



SOLID STATE
STEREO TAPE RECORDER
MODEL TRQ-777(A)
TRQ-777(W)
SERVICE MANUAL

No. 279

1970

SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

POWER SUPPLY.....AC 120V, 60Hz (A)
AC100/120/210/230V, 50/60Hz(W)
POWER CONSUMPTION...70W (A)
55W (W)
RECORDING SYSTEM.....AC bias
ERASING SYSTEM.....AC erase
TRACK SYSTEM.....4-track stereo
AUDIO OUTPUT.....6W \times 2
FREQUENCY RANGE.....30 - 20,000Hz at $7\frac{1}{2}$ ips speed
30 - 13,000Hz at $3\frac{3}{4}$ ips speed

INPUT IMPEDANCE

MICROPHONE TERMINAL (MIC.)...25K ohms
INPUT TERMINAL (LINE IN).....150K ohms
DIN TERMINAL (REC/P.B.).....1.0K ohms

OUTPUT IMPEDANCE

OUTPUT TERMINAL (EXT. SP).....8 ohms
OUTPUT TERMINAL (LINE OUT)....7K ohms
HEADPHONE TERMINAL.....8 ohms
DIN TERMINAL (REC/P.B.).....7K ohms
RECORDING COMPENSATION
CHARACTERISTICS According to NAB
standard

MECHANICAL CHARACTERISTICS

TAPE SPEED..... $7\frac{1}{2}$ ips (19cm/s)
 $3\frac{3}{4}$ ips (9.5cm/s)
 $1\frac{1}{8}$ ips (4.75cm/s)
TAPE REEL.....Max.7" reel (178mm)
RECORDING OR PLAYING TIME
Stereo (using 7" 35 μ tape)
1.5hr at $7\frac{1}{2}$ ips speed
3hr at $3\frac{3}{4}$ ips speed
6hr at $1\frac{1}{8}$ ips speed

Monoaural (using 7"35 μ tape)
3hr at $7\frac{1}{2}$ ips speed
6hr at $3\frac{3}{4}$ ips speed
12hr at $1\frac{1}{8}$ ips speed

MOTOR.....4-pole condenser motor

COMPONENTS USED

TRANSISTORS2SB73 (B) \times 2, 2SC281 (C) \times 4
2SB77 (B) \times 2, 2SB367 (B) \times 4
2SB370 (B) \times 2, 2SB370 (A) \times 1
DIODES.....1N34A \times 4, 1S310 \times 4, 1S314 \times 2
VARISTORS.....HV-16 \times 2
THERMISTORS.....13D27 \times 4, D-1E \times 1
LOUDSPEAKER..... $7\frac{7}{8}$ " P.M. (Woofer) \times 2
(Speaker boxes) $3\frac{1}{8}$ " P.M. (Tweeter) \times 2
MICROPHONE.....Dynamic microphone
OPERATING SYSTEM.....Push-button system

MISCELLANEOUS

DIMENSIONS **Recorder**
 $17\frac{3}{4}$ "(H) \times 16" (W) \times $6\frac{7}{8}$ " (D)
(45 \times 40.5 \times 17.4cm)
Speaker box
 $17\frac{3}{4}$ "(H) \times 16" (W) \times $5\frac{7}{8}$ " (D)
(45 \times 40.5 \times 15cm)

WEIGHT **Recorder**
36 lbs. (16kg)
Speaker boxes
15 lbs. 8oz (9.5kg)

ACCESSORIES

Dynamic microphone (with stand) 2
7" empty reel 1
Reel holder..... 2
Sensing leaf 1
Speaker cord..... 1 set
Capstan 1
Pinch-roller 1

CONTROLS

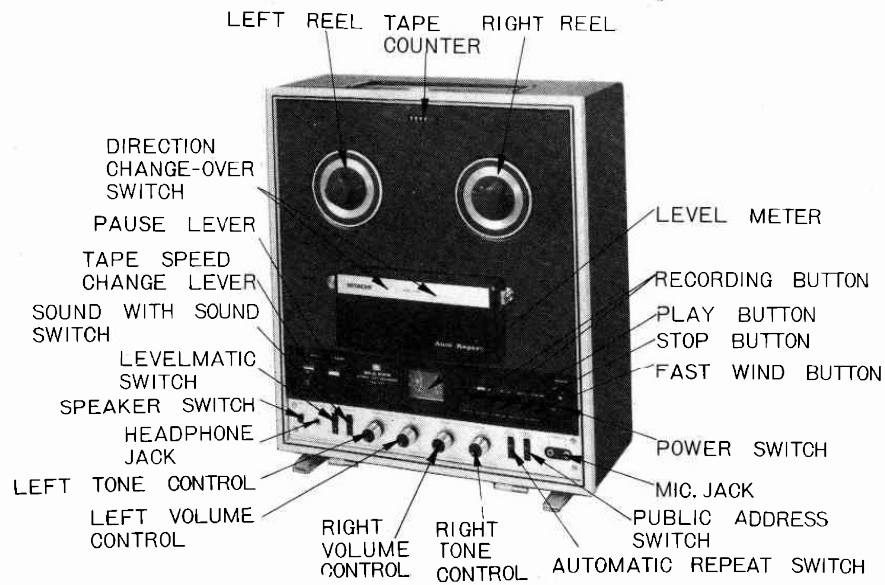


Fig. 1

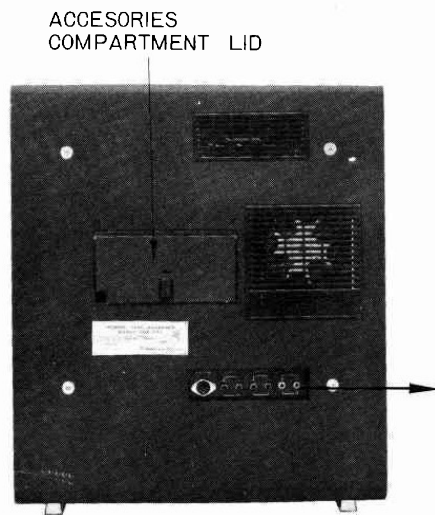


Fig. 2

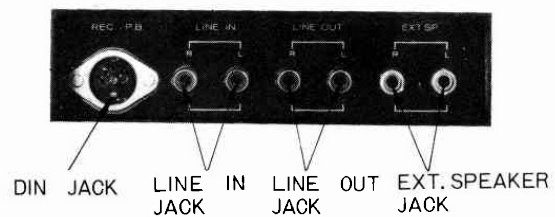


Fig. 3

BLOCK DIAGRAM

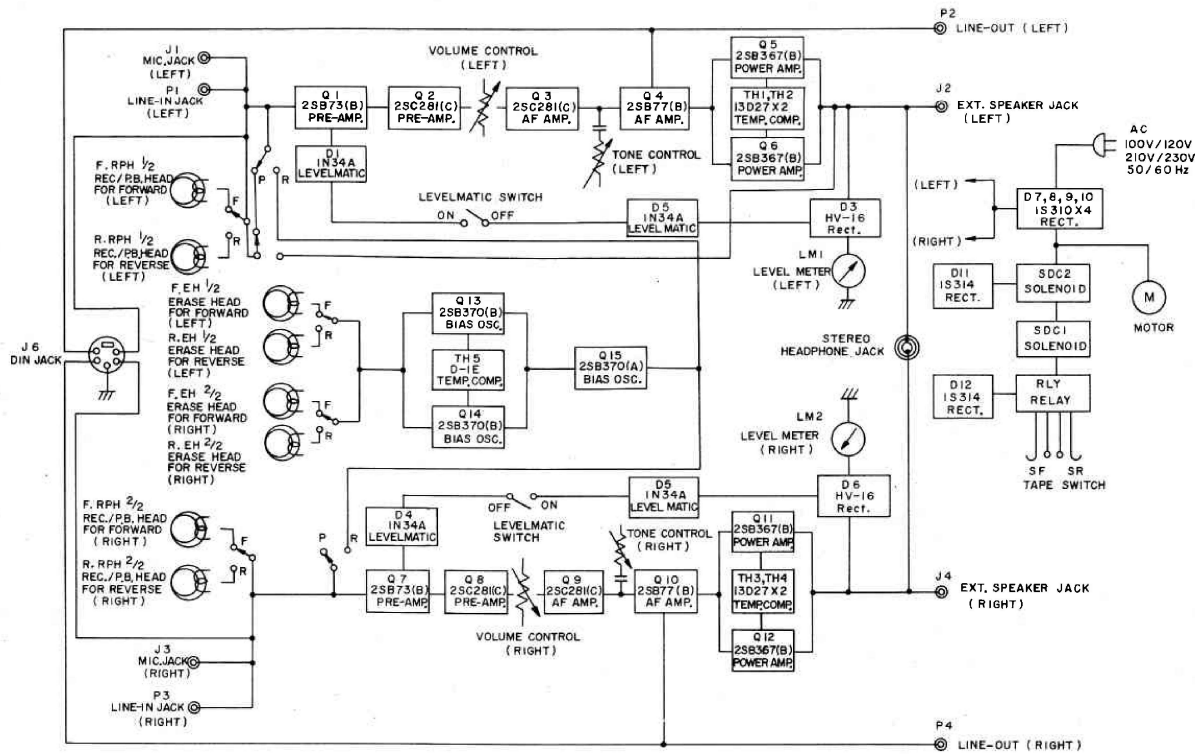


Fig. 4

EXPLANATION AND HANDLING OF EACH SECTION

1. AUTO-REPEAT mechanism

The automatic reversing system for this tape recorder is so designed that electroconductive sensing tapes (silver leaf tapes) stuck to both ends of a recording tape actuate a relay to operate the AUTO-REPEAT mechanism, thus the running direction of tape is automatically changed over.

Handling

- 1) Prepare two pieces of sensing tape cut into approx. 3 cm in length, stick them to a recording tape about at 40 cm from the right and left ends.

- 2) Turn on the AUTOMATIC-REPEAT switch (AUTO).

Thus, the tape can be automatically repeated.

Note: a sensing tape at the right end is not necessary in case of automatic stopping after recording or reproducing by AUTO-REVERSE (one reciprocative run).

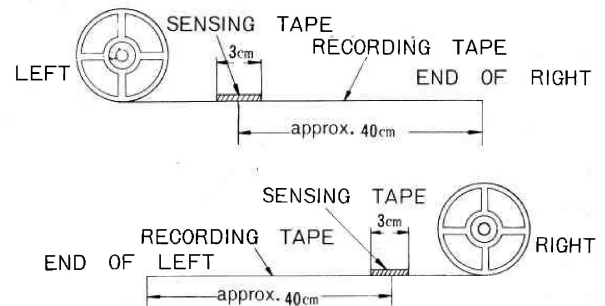


Fig. 5

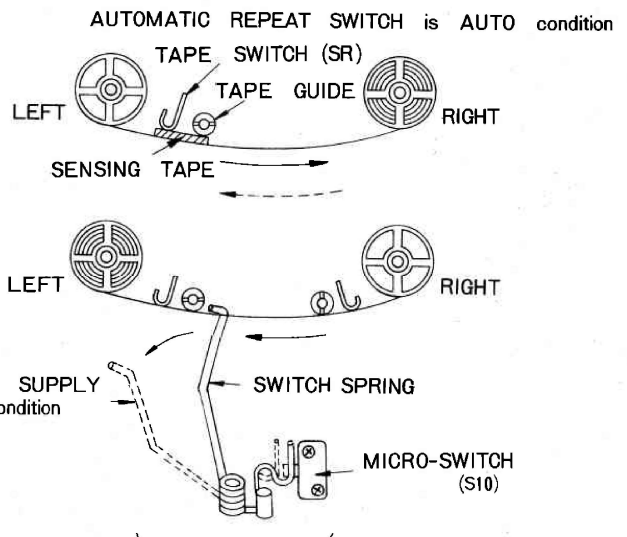


Fig. 7

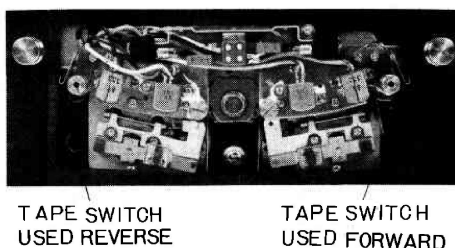


Fig. 6

(Explanation of Fig. 7)

At the end of a running in forward direction (from left to right) when the tape is going to be wound up to the right reel, the left side sensing tape reverses the direction (from right to left) of tape feeding, and the tape is wound up to the left reel because there is no sensing tape at the right end. At this time tape is stopped automatically by means of the TAPE SHUT-OFF mechanism.

2. Manual reversal

Reversal can be performed not only automatically, also manually. To reverse the running direction of tape at any position, operate the direction change-over switch

(switch for forward or reverse running).

Note: the running direction will be forward whenever the power supply is switched on or running is started after power supply turning off or automatic stop.

3. 4-track 2-channel system and running reversal

4-track 2-channel system, as shown in Fig. 9, uses all the tracks from No. 1 to No. 4 of tape, in which two pairs of tracks - No. 1 (L) and No. 3 (R), No. 2 (R) and No. 4 (L) - perform a reciprocal run.

Different from conventional systems, recording and playing back can be carried out in reverse tape running direction (from left to right) without necessity of resetting the tape.

For this purpose, four heads are provided: two (for recording/playing back, for erasing) for forward running (from left to right) and two (for recording/playing back, for erasing) for reverse running (from right to left).

The system of recording and playing back in forward and reverse directions is based on the same principle as conventional methods ✖

DIRECTION CHANGE-OVER SWITCH

running direction of tape From right to left REVERSE direction

running direction of tape From left to right FORWARD direction



Fig. 8

4-track 2-channel recording tape division



Fig. 9

REEL-TO-REEL SYSTEM STEREO TAPE RECORDER

AUTOMATIC REPEAT SYSTEM STEREO TAPE RECORDER

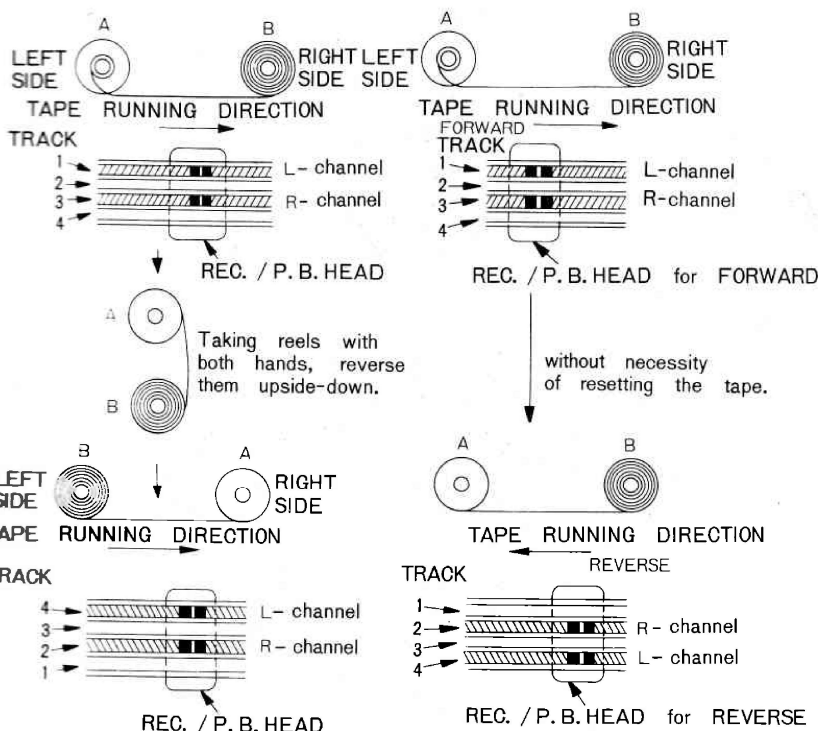
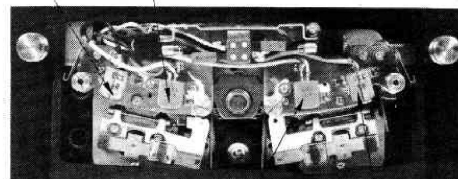


Fig. 11

(FORWARD)

