

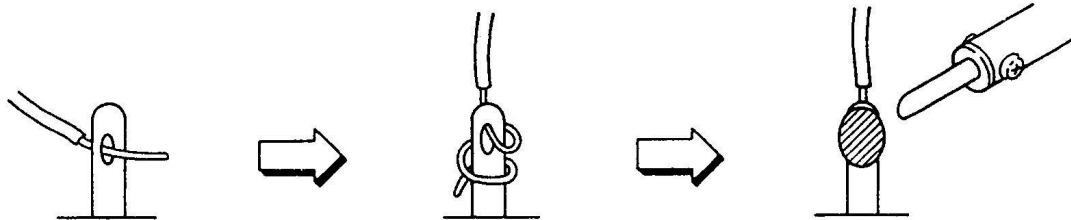
SAFETY INSTRUCTIONS

SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for **C** or **A**, specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks, line-in-out jacks etc.)

PRECAUTIONS DURING SERVICING

1. Parts identified by the \triangle symbol parts are critical for safety.
Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
 - 1) Wires covered with PVC tubing
 - 2) Double insulated wires
 - 3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
 - 1) Insulation Tape
 - 2) PVC tubing
 - 3) Spacers (Insulating Barriers)
 - 4) Insulation sheets for transistors
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

SECTION 1

SERVICE MANUAL

TABLE OF CONTENTS

| | | |
|-------|---|----|
| I. | SPECIFICATIONS | 4 |
| II. | DISMANTLING OF UNIT | 5 |
| III. | CONTROLS | 6 |
| IV. | PRINCIPAL PARTS LOCATION | 8 |
| V. | VOLTAGE AND CYCLE CONVERSION | 9 |
| | 1. VOLTAGE CONVERSION | 9 |
| | 2. CYCLE CONVERSION | 9 |
| VI. | OPERATING PRINCIPLES | 10 |
| | 1. TIMING CHART OF EACH MODE | 12 |
| | 2. EXPLANATION OF EACH MODE | 18 |
| | 3. EXPLANATION OF EACH CIRCUIT | 21 |
| VII. | MECHANISM ADJUSTMENT | 26 |
| | 1. BRAKE BAND POSITION ADJUSTMENT AND BRAKE TENSION ADJUSTMENT | 26 |
| | 2. PLAY PLUNGER POSITION ADJUSTMENT | 27 |
| | 3. PINCH ROLLER PRESSURE ADJUSTMENT | 27 |
| | 4. TENSION SERVO ADJUSTMENT | 28 |
| | 5. LOADER PLUNGER POSITION ADJUSTMENT | 29 |
| | 6. TAPE SPEED ADJUSTMENT | 29 |
| VIII. | HEAD ADJUSTMENT | 30 |
| IX. | AMPLIFIER ADJUSTMENT | 32 |
| X. | DC RESISTANCE OF VARIOUS COILS | 35 |
| XI. | CLASSIFICATION OF VARIOUS P.C BOARDS | 35 |
| | 1. P.C BOARD TITLES AND IDENTIFICATION NUMBERS | 35 |
| | 2. COMPOSITION OF VARIOUS P.C BOARDS | 36 |

For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

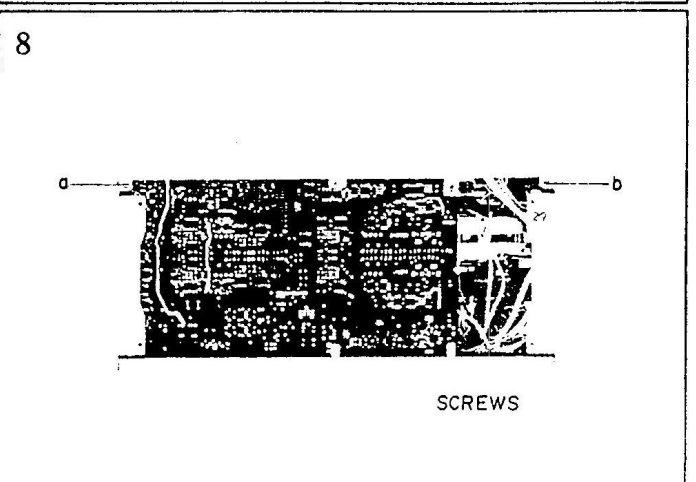
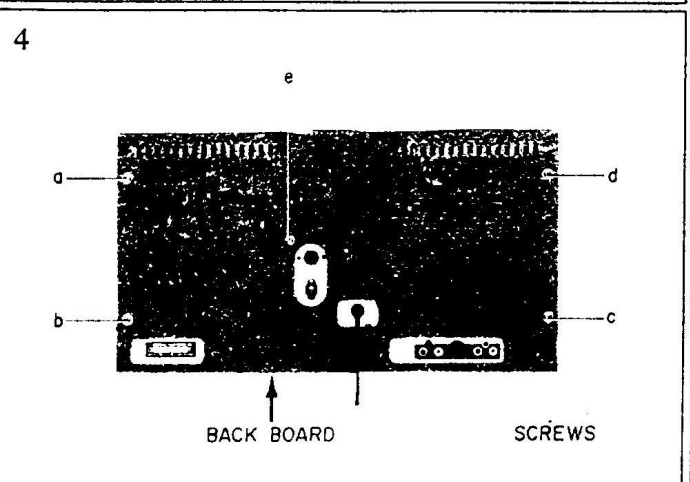
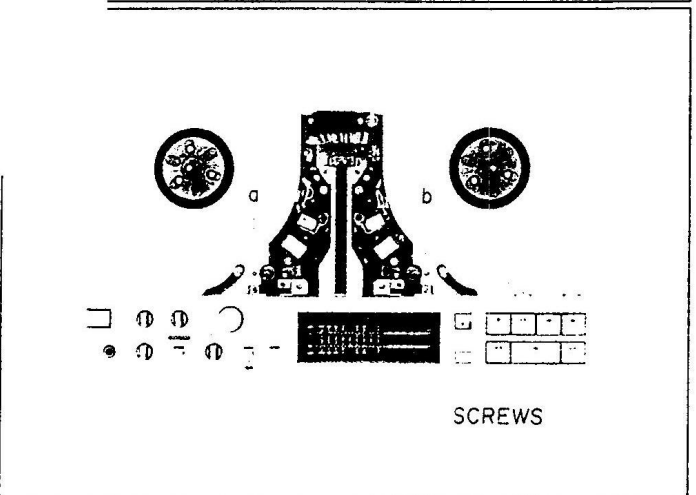
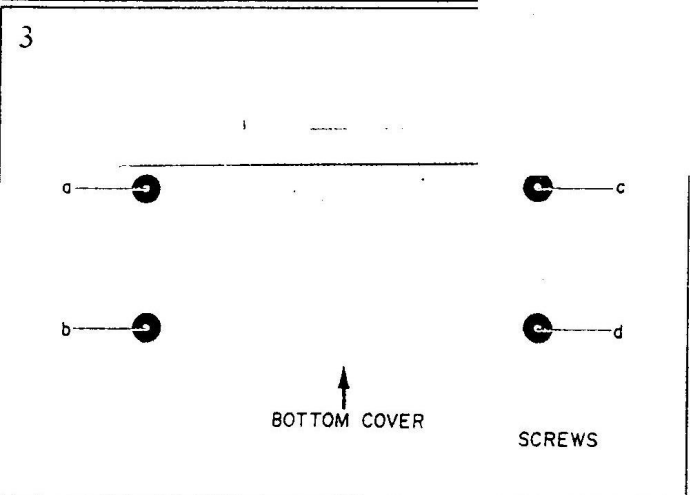
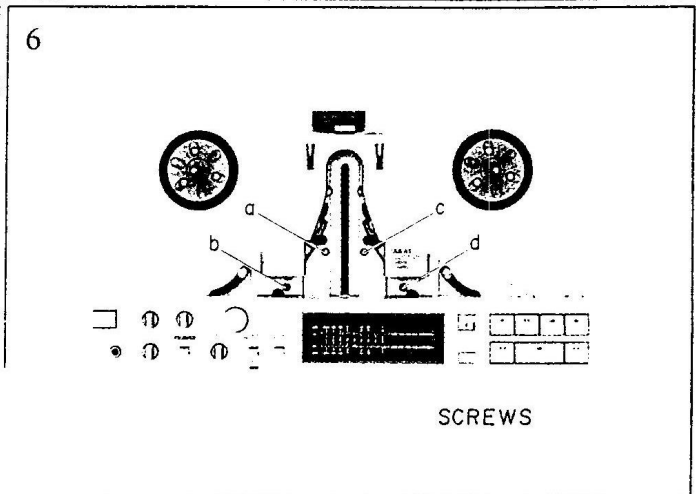
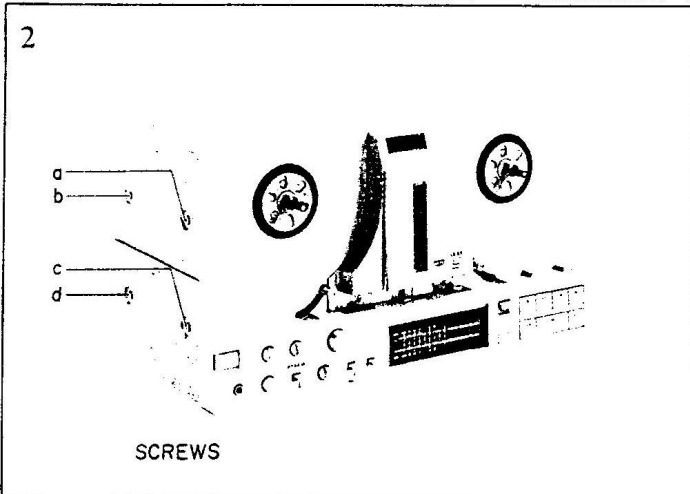
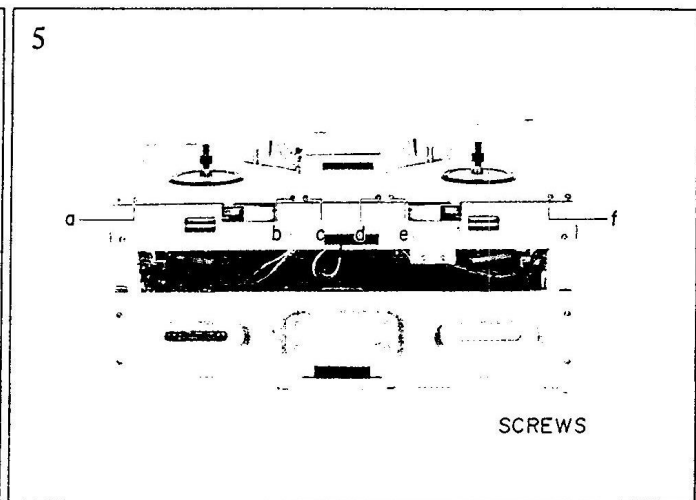
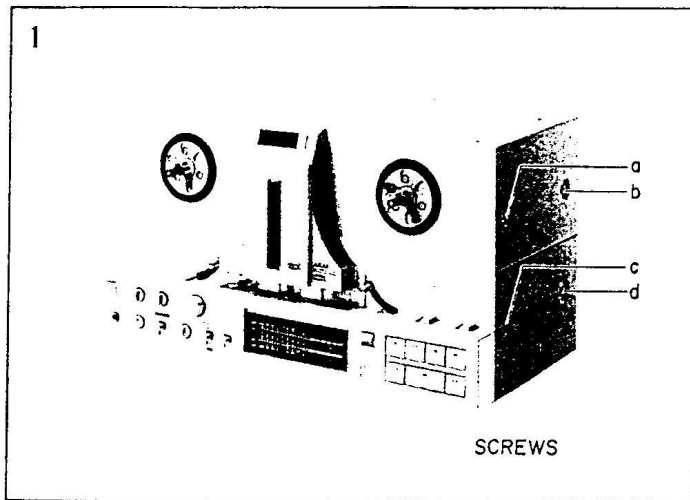
I. SPECIFICATIONS

| | |
|--------------------------------------|---|
| TRACK SYSTEM | 4 Track 2 Channel Stereo System |
| REEL CAPACITY | Up to 7" reel |
| HEADS | GX head for Recording x 2 GX head for Playback x 2 Erase head x 2 |
| MOTORS | FG Servo DC motor for capstan drive x 1 DC motor for reel drive x 2 |
| TAPE SPEED | 19 cm/s \pm 0.8% (7-1/2 ips.) 9.5 cm/s \pm 1.0% (3-3/4 ips.) |
| WOW & FLUTTER | Less than 0.03% WRMS, 0.07% DIN 45500 at 19 cm/s Less than 0.04% WRMS, 0.10% DIN 45500 at 9.5 cm/s |
| TAPE WINDING TIME | 80 sec. using 360 m (1200 ft.) tape |
| FREQUENCY RESPONSE (Using a EE Tape) | 25 to 33,000 Hz \pm 3 dB (-20 VU) at 19 cm/s 25 to 26,000 Hz \pm 3 dB (0 VU) at 19 cm/s 25 to 25,000 Hz \pm 3 dB (-20 VU) at 9.5 cm/s 25 to 15,000 Hz \pm 3 dB (0 VU) at 9.5 cm/s |
| SIGNAL TO NOISE RATIO | Better than 63 dB at 19 cm/s DIN 45500 |
| HARMONIC DISTORTION | Less than 0.5% at 19 cm/s |
| INPUT | Required microphone impedance: 600 ohms Line: 70 mV (input impedance 47 kohms) |
| OUTPUT | Line: 0.775V at 0 VU Required load impedance: more than 20 kohms Phone: 1.3 mV/8 ohms at 0 VU |
| DIN | Input: 2.0 mV (input impedance 10 kohms) Output: 0.3V Required load impedance: more than 20 kohms |
| DIMENSIONS | 440(W) x 244(H) x 227(D) mm (17.3 x 9.6 x 8.9") |
| WEIGHT | 17.0 kg (37.5 lbs) |
| POWER REQUIREMENTS | 100V, 50/60 Hz for Japan 120V, 60 Hz for USA and Canada 220V, 50 Hz for Europe except UK 240V, 50 Hz for UK and Australia 110/120/220/240V, 50/60 Hz switchable for the other countries |
| POWER CONSUMPTION | JPN 30W U/T, CSA, AAL 50W |

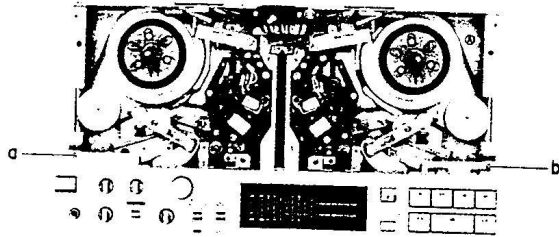
* For improvement purposes, specifications and design are subject to change without notice.

II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.

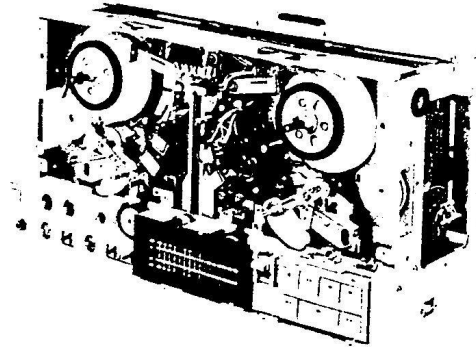


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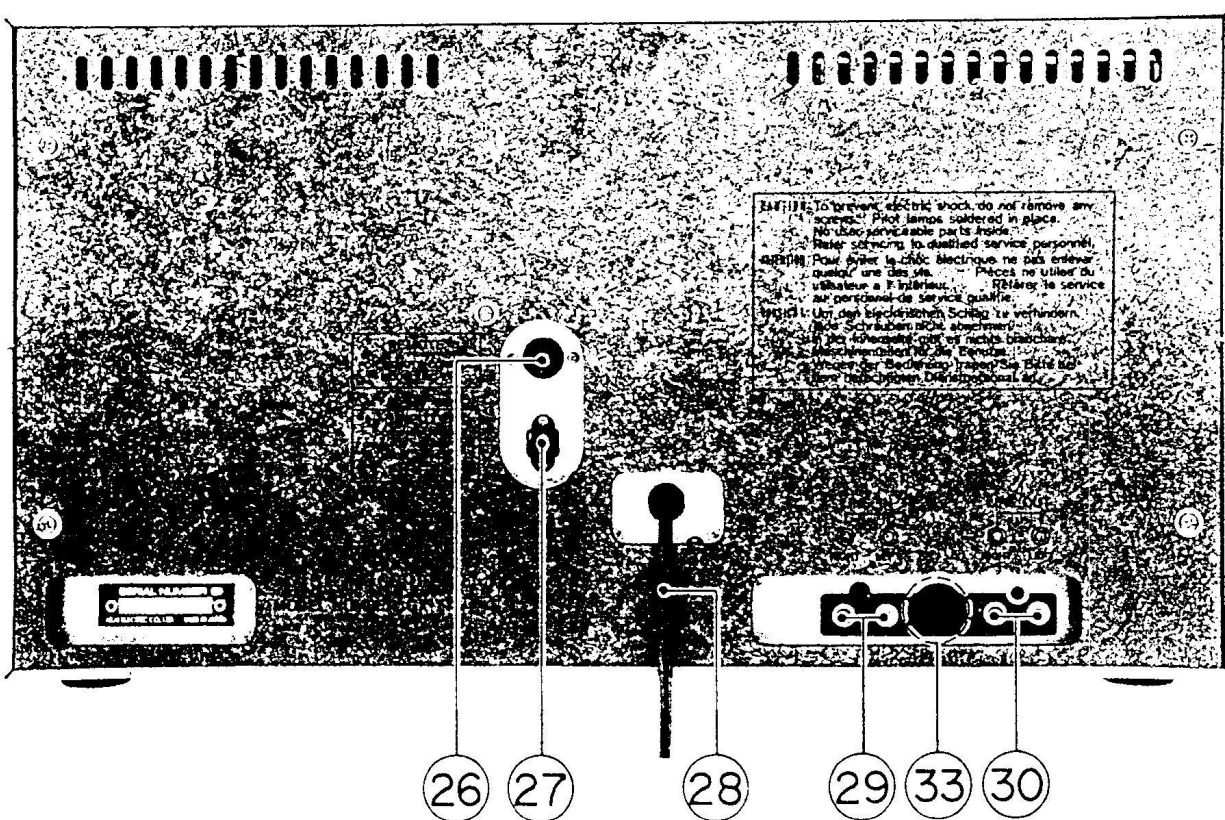
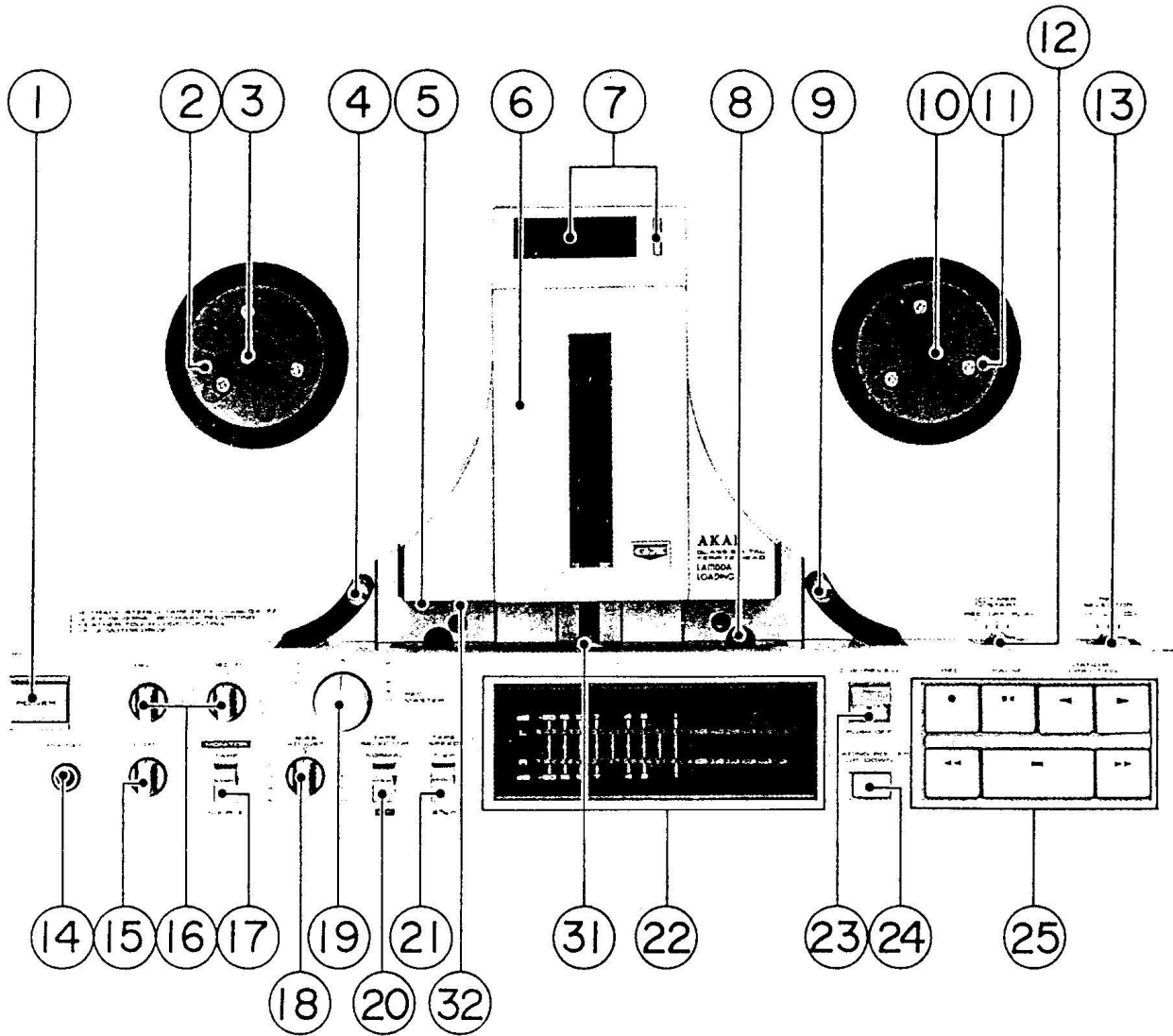
SCREWS

10



III. CONTROLS

1. POWER SWITCH
2. SUPPLY REEL TABLE
3. REEL STOPPER
4. TENSION ARM
5. CAPSTAN
6. HEAD COVER
7. REAL TIME COUNTER and RESET BUTTON
8. PINCH ROLLER
9. TENSION ARM
10. REEL STOPPER
11. TAKE UP REEL TABLE
12. TIMER START SELECTOR
13. REVERSE (REV) SELECTOR
14. HEADPHONE (PHONES) JACK
15. OUTPUT CONTROL
16. RECORDING INPUT CONTROLS (REC-L, REC-R)
17. MONITOR SELECTOR
18. BIAS ADJUSTMENT (ADJUST) CONTROL
19. RECORDING (REC) MASTER CONTROL
20. TAPE SELECTOR
21. TAPE SPEED SELECTOR
22. DIGITAL BAR METERS
23. CUE/REVIEW LEVER
24. LOADING ROLLER UP/DOWN BUTTON
25. OPERATION BUTTONS
 - RECORDING BUTTON (● REC) and INDICATOR
 - PAUSE BUTTON (■■) and INDICATOR
 - REVERSE BUTTON (◀)
 - FORWARD BUTTON (▶)
 - REWIND BUTTON (◀◀)
 - STOP BUTTON (■)
 - FAST FORWARD BUTTON (▶▶)
 - STANDBY/DIRECTION INDICATORS (◀ and ▶)
26. REMOTE CONTROL JACK
27. EXTERNAL POWER SUPPLY JACK
(INPUT DC 15V 200 mA)
28. POWER CORD
29. LINE IN JACKS
30. LINE OUT JACKS
31. LOADING ROLLER
32. SENSING PINS
33. DIN JACK (Some models do not have this facility)



IV. PRINCIPAL PARTS LOCATION

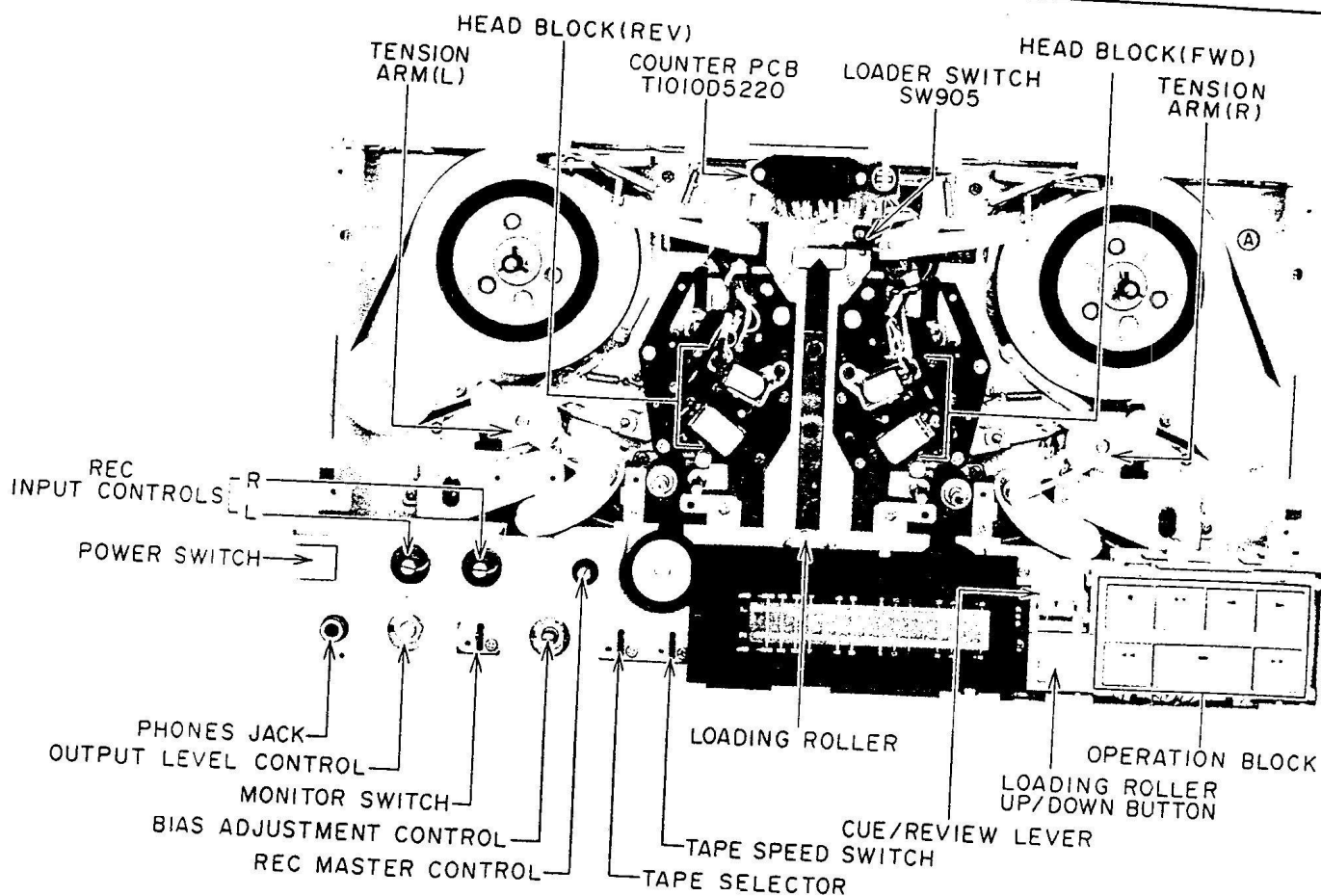


Fig. 2 Front View

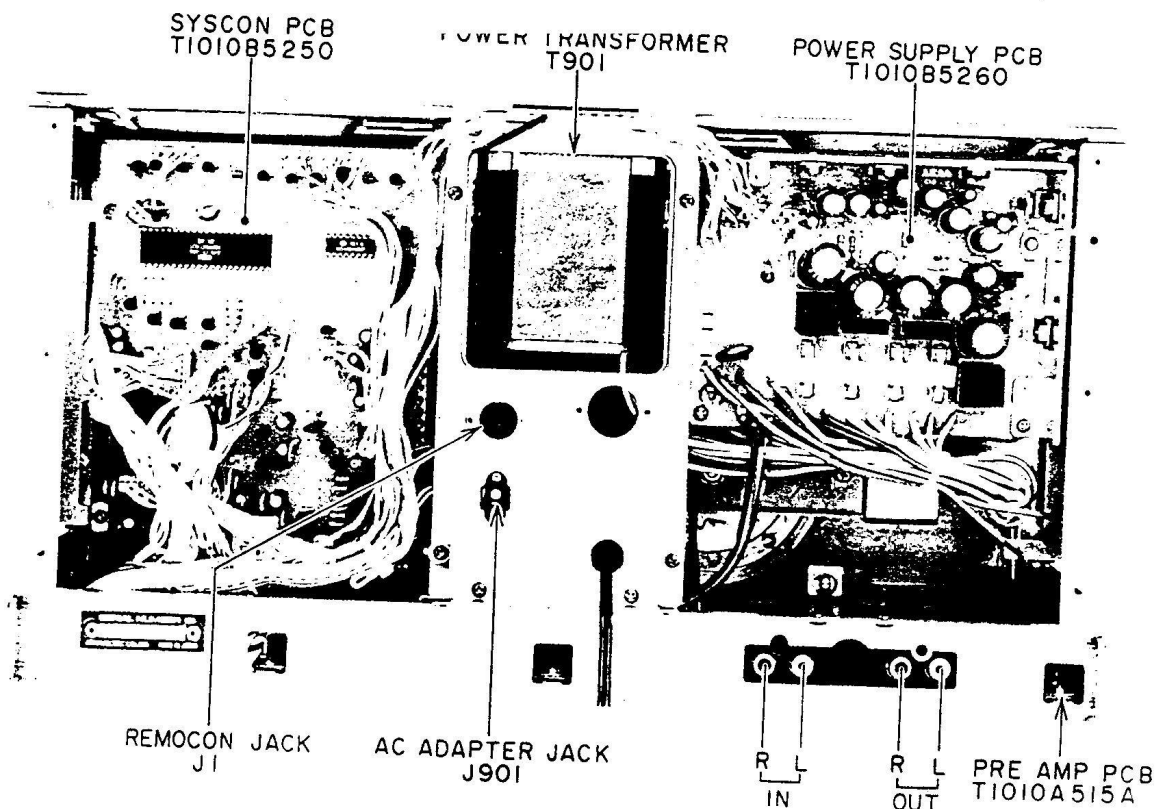


Fig. 3 Rear View

V. VOLTAGE AND CYCLE CONVERSION

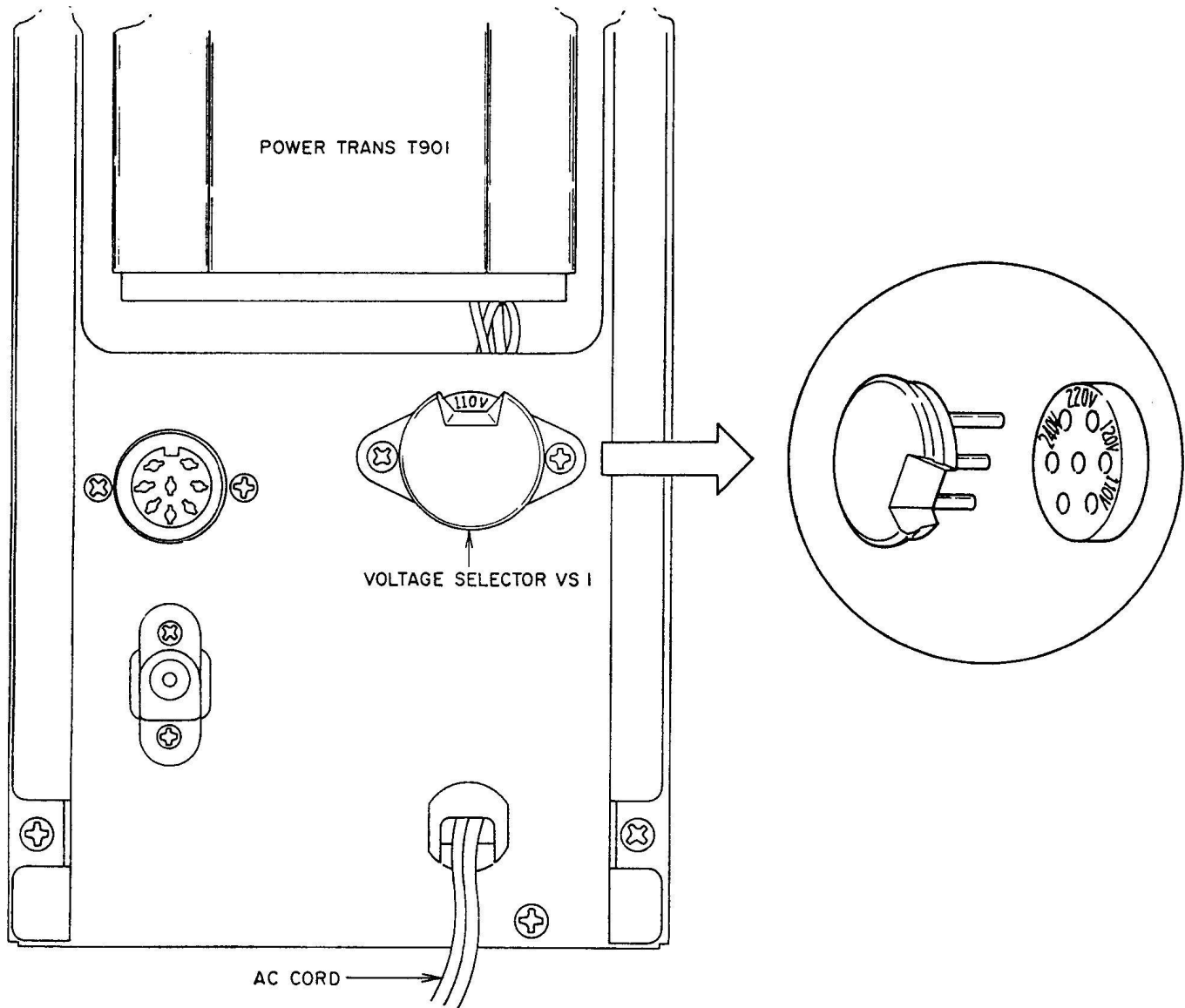


Fig. 4 Voltage Conversion (U/T Model Only)

1. VOLTAGE CONVERSION

Models for Canada, Europe, USA, UK, Australia and Japan are not equipped with this facility.

Each machine is preset at the factory according to destination, but some machines can be set to 110V, 120V or 240V as required.

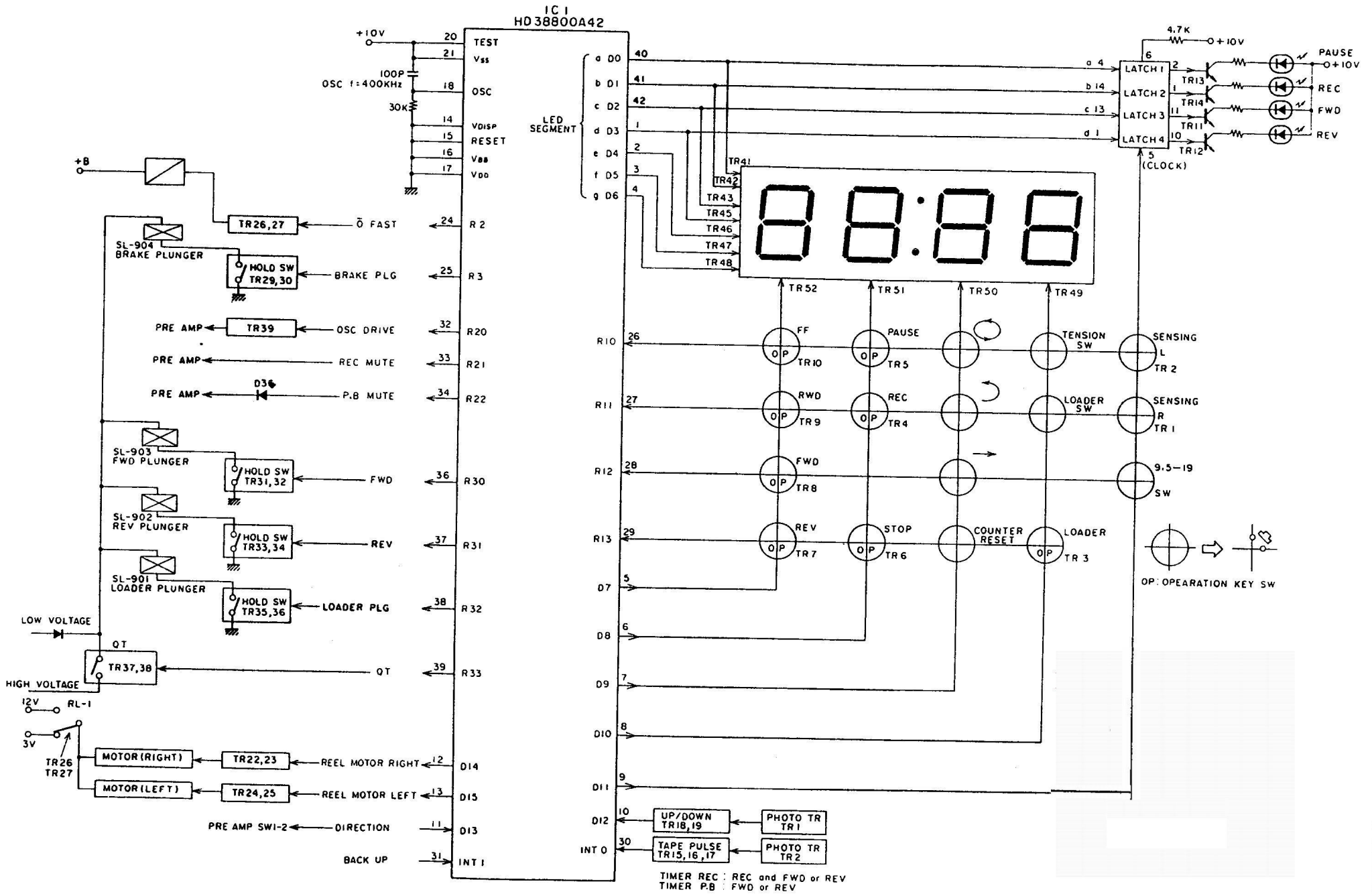
If voltage change is necessary, this can be accomplished as follows:

- 1) Remove the back board and look for the voltage selector on the center portion of the machine.
- 2) Change the position of voltage selector plugs so that the voltage to be used coincides with the voltage shown through the opening of voltage selector plug.

