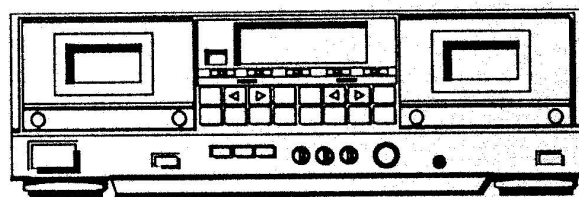


AIWA®**AD-WX999****SERVICE
MANUAL**

STEREO CASSETTE DECK

• BASIC TAPE MECHANISM : $\alpha - 14$

• TYPE. H,U,E,K,Z

SPECIFICATIONS

Type	Stereo cassette tape deck
Track format	4 tracks, 2 channels
Power supply	AD-WX999E, Z AC 220 V, 50/60 Hz AD-WX999K AC 240V, 50/60 Hz AD-WX999U AC 120 V, 60 Hz AD-WX999H AC 120 V/220 V/240 V switchable, 50/60 Hz
Power consumption	33 W
Frequency response	METAL tape: 20-18,000 Hz CrO ₂ tape: 20-17,000 Hz NORMAL tape: 20-16,000 Hz
Signal-to-noise ratio	73 dB (METAL tape DOLBY C NR ON)
Wow and flutter	Deck 1 0.15% (according to DIN 45500) 0.055% (WRMS) Deck 2 0.15% (according to DIN 45500) 0.055% (WRMS)
Tape speed	4.8 cm/sec. (1 7/8 ips), 9.5 cm/sec (double speed)

Recording system	AC bias (frequency 105 kHz)
Erase system	AC erase
Motor	DC servomotor $\times 2$
Heads	Record/playback head $\times 2$ (PC-OCC coil pure amorphous head) Erase head $\times 2$ (Double-gap ferite head)
Inputs	LINE IN maximum input sensitivity: 50 mV (over 50 k Ω)
Outputs	LINE OUT standard output level: 400 mV (0 VU); suitable load impedance: over 50 k Ω
Dimensions	430(W) $\times$ 140(H) $\times$ 313(D) mm
Weight	5.4 kg

- Design and specifications are subject to change without notice.
- Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
- "Dolby", the double-D symbol, and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

AIWA Co., Ltd.**Tokyo Japan**

Printed in Japan

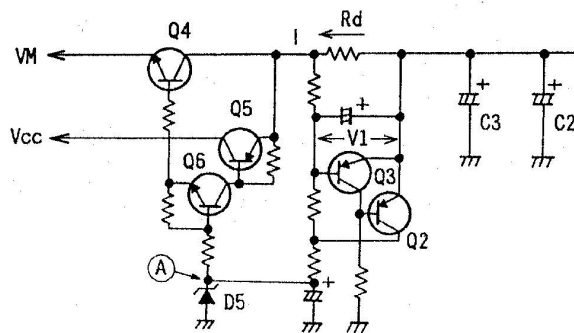
Cautions when servicing

The power circuit in this unit incorporates an overcurrent protector (shut-down circuit). When the overcurrent protector operates, voltages, VM, Vcc and Vref are not supplied. Once the overcurrent protector has operated, the power circuit will not be recovered automatically when is turned on, even after the cause of overcurrent is removed. Perform the following procedure to recover the power circuit.

1. Turn the power switch off.
2. Discharge C2 and C3 through a resistor of 100Ω or more. (It takes about 5 seconds to discharge C2 and C3 through a 100Ω resistor.)

Note : It takes about 90 seconds to discharge if step 2 is not performed.

Operation of Overcurrent Protector



During normal operation (Q3: OFF, Q2: ON)

