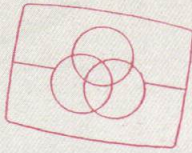


TC-K22



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US Model
Canadian Model
AEP Model
UK Model
E Model



(US model shown)

'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories. Noise reduction system manufactured under license from Dolby Laboratories.

STEREO CASSETTE-DECK

SPECIFICATIONS

GENERAL

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

Power Consumption: 10 W (US, Canadian model)
12 W (AEP, UK, E model)

Dimensions: US, AEP, UK, E model:
Approx. 430 (w) x 105 (h) x 290 (d) mm
17 (w) x 4¼ (h) x 11½ (d) inches
Canadian model:
Approx. 460 (w) x 105 (h) x 290 (d) mm
18½ (w) x 4¼ (h) x 11½ (d) inches
including projecting parts and controls

Weight: US, AEP, UK, E model:
Approx. 4.5 kg, 9 lb 15 oz
Canadian model:
Approx. 5 kg, 11 lb 1 oz


TAPE RECORDER SECTION

Recording System: 4-track 2-channel stereo

Fast Forward and Rewind Time: Approx. 90 sec. (with C-60 cassette)

— continued on page 2 —

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS 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.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE  SUR LES DIAGRAMMES SCHEMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Tape Transport Mechanism Type	MDS-18S1 (US, AEP, UK, E model) MDS-18S6 (Canadian model)
-------------------------------	--

SONY®

SERVICE MANUAL

- Frequency Response:** DOLBY NR OFF
- With Type IV cassette (Sony METALLIC)
 - 20 – 16,000 Hz
 - 30 – 15,000 Hz (± 3 dB)
 - 30 – 12,500 Hz (± 3 dB, 0 VU recording)
 - 30 – 15,000 Hz (DIN)
 - With Type III cassette (Sony Fe-Cr)
 - 20 – 16,000 Hz
 - 30 – 15,000 Hz (± 3 dB)
 - 30 – 15,000 Hz (DIN)
 - With Type II cassette (Sony EHF)
 - 20 – 15,000 Hz
 - 30 – 14,000 Hz (± 3 dB)
 - 30 – 14,000 Hz (DIN)
 - With Type I cassette (Sony BHF)
 - 20 – 14,000 Hz
 - 30 – 12,500 Hz (± 3 dB)
 - 30 – 12,500 Hz (DIN)

Total Harmonic Distortion: 1.0 % (With Sony Fe-Cr and METALLIC cassettes)

Bias Frequency: 105 kHz

Inputs: MIC (two phone jacks) sensitivity 0.25 mV (-70 dB) for a low-impedance microphone
 LINE IN (two phono jacks) sensitivity 77.5 mV (-20 dB) input impedance 50 k Ω
 REC/PB (connector) (AEP, UK, E model) input impedance less than 10 k Ω

Outputs: LINE OUT (two phono jacks) output level 0.435 V (-5 dB) at load impedance 50 k Ω suitable load impedance more than 10 k Ω
 HEADPHONES (binaural jack) output level 31 mV (-28 dB) at load impedance 8 Ω
 REC/PB (connector) (AEP, UK, E model) output impedance less than 10 k Ω

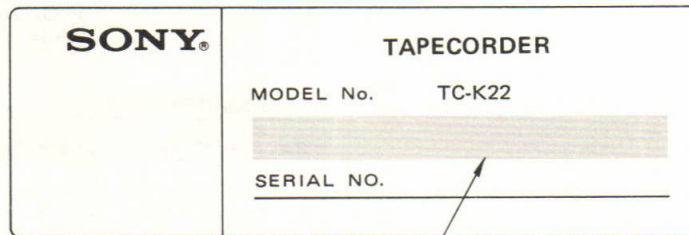
Wow and Flutter: 0.07 % WRMS (US, Canadian model)
 0.07 % WRMS (NAB) } (AEP, UK, E model)
 ± 0.2 % (DIN)

- S/N Ratio:** DOLBY NR OFF
 US, Canadian model:
- With Type IV cassette (Sony METALLIC) 58 dB at peak level
 - With Type III cassette (Sony Fe-Cr) 58 dB at peak level
 - With Type II cassette (Sony EHF) 56 dB at peak level
- AEP, UK, E model:
- With Type IV cassette (Sony METALLIC) 58 dB at peak level (NAB) 56 dB (DIN, 1975 rev.)
 - With Type III cassette (Sony Fe-Cr) 58 dB at peak level (NAB) 56 dB (DIN, 1975 rev.)
 - With Type II cassette (Sony CD- α) 55 dB at peak level (NAB)
- DOLBY NR ON
 Improved by 5 dB at 1 kHz,
 10 dB above 5 kHz

0 dB = 0.775 V

MODEL IDENTIFICATION

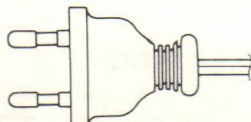
– Specification Label –



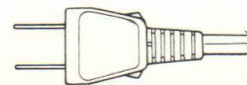
- US, Canadian model: AC 120 V ~ 60 Hz 10 W
- AEP model: AC 220 V ~ 50/60 Hz 12 W
- UK model: AC 240 V ~ 50/60 Hz 12 W
- E model: AC 110, 120, 220, 240 V ~ 50/60 Hz 12 W

