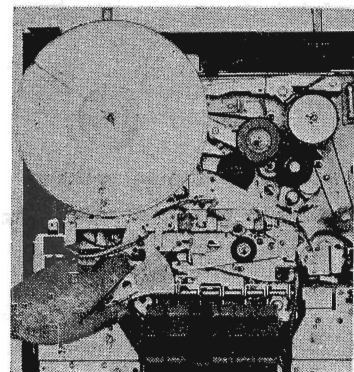


Fig. 31

c) Back tension15-36gr

Place empty reel on the rewinding reel shaft after winding a thread. Set the machine to play condition. Measure the force when pulling out the thread.

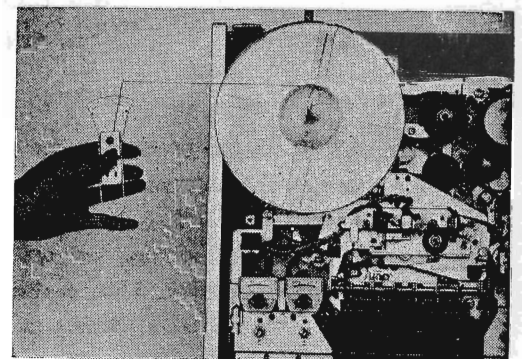


Fig. 32

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d) Takeup back tension.....15~35gr

Place 7" empty reel on the takeup reel shaft after winding a thread. Set the machine to rewinding condition. Measure the force when pulling out the thread.

e) Push button operating force...Under 3.5kg

Place the machine in a horizontal position. Apply the bar gauge to the tip of the push button and measure the force until the button is locked.

Note) When applying the bar gauge directly to the push button, the push button may be damaged. To prevent any possible damage, use a rubber sheet between the gauge and the button.

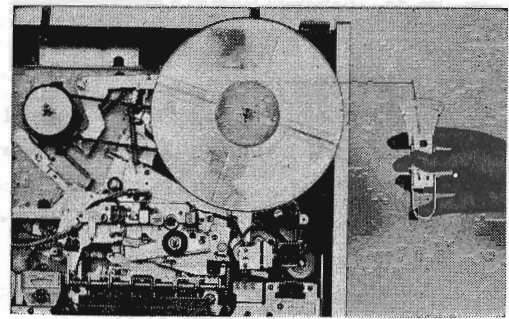


Fig. 33

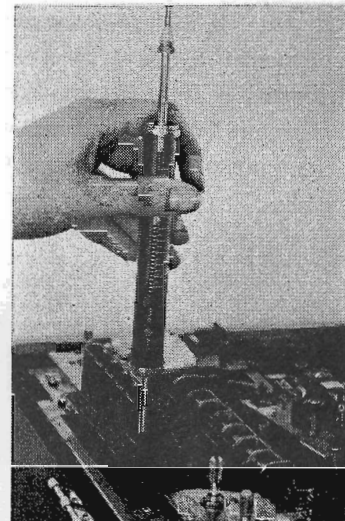
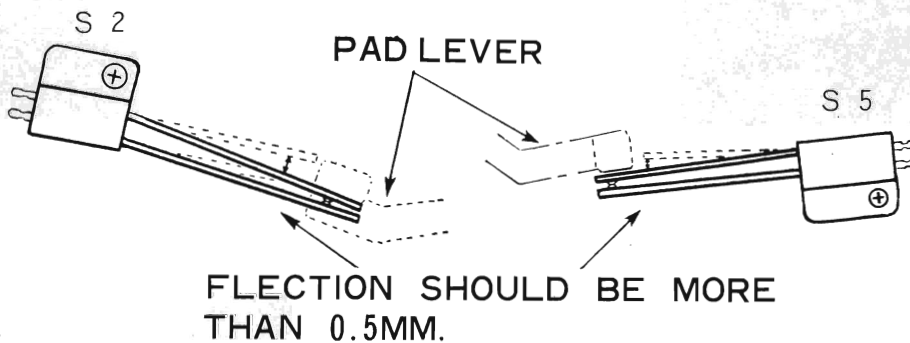


Fig. 34

3) Adjustment of installation position

a) Installation position of the muting switch (Fig. 1)



b) Installation position of motor pulley (Fig.1)

The standard distance between the chassis and the motor pulley is $2 \pm 0.1\text{mm}$. After installing the pulley in this position, try the speed change and adjust the position, while confirming that the Playback idler correctly enters each stage of the motor pulley.

