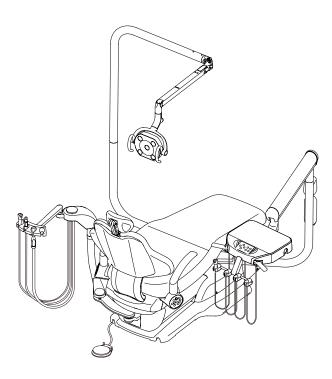
# Quolis<sup>®</sup> Series

# Evogue Dental Unit



# INSTALLATION INSTRUCTIONS

# **IMPORTANT**

- This manual provides installation instructions for the Evogue unit.
- The instructions contained in this booklet should be thoroughly read and understood before installing the chair and unit.
- After the installation has been completed, keep this manual in a safe place and refer to it for future maintenance.
- Installation should be conducted by authorized personnel only. Follow instructions on installation manual.



#### **Intended Use of the Product**

This product is an active therapeutic device intended to administer or exchange energy of electric, air and water for the exclusive use for diagnoses, treatments and relative procedures of dentistry, and its characteristic is not in a potentially hazardous way between such energy and human body, taking account of the nature, the density and site of application of the energy.

The product must be operated or handled by the qualified dentists or by dental staffs under the supervision of the dentist.

Such dentists or dental staffs should instruct and/or assist the patients to approach to and leave from the product.

Patients should not be allowed to operate or handle the product unless he/she is so instructed.

The product is supplied together with the handpieces like electric micromotor, air turbine and/or motor, scaler and so on.

#### **Environmental Requirements**

For Operation :

Ambient Temperature 41°F to 104°F (5°C to 40°C) Humidity 30 % - 75% Atmospheric Pressure 10 psi – 15.1 psi (700 hPa to 1060 hPa) For Transportation / Storage : Ambient Temperature 7°F to 158°F (-20°C to +70°C) Humidity 10 % - 95% Atmospheric Pressure 10 psi – 15.1 psi (700 hPa to 1060 hPa)

Equipment is not suitable for use in environments with, flammable anesthetic gases, oxygen or nitrous oxide.

#### **Classification of Equipment**

- a. Type of shock protection : Class I Equipment
- b. Degree of shock protection : Type B Applied part
- c. Degree of protection against water ingress : Ordinary Equipment (All Products)
- d. Mode of operation : Continuous Operation
- e. Flammable Gases : Not suitable for use in the presence of a flammable anesthetic mixture with air,

oxygen, or nitrous oxide.

f. Earth : Protective earth (ground)

g. Hospital Grade Plug : Grounding reliability can be achieved only when the equipment is connected to an equivalent receptacle marked hospital only or hospital grade.



Ground reliability can only be achieved when the equipment is connected to an equivalent receptacle marked HOSPITAL only or HOSPITAL GRADE.

#### **TABLE OF CONTENTS**

1. Overview and Major Components -----1 1-1. Swing Mounted Delivery System with Vac Pac and CLESTA LED Light 1-2. Over the Patient Delivery System with Cuspidor and CLESTA LED Light 1-3.Rear Delivery System 2. Dimensions and Specifications ------4 2-1. Swing Mounted Delivery System with Vac Pac and CLESTA LED Light (Quolis Chair) 2-2. Over the Patient Delivery System with Cuspidor and CLESTA LED Light (Quolis Chair) 2-3. Swing Mounted Delivery System with Vac Pac and CLESTA LED Light (Bel-50 Chair) 2-4. Over the Patient Delivery System with Cuspidor and CLESTA LED Light (Bel-50 Chair) 2-5. Rear Deliver System 3. Introduction ------9 3-1. Precautions for installation 3-2. Necessary Tools 4. Unpacking of units ------9 5. Installation for Swing Mounted Delivery System with Vac Pac for Quolis Chair ------12 5-1. How to Install the Dr. Swing Arm 5-2. How to Install the Balance Arm for the Doctor's Control 5-3. How to Install the Vac Pac Section 5-4. How to Install the Junction Box 5-5. How to Plumb the Junction Box 6. Installation for Over the Patient Delivery System with Cuspidor (PMU) for Quolis Chair -- 16 6-1. How to Install the PMU 6-2. How to Install the Doctor Table 6-3. How to Install the Junction Box 6-4. How to Plumb the Junction Box 7. How to Connect Chair Operation Cable of the Dr table for Quolis Chair ------22 8. Installation for Swing Mounted Delivery System with Vac Pac for Bel-50 Chair ------ 23 9. Installation for Over the Patient Delivery System with Cuspidor (PMU) for Bel-50 Chair - 29 10. How to install the Foot Controller ------ 32 11. How to Install the Monitor Arm ------ 32 12. How to Install the Dental Light------33 13. Installation for Power Supply Box (Micromotor, Electric Scaler and Fiber Optic) ------ 34 14. Installation of the Dental Light ------ 34 15. Installation of Accessories ------ 35 16. Installation of Covers-------35 16-1. Swing Arm Bottom Cover 16-2. Junction Box Cover 17. How to Install the Rear Delivery------36 18. Final Adjustment ------ 40 18-1. How to Adjust the Horizontal Level of the Dr Table 18-2. How to Adjust the Swing Arm Friction 18-3. How to Adjust the Rotation Friction of Table Balance Arm 18-4. Doctor Arm / Assistant Arm Height Adjustment of Rear Delivery 18-5. Water and Air Manual ON/OFF Valves 18-6. Main Air Pressure 18-7. Main Water Pressure 18-8. Drive Air 18-9. Coolant Water 18-10. Coolant Air 18-11. Doctor's Syringe 18-12. Assistant's Syringe (Vac Pac) 18-13. Cupfiller, Bowl Flush and Assistant's Syringe (Cuspidor Unit) 18-14. Assistant's Syringe (Rear Delivery) 19. Electrical Diagram ------ 47 20-1. Doctor's Control Section (with spittoon) 20-2. Doctor's Control Section (without spittoon) 20-3. Swing Arm Section 20-4. PMU Section 20-5. Vac Pac Section

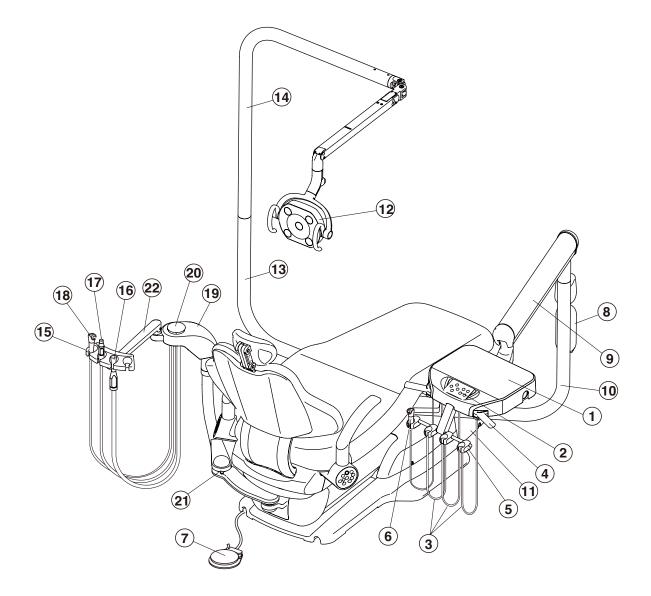
- 20-6 Rear Delivery Section (Table)
- 20-7 Rear Delivery Section (Cabinet)
- 20-8. Junction Box Section

#### 21. Floor Template ----- 58

Page

#### 1. Overview and Major Components

1-1. Swing Mounted Delivery System with Vac Pac and CLESTA LED Light



(1) Control Head

(2) Main Control Panel

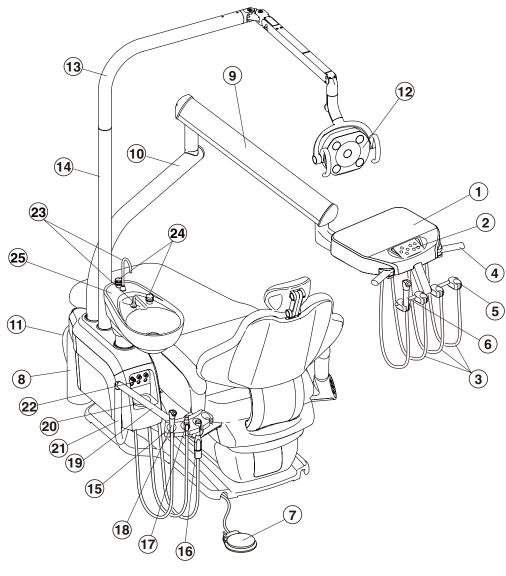
- (3) Handpiece Hose
- (4) Handle
- (5) Handpiece Holders
- (6) Dr's Syringe (\*)
- (7) Foot Control
- (8) Water Bottle
- (9) Balance Arm
- (10) Dr Swing Arm
- (11) Junction Box

- (12) Dental Light
- (13) Dental Light Swing Arm
- (14) Light Pole
- (15) Assistant Instrument Holder
- (16) HVE
- (17) Saliva Ejector
- (18) Assistant's Syringe (\*)
- (19) Vac Pac Housing
- (20) Solids Collector
- (21) Assistant Swing Arm
- (22) Assistant Holder Arm

(\*Note) Evogue does not include syringe tips. Syringe tips manufactured by DCI are compatible with syringes used with this delivery system.

#### 1. Overview and Major Components

1-2. Over the Patient Delivery System with Cuspidor and CLESTA LED Light



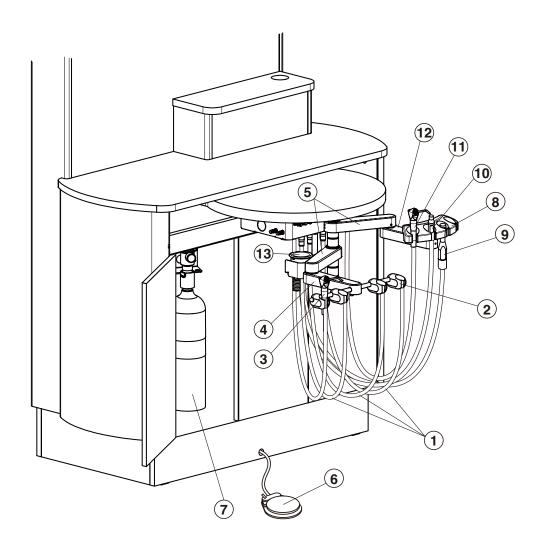
- (1) Control Head
- (2) Main Control Panel
- (3) Handpiece Hose
- (4) Handle
- (5) Handpiece Holders
- (6) Dr's Syringe (\*)
- (7) Foot Control
- (8) Water Bottle
- (9) Balance Arm
- (10) Dr Swing Arm
- (11) Junction Box
- (12) Dental Light
- (13) Dental Light Swing Arm

- (14) Light Pole
- (15) Assistant Instrument Holder
- (16) HVE
- (17) Saliva Ejector
- (18) Assistant's Syringe (\*)
- (19) Assistant Holder Arm
- (20) Solids Collector
- (21) Assistant Swing Arm
- (22) PMU front panel
- (23) Cupfill nozzle and bowl flush nozzle
- (24) Cupfill switch and bowl flush switch

(\*Note) Evogue does not include syringe tips. Syringe tips manufactured by DCI are compatible with syringes used with this delivery system.

1. Overview and Major Components

1-3.Rear Delivery System



- (1) Handpiece Hose
- (2) Handpiece Holders
- (3) Dr's Syringe (\*)
- (4) Doctor Arm
- (5) First Arm
- (6) Foot Control
- (7) Water Bottle

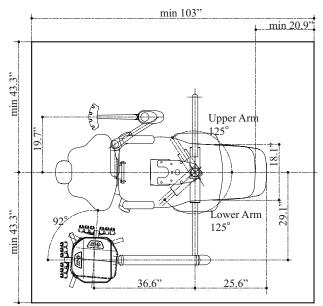
- (8) Assistant Instrument Holder
- (9) HVE
- (10) Saliva Ejector
- (11) Assistant's Syringe (\*)
- (12) Assistant Arm
- (13) Solids Collector

(\*Note) Evogue does not include syringe tips. Syringe tips manufactured by DCI are compatible with syringes used with this delivery system.

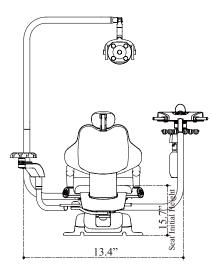
# 2-1. Swing Mounted Delivery System with Vac Pac and CLESTA LED Light (Quolis Chair)

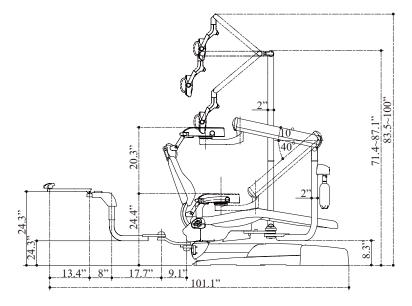
#### 2-1-1. Dimensions

- Inch / (mm) - Tolerance ( $\pm 10\%$ )



Minimum dimension for change to right and left position excluding treatment space.





