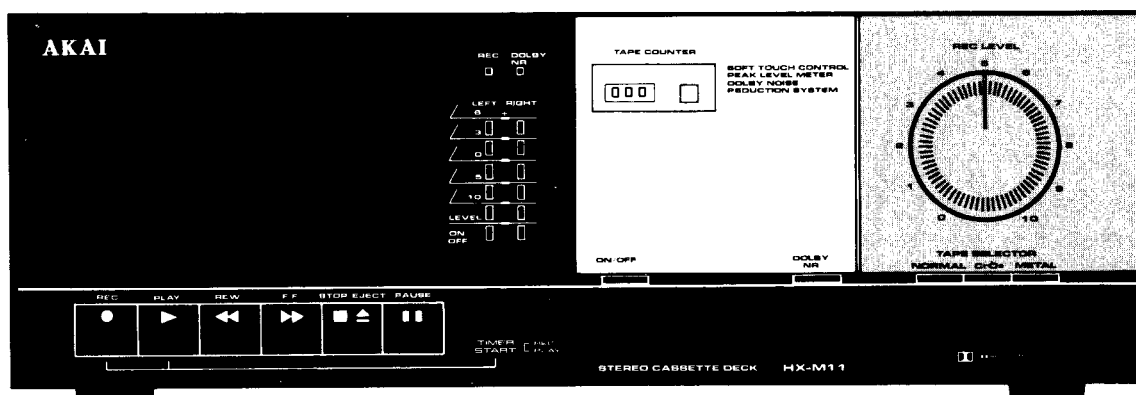


AKAI SERVICE MANUAL

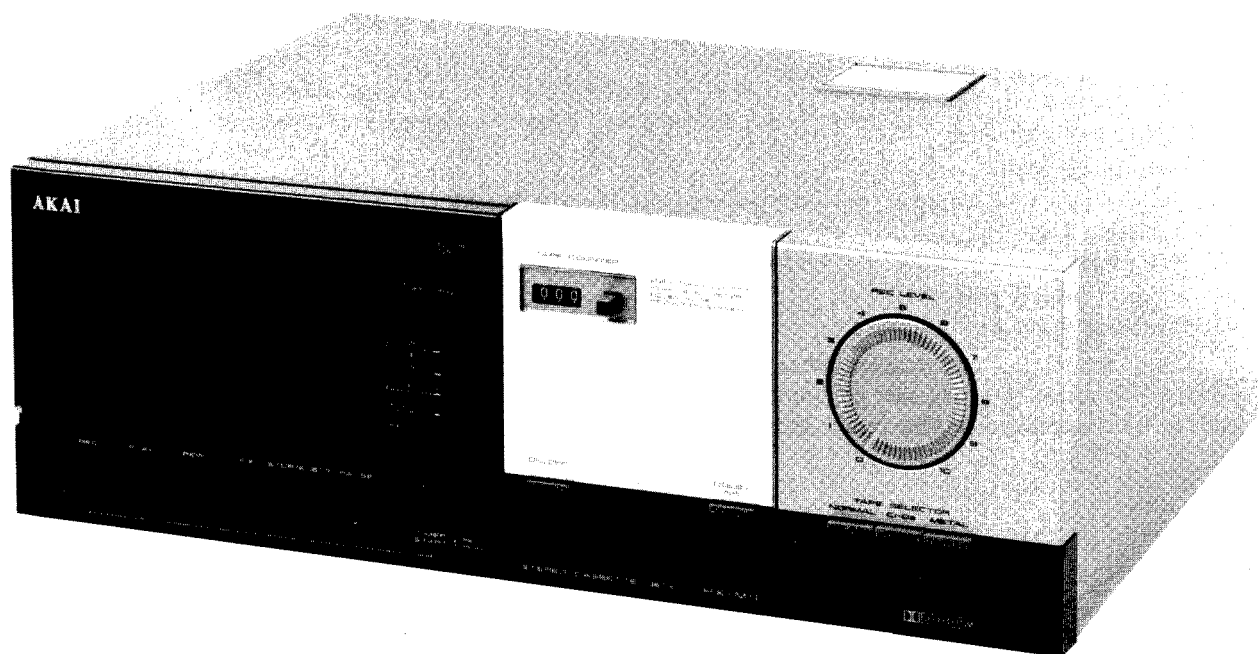


STEREO CASSETTE DECK

MODEL **HX-M11**

ABBREVIATIONS FOR SERVICE MANUAL MODEL HX-M11

ABBREVIATION	EXPLANATION
AC	Alternating Current
ADJ	ADJustment
DC	Direct Current
F.F	Fast Forward
NR	Noise Reduction
PB	Play Back
REC	RECORD (RECORDing)
REW	REWind
SENS	SENSitivity



STEREO CASSETTE DECK

MODEL **HX-M11**

SECTION 1	SERVICE MANUAL	3
SECTION 2	PARTS LIST	11

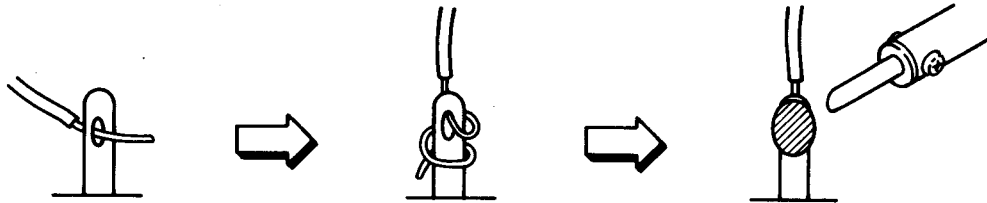
SAFETY INSTRUCTIONS

SAFETY CHECK AFTER SERVICING

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

PRECAUTIONS DURING SERVICING

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



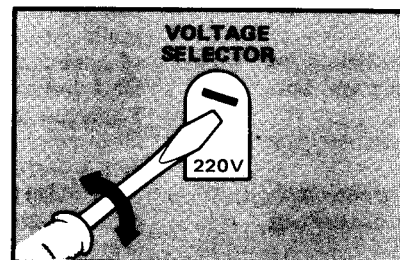
6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets,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

VOLTAGE CONVERSION

Models for USA, Canada, Europe, UK and Australia are not equipped with this facility. Each machine is preset at the factory according to destination, but some machines can be set to 110V, 120V, 220V, or 240V as required.

If VOLTAGE CHANGE is necessary, this can be accomplished as follows:

1. Disconnect power cord.
2. Turn the VOLTAGE SELECTOR located on the rear panel with a screwdriver until the correct voltage is indicated.



CYCLE CONVERSION

Cycle conversion is not necessary since HX-M11 uses DC motor.

SECTION 1

SERVICE MANUAL

TABLE OF CONTENTS

I.	SPECIFICATIONS	4
II.	DISMANTLING OF UNIT	5
III.	CONTROLS	6
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For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

I. SPECIFICATION

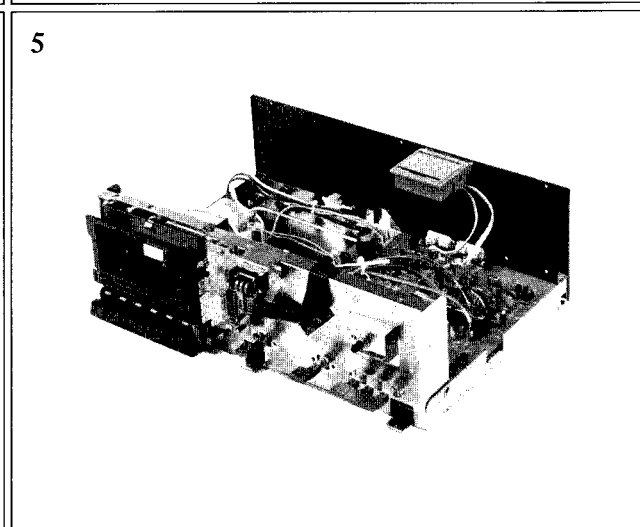
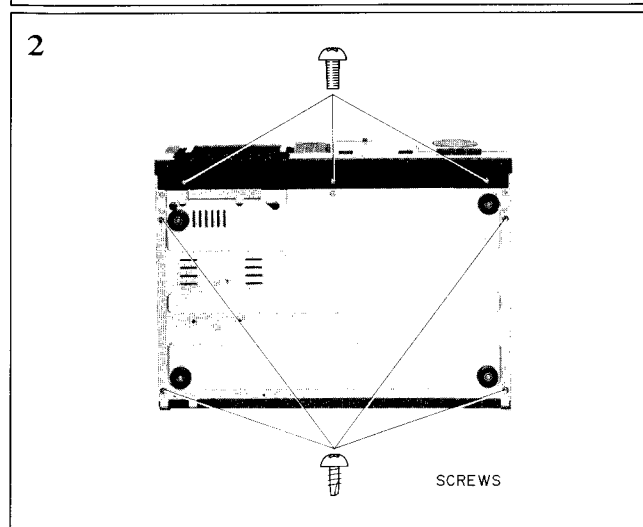
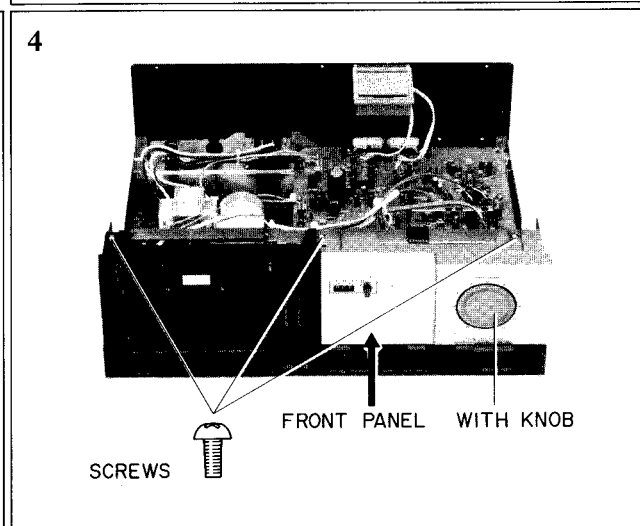
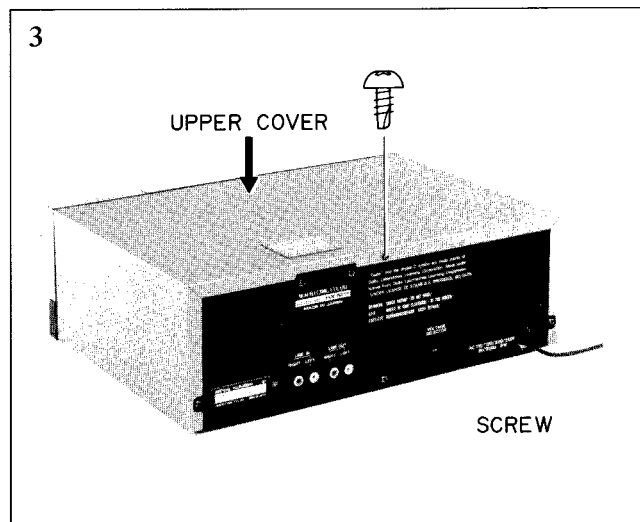
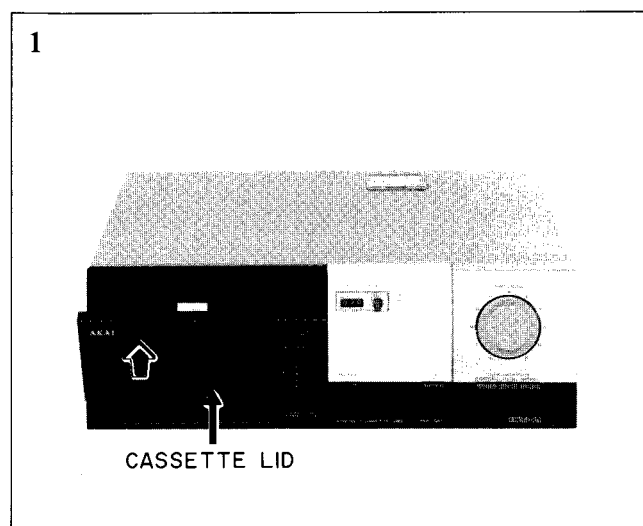
TRACK	4 track 2 channel stereo
HEADS	Erase head × 1 High density head for REC/PB × 1
MOTOR	Electronically speed controlled DC Motor for capstan drive × 1
WOW & FLUTTER	0.09% (DIN), 0.05% (W. RMS)
S/N	56 dB (Measured via tape with peak recording level, Metal Tape) Dolby NR ON: Improves up to 5 dB at 1 kHz, 10 dB above 5 kHz
DISTORTION	0.75% (Metal)
FREQUENCY RESPONSE	NORMAL CrO₂ METAL 30 Hz to 13,000 Hz ± 3 dB 30 Hz to 16,000 Hz ± 3 dB 30 Hz to 17,000 Hz ± 3 dB
INPUT	410 mV/47 kohms (Line)
OUTPUT	410 mV/Less than 2.2 kohms
POWER REQUIREMENTS	120V, 60 Hz for USA and Canada 220V, 50 Hz for Europe except UK 240V, 50 Hz for UK and Australia 110V/120V/220V/240V, 50/60 Hz switchable for other countries
POWER CONSUMPTION	9W
DIMENSIONS	350(W) × 98(H) × 267 (D) mm (13.8 × 3.9 × 10.5 inches)
WEIGHT	4 kg (8.8 lbs)

