SD-7000
SERVICE HANDBOOK

SANSUI ELECTRIC COMPANY LIMITED

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1 SPECIFICATIONS

Recording system: 4-track 2-channel stereophonic recording

Reel: 7-inch reel maximum

Tape speed: 19 cm/sec and 9.5 cm/sec (7½ ips and 3¾ ips)

Tape speed accuracy: ±0.5% (19 cm/sec, 9.5 cm/sec)

Head:
Erase head — 4-track 2-channel
Record head — 4-track 2-channel
Forward playback head — 4-track 2-channel
Reverse playback head — 4-track 2-channel

Motor:
Capstan motor — 2-speed 4-or 8-pole hysteresis synchronous motor
Two reel motors — Capacitor starting 6-pole induction motor

Rewind/Fast Forward time: Approximately 100 seconds (550 meter tape)

Wow and Flutter: 0.06% WRMS (19 cm)
0.1% WRMS (9.5 cm)

Frequency response: 15 to 25,000 Hz at 19 cm/sec, tape speed (20 to 20,000 Hz ±2 dB)

Signal-to-noise ratio: Greater than 60 dB (at 3% total RMS distortion level, weighted)

Crosstalk:
Greater than 45 dB (1,000 Hz between channels)
Greater than 60 dB (1,000 Hz between adjacent tracks)

Distortion:
Playback preamplifier — Less than 0.15% (at 1 kHz, 1.2 V output)
Tape record/playback — Less than 1.2% (at 1 kHz, 0 VU)

Erase effect: Greater than 60 dB

Inputs:
Microphone — 0.5 mV minimum (50 kΩ)
0.05 mV minimum (600 Ω using microphone transformers)
LINE-1,2—70 mV minimum (100 kΩ)
DIN—14 mV minimum (100 kΩ)

Outputs: LINE, DIN—1.2 V maximum (0 VU = 0.775 V or 0.245 V switchable)
HEADPHONES—10 mW, 8 Ω

Bias Frequency: 100 kHz

Mixing:
Between MIC and LINE-1
Between LINE-1 and LINE-2
Between LINE-1 and DIN

Power requirements: 100 V, 110 V, 120 V, 200 V, 220 V and 240 V AC (by voltage selector) 50/60 Hz

Power consumption: 130 watts

Dimensions: 535 x 260 x 435 mm (21" x 10" x 17")

Weight: 27 kg (5.9 ibs)

Note: Specifications may change without notice.

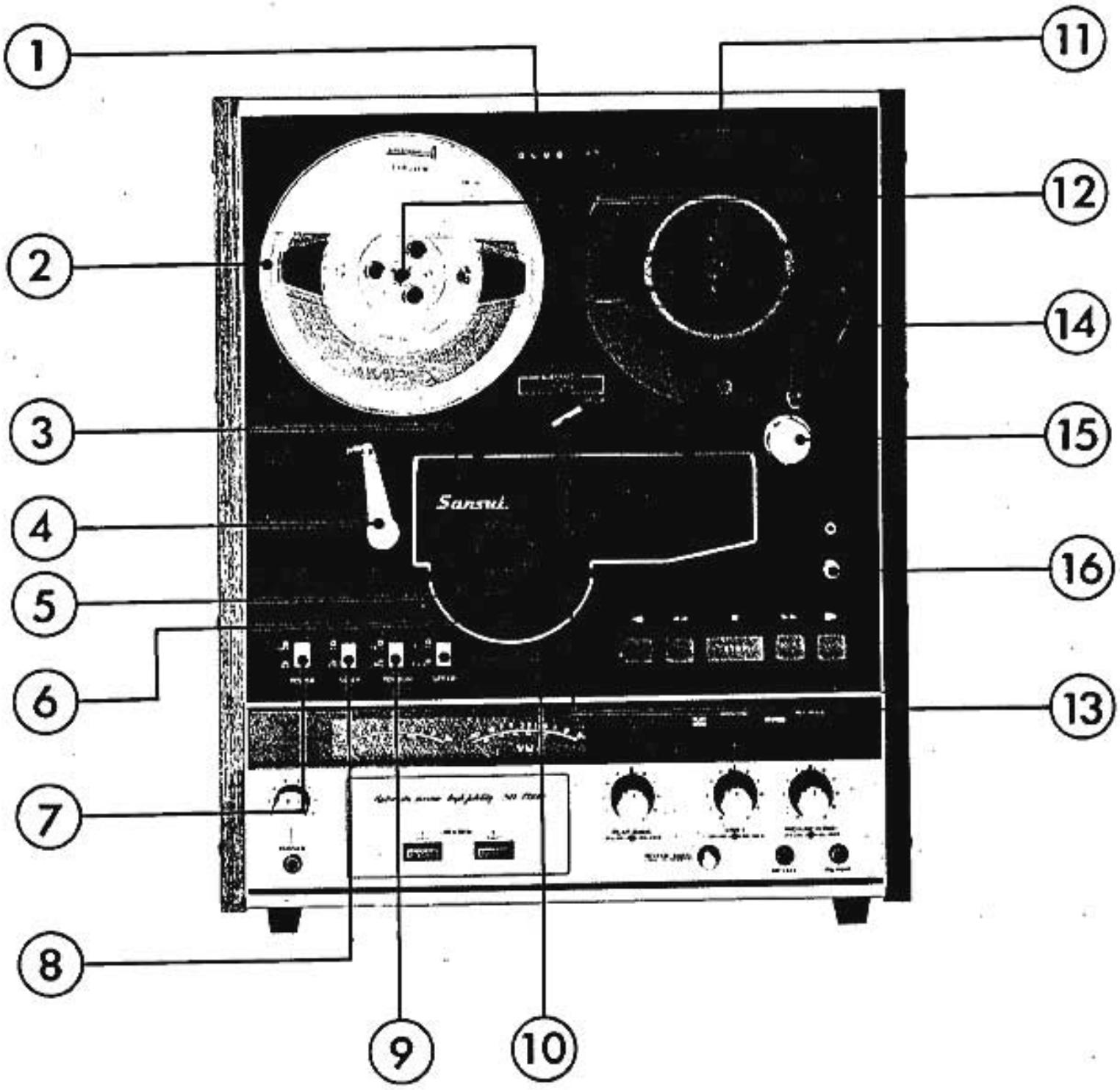
Semiconductors: 36 transistors, 2 FETs, 23 diodes and 1 zener diode.

2SC708A	2 pcs
2SC870	28 pcs
2SC871	6 pcs
2SK24	2 pcs
1N34A	5 pcs
10D4	17 pcs
BS-B-2	1 pc

Accessories:
1. Dust cover — 1 pc
2. Empty reel — RS-7
3. Cleaner — 60-cc fluid and 40 cleaning tips
4. Oil MOBILE DTE 24 (5 cc)
5. Splicing tape — tape width of ¾ inch
6. Tape-sensing foil — 6 mm (W) x 15 mm (15 pcs)
7. Pin plug cord — 1.5 m 2 pcs
8. Fuse — glass-cartridge type (30 mm) 2A 2 pcs
9. Reel spacer — 0.3mm thick 2pcs
10. Polishing cloth — 1 pc
11. Operating Instructions — 1 pc
12. Instruction Sheet — 1 pc

2 CONTROLS INDICATORS AND OTHERS

2-1. Upper Front(1)



① Counter

The counter reading is used to locate desired or selected portions of the tape approximately. The counter can be reset to the "0000" position by the counter reset button located to the right of the counter.

② Left Reel

Reels up to 7 inches can be used.

③ Head Housing

Head housing contains 4 heads; erase, record, reverse playback and forward playback from the left.

④ **Left Tension Arm**

Tension arm performs two main functions. The first is to take away any excessive tape slack during the starting and stopping of tape motion, and caused by the change of diameter of wound tape. Proper tape tension can be maintained during all modes. Secondly this arm is used to stop the system at the end of tape, as the arm slides down and motor power is turned off.

⑤ **Capstan**

Precision machined capstan drives the tape, pulling the tape through the tape path at a constant speed during record and playback modes.

⑥ **Pinch Roller Housing**

Contains the Pinch Roller to hold the magnetic tape tightly against the capstan.

⑦ **Power Switch (POWER)**

Turns the power on or off when the unit is connected to an AC source. Push the button to switch on. When the unit is powered, the VU Meter will light. To turn off the unit, push the button again.

⑧ **Sleep Switch (SLEEP)**

Push the button before going to bed. All the powers, including those of the amplifier unit, the tuner unit etc. connected to the AC socket of the unit are turned off when the tape is perfectly rewound onto the reel.

⑨ **Tension Selector (TENSION)**

Selects the tension applied by the Tension Arm. Tension of 1 MIL (with 100 type tape) without the button pushed, and ½ MIL (with 200 tape, 300 type tape) with the button pushed.

⑩ **Tape Speed Selector (SPEED)**

Changes tape speed from 19 cm/sec (7 ½ ips) to 9.5 cm/sec (3¾ ips), by pushing the selector.

⑪ **Right Reel**

Use the same reel as the left.

⑫ **Reel-Clamper**

Fix the reel onto the Reel Clamper. To secure the reel, pull and turn the clamper by about 60 degrees.

⑬ **Automatic Switch (AUTOMATIC)**

The following operations can be obtained by recording 20 Hz reversing signal or by applying a tape-sensing foil to the required position of tape.

*AUTO REWIND

When the reverse signal is played back after the tape is wound onto the right reel in the forward playback mode, the tape is rewound onto the left reel automatically.

*AUTO REVERSE

When the reverse signal is played back in the forward playback mode, the tape only once starts to run in an opposite direction in the reverse playback mode automatically.

*AUTO REPEAT

The tape keeps reversing at both ends until the Stop Button is pushed.

*MANUAL

When the switch is set to MANUAL, any automatic operation does not work even if the reverse signal is played back nor sensing foil is applied.

⑭ **Right Tension Arm**

This is an arm to stabilize the tape movement increasing the effect of the impedance roller by removing the vibration from the reel motor or tape movement.

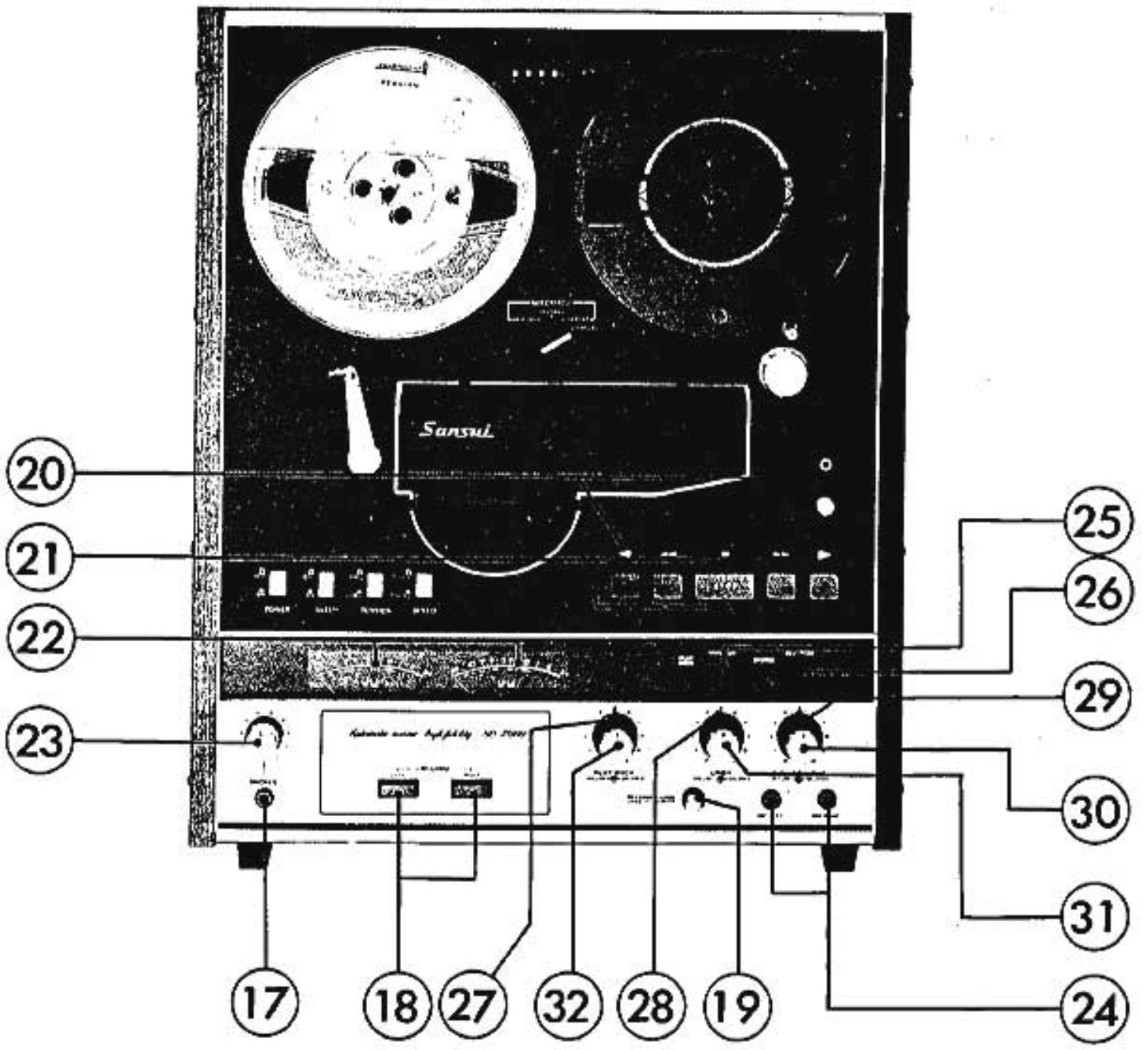
⑮ **Impedance Roller**

Coupling a flywheel of a certain weight to lower the wow and flutter by the inertia. The roller and the Tension Arm work together to keep the tape tension constant.

⑯ **Pause Button (PAUSE)**

Tape travel is stopped in the record and playback modes by pushing this button. The Pause Lamp will light to indicate stop action. To run the tape normally, push the button again. The lamp will turn off.

2-2. Lower Front(2)



⑰ **Phone Jack (PHONE)**

Connect a headphone set having 8 Ω impedance (SANSUI SS-2 or SS-20). The output signal from the LINE OUT can be monitored.

⑱ **Record Button (RECORD)**

Push the Forward Button "▶" with the desired channel of the Record Button pressed simultaneously, to set the unit in the record mode. The Record Button lights to indicate that the unit is in the record mode. The monophonic recording can be done, because both channels can be recorded separately.

⑲ **Reverse Signal Button (REVERSE SIGNAL)**

This button is used to record 20 Hz reverse signal for the automatic operation. Press the Forward Button "▶" with the Reverse Signal Button pulled. The 20 Hz signal recording will be completed by pressing the stop button after tape running of one second.

⑳ **Track and Running Direction Indicator (◀ ▶)**

This lamp indicates the active track and the direction of the tape running.

"▶" Tape runs form the left to the right reel. Active tracks are the first and the third.

"◀" Tape runs from right to left, and tracks 2 and 4 are active.

Tape shall run to the indicated direction instantaniously from the stop position.

㉑ **Tape Transport Control Button**

Reverse Button (◀)

Tape runs from right to left in the reverse playback mode.

Rewind Button (◀◀)

Tape runs from right to left rapidly to be rewound onto the left reel.

Stop Button (STOP)

This button stops the tape movement.
Push the Fast Forward Button " ▶▶ " to slow down the tape speed before the rewind mode is stopped. Likewise push the Rewind Button " ◀◀ " and, then Stop Button to stop the tape from the fast forward.

Fast Forward Button (▶▶)

Tape runs from left to right rapidly, and is wound onto the right reel.

Forward Button (▶)

Tape runs from left to right. This button is used in the forward record and playback.

㉒ VU meter (VU)

These meters indicate record input level and the playback output level. The left meter is for the left channel and the right for the right channel. Adjust the Volume Control so that the pointer reads the position from 1 to 2 of the red region in the maximum output level.

㉓ Headphone Volume Control (PHONE)

Controls the output level from the headphones. The sound can be heard even if this control is turned fully counterclockwise.

㉔ Microphone Jack (MIC)

This jack accepts a high impedance microphone (10 to 50 kΩ). Use the right jack for the right-channel microphone, and the left for the left-channel microphone. When a low impedance microphone (600 Ω) is in use, see "4 Dummy Plug for Microphone Transformer " in the Section 2-3.

㉕ Monitor Switch (MONITOR)

This switch switches the sounds to be recorded and sound playback off the tape in the record mode for monitoring the recording.

(SOURCE) : The sound to be recorded.

(PLAY BACK) : The sound played back off the tape.

㉖ Mode Switch (REC MODE)

This switch is used only in the record mode.

(MONO L + R): This switch is used when the stereo signal is to be recorded in the mono mode, and is also used to check for the balance of the signal levels in the stereophonic recording. This switch does not work when the signal is supplied from the microphone.

(STEREO) : In the stereo mode this switch should not be pushed.

㉗ Playback Balance Control (PLAYBACK)

Controls the output levels from both channels in the playback mode.

㉘ Line Input Balance Control (LINE-1)

Controls the sound volume at both channels, when the signal is supplied from the LINE-1.

㉙ Microphone Input Balance Control (MIC/LINE-2/DIN)

Controls the sound volume at both channels, when the signal is supplied from either MIC, LINE-2 or DIN .

㉚ Microphone Input Volume Control (MIC/LINE-2/DIN)

Controls the input level from either MIC, LINE-2 or DIN. Set the Monitor Switch to SOURCE.

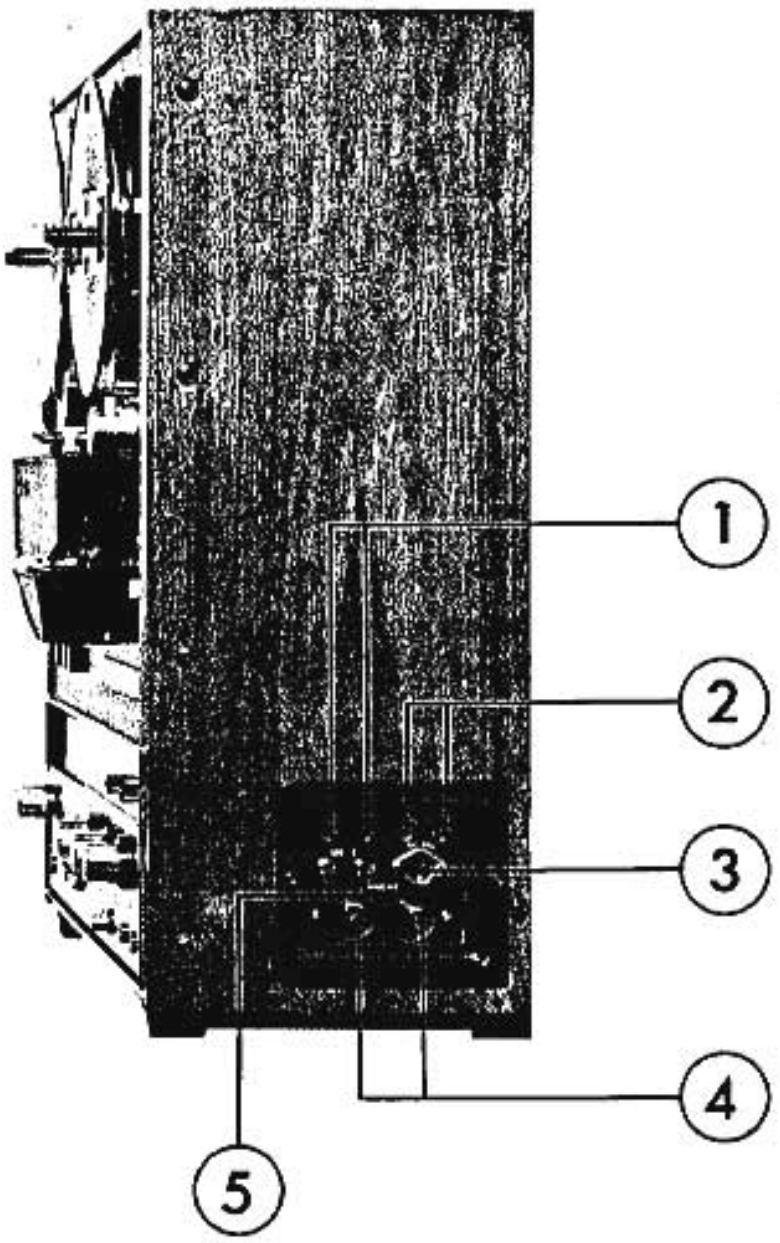
㉛ Line Input Volume Control (LINE-1)

Controls the input level from the LINE-1. Set the Monitor Switch to SOURCE.

㉜ Playback Output Volume Control (PLAYBACK)

Controls the playback output level. Set the Monitor Switch to PLAYBACK. Adjust this control so that the pointer reads the position from 1 to 2 of the red region in the maximum output level.

2-3. Side Panel



① Line Input Jack (LINE-1)

This jack is to be connected to the Recording Output Jack (REC) of the stereo amplifiers or the tuner unit with a pin plug cord (supplied). L jack is for the left channel, and R for the right.

② Line Output Jack (LINE OUT)

In the playback mode, connect this jack to the Tape Input Jack (TAPE MONITOR) of the stereo amplifier unit. Set the Tape Monitor Switch of the amplifier unit to ON.

③ DIN Connector (REC/PB)

This connector is set according to the German DIN Standard. In the record and the playback modes, this is connected with the stereo amplifier unit with a 5-pin cable. Adjust the record input level by the microphone Input Volume Control, and the playback output level by the Playback Output Volume Control.

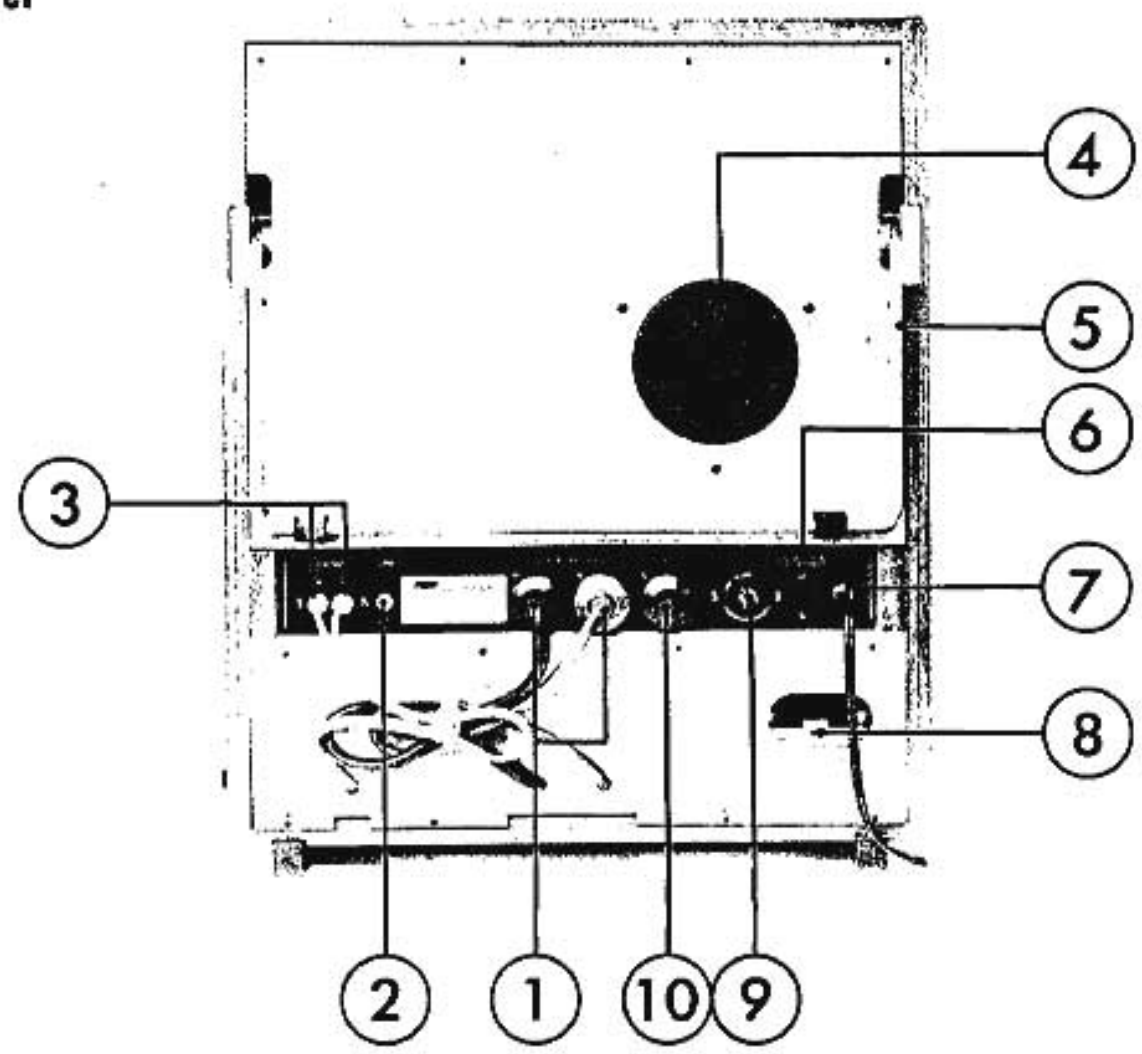
④ Dummy Plug for Microphone Transformer (MIC)

This plug is used on a high-impedance microphone (10 to 50 kΩ) recording. When a low impedance microphone (600 Ω) is in use, replace this plug with a microphone transformer (SANSUI A-603). L is for the left channel and R for the right.

⑤ Line Input Jack (LINE-2)

Mixing can be done between LINE-1 and LINE-2.

2-4. Rear Panel



① Amplifier Connector (TO AMP)

It is connected to the preamplifier section of the unit.

② Ground Terminal (GND)

To eliminate the hum when the unit is connected with the stereo amplifier unit or the tuner unit, connect this ground terminal to that of the other equipment with a pvc wire.

③ Equalizer Connector (EQ OUT)

Connects the output from the equalizer amplifier (equalizer for the playback head) to the line amplifier.

④ Ventilator

Ventilates the inner air of the unit. Be careful not to place the unit close to the wall.

⑤ Reclining Stand

This facilitates the operation of the unit easily when the unit placed at very low position.

⑥ AC Outlet (UNSWITCHED)

This is connected to the power plug from the stereo amplifier unit or the tuner unit. Maximum power is 300 W. Press the Sleep Switch of the Front Panel before going to sleep. All the powers of the connected equipment are turned off automatically when the tape is wound onto the reel.

⑦ Power Cord

Plug this cord to an AC outlet in the room, after checking for the power voltage and frequency.

⑧ Output Voltage Attenuator Selector

Select this switch to LOW (−10 dB), when the sound from the speaker distorted due to the too high output level.

⑨ Power Fuse and Voltage Selector Connector (FUSE)

See Section 9-1. "Maintenance".

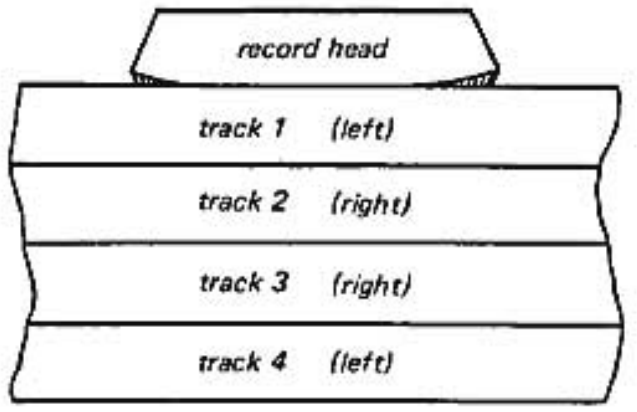
⑩ Remote Connector (REMOTE)

For remote operation in the forward and reverse playback, fast forward, rewind and pause modes, remove the Dummy Plug from the receptacle and connect the remote control unit (SRC-1). Remote operation can be done four meters apart.

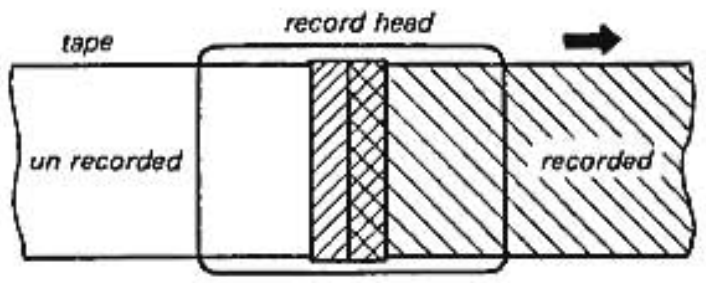
3 4-TRACK RECORDING AND PLAYBACK

3-1. Tracking Pattern

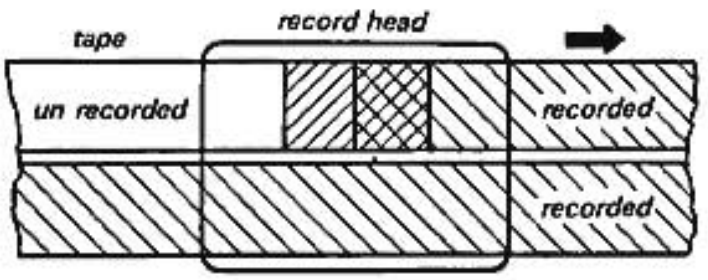
Recording is made on non-glare side of the tape by the recording head. As the tape is passed across the head, the recording pattern will be on its longitudinal. The pattern is called a track. There are several types of tracking pattern such as a full track, 2-track and 4-track. The number of track changes depending on the type of head.



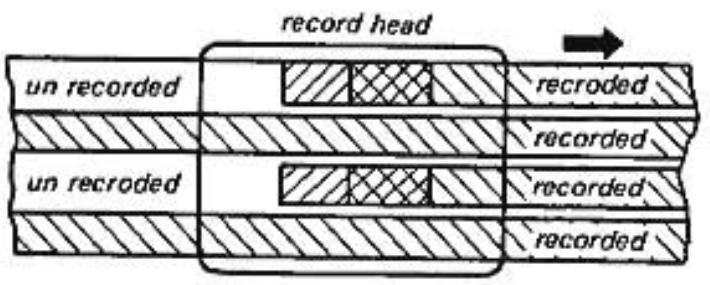
Full Track



2-Track (MONOPHONIC RECORD)



4-Track (STEREOPHONIC RECORD)

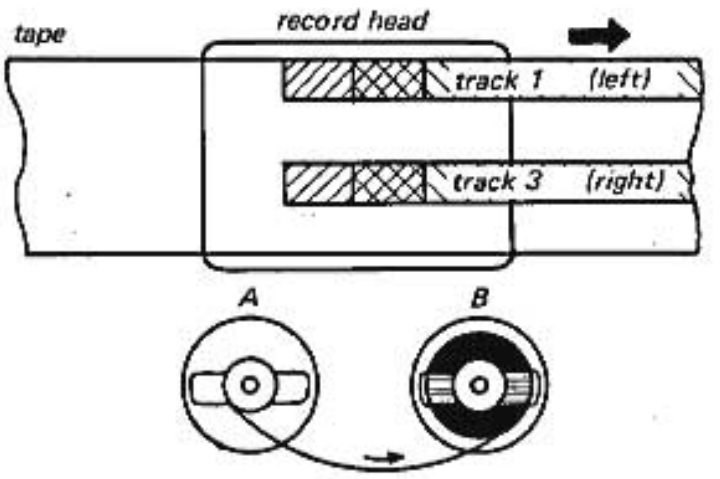


3-2. Tracking Number

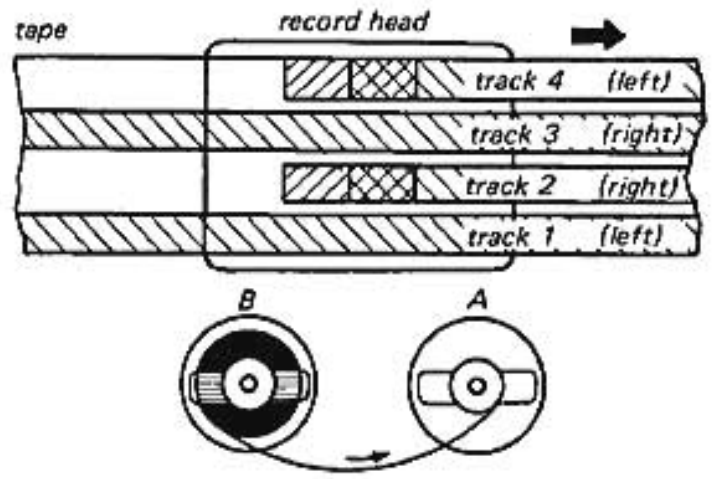
The 2-tracks, one for left channel and the other for right channel, are laid down at one time during forward recording. The 4-tracks are called, from top to bottom, 1, 2, 3, and 4 when viewed from the glare side of the tape. The signal for left channel is recorded on tracks 1 and 4 while that for right channel on tracks 2 and 3.

3-3. 4-Track 2-Channel Stereophonic Recording

The signal for left channel is recorded on track 1 and that for right channel on track 3 at the same time during recording. When the tape on the left reel has been taken up completely, change the locations of the right and left reels to each other. After that, the signal for left channel is recorded on track 4 and that for right channel on track 2. Be careful that the non-glare side of the tape comes in contact with the head.



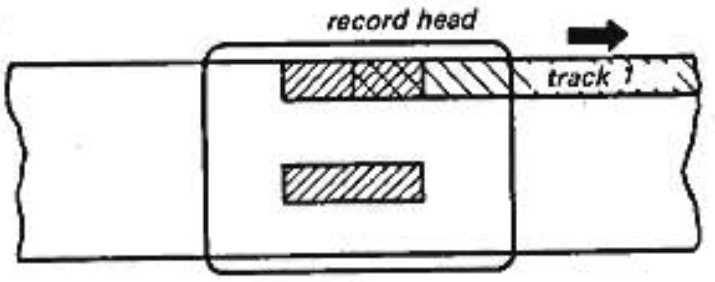
Exchange the right and left reels each other when the right reel is wound fully.



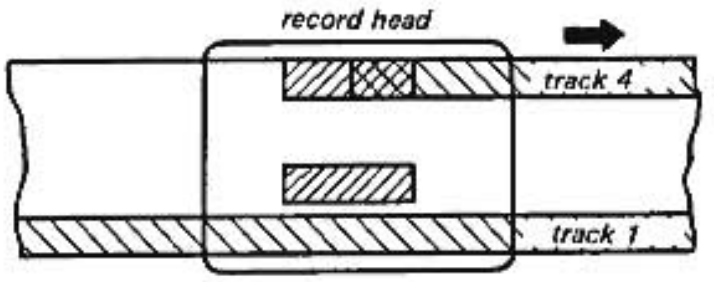
3-4. Monophonic Recording in 4-Track Pattern

Monophonic recording in the 4-track pattern can be done four times in one tape by pressing either channel button of the Record Button. Reels should be changed at each time. Record the signal on track 1. Tape runs from left to right. Use track 4, the next is track 3, and the forth track 2. The left Record Button is for tracks 1 and 4, and the right for tracks 2 and 3.

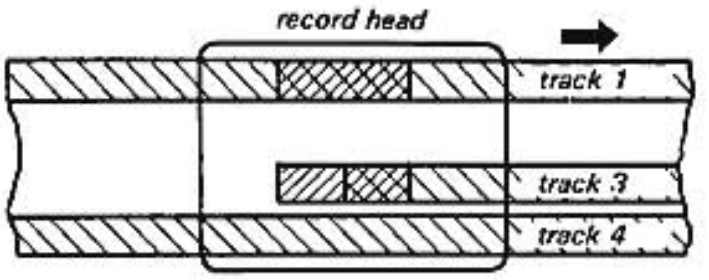
First
record button (left)



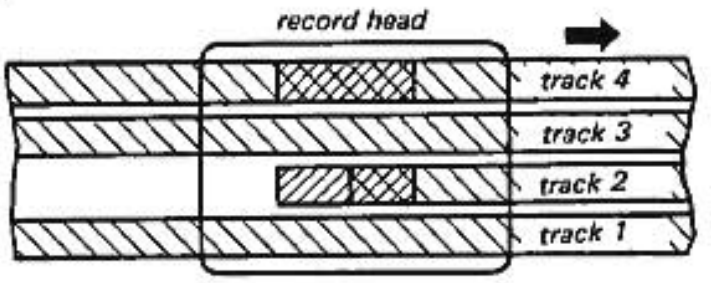
Second
record button (left)



Third
record button (right)



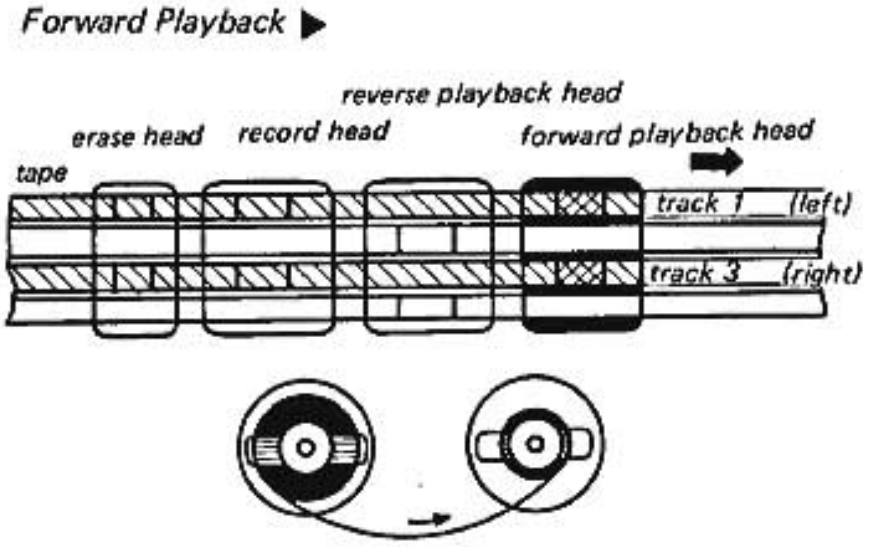
Fourth
record button (right)



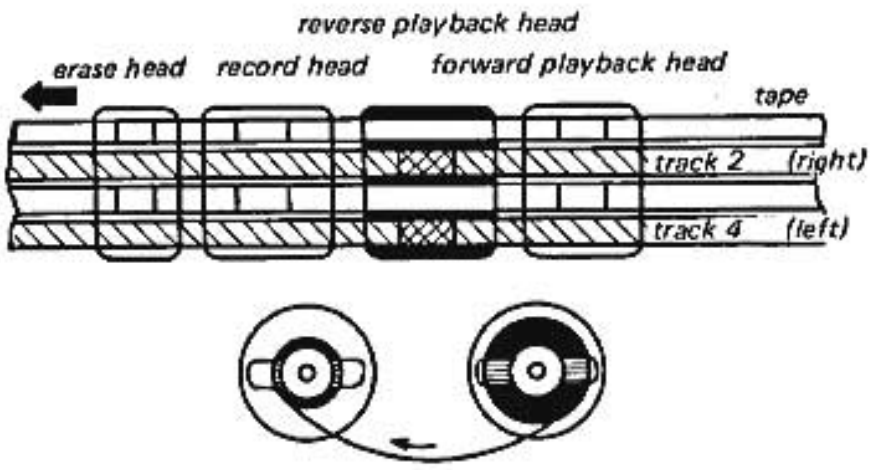
3-5. 4-Track 2-Channel Stereophonic Playback

Forward playback is performed on tracks 1 (left) and 3 (right) by the forward playback head. Tape runs from the left to the right reel. Reverse playback is made on tracks 2 (right) and 4 (left) by the reverse playback head. Tape runs from right to left.

Forward Playback ▶



Reverse Playback ◀



3-6. 4-Track Monophonic Playback

Monophonic playback of the monophonic record tape in the 4-track pattern can be done by turning the Playback Balance Control to fully counter-clockwise or clockwise.
Playback track 1 (left) with the Forward Button "▶", track 4 (left) with the Reverse Button "◀", track 3 (right) with the Reverse Button "▶", and track 2 (right) with the Reverse Button "◀", When the reverse signal is in use, four playbacks can be performed continuously with The AUTOMATIC Button set to REPEAT.

* Turn the Playback Balance Control fully to the L side when track 1 or 2 is in use, and fully to the R side when track 2 or 3 is used.

4 OPERATION OF RELAYS

The capstan motor (MT-701) rotate counter clockwise by AC 100V supplied from the power switch when it is pushed down and the shut-off switches (S711 a - c) linked with the left tension arm are switched on. DC 80V rectified by D802 is supplied to the terminal J703-4 through S711C.

4-1. Forward Operation

(See Fig. 4-2 Operation Schematic)

The relay (RL801) is actuated by pushing down the forward button " ▶ " (S706).

1) The brakes of left and right reel motors are released by closing the contact (RL801-2) and actuating the brake solenoid (PS702). RL801 is self - holded as the relay voltage is applied through the terminal ⑪ .

2) When the contact RL801-3 is closed, the pinch-roller solenoid (PS701) and the lifter solenoid (PS703) are actuated to press the pinch-roller to the capstan and to press the tape to the head by the coming up lifter at the same time.

3) When the contact RL801-1 is closed, the left reel motor (MT702) rotate clockwise in weak torque by the current supplied through the terminals 2 and 3 of the LEFT TORQUE ADJUST resistor, R701 (200 Ω, 20 W). Also the right reel motor rotate counterclockwise by the current supplied through the terminals 1 and 3 of the RIGHT TORQUE ADJUST resistor R702 (200 Ω, 20 W) in slightly greater torque as the resistance is lower than R701.

4) The tape on the left reel is moved to the right reel by capstan driving as the capstan motor (MT701) is rotating counterclockwise. In this case the left motor torque works as a back tension.

4-2. Reverse Operation

(See Fig. 4-3 Operation Schematic)

When the reverse button " ◀ " (S707) is pushed the relays are actuated in the following order from RL802, RL803, RL801, RL806 to RL808.

1) When the reverse button is pushed, the delay relay RL806 is actuated to keep contacts RL806-1 and RL806-2 open for about 2 seconds and the currents are cut off temporarily at the reel motor and the solenoids of pinch-roller, filter, and brakes. Also the contact RL802-2 makes RL802 and RL803 to self-hold.

2) The direction-indicating lamp is switched to the mark " ◀ " , when the contact RL803-2 is switched.

3) For the movement of RL801, see Section 4-1 "Forward Operation".

4) When the contact, RL802-1 is open, the power to the REC relay (RL501, 502) is cut off.

5) When the contact, RL801-1 is closed and RL803-3 is closed, current flow through the terminals 2 and 4 of the LEFT TORQUE ADJUST resistor, R701 (200 Ω, 40 W) to the left reel motor (MT702) and rotate clockwise in greater torque than the right reel motor. To the right reel motor, current flow through the terminals 1 and 4 of the RIGHT TORQUE ADJUST resistor, R702 (200 Ω, 400 W) and rotate counterclockwise in smaller torque than the left reel motor.

6) When the contacts, RL802-3, RL802-4 are switched, the capstan motor (MT701) rotates to the opposite direction (clockwise), and tape on the right reel is moved by the rotation of the capstan to be wound to the left reel. On the operation the right reel motor works to make the back tension.

7) When the contact RL803-4 is closed, the relay RL808 is actuated, which terminals 1 and 2 are switched and the connection is changed from the forward head to the reverse head.

8) The action of the contact RL803-1 will be explained in the Section 4-6. 3).

4-3. Fast Forward Operation

(See Fig. 4-4 Operation Schematic)

The relays work in order from RL804, RL807 to RL801, when the fast forward button " ▶▶ " (S708) is depressed.

1) See 4-1 "Forward Operation" for the movement of RL801.

2) When the contact RL804-1 is switched, the pinch-roller and the lifter are lowered as the current to the pinch-roller solenoid (PS701)

and to the lifter solenoid (PS703) are cut off. The relay, RL804 is self-hold.

3) When the contact, RL801-1 is closed and the contact RL804-3 and RL804-4 are switched, the current is supplied to the left reel motor (MT702) through the terminals 1 and 3 of R703 and the motor rotate clockwise with small torque. At the same time, tape is wound to the right reel as a full power (100 V AC) is supplied to the right reel motor (MT703) and the motor rotate counterclockwise with large torque direction. On the operation the left reel motor works to give a weak back tension.

4) The delay relay (RL807)- - - - - The relay, RL806 does not work as the contact, RL804-2 is kept open even after the movement of the RL807-1.

4-4. Rewind Operation

(See Fig. 4-5 Operation Schematic)

The relays work in order from RL805, RL804, RL807 to RL801 when the rewind button "◀◀" (S709) is pushed.

1) See 4-1 "Forward Operation" for the movement of RL801.

2) See item number 2 of 4-3 "Fast Forward Operation" for the action of the contact, RL804-1 and RL801-3.

3) The contact, RL805-2, makes the relay, RL805 in self-hold.

4) When the contact, RL801-1 is closed and the contact, RL804-4, RL804-3 and RL805-1 are switched, the left reel motor (MT702) rotate clockwise with large torque as a full power (100 V AC) is supplied and tape is wound to the left reel. The right reel motor rotates counterclockwise with small torque to give a weak back tension.

5) See the item number 4 of 4-3 "Fast Forward Operation" for the action of delay relay, RL807.

4-5. Automatic Rewind, contact 1 of automatic switch S715

(See Fig. 4-6 Operation Schematic)

The relays works in the order from RL901, RL902, RL802, RL803, RL801, RL805, RL804 to RL807 on forward operation only when 20 Hz signal on L-channel and no signal on R-channel are detected.

1) The discharging current from C923 operates RL902 as the contact RL901-1 is closed by the operation of RL901. When the contact RL902-2 is closed the current flow through D907 to RL805, RL804, RL807 and RL801, and operate them.

2) For the operation of RL801, RL804 and RL805, see Section 4-4 "Rewind Operation".

3) The tape travel direction lamp is switched to "◀" as RL802 and RL803 are operated.

4-6. Automatic Reverse, contact 2 of automatic switch S715

(See Fig. 4-7 Operation Schematic)

Detecting 20 Hz signal only on L-channel, but not on R-channel, the relays are operated from RL901, RL902, RL802, RL803, RL801, to RL806.

1) The discharging current from C923 operate RL902 as the contact RL901-1 is closed by the operation of RL901. When the contact RL902-2 is closed the current flow through D907 to RL802, RL803, RL801 and RL806, and operate them.

2) Each solenoid of the pinch-roller, lifter and brake is cut off temporarily (for about two seconds) by the movements of the contacts RL806-1 and RL806-2. At the same time the microswitch (S714) linked with the pinch roller solenoid is opened, and the contact RL902-2 is kept open due to cut off of the current to the contact RL901-1. As RL802-2 and RL801-2 are self-hold, the unit operates in reverse mode.

3) RL903 does not work even when the contact RL803-1 is moved since the contact RL901-1 is kept open.

4) For the operations of RL802, RL803 and RL801, see Section 4-2 "Reverse Operation".

4-7. Automatic Repeat, contact 3 of automatic switch S715

(See Fig. 4-8 Operation Schematic)

On Forward mode, the relay RL801 and RL806 are actuated when detecting 20 Hz signal on the L-channel and no signal on the R-channel.

For operation of relays RL802, RL803, RL801 and RL806, see Section 4-2 "Reverse Operation".

During reverse operation relays RL901, RL903 and RL801 move when 20 Hz signal is detected.

1) When RL901 is actuated, the contact RL901-1 is closed. The discharging current from C923 flows to RL903, as the contact RL803-1 is switched, RL903-2 is opened. The self-holding of RL802-2 is cut off, then, RL802, RL803 and RL806 are returned to their original positions.
2) RL806 is actuated by the discharging current of C704 and the solenoids of pinch roller, lifter and brake are in cut off state temporarily. Then, the microswitch (S714) linked with the pinch roller solenoid is cut off and the remaining charge of C923 is discharged to zero.
3) When the delay relay RL806 is returned, the unit is set in the forward operation instantaneously as the relay RL801 is actuated.
4) See 4-1 "Forward Operation" for the movement of RL801.

Note: The automatic operation with a sensing foil is as same as the operation using the 20 Hz signal. The sensing post detecting the foil is located on the right tension arm.

4-8. Record Button Operation

The relay, RL501 and RL502 are actuated when both record buttons (S005, S006) and forward button "▶"(S706) are pressed simultaneously. See 4-1 "Forward Operation" for the relay movements of the forward operation when the forward button is depressed.

1) The contacts, RL501-3 and RL502-3 are in self-hold.
2) The contacts, RL501-2 and RL502-2 are switched. The oscillator starts operation and supplies the bias current to the recording head.
3) The erasing current is supplied to the erase head by switching the contacts, RL501-1 and RL502-1.
4) The record lamps light by switching the contacts, RL501-4 and RL502-4.

4-9. Speed Switching Operation

The relay RL401 is actuated when the tape speed switch (S703) is pushed.
(19 cm/sec = 7 ½ ips, 9.5 cm/sec = 3 ¾ ips)

1) When the contacts RL401-1 and RL401-2 are closed the pre-emphases circuit of the recording amplifier section is switched from the one for 19 cm/sec to 9.5 cm/sec.

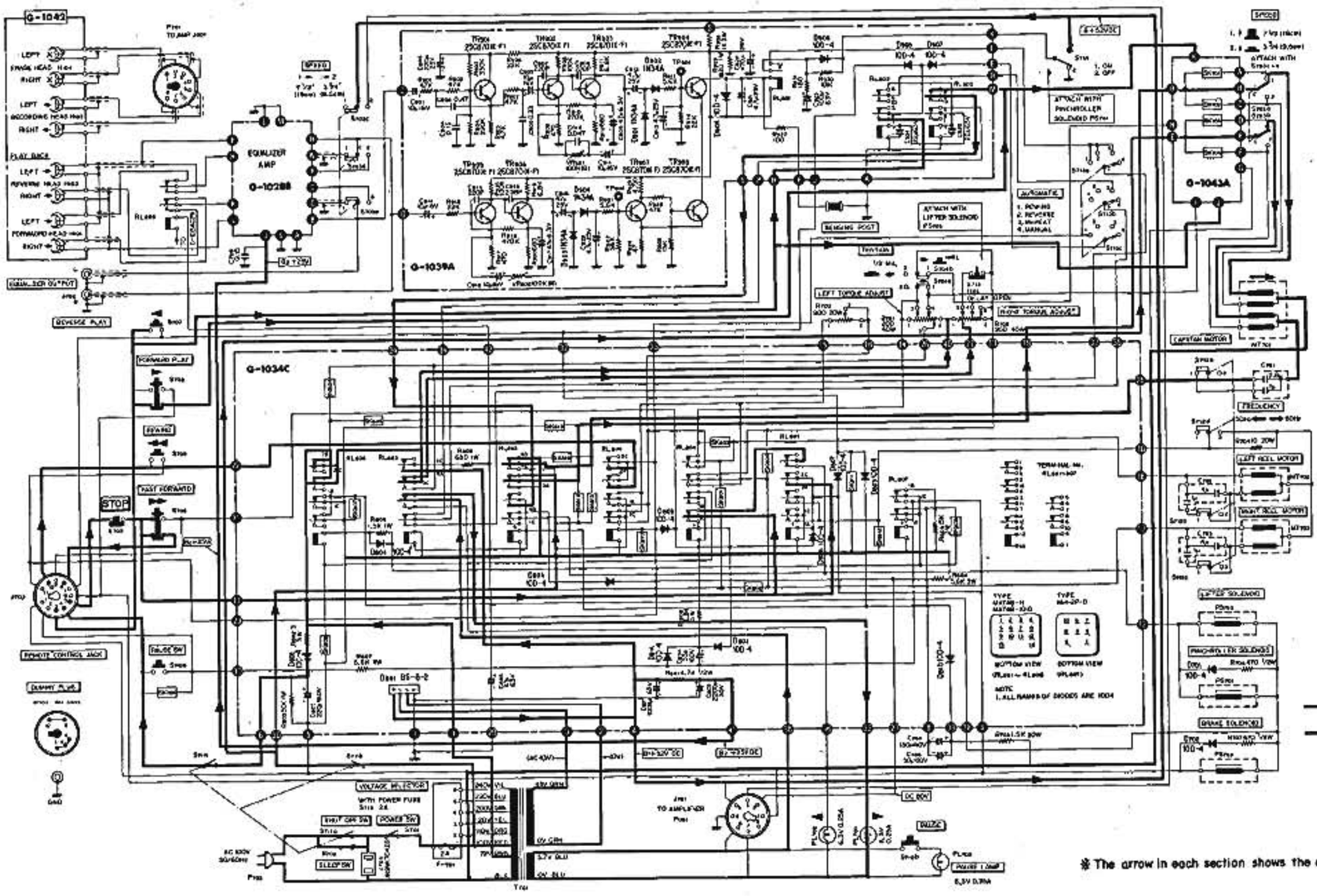
Note: The equalizer characteristics of the playback equalizer amplifier are switched by pushing the switch. Also, the speed of the capstan motor is changed. (the number of poles of the motor changes from 4 to 8)

4-10. Stop Button Operation

(See Fig. 4-1 Operation Schematic)

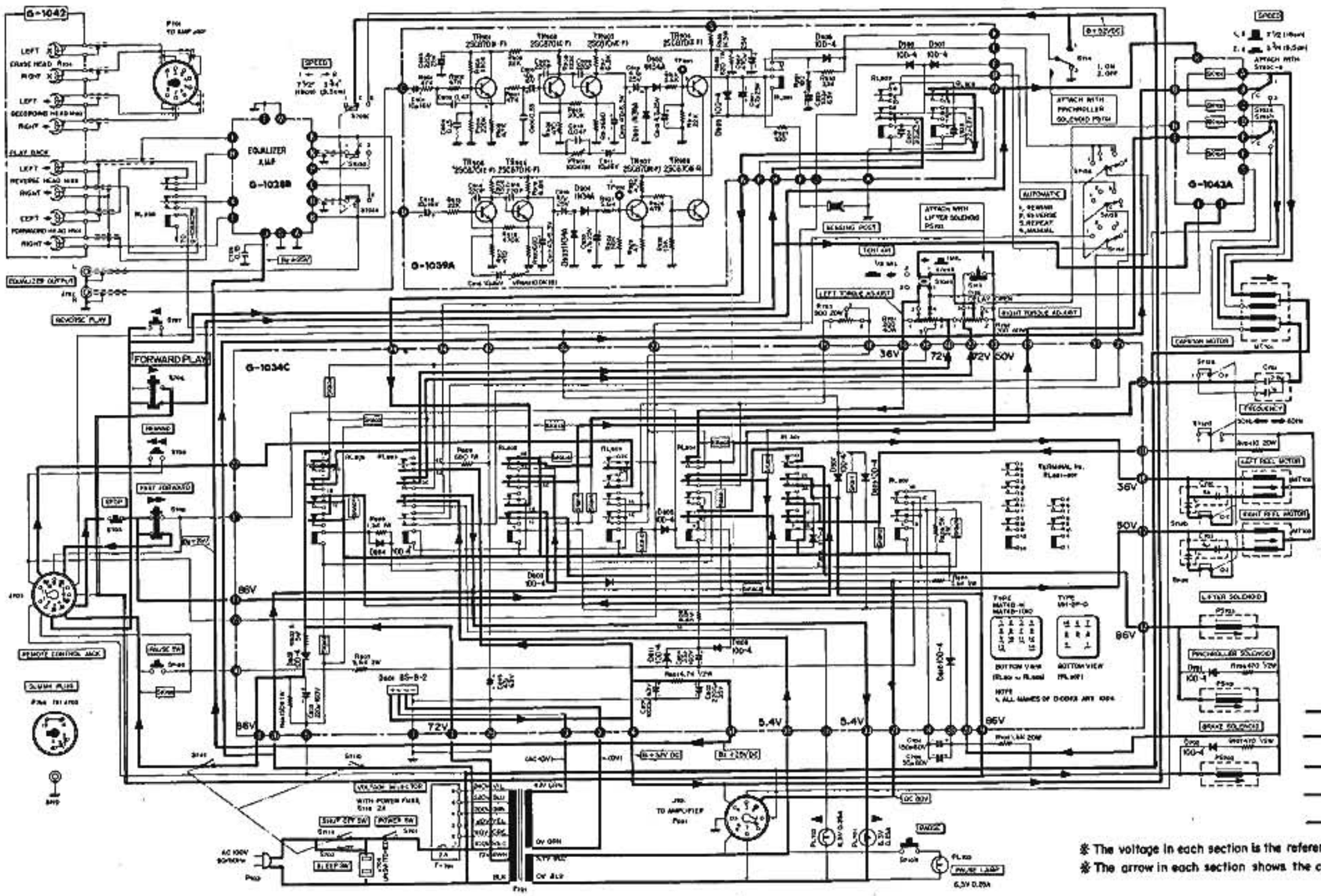
When the Stop button (S705) is pushed, the relay drive current is cut off. The unit returns to the state on the beginning when the POWER button is pushed.

Fig 4-1. STOP



※ The arrow in each section shows the current direction.

Fig 4-2. STOP→FORWARD



※ The voltage in each section is the reference value.
※ The arrow in each section shows the current direction.

Fig 4-3. STOP → REVERSE

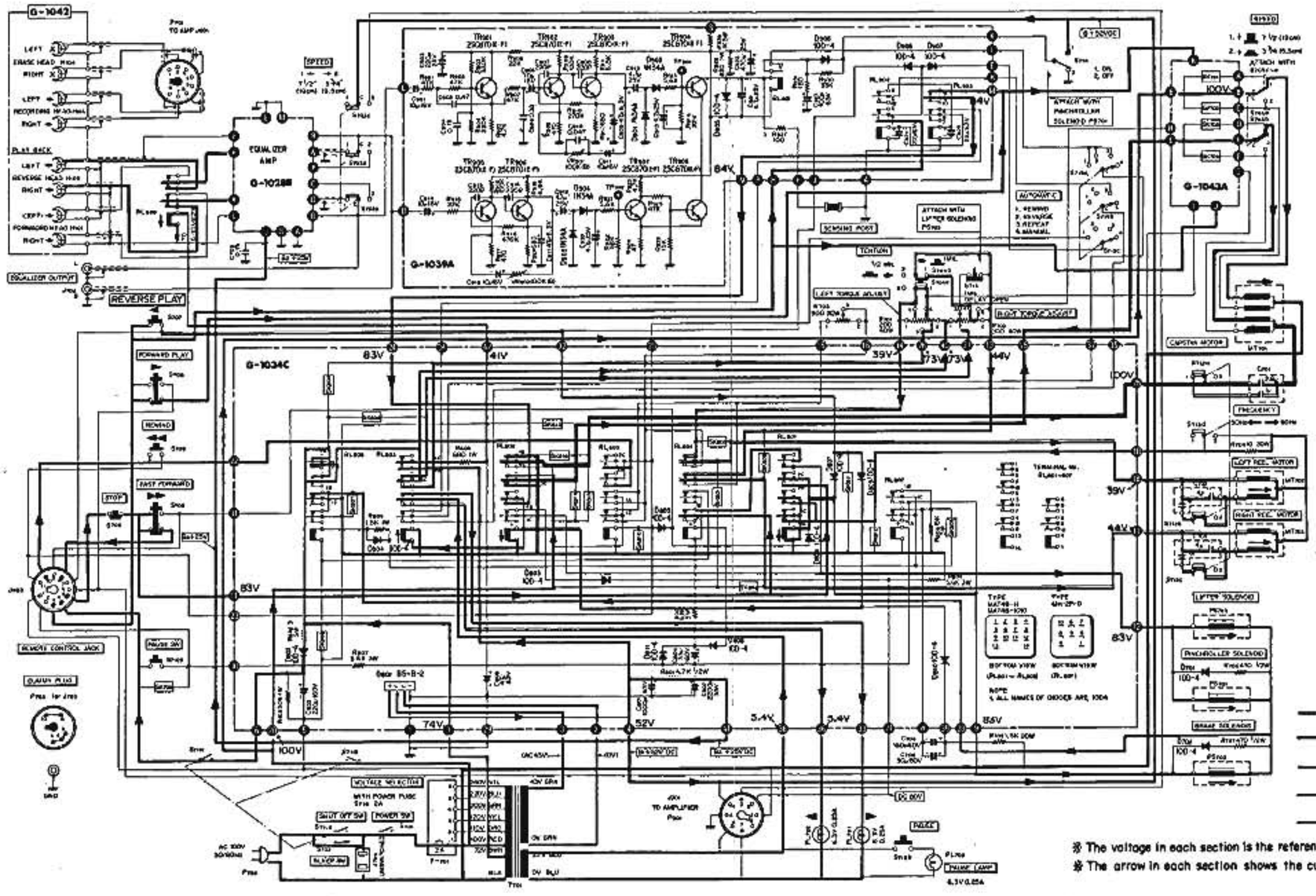
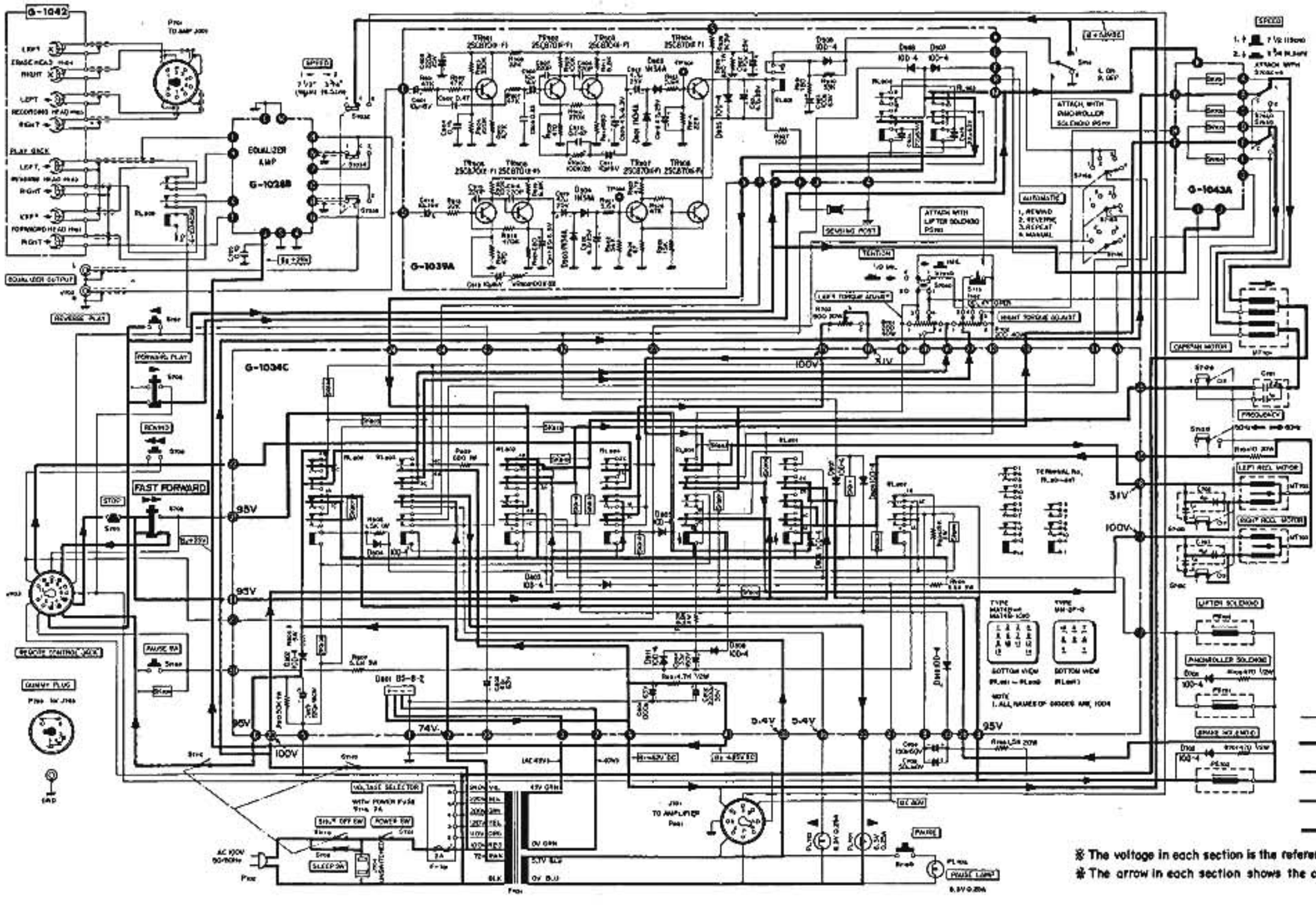
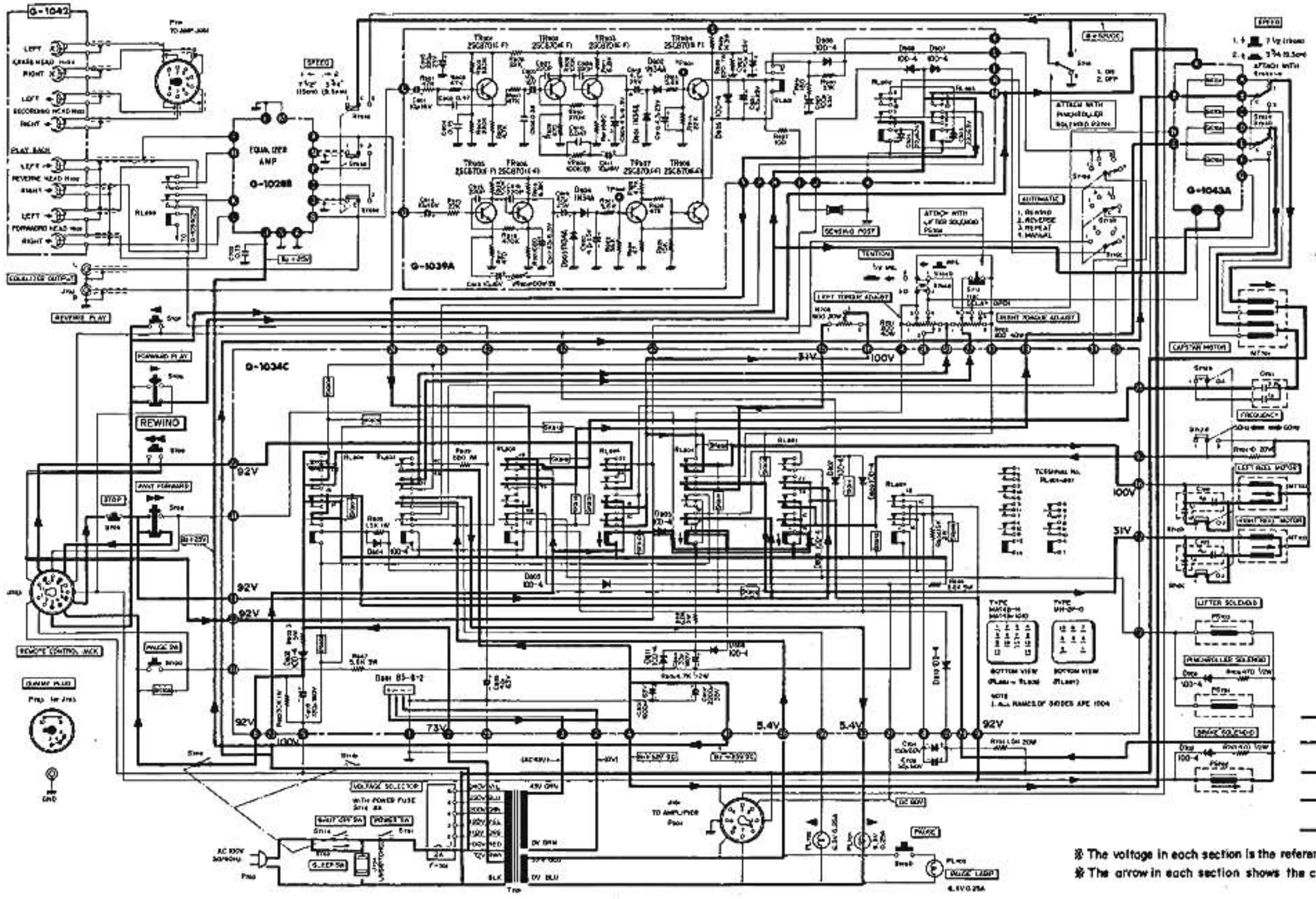


Fig 4-4. STOP→FAST FORWARD



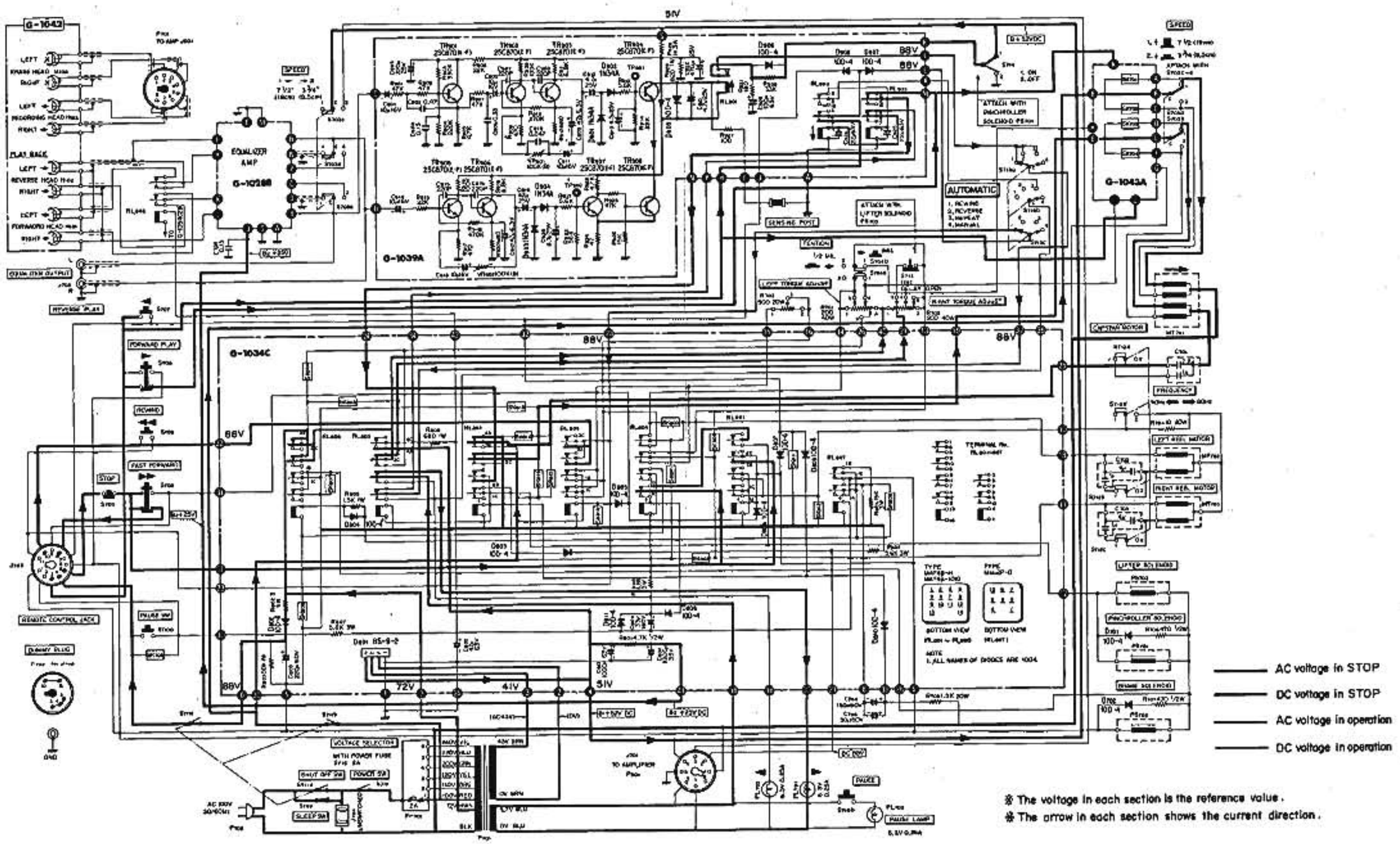
※ The voltage in each section is the reference value.
※ The arrow in each section shows the current direction.

