

TC-755

USA Model
E Model
AEP Model
UK Model



STEREO TAPECORDER

SPECIFICATIONS

Power Requirements:	AC 120 V, 60 Hz, 100 W (USA) AC 100, 110, 120, 127, 220 or 240 V, 50/60 Hz, 55 W (E) AC 110, 127, 220, or 240 V, 50/60 Hz, 110 W (AEP, UK)	Inputs:	MIC (2) Impedance: low Maximum sensitivity: -72 dB (0.19 mV) LINE IN (2) Impedance: 100 k Ω Maximum sensitivity: -22 dB (60 mV)
Track System:	Four-track two-channel stereo and monaural	Outputs:	LINE OUT (2) Impedance: 100 k Ω Level: -5 dB (0.44 V) with 100 k Ω load HEADPHONE Impedance: 8 Ω
Reels:	270 mm (10 $\frac{1}{2}$ inches) or smaller	REC/PB (DIN) Connector (E, AEP):	Input impedance: 3.9 k Ω Output impedance: 8.2 k Ω
Tape Speed:	19 cm/s (7 $\frac{1}{2}$ ips), 9.5 cm/s (3 $\frac{3}{4}$ ips)	AC Outlet (USA):	Unswitched, 300 W maximum
Recording Time:	6 hours total at 9.5 cm/s (3 $\frac{3}{4}$ ips), stereo recording, with 1,100 m (3360 ft.) tape of 270 mm (10 $\frac{1}{2}$ inch) reel	Heads:	Record : RF140-2902 Playback: PF140-4202 Erase : EF18-2902A2
Frequency Response:	According to NAB standards 20~30,000 Hz at 19 cm/s (7 $\frac{1}{2}$ ips) 30~25,000 Hz \pm 3 dB at 19 cm/s (7 $\frac{1}{2}$ ips) 20~20,000 Hz at 9.5 cm/s (3 $\frac{3}{4}$ ips) According to DIN standards 30~24,000 Hz at 19 cm/s (7 $\frac{1}{2}$ ips) 40~16,000 Hz at 9.5 cm/s (3 $\frac{3}{4}$ ips)	Motors:	Capstan: IC-624G Reel : IC-638R (2)
Signal-to-Noise Ratio:	56 dB (with SONY SLH tape) 53 dB (with standard tape)	Semiconductors:	1 IC, 2 FETs, 56 transistors, 42 diodes
Wow and Flutter:	0.05 % (RMS) weighted at 19 cm/s (7 $\frac{1}{2}$ ips) 0.08 % (RMS) weighted at 9.5 cm/s (3 $\frac{3}{4}$ ips) \pm 0.07 % (DIN) at 19 cm/s (7 $\frac{1}{2}$ ips) \pm 0.10 % (DIN), at 9.5 cm/s (3 $\frac{3}{4}$ ips)	Dimensions:	435 (w) x 451 (h) x 221 (d) mm 17 $\frac{1}{8}$ (w) x 17 $\frac{3}{4}$ (h) x 8 $\frac{3}{4}$ (d) inches
Overall Distortion:	1.2 %	Weight:	24 kg, 52 lb 15 oz
Record Bias Frequency:	Approximately 160 kHz		

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SONY
SERVICE MANUAL

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When ordering replacement parts, use PART NUMBERS listed in Parts Lists or shown in EXPLODED VIEWS.

Parts List reference numbers should not be used.

MODEL IDENTIFICATION

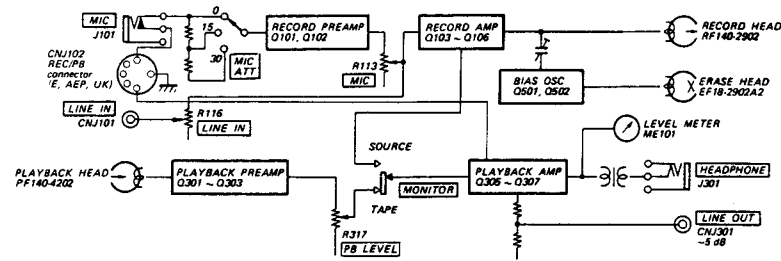
(See specification label.)

Model	Identification on specification label
USA	AC 120V 60 Hz 100W SUPERSCOPE
E	AC 100, 110, 127, 220, 240V 50/60 Hz 55W
AEP, UK	110, 127, 220, 240V ~ 50/60 Hz 110W

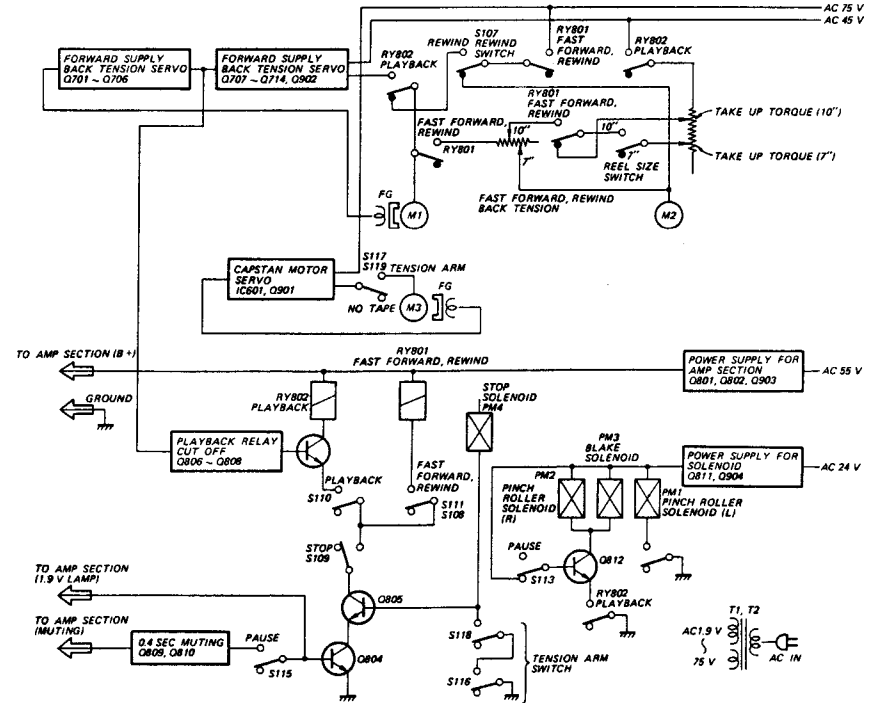
SECTION 1
DIAGRAMS

1-1. BLOCK DIAGRAMS

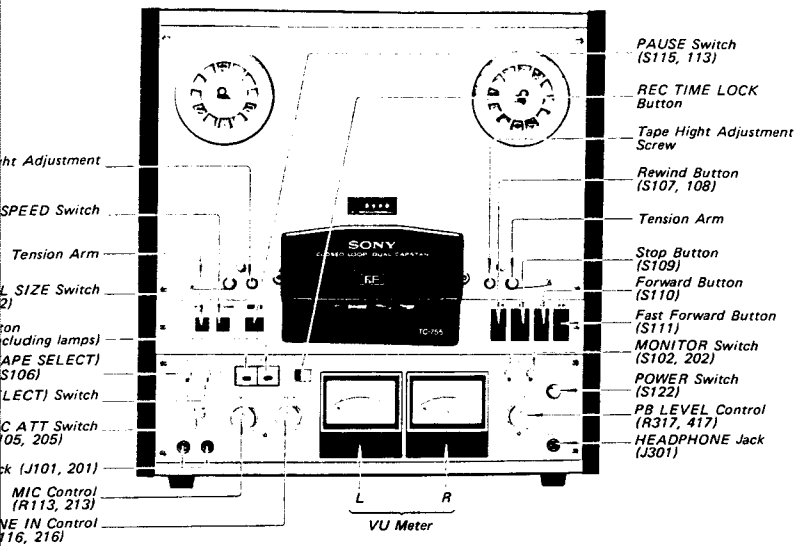
Amp Section



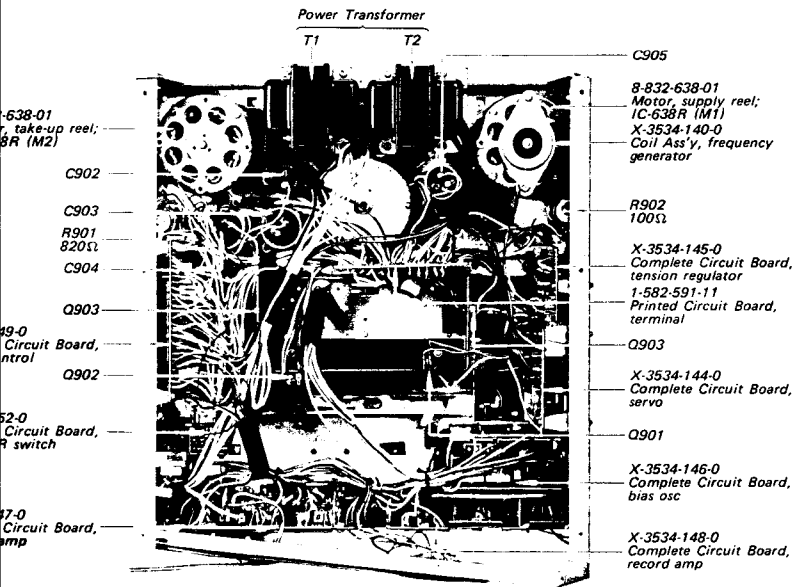
System Control Section



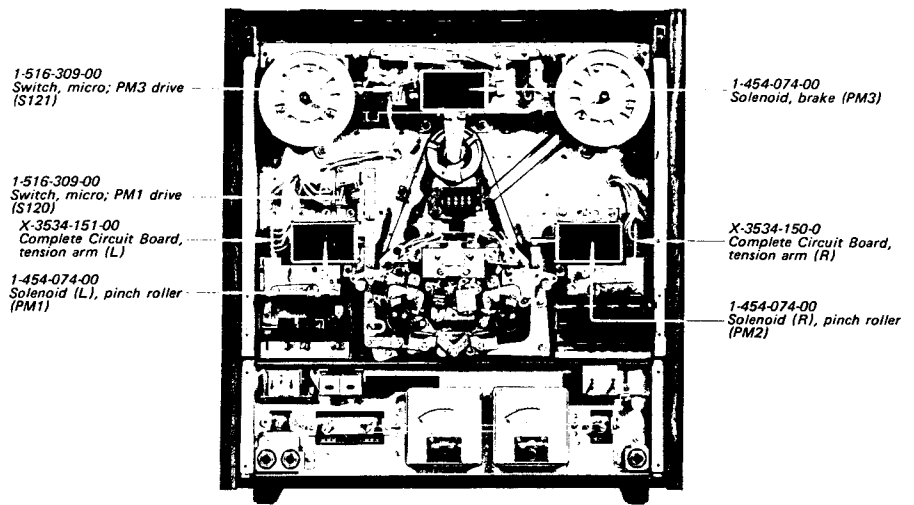
INTERNAL VIEW



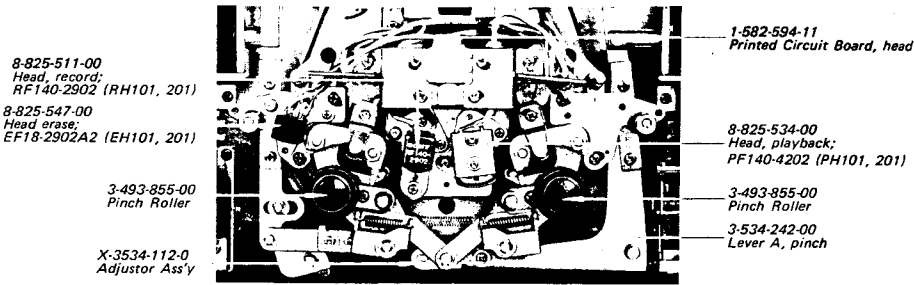
INTERNAL VIEW (1)



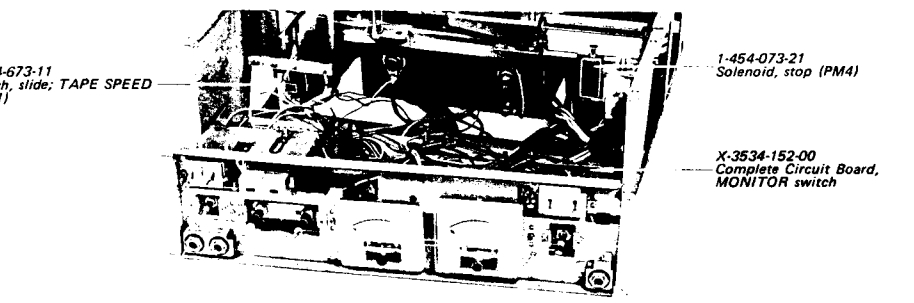
1-4. INTERNAL VIEW (2)



1-5. INTERNAL VIEW (3)



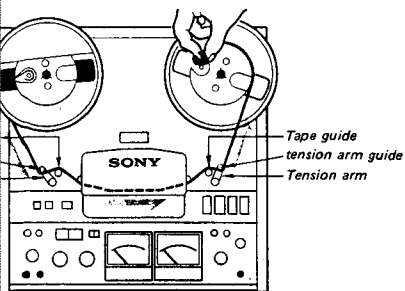
1-6. INTERNAL VIEW (4)



NOTES ON OPERATION

270 mm (10½ inch) metal reel, use a reel adapter and a Sony Reel Adaptor RAD-10.

Load a tape as illustrated. Be sure to pass the tape under the tension-arm guides, and over the tape guides.



For protection against the high bias voltage the upper head cover is fastened with the two upper cover bosses.

Set the BIAS and EQ (TAPE SELECT) switches according to the tape used.

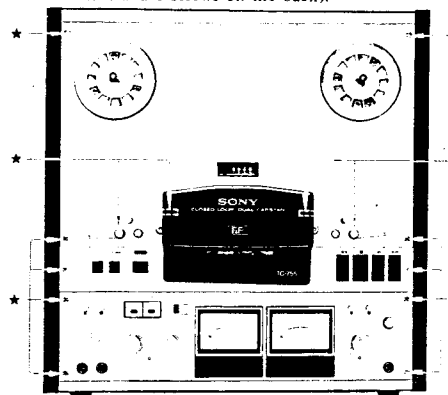
EQ switch	Tapes
NORMAL	SONY SUPER 150, SUPER A TDK 150 SCOTCH 150 Other 150 type tapes
SPECIAL	SONY SLH MAXELL LNE 35 AGFA PE 35 BASF LP 35, 35LH
NORMAL	SCOTCH 203, 206 TDK SD 150
SPECIAL	When using some tapes, frequency response range may be wide but distortion level may be high.

- Do not leave the TC-755 in PAUSE mode for a long time, since the normal rated voltages are still applied to the reel motors in PAUSE mode. Place the TC-755 in stop mode instead.
- REC TIMER LOCK button can be moved to the right only when L and/or R RECORD buttons are pushed in stop mode. Once the RECORD buttons are locked, they cannot be released and remain illuminated even though any function button (stop, fast forward, rewind or forward button) is pushed. The TC-755 can be placed in record mode only by pushing the forward button, but not by pushing the stop, fast forward or rewind button.
- Before setting the timer-activated recording, be sure to turn POWER switch OFF. Otherwise the tension arms may be turned OFF by the momentary tape slack and the TC-755 may be placed in stop mode.
- PB LEVEL controls adjust the playback signal level at the LINE OUTPUTS and the HEADPHONE jack. This adjustment reflects on VU meters with a 0 VU reading corresponding to 0.43 volt output. During normal use, set the inner knob (R channel) to the center click position and align the outer knob (L channel) with the inner knob.
- The TC-755 is designed only for vertical use, and therefore no rubber feet are provided for horizontal use.
- All function buttons except the stop button have self lock mechanisms.

1-8. NOTES ON REPAIR

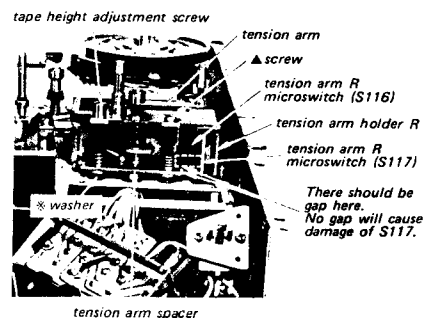
1. Disassembly

To remove the reel panel, unscrew the 14 screws indicated by * in the photo below. To remove the cabinet, unscrew the 10 screws attached to the cabinet (4 screws on both sides and 6 screws on the back).



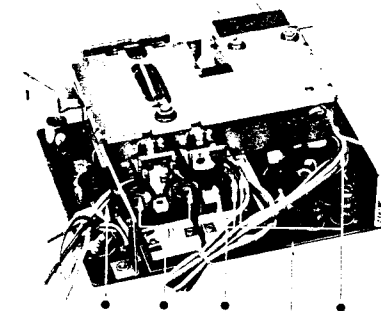
- When turning the tape height adjustment screw, the following precaution must be taken: After the screw is turned clockwise as far as it will go, it must not be turned counterclockwise more than 3½ turns. The tape height may be adjusted with this screw within these limits. If the screw is turned beyond these limits, the washer indicated by * will be damaged. (See photo.)

The screw indicated by ▲ has been adjusted at the factory and should not be turned. If, however, it happens to be turned, care must be taken that the microswitch (S117) is not touched by the tension arm spacer even if the tape height adjustment screw is turned within the limits mentioned above. Otherwise S117 will be damaged.



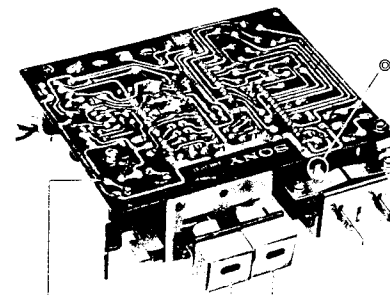
tension arm spacer

- Lead wires for the complete circuit board of the bias oscillator should be arranged through the areas and between the parts indicated by ● as shown in the photo. Also, make sure that the lead wires and other parts do not interfere with the ranges within which the switches operate.



complete circuit board of bias osc.

- Be sure to insert the function spring projection (indicated by ⊙) into the lever of the EQ (TAPE SELECT) switch as shown in the photo.



RECORD buttons

complete circuit board of bias osc.

SECTION 2 ADJUSTMENTS

MECHANICAL ADJUSTMENTS

1. Brake Adjustment (1)

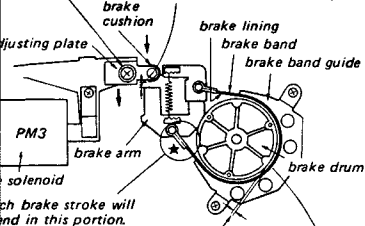
Perform this adjustment for both left and right brakes. After the adjustment, apply locking compound to the adjusted screw.

Back mode —

Turn the adjustment screw clockwise to increase the brake stroke for the late brake stroke.

— Right side —

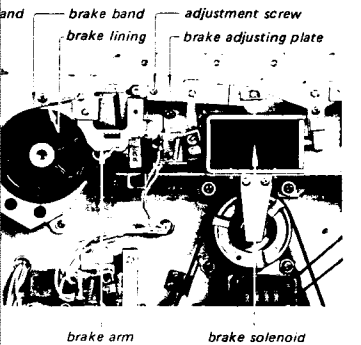
(In stop mode there should be more than 1 mm (3/64") gap.)



In back mode (When PM3 solenoid is energized,) the brake band should uniformly be more than 0.5 mm (1/32").

In playback mode (When PM3 solenoid is energized,) the brake band should uniformly contact the brake band guide.

— Left side —



2. Brake Adjustment (2)

Perform this adjustment for both left and right brakes. After the adjustment, apply locking compound to the adjusted screw.

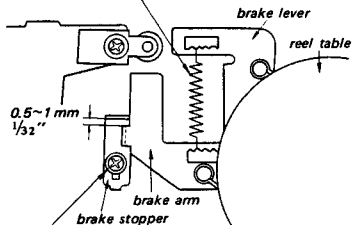
Specification:

Take-up Reel	Supply Reel	Brake Torque
clockwise	counterclockwise	800~2,500 g·cm (11.1~34.8 oz·inch)
counterclockwise	clockwise	600~700 g·cm (8.3~9.7 oz·inch)

— Stop mode —

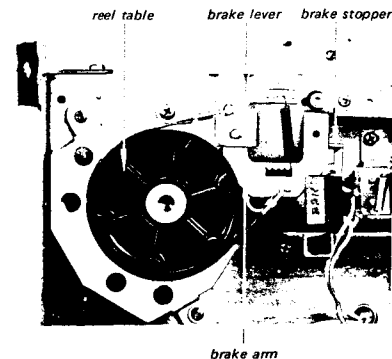
— Right side —

Change the hooking position of the spring for the specified brake torque.

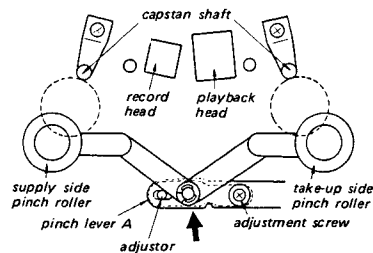


Adjustment screw
Adjust the brake stopper for the specified clearance.

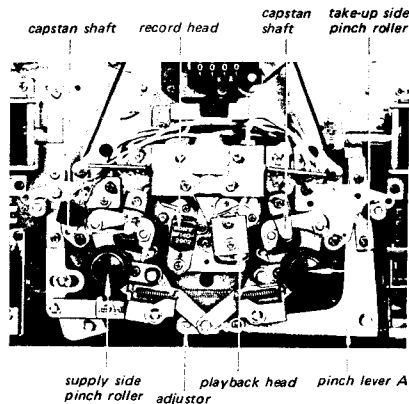
— Left side —



3. Adjustor Adjustment

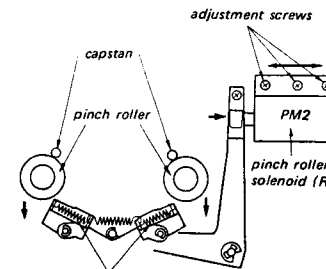


In playback mode and with PAUSE switch to ON, slowly push the pinch lever A in the direction shown by the arrow. When the supply side pinch roller contacts the capstan shaft and starts to rotate, the gap between the take-up side pinch roller and the capstan shaft should be less than 0.5 mm (1/64"), so that the take-up side pinch roller starts rotating slightly after or almost simultaneously with the start of the supply side pinch roller, if necessary, adjust the adjustor.



4. Pinch Roller Solenoid (R) (PM2) Position Adjustment

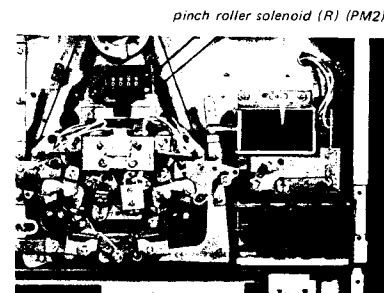
After the adjustment, apply locking compound to the adjusted screws.



These two springs should expand 0.5 mm (1/64") longer after the pinch rollers contact the capstans in playback mode. If necessary, adjust the PM2 solenoid position.

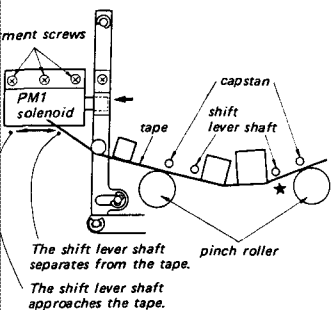
Specification for your reference:

Pinch roller pressure: 1000 g ~ 1600 g (2 lb 3 oz ~ 3 lb 8 oz).



Pinch Roller Solenoid (L) (PM1) Position Adjustment

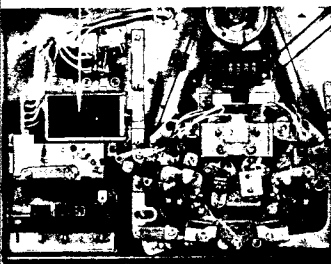
After the adjustment, apply locking compound to the adjusted screws.



When a tape threaded along the tape path and back mode (PM1 solenoid should be engaged), turn PAUSE switch ON. At this time the shift lever shafts should not contact the tape and the pinch rollers should separate from the capstans. If necessary, adjust the PM1 solenoid position.

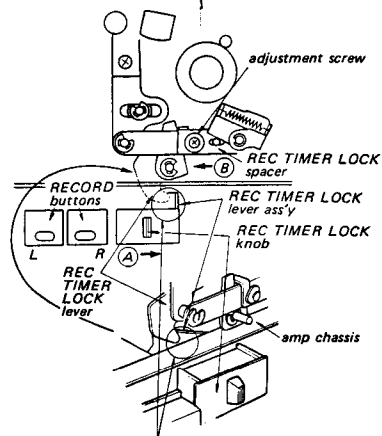
Note: The shift lever shaft indicated by * in the above figure may slightly contact the tape but the other one should not.

Pinch Roller Solenoid (L) (PM1)



6. RECORD Button Lock Adjustment

After the adjustment, apply locking compound to the adjusted screw.



Push L and R RECORD buttons, move REC TIMER LOCK knob in the direction shown by arrow (A) and then push the 'forward' button. At this time REC TIMER LOCK lever should slightly contact REC TIMER LOCK lever ass'y as shown. If necessary, adjust the REC TIME LOCK spacer.

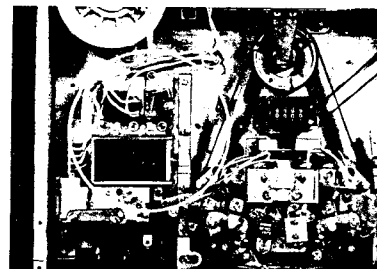
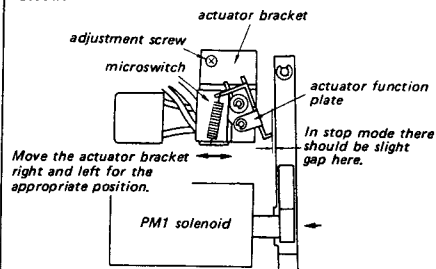
Note:

After the adjustment, and with the L and R RECORD buttons pushed and the REC TIMER LOCK knob pushed in the direction shown by arrow (A), and also the forward button pushed, make sure of the following functions.

1. RECORD buttons cannot be released by releasing REC TIMER LOCK knob.
2. REC TIMER LOCK knob cannot be released by moving the REC TIMER LOCK knob further in the direction shown by the arrow (A).
3. Push L and R RECORD buttons and then push forward button. At this time the RECORD buttons should not be released.
4. In stop mode L and R RECORD buttons should be released.
5. When L and R RECORD buttons are released, REC TIMER LOCK knob cannot be moved in the direction shown by the arrow (A).

7. Actuator Adjustment (1)

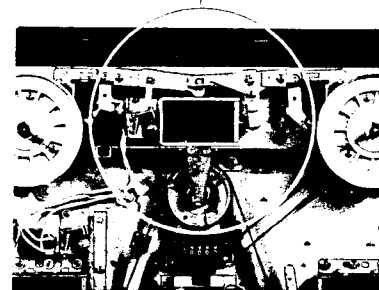
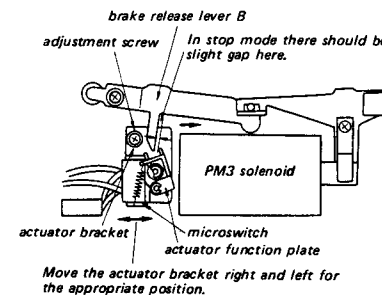
Perform this adjustment after the Pinch Roller Solenoid (L) (PM1) Position Adjustment. After the adjustment, apply locking compound to the adjusted screw.



Note: The microswitch should turn OFF (click) in 0.5 to 2 seconds after forward button is pushed.

8. Actuator Adjustment (2)

Perform this adjustment after the Brake Adjustments (1) and (2). After the adjustment, apply locking compound to the adjusted screw.



Note: The microswitch should turn OFF (click) in 0.5 to 2 seconds after forward button is pushed.

Forward and Rewind Back-Tension Adjustment

Apply the rated power voltage.

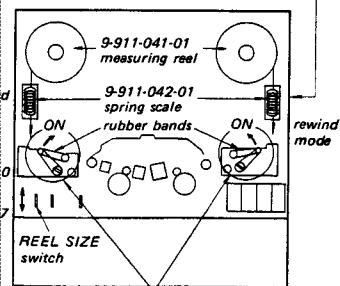
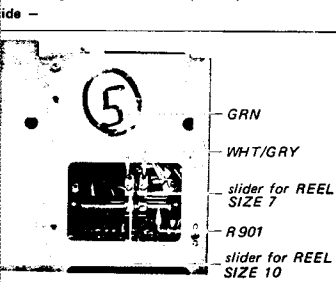
Fasten the tension arms with rubber bands as shown, thus activating them.