ERASE HEAD RECORDING HEAD



RECORDING HEAD ERASE HEAD

REVERSE DIRECTION

Fig. 10

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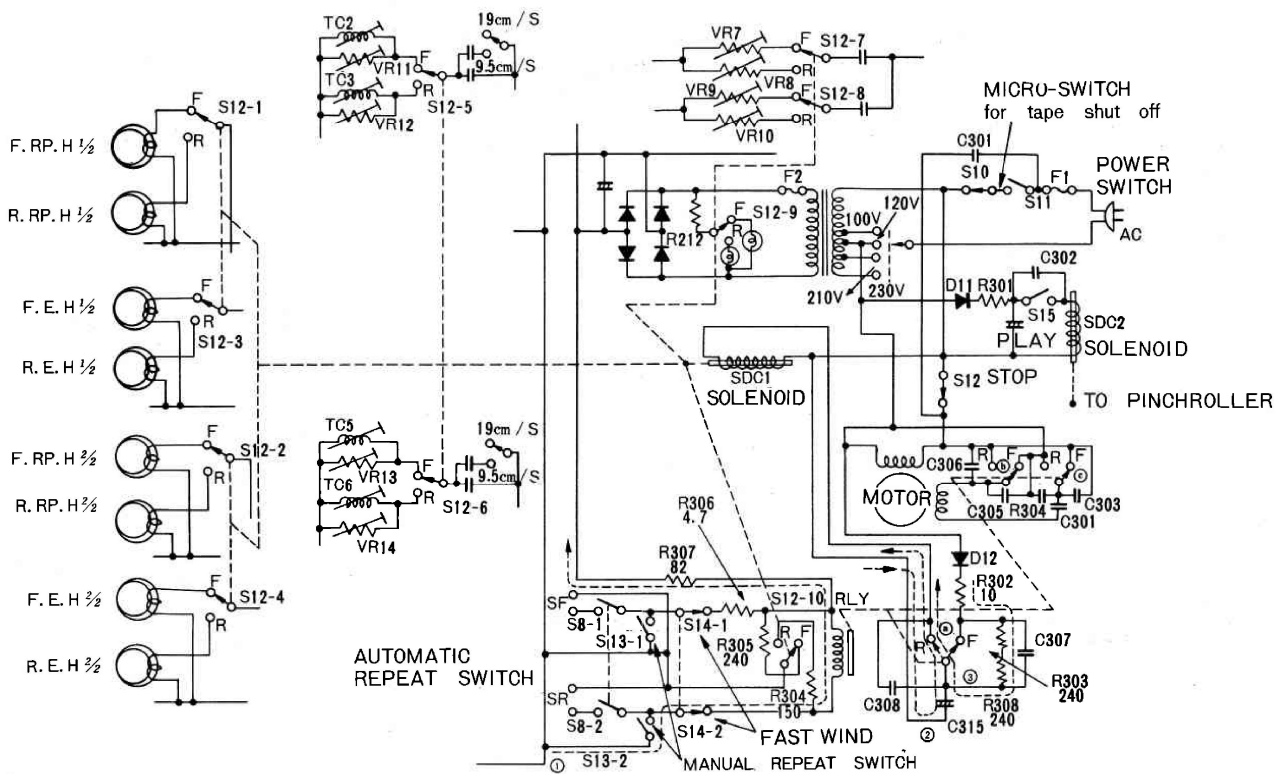


Fig. 12

✱ carrying out recording and playing back with resetting a tape, as shown in Fig.11. Therefore, there is not any problem in interchange ability of tapes, that is, any tape of 4-track 2-channel system can be used on the present tape recorder or conventional ones.

Explanation of operation

Turn on the power supply switch "S-11". When a tape is not set and the function buttons are not operated, the SHUT-OFF SWITCH "S-10" is "ON" so that the power supply can be switched on. The switch "S-12" can be turned on only when the "PLAY" button is pushed. The circuit diagram (Fig. 12) shows the state of forward running (right to left).

This state is obtained every time of starting after the "STOP" button is pushed or power supply is switched off. Set a tape in stop conditions. For playing back the tape, push the "PLAY" button and for recording, push the "RECORDING" button and also "PLAY" button simultaneously. When the "PLAY" button is pushed "S15" is turned on to actuate the solenoid coil (SDC2),

where by the pinch roller is pressed to the capstan shaft and the tape runs in forward direction for playing back. When the "FAST WIND" button is not pushed, switches "S14-1" and "S14-2" are "ON". These switches prevent from forward and reverse running in course of fast forwarding. If the reverse direction change-over switch (◀ "S13-2") is pushed when the tape is running forward, current flows as indicated in Fig. 13 to actuate the relay. Then switches (a), (b) and (c) interlocked with the relay are connected in R-direction to reverse the rotating direction of motor. When the switch (a) is connected to the point R, electric current charged in C315 actuates the solenoid coil (SDC1), thus switches "S12-1" to "S12-10" are simultaneously connected to the point R to obtain the playing back and recording conditions in R-direction. The direction change-over switch can work by a momentary, because current is flowing in the relay as shown in Fig. 12. As for the solenoid coil (SDC1), it is originally actuated by the voltage charged in C315 and is kept in the same working conditions even

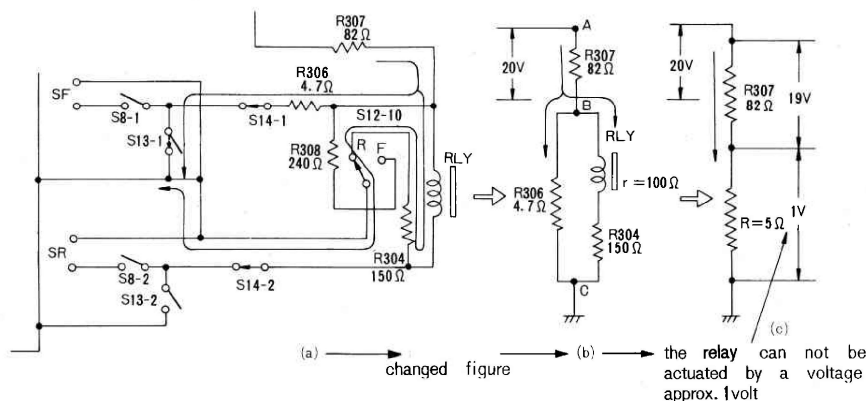


Fig. 13

if C315 is discharged to lose voltage, because current is flowing through R303 to R308, that is, once it is actuated it can continue to work under lower voltage.

If "F" direction change-over button (► S13-1 switch) is pushed, immediately is obtained the circuit shown in Fig. 13. Accordingly, as shown in Fig. 13, the relay can not be actuated by a voltage approx. 1 V and the switch is operated to F-point direction to change the rotating direction of motor by means of switches (b) and (c) interlocked with the relay. When the switch (a) is connected to F-point, the solenoid coil (SDC1) is immediately opened while switches "S12-1" to "S12-10" are connected to F-point to obtain the playing back and

recording conditions in forward direction. The solenoid coil (SDC2) is actuated to press the pinch roller to the capstan shaft when the "PLAY" button is pushed to actuate "S15" switch. The condenser motor is fed with AC power supply and changed over in direction by means of phase changing. To operate automatically turn on the "AUTO" switch (S8-1, S8-2). Stick pieces of sensing tape to the left and right ends of recording tape. These pieces of sensing tape actuate the recording tape switches "SF" and "SR" just as manual reversing, and the recording tape is automatically reversed to go or return without the operation of direction change-over button.

4. EASY ROLLING system

This system makes tape setting easy, that is, the pinch roller goes into the flywheel when running is stopped and a tape can be easily set by means of putting it upwards in stretched state. In conventional systems the pinch roller stays in the same position and the capstan leaves it to form a clearance, while the tape has to be inserted into this clearance (clearance for tape under the head cover). This is somehow troublesome.

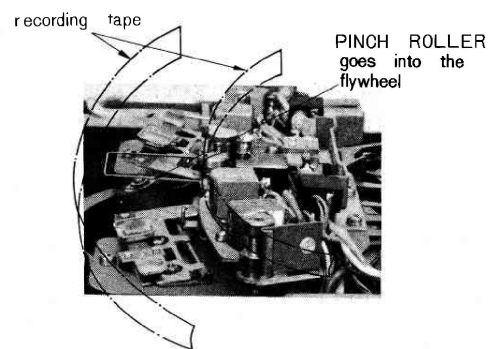


Fig. 14

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5. Speed change-over (7½ ips (19cm/s), 3¾ips (9.5cm/s), 1⅞ ips (4.75cm/s))

Speed changing must be done in "PLAY" condition without fail. It should be kept in mind that speed often can not be changed if this is done in stop condition, and also the rubber belt (driving belt) is often stretched out. Because speed changing is carried out by means of replacing a pulley with another pulley of different diameter while only one driving pulley is used. This can be done smoothly in course of rotation.

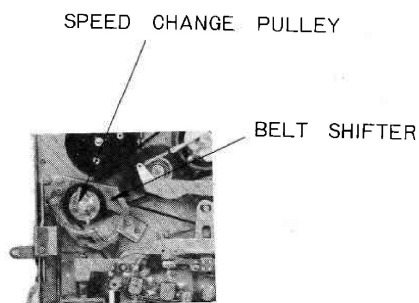


Fig. 15

6. Cycle change

Cycle changing must be carried out in accordance with the cycle of power supply (50Hz/60Hz) by means of replacing the capstan and the pinch roller.

- 1) Remove the head cover and the capstan set-screw. Replace the capstan with the other one provided as an accessory.
- 2) Remove the E-ring from the pinch roller and replace the pinch roller with the other one also provided.

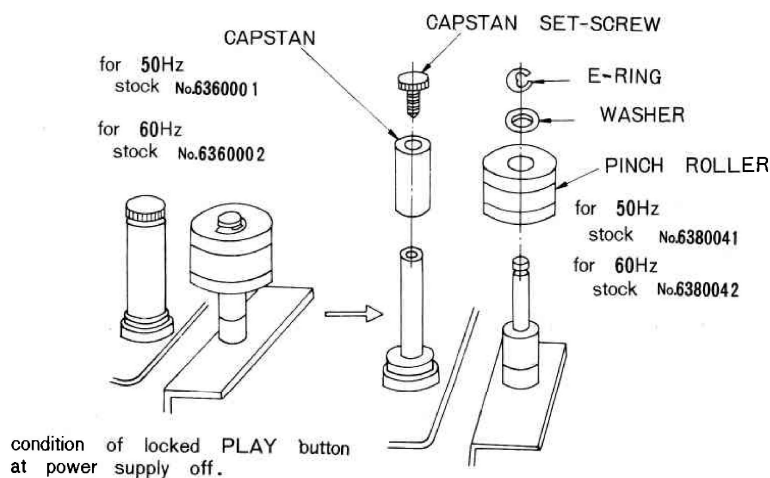


Fig. 16

DISASSEMBLY

When inspecting, repairing or lubricating, disassemble the machine in the following manner.

1. Removal of cabinet

- 1) Remove two setscrews and then head cover as shown in Fig. 17
- 2) Remove four setscrews as shown in Figs. 18, 19 from the chassis.
- 3) Remove four chassis setscrews as shown in Fig. 20.



Fig. 17

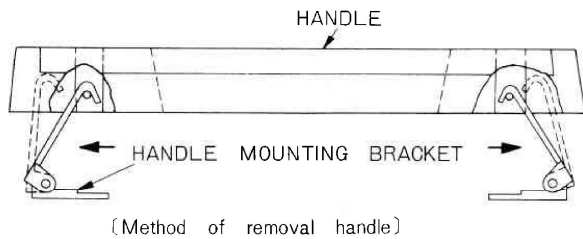


Fig. 18

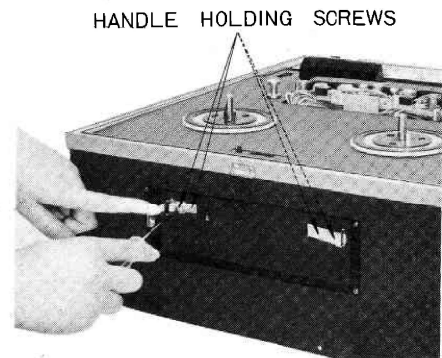


Fig. 19

2. Removal of front panel

- 1) Remove six setscrews from each reel stand (left and right) as shown in Fig. 21.
- 2) Remove the screw holding the front panel shown in Fig. 21.
- 3) Remove seven set-screws from the chassis as shown in Fig. 22.

3. Removal of circuit board

Note : take care with the wires connecting several parts of circuit board.

- 1) Circuit board for amplifier block: Remove five screws holding circuit board shown in Fig. 23.
- 2) Head changing-over circuit board: Remove three screws shown in Fig. 24.
- 3) Compensation circuit board: Remove two screws shown in Fig. 25.

CHASSIS HOLDING SCREWS

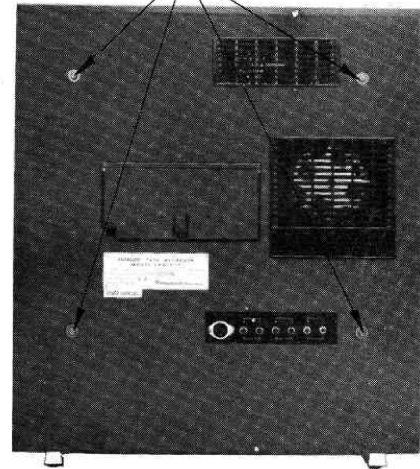


Fig. 20

CHASSIS HOLDING SCREWS

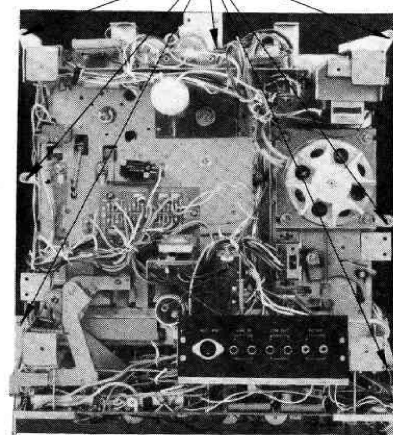


Fig. 22

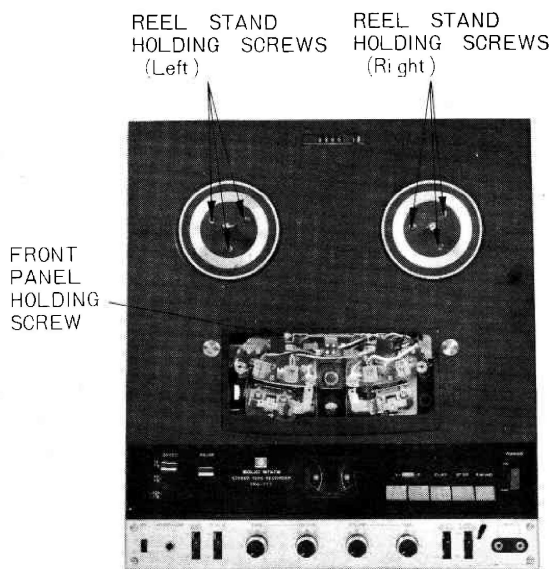
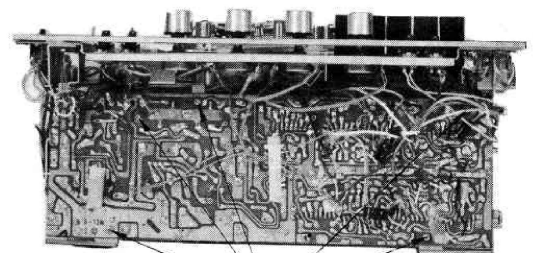


Fig. 21



CIRCUIT BOARD HOLDING SCREWS
(amplifier block)

Fig. 23

HEAD CHANGING-OVER
CIRCUIT BOARD HOLDING SCREWS

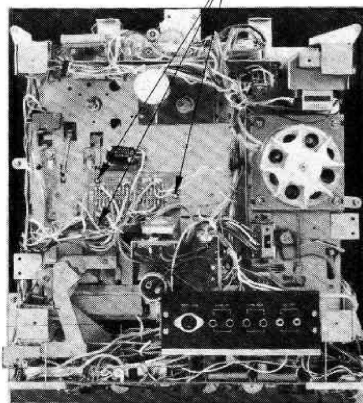


Fig. 24

COMPENSATION CIRCUIT BOARD
HOLDING SCREWS

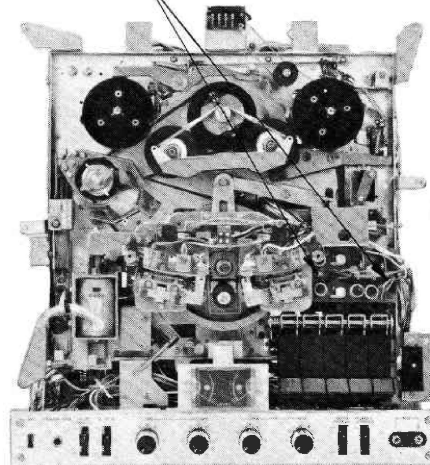


Fig. 25

4. Removal of transformer

Remove two set-screws and four holder set-scores in Fig. 26.

