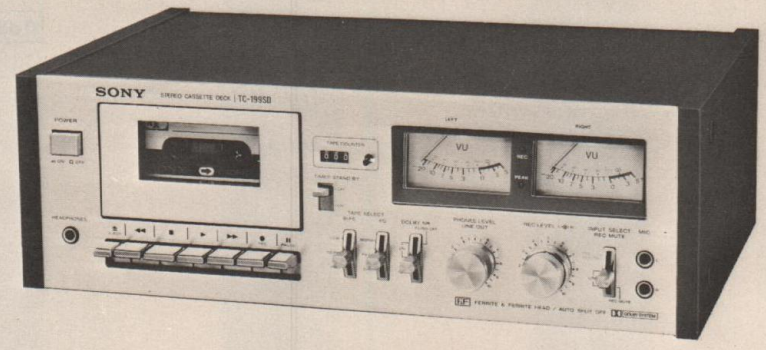
TC-199SD

AEP Model
E Model
Canadian Model



STEREO CASSETTE DECK

SPECIFICATIONS

Power Requirements: 120V ac, 60Hz (Canadian model)
110, 120, 220, 240V ac, 50/60Hz
(AEP, E model)

Power Consumption: 11W ac

Dimensions: Approx. 440 (w) x 145 (h) x 290 (d) mm
17 1/4 (w) x 5 3/4 (h) x 11 3/8 (d) inches
including projecting parts and controls

Weight: Approx. 7 kg, 15 lb 7 oz

Track: 4-track 2-channel stereo

Fast Forward Rewind Time: Approx. 90 seconds with Sony cassette C-60

Frequency Response:
DOLBY NR OFF
With Ferri-Chrome cassette
20–18,000Hz (NAB)
30–16,000Hz ±3dB (NAB)
30–16,000Hz (DIN)
With chromium dioxide cassette
20–17,000Hz (NAB)
30–15,000Hz ±3dB (NAB)
30–15,000Hz (DIN)
With regular cassette
20–15,000Hz (NAB)
30–13,000Hz (DIN)

Wow and Flutter: 0.08% (RMS) weighted NAB
±0.2% DIN

S/N Ratio:
DOLBY NR OFF
With Ferri-Chrome cassette
59dB at peak level (NAB)
57dB (DIN, 1975 rev.)
49dB (DIN, old)
With chromium dioxide cassette
55dB at peak level (NAB)
DOLBY NR ON
Improved by 5dB at 1kHz, 10dB above 5kHz

— Continued on page 2 —

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SONY®
SERVICE MANUAL

Total Harmonic Distortion: 1.3%

Record Bias Frequency: 105 kHz

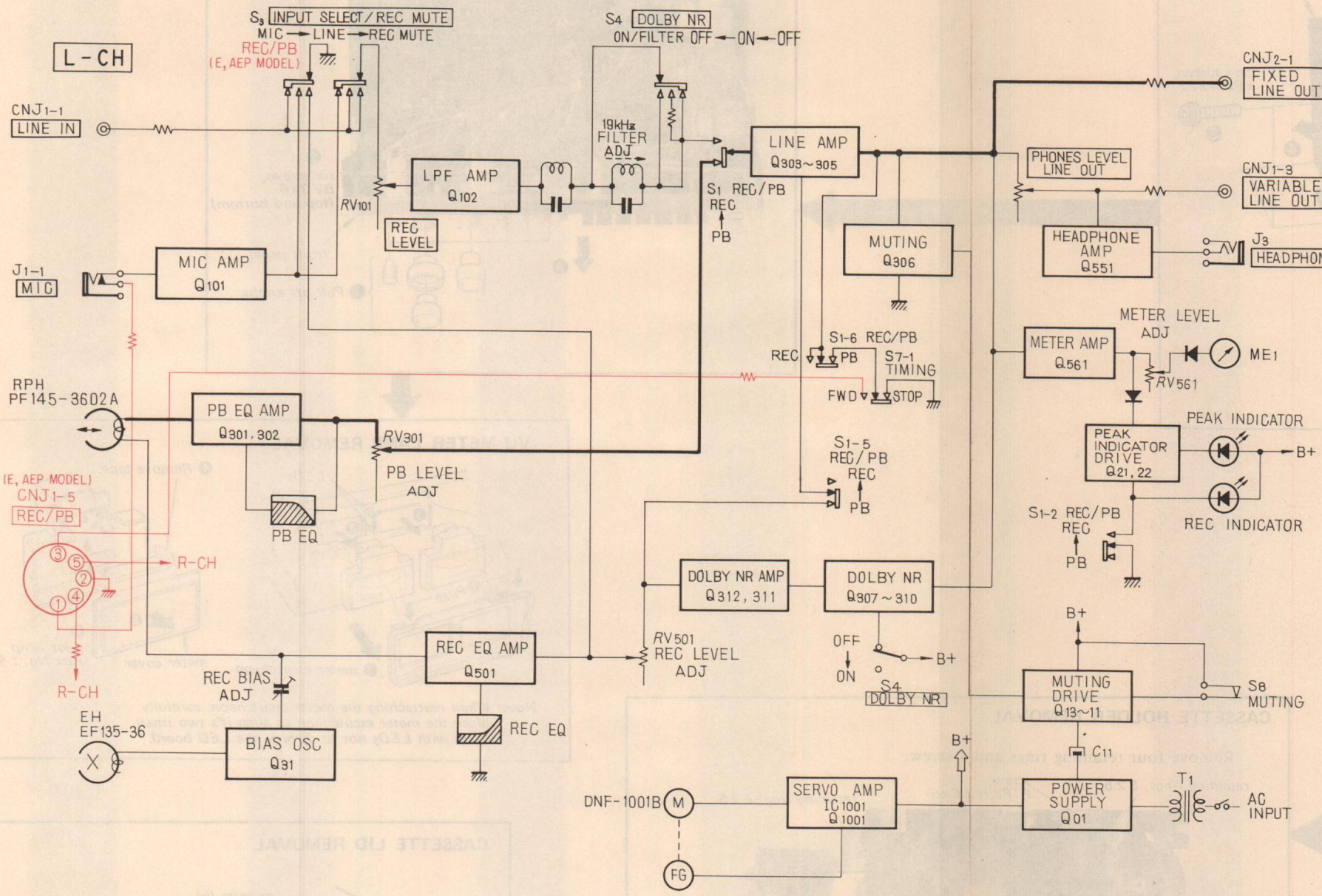
Inputs:
MIC (two phone jacks)
Sensitivity: 0.2 mV (–72 dB)
Impedance: for low-impedance microphone
LINE IN (two phono jacks)
Sensitivity: 0.06 V (–22 dB)
Impedance: 100 kΩ
REC/PB (connector)
Input impedance: less than 10 kΩ

Outputs:
VARIABLE LINE OUT (two phono jacks)
Output level: 0.775 V (0 dB)
at load impedance 100 kΩ
with LINE OUT level control at "10"
suitable load impedance more than 10 kΩ
FIXED LINE OUT (two phono jacks)
Output level: 0.435 V (–5 dB)
at load impedance 100 kΩ
suitable load impedance more than 10 kΩ
HEADPHONES (binaural jack)
for low-impedance headphones
REC/PB (connector)
Output impedance: less than 10 kΩ

