

# Service Manual

## Kiwami 4D-970

|                          |                                  |   |         |   |
|--------------------------|----------------------------------|---|---------|---|
| 【Home use】 Massage chair |                                  |   | Medical |   |
| 4D-970 (BK/Black)        | Launching date<br>November, 2016 |   | ○       |   |
| 4D-970 (CS/Beige)        |                                  |   |         |   |
| 4D-970 (BR/Brown)        |                                  |   |         |   |
| Category                 | A45                              | 2 | No.     | 1 |

### Contents

1. Specification . . .
2. Electric schematic diagram . . .
3. Error number list . . .
4. Half function diagnosis flowchart . . .
5. Easter egg list . . .
6. Servicing operation guide . . .
7. Exploded diagram . . .
8. Parts price list . . .

Parts in this manual are important parts for function, safety.

Make sure to use designated parts.

The parts with ★ mark are especially important for safety.

# FUJIIRYŌKI

Fuji Medical Instruments Mfg. Co., Ltd.

# 4D-970

## Product specification

### 1. General specification

| Contents                       |                              | Specification  | Remark         |
|--------------------------------|------------------------------|--|----------------|
| Category                       |                              | Controlled medical device generic term: Home-use electric massager |                |
| Model                          |                              | 4D-970   |                |
| Medical device approval number |                              | —  |                |
| Name                           |                              | <i>Kiwami</i>  |                |
| Rating                         | Electric power supply        | AC100~240V 50/60Hz   |                |
|                                | Power consumption            | 130 W  |                |
|                                | Electric motor power supply  | 90 W   |                |
|                                | Electric heater power supply | 40 W   |                |
|                                | Rated time                   | 30分  |                |
| Mass                           | Net weight                   | 88 kg  |                |
|                                | Gross weight (in packing)    | 102kg  |                |
| Dimension                      | Main unit dimension          | 800(W)×1,370~1,920(L)×1,230~810(H) mm                              |                |
|                                | Packing dimension            | 744(W)×1,618(L)×751(H)   |                |
| Power cord                     |                              | 0.75mm2×2 outside instruments/approx. 3.0m                         |                |
| Material of cloth              |                              | PVC leather, Polyester tricot                                      |                |
| Motor form                     | Kneading motor               | 2-pole DC motor, DC24V   |                |
|                                | Tapping motor                | 2-pole DC motor, DC24V   |                |
|                                | Elevation motor              | 2-pole DC motor, DC24V   |                |
|                                | Strength motor               | 2-pole DC motor, DC24V   |                |
|                                | Reclining motor              | 2-pole DC motor, DC24V   |                |
|                                | Footrest slide motor         | 2-pole DC motor, DC24V   |                |
| Air pump form                  |                              | DIAPHRAGM TYPE RECIPROCATING                                       |                |
| Heater                         |                              | PTC heater(Back/Sole of feet)                                      | less than 60°C |
| Stacking limit                 |                              | 3  |                |
| Product serial number          |                              | N <sub>2</sub> PRM4S00000001~                                      |                |

### 2. Use conditins

#### 2-1 Environment of usage

- a. Ambient temperature 5~35°C
- b. Relative humidity 30~90%Rh

#### 2-2 Storage environment

- a. Ambient temperature -20~60°C
- b. Relative humidity 30~90%Rh

### 3. Operation speed and air pressure

|                   | 50Hz/60Hz                   |            |            |            |  |           |
|-------------------|-----------------------------|------------|------------|------------|--|-----------|
| Knead(rpm)        | Slowest                     | Slow       | Mid        | High       |  | Tolerance |
|                   | 8                           | 18         | 24         | 30         |  | ±5        |
| Tapping(rpm)      | Slow,<br>Ex-mode<br>tapping | Slow       | Mid        | High       |  |           |
|                   | 250±50                      | 270~440±50 | 370~540±50 | 470~650±70 |  |           |
| Strength(cm/sec)  | Lowest                      |            | Highest    |            |  |           |
|                   | 1.7±0.5                     |            | 5.4±0.5    |            |  |           |
| Elevation(cm/sec) | Lowest                      |            | Highest    |            |  |           |
|                   | 1.0±0.5                     |            | 5.4±0.5    |            |  |           |

(rpm)

|                 | 50Hz    | 60Hz |
|-----------------|---------|------|
| Reclining(up)   | 19 ±3.0 |      |
| Reclining(down) | 17 ±3.0 |      |
| Slide(elongate) | 5 ±1.0  |      |
| Slide(contract) | 5 ±1.0  |      |
| Footrest(upper) | 18 ±3.0 |      |
| Footrest(lower) | 17 ±3.0 |      |

|            | 50Hz      | 60Hz |
|------------|-----------|------|
| Air pressu | 0.045 Mpa |      |

## 4. Variety of functions

## 4-1 Selection of course

## Mechanic

## 【Basic functions】

- |                       |                    |                         |
|-----------------------|--------------------|-------------------------|
| ① KNEAD UP            | ⑪ NECK RELAX       | 21 PUSH & KNEAD         |
| ② KNEAD DOWN          | ⑫ SHOULDER TAPPING | 22 SHOULDER BLADE       |
| ③ TAPPING             | ⑬ LOOP KNEAD UP    | 23 UPPER SHOULDER PRESS |
| ④ WAVELET             | ⑭ LOOP KNEAD DOWN  | 24 PARA SPINAL          |
| ⑤ STRETCH             | ⑮ LOOP TAPPING     | 25 PALMAR KNEAD UP      |
| ⑥ ROLLING(whole body) | ⑯ LOOP WAVELET     | 26 PALMAR KNEAD DOWN    |
| ⑦ ROLLING(part)       | ⑰ SHIATSU          | 27 WAIST SHIATSU        |
| ⑧ WAVE ROLLING        | ⑱ 3D               |                         |
| ⑨ EXTREME-KNEAD       | ⑲ RELAX KNEAD UP   |                         |
| ⑩ EXTREME-TAPPING     | ⑳ RELAX KNEAD DOWN |                         |

## 【Combination of functions】

|                  | Whole/Part        | Speed                   | Intensity                   | Width | Remarks                        |
|------------------|-------------------|-------------------------|-----------------------------|-------|--------------------------------|
| Knead up         | Whole/Part/Point  | knead                   | 12 levels                   | ×     |                                |
| Knead down       | Whole/Part/Point  | knead                   | 12 levels                   | ×     |                                |
| Tapping          | Whole/Part/Point  | tapping                 | 12 levels                   | ○     |                                |
| Wavelet          | Whole/Part/Point  | knead/tapping interlock | 12 levels                   | ×     |                                |
| Rolling          | Whole/Part        | ×                       | 12 levels                   | ○     | knead down + tapping           |
| Stretch          | Whole/Part/Point  | ×                       | 12 levels                   | ○     |                                |
| Stretch knead up | Whole/Part/Point  | knead                   | 12 levels                   | ×     | Stretch + knead up             |
| Stretch tapping  | Whole/Part/Point  | tapping                 | 12 levels                   | ○     | Stretch + tapping              |
| Stretch wavelet  | Whole/Part/Point  | knead/tapping interlock | 12 levels                   | ×     | Stretch + knead down + tapping |
| Neck relax       | Shoulder position | ×                       | ×                           | ×     | Up/down                        |
| Extreme-knead    | Shoulder position | ×                       | ×                           | ×     | Up/down                        |
| Extreme-tapping  | Shoulder position | ×                       | ×                           | ×     | Up/down                        |
| Waist ex.knead   | Shoulder position | ×                       | ×                           | ×     |                                |
| Waist ex.tapping | Shoulder position | ×                       | ×                           | ×     |                                |
| Buttock          | Preposition       | ×                       | ×                           | ×     |                                |
| Loop knead up    | Whole/Part/Point  | knead                   | 9 levels + Extreme 3 levels | ×     | Knead up + up/down             |
| Loop knead down  | Whole/Part/Point  | knead                   | 12 levels                   | ×     | Knead down + up/down           |
| Loop tapping     | Whole/Part/Point  | knead/tapping interlock | 12 levels                   | ×     | Loop knead up + tapping        |
| Loop wavelet     | Whole/Part/Point  | knead/tapping interlock | 12 levels                   | ×     | Loop knead up + tapping        |

|                      | Whole/Part        | Speed | Intensity | Width | Remarks         |
|----------------------|-------------------|-------|-----------|-------|-----------------|
| Wave rolling         | Whole/Part        | knead | 12 levels | ×     | knead + rolling |
| Shoulder tapping     | Shoulder position | ×     | 12 levels | ×     | Up/down         |
| Push & knead         | Whole/Part/Point  | knead | 12 levels | ×     |                 |
| Shoulder blade line  | Preposition       | ×     | ×         | ×     |                 |
| Upper shoulder press | Preposition       | ×     | ×         | ×     |                 |
| Shiatsu              | Whole/Part/Point  | ×     | 12 levels | ○     |                 |
| 3D knead up          | Whole/Part/Point  | ×     | ×         | ×     |                 |
| 3D knead down        | Whole/Part/Point  | ×     | ×         | ×     |                 |
| 3D tapping           | Whole/Part/Point  | ×     | ×         | ○     |                 |
| 3D wavelet           | Whole/Part/Point  | ×     | ×         | ×     |                 |
| Relax knead up       | Point             | knead | 12 levels | ×     |                 |
| Paraspinal           | Whole             | knead | 12 levels | ×     |                 |
| Palmar knead up      | Whole/Part/Point  | knead | 12 levels | ×     |                 |
| Palmar knead down    | Whole/Part/Point  | knead | 12 levels | ×     |                 |
| Waist shiatsu        | Waist position    | ×     | ×         | ×     |                 |

## 【Adjust function】

- Strength adjustment(12 levels)
- Speed adjustment(3 levels)
- Partly adjustment(3 types)
- Width adjustment(3 levels)
- Height adjustment

## Air unit

## 【Selection of parts】

- |                    |     |
|--------------------|-----|
| ① · SHOULDER       | ⑥ - |
| ② · ARM            | ⑦ - |
| ③ · WAIST· BUTTOCK | ⑧ - |

- ④ ·Foot
- ⑤ -

- ⑨ -
- ⑩ -

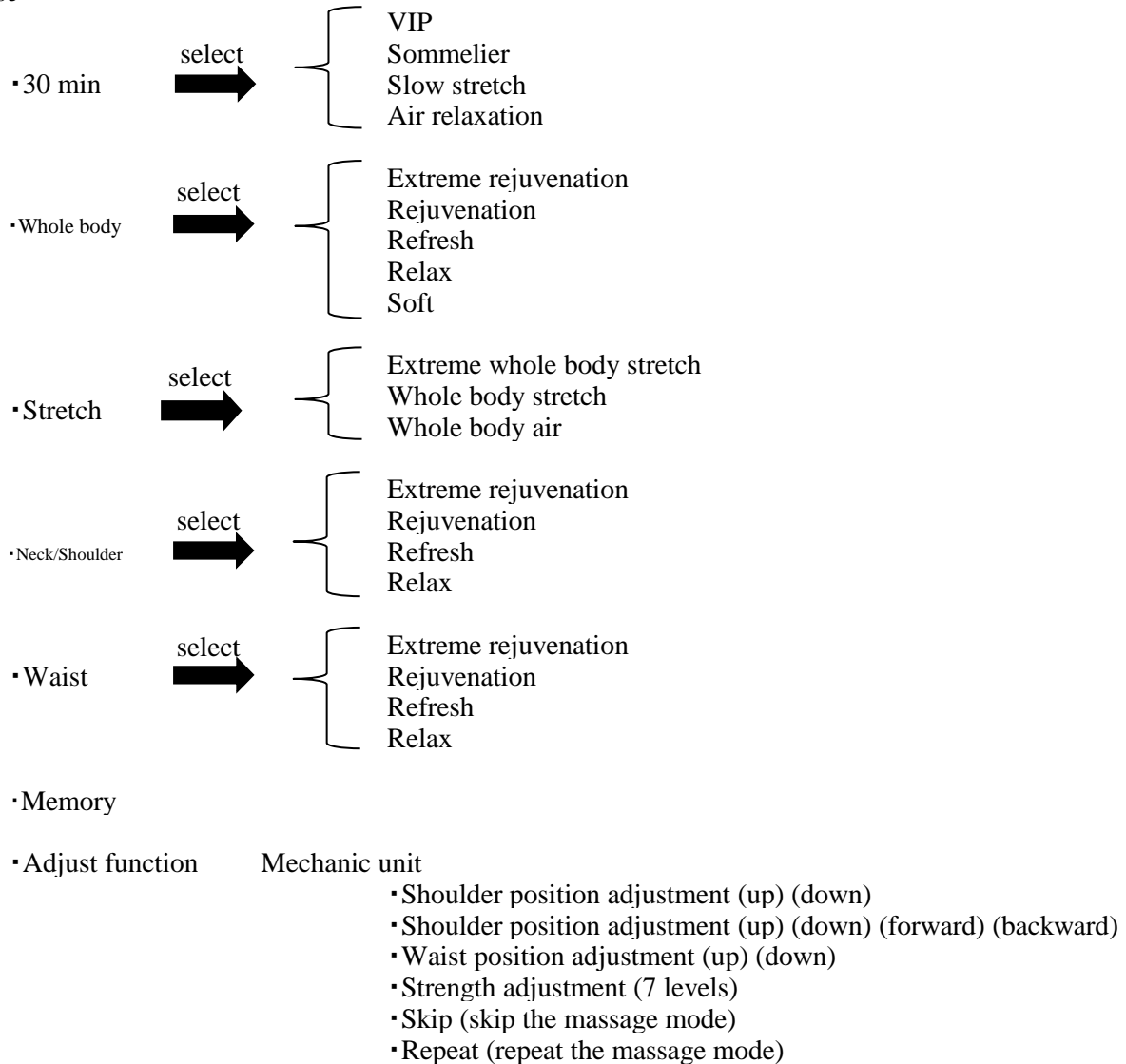
**【Adjust function】**

- Strength adjustment(5 levels)
- Arm strength adjustment(3 levels)
- Air(OFF/Pulse/Hand knead)
- Stretch(OFF/Knee/Foot/Double)
- Individual movement(OFF/With foot/With waist/Twist)
- Twist

**【Mechanic·Air combination】**

Arrange imultaneous motion by air function, selection of parts while mechanic operates.

4-2 Auto course



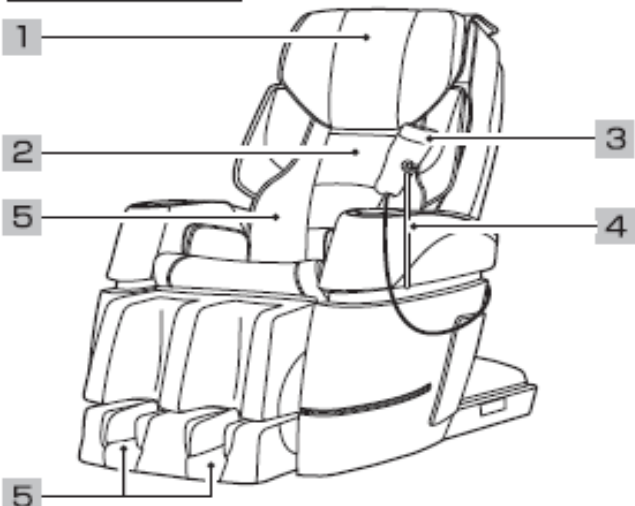
Air unit

- Shoulder strength (5 levels/OFF)
- Arm strength (3 levels/OFF)
- Waist·Seat strength (5 levels/OFF)
- Foot strength (5 levels/OFF)
- Pulse (OFF/ON)
- With foot (OFF/ON)
- Double stretch (OFF/ON)
- Foot stretch (OFF/ON)
- Knee stretch (OFF/ON)
- Hold (OFF/ON)
- Pelvis (OFF/ON)

- 【ON/OFF】** (Start/Stop)
- 【STOP】** (Emergency stop of the operation)
- 【Child lock】** Lock function(Press STOP button for over 2 seconds)
- 【Footrest angle】** (up) (down)
- 【Footrest extension/Contraction】** (Contraction) (Extension)
- 【Reclining】** (up) (down)
- 【Store】** Auto store of backrest and footrest.

