

DENTAL UNIT AND CHAIR

Voyager III

INSTALLATION INSTRUCTIONS

IMPORTANT

This manual provides installation instructions for Belmont VOYAGER II L. The instructions contained in this booklet should be thoroughly read and understood before attempting installation of chair and unit. After the installation is completed, file this manual and refer back to it for future maintenance.



Belmont

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1. OVERALL VIEW AND MAJOR COMPONENTS

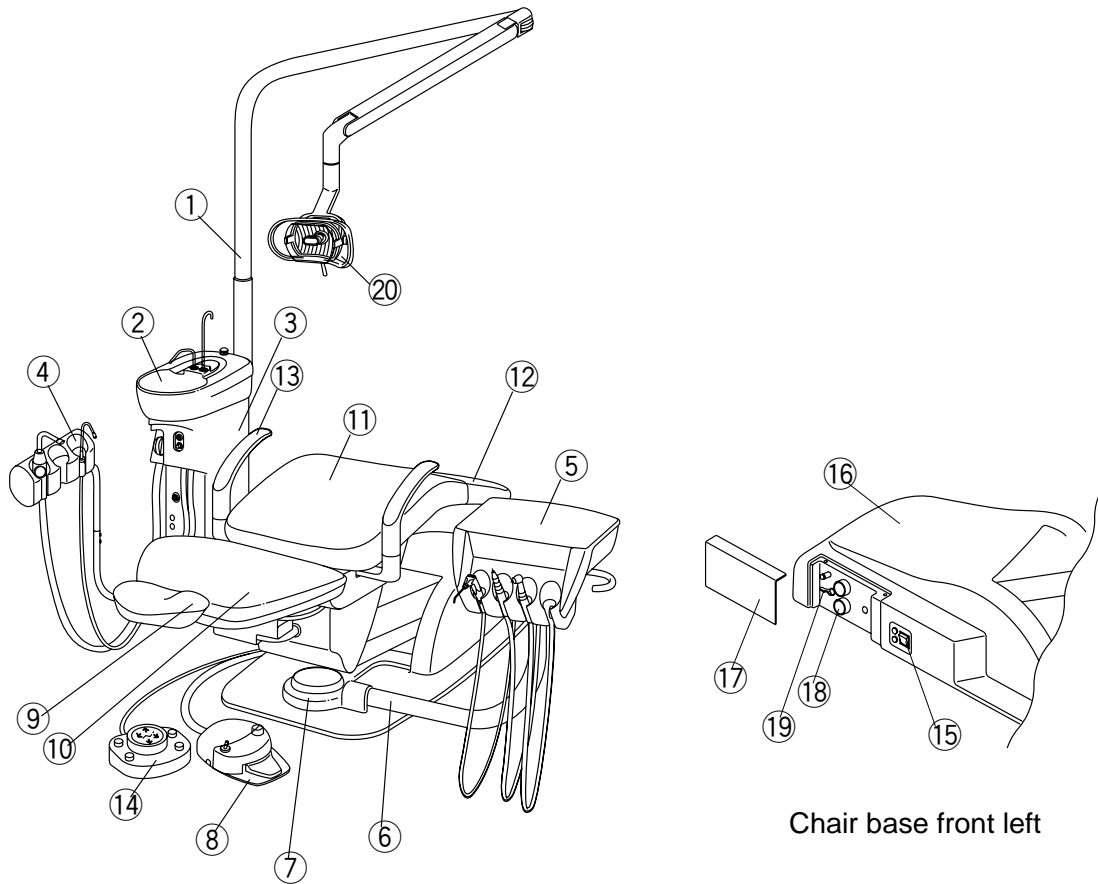


Fig.1-1-1 Overall View and Major Parts

MAJOR PARTS

Unit Section

- | | |
|--------------------|------------------------|
| ① Light Pole | ⑪ Seat |
| ② Cuspidor Bowl | ⑫ Seat Cover |
| ③ Cuspidor Unit | ⑬ Armrest |
| ④ Assistant Holder | ⑭ Foot Switch |
| ⑤ Doctor Table | ⑮ Power Switch |
| ⑥ Doctor Arm | ⑯ Pump Cover |
| ⑦ Doctor Arm Cover | ⑰ J-Box Cover |
| ⑧ Foot Control | ⑱ Pressure Gauge |
| ⑨ Headrest | ⑲ Stop Valve for Water |
| ⑩ Backrest | ⑳ Dental Light 048-VG |

2. DIMENSIONS AND SPECIFICATIONS

2-1. DIMENSIONS

-mm-

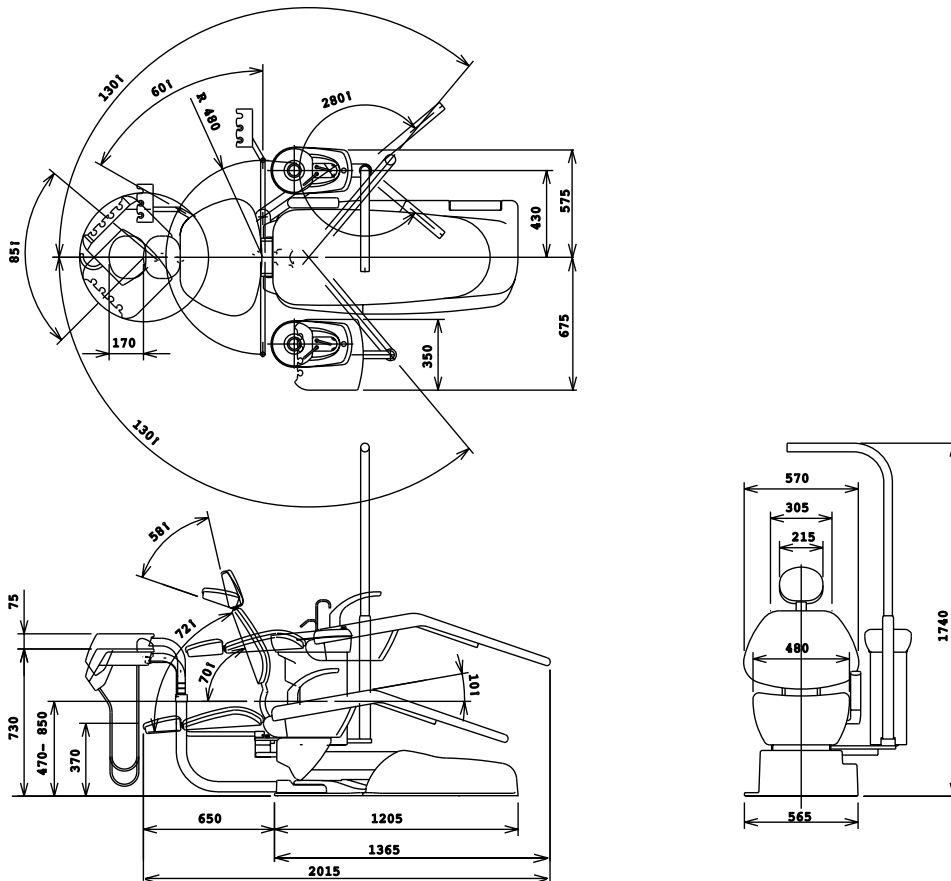


Fig.2-1-1 Dimensions

2-2. SPECIFICATIONS

Chair Section

Seat initial Height	-----	470mm
Seat Lifting Stroke	-----	380mm
Backrest Movement	-----	0° ~ 72° above Horizontal
Auto Movements	-----	2 Preset, 1 Last Position Memory and 1 Auto Return
Control Voltage	-----	DC12V
Power Consumption	-----	115V, 50/60Hz, 7.2A/5.6A 220V, 50/60Hz, 3.7A/3.1A 230V, 50Hz, 3.7A 240V, 50Hz, 3.6A
Net Weight	-----	140 kg

Unit Section

Doctor Side Handpiece	-----	1 x High Speed Turbine Tubing 1 x Low Speed Air Motor Tubing 1 x 3-Way Syringe
Assistant Side Handpiece	-----	Saliva Ejector (Central System Type) Vacuum (Central System Type)
Bowl Flush	-----	Manual Control
Cupfiller	-----	Manual Control
Dental Light	-----	048-VG Type
Net Weight	-----	67 kg (With Dental Light)

3. INSTALLATION INSTRUCTIONS

3-1. PRE-INSTALLATION REQUIREMENTS

A. General Requirements

- (1) The contractor is to supply the necessary service and materials to complete the installation of the satisfaction of the dentists and the installation engineer.
- (2) This includes the supply and installation of the electric power supply cables with main isolating switch and fuses, air supply piping, water supply piping, suction piping including vacuum pump and its control wires and drain piping as noted on the installation diagrams.

B. Setting Requirements

- (1) The VOYAGER-III dental unit comprises a Chair section, Cuspidor section, Doctor unit section and Light section.
- (2) The VOYAGER-III should be mounted taking the opening end of drain pipe into due consideration. Refer to Page 5, **Fig.3-1-1**.
- (3) The place on which the VOYAGER-III (approx. 210 kg) is set must have endurance force of 250kg/m².
- (4) The setting position of the VOYAGER-III chair is shown in **Fig.3-1-1** as recommended example.