0 dB = 0.775 V

SECTION 1
OUTLINE

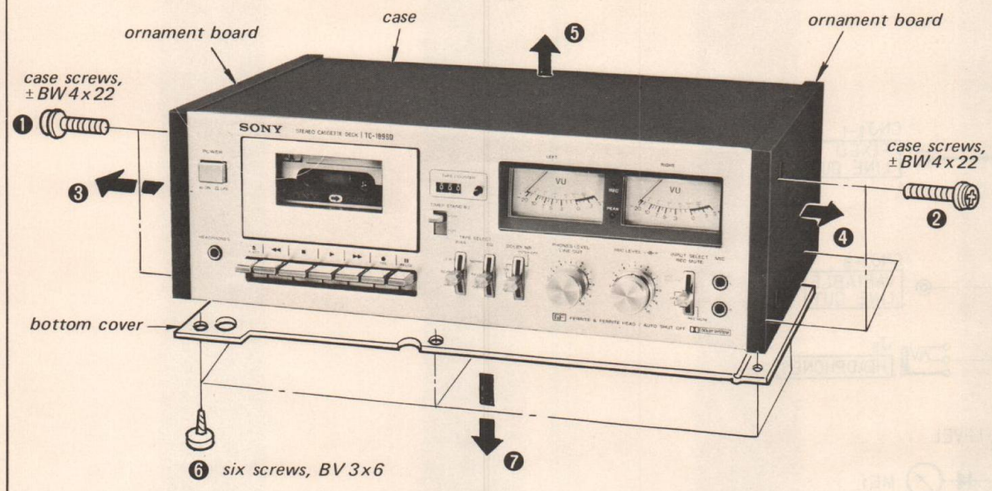
1-1. BLOCK DIAGRAM



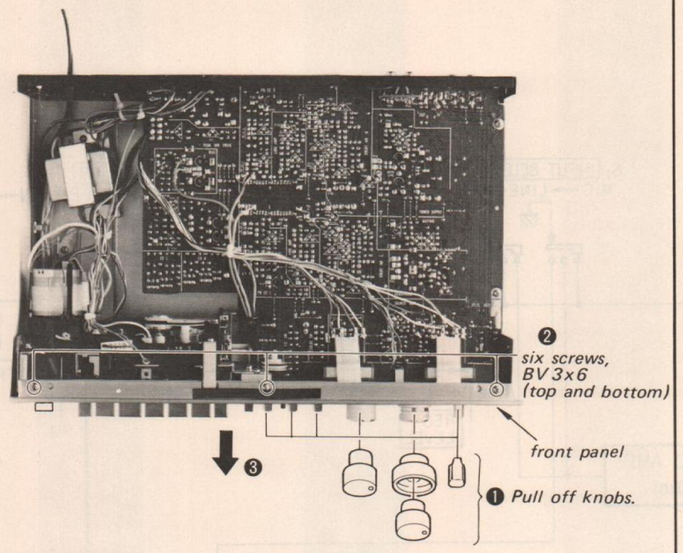
SECTION 2
DISASSEMBLY

CASE AND BOTTOM COVER REMOVAL

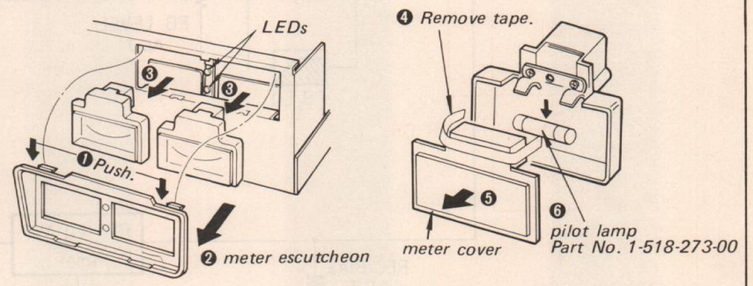
Case Removal: ❶, ❷, ❸, ❹, ❺
Bottom Cover Removal: ❻, ❼



FRONT PANEL REMOVAL

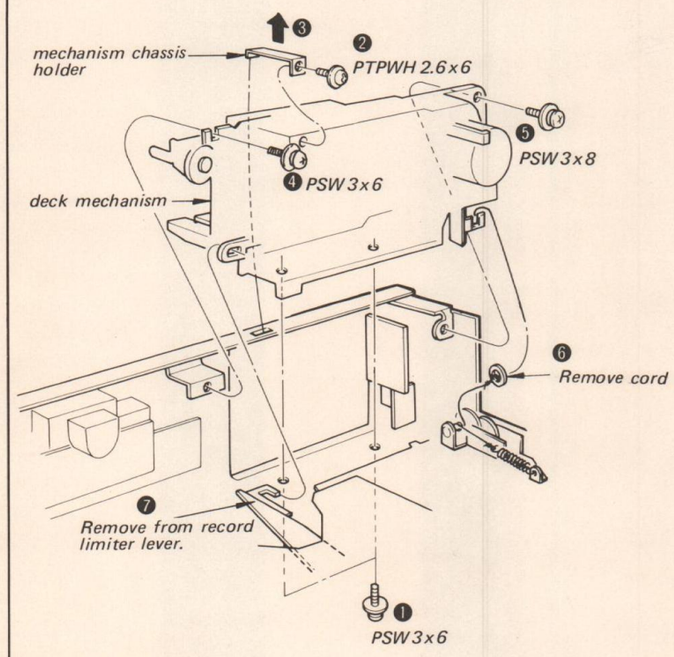


VU METER LAMP REMOVAL



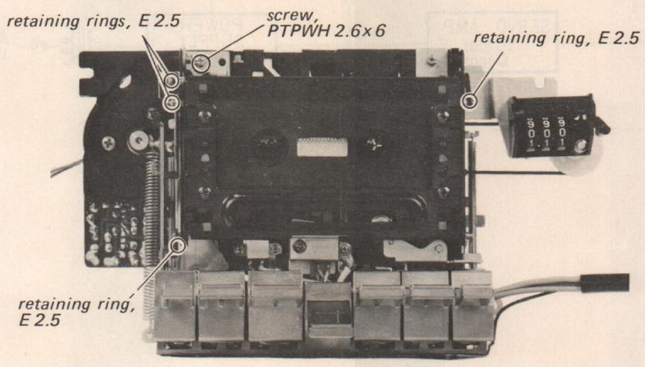
Note: *When reattaching the meter escutcheon, carefully place the meter escutcheon to align it's two small holes with LEDs not to damage the LED board.*

DECK MECHANISM REMOVAL

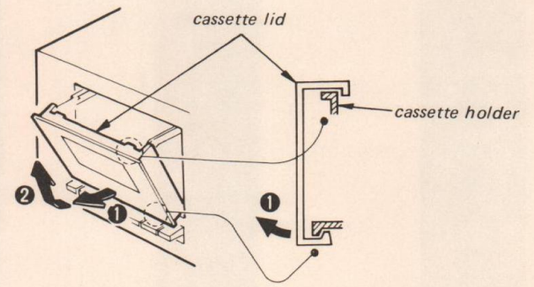


CASSETTE HOLDER REMOVAL

Remove four retaining rings and a screw.



CASSETTE LID REMOVAL



SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

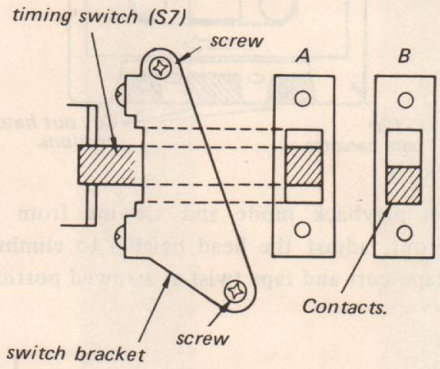
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply a suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Timing Switch (S7) Position Adjustment

– Stop Mode –

Loosen the screws and adjust position of the switch bracket so that it is placed as shown in Fig. B.

After the adjustment, tighten the screws.

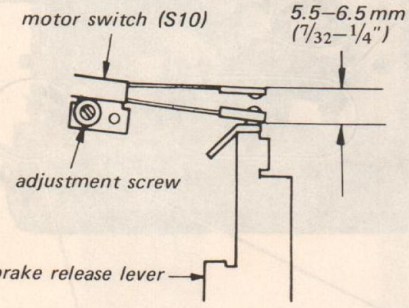


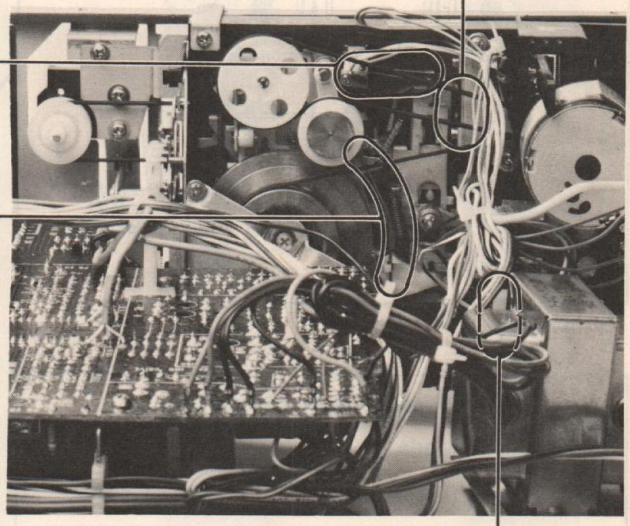
Motor Switch (S10) Position Adjustment

– Stop Mode –

Loosen adjustment screw and adjust the position of the switch for the specified clearance between the switch leaves.

After the adjustment, tighten and lock the screw with a suitable locking compound.



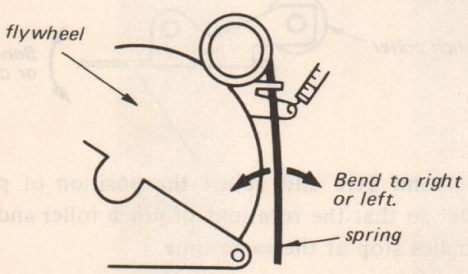


Fast Forward and Rewind Torque Adjustment

– Fast Forward and Rewind Modes –

Use type CQ-201A cassette torque meter.

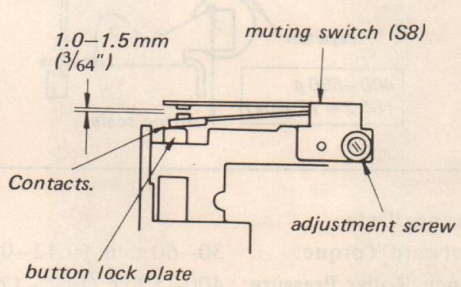
Bend the spring for the torque of 55–95 g·cm (0.8–1.3 oz·inch).



Muting Switch (S8) Position Adjustment

– Stop Mode –

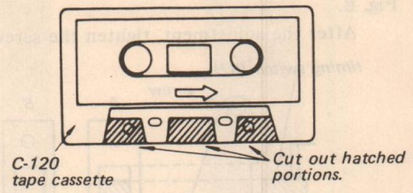
Loosen the adjustment screw and adjust the position of the switch for the specified clearance between the switch leaves.



