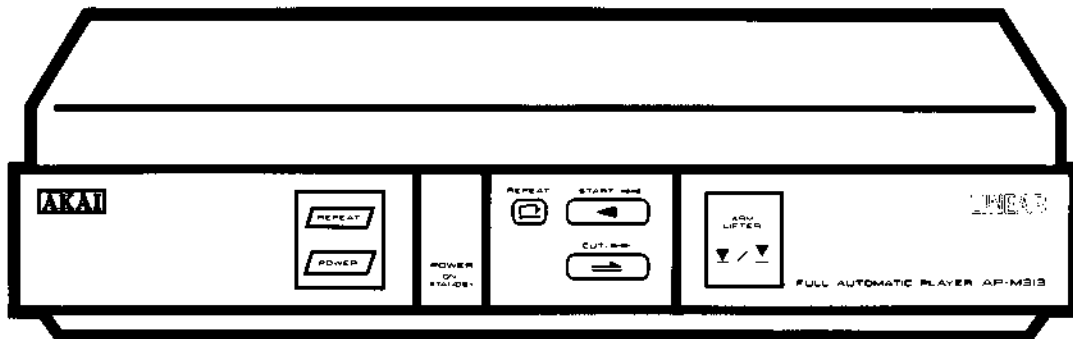



AKAI SERVICE MANUAL



FULL AUTOMATIC PLAYER

MODEL AP-M313

SPECIFICATIONS

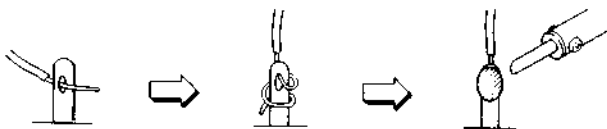
Motor	EG servo DC motor
Platter	300 mm aluminum diecast
Speed	33-1/3 & 45 rpm
Wow & flutter	0.05% (WRMS)
Rumble	62 dB (DIN-B)
Tonearm	Static balanced linear tracking type
Effective arm length	90 mm
Cartridge	VM  plug-in type
Weight	5.9 g
Output voltage	2.5 mV
Optimal stylus pressure	1.5 g
Channel separation	20 dB (1 kHz)
Channel balance	2 dB
Dynamic compliance	8×10^{-6} cm/dyn
Power requirements	100V, 50/60Hz for Japan 120V, 60Hz for USA & Canada 220V, 50Hz for Europe except UK 240V, 50Hz for UK & Australia 110V to 120V/220V to 240V, 50Hz/60Hz convertible for other country
Dimensions	350 (W) x 95 (H) x 320 (D) mm (13.8 x 3.7 x 12.6 inches)
Weight	3.5 kg (7.7 lbs)

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

★ SAFETY INSTRUCTIONS

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.

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 M ohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for $\square C$ or $\square A$, specified insulation resistance should be headphone jacks line-in-out jacks etc. more than 2.2 M ohms (ground terminals, microphone jacks).

★ INFORMATION

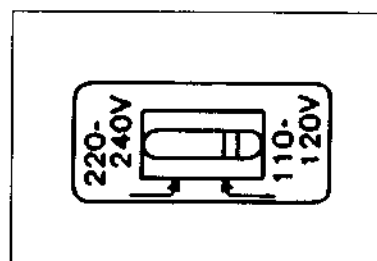
SYMBOLS FOR PRIMARY DESTINATION

Alphabet indicates the destination of the units as listed below.

Symbols	Principal Destinations
$\square A$	USA
$\square B$	UK
$\square C$	Canada
$\square E$	Europe (except UK)
$\square J$	Japan
$\square S$	Australia
$\square V$	W. Germany only
$\square U$	Universal Area
$\square Y^*$	Custom version

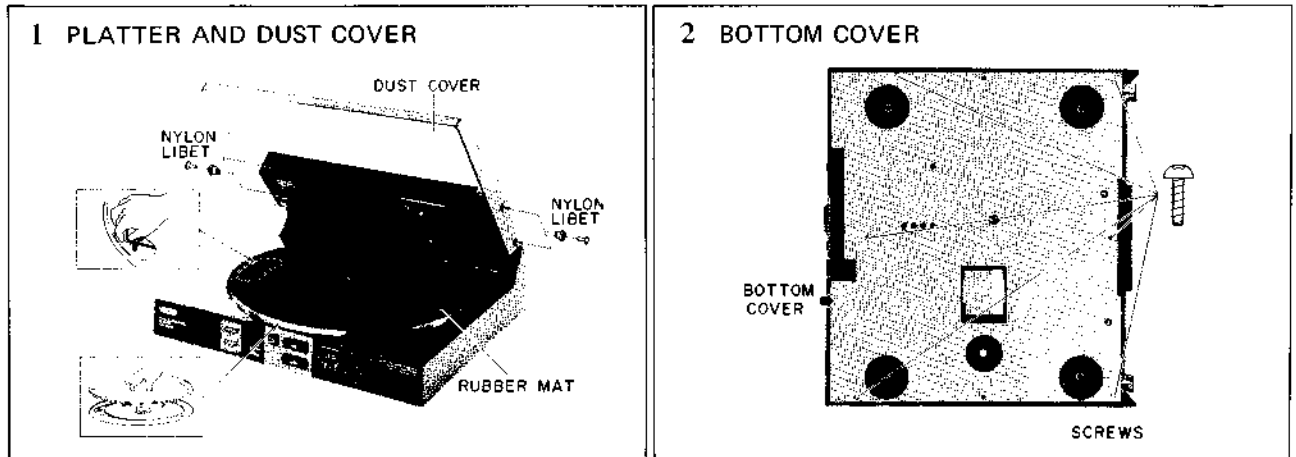
VOLTAGE CONVERSION ($\square U$ Model only)

Before connecting the power cord, SET the VOLTAGE SELECTOR located on the rear panel with a screwdriver so that the correct voltage is indicated.



I. DISMANTLING OF UNIT

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



II. CONTROLS

CUT (←/→) Arm Backward button
Stops playback and moves the tonearm manually backward.

Touche d'arrêt et de retour du bras (CUT/←/→)
Pour arrêter la reproduction et pour déplacer manuellement le bras en arrière

REPEAT (□) button
Repeatedly plays the entire record 15 times.

Touche de répétition (REPEAT □)
Pour répéter 15 fois la reproduction du disque dans intégralité.

REPEAT indicator
Indicates the REPEAT button is engaged.

Indicateur de répétition (REPEAT)
Indique que la touche de répétition (REPEAT) est engagée.

Dust Cover
Pare-poussière

POWER indicator
To indicate the POWER ON/STANDBY switch is turned ON. The POWER indicator flashes when the tonearm is moving, during Manual Playback.

Indicateur d'alimentation (POWER)
Indique la mise sous tension du commutateur alimentation sous tension/en attente (POWER ON/STANDBY). L'indicateur d'alimentation (POWER) clignote lorsque le bras acoustique se déplace lors de reproduction manuelle.

Rubber mat
Covers the platter and protects your records.

Tapis en caoutchouc
Recouvre le plateau et protège vos disques.

SIZE 17/30 selector
To set the record size, accordingly.

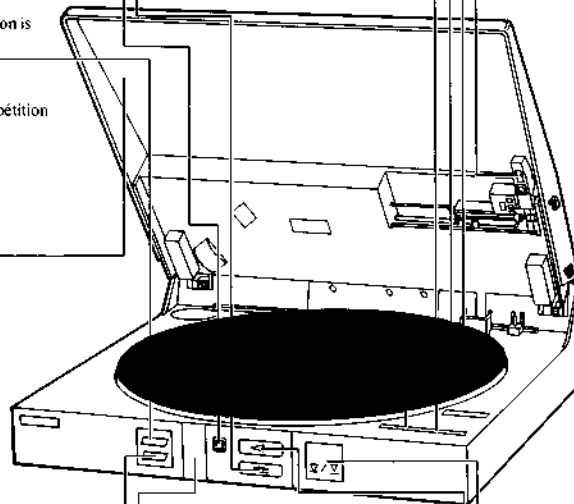
Sélecteur de taille (SIZE 17/30)
Pour régler la taille du disque.

SPEED 45/33 selector
To set the record playback speed, accordingly.

Sélecteur de vitesse (SPEED 45/33)
Pour régler la vitesse de reproduction du disque.

The dynamic-balanced linear tracking tonearm holds the cartridge at the correct position.

Le bras acoustique à lecture de piste linéaire et à équilibrage dynamique maintient la cellule sur la position correcte.