C. Piping and Plumbing Requirements

- (1) All pipings and conduits for cables are to be laid down under the floor and to come out from the floor.
- (2) The installation position and height from the floor of each pipe and cable conduit are shown in **Fig.3-1-1**.
- (3) The recommended sizes, materials and end piece are shown in **Table 1**.

Table 1 The Recommended Sizes, Materials and End Piece of Pipes

Item	Material	Size	End Piece
Compressed Air Supply Pipe	Shock Resistance P.V.C. Pipe HI-13	Out. Dia.18mm In. Dia. 13mm	PT1/2
Water Supply Pipe	Shock Resistance P.V.C. Pipe HI-13	Out. Dia. 18mm In. Dia. 13mm	PT1/2
Suction Pipe	P.V.C. Pipe VP-20	Out Dia. 26mm IN. Dia. 20mm	
Drain Pipe	P.V.C. Pipe VP-50	Out. Dia. 58mm In. Dia. 50mm	
Power Supply Cable Conduit	P.V.C. VE-16	In. Dia. 16mm	
Vacuum Control Wire Coduit	P.V.C. VE-16	In. Dia. 16mm	

Note : The suction pipe and drain pipe should be laid under the floor with an inclination of 1/200 - 1/400.

Air vacuum type does not require suction pipe, vacuum control wire and its conduit.

- (4) Regarding installation of the vacuum pump and its connection to main suction line, follow the specifications of central vacuum pump system manufacture's recommendation.
- (5) All Piping should be arranged avoiding bend as much as possible.

D. Air Supply Requirements

- (1) Compressed air to be supplied should be filtered.
Dirty and moistured air may cause trouble in unit air system.
- (2) Air Pressure
Regulate the outlet air pressure of the compressor to the utility section at 0.54 - 0.59 Mpa (5.0-5.5kg/cm²) and the air pressure should be kept higher than 0.49 Mpa (5kg/cm²) at any time.
- (3) Compressed Air Supply Capacity
Compressed air supply capacity is at least 55 l/min. (Central Vacuum type)
Compressed air supply capacity is at least 88 l/min. (Air vacuum type)

E. Water Supply Requirements

- (1) The supply water should be clean.
Dirty water may cause trouble in unit water line.
- (2) Water Pressure
More than 0.1 Mpa (1kg/cm²) water pressure in utility section is required for operating unit efficiently at any time.

F. Electric Supply Requirements

- (1) The connection of power supply cable is to be carried out in accordance with the local electric regulation.
- (2) Rating of supply voltage and power consumption :

100/110/115V Type Single Phase 50/60 Hz : 10 A

220/230/240V Type Single Phase 50/60 Hz : 6 A
- (3) Power supply line should be provided with fuses or circuit breaker in accordance with power consumption.
- (4) The earth wire (ground wire) should be provided in the utility section.
- (5) All cables should have at least 500mm surplus from the floor so that they are long enough to be connected with the terminals in the utility section.

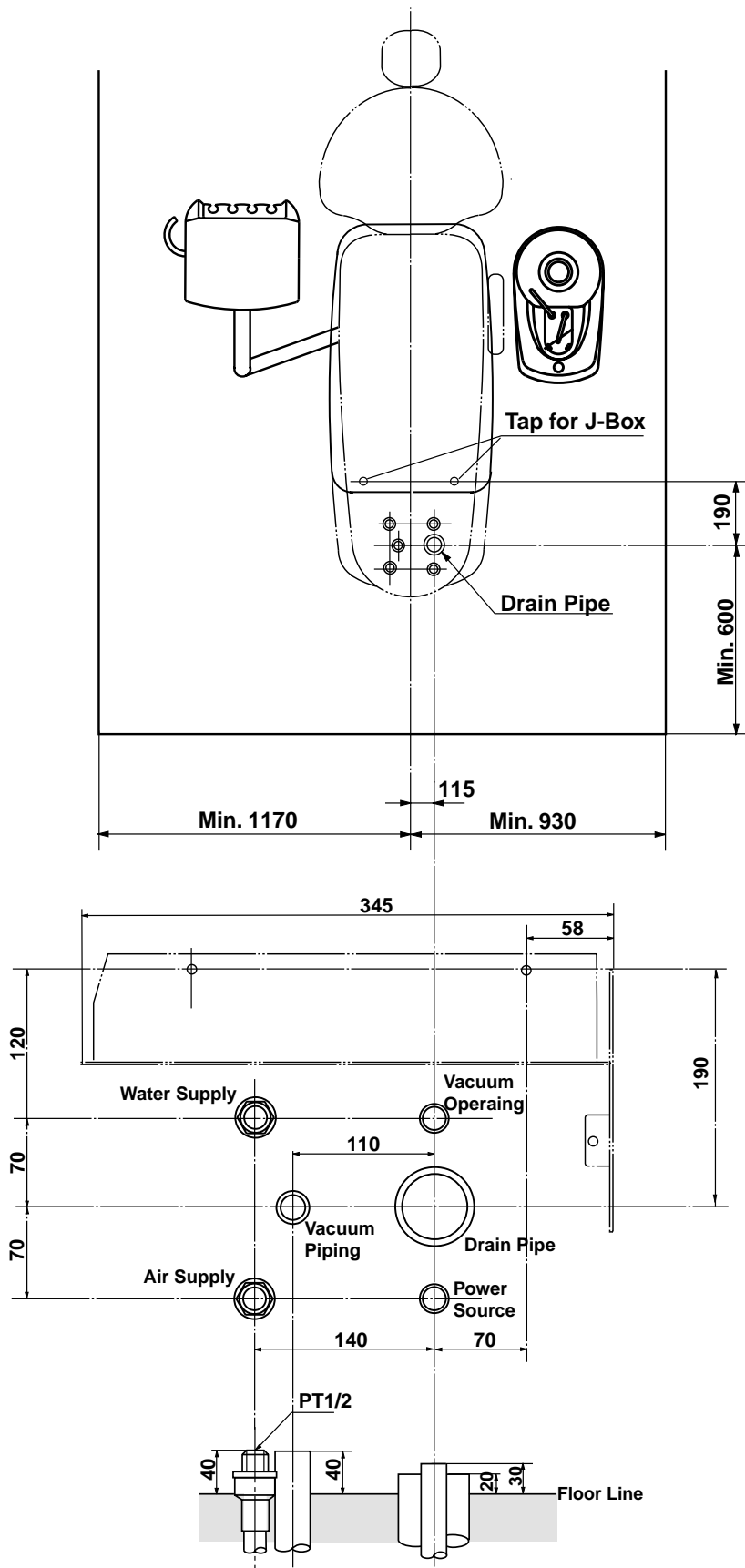


Fig.3-1-1 Setting Position and Plumbing Layout

3-2. UNPACKING

A. Checking the packages and Unpacking

The VOYAGER-III is to be delivered into four packages. (Chair base section, Chair upper section, Unit section and Dental Light)

B. Checking Contents

Check the contents of each packing with following list.

(1) Chair Base Section ----- 1set

1. Chair Base Assembly

(Base, Base Cover, Pump Cover)

(2) Chair Upper Section

1. Backrest Assembly ----- 1set
(Backrest Cushion, Backrest Cover, Back Support Cover)

2. Seat Assembly ----- 1set

3. Armrest (Right and Left) ----- 1pce.

4. Headrest Assembly ----- 1set

5. Screw Kit ----- 1set

(3) Unit Section

1. Cuspidor Unit with Bracket Assembly ----- 1set

2. Doctor Table with Swing Arm Assembly ----- 1set

3. Light Post and Light Pole (Chair Mount Type only) ----- 1set

4. Cuspidor Cover ----- 1set

5. Parts Box ----- 1set

(a) Stop Valve (Air and Water) ----- 1set

(b) Cupfiller and Bowl Flush Nozzle ----- 1set

(c) Saliva Ejector Tip ----- 1pcs.

(d) Vacuum Tip (Straight & Bent) ----- 1set

(e) Drain Cap and Basket Strainer ----- 1set

(f) Vacuum and Drain Elbow (Central Vacuum Type) ----- 1set

(g) Pop Revet for Pump Cover & Cuspidor Base Cover ----- 6set

(h) Screw Kit ----- 1set

(4). Dental Light Section

1. Dental Light Assembly (048-VG) ----- 1set

3-3. INSTALLATION OF STOP VALVES

- (1) Confirm that the pipings and wirings are laid out in accordance with **Fig.3-1-1**.
- (2) Install water and air stop valves to each supply pipe. The direction of stop valves are shown in **Fig.3-3-1**.
- (3) After installation of the stop valves, open the valves and flush out dust and chips in the pipings.

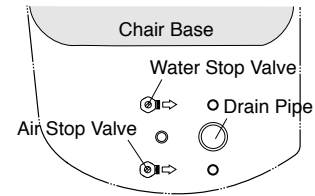


Fig.3-3-1 Direction of Air and Water Stop Valves

Note : Stop valves are packed in the unit section carton.

3-4. INSTALLATION OF CHAIR BASE

⚠ CAUTION

Do not plug the power supply line before removing Red tagged bolt, Back support plate and Carriage bar.