Fig 4-5. STOP→REWIND



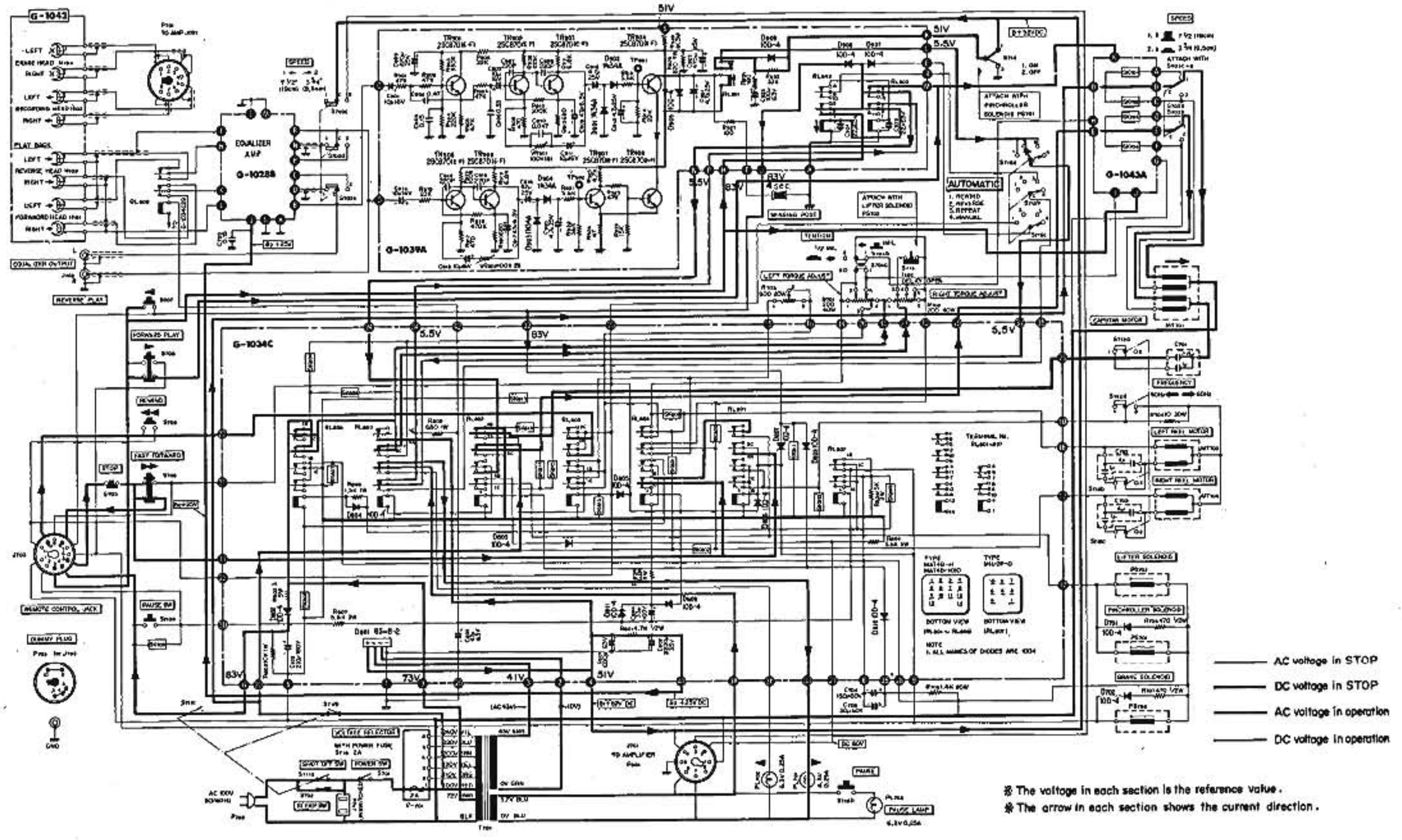
※ The voltage in each section is the reference value.
※ The arrow in each section shows the current direction.

Fig 4-6. AUTO REWIND



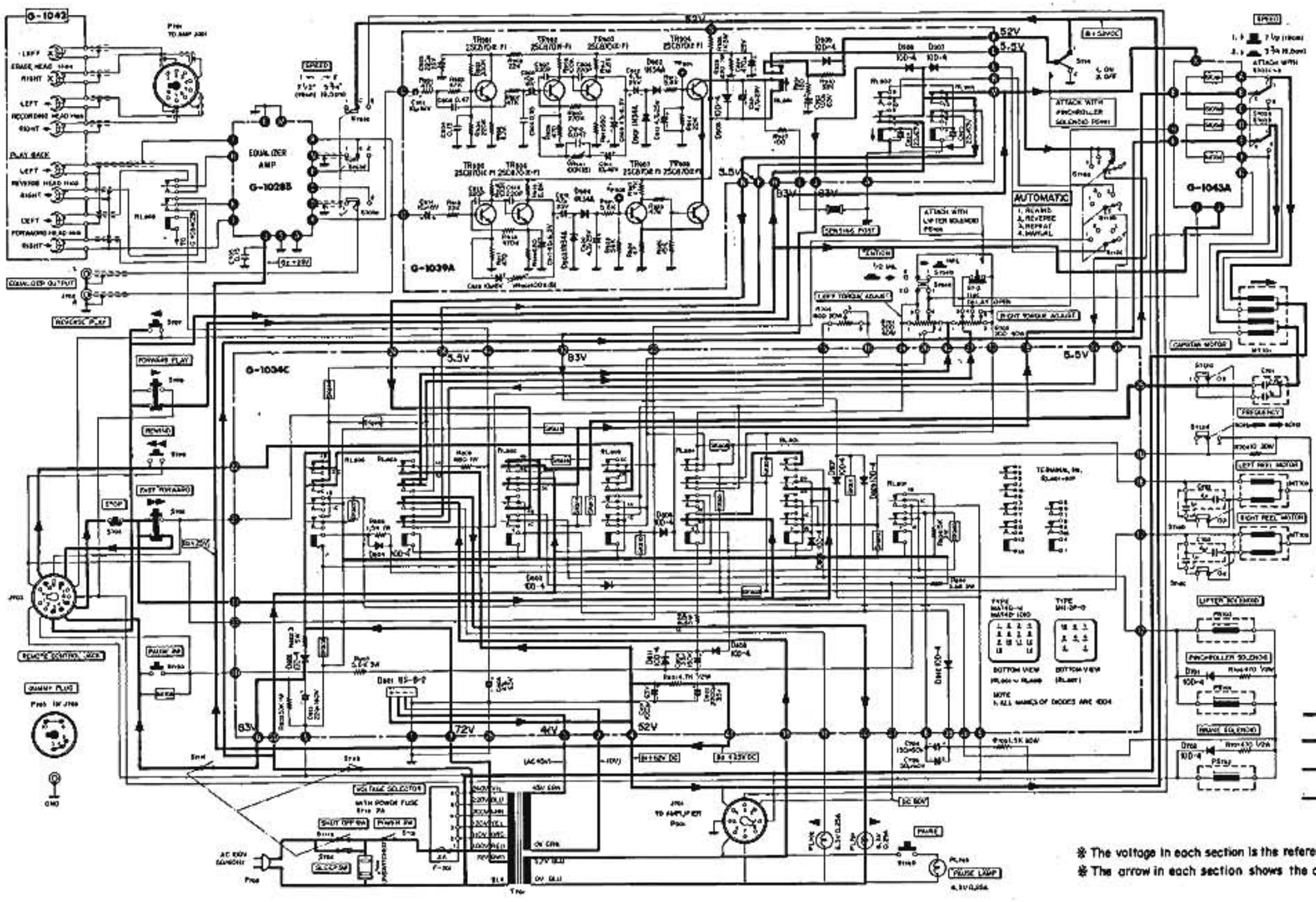
※ The voltage in each section is the reference value.
※ The arrow in each section shows the current direction.

Fig 4-7. AUTO REVERSE



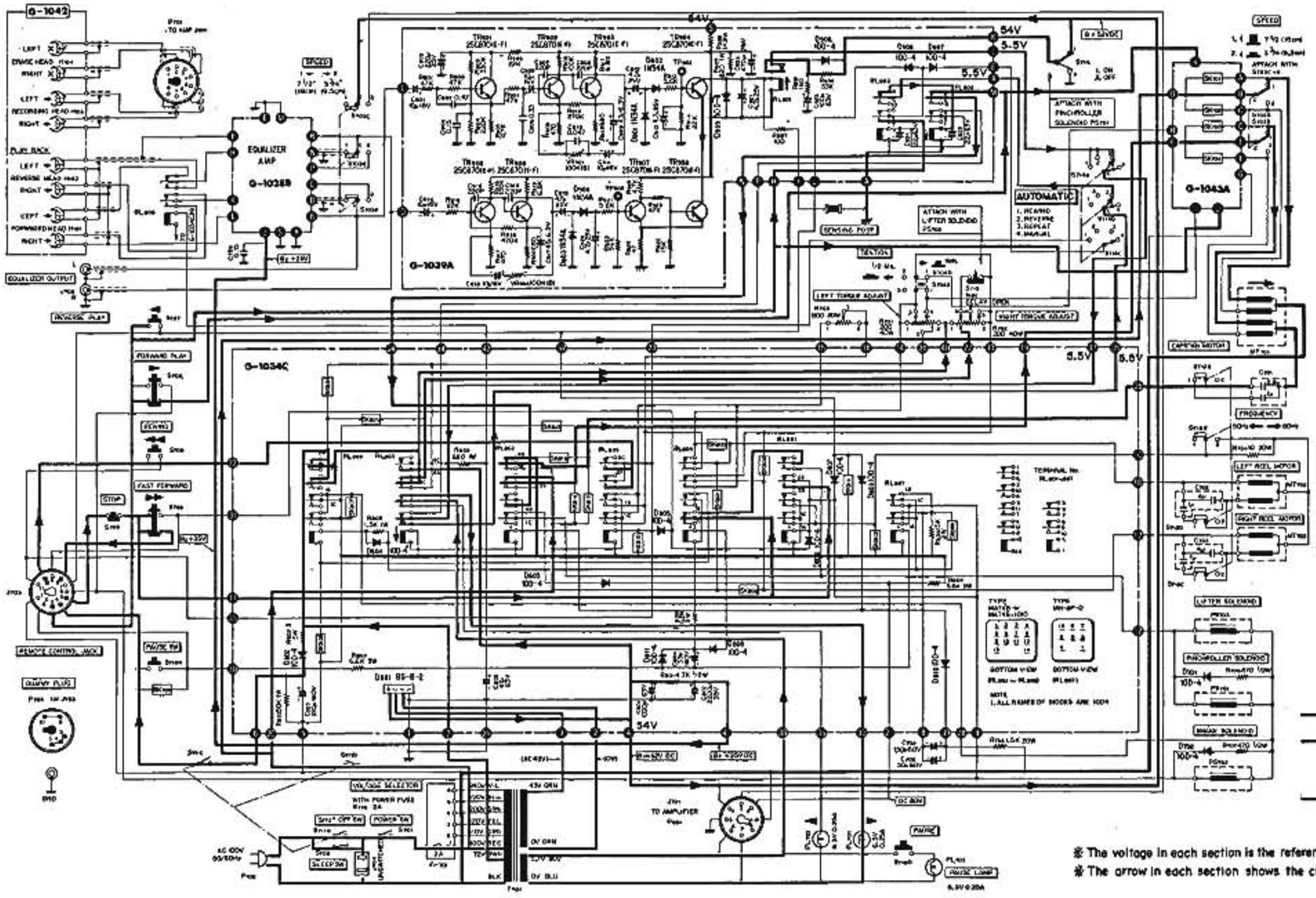
※ The voltage in each section is the reference value.
※ The arrow in each section shows the current direction.

Fig 4-8. AUTO REPEAT (Forward → Reverse)



※ The voltage in each section is the reference value.
※ The arrow in each section shows the current direction.

Fig 4-9. AUTO REPEAT (Reverse → Forward)



※ The voltage in each section is the reference value.
※ The arrow in each section shows the current direction.

5 ELECTRICAL ADJUSTMENT

Before any adjustment, perform the preliminary set-up as follows:

1) TAPE SPEED - - 19 cm/sec (7½ ips)

2) PLAYBACK
Volume Control -- Thread the test tape (AMPEX standard tape 01-31321-04), and set the unit to the forward playback mode. Adjust the PLAYBACK Volume Control for 0.775 V at LINE OUT on the playback of 700 Hz signal. Make sure that the reading of the VU Meter is in "O" position.

3) LINE-1,2 Volume Control - - - Maximum

4) BALANCE Volume Control - - - -Center

5) MONITOR Switch - PLAYBACK

6) MODE Switch - - - STEREO

Follow the adjustment after the set-up.

5-1. VU Meter Adjustment (See Fig. 5-3)

1) Thread a test tape (AMPEX standard tape 01-31321-04) recorded 700 Hz signal (0.775 V = 0 dB) and play back the tape. Adjust VR403 (adjustable resistor, 100 kΩ-B for L-channel) and VR404 (adjustable resistor 100 kΩ-B for R-channel) on G-1019C for "0" at the VU Meter.

5-2. 100kHz Filter Adjustment
(See Figs. 5-3 and 5-4)

1) Thread a demagnetized tape. Set both channels of the unit to the recording playback mode without input signal.

2) Connect an oscilloscope (or VTVM) between the test points (TP401, 402) on G-1019C and the grounds. Adjust L401 (L-channel) and L402 (R-channel) for minimum levels of the oscilloscope (or VTVM) at TP401 (L-channel) and TP402 (R-channel).

3) Set the R-channel to the record mode. Connect the oscilloscope (or VTVM) between TP402 on G-1019C and the ground. Adjust L501 on G-1022C for minimum level.

5-3. Bias Current Adjustment (See Fig. 5-4)

Connect VTVMs to the LINE OUTs of L- and R-channels.

1) Connect 1,000 Hz, 70 mV output from an audio signal generator to the LINE-1 terminals. Set the unit to the recording playback mode.

2) By gradually turning clockwise, adjust VR501 (adjustable resistor, 50 kΩ-B for L-channel) and VR502 (adjustable resistor, 50 kΩ-B for R-channel) on G-1022C for maximum output level.

5-4. Recording Sensitivity Adjustment
(See Fig. 5-3)

Connect 1,000 Hz, 70 mV output from the audio signal generator to the LINE-1 terminals. Set the unit to the recording playback mode.

1) Adjust VR401 (adjustable resistor, 100 kΩ-B for L-channel) and VR402 (adjustable resistor, 100 kΩ-B for R-channel) on G-1019C for "O" at the VU meter.

5-5. 20Hz Frequency Adjustment
(See Fig. 5-1)

Connect a frequency counter to the LINE OUT of L-channel.

1) Thread a demagnetized tape. Pull the Reverse Signal Button in the forward playback mode. Adjust VR610 (adjustable resistor, 50 kΩ - B) on G-1041A for 20 ± 1 Hz at the frequency counter. Make sure that the pointer of the VU Meter reads "5" to "0" at L-channel.

5-6. Sensitivity Adjustment in Automatic Tape Transport Circuit (20Hz Detecting Sencitivity Adjustment) (See Fig. 5-5)

Set the Automatic Switch to AUTO REVERSE.

1) Terminate between the collector and the emitter of TR908, 2SC870 (R-channel) on G-1039A.

2) Supply 20 Hz, 44 mV output signal from the audio signal generator between terminals A and C on G-1039A.

3) Adjust VR901 (adjustable resistor, 100 kΩ -B) on G-1039A until the relay RL901 is energized.

4) Connect a 220 kΩ resistor between TP901 and the negative terminal of D905 on G-1039A.

5) Supply 20 Hz, 5.4 mV output signal between terminals A and D on G-1039A.

6) Adjust VR902 (adjustable resistor, 100 kΩ - B) on G-1039A unitl the relay RL901 is turned off.

5-7. Playback Frequency Response Adjustment (High Frequency Compensation)

1. **19 cm/sec (7½ ips) Forward Playback Mode**
Connect VTVMs to the LINE OUTs of both channels.

1) Thread the test tape (AMPEX standard tape 01-31321-04) recorded 50 Hz, 100 Hz, 1,000 Hz, 7.5 kHz and 15 kHz signals. Adjust VR101 (adjustable resistor, 20 kΩ - B for L-channel) and VR102 (adjustable resistor, 20 kΩ - B R-channel) on G-1022B for the output voltage difference within ± 2 dB. In this case 15 kHz output level should be adjusted to the same level as 1,000 Hz output level.

2) In the reverse playback mode, the output level adjustment is not necessary if it is performed in the forward playback mode.

2. **9.5 cm/sec (3¾ ips) Forward Playback Mode**
Connect VTVMs to the LINE OUTs of both channels.

1) Thread a tape recorded 50 Hz, 100 Hz, 1,000 Hz, 2.5 kHz and 7.5 kHz signals.Play back the tape. Adjust VR103 (adjustable resistor, 50 kΩ - B for L-channel) and VR104 (adjustabel resistor, 50 kΩ - B for R-channel) on G-1028B for the output voltage difference within ± 2 dB. In this case 7.5 kHz output level should be adjusted to the same level as 1,000 Hz output level.

2) In the reverse playback mode, the output level adjustment is not necessary if it is performed in the forward playback mode.

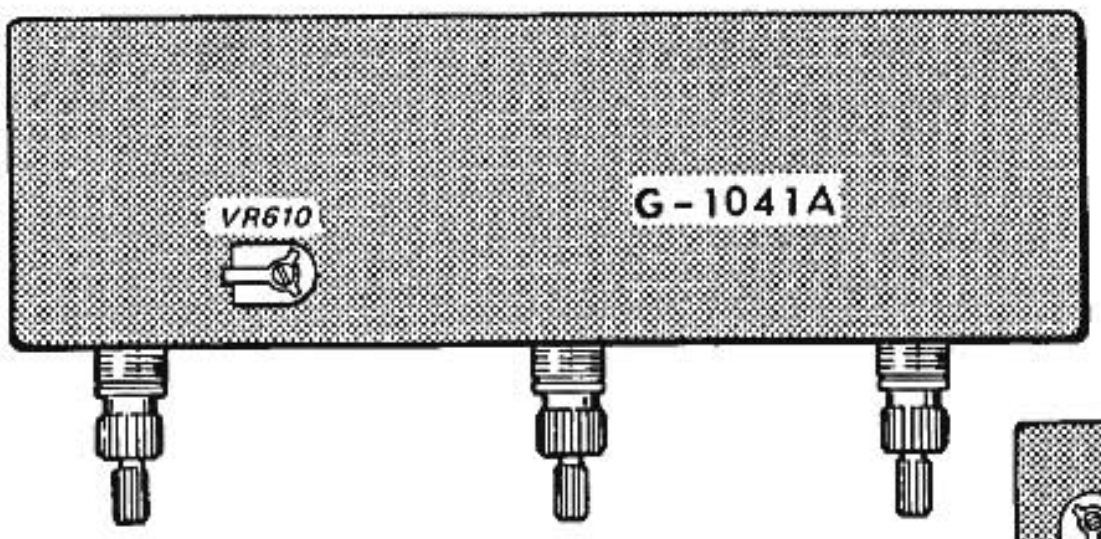


Fig. 5-1

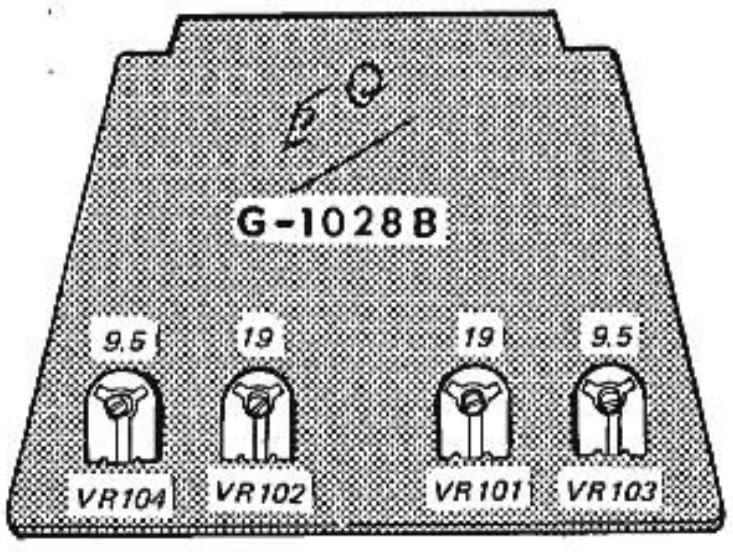


Fig. 5-2

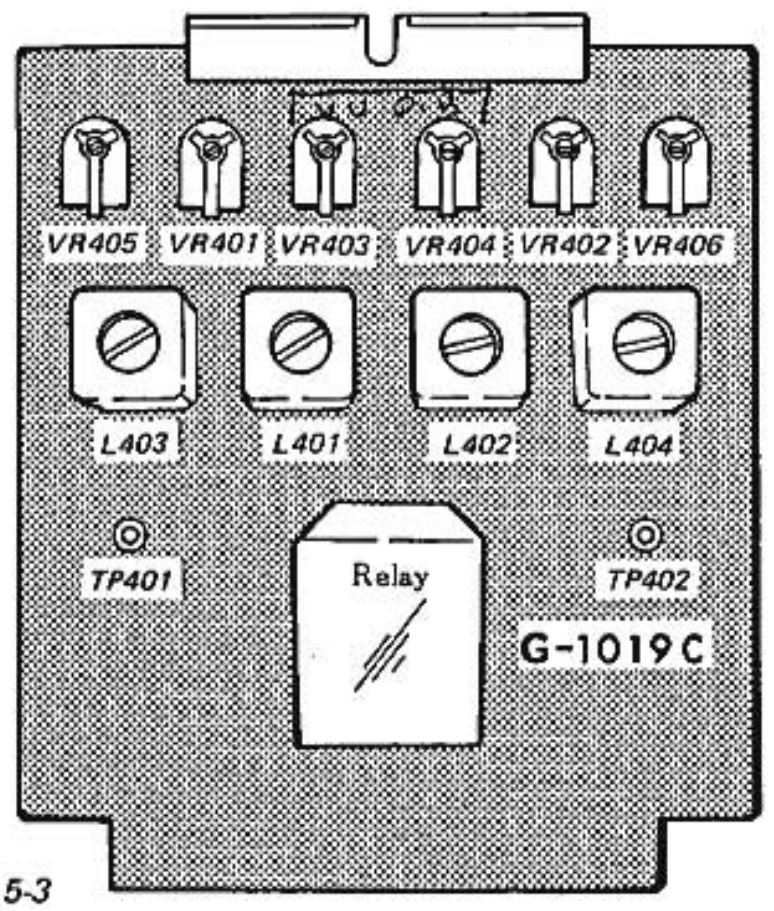


Fig. 5-3

5-8. Recording/Playback Adjustment (Equalizing) (See Fig. 5-3)

1. Tape Speed at 19 cm/sec (7½ ips)

Connect VTVMs to the LINE OUTs of both channels.

1) Turn VR405 and VR406 on G-1019C board fully clockwise (Viewed from the front).
2) Supply 22 kHz, 7 mV, output from the audio signal generator to the LINE-1 terminals of both channels, and set the unit in the recording playback mode.
3) Adjust L403 (left) and L404 (right) on G-1019C for maximum output level.
4) Supply 1,000 Hz 7 mV signal. Read the output levels of LINE OUTs by VTVMs. Change the frequency 1,000 Hz to 20 kHz. Adjust VR405 (left) and VR406 (right) on G-1019C for the same output level as in the 1,000 Hz output.
5) Set the output from the audio signal generator to 7 mV. Select the frequency to 20 Hz, 50 Hz, 100 Hz, 1,000 Hz, 5 kHz, 10 kHz, 15 kHz, and 20 kHz, Make sure the VTVM reading at each frequency points within ± 2 dB from the output level at 1,000 Hz.

2. Tape Speed at 9.5 cm/sec (3¾ ips)

1) Set the output from the audio signal generator to 7 mV. Select the frequency to 30 Hz, 100 Hz, 1,000 Hz, 5 kHz and 10 kHz. Make sure the VTVM reading at each frequency points within ± 2 dB from the output level at 1,000 Hz.

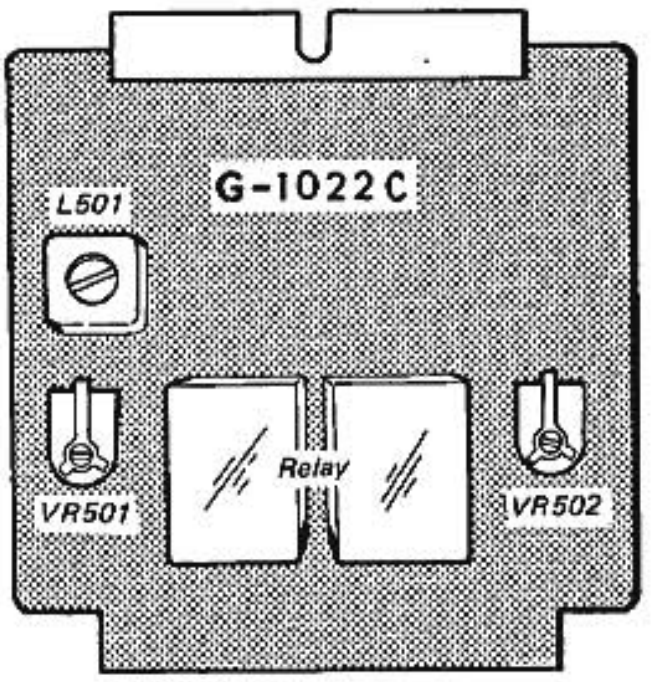


Fig. 5-4

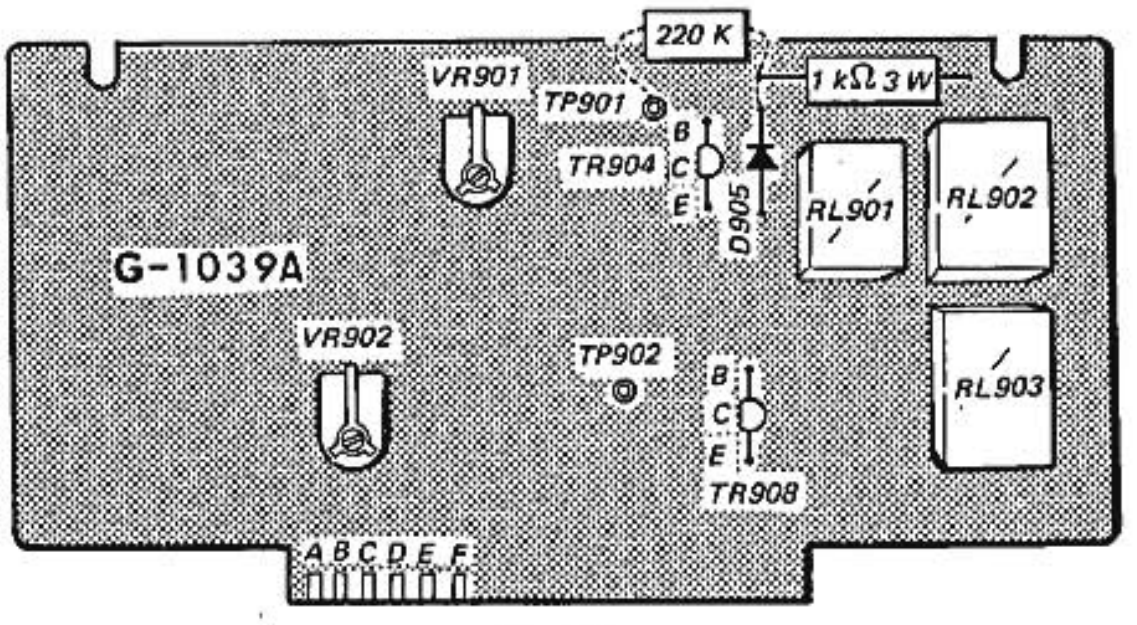


Fig. 5-5

5-9. Tape Head Adjustment

The quality of the unit depends upon the very critical adjustment of heads. When the head is replaced as an assembly, "1. Preliminary Adjustment" is not necessary to be performed, because the head assembly is factory-adjusted.

1. Preliminary Adjustment

Run a tape in the forward direction at 9.5 cm/sec (3 ¾ ips). Adjust the screws shown in Fig. 5-6 for the following specifications.

1) The surface of tape should contact closely parallel with that of head.

2) Untouched core spaces with tape are shown in the list of Fig. 5-7. (See Fig. 5-6 Adjusting Screws).

2. Forward Playback Head Adjustment

Set the tape speed to 19 cm/sec (7 ½ ips). Connect VTVMs to the EQ OUTs. Thread a tape (AMPEX standard tape 01-31321-04) recroded 700 Hz and 15 kHz signals. Set the unit in the forward playback mode.

1) Tracking Adjustment

In the playback of 700 Hz signal, adjust M, N and O of Fig. 5-6 for maximum output at a VTVM.

2) Dihedral Adjustment

In the playback of 15 kHz signal, adjust P of Fig. 5-6 for maximum output.

* Within ± 1.5 dB of maximum output difference.
* Apply locking paint to the adjusting screws after adjustment.

3. Reverse Playback Head Adjustment

Set up the unit as in "2. Forward Playback Adjustment". And set the unit in the reverse playback mode.

1) Perform the adjustments as in "Forward Playback Head Adjustment." Adjust I, J and K of Fig. 5-6 for tracking adjustment, and L of Fig. 5-6 for dihedral adjustment.

* Within ± 1.5 dB of maximum output difference.
* Apply locking paint to the adjusting screws after adjustment.

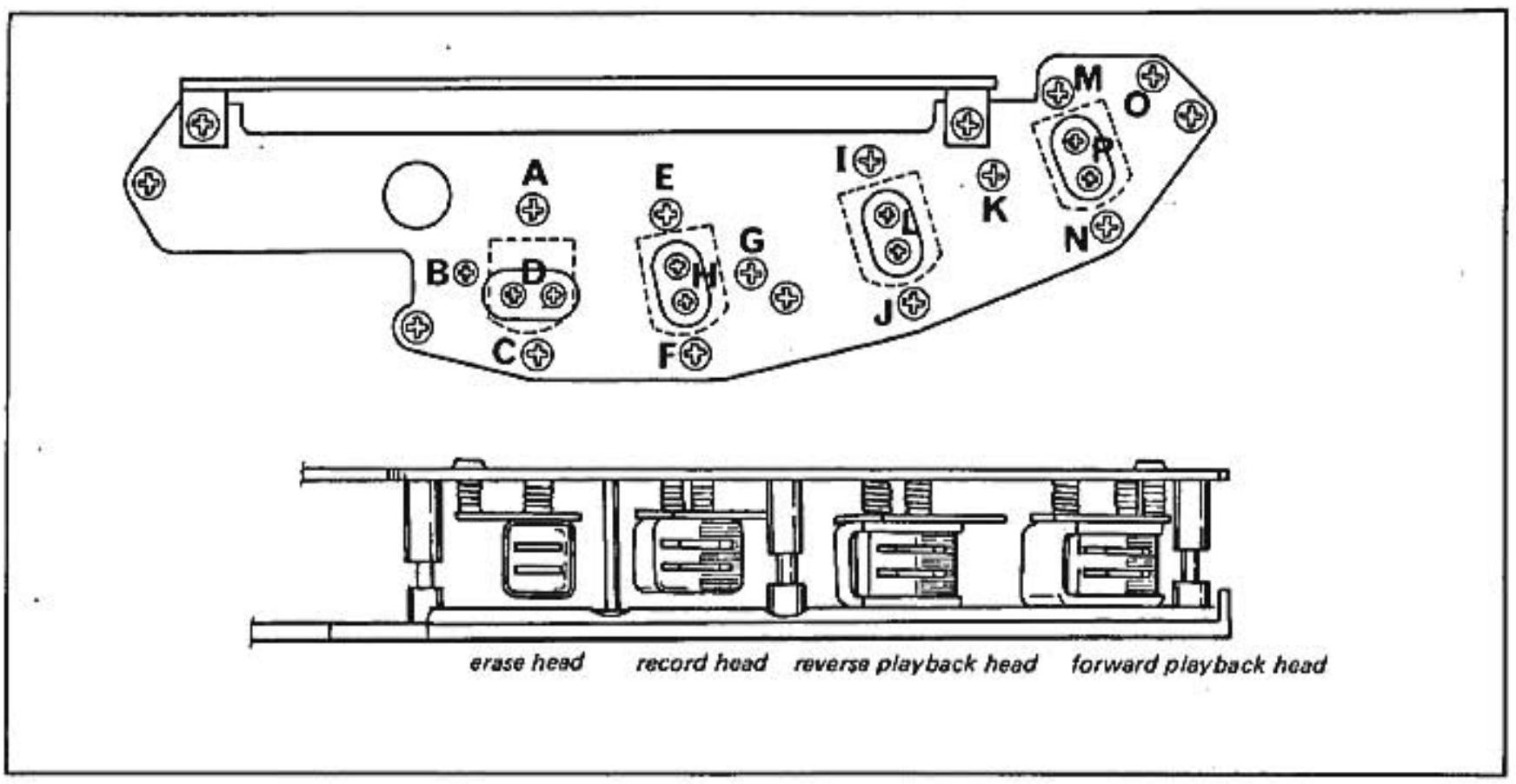


Fig. 5-6

4. Recording Head Adjustment

Set the tape speed to 19 cm/sec (7 ½ ips). Connect VTVMs to the LINE OUTs of both channels.

1) Supply 1,000 Hz, 7 mV, output from the audio signal generator to the LINE-1 terminals. Set the unit to the recording mode.

2) Tracking Adjustment

   Adjust E, F and G of Fig. 5-6 for maximum output levels.

3) Dihedral Adjustment

   Change the output frequency to 15 kHz. Adjust H of Fig. 5-6, for maximum output levels.

* Within ± 1.5 dB of maximum output difference.
* Apply locking paint to the adjusting screws after adjustment.

5. Erase Head Adjustment

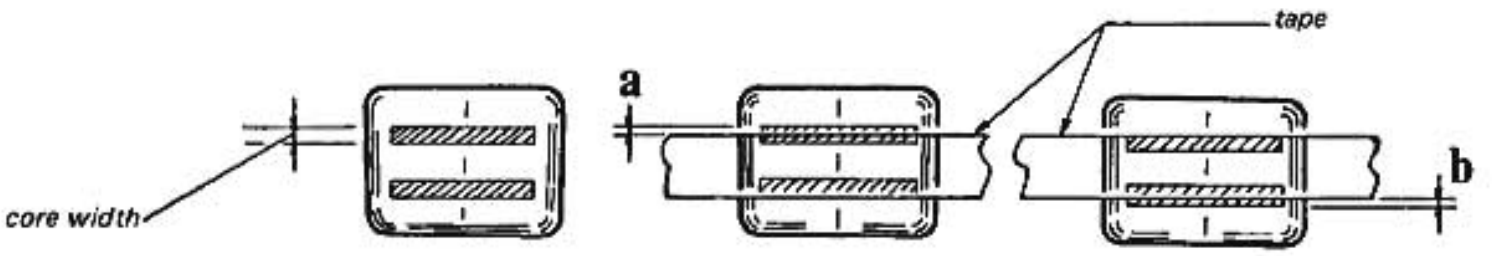
Connect VTVMs to the LINE OUTs of both channels.

1) Set the Tape counter to "0000". Supply 1,000 Hz, 7 V signal to the LINE-1 terminals. Set the unit to the recording mode. Push the Stop Button, when the Tape Counter reads "0015". Push the Reverse Button to obtain "0000" in the counter.

2) Disconnect the input from the LINE-1 terminals, and set the unit in the record mode until the Tape Counter reads "0015".

3) Obtain the difference between the levels measured from the output (7 V input) and that without input signals. Adjust A, B and C of Fig. 5-6 for tracking adjustment and D of Fig. 5-6 for dihedral adjustment.

* Within ± 1.5 dB of the erasing difference.
* Apply locking paint to the adjusting screws after the adjustments.



head	untouched spacer between	core width core and tape	screw
erase head	1.6 ± 0.05	a 0.18 0.2	A, B, C, D
record head	1.0 1.1	a 0.023 0.025	E, F, G, H
reverse playback head	0.9 1.0	b 0.023 0.025	I, J, K, L
forward playback head	0.9. 1.0	a 0.023 0.025	M, N, O, P

Fig. 5-7

6 MECHANICAL ADJUSTMENT

6-1. Reel Moter Torque Adjustment

- Tape speed should be 19 cm/sec (7½ ips).
- Turn on the Shut-Off Switch linked to the Left Tension Arm.

1. 1 MIL Back Torque Adjustment

(See Figs. 6-1 and 6-2)

1) Set the reel and spring scale as shown in Fig. 6-1.

2) Set the Tension Switch to 1 MIL.

① Left Back Torque . . . Push the Forward Button" ▶ ". Pull the spring scale in the direction shown by the dotted line and arrow. A steady pull, at the constant speed (tape speed), should give a reading of 70 g. Adjusting Slider band 5 of the torque adjusting resistor R701 (See Fig. 6-2).

② Right Back Torque. . . . Push the Reverse Button" ◀ ". Pull the spring scale in the direction shown by the dotted line and arrow. A steady pull, at the constant speed (tape speed), should give a reading of 80 g. Adjusting Slider band 2 of the torque adjusting resistor R702.

2. 1 MIL Rewind Torque Adjustment

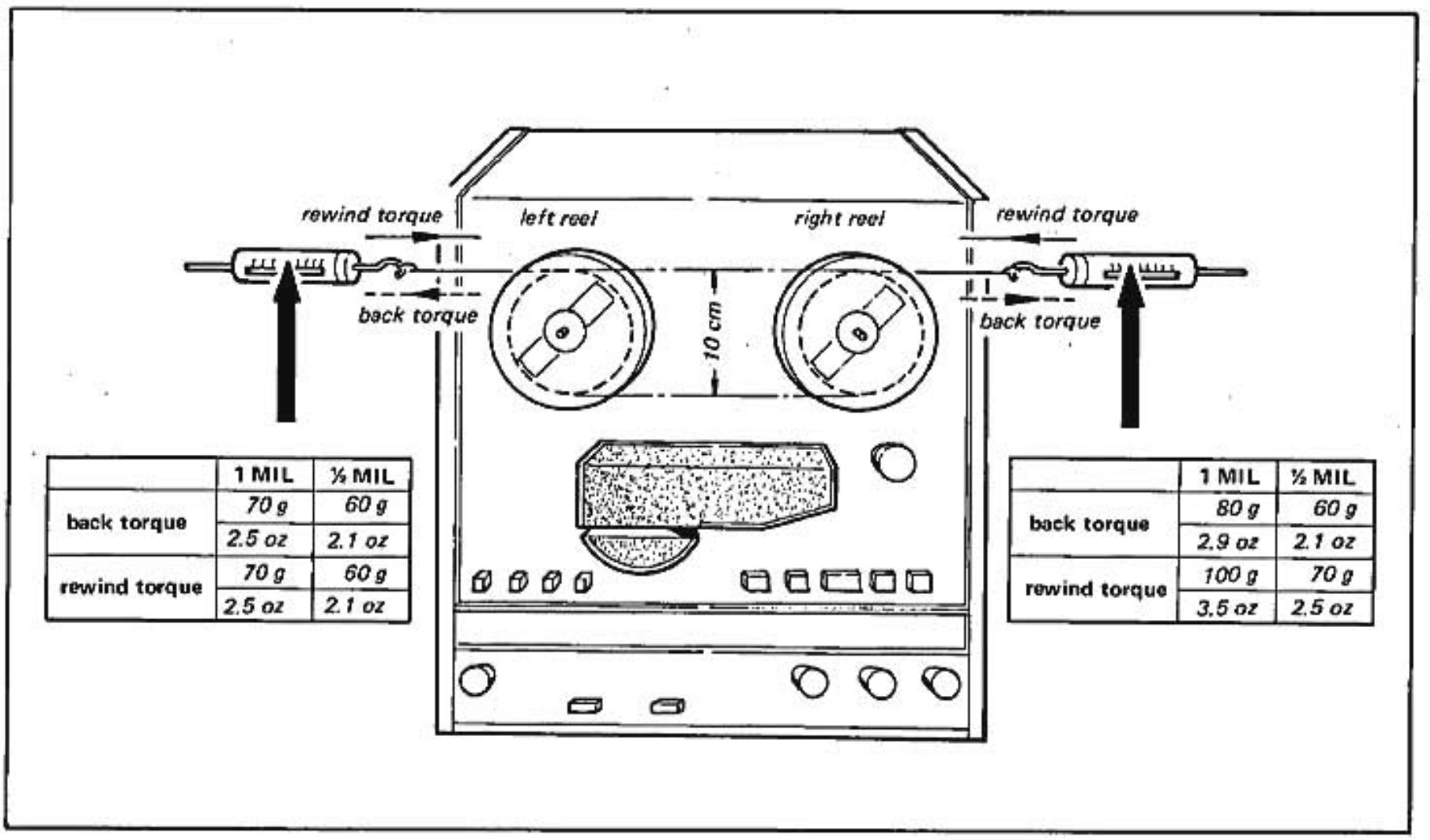
(See Figs. 6-1 and 6-2)

1) Set the reel and the spring scale as shown in Fig. 6-1.

2) Set the Tension Switch to 1 MIL.

① Left rewind torque . . . Push the REVERSE button marked" ◀ ". Carefully left the spring scale pulled in the direction shown by the solid line and arrow at the constant speed (tape speed). Obtain a spring scale reading of 70 g by adjusting slider band 6 on torque adjusting resistor R701.

② Right rewind torque. . . Push the FORWARD button marked" ▶ ". Carefully left the spring scale pulled in the direction shown by the solid line and arrow at the constant speed (tape speed). Obtain a spring scale reading of 100 g by adjusting slider band 3 on torque adjusting resistor R702.



	1 MIL	½ MIL
back torque	70 g	60 g
	2.5 oz	2.1 oz
rewind torque	70 g	60 g
	2.5 oz	2.1 oz

	1 MIL	½ MIL
back torque	80 g	60 g
	2.9 oz	2.1 oz
rewind torque	100 g	70 g
	3.5 oz	2.5 oz

Fig. 6-1. Reel Motor Torque Adjustment

3. 1/2 MIL Rewind Torque Adjustment

(See Figs. 6-1 and 6-2)

1) Set the reel and the spring scale as in Fig. 6-1.

2) Set the Tension Switch to 1/2 MIL.

① Left rewind torque. . . Push the REVERSE button marked "◀". Carefully let the spring scale pulled in the direction shown by the solid line and arrow at the constant speed (tape speed). Obtain a spring scale reading of 60 g by adjusting slider band 4 on torque adjusting resistor R701.

② Right rewind torque. . . Push the FORWARD button marked "▶". Carefully let the spring scale pulled in the direction shown by the solid line and arrow at the constant speed (tape speed). Obtain a spring scale reading of 70 g by adjusting slider band 1 on torque adjusting resistor R702.

4. 1/2 MIL Back Torque Adjustment

1) Set the reel and the spring scale as in Fig. 6-1.

2) Set the Tension Switch to 1/2 MIL.

① Left back torque . . . Push the FORWARD button marked "▶". Carefully pull the spring scale in the direction shown by the dotted line and arrow at the constant speed (tape speed). Obtain a spring scale reading of 60 g. When a 60 g reading is not obtained, repeat each step 2- 1 in 6-1-1, 6-1-2 and 6-1-3, respectively, for adjustment.

② Right back torque. . . .Push the REVERSE button marked "◀". Carefully pull the spring scale in the direction shown by the dotted line and arrow at the constant speed (tape speed). Obtain a spring scale reading of 70 g. When a 70 g reading is not obtained, repeat each step 2-② in 6-1-1, 6-1-2 and 6-1-3, respectively, for adjustment.

Note: Apply the locking paint (white) to the slider bands on the torque adjusting resistors and the screws securing the slider bands. When using a reel with a different hub diameter and adjusting the torque concerned, refer to the following table.

T (g·cm) = R x W
R ; radius of hub (cm)
W ; gram

	torque (1 MIL)	torque (½ MIL)
left back torque	350 g – cm	300 g – cm
	4.9 oz – in	4.2 oz – in
right back torque	400 g – cm	300 g – cm
	5.6 oz – in	4.2 oz – in
left rewind torque	350 g – cm	300 g – cm
	4.9 oz – in	4.2 oz – in
right rewind torque	500 g – cm	350 g – cm
	7.0 oz – in	4.9 oz – in

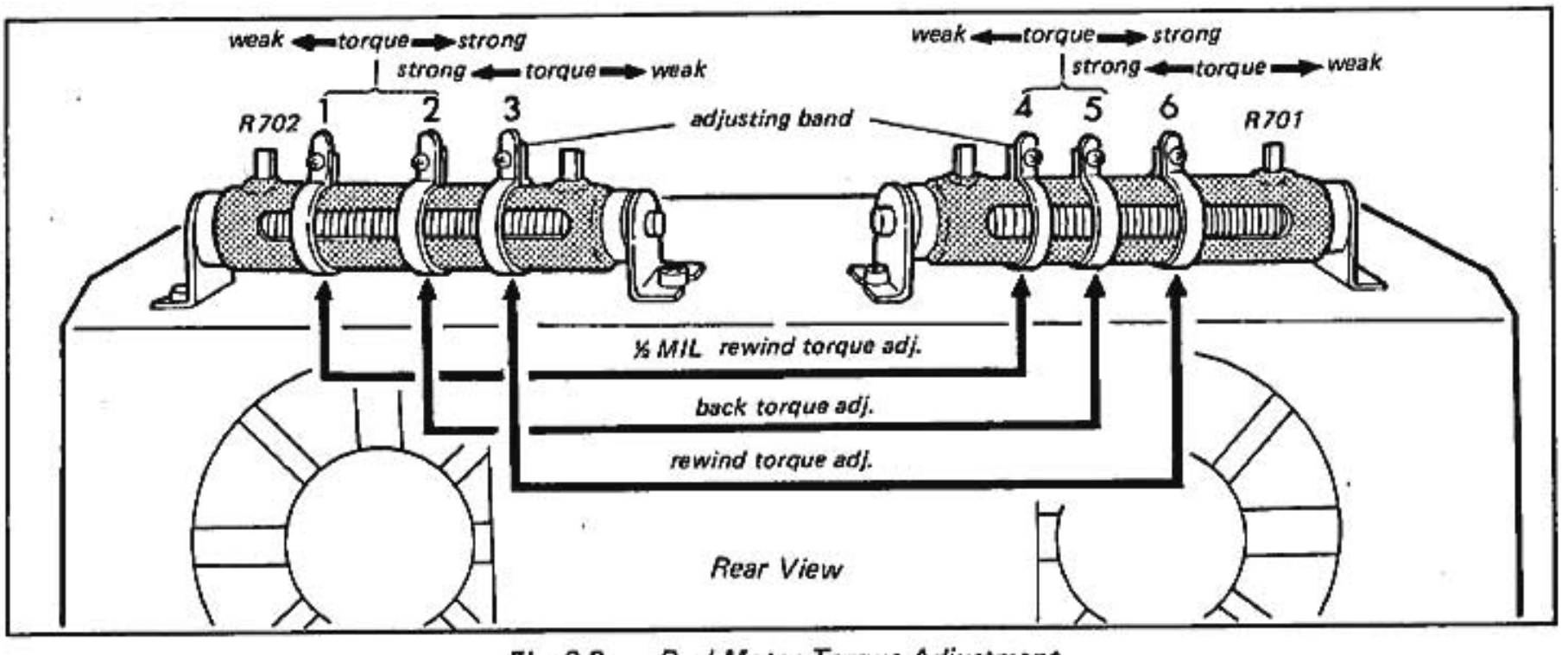


Fig. 6-2. Reel Motor Torque Adjustment

6-2. Reel Moter Voltage Adjustment in FAST FORWARD (See Fig. 6-3)

Proceed as follows with the Shut Off Switch (linked with the left tension arm) turned on.

1) Connect an AC voltmeter on 100 V range as in Fig. 6-3.
2) Push the FAST FORWARD button marked " ▶▶ ". Adjust the slider band for a voltmeter reading of 30 V.

Notes:
1 After the above voltage adjustment, thread a tape on the set and alternately repeat the FAST FORWARD and REWIND operations several times. Check the starting of the tape.
2 Apply the locking paint to the slider band and the screw securing it.

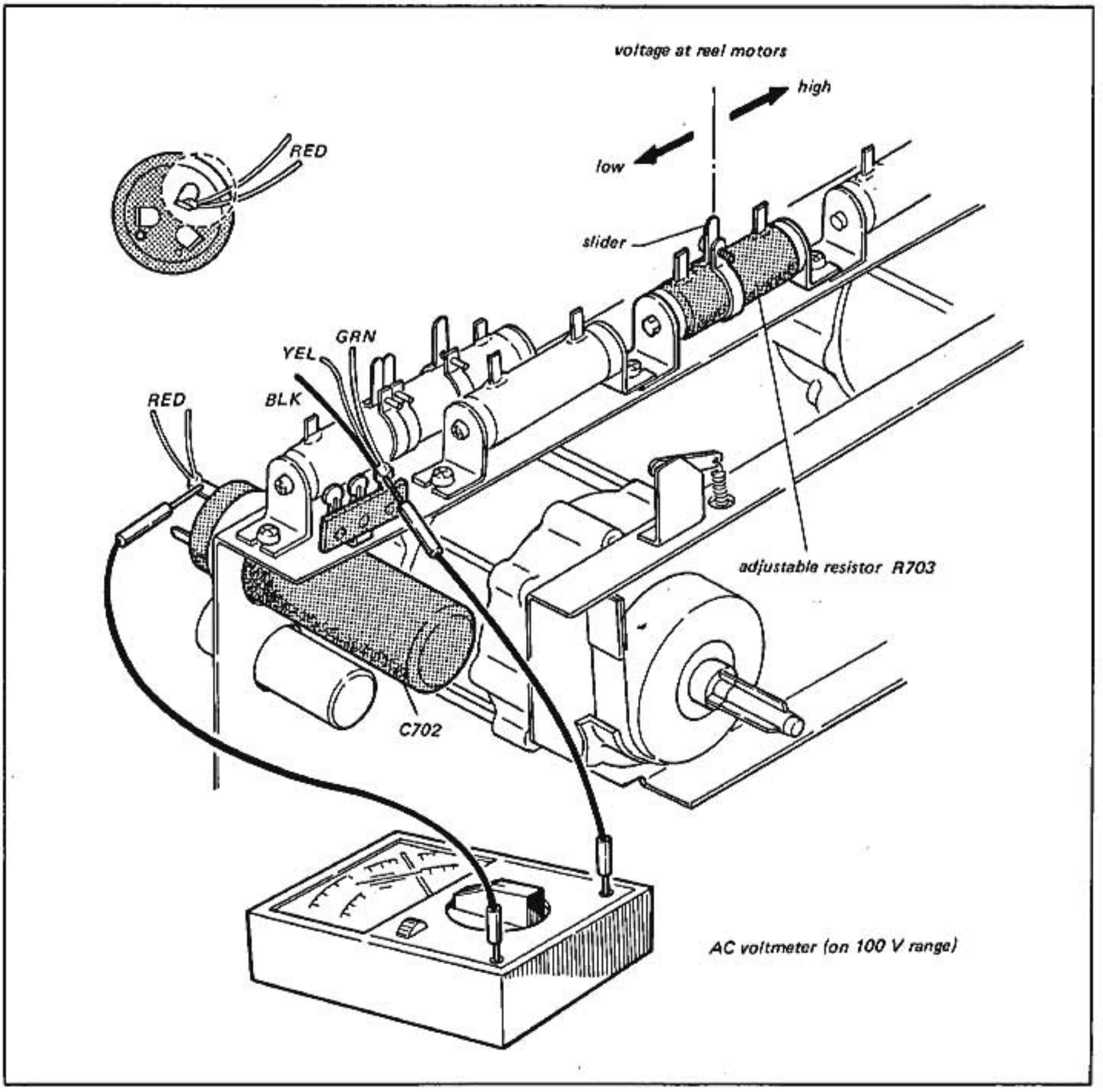


Fig. 6-3 Voltage adjustment for the reel motor

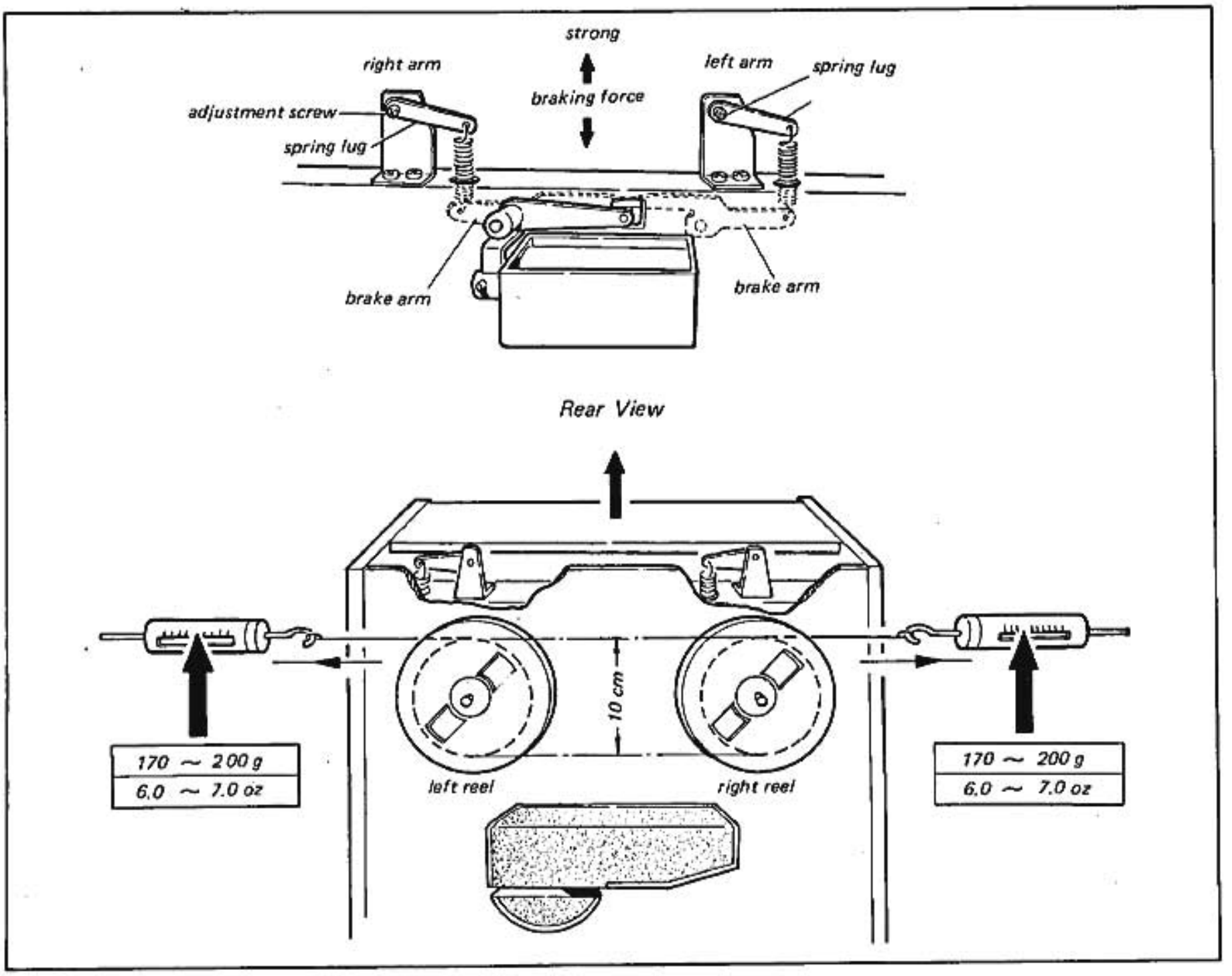


Fig. 6-4 Brake torque adjustment

6-3. Brake Torque Adjustment

(See Fig. 6-4)

- Proceed this adjustment after "10-2 Main Parts Replacement" when the Brake Assembly is replaced.
- Proceed as follows with the Shut Off Switch (linked with the left tension ram) turned off.

1) Place two empty reels (with 10 cm hub diameter) and two spring scales as shown in Fig. 6-4.
2) Slowly pull the spring scales in the directions shown by the arrow at a constant speed, respectively. Loosen then, each adjustment screw and adjust each spring lug for a spring scale reading between 170 g to 200 g.

Note: Apply the locking paint to the adjustment screws.

6-4. Pinch Roller Pressure Adjustment

(See Figs. 6-5, 6-6)

- Proceed as follows with the Shut Off Switch (linked with the left tension arm) turned on.

1) Set the spring scale to the pinch roller as shown in Fig. 6-5. Push the FORWARD button marked " ▶ ".
2) With the pinch roller being in contact with the capstan, slowly pull the spring scale in the direction shown by the arrow. Check the moment the pinch roller stops rotating and adjust the adjusting nut (See Fig. 6-6) for the pinch roller solenoid for a spring scale reading between 1.3 kg to 1.5 kg.

3) After tightening both the adjusting and locking nuts completely, thread a tape on the set. Check if the capstan pressure does not change by repeating the FORWARD to STOP process about ten times.

Note: Apply the locking paint to the adjustment nut.

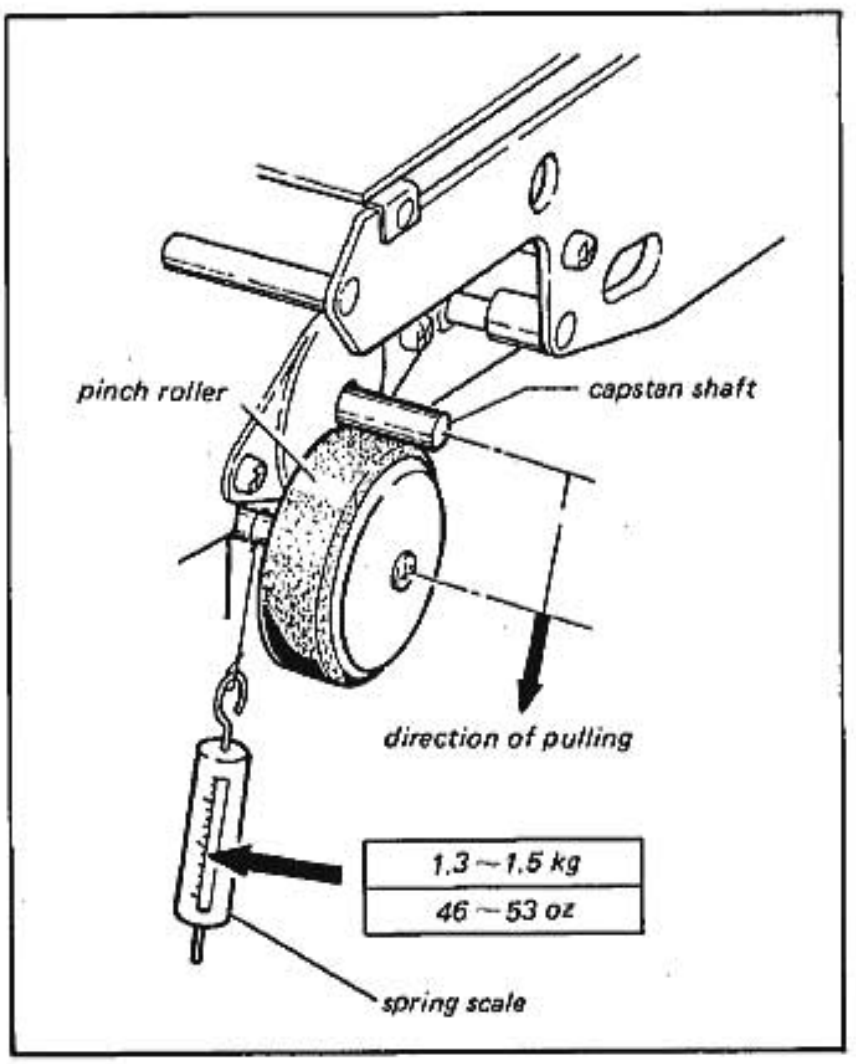


Fig. 6-5 Pinch roller pressure adjustment

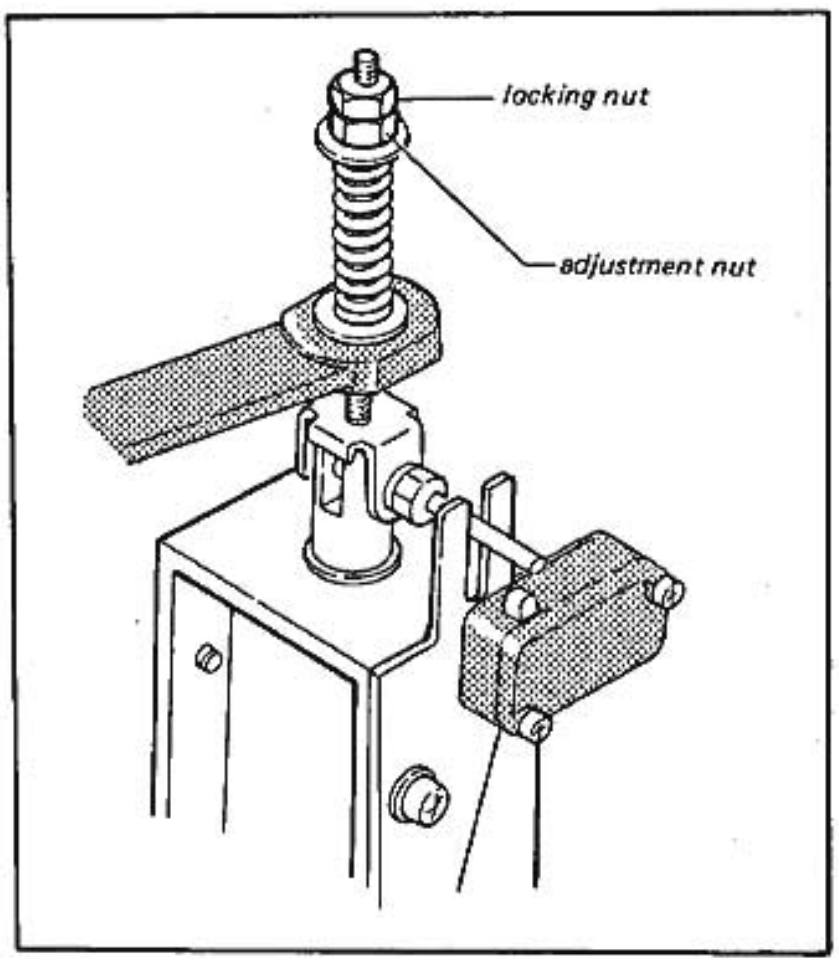


Fig. 6-6 Location of the locking & adjustment nuts.

7 MECHANICAL OPERATION

7-1. Relation of Solenoid and Mechanism

Solenoid operations are as follows. See Fig. 7-1.

By PS701 (pinch roller solenoid), the roller arm is moved and the Pinch Roller is lifted to contact the capstan. S714 is turned on.

PS703 (lifter solenoid) causes the lifter arm to move. The Right Tension Arm regulates the tape movements. Lifter moves upward and contacts the tape with the head. S713 is turned off by the Damper Unit. The Right Reel Motor starts to rotate in correct speed. The Damper Unit has a function of delay, making use of oil and spring. Delay time should be set at 1 to 1.5 seconds.

PS702 (brake solenoid) acts on the Brake Arm to release the both Right and Left Reel Motor Brakes.

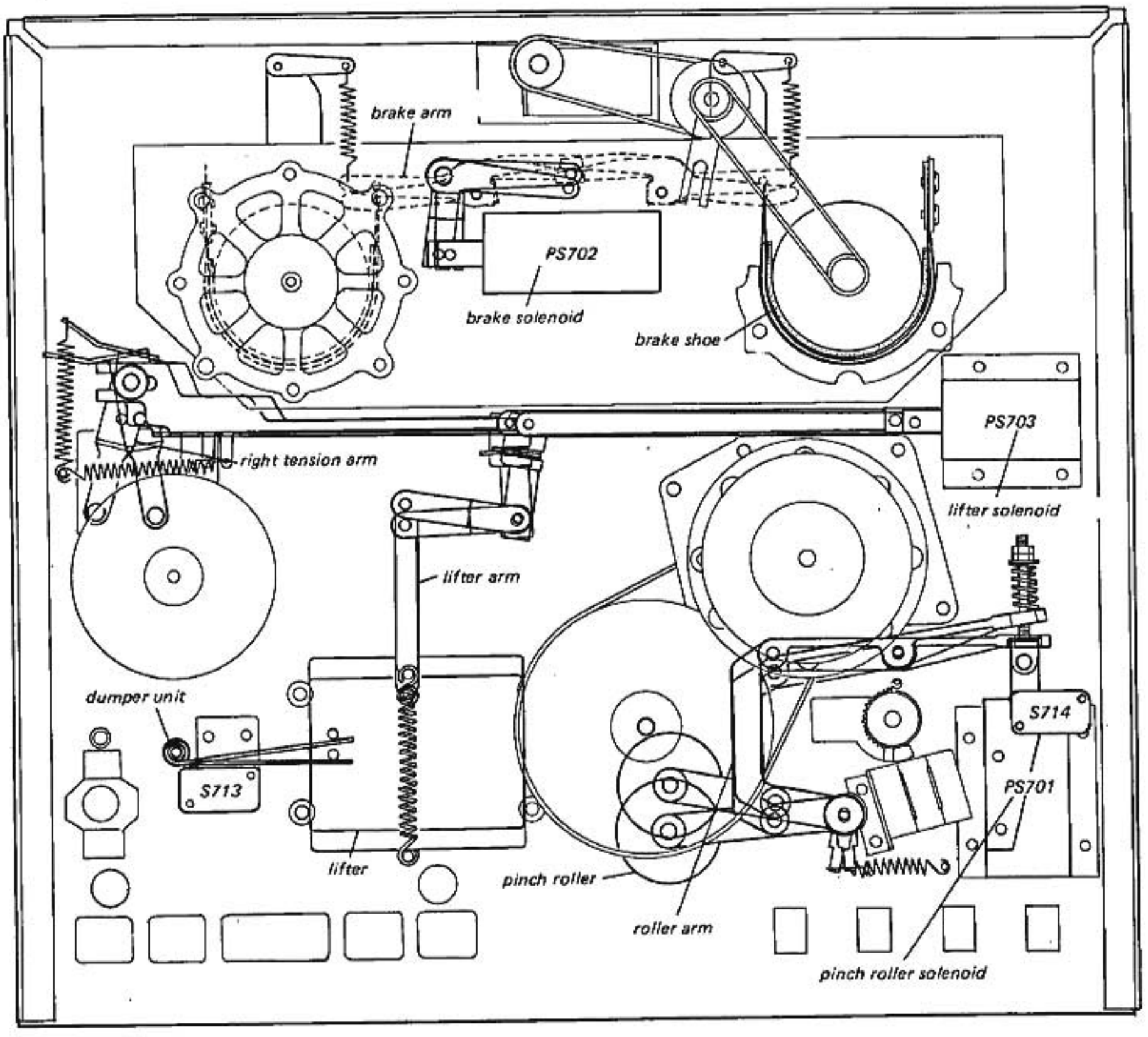


Fig. 7-1

8 MEASUREMENT

* Before any measurement, set the unit as follows.

1) Tape Speed —— 19 cm/sec (7½ ips).

2) PLAYBACK Volume Control Thread a tape (AMPEX standard tape 01-31321-04), and playback 700 Hz signal in the forward playback mode. Adjust the PLAYBACK Volume Control for 0.775 V at the LINE OUT. Make sure the pointer of the VU meter reads "O".

3) LINE-1 and 2 Volume Control —— Maximum.

4) BALANCE Volume Control —— Center

5) MONITOR Switch —— PLAYBACK

6) MODE Switch —— STEREO

8-1. Signal-to-Noise Ratio

1) Supply 1,000 Hz signal of 70 mV from the audio signal generator to the LINE-1 terminals of right and left channels in the record mode.

2) Play back the tape. Connect the equalizer circuit to LINE OUTs of the channels as shown in Fig. 8-1, and read the output voltages by a VTVM.

3) Demagnetize the tape completely by the tape eraser. Play back the tape without signal connecting the equalizer circuit as shown in Fig. 8-1. Read the output voltages.

4) The signal-to-noise ratio can be obtained from the ratio of the output voltages between the steps 2 (signal) and 3 (noise).
See Fig. 8-7 for the response of the equalizer circuit.

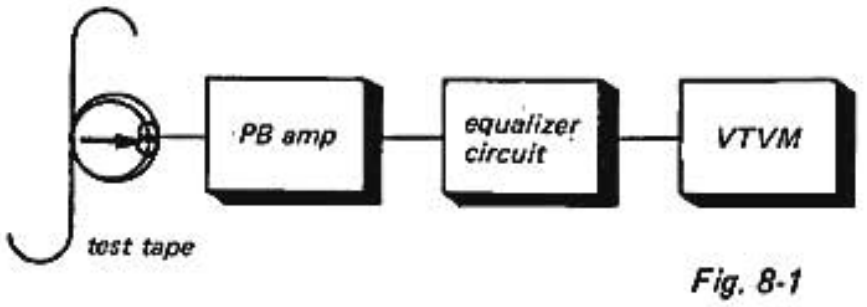


Fig. 8-1

8-2. Distortion

1) Record 1,000 Hz, 70 mV signal on both channels.

2) Play back the tape. Connect the equalizer circuit to LINE OUTs of both channels as shown in Fig. 8-2, and read the distortion by the distortion meter. See Fig. 8-7 for the response of the equalizer circuit.

8-3. Crosstalk Between Tracks

1) Thread a tape demagnetized completely by the Tape Eraser.

2) Record 1,000 Hz, 70 mV signal.

3) Play back the tape. Connect the LINE OUTs of both channels to the bandpass filter as shown in Fig. 8-3. Read the output voltages by a VTVM. (Track 1 is at L-channel and track 3 at R-channel.)

4) Exchange reels, and play back the tape with no recordings. Make connections as shown in Fig. 8-3. Read the output voltages. (Track 4 is at L-channel and track 2 at R-channel.)

5) Crosstalk between tracks can be obtained from the ratio between the output voltages in steps 3 and 4. See Fig. 8-6 for the response of the bandpass filter.

8-4. Erasure Percentage

1) Record 1,000 Hz, 7 V signal.

2) Erase a part of the recorded tape. Erasure percentage can be obtained from the ratio of playback output voltages between recorded and erased parts of the tape.
See Fig. 8-6 for the response of the bandpass filter.

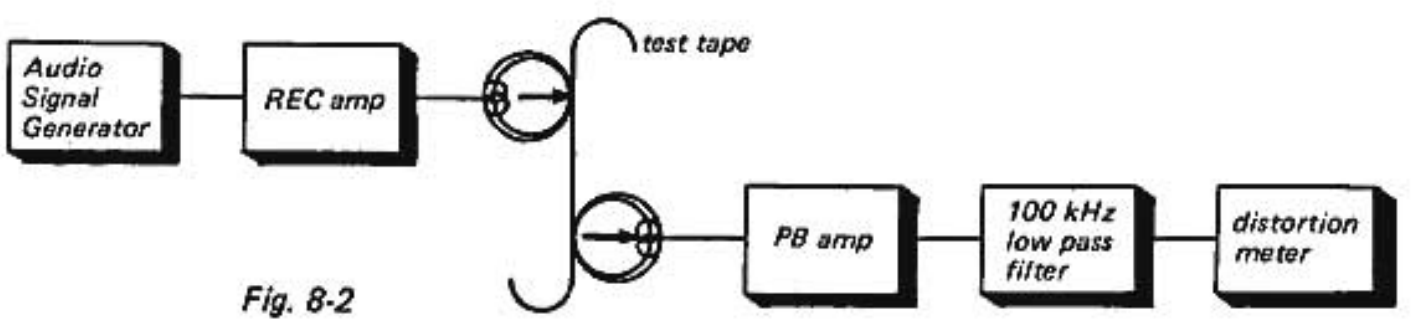


Fig. 8-2

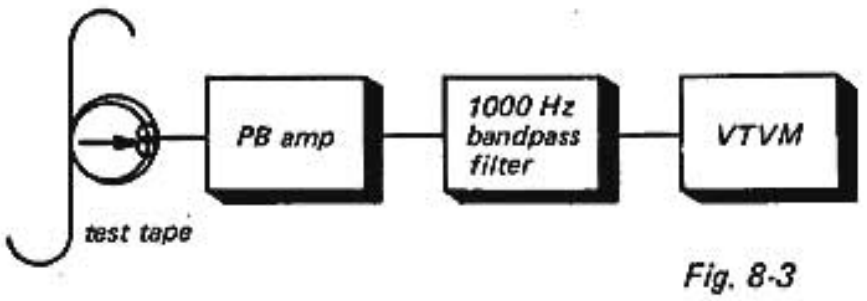


Fig. 8-3

8-5. Channel Separation

1) Supply 1,000 Hz, 70 mV signal from the audio signal generator to the LINE-1 terminal of L-channel (R-channel) in the record mode. Supply only a bias to the R-channel (L-channel) without signal.