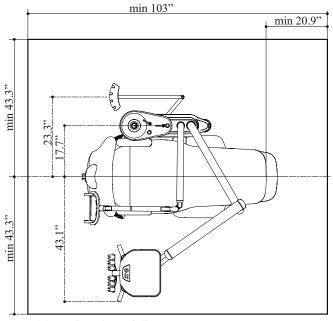
#### 2-1-2. Specifications

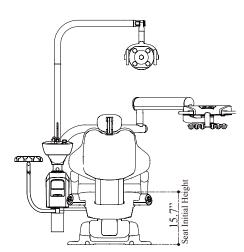
Power Consumption	- AC120V 1.6A
Frequency	- 60 Hz
Fuse value	- M6AL, 250V
Dr's control Net Weight	- 44 lbs. (20 kg)
Swing Arm Net Weight	- 55 lbs. (25 kg) (Without Dental Light)
Vacuum Pack Net Weight	- 44 lbs. (20 kg)
Junction Net Weight	- 9 lbs. (4 kg)
Doctor Table Maximum Load	- 4.40 lbs. (2 kg)
Operating Pressure	- Water 29 psi (0.2 MPa), Air 75 psi (0.5 MPa)
Dental Light	- CLESTA LED Dental Light
	BEL HALO Dental Light
Protection class against electric shock	- Class I equipment
Service Life	- 10 years

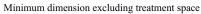
# 2-2. Over the Patient Delivery System with Cuspidor and CLESTA LED Light (Quolis Chair)

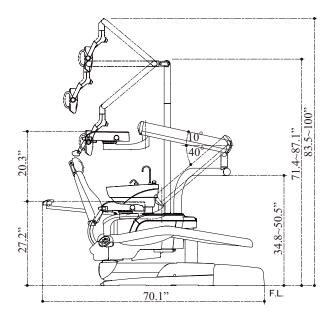
#### 2-2-1. Dimensions

- Inch / (mm) - Tolerance ( $\pm 10\%$ )









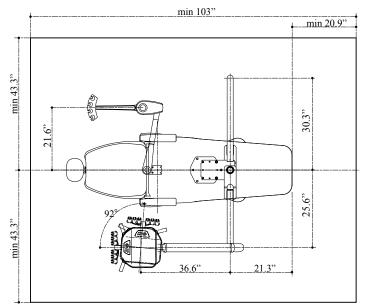
# 2-2-2. Specifications

Power Consumption	- AC120V 1.6A
Frequency	- 60 Hz
Fuse value	- M6AL, 250V
Dr's control Net Weight	44 lbs. (20 kg)
Swing Arm Net Weight	55 lbs. (25 kg) (Without Dental Light)
Cuspidor Section Net Weight	66 lbs. (30 kg)
Junction Net Weight	9 lbs. (4 kg)
Doctor Table Maximum Load	- 4.40 lbs. (2 kg)
Operating Pressure	- Water 29 psi (0.2 MPa), Air 75 psi (0.5 MPa)
Dental Light	CLESTA LED Dental Light
	BEL HALO Dental Light
Protection class against electric shock	- Class I equipment
Service Life	10 years

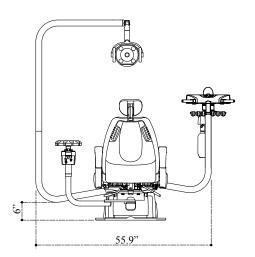
# 2-3. Swing Mounted Delivery System with Vac Pac and CLESTA LED Light (Bel-50 Chair)

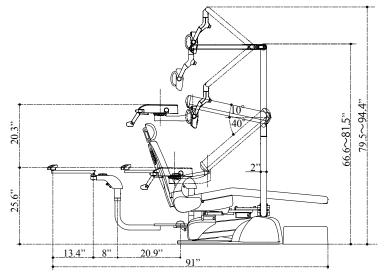
#### 2-3-1. Dimensions

- Inch / (mm) - Tolerance (± 10%)



Minimum dimension for change to right and left position excluding treatment space.





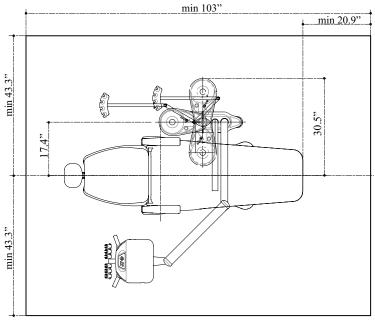
#### 2-3-2. Specifications

Power Consumption	- AC120V 1.6A
Frequency	- 60 Hz
Fuse value	- M6AL, 250V
Dr's control Net Weight	- 44 lbs. (20 kg)
Swing Arm Net Weight	55 lbs. (25 kg) (Without Dental Light)
Vacuum Pack Net Weight	- 44 lbs. (20 kg)
Junction Net Weight	- 9 lbs. (4 kg)
Doctor Table Maximum Load	- 4.40 lbs. (2 kg)
Operating Pressure	- Water 29 psi (0.2 MPa), Air 75 psi (0.5 MPa)
Dental Light	CLESTA LED Dental Light
	BEL HALO Dental Light
Protection class against electric shock	- Class I equipment
Service Life	- 10 years

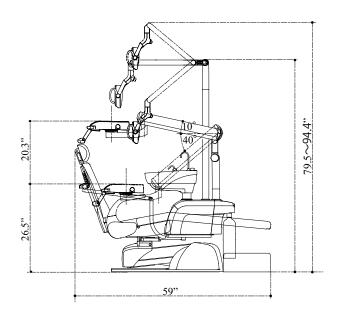
# 2-4. Over the Patient Delivery System with Cuspidor and CLESTA LED Light (Bel-50 Chair)

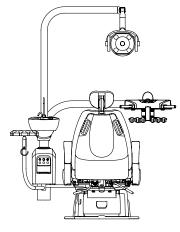
#### 2-4-1. Dimensions

- Inch / (mm) - Tolerance (± 10%)



Minimum dimension for change to right and left position excluding treatment space.





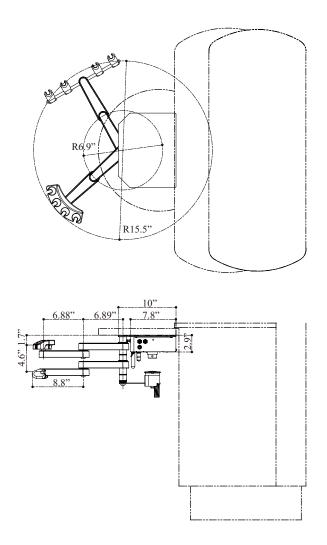
#### 2-4-2. Specifications

Power Consumption	AC120V 1.6A
Frequency	60 Hz
Fuse value	- M6AL, 250V
Dr's control Net Weight	44 lbs. (20 kg)
Swing Arm Net Weight	55 lbs. (25 kg) (Without Dental Light)
Cuspidor Section Net Weight	66 lbs. (30 kg)
Junction Net Weight	9 lbs. (4 kg)
Doctor Table Maximum Load	- 4.40 lbs. (2 kg)
Operating Pressure	- Water 29 psi (0.2 MPa), Air 75 psi (0.5 MPa)
Dental Light	CLESTA LED Dental Light
	BEL HALO Dental Light
Protection class against electric shock	Class I equipment
Service Life	10 years

# 2-5. Rear Delivery System

#### 2-5-1. Dimensions

- Inch / (mm) - Tolerance (± 10%)



#### 2-5-2. Specifications

- AC120V 1.6A
- 60 Hz
- M6AL, 250V
- 27.6 lbs (12.5 kg)
- Water 29 psi (0.2 MPa), Air 75 psi (0.5 MPa)
- Minimum 200L/min.
- IPX1 (applicable standard IEC60529)
- Class I equipment
- Type B applied parts : Handpiece for unit
-10 years

#### **3. Introduction**

#### **3-1.** Precautions for installation

- Do not connect to power supply other than 120V/60Hz.
- Ground the unit properly.
- Attach the junction box firmly to the floor.
- When electric micromotor (option) or electric scaler (option) is installed, please refer to the manual for the each device.
- Do not drop or hit the chair.
- When the installation process has been completed, verify that all the mechanical and electrical functions are working properly and that there is no evidence of oil, water or air leakage.
- Attach the dental chair to the floor before mounting the unit.
- Refer to the installation manual of Quolis 5000 dental chair to know how to install the dental chair.
- Refer to Floor Template for connection of water, air, power, drain hose and vacuum hose.

#### **3-2.** Necessary Tools

- Phillips screw drivers set #1, #2.
- Slotted screw driver
- Hex key wrenches set (metric, 2.5mm 8mm)
- Adjustable wrench (over 24mm)
- Long nose pliers
- Wire cutter
- Socket set 17mm, 7mm, 1/4"
- Level

#### 4. Unpacking of units

Each carton number corresponds to a component

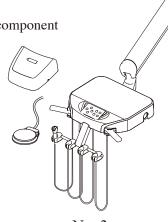
CAUTION

Opening cartons with a sharp object may

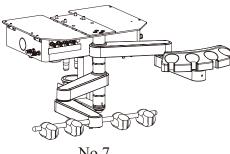
Box No.	Module
3	Doctor's control
4	Swing arm (s)
5	Vac pac
6	PMU
7	Rear Delivery

Check all the components and parts damage after unpacking.

cause damage to parts







No.6

No.4

No.5

#### Box No.3 (Doctor's control)

- (1) Doctor's control assembly 1 set
- (2) Junction box assembly 1 set
  - Junction box with cover 1 set
  - Duct hose 800mm 1 pc.
  - Utility package (air)
- (3) Balance arm end cap 1pc.
- (4) Stainless tray and non-slip pad 1 set
- (5) Foot controller 1 set
- (6) Syringe parts 1 set
- (7) Operating manual, installation manual 1 set
- (8) Miscellaneous parts for installation as follow
  - Sleeve for 1/4" OD tubing 14 pcs.
  - Sleeve for 1/8" OD tubing 12 pcs.
  - Barb fitting for 1/4" OD tubing 3 pcs.
  - Barb fitting for 1/8" OD tubing 3 pc.
  - Hex plug 2 pcs.
  - Tubing 1/8" OD brown 500mm 1 pc.
  - Tubing 1/4 Green 500mm 1 pc.
  - Pan head Philips screw M4 x 10mm 2 pcs
  - Round head Philips wood screw M5 x 25mm 3 pcs.

#### Box No.4 (Swing arms)

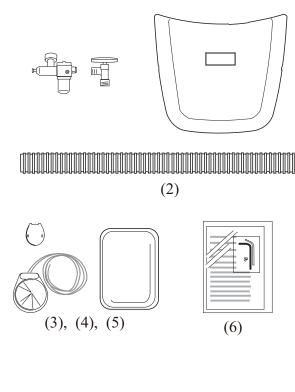
- (9) Swing arm Assembly 1 set
- (10) Water bottle 1 pc
- (11) Lower tubing cover 1 pc.
- (12) Quick disconnect adaptor for water bottle 1pc.
- (13) Swing arm locking pin for dental light 1 pc. (For the swing mounted light only)
- (14) Miscellaneous Parts for installation as follow.
  - Socket screw M10 x 40mm (for mounting) 4 pcs.
  - Socket screw M10 x 20mm (for level) 4 pcs.
  - Pan head Phillips screw M5 x 16mm 4 pcs.
  - Flat head screw M10×35mm 1 pc.
  - 1/4 sleeve 2 pcs.
  - 1/8 sleeve 1 pc.

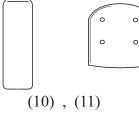
#### Box No.5 (Vac Pac)

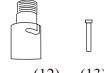
- (15) Vac Pac Assembly 1 set
- (16) Syringe parts 1 set
- (17) Miscellaneous Parts for installation as follow.
  - Socket screw M10 x 40mm (for mounting) 4 pcs.
  - 1/4 sleeve 2 pcs.
  - Barb fitting for 1/4 OD tubing 2 pcs.

#### Box No.6 (PMU)

- (18) PMU Assembly 1 set
- (19) Junction Box Assembly 1 set
- (20) Syringe parts 1 set
- (21) Cuspidor Bowl Section
  - Cup filler nozzle 1pc.
  - Bowl Rinse nozzle 1pc.
  - Basket Strainer & Cap 1pc.
- (22) Miscellaneous Parts for installation as follow.
  - Socket screw M10 x 40mm (for mounting) 4 pcs.
  - 1/4 sleeve 8 pcs.
  - Barb fitting for 1/4 OD tubing 5 pcs.

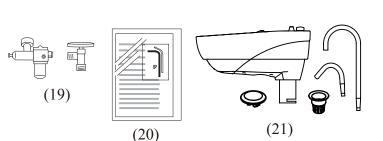












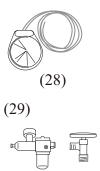
#### Box No.7 (Rear Delivery)

- (23) Rear Delivery Assembly 1 set
- (24) Water bottle 1 pc
- (25) Quick disconnect adaptor for water bottle 1pc.
- (26) Operating manual, installation manual 1 set
- (27) Syringe parts 1 set
- (28) Foot controller 1 set
- (29) Utility package (air)
- (30) Miscellaneous parts for installation as follow
  - Hex wrench M6 1 pcs.
  - Cap screw No. 10-24 unc 5/8
  - 1/8 Sleeve 5 pcs.
  - 1/4 Sleeve 5 pcs.
  - Tp M5x20 4 pcs.









