

2021



Flight Dental Systems

A Division of HR Dental Products
Inc.



[A6-E USER MANUAL]

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Welcome

Welcome to the Flight Dental Systems' Owner's Guide. This guide is a source of technical information for installation, operation and maintenance of the Flight Dental Systems A6-E Operative Unit.

The Flight Dental Systems A6-E Operative Units are intended to supply power and serve as a base for dental devices and accessories. The intended use is in the treatment of dental patients in the dental clinic/office environment. The units are to be used by trained dentists, dental hygienists, dental technicians and dental assistants.

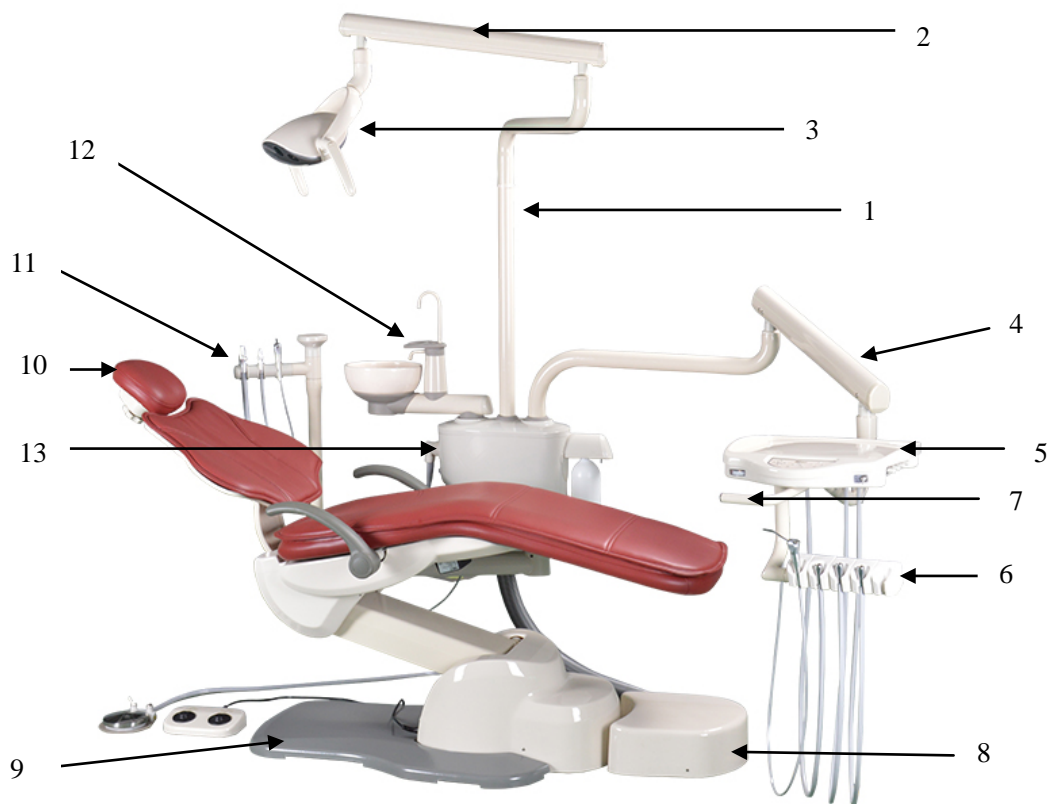
This document is intended for use by technicians and for practitioners and staff during installation, operation and maintenance of the Flight dental unit. This guide provides descriptions and operation instructions for the use of the Flight Dental unit. It contains protocols for programming chair functions, chair operations, adjustments, maintenance, the use of the delivery system and upholstery care.

Only Flight Dental System's authorized factory trained service technicians should attempt to install or service this equipment. Technicians should refer to this manual prior to commencing installation of any Flight Dental Systems operative equipment. Failure to follow the directions may result in damage to the equipment and/or injury to the installer, user, or patients.

Operators should refer to this manual prior to first using their new equipment in order to obtain optimal use of all of the features and benefits provided by this advanced dental system. Operators should also read this manual to become aware of the proper care and maintenance of their new equipment to ensure a long usable life for the chair and delivery systems and to avoid the risk of injury to the operator or their patients.

Should you have any questions regarding the content of this manual or about any aspect of the installation, use, or maintenance of this new equipment please call Flight Dental Systems at the appropriate numbers listed on the contact page.

Overview



1. Vertical light post
2. Light flex arm
3. Light head
4. Treatment tray flex arm
5. Treatment tray
6. Handpiece tubing holders
7. Air brake
8. Junction box cover
9. Chair base plate
10. Double articulating headrest
11. Assistant instrumentation
12. One piece ceramic cuspidor
13. Side utility box

General Information

Minimum Requirements

- Electrical wires must be standard and grounded.
- Input air pressure must be at least 2.50 scfm (70.80 l/min) at 5.5 kg/cm² (80 psi or 551 kPa).
- Input water pressure must be at least 1.5 gpm (5.681 l/min) at 2.81kg/cm² (40 psi or 276 kPa).
- Vacuum must be at least 1 cfm (339.84 l/min) at 8 inches of mercury (27 kPa).
- The instruments to be placed on the treating tray cannot be too heavy -- weight should not exceed 3.8 KG.
- The air pressure of the unit is set by the manufacturer. Do not attempt to adjust the air pressure. Only an authorized Flight Dental Systems technician should attempt to adjust the pressure.
- The preset stationary position of the dental chairs is locked once installed. Do not adjust and allow for professional adjustment.

Ideal Working Conditions

The following is the ideal conditions that will optimize the performance of your dental unit.

- 1) Environment temperature: 5°C to 40°C (41°F to 104°F)
- 2) Relative humidity: 20% - 80%
- 3) Atmospheric pressure: 86 to 106 kPa
- 4) Electrical source AC: 115V **or** 230V, 50-60 Hz± 1Hz, power 1800VA (maximum)
- 5) Water pressure : 35 - 45 psi, water temperature 5°C to 40°C (41°F to 104°F)
- 6) Air source pressure: 70-85 psi, air temperature 5°C to 40°C (41°F to 104°F)
- 7) Vacuum pressure should not exceed that supplied by a dental specific vacuum pump system.
- 8) Electromagnetic compatibility: This product has been evaluated to electromagnetic compatibility as per IEC 60601-1-2. It conforms to all the necessary standards and therefore deemed safe for operation with other devices.
- 9) Mode of operation: Continuous operation except dental chair. Chair duty cycle 6%.
- 10) Electrical power transformed to maximum 24VAC by transformer. All wiring within chair and unit is low voltage of either 12VAC or 24VAC.
- 11) Shipping weight including shipping crate and packing is 285kg (627 lbs). Actual weight of chair, unit, cuspidor and light is 205 kg (453 lbs).
- 12) Please observe the patient chair maximum load capacity of 135kg according to EN ISO 6875.

Transport and Storage Conditions

Environment temperature: -10°C to 60°C (41°F to 104°F)

Relative humidity: 10% - 90%

Atmospheric pressure: 60 to 106 kPa

Specifications and Conformance to Standards:

HR Dental Products Inc. has implemented and maintains a Quality System certified to ISO 13485:2016

This equipment is approved by Health Canada, FDA, CE Mark (Europe), TGA (Australia) SFDA (Saudi Arabia)

All water and air supplies to unit must meet national regulations for air and water quality for human use.

Chair Foot Control has IPX1 degree of protection against liquids.

Statement of Intended Use:

The Flight Dental Systems A6-E Operatory Unit is intended to supply power and serve as a base for dental devices and accessories. The product at its bare minimum includes a dental operatory chair. The device may also include a cuspidor and a central vacuum valve system. The use intended is in the treatment of patients in the dental clinic/office environment and by trained dentists, dental hygienists, dental technicians and dental assistants use the device. The device may be attached to a dental chair using an industry standard 2" mounting post.

Compatible Accessories

Flight Dental Systems equipment is compatible with most standard accessories as follows:

- Standard handpiece tubes fit four hole Midwest Style handpieces and accessories.
- Fibre-optic tubing is ISO-C (six pin tubing).
- Cup fill settings can be set to fill any standard size cup from 3 to 5 ounces.
- Handpieces hangers will accept any standard size air driven or electrical motor handpiece.
- Quick disconnect accepts any 1/4" quick disconnect male insert.
- 1 7/8" vacuum trap filters – 2 hole and industry standard air syringe tips
- High volume and saliva ejector valves accept all standard North American tips.

Warning

To avoid personal injury or material damage, please observe the warnings and safety information provided in this manual, on the equipment and on the product packaging.

Installation

Tools Required for Installation

- Allen (Hex) keys sets (Metric and Imperial)
- Phillips screw driver – medium size
- Slot head screw driver – medium size
- Slot head screw driver – extra small size
- Fish tape
- Needle nose pliers – medium size
- Moving dolly with pull rope

- 10" Magnetic level
- Standard pliers or cutters
- Hammer drill
- Utility knife
- Handpiece pressure gauge

Basic Installation

This is a systematic overview with diagrams to help you quickly install the dental unit for operation. A two man team can install any Flight system in as little as one hour; however, it is preferred to have a minimum of three technicians in attendance for installation because of the weight of the equipment.

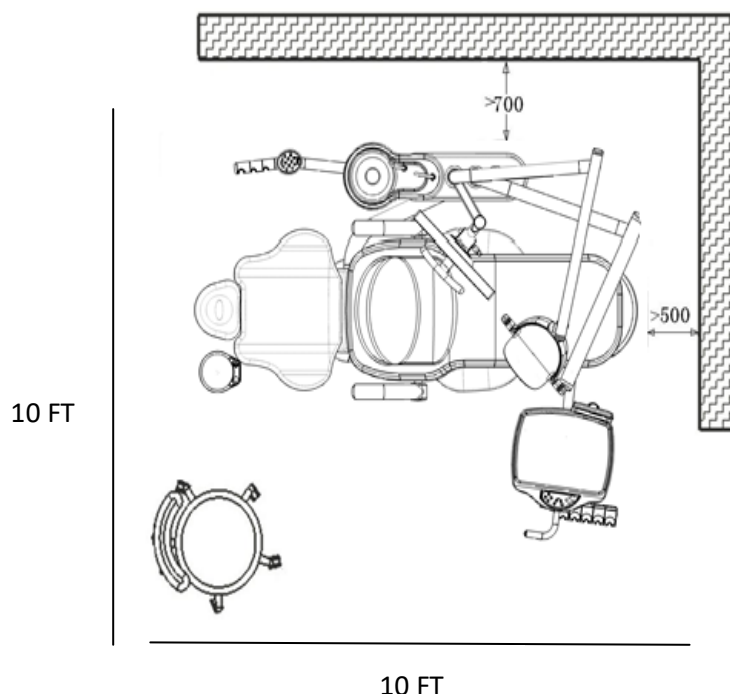
The Flight model operatory system is shipped fully assembled with the exception of upholstery and treatment light, which must be installed in the operating room. In most cases the chair can be unpacked by loading it on a shipping dolly and wheeling it into the operating room for final placement and connection to the plumbing and electrical fixtures.