2) Make connections of both channel outputs to the bandpass filter as shown in Fig. 8-4. Channel separation can be obtained from the ratio of the playback output voltages between both channels from a VTVM.
See Fig. 8-6 for the response of the bandpass filter.

8-6. Wow and Flutter

1. **Tape Speed of 19 cm/sec (7½ ips)**
(See Fig. 8-5)

1) Play back 3,000 Hz signal of a test tape (AMPEX standard tape 01-31326-01.)

2) With a wow and flutter meter, check the wow and fluter three times at the beginning, middle and end of a tape wound on 17 cm (7 inch) reel for ten seconds each time. Deviations above the specifications within three times are not counted as wow and flutter.

3) Perform this checking in both forward and reverse playback modes.

2. **Tape Speed of 9.5 cm/sec (3¾ ips)**

Thread a test tape (AMPEX standard tape 01-31336-02). Perform the check as in step 1 "Tape Speed of 19 cm/sec".

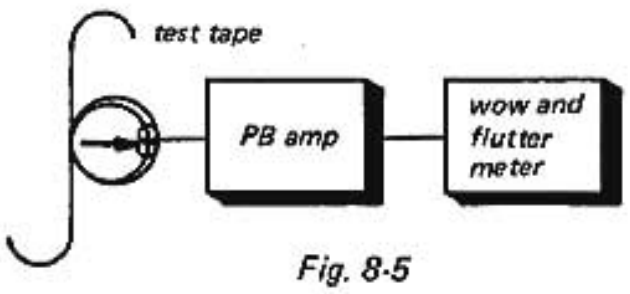


Fig. 8-5

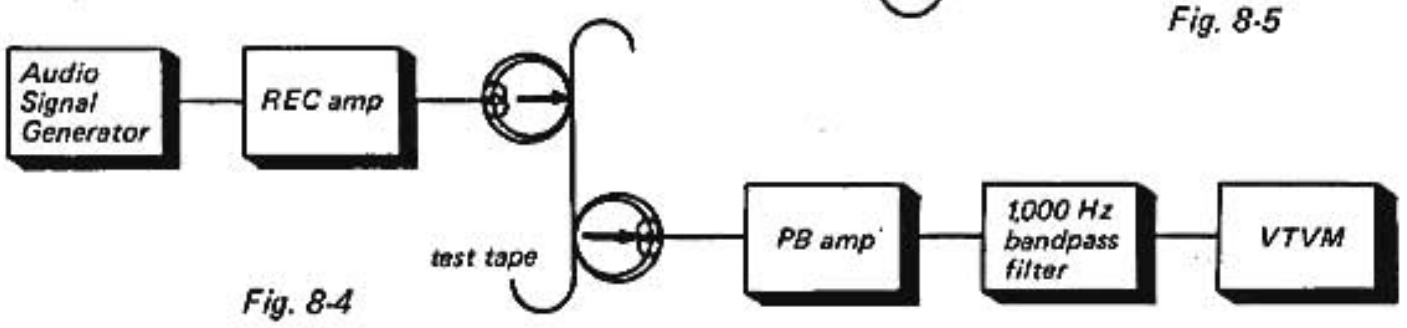
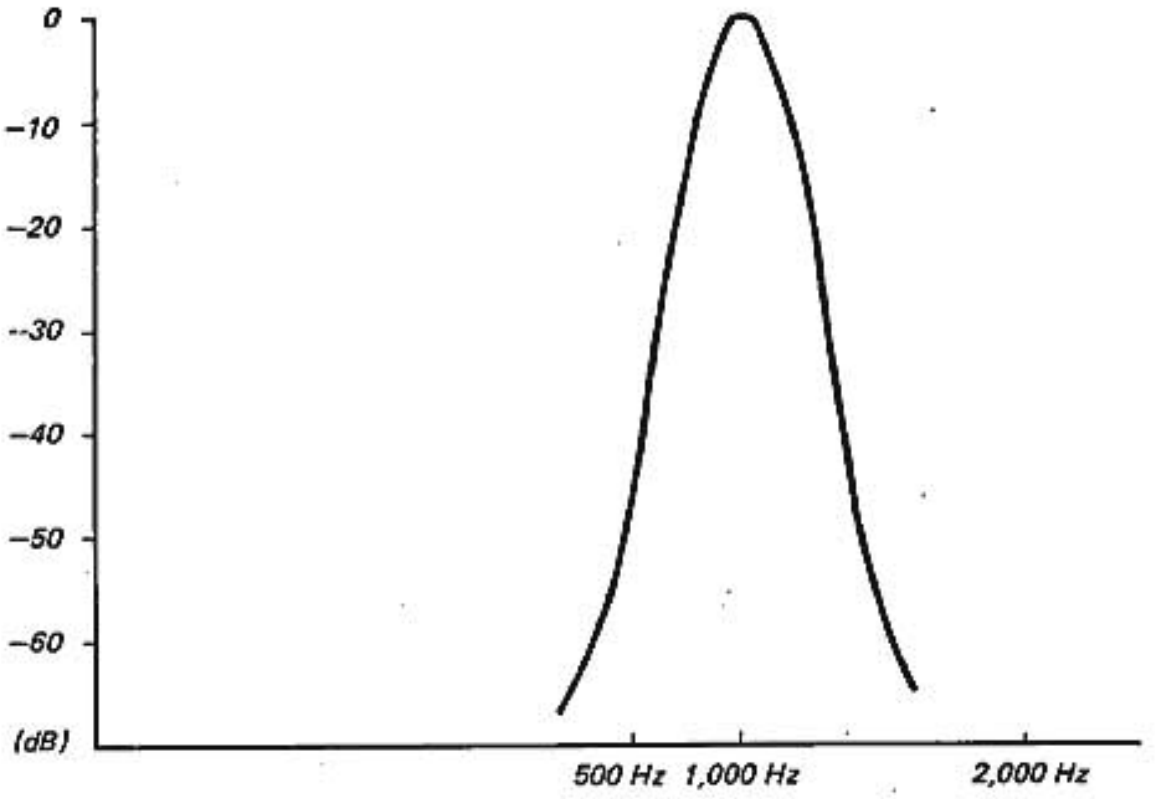


Fig. 8-4

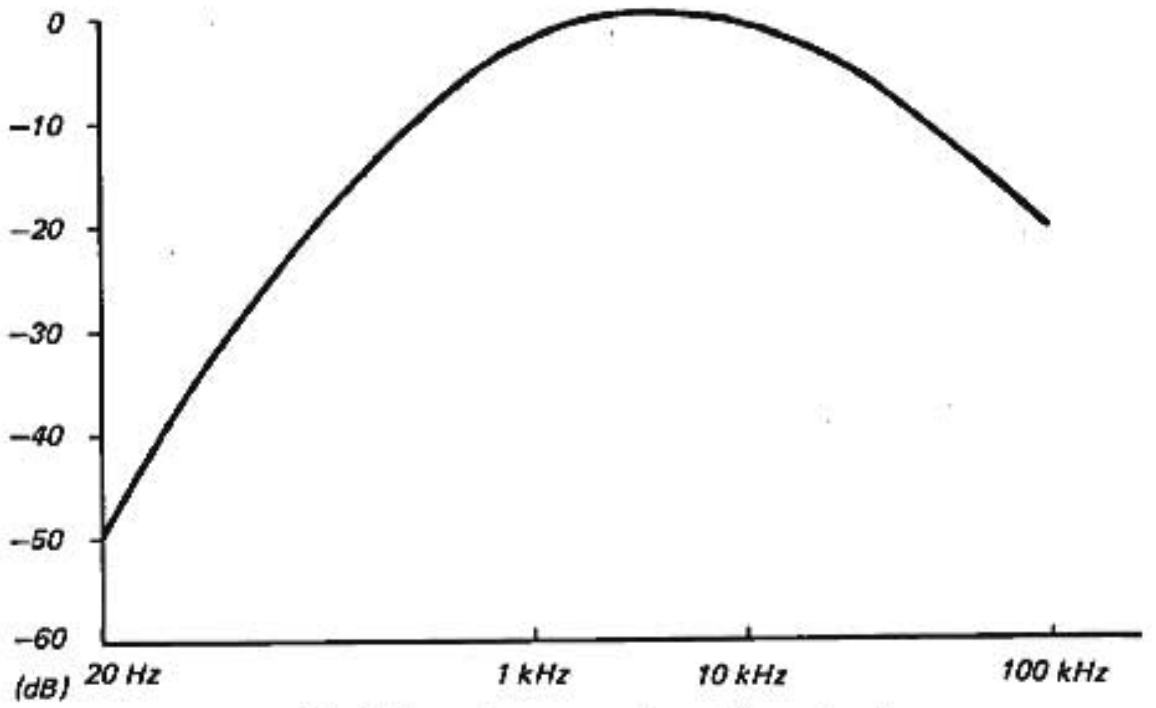
8-7. Response of 1,000 Hz Bandpass Filter



frequency	response
300 Hz	−68 dB
500 Hz	−58 dB
1,000 Hz	0 dB
1,500 Hz	−17 dB
2,000 Hz	−37 dB
2,500 Hz	−65 dB

Fig. 8-6. Response of 1,000 Hz bandpass filter

8-8. Response of Equalizer Circuit



frequency	response
20 Hz	−50 dB
50 Hz	−31 dB
100 Hz	−19.5 dB
150 Hz	−6 dB
1,000 Hz	0 dB
1,500 Hz	−0.1 dB
10 kHz	−2.5 dB
15 kHz	−15 dB
100 kHz	−21 dB

Fig. 8-7. Response of equalizer circuit

9 MAINTENANCE

9-1. Changing the LINE Voltages and Frequencies

To operate the recorder on the correct voltage and frequency.
Proceed to (1) and (2) with the power off.

1. Changing the LINE Voltages (See Fig. 9-1)

1) Rotate the fuse cap in the direction shown by the arrow and remove it.

2) Pull off the power plug. Insert it into the power receptacle so that the cut-out section of the plug indicates the correct voltage marking on the receptacle.

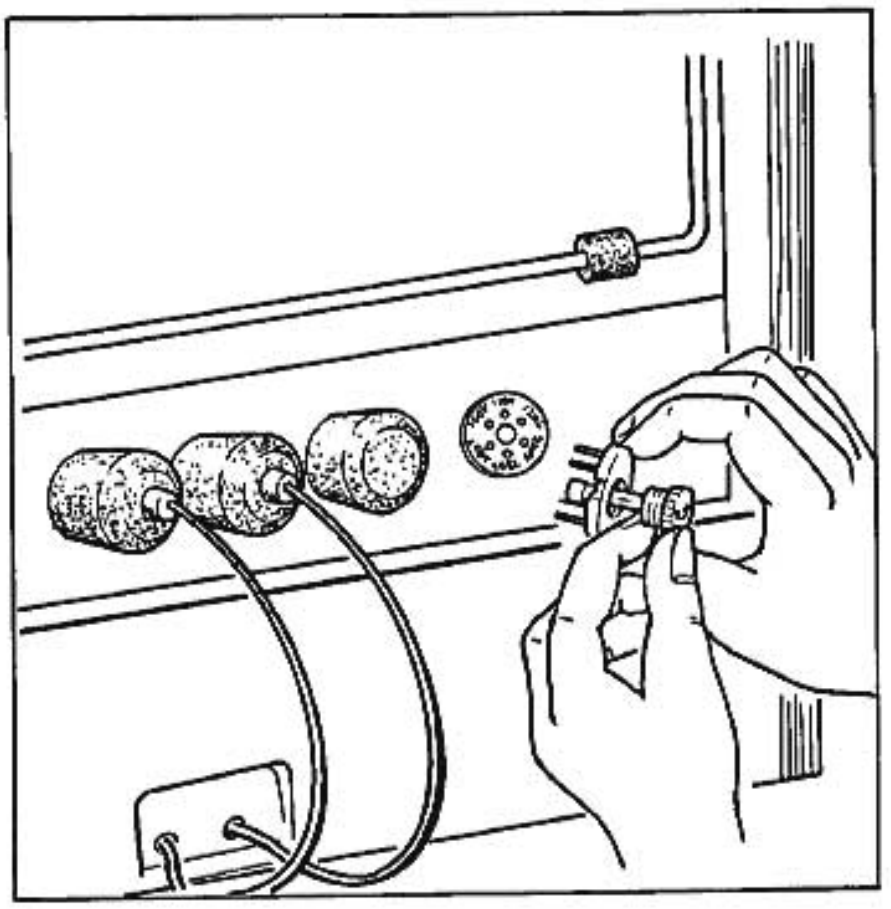


Fig. 9-1

2. Changing the LINE Frequencies
(See Figs. 9-2, 9-3)

LINE Frequency changing is accomplished by using the frequency change switch and the capstan belt for 50 Hz and 60 Hz operations. The frequency change switch is located at the left edge of the control mounting bracket to which the reel motors are installed. (The control mounting bracket appears after the removal of the mechanical section from the cabinet.)

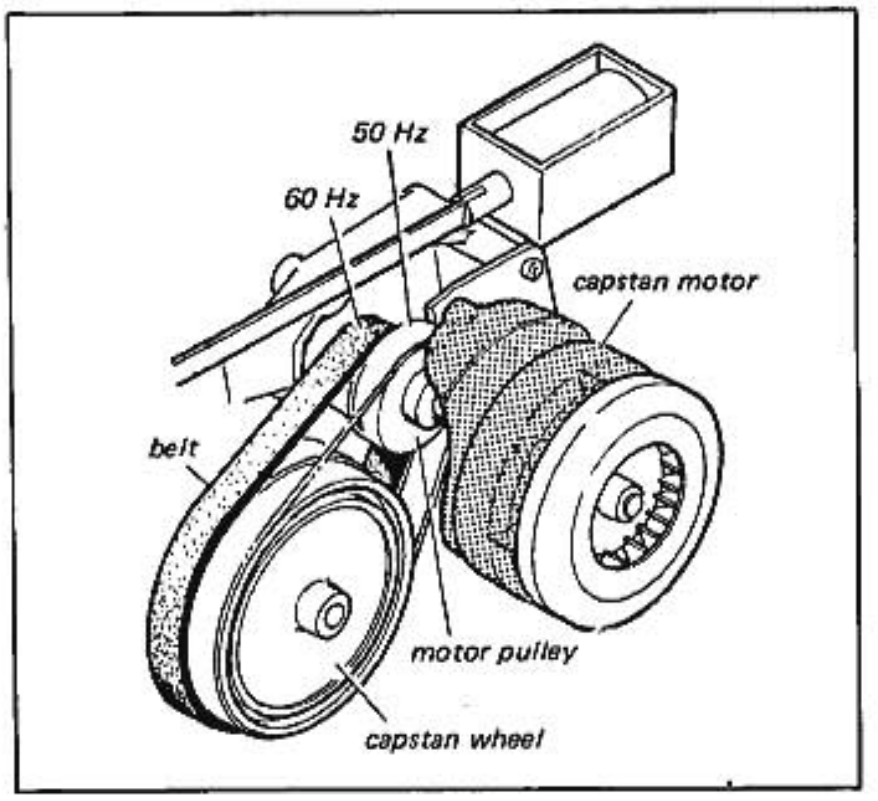


Fig. 9-2

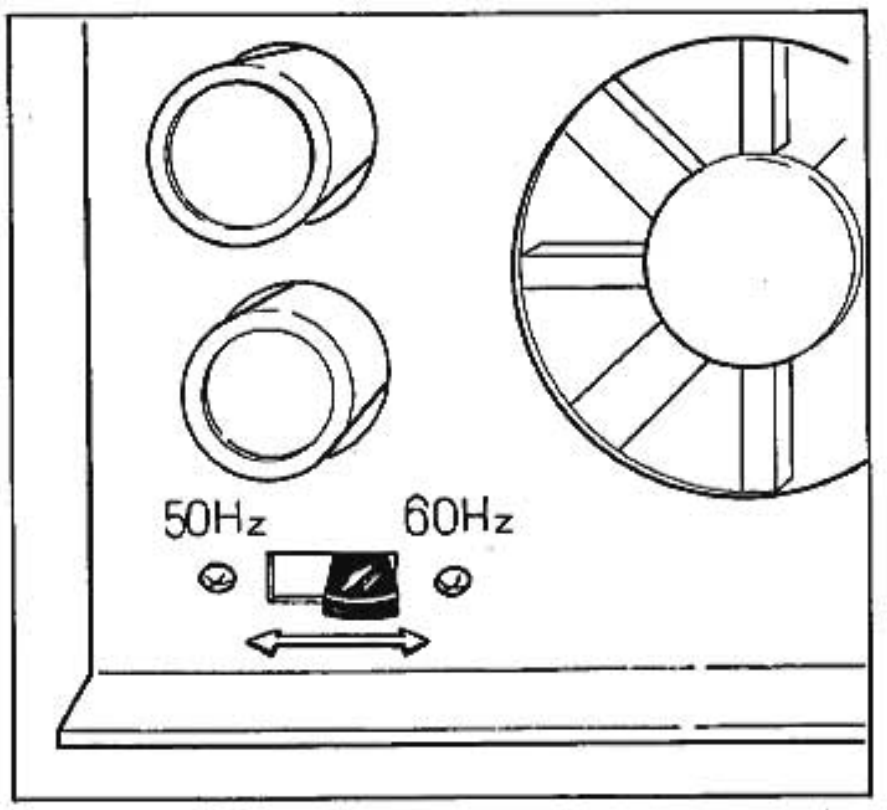


Fig. 9-3

Procedure

1) Set the frequency change switch to the correct position (50 Hz or 60 Hz.)

2) Apply the capstan belt on the correct side of the capstan wheel and motor pulley so that the belt tracks correctly (See Fig. 9-2.) Note that the smaller side of the motor pulley is for 60 Hz operation and the larger side for 50 Hz operation, while the smaller side of the capstan flywheel is for 50 Hz operation and the larger side for 60 Hz operation.

9-2. Changing Output Voltage (See Fig. 9-4)

When the output voltage is too high for the amplifiers to be connected, change the output voltage attenuator switch to the LOW position (which is located on the G-1020G board in the amplifier section.) In normal condition, however, set the switch to HIGH.

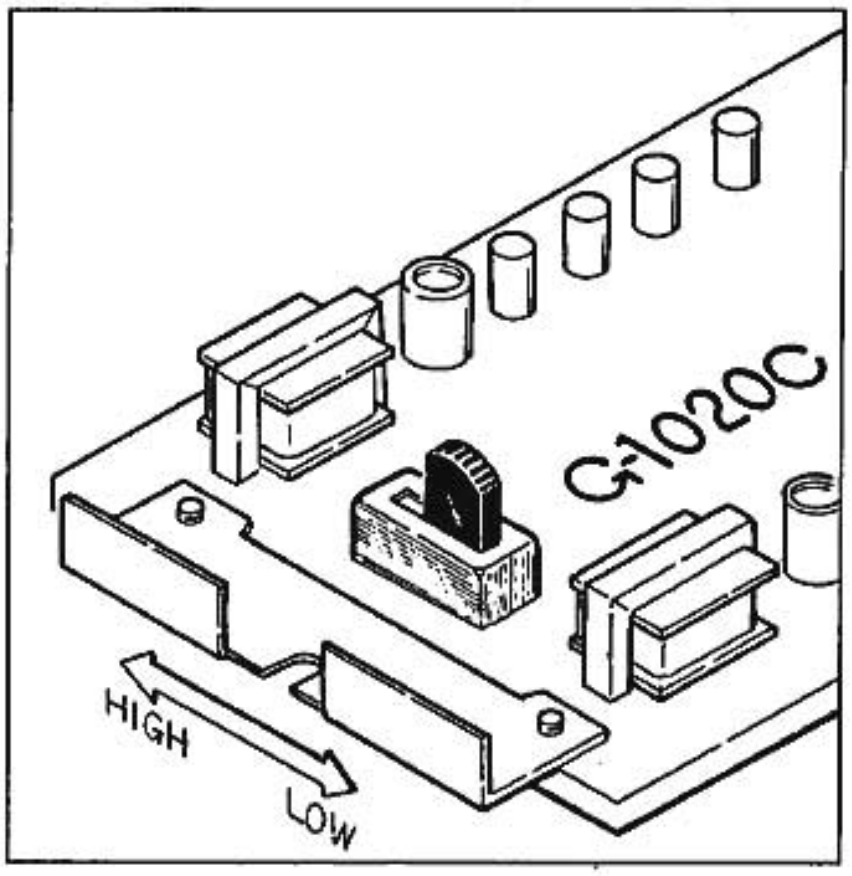


Fig. 9-4

9-3. Lubrication (See Figs. 9-5, 9-6)

Four main lubrication points are:

a. Capstan motor

b. Capstan shaft

c. Reel motors (two)

1) Use only the lubricating agent recommended in this manual.

2) Be careful to prevent any flow-out of the lubricating agent at the motors. Avoid excessive lubrication.

3) Be careful to prevent the lubricating agent from being in contact with the capstan belt, the capstan shaft (Contact part with tape) and the capstan wheel.

4) The capstan motor, the capstan shaft and the reel motors require lubrication every 2,000 hours of operation.

5) Lubricate the rotating parts (except for at the four main parts previously referred to) only when a burning or noise is caused.

6) Lubrication, shall be made at the Sansui authorized service agency only.

9-4. List of Recommended Lubricating Agent

- Capstan motor
- Reel motors
  - - - - - - -MOBILE OIL. DTE No. 24
- Shafts of operating switches & REC switch
- Counter mounting shaft
  - - - - - - -disulfide molybdenum
- Shafts of other rotating parts
  - - - - - - -MOBILE GREASE SPECIAL

9-5. Cleaning (See Fig. 9-7)

Clean the following parts carefully with the supplied silicon cloth or a cotton wrapped stick soaked with the SANSUI tape deck cleaning agent.

A. Left tension arm

B. Pinch roller (rubber surface)

C. Capstan shaft

D. Tape guides

E. Lifters (pins being in contact with tape)

F. Each head surface

G. Right tension arm

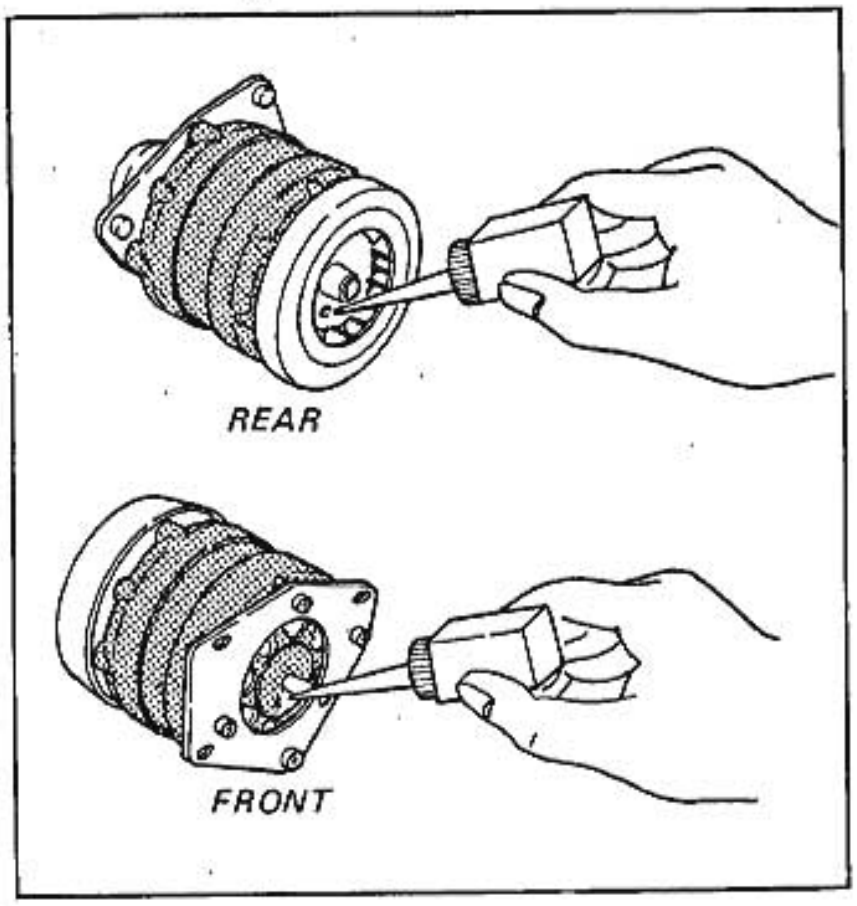


Fig. 9-5

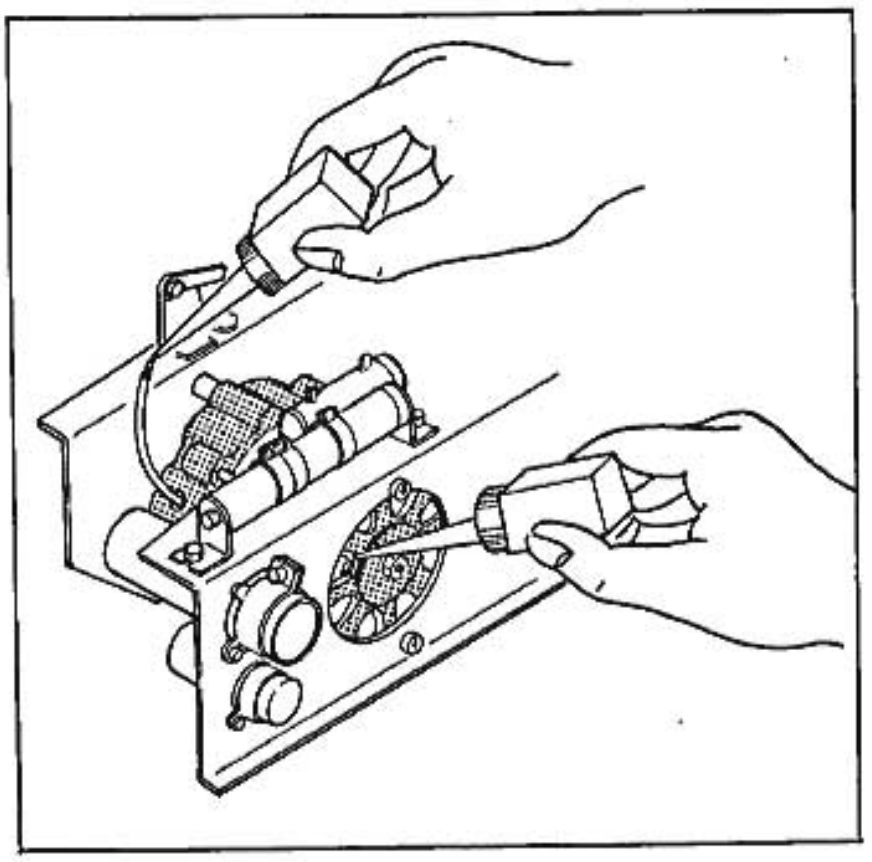


Fig. 9-6

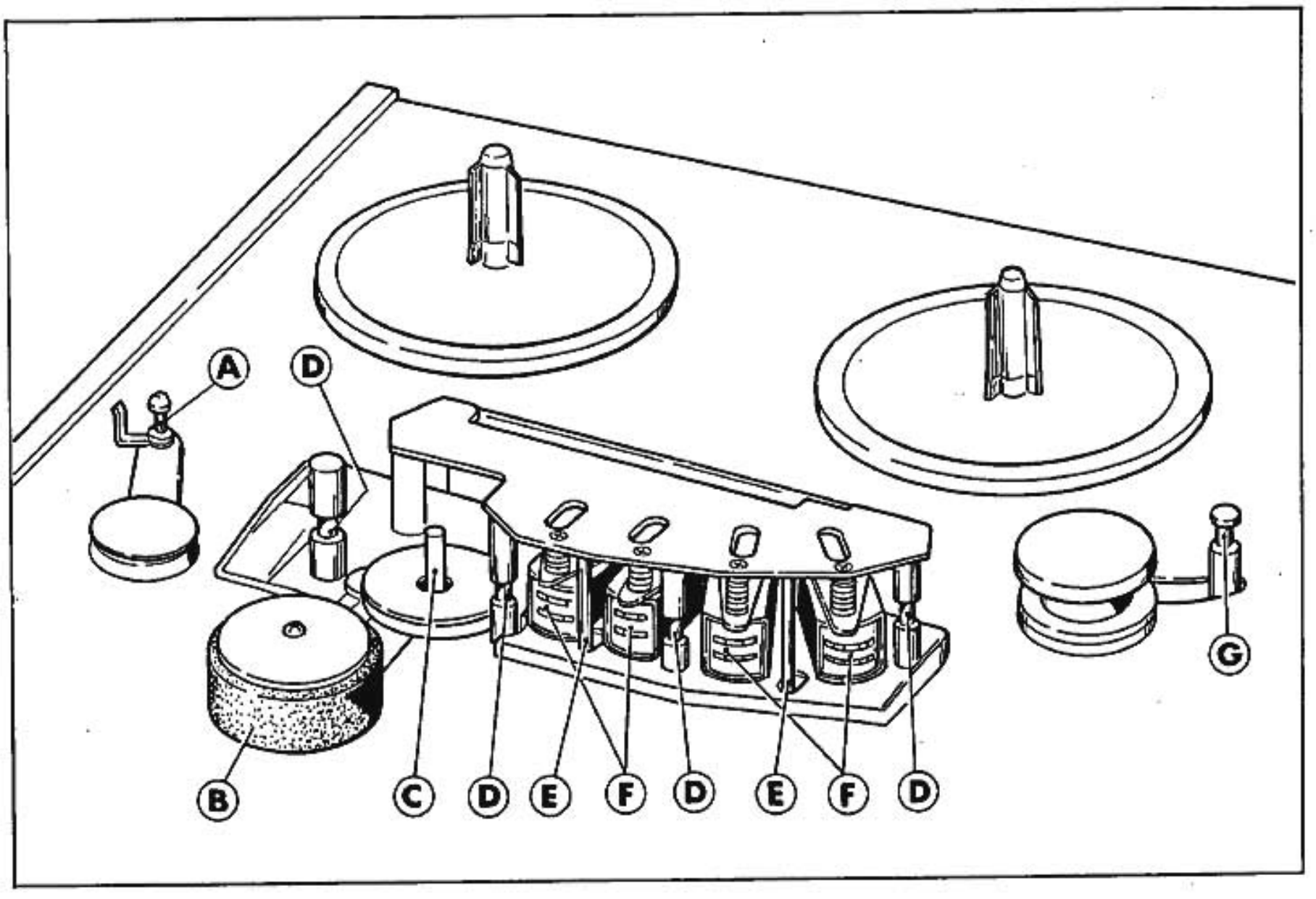


Fig. 9-7

9-6. Tape Splicing (See Fig. 9-8)

The tape are designed strong enough to withstand the various stresses. However, if splitting the tape occurs accidentally or cutting the tape is necessary for the editing purposes, tape splicing is easily made as follows.

Requirements:

1. Scissors:
   Use a scissors demagnetized through the use of a head or bulk eraser.
2. Splicing tape:
   Use only the supplied splicing tape or the splicing tape for recording tape use. Any substitutional adhesive tapes easily cause various tape troubles such as damage or scratches of tape in motion. Therefore, never use the substitutional tapes.

Procedure:

1) Overlap the desired two tapes with the reverse (glare side) upward respectively. Cut the ends of the tapes at 45 degrees. See Fig. 9-8 (a)
2) On a flat work bench, bring the cut tapes face to face so that the joints fit together perfectly. Apply the splicing tape to the joints of the spliced tape. See Fig. 9-8 (b). And rub the splicing tape with the finger(s) so that the joints and the applied splicing tape stick together firmly.
3) Cut the unnecessary portions of splicing tape so that the splicing tape applied is a bit in from top and bottom ends of the spliced tape.

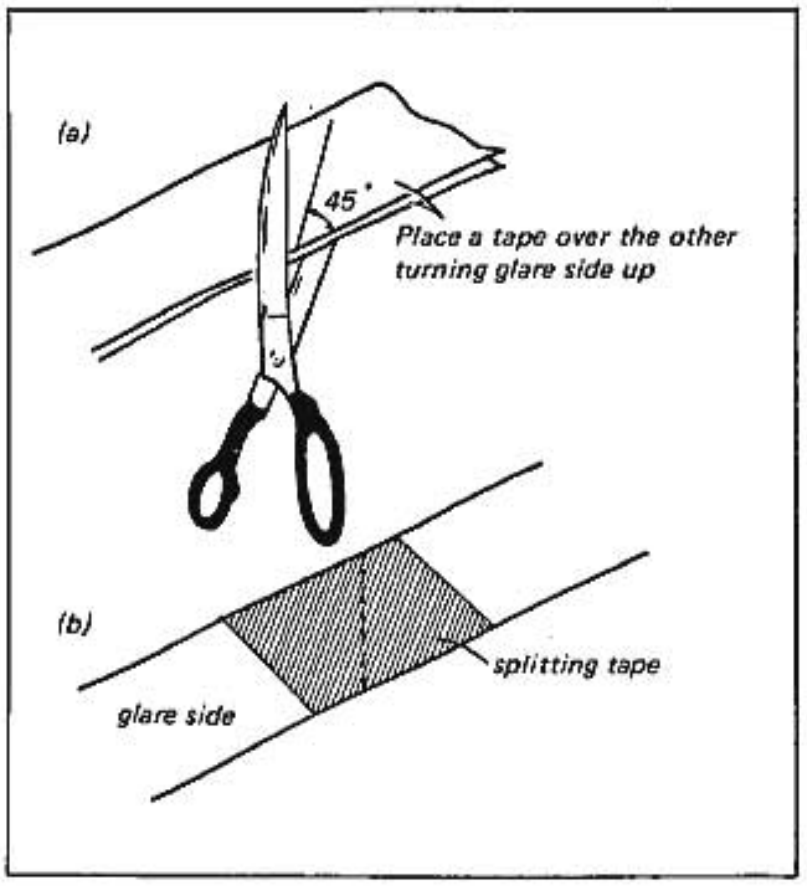


Fig. 9-8

10 REPLACEMENT OF MAIN PARTS

This section describes replacement procedures of the principal parts. Perform the mechanical or electronical adjustments always, referring to the respective adjustments described in this manual, after every replacement of parts.

10-1. Brake Band & Brake Shoe Replacement

For replacement of a worn-out brake shoe also the brake band in accordance with the following procedure, see Fig. 10-1. Do not remove the brake guide except it is damaged.

1. Disassembly (See Fig. 10-1)

1) Remove the table sheet, the reel table, the 20 Hz sensing amplifier board (G-1039A) and the reel platform assembly in accordance with Figs. 12-6 and 12-8.

2) Remove the brake drum ③ by unscrewing the two S type screws ① , ② .

3) Remove the brake band bracket ⑭ from the brake band by removing the spring ⑦, the two B type screws ⑩ , ⑫ and the two S type washers ⑪ , ⑬ .

4) Remove the brake band ⑱ and the brake arm ⑲ together by removing the E type ring ⑨ .

5) Remove the two E type rings ⑮ , ⑰ . Pull off the brake band pin ⑯ from the brake band. Disassemble the brake band and the brake arm.

2. Assembly (See Fig. 10-1)

1) After inserting the brake band pin ⑯ into the brake band ⑱ and the brake arm ⑲ , secure the pin place with the E type rings ⑮ , ⑰ .

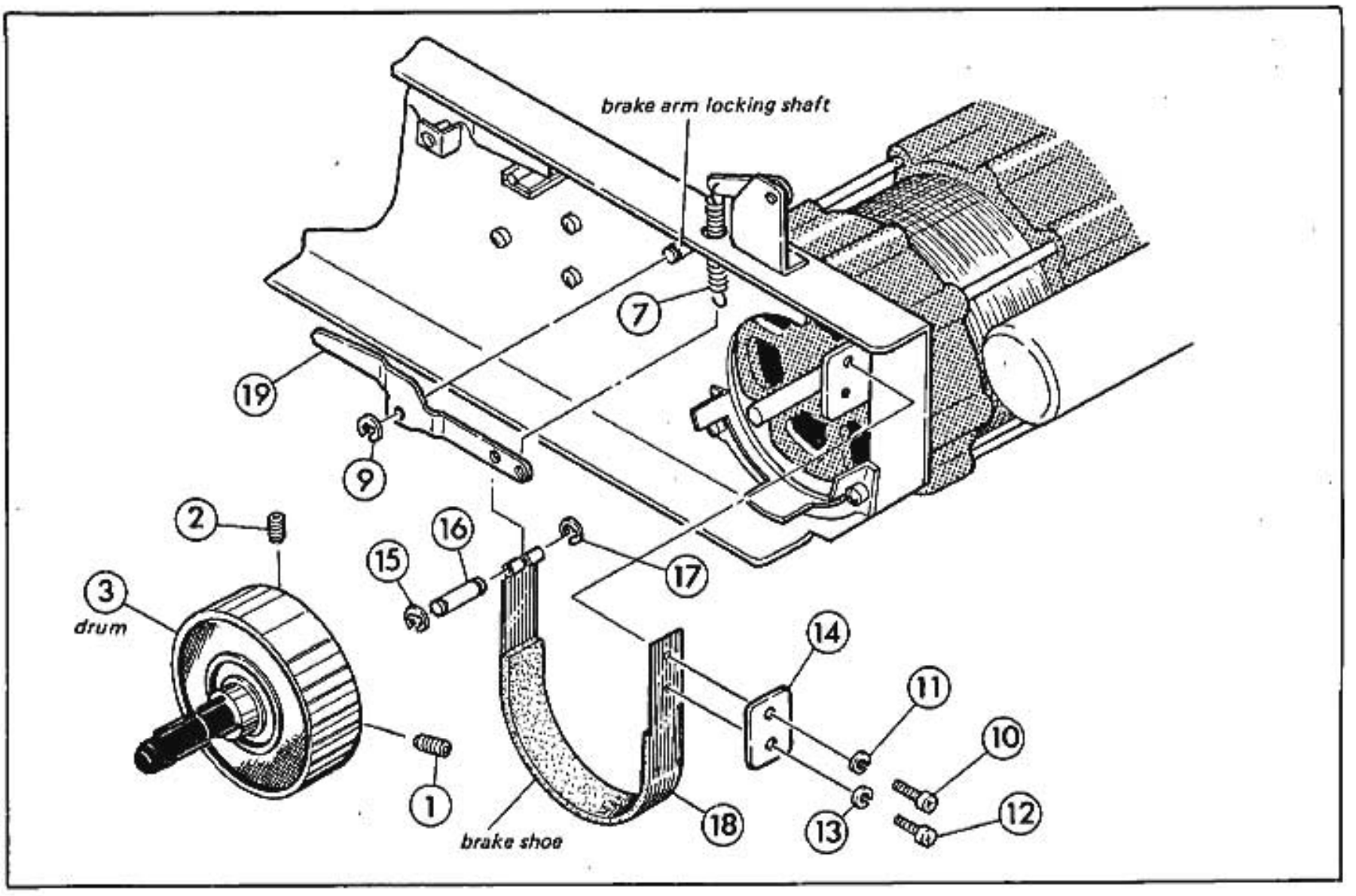


Fig. 10-1

2) With the two S type washers ⑪ , ⑬ inserted into the two B type screws ⑩ , ⑫ , install the brake band bracket ⑭ to the brake band. At this time, tighten the B type screws partially because the screws for the brake band bracket ⑭ are tightened completely after going through the rough adjustment on the brake torque.

3) Install the spring ⑦ in place.

4) Install the reel platform assembly, the 20 Hz sensing board G-1039A, the reel table and the table sheet respectively in place in the reverse order of the disassembly procedure.

5) After going through the above procedure, perform all the steps in the section 10-2, Rough adjustment on brake torque.

10-2. Rough Adjustment on Brake Torque

(See Figs. 10-2, 10-3)

The brakes need to be adjusted so that excessive tape slack or exvessive tape tension does not occur when PLAY, FAST FORWARD or REWIND mode is switched to STOP. Therefore, perform this section after every brake band replacement. Proceed as follows.

1) Insert an iron plate of applicable size (with thickness between 1.2 mm to 1.6 mm) between the brake arm ⑲ and the stopper pin as in Fig. 10-3.

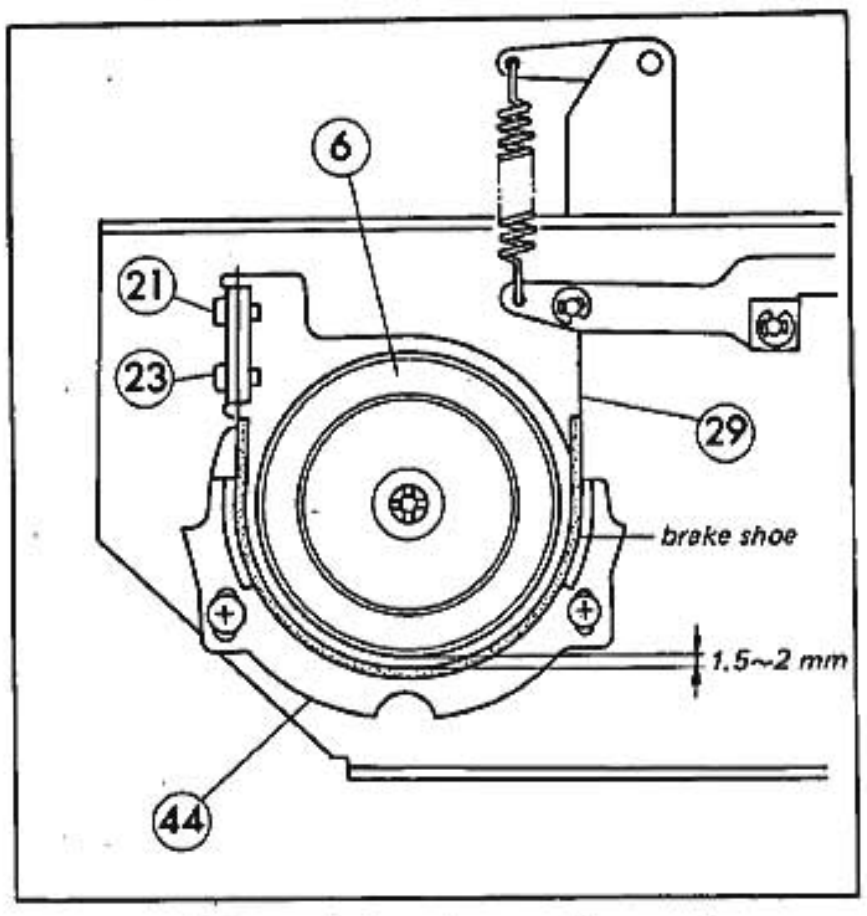


Fig. 10-2 Brake adjustment (approx)

2) Adjust the brake band ㉙ , with the two B type screws ㉑ , ㉓ partially tightened, so that the brake band contacts the guide ㊹ uniformly as in Fig. 10-2. At this time, the clearance between the brake shoe and the brake drum ⑥ should be approximately 1.5 mm to 2 mm. Secure, then, the brake band bracket in place by tightening the two B type screws completely.

Note: After going through this adjustment, perform the brake torque adjustment in the section 6-3.

10-3. Capstan Motor Replacement

Replace the capstan motor when found defective or after 30,000 hours of normal operation.

1. **Disassembly** (See Fig. 10-4)

1) Remove the capstan motor ⑲ and the motor mounting bracket ⑩ by removing the three B type screws ① , ④ , ⑦ , the three S type washers ② , ⑤ , ⑧ and the three P type washers ③ , ⑥ , ⑨ .

2) Disassemble the capstan motor and the motor mounting bracket by removing the four B type screws ⑪ , ⑬ , ⑮ , ⑰ and the four S type washers ⑫ , ⑭ , ⑯ , ⑱ .

3) Remove the motor pulley ㉓ by removing the two S type screws ㉑ , ㉒ .

2. **Assembly** (See Figs. 10-4, 10-5 and 10-6)

1) Install the motor pulley ㉓ to the capstan motor ⑲ , with a clearance of 3.5 mm between them as in Fig. 10-5, by tightening the two

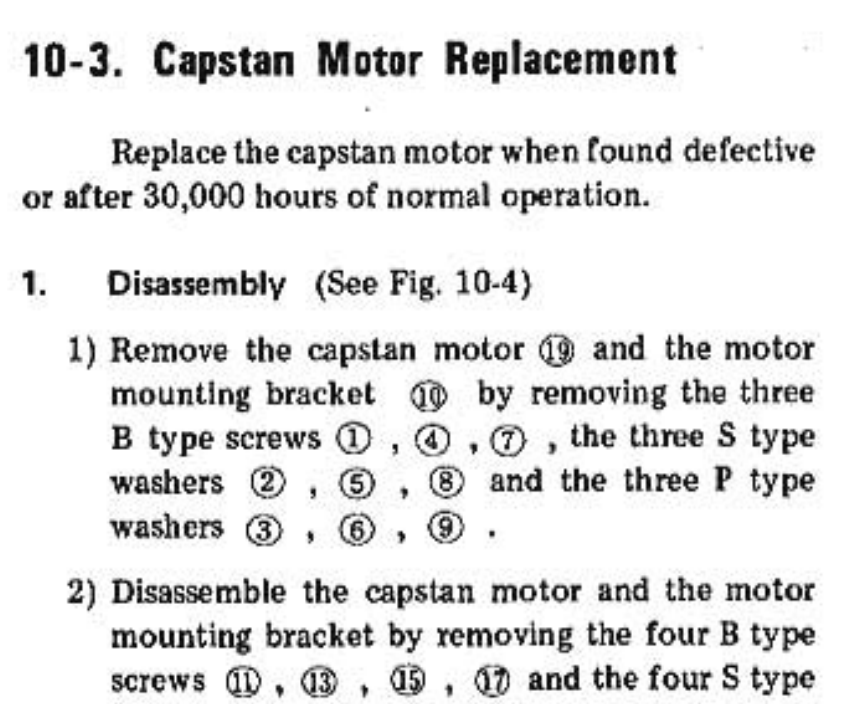


Fig. 10-3 Location of an iron plate

S type screws ㉑ , ㉒ . At this time, tighten the S type screw ㉒ first and then the S type screw ㉑ . For easily obtaining the proper clearance between the motor pulley and the capstan motor, use of such a handmade tool as in Fig. 10-6 is recommended.

2) After inserting the four S type washers ⑫ , ⑭ , ⑯ , ⑱ into the four B type screws ⑪ , ⑬ , ⑮ , ⑰ , install the motor mounting bracket ⑩ to the capstan motor ⑲ by tightening the screws.

3) Insert the three S type washers ② , ⑤ , ⑧ and the three P type washers ③ , ⑥ , ⑨ into the three B type screws ① , ④ , ⑦ . Install the capstan motor in place by tightening the screws. At this time, before tightening the screws, make sure that they are positioned at the left limits in the respective screw mounting slots.

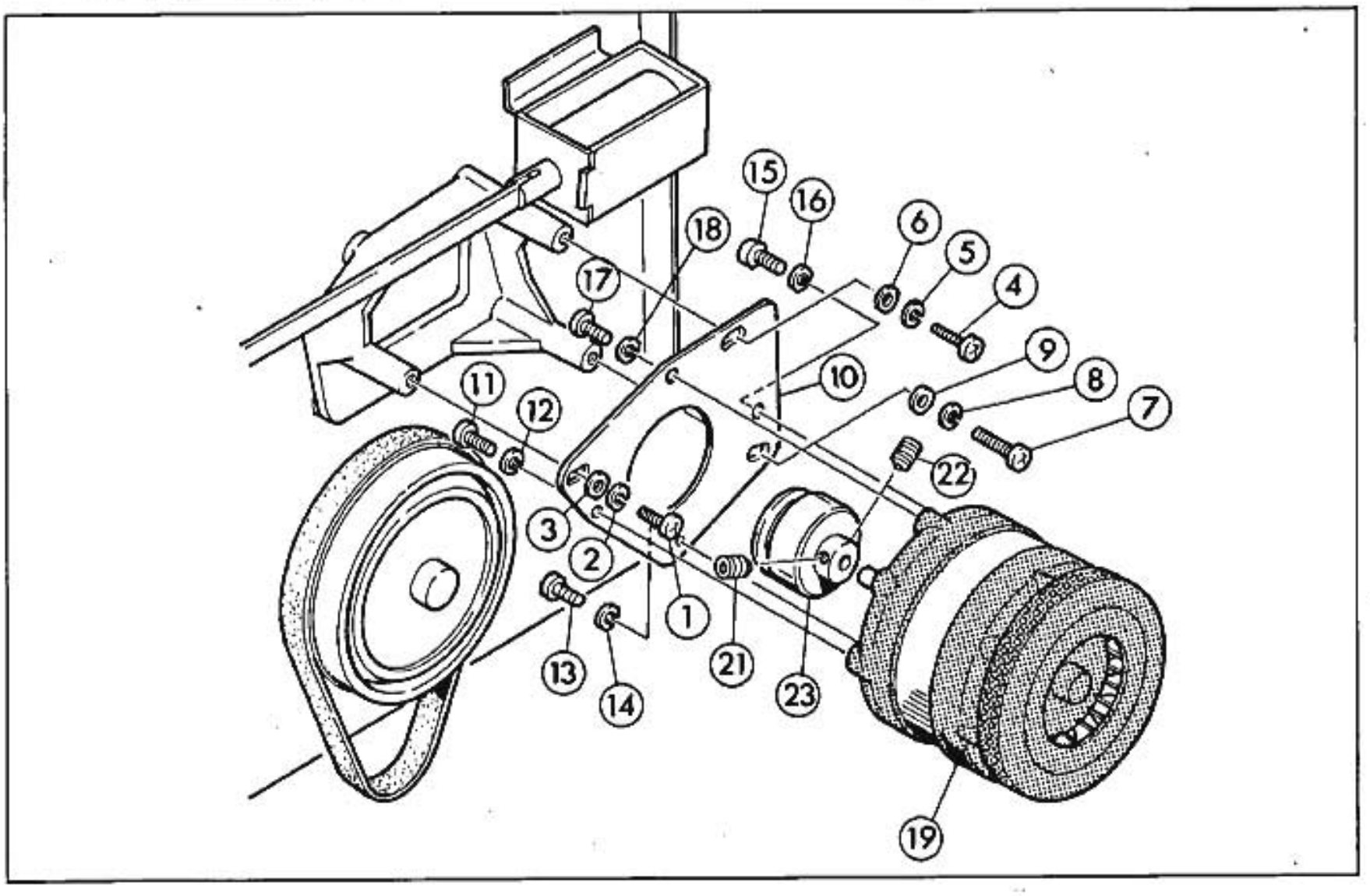


Fig. 10-4

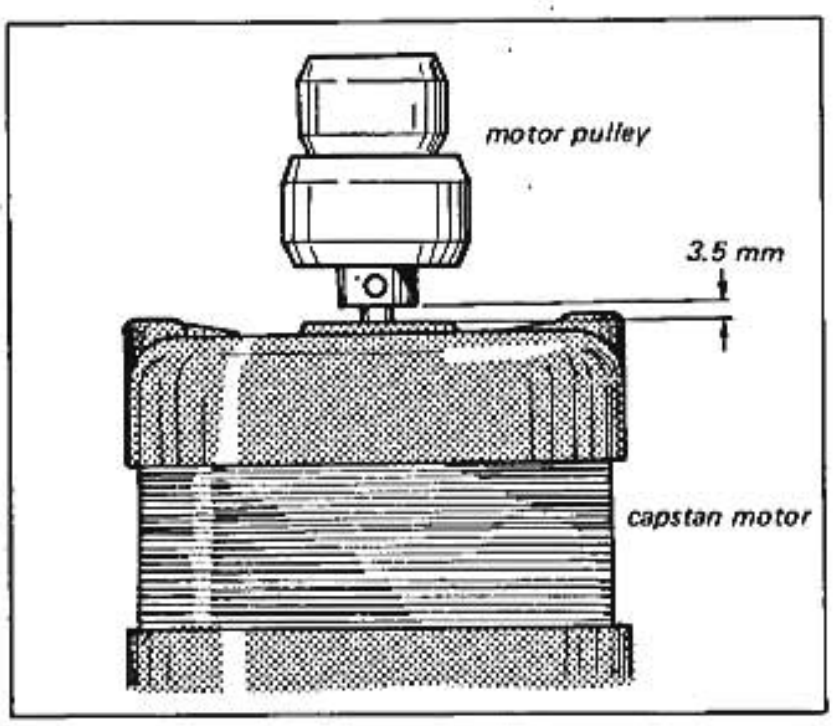


Fig. 10-5 Proper clearance between the motor pulley and the capstan motor

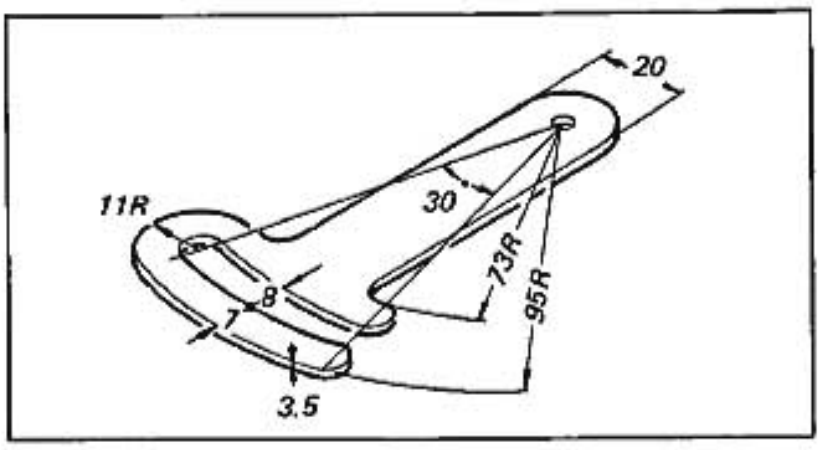


Fig. 10-6 A handmade tool for obtaining the proper clearance

10-4. Capstan Assembly Replacement

Replace the capstan shaft and/or the felt when the shaft is found defective or the felt dirty. The capstan shaft should be replaced together with the metal case.

1. Disassembly (See Figs. 10-7, 10-8)

1) Remove the capstan metal cover ⑯ by removing the two B type screws ⑫, ⑭ and the two S type washers ⑬, ⑮ . See Fig. 10-7.

2) Pull off the oil retaining ring ㊻ from the capstan shaft.

3) To remove the wheel ㉜ , loosen off the two S type screws ㉚, ㉛ .and push the capstan shaft ㊼ toward the front panel to come free of the wheel. See Fig. 10-8.

4) Remove the metal case ㊷ by removing the three nuts ㉝ , ㊱ , ㊴ and the three S type washers ㉞ , ㊲ , ㊵ .

2. Assembly (See Figs. 10-7, 10-8)

1) Install the metal case ㊷ in place by tightening the nuts ㉝ , ㊱ , ㊴ and the S type washers ㉞ , ㊲ , ㊵ .

2) Install the wheel ㉜ in place by tightening the two S type screws ㉚ , ㉛ . At this time, tighten the S type screw ㉛ first and then the S type screw ㉚ .

3) Insert the oil retaining ring ㊻ into the capstan shaft.

4) Insert the two S type washers ⑬ , ⑮ into the two B type screws ⑫ , ⑭ . Install, then, the capstan metal cover ⑯ in place by tightening the screws.

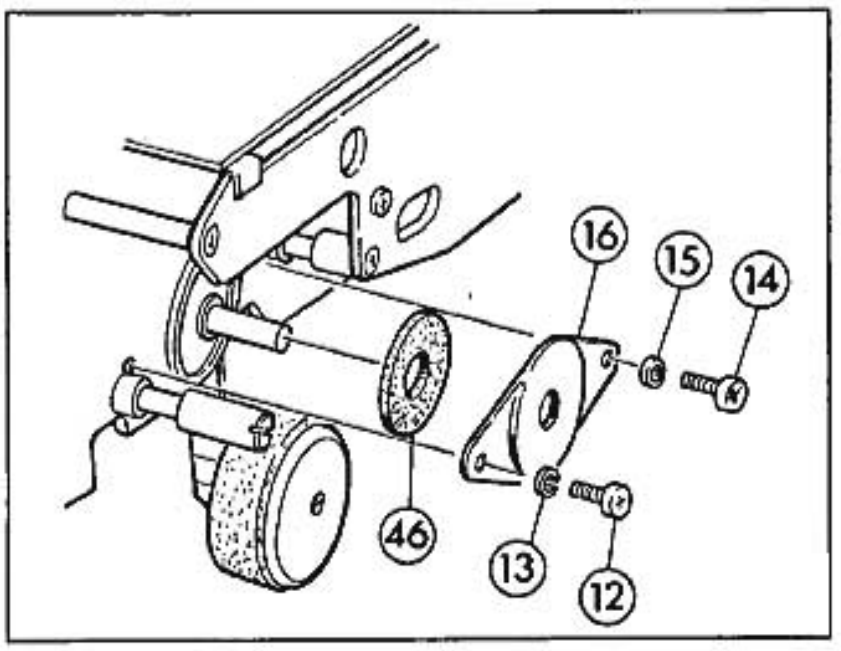


Fig. 10-7

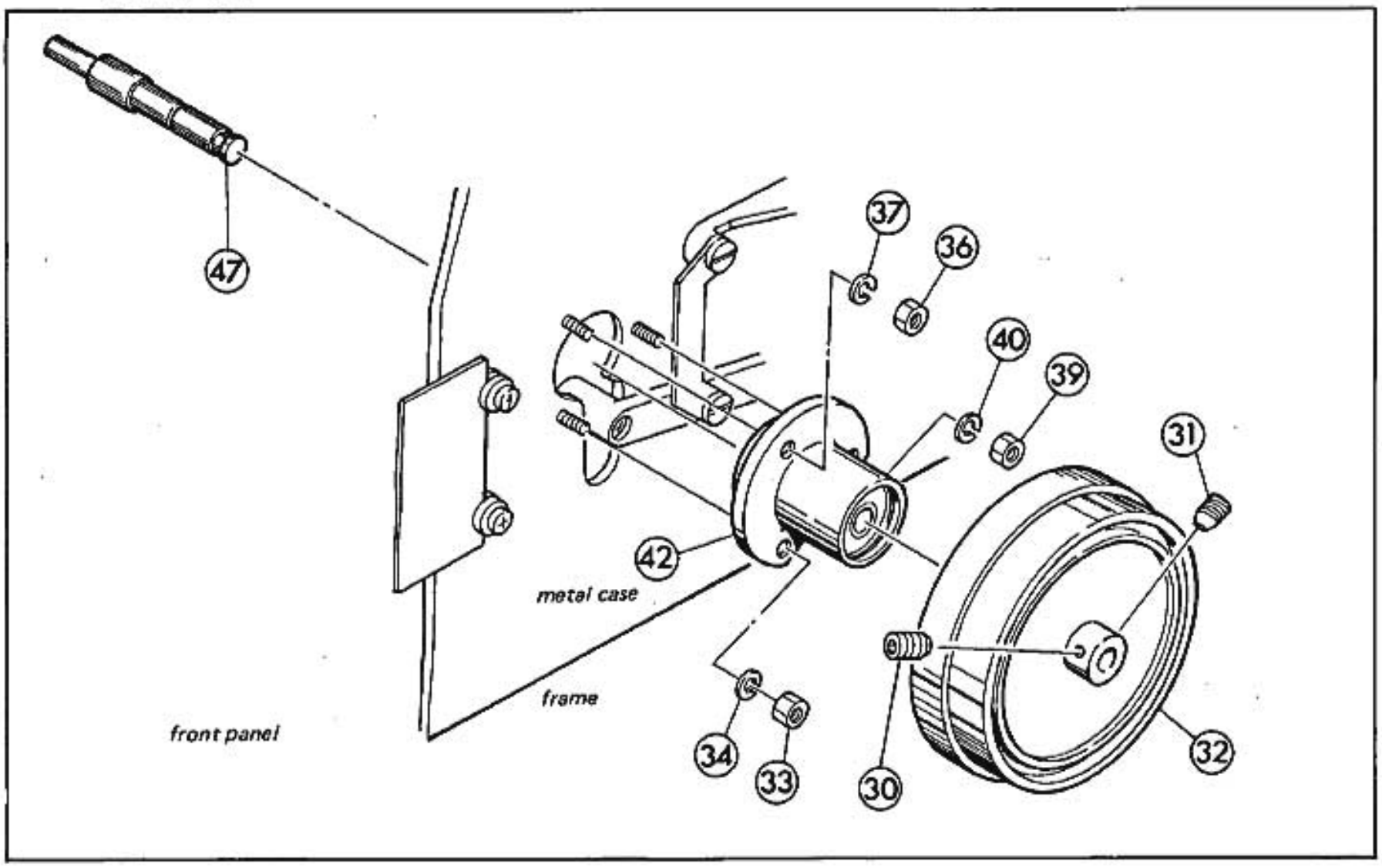


Fig. 10-8

10-5. Pinch Roller Replacement

(See Fig. 10-9)

The pinch roller, being forced against the capstan and acting as a torque transmitter, greatly affects wow and flutter. Therefore, a worn out pinch roller or an oilless metal needs to be replaced. These parts can be replaced separately, but replacement of the pinch roller assembly is recommended. Proceed as follows: Remove the two B type screws ㉖ , ㉘ and the two P type washers ㉗ , ㉙ from the front panel. Remove, then, the pinch roller housing ㉚ and pull off the pinch roller assembly ㉛ from the front panel. Assemble the pinch roller and other necessary parts using the reverse of the disassembly procedure.

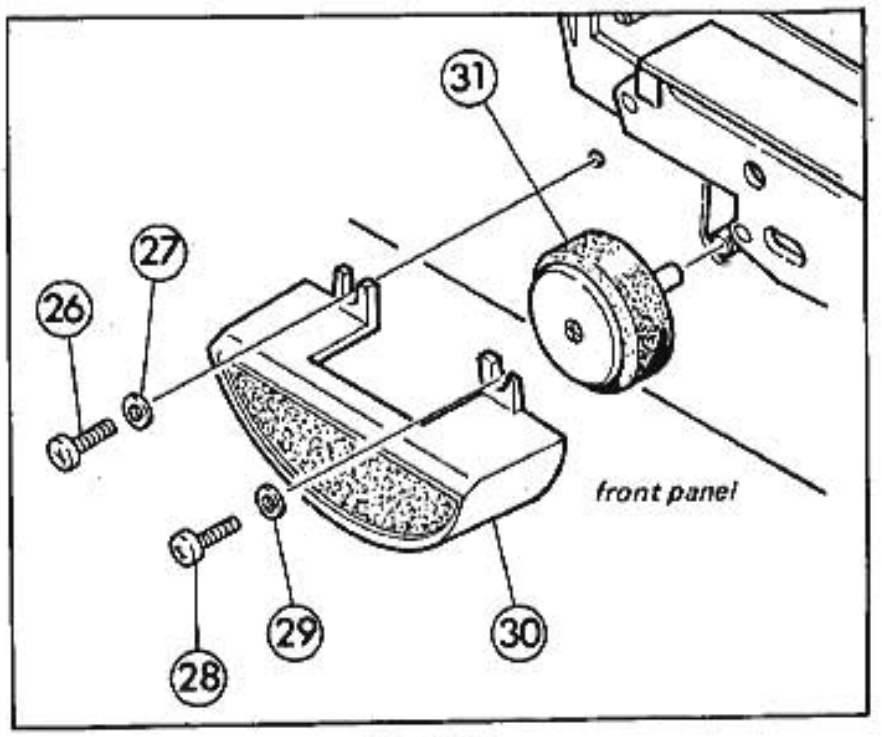


Fig. 10-9

10-6. Reel Motor Replacement

Replace the reel motors when found defective or after 30,000 hours of normal operation.

1. **Disassembly** (See Figs. 10-10, 10-11, 10-12)

   1) Remove the two reel tables ㊸ , ㊽ by removing the two table sheets ㊴ , ㊹ and the six B type screws ㊵ , ㊶ , ㊷ , ㊺ , ㊻ , ㊼ . See Fig. 10-10.

   2) To pull off the 20 Hz sensing amplifier board, G-1039A ⑦ from the 15 pin connector, remove the two B type screws ① , ④ , the two P type washers ② , ⑤ and the two rubber bushings ③ , ⑥ . See Fig. 10-11.

   3) Remove the reel platform assembly ⑳ by removing the six B type screws ⑧ , ⑩ , ⑫ , ⑭ , ⑯ , ⑱ and the six S type washers ⑨, ⑪ , ⑬ , ⑮ , ⑰ , ⑲ .

   4) Remove the two brake drums ③ , ⑥ by removing the four S type screws ① , ② , ④ , ⑤ . See Fig. 10-12.

   5) Remove the bracket assembly ⓭ by removing the six B type screws ❶ , ❹ , ❼ , ❿ , ⓫ , ⓮ , the six S type washers ❷ , ❺ , ❽ , ⓫ , ⓮ , ⓱ and the six P type washers ❸ , ❻ , ❾ , ⓬ , ⓯ , ⓲ . See Fig. 10-12.

   6) Remove the two reel motors ㊺ , ㊽ , by removing the witht B type screws ㊸ , ㊽ , ㊾ , ㊿ , ㊿ , ㊿ , ㊿ , ㊿ , the wight S type washers ㊹ , ㊼ , ㊿ , ㊿ , ㊿ , ㊿ , ㊿ , ㊿ and the eight reel motor

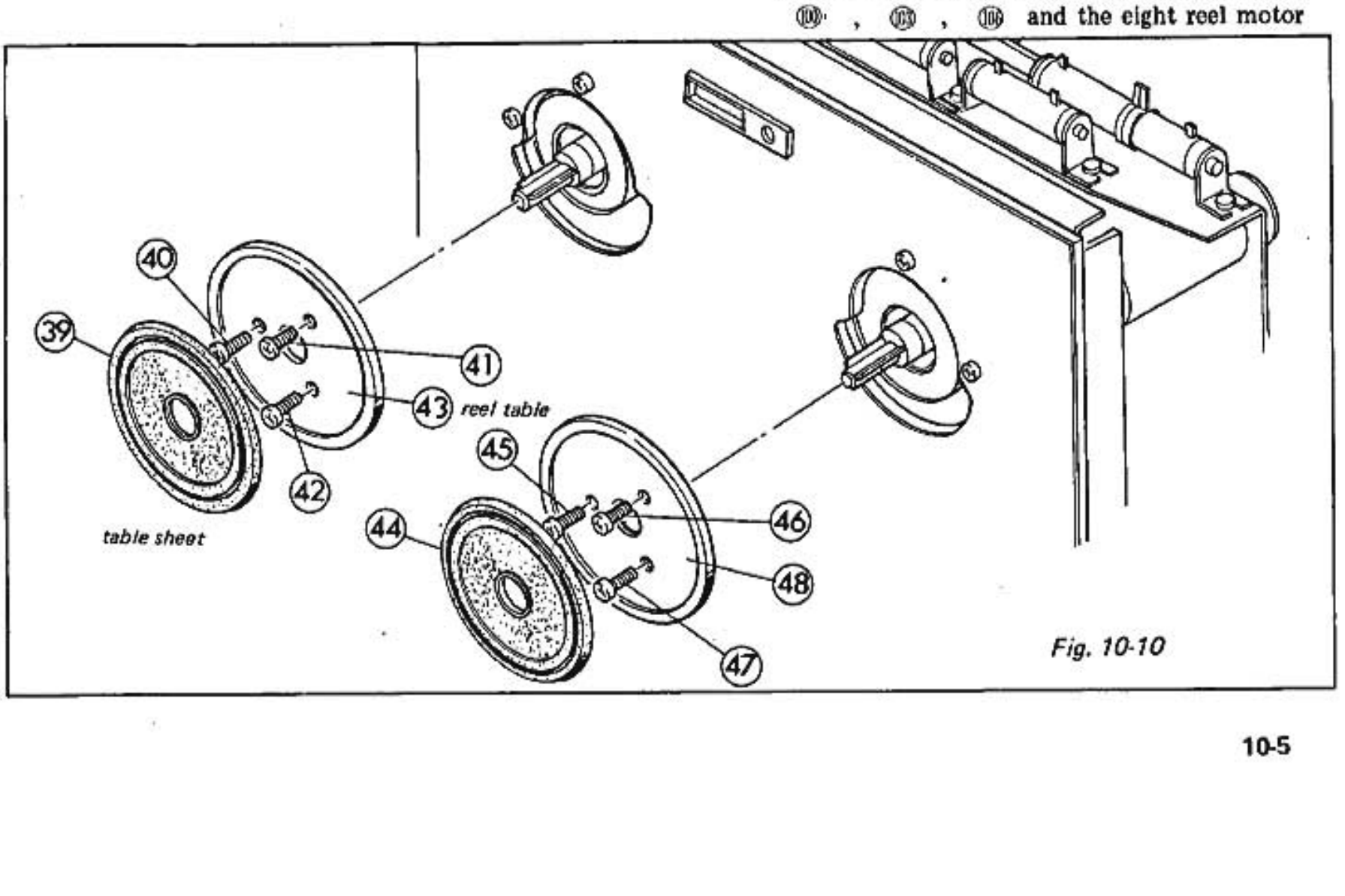


Fig. 10-10

collars ⑮ , ㊽ , ㊶ , ㊹ , ㊽ , ⑩⓪ ,
⑩① , ⑩⑦ . See Fig. 10-12.