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

* Noise Reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the Double-D Symbol are trade marks of Dolby Laboratories Licensing Corporation.

II. DISMANTLING OF UNIT

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



III. CONTROLS

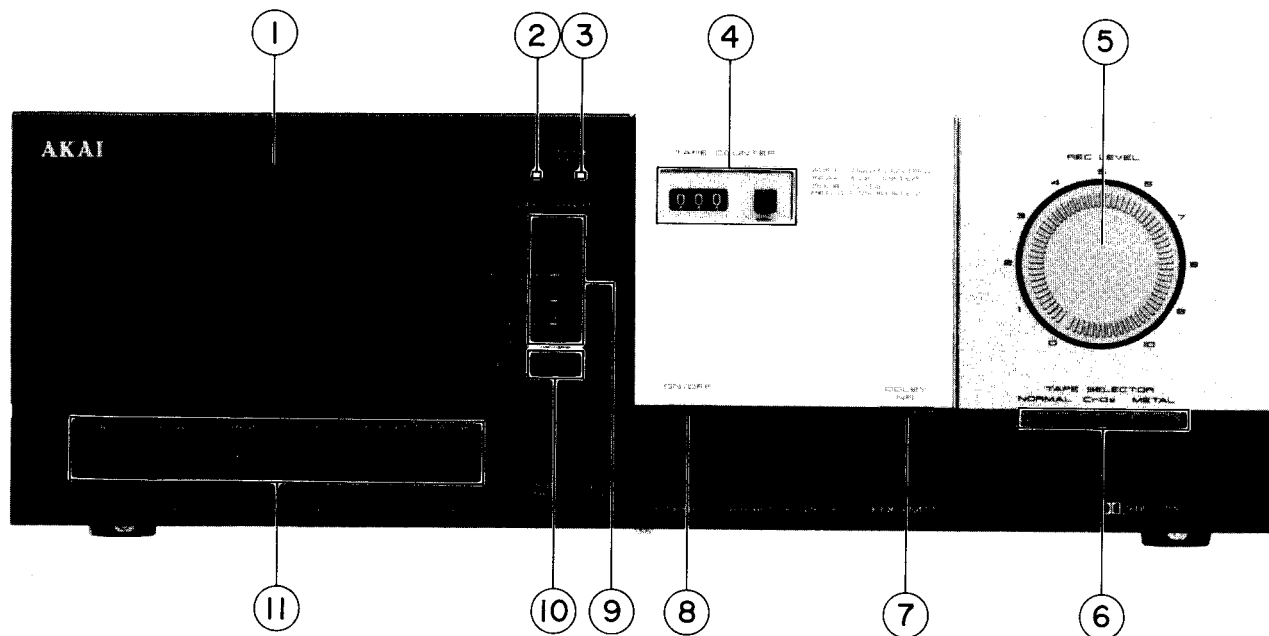


Fig. 3-1

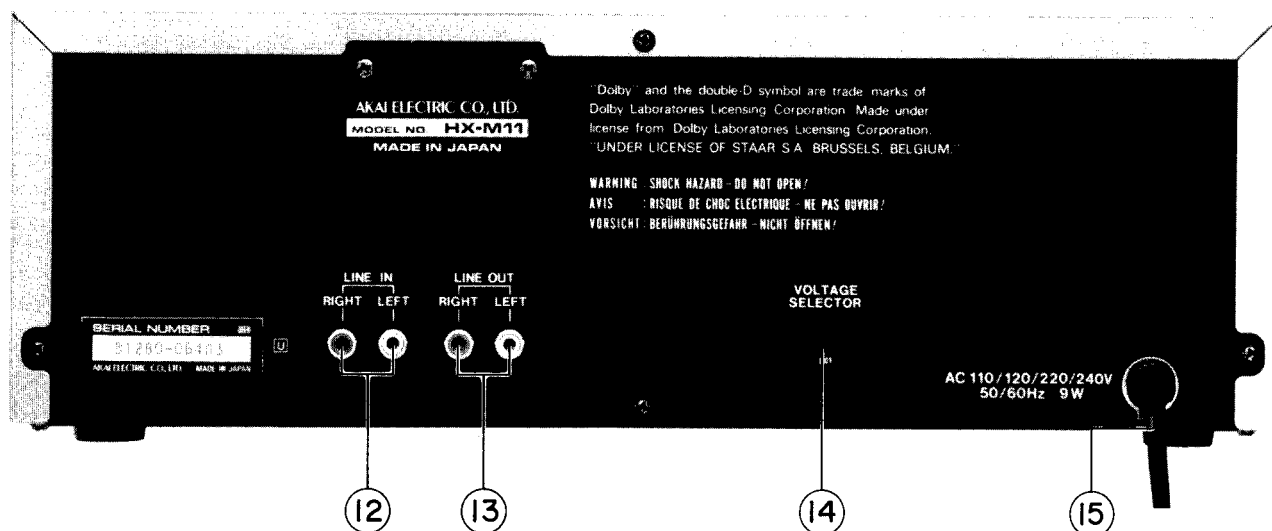


Fig. 3-2

- | | |
|--|--|
| 1. CASSETTE LID | 9. PEAK LEVEL METER |
| 2. REC INDICATOR | 10. ON/OFF INDICATOR |
| 3. DOLBY NR INDICATOR | 11. OPERATION BUTTONS |
| 4. TAPE COUNTER and COUNTER RESET BUTTON | 12. LINE IN JACKS |
| 5. REC LEVEL CONTROL | 13. LINE OUT JACKS |
| 6. TAPE SELECTOR SWITCHES | 14. VOLTAGE SELECTOR SWITCH (☐ Model only) |
| 7. DOLBY NR SWITCH | 15. POWER CORD |
| 8. ON/OFF (POWER) SWITCH | |