In certain cases, because of narrow doors or hallways, the cuspidor and delivery system must be removed from the chair to allow the chair to fit through the door; the cuspidor and delivery system can then be transported by dolly to the operating room for reassembly. Please note the overall dimensions of the chair and the delivery system relative to the dimensions of the door and the hallway prior to the transportation of the package into the operating room.

Positioning of Chair in Operating Room

Proper operation of the dental unit requires that sufficient space be left around the chair to accommodate the operator and assistant as well as entry and exit for the patient.

We suggest the unit should be arranged in the following manner according to the figure below.



Provision of Utilities to the Dental Unit

Flight Dental System's Operatory Unit normally requires the provision of a compressed air line, vacuum line, a water supply, a 1½" or 2" drain and a 115V **or** 230V electrical supply. The necessary connectors will be found in a plastic bag stored within the floor box or inside the treatment tray. A backflow prevention device must be installed at the connection point of unit to office plumbing or elsewhere in the office in accordance with all federal, state, provincial, and local regulations.

Junction Box Utility Connections Specifications

AIR:

- ½" pipe N.P.T. protruding 1" from floor or wall. Supplied by contractor.
- Manual air shut-off valve to be installed by contractor.
- Air pressure 70-80 psi.
- Air plumbing should be flushed clean before making final connections to dental equipment.

WATER:

- ½" pipe N.P.T. protruding 1" from floor to wall. Supplied by contractor.
- Manual water shut-off valve to be installed by contractor.
- Water pressure 35-40 psi.
- Water plumbing should be flushed clean before making final connections to dental equipment.

ELECTRICAL:

- ½" conduit (or by code) and box with dual or equal receptacle supplied by contractor.
- Wire box as per code with top of the box no higher than 4½" above finished floor.
- Voltage: 115 Volts AC 3 wire **or** 230 Volts AC 3 wire.

CENTRAL VACUUM:

- Plumbing up to utility center should be specified by central vacuum supplier (usually 1¼") and terminated in utility center with 1/2" OD connection perpendicular to floor, similar to drain connection.

GRAVITY DRAIN:

- ½"OD tube protruding 1" from finished floor. A 1½" pipe is recommended underground.

Note: Place trap in line and use vented fitting to conform to local codes. Supplied by contractor. Floor mounting only.

- Local regulations may require that licensed plumbers and electricians install utilities.
 - Make sure all plumbing conforms to prevailing local codes.
- Use the junction box template to determine floor locations for connections.

Installing the Floor (Junction) Box

The floor box will be delivered connected by umbilical to the utility center. Be careful when moving the unit to avoid pinching the umbilical or any of the tubing within.

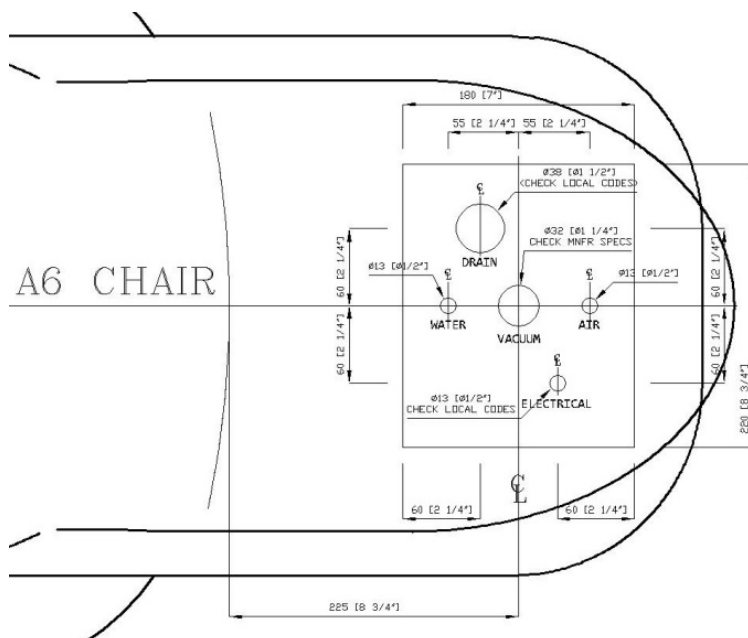
The floor box may be flush mounted or non-flush mounted depending upon the position of the utilities in relation to the desired chair position. If the floor box is to be flush mounted you can use a 2" drill bit to cut a hole in the rear of the floor box cover to allow the insertion of the chair power cord into the floor box.

The floor box may also be installed flush to the floor or resting on four rubber feet. If the floor box is installed using the rubber feet, the box will not be secured to the floor. If the floor box is to be mounted flush to the floor, you must remove the four rubber feet, and secure the floor box to the floor using four screws inserted through the holes previously occupied by the rubber feet.

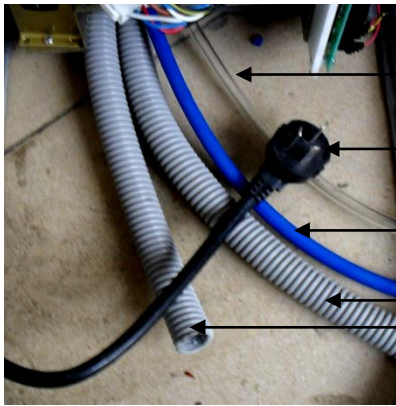
Floor Box Installation

1. Prior to junction box installation it will be necessary to flush out the office plumbing. Connect a hose to the water line and flush into a drain or suitable container. This will prevent debris getting into unit lines. Flush the air line also.
2. Locate the junction box template for general layout. If the box is to be secured to the floor, drill holes into floor and place the junction box frame over the office plumbing. Secure frame to the floor.
3. Install the master shut-off valves. Using a 5/8" wrench, install the air and water shut-off blocks onto the master valves. Tighten the compression nuts securely.
4. If necessary, shorten drain and vacuum tubing as required.
5. Locate the air and water regulators in packaging. The incoming air and water pressures may be set using these regulators. The air pressure regulators are manufactured to handle air and water pressures that do not exceed 135 psi.

The Floor Box Dimensions and Plumbing



- a) Water pipe, 1/2".
- b) Central vacuum pipe, 1/4" (or by specs).
- c) Air pipe, 1/2".
- d) Drain pipe, 1 1/2", or by code.
- e) Power conduit, as per code.



3/8" Compressed air connection

115v or 230v Electrical outlet

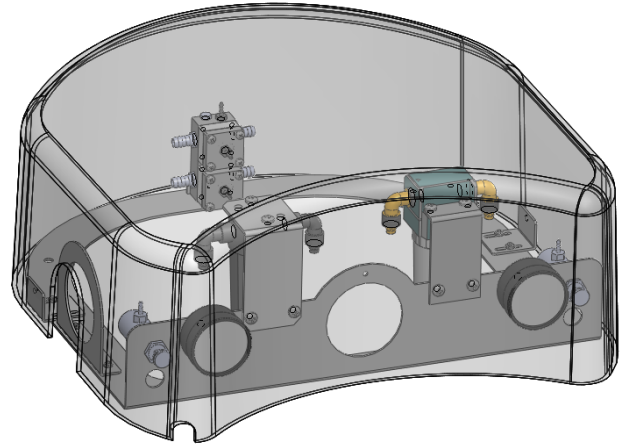
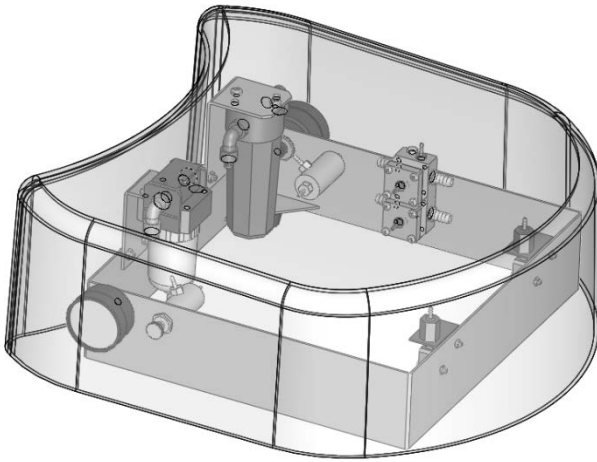
3/8" Water connection

19mm ID drain connection

16mm ID vacuum connection

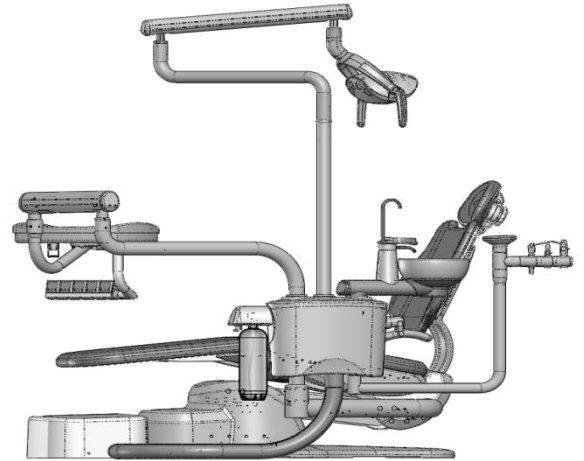
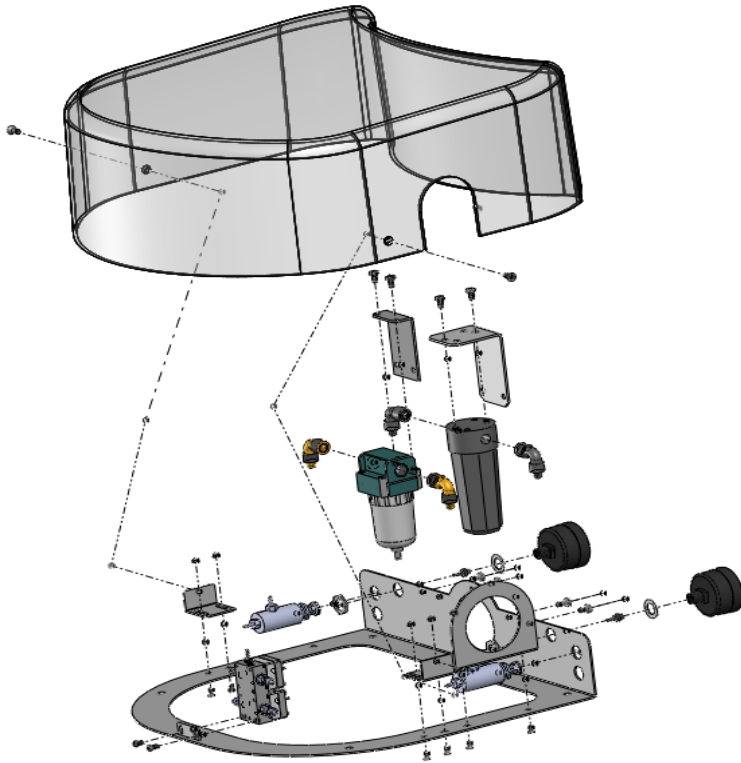
To remove the floor box cover, just grasp the end of the cover and lift it upwards. This does not require tools. On certain models in which pressure gauges are visible on the outside of the floor box cover, be careful that you do not disconnect or damage the tubings that are connected to the cover. Air and water pressure pre-regulators control the air and water pressure of the unit.