Set the spring scale at a speed of between 5 cm/s to 19 cm/s in the direction shown by the arrow for rewind or fast forward mode with REEL SIZE switch at "7" and "10". Measure the back tension torque for rewind and fast forward modes. Torques should be as shown in the following table.

Specification:

REEL SIZE Switch	Back-Tension Torque
10	110 to 140 g·cm (1.53 to 1.95 oz·inch)
7	80 to 100 g·cm (1.11 to 1.39 oz·inch)
10	110 to 140 g·cm (1.53 to 1.95 oz·inch)
7	80 to 100 g·cm (1.11 to 1.39 oz·inch)

If necessary, adjust the torque by moving the sliders of the adjustable resistor (R901).



Fasten the tension arms with rubber bands to operate the unit.

10. Playback Take-up Torque Adjustment

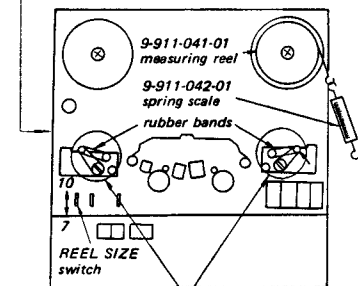
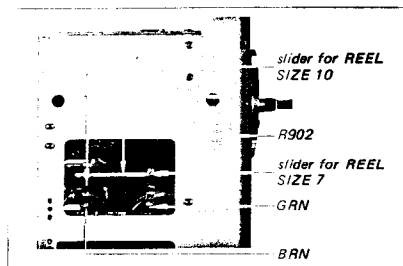
1. Supply the rated power voltage.
2. Fasten the tension arms with rubber bands as shown, thus activating them.
3. Turn the TAPE SPEED switch to "19 cm 7½."
4. Place the unit in playback mode.
5. Pull the spring scale in the direction shown by the arrow and measure the take-up torque with REEL SIZE switch at "10" and "7". Torques should be as shown in the following table.

Specification:

REEL SIZE switch	Take-up Torque
10	580 to 620 g·cm (80.5 to 86.1 oz·inch)
7	280 to 320 g·cm (38.9 to 44.5 oz·inch)

If necessary, adjust the torque by moving the sliders of the adjustable resistor (R902).

— Left side —

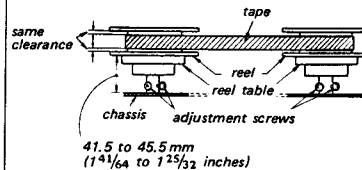
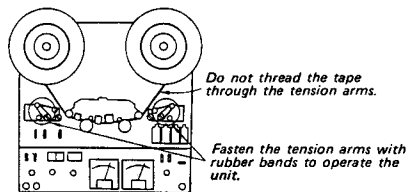


Fasten the tension arms with rubber bands to operate the unit.

11. Reel Table Height Adjustment

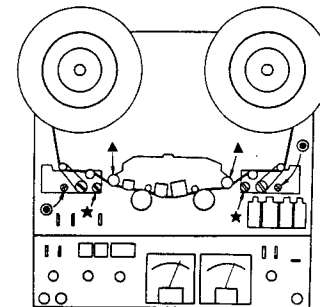
After the adjustment, apply locking compound to the adjusted screws.

1. Thread the tape from a 180 mm (7 inches) plastic reel as shown.
2. Fasten the tension arms with rubber bands as shown.
3. Adjust the reel table height so that the tape travels in the center of both reel flanges in fast forward and rewind modes.



12. Tape Guides Adjustment (1)

1. Thread the tape from a 180 mm (7 inches) plastic reel as shown.
2. Turn the two screws indicated by ★ counterclockwise until it stops, and then turn them clockwise in 1/4 turns.
3. Turn the two screws indicated by ● so that the tape travels in the center of both reel flanges in rewind and fast forward modes.
4. Turn the two tape guides indicated by ▲, for fine adjustment, so that the tape travels in the center of the guides without tape curl in playback mode.
5. When the tape curls, repeat the above steps.

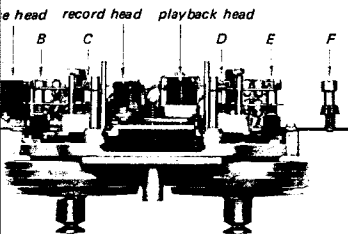
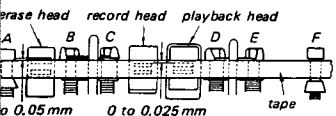


Tape Guide Adjustment (2)

Perform this adjustment after the reel table adjustment and the tape guides adjustment are completed. Tape should not curl at each tape guide B, C, D and E.

If necessary, adjust the tape guides B, C and E with the same procedure as for guide D as standard.

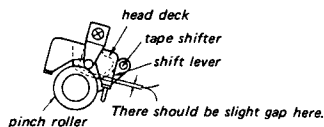
- Note:** 1. Make sure that the three heads are correctly positioned as specified. If necessary, perform the head height adjustments on page 19 and 21.
2. If all the tape guides B, C, D and E are not correctly positioned, adjust them so that the tape travels in the center of the pinch roller.



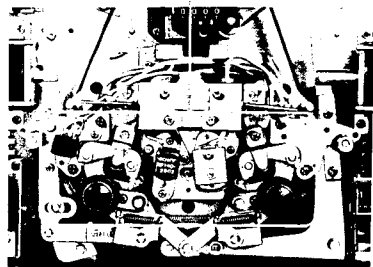
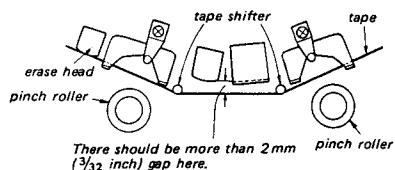
14. Tape Shifter Position Check.

Perform this check for both left and right shifters with the unit in horizontal position.

- In playback mode the shift levers should not touch the head deck.

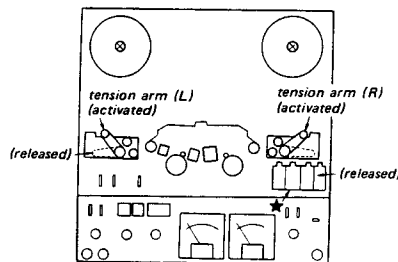


- At tape end in rewind and fast forward modes, there should be more than 2 mm (3/32 inch) gap between the tape and the record and playback heads. At this time the tape may touch the erase head.



15. Function Switch Operation Check

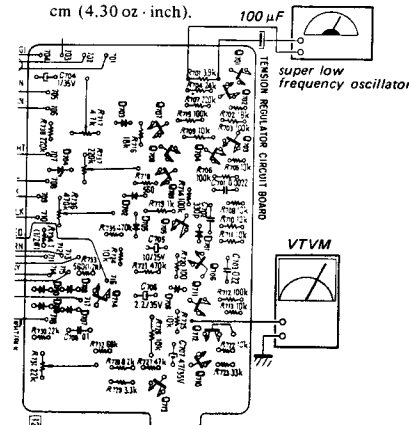
- Push the POWER switch ON with the tension arms released. Next push each function button. No operation should take place, and each function button should not lock.
- When the tension arm L and/or R are activated, the stop solenoid should be de-energized. The solenoid can be seen when looked at in the direction of the arrow indicated by *. When the solenoid is de-energized, a click can be heard.
- Activate the tension arm L or R, and make sure of the following functions.
 - Push the forward button. The button should lock. When the activated tension arm is released, the locked button should release itself.
 - Push the forward button. Then push the stop button. At this time, the locked forward button should release itself.
 - Push the forward button. Then push the POWER switch OFF. The locked forward button should remain locked. Next push the POWER switch ON. The forward button should still remain locked.
 - Push the fast forward button. The button should lock. When the activated tension arm is released, the locked button should release itself.
 - Push the fast forward button. Then push the stop button. At this time the locked button should release itself.
 - Push the rewind button. The button should lock. When the activated tension arm is released, the locked button should release itself.
 - Push the rewind button. Then push the stop button. At this time the locked button should release itself.



16. Tension Regulator Adjustment (Not normally performed)

Note: For this adjustment a super low frequency oscillator (3 Hz to 10 Hz) is required. Without the oscillator, do not perform this adjustment and only replace the defective parts. When adjusting adjustable resistors, turn them in the direction of increasing torque, so that the torque rises to the specified value.

- Supply the rated power voltage.
- Unsolder the three lead wires of the FG (frequency generator) coil in the supply reel motor M1, connect a super low frequency oscillator of 1 Vp-p output across R701 through a 100μF electrolytic capacitor.
- Set TAPE SPEED switch to "9.5 cm 3/4" and REEL SIZE switch to "10".
- Adjust the oscillator frequency so that the voltage between the emitter of Q712 transistor and the chassis ground is 9 volts in playback mode.
- With the frequency adjusted in step 4, adjust R731 so that the supply motor torque is 250 g·cm (3.47 oz·inch).
- Change the oscillator frequency to 10 Hz and adjust R717 so that the torque is 80 g·cm (1.11 oz·inch).
- Change the oscillator frequency to 3.3 Hz and adjust R736 so that the torque is 310 g·cm (4.30 oz·inch).
- Repeat steps 6 and 7 once more.
- Set TAPE SPEED switch to "19 cm 7/8" and change the oscillator frequency to 6.6 Hz. Then adjust R737 so that the torque is 310 g·cm (4.30 oz·inch).



ELECTRICAL ADJUSTMENTS

on:
Clean the following parts with a swab moistened with alcohol:

record head pinch roller
playback head rubber belts
erase head idlers
capstan tape guides

Demagnetize record, playback and erase heads with a head demagnetizer.

Do not use magnetized screwdriver for adjustments.

After adjustments, apply locking compounds to the adjusted parts.

Adjustments should be performed in the order listed in this service manual.

Adjustments and measurements should be performed for each L and R channel with the rated power supply voltage unless otherwise specified.

Switches and controls, which are not given in "Settings" for the each adjustment, can be set in any modes or positions. Power switch, however, should be ON unless otherwise stated.

Equipment/Tools Required:

radio oscillator (af osc)
VTVM
DM
attenuator (600Ω)
digital frequency counter or speed checker
SONY LFM-30)
oscilloscope
resistors: 600Ω, 10kΩ, 100kΩ

SONY test tape
J-19-F2

	1	2	3	4	5	6	7
Impedance:	400	400	10k	12.5k	7k	80	40
Level (dB):	0	-10	-10	-10	-10	-10	-10

J-19-A2 (12.5 kHz, -10 dB)
SPC-47 (4 kHz, 0 dB)
blank tapes (completely erased)
NPS-1 (for NORMAL record)
SLH-S1 (for SPECIAL record)

Normal Input Level

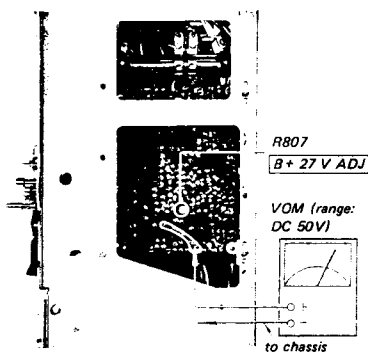
	Impedance	Level
LINE IN	300Ω	-60 dB (0.77 mV)
PHONO	10kΩ	-10 dB (0.25 V)

Normal Output Level

	Load Impedance	Level
LINE OUT	100kΩ	-5 dB (0.44 V)
HEADPHONE	8Ω	-28 dB (31 mV)

1. B + 27V Adjustment

Settings:



Procedure:

Adjust R807 for 26.5 to 27.0V DC on VOM.

Note: The ripple voltage should be less than 1 mV p-p.

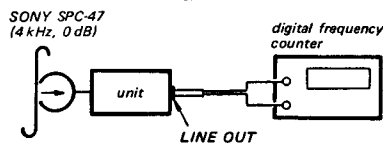
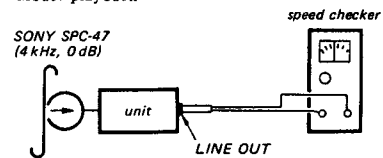
2. Tape Speed Adjustment

Settings:

REEL SIZE switch: 7
TAPE SPEED switch: 19 cm, 7½ and 9.5 cm, 3¾
EQ (TAPE SELECT) switch: NORMAL
MONITOR switch: TAPE
PB LEVEL control: mechanical mid

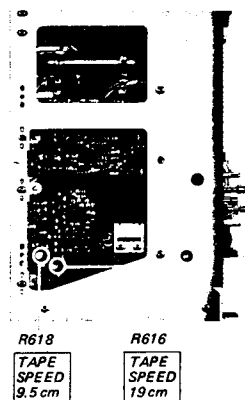
Procedure:

Mode: playback



TAPE SPEED	Adjust	Specification	
		speed checker	digital frequency counter
19 cm, 7½	R616	-1 ~ +1%	3,960 ~ 4,040 Hz
9.5 cm, 3¾	R618	-1 ~ +1%	1,980 ~ 2,020 Hz

Adjustment Location:



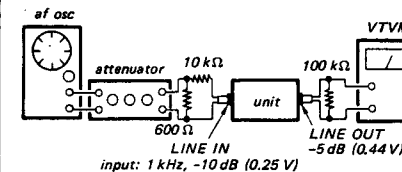
3. Meter Level Adjustment

Settings:

EQ (TAPE SELECT) switch: NORMAL
MONITOR switch: SOURCE
PB LEVEL control: mechanical mid

Procedure:

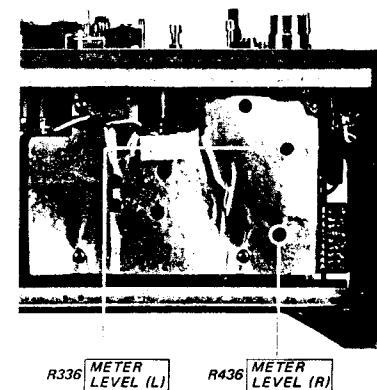
1. Calibrate the level meters for 0% indication with POWER switch OFF.
2. Adjust LINE IN control for -5 dB (0.44 V).



3.

Adjust	Remarks
R336 (L channel)	0 VU on the level meters
R436 (R channel)	

Adjustment Location:



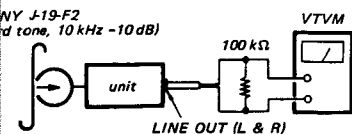
Playback Head Angle Adjustment

Settings:

REEL SIZE switch: 7
 TAPE SPEED switch: 19 cm, 7½
 EQ (TAPE SELECT) switch: NORMAL
 MONITOR switch: TAPE
 PB LEVEL control: mechanical mid

Procedure:

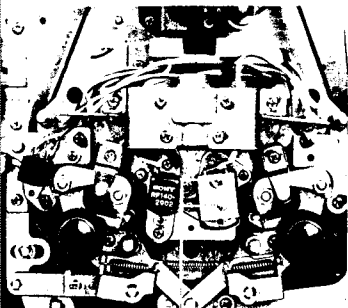
Mode: playback



Loosen the adjustment screws and correctly position the playback head for the highest VTVM reading.

Note: Slightly touch the supply reel and at this time the VTVM reading deviation should be less than 1 dB.

Adjustment Location:



playback head angle adjustment screws.

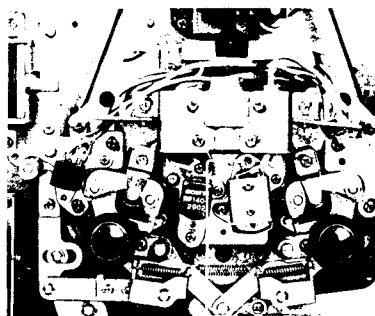
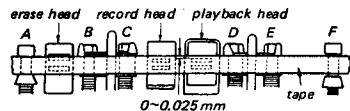
5. Playback Head Height Adjustment

Settings:

REEL SIZE switch: 7
 TAPE SPEED switch: 19 cm, 7½

Procedure:

Play back a tape and align the tape edge and the playback head core as shown by turning the height and zenith adjustment screws.



playback head height and zenith adjustment screws.

6. Playback Head Azimuth and Phase Adjustments

Settings:

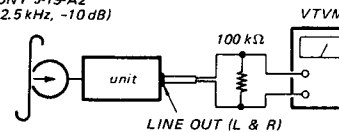
REEL SIZE switch: 7
 TAPE SPEED switch: 19 cm, 7½
 EQ (TAPE SELECT) switch: NORMAL
 MONITOR switch: TAPE
 PB LEVEL control: mechanical mid

Procedure:

If an oscilloscope is available, employ Procedure 2. If a simplified test is to be made, follow Procedure 1.

1. Mode: playback

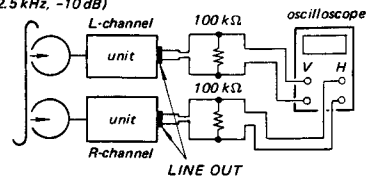
SONY J-19-A2
 (12.5 kHz, -10 dB)



Turn the adjustment screw shown in the photo below for the highest VTVM reading. If the highest peaks for L and R do not coincide, place the adjustment screw to the mechanical mid of the two positions for the peaks.

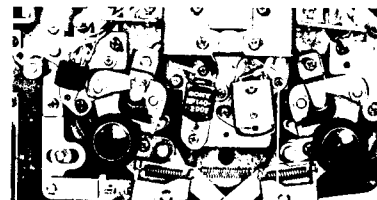
2. Mode: playback

SONY J-19-A2
 (12.5 kHz, -10 dB)



Adjust	On the oscilloscope			
azimuth adjustment screw				
	in-phase	30°	90°	more than 90°
		good		wrong

Adjustment Location:



playback head azimuth adjustment screw.

7. Playback Equalizer Adjustment

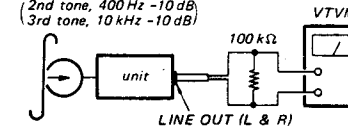
Settings:

REEL SIZE switch: 7
 TAPE SPEED switch: 19 cm, 7½
 EQ (TAPE SELECT) switch: NORMAL
 MONITOR switch: TAPE
 PB LEVEL control: mechanical mid

Procedure:

Mode: playback

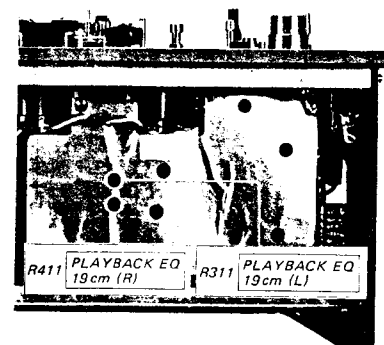
SONY J-19-F2
 (2nd tone, 400 Hz -10 dB)
 (3rd tone, 10 kHz -10 dB)



	Adjust	VTVM reading
2nd tone 400 Hz	PB LEVEL control	0 dB (0.775 V)
3rd tone 10 kHz	R311 (L channel) R411 (R channel)	-0.5 dB (0.73V)

Specification for your reference in case of a more detailed test:

J-19-F2 (TAPE SPEED: 19 cm, 7½)		J-9-F1 (TAPE SPEED: 9.5cm, 3¼)	
400 Hz	0 dB (standard)	400 Hz	0 dB (standard)
10 kHz	-0.5 ± 1 dB	5 kHz	0 ± 2 dB
12.5 kHz	-0.5 ± 1.5 dB	3 kHz	0 ± 1.5 dB
7 kHz	-0.5 ± 1.5 dB	200 Hz	0 ± 1.5 dB
80 Hz	+2 ± 2 dB	80 Hz	+1 ± 2 dB
40 Hz	+1.5 ± 2 dB		

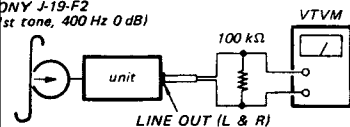


Playback Level Adjustment

Settings:
 REEL SIZE switch: 7
 TAPE SPEED switch: 19 cm, 7½
 EQ (TAPE SELECT) switch: NORMAL
 MONITOR switch: TAPE
 PB LEVEL control: mechanical mid

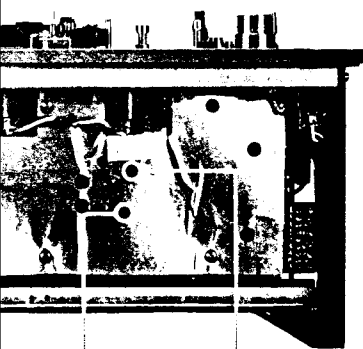
Procedure:
 Mode: playback

SONY J-19-F2
 1st tone, 400 Hz 0 dB



Adjust	VTVM reading
R317 (L channel)	0 dB (0.775 V) allowance: ±1 dB
R417 (R channel)	

Note: 1. Turn the EQ (TAPE SELECT) switch to SPECIAL position and make sure that the output level lowers by 2.4 ± 1 dB.
 2. Difference between L and R channels should be within 1 dB.



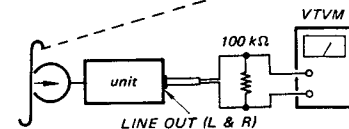
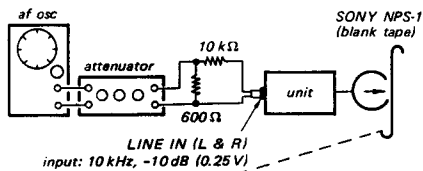
R417 PLAYBACK LEVEL (R) R317 PLAYBACK LEVEL (L)

9. Record Head Angle Adjustment

Settings:
 REEL SIZE switch: 7
 TAPE SPEED switch: 19 cm, 7½
 BIAS (TAPE SELECT) switch: LOW
 EQ (TAPE SELECT) switch: NORMAL
 MONITOR switch: TAPE
 LINE IN control: mechanical mid
 PB LEVEL control: mechanical mid

Procedure:

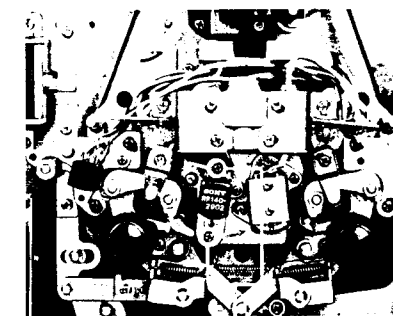
Mode: record and simultaneous playback



Loosen the adjustment screws and correctly position the record head for the highest VTVM reading.

Note: Slightly touch the supply reel and at this time the VTVM reading deviation should be less than 1 dB.

Adjustment Location:



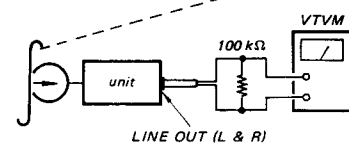
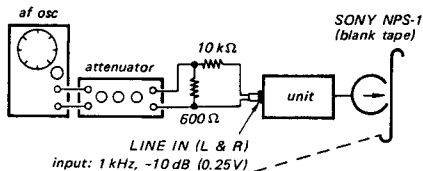
record head angle adjustment screws

10. Record Head Height Adjustment

Settings:
 REEL SIZE switch: 7
 TAPE SPEED switch: 19 cm, 7½
 BIAS (TAPE SELECT) switch: LOW
 EQ (TAPE SELECT) switch: NORMAL
 MONITOR switch: TAPE
 LINE IN control: mechanical mid
 PB LEVEL control: mechanical mid

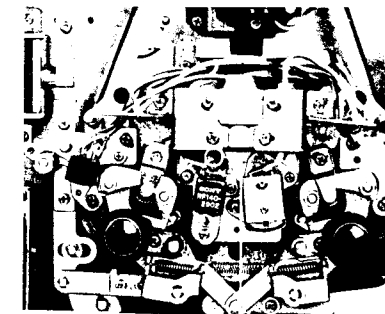
Procedure:

Mode: record and simultaneous playback



Turn the height and zenith adjustment screws for the highest VTVM reading.

Adjustment Location:



record head height and zenith adjustment screws

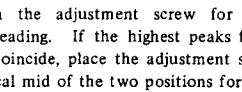
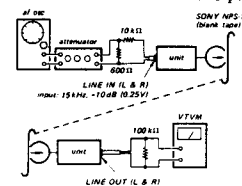
11. Record Head Azimuth and Phase Adjustments

Settings:
 REEL SIZE switch: 7
 TAPE SPEED switch: 19 cm, 7½
 BIAS switch: LOW
 TAPE SELECT (EQ) switch: NORMAL
 MONITOR switch: TAPE
 LINE IN control: mechanical mid
 PB LEVEL control: mechanical mid

Procedure:

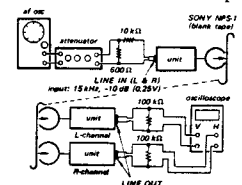
When an oscilloscope is available, employ Procedure 2. When a simplified test is made, follow Procedure 1.

1. Mode: record and simultaneous playback



Turn the adjustment screw for the highest VTVM reading. If the highest peaks for L and R do not coincide, place the adjustment screw to the mechanical mid of the two positions for the peaks.

2. Mode: record and simultaneous playback



Adjust	On the oscilloscope
azimuth adjust screw	in-phase
	30°
	90°
	more than 90°
	good
	wrong

Note: Difference between the highest levels of L and R and the finally adjusted level should be within 1 dB.

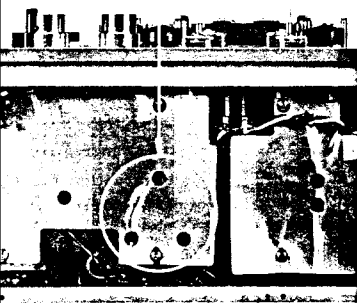
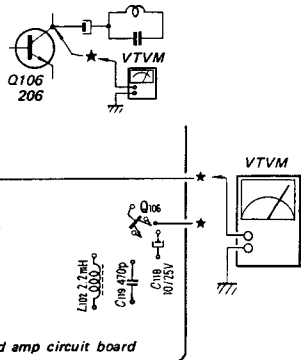
Adjustment Location:



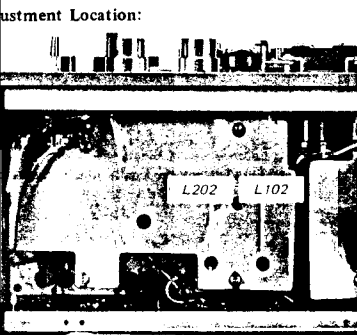
record head azimuth adjustment screw

Bias Trap Adjustment

Settings:



Procedure:
In record mode turn L102 (L-channel) and L202 (R-channel) for the lowest VTVM reading (-40 dB mV) or less).



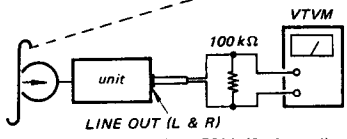
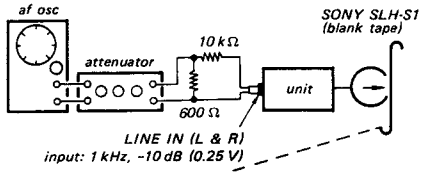
13. Record Bias Adjustment

Settings:

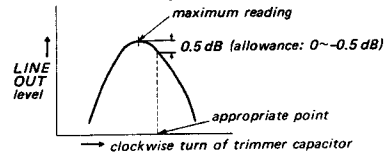
- REEL SIZE switch: 7
- TAPE SPEED switch: 19 cm 7½
- BIAS (TAPE SELECT) switch: LOW
- EQ (TAPE SELECT) switch: SPECIAL
- MONITOR switch: TAPE
- LINE IN control: mechanical mid
- PB LEVEL control: mechanical mid

Procedure:

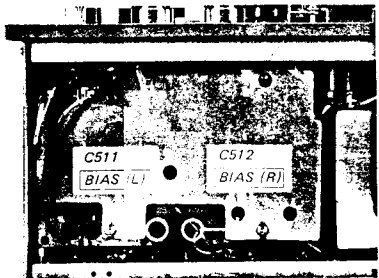
Mode: record and simultaneous playback



As trimmer capacitor C511 (L-channel) or C512 (R-channel) is slowly turned clockwise, VTVM reading will go up to a maximum and then start falling again. Adjust the capacitor until VTVM reads 0.5 dB below and beyond the maximum reading.