#### 5. Installation for Swing Mounted Delivery System with Vac Pac for Quolis Chair

#### 5-1. How to Install the Dr. Swing Arm

The swing arm assembly shall be mounted at the front of the chair under the seat.

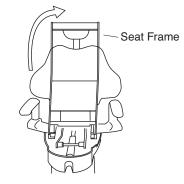


Be sure to remove the carriage bolt from the chair before lift the chair by upper structure. This could cause damage to the chair if operate the chair without removing the carriage bolt. Refer to the chair installation manual for preparation and installation of the chair.

1. Raise the seat frame of the chair as shown.



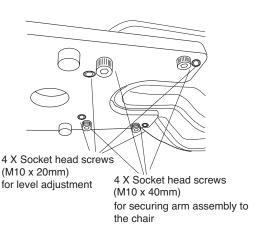
Failure to lift seat frame as shown can result in damage to paint finish of swing arm in subsequent steps.



Flange cover

Swing arm plate

- Insert M10 x 35mm flat head screw in the threaded hole on the top side of the swing arm plate center and leave 1" from the top of screw to plate surface.
- 3. Raise the seat.
- Attach swing arm assembly to chair by aligning M10 x 35mm screw with recess in front of the seat and slide screw into slot.
- 5. Locate 4 M10 x 20mm leveling set screws and insert into bottom side of swing arm plate.
- 6. Adjust the level of the swing arm plate with the four socket set screws.
- 7. Tighten the 4 M10 x 40 mm socket head screws. Lift the swing arm if needed.



#### 5-2. How to Install the Balance Arm for the Doctor's Control



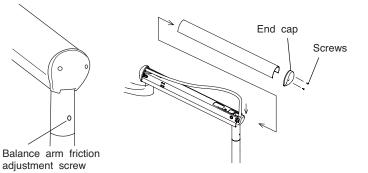
If Vac Pac is installed with Dr. table, run tubings for Vac Pac at the same time.

- 1. Lower the chair.
- 2. Insert the balance arm into the top of the swing arm.
- 3. Slide the balance arm cover off balance arm and route tubing and cables down into the swing arm. Make sure that the hoses are not twisted.
- 4. Remove the seat flange cover from chair by removing four M5 x 15mm screws and sub-link cover by removing two M5 x 15mm screws on the back of the chair cantilever lift arm.
- 5. Route umbilical tubing & wires from swing arm into chair. Tubing & wires should be routed over the top of the pivot bar in the front of the cantilever arm.
- 6. Feed umbilical down between 2nd pivot bar and into plastic retaining loop.



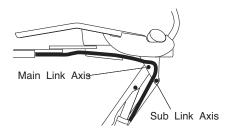
Route tubing and wires over the top of the pivot bar in front of the chair

- 7. Feed tubing between PCB box and pump and out to the front of the chair.
- 8. Slide in the balance arm cover and into the channels along the balance arm and the balance arm end cap with two M4 x 10mm screws.
- 9. Adjust M6 x 5mm balance arm friction adjustment screw (M6 x 5mm).

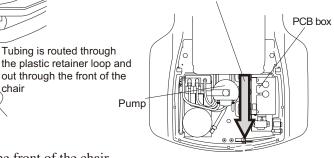


Balance arm cover Screws for flange cover

Sub link cover Flange cover



Feed tubing between PCB box and pump



Tubing is routed through

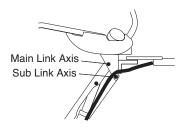
chair

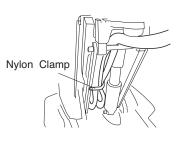
#### 5-3. How to Install the Vac Pac Section



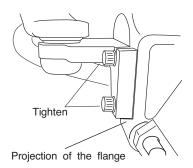
If swing arm Dr. table is installed with Vac Pac, run tubings for Dr. table or at the same time.

- 1. Remove four screws M5 x 15mm and the flange cover of the chair.
- 2. Insert two M10 x 40mm socket head cap screws into the top threaded hole on the rear side of the chair. Screws should extend approximately 1" from chair.
- Hook the assistant arm mounting bracket underneath the two socket head cap screws. Tilt the bracket slightly and lift it.
   Place the lower edge of the mounting bracket on the projections of the flange.
- 4. Tighten lower M10 x 40mm socket head cap screws through swing arm mounting bracket. Tighten all four screws.
- 5. Route the umbilical tubing with unit umbilical down through chair, between the main link and sub link Axis, and bring the end to the junction box. Tie the tubing with the white nylon clamp. Make sure that hoses are not kinked





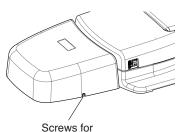
# Screw for flange cover



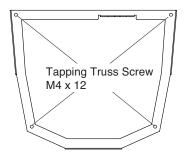
#### 5-4. How to Install the Junction Box

Refer to floor template for connection of water, air, power, drain hose and vacuum hose.

- 1. Open the junction box cover by removing two slotted M5 x 10mm screws from each side of the Junction box cover.
- 2. Place the junction box frame in front of the chair. (The plan of the plumbing position needs to be done in advance. See the flow diagram)
- 3. Attach the junction box frame to the floor with four M4 x 12mm tapping truss screws.

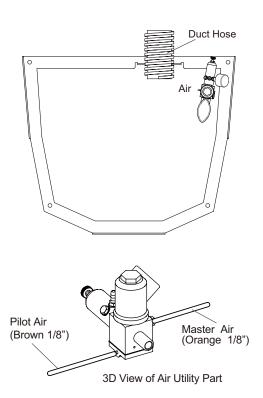


J.box cover

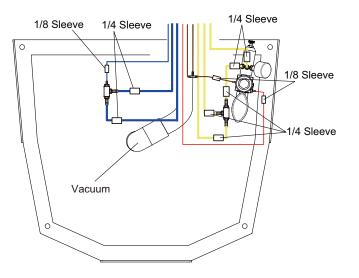


#### 5-5. How to Plumb the Junction Box

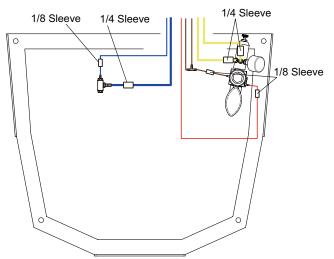
- 1. Cut the duct hose to desired length and insert it between retainers inside of the pump cover and the junction box.
- Attach the manual on/off valve to the air supply pipe.
  Purge air through valve to clean debris.
  Attach automatic valve assembly for air to manual valve.
- 3. Connect tubings and 5/8 vacuum hose as below drawing shows.



#### Swing Arm Dr.table + Vac Pac



#### Swing Arm Dr.table



#### 6. Installation for Over the Patient Delivery System with Cuspidor (PMU) for Quolis Chair 6-1. How to Install the PMU

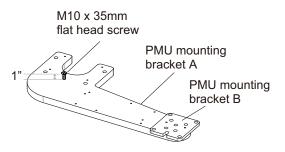
The PMU shall be mounted at the front of the chair under the seat.

1. Raise the seat frame of the chair as shown.



Failure to lift seat frame as shown can result in damage to paint finish of swing arm in subsequent steps.

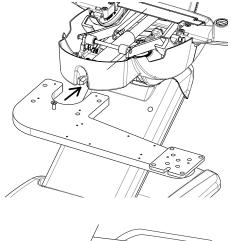
Seat Frame

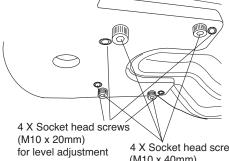


In case of mount PMU onto the chair right

M10 x 35mm flat head screw

PMU mounting bracket B





 $4 \times \text{Socket}$  head screws (M10 x 40mm) for securing PMU mounting bracket to arm assembly to the chair

on the top side of the PMU mounting bracket A and leave 1" from the top of screw to plate surface.

2. Insert M10 x 35mm flat head screw in the threaded hole

- Note: In case of mount PMU onto right side of the chair. Remove the bracket B from bracket A. Turn the bracket A over and reattach the bracket B opposite side.
- 3. Raise the seat.
- Attach PMU mounting bracket to chair by aligning M10 x 35mm screw with recess in front of the seat and slide screw into slot.

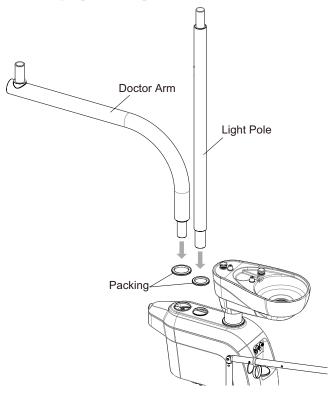
- 5. Locate 4 M10 x 20mm leveling set screws and insert into bottom side of PMU mounting bracket.
- 6. Adjust the level of the swing arm plate with the four socket set screws.
- 7. Tighten the 4 M10 x 40 mm socket head screws. Lift the PMU mounting bracket if needed.

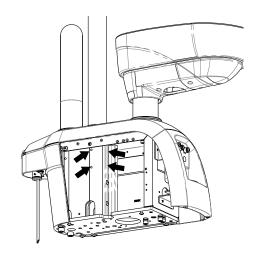
- 8. Attach PMU onto the PMU mounting bracket by aligning guide bolt with recess in front of the PMU mounting bracket and slide guide bolt into slot. Temporarily fix with three M8 x 18 cap bolts.
- 9. Adjust the level of the PMU with four M8 x 10 set screws.
- 10. Tighten the four M10 x 55 cap bolts and three M10 x 18 cap bolts.

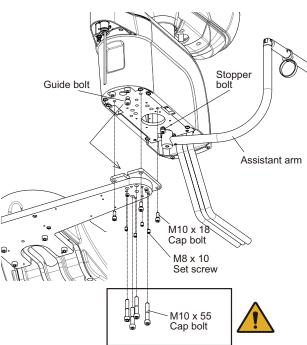


Be sure to fix the PMU to the mounting bracket together with four M10 x 55 cap bolts. If not, the PMU may fall over.

- Note : In the case of that the PMU mount to other side. Remove the stopper bolt from the cuspidor bottom. Change the position of the assistant arm to other side and re-attach the stopper bolt to same position. Make sure attach the stopper bolt after changing the assistant arm position. If not, the assistant arm and hoses hit each other and it could cause damage to the handpiece hoses.
- 11. Insert the light pole and doctor arm with rubber packing. Fix the light pole to cuspidor chassis with 4 screws.

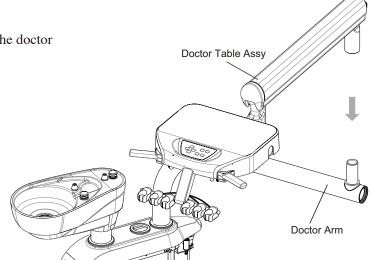


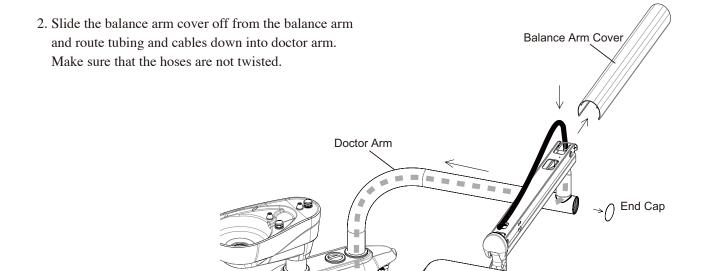




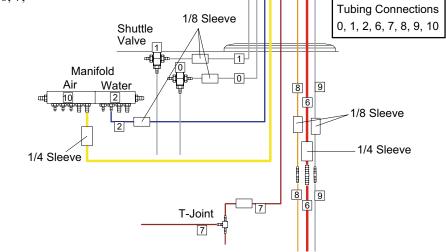
#### 6-2. How to Install the Doctor Table

1. Insert the doctor table assy into the top of the doctor arm.





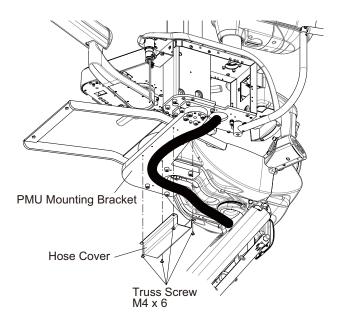
- 3. Connect the tubing labeled 0, 1, 2, 6, 7, 8, 9, 10 into the PMU.
  - 0 : Pilot air for bowl flush
  - 1 : Pilot air for cupfiller
  - 2 : Bottle water to table
  - 6 : Drive air to foot controller
  - 7 : Pilot air for main switch out / water bottle pressure air
  - 8: Pilot air for main switch in
  - 9 : Coolant air
  - 10 : Input air to doctor table



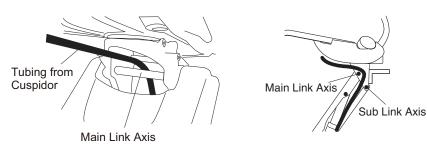
GARD)

822

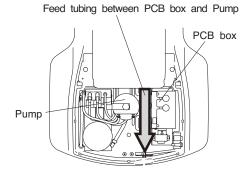
4. Route the tubing from cuspidor through under the PMU mounting bracket.Attach the hose cover to bottom of PMU mounting bracket and fit it with truss four screws M4 x 16.



