

Service Manual

MASSAGE LOUNGER
EP578

SPECIFICATIONS

Power source:	120 AC, 60Hz
Power consumption:	130W
<Massage lounger>	
Rotating speed (Massage head):	Approx. 28 times/min.
Massaging width:	2' 6 1/4" (75mm)
Tapping speed (One way):	Approx. 500 times/min.
Rolling massage:	Approx. 1 cycle every 33 sec.
Rolling massage:	3' 11/32 or 4' 21/64" (85 or 110mm)
Regional rolling massage:	Approx. 4' 23/32" (120mm)
Massage travel up and down:	Neck and shoulder section to waist section, Approx. 1' 10 1/4" (565mm)
Expansion of massage head:	Approx. 1' 3/16" (30mm)
Massage heads adjustment:	7 steps
Automatic timer:	Approx. 15 min.
Reclining angle:	127° - 170°
Programmed operation time:	Approx. 12 min.
Short program time:	Approx. 5 min.
<leg massager>	
Speed:	Approx. 3,200 RPM
Automatic timer:	Approx. 30 min.
Maximum user weight:	264 lbs (120kg)
Weight:	84 lbs (44.5 kg)
Dimensions:	Not reclined and leg Massager restored 3' 6 7/64" x 2' 2 49/64" x 3' 1 25/64" 1,070(H) X 680(W) X 950(D) mm
	Reclined and Leg Massager extended 2' 51/64" x 2' 2 49/64" x 5' 9 43/64" 630(H) X 680(W) X 1,770(D) mm
Accessories:	Back cushion



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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

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INSTRUCTION

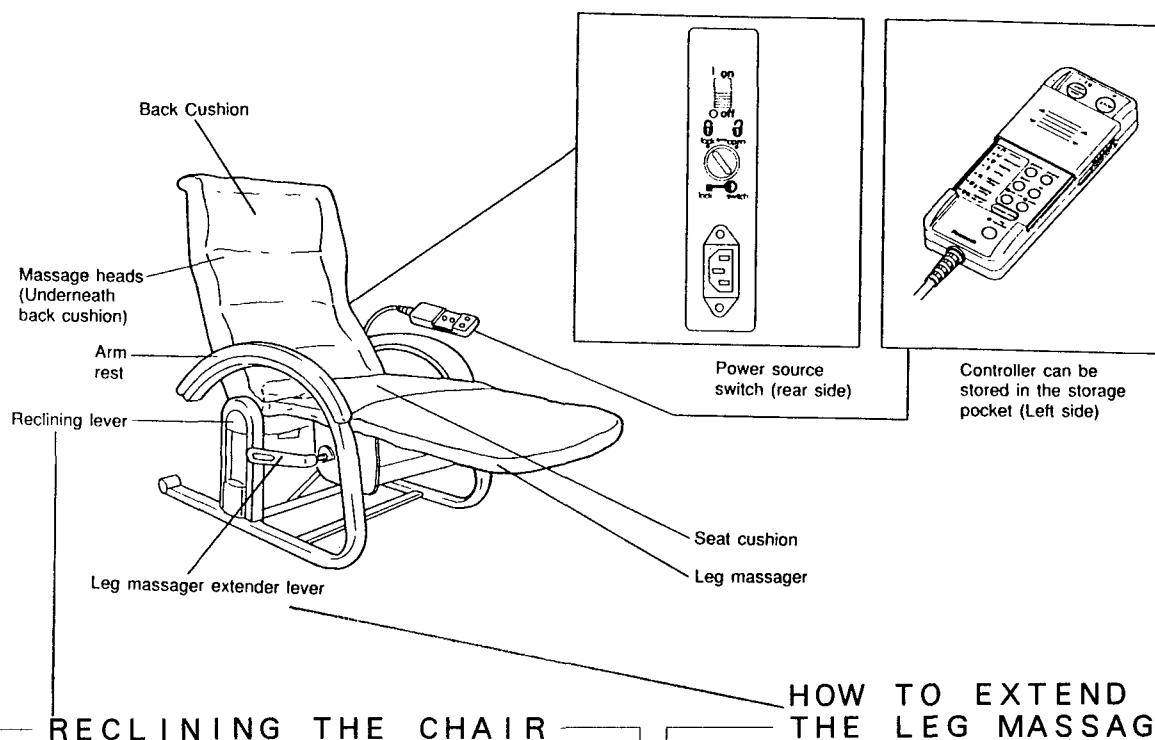
The effective technique of Oriental Shiatsu Massage has been duplicated by National's electronic technology and is available in all of our National Massage Lounger models. Our massage mechanism perform the complex motions of kneading, rolling and tapping,

has manual and preprogrammed modes and has a built-in auto shut-off timer.

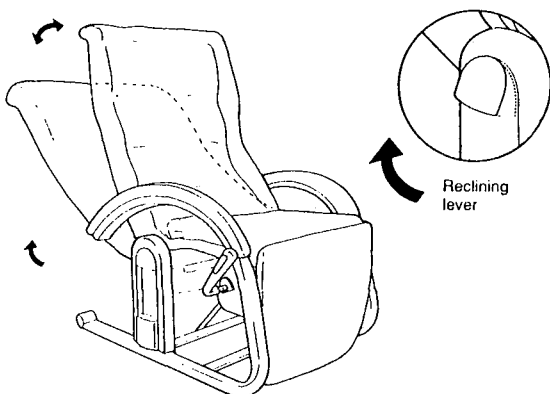
This service manual is intended to help the technician to understand the mechanism movement, troubleshoot problems and repair this mechanism to the component level. Most repairs may be performed on-site.

PARTS INDICATION & CONTROLLER

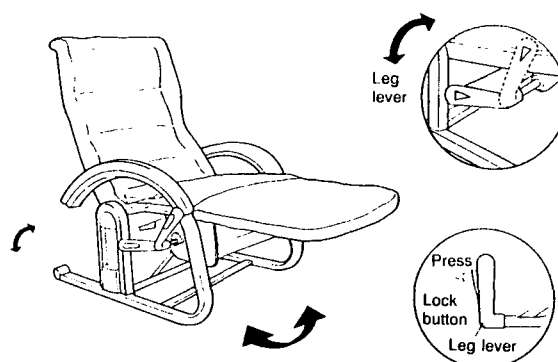
■ PARTS INDICATION



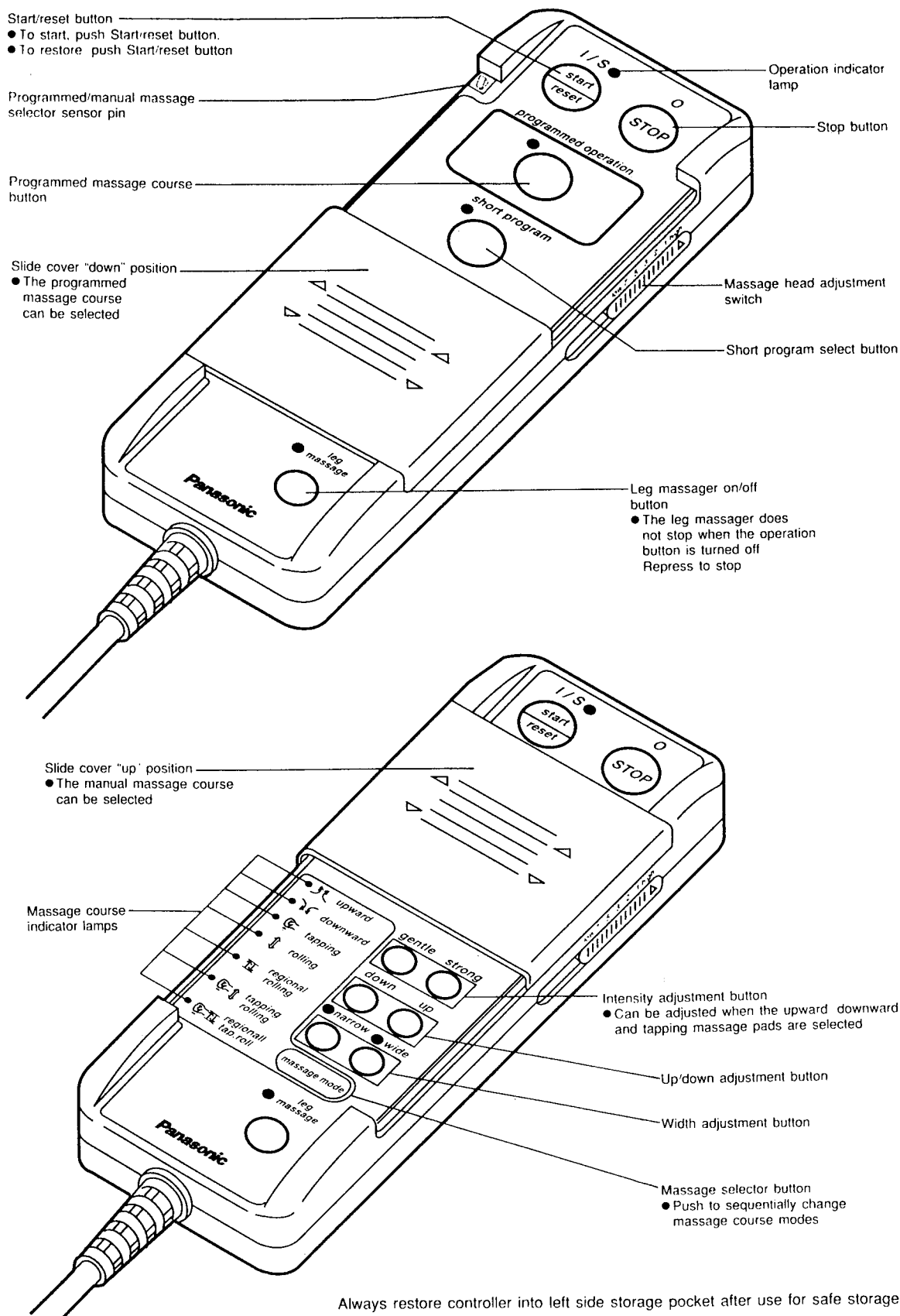
RECLINING THE CHAIR



HOW TO EXTEND THE LEG MASSAGER

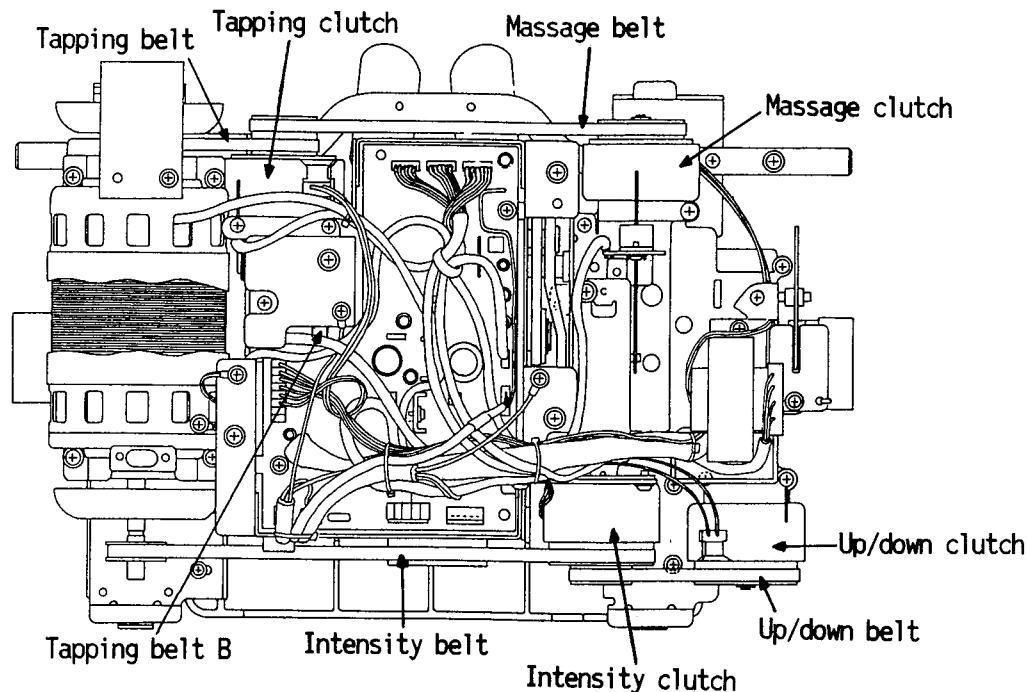


CONTROLLER



BASIC MOVEMENT

■ PARTS IDENTIFICATION (BACK VIEW)



■ INITIAL SETUP POSITION

- Before checking the movement of the massage mechanism, plug the AC cord to the electrical outlet. Turn on the power switch of the power source switch box which is located on the back

side of the chair.

Then turn on the power switch of the controller

- The massage mechanism needs a time to respond when selecting each operation mode.

Massage wheel position before each operation mode

Operation mode	Massage wheel position			Operation mode	Massage wheel position		
Upward massage Downward massage Tapping massage	Move to the weakest position			Off	Move to the weakest position		
Rolling massage Regional rolling Tapp. & rolling Regional tapping & rolling	Move to the weakest position	⇒ Move to the narrowest position	⇒ Move to the high position	Restore	Move to the uppest position	⇒ Move to the widest position	⇒ Move to the lowest position

■ BASIC OPERATION

<Upward or downward massage operation>

- When the upward or downward massage pad of the controller is pressed, the motor rotates the massage clutch is energized, and the massage belt rotates. Therefore the drive pipe and the massage wheels are rotated. At the same time, the up/down clutch is energized, and the up/down belt is rotated. Therefore the

guide roller moves up or down.

The tapping clutch, and the intensity clutch are not energized though the tapping belt, and the intensity belt rotates.

- The upward or downward massage is switched by the reversed direction of the motor's rotation.