IV. PRINCIPAL PARTS LOCATION

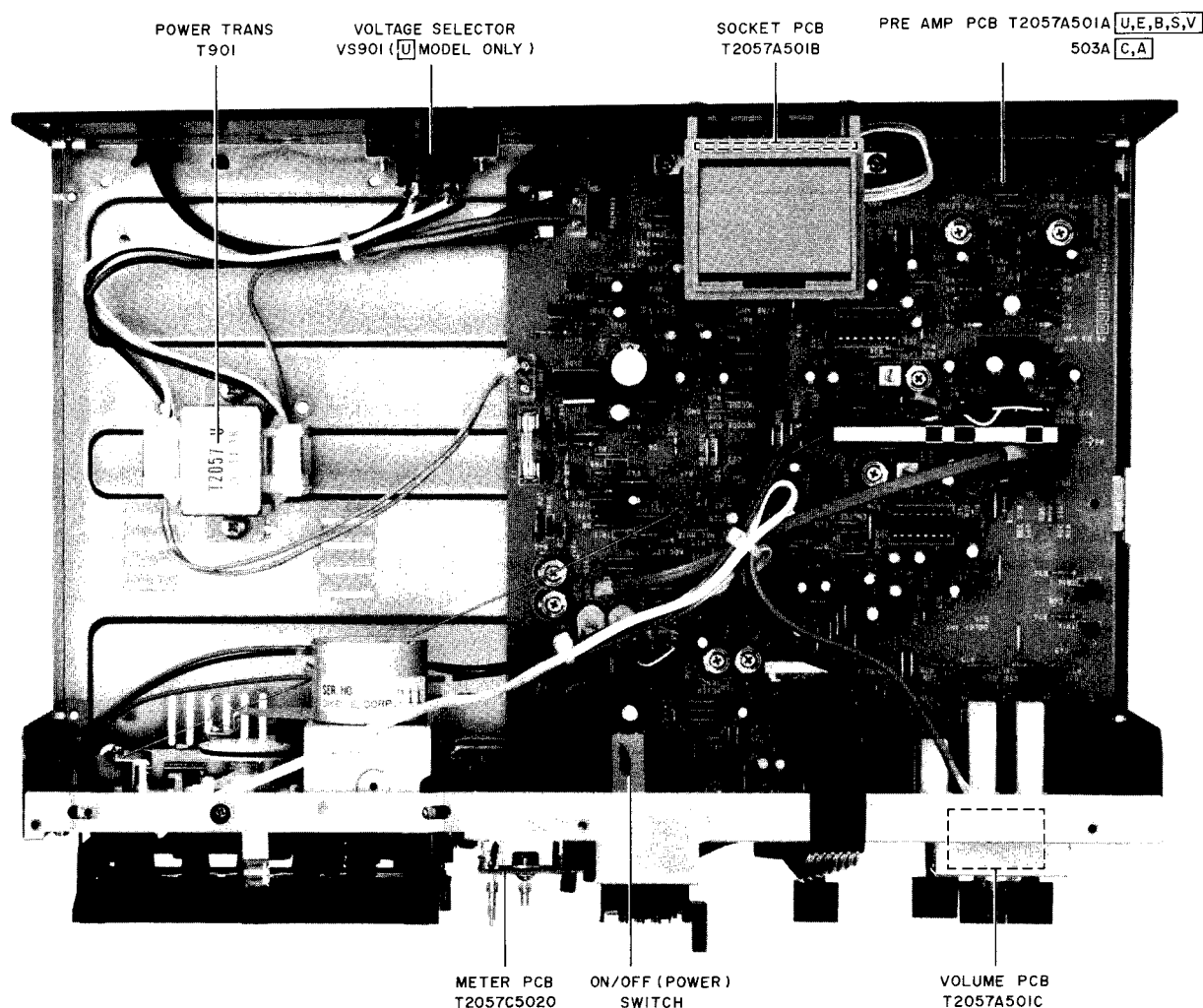


Fig. 4-1

V. MECHANICAL ADJUSTMENT

5-1 PINCH ROLLER PRESSURE MEASUREMENT

Put in the PLAY mode push pinch roller arm down with the spring gauge, push the pinch roller 1 to 2 mm from the Capstan and release slowly.

Read the spring gauge at the moment the pinch roller touches the capstan and begins to rotate.

Specified Contact pressure measurement of 200 to 300 gm. If there is no measurement obtained, Adjust or Replace the pinch roller spring.

5-2 WINDING TORQUE MEASUREMENT IN EACH MODE

Insert cassette torque meter (AJ-751179) and measure in each mode.

PLAY mode

Take up Torque: $45 \pm \frac{30}{10}$ gm-cm

Back tension torque: 1 to 6 gm-cm

FAST FORWARD, REWIND mode

Take up Torque: 70 to 160 gm-cm

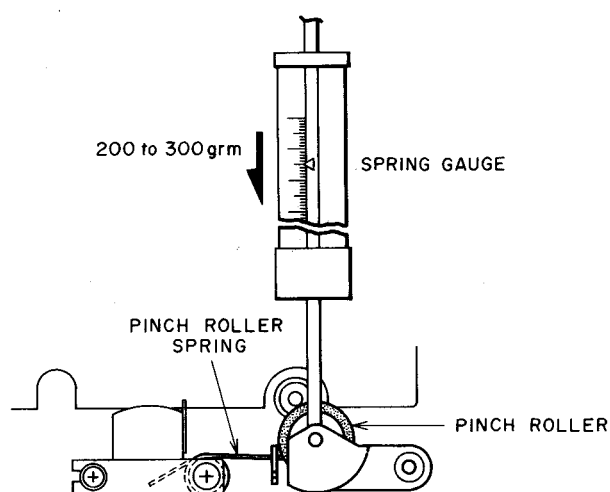


Fig. 5-1

5-3 REC/PB HEAD AZIMUTH ADJUSTMENT

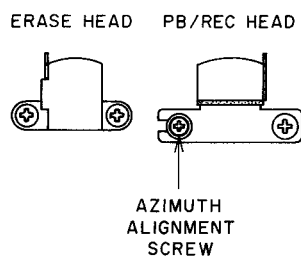


Fig. 5-2

Play Back a 10 kHz Azimuth Alignment Tape (AT-750778) and Adjust the Azimuth Alignment Screw, until the output levels of both channels are maximum. After Adjustment, Paintlock the Azimuth Alignment Screw.

5-4 TAPE SPEED ADJUSTMENT

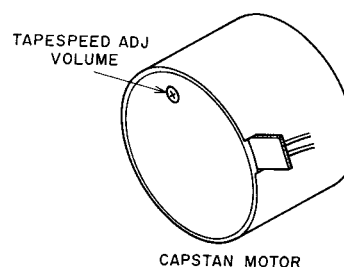


Fig. 5-3

Connect a frequency Counter to line output terminal. Play Back a 1,000 Hz Tape Speed Test Tape (AT-751263) or 3,150 Hz Tape Speed Test Tape (AT-751263) and adjust a Tape speed Adjustment Volume (see Fig. 3-3) to obtain a tape speed of 1,000 Hz $\pm$ 0.5% or 3,150 $\pm$ 0.5%.

VI. ELECTRICAL ADJUSTMENT

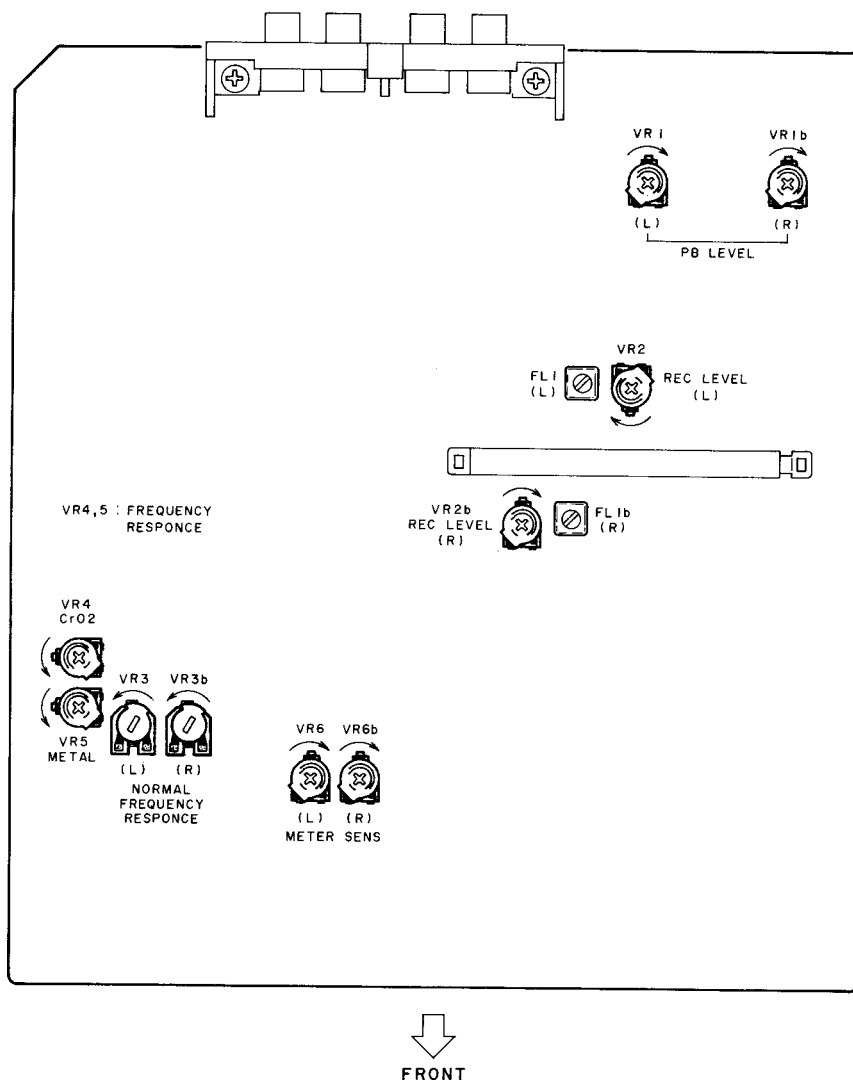


Fig. 6-1 PRE-AMP P.C Board Adjustment Points

Step	Adjustment Item	Test Tape Supply Signal	Mode	Adjustment	Result Parts	Remarks
1	PB LEVEL	315 Hz or 333 Hz	PB	VR1 (LcH) VR1b (RcH)	-5.5 ± 0.5 dBm -6.1 ± 0.5 dBm	* Before this adjustment Set the METER SENS. ADJ Volume (VR6, VR6b) to the center position
2	NORMAL Position Frequency Response	NORMAL Blank Tape 1 kHz, 10 kHz -25.5 dBm	REC/PB	VR3 (LcH) VR3b (RcH)	1 kHz, 10 kHz -25.5 ± 0.5 dBm	
3	CrO ₂ Position Frequency Response	CrO ₂ Blank Tape 1 kHz, 10 kHz -25.5 dBm	REC/PB	VR4	1 kHz, 10 kHz -25.5 ± 1.0 dBm	
4	METAL Position Frequency Response	METAL Blank Tape 1 kHz, 10 kHz -25.5 dBm	REC/PB	VR5	1 kHz, 10 kHz -25.5 ± 1.0 dBm	
5	REC LEVEL	NORMAL Blank Tape 1 kHz, -5.5 dBm	REC/PB	VR2 (LcH) VR2b (RcH)	-5.5 ± 0.5 dBm	
6	METER Sensitivity	1 kHz, -5.5 dBm	REC	VR6 (LcH) VR6b (RcH)	0 VU LED LIGHT UP	
7	Bias Leak	No Signal Input	REC	FL-1 (LcH) FL-1b (RcH)	Minimum output level	Set TAPE SELECTOR switch to METAL, REC LEVEL Volume to maximum

- NOTES:**
1. All adjustments are without Dolby.
 2. Use the following cassette measuring tapes:
 NORMAL TAPE : Maxell UD C-60
 CrO₂ TAPE : TDK SA C-60
 METAL TAPE : TDK MA C-60

VII. P.C BOARD TITLE AND IDENTIFICATION NUMBERS

P.C Board Title	P.C Board Number	Remarks
PRE-AMP P.C Board	T2057A501A T2057A503A	U, E, B, S, V C, A
METER P.C Board	T2057C5020	
SOCKET P.C Board	T2057A501B	
VOLUME P.C Board	T2057A501C	

VIII. DC RESISTANCE OF VARIOUS COILS

Parts	Designation	DC Resistance
PB/REC Head	HY4247199VK	320 ohms $\pm$ 20%
Erase Head	HJ213270	3.5 ohms

SECTION 2

PARTS LIST

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2. PRE AMP P.C BOARD BLOCK	14
3. METER P.C BOARD BLOCK	14
4. ASSEMBLY BLOCK	14
5. FINAL ASSEMBLY BLOCK	15
INDEX	16

Resistors and Capacitors which are not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

ATTENTION

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

HOW TO USE THIS PARTS LIST

1. This Parts List shows the parts that are considered necessary for repairs. Other parts, such as resistors and capacitors, are shown in the "Common List for Service Parts". Select and order such parts from the "Common List for Service Parts".
2. The Recommended Spare Parts shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not be supplied in principle.
4. How to read list

a) Mechanism Block

b) P.C Board Block

2. HEAD BASE BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK GX-F66R
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20x03STL CMT
2-4	ZS-536488	BID20x08STL CMT
2-5	ZG-402895	CS ANGLE ADJUST SPRING

SP (Service Parts) Classification

A small "x" indicates the inability to show that particular part in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure

This number corresponds with the Figure Number

6. SYS. CON. P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
6-1	BA-T2034A070A	PC SYS CON BLK GX-F44R
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-IC3	EI-331661	IC SN7405N
6-IC4	EI-336725	IC M54527P
6-TR1to4	ET-200985	TR 2SC2603 F,G
6-TR5to28	ET-554657	TR 2SA733A P,Q
6-D1	ED-318292	D SILICON H 1S2473T-77 T26
6-D2to4	ED-308952	D GERMA V 1K34A-LR F07
6-D5to10	ED-318292	D SILICON H 1S2473T-77 T26
6-X1	EI-318384	OSC X'TAL NC-18C 3.579545MHZ

SP (Service Parts) Classification

This reference numbers corresponds with symbol numbers of Schematic Diagrams.

5. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List. It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index.

WARNING

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

AVERTISSEMENT

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

RECOMMENDED SPARE PARTS

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

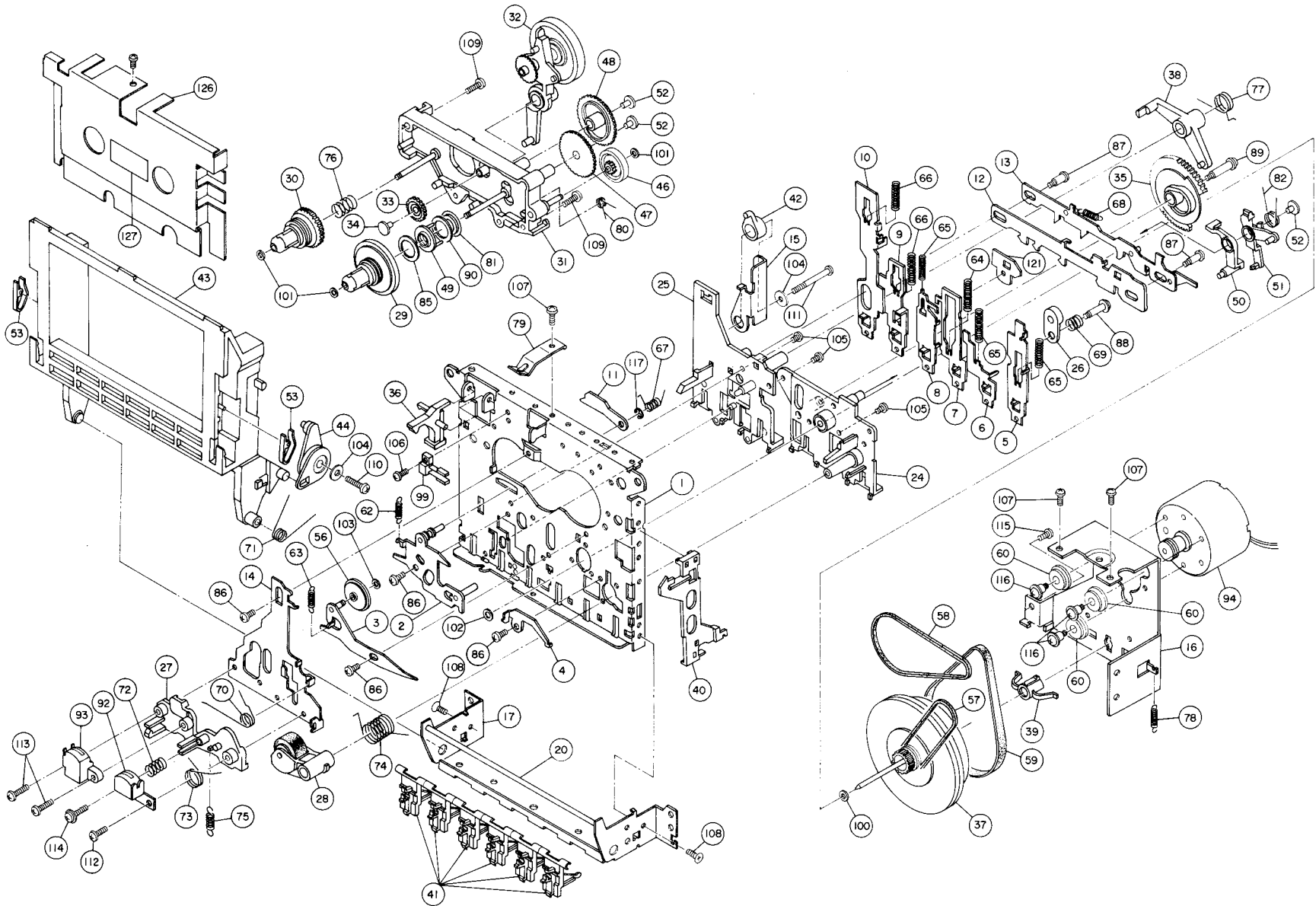
NO.	PARTS NO.	DESCRIPTION
1	BM-712825	MOTOR (W/PULLEY) ASSY
2	BR-712802	SUPPLY REEL ASSY
3	BR-712801	TAKE-UP REEL ASSY
4	BT-349571	Δ TRANS POWER T2057(A,C)(T901)
5	BT-349573	Δ TRANS POWER T2057(B,S)(T901)
6	BT-349572	Δ TRANS POWER T2057(E,V)(T901)
7	BT-349570	Δ TRANS POWER T2057(U)(T901)
8	ED-330319	Δ D SILICON DBA10B 100/1.0A
9	ED-351901	D LED GL-104H5
10	ED-351881	D LED GL-9PR23
11	ED-349584	D LED SLP-175B RED
12	ED-349617	D LED SLP-475B-50 YLW
13	ED-301911	D SILICON H DS448
14	N ED-346477	D ZENER H HZ11FA F10 B1
15	ED-338096	D ZENER H 05Z2.0 X
16	EF-258344	Δ FUSE SEMKO T 250V 0.80A
		(U,E,B,S)
17	EF-309391	Δ FUSE TSC 125V 0.80A (C,A)
18	EH-328491	FILTER DB D07-003K 100KHZ
19	EI-351879	IC AN6888
20	EI-349590	IC BA328
21	EI-349591	IC LA2730
22	EI-337228	IC M5218L0
23	EO-349589	COIL OSC 1 32-5016-12
24	EO-315758	COIL TUN 1 100Z-431 100.00KHZ
25	ES-712826	SW LEAF BSW-180
26	ES-337902	SW PUSH SDLD1P 01-1
27	ES-349588	SW PUSH SUL192A 2-02-02N
28	ES-349587	SW PUSH SUL322A 3 THROW
29	ES-305733	SW SELECTOR HXW0131-260 01-4
		(VS901) (U)
30	ES-349586	SW SLIDE 00920119 1-09-02
31	N ET-200558	TR 2SA11115 E,F
32	ET-349630	TR 2SA1246 T
33	ET-322598	TR 2SB632K E,F
34	ET-348931	TR 2SB774 R,S,T
35	N ET-310833	TR 2SC2274K E
36	ET-349705	TR 2SC2320 E,F,G
37	N ET-200505	TR 2SC2603 E,F
38	ET-349081	TR 2SC3383 S,T
39	N ET-452531	TR 2SD313HP E,F
40	EV-337995	R S-FIX H RVF8P01 3P 103
41	EV-337992	R S-FIX H RVF8P01 3P 502
42	EV-338588	R S-FIX H RVF8P01 3P 503
43	EV-336785	R S-FIX H TM8KV2-1S 3P 0.50W 104
44	EV-348314	VR ROTARY 16P20×3C A503
45	HE-337047	HEAD E HJ213270 C
46	HP-712824	HEAD R/P HY424719
47	MB-712818	BELT AUTO
48	MB-349497	BELT COUNTER 0.8×D74.3 CR HS60
49	MB-712820	BELT DRIVE
50	MB-712819	BELT FR
51	MI-712805	GEAR
52	MI-712813	GEAR AUTO
53	MI-712814	GEAR CAM AUTO
54	MI-712804	GEAR FF

NOTE: "N" New Parts

SYMBOL FOR DESTINATION

- A : AAL (U.S.A)
- B : UK (England)
- C : CSA (Canada)
- V : VDE (Germany)
- S : SAA (Australia)
- U : U/T (Universal Area)
- E : CEE (Europe)

MECHA AKI-90FMF BLOCK



1. MECHA AKI-90FMF BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
1-X	BB-349568	MECHA BLK AKI-90FMF
1-24	MV-712797	HOLDER LEVER (A) ASSY
1-28	BL-712799	PINCH ROLLER ARM ASSY
1-29	BR-712801	TAKE-UP REEL ASSY
1-30	BR-712802	SUPPLY REEL ASSY
1-32	MI-712803	CLUTCH ARM ASSY
1-33	MI-712804	GEAR FF
1-35	MI-712805	GEAR
1-36	ML-712806	REC SENSOR
1-37	BF-712807	FLYWHEEL ASSY
1-39	MZ-712808	HOLDER CAPSTAN
1-40	ML-712809	LEVER EJECT
1-43	TC-712810	LID FRAME
1-44	TC-712811	DAMPER ASSY
1-46	MI-712812	PULLEY AUTO
1-47	MI-712813	GEAR AUTO
1-48	MI-712814	GEAR CAM AUTO
1-49	MI-712815	CLUTCH AUTO
1-53	ZG-712816	CLAMP CASSETTE
1-56	MI-712817	IDLER PLAY
1-57	MB-712818	BELT AUTO

REF. NO.	PARTS NO.	DESCRIPTION
1-58	MB-712819	BELT FR
1-59	MB-712820	BELT DRIVE
1-72	ZG-749268	SP HEAD
1-73	ZG-712821	SP PINCH ROLLER
1-79	ZG-712822	SP PACK
1-85	TC-712823	FELT AUTO CLUTCH
1-92	HP-712824	HEAD R/P HY424719 (H901)
1-93	HE-337047	HEAD E HJ213270 C (H902)
1-94	BM-712825	Δ MOTOR (W/PULLEY) ASSY(M901)
1-99	ES-712826	SW LEAF BSW-180 (SW901)
1-112	ZS-536488	BID20×08STL CMT
1-113	ZS-749292	BID20×8.5STL CMT
1-114	ZS-749293	BID20×09STL CMT TW
1-126	TC-349493	DECORATION PLATE
1-127	SZ-645186	REFLECTOR