– Power Cord –

E model: euro-plug 1-551-530-00

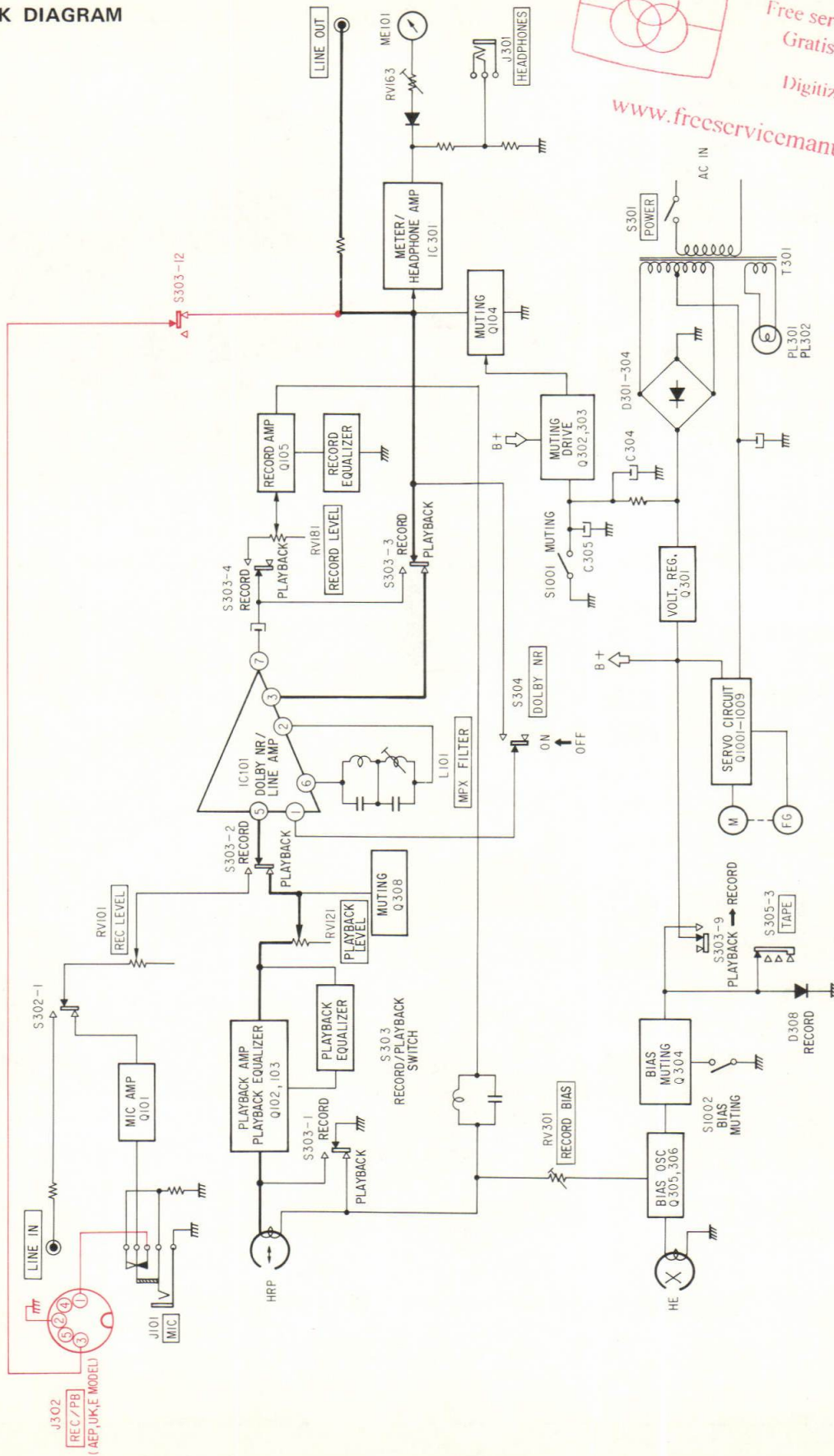


E model: parallel-blade plug 1-551-473-31



SECTION 1 OUTLINE

1-1. BLOCK DIAGRAM

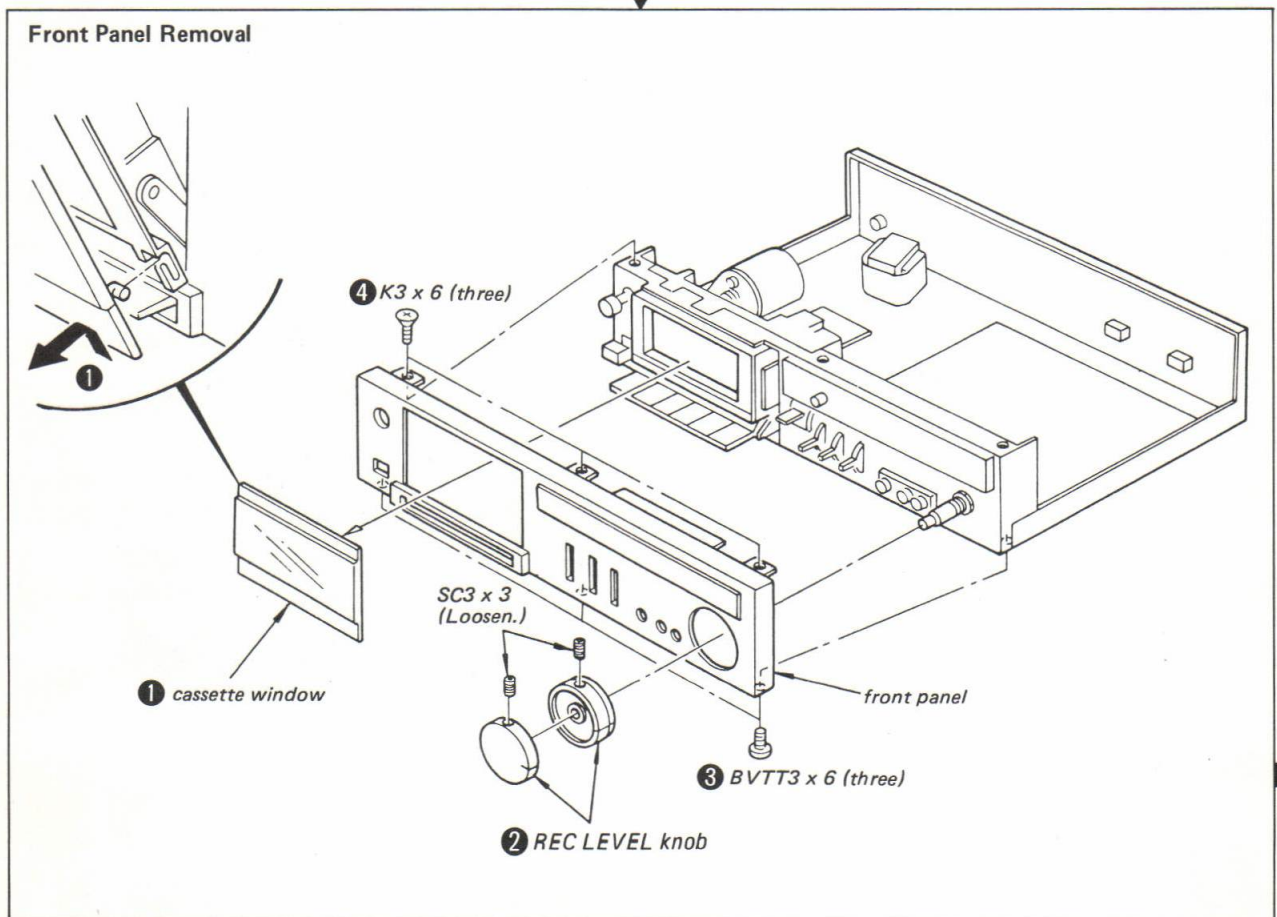
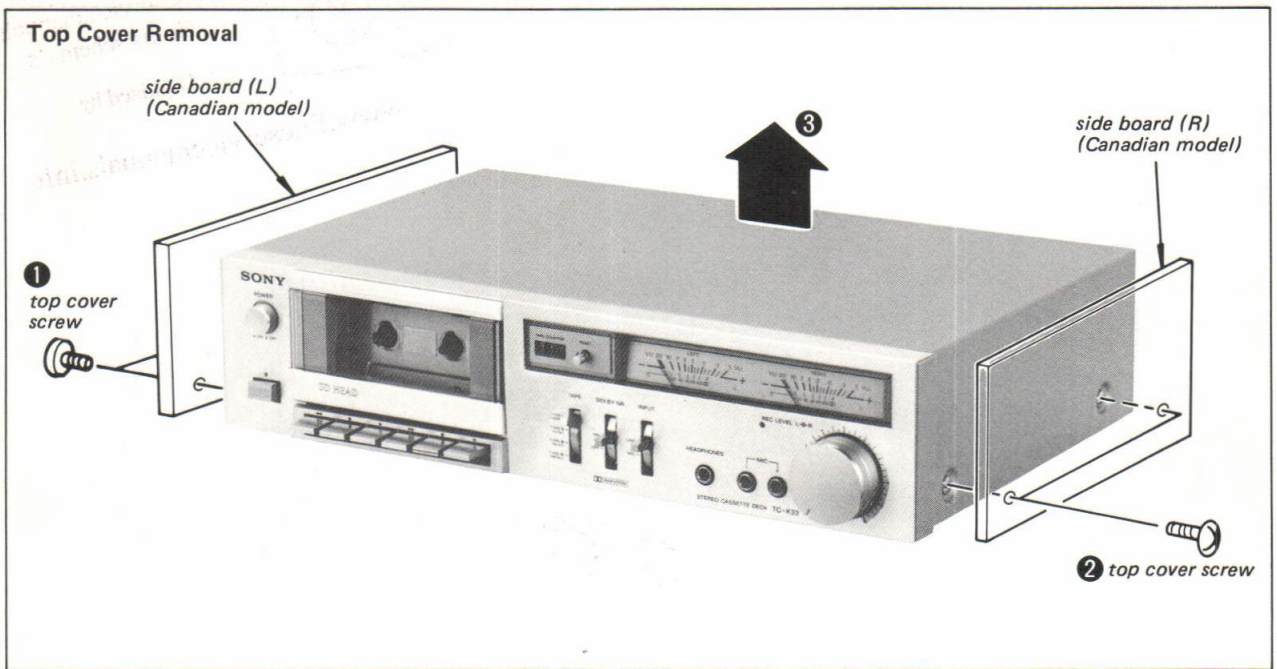