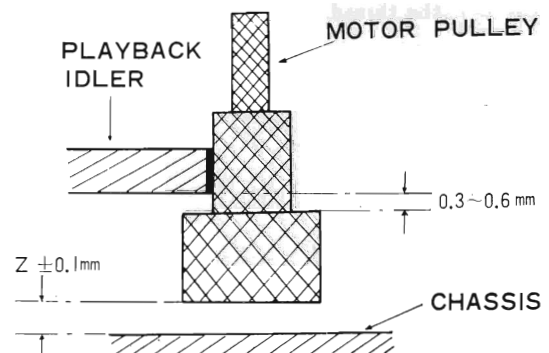


Fig. 35

TROUBLE-SHOOTING

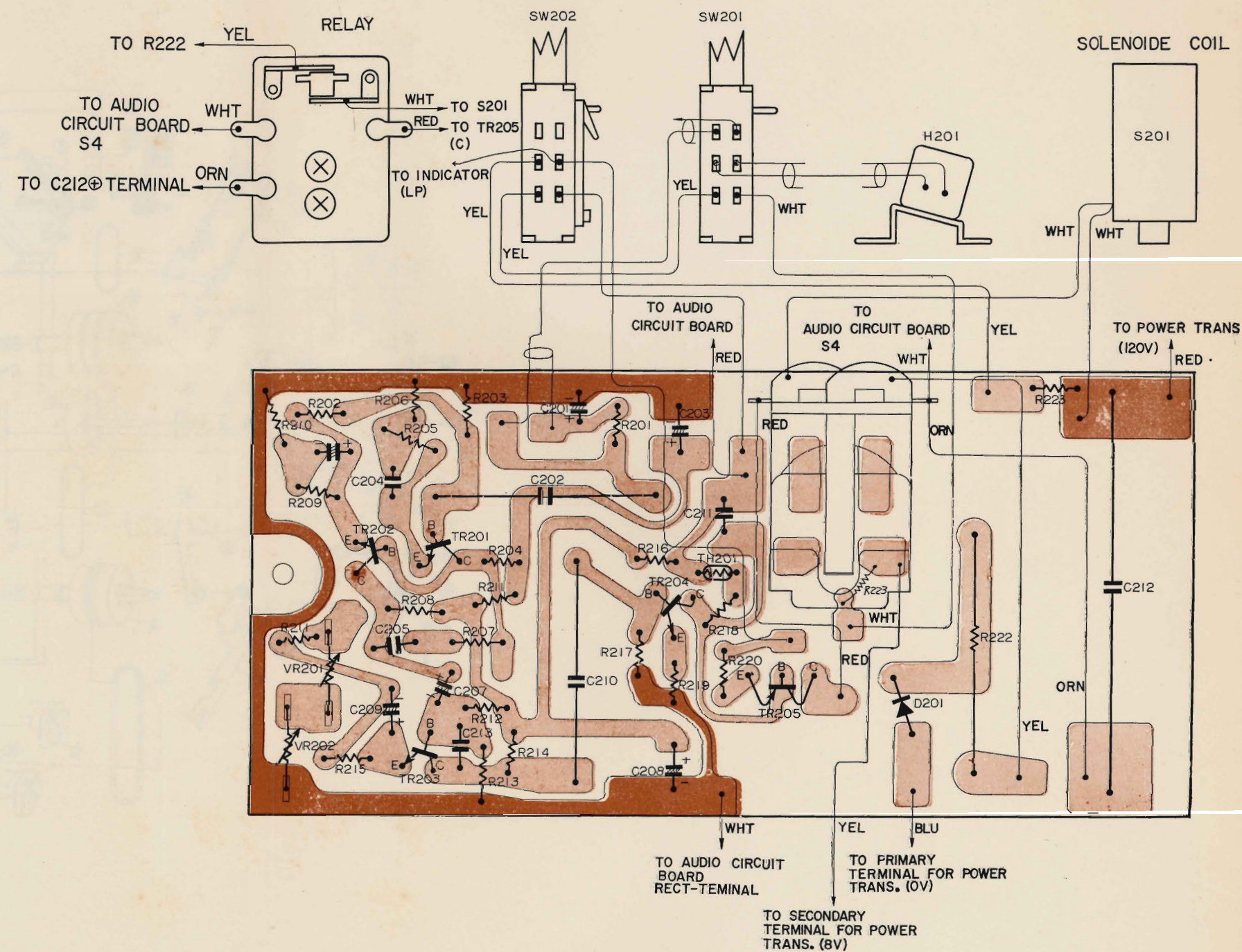
