



Operation and Maintenance Instructions

Dental Delivery System

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Dental Delivery System Introduction

The TPC Dental Delivery System is a modern highly efficient dental delivery system designed for efficiency and convenience in the dental operator. The unit is shipped pre-assembled and tested, ready for immediate installation.

This manual contains detailed information about the operation and maintenance of your delivery system. Carefully following these instructions will assure that your system will give you years of reliable service as well as being covered under the manufacturers' warranty.

The Dental Delivery System features a three handpiece automatic control system. The system is a post mounted unit that may be installed with or without cuspidor.

The control head is mounted on a movable arm system that allows a full range of vertical and horizontal movement. The air operated brake mechanism locks the arm against vertical movement once it is set into position.



Unit Controls Description

All operating controls are located on the underside of the unit control head. This location was chosen to reduce contamination via air-borne contaminants.

Dental Delivery System Control Head

Master On/Off Toggle

This toggle turns the unit on. It activates the air and water shut-off valves which control the air and water supplies to the delivery unit. The location of the toggle is on the right underside of the unit head near the center.



Shown with Optional Viewer

Always turn the Master On/Off Toggle to the “OFF” position when the operatory is unoccupied. This will ensure protection against damage resulting from water leakage from the delivery unit.

Air Coolant Control Valve

Control of coolant air to the handpiece is adjusted by turning the valve counterclockwise to increase air flow, clockwise to decrease. The location of this valve is on the left underside of the unit head near the center.

Water Coolant Flow Control Valve

Each water control valve adjusts the amount of water supplied to it's handpiece. The control valves are positioned to correspond with the handpiece layout. The location of this valve is on the front underside of the unit head next to each corresponding handpiece holder.

Handpiece Flush Control Toggle

This is a momentary toggle that flushes out the handpieces with coolant water when activated. Hold the handpieces over cuspidor or other suitable container and activate and hold the toggle for at least 20 seconds to flush out the handpieces. The location of this valve is on the right underside of the unit head near the front.

Air Brake Button

The button is located on the end of the control head handle. The momentary valve activates and releases the air brake in the control arm when adjusting the height of the control head. Once it is placed in the desired position release the button to lock the delivery system arm against vertical movement.

Handpiece Autoholders

Handpiece selection is automatic. The holders contain actuator valves that allow the operation of the specific handpiece that is lifted from its holder, without the need for a manual selector.

Dental Delivery System Cuspidor (Optional)

The Dental Delivery System cuspidors are equipped with timed bowl rinse and manually actuated cup filler. Both functions are controlled by buttons on the top of the cuspidor housing.

Bowl Rinse Toggle

This momentary push button valve activates the bowl rinse function. The bowl will rinse for 30 seconds before automatically shutting off. This membrane switch is located on the top left surface of cuspidor near the center



Cup Filler Toggle

This momentary push button valve activates the cup filler, set to fill a 5 ounce cup full. This membrane switch is located on the top right surface of cuspidor near the center.

Wet / Dry Foot Control

Each dental unit is equipped with a variable speed, disc type foot control. Foot pressure on any part of the disc controls the flow of air to the active handpiece. A signal relay within the foot control simultaneously activates the air and water coolant.

Water Coolant On/Off Toggle

Or wet/dry toggle, interrupts the flow of water coolant to the handpieces when performing a procedure that requires dry cutting.

Dental Delivery System Post-Mounted Utility Center

Water Flow Control Valve

This control valve adjusts the flow from the water outlet. This control valve is located at the front of the utility center above the city water switch and below the air and water quick disconnects. Turn the knob counterclockwise to open (increase) and clockwise to close (decrease).

Water Outlet

The water outlet accepts a 1/4" male quick disconnect fitting. This fitting is located at the front of the utility center above the Water Flow Control Valve on the left side next to the Air Outlet.



Air Outlet:

The air outlet accepts a 3/8" male quick disconnect fitting. This fitting is located at the front of the utility center above the Water Flow Control Valve on the right side next to the Water Outlet.

City / Bottle Selector Switch

This toggle allows user to switch between city water supply and bottle water supply. The toggle switch is located below the Water Flow Control Valve on the front of the utility center.

Dental Delivery System Vacuum Utilities

The Dental Delivery System features the assistant's instrument holder on a pull-out arm mounted to the post. The instrument holder accommodates a saliva ejector valve, (2) HVE, valve and three way syringe.

Solids Collector

The solids collector screens particulates introduced to the system through the saliva ejector and high vacuum ejector. The solids collector is located at the top of the utility center in the center. The strainer screen must be cleaned and disinfected or replaced at least once a week.