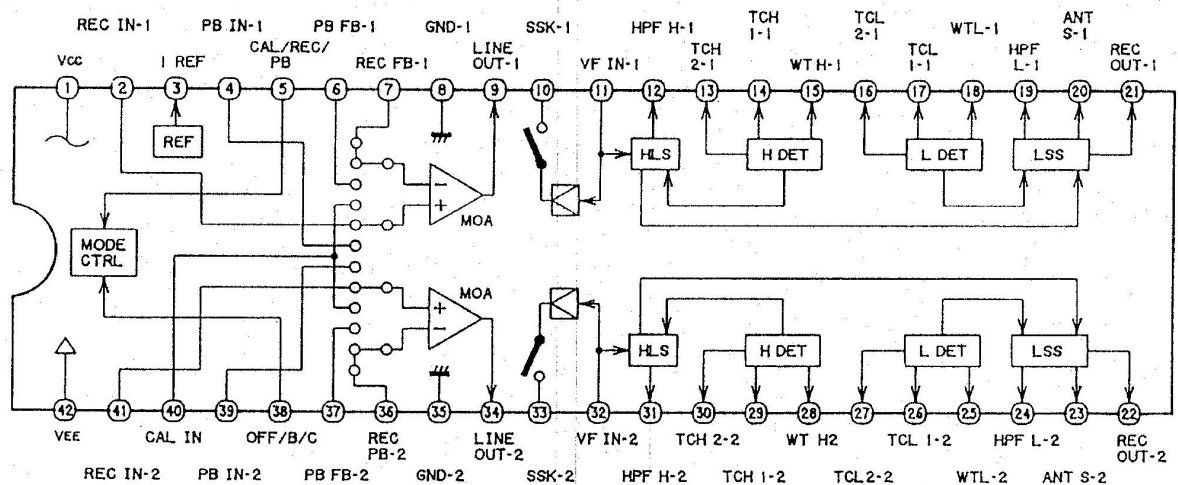
Since current I flowing to Rd is not large, V1 becomes lower than 0.6V and Q3 turns off. This causes Q2 to turn on, and the voltage at point A becomes about 12V, so VM and Vcc are output.

When overcurrent occurs (Q3: ON, Q2: OFF)

When current I rises due to trouble on the VM and Vcc lines, V1 becomes higher than 0.6V and Q3 turns on. This causes Q2 to turn off, and the voltage at point A drops abnormally, so VM or Vcc is not output.

IC BLOCK DIAGRAM

IC, CX20187



ELECTRICAL MAIN PARTS LIST

REF.NO. PART NO. DESCRIPTION

IC

87-001-441-019 IC,BA10358N
87-001-440-019 IC,BA15218N
87-001-143-019 IC,CX20187
87-001-334-010 IC,LB9051A

84-790-619-010 IC,LC6538D-4098
87-020-533-019 IC,M4069UBP
87-020-680-019 IC,NJM2068S
87-020-758-019 IC,NJM2068SD

87-020-908-019 IC,NJM4066BD
87-001-533-010 REMOTE UNIT GPIU501X

TRANSISTOR

89-503-735-019 FET,2SK373GR
87-026-463-019 TRANSISTOR,2SA933SR
89-109-521-019 TRANSISTOR,2SA952K
89-110-155-019 TRANSISTOR,2SA1015GR

89-112-965-019 TRANSISTOR,2SA1296GR
89-210-154-019 TRANSISTOR,2SB1015Y
87-026-462-019 TRANSISTOR,2SC1740S,SR
89-318-155-019 TRANSISTOR,2SC1815GR

89-318-156-019 TRANSISTOR,2SC1815BL
89-320-011-019 TRANSISTOR,2SC2001K
89-331-130-019 TRANSISTOR,2SC3113
89-413-023-019 TRANSISTOR,2SD1302S

89-414-065-019 TRANSISTOR,2SD1406GR
87-026-200-019 TRANSISTOR,DTC114ES
87-026-379-010 TRANSISTOR,RN2206

DIODE

87-001-783-019 DIODE,1N4002
87-020-691-019 DIODE,1SS132
87-020-123-019 DIODE,DS446
87-001-820-010 DIODE,GP15B(F)

87-027-676-019 DIODE,ZENER HZ12B3L
87-027-391-019 DIODE,ZENER HZ36-2
87-027-301-019 DIODE,ZENER HZ3A1
87-027-286-019 DIODE,ZENER HZ5C1

87-027-649-019 DIODE,ZENER HZ7A2
87-027-321-019 DIODE,ZENER HZ9B2
87-027-584-019 DIODE,ZENER HZ9C1L

MAIN CIRCUIT BOARD SECTION

C1 *87-010-400-019 CAP,ELECT 0.47-50V SME
C2 *87-010-390-019 CAP,ELECT 3300-25V SME
C3 *87-010-390-019 CAP,ELECT 3300-25V SME
C4 *87-010-405-019 CAP,ELECT 10-50V SME

C5 *87-010-384-019 CAP,ELECT 100-25V
C6 *87-010-644-019 CAP,ELECT 470-16V MUSE
C7 *87-010-263-019 CAP,ELECT 100-10V
C8 *87-010-644-019 CAP,ELECT 470-16V MUSE