**Chair**

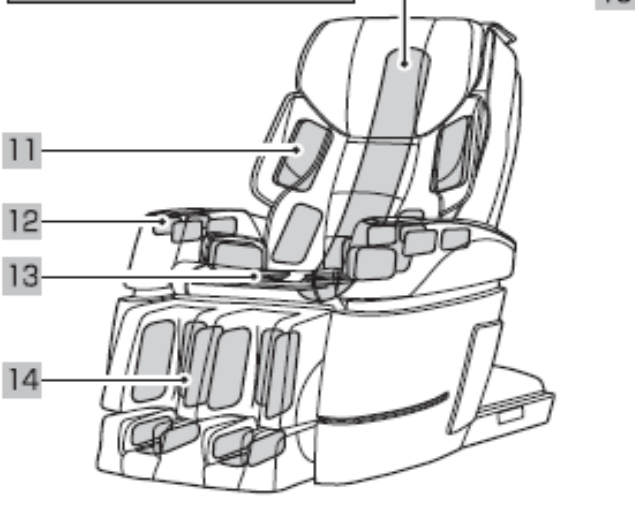
**Front side**



**Rear side**



**Massage position**



**Front side**

- 1** Pillow  
Turn back the pillow pad during massage
- 2** Back pad  
Slowly lean against the back pad
- 3** Remote control
- 4** Remote control stand
- 5** Heat  
Built-in the back, sole of the feet

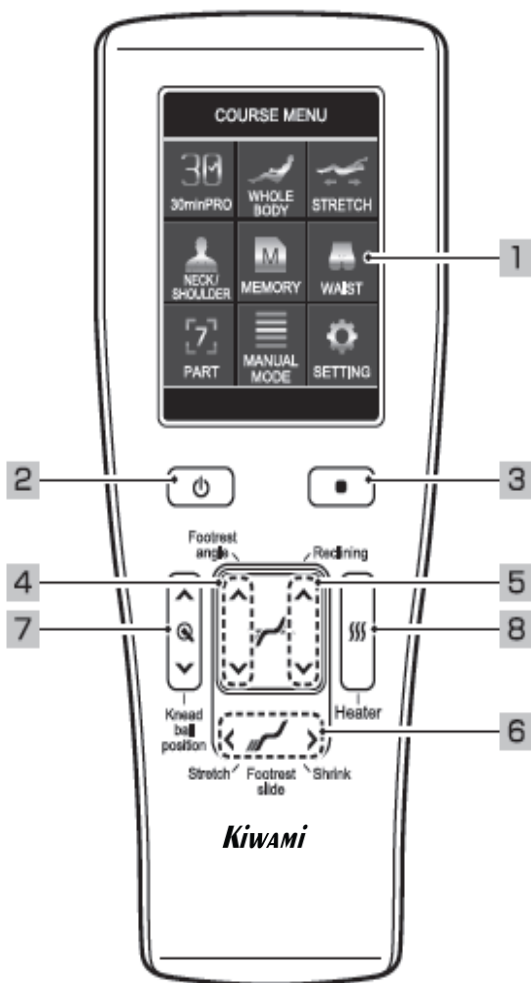
**Rear side**

- 6** Power switch  
Turn the power switch OFF after use
- 7** Caster
- 8** Power cord
- 9** Power plug

**Massage position**

- 10** Backrest  
Massage whole the back area of the body
- 11** Shoulder  
Air massage for shoulder
- 12** Arm  
Air massage for arm
- 13** Waist/Buttocks (Pelvis)  
Air massage for waist, buttocks, around thigh
- 14** Footrest  
Air massage for calf, feet

## Remote control

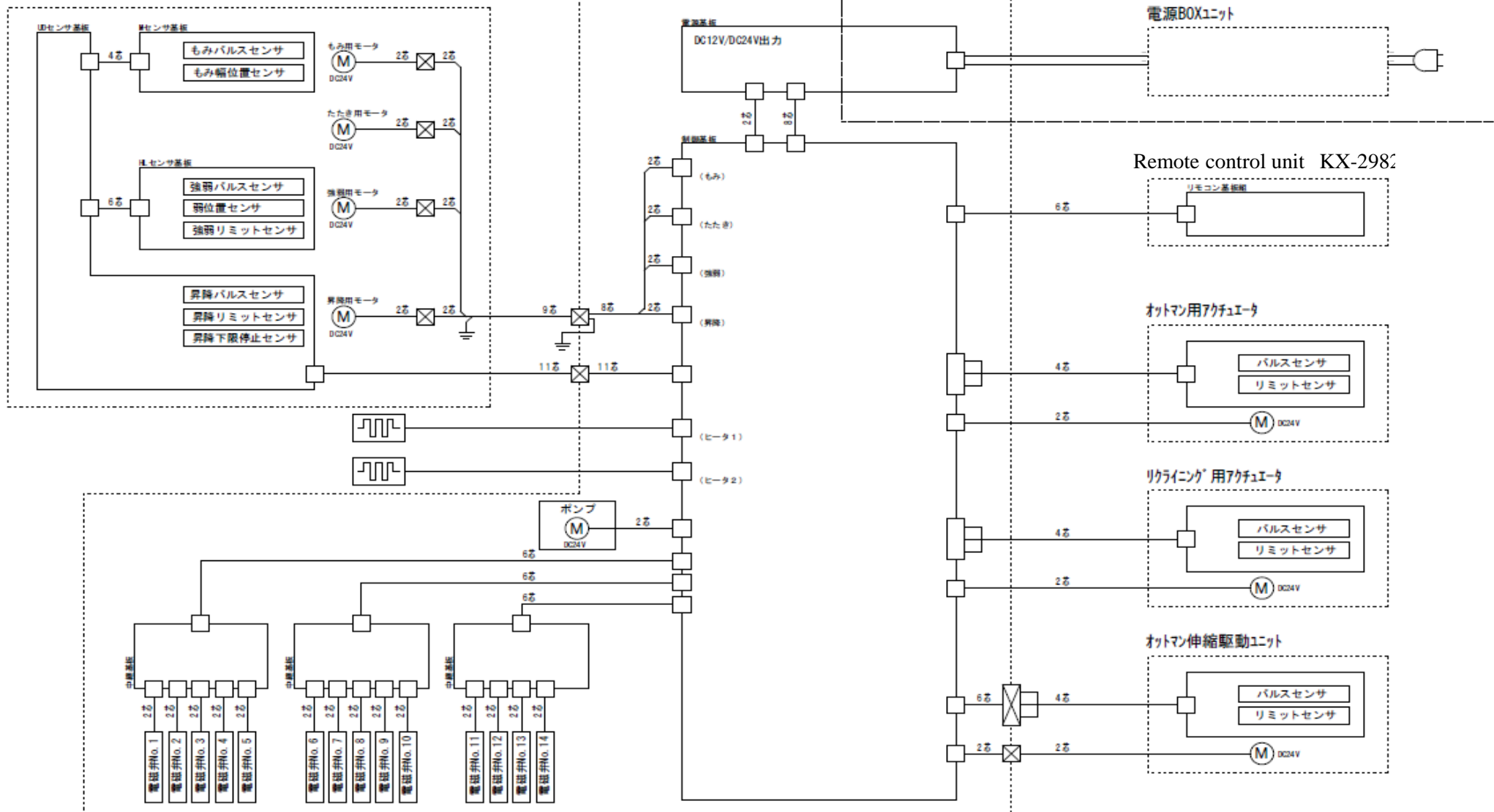


| Front side |  |
|------------|--|
| 1          | LCD screen (Touch panel)   |
| 2          | ON/OFF button<br>on/off of the power supply  |
| 3          | STOP button<br>Stop all operations.(Press this button to stop massages immediately.) |
| 4          | Footrest angle button  |
| 5          | Reclining angle button   |
| 6          | Footrest slide button  |
| 7          | Knead ball position adjustment button  |
| 8          | Heat ON/OFF button   |

Mechanic unit KX-7872

PCB unit KX-3982

強化絶縁



Air-discharge aperture No. and homology for each part of air bag.

|   |               |   |               |   |           |
|---|---------------|---|---------------|---|-----------|
| ① | Waist         | ⑥ | right buttock | ⑪ | Toe       |
| ② | Waist (Right) | ⑦ | left buttock  | ⑫ | Calf rear |
| ③ | Waist (Left)  | ⑧ | Thigh         | ⑬ | Calf side |
| ④ | Arm (Front)   | ⑨ | Waist side    | ⑭ |           |
| ⑤ | Arm (Back)    | ⑩ | Sole of feet  | ⑮ |           |

## 7. Safety precaution

When an error occurs, turn off air massage, mechanic massage, reclining, footrest, footrest Expansion and contraction, air movement, heater.

Error mode could be released by turning the power off.

Details of error are described on chart 7-1

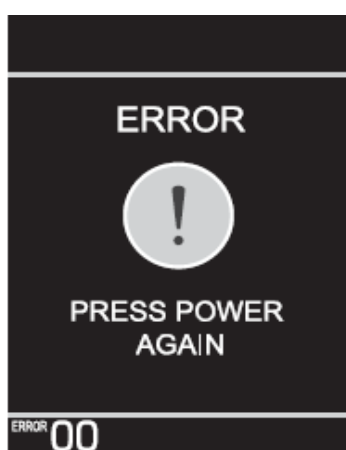


Chart 7.1 : Error display  
Chart 7-1 : Error contents

| Error No. | Error contents   |
|-----------|--|
| 2         | Limit sensor signal is not on for more than 42 seconds during moving up.   |
| 3         | Lower limit stop sensor signal is not on for more than 42 seconds during moving down.  |
| 4         | In case elevation pulse is not entered for more than 3 seconds during elevating operation.   |
| 5         | Malfunction of weak position sensor(weak signal is not off for more than 6 seconds during moving to "strong" direction)  |
| 6         | Malfunction of weak position sensor(weak signal is not on for more than 6 seconds during moving to "weak" direction)   |
| 8         | In case Strong/Weak pulse is not entered for more than 1 second during strength operation.   |
| 9         | In case 「Wide」position pulse is not entered for more than 25 seconds during kneading operation.  |
| 10        | In case Knead pulse is not entered for more than 2 seconds during kneading operation.  |
| 11        | Equipment error(from the main board)   |
| 14        | Equipment error(from remote control)   |
| 18        | Connector comes off, continuous detection for 0.5 second.  |
| 19        | Tapping motor lock signal is continuously on for 2 seconds.  |
| 20        | In case reclining pulse is not entered for more than 2 seconds during reclining operation.   |
| 21        | In case footrest pulse is not entered for more than 2 seconds during footrest operation.   |
| 22        | In case reclining limit signal is not entered for more than 30 seconds during reclining up operation.  |
| 23        | In case reclining limit signal is not entered for more than 30 seconds during reclining down operation.  |
| 24        | In case footrest limit signal is not entered for more than 30 seconds during footrest up operation.  |
| 25        | In case footrest limit signal is not entered for more than 30 seconds during footrest down operation.  |
| 26        | Actuator connector comes off, continuous detection for 0.5 second.   |
| 27        | In case footrest expansion and contraction pulse is not entered for more than 2 seconds during footrest expansion and contraction operation.                       |
| 28        | In case limit signal is not entered for more than 15 seconds during footrest expansion operation.  |
| 29        | In case limit signal is not entered for more than 15 seconds during footrest contraction operation.  |
| 30        | Continuous detection of the overcurrent for footrest expansion and contraction motor for more than 0.3 second during footrest expansion and contraction operation. |
| 40        | Main circuit board : CRC does not match for 1 second in a row.   |
| 41        | Main circuit board : header does not match for 1 second in a row.  |
| 42        | Main circuit board : remote control is in busy state for 1 second in a row.  |
| 43        | Main circuit board : It does not receive a data from remote control for 1 second in a row.   |
| 44        | Remote control : CRC does not match for 1 second in a row.   |
| 45        | Remote control : header does not match for 1 second in a row.  |
| 46        | Remote control : It does not have communication processing for 1 second in a row.  |
| 60        | Main circuit board : power outlet 24V become below 20V after 0.5 second pass from power on with 24V.   |
| 61        | Main circuit board : power outlet 24V become below 12V for 0.1 second in a row.  |



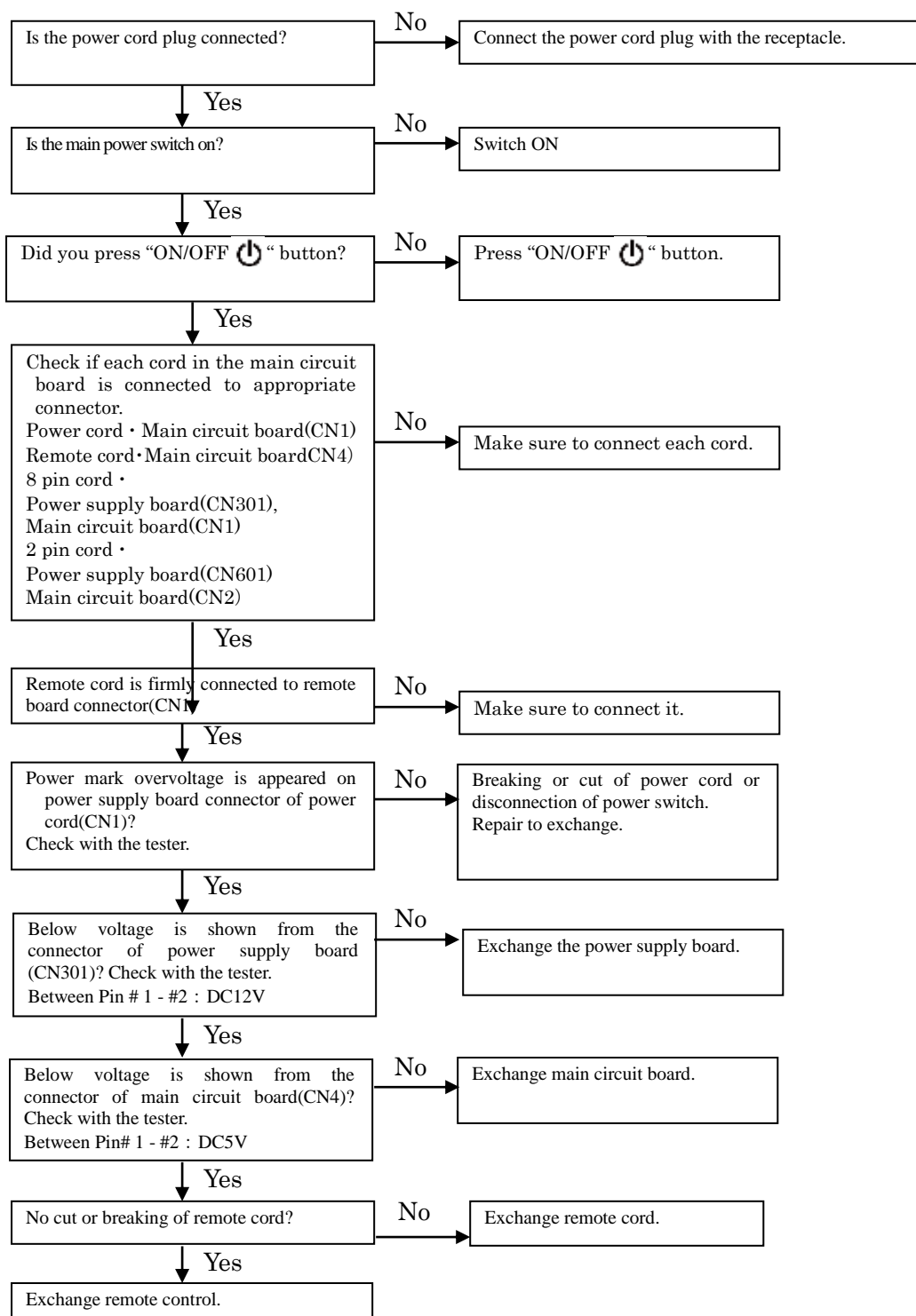
## 0. Trouble shooting(4D-970)

### ■Precautions for repair or exchange

- Make sure to unplug when you exchange parts, teardown, inserting or removing the connector.
  - Make sure to work for repair after following actions when you touch main circuit board(each board) as semiconductor(Ex. IC) is static-sensitive.
- ※Remove human earth or touch an earth(Ex. refrigerator, washing machine) directly by hand and release the static from electrically charged body.
- Do not touch power supply board without discretion as high(AC100V~240V) and low(24V · 12V · 5V) pressure are mixed in the power supply board. It may cause electric shocks. Please be very careful with checking voltage.