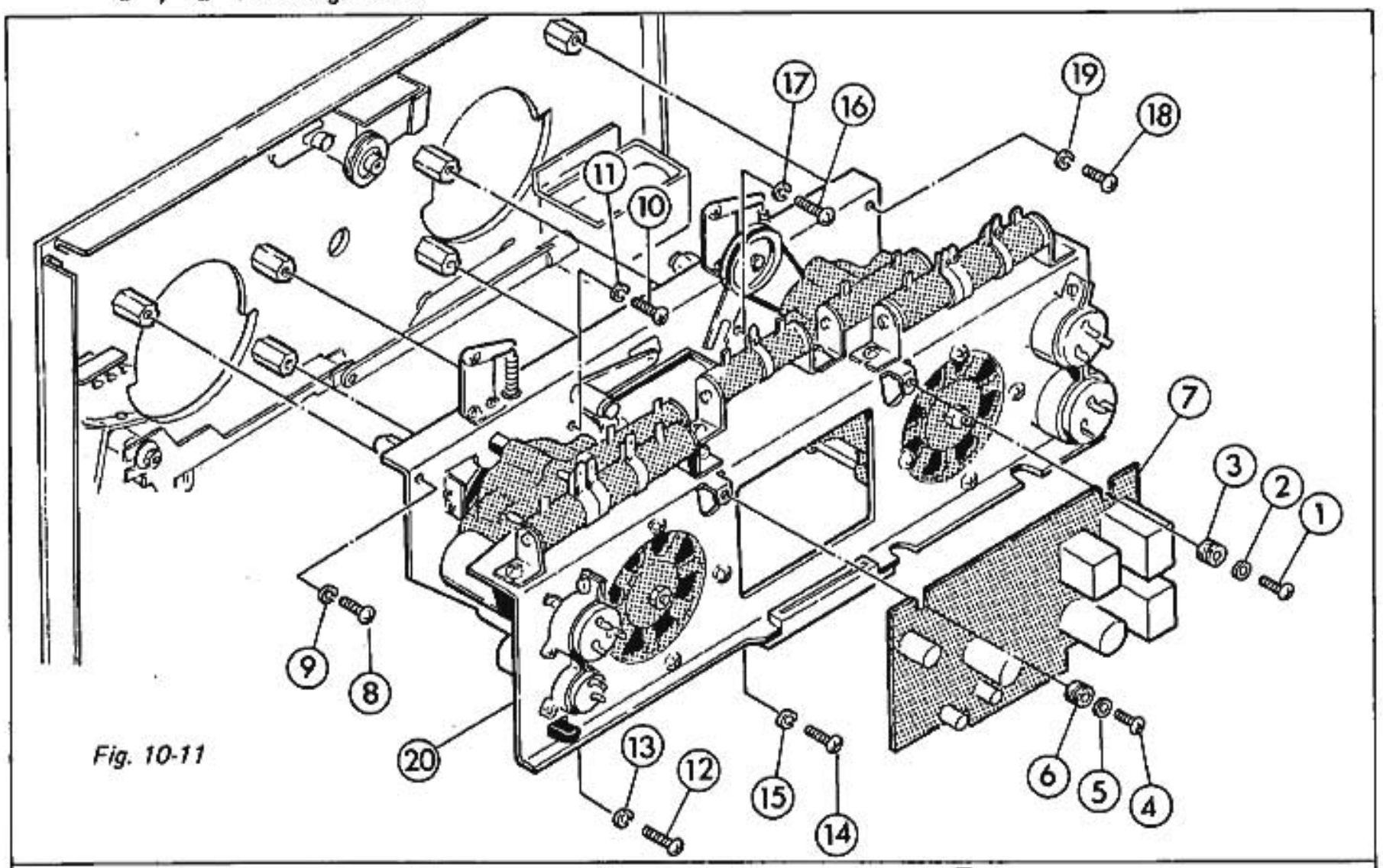


Fig. 10-11

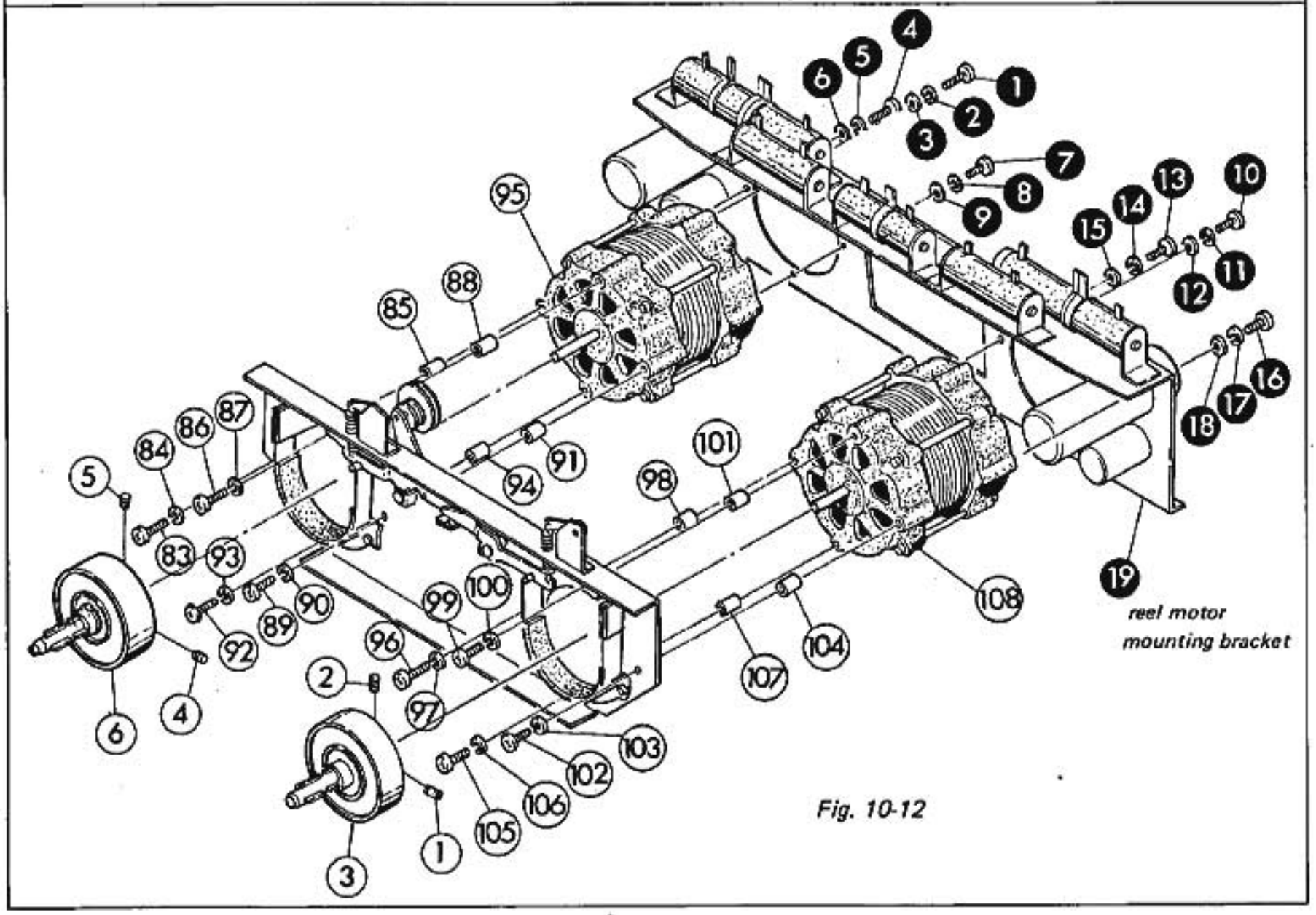


Fig. 10-12

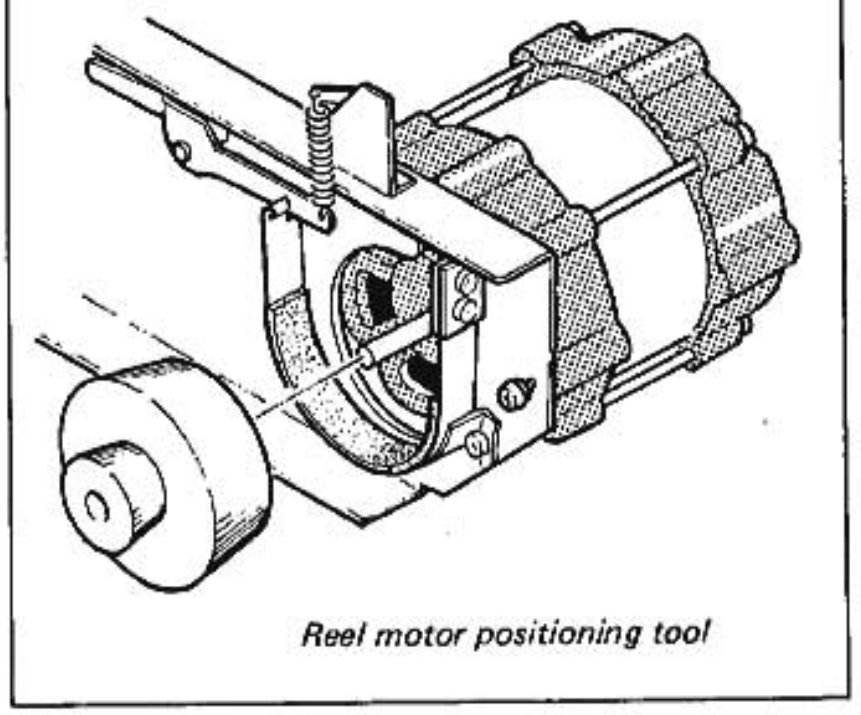
2. Assembly (See Figs. 10-10, 10-11, 10-12, 10-13, 10-14, and 10-15)

1) With the eight S type washers ⑭ , ⑰ , ⑳ , ㉓ , ㉖ , ㉙ , ㉜ , ㉟ inserted into the eight B type screws ⑬ , ⑯ , ⑲ , ㉒ , ㉕ , ㉘ , ㉛ , ㉞ , insert these screws into the eight collars ⑮ , ⑱ , ㉑ , ㉔ , ㉗ , ㉚ , ㉝ , ㊱ through the reel motor mounting bracket. Insert, then, the screws into the respective holes in the reel motors. Tighten the screws partially to permit a slight movement of motors. After the positioning of the reel motors is performed by the positioning tool, secure the motors in place by tightening the screws completely.
See Fig. 10-13.

2) With the six S type washers ❷ , ❺ , ❽ , ❶❶ , ❶❹ , ❶❼ and the six P type washers ❸ , ❻ , ❾ , ❶❷ , ❶❺ , ❶❽ inserted into the six B type screw ❶ , ❹ , ❼ , ❿ , ❸ , ❻ , install the bracket assembly into the reel motors, ㉕ and ㉘ by tightening the screws.

3) Insert the two brake drums ③ , ⑥ into the two reel motor shafts and tighten the four S type screws ① , ② , ④ , ⑤ partially. Obtain, then, the correct positioning of the brake drums so that the clearance between the brake drum and the reel motor is approximately 1.8 mm as shown in Fig. 10-14. Tighten the two S type screws ② , ⑤ first and then the two screws ① , ④ . In addition, for easily obtaining the proper clearance between the drum and the motor, use of a handmade tool as in Fig. 10-15 is recommended.

Note: The clearance is to be adjusted so that the tape is wound in the middle of the reel.



Reel motor positioning tool

Fig. 10-13

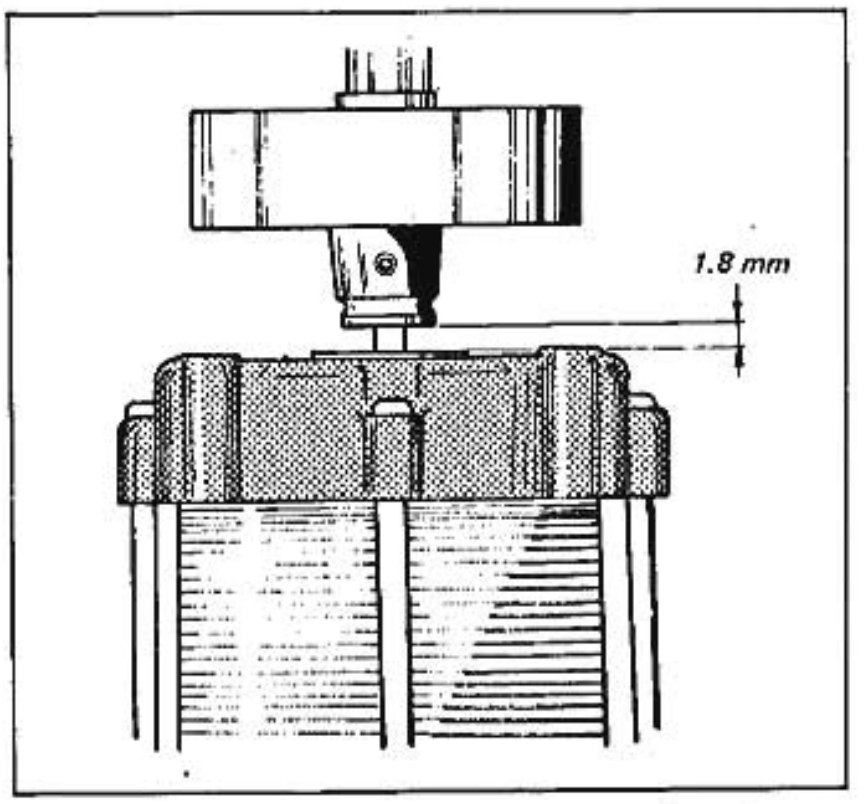


Fig. 10-14 *Proper clearance between the reel motor and the brake drum*

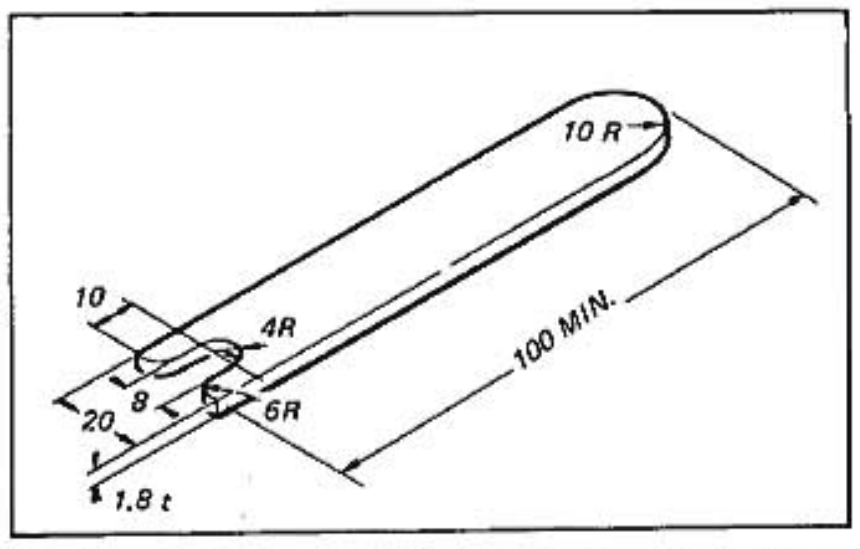


Fig. 10-15 *A handmade tool for obtaining to proper clearance*

10-7. Impedance Roller Replacement

1. Disassembly (See Fig. 10-16)

For replacement of a defective impedance roller, proceed as follows:

1) Remove the two S type screws ㊾ , ㊿ and the wheel (51) . At this time, be careful not to drop the impedance roller to the floor as it has come out free.

2) Remove the bearing case (53) by loosening off the nut (52) securing the case.

2. Assembly (See Fig. 10-16)

1) Install the bearing case (53) in place by tightening the nut (52) . At this time, be careful not to drop the impedance roller to the floor.

2) Insert the flywheel (51) into the impedance roller and secure the wheel in place by tightening the two S type screws ㊾ , ㊿ . Note that the screw ㊿ is tightened first and then the screw ㊾ is tightened.

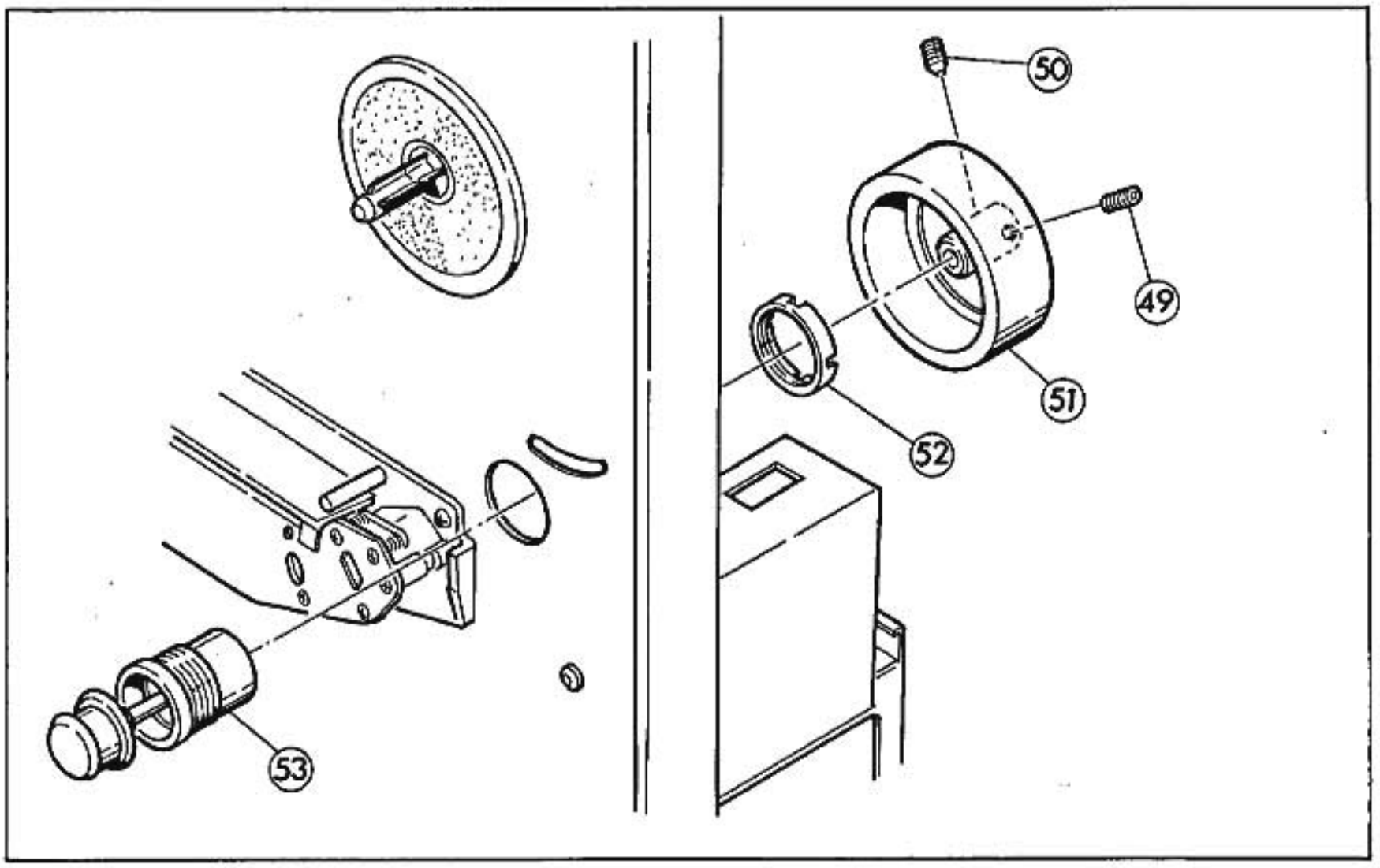


Fig. 10-16

11 TROUBLESHOOTING TABLE OF CONTENTS

11-1. Table of Contents

TROUBLESHOOTING ON THE MECHANICAL SECTION

TROUBLESHOOTING ON THE AMPLIFIER SECTION

NOTES:

1. Symbols of terminals or components in the parentheses refer to that of the right channel.
2. Condition

Section *Title* *Page*

Playback Mode

1. Input · · 1 kHz, 1 mV Supply to the playback head terminals (output impedance of 600 Ω at an audio signal generator)
2. HEADPHONE Volume Control . . . . . Maximum
3. MONITOR Switch . . . . . PLAYBACK
4. MODE Switch . . . . . STEREO
5. PLAYBACK Volume Control . . . . . Maximum
6. BALANCE Volume Control . . . . . Center
7. LINE (1, 2) Volume Control . . . . . Minimum

Record Mode

1. LINE 1 Input . . . . . 70 mV
2. HEADPHONE Volume Control. . . . Maximum
3. MONITOR Switch . . . . . SOURCE
4. MODE Switch . . . . . STEREO
5. PLAYBACK Volume Control. . . . . Maximum
6. BALANCE Volume Control . . . . . Center
7. LINE 1 Volume Control . . . . . Maximum
8. MIC Volume Control . . . . . Maximum

11-2. How to Keep the Recorder Out of the Following Symptoms

Symptom	Probable Cause & Reference Date
No tape movement or incorrect tape speed	PAUSE switch is opearted to stop tape movement; excessive tape slack causing tension arms to stop the recorder; 11-pin dummy plug for REMOTE connector disconnected (on the control indicator, rear); tape speed in playback different from that in record
Weak or no sound (on either one or both channels)	MONITOR switch turned to SOURCE; improper setting of input and output balancing or level controls; wrong or incomplete connections between connectors
Weak or no sound through headphones	Dirty heads; improper setting of output level control in playback; improper setting of the headphone volume
No erase of previous	Dirty erase head
Microphone inoperative	Incomplete connection of dummy plug (s) and microphone jack (s) (right side, cabinet); incorrect impedance of microphone
Opposite lamp indication against tape movement in FAST FORWARD and REWIND	Normal - - - - - playback head operative in the direction shown by the arrow and capstan ready for operating in the same direction
Inoperative AUTOMATIC mechanism	Note that AUTOMATIC system works 10 seconds after from the start of tape movement; unrecording of 20 Hz reversing signal
Power off with POWER switch pushed	SLEEP switch pressed; left tension arm head down

11-3. Troubleshooting on the Mechanical Section

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
1. No power supply to each section.	1. SLEEP switch on		1. Thread tape correctly (not trouble)
1-1. Each lamp for FORWARD, MONITOR switch, MODE switch, & VU meter not lighted.	2. SLEEP switch off		2. Defective power cord plug, P702
			3. Breaking of power cord
			4. Imperfect contact of Shut-off switch, S711 (a, b, c)
			5. Imperfect contact of POWER switch, S701
			6. Power fuse, F701, open
			7. Imperfect contact of voltage selector
			8. Defective power transformer, T701
	3. Check terminal voltages on J701 (mechanical section, rear)	1. DC 53 V not supplied to terminal 4	9. See 2 to 8 of Cause & What to Do
			10. Open 43 V winding of power transformer, T701
			11. Imperfect contact of terminals 1, 2, 3, 4 of the control board, G-1034C
			12. Defective D801 on G1034C
		2. AC 5.7 V not supplied to terminals 6 & 7	13. Open 5.7 V winding of power transformer, T701
		3. DC 80 V not supplied to terminal 2	14. Imperfect contact of terminal 21 on G-1034C
		Note: DC 80 V is applied only in FORWARD	15. Defective D803 on G1034C
			16. Imperfect contact points of RL802 on G-1034C
			17. See Symptom 2-15
		4. DC 53 V not supplied to terminal 3	18. Imperfect contact of SPEED switch, S703C
		Note: DC 53 V is applied only when SPEED switch is set to 3 ¾ (9.5 cm/sec)	19. See 2 to 12 of Cause & What to Do
1-2. Each lamp for FORWARD, MONITOR switch, MODE switch, & VU meter lighted.	4. DC voltage not supplied to control board, G-1034C & 20 Hz sensing board, G-1039A	5. DC not supplied to terminal 4 of J703	20. Imperfect contact of terminals 6 & 7 on G-1034C
		Note: STOP 100 V FORWARD 80 V F. F 95 V Note that DC voltage is hereinafter supplied to terminal 4 of J703	21. Defective D802 on G-1034C
			22. R802 on G-1034C open
			23. See 2 to 8 of Cause & What to Do
		6. DC voltage not supplied to terminal 11 of G-1034C	24. Imperfect contact of remote control jack, J703
		Note: Ditto	25. Internal break of dummy plug
			26. Imperfect contact of STOP switch, S705

To P11-7

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
1-2. Each lamp for FORWARD, MONITOR switch, MODE switch, & VU meter lighted.	4. DC voltage not supplied to control board, G-1034C & 20 Hz sensing board, G-1039A	From P11-6	
		7. DC voltage not supplied to terminal 22 on G-1034C	27. See 24 to 26 of Cause & What to Do
			28. Imperfect contact of FAST FORWARD switch, S708
		Note: Ditto	
		8. DC voltage not supplied to terminals H & G on G-1039A and K & J on G-1043A	29. See 25 of Cause & What to Do
		Note: Ditto	
		9. AC 100 V not supplied to terminal 20 on G-1034C	30. See 2 to 8 of Cause & What to Do
		10. DC 25 V not supplied to terminal 41 on G-1034C	31. See 2 to 12 of Cause & What to Do
			32. Open R801 on G-1034C
			33. Imperfect contact of terminal 41 on G-1034C
2. Capstan not rotating.	5. Capstan motor MT701, not rotating	11. AC 100 V not supplied to terminals B & E of SPEED switch, S703, on G-1034C	34. See 2 to 8 of Cause & What to Do
			35. Imperfect contact of terminals 19, 20 on G-1034C
			36. Imperfect contact points of RL802 on G-1034C
		12. AC 100 V not supplied to terminals B & E of SPEED switch, S703, on G-1034C	37. Defective capstan motor, MT701
			38. Imperfect contact of SPEED switch, S703 (a, b)
			39. Imperfect contact points of RL802 on G-1034C
			40. Imperfect contact of terminals 5, 25 on G-1034C
			41. Defective starting capacitor, C701
	6. Capstan motor MT701 rotating correctly.	13. Capstan belt	42. Broken or stretched belt
			43. Belt slipping
		14. Capstan ass'y	44. Burning of capstan shaft
			45. Extreme eccentric capstan shaft
3. Capstan rotating incorrectly.	7. Capstan motor MT701, rotating incorrectly	15. Voltage selector	46. Not set to the rated voltage
		16. Capstan belt	47. Not set to the rated frequency
4. FORWARD play inoperative.			
4-1. No tape movement.	8. Capstan not rotating	See Sympton 1-2	

To P11-8

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
	From P11-7		
4-1. No tape movement.	9. Pinch roller inoperative	17. DC 86 V supplied to terminal 12 on G-1034C	48. Imperfect contact of terminal 28 on G-1034C
			49. Open pinch roller solenoid, PS701
			50. Imperfect contact points of RL806 on G-1034C
			51. Defective pinch roller system
		18. DC 86 V not supplied to terminal 12 on G-1034C	52. Imperfect contact of terminals 9, 11 on G-1034C
			53. Imperfect contact points of RL804 on G-1034C
			54. Imperfect contact points of RL801 on G-1034C
		19. DC 86 V not supplied to terminal 11 on G-1034C	55. See 24 to 26 of Cause & What to Do
	10. Imperfect contact of capstan & pinch roller	20. Capstan system	56. Pinch roller pressure out of adjustment or loose screws
	11. Incorrect pinch roller rotation	21. Pinch roller	57. Defective pinch roller assembly
	12. Right & left reel motors not rotating	22. AC 72 V not supplied to terminal 7 on G-1034C	58. See 2 to 8 of Cause & What to Do
		23. AC 72 V supplied to terminal 7 on G-1034C	59. Imperfect contact points of RL806 on G-1034C
		24. Reel motor ground circuit	60. R704 open (only at 50 Hz)
			61. Imperfect contact of terminal 10 on G-1034C
			62. Imperfect contact points of RL801 on G-1034C
	13. Left reel motor not rotating (left tension arm held down)	25. AC 36 V not supplied to terminal 18 on G-1034C	63. Imperfect contact of terminals 14, 18, 40 on G-1034C
			64. Defective left torque adjusting resistor, R701
			65. Imperfect contact points of RL804 on G-1034C
		26. AC 36 V supplied to terminal 18 on G-1034C	66. Defective starting capacitor, C702
			67. Defective left reel motor, MT702
	14. Right reel motor not rotating	27. AC 50 V not supplied to terminal 17 on G-1034C	68. Imperfect contact points of RL803 on G-1034C
			69. Imperfect contact points of terminal 13, 17, 27 on G-1034C
			70. Defective right torque adjusting resistor, R702
			71. Imperfect contact points of TENSION switch, S704b
			72. Imperfect contact points of RL804 on G-1034C
	To P11-9	To P11-9	

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
4-1. No tape movement.	From P11-8	From P11-8	
		28. AC 50 V supplied to terminal 17 on G-1034C	73. Defective starting capacitor, C703
			74. Defective right reel motor, MT703
	15. Reel brake not releasing	29. DC 86 V not supplied to terminal 11 on G-1034C	75. See 24 to 26 of Cause & What to Do
		30. DC 86 V not supplied to terminal 9 on G-1034C	76. Imperfect contact points of RL801 on G-1034C
		31. DC 86 V supplied to terminal 9 on G-1034C	77. Imperfect contact of FORWARD switch, S706
			78. Open brake solenoid, PS702
			79. See 48 & 50 of Cause & What to Do
4-2. Excessive tape slack.	16. Excessive tape slack of left reel (left tension arm held down)		80. Left torque adjusting resistor, R701 out of adjustment
	17. Excessive tape slack on right reel	32. Right & left reel motors not rotaging	81. See Symptom 2-12
		33. Right reel motor not rotating	82. See Symptom 2-14
5. FAST FORWARD inoperative.			
5-1. No tape movement in FAST FORWARD.	18. Reel brake not releasing	34. See Symptom 2-15	
	19. Right reel motor not rotating	35. AC 100 V not supplied to terminal 17 on G-1034C	83. Imperfect contact points of RL804 on G-1034C
		36. AC 100 V supplied to terminal 17 on G-1034C	84. See 73 & 74 Cause & What to Do
	20. Right & left reel motors not rotating	37. AC 100 V not supplied to terminal 15 on G-1034C	85. See 4 to 8 of Cause & What to Do
			86. Imperfect contact of terminals 15, 20 on G-1034C
			87. Imperfect contact points of RL805 on G-1034C
		38. Reel motor ground circuit	88. See 60 to 62 of Cause & What to Do
6. REVERSE play inoperative.			
6-1. No tape movement in REVERSE.	21. Capstan not rotating	39. See Symptom 1-2	
	22. Capstan motor MT701, not rotating in REVERSE	40. DC 83 V not supplied to terminal 11 on G-1034C	89. See 24 to 26 of Cause & What to Do
		41. DC 83 V supplied to terminal 11 on G-1034C	90. Imperfect contact of REVERSE switch, S707
			91. Defective D809 on G-1034C
			92. Imperfect contact points of RL802 on G-1034C

To P11-10

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
	From P11-9		
6-1. No tape movement in REVERSE.	23. Pinch roller inoperative	42. DC 83 V supplied to terminal 12 on G-1034C	93. See 49 to 52 of Cause & What to Do
		43. DC 83 V not supplied to terminal 12 on G-1034C	94. Imperfect contact of terminals 12, 32 on G-1034C
			95. DC 83 V not supplied to terminal 11 on G-1034C (See 25 to 27 of Cause & What to Do)
			96. Imperfect contact points of RL801 on G-1034C
			97. Defective D807 on G-1034C
			98. Imperfect contact of REVERSE switch, S707
	24. Imperfect contact of pinch roller & capstan	44. See Symptom 2-7	
	25. Incorrect pinch roller rotation	45. See Symptom 2-9	
	26. Left reel motor not rotating	46. AC 73 V not supplied to terminal 26 on G-1034C	99. Imperfect contact of terminals 7, 26 on G-1034C
			100. See 2 to 8 of Cause & What to Do
			101. Imperfect contact points of RL803 & RL806 on G-1034C
		47. AC 73 V supplied to terminal 26 on G-1034C	102. See 63 to 67 of Cause & What to Do
			103. Imperfect contact of TENSION switch, S704a
	27. Right reel motor not rotating (due to out-positioned tape or improper head to tape contact)	48. AC 73 V supplied to terminal 40 on G-1034C	104. See 68 to 74 of Cause & What to Do
	28. Right & left reel motors not rotating	49. See Sumptom 2-12	
	29. Reel brake not releasing	50. See Symptom 2-15	
6-2. Reverse head inoperative.		51. DC 52 V not supplied to terminal 4 on G-1034C	105. Imperfect contact of terminal 4 on G-1034C
			106. See 10 to 12 of Cause & What to Do
		52. DC 52 V supplied to terminal 4 on G-1034C	107. See 101 & 102 of Cause & What to Do
			108. Imperfect contact points of RL803 on G-1034C
			109. Open R809 on G-1034C
			110. Imperfect contact of terminals 29, 42 on G-1034C
			111. Imperfect contact points of RL808 on G-1034C
			112. Defectove reverse head, H102

Symptom – 1		Symptom – 2		Check Point		Cause & What to Do
6-3. Lamp for REVERSE operation not lighted.			53.	AC 5.7 V not supplied to terminal 38 on G-1034C	113.	See 13 of Cause & What to Do
			54.	AC 5.7 V supplied to terminal 38 on G-1034C	114.	Imperfect contact points of RL803 on G-1034C
					115.	Imperfect contact of terminals 28, 36 on G-1034C
					116.	Reverse lamp, PL702 open
					117.	Imperfect contact of PL702 and lamp socket
6-4. Excessive tape slack.		30. Excessive tape slack on left reel (shut off switch is switched off)	55.	Left reel motor not rotating	118.	See Symptom 2-13
		31. Excessive tape slack on right reel (improper head-to-contact tape)	56.	Right reel motor not rotating	119.	See Symptom 2-14
7. REWIND inoperative.						
7-1. No tape movement in REWIND.		32. Left reel motor not rotating	57.	AC 100 V not supplied to terminal 18 on G-1034C	120.	Imperfect contact of terminal 18 on G-1034C
					121.	Imperfect contact points of RL804 on G-1034C
			58.	AC 100 V supplied to terminal 18 on G-1034C	122.	See 66 & 67 of Cause & What to Do
		33. Right reel motor not rotating	59.	AC 31 V not supplied to terminal 17 on G-1034C	123.	Imperfect contact of terminals 15, 16, 17 on G-1034C
					124.	Imperfect contact points of RL804 on G-1034C
					125.	R703 open
			60.	AC 31 V supplied to terminal 17 on G-1034C	126.	See 73 & 74 of Cause & What to Do
		34. Right & left reel motors not rotating	61.	AC 100 V not supplied to terminal 16 on G-1034C	127.	See 4 to 8 of Cause & What to Do
					128.	Imperfect contact of terminals 16, 20, 23 on G-1034C
					129.	Imperfect contact points of RL805 on G-1034C
					130.	Imperfect contact of REWIND switch, S709
					131.	Imperfect contact of terminal 22 on G-1034C
			62.	Reel motor ground circuit	132.	See 60 to 62 of Cause & What to Do
			63.	DC 92 V not supplied to terminal 11 on G-1034C	133.	See 24 to 26 of Cause & What to Do

To P11-12

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
7-1. No tape movement in REWIND. (From P11-11)	35. Reel brake not releasing	64. DC 92 V not supplied to terminal 11 on G-1034C	134. See 24 to 26 of Cause & What to Do
		65. DC 92 V not supplied to terminal 9 on G-1034C	135. Imperfect contact points of RL801 on G-1034C
			136. Defective D805 & D806 on G-1034C
			137. Imperfect contact of REWIND switch, S709
			138. Imperfect contact of terminal 23 on G-1034C
		66. DC 92 V supplied to terminal 9 on G-1034C	139. See 48; 50 & 78 of Cause & What to Do
7-2. Excessive tape slack.			140. R703 out on adjustment
		67. Left reel motor not rotating	141. See 4 to 8 on Cause & What to Do
			142. See 65 to 67 on Cause & What to Do
			143. Imperfect contact of terminals 15, 16 on G-1034C
		68. No proper braking on right reel motor	144. Brake on right reel out of proper adjustment
8. AUTOMATIC circuitry inoperative (normal at MANUAL).	36. Short sensing post (mounted on right tension arm)	69. AUTOMATIC operative	145. DC 51 V not supplied to terminal S on G-1034A (See 9 to 12 of Cause & What to Do)
			146. Imperfect contact of each terminal on G-1039A
			147. Defective transistors TR901 to TR908 & diodes D901 to D904 on G-1039A
			148. See 8 & 9 of Check Point (Playback troubles in the TROUBLESHOOTING on the Amplifier Section)
			149. Unrecording of 20 Hz sensing signal on tape (See Symptom 1-3-4 & 1-3-5 in Recording troubles, Troubleshooting on the Amplifier Section)
		70. AUTOMATIC inoperative	150. Troubleshoot, referring to AUTOMATIC troubles
9. AUTOMATIC REWIND inoperative.		71. DC 51 V supplied to terminal 4 on G-1034C	151. Imperfect contact of S714 (mounted on pinch roller plunger)
			152. Imperfect contact of terminals K, L on G-1039A
			153. Defective RL901 on G-1039A
			154. Open R930 on G-1039A

To P11-13 To P11-13

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
9. AUTOMATIC REWIND inoperative.		From P11-12	From P11-12
			155. Imperfect contact of AUTOMATIC switch, S715a
			156. Imperfect contact of terminals 34, 37 on G-1034C
			157. Imperfect contact points of RL803 on G-1034C
			158. Imperfect contact of terminals P, A on G-1039A
			159. Imperfect contact points of RL903 on G-1039A
			160. Defective RL902 on G-1039A
		72. DC 88 V not supplied to terminal H on G-1039A	161. See 25 of Cause & What to Do
		73. DC 88 V not supplied to terminal 23 on G-1034C Note: Check within 4 seconds after shorting sensing post	162. Imperfect contact of terminal 23 on G-1034C
			163. Imperfect contact of AUTOMATIC switch, S715C
			164. Imperfect contact of terminals E, H on G-1039A
			165. Defective D907 on G-1039A
			166. Imperfect contact points of RL902 on G-1039A
		74. DC 88 V supplied to terminal 23 on G-1034G Note: Ditto	167. Imperfect contact points of RL805 on G-1034C
			168. Imperfect contact of terminal 22 on G-1034C
			169. See 24 to 26 of Cause & What to Do
10. AUTOMATIC REVERSE inoperative. Notes: 1. Short sensing post. 2. Remove terminal 32 on G-1034C.		75. DC 51 V not supplied to terminal S on G-1034C Note: Ditto	170. See 9 to 12 of Cause & What to Do
		76. DC 83 V not supplied to terminal H on G-1039A	171. See 25 of Cause & What to Do
		77. DC 5.5 V not supplied to terminal 34 on G-1034C	172. See 151 to 154 of Cause & What to Do
			173. Imperfect contact of terminal 37 on G-1034C
			174. Imperfect contact of AUTOMATIC switch, S715 a-2
			175. Imperfect contact points of RL803 on G-1034C
		78. DC 83 V not supplied to terminal 32 on G-1034C	176. Imperfect contact of terminals J, P, A on G-1039A
			177. Defective D908 on G-1039A
			178. Imperfect contact points of RL902 on G-1039A

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
11. AUTOMATIC REPEAT inoperative.	11-1. FORWARD to REVERSE operation. Notes: 1. Short sensing post. 2. Remove terminal 32 on G-1034C.	79. DC 52 V not supplied to terminal 4 on G-1034C	179. See 9 to 12 of Cause & What to Do
		80. DC 83 V not supplied to terminal H on G-1039A	180. See 25 of Cause & What to Do
		81. DC 5.5 V not supplied to terminal 34 on G-1034C	181. See 151 to 154, 173, 175 of Cause & What to Do 182. Imperfect contact of AUTOMATIC switch, S715a-3
		82. DC 83 V not supplied to terminal 32 on G-1034C Note: Check within 4 seconds after shorting sensing post	183. See 176 to 178 of Cause & What to Do
	11-2. REVERSE to FORWARD operation. Notes: 1. Short sensing post. 2. Tape Transport Button from STOP to REVERSE operation.	83. DC 54 V not supplied to terminal 4 on G-1034C	184. See 9 to 12 of Cause & What to Do
		84. DC 5.5 V not supplied to terminal 35 on G-1034C	185. See 151 to 154, 173, 175 of Cause & What to Do 186. Imperfect contact of AUTOMATIC switch, S715a-3
		85. DC 5.5 V applied to terminal 35 on G-1034C	187. Imperfect contact of AUTOMATIC switch, S715b-3 188. Imperfect contact of terminals R, A on G-1039A 189. Imperfect contact points of RL902 & RL903 on G-1039A.

11-4. Troubleshooting on the Amplifier Section

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
1. Power Supply Troubles.			
1-1. No power supply to amplifier section.	1. Correct voltage supplied to each terminal of J701	1. DC 24.4 V not supplied to terminals J on G-1019C & D (N) on G-1021C	1. Defective TR001 on G-1036B
			2. Imperfect contact of terminal 32 on G-1036B
			3. Imperfect contact of two terminals 4 of P001 & J701
		2. DC 52 V not supplied to terminal J on G-1022C	4. Imperfect contact of two terminals 4 of P001 & J701
		3. DC 52 V not supplied to terminal K on G-1019C Note: DC 52 V is supplied only when SPEED switch is set to 3¾ (9.5 cm)	5. Imperfect contact of two terminals 3 of P001 & J701
		4. DC 80 V not supplied to terminal H on G-1022C	6. Imperfect contact of terminal 30 on G-1036B
			7. Imperfect contact of two terminals 2 of P001 & J701
		5. DC 28 V not supplied to terminal 7 on G-1041A	8. See 2 & 3 of Cause & What to Do
			9. Open R002 on G-1036B
		6. DC 25 V not supplied to terminal H (K) on G-1020C	10. See 2 & 3 of Cause & What to Do
			11. Open R001 on G-1036B
	2. Wrong voltage supplied to each terminal of J701	7. See Symptom 2-3 in the Troubleshooting on the Mechanical Section	
2. Playback System troubles.			
2-1. Output 800 mV absent at LINE OUT.		8. Output 1 mV absent at terminal H (K) on G-1028B	12. Imperfect contact points of RL808 on G-1034C
		9. Output 180 mV absent at terminal B (R) on G-1028B	13. DC 25 V not supplied to terminal J on G-1028B
			14. Imperfect contact of each terminal on G-1028B
			15. Defective of G-1028B (transistor or FET)
		10. Output 145 mV absent at terminal D (N) on G-1020C	16. Imperfect contact of J702 & P002
			17. Imperfect contact of terminals 1 (4) & 5 (6) on G-1041A
			18. Imperfect contact of VR607 (VR608) on G-1041A
			19. Imperfect contact of TAPE MONITOR switch, S001 b (S001c)

To P11-16

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
		From P11-15	
2-1. Output 800 mV absent at LINE OUT.		11. Output 800 mV absent at terminal E (M) on G-1020C	20. Imperfect contact of terminals D (N), H (K), E (M) on G-1020C
			21. Defective TR201 (TR202), TR203 (TR204), TR205 (TR206) on G-1020C
			22. Imperfect contact of ATTENUATOR switch S201a (S201b) on G-1020C
2-2. VU meter inoperative.	3. Output present at LINE OUT	12. Output 1.2 V absent at terminal E (M) on G-1019C	23. Imperfect contact of terminal A (S) on G-1020C
			24. Imperfect contact of terminals C (P) & E (M) on G-1019C
			25. Defective TR403 (TR404) on G-1019C
		13. Output 1.2 V present at terminal E (M) on G-1019C	26. Defective VU meter
2-3. Output 300 mV, absent at HEADPHONE.	4. Output present at LINE OUT	14. Output 300 mV absent at terminal F (L) on G-1020C	27. Imperfect contact of terminal F (L) on G-1020C
			28. Imperfect contact of terminal B (R) on G-1020C
			29. Imperfect contact of headphone volume, VR001 (VR002)
			30 Imperfect contact of terminal C (P) on G-1020C
			31. Defective TR207 (TR208) on G-1020C
			32. Defective output transformer T201 (T202) on G-1020C
		15. Output 300 mV present at terminal F (L) on G-1020C	33. Imperfect contact of headphone jack, J008
3. Recording System troubles.			
3-1. Output 700 mV absent at LINE OUT.	5. Output 5.4 mV absent at terminal 12 (13) on G-1041A	16. At LINE 1	34. Imperfect contact of pin-jack
			35. Open R013 (R014)
			36. Imperfect contact of terminal 17 (18) on G-1041A
			37. Open R601 (R602) on G-1041A
			38. Defective VR604 (VR605) on G-1041A
			39. Open R605 (R606) on G-1041A

To P11-17

Symptom – 1	Symptom – 2	Check Point		Cause & What to Do
		From P11-16		
3-1. Output 700 mV absent at LINE OUT.		17.	At MIC	40. Imperfect contact of microphone jack, S003 (S007)
				41. Imperfect contact of dummy jack, J003 (J004) & dummy plug P003 (P004)
				42. Internal break of dummy plug, P003 (P004)
				43. Imperfect contact of terminals E, F (L, M) on G-1021C
				44. Defective TR301, TR303 (TR302, TR304) on G-1021C
				45. Imperfect contact of terminal 14 (15) on G-1041A
				46. Open R603 (R604) on G-1041A
				47. Open R607 (R608) on G-1041A
		18.	At LINE 2	48. Imperfect contact of pin-jack
			Note: MIC operates correctly	49. Open R009 (R010)
				50. Open R001 (R012)
		19.	At DIN	51. Imperfect contact of DIN jack, J007
	6. Output 350 mV absent at terminal A (S) on G-1021C			52. Imperfect contact of terminals A, C (S, P) on G-1021C
				53. DC 24.4 V not supplied to terminal D (N) on G-1021C (See 1 to 3 of Cause & What to Do)
				54. Defective TR305, TR307 (TR306, TR308) on G-1021C
	7. Output 120 mV absent at terminal D (N) on G-1020C			55. Imperfect contact of TAPE MONITOR switch, S001b (S001c)
				56. Defective G-1037B
	8. Output 700 mV absent at terminal E (M) on G-1020C			57. Defective TR201, TR203, TR205 (TR202, TR204, TR206) on G-1020C
3-2. VU meter inoperative.	9. Output present at LINE OUT			58. See 23 to 26 of Cause & What to Do
3-3. Output 350 mV absent at HEADPHONE.	10. Output present at LINE OUT			59. See 27 to 33 of Cause & What to Do
3-4. Incorrect recording.	11. Defective recording circuit, G-1019C	20.	DC 24.4 not supplied to terminal J on G-1019C	60. See 1 to 3 of Cause & What to Do
Note: Output (1 kHz, 350 mV) is present at terminal A (S) on G-1021C.		21.	Output (1 kHz, 350 mV) absent at terminal B (R) on G-1019C	61. Imperfect contact of REV SIG REC switch, S004

To P11-18

To P11-18

Symptom – 1	Symptom – 2	Check point	Cause & What to Do
3-4. Incorrect recording.	From P11-17	From P11-17	
		22. Output (1 kHz, 8.5 mV) absent at terminal F (L) on G-1019C Note: Check after removal on G-1022C (oscillator circuit board)	62. Imperfect contact of terminal B (R) on G-1019C 63. Defective VR401 (VR402) on G-1019C 64. Defective TR401 (TR402) on G-1019C 65. Imperfect contact of terminal F (L) on G-1019C
	12. Defective bias oscillator circuit, G-1022C	23. DC 80 V not supplied to terminal H on G-1022C	66. Imperfect contact of terminal 30 on G-1026B 67. Imperfect contact of P001 & J701
		24. DC 52 V not spplied to terminal J on G-1022C	
		25. Output (100 kHz, 13 V) absent at terminal B (R) on G-1022C	68. Imperfect contact of REC switch, S005 (S006) 69. Imperfect contact of terminal E (L) on G-1022C 70. Imperfect contact points of RL501 (RL502) on G-1022C 71. Defective oscillator transformer T501 on G-1022C 72. Imperfect contact of VR501 (VR502) on G-1022C
	13. Normal recording circuit (on G-1019C) & bias oscillator circuit (on G-1022C)		73. Imperfect contact of terminal 21 (28) on G-1026B 74. Imperfect contact of J001 & P701 75. Defective record head, H103
	14. Improper head to tape contact		76. Readjust, referring to TAPE Head Adjustment of Section 5, Electrical Adjustment, item 9
3-5. Unrecording of 20 Hz reverse sensing signal.	15. With normal recording from source	26. DC 28 V not supplied to terminal 7 on G-1041A	77. Open R002 on G-1036B 78. Imperfect contact of terminal 32 on G-1036B 79. Imperfect contact of J001 & P701 80. DC 52 V not supplied to terminal 4 on G-1034C (See Symptom 1 -6-2, Reverse head inoperative, in the Troubleshooting on the Mechanical Section) 81. Imperfect contact of terminal 8 on G-1041A 82. Imperfect contact of REV SIG REC switch, S004a 83. Defective TR601 on G-1041A

Symptom – 1	Symptom – 2	Check Point	Cause & What to Do
3-6. No switching of the speed switch (the equalizer circuit on G-1028B and the high frequency peaking circuit on G-1019C).		27. Unswitching of equalizer circuit on G-1028B	84. Imperfect contact of SPEED switch, S703d(e)
		28. Unchanging of high frequency peaking circuit on G-1019C	85. See 80 of Cause & What to Do
			86. Imperfect contact of SPEED switch, S703c
			88. Imperfect contact of terminals K, H on G-1019C
			89. Defective RL401 on G-1019C
3-7. No erasing.	16. RECORD operative		90. Imperfect contact points of RL501 (RL502) on G-1022C
			91. Imperfect contact of terminal F (K) on G-1022C
			92. Imperfect contact of terminal 24 (25) on G-1036B
			93. Imperfect contact of J001 & P701
			94. Defective erase head, H104
3-8. Extreme leakage of the bias oscillator output, 100 kHz.			95. L401 (L402) on G-1019C out of adjustment
			96. Open or deteriorated L401 (L402) on G-1019C

11-5. Voltage & Waveforms

Playback mode

1. MONITOR Switch · · ·PLAYBACK
2. MODE Switch · · · · ·STEREO
3. BALANCE
   Volume Control · · · Cernter
4. PLAYBACK
   Volume Control · · · Maximum
5. HEADPHONE
   Volume Control · · · Maximum
6. Input· · · · · · · · · · ·1 kHz, 1 mV, sine wave (output impedance of 600 Ω at an audio signal generator)
7. Supplying · · · · · · · Supply to playback head (forward, or reverse)

Note: Each voltage value is for reference and, in some recorders, the actual voltage value is in minor difference from the reference value.

Input signal	*G-1028B H (K)*	*G-1028B B (R)*
1 mV (1 kHz)	*1 mV (1 kHz)*	*180 mV (1 kHz)*

G-1020C D (N)	*G-1020C E (M)*	*G-1020C F (L)*
145 mV (1 kHz)	*800 mV (1 kHz)*	*300 mV (1 kHz)*

G-1020C A (S) *G-1019C C (P)*	*G-1019C E (M)*
800 mV (1 kHz)	*1.2 V (1 kHz)*

Record mode

1. MONITOR Switch · · ·SOURCE
2. MODE Switch · · · · · STEREO
3. BALANCE
   Volume Control · · · Center
4. PLAYBACK
   Volume Control · · · Maximum
5. PLAYBACK
   Volume Control · · · Maximum
6. LINE 1 (LINE 2)
   Volume· · · · · · · · ·Maximum
7. Input· · · · · · · · · · ·1 kHz, 70 mV, sine wave (output impedance of 600 Ω at an audio signal generator)
8. Supplying · · · · · · · Supply to LINE 1

Input signal	*G-1021C C (P)*	*G-1021 A (S)*
70 mV (1 kHz)	*5.4 mV (1 kHz)*	*350 mV (1 kHz)*

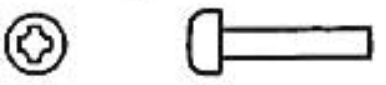
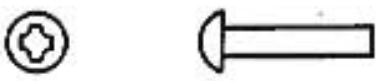
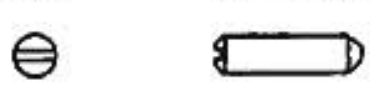
G-1020C D (N)	*G-1020C E (M)*	*G-1020C F (L)*
120 mV (1 kHz)	*700 mV (1 kHz)*	*350 mV (1 kHz)*

G-1020C A (S) *G-1019C C (P)*	*G-1019C E (M)*	*G-1019C B (R)*
700 mV (1 kHz)	*1.2 V (1 kHz)*	*360 mV (1 kHz)*

G-1019C TP401 (TP402)	*G-1019C F (L)*	*G-1019C F (L)* *G-1022C B (R)* *ERASE, RECORDING HEAD*
330 mV (1 kHz) *(when G-1022C is removed)*	*9.5 mV (1 kHz)* *(when G-1022C is removed)*	*13 V* *(mixed output of 100 kHz and 1 kHz)*

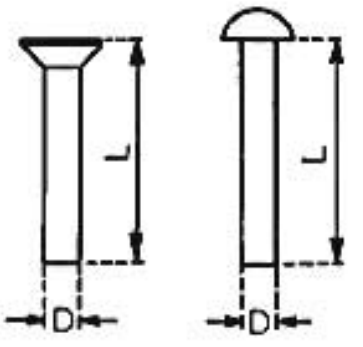
12 DISASSEMBLY WITH EXPLODED VIEWS & PARTS LIST

Hardware Nomenclature

	Name	*Abbreviation*	*Type*
SCREW	Pan Head Screw	**P**	
	Binding Head Screw	**B**	
	Round Head Screw	**R**	
	Flat Countersunk Head Screw	**F**	
	Oval Countersunk Head Screw	**O**	
	Truss Head Screw	**T**	
	Flat Fillister Screw	**FS**	
	Oval Countersunk Wood Screw	**OC**	
	Flat Countersunk Wood Screw	**FC**	
SETSCREW	Hex. Socket Setscrew	**S**	
	Slot Type Setscrew	**SS**	
WASHER	Retaining Ring (E washer)	**E**	
	Plane Washer	**P**	
	Spring Washer	**S**	
	Corrugated Washer	**C**	

〈EXAMPLE〉 FS type Screw, M3 x 6 (BLK)

- (BLK) — Color
- 6 — Length in mm (L)
- M3 — Diameter in mm (D)
- FS type Screw — Type & Name



All screws conform to ISO standards, unless otherwise noted.

HARDWARE NORMENCLATURE

12-1. Removal of the Amplifier Section

To remove the amplifier section, proceed as follows. See Fig. 12-1, Amplifier Section Rear Cover & Others.

Notes: * The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

* When both the amplifier and mechanical sections are to be removed from the cabinet, be sure to remove the amplifier section first. Also, be sure to install the mechanical section first and then the amplifier section to the cabinet.

Step 1) Remove the two O type screws ① , ③ and the two C type washers ② , ④ from the cabinet bottom.

Step 2) Disconnect the playback cord ⑤ , the 8 pin remote control cord ⑥ and the 8 pin output cord ⑦ from the individual connectors on the rear.

Step 3) To remove the rear cover ⑯ from the cabinet, remove the eight OC type screws ⑧ , ⑨ , ⑩ , ⑪ , ⑫ , ⑬ , ⑭ , ⑮ from the rear cover.

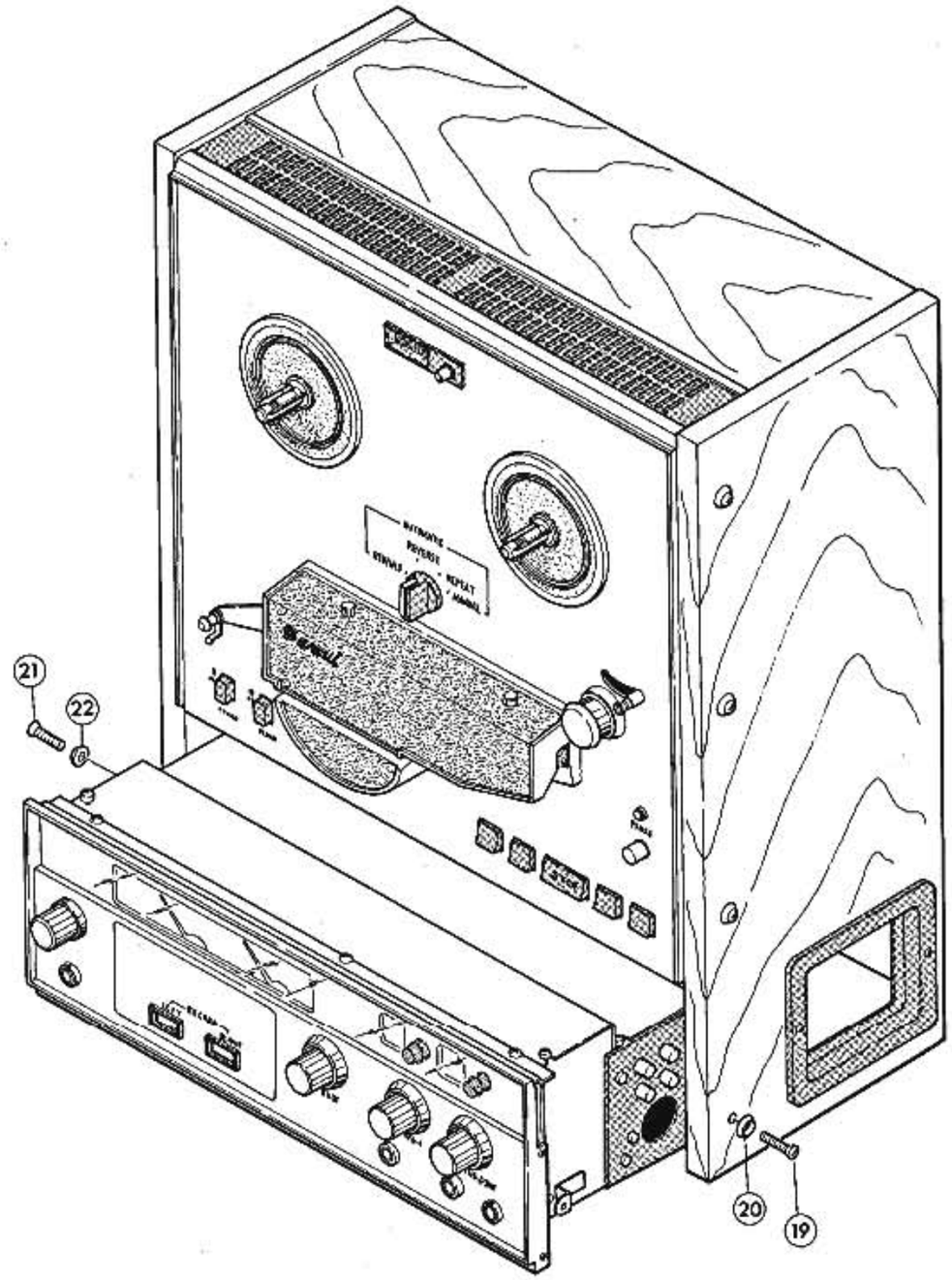
Step 4) Disconnect the two dummy plugs ⑰ , ⑱ from the right side of the cabinet

Step 5) Remove the two O type screws ⑲ , ㉑ and the two C type washers ⑳ , ㉒ from the right and left sides of the cabinet.

Step 6) Carefully remove the amplifier section from the cabinet, pushing it (the side more distant from you) forward with the hand.

Parts No.	Stock No.	Description
1	5104069	O type Screw, M4 x 25 (BLK)
2	5123160	C type Washer, 4 ϕ (BLK)
3	5104069	O type Screw, M4 x 25 (BLK)
4	5123160	C type washer, 4 ϕ (BLK)
5	3810050	Play Back Cord
6	3850010	Remote Control Cord
7	3850020	Output Cord (Head)
8	5146203	OC type Screw, M2.1 x 13 (BLK)
9	5146203	OC type Screw, M2.1 x 13 (BLK)
10	5146203	OC type Screw, M2.1 x 13 (BLK)
11	5146203	OC type Screw, M2.1 x 13 (BLK)
12	5146203	OC type Screw, M2.1 x 13 (BLK)
13	5146203	OC type Screw, M2.1 x 13 (BLK)
14	5146203	OC type Screw, M2.1 x 13 (BLK)
15	5146203	OC type Screw, M2.1 x 13 (BLK)
16	5740030	Rear Cover, amplifier section
17	2410320	Dummy Plug, microphone
18	2410320	Dummy Plug, microphone
19	5104069	O type Screw, M4 x 25 (BLK)
20	5123160	C type Washer, 4 ϕ (BLK)
21	5104069	O type Screw, M4 x 25 (BLK)
22	5123160	C type Washer, 4 ϕ (BLK)

Fig. 12-1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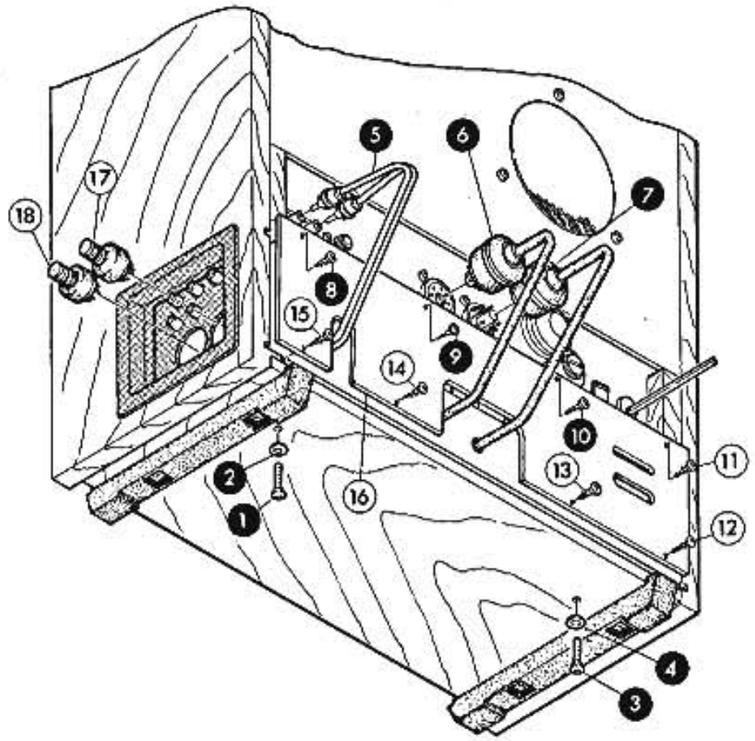
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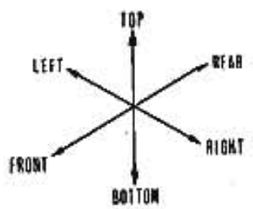
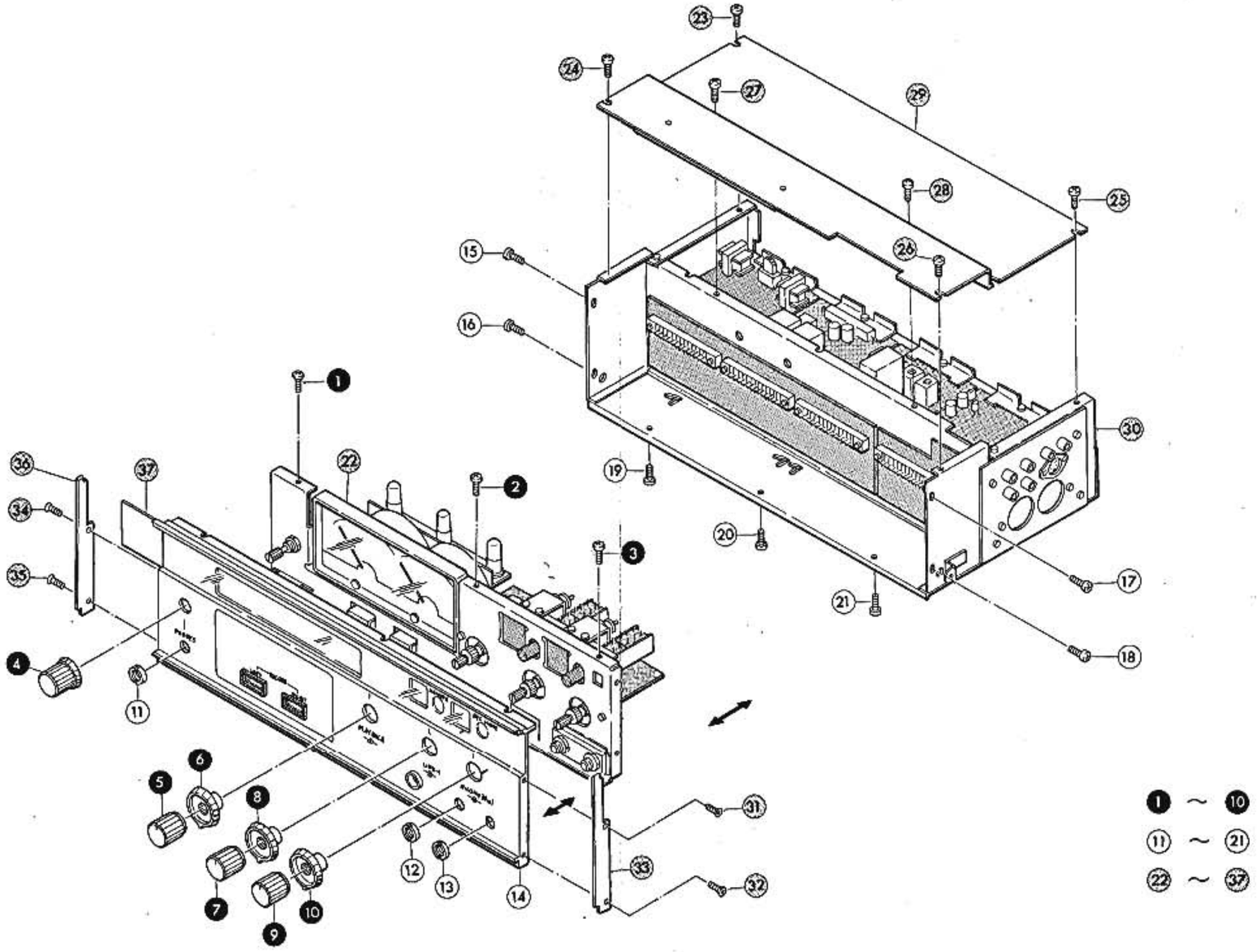

TOP
LEFT
REAR
FRONT
RIGHT
BOTTOM

❶ ~ ❿

⑪ ~ ㉒

Fig. 12-2



12-2. Removal of the Amplifier Back Panel Assembly

(See Fig. 12-2)

To remove the amplifier back panel assembly, proceed as follows.

Notes: * The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

* When assembling the amplifier back panel assembly, keep the three R type nuts ⑪ , ⑫ , ⑬ in step 2 loose untill the three B type screws ① , ② , ③ in step 1 tightened. Tighten, then, the three R type nuts completely.

Step 1) Remove the three B type screws ① , ② , ③ from the back panel assembly ㉒ .

Step 2) Pull off the three 001 type knobs ⑤ , ⑦ , ⑨ the three 002 type knobs ⑥ , ⑧ , ⑩ and one 003 type knob ④ from the front panel assembly ⑭ .

Step 3) Remove the three R type nuts ⑪ , ⑫ , ⑬ from the front panel assembly.

Step 4) To remove the amplifier top cover ㉙ from the chassis assembly ㉚ remove the six B type screws ㉓ , ㉔ , ㉕ , ㉖ , ㉗ , ㉘ from the top cover.

Step 5) To remove the back panel assembly ㉒ from the chassis assembly ㉚ remove the seven B type screws ⑮ , ⑯ , ⑰ , ⑱ , ⑲ , ⑳ , ㉑ from the chassis assembly.

Parts No.	Stock No.	Description
1	5101043	B type Screw, M3 x 6
2	5101043	B type Screw, M3 x 6
3	5101043	B type Screw, M3 x 6
4	5310030	003 type Knob, phone volume
5	5310010	001 type Knob, play back volume
6	5310020	002 type Knob, play back volume
7	5310010	001 type Knob, line volume
8	5310020	002 type Knob, line volume
9	5310010	001 type Knob, microphone volume
10	5310020	002 type Knob, microphone volume
11	5170020	R type Nut, head phone jack
12	5170020	R type Nut, microphone jack (left)
13	5170020	R type Nut, microphone jack (right)
14		Front Panel Ass'y, amplifier
15	5101043	B type Screw, M3 x 6
16	5101043	B type Screw, M3 x 6
17	5101043	B type Screw, M3 x 6
18	5101043	B type Screw, M3 x 6
19	5101043	B type Screw, M3 x 6
20	5101043	B type Screw, M3 x 6
21	5101043	B type Screw, M3 x 6
22		Back Panel Ass'y, amplifier
23	5101043	B type Screw, M3 x 6
24	5101043	B type Screw, M3 x 6
25	5101043	B type Screw, M3 x 6
26	5101043	B type Screw, M3 x 6
27	5101043	B type Screw, M3 x 6
28	5101043	B type Screw, M3 x 6
29	5050030	Top Cover, amplifier
30		Chassis Ass'y, amplifier
31	5102822	F type Screw, M2.6 x 5
32	5102822	F type Screw, M2.6 x 5
33	5300050	Side Sash (right), amp. panel
34	5102822	F type Screw, M2.6 x 5
35	5102822	F type Screw, M2.6 x 5
36	5300060	Side sash (left), amp. panel
37	6400040	Tinted Plate

12-2-1 Disassembly of the Amplifier Back Panel Assembly

To disassemble the amplifier back panel assembly, see Fig. 12-3, Amplifier Back Panel Assembly .

Notes: * The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

* Apply the locking paint in place to all the screws after tightening them completely.