Adjustment Location:



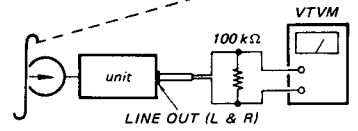
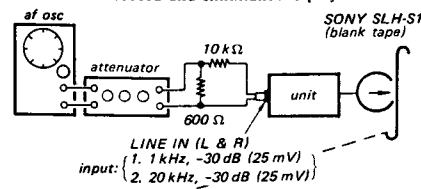
14. Overall Frequency Response (SPECIAL RECORD EQ) Adjustment

Settings:

- REEL SIZE switch: 7
- TAPE SPEED switch: 19 cm 7½
- BIAS (TAPE SELECT) switch: LOW
- EQ (TAPE SELECT) switch: SPECIAL
- MONITOR switch: TAPE
- LINE IN control: mechanical mid
- PB LEVEL control: mechanical mid

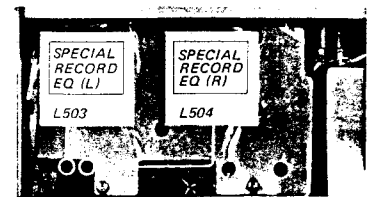
Procedure:

Mode: record and simultaneous playback



	Adjust	Remarks
1 kHz	L503 (L channel) and L504 (R channel)	Same LINE OUT level at both frequencies.
20 kHz	L504 (R channel)	

Adjustment Location:



Specifications for your reference in case of a more detailed test:

1 kHz	0 dB (standard)
40 Hz	0 ± 3 dB
80 Hz	0 ± 3 dB
5 kHz	0 ± 3 dB
10 kHz	0 ± 3 dB
15 kHz	0 ± 3 dB
20 kHz	0 ± 1 dB

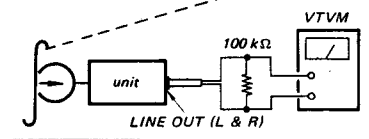
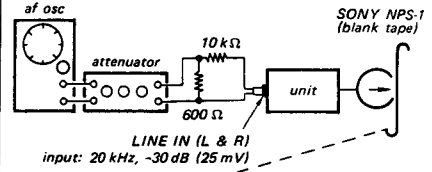
15. Dummy Coil Adjustment

Settings:

- REEL SIZE switch: 7
- TAPE SPEED switch: 19 cm, 7½
- BIAS (TAPE SELECT) switch: LOW
- EQ (TAPE SELECT) switch: NORMAL
- MONITOR switch: TAPE
- LINE IN control: mechanical mid
- PB LEVEL control: mechanical mid

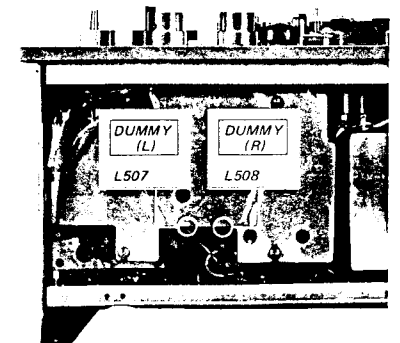
Procedure:

Mode: record and simultaneous playback



Step	Mode	Adjust	Remarks
1	stereo record and simultaneous playback	—	same VTVM reading
2	L channel record and simultaneous playback	L508	
3	R channel record and simultaneous playback	L507	

Adjustment Location:



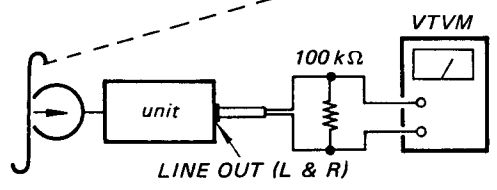
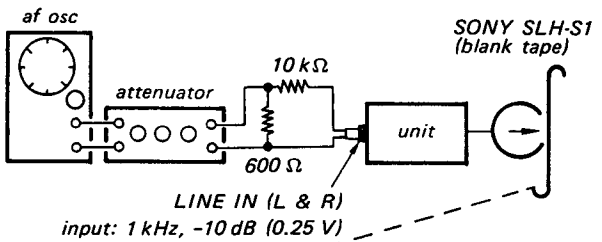
16. Record Level Adjustment

Settings:

- REEL SIZE switch: 7
- TAPE SPEED switch: 19 cm, 7½
- BIAS (TAPE SELECT) switch: LOW
- EQ (TAPE SELECT) switch: SPECIAL
- MONITOR switch: TAPE
- LINE IN control: mechanical mid
- PB LEVEL control: mechanical mid

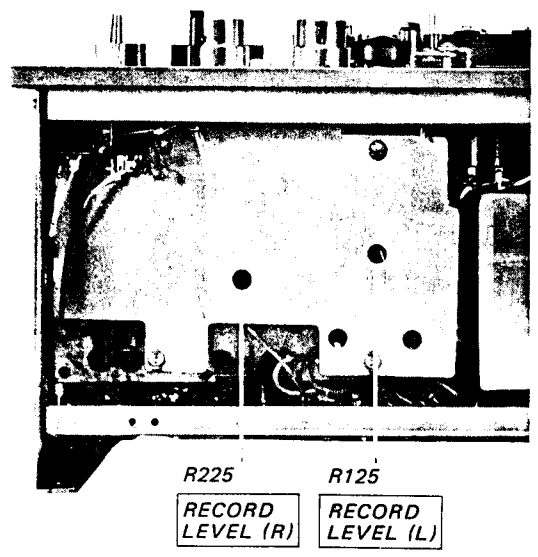
Procedure:

Mode: record and simultaneous playback



Adjust	VTVM reading
R125 (L channel)	0 dB (0.775 V)
R225 (R channel)	

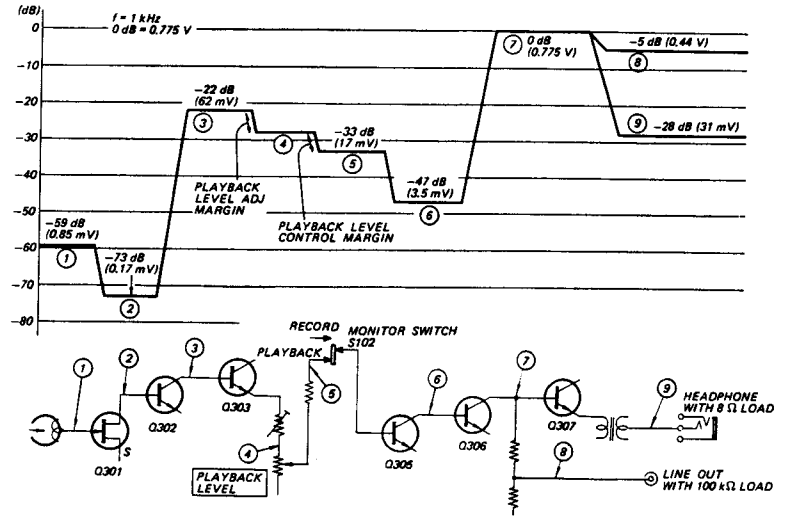
Adjustment Location:



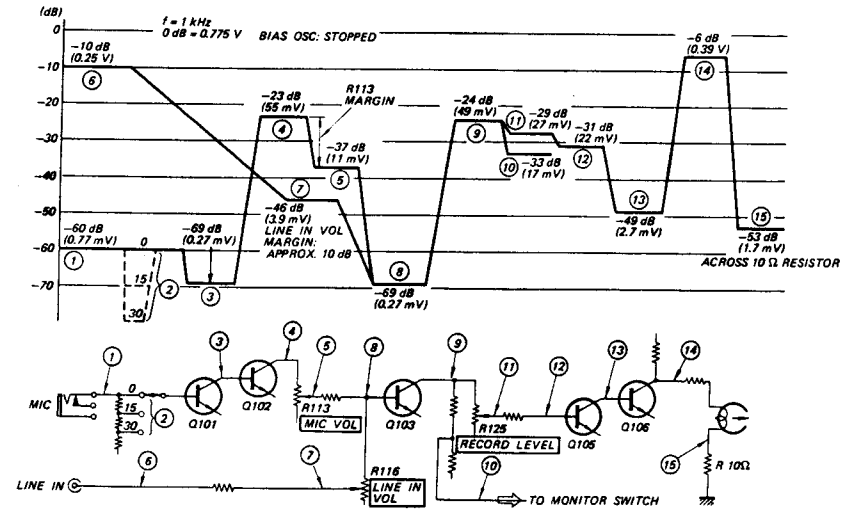
SECTION 3
DIAGRAMS

3.1. LEVEL DIAGRAMS

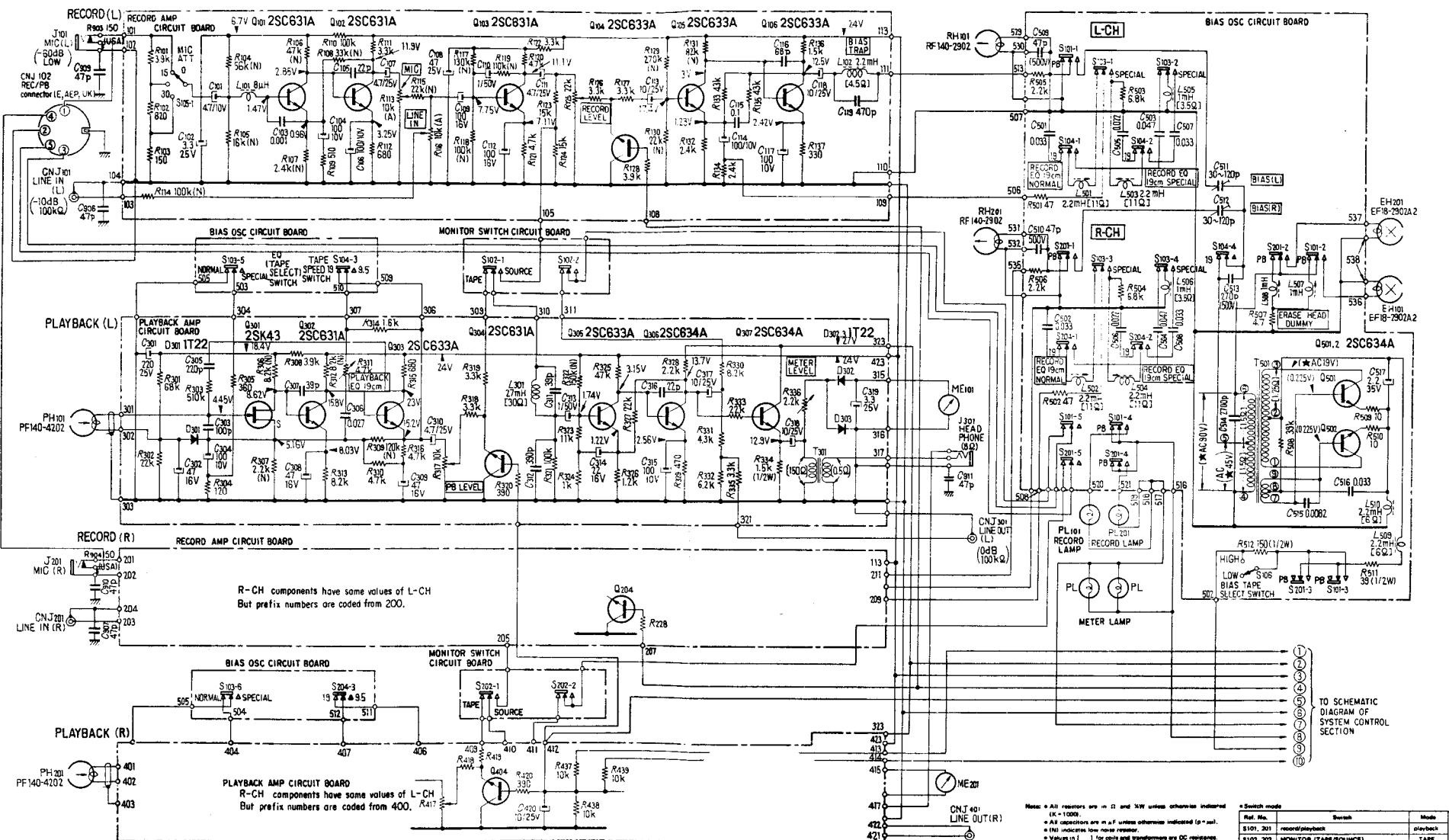
Playback Mode



Record Mode



SCHEMATIC DIAGRAM - AMP SECTION -



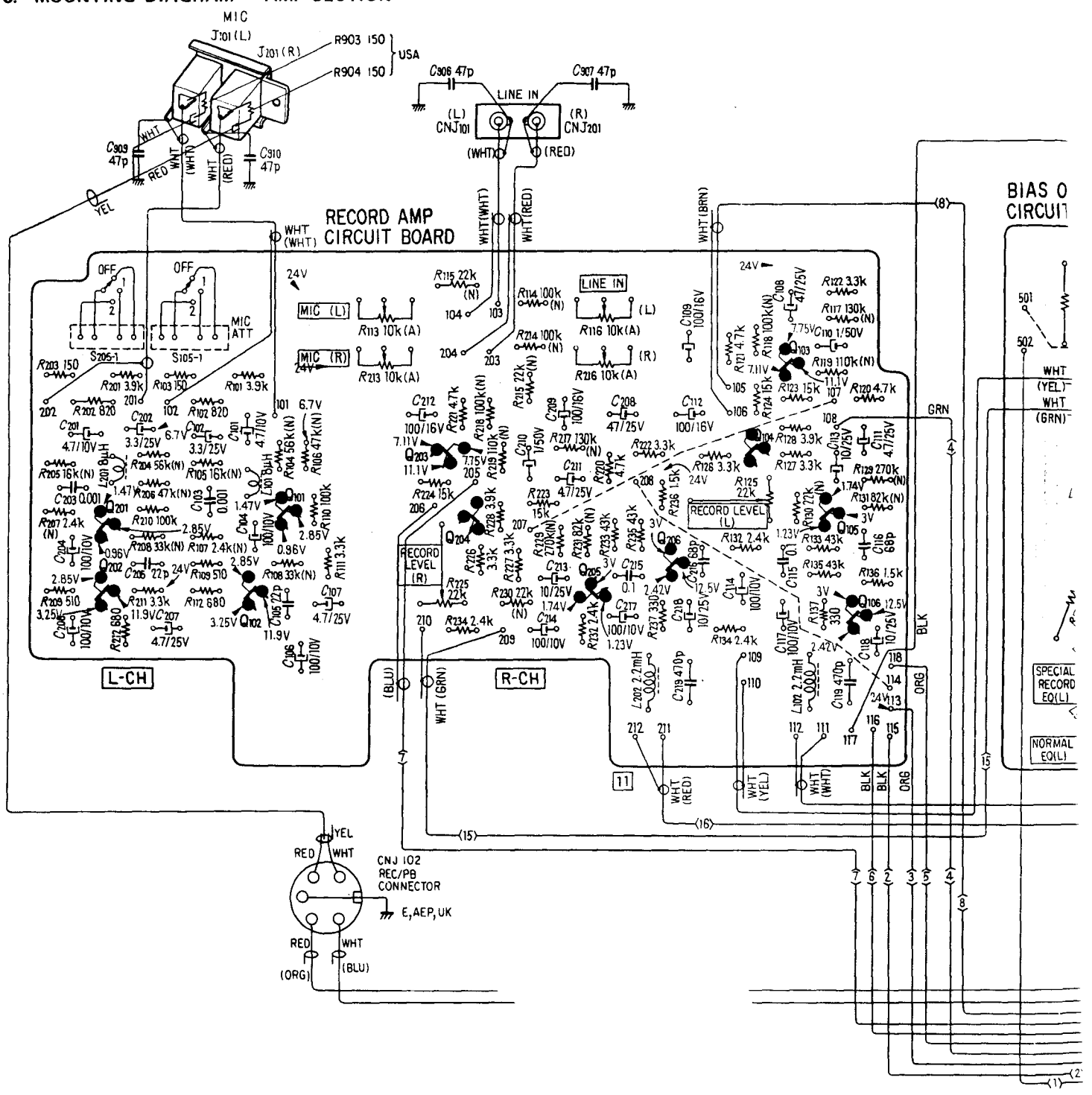
Note: • All resistors are in Ω and $\text{k}\Omega$ unless otherwise indicated (k = 1000).
 • All capacitors are in μF unless otherwise indicated ($\mu = \text{micro}$).
 • (N) indicates low noise resistor.
 • Values in () for coils and transformers are DC resistances.
 • Voltage values shown are measured with a voltmeter (20k Ω /V).
 • Voltages marked with * are for record mode.
 • Voltages marked with ^ are measured with VTVM.

Switch mode

Ref. No.	Switch	Mode
S101-201	RECORD/PLAYBACK	PLAYBACK
S102-202	MONITOR TAP (SOURCE)	TAPE
S103	EQ (TAPE SELECT) (NORMAL/SPECIAL)	NORMAL
S104-204	TAPE SPEED (19cm, 7 1/2, 5cm, 3 1/4)	19cm, 7 1/2
S108-208	MIC ATT (0/18/30)	0
S108	BIAS (TAPE SELECT) (LOW/HIGH)	LOW

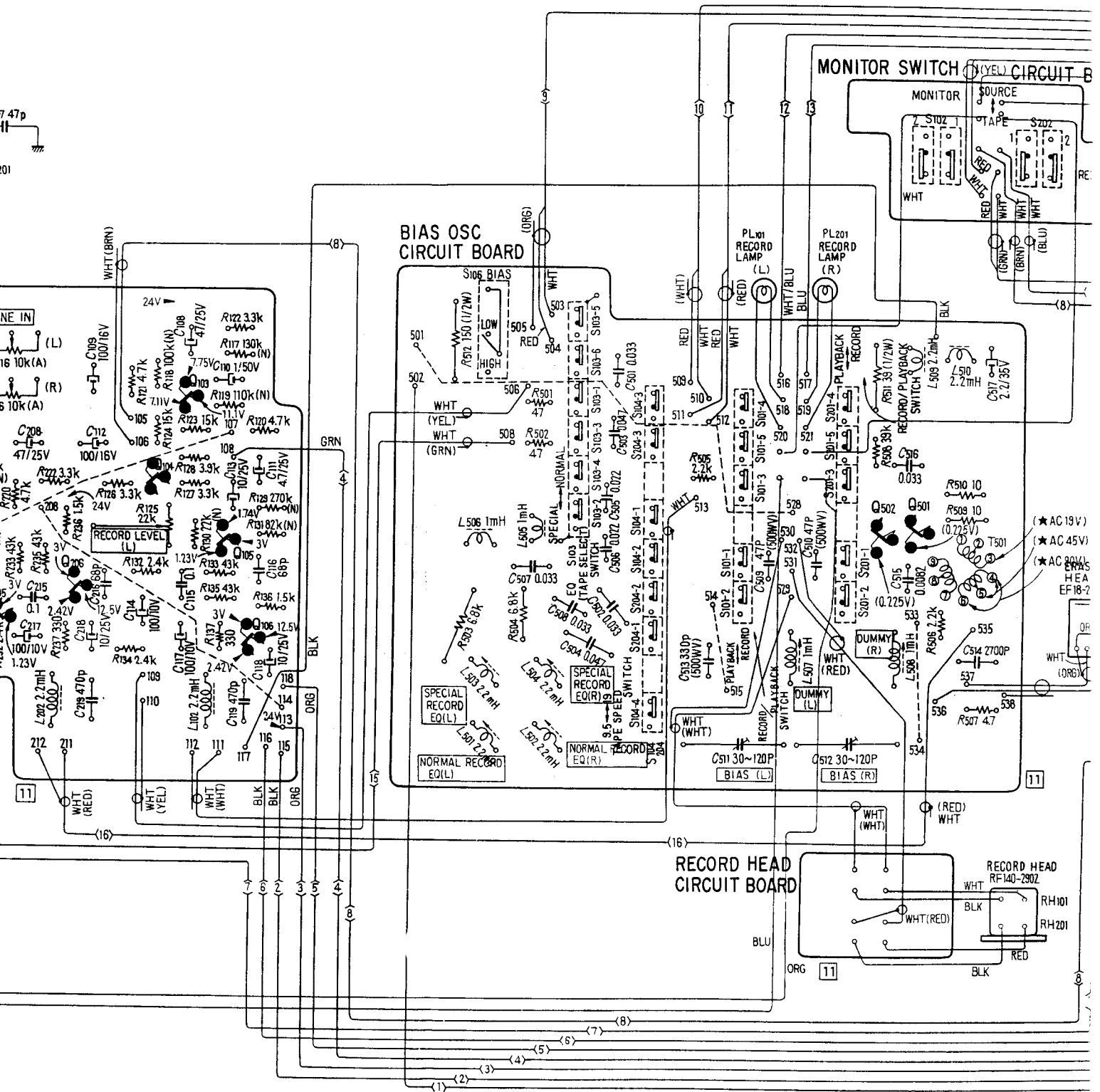
TO SCHEMATIC DIAGRAM OF SYSTEM CONTROL SECTION

3.3. MOUNTING DIAGRAM - AMP SECTION -



Q	Q201 Q202	Q101 Q102	Q203 Q204	Q205	Q206	Q104 Q103	Q105 Q106
D							
ADJ			R225			R125	

L5
L5



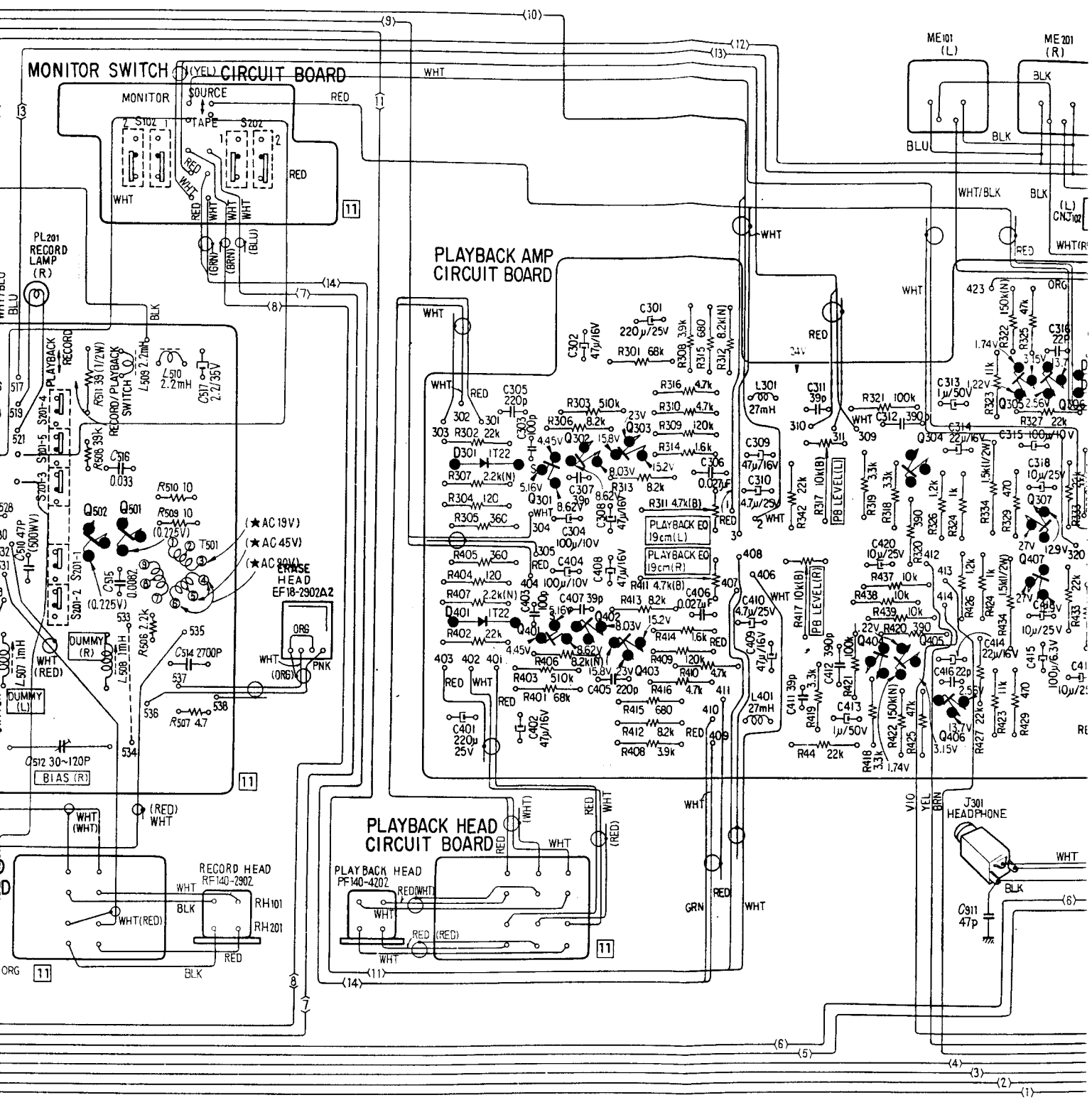
Q206 Q104 Q103 Q105 Q106

Q502 Q501

R125

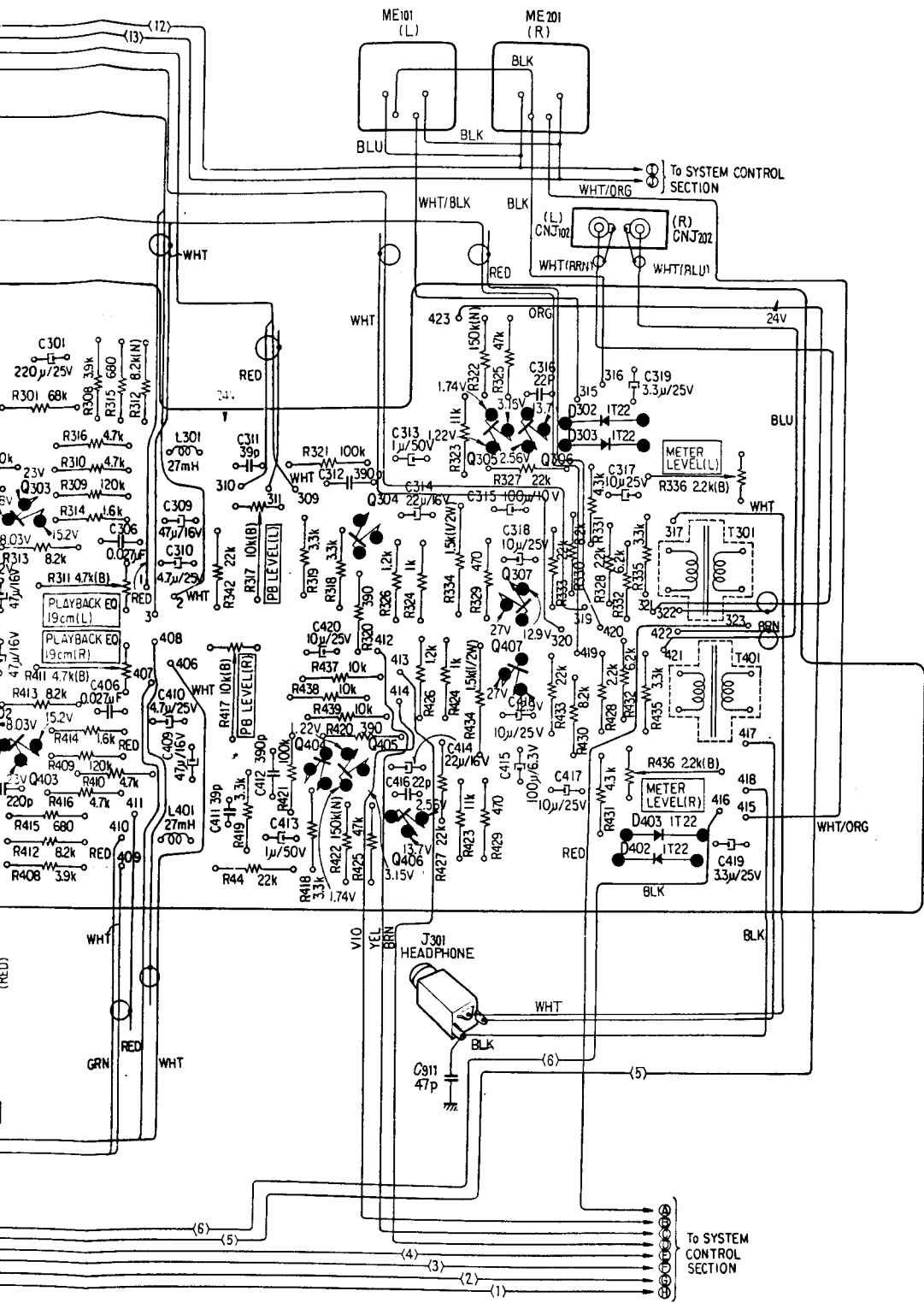
L503 L504
L501 L502

C511 L507 C512 L508

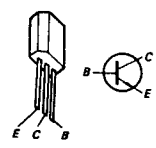


Q502 Q501	Q301 Q302 Q303	Q304	Q305 Q306 Q307 Q407
	Q401 Q402 Q403	Q404 Q405 Q406	
D301			
D401			
	R311 R411	R317 R417	

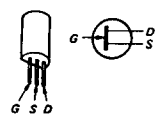
07 C512 L508



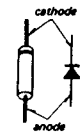
- ZSC631A: { Q101, 102, 103
Q201, 202, 203
Q302, 304,
Q402, 404
- ZSC633A: { Q104, 105, 106
Q204, 205, 206
Q303, 305
Q403, 405
- ZSC634A: { Q306, 307
Q406, 407
Q501, 502