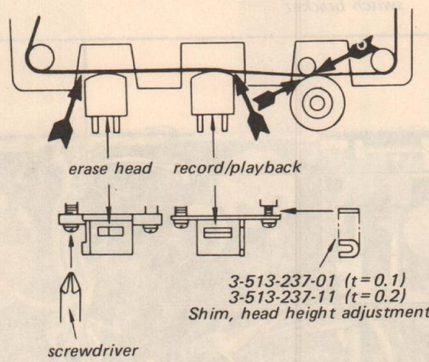
Tape Path Adjustment

– Playback Mode –

1. Make an adjustment cassette as shown below.



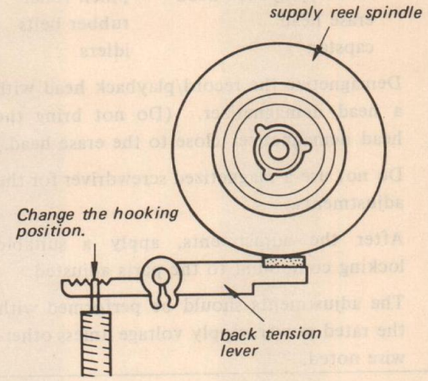
2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.



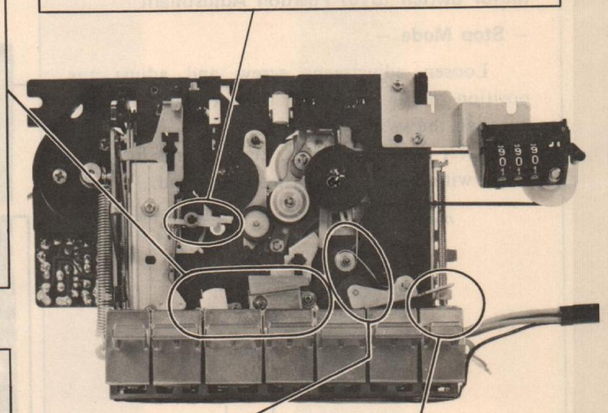
Playback Tension Torque Adjustment

– Playback Mode –

Use type CQ-101A or CQ-102A cassette torque meter.



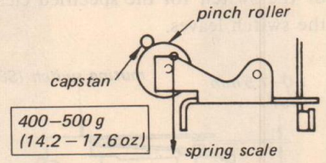
Specification: 2.5–3.5 g·cm (0.04 oz·inch)



Pinch Roller Pressure Adjustment

– Playback Mode –

1. Hook the pinch roller with a spring scale.
2. Pull the spring scale.
3. Slowly return the pinch roller and read the spring scale just when the pinch roller starts to rotate.



Reference Data

Forward Torque:	30–60 g.cm (0.42–0.8 oz.inch)
Pinch Roller Pressure:	400–500 g (14.2 – 17.6 oz)
Shut-off Time:	Within six seconds

PAUSE Timing Adjustment

– PAUSE Mode –

Bend here and adjust the position of pinch roller so that the rotations of pinch roller and reel spindles stop at the same time.

3-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual. The adjustments should be performed for both L-CH and R-CH.

Test Equipment/Tools Required:

audio oscillator (af osc)
VTVM
digital frequency counter
speed checker SONY LFM-30
oscilloscope
attenuator (600 Ω)
non-magnetic screwdriver
resistors ... 600 Ω (1/4 W), 10 kΩ (1/4 W), 100 kΩ (1/4 W)
blank tapes (completely erased with bulk eraser)
SONY CS-10 (HF), CS-20 (CrO_2), CS-30 (Fe-Cr)
BIAS and EQ switch settings in accordance with tape used are as follows.

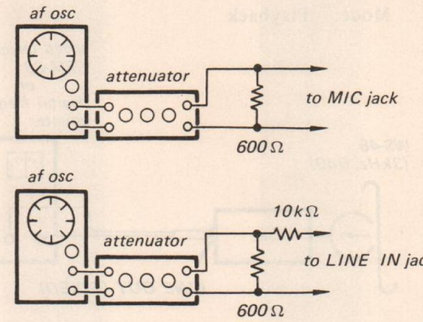
Tape	BIAS switch	EQ switch
CS-10	NORMAL	NORMAL
CS-20	HIGH	CrO_2
CS-30	NORMAL	Fe-Cr

SONY test tapes
P-4-A81S (6.3 kHz, – 10 dB)
P-4-A82 (10 kHz, – 10 dB)
P-4-L81 (333 Hz, 0 dB)
WS-48 (3 kHz, 0 dB)

Switches and controls should be set as follows unless otherwise specified.
DOLBY NR switch: OFF
LINE OUT control: MAX
EQ switch: NORMAL
BIAS switch: NORMAL

Test Equipment Connections:

Input side:



Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	MIC	LINE IN	REC/PB (AEP model)
source impedance	300 Ω	10 kΩ	82 kΩ
input level	0.77 mV (–60 dB)	0.25 V (–10 dB)	31 mV (–28 dB)

Standard Output Level

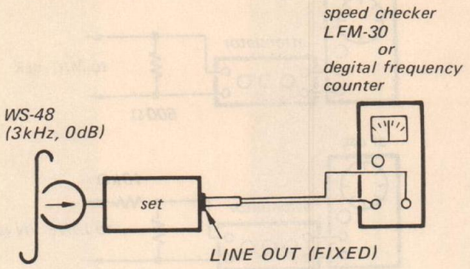
	LINE OUT	HEAD-PHONES	REC/PB (AEP model)
load impedance	100 kΩ	8 Ω	50 kΩ
output level	0.44 V (–5 dB)	62 mV* (–22 dB)	0.44 V (–5 dB)

* with PHONES LEVEL LINE OUT control at "10"

1. Tape Speed Adjustment

Procedure:

Mode: Playback



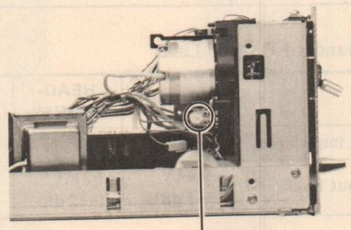
Adjust RV1001 to obtain the values specified below.

Specification:

Speed checker	Digital frequency counter
−0.7–+0.7%	2,980–3,020 Hz

Frequency difference between beginning and end of tape should be within 0.7% (20 Hz).

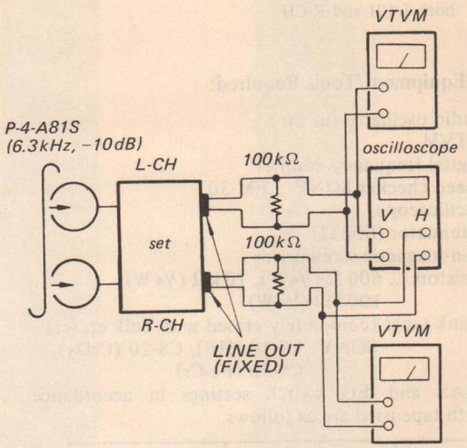
Adjustment Location:



2. Record/playback Head Azimuth Adjustment

Procedure:

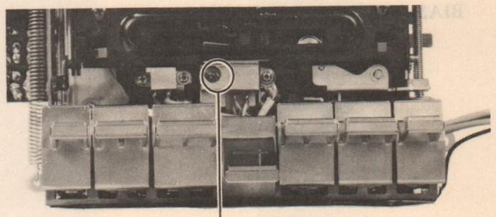
1. Mode: Playback



2.

Adjust	Oscilloscope patterns
azimuth adjustment screw to obtain the in-phase pattern around the highest VTVM readings.	[Allowance] *in-phase* ~ *90° out-of-phase* (L) (R) (L) (R) Level drop should be within 0.5 dB

Adjustment Location:

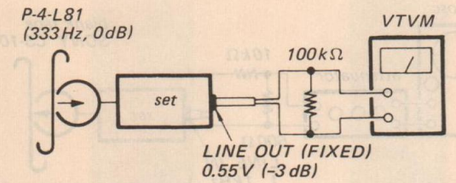


Note: This adjustment can be performed with the cassette lid (A) removed.

3. Playback Level Adjustment

Procedure:

1. Mode: Playback



Adjust RV301 (L-CH) and RV401 (R-CH) to obtain 0.55 V (−3 dB) VTVM reading.

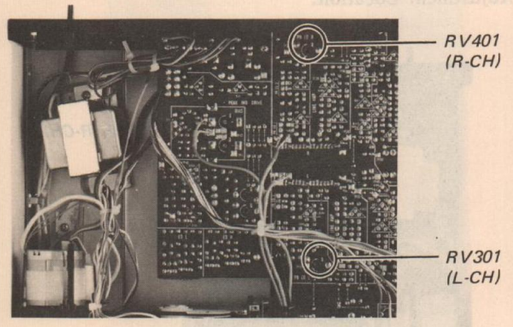
2. Assure that the LINE OUT level does not change when the mode is changed from playback to stop several times.

Specification:

LINE OUT level: 0.52–0.58 V (−2.5–−3.5 dB)

Level difference between channels: less than 0.5 dB

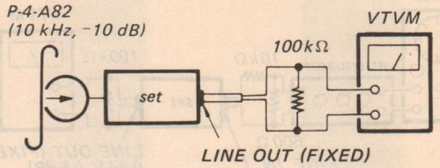
Adjustment Location:



4. Playback Equalizer Adjustment

Procedure:

Mode: Playback

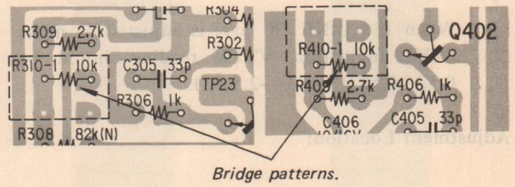


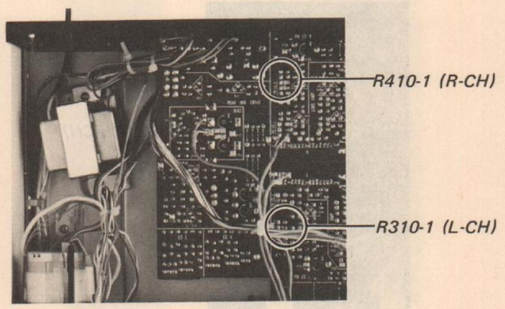
Adjust R310-1 (L-CH) and R410-1 (R-CH) for 0.12–0.25 V (−16–−10 dB) VTVM reading.