POWER ON/STANDBY switch
To turn on and off the Akai AP-M313.
* This switch does not completely switch off the power. If you want to completely turn off the Akai AP-M313, disconnect the power cord from the timer or the household AC outlet.

Commutateur d'alimentation sous tension/en attente (POWER ON/STANDBY)

Pour mettre sous tension et hors circuit la AP-M313 Akai.
* Ce commutateur ne met pas l'alimentation complètement hors circuit. Si vous voulez mettre la AP-M313 Akai totalement hors circuit, déconnectez le cordon secteur de la minuterie ou de la sortie secteur murale.

ARM LIFTER (↑/↓) button
Manually raises and lowers the tonearm

Touche d'élevateur du bras (ARM LIFTER ↑/↓)
Pour soulever et abaisser manuellement le bras acoustique.

START (←/→) Arm Forward button
Starts auto play and moves the tonearm manually forward.

Touche de démarrage et d'avance du bras (START/←/→)
Pour démarrer la reproduction automatique et pour avancer manuellement le bras acoustique.

III. PRINCIPAL PARTS LOCATION

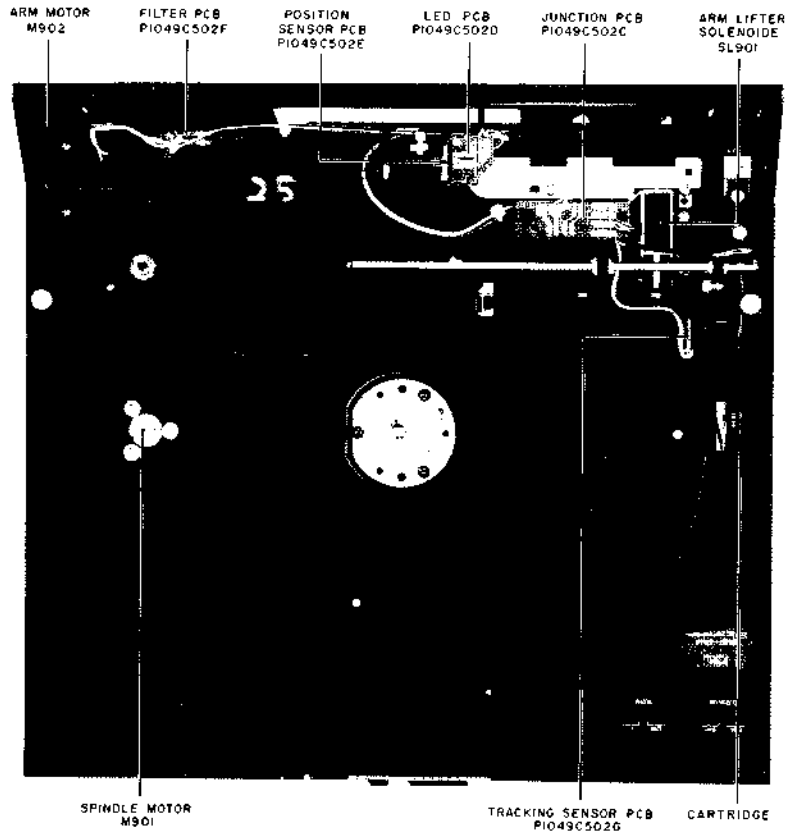


Fig. 3-1 Upper View

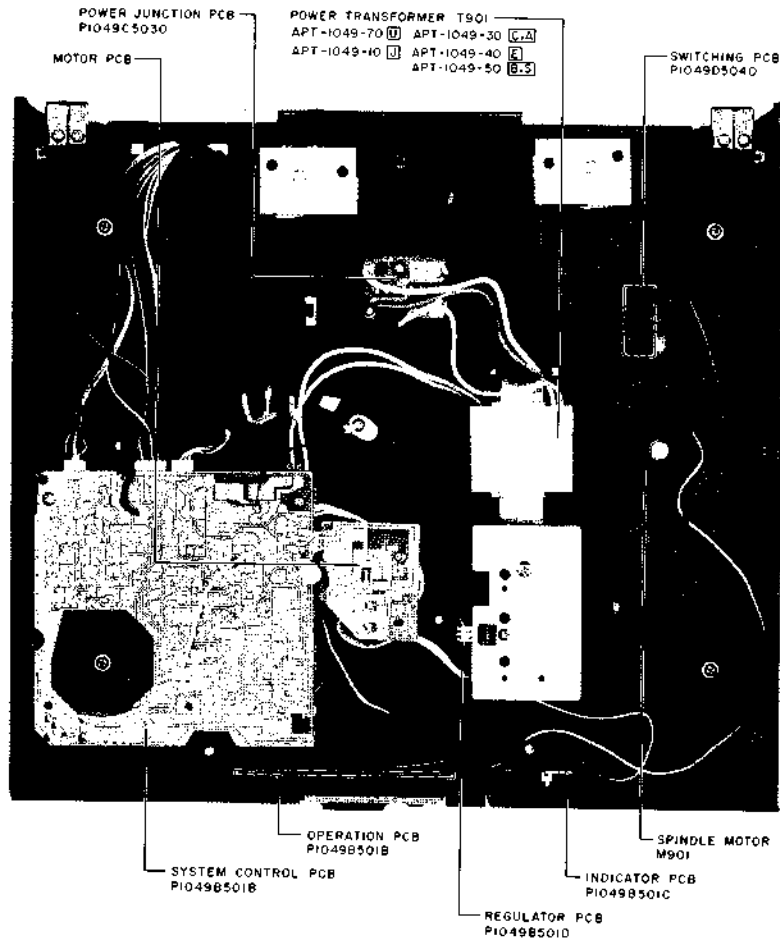


Fig. 3-2 Bottom View

IV. ADJUSTMENT

4-1. ORDINARY MECHANICAL ADJUSTMENT

- 1) Ordinary Mechanical Adjustment such as Stylus Pressure, Overhang and Tonearm Height Adjustment are not necessary since this model is equipped with a Static-Balance Linear Tracking Tonearm.
- 2) Stylus Pressure is pre-adjusted to 1.5 grams at the factory, and re-adjustment is not necessary in normal conditions.

4-2. ELEVATION AND POSITION ADJUSTMENT

- 1) This adjustment is not necessary unless the Elevation or Elevation prop is replaced or miss-adjusted.
- 2) Hold the Tonearm with the Moving Base Block and separate the Elevation Prop from the Tonearm. Then, bring the Elevation prop close to the Tonearm, and adjust the Elevation prop close to the Tonearm, and adjust the Elevation Prop with a flat type screwdriver to the place where the position of the notch (A) on the Elevation Prop coincides with the projection part (B) on the Tonearm as shown Fig. 4-1.

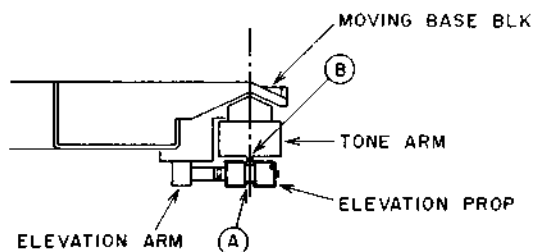


Fig. 4-1

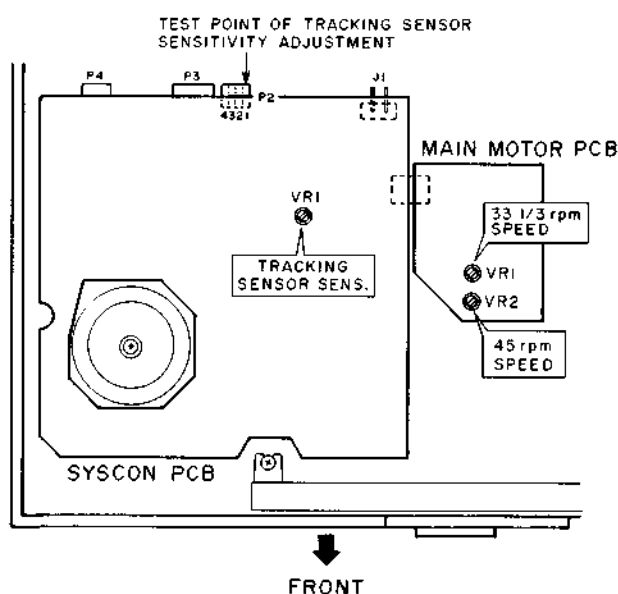


Fig. 4-2 Bottom View

4-3. TRACKING SENSOR SENSITIVITY ADJUSTMENT (Refer to Fig. 4-2)

- 1) Place a 30 cm record on the platter and put the power "ON".
- 2) Connect a digital voltmeter to Pin 1 of the Connector (P2) on the SYSTEM CONTROL PC BOARD.
- 3) Press the "START/◀", shift the Tonearm and bring the Tonearm down by pressing the "ARM LIFTER ▼/▼" key.
At this stage, fix the Tonearm with a cello-phanetape to avoid setting down to its rest position.
- 4) Adjust VR1 so that the DC voltage is $3.6V \pm 0.2V$.