NOTE: Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

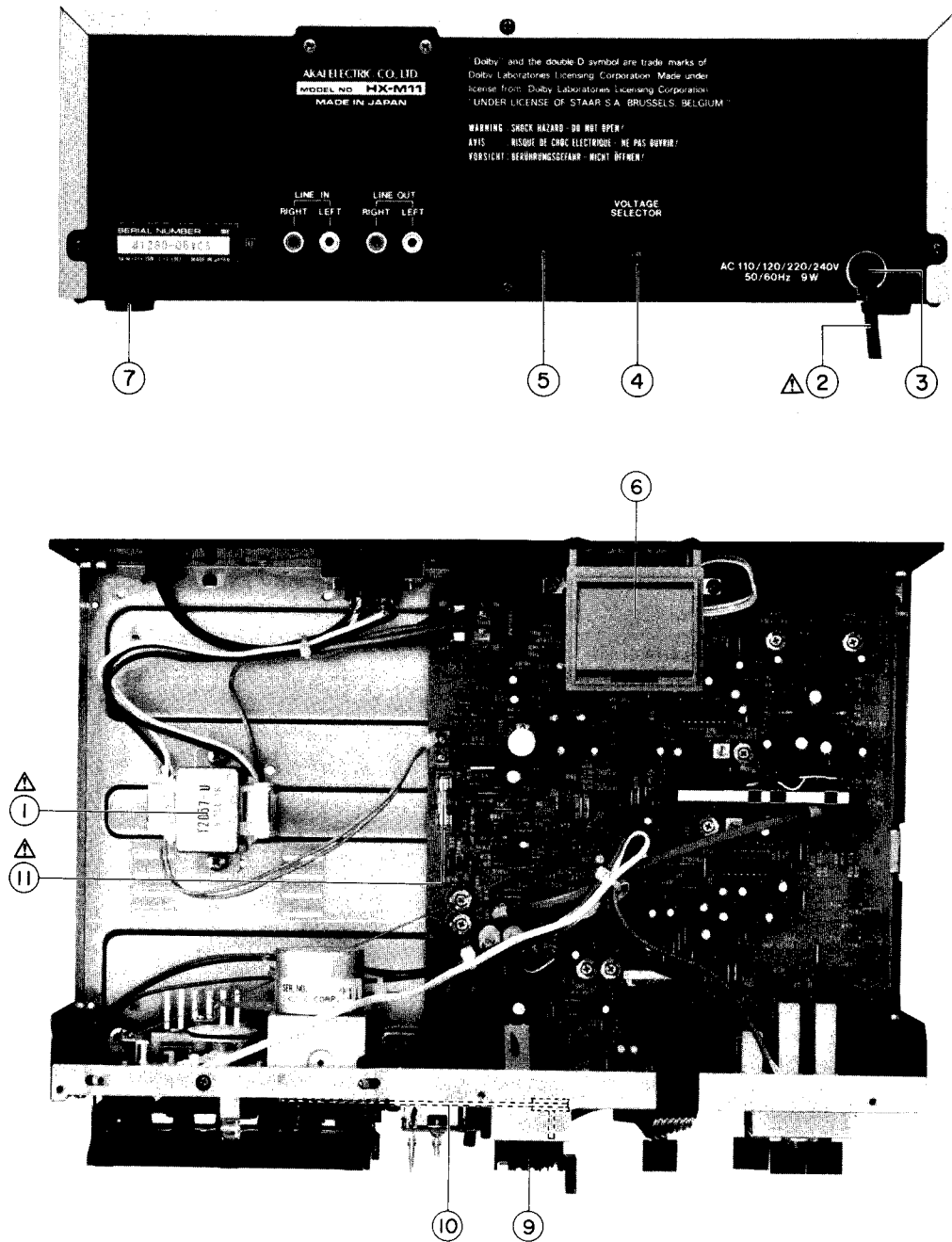
2. PRE AMP P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1U	BA-T2057A020A	PC PRE AMP BLK HX-M11 (U,E,V,B,S)
2-1C	BA-T2057A020B	PC PRE AMP BLK HX-M11(C,A)
PRE AMP P.C BOARD		
2-IC1	EI-349590	IC BA328
2-IC2	EI-349591	IC LA2730
2-IC3	EI-337228	IC M5218L0
2-TR1to3	ET-349081	TR 2SC3383 S,T
2-TR4,5	ET-310833	TR 2SC2274K E
2-TR6	ET-200505	TR 2SC2603 E,F
2-TR7	ET-452531	Δ TR 2SD313HP E,F
2-TR8to11	ET-200505	TR 2SC2603 E,F
2-TR12	ET-349630	TR 2SA1246 T
2-TR13	ET-349081	TR 2SC3383 S,T
2-TR14	ET-349705	TR 2SC2320 E,F,G
2-TR15	ET-200558	TR 2SA1115 E,F
2-TR16	ET-348931	TR 2SB774 R,S,T
2-TR17	ET-200505	TR 2SC2603 E,F
2-TR100	ET-322598	Δ TR 2SB632K E,F
2-TR101	ET-349081	Δ TR 2SC3383 S,T
2-D1	ED-301911	D SILICON H DS448
2-D2	ED-338096	D ZENER H 05Z2.0 X
2-D3to8	ED-301911	D SILICON H DS448
2-D100	ED-330319	Δ D SILICON DBA10B 100/1.0A
2-D101	ED-346477	D ZENER H HZ11FA F10 B1
2-SW1	ES-349586	SW SLIDE 00920119 1-09-02
2-SW2	ES-349587	SW PUSH SUL322A 3 THROW
2-SW3	ES-349588	SW PUSH SUL192A 2-02-02N
2-SW4	ES-337902	Δ SW PUSH SLDL1P 01-1
2-VR1A	EV-338588	R S-FIX H RVF8P01 3P 503
2-VR2A	EV-337992	R S-FIX H RVF8P01 3P 502
2-VR3A	EV-336785	R S-FIX H TM8KV2-1S 0.50W 104
2-VR4A	EV-337995	R S-FIX H RVF8P01 3P 103
2-VR5A	EV-337992	R S-FIX H RVF8P01 3P 502
2-VR6A	EV-337995	R S-FIX H RVF8P01 3P 103
2-L1	EO-347162	COIL FIX 1 L-8 103J
2-T1	EO-349589	COIL OSC 1 32-5016-12
2-FL1	EH-328491	FILTER DB D07-003K 100KHZ
2-FL2	EO-315758	COIL TUN 1 100Z-431 100.00KHZ
2-R8	ER-306879	Δ R CB H S15 FS RDS 1/2W 221J
2-R42	ER-333684	Δ R CB H S15 FS RDS 1/2W 621J
2-R100	ER-306127	Δ R CB H S15 FS RDS 1/2W 681J
2-C1	EC-306980	C STY V F05 500 221J 50DC
2-C12	EC-314990	C STY V SNP CQFS 101J 50DC
2-C15	EC-334402	C STY V SNP CQFS 472J 50DC
2-C36	EC-349631	C PP V F10 ECQ-F 182J 630DC
2-C100	EC-309091	C EC V CUT SE 332M 16.0DC
2-J1	EJ-347664	PIN J YKC21-5053 P 4P
VOLUME P.C BOARD		
2-VR1C	EV-348314	VR ROTARY 16P20x3C A503

3. METER P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
3-1	BA-T2057A030A	PC METER BLK HX-M11
METER P.C BOARD		
3-IC1	EI-351879	IC AN6888
3-D1	ED-351901	D LED GL-104H5
3-D2,3	ED-351881	D LED GL-9PR23
3-D4	ED-349617	D LED SLP-475B-50 YLW
3-D5	ED-349584	D LED SLP-175B RED