TRANSFORMER HOLDER
HOLDING SCREWS

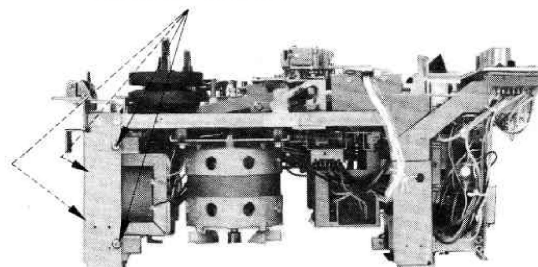


Fig. 26

6. Removal of auto reverse control chassis

Remove three set-screws shown in Fig. 27.

AUTO REVERSE CONTROL
CHASSIS HOLDING SCREWS

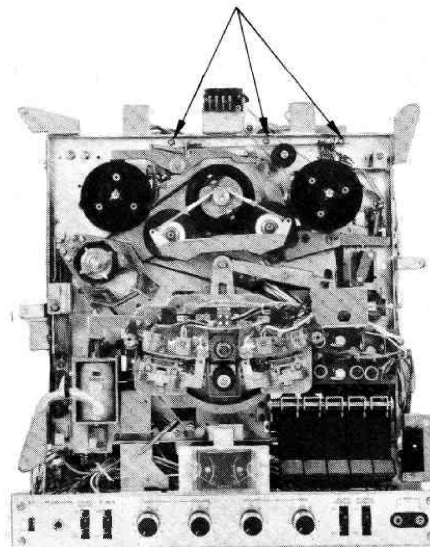


Fig. 27

LUBRICATION

Lubricate each part shown in Figs. 28, 29 and 30, 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.

- Ⓗ.....GRASE (MOS2)
- Ⓐ.....SAE #30
- Ⓜ.....MACHINE OIL
- Ⓢ.....SONIC SLIDUS OIL #30 (SAE #30)
- Ⓒ.....GRASE

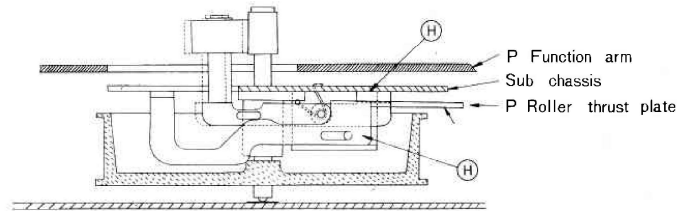


Fig. 28

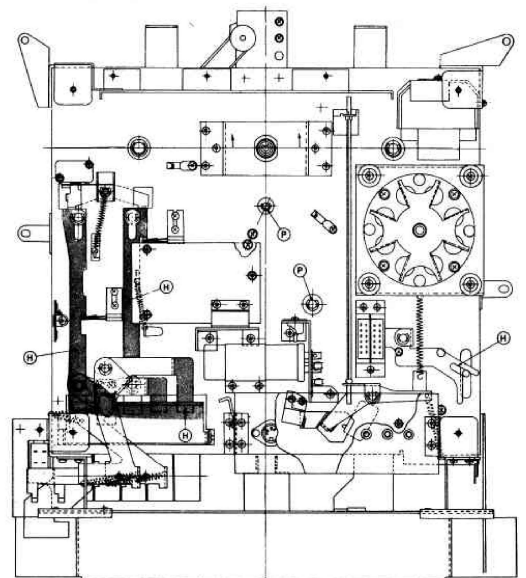


Fig. 29

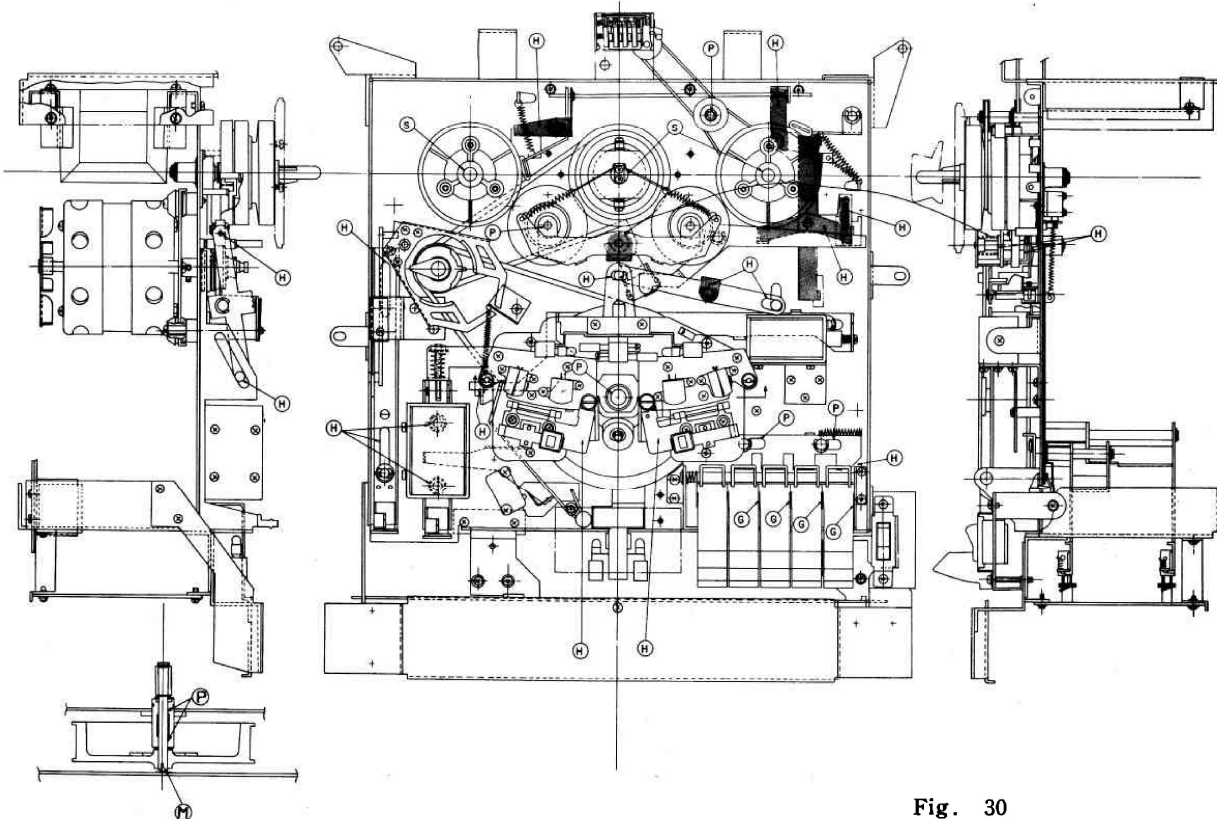


Fig. 30

ADJUSTMENT

1. Adjustment of electric circuit block

1) Adjustment of tape guide

Adjust the tape guide shown in Figs. 31 and 32 in forward and reverse directions. Running a transparent tape, adjust it exactly to the upper edge of track core above the head.

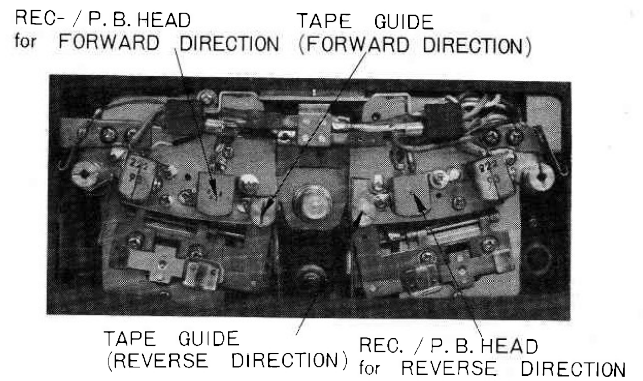


Fig. 31

2) Angle adjustment of play back head

Using the standard tape for angle adjustment, adjust the angle adjusting screw for the recording/playing back head so that the play back output level reaches maximum (Fig. 33).

In this case turn off "SP switch" and connect VTVM (vacuum tube voltmeter) to "L-channel" and "R-channel" of output terminals "LINE OUT" in order to measure the play back output level. The output level should be regulated so that it does not vary excessively when the pad is slightly pushed by hand.

* take into consideration that it is difficult to measure the output level by means of VTVM if an ordinal recorded tape (4-track 2-channel) is used for adjustment, because output level is varied in accordance with individual voice. In such a case the output level should be judged by ear.

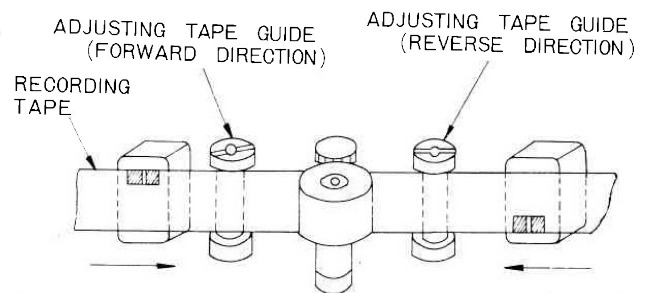


Fig. 32

ANGLE ADJUSTING SCREWS

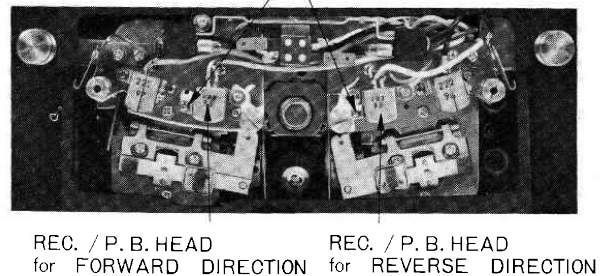


Fig. 33

3) Adjustment of bias current

This model has bias oscillation frequency 57 kHz. Adjustment should be carried out in forward and reverse directions as follows.

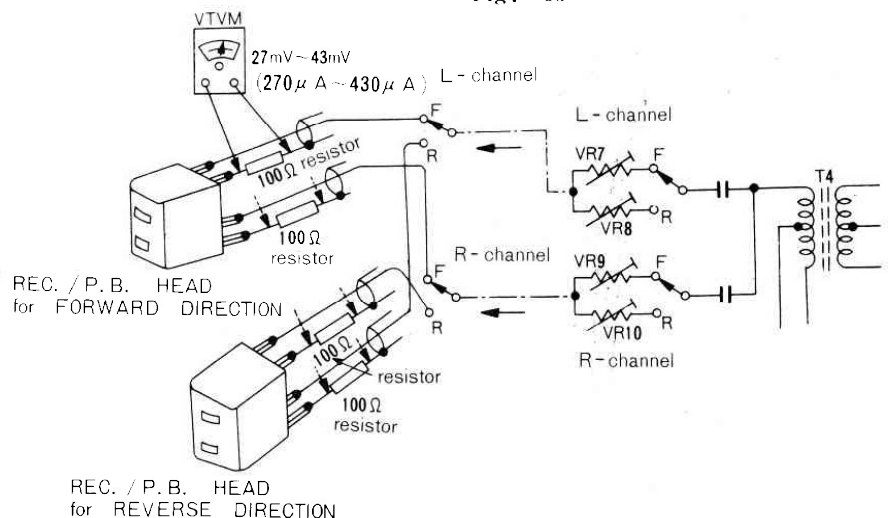


Fig. 34

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- a) Set up the recording conditions.
- b) Remove ground side lead wires from the terminals of recording/playing back heads for F and R directions, and insert resistance (100 ohm).
- c) Connect a VTVM as shown in Fig. 34 and adjust the Semi-variable (F direction: VR7, VR9, R direction: VR8, VR10) so that current intensity will be $350 \mu A \pm 80 \mu A$.

F direction L channel: VR7 (amplifier block circuit board)

R channel: VR9 (compensator circuit board)

R direction L channel: VR8 (amplifier block circuit board)

R channel: VR10 (compensator circuit board)

For measuring current by means of VTVM, resistor should be inserted. If a voltmeter, a tester, etc. are used without resistor inserted, the circuit constant and other characteristics will vary.

4) Adjustment of bias trap

This adjustment is performed in order to eliminate high frequency leaking from the bias oscillating circuit (oscillating frequency 57 kHz) to the audio amplifier circuit.

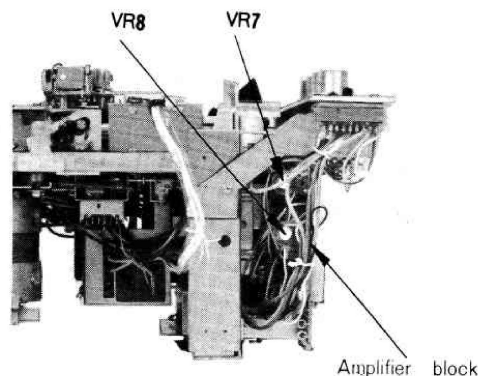


Fig. 35

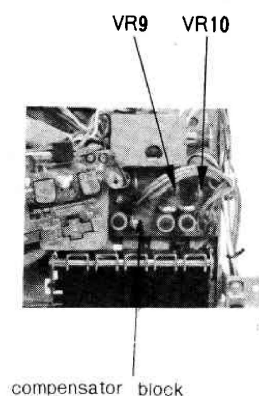


Fig. 36

ADJUSTING ORDER

Set up conditions for either R or F direction.

a) Adjustment is made from L-channel.

- a-1) Set L-channel in play back condition and also place R-channel in recording condition (This is the same condition that recording and play back buttons of R-channel depressed.). Do not insert a microphone or auxiliary cord into the microphone jack or the input jack. A tape should not be put on. In this case turn off the shut-off switch so that the tape recorder can be operated.
- a-2) Volume control (L-VOLUME, R-VOLUME) and tone control (L-TONE, R-TONE) should be turned completely clockwise to produce a maximum output.
- a-3) Connect a 8 ohm resistor to EXT. SP jack of L-channel as shown in Fig. 37 and connect the VTVM to both sides of the resistor.

Thus voltage of high frequency leaking out from the oscillating circuit will be indicated. Turn the core of "TRAP COIL (TC1)" so that this voltage reaches the minimum. Voltage of high frequency leakage will be, when the set is working normally, not more than 150 mV.

b) Trap adjustment for R-channel is carried out in the same manner as in cas for L-channel.

Set R-channel into play back condition and L-channel into recording condition. Turn the core of "TRAP COIL (TC4)" in case of R-channel.

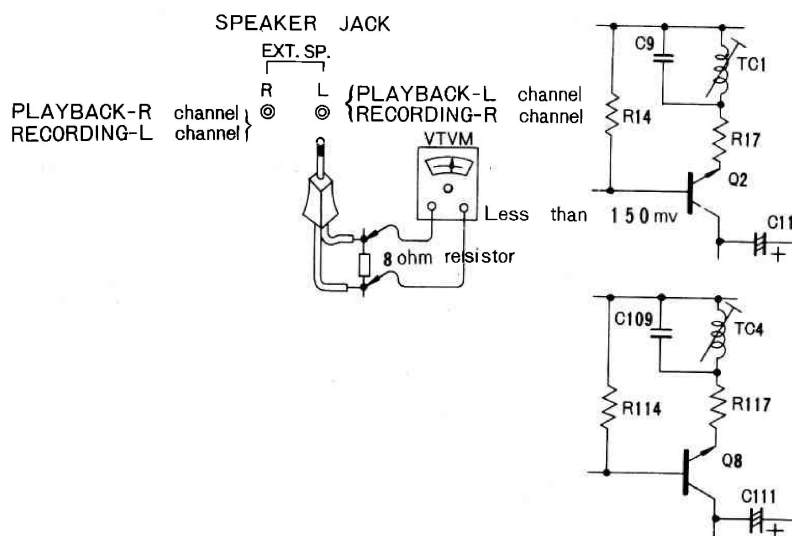


Fig. 37

MODEL TRQ-777(A) SERVICE MANUAL

TRQ-777(W)

5) Adjustment of level meters

Set conditions for either F or R direction. Adjust two level meters; one for L-channel and the other for R-channel.

a) L-channel

- a-1. Depress the recording button (L-REC) to set L-channel side in recording condition.
- a-2. Put a low frequency signal of 1,000 Hz from the low frequency signal oscillator to the L-channel microphone jack or the input jack (L-LINE IN).
- a-3. Turn on the speaker switch (SP SWITCH), insert a 8 ohm resistor to the external speaker jack (EXT. SP) and connect the VTVM (vacuum tube voltmeter) to both sides of the resistor as shown in Fig. 38.
- a-4. Turn the volume control for L-channel (L-VOLUME) fully clockwise to the maximum volume position.
- a-5. Adjust the output of low frequency signal oscillator (signal frequency 1,000 Hz) so that the VTVM indicates an output voltage 0.5- 0.55V, that is, regulate the intensity of input signal. When the voltage does not drop to the predetermined value (0.5 - 0.55V) even if output of the low frequency signal oscillator (input of the set) is decreased, turn the volume control (L-VOLUME) to the left to decrease the audio output.
- a-6. Adjust the Semi-variable (VR3) so that the level meter pointer indicates the border of white and red zones on the level meter scale when the output voltage is 0.5 - 0.55V.