(To be continued)

■ BASIC OPERATION

<Rolling massage, up or down operation>

- When the rolling or, up or down pad of the controller is pressed, the motor rotates, the up/down clutch is energized, and the up/down belt rotates. Therefore the guide roller moves up or down.
The tapping clutch, the massage clutch, and

the intensity clutch are not energized though the tapping clutch, the massage belt, and the intensity belt rotates.

- The up and down is switched by the direction of the motor's rotation.

<Tapping massage>

- When the tapping massage pad of the controller is pressed, the motor rotates, the tapping clutch is energized, and the tapping belt and the tapping belt B are rotated. Therefore

the massage wheels make tapping operation. The massage clutch, and intensity clutch are not energized though the massage belt, and the intensity belt are rotated.

<Tapping & rolling massage>

- When the tapping & rolling massage pad of the controller is pressed, the motor rotates, the tapping clutch is energized, and the tapping belt and the tapping belt B rotates. Therefore the massage wheels make tapping operation. At the same time, the up/down clutch is energized, and the up/down belt rotates.

Therefore the guide roller moves up and down. The massage clutch, and the tapping clutch are not energized though the massage belt, and the intensity belt are rotated.

- The up and down is switched by the direction of the motor's rotation.

<Intensity adjustment>

- When the strong or weak pad of the controller is pressed, the motor rotates, the massage clutch and the intensity clutch are energized and the massage belt and the intensity belt rotates. Therefore the massage wheels go front or back.

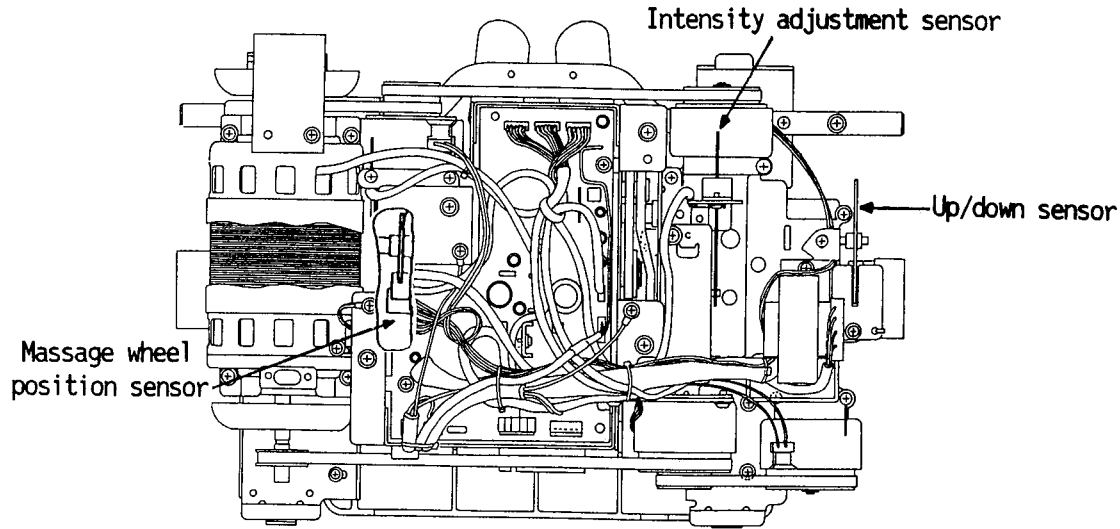
The tapping clutch and the up/down clutch are not energized though the tapping belt, and the up/down belt are rotated.

- The direction of the massage wheel's movement is switched by the direction of the motor's rotation.

■ BASIC OPERATION AND OPERATION CHECK POINT

Operation mode	Motor	Tapping belt	Tapping belt B	Tapping clutch	Massage belt	Massage clutch	Drive pipe	Massage wheels	Intensity belt	Intensity clutch	Up/Down belt	Up/Down clutch	Guide roller
Upward/Downward massage	Rotate	Rotate	Stop	Off	Rotate	On	Rotate	Rotate	Rotate	Off	Stop	On	On
Rolling Up/Down	Rotate	Rotate	Stop	Off	Rotate	Off	Stop	Stop	Rotate	Off	Rotate	On	On
Tapping massage	Rotate	Rotate	Rotate	On	Rotate	Off	Stop	Tapping	Rotate	Off	Stop	Off	On
Tapping & Rolling	Rotate	Rotate	Rotate	On	Rotate	Off	Stop	Tapping	Rotate	Off	Rotate	On	On
Intensity adjustment	Rotate	Rotate	Stop	Off	Rotate	On	Rotate	Rotate	Rotate	On	Stop	Off	On

■ SENSOR OPERATION (BACK VIEW)



UP/DOWN SENSOR

- This sensor detects highest/lowest position or the 32 steps of height position.
- If the massage mechanism is removed from the chair, the position of up/down detector gear may change and the up/down stop position will change. Adjust the up/down detector

gear. Also, if chair has received sufficient shock during transportation (I.E. dropped from more than 1 m), massage mechanism may jam at top position. In this case, adjust the up/down detector gear.

INTENSITY ADJUSTMENT SENSOR

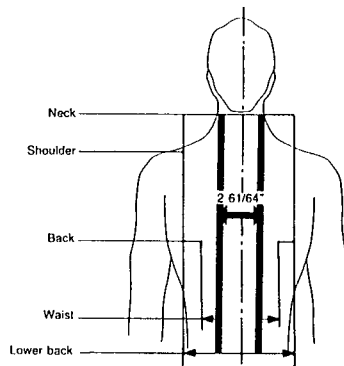
- This sensor detects the strongest/the weakest position or the 7 steps of the intensity position.
- This sensor does not require any adjustment.

MASSAGE WHEEL POSITION SENSOR

- This sensor detects the highest or lowest position of the massage wheels.
- This sensor does not require any adjustment.

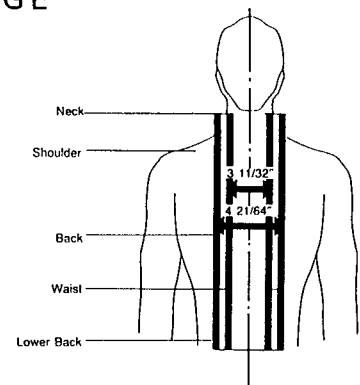
MASSAGE WHEELS MOVING RANGE

<UPWARD AND DOWNWARD MASSAGE>



Massage range width : 2 61/64" (75mm)
(Width cannot be adjusted)
Intensity adjustment: Adjust massage intensity from "gentle" to "strong" ; 1 3/16" (30mm)-wide adjustability where massage heads push out toward body as intensity increases.

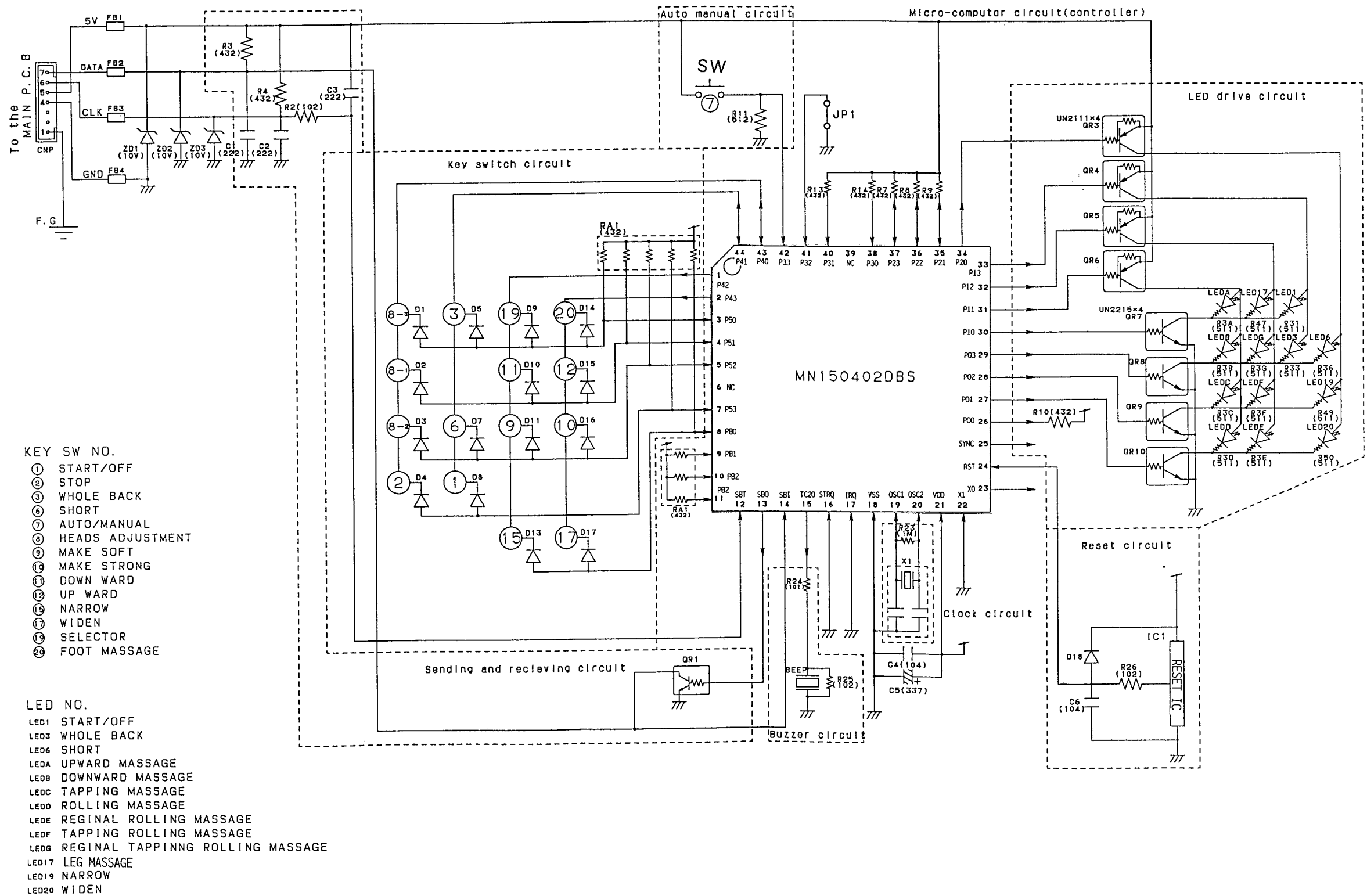
<TAPPING, ROLLING, REGIONAL ROLLING, TAPPING ROLLING AND REGIONAL TAPPING ROLLING MASSAGE>



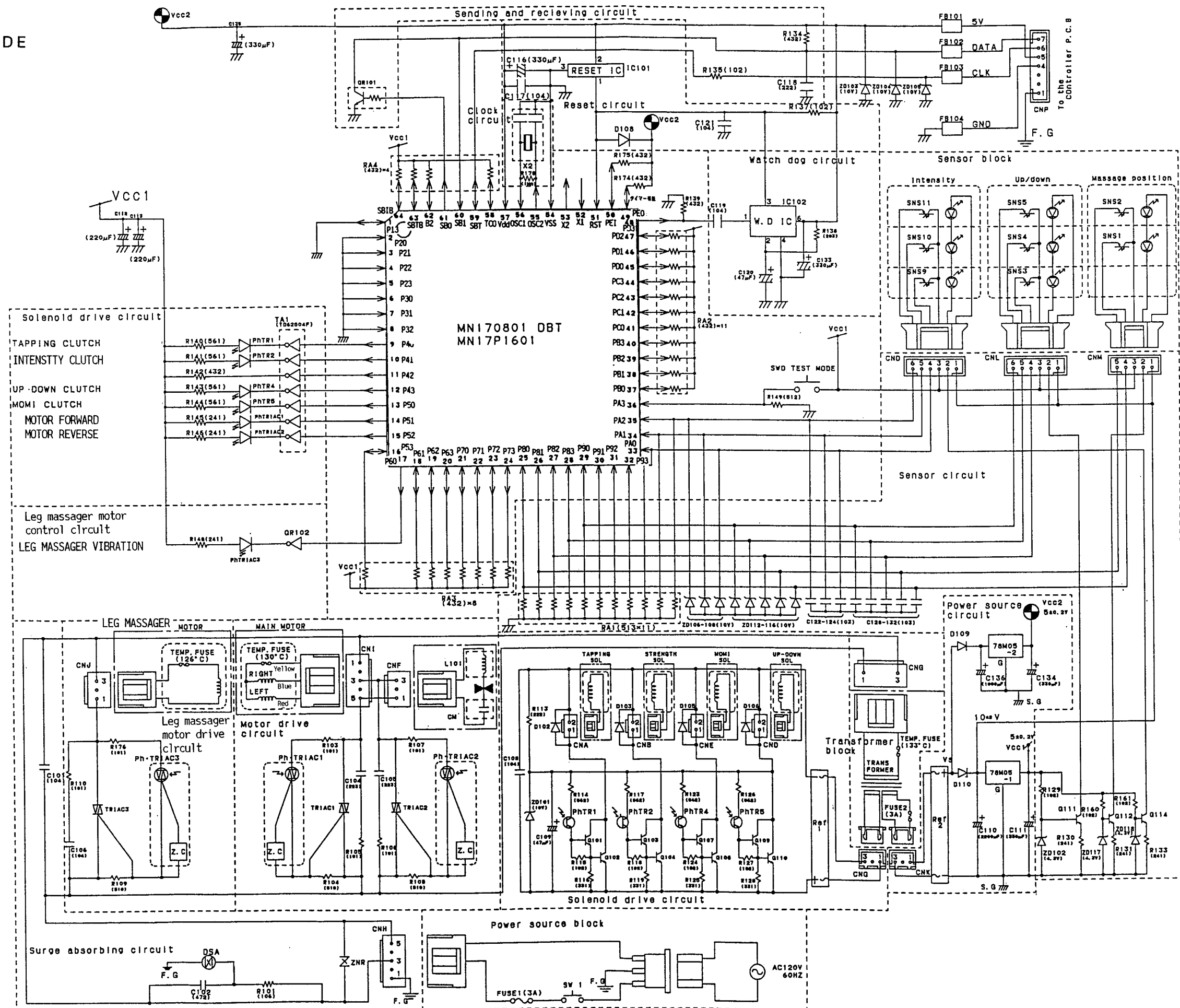
Massage range width : 3 11/32" or 4 21/64" (85mm or 110mm)
Intensity adjustment: Adjust intensity from "gentle" to "strong" (Only tapping mode); 1 3/16" (30mm)-wide adjustability where massage heads push toward body as intensity increases. Other aspects cannot be adjusted; massage heads are automatically set to gentle.