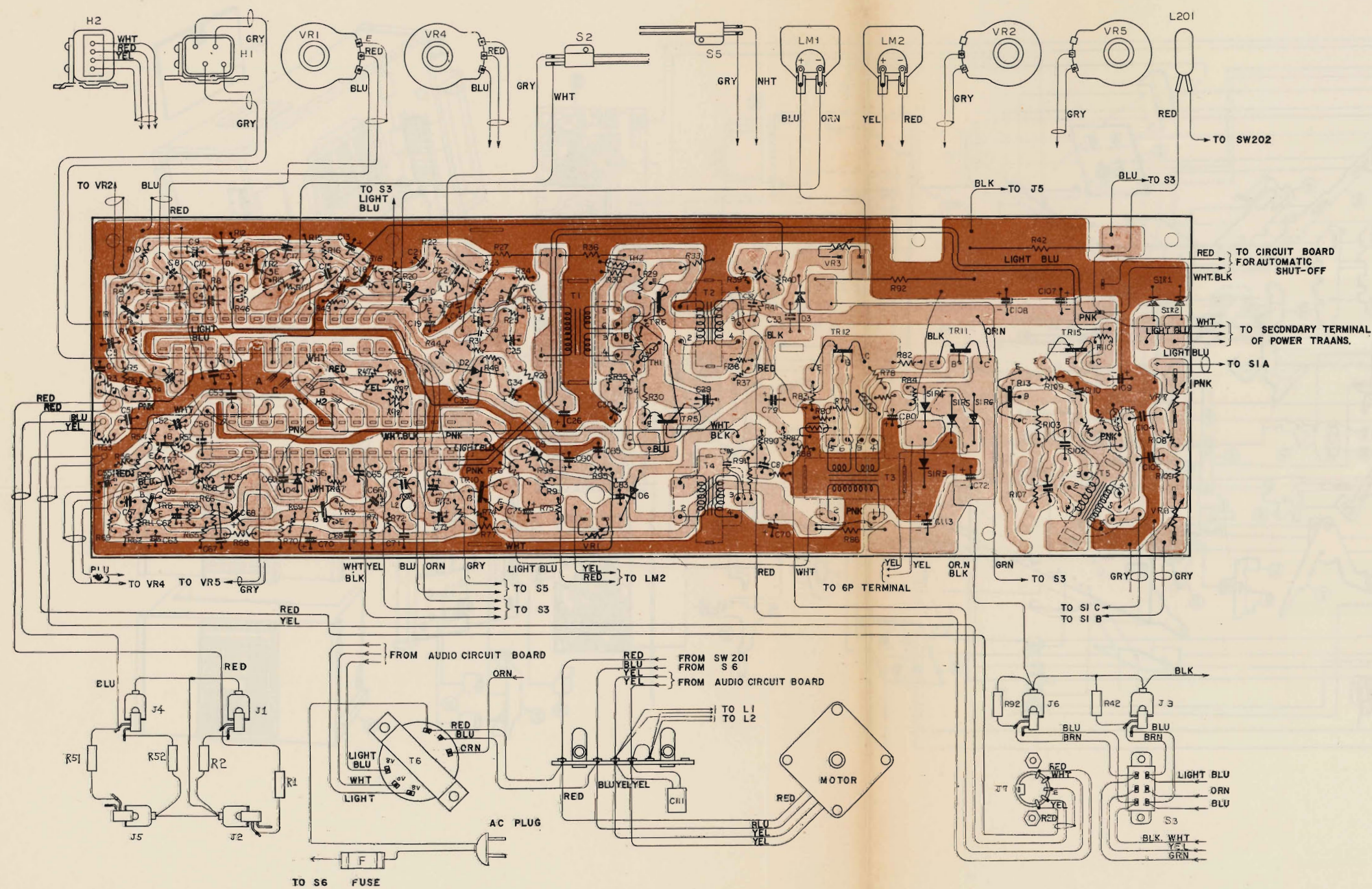
The following are important malfunctions and their countermeasures.