C9 *87-010-237-019 CAP,ELECT 1000-16V SME
C11 *87-015-406-019 CAP,ELECT 100-100V
C13 *87-010-405-019 CAP,ELECT 10-50V SME
C14 *87-010-408-019 CAP,ELECT 47-50VX

C101 *87-018-121-019 CAP,CERA SS 150P
C102 *87-018-121-019 CAP,CERA SS 150P
C103 *87-018-120-019 CAP,CERA 120P
C104 *87-018-120-019 CAP,CERA 120P

C109 *87-018-126-019 CAP,CERA SS 390P
C110 *87-018-126-019 CAP,CERA SS 390P
C111 *87-010-679-019 CAP,ELECT 10-16V KS
C112 *87-010-679-019 CAP,ELECT 10-16V KS

REF.NO. PART NO. DESCRIPTION

C113 *87-010-679-019 CAP,ELECT 10-16V KS
C114 *87-010-679-019 CAP,ELECT 10-16V KS
C117 *87-018-134-019 CAP,CERA SS 0.01
C201 *87-018-121-019 CAP,CERA SS 150P

C202 *87-018-121-019 CAP,CERA SS 150P
C203 *87-018-121-019 CAP,CERA SS 150P
C204 *87-018-121-019 CAP,CERA SS 150P
C209 *87-018-126-019 CAP,CERA SS 390P

C210 *87-018-126-019 CAP,CERA SS 390P
C211 *87-010-679-019 CAP,ELECT 10-16V KS
C212 *87-010-679-019 CAP,ELECT 10-16V KS
C213 *87-010-679-019 CAP,ELECT 10-16V KS

C214 *87-010-679-019 CAP,ELECT 10-16V KS
C217 *87-018-134-019 CAP,CERA SS 0.01
C311 *87-018-197-019 CAP,CERA SS 1800P
C312 *87-018-197-019 CAP,CERA SS 1800P

C315 *87-010-404-019 CAP,ELECT 4.7-50V SME
C316 *87-010-404-019 CAP,ELECT 4.7-50V SME
C317 *87-018-132-019 CAP,CERA SS 2200P
C318 *87-018-132-019 CAP,CERA SS 2200P

C319 *87-018-119-019 CAP,CERA SS 100P
C320 *87-018-119-019 CAP,CERA SS 100P
C371 *87-010-408-019 CAP,ELECT 47-50VX
C372 *87-010-401-019 CAP,ELECT 1-50V

C373 *87-010-381-019 CAP,ELECT 330-16V SME
C375 *87-018-133-019 CAP,CERA SS 4700P
C378 *87-014-077-010 CAP,PP 6800P
C379 *87-018-131-019 CAP,CERA SS 1000P

C405 *87-018-197-019 CAP,CERA SS 1800P
C406 *87-018-197-019 CAP,CERA SS 1800P
C413 *87-018-197-019 CAP,CERA SS 1800P
C414 *87-018-197-019 CAP,CERA SS 1800P

C421 *87-010-404-019 CAP,ELECT 4.7-50V SME
C422 *87-010-404-019 CAP,ELECT 4.7-50V SME
C423 *87-018-132-019 CAP,CERA SS 2200P
C424 *87-018-132-019 CAP,CERA SS 2200P

C425 *87-018-119-019 CAP,CERA SS 100P
C426 *87-018-119-019 CAP,CERA SS 100P
C471 *87-010-408-019 CAP,ELECT 47-50VX
C472 *87-010-401-019 CAP,ELECT 1-50V

C473 *87-010-381-019 CAP,ELECT 330-16V SME
C475 *87-018-133-019 CAP,CERA SS 4700P
C478 *87-014-077-010 CAP,PP 6800P
C479 *87-018-131-019 CAP,CERA SS 1000P

C501 *87-018-131-019 CAP,CERA SS 1000P
C502 *87-018-131-019 CAP,CERA SS 1000P
C511 *87-018-130-019 CAP,CERA 820P
C512 *87-018-130-019 CAP,CERA 820P

C515 *87-018-121-019 CAP,CERA SS 150P
C516 *87-018-121-019 CAP,CERA SS 150P
C601 *87-018-131-019 CAP,CERA SS 1000P
C602 *87-018-131-019 CAP,CERA SS 1000P