SCHEMATIC DIAGRAM

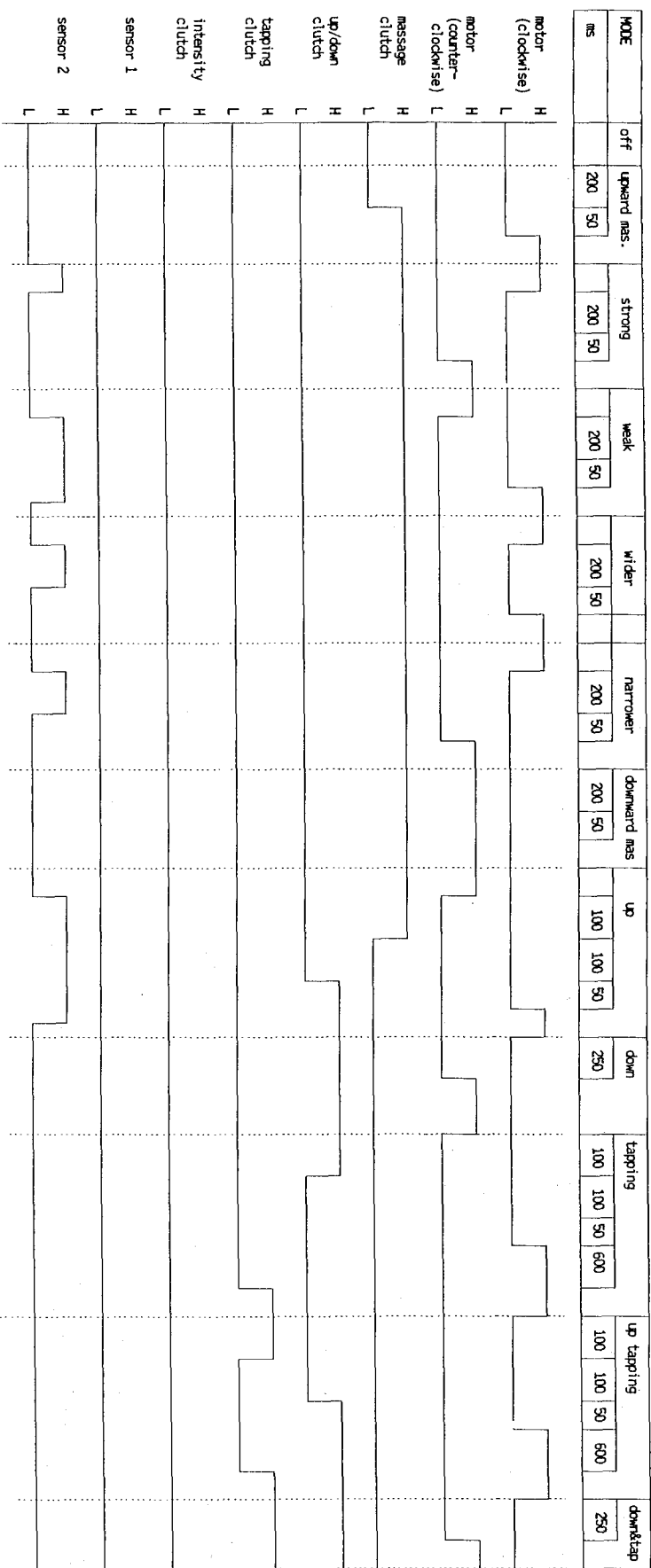
■ CONTROLLER SIDE



■ MAIN UNIT SIDE



■ TIMMING CHART FOR EACH OPERATION MODE



Pin No. of Main PCB's micro-computer

Model No.	motor (clockwise)	motor (counter-clockwise)	massage clutch	up/down clutch	tapping clutch	intensity clutch	sensor 1	sensor 2
EP578	Pin 15	Pin 14	Pin 13	Pin 12	Pin 9	Pin 10	Pin 25	Pin 26

■ TERMINAL FUNCTION OF MICRO-COMPUTOR'S

Main PCB's micro-computer

Pin No.	Mark	Function	Pin No.	Mark	Function
1	P13	—	33	PA0	SNS9 Intensity adjustment P.C.B
2	P20	—	34	PA1	SNS10 Intensity adjustment P.C.B
3	P21	—	35	PA2	SNS11 Intensity adjustment P.C.B
4	P22	—	36	PA3	SW 0 test mode
5	P23	—	37	PB0	—
6	P30	—	38	PB1	—
7	P31	—	39	PB2	—
8	P32	—	40	PB3	—
9	P40	Tapping clutch	41	PC0	—
10	P41	Intensity clutch	42	PC1	—
11	P42	Width clutch	43	PC2	—
12	P43	Up/down clutch	44	PC3	—
13	P50	Massage clutch	45	PD0	—
14	P51	Motor (left)	46	PD1	—
15	P52	Motor (right)	47	PD2	—
16	P53	—	48	PD3	W.D IC
17	P60	Leg massager	49	PE0	Timer
18	P61	Leg massager (High)	50	PE1	SW E
19	P62	Leg massager (Low)	51	RST	Reset
20	P63	—	52	X1	—
21	P70	—	53	X2	—
22	P71	—	54	Vss	GND
23	P72	—	55	OSC2	Clock
24	P73	—	56	OSC1	Clock
25	P80	SNS1 Massage position detector P.C.B	57	Vdd	5V
26	P81	SNS2 Massage position detector P.C.B	58	TC0	—
27	P82	SNS3 Up/down detector P.C.B	59	SBT	Clock
28	P83	SNS4 Up/down detector P.C.B	60	SB1	DATA Recieving
29	P90	SNS5 Up/down detector P.C.B	61	SB0	DATA Sending
30	P91	SNS6 Width detector P.C.B	62	B2	—
31	P92	SNS7 Width detector P.C.B	63	SBT8	—
32	P93	SNS8 Width detector P.C.B	64	SB18	—

Controller PCB's micro-computer

Pin No.	Mark	Function	Pin No.	Mark	Function
1	P42	Key Switch (See Chart I)	28	P02	LCD indication (See Chart II)
2	P43	Key Switch (See Chart I)	29	P03	LCD indication (See Chart II)
3	P50	Key Switch (See Chart I)	30	P10	LCD indication (See Chart II)
4	P51	Key Switch (See Chart I)	31	P11	LCD indication (See Chart II)
5	P52	Key Switch (See Chart I)	32	P12	LCD indication (See Chart II)
6	NC	—	33	P13	LCD indication (See Chart II)
7	P53	Key Switch (See Chart I)	34	P20	LCD indication (See Chart II)
8	PB0	Key Switch (See Chart I)	35	P21	—
9	PB1	—	36	P22	—
10	PB2	—	37	P23	—
11	PB2	—	38	P30	Upward/downward massage ... SWA
12	SBT	—	39	NC	—
13	SB0	DATA Receiving	40	P31	Timer ... SWB
14	SB1	DATA Receiving	41	P32	Leg massager vibration ... SWC
15	TC20	BEEP	42	P33	Auto/manual selector ... SW
16	S1RQ	—	43	P40	Auto/manual selector ... SW
17	IRQ	—	44	P41	Auto/manual selector ... SW
18	VSS	GND			
19	OSC1	Clock			
20	OSC2	Clock			
21	VDD	5V			
22	X1	—			
23	X0	—			
24	SRT	Reset Input			
25	SYNC	—			
26	P00	LCD Indication (See chart II)			
27	P01	LCD Indication (See chart II)			

Key Switch Chart I

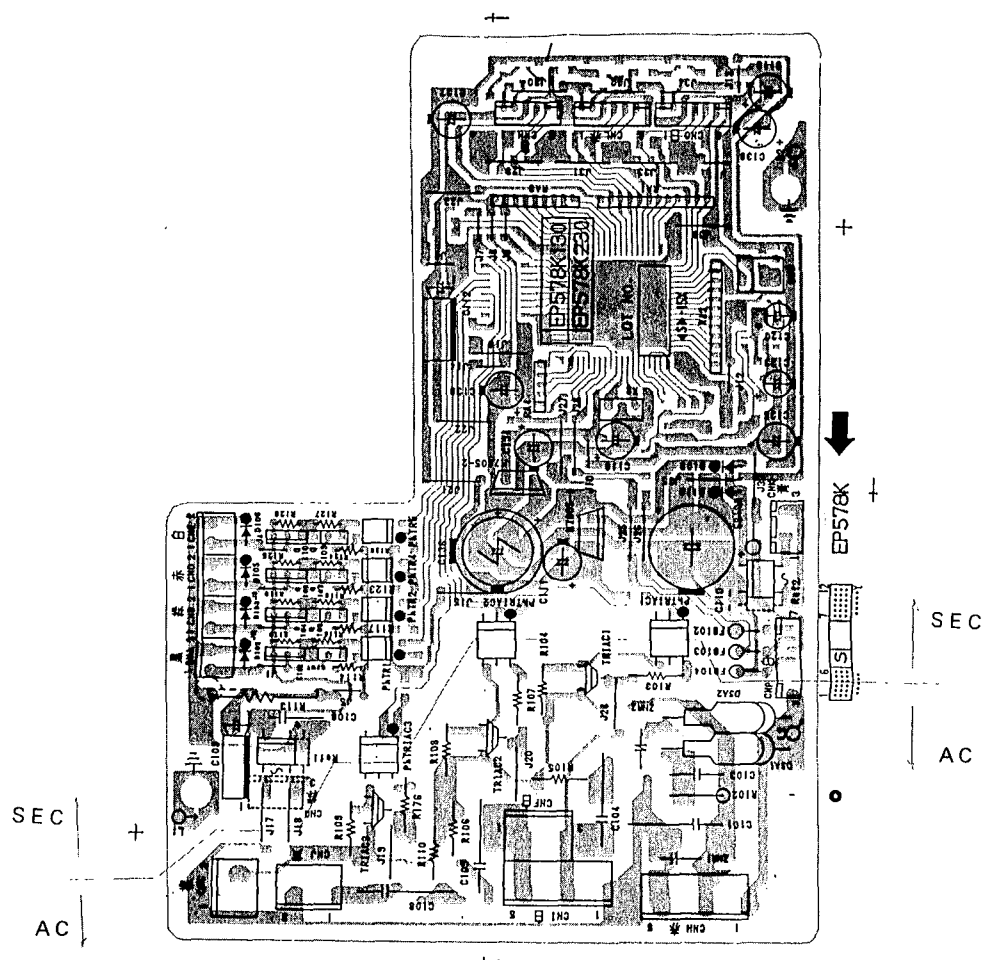
	P42 PIN1	P43 PIN2	P40 PIN43	P41 PIN44
P50 PIN3	Narrow	Wider	—	Whole back
P51 PIN4	Down ward	UP ward	—	Neck shoulder
P52 PIN5	Make soft	Make strong	—	Short
P53 PIN7	—	—	Stop	Start /off
PB0 PIN8	Selector	Leg massager	Lower back	—

Key Switch Chart II

	P11 PIN31	P12 PIN32	P13 PIN33	P20 PIN34
P10 PIN30	Upward massage	Foot massage	Start /off	Neck Shoulder
P03 PIN29	Downward massage	Reginal tapping rolling massage	Whole back	Short
P02 PIN28	Tapping massage	tapping rolling massage	Lower back	—
P01 PIN27	Rolling massage	Reginal rolling massage	—	—

ELECTRICAL PARTS LOCATION AND PARTS LIST

- Main printed circuit board
- Printed circuit board viewed from pattern side.