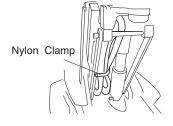
5. Route tubing down through the chair between the main link axis and sub link axis.



6. Feed tubing between PCB box and pump and out to the front of the chair.



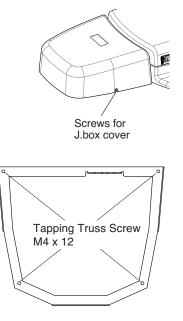
7. Tie the tubing with the wire nylon clamp. Make sure that hoses are not kinked.



#### 6-3. How to Install the Junction Box

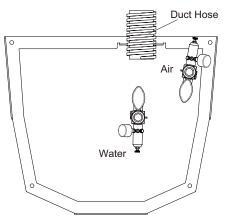
Refer to floor template for connection of water, air, power, drain hose and vacuum hose.

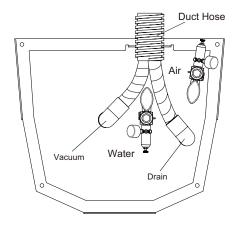
- 1. Open the junction box cover by removing two slotted M5 x 10mm screws from each side of the Junction box cover.
- 2. Place the junction box frame in front of the chair. (The plan of the plumbing position needs to be done in advance. See the flow diagram)
- 3. Attach the junction box frame to the floor with four M4 x 12mm tapping truss screws.



#### 6-4. How to Plumb the Junction Box

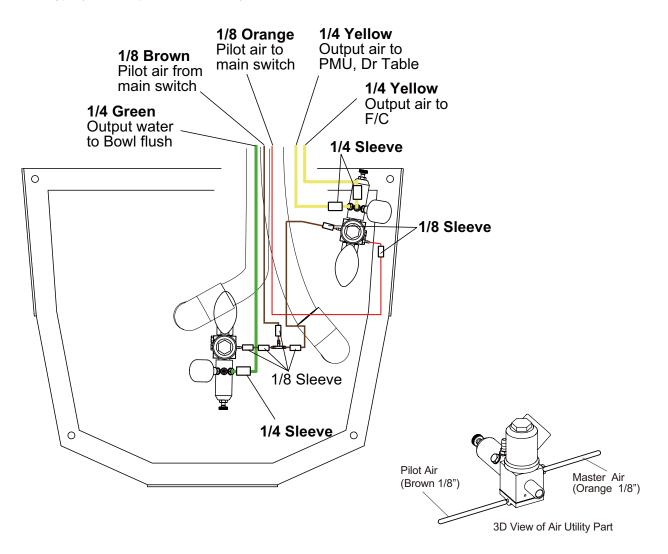
- 1. Cut the duct hose to desired length and insert it between retainers inside of the pump cover and the junction box.
- Attach the manual on/off valve to the air supply pipe. Purge air through valve to clean debris. Attach automatic valve assembly for air to manual valve. Do the same thing for the water assembly ordered with unit models.
- 3. Connect vacuum hose (5/8) and Drain Hose (3/4) to the floor. Vacuum hose has uneven surface.We supply long hose as needed and cut them accordingly.





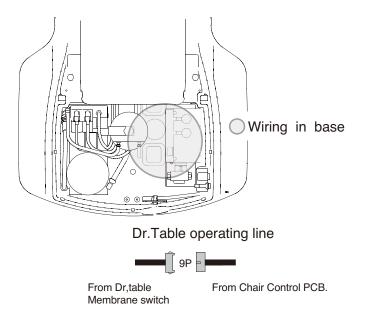
4. As below drawing shows, connect tubings.

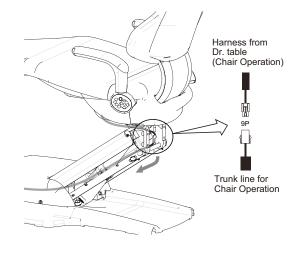
PMU Type (Table + Spittoon + Vacuum)

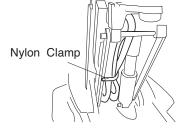


#### 7. How to Connect Chair Operation Cable of the Dr table for Quolis Chair

- 1. Connect the trunk line of the chair operation to the harness from Dr.table. (Note : Trunk line of the chair operation is supplied from unit package)
- 2. Route the trunk line of the chair operation into the chair and bring to the front of the chair base.
- Tie the trunk line for chair operation and other tubings with the wire nylon clamp. Make sure that hoses are not kinked.
- 4. Connect the trunk line of the chair operation to the harness from chair control pcb in the base.







#### 8. Installation for Swing Mounted Delivery System with Vac Pac for Bel-50 Chair

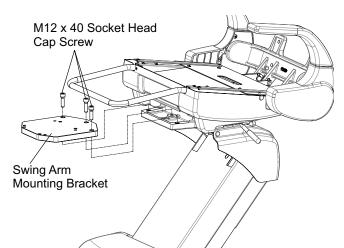
#### 8-1. How to Install the Dr. Swing Arm

The swing arm assembly shall be mounted at the front of the chair under the seat.

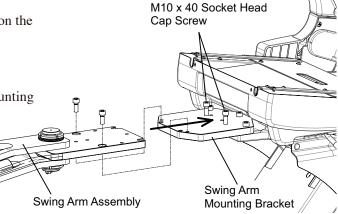


Be sure to remove the carriage bolt from the chair before lifting the chair. Failure to remove the carriage bolt could cause damage to the chair. Refer to the chair installation manual for preparation and installation of the chair.

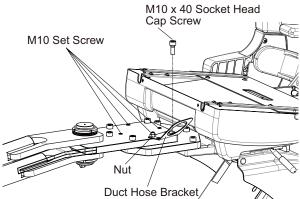
- 1. Raise the seat to the highest position.
- Attach swing arm mounting bracket to chair by using
  M12 x 40 socket head cap screws.



- 3. Premount the 2 M10 x 40 socket head cap screws on the swing arm mounting bracket.
- 4. Insert the swing arm assembly to the swing arm mounting bracket and tighten it with 2 screws temporarily.



- 5. Remove 1 socket head cap screw that is fixing the swing arm assembly and attach the duct hose bracket on the plate of the swing arm assembly by using same screw. Insert the leveling set screw with locking nut through hole in duct hose bracket. Nut should be tightened after final leveling of swing arm assembly.
- 6. Adjust the level of the swing arm assembly with 4 M10 set screws.
- 7. Tighten the 4 M10 x 40 socket head cap screws to secure swing arm assembly to the swing arm mounting bracket.



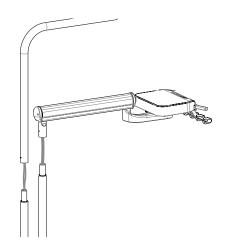
#### 8-2. How to Install the Balance Arm for the Doctor's Control

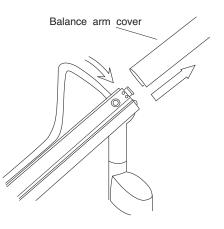


If Vac Pac is installed with Dr. table, run tubings for Vac Pac at the same time.

Note : Installation of dental light, switch box and power supply box, refer to dental light installation instructions.

- 1. Insert the balance arm into the top of the swing arm.
- Slide the balance arm cover of the balance arm and route tubing and cables down into the swing arm. Make sure that the hoses are not twisted.



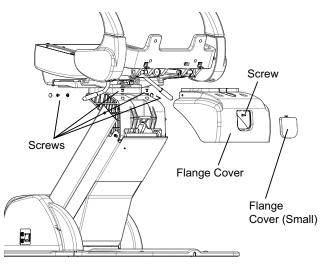


#### 8-3. How to Install the Vac Pac Section



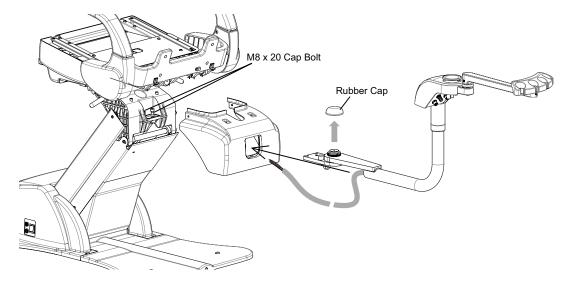
If the Dr. swing arm is installed with Vac Pac, run tubings for Dr. table or at the same time.

- 1. Remove the flange cover by loosening (4) screws.
- 2. Remove a flange cover (small) by loosening (1) screw from the inside of the flange cover.

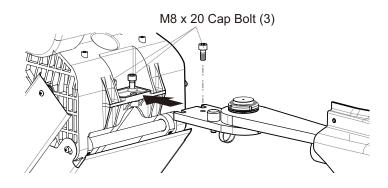


3 Attaching the Vac Pac to the chair

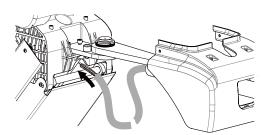
Temporarily insert two M8 x 20 cap bolt to the top threaded hole on the rear side of the chair flange. Remove the rubber cap from the mounting bracket. (After installing the flange cover, attach the rubber cap to the mounting bracket.) Slide the flange cover over the end of the mounting bracket with tubings.



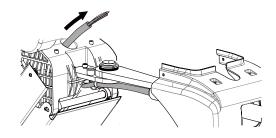
4. Fix the mounting bracket to the chair flange by using (3) M8 x 20 cap bolt.

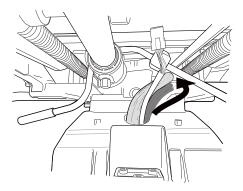


5. Pass the Vac Pac tubings from the under seat flange through the hole in the seat flange.

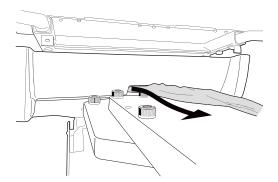


6. Root the tubing upward and underneath seat area. (View from rear of chair, looking toward legrest)





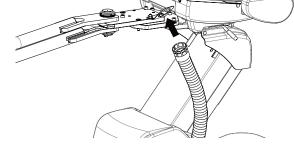
7. Pull the tubing out through the notched cut out in front of the seat flange cover as shown in the right figure.Feed Vac pac tubing through opening on the side of the umbilical retaining bracket.



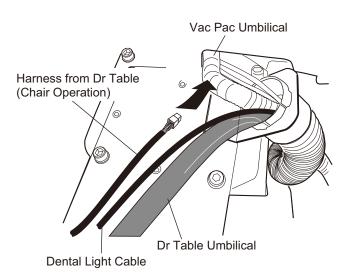
Vac pac tubing exits through notched cut-out in front of the seat

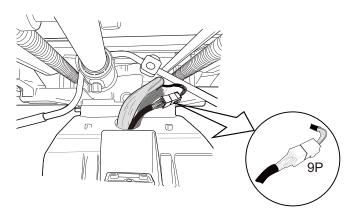
#### 8-4. Route the Dr table umbilical and Vac Pac Umbilical to the Umbilical Duct Hose

1. Attach the duct hose to the duct hose bracket.



- 2. Route the harness for chair operation from Dr table to the notched cut-out in front of the seat flange cover as shown in the right figure.
- 3. Dr table umbilical and Vac Pac umbilical are both feed together into the outer umbilical duct hose and bring it them to the J-Box.
- Note : Installation of dental light, switch box and power supply box, refer to dental light installation instructions. Pass the dental light cable to the duct hose at the same time.
- 4. Connect the connector of the chair operation from Dr table to the connector from chair control pcb in the flange section.

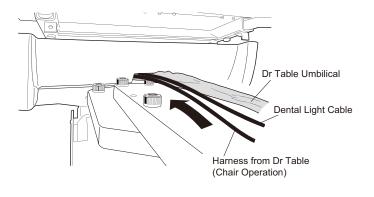




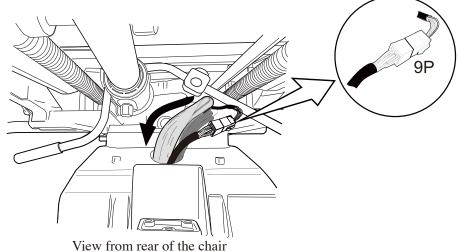
#### 8-5. If the umbilical duct hose is not used, follow the instructions below.

Note: Installing the Swing Mounted Delivery System and Vac Pac System, Please refer to 8-1, 8-2 and 8-3 sections.

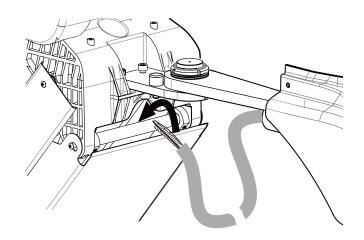
 Feed the Dr table umbilical, dental light cable and harness for the chair operation from the Dr table through to the notched cut-out in front of the seat flange cover as shown in the right figure.
 Feed the umbilical and cables through along the seat potentiometer and bring it to behind the chair.