While reproducing	Cause	Countermeasures
Tape does not run.	Pinch roller does not press, or it slips.	Is pressing force normal?
		Is the spring disconnected?
		Does oil adhere to the pinch roller and the capstan?
Speeds do not coincide.	Heights of the playback idler and the motor pulley do not coincide	Pulley is lowered because of loose screwing of the motor pulley.
Unstable revolution	Winding torque is large. Insufficient oil on the capstan shaft.	Check the pressing force on each section. Check relative mechanisms of the winding reel base Oiling.
Disabled fast forward	Check the supply back tension. Check the winding coupling torque.	Oiling. When the torque and tension are too weak, replace the assembly.
Disabled rewinding	Check slipping portion. Check the supply coupling torque and winding side back tension. Check the pressing force of playback idler	When it is weak and does not conform to designated value, replace the assembly. Oiling. Confirm any deformation of the spring.
Automatic stopping does not occur.		
Is solenoid actuated?	Stroke cannot function because of loosened screws of the solenoid iron core and the solenoid pin.	Tighten the screws securely.
Lock is not disconnected.		
No solenoid stroke.	Solenoid is installed in a bent or inclined fashion. Heavy lock plate motion.	

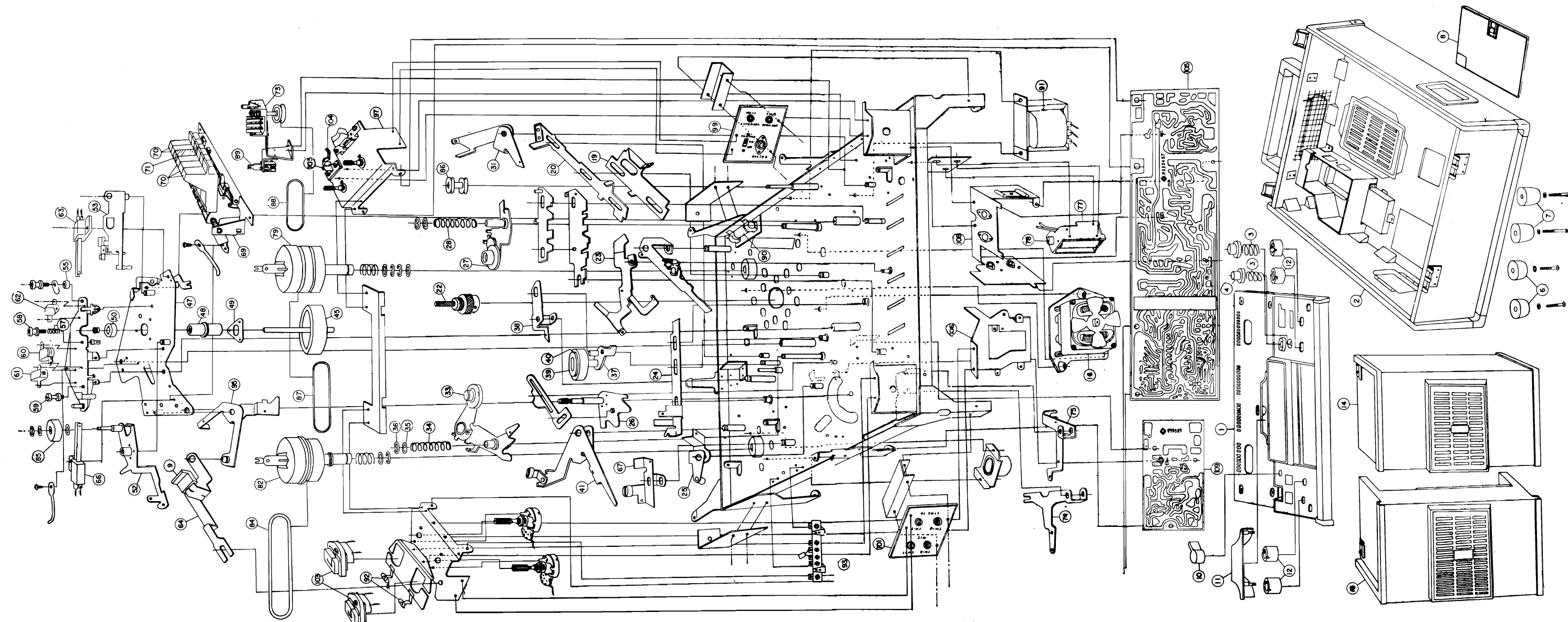
REPLACEMENT PARTS

Symbol No.	Stock No.	Description			Symbol No.	Stock No.	Description		
CAPACITORS:					C 102	0275111	Same as C1		
C 1	0275111	Mylar	0.01μF±20%	50WV	C 103	0275016	Same as C6		
C 2	0252313	Electrolytic	3μF	10WV	C 104	0242820	Ceramic	50pF±10%	500WV
					C 105	0242820	Same as C104		
C 4	0252321	Electrolytic	10μF	10WV	C 107	0252535	Electrolytic	500μF	15WV
C 5	0252323	Electrolytic	30μF	10WV	C 108	0252535	Same as C107		
C 6	0275016	Mylar	0.068μF±10%	50WV	C 109	0252535	Same as C107		
C 7	0252313	Same as C2			C 110	0252525	Same as C30		
C 8	0252313	Same as C2			C 111	0274116	Mylar	0.0068±20%	50WV
C 9	0252313	Same as C2			C 112	0252535	Same as C107		
C 10	0275014	Mylar	0.033μF±10%	50WV	C 113	0252535	Same as C107		
					RESISTORS:				
C 12	0252323	Same as C5			R 1	0134403	Carbon film	330kΩ±10%	RC½GF
C 13	0252323	Same as C5			R 2	0134385	Carbon film	10kΩ±10%	RC½GF
					R 3	0137809	Carbon film	470Ω±10%	SRD¼SD
C 15	0275014	Same as C10			R 4	0137906	Carbon film	27kΩ±10%	SRD¼SD
C 16	0276113	Mylar	0.22μF±20%	50WV	R 5	0137906	Same as R4		
C 17	0274016	Mylar	0.0068μF±10%	50WV	R 6	0137904	Carbon film	18kΩ±10%	SRD¼SD
C 18	0252321	Same as C4			R 7	0137621	Carbon film	6.8kΩ±5%	SRD¼SD
C 19	0252323	Same as C5			R 8	0137906	Same as R4		
C 20	0252523	Electrolytic	30μF	15WV	R 9	0137902	Carbon film	12kΩ±10%	SRD¼SD
C 21	0274013	Mylar	0.0022μF±10%	50WV	R 10	0137812	Carbon film	820Ω±10%	SRD¼SD
C 22	0275012	Mylar	0.015μF±10%	50WV	R 11	0137909	Carbon film	47kΩ±10%	SRD¼SD
C 23	0252323	Same as C5			R 12	0137902	Same as R9		