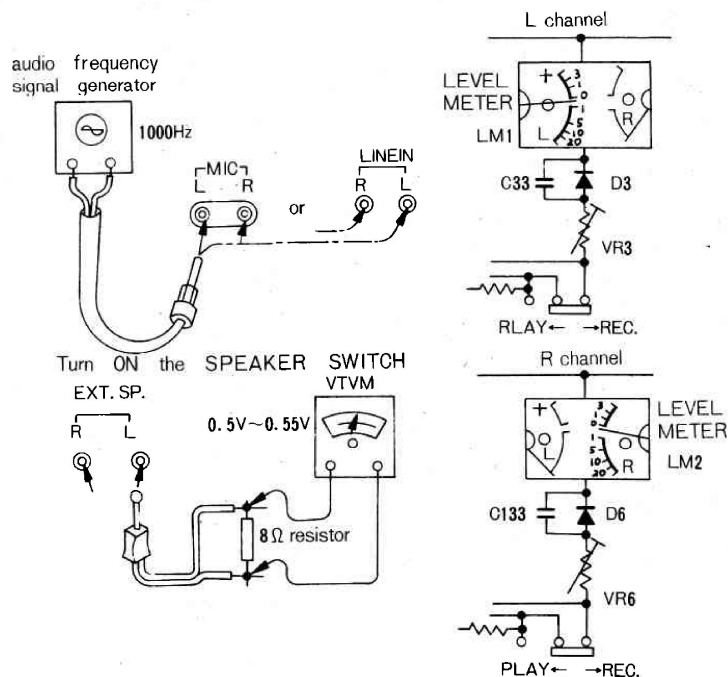


Fig. 38

b) R-channel

The R-channel level meter is adjusted in the same manner as in case of L-channel by means of regulating the volume control for R-channel (R-VOLUME) and the Semi-variable (VR6).

Semi-variable for adjustment L-channel: VR3

R-channel: VR6

6) Adjustment of resonance point of recording current

The adjustment of recording current resonance point must be carried out at the tape speed of $7\frac{1}{2}$ ips (19 cm/s). As shown in Fig. 39, remove resistor R 203 with the aid of a soldering iron, remove ground side lead wires from terminals for F-direction and R-direction recording/playing back heads, and insert a resistor (100 ohm). Connect a VTVM (vacuum tube voltmeter) to the both sides of resistor and carry out the adjustment of resonance point as follows (coils for resonance point adjustment are collected on the compensation circuit board).

a) Adjustment of resonance point of F-direction L-channel

- a-1. Push the recording button L to set recording condition.
- a-2. Increase the value of variable resistor VR 11 for Q damp to the maximum (turn to the right for about 20°).
- a-3. Connect a low frequency signal oscillator to the microphone terminal or the input terminal (LINE-IN) and put in signals of 16 kHz so that the level meter indicates the border of red and white zones.
- a-4. Looking at the VTVM connected to the both sides of resistance, turn the TC2 variable coil to right or left so that the volt meter indicates the maximum value. Then stop the variable coil and fix it with wax or white paint. Thus the adjustment of F-direction L-channel resonance point is completed.

b) Adjustment for R-direction L-channel

Set the tape in R-direction, connect the VTVM to the both sides of 100 ohm resistor for the R-direction L-channel recording-playing back heads, and perform adjustment in the above-mentioned procedure.

c) Adjustment for F-direction R-channel and R-direction R-channel is carried out in the same procedure as above-mentioned two cases only after pushing the recording button R to obtain recording conditions.

The followings are variable resistors and variable coils to be used for the adjustment:

F-direction L-channel.....VR11, TC2

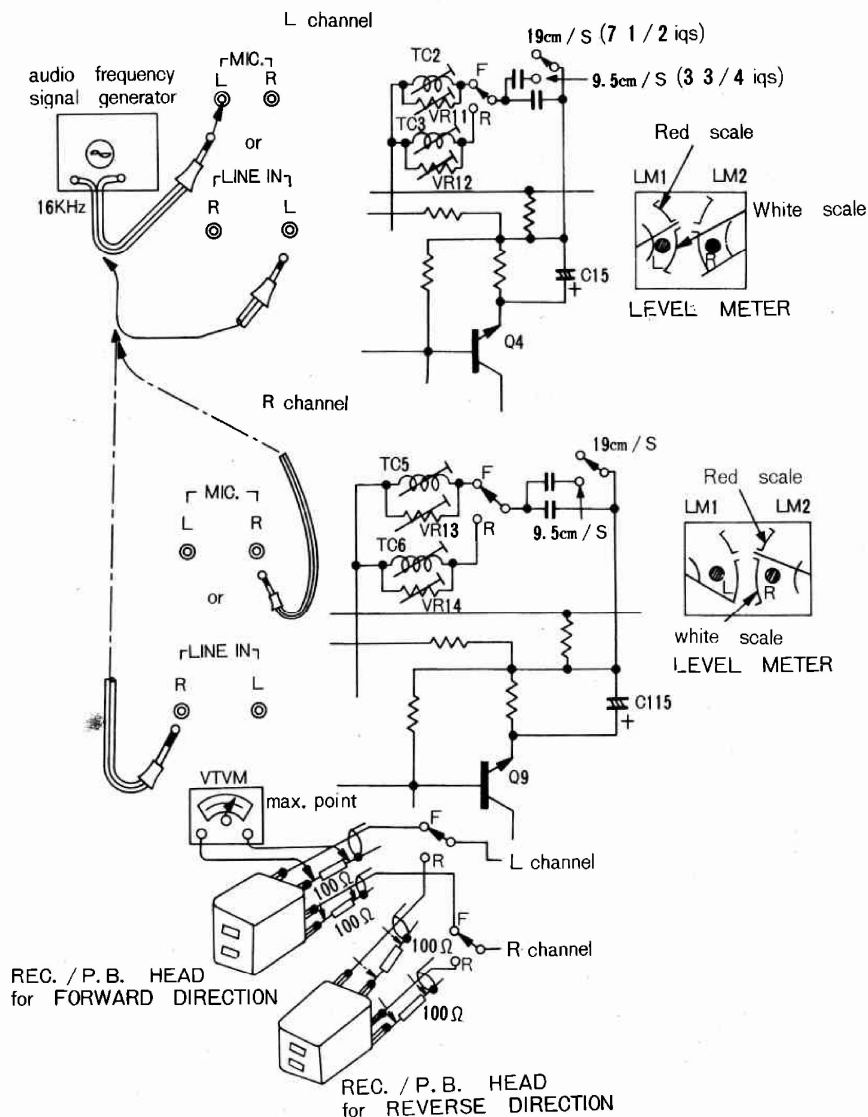


Fig. 39

F-direction R-channel.....VR13, TC5

R-direction L-channel.....VR12, TC3

R-direction R-channel.....VR14, TC6

Set it compensation circuit board.

7) Adjustment of recording current

The adjustment of recording current should be carried out with the tape speed of $7\frac{1}{2}$ ips (19cm/s) without fail. As in case of recording current resonance point, remove R203, remove lead wires of ground side from terminals for F-direction and R-direction recording/playing back heads, insert a resistor 100 ohm, connect the VTVM to the both sides of the resistor, and regulate recording current as follows.

- * This adjustment should be undertaken after the resonance point adjustment, as it is related to the latter.

a) Adjustment of F-direction L-channel recording current

- a-1. Depress the recording button to set recording condition.
- a-2. Connect the low frequency signal oscillator to the

microphone terminal or the input terminal (LINEIN) and put in 1 kHz signals so that the level meter indicates the white-red border.

- a-3. Read the indication of VTVM at this time which is connected to the both sides of resistor inserted to the ground side of the head.
- a-4. Set the low frequency signal oscillator to 16 kHz and adjust VR 11 to the point where the VTVM indicates a point upper than 1 kHz approx. by 16 db. Fix the VR11.

b) Adjustment of R-direction L-channel recording current

Set condition for R-direction, connect the VTVM (vacuum tube voltmeter) to the both sides of 100 ohm resistor for the R-direction recording/playing back head, and regulate the VR12 as in case of 1. so that the VTVM indicates a point upper than 1 kHz approx. by 16 dB.

c) As for the F-direction R-channel and the R-direction R-channel

L-channel, Depress the recording button R, put in signals through the microphone terminal or the terminal LINE-IN, then undertake the same adjustment as mentioned above.

Variable resistor related:

F-direction L-channel.....VR11	} included compensation circuit board
F-direction R-channel.....VR13	
R-direction L-channel.....VR12	
R-direction R-channel.....VR14	

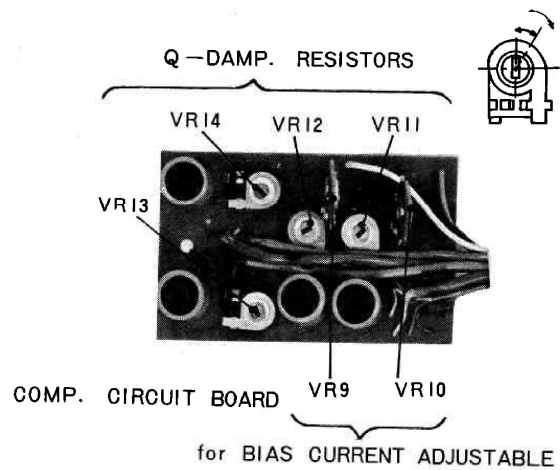


Fig. 40

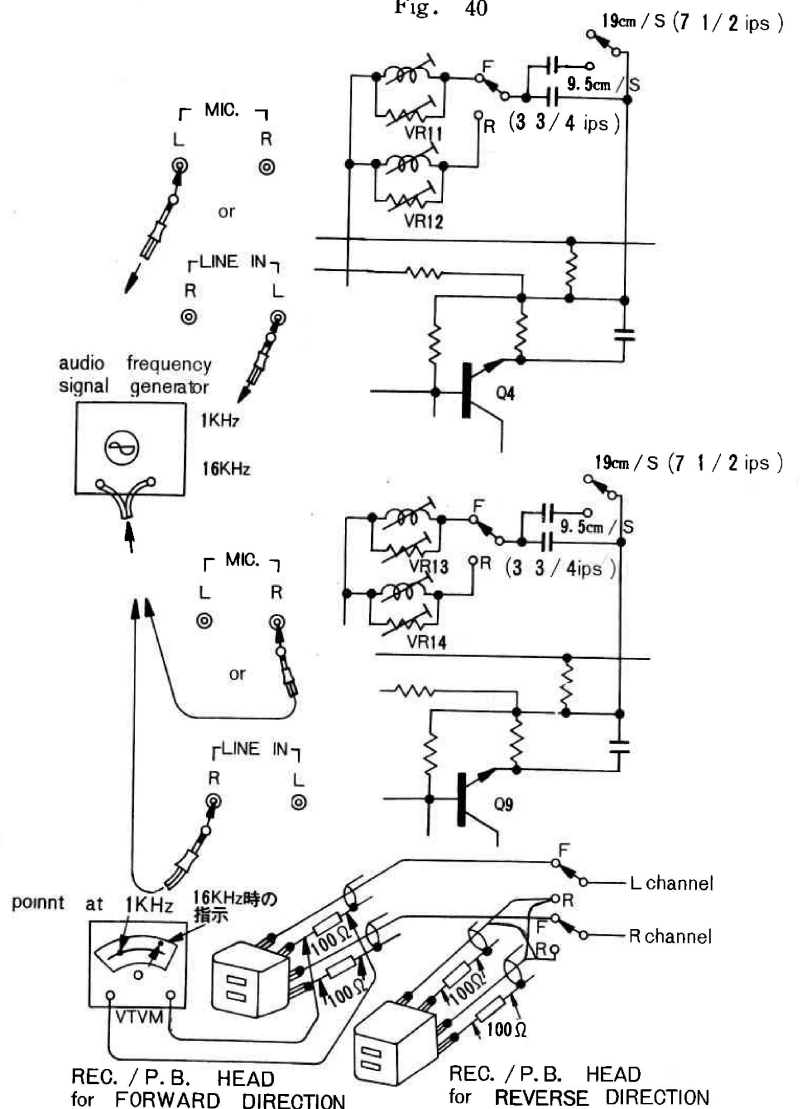


Fig. 41

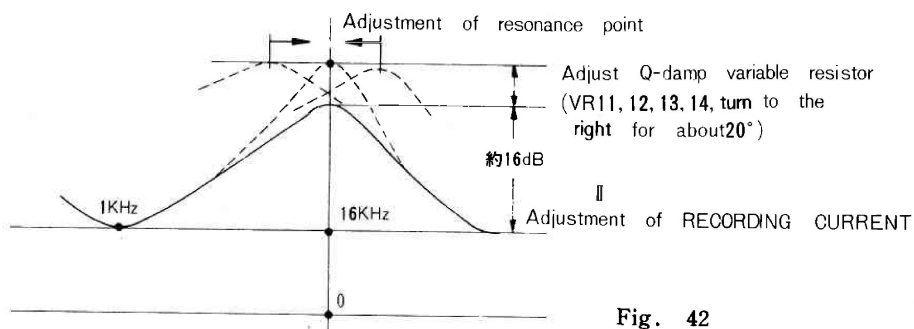


Fig. 42

1. Adjustment for mechanical block

1) Pressing forces (Fig. 43)

- a) Pinch roller pressing force.....1.4kg - 1.9kg
Measuring method

To measure the pinch roller pressing force to the capstan shaft, set the pinch roller to be pressed to the capstan shaft (in play back condition), and pulling the lower portion of pinch roller shaft, measure the value when the rotation of pinch roller is stopped (using a bar gauge of 3 kg or 5 kg).

- b) Adjustment of SHUT-OFF switch (Fig. 44)

Adjust the micro-switch to obtain $\ell = 2\text{mm}$ at stopped condition. Loosen the screw (A) and regulate the portion (B) so that the micro-switch will be "ON" ($\ell = 0$) when a tape is set in play back condition, and "OFF" with $\ell = 2$ (reference value) when there is no tape.

- c) Height adjustment of motor pulley (Fig. 45)

The standard distance between the chassis and the motor pulley is about 2 mm (reference value). Adjust the position of motor pulley in course of rotation, changing speed in three steps and making sure that the belt and the belt shifter do not come into contact with each other after speed change.

- d) Adjustment of muting switch (Fig. 46, Fig. 47)

Regulate the position of switch in stopped conditions so that the thicker "Fixed piece" side bends more than 0.5mm. Make sure that contact pieces of switch are away from each other in the condition of "F. WIND".