2. CYCLE CONVERSION

With DC motor, cycle conversion is not necessary.

VI. OPERATING PRINCIPLES



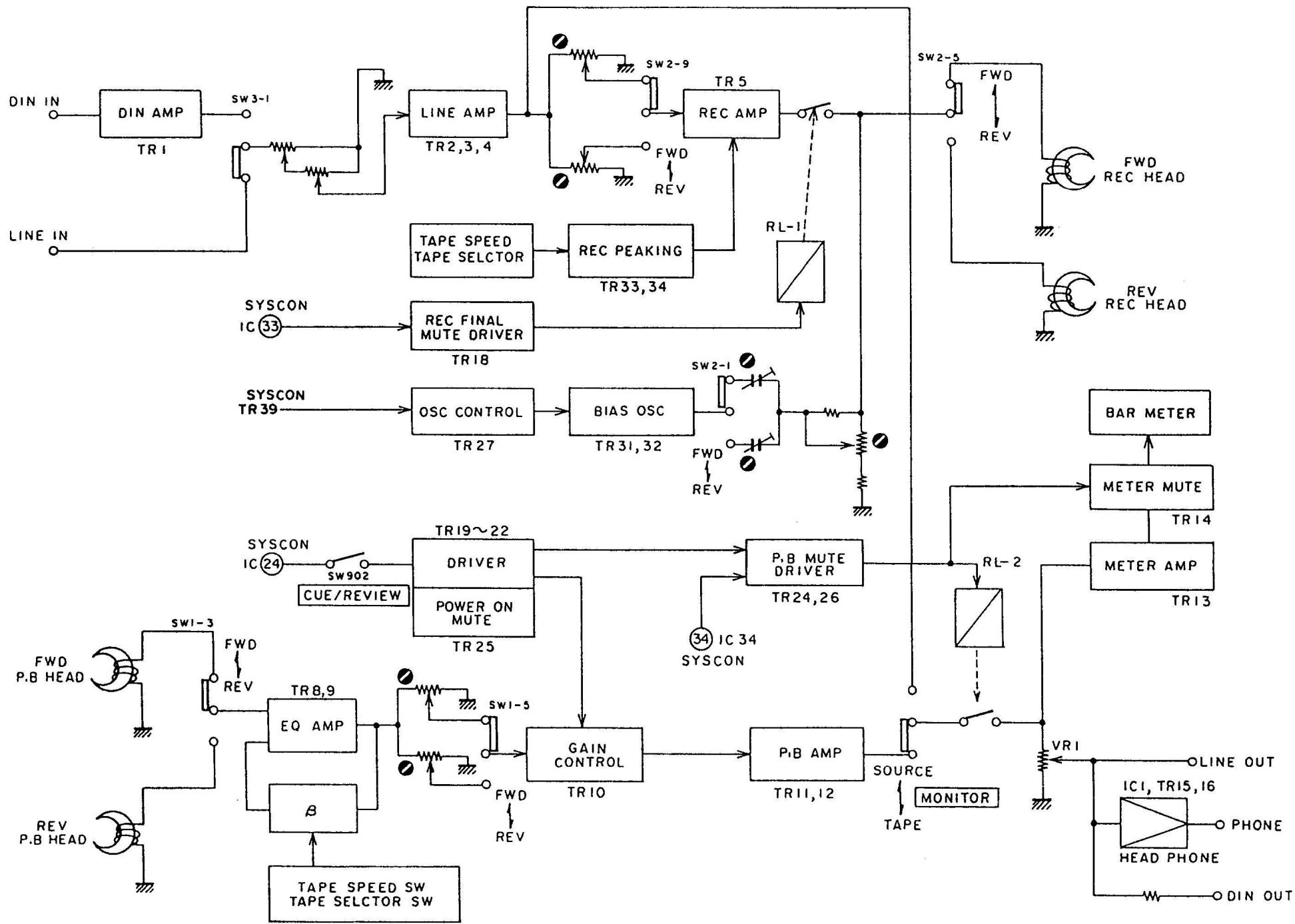


Fig. 6 Pre Amp Block Diagram

1. TIMING CHART OF EACH MODE

1) Loading, Unloading Mode (Refer to Fig. 7)

LOADING and UNLOADING do not work during FWD, FWD/REC, REV, REV/REC, FF and RWD and during loading or unloading.

The loader PLG can be pulled many times by turning the operation "loader" ON while SW905 (loader) is ON (IC1 38 will be "H").

If the loader SW is pressed, 38 will be "H" for about 0.2 sec. and then, TR35, 36 ON and the loader PLG, SW905 ON and the gear of the capstan flywheel will be engaged with the loading gear, and the loading arm is lifted by the rotating

power of the loading gear, i.e., the rotating movement is changed into the linear movement. After loading, the loading gear makes one turn to return to the original position and the link-up with the flywheel will be off.

2) Timer Start Off (no tape) SW904 (tension off) (Refer to Fig. 8)

If the operation loader key or FWD, REV, FF or RWD is turned ON, IC1 38 becomes "H" to pull the loader PLG and then, the loader gear is rotated, SW903 (motor SW) ON, and the right and left reel motors are rotated.

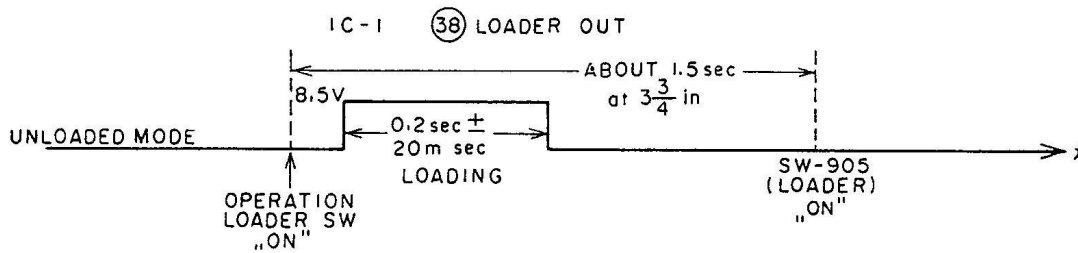


Fig. 7

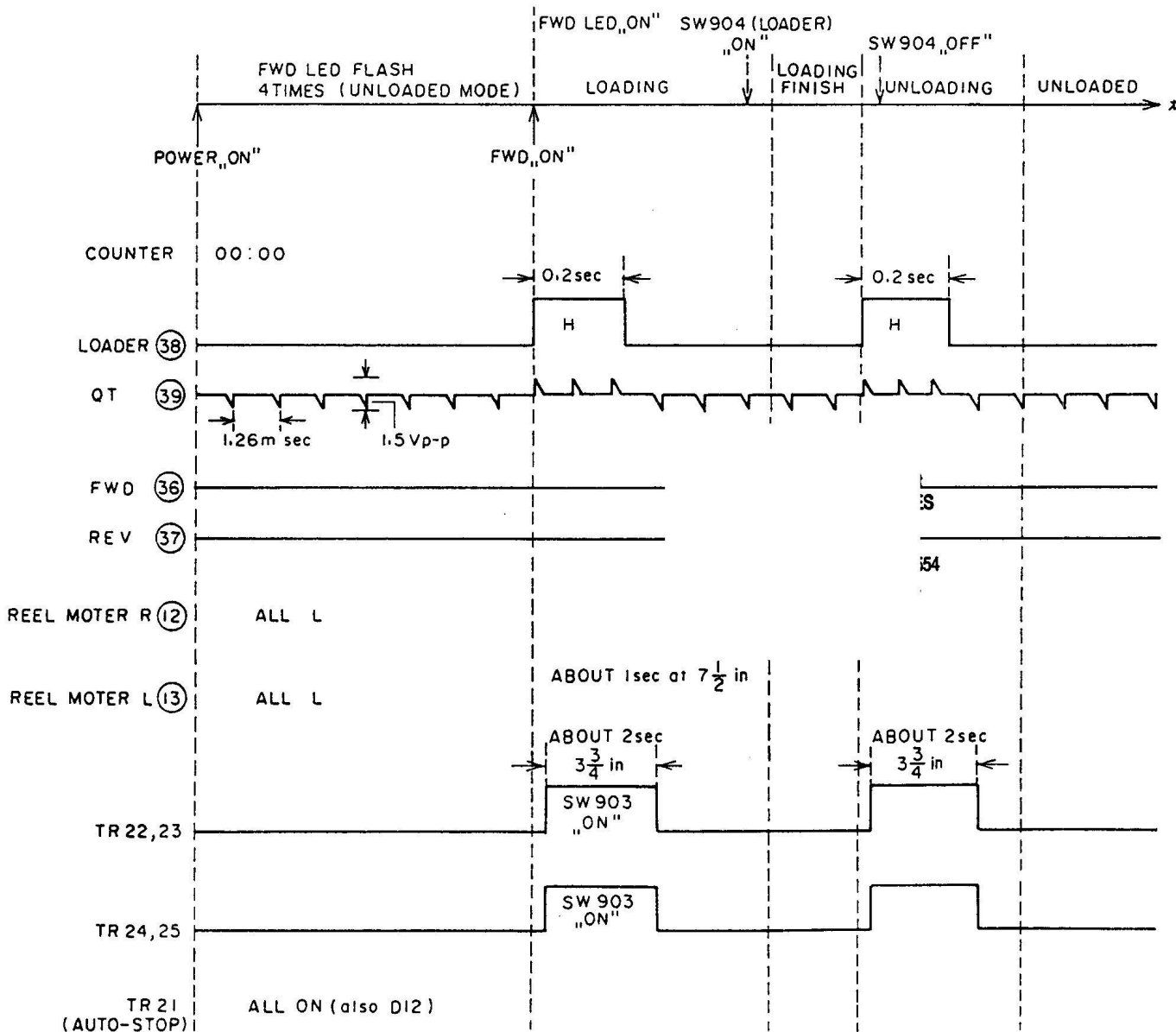


Fig. 8

3) FWD Mode (tape loaded) SW904 (tension on)

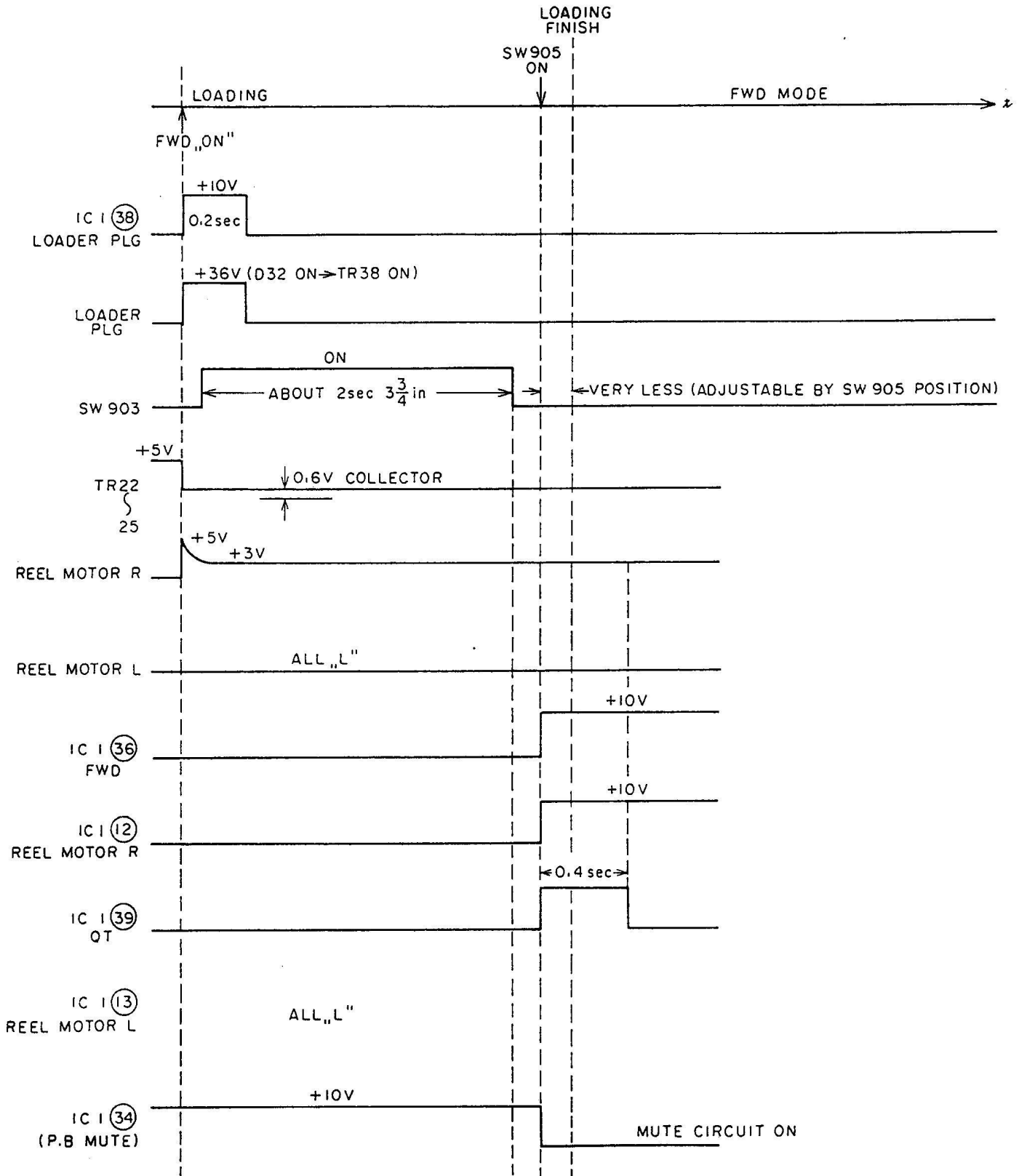


Fig. 9

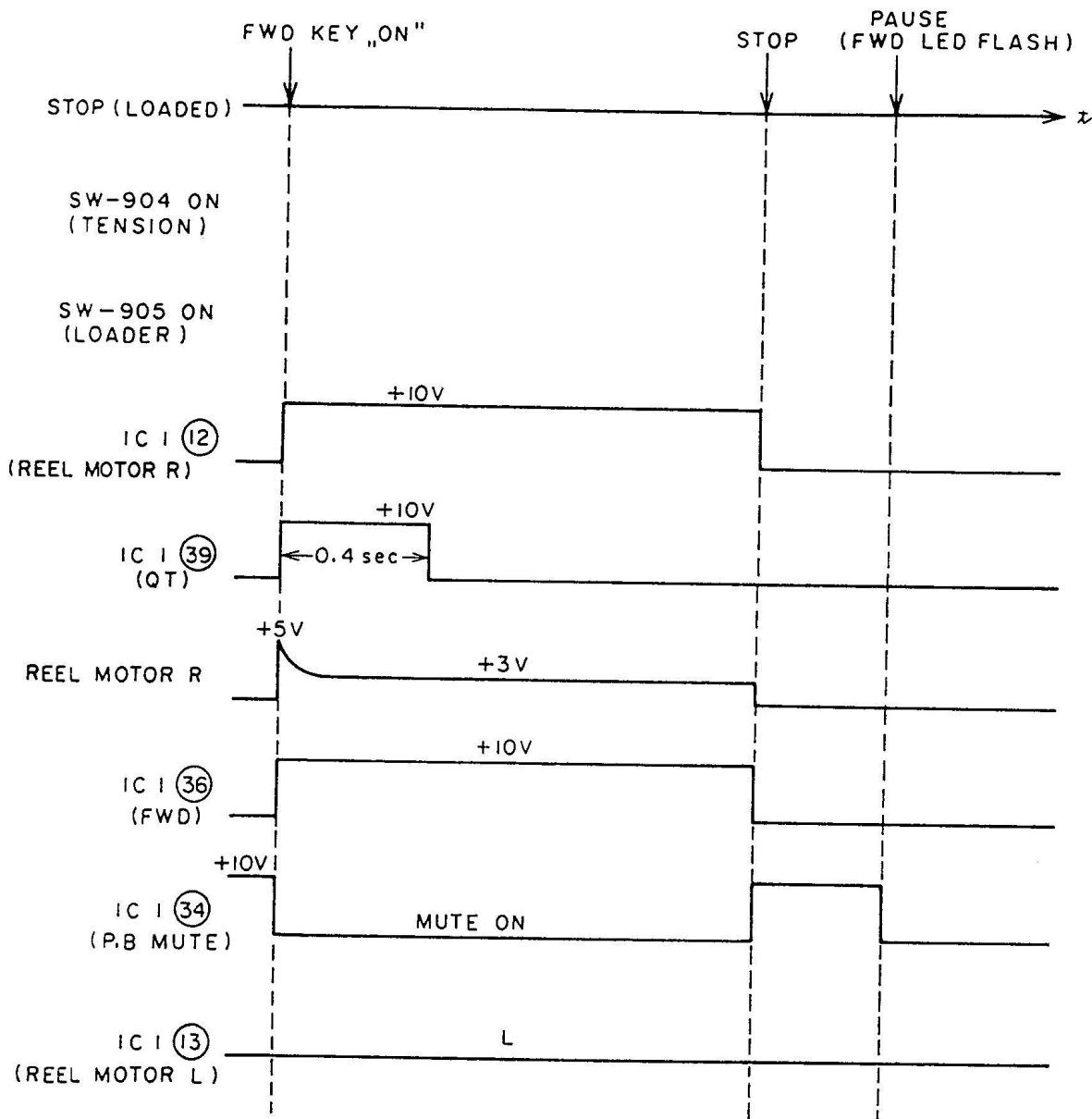


Fig. 10

4) FWD Mode After Loading (Tape Loaded)

(Refer to Fig. 10)

If FWD key is turned ON after loading, ⑫ will be "H", ⑳ "H" (for 0.4 sec.), and +36V is applied to FWD PLG, and TR31, TR32 "ON", and after 0.4 sec., the voltage will be changed to +14V (because of TR38 OFF).

Because of TR22, 23 "ON", the original +5V on the right reel motor will be changed to +2.7V (due to power regulation).

The left reel motor has 0V (only mechanical tension is operated) and ⑳ will be changed from "H" to "L", and the pre amplifier MUTE is released.

5) STOP → FWD → REV → PAUSE Mode

(Refer to Fig. 11)

For FWD to REV, ㉑ (QT relay) becomes "H" for 0.4 sec., TR37 "OFF" and TR38 "ON", and +36V is applied to each plunger.

After 0.4 sec., TR38 becomes "OFF", and +14V is applied to each plunger. For each reel motor, the first +5V and then reduced to +2.7V in FWD and REV mode.

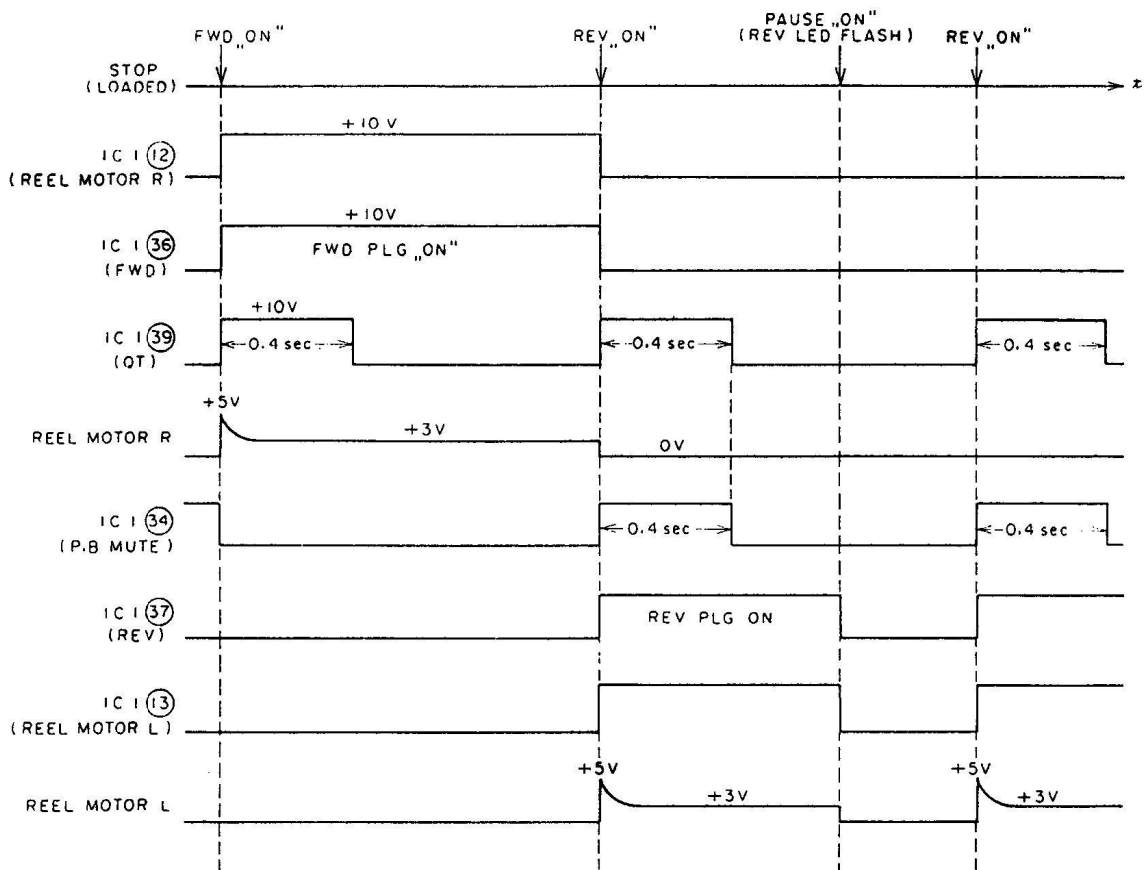


Fig. 11

6) REC/FWD → REC/REV → REC/REV/PAUSE Mode

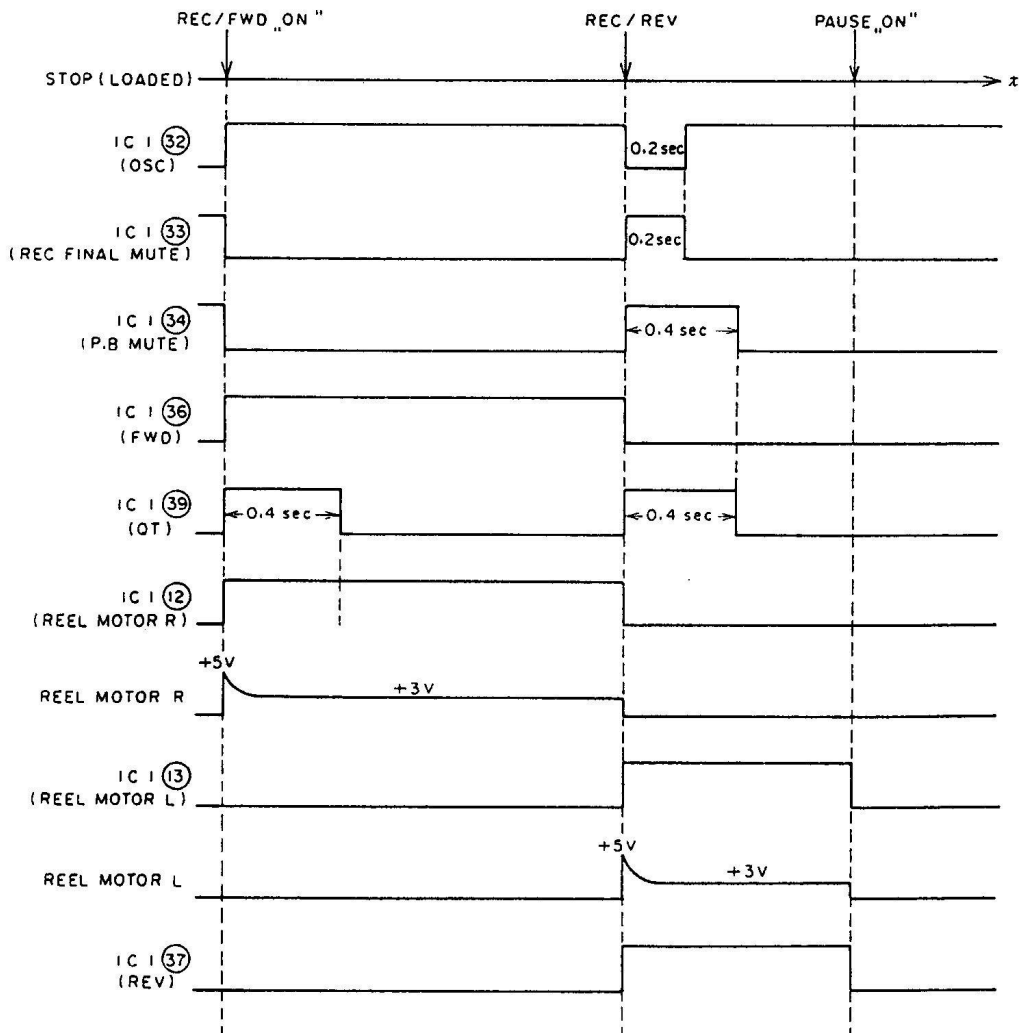


Fig. 12

7) STOP → FF → RWD Mode

If, in FF and RWD, 24 (O FAST) becomes "H", TR26 and 27 "ON" and RLI "ON", and +12V

is applied to each reel motor. For the brake PLG, 39 (QT relay) is "H" for 0.4 sec. and during the time, +36V and then reduced to +14V.

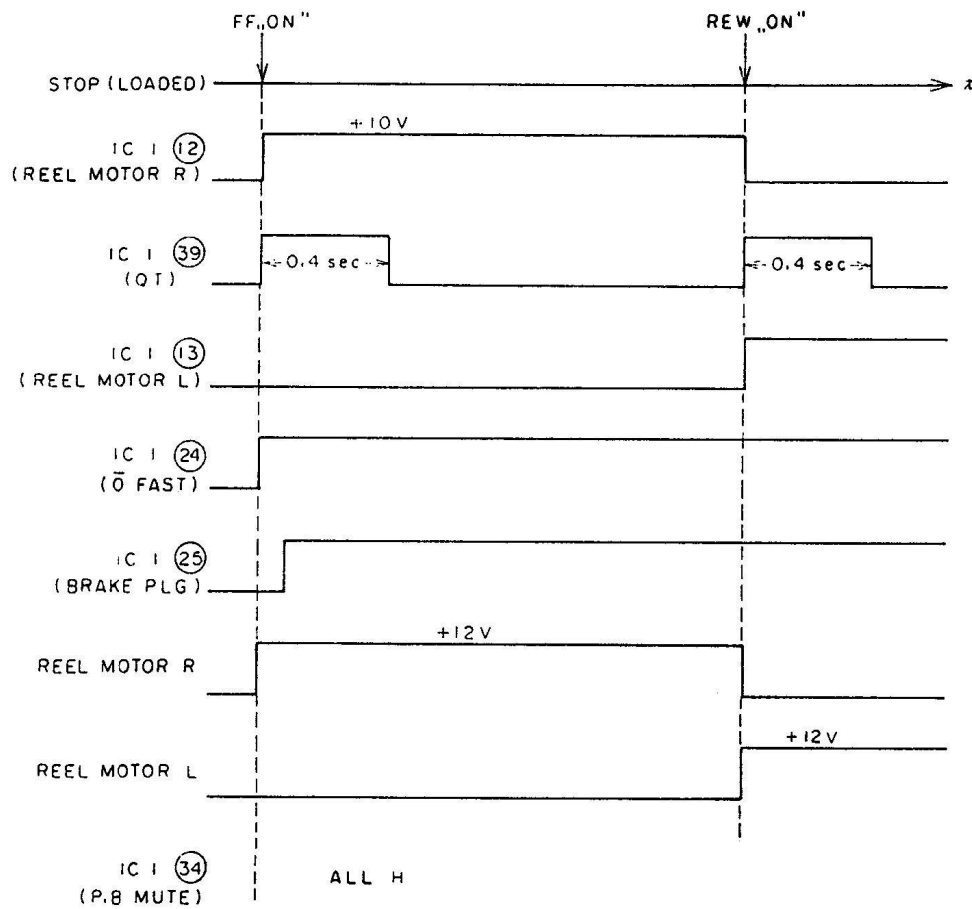


Fig. 13

8) FF → FWD Mode

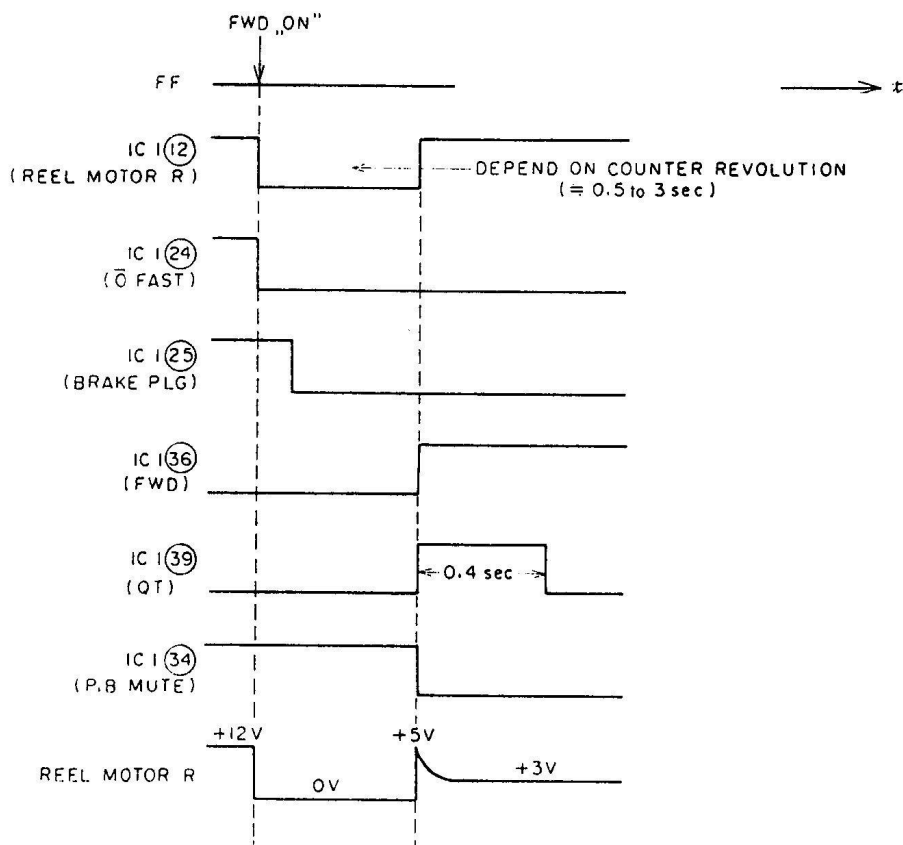


Fig. 14

9) Timer Start
a) OFF Mode

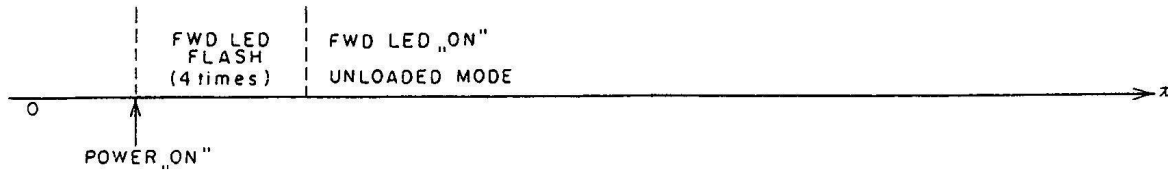


Fig. 15

b) PLAY Mode

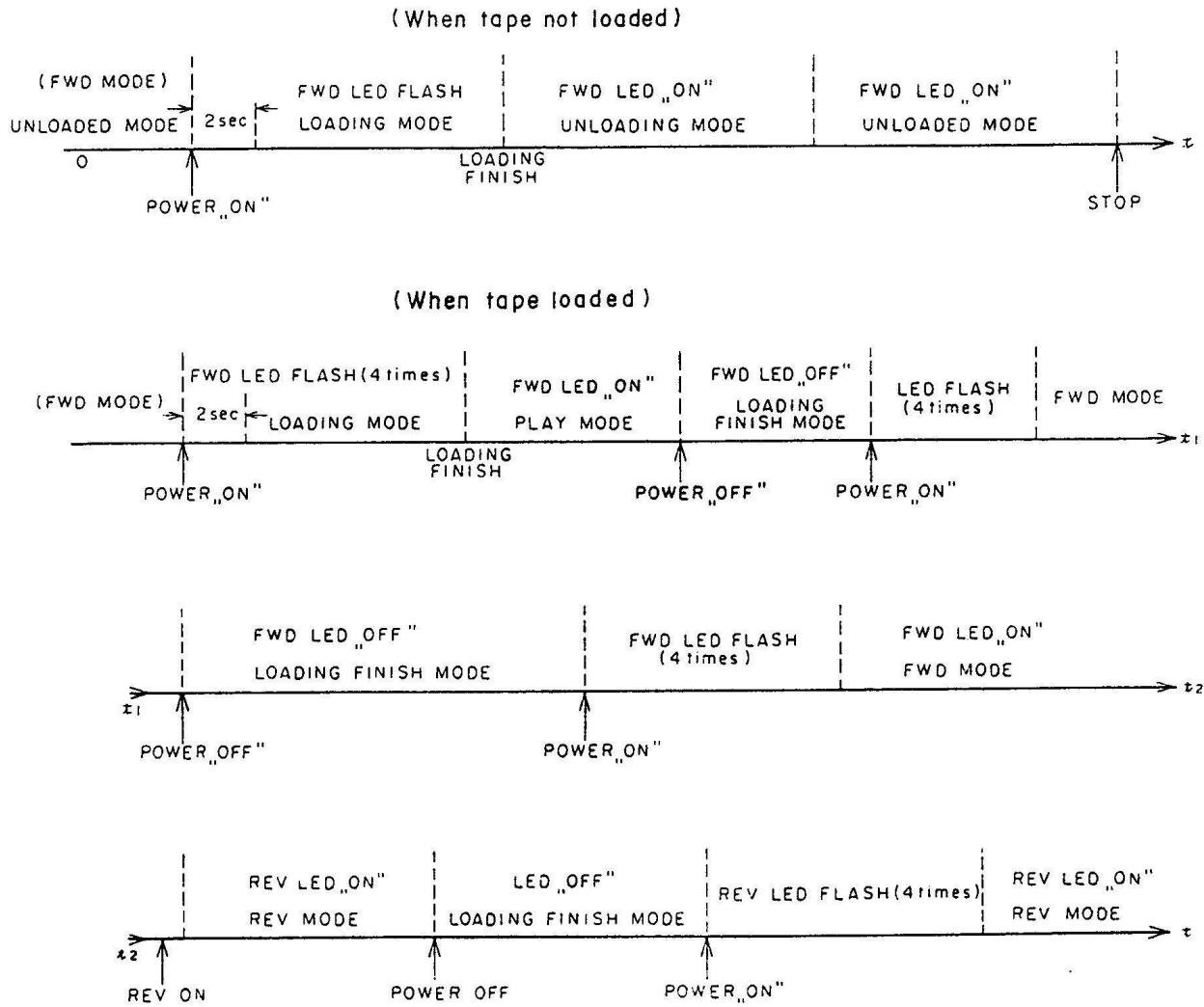
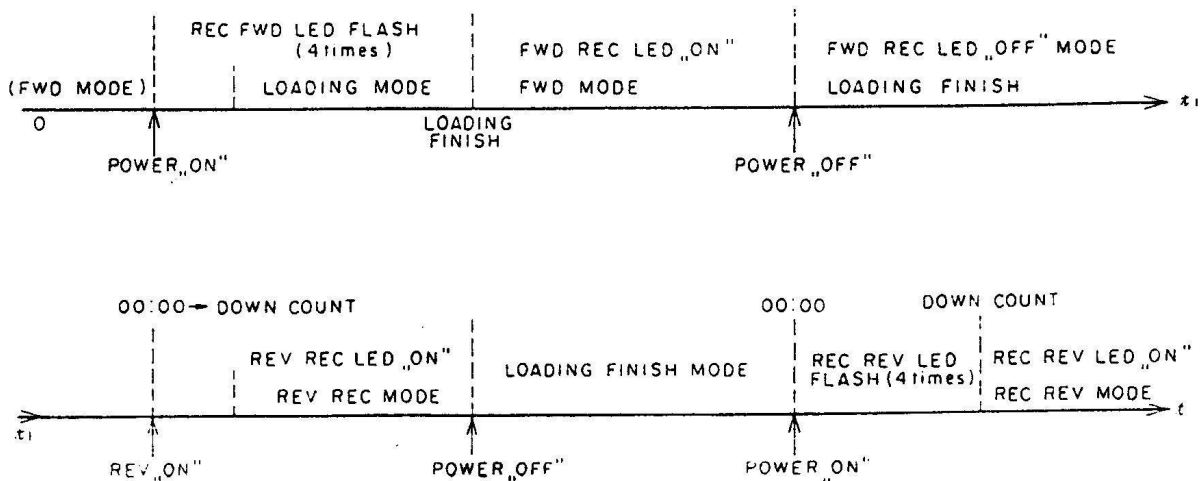