4-4. SPEED ADJUSTMENT (Refer to Fig. 4-2)

- 1) Set the test record (33-1/3 rpm at 1000 Hz) on the platter.
- 2) Turn "ON" the power and set the speed selector to 33-1/3 rpm.
- 3) Play back the test record (33-1/3 rpm 1000 Hz). The playback output frequency is adjusted to $995 \text{ Hz} \pm 5 \text{ Hz}$ on the VR1 on the MAIN MOTOR PC BOARD.
- 4) Set the speed selector to 45 rpm. The playback output frequency is adjusted to $1343 \text{ Hz} \pm 5 \text{ Hz}$ by VR2.

4-5 LEAD IN POSITION ADJUSTMENT (Refer to Fig. 4-3)

- 1) Set the 30 cm record on the platter.
- 2) Auto play the record and confirm where the tonearm descends.
- 3) Turn the Lead-in adjustment screw with a flat type screwdriver.
- * Turn the screwdriver slowly for accuracy.

- Ⓐ Turn clockwise: to set towards the Arm Rest Direction.
- Ⓑ Turn counterclockwise: to set towards the Spindle Direction.

Confirm the position after each adjustment.

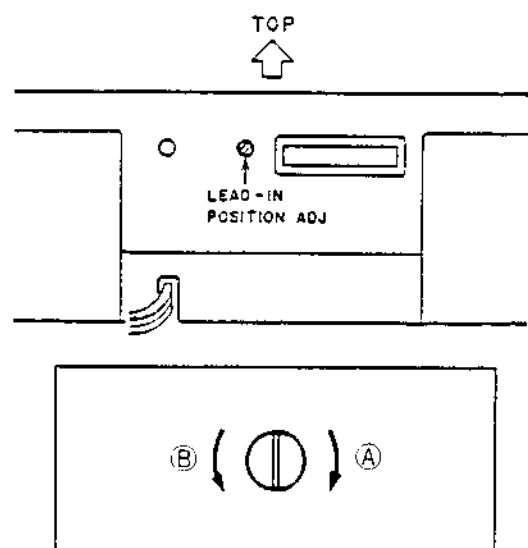


Fig. 4-3

V. PARTS LIST

ATTENTION

1. When placing an order for parts, be sure to list Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering.
If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List 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 in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

b) PC Board

2. HEAD BASE BLOCK

REF. NO.	PART NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK
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	SP CS ANGLE ADJUST

SP (Service Parts) Classification

A small "x" indicates that this part is not shown 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. MAIN PC BOARD

REF. NO.	PART NO.	DESCRIPTION
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
6-C1B	EC-350949	C MMY V 223M 250DC [J]
6-C1C	EC-338397	C MMY V 223M 125AC [C,A]
6-X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination

[A]: AAL(U.S.A.) [S]: SAA(Australia)
 [B]: BEAB(England) [U]: U/T(Universal Area)
 [C]: CSA(Canada) [V]: VDE(W. Germany)
 [E]: CEE(Europe) [Y]: Custom Version
 [J]: JPN(Japan)

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

WARNING

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

AVERTISSEMENT

⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUÉ DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

RECOMMENDED SPARE PARTS LIST

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

NO.	PART NO.	DESCRIPTION
1 N	BM-P1049A060A	MOTOR ARM BLK
2	BM-P1041A030A	MOTOR MAIN BLK AP-M50-C(U)
3 N	BT-361005	△ TRANS POWER APT-1049-10[J]
4 N	BT-361006	△ TRANS POWER APT-1049-30 [C,A]
5 N	BT-361007	△ TRANS POWER APT-1049-40[E]
6 N	BT-361008	△ TRANS POWER APT-1049-50 [B,S]
7 N	BT-361004	△ TRANS POWER APT-1049-70[U]
8	ED-322238	△ D SILICON 1B4B41 100/1.0A
9 N	ED-361112	D LED SLH-56-YC YELLOW
10	ED-359745	D LED TLN-113 INFRARED
11	ED-344280	D SILICON H GMA-01-FY2 F05
12 N	ED-361267	D ZENER H 05AZ5.1 X
13 N	ED-361269	D ZENER H 05AZ6.8 X
14 N	ED-362910	D ZENER H05AZ5.6 X
15	EF-355374	△ FUSE BET T 500MA 250V [B]
16	EF-593706	△ FUSE SEMKO T 500MA 250V [E,S]
17	EI-359734	△ IC TA78M12P
18	EI-349590	IC BA3280EC
19	EI-357879	IC LA5512
20	EI-359733	IC M54547P
21	EI-359735	IC P1049A-1842
22	EP-359740	SOLENOID P1049
23	ES-337898	△ SW SLIDE 00120163 01-2 [U]
24	ES-359736	SW SLIDE P1049 1-01-02S
25	ES-349367	SW TACT SKHHAK003A
26	ET-344472	PHOTO SENSOR ON1128AK
27	ET-359746	TR PHOT TPS-613
28	ET-330225	TR 2SC1815 BL
29	ET-302502	TR 2SC2001 K
30	ET-306719	TR 2SC2236 O,Y
31	EV-315540	R S-FIX H D8 3P 502
32	EV-336853	R S-FIX H KVSF807U 3P 103
33 N	EV-362299	R S-FIX H V8EK-PV 3P 203
34	MB-355119	BELT EP
35 N	MZ-360159	GEAR TRACKING

"NOTE" N: New Parts

1. PC BOARD BLOCK

REF. NO.	PART NO.	DESCRIPTION
1-1	BA-P1049A020A	PC SYSCON BLK AP-M313[U,J,C,A]
1-1A	BA-P1049A020B	PC SYSCON BLK AP-M313[E,B,S]

NOTE: PC SYSCON BLK consists of following PC BOARDS.

- SYSTEM CONTROL PC BOARD
- SWITCHING PC BOARD
- OPERATION PC BOARD
- INDICATOR PC BOARD
- REGULATOR PC BOARD

2. SYSTEM CONTROL PC BOARD

REF. NO.	PART NO.	DESCRIPTION
SYSTEM CONTROL PC BOARD		
2-IC1	EI-359733	IC M54547P
2-IC2	EI-359735	IC P1049A-1842
2-IC3	EI-349590	IC BA3280EC
2-TR1,2	ET-302502	TR 2SC2001 K
2-TR4	ET-306719	TR 2SC2236 O,Y
2-TR5	ET-306719	△ TR 2SC2236 O,Y
2-TR6,7	ET-330225	TR 2SC1815 BL
2-D1,3	ED-344280	D SILICON H GMA-01-FY2 F05
2-D4	ED-361267	D ZENER H 05AZ5.1 X
2-D5	ED-361269	D ZENER H 05AZ6.8 X
2-D6	ED-361267	D ZENER H 05AZ5.1 X
2-D7	ED-362910	D ZENER H 05AZ5.6 X
2-D8	ED-322238	△ D SILICON 1B4B41 100/1.0A
2-SW1,2	ES-359736	SW SLIDE P1049 1-01-02S
2-VR1	EV-362299	R S-FIX H V8EK-PV 3P 203
2-L1	EO-345922	COIL FIX I LAL03KH 470K
2-IB1	EH-349274	COMP R EXB-P86223K
2-R7	ER-359738	R OMF H S15 FS 1W 151J
2-R55	ER-333065	R OMF H S20 FS 2W 220J
2-R56	ER-359739	R OMF H S15 FS 1W 121J
2-C17	EC-336875	C EC V CUT SR 102M 25DC
ASSEMBLY BLOCK		
2-F1A	EF-593706	△ FUSE SEMKO T 500MA 250V [E,S]
2-F1B	EF-355374	△ FUSE BET T 500MA 250V [B]