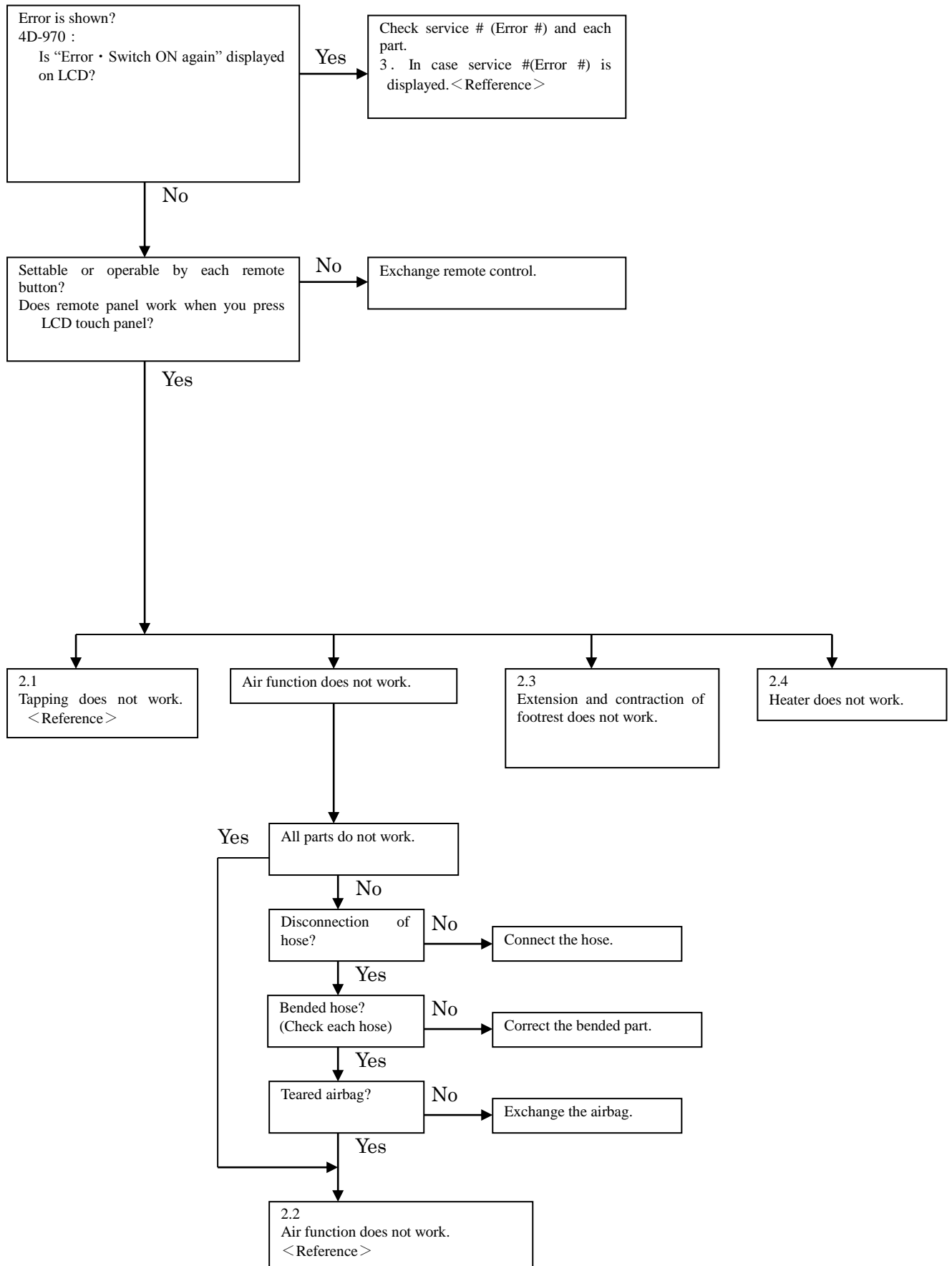
### 1 . Power does not turn ON

(4D-970 : LCD does not light up)

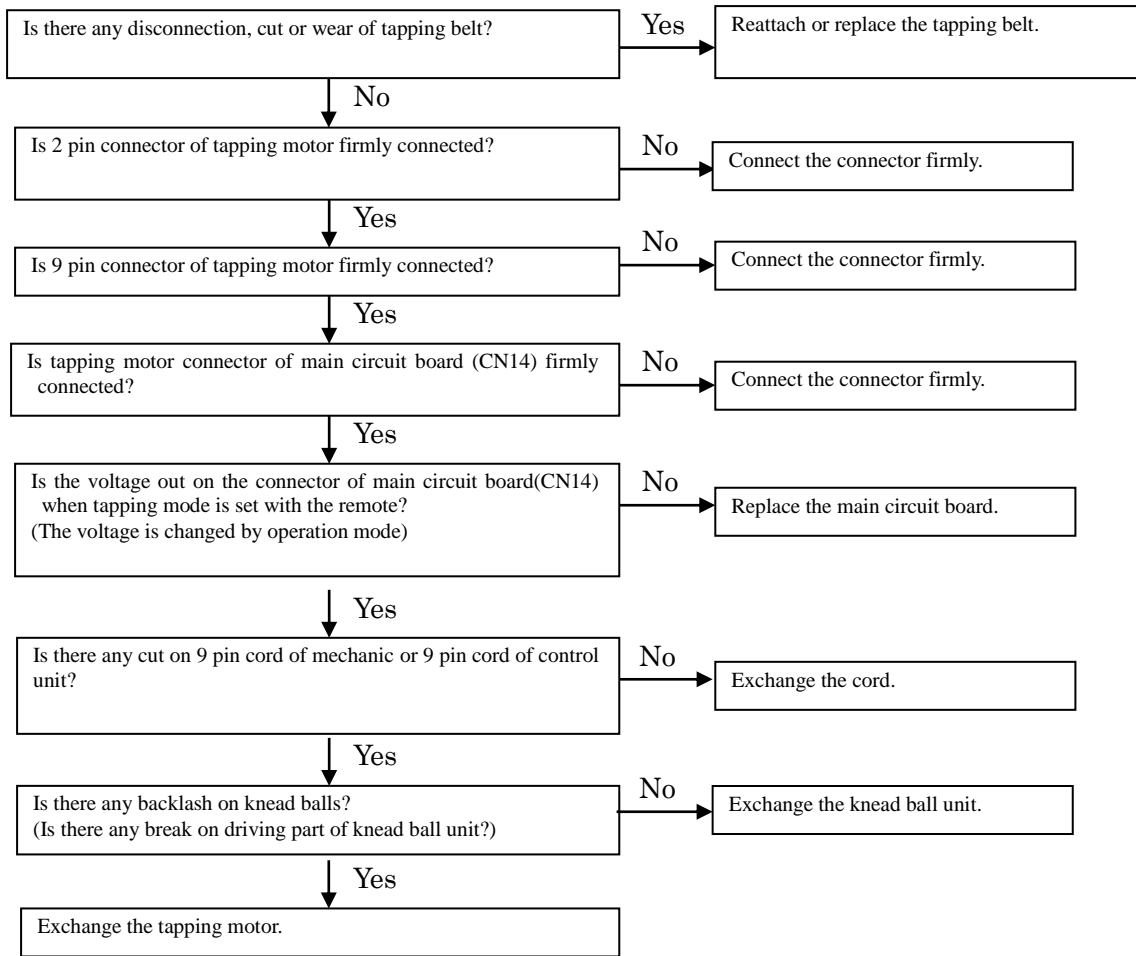


## 2. Malfunction (LCD is lighted up)

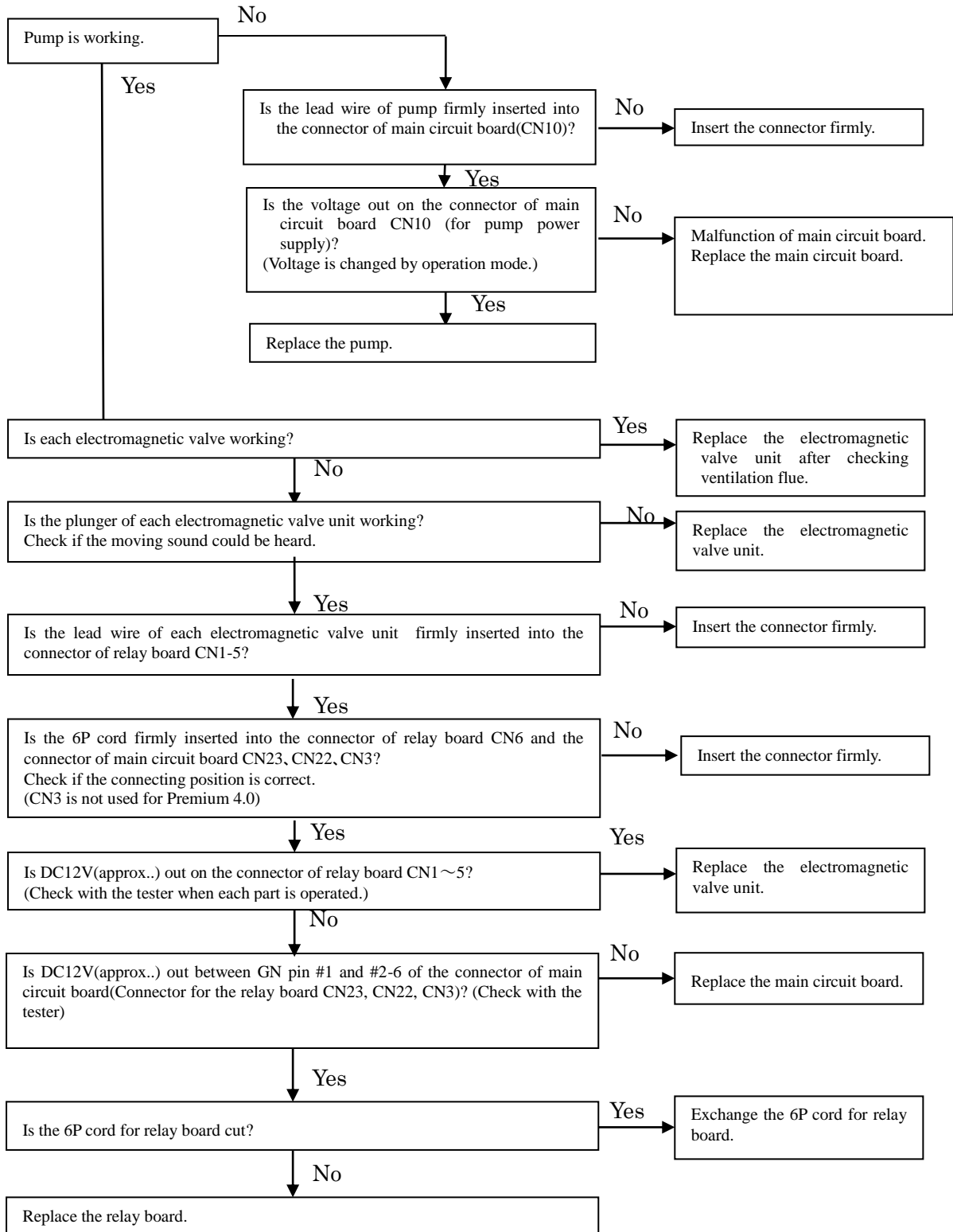
(4D-970) : LCD is lighted up)



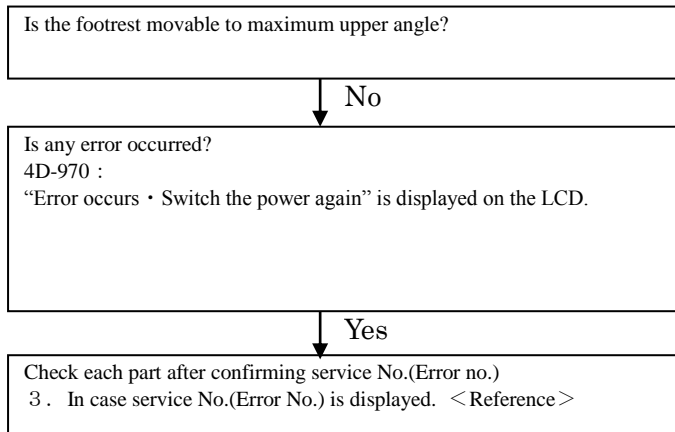
2. 1 Tapping does not work.



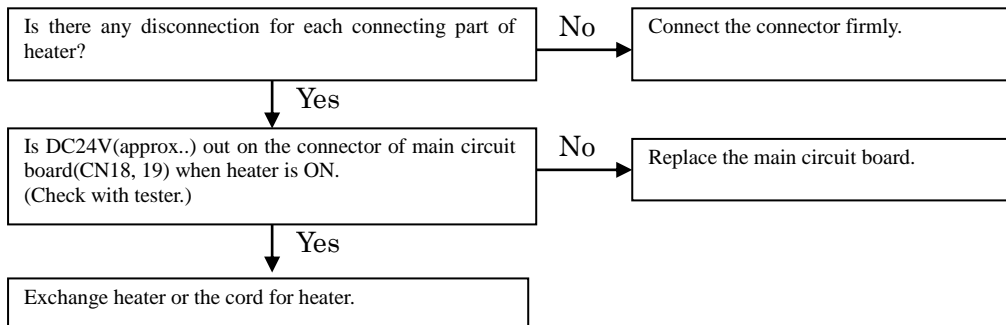
2. 2 Air function does not work.



2. 3 Extension and contraction of footrest do not move.



2. 4 Heater does not work.(It does not heat up)

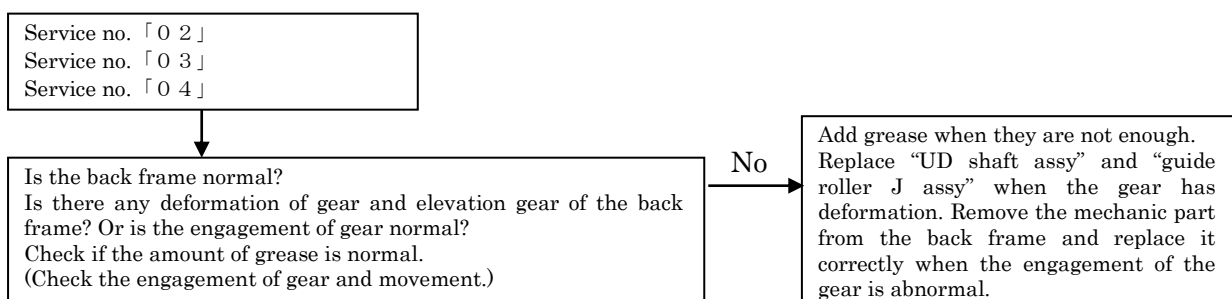


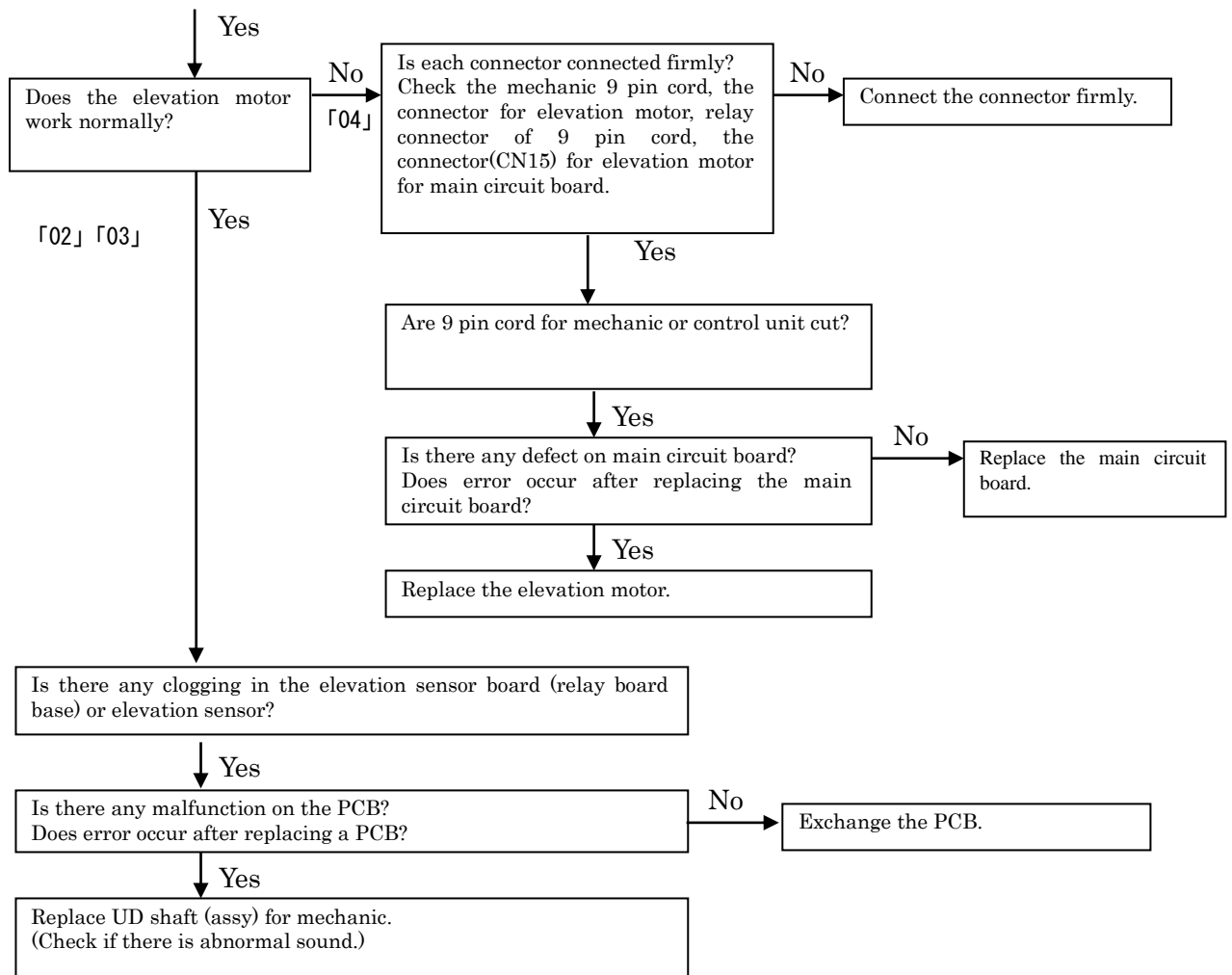
3. When an error occurs.