ZSK43: Q301, 401



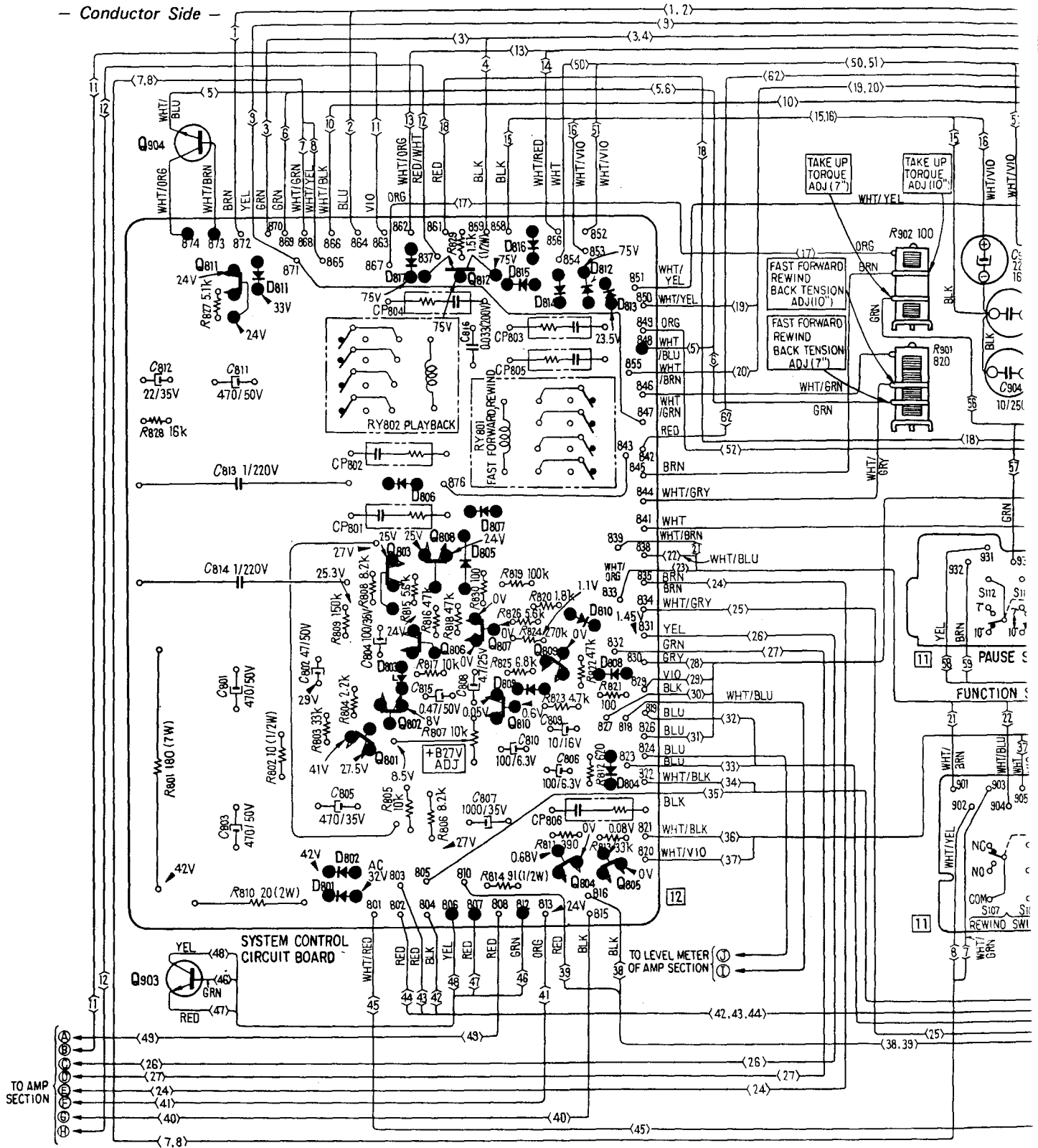
1T22: { D301, 302, 303
D401, 402, 403



303	Q304	Q305 Q306	
403	Q404 Q405 Q406	Q307 Q407	
		D302 D303	
		D403 D402	
R311 R411	R317 R417	R336	
		R436	

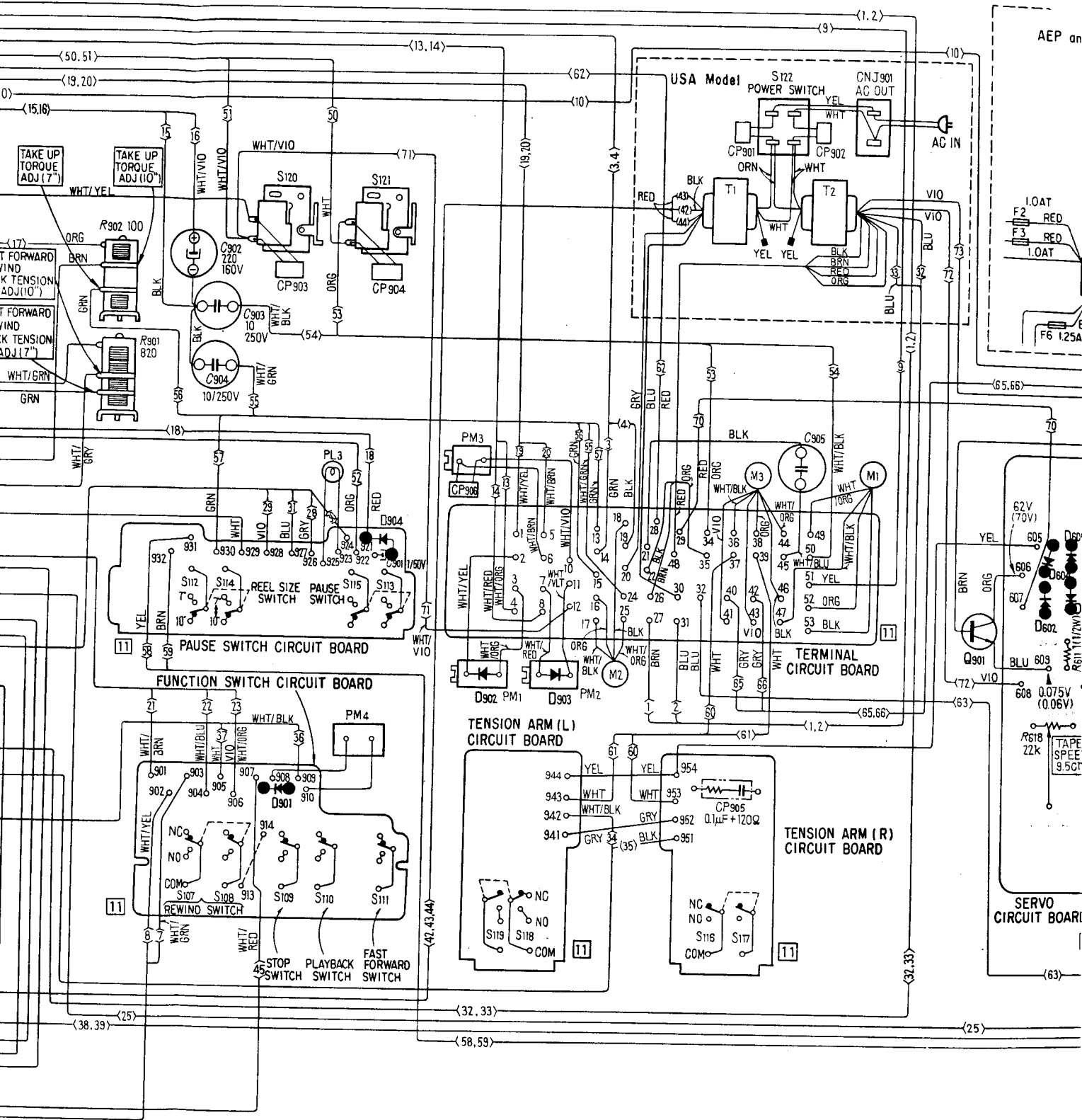
3-4. MOUNTING DIAGRAM – SYSTEM CONTROL SECTION –

– Conductor Side –



Q, IC	Q904	Q811	Q803	Q808	Q801	Q806	Q807	Q809	Q804	Q805		
D	D811	D802	D801	D817	D806	D803	D807	D816	D814	D812	D813	D808
ADJ							D809			D804		

R902
R901



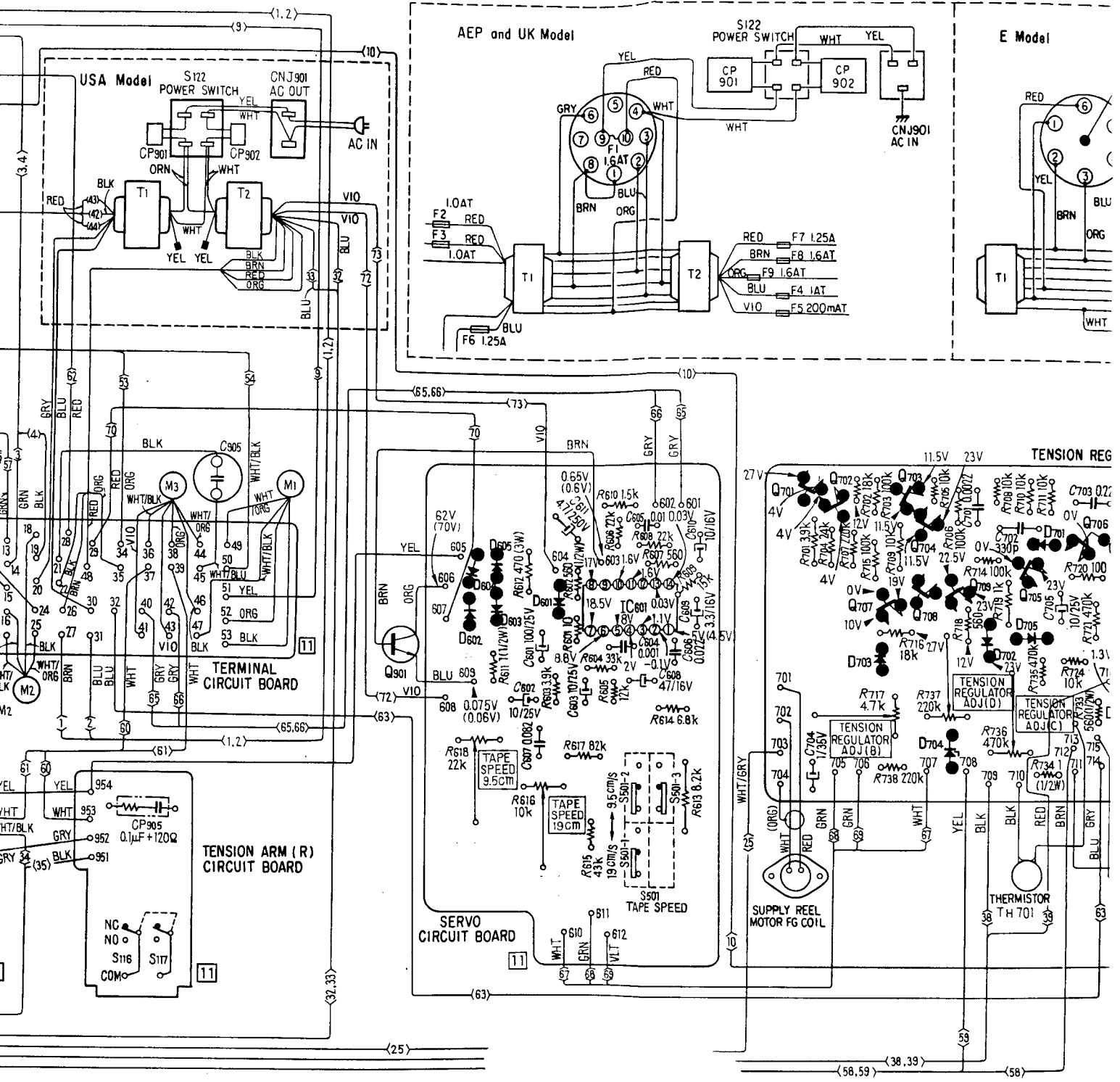
Q901

D901 D904 D902 Q903

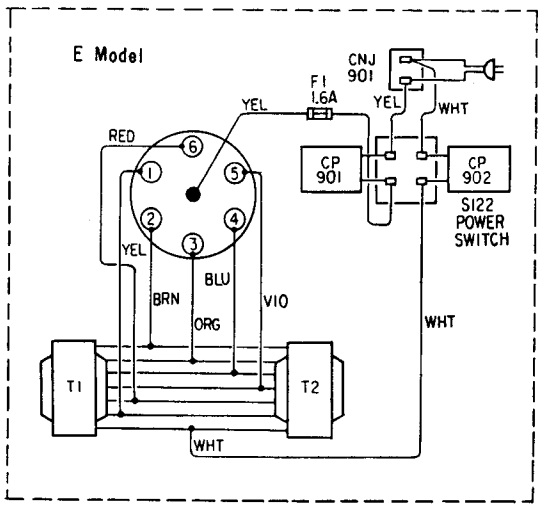
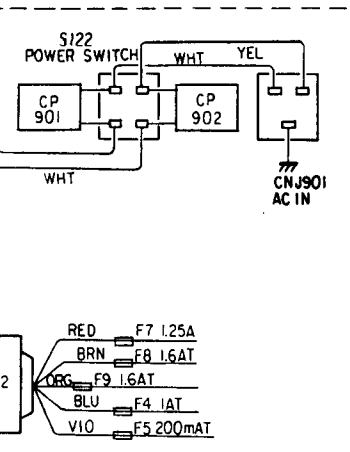
D604 D61
D602 D60

R902
R901

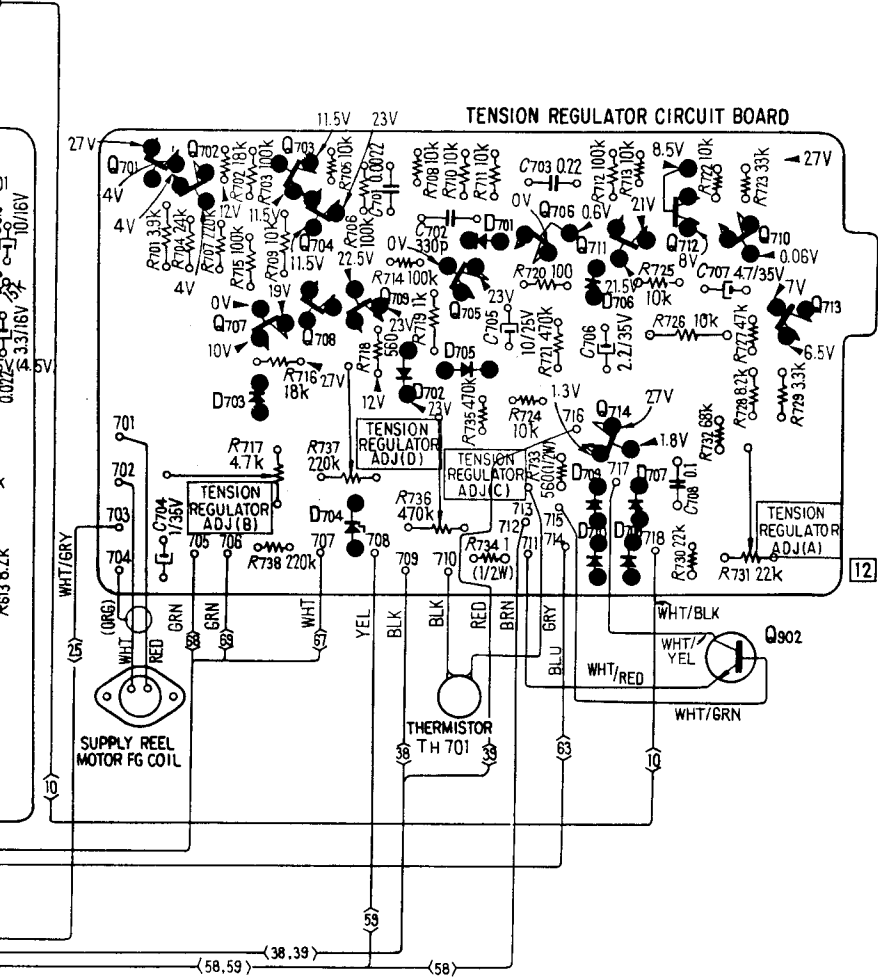
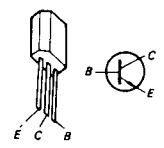
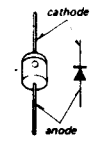
R618



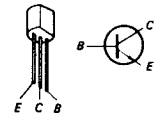
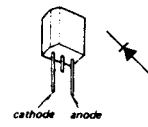
- | | | | | |
|-----------|-------|----------------|-----------|--------|
| Q901 | IC601 | Q701 Q702 | Q703 | Q706 C |
| | | Q707 Q708 Q709 | Q705 | |
| D604 D605 | D601 | | D701 | |
| D602 | D603 | D703 | D702 D705 | |
| | | | D704 | |
| R618 | R616 | R717 | R737 | R736 |



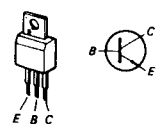
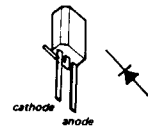
- 10D2: { D601, 602, 603
D604, 605, 707
D708, 709, 710
D801, 802, 806
D807, 811, 812
D813, 814, 815
D816, 817, 901
D902, 903, 904
- 2SC634A: { Q701, 702, 703
Q704, 705, 706
Q707, 708, 709
Q710, 711, 712
Q713, 801, 802
Q803, 804, 805
Q806, 807, 808
Q809, 810, 811



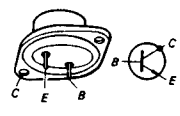
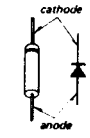
- MZ-08: D703, 803 2SC1384: Q714



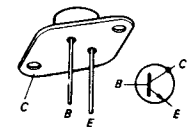
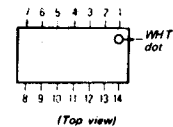
- MZ-12: D704 2SC1124: Q812



- 1T40: { D701, 702, 804 2SC867: Q901, 902
D805, 808
- 1T22: D705, 706, 809, 810

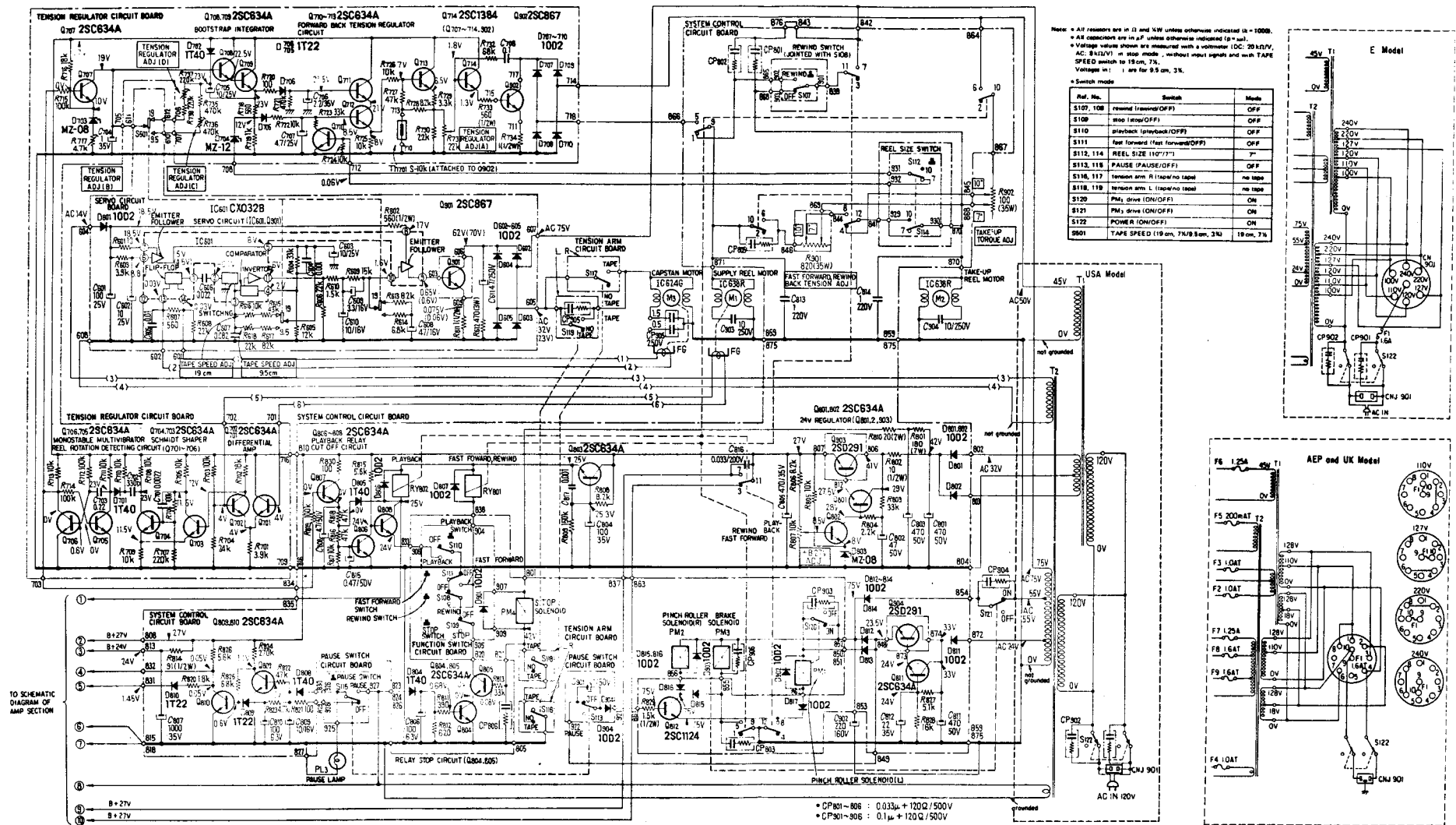


- CX-032B: IC601 2SD291: Q903, 904

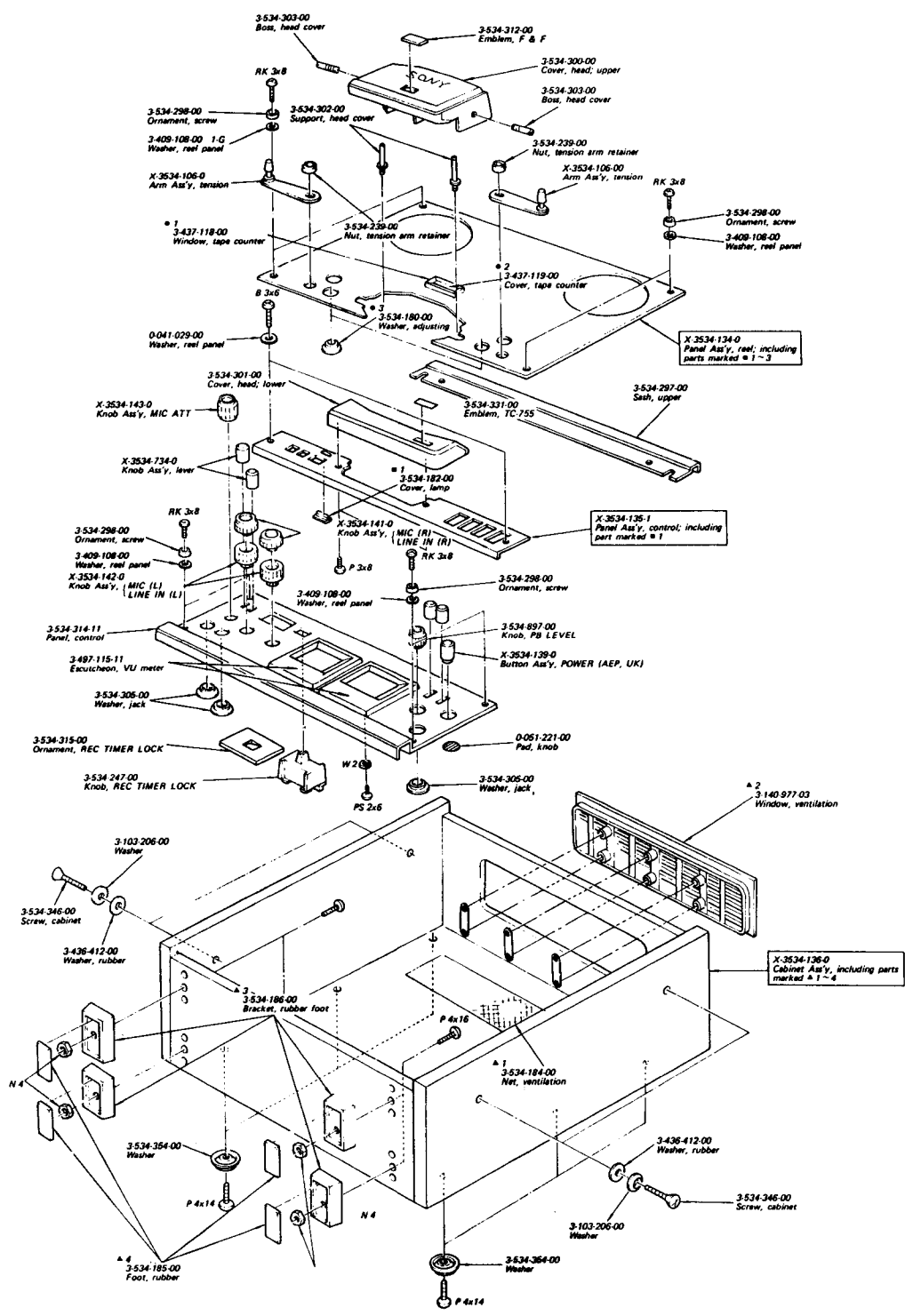


Q701	Q702	Q703	Q704	Q705	Q706	Q711	Q712	Q710	Q713
			Q707	Q708	Q709				
					D701		D706		
					D703	D702	D705	D709	D707
						D704		D710	D708
					R717	R737	R736		
									R731