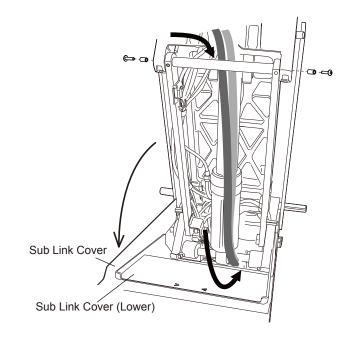
- 2. Connect the connector (9P) from the Dr table and connector (9P) from the chair control pcb in the flange section.
- 3. Pass the umbilical and cable through the hole of the seat flange. (View from rear of the chair flange)



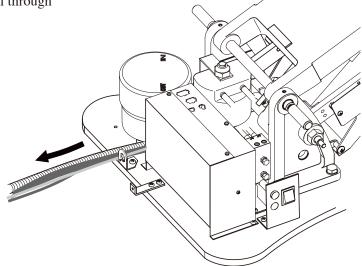
- 4. Root the Vac Pac umbilical between the hole of the chair flange and the link bar.
- Note: Installing the Vac Pac Section, refer to section "8-3. How to Install the Vac Pac Section (3 & 4)"



5. Open the sub link cover by removing two screws. Route Dr umbilical and Vac Pac umbilical down through the chair between the main link axis and sub link axis.



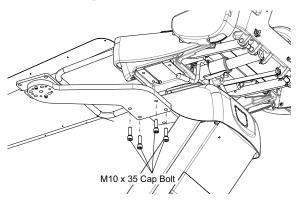
6. Pass the Dr umbilical and Vac Pac umbilical through between the PCB box and the motor pump.



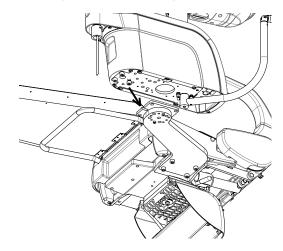
Note : Please confirm that the Dr umbilical and Vac Pac umbilical are not excessively pulled by operating the chair up & down, backrest reclining & raising and seat rotation.

### 9. Installation for Over the Patient Delivery System with Cuspidor (PMU) for Bel-50 Chair 9-1. How to Install the UMP

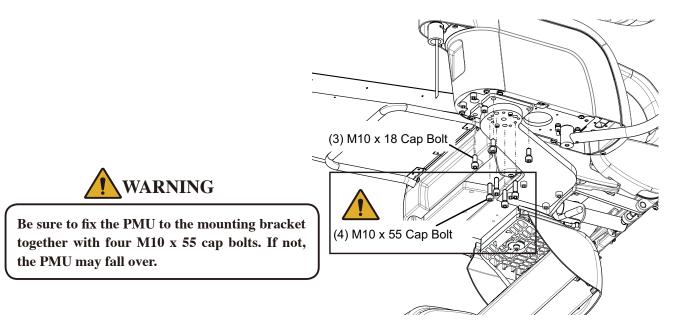
1. Attach PMU mounting bracket to chair by using M10 x 35 Cap bolts.



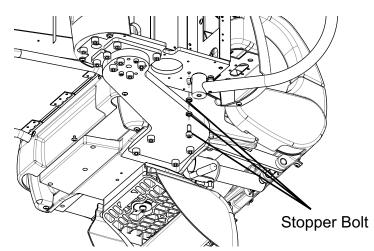
2. Attach PMU onto the PMU mounting bracket by aligning guide bolt with recess in front of the PMU mounting bracket and slide guide bolt into slot.



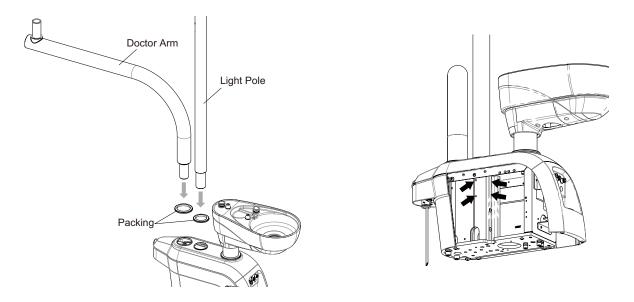
3. Secure PMU to the mounting bracket by using (3) M10 x 18 Cap bolt and (4) M10 x 55 Cap bolt.



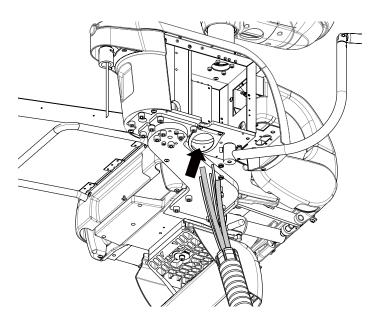
4. Fix the assistant arm stopper bolt underneath of the PMU.



5. Insert the light pole and doctor arm with rubber packing. Fix the light pole to cuspidor chassis with 4 screws.

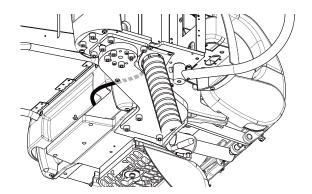


- 6. Installing the Doctor table section. Please refer to 6-2. How to Install the Doctor Table (1~3) sections.
- 7. Installing the Dental Light. Please refer to installation instruction of the dental light.
- 8. Snap the upper umbilical duct hose into the circular hole in the bottom of the PMU.

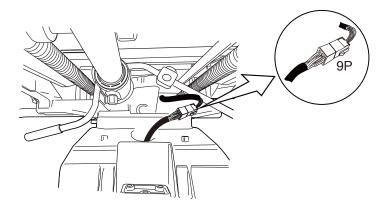


- 9. Connect tubing from the upper umbilical inside of the PMU with tubing from the Doctor table. Connect tubing by matching numbered tags on tubing or simply match by tubing color.
- 10. Connect drain hose to drain hose joint from the cuspidor bowl by using the hose clamp.
- 11. Connect vacuum hose to vacuum hose joint from the solid corrector by using the hose clamp.
- 12. Attach electric lines (6P for 24V, Optic and 1P for earth) from umbilical inside of the PMU.

13. Pass the harness of the chair operation from the Dr table through the notched cut-out in front of the seat flange cover.



14. Connect the connector from Dr table to the connector from chair control pcb in the flange section.



#### 9-2. How to Install the J-Box

- 1. Secure J-Box frame to the floor by using mounting holes provided, at desired location.
- 2. Connect lower end of Umbilical Duct Hose to J-Box.
- 3. Attach the manual shut-off valve to the J-Box air and water supply pipes. Purge lines prior to attaching air/ water assemblies and umbilical tubing to shut-off valves. Attach Air & Water regulator assemblies to umbilical tubing.
- 4. Test the Delivery System to verify that there is no air or water leakage and that the unit is fully functional. Place J-Box Cover over the Frame and secure with (4)  $10-32 \ge 1/2$  slotted screw provided.

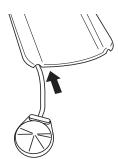
Note: Also refer to the 6-3, 6-4, 10, 13, 20-8 sections for installation of the J-Box

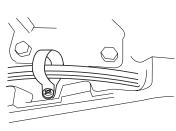
Number	Color (Size)	Function
6	Red (1/4" OD)	Drive
10	Yellow (1/4" OD)	In
5	Yellow (1/8" OD)	Chip (Air for spray, not used)
9	Gray (1/8" OD)	Water (Pilot air for water for spray, not used)

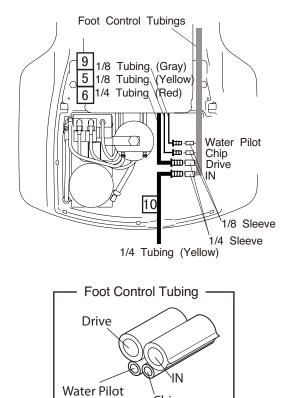
#### **10.** How to install the Foot Controller

1. Insert foot control tubing through channel in chair base and feed through chairs into J-box.

- 2. Connect the tubing labeled 5, 6, 9 and 10 to the tubing from the doctor table.
- Note : Although the 1/8" OD gray tubing and yellow 1/8" OD tubing are not used, connect to prevent air leaks.
- 3. Attach the foot control tubing to the chair base with a nylon clamp (see photo).







Chip

#### 11. How to Install the Monitor Arm

- 1. Install the monitor arm to the swing arm. See in 5-1. How to install the Dr. swing arm.
- 2. Feed the cables thought the swing arm and the chair, and bring the end into the junction box.
- 3. Install the monitor mount to the monitor arm.
- 4. Connect the cables inside Junction box.
- Note : LCD monitors are not supplied from Belmont. The mounting holes on back of monitor should be designed for attachment of 75 or 1000 mm VESA mgt pattern.

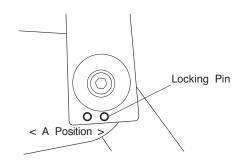
#### 12. How to Install the Dental Light

- 1. Installation of the dental light. Please refer to the installation instruction of the dental light.
- 2. Position the swing arm to either side of the chair and lock it in place with the dental light locking pin.

When you combine Dr. Table and PMU with a water bottle. Set Lock Pin on A position to avoid the interference of a bottle and a swing arm.



Do not remove the cardboard paper put on the swing arm until the seat cushion has been attached to the seat frame with screws, otherwise the surface of the light pole will be scratched off when swinging the arm.



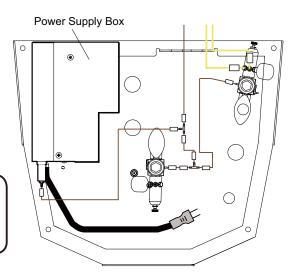
#### 13. Installation for Power Supply Box (Micromotor, Electric Scaler and Fiber Optic)

This power supply box is power of the micromotor, electric scaler and fiber optic.

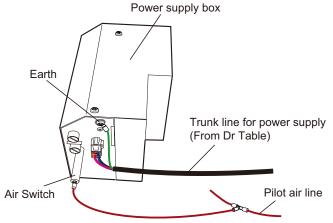
1. Place the power supply box into the junction box. Connect the power supply cable to the outlet.



Ground reliability can only be achieved when the equipment is connected to an equivalent receptacle marked HOSPITAL only or HOSPITAL GRADE.



 Connect brown tubing to the air switch of the power supply box and pilot air line with T-joint.
 Connect connector (6P) and earth line of the trunk line from Dr table to the power supply box.



14. Installation of the Dental Light Power PCB.

Installation of the dental light power pcb. refer to installation manual attached to dental light.

#### **15. Installation of Accessories**

**16. Installation of Covers** 

16-1. Swing Arm Bottom Cover

Attach the lower tubing cover to the bottom of the swing arm mounting bracket with four M5 x 16mm.

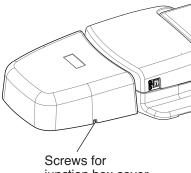
Install the cupfiller nozzle, bowl flush nozzle, cap and basket strainer to spittoon.



# Swing arm bottom cover M5 x 16 Pan head screw

#### 16-2. Junction Box Cover

Attach the junction box cover and fasten with M5 x 10mm screw and tighten firmly with a slotted screw driver.



junction box cover

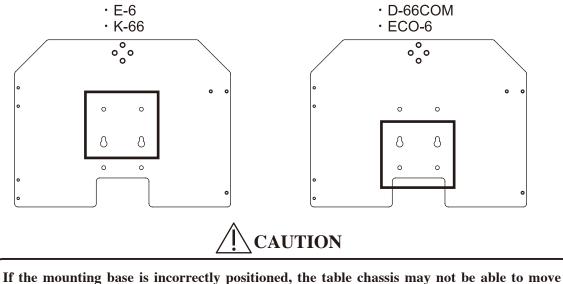
**A**CAUTION

Fasten the pump cover and junction box cover firmly with a screw driver with screws provided and tighten.

#### 17. How to Install the Rear Delivery

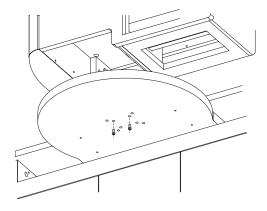
1. Before installing the Rear Delivery, please check the followings.

To install the Rear Delivery, fix the mounting base to the cabinet by using (4) 5/8 cap screws (No. 10-24 UNC). But fixing holes may differ depending on the cabinet type.



If the mounting base is incorrectly positioned, the table chassis may not be able to mov properly. Be sure to fix the mounting base to the connect position.

- 2. Installation of Rear Delivery (Example : D-66COM)Premount (2) cap screws to the cabinet underneath.(Be sure premount the screws tp prevent fall down the mounting base after hanging it.)
  - \* Fixing positions may differ depend on the type of cabinet.



3. Attach the mounting base to the cabinet.

Insert the large holes of the mounting base to the 5/8 cap screws (NO. 10-24 UNC).