4D-970 : Service no.(Error no.) is displayed on the LCD of remote.

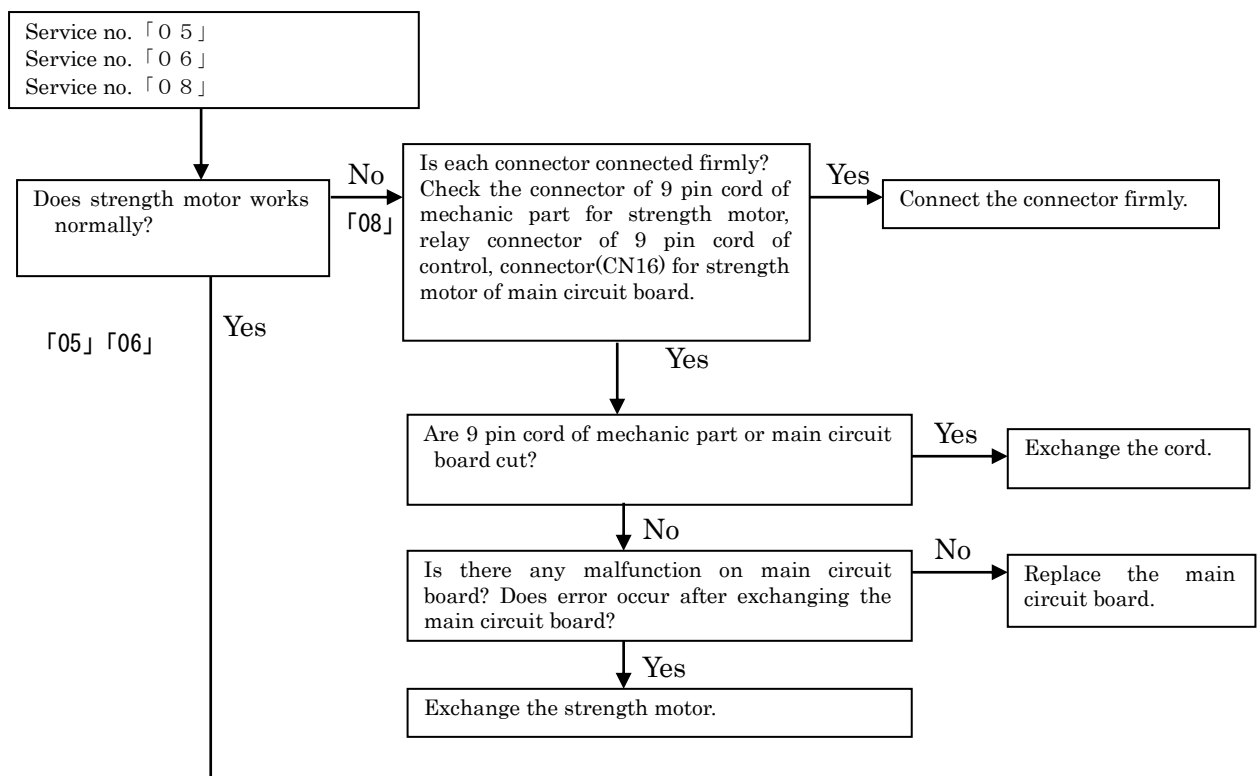
| Error No. | Error contents   |
|-----------|--|
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| 3         | Lower limit stop sensor signal is not on for more than 42 seconds during moving down.  |
| 4         | In case elevation pulse is not entered for more than 3 seconds during elevating operation.   |
| 5         | Malfunction of weak position sensor(weak signal is not off for more than 6 seconds during moving to "strong" direction)  |
| 6         | Malfunction of weak position sensor(weak signal is not on for more than 6 seconds during moving to "weak" direction)   |
| 8         | In case Strong/Weak pulse is not entered for more than 1 second during strength operation.   |
| 9         | In case 「Wide」 position pulse is not entered for more than 25 seconds during kneading operation.   |
| 10        | In case Knead pulse is not entered for more than 2 seconds during kneading operation.  |
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| 21        | In case footrest pulse is not entered for more than 2 seconds during footrest operation.   |
| 22        | In case reclining limit signal is not entered for more than 30 seconds during reclining up operation.  |
| 23        | In case reclining limit signal is not entered for more than 30 seconds during reclining down operation.  |
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| 26        | Actuator connector comes off, continuous detection for 0.5 second.   |
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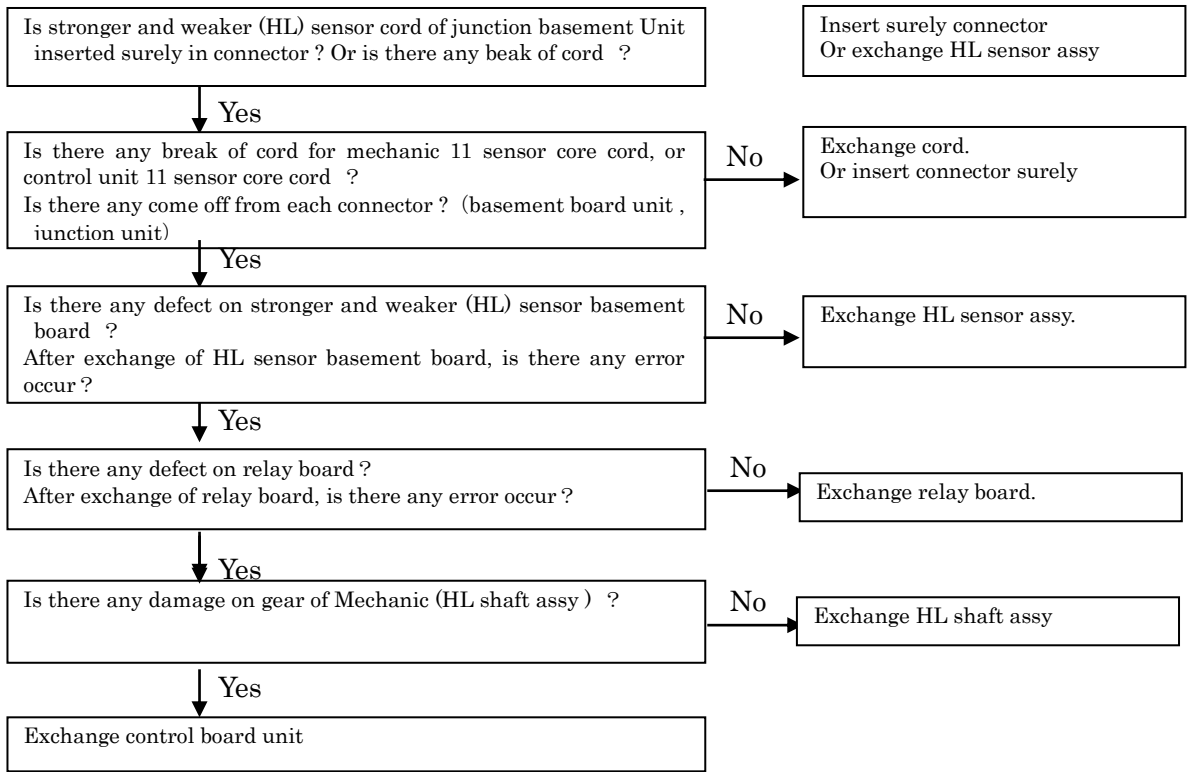
3.1