Fig. 16

c) REC Start Mode



2. EXPLANATION OF EACH MODE

1) IC1 (HD38800A42) Terminal Description

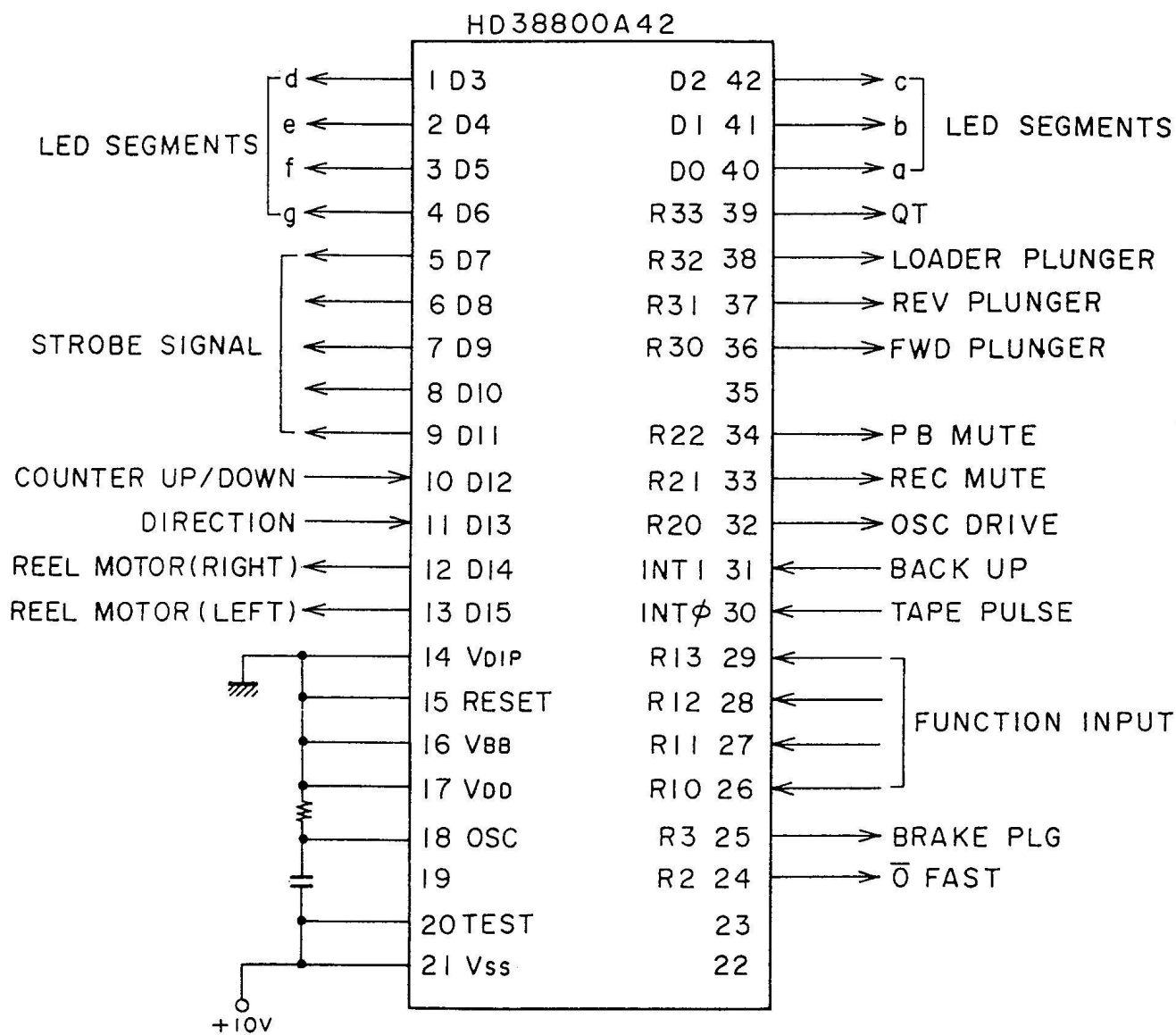


Fig. 18

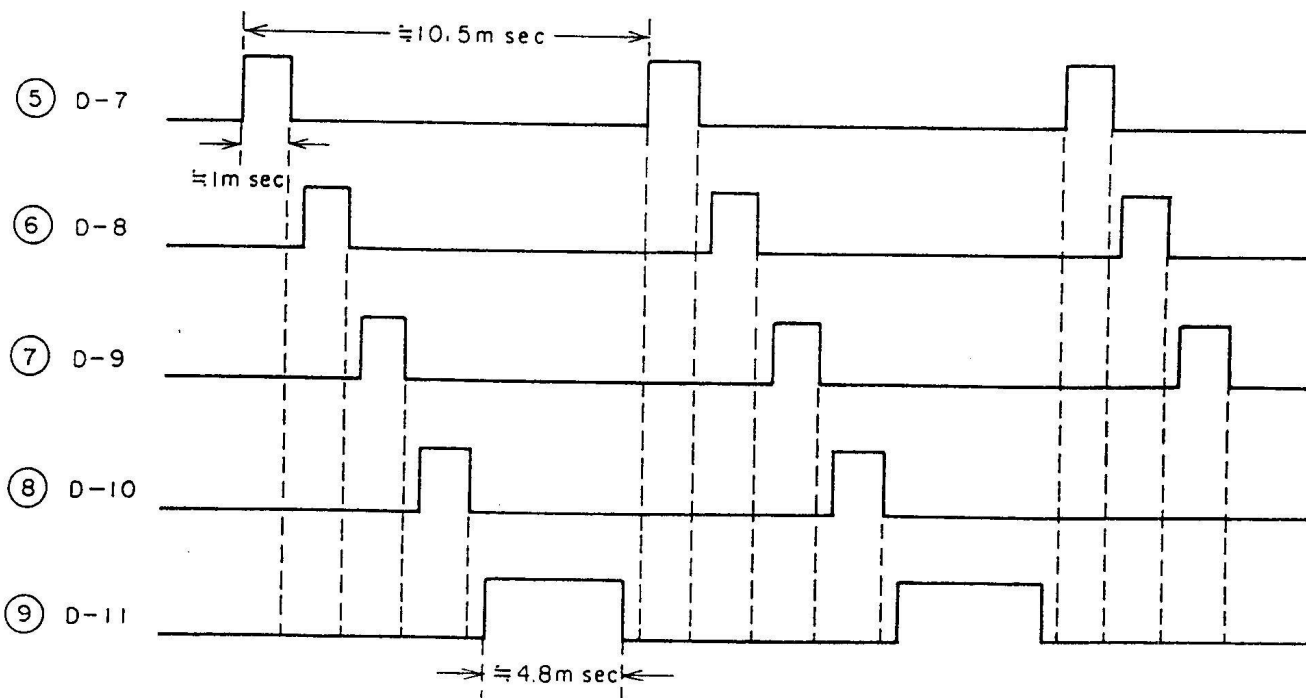
2) Terminal Conditions in Each Mode

| IC-1 PIN NUMBER | (38) LOADER | (39) QT | (36) FWD | (37) REV | (12) REEL MOTOR R | (13) REEL MOTOR L | (34) P.B MUTE | (32) OSC | (33) REC MUTE | (24) O FAST | (25) BRAKE PLUNGER |
|-----------------|----------------|------------|-------------|-------------|----------------------|----------------------|------------------|-------------|------------------|----------------|-----------------------|
| STOP | L | L | L | L | L | L | H | L | H | L | L |
| LOADING | H(M) | L | L | L | L | L | H | L | H | L | L |
| FWD | L | H(M) | H | L | H | L | L | L | H | L | L |
| REV | L | H(M) | L | H | L | H | L | L | H | L | L |
| FWD/PAUSE | L | L | L | L | L | L | L | L | H | L | L |
| REV/PAUSE | L | L | L | L | L | L | L | L | H | L | L |
| REC/FWD | L | H(M) | H | L | H | L | L | H | L | L | L |
| REC/REV | L | H(M) | L | H | L | H | L | H | L | L | L |
| REC/FWD/PAUSE | L | L | L | L | L | L | L | H | L | L | L |
| REC/REV/PAUSE | L | L | L | L | L | L | L | H | L | L | L |
| FF | L | H(M) | L | L | H | L | H | L | H | H | H |
| RWD | L | H(M) | L | L | L | H | H | L | H | H | H |
| UNLOADING | H(M) | L | L | L | L | L | H | L | H | L | L |

X·M : MOMENTALY

Fig. 19

3) Output Waveforms of IC1 Terminals ⑤ to ⑨



4) Power ON

Without any input conditions (such as operation key is not pressed) through the built-in reset circuit, IC1 performs no operation. (In order to meet the conditions for the operation of the built-in reset circuit, 3 terminal regulator is used only for the IC1 power source)

5) Loading Mode After Power ON

If the loading operation SW, etc. is pressed, the output of IC1 ⑧ enters ⑳ through TR3, and ㉔ (loader plunger) changes from "L" to "H" ($\approx 10V$) for 0.2 sec., TR35 and 36 "ON" and TR37 and 38 ON through D32, and +36V is added to the loader plunger. Because the loader plunger is ON for about 0.2 sec., the loading gear starts rotating via the capstan flywheel, and the motor SW (SW903) interlocked with it will be ON until the gear finishes one turn, and then TR22 to TR25 ON, and the voltage (+5V under no load, +3V after motor loading) is added to the right and left reel motors which turn in the respective winding direction. Thus the tension is added to the tape to prevent sagging even if the mechanical brake interlocked with the loading gear is released during loading.

The completion of loading is detected by SW905, i.e., the next operation is not available until the SW905 is ON.

6) FWD Mode After Loading

With FWD key ON, the output of IC1 ⑤ is inputted into ㉘ and ㉚ "L" \rightarrow "H", ㉞ "L" \rightarrow "H", and then TR31, 32 ON, TR 22, 23 ON, and the right reel motor rotates, FWD plunger is also ON and the right pinch roller is pulled. The right and left brakes mechanically interlocked with the FWD plunger are released. The supply back tension is added to the reel table by the brake pad interlocked with the supply tension arm. (The supply motor rotates freely). ㉠ (QT) is also ON for 0.4 sec. and +36V is added to the plunger \rightarrow subsequently held at +14V.

With ㉣ (P.B. Mute) "H" \rightarrow "L", Mute will be off.

7) REV Mode (reverse operation to FWD)

- IC1 ⑬ "H" \rightarrow left reel motor rotates
- ㉟ "H" \rightarrow FWD plunger ON
- ㊱ "H" (for 0.4 sec.) \rightarrow +36V \rightarrow +14V
- ㊲ "L" \rightarrow Mute Off.

8) FF Mode

IC1 ㉔ (\bar{O} FAST) "L" \rightarrow "H", TR26, 27 ON, RL1 ON, and +12V is added to the reel motor, ㉚ (right motor) "L" \rightarrow "H", TR22, 23 ON, and the right reel motor rotates at a high speed. ㉞ (brake plunger) "L" \rightarrow "H", TR31, 32 ON, brake PLG ON, and the supply motor rotates freely (the reel table is only receiving mechanical free tension). ㉣ (PB Mute) is fixed at "H" and the line output is cut off.

9) RWD Mode (reverse operation to FF)

- IC1 ㉔ (\bar{O} FAST) "L" \rightarrow "H", RL1 ON, +12V applied
- ㉞ (brake plunger) "L" \rightarrow "H", brake released
- ⑬ (left motor) "L" \rightarrow "H", left reel motor rotates at high speed.
- ㉣ (PB Mute) fixed at "H", and line output cut off.

10) FWD/REC Mode

With the input IC1 ⑤ \rightarrow ㉠ and at the same time IC1 ⑥ \rightarrow ㉟, the output of IC1, with FWD mode output, ㉚ "L" \rightarrow "H", TR39 ON, operates the OSC circuit of the preamplifier. ㉞ "H" \rightarrow "L", preamplifier TR17 OFF, TR18 ON, RL1 (Rec Mute Relay) ON, and the preamplifier REC input signal is added to the Rec head. ㉣ "H" \rightarrow "L" and PB Mute released.

11) FWD, REV Direction (Refer to Fig. 21)

SW1 - 2 (Pre Amp PCB) Signal from REV \rightarrow FWD SW.

If IC1 ⑪ is "L" (REV mode), IC1 will be in REV STANDBY mode, i.e., when IC1 ① is ON, "L" \rightarrow "H" \rightarrow "L" is repeated 4 times \rightarrow (REV LED flashes 4 times) and then fixed at "H" \rightarrow (LED "ON"). (See the description of lighting circuit operation).

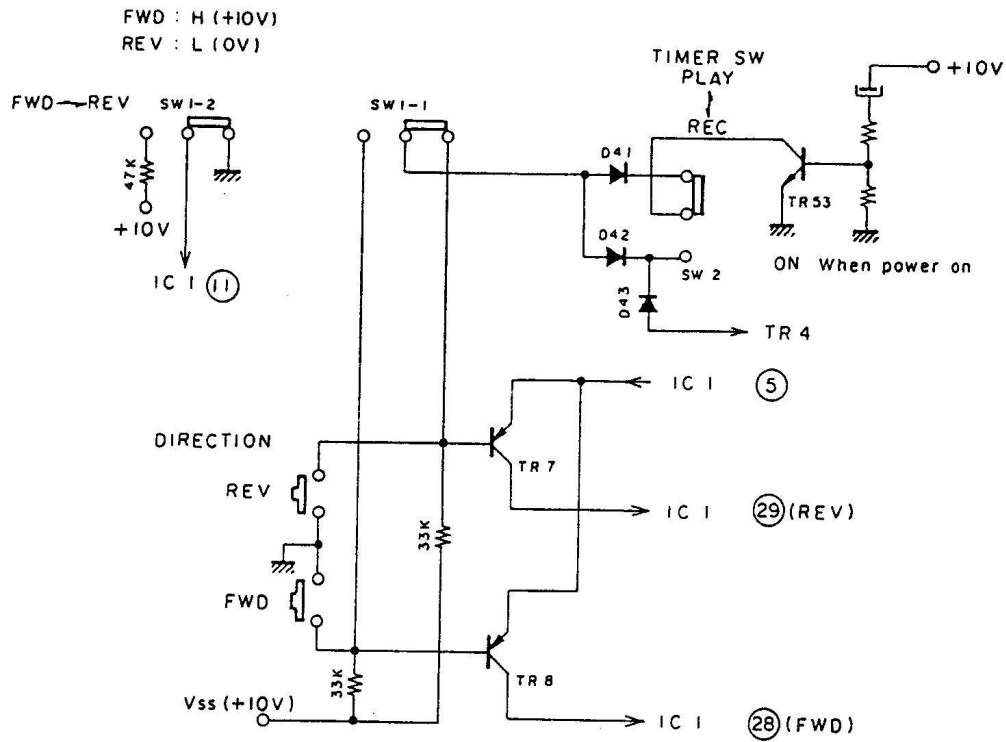
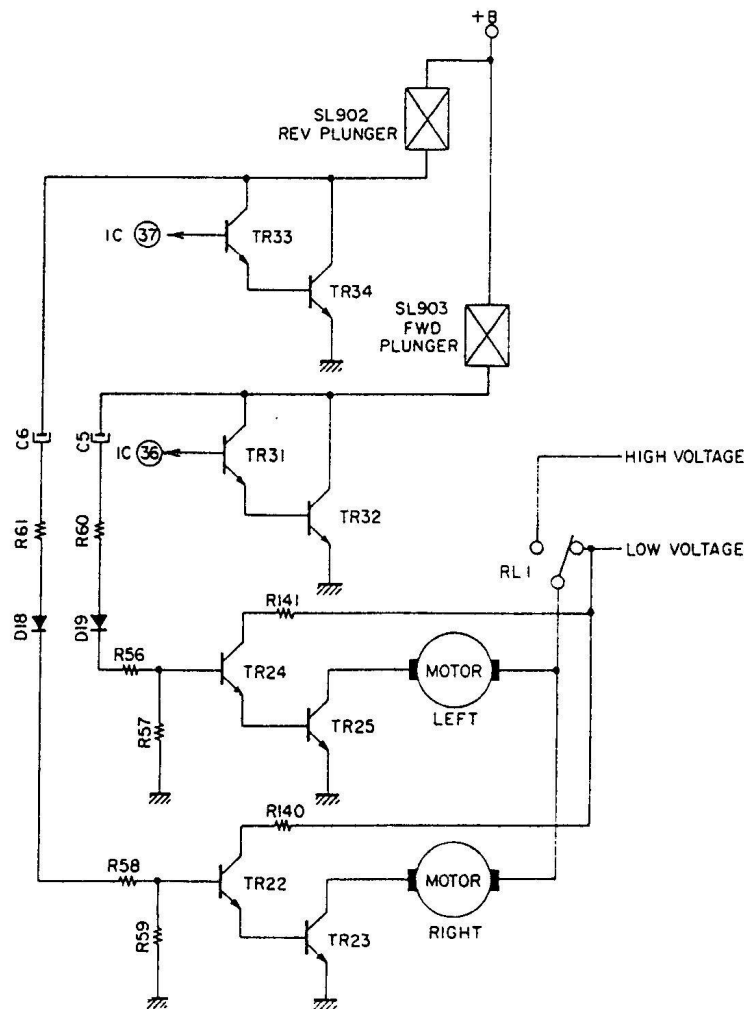


Fig. 21

3. EXPLANATION OF EACH CIRCUIT

1) Circuit to Prevent Tape Sagging When Power is ON
+14V → REV, FWD PLG → C5, C6 → D19, D18 →
R56, R58 → TR22, 24 runs the charging current,

and in the meantime, the right and left reel motors are energized to prevent the tape from sagging (Brake is also mechanically on the reel table).



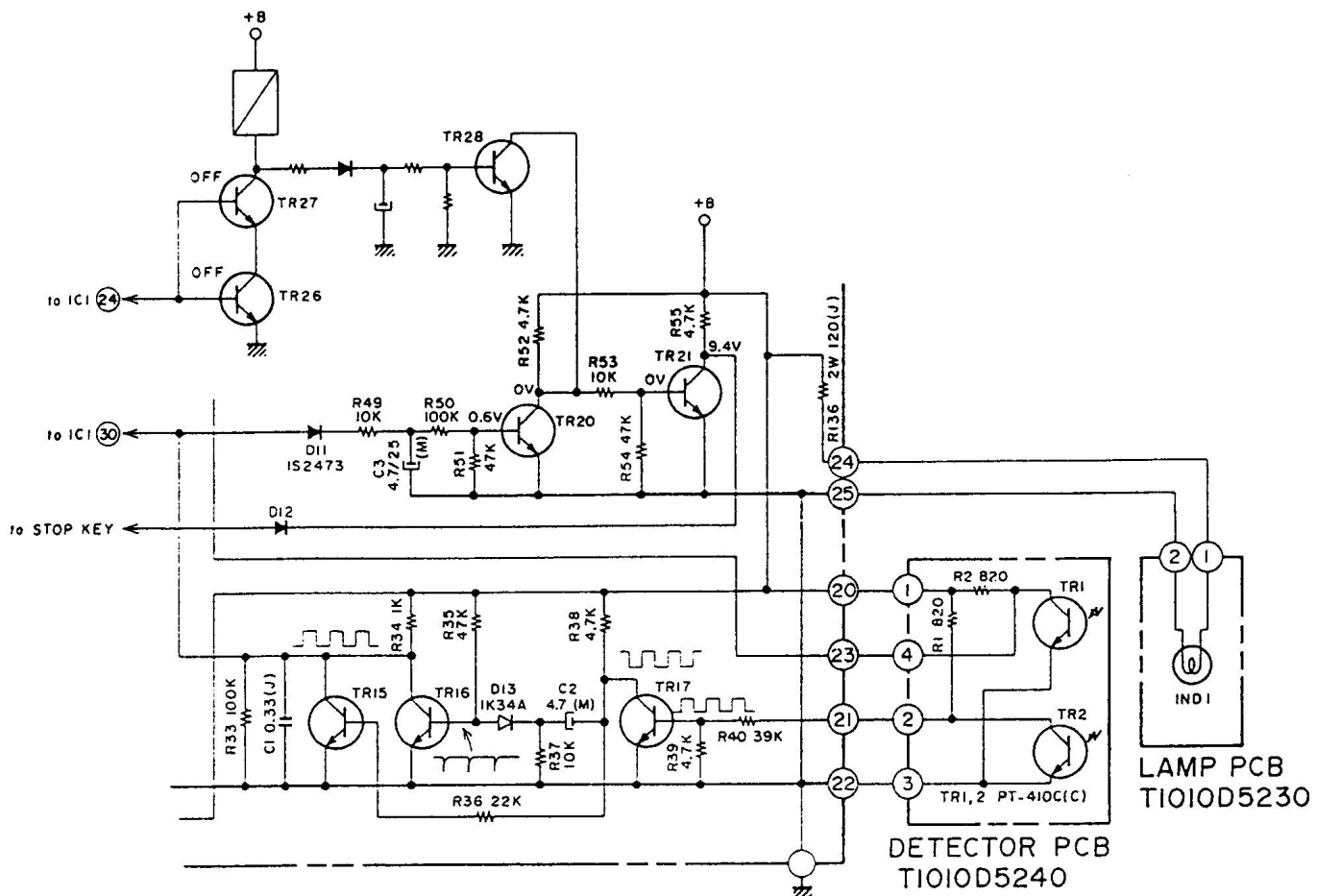


Fig. 23

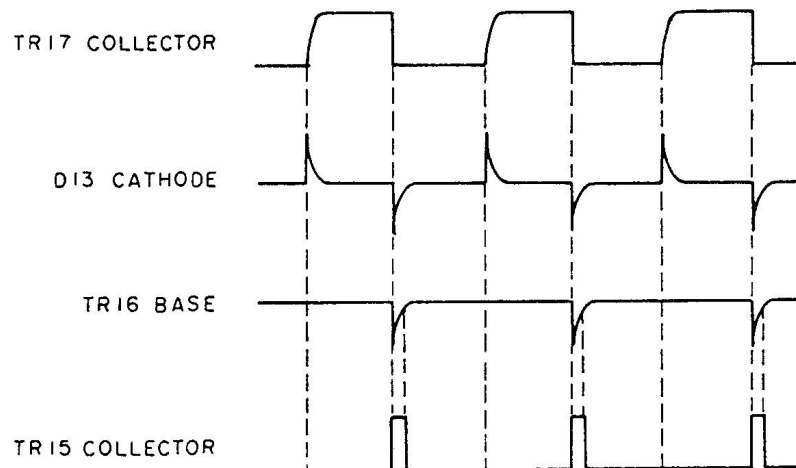


Fig. 24

2) Auto Stop Circuit (Refer to Figs. 23, 24)

Photo TR (TR2) is repeating ON/OFF when the tape is running.

The pulse of TR15 collector is added to IC1 ③ and TR20 base.

TR20 collector is connected with TR28 collector, and while TR28 base is "H", TR21 is "OFF", i.e., no auto-stop. In FWD and REV, the auto-stop functions when the tape is winder up by the take-up reel. tension arm (right) is lowered, and micro SW SW904 is shut off. In FF and REW,

same as in FWD and REV, the auto-stop works about 4 seconds after the micro SW SW904 is shut off and the tape pulse is gone.

In FWD, REV and FF, REW, the positions of TR28 and D12 are as follows.

| | | | |
|-------|--------------|---|--|
| | FWD, REV | → | FF, REW |
| TR28: | ON (Always) | | ON → OFF |
| D12 : | OFF (Always) | | ON about 4 seconds after tape pulse disappears |

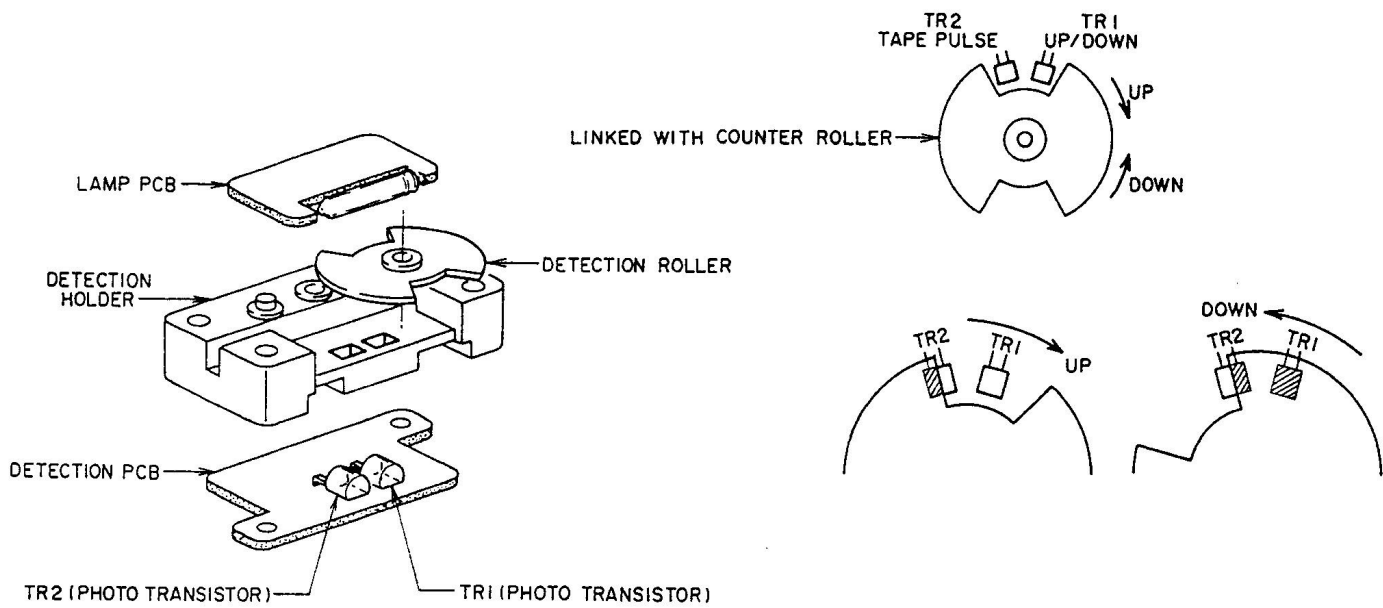


Fig. 25

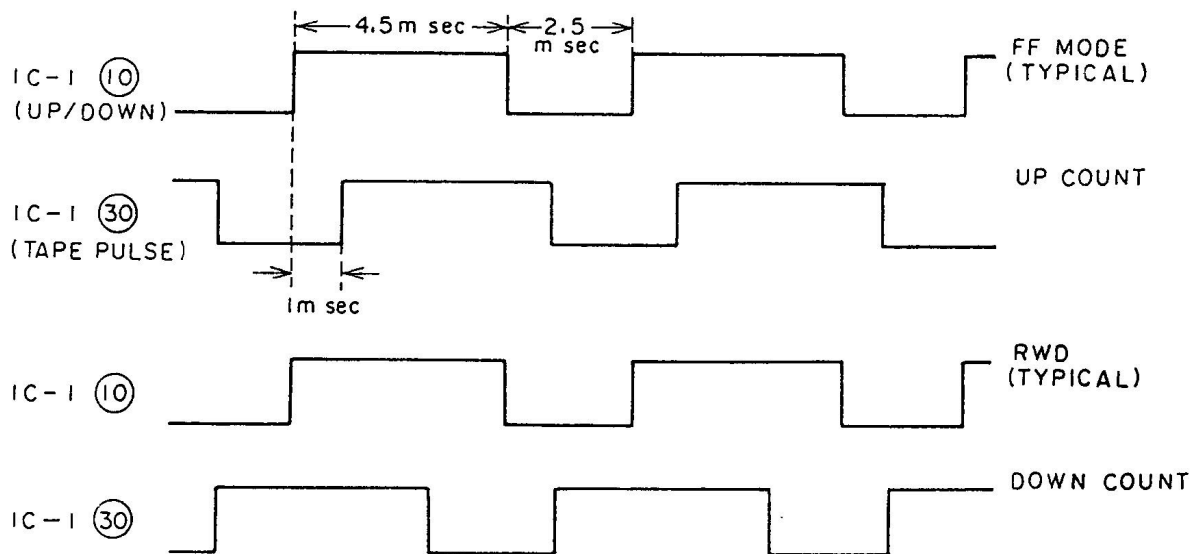


Fig. 26

3) COUNTER Operation (Refer to Figs. 25, 26)

The output of TR1 is inputted into IC1 D12 ⑩ after waveform shaping in the Schmitt Circuit of TR18 and TR19. The output of TR2 is inputted into IC1 ③① after waveform shaping in TR15 to TR17, and depending on the phase relation, it conducts UP or DOWN count. (For the waveform of TR15-17, see auto-stop circuit).

4) Function Mode Indicator Indication Circuit

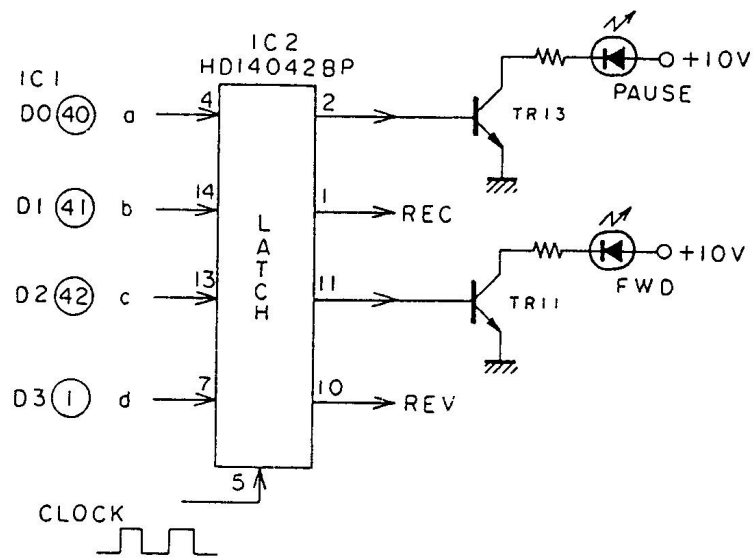
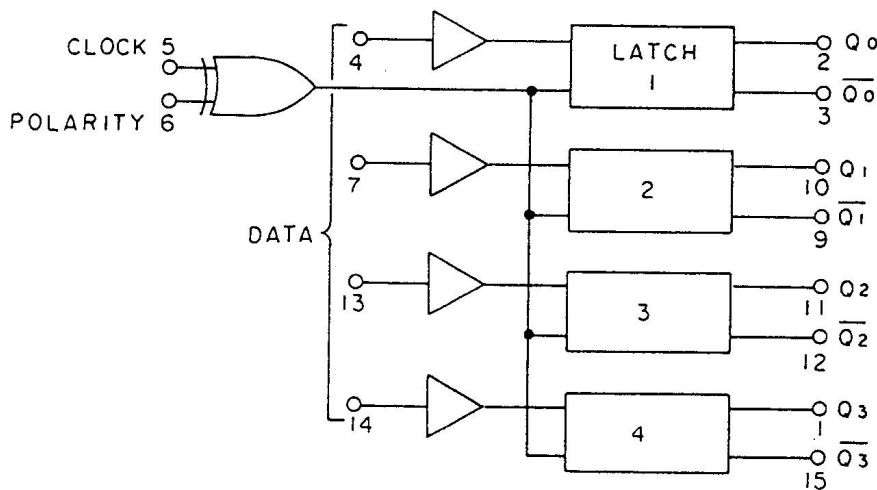


Fig. 27

IC2 (HD14042BP) Quad Latch



| CLOCK | POLARITY | Q |
|-------|----------|-------|
| L | L | DATA |
| | L | LATCH |
| H | H | DATA |
| | H | LATCH |

} Use Only This Condition

Fig. 28

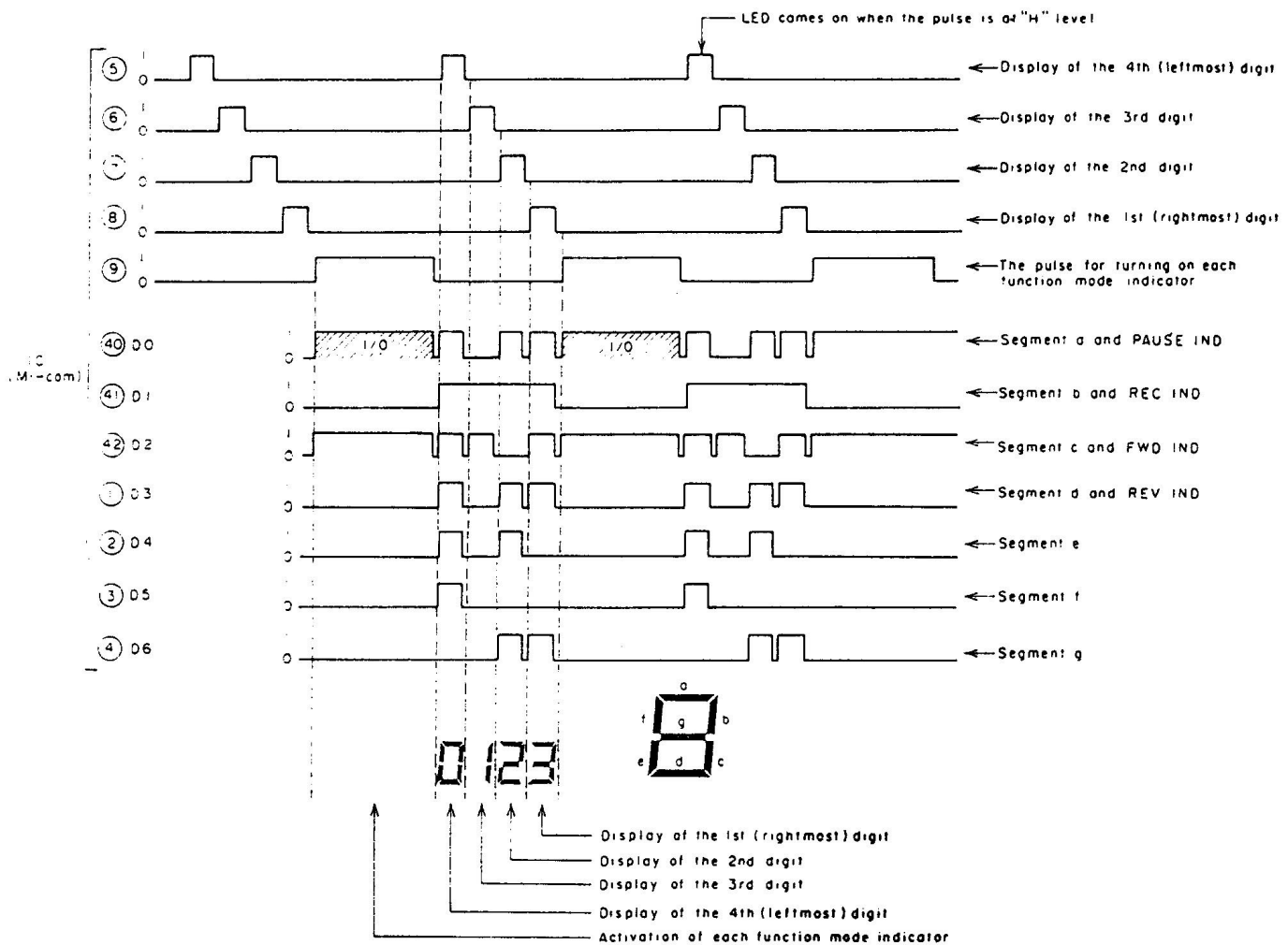


Fig. 29

Also the function mode indicators are lighted up by the operation timing of the control signal from the microcomputer. Here, we take the example of FWD PLAY/PAUSE in Fig. 29. FWD PLAY shall be called simply as PLAY hereinafter. In PLAY/PAUSE mode, the function mode indicator, PAUSE is always lighted and PLAY is flashing. Firstly look at the longitudinal raw of the function mode indicators of D0 ~ D3 in Fig. 29.