C 24	0252323	Same as C5			R 13	0137859	Carbon film	4.7kΩ±10%	SRD¼SD
C 25	0252131	Electrolytic	100μF	3WV					
C 26	0252533	Electrolytic	300μF	15WV	R 15	0137802	Carbon film	120Ω±10%	SRD¼SD
					R 16	0137901	Carbon film	10kΩ±10%	SRD¼SD
C 29	0259651	Electrolytic	1000μF	12WV	R 17	0137860	Carbon film	5.6kΩ±10%	SRD¼SD
C 30	0252525	Electrolytic	50μF	15WV	R 18	0137811	Carbon film	680Ω±10%	SRD¼SD
C 31	0233022	Ceramic	250pF±5%	50WV	R 19	0137900	Carbon film	56kΩ±10%	SRD¼SD
C 32	0233013	Ceramic	370pF±5%	50WV	R 20	0137903	Carbon film	15kΩ±10%	SRD¼SD
C 33	0275113	Mylar	0.022μF±20%	50WV	R 21	0137858	Carbon film	3.9kΩ±10%	SRD¼SD
C 34	0252325	Electrolytic	50μF	10WV	R 22	0137861	Carbon film	6.8kΩ±10%	SRD¼SD
C 35	0252325	Same as C34			R 23	0137908	Carbon film	39kΩ±10%	SRD¼SD
C 36	0275111	Same as C1			R 24	0137861	Same as R22		
					R 25	0137802	Same as R15		
C 51	0275111	Same as C1			R 26	0137763	Carbon film	22Ω±10%	SRD¼SD
C 52	0252313	Same as C2			R 27	0134371	Carbon film	680Ω	RC½GF
					R 28	0137802	Same as R15		
C 54	0252321	Same as C4			R 29	0137852	Carbon film	1.2kΩ±10%	SRD¼SD
C 55	0252323	Same as C5			R 30	0137802	Same as R15		
C 56	0275016	Same as C6			R 31	0137810	Carbon film	560Ω±10%	SRD¼SD
C 57	0252313	Same as C2			R 32	0149101	Wire wound	0.5Ω±10%	RU½
C 58	0252313	Same as C2			R 33	0149101	Same as R32		
C 59	0252313	Same as C2			R 34	0137851	Carbon film	1kΩ±10%	SRD¼SD
C 60	0275014	Same as C10			R 35	0137809	Same as R3		
					R 36	0134370	Carbon film	560Ω±10%	RC½GF
C 62	0252323	Same as C5			R 37	0137855	Carbon film	2.2kΩ±10%	SRD¼SD
C 63	0252323	Same as C5			R 38	0137812	Same as R10		
					R 39	0137909	Same as R11		
C 65	0275014	Same as C10			R 40	0137912	Carbon film	82kΩ±10%	SRD¼SD
C 66	0276113	Same as C16			R 41	0137952	Carbon film	120kΩ±10%	SRD¼SD
C 67	0274016	Same as C17			R 42	0190046	Wire wound	8.2Ω±10%	RG5
C 68	0252321	Same as C4			R 43	0137860	Same as R17		
C 69	0252323	Same as C5			R 44	0137855	Same as R37		
C 70	0252523	Same as C20			R 45	0137852	Same as R29		
C 71	0274013	Same as C21			R 46	0137615	Carbon film	3.9kΩ±5%	SRD¼SD
C 72	0275012	Same as C22			R 47	0134377	Carbon film	2.2kΩ±10%	RC½GF
C 73	0252323	Same as C5			R 48	0134377	Same as R47		
C 74	0252323	Same as C5			R 49	0134297	Carbon film	47Ω±10%	RC½GF
C 75	0252131	Same as C25							
C 76	0252533	Same as C26			R 51	0134403	Same as R1		
					R 52	0134385	Same as R2		
C 79	0259651	Same as C29			R 53	0137809	Same as R3		
C 80	0252525	Same as C30			R 54	0137906	Same as R4		
C 81	0233022	Same as C31			R 55	0137906	Same as R4		
C 82	0233013	Same as C32			R 56	0137904	Same as R6		
C 83	0275113	Same as C33			R 57	0137621	Same as R7		
C 84	0252325	Same as C34			R 58	0137906	Same as R4		
C 85	0252325	Same as C34			R 59	0137902	Same as R9		
C 86	0275111	Same as C1			R 60	0137812	Same as R10		
C 101	0275111	Same as C1			R 61	0137909	Same as R11		