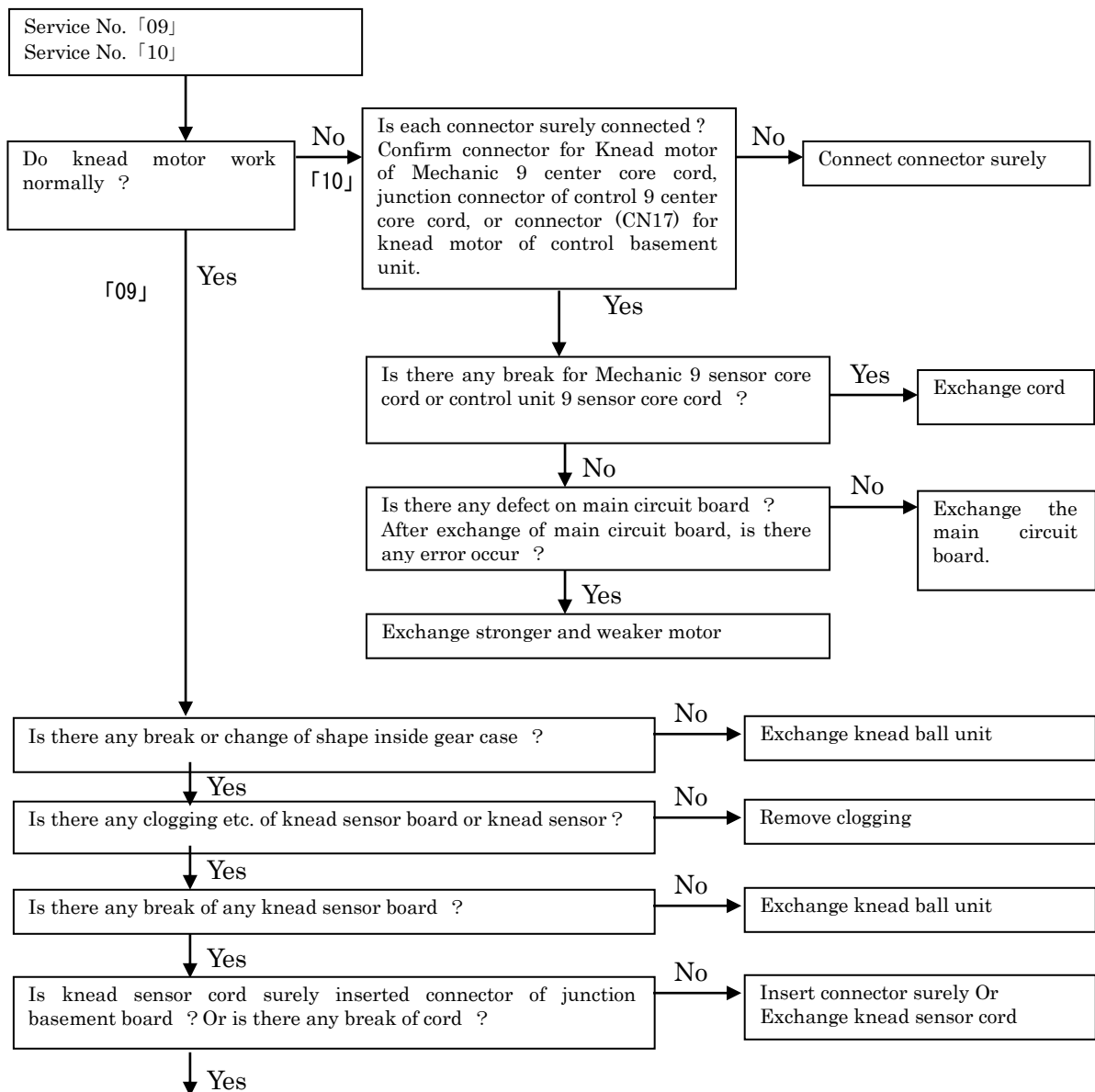


3.2

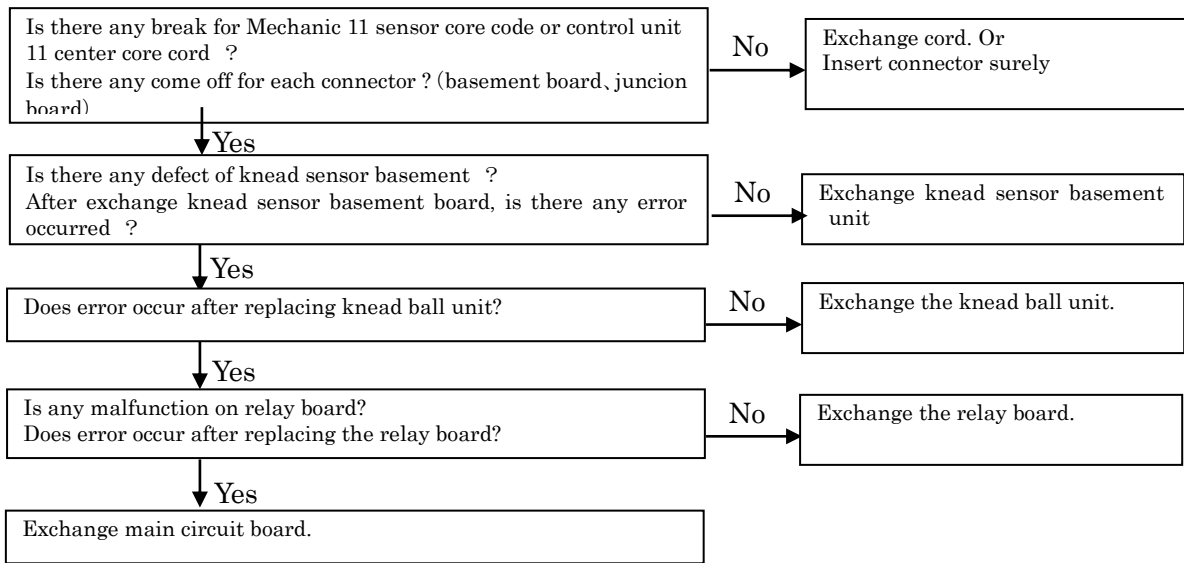




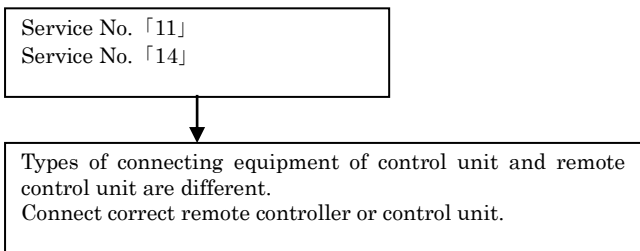
3.3



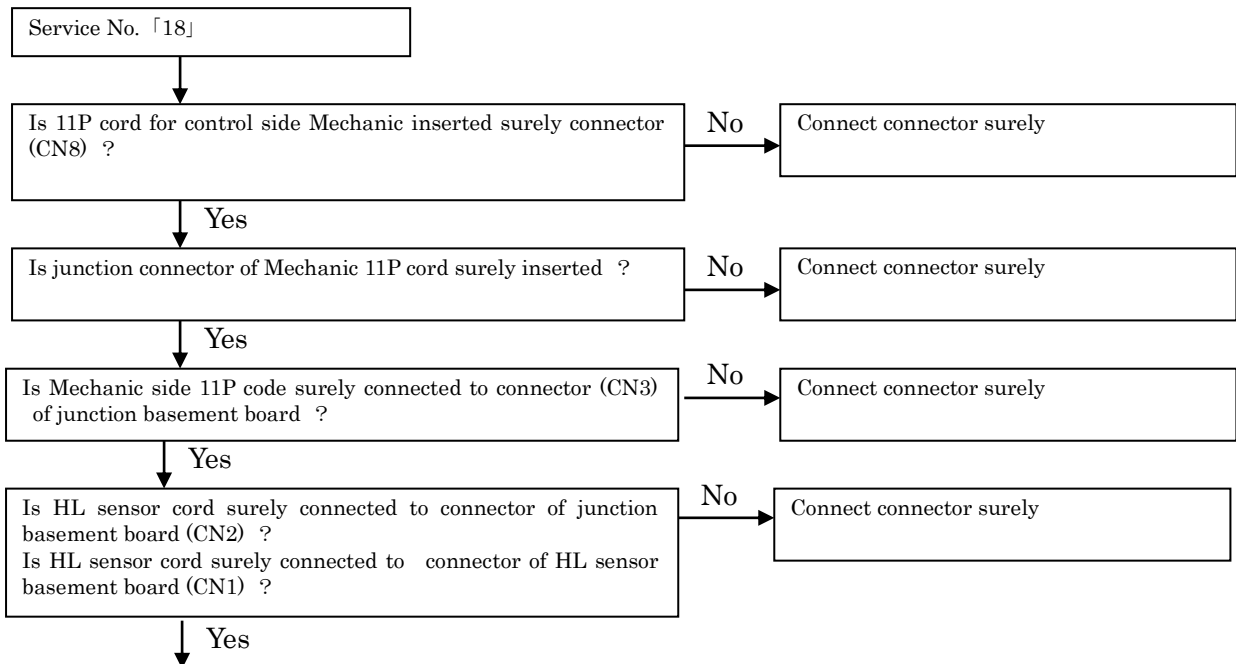


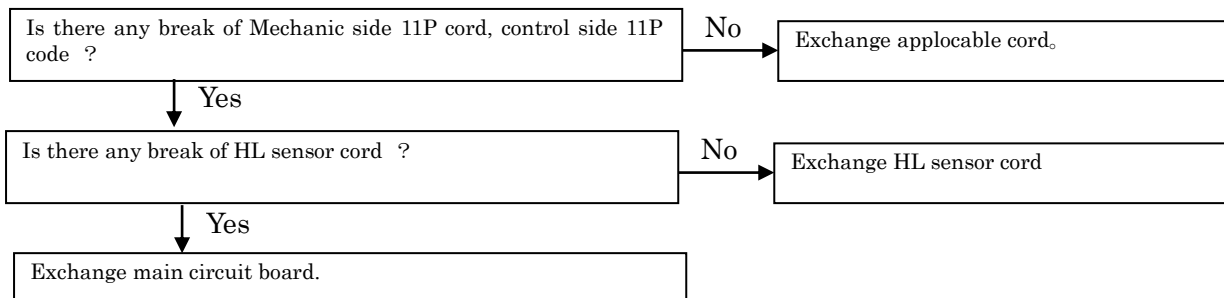


3.4

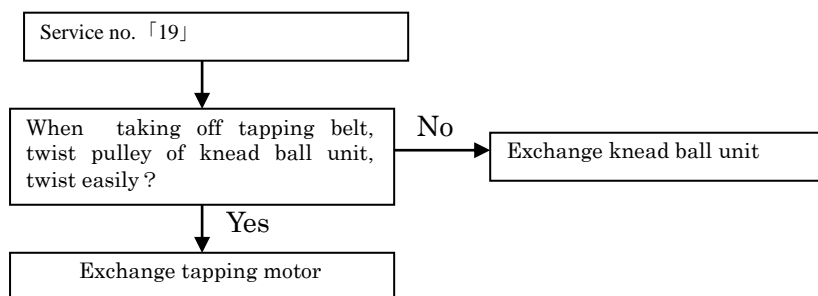


3.5

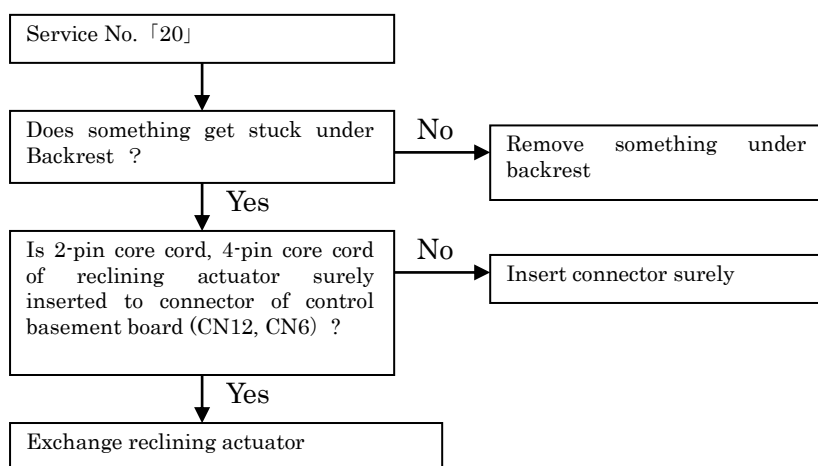




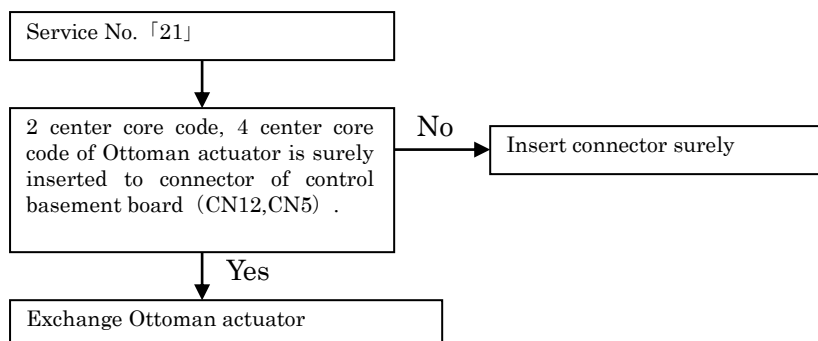
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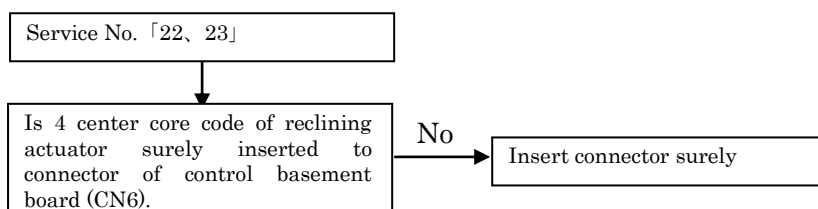
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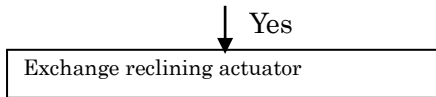


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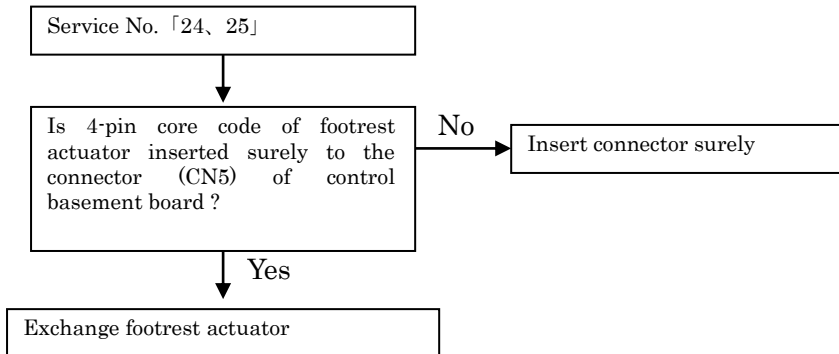


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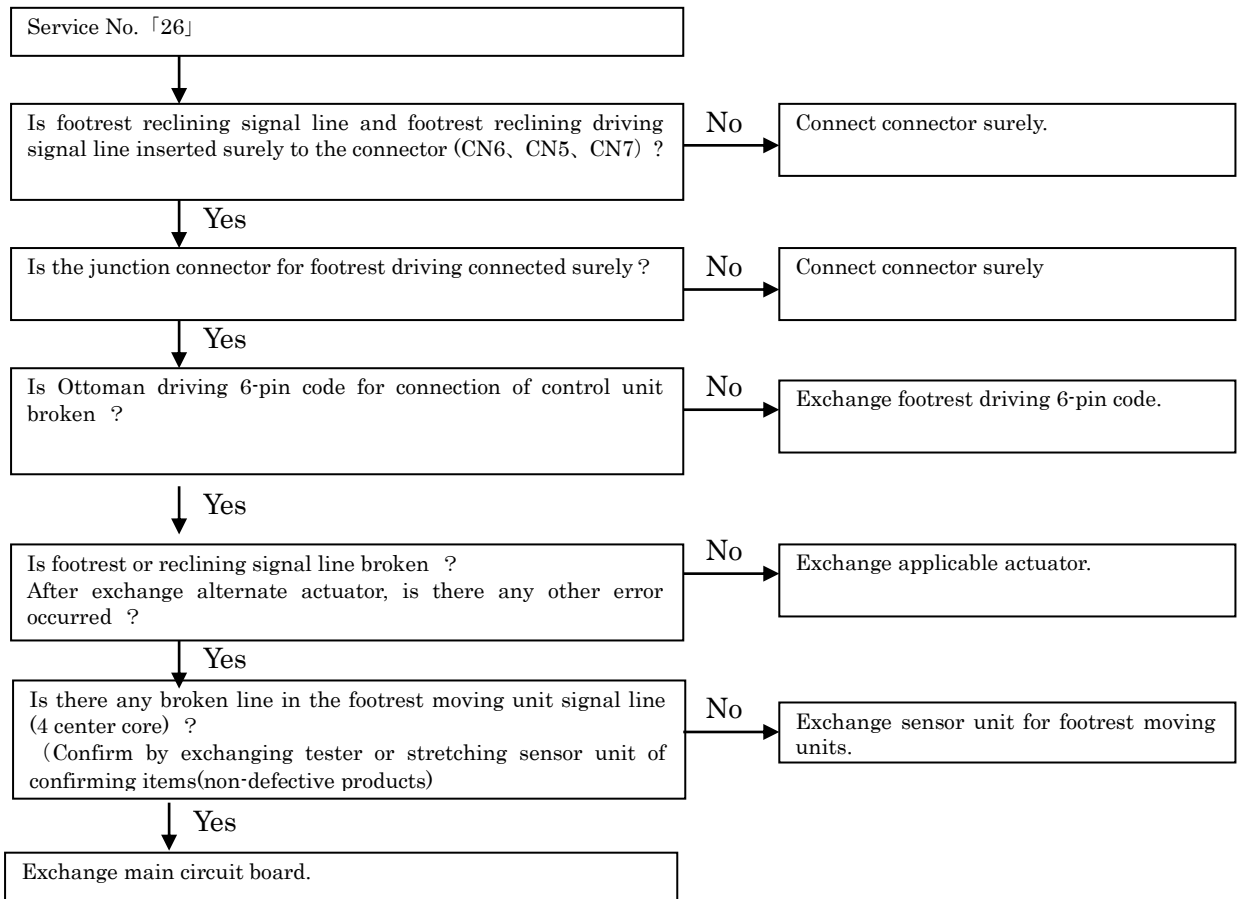




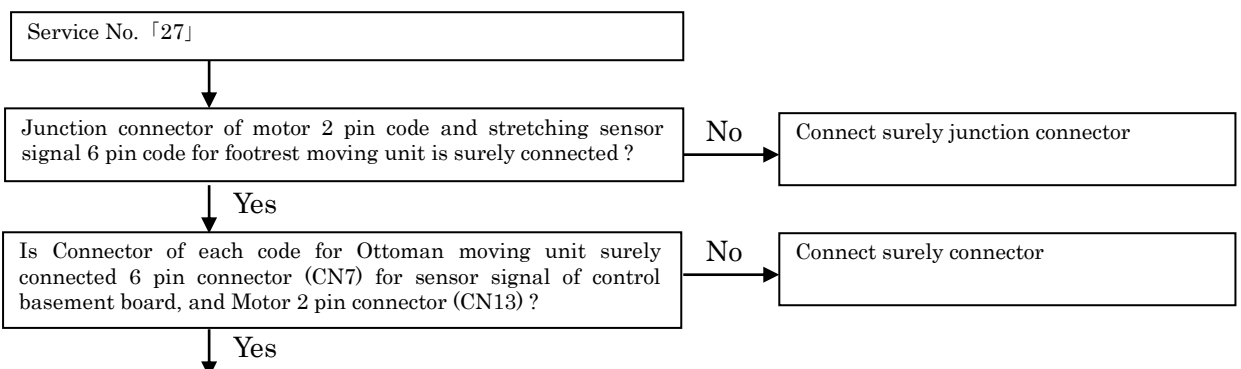
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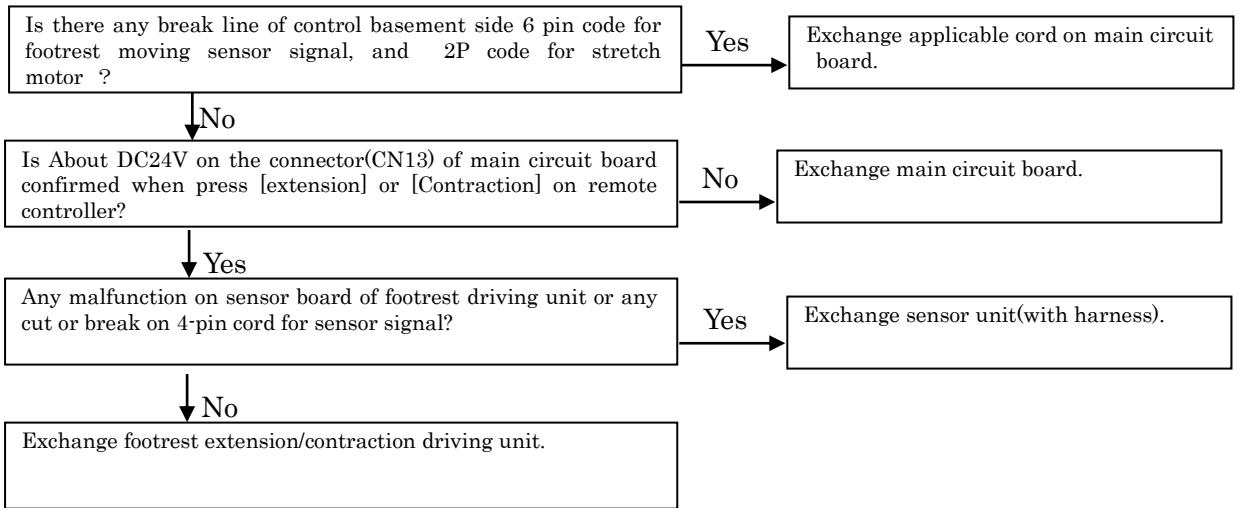


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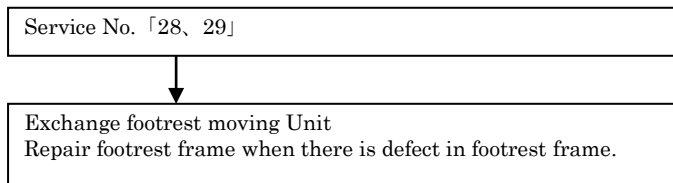


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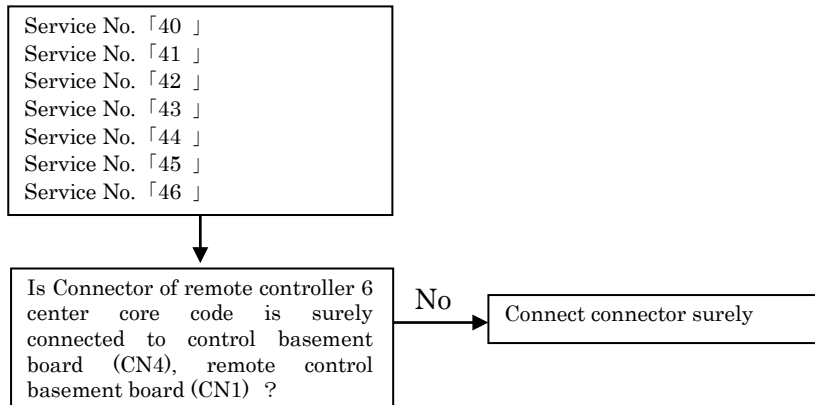