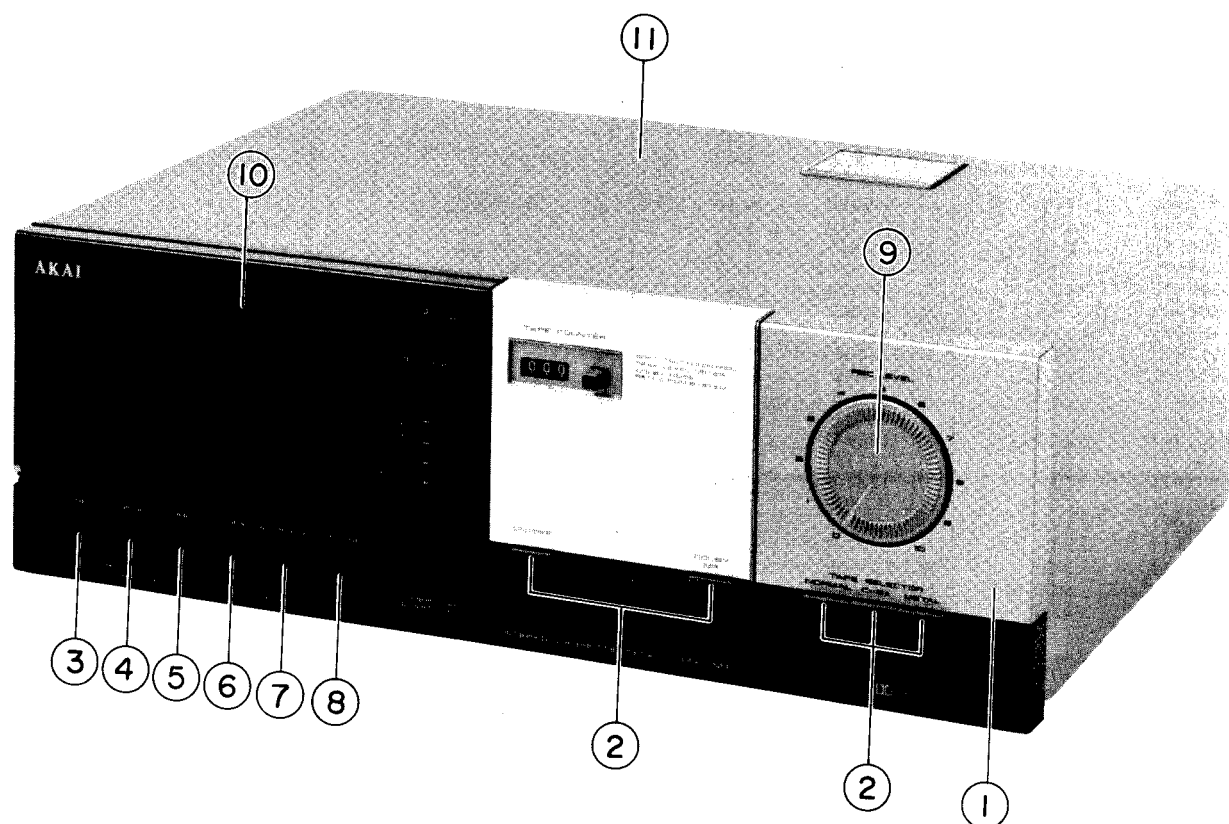
ASSEMBLY BLOCK



4. ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
4-1U	BT-349570	Δ TRANS POWER T2057(U)(T901)	4-4	ES-305733	Δ SW SELECTOR HXW0131-260 01-4 (VS901) (U)
4-1C	BT-349571	Δ TRANS POWER T2057(A,C)(T901)	4-5U	SP-349490A	PANEL REAR HX-M11(U)
4-1E	BT-349572	Δ TRANS POWER T2057(E,V)(T901)	4-5C	SP-349490B	PANEL REAR HX-M11(C,A)
4-1B	BT-349573	Δ TRANS POWER T2057(B,S)(T901)	4-5E	SP-349490C	PANEL REAR HX-M11(E,V)
4-2U	EW-349575	Δ AC CORD 2 CORES KP-224, VFF DK-1 U/T (U)	4-5B	SP-349490D	PANEL REAR HX-M11(B,S)
4-2C	EW-305691	Δ AC CORD 2 CORES KP-8, SPT-1 UC (C,A)	4-6	EJ-351021	SOCKET CONNECTOR M1688 12P
4-2E	EW-336923	Δ AC CORD 2 CORES KP-419C, LTCE-2F EV (E)	4-7	SA-349332	FOOT
4-2B	EW-346249	Δ AC CORD 2 CORES LCFL2x0.75 (B)	4-8x	ZW-305013	RV POP32 (A)
4-2S	EW-347898	Δ AC CORD 2 CORES VM-0436, LCFL (S)	4-9	MC-349574	COUNTER MK395-029
4-3	EZ-631945	STRAIN RELIEF SR-4N-4	4-10	MB-349497	BELT COUNTER 0.8xD74.3 CR HS60 S236M
			4-11U	EF-258344	Δ FUSE SEMKO T 250V 0.80A (U,E,B,S)
			4-11C	EF-309391	Δ FUSE TSC 125V 0.80A (C,A)

FINAL ASSEMBLY BLOCK



5. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
5-1	BD-T2057A040A	PANEL FRONT BLK HX-M11
5-2	SK-349495	KNOB PUSH
5-3	SK-349496A	KNOB OPERATION REC
5-4	SK-349496B	KNOB OPERATION PLAY
5-5	SK-349496C	KNOB OPERATION REW
5-6	SK-349496D	KNOB OPERATION FF
5-7	SK-349496E	KNOB OPERATION STOP
5-8	SK-349496F	KNOB OPERATION PAUSE
5-9	SK345375E	JNOB VOLUME (C)
5-10	BD-B349491	LID PART
5-11	SP-349489	COVER UPPER

INDEX

PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.
BA-T2057A020A	2-1U	EV-338588	2-VR1A				
BA-T2057A020B	2-1C	EV-348314	2-VR1C				
BA-T2057A030A	3-1	EW-305691	4-2C				
BB-349568	1-x	EW-336923	4-2E				
BD-B349491	5-10	EW-346249	4-2B				
BD-T2057A040A	5-1	EW-347898	4-2S				
BF-712807	1-37	EW-349575	4-2U				
BL-712799	1-28	EZ-631945	4-3				
BM-712825	1-94	HE-337047	1-93				
BR-712801	1-29	HP-712824	1-92				
BR-712802	1-30	MB-349497	4-10				
BT-349570	4-1U	MB-712818	1-57				
BT-349571	4-1C	MB-712819	1-58				
BT-349572	4-1E	MB-712820	1-59				
BT-349573	4-1B	MC-349574	4-9				
EC-306980	2-C1	MI-712803	1-32				
EC-309091	2-C100	MI-712804	1-33				
EC-314990	2-C12	MI-712805	1-35				
EC-334402	2-C15	MI-712812	1-46				
EC-349631	2-C36	MI-712813	1-47				
ED-301911	2-D4	MI-712814	1-48				
ED-301911	2-D5	MI-712815	1-49				
ED-301911	2-D6	MI-712817	1-56				
ED-301911	2-D7	ML-712806	1-36				
ED-301911	2-D8	ML-712809	1-40				
ED-301911	2-D1	MV-712797	1-24				
ED-301911	2-D3	MZ-712808	1-39				
ED-330319	2-D100	SA-349332	4-7				
ED-338096	2-D2	SK-345375E	5-9				
ED-346477	2-D101	SK-349495	5-2				
ED-349584	3-D5	SK-349496A	5-3				
ED-349617	3-D4	SK-349496B	5-4				
ED-351881	3-D3	SK-349496C	5-5				
ED-351881	3-D2	SK-349496D	5-6				
ED-351901	3-D1	SK-349496E	5-7				
EF-258344	4-11U	SK-349496F	5-8				
EF-309391	4-11C	SP-349489	5-11				
EH-328491	2-FL1	SP-349490A	4-5U				
EI-337228	2-IC3	SP-349490B	4-5C				
EI-349590	2-IC1	SP-349490C	4-5E				
EI-349591	2-IC2	SP-349490D	4-5B				
EI-351879	3-IC1	SZ-645186	1-127				
EJ-347664	2-J1	TC-349493	1-126				
EJ-351021	4-6	TC-712810	1-43				
EO-315758	2-FL2	TC-712811	1-44				
EO-347162	2-L1	TC-712823	1-85				
EO-349589	2-T1	ZG-712816	1-53				
ER-306127	2-R100	ZG-712821	1-73				
ER-306879	2-R8	ZG-712822	1-79				
ER-333684	2-R42	ZG-749268	1-72				
ES-305733	4-4	ZS-536488	1-112				
ES-337902	2-SW4	ZS-749292	1-113				
ES-349586	2-SW1	ZS-749293	1-114				
ES-349587	2-SW2	ZW-305013	4-8x				
ES-349588	2-SW3						
ES-712826	1-99						
ET-200505	2-TR6						
ET-200505	2-TR9						
ET-200505	2-TR8						
ET-200505	2-TR10						
ET-200505	2-TR11						
ET-200505	2-TR17						
ET-200558	2-TR15						
ET-310833	2-TR4						
ET-310833	2-TR5						
ET-322598	2-TR100						
ET-348931	2-TR16						
ET-349081	2-TR1						
ET-349081	2-TR2						
ET-349081	2-TR3						
ET-349081	2-TR101						
ET-349081	2-TR13						
ET-349630	2-TR12						
ET-349705	2-TR14						
ET-452531	2-TR7						
EV-336785	2-VR3A						
EV-337992	2-VR2A						
EV-337992	2-VR5A						
EV-337995	2-VR4A						
EV-337995	2-VR6A						

Da dieses Wartungshandbuch bereits auf Englisch veröffentlicht ist und Einstell- und Zeichnungshinweise auf Deutsch enthält, empfiehlt es sich, diese Ausgabe des Handbuchs zusammen mit der bereits veröffentlichten englischen Ausgabe und den Stromlaufplänen zu verwenden.

STEREOCASSETTENDECK

MODEL HX-M11

I. TECHNISCHE DATEN

Spur	4-Spur, 2-Kanal, Stereo
Tonköpfe	Löschkopf x 1 Hochdichter Kopf für Aufnahme/Wiedergabe x 1
Motor	Gleichstrommotor mit elektronischer Drehzahl- steuerung für Tonwellen- trieb x 1
Gleichlaufschwankungen	0,09% (DIN), 0,05% (WRMS)
Rauschabstand	56 dB (Gemessen über ein Band bei Höchstaufnahmepegel, Reineisenband) DOLBY EIN: Verbessert um bis zu 15 dB bei 1 kHz, 10 dB über 5 kHz
Klirrfaktor	0,75% (Reineisenband)
Frequenzgang	
Normal	30 Hz bis 15.000 Hz $\pm$ 3 dB
Cr02	30 Hz bis 16.000 Hz $\pm$ 3 dB
Reineisen	30 Hz bis 17.000 Hz $\pm$ 3 dB
Eingang	410mV/47kOhm (LINE)
Ausgang	410mV/weniger als 2,2 kOhm

Stromversorgung	120V, 60 Hz für USA und Kanada 220V, 50 Hz für Europa außer GB 240V, 50 Hz für GB und Australien 110V/120V/220V/240V, 50/60 Hz umschaltbar für andere Länder
Abmessungen	350(B) x 98(H) x 267(T) mm
Gewicht	4kg

* Änderungen der technischen Daten und des Designs
zum Zwecke der Verbesserung vorbehalten.

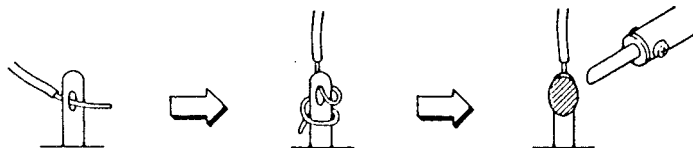
II. SICHERHEITSHINWEISE

SICHERHEITSKONTROLLE NACH WARTUNGSARBEITEN

Sicherstellen, daß der vorgegebene Isolierwiderstand zwischen den Stifen des Netzkabelsteckers und den äußeren, freiliegenden Gehäuseteilen mehr als 10 MOhm beträgt; hingegen soll bei Geräten mit Klemmen für Außenantennen (Tuner, Receiver usw.), die für **C** oder **A** vorgesehen sind, der vorgegebene Isolierwiderstand mehr als 2,2 MOhm (Erdungsklemmen, Mikrophonbuchsen, Kopfhörerbuchsen, (Line-in-out-Buchsen usw.) betragen.

BEI WARTUNGSARBEITEN ZU BEACHTENDE VORSICHTSMASSNAHMEN

1. Bei mit dem Symbol markierten Teilen sind die Sicherheitsvorschriften besonders sorgfältig zu beachten.
Den Austausch nur gegen Teile mit vorgeschriebener Teilenummer vornehmen.
2. Abgesehen von Sicherheitsmarkierungen werden sonstige Teile und Einheiten spezifiziert im Hinblick auf Übereinstimmung mit Regelungen, wie z.B. für Nebenausstrahlung, auch solche Teile dürfen nur gegen vorgeschriebene Austauschteile ausgetauscht werden.
Beispiele: Hf-Umsetzer, Tunereinheiten, Antennenwahlschalter, Hf-Kabel, rausch unterdrückende Kondensatoren, rauschunterdrückende Filter usw.
3. Die vorgeschriebene interne Verdrahtung verwenden. Insbesondere auf Folgendes achten:
 - 1) mit PVC-Kabelschutzrohr versehene Leitungen
 - 2) doppelt isolierte Leitungen
 - 3) Hochspannungsleitungen
4. Für Teile, die gefährlich hohe Spannungen führen, nur die vorgeschriebenen Isoliermaterialien verwenden. Dabei ist besonders zu achten auf:
 - 1) Isolierband
 - 2) PVC-Kabelschutzrohr
 - 3) Abstandhalter (Isoliersperren)
 - 4) Isolierfolien für Transistoren
 - 5) Plastikschrauben zur Befestigung von Mikroschaltern (insbesondere bei Plattenspielern)
5. Beim Austauschen von Komponenten auf der Netzspannung-Primärseite (Transformatoren, Netzkabel, rauschunterdrückende Kondensatoren usw.) sind die Kabelenden vor dem Verlöten vorschriftsmäßig um die Klemmen zu wickeln.