Parts No.	Stock No.	Description
1	5101043	B type Screw, M3 x 6
2	5120141	P type Washer, 3 x 8 x 0.5
3	5101043	B type Screw, M3 x 6
4	5120141	P type Washer, 3 x 8 x 0.5
5	5101043	B type Screw, M3 x 6
6	5120141	P type Washer, 3 x 8 x 0.5
7	5101043	B type Screw, M3 x 6
8	5120141	P type Washer, 3 x 8 x 0.5
9	4300330	VU Meter
10	5101043	B type Screw, M3 x 6
11	5121340	S type Washer, 3 x 1.1 x 0.7
12	5101043	B type Screw, M3 x 6
13	5121340	S type Washer, 3 x 1.1 x 0.7
14	5220090	Bracket, VU meter lamp
15	2320080	Lamp Socket (B), swan type
16	0400090	Lamp, swan type (6.3 V, 0.25A)
17	2320080	Lamp Socket (B), swan type
18	0400090	Lamp, swan type (6.3 V, 0.25A)
19	2320080	Lamp Socket (B), swan type
20	0400090	Lamp, swan type (6.3 V, 0.25A)
21		Hex. Nut, volume M8
22		P type Washer, volume M8
23	1010180	Phone Volume, 100 kΩ A x 2
24		Hex. Nut, jack M9
25	2430060	Jack, head phone
26	5101043	B type Screw, M3 x 6
27	5101043	B type Screw, M3 x 6
28		REC Switch Unit
29	2320080	Lamp Socket (B), swan type
30	0400090	Lamp, swan type (6.3 V, 0.25A)
31	2320080	Lamp Socket (B), swan type
32	0400090	Lamp, swan type (6.3 V, 0.25A)
33	5151003	E type Ring 2.3 ϕ
34	6210100	Shaft, REC switch
35	6040020	Holder, REC button (left)
36	5320010	REC Button
37	5151003	E type Ring 2.3 ϕ
38	6210100	Shaft, REC switch
39	6040050	Holder, REC button (right)
40	5320010	REC Button
41	5101228	B type Screw, M2.6 x 15
42	5110121	Hex. Nut, M2.6 x 5 x 2
43	5121220	S type Washer, 2.6 x 1.0 x 0.6
44	5101228	B type Screw, M2.6 x 15
45	5110121	Hex. Nut, M2.6 x 5 x 2
46	5121220	S type Washer, 2.6 x 1.0 x 0.6
47	1160060	Micro Switch, V-1A10
48	5101228	B type Screw, M2.6 x 15
49	5110121	Hex. Nut, M2.6 x 5 x 2
50	5121220	S type Washer, 2.6 x 1.0 x 0.6
51	5101228	B type Screw, M2.6 x 15
52	5110121	Hex. Nut, M2.6 x 5 x 2
53	5121220	S type Washer, 2.6 x 1.0 x 0.6
54	1160060	Micro Switch, V-1A10
55	5240170	Bracket, REC switch
56		Hex. Nut, volume M11
57		P type Washer, volume M11
58		Hex. Nut, volume M11
59		P type Washer, volume M11
60		Hex. Nut, Volume M11
61		P type Washer, volume M11
62	7660280	Volume P. C Board, G-1041A
63	5101043	B type Screw, M3 x 6
64	5101043	B type Screw, M3 x 6
65	1130260	Push Switch, GA-S72
66	5101043	B type Screw, M3 x 6
67	5101043	B type Screw, M3 x 6
68	1130260	Push Switch, GA-S72
69	5101043	B type Screw, M 3 x 6
71	5101043	B type Screw, M3 x 6
73	5240160	VR & SW Bracket Ass'y
74	5101041	B type Screw, M3 x 4
75	5101041	B type Screw, M3 x 4
76	5220090	Bracket, lamp
77	2320080	Lamp Socket (B), swan type
78	0400090	Lamp, swan type (6.3 V, 0.25A)
79	2320080	Lamp Socket (B), swan type
80	0400090	Lamp, swan type (6.3 V, 0.25A)
81	5101041	B type Screw, M3 x 4
82	5101041	B type Screw, M3 x 4
83	5220090	Bracket, lamp
84	2320080	Lamp Socket (B), swan type
85	0400090	Lamp, swan type (6.3 V, 0.25A)
86	2320080	Lamp, socket (B), swan type
87	0400090	Lamp, swan type (6.3 V, 0.25A)
88		Hex. Nut, jack M9
89	2430060	Jack, microphone (right)
90		Hex. Nut, Jack M9
91	2430060	Jack, microphone (left)
92	5101043	B type Screw, M3 x 6
93	5101043	B type Screw, M3 x 6
94	1130270	Pull Switch, WB type
95	5030030	Shield Plate, 20 Hz recording switch
96	5105501	SS type Screw, M2 x 8
97	5320060	Knob, 20 Hz recording switch
98	5420010	Monitor Indicator
99	5420030	REC Mode Indicator
100	5200050	Back Panel

Fig. 12-3

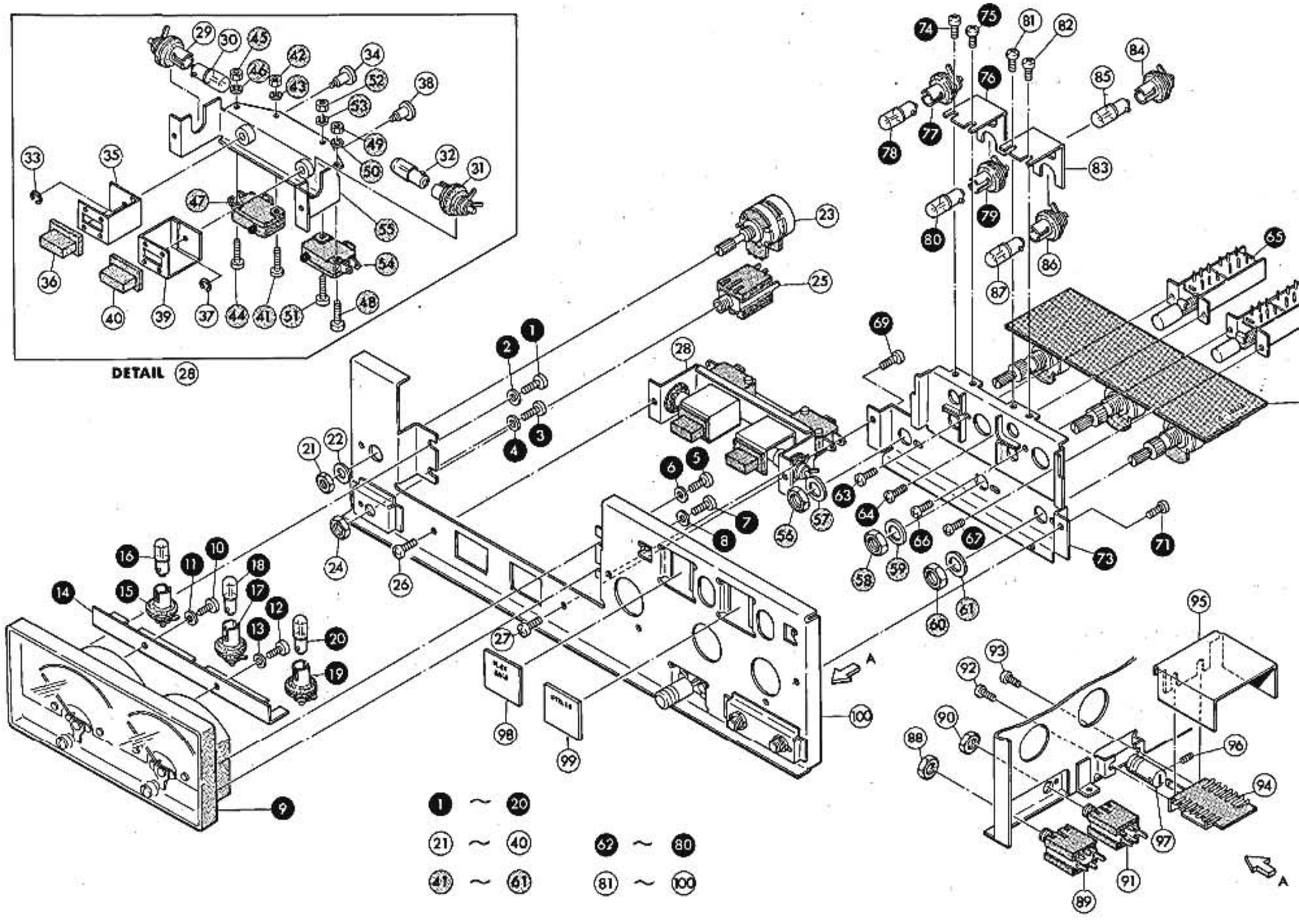
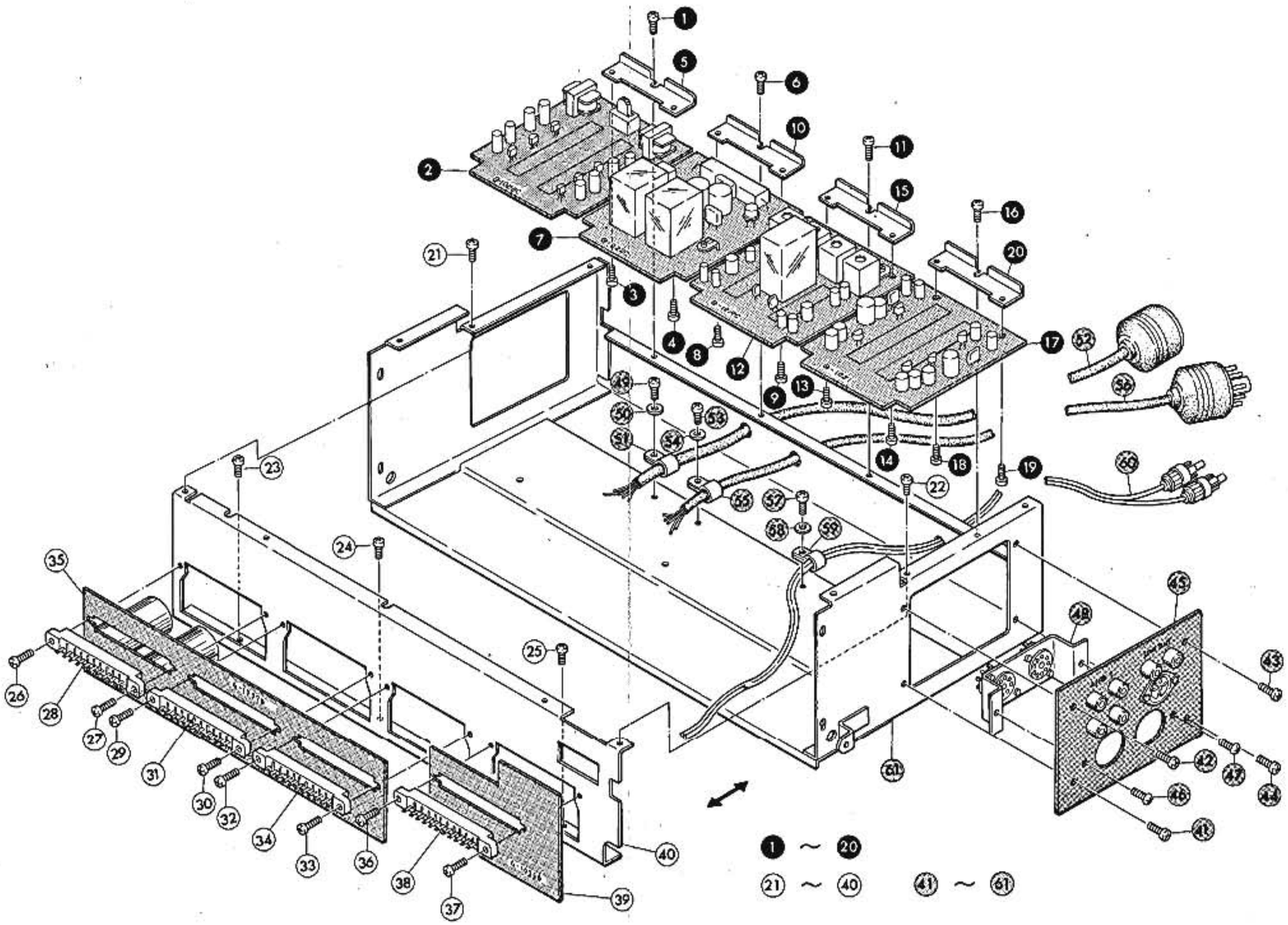


Fig. 12-4



12-2-2 Disassembly of the Amplifier Section

To disassemble the amplifier section, see Fig. 12-4, Amplifier Chassis.

Notes: * The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

* Apply the locking paint in place to all the screws after tightening them completely.

Parts No.	Stock No.	Description
1	5101043	B type Screw, M3 x 6
2	7640010	Line Amp. Printed Circuit Board, G-1020C
3	5101043	B type Screw, M3 x 6
4	5101043	B type Screw, M3 x 6
5	5220080	Retainer, P. C. B
6	5101043	B type Screw, M3 x 6
7	7600010	Oscillator Printed Circuit Board, G-1022C
8	5101043	B type Screw, M3 x 6
9	5101043	B type Screw, M3 x 6
10	5220080	Retainer, P.C.B
11	5101043	B type Screw, M3 x 6
12	7550170	Recording Amp. Printed Circuit Board, G-1019C
13	5101043	B type Screw, M3 x 6
14	5101043	B type Screw, M3 x 6
15	5220080	Retainer, P.C.B
16	5101043	B type Screw, M3 x 6
17	7610010	Mic. Amp. Printed Circuit Board, G-1021C
18	5101043	B type Screw, M3 x 6
19	5101043	B type Screw, M3 x 6
20	5220080	Retainer, P.C.B
21	5101043	B type Screw, M3 x 6
22	5101043	B type Screw, M3 x 6
23	5101043	B type Screw, M3 x 6
24	5101043	B type Screw, M3 x 6
25	5101043	B type Screw, M3 x 6
26	5101046	B type Screw, M3 x 12
27	5101046	B type Screw, M3 x 12
28	2420050	15 P Multiple Connector
29	5101046	B type Screw, M3 x 12
30	5101046	B type Screw, M3 x 12
31	2420050	15 P Multiple Connector
32	5101046	B type Screw, M3 x 12
33	5101046	B type Screw, M3 x 12
34	2420050	15 P Multiple Connector
35	7690030	Filter Printed Circuit Board, G-1037B
36	5101046	B type Screw, M3 x 12
37	5101046	B type Screw, M3 x 12
38	2420050	15 P Multiple Connector
39	7500310	Power Supply Printed Circuit Board, G-1036B
40	5200020	Retainer, P. C. B
41	5101143	B type Screw, M3 x 6 (BLK)
42	5101143	B type Screw, M3 x 6 (BLK)
43	5101143	B type Screw, M3 x 6 (BLK)
44	5101143	B type Screw, M3 x 6 (BLK)
45	7710010	Terminal Ass'y.
46	5101143	B type Screw, M3 x 6 (BLK)
47	5101143	B type Screw, M3 x 6 (BLK)
48	7710010	Bracket, 9 P socket
49	5101044	B type Screw, M3 x 8
50	5120141	P type Washer, 3 x 8 x 0.5
51	3910050	Nylon Cord Clamper
52	3850020	Output Cord (Head)
53	5101044	B type Screw, M3 x 8
54	5120141	P type Washer, 3 x 8 x 0.5
55	3910050	Nylon Cord Clamper
56	3850010	Remote Control Cord
57	5101044	B type Screw, M3 x 8
58	5120141	P type Washer, 3 x 8 x 0.5
59	3910050	Nylon Cord Clamper
60	3810050	Play Back Cord
61	5200010	Chassis, amplifier

12-3. Removal of the Mechanical Section

To remove the mechanical section, proceed as follows. See Fig. 12-5, Mechanical Section & Cabinet.

Notes: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

*When both the amplifier and mechanical sections are to be removed from the cabinet, be sure to remove the amplifier section first. Also, be sure to install the mechanical section first and then the amplifier section to the cabinet.

Step 1) Remove the upper sash ④ by removing the three O type screws ① , ② , ③ and the spacer ⑤ from the upper sash.

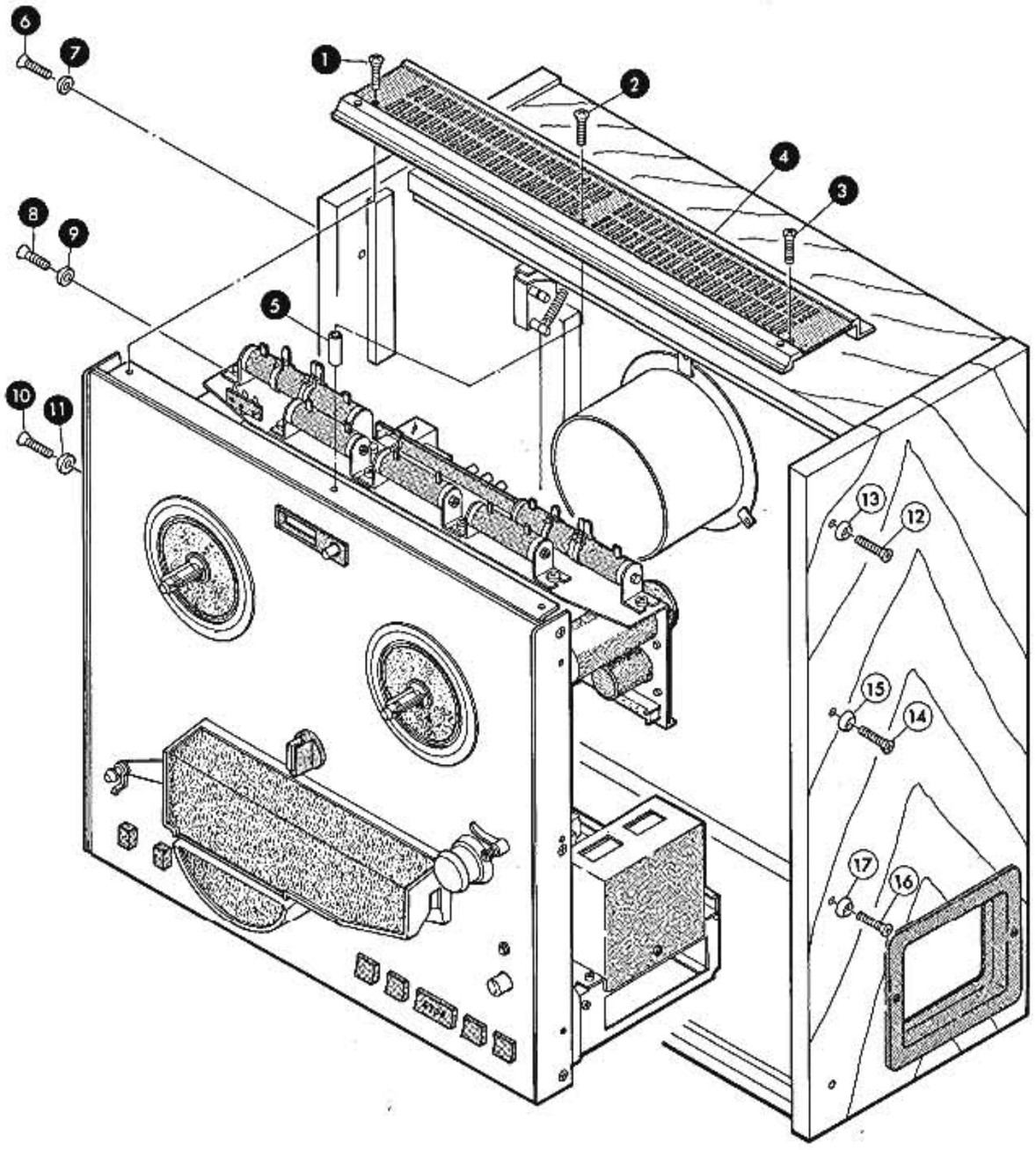
Step 2) Remove the six O type screws ⑥, ⑧ , ⑩ , ⑫ , ⑭ , ⑯ and the six C type washers ⑦, ⑨ , ⑪ , ⑬ , ⑮ , ⑰ from the right and left sides of the cabinet.

Step 3) Holding the top and bottom of the mechanical section with the hands, slowly remove the mechanical section from the cabinet.

Parts No.	Stock No.	Description
1	5104048	O type Screw, M3 x 15 (BLK)
2	5104048	O type Screw, M3 x 15 (BLK)
3	5104048	O type Screw, M3 x 15 (BLK)
4	5300070	Upper Sash
5	5230140	Spacer, upper sash (L = 7 mm)
6	5104069	O type Screw, M4 x 25 (BLK)
7	5123160	C type Washer, 4 ϕ (BLK)
8	5104069	O type Screw, M4 x 25 (BLK)
9	5123160	C type Washer, 4 ϕ (BLK)

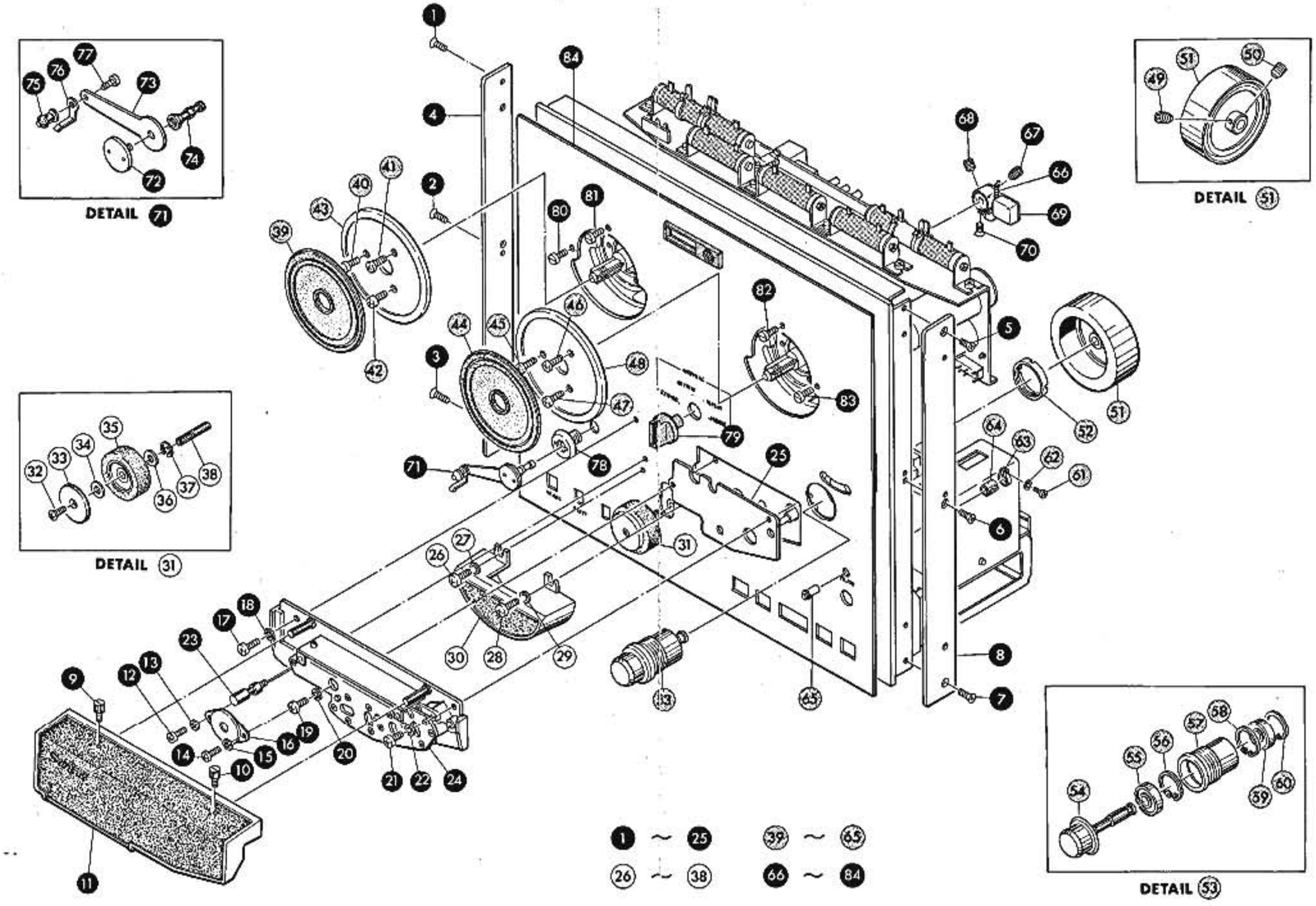
Parts No.	Stock No.	Description
10	5104069	O type Screw, M4 x 25 (BLK)
11	5123160	C type Washer, 4 ϕ (BLK)
12	5104069	O type Screw, M4 x 25 (BLK)
13	5123160	C type Washer, 4 ϕ (BLK)
14	5104069	O type Screw, M4 x 25 (BLK)
15	5123160	C type Washer, 4 ϕ (BLK)
16	5104069	O type Screw, M4 x 25 (BLK)
17	5123160	C type Washer, 4 ϕ (BLK)

Fig. 12-5



❶ ~ ⓫
⑫ ~ ⑰

Fig. 12-6



12-4. Removal of the Front Panel

To remove the front panel, proceed as follows. See Fig. 12-6, Mechanical Section, Front.

Notes: *When assembling the left tension arm assembly ⑦① and the left tension arm balancer ⑥⑨ , tighten the left tension arm set screw ⑦② so that the bottom surface of the tape guide hook ⑦⑤ is 8 cm away from that of the front panel (in the condition that the left tension arm is held down.) In this condition, the left tension arm balancer ⑥⑨ is in contact with the stopper.

*The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

Step 1) Remove the right and left side sashes ④ , ⑧ by removing the six F type screws ① , ② , ③ , ⑤ , ⑥ , ⑦ from both sashes. The reasons why the side sashes have to be removed first :

1) Side sashes are easily scratched.

2) The tool necessary for loosening off the two S type screws securing the left tension arm balancer ⑥⑨ can be used only when side sashes removed.

Step 2) Pull off the head housing ⑪ by loosening off the two set screws ⑨ , ⑩ securing the housing.

Step 3) Remove the metal cover ⑯ by removing the two B type screws ⑫ , ⑭ and the two S type washers ⑬ , ⑮ securing the metal cover.

Step 4) Remove the three B type screws ⑰ , ⑲ , ㉑ and the three S type washers ⑱ , ⑳ , ㉒ .

Step 5) Remove the head assembly ㉔ by rotating the guide pin ㉓ in counterclockwise and removing it.

Note that removal of the head assembly permits the removal of the shield plate A ㉕ .

Step 6) Remove the pinch roller housing ㉚ from the front panel ⑧④ by removing the two B type screws ㉖ , ㉘ and the two P type washers ㉗ , ㉙ .

Step 7) Pull off the pinch roller assembly ㉛ from the front panel.

Step 8) Remove the right and left reel tables ㊸ , ㊽ from the front panel by removing the two table sheets ㊴ , ㊹ and the six B type screws ㊵ , ㊶ , ㊷ , ㊺ , ㊻ , ㊼ .

Step 9) Pull off the impedance wheel ㊶ by loosening off the two S type screws ㊾ , ㊿ .

Step 10) Remove the impedance roller assembly ㊸ from the front panel by unscrewing the nut ㊷ .

Step 11) Remove the rubber pipe ㊹ , the holder ㊸ and the warning light assembly ㊺ from the front panel by unscrewing the B type screw ㊶ and the S type washer ㊷ .

Step12) Remove the frame side of the left tension arm spring ㊻ from the frame. In this condition, the left tension arm spring ㊻ can be removed from the left tension arm balancer ㊾ by loosening off the B type screw ㊿ .

Step 13) Remove the arm balancer ㊾ from the left tension arm shaft ⑦④ by loosening off the two S type screws ㊼ , ㊽ .

Step 14) Pull off the left tension arm assembly ⑦① from the front panel.

Step 15) Remove the left tension arm holder ⑦⑧ from the front panel.

Step 16) Pull off the selector knob ⑦⑨ from the front panel.

Step 17) Remove the four FS screws ⑧⓪ , ⑧① , ⑧② , ⑧③ .

Step 18) Remove the front panel ⑧④ .

Parts No.	Stock No.	Description
1	5102843	F type Screw, M3 x 6
2	5102843	F type Screw, M3 x 6
3	5102843	F type Screw, M3 x 6
4	5300020	Side Sash, left
5	5102843	F type Screw, M3 x 6
6	5102843	F type Screw, M3 x 6
7	5102843	F type Screw, M3 x 6
8	5300030	Side Sash, right
9	5310050	Set Screw, head housing
10	5310050	Set Screw, head housing
11	5060010	Head Housing
12	5101241	B type Screw M3 x 4
13	5121040	S type Washer, 3 x 1.1 x 0.7
14	5101241	B type Screw, M3 x 4
15	5121040	S type Washer, 3 x 1.1 x 0.7
16	5050010	Metal Cover, capstan
17	5101263	B type Screw, M4 x 10
18	5121060	S type Washer, 4 x 1.4 x 1.0
19	5101263	B type Screw, M4 x 10
20	5121060	S type Washer, 4 x 1.4 x 1.0
21	5101263	B type Screw, M4 x 10
22	5121060	S type Washer, 4 x 1.4 x 1.0
23	5950020	Guide Pin
24	7700000	Head Ass'y.
25	5030010	Shield Plate A
26	5101262	B type Screw, M4 x 8
27	5120361	P type washer 4 x 10 x 0.8
28	5101262	B type Screw, M4 x 8
29	5120361	P type washer 4 x 10 x 0.8
30	5060040	Pinch Roller Housing
31	7060010	Pinch Roller Ass'y.
32	5104245	O type Screw, M3 x 10
33	5070020	Roller Cap
34	5124081	Fiber Washer, pinch roller 6 ϕ
35	6310010	Pinch Roller
36	5124081	Fiber Washer, pinch roller 6 ϕ
37	5151006	E type Ring, 5 ϕ
38	6210050	Shaft, pinch roller
39	5500040	Table Sheet
40	5101244	B type Screw, M3 x 8
41	5101244	B type Screw, M3 x 8
42	5101244	B type Screw, M3 x 8

Parts No.	Stock No.	Description
43	6110010	Reel Table
44	5500040	Table Sheet
45	5101244	B type Screw, M3 x 8
46	5101244	B type Screw, M3 x 8
47	5101244	B type Screw, M3 x 8
48	6110010	Reel Table
49	5106060	S type Screw, M4 x 4 (BLK)
50	5106060	S type Screw, M4 x 4 (BLK)
51	6100020	Impedance Wheel
52	5170010	Nut, Impedance Roller
53	7040020	Impedance Roller Ass'y.
54	6200030	Impedance Roller
55	6320020	Ball Bearing
56	5152018	C type Ring, 23.5 ϕ
57	6300030	Bearing Case
58	5152018	C type Ring, 23.5 ϕ
59	6320020	Ball Bearing
60	5152018	C type Ring, 23.5 ϕ
61	5101205	B type Screw, M2 x 8
62	5121301	S type Washer, 2 x 0.9 x 0.5
63	5260010	Holder
64	5500050	Pipe, rubber
65	7720010	Warning Light Ass'y, pause switch
66	6900070	Spring, left tension arm
67	5106060	S type Screw, M4 x 4 (BLK)
68	5106060	S type Screw, M4 x 4 (BLK)
69	6010010	Arm Balancer
70	5101043	B type Screw, M3 x 6
71	7050010	Left Tension Arm Ass'y.
72	5160020	Left Tension Arm Set Screw
73	6500040	Left Tension Arm
74	6200020	Shaft, left tension arm
75	5950070	Tape Guide
76	5950080	Hook, tape guide
77	5102743	F type Screw, M3 x 6
78	6300020	Holder, left tension arm
79	5310040	Knob, selector
80	5160100	FS type Screw, M3 x 6
81	5160100	FS type Screw, M3 x 6
82	5160100	FS type Screw, M3 x 6
83	5160100	FS type Screw, M3 x 6
84	5300010	Front Panel

12-4-1. Disassembly of the Head Assembly

To disassemble the head assembly, see Fig. 12-7, Head Assembly.

Notes: * The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

* Be sure to tighten the F type screws first and then the B type screws when installing the four heads ㊲ , ㊿ , ㊷ , ㉒ , the head base ㉓ and the four head mounting brackets ㉟ , ㊽ , ㊶ , ㉑ in place.
See Tape Head Adjustments described in 5-9 for the adjustments.

* Apply the locking paint in place to all the screws after tightening them completely.

Parts No.	Stock No.	Description
1	5101243	B type Screw, M3 x 6
2	5121040	S type Washer, 3 x 1.1 x 0.7
3	5950010	Tape Guide
4	5102743	F type Screw, M3 x 6
5	5101243	B type Screw, M3 x 6
6	5121040	S type Washer, 3 x 1.1 x 0.7
7	5950010	Tape Guide
8	5102743	F type Screw, M3 x 6
9	5101243	B type Screw, M3 x 6
10	5121040	S type Washer, 3 x 1.1 x 0.7
11	5950010	Tape Guide
12	5102743	F type Screw, M3 x 6
13	5101243	B type Screw, M3 x 6
14	5121040	S type Screw, M3 x 1.1 x 0.7
15	5230010	Spacer (L = 26 mm)
16	5102743	F type Screw, M3 x 6
17	5240010	Housing Base
18	5102422	F type Screw, M2.6 x 5 (BLK)
19	5102422	F type Screw, M2.6 x 5 (BLK)
20	5060030	Base Guide B
21	5102422	F type Screw, M2.6 x 5 (BLK)
22	5102422	F type Screw, M2.6 x 5 (BLK)
23	5102422	F type Screw, M2.6 x 5 (BLK)
24	5060020	Base Guide A
25	5101226	B type Screw, M2.6 x 12
26	6900020	Head Spring B (L = 9 mm)
27	5102726	F type Screw, M2.6 x 12
28	6900020	Head Spring B (L = 9 mm)
29	5102725	F type Screw, M2.6 x 10
30	6900020	Head Spring B (L = 9 mm)
31	5101203	B type Screw, M2 x 5
32	5121001	S type Washer, 2 x 0.9 x 0.5
33	5120302	P type Washer, 2 x 6 x 0.4
34	5102702	F type Screw, M2 x 4
35	5240030	Bracket, PB head mtg.
36	5030050	Shield Cover
37	4503010	Head, play back PS-301
38	5101228	B type Screw, M2.6 x 15
39	6900010	Head Spring A (L = 12 mm)
40	5102728	F type Screw, M2.6 x 15
41	6900010	Head Spring A (L = 12 mm)
42	5102726	F type Screw, M2.6 x 12
43	6900010	Head Spring A (L = 12 mm)
44	5101203	B type Screw, M2 x 5
45	5121001	S type Washer, 2 x 0.9 x 0.5
46	5120302	P type Washer, 2 x 6 x 0.4
47	5102702	F type Screw, M2 x 4
48	5240030	Bracket, PB head mtg.
49	5030050	Shield Cover
50	4503010	Head, play back PS-301
51	5101226	B type Screw, M2.6 x 12
52	6900020	Head Spring B (L = 9 mm)
53	5102726	F type Screw, M2.6 x 12
54	6900020	Head Spring B (L = 9 mm)
55	5102725	F type Screw, M2.6 x 10
56	6900020	Head Spring B (L = 9 mm)
57	5101202	B type Screw, M2 x 4
58	5121001	S type Washer, 2 x 0.9 x 0.5
59	5120302	P type Washer, 2 x 6 x 0.4
60	5102701	F type Screw, M2 x 3
61	5240040	Bracket, REC head mtg.
62	4513010	Head, recording RS-301
63	5101226	B type Screw, M2.6 x 12
64	6900020	Head Spring B (L = 9 mm)
65	5102726	F type Screw, M2.6 x 12
66	6900020	Head Spring B (L = 9 mm)
67	5102725	F type Screw, M2.6 x 10
68	6900020	Head Spring B (L = 9 mm)
69	5102701	F type Screw, M2 x 3
70	5102701	F type Screw, M2 x 3
71	5240050	Bracket, erase head mtg.
72	4523010	Head, erase ES-301
73	5240020	Head Base
74	5101243	B type Screw, M3 x 6
75	5220110	P. C. B. Frame
76	5101243	B type Screw, M3 x 6
77	5220110	P. C. B Frame
78	7690020	Head Printed Circuit Board G-1042
79	5102743	F type Screw, M3 x 6
80	5102743	F type Screw, M3 x 6

Fig. 12-7

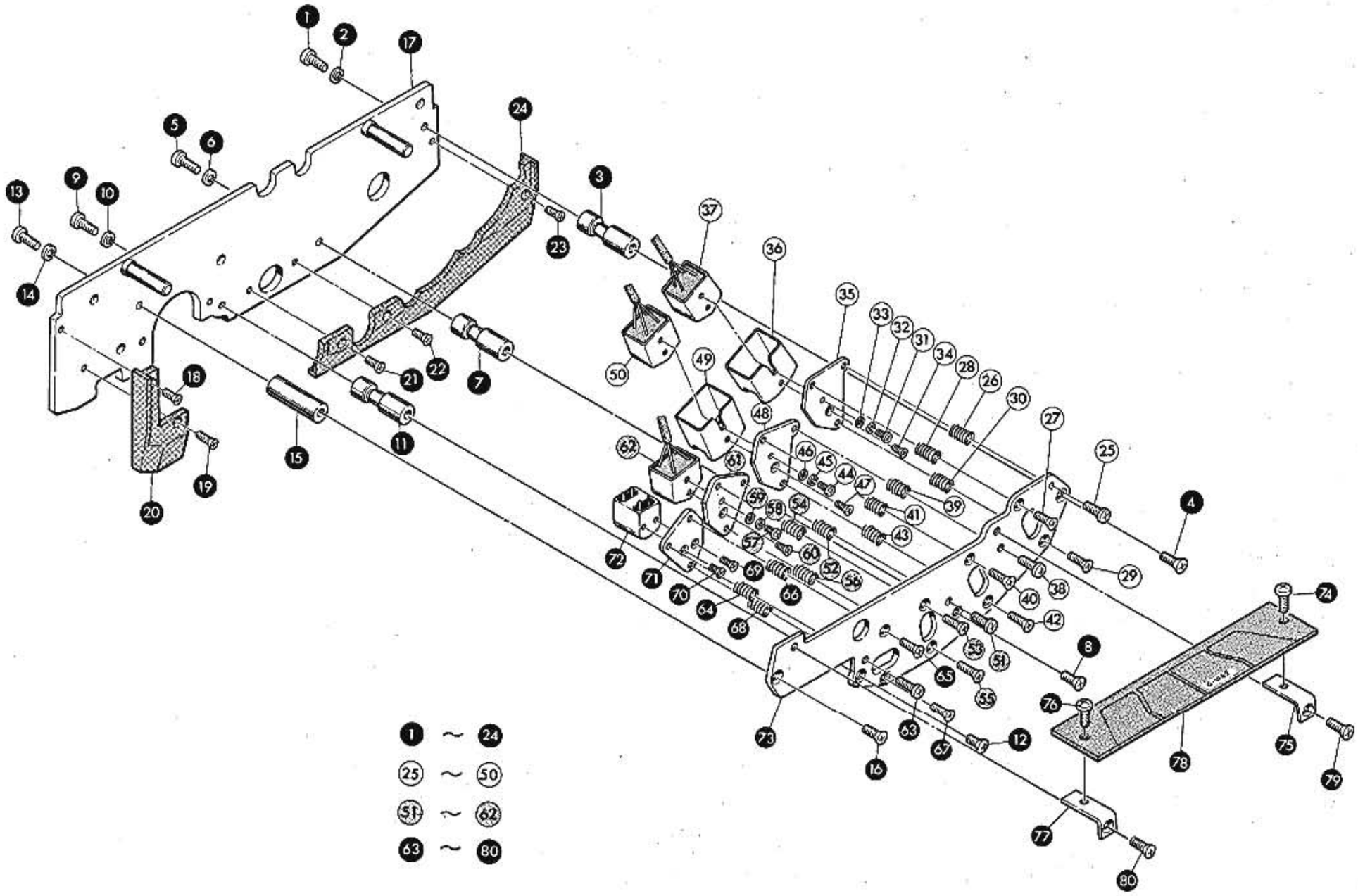
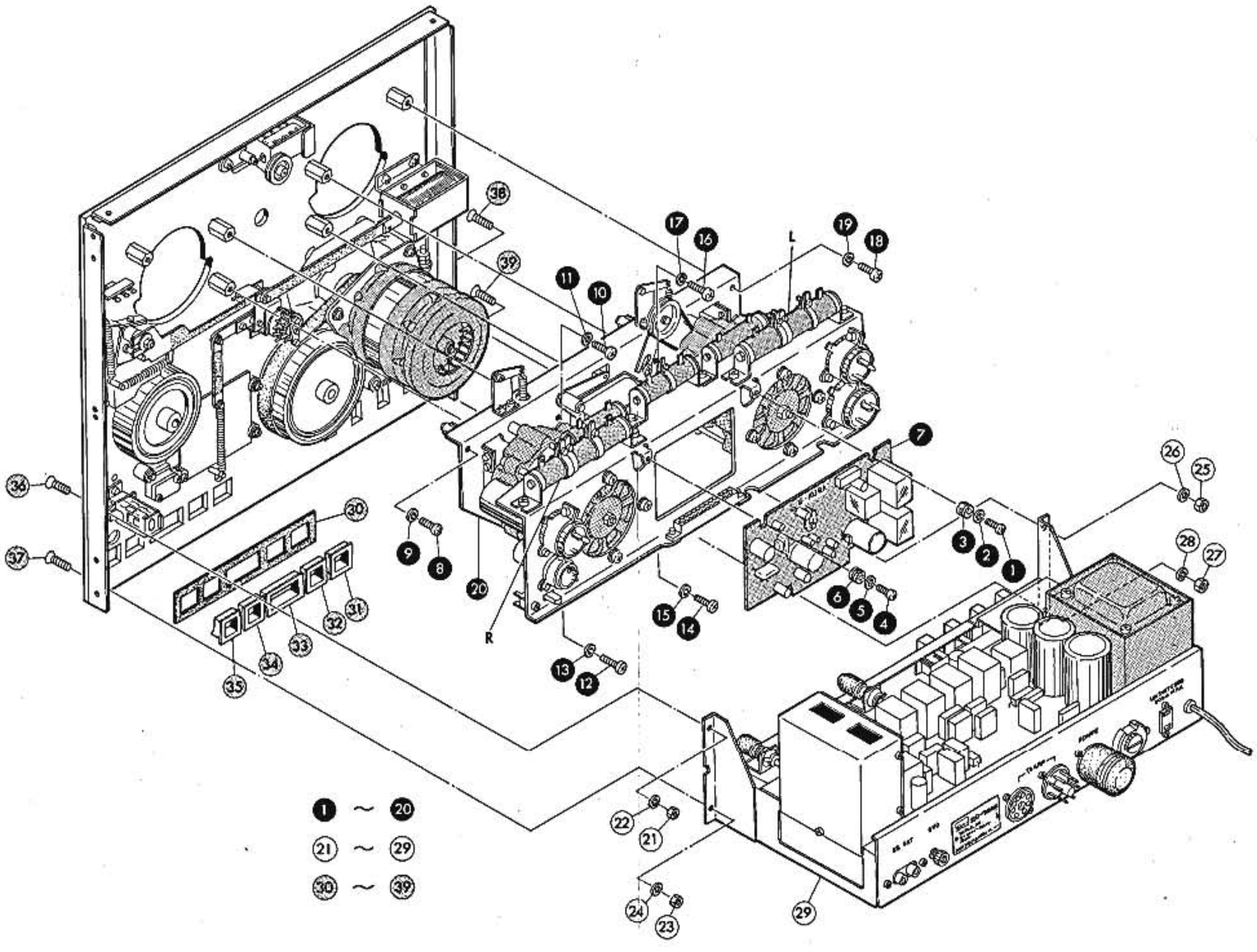


Fig. 12-8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1 ~ 20
21 ~ 29
30 ~ 39

12-5. Removal of the Reel & Control Platform Assembly

To remove the reel and control platform assemblies, proceed as follows. See Fig. 12-8, Reel & Control Platform Assemblies.

Note: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

Step 1) Proceed step 8 in 12-4, Removal of the Front Panel.

Step 2) Remove the 20 Hz sensing board G-1039A ⑦ from the reel platform assembly 20 by removing the two B type screws ① , ④ , the two P type washers ② , ⑤ and the two rubber bushings ③ , ⑥ .

Step 3) Remove the reel platform assembly ⑳ by removing the six B type screws ⑧ , ⑩ , ⑫ , ⑭ , ⑯ , ⑱ and the six S type washers ⑨ , ⑪ , ⑬ , ⑮ , ⑰ , ⑲ securing the platform assembly.

Note that removing the enameled wire-wound resistors marked R and L in Fig. 12-8 from the reel platform assembly permits easy removal of the S type screws ⑧ , ⑱ .

Step 4) Remove the control platform assembly ㉙ by removing the four hex nuts ㉑ , ㉓ , ㉕ , ㉗ and the four S type washers ㉒ , ㉔ , ㉖ , ㉘ securing the platform assembly.

Step 5) Remove the pushbutton A ㉝ , the four pushbuttons B ㉛ , ㉜ , ㉞ , ㉟ and the pushbutton masking ㉚ .

Parts No.	Stock No.	Description
1	5101046	B type Screw, M3 x 12
2	5120141	P type Washer, 3 x 8 x 0.5
3	5050070	Rubber Bushing, P. C. B frame
4	5101046	B type Screw, M3 x 12
5	5120141	P type Washer, 3 x 8 x 0.5
6	5050070	Rubber Bushing, P. C. B frame
7	7690040	20 Hz Sensing Printed Circuit Board, G-1039A
8	5101063	B type Screw, M4 x 10
9	5121360	S type Washer, 4 x 1.4 x 1.0
10	5101063	B type Screw, M4 x 10
11	5121360	S type Washer, 4 x 1.4 x 1.0
12	5101063	B type Screw, M4 x 10
13	5121360	S type Washer, 4 x 1.4 x 1.0
14	5101063	B type Screw, M4 x 10
15	5121360	S type Washer, 4 x 1.4 x 1.0
16	5101063	B type Screw, M4 x 10
17	5121360	S type Washer, 4 x 1.4 x 1.0
18	5101063	B type Screw, M4 x 10
19	5121360	S type Washer, 4 x 1.4 x 1.0
20		Reel Platform Ass'y

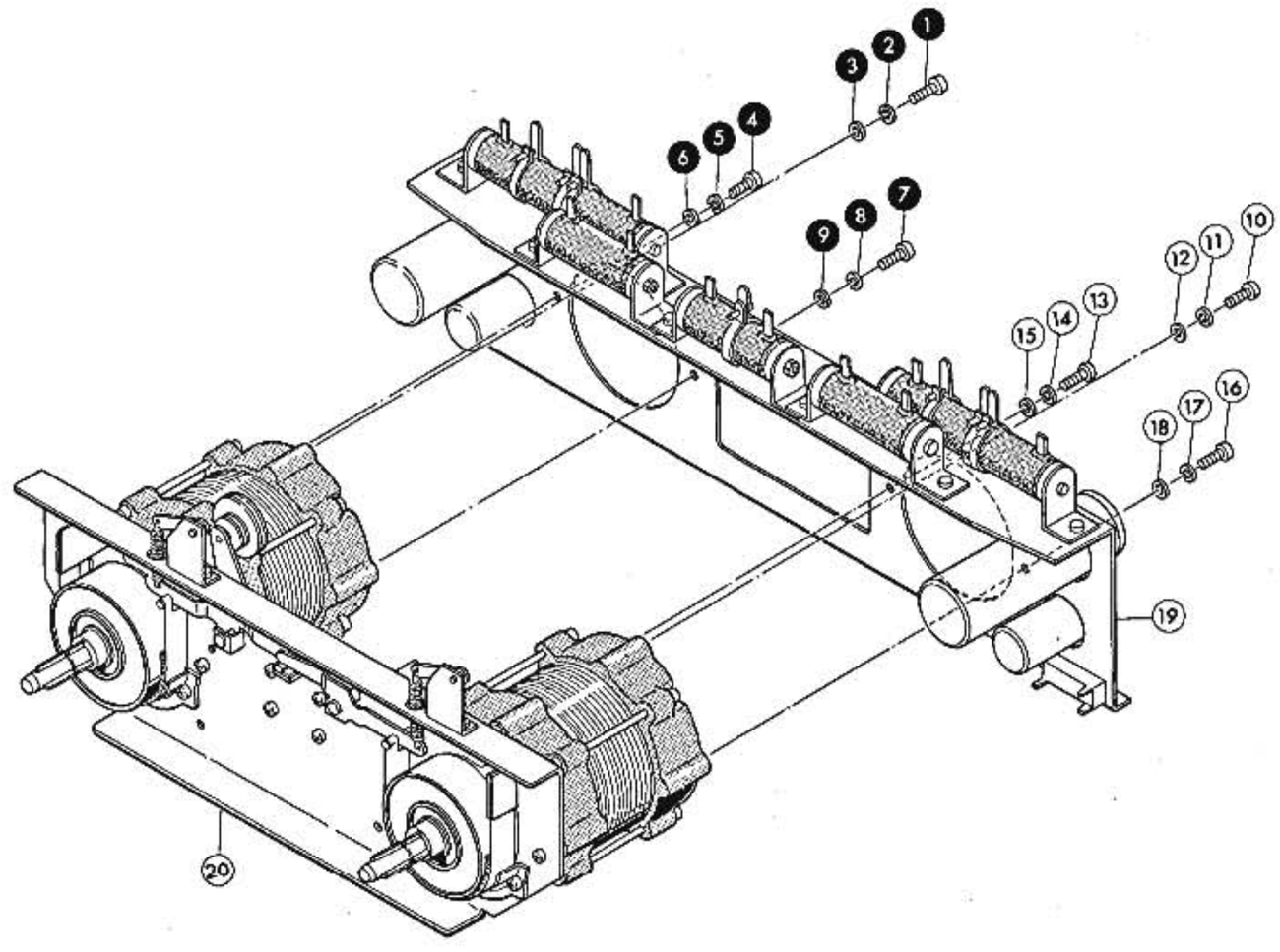
Parts No.	Stock No.	Description
21	5110261	Hex. Nut, M4 x 7 x 3.2
22	5121360	S type Washer, 4 x 1.4 x 1.0
23	5110261	Hex. Nut, M4 x 7 x 3.2
24	5121360	S type Washer, 4 x 1.4 x 1.0
25	5110261	Hex. Nut, M4 x 7 x 3.2
26	5121360	S type Washer, 4 x 1.4 x 1.0
27	5110261	Hex. Nut, M4 x 7 x 3.2
28	5121360	S type Washer, 4 x 1.4 x 1.0
29		Control Platform Ass'y
30	5040040	Masking, control pushbutton
31	5320030	Pushbutton B
32	5320030	Pushbutton B
33	5320020	Pushbutton A
34	5320030	Pushbutton B
35	5320030	Pushbutton B
36	5102865	F type Screw, M4 x 15
37	5102865	F type Screw, M4 x 15
38	5102865	F type Screw, M4 x 15
39	5102865	F type Screw, M4 x 15

12-6. Removal of the Reel Motor Assembly

To remove the reel motor assembly ⑳ , remove the six B tupe screws ① , ④ , ⑦ , ⑩ , ⑬ , ⑯ and the six S type washers ② , ⑤ , ⑧ , ⑪ , ⑭ , ⑰ from the bracket assembly ⑲ . See Fig. 12-9, Reel Motor & Bracket Assemblies.

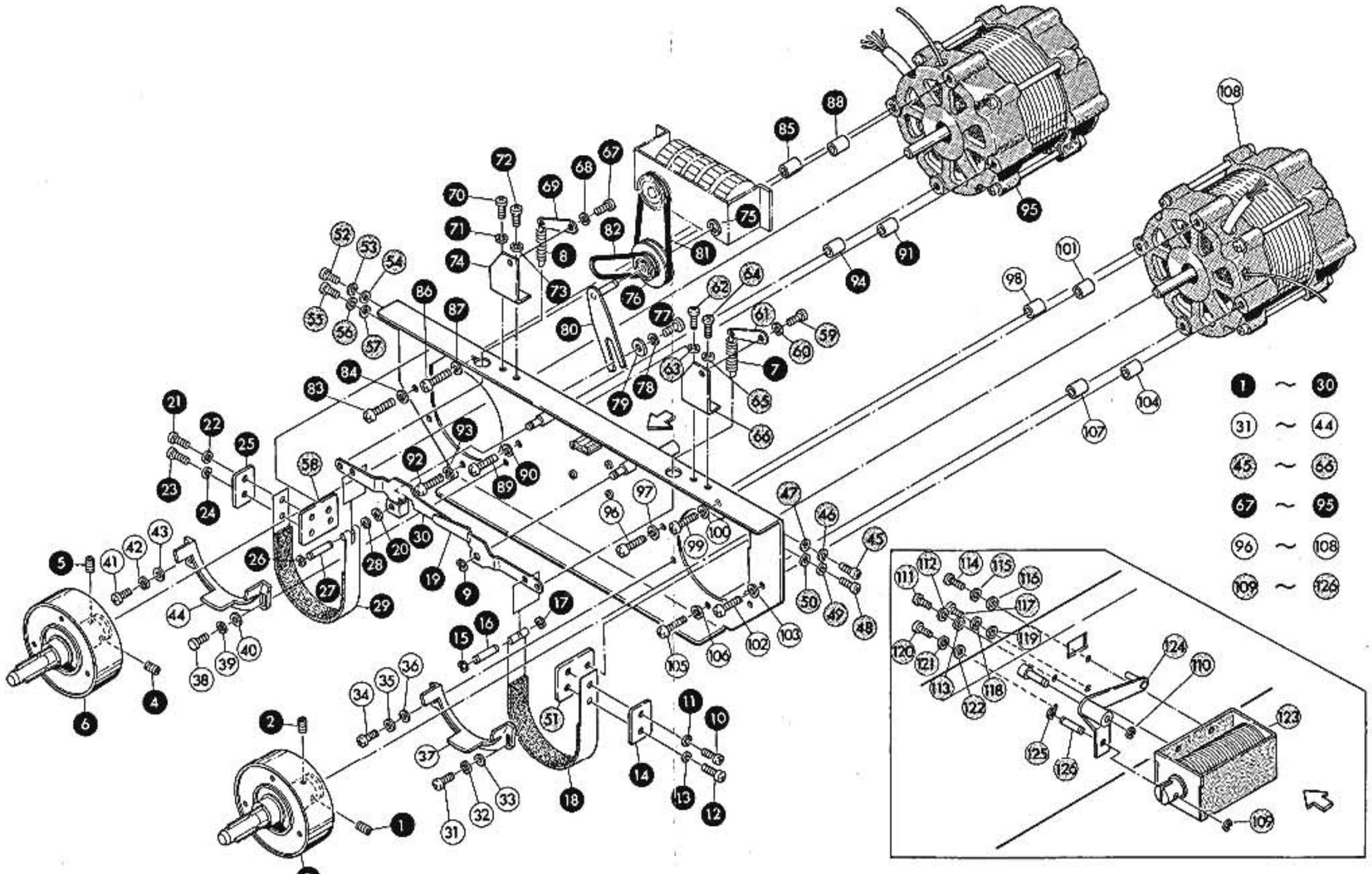
Parts No.	Stock No.	Description
1	5101063	B type Screw, M4 x 10
2	5121360	S type Washer 4 x 1.4 x 1.0
3	5120161	P type Washer, 4 x 10 x 0.8
4	5101063	B type Screw, M4 x 10
5	5121360	S type Washer, 4 x 1.4 x 1.0
6	5120161	P type Washer, 4 x 10 x 0.8
7	5101063	B type Screw, M4 x 10
8	5121360	S type Washer, 4 x 1.4 x 1.0
9	5120161	P type Washer, 4 x 10 x 0.8
10	5101063	B type Screw, M4 x 10
11	5121360	S type Washer, 4 x 1.4 x 1.0
12	5120161	P type Washer, 4 x 10 x 0.8
13	5101063	B type Screw, M4 x 10
14	5121360	S type Washer, 4 x 1.4 x 1.0
15	5120161	P type Washer, 4 x 10 x 0.8
16	5101063	B type Screw, M4 x 10
17	5121360	S type Washer, 4 x 1.4 x 1.0
18	5120161	P type Washer, 4 x 10 x 0.8
19		Bracket Ass'y, control mtg.
20		Reel Motor Ass'y.

Fig. 12-9



❶ ~ ❾
⑩ ~ ⑳

Fig. 12-10



12-6-1. Disassembly of the Reel Motor Assembly

To disassemble the reel motor assembly, see Fig. 12-10, Reel Motor Assembly.

Notes: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

*Apply the locking paint in place to all the screws after tightening them completely.

*Wipe off any used lubricants after every disassembly. Apply, then, disulfide molybdenum or Mobile Grease Special in place.

Parts No.	Stock No.	Description
1	5106060	S type Screw, M4 x 4
2	5106060	S type Screw, M4 x 4
3	6400030	Brake Drum
4	5106060	S type Screw, M4 x 4
5	5106060	S type Screw, M4 x 4
6	6400030	Brake Drum
7	6900030	Brake Spring
8	6900030	Brake Spring
9	5151004	E type Ring, 3 ϕ
10	5101043	B type Screw, M3 x 6
11	5121340	S type Washer, 3 x 1.1 x 0.7
12	5101043	B type Screw, M3 x 6
13	5121340	S type Washer, 3 x 1.1 x 0.7
14	5240070	Supporter, brake band
15	5151002	E type Ring, 2 ϕ
16	6210020	Pin, brake band
17	5151002	E type Ring, 2 ϕ
18	7070010	Brake Band
19	6500020	Brake Arm
20	5151004	E type Ring, 3 ϕ
21	5101043	B type Screw, M3 x 6
22	5121340	S type Washer, 3 x 1.1 x 0.7
23	5101043	B type Screw, M3 x 6
24	5121340	S type Washer, 3 x 1.1 x 0.7
25	5240070	Supporter, brake band
26	5151002	E type Ring, 2 ϕ
27	6210020	Pin, brake band
28	5151002	E type Ring, 2 ϕ
29	7070010	Brake Band
30	6500020	Brake Arm
31	5101043	B type Screw, M3 x 6
32	5121340	S type Washer, 3 x 1.1 x 0.7
33	5120141	P type Washer, 3 x 8 x 0.5
34	5101043	B type Screw, M3 x 6
35	5121340	S type Washer, 3 x 1.1 x 0.7
36	5120141	P type Washer, 3 x 8 x 0.5
37	5950030	Brake Guide
38	5101043	B type Screw, M3 x 6
39	5121340	S type Washer, 3 x 1.1 x 0.7
40	5120141	P type Washer, 3 x 8 x 0.5
41	5101043	B type Screw, M3 x 6
42	5121340	S type Washer, 3 x 1.1 x 0.7
43	5120141	P type Washer, 3 x 8 x 0.5
44	5950030	Brake Guide
45	5101043	B type Screw, M3 x 6
46	5121340	S type Washer, 3 x 1.1 x 0.7
47	5120141	P type Washer, 3 x 8 x 0.5
48	5101043	B type Screw, M3 x 6
49	5121340	S type Washer, 3 x 1.1 x 0.7
50	5120141	P type Washer, 3 x 8 x 0.5
51	5240060	Adjusting Plate
52	5101043	B type Screw, M3 x 6
53	5121340	S type Washer, 3 x 1.1 x 0.7
54	5120141	P type Washer, 3 x 8 x 0.5
55	5101043	B type Screw, M3 x 6
56	5121340	S type Washer, 3 x 1.1 x 0.7
57	5120141	P type Washer, 3 x 8 x 0.5
58	5240060	Adjusting Plate
59	5101043	B type Screw, M3 x 6
60	5121340	S type Washer, 3 x 1.1 x 0.7
61	5240060	Spring Lug
62	5101043	B type Screw, M3 x 6
63	5121340	S type Washer, 3 x 1.1 x 0.7
64	5101043	B type Screw, M3 x 6
65	5121340	S type Washer, 3 x 1.1 x 0.7
66	5220010	Bracket, spring
67	5101043	B type Screw, M3 x 6
68	5121340	S type Washer, 3 x 1.1 x 0.7
69	5240080	Spring Lug
70	5101043	B type Screw, M3 x 6
71	5121340	S type Washer, 3 x 1.1 x 0.7
72	5101043	B type Screw, M3 x 6
73	5121340	S type Washer, 3 x 1.1 x 0.7
74	5220010	Bracket, spring
75	5151004	E type Ring, 3 ϕ
76	6140020	Counter Pulley
77	5101061	B type Screw, M4 x 6
78	5121360	S type Washer, 4 x 1.4 x 1.0
79	5120161	P type Washer, 4 x 10 x 0.8
80	5240090	Pulley Holder
81	6030020	Counter Belt
82	6030020	Counter Belt
83	5101068	B type Screw, M4 x 20
84	5121360	S type Washer, 4 x 1.4 x 1.0
85	5230030	Spacer, reel motor (L = 11 mm)
86	5101068	B type Screw, M4 x 20
87	5121360	S type Washer, 4 x 1.4 x 1.0
88	5230030	Spacer, reel motor (L = 11 mm)
89	5101068	B type Screw, M4 x 20
90	5121360	S type Washer, 4 x 1.4 x 1.0
91	5230030	Spacer, reel motor (L = 11 mm)
92	5101068	B type Screw, M4 x 20
93	5121360	S type Washer, 4 x 1.4 x 1.0
94	5230030	Spacer, reel motor (L = 11 mm)
95	4320010	Reel Motor, VS-KP69
96	5101068	B type Screw, M4 x 20
97	5121360	S type Washer, 4 x 1.4 x 1.0
98	5230030	Spacer, reel motor (L = 11 mm)
99	5101068	B type Screw, M4 x 20
100	5121360	S type Washer, 4 x 1.4 x 1.0
101	5230030	Spacer, reel motor (L = 11 mm)
102	5101068	B type Screw, M4 x 20
103	5121360	S type Washer, 4 x 1.4 x 1.0
104	5230030	Spacer, reel motor (L = 11 mm)
105	5101068	B type Screw, M4 x 20
106	5121360	S type Washer, 4 x 1.4 x 1.0
107	5230030	Spacer, reel motor (L = 11 mm)
108	4320010	Reel Motor VS-KP69
109	5151002	E type Ring, 2 ϕ
110	5151004	E type Ring, 3 ϕ
111	5101043	B type Screw, M3 x 6
112	5121340	S type Washer, 3 x 1.1 x 0.7
113	5120141	P type Washer, 3 x 8 x 0.5
114	5101043	B type Screw, M3 x 6
115	5121340	S type Washer, 3 x 1.1 x 0.7
116	5120141	P type Washer, 3 x 8 x 0.5
117	5101043	B type Screw, M3 x 6
118	5121340	S type Washer, 3 x 1.1 x 0.7
119	5120141	P type Washer, 3 x 8 x 0.5
120	5101043	B type Screw, M3 x 6
121	5121340	S type Washer, 3 x 1.1 x 0.7
122	5120141	P type Washer, 3 x 8 x 0.5
123	4340010	Plunger, brake
124	6500010	Brake Lever
125	5151002	E type Ring, 2 ϕ
126	6210010	Pin A, plunger

12-6-2. Disassembly of the Control Mounting Bracket Assembly

To disassemble the control mounting bracket assembly, see Fig. 12-11, Control Mounting Bracket Assembly.

Notes: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

* Apply the locking paint in place to all the screws after tightening them completely.

Parts No.	Stock No.	Description
1	5101061	B type Screw, M4 x 6
2	5101061	B type Screw, M4 x 6
3	0125270	Enameld Wirewound Resistor, 200 Ω 40W
4	5101061	B type Screw, M4 x 6
5	5101061	B type Screw, M4 x 6
6	0125270	Enameld Wirewound Resistor, 200 Ω 40W
7	5101061	B type Screw, M4 x 6
8	5101061	B type Screw, M4 x 6
9	0125260	Enameld Wirewound Resistor, 10 Ω 20W
10	5101061	B type Screw, M4 x 6
11	5101061	B type Screw, M4 x 6
12	0125250	Enameld Wirewound Resistor, 1.5 kΩ 20W
13	0125280	Enameld Wirewound Resistor, 900 Ω 20W
14	5101043	B type Screw, M3 x 6
15	5101043	B type Screw, M3 x 6
16	0559826	Electrolytic Capacitor, 150 μF 160V
17	5101043	B type Screw, M3 x 6
18	5101043	B type Screw, M3 x 6
19	0599002	MP Capacitor (block type), 4 + 1 μF 250V
20	5101043	B type Screw, M3 x 6
21	5101043	B type Screw, M3 x 6
22	0599001	MP Capacitor (block type), 2.8 + 1 μF 250V
23	5101043	B type Screw, M3 x 6
24	5101043	B type Screw, M3 x 6
25	0599002	Electrolytic Capacitor, 4 + 1 μF 250V
26	5101043	B type Screw, M3 x 6
27	5110241	Hex. Nut, M3 x 5.5 x 2.4
28	5101043	B type Screw, M3 x 6
29	5110241	Hex. Nut, M3 x 5.5 x 2.4
30	7690010	Spark Killer Printed Circuit Board, G-1043A
31	5106520	B type Screw (polycarbnate), M2.6 x 4
32	5124040	Fiber Washer, 3 x 8 x 0.5
33	5106520	B type Screw (polycarbonate), M2.6 x 4
34	5124040	Fiber Washer, 3 x 8 x 0.5
35	1110180	Slide Switch, SL-262B4
36	5101045	B type Screw, M3 x 10
37	5101045	B type Screw, M3 x 10
38	2420050	15 P Multiple Connector
39	5200040	Chassis, controller mtg.
40	0508470	Electrolytic Capacitor 47 μF 160V

Fig. 12-11

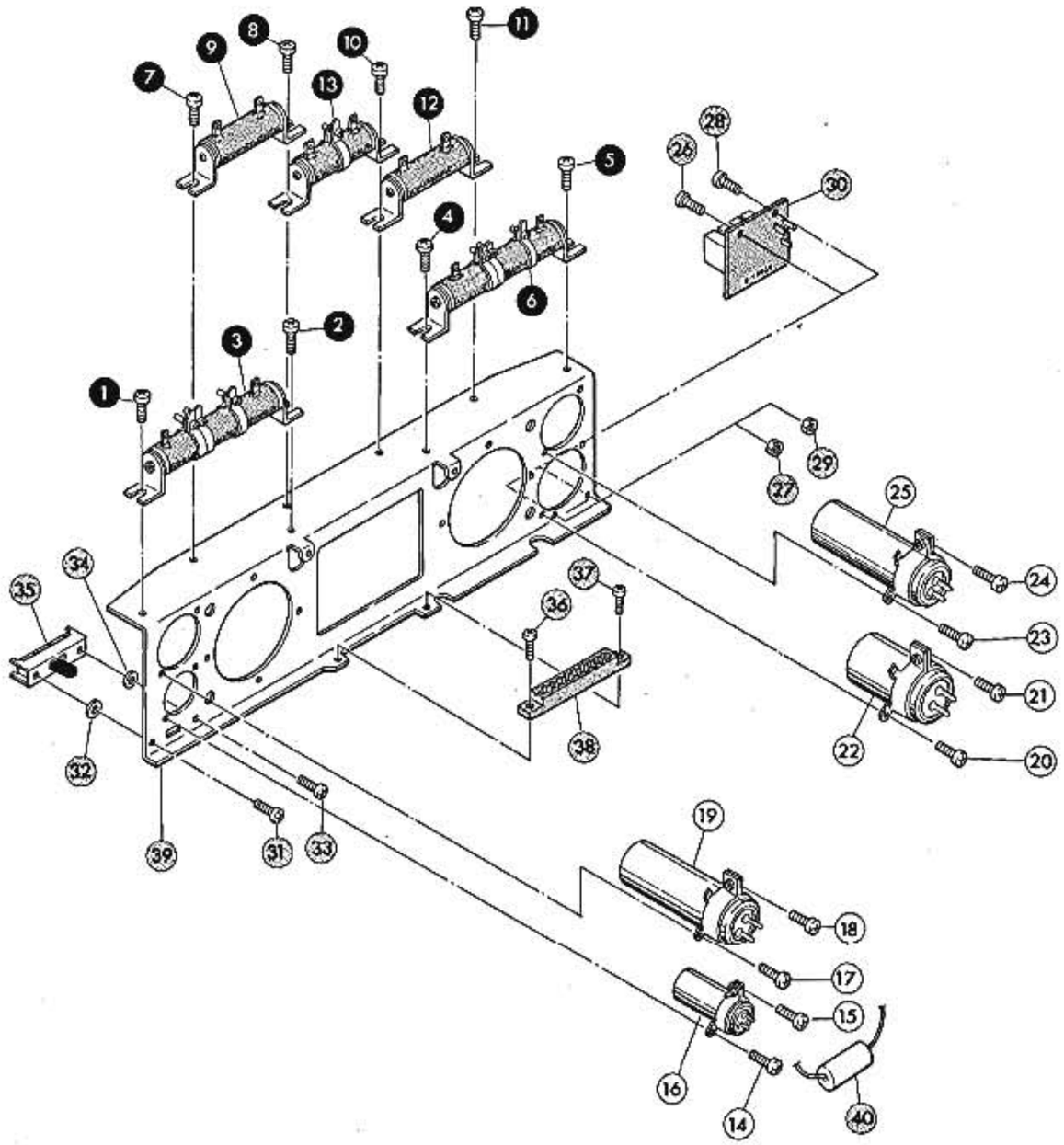
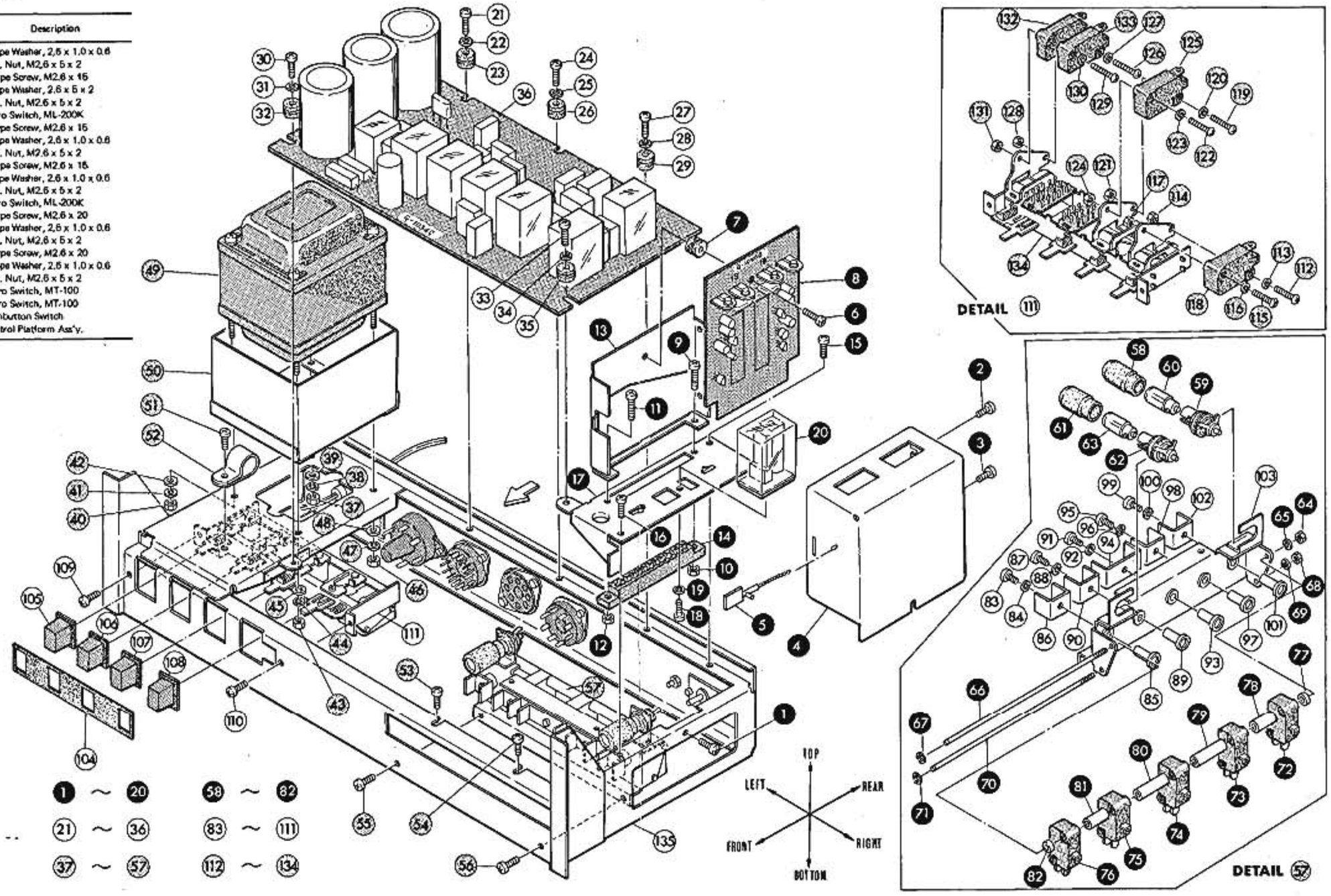


Fig. 12-12

Parts No.	Stock No.	Description
113	5121220	S type Washer, 2.6 x 1.0 x 0.6
114	5110121	Hex. Nut, M2.6 x 5 x 2
115	5101028	B type Screw, M2.6 x 15
116	5121220	S type Washer, 2.6 x 5 x 2
117	5110121	Hex. Nut, M2.6 x 5 x 2
118	1160080	Micro Switch, ML-200K
119	5101028	B type Screw, M2.6 x 15
120	5121220	S type Washer, 2.6 x 1.0 x 0.6
121	5110121	Hex. Nut, M2.6 x 5 x 2
122	5101028	B type Screw, M2.6 x 15
123	5121220	S type Washer, 2.6 x 1.0 x 0.6
124	5110121	Hex. Nut, M2.6 x 5 x 2
125	1160080	Micro Switch, ML-200K
126	5101029	B type Screw, M2.6 x 20
127	5121220	S type Washer, 2.6 x 1.0 x 0.6
128	5110121	Hex. Nut, M2.6 x 5 x 2
129	5101029	B type Screw, M2.6 x 20
130	5121220	S type Washer, 2.6 x 1.0 x 0.6
131	5110121	Hex. Nut, M2.6 x 5 x 2
132	1160090	Micro Switch, MT-100
133	1160090	Micro Switch, MT-100
134		Pushbutton Switch
135	5200030	Control Platform Ass'y.



12-6-3. Disassembly of the Control Platform Assembly

To disassemble the control platform assembly, see Fig. 12-12, Control Platform Assembly.

Notes: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

*Use the six PCB holding bushings ⑦, ㉓, ㉖, ㉙, ㉜, ㉟ with the thinner side to the head of the screws (when tightened). Tighten the screws completely so that the P type washers are squeezed into the rubber bushings.