The air and water shutoff valves control the flow of air and water to the unit. These valves must remain fully open (turned clockwise) to prevent leaks. Only close the valves during servicing. The air and water filter prevents solids from entering the unit.



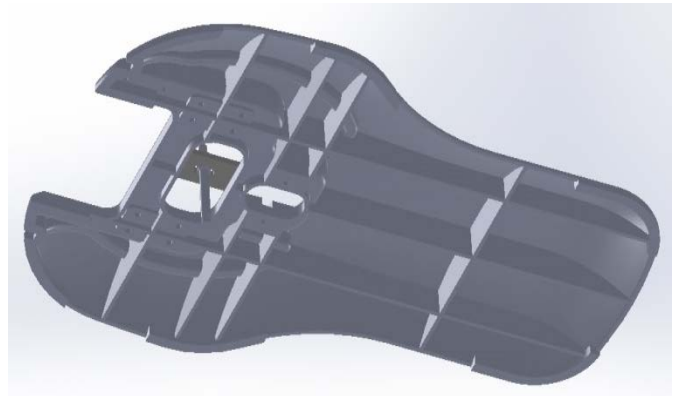
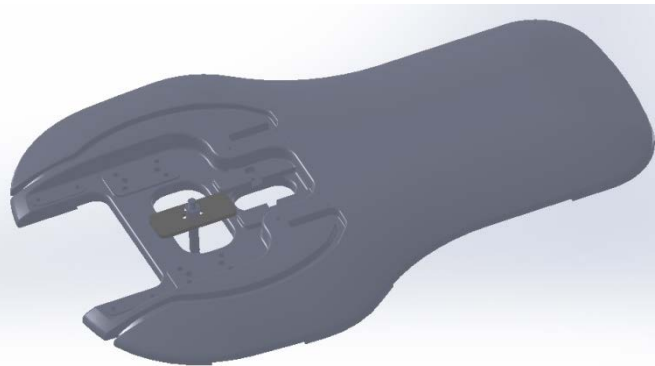
Adjust incoming Air and water bottle pressure in junction box. The air pressure gauge will also regulate the incoming city water. The air pressure should be 80psi and air pressure for your water bottle should be 35-40psi.





Securing Chair Base

Flight provides a metal bracket to secure the chair base to the floor. This will help to provide additional stability for the chair and to prevent chance that the chair may cause any injury. A bracket is provided in your parts to secure the chair. Please see diagram of where to secure the chair to the floor.

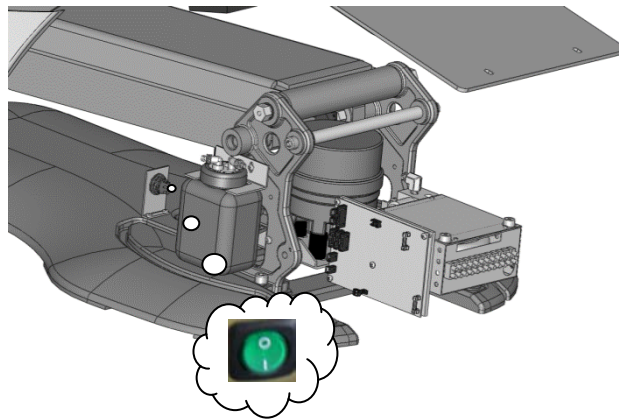


Please use the proper securing bolts according to your flooring material.

Operation of the Dental Chair

Power On/Off Button

The power on/off for the chair is a green switch located on right side of the chair base. The switch is illuminated when the chair is plugged in and the power is on. This allows the entire system to become functional at the touch of a button. When the power on/off button is pressed in, a buzzer will sound two times. When pushing a valid key, the buzzer sounds one time. When the power button is off, the system will not be functional.



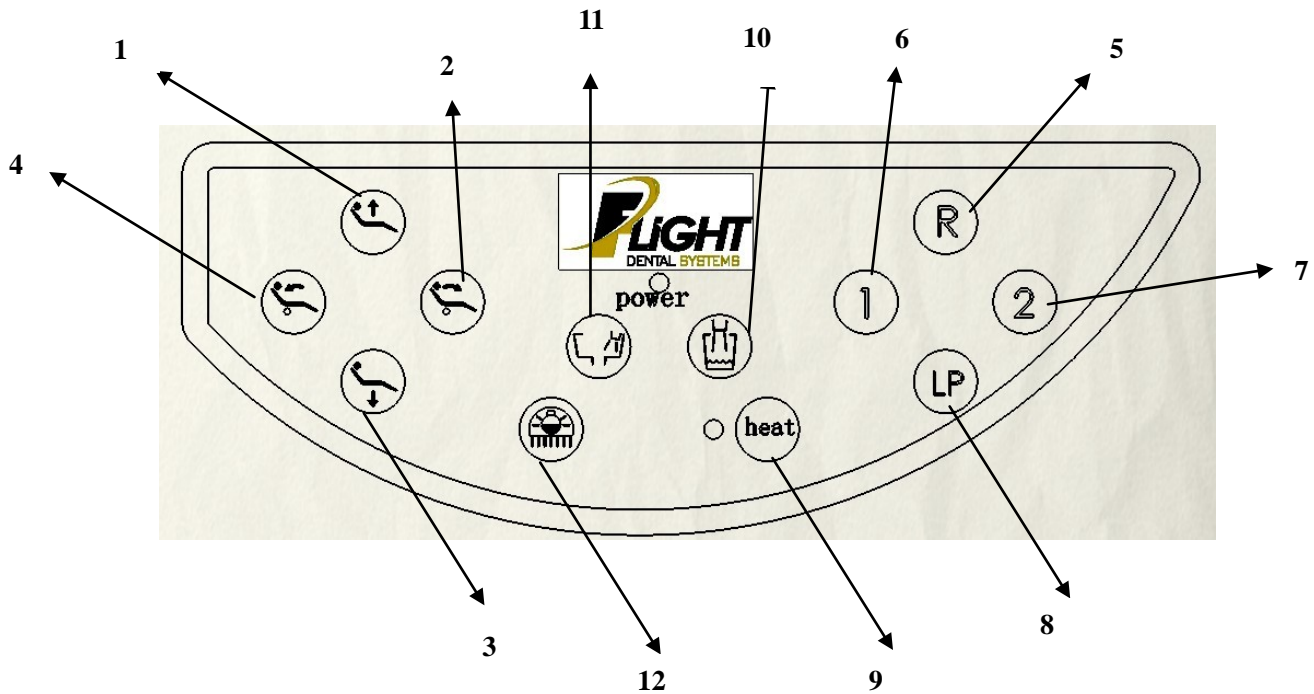
Control Panels for Movement of the Flight Unit

Each Flight chair can be operated either manually or with programmed controls on the touchpads or on the deluxe foot control. Using the foot control or the arrows on the touchpad, the chair position can be manually controlled. Programmable functions can be stored in the designated memory buttons.



Deluxe foot control

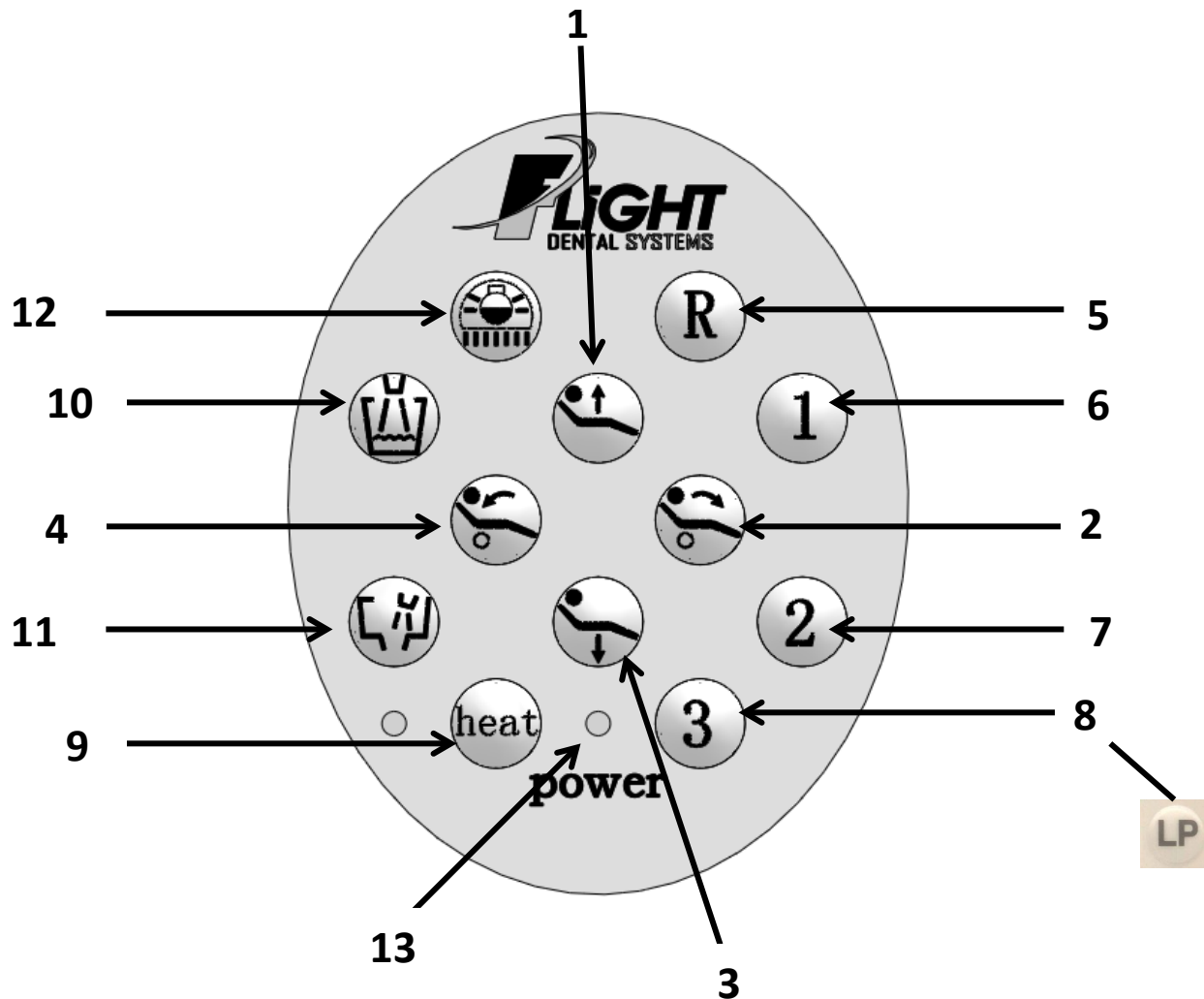
Touchpad Functions – On TRAD -2001 Treatment Tray



- | | |
|-------------------------------------|--|
| 1. Chair base up | 7. Memory position number |
| 2. Backrest forward | 8. Return to last position |
| 3. Chair base down | 9. Syringe heater On/Off * |
| 4. Backrest down | 10. Activate cup fill |
| 5. Reset chair to original position | 11. Activate bowl rinse |
| 6. Memory position number 1 | 12. On/Off/Intensity - treatment light |

*Syringe heater function is not available on chairs sold in Canada, United States or

Touchpad Functions – On TRAD -2002/3001 Treatment Tray& Assistants Arm



- | | |
|-------------------------------------|--|
| 1. Chair base up | 7. Memory position number 2 |
| 2. Backrest forward | 8. Return to last position |
| 3. Chair base down | 9. Syringe heater On/Off * |
| 4. Backrest down | 10. Activate cup fill |
| 5. Reset chair to original position | 11. Activate bowl rinse |
| 6. Memory position number 1 | 12. On/Off/Intensity - treatment light |
| | 13. Power indicator |

*Syringe heater function is not available on chairs sold in Canada, United States or European Union.