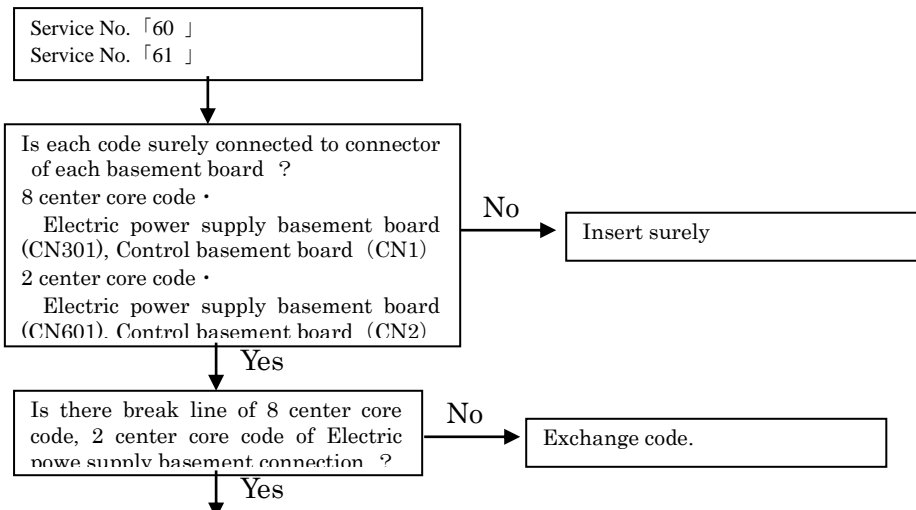
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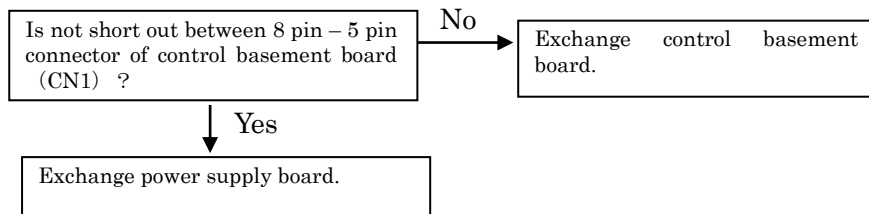


3.14

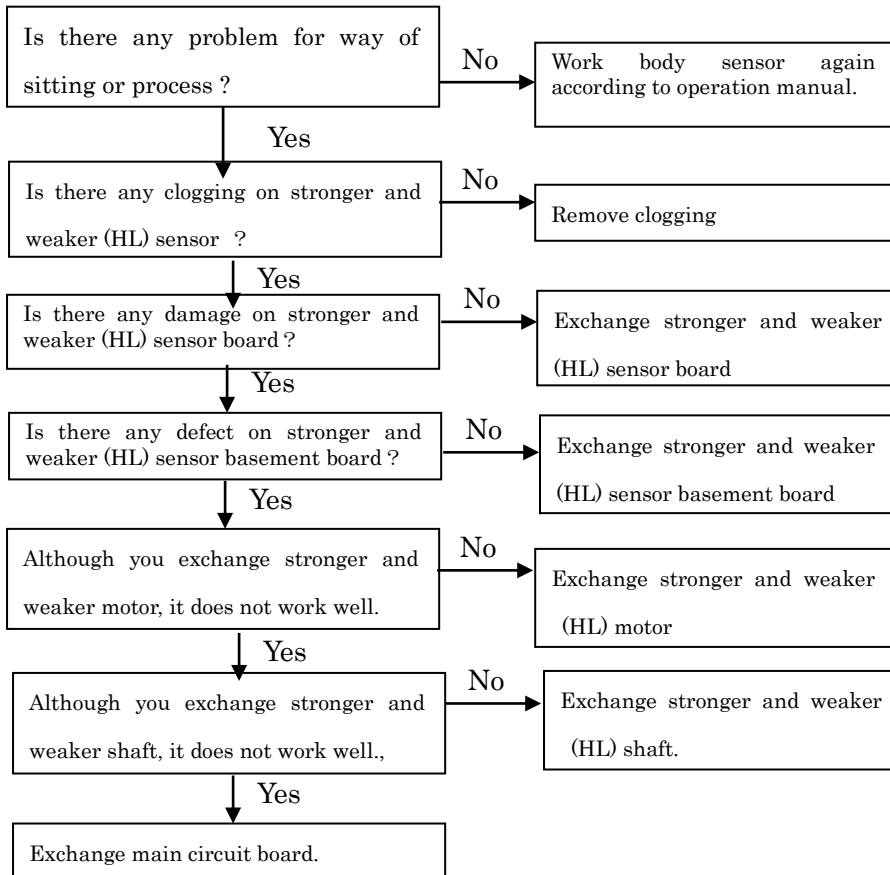


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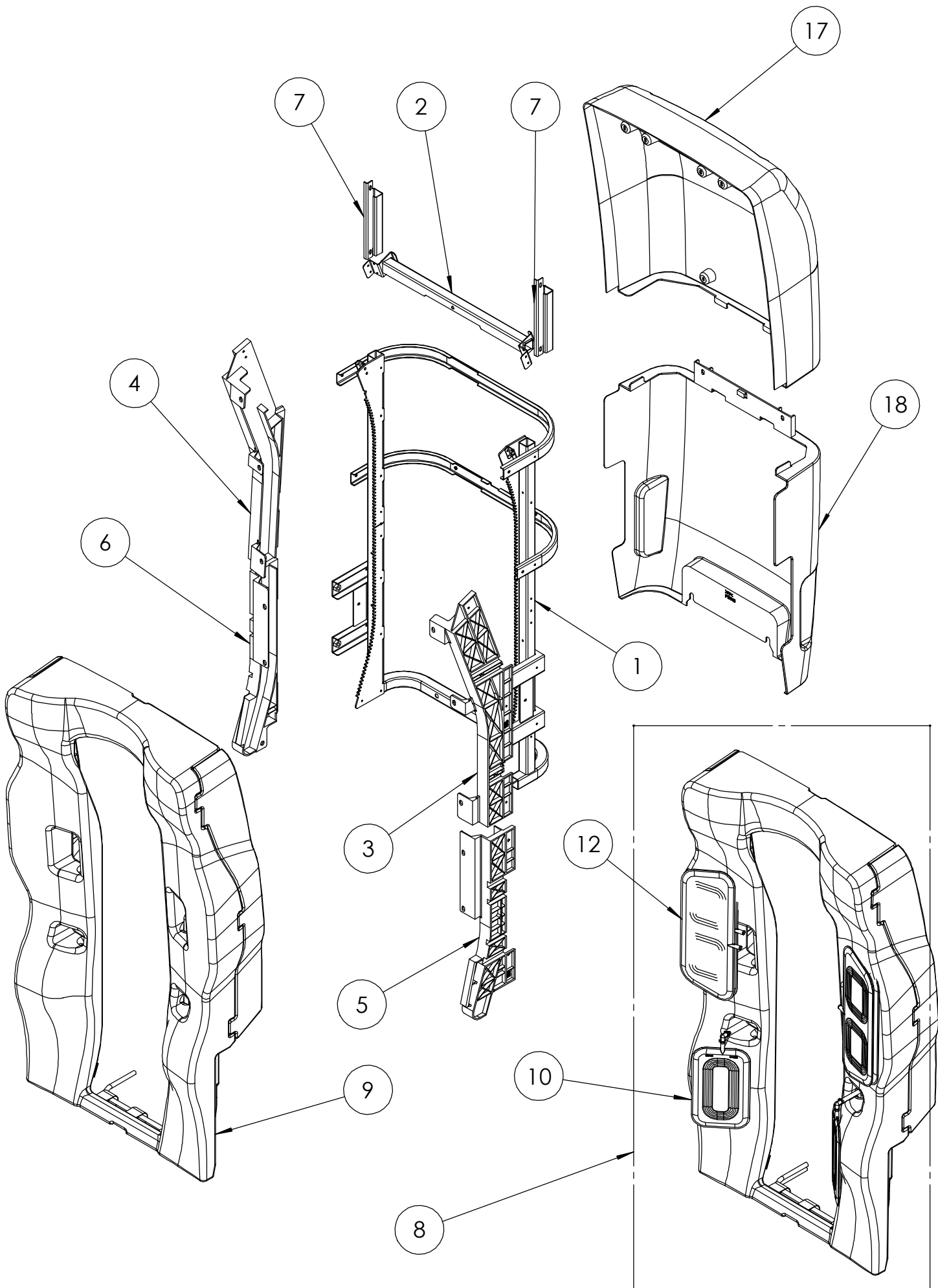




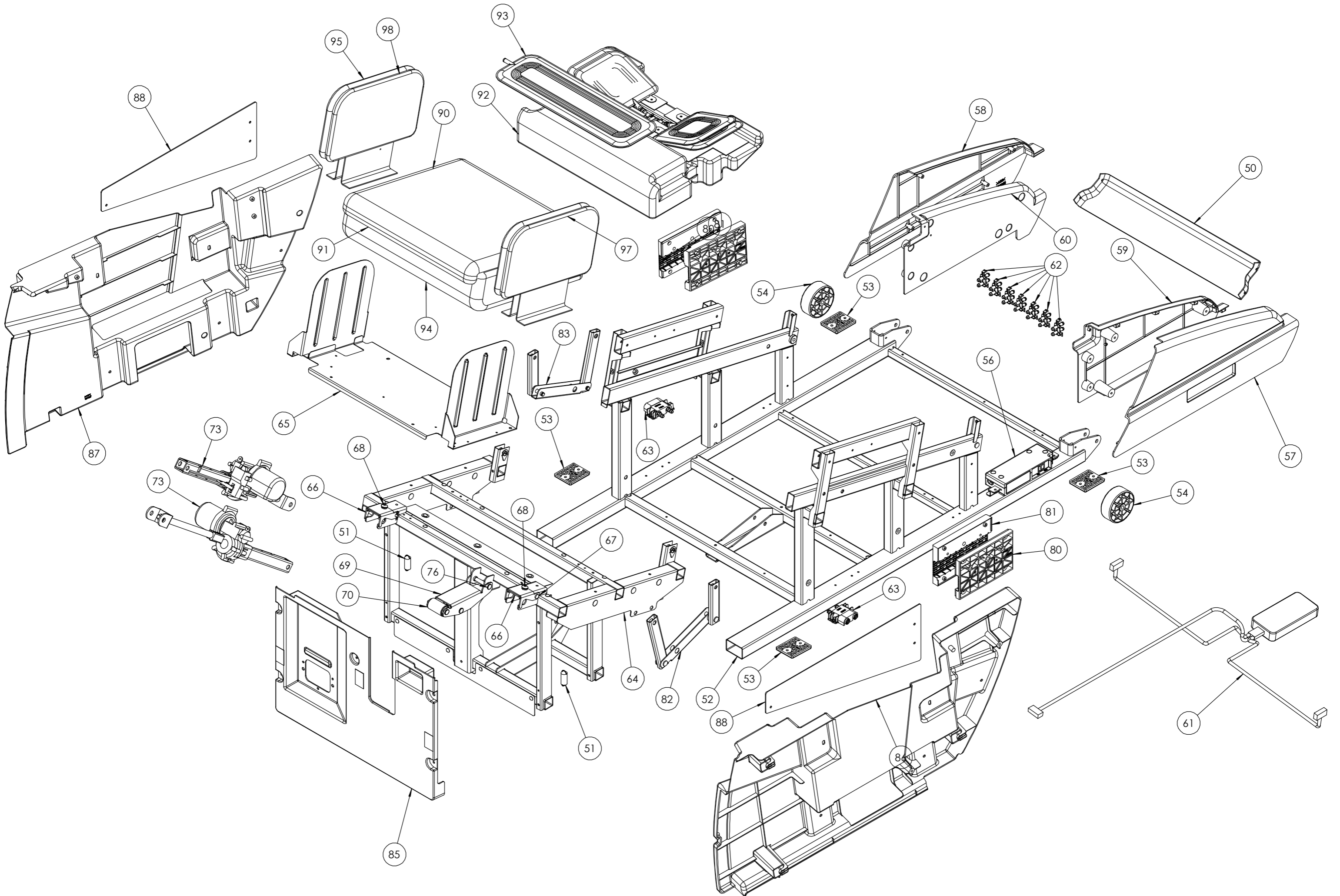
4 . Body shape detection does not work



Exploded view for upper part of chair

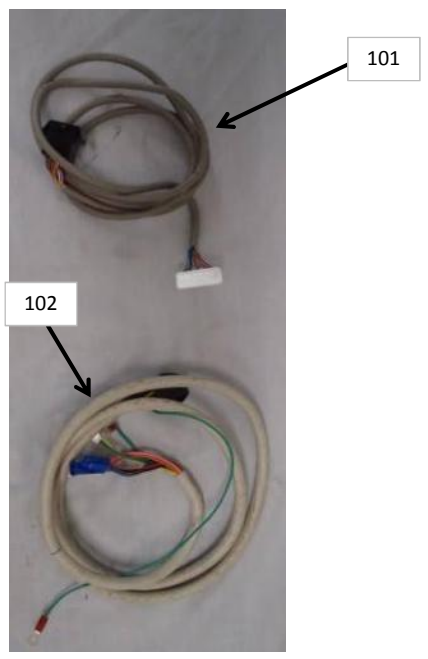
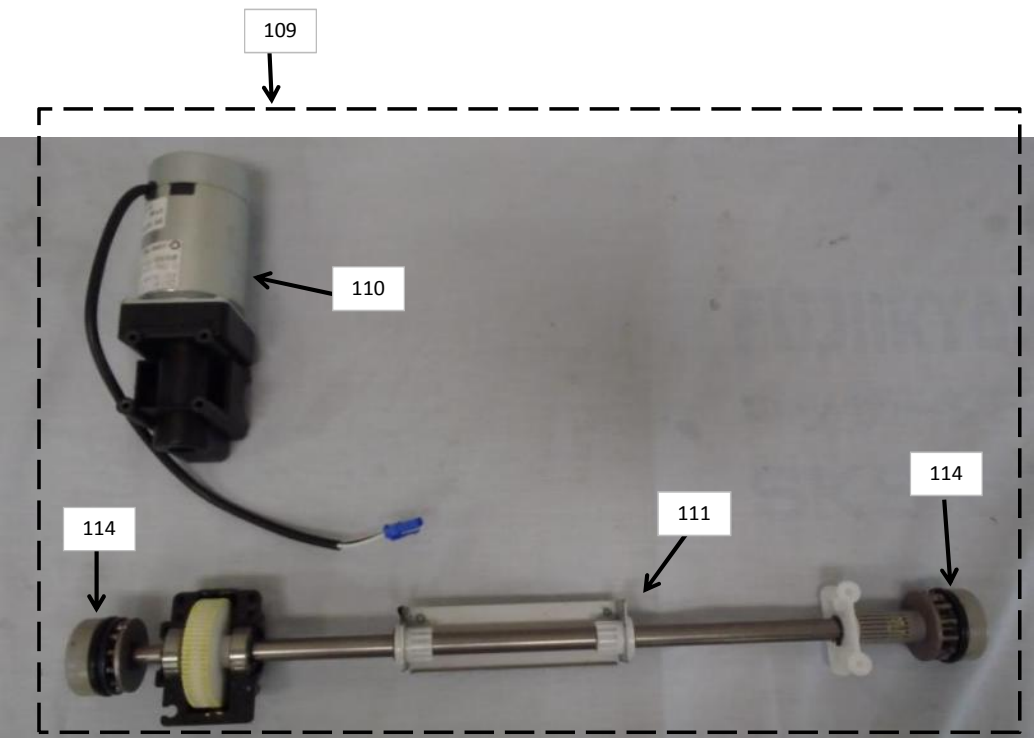
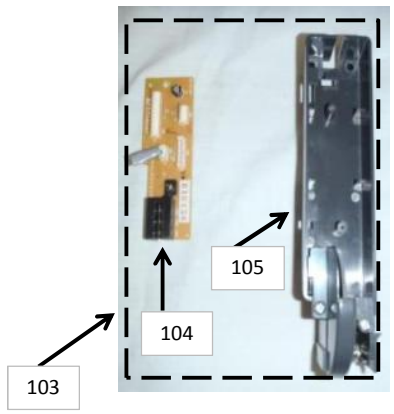
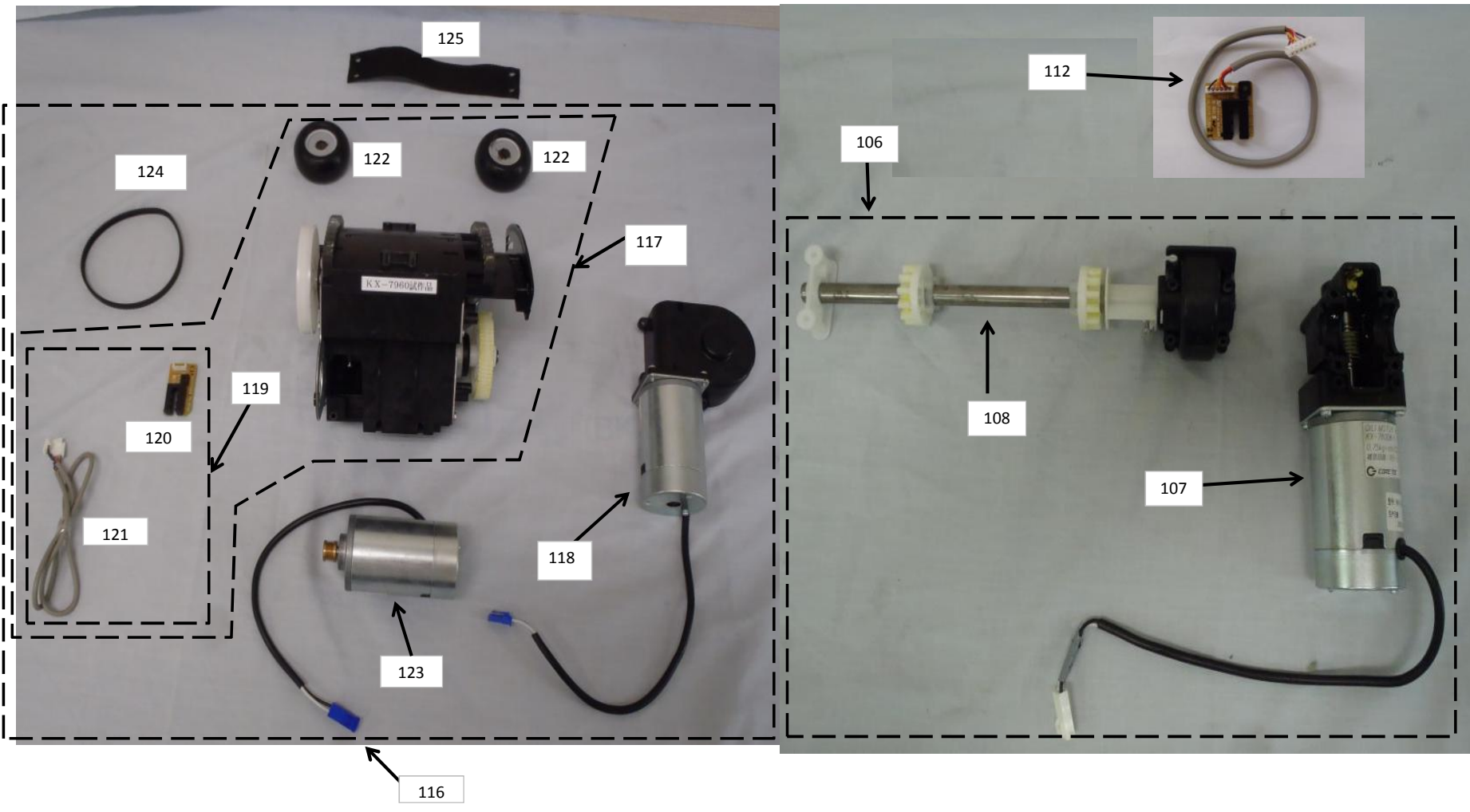