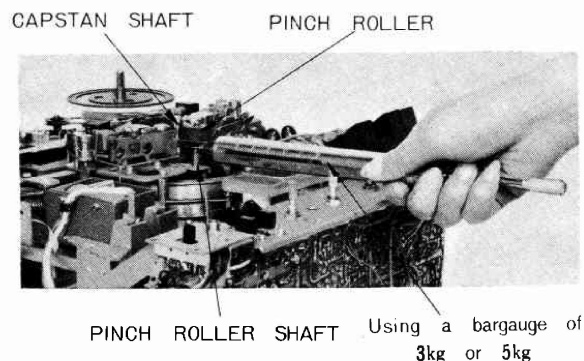


Fig. 43

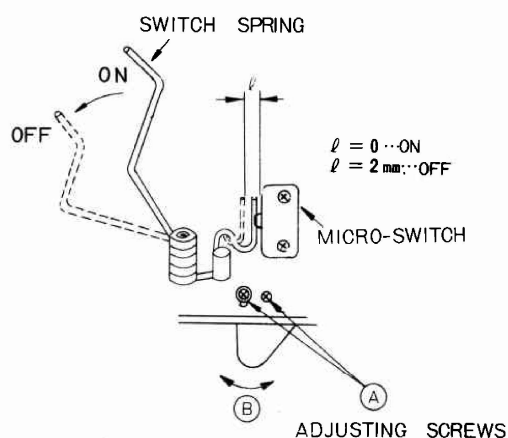


Fig. 44

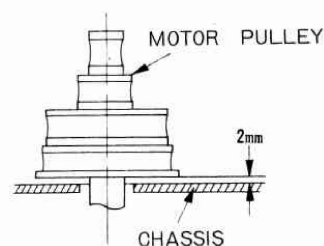


Fig. 45

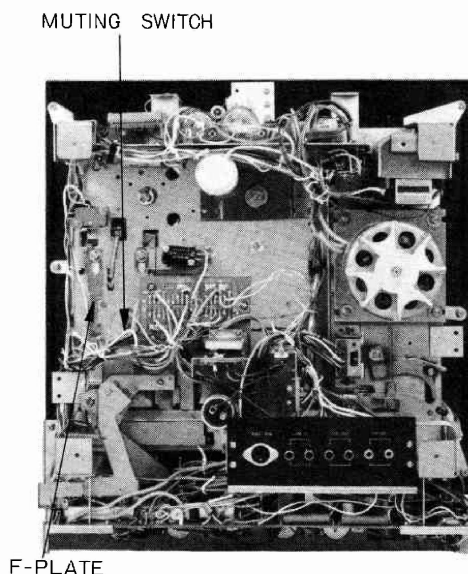


Fig. 46

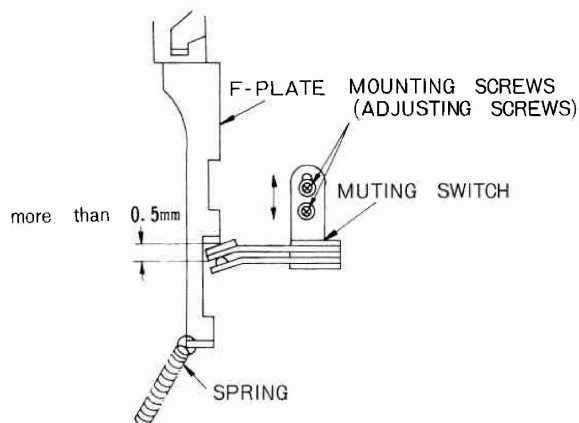
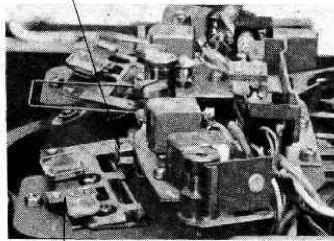


Fig. 47

e) Adjustment of direction changing solenoid

Adjust so that the distance between the polarity change-over plate and the plunger is about $\ell = 7.5\text{mm}$ (reference value), the slide switch of head change over circuit board is changed over to the right in the condition of forward playing, the left side of pad plate is pressed, the distance between the pad plate and the pad change-over plate (m) is more than 0.5 mm, and the right side of pad plate is apart from the head. Make sure that in the condition of reverse direction playing back the slide switch of head change over circuit board is changed over to the left, the right side of pad plate is pressed, (m) is more than 0.5 mm, and the left side of pad plate is apart from the head. For this adjustment use a screw lock No.2 (white wax) so that screws will not be loosened.

HEAD CHANGE-OVER PLATE



PAD PLATE

Fig. 49

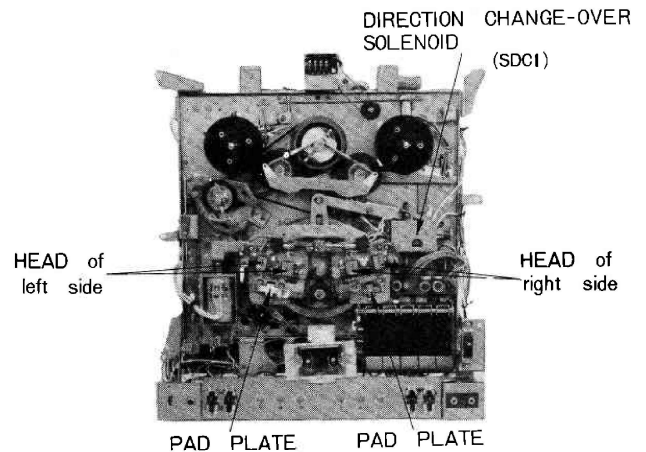


Fig. 48

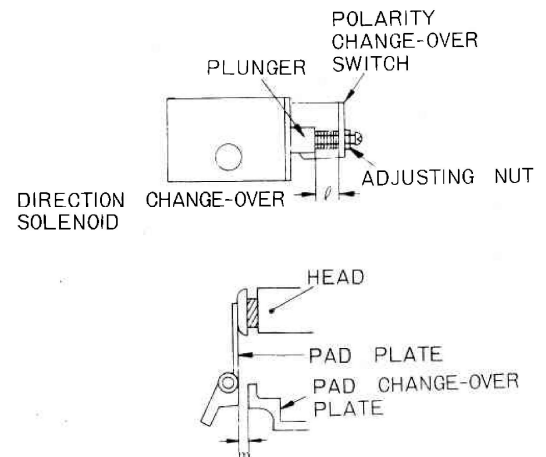
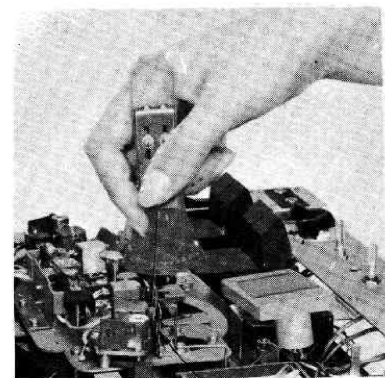


Fig. 50

f) Pad pressing force.....50 gr - 70 gr

Measuring method (Fig. 51)

This is the force of pad pressing a tape to the head surface. Apply a gauge to the center of pad plate and measure the value when the pad leaves the head surface.



PAD PLATE

Fig. 51

MODEL TRQ-777(A) SERVICE MANUAL

TRQ-777(W)

- g) **Idler pressing force**..... 200 gr $\begin{matrix} +20 \text{ gr} \\ -30 \text{ gr} \end{matrix}$
(both left and right)

Measuring method (Fig. 52)

Depress the PLAY button to lock the machine (in play back condition). Measure the value when the idler leaves and the reel stand rotation is stopped.

2) Torques

- a) **Winding torque**.....70 gr-120 gr (both right and left)

Measuring method (Fig. 53, Fig. 54)

Place the machine in vertical position and turn on power supply. Place an empty reel 7" on the winding side reel stand (right side in case of forward running and left side in case of reverse running), wind a thread inside the reel and a carry out measurement.

Note: even when the measured value is small, this does not make any problem if the tape is not removed from the tape flange at its end portion.

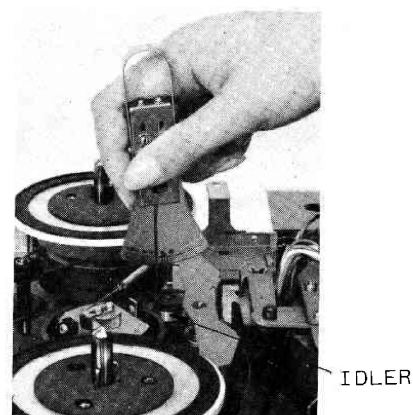


Fig. 52

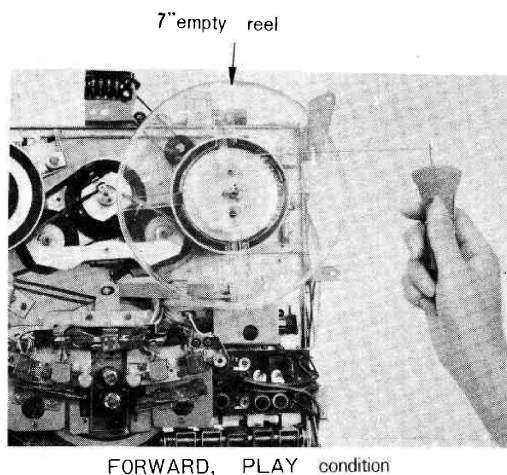


Fig. 53

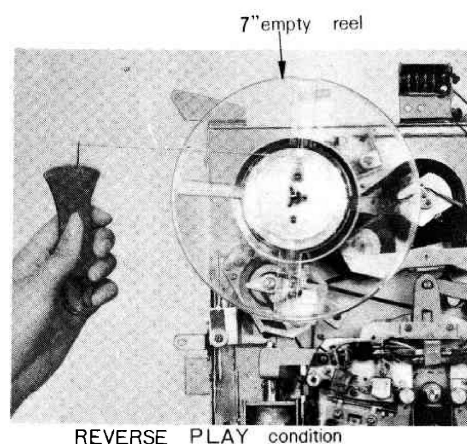


Fig. 54

- b) **Friction coupling torque**.....400 gr - 500 gr
(right and left)

Measuring method (Fig. 55, Fig. 56)

Place the machine in vertical position and set the power switch to "ON" position. Wind a thread inside the 7" reel and carry out measurement in "F. WIND" condition.

Note: even when the friction coupling torque is measured to be more than 500gr, this does not from any trouble if quick winding is possible.

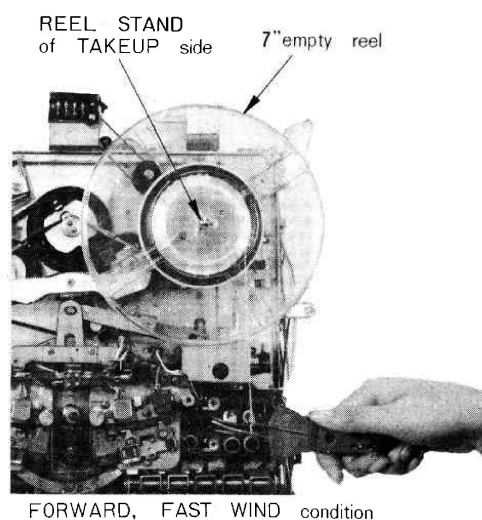


Fig. 55

c) **Back tension**.....25 gr - 40 gr (Fig. 57, Fig. 58)

To measure the back tension of left side reel stand, set the machine in vertical position and turn on power supply. After making sure that the pilot lamp is indicating the forward direction, carry out measurement in play back condition.

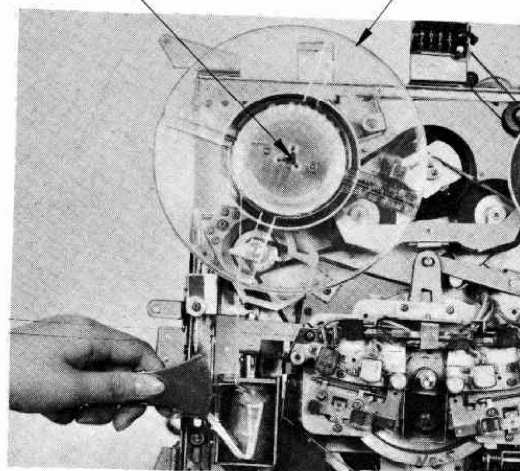
To measure the back tension of the right side reel stand, make sure the the pilot lamp is indicating the reverse direction and undertake measurement in play back condition.

d) **Push-button working force** ..2.7 kg or less (Fig. 59)

Put the tape recorder into vertical conditons, apply a bar guage to the top of push button and measure the force at the moment of locking.

Note: between the push-button and the bar guage apply a rubber sheet to prevent the push-button from any possible damage.