2A. SWITCHING PC BOARD

REF. NO.	PART NO.	DESCRIPTION
2A-TR10	ET-330225	TR 2SC1815 BL
2A-TR11	ET-330225	TR 2SC1815 BL

3. OPERATION PC BOARD

REF. NO.	PART NO.	DESCRIPTION
3-TS1to5	ES-349367	SW TACT SKHHAK003A

4. INDICATOR PC BOARD

REF. NO.	PART NO.	DESCRIPTION
4-D101to4	ED-361112	D LED SLH-56-YC YELLOW

5. REGULATOR PC BOARD

REF. NO.	PART NO.	DESCRIPTION
5-IC101	EI-359734	IC TA78M12P

6. POSITION SENSOR PC BOARD

REF. NO.	PART NO.	DESCRIPTION
6-PH1,2	ET-359746	TR PHOT TPS-613

7. LED PC BOARD

REF. NO.	PART NO.	DESCRIPTION
7-D201	ED-359745	D LED TLN-113 INFRARED

8. FILTER PC BOARD

REF. NO.	PART NO.	DESCRIPTION
8-C101	EC-348696	C EC V NP BP 100M 16.0DC

9. TRACKING SENSOR PC BOARD

REF. NO.	PART NO.	DESCRIPTION
9-PH101	ET-344472	DETECTOR ON1128AK

10. POWER JUNCTION PC BOARD

REF. NO.	PART NO.	DESCRIPTION
10-SW301	ES-337898	△ SW SLIDE 00120163 01-2 [U]

11. MOTOR PC BOARD

REF. NO.	PART NO.	DESCRIPTION
11-IC1	EI-357879	IC LA5512
11-VR1	EV-315540	R S-FIX H D8 3P 502 (33-1/3 rpm)
11-VR2	EV-336853	R S-FIX H KVSF807U 3P 103 (45 rpm)

12. ASSEMBLY BLOCK

REF. NO.	PART NO.	DESCRIPTION
ASSEMBLY BLOCK		
12-1	TP-P1041A130B	LIFTER BLK AP-M313-C
12-2	ZW-288764	PW51x078x020PBR
12-3	ZG-354975	SP PUSH PLUNGER
12-4	TP-359742	TONE ARM ARM-M313 (EXCEPT CARTRIDGE)
12-5	MS-360161	GUIDE RAIL
12-6	ZW-270101	RING E 300SUP CMT
12-7	MR-308836	PULLEY
12-8	MZ-360159	GEAR TRACKING
12-9	ZG-357752	SP T5-04.0/0.40-16.0 T5-111
12-10	MZ-360550	WIRE STRING
12-11	MB-349219	CUSHION MOTOR
12-12	TP-344537	CAM LOCATION SENSOR
12-13	ZW-659755	PW43x110x050NYL
12-14	ZG-362306	SP PUSH POSITION SENSOR
12-15	BC-B349261F	DUST COVER AP-M313 PART
12-15-B	BC-B349261G	DUST COVER AP-M313B PART
12-16	MB-343057	COVER CUSHION
12-17	EZ-349251B	BUSH COVER (B)
12-18	ZW-362110	RV NYL40x080 BL
12-19	TP-P1041A110A	HINGE BLK AP-M50-C
12-20	SC-360170A	COVER CHASSIS 313
12-M902	BM-P1049A060A	MOTOR ARM BLK
12-SL901	EP-359740	SOLENOID P1049

POSITION SENSOR PC BOARD		
6-PH1	ET-359746	TR PHOT TPS-613
6-PH2	ET-359746	TR PHOT TPS-613

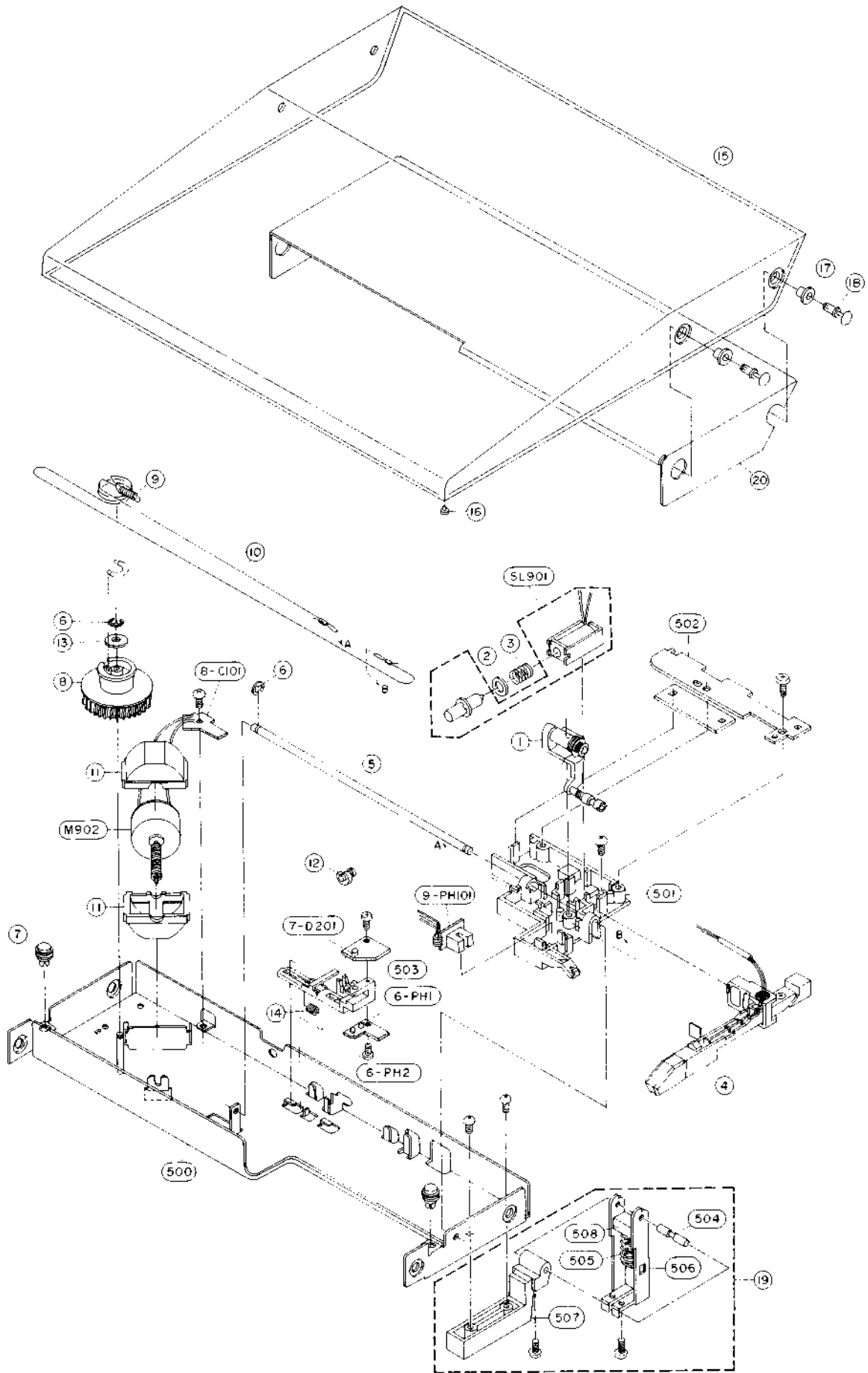
LED PC BOARD		
7-D201	ED-359745	D LED TLN-113 INFRARED