3-5. SCHEMATIC DIAGRAM - SYSTEM CONTROL SECTION -



SECTION 4
EXPLODED VIEWS AND PACKING

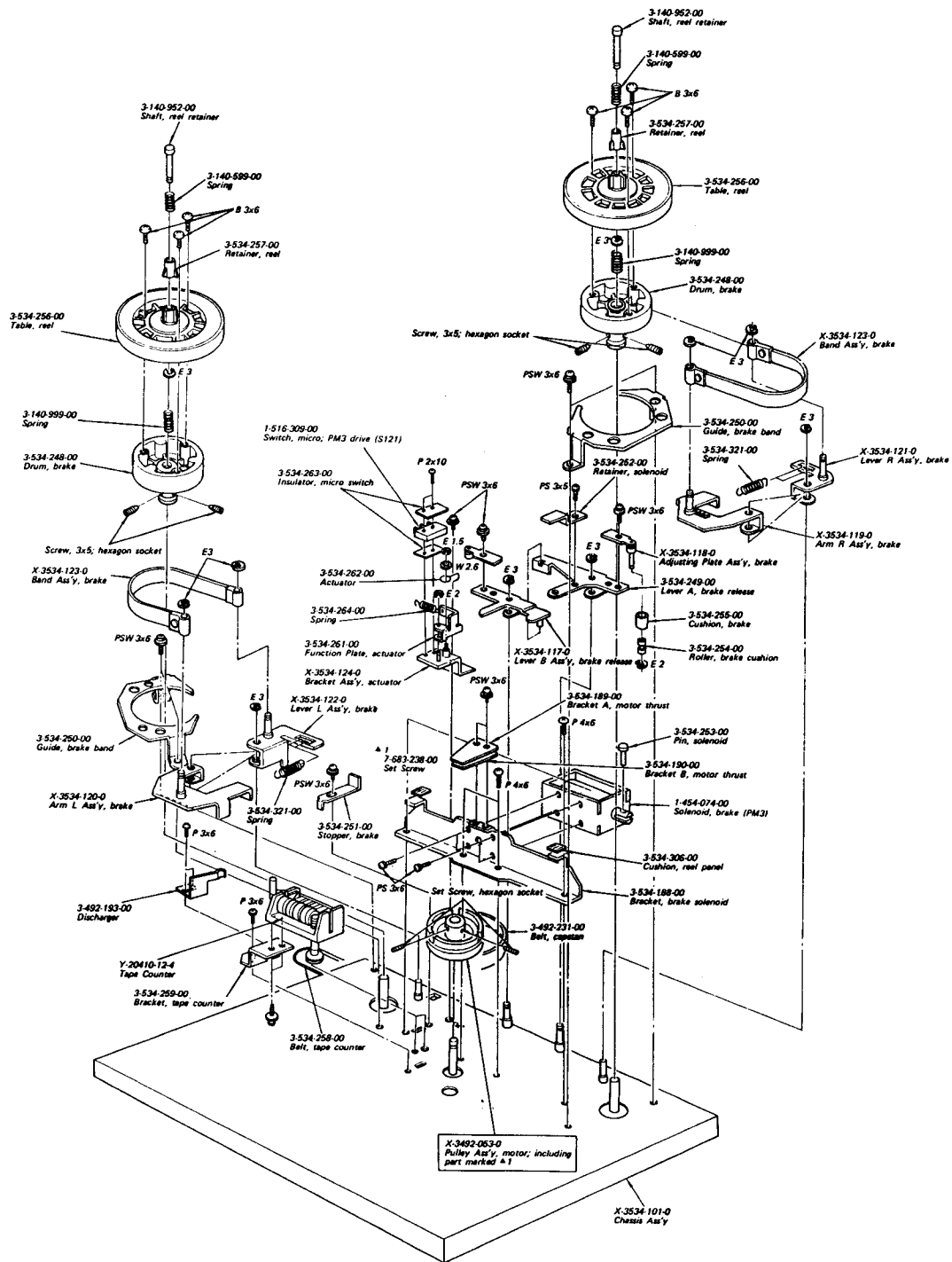


37

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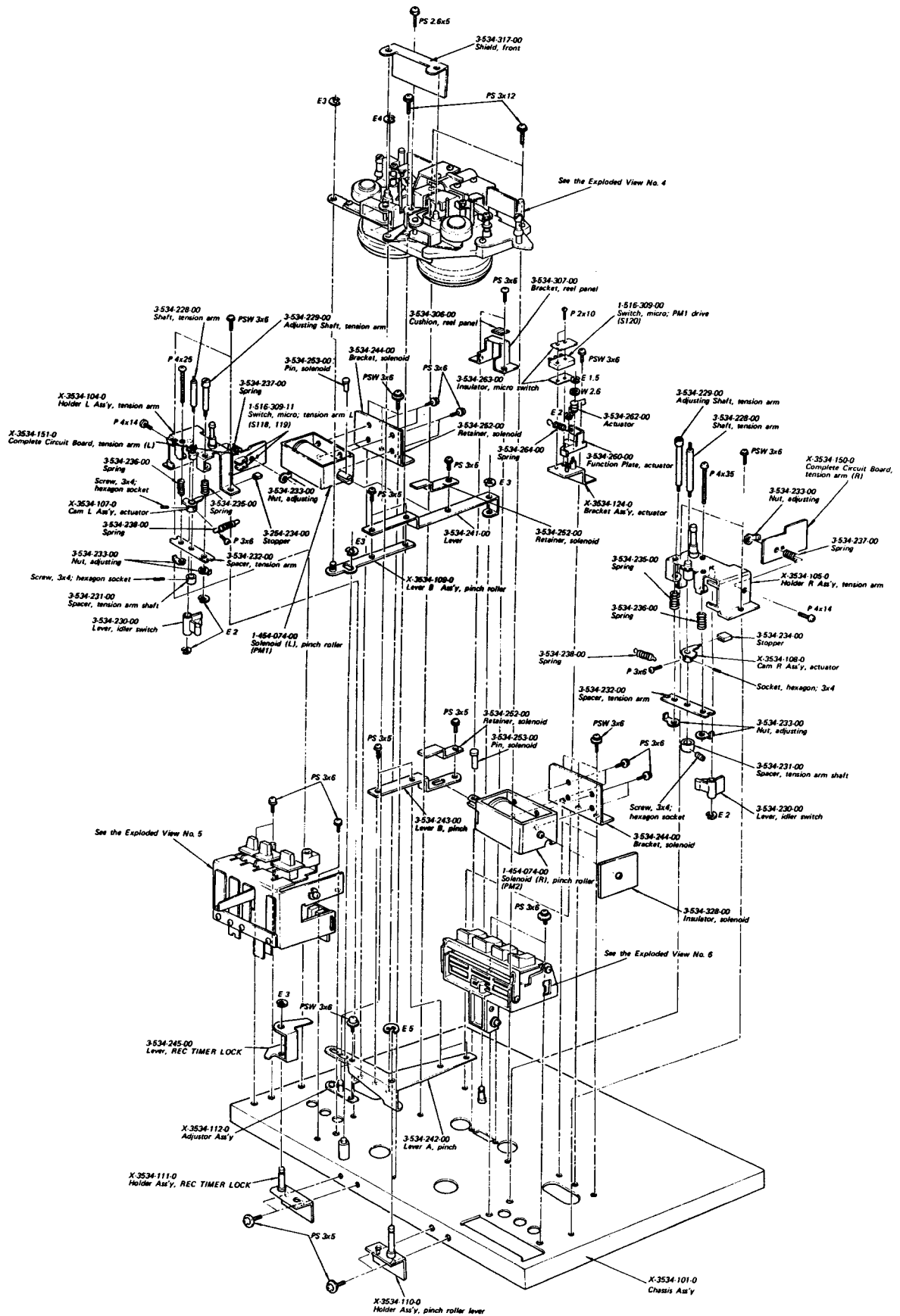
Notes: 1. Parts without part numbers and names are not available.
 2. All screws are Phillips type (cross recess type) unless otherwise indicated.
 (-): slotted head

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— 40 —

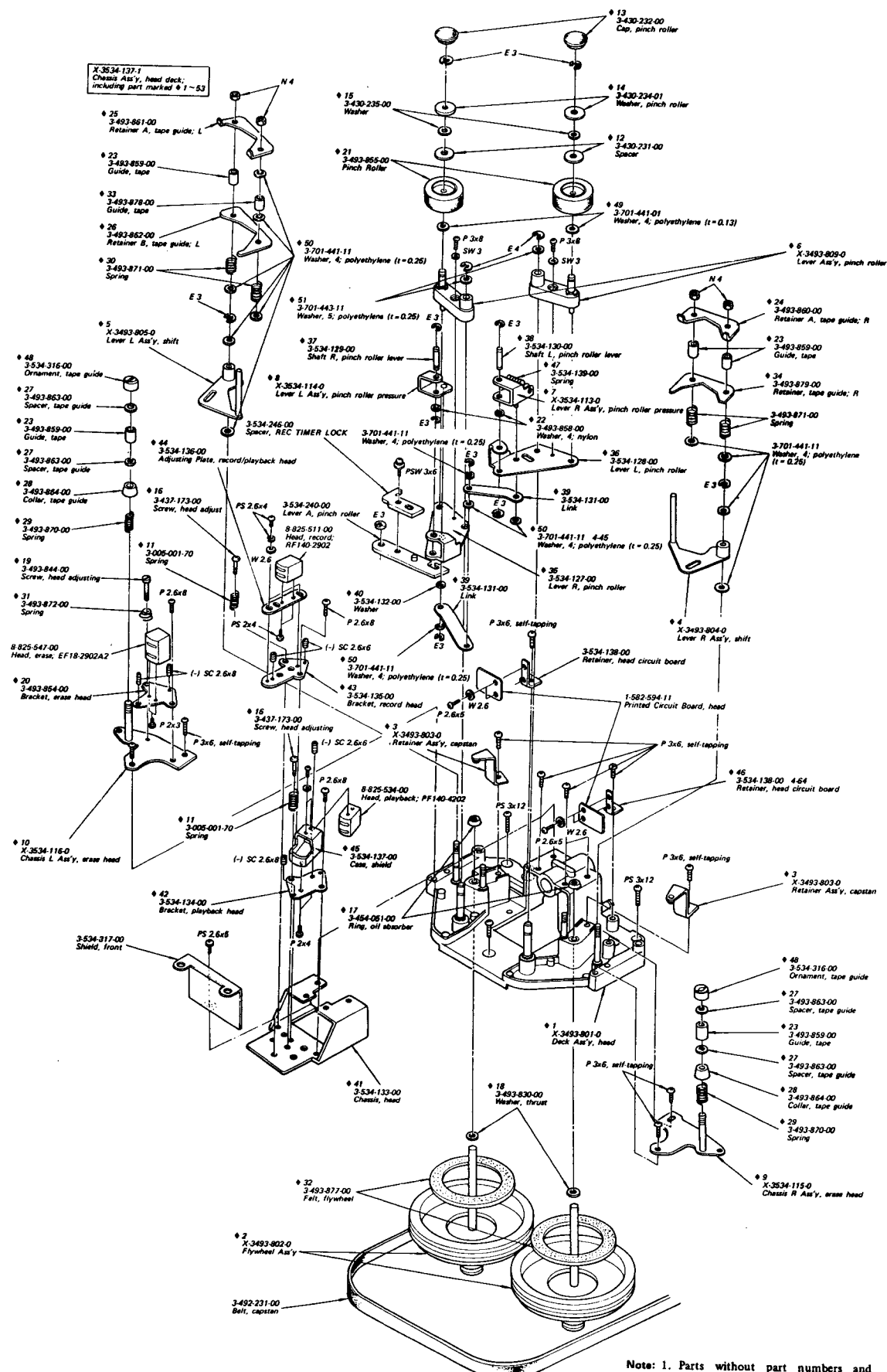
Note: 1. Parts without part numbers and names are not available.
 2. All screws are Phillips type (cross recess type) unless otherwise indicated.
 (-): slotted head



Note: 1. Parts without part numbers and names are not available.
 2. All screws are Phillips type (cross recess type) unless otherwise indicated.
 (-): slotted head

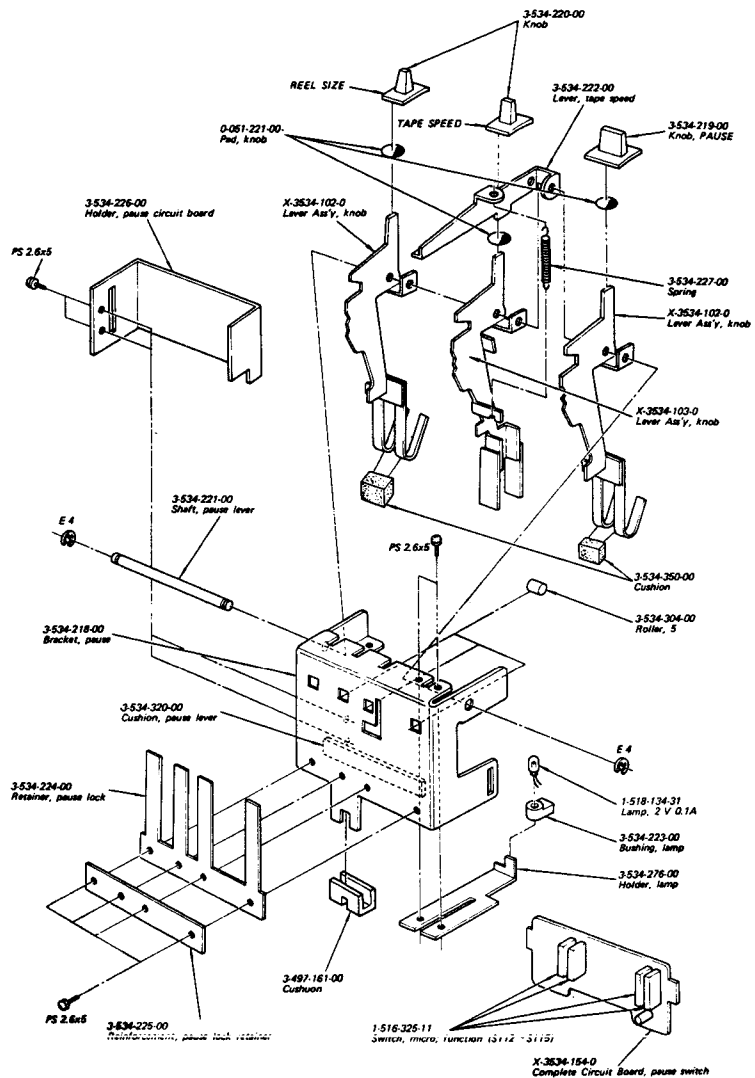
43

44



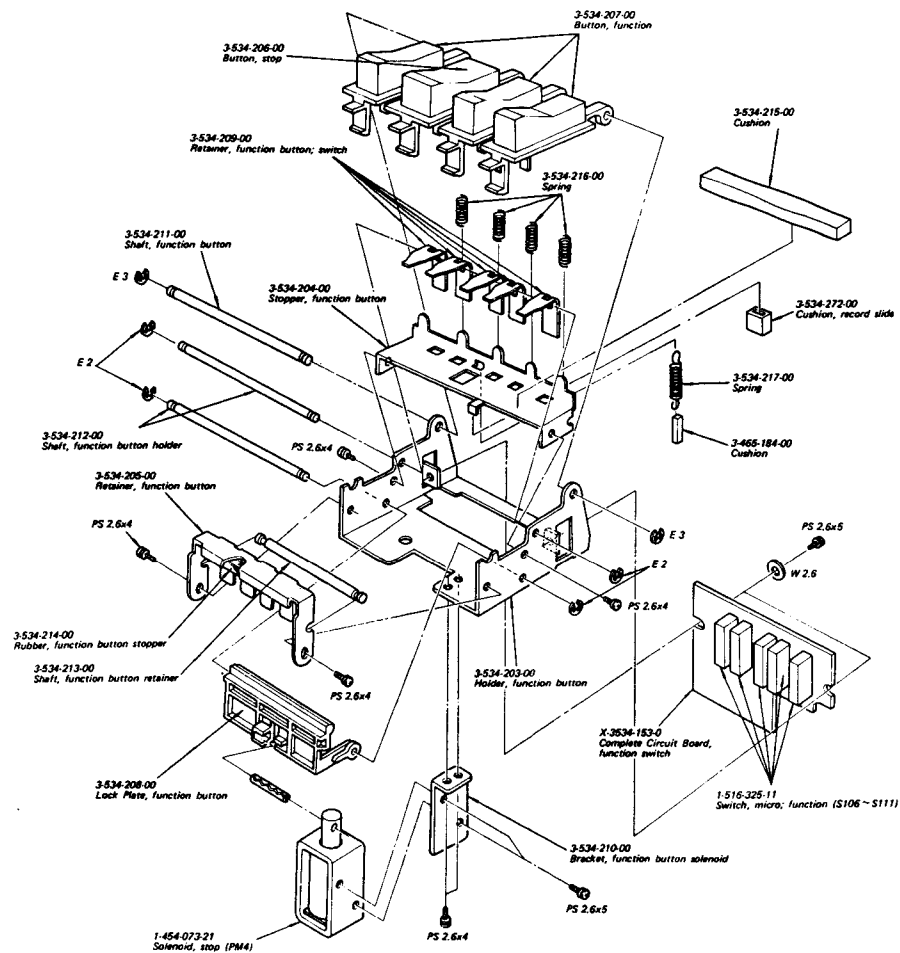
Note: 1. Parts without part numbers and names are not available.
 2. All screws are Phillips type (cross recess type) unless otherwise indicated.
 (-): slotted head

4-5. EXPLODED VIEW (5)



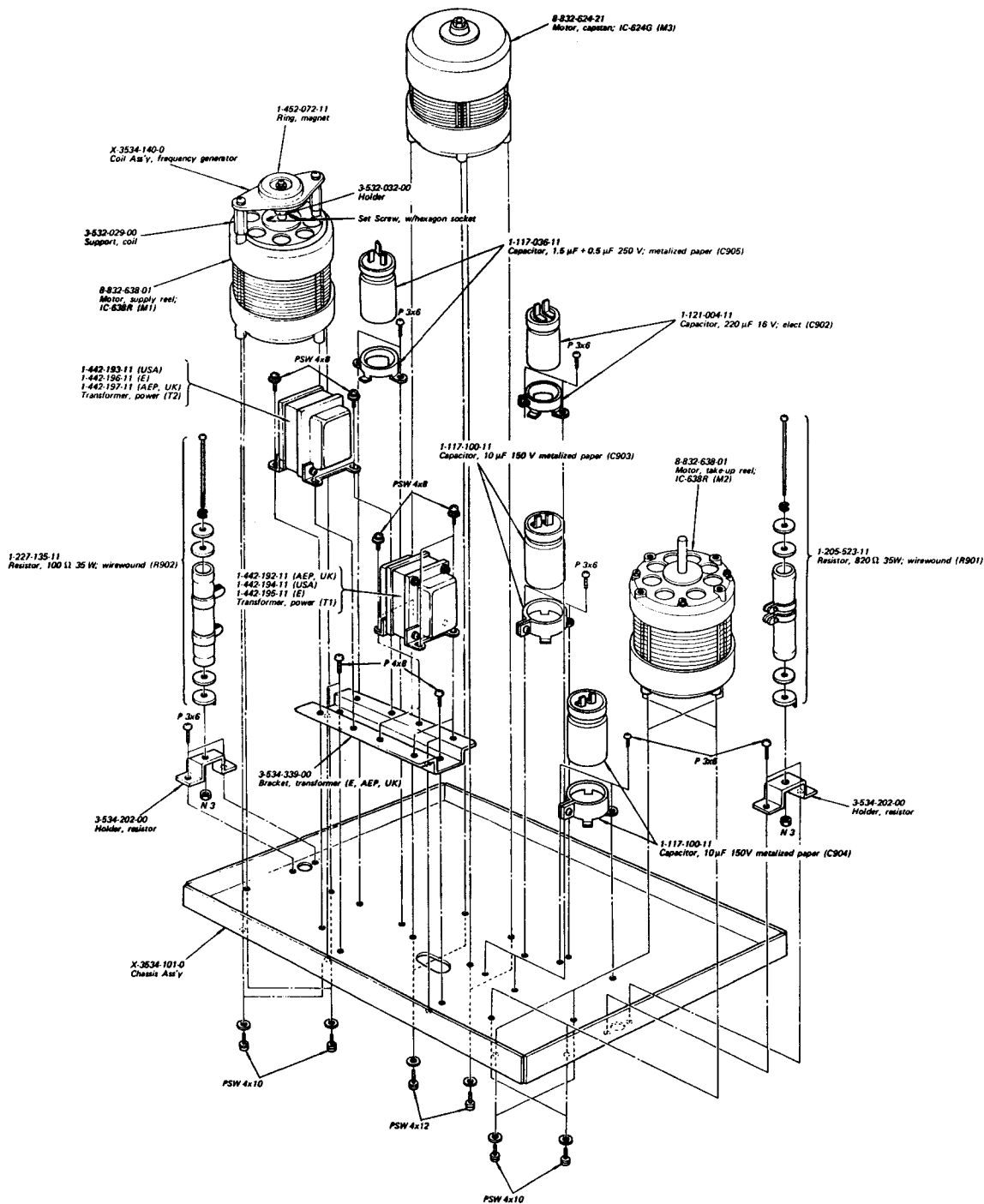
- Note:** 1. Parts without part numbers and names are not available.
 2. All screws are Phillips type (cross recess type) unless otherwise indicated.
 (-): slotted head

4-6. EXPLODED VIEW (6)



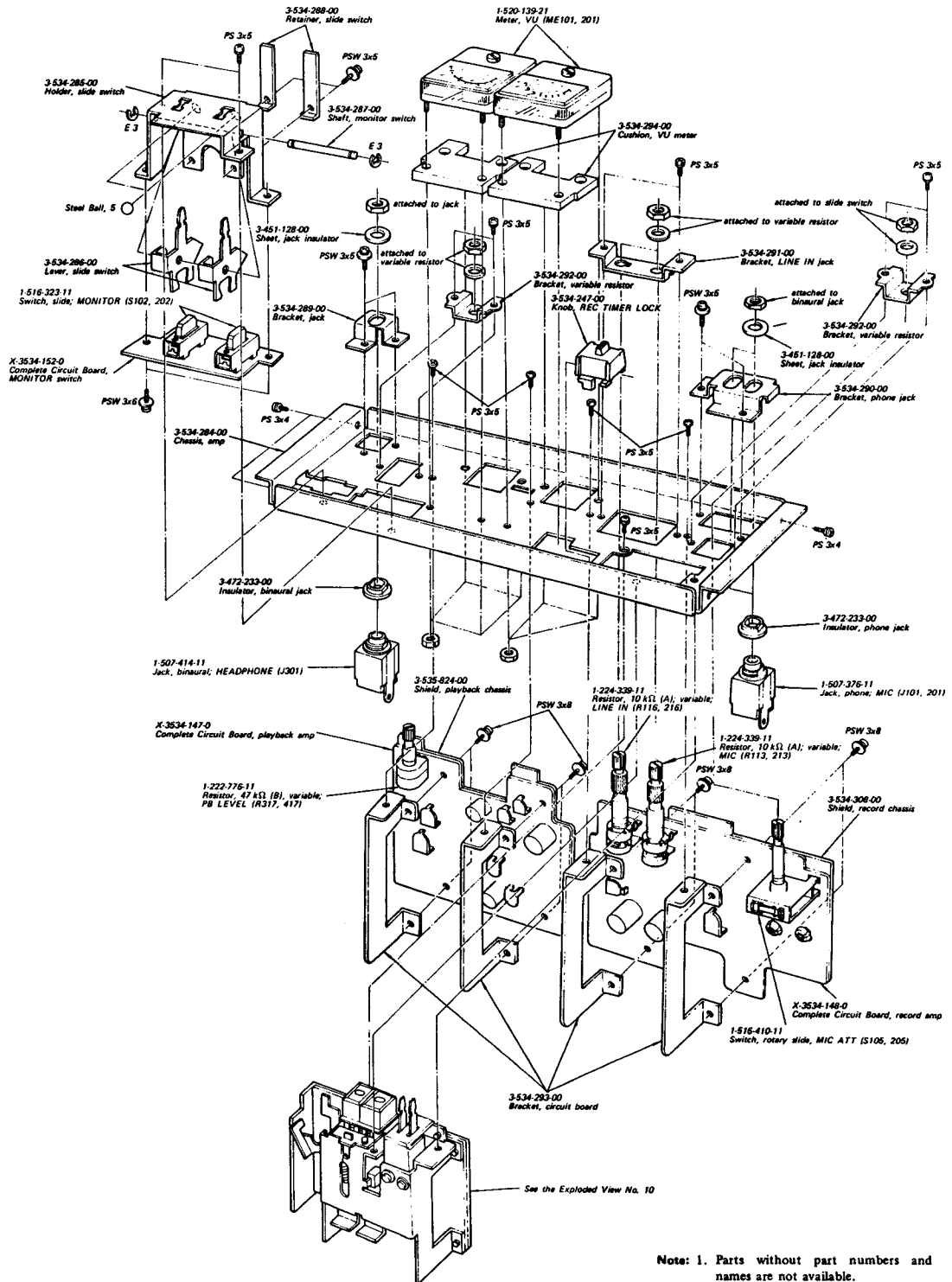
- Note:** 1. Parts without part numbers and names are not available.
 2. All screws are Phillips type (cross recess type) unless otherwise indicated.
 (-): slotted head

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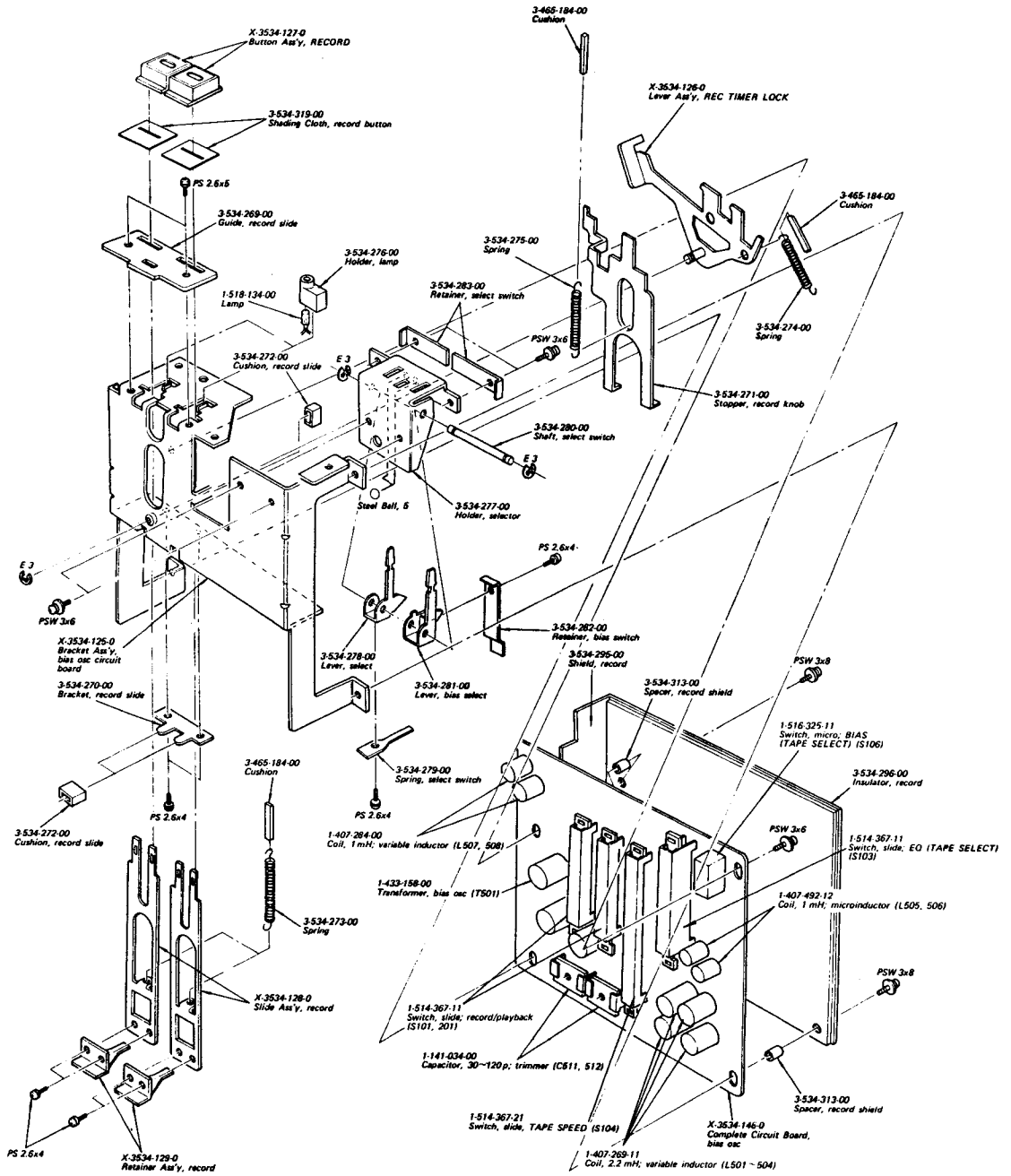
— 48 —

Note: 1. Parts without part numbers and names are not available.
 2. All screws are Phillips type (cross recess type) unless otherwise indicated.
 (-): slotted head



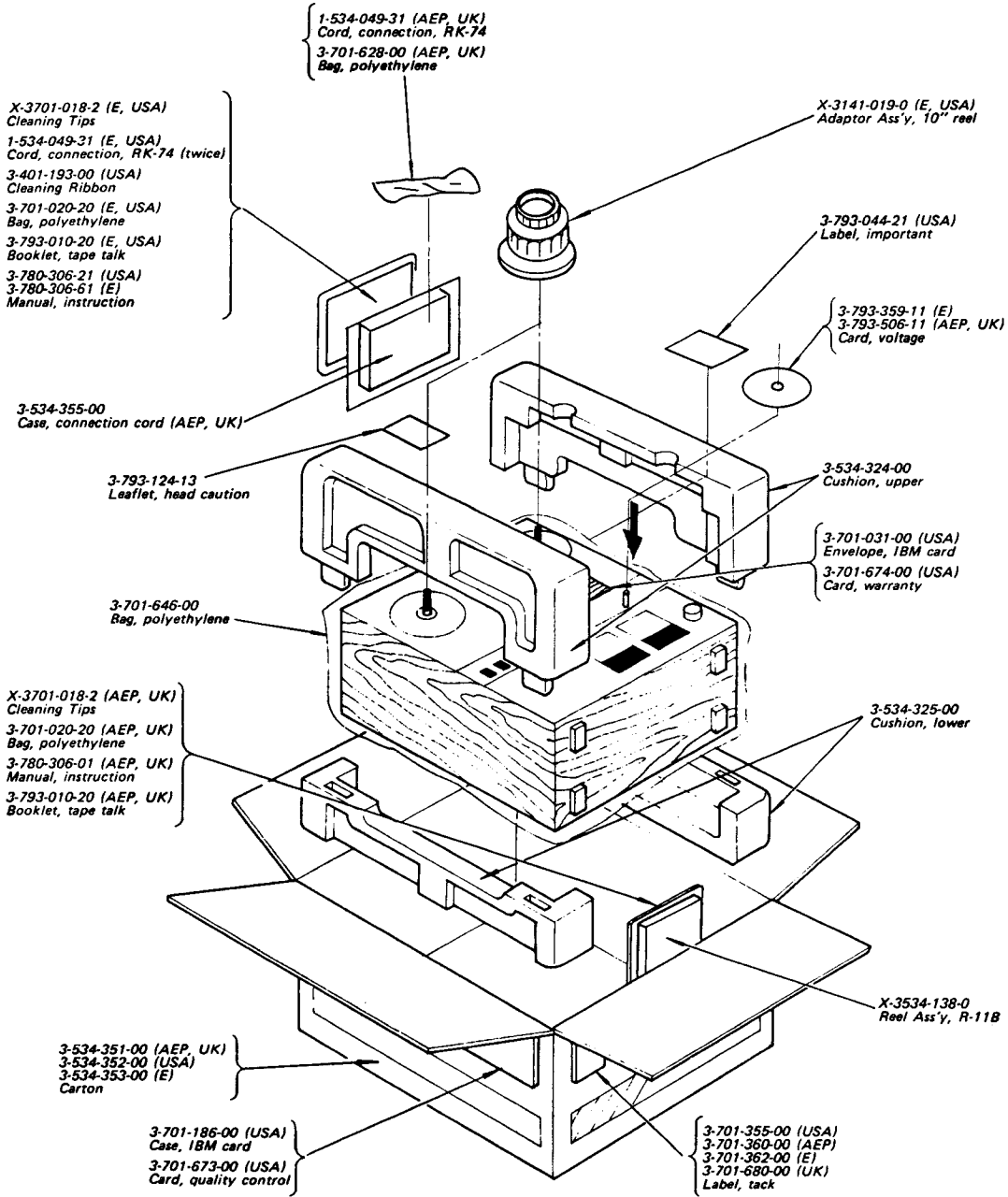
Note: 1. Parts without part numbers and names are not available.
 2. All screws are Phillips type (cross recess type) unless otherwise indicated.
 (-): slotted head

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Note: 1. Parts without part numbers and names are not available.
 2. All screws are Phillips type (cross recess type) unless otherwise indicated.
 (-): slotted head

4-11. PACKING



Parts without part numbers and names are not available.