You will see that PAUSE IND is "H" level, PLAY IND is "L/H" flashing and others are "L" level. (D0 ~ D3) and IC1 ⑨ signals are inputted into the latch circuits of ④, ⑦, ⑬, ⑭ and ⑤ of

IC2 in Fig. 27.

The latch circuit is shown in Fig. 28, and in such case, since IC2 ⑥ polarity is always "H", data is always "H", data is outputted when the clock is "H", and when it is "L", the data latched and held is outputted.

Therefore, in FWD PLAY/PAUSE, when the clock signal of IC1 ⑨ is "H", the PAUSE indicator is "H" and FWD IND is "L/H" flashing, and "H" signal appears in IC2 ② in Fig. 27 to turn TR13 ON and flashes PAUSE IND, and in IC2 ⑪, "L/H" flashing signal appears to turn TR11 ON and OFF and flashes FWD IND.

VII. MECHANISM ADJUSTMENT

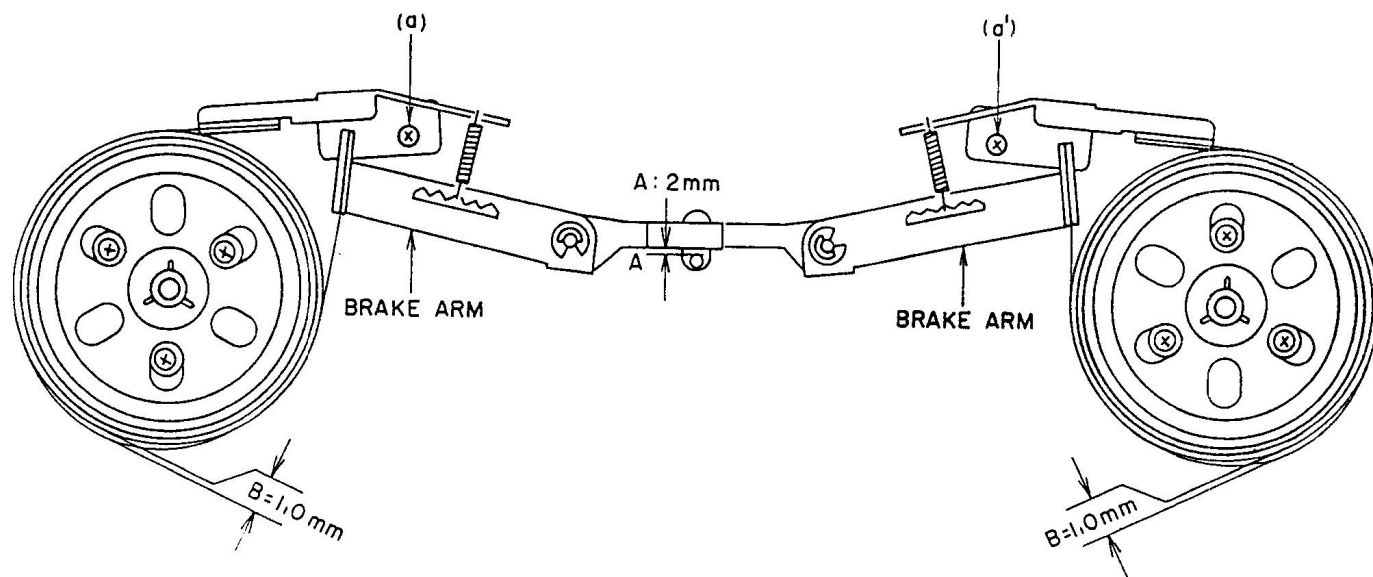


Fig. 30

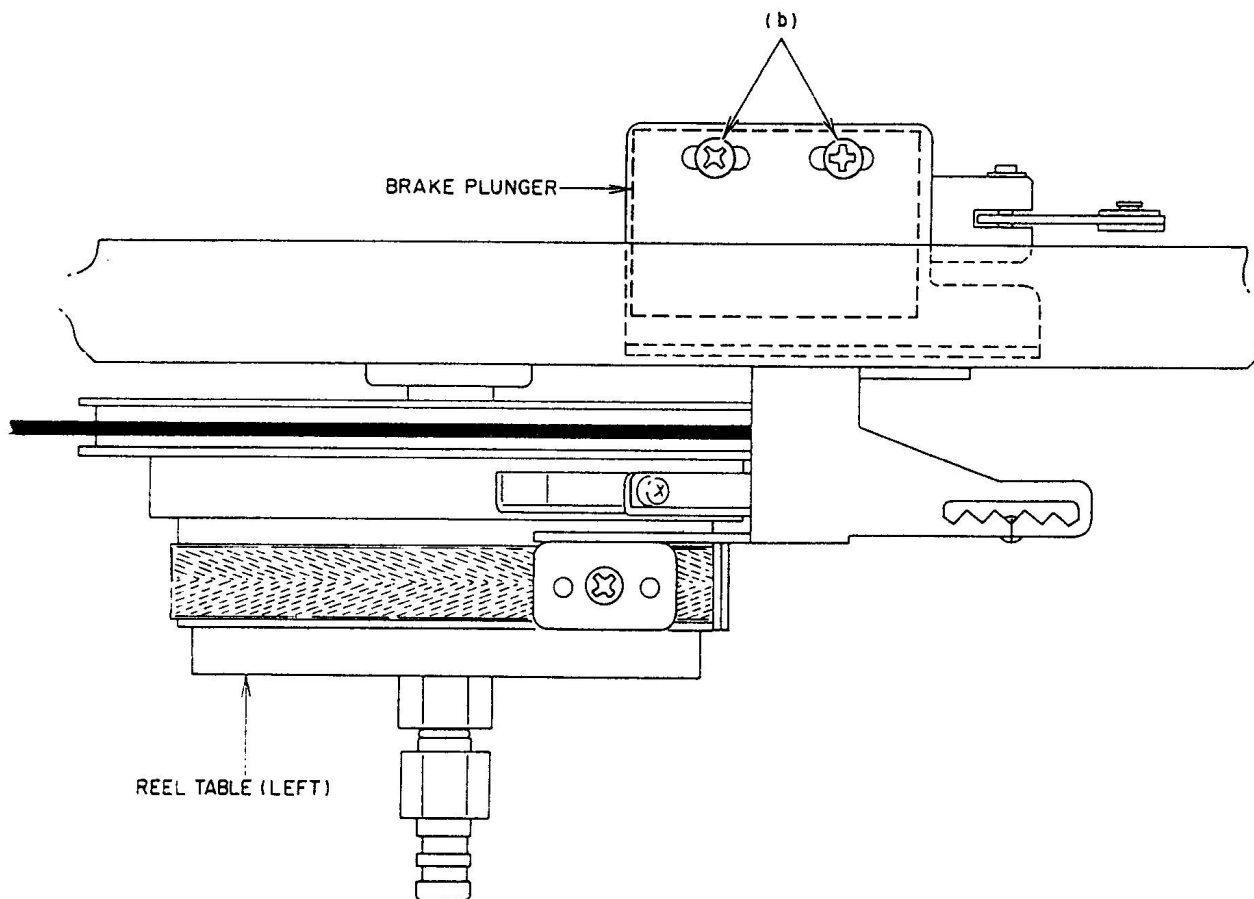


Fig. 31

1. BRAKE BAND POSITION ADJUSTMENT AND BRAKE TENSION ADJUSTMENT

(Refer to Figs. 30, 31, 32)

- 1) In STOP Position, make adjustment with the screws (a) and (a') so that the clearance (A) will be 2.0 mm.
- 2) By working the brake plunger with fingers and adjust the brake plunger position with the screw

- (b) so that the clearance (B) between the brake cloth and brake band will be about 1 mm.
- 3) Work the brake plunger to check that the brake band is not slanted.
- 4) In STOP Position, change and adjust the spring position so that the brake tension of 400 ± 30 g is obtained on both the brakes.
(Use a 500 g spring gauge for a reel with 60 mm diameter of tape).

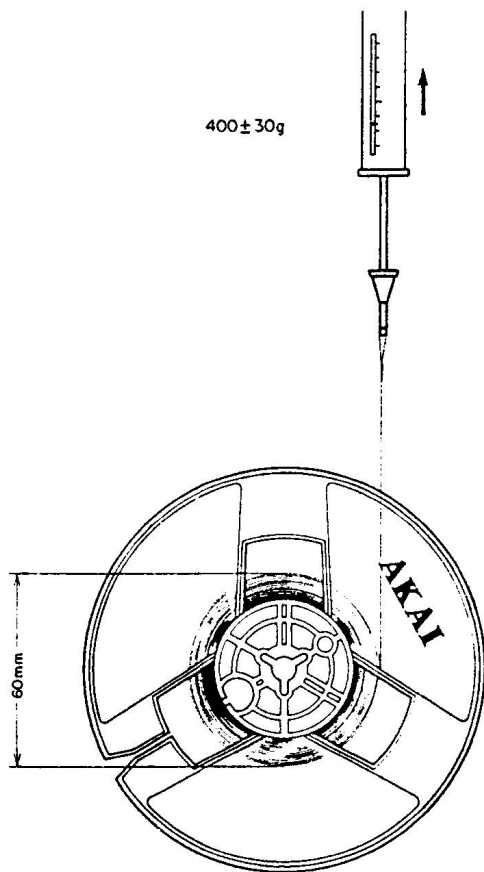


Fig. 32

2. PLAY PLUNGER POSITION

ADJUSTMENT (Refer to Fig. 33)

With FWD PLAY mode, adjust the FWD plunger position with the screw (a) so that the clearance (A) of the slide play will be 0.1 ± 0.3 mm.

Also adjust the REV plunger position in the same way in REV mode.

3. PINCH ROLLER PRESSURE ADJUSTMENT

With FWD PLAY mode, connect a 1 kg spring gauge to the right pinch roller cap. Pull down the pinch roller and then let it slowly move back.

Check that the spring gauge reads $850 \text{ g} \pm 100 \text{ g}$ at the moment the pinch roller touches the capstan and starts rolling.

If it reads otherwise, replace the P spring (See Fig. 33) Also make the same adjustment about the left pinch roller in REV mode.

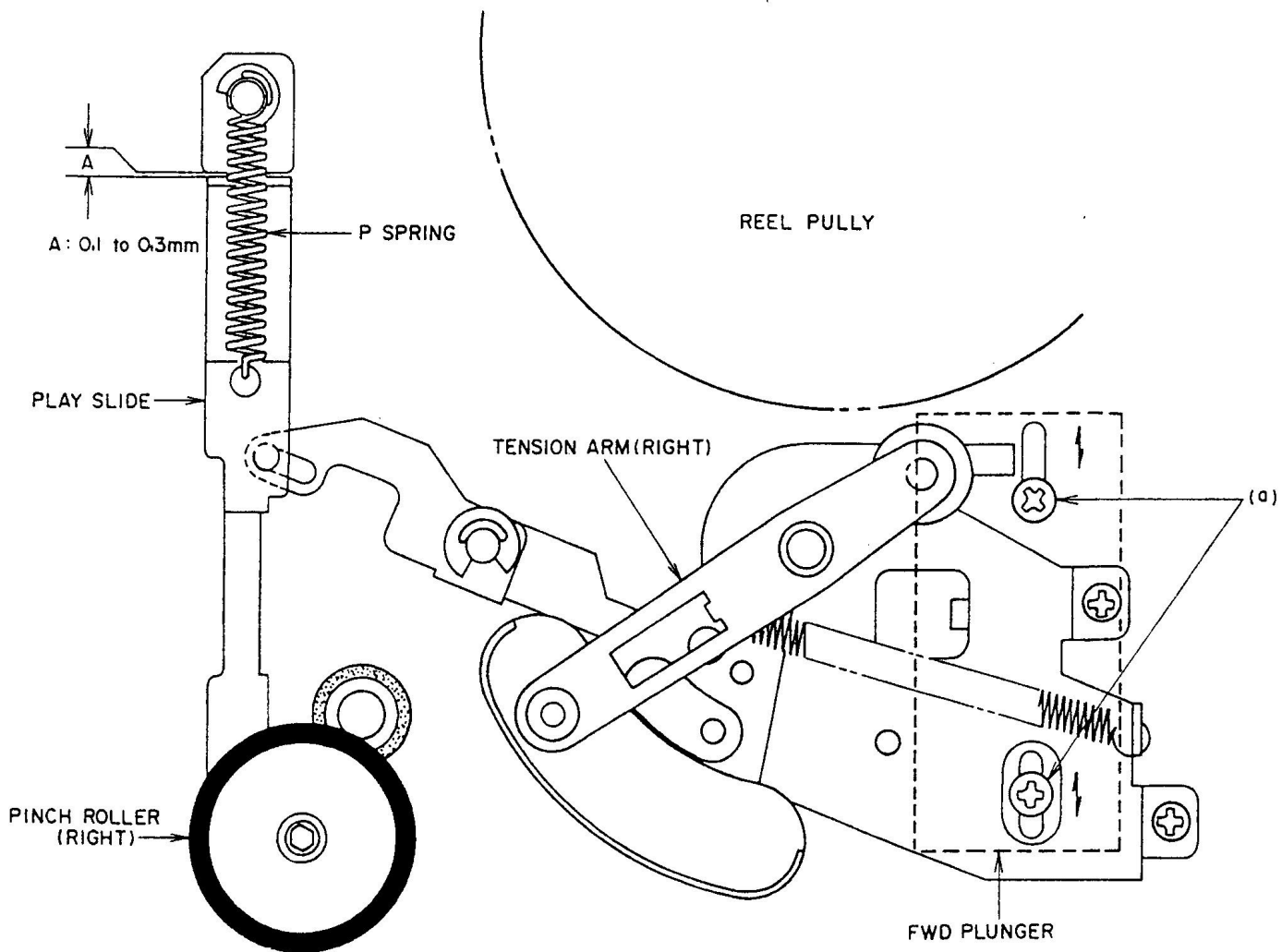


Fig. 33

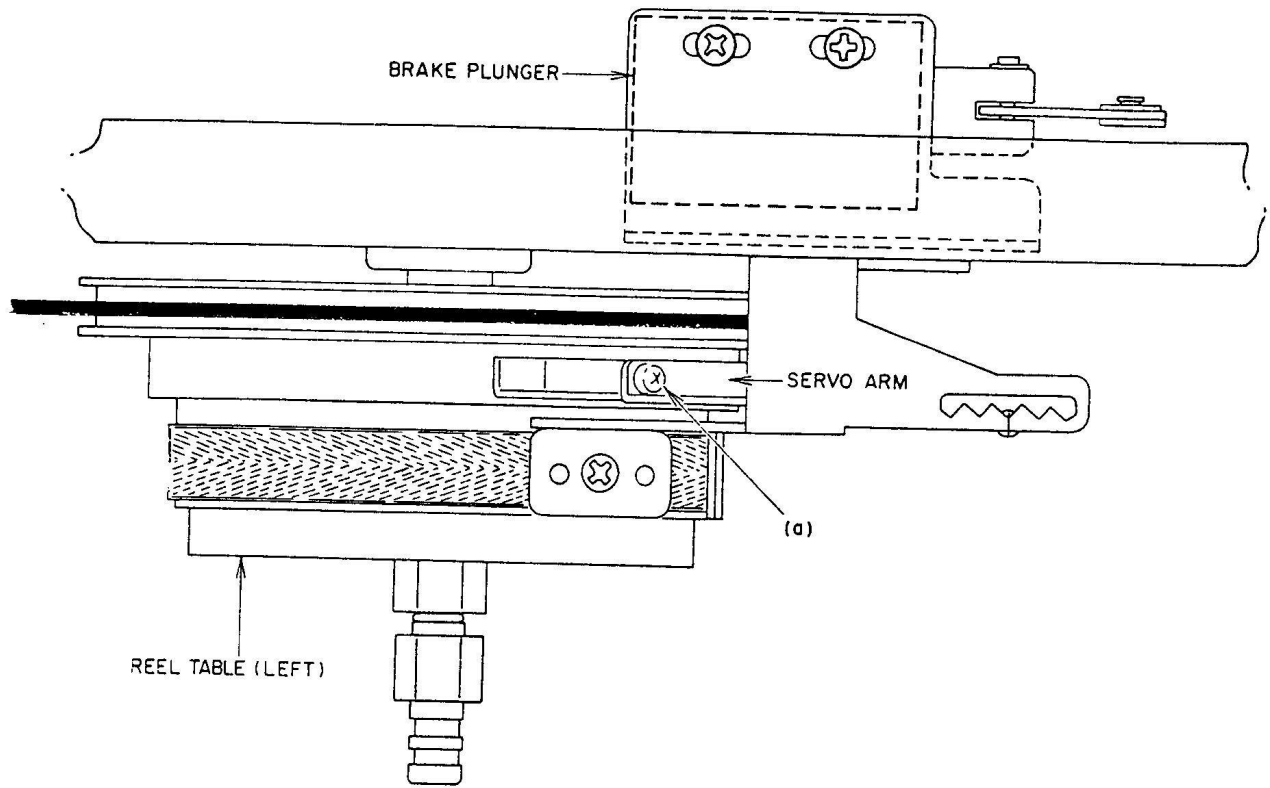


Fig. 34

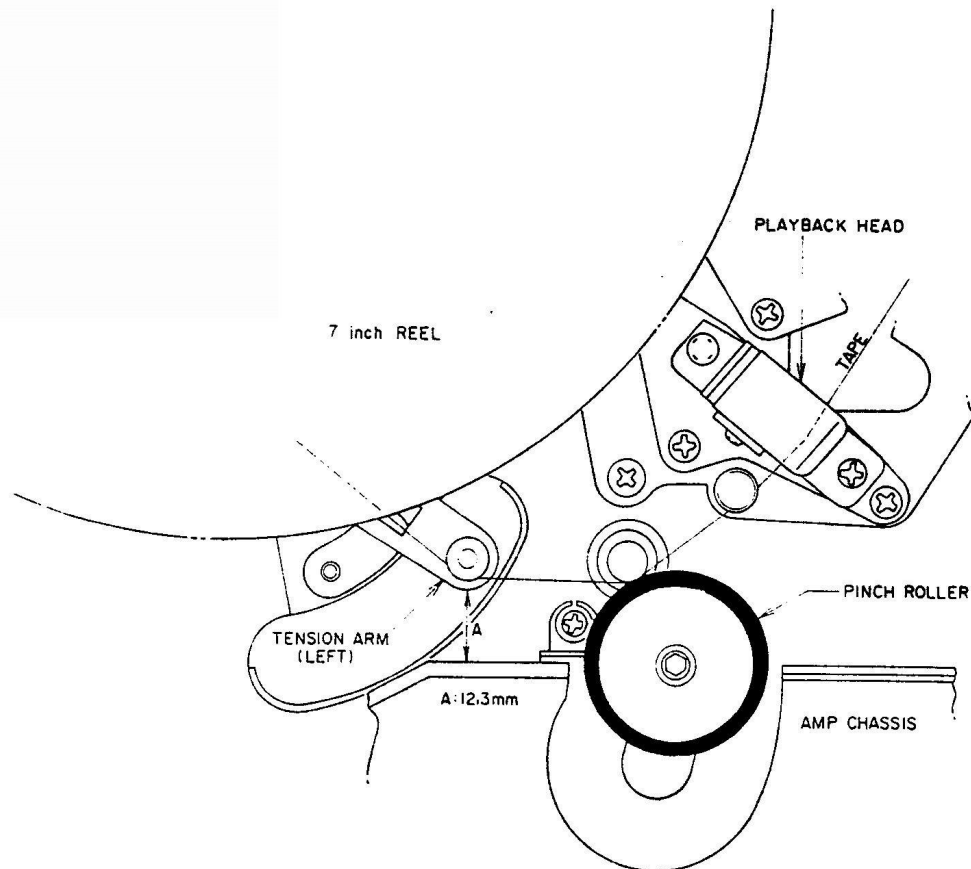


Fig. 35

4. TENSION SERVO ADJUSTMENT (Refer to Figs. 34, 35)

With FWD PLAY near the center of the tape (where the tape lengths at right and left are equal), make adjustment with the screw (a) of the servo arm so that the distance (A) of 12.3 mm will be achieved

between the lower part of the tension arm tape guide at the left side and the amplifier chassis. Also make the same adjustment about the right tension arm in REV mode.

NOTE: Use the tape Maxell UD35-90

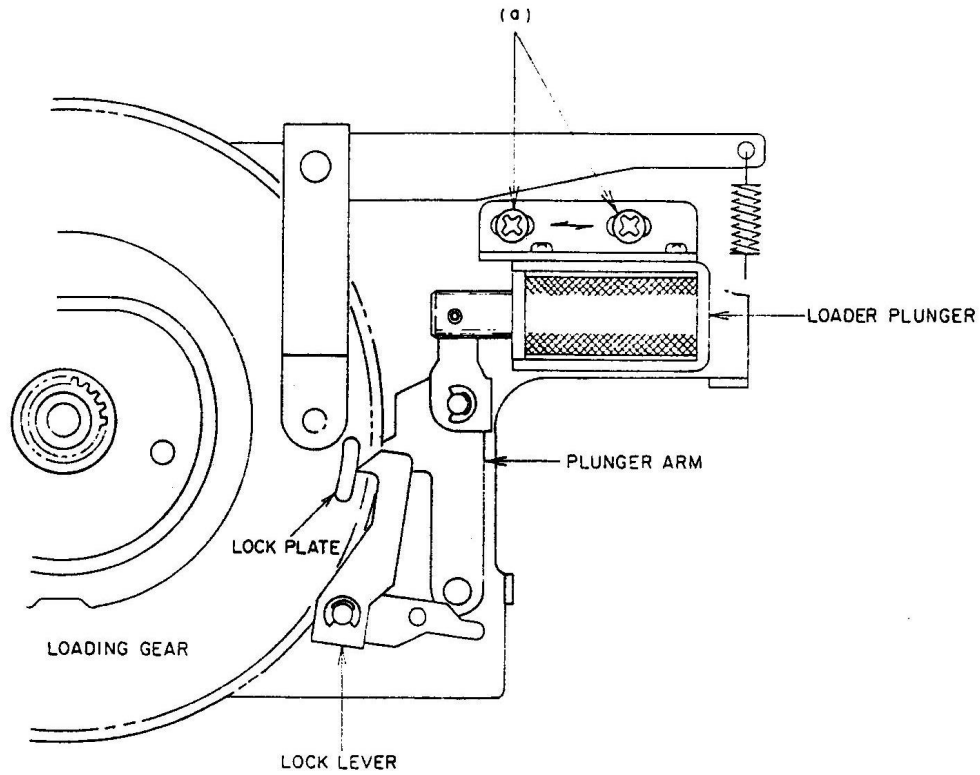


Fig. 36

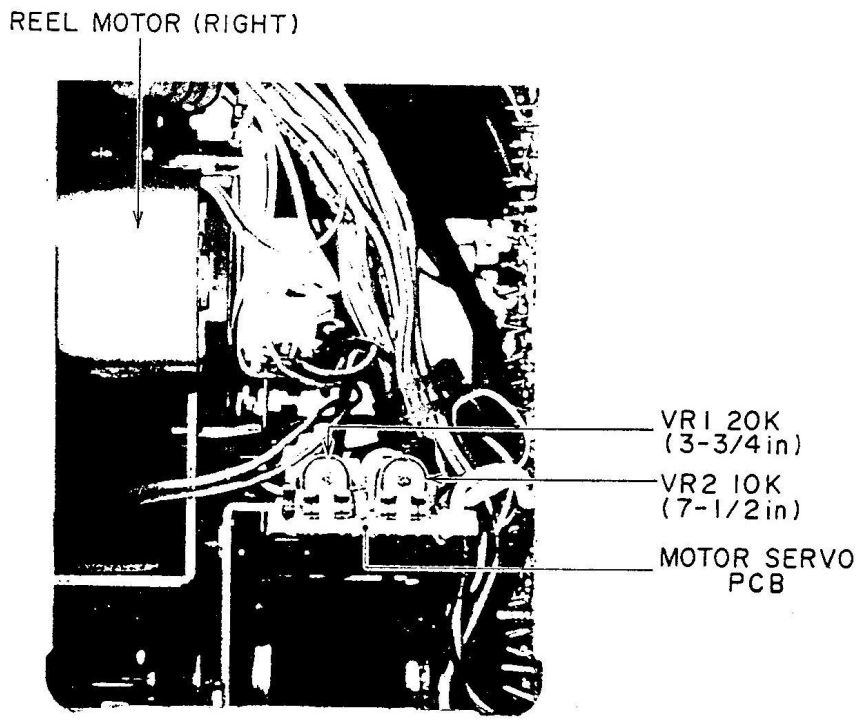


Fig. 37

5. LOADER PLUNGER POSITION ADJUSTMENT (Refer to Fig. 36)

With the loading roller up (FWD/REV PLAY mode or with the loading roller up/down button up), adjust the position of the loader plunger with the screw (a) so that the lock lever is removed from the lock plate of loading gear and put on the lock plate.

6. TAPE SPEED ADJUSTMENT (Refer to Fig. 37)

Set the Tape Speed Switch to 7-1/2 ips. and playback the 1,000 Hz, 7-1/2 Test Tape. Connect a frequency counter to VR2 10 kB until the counter reads, 1,000 Hz \pm 0.8%. Next, set the Tape Speed Switch to 3-3/4 ips. and adjust VR1 20 kB until the frequency counter reads 500 Hz \pm 1.0%.

VIII. HEAD ADJUSTMENT

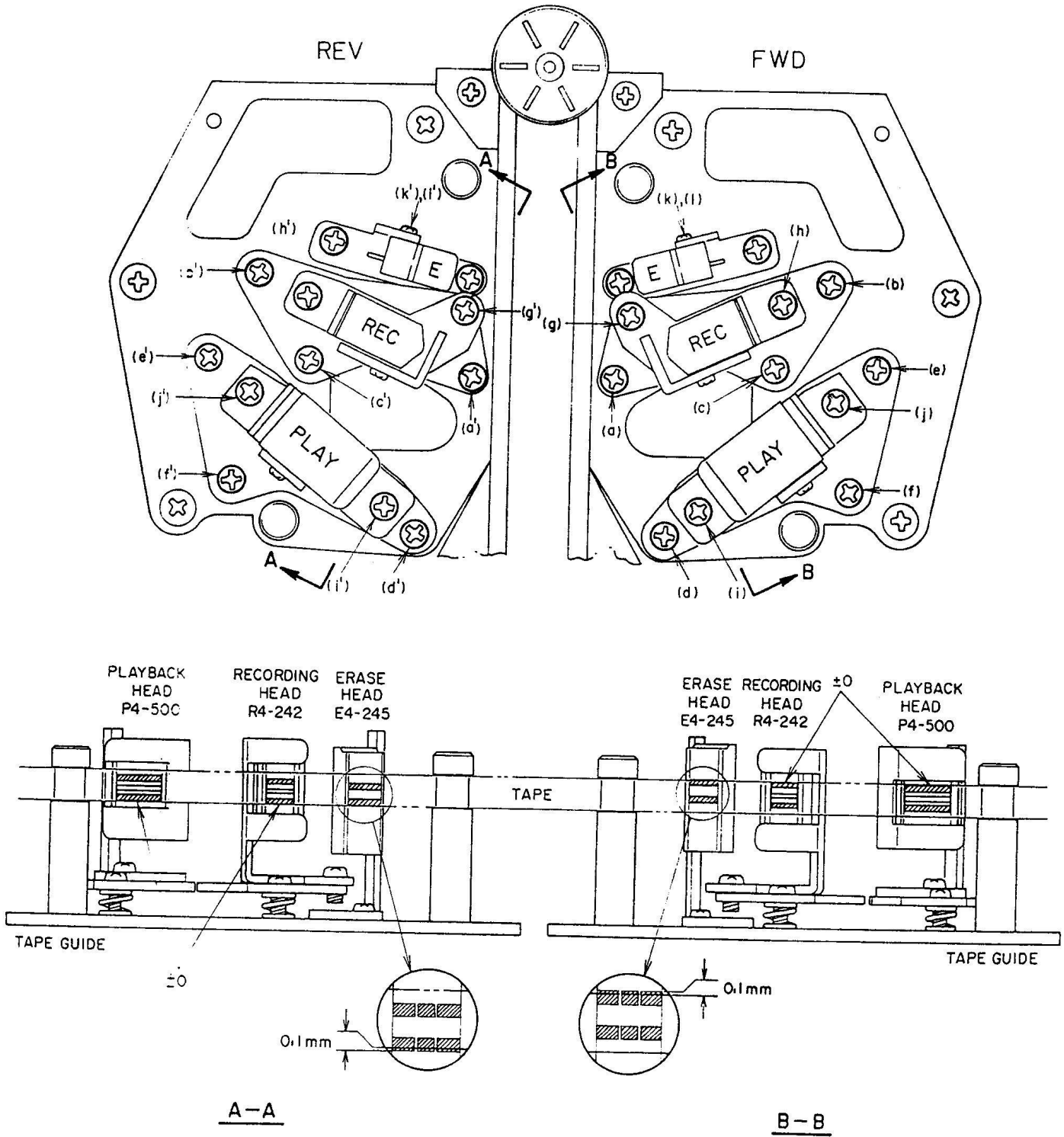


Fig. 38

| Step | Adjustment Item | Test Tape Supply Signal | Mode | Adjustment Point | Result | Remarks |
|------|--|--|---------------------|------------------|---------------------------------|---|
| 1 | FWD Playback level | 700 Hz 7-1/2 ips 0 VU Test Tape | FWD | VR8 50K | 0 ± 0.5 dBm (0.775V) | |
| 2 | REV Playback level | 700 Hz 7-1/2 ips 0 VU Test Tape | REV | VR9 50K | 0 ± 0.5 dBm (0.775V) | |
| 3 | Bias OSC | | REC | T1 | 100 ± 2 kHz | Set TAPE SELECTOR to "EE". Tape Speed 7-1/2 ips. Connect a Frequency Counter between TP and GND. Fig. 40. |
| 4 | Bias Current | | REC | VR5 10K | 115 mV | Set TAPE SELECTOR to "NORMAL". Tape Speed 3-3/4 ips. Connect a AC voltmeter between TP and GND. Fig. 40. |
| 5 | FWD Recording level | NORMAL Blank Tape 1,000 Hz 0 dBm Recording | FWD/ REC | VR7 20K | 0 ± 0.5 dBm (0.775V) | |
| 6 | REV Recording level | NORMAL Blank Tape 1,000 Hz 0 dBm Recording | REV/ REC | VR6 20K | 0 ± 0.5 dBm (0.775V) | |
| 7 | NORMAL Position FWD Frequency Response | NORMAL Blank Tape 1.5 kHz, 15 kHz -20 dBm Recording | FWD/ REC | TC1 | 1.5 kHz, 15 kHz flat | Tape Speed 3-3/4 ips. Recheck Recording level. |
| 8 | NORMAL Position REV Frequency Response | NORMAL Blank Tape 1.5 kHz, 15 kHz -20 dBm Recording | REV/ REC | TC2 | 1.5 kHz, 15 kHz flat | Tape Speed 3-3/4 ips. Recheck Recording level. |
| 9 | EE Position Frequency Response (3-3/4 ips) | EE Blank Tape 2.0 kHz, 20 kHz -20 dBm Recording | FWD, REV/ REC | VR12 20K | 2.0 kHz, 20 kHz, flat | Tape Speed 3-3/4 ips. Recheck Recording level. |
| 10 | EE Position Frequency Response (7-1/2 ips) | EE Blank Tape 2.0 kHz, 20 kHz -20 dBm Recording | FWD, REV/ REC | VR11 5K | 2.0 kHz, 20 kHz flat | Tape Speed 7-1/2 ips. Recheck Recording level. |
| 11 | FWD Distortion Confirmation | 1,000 Hz 0 dBm Recording | FWD/ REC | | NORMAL : EE : See NOTE 6. | Less than 0.5% Less than 0.5% |
| 12 | REV Distortion Confirmation | 1,000 Hz 0 dBm Recording | REV/ REC | | NORMAL : EE : See NOTE 6. | Less than 0.5% Less than 0.5% |
| 13 | Bar Meter Sensitivity | 1,000 Hz 0 dBm from an oscillator | STOP | VR10 10K | 0 VU indication | Set MONITOR Switch to "SOURCE". See NOTE 7. |

| Step | Adjustment Item | Test Tape Supply Signal | Mode | Adjustment Point | Result | Remarks |
|------|-----------------|-------------------------|------|------------------|-------------------|--|
| 14 | Bias Filter | | REC | FL4 | Less than -30 dBm | Set TAPE SELECTOR to "EE". Tape Speed 7-1/2 ips. Line Volume at MAX. See NOTE 8. |

Fig. 41

- NOTES:
1. Output Level Control should be at maximum.
 2. Except for Steps 7, 8 and 9, set Tape Speed to 7-1/2 ips.
 3. Except for Steps 3, 9 to 12 and 14, set Tape Selector Switch to NORMAL Position.
 4. Set Bias Adjustment Volume to center position.
 5. Use the following open measuring tapes:
 - NORMAL Tape: Maxell UD
 - EE Tape : Maxell XLII
 - TDK SA
 6. If it does not comply with the specifications, repeat Steps 5 to 9 and 10, and re-adjust.
 7. Light the bar meter in the ascending order with VR10 and set VR10 in position immediately when 0 dB is lit.
 8. Unless the core is moved intentionally this adjustment is not necessary.