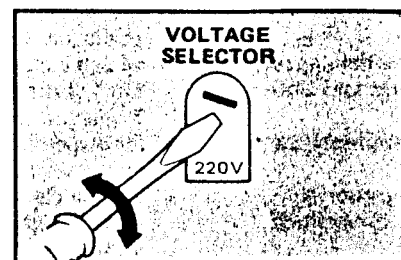
6. Darauf achten, daß Leitungen nicht in Kontakt mit wärmeproduzierenden Teilen geraten (z.B. Kühlkörpern, Metalloxidfolien-Widerständen, unterbrechbaren Widerständen usw.)
7. Sicherstellen, daß beim Austausch von Leitungen diese nicht in Kontakt mit scharfen Kanten oder spitzen Teilen geraten.
8. Desgleichen die Bereiche in der Umgebung von Stellen, an denen repariert wurde, überprüfen.
9. Darauf achten, daß keine Fremdkörper (Schrauben, Lot usw.) innerhalb des Gerätes verbleiben.

III. SPANNUNGSUMSTELLUNG

3-1 SPANNUNGSUMSTELLUNG

Alle Geräte werden ab Werk dem Bestimmungsort entsprechend eingestellt, einige können jedoch bei Bedarf auf 110V, 120V, 220V oder 240V eingestellt werden.

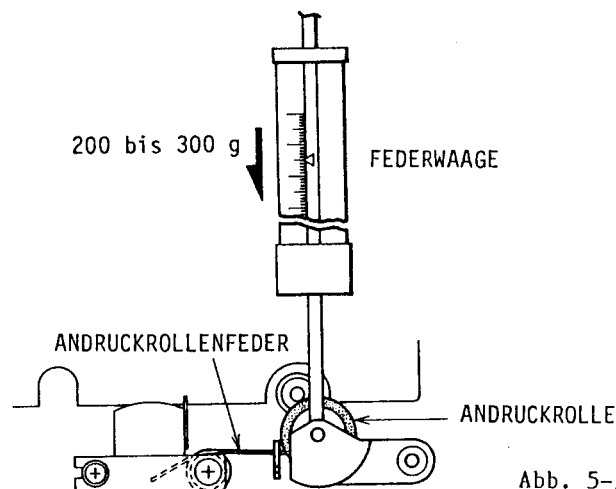
Falls Ihr Gerät für eine Spannungsumstellung vorgesehen ist: Drehen Sie, vor dem Anschluß des Netzkabels, den Spannungswähler (VOLTAGE SELECTOR) auf der Geräterückseite mit einem Schraubenzieher, bis die korrekte Spannung angezeigt wird. Modelle für USA, Europa, Großbritannien und Australien sind nicht mit einem Spannungswähler ausgestattet.



V. MECHANISCHE EINSTELLUNG

5-1 MESSEN DES ANDRUCKROLLENDRUCKS

Das Gerät auf Wiedergabe schalten. Den Andruckrollenarm mit der Federwaage herunterdrücken, daß ein Abstand von 1 2 mm zwischen Capstan und Andruckrolle entsteht. Anschließend den Druck vermindern, bis sich die Andruckrolle wieder zu drehen beginnt. In diesem Zustand den Wert ablesen. Im Normalfall liegt der Druck zwischen 200 300 g. Falls dieser Meßwert nicht erzielt wird, ist die Andruckrollenfeder einzustellen oder auszutauschen.



5-2 MESSUNG DES WICKEL-DREHMOMENTS IN ALLEN BETRIEBSARTEN

Eine Drehmoment-Meßkassette (AJ-751179) einlegen und in jeder Betriebsart messen. Wiedergabe

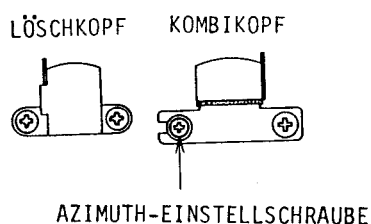
Aufwickeldrehmoment: 45 $\begin{smallmatrix} +30 \\ -10 \end{smallmatrix}$ g-cm

Abwickel-Drehmoment: 1 bis 6 g-cm

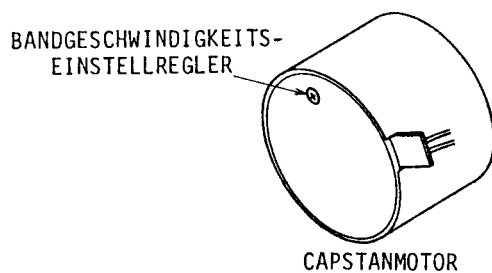
Betriebsart SCHNELLER VORLAUF, RÜCKSPULEN

Aufwickeldrehmoment: 70 bis 160 g-cm

5-3 KOMBIKOPF-AZIMUTH-EINSTELLUNG 5-4 EINSTELLUNG DER BANDGESCHWINDIGKEIT



Eine 10 kHz Azimuth-Einstellcassette (AT-750778) abspielen und die Azimuth-Einstellschraube so einstellen, daß die Ausgangspegel beider Kanäle Maximum erreicht. Nach der Einstellung Siegellack auf die Azimuth-Einstellschraube auftragen.



Einen Frequenzzähler an den Line-Ausgang anschließen. Eine 1000kHz-Bandgeschwindigkeits-Testcassette (AT-751263) oder eine 3150 Hz Bandgeschwindigkeits-Testcassette (AT-751263) abspielen und den Bandgeschwindigkeits-Einstellregler (siehe Abb. 5-3) so einstellen, daß eine Frequenz von $1000 \text{ Hz} \pm 0,5\%$ bzw. $3150 \pm 0,5\%$ erreicht wird.

VI. ELEKTRISCHER ABGLEICH

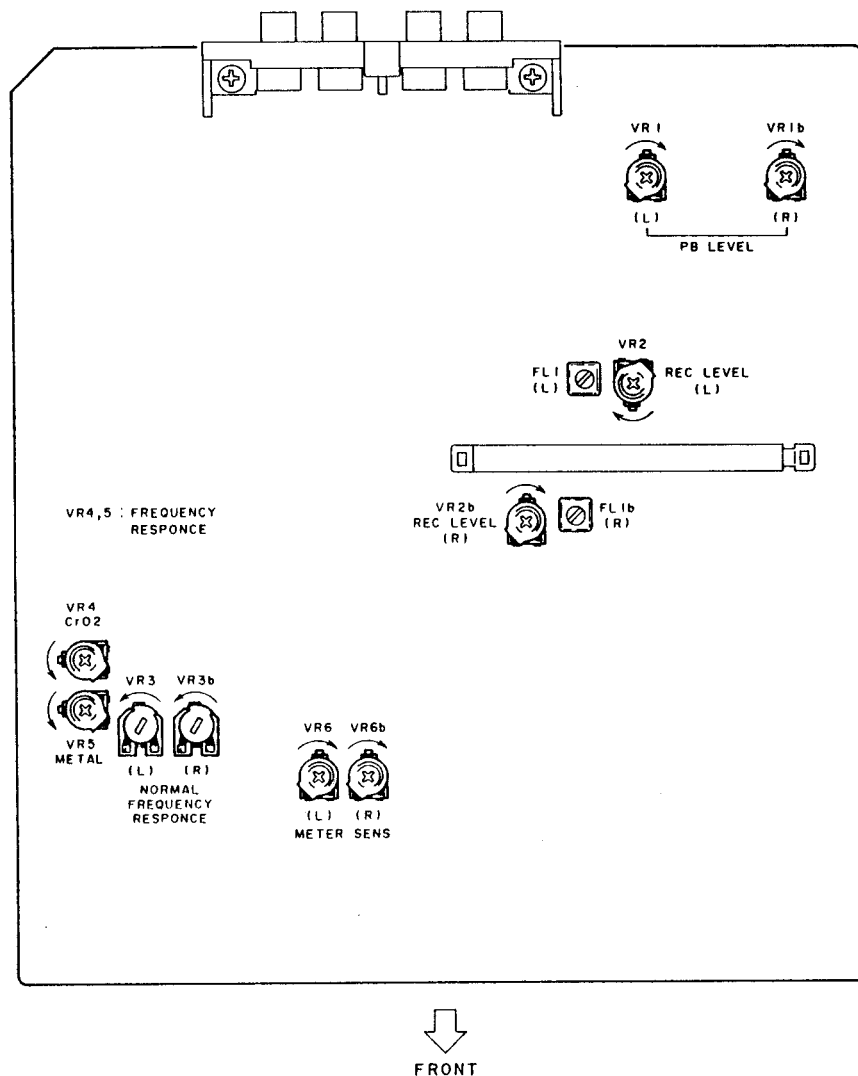


Abb. 6-1 Abgleichpunkte an der Vorverstärker-Leiterplatte

Schritt	Abgleichge- genstand	Testcassette Angelegtes Signal	Be- triebs- art	Abgleich- teil	Ergebnis	Bemerkungen
1	PB LEVEL	315 Hz oder 333 Hz	PB	VR1 (LcH) VR1b (RcH)	$-5,5 \pm 0,5$ dBm $-6,1 \pm 0,5$ dBm	* Vor dieser Ein- stellung den METER SENS. ADJ-Regler (VR6, VR6b) in Mittel- stellung bringen.
2	NORMAL Position Frequency Response	NORMAL Leercassette 1 kHz, 10 kHz $-25,5$ dBm	REC/PB	VR3 (LcH) VR3b (RcH)	1 kHz, 10 kHz $-25,5 \pm 0,5$ dBm	
3	CrO ₂ Position Frequency Response	CrO ₂ -Leer- cassette 1 kHz, 10 kHz $-25,5$ dBm	REC/PB	VR4	1 kHz, 10 kHz $-25,5 \pm 1,0$ dBm	
4	METAL Position Frequency Response	Reineisenband- Leercassette 1 kHz, 10 kHz $-25,5$ dBm	REC/PB	VR5	1 kHz, 10 kHz $-25,5 \pm 1,0$ dBm	
5	REC LEVEL	Normal- Leercassette 1 kHz, $-5,5$ dBm	REC/PB	VR2 (LcH) VR2b (RcH)	$-5,5 \pm 0,5$ dBm	
6	METER Sensitivity	1 kHz, $-5,5$ dBm	REC	VR6 (LcH) VR6b (RcH)	0 VU LED leuchtet auf	
7	Bias Leak	Ohne Signal	REC	FL-1 (LcH) FL1b (RcH)	Mindestaus- gangspegel	Den Bandsorten- Wahlschalter auf METAL, den Aus- steuerungsregler (REC LEVEL) auf Maximum einstellen.