Movement of chair


Manual Mode


The up and down keys allows for vertical movement of the chair. Press the up key to raise the chair and hold until desired height is reached or until the maximum height is reached. Press the down key to lower the chair and hold until the desired height or the maximum depression is reached.

The forward and backward keys allow for tilt movement of the chair. Press the forward key to tilt the chair forwards and hold until the desired position or the maximum forward tilt position is reached. Press the backward key to tilt the chair backwards and hold until the desired position or the maximum backward tilt position is reached.

Automatic Mode

This refers to programmable positions based on the practitioner's desire and can be constantly changed according to preference and needs. There are two adjustable memory position keys ( and ). Pressing each key will activate the chair to move to the programmed position.

Pressing the reset key  will reset the chair to the original patient entry position. This position is preset at the factory.

Pressing the last position key  position key will bring the chair backrest to the preset cuspidor position allowing the patient to easily access the cuspidor and rinse cup. The chair may then be returned to the working position using the programmed position buttons.

The chair movement may be stopped at any time during automatic movement by pressing the directional keys on the touchpad.

Programming the Chair

The dental chairs have programmable positions that accommodate the doctor's preferences. To Program your chair please follow these steps:



1. Adjust the chair to the desired position using the manual keys.
2. Once in place, press one of the memory position keys and hold for 5 seconds.
3. Wait for the buzzer to ring twice. Your position is now set.

To set the second memory position, move the chair to the second desired position and repeat step 2 using the other memory position button.


Setting the Chair Soft Limits

The maximum high and low setting for the chair may be field set according to the individual requirements of the office. It is recommended that these settings be set by the technician at the time of installation at not less than 1" from the mechanical high and low limits of the chair.


Resetting the Chair Soft Limits

Press the Reset  and Chair Base Down key  simultaneously for 20 seconds until the buzzer sounds continuously at a rapid rate. Release the two buttons as soon as the buzzer starts to beep continuously.

First set the “double high” position by moving the chair base to the highest positions and then down slightly so that it is away from the mechanical limit switch. Move the chair back all the way up and then down slightly so it is away from the mechanical limit switch.

Press the LP key  once and the “double high” soft limits will be memorized and the frequency of the buzzer will decrease.

Set the “double low” position by moving the chair base all the way down and then slightly up so it is away from the mechanical limit switch. Move the backrest all the way down and then slightly up so that it is away from the mechanical limit switch.

Press the LP key  one more time, the sound of the buzzer will stop and the setting is finished.

Note: If the sound of the buzzer does not stop and continues to sound at a rapid rate in step 5, this means there is an error in the setting. Steps 2 to 5 will need to be repeated.

Upon completion of this procedure the chair base and backrests will not be able to move higher or lower than these preset limits. *It is important that the higher position is adjusted before the lower position. The process cannot be reversed and must be programmed in this order; otherwise, other operations cannot be carried out.*

The Headrest

The FLIGHT chair includes a double articulating headrest. This headrest allows the placement of the headrest to virtually any position to ensure operator and patient comfort.

To set the position of the headrest, turn the knob at the back of the headrest in a counterclockwise direction to loosen the headrest movement. Position the headrest in the desired position and tighten the knob by turning in a clockwise direction to fix the headrest in the desired position.



The height of the headrest is adjusted by pulling and/or pushing the headrest from the slot in the backrest. When the glide bar reaches its maximum recommended working height (lower or upper), a marker will become visible on the headrest support. Do not use the headrest if the warning is visible.

Wheelchair Patients

The headrest can also accommodate patients in wheelchairs.

To adjust for wheelchair patients:

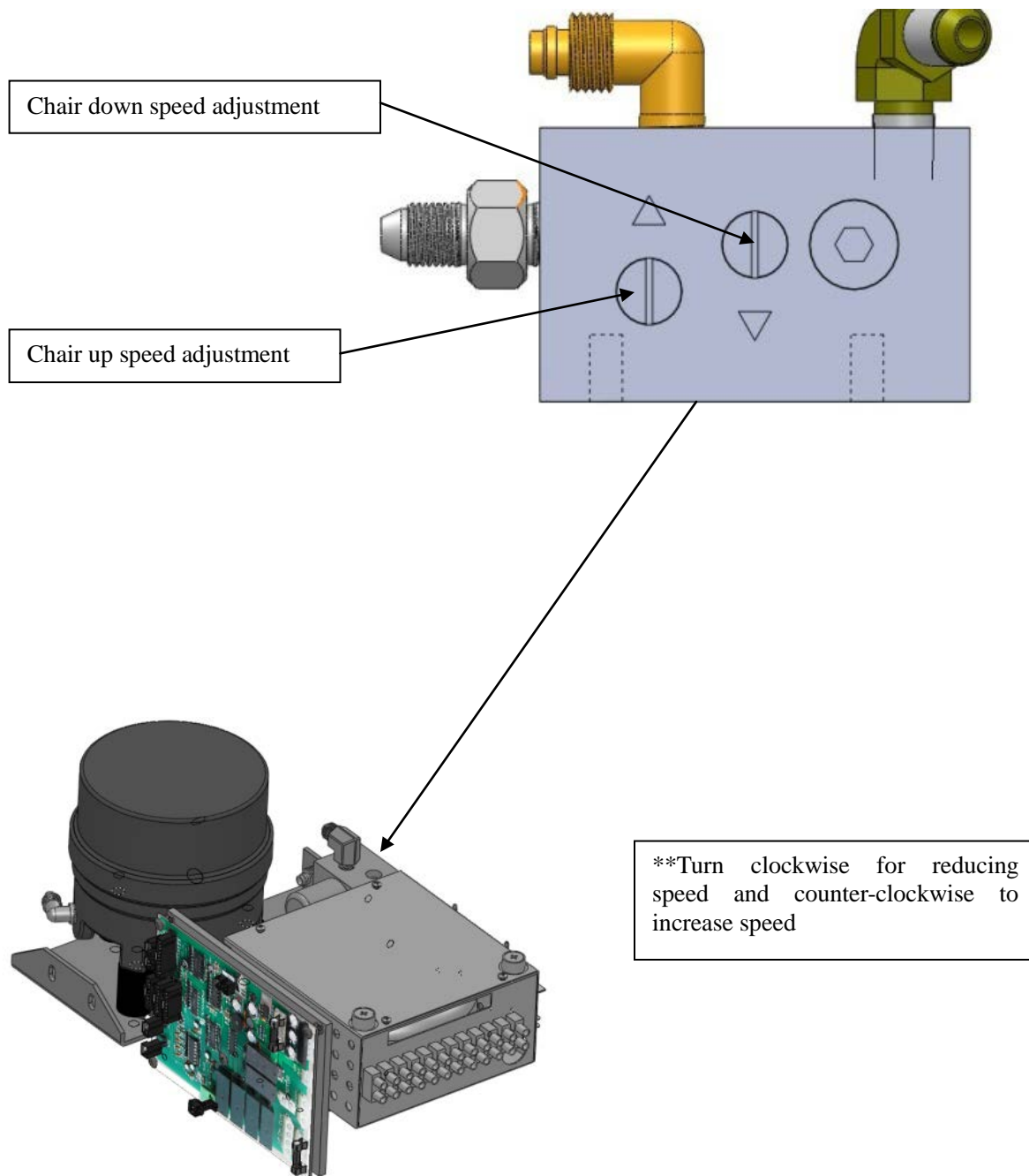
Slide the glide bar of the headrest upwards until it is away from the dental chair.

Rotate the glide bar 180 ° and slide it back into the backrest pushing it completely down.

Position the dental chair into its fullback up position.

The patient should be positioned so the wheelchair is back to back with the dental chair. You may need to position the chair height to accommodate the patient's height.

Patient Chair Up/Down Speed Adjustment



About the Delivery System

The Flight doctor's delivery system includes a treatment tray with automatic control of three installed handpiece positions; two of these positions are configured for high-speed air turbine sets and one is configured for a low-speed air driven handpiece. The control also includes one air-water syringe set. The handpieces become automatically active when removed from the hanger.

It has a pivoting handpiece bar and rotating handpiece holders for personalized positioning. It holds up to 5 handpiece positions. The assistant's instrumentation has an extended flexible arm for comfortable positioning and movement in the case of a solo operator.

Power On/Off Switch

The power on/off switch is located on the chair base. It is a green switch that lights when the unit is on. When this switch is on, electrical power is running through the unit. The power switch should be turned off when the unit is not in use for extended periods of time – i.e. at the end of every day and at long breaks during the day.