X. DC RESISTANCE OF VARIOUS COILS

-
2

| Part | Designation | DC Resistance |
|------------------------------------|-------------|---------------------|
| Forward Plunger Reverse Plunger | 1664TLTI | 100 ohms \pm 10% |
| Brake Plunger | 1240PLTI | 120 ohms \pm 10% |
| Loader Plunger | 0730TLTI | 120 ohms \pm 10% |
| Relay | G2U | 400 ohms \pm 10% |
| Relay | L24 (M) | 1600 ohms \pm 10% |
| Erase Head | E4-245 | 3.1 ohms |
| Recording Head | R4-242 | 5.9 ohms |
| Playback Head | P4-500 | 407 ohms \pm 5% |

XI. CLASSIFICATION OF VARIOUS P.C BOARDS

1. P.C BOARD TITLES AND IDENTIFICATION NUMBERS

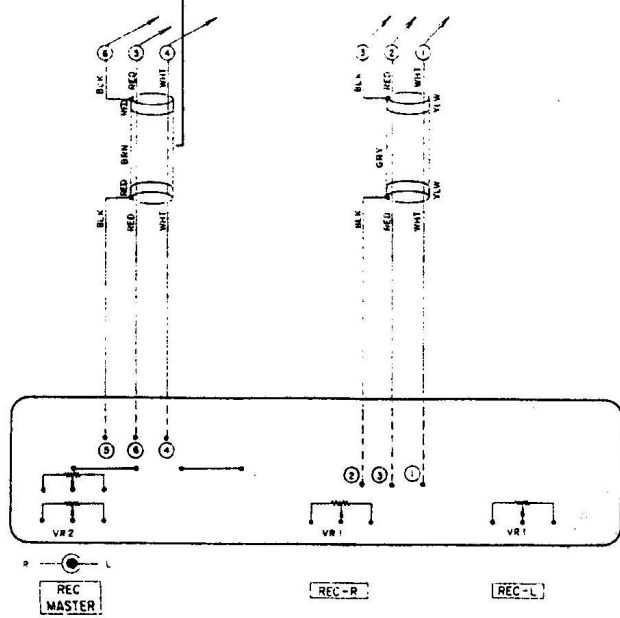
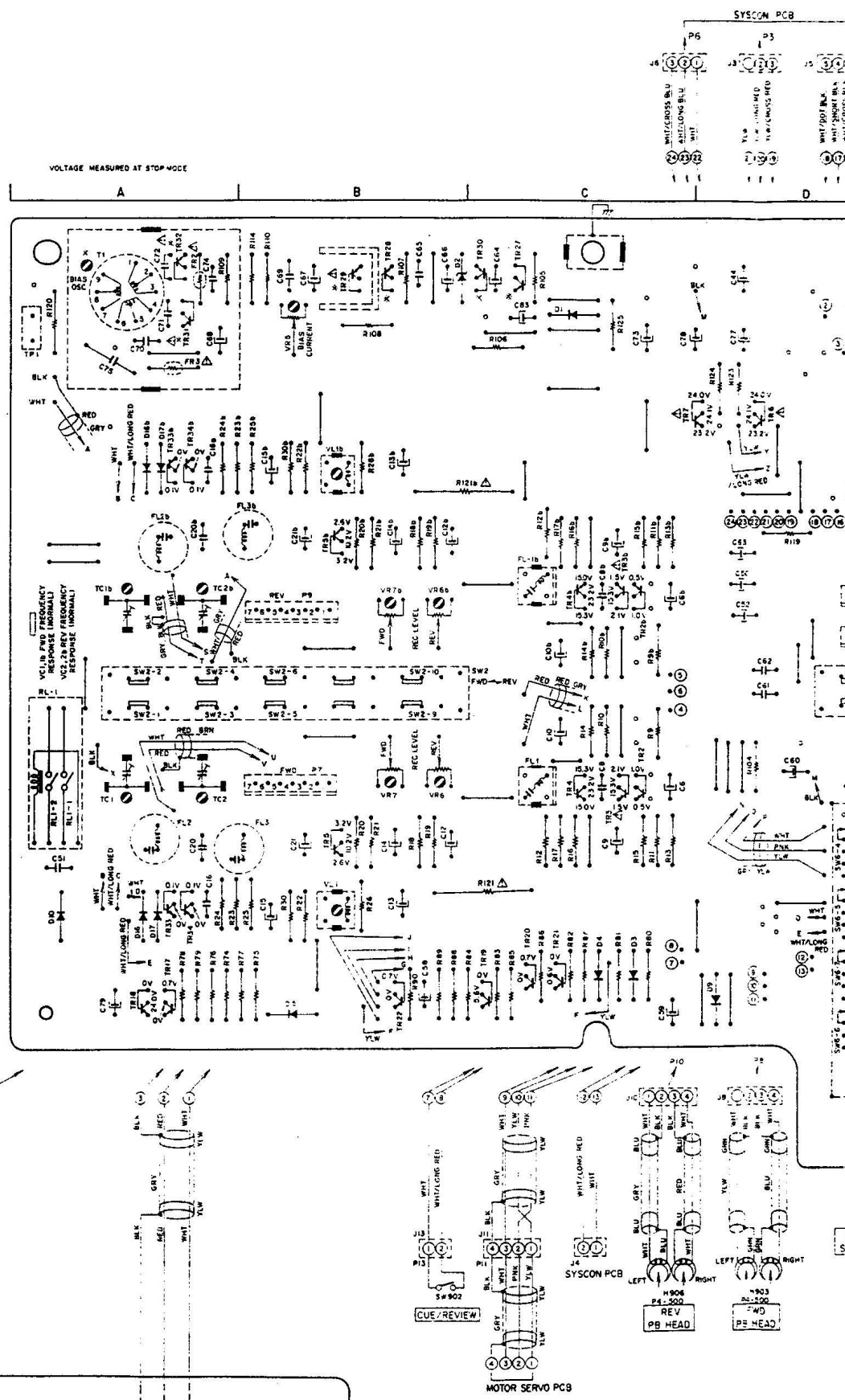
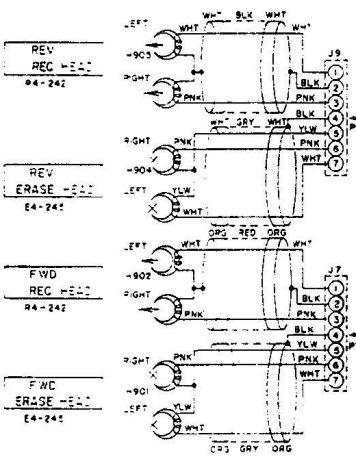
| P.C Board Title | P.C Board Number |
|----------------------------|------------------|
| Pre Amp P.C Board | T1010A515A |
| Volume P.C Board | T1010A515B |
| Syscon P.C Board | T1010B5250 |
| Power Supply P.C Board | T1010B5260 |
| Selector P.C Board | T1010C5160 |
| Operation P.C Board | T1010C5170 |
| Intermediate P.C Board (L) | T1010D520A |
| Intermediate P.C Board (R) | T1010D520B |
| Remocon P.C Board | T1010D5210 |
| Counter P.C Board | T1010D5220 |
| Lamp P.C Board | T1010D5230 |
| Detector P.C Board | T1010D5240 |

2. COMPOSITION OF VARIOUS P.C BOARDS

1) PRE AMP P.C BOARD T1010A515A (2ED) and VOLUME P.C BOARD T1010A515B

REC MODE

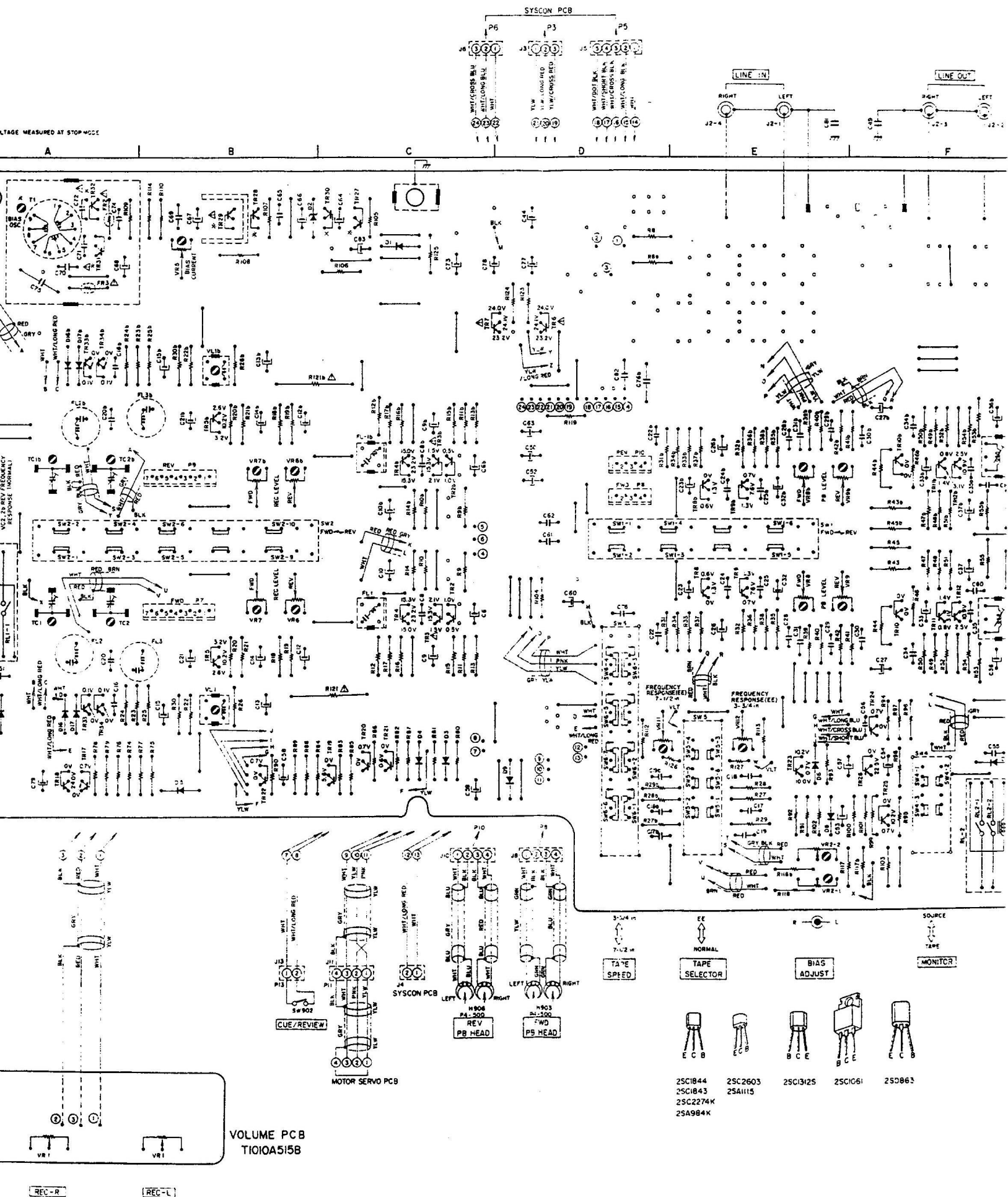
| | T | E | S-S/4 in | | |
|------|---|----|----------|-----------|-----------|
| | | | EE | EE | |
| T927 | C | 25 | 7.8 V | 10.9 | 13.3 V |
| T28 | C | 24 | 24.0 | 24.0 | 24.0 V |
| T929 | E | 7 | 7.2 V | 10.3 | 12.7 V |
| T929 | E | 7 | 6.6 V | 9.9 | 12.1 V |
| T930 | S | 6 | 6.6 V | 8.8 | 6.6 V |
| T930 | E | 6 | 6.7 V | 6.2 | 6.0 V |
| T93 | E | 3 | 3.3 V | 0.6 | 0.6 V |
| T96 | E | 6 | 6.6 V | 9 | 12.1 V |
| T93 | S | 2 | 2.5 V AC | 67.5 V AC | 83.8 V AC |
| T93Z | E | 2 | 0.4 | 0 | 0 V |



VOLUME PCB
T1010A515B

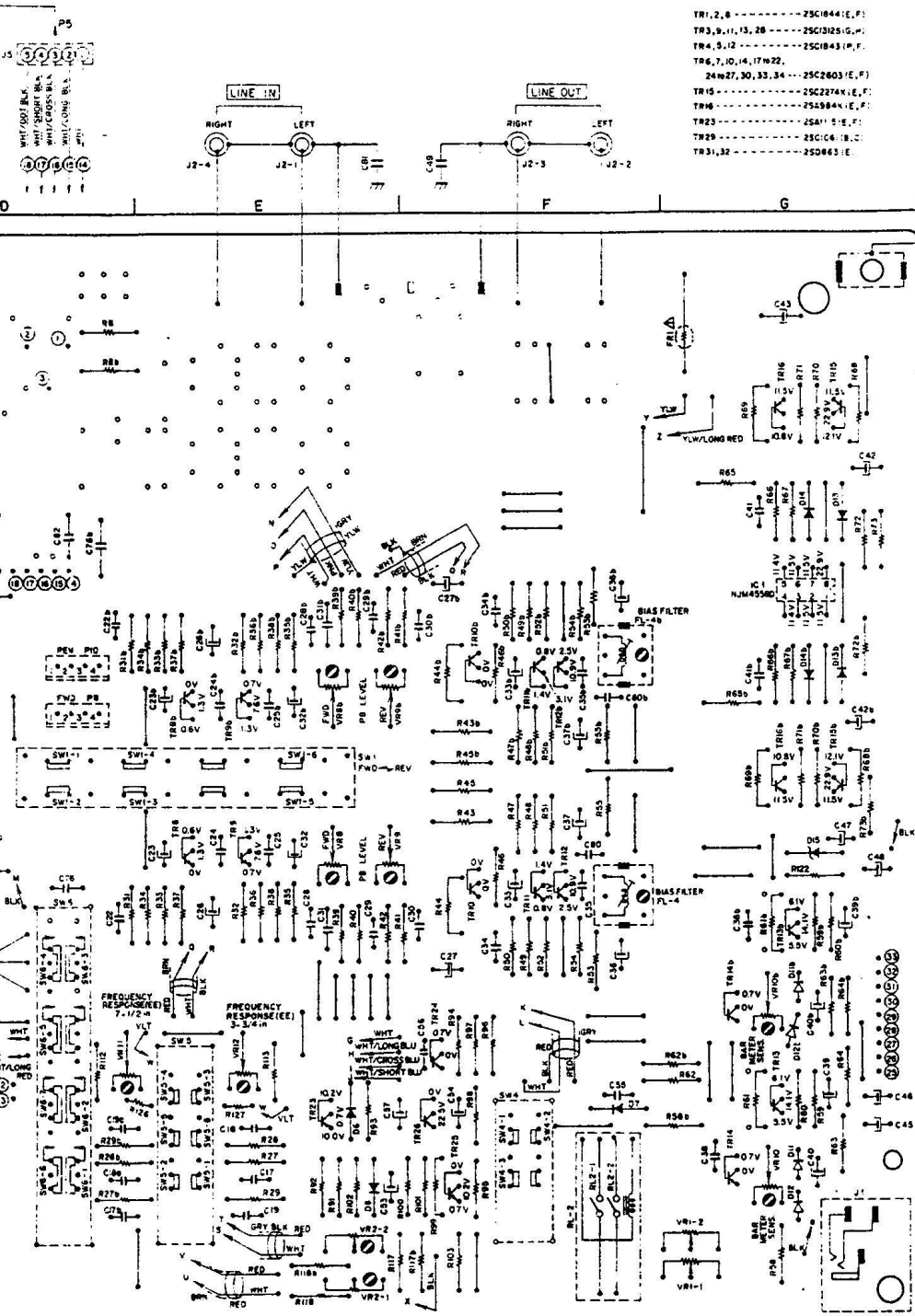
ARDS

and VOLUME P.C BOARD T1010A515B



VOLUME PCB
T1010A515B

- 25C1844
- 25C1843
- 25C2274K
- 25A984K
- 25C2603
- 25A1115
- 25C1325
- 25C1061
- 25D863

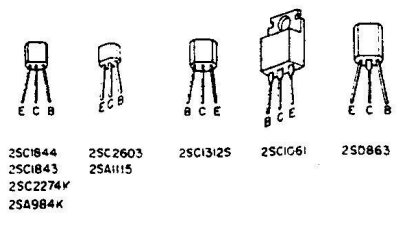
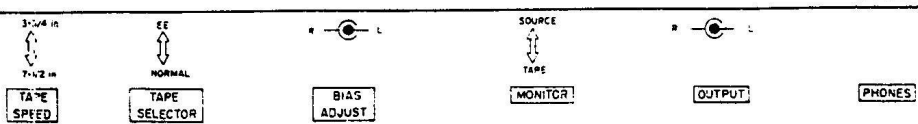
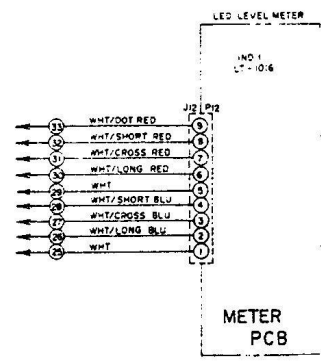


- TR1, 2, 8 ----- 2SC1844 (E, F)
- TR3, 9, 11, 13, 28 ----- 2SC1325 (G, H)
- TR4, 5, 12 ----- 2SC1843 (H, F)
- TR6, 7, 10, 14, 17, 19, 22, 24, 27, 30, 33, 34 ----- 2SC2603 (E, F)
- TR15 ----- 2SC2274 (K, E, F)
- TR16 ----- 2SA984 (K, E, F)
- TR23 ----- 2SA1115 (E, F)
- TR29 ----- 2SC1061 (B, C)
- TR31, 32 ----- 2SD863 (E)

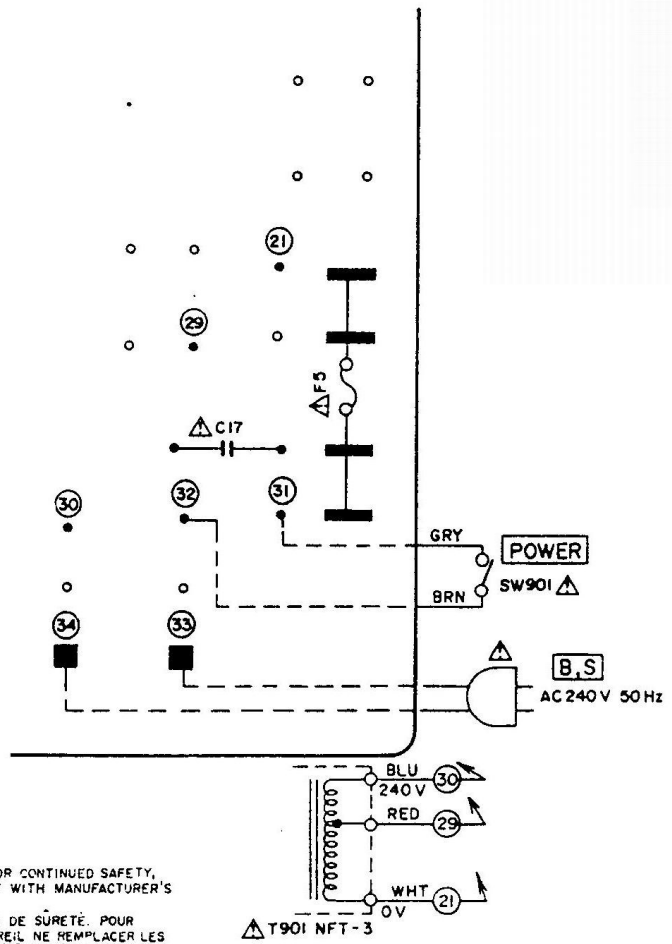
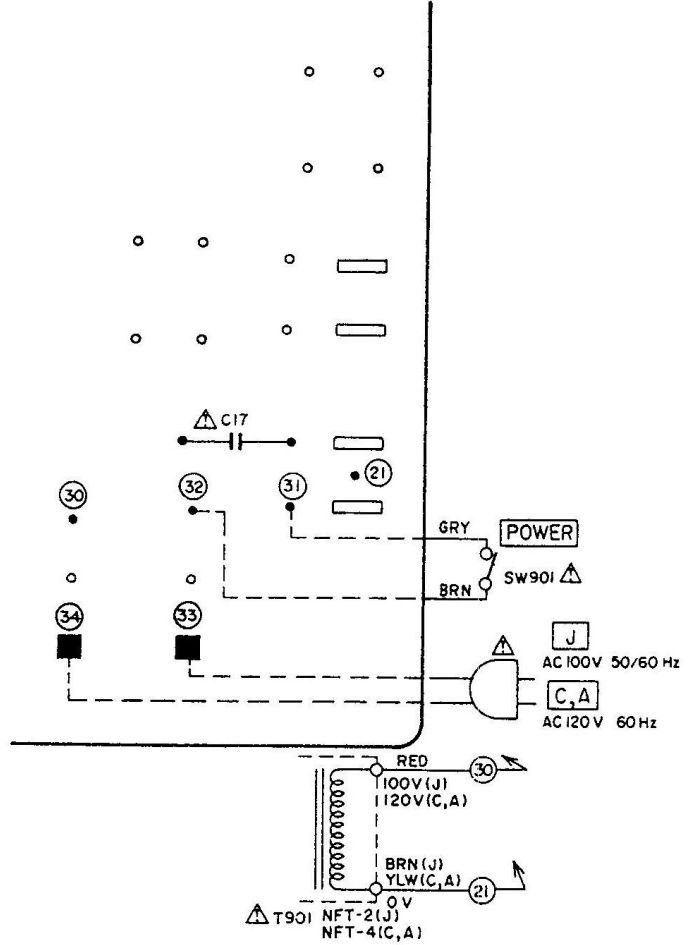
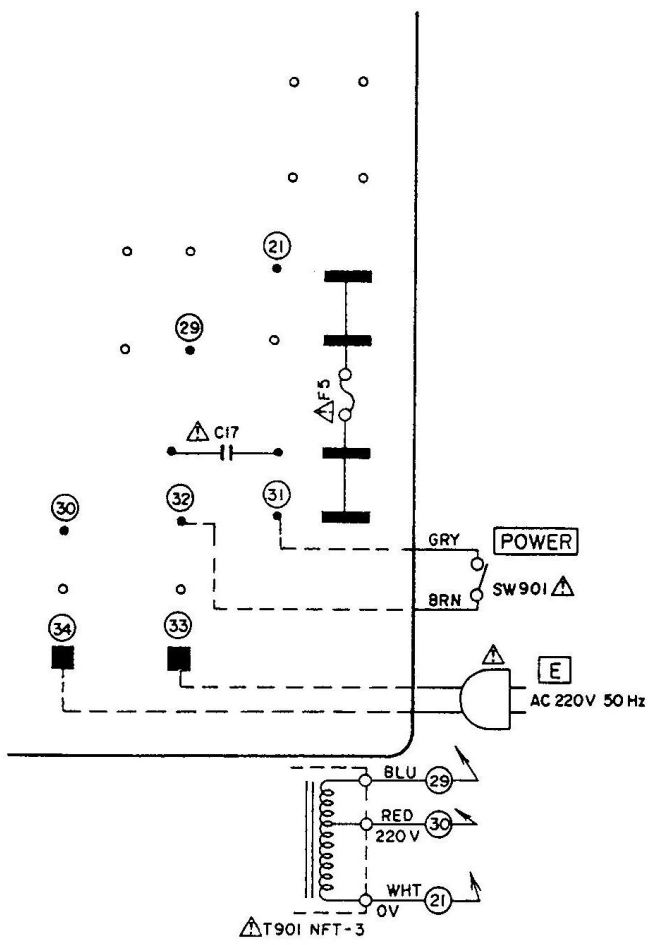
LOCATION OF TRANSISTOR

| | | | |
|------------|----|--------------|----|
| TR1 | E2 | TR10 | E1 |
| TR2 to 4 | C3 | TR20 to 40 | C2 |
| TR5 | B4 | TR50 | B2 |
| TR6, 7 | D2 | TR80, 90 | E3 |
| TR8, 9 | E3 | TR100 to 120 | F3 |
| TR10 to 12 | F3 | TR130, 140 | G4 |
| TR13, 14 | G5 | TR150, 160 | G3 |
| TR15, 16 | G1 | TR330, 340 | A2 |
| TR17, 18 | A5 | | |
| TR19 to 21 | C5 | | |
| TR22 | B5 | | |
| TR23 | C5 | | |
| TR24 | F4 | | |
| TR25, 26 | F5 | | |
| TR27 | C1 | | |
| TR28, 29 | B1 | | |
| TR30 | C1 | | |
| TR31, 32 | A1 | | |
| TR33, 34 | A4 | | |

PRE AMP PCB
T1010A515A



- 2SC1844
- 2SC1843
- 2SC2274K
- 2SA984K
- 2SC2603
- 2SA1115
- 2SC1325
- 2SC1061
- 2SD863

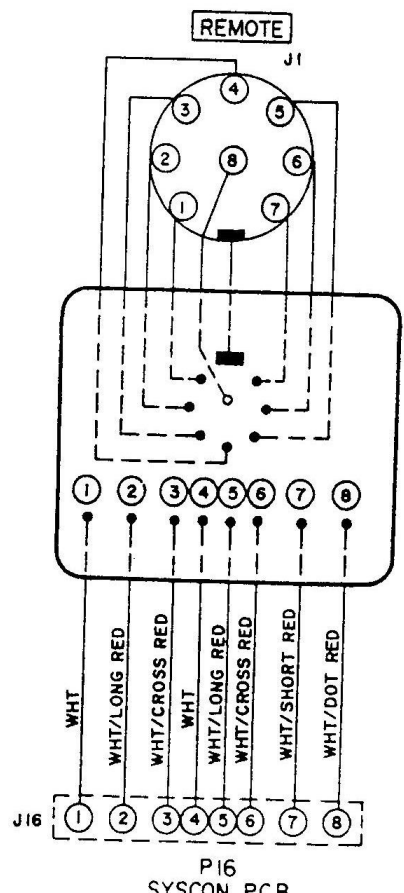
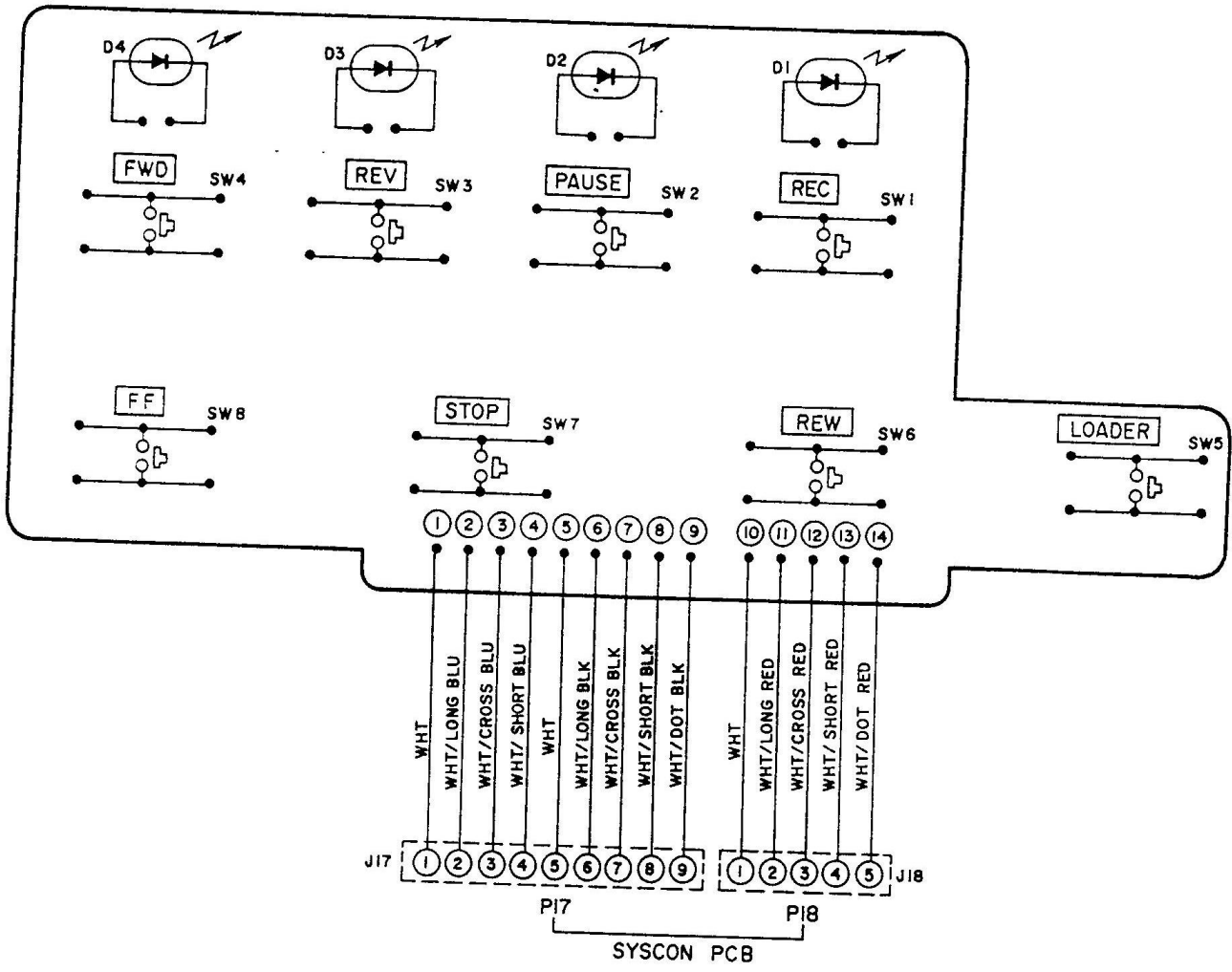


WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

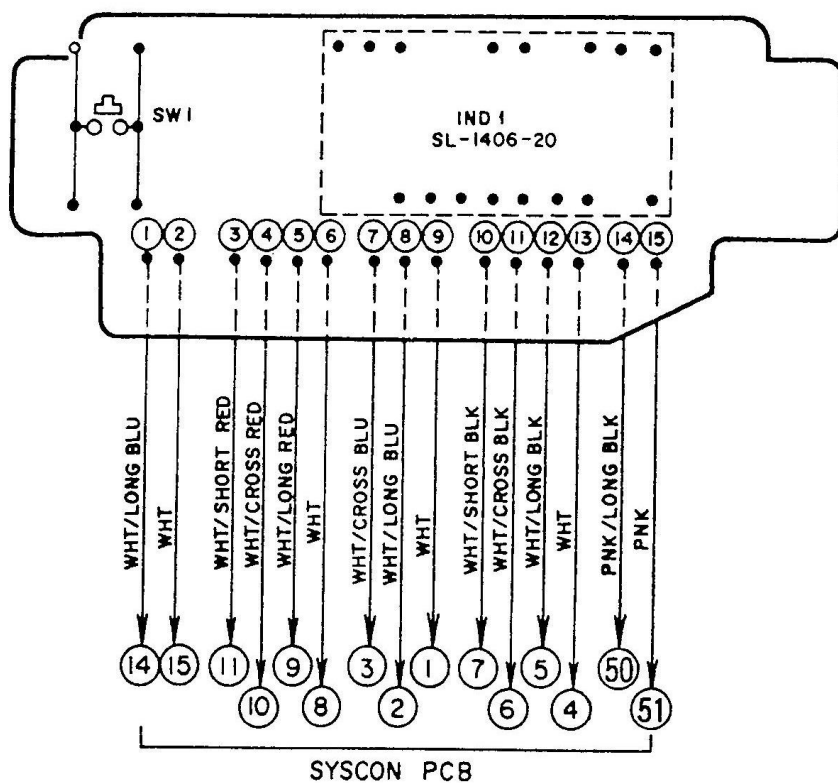
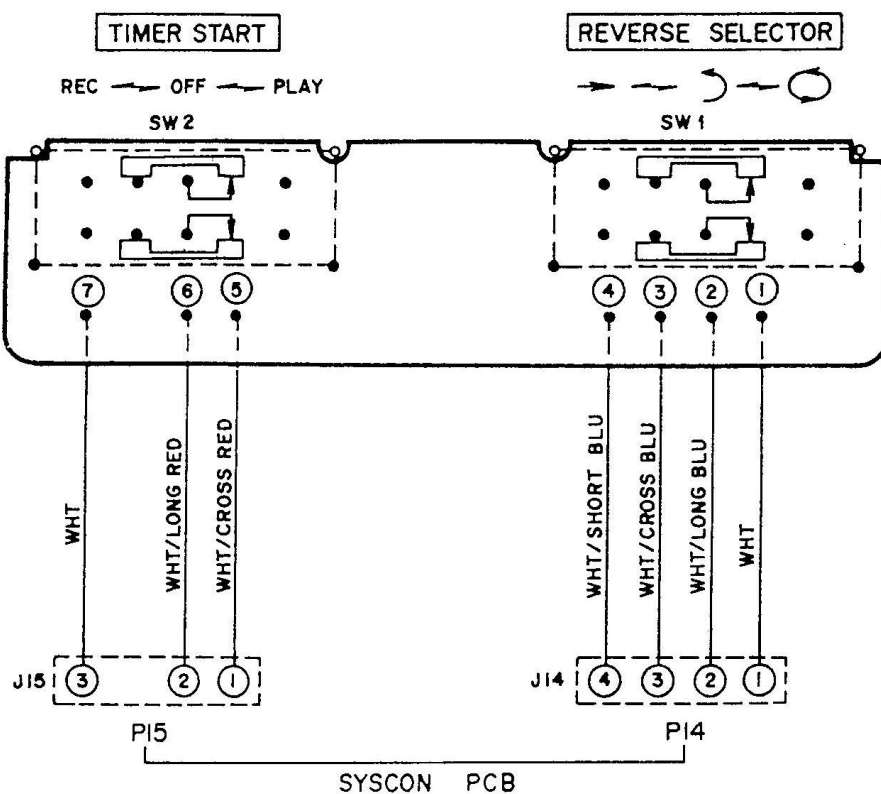
AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRÉ DE SÛRETÉ DE L'APPAREIL, NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SÛRETÉ QUE PAR DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

Δ T901 NFT-3

4) OPERATION P.C BOARD T1010C5170 and REMOCON P.C BOARD T1010D5210



5) SELECTOR P.C BOARD T1010C5160 and COUNTER P.C BOARD T1010D5220



SECTION 2

PARTS LIST

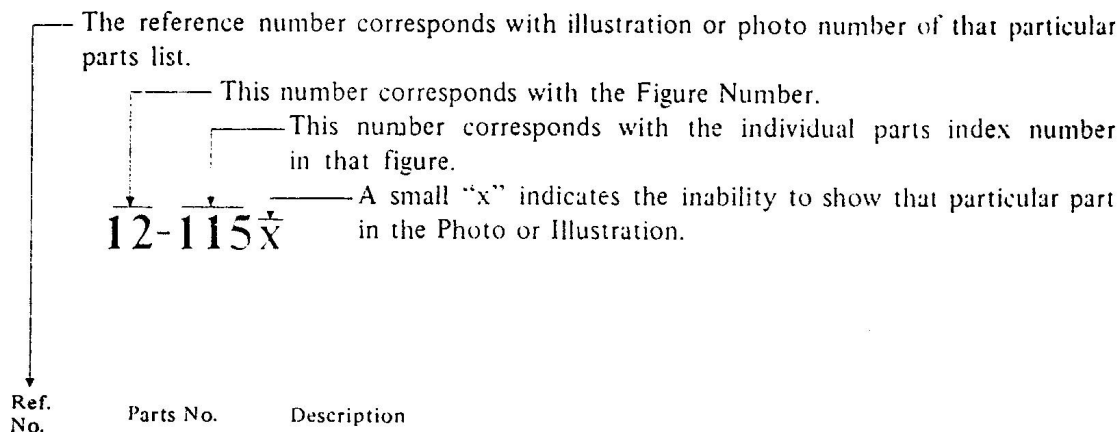
TABLE OF CONTENTS

| | |
|--|----|
| 1. RECOMMENDED SPARE PARTS | 47 |
| 2. HEAD BLOCK | 48 |
| 3. REEL TABLE BLOCK | 50 |
| 4. ARM TENSION BLOCK | 52 |
| 5. ROLLER BLOCK | 53 |
| 6. MECHA BLOCK (1) | 54 |
| 7. MECHA BLOCK (2) | 56 |
| 8. PRE AMP P.C BOARD BLOCK | 58 |
| 9. SYS. CON. P.C BOARD BLOCK | 59 |
| 10. POWER SUPPLY P.C BOARD BLOCK | 59 |
| 11. ASSEMBLY BLOCK | 60 |
| 12. FINAL ASSEMBLY BLOCK | 62 |
| INDEX | 63 |

Resistor and Capacitor which is not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

HOW TO USE THIS PARTS LIST

1. This parts list is compiled by various individual blocks based on assembly process.
2. When ordering parts, please describe parts number, serial number, and model number in detail.
3. How to read List



| Ref. No. | Parts No. | Description |
|---------------------------|-----------|----------------------------|
| FLYWHEEL BLOCK =13 | | |
| 12-115x | 800425 | Flywheel Block Assy. Comp. |
| 12-116 | 244506 | Flywheel Only |
| 12-117x | 244754 | Felt, Flywheel |
| 12-118 | 251324 | Main Metal Case |
| 12-119 | 253080 | Main Metal |

4. The symbol numbers shown on the P.C. Board list can be matched with the Composite Views of Components of the Schematic Diagram or Service Manual.
5. Please utilize separate "Common List for Service Parts" for Resistor Parts orders.
6. The shape of the parts and parts name, etc. can be confirmed by comparing them with the parts shown on the Electrical Parts Table of P.C. Board.
7. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List.
It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index. (meaning of ref. no. outlined in Item 3 above).
8. Utilize separate "Price List for Parts" to determine unit price. The most simple method of finding parts Price is to utilize the reference number.

- CAUTION:**
1. When placing an order for parts, be sure to list the parts no. model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
 2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
 3. Because parts number and parts unit supply in the Preliminary Service Manual (Basic Parts List) may be partially changed, please use this parts list for all future reference.