CIRCUIT BOARD DIAGRAM



MECHANICAL PARTS VIEW



MODEL TRQ-707 SERVICE MANUAL

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
R 62	0137902	Same as R9	VR 7	0151129	adjustable 250kΩ (B) VR—S
R 63	0137859	Same as R13	VR 8	0151129	adjustable 250kΩ (B) VR—S
R 65	0137802	Same as R15	VR201	0159016	adjustable 500Ω (B) RV—S
R 66	0137901	Same as R16	VR202	0159015	adjustable 100Ω (B) RV—S
R 67	0137860	Same as R17	TRANSISTORS:		
R 68	0137811	Same as R18	TR 1	0573018	2SB 73 (B)
R 69	0137910	Same as R19	TR 2	0573153	2SB 75 (C)
R 70	0137903	Same as R20	TR 3	0573153	Same as TR2
R 71	0137858	Same as R21	TR 4	0573118	2SB 89 (C)
R 72	0137861	Same as R22	TR 5	0573031	2SB 367 (B)P
R 73	0137908	Same as R23	TR 6		
R 74	0137861	Same as R22	TR 7	0573018	Same as TR1
R 75	0137802	Same as R15	TR 8	0573153	Same as TR2
R 76	0137764	Carbon film	TR 9	0573153	Same as TR2
R 77	0134371	Same as R27	TR 10	0573118	Same as TR4
R 78	0137802	Same as R15	TR 11	0573031	Same as TR5,6
R 79	0137852	Same as R29	TR 12		
R 80	0137802	Same as R15	TR 13	0573022	2SB 370 (A)
R 81	0137810	Same as R31	TR 14	0573022	Same as TR13
R 82	0149101	Same as R32	TR 15	0573022	Same as TR3
R 83	0149101	Same as R32	TR201	0573469	2SC 281 (C)
R 84	0137851	Same as R34	TR202	0573469	
R 85	0137809	Same as R3	TR203	0573469	Same as TR201
R 86	0134370	Same as R36	TR204	0573469	Same as TR201
R 87	0137855	Same as R37	TR205	0573029	2SB 156 (A)
R 88	0137812	Same as R10	TH 1	0576004	Thermistor D—IE
R 89	0137909	Same as R11	TH 2	0576004	Same as TH1
R 90	0137912	Same as R40	TH 3	0576004	Same as TH1
R 91	0137952	Same as R41	TH 4	0576004	Same as TH1
R 92	0190046	Same as R42	TH 5	0576004	Same as TH1
R 93	0137860	Same as R17	TH2 01	0576021	Thermistor 31D 46
R 94	0137855	Same as R37	D 1	0575001	Diode 1N 34A
R 95	0137852	Same as R29	D 2	0575001	Same as D1
R 96	0137615	Same as R46	D 3	0575039	Diode OA—90
R 97	0134377	Same as R47	D 4	0575001	Same as D1
R 98	0134377	Same as R47	D 5	0575001	Same as D1
R 99	0134297	Same as R49	D 6	0575039	Same as D3
R 101	0137854	Carbon film	D 201	0552006	Silicon rectifire 1S 314
R 102	0137803	Carbon film	SIR 1	0552010	Diode 1S 310
R 103	0137851	Same as R34	SIR 2	0552010	Same as SIR1
R 104	0137851	Same as R34	SIR 3	0552010	Same as SIR1
R 107	0134281	Carbon film	SIR 4	0552010	Same as SIR1
R 108	0137953	Carbon film	SIR 5	0552010	Same as SIR1
R 109	0137953	Same as R108	SIR 6	0552010	Same as SIR1
R 110	0137806	Carbon film	TRANSFORMERS:		
R 201	0137859	Carbon film	T 1	0441054	Input
R 202	0137903	Carbon film	T 2	0451106	Output
R 203	0137904	Carbon film	T 3	0441054	Same as T3
R 204	0137659	Carbon film	T 4	0451106	Same as T2
R 205	0137861	Carbon film	T 5	0316531	Oscillator coil
R 206	0137559	Carbon film	COILS:		
R 207	0137901	Carbon film	L 1	0317148	Trap
R 208	0137619	Carbon film	L 2	0317148	Same as L1
R 209	0137901	Same as R207	MISCELLANEOUS:		
R 210	0137531	Carbon film	for Final assembly		
R 211	0137855	Carbon film		0592096	Microphone
R 212	0137907	Carbon film		0593454	Cord (120V 50,60%)
R 213	0137903	Same as R202		0958389	Deck assembly
R 214	0137862	Carbon film		0020774	Cabinet assembly (120V 50,60%)
R 215	0137859	Same as R201		0020775	Cabinet