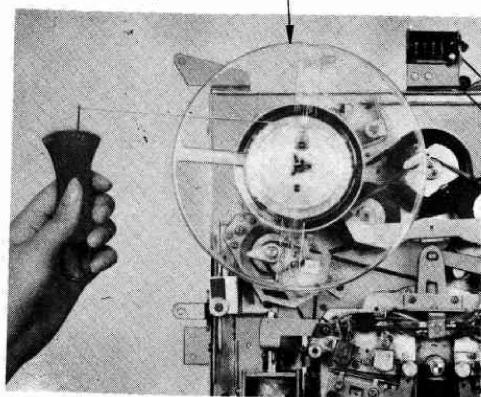
REEL STAND of SUPPLY Side 7"empty reel



FORWARD, FAST WIND condition

Fig. 56

7"empty reel

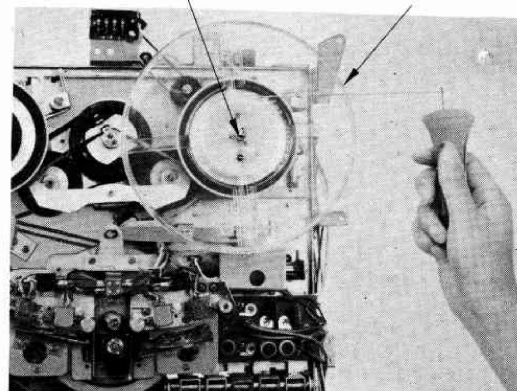


REVERSE PLAY condition

Fig. 57

RIGHT REEL STAND

7"empty reel



FORWARD, PLAY condition

Fig. 58

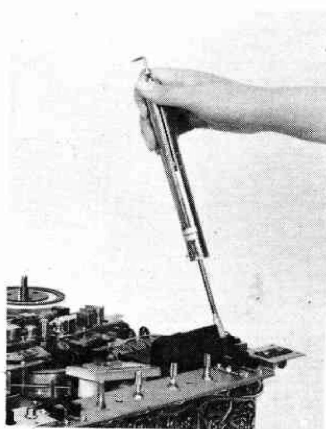


Fig. 59

MODEL TRQ-777(A) TRQ-777(W) SERVICE MANUAL

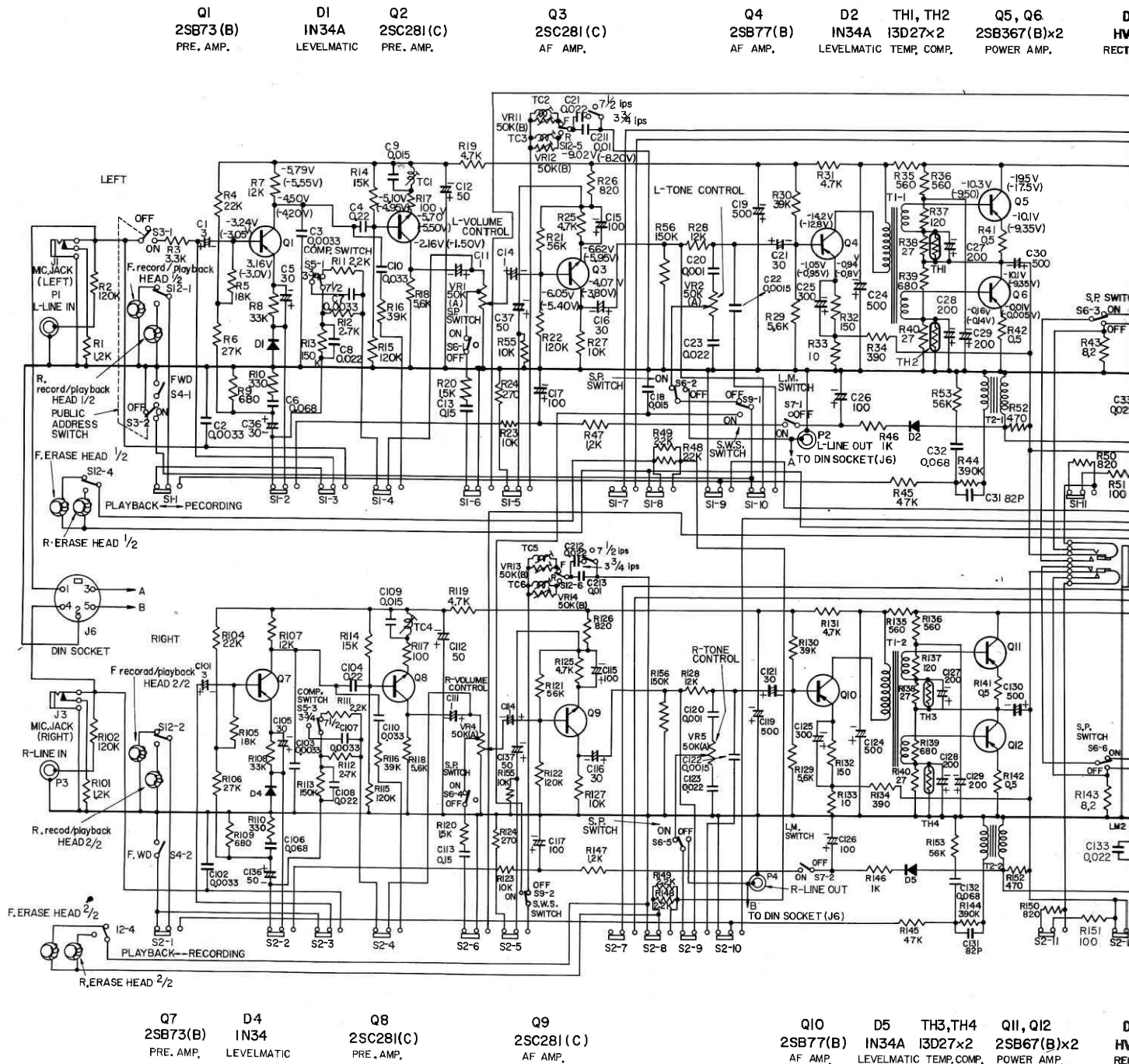
REPLACEMENT PARTS

Symbol No.	Stock No.	Description			Symbol No.	Stock No.	Description		
CAPACITORS:									
C 1,101	0252213	Electrolytic	3.3 μ F	6.3WV	R 15,115	0122539	Composition	120k Ω \pm 10%	RD $\frac{1}{4}$ L
C 2,102	0274114	Mylar	0.0033 μ F \pm 20%		R 16,116	0137665	Carbon film	39k Ω \pm 5%	SRD $\frac{1}{4}$ SD
C 3,103	0274114	Same as C2	0.0033 μ F \pm 20%		R 17,117	0137801	Carbon film	100 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 4,104	0276013	Mylar	0.22 μ F \pm 20%		R 18,118	0137860	Carbon film	5.6k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 5,105	0252223	Electrolytic	33 μ F	6.3WV	R 19,119	0137859	Carbon film	4.7k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 6,106	0275016	Mylar	0.068 μ F \pm 10%		R 20,120	0137605	Carbon film	1.5k Ω \pm 5%	SRD $\frac{1}{4}$ SD
C 7,107	0274114	Same as C2			R 21,121	0137910	Carbon film	56k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 8,108	0275013	Mylar	0.022 μ F \pm 10%		R 22,122	0137952	Same as R2		
C 9,109	0275012	Mylar	0.015 μ F \pm 10%		R 23,123	0122441	Composition	10k Ω \pm 10%	RD $\frac{1}{4}$ L
C 10,110	0275014	Mylar	0.033 μ F \pm 10%		R 24,124	0137806	Carbon film	270 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 11,111	0256004	Electrolytic	1 μ F	6.3WV	R 25,125	0137859	Same as R19		
C 12,112	0252225	Electrolytic			R 26,126	0137812	Carbon film	820 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 13,113	0276112	Mylar	0.15 μ F \pm 20%		R 27,127	0137901	Carbon film	10k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 14,114	0256004	Same as C11			R 28,128	0137653	Carbon film	12k Ω \pm 5%	SRD $\frac{1}{4}$ SD
C 15,115	0252231	Electrolytic	100 μ F	6.3WV	R 29,129	0137860	Same as R18		
C 16,116	0252223	Same as C5			R 30,130	0137908	Carbon film	39k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 17,117	0252231	Same as C15			R 31,131	0137859	Same as R19		
C 18	0275012	Same as C9			R 32,132	0137803	Carbon film	150 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 19,119	0252535	Electrolytic	470 μ F	16WV	R 33,133	0137759	Carbon film	10 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 20,120	0274011	Mylar	0.001 μ F \pm 10%		R 34,134	0137808	Carbon film	390 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 21,121	0252223	Same as C5			R 35,135	0137810	Carbon film	560 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 22,122	0274012	Mylar	0.0015 μ F \pm 10%		R 36,136	0137810	Same as R35		
C 23,123	0275013	Same as C8			R 37,137	0137802	Carbon film	120 Ω	SRD $\frac{1}{4}$ SD
C 24,124	0256008	Electrolytic	470 μ F	25WV	R 38,138	0137764	Carbon film	27 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 25,125	0252133	Electrolytic	330 μ F	6.3WV	R 39,139	0137811	Carbon film	680 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 26,126	0252231	Same as C15			R 40,140	0137764	Same as R38		
C 27,127	0252232	Electrolytic	220 μ F	6.3WV	R 41,141	0149101	Wire wound	0.5 Ω \pm 10%	RU $\frac{1}{2}$
C 28,128	0252232	Same as C27			R 42,142	0149101	Same as R41		
C 29,129	0252632	Electrolytic	220 μ F	25WV	R 43,143	0190046	Wire wound	8.2 Ω \pm 10%	RG5P
C 30,130	0256003	Same as C24			R 44,144	0137715	Carbon film	390k Ω \pm 5%	SRD $\frac{1}{4}$ SD
C 31,131	0247852	Ceramic	82pF \pm 5%	500V	R 45,145	0137667	Carbon film	47k Ω \pm 5%	SRD $\frac{1}{4}$ SD
C 32,132	0275016	Same as C6			R 46,146	0137851	Carbon film	1k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 33,133	0275111	Mylar	0.01 μ F \pm 20%		R 47,147	0137852	Carbon film	1.2k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 34,134	0275039	Electrolytic	5 μ F	15WV	R 48,148	0134377	Composition	2.2 Ω \pm 10%	RC $\frac{1}{2}$ GF
C 36	0252223	Electrolytic	33 μ F	6.3WV	R 49,149	0134377	Same as R48		
C 136	0251325	Electrolytic	47 μ F	10WV	R 50,150	0137812	Same as R26		
C 37,137	0251325	Same as C136			R 51,151	0137801	Same as R17		
C 201	0259717	Electrolytic	2000 μ F	25WV	R 52,152	0137809	Carbon film	470 Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 202	0247848	Ceramic	56pF \pm 5%	500V	R 53,153	0137910	Same as R21		
C 203	0247848	Same as C202			R 55,155	0137901	Carbon film	10k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 204	0275012	Mylar	0.015 μ F \pm 10%		R 56,156	0137953	Carbon film	150k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 205	0275016	Same as C6			R 201	0135322	Composition	120 Ω \pm 10%	RC $\frac{1}{2}$ GF
C 206	0275013	Same as C8			R 202	0135322	Same as R201		
C 207	0275013	Same as C8			R 203	0190119	Wire wound	33 Ω \pm 10%	RG4P
C 208	0252525	Electrolytic	50 μ F	16WV	R 204	0134286	Composition	5.6 Ω \pm 10%	RC $\frac{1}{2}$ GF
C 209	0252535	Electrolytic	470 μ F	16WV	R 205	0137851	Same as R46		
C 210	0275013	Same as C8			R 206	0137851	Same as R46		
C 211	0275111	Mylar	0.01 μ F \pm 10%		R 207	0137854	Carbon film	1.8k Ω \pm 10%	SRD $\frac{1}{4}$ SD
C 212	0275013	Same as C8			R 208	0137803	Same as R32		
C 213	0275111	Same as C211			R 209	0137811	Same as R39		
C 301	0216521	Oil	0.1 μ F \pm 20%	400WV	R 212	0134300	Composition	82 Ω \pm 10%	RC $\frac{1}{2}$ GF
C 302	0216521	Same as C301			R 213	0134418	Composition	5.6M Ω \pm 10%	RD $\frac{1}{4}$ L
C 303	0216521	Same as C301			R 301	0123224	Carbon film	10 Ω \pm 10%	RD $\frac{1}{2}$ LK
C 304	0216521	Same as C301			R 302	0123224	Same as R301		
C 305	0216521	Same as C301			R 303	0190093	Wire wound	240 Ω	RG5P
C 306	0216521	Same as C301			R 304	0126285	Carbon film	150 Ω \pm 10%	RD2LK
C 307	0216521	Same as C301			R 305	0126298	Carbon film	270 Ω \pm 10%	RD2LK
C 308	0216521	Same as C301			R 306	0134285	Composition	4.7 Ω \pm 10%	RC $\frac{1}{2}$ GF
C 313	0256909	Metalized	25 μ F	250WV	R 307	0127204	Carbon film	82 Ω \pm 10%	RD3LK
C 314	0253231	Electrolytic	100 μ F		R 308	0190093	Same as R303		
C 315	0253231	Same as C314			V R 1	0153410	Variable	50k Ω (A)	RV24A503A
RESISTORS:					V R 2	0153176	Variable	50k Ω (A)	RV24A503A
R 1,101	0122369	Composition	1.2k Ω \pm 10%	RD $\frac{1}{4}$ L	V R 3	0151120	Semi variable	2k Ω (B)	RS10A202
R 2,102	0137952	Carbon film	120k Ω \pm 10%	SRD $\frac{1}{4}$ SD	V R 4	0153410	Same as VR1		
R 3	0137857	Carbon film	3.3k Ω \pm 10%	SRD $\frac{1}{4}$ SD	V R 5	0153126	Same as VR2		
R 4,104	0122462	Composition	22k Ω \pm 10%	RD $\frac{1}{4}$ L	V R 6	0151120	Same as VR3		
R 5,105	0122456	Composition	18k Ω \pm 10%	RD $\frac{1}{4}$ L	V R 7	0159024	Semi variable	500k Ω (B)	RS16A504
R 6,106	0122463	Composition	27k Ω \pm 10%	RD $\frac{1}{4}$ L	V R 8	0159024	Same as VR7		
R 7,107	0137902	Carbon film	12k Ω \pm 10%	SRD $\frac{1}{4}$ L	V R 9	0159024	Same as VR7		
R 8,108	0137907	Carbon film	33k Ω \pm 10%	SRD $\frac{1}{4}$ SD	V R 10	0159024	Same as VR7		
R 9,109	0137807	Carbon film	330 Ω \pm 10%	SRD $\frac{1}{4}$ SD	V R 11	0151357	Variable	20k Ω (B) M	RS10A203
R 10,110	0137807	Same as R9			V R 12	0151357	Same as VR11		
R 11,111	0137609	Carbon film	2.2k Ω \pm 5%	SRD $\frac{1}{4}$ SD	V R 13	0151357	Same as VR11		
R 12,112	0137611	Carbon film	2.7k Ω \pm 5%	SRD $\frac{1}{4}$ SD	V R 14	0151357	Same as VR11		
R 13,113	0137953	Carbon film	150k Ω \pm 10%	SRD $\frac{1}{4}$ SD					
R 14,114	0137903	Carbon film	15k Ω \pm 10%	SRD $\frac{1}{4}$ SD					

MODEL TRQ-777(A) SERVICE MANUAL

MODEL TRQ-777(W) SERVICE MANUAL

CIRCUIT DIAGRAM

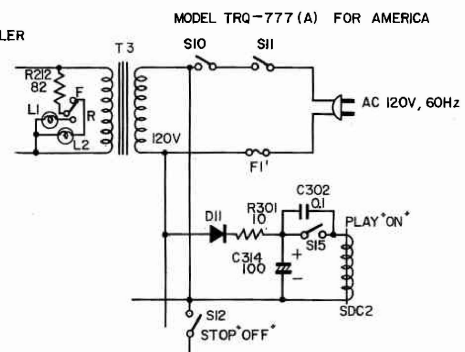
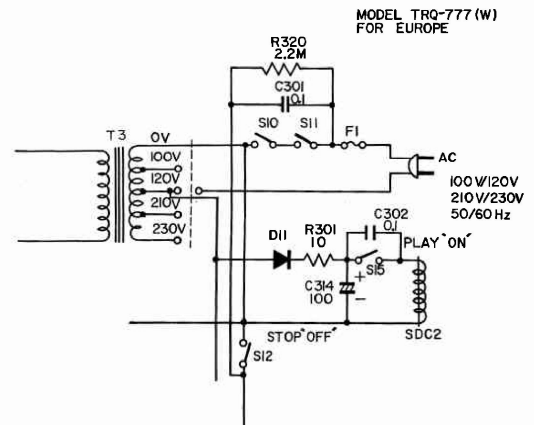
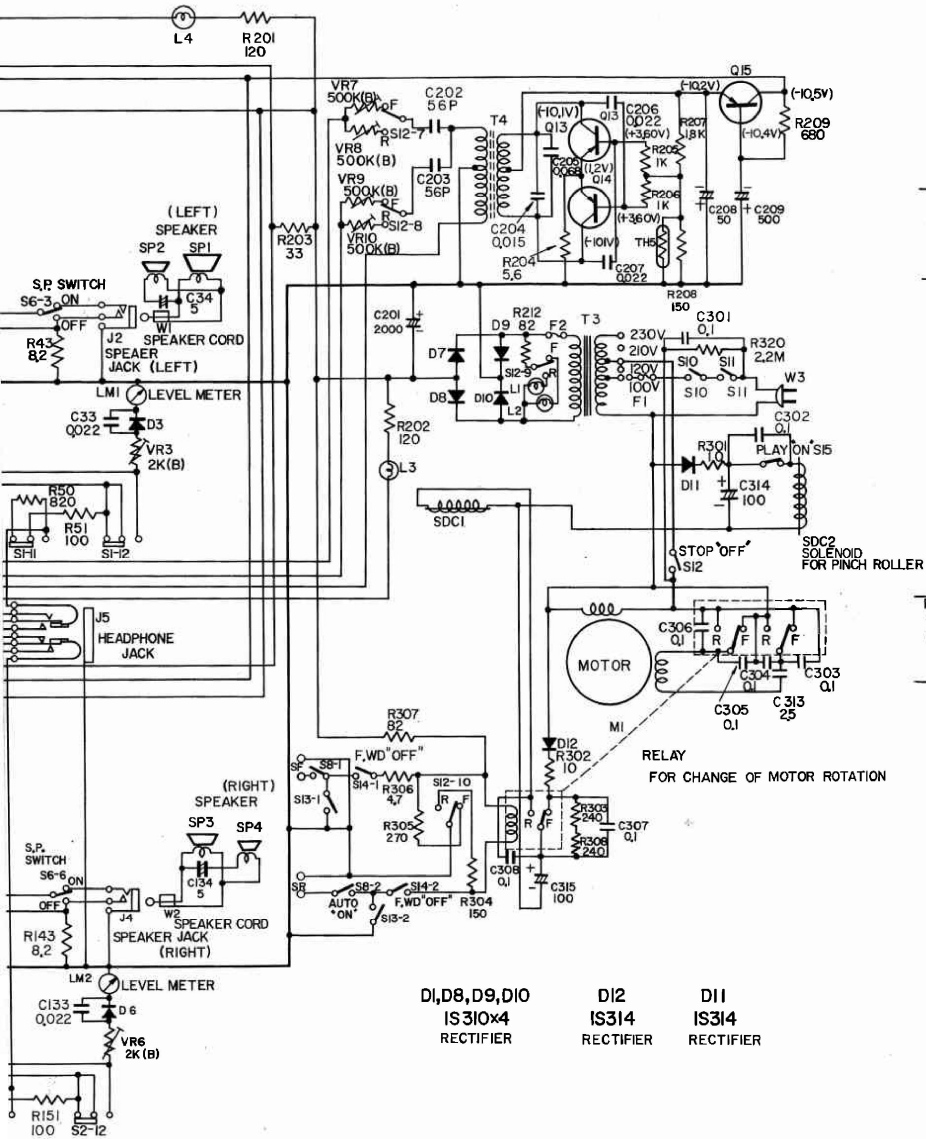


D3
HV-16
RECT. for L.M.

Q13, Q14
2SB370(B)x2
BIAS OSC.

TH5
D-IE
TEMP. COMP.

Q15
2SB370(A)
BIAS OSC.