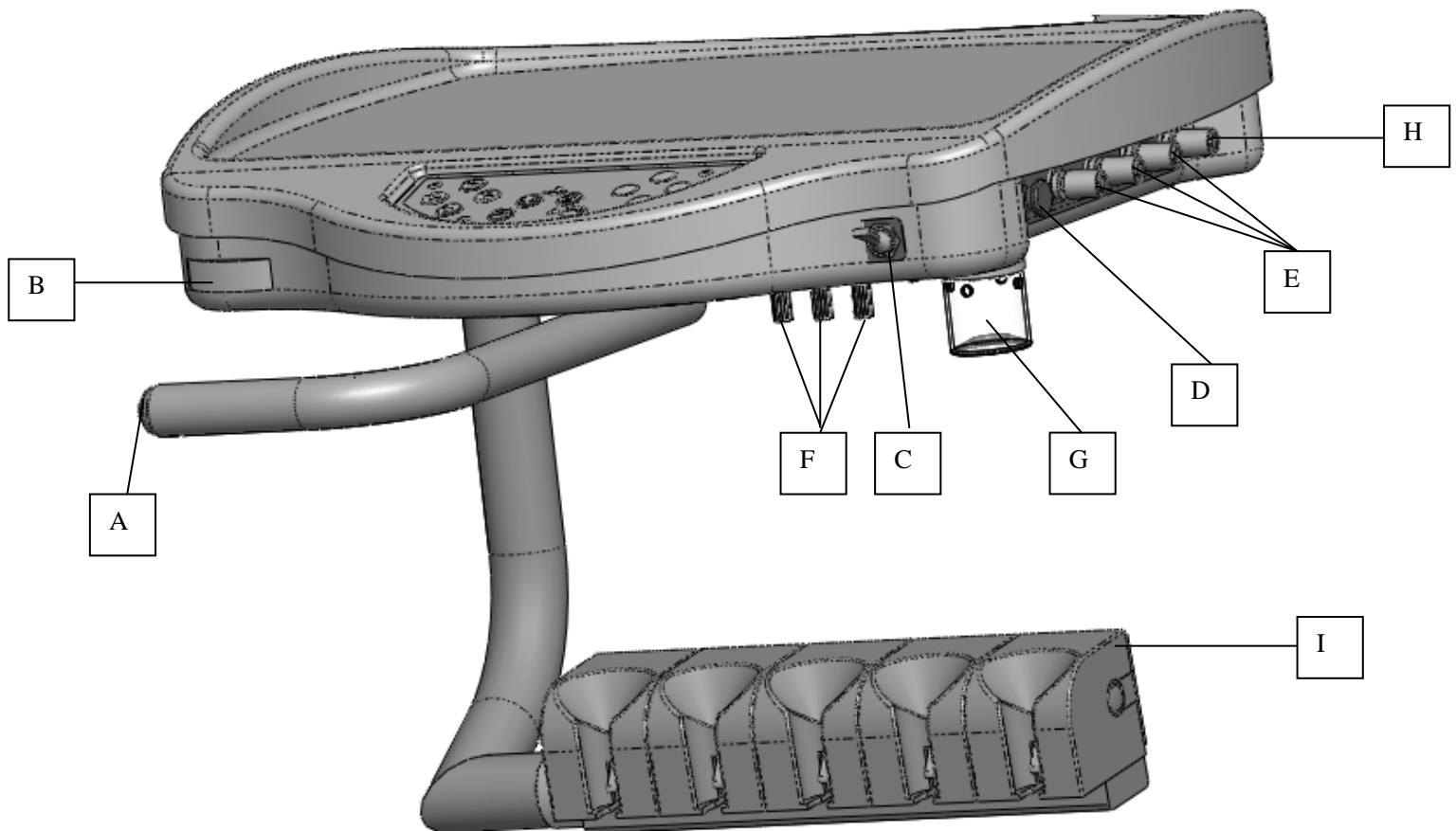
Master On/Off Switch

This switch turns on/off the delivery system providing air and water for the entire unit. It will allow the user to operate the handpieces, treatment light and cuspidor functions when this switch is in the on position. The Master switch should be turned off when the unit is not in use for extended periods of time – i.e. at the end of every day and at long breaks during the day.

Anti-Retraction

The unit is equipped with certain anti-retraction devices; however, only instruments with anti-retraction devices are to be used with this dental unit.

Layout of the Valves and Switches for the Doctor's Handpiece Control System (TRAD 2001 Model)



- A. Air brake for flex arm – The arm is normally locked when this switch is not activated, thus immobilizing the tray. When the switch is pressed, the switch closes and the doctor's tray is free to move. The weight of any load placed on the handpiece control tray should not exceed 3kg (6.6 lbs)
- B. Pressure Gauge – Displays the working air pressure in PSI when the handpiece is working.
- C. Master on-off switch – This controls the water and air source. When it is on, the delivery system is fully functional. The system is completely shut down when the switch is off.
- D. On-off water for handpiece flush -- Allows water to be emitted from the handpiece tubing's when on.
- E. Handpiece water coolant adjustment valve -- individual adjustment to the flow of water emitted by the high speed handpiece positions.
- F. Handpiece drive air adjustment valve – adjusts the driving air of each handpiece. The desired air pressure may vary depending upon your handpiece manufacturer's specifications.
- G. Exhaust air collection bottle. Collects any oil or moisture that escapes from during operation of the system. Insert a new piece of gauze into this container to collect oil when it becomes dirty or on a weekly basis.
- H. Coolant air adjustment. Adjust the flow of air to the handpiece with this knob. Clock wise to decrease flow and counter clockwise to increase flow.
- I. Handpiece Holders

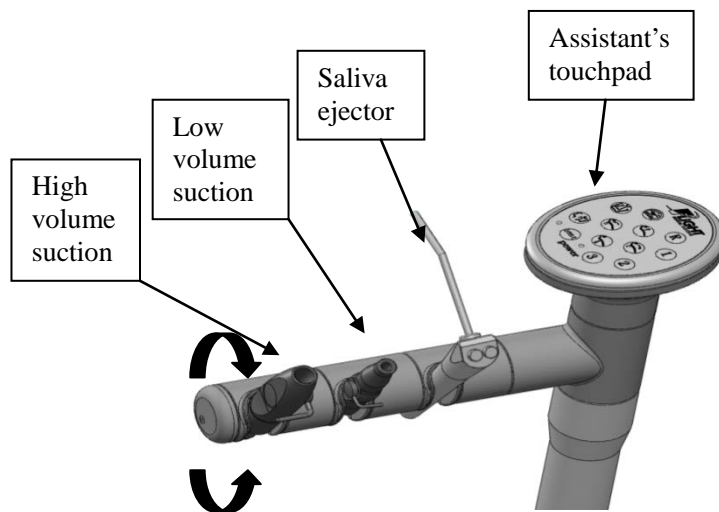
Note: When the master on-off switch is on, then the handpieces are automatically activated when removed from the holder.

Caution: Do not turn the knobs beyond the maximum adjustment level, doing so may pull the stem completely out or may damage the valve.

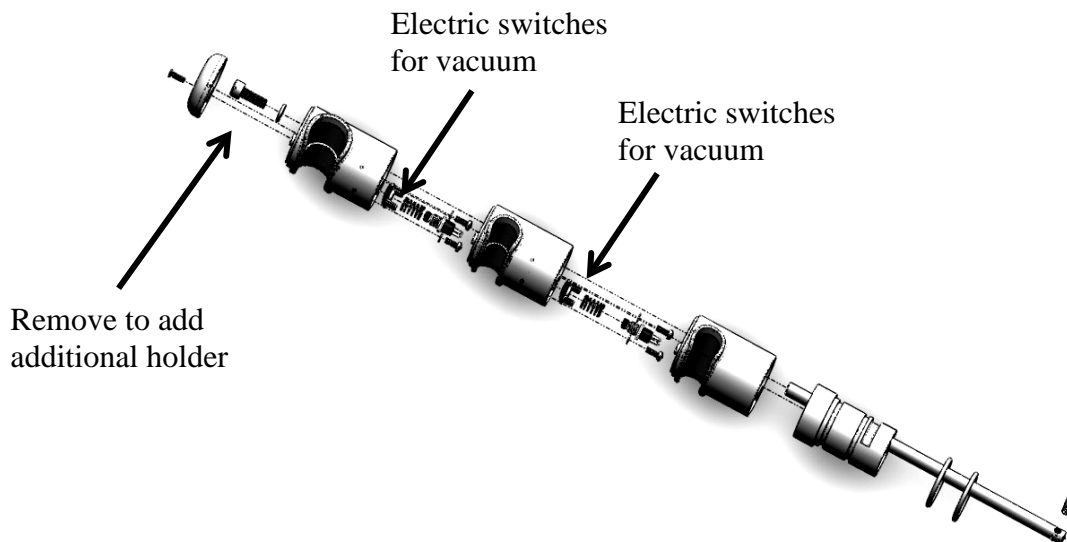
Operation of the Handpiece System

Each handpiece will become active when it is removed from the handpiece hanger. If a second handpiece is removed from the hanger, only the first handpiece will operate. This is a safety feature that cannot be changed. Be sure to check the recommended air pressures for your handpieces and have the individual pressures set according to these requirements by your technician.

Assistant's Instrumentation



The assistant's instruments will be installed at the factory including an air-water syringe, high volume evacuator and saliva ejector. The assistant's hanger bar will include a fourth position that will be empty at the time of delivery.

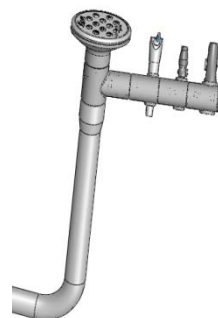


*Standard configuration is with 1x HVE, 1x SE, 1x Syringe

Should you wish to add a second high volume evacuator (HVE) valve, you may order the valve and tubing from your Flight representative although any standard HVE tubing and valve will fit. To install the additional HVE valve insert the tubing through the empty hole in the bottom of the utility center beside the entry holes for the existing vacuum tubings. Connect this end of the new HVE tubing to the vacuum trap located within the utility center. Be sure to remove the seal within the extra vacuum line on the vacuum trap prior to installing the new vacuum tubing.

Operation of Cuspidor and Assistant's Instrumentation

The cuspidor system is supported by the utility center and is comprised of the cuspidor bowl, cup fill spout, and bowl rinse spout. The assistant's instrumentation consists of a saliva ejector, syringe and high volume evacuator. It is configured with a distilled water bottle system and a port for water output. The cuspidor is seamless providing easy infection control.



Self-Contained Water System

The self contained water bottle system supplies water to handpieces, syringes, cup fill and bowl rinse on the delivery unit. A 750ml bottle is provided for the user, you may install a 1.5 L bottle on there as well.