SECTION 5 ELECTRICAL PARTS LIST

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
COMPLETE CIRCUIT BOARDS			Q707	Transistor	2SC634A
	X-3534-150-0	Tension Arm (R)	Q708	Transistor	2SC634A
	X-3534-151-0	Tension Arm (L)	Q709	Transistor	2SC634A
	X-3534-152-0	MONITOR Switch	Q710	Transistor	2SC634A
	X-3534-144-0	Servo	Q711	Transistor	2SC634A
	X-3534-153-0	Function Switch	Q712	Transistor	2SC634A
	X-3534-154-0	Pause Switch	Q713	Transistor	2SC634A
	X-3534-145-0	Tension Regulator	Q714	Transistor	2SC1384
	X-3534-146-0	Bias Osc	Q801	Transistor	2SC634A
	X-3534-147-0	Playback Amp	Q802	Transistor	2SC634A
	X-3534-148-0	Record Amp	Q803	Transistor	2SC634A
	X-3534-149-0	System Control	Q804	Transistor	2SC634A
			Q805	Transistor	2SC634A
PRINTED CIRCUIT BOARDS			Q806	Transistor	2SC634A
	1-582-591-11	Terminal	Q807	Transistor	2SC634A
	1-582-594-11	Head	Q808	Transistor	2SC634A
SEMICONDUCTORS			Q809	Transistor	2SC634A
Q101,201	Transistor	2SC631A	Q810	Transistor	2SC634A
Q102,202	Transistor	2SC631A	Q811	Transistor	2SC634A
Q103,203	Transistor	2SC631A	Q812	Transistor	2SC1124
Q104,204	Transistor	2SC633A	Q901	Transistor	2SC867
Q105,205	Transistor	2SC633A	Q902	Transistor	2SC867
Q106,206	Transistor	2SC633A	Q903	Transistor	2SD291
Q301,401	FET	2SK43	Q904	Transistor	2SD291
Q302,402	Transistor	2SC631A	IC601	Integrated Circuit	CX-032B
Q303,403	Transistor	2SC633A	D301,401	Diode	1T22
Q304,404	Transistor	2SC631A	D302,402	Diode	1T22
Q305,405	Transistor	2SC633A	D303,403	Diode	1T22
Q306,406	Transistor	2SC634A	D601	Diode	10D2
Q307,407	Transistor	2SC634A	D602	Diode	10D2
Q501	Transistor	2SC634A	D603	Diode	10D2
Q502	Transistor	2SC634A	D604	Diode	10D2
Q701	Transistor	2SC634A	D605	Diode	10D2
Q702	Transistor	2SC634A	D701	Diode	1T40
Q703	Transistor	2SC634A	D702	Diode	1T40
Q704	Transistor	2SC634A	D703	Diode	MZ-08
Q705	Transistor	2SC634A	D704	Diode	MZ-12
Q706	Transistor	2SC634A	D705	Diode	1T22
			D706	Diode	1T22
			D707	Diode	10D2
			D708	Diode	10D2
			D709	Diode	10D2
			D710	Diode	10D2

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
D801		Diode 10D2
D802		Diode 10D2
D803		Diode MZ-08
D804		Diode 1T40
D805		Diode 1T40
D806		Diode 10D2
D807		Diode 10D2
D808		Diode 1T40
D809		Diode 1T22
D810		Diode 1T22
D811		Diode 10D2
D812		Diode 10D2
D813		Diode 10D2
D814		Diode 10D2
D815		Diode 10D2
D816		Diode 10D2
D817		Diode 10D2
D901		Diode 10D2
D902		Diode 10D2
D903		Diode 10D2
D904		Diode 10D2
Th701	1-800-204-11	Thermistor S10K

COILS

L101,201	1-407-519-11	8 μ H, inductor
L102,202	1-407-286-11	2.2 mH, variable inductor
L301, 401	1-407-593-11	27 mH, microinductor
L501	1-407-269-11	2.2 mH, variable inductor
L502	1-407-269-11	2.2 mH, variable inductor
L503	1-407-269-11	2.2 mH, variable inductor
L504	1-407-269-11	2.2 mH, variable inductor
L505	1-407-492-12	1 mH, microinductor
L506	1-407-492-12	1 mH, microinductor
L507	1-407-284-00	1 mH, variable inductor
L508	1-407-284-00	1 mH, variable inductor
L509	1-407-198-51	2.2 mH, microinductor
L510	1-407-198-51	2.2 mH, microinductor

TRANSFORMERS

T1	1-442-192-11	Power (AEP, UK)
	1-442-194-11	Power (USA)
	1-442-195-11	Power (E)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
T2	1-442-193-11	Power (USA)
	1-442-196-11	Power (E)
	1-442-197-11	Power (AEP, UK)
T301,401	1-427-299-11	Headphone
T501	1-433-158-00	Bias Osc

CAPACITORS

All capacitors are in μ F unless otherwise indicated. (p = $\mu\mu$, elect = electrolytic)

C101,201	1-131-192-11	4.7	10V	solid tantalum
C102,202	1-121-392-11	3.3	25V	elect
C103,203	1-105-821-12	0.001	50V	mylar
C104,204	1-121-414-11	100	10V	elect
C105,205	1-107-115-11	22 p	50V	silvered mica
C106,206	1-121-414-11	100	10V	elect
C107,207	1-121-915-11	4.7	25V	elect
C108,208	1-121-410-11	47	25V	elect
C109,209	1-121-415-11	100	16V	elect
C110,210	1-121-391-11	1	50V	elect
C111,211	1-121-915-11	4.7	25V	elect
C112,212	1-121-415-11	100	16V	elect
C113,213	1-121-748-11	10	25V	elect
C114,214	1-121-414-11	100	10V	elect
C115,215	1-105-685-12	0.1	50V	mylar
C116,216	1-107-127-11	68 p	50V	silvered mica
C117,217	1-121-414-11	100	10V	elect
C118,218	1-121-748-11	10	25V	elect
C119,219	1-107-016-11	470 p	500V	silvered mica
C301,401	1-121-422-11	220	25V	elect
C302,402	1-123-055-11	47	16V	elect
C303,403	1-107-131-11	100 p	50V	silvered mica
C304,404	1-121-414-11	100	10V	elect
C305,405	1-107-139-11	220 p	50V	silvered mica
C306,406	1-105-678-12	0.027	50V	mylar
C307,407	1-107-121-11	39 p	50V	silvered mica
C308,408	1-121-409-11	47	16V	elect
C309, 409	1-121-409-11	47	16V	elect
C310,410	1-121-915-11	4.7	25V	elect
C311,411	1-107-121-11	39 p	50V	silvered mica
C312,412	1-107-242-11	390 p	50V	silvered mica
C313,413	1-121-912-11	1	50V	elect
C314,414	1-121-479-11	22	16V	elect
C315,415	1-121-414-11	100	10V	elect

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
C316,416	1-107-115-11	22 p	50V	silvered mica
C317,417	1-121-398-11	10	25V	elect
C318,418	1-121-398-11	10	25V	elect
C319,419	1-121-392-11	3.3	25V	elect
C420	1-121-398-11	10	25V	elect
C501	1-105-519-12	0.033	50V	mylar
C502	1-105-519-12	0.033	50V	mylar
C503	1-105-521-12	0.047	50V	mylar
C504	1-105-521-12	0.047	50V	mylar
C505	1-105-517-12	0.022	50V	mylar
C506	1-105-517-12	0.022	50V	mylar
C507	1-105-519-12	0.033	50V	mylar
C508	1-105-519-12	0.033	50V	mylar
C509	1-107-163-11	47p	500V	silvered mica
C510	1-107-163-11	47p	500V	silvered mica
C511	1-141-069-11	30~120 p		trimmer
C512	1-141-069-11	30~120 p		trimmer
C513	1-107-179-11	270p	500V	silvered mica
C514	1-129-928-11	0.0027	630V	polypropylene
C515	1-105-712-12	0.0082	100V	mylar
C516	1-105-719-12	0.033	100V	mylar
C517	1-131-217-11	2.2	35V	solid tantalum
C601	1-121-935-11	100	25V	elect
C602	1-121-398-11	10	25V	elect
C603	1-121-398-11	10	25V	elect
C604	1-105-661-12	0.001	50V	mylar
C605	1-105-673-12	0.01	50V	mylar
C606	1-105-677-12	0.022	50V	mylar
C607	1-108-550-11	0.082	50V	polyethylene
C608	1-121-409-11	47	16V	elect
C609	1-131-197-11	3.3	16V	solid tantalum
C610	1-131-199-11	10	16V	solid tantalum
C611	1-121-900-11	4.7	250V	elect
C701	1-105-665-12	0.0022	50V	mylar
C702	1-102-112-11	330 p	50V	ceramic
C703	1-105-529-12	0.22	50V	mylar
C704	1-131-215-11	1	35V	solid tantalum
C705	1-131-238-11	10	25V	solid tantalum
C706	1-131-217-11	2.2	35V	solid tantalum
C707	1-131-219-11	4.7	35V	solid tantalum
C708	1-105-725-12	0.1	100V	mylar
C801	1-121-983-11	470	50V	elect
C802	1-121-411-11	47	50V	elect
C803	1-121-810-11	470	50V	elect
C804	1-121-357-11	100	35V	elect

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
C805	1-121-361-11	470	35V	elect
C806	1-121-980-11	100	6.3V	elect
C807	1-121-388-11	1000	35V	elect
C808	1-121-961-11	4.7	25V	elect
C809	1-121-651-11	10	16V	elect
C810	1-121-980-11	100	6.3V	elect
C811	1-121-983-11	470	50V	elect
C812	1-121-662-11	22	35V	elect
C813	1-113-072-11	1	220V	metalized paper
C814	1-113-072-11	1	220V	metalized paper
C815	1-121-726-11	0.47	50V	elect
C816	1-105-919-12	0.033	200V	mylar
C817	1-105-821-12	0.001	50V	mylar
C901	1-121-391-11	1	50V	elect
C902	1-121-004-11	220	160V	elect
C903	1-117-100-11	10	250V	metalized paper
C904	1-117-100-11	10	250V	metalized paper
C905	1-117-036-11	1.5+0.5	250V	metalized paper
C906	1-107-123-11	47 p	50V	silvered mica
C907	1-107-123-11	47 p	50V	silvered mica
C908		-----		
C909	1-107-123-11	47 p	50V	silvered mica
C910	1-107-123-11	47 p	50V	silvered mica
C911	1-107-123-11	47 p	50V	silvered mica

RESISTORS

All resistors are in Ω , $\frac{1}{4}W$ and carbon type unless otherwise indicated. (k = 1000)

R101,201	1-242-687-11	3.9 k	
R102,202	1-242-671-11	820	
R103,203	1-242-653-11	150	
R104,204	1-242-715-09	56 k	low noise
R105,205	1-242-702-09	16 k	low noise
R106,206	1-242-713-09	47 k	low noise
R107,207	1-242-682-09	2.4 k	low noise
R108,208	1-242-709-09	33 k	low noise
R109,209	1-242-666-11	510	
R110,210	1-242-721-11	100 k	
R111,211	1-242-685-11	3.3 k	
R112,212	1-242-669-11	680	
R113,213	1-224-339-11	10k (A), variable;	MIC
R114,214	1-242-721-09	100k	low noise
R115,215	1-242-705-09	22k	low noise
R116,216	1-224-339-11	10k (A), variable;	LINE IN

<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>		
R117,217	1-242-724-09	130 k	low noise	R325,425	1-242-713-11	47 k		R701	1-242-687-11	3.9 k	R807	1-222-774-11	10 k (B), adjustable
R118,218	1-242-721-09	100 k	low noise	R326,426	1-242-675-11	1.2 k		R702	1-242-703-11	1.8 k	R808	1-242-695-11	8.2 k
R119,219	1-242-722-09	110 k	low noise	R327,427	1-242-705-11	2.2 k		R703	1-242-721-11	100 k	R809	1-242-725-11	150 k
R120,220	1-242-689-11	4.7 k		R328,428	1-242-681-11	2.2 k		R704	1-242-706-11	24 k	R810	1-206-470-11	20 2W, metal oxide
R121,221	1-242-689-11	4.7 k		R329,429	1-242-665-11	470		R705	1-242-697-11	10 k	R811	1-242-663-11	390
R122,222	1-242-685-11	3.3 k		R330,430	1-242-695-11	8.2 k	(E, AEP, UK)	R706	1-242-721-11	100 k	R812	1-242-668-11	620
R123,223	1-242-701-11	15 k		R331,431	1-242-688-11	4.3 k		R707	1-242-729-11	220 k	R813	1-242-709-11	33 k
R124,224	1-242-701-11	15 k		R332,432	1-242-692-11	6.2 k		R708	1-242-697-11	10 k	R814	1-212-981-11	91 ½W, metal oxide
R125,225	1-222-775-11	22 k (B), adjustable		R333,433	1-242-705-11	22 k		R709	1-242-697-11	10 k	R815	1-242-691-11	5.6 k
R126,226	1-242-685-11	3.3 k		R334,434	1-244-877-11	1.5 k	½W	R710	1-242-697-11	10 k	R816	1-242-713-11	47 k
R127,227	1-242-685-11	3.3 k		R335,435	1-242-685-11	3.3 k		R711	1-242-697-11	10 k	R817	1-242-697-11	10 k
R128,228	1-242-687-11	3.9 k		R336,436	1-222-772-11	2.2 k (B), adjustable		R712	1-242-721-11	100 k	R818	1-242-713-11	47 k
R129,229	1-242-731-11	270 k		R437	1-242-697-11	10 k		R713	1-242-697-11	10 k	R819	1-242-721-11	100 k
R130,230	1-242-705-09	22 k	low noise	R438	1-242-697-11	10 k		R714	1-242-721-11	100 k	R820	1-242-679-11	1.8 k
R131,231	1-242-719-09	82 k	low noise	R439	1-242-697-11	10 k		R715	1-242-721-11	100 k	R821	1-242-649-11	100
R132,232	1-242-682-11	2.4 k		R501	1-242-641-11	47		R716	1-242-703-11	18 k	R822	1-242-713-11	47 k
R133,233	1-242-712-11	43 k		R502	1-242-641-11	47		R717	1-222-773-11	4.7 k (B), adjustable	R823	1-242-689-11	4.7 k
R134,234	1-242-682-11	2.4 k		R503	1-242-693-11	6.8 k		R718	1-242-667-11	560	R824	1-242-731-11	270 k
R135,235	1-242-712-11	43 k		R504	1-242-693-11	6.8 k		R719	1-242-673-11	1 k	R825	1-242-693-11	6.8 k
R136,236	1-242-677-11	1.5 k		R505	1-242-681-11	2.2 k		R720	1-242-649-11	100	R826	1-242-691-11	5.6 k
R137,237	1-242-661-11	330		R506	1-242-681-11	2.2 k		R721	1-242-737-11	470 k	R827	1-242-690-11	5.1 k
R301,401	1-242-715-11	68 k		R507	1-242-617-11	4.7		R722	1-242-697-11	10 k	R828	1-242-702-11	16 k
R302,402	1-242-705-11	22 k		R508	1-242-711-11	39 k		R723	1-242-709-11	33 k	R829	1-244-877-11	1.5 k ½W
R303,403	1-242-738-11	510 k		R509	1-242-625-11	10		R724	1-242-697-11	10 k	R830	1-242-649-11	100
R304,404	1-242-651-11	120		R510	1-242-625-11	10		R725	1-242-697-11	10 k	R901	1-205-523-11	820 35 W, wirewound; adjustable
R305,405	1-242-662-11	360		R511	1-212-972-11	39	½W, metal oxide	R726	1-242-697-11	10 k	R902	1-227-135-11	100 35 W, wirewound; adjustable
R306,406	1-242-695-09	8.2 k	low noise	R512	1-212-986-11	150	½W, metal oxide	R727	1-242-713-11	47 k	R903	1-242-653-11	150 (USA)
R307,407	1-242-681-09	2.2 k	low noise	R601	1-242-625-11	10		R728	1-242-695-11	8.2 k	R904	1-242-653-11	150 (USA)
R308,408	1-242-687-11	3.9 k		R602	1-244-867-11	560	½W	R729	1-242-685-11	3.3 k	SWITCHES		
R309,409	1-242-723-09	120 k	low noise	R603	1-242-687-11	3.9 k		R730	1-242-705-11	22 k	S101,201	1-516-367-11	Slide, record/playback
R310,410	1-242-689-11	4.7 k		R604	1-242-709-11	33 k		R731	1-222-775-11	22 k (B), adjustable	S102,202	1-516-323-11	Slide, MONITOR
R311,411	1-222-773-11	4.7 k (B), adjustable		R605	1-242-699-11	12 k		R732	1-242-717-11	68 k	S103	1-516-367-11	Slide, EQ (TAPE SELECT)
R312,412	1-242-695-09	8.2 k	low noise	R606	1-242-705-11	22 k		R733	1-244-867-11	560 ½W	S104,204	1-514-367-21	Slide, TAPE SPEED
R313,413	1-242-695-11	8.2 k		R607	1-242-667-11	560		R734	1-244-801-11	1 ½W	S105,205	1-516-410-11	Rotary Slide, MIC ATT
R314,414	1-242-678-11	1.6 k		R608	1-242-705-11	22 k		R735	1-242-737-11	470 k	S106	1-516-325-11	Micro, BIAS (TAPE SELECT)
R315,415	1-242-669-11	680		R609	1-242-701-11	15 k		R736	1-222-779-11	470 k (B), adjustable	S107	1-516-325-11	Micro, rewind
R316,416	1-242-689-11	4.7 k		R610	1-242-677-11	1.5 k		R737	1-222-778-11	220 k (B), adjustable	S108	1-516-325-11	Micro, rewind
R317,417	1-222-774-11	10 k (B), variable; PB LEVEL		R611	1-244-801-11	1	½W	R738	1-242-729-11	220 k	S109	1-516-325-11	Micro, stop
R318,418	1-242-685-11	3.3 k		R612	1-206-717-11	470	3W, metal oxide	R801	1-207-992-11	180 7W, wirewound	S110	1-516-325-11	Micro, playback
R319,419	1-242-685-11	3.3 k		R613	1-244-695-11	8.2 k		R802	1-212-958-11	10 ½W, fuse	S111	1-516-325-11	Micro, fast forward
R320,420	1-242-663-11	390		R614	1-242-693-11	6.8 k		R803	1-242-709-11	33 k	S112	1-516-325-11	Micro, REEL SIZE
R321,421	1-242-721-11	100 k		R615	1-242-712-11	43 k		R804	1-242-681-11	2.2 k	S113	1-516-325-11	Micro, PAUSE
R322,422	1-242-725-09	150 k	low noise	R616	1-222-774-11	10 k (B), adjustable		R805	1-242-697-11	10 k			
R323,423	1-242-698-11	11 k		R617	1-242-719-11	82 k		R806	1-242-695-11	8.2 k			
R324,424	1-242-673-11	1 k		R618	1-222-775-11	22 k (B), adjustable							

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
S114	1-516-325-11	Micro, REEL SIZE
S115	1-516-325-11	Micro, PAUSE
S116	1-516-309-11	Micro, tension arm R
S117	1-516-309-11	Micro, tension arm R
S118	1-516-309-11	Micro, tension arm L
S119	1-516-309-11	Micro, tension arm L
S120	1-516-309-11	Micro, PM1 drive
S121	1-516-309-11	Micro, PM3 drive
S122	1-516-181-11	Push, POWER (E, USA)
	1-516-277-11	Push, POWER (UK, AEP)
S501	1-514-673-11	Slide, TAPE SPEED

ENCAPSULATED COMPONENTS, C-R

CP801	1-231-057-31	0.033 μ F + 120 Ω , 500V
CP802	1-231-057-31	0.033 μ F + 120 Ω , 500V
CP803	1-231-057-31	0.033 μ F + 120 Ω , 500V
CP804		-----
CP805	1-231-057-31	0.033 μ F + 120 Ω , 500V
CP806	1-231-057-31	0.033 μ F + 120 Ω , 500V
CP901	1-101-534-31	0.1 μ F + 120 Ω , 500V (USA)
	1-231-057-31	0.033 μ F + 120 Ω , 500V (E)
CP902	1-101-534-31	0.1 μ F + 120 Ω , 500V (USA)
	1-231-057-31	0.033 μ F + 120 Ω , 500V (E)
CP903	1-101-534-31	0.1 μ F + 120 Ω , 500V
CP904	1-101-534-31	0.1 μ F + 120 Ω , 500V
CP905	1-101-534-31	0.1 μ F + 120 Ω , 500V
CP906	1-101-534-31	0.1 μ F + 120 Ω , 500V

JACKS

J101,201	1-507-376-11	Phone, MIC
J301	1-507-414-11	Binaural, HEADPHONE
CNJ101,201	1-507-349-21	2P Phono, LINE IN
CNJ102	1-509-359-11	Connector, REC/PB (AEP, E, UK)
CNJ301,401	1-507-349-21	2P Phono, LINE OUT
CNJ901	1-509-341-13	Connector, AC OUTLET (E, USA)
	1-509-546-00	Connector, AC IN (AEP, UK)
CN901	1-509-427-11	Socket, voltage selector (E)
	1-509-482-11	Socket, voltage selector (AEP, UK)

Ref. No. Part No. Description

MISCELLANEOUS

EH101,201	8-825-547-00	Head, erase; EF18-2902A2
F1	1-532-137-00	Fuse, 1.6 A (E)
	1-532-259-00	Fuse, 1.6 AT (AEP, UK)
F2	1-532-078-11	Fuse, 1 AT (AEP, UK)
F3	1-532-078-11	Fuse, 1 AT (AEP, UK)
F4	1-532-078-11	Fuse, 1 AT (AEP, UK)
F5	1-532-074-11	Fuse, 200 mA (AEP, UK)
F6	1-532-296-11	Fuse, 1.25A (AEP, UK)
F7	1-532-296-11	Fuse, 1.25A (AEP, UK)
F8	1-532-259-11	Fuse, 1.6AT (AEP, UK)
F9	1-532-259-11	Fuse, 1.6AT (AEP, UK)
M1	8-832-638-01	Motor, supply reel; IC-638R
M2	8-832-638-01	Motor, take-up reel; IC-638R
M3	8-832-624-21	Motor, capstan; IC-624G
ME101,201	1-520-139-21	Meter, VU
PH101,201	8-825-534-00	Head, playback; PF140-4202
PL1	1-518-134-31	Lamp, 2V 0.1A
PL2	1-518-134-31	Lamp, 2V 0.1A
PL3	1-518-134-31	Lamp, 2V 0.1A
PM1	1-454-074-00	Solenoid (L), pinch roller
PM2	1-454-074-00	Solenoid (R), pinch roller
PM3	1-454-074-00	Solenoid, brake
PM4	1-454-073-21	Solenoid, stop
RH101,201	8-825-511-00	Head, record; RF140-2902
RY801	1-515-127-41	Relay
RY802	1-515-127-41	Relay
	1-452-072-11	Ring, magnet
	1-533-007-00	Holder, fuse (E)
	1-533-105-12	Holder, fuse (AEP, UK)
	1-534-487-00	Cord, power (E)
	1-534-538-21	Cord, power (USA)
	1-534-765-00	Cord, power; 3-wire with plug (2 pins, 1 earth) (AEP)
	1-534-766-00	Cord, power; 2-wire with plug (2 pins) (AEP)
	1-534-767-00	Cord, power; 2-wire with plug (2 blades) (AEP)
	1-534-768-00	Cord, power; 3-wire without plug (AEP)
	1-534-819-11	Cord, power, DK-37 (UK)
	1-535-506-21	Terminal, solderless
	1-536-395-11	Strip, terminal; 1L1
	1-582-134-11	Coil, FG

SECTION 6 HARDWARE

<u>Part No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Description</u>
SCREWS			
All screws are Phillips type (cross recess type) unless otherwise indicated.			
7-621-259-55	P 2.6 x 8	7-682-961-01	PSW 4 x 8
7-628-253-05	PS 2.6 x 5	7-682-962-01	PSW 4 x 10
7-628-253-95	PS 2.6 x 4	7-682-963-01	PSW 4 x 12
7-628-254-05	PS 2.6 x 5	7-683-237-31	3 x 3, thrust
7-682-128-01	P 2 x 10	7-683-238-01	(-) SC 3 x 5
7-682-147-01	P 3 x 6	7-683-238-31	3 x 4, thrust
7-682-164-01	P 4 x 14	7-685-145-31	P 3 x 6
7-682-169-01	P 4 x 35	7-685-146-21	P 3 x 8; self-tapping
7-682-170-04	RK 4 x 35	7-685-158-31	P 4 x 6
7-682-254-35	PS 2.6 x 10	7-685-159-31	P 4 x 8
7-682-546-03	B 3 x 5	WASHERS	
7-682-626-01	PS 2 x 6	7-623-107-18	2.6
7-682-646-01	PS 3 x 5	7-623-108-18	3
7-682-647-01	PS 3 x 6	RETAINING RINGS	
7-682-649-01	PS 3 x 10	7-624-102-01	E 1.5
7-682-661-01	PS 4 x 8	7-624-104-01	E 2
7-682-947-01	PSW 3 x 6	7-624-106-01	E 3
7-682-948-01	PSW 3 x 8	7-624-109-01	E 5
7-682-949-01	PSW 3 x 10	7-623-508-01	Lug, 3
7-682-960-01	PSW 4 x 6	7-671-115-01	Steel Ball, 5

- Hardware Nomenclature -

<p>P - Pan Head Screw </p> <p>PS - Pan Head Screw with Spring Washer </p> <p>K - Flat Countersunk Head Screw </p> <p>B - Binding Head Screw </p> <p>RK - Oval Countersunk Head Screw </p> <p>T - Truss Head Screw </p> <p>R - Round Head Screw </p> <p>F - Flat Fillister Head Screw </p>	<p>SC - Set Screw </p> <p>E - Retaining Ring (E Washer) </p> <p style="margin-left: 40px;">W - Washer</p> <p style="margin-left: 40px;">SW - Spring Washer</p> <p style="margin-left: 40px;">LW - Lock Washer</p> <p style="margin-left: 40px;">N - Nut</p> <p style="text-align: center;">- Example -</p> <div style="margin-left: 20px;"> </div>
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STEREO TAPECORDER

TC-755

*USA Model
E Model
AEP Model
UK Model*

SUPPLEMENT

No. 1
February, 1974

Subject: Circuit Description



SONY CORPORATION

SONY
SERVICE MANUAL

CIRCUIT OPERATION OF SYSTEM CONTROL SECTION

Normal operation and current flow in each mode and each function are described below. If trouble occurs in the system control section, examine the cause according to the following description.

1. STOP MODE

Settings:

POWER switch (S122): ON
All function buttons: not pushed
(S107-111: OFF)
PAUSE switch (S113, 115): OFF
REEL SIZE switch (S112, 114): 7
Tension arm: activated (ON) by threading a tape
(S116-119: tape)
TAPE SPEED switch: 19 cm, 7 $\frac{1}{2}$ " or 9.5 cm, 3 $\frac{3}{4}$ " per sec.

Main operations:

When a tape is threaded or the tension arms are activated, with the POWER switch ON, the stop solenoid (PM4) will be de-energized and the capstan motor will start to rotate.

The playback preamp will be muted.