- (1) Remove all the staples fixing carton to pallet, or cut the carton just above the stapled line, and remove the carton. (**Fig.3-4-1**)
- (2) Place the base section with pallet behind the planned location for chair.
- (3) Remove the pump cover and remove two wood screws from the base. (**Fig.3-4-2**)
- (4) Remove the base section from the pallet by holding the carriage bars and armrest bracket, then place it at planned location. (**Fig.3-4-2**)

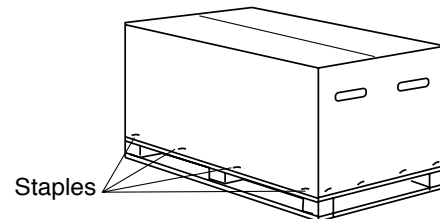


Fig.3-4-1 Base Section Carton

⚠ CAUTION

Do not damage the piping and wirings by the chair base.

- (5) Remove the red tagged bolt (carriage bolt) from the centre of chair flange. (**Fig.3-4-3**)
- (6) Remove the red tagged oil plug from the oil reservoir. (**Fig.3-4-3**)

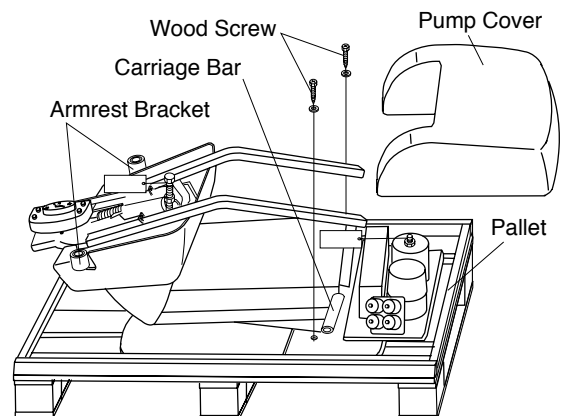


Fig.3-4-2 Removing Base Section from Pallet

⚠ CAUTION

Do not lift the chair by upper structure after removing the red tagged bolt.

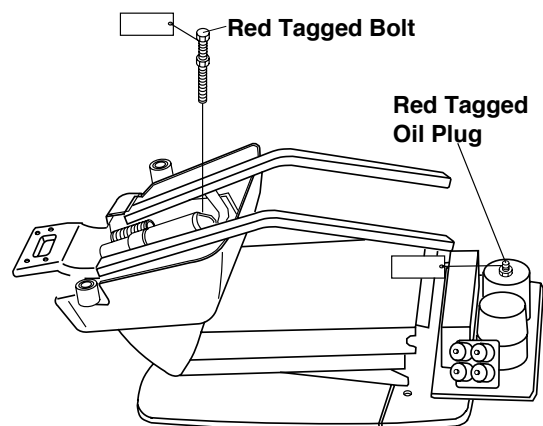


Fig.3-4-3 Removing Red Tagged Bolt

3-5. INSTALLATION OF UNIT

(1) Remove all the staples fixing the carton to pallet, or cut the carton just above the stapled line, and remove the carton.

(Fig.3-5-1)

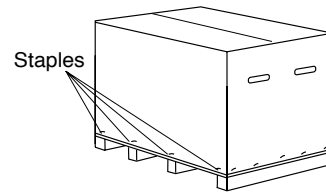


Fig.3-5-1 Unit Section Carton

(2) Place the unit section with pallet behind the planned location for unit.

(3) Remove utility frame from the pallet.

(Fig.3-5-2)

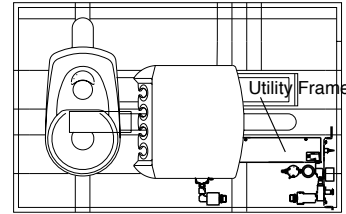


Fig.3-5-2 Removing Unit from Pallet

⚠ CAUTION

Turn off the electric power before connecting the wires to the electric terminal block.

(4) Fix the utility frame to the chair base plate by two pan screws(M5-10).
Fix the terminal and insulating plate to the utility frame. (Fig.3-5-3)

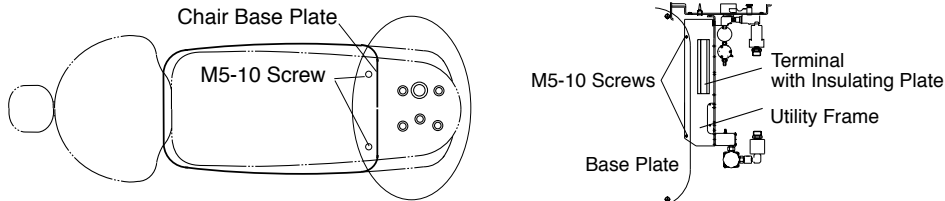


Fig.3-5-3 Fixing Utility Section to Chair

(5) Connection Wires to Electric Terminal Block (Fig.3-5-4)

Connect the power supply line wires (number 1,2,3,7,8 and 9) to the electric terminal block.
Fix the earth wire to the utility frame with a screw and washers.

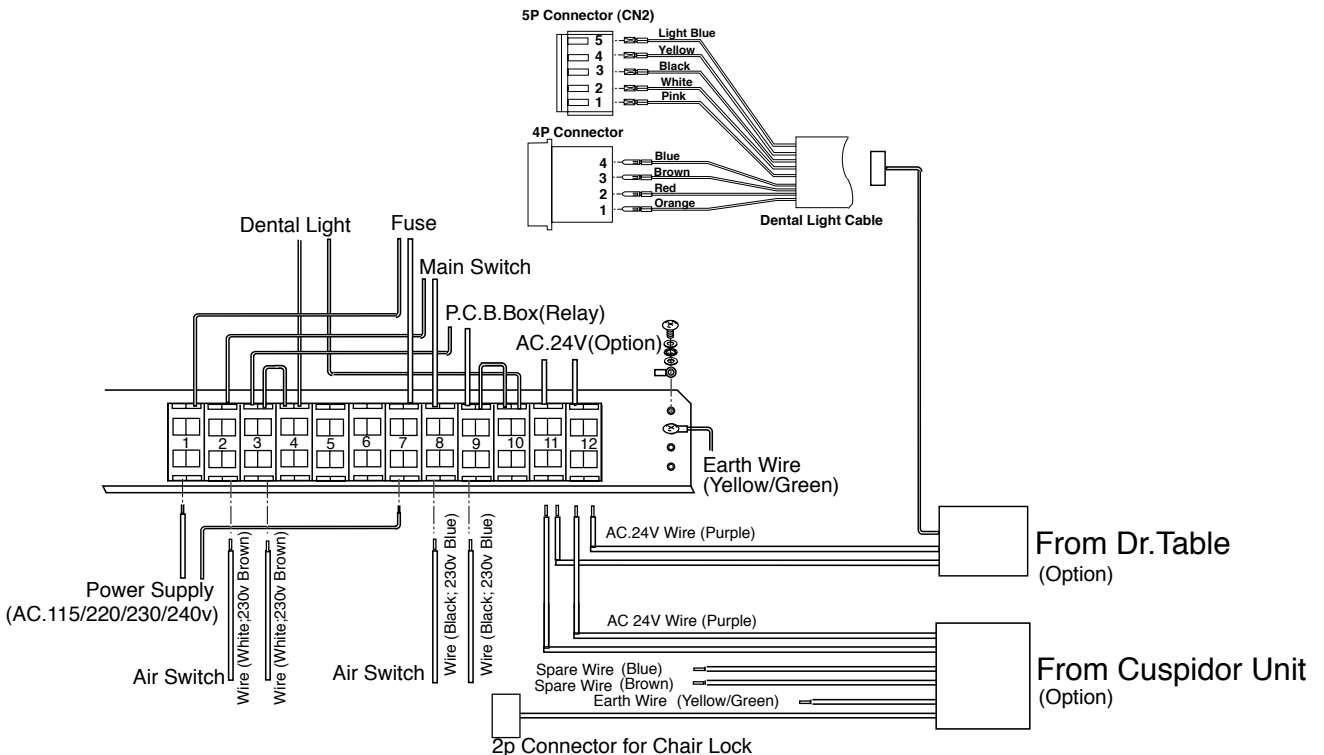


Fig.3-5-4 Connection Wires to Electric Terminal Block

- (6) Plug the power supply cable.
 Raise the upper structure by the foot switch to the highest position.
 Remove a frange cover and upper frange cover.
(Fig.3-5-6)

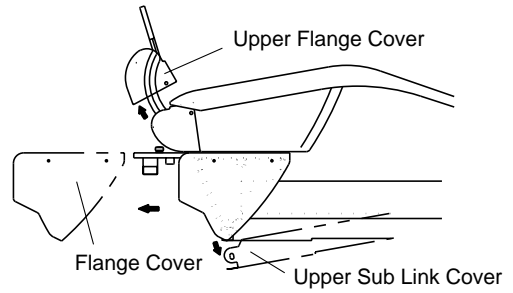


Fig.3-5-6 Removing Cover from Pallet

- (7) Remove a lag bolt (B) and remove the cuspidor unit from the pallet.
(Fig.3-5-7)

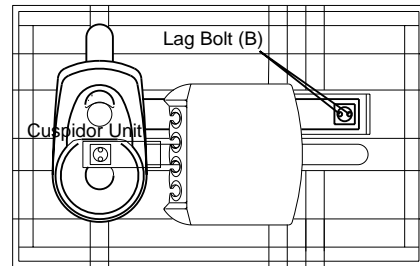


Fig.3-5-7 Removing Cuspidor Unit from Pallet

- (8) Fix the cuspidor mount arms to mounting bracket with flat washers, thrust bearings and ring nut. **(Fig.3-5-8)** Insert the assistant arm into the cuspidor bracket.