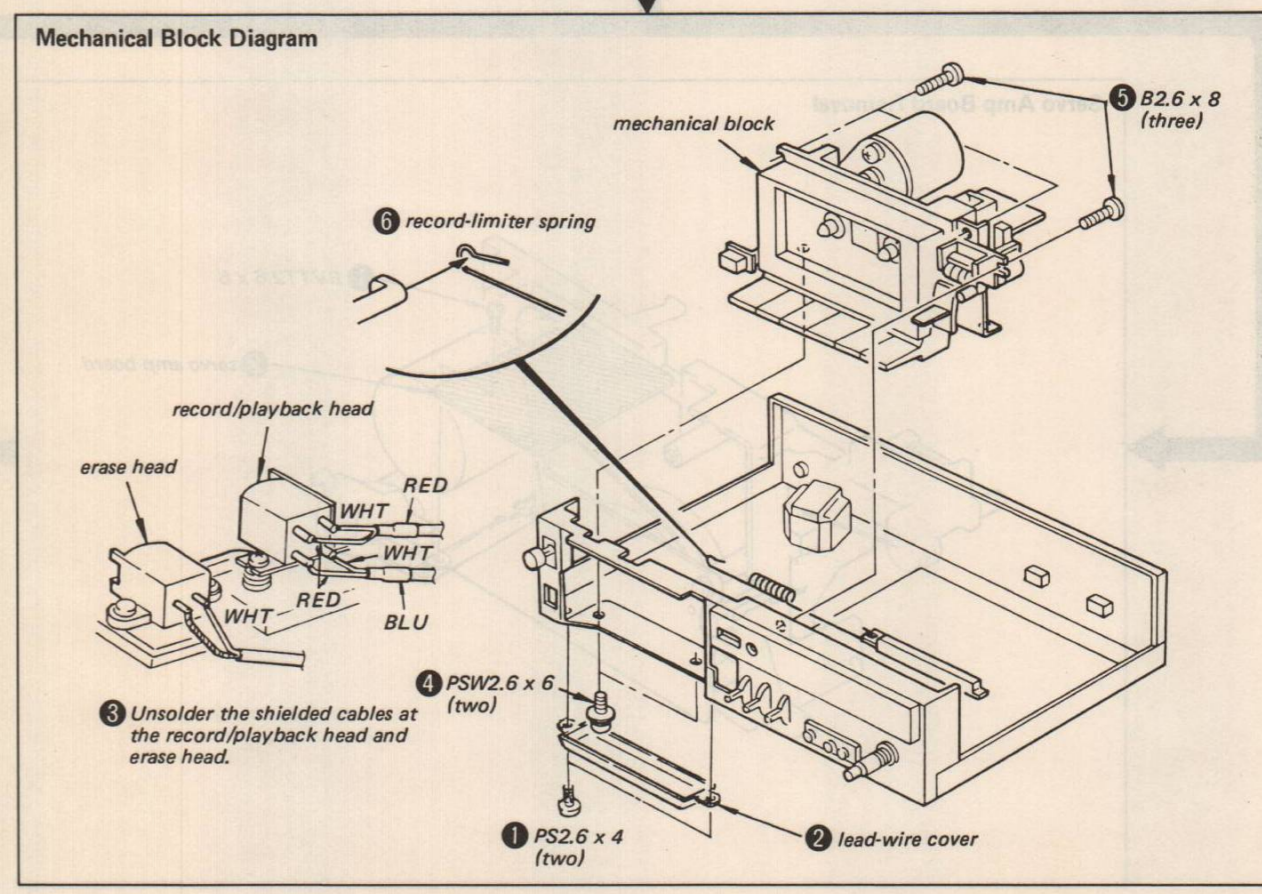
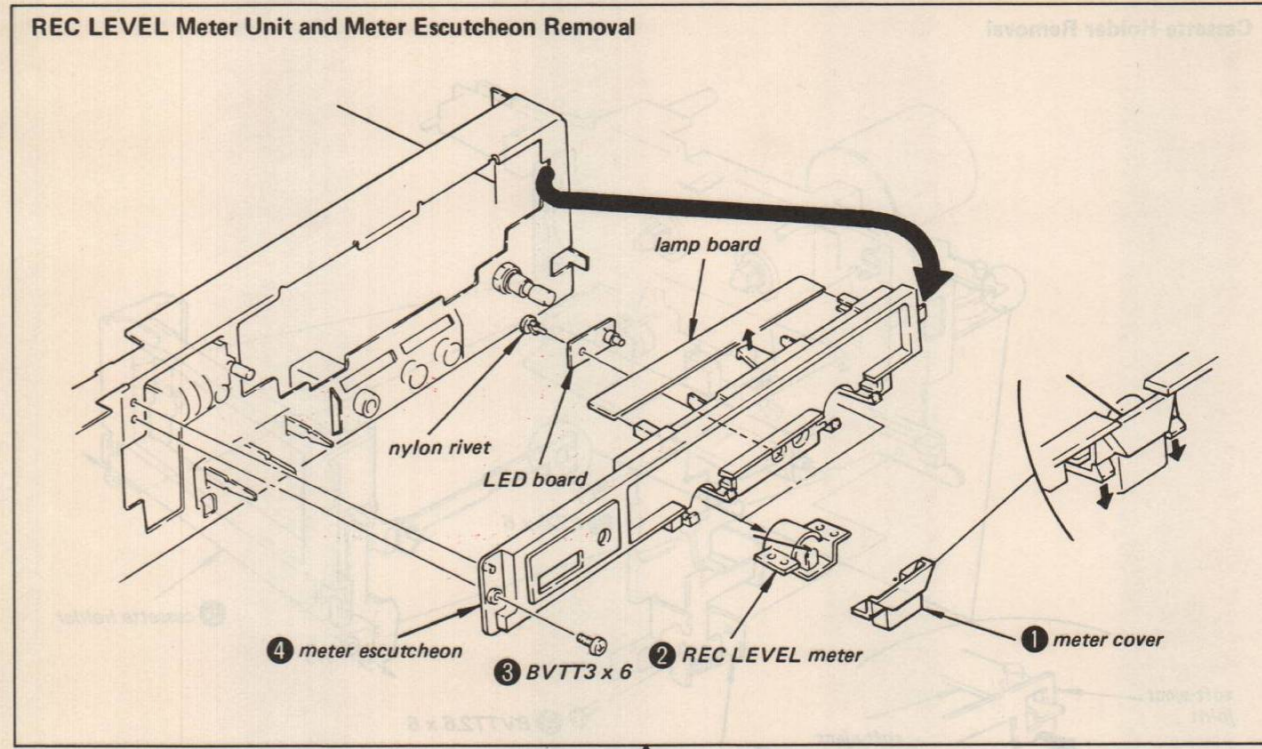
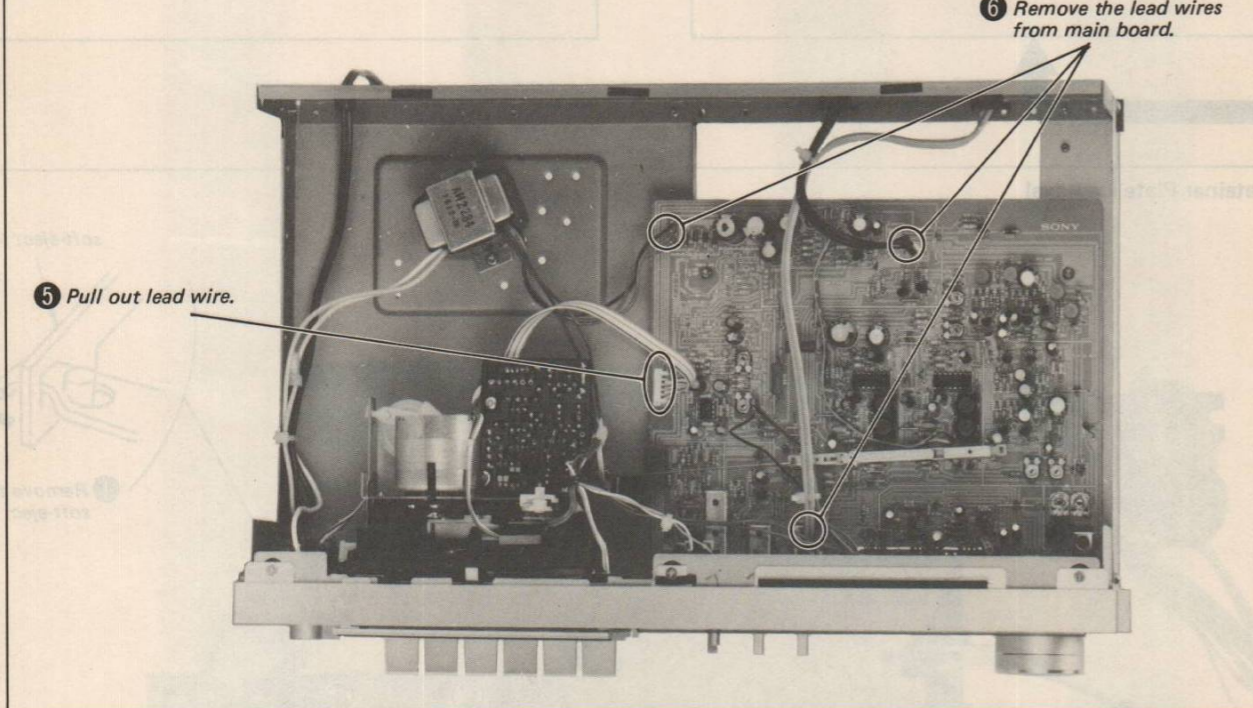
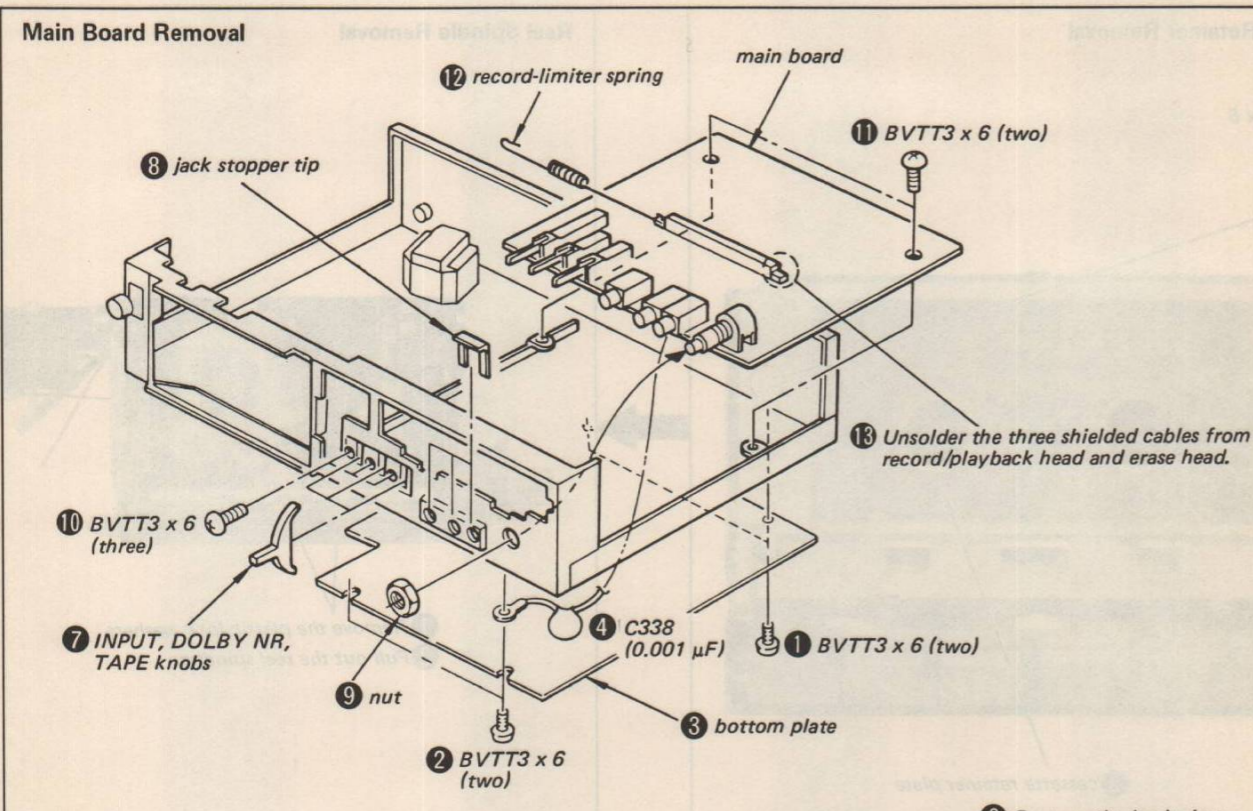
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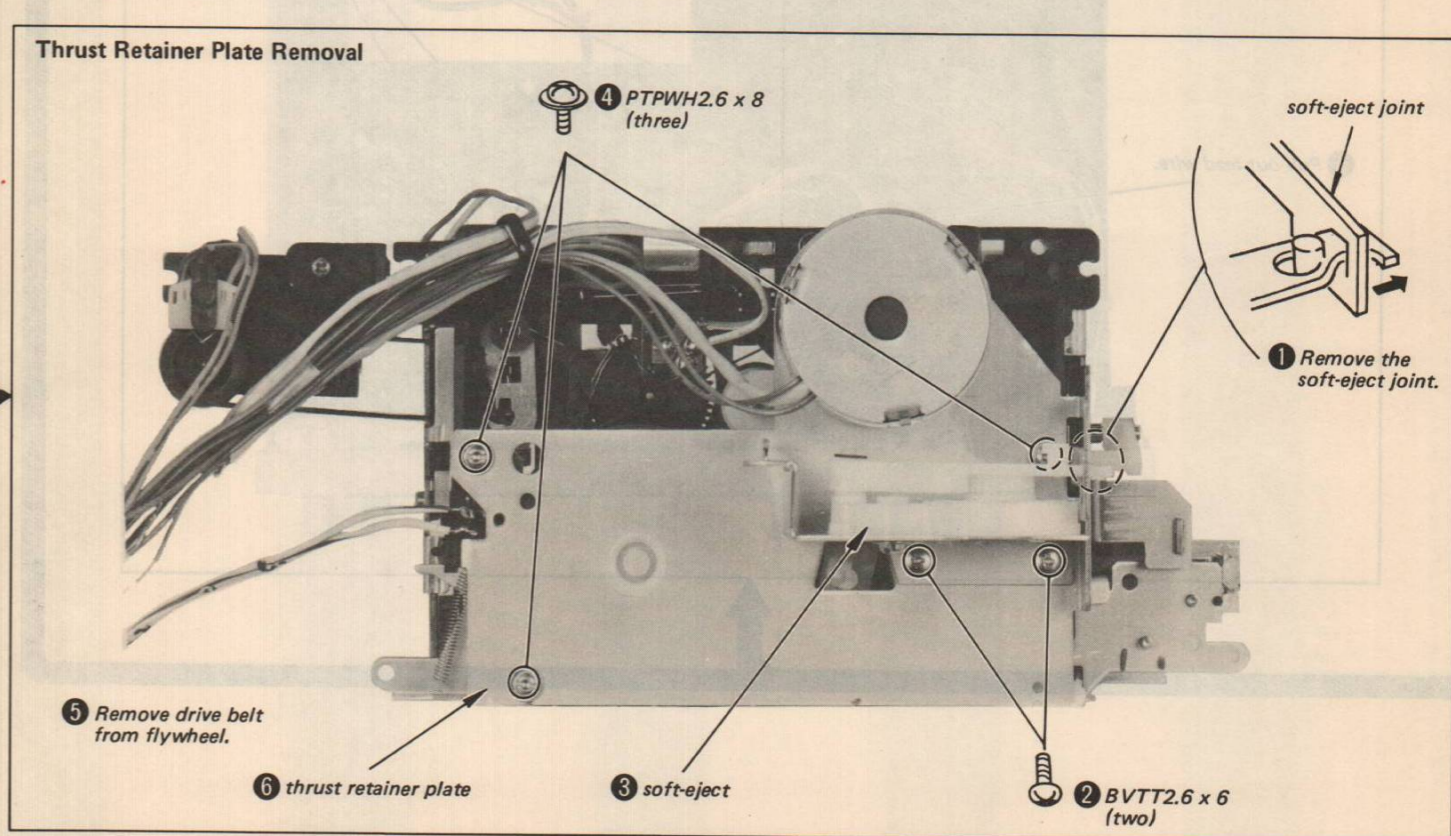