D1, D8, D9, D10
IS310x4
RECTIFIER

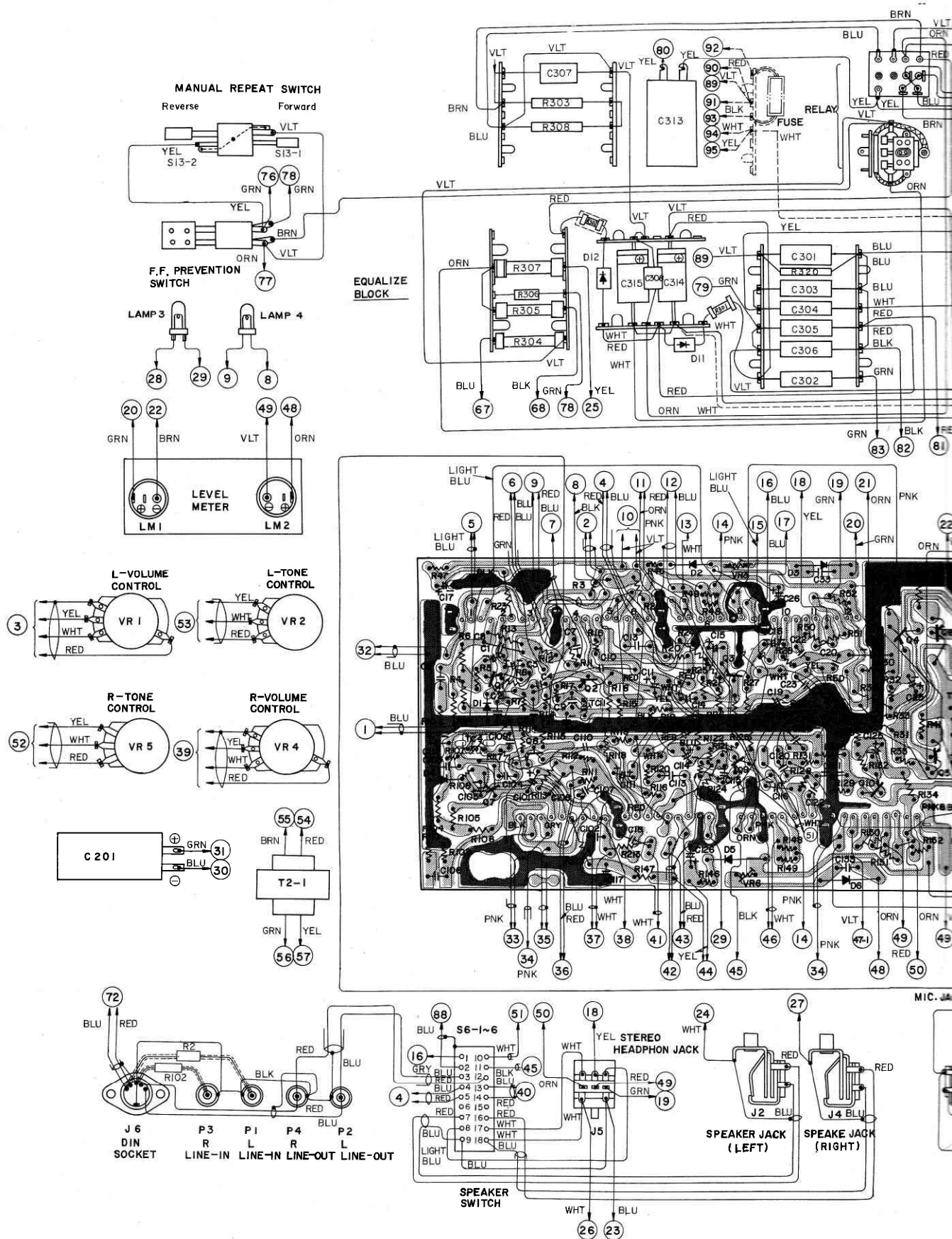
D12
IS314
RECTIFIER

D11
IS314
RECTIFIER

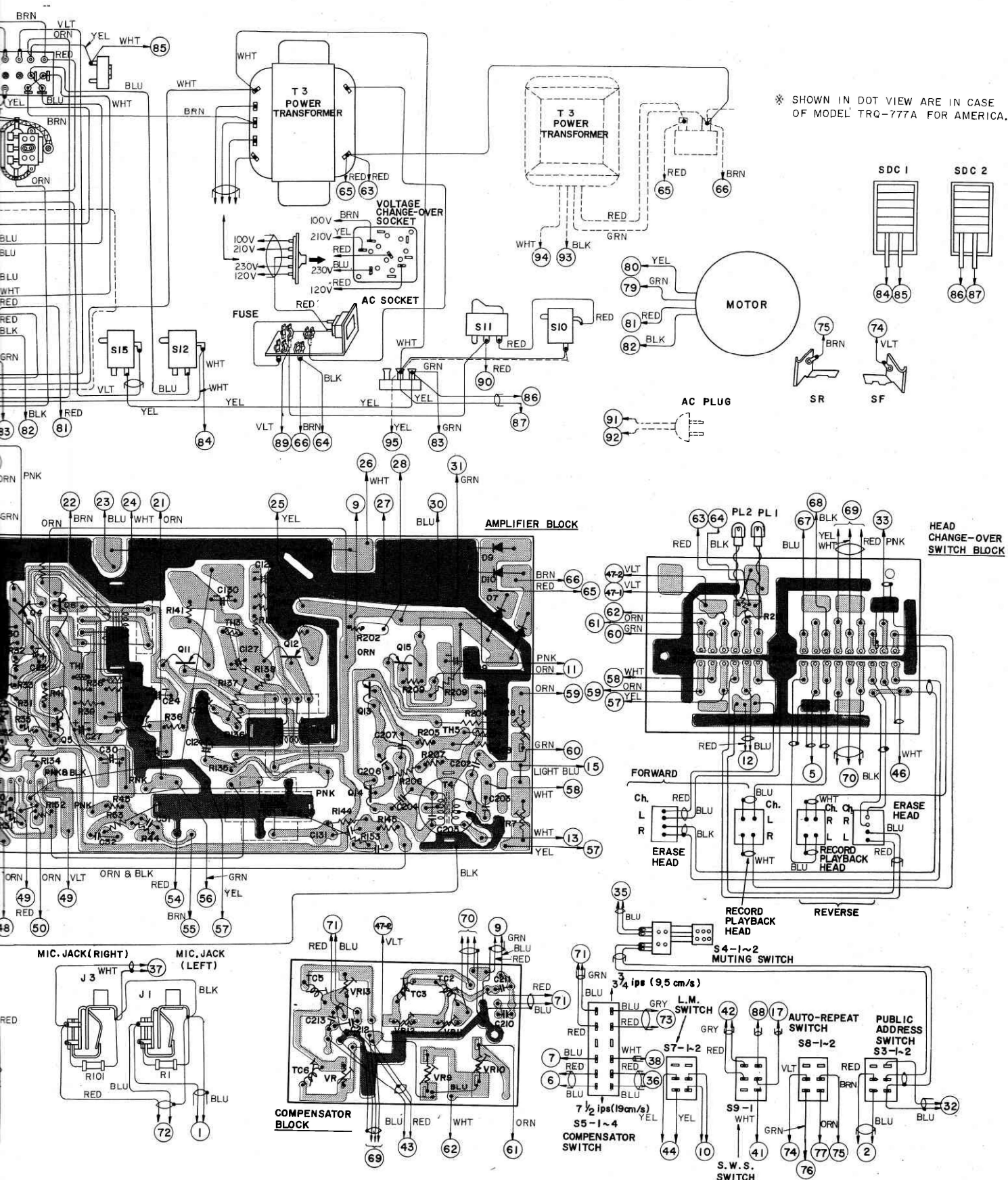
- NOTE 1. 'F' MEANS FORWARD CONDITION, 'R' MEANS REVERSE CONDITION.
2. VOLTAGE MEASURED WITH VOLTMETER, BASE OF ⊕ SIDE EARTH, VOLUME CONTROL AT MINIMUM AND NO SIGNAL.
VOLTAGE SHOWN IN () ARE IN RECORDING CONDITION AND EXCEPT () IS PLAYBACK CONDITION.
3. ALL RESISTANCE VALUES IN OHMS, K=1000
4. ALL CAPACITANCE VALUES IN μF EXCEPT 'P' NOTED.
P=μF F=PF

x2 D6
HV-16
RECT. for L.M.

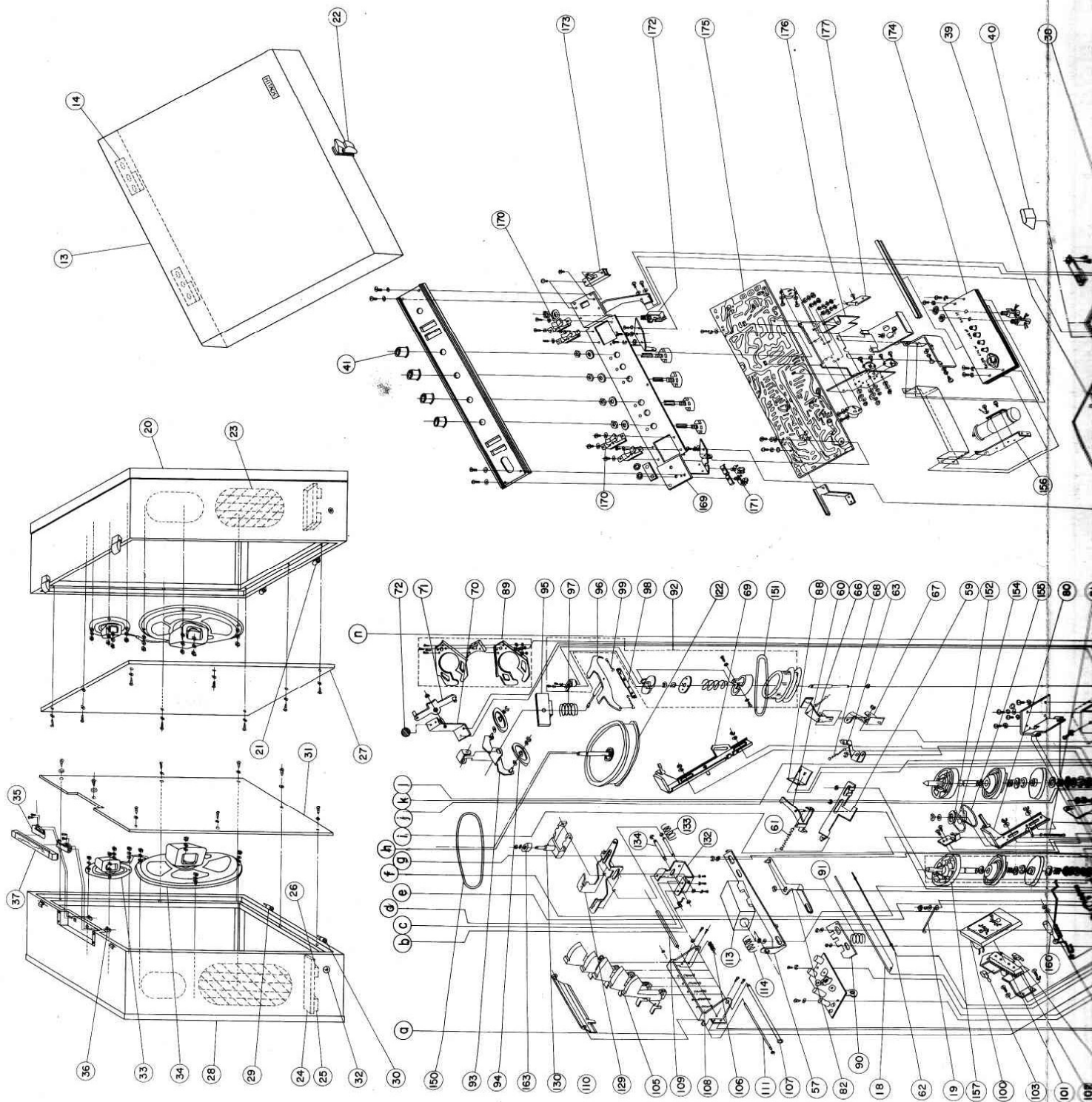
CIRCUIT BOARD DIAGRAM



**MODEL TRQ-777(A)
TRQ-777(W) SERVICE MANUAL**



DISASSEMBLED DIAGRAM



MODEL TRQ-777(A) SERVICE MANUAL

TRQ-777(W)

Symbol No.	Stock No.	Description			Symbol No.	Stock No.	Description		
TRANSISTORS:									
Q	1	0573018		2SB73(B)	9	6700032		Leg	
Q	2	0573066		2SC281(C)	10	0971273		Rubber base 1 (front)	
Q	3	0573469		2SC281(C)	11	0971274		Rubber base 2 (rear)	
Q	4	0573114		2SB77(B)		8811116		Washer-4mm ϕ	
Q	5	0573031		2SB367(B)		8813126		Washer-4mm ϕ spring	
Q	6	0573031	Same as Q5			8711625		Screw-4mm ϕ \times 25mm pan head	
Q	7	0573018	Same as Q1			8821116		Nut-4mm ϕ	
Q	8	0573066	Same as Q2					(4 req'd) for leg mounting	
Q	9	0573469	Same as Q3		12	6602701		Handle holder	
Q	10	0573114	Same as Q4		8757210			Screw-2.4mm ϕ \times 10mm wood	
Q	11	0573031	Same as Q5					(4 req'd) for handle holder mounting	
Q	12	0573031	Same as Q5		13	6114411		Cabinet cover ass'y	
Q	13	0573023		2SB370(B)	14	0960201		Hinge B (right)	
Q	14	0573023	Same as Q13		8775410			Screw-3.1mm ϕ \times 10mm wood flat	
Q	15	0573022		2SB370(A)				(6 req'd) for hinge B mounting	
D	1	0575001	Diode	1N34A	15	0960170		Handle bracket ass'y	
D	2	0575001	Same as D1		8736420			Screw-3mm ϕ \times 20mm flat	
D	3	0534011	Varistor	HV-16				(4 req'd) for handle bracket mounting	
D	4	0575001	Same as D1		16	6330112		Handle ass'y	
D	5	0575001	Same as D1		17	7174532		Washer	
D	6	0534011	Same as D3		8717616			Screw-4mm ϕ \times 16mm pan head	
D	7	0552010	Diode	1S310				(4 req'd) for chassis mounting	
D	8	0552010	Same as D7		8781438			Screw-3mm ϕ \times 8mm tapping	
D	9	0552010	Same as D7					(4 req'd) for cabinet bracket mounting	
D	10	0552010	Same as D7		18	7184191		Lock wire	
D	11	0552006	Diode	1S314	19	7184201		Holder wire	
D	12	0552006	Same as D11		8781438			Screw-3mm ϕ \times 8mm tapping	
TH1~4	0576031	Thermistor		13D27				for holder wire mounting	
TH5	0576057	Thermistor		D-1E	20	6114464		Speaker box ass'y (right)	
TRANSFORMERS:									
T	1	0441054	Input		21	0960201		Hinge B (right)	
T	2	5250891	Output		8775410			Screw-3.1mm ϕ \times 10mm wood	
T	3	5210272	Power	120V				(6 req'd) for hinge B mounting	
T	3	5210411	Power	100/120/210/230V	22	0621761		Lock	
T	4	0316534	Bias osc. coil		0621763			Hinge mounting screw	
COILS:									
TC	1	0324066	Trap		23	6114493		Speaker board (A) ass'y	
TC	2	5270031	Variable	6mH	0645587			Special washer (8 req'd)	
TC	3	5270031	Same as TC2		8821114			Nut-3mm ϕ (7 req'd)	
TC	4	0324066	Same as TC1					for speaker board (A) mounting	
TC	5	5270031	Same as TC2		25	0971273		Rubber base 1 (front)	
TC	6	5270310	Same as TC2		26	0971274		Rubber base 2 (rear)	
for Final assembly									
		5420071	Microphone			8811116		Washer-4mm ϕ	
		5740731	Patch cord			8813126		Washer-4mm ϕ spring	
1		6114381	Cabinet ass'y TRQ-777 (W), (E)			8711625		Screw-4mm ϕ \times 25mm pan head	
		6114382	Cabinet ass'y TRQ-777 (A)			8821116		Nut-4mm ϕ	
		8775210	Screw-2.4mm ϕ \times 10mm wood flat					(4 req'd) for leg mounting	
			(8 req'd) for metal mounting		27	6114511		Speaker board (B) ass'y (right)	
2		0960194	Hinge A (right long)		28	6114463		Speaker box ass'y (left)	
3		0960199	Hinge A (right short)		29	0960194		Hinge A (right long)	
		8775410	Screw-3.1mm ϕ \times 10mm flat head		30	0960199		Hinge A (right short)	
			(6 req'd) for hinge A mounting			8775410		Screw-3.1mm ϕ \times 10mm flat head	
								(6 req'd) for hinge mounting	
4		0621772	Lock holder			6114492		Speaker board (A) ass'y	
		0621763	Screw			6602701		Handle holder	
			(2 req'd) for hinge mounting			8757210		Screw-2.4mm ϕ \times 10mm wood	
5		0015448	Ventilation grille (1)					(4 req'd) for holder mounting	
6		0015447	Ventilation grille (2)			0645587		Special washer (8 req'd)	
		0645587	Special washer			8821114		Nut-3mm ϕ (9 req'd)	
		8781438	Screw-3mm ϕ \times 8mm tapping					for holder mounting	
			(8 req'd) for grille mounting			0971273		Rubber base 1 (front)	
7		7711782	Accessory compartment			0971274		Rubber base 2 (rear)	
		7711781	Accessory compartment			8811116		Washer-4mm ϕ	
		8811114	Washer-3mm ϕ			8813126		Washer-4mm ϕ spring	
		8751410	Screw-3.1mm ϕ \times 10mm wood			8711625		Screw-4mm ϕ \times 25mm pan head	
			(8 req'd) for accessory compartment mounting			8821116		Nut-4mm ϕ	
								(4 req'd) for leg mounting	
8		0015464	Accessory compartment lid ass'y		31	6114512		Speaker board (B) ass'y (left)	
		8811231	Washer-2mm ϕ		32	0543229		Pin jack	
		8715106	Screw-2mm ϕ \times 6mm pan head			8755310		Screw-2.7mm ϕ \times 10mm wood	
			for accessory compartment lid button mounting			8812113		Washer-2.6mm ϕ	
		8811114	Washer-3mm ϕ					(4 req'd) for jack mounting	
		8751413	Screw-3.1mm ϕ \times 13mm wood			0964036		Washer-3mm ϕ	
			(3 req'd) for accessory compartment lid mounting			0964037		Screw-3.1mm ϕ \times 16mm wood	
								(16 req'd) for speaker board (B) mounting	