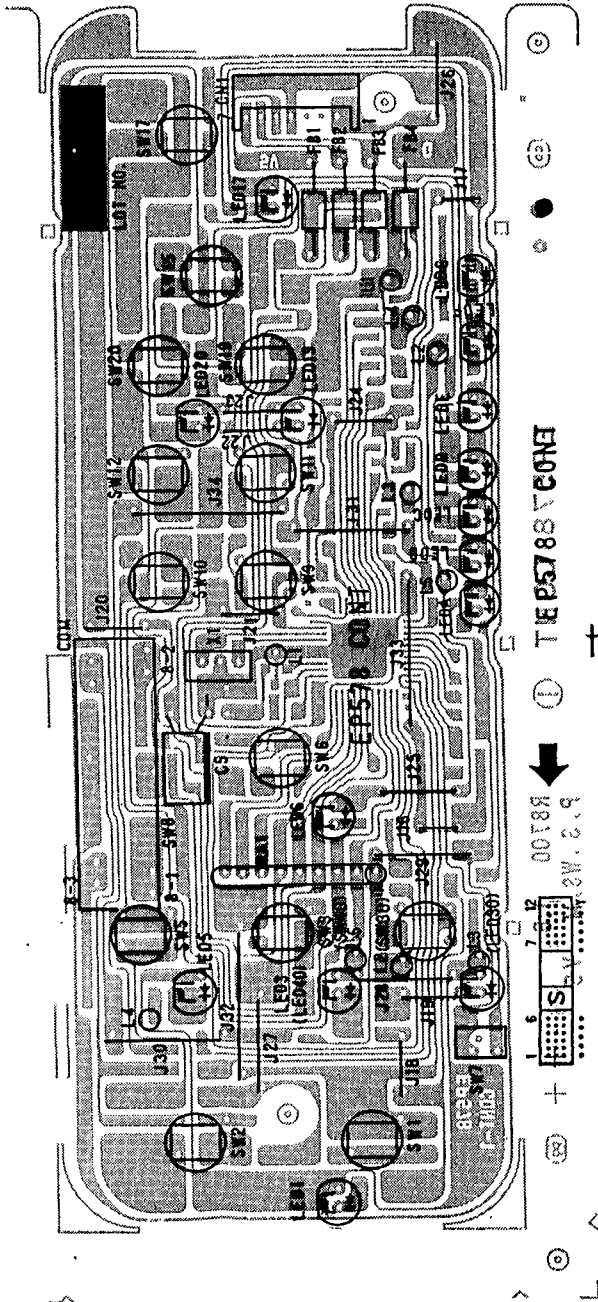


Pef No.	Parts Name	Description	Remarks
MPU1	Micro-computer	MN170801DBX-1	
DSA1	Surge absorber	440V or 550V	
ZN1	Surge absorber	270V	
Ph. TRIAC1-3	Photo triac	600V, 0.1A	
TRIAC1,2	Triaic	600V, 8A	
TRIAC3	Triaic	400V, 3A	
Ref1,2	Rectifier	400V, 1A	
78M05-1, 2	Voltage regulator	5V, 0.5A	
Ph. TRI, 2, 4, 5	Photo transistor	35V, 0.1A	
Q101, 103, 107 Q109	Transistor	60V, 0.1A	
Q102, 104, 108 Q110	Transistor	50V, 2A	
Q111, 112, 114	Transistor	50V, 0.1A	
QRI01	Transistor	50V, 0.1A	
QRI02	Transistor	50V, 0.1A	
DI02, 103, 105, DI06, 109, 110	Diode	400V, 1A	
DI08	Switching diode	35V, 0.1A	
ZDI02, 117, 118	Zener diode	4.3V	
ZDI01, 103-108 112-118	Zener diode	10V	
IC101	Reset IC	4.0V-4.3V	
IC102	Watch dog Timer	_____	
TA1	Transistor array	_____	
SW1	Switch	_____	
RI02	Resistor	5.6M Ω , 1/2W	
RI13	Resistor	2.2K Ω , 3W	
RI05, 106	Resistor	100 Ω , 1/2W	
RI04, 108, 109	Resistor	51 Ω , 1/4W	
RI03, 107, 110 RI76	Resistor	100 Ω , 1/4W	
RI16, 119, 125, RI28	Resistor	330 Ω , 1/4W	
RI15, 118, 124, RI27	Resistor	1k Ω , 1/4W	

Pef No.	Parts Name	Description	Remarks
R114, I17, 123 R126	Resistor	5.6k Ω , 1/4W	
R130, 131, 133 R145, 146, 148	Resistor	240 Ω , 1/8W	
R140, 141, 143 R144	Resistor	560 Ω , 1/8W	
R129, 135, 137 R160, 161	Resistor	1k Ω , 1/8W	
R134, 139, 142 R174, 175	Resistor	4.3K Ω , 1/8W	
R149	Resistor	5.1K Ω , 1/8W	
R138	Resistor	20k Ω , 1/8W	
R178	Resistor	1M Ω , 1/8W	
J38	Resistor	0 Ω , 1/8W	
RA1	Resistor Network	5.1K Ω , 11elements	
RA2	Resistor Network	5.1K Ω , 11elements	
RA3	Resistor Network	4.3K Ω , 8elements	
RA4	Resistance array	4.3K Ω , 4elements	
X2	Ceramic Resonator	4MHz, 0.5%	
C103	Capacitor	AC 250V, 4700pF	
C118	Capacitor	50V, 2200pF	
C122-124 128-132	Capacitor	50V, 0.01 μ F	
C117, 119, 121	Capacitor	50V, 0.01 μ F	
C110	Capacitor	25V, 2200 μ F	
C136	Capacitor	25V, 1000 μ F	
C109	Capacitor	16V, 47 μ F	
C120	Capacitor	6.3V, 47 μ F	
C112, 113	Capacitor	6.3V, 220 μ F	
C111, 116 133-135	Capacitor	6.3V, 330 μ F	
C104, 5	Capacitor	DC 1250V, 0.022 μ F	
C106	Capacitor	DC 630V, 0.1 μ F	
C101	Capacitor	DC 250V, 0.1 μ F	
C108	Capacitor	AC 250V, 0.1 μ F	
F8101-104	Ferrite beads	3A	

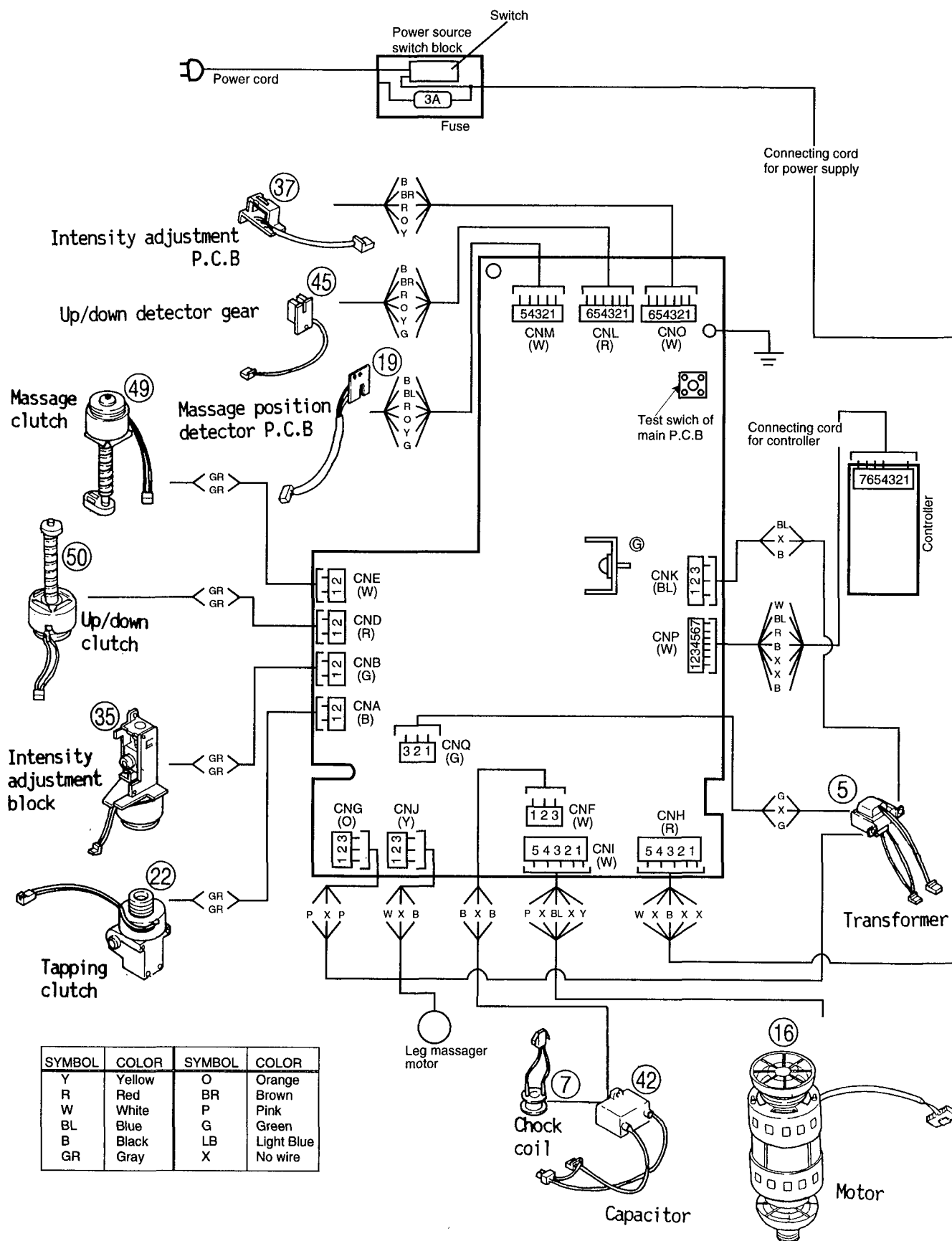
ELECTRICAL PARTS LOCATION AND PARTS LIST

- Controller printed circuit board
- Printed circuit board viewed from pattern side.



Pef No.	Parts Name	Description	Remarks
MPU1	Micro-computer	MN150402DBY	
IC1	IC	4.0V-4.3V	
QR1,7-10	Transistor	50V,0.1A	
QR3-6	Transistor	50V,0.1A	
ZDI-3	Zener diode	10V	
DI-5,7-11	Diode	35V,0.1A	
LED1,3,6,17	LED	LN28RPL	
LED19,20,A-G	LED	LN28RPL	
SW8	Slide encoder	EVQM55C1008E	
SW1-3,6,9-12	Switch	SKHHAP	
SW15,17,19,20	Switch	EVQAC09B	
SW7	Selector switch	SPPB51	
X1	Ceramic Resonator	4MHz 0.5%	
FB1-4	Ferrite beads	6A	
R23	Resistor	1MΩ,1/10W	
R11	Resistor	5.1KΩ,1/10W	
R3,4,7-10,13	Resistor	4.3KΩ,1/10W	
R14	Resistor	1KΩ,1/10W	
R2,12,25,26	Resistor	1KΩ,1/10W	
R31,33,36	Resistor	510Ω,1/10W	
R3A-G,R47	Resistor	510Ω,1/10W	
R49,50	Resistor	100Ω,1/10W	
R24	Resistor	100Ω,1/10W	
J1-4	Resistor	0Ω,1/10W	
J5-15	Resistor	0Ω,1/8W	
RA1	Resistor Network	4.3KΩ,8elements	
C4,6,7	Capacitor	0.1μF,50V	
CI-3	Capacitor	2200pF,50V	
C5	Capacitor	330μF,6.3V	

WIRING CONNECTION DIAGRAM

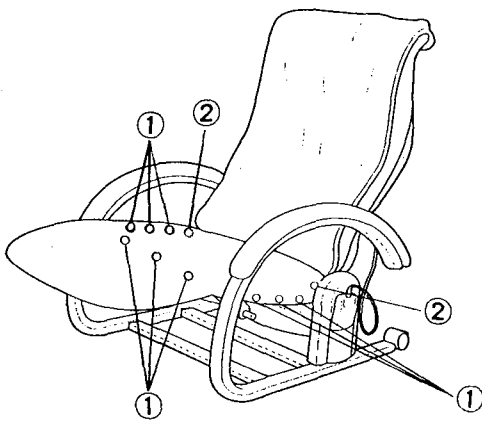
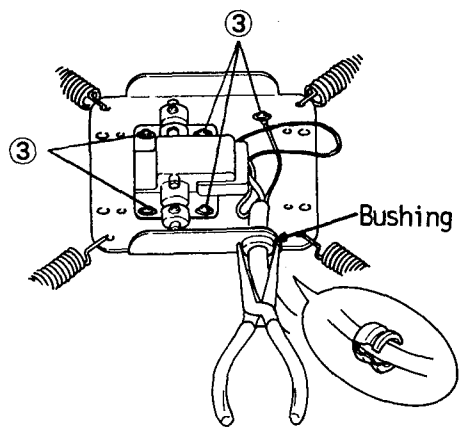


DISASSEMBLY INSTRUCTIONS

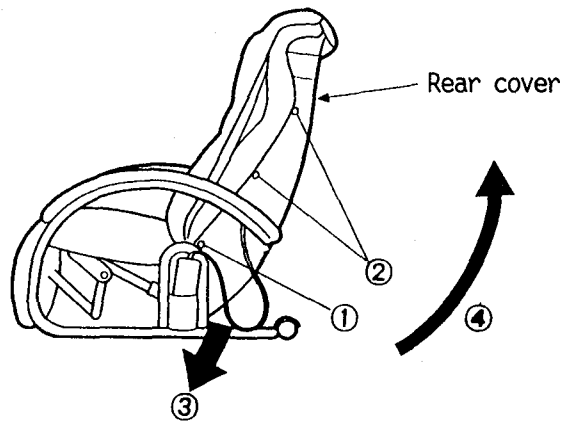
- Unplug the AC cord from the electrical outlet before disassembly.
- Remove only those parts which are necessary. In the description of repairs, only the parts covered by those points are stated.
- Note correct screw size when re-installing parts.