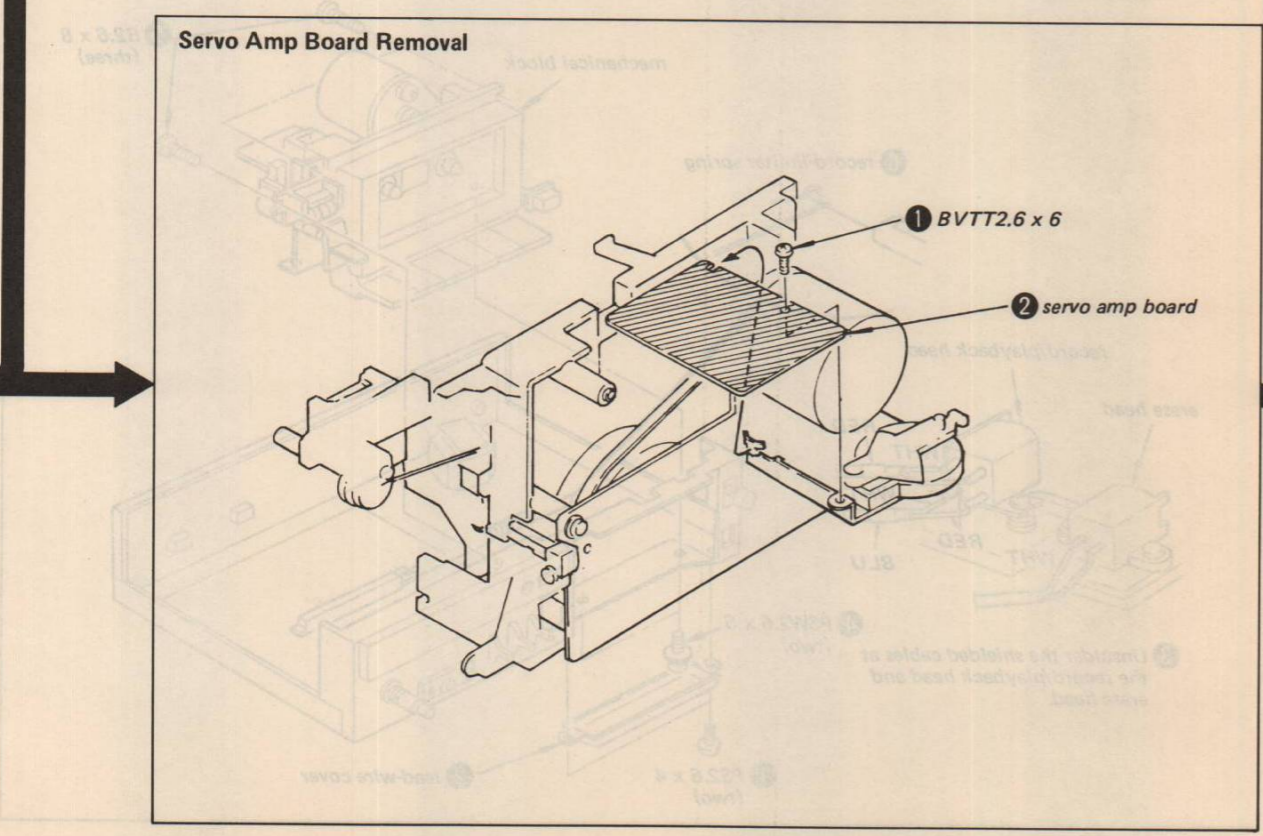
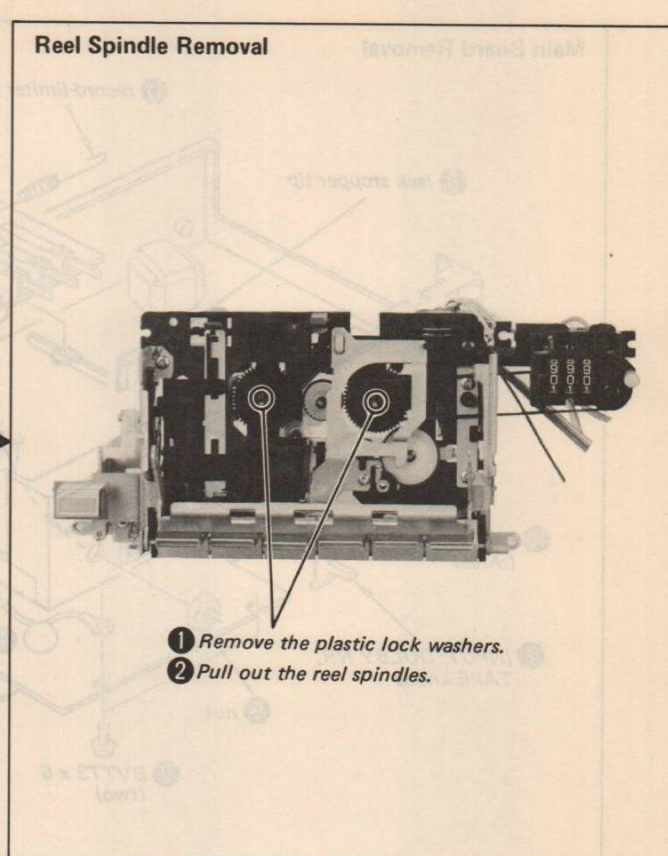
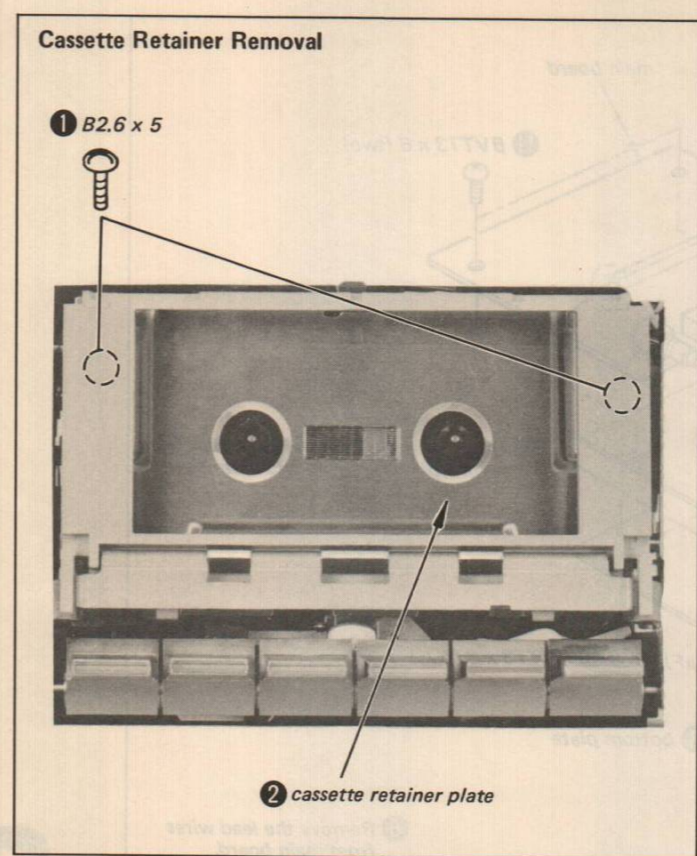
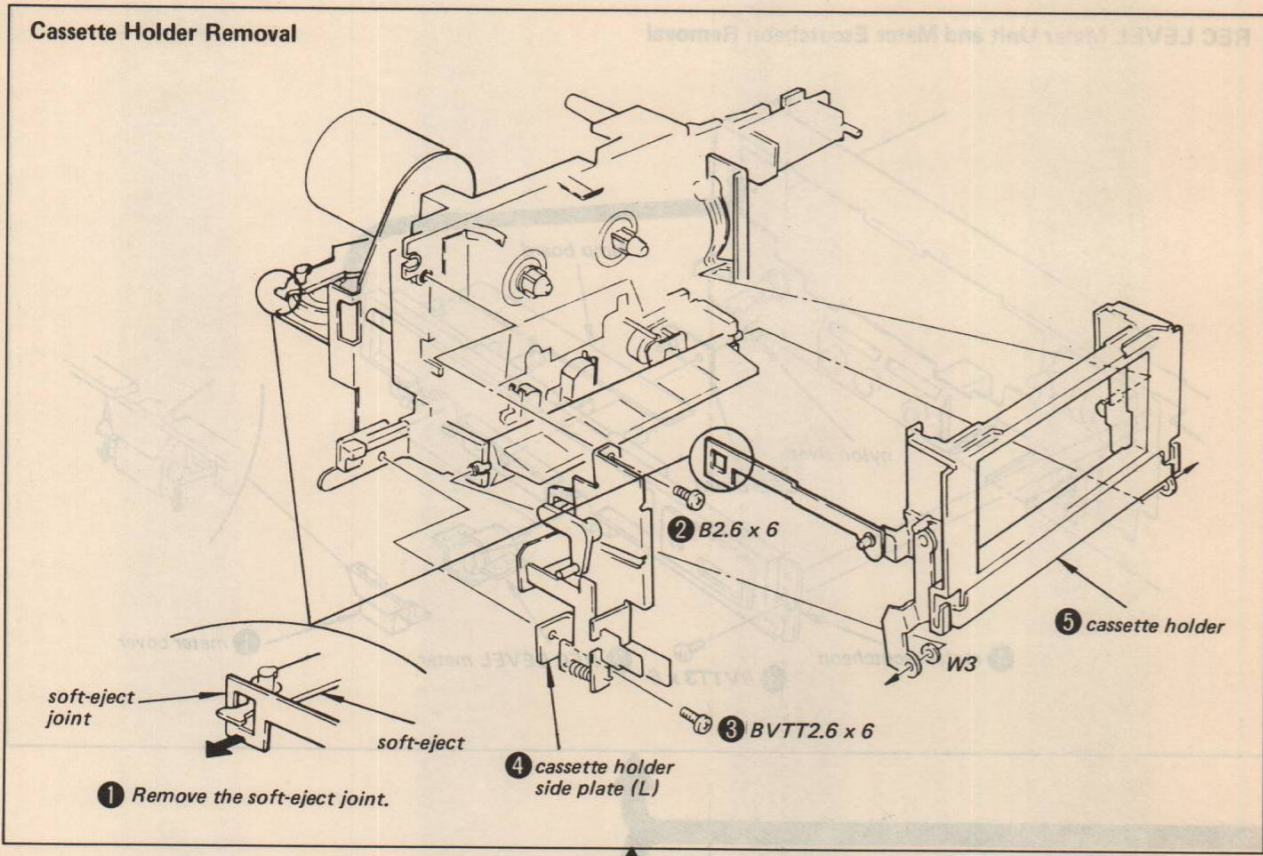
- R - CH -
SAME AS L - CH

SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.







SECTION 3 ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

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

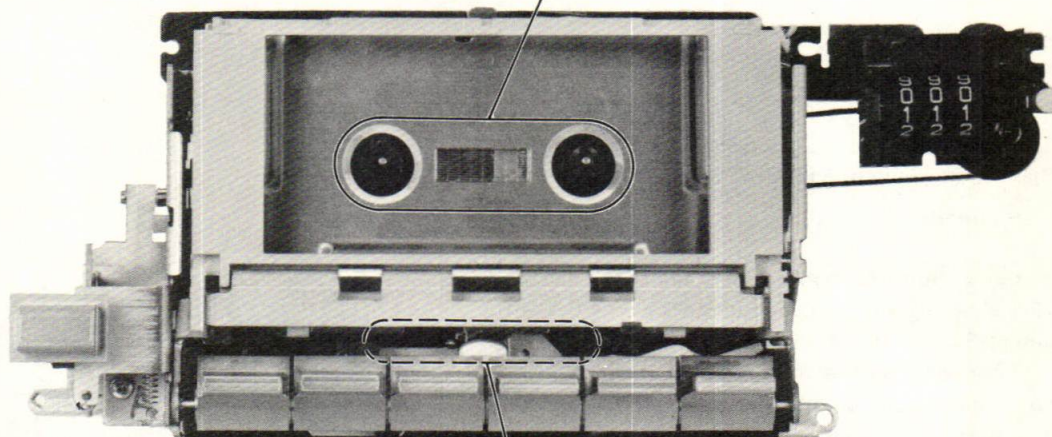
record/playback head	pinch roller
erase head	rubber belts
capstan	idlers
- Demagnetize the record/playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Torque	Torque meter	Meter reading
Forward	CQ-102C	26 – 48 g·cm (0.36 – 0.67 oz·inch)
Fast forward and rewind	CQ-201B	65 – 120 g·cm (0.91 – 1.67 oz·inch)
Back tension	CQ-102C	2.0 – 5.0 g·cm (0.028 – 0.08 oz·inch)

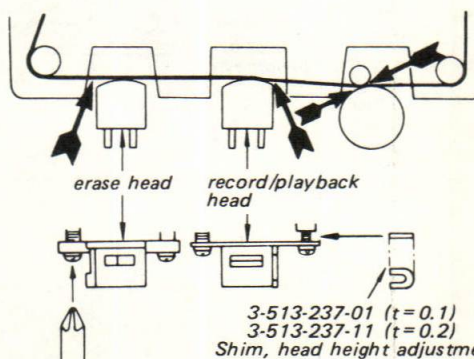
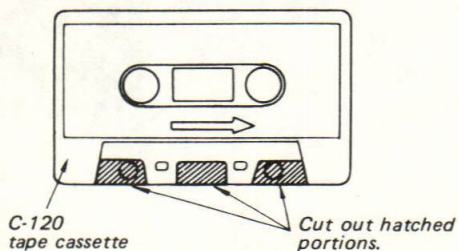
Tape Tension Measurement

Meter	
CQ-403	more than 150 g (5.28 oz)



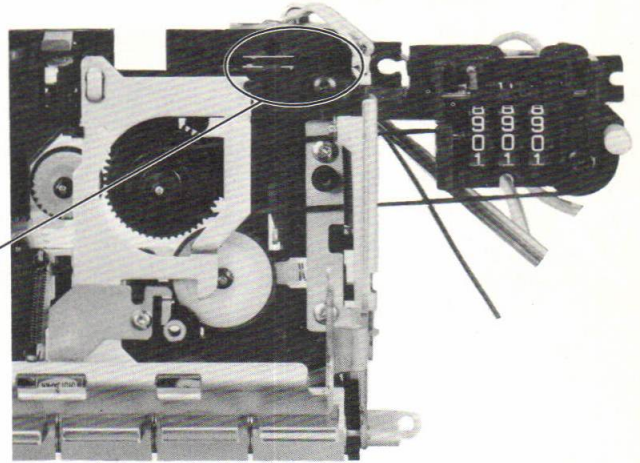
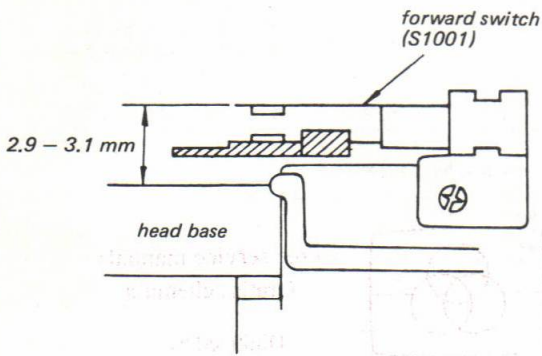
Head Height Adjustment

- Prepare an adjustment cassette as shown below.
- In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at portions shown by arrows.



Forward Switch (S1001) Position Adjustment

– Stop Mode –

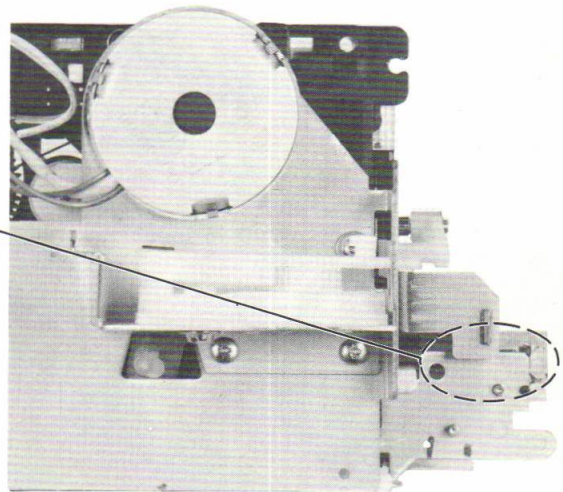
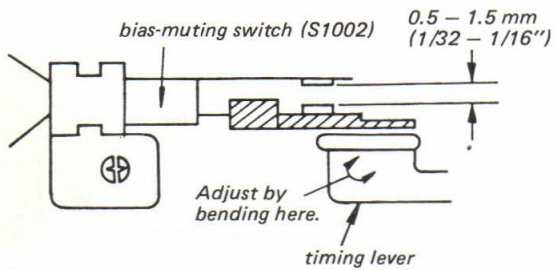


Bias-Muting Switch (S1002) Clearance Adjustment

– stop mode –

By bending the timing lever, adjust the clearance of the timing switch's contacts to become 0.5 - 1.5 mm (1/32 - 1/16") as shown.

After the adjustment, verify that the switch turns on momentarily before the function button locks in either of the four modes, i.e., playback, rewind, fast forward and record. Also verify that the switch turns off when the function button(s) is locked.



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.

- Set the TAPE switch according to the tape as followings.

Tape	TAPE switch
CS-10	TYPE I (NORM)
CS-25	TYPE II (CrO ₂)
CS-30	TYPE III (Fe-Cr)
CS-40	TYPE IV (METAL)

- Switch Mode
 DOLBY NR OFF
 TAPE TYPE I (NORM)

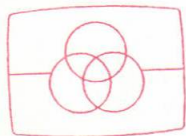
- Standard Record:
 Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	MIC	LINE IN
source impedance	300 Ω or 600 Ω	10 kΩ
input level	0.77 mV (-60 dB)	0.25 V (-10 dB)

Standard Output Level

	LINE OUT	HEAD-PHONES
load impedance	50 kΩ	8 Ω
output level	0.435 V (-5 dB)	31 mV (-28 dB)



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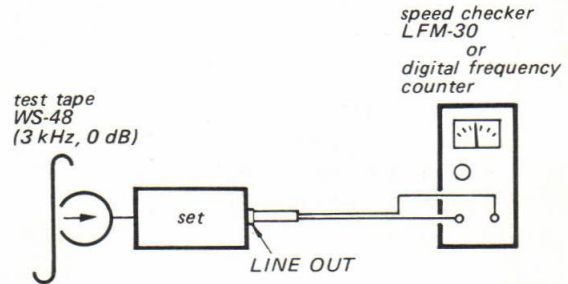
Tape Speed Adjustment

Setting:

REC LEVEL control: mechanical mid

Procedure:

Mode: playback



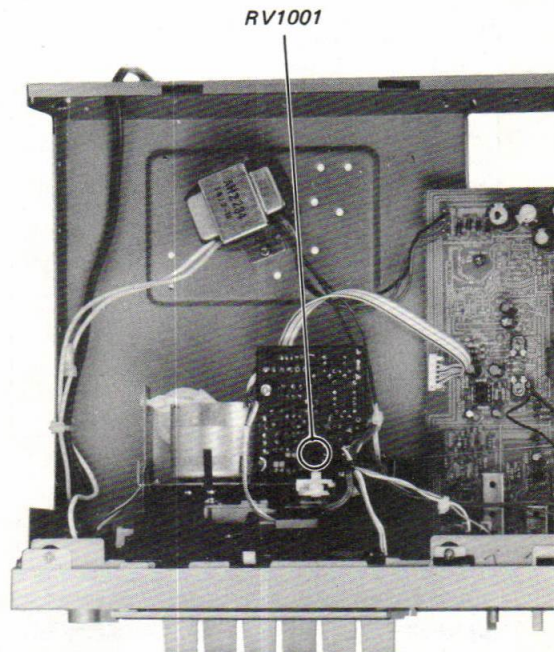
Specification:

Speed checker	Digital frequency counter
-1 - +1 %	2,970 - 3,030 Hz

Frequency difference between the beginning and the end of the tape should be within 0.66 % (20 Hz).

Adjustment Location:

- servo amp board -

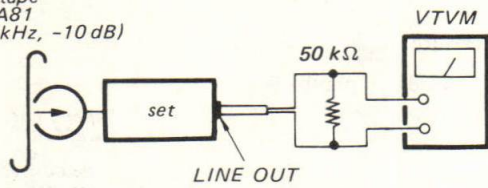


Record/playback Head Azimuth Adjustment

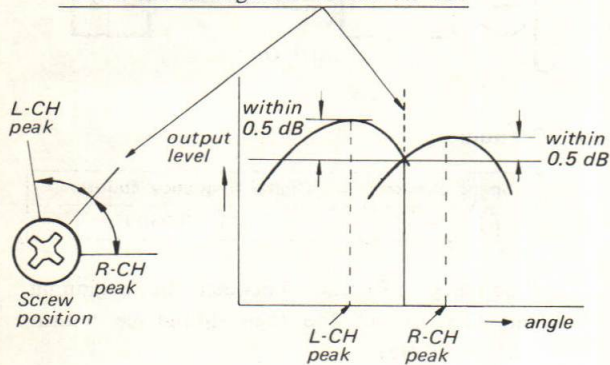
Procedure:

1. Mode: playback

test tape
P-4-A81
(6.3 kHz, -10 dB)

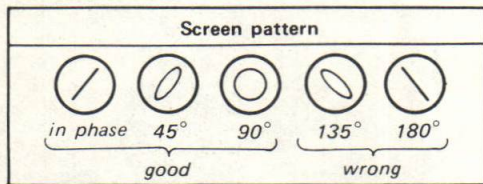
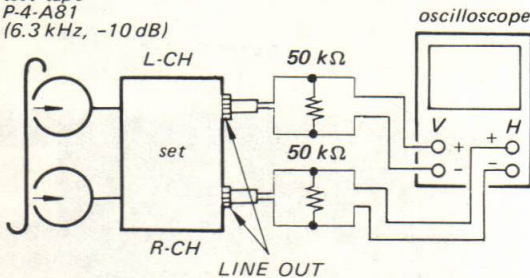


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.