Route 1

24 V AC from the power transformer T2 is rectified to 24 V DC for each solenoid through Q811 and Q904. The 24 V DC, however, stops at the emitter of Q904 because of the 75 V DC through D814 from the 55 V AC of the same transformer T2. At the same time the 75 V DC stops at the cathode of D904 through S120, PM1, D817, E-B of Q812 and R829.

51 V DC, the difference between 75 V DC and the voltage across R828, is applied to E-B of Q812, D904, E-B of Q904 and E-B of Q811. Since the break down voltages for these diodes, except D904, are very low, do not measure the partial voltage across each diode with a low range volt-meter.

Route 2

Through the contacts 11-3 of the playback relay (RY802), 27 V DC from terminal No. 863 of the system control circuit board is applied to terminal No. 414 of the playback circuit board, and the playback circuit is muted for both the L and R channels. Since the muting circuit is connected at the TAPE side of the MONITOR switch and only the playback preamp is grounded, the SOURCE can be monitored.

Route 3

25 V DC from Q803 is applied to the contacts of each function button through the fast forward/rewind relay (RY801), the playback relay (RY802) and Q808.

Route 4

Q804 is turned ON by the base voltage to which the lamp power source of 1.9 V AC is rectified through D804, and Q805 is turned ON by 42 V DC through the stop solenoid PM4. Thus the cold (common) side of each function button is grounded through the totem-pole type switch consisting of Q804 and Q805.

Route 5

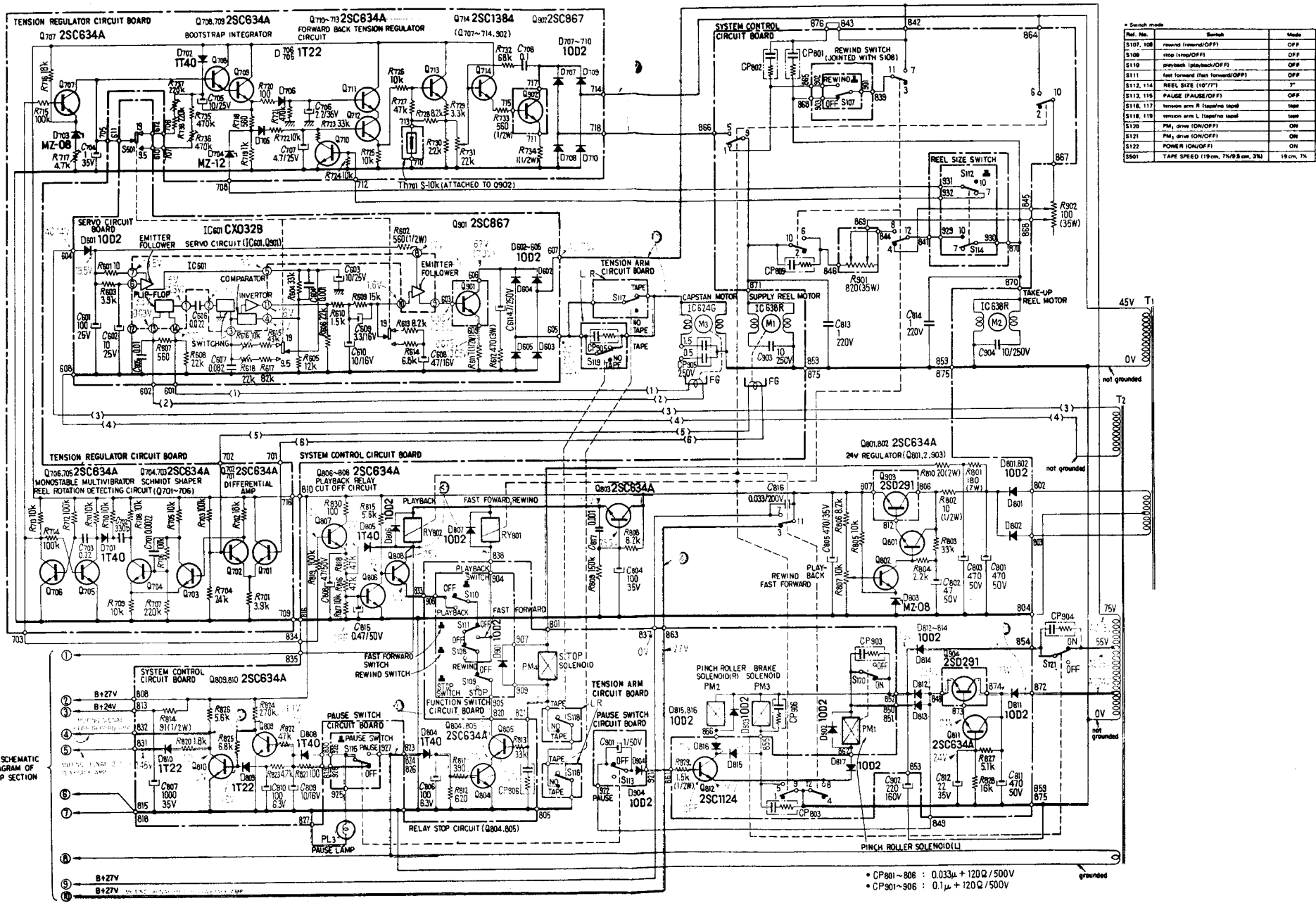
The base of Q809 is grounded through the pause lamp (PL3) and Q809 is turned OFF. Therefore Q810 is turned ON. This means that the muting voltages for the record and playback amplifiers are not applied from the collector of Q810. And D810 is used to prevent the muting signal (1) of 1.45 V DC for the playback amplifier from flowing backward through terminal No. 831 of the system control circuit board.

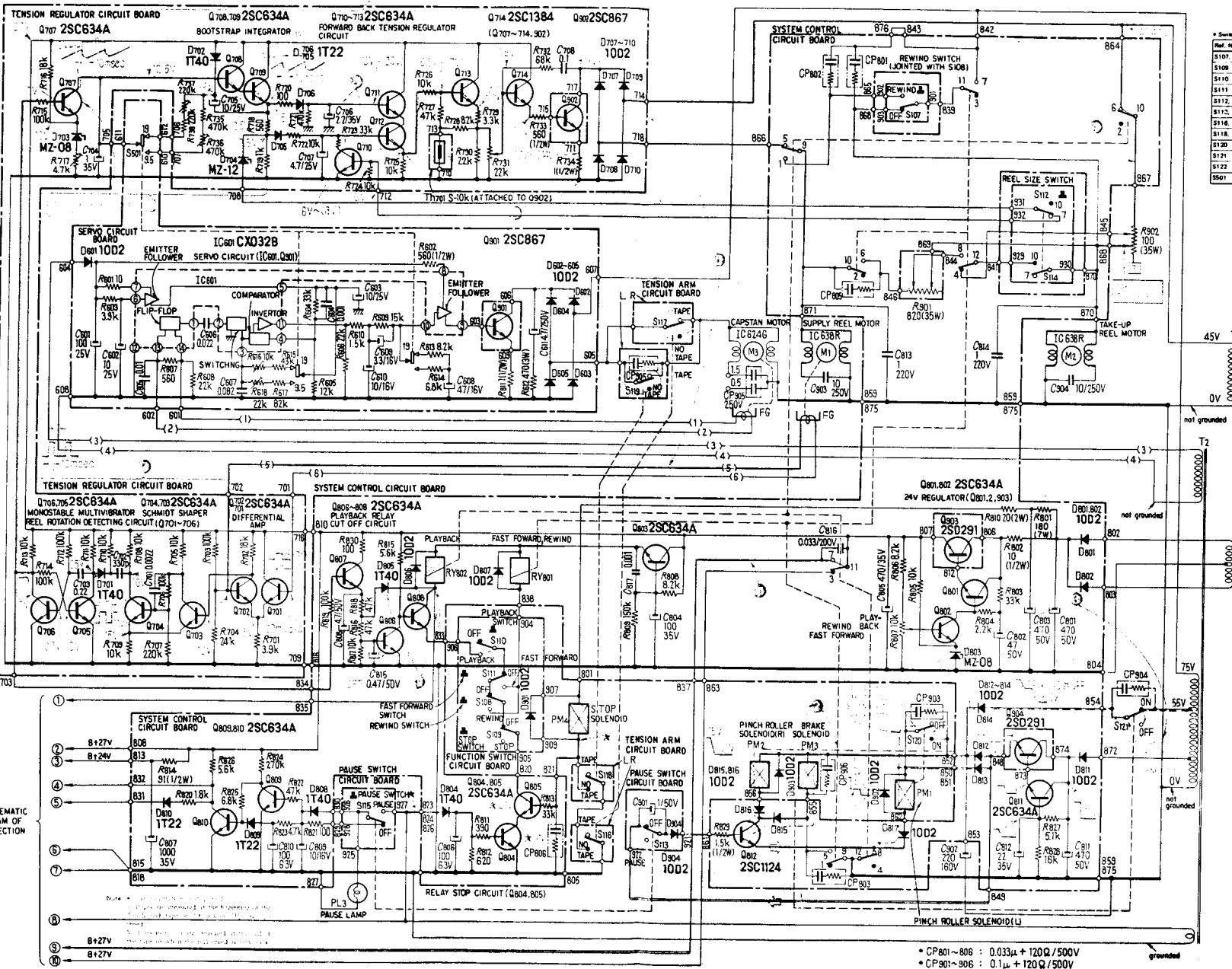
Route 6

With the servo circuit (IC601 and Q901) operating normally and with the tension-arm switches S117 and S119 ON, 75 V AC from the power transformer (T2) is applied to the capstan motor, and the motor rotates normally. Voltages shown in the servo circuit without parentheses are for a tape speed of 19 cm (7 $\frac{1}{2}$ " per second. Voltages in parentheses are for 9.5 cm (3 $\frac{3}{4}$ " tape speed.

Route 7

The contacts 9-5 and 10-6 of the playback relay are not connected in the stop mode, and so the take-up and supply reel motors do not rotate.





* Switch mode

Part No.	Switch	Mode
S107, 108	rewind (forward/OFF)	OFF
S109	stop (stop/OFF)	OFF
S110	pinch roller (playback/OFF)	OFF
S111	fast forward (fast forward/OFF)	OFF
S112, 114	REEL SIZE (10"/7")	T
S112, 115	PAUSE (PAUSE/OFF)	OFF
S116, 117	tension arm R (tension/normal)	normal
S118, 119	tension arm L (tension/normal)	normal
S120	PM ₁ drive (ON/OFF)	OFF
S121	PM ₂ drive (ON/OFF)	ON
S122	POWER R (ON/OFF)	ON
S501	TAPE SPEED (18cm, 7.6cm, 3M)	18cm, 7.6

D SCHEMATIC DIAGRAM OF AMP SECTION

• CP801-806 : 0.033μ + 120Ω / 500V
 • CP901-906 : 0.1μ + 120Ω / 500V

2. PLAYBACK MODE

Settings:

POWER switch (S122):	ON
Forward button:	pushed and locked
(S110):	ON
PAUSE switch (S113, 115):	OFF
REEL SIZE switch (S112, 114):	7
Tension arm:	activated (ON) by threading a tape (S116-119: tape)
TAPE SPEED switch:	19 cm, 7½" or 9.5 cm, 3¾"

Main operations:

The motor torque is automatically controlled by the DC voltage produced in reverse proportion to the reel rotation speed through the switching circuit (Q701-706), which is synchronized with the reel rotation, and amplified through Q707-717 and 902. The control curve for the motor torque can be changed by the amplifier gain.

Route 1

Q806 is OFF in the stop mode, and so Q808 is ready to be turned ON. When the forward button is pushed and the playback switch (S110) is turned ON, the playback relay (RY802) turns ON. At this time the square waves from the reel rotation detecting circuit (Q701-706) are applied to the base of Q807. D805, by grounding the output of Q807 through D805 and Q808, prevents Q806 from turning ON and Q808 OFF.

Route 2

For the solid line:
Q812 is turned ON by the B+ voltage through the PAUSE switch (S113).
For the dotted line:
55 V AC from the power transformer T2 is rectified by D814 through S121. The rectified 75 V DC is simultaneously applied to the pinch roller solenoid (L) (PM1) and (R) (PM2) and the brake solenoid (PM3) and lowers to 45 V DC.

Route 3

To prevent temperature rise in the energized solenoids, the operation voltage is lowered and kept at 20 V DC through D811 and Q904, when S120 is mechanically turned off by the pinch roller solenoid (L) (PM1) and S121 by the brake solenoid (PM3) approximately one second after these solenoids are energized.

Route 4

45 V AC from the power transformer T1 is applied to the take-up reel motor (M2) through the take-up torque adjustment resistor R902. Since the TC-755 uses tension arms, the initial high voltage is not applied to the motor.

Route 5

The 45 V AC is also applied to the supply reel motor (M1) through the diode bridge circuit (D707-710) with Q902 functioning as a variable resistor. An FG coil is attached to the motor (M1), and the coil output signal is fed back to the motor through the tension regulator circuit, to control the motor torque.

Route 6

Transistors Q708-714 in the tension regulator circuit operate as a DC amplifier. The emitter of Q707 is locked at approximately 10 V DC by a zener diode (D703). Therefore, when the voltage at the collector of Q707 is more than 10 V DC, the final transistor Q902 is ON, and the supply reel motor starts to rotate.

Route 7

When the supply reel motor starts to rotate, an output signal of a frequency proportionate to the rotational speed of the reel is generated at the FG coil and delivered to the differential amplifier (Q701, 702). The differential amplifier can amplify, without any induction interference, the FG coil output signal of 30 mVp-p generated from an extremely slow reel rotation, to produce a 4 Vp-p square wave. The square wave is amplified to a 12 Vp-p square wave through the Schmidt wave-shaper (Q703, 704). The negative part of the amplified 12 Vp-p square wave triggers the monostable multivibrator (Q705, 706) through D701. The monostable multivibrator changes the square wave into a positive pulse with a constant pulse width, which is synchronized with the input signal. In this case the constant pulse width is approximately 10 msec according to the time constant for the base circuit of Q706.

Route 8

Q707 receives these pulses of approximately 10 msec width and pulse interval T, determined by the rotational speed of the reel, and turns ON during the pulse of approximately 10 msec. Q707 is used as a switching device for the bootstrap integrator (Q708, 709) which creates saw-tooth waves. The saw-tooth waves are created from the charging curve of C704 with R737 and R738 for 19 cm/s (7½ ips) tape speed and with R735 and 736 for 9.5 cm/s

(3¾ ips) tape speed. The circuit (Q708, 709), which has the same polarity with no loss in gain, increases the potential of C705 at the hot side of the above mentioned charging resistors. As the charging current is constant, saw-tooth waves of good linearity are obtained across C704.

D702 (1T40) quickly charges C705 while Q707 is ON and turns off when the potential of the cathode of D702 is raised by C705. Therefore, a voltage higher than 27 V DC can be measured at the hot side of C705.

Route 9

The saw-tooth waves formed through route 8 extend longer in proportion to the pulse interval time T, which is inversely proportional to the reel rpm. Therefore, saw-tooth waves of an area inversely proportional to the rotational speed of the reel are obtained as the output of Q709. The output signal is rectified by D705 and C707 and by D706 and C706, and thus a DC variation inversely proportional to the reel speed can be obtained.

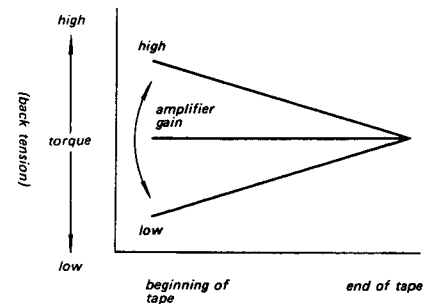
Route 10

The current of the DC variation is amplified through route 10 with the same polarity and fed back to the supply reel motor. The following function therefore takes place:

- * At the beginning of the tape, the diameter of the tape roll is large and the reel speed is slow. Therefore, the voltage applied to the supply motor is high, and the motor torque is high.
- * At the end of the tape, the tape roll diameter is small, and the reel speed is high. Therefore, the voltage applied to the supply motor is low, and the motor torque is low.
- * The back tension T_B (g) for the tape is thus expressed as follows:

$$T_B = \frac{T_M \text{ (motor torque: g-cm)}}{r \text{ (tape radius : cm)}}$$

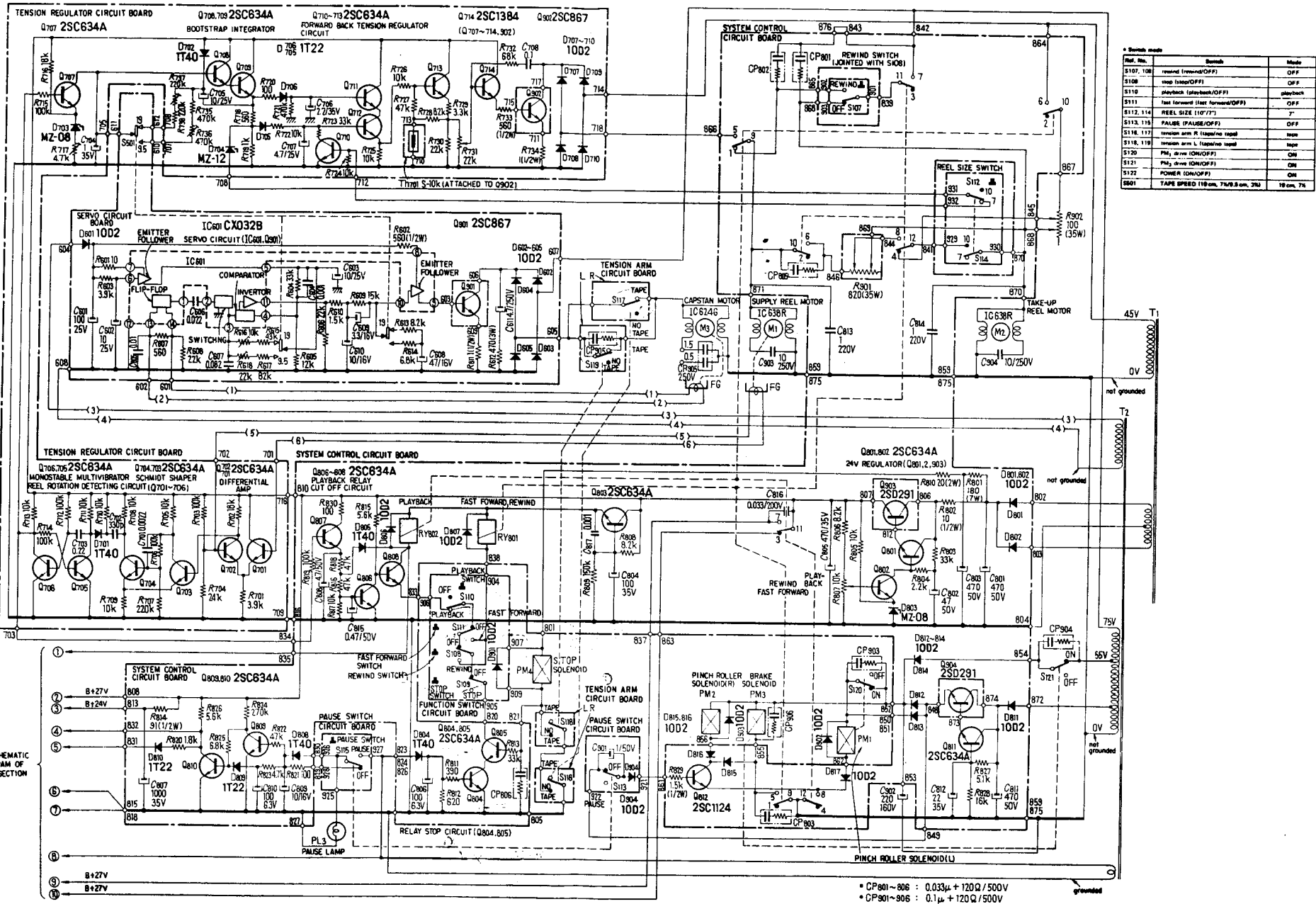
The thermistor S-10K (Th701) is physically attached to transistor Q902 and compensates the temperature rise in the DC amplifier (Q713, 714 and 902). The back tension of the tape can be controlled with respect to the reel speed by changing the amplifier gain. The amplifier gain affects the back tension as shown below.



To supply a stronger back tension for the ten-inch reel than the seven-inch reel, with the torque curve remaining the same as for the seven-inch reel, the REEL SIZE switch (S112) turns Q710 OFF and opens the connection of R723, which is in the circuit when the REEL SIZE switch is at "7". The increased tension is determined by the ratio of R722 and 733.

Route 11

To the bias oscillator circuit, the B+ voltage is supplied through contacts 11-7 of the playback relay (RY802), which puts the circuit in readiness to operate.



* Switch mode

Part No.	Switch	Mode
S107, 108	rewind (normal/OFF)	OFF
S108	stop (stop/OFF)	OFF
S110	playback (playback/OFF)	playback
S111	fast forward (fast forward/OFF)	OFF
S112, 114	REEL SIZE (10/7")	7"
S113, 115	PAUSE (PAUSE/OFF)	OFF
S116, 117	tension arm R (taps/no tap)	tap
S118, 119	tension arm L (taps/no tap)	tap
S120	PM ₁ drive (ON/OFF)	ON
S121	PM ₂ drive (ON/OFF)	ON
S122	POWER (ON/OFF)	ON
CP01	TAPE SPEED (18 cm, 7.62 cm, 3.81 cm)	18 cm, 7.62 cm

TO SCHEMATIC DIAGRAM OF AMP SECTION

3. FROM ANY MODE TO STOP MODE

Route 1

If the POWER switch is turned OFF or the AC plug is removed from the AC outlet, the 1.9 V AC is cut off and the transistor Q804 turns OFF quickly. Thus the TC755 is placed in the stop mode from any mode. Also each solenoid is de-energized by the opening of the relays due to the turning off of Q804, regardless of any remaining B+ voltage in each solenoid. Thus the tape is prevented from being accidentally broken.

Route 2

The fast forward, rewind relay (RY801) and the playback relay (RY802) can be de-energized by pushing the stop button. The TC-755 is then placed in the stop mode.

Route 3

If the tape should happen to break, or when the tape comes to its end, the stop solenoid (PM4) is energized by the closing of the tension arm switches (S116 and S118). The stop solenoid mechanically causes each function button to release.

Route 4

If a function button is pushed when both tension arms remain released because of improper tape threading, the tape may be broken by a sudden tension on the tape. To prevent such trouble, S116 and S118 ground the base of Q805 when they are turned ON by the release of both tension arms. Q805 therefore turns OFF, and the function buttons become inoperative.

4. FROM PLAYBACK MODE TO PAUSE MODE

Route 1

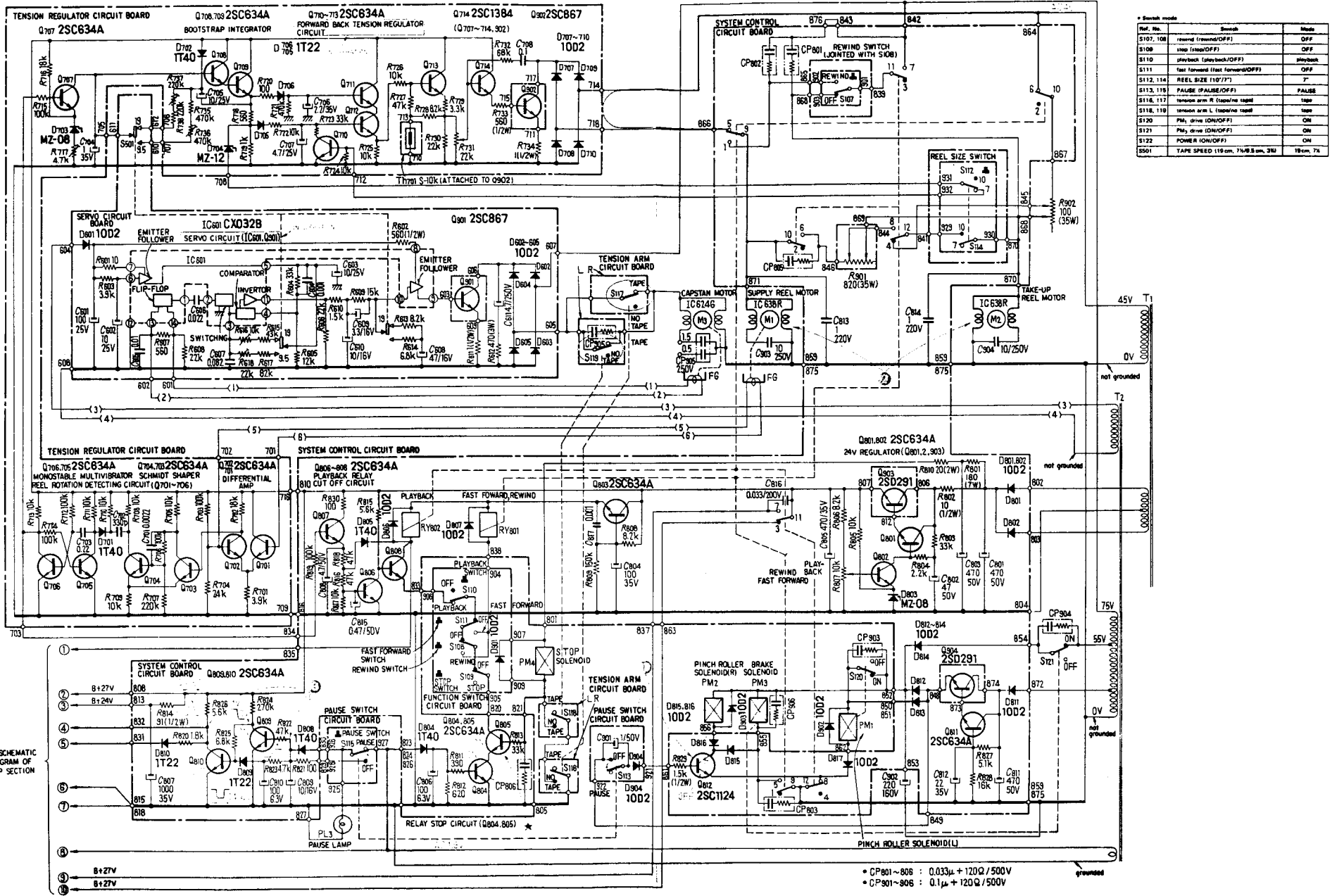
When the PAUSE switch (S113) is pushed to PAUSE, Q812 turns OFF. This causes the pinch roller solenoid (PM2) and the brake solenoid (PM3) to become de-energized, the pinch roller moves back from the capstan, and the brake is put on.

Route 2

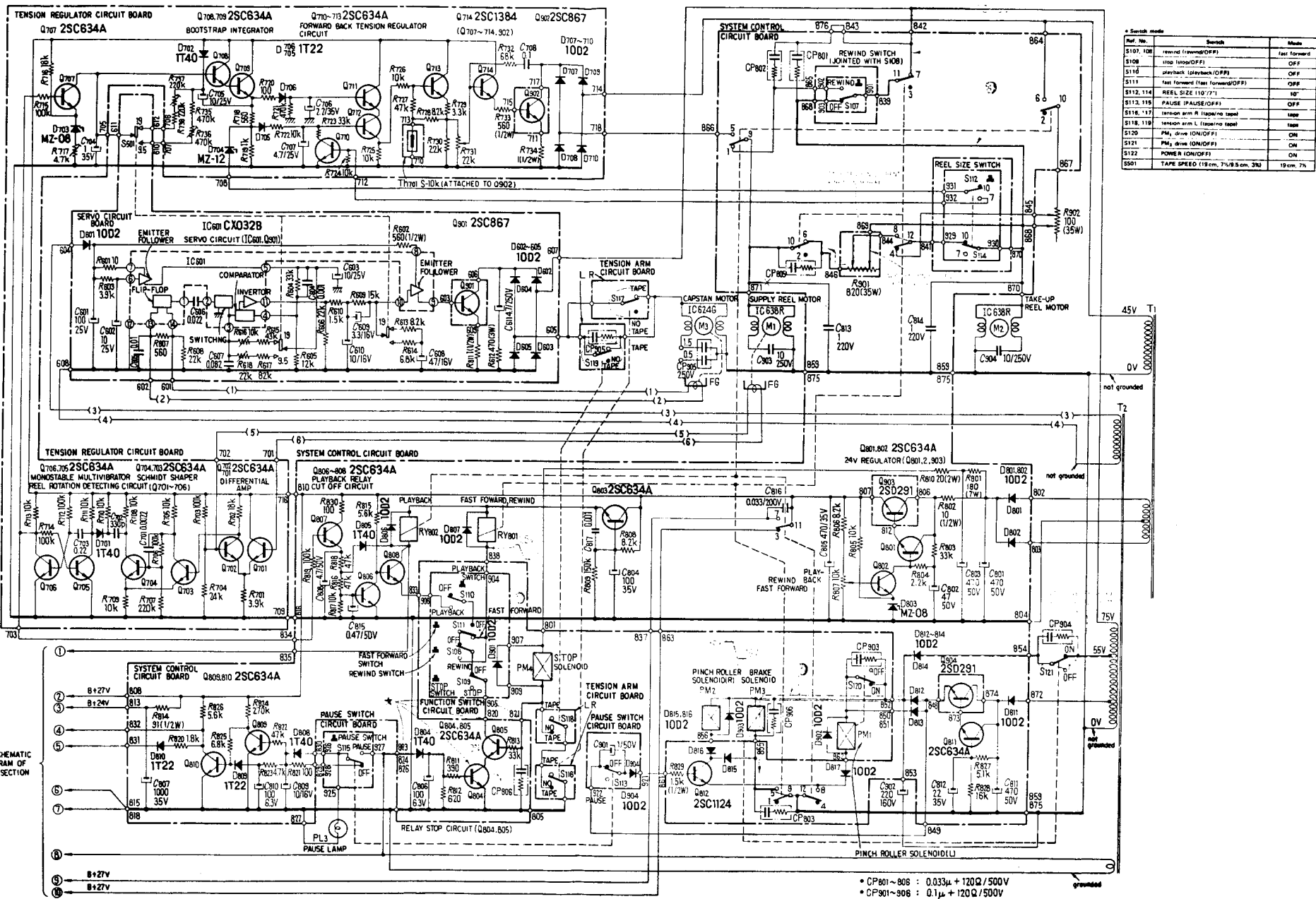
Since the playback relay (RY802) is still energized, the reel motors try to continue rotating. They, however, are stopped by the brake.