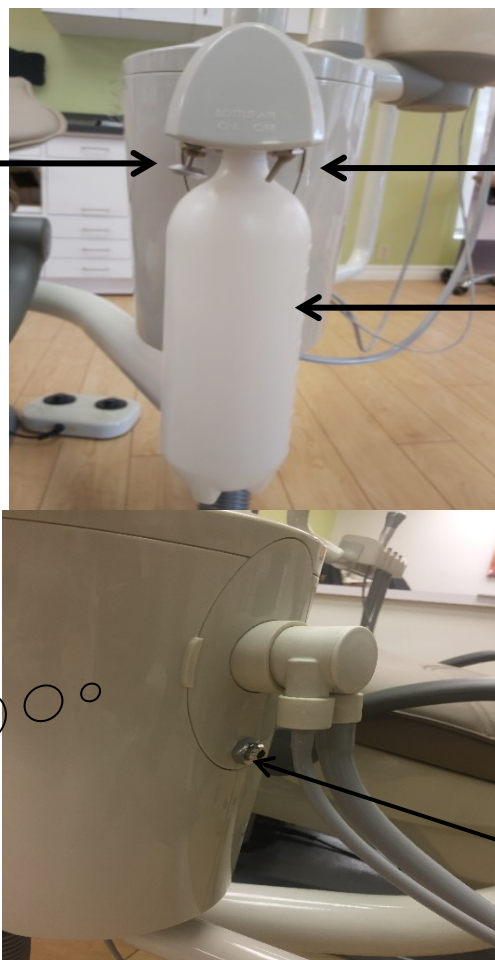
City Water/Water
bottle selector valve

Water bottle pressure

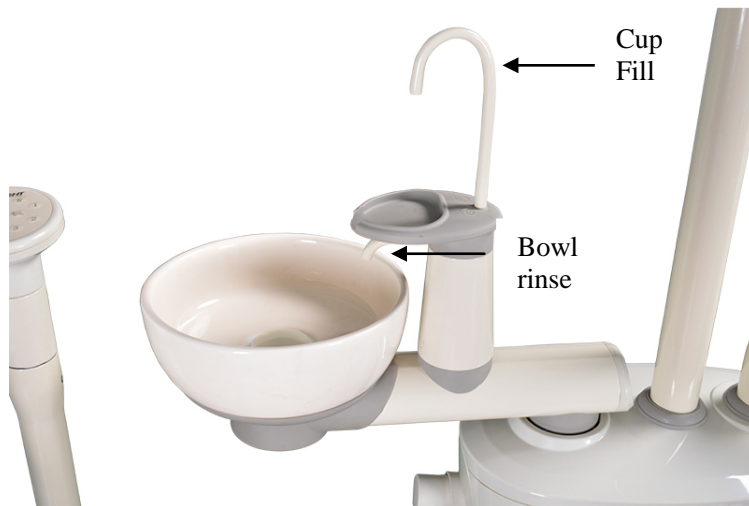
Water bottle

Pinch Valve for Cuspidor
Water Control

Water Quick Disconnect



Cuspidor System



Ceramic Rotating Cuspidor: Rotates 90°; includes programmable cup fill and bowl rinse; controlled by touchpad or directly on cuspidor.

Programming the Cuspidor Functions

Set the Volume for Cup Fill

Flight Dental System's unit allows for remote filling of the cup by either the doctor or assistant using the touchpads. The volume of water can be preset to suit the needs of the office and depending upon the standard cup size used in the office from either touchpad using the following steps;

1. Place a standard cup on the cuspidor beneath the cup fill spout.
2. Press the cup fill and cuspidor rinse buttons at the same time to enter the programming state.
3. Hold the cup fill button allowing water to run until the cup is filled to the desired level, and then release the button.
4. Press the "LP" button to save this volume setting.

Set the Bowl Rinse Function

The rinsetime of the cuspidor may also be set to 15, 30, or 45 seconds or continuous flow using either the doctor or assistant touchpads as follows:

1. Press the cup fill and cuspidor rinse buttons at the same time to enter the programming state
2. To set the cuspidor rinse for 15 seconds press the cuspidor rinse button once. The buzzer will sound one time. Press the LP button to save this time setting.
3. To set the cuspidor rinse for 30 seconds press the cuspidor rinse button twice. The buzzer will sound two times. Press the LP button to save this time setting.

4. To set the cuspidor rinse for 45 seconds press the cuspidor rinse button three times. The buzzer will sound three times. Press the LP button to save this time setting.

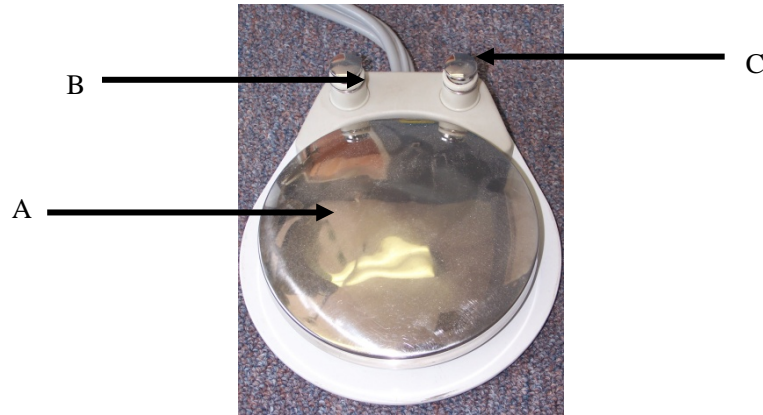
To set the cuspidor rinse for continuous flow, press the cuspidor rinse button four times. Press the LP button to save this time setting. When using this setting, the cuspidor will have to be turned off using the touchpads to stop the flow of water to the cuspidor after it has been activated.

Adding Water to Water Bottle

As in the photo above, open the cover first, turn off the switch for air pressure of the waterbottle, then unscrew the bottle to add the water. After adding the water, screw the bottle back to its original place and turn on the switch for the air pressure of the water bottle.

Note: Before unscrewing the bottle, you have to turn off the switch for the air in the bottle to avoid danger of causing harm/injury to yourself or from damaging the water bottle.

Operation of Handpiece Foot Control



- A- Activates the drive air for handpieces
- B- Handpiece water on-off switch (wet/dry toggle)
- C- Chip air blower – allows operator to blow air from the handpiece without operating the turbine or generating coolant water spray.

Floor Box

The floor box is an essential component of the dental unit. It regulates the delivery system, assistant's instrumentation, and/or the cuspidor. It is mounted over the utilities on the floor of the room. The floor box houses the air and water manual shutoff valves, pressure pre-regulators, filters, vacuum and gravity drains, and electrical outlets.

Maintenance

General Overview

- Shut off all electrical sources, water and air after operation of the dental unit is finished or when servicing the unit.
- Do not run the chair motors continuously.
- The air and water filters must be rinsed each month.
- Ejectors must be rinsed after every use.
- Cuspidor must be rinsed after every use.
- Do not turn on the light when the unit is off to protect the light.

Filters and Checking for clogs

Before entering the regulators, air and water must pass through separate filters. However, when a filter becomes sufficiently clogged, it must be replaced to prevent restricted flow to the regulator.

Air Filter Clog

If an air clog is suspected, first flip the master on/off toggle to the **ON** position and remove the floor box cover.

Watch the air pressure gauge in the floor box while pressing the air syringe button. As mentioned previously, if the gauge shows a pressure drop of more than 15 psi, there is a clog and the filter needs replacement.

Water Filter Clog

A water filter clog might be present if there is poor water flow from the cuspidor bowl rinse.

To inspect, place the master on/off toggle to the **OFF** position and close the manual shutoff valves.

Purge the system of air and water pressure by operating the syringe buttons until the air and water cease to flow.

Use a standard flat blade screwdriver to remove the filter housing from the air and/or water regulator assemblies.

Remove the filter.

The filter will need replacement if it appears clogged or discoloured.

Install the filter with the beveled edge facing the manifold. (The system will not operate and function properly if the filter is incorrectly installed.)

System Air and Water Pressure Adjustments

The air and water pre-regulators are located in the floor box. Verify the air compressor is on and that it

maintains a pressure of 80-100 psi inside the tank prior to any adjustments.

The air pressure gauge in the floor box does not change until the pressure from the system is released when the system air or water pressure is decreased. Activate the syringe for a few seconds before checking the gauge. Repeat the process each time an adjustment is made to decrease air pressure.

Protocol for adjusting the air and water pressure:

Turn the manual shutoff valves counter-clockwise to fully open.

Turn the system ON and check the pressure gauge in the floor box. The pressure should be 70-80 psi.

Operate the syringe while watching the gauge. There may be a clogged filter if the air pressure drops more than 15 psi.

To adjust the air, or water pressure, turn the corresponding pre-regulator (water or air) knob clockwise to increase the pressure and counter-clockwise to decrease. Only do this if necessary, although adjustment of the air pressure is not recommended unless with professional help.

Gravity Drain, Air Vent and Vacuum Outlet

The gravity drain tubing is connected to the office waste drainage system. It provides for the disposal of water and debris from the dental unit. The gravity drain is connected to the cuspidor via a flexible tube.

The air vent prevents the trapping of air in the office waste drainage system. The vent will become obstructed if the waste water and debris is backed up into the unit.

The office central vacuum outlet should be located in the floor box. It is connected to the vacuum/suction instruments by a flexible tube and it can also connect to a vacuum cuspidor.

Replacement of Vacuum Trap Filter

It is recommended that gloves and a face mask be worn when performing this procedure to avoid contact with biological materials. The vacuum canister is located within the utility center. To replace the vacuum trap you must first turn off the central dental suction unit. The cap of the canister is removed by turning and lifting it. The vacuum trap can then be lifted from the canister and disposed of by way of your regular medical waste disposal method. Replacement traps may be purchased from your local dental dealer. The traps are standard two hole configuration in 1 7/8 inch sizing.

Cleaning and Upholstery Care

Flight Dental Systems will not attempt to specify the required intervals or protocols for disinfection nor can it recommend the overall best surface disinfectant. Please refer to the Infection Control Recommendations published by the American Dental Association and to the Centre for Disease Control for further information.

Caring for Chair and Stool Upholsteries

As with all cleaning products, first clean a small inconspicuous area to ensure the material will not discolour or fade. It is recommended that each stain be cleaned in a stepwise manner using the sequence below:

Ultra Soft Upholstery

Clean spots with mild soap and water or an ordinary household cleaner such as Fantastic or 409 cleaners. Wipe off any soap residue with a clean damp cloth.

Allow to air dry or dry quickly with a warm setting of a hair dryer.

For stubborn stains use a mild solvent.

Dry cleanable by conventional methods using commercial dry cleaning solvent.

Other Tips

- Always apply cleaners with a soft white cloth. Avoid the use of paper towels.
- When using strong cleaning solutions such as alcohol, it is advisable to first test in an inconspicuous area.
- Never use harsh solvents or cleaners that are intended for industrial use.
- To restore luster, a light coat of spray furniture wax may be used.
- Apply to chair; let it set for 30 seconds. Lightly buff dry with a clean, dry cloth.

Barrier Technique

Flight Dental Systems strongly advocates the barrier technique be used whenever possible to preserve the finish and appearance of the equipment. Wherever possible disposable barriers should be used and changed between patients. The barrier technique will ensure maximum long-term durability of the surfaces and finishes of the equipment. Barriers may be purchased from your local dental supply dealers that will cover the unit touch pads, light switch and handles, air-water syringes, air-brake handle and the chair including headrest. These barriers should be removed and replaced after every patient.

In barrier compromised or inapplicable touch and transfer surfaces, the area must be properly cleansed, chemically disinfected and sterilized.

Chemical Disinfection

Regardless of the chemical disinfectant used, it is imperative that the equipment be thoroughly washed with mild soap and warm water at least once per day. This wash down will minimize the harmful effects of chemical disinfection residues being allowed to accumulate on the equipment.