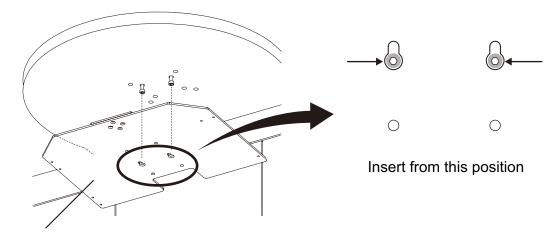
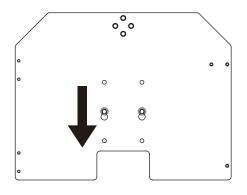
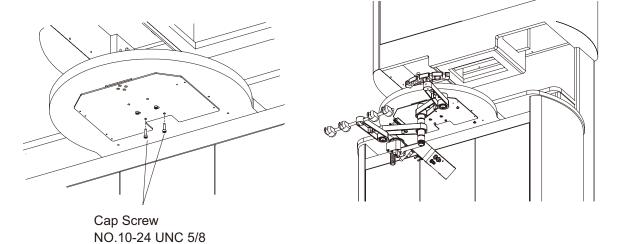


Table Chassis Upper Plate

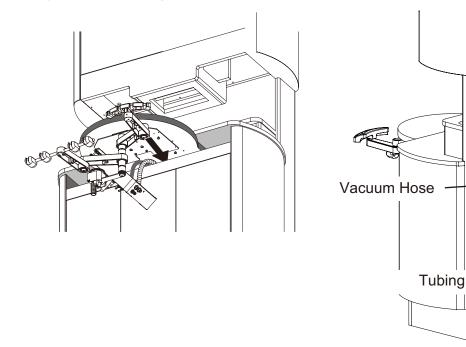
4. Slide the mounting base in the direction of an arrow to hold the mounting base to the cabinet.



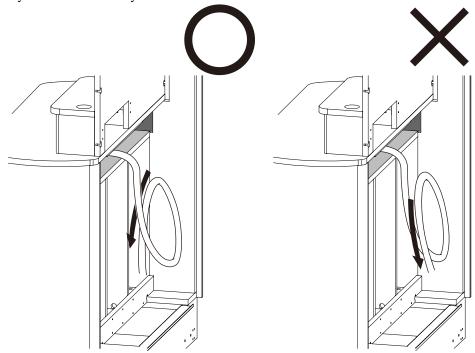
Fix the mounting base to the cabinet with remaining two holes by using two 5/8 cap screws (NO.10-24 UNC).



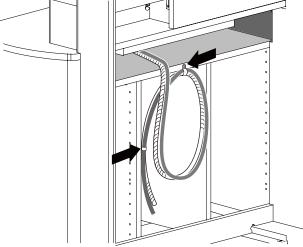
5. Pass the two tubings and vacuum hose through the opening space from the cabinet front as show in the figure below and bring it to behind the cabinet.



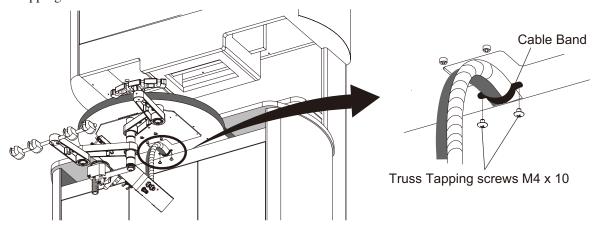
6. Be sure to reel the two tubings and vacuum hose as show in the figure below. If reeled it wrong direction, tubings may not move smoothly



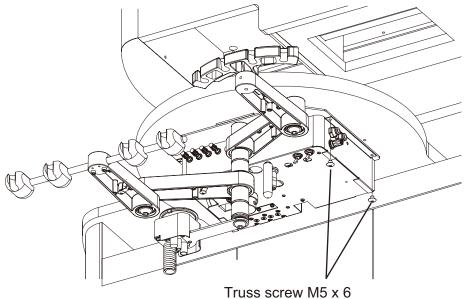
- 7. Fix the tubings and vacuum hose together by using two clamps.
- \* To ensure that the tubings and vacuum hose moves smoothly, be sure to fix the clamps at correct position as described below.



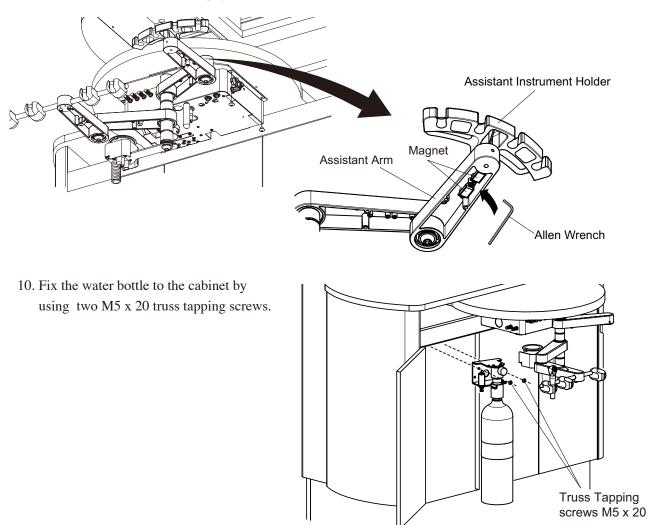
8. Fix the tubing and vacuum hose to the underneath of the cabinet by using cable band with two truss tapping screws.



9. Finally, attach the table chassis and fix it with two M5 x 6 truss screws.



Note: For the future adjustment, the allen wrench (M6) must always be attached magnetically underneath of the assistant arm after doctor arm and assistant arm height adjustment. Height adjustment of doctor arm and assistant arm, refer to page 41.



Connection of foot controller, tubings and vacuum hose, please refer to P54 flow diagrams. Also refer to installation manual attached to the cabinet.

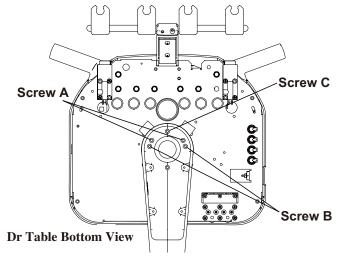
### 

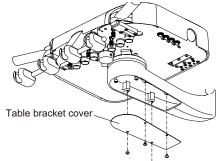
Be careful when opening the Dr table top cover during installation or repair. Harness from membrane switch of the table top cover is connected to the Dr table section. Do not pull the Dr table top cover excessively. This could cause damage to the harness of the membrane switch.

#### 18-1. How to Adjust the Horizontal Level of the Dr Table

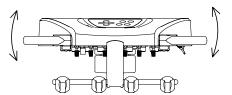
The horizontal level of the Dr table can be adjusted. Adjust horizontal level of the Dr table by below procedures during installation if the Dr table is not horizontally leveled. Before adjusting horizontal level of the Dr table, adjust the level of the swing arm or PMU section.

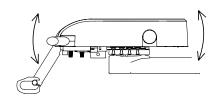
- 1. Open the table bracket cover by removing 4 screws.
- 2. Loose screw A (2 screws) before adjusting horizontal level.

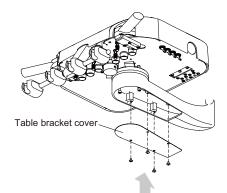




- 3. Left or right horizontal level of the Dr table can be adjusted by loosening or tightening screw B (2 screws).
- 4. Front or rear horizontal level of the Dr table can be adjusted by loosening or tightening screw C.
- 5. After adjustments, tighten screw A (2 screws) and reattach the table bracket cover with 4 screws.

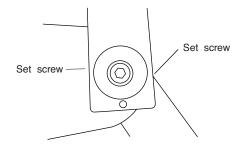






#### **18-2. How to Adjust the Swing Arm Friction** The friction of the swing arm for Doctor's control, dental light and monitor must be adjusted independently.

Adjust the M6 x 5mm socket set screw beneath the swing arm.



0

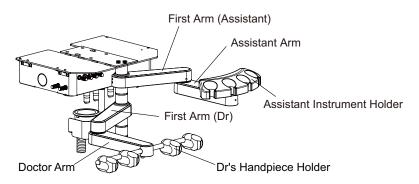
Balance arm friction adjustment screw

#### 18-3. How to Adjust the Rotation Friction of Table Balance Arm

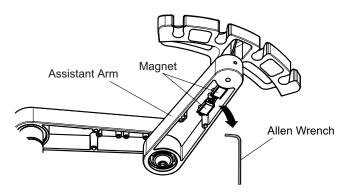
Adjust rotation friction of the balance arm with M6 x 5mm adjustment screw.

#### 18-4. Doctor Arm / Assistant Arm Height Adjustment of Rear Delivery

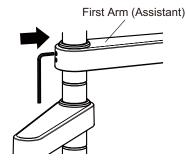
Height of doctor arm and assistant arm can be adjusted. Also this adjustment can be done by users themselves. This is why the allen wrench (M6) must always be attached magnetically underneath of the assistant arm after doctor arm and assistant arm are adjusted.



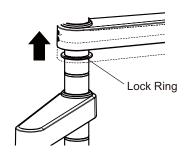
1. Take allen wrench out from underneath the assistant arm.



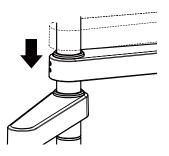
2. Loosen the (2) set screws on the first arm (Assistant) by using allen wrench.



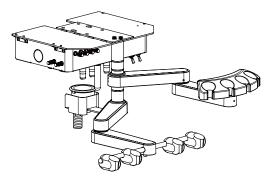
3. Lift up the first arm (Assistant).



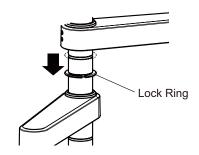
5. Lower the first arm (Assistant) until arm hits the lock ring.



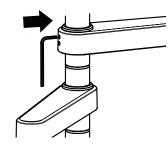
7. Adjust height of Doctor Arm by following the same procedures shown in  $2 \sim 6$ .



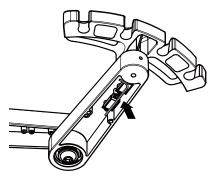
4. Slide down the lock ring.



6. Tighten the (2) set screws on the first arm (Assistant) by using allen wrench.



8.Re-attach the allen wrench to underneath the assistant arm.



Note : Arm height can be adjusted at 3 positions.

If one of the arms is adjusted, you may need to adjust another arm to avoid interference of arms.

#### 18-5. Water and Air Manual ON/OFF Valves

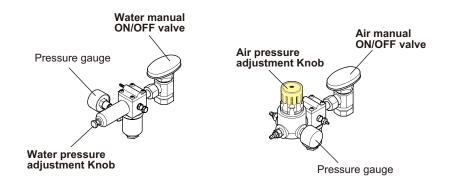
Open the water and air manual ON/OFF valve counterclockwise in the floor utility. Turn on the master switch and check that water and air are not leaking.

#### 18-6. Main Air Pressure

The main air pressure has been adjusted in the factory. Confirm that the main air pressure is at 75 psi (0.5 MPa) by the main air pressure gauge. The main air pressure can be regulated by the main air regulator in the floor utility.

#### 18-7. Main Water Pressure

The main water pressure has been adjusted in the factory. Confirm the main water pressure is at 29 psi (0.2 MPa) by the main water pressure gauge. The main water pressure can be regulated by the main water regulator in the floor utility.

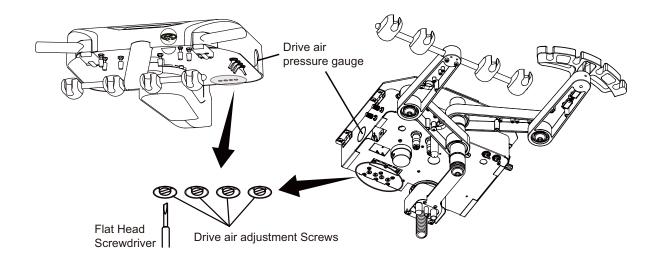


## 

- To avoid potential damage to handpieces
  - Never operate a handpiece without a bur in the chuck.
  - Do not exceed manufacturers recommended pressure setting at the handpiece.

Each handpiece drive air can be adjusted by turning the drive air adjustment screw during the operation. Drive air pressure is decrease by turning the adjustment screw clockwise and increase by turning the adjustment screw counterclockwise use a flat head screwdriver.

Drive air pressure is indicated on the handpiece pressure gauge located on the rear side of table and set the drive air pressure according to the instruction manual attached to individual handpiece.



Note : The reading at the pressure gauge will be approximately 5 psi (0.034MPa) higher than the actual pressure at the handpiece, due to line loss. To attain the desired handpiece pressure setting, adjust the drive air adjustment screw until the gauge pressure is 5 psi (0.034MPa) above target pressure. If the adjust is made using a special in-line gauge attached at the handpiece connector, then set the pressure at this gauge directly, as specified by the handpiece manufacturer.

#### 18-9. Coolant Water

The handpiece coolant water control knobs are located underneath the doctor table.

Each handpiece coolant water control knob is identified as number 1 to 3 from the left side HP1, HP2 and HP3. The handpiece coolant water volume can be controlled independently.

Flip the toggle on foot control to switch to the "wet" position. (Toggle toward inside of the foot controller) Install a bur in the handpiece to be adjusted. Step on the foot controller and run the handpiece, adjust the water coolant flow knob until a fine mist is achieved.