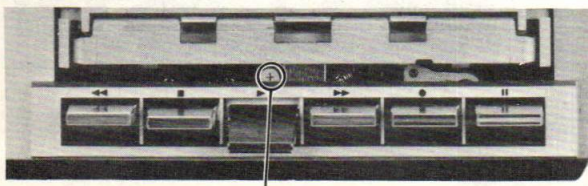


3. Phase Check
Mode: playback

test tape
P-4-A81
(6.3 kHz, -10 dB)



Adjustment Location:

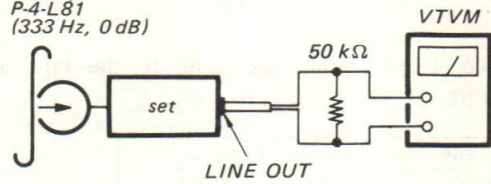


azimuth adjustment screw

Playback Level Adjustment

Procedure:

test tape
P-4-L81
(333 Hz, 0 dB)



Specification:

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

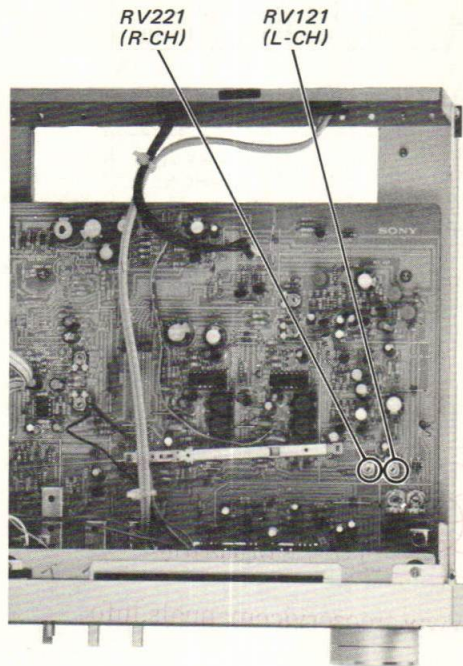
Level difference between channels:
less than 0.5 dB

Level difference from NORMAL:
between –1 dB and +1 dB
(TAPE switch: TYPE IV)

Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location:

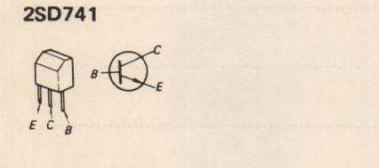
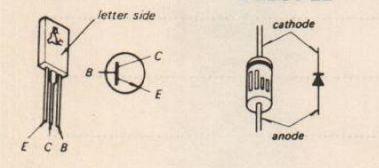
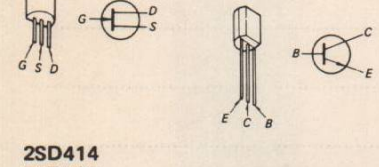
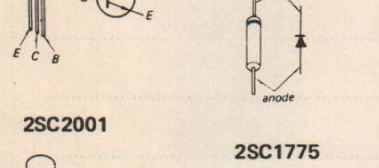
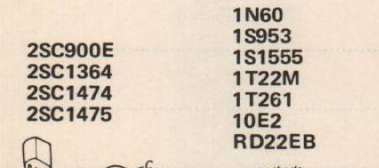
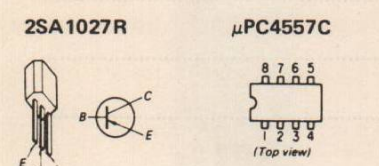
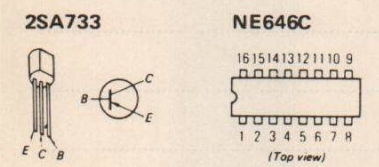
– main board –



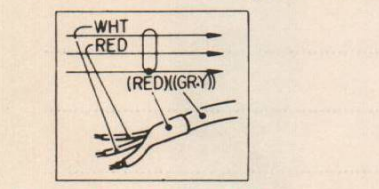
SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM
- Conductor Side -

Semiconductor Outlines:

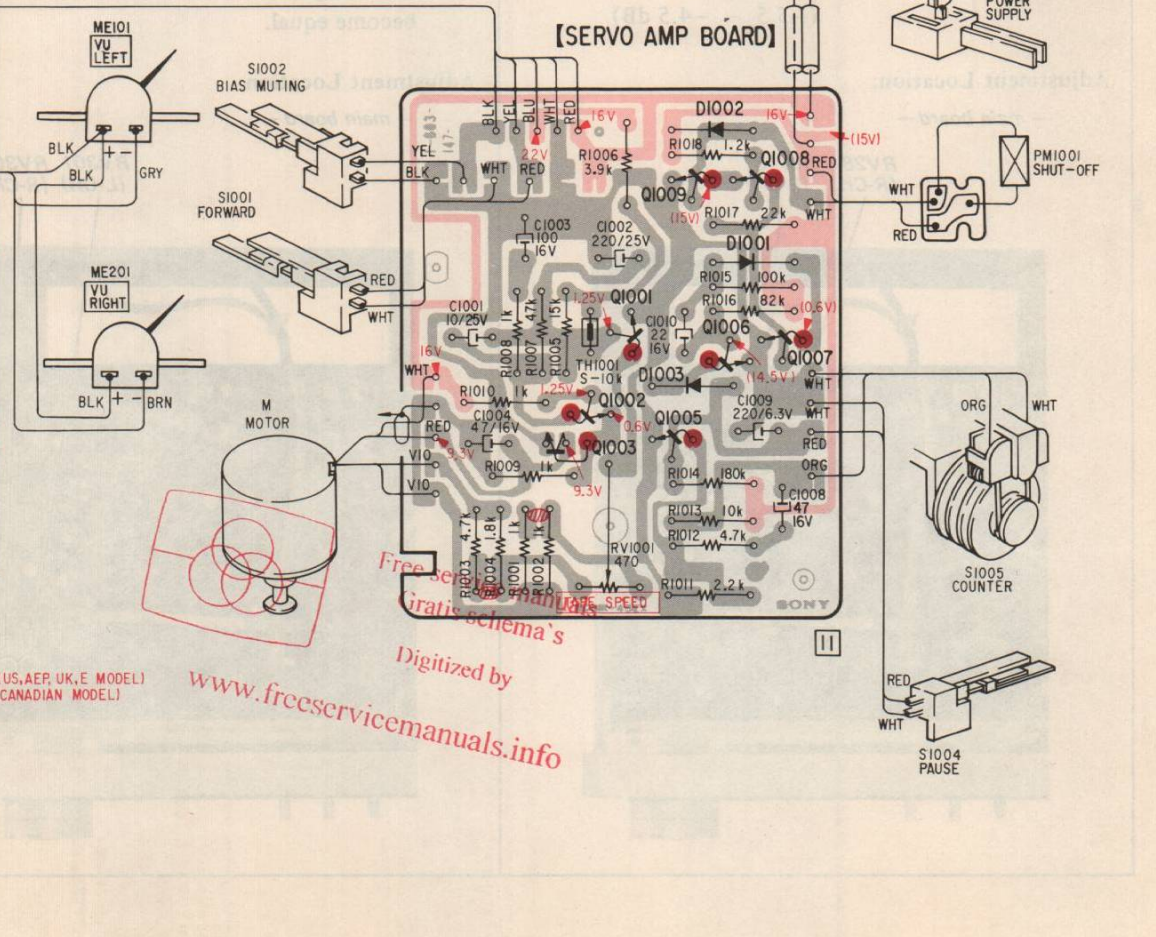
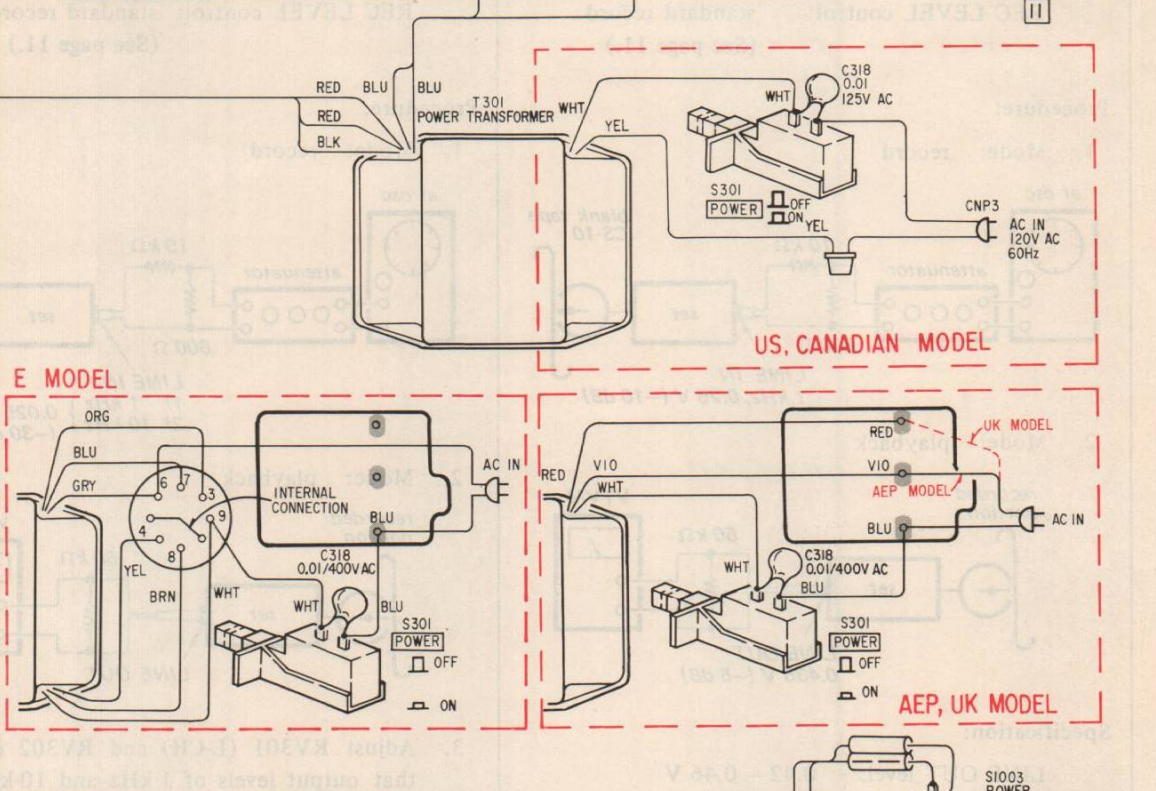
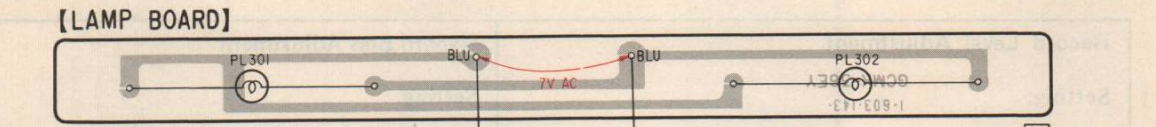
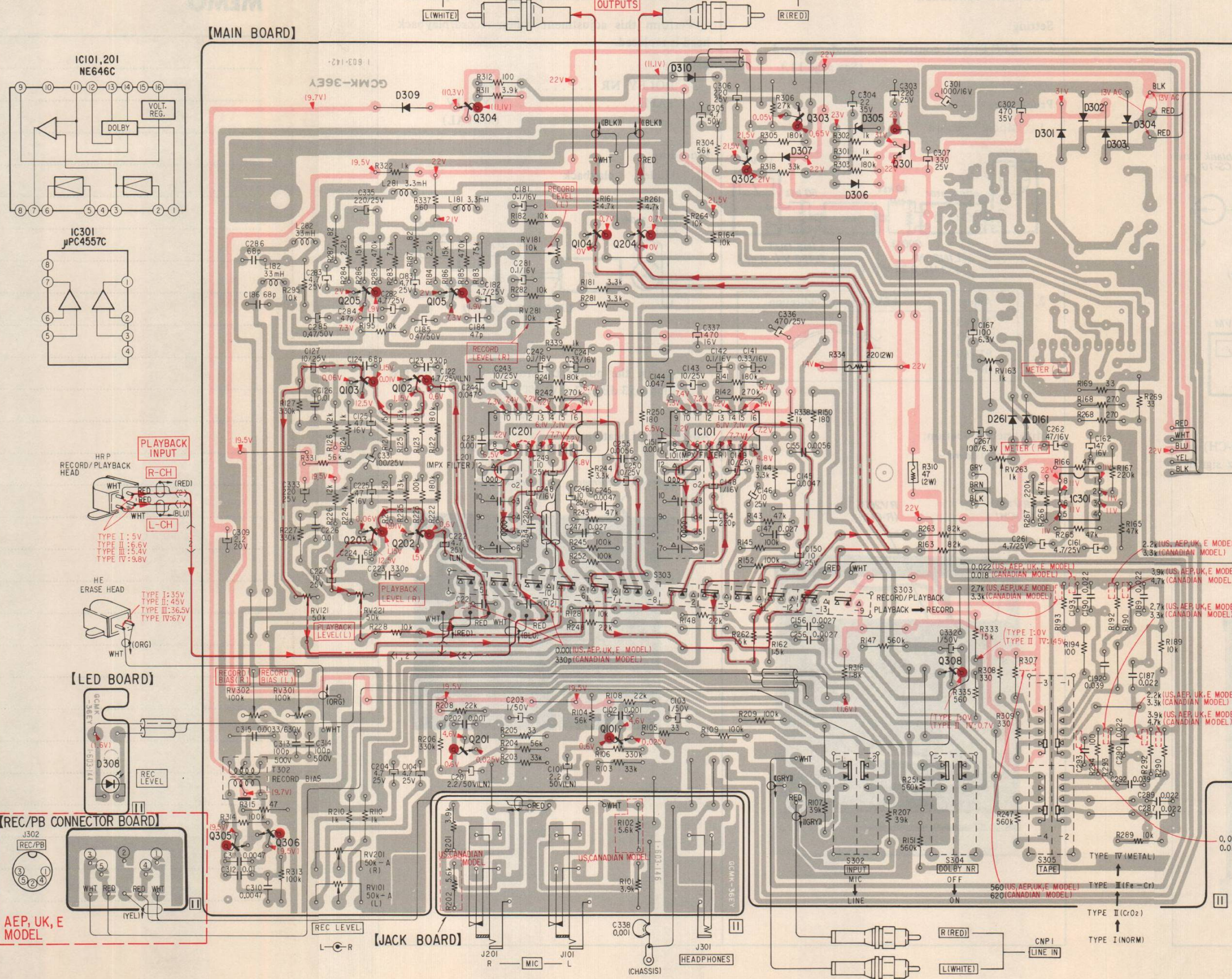