Parts No.	Stock No.	Description
1	5101043	B type Screw, M3 x 6
2	5101043	B type Screw, M3 x 6
3	5101043	B type Screw, M3 x 6
4	5050050	Shield Plate, equalizer P. C. B.
5	3910040	Lead Clamper
6	5101046	B type Screw, M3 x 12
7	5050070	Rubber Bushing, P.C.B hold'g
8	7550160	Equalizer Amp. Printed Circuit Board, G-1028B
9	5101046	B type Screw, M3 x 12
10	5110241	Hex. Nut, M3 x 5.5 x 2.4
11	5101046	B type Screw, M3 x 12
12	5110241	Hex. Nut, M3 x 5.5 x 2.4
13	5050060	Retainer, equalizer P.C.B
14	2420050	15P Multiple Connector
15	5101043	B type Screw, M3 x 6
16	5101043	B type Screw, M3 x 6
17	5240220	Bracket, equalizer P.C. B
18	5101222	B type Screw, M2.6 x 5
19	5121020	S type Washer, 2.6 x 1.0 x 0.6
20	1150070	Relay, MOB-1293-OH
21	5101046	B type Screw, M3 x 12
22	5120141	P type Washer, 3 x 8 x 0.5
23	5050070	Rubber Bushing, P.C.B hold'g
24	5101046	B type Screw, M3 x 12
25	5120141	P type Washer, 3 x 8 x 0.5
26	5050070	Rubber Bushing, P.C.B hold'g
27	5101046	B type Screw, M3 x 12
28	5120141	P type Washer, 3 x 8 x 0.5
29	5050070	Rubber Bushing, P.C.B hold'g
30	5101046	B type Screw, M3 x 12
31	5120141	P type Washer, 3 x 8 x 0.5
32	5050070	Rubber Bushing, P.C.B hold'g
33	5101046	B type Screw, M3 x 12
34	5120141	P type Washer, 3 x 8 x 0.5
35	5050070	Rubber Bushing, P.C.B hold'g
36	7630010	Control Printed Circuit Board, G-1034C
37	5110261	Hex. Nut, M4 x 7 x 3.2
38	5121360	S type Washer, 4 x 1.4 x 1.0
39	5120161	P type Washer, 4 x 10 x 0.8
40	5110261	Hex. Nut, M4 x 7 x 3.2
41	5121360	S type Washer, 4 x 1.4 x 1.0
42	5120161	P type Washer, 4 x 10 x 0.8
43	5110261	Hex. Nut, M4 x 7 x 3.2
44	5121360	S type Washer, 4 x 1.4 x 1.0
45	5120161	P type Washer, 4 x 10 x 0.8
46	5110261	Hex. Nut, M4 x 7 x 3.2
47	5121360	S type Washer, 4 x 1.4 x 1.0
48	5120161	P type Washer, 4 x 10 x 0.8
49	4000710	Power Transformer
50	5030040	PT Shield Plate
51	5101043	B type Screw, M3 x 6
52	3910010	Nylon Cord Clamper
53	5101043	B type Screw, M3 x 6
54	5101043	B type Screw, M3 x 6
55	5101043	B type Screw, M3 x 6
56	5101043	B type Screw, M3 x 6
57		Operation Switch Ass'y.
58	5046101	Shield Cover, lamp
59	2320080	Lamp Socket (B), swan type
60	0400090	Lamp, swan type (6.3 V 0.25A)
61	5046101	Shield Cover, lamp
62	2320080	Lamp Socket (B), swan type
63	0400090	Lamp, swan type (6.3 V 0.25A)
64	5110241	Hex. Nut, M3 x 5.5 x 2.4
65	5121340	S type Washer, 3 x 1.1 x 0.7
66	6210080	Shaft, switch mtg.
67	5151003	E type Ring, 2.3 ϕ
68	5110241	Hex. Nut, M3 x 5.5 x 2.4
69	5121340	S type Washer, 3 x 1.1 x 0.7
70	6210080	Shaft, switch mtg.
71	5151003	E type Ring, 2.3 ϕ
72	1160060	Micro Switch, V-1A10
73	1160060	Micro Switch, V-1A10
74	1160060	Micro Switch, V-1A10
75	1160060	Micro Switch, V-1A10
76	1160060	Micro Switch, V-1A10
77	5230040	Spacer, switch (L = 2 mm)
78	5230050	Spacer, switch, (L = 15.7 mm)
79	5230060	Spacer, switch (L = 24.5 mm)
80	5230060	Spacer, switch (L= 24.5 mm)
81	5230050	Spacer, switch (L = 15.7 mm)
82	5230040	Spacer, switch (L = 2 mm)
83	5101043	B type Screw, M3 x 6
84	5121340	S type Washer, 3 x 1.1 x 0.7
85	6210090	Shaft, operation switch
86	6040030	Plate, switch actuating (L = 17 mm)
87	5101043	B type Screw, M3 x 6
88	5121340	S type Washer, 3 x 1.1 x 0.7
89	6210090	Shaft, operation switch
90	6040030	Plate, switch actuating (L = 17 mm)
91	5101043	B type Screw, M3 x 6
92	5121340	S type Washer, 3 x 1.1 x 0.7
93	6210090	Shaft, operation switch
94	6040040	Plate, switch actuating (L = 35 mm)
95	5101043	B type Screw, M3 x 6
96	5121340	S type Washer, 3 x 1.1 x 0.7
97	6210090	Shaft, operation switch
98	6040030	Plate, switch actuating (L = 17 mm)
99	5101043	B type Screw, M3 x 6
100	5121340	S type Washer, 3 x 1.1 x 0.7
101	6210090	Shaft, operation switch
102	6040030	Plate, switch actuating (L = 17 mm)
103	6240200	Bracket Ass'y operation switch mtg.
104	6040030	Masking, control pushbutton
105	5320050	Pushbutton (ivory)
106	5320040	Pushbutton (gray)
107	5320040	Pushbutton (gray)
108	5320040	Pushbutton (gray)
109	5101043	B type Screw, M3 x 6
110	5101043	B type Screw, M3 x 6
111	1130240	Pushbutton Switch Ass'y
112	5101028	B type Screw, M2.6 x 15

12-6-4. Disassembly of the Control Indicator Assembly

To disassemble the control indicator assembly, see Fig. 12-13, Control Indicator Assembly.

Notes: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

*Apply the locking paint in place to all the screws after tightening them completely.

*Set the voltage selector to the correct voltage marking.

Parts No.	Stock No.	Description
1	5101144	B type Screw, M 3 x 8 (BLK)
2	5110240	Hex. Nut, M3 x 5.5 x 1.8
3	5101144	B type Screw, M 3 x 8 (BLK)
4	5110240	Hex. Nut, M3 x 5.5 x 1.8
5	2200080	Terminal, 2P input
6	5110241	Hex. Nut, M3 x 5.5 x 2.4
7	5121340	S type Washer, 3 x 1.1 x 0.7
8	2230010	Terminal, metal
9	5101143	B type Screw, M3 x 6 (BLK)
10	5110241	Hex. Nut, M3 x 5.5 x 2.4
11	5101143	B type Screw, M3 x 6 (BLK)
12	5110241	Hex. Nut, M3 x 5.5 x 2.4
13	2020050	Socket, octal type
14.	5101143	B type Screw, M3 x 6 (BLK)
15	5110240	Hex. Nut, M3 x 5.5 x 1.8
16	5101143	B type Screw, M3 x 6 (BLK)
17	5110240	Hex. Nut, M3 x 5.5 x 1.8
18	2410250	Socket, octal type
19	2410290	11 P Dummy Plug, microphone
20	5101143	B type Screw, M3 x 6 (BLK)
21	5110241	Hex. Nut, M3 x 5.5 x 2.4
22	5101143	B type Screw, M3 x 6 (BLK)

Parts No.	Stock No.	Description
23	5110241	Hex. Nut, M3 x 5.5 x 2.4
24	2040010	11 P Socket, remote control
25	2410260	Receptacle, power
26	0430030	Fuse, 2A
27	2410260	Receptacle, power
28	5101145	B type Screw, M3 x 10 (BLK)
29	5101145	B type Screw, M3 x 10 (BLK)
30	2410260	Receptacle, power
31	5101145	B type Screw, M3 x 10 (BLK)
32	5110241	Hex. Nut, M3 x 5.5 x 2.4
33	5101145	B type Screw, M3 x 10 (BLK)
34	5110241	Hex. Nut, M3 x 5.5 x 2.4
35	2450011	Receptacle, power
36	3910020	Line Cord Strain Relief
37	3800021	Power Cord
38	5300080	Control Indicator
39	5101222	B type Screw, M2.6 x 5
40	5101222	B type Screw, M2.6 x 5
41	5360040	Name Plate

Fig. 12-13

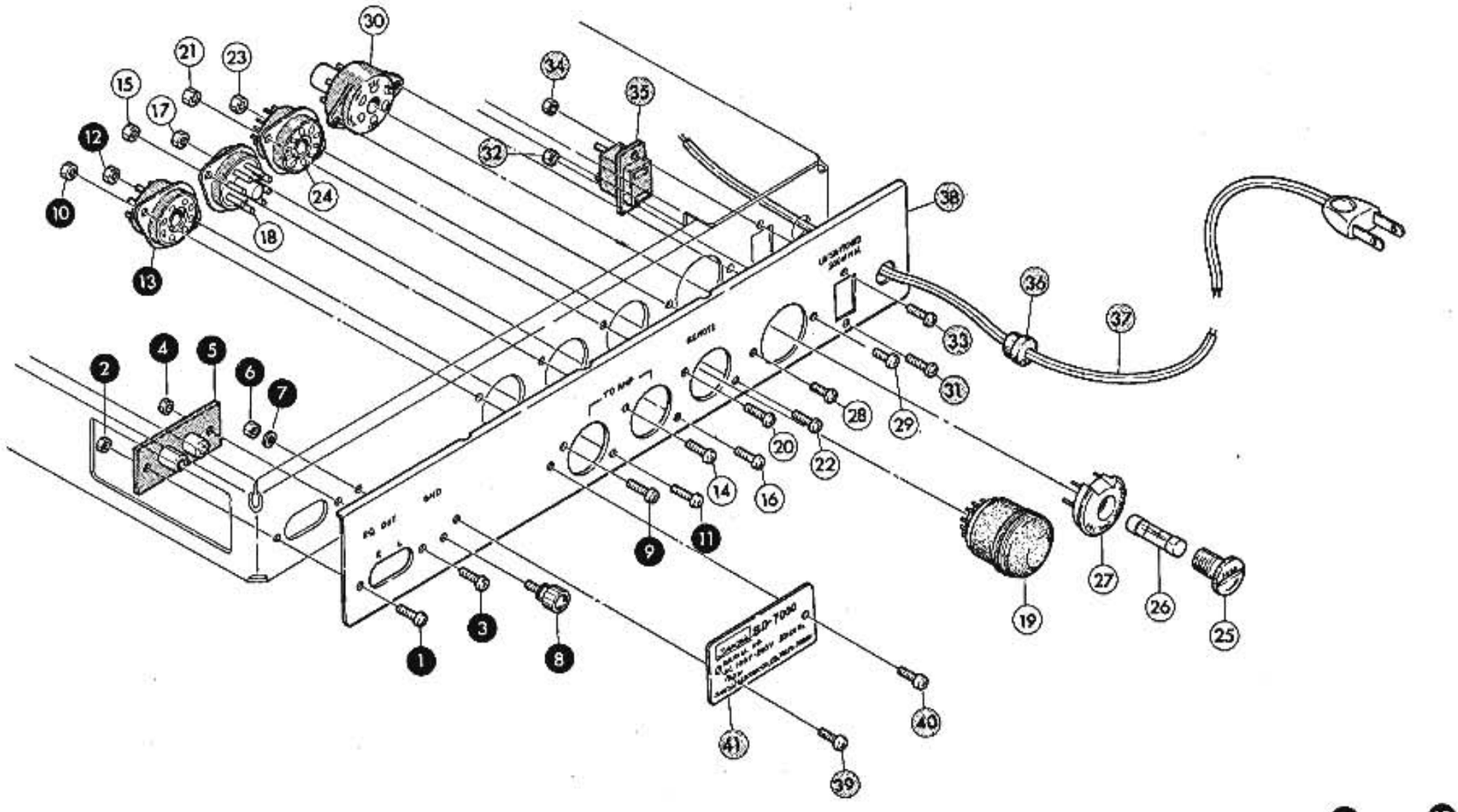


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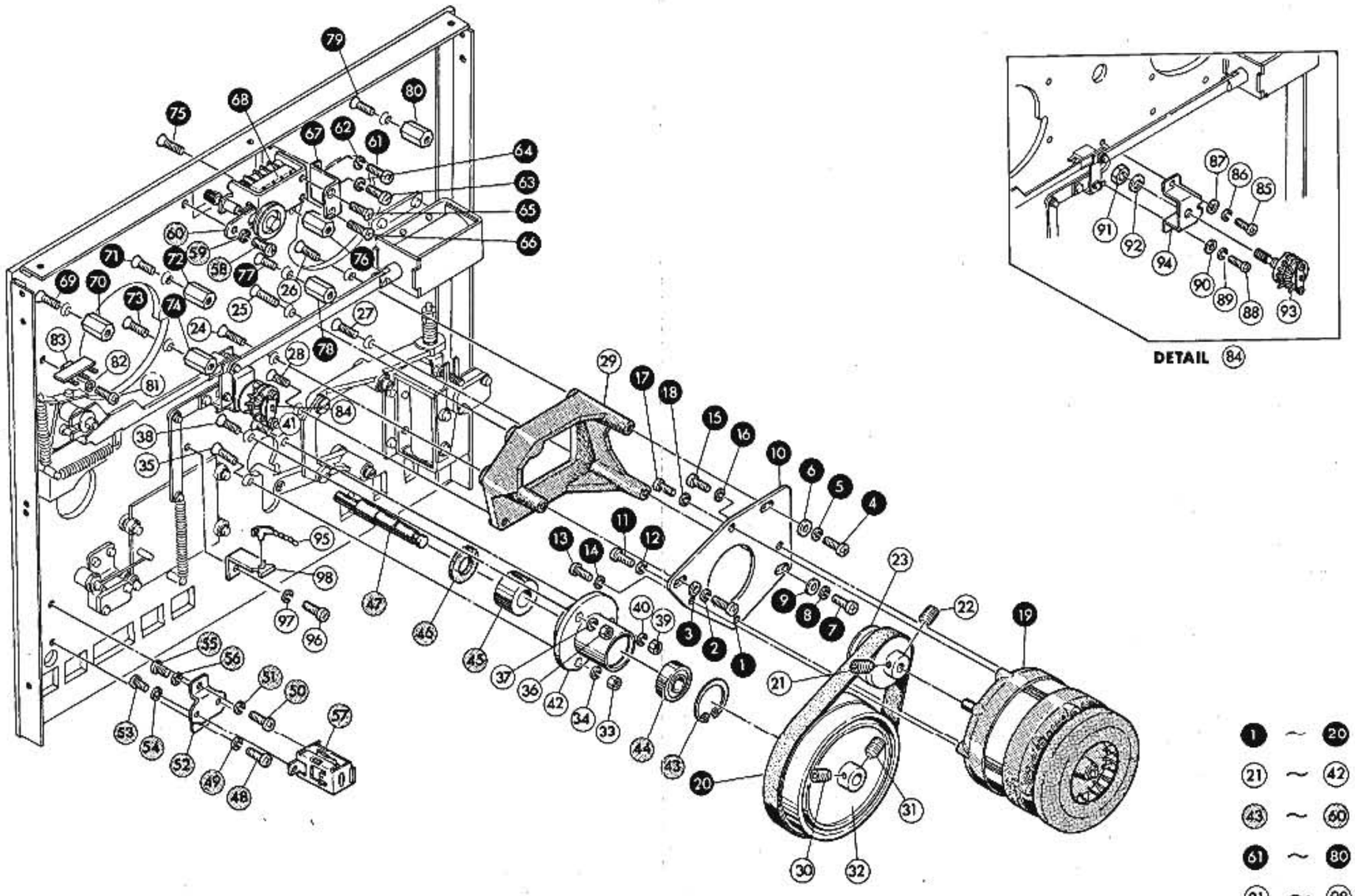
Fig. 12-14



12-7. Disassembly of the Mechanical Section(1)

To disassemble the mechanical Section (1), see Fig. 12-14, Mechanical Section, Rear (1).

Notes: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

*Apply the locking paint in place to all the screws after tightening them completely.

*Wipe off any used lubricants after every disassembly. Apply, then, disulfide molybdenum or Mobile Grease Special in place.

Parts No.	Stock No.	Description
1	5101063	B type Screw, M4 x 10
2	5121360	S type Washer, 4 x 1.4 x 1.0
3	5120161	P type Washer, 4 x 10 x 0.8
4	5101063	B type Screw, M4 x 10
5	5121360	S type Washer, 4 x 1.4 x 1.0
6	5120161	P type Washer, 4 x 10 x 0.8
7	5101063	B type Screw, M4 x 10
8	5121360	S type Washer, 4 x 1.4 x 1.0
9	5120161	P type Washer, 4 x 10 x 0.8
10	6610020	Bracket, motor mtg.
11	5101063	B type Screw, M4 x 10
12	5121360	S type Washer, 4 x 1.4 x 1.0
13	5101063	B type Screw, M4 x 10
14	5121360	S type Washer, 4 x 1.4 x 1.0
15	5101063	B type Screw, M4 x 10
16	5121360	S type Washer, 4 x 1.4 x 1.0
17	5101063	B type Screw, M4 x 10
18	5121360	S type Washer, 4 x 1.4 x 1.0
19	4320020	Capstan Motor
20	6030010	Belt, capstan
21	5106060	S type Screw, M4 x 4
22	5106060	S type Screw, M4 x 4
23	6140010	Pulley, motor
24	5102864	F type Screw, M4 x 12
25	5102864	F type Screw, M4 x 12
26	5102864	F type Screw, M4 x 12
27	5102864	F type Screw, M4 x 12
28	5102864	F type Screw, M4 x 12
29	6630010	Table, capstan motor mtg.
30	5106060	S type Screw, M4 x 4
31	5106060	S type Screw, M4 x 4
32	6100010	Capstan Wheel
33	5110261	Hex. Nut, 4 x 7 x 3.2
34	5121360	S type Washer, 4 x 1.4 x 1.0
35	5102865	F type Screw, M4 x 15
36	5110261	Hex. Nut, M4 x 7 x 3.2
37	5121360	S type Washer, 4 x 1.4 x 1.0
38	5102865	F type Screw, M4 x 15
39	5110261	Hex. Nut, M4 x 7 x 3.2
40	5121360	S type Washer, 4 x 1.4 x 1.0
41	5102865	F type Screw, M4 x 15
42	6300010	Metal Case
43	5152018	C type Ring, 23.5 ϕ
44	6320010	Ball Bearing
45	6300040	Oilless Metal
46	6930010	Oil Retainer
47	6200010	Shaft, capstan
48	5101043	B type Screw, M3 x 6
49	5121340	S type Washer, 3 x 1.1 x 0.7
50	5101043	B type Screw, M3 x 6
51	5121340	S type Washer, 3 x 1.1 x 0.7
52	5240230	Platform, pause switch mtg.
53	5101041	B type Screw, M3 x 4
54	5121340	S type Washer, 3 x 1.1 x 0.7
55	5101041	B type Screw, M3 x 4
56	5121340	S type Washer, 3 x 1.1 x 0.7
57	1130230	Pushbutton Switch, LA type
58	5101043	B type Screw, M3 x 6
59	5121340	S type Washer, 3 x 1.1 x 0.7
60	5240100	Enforcement, counter
61	5101043	B type Screw, M3 x 6
62	5121340	S type Washer, 3 x 1.1 x 0.7
63	5101043	B type Screw, M3 x 6
64	5121340	S type Washer, 3 x 1.1 x 0.7
65	5102843	F type Screw, M3 x 6
66	5102843	F type Screw, M3 x 6
67	5220020	Frame, counter mtg.
68	5430010	Counter
69	5102864	F type Screw, M4 x 12
70	5230020	Hex. Spacer (L = 18 mm)
71	5102864	F type Screw, M4 x 12
72	5230020	Hex. Spacer, (L = 18 mm)
73	5102864	F type Screw, M4 x 12
74	5230020	Hex. Spacer, (L = 18 mm)
75	5102864	F type Screw, M4 x 12
76	5230020	Hex. Spacer, (L = 18 mm)
77	5102864	F type Screw, M4 x 12
78	5230020	Hex. Spacer, (L = 18 mm)
79	5102864	F type Screw, M4 x 12
80	5230020	Hex. Spacer, (L = 18 mm)
81	5101043	B type Screw, M3 x 6
82	5121340	S type Washer, 3 x 1.1 x 0.7
83	2110080	2-Lug Terminal Strip
84		Automatic Switch Ass'y.
85	5101043	B type Screw, M3 x 6
86	5121340	S type Washer, 3 x 1.1 x 0.7
87	5120141	P type Washer, 3 x 8 x 0.5
88	5101043	B type Screw, M3 x 6
89	5121340	S type Washer, 3 x 1.1 x 0.7
90	5120141	P type Washer, 3 x 8 x 0.5
91		Hex. Nut, M7
92		P type Washer, 7 ϕ
93	1102180	Rotary Switch, F-2-3-4
94	5240240	Bracket, automatic switch
95	3910040	Lead Clamper
96	5101043	B type Screw, M3 x 6
97	5121340	S type Washer, 3 x 1.1 x 0.7
98	5220060	Frame, lead wire hold'g

12-7-1. Disassembly of the Mechanical Section (2)

To disassemble the mechanical section (2), see Fig. 12-15, Mechanical Section, Rear (2).

Notes: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

*Apply the locking paint in place to all the screws after tightening them completely.

*Wipe off any used lubricants after every disassembly. Apply, then, disulfide molybdenum or Mobile Grease Special in place.

Parts No.	Stock No.	Description
1	6900100	Spring A, arm roller
2	5151006	E type Ring, 5 ϕ
3	5160070	FS type Screw, arm link
4	6500080	Roller Arm A
5	6210070	Spindle B, arm
6	5160070	FS type Screw, arm link
7	6510050	Arm Link
8	5110261	Hex. Nut, M4 x 7 x 3.2
9	5110261	Hex. Nut, M4 x 7 x 3.2
10	5120161	P type Washer, 4 x 10 x 0.8
11	6900110	Spring B, pinch roller
12	5120160	P type Washer, 4 x 8 x 0.5
13	5151006	E type Ring, 5 ϕ
14	6500090	Roller Arm B
15	6210060	Spindle A, arm
16	5101043	B type Screw, M3 x 6
17	5121340	S type Washer, 3 x 1.1 x 0.7
18	5101043	B type Screw, M3 x 6
19	5121340	S type Washer, 3 x 1.1 x 0.7
20	5101043	B type Screw, M3 x 6
21	5121340	S type Washer, 3 x 1.1 x 0.7
22	5101043	B type Screw, M3 x 6
23	5121340	S type Washer, 3 x 1.1 x 0.7
24		Plunger Ass'y, pinch roller
25	5101046	B type Screw, M3 x 12
26	5121340	S type Washer, 3 x 1.1 x 0.7
27	5101046	B type Screw, M3 x 12
28	5121340	S type Washer, 3 x 1.1 x 0.7
29	1160050	Micro Switch, V-1A44
30	5160080	Pin B, plunger
31	5110241	Hex. Nut, M3 x 5.5 x 2.4
32	5110241	Hex. Nut, M3 x 5.5 x 2.4
33	6040010	Attachment Metal
34	5104570	Hex. Head Bolt, M4 x 40
35	5101043	B type Screw, M3 x 6
36	5121340	S type Washer, 3 x 1.1 x 0.7
37	5101043	B type Screw, M3 x 6
38	5121340	S type Washer, 3 x 1.1 x 0.7
39	5101043	B type Screw, M3 x 6
40	5121340	S type Washer, 3 x 1.1 x 0.7
41	5101043	B type Screw, M3 x 6
42	5121340	S type Washer, 3 x 1.1 x 0.7
43	5240140	Bracket, plunger mtg.
44	5101043	B type Screw, M3 x 6
45	5121340	S type Washer, 3 x 1.1 x 0.7
46	5120141	P type Washer, 3 x 8 x 0.5
47	5101043	B type Screw, M3 x 6
48	5121340	S type Washer, 3 x 1.1 x 0.7
49	5120141	P type Washer, 3 x 8 x 0.5
50	5240150	Bracket A, micro switch mtg.
51	4340010	Plunger, pinch roller
52	5101043	B type Screw, M3 x 6
53	5121340	S type Washer, 3 x 1.1 x 0.7
54	5102843	F type Screw, M3 x 6
55		Micro Switch Ass'y
56	5101054	B type Screw, M3 x 35
57	5101054	B type Screw, M3 x 35
58	1160050	Micro Switch, V-1A44
59	1160050	Micro Switch, V-1A44
60	1160050	Micro Switch, V-1A44
61	5151001	E type Ring, 1.5 ϕ
62	6500050	Plate, switch actuating
63	5220030	Holder, micro switch
64	5160040	Stopper Pin
65	5160030	Pin B, spring hook
66	5160040	Stopper Pin
67	5160010	Pin C, spring hook
68	5102865	F type Screw, M4 x 15
69	5102865	F type Screw, M4 x 15

Fig. 12-15

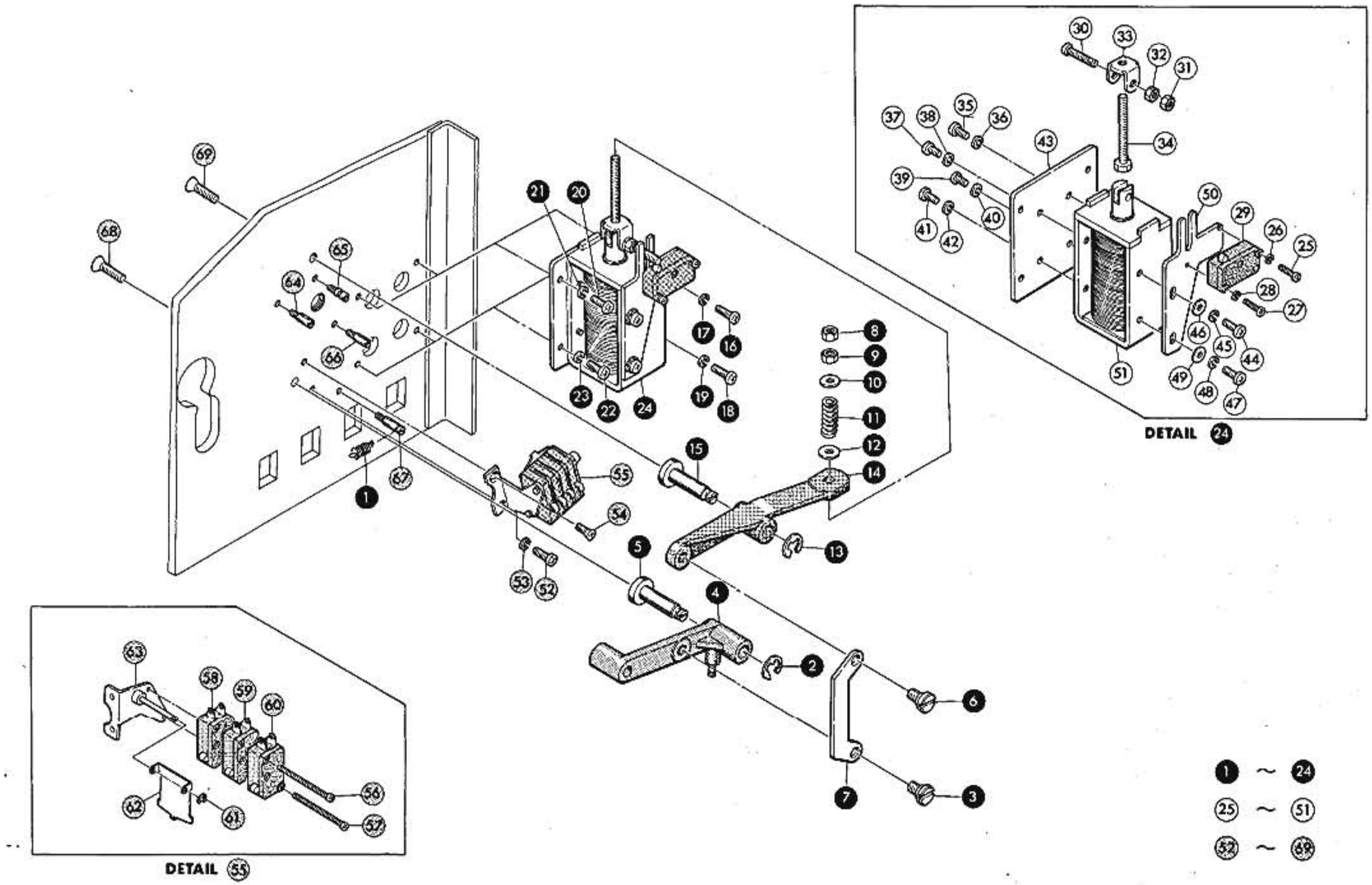
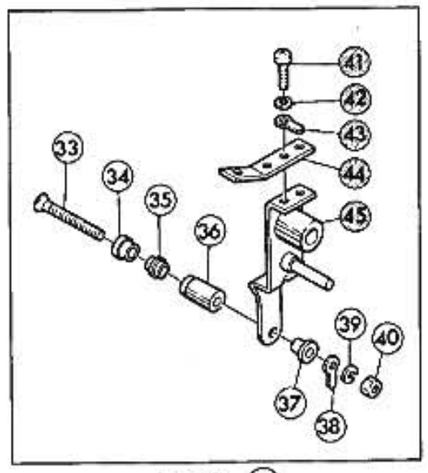
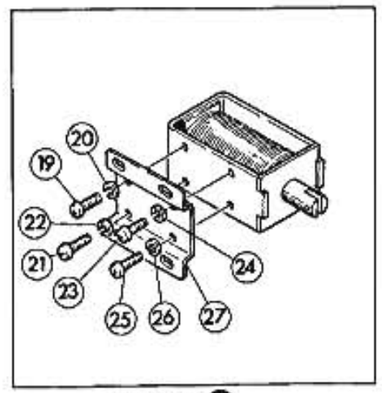


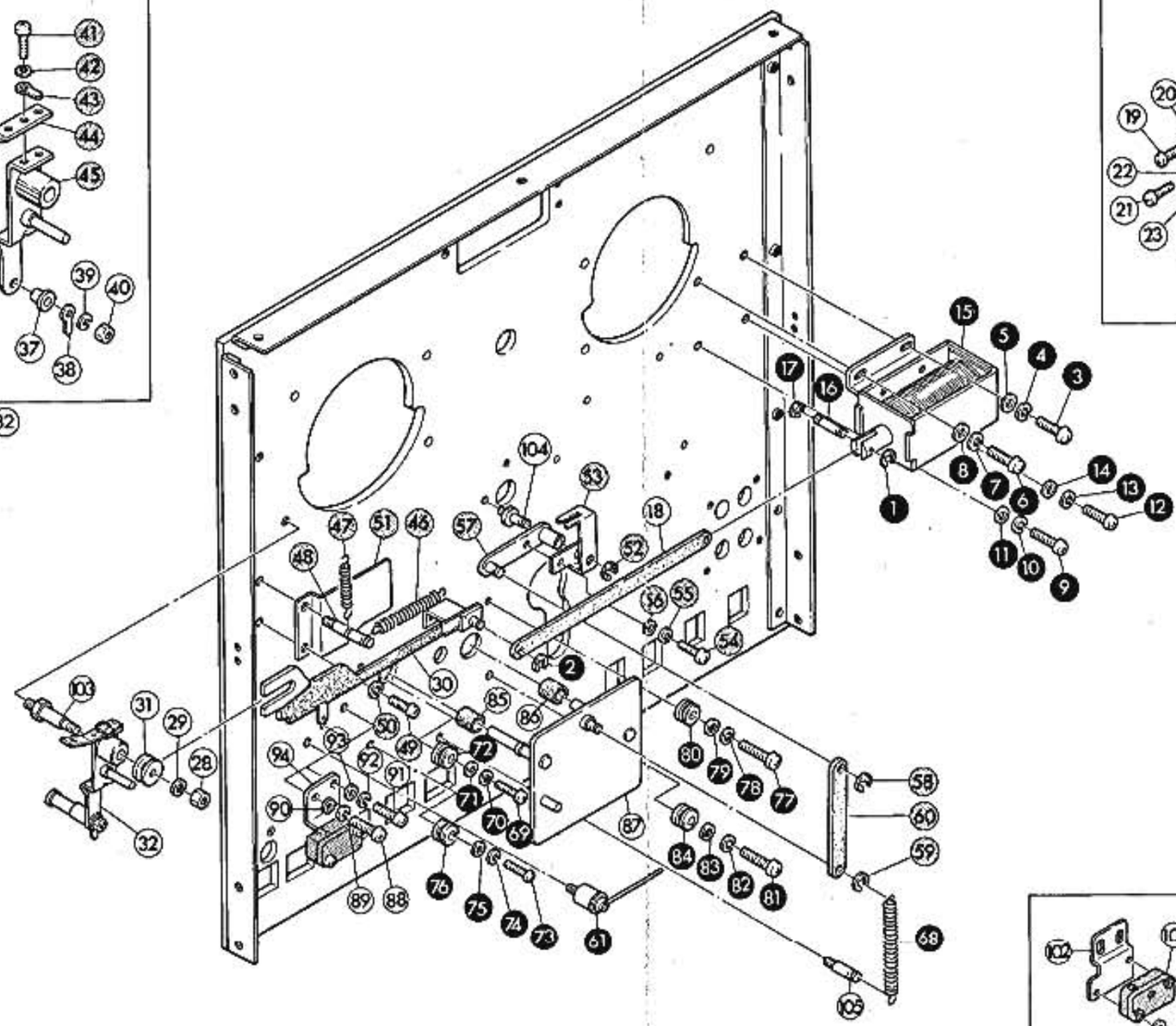
Fig. 12-16

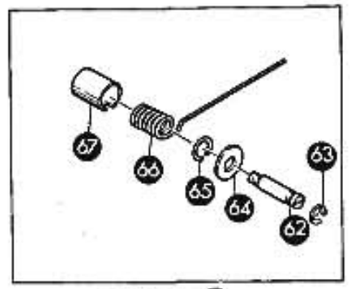


DETAIL (32)

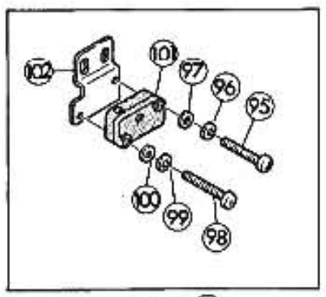


DETAIL (15)





DETAIL (61)



DETAIL (94)

1	~	17	61	~	84
18	~	40	85	~	105
41	~	60			

12-7-2. Disassembly of the Mechanical Section (3)

To disassemble the mechanical section (3), see Fig. 12-16, Mechanical Section, Rear (3).

Notes: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

*Apply the locking paint in place to all the screws after tightening them completely.

*Wipe off any used lubricants after every disassembly. Apply, then, disulfide molybdenum or Mobile Grease Special in place.

Parts No.	Stock No.	Description
1	5151002	E type Washer, 2 ϕ
2	5151004	E type Washer, 3 ϕ
3	5101043	B type Screw, M3 x 6
4	5121340	S type Washer, 3 x 1.1 x 0.7
5	5120141	P type Washer, 3 x 8 x 0.5
6	5101043	B type Screw, M3 x 6
7	5121340	S type Washer, 3 x 1.1 x 0.7
8	5120141	P type Washer, 3 x 8 x 0.5
9	5101043	B type Screw, M3 x 6
10	5121340	S type Washer, 3 x 1.1 x 0.7
11	5120141	P type Washer, 3 x 8 x 0.5
12	5101043	B type Screw, M3 x 6
13	5121340	S type Washer, 3 x 1.1 x 0.7
14	5120141	P type Washer, 3 x 8 x 0.5
15	4340020	Plunger, tension arm
16	6210010	Pin A, plunger
17	5151002	E type Ring, 2 ϕ
18	6510020	Rod, tension arm
19	5101043	B type Screw, M3 x 6
20	5121340	S type Washer, 3 x 1.1 x 0.7
21	5101043	B type Screw, M3 x 6
22	5121340	S type Washer, 3 x 1.1 x 0.7
23	5101043	B type Screw, M3 x 6
24	5121340	S type Washer, 3 x 1.1 x 0.7
25	5101043	B type Screw, M3 x 6
26	5121340	S type Washer, 3 x 1.1 x 0.7
27	5240120	Bracket, plunger support
28	5110261	Hex. Nut, M4 x 7 x 3.2
29	5121360	S type Washer, 4 x 1.4 x 1.0
30	6510010	Link, tension arm
31	5950060	Link Guide
32		Right Tension Arm Ass'y.
33	5104230	O type Screw, M2.6 x 25
34	5950040	Sensing Head
35	5630010	Bushing A
36	5950050	Sensing Pole
37	5630020	Bushing B
38	2120000	Terminal
39	5121020	S type Washer, 2.6 x 1.0 x 0.6
40	5110121	Hex. Nut, M2.6 x 5 x 2
41	5101222	B type Screw, M2.6 x 5
42	5121020	S type Washer, 2.6 x 1.0 x 0.6
43	2120000	Terminal
44	5240110	Holder, spring
45	6500030	Right Tension Arm
46	6900040	Spring A, right tension arm
47	6900050	Spring B, right tension arm
48	5160010	Pin C, spring hook
49	5101043	B type Screw, M3 x 6
50	5121340	S type Washer, 3 x 1.1 x 0.7
51	5050020	Blind Metal
52	5151004	E type Ring, 3 ϕ
53	6500060	Lifter Arm A
54	5101043	B type Screw, M3 x 6
55	5121340	S type Washer, 3 x 1.1 x 0.7
56	5120141	P type Washer, 3 x 8 x 0.5
57	6500070	Lifter Arm B
58	5151004	E type Ring, 3 ϕ
59	5151004	E type Ring, 3 ϕ
60	6510040	Lifter Link
61		Dumper Unit
62	5160060	Dumper Pin
63	5151005	E type Ring, 4 ϕ
64	5120180	P type Washer, 5 x 10 x 0.8
65	5180010	Ring
66	6900090	Dumper Lever
67	6440010	Cap
68	6900080	Spring, lifter
69	5101046	B type Screw, M3 x 12
70	5121340	S type Washer, 3 x 1.1 x 0.7
71	5120141	P type Washer, 3 x 8 x 0.5
72	5950090	Lifter Roller
73	5101046	B type Screw, M3 x 12
74	5121340	S type Washer, 3 x 1.1 x 0.7
75	5120141	P type Washer, 3 x 8 x 0.5
76	5950090	Lifter Roller
77	5101046	B type Screw, M3 x 12
78	5121340	S type Washer, 3 x 1.1 x 0.7
79	5120141	P type Washer, 3 x 8 x 0.5
80	5950090	Lifter Roller
81	5101046	B type Screw, M3 x 12
82	5121340	S type Washer, 3 x 1.1 x 0.7
83	5120141	P type Washer, 3 x 8 x 0.5
84	5950090	Lifter Roller
85	5500050	Rubber Pipe
86	5500050	Rubber Pipe
87	6510030	Lifter
88	5101043	B type Screw, M3 x 6
89	5121340	S type Washer, 3 x 1.1 x 0.7
90	5120141	P type Washer, 3 x 8 x 0.5
91	5101043	B type Screw, M3 x 6
92	5121340	S type Washer, 3 x 1.1 x 0.7
93	5120141	P type Washer, 3 x 8 x 0.5
94	5240130	Bracket B, micro switch mtg
95	5101228	B type Screw, M2.6 x 15
96	5121020	S type Washer, 2.6 x 1.0 x 0.6
97	5120321	P type Washer, 2.6 x 7.5 x 0.5
98	5101228	B type Screw, M2.6 x 15
99	5121020	S type Washer, 2.6 x 1.0 x 0.6
100	5120321	P type Washer, 2.6 x 7.5 x 0.5
101	1160050	Micro Switch, V-1A44
102	5240130	Bracket B, micro switch
103	6210030	Shaft, right tension arm
104	6210110	Pin, lifter link
105	5160010	Pin C, spring hook

12-8. Disassembly of the Cabinet

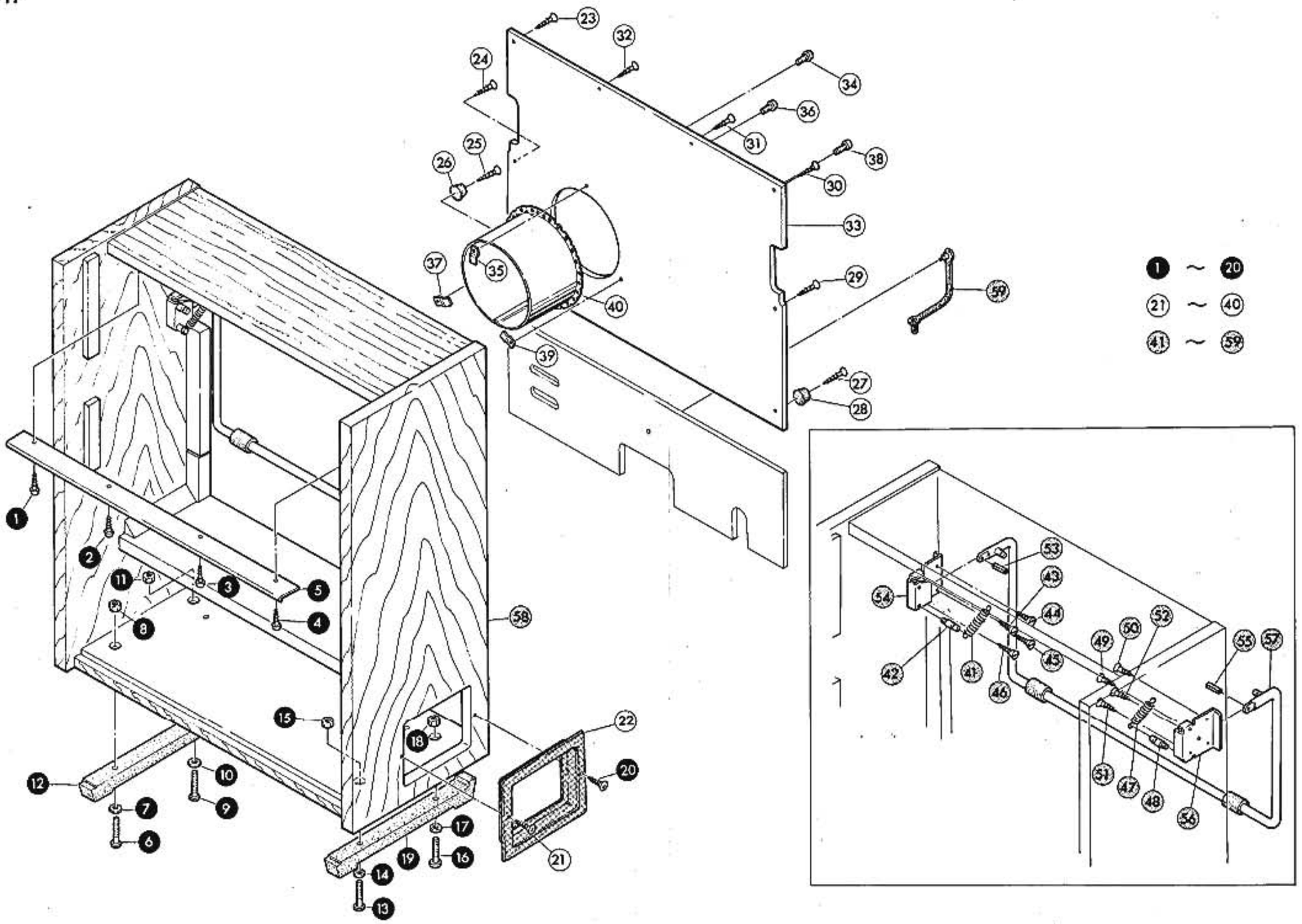
To disassemble the cabinet, see Fig. 12-17, Cabinet Assembly.

Notes: *The numerals in the exploded views and parts list show the sequence of disassembly. Therefore, assemble the set if necessary, using the reverse of the individual procedures.

Parts No.	Stock No.	Description
1	5140418	OC type Screw, M2.7 x 13
2	5140418	OC type Screw, M2.7 x 13
3	5140418	OC type Screw, M2.7 x 13
4	5140418	OC type Screw, M2.7 x 13
5	5220100	Supporter, upper sash
6	5101269	B type Screw, M4 x 25
7	5120361	P type Washer, 4 x10 x0.8
8	5110160	Hex. Nut, M4 x 7 x 2.4
9	5101269	B type Screw, M4 x 25
10	5120361	P type Washer, 4 x10 x 0.8
11	5110160	Hex. Nut, M4 x 7 x 2.4
12	5500070	Rubber Feet
13	5101269	B type Screw, M4 x 25
14	5120361	P type Washer, 4 x 8 x 0.8
15	5110160	Hex. Nut, M4 x 7 x 2.4
16	5101269	B type Screw, M4 x 25
17	5120361	P type Washer, 4 x 8 x 0.8
18	5110160	Hex. Nut, M4 x 7 x 2.4
19	5500070	Rubber Feet
20	5146203	OC type Screw, M2.1 x 13
21	5146203	OC type Screw, M2.1 x 13
22	5050040	Terminal Cover
23	5146203	OC type Screw, M2.1 x 13
24	5146203	OC type Screw, M2.1 x 13
25	5140418	R type Wood Screw, M2.7 x 13
26	5500080	Rubber Feet
27	5140418	R type Wood Screw, M2.7 x 13
28	5500080	Rubber Feet
29	5146203	OC type Screw, M2.1 x 13
30	5146203	OC type Screw, M2.1 x 13

Parts No.	Stock No.	Description
31	5146203	OC type Screw, M2.1 x 13
32	5146203	OC type Screw, M2.1 x 13
33	5740030	Rear Cover, mechanical section
34	5101043	B type Screw, M3 x 6
35	5240190	Retainer, pipe duct
36	5101043	B type Screw, M3 x 6
37	5240190	Retainer, pipe duct
38	5101043	B type Screw, M3 x 6
39	5240190	Retainer, pipe duct
40	5240170	Pipe Duct
41	6900120	Spring, reclining stand
42	5160110	Pin, spring hook
43	5143426	FC type Screw, M3.1 x 13
44	5143426	FC type Screw, M3.1 x 13
45	5143426	FC type Screw, M3.1 x 13
46	5143426	FC type Screw, M3.1 x 13
47	6900120	Spring, reclining stand
48	5160110	Pin, spring hook
49	5143426	FC type Screw, M3.1 x 13
50	5143426	FC type Screw, M3.1 x 13
51	5143426	FC type Screw, M3.1 x 13
52	5143426	FC type Screw, M3.1 x 13
53	5153040	Spring Pin, 3 ϕ x 14
54	5240180	Bracket, stand mtg.
55	5153040	Spring Pin, 3 ϕ x 14
56	5240180	Bracket, stand mtg.
57	5250010	Reclining Stand
58	5740010	Cabinet
59	3910030	Nylon Cord Clamper

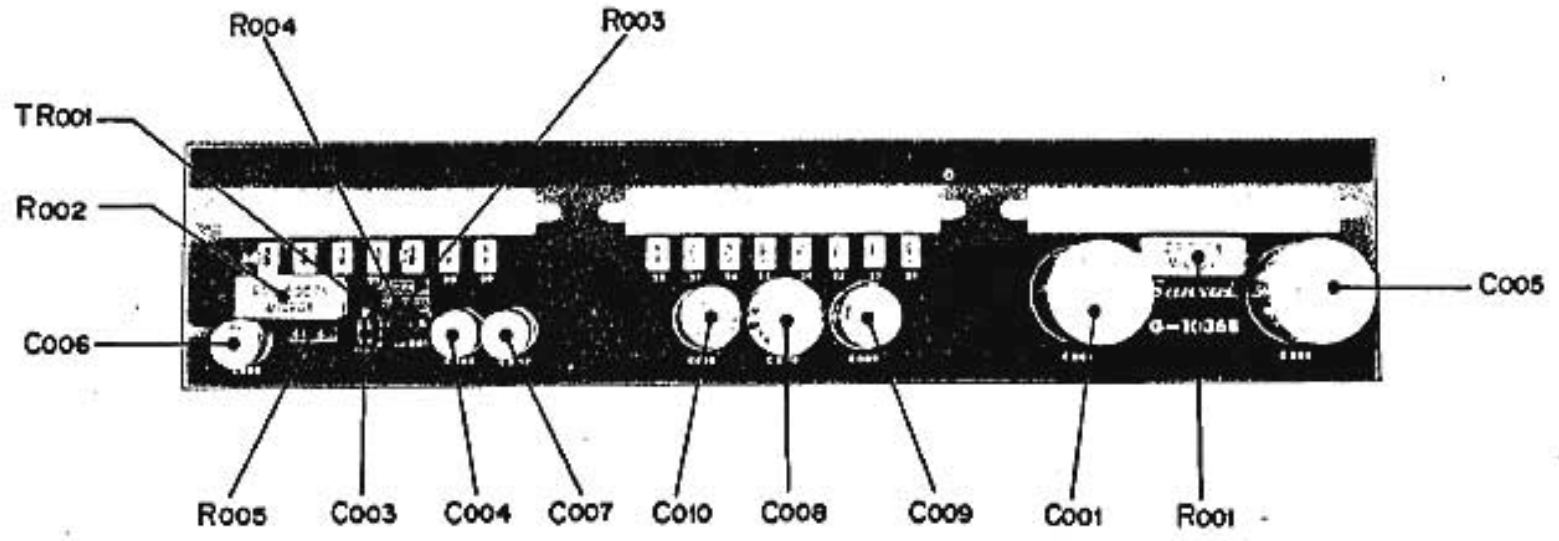
Fig. 12-17



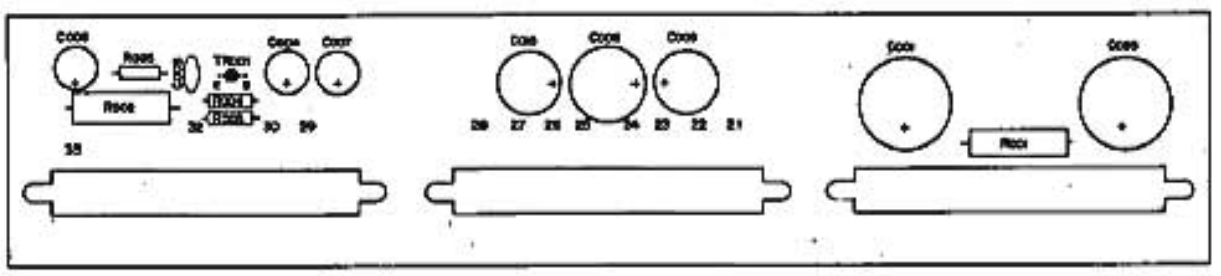
13 PARTS LOCATION AND PARTS LIST

13-1. 1036B Power Supply Circuit Board
(Stock No. 7500310)

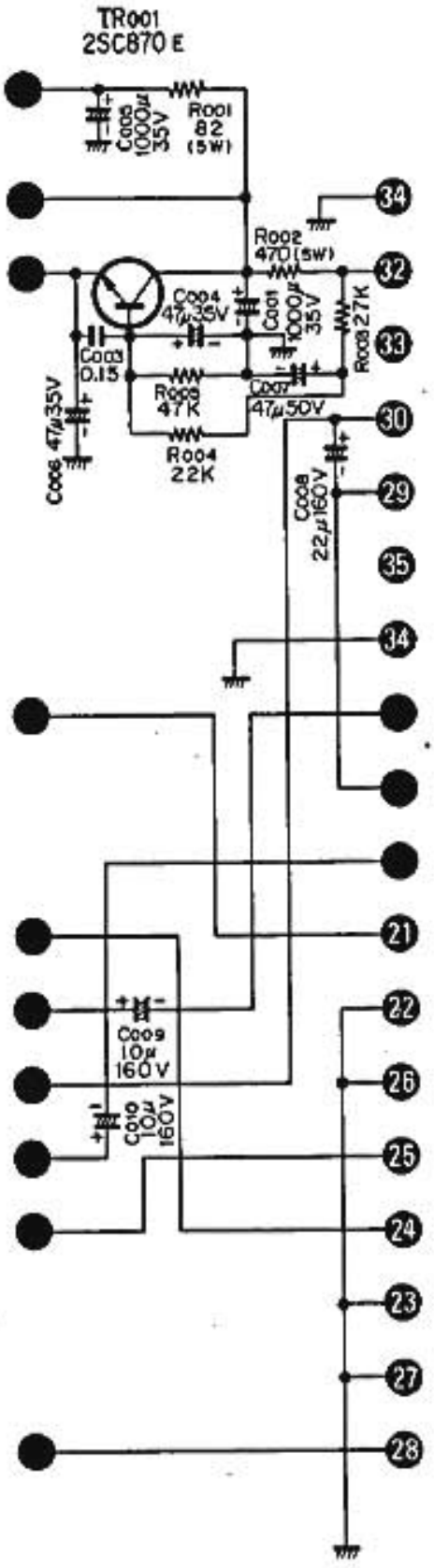
Component Side



Conductor Side



Schematic Diagram



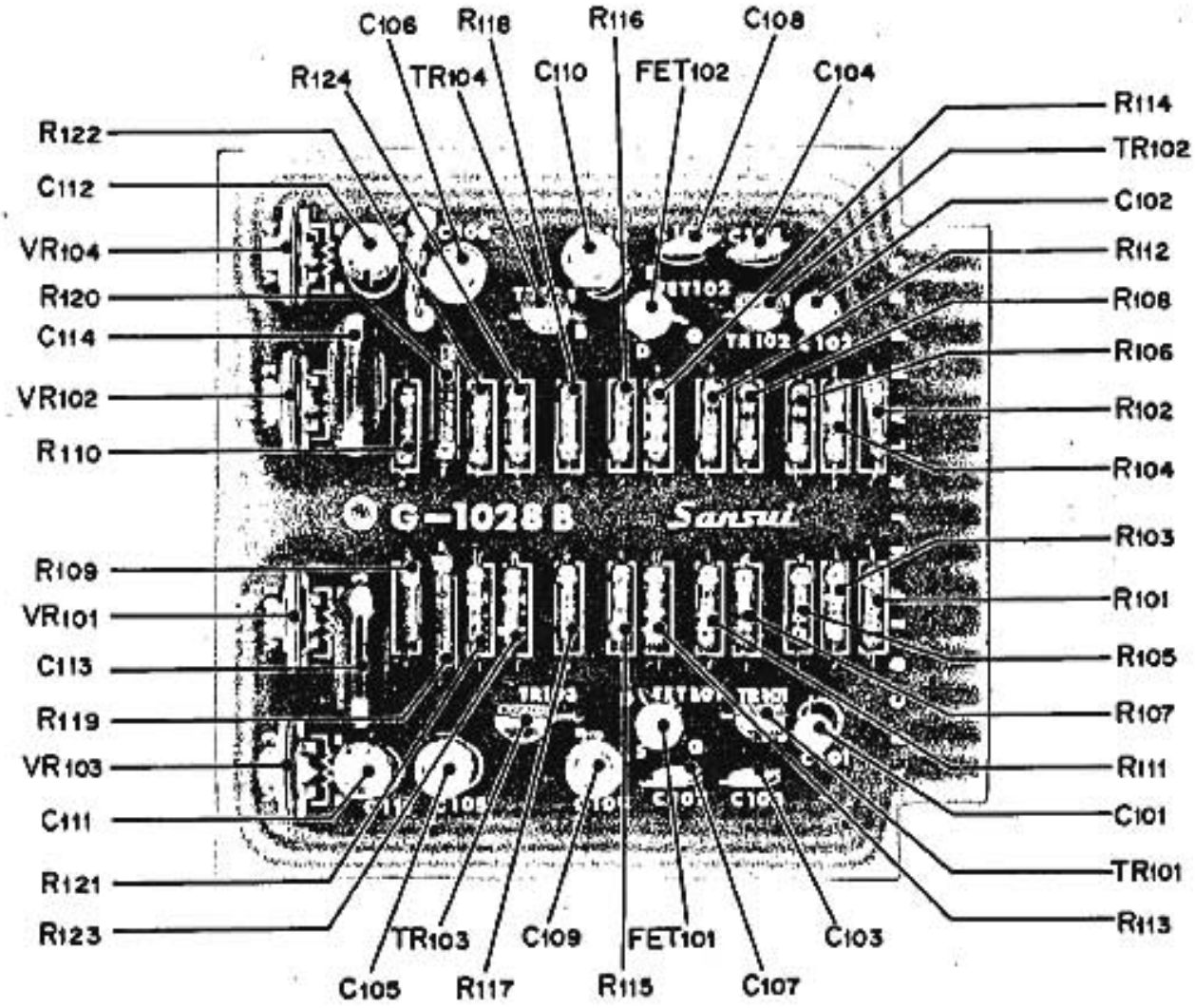
Parts List

Parts No.	Stock No.		Description
	7500310	G-1036B	Power Supply Circuit Board
R001	0155820	82 Ω	5W Cement Resistor
R002	0155471	470 Ω	5W Cement Resistor
R003	0101273	27 kΩ	¼W C. Resistor
R004	0101223	22 kΩ	¼W C. Resistor
R005	0101473	47 kΩ	¼W C. Resistor
C001	0549002	1000 μF	35V EI Capacitor
C003	0601158	0.15 μF	50V Mylar Capacitor
C004	0514470	47 μF	35V EI Capacitor
C005	0549002	1000 μF	35V EI Capacitor
C006	0514470	47 μF	35V EI Capacitor
C007	0515470	47 μF	50V EI Capacitor
C008	0518220	22 μF	160V EI Capacitor
C009	0518100	10 μF	160V EI Capacitor
C010	0518100	10 μF	160V EI Capacitor
TR001	0305510	2SC870	Transistor
	2250020	2701	Fasten Tab A
	2250030	2703	Fasten Tab B

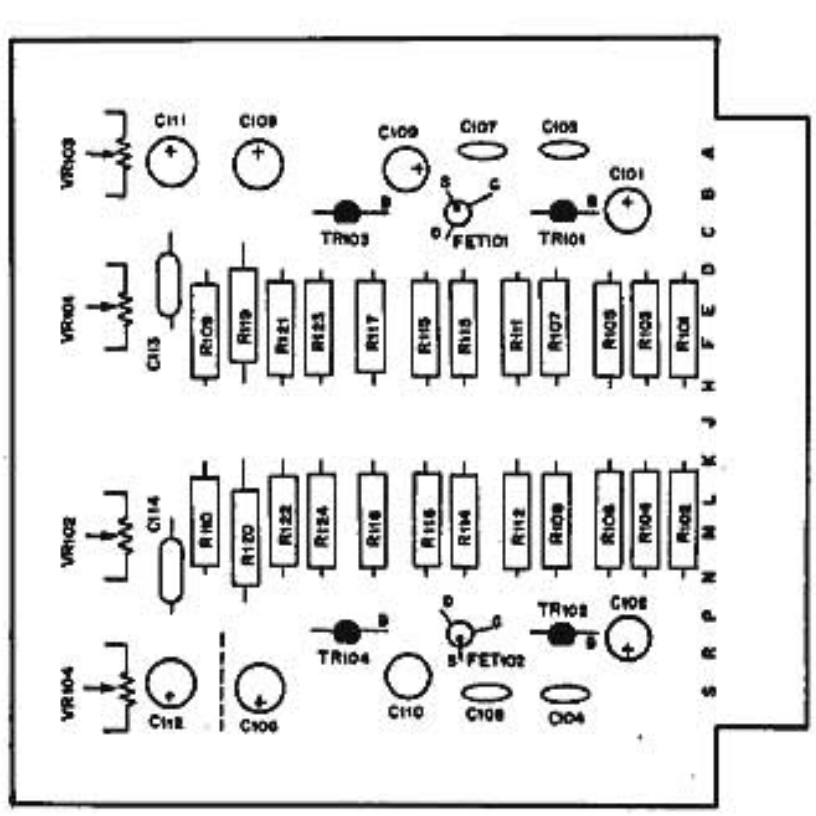
13-2. G-1028B Equalizer Circuit Board

(Stock No. 7550160)

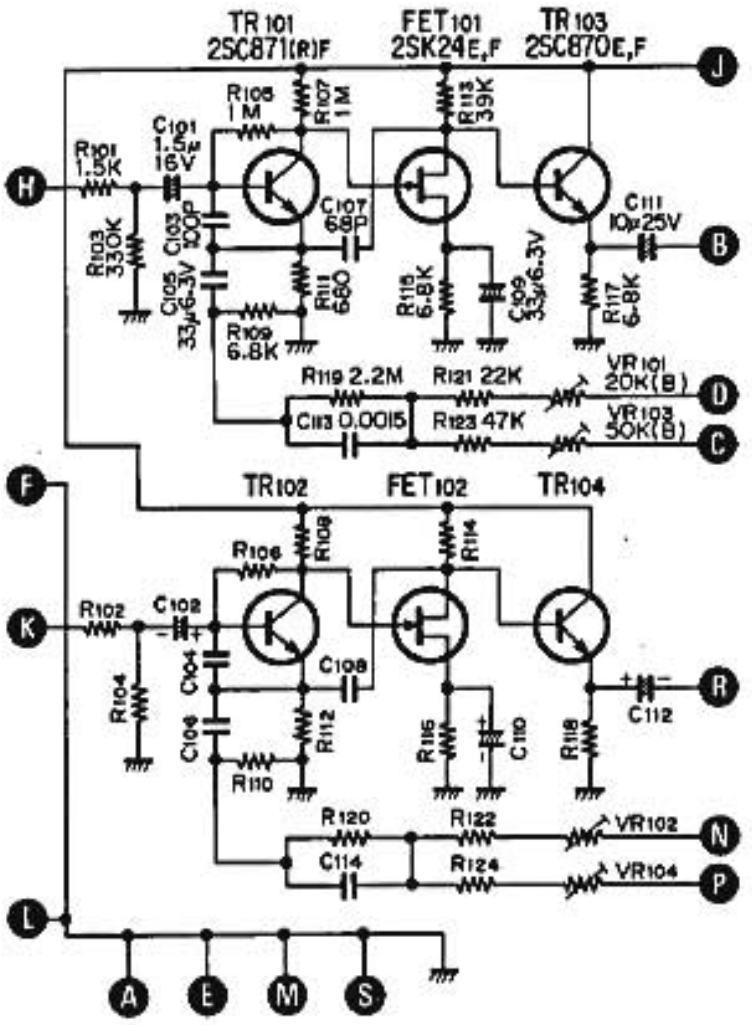
Component Side



Conductor Side



Schematic Diagram



Parts List

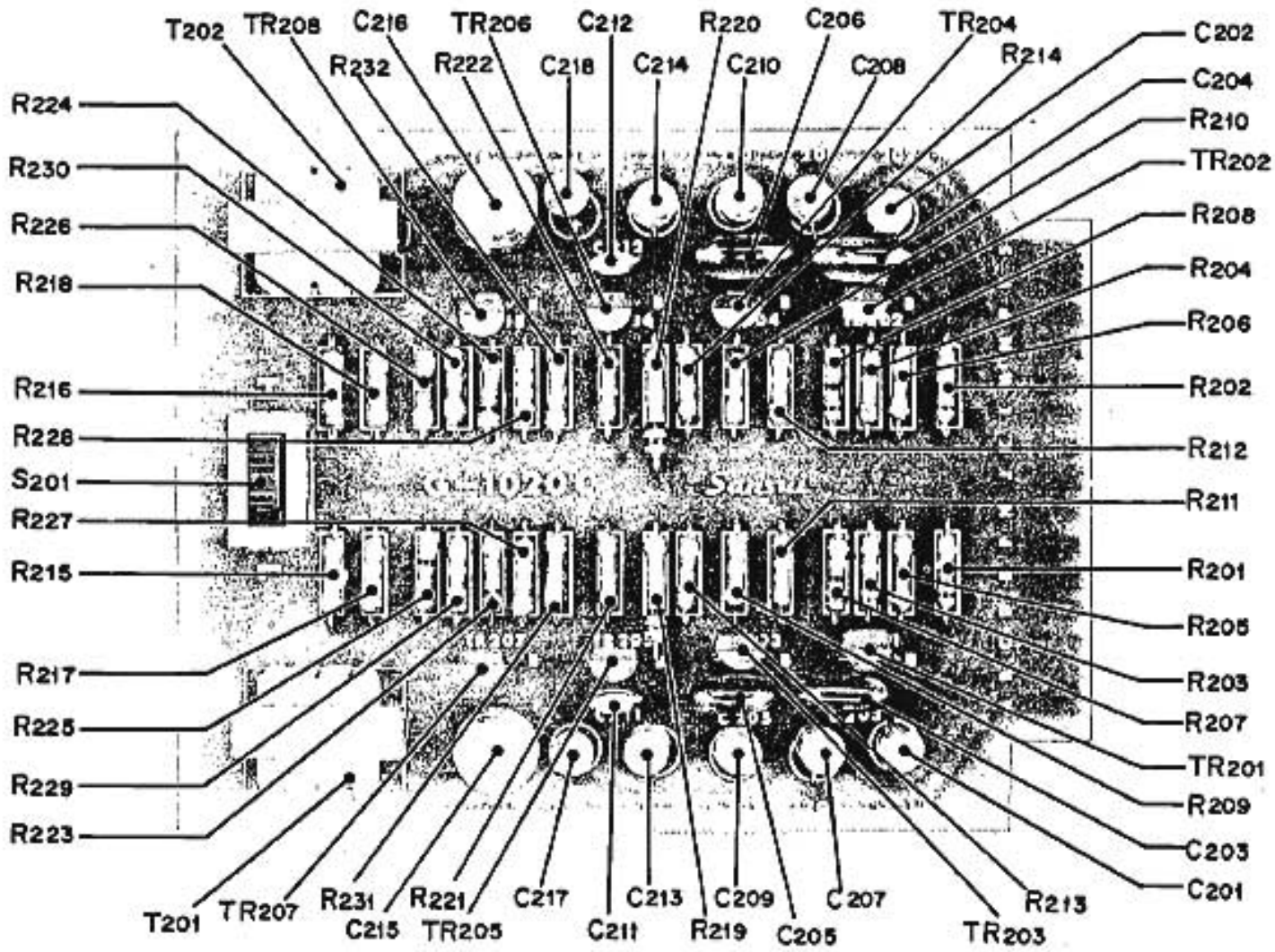
Parts No.	Stock No.	Description
	7550160	G-1028B Equalizer Circuit Board
R101	0101152	1.5 kΩ ¼W C. Resistor
R102	0101152	1.5 kΩ ¼W C. Resistor
R103	0101334	330 kΩ ¼W C. Resistor
R104	0101334	330 kΩ ¼W C. Resistor
R105	0101105	1 MΩ ¼W C. Resistor
R106	0101105	1 MΩ ¼W C. Resistor
R107	0101105	1 MΩ ¼W C. Resistor
R108	0101105	1 MΩ ¼W C. Resistor
R109	0101682	6.8 kΩ ¼W C. Resistor
R110	0101682	6.8 kΩ ¼W C. Resistor
R111	0101681	680 Ω ¼W C. Resistor
R112	0101681	680 Ω ¼W C. Resistor
R113	0101393	39 kΩ ¼W C. Resistor
R114	0101393	39 kΩ ¼W C. Resistor
R115	0101682	6.8 kΩ ¼W C. Resistor
R116	0101682	6.8 kΩ ¼W C. Resistor
R117	0101682	6.8 kΩ ¼W C. Resistor
R118	0101682	6.8 kΩ ¼W C. Resistor
R119	0103225	2.2 MΩ ½W C. Resistor
R120	0103225	2.2 MΩ ½W C. Resistor
R121	0101223	22 kΩ ¼W C. Resistor
R122	0101223	22 kΩ ¼W C. Resistor
R123	0101473	47 kΩ ¼W C. Resistor
R124	0101473	47 kΩ ¼W C. Resistor

Parts No.	Stock No.	Description
C101	0572159	1.5 µF 16V Tantalum Capacitor
C102	0572159	1.5 µF 16V Tantalum Capacitor
C103	0660101	100 pF 50V Ceramic Capacitor
C104	0660101	100 pF 50V Ceramic Capacitor
C105	0510330	33 µF 6.3V El Capacitor
C106	0510330	33 µF 6.3V El Capacitor
C107	0660680	68 pF 50V Ceramic Capacitor
C108	0660680	68 pF 50V Ceramic Capacitor
C109	0510330	33 µF 6.3V El Capacitor
C110	0510330	33 µF 6.3V El Capacitor
C111	0513100	10 µF 25V El Capacitor
C112	0513100	10 µF 25V El Capacitor
C113	0640152	1500 pF 50V Mica Capacitor
C114	0640152	1500 pF 50V Mica Capacitor
TR101	0305475	2SC871 Transistor
TR102	0305475	2SC871 Transistor
TR103	0305510	2SC870 Transistor
TR104	0305510	2SC870 Transistor
FET101	0370060	2SK24 FET
FET102	0370060	2SK24 FET
VR101	1030480	20 kΩ (B) Semi-Variable Resistor
VR102	1030480	20 kΩ (B) Semi-Variable Resistor
VR103	1030490	50 kΩ (B) Semi-Variable Resistor
VR104	1030490	50 kΩ (B) Semi-Variable Resistor

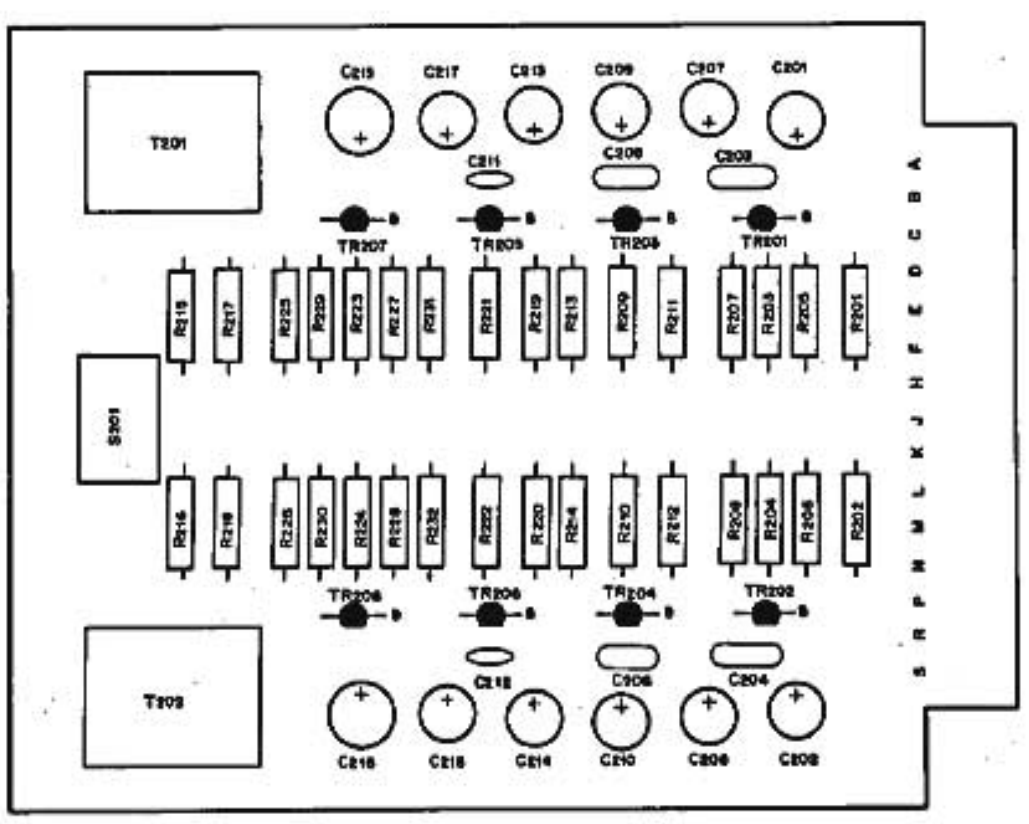
13-3. G-1020C Line Amp Circuit Board

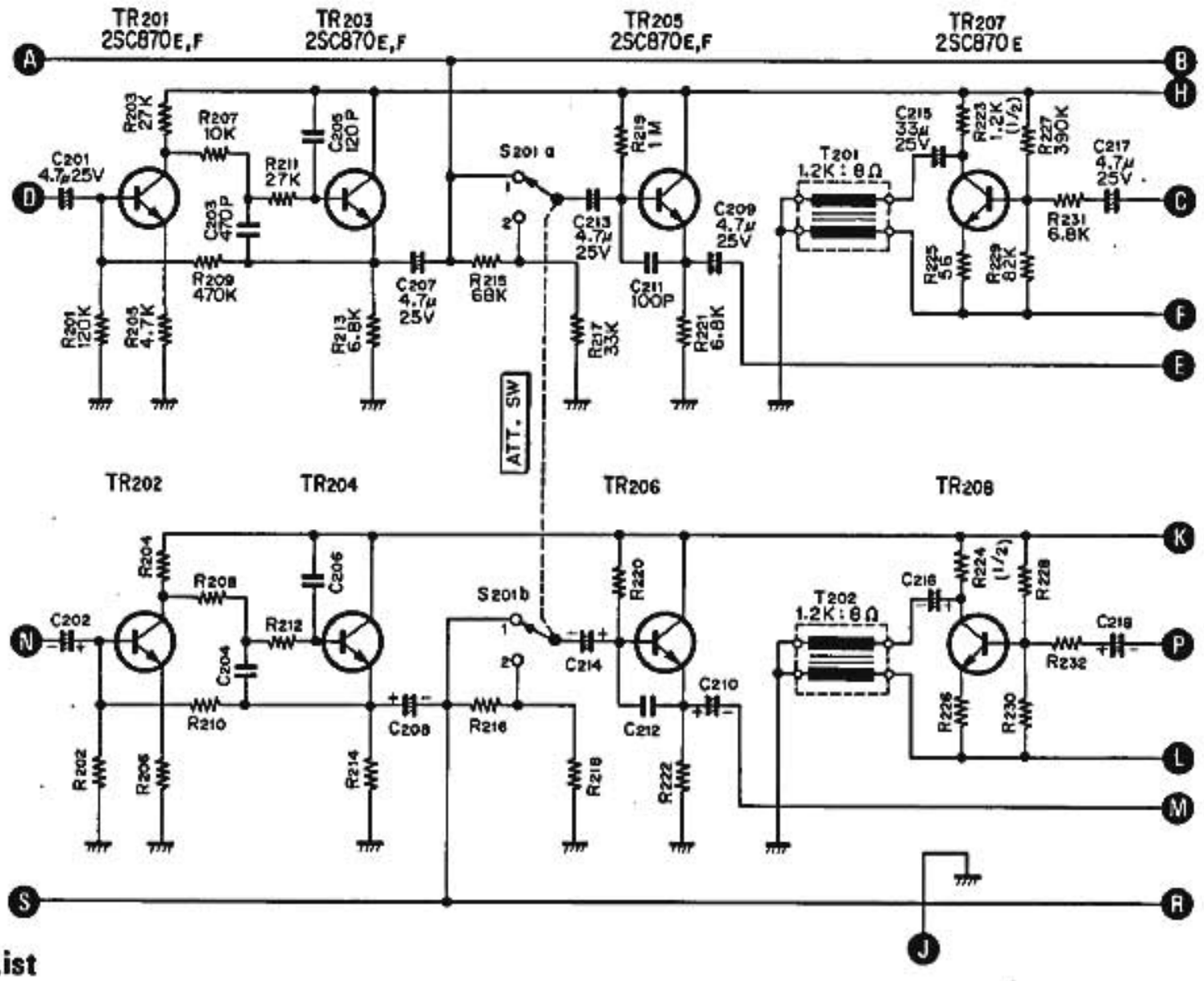
(Stock No. 7640010)