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

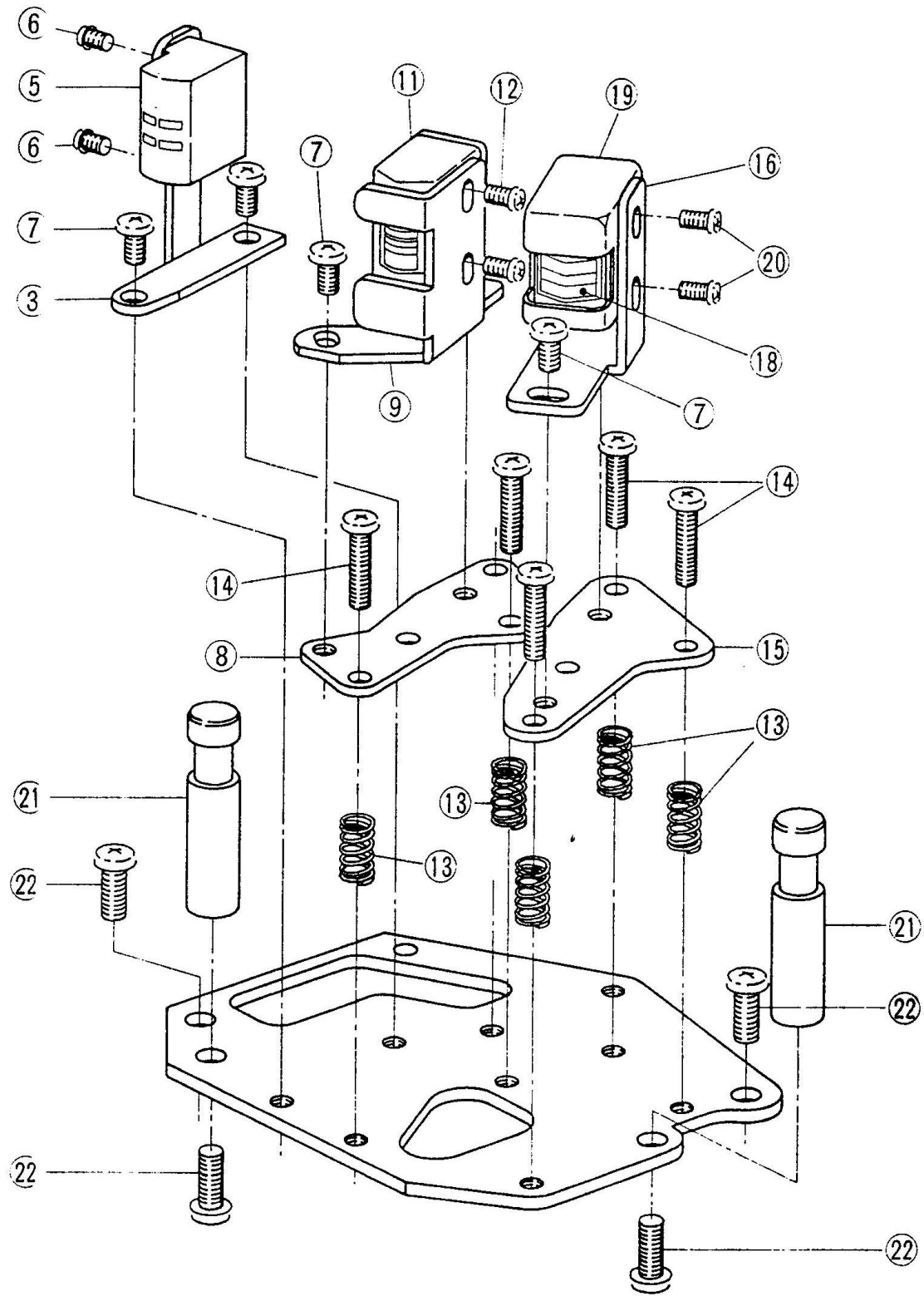
AVERTISSEMENT: ⚠ IL INDIQU LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

1. RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

| REF. NO. | PARTS NO. | DESCRIPTION | REF. NO. | PARTS NO. | DESCRIPTION |
|----------|--------------|--|----------|--------------|---------------------------|
| 1-1 | BMT1010A130A | CAPSTAN MOTOR BLK GX-77 | 1-65 | ES283072 | SW SLIDE SSC22LP 2-02-02N |
| 1-2 | BM331256 | MOTOR 4322-010-75112 | 1-66 | ES315362 | SW TACT AKC8S |
| 1-3 | BT331218 | Δ TRANS POWER NFT-1 (U) | 1-67 | ET324539 | TR PHOTO PT-410C C |
| 1-4 | BT331219 | Δ TRANS POWER NFT-2 (J) | 1-68 | ET200558 | TR 2SA1115 E,F |
| 1-5 | BT331220 | Δ TRANS POWER NFT-3 (E,B,S,V) | 1-69 | ET331223 | TR 2SA608KWBPN F,G SNP |
| 1-6 | BT331221 | Δ TRANS POWER NFT-4 (C,A) | 1-70 | ET324134 | TR 2SA984K E,F |
| 1-7 | BZT1010A240A | GEAR LOADING BLK GX-77 | 1-71 | ET666415 | TR 2SB605 K,L |
| 1-8 | BZT1010A050A | HOLDER LOADING ARM BLK GX-77 | 1-72 | ET375603 | TR 2SC1061B,C |
| 1-9 | ED308952 | D GERMA V 1K34A-LR F07 | 1-73 | ET317919 | TR 2SC1061 C,D |
| 1-10 | ED331227 | D GERMA V 1K34A-UF SNP | 1-74 | ET603257 | TR 2SC1312S G,H |
| 1-11 | ED330996 | D LED GL-5HY5 YLW | 1-75 | ET331279 | TR 2SC1843 P,F SNP |
| 1-12 | ED330997 | D LED GL-5PR5 RED | 1-76 | ET308954 | TR 2SC1844 E,F |
| 1-13 | ED330995 | D LED SLP-260C GRN | 1-77 | ET309353 | TR 2SC2274 E,F |
| 1-14 | ED313566 | D SILICON GP-25G 400/2.5A | 1-78 | ET331225 | TR 2SC2274K-WB E,F SNP |
| 1-15 | ED301911 | D SILICON H DS448 | 1-79 | ET200505 | TR 2SC2603 E,F |
| 1-16 | ED316143 | D SILICON H 1S2473HS F10 | 1-80 | ET331224 | TR 2SC536KWBPN F,G SNP |
| 1-17 | ED330987 | D SILICON RB152 200/1.5A | 1-81 | ET639437 | TR 2SC945L Q,P |
| 1-18 | ED560913 | D SILICON V 1S2473VE | 1-82 | ET219857 | TR 2SD438 E,F |
| 1-19 | ED306109 | D SILICON W03B 100/1.0A | 1-83 | ET307349 | TR 2SD794 P,Q |
| 1-20 | ED330622 | D SILICON 1SR35-100VL 100/1.0A | 1-84 | ET331196 | TR 2SD863 E |
| 1-21 | ED319463 | D SILICON 4B4B41 100/4.0A | 1-85 | EV336853 | R S-FIX H KVSF807V 3P 103 |
| 1-22 | ED330989 | D ZENER H HZ11 B2 | 1-86 | EV336849 | R S-FIX H KVSF807V 3P 203 |
| 1-23 | ED315759 | D ZENER H HZ16 1 | 1-87 | EV336843 | R S-FIX H KVSF807V 3P 303 |
| 1-24 | ED329051 | D ZENER H HZ24 3 | 1-88 | EV341225 | R S-FIX H KVSF807V 3P 503 |
| 1-25 | ED331198 | D ZENER H HZ3 A1 | 1-89 | EV331199 | VR ROTARY 16P10x1E 15A503 |
| 1-26 | ED331197 | D ZENER H HZ6 C1 | 1-90 | EV331201 | VR ROTARY 16P20x2F A503 |
| 1-27 | ED324082 | IND FL SL-1406-20 CHARACTER | 1-91 | EV331202 | VR ROTARY 16P20x2G 3B103 |
| 1-28 | ED331263 | IND LE LT-1016 GRAPH | 1-92 | EV331285 | VR ROTARY 16P20x2H B502 |
| 1-29 | EF258344 | Δ FUSE SEMKO T 250V 0.80A (F3) (U,E,B,S,V) | 1-93 | HEH1305A010A | HEAD E E4-245 O |
| 1-30 | EF602550 | Δ FUSE SEMKO T 250V 1.25A (F4) (U,E,B,S,V) | 1-94 | HPH1005A010A | HEAD PB P4-500 O |
| 1-31 | EF602550 | Δ FUSE SEMKO T 250V 1.25A (F5) (U,E,B,S,V) | 1-95 | HRH1103A010A | HEAD REC R4-242 O |
| 1-32 | EF601964 | Δ FUSE SEMKO T 250V 1.60A (F2) (U,E,B,S,V) | 1-96 | MB331350 | BELT CAPSTAN |
| 1-33 | EF601301 | Δ FUSE SEMKO T 250V 2A (F1) (U,E,B,S,V) | 1-97 | MB331351 | BELT REEL |
| 1-34 | EF309388 | Δ FUSE TSC A 250V 0.80A (F3)(J) | 1-98 | MI331310 | FLYWHEEL (A) |
| 1-35 | EF306949 | Δ FUSE TSC A 250V 1.25A (F4)(J) | 1-99 | MI331311 | FLYWHEEL (B) |
| 1-36 | EF311839 | Δ FUSE TSC A 250V 1.6A (F2) (J) | 1-100 | MP331347 | ROLLER PINCH |
| 1-37 | EF306951 | Δ FUSE TSC A 250V 2.5A (F1) (J) | 1-101 | MZ331397 | GEAR LOADING (B) |
| 1-38 | EF309391 | Δ FUSE TSC 125V 0.08A (F3)(C,A) | 1-102 | SZ331312 | GEAR CAPSTAN |
| 1-39 | EF309392 | Δ FUSE TSC 125V 1.25A (F4)(C,A) | 1-103 | SZ331394 | GEAR FIX |
| 1-40 | EF308847 | Δ FUSE TSC 125V 1.60A (F2)(C,A) | 1-104 | SZ338391 | GEAR SET |
| 1-41 | EF306956 | Δ FUSE TSC 125V 2.5A (F1)(C,A) | | | |
| 1-42 | EI331573 | IC HD14042BP | | | |
| 1-43 | EI331222 | IC HD38800A42 | | | |
| 1-44 | EI213390 | IC NJM4558D | | | |
| 1-45 | EI331249 | IC μPC78M10H | | | |
| 1-46 | EL324540 | PL H LEAD 12V 55MA | | | |
| 1-47 | EP331258 | SOLENOID 0730TLT1 | | | |
| 1-48 | EP331257 | SOLENOID 1240PLT1 | | | |
| 1-49 | EP331254 | SOLENOID 1664TLT1 (TDS-16C-01) | | | |
| 1-50 | EP331253 | SOLENOID 1664TLT1 (TDS-16C-02) | | | |
| 1-51 | ER331188 | R FUSE ERD2FC F10 1/4W 8R2J | | | |
| 1-52 | ER319510 | R FUSE FR25SJ 1/4W 560J | | | |
| 1-53 | ES283151 | SW LEAF BSW-31NL 01-1 NO | | | |
| 1-54 | ES331259 | SW LEAF BSW-810 01-1 NO | | | |
| 1-55 | ES319448 | SW LEVER 00420461 2-04-02N | | | |
| 1-56 | ES331203 | SW LEVER 00620387 2-06-02S | | | |
| 1-57 | ES331205 | SW LEVER 00820190 2-08-02S | | | |
| 1-58 | ES331575 | SW MICRO D2MV-01-1C1 CU | | | |
| 1-59 | ES330422 | SW PUSH SDL1P 01-1 E (U,E,B,S,V) | | | |
| 1-60 | ES330420 | SW PUSH SDL1P 01-1 J (J) | | | |
| 1-61 | ES330421 | SW PUSH SDL1P 01-1 UC (C,A) | | | |
| 1-62 | FS331204 | SW SLIDE CL208E 2-08-02W | | | |
| 1-63 | ES301435 | SW SLIDE CL210E 2-10-02S | | | |
| 1-64 | ES331260 | SW SLIDE SSB423 2-02-03N | | | |

HEAD BLOCK



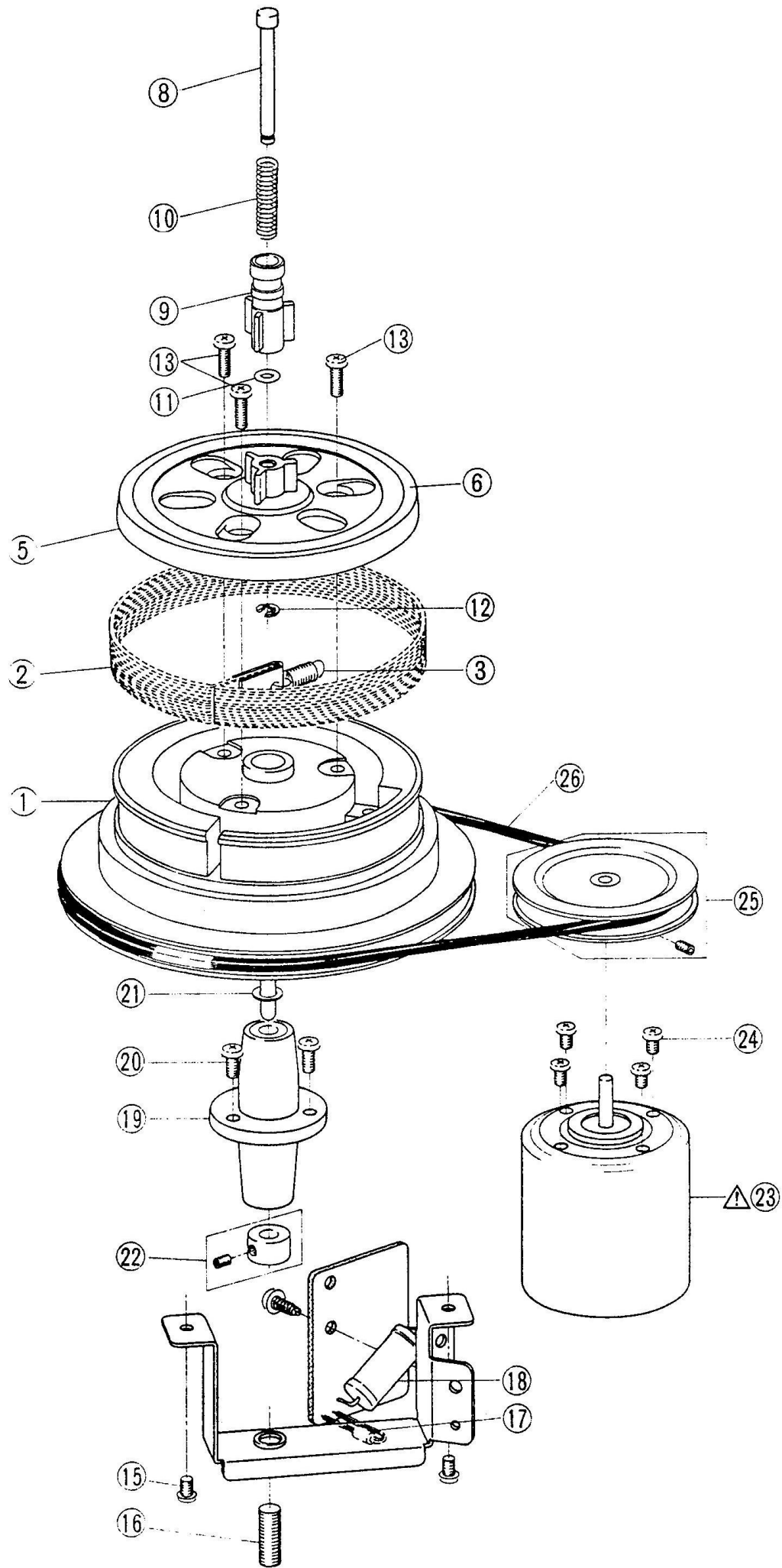
2. HEAD BLOCK

| REF. NO. | PARTS NO. | DESCRIPTION |
|----------|--------------|--------------------------|
| 2-1 | BHT1010A370A | ANGLE HEAD (R) BLK GX-77 |
| 2-2 | BHT1010A360A | ANGLE HEAD (L) BLK GX-77 |
| 2-3 | HZ331172 | CHASSIS HEAD |
| 2-4x | HZ331171A | ANGLE E HEAD (L) |
| 2-5 | HEH1305A010A | HEAD E E4-245 O |
| 2-6 | ZS477876 | PAN20x03STL CMT |
| 2-7 | ZS323728 | BID30x05STL CMT |
| 2-8 | HZ331147 | HOLDER REC HEAD ANGLE |
| 2-9 | HZ331148B | ANGLE REC HEAD (R) |
| 2-10x | HZ331148A | ANGLE REC HEAD (L) |
| 2-11 | HRH1103A010A | HEAD REC R4-242 O |
| 2-12 | ZS460440 | PAN20x04STL CMT |
| 2-13 | ZG206144 | ANGLE ADJUST SPRING |
| 2-14 | ZS419670 | PAN30x12STL CMT |
| 2-15 | HZ331149 | HOLDER PB HEAD ANGLE |
| 2-16 | HZ331150B | ANGLE PB HEAD (R) |
| 2-17x | HZ331150A | ANGLE PB HEAD (L) |
| 2-18 | HPH1005A010A | HEAD PB P4-500 O |
| 2-19 | HZ330925 | HEAD SHIELD |
| 2-20 | ZS608095 | PAN20x05STL CMT |
| 2-21 | HZ331151 | GUIDE TAPE |
| 2-22 | ZS417150 | PAN40x06STL CMT |

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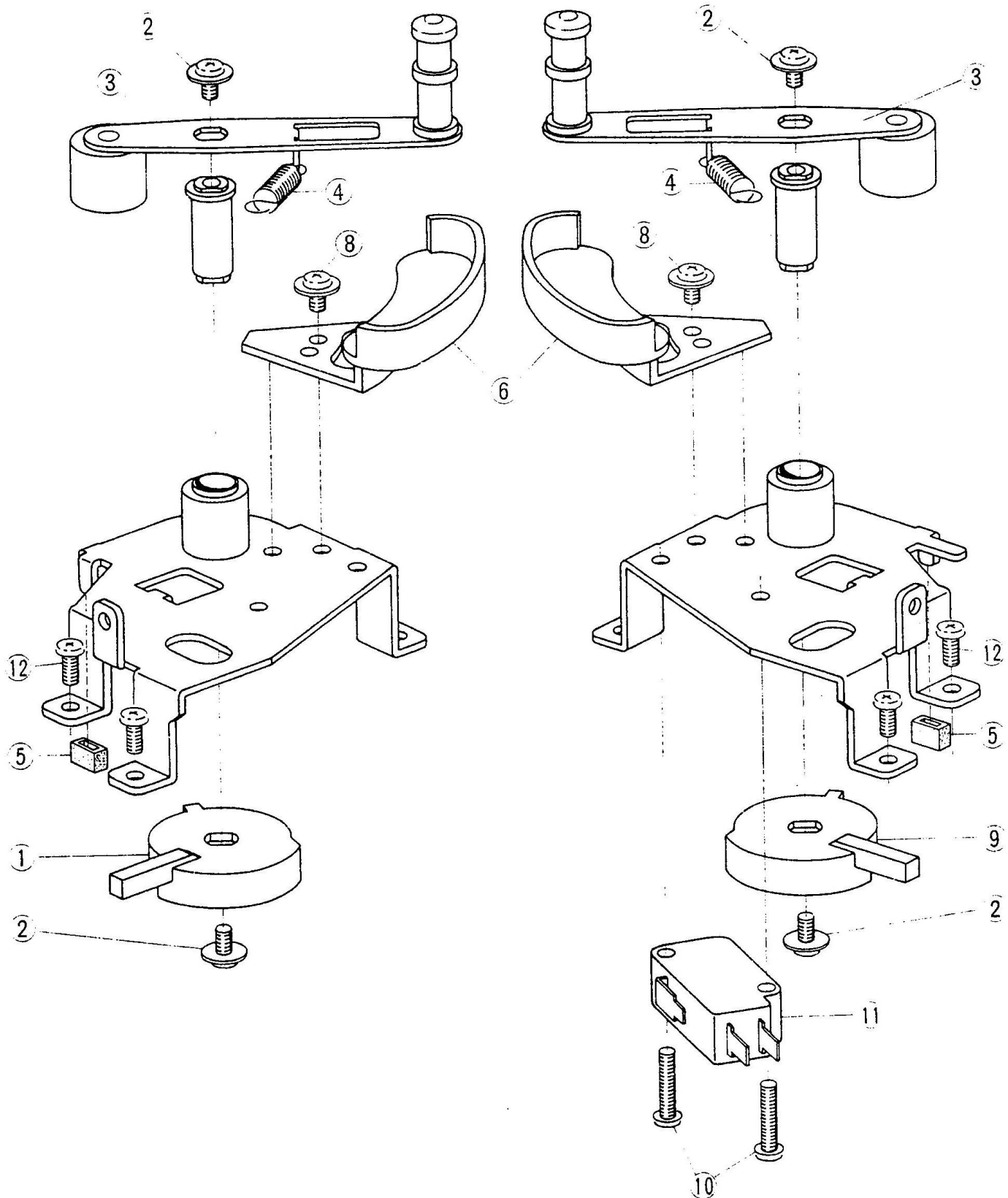
REEL TABLE BLOCK



3. REEL TABLE BLOCK

| REF. NO. | PARTS NO. | DESCRIPTION |
|----------|--------------|--------------------------------------|
| | | PULLEY REEL BLOCK |
| 3-1 | MR331432 | PULLEY REEL |
| | | BRAKE CLOTH ASSY |
| 3-2 | MTT1003A340A | BRAKE CLOTH ASSY GX-215D |
| 3-3 | ZG317496 | FELT TENSION SPRING |
| 3-4x | ZS455207 | T2BR30x05STL CMT |
| | | REEL TABLE BLOCK |
| 3-5 | MTB603571 | REEL TABLE W/RUBBER (B) PART |
| 3-6 | MT300426 | REEL TABLE RUBBER |
| 3-7x | MTB604269 | REEL TABLE W/RUBBER (C) PART (BL) |
| 3-8 | MS342000 | REEL SHAFT |
| 3-9 | MT458943 | REEL RETAINER |
| 3-10 | ZG255633 | REEL SPRING |
| 3-11 | MT516565 | 'O' RING 2.8x1.9 |
| 3-12 | ZW270088 | RING E 190SUP CMT |
| 3-13 | ZS336628 | BT BID30x14STL NI3 |
| 3-14x | ZS336629 | BT BID30x14STL BNI (BL) |
| | | HOLDER REEL BLOCK |
| 3-15 | ZS331111 | T2BR30x08STL CMT TWB |
| 3-16 | ZS302318 | HOLD SCREW |
| | | PC RELAY BLOCK |
| 3-17 | ED306109 | D SILICON W03B 100/1.0A (D1) |
| 3-18 | ER280710 | R OMF H FS 3W 101J (R1) |
| | | ASSEMBLY BLOCK |
| 3-19 | MZ331362 | HOLDER REEL SHAFT |
| 3-20 | ZS379350 | PAN30x06STL CMT |
| 3-21 | ZW259738 | PW41x070x025PSL |
| 3-22 | MT331326 | RING REEL |
| 3-23 | BM331256 | Δ MOTOR 4322-010-75112 |
| 3-24 | ZS417216 | PAN30x04STL CMT |
| 3-25 | MR331328 | PULLEY REEL MOTOR |
| 3-26 | MB331351 | BELT REEL |

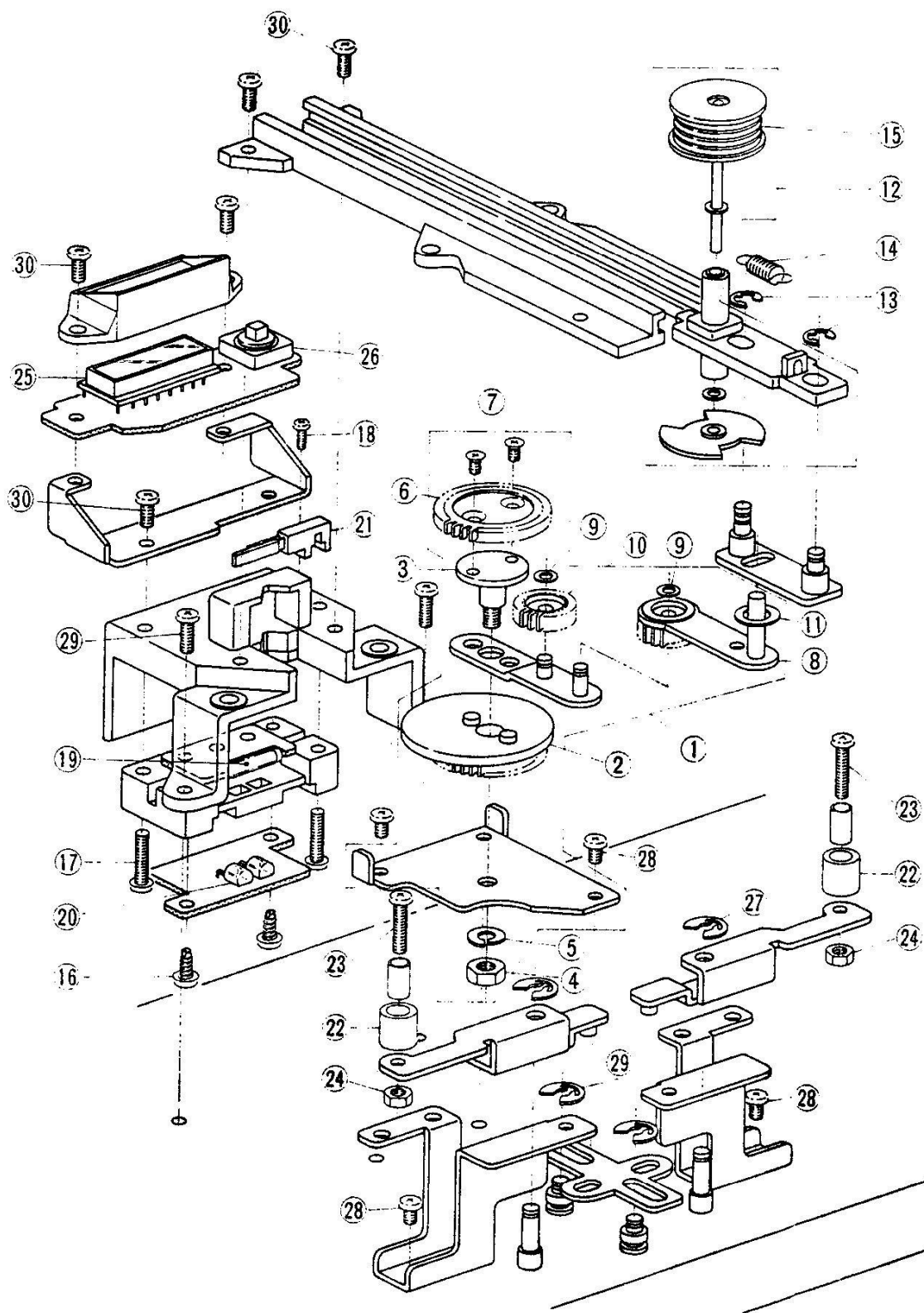
ARM TENSION BLOCK



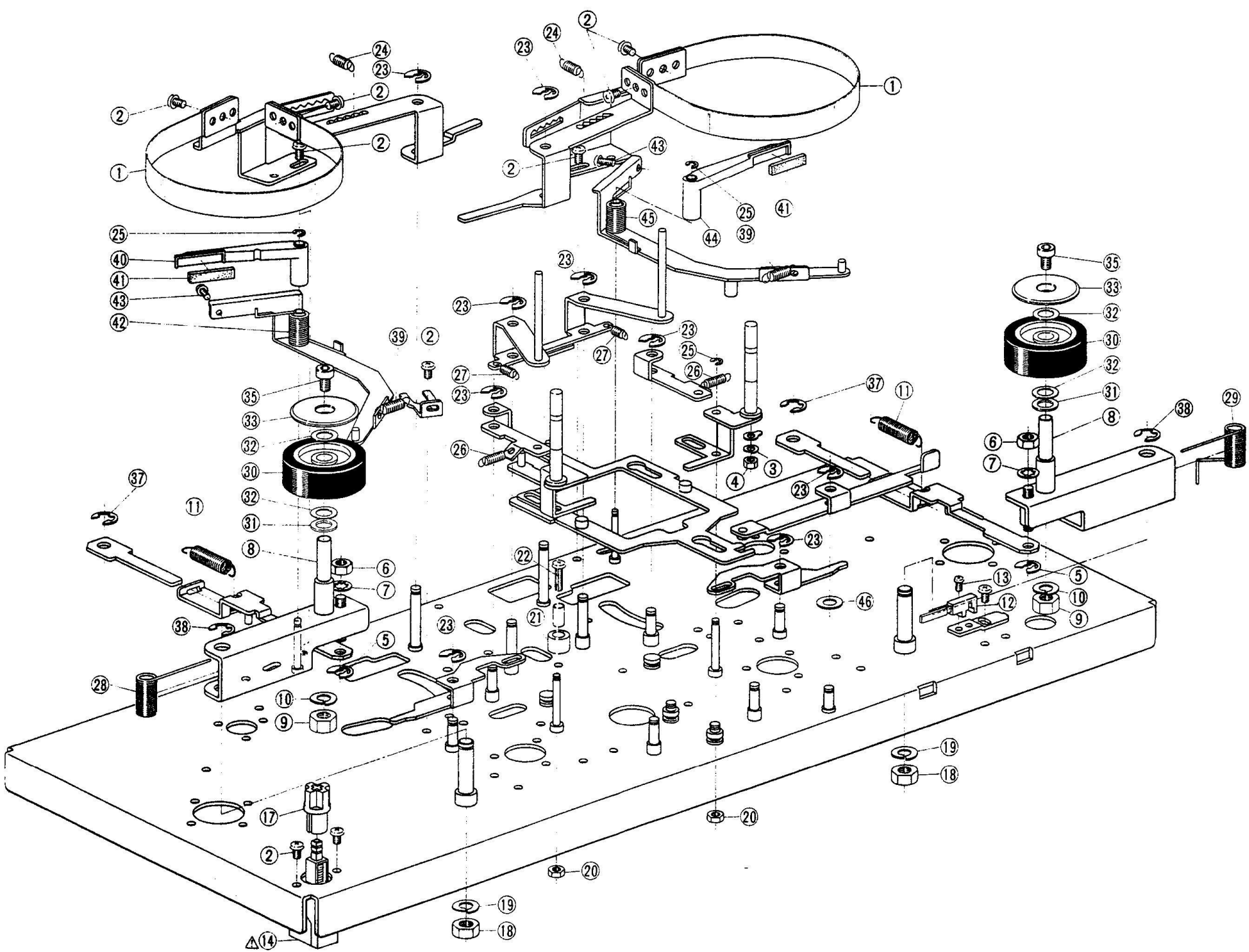
4. ARM TENSION BLOCK

| REF. NO. | PARTS NO. | DESCRIPTION |
|----------|-----------|-------------------------|
| 4-1 | SZ331421A | CAM TENSION ARM (L) |
| 4-2 | ZS265814 | PAN30x05STL CMT PW080 |
| 4-3 | BZB331423 | ARM TENSION PART |
| 4-4 | ZG331427 | SP PULL TENSION ARM (R) |
| 4-5 | MB282104 | BRAKE RUBBER |

| REF. NO. | PARTS NO. | DESCRIPTION |
|----------|-----------|-------------------------|
| 4-7x | SE331429B | ESCUTCHEON ARM (BL) |
| 4-8 | ZS379350 | PAN30x06STL CMT |
| 4-9 | SZ331421B | CAM TENSION ARM (R) |
| 4-10 | ZS483502 | PAN30x13STL CMT |
| 4-11 | ES331575 | SW MICRO D2MV-01-1C1 CU |
| 4-12 | ZS379350 | PAN30x06STL CMT |



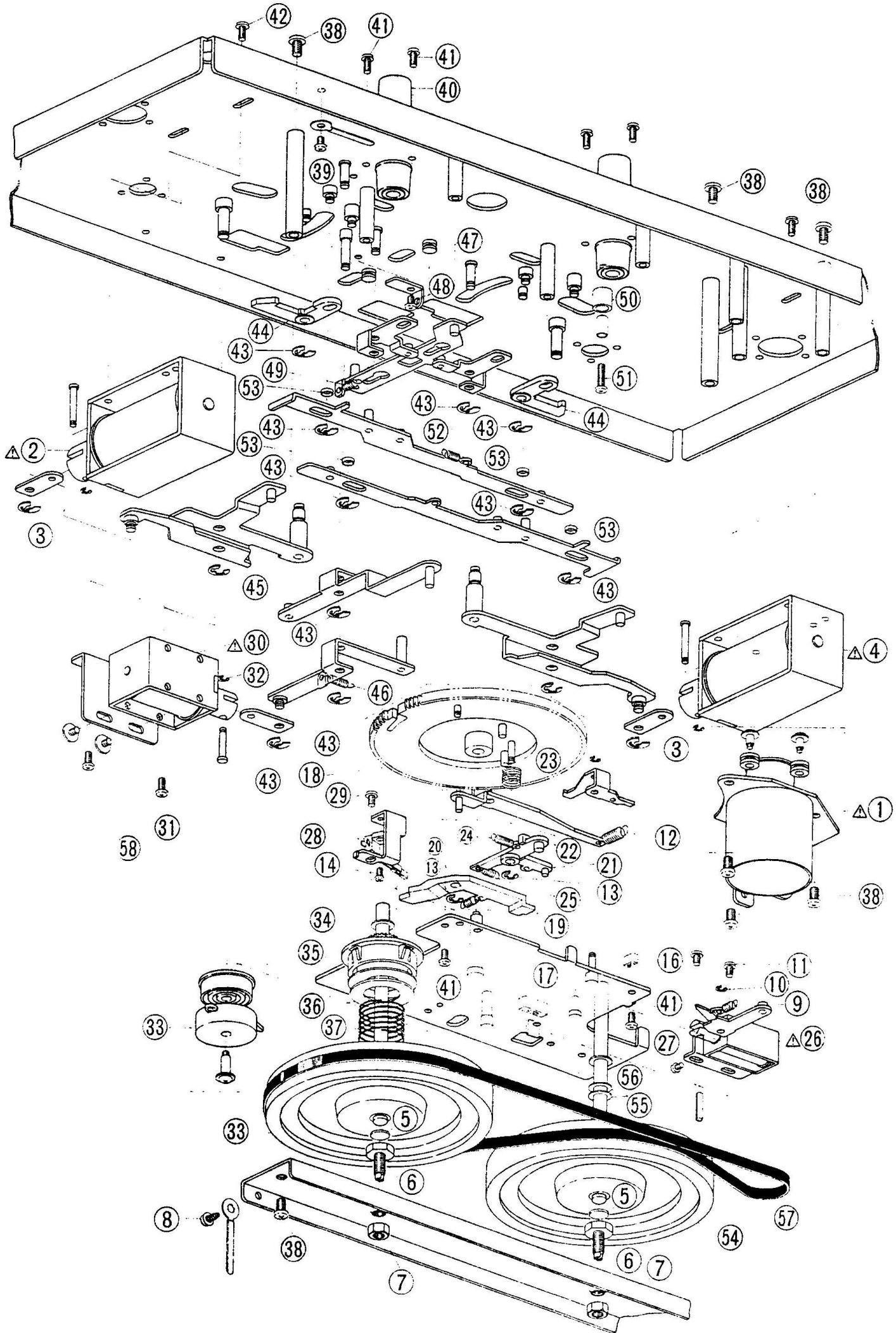
When ordering parts, please quote Parts Number, Description and Model Number.