Note:
• Color code of sleeving over the end of the jacket.

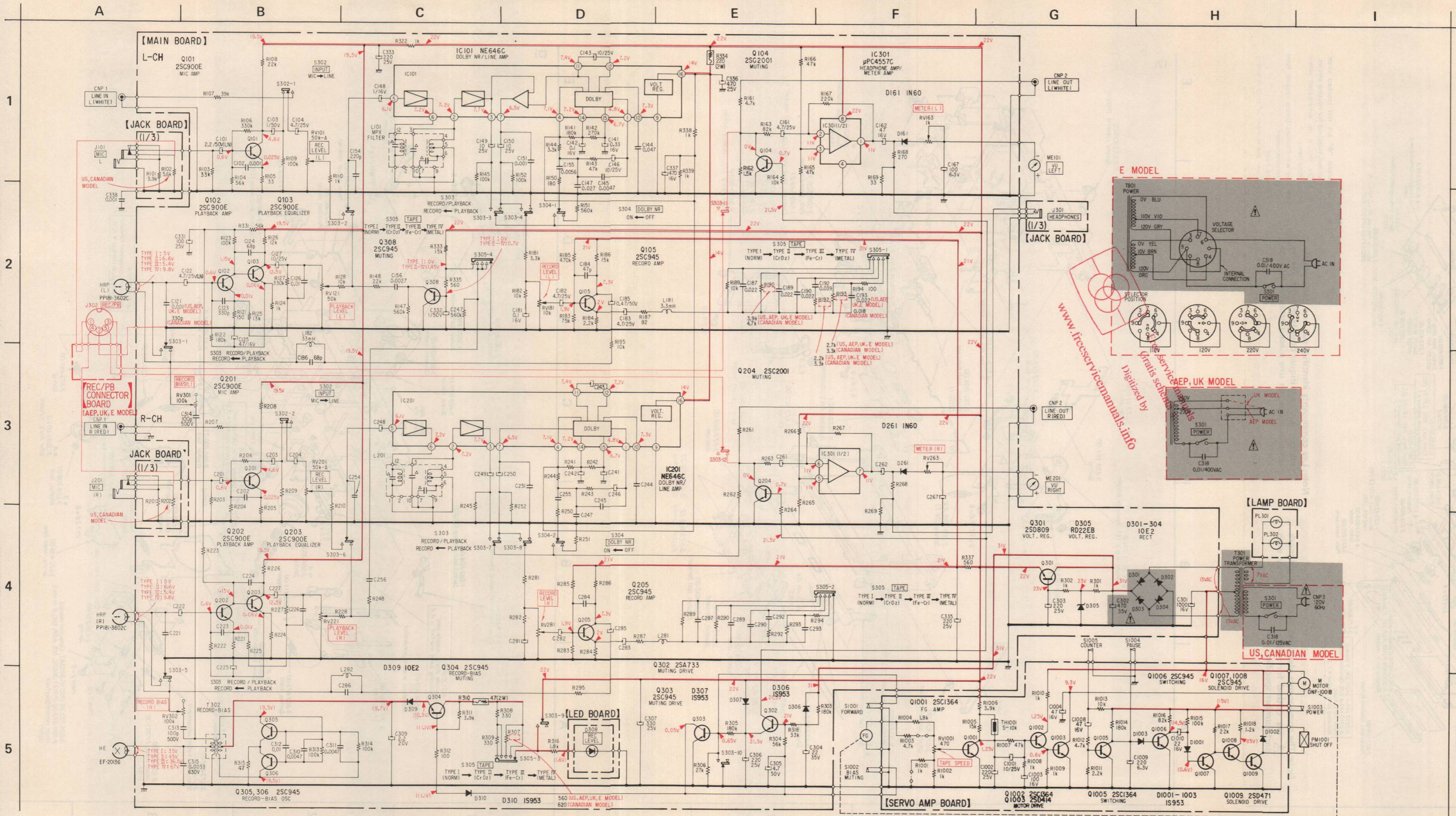


- : signal path
- : L-CH signal path
- : R-CH signal path
- : B + pattern

Q, IC	D
1	310
304, 303	309, 302, 304, 305, 301, 303
301, 302	307
2	306
104, 204	
205, 105	
103, 102	
IC201, 101	261, 161
IC301	
203, 202	1002
1009, 1008	
1001, 1007, 1006, 308	1001
1002, 1005, 1003	1003
101, 201	308
305, 306	



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

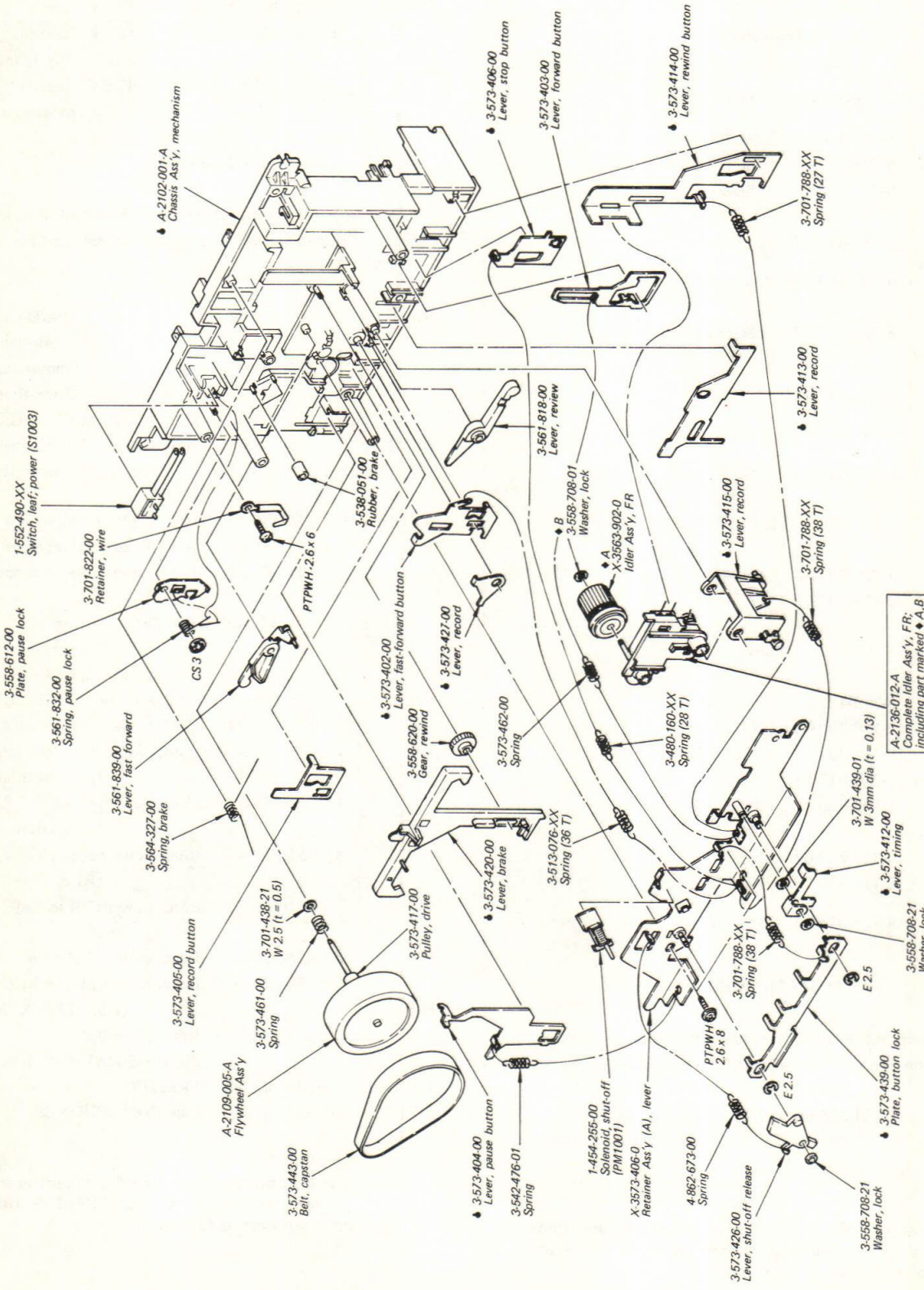
Note: Les composants identifiés par une trame et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- Note:
- All capacitors are in μF unless otherwise noted. $\text{pF} = \mu\mu\text{F}$ 50WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in ohms, $\frac{1}{4}\text{W}$ unless otherwise noted. $\text{k}\Omega : 1000\Omega$, $\text{M}\Omega : 1000\text{k}\Omega$
 - (LN) : low-noise capacitor.
 - : internal component.
 - : panel designation.
 - : adjustment for repair.
 - : B+ bus.
 - Readings are taken under no-signal conditions with a VOM (20 $\text{k}\Omega/\text{V}$).
 - () : REC
 - Switch