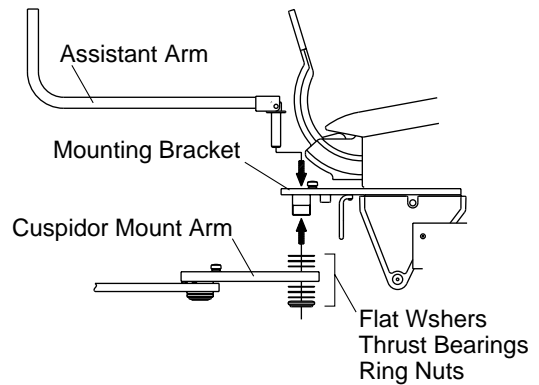
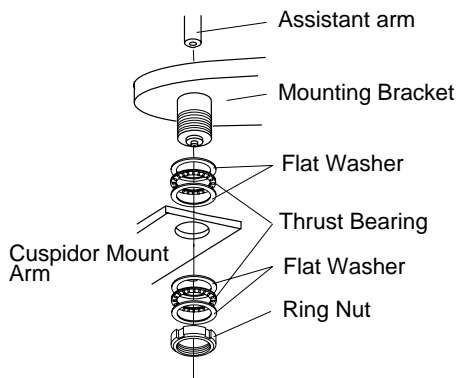


Fig.3-5-8 Fixing Cuspidor Unit

- (9) Fix the socket head cap bolt (M8-40) to assistant holder shaft.
 Fix two collars and socket head cap bolts (M6-30). **(Fig.3-5-9)**

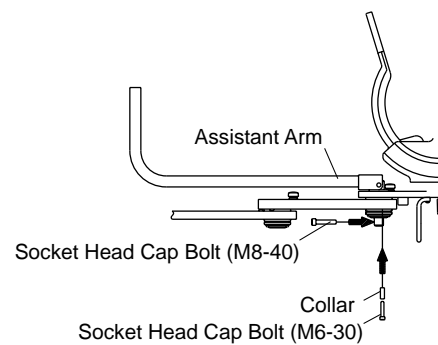


Fig.3-5-9 Fixing Assistant Arm

- (10) Run the drain hose, vacuum hose and tubings through frange cover and hose bracket and link. **(Fig.3-5-10)**
 Fix the hose bracket to sub link by two pan screws. **(Fig.3-5-10 A view)**
 Fix the drain hose and vacuum hose to base plate by hose fixing metal.

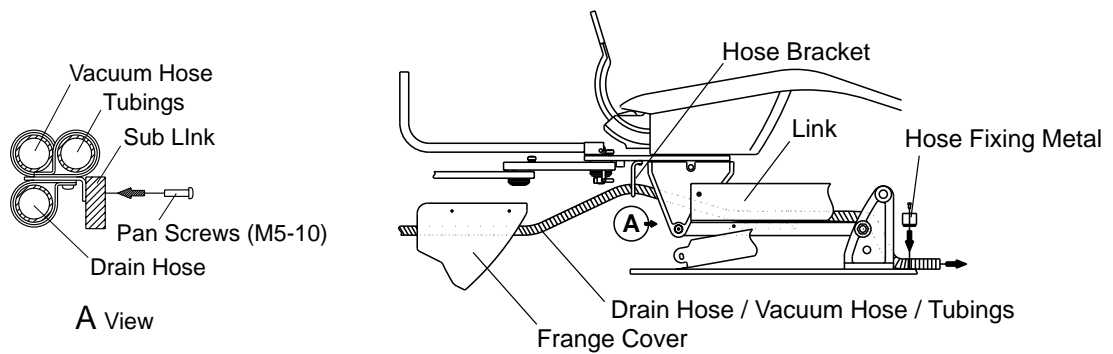


Fig.3-5-10 Fixing Drain Hose, Vacuum Hose, Tubings

- (11) Fix the cuspidor bracket covers by pan screws (M4-6). **(Fig.3-5-11)**
 (12) Fix the frange cover and upper flange cover and upper sub link cover by pan screws (M4-6). **(Fig.3-5-11)**

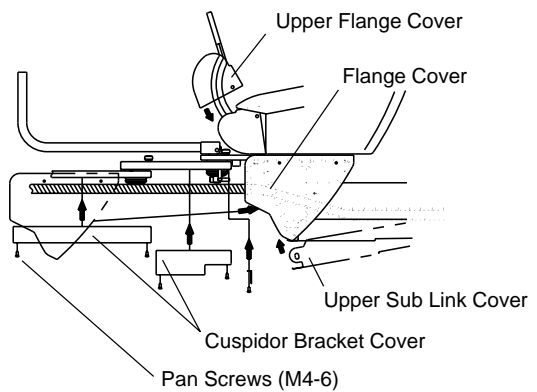


Fig.3-5-11 Fixing Cuspidor Bracket Cover

- (13) Insert the assistant holder into assistant arm. **(Fig.3-5-12)**
 (14) Insert the cupfiller nozzle and bowl flush nozzle into each hole on the cuspidor top. **(Fig.3-5-12)**
 (15) Set the drain cap and basket strainer in the center of cuspidor bowl. **(Fig.3-5-12)**



Fig.3-5-12 Fixing Assistant arm, Nozzles

- (16) Remove a lag bolt (A) and remove the doctor table unit from the pallet. (Fig.3-5-13)

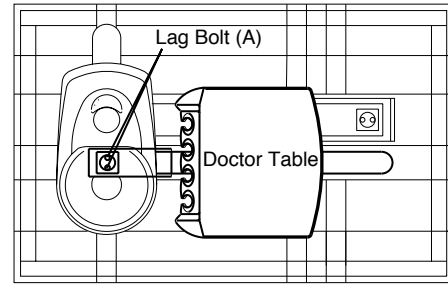
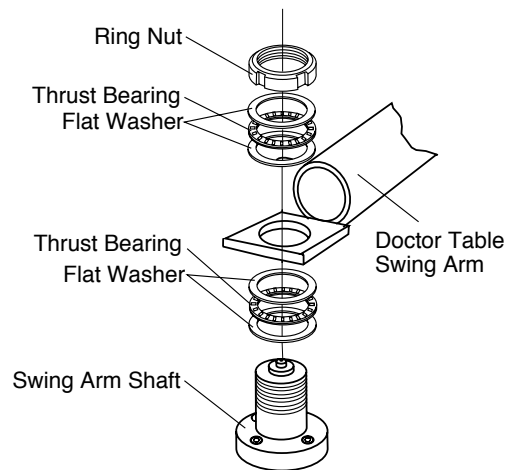


Fig.3-5-13 Removing Doctor Table from Pallet

- (17) Set flat washers, thrust bearings and the doctor table swing arm to the swing arm shaft on the chair and fix them with ring nut. (Fig.3-5-14)



CAUTION

Do not damage tubings and wires.

Fig.3-5-14 Fixing Doctor Table arm

- (18) Run the tubings through doctor table arm cover and front base cover bracket. (Fig.3-5-15)
 Fix the doctor table arm cover with two truss screws (M5-10). (Fig.3-5-15)
 Fix the front base cover with flat head screw with cap. (M4-8). (Fig.3-5-15)

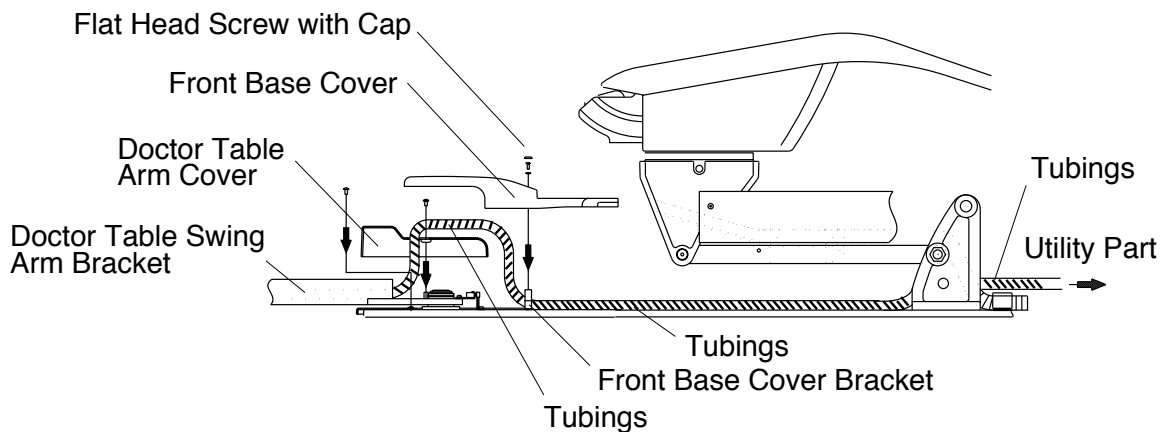


Fig.3-5-15 Fixing Doctor Table Arm Cover and Tubings

3-6. INSTALLATIONS OF UTILITY SECTION

(1) Drain Hose and Vacuum Hose Connection (Fig.3-6-1)

1. Run the drain hose and vacuum hose through under utility section frame.
2. Cut the drain hose and vacuum hose from the chair at suitable length and connect them to each elbow with plastic glue.
3. Insert the drain hose elbow and vacuum hose elbow into each piping.