FILTER PC BOARD		
8-C101	EC-358696	C EC V NP BP 100M 16.0DC

TRACKING SENSOR PC BOARD		
9-PH101	ET-344472	DETECTOR ON1128AK

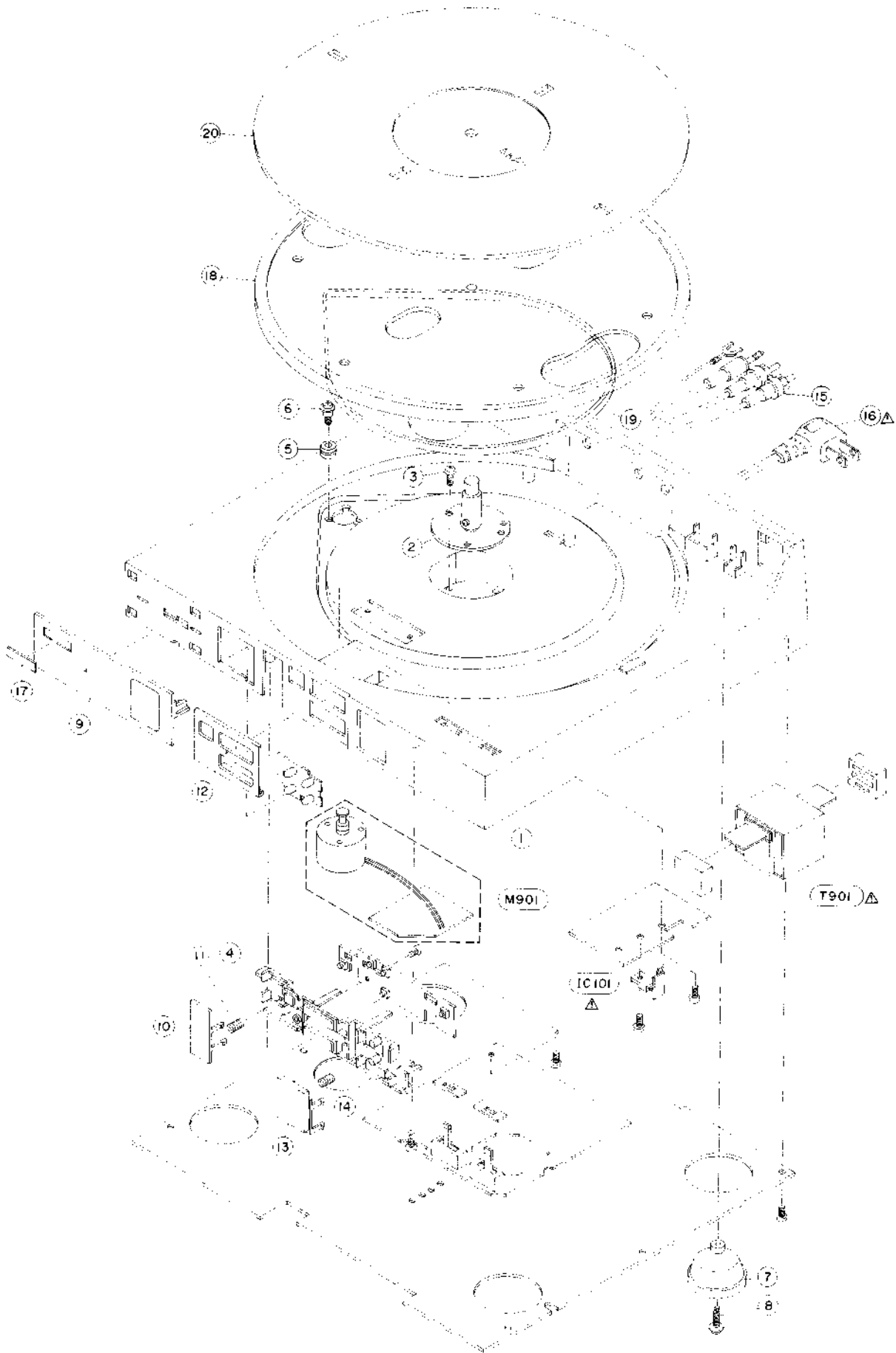
NOTE: The parts reference numbered here except the ones in 500's are normally stocked for replacement purpose. The rest of the parts shown in this manual are not stocked since they are seldom required for routine service.

ASSEMBLY BLOCK



PARTS LIST

FINAL ASSEMBLY BLOCK



PARTS LIST

13. FINAL ASSEMBLY BLOCK

REF. NO.	PART NO.	DESCRIPTION
13-1	BC-360163A	CABINET
13-1-B	BC-360163B	CABINET-B
13-2	TP-349346	SPINDLE ASSY
13-3	ZS-310984	PT BR30x08STL CMT
13-4	SK-360171A	KNOB OPERATION
13-4-B	SK-360171B	KNOB OPERATION-B
13-5	MB-345351B	CUSHION RUBBER (2)
13-6	ZS-350767	SCREW
13-7	SA-336281C	INSULATOR (C)
13-8	ZS-353104	BT PAN30x18STL CMT C
13-9	BD-B360164A	PANEL LED PART
13-9-B	BD-B360164B	PANEL LED-B PART
13-10	SK-360166	KNOB POWER
13-11	ZG-364128	SP PUSH POWER
13-12	BD-360168A	PANEL OPERATION
13-12-B	BD-360168B	PANEL OPERATION-B
13-13	SK-360169A	KNOB LIFTER
13-13-B	SK-360169B	KNOB LIFTER-B
13-14	ZG-364126	SP PUSH LIFTER
13-15	EW-364137	CORD SAE-047 3P AUDIO
13-15A	EW-364139	CORD SAE-046 3P AUDIO
13-16	EW-349551	△ AC CORD 2 CORES KP-224, VFF PL-3 J [J]
13-16A	EW-349552	△ AC CORD 2 CORES KP-224, VFF PL-3 U/T [U]
13-16B	EW-207742	△ AC CORD 2 CORES VM-0238, SPT-1 UC [C,A]
13-16C	EW-336923	△ AC CORD 2 CORES KP-419C, LTCE-2F EV [E]
13-16D	EW-346249	△ AC CORD 2 CORES LCFL2x0.75 B [B]
13-16E	EW-347898	△ AC CORD 2 CORES VM-0436, LCFL S [S]

REF. NO.	PART NO.	DESCRIPTION
13-17	SM-361028	NAME PLATE
13-17-B	SM-361028B	NAME PLATE (B)
13-18	TP-348321	PLATTER
13-19	MB-355119	BELT EP
13-20	TP-348266A	TABLE SHEET A [U,J,C,E,B,S]
13-20A	TP-348266B	TABLE SHEET B [A]
13-21x	TP-360698	DUST COVER FINGER
13-22x	AX-332567D	45 ADAPTER-B [ACCESSORY]
13-T901	BT-361005	△ TRANS POWER
13-T901A	BT-361004	△ TRANS POWER APT-1049-10 (J)
13-T901B	BT-361006	△ TRANS POWER APT-1049-70 (U)
13-T901C	BT-361007	△ TRANS POWER APT-1049-30 (C,A)
13-T901D	BT-361008	△ TRANS POWER APT-1049-40 (E)
13-M901	BM-P1041A030A	MOTOR MAIN BLK AP-M50-C (U)
13-IC101	EI-359734	△ IC TA78M12P

SYMBOL FOR COLOR VARIATION

NON : STANDARD COLOR
-B : BLACK

OPTIONAL ACCESSORIES

STYLUS : RS-33
CARTRIDGE : PC-35

INDEX

PART NO.	REF. NO.	PART NO.	REF. NO.	PART NO.	REF. NO.	PART NO.	REF. NO.
AX-332567D	13-22x	ED-361267	2-D6	ET-330225	2-TR6	SA-336281C	13-7
BA-P1049A020A	1-1	ED-361267	2-D4	ET-330225	2-TR7	SC-360170A	12-0
BA-P1049A020B	1-1A	ED-361269	2-D5	ET-330225	2A-TR10	SK-360166	13-0
BC-B349261F	12-15	ED-362910	2-D7	ET-330225	2A-TR11	SK-360169A	13-3
BC-B349261G	12-15-B	EF-355374	2-F1B	ET-344472	9-PH101	SK-360169B	13-3-B
BC-360163A	13-1	EF-593706	2-F1A	ET-344472	9-PH101	SK-360171A	13-4
BC-360163B	13-1-B	EH-349274	2-1B1	ET-359746	6-PH2	SK-360171B	13-4-B
BD-B360164A	13-9	EI-349590	2-IC3	ET-359746	6-PH1	SM-361028	13-7
BD-B360164B	13-9-B	EI-357879	11-IC1	ET-359746	6-PH1	SM-361028B	13-7-B
BD-360168A	13-12	EI-359733	2-IC1	ET-359746	6-PH2	TP-P1041A110A	12-9
BD-360168B	13-12-B	EI-359734	5-IC101	EV-315540	11-VR1	TP-P1041A130B	12-1
BM-P1041A030A	13-M901	EI-359734	13-IC101	EV-336853	11-VR2	TP-344537	12-2
BM-P1049A060A	12-M902	EI-359735	2-IC2	EV-362299	2-VR1	TP-348266A	13-0
BT-361004	13-T901A	EO-345922	2-L1	EW-207742	13-16B	TP-348266B	13-0A
BT-361005	13-T901	EP-359740	12-SL901	EW-336923	13-16C	TP-348321	13-8
BT-361006	13-T901B	ER-333065	2-R55	EW-346249	13-16D	TP-349346	13-1
BT-361007	13-T901C	ER-359738	2-R7	EW-347898	13-16E	TP-359742	12-4
BT-361008	13-T901D	ER-359739	2-R56	EW-349551	13-16	TP-360698	13-1x
EC-336875	2-C17	ES-337898	10-SW301	EW-349552	13-16A	ZG-354975	12-1
EC-348696	8-C101	ES-349367	3-TS4	EW-364137	13-15	ZG-357752	12-1
EC-348696	8-C101	ES-349367	3-TS3	EW-364139	13-15A	ZG-362306	12-4
ED-322238	2-D8	ES-349367	3-TS2	EZ-349251B	12-17	ZG-364126	13-4
ED-344280	2-D1	ES-349367	3-TS5	MB-343057	12-16	ZG-364128	13-1
ED-344280	2-D3	ES-349367	3-TS1	MB-345351B	13-5	ZS-310984	13-1
ED-359745	7-D201	ES-359736	2-SW2	MB-349219	12-11	ZS-350767	13-1
ED-359745	7-D201	ES-359736	2-SW1	MB-355119	13-19	ZS-353104	13-1
ED-361112	4-D102	ET-302502	2-TR2	MR-308836	12-7	ZW-270101	12-1
ED-361112	4-D103	ET-302502	2-TR1	MS-360161	12-5	ZW-288764	12-1
ED-361112	4-D104	ET-306719	2-TR4	MZ-360159	12-8	ZW-362110	12-8
ED-361112	4-D101	ET-306719	2-TR5	MZ-360550	12-10	ZW-659755	12-3