HINWEIS: 1. Alle Einstellungen ohne Dolby ausführen.

2. Die folgenden Cassettenmeßbänder verwenden:

NORMAL : Maxell UD C-60

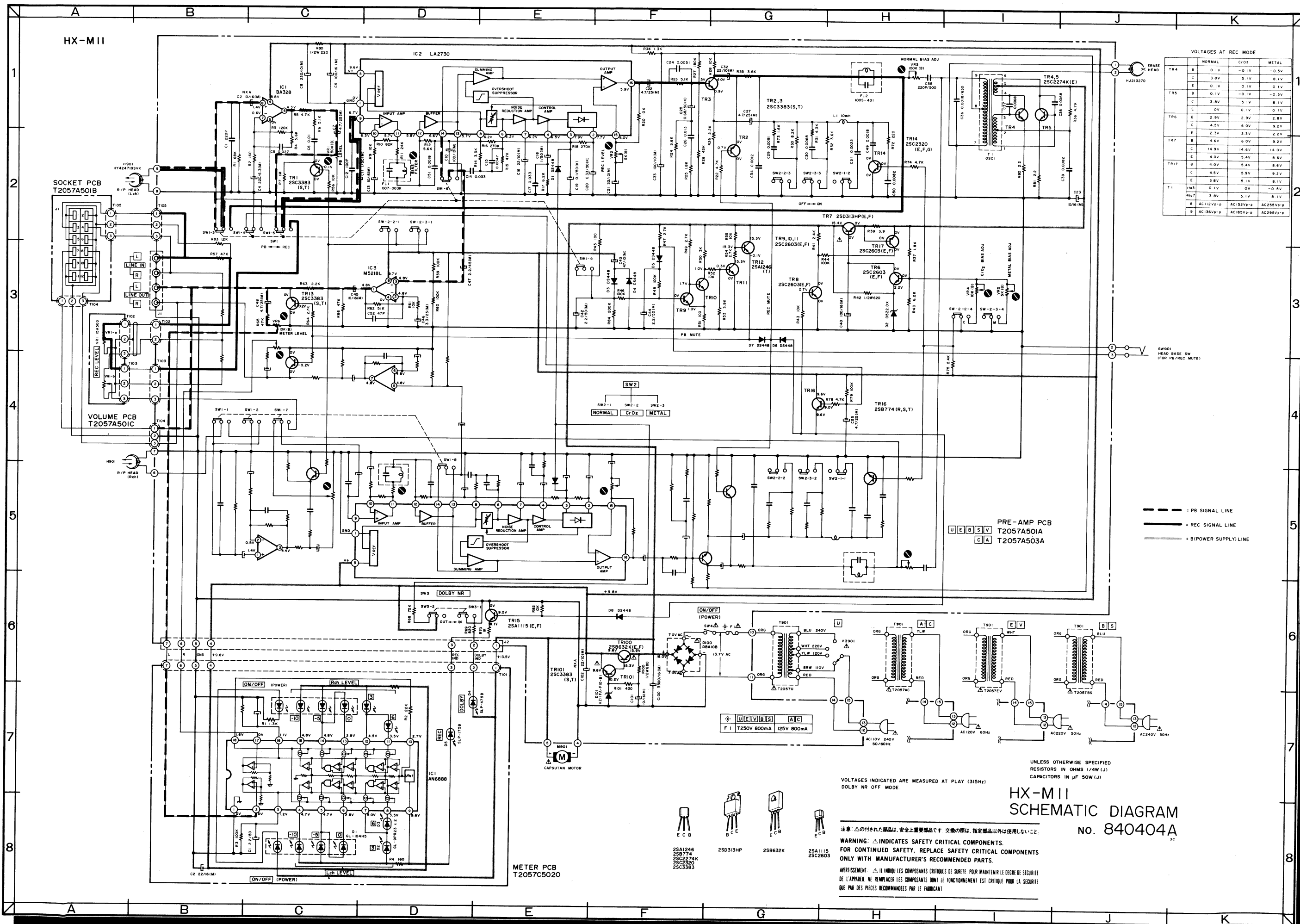
CrO₂ : TDK SA C-60

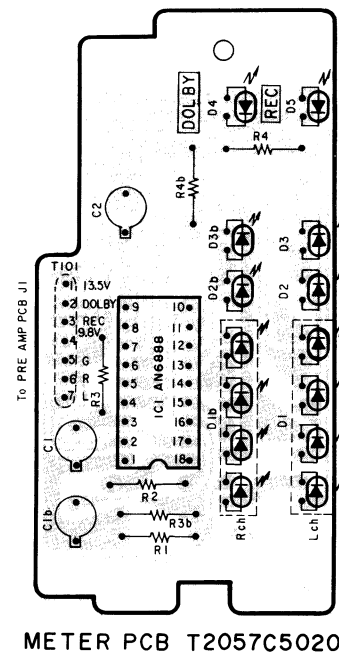
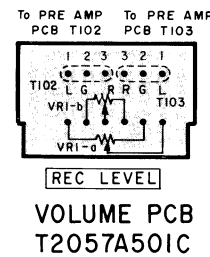
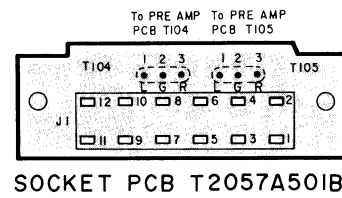
METAL : TDK MA C-60

AKAI

MODEL HX-M11

P.C BOARDS SCHEMATIC DIAGRAM

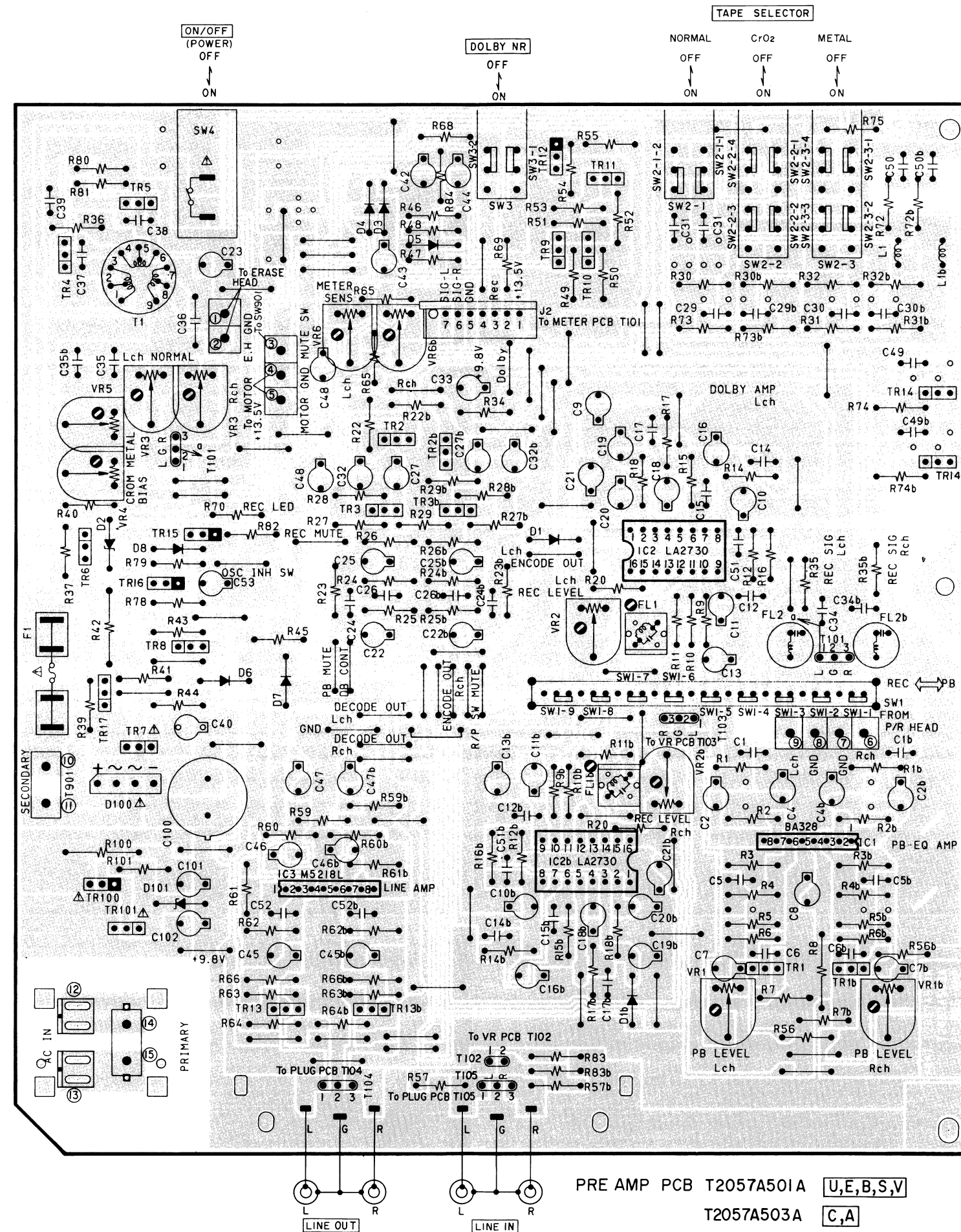




注意: △の付された部品は、安全上重要部品です。交換の際は、指定部品以外は使用しないこと。

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

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



LOCATION OF COMPONENTS

IC'S
IC1-----D4
IC2-----C3
IC2b-----D3
IC3-----D2

TRANSISTORS

TR1,1b-----E4
TR2,2b-----B2
TR3,3b-----C2
TR4,5-----A1
TR6,8-----C1
TR7-----D1
TR9 to 12-----A3
TR13,13b-----E2
TR14,14b-----B2
TR15,16-----C1
TR17-----D1
TR100-----D1
TR101-----E1

TERMINALS

J1-----B2
①,②-----B1
③ to ⑤-----B2
⑥ to ⑨-----D4
⑩,⑪-----D1
⑫ to ⑮-----E1

TR1 to 3,13,101---2SC3383(S,T)
TR4,5-----2SC2274K(E)
TR6,8 to 11,17---2SC2603(E,F)
TR7-----2SD313HP(E,F)
TR12-----2SA1246 (T)
TR14-----2SC2320(E,F,G)
TR15-----2SA1115(E,F)
TR16-----2SB774 (R,S,T)
TR100-----2SB632K(E,F)

B
●●● = PNP TRANSISTOR
B
●●● = NPN TRANSISTOR

2SA1246
2SB774
2SC2274K
2SC2320
2SC3383

2SB632K
2SA1115
2SC2603