C607 *87-018-134-019 CAP,CERA SS 0.01
C608 *87-018-134-019 CAP,CERA SS 0.01
C611 *87-018-130-019 CAP,CERA 820P
C612 *87-018-130-019 CAP,CERA 820P

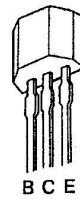
C615 *87-018-121-019 CAP,CERA SS 150P
C616 *87-018-121-019 CAP,CERA SS 150P
C617 *87-010-260-019 CAP,ELECT 47-25V
C618 *87-010-263-019 CAP,ELECT 100-10V

C701 *87-010-405-019 CAP,ELECT 10-50V SME
C702 *87-010-405-019 CAP,ELECT 10-50V SME
C703 *87-018-133-019 CAP,CERA SS 4700P
C704 *87-018-133-019 CAP,CERA SS 4700P

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
C711	*87-010-400-019	CAP,ELECT 0.47-50V SME	△R935	87-029-079-010	RES,MO 100-1W
C712	*87-010-400-019	CAP,ELECT 0.47-50V SME	△R936	87-025-338-010	RES,MO 2.2-1W(U)
C713	*87-010-677-019	CAP,ELECT 0.15-50V SRA	SFR101	*87-024-168-019	SFR,1K
C714	*87-010-677-019	CAP,ELECT 0.15-50V SRA	SFR102	*87-024-168-019	SFR,1K
C717	*87-010-545-019	CAP,ELECT 0.22-50V SME	SFR201	*87-024-168-019	SFR,1K
C718	*87-010-545-019	CAP,ELECT 0.22-50V SME	SFR202	*87-024-168-019	SFR,1K
C731	*87-010-404-019	CAP,ELECT 4.7-50V SME	SFR301	*87-024-169-019	SFR,2.2K
C732	*87-010-404-019	CAP,ELECT 4.7-50V SME	SFR302	*87-024-169-019	SFR,2.2K
C751	*87-015-242-019	CAP,ELECT 2.2-50V LL	SFR401	*87-024-169-019	SFR,2.2K
C752	*87-015-242-019	CAP,ELECT 2.2-50V LL	SFR402	*87-024-169-019	SFR,2.2K
C761	*87-010-404-019	CAP,ELECT 4.7-50V SME	SFR501	*87-024-176-019	SFR,100K
C762	*87-010-404-019	CAP,ELECT 4.7-50V SME	SFR502	*87-024-176-019	SFR,100K
C763	*87-010-401-019	CAP,ELECT 1-50V	SFR601	*87-024-176-019	SFR,100K
C764	*87-010-401-019	CAP,ELECT 1-50V	SFR602	*87-024-176-019	SFR,100K
C765	*87-010-263-019	CAP,ELECT 100-10V	SFR801	*87-024-177-019	SFR,220K
C766	*87-010-263-019	CAP,ELECT 100-10V	VR551	84-790-632-019	VR,250KB(BIAS FINE)(D1)
C767	*87-018-209-019	CAP,CERA SS 0.1	VR651	84-790-632-019	VR,250KB(BIAS FINE)(D2)
C801	*87-018-133-019	CAP,CERA SS 4700P	VR751	84-790-631-019	VR,100KW(BALANCE)
C802	*87-018-164-019	CAP,CERA SS 2.2P UJ	VR752	84-790-630-019	VR,50KA(REC LEVEL)
C803	*87-018-133-019	CAP,CERA SS 4700P	--- FRONT CIRCUIT BOARD SECTION ---		
C804	*87-012-105-019	CAP,CERA 0.022 16V Y	C901	*87-010-234-019	CAP,ELECT 47-16V SRE
C805	*87-010-401-019	CAP,ELECT 1-50V	FL1	84-790-620-010	FL,CP5387 GR(METER/COUNTER)
C806	*87-010-384-019	CAP,ELECT 100-25V	LED901	87-001-745-010	LED,SEL1324G(PLAY)(D2)
C807	*87-010-252-019	CAP,ELECT 1000-6.3V	LED902	84-792-625-019	LED,SLH-38YC,H15.5(PAUSE)(D2)
C808	*87-018-134-019	CAP,CERA SS 0.01	LED903	84-792-625-019	LED,SLH-38YC,H15.5(PAUSE)(D1)
C809	*87-010-401-019	CAP,ELECT 1-50V	LED904	84-792-624-019	LED,SLH-38VC,H15.5(DUAL REC/HIGH)
C812	*87-010-402-019	CAP,ELECT 2.2-50V SME	LED905	87-001-745-010	LED,SEL1324G(PLAY)(D1)
C813	*87-010-382-019	CAP,ELECT 22-25V SME	LED906	84-792-624-019	LED,SLH-38VC,H15.5(REC/REC MUTE)(D2)