TAPE SELECT EQ switch:

Fe-Cr or CrO_2	0.069–0.14 V (−21–−15 dB)

Adjustment Location:

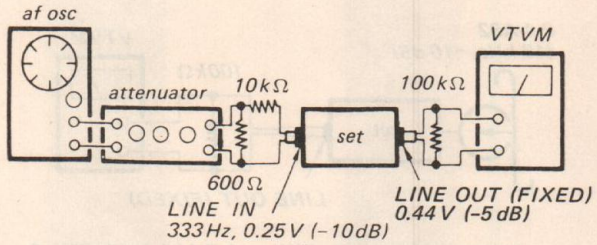




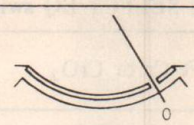
5. Level Meter Calibration

Procedure:

1. Mode: Standard record (See page 9.)



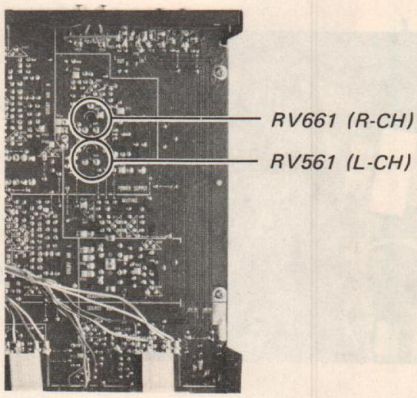
2.

Adjust	VU meter reading: 0 VU
RV561 (L-CH) RV661 (R-CH)	

Specification:

When the LINE IN level is adjusted to make 0 VU indication, VTVM reading should be 0.52–0.58 V (–3.5––2.5 dB).

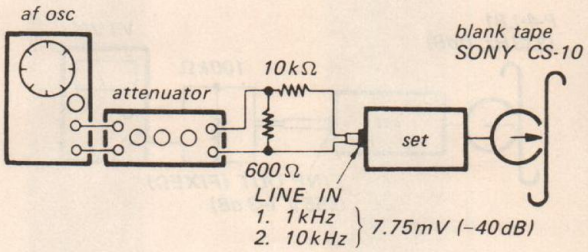
Adjustment Location:



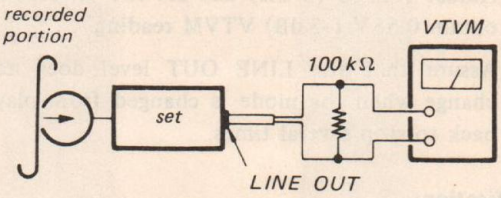
6. Record Bias Adjustment

Procedure:

1. Mode: Standard record (See page 9.)



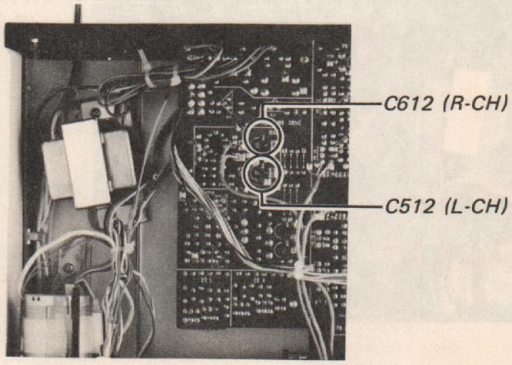
2. Mode: Playback



Adjust C512 (L-CH) and C612 (R-CH) to make 10 kHz and 1 kHz signal output levels equal.

Level difference between the two output levels: 0 dB ± 1 dB

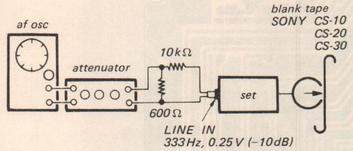
Adjustment Location:



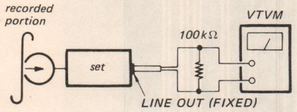
7. Record Level Adjustment

Procedure:

1. Mode: Standard record (See page 9.)



2. Mode: Playback



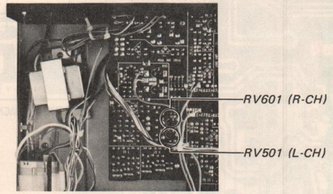
Adjust RV501 (L-CH) and RV601 (R-CH) to obtain 0.44 V (–5 dB) VTVM reading.

3. Change the blank tape to CS-20 and CS-30, and perform the same record and playback procedure. Measure LINE OUT level.

Specification:

SONY tape	LINE OUT level
CS-10	0.41–0.46 V (–5.5––4.5 dB)
CS-20 CS-30	0.37–0.52 V (–6.5––3.5 dB)

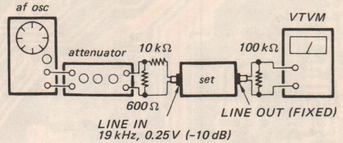
Adjustment Location:



8. 19 kHz Filter Adjustment

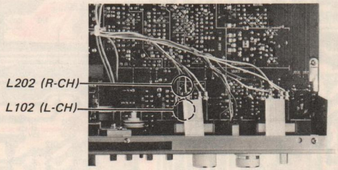
Procedure:

DOLBY NR switch: ON



Adjust L102 (L-CH) and L202 (R-CH) for 25 mV (–30 dB) or less VTVM reading.

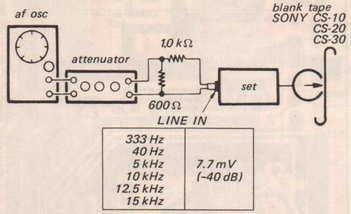
Adjustment Location:



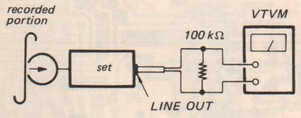
9. Playback Frequency Response Adjustment

Procedure:

1. Mode: Standard record (See page 9.)



2. Mode: Playback

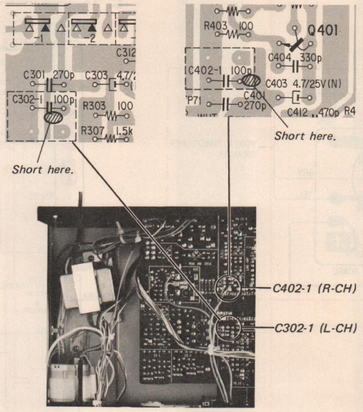


Measure LINE OUT level with 333 Hz output level as reference.

Tape \ f	40 Hz	5 kHz	10 kHz	12.5 kHz	15 kHz
	Level difference				
CS-10	±3 dB	±2 dB		±3 dB	
CS-20 CS-30		±2 dB			+4 dB –3 dB

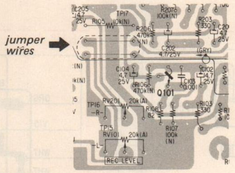
If the 15 kHz level is out of the specification, adjust by shorting patterns.

Adjustment Location:



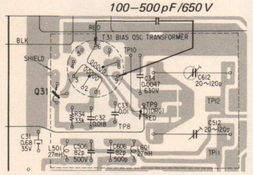
Correcting REC LEVEL Controls' Mechanical Error

To correct mechanical error of REC LEVEL controls, remove the jumper wires and install suitable resistors.



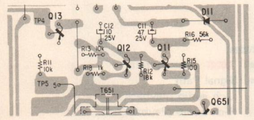
Rejecting AM Beat

To solve AM beat trouble at the record bias oscillator, connect a ceramic capacitor of 100–500 pF/650 V between pins 6 and 9 of the bias oscillator transformer.



Correcting Abnormal Operation of Muting

To correct abnormal muting operation due to power supply noise, decrease the value of R16 or C11.



SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAMS

– Conductor Side –

Replacement semiconductors
For replacement, use semiconductors except in ( ).