Exploded view for lower part of chair





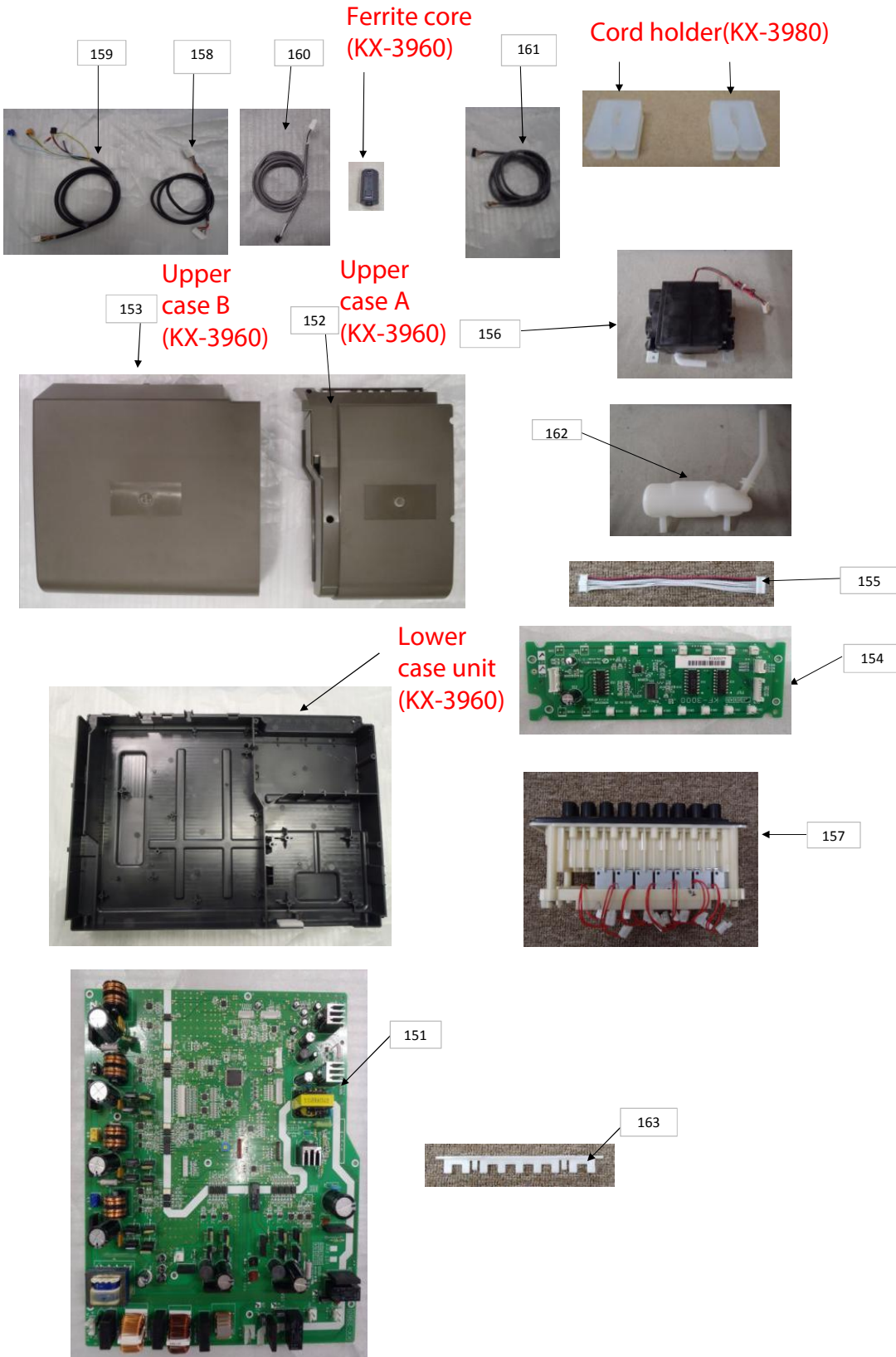
Massage chair 4D-970  
Mechanic unit KX-7960 : Service parts list



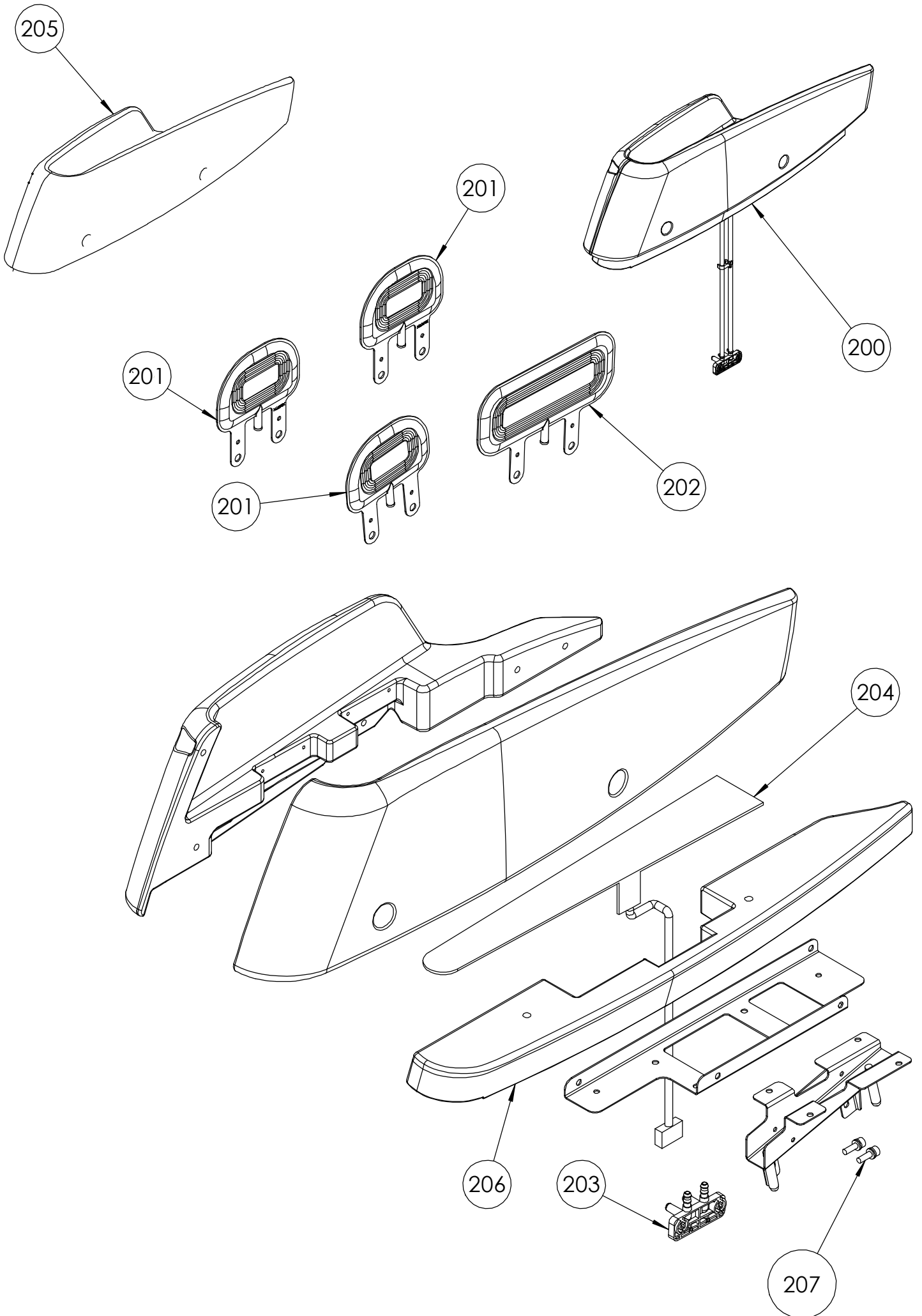


Massage chair 4D-970

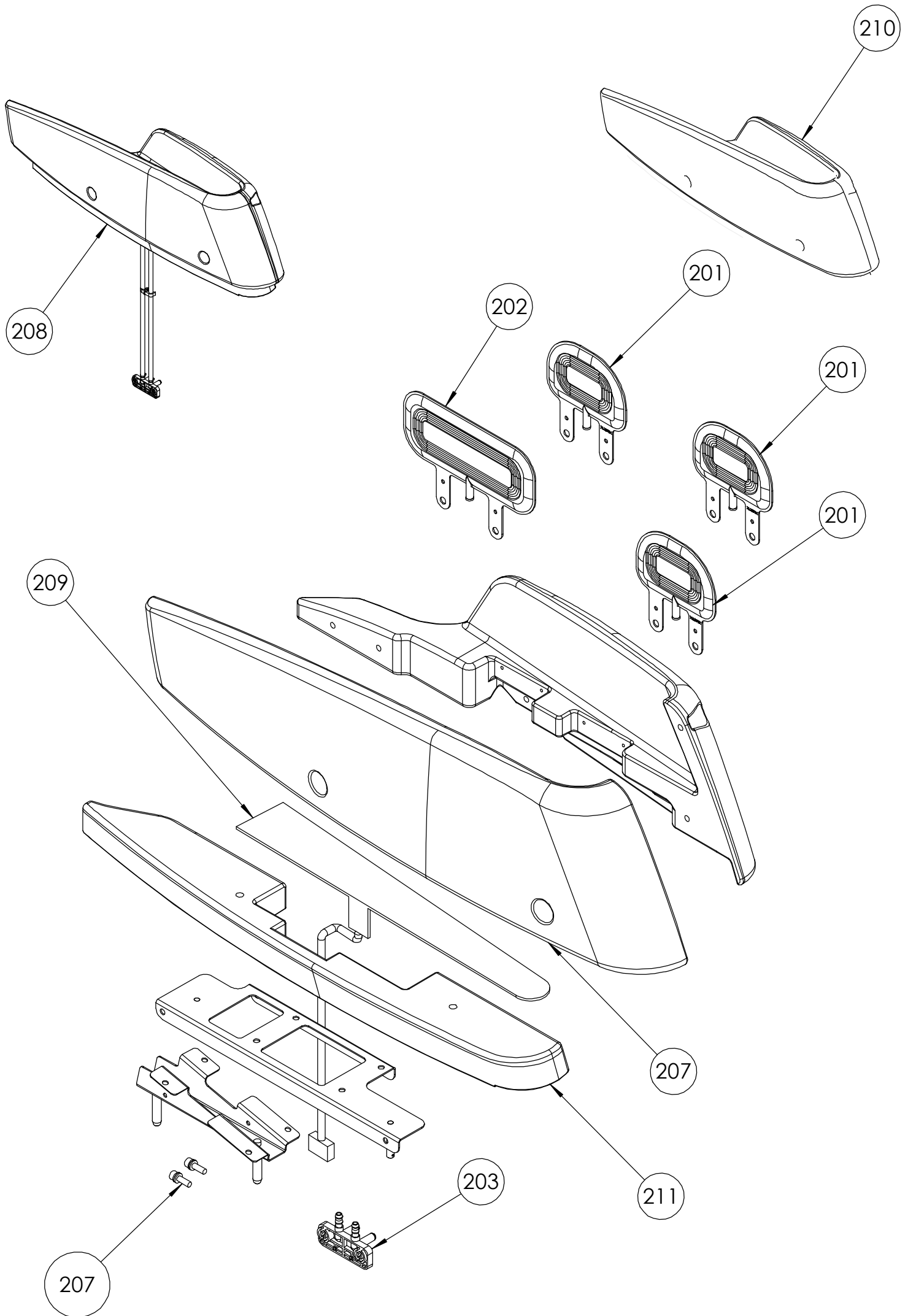
Main circuit board unit KX-3970 : Service parts list