ABBREVIATIONS (TURNTABLE)

ABBREVIATION	EXPLANATION
ADJ	ADJust, or ADJustment
CH	CHannel
FWD	FoWarD
"H"	High
"L"	Low
LED	Light Emitting Diode
MI-COM	MIcro COMputer
PCB	Printed Circuit Board
REV	REVerse
SENS	SENSor, or SENSitivity
SYSCON	SYStem CONtrol
SW	SWitch
T.S	Tracking Sensor
VR	Variable Resistor

AKAI ELECTRIC CO., LTD.

12-14, 2-Chome, Higashi-Kojiya, Ohta-Ku, Tokyo, Japan

TEL: Tokyo (742) 5111 CABLE: HIFIAKAI TOKYO TELEX: J26261

Printed No. 860403-11-3700

Printed Date: April 28, 1986

350 Printed in Japan

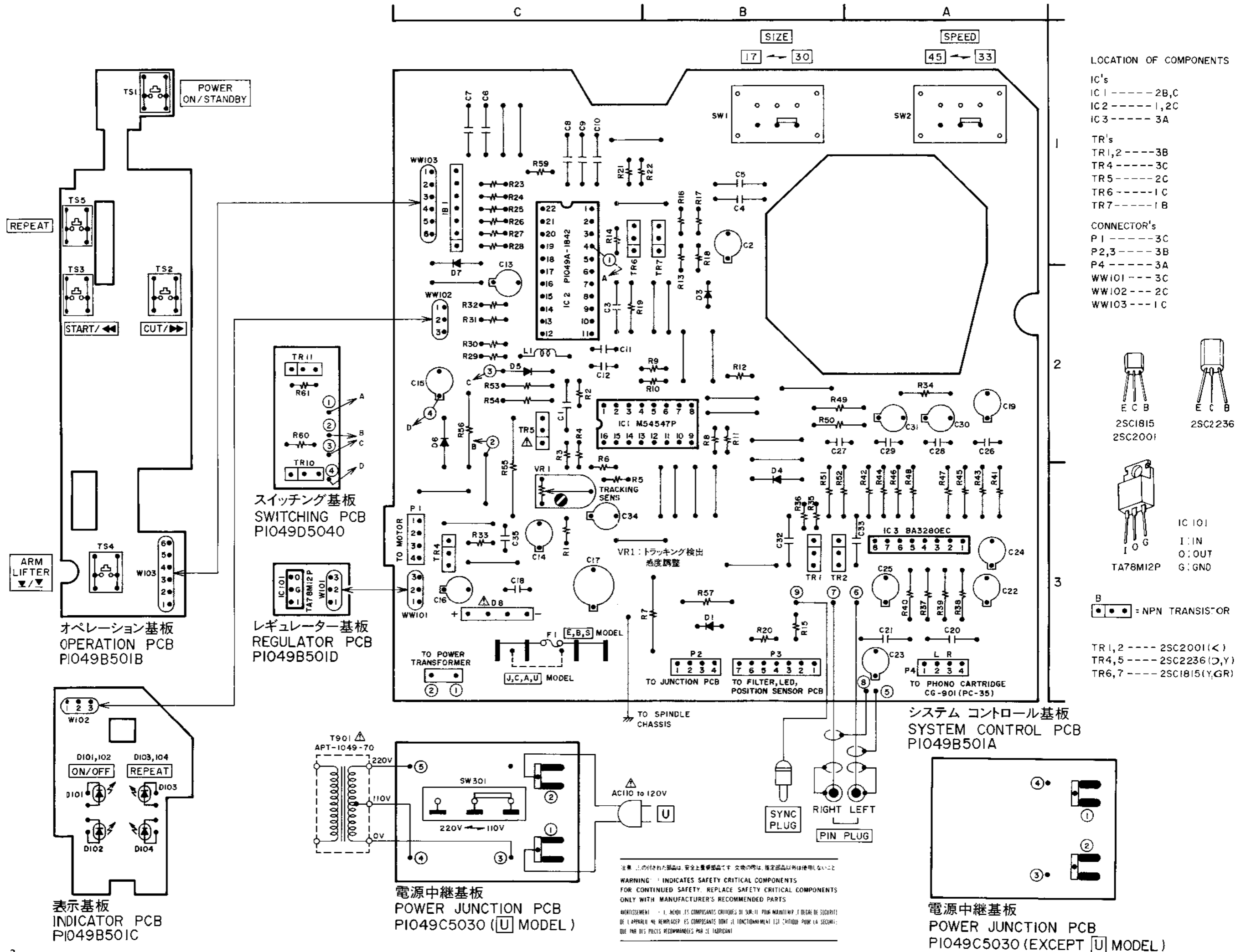
AKAI

MODEL AP-M313

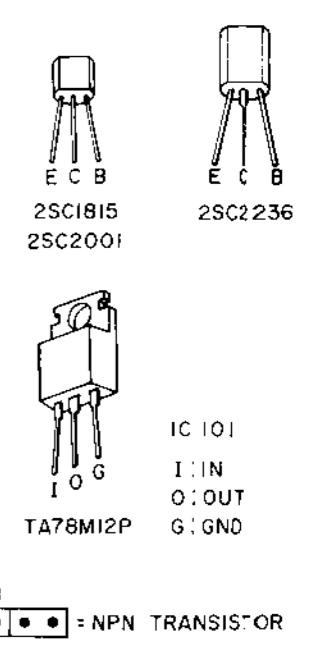
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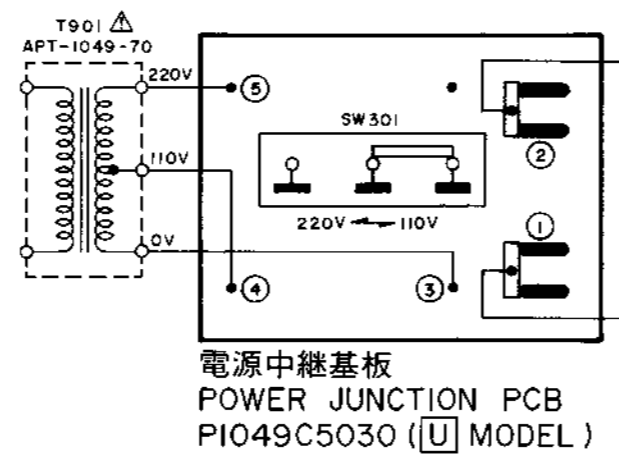
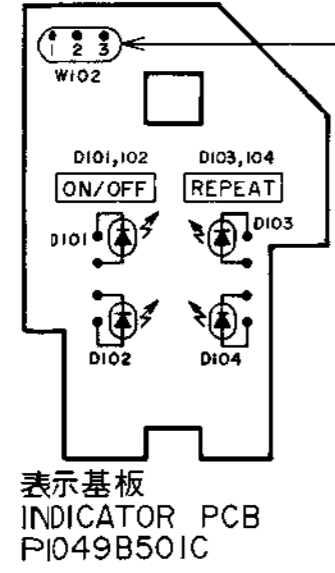
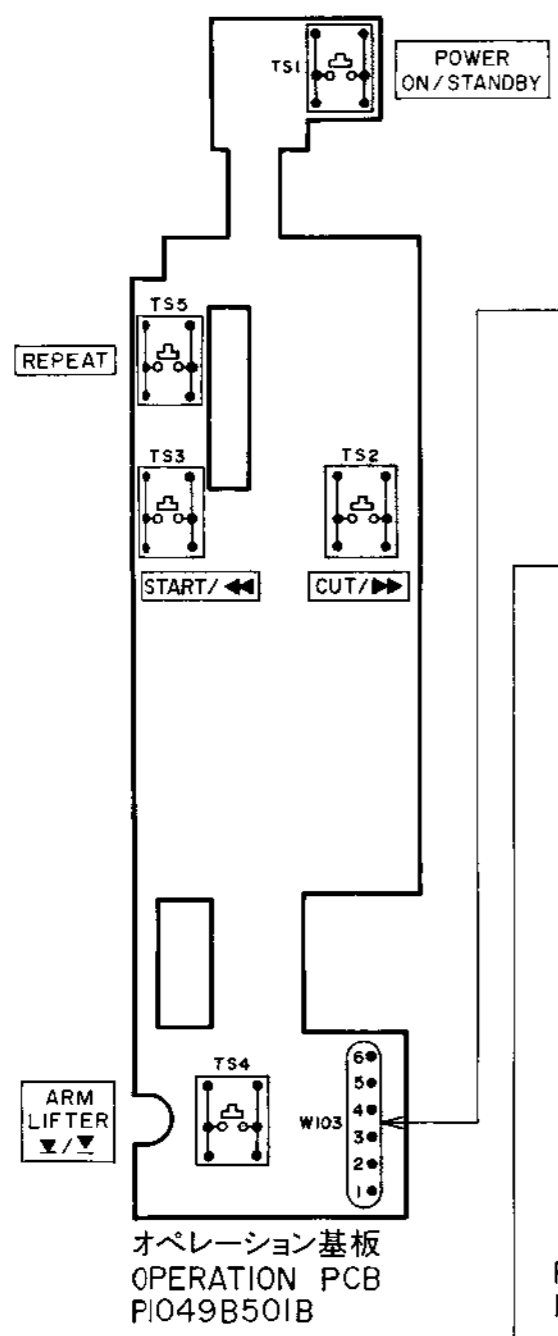
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2. SYSTEM CONTROL PC BOARD AND OTHER PC BOARDS	2
3. SCHEMATIC DIAGRAM	3
4. BLOCK DIAGRAM.....	4



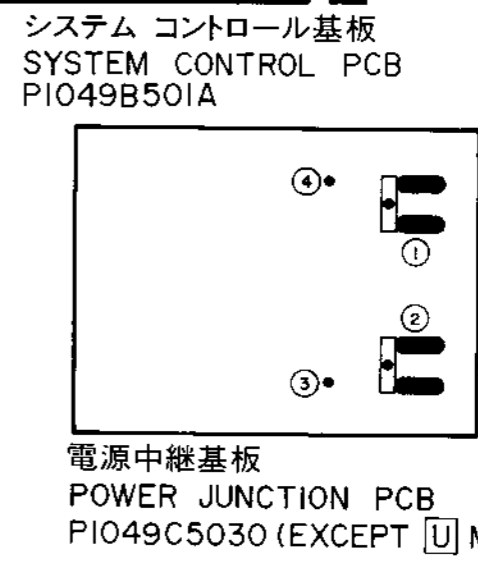