Note : Drain pipe should be sealed with silicone sealant or taping.

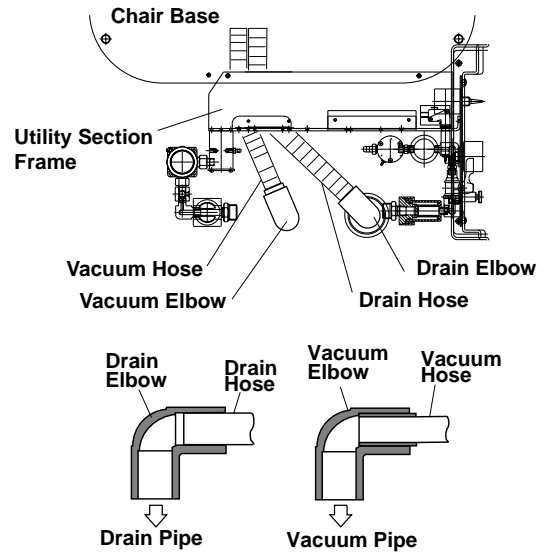


Fig.3-6-1 Drain Hose and Vacuum Hose Connection

(2) Water and Air Supply Lines Connection (Fig.3-6-2)

1. Bend each stainless flexible pipe at suitable angle for connection.
2. Connect the water supply line to the water stop valve with the stainless flexible pipe and the packings.
3. Connect the air supply line to the air stop valve with the stainless flexible pipe and the packings.

(3) Connection Tubings in Utility Section (Fig.3-6-3)

1. Connect the tubings from the units to the utility parts.
2. Connect the tubings from the foot control to the utility parts.

Note : Cut the tubings to suitable length for connection.

Do not bend the tubing excessively to prevent kinking.

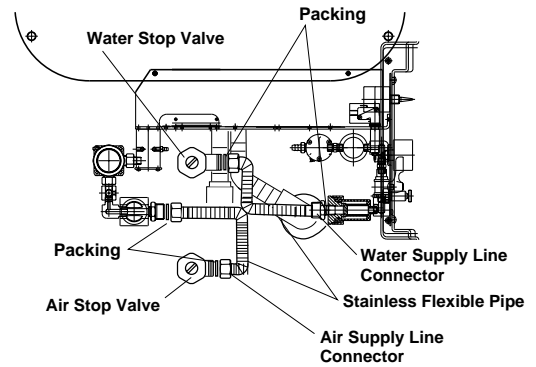


Fig.3-6-2 Water and Air Supply Lines Connection

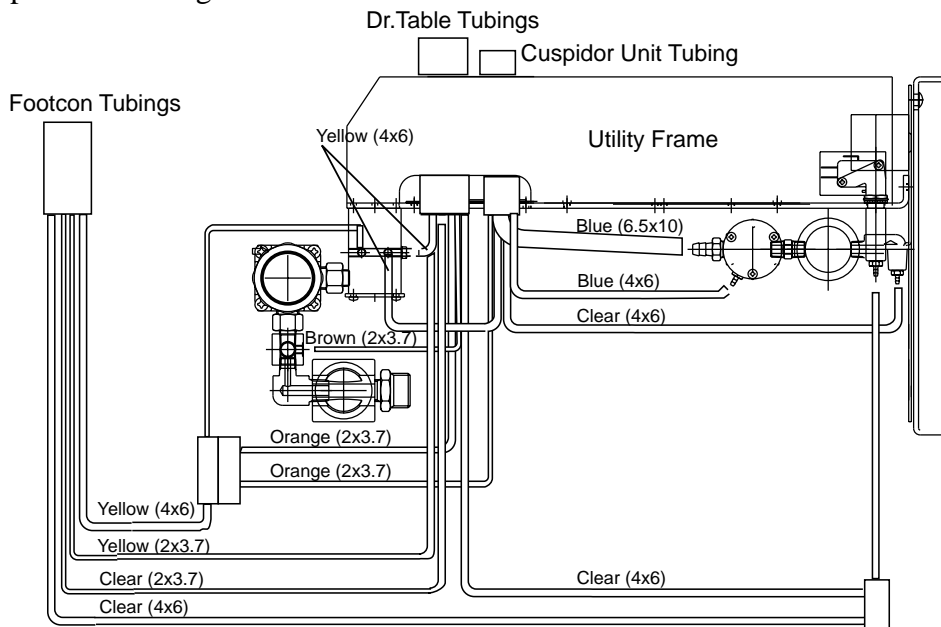


Fig.3-6-3 Connection Tubings in Utility Section

3-7. INSTALLATIONS OF CHAIR (UPPER PART)

⚠ CAUTION

Confirm that Red Tagged Bolt and Red Tagged Plugs are removed (Step 3-4 (5) (6))

Raise the backrest by the foot switch to the upright position.

Note : Refer to the operating manual for chair operation.

(1) Open the upper section carton.
Backrest cushion, back support cover, backrest cover, headrest, armrest and screw kit are packed in the upper section carton.

(2) Remove the back support plate from the backrest cushion by removing four pan head screws (M6-15).

(3) Fix the back support plate to the back support with four socket head cap bolt (M8-20) and spring washers. (**Fig.3-7-1**)

(4) Attach the back support cover to the back support with two truss screws (M5-10). (**Fig.3-7-2**)

(5) Fix the backrest cushion to the back support plate with four pan screws (M6-15) (**Fig.3-7-3**)

(6) Attach the backrest cover to the backrest cushion (**Fig.3-7-4**)
Insert upper two hooks of backrest cover into upper fixing holes of backrest.
Keep pressing the backrest against backrest, slide down the backrest cover so that lower two hooks catch the lower fixing holes. (**Fig.3-7-4**)

(7) Attach the headrest. (**Fig.3-7-4**)

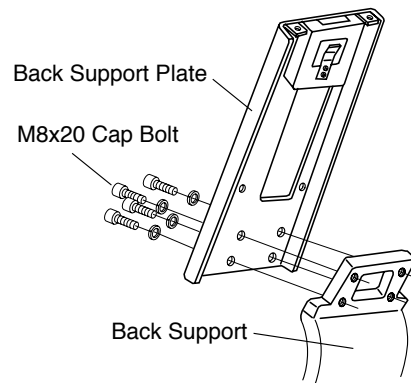


Fig.3-7-1 Fixing Back Support Plate

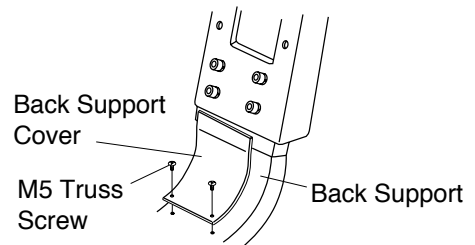


Fig.3-7-2 Fixing Back Support Cover

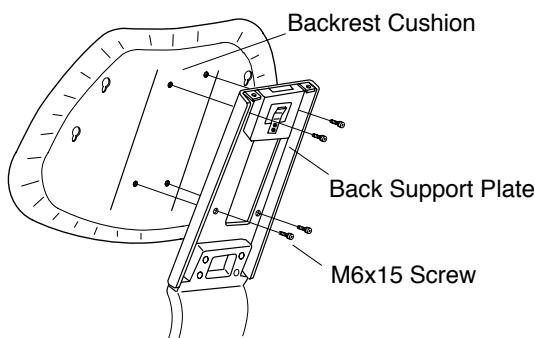


Fig.3-7-3 Fixing Backrest Cushion

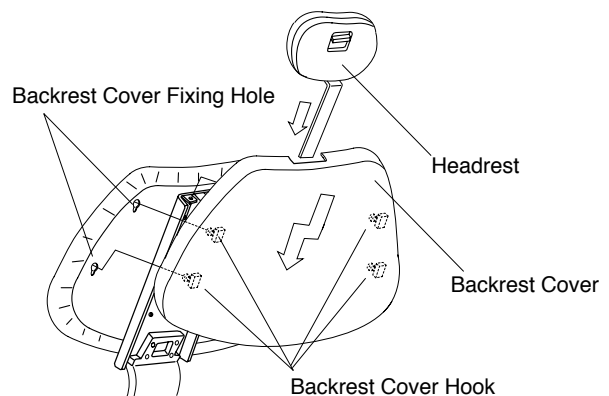


Fig.3-7-4 Fixing Backrest Cover and Headrest

(8) Fix the seat to the base section. **(Fig.3-7-5)**

Hook 2 x fixing hooks to the seat support bars and fix the seat to the seat support bars with two pan head screws(M6-35) and flat washers.