Component Side



Conductor Side





Parts List

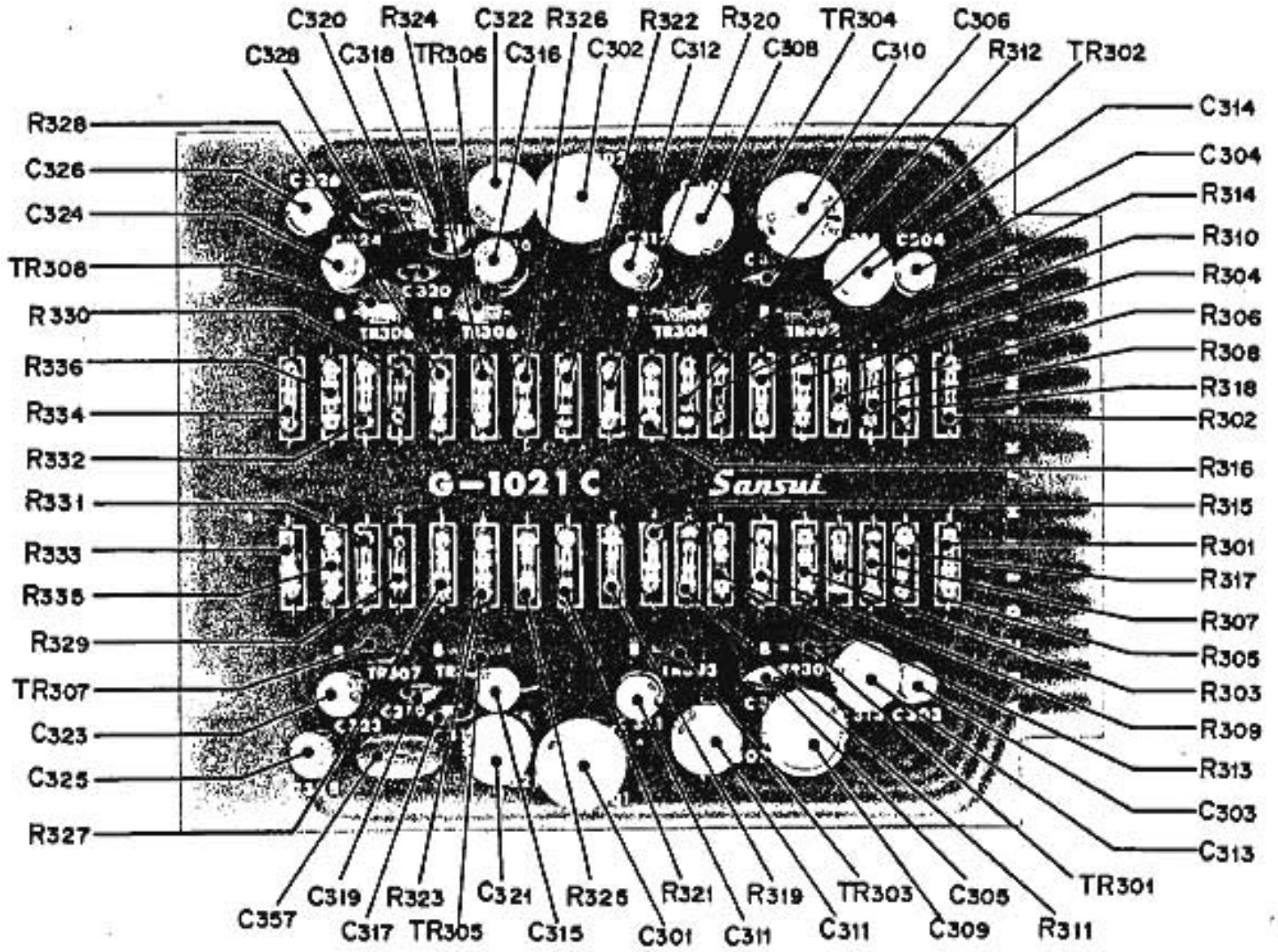
Parts No.	Stock No.	Description
	7640010	G-1020C Line Amp Circuit Board
R201	0101124	120 kΩ ¼W C. Resistor
R202	0101124	120 kΩ ¼W C. Resistor
R203	0101273	27 kΩ ¼W C. Resistor
R204	0101273	27 kΩ ¼W C. Resistor
R205	0101472	4.7 kΩ ¼W C. Resistor
R206	0101472	4.7 kΩ ¼W C. Resistor
R207	0101103	10 kΩ ¼W C. Resistor
R208	0101103	10 kΩ ¼W C. Resistor
R209	0101474	470 kΩ ¼W C. Resistor
R210	0101474	470 kΩ ¼W C. Resistor
R211	0101273	27 kΩ ¼W C. Resistor
R212	0101273	27 kΩ ¼W C. Resistor
R213	0101682	6.8 kΩ ¼W C. Resistor
R214	0101682	6.8 kΩ ¼W C. Resistor
R215	0101683	68 kΩ ¼W C. Resistor
R216	0101683	68 kΩ ¼W C. Resistor
R217	0101333	33 kΩ ¼W C. Resistor
R218	0101333	33 kΩ ¼W C. Resistor
R219	0101105	1 MΩ ¼W C. Resistor
R220	0101105	1 MΩ ¼W C. Resistor
R221	0101682	6.8 kΩ ¼W C. Resistor
R222	0101682	6.8 kΩ ¼W C. Resistor
R223	0103122	1.2 kΩ ½W C. Resistor
R224	0103122	1.2 kΩ ½W C. Resistor
R225	0101560	56 Ω ¼W C. Resistor
R226	0101560	56 Ω ¼W C. Resistor
R227	0101394	390 kΩ ¼W C. Resistor
R228	0101394	390 kΩ ¼W C. Resistor
R229	0101823	82 kΩ ¼W C. Resistor
R230	0101823	82 kΩ ¼W C. Resistor
R231	0101682	6.8 kΩ ¼W C. Resistor
R232	0101682	6.8 KΩ ¼W C. Resistor

Parts No.	Stock No.	Description
C201	0513479	4.7 μF 25V El Capacitor
C202	0513479	4.7 μF 25V El Capacitor
C203	0641471	470 pF 50V D. S. M Capacitor
C204	0641471	470 pF 50V D. S. M Capacitor
C205	0641121	120 pF 50V D. S. M Capacitor
C206	0641121	120 pF 50V D. S. M Capacitor
C207	0513479	4.7 μF 25V El Capacitor
C208	0513479	4.7 μF 25V El Capacitor
C209	0513479	4.7 μF 25V El Capacitor
C210	0513479	4.7 μF 25V El Capacitor
C211	0660101	100 pF 50V Ceramic Capacitor
C212	0660101	100 pF 50V Ceramic Capacitor
C213	0513479	4.7 μF 25V El Capacitor
C214	0513479	4.7 μF 25V El Capacitor
C215	0513330	33 μF 25V El Capacitor
C216	0513330	33 μF 25V El Capacitor
C217	0513479	4.7 μF 25V El Capacitor
C218	0513479	4.7 μF 25V El Capacitor
TR201	0305510	2SC870 Transistor
TR202	0305510	2SC870 Transistor
TR203	0305510	2SC870 Transistor
TR204	0305510	2SC870 Transistor
TR205	0305510	2SC870 Transistor
TR206	0305510	2SC870 Transistor
TR207	0305510	2SC870 Transistor
TR208	0305510	2SC870 Transistor
T201	4100120	Output Transformer
T202	4100120	Output Transformer
S201	1110170	SL242A200 Slide Switch

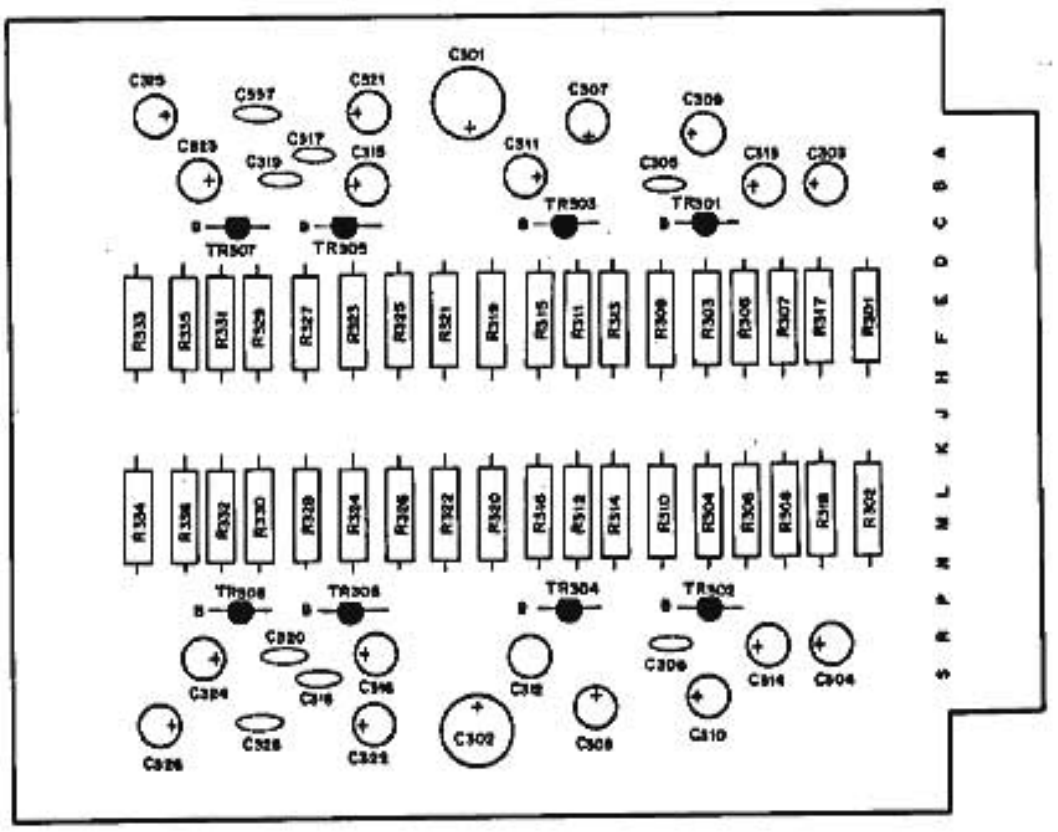
13-4. G-1021C Mic Circuit Board

(Stock No. 7610010)

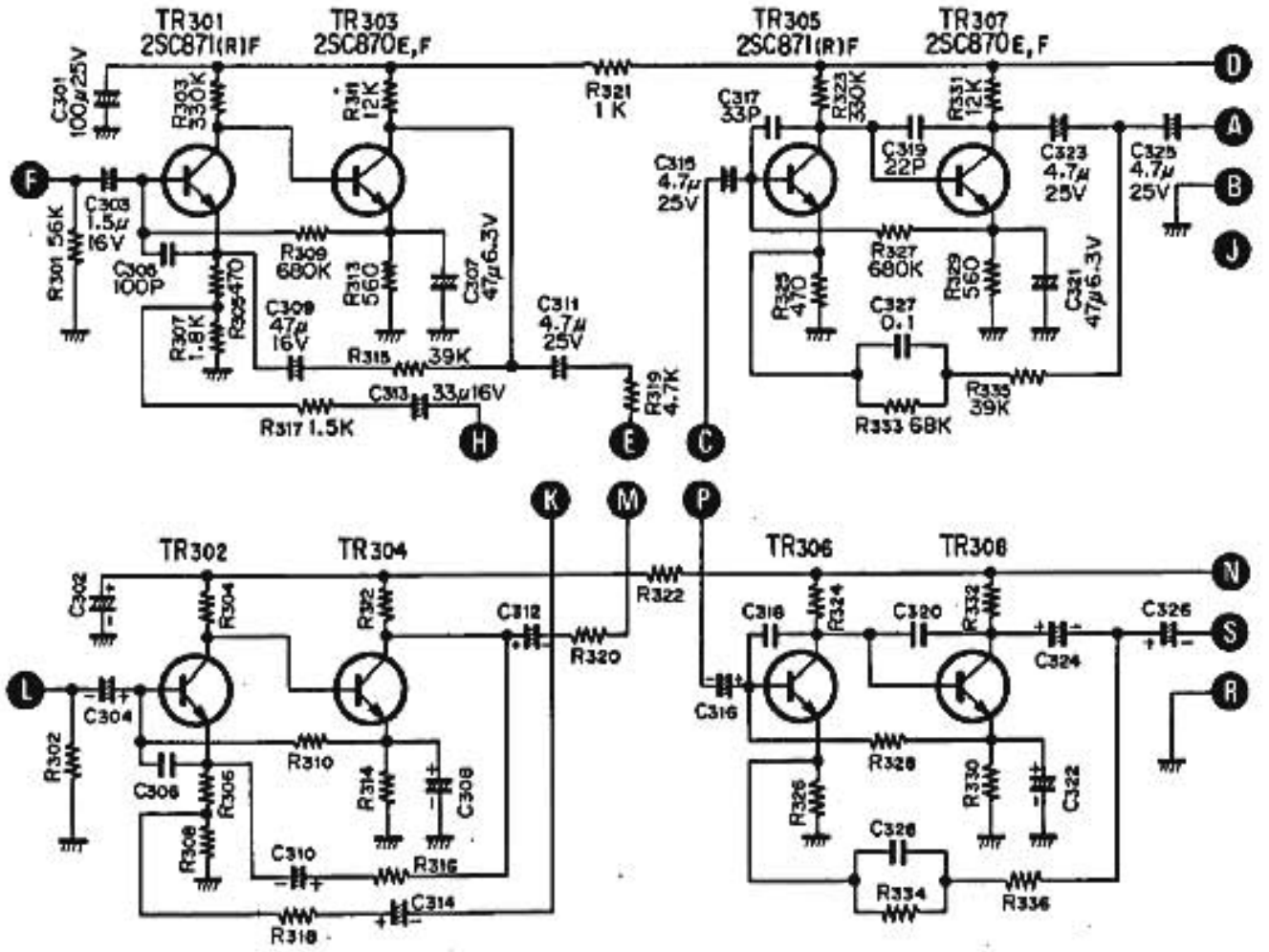
Component Side



Conductor Side



Schematic Diagram



Parts List

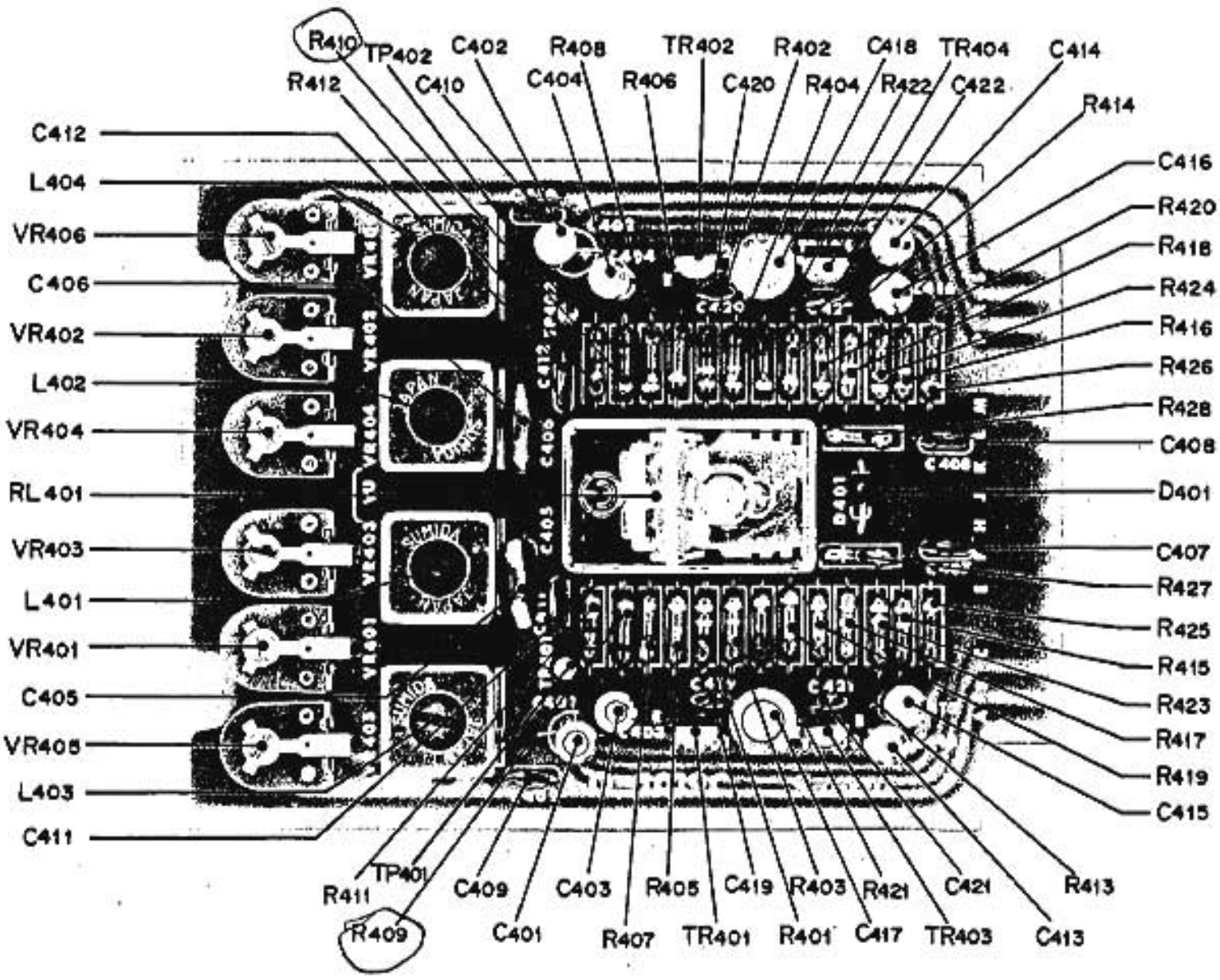
Parts No.	Stock No.	Description
	7610010	G-1021C Mic Circuit Board
R301	0101563	56 kΩ ¼W C. Resistor
R302	0101563	56 kΩ ¼W C. Resistor
R303	0101334	330 kΩ ¼W C. Resistor
R304	0101334	330 kΩ ¼W C. Resistor
R305	0101471	470 Ω ¼W C. Resistor
R306	0101471	470 Ω ¼W C. Resistor
R307	0101182	1.8 kΩ ¼W C. Resistor
R308	0101182	1.8 kΩ ¼W C. Resistor
R309	0101684	680 kΩ ¼W C. Resistor
R310	0101684	680 kΩ ¼W C. Resistor
R311	0101123	12 kΩ ¼W C. Resistor
R312	0101123	12 kΩ ¼W C. Resistor
R313	0101561	560 Ω ¼W C. Resistor
R314	0101561	560 Ω ¼W C. Resistor
R315	0101393	39 kΩ ¼W C. Resistor
R316	0101393	39 kΩ ¼W C. Resistor
R317	0101152	1.5 kΩ ¼W C. Resistor
R318	0101152	1.5 kΩ ¼W C. Resistor
R319	0101472	4.7 kΩ ¼W C. Resistor
R320	0101472	4.7 kΩ ¼W C. Resistor
R321	0101102	1 kΩ ¼W C. Resistor
R322	0101102	1 kΩ ¼W C. Resistor
R323	0101334	330 kΩ ¼W C. Resistor
R324	0101334	330 kΩ ¼W C. Resistor
R325	0101471	470Ω ¼W C. Resistor
R326	0101471	470 Ω ¼W C. Ressitor
R327	0101684	680 kΩ ¼W C. Resistor
R328	0101684	680 kΩ ¼W C. Resistor
R329	0101561	560 Ω ¼W C. Resistor
R330	0101561	560 Ω ¼W C. Resistor
R331	0101123	12 kΩ ¼W C. Resistor
R332	0101123	12 kΩ ¼W C. Resistor
R333	0101683	68 kΩ ¼W C. Resistor
R334	0101683	68 kΩ ¼W C. Resistor
R335	0101393	39 kΩ ¼W C. Resistor
R336	0101393	39 kΩ ¼W C. Resistor

Parts No.	Stock No.	Description
C301	0513101	100 μF 25V El Capacitor
C302	0513101	100 μF 25V El Capacitor
C303	0572159	1.5 μF 16V Tantalum Capacitor
C304	0572159	1.5 μF 16V Tantalum Capacitor
C305	0660101	100 pF 50V Ceramic Capacitor
C306	0660101	100 pF 50V Ceramic Capacitor
C307	0510470	47 μF 6.3V El Capacitor
C308	0510470	47 μF 6.3V El Capacitor
C309	0512470	47 μF 16V El Capacitor
C310	0512470	47 μF 16V El Capacitor
C311	0513479	4.7 μF 25V El Capacitor
C312	0513479	4.7 μF 25V El Capacitor
C313	0512330	33 μF 16V El Capacitor
C314	0512330	33 μF 16V El Capacitor
C315	0513479	4.7 μF 25V El Capacitor
C316	0513479	4.7 μF 25V El Capacitor
C317	0660330	33 pF 50V Ceramic Capacitor
C318	0660330	33 pF 50V Ceramic Capacitor
C319	0660220	22 pF 50V Ceramic Capacitor
C320	0660220	22 pF 50V Ceramic Capacitor
C321	0510470	47 μF 6.3V El Capacitor
C322	0510470	47 μF 6.3V El Capacitor
C323	0513479	4.7 μF 25V El Capacitor
C324	0513479	4.7 μF 25V El Capacitor
C325	0513479	4.7 μF 25V El Capacitor
C326	0513479	4.7 μF 25V El Capacitor
C327	0601108	0.1 μF 50V Mylar Capacitor
C328	0601108	0.1 μF 50V Mylar Capacitor
TR301	0305475	2SC871 Transistor
TR302	0305475	2SC871 Transistor
TR303	0305510	2SC870 Transistor
TR304	0305510	2SC870 Transistor
TR305	0305475	2SC871 Transistor
TR306	0305475	2SC871 Transistor
TR307	0305510	2SC870 Transistor
TR308	0305510	2SC870 Transistor

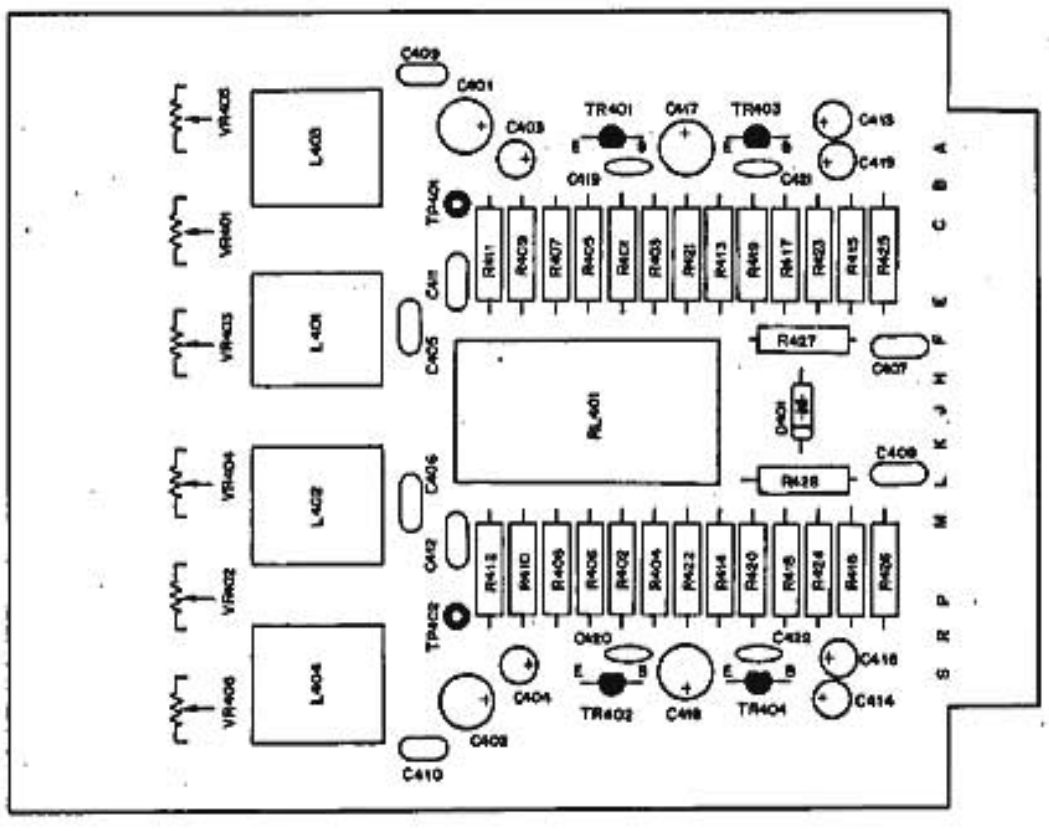
13-5. G-1019C Recording Circuit Board

(Stock No. 7550170)

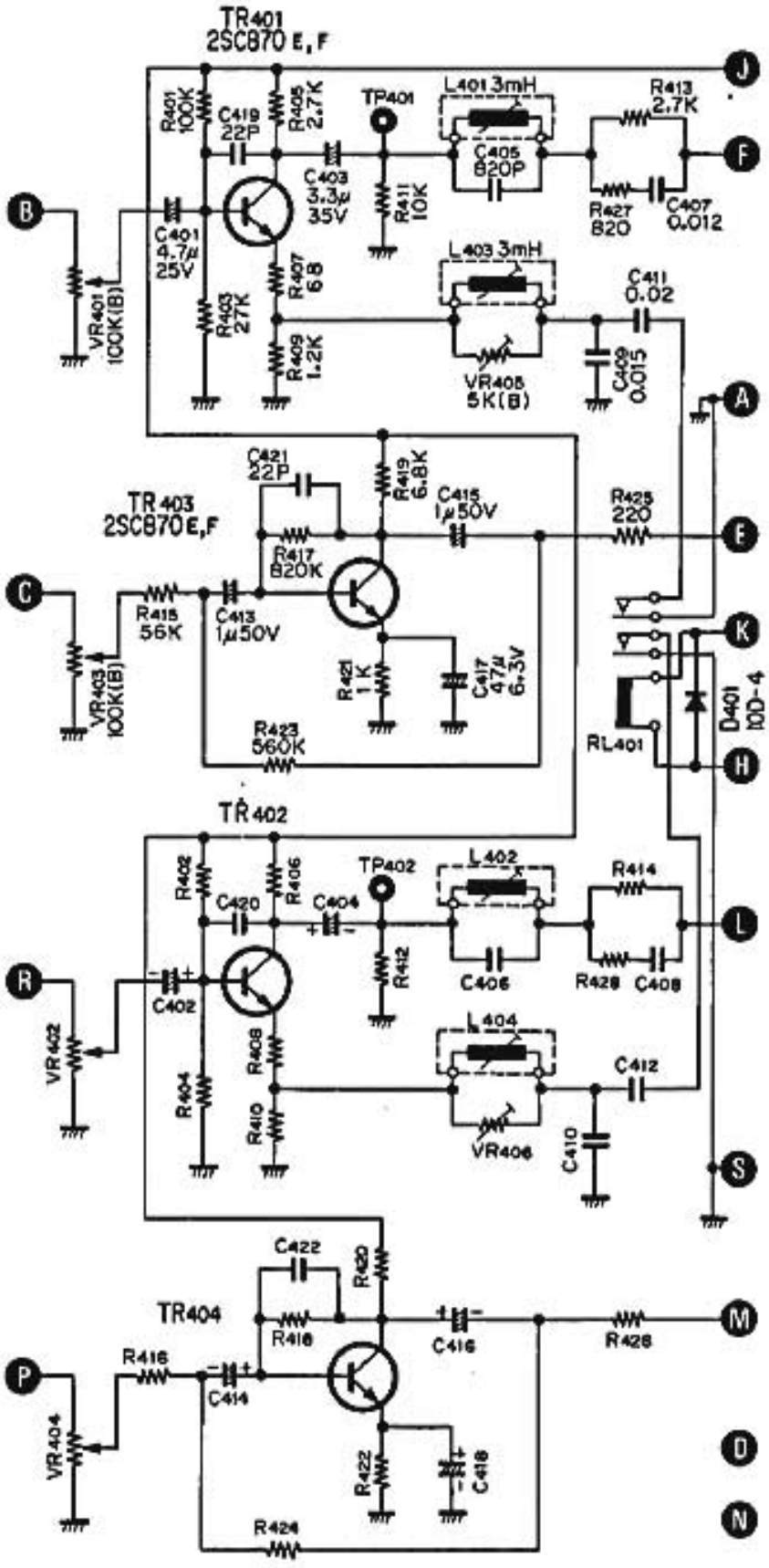
Component Side



Conducter Side



Schematic Diagram



Parts No.	Stock No.	Description
VR403	1030340	100 kΩ (B) Semi-Variable Resistor
VR404	1030340	100 kΩ (B) Semi-Variable Resistor
VR405	1030180	5 kΩ (B) Semi-Variable Resistor
VR406	1030180	5 kΩ (B) Semi-Variable Resistor
L401	4010050	TL-30 3 mH Coil
L402	4010050	TL-30 3 mH Coil
L403	4010050	TL-30 3 mH Coil
L404	4010050	TL-30 3 mH Coil
RL401	1150060	MQB401-OH DC48V Relay
		A4-01775-1 TP Pin

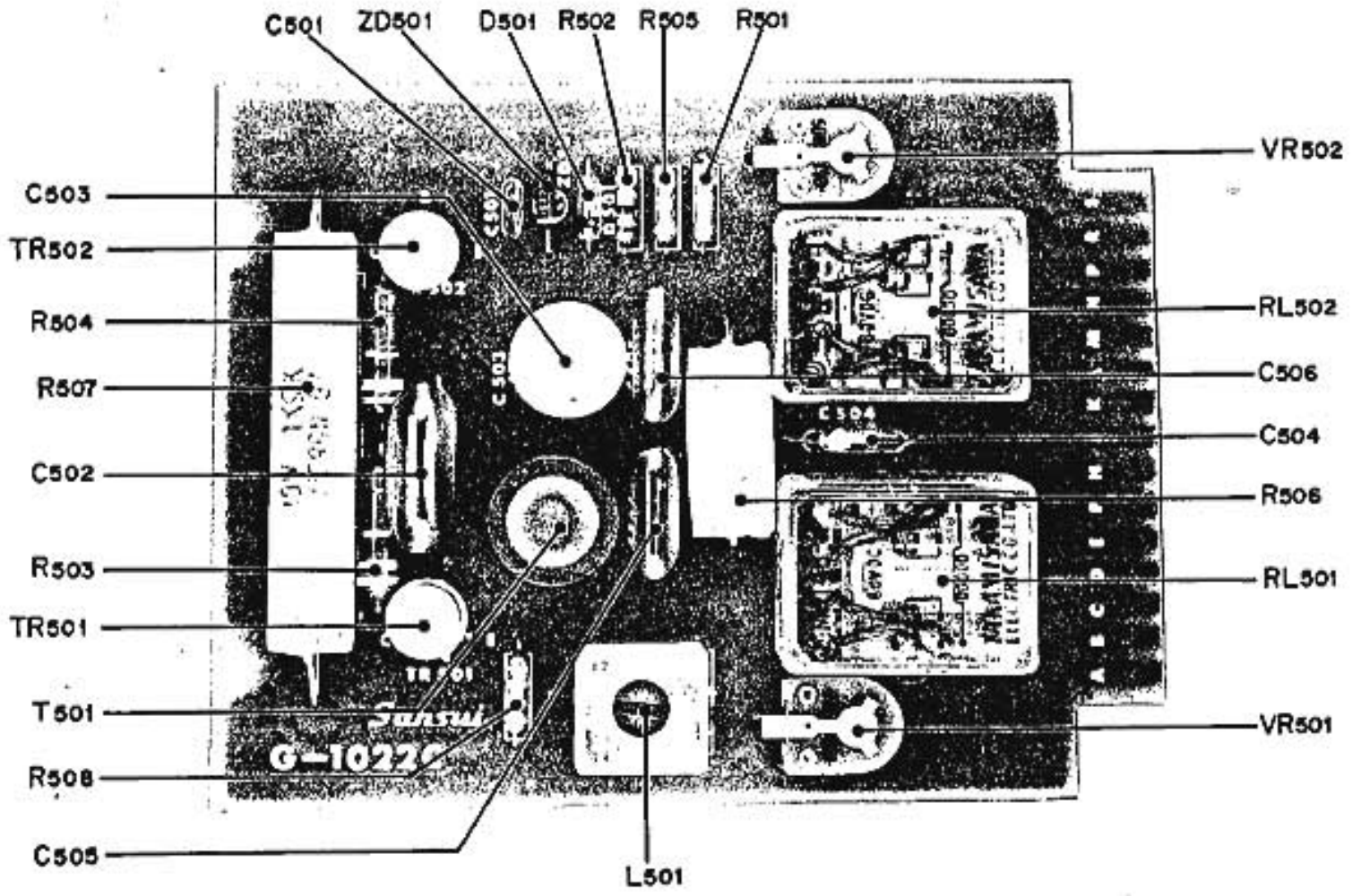
Parts List

Parts No.	Stock No.	Description
	7550170	G-1019C Recording Circuit Board
R401	0101104	100 kΩ ¼W C. Resistor
R402	0101104	100 kΩ ¼W C. Resistor
R403	0101273	27 kΩ ¼W C. Resistor
R404	0101273	27 kΩ ¼W C. Resistor
R405	0101272	2.7 kΩ ¼W C. Resistor
R406	0101272	2.7 kΩ ¼W C. Resistor
R407	0101680	68 Ω ¼W C. Resistor
R408	0101680	68 Ω ¼W C. Resistor
R409	0101122	1.2 kΩ ¼W C. Resistor
R410	0101122	1.2 kΩ ¼W C. Resistor
R411	0101103	10 kΩ ¼W C. Resistor
R412	0101103	10 kΩ ¼W C. Resistor
R413	0101272	2.7 kΩ ¼W C. Resistor
R414	0101272	2.7 kΩ ¼W C. Resistor
R415	0101563	56 kΩ ¼W C. Resistor
R416	0101563	56 kΩ ¼W C. Resistor
R417	0101824	820 kΩ ¼W C. Resistor
R418	0101824	820 kΩ ¼W C. Resistor
R419	0101682	6.8 kΩ ¼W C. Resistor
R420	0101682	6.8 kΩ ¼W C. Resistor
R421	0101102	1 kΩ ¼W C. Resistor
R422	0101102	1 kΩ ¼W C. Resistor
R423	0101564	560 kΩ ¼W C. Resistor
R424	0101564	560 kΩ ¼W C. Resistor
R425	0101221	220 Ω ¼W C. Resistor
R426	0101221	220 Ω ¼W C. Resistor
R427	0101821	820 Ω ¼W C. Resistor
R428	0101821	820 Ω ¼W C. Resistor
C401	0513479	4.7 μF 25V El Capacitor
C402	0513479	4.7 μF 25V El Capacitor
C403	0514339	3.3 μF 35V El Capacitor
C404	0514339	3.3 μF 35V El Capacitor
C405	0641821	820 pF 50V D. S. M Capacitor
C406	0641821	820 pF 50V D. S. M Capacitor
C407	0601127	0.012 μF 50V Mylar Capacitor
C408	0601127	0.012 μF 50V Mylar Capacitor
C409	0601157	0.015 μF 50V Mylar Capacitor
C410	0601157	0.015 μF 50V Mylar Capacitor
C411	0601207	0.02 μF 50V Mylar Capacitor
C412	0601207	0.02 μF 50V Mylar Capacitor
C413	0515109	1 μF 50V El Capacitor
C414	0515109	1 μF 50V El Capacitor
C415	0515109	1 μF 50V El Capacitor
C416	0515109	1 μF 50V El Capacitor
C417	0510470	47 μF 6.3V El Capacitor
C418	0510470	47 μF 6.3V El Capacitor
C419	0660220	22 pF 50V Ceramic Capacitor
C420	0660220	22 pF 50V Ceramic Capacitor
C421	0660220	22 pF 50V Ceramic Capacitor
C422	0660220	22 pF 50V Ceramic Capacitor
TR401	0305510	2SC870 Transistor
TR402	0305510	2SC870 Transistor
TR403	0305510	2SC870 Transistor
TR404	0305510	2SC870 Transistor
D401	0310360	10D-4 Diode
VR401	1030340	100 kΩ (B) Semi-Variable Resistor
VR402	1030340	100 kΩ (B) Semi-Variable Resistor

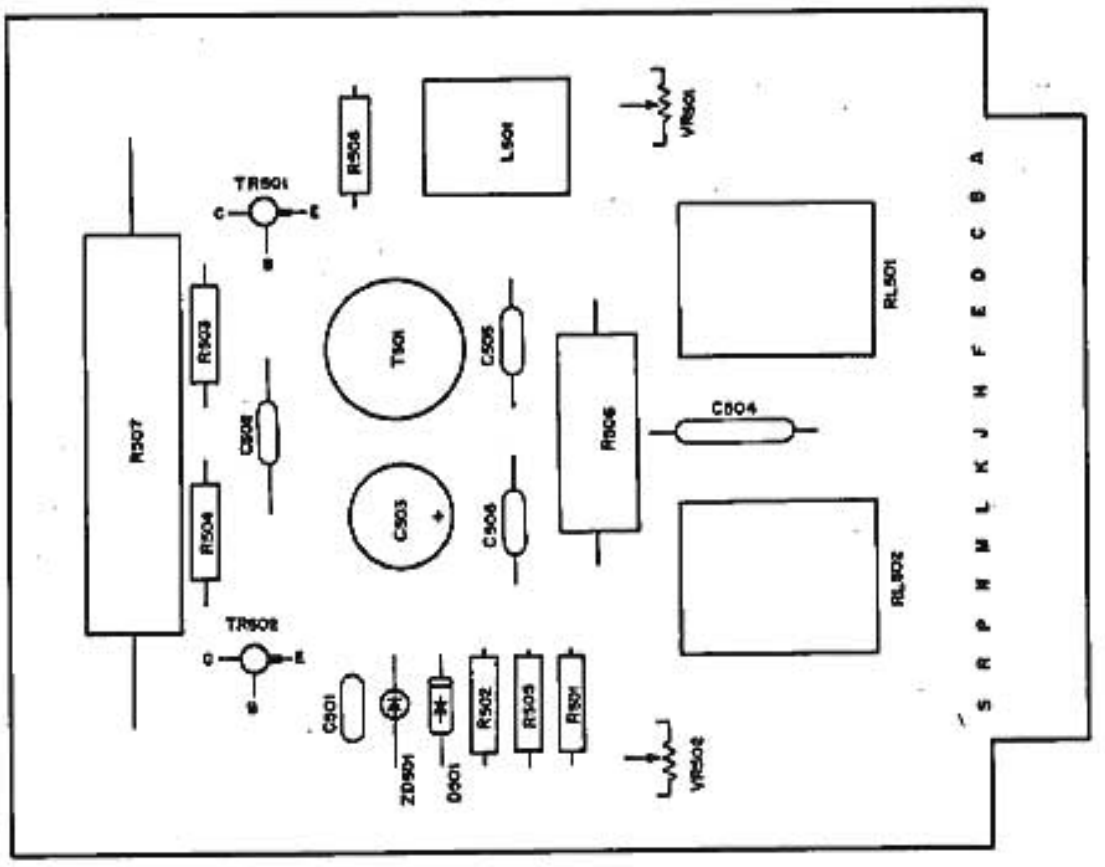
13-6. G-1022C Oscillator Circuit Board

(Stock No. 7600010)

Component Side



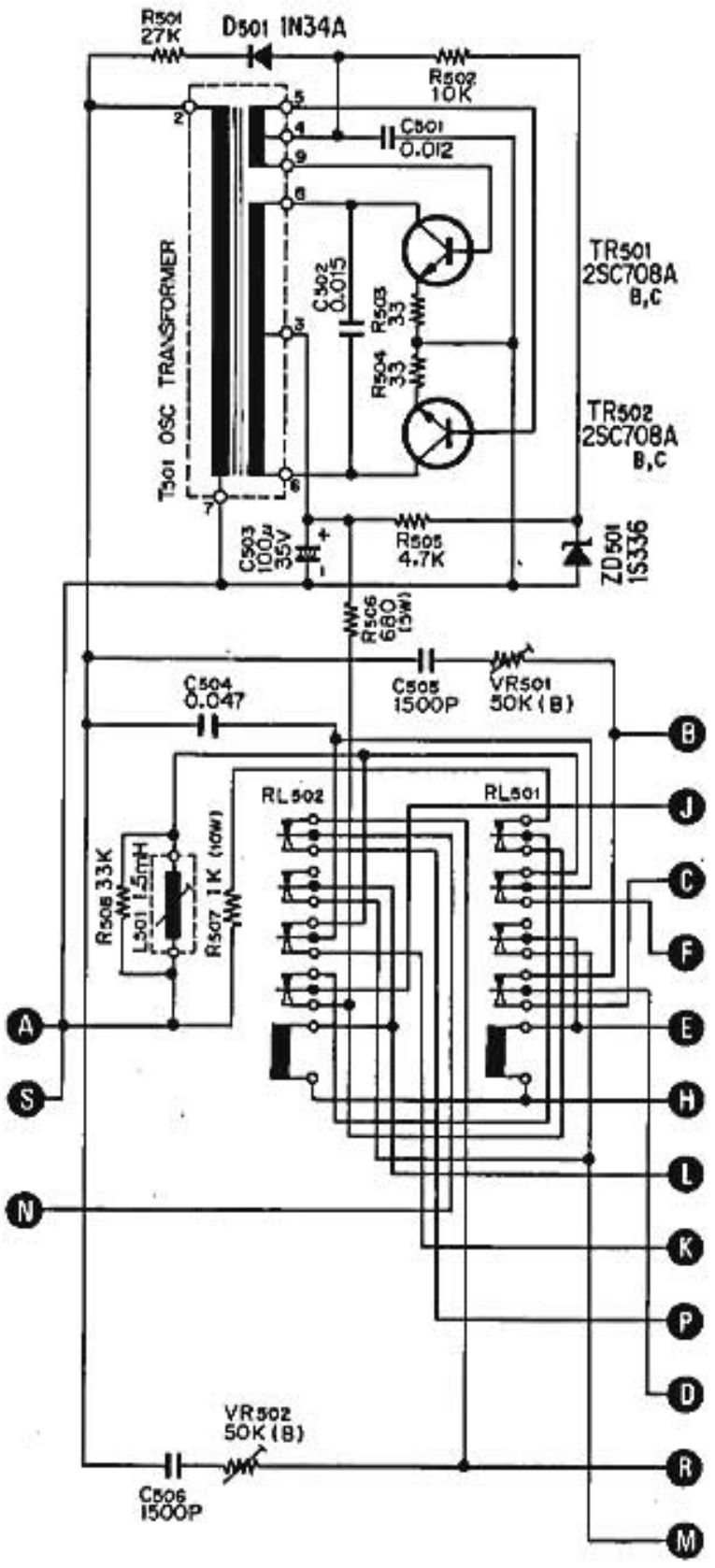
Conductor Side



Resistor: Carbon Resistor ⟶ C. Resistor

Capacitor: Dipped Silverd Mica Capacitor ⟶ D. S. M Capacitor
Electrolytic Capacitor ⟶ El Capacitor

Schematic Diagram

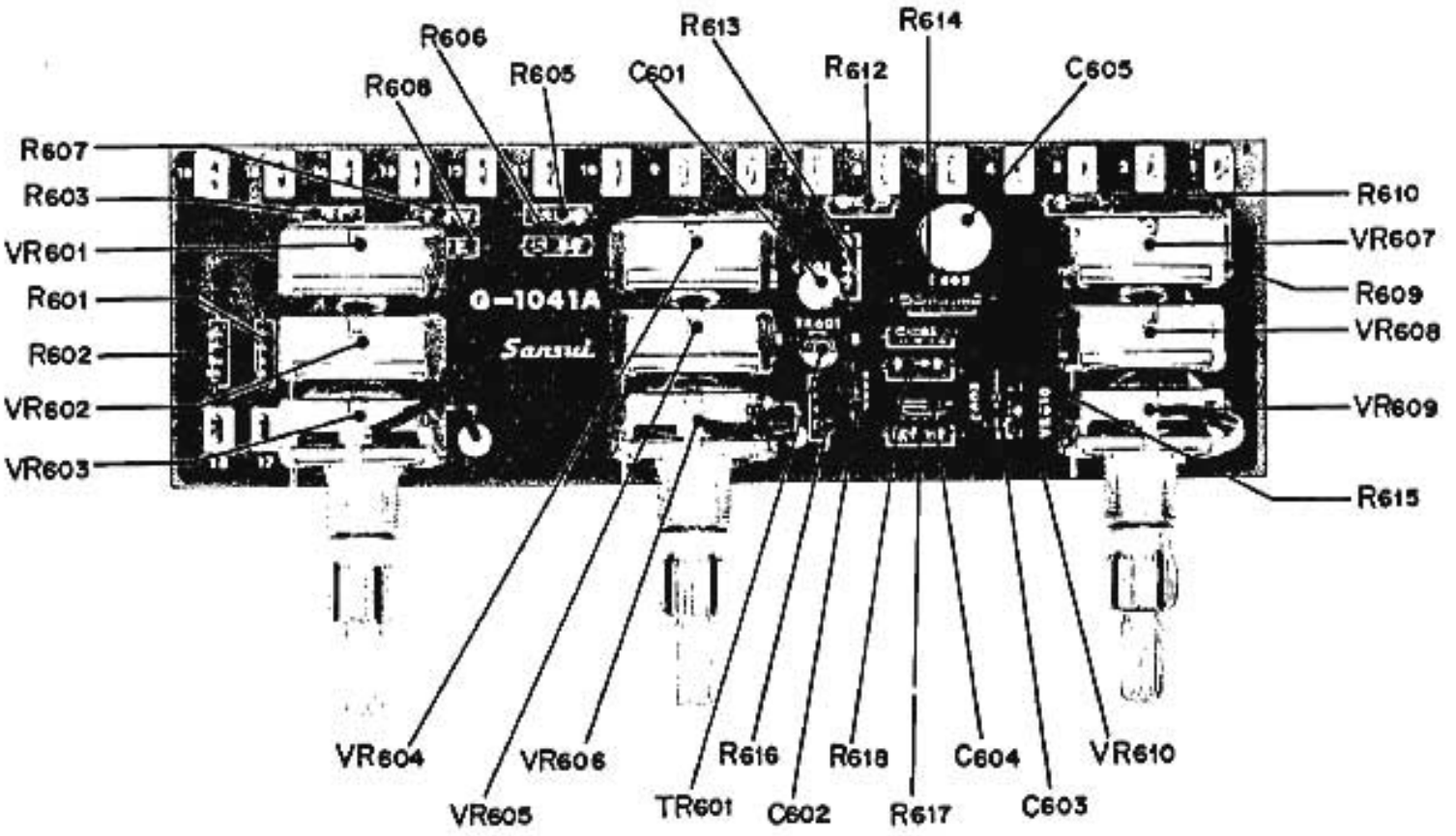


Parts List

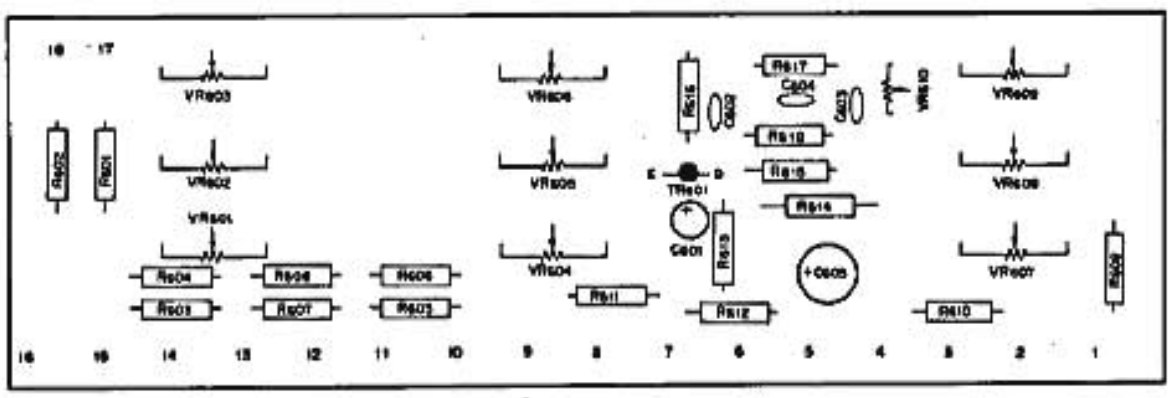
Parts No.	Stock No.	Description
	7600010	G-1022C Oscillator Circuit Board
R501	0101273	27 kΩ ¼W C. Resistor
R502	0101103	10 kΩ ¼W C. Resistor
R503	0103330	33 Ω ½W C. Resistor
R504	0103330	33 Ω ½W C. Resistor
R505	0101472	4.7 kΩ ¼W C. Resistor
R506	0155681	680 Ω 5W Cement Resistor
R507	0150102	1 kΩ 10W Cement Resistor
R508	0101333	33 kΩ ¼W C. Resistor
C501	0601127	0.012 μF 50V Mylar Capacitor
C502	0642153	0.015 μF 50V D.S.M Capacitor
C503	0514101	100 μF 35V El Capacitor
C504	0601477	0.047 μF 50V Mylar Capacitor
C505	0640152	0.015 μF 50V D. S. M Capacitor
C506	0640152	0.015 μF 50V D. S. M Capacitor
TR501	0305480	2SC708A Transistor
TR502	0305480	2SC708A Transistor
D501	0310400	1N34A Diode
DZ501	0310820	1S336 Diode
VR501	1030200	50 kΩ (B) Semi-Variable Resistor
VR502	1030200	50 kΩ (B) Semi-Variable Resistor
T501	4220240	OS-1 Oscillator Transformer
L501	4010040	TL-15 1.5 mH Coil
RL501	1150090	MAT4B-H DC80V Relay
RL502	1150090	MAT4B-H DC80V Relay

13-7. G-1041A Volume Circuit Board
(Stock No. 7560280)

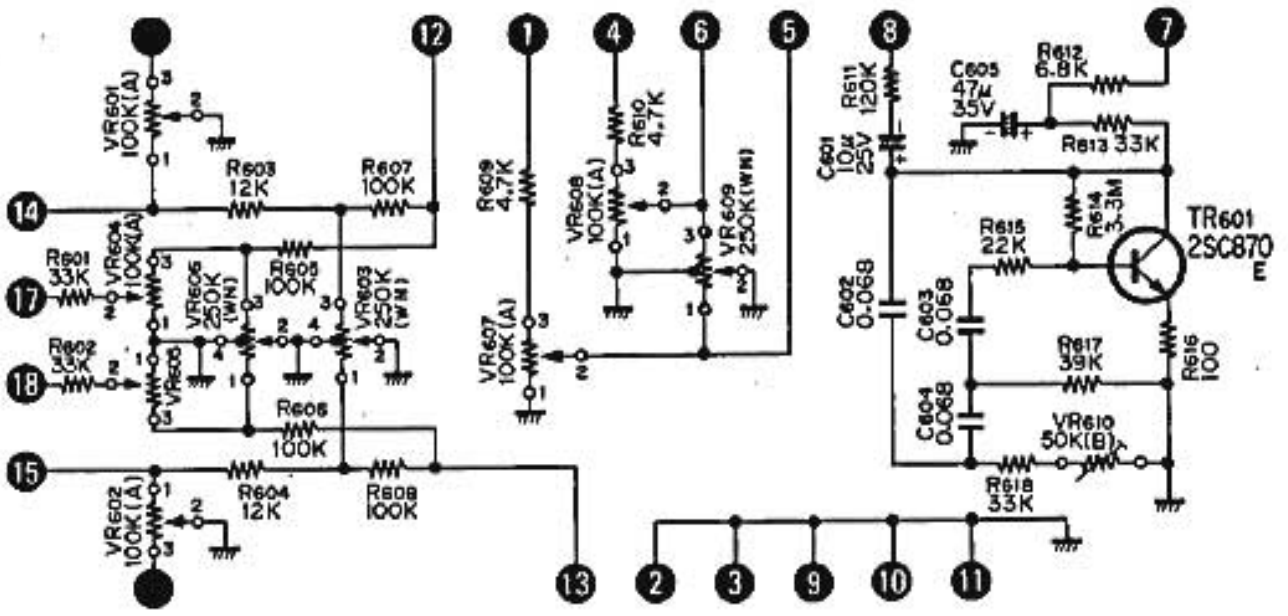
Component Side



Conductor Side



Schematic Diagram



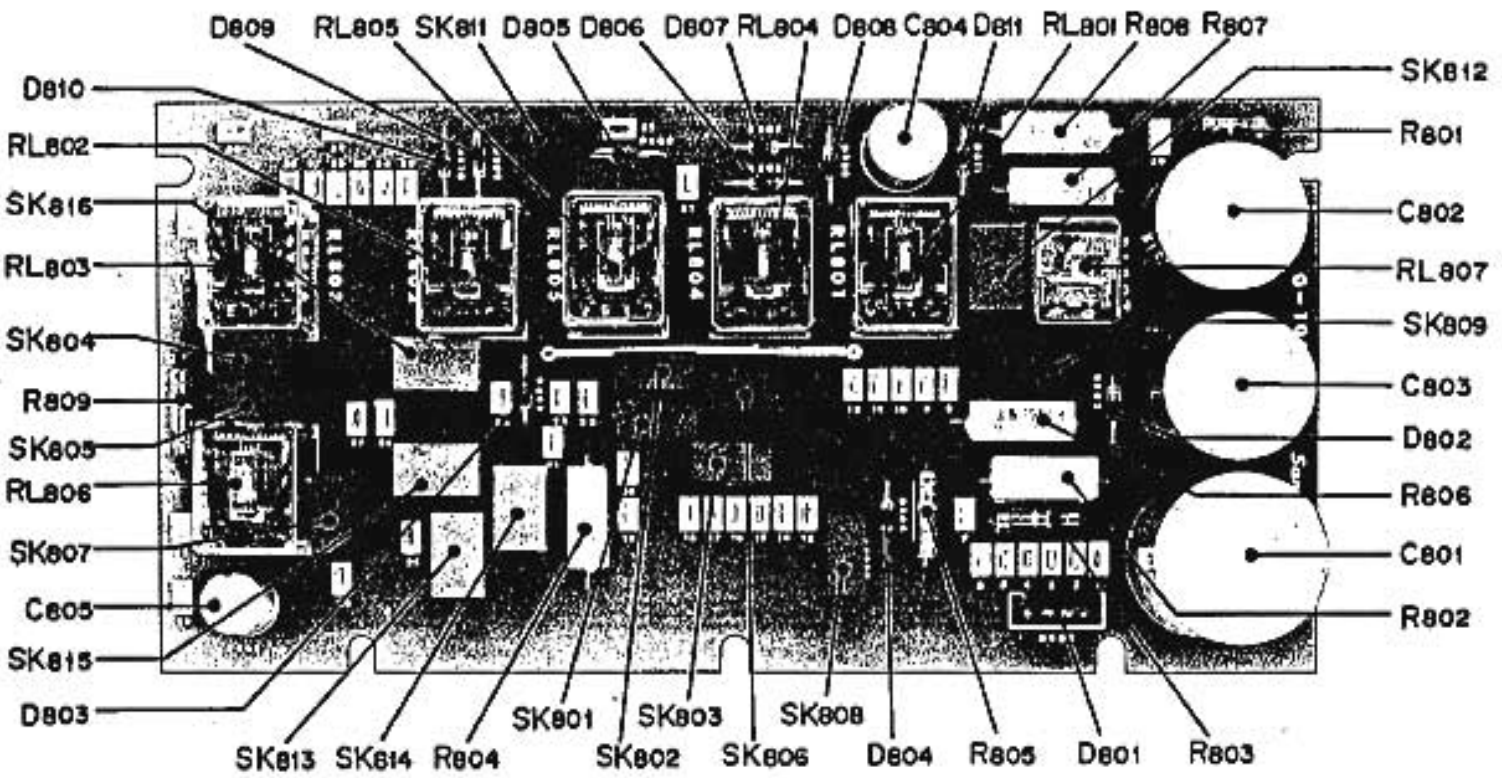
Parts List

Parts No.	Stock No.	Description
	7560280	G-1041A Volume Circuit Board
R601	0101333	33 kΩ ¼W C. Resistor
R602	0101333	33 kΩ ¼W C. Resistor
R603	0101123	12 kΩ ¼W C. Resistor
R604	0101123	12 kΩ ¼W C. Resistor
R605	0101104	100 kΩ ¼W C. Resistor
R606	0101104	100 kΩ ¼W C. Resistor
R607	0101104	100 kΩ ¼W C. Resistor
R608	0101104	100 kΩ ¼W C. Resistor
R609	0101472	4.7 k Ω ¼W C. Resistor
R610	0101472	4.7 kΩ ¼W C. Resistor
R611	0101124	120 kΩ ¼W C. Resistor
R612	0101682	6.8 kΩ ¼W C. Resistor
R613	0101333	33 kΩ ¼W C. Resistor
R614	0103335	3.3 MΩ ½W C. Resistor
R615	0101223	22 kΩ ¼W C. Resistor
R616	0101101	100 Ω ¼W C. Resistor
R617	0101393	39 kΩ ¼W C. Resistor
R618	0101333	33 kΩ ¼W C. Resistor

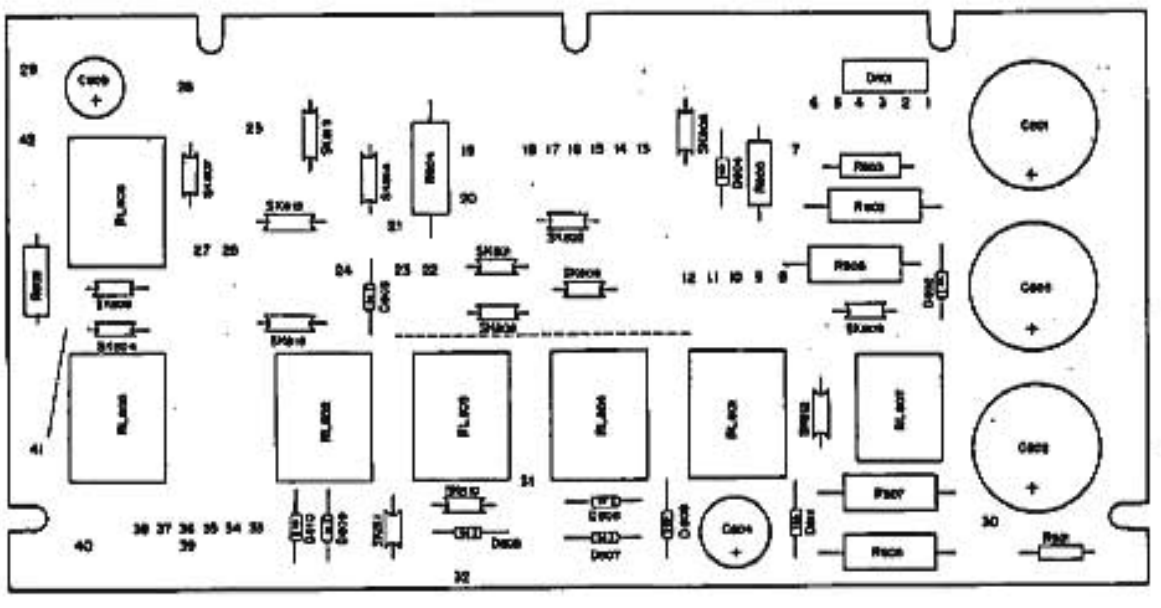
Parts No.	Stock No.	Description
C601	0513100	10 μF 25V El Capacitor
C602	0601687	0.068 μF 50V Mylar Capacitor
C603	0601687	0.068 μF 50V Mylar Capacitor
C604	0601687	0.068 μF 50V Mylar Capacitor
C605	0514470	47 μF 35V El Capacitor
TR601	0305510	2SC870 (E) Transistor
VR601 ~3	1050020	100 kΩ A x 2 250 kΩ, MIC LINE-2 volume, balance
VR604 ~6	1050020	100 kΩ A x 2 250 kΩ, LINE-1 volume, balance
VR607 ~9	1050020	100 kΩ A x 2 250 kΩ, PLAY BACK volume, balance
VR610	1030200	50 kΩ (B) Semi-Variable Resistor
	2250020	2701 Fasten Tab A
	2250030	2703 Fasten Tab B

13-8. G-1034C Control Circuit Board
(Stock No. 7630010)

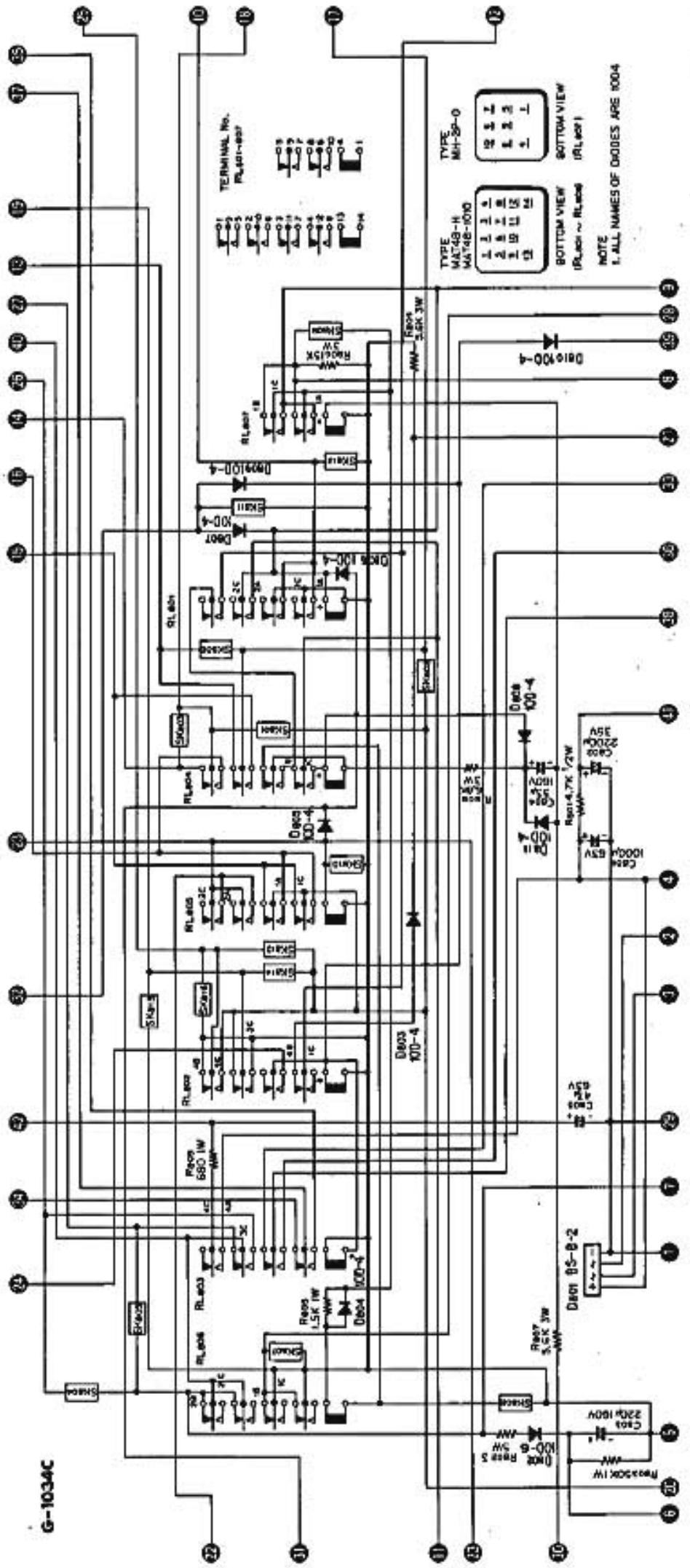
Component Side



Conductor Side



Schematic Diagram

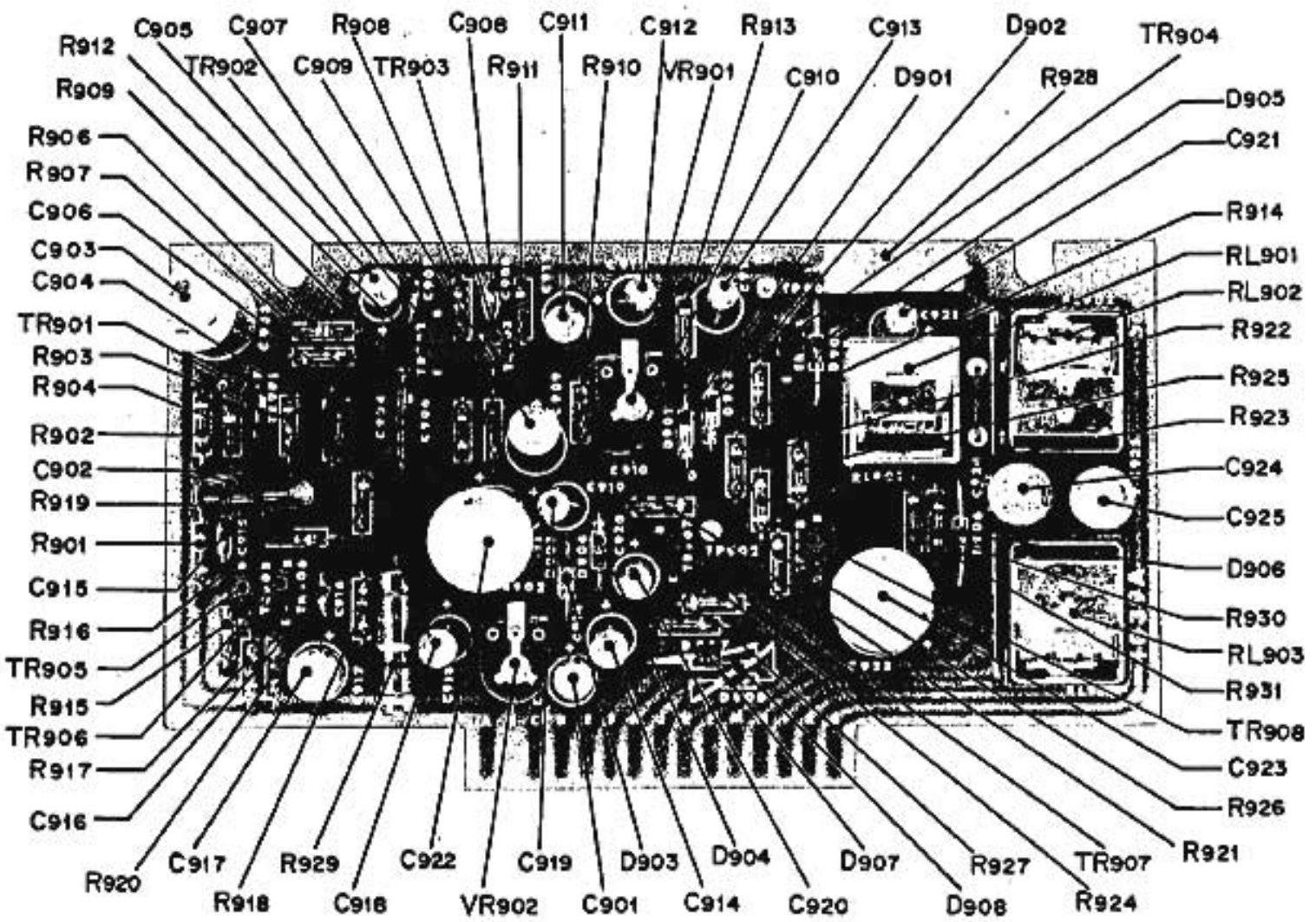


Parts List

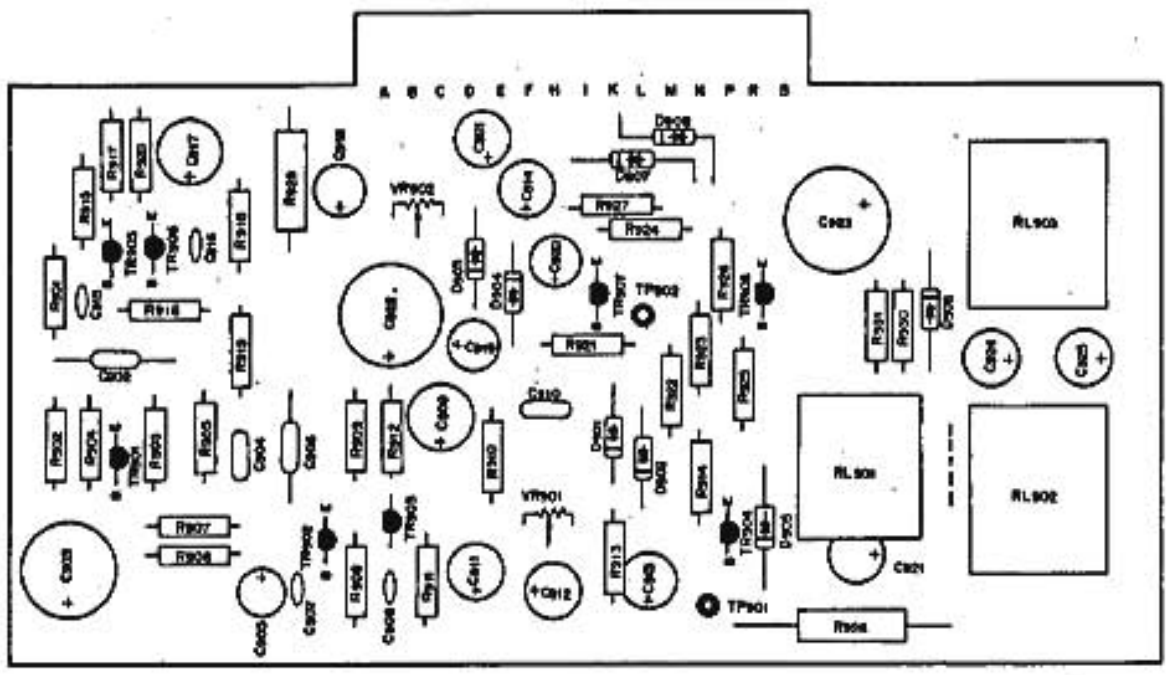
Parts No.	Stock No.	Description
	7630010	G-1034C Control Circuit Board
R801	0103472	4.7 kΩ ½W C. Resistor
R802	0155309	3 Ω 5W Cement Resistor
R803	0104503	50 kΩ 1W C. Resistor
R804	0153562	5.6 kΩ 3W Cement Resistor
R805	0104152	1.5 kΩ 1W C. Resistor
R806	0153153	15 k Ω 3W Cement Resistor
R807	0153562	5.6 kΩ 3W Cement Resistor
R808	0153682	6.8 kΩ 3W Cement Resistor
R809	0104681	680 Ω 1W C. Resistor
C801	0549201	1000 μF 63V El Capacitor
C802	0549003	2200 μF 35V El Capacitor
C803	0549501	220 μF 160V El Capacitor
C804	0518330	33 μF 160V El Capacitor
C805	0516470	47 μF 63V El Capacitor
D801	0310760	BS-B-2 Diode
D802	0310370	10D-6 Diode
D803	0310360	10D-4 Diode
D804	0310360	10D-4 Diode
D805	0310360	10D-4 Diode
D806	0310360	10D-4 Diode
D807	0310360	10D-4 Diode
D808	0310360	10D-4 Diode
D809	0310360	10D-4 Diode
D810	0310360	10D-4 Diode
D811	0310360	10D-4 Diode
SK801	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK802	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK803	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK804	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK805	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK806	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK807	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK808	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK809	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK810	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK811	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK812	0800200	0.2 μF-120 Ω AC400V Spark Killer
SK813	0800200	0.2 μF-120 Ω AC400V Spark Killer
SK814	0800200	0.2 μF-120 Ω AC400V Spark Killer
SK815	0800200	0.2 μF-120 Ω AC400V Spark Killer
SK816	0800200	0.2 μF-120 Ω AC400V Spark Killer
RL801	1150090	MAT4B-H DC80V Relay
RL802	1150090	MAT4B-H DC80V Relay
RL803	1150090	MAT4B-H DC80V Relay
RL804	1150090	MAT4B-H DC80V Relay
RL805	1150090	MAT4B-H DC80V Relay
RL806	1150080	MAT4B-1010 DC48V Relay
RL807	1150040	MH-2PO DC36V Relay
	2250020	2701 Fasten Tab A
	2250030	2703 Fasten Tab B