IC1001: CX065A

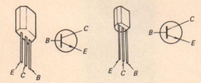
Q01: 2SC1760
Q1001: 2SC1760 (2SC1761)

Q11, 13 / Q312, 412: 2SA678 (2SA677)

Q12, 21, 22 / Q304–310 / Q404–410 / Q501, 551, 561 / Q601, 651, 661 / Q102, 202: 2SC634A (2SC633A)
Q301, 303, 311 / Q401, 403, 411: 2SC632A (2SC631A)

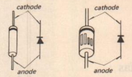
Q31: 2SC1475

Q101, 201 / Q302, 402: 2SC632A (2SC1361)

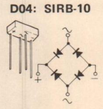


D01: EQB01-21 (EQA01-21R)
D11: EQB01-24 (EQA01-24R)

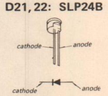
D02, 03: 10E2 (SIB01-02)



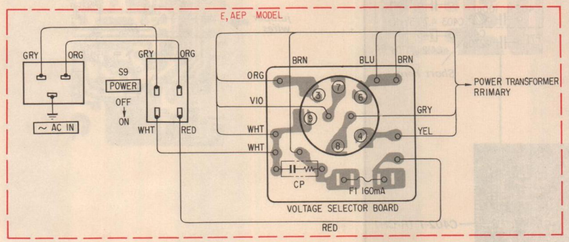
D04: SIRB-10



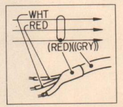
D21, 22: SLP24B

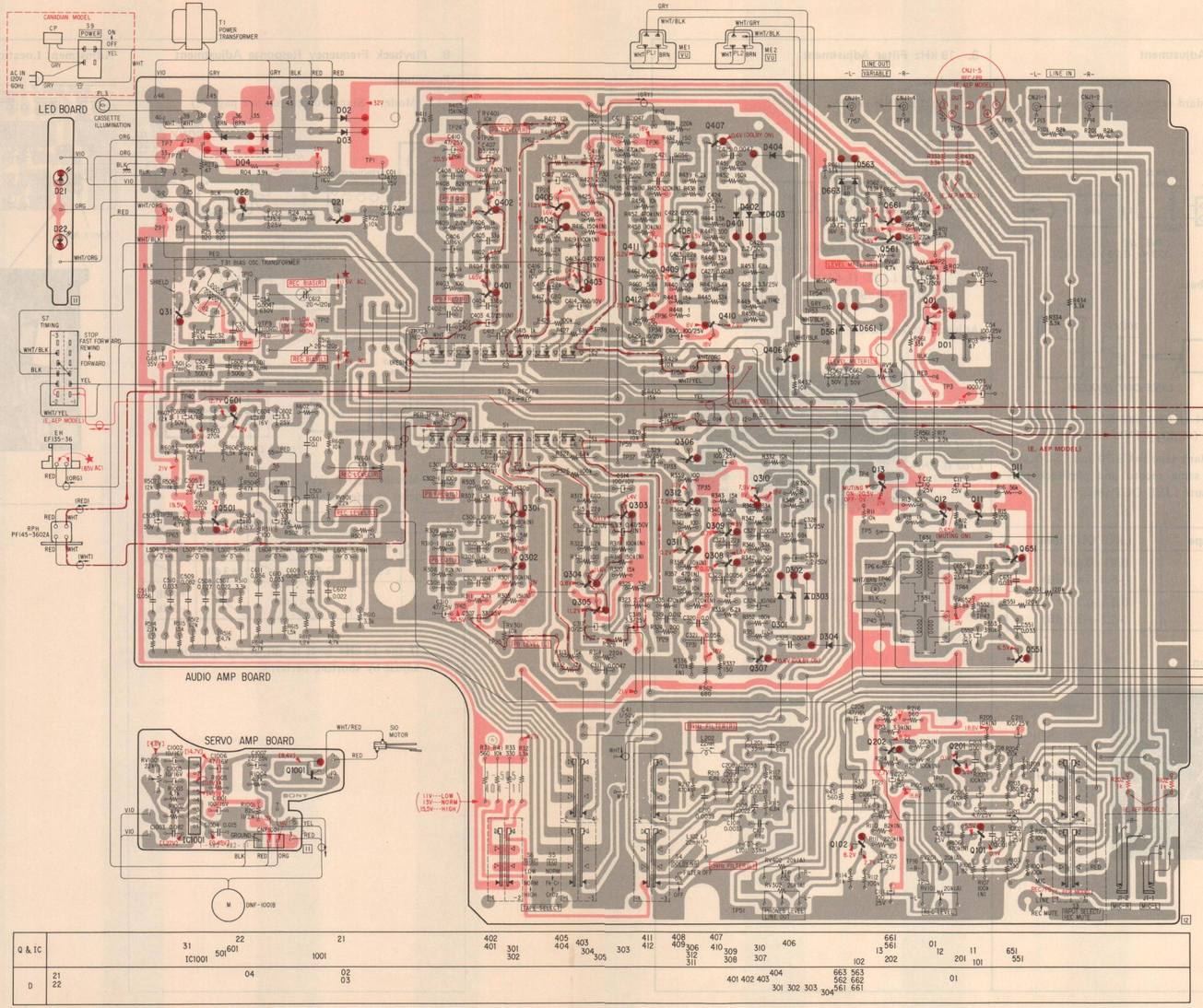


D301, 401: 1S1555 (1T22A)
D302, 402: 1T22A
D303, 403: 1S1555
D304, 404 / D563, 663: 1S1555 (1T40)
D561, 661: 1T22A (1T22)



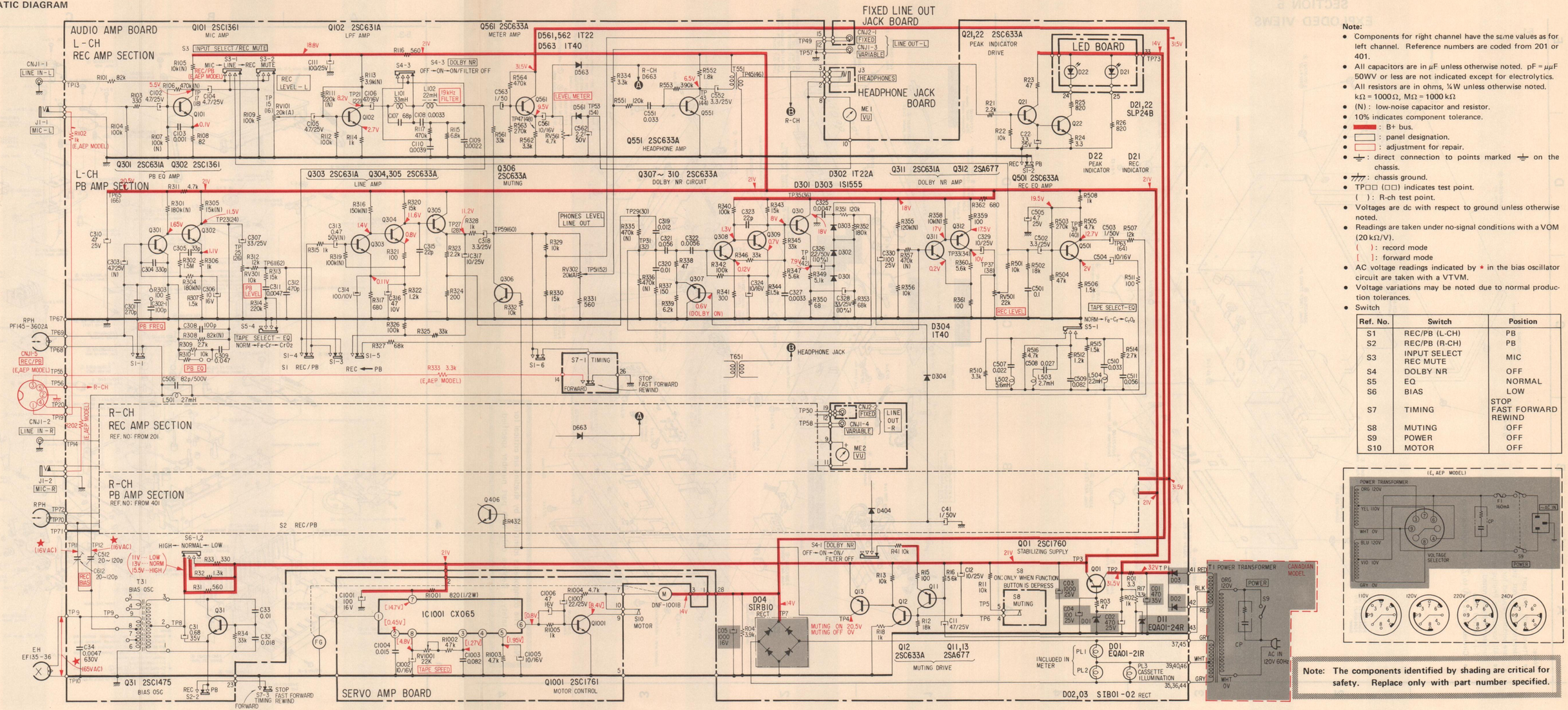
Note:
- ▭ : B+ pattern
- Signal Path
  L-ch audio playback: ▬▸
  R-ch audio playback: ▬▸
- Color code of sleeving over the end of the jacket.