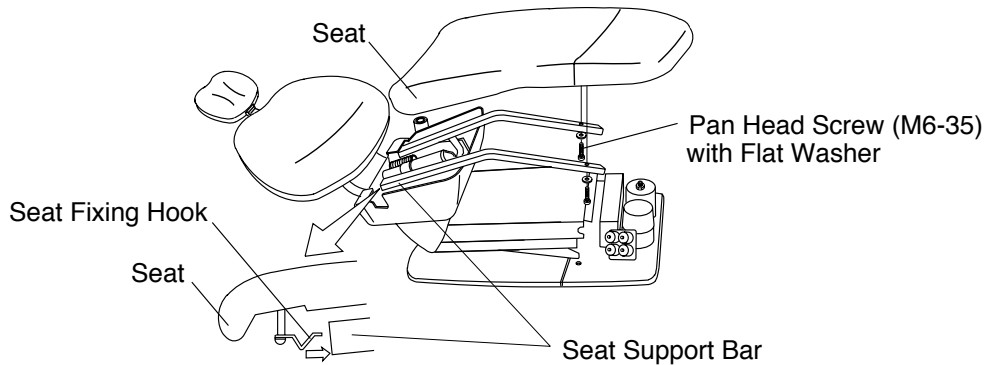


Fig.3-7-5 Fixing Seat

(9) Fix the armrests to the armrest bracket with two Pan head screws (M6-25), flat washer and collar. **(Fig.3-7-6)**

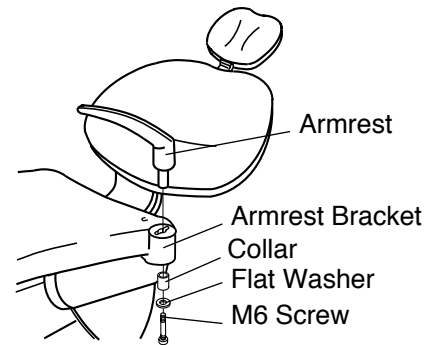


Fig.3-7-6 Fixing Seat

(10) Fix the chair base to the floor by two wood screws or anchors **(Fig.3-7-7)**

⚠ CAUTION

Chair must be fixed to the floor with bolts to prevent from falling down.
When fixing chair to the floor, be careful not to damage pipings under the floor.

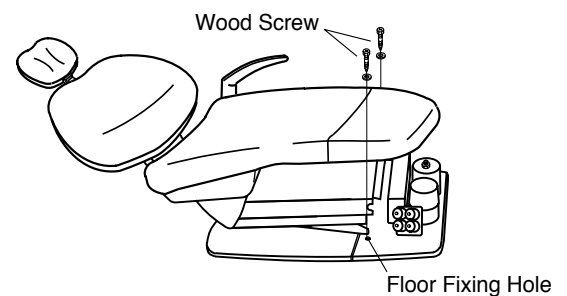


Fig.3-7-7 Fixing Base to Floor

(11) Fix the pump cover with two truss head screws (M5-10). **(Fig.3-7-8)**

Note : For fixing pump cover, refer to the unit section.
After installation is completed, check all movements following the operating manual.

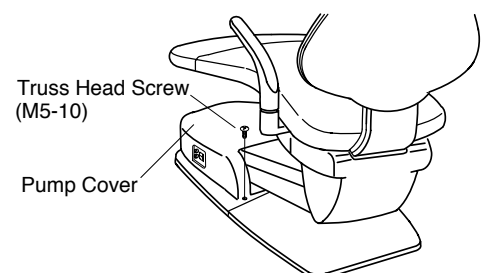


Fig.3-7-8 Fixing Pump Cover

3-8. INSTALLATION OF DENTAL LIGHT (CHAIR MOUNT TYPE)

(1) Pass the light cable through the light pole and insert the light spigot into the light post, and fix it with two button head screws (M6-20) . (Fig.3-8-1)

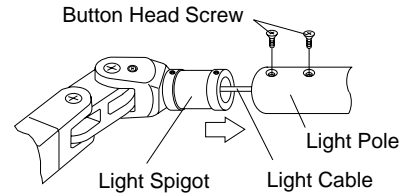


Fig.3-8-1 Fixing Light to Light Pole

(2) Pass the light cable through the light post and insert the light pole into the light post. Fix the light pole to the light post with truss head screw. (Fig.3-8-2)

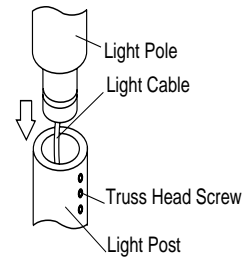


Fig.3-8-2 Fixing Light Pole to Light Post

(3) Insert the connector pins on the tips of the wires from dental light into 3P connector housing.(Fig.3-8-3)

Connect 3P connector in the cuspidor unit.

Note : 3P connector is packed with the Dental light .

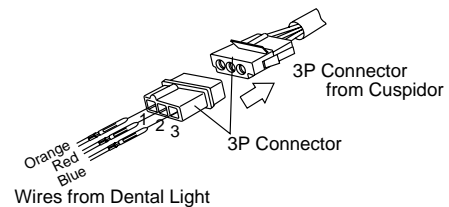


Fig.3-8-3 Connecting wire for 048VG Dental Light

(4) Connection for IO5000 Dental Light (Option)

Insert the connector pins on the tips of the wires from dental light into 4P and 5p connector housings.

Wire colours and connectors for connection are shown in Fig.3-8-4.

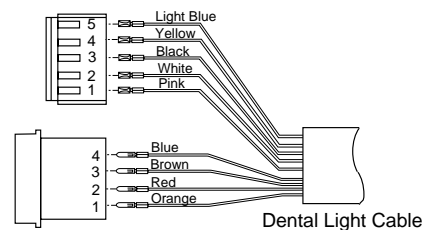


Fig.3-8-4 Connecting wire for IO5000 Dental Light

(5) Switching Distance Adjustment for IO5000 Dental Light

Dental light P.C.B. is located in the utility part. The switching distance can be adjusted by the potentiometer on the P.C.B. (Fig.3-8-5)

1. Turning the potentiometer clockwise decreases the switching distance. (Switching point becomes closer to the sensor .)

2. Turning counter clockwise increases switching distance. (Switching point becomes farther from the sensor .)

The suitable switching distance is about 70mm.

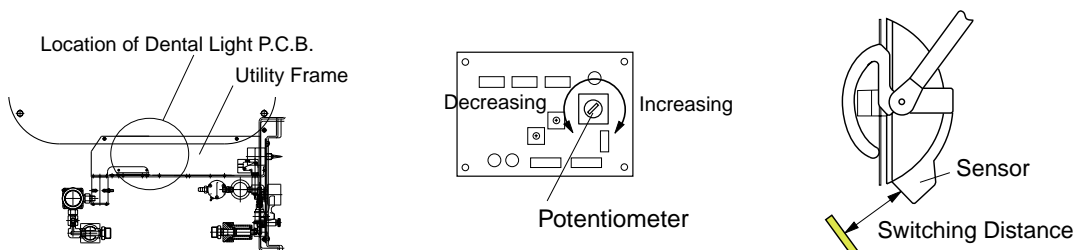


Fig.3-8-5 Dental Light P.C.B.

4. SPEED ADJUSTMENT FOR CHAIR (Fig.4-1-1 and Fig.4-1-2)

Seat lowering speed and backrest reclining speed can be adjusted by the speed control knob on the solenoid valve block.

Solenoid valve numbers and functions are shown in (Fig.4-1-1).

1. Remove the pump cover.
Solenoid valve block is located on the right side of base.
Each speed control knob is located on the rear side solenoid valve block.
2. Loosen the lock nut for the speed control knob.
3. Turning the speed control knob clockwise decreases speed and turning counterclockwise increases speed.
4. After adjustment, tighten the lock nut and reattach the pump cover.

CAUTION

**The solenoid valve will be locked if the speed is reduced excessively.
Oil may leak from the speed control knob if the speed is increased excessively.**