#### 18-10. Coolant Air

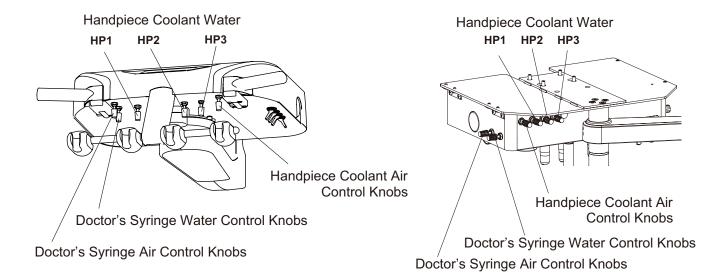
The handpiece coolant air control knob is located underneath the doctor table and all handpieces coolant air can be controlled. (Except syringe).

Adjust coolant air volume during run the handpiece until the desired flow is achieved.

#### 18-11. Doctor's Syringe

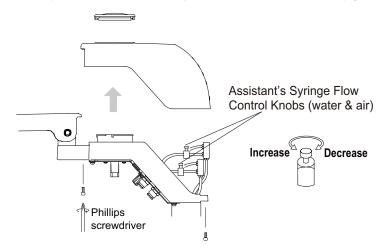
Doctor's syringe flow control knobs are located underneath the doctor table. The flow control knobs adjust the doctor's syringe air and water flow volume.

The yellow capped knob is the air flow control knob, the blue capped knob is the water flow control knob.



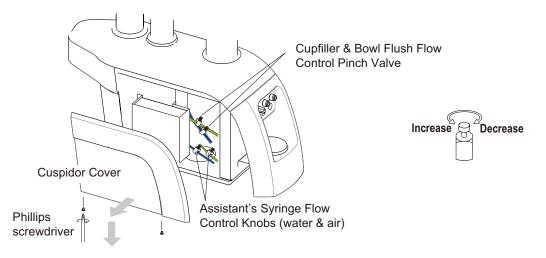
#### 18-12. Assistant's Syringe (Vac Pac)

Assistant's syringe flow control pinch valves are located inside the Vac Pac utility center. Open the upper cover by loosen the screws. Adjust the water and air flow by pinch valves.



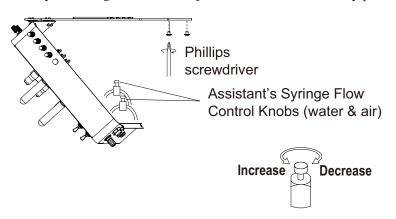
#### 18-13. Cupfiller, Bowl Flush and Assistant's Syringe (Cuspidor Unit)

Cupfiller, bowl flush and assistant's syringe flow control pinch valves are located inside the cuspidor. Open the cuspidor side cover by loosening the screws. Adjust the water and air flow by pinch valves.



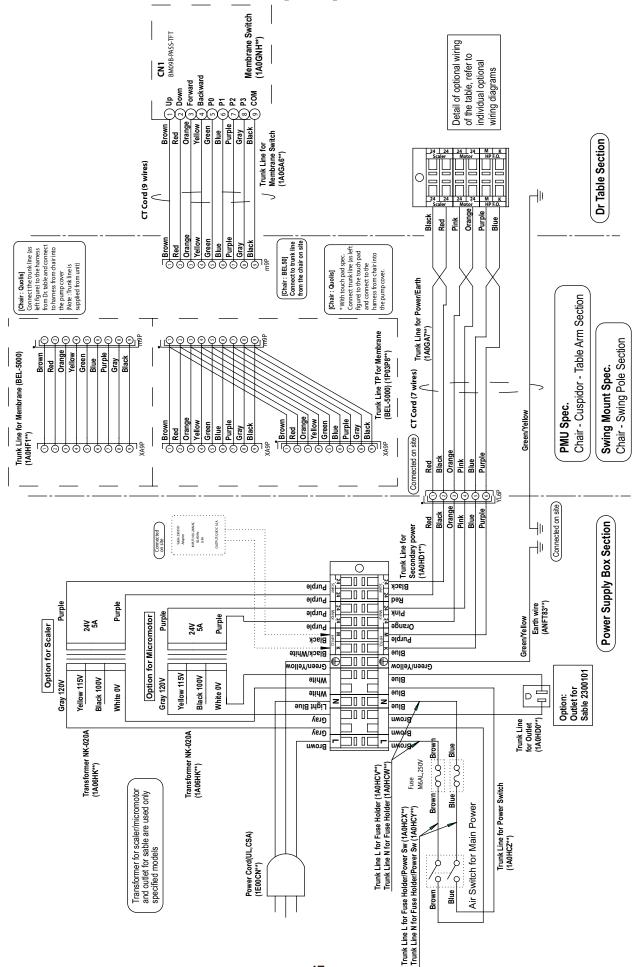
#### 18-14. Assistant's Syringe (Rear Delivery)

Assistant's syringe flow control pinch valves are located inside the Rear Delivery. Open the table chassis by loosening the screws. Adjust the water and airflow by pinch valves.

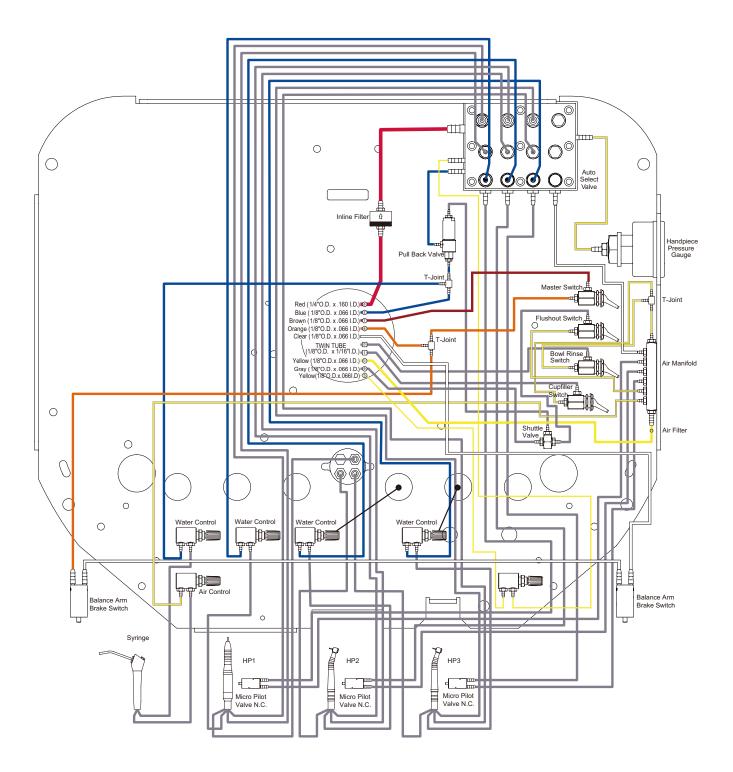


#### **19. Electrical Diagram**

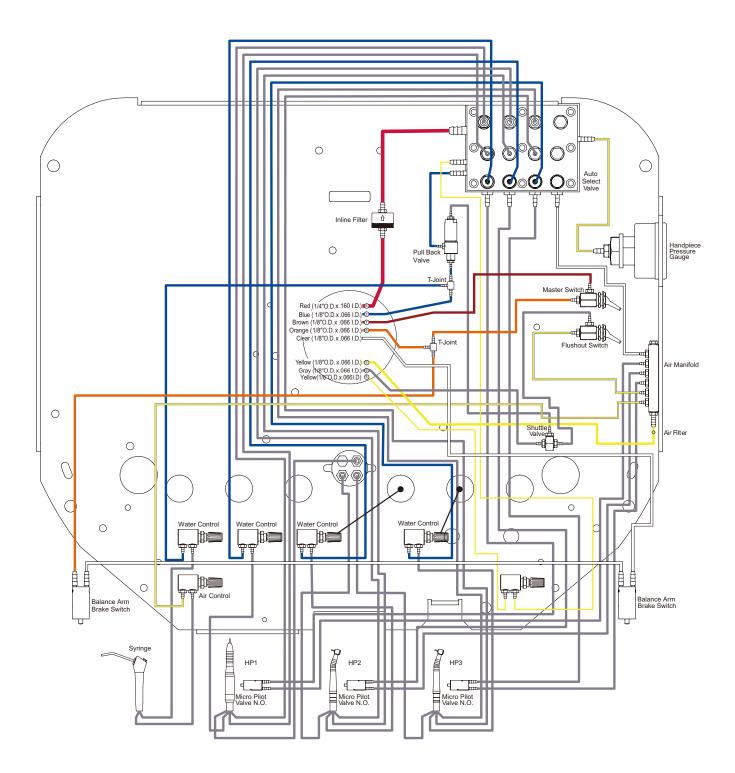
(with Mocromotor, Electric Scaler, Handpiece Optic)



## 20. Flow Diagram20-1. Doctor's Control Section (with spittoon)

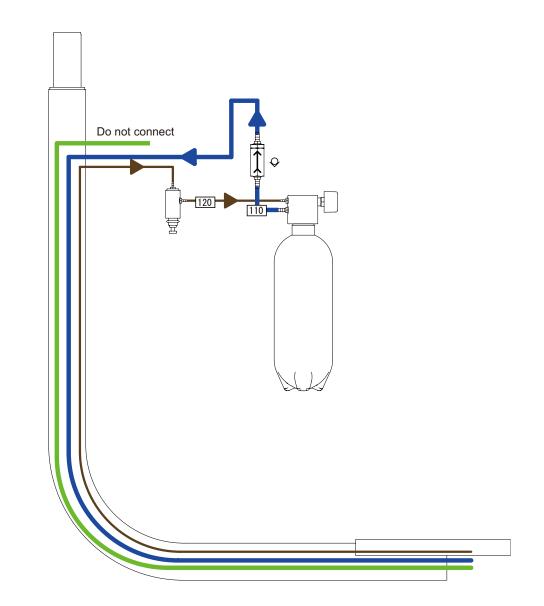


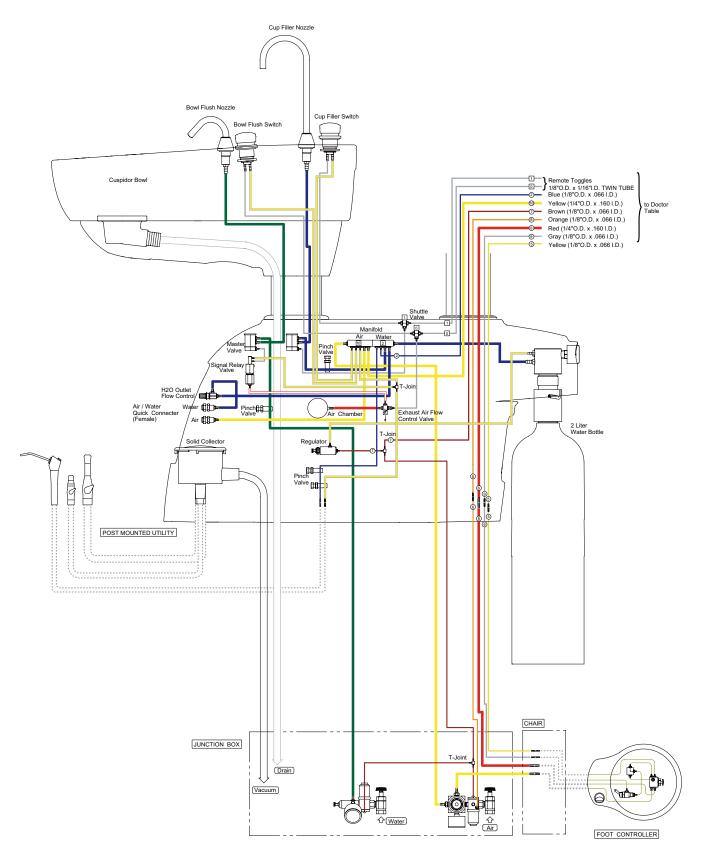
#### 20-2. Doctor's Control Section (without spittoon)