■ HOW TO DISASSEMBLY THE LEG MASSAGER

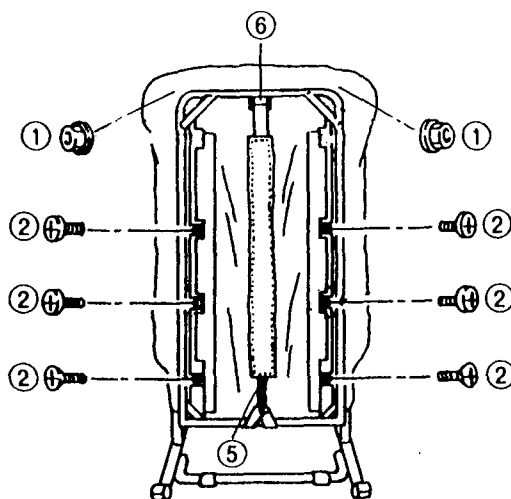
(The leg massager can be repaired without opening the chair back)

Ref. No. 1A	Procedure 1A	5 minutes	REMOVAL OF THE LEG MASSAGER MOTOR.
<div style="display: flex; justify-content: space-around; align-items: flex-start;">   </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 48%;"> <ol style="list-style-type: none"> 1. Remove the seat by removing the 9 buttons (①), and 2 screws (②). 2. Remove the fitting for motor by removing the 4 screws. </div> <div style="width: 48%;"> <ol style="list-style-type: none"> 3. Remove the bushing by pinching and pulling out with a pincher. 4. The motor can be replaced by removing the 5 screws (③). </div> </div>			

■ HOW TO DISASSEMBLY THE CHAIR

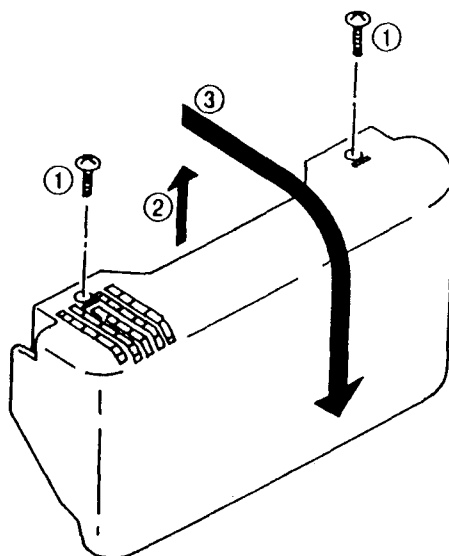
Ref. No. 1B	Procedure 1B	5 minutes	HOW TO OPEN THE REAR COVER.
<div style="display: flex; justify-content: center; align-items: center; margin-bottom: 20px;">  </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <ol style="list-style-type: none"> 1. Remove the 6 screws (②) that are located at left and right of the rear cover. </div> <div style="width: 48%;"> <ol style="list-style-type: none"> 2. In the rear cover lower section, there is a plastic cover inside the cloth. The rear cover can be removed by pulling down and out ③. 3. Pull the rear cover up and hang it down on the chair seat in the direction shown by the arrow ④. </div> </div>			

Ref. No. 2B	Procedure 1B → 2B	10 minutes	REMOVAL OF THE MASSAGE WHEEL COVER AND REAR COVER.
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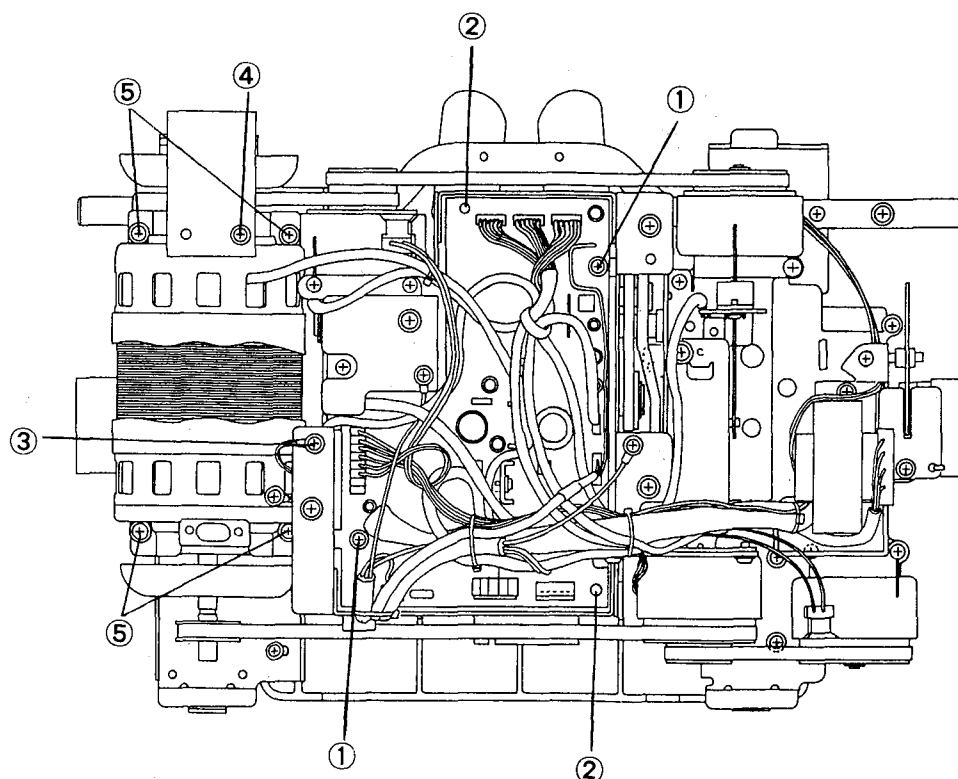
1. Remove the 2 nuts (①).
2. Remove the rear cover.
3. Remove the 6 screws (②).
4. Remove the 4 screws (③).
5. The massage wheel cover can be replaced by removing the 1 spring (④) for center belt, and the hooks for center belt (⑤).

Ref. No. 3B	Procedure 1B → 3B	2 minutes	REMOVAL OF THE MASSAGE MECHANISM COVER.
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1. Remove the 2 screws (①), and pull up the massage mechanism cover in the direction shown by the arrow ②, next pull toward you in the direction ③.

■ HOW TO DISASSEMBLE THE MESSAGE MECHANISM BLOCK (1)
 (Belts, Main P.C.B. and motor can be replaced without removing the message mechanism block from the back frame)



Ref. No. 1C	Procedure 3B → 1C	1 minute	REMOVAL OF THE BELTS.
1. Remove the 4 belts; the tapping belt, the message belt, the up/down belt and the intensity belt.			
Ref. No. 2C	Procedure 3B → 2C	3 minutes	REMOVAL OF THE MAIN P.C.B.
1. Remove all the connectors on the main P.C.B. 2. Remove the 2 screws (①). 3. With pinching the 2 plastic securing parts (②), remove the main P.C.B.			
Ref. No. 3C	Procedure 1C → 3C	3 minutes	REMOVAL OF THE MOTOR.
1. Remove the grounding wire by removing the 1 screw (③). 2. Remove the protective plate for fan by removing the 1 screw (④). 3. Remove the 4 screws (⑤). 4. Remove the guide plate for motor, the fitting for motor and the motor block.			

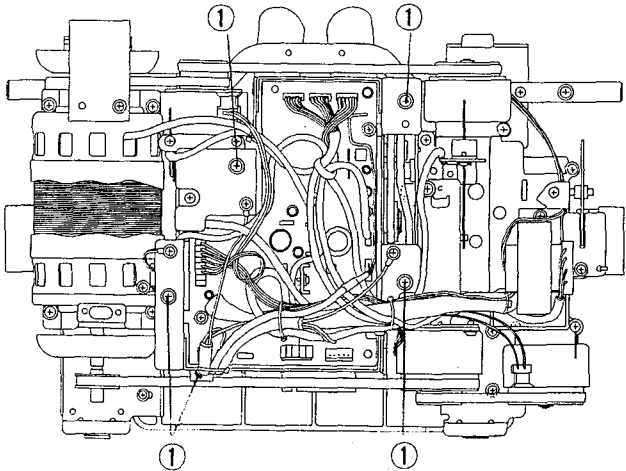
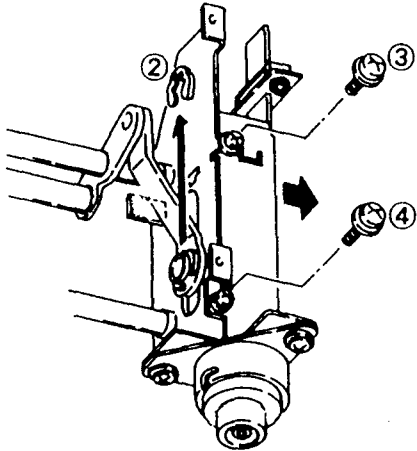
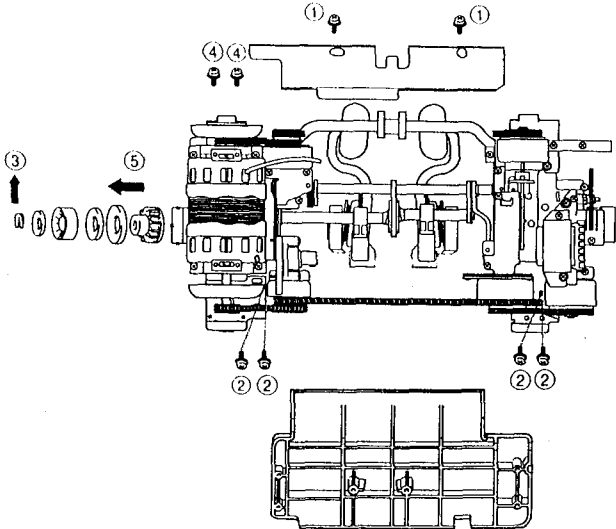
■ HOW TO DISASSEMBLE THE MESSAGE MECHANISM BLOCK (2)

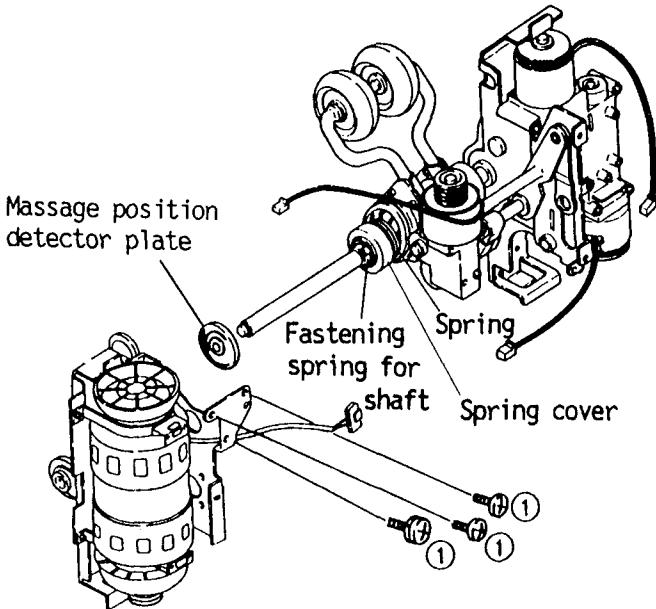
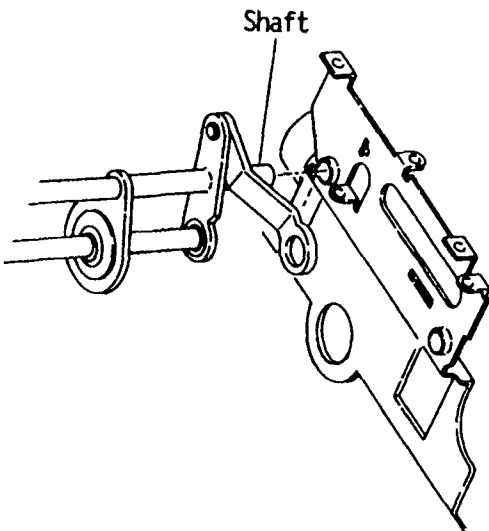
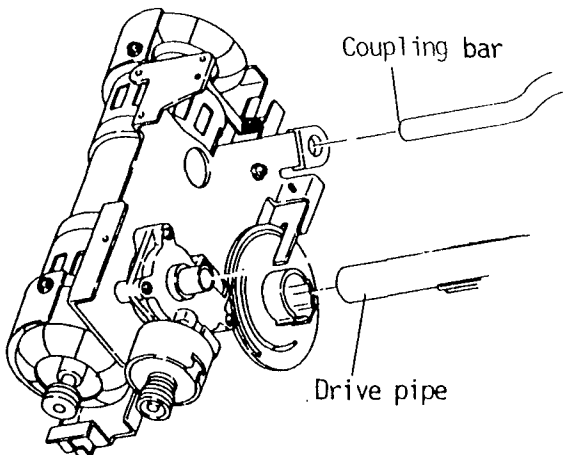
- In order to facilitate repairs on the massage mechanism, it is recommended that the chair back should be set forward after removing the arm rest, the seat, and the pneumatic spring.

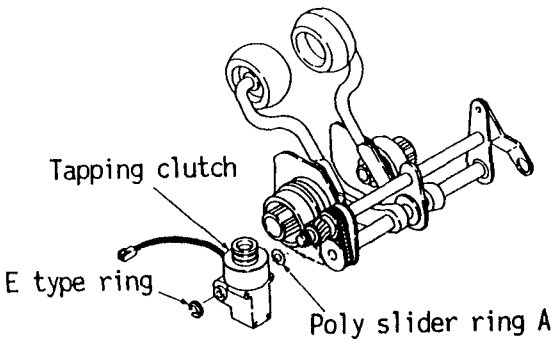
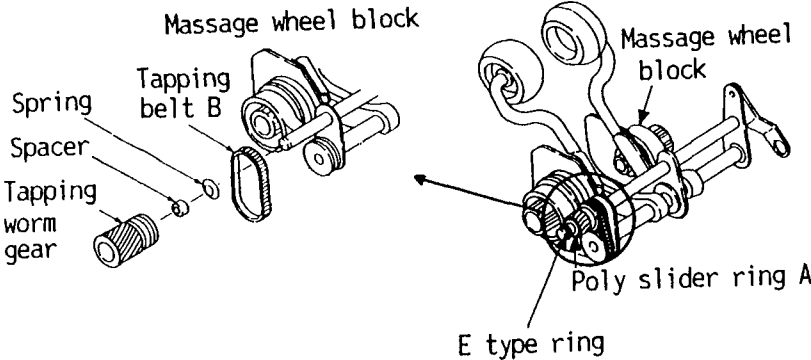
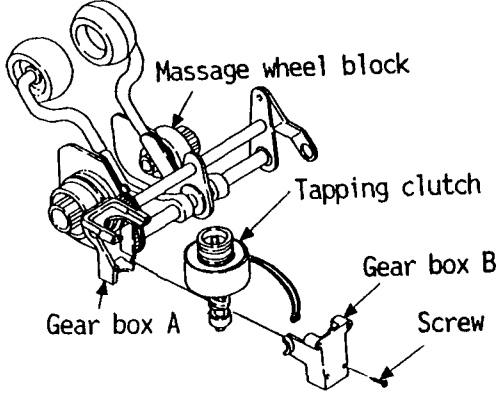
NOTE: Do not, however, if the massage mechanism runs at the top of the chair back, the weight of the mass mechanism will cause to fall forward.