Route 3

The pause lamp (PL3) illuminates through the other PAUSE switch (S115), C809 is quickly charged through D808 and causes Q809 to turn ON. Therefore, Q810 turns OFF, and the collector voltage of Q810 rises to 4 V DC. This voltage is delivered to the playback and record circuit boards as a muting voltage and eliminates amplifier noise when the PAUSE switch is operated. C810 then starts to be charged, and in approximately 0.4 sec, Q810 turns ON again due to the charged voltage applied through D809, and the desired starting portion of the tape can be set by hand while listening to the cue sound. The charged C809 and C810 discharge through the filament of the pause lamp (PL3), when PAUSE switch (S115) is pushed OFF, and this prepares the circuit for the next PAUSE mode.



Ref. No.	Symbol	Mode
S107, 108	rewind (rewind/OFF)	OFF
S109	stop (stop/OFF)	OFF
S110	playback (playback/OFF)	playback
S111	fast forward (fast forward/OFF)	OFF
S112, 114	REEL SIZE (10"/7")	7"
S113, 116	PAUSE (PAUSE/OFF)	PAUSE
S118, 117	tension arm R (tension/normal)	tape
S118, 118	tension arm L (tension/normal)	tape
S120	Pin. drive (ON/OFF)	ON
S121	Pin. drive (ON/OFF)	ON
S122	POWER (ON/OFF)	ON
S501	TAPE SPEED (16 cm, 7 1/2 IPS, 3 1/4)	16 cm, 7 1/2



5. FAST FORWARD MODE

Route 1

When the fast forward button is pushed, turning on the fast forward switch (S111), the fast forward, rewind relay (RY801) is energized. Through the contacts of the relay, the take-up and supply reel motors start to rotate, and the brake solenoid (PM3) is energized releasing the brake. The circuit operation indicated by ★ is the same as in the stop mode.

Route 2

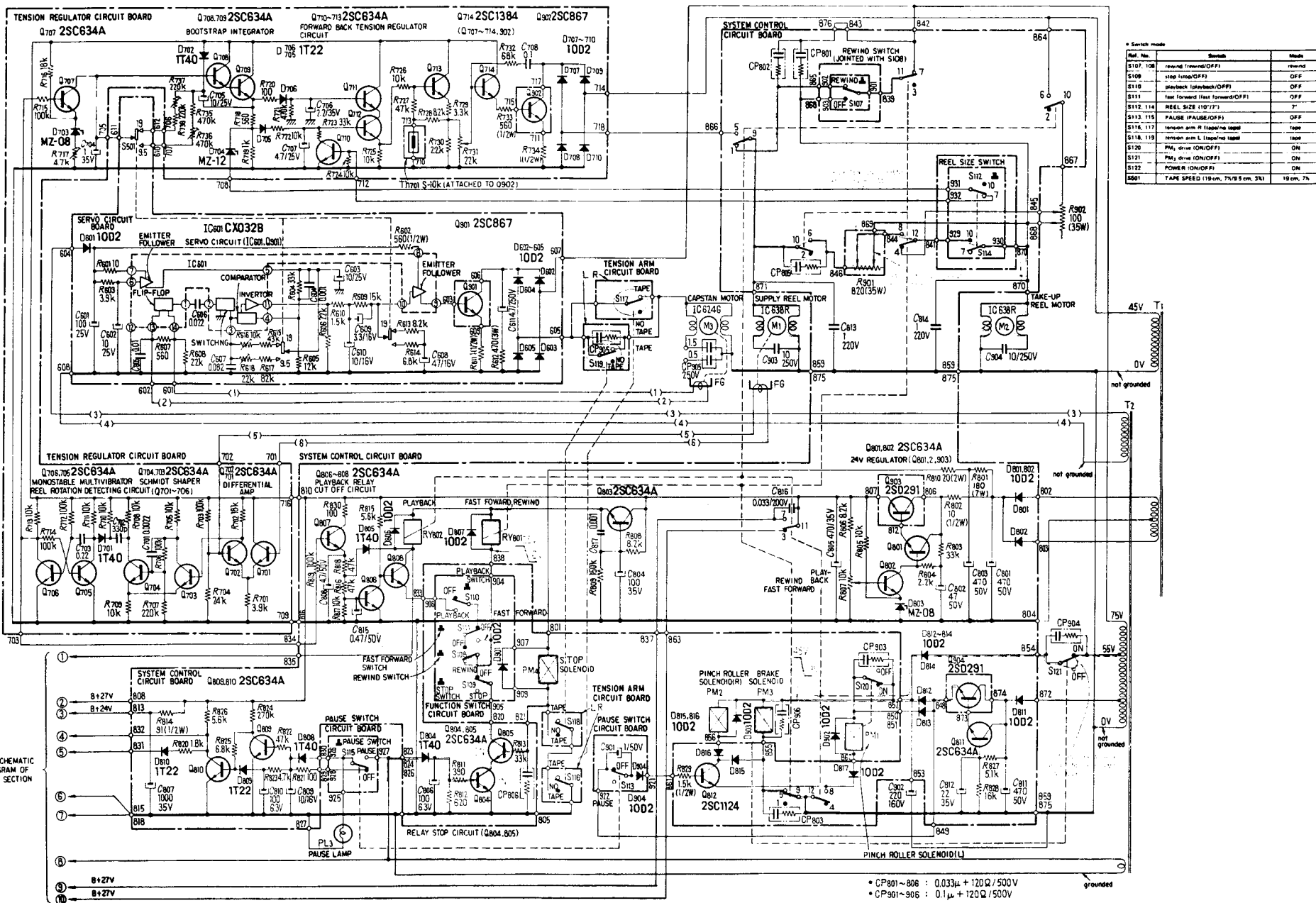
Each solenoid is energized and locked by the rectified power supply similarly to the playback mode. The voltage of the power supply drops from 45 V DC to 20 V DC. The high voltage route is indicated by the dotted line.

Route 3

The back tension torques can be adjusted by R901 for 7- and 10-inch reels with the REEL SIZE switch (S114) at "7 and 10".

6. REWIND MODE

When the rewind button is pushed, turning on the rewind switch (S108), the connection of R901 to the reel motors is changed by the other rewind switch (S107) which is joined with S108. The other circuit operations are the same as in the fast forward mode.



* Switch mode

Ref. No.	Switch	Mode
S107, 108	rewind (Tremble/OFF)	rewind
S109	stop (stop/OFF)	OFF
S110	playback (playback/OFF)	OFF
S111	fast forward (fast forward/OFF)	OFF
S112, 114	REEL SIZE (10"/7")	7"
S113, 115	PAUSE (PAUSE/OFF)	OFF
S114, 117	tension arm R (Tape/No tape)	tape
S118, 119	tension arm L (Tape/No tape)	tape
S120	PM ₂ drive (ON/OFF)	ON
S121	PM ₁ drive (ON/OFF)	ON
S122	POWER (ON/OFF)	ON
S601	TAPE SPEED (19 cm./7 1/8 cm./3 1/2)	19 cm./7 1/8

TO SCHEMATIC DIAGRAM OF AMP SECTION

7. FROM FAST FORWARD MODE TO PLAYBACK MODE

Since this explanation involves the fast forward and playback modes, each contact of RY801 and RY802 has been drawn in the OFF position in the schematic diagram.

Route 1

When the playback button is pushed (that is, the playback switch (S110) is turned ON), the fast forward button is released, turning the fast forward switch (S111) OFF. The brake is then applied on the reel table, and the rotation speed of the reel table becomes slower. If Q808 were ON, RY802 would turn ON with the playback switch (S110) ON. Q808, however, is OFF, since Q806 has been turned ON by the signal from Q706. RY802 therefore remains OFF.

Route 2

As long as the reels rotate, the monostable multivibrator produces square waves of 21 Vp-p, which are delivered to the base of Q807 and turn Q807 ON. The emitter output of Q807 charges C808 and turns Q806 ON. Q808 is therefore turned OFF.

Route 3

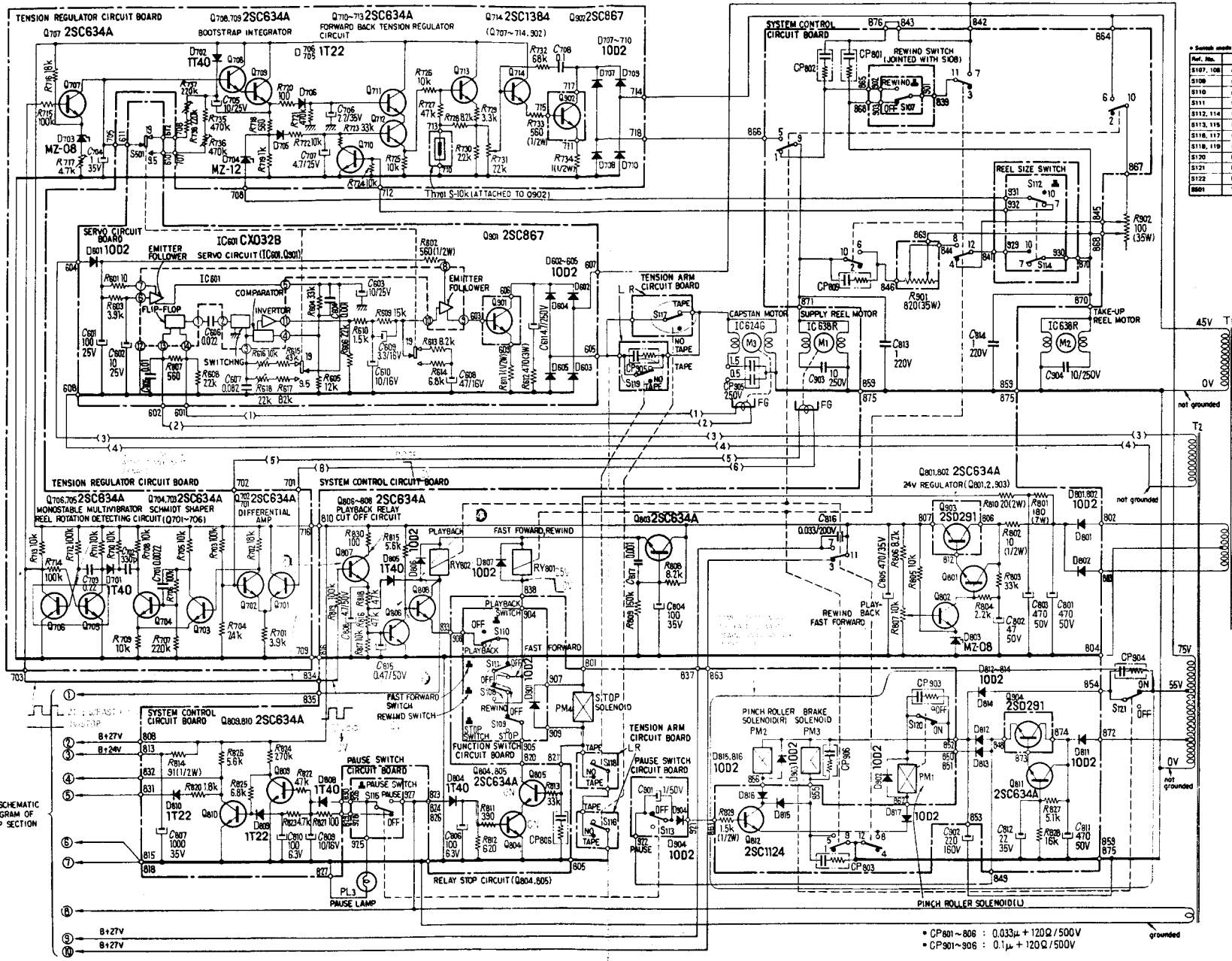
When the reel rotation stops, Q706 turns ON and the collector voltage of Q706 drops to 0 V. Q807 therefore turns OFF and C808 starts to discharge. When C808 discharges to a voltage lower than the ON voltage for Q806, Q806 turns OFF, allowing Q808 to turn ON as a result of the voltage across R815. The playback relay RY802 is then energized.

Route 4

When the reels start to rotate again, the square waves produced in the monostable multivibrator (Q705, Q706) are delivered to the base of Q807, and Q807 turns ON. The emitter output is locked to 0 V through D805 and Q808, since Q808 is ON. Q806 therefore cannot be turned ON. The TC-755 is thus placed in the playback mode.

8. FROM REWIND MODE TO PLAYBACK MODE

This can be explained similarly to the previous explanation of 7 ("FROM FAST FORWARD MODE TO PLAYBACK MODE"). Only the connection of R901 to the reel motor is different.



Switches

Ref. No.	Switch	Mode
S107, 108	rewind (rewind/OFF)	OFF
S109	stop (stop/OFF)	OFF
S110	playback (playback/OFF)	playback
S111	fast forward (fast forward/OFF)	OFF
S112, 114	REEL SIZE (110/117)	110
S113, 116	PAUSE (PAUSE/OFF)	OFF
S116, 117	tension arm R (taper/stop)	stop
S118, 119	tension arm L (taper/stop)	stop
S120	PM4 drive (ON/OFF)	ON
S121	PM3 drive (ON/OFF)	ON
S122	PM2 drive (ON/OFF)	ON
S601	TAPE SPEED (18 cm, 7 1/2 & cm, 3 1/4)	18 cm, 7 1/2

TO SCHEMATIC DIAGRAM OF AMP SECTION

• CP801 ~ 806 : 0.033μ + 120Ω / 500V
 • CP901 ~ 906 : 0.1μ + 120Ω / 500V

TC-755

Model _____

Date Dec. 1975

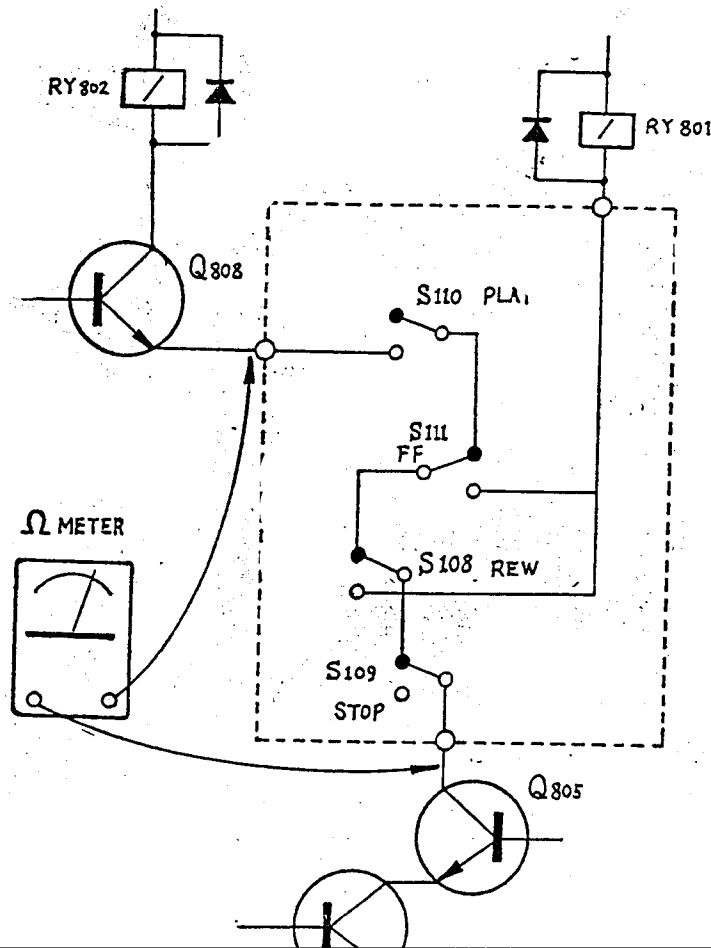
Ref. TCK-0113

Subject _____

INTERMITTENT TAPE TRANSPORT

INTERMITTENT STOP DURING REC/PLAY, POOR PINCH ROLLER ACTUATION

If the above problems are experienced check the resistance of micro switches as shown below. Replace the microswitch which shows a high resistance when the relevant control is operated.



TC-755

Model _____

Date Dec. 1975

Ref. _____

TCK-0121

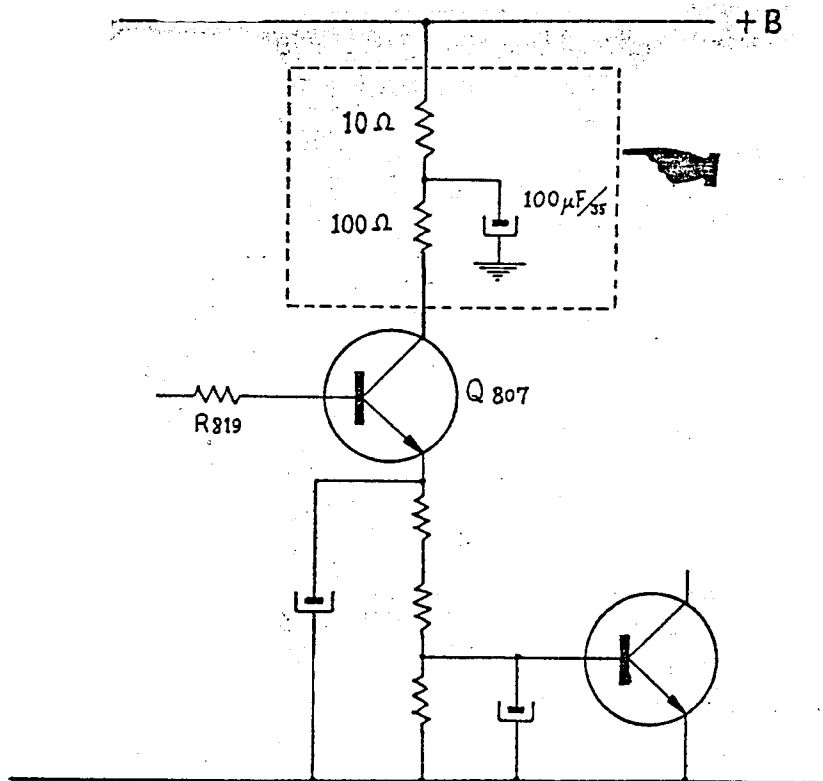
Subject _____

INTERFERENCE from the SERVO circuit

If the above model is situated very close to an FM Tuner receiving a very weak signal, some interference may be experienced from the servo of the tape recorder. To cure this problem please install the filter circuit shown below.

ADDITIONAL PARTS

- 1 10 $\frac{1}{4}$ resistor
- 1 100 uf 35V electrolytic capacitor



E Model
USA Model
AEP Model
UK Model

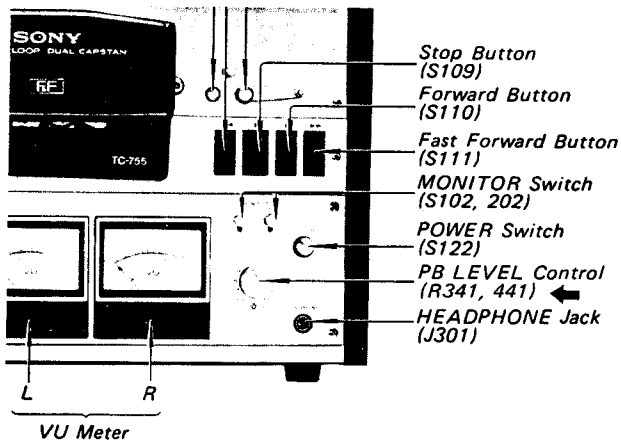
CORRECTION

No. 1
March, 1974

← indicates the corrected portions.

1. On Page 4.

1-2. EXTERNAL VIEW



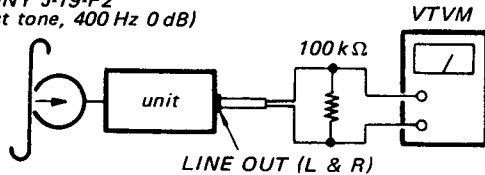
2. On Page 20

8. Playback Level Adjustment

Procedure;

Mode: playback

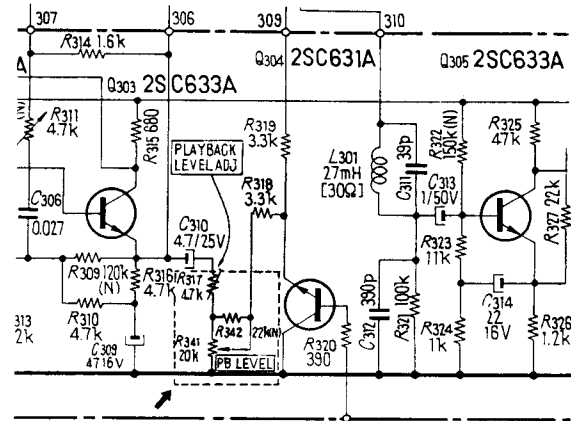
SONY J-19-F2
(1st tone, 400 Hz 0 dB)



Adjust	VTVM reading
R317 (L channel)	-5 dB (0.44 V)
R417 (R channel)	allowance: ±1dB

3. On Page 27

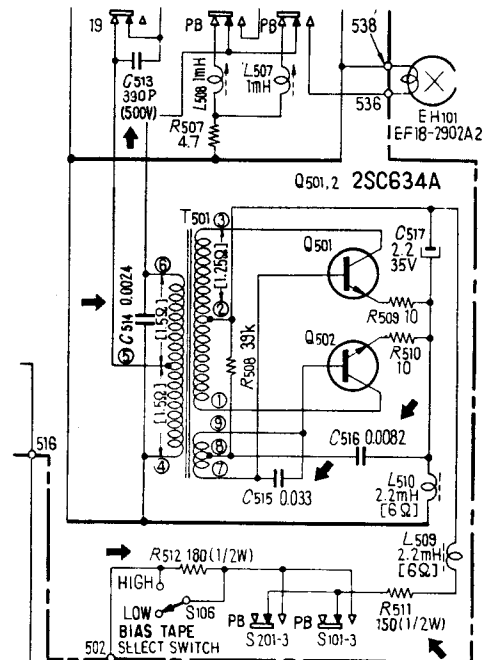
PLAYBACK AMP CIRCUIT BOARD (L-CHANNEL)



Note: Correct the schematic diagram of R-channel similarly to the above correction.

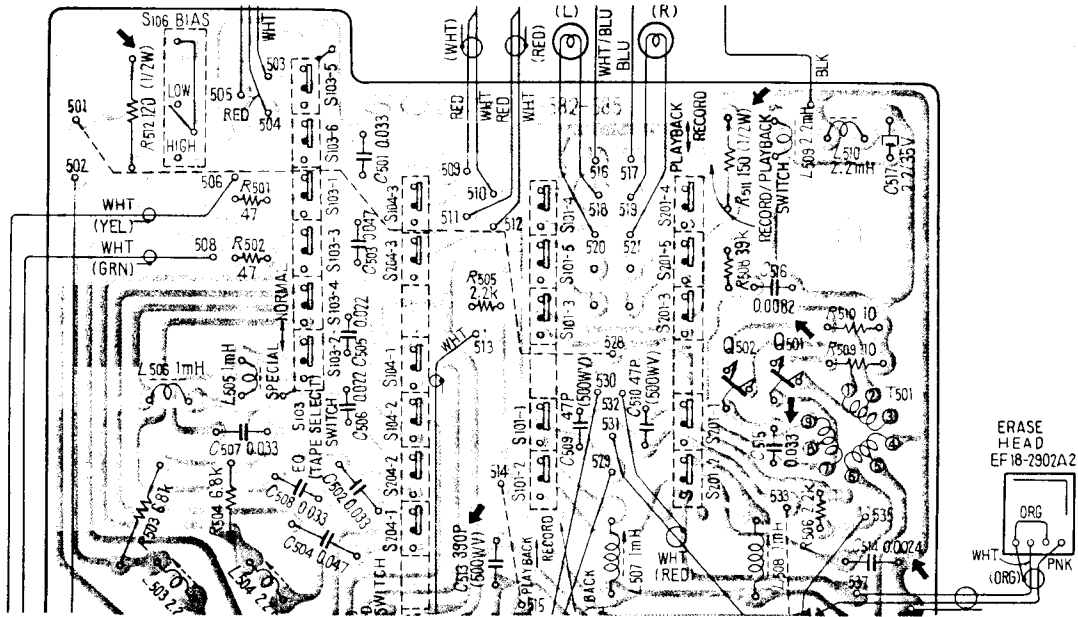
4. On Page 28

BIAS OSC CIRCUIT BOARD



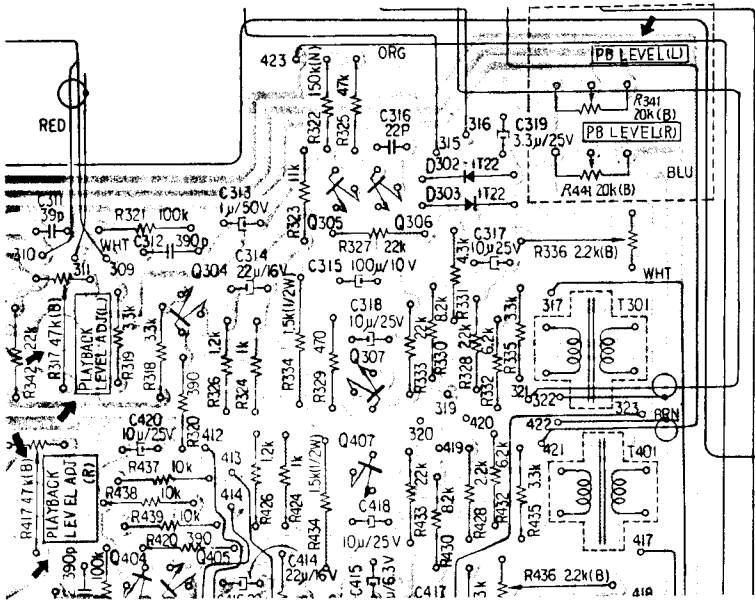
5. On Page 30

BIAS OSC CIRCUIT BOARD



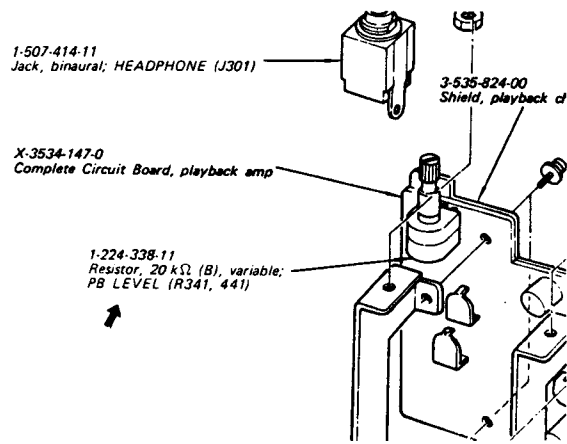
6. On Page 31

PLAYBACK AMP CIRCUIT BOARD



7. On Page 52

4-9. EXPLODED VIEW (9)



8. Corrected and newly added electrical parts

Ref. No.	Part No.	Description
C513	1-107-181-11	390 p 500 V silvered mica
C514	1-129-992-11	0.0024 630V polypropylene
C515	1-105-719-12	0.033 100V mylar
C516	1-105-712-12	0.0082 100V mylar
R317,417	1-222-776-00	47k (B), adjustable
R341,441	1-224-338-11	20k (B), variable; PB LEVEL
R342-442	1-244-705-09	22k, low noise

SONY CORPORATION

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