When using chemical disinfectants, always pay strict attention to the manufacturer's disinfectant directions. When using concentrated disinfectants, measure the concentrate carefully and mix according to package directions. Disinfectant solutions that are relatively harmless to surfaces at their recommended strengths can be corrosive at lower than recommended dilution ratios.

Unacceptable Disinfectants

These disinfectants will harm the surface finishes of dental equipment and are not recommended.

Use of these products will void your warranty.

Strong Phenols / Phenol-Alcohol combinations – examples - Lysol, Lysol 2, Lysol Professional, Coe Foam, Coe Spray, Vitaphene, Omni II

Sodium Hypochlorite / Household Bleach – examples – Clorox, Ajax, Purex

Strong Alcohol based solutions – exceeding 19% alcohol by content
Household Cleaners

Conditionally Acceptable Disinfectants*

The following disinfectants have been found to be the **least harmful** to the equipment surfaces by our test methods. Harmful effects of chemical disinfectant residues being allowed to accumulate on the equipment

Iodophors** - examples – Biocide, Aseptic-IDC, Wescodyne, Promeddyne, Ido-Five
Glutaraldehyde – examples – Sterall Spray, Coldspor
Synergized Super Quat – Dis-cide, Cavicide, Kleenaseptic
Low Content Alcohol – BioText

*The Manufacturer makes no representation as to the disinfectant efficacy of these products. We make no warranty expressed or implied that these disinfectants will not damage the surface finishes. Damage and discolouration of the surface finishes are not covered under the warranty.

**Iodophor-based disinfectants will cause yellow staining on many surfaces. Regular washing with soap and water will minimize this staining. Iodophor neutralizers such as Promeddyne are also available.

Flushing Handpiece Tubing

Flushing the handpiece tubing is important for removing stale water and possibly contaminated water. The tubing flushes more water through the tubings than when operating the foot control only. The handpieces need to be disconnected to properly flush the tubing.

The tubes can either be flushed independently or grouped together. Gather the tubings that use water coolant to be flushed and hold over a sink, cuspidor bowl or basin. Ensure that the tubings are held so that the water will be directed into the receptacle.

Locate the switch on the side of the control head and flip it to the on position for the required time. Return the toggle to off when finished and replace the tubings.

Tubes should be flushed for 20-30 seconds after each patient and at the beginning of each day.

*Also be sure to discharge each handheld device with air and water lines for 20-30 seconds between each patient to minimize the chances of cross-contamination due to potential bio-burden retraction.

OPTIONAL

Handpiece tubing's may also be flushed and cleaned using a specialized waterline disinfectant solution (ex.E20 Germiphene). This solution may be introduced to the system using the unit's closed water system. Be sure to follow the disinfectant solution's manufacturer's directions for use.

Troubleshooting Guide

<u>Problem</u>	<u>Possible Cause</u>	<u>Action</u>
Air pressure to handpiece is insufficient	1) Handpiece gasket is leaking 2) Air pressure to handpiece port is insufficient 3) Input air from main valve is insufficient 4) Tubing may be leaking air	1) Inspect handpiece gasket and replace if necessary 2) Adjust air pressure entering handpiece port on handpiece block in unit head 3) Check compressor to ensure that it is functioning correctly and air pressure is sufficient. Clean out air filter to ensure there is no blockage. 4) Check for leaks or pinches in tubing
Overall unit air pressure is insufficient	1) Air filter is clogged 2) Air tubing is pinched or leaking 3) Air pressure insufficient from compressor	1) Clean air filter in utility box at base 2) Check for pinches or leaks of tubing 3) Check compressor to see if it is sufficient to support the current set up
No Water from Handpiece	1) Handpiece tubing is pinched 2) Water switched off from handpiece foot control 3) No water in water bottle 4) Gasket of water relay faulty 5) Water control valve not adjusted properly	1) Check for pinches or clogs in water tubing 2) Switch water on from handpiece foot control 3) Fill water bottle with water 4) Call Service Technician to replace water gasket or water relay valve 5) Adjust water control valve or call Service Technician to replace if unable to control
Water Control Valve cannot adjust	1) Water control valve faulty.	1) Replace water control valve. Call

water flow		service.
Water is leaking from the handpiece port	1) Washer seal on handpiece is faulty	1) Call service or order part to replace washer on handpiece.
No water from the 3-way Syringe	1) 3-way syringe is faulty 2) No water input from water lines/water bottle 3) Pinched water line 4) Master on/off toggle is off	1) Call service to have 3-way syringe replaced 2) Fill water bottle or check manual shut off valve 3) Check for pinches or clogged lines 4) Turn on master toggle
Unwanted water in air from 3-way Syringe	1) The air filter has collected moisture 2) Syringe tip is faulty	1) Remove air filter to clean and remove water 2) Call service to repair or replace syringe
Handpiece leaking when in hanger	1) Hose placed in wrong hanger 2) Handpiece is not properly inserted 3) Faulty air valve on hanger	1) Place handpiece hose in correct hanger position 2) Adjust handpiece hose to ensure it is completely inserted in hanger 3) Call service to repair hanger air valve

Contact Information

Thank you for taking the time to review the Flight Dental Unit's Owner Guide. Your feedback or comments regarding the document is welcomed. For any comments and concerns please mail, e-mail or phone us at:

Sales and Marketing

sales@flightdentalsystems.com

1-866-799-0517

905-799-0517

Technical Support

1-866-799-0517

905-799-0517

Parts and Warranty

1-866-799-0517

905-799-0517

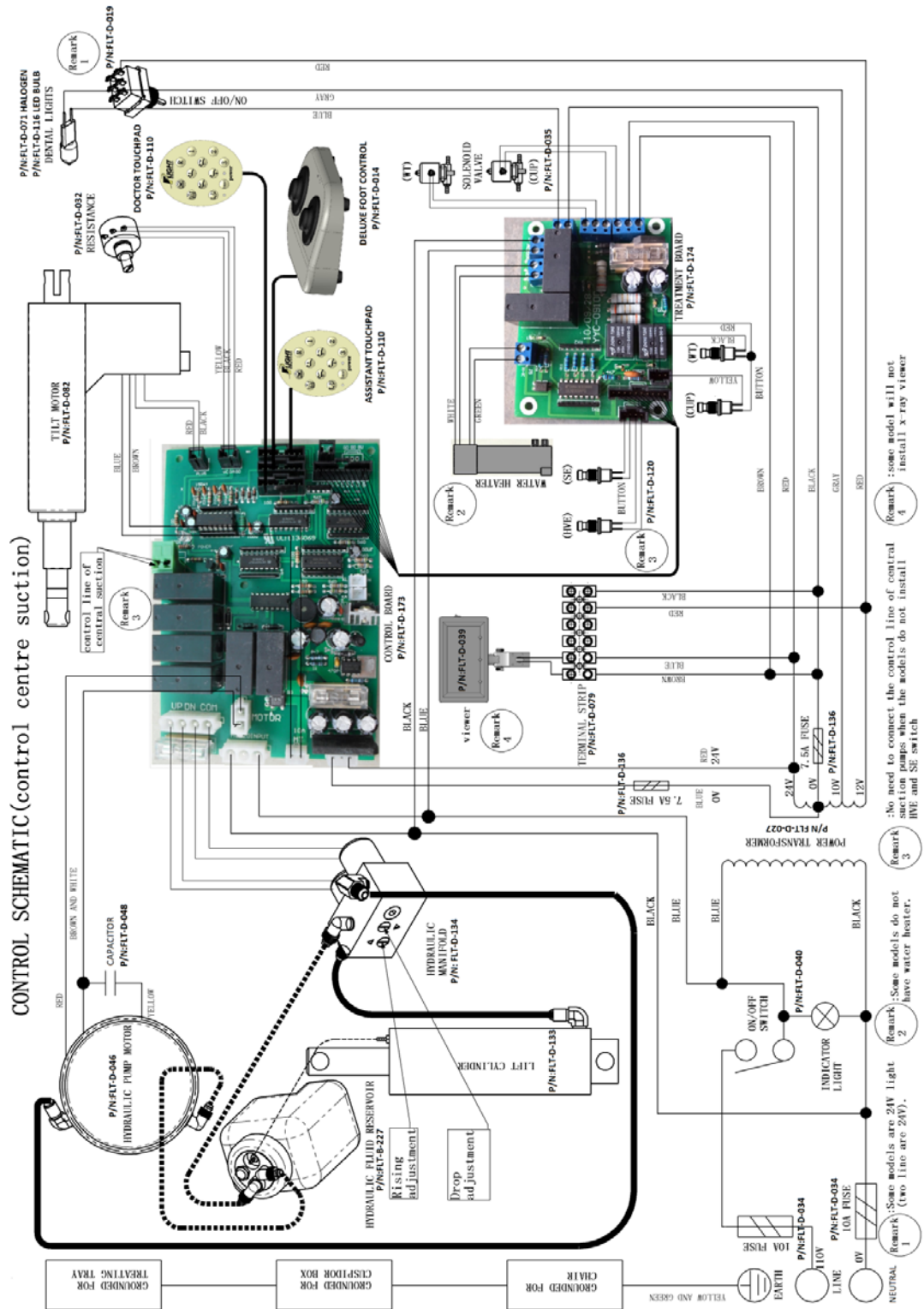
Mailing and Shipping Address (Office)