Ref. No.	Switch	Position
S301	POWER	OFF
S302	INPUT	MIC
S303	RECORD/PLAYBACK	PLAYBACK
S304	DOLBY NR	OFF
S305	TAPE	TYPE I (NORM)
S1001	FWD	OFF
S1002	BIAS MUTING	OFF
S1003	POWER	OFF
S1004	PAUSE	OFF
S1005	COUNTER	OFF

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A B C D E (4)



SECTION 6 ELECTRICAL PARTS LIST

Ref. No. Part No. Description

SEMICONDUCTORS

Transistors

Q101-103 Q201-203) 8-729-377-58	2SC1775
Q104, 204		
Q105, 205	8-729-100-13	2SC2001
Q301	8-729-663-47	2SC1364
	8-729-180-93	2SD809
Q302	8-729-612-77	2SA1027R
Q303-306 Q308) 8-729-663-47	2SC1364
Q1001 Q1002		
	8-729-663-47	2SC1364
Q1003	8-729-141-43	2SD414
Q1005- Q1008) 8-729-663-47	2SC1364
Q1009		
	8-760-413-10	2SC1475

ICs

IC101, 201	8-759-906-46	NE646B
IC301	8-759-145-57	μPC4557C

Diodes

D161, 261	8-719-422-21	1T22AM
D301-304	⚠ 8-719-200-02	10E2
D305	8-719-931-22	EQB01-22
D306, 307	8-719-815-55	1S1555
D308	1-800-960-11	AR3131D
D309	8-719-200-02	10E2
D310	8-719-815-55	1S1555
D1001- D1003) 8-719-815-55	1S1555

CAPACITORS

All capacitors are in μF. Common capacitors are omitted. Refer to the lists on pages 28 and 29 for their part numbers.

C122, 222	1-121-395-00	4.7	25 V	electrolytic (low noise)
-----------	--------------	-----	------	-----------------------------

- Items marked "⚠" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No. Part No. Description

C302	⚠ 1-123-348-00	470	35 V	electrolytic
C315	1-129-708-00	0.0033	630 V	film
C318	⚠ 1-161-744-00	0.01	400 V	ceramic (AEP, UK, E model)

RESISTORS

All resistors are in ohms. Common ¼ W carbon resistors are omitted. Refer to the list on last page for their part numbers. k: 1000 Ω.

R310	1-206-479-00	47	2 W	metal-oxide (non-flammable)
R334	1-206-648-00	220	2 W	metal-oxide (non-flammable)
RV101, 201	1-226-909-00	50 k/50 k-A,	variable; REC LEVEL	
RV121, 221	1-226-238-00	50 k-B,	adjustable; playback level	
RV163, 263	1-226-233-00	1 k-B,	adjustable; meter level	
RV181, 281	1-226-236-00	10 k-B,	adjustable; record level	
RV301, 302	1-226-931-00	100 k-B,	adjustable; record bias	
RV1001	1-224-641-XX	470-B,	adjustable; tape speed	

MISCELLANEOUS

CNP1	1-551-116-11	Cord with plug, LINE IN
CNP2	1-555-119-21	Cord with plug, LINE OUT
CNP3	⚠ 1-534-817-XX	Cord, power; euro-plug (AEP model)
	⚠ 1-534-986-XX	Cord, power; parallel-blade plug (US, Canadian model)
	⚠ 1-551-473-31	Cord, power; parallel-blade plug (E2 model)
	⚠ 1-551-530-00	Cord, power; euro-plug (E1 model)
	⚠ 1-551-962-00	Cord, power (UK model)
HE	8-825-724-00	Head, erase; EF201-36
HRP	⚠ 8-829-373-30	Head, record/playback; PP181-3602C (US, AEP, UK, E model)
J101, 201	1-507-702-00	Jack, MIC
J301	1-507-669-00	Jack, HEADPHONES

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

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
J302	1-561-556-00	Connector, REC/PB (AEP, UK, E model)
L101, 201	1-231-725-00	Filter, MPX
L181, 281	1-407-962-00	3.3 mH, microinductor
L182, 282	1-407-964-00	33 mH, microinductor
M	8-835-006-00	Motor, DNF-1001B
ME101, 201	1-520-429-00	Meter Unit, level meter
PL301, 302	1-518-351-00	Lamp, pilot
PM1001	1-454-255-00	Solenoid, shut-off

S301	⚠ 1-553-318-00	Switch, pushbutton; POWER (AEP, UK, E model)
	⚠ 1-553-352-21	Switch, pushbutton; POWER (US model)
	⚠ 1-553-418-21	Switch, pushbutton; POWER (Canadian model)

S302	1-553-425-00	Switch, lever slide; INPUT
S303	1-553-434-00	Switch, slide; record/playback
S304	1-553-424-00	Switch, lever slide; DOLBY NR
S305	1-553-426-00	Switch, lever slide; TAPE
S1001	1-552-804-00	Switch, leaf; forward
S1002	1-552-804-00	Switch, leaf; bias muting
S1003	1-553-490-00	Switch, leaf; power
S1004	1-552-804-00	Switch, leaf; pause
S1005	1-552-913-00	Switch, rotary; counter

T301	⚠ 1-446-808-00	Transformer, power (US, Canadian model)
	⚠ 1-446-809-00	Transformer, power (AEP, UK model)
	⚠ 1-446-810-00	Transformer, power (E model)
T302	1-433-229-00	Transformer, bias osc
TH1001	1-800-202-XX	Thermistor, S-10 k
VS101	⚠ 1-526-576-31	Voltage Selector Switch (E model)

● 1-535-116-00	Terminal
⚠ ● 1-535-140-00	Base Post, 3-p (AEP, UK, E model)
1-535-506-00	Terminal, crimping (US, Canadian model)
1-548-545-21	Counter, tape; including S1005
● 1-561-441-00	Socket, 5-p

COMPLETE CIRCUIT BOARD

● A-2010-175-A	Main
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<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
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PRINTED CIRCUIT BOARDS

● 1-603-142-00	Main
● 1-603-143-00	Lamp
● 1-603-144-00	LED
● 1-603-145-00	REC/PB (AEP, UK, E model)
● 1-603-146-00	Jack
● 1-603-147-00	Servo Amp
⚠ ● 1-603-148-00	Voltage Select (AEP, UK, E model)

ACCESSORIES & PACKING MATERIALS

<u>Part No.</u>	<u>Description</u>
X-3701-105-0	Tips Ass'y, head cleaning
⚠ 1-526-565-00	Adapter, AC plug (E1 model)
⚠ 1-551-967-00	Adapter, power cord (UK model)
3-573-569-00	Sheet, plastic (Canadian model)
3-573-619-00	Cushion (upper)
3-573-620-00	Cushion (lower)
3-573-625-00	Sheet, plastic (US, AEP, UK, E model)
3-573-630-00	Carton (AEP, E model)
3-573-632-00	Carton (US, UK model)
3-573-634-00	Carton (Canadian model)
3-701-630-00	Bag, plastic
3-783-215-11	Manual, instruction (AEP, UK, E model)
3-783-215-21	Manual, instruction (US model)
3-783-215-21	Manual, instruction
3-783-215-31	Manual, instruction (French)
3-793-828-11	Caution Card, cassette
3-794-975-11	Instruction, Dutch and Swedish (AEP model)

ELECTROLYTIC CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.					
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47						1-121-726-00
1.0						1-121-391-00
2.2						1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	-	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	-
3300	1-121-661-00	1-123-075-00	1-123-071-00	-	-	-

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	-	-	-	-
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	-	1-123-028-00
3.3	1-121-995-00	-	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	-	-
47	1-123-251-00	1-121-919-00	-	-
100	1-123-084-00	-	-	-

CERAMIC CAPACITORS

CAP. (pF)	RATING						
	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

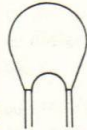
0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.				
	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

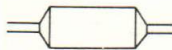
MYLAR CAPACITORS

CAP. (μF)	RATING																		
	50 VOLT.			100 VOLT.			200 VOLT.			CAP. (μF)	50 VOLT.			100 VOLT.			200 VOLT.		
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.		
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00								
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00								
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00								
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00								
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00								
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	-	-								
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	-	-								
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	-	-								
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	-	-								
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00												
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00												
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00												



TANTALUM CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.													
	3.15 VOLT.		6.3 VOLT.		10 VOLT.		16 VOLT.		20 VOLT.		25 VOLT.		35 VOLT.	
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.01														1-131-396-00
0.015														1-131-397-00
0.022														1-131-398-00
0.033														1-131-399-00
0.047														1-131-400-00
0.068														1-131-401-00
0.1														1-131-402-00
0.15														1-131-403-00
0.22														1-131-404-00
0.33														1-131-405-00
0.47														1-131-406-00
0.68														1-131-407-00
1.0														1-131-408-00
1.5														1-131-348-00
2.2	1-131-424-00													1-131-349-00
3.3														1-131-350-00
4.7	1-131-425-00													1-131-351-00
6.8														1-131-352-00
10	1-131-426-00													1-131-353-00
15	1-131-390-00													-
22	1-131-391-00													
33	1-131-392-00													
47	1-131-393-00													
68	1-131-394-00													
100	1-131-395-00													



TANTALUM CAPACITORS

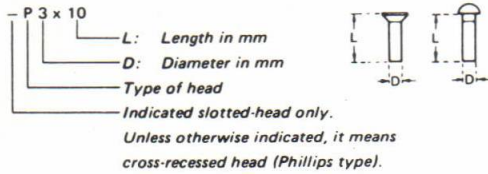
CAP. (μF)	RATING											
	3 VOLT.		6.3 VOLT.		10 VOLT.		16 VOLT.		20 VOLT.		35 VOLT.	
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	
0.033												1-131-273-00
0.047												1-131-274-00
0.068												1-131-275-00
0.1												1-131-276-00
0.15												1-131-277-00
0.22												1-131-278-00
0.33												1-131-279-00
0.47												1-131-280-00
0.68												1-131-281-00
1.0												1-131-282-00
1.5												1-131-283-00
2.2												1-131-284-00
3.3												-
4.7												-
6.8												-
10												-
15												-
22												-
33	1-131-176-00											-
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1/4 WATT CARBON RESISTORS

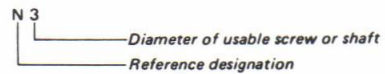
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

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	

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