Q & IC	31 IC1001	501	601	22	21	1001	402 401	301 302	405 404	403 304 305	303	411 412	408 409	306 312 311	407 410	309 308	310 307	406	102	661 561	13	202	01	12	201	11	101	651 551
D	21 22			04		02 03														401 402 403		404 301 302 303		663 562 561	563 662 304 661		01			

4-2. SCHEMATIC DIAGRAM



Note:

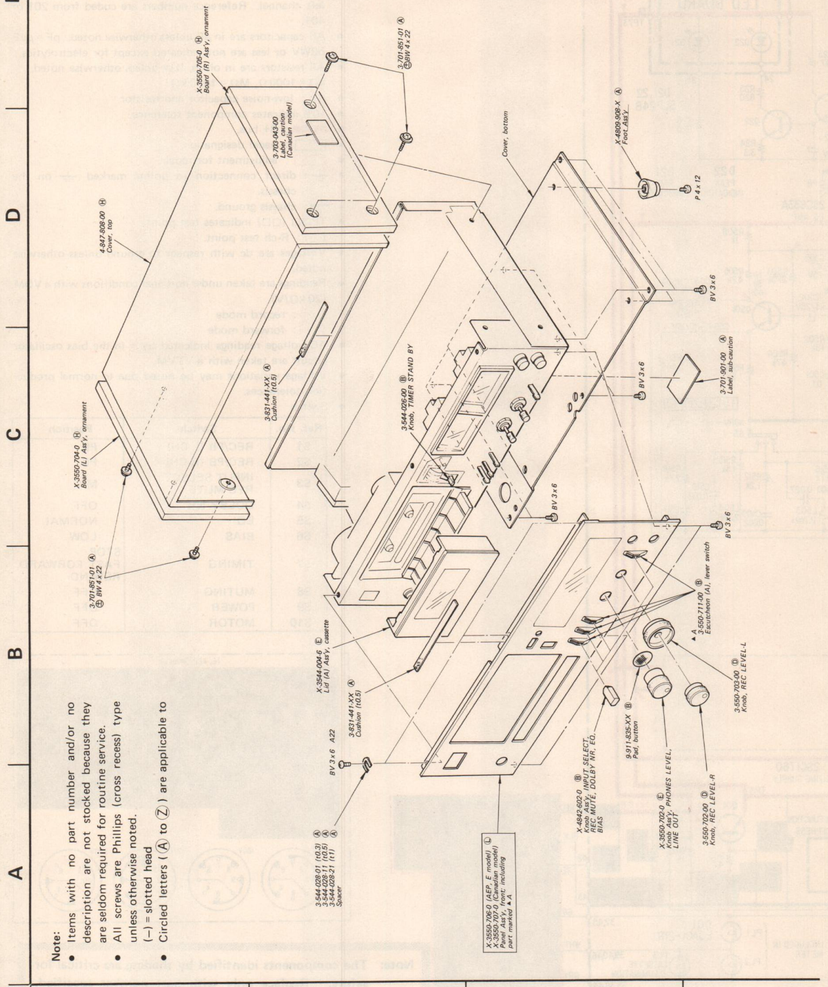
- Components for right channel have the same values as for left channel. Reference numbers are coded from 201 or 401.
- All capacitors are in μF unless otherwise noted. pF = μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ = 1000Ω, MΩ = 1000 kΩ
- (N) : low-noise capacitor and resistor.
- 10% indicates component tolerance.
- ▬ : B+ bus.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ⏚ : direct connection to points marked ⏚ on the chassis.
- ⏚ : chassis ground.
- TP□□ (□□) indicates test point.
  ( ) : R-ch test point.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (20 kΩ/V).
  ( ) : record mode
  [ ] : forward mode
- AC voltage readings indicated by ★ in the bias oscillator circuit are taken with a VTVM.
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S1	REC/PB (L-CH)	PB
S2	REC/PB (R-CH)	PB
S3	INPUT SELECT REC MUTE	MIC
S4	DOLBY NR	OFF
S5	EQ	NORMAL
S6	BIAS	LOW
S7	TIMING	STOP FAST FORWARD REWIND
S8	MUTING	OFF
S9	POWER	OFF
S10	MOTOR	OFF

Note: The components identified by shading are critical for safety. Replace only with part number specified.

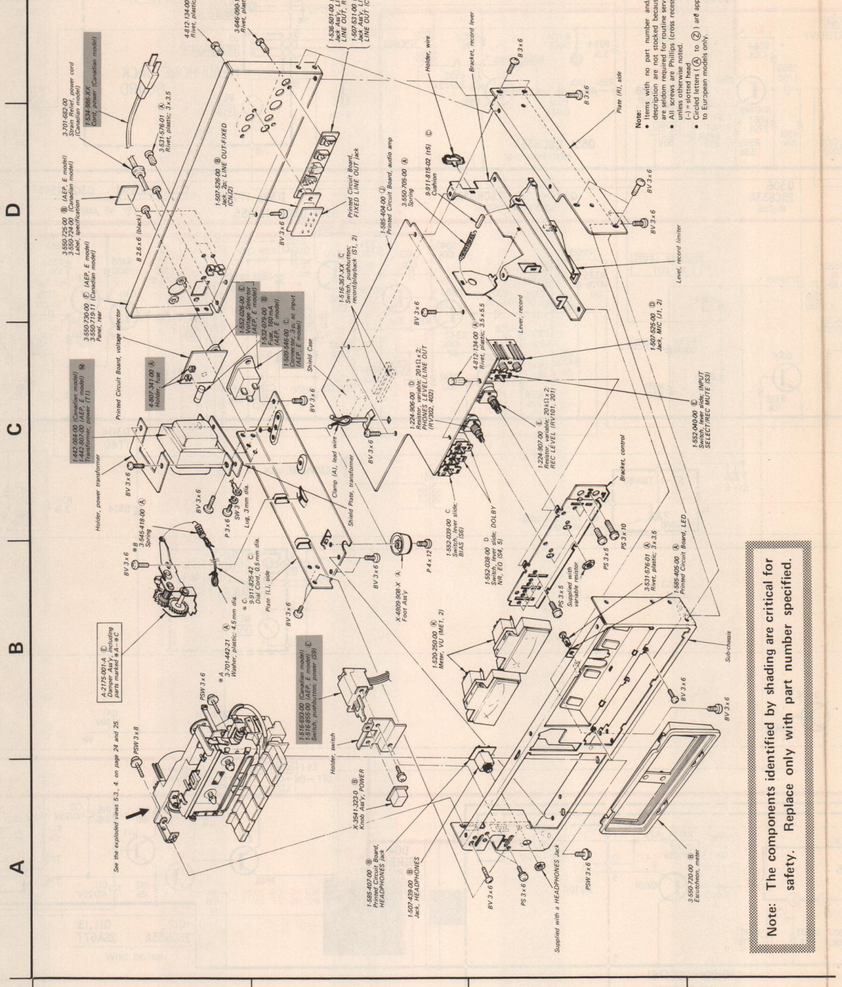
SECTION 5
EXPLODED VIEWS

5-1.

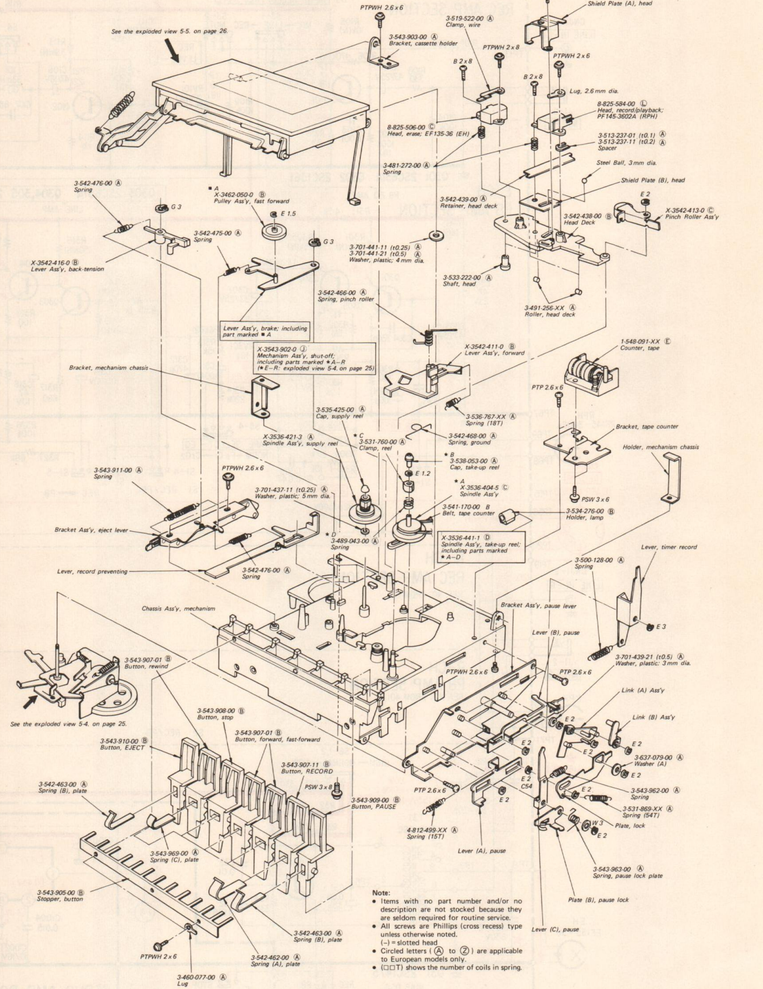


Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to

5-2.