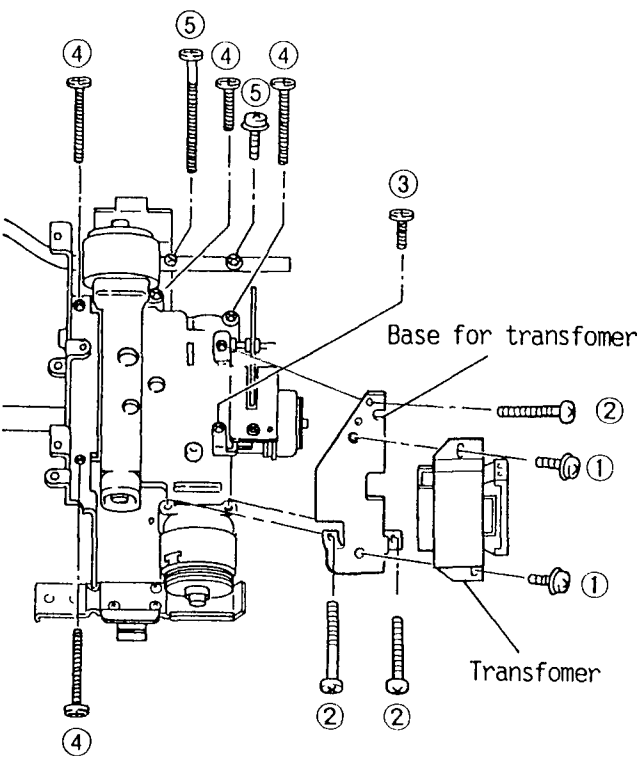
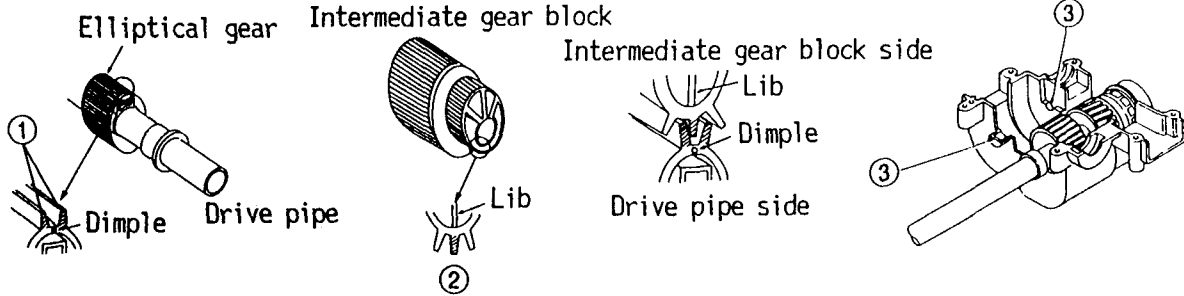
Ref. No. 1D	Procedure 3B → 1D	5 minutes	REMOVAL OF THE MESSAGE MECHANISM BLOCK.
			<div data-bbox="196 443 699 863"> </div> <div data-bbox="857 516 1377 877"> </div> <div data-bbox="1143 877 1409 1045"> <p>Up/down clutch (10mm Metric Driver)</p> </div> <div data-bbox="228 1020 764 1507"> </div> <ol style="list-style-type: none"> Remove the snap pin (②) and hinge pin (③). With supporting the chair back tightly, recline it on the seat carefully. Remove the following connectors, and the 2 screws for the gronding wires of those connectors. <ul style="list-style-type: none"> ▪ Leg massager motor cord ▪ Connecting cord for power supply ▪ Connecting cord for controller Move the massage mechanism down to the bottom range position. Remove the 6 screws (⑥). Next, slide the both left and right rail pieces in the direction shown by the arrow ⑦. Take out the massage mechanism block (⑧) and place it on a table or floor. <p>NOTE: The massage mechanism block can be moved down by turning the nut of the up/down clutch with a box driver (10mm driver)</p> <p>NOTE: Readjust the director gear when set up the massage mechanism block to the frame. Adjust the decline of the massage mechanism.</p>

NOTE: Be sure to note all wire ties and wire routing before disassembly.

Ref. No. 2D	Procedure	1D → 2D	10 minutes	REMOVAL OF THE INTENSITY ADJUSTMENT BLOCK.
<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <ol style="list-style-type: none"> 1. Remove the 5 screws (①), and remove the shield panel with the chock coil. 2. Remove the K type stop ring (②). 3. Remove the 2 screws (③, ④). 4. Remove the block for intensity adjustment. 				
Ref. No. 3D	Procedure	2D → 3D	5 minutes	REMOVAL OF THE MASSAGE WHEEL BLOCK (1)
<div style="display: flex; justify-content: center; align-items: center;">  </div> <ol style="list-style-type: none"> 1. Remove the belt cover by removing the 2 screws (①). 2. The massage mechanism cover A with the cord guide plate and capacitor can be removed by removing the 4 screws (④). 3. Remove the fitting A and the pinion B block by removing the E type stop ring (③). 4. Remove the 2 screws (④). 				

Ref. No. 4D	Procedure 3D → 4D	5 minutes	REMOVAL OF THE MASSAGE WHEEL BLOCK (2)
<div></div> <div><ol style="list-style-type: none">1. Remove the motor by removing the 3 screws (①).2. Remove the fastening spring for shaft (②) with pushing the spring cover (③) toward the gear box side.3. Remove the massage wheel block with the tapping clutch block (④).</div>			
Ref. No. 5D	Procedure 4D → 5D	10 minutes	METHOD FOR MATCHING THE MASSAGE WHEEL BLOCK
<div></div> <div></div> <div><ol style="list-style-type: none">1. When assembling, make sure to insert the shaft into correct position.2. When assembling, make sure to insert the coupling bar, and the drive pipe into each correct position.<p>NOTE: Do not forget to set the massage wheel detector when assembling.</p></div>			

Ref. No. 6D	Procedure 4D → 6D	3 minutes	REMOVAL OF THE TAPPING CLUTCH BLOCK
<p>1. Pull out the tapping clutch from the massage wheel block by removing the E type stop ring (①).</p>			 <p>Tapping clutch</p> <p>E type ring</p> <p>Poly slider ring A</p>
Ref. No. 7D	Procedure 6D → 7D	10 minutes	METHOD FOR MATCHING THE TAPPING CLUTCH BLOCK
 <p>Massage wheel block</p> <p>Spring</p> <p>Spacer</p> <p>Tapping belt B</p> <p>Tapping worm gear</p> <p>Poly slider ring A</p> <p>E type ring</p>			 <p>Massage wheel block</p> <p>Tapping clutch</p> <p>Gear box A</p> <p>Gear box B</p> <p>Screw</p> <p>1. Insert the tapping belt, the spring, the spacer, and the tapping worm gear into the shaft.</p> <p>2. Insert the poly slider ring A into the pipe of the massage wheels, and fasten the E type ring (②).</p> <p>3. Remove the tapping clutch block by removing the 1 screw (①).</p> <p>4. Set the gear case A. Be careful not to transform the poly slider ring A.</p> <p>5. Install the tapping worm block.</p> <p>NOTE: Make sure to check the position and direction of the lead wires of the tapping clutch block.</p> <p>6. Set the gear box B. Be careful not to transform the poly slider ring A.</p> <p>7. Fix the 1 screw (①).</p> <p>NOTE: If there is a space between the gear case A and B, the poly slider ring A might be transformed. Replace the poly slider ring A, and assemble again.</p> <p>The tapping clutch block can not be inserted block into the hole of the motor frame if there is a space between the gear box A and B.</p>

Ref. No. 9D	Procedure 8D → 9D	5 minutes	REMOVAL OF THE GEAR BOX A, B
			 <ol style="list-style-type: none"> 1. Remove the transformer by removing the 2 screws (①). 2. Remove the base for transformer by removing the 2 screws (②). 3. Remove the up/down circuit board by removing the 1 screw (③). 4. Remove the 4 screws (④). 5. Remove the 2 screws (⑤) securing a coupling bar and take out the coupling bar. 6. Pull out the side cover block from the gear box A and B. 7. Open the gear box A and B. The massage clutch, the up/down clutch, and intermediate gear block can be removed.
Ref. No. 10D	Procedure 9D → 10D	10 minutes	METHOD FOR MATCHING THE ELLIPTICAL GEARS (Intermediate gear block & drive pipe block)
			 <ol style="list-style-type: none"> 1. Make sure that there is a dimple on the side of the elliptical gear on the drive pipe block by wiping off the grease. Then put a V mark on it as shown ①. 2. Put a mark on the side of the elliptical gear on the intermediate gear block as shown in ②. 3. Set the drive pipe block to the gear box A with V type mark facing up. 4. With matching the point ① and ②, set the intermediate gear block into the point ③ shown in figure. NOTE: After assembling the elliptical gear, set up the gear box A, B and check if the drive pipe can be moved with turning nut of massage clutch.

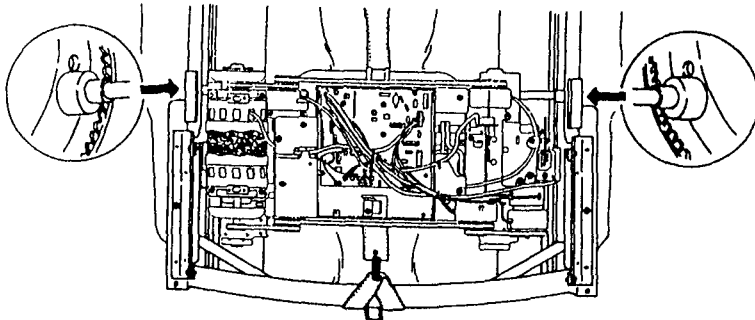
ADJUSTMENTS

- If the massage mechanism is removed from the chair, the position of up/down detector gear may change and the up/down stop position will be changed. Adjust the up/down gear. Also, if chair has received sufficient shock

during transportation (I.E. dropped from more than 1 m), massage mechanism may jam at top position.

In this case, the controller will flash all indication lights several times and turn off.

■ HOW TO ADJUST THE DECLINE OF THE MESSAGE MECHANISM

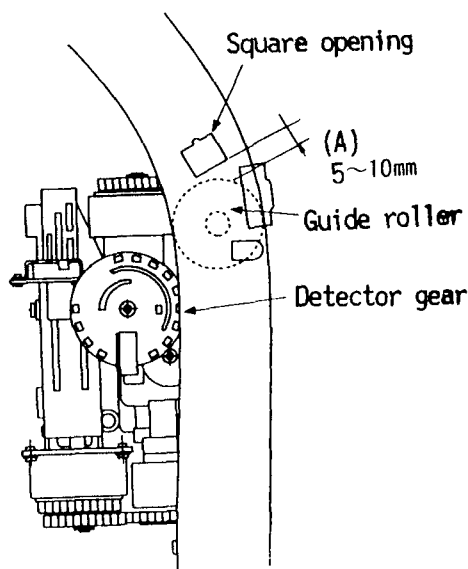


1. Before setting the massage mechanism onto the chair back, keep pushing the controller pad (down ▼) until the massage mechanism stops.

NOTE: Do not touch the rotating part of the massage mechanism with your body (hand) or cloth.

2. Set the massage mechanism block onto the chair back and move up until it comes both right and left rail pieces by turning the nut of the up/down clutch with a box driver in parallel.
3. After adjusting the position, set the both left and right rail pieces with 4 screws.

■ HOW TO ADJUST THE POSITION OF THE UP/DOWN GEAR



4. Set the selector switch to level ①, and keep pushing the controller pad (up ▲) until the guide roller of the massage mechanism comes to the stop position as shown in figure.
5. The proper position for the guide roller is with clearance (A) of about 5 to 10 mm from bottom of the square opening.
6. If the massage mechanism is too high, turn the up/down detector gear clockwise to move it lower.
If the massage mechanism is too low, turn the up/down detector gear counter-clockwise to move it higher.

NOTE: Rotating the up/down detector gear changes the highest/lowest position of the massage mechanism about 4 mm/cog.

7. After adjusting the up/down gear, check the up/down position at rolling massage of the manual operation with setting the massage head adjustment switch to level ①.

TROUBLESHOOTING GUIDE

With the massage mechanism mounted in the chair, the electrical parts should be checked for continuity between lead wires, resistance value, and other electrical conditions at the plug-in section of the circuit block in accordance with the procedure given below. In addition

to the items below, open circuits in the wiring, power switch contact defects, printed circuit board foil peeling, broken parts, solder separation, etc., should be checked. Specially, where there is interrupted solder connections can be the cause of the malfunction.

<SYMPTOM>

<CHECK>

<REMEDY>

No operation at all when pressing any pad of controller.

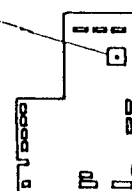
Turn on the power switch and press the off switch of the controller. Then, press the test switch of main P.C.B. for more than 1 second. (Fig.A) Check the following movement.

OK

Replace the controller or the controller cord.

- ① Move to the weakest position.
 - ② Move to center of the back frame after moving up or down.
 - ③ Do upward massage for 3 times.
 - ④ Go up with rolling massage.
 - ⑤ Stop at shoulder position and move to the strongest and the weakest position.
 - ⑥ With tapping rolling massage move to up position, then to go down.
 - ⑦ Move to the lowest position, then turn to go up.
 - ⑧ Stop at the center of the back frame (②) and move to restore position. (widest and weakest position)
- * Test time is about 1'30".

Test switch of main P.C.B



Main P.C.B

NO

At procedure ②, the mechanism keeps operating the upward massage.

Check the massage position detector.

At procedure ②, the mechanism tries to go up or down at the highest or lowest position, and the mechanism is locked.

Check the up/down sensor.

At procedure ③, the mechanism keeps operating the upward or downward massage, and the mechanism is locked.

Check the intensity sensor.

At procedure ②, the mechanism stops at the position. Just these belts keep rotating.

Check the massage clutch.

At procedure ①, the mechanism stops at the position. Just these belts keep rotating.

Check the up/down clutch.

At procedure ③, the mechanism keeps operating the upward massage.

Check the intensity clutch.

(to be continued)

At procedure ⑥, the mechanism does not operate the tapping.