MODEL TRQ-777(A) SERVICE MANUAL

TRQ-777(W)

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
33	5410301	Speaker-3 inches	74	5620271	Slide switch
34	2410151	Speaker-8 inches	75	7502972	Brake wire
	8811114	Washer-3mm ϕ	76	7168361	Pause arm ass'y
	8814124	Lock washer 3mm ϕ	77	6311361	Spring for pause arm
	8821114	Nut-3mm ϕ	78	5630351	Micro switch (V-1A 445)
		(16 req'd) for speaker mounting		8711418	Screw-3mm ϕ \times 18mm pan head
	8751410	Screw-3.1mm ϕ \times 10mm wood		8813124	Washer-3mm ϕ spring
		(2 req'd)		8811114	Washer-3mm ϕ
35	0960170	Handle bracket ass'y			(2 req'd) for micro switch mounting
	8736416	Screw-3mm ϕ \times 16mm flat (4 req'd)	79	7503711	Tension plate ass'y
		for handle bracket mounting		8781438	Screw-3mm ϕ \times 8mm tapping
36	7173581	Handle holder			(6 req'd) for tension plate mounting
37	6330112	Handle ass'y	80	7168401	Pause lever ass'y
38	6114551	Escutcheon ass'y		0948544	Fiber washer
	6602741	Panel (2)		0941259	"E" ring
	0948482	Washer-fiber			(2 req'd) for pause lever mounting
	8745408	Screw-3mm ϕ 8mm bind	81	0662195	Spring for pause lever
		(4 req'd) for panel (2) mounting	82	7168511	Pressure roller arm ass'y
	8813124	Spring washer-3mm ϕ (7 req'd)	83	7172021	Idler shifter
	8711408	Screw-3mm ϕ \times 8mm pan head (7 req'd)	84	7503781	Idler shifter shaft
	8711410	Screw-3mm ϕ \times 10mm pan head	85	7172032	Idler shifter supporter
	8811114	Washer-3mm ϕ washer (8 req'd)		8781438	Screw-3mm ϕ \times 8mm tapping
		for escutcheon mounting			for idler shifter support mounting
39	6161541	Head cover ass'y	86	7175721	Fast forward arm
	0747306	Screw-2.6mm ϕ \times 6mm bind	87	6311381	Fast forward spring
		(2 req'd) for head cover mounting	88	7172041	Belt shifter guide
105	6261922	Push button		8781438	Screw-3mm ϕ \times 8mm tapping
41	6261931	Knob ass'y			for belt shifter guide mounting
		for Chassis assembly	89	7172051	Belt shifter ass'y
				8711412	Screw-3mm ϕ \times 12mm pan head
42	7168172	Motor holder plate		8813124	Spring washer-3mm ϕ
	8711608	Screw-4mm ϕ \times 8mm pan head (4 req'd)		8821114	Nut-3mm ϕ
	8813126	Spring washer-4mm ϕ (4 req'd)			(4 req'd) for belt shifter mounting
43	0971120	Motor cushion	90	7168581	Lock plate
44	7500212	Collar	91	0639391	Spring for lock plate
45	5570001	Motor		0948544	Fiber washer for lock plate
46	6340761	Motor pulley ass'y	92	6410191	Pulley ass'y
47	6340771	Motor pulley	93	7168651	Idler arm ass'y
48	7771252	Set screw	94	6380061	Idler
49	7502921	Pulley bearing		7731151	Oil washer
50	7502931	Bearing nut	95	7172071	Idler guide
51	6340441	Bearing (under side)	96	7168671	Idler change-over arm ass'y
52	6340442	Bearing (upper side)	97	6311441	Idler shifter spring
53	7168212	Fast plate	98	6350081	Idler exchange belt
54	7168221	Play plate ass'y	99	6310542	Spring for idler
55	0948544	Washer-fiber		0941258	"E" ring for idler arm
	0941259	"E" ring	100	5550251	Level indicator
		(2 req'd)	102	7662601	Supporter for level indicator
		for play plate mounting	101	7662591	Cushion for level indicator
56	0639009	Spring for play plate	103	0594111	Pilot lamp
57	7168242	Polarity change-over plate ass'y	104	0948876	Lamp cushion
	0948544	Washer-fiber	40	6703911	Push button
	0941259	"E" ring	106	6311471	Spring for push button shaft
		(2 req'd)	107	7503091	Shaft for button
		for plate mounting	108	0948551	Spring for push button
58	7168271	Pad change over plate ass'y	109	7503101	Button (S) shaft
59	7168291	Brake plate	110	7168701	Stopper plate
60	7168301	Play fast arm ass'y	111	7503081	Stopper shaft
61	6313061	Play fast spring		8781438	Screw-3mm ϕ \times 8mm tapping
62	7502971	Brake wire			(4 req'd) for button holdr mounting
63	7172171	Brake arm (R) ass'y	112	6310891	Spring for lock plate
64	7168331	Brake arm (L-2)	113	5640102	DC solenoid
65	0662168	Spring for brake (L-2)		8711405	Screw-3mm ϕ \times 5mm pan head
66	7172181	Brake arm (L-1) ass'y		8813124	Spring washer-3mm ϕ
67	7168351	Pause brake arm			(3 req'd) for solenoid mounting
68	0662108	Spring for brake (L-1)	114	6311461	Polarity plunger spring
69	7168441	Tape speed selector lever ass'y		8781436	Screw-3mm ϕ \times 6mm tapping
70	7171931	Shifter holder ass'y			(3 req'd) for plunger holder mounting
71	7171951	Shifter arm ass'y	115	5640111	DC solenoid
72	0944879	Ball-4mm ϕ		8711405	Screw-3mm ϕ \times 5mm pan head
	8781438	Screw-3mm ϕ \times 8mm tapping		8813124	Washer-3mm ϕ spring
		(2 req'd) for shifter holder ass'y mounting			(4 req'd) for DC solenoid mounting
73	7171972	Equalizer arm cramping work ass'y	116	7503111	Plunger rod
	8781436	Screw-3mm ϕ \times 6mm tapping	117	6310901	Spring for pressure roller
	0711305	Screw-2.6mm ϕ \times 5mm pan head	118	7503121	Pressure roller plunger pin
		(2 req'd)			
		for equalizer holder mounting			

MODEL TRQ-777(A) SERVICE MANUAL TRQ-777(W)

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description	
119	8821116	Nut-4mm \varnothing Washer-4mm \varnothing } (4 req'd) for plunger rod mounting	152	8711406	Screw-3mm \varnothing \times 6mm pan head Spring washer-3mm \varnothing }	
	8811116			(4 req'd) for pad plate mounting		
	7175801	Fuse holder ass'y TRQ-777 (W), (E)		6340341	Counter pulley	
	7175802	Fuse holder ass'y TRQ-777 (A)		0636553	Washer for rewind	
	0542215	AC plug TRQ-777 (W), (E)		5550242	Counter	
	0591163	Fuse 2.0A		8813124	Spring washer-3mm \varnothing }	
	0591162	Fuse		8711405	Screw-3mm \varnothing \times 5mm pan head (2 req'd) for counter mounting	
	7168751	Recording lever (R) ass'y		154	7660162	Counter belt (big)
	7168781	Recording lever (L) ass'y		155	0971193	Counter belt (small)
	0941561	"E" ring for flywheel		156	9169071	Jack holder (R)
0637121	Fiber washer for oil washer mounting	8813124	Washer-3mm \varnothing spring			
6370111	Flywheel ass'y	8711406	Screw-3mm \varnothing \times 6mm pan head (2 req'd) for jack holder mounting			
6360001	Capstan 50Hz	8711406	P.C.B. holder (E)			
6360002	Capstan 60Hz	8813124	Washer-3mm \varnothing spring			
6360011	Capstan screw	8711406	Screw-3mm \varnothing \times 6mm pad screw (2 req'd) for holder (E) mounting			
7612042	Nylon washer for flywheel	7169091	P.C.B. holder (F)			
7503151	Flywheel metal	8813124	Washer-3mm \varnothing spring			
7175102	Pad change-over plate	8711406	Screw-3mm \varnothing \times 6mm pan head (2 req'd) for holder (F) mounting			
7503161	Pad change-over ring	6410341	Reel ass'y			
7168941	Pressure roller arm	6410381	Reel plate ass'y			
7172081	Pressure roller plate ass'y	6311131	Shut off spring			
7506741	Pressure roller shaft ass'y	7503221	Balancer			
6312982	Pad spring	0636553	Washer			
7168981	P roller support	0941259	"E" ring			
6310911	P arm spring	0539135	Micro switch TRQ-777 (A)			
7503181	P roller support shaft	0539132	Micro switch TRQ-777 (W), (E)			
8813124	Spring washer-3mm \varnothing	8813124	Washer-3mm \varnothing spring			
8711406	Screw-3mm \varnothing \times 6mm pan head (3 req'd) for P roller supporter mounting	8811114	Washer-3mm \varnothing			
7168991	Head plate ass'y	8711416	Screw-3mm \varnothing \times 16mm pan head (2 req'd) for micro switch mounting			
7503203	Tape guide (left)	8813124	Washer-3mm \varnothing spring (2 req'd)			
7503204	Tape guide (right)	8811114	Washer-3mm \varnothing			
7180751	Short plate (L) ass'y	8711405	Screw-3mm \varnothing \times 5mm pan head (2 req'd) for shut off holder mounting			
6706601	Insulating plate	7169121	Power switch holder ass'y			
0638551	Fiber washer	0533173	Seesaw switch TRQ-777 (A)			
7180761	Short plate (R) ass'y	0533161	Seesaw switch TRQ-777(W), (E)			
8711406	Screw-3mm \varnothing \times 6mm pan head (4 req'd)	8813124	Washer-3mm \varnothing spring			
8711408	Screw-3mm \varnothing \times 8mm pan head (4 req'd)	8711406	Screw-3mm \varnothing \times 6mm pan head for seesaw switch mounting			
8813124	Spring washer-3mm \varnothing (12 req'd)	8813124	Washer-3mm \varnothing spring (2 req'd)			
0513222	Erase head	8711406	Screw-3mm \varnothing \times 6mm pan head			
0513293	Record playback head	8813124	Washer-3mm \varnothing spring (2 req'd)			
0711306	Screw-2.6mm \varnothing \times 6mm pan head	8711406	Screw-3mm \varnothing \times 6mm pan head			
0948102	Head adjust spring	8711432	Screw-3mm \varnothing \times 32mm pan head for power switch holder mounting			
0711316	Screw-2.6mm \varnothing \times 16mm pan head (2 req'd)	163	6380041	Pressure roller (50Hz) (Pinch-roller)		
8811113	Washer-2.6mm \varnothing (2 req'd)	6380042	Pressure roller (60Hz) (Pinch-roller)			
7504841	Tape guide	5630351	Micro switch			
0948154	Spring for tape guide	8711418	Screw-3mm \varnothing \times 18mm pan head			
8711405	Screw-3mm \varnothing \times 5mm pan head	8811114	Washer-3mm \varnothing			
8811114	Washer-3mm \varnothing	8813124	Spring washer-3mm \varnothing (2 req'd) for micro switch mounting			
8813124	Spring washer-3mm \varnothing (4 req'd) for pad plate mounting	5630461	Lever switch			
7176511	Pad plate ass'y (left)	0711305	Screw-2.6mm \varnothing \times 5mm pan head			
7176512	Pad plate ass'y (right)	8812113	Washer-2.6mm \varnothing			
7169031	Direction switch holder	8813123	Washer-2.6mm \varnothing spring (4 req'd) for lever switch mounting			
0948756	Pad (erase)	5210272	Power transformer (60Hz, 120V)			
0948835	Pad (recording)	5210411	Power transformer (50/60Hz, 100/120/210/230V)			
0539138	Lever switch	8711606	Screw-4mm \varnothing \times 6mm pan head			
8813123	Spring washer-2.6mm \varnothing spring	8813126	Washer-4mm \varnothing spring (2 req'd) for trans mounting			
0711305	Screw-2.6mm \varnothing \times 5mm pan head	8711606	Screw-4mm \varnothing \times 6mm pan head			
8812113	Washer-2.6mm \varnothing (2 req'd) for lever switch mounting	8813126	Washer-4mm \varnothing \times 6mm pan head (4 req'd) for holder mounting			
8711405	Screw-3mm \varnothing \times 5mm pan head	8781436	Screw-3mm \varnothing \times 6mm tapping (3 req'd)			
8813124	Spring washer-3mm \varnothing (2 req'd) for direction switch holder mounting	7175791	Voltage change-over holder ass'y TRQ-777 (W), (E)			
0594111	Pilot lamp					
6350071	Play belt					
0971126	Rewinding belt					

MODEL TRQ-777(A) SERVICE MANUAL

TRQ-777(W)

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
	8781436	Screw-3mm ϕ \times 6mm tapping (2 req'd) for holder mounting		8711406	screw-3mm ϕ \times 6mm pan head
	7162991	Plug cover ass'y		8813124	Spring washer-3mm ϕ (8 req'd) for seesaw switch mounting
	8781436	Screw-3mm ϕ \times 6mm tapping (2 req'd) for plug cover holder mountnig	171	0543082	Jack (red) (Mic.)
	0593587	Power cord TRQ-777 (A)		0948771	Insulating washer
	5740481	Power cord TRQ-777 (W), (E)		0635594	Jack washer (2req'd) for jack (red)
	8781438	Screw-3mm ϕ \times 8mm tapping (2 req'd) for capacitor mounting	172	5670261	Head phone jack
	6212751	Jack plate ass'y		0958453	Washer for head phone jack
	8813124	Washer-3mm ϕ spring	173	0532177	Slide switch for speaker switch
	8711406	Screw-3mm ϕ \times 6mm (4 req'd) for jack plate mounting		0721304	Screw-2.6mm ϕ \times 4mm flat (2 req'd) for slide swich mounting
	8711406	Screw-3mm ϕ \times 6mm pan head	174	5670291	Jack plate
	8813124	Washer-3mm ϕ spring (3 req'd) for head change-over P.C.B. mounting		0948482	Washer-fiber
	8711406	Screw-3mm ϕ \times 6mm pan head (10 req'd)		8711406	Screw-3mm ϕ \times 6mm pan head (2 req'd) for P.C.B. mounting
	8813124	Washer-3mm ϕ spring (10 req'd)		8811114	Washer-3mm ϕ (2 req'd)
	0948482	Washer-fiber		8711406	Screw-3mm ϕ \times 6mm pan head (2req'd)
	8811114	Washer-3mm ϕ for volume holder P.C.B. mounting	175	5511811	P.C.B. ass'y
		for Printed circuit board assembly		5620282	Slide switch (SLD SW 12-2)
166	5620301	Slide switch (SLD SW 6-2)		8811114	Washer-3mm ϕ
167	5620271	Slide switch (SLD SW 4-2)		8813124	Spring washer-3mm ϕ for radiator mounting
	8781436	Screw-3mm ϕ \times 6mm tapping (16 req'd)	176	7171732	Radiator plate support ass'y
	8711410	Screw-3mm ϕ \times 10mm pan head		0015136	Insulating washer
	8813124	Spring washer-3mm ϕ for relay mounting		0629980	Insulating film
168	5640091	Relay		8711408	Screw-3mm ϕ \times 8mm pan head
169	7113831	Volume holder ass'y		8813124	Spring washer-3mm ϕ
170	0533162	Seesaw switch (for signal)		0941207	Wood washer-3mm ϕ
				0629902	Radiator for transistor (Q13, 14) mounting
				7181541	P.C.B. holder (G) ass'y
				8711406	Screw-3mm ϕ \times 6mm pan head
				8813124	Spring washer-3mm ϕ
				8811114	Washer-3mm ϕ
			177	0680175	Radiator for transistor (Q15) mounting



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