C814	*87-010-402-019	CAP,ELECT 2.2-50V SME	LED907	84-792-625-019	LED,SLH-38YC,H15.5(REC/REC MUTE)(D1)
C815	*87-010-382-019	CAP,ELECT 22-25V SME	LED908	84-792-624-019	LED,SLH-38VC,H15.5(SYNC.DUBB.NORMAL)
C816	*87-010-565-019	CAP,ELECT 470-12V SME	S901	87-036-170-019	TACT SW(▷)(D1)
C817	*87-010-565-019	CAP,ELECT 470-12V SME	S902	87-036-170-019	TACT SW(◁)(D1)
C818	*87-010-565-019	CAP,ELECT 470-12V SME	S903	87-036-170-019	TACT SW(▷▷)(D1)
C819	*87-010-565-019	CAP,ELECT 470-12V SME	S904	87-036-170-019	TACT SW(◁◁)(D1)
C821	*87-010-401-019	CAP,ELECT 1-50V	S905	87-036-170-019	TACT SW(STOP)(D1)
C822	*87-010-401-019	CAP,ELECT 1-50V	S906	87-031-863-019	TACT SW(PAUSE)(D1)
C823	*87-010-402-019	CAP,ELECT 2.2-50V SME	S907	87-031-863-019	TACT SW(REC/REC MUTE)(D1)
C825	*87-010-260-019	CAP,ELECT 47-25V	S908	87-036-170-019	TACT SW(SYNC.DUBB.NORMAL)
C826	*87-010-385-019	CAP,ELECT 220-25V	S909	87-036-170-019	TACT SW(▷)(D2)
C827	*87-018-131-019	CAP,CERA SS 1000P	S910	87-036-170-019	TACT SW(◁)(D2)
C902	*87-010-384-019	CAP,ELECT 100-25V	S911	87-036-170-019	TACT SW(▷▷)(D2)
CF801	*87-030-167-019	CERA LOCK CST4.0 MHZ	S912	87-036-170-019	TACT SW(◁◁)(D2)
△FR1	87-029-017-010	RES,FUSE 1/4W 10 (EXCEPT U)	S913	87-036-170-019	TACT SW(STOP)(D2)
J761	84-790-635-019	JACK,6.3(PHONES)	S914	87-031-863-019	TACT SW(PAUSE)(D2)
L301	*82-194-634-010	COIL,10 MMH	S915	87-031-863-019	TACT SW(REC/REC MUTE)(D2)
L302	*82-194-634-010	COIL,10 MMH	S916	87-036-170-019	TACT SW(SYNC.DUBB.HIGH)
L303	*82-231-622-010	COIL,22 MMH-J	S917	87-036-170-019	TACT SW(COUNTER RESET)(D1)
L304	*82-231-622-010	COIL,22 MMH-J	S918	87-036-170-019	TACT SW(COUNTER RESET)(D2)
L371	*84-790-621-010	COIL,BIAS 105K AMO	S919	87-036-170-019	TACT SW(DUAL REC)
L401	*87-003-128-019	MICRO INDUCTOR 5.6 MMH	S920	84-790-637-019	SLIDE SW(TIMER)
L402	*87-003-128-019	MICRO INDUCTOR 5.6 MMH	S921	84-790-637-019	SLIDE SW(STSD)
L403	*87-003-131-019	MICRO INDUCTOR 10 MMH	S922	84-790-637-019	SLIDE SW(DOLBY NR)
L404	*87-003-131-019	MICRO INDUCTOR 10 MMH	S923	84-790-636-019	SLIDE SW(BLANK SKIP)
L405	*82-231-622-010	COIL,22 MMH-J	--- PIN JACK CIRCUIT BOARD SECTION ---		
L406	*82-231-622-010	COIL,22 MMH-J	C753	*87-018-134-019	CAP,CERA SS 0.01
L471	*84-790-621-010	COIL,BIAS 105K AMO	J751	87-009-023-019	JACK PIN(R/LINE IN,P/LINE OUT)
L501	*84-790-622-010	COIL,HX105K AMO	--- DECK-1 CIRCUIT BOARD SECTION ---		
L502	*84-790-622-010	COIL,HX105K AMO	S1	87-036-109-010	PUSH SW SPPB61(CAST)
L601	*84-790-622-010	COIL,HX105K AMO	S2	87-036-110-010	PUSH SW SPPB62(CR02)
L602	*84-790-622-010	COIL,HX105K AMO	S3	87-036-110-010	PUSH SW SPPB62(REA)
L701	*84-790-623-019	FILTER,DOLBY LPF 105K	S4	87-036-109-010	PUSH SW SPPB61(REB)
L702	*84-790-623-019	FILTER,DOLBY LPF 105K			
L703	*82-231-622-010	COIL,22 MMH-J			
L704	*82-231-622-010	COIL,22 MMH-J			