Check the tapping clutch.

<SYMPTOM>

<CHECK>

<REMEDY>

No operation at all
(Motor does not move)

With the plug inserted into the AC outlet and the switch turned on, check the voltage between terminals 1 and 3 of the 5 pin red connector (CNH) in the main P.C.B. There should be about 120V.

NO Check the power cord.

NO Replace the power cord.

YES Check the fuse.

NO Replace the fuse.

YES Check the transformer input voltage between 1 and 3 of the 3 pin yellow connector(CNJ). There should be AC 120V.
Check the transformer output 1 voltage between 1 and 3 of the 3 pin blue connector(CNK). There should be AC 120V.
Check the transformer output 2 voltage between 1 and 3 of the 3 pin green connector(CNQ). There should be AC 24V.

NO Replace the transformer.

YES Check the voltage between terminals 1 and 5 of 5 pin or 1 and 3 of 3 pin white connector(CNI) in the main P.C.B. There should be about 120V.

NO Replace the main P.C.B.

YES Check the motor.

NO Replace the motor.

Mechanism does not move to the upper position or does not move to the lower position.

Adjust the up/down detector gear.

<SYMPTOM>

<CHECK>

<REMEDY>

No operation at all.
(Motor moves or
buzzes)

Check the voltage between 1 and 2 of
the 2 pin black connector (CNA).
Check the voltage between 1 and 2 of
the 2 pin green connector (CNB).
Check the voltage between 1 and 2 of
the 2 pin red connector (CND).
Check the voltage between 1 and 2 of
the 2 pin white connector (CNF).
Each value should be DC 33V.

NO — Replace the main P.C.B.

YES — Check the resistance two black lead
wires of 2 pin black terminal.
There should be about 1.0 k Ω .

NO — Replace the tapping
clutch.

YES — Check the resistance two green lead
wires of 2 pin green terminal.
There should be about 1.0k Ω .

NO — Replace the intensity
clutch.

YES — Check the resistance two red lead
wires of 2 pin red terminal.
There should be about 1.0 k Ω .

NO — Replace the up/down
clutch.

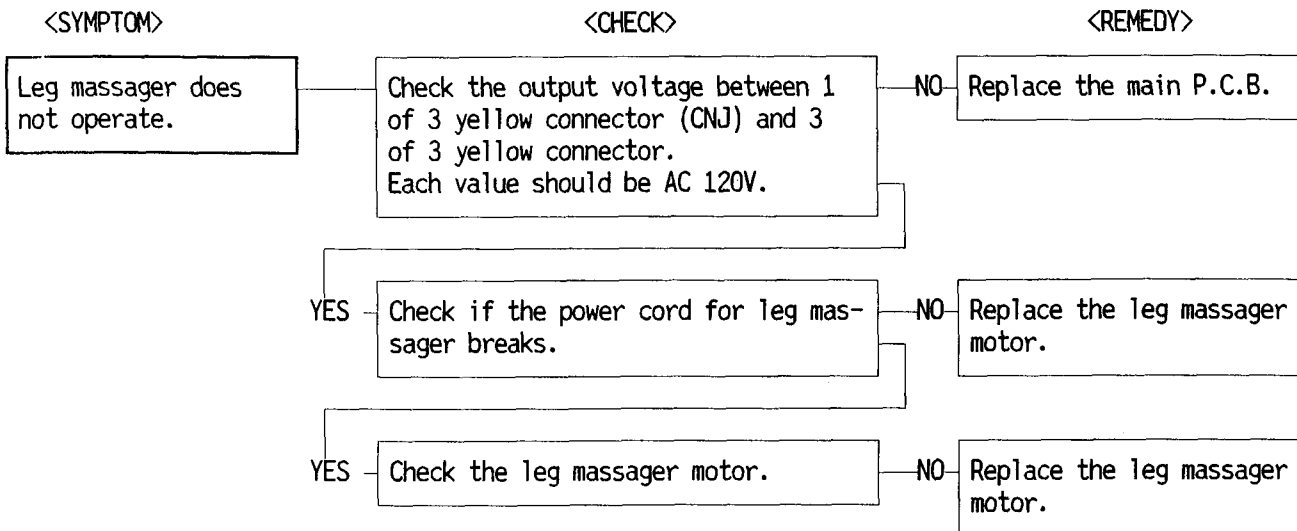
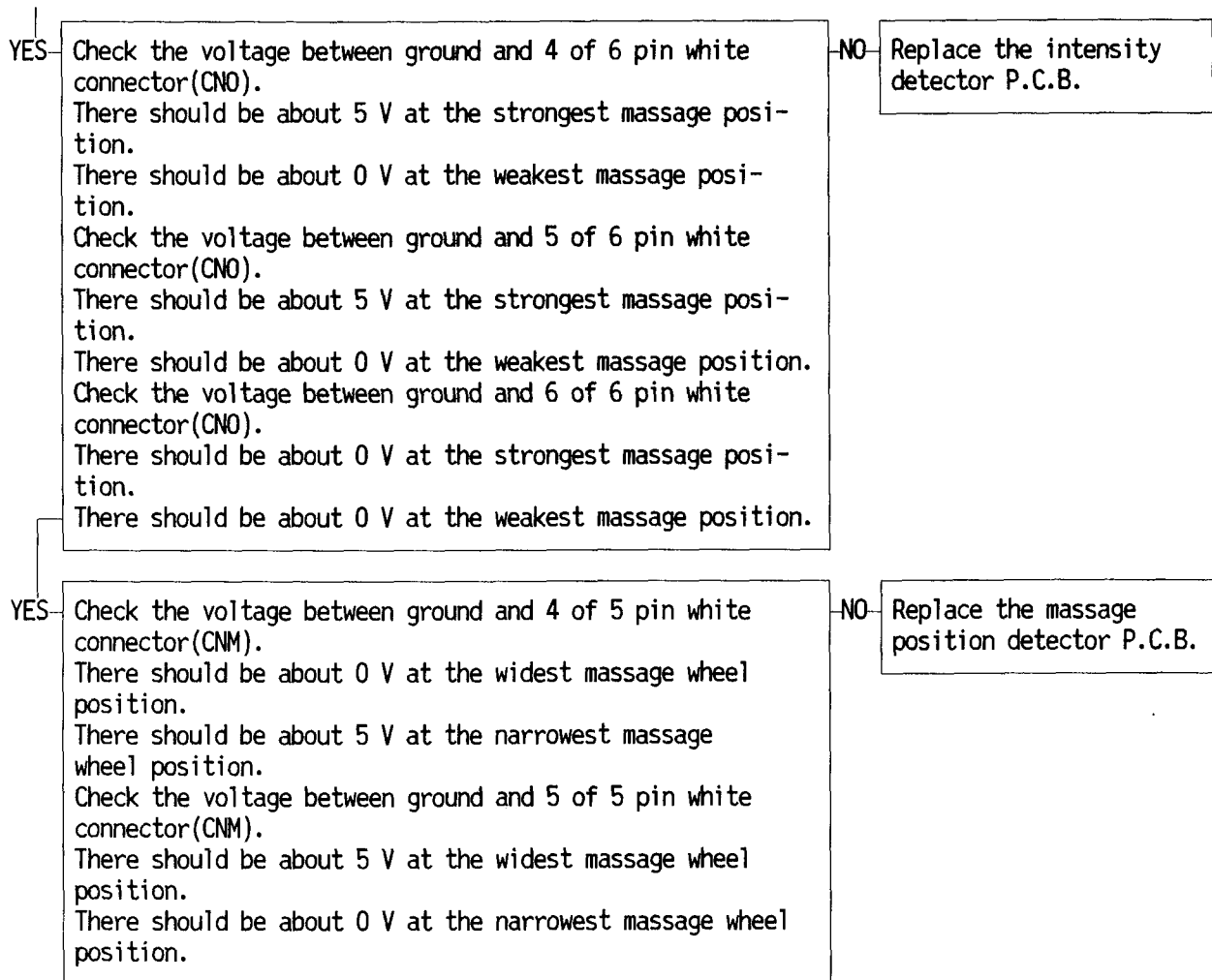
YES — Check the resistance two white lead
wires of 2 pin white terminal.
There should be about 1.0 k Ω .

NO — Replace the massage
clutch.

YES — Check the voltage between ground and 4 of 6 pin red con-
nector(CNL).
There should be about 5 V at the highest massage position.
There should be about 5 V at the lowest massage position.
Check the voltage between ground and 5 of 6 pin red con-
nector(CNL).
There should be about 5 V at the highest massage posi-
tion.
There should be about 0 V at the lowest massage position.
Check the voltage between ground and 6 of 6 pin red con-
nector(CNL).
There should be about 0 V at the highest massage posi-
tion.
There should be about 0 V at the lowest massage position.

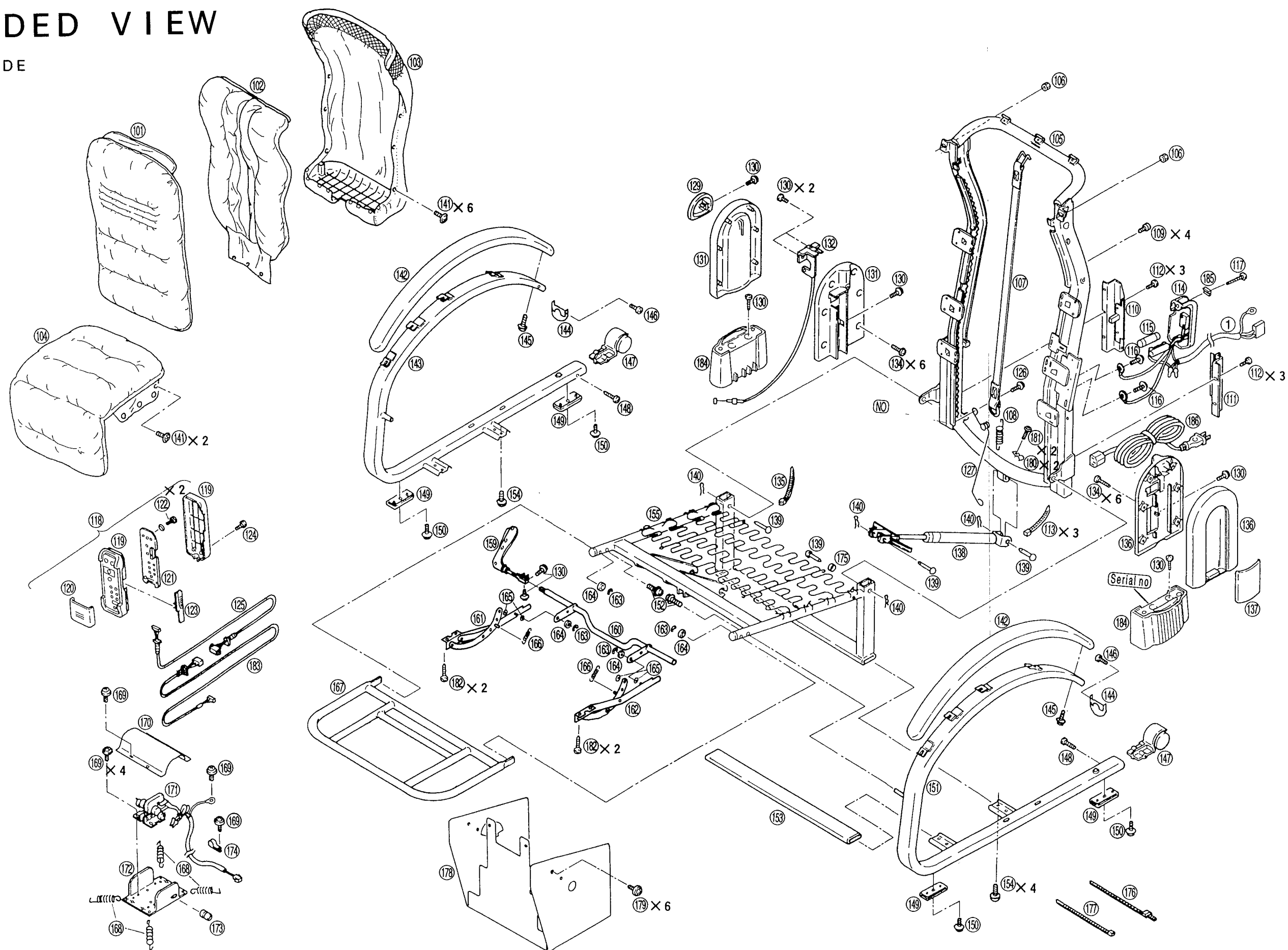
NO — Replace the up/down
detector P.C.B.