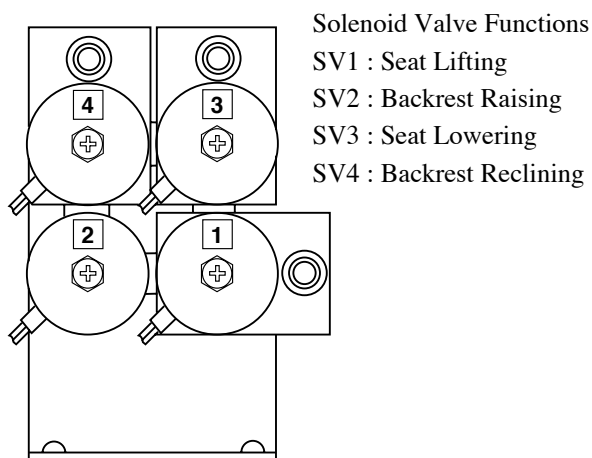


Fig.4-1-1 Solenoid Valve Numbers and Functions

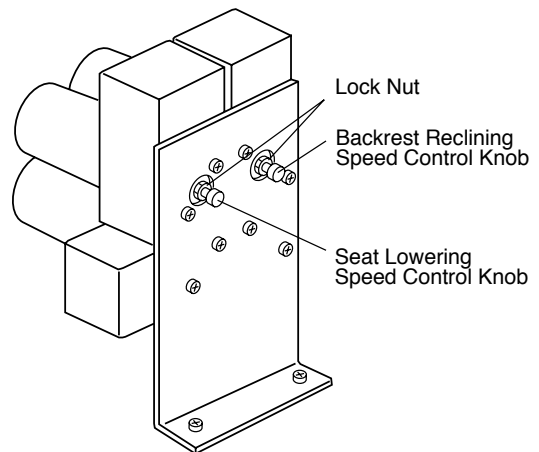
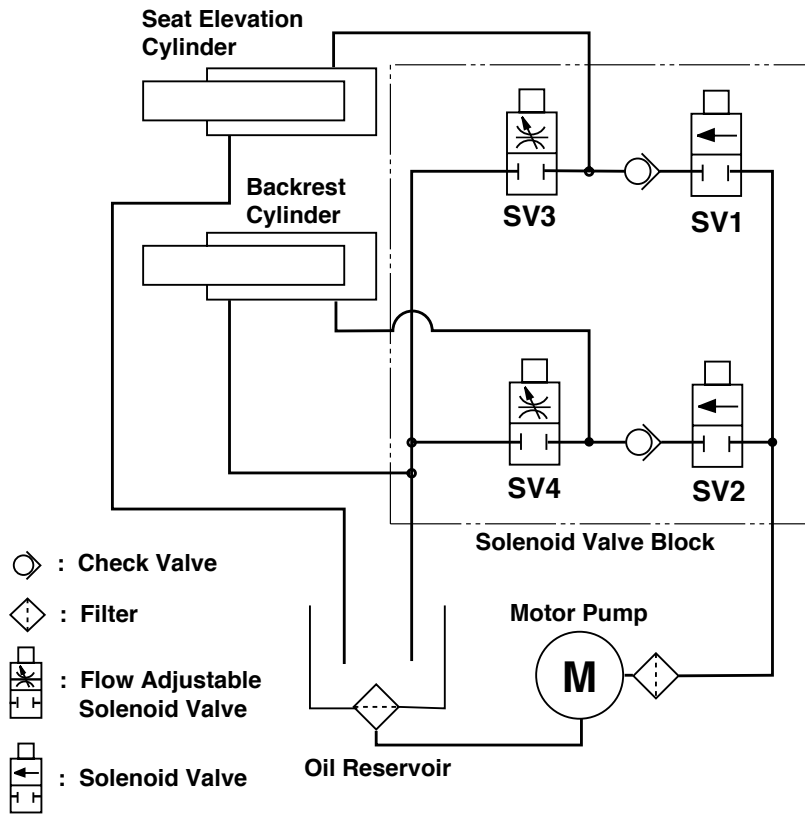
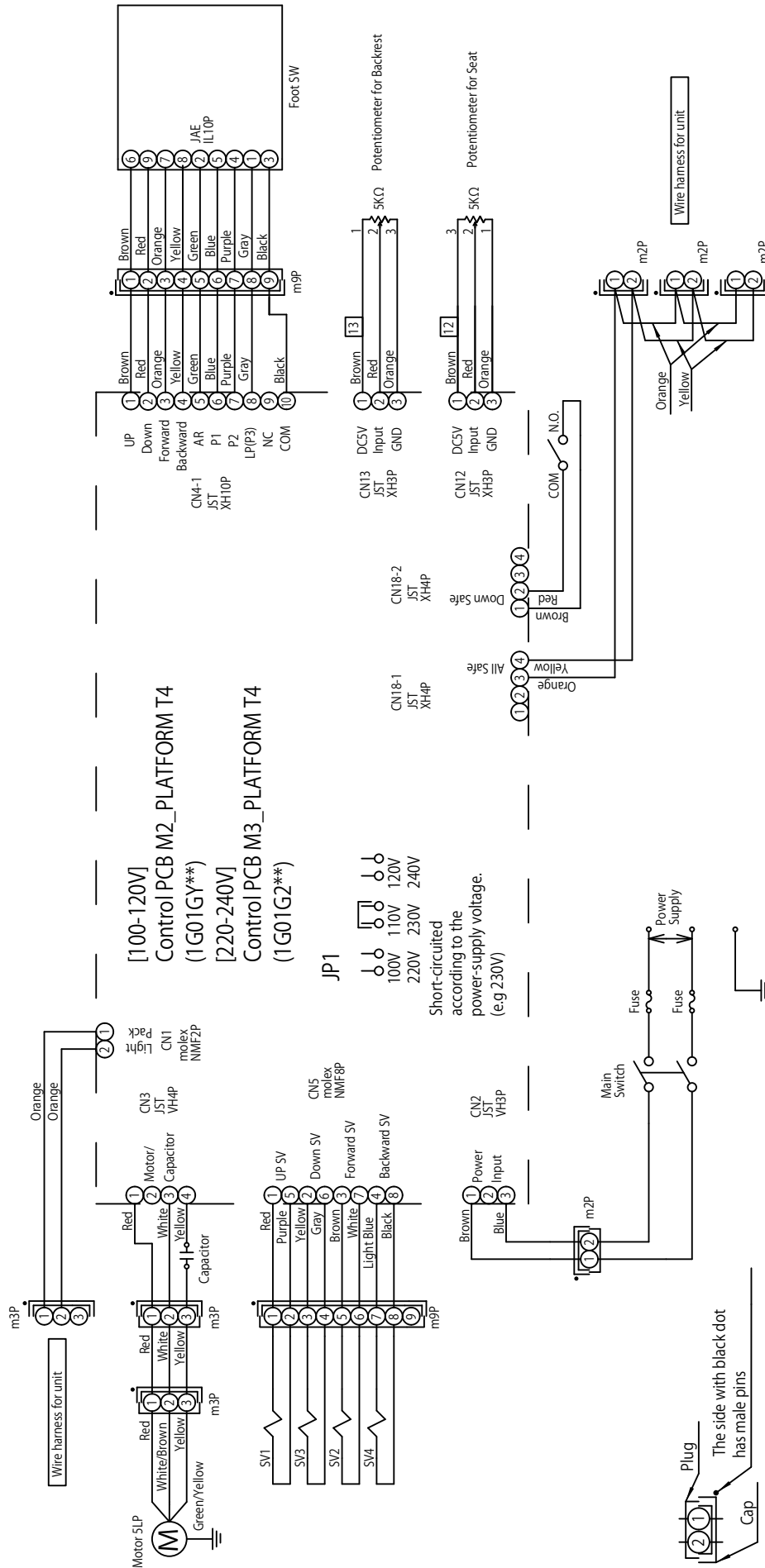