21 KenviewDr, Unit 11

Brampton, ON Canada L6T 5G7

L6T 5G7

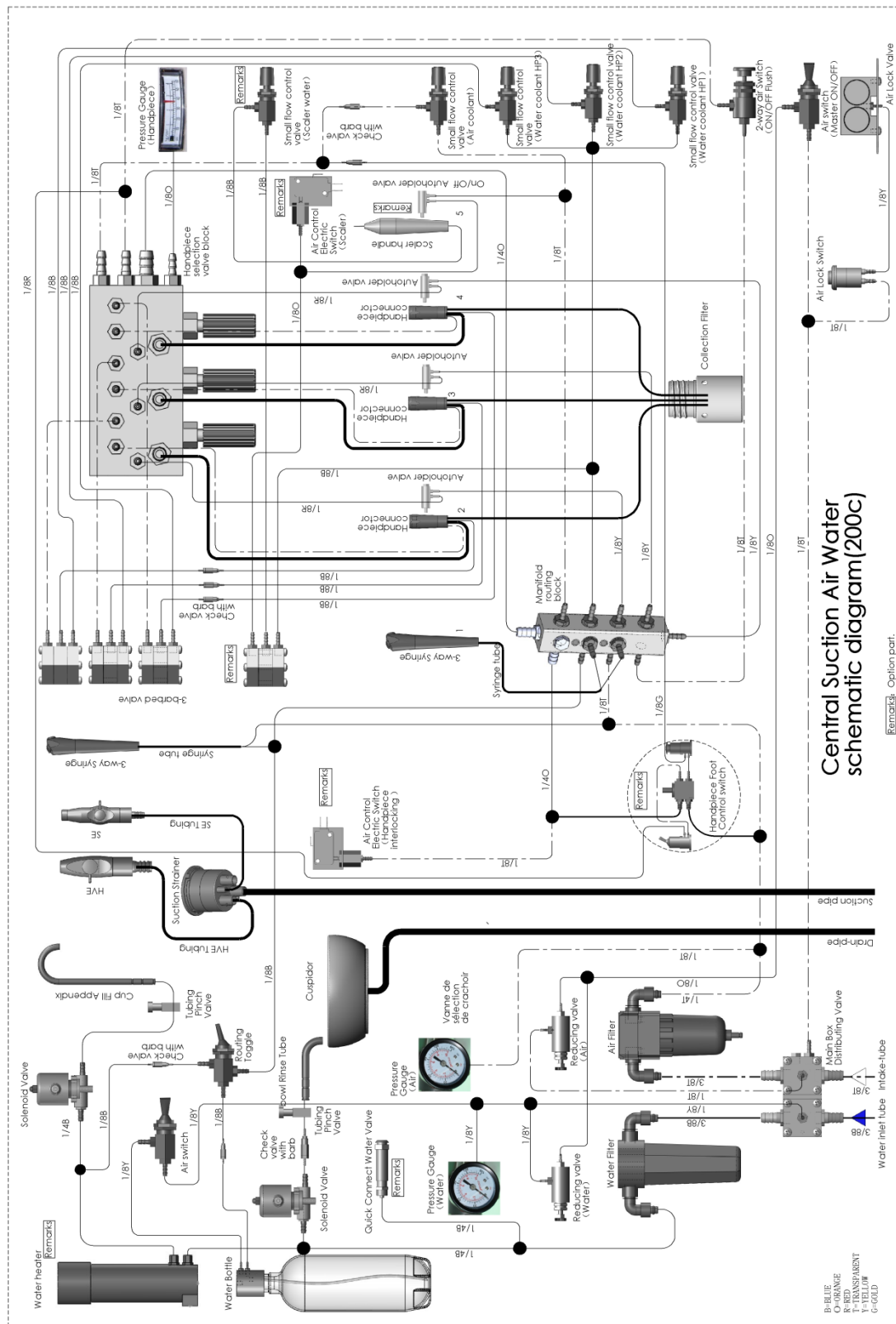
Electrical/HydraulicDiagram



REV.2.0

Note: 230V uses 5A fuses, 115V uses 10A fuses in primary.

Air/Water Diagram



Warnings and Notes

1.This product has been evaluated to Electromagnetic Compatibility as per IEC 60601-1-2. It conforms to all the necessary standards and is therefore deemed safe for operation with other devices.

2.Caution: Federal Law restricts this device to sale by or on the order of a dentist

3.Pressure gauge supplied within doctor's handpiece element is provided as a rough guide only to the unit air pressures. Technicians must use a properly calibrated Handpiece Pressure Gauge to confirm and adjust the exact pressures delivered by the individual handpiece tubing's. See DCI Handpiece Pressure Gauge Model 7263.

4. Detailed circuit diagrams, component parts lists, descriptions, calibration instructions and other information that will assist appropriately qualified technical personnel to repair those parts of the equipment which are designated by the manufacturer as repairable are available upon request.

5. This equipment may be installed and serviced only by technicians who have been trained by HR Dental Products Inc. Damage to the equipment or other equipment or injury to service technicians, operators or patients that result from faulty installation and servicing methods are not the responsibility of HR Dental Products Inc. Components influencing the safety or operators, patients and third parties must always be replaced with original spare parts upon failure.

6. The chair and unit should be turned off prior to commencing any servicing or maintenance of the unit including cleaning. The unit may be turned off by placing the master on/off switch on the delivery head to the off position. The chair may be turned off by placing the internally lit green button on the chair base cover in the off position. (The light will turn off when the chair is off).

All users of the equipment should receive user training from a qualified service technician and must read this manual prior to using the equipment. Failure to follow the directions included in this manual may result in damage to the equipment and/or injury to the user or their patients.

Only handpieces equipped with anti-retraction devices may be used with this dental unit

Caution: It is important to ensure that the patient's entire body including hands and legs are kept on the patient chair. The hands, arms and legs must not be allowed to hang over the edges of the patient sitting surfaces.

When the chair is moving via program or manual operation make sure that the patient does not under any circumstances come into contact with the flex arm, dentist's element or utility center.

Make sure that stools and assistant element do not extend under the chair while the chair is moving. Failure to heed this caution may result in damage to the chair, stools and or assistant element.

Never operate the operating (treatment) light with the cover removed. Pay attention to the temperature of the light surfaces before attempting to service the light or to change a bulb.

To guarantee the operational safety of electro medical devices the operation of mobile radio telephones in the hospital or practice area is prohibited.

When opening the equipment please observe safety measures for handling PC boards. Touch a ground

point to remove any electrostatic charge before touching the components.

It is essential to the safe and effective operation of this dental equipment that regular inspections and servicing be performed by a trained technician. It is recommended that your technician perform a visual inspection and operating test of the equipment and the key components at least once every two years.

Marking and Warning Symbols



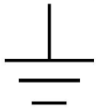
Classified with respect to electric shock, fire and mechanical hazards only accordance with CAN/CSA C22.2, No. 601.1.



Protective earth (ground)



Type B applied part



Functional earth (ground)



Attention, Consult ACCOMPANYING DOCUMENTS

Environmental

Environmental Specifications

Storage/Transportation Temperature: -40°C to 70°C (-40°F to 158°F)

Relative Humidity: 95% maximum

Operating Temperature: 10°C to 40°C (50°F to 104°F) Relative Humidity: 95% maximum

Electromagnetic Compatibility:

This product has been evaluated to electromagnetic compatibility as per IEC 60601-1-2. It conforms to all the necessary standards and is therefore deemed safe for operation with other devices.

Flammable Gasses:

Not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide, where such gasses may accumulate in concentration (closed space).

Recycling and Returning Parts:

To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of the material resources.

To return your used devices, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

Certificate of Warranty

Flight Dental Systems warrants all Flight operatory products sold and installed by authorized Flight dealers, to the original owner-operator to be free of defects in materials and workmanship for a period of five (5) years from the date of installation in original owner-operator's premises. To activate this warrant, the owner-operator must fill out and return a product registration and warranty activation card to Flight Dental Systems within 30 days of installation of the equipment.

Authorized Dealer: _____

Installed by: _____

Product Serial Number: _____

Product Description: _____

Product Model: _____

Purchased Date: _____ Invoice Number: _____

End User Name: _____

Telephone: _____ Fax: _____

Email: _____

Address: _____

City: _____ State/Province: _____

Zipcode: _____ Country: _____

WARRANTY PERIOD

WARRANTY START ON: _____ **WARRANTY ENDS ON:** _____

WARRANTY

If within the warranty time limits described below a product or any of its components fail, the original user-owner must contact an authorized Flight Dental Systems dealer with the product sale and service records. Should the dealer be unable to complete the repair, the dealer may contact Flight Dental Systems for disposition. The product's model, serial number and original Flight Dental Systems invoice number must be furnished. Transportation charges to and from Flight Dental Systems, if necessary, must be paid by the dealer. If upon receipt at the factory, an examination reveals faulty or defective original parts, materials, or workmanship, Flight Dental Systems will, at its sole discretion issue a credit.

This warranty does not cover damages caused by misuse, accident, neglect or damage caused by the use of replacement parts which were not manufactured or distributed by Flight Dental Systems. Service performed by unauthorized dealers or service technician or the usage of replacement parts not manufactured or distributed by Flight Dental Systems may nullify this warranty.

PATIENT CHAIRS

All chairs sold and installed by authorized Flight Dental Systems dealers are warranted to be free from defects in parts, workmanship and materials for five (5) years, unless otherwise stated, from date of purchase. Plastic Chair base cover and unit covers, foot control and circuit boards are warranted for one (1) year.

DELIVERY SYSTEMS

All delivery systems sold and installed by authorized Flight Dental Systems dealers are warranted for five (5) years from defects in parts, workmanship and materials, unless otherwise stated, from date of purchase. Damage resulting from the use of improper chemicals and process for cleaning, disinfecting or sterilization are excluded from this warranty. Wear and tear items are excluded from this warranty such as gaskets, tubing and filters.

OPERATING LIGHTS

All lights (Track Mounted Lights, Unit/Post Mounted Light and Ceiling Mounted Lights) sold by Flight Dental Systems are warranted for (2) two years to be free from defects in parts, workmanship and materials, unless otherwise stated, from date of purchase. Light Bulbs are excluded from this warranty.

STOOLS

All stools sold by Flight are warranted for five (5) years from manufacture defect and workmanship.

Chair and stool upholstery, or surface discoloration or abrasion from improper use of cleaners and disinfectants are not considered a manufacturer's defect and will not be covered by this warranty.

The warranty excludes all normal expected service items such as but not limited to: light bulbs, filters, o-rings, hoses, HVE valves, SE valves and 3-way syringes.

The warranty excludes add-on components such as scalers intraoral handpiece illumination systems and custom upholstery materials, unless noted elsewhere in this document. Warranty is limited to repair or replacement as determined by Flight Dental Systems and does not include any shipping or dealer labor charges. Products returned to the factory and determined to be defective will be repaired or replaced free of charge. If a product is installed by anyone other than an authorized Flight Dental Systems dealer, or their representative, all warranties will be void. No claim for labor or consequential damages will be allowed.

ADD-ON ACCESSORIES

All intraoral handpiece illumination systems and accessories are warranted to be free from defects in parts, workmanship and materials for one (1) year from date of purchase unless otherwise noted. Light Bulbs are warranted to be free from manufacturing defects in material and workmanship at the time of installation in an electrical circuit having the correct characteristics. The useful life of light bulbs is not covered under warranty. Scalers and accessories featured in this catalog carry a manufacturer's warranty and are not covered by the Flight Dental Systems warranty. Please contact the manufacturer directly for all warranty and/or service issues or questions.

REPLACEMENT PARTS

Replacement parts and accessories are warranted for a period of one (1) year from date of purchase from Flight Dental Systems. Replacement parts, either purchased or replaced through a warranty claim shall not interrupt or prolong the term of the original warranty.

GENERAL

Flight Dental Systems will not be responsible for dealer or service company labor charges, or shipping costs. Claims for shipping damage must be filed with the carrier.

RETURN POLICY

No goods shall be returned without prior permission by Flight Dental Systems. If permission is granted for the return of the goods, the amount of credit issued, if any, will be at the sole discretion of the Flight Dental Systems home office in accordance with established policies. If a return for non-warranted credit is authorized, a 20% restocking fee will be charged on all catalogued items.

No returns on replacement parts after 180 days from date of purchase from Flight Dental Systems. The customer is responsible for any freight costs. Call Customer Service to obtain a Return Authorization Number (RMA) before returning any item for credit consideration.

Product information and photography included in this catalog were as accurate as possible at the time of publication. Subsequent refinements may be evident in the actual product. Prices and specifications are subject to change without notice.