13-9. G-1039A 20Hz Sensing Circuit Board
(Stock No. 7690040)

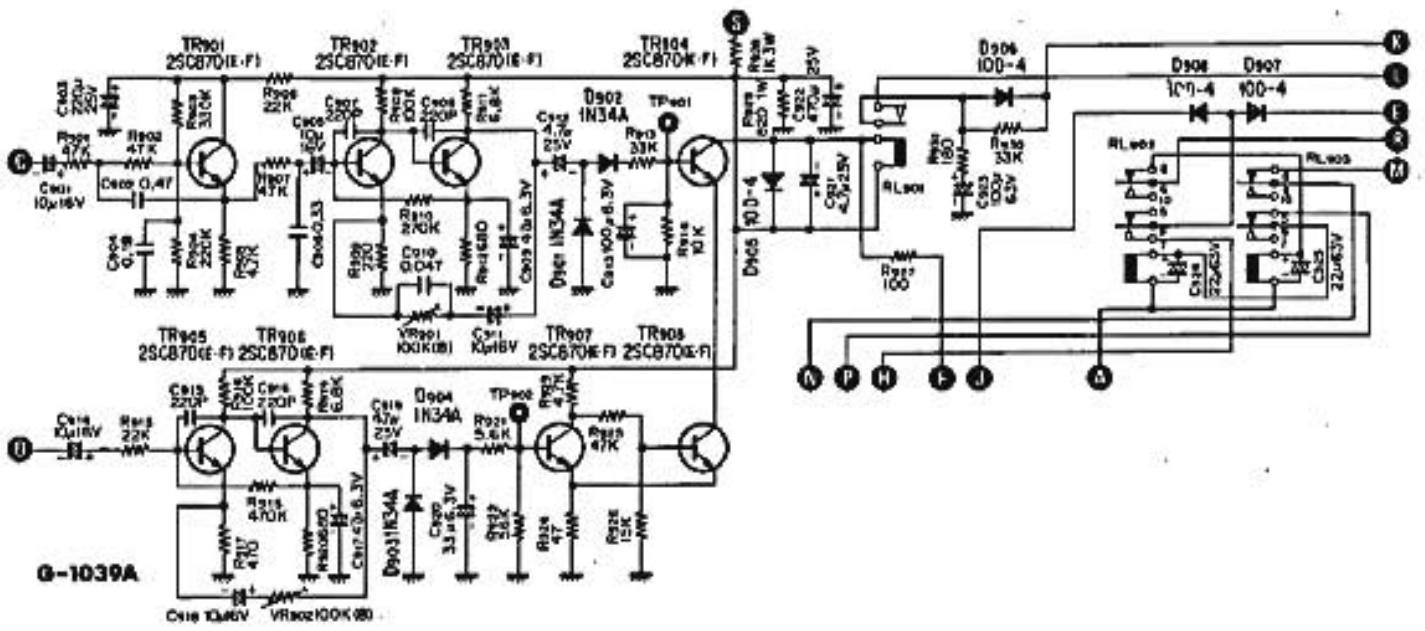
Component Side



Conductor Side



Schematic Diagram



Parts List

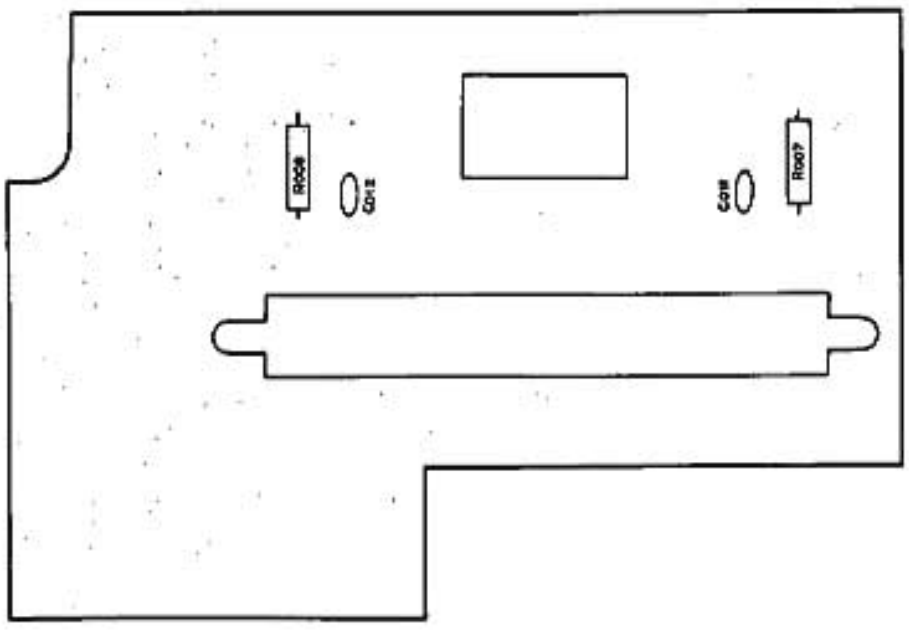
Parts No.	Stock No.	Description
	7690040	G-1039A 20 Hz Sensing Circuit Board
R901	0101473	47 kΩ ¼W C. Resistor
R902	0101473	47 kΩ ¼W C. Resistor
R903	0101334	330 kΩ ¼W C. Resistor
R904	0101224	220 kΩ ¼W C. Resistor
R905	0101472	4.7 kΩ ¼W C. Resistor
R906	0101223	22 kΩ ¼W C. Resistor
R907	0101473	47 kΩ ¼W C. Resistor
R908	0101104	100 kΩ ¼W C. Resistor
R909	0101221	220 Ω ¼W C. Resistor
R910	0101274	270 kΩ ¼W C. Resistor
R911	0101682	6.8 kΩ ¼W C. Resistor
R912	0101681	680Ω ¼W C. Resistor
R913	0101333	33 kΩ ¼W C. Resistor
R914	0101103	10 kΩ ¼W C. Resistor
R915	0101223	22 kΩ ¼W C. Resistor
R916	0101104	100 kΩ ¼W C. Resistor
R917	0101471	470 Ω ¼W C. Resistor
R918	0101474	470 kΩ ¼W C. Resistor
R919	0101682	6.8 kΩ ¼W C. Resistor
R920	0101681	680 Ω ¼W C. Resistor
R921	0101562	5.6 kΩ ¼W C. Resistor
R922	0101563	56 kΩ ¼W C. Resistor
R923	0101472	4.7 kΩ ¼W C. Resistor
R924	0101470	47 Ω ¼W C. Resistor
R925	0101473	47 kΩ ¼W C. Resistor
R926	0101153	15 kΩ ¼W C. Resistor
R927	0101101	100 Ω ¼W C. Resistor
R928	0153102	1 kΩ 3W Cement Resistor
R929	0104821	820Ω 1W C. Resistor
R930	0101333	33 kΩ ¼W C. Resistor
R931	0101181	180 Ω ¼W C. Resistor
C901	0512100	10 μF 16V El Capacitor
C902	0601478	0.47 μF 50V Mylar Capacitor
C903	0513221	220 μF 25V El Capacitor
C904	0601158	0.15 μF 50V Mylar Capacitor
C905	0512100	10 μF 16V El Capacitor
C906	0601338	0.33 μF 50V Mylar Capacitor
C907	0660221	220 pF 50V Ceramic Capacitor
C908	0660221	220 pF 50V Ceramic Capacitor

Parts No.	Stock No.	Description
C909	0510470	47 μF 6.3V El Capacitor
C910	0601477	0.047 μF 50V Mylar Capacitor
C911	0512100	10 μF 16V El Capacitor
C912	0513479	4.7 μF 25V El Capacitor
C913	0510101	100 μF 6.3V El Capacitor
C914	0512100	10 μF 16V El Capacitor
C915	0660221	220 pF 50V Ceramic Capacitor
C916	0660221	220 pF 50V Ceramic Capacitor
C917	0510470	47 μF 6.3V El Capacitor
C918	0512100	10 μF 16V El Capacitor
C919	0513479	4.7 μF 25V El Capacitor
C920	0510330	33 μF 6.3V El Capacitor
C921	0513479	4.7 μF 25V El Capacitor
C922	0513471	470 μF 25V El Capacitor
C923	0516101	100 μF 63V El Capacitor
C924	0516220	22 μF 63V El Capacitor
C925	0516220	22 μF 63V El Capacitor
TR901	0305510	2SC870 Transistor
TR902	0305510	2SC870 Transistor
TR903	0305510	2SC870 Transistor
TR904	0305510	2SC870 Transistor
TR905	0305510	2SC870 Transistor
TR906	0305510	2SC870 Transistor
TR907	0305510	2SC870 Transistor
TR908	0305510	2SC870 Transistor
D901	0310400	1N34A Diode
D902	0310400	1N34A Diode
D903	0310400	1N34A Diode
D904	0310400	1N34A Diode
D905	0310360	10D-4 Diode
D906	0310360	10D-4 Diode
D907	0310360	10D-4 Diode
D908	0310360	10D-4 Diode
RL901	1150050	TECK-M24 DC24V Relay
RL902	1150040	MH-2P-0 DC36V Relay
RL903	1150040	MH-2P-0 DC36V Relay
VR901	1030340	100 kΩ (B) Semi-Variable Resistor
VR902	1030340	100 kΩ (B) Semi-Variable Resistor

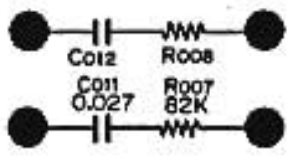
Resistor: Carbon Resistor ——→C. Resistor
Capacitor: Dipped Silverd Mica Capacitor ——→D. S. M Capacitor
Electrolytic Capacitor ——→El Capacitor

13-10. G-1037B Filter Circuit Board
(Stock No. 7690030)

Conductor Side



Schematic Diagram

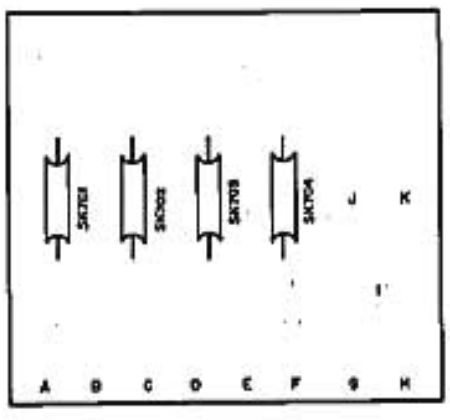


Parts List

Parts No.	Stock No.	Description
	7690030	G-1037B Filter Circuit Board
R007	0101823	82 kΩ ¼W C. Resistor
R008	0101823	82 kΩ ¼W C. Resistor
C011	0601277	0.027 μF 50V Mylar Capacitor
C012	0601277	0.027 μF 50V Mylar Capacitor
	2250020	2701 Fasten Tab A

13-11. G-1043A Spark Killer Circuit Board
(Stock No. 7690010)

Conductor Side

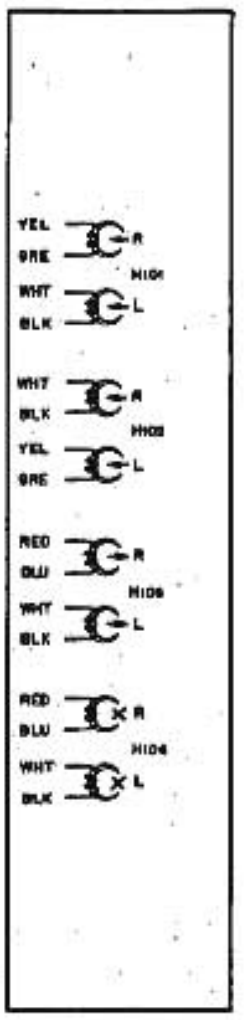


Parts List

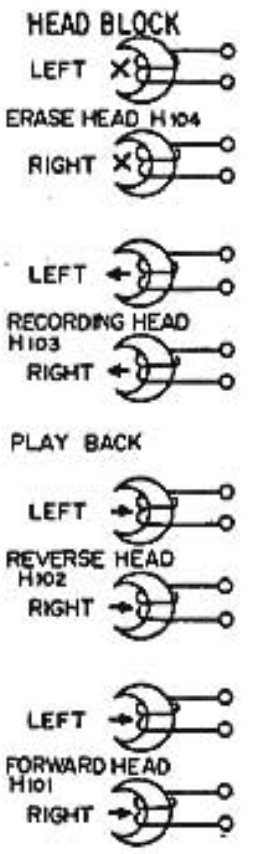
Parts No.	Stock No.	Description
	7-690010	G-1043A Spark Killer Circuit Board
SK701	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK702	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK703	0800190	0.1 μF-120 Ω AC400V Spark Killer
SK704	0800190	0.1 μF-120 Ω AC400V Spark Killer
	2250020	2701 Fasten Tab A
	2250030	2703 Fasten Tab B

13-12. G-1042
(Stock No. 2690020)

Conductor Side



Schematic Diagram



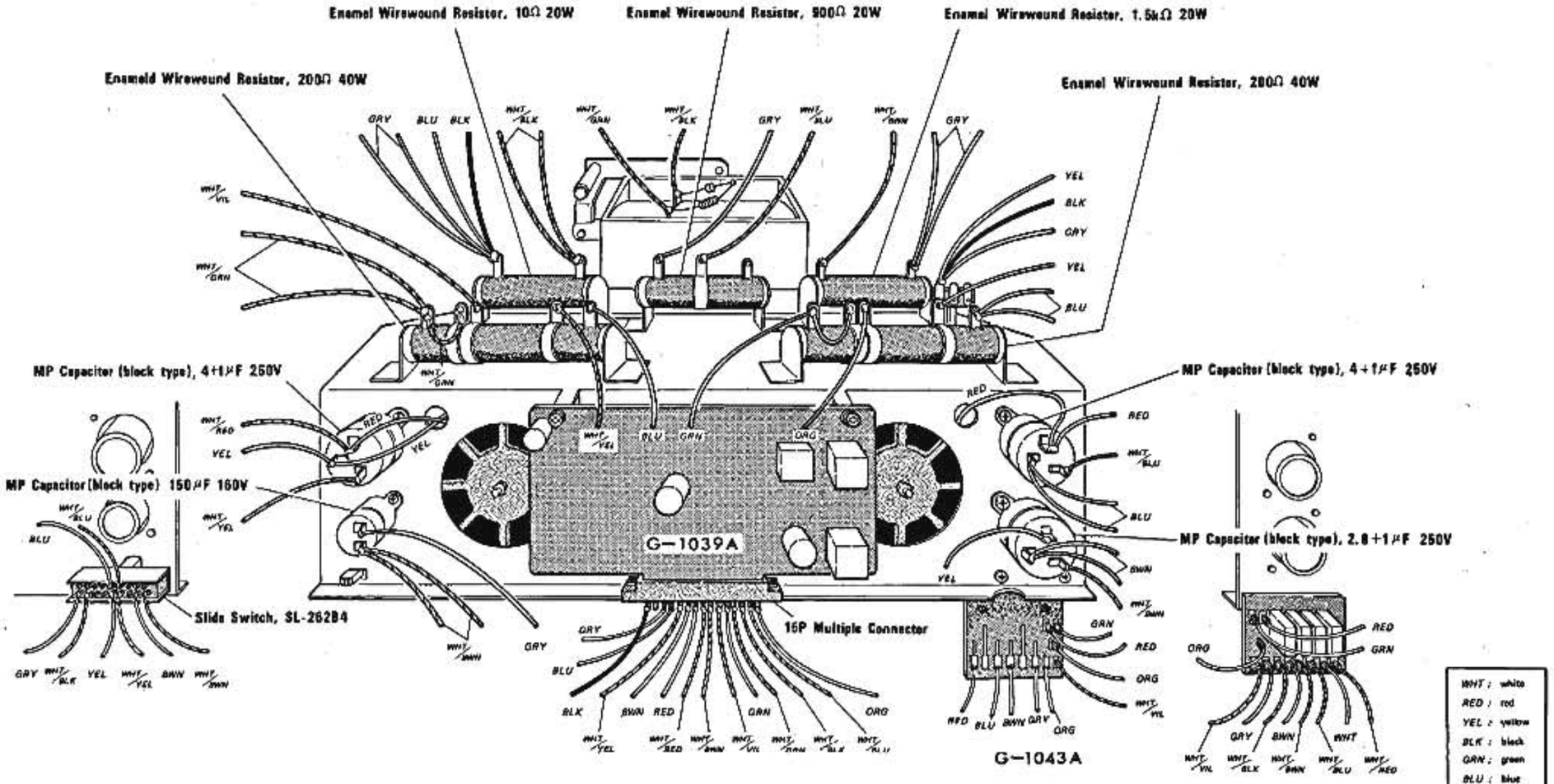
13-13. OTHER PARTS LIST

Parts No.	Stock No.	Description
R009	0101224	220 kΩ ¼W C. Resistor
R010	0101224	220 kΩ ¼W C. Resistor
R011	0101153	15 kΩ ¼W C. Resistor
R012	0101153	15 kΩ ¼W C. Resistor
R013	0101224	220 kΩ ¼W C. Resistor
R014	0101224	220 kΩ ¼W C. Resistor
R015	0101332	3.3 kΩ ¼W C. Resistor
R016	0101332	3.3 kΩ ¼W C. Resistor
R017	0101473	47 kΩ ¼W C. Resistor
R018	0101473	47 kΩ ¼W C. Resistor
R019	0101333	33 kΩ ¼W C. Resistor
R020	0101333	33 kΩ ¼W C. Resistor
VU	4300330	VU Meter
VR001 VR002	1010180	Phone Volume, 100 kΩ A x 2
S001	1130260	Push Switch, GA-S72
S002	1130260	Push Switch, GA-S72
S003	2430060	Jack, microphone
S004	1130270	Pull Switch, WB type
S005	1160060	Micro Switch, V-1A10
S006	1160060	Micro Switch, V-1A10
J007	2430060	Jack, microphone
J008	2430060	Jack, head phone
PL001	0400090	Lamp, swan type (6.3 V 0.25A)
PL002	0400090	Lamp, swan type (6.3 V 0.25A)
PL003	0400090	Lamp, swan type (6.3 V 0.25A)
PL004	0400090	Lamp, swan type (6.3 V 0.25A)
PL005	0400090	Lamp, swan type (6.3 V 0.25A)
PL006	0400090	Lamp, swan type (6.3 V 0.25A)
PL007	0400090	Lamp, swan type (6.3 V 0.25A)
PL008	0400090	Lamp, swan type (6.3 V 0.25A)
PL009	0400090	Lamp, swan type (6.3 V 0.25A)
P001	3850010	Remote Control Cord
J001	3850020	Output Cord (head)
R701	0125270	200 Ω 40W Enameld Wirewoun Resistor
R702	0125270	200 Ω 40W Enameld Wirewoun Resistor
R703	0125280	900 Ω 20W Enameld Wirewoun Resistor
R704	0125260	10 Ω 20W Enameld Wirewoun Resistor
R705	0125250	1.5 kΩ 20W Enameld Wirewoun Resistor
R706	0103471	470 Ω ½W C. Resistor
R707	0103471	470 Ω ½W C. Resistor

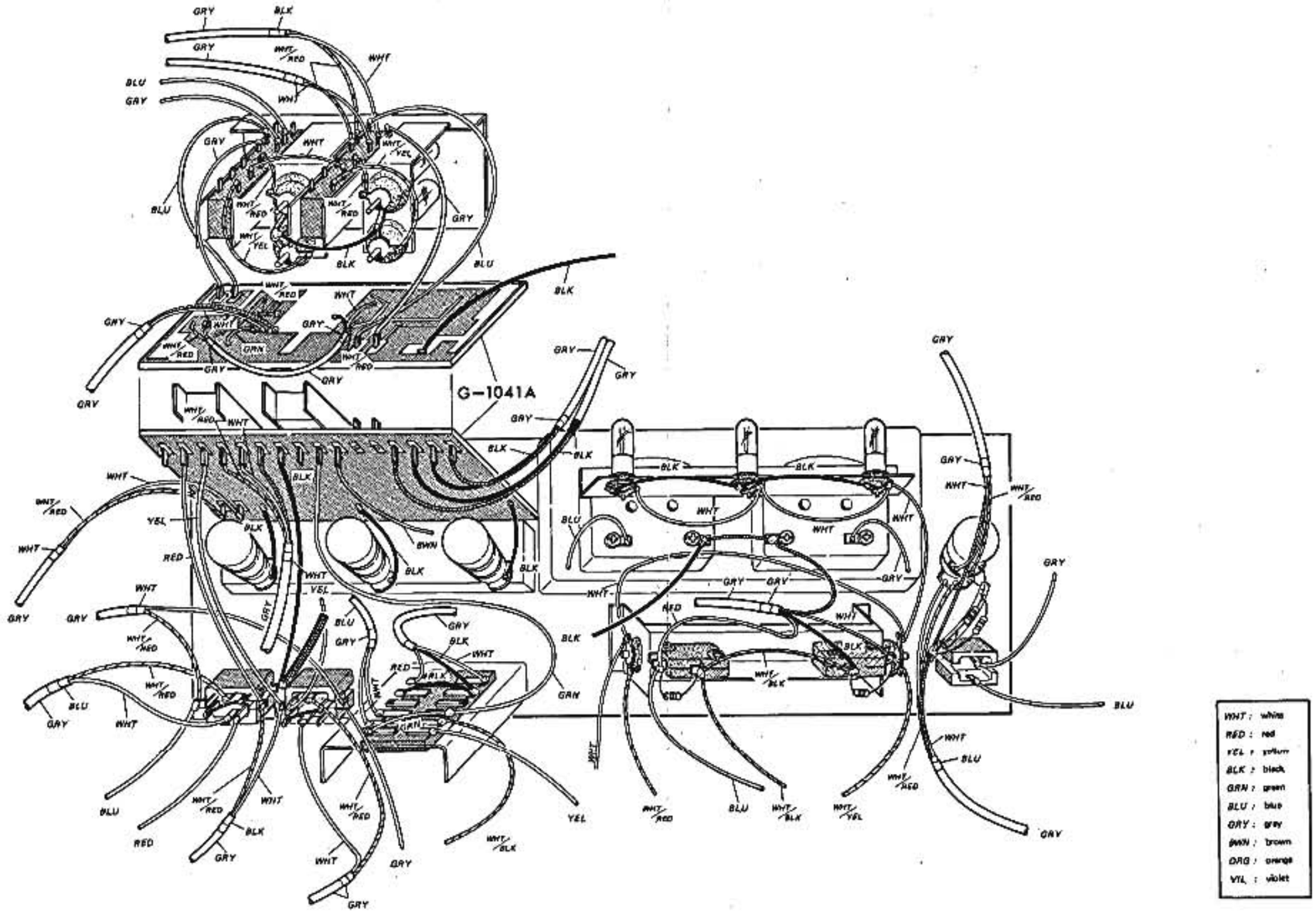
Parts No.	Stock No.	Description
C701	0599001	2.8 μF + 1 μF 250V MP Capacitor
C702	0599002	4 μF + 1 μF 250V MP Capacitor
C703	0599002	4 μF + 1 μF 250V MP Capacitor
C704	0559826	150 μF 160V El Capacitor
C705	0601158	0.15 μF 50V Mylar Capacitor
C706	0508470	47 μF 160V El Capacitor
SK705	0800190	0.1 μF-120 Ω AC400V Spark Killer
D701	0310360	10D-4 Diode
D702	0310360	10D-4 Diode
S701	1160080	Micro Switch, ML-200K
S702	1160080	Micro Switch, ML-200K
S703a	1160090	Micro Switch, MT-100
S703b	1160090	Micro Switch, MT-100
S705	1160060	Micro Switch, V-1A10
S706	1160060	Micro Switch, V-1A10
S707	1160060	Micro Switch, V-1A10
S708	1160060	Micro Switch, V-1A10
S709	1160060	Micro Switch, V-1A10
S710	1130230	Pushbutton Switch, LA-S7
S711a	1160050	Micro Switch, V-1A44
S711b	1160050	Micro Switch, V-1A44
S711c	1160050	Micro Switch, V-1A44
S712a-b	1110180	Slide Switch, SL-262B4
S713	1160050	Micro Switch, V-1A44
S714	1160050	Micro Switch, V-1A44
S715a-c	1102180	Rotary Switch, F-2-3-4
S716	2410260	Voltage Selector
RL808	1150070	MQ1293-OH DC48V Relay
PL701	0400090	Lamp, swan type (6.3 V 0.25A)
PL702	0400090	Lamp, swan type (6.3 V 0.25A)
PL703	0400110	Micro Lamp, T4.7 (6 V 30 mA)
T701	4000710	Power Transformer
J704	2450011	AC Outlet
F001	0430030	2A Fuse

14. WIRING DIAGRAM

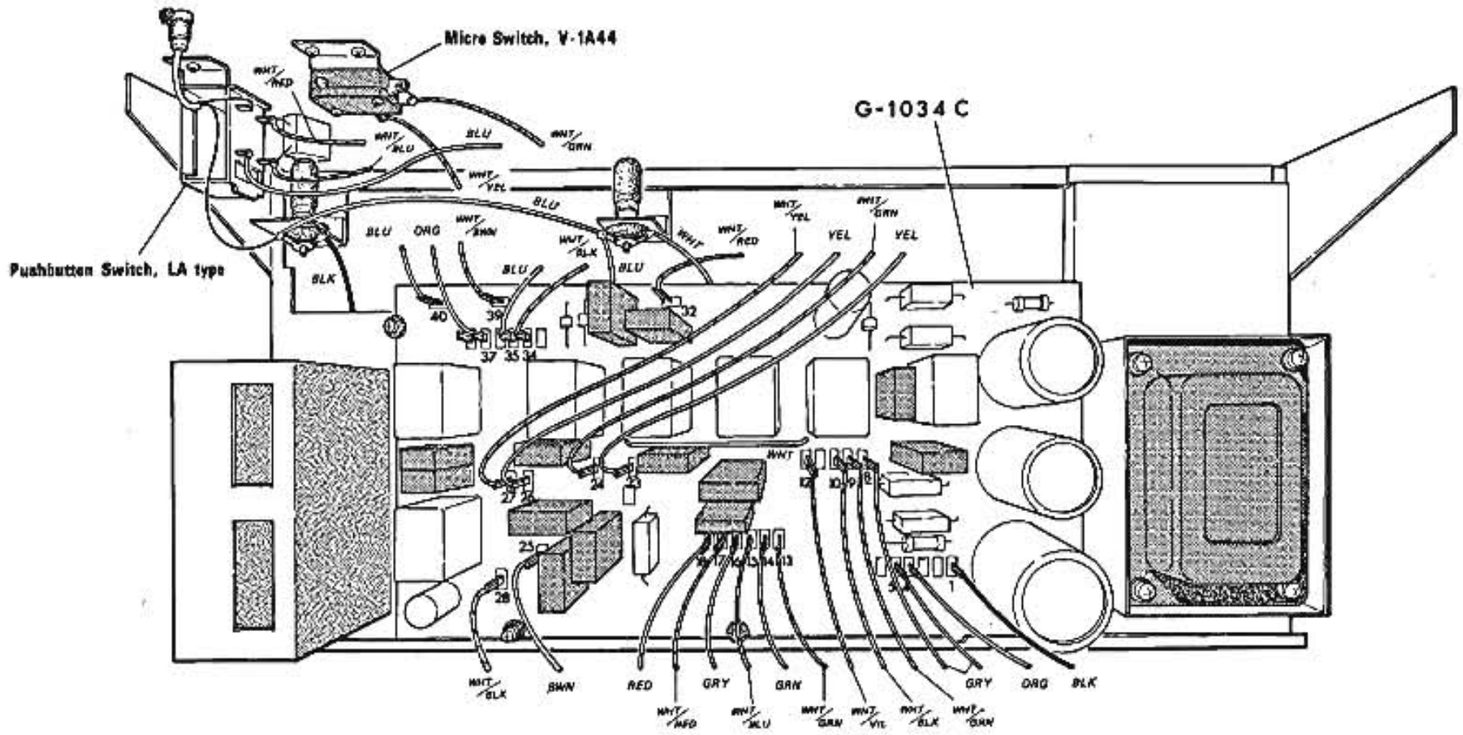
14-1 REEL PLATFORM ASS'Y



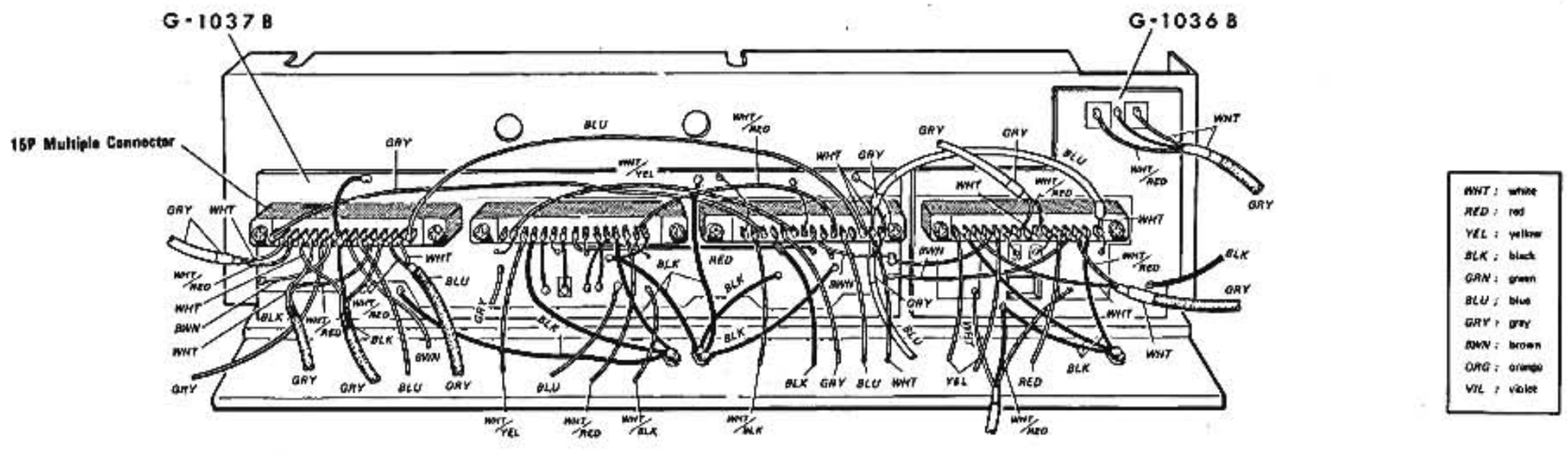
14-2 BACK PANEL ASS'Y, AMPLIFIER



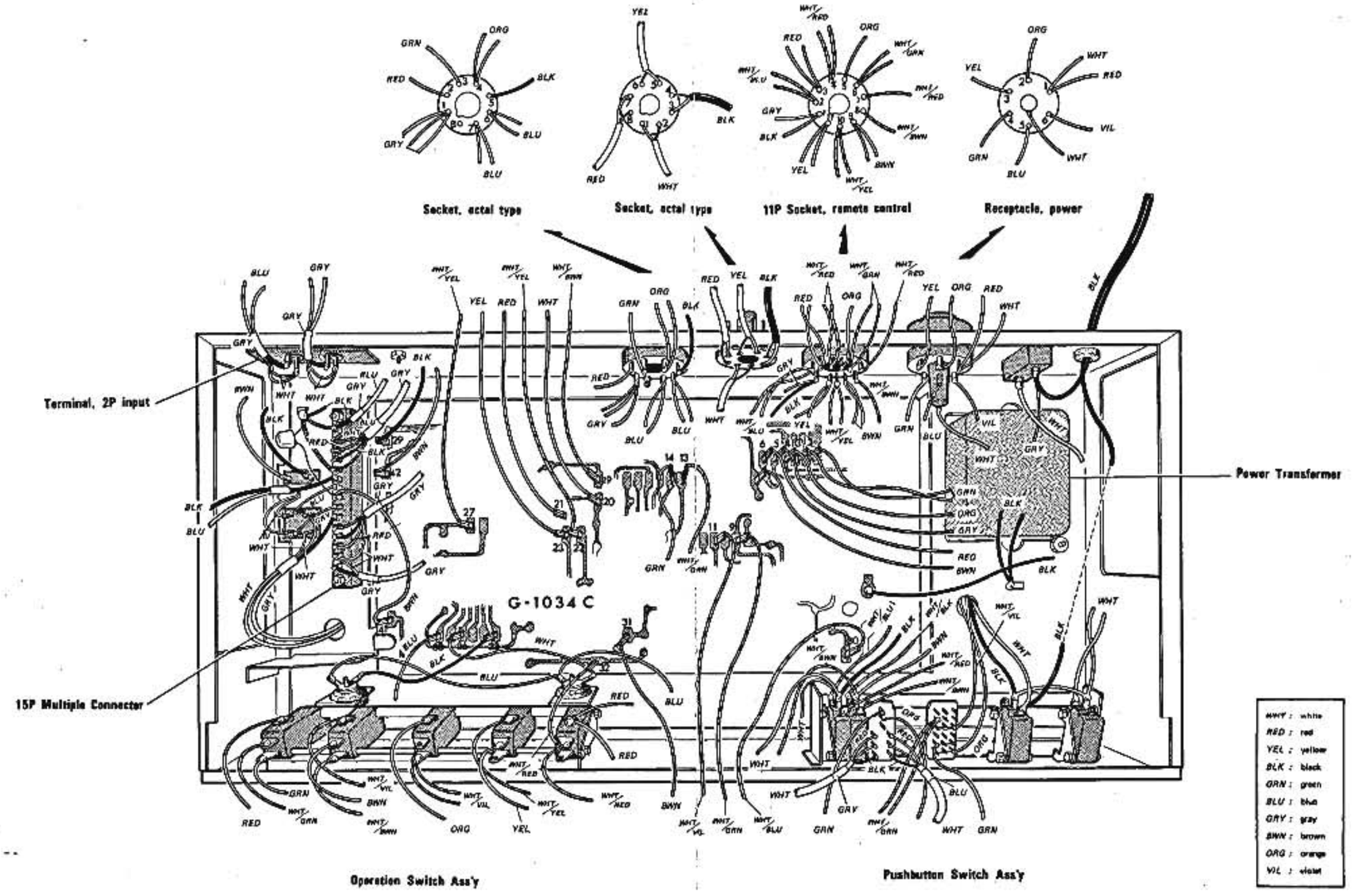
14-3 CONTROL PLATFORM ASS'Y(Top View)



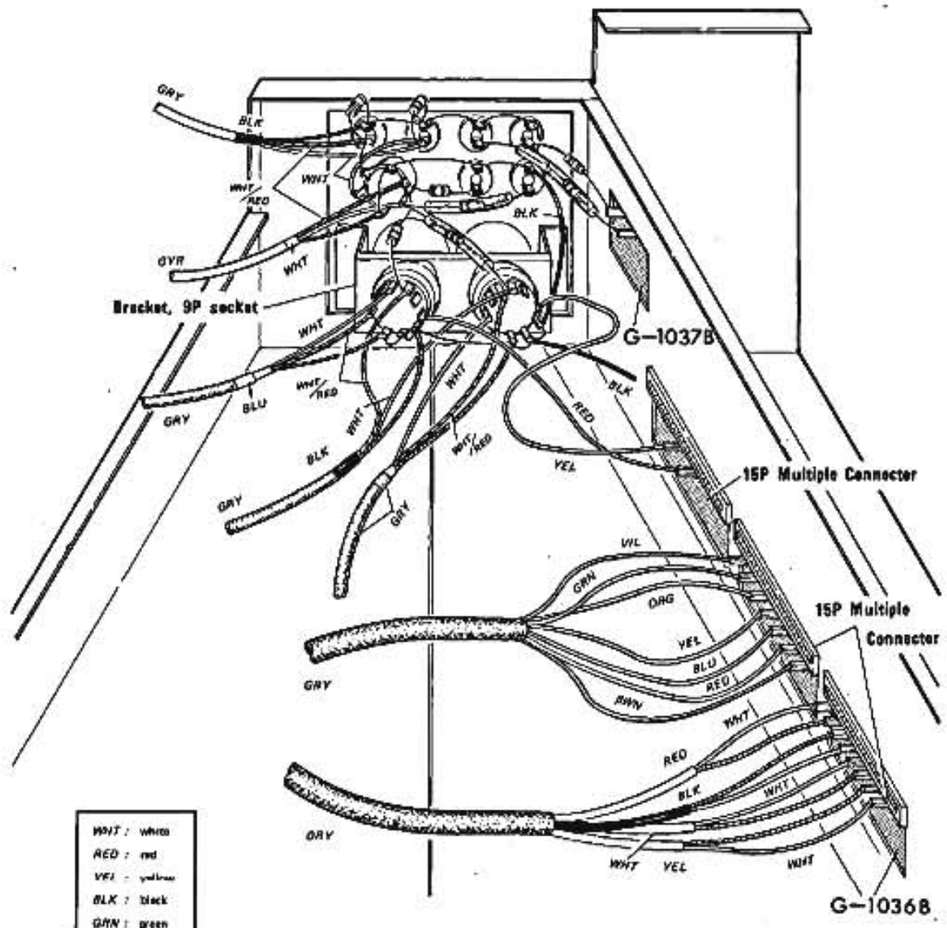
14-4 CHASSIS ASS'Y, AMPLIFIER



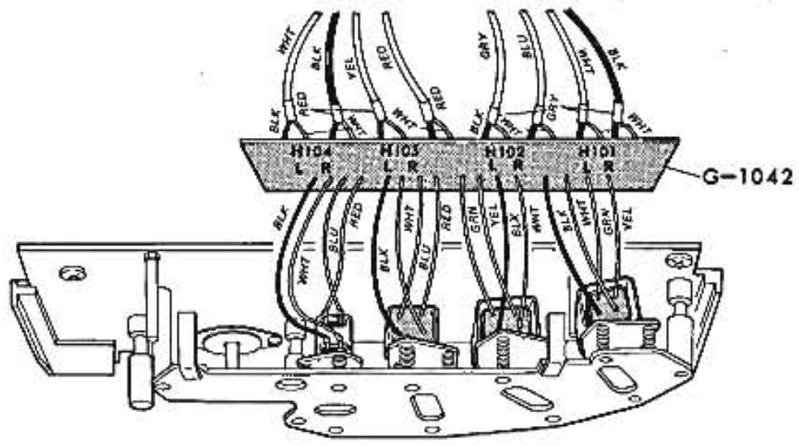
14-5 CONTROL PLATFORM ASS'Y (Bottom View)



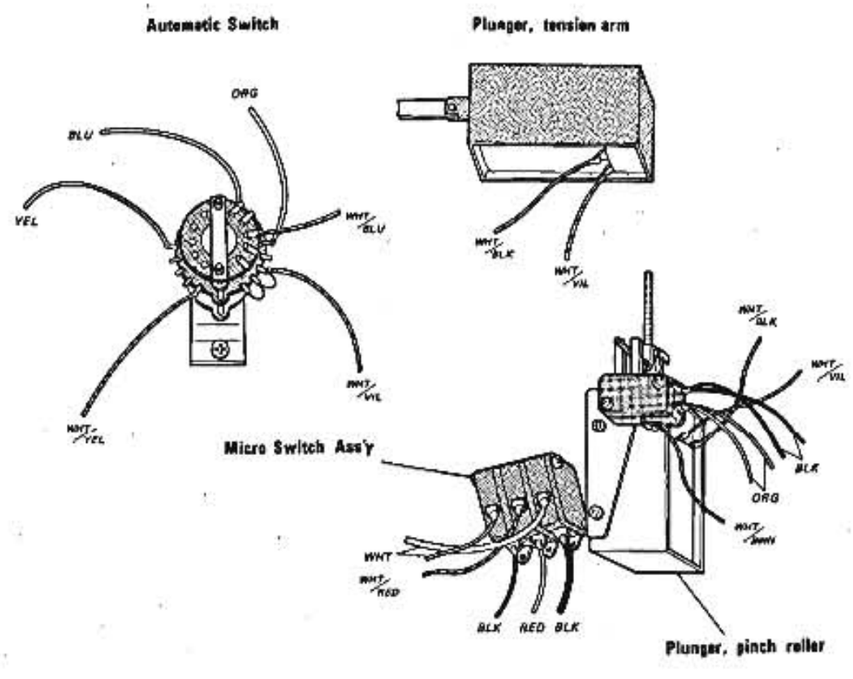
14-6 CHASSIS ASS'Y, AMPLIFIER



14-7 HEAD ASS'Y



14-8 OTHER PARTS



15 TOOLS REQUIRED

15-1. Hexagon Screwdriver

(See Figs. 15-1, 15-2, 15-3, 15-4, and 15-5)

This screwdriver is used for tightening or loosening the S type screws employed for installing the impedance wheel, the capstan wheel, the brake drums, the motor pulley and the left tension arm balancer.

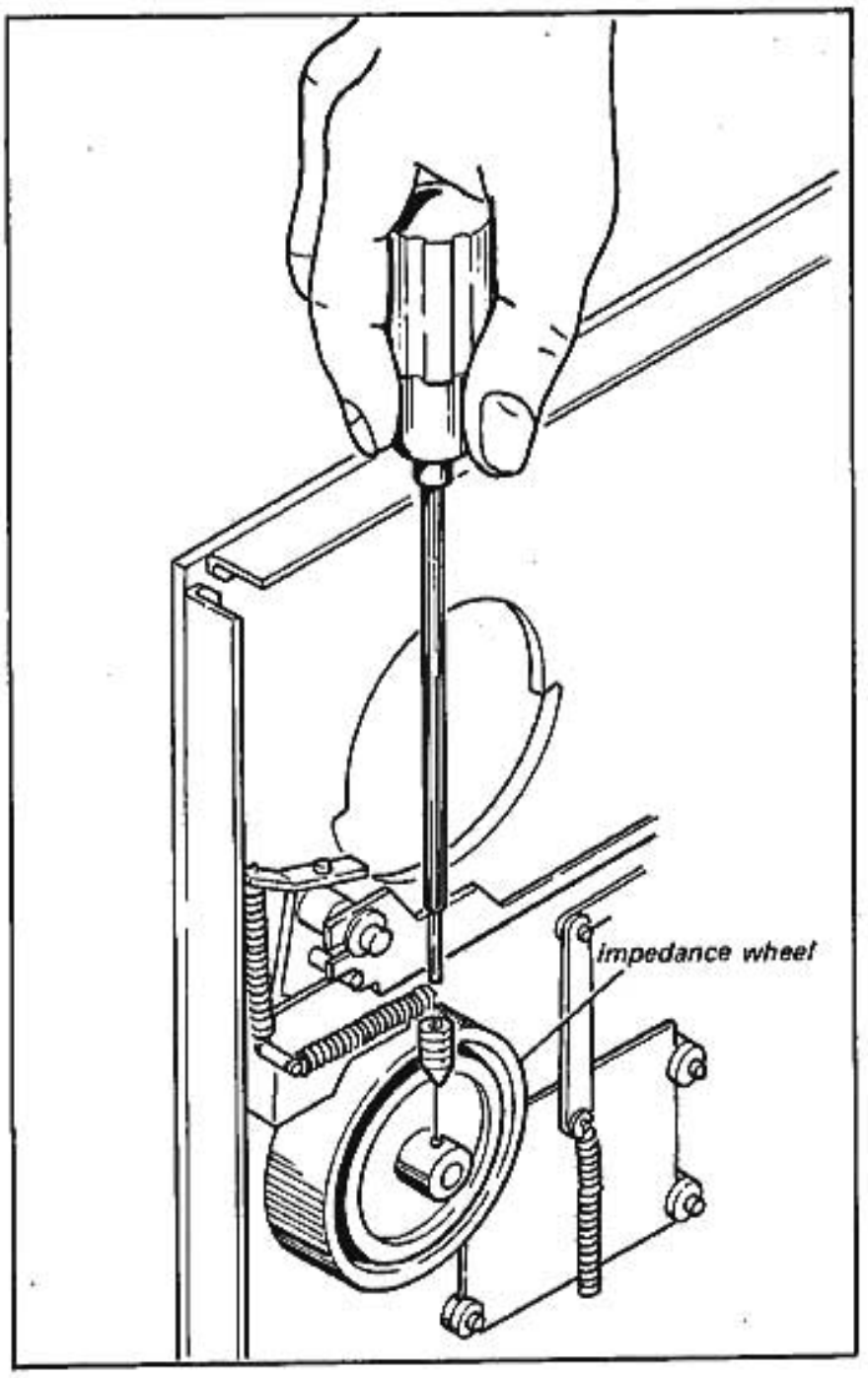


Fig. 15-1 *Hex screwdriver used in installing the impedance wheel*

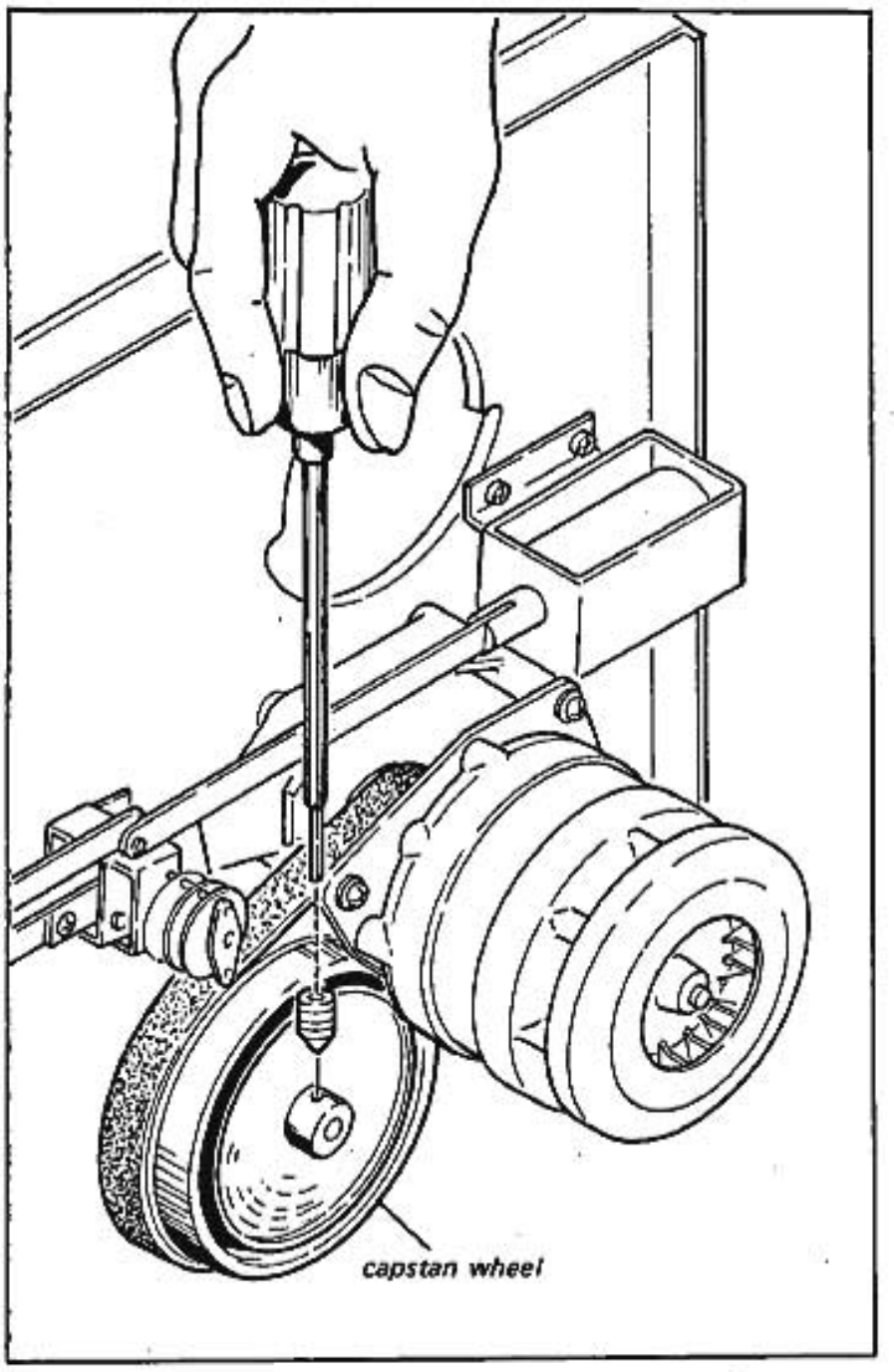


Fig. 15-2 *Screwdriver used in installing the capstan wheel*

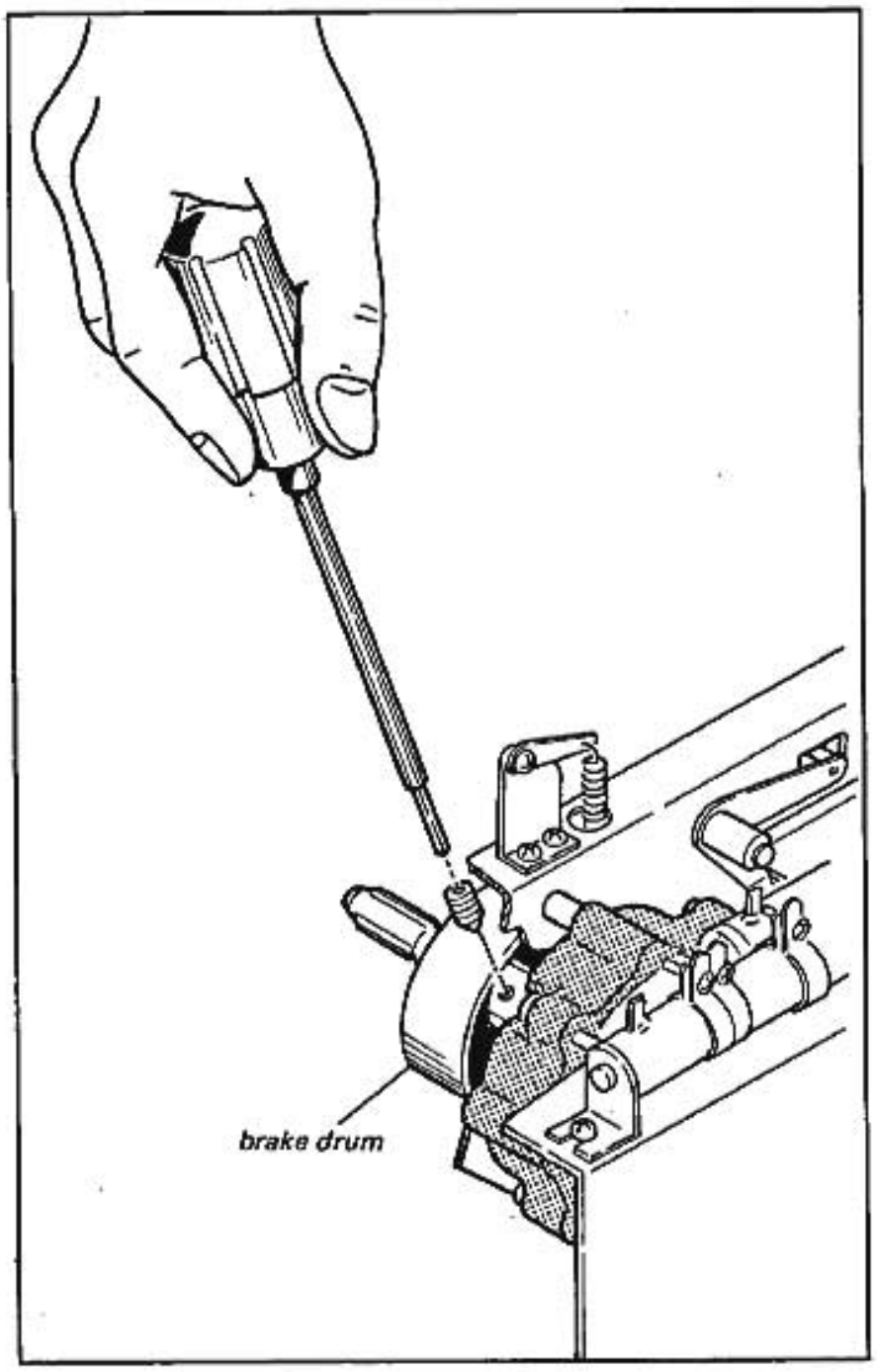


Fig. 15-3 Screwdriver used in installing the brake drum

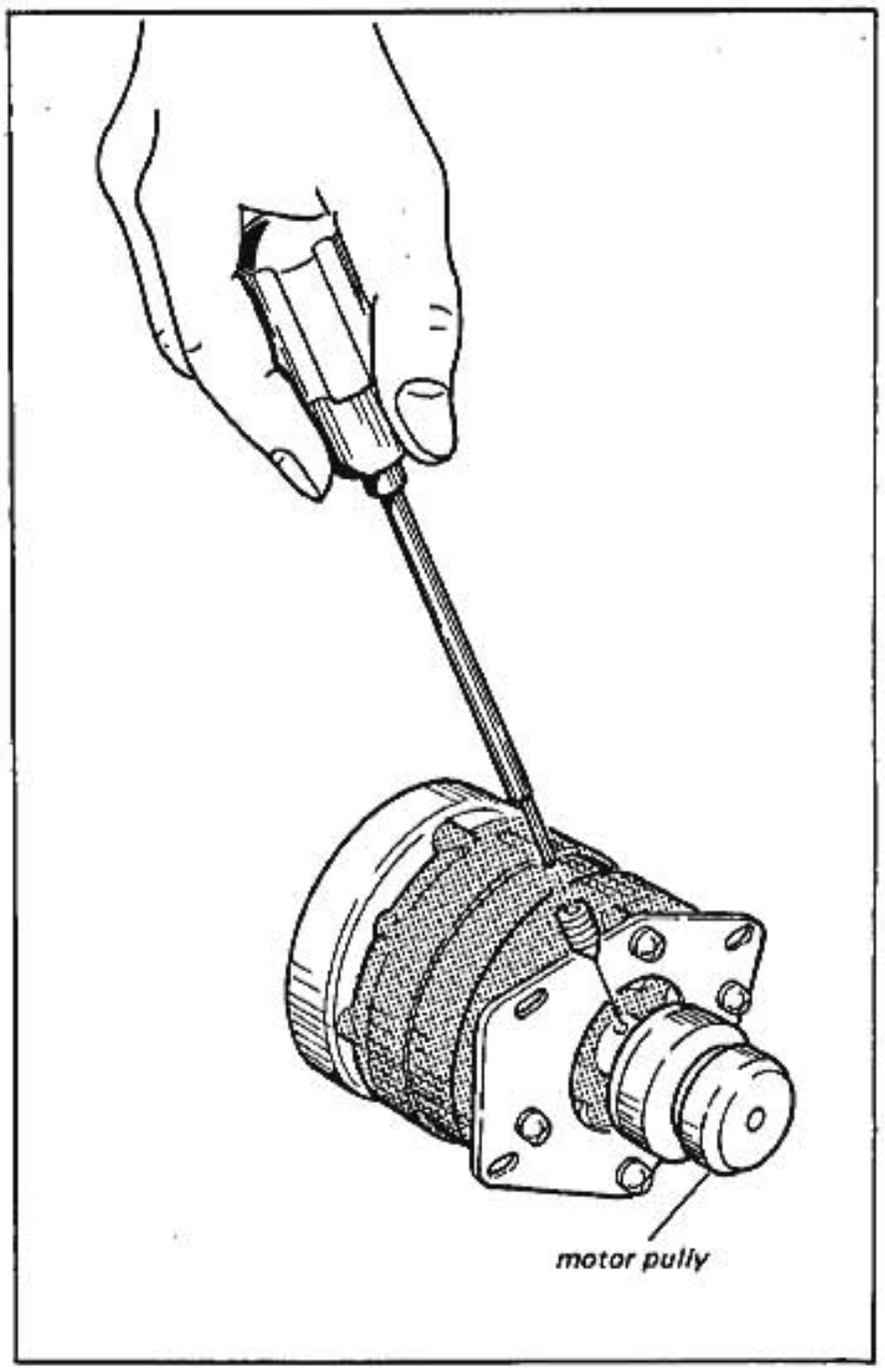


Fig. 15-4 Screwdriver used in installing the motor pully

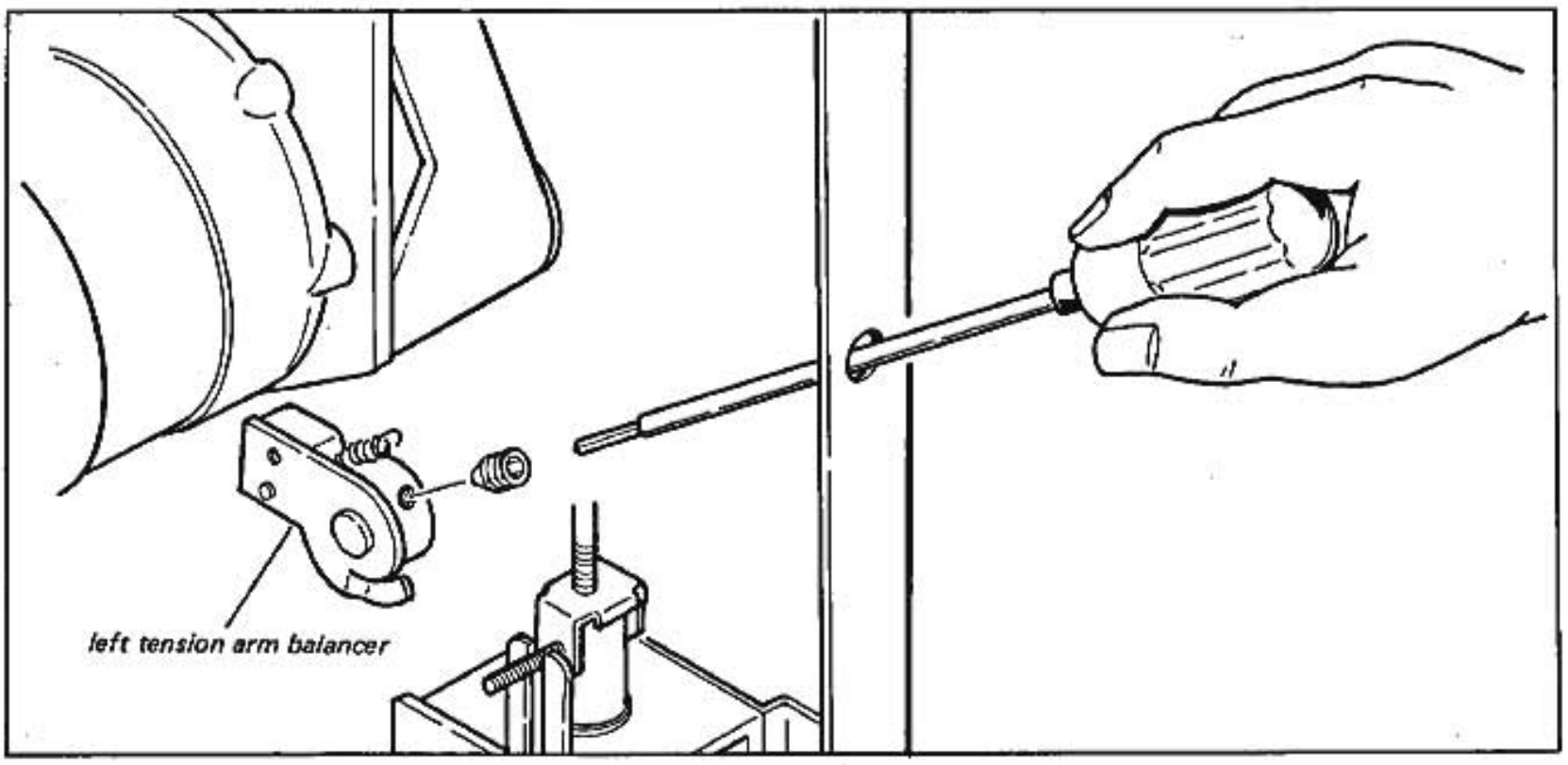


Fig. 15-5 Screwdriver used in installing the left tension arm balancer

15-2. Screwdriver for Left Tension Arm

(See Fig. 15-6)

This screwdriver is used for tightening or loosening the left tension arm set screw after inserting the set screw into the hole of the tension arm, with the two bosses on the screwdriver inserted into the respective holes of the set screw.

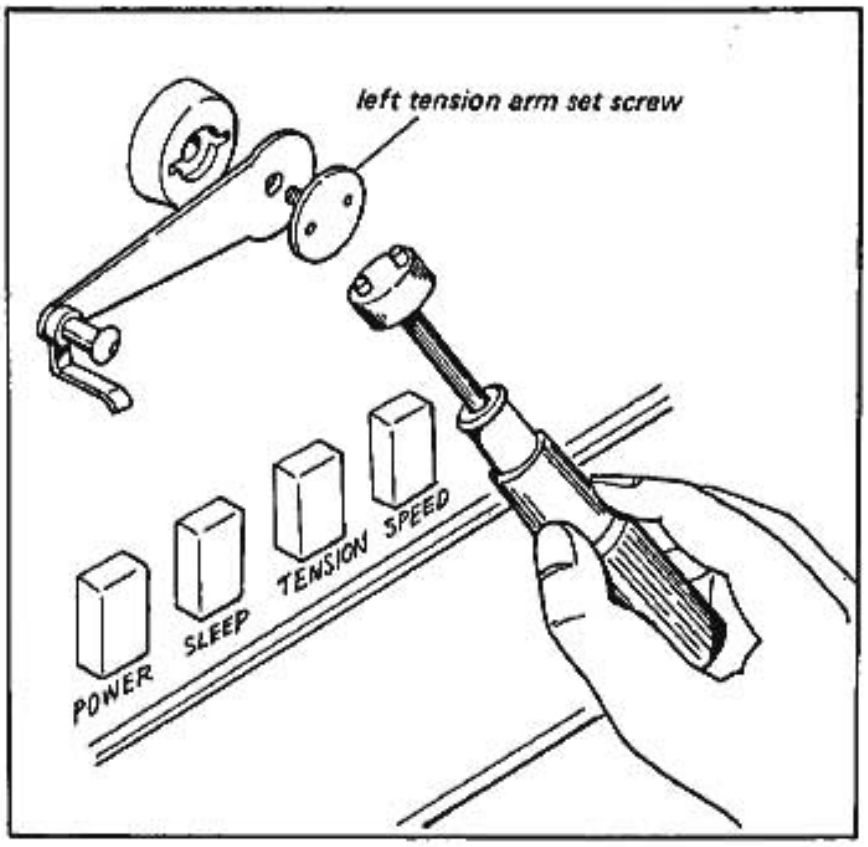


Fig. 15-6 *Screwdriver used in installing the left tension arm*

15-3. Screwdriver for Jack

(See Figs. 15-7, 15-8)

This screwdriver is used for the left tension arm holder and the R type nut of the headphone jack of the amplifier section.

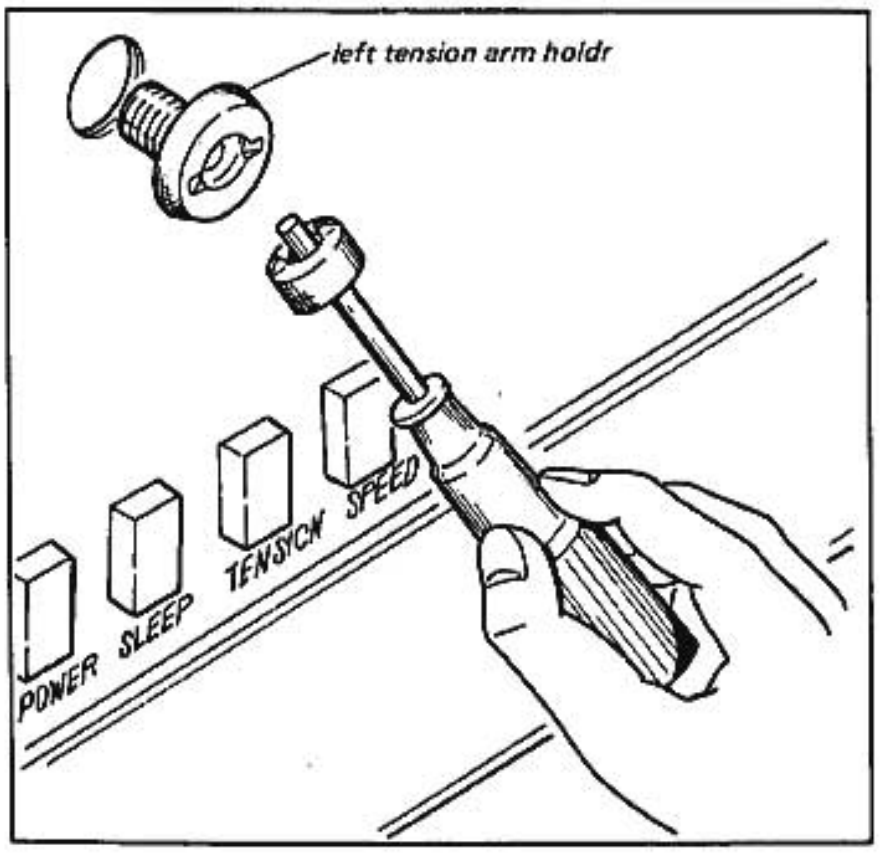


Fig. 15-7 *Screwdriver used for installing the left tension arm holder*

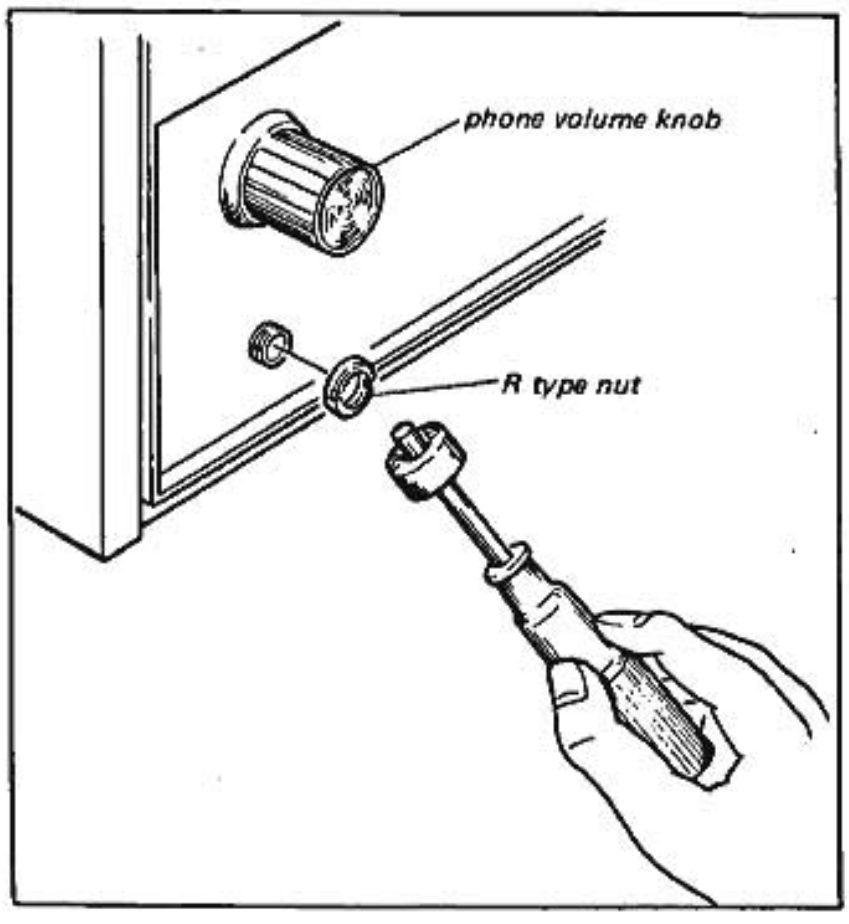


Fig. 15-8 *Screwdriver used for installing the headphone jack R type nut*

15-4. Special Type Screwdriver

(See Fig. 15-9)

This screwdriver is used for the stopper pins and spring hook pins (Part No. 64 to 67) referred to in the section 12-7-1. Disassembly of the Mechanical Section (2).

15-5. Reel Motor Positioning Tool

This screwdriver is used for positioning the reel motors (when they are installed to the reel motor mounting bracket) by inserting it into the reel motor shafts and also for tightening or loosening the screws for reel motors. See Fig. 10-13 in the section 10-6, Reel Motor Replacement.

15-6. Spring Scale, large (3kg)

This scale is used for measuring the pinch roller pressure. See Fig. 6-5 in the section 6-4, Pinch Roller Pressure Adjustment.

15-7. Spring Scale, small (300g)

This scale is used for measuring the torque of the reel motors. See Fig. 6-1 in the section 6-1, Reel Motor Torque Adjustment or Brake Torque Adjustment (Section 6-3).

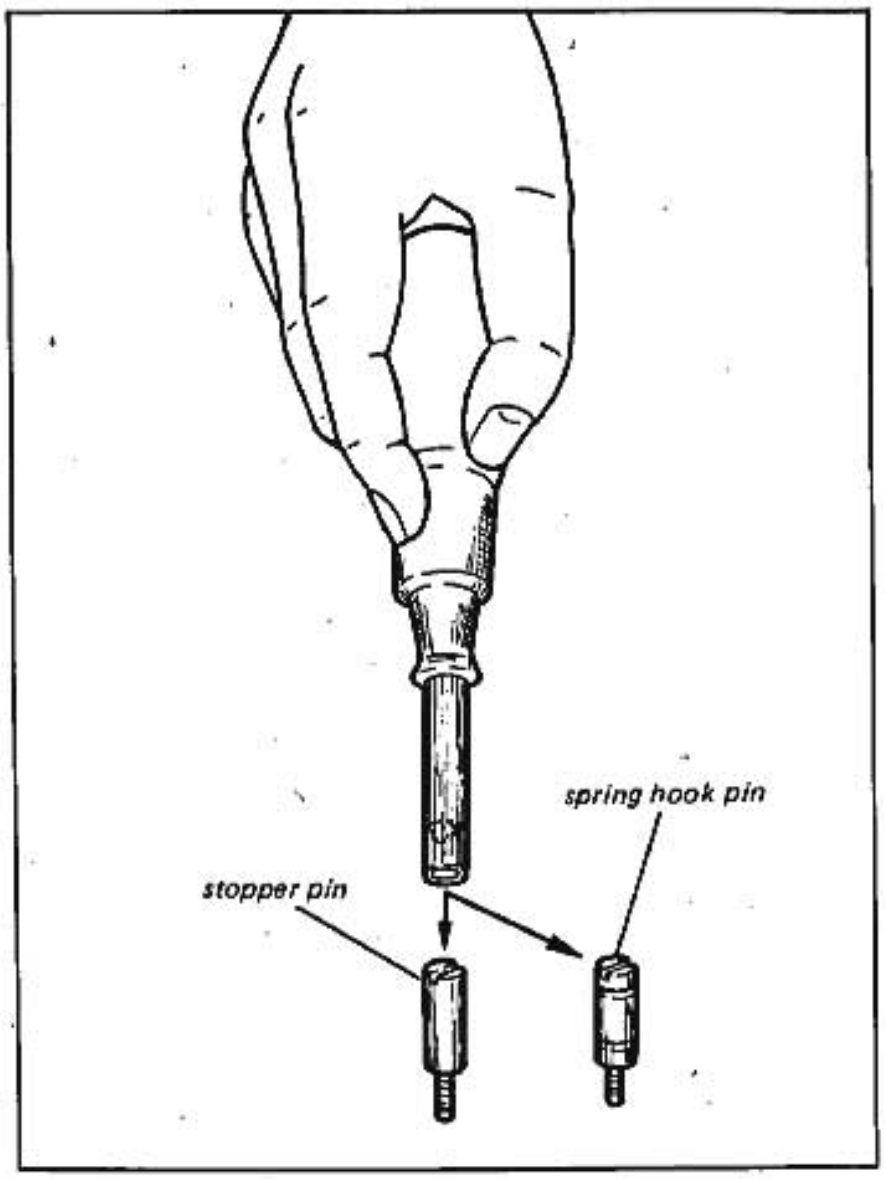


Fig. 15-9 *Special screwdriver used in installing the stopper pin and spring hook pin*