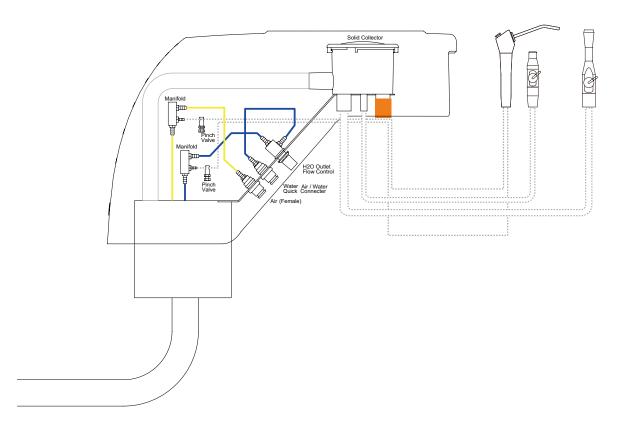
#### 20-3. Swing Arm Section

Swing Arm

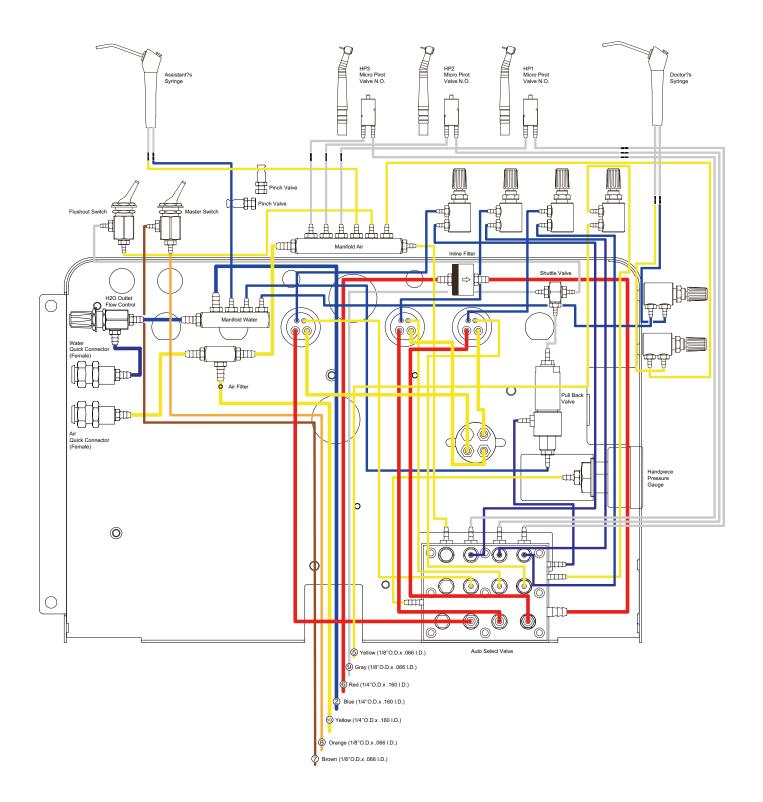




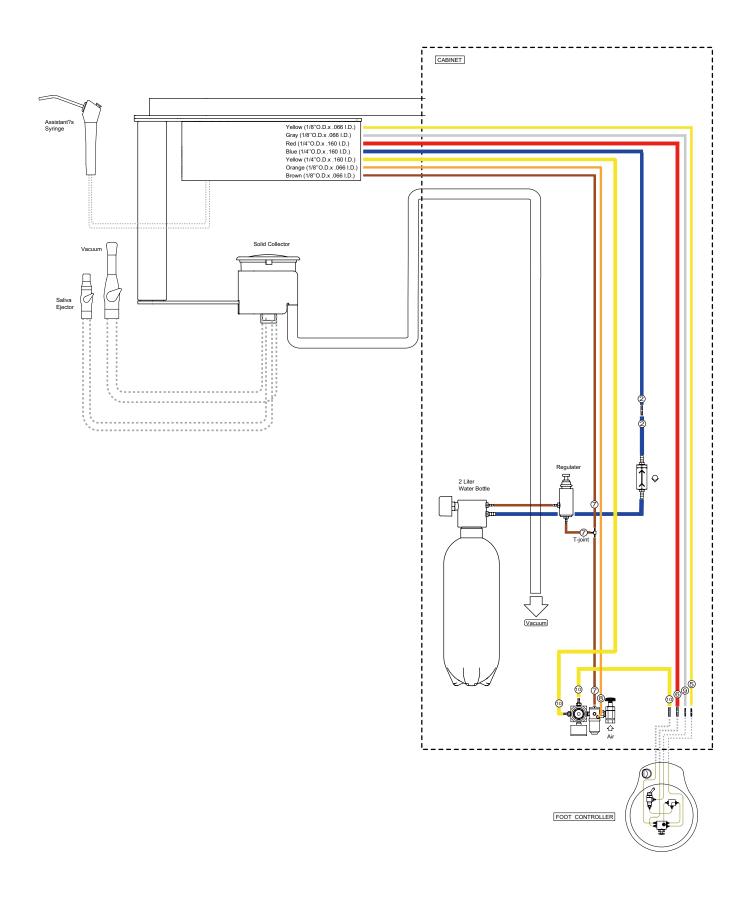
#### 20-5. Vac Pac Section



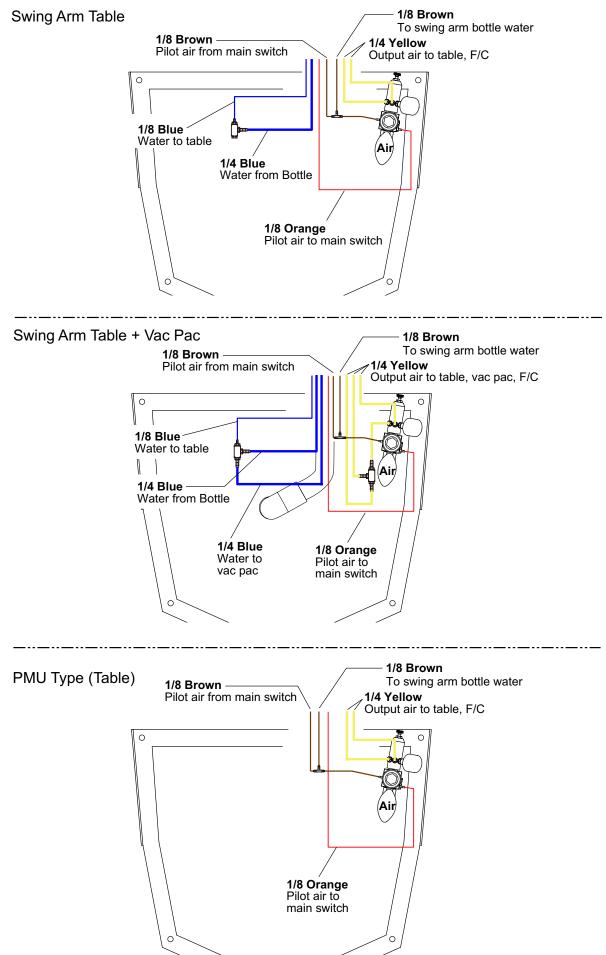
#### **20-6 Rear Delivery Section(Table)**

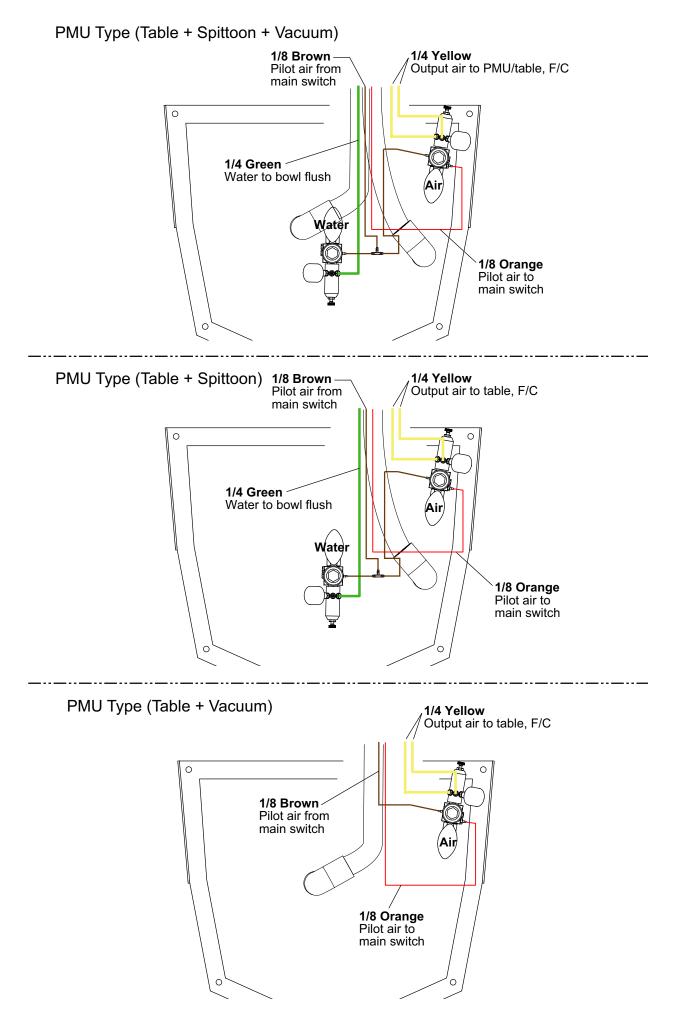


#### 20-7 Rear Delivery Section(Cabinet)

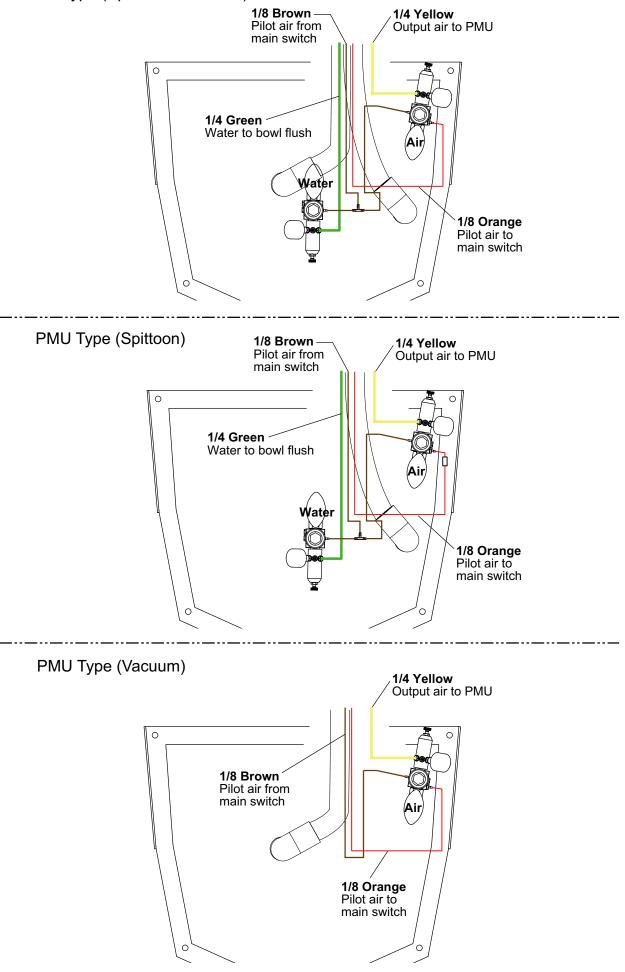


#### 20-8. Junction Box Section



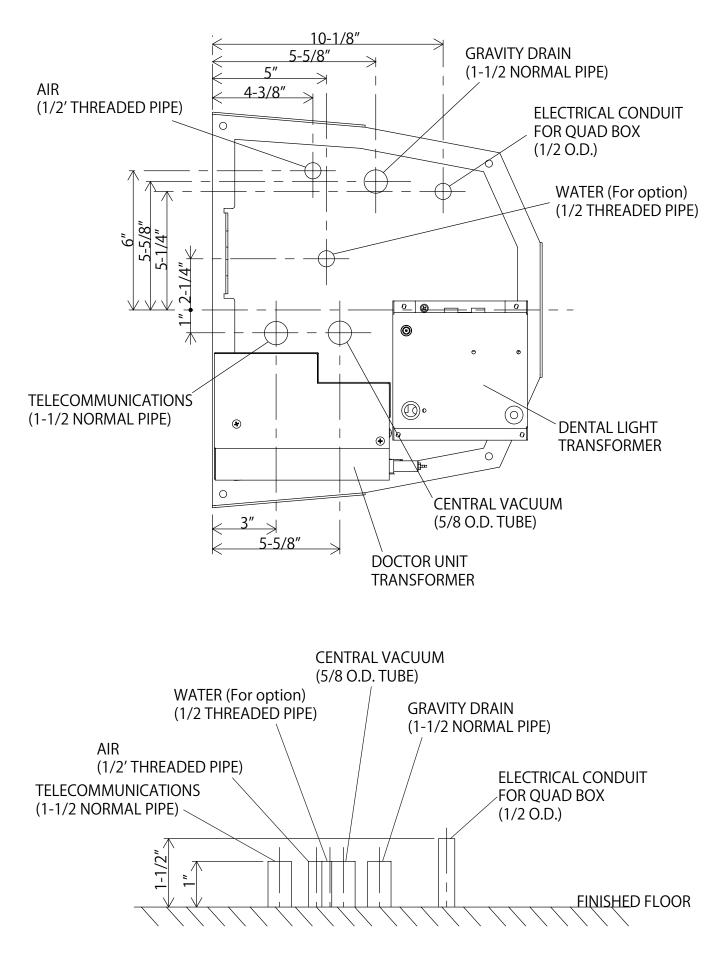


PMU Type (Spittoon + Vacuum)



#### **21. Floor Template**

\* Floor template of the Rear Delivery, See in cabinet installation manual.



## Belmont

#### Importer for U.S.A.

NOTE

#### BELMONT EQUIPMENT, Division of Takara Belmont USA, Inc.

101 Belmont Drive, Somerset, New Jersey 08873 U.S.A. TEL.:(732) 469-5000 / (800) 223-1192 Fax.:(732) 526-6322 / (800) 280-7504

#### Importer for Canada

#### TAKARA CO, CANADA LTD.

2076 S. Sheridan Way, Mississauga, Ont., L5J2M4, Can. TEL.:(905) 822-2755 Fax.:(905)822-6203



BELMONT MANUFACTURING CO., LTD. (Manufacturer) Long Duc Industrial Park, Long Thanh District, Dong Nai Province, Viet Nam TEL : +84-613-201-100 / FAX : +84-613-201-096

BOOK NO. 1E04S3BE 2017-02