(To be continued)



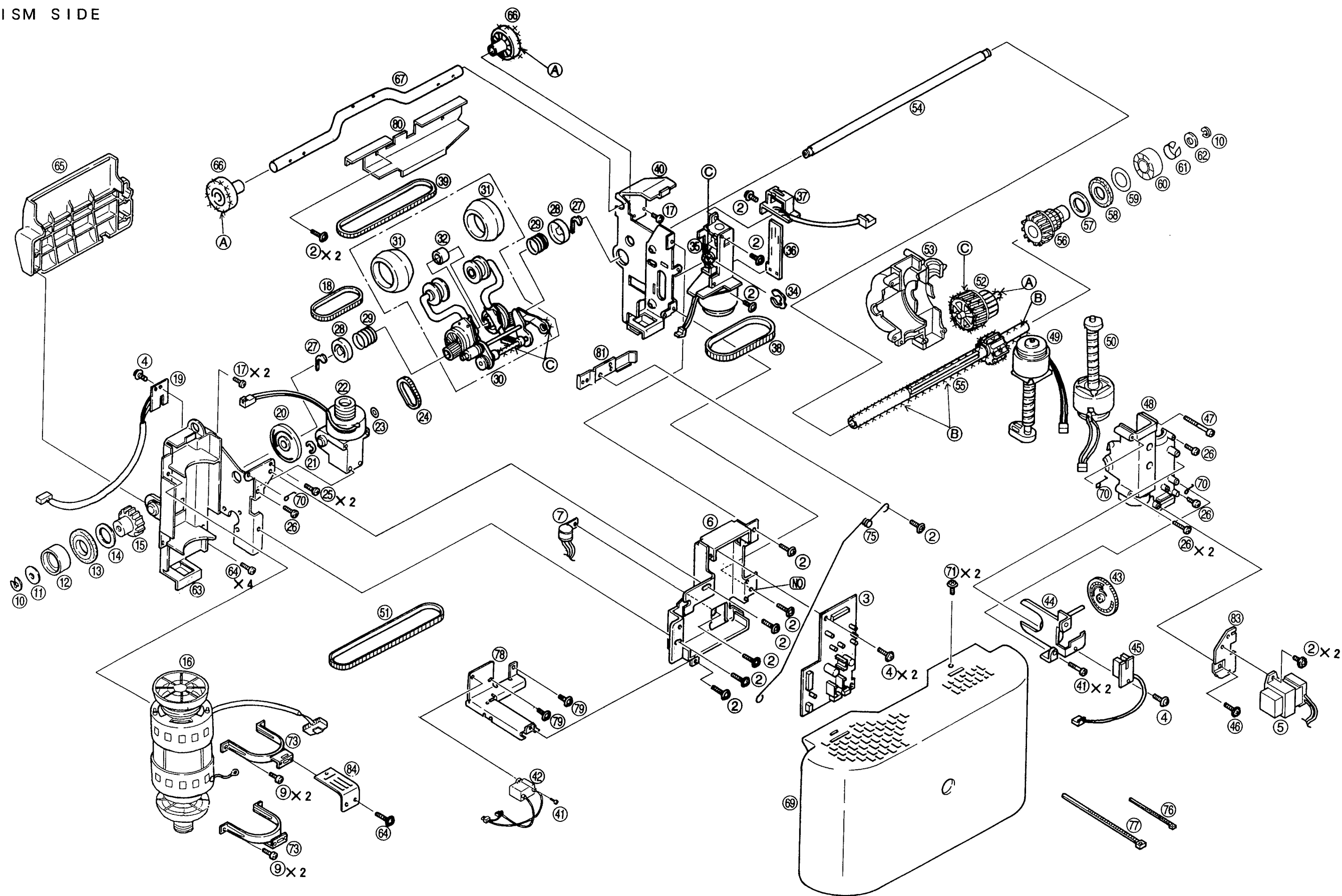
EXPLODED VIEW

● CHAIR SIDE



EXPLODED VIEW

● MECHANISM SIDE



REPLACEMENT PARTS LIST

Ref. No.	Parts No.	Parts Name & Descriptions	Per set	Remarks
1	WEP578L2899	CONNECTING CORD FOR POWER SUPPLY	1	
2	WEP563D6627	SCREW	12	*1
3	WEP578L2109	MAIN CIRCUIT BOARD W/COMPONENT	1	
4	WEP593Y9777	SCREW	6	*1
5	WEP578L2248	TRANSFORMER	1	
6	WEP578L0038	SHIELD PANEL	1	
7	WEP589L2218	CHOCK COIL	1	
9	WEP525F9567	SCREW	5	*1
10	WEP569L6947	U TYPE STOP RING	2	*1
11	WEP560F3538	FITTING A	1	
12	WEP545H1937	GUIDE ROLLER B	1	
13	WEP593G0317	RUBBER RING A	1	
14	WEP567ED0577	RUBBER RING PLATE	1	
15	WEP567ED1447	PINION B BLOCK	1	
16	WEP578L1008	MOTOR	1	
17	WEP569L9167	SCREW	3	*1
18	WEP569L1117	TAPPING BELT	1	
19	WEP569L4947	MESSAGE POSITION DETECTOR P.C.B.	1	
20	WEP569L0458	MESSAGE POSITION PLATE	1	
21	WEP569L6857	E TYPE STOP RING	1	
22	WEP589L1498	TAPPING CLUTCH BLOCK	1	
23	WEP565H5207	POLY SLIDER RING A	1	
24	WEP569L1147	TAPPING BELT A	1	
25	WEP570D9537	SCREW	2	*1
26	WEP515F9587	SCREW	5	*1
27	WEP578L0167	FASTENING SPRING FOR SHAFT	2	*1
28	WEP578L0387	SPRING COVER	2	*1
29	WEP578L0197	SPRING	2	*1
30	WEP578L4607	MESSAGE WHEEL BLOCK	1	
31	WEP594L3907	ROLLER SET	2	*2
32	WEP578L1607	CENTER RING	1	
34	WEP569L6887	K TYPE STOP RING	1	
35	WEP589L0508	INTENSITY ADJUSTMENT BLOCK	1	
36	WEP569L0467	INTENSITY ADJUSTMENT PLATE	1	
37	WEP569L4957	INTENSITY ADJUSTMENT P.C.B.	1	
38	WEP578L1127	INTENSITY ADJUSTMENT BELT	1	
39	WEP578L1097	MESSAGE BELT	1	
40	WEP569L0297	GUIDE PLATE	1	
41	WEP567AL9137	SCREW	3	*1
42	WEP578L2388	CAPACITOR	1	
43	WEP569L1397	UP/DOWN DETECTOR GEAR A	1	
44	WEP569L1847	SIDE COVER BLOCK	1	
45	WEP569L2187	UP/DOWN DETECTOR GEAR	1	
46	WEP569L6577	SCREW	1	
47	WEP569L6567	SCREW	1	
48	WEP569L1797	GEAR BOX B	1	
49	WEP589L4838	MESSAGE CLUTCH	1	
50	WEP589L4848	UP/DOWN CLUTCH	1	
51	WEP569L3417	UP/DOWN BELT	1	
52	WEP570D4637	INTERMEDIATE GEAR BLOCK	1	
53	WEP569L1767	GEAR BOX A	1	

(To be continued)

REPLACEMENT PARTS LIST

Ref. No.	Parts No.	Parts Name & Descriptions	Per set	Remarks
54	WEP545H0377	UP/DOWN SHAFT	1	
55	WEP578L4357	DRIVE PIPE	1	
56	WEP569L1467	UP/DOWN GEAR A	1	
57	WEP593G1917	GUIDE PLATE B	1	
58	WEP593G0317	RUBBER RING A	1	
59	WEP567ED0837	SPACER FOR GUIDE ROLLER A	1	
60	WEP565H1917	GUIDE ROLLER A	1	
61	WEP562A3767	SPACER FOR GUIDE ROLLER	1	
62	WEP560F3538	FITTING	1	
63	WEP578L0048	MOTOR FRAME	1	
64	WEP578L9567	SCREW	5	*1
65	WEP578L0558	MESSAGE MECHANISM COVER A	1	
66	WEP578L1927	GUIDE ROLLER E	2	*1
67	WEP578L0287	COUPLING BAR	1	
69	WEP578L0538	MESSAGE MECHANISM COVER	1	
70	WEP570ED0177	GROUND SPRING B	3	*1
71	WEP578L9537	SCREW	2	*1
73	WEP569L0027	FITTING FOR MOTOR	2	*1
75	WEP578L0697	CORD WIRE F	1	
76	WEP555Y0747	INSULATED TIE (SMALL)	1	
77	WEP555Y0757	INSULATED TIE (MEDIUM)	1	
78	WEP589L0218	CORD GUIDE PLATE	1	
79	WEP589K6098	SCREW	2	*1
80	WEP578L3108	BELT COVER A	1	
81	WEP589L3118	BELT COVER B	1	
83	WEP578L0288	BASE FOR TRANSFORMER	1	
84	WEP578L0548	PROTECTIVE PLATE FOR FAN	1	
101	WEP578K3619	BACK CUSHION	1	
102	WEP578K3149	MESSAGE WHEEL COVER	1	
103	WEP578K3179	REAR COVER	1	
104	WEP578K3689	SEAT	1	
105	WEP578L0089	BACK FRAME	1	
106	WEP578L6497	NUT	2	*1
107	WEP578L0858	CENTER BELT	1	
108	WEP563D0967	SPRING	1	
109	WEP578K9678	SCREW	4	*1
110	WEP563D0697	RIGHT RAIL PIECE	1	
111	WEP578L0707	LEFT RAIL PIECE	1	
112	WEP555Y9147	SCREW	6	*1
113	WEP555Y0737	INSULATED TIE (LARGE)	3	*1
114	WEP578K2009	POWER SOURCE SWITCH BLOCK	1	
115	WEP68885122	FUSE (3A)	1	
116	WEP578S9048	SCREW	2	*1
117	WEP578K9088	SCREW	1	
118	WEP578K4459	CONTROLLER BLOCK	1	
119	WEP578K3079	CONTROLLER HOUSING AB SET	2	*2
120	WEP578K3087	SLIDE COVER	1	
121	WEP578L2157	CONTROLLER CIRCUIT BOARD W/COMPONENT	1	
122	WEP578L9017	SCREW	2	*1
123	WEP569K3257	SELECTOR SWITCH	1	
124	WEP569K9047	SCREW	2	*1
125	WEP578K2068	CONTROLLER CORD	1	

(To be continued)

REPLACEMENT PARTS LIST

Ref. No.	Parts No.	Parts Name & Descriptions	Per set	Remarks
126	WEP563D9077	SCREW	1	
127	WEP567ED0687	CORD WIRE D	1	
129	WEP578H3267	RECLINING LEVER BLOCK	1	
130	WEP525F9567	SCREW	11	*1
131	WEP578H3158	RIGHT HINGE COVER AB SET	2	*2
132	WEP578K4488	WIRE BLOCK	1	
133	WEP578L9237	SCREW	2	*1
134	WEP578L9597	SCREW	12	*1
135	WEP578K0717	INSULATED TIE (LARGE, BLACK)	1	
136	WEP578H3167	LEFT HINGE COVER AB SET	2	*2
137	WEP578H3367	POCKET FOR LEFT HING COVER	1	
138	WEP578K1757	PNEUMATIC SPRING	1	
139	WEP560F0907	HINGE PIN	4	*1
140	WEP50380357	SNAP PIN	5	*1
141	WEP578K9557	SCREW	8	*1
142	WEP578K3938	ARM COVER	2	*1
143	WEP578S3878	RIGHT ARM PIPE	1	
144	WEP578H3187	CAP	2	*1
145	WEP578L6087	SCREW	2	*1
146	WEP578S6747	SCREW	2	*1
147	WEP578H3907	CASTOR	2	*1
148	WEP578S9657	SCREW	2	*1
149	WEP578K3377	BOTTOM COVER	4	*1
150	WEP578N9607	SCREW	4	*1
151	WEP578S3868	LEFT ARM PIPE	1	
152	WEP578L6547	SCREW	2	*1
153	WEP578K0067	ARM PIPE A	1	
155	WEP578K0099	UNDER PIPE	1	
159	WEP578K1568	LEG MASSAGER LEVER	1	*1
160	WEP578K1548	DRIVE LINK	1	*1
161	WEP578K4988	RIGHT LINK PART	1	
162	WEP578K4998	LEFT LINK PART	1	
163	WEP567G6477	U NUT	4	
164	WEP567G6997	WASHER	4	
165	WEP565H5207	POLY SLIDER RING A	4	*1
166	WEP567G0197	SPRING	2	*1
167	WEP578L0369	FOOT MASSAGER PIPE	1	*1
168	WEP578L0227	SPRING	4	*1
169	WEP563D6627	SCREW	9	
170	WEP578L0057	FITTING FOR MOTOR	1	*1
171	WEP578L1019	LEG MASSAGER MOTOR	1	*1
172	WEP578L0018	BASE FOR LEG MASSAGER MOTOR	1	
173	WEP545H3467	BUSHING	1	
174	WEP530B0467	CORD CLIP	2	
175	WEP578L0837	SPACER	1	
176	WEP593G0727	INSULATED TIE (MEDIUM, T30R-SF)	1	*1
177	WEP555Y0757	INSULATED TIE (MEDIUM)	1	
178	WEP578K0058	LINK COVER	1	
179	WEP578K1148	SCREW	6	
180	WEP578L0218	FITTING B	2	
				*1
				*1

(To be continued)

REPLACEMENT PARTS LIST

Ref. No.	Parts No.	Parts Name & Descriptions	Per set	Remarks
181	WEP557F9347	SCREW	2	*1
182	WEP567G9127	SCREW	4	*1
183	WEP578L2929	CONNECTING CORD FOR CONTROLLER	1	
184	WEP578K0788	HINGE COVER SPACER	2	*2
185	WEP578K0778	BUSHING COVER	1	
186	WEP1005K2058	POWER CORD (A-2 PLUG)	1	
187	WEP578K8109	INSTRUCTION BOOKLET	1	
—	WEP578K8009	INDIVIDUAL BOX	1	
—	WEP578L4128	MASSAGE MECHANISM BLOCK	1	

NOTE: *1 Individual available
*2 Available as set

■ INDICATION OF SERIAL NO., LOT NO., AND DATE OF PRODUCTION

Part	Lot No. (Red) & Date of Production (Black)	Serial No. (Black)	Remarks
Mechanism Block	On the right side of the shield panel	_____	It dose not always agree with these indication of the mechanism block and the chair. Because these are produced by separate lines.
Chair	On the right lower side of the back frame	_____	
Finished Product	_____	On the side of the left hinge cover spacer	

(EXAMPLE)

9 0	←	LOT NO.	6 0 2 0 3 0	←	SERIAL NO.
6 0 2 1 9	←	DATE OF PRODUCTION (2/19/1996)			

■ GREASE FOR MASSAGE LOUNGER

NOTE: When assembling, please apply the adequate grease to areas marked "XX" as shown in the exploded view.

Ref. No.	Parts No.	Parts Name & Descriptions	Remarks
A	WEPGP1	GREASE (LIGHT BROWN)	
B	WEPGP3	GREASE (WHITE)	
C	WEPGP5	GREASE (LIGHT YELLOW)	