- LOCATION OF COMPONENTS
- IC's
 IC 1 ----- 2B,C
 IC 2 ----- 1, 2C
 IC 3 ----- 3A
- TR's
 TR 1, 2 ----- 3B
 TR 4 ----- 3C
 TR 5 ----- 2C
 TR 6 ----- 1C
 TR 7 ----- 1B
- CONNECTOR'S
 P 1 ----- 3C
 P 2, 3 ----- 3B
 P 4 ----- 3A
 WW101 --- 3C
 WW102 --- 2C
 WW103 --- 1C



- TR 1, 2 ----- 2SC2001 (L)
 TR 4, 5 ----- 2SC2236 (J, Y)
 TR 6, 7 ----- 2SC1815 (Y, GR)

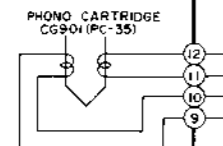
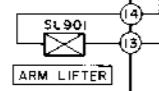
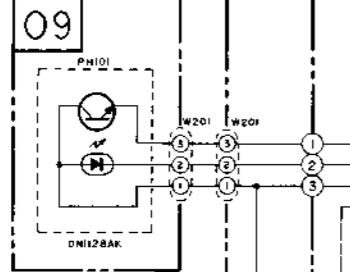


注意: 上の付された部品は、安全上重要部品です。交換の際は、指定部品以外は使用しないでください。
 WARNING: INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.
 Avertissement: Les composants critiques de sur-11 pour maintenir le degré de sécurité de l'appareil ne remplacent les composants dont le fonctionnement est critique pour la sécurité que par des pièces recommandées par le fabricant.



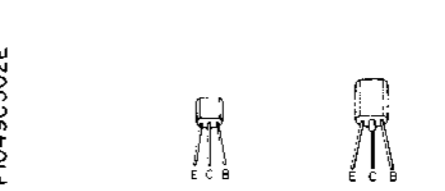
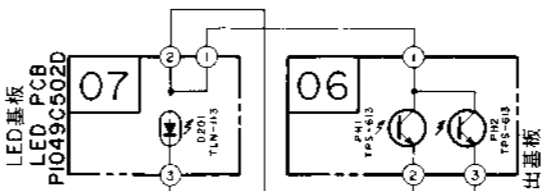
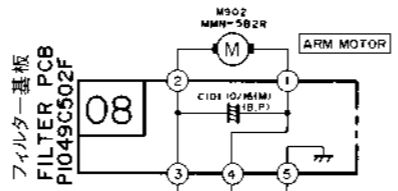
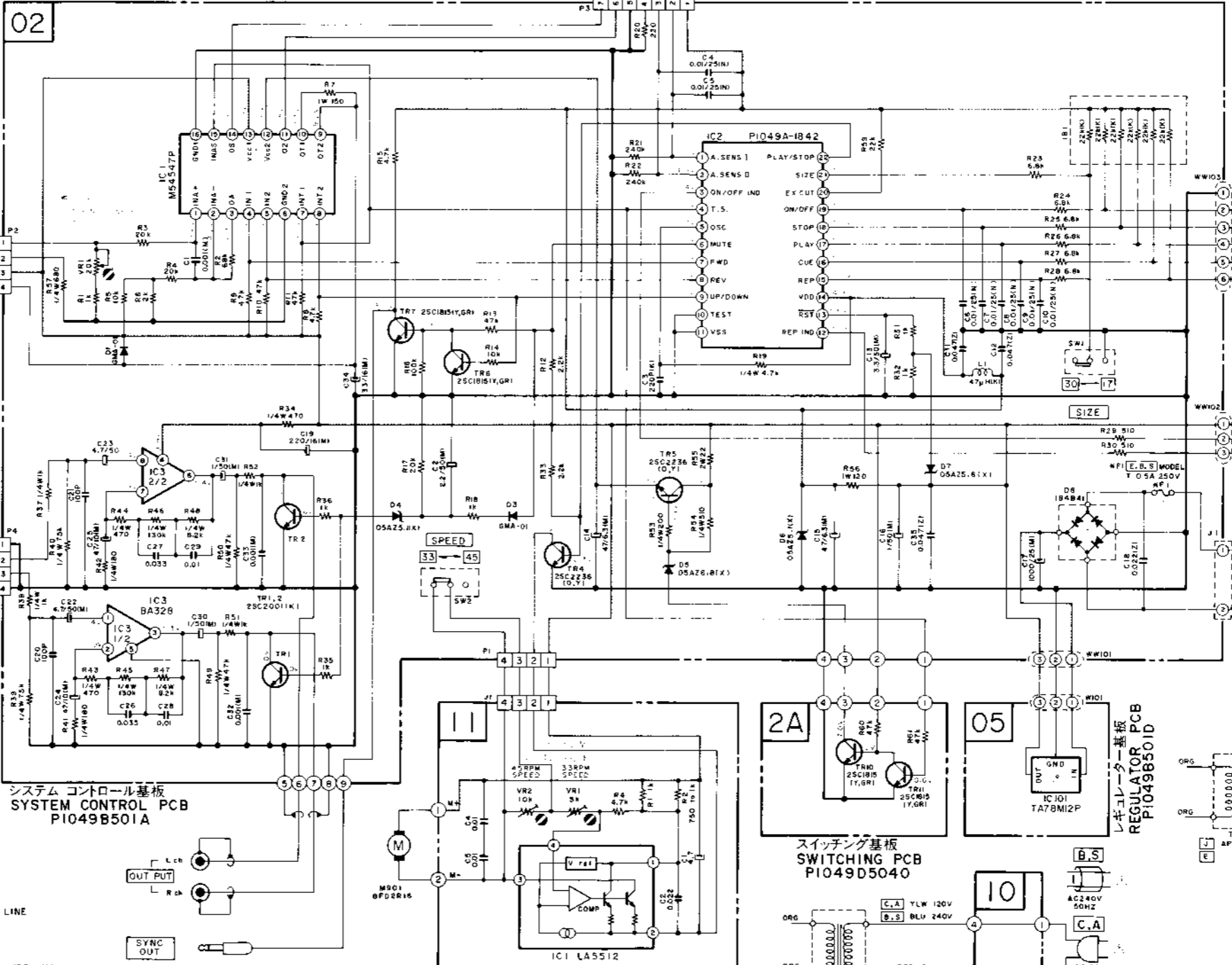
AP-M313