6. MECHA BLOCK (1)

| REF. NO. | PARTS NO. | DESCRIPTION |
|-----------------------------|------------|---------------------------------------|
| ARM BRAKE BLOCK | | |
| 6-1 | MZ331557 | BRAKE BAND (B) |
| 6-2 | ZS417216 | PAN30x04STL CMT |
| ARM SHIFTER BLOCK | | |
| 6-3 | ZW609322 | N26BRS 1 |
| 6-4 | ZW307947 | SW26 |
| ARM PLAY BLOCK | | |
| 6-5 | ZW290283 | RING U 285SUP CMT |
| 6-6 | ZW413188 | N40STL CMT 1 |
| 6-7 | ZW273892 | TW40 |
| 6-8 | MH331308 | PROP 6 PINCH ROLLER |
| 6-9 | ZW413278 | N50STL CMT 1 |
| 6-10 | ZW274026 | SW50 |
| 6-11 | ZG331352 | SP PULL PINCH ROLLER |
| HOLDER MUTE SW BLOCK | | |
| 6-12 | ES283151 | SW LEAF BSW-31NL 01-1 NO (SW901) |
| 6-13 | ZS464703 | BID20x04STL CMT |
| POWER SW BLOCK | | |
| 6-14 | ES330422 | △ SW PUSH SDL1P 01-1 E (U,E,B,S,V) |
| 6-15x | ES330420 | △ SW PUSH SDL1P 01-1 J (J) |
| 6-16x | ES330421 | △ SW PUSH SDL1P 01-1 UC (C,A) |
| 6-17 | ML321550 | JOINT |
| ASSEMBLY BLOCK | | |
| 6-18 | ZW413278 | N50STL CMT 1 |
| 6-19 | ZW274026 | SW50 |
| 6-20 | ZW516993 | N30STL CMT 1 |
| 6-21 | SA331372 | CUSHION STOPPER |
| 6-22 | ZS380046 | PAN30x10STL CMT |
| 6-23 | ZW290283 | RING U 285SUP CMT |
| 6-24 | ZG312996 | SP T1-4.0/0.4-14.0 T1-110 |
| 6-25 | ZW270088 | RING E 190SUP CMT |
| 6-26 | ZG312947 | SP T1-3.2/0.29-18.0 T1-063 |
| 6-27 | ZG385457 | FF LEVER RETURN SPRING |
| 6-28 | ZG331354A | SP TORSION P ROLLER RETURN (L) |
| 6-29 | ZG331354B | SP TORSION P ROLLER RETURN (R) |
| 6-30 | MP331347 | ROLLER PINCH |
| 6-31 | ZW260076 | PW61x100x050NYL |
| 6-32 | ZW376391 | PW61x100x013PSL |
| 6-33 | SK331339A | CAP PINCH ROLLER |
| 6-34x | SK331339B | CAP PINCH ROLLER (BL) |
| 6-35 | ZS613901 | PANEL SCREW |
| 6-36x | ZS306435 | PANEL SCREW (C) |
| 6-37 | ZW270123 | RING E400SUP CMT |
| 6-38 | ZW270134 | RING E500SUP CMT |
| 6-39 | ZG331353 | SP PULL TENSION SERVO |
| 6-40 | BZB331336A | ARM SERVO (A-L) PART |
| 6-41 | SZ331337 | FELT SERVO |
| 6-42 | ZG331355A | SP TORSION SERVO ADJ (L) |
| 6-43 | ZS590804 | PAN23x06STL CMT |
| 6-44 | BZB331336B | ARM SERVO (A-R) PART |
| 6-45 | ZG331355B | SP TORSION SERVO ADJ (R) |
| 6-46 | ZW259931 | PW51x103x030PBR |

MECHA BLOCK (2)



7. MECHA BLOCK (2)

| REF. NO. | PARTS NO. | DESCRIPTION | REF. NO. | PARTS NO. | DESCRIPTION |
|------------------------------|--------------|---|----------|-----------|---------------------------|
| CAPSTAN MOTOR BLOCK | | | | | |
| 7-1 | BMT1010A130A | △ CAPSTAN MOTOR BLK GX-77 | 7-51 | ZS419670 | PAN30x12STL CMT |
| PR PLUNGER (L) BLOCK | | | | | |
| 7-2 | EP331253 | △ SOLENOID 1664TLT1 (TDS-16C-02) (SL901) | 7-52 | ZG336313 | SP PULL PLAY SLIDE RETURN |
| 7-3 | ZW357164 | RING E230SUP CMT | 7-53 | MV331325 | ROLLER |
| PR PLUNGER (R) BLOCK | | | | | |
| 7-4 | EP331254 | △ SOLENOID 1664TLT1 (TDS-16C-01) (SL902) | 7-54 | MI331311 | FLYWHEEL (B) |
| HOLDER FLYWHEEL BLOCK | | | | | |
| 7-5 | ZW462205 | WASHER (WITHOUT HOLE) 79x100NYL | 7-55 | ZW560215 | PW61x100x050TFL |
| 7-6 | MZ585900 | SHAFT SUPPORT | 7-56 | ZW331858 | WASHER CAPSTAN |
| 7-7 | ZW413278 | N50STL CMT 1 | 7-57 | MB331350 | BELT CAPSTAN |
| 7-8 | ZS325495 | T2BR30x06STL CMT | 7-58 | ZS417216 | PAN30x04STL CMT |
| CHASSIS SUB BLOCK | | | | | |
| 7-9 | ZG336117 | SP PULL PLUNGER RETURN | | | |
| 7-10 | ZW270088 | RING E 190SUP CMT | | | |
| 7-11 | ZS331530 | BID30x40STL CMT | | | |
| 7-12 | ZG313043 | SP T1-5.0/0.55-20.0 T1-156 | | | |
| 7-13 | ZW270101 | RING E300SUP CMT | | | |
| 7-14 | ZS417216 | PAN30x04STL CMT | | | |
| 7-15 | BZT1010A270A | DAMPER (B) BLK GX-77 | | | |
| 7-16 | MB282104 | BRAKE RUBBER | | | |
| 7-17 | MB665561 | TE STOPPER RUBBER | | | |
| GEAR LOADING BLOCK | | | | | |
| 7-18 | BZT1010A240A | GEAR LOADING BLK GX-77 | | | |
| 7-19 | ML331379 | LEVER TRIGGER | | | |
| 7-20 | ZG312923 | SP T1-3.2/0.2-11.2 T1-040 | | | |
| 7-21 | ML331381 | LEVER LOADING (A) | | | |
| 7-22 | MC331382 | LEVER LOADING (B) | | | |
| 7-23 | ZG332778 | SP PUSH TRIGER | | | |
| 7-24 | ZG312946 | SP T1-3.2/0.29-16.0 T1-062 | | | |
| 7-25 | ZG312925 | SP T1-3.2/0.2-14.0 T1-042 | | | |
| HOLDER PLUNGER BLOCK | | | | | |
| 7-26 | EP331258 | △ SOLENOID 0730TLT1 (SL901) | | | |
| 7-27 | ZS592378 | PAN26x03STL CMT | | | |
| LEAF SW (B) BLOCK | | | | | |
| 7-28 | ES331259 | SW LEAF BSW-810 01-1 NO(SW903) | | | |
| 7-29 | ZS460440 | PAN20x04STL CMT | | | |
| BRAKE PLUNGER BLOCK | | | | | |
| 7-30 | EP331257 | △ SOLENOID 1240PLT1 (SL904) | | | |
| 7-31 | ZS417137 | BID30x04STL CMT | | | |
| 7-32 | ZW270088 | RING E 190SUP CMT | | | |
| FLYWHEEL (A) BLOCK | | | | | |
| 7-33 | MI331310 | FLYWHEEL (A) | | | |
| 7-34 | SZ331312 | GEAR CAPSTAN | | | |
| 7-35 | SZ331313 | CAP CLUTCH | | | |
| 7-36 | SZ331314 | FELT CLUTCH | | | |
| 7-37 | ZG331315 | SP PUSH CLUTCH | | | |
| ASSEMBLY BLOCK | | | | | |
| 7-38 | ZS417150 | PAN40x06STL CMT | | | |
| 7-39 | ZS417216 | PAN30x04STL CMT | | | |
| 7-40 | MV331361 | HOLDER CAPSTAN SHAFT | | | |
| 7-41 | ZS379350 | PAN30x06STL CMT | | | |
| 7-42 | ZS379405 | BID30x06STL CMT | | | |
| 7-43 | ZW290283 | RING U 285SUP CMT | | | |
| 7-44 | SZ331317 | ARM SERVO RELEASE | | | |
| 7-45 | ZW270123 | RING E400SUP CMT | | | |
| 7-46 | ZG312962 | SP T1-3.2/0.45-16.0 T1-077 | | | |
| 7-47 | ZG331324 | HOLDER SPRING | | | |
| 7-48 | ZS417216 | PAN30x04STL CMT | | | |
| 7-49 | ZG312945 | SP T1-3.2/0.29-14.0 T1-061 | | | |
| 7-50 | MB606712 | KJ STOPPER RUBBER | | | |

8. PRE AMP P.C BOARD BLOCK

| REF. NO. | PARTS NO. | DESCRIPTION |
|----------|--------------|---|
| 8-1 | BAT1010A520A | PC PRE AMP BLK GX-77(U) (U,J,C,A) (INCLUDING VR PCB) |
| 8-2 | BAT1010A520B | PC PRE AMP BLK GX-77(S) (S) (INCLUDING VR PCB) |
| 8-3 | BAT1010A520C | PC PRE AMP BLK GX-77(E) (E,B,V) (INCLUDING VR PCB) |

PRE AMP P.C BOARD BLOCK

| | | |
|------------|----------|--|
| 8-IC1 | EI213390 | IC NJM4558D |
| 8-TR1,2 | ET308954 | TR 2SC1844 E,F |
| 8-TR3 | ET603257 | Δ TR 2SC1312S G,H |
| 8-TR4,5 | ET331279 | TR 2SC1843 P,F SNP |
| 8-TR6,7 | ET200505 | TR 2SC2603 E,F |
| 8-TR8 | ET308954 | TR 2SC1844 E,F |
| 8-TR9 | ET603257 | TR 2SC1312S G,H |
| 8-TR10 | ET200505 | TR 2SC2603 E,F |
| 8-TR11 | ET603257 | TR 2SC1312S G,H |
| 8-TR12 | ET331279 | TR 2SC1843 P,F SNP |
| 8-TR13 | ET603257 | TR 2SC1312S G,H |
| 8-TR14 | ET200505 | TR 2SC2603 E,F |
| 8-TR15 | ET309353 | TR 2SC2274 E,F |
| 8-TR16 | ET324134 | TR 2SA984K E,F |
| 8-TR17to22 | ET200505 | TR 2SC2603 E,F |
| 8-TR23 | ET200558 | TR 2SA1115 E,F |
| 8-TR24to27 | ET200505 | TR 2SC2603 E,F |
| 8-TR28 | ET603257 | TR 2SC1312S G,H |
| 8-TR29 | ET375603 | Δ TR 2SC1061 B,C |
| 8-TR30 | ET200505 | TR 2SC2603 E,F |
| 8-TR31,32 | ET331196 | Δ TR 2SD863 E |
| 8-TR33,34 | ET200505 | TR 2SC2603 E,F |
| 8-D1 | ED316143 | D SILICON H 1S2473HS F10 |
| 8-D2 | ED331197 | D ZENER H HZ6 C1 |
| 8-D3,4 | ED301911 | D SILICON H DS448 |
| 8-D5,6 | ED316143 | D SILICON H 1S2473HS F10 |
| 8-D7to10 | ED301911 | D SILICON H DS448 |
| 8-D11,12 | ED308952 | D GERMA V 1K34A-LR F07 |
| 8-D13 | ED301911 | D SILICON H DS448 |
| 8-D14 | ED316143 | D SILICON H 1S2473HS F10 |
| 8-D15 | ED331198 | D ZENER H HZ3 A1 |
| 8-D16,17 | ED301911 | D SILICON H DS448 |
| 8-J1 | EJ331602 | PHONE J 3P HLJ0327-020 6.3 20 |
| 8-J2 | EJ319466 | PIN J UA-1069 #01 P 4P (U,J,C,A) |
| 8-J2 | EJ308985 | JACK PLATE DIN, PIN JACK 4P (E,B,S,V) |
| 8-SW1 | ES331204 | SW SLIDE CL208E 2-08-02W |
| 8-SW2 | ES301435 | SW SLIDE CL210E 2-10-02S |
| 8-SW3 | ES283072 | SW SLIDE SSC22LP 2-02-02N |
| 8-SW4 | ES319448 | SW LEVER 00420461 2-04-02N |
| 8-SW5 | ES331203 | SW LEVER 00620387 2-06-02S |
| 8-SW6 | ES331205 | SW LEVER 00820190 2-08-02S |
| 8-VR1 | EV331202 | VR ROTARY 16P20x2G 3B103 |
| 8-VR2 | EV331285 | VR ROTARY 16P20x2H B502 |
| 8-VR5 | EV336853 | R S-FIX H KVSF807V 3P 103 |
| 8-VR6,7 | EV336849 | R S-FIX H KVSF807V 3P 203 |
| 8-VR8,9 | EV341225 | R S-FIX H KVSF807V 3P 503 |
| 8-VR10,11 | EV336853 | R S-FIX H KVSF807V 3P 103 |
| 8-VR12 | EV336843 | R S-FIX H KVSF807V 3P 303 |
| 8-L1 | EO331190 | COIL OSC 1 2330-065 100KHZ |
| 8-L2,3 | EO315758 | COIL TUN 1 100S-431 100KHZ |
| 8-FL1 | EO319447 | COIL TUN 1 GYD-100K 100KHZ |
| 8-FL2 | EO319495 | COIL VARI 1 GYD-102 1MH |
| 8-FL3 | EO331280 | COIL VARI 1 46-1072-11 22MH |
| 8-RL1,2 | EP249344 | RELAY LEAD L24(M) 2NO 24V |
| 8-TC1 | EO330991 | C S-FIX H ECR-BC090M11 8.0-90 |
| 8-FR1 | ER319510 | Δ R FUSE FR25SJ 1/4W 560J |
| 8-FR2,3 | ER331188 | Δ R FUSE ERD2FC F10 1/4W 8R2J |
| 8-R39 | ER331281 | R MF H 1/4W 2802F |
| 8-R112 | ER332362 | R MF H F10 1/4W 2202G |
| 8-R113 | ER332363 | R MF H F10 1/4W 3902G |
| 8-R121 | ER317595 | R OMF H FS 2W 471J |
| 8-C8 | EC474671 | C MC V FM 100K 500DC |
| 8-C22 | EC474671 | C MC V FM 100K 500DC |
| 8-C24 | EC306987 | C STY V F05 500 471J 50DC |

| REF. NO. | PARTS NO. | DESCRIPTION |
|----------|-----------|---------------------------|
| 8-C25 | EC285513 | C MC V FM 220K 500DC |
| 8-C35 | EC285513 | C MC V FM 220K 500DC |
| 8-C38 | EC305422 | C TT V D R33K 35DC |
| 8-C56 | EC201345 | C MC V FM 300K 500DC |
| 8-C75 | EC325380 | C PP V F10 PFH 332J 630DC |

VR P.C BOARD BLOCK

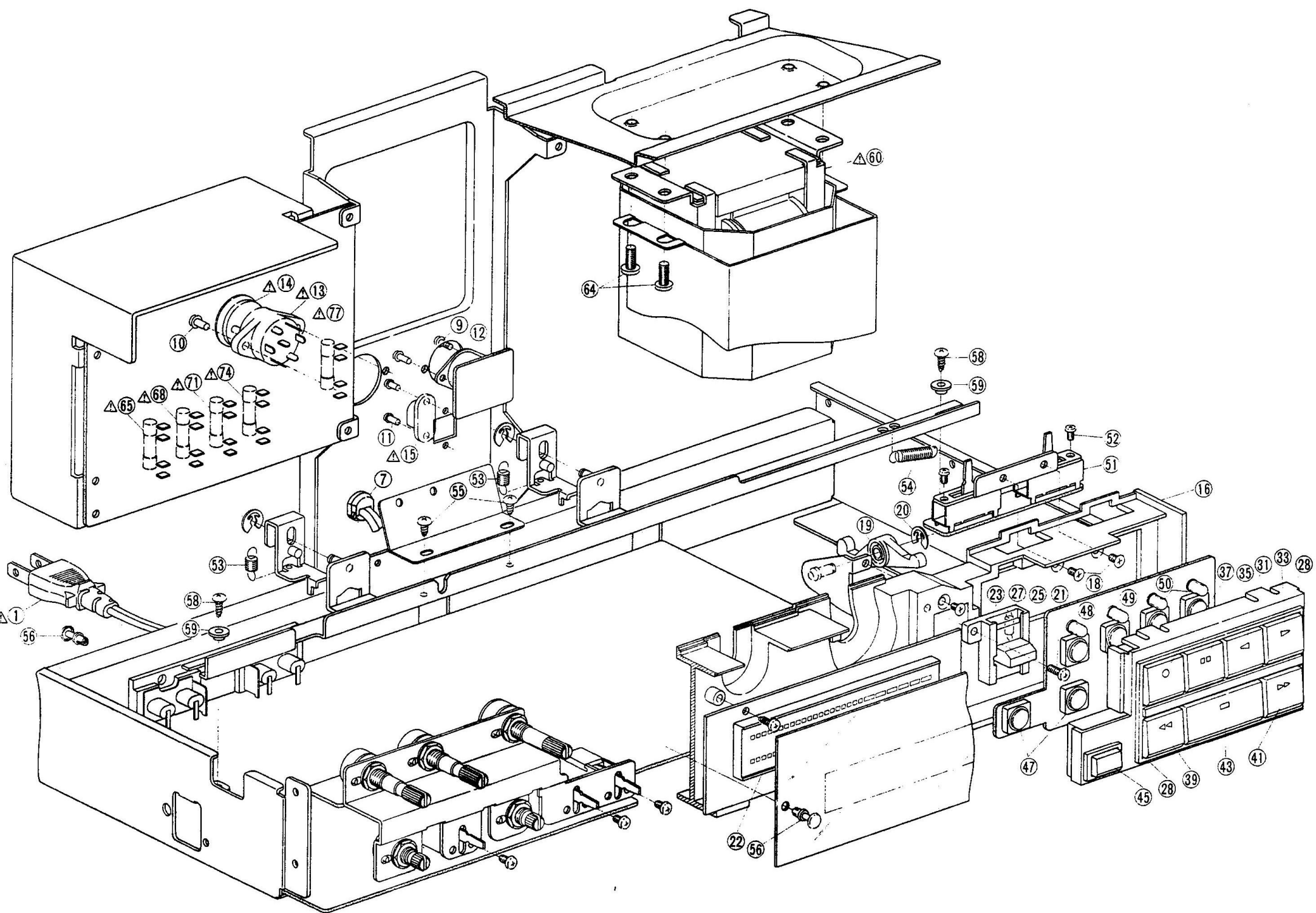
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|-------|----------|---------------------------|
| 8-VR1 | EV331199 | VR ROTARY 16P10x1E 15A503 |
| 8-VR2 | EV331201 | VR ROTARY 16P20x2F A503 |

9. SYS. CON. P.C BOARD BLOCK

| REF. NO. | PARTS NO. | DESCRIPTION |
|------------|--------------|------------------------------------|
| 9-1 | BAT1010A450A | PC SYSCON BLK GX-77 (EXCEPT A) |
| 9-2 | BAT1010A450B | PC SYSCON BLK (A) |
| 9-IC1 | EI331222 | IC HD38800A42 |
| 9-IC2 | EI331573 | IC HD14042BP |
| 9-TR1to10 | ET331223 | TR 2SA608KWBNP F,G SNP |
| 9-TR11to22 | ET331224 | TR 2SC536KWBNP F,G SNP |
| 9-TR23 | ET307349 | Δ TR 2SD794 P,Q |
| 9-TR24 | ET331224 | TR 2SC536KWBNP F,G SNP |
| 9-TR25 | ET307349 | Δ TR 2SD794 P,Q |
| 9-TR26to28 | ET331224 | TR 2SC536KWBNP F,G SNP |
| 9-TR29to37 | ET331225 | Δ TR 2SC2274K-WB E,F SNP |
| 9-TR38 | ET666415 | Δ TR 2SB605 K,L |
| 9-TR39 | ET331224 | TR 2SC536KWBNP F,G SNP |
| 9-TR40 | ET219857 | TR 2SD438 E,F |
| 9-TR41to43 | ET331224 | TR 2SC536KWBNP F,G SNP |
| 9-TR45to53 | ET331224 | TR 2SC536KWBNP F,G SNP |
| 9-D1to6 | ED560913 | D SILICON V 1S2473VE |
| 9-D7to10 | ED316143 | D SILICON H 1S2473HS F10 |
| 9-D11,12 | ED560913 | D SILICON V 1S2473VE |
| 9-D13 | ED331227 | D GERMA V 1K34A-UF SNP |
| 9-D14to27 | ED560913 | D SILICON V 1S2473VE |
| 9-D28to31 | ED330622 | D SILICON 1SR35-100VL 100/1.0A |
| 9-D32,33 | ED560913 | D SILICON V 1S2473VE |
| 9-D34 | ED330622 | D SILICON 1SR35-100VL 100/1.0A |
| 9-D35 | ED330989 | D ZENER H HZ11 B2 |
| 9-D36to49 | ED560913 | D SILICON V 1S2473VE |
| 9-D50,51 | ED330622 | D SILICON 1SR35-100VL 100/1.0A |
| 9-D52 | ED560913 | D SILICON V 1S2473VE |
| 9-L1 | EO331574 | COIL FIX 2 0749-471K 470μH |
| 9-RL1 | EP330425 | RELAY POWER G2U-112P-US 1TR 12V |
| 9-TH1,2 | ED672232 | Δ POSISTER PTH62BD3R3M |
| 9-R134 | ER331228 | R MF V 1/4W 3012F |
| 9-R136 | ER331229 | Δ R OMF V SNP 2W 121J |
| 9-C13 | EC314990 | C STY V SNP CQFS 101J 50DC |

10. POWER SUPPLY P.C BOARD BLOCK

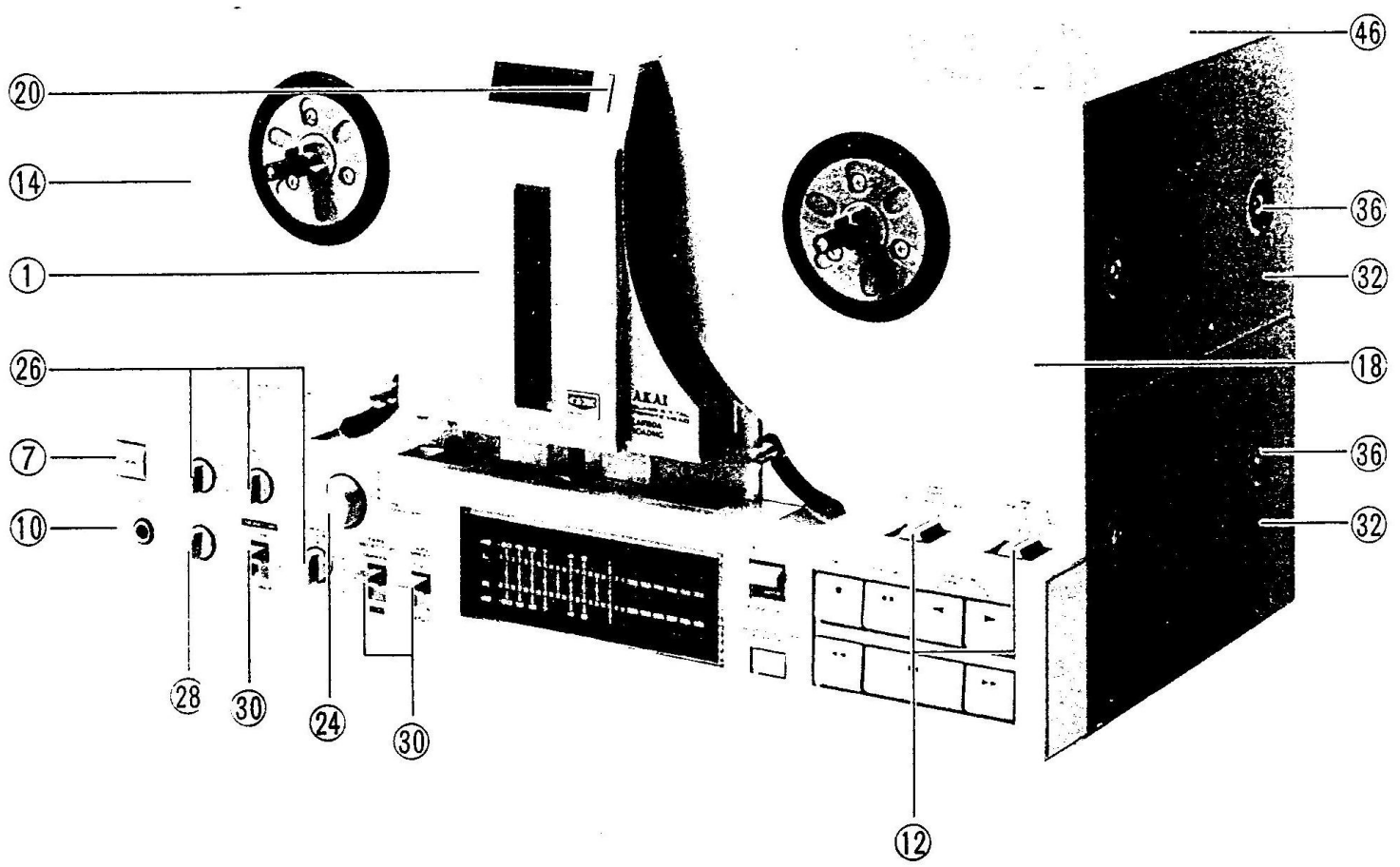
| REF. NO. | PARTS NO. | DESCRIPTION |
|------------|--------------|--------------------------------|
| 10-1 | BAT1010A430A | PC POWER BLK GX-77(U) (U) |
| 10-2 | BAT1010A430B | PC POWER BLK GX-77(J) (J) |
| 10-3 | BAT1010A430C | PC POWER BLK GX-77(C) (C,A) |
| 10-4 | BAT1010A430D | PC POWER BLK GX-77(E)(E,B,S,V) |
| 10-IC1 | EI331249 | Δ IC μPC78M10H |
| 10-TR1,2 | ET639437 | Δ TR 2SC945L Q,P |
| 10-TR3 | ET307349 | Δ TR 2SD794 P,Q |
| 10-TR4to6 | ET639437 | TR 2SC945L Q,P |
| 10-TR7to10 | ET317919 | Δ TR 2SC1061 C,D |
| 10-D1 | ED319463 | Δ D SILICON 4B4B41 100/4.0A |
| 10-D2,3 | ED330987 | Δ D SILICON RB152 200/1.5A |
| 10-D4 | ED319463 | Δ D SILICON 4B4B41 100/4.0A |
| 10-D5 | ED306109 | Δ D SILICON W03B 100/1.0A |
| 10-D6 | ED313566 | Δ D SILICON GP-25G 400/2.5A |
| 10-D7 | ED560913 | D SILICON V 1S2473VE |
| 10-D8 | ED329051 | D ZENER H HZ24 3 |
| 10-D9 | ED315759 | D ZENER H HZ16 1 |
| 10-D10 | ED330989 | D ZENER H HZ11 B2 |
| 10-R6 | ER331250 | R OMF V SNP 1W 472J |
| 10-R12 | ER331251 | Δ R FUSE ERD2FC 1/4W 4R7J |
| 10-C17 | EC320548 | Δ C CE V F 103Z 250AC (U,J) |
| 10-C17 | EC314688 | Δ C CE V FZ 103P 125AC (C,A) |
| 10-C17 | EC327382 | Δ C MP V 472M 250AC (E,B,S,V) |



11. ASSEMBLY BLOCK

| REF. NO. | PARTS NO. | DESCRIPTION | REF. NO. | PARTS NO. | DESCRIPTION |
|------------------------------|-----------|---|---------------------------|-----------|--|
| POWER BLOCK | | | | | |
| 11-1 | EW306428 | △ AC CORD 2 CORES KP-205A, VFF UCJ (U) | 11-49 | ED330996 | D LED GL-5HY5 YLW (D2) |
| 11-2x | EW306427 | △ AC CORD 2 CORES KP-211, VFF J (J) | 11-50 | ED330995 | D LED SLP-260C GRN (D3,4) |
| 11-3x | EW305691 | △ AC CORD 2 CORES KP-8, SPT-1 UC (C,A) | PC SELECT BLOCK | | |
| 11-4x | EW313882 | △ AC CORD 2 CORES KP-419C, LTCE-2FE (E,V) | 11-51 | ES331260 | SW SLIDE SSB423 2-02-03N (SW1,2) |
| 11-5x | EW313884 | △ AC CORD 2 CORES GTBS-2F 24/0.20x2 B (B) | 11-52 | ZS432843 | PAN26x04STL CMT |
| 11-6x | EW201515 | △ AC CORD 2 CORES KP-560, LTSA-2FS (S) | SLIDE CHANGE BLOCK | | |
| 11-7 | SZ631945 | STRAIN RELIEF SR-4N-4 (U,J,C,A,E,S,V) | 11-53 | ZG313040 | SP T1-5.0/0.55-14.0 T1-153 |
| 11-8x | EJ692908 | STRAIN RELIEF SR-5N-4 (B) | 11-54 | ZG313031 | SP T1-5.0/0.32-28.0 T1-144 |
| 11-9 | ZS479474 | PAN26x05STL CMT | 11-55 | ZS455207 | T2BR30x05STL CMT |
| 11-10 | ZS379350 | PAN30x06STL CMT | ASSEMBLY BLOCK | | |
| 11-11 | ZS590804 | PAN23x06STL CMT | 11-56 | ZW698308 | RV NYL30x055 BL |
| PC REMO. CON. BLOCK | | | | | |
| 11-12 | EJ331215 | DIN J TCS1881-101 P 8P | 11-57x | ZW263946 | RV NYL40x050 |
| SOCKET SELECTOR BLOCK | | | | | |
| 11-13 | EJ262732 | △ SOCKET SELECTOR S-I7223 U 7P | 11-58 | ZW331567 | T2BR30x08STL CMT C080 |
| 11-14 | EJ249467 | △ PLUG VOLTAGE SELECTOR S-I7207 3P | 11-59 | ZW625241 | GRADUATED WASHER |
| PLUG CONNECTOR BLOCK | | | | | |
| 11-15 | EJ310203 | △ PLUG CONNECTOR EC0630-020 2P | 11-60 | BT331218 | △ TRANS POWER NFT-1 (U) |
| CHASSIS AMP BLOCK | | | | | |
| 11-16 | SP331443A | CHASSIS AMP | 11-61x | BT331219 | △ TRANS POWER NFT-2 (J) |
| 11-17x | SP331443B | CHASSIS AMP (BL) | 11-62x | BT331221 | △ TRANS POWER NFT-4 (C,A) |
| 11-18 | ZS444330 | CTS30x04STL CMT | 11-63x | BT331220 | △ TRANS POWER NFT-3 (E,B,S,V) |
| 11-19 | TP331447 | ARM CUE | 11-64 | ZS314702 | ST BID40x10STL CMT |
| 11-20 | ZW290283 | RING U 285SUP CMT | 11-65 | EF601301 | △ FUSE SEMKO T 250V 2A (F1) (U,E,B,S,V) |
| 11-21 | ZS331533 | PT PAN30x08STL CMT | 11-66x | EF306951 | △ FUSE TSC A 250V 2.5A (F1) (J) |
| 11-22 | ED331263 | IND LE LT-1016 GRAPH | 11-67x | EF306956 | △ FUSE TSC 125V 2.5A (F1) (C,A) |
| GUIDE CUE BLOCK | | | | | |
| 11-23 | SK331448A | GUIDE CUE KNOB | 11-68 | EF601964 | △ FUSE SEMKO T 250V 1.60A (F2) (U,E,B,S,V) |
| 11-24x | SK331448B | GUIDE CUE KNOB (BL) | 11-69x | EF311839 | △ FUSE TSC A 250V 1.6A (F2) (J) |
| 11-25 | SK331449A | KNOB CUE | 11-70x | EF308847 | △ FUSE TSC 125V 1.60A (F2)(C,A) |
| 11-26x | SK331449B | KNOB CUE (BL) | 11-71 | EF258344 | △ FUSE SEMKO T 250V 0.80A (F3) (U,E,B,S,V) |
| 11-27 | ZG312923 | SP T1-3.2/0.2-11.2 T1-040 | 11-72x | EF309388 | △ FUSE TSC A 250V 0.80A (F3)(J) |
| OPERATION BLOCK | | | | | |
| 11-28 | SE331459A | ESCUTCHEON OPERATION KEY | 11-73x | EF309391 | △ FUSE TSC 125V 0.08A (F3)(C,A) |
| 11-29x | SE331459B | ESCUTCHEON OPERATION KEY (BL) | 11-74 | EF602550 | △ FUSE SEMKO T 250V 1.25A (F4) (U,E,B,S,V) |
| 11-30x | SB331025 | OPERATE BUTTON | 11-75x | EF306949 | △ FUSE TSC A 250V 1.25A (F4)(J) |
| 11-31 | SBB603905 | OPERATION KEY (A) PART | 11-76x | EF309392 | △ FUSE TSC 125V 1.25A (F4)(C,A) |
| 11-32x | SBB603901 | OPERATION KEY (A)-BL PART | 11-77 | EF602550 | △ FUSE SEMKO T 250V 1.25A (F5) (U,E,B,S,V) |
| 11-33 | SBB603906 | OPERATION KEY (B) PART | | | |
| 11-34x | SBB603902 | OPERATION KEY (B)-BL PART | | | |
| 11-35 | SBB603907 | OPERATION KEY (C) PART | | | |
| 11-36x | SBB603903 | OPERATION KEY (C)-BL PART | | | |
| 11-37 | SBB603908 | OPERATION KEY (F) PART | | | |
| 11-38x | SBB603904 | OPERATION KEY (F)-BL PART | | | |
| 11-39 | SB331026D | OPERATION KEY (D) | | | |
| 11-40x | SB331026K | OPERATION KEY (D)-BL | | | |
| 11-41 | SB331026E | OPERATION KEY (E) | | | |
| 11-42x | SB331026L | OPERATION KEY (E)-BL | | | |
| 11-43 | SB331027A | OPERATION KEY (G) | | | |
| 11-44x | SB331027B | OPERATION KEY (G)-BL | | | |
| 11-45 | SB331028A | OPERATION KEY (H) | | | |
| 11-46x | SB331028B | OPERATION KEY (H)-BL | | | |
| PC OPERATION BLOCK | | | | | |
| 11-47 | ES315362 | SW TACT AKC8S (SW1to8) | | | |
| 11-48 | ED330997 | D LED GL-5PR5 RED (D1) | | | |

FINAL ASSEMBLY BLOCK



12. FINAL ASSEMBLY BLOCK

| REF NO. | PARTS NO. | DESCRIPTION |
|-----------------------------|--------------|----------------------------|
| COVER HEAD BLOCK | | |
| 12-1 | BCT1010A540A | COVER HEAD BLK GX-77 |
| 12-2x | BCT1010A540B | COVER HEAD BLK GX-77-BL |
| 12-3x | BDB603561 | LID HEAD COVER PART |
| 12-4x | BDB603563 | LID HEAD COVER (BL) PART |
| 12-5x | MZ331479 | ARM FRICTION (V) |
| 12-6x | ZG312965 | SP T1-3.2/0.45-20.0 T1-079 |
| CHASSIS AMP BLOCK | | |
| 12-7 | SK317468A | KNOB PUSH (A) |
| 12-8x | SK317468B | KNOB PUSH (A)-BL |
| 12-9x | ZG370350 | REEL TABLE SPRING |
| FINAL ASSEMBLY BLOCK | | |
| 12-10 | BDB603414 | PANEL AMP PART |
| 12-11x | BDB603416 | PANEL AMP (BL) PART |
| 12-12 | SK331481A | KNOB SELECTOR |
| 12-13x | SK331481B | KNOB SELECTOR (BL) |
| 12-14 | SP331489A | PANEL (L) |
| 12-15x | SP331489B | PANEL (L)-BL |
| 12-16x | ZS379350 | PAN30x06STL CMT |
| 12-17x | ZS325495 | T2BR30x06STL CMT |
| 12-18 | SP331489C | PANEL (R) |
| 12-19x | SP331489D | PANEL (R)-BL |
| 12-20 | SK331486A | KNOB RESET |

| REF. NO. | PARTS NO. | DESCRIPTION |
|----------|-----------|-----------------------------|
| 12-22x | ZS691277 | PANEL SCREW |
| 12-23x | ZS322939 | PANEL SCREW (B) (BL) |
| 12-24 | SK331487A | KNOB REC |
| 12-25x | SK331487B | KNOB REC (BL) |
| 12-26 | SK331109G | KNOB (F) |
| 12-27x | SK331109E | KNOB (D)-BL |
| 12-28 | SK331109F | KNOB (E) |
| 12-29x | SK331109B | KNOB (B)-BL |
| 12-30 | TC316384 | LEVER (A) |
| 12-31x | TC316385 | LEVER (A-BL) |
| 12-32 | SP331493A | COVER |
| 12-33x | SP331493B | COVER (BL) |
| 12-34x | SA331534 | FOOT 2059 |
| 12-35x | ZS301398 | ST BID40x08STL CMT |
| 12-36 | ZS315878 | XST BID40x08STL NI3 |
| 12-37x | ZS310588 | XST BID40x08STL BNI (BL) |
| 12-38x | SP331494B | PANEL REAR BOARD GX-77(U) |
| 12-39x | SP331494C | PANEL REAR BOARD GX-77(J) |
| 12-40x | SP331494D | PANEL REAR BOARD GX-77(A,C) |
| 12-41x | SP331494A | PANEL REAR BOARD GX-77(E,V) |
| 12-42x | SP331494E | PANEL REAR BOARD GX-77(B,S) |
| 12-43x | ZS332469 | ST PAN40x10STL CMT CUP |
| 12-44x | ZS331568 | T2BR30x10STL CMT C080 |
| 12-45x | ZW305013 | RV POP32 (A) |
| 12-46 | SA331496A | CUSHION RUBBER |
| 12-47x | SA331496B | CUSHION RUBBER (BL) |