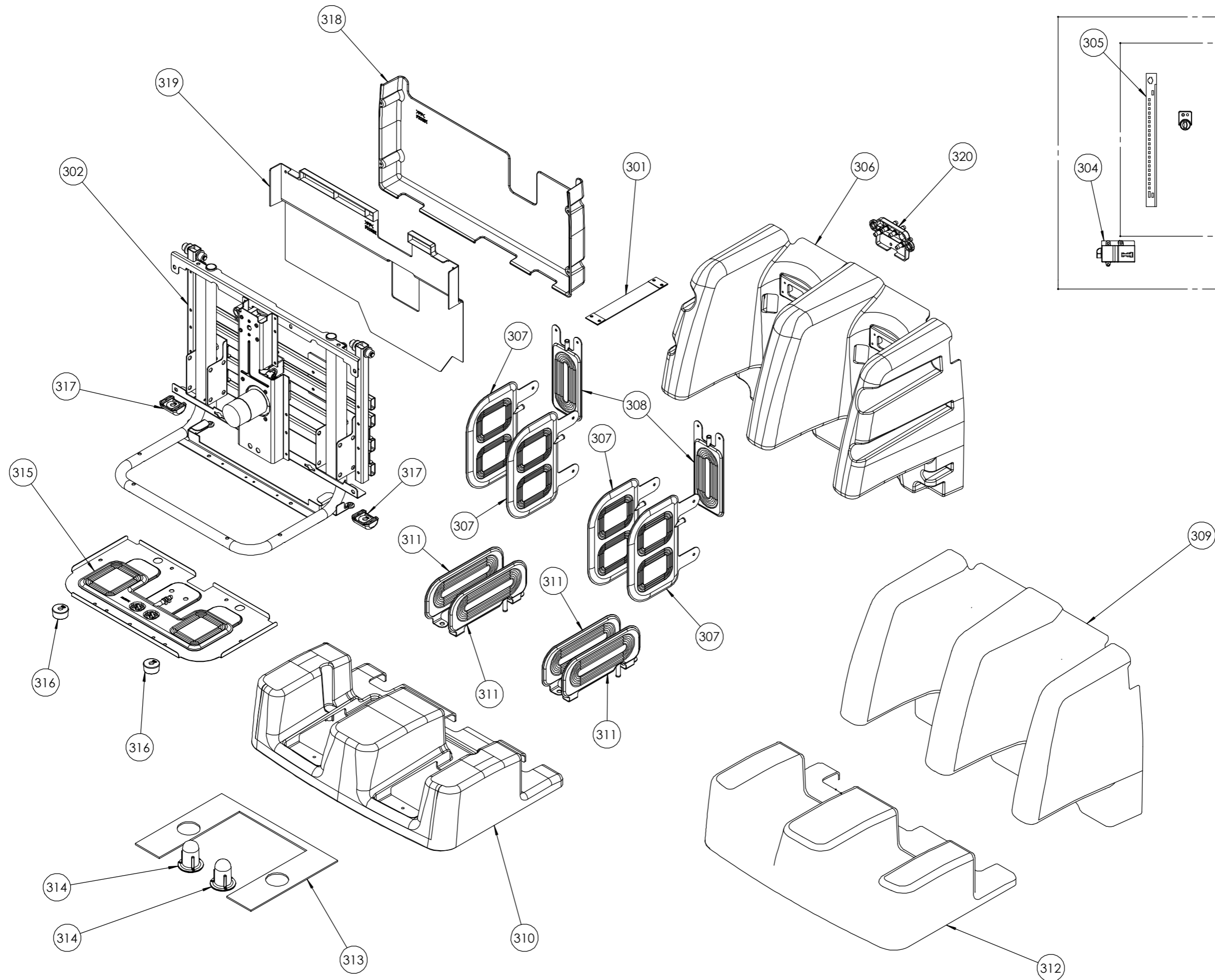
Exploded view for arm unit\_L



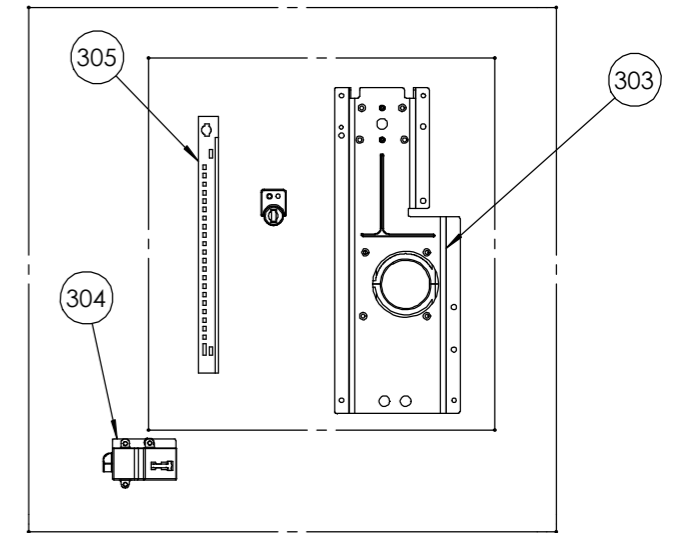
Exploded view for arm unit\_R



Exploded view for footrest unit



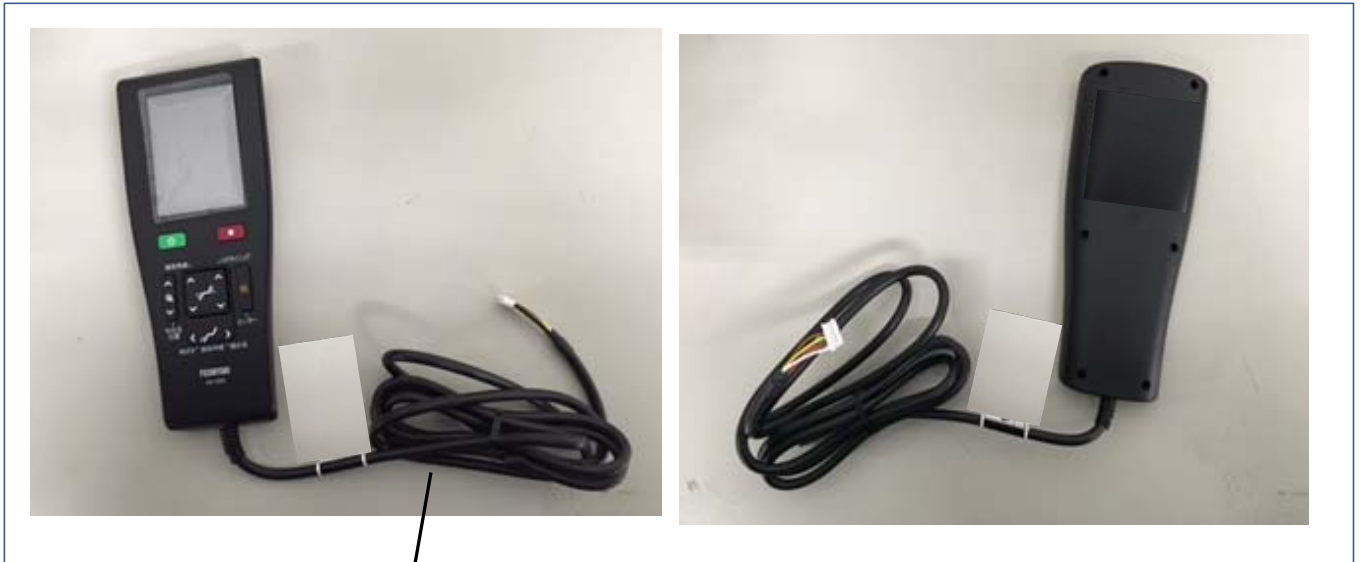
Exploded view for footrest slide.



**Massage chair**

**Remote control unit KX-2980UL : Component list**

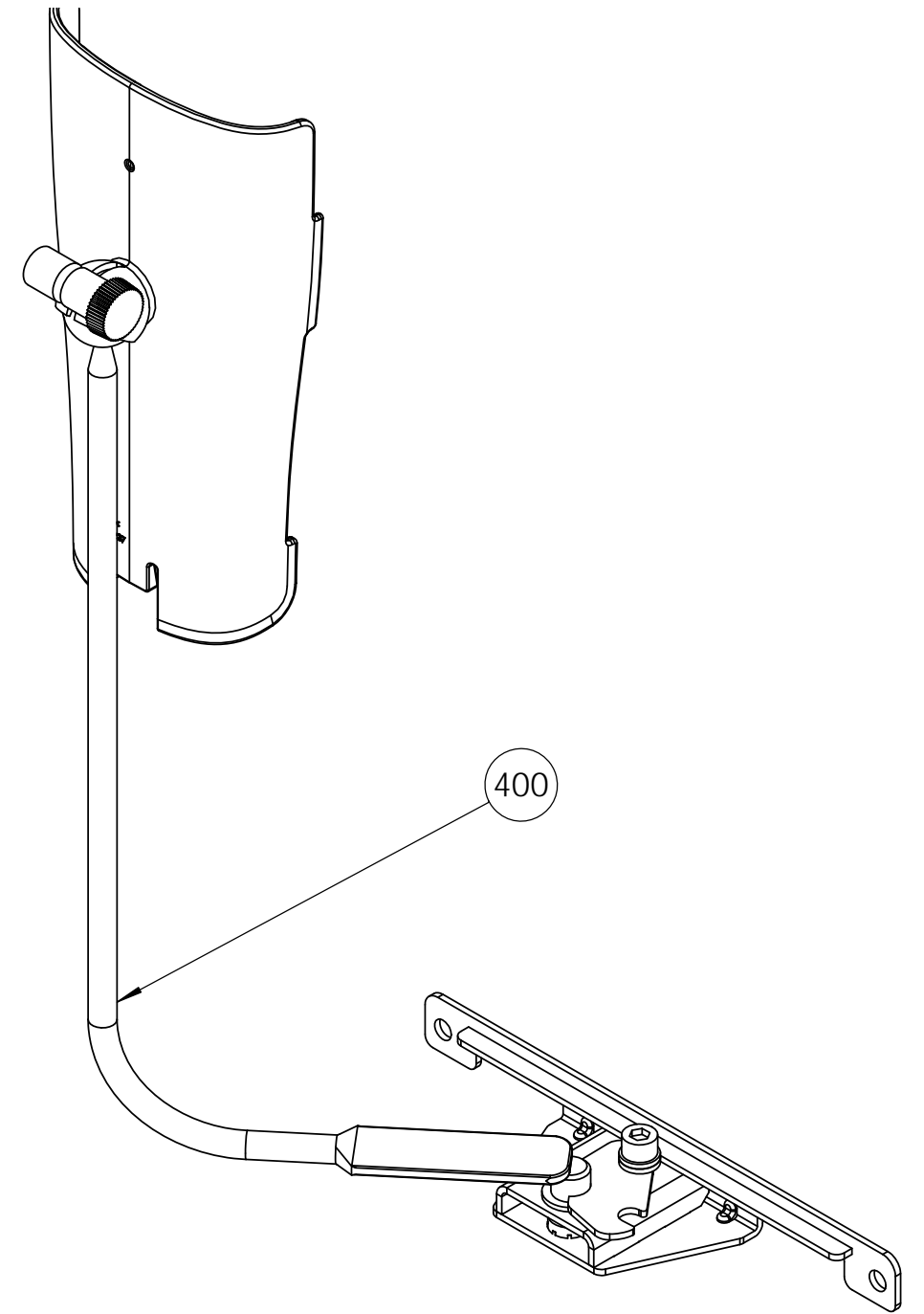
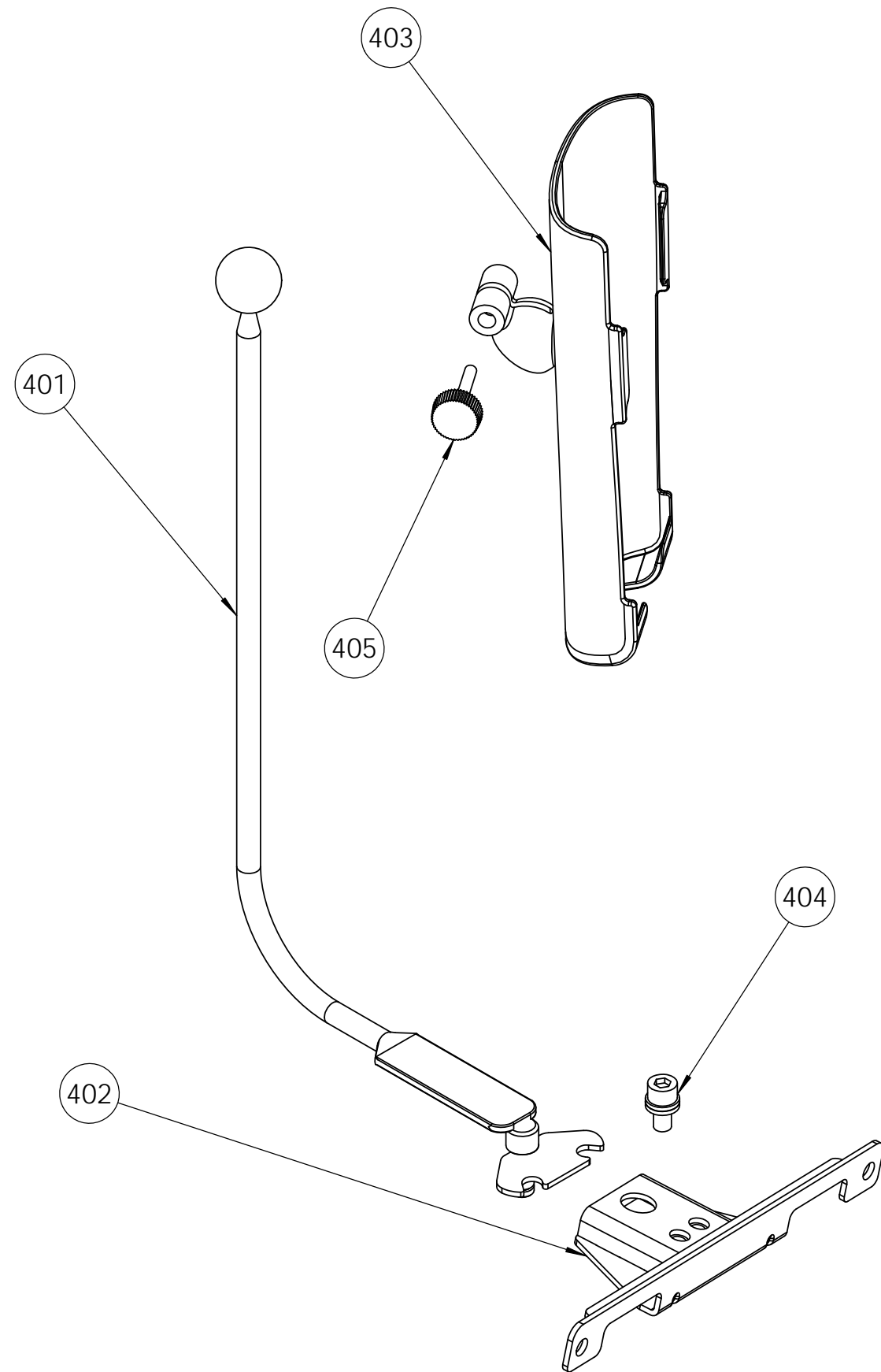
350



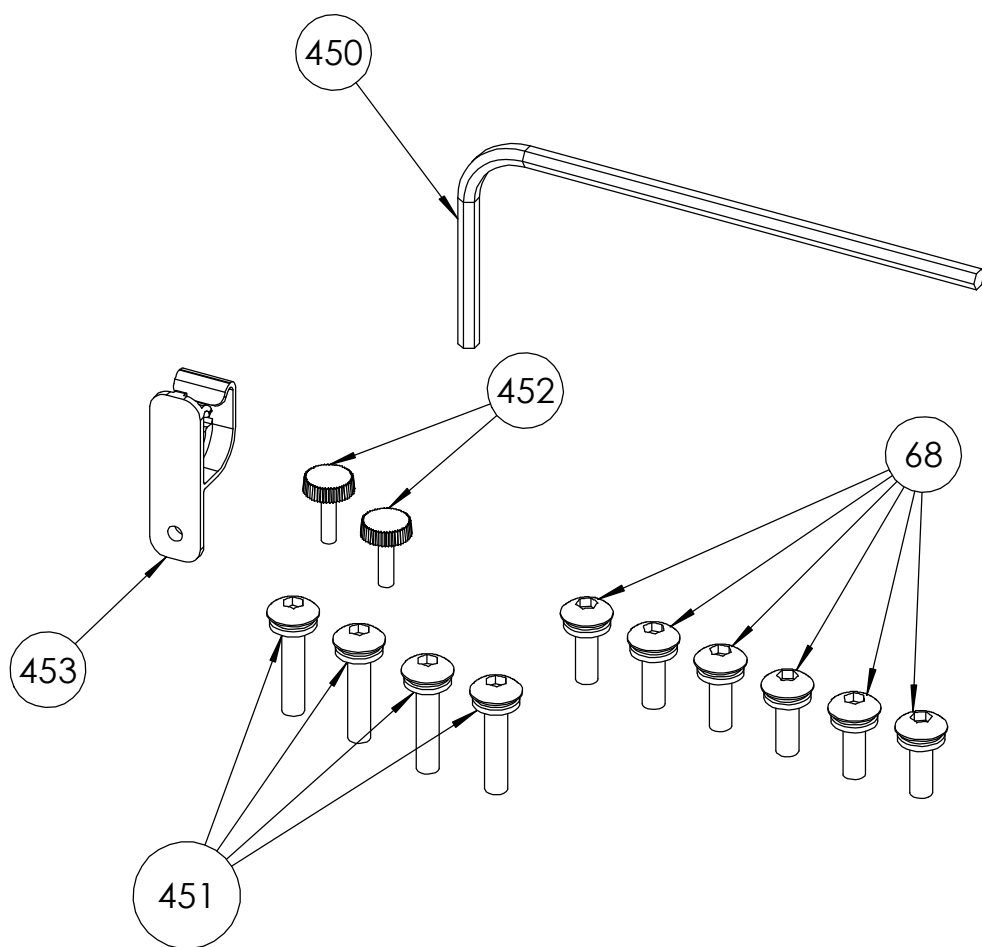
351



Exploded view for remote control stand



## Accessories





Exploded view for packing condition