MODEL TRQ-707 SERVICE MANUAL

Symbol No.	Stock No.	Description	Sybolm No.	Stock No.	Description
	0020761	Connector for metal mounting,		0662124	Spring for fast forward lever
	0020432	Screw(1) for metal mounting (16 req'd)		0941144	Brake actuator
	0621761	Lock	20		Washer-fibber washer for brake actuator (3 req'd)
	0020296	Hinge (B)			Washer-"E" type retaining washer (3 req'd)
	0621763	Screw for hinge mounting (10 req'd)		0944452	Screw (2 req'd)
	0043692	Handle assembly		22	0945014 Pulley-motor pulley (60%)
	0020838	Mortor cooling		0945015	Pulley-motor pulley (50%)
3	0020323	Screw for mortor cooling		23	0941829 Plaging lever assembly
	0958437	Spring (2 req'd)			0941259 Washer-"E" type retaining washer
4	0958438	Button-auto stop switch button			0948316 Spring for fast forward (2 req'd)
6	0971196	Rubber base (2 req'd)		24	0941150 Control Lever for Rewinding idler
		Washer-4mm ϕ washer (2 req'd)			Fibber washer (4 req'd)
		Screw-4mm ϕ $\times$ 25mm pan head screw (2 req'd)			"E" type retaining washer (2 req'd)
		for rubber base mounting		0948637	Control lever spring fo rrewinding idler
7	0971239	Rubber base (large, 2 req'd)		25	0941151 Adjusting lever assembly
	0711635	Screw-4mm ϕ $\times$ 35mm pan head screw (2 req'd)		0948316	Spring for adjusting lever
		Washer-4mm ϕ washer (2 req'd)		26	0941832 Tape speed exchange cum assembly
		for rubber base mounting		27	0971150 Idler wheel
	0624387	Column (B)			0948595 Washer-nylon washer (2 req'd)
		Screw-4mm ϕ $\times$ 20mm screw (2 req'd)			0941159 Fast forward ider lever assembly
		for shassis mounting		28	0948631 Spring for selector (Fast-Forward)
8	0958355	Storage cover assembly		31	0941162 Lever-fast forward idler lever
9	0958431	Button-pause control button			Washer-"E" type retaining washer
10	0693422	Knob-speed changing knob			0662126 Spring for fast forward idler lever
11	0958435	Cover-head cover			0662128 Spring for playing idler wheel
12	0958433	Control knob assembly		33	0971223 Idler wheel (R)
13	0020325	Speaker box assembly (Left)			0948727 Washer-nylon washer
	0020298	Cabinet metal plate			0971215 Cap-idler cap
	0020299	Cabinet metal plate			0941818 Playing idler lever assembly
	0020300	Hinge (A)		34	0662127 Spring for exchange
	0971205	Rubber base		35	Washer-fibber washer
		Washer-3mm ϕ washer } for rubber base		36	Washer-"E" type retaining washer
	0020323	Screw } mounting			0662129 Spring for Playing idler lever
	0524099	Speaker		37	0941310 Rewinding idler lever assembly
	0542239	Cord-plag cord		38	0941170 Lever-rewinding idler lever (2)
		Screw-3mm ϕ $\times$ 12mm pan head screw } (4 req'd)			Washer-"E" type retaining washer
		Washer-3mm ϕ locking washer }			0662125 Spring-rewinding idler lever spring
		Nut-3mm ϕ nut }		39	0971099 Rewinding idler wheel
		for speaker mounting		41	0941564 Brake lever assembly (left)
	0958370	Speaker grill assembly			0662130 Brake spring
		Screw-3mm ϕ $\times$ 16mm tapping screw (4 req'd)			0662105 Spring for left-brake lever
		for speaker grill mounting			0941567 Brake lever assmbly (right)
	0020301	Speaker box lid			0948316 Spring for brake lever
		Screw-2.7mm ϕ $\times$ 13mm screw (8 req'd)			
		for speaker box lid mounting			
14	0020329	Speaker box assembly (right)			
		for Chassis assembly			
	0971107	Rubber for Deck			
		Washer-4mm ϕ spring			
		Screw-4mm ϕ $\times$ 18mm pan head screw } (3 req'd)			
	0941291	Pad-motor pad			
16	0514137	Motor-induction motor (120V 50/60%)			
	0514138	Motor-induction motor (210/230V 50%)			
19	0941141	Lever-fast foward lever			