Fig.4-1-2 Speed Control Knobs on Solenoid Valve Block

5. HYDRAULIC DIAGRAM FOR CHAIR

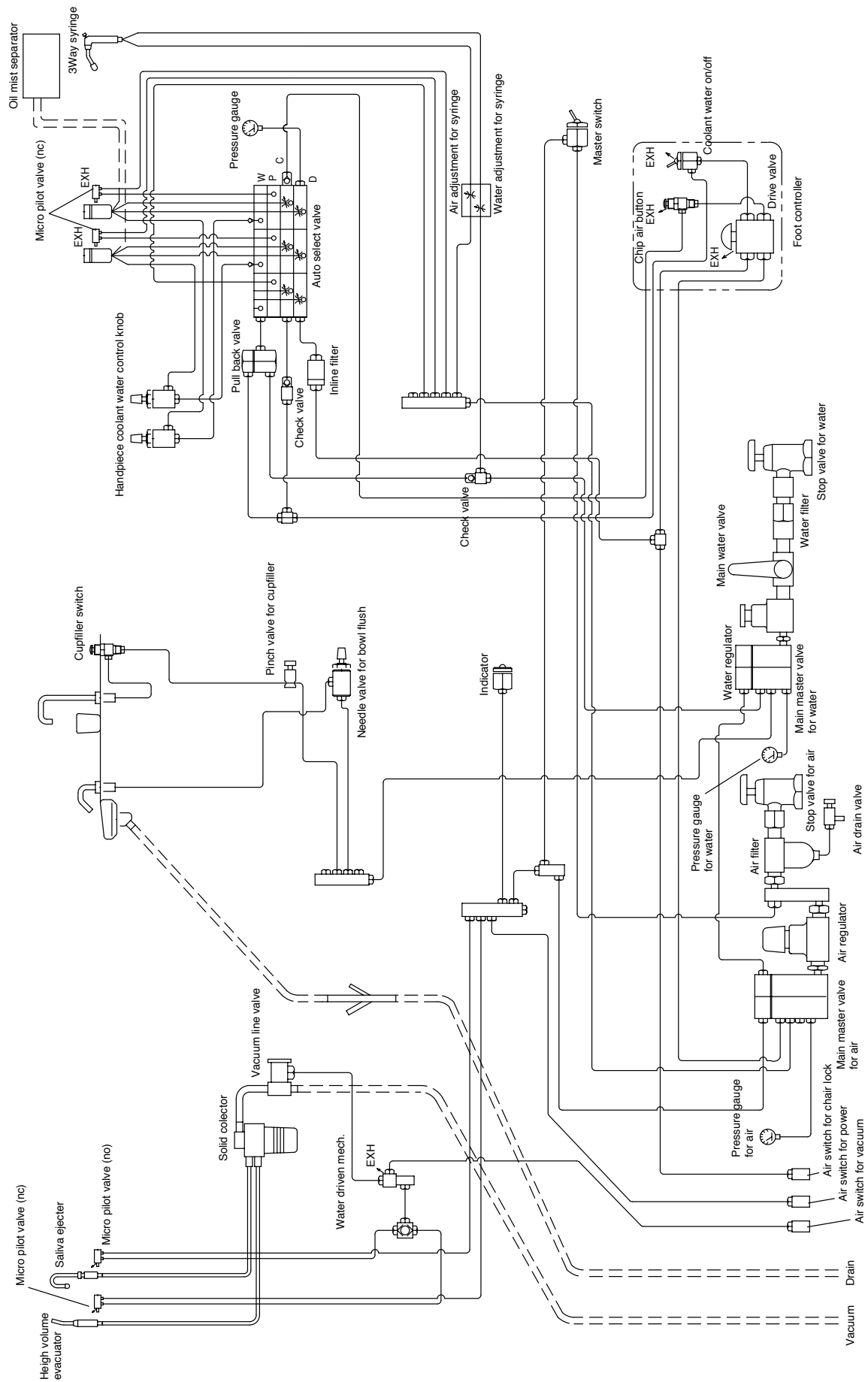


6. ELECTRICAL DIAGRAM FOR CHAIR

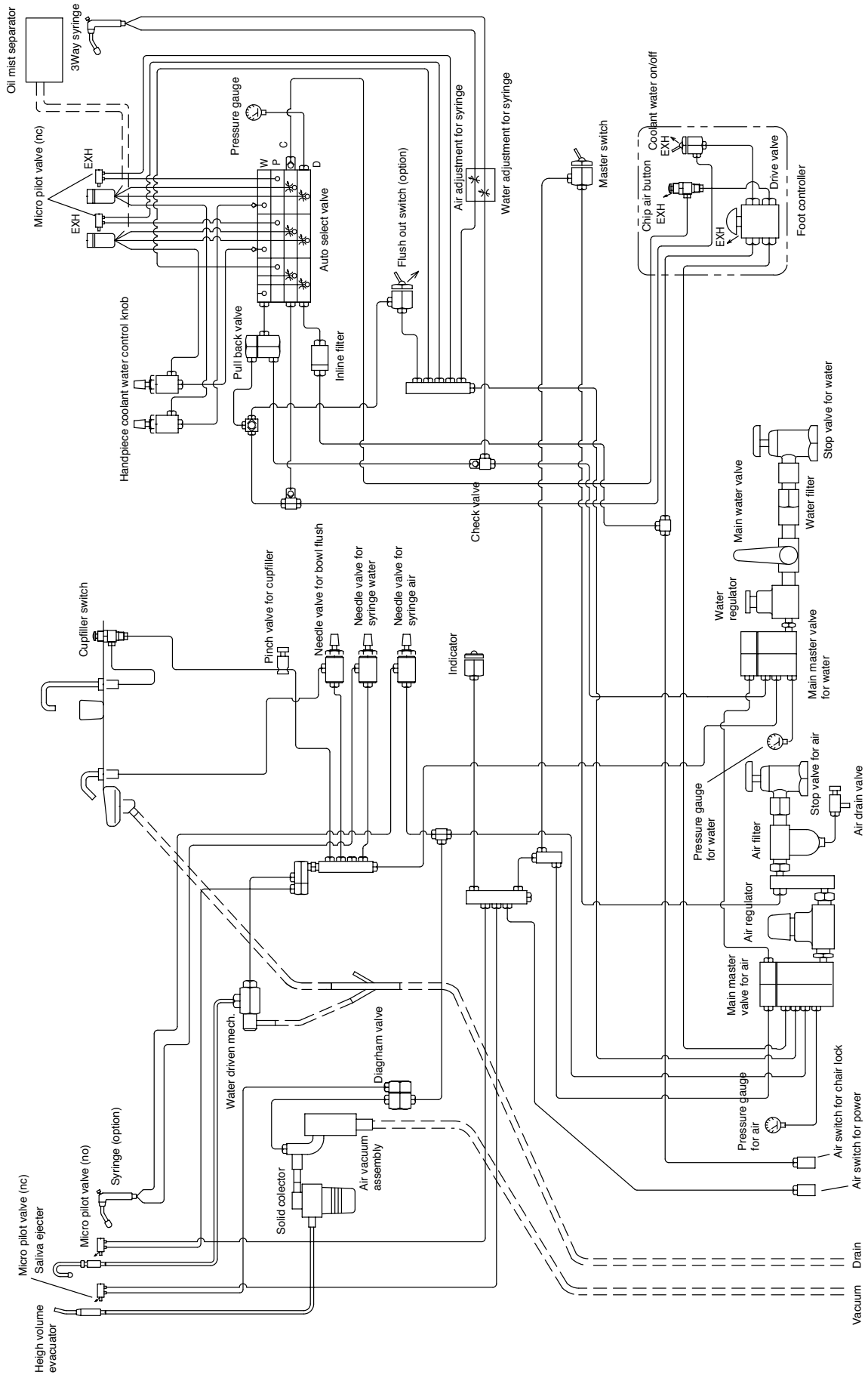


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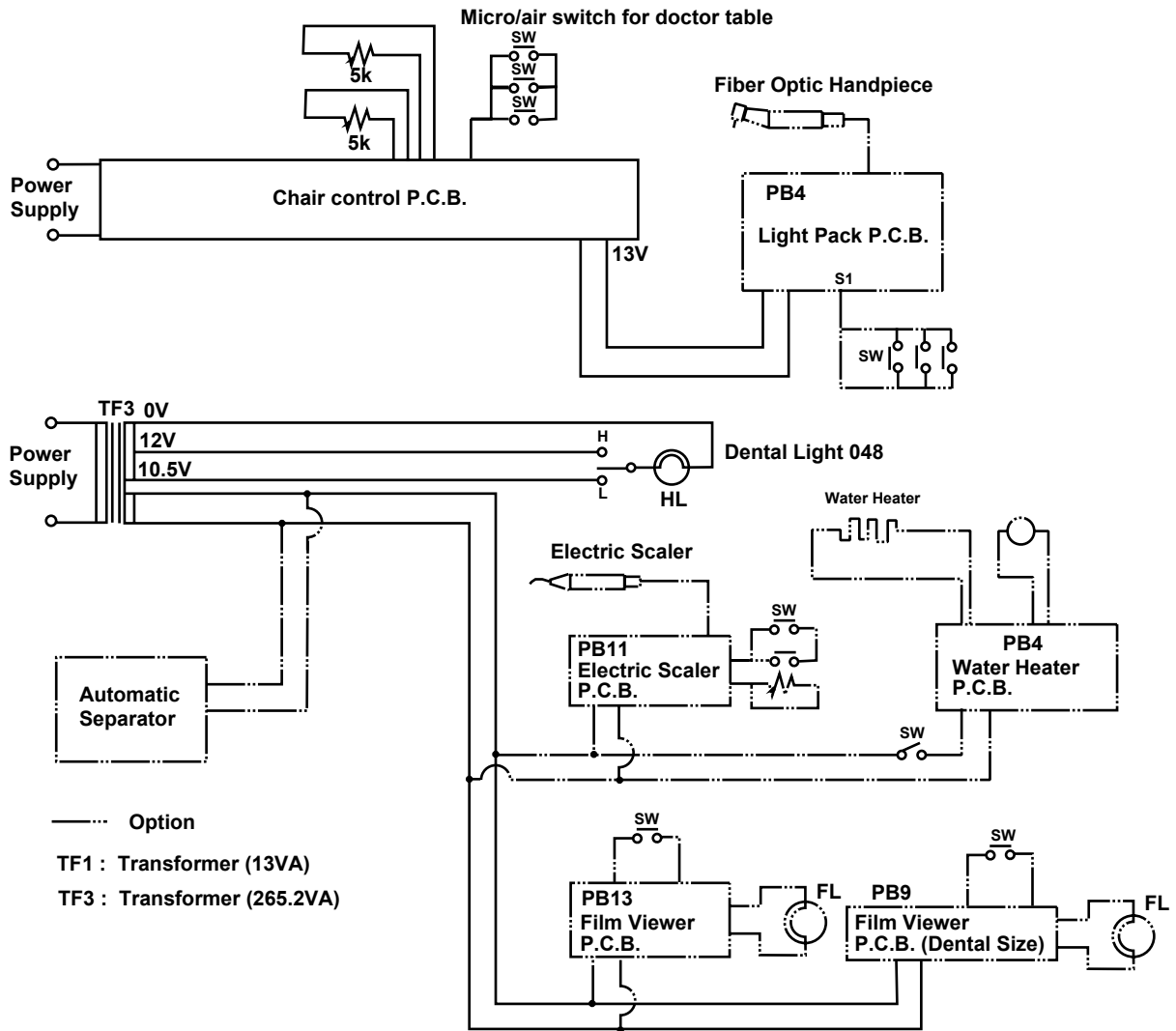
7. FLOW DIAGRAM FOR UNIT (CENTRAL VACUUM TYPE)



(AIR VACUUM TYPE)



8. ELECTRIC DIAGRAM FOR UNIT



NOTE

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