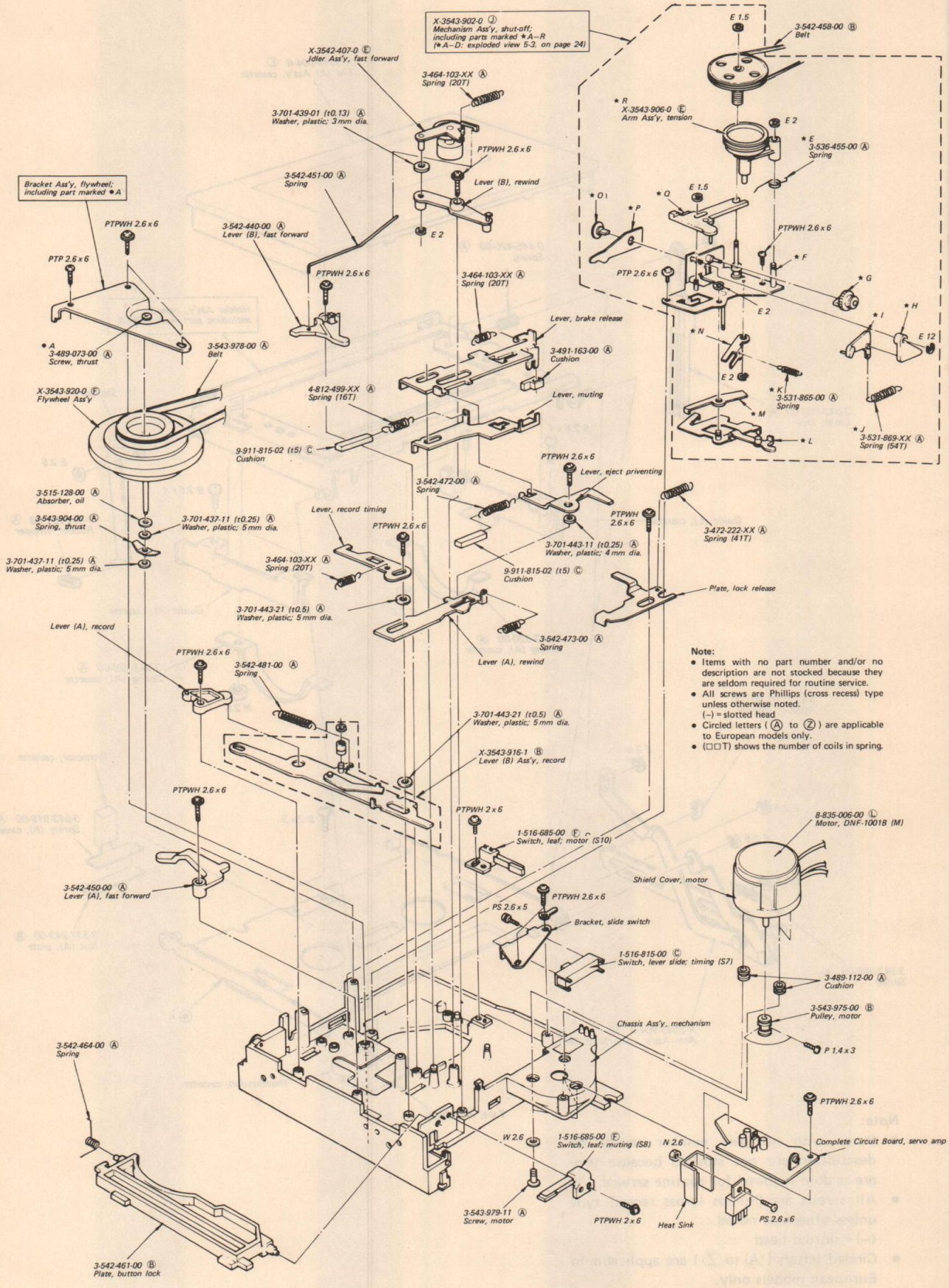


5-3.



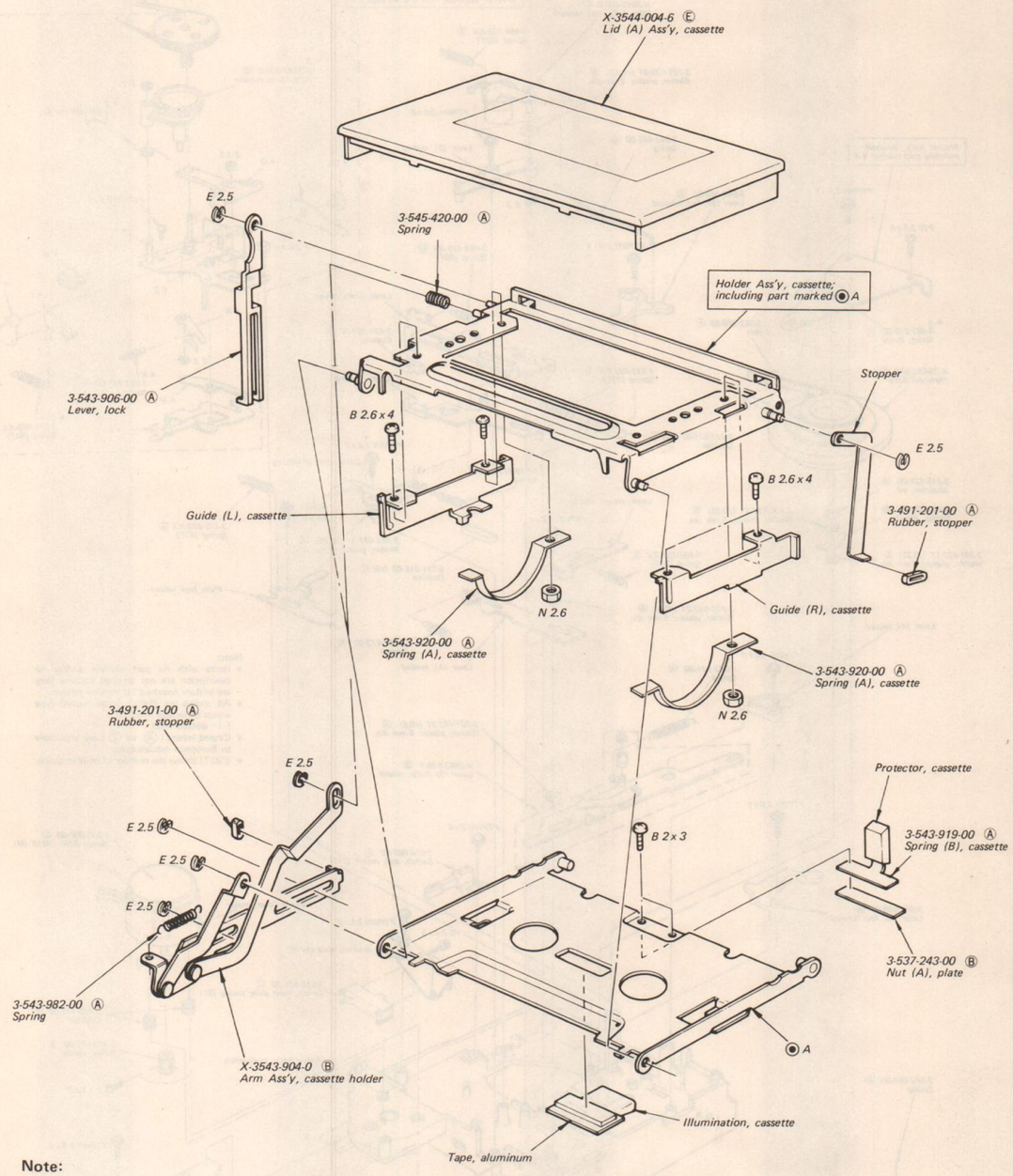
Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.
- □□T shows the number of coils in spring.

5-4.



Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.
- (□□T) shows the number of coils in spring.

5-5.



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

SECTION 6
ELECTRICAL PARTS LIST

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*	*Description*
		PRINTED CIRCUIT BOARDS
	1-585-405-00	Ⓐ LED
	1-585-406-00	Ⓑ FIXED LINE OUT jack
	1-585-407-00	Ⓑ HEADPHONES jack
		SEMICONDUCTORS
		Transistors
Q01		Ⓒ 2SC1760
⇒ Q11		Ⓒ 2SA678
⇒ Q12		Ⓑ 2SC634A
⇒ Q13		Ⓒ 2SA678
⇒ Q21,22		Ⓑ 2SC634A
Q31		Ⓒ 2SC1475
⇒ Q101,201 ⇒ Q102,202		Ⓑ 2SC632A
⇒ Q301–303 ⇒ Q401–403		Ⓑ 2SC632A
⇒ Q304–310 ⇒ Q404–410		Ⓑ 2SC634A
⇒ Q311,411		Ⓑ 2SC632A
⇒ Q312,412		Ⓒ 2SA678
⇒ Q501,601 ⇒ Q551,651 ⇒ Q561,661		Ⓑ 2SC634A
⇒ Q1001		Ⓒ 2SC1760
⇒ IC1001		Ⓕ CX-065A
		Diodes
⇒ D01		Ⓑ EQB01-21
⇒ D02,03		Ⓑ 10E2
D04		Ⓒ SIRB-10
⇒ D11		Ⓑ EQB01-24
D21,22		Ⓒ SLP24B
⇒ D301,401		Ⓑ 1S1555
D302,402		Ⓑ 1T22A
D303,403 ⇒ D304,404		Ⓑ 1S1555
⇒ D561,661		Ⓑ 1T22A
⇒ D563,663		Ⓑ 1S1555
		COILS
L101,201	1-407-212-XX	Ⓐ 33 mH, microinductor
L102,202	1-407-240-00	Ⓑ 22 mH, variable inductor
L501,601	1-407-211-XX	Ⓐ 27 mH, microinductor
L502,602	1-407-203-XX	Ⓐ 5.6 mH, microinductor
L503,603	1-407-199-XX	Ⓑ 2.7 mH, microinductor
L504,604	1-407-198-XX	Ⓐ 2.2 mH, microinductor
		TRANSFORMERS
T1	1-442-084-00 1-442-807-00	Power (Canadian model) Ⓜ Power (AEP, E model)
T31	1-433-132-11	Ⓑ Osc
T551,651	1-427-284-00	Ⓑ Headphone
		CAPACITORS

All capacitors are in μF and electrolytic unless otherwise noted.
50WV or less are not indicated except for electrolytics. pF = μμF

C01	1-121-361-11	Ⓑ 470	35V	
C02	1-121-733-11	Ⓑ 470	25V	
C03	1-123-066-11	Ⓑ 1000	25V	
C04	1-121-416-11	Ⓐ 100	25V	
C05	1-121-944-11	Ⓔ 1000	16V	
C11	1-121-410-11	Ⓑ 47	25V	
C12	1-121-398-11	Ⓐ 10	25V	
C22	1-121-392-11	Ⓐ 3.3	25V	
C31	1-131-214-11	Ⓑ 0.68	35V	tantalum
C32	1-108-358-12	Ⓐ 0.018		mylar
C33	1-108-239-12	Ⓐ 0.01		mylar
C34	1-129-710-11	Ⓑ 0.0047	630V	polyethylene
C41	1-121-391-11	Ⓐ 1	50V	

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: The components identified by shading are critical for safety. Replace only with part number specified.