トラッキング検出基板
TRACKING
SENSOR PCB
PI049C502G

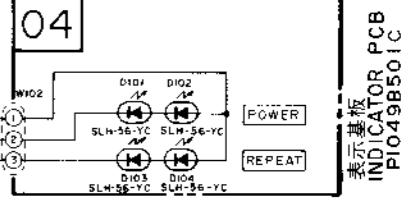
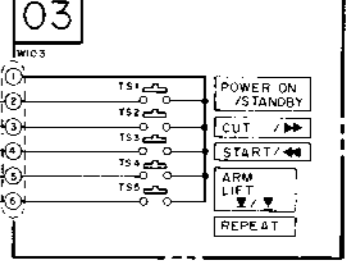


WARNING: INDICATES SAFETY CRITICAL COMPONENTS
FOR USER NEEDS SAFETY. REPLACE SAFETY CRITICAL COMPONENTS
ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

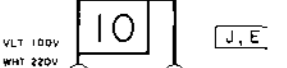
システムコントロール基板
SYSTEM CONTROL PCB
PI049B501A



オペレーション基板
OPERATION PCB
PI049B501B



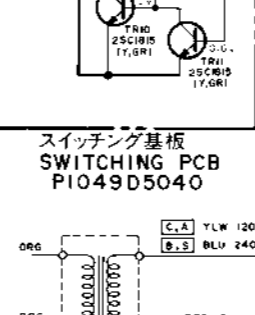
電源中継基板
POWER JUNCTION PCB
PI049C5030



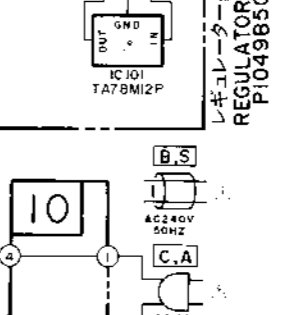
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POWER JUNCTION PCB
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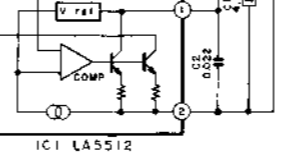
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SWITCHING PCB
PI049D5040



レギュレーター基板
REGULATOR PCB
PI049B501D



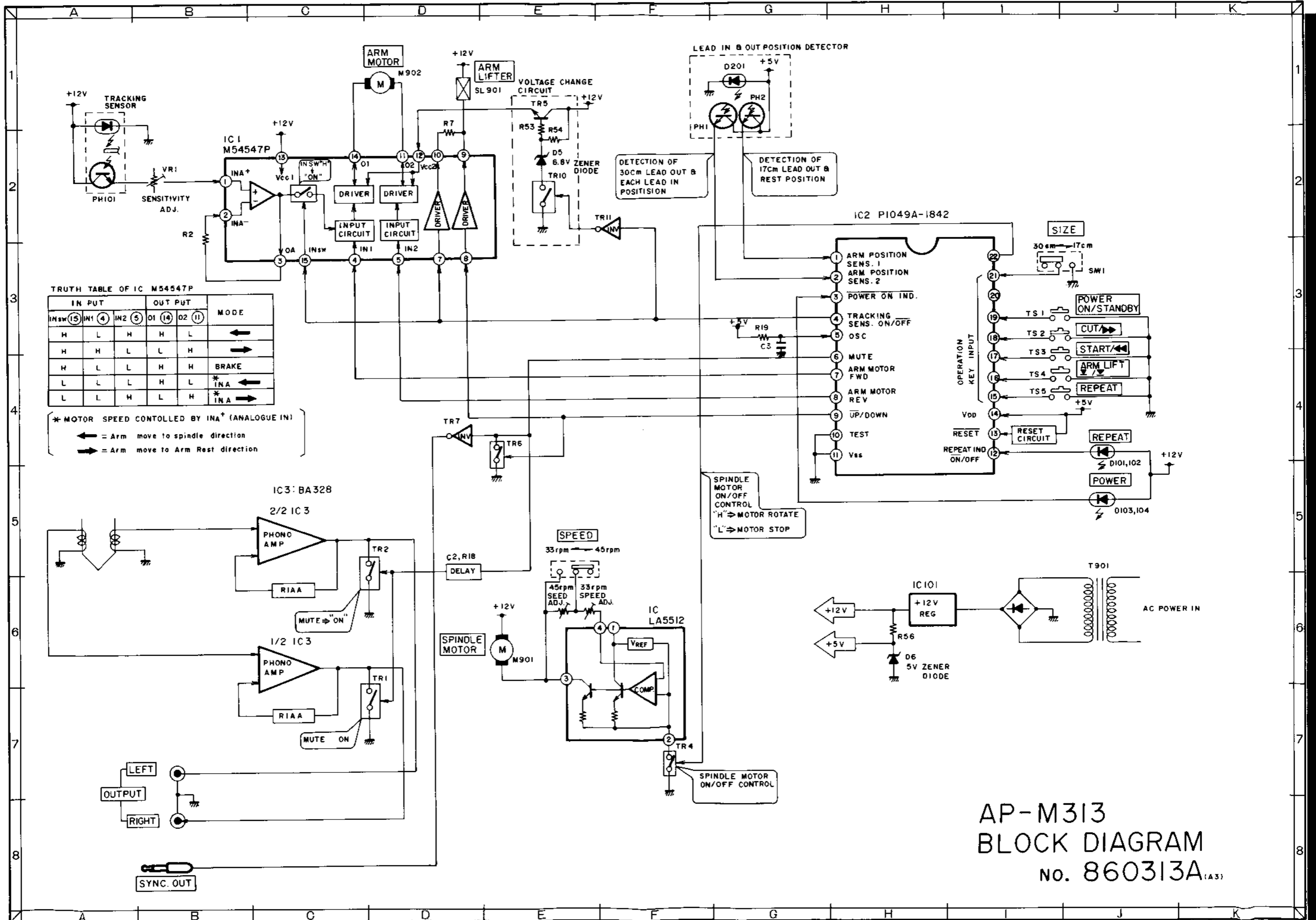
モーター基板
MOTOR PCB



NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/6W(J)
ALL CAPACITORS IN uF 50WV(J)
POWER TRANSFORMER IS DIFFERENT
ACCORDING TO AREA

備考
C,Rの単位(特に指定された部品以外)
抵抗は.....Ω(1/6W(J))
コンデンサ.....μF(50WV(J))
各電圧は、GNDのDC電圧をデジタルボルトメーターにて
測定した値です

AP-M313
SCHEMATIC DIAGRAM
No. 860312A



TRUTH TABLE OF IC M54547P

IN PUT			OUT PUT		MODE
INsw (15)	IN1 (4)	IN2 (5)	O1 (14)	O2 (11)	
H	L	H	H	L	←
H	H	L	L	H	→
H	L	L	H	H	BRAKE
L	L	L	H	L	* INA ←
L	L	H	L	H	* INA →

* MOTOR SPEED CONTROLLED BY INA+ (ANALOGUE IN)
 ← = Arm move to spindle direction
 → = Arm move to Arm Rest direction

AP-M313
 BLOCK DIAGRAM
 No. 860313A(A3)