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
45	0944468	Flywheel assembly	78	0944743	Shaft-solenoid shaft
47	0941588	SH plate assembly			Washer-3mm $\varnothing$ spring washer
48	0944832	Bearing		0542184	Screw-3mm $\varnothing$ $\times$ 6mm tapping screw (2 req'd)
49	0638150	Bearing holder		0541313	Plug-changing of voltage plug (210/230V)
		Washer-3mm $\varnothing$ spring washer	79	0015322	Socket-changing of voltage socket (210/230V)
		Screw-3mm $\varnothing$ $\times$ 6mm tapping screw (6 req'd)		0015321	Take up reel base assembly
		Flywheel washer	82	0015321	Sending reel base assembly
50	0941183	Cap-oil cap		0662190	Spring-reel base Spring
52	0941176	Pressure roller arm assembly		0948822	Washer thrust washer (2req'd)
53	0941573	Pad plate assembly		0948752	Washer thrust nylon washer (4 req'd)
	0948756	Pad		0941260	Washer "E" type retaining Washer (2 req'd)
	0948835	Pad	84	0971126	Belt rewinding belt
55	0941939	Tape guide collar	85	0971104	Roller pressure roller
					Washer-rewinding washer (2 req'd)
	0662183	Spring for pad lever			Washer "E" type retaining washer
57	0948154	Tape guide spring	86	0948003	Pulley counter pulley
58	0944913	Tape guide (right)			Washer rewinding washer
59	0944742	Tape guide (left)			Washer "E" type retaining washer
60	0513293	Record-playback head	87	0971236	Belt counter belt (L)
61	0513222	Erase head	88	0971193	Belt-counter belt (S)
62	0513292	Head for auto stop	89	0533158	Switch-push switch
		Screw-2.6mm $\varnothing$ $\times$ 6mm pan head screw (5 req'd)			Screw 2.6mm $\varnothing$ $\times$ 4mm pan head screw (2 req'd)
	0948102	Head adjust spring	90	0591167	Fuse 1A fuse
		Screw-2.6mm $\varnothing$ $\times$ 16mm pan head screw	93	0544404	Board 6Pterminal board
63	0539087	Switch-muting switch			Screw-3mm $\varnothing$ $\times$ 6mm tapping screw
		Screw-3mm $\varnothing$ $\times$ 12mm tapping screw	91	0411767	Transformer power trans (100~120V)
		Washer-3mm $\varnothing$ spring washer		0411782	Transformer power trans (210~230V)
64	0941378	Pause lever (2) assembly			Washer 4mm $\varnothing$ washer (2 req'd)
		Washer-"E" type retaining washer			Screw 4mm $\varnothing$ $\times$ 8 tapping screw (2 req'd)
	0662251	Spring-pad spring			for transformer mounting
	0662071	Spring for slide switch	92	0594110	Lamp pilot lamp (2 req'd)
	0948637	Spring for pause control lever		0333126	Coil hum balancing coil (30 μ H)
	0638651	Wire holder		0043793	Bushing (100~120V)
		Screw-3mm $\varnothing$ $\times$ 8mm pan head screw (1 req'd)			Screw 3mm $\varnothing$ $\times$ 30mm binding screw (2 req'd)
		Screw-3mm $\varnothing$ $\times$ 6mm pan head screw (2 req'd)			Washer 3mm $\varnothing$ washer
		Washer-3mm $\varnothing$ spring washer (3 req'd)	95	0941585	Lever pause lever (1)
		for shassis plate mounting		0593464	Cord power cord (120V 50,60%)
66	0539063	Switch-muting switch		0593443	Cord power cord (210,230V 50%)
		Screw-3mm $\varnothing$ $\times$ 12mm tapping screw			for Printed circuit board assembly
		Washer-3mm $\varnothing$ spring washer	99	0948656	Plate jack plate (output)
67	0941380	Pause lever assembly			Screw 3mm $\varnothing$ $\times$ 6mm pan head screw (2 req'd)
68	0662195	Spring-pause lever spring		0532149	Switch slide switch
69	0015050	Push holder assembly			Screw 3mm $\varnothing$ $\times$ 8mm pan head screw (2 req'd)
70	0015237	Button-push button (5 req'd)			Nut 3mm $\varnothing$ nut (2 req'd)
71	0015238	Button-stop push button		0541357	Socket 5P socket
	0662131	Spring-push lever spring (4 req'd)		0541358	Socket 5P socket
	0662062	Spring-record, playback switch			Screw 3mm $\varnothing$ $\times$ 6mm pan head screr
		spring (2 req'd)			Washer 3mm $\varnothing$ spring washew
	0662173	Spring-shaft spring			
		Screw-3mm $\varnothing$ $\times$ 6mm tapping screw (4 req'd)	101	0543082	Jack
73	0971206	Counter-tap counter	1,2,3,4	0948689	Plate jack plate (input)
74	0941366	Lever-Recording lever (1)		0533110	Switch see saw switch
75	0941367	Lever-Recording lever (2)			
	0948658	Spring-switch spring (1)			
	0948659	Spring-switch spring (2)			
77	0539126	DC solenoid			

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Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
103	0514203 0948718	Motor level motor Cushion level motor cushion			Screw 3mm ϕ $\times$ 10mm pan head screw (8 req'd) Washer 3mm ϕ spring washer (8 req'd) Washer 3mm ϕ washer (4 req'd) Nut 3mm ϕ nut (8 req'd)
104	0594110	Lamp pilot lamp Screw 2.6mm ϕ $\times$ 4mm pan head screw (2 req'd)	0544186		Terminal lug terminal (4 req'd)
105	0533141	Switch push switch Washer 3mm ϕ washer (4 req'd) Screw 3mm ϕ $\times$ 6mm pan head screw (6 req'd) Washer 3mm ϕ spring washer (6 req'd)			Screw 3mm ϕ $\times$ 8mm pan head screw Washer 3mm ϕ spring washer Washer 3mm ϕ washer
	0532168	Switch slide switch (2 req'd)	0629902		Radiator
			5640002		DC Relay

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
CAPACITORS: for automatic stopping signal circuit					
C 201	0252323	Electrolytic 30 μ F 10WV	C 208	0252532	Electrolytic 200 μ F 15WV
C 202	0266301	Metalized 0.47 μ F $\pm$ 20% 150WV	C 209	0252231	Electrolytic 100 μ F 6WV
C 203	0252531	Electrolytic 100 μ F 15WV	C 210	0266301	Same as C202
C 204	0252131	Electrolytic 100 μ F 3WV	C 211	0252132	Electrolytic 200 μ F 3WV
C 205	0276011	Mylar 0.1 μ F $\pm$ 10% 50WV	C 212	0253231	Electrolytic 100 μ F 250WV
C 206	0252225	Electrolytic 50 μ F 6WV	C 213	0233018	Ceramic 250pF $\pm$ 10% 50WV
C 207	0252313	Electrolytic 3 μ F 10WV			



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