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*		*Description*		
C102,202	1-121-395-11	Ⓐ	4.7	25V	
C103,203	1-101-918-11	Ⓐ	0.001		ceramic
C104,204 C105,205)	1-121-395-11	Ⓐ	4.7	25V	
C106,206	1-121-409-11	Ⓐ	47	16V	
C107,207	1-101-888-11	Ⓐ	68p		ceramic
C108,208	1-108-567-12	Ⓐ	0.0033		mylar
C109,209	1-108-563-12	Ⓑ	0.0022		mylar
C110,210	1-108-569-12	Ⓑ	0.0039		mylar
C111,211	1-121-416-11	Ⓐ	100	25V	
C301,401	1-102-111-11	Ⓐ	270p		ceramic
C302-1,402-1	1-102-106-11	Ⓐ	100p		ceramic
C303,403	1-121-915-11	Ⓐ	4.7	25V	
C304,404	1-102-820-11	Ⓐ	330		ceramic
C305,405	1-102-963-11	Ⓐ	33p		ceramic
C306,406	1-121-651-11	Ⓐ	10	16V	
C307,407	1-121-404-11	Ⓐ	33	25V	
C308,408	1-102-106-11	Ⓐ	100p		ceramic
C309,409	1-108-595-12	Ⓑ	0.047		mylar
C310,410	1-121-410-11	Ⓑ	47	25V	
C311,411	1-108-571-12	Ⓐ	0.0047		mylar
C312,412	1-102-114-11	Ⓐ	470p		ceramic
C313,413	1-121-911-11	Ⓑ	0.47	50V	
C314,414	1-121-414-11	Ⓐ	100	10V	
C315,415	1-102-959-11	Ⓐ	22p		ceramic
C316,416	1-121-352-11	Ⓐ	47	10V	
C317,417	1-121-398-11	Ⓐ	10	25V	
C318,418	1-121-392-11	Ⓐ	3.3	25V	
C319,419	1-108-581-12	Ⓑ	0.012		mylar
C320,420	1-108-579-12	Ⓐ	0.01		mylar
C321,421	1-108-597-12	Ⓑ	0.056		mylar
C322,422	1-108-573-12	Ⓐ	0.0056		mylar
C323,423	1-102-959-11	Ⓐ	22p		ceramic
C324,424	1-121-651-11	Ⓐ	10	16V	
C325,425	1-108-234-12	Ⓐ	0.0047		mylar
C326,426	1-121-986-11	Ⓐ	2.2	50V	
C327,427	1-108-567-12	Ⓐ	0.0033		mylar
C328,428	1-121-960-11	Ⓐ	3.3	25V	
C329,429	1-121-398-11	Ⓐ	10	25V	
C330,430	1-121-416-11	Ⓐ	100	25V	

Ref. No.	*Part No.*		*Description*		
C501,601	1-108-251-12	Ⓑ	0.1		mylar
C502,602	1-121-392-11	Ⓐ	3.3	25V	
C503,603	1-121-391-11	Ⓐ	1	50V	
C504,604	1-121-651-11	Ⓐ	10	16V	
C505,605	1-121-395-11	Ⓐ	4.7	25V	
C506,606	1-107-037-11	Ⓐ	82p	500V	silvered mica
C507,607	1-108-587-12	Ⓑ	0.022		mylar
C508,608	1-108-589-12	Ⓑ	0.027		mylar
C509,609	1-108-362-12	Ⓑ	0.082		mylar
C510,610	1-108-591-12	Ⓑ	0.033		mylar
C511,611	1-108-361-12	Ⓐ	0.056		mylar
C512,612	1-141-010-XX	Ⓑ	Trimmer		
C551,651	1-108-244-12	Ⓐ	0.033		mylar
C552,652	1-121-392-11	Ⓐ	3.3	25V	
C561,661	1-121-651-11	Ⓐ	10	16V	
C562,662	1-121-450-11	Ⓐ	2.2	50V	
C563,663	1-121-391-11	Ⓐ	1	50V	
C1001	1-121-415-11	Ⓐ	100	16V	
C1002	1-121-651-11	Ⓐ	10	16V	
C1003	1-108-550-12	Ⓐ	0.082		mylar
C1004	1-108-583-12	Ⓑ	0.015		mylar
C1005	1-121-651-11	Ⓐ	10	16V	
C1006	1-121-409-11	Ⓐ	47	16V	

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted.
Check schematic diagram for values.

RV101,201	1-224-907-00	Ⓔ	20 k × 2, variable; REC LEVEL
RV301,401	1-224-645-XX	Ⓑ	10 k, adjustable
RV302,402	1-224-906-00	Ⓓ	20 k × 2, variable; PHONES LEVEL/ LINE OUT
RV501,601	1-224-646-XX	Ⓑ	22 k, adjustable
RV561,661	1-224-644-XX	Ⓑ	4.7 k, adjustable
RV1001	1-224-635-11	Ⓑ	22 k, adjustable

Note: Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*		*Description*
			SWITCHES
S1,2	1-516-367-XX	Ⓒ	Pushbutton, REC/PB
S3	1-552-040-00	Ⓔ	Lever Slide, INPUT SELECT/ REC MUTE
S4,5	1-552-038-00	Ⓓ	Lever Slide, DOLBY NR, EQ
S6	1-552-039-00	Ⓒ	Lever Slide, BIAS
S7	1-516-815-00	Ⓒ	Lever Slide, timing
S8	1-516-685-00	Ⓕ	Leaf, muting
S9	1-516-693-00		Pushbutton, POWER (Canadian model)
	1-516-855-00	Ⓔ	Pushbutton, POWER (AEP, E model)
S10	1-516-685-00	Ⓕ	Leaf, motor
			JACKS
J1,2	1-507-525-00	Ⓓ	MIC
J3	1-507-439-00	Ⓑ	HEADPHONES
CNJ1	1-536-501-00	Ⓓ	Jack Ass'y, LINE IN, LINE OUT-VARIABLE REC/PB (AEP, E model)
	1-507-531-00		Jack Ass'y, LINE IN, LINE OUT-VARIABLE (Canadian model)
CNJ2	1-507-526-00	Ⓑ	2p, LINE OUT-FIXED
			MISCELLANEOUS
CP	1-231-057-31	Ⓑ	Encapsulated Component (AEP, E model)
	1-231-341-00		Encapsulated Component (Canadian model)
EH	8-825-506-00	Ⓒ	Head, erase; EF135-36
F1	1-532-079-00	Ⓐ	Fuse, 160 mA (AEP, E model)
M	8-835-006-00	Ⓛ	Motor, DNF-1001B
ME1,2	1-520-250-00	Ⓚ	Meter, VU
PL1,2	1-518-273-00	Ⓑ	Lamp, VU meter
PL3	1-518-115-XX	Ⓑ	Lamp, 6V 35 mA
RPH	8-825-584-00	Ⓛ	Head, record/playback; PF145-3602A

Ref. No.	*Part No.*		*Description*
	1-509-546-00	Ⓒ	Connector, 3-p; ac input (AEP, E model)
	1-534-986-XX		Cord, power (Canadian model)
	1-552-026-00	Ⓔ	Voltage Selector (AEP, E model)

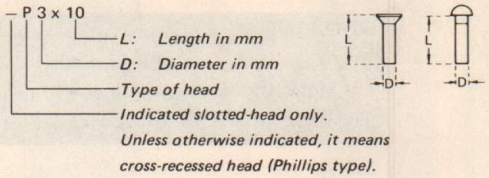
ACCESSORIES & PACKING MATERIALS

Part No.		*Description*
X-3544-013-2	Ⓑ	Cushion Ass'y
X-3701-018-2	Ⓐ	Tips Ass'y, head cleaning
1-534-049-31	Ⓓ	Cord, connection; RK-74H
1-534-754-00		Cord, power; parallel-blade plug (E model)
1-551-216-00		Cord, power; euro-plug (E model)
3-429-126-00	Ⓑ	Bag, plastic
3-550-630-00	Ⓐ	Bag, plastic
3-550-731-00	Ⓔ	Carton (AEP model)
3-550-732-00		Carton (Canadian, E model)
3-550-733-00	Ⓑ	Spacer (AEP model)
3-550-734-00		Holder, power cord; euro-plug (E model)
3-770-227-11	Ⓕ	Manual Instruction (AEP model)
3-770-227-31 3-794-063-31)		Manual Instruction (Canadian model)

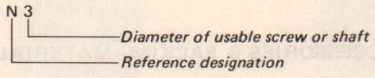
Note: The components identified by shading are critical for safety. Replace only with part number specified.

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	