REF.NO. PART NO. DESCRIPTION

S5 87-036-109-010 PUSH SW SPPB61(METAL)
 SFR1 ★87-024-291-019 SFR,4.7K
 SFR2 ★87-024-291-010 SFR,4.7K
 SOL1 ★86-535-611-210 SOL,X-3 PL(PLAY)
 SOL2 ★86-535-612-210 SOL,X-3 FR(FRP)



=== DECK-2 CIRCUIT BOARD SECTION ===

S1 87-036-109-010 PUSH SW SPPB61(CAST)
 S2 87-036-110-010 PUSH SW SPPB62(CRO2)
 S3 87-036-110-010 PUSH SW SPPB62(REA)
 S4 87-036-109-010 PUSH SW SPPB61(REB)
 S5 87-036-109-010 PUSH SW SPPB61(METAL)
 SFR1 ★87-024-291-019 SFR,4.7K
 SFR2 ★87-024-291-019 SFR,4.7K
 SOL1 ★86-535-611-210 SOL,X-3 PL(PLAY)
 SOL2 ★86-535-612-210 SOL,X-3 FR(FRP)

2SA933
 2SA952
 2SA1015
 2SA1296
 2SC1740
 2SC1815
 2SC2001
 2SD1302

2SC3113
 DTC114
 RN2206

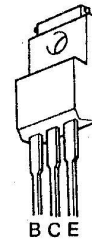
=== SENSOR-1 CIRCUIT BOARD SECTION ===

CP1 87-001-367-019 PHOTO,SPI-315(0)CD

=== SENSOR-2 CIRCUIT BOARD SECTION ===

CP1 87-001-367-019 PHOTO,SPI-315(0)CD

=== RELAY-1 CIRCUIT BOARD SECTION ===



2SK373

2SB1015
 2SD1406

=== RELAY-2 CIRCUIT BOARD SECTION ===

=== POWER CIRCUIT BOARD SECTION ===

△ C15 87-033-147-019 FUSE CLAMP(EXCEPT U)
 △ FU1 ★87-019-112-019 CAP,LINE 0.01E
 △ FU1 87-035-191-019 FUSE,3.15A 250V T E(H,E,K,Z)
 △ FU1 87-035-367-010 FUSE,3.15A 250V T E(H,E,K,Z)
 △ PT1 84-790-611-019 POWER TRANSFORMER H(H)
 △ PT1 84-790-612-019 POWER TRANSFORMER U,C(U)
 △ PT1 84-790-613-019 POWER TRANSFORMER E,Z(E,Z)
 △ PT1 84-790-614-019 POWER TRANSFORMER K(K)
 △ S1 87-036-015-019 PUSH SW(POWER)
 △ S2 87-036-136-019 ROTARY SW(VOLTAGE SELECTOR)(H)

=== MISCELLANEOUS ===

△ ★82-187-796-019 AC CORD (BS)(K)
 △ ★82-187-797-019 AC CORD (E)(E,Z)
 △ ★87-034-584-019 AC CORD (U)SPT-2(U)
 △ ★87-034-749-019 AC CORD (H) W/PLUG(H)
 △ ★87-085-184-010 AC CORD BUSHING D(H)
 △ ★87-085-185-010 AC CORD BUSHING E(E,K,Z)
 △ ★87-085-189-010 AC CORD BUSHING (SPT-2)(U)
 M1 87-045-235-010 MOTOR,MMA6B2LW(D1)
 M2 87-045-235-010 MOTOR,MMA6B2LW(D2)
 RPEH1 87-046-325-010 HEAD,RPEH(D1)
 RPEH2 87-046-325-010 HEAD,RPEH(D2)