INDEX

| PARTS NO. | REF. NO. | PARTS NO. | REF. NO. | PARTS NO. | REF. NO. | PARTS NO. | REF. NO. |
|--------------|-----------|-----------|------------|--------------|------------|-----------|----------|
| BAT1010A430A | 10-1 | ED672232 | 9-TH1,2 | ET309353 | 8-TR15 | MV331325 | 7-53 |
| BAT1010A430B | 10-2 | EF258344 | 11-71 | ET317919 | 10-TR7to10 | MV331361 | 7-40 |
| BAT1010A430C | 10-3 | EF306949 | 11-75x | ET324134 | 8-TR16 | MZ331362 | 3-19 |
| BAT1010A430D | 10-4 | EF306951 | 11-66x | ET324539 | 5-20 | MZ331397 | 5-10 |
| BAT1010A450A | 9-1 | EF306956 | 11-67x | ET331196 | 8-TR31,32 | MZ331479 | 12-5x |
| BAT1010A450B | 9-2 | EF308847 | 11-70x | ET331223 | 9-TR1to10 | MZ331557 | 6-1 |
| BAT1010A520A | 8-1 | EF309388 | 11-72x | ET331224 | 9-TR11to22 | MZ585900 | 7-6 |
| BAT1010A520B | 8-2 | EF309391 | 11-73x | ET331224 | 9-TR24 | SA331372 | 6-21 |
| BAT1010A520C | 8-3 | EF309392 | 11-76x | ET331224 | 9-TR26to28 | SA331496A | 12-46 |
| BCT1010A540A | 12-1 | EF311839 | 11-69x | ET331224 | 9-TR39 | SA331496B | 12-47x |
| BCT1010A540B | 12-2x | EF601301 | 11-65 | ET331224 | 9-TR41to43 | SA331534 | 12-34x |
| BDB603414 | 12-10 | EF601964 | 11-68 | ET331224 | 9-TR45to53 | SBB603901 | 11-32x |
| BDB603416 | 12-11x | EF602550 | 11-74 | ET331225 | 9-TR29to37 | SBB603902 | 11-34x |
| BDB603561 | 12-3x | EF602550 | 11-77 | ET331279 | 8-TR4,5 | SBB603903 | 11-36x |
| BDB603563 | 12-4x | EI213390 | 8-IC1 | ET331279 | 8-TR12 | SBB603904 | 11-38x |
| BHT1010A360A | 2-2 | EI331222 | 9-IC1 | ET375603 | 8-TR29 | SBB603905 | 11-31 |
| BHT1010A370A | 2-1 | EI331249 | 10-IC1 | ET603257 | 8-TR3 | SBB603906 | 11-33 |
| BMT1010A130A | 7-1 | EI331573 | 9-IC2 | ET603257 | 8-TR9 | SBB603907 | 11-35 |
| BM331256 | 3-23 | EJ249467 | 11-14 | ET603257 | 8-TR11 | SBB603908 | 11-37 |
| BT331218 | 11-60 | EJ262732 | 11-13 | ET603257 | 8-TR13 | SB331025 | 11-30x |
| BT331219 | 11-61x | EJ308985 | 8-J2 | ET603257 | 8-TR28 | SB331026D | 11-39 |
| BT331220 | 11-63x | EJ310203 | 11-15 | ET639437 | 10-TR1,2 | SB331026E | 11-41 |
| BT331221 | 11-62x | EJ319466 | 8-J2 | ET639437 | 10-TR4to6 | SB331026K | 11-40x |
| BZB331336A | 6-40 | EJ331215 | 11-12 | ET666415 | 9-TR38 | SB331026L | 11-42x |
| BZB331336B | 6-44 | EJ331602 | 8-J1 | EV331199 | 8-VR1 | SB331027A | 11-43 |
| BZB331398 | 5-8 | EJ692908 | 11-8x | EV331201 | 8-VR2 | SB331027B | 11-44x |
| BZB331423 | 4-3 | EL324540 | 5-19 | EV331202 | 8-VR1 | SB331028A | 11-45 |
| BZT1010A050A | 5-1 | EO315758 | 8-L2,3 | EV331285 | 8-VR2 | SB331028B | 11-46x |
| BZT1010A070A | 5-12 | EO319447 | 8-FL1 | EV336843 | 8-VR12 | SE331429A | 4-6 |
| BZT1010A240A | 7-18 | EO319495 | 8-FL2 | EV336849 | 8-VR6,7 | SE331429B | 4-7x |
| BZT1010A270A | 7-15 | EO331190 | 8-L1 | EV336853 | 8-VR5 | SE331459A | 11-28 |
| EC201345 | 8-C56 | EO331280 | 8-FL3 | EV336853 | 8-VR10,11 | SE331459B | 11-29x |
| EC285513 | 8-C25 | EO331574 | 9-L1 | EV341225 | 8-VR8,9 | SK317468A | 12-7 |
| EC285513 | 8-C35 | EP249344 | 8-RL1,2 | EW201515 | 11-6x | SK317468B | 12-8x |
| EC305422 | 8-C38 | EP330425 | 9-RL1 | EW305691 | 11-3x | SK331109B | 12-29x |
| EC306987 | 8-C24 | EP331253 | 7-2 | EW306427 | 11-2x | SK331109E | 12-27x |
| EC314688 | 10-C17 | EP331254 | 7-4 | EW306428 | 11-1 | SK331109F | 12-28 |
| EC314990 | 9-C13 | EP331257 | 7-30 | EW313882 | 11-4x | SK331109G | 12-26 |
| EC320548 | 10-C17 | EP331258 | 7-26 | EW313884 | 11-5x | SK331339A | 6-33 |
| EC325380 | 8-C75 | ER280710 | 3-18 | EO330991 | 8-TC1 | SK331339B | 6-34x |
| EC327382 | 10-C17 | ER317595 | 8-R121 | HEH1305A010A | 2-5 | SK331448A | 11-23 |
| EC474671 | 8-C22 | ER319510 | 8-FR1 | HPH1005A010A | 2-18 | SK331448B | 11-24x |
| EC474671 | 8-C8 | ER331188 | 8-FR2,3 | HRH1103A010A | 2-11 | SK331449A | 11-25 |
| ED301911 | 8-D3,4 | ER331228 | 9-R134 | HZ330925 | 2-19 | SK331449B | 11-26x |
| ED301911 | 8-D7to10 | ER331229 | 9-R136 | HZ331147 | 2-8 | SK331481A | 12-12 |
| ED301911 | 8-D13 | ER331250 | 10-R6 | HZ331148A | 2-10x | SK331481B | 12-13x |
| ED301911 | 8-D16,17 | ER331251 | 10-R12 | HZ331148B | 2-9 | SK331486A | 12-20 |
| ED306109 | 3-17 | ER331281 | 8-R39 | HZ331149 | 2-15 | SK331486B | 12-21x |
| ED306109 | 10-D5 | ER332362 | 8-R112 | HZ331150A | 2-17x | SK331487A | 12-24 |
| ED308952 | 8-D11,12 | ER332363 | 8-R113 | HZ331150B | 2-16 | SK331487B | 12-25x |
| ED313566 | 10-D6 | ES283072 | 8-SW3 | HZ331151 | 2-21 | SP331443A | 11-16 |
| ED315759 | 10-D9 | ES283151 | 5-21 | HZ331171A | 2-4x | SP331443B | 11-17x |
| ED316143 | 8-D1 | ES283151 | 6-12 | HZ331172 | 2-3 | SP331489A | 12-14 |
| ED316143 | 8-D5,6 | ES301435 | 8-SW2 | MB282104 | 4-5 | SP331489B | 12-15x |
| ED316143 | 8-D14 | ES315362 | 11-47 | MB282104 | 7-16 | SP331489C | 12-18 |
| ED316143 | 9-D7to10 | ES319448 | 8-SW4 | MB331350 | 7-57 | SP331489D | 12-19x |
| ED319463 | 10-D1 | ES328414 | 5-26 | MB331351 | 3-26 | SP331493A | 12-32 |
| ED319463 | 10-D4 | ES330420 | 6-15x | MB606712 | 5-22 | SP331493B | 12-33x |
| ED324082 | 5-25 | ES330421 | 6-16x | MB606712 | 7-50 | SP331494A | 12-41x |
| ED329051 | 10-D8 | ES330422 | 6-14 | MB665561 | 7-17 | SP331494B | 12-38x |
| ED330622 | 9-D28to31 | ES331203 | 8-SW5 | MC331382 | 7-22 | SP331494C | 12-39x |
| ED330622 | 9-D34 | ES331204 | 8-SW1 | MH331308 | 6-8 | SP331494D | 12-40x |
| ED330622 | 9-D50,51 | ES331205 | 8-SW6 | MH331392 | 5-3 | SP331494E | 12-42x |
| ED330987 | 10-D2,3 | ES331259 | 7-28 | MI331310 | 7-33 | SZ331312 | 7-34 |
| ED330989 | 9-D35 | ES331260 | 11-51 | MI331311 | 7-54 | SZ331313 | 7-35 |
| ED330989 | 10-D10 | ES331575 | 4-11 | ML321550 | 6-17 | SZ331314 | 7-36 |
| ED330995 | 11-50 | ET200505 | 8-TR6,7 | ML331379 | 7-19 | SZ331317 | 7-44 |
| ED330996 | 11-49 | ET200505 | 8-TR10 | ML331381 | 7-21 | SZ331337 | 6-41 |
| ED330997 | 11-48 | ET200505 | 8-TR14 | MP331347 | 6-30 | SZ331394 | 5-6 |
| ED331197 | 8-D2 | ET200505 | 8-TR17to22 | MR331328 | 3-25 | SZ331421A | 4-1 |
| ED331198 | 8-D15 | ET200505 | 8-TR24to27 | MR331432 | 3-1 | SZ331421B | 4-9 |
| ED331227 | 9-D13 | ET200505 | 8-TR33,34 | MR331433 | 5-15 | SZ338391 | 5-2 |
| ED331263 | 11-22 | ET200505 | 8-TR30 | MS342000 | 3-8 | SZ631945 | 11-7 |
| ED560913 | 9-D1to6 | ET200558 | 8-TR23 | MTB603571 | 3-5 | TC316384 | 12-30 |
| ED560913 | 9-D11,12 | ET219857 | 9-TR40 | MTB604269 | 3-7x | TC316385 | 12-31x |
| ED560913 | 9-D14to27 | ET307349 | 9-TR23 | MTT1003A340A | 3-2 | TP331447 | 11-19 |
| ED560913 | 9-D32,33 | ET307349 | 9-TR25 | MT300426 | 3-6 | ZG206144 | 2-13 |
| ED560913 | 9-D36to49 | ET307349 | 10-TR3 | MT331326 | 3-22 | ZG255633 | 3-10 |
| ED560913 | 9-D52 | ET308954 | 8-TR1,2 | MT458943 | 3-9 | ZG312923 | 7-20 |
| ED560913 | 10-D7 | ET308954 | 8-TR8 | MT458943 | 3-11 | ZG312923 | 11-27 |

INDEX

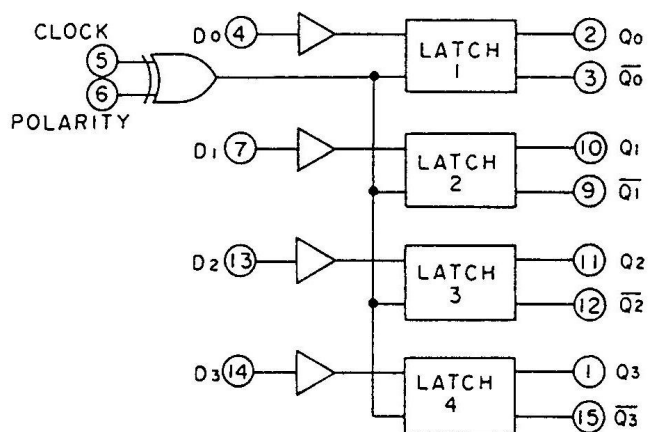
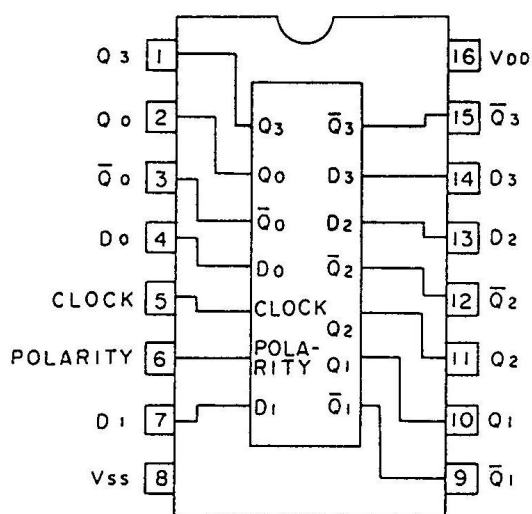
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|-----------|----------|-----------|----------|-----------|----------|-----------|----------|
| ZG312925 | 7-25 | ZS537085 | 5-18 | | | | |
| ZG312945 | 7-49 | ZS590804 | 6-43 | | | | |
| ZG312946 | 7-24 | ZS590804 | 11-11 | | | | |
| ZG312947 | 6-26 | ZS592378 | 7-27 | | | | |
| ZG312962 | 7-46 | ZS608095 | 2-20 | | | | |
| ZG312965 | 12-6x | ZS613901 | 6-35 | | | | |
| ZG312996 | 6-24 | ZS691277 | 12-22x | | | | |
| ZG313031 | 11-54 | ZW259738 | 3-21 | | | | |
| ZG313040 | 11-53 | ZW259931 | 6-46 | | | | |
| ZG313043 | 7-12 | ZW260010 | 5-11 | | | | |
| ZG317496 | 3-3 | ZW260076 | 6-31 | | | | |
| ZG331315 | 7-37 | ZW263946 | 11-57x | | | | |
| ZG331324 | 7-47 | ZW270088 | 3-12 | | | | |
| ZG331352 | 6-11 | ZW270088 | 6-25 | | | | |
| ZG331353 | 6-39 | ZW270088 | 7-10 | | | | |
| ZG331354A | 6-28 | ZW270088 | 7-32 | | | | |
| ZG331354B | 6-29 | ZW270101 | 7-13 | | | | |
| ZG331355A | 6-42 | ZW270123 | 6-37 | | | | |
| ZG331355B | 6-45 | ZW270123 | 7-45 | | | | |
| ZG331407 | 5-14 | ZW270134 | 6-38 | | | | |
| ZG331427 | 4-4 | ZW273892 | 5-5 | | | | |
| ZG332778 | 7-23 | ZW273892 | 6-7 | | | | |
| ZG336117 | 7-9 | ZW274026 | 6-10 | | | | |
| ZG336313 | 7-52 | ZW274026 | 6-19 | | | | |
| ZG370350 | 12-9x | ZW282407 | 5-9 | | | | |
| ZG385457 | 6-27 | ZW290283 | 5-27 | | | | |
| ZS265814 | 4-2 | ZW290283 | 6-5 | | | | |
| ZS301398 | 12-35x | ZW290283 | 6-23 | | | | |
| ZS302318 | 3-16 | ZW290283 | 7-43 | | | | |
| ZS306435 | 6-36x | ZW290283 | 11-20 | | | | |
| ZS310588 | 12-37x | ZW305013 | 12-45x | | | | |
| ZS314702 | 11-64 | ZW307947 | 6-4 | | | | |
| ZS315878 | 12-36 | ZW331567 | 11-58 | | | | |
| ZS322939 | 12-23x | ZW331858 | 7-56 | | | | |
| ZS323728 | 2-7 | ZW336595 | 5-13 | | | | |
| ZS325495 | 5-16 | ZW357164 | 7-3 | | | | |
| ZS325495 | 7-8 | ZW376391 | 6-32 | | | | |
| ZS325495 | 12-17x | ZW413188 | 5-4 | | | | |
| ZS331111 | 3-15 | ZW413188 | 6-6 | | | | |
| ZS331530 | 7-11 | ZW413278 | 6-9 | | | | |
| ZS331533 | 11-21 | ZW413278 | 6-18 | | | | |
| ZS331568 | 12-44x | ZW413278 | 7-7 | | | | |
| ZS332469 | 12-43x | ZW462205 | 7-5 | | | | |
| ZS336628 | 3-13 | ZW516993 | 5-24 | | | | |
| ZS336629 | 3-14x | ZW516993 | 6-20 | | | | |
| ZS379350 | 3-20 | ZW560215 | 7-55 | | | | |
| ZS379350 | 4-8 | ZW609322 | 6-3 | | | | |
| ZS379350 | 4-12 | ZW625241 | 11-59 | | | | |
| ZS379350 | 5-30 | ZW698308 | 11-56 | | | | |
| ZS379350 | 7-41 | | | | | | |
| ZS379350 | 11-10 | | | | | | |
| ZS379350 | 12-16x | | | | | | |
| ZS379405 | 7-42 | | | | | | |
| ZS380046 | 6-22 | | | | | | |
| ZS417137 | 7-31 | | | | | | |
| ZS417150 | 2-22 | | | | | | |
| ZS417150 | 7-38 | | | | | | |
| ZS417216 | 3-24 | | | | | | |
| ZS417216 | 5-28 | | | | | | |
| ZS417216 | 6-2 | | | | | | |
| ZS417216 | 7-14 | | | | | | |
| ZS417216 | 7-39 | | | | | | |
| ZS417216 | 7-48 | | | | | | |
| ZS417216 | 7-58 | | | | | | |
| ZS419670 | 2-14 | | | | | | |
| ZS419670 | 5-17 | | | | | | |
| ZS419670 | 7-51 | | | | | | |
| ZS421806 | 5-29 | | | | | | |
| ZS430413 | 5-7 | | | | | | |
| ZS432843 | 11-52 | | | | | | |
| ZS444330 | 11-18 | | | | | | |
| ZS455207 | 3-4x | | | | | | |
| ZS455207 | 11-55 | | | | | | |
| ZS460440 | 2-12 | | | | | | |
| ZS460440 | 7-29 | | | | | | |
| ZS464703 | 6-13 | | | | | | |
| ZS477876 | 2-6 | | | | | | |
| ZS479474 | 11-9 | | | | | | |
| ZS483502 | 4-10 | | | | | | |
| ZS483502 | 5-23 | | | | | | |

SECTION 3



SCHEMATIC DIAGRAM

1. SCHEMATIC DIAGRAM OF ICs
2. GX-77 NO. 2-1 1622028A POWER & SYSCON SCHEMATIC DIAGRAM
3. GX-77 NO. 2-2 1622033A AMP SCHEMATIC DIAGRAM

HD14042BP

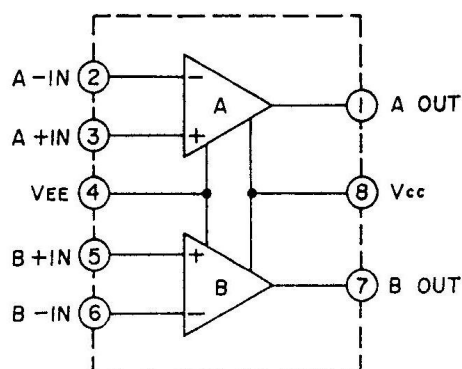


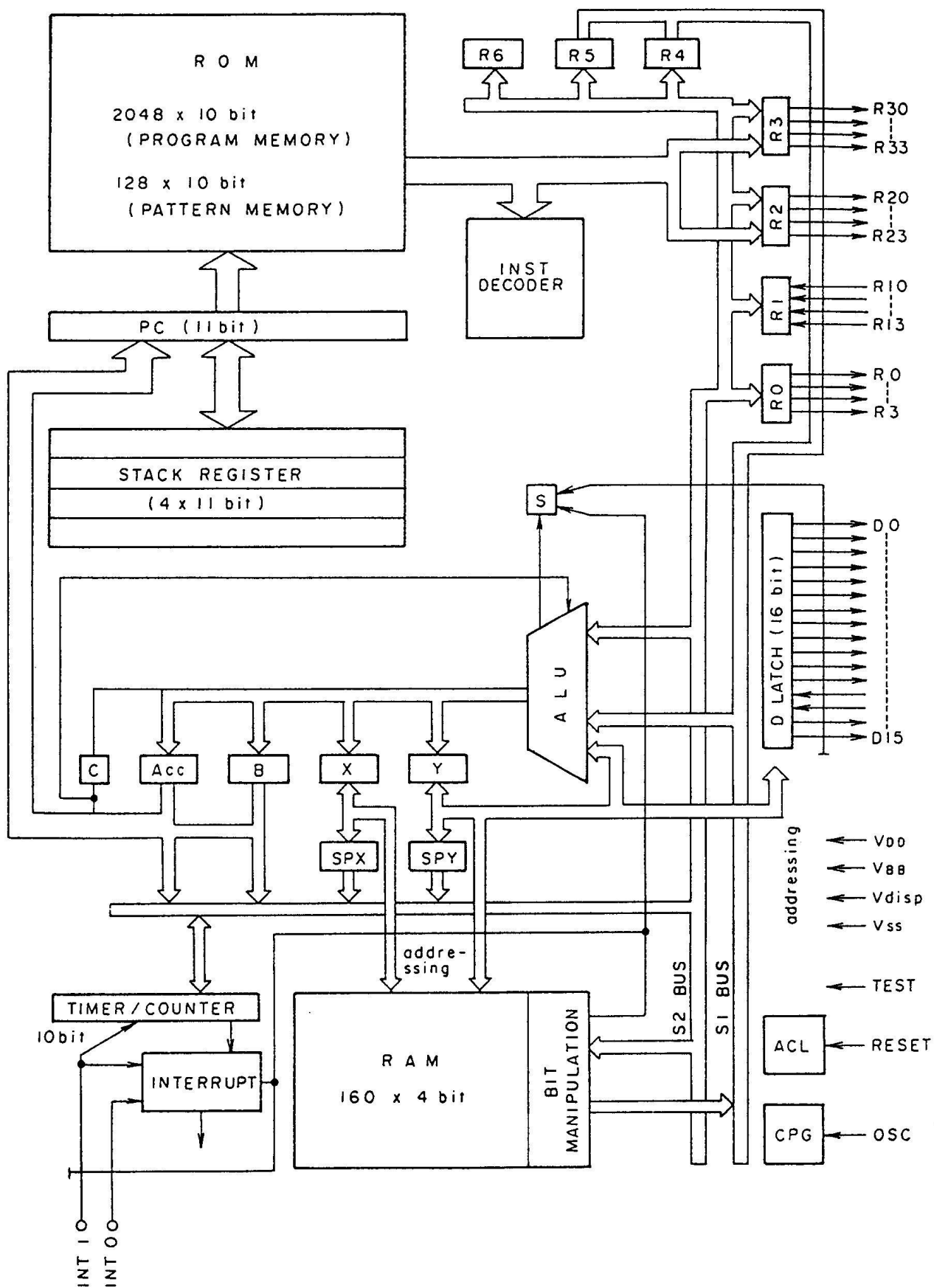
TRUTH TABLE

| INPUT | | OUTPUT |
|---|----------|--------|
| CLOCK | POLARITY | Q |
| L | L | CATA |
|  | L | LATCH |
| H | H | DATA |
|  | H | LATCH |

H: HIGH LEVEL
L: LOW LEVEL

NJM4558D





C

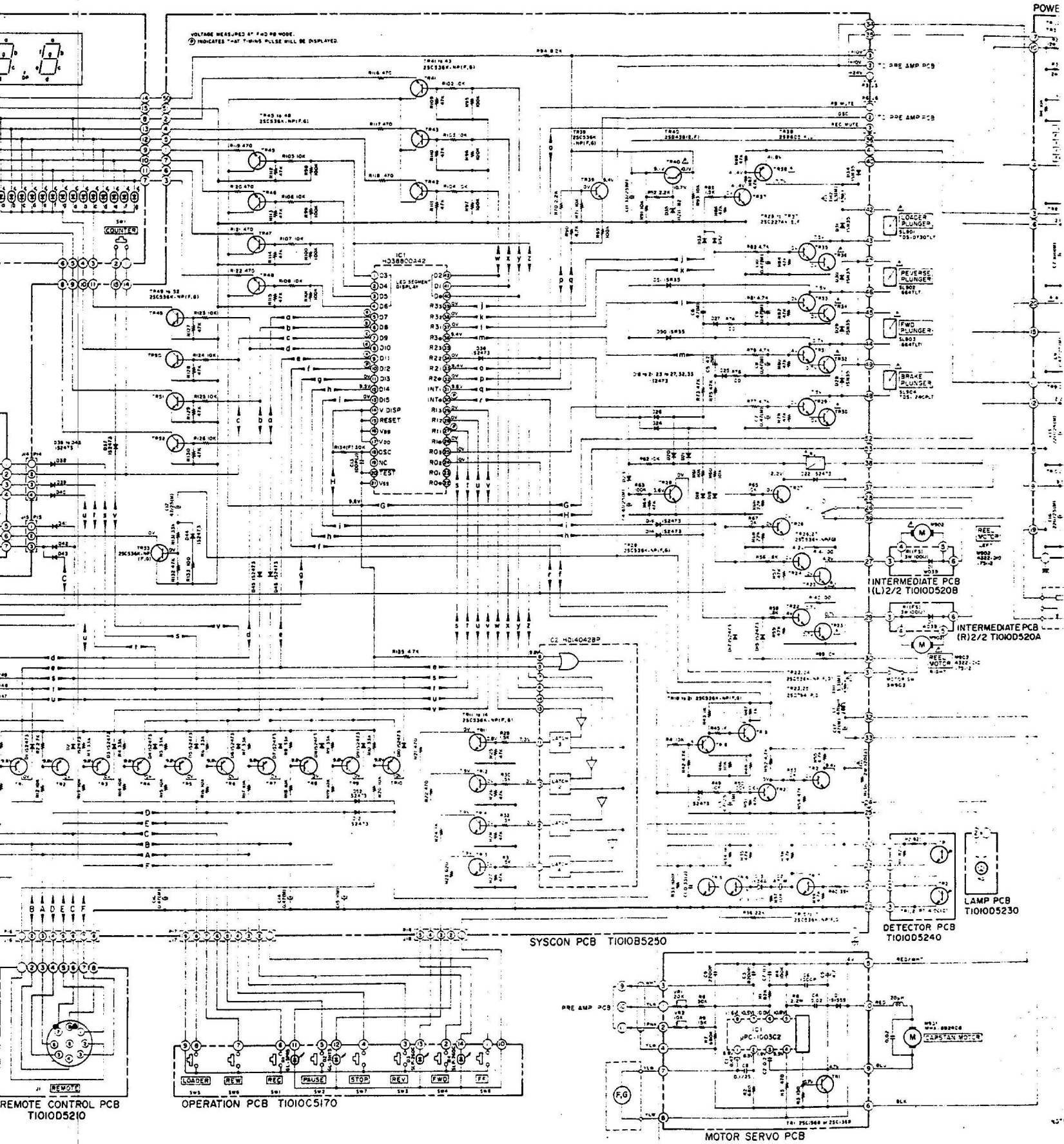
D

E

F

G

H



VOLTAGE MEASURED AT #40 OR #46.
 ② INDICATES THAT TUNING PULSE WILL BE DISPLAYED.

POWER

REMOTE CONTROL PCB
 T10105210

OPERATION PCB T1010C5170

SYSCON PCB T1010B5250

MOTOR SERVO PCB

DETECTOR PCB
 T1010D5240

INTERMEDIATE PCB
 (L) 2/2 T1010D520B

INTERMEDIATE PCB
 (R) 2/2 T1010D520A

LAMP PCB
 T1010D5230

SOLENOID PLUNGER
 3.0V
 10S-073007

REVERSE PLUNGER
 3.0V
 10S-066471

FWD PLUNGER
 3.0V
 10S-066471

BRAKE PLUNGER
 3.0V
 10S-066471

REEL MOTOR
 3.0V
 10S-066471

REEL MOTOR
 3.0V
 10S-066471

REEL MOTOR
 3.0V
 10S-066471

REEL MOTOR
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REEL MOTOR
 3.0V
 10S-066471

REEL MOTOR
 3.0V
 10S-066471

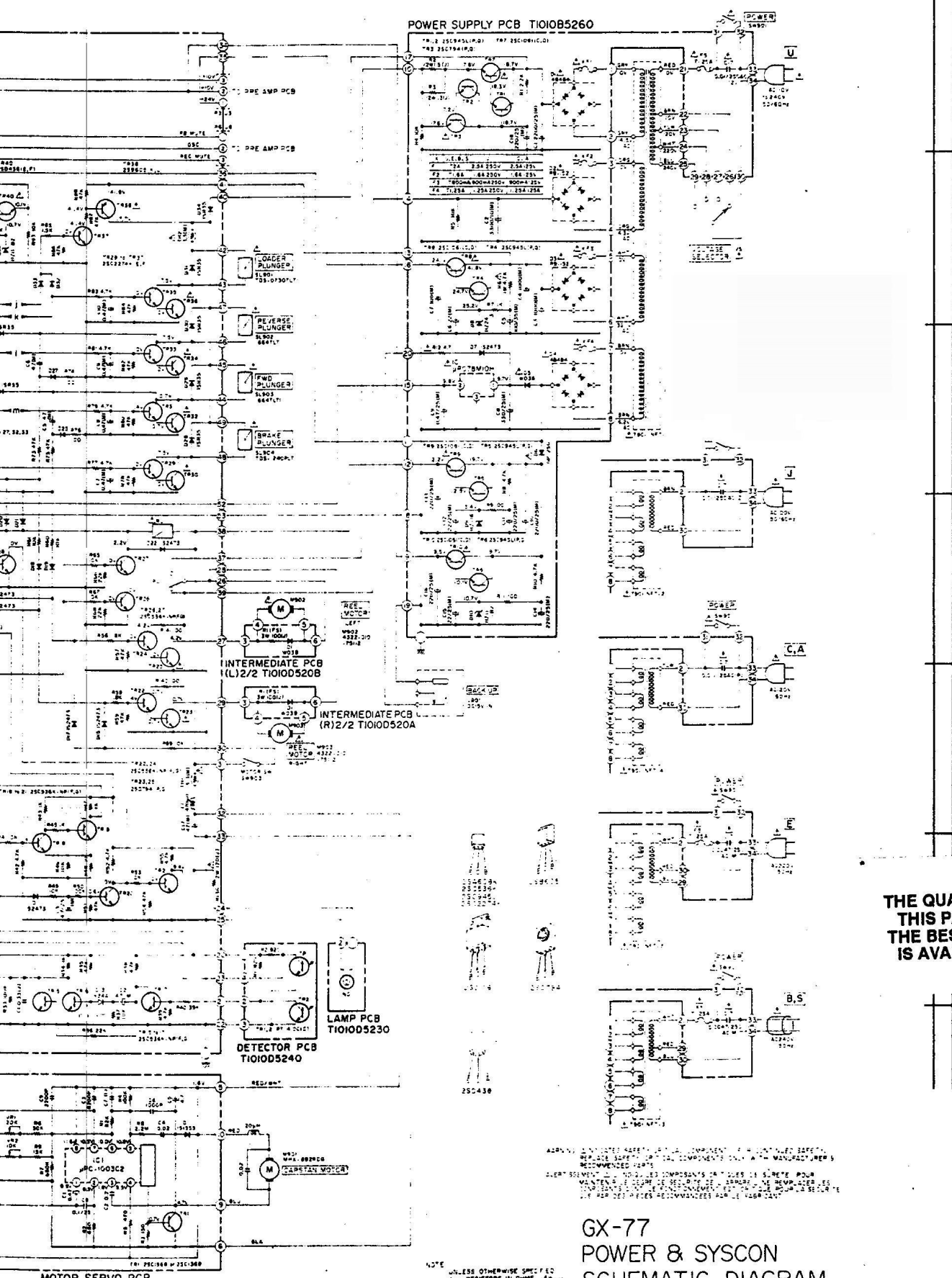
REEL MOTOR
 3.0V
 10S-066471

REEL MOTOR
 3.0V
 10S-066471

REEL MOTOR
 3.0V
 10S-066471

REEL MOTOR
 3.0V
 10S-066471

G H I J K



THE QUALITY OF THIS PAGE IS THE BEST THAT IS AVAILABLE

GX-77
 POWER & SYSCON
 SCHEMATIC DIAGRAM
 NO. 2-1 1622028A

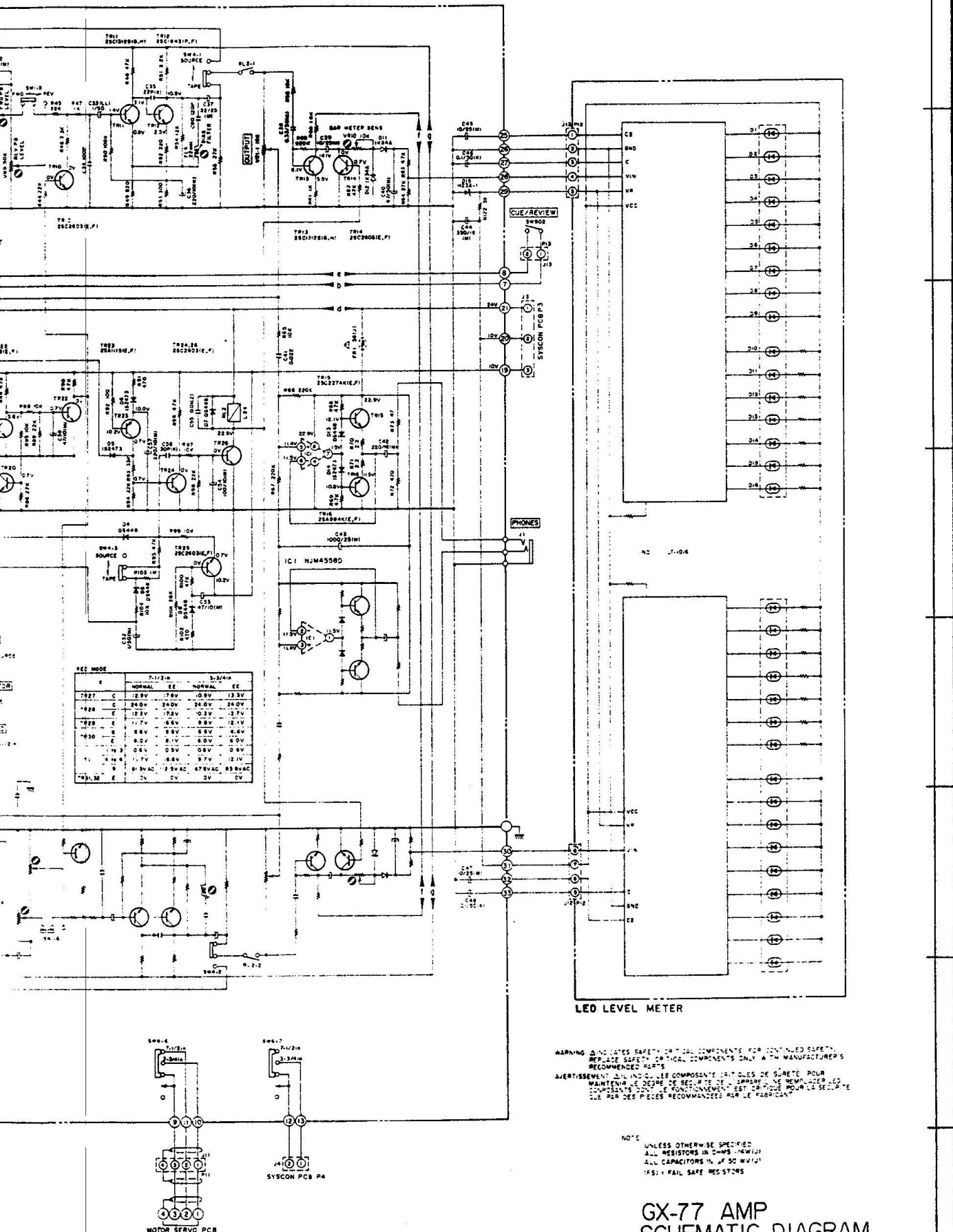
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| REC MODE | E | T1/T2 | | T3/T4 | |
|----------|---------|--------|-------|---------|---------|
| | | NORMAL | EE | NORMAL | EE |
| | T27 | 0.0V | 0.0V | 13.0V | 13.0V |
| | +28 | 24.0V | 24.0V | 24.0V | 24.0V |
| | -28 | 12.3V | 12.2V | -0.3V | -2.7V |
| | +29 | 11.7V | 6.6V | 8.8V | 12.1V |
| | +30 | 6.6V | 1.6V | 6.6V | 6.6V |
| | -27 | 6.2V | 6.1V | 6.0V | 6.0V |
| | T1 | 11.7V | 6.6V | 6.7V | 12.1V |
| | +31, 32 | 0V | 0V | 47.8VAC | 89.0VAC |

WARNING Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT Δ IL INDICATE LES COMPOSANTS CRITIQUES DE SURETE POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL. NE REMPLACEZ LES COMPOSANTS Δ QU'ILS FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS (R/W/F)
ALL CAPACITORS IN µF (D/W/F)
RFS: FAIL SAFE RESISTORS

**GX-77 AMP
SCHEMATIC DIAGRAM
NO. 2-2 1622033A**