Dental Delivery System Clean Water System

Each delivery unit comes equipped with a self contained bottle system. This is an excellent way to ensure a clean and safe environment for your patients. By using the water bottle you can control the quality of water that enters the lines and reduce the risk of contamination. Each system is equipped with a city / bottle selector switch allowing the user to choose the source of water to the syringe and handpiece.

The water bottle uses 40 psi pressurized air to supply water to the syringe and handpieces. The cup filler and cuspidor bowl rinse remains on a separate line and receives its water supply from the office plumbing.



To Use the Water Bottle

- Make sure the unit master switch is in the “OFF” position while the water bottle is removed.
- Fill the water bottle, then attach to the threaded pressure cap. Be careful not to overtighten the bottle.
- Turn the unit back on again and check for any leaks in the bottle connection. If any air or water leaks occur, turn the unit off and allow it to depressurize before retightening the bottle.
- When changing or refilling the bottle, remember to turn off the system and allow several seconds for the unit to depressurize.

WARNING

Do not use any bottle other than the pressurized bottle provided.

Never use standard soft drink bottles, which may fail under pressure.

Do not attempt to adjust the water pressure, which is pre-set at the factory. Pressurizing the bottle over 40 psi may cause it to rupture.

Other Uses:

The water bottle is also an effective tool in reducing the growth of biofilm and maintaining waterline asepsis. It may be filled with waterline treatment products as well as air to purge remaining water.

General Operation Adjustments

ALERT

Always be aware of the following items when making handpiece adjustments:

Never operate any handpiece without a bur in the chuck. When there is no bur in place, parts of the chuck are loose, causing the turbine to be out of balance, potentially damaging the handpiece. Also, avoid running the handpiece at full speed or for more than a few seconds at a time when not actually cutting teeth.

Handpiece Air Coolant Adjustment

The air coolant flow control will affect all of the handpiece positions in unison. Since the air coolant characteristics of most handpieces are similar, one setting is normally acceptable for all of your handpieces.

Note that some handpieces draw their air coolant from the drive air. These include any handpiece that uses a 2-hole handpiece tubing, as well as some that have a coaxial connector. These handpieces will not be affected by the air coolant adjustment.

1. On the foot control, flip the wet/ dry toggle OFF. Install a bur in the handpiece that you are going to run while making this adjustment.
2. Step on the foot control to run the handpiece at half speed. While the handpiece is running, turn the air coolant flow control to achieve the desired flow.

Handpiece Water Coolant Adjustment

The water coolant characteristics vary significantly from one handpiece to another, so individual flow controls are provided.

1. After adjusting the air coolant as described above, flip the wet/ dry toggle on the foot control to ON. Install a bur in the handpiece for which you are making this adjustment.
2. Turn the water coolant flow control knob clockwise to its stop. Step on the foot control to run the handpiece at medium speed. Gradually open the flow control (counter- clockwise) until a fine mist appears around the bur.
3. This setting achieves optimum cooling, while minimizing the creation of potentially hazardous aerosols.

Drive Air Pressure Adjustment

Maximum handpiece speed is controlled by adjusting the drive air pressure. The adjusting screws and pressure gauge are located inside the control head. There is a separate adjusting screw for each handpiece.

1. Lift the unit head cover from the front. Pull unit cover up until internal component are exposed.
2. Identify the drive air gauge and the drive air adjusting screws on the control block.
3. Install a bur in the handpiece you are going to adjust. The adjusting screws should correspond in sequence with the positions of the handpieces on the hanger bar. Use a small straight slot screwdriver to make the adjustment.
4. Run the handpiece, while turning the adjusting screw (clockwise to decrease pressure, counter-clockwise to increase) to achieve the manufacturer's recommended maximum pressure with the foot control fully depressed.

IMPORTANT

The drive air gauge in the control head reads pressure at the control block. Because of the normal restrictions in tubings and connectors, the pressure delivered to the handpiece will be approximately 15 psi less than shown on this gauge. Take this into account when using the built-in gauge.

Syringe Flow Adjustment

Adjusting screws allow you to control the flow of air and water from the syringe to prevent splashing and to achieve a desirable mist pattern.

1. Use a 3/32 inch hex key to make the syringe flow adjustment. Identify which adjusting screw is for air and which is for water by the color of the tubing connected to the block. Blue is water, yellow is air.

Flex Arm Balance Adjustment

The flex arm balance should be adjusted to accommodate the amount of weight that you normally have on the handpiece control, so that the control head does not drift up or down when the arm brake toggle is released.

1. Remove end Arm Caps from each end of the straight horizontal flex arm. Locate the spring adjusting nut.

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- Insert a straight slot screw driver or automotive brake adjusting tool into the hole to engage the notches on the adjusting nut. Use a prying motion against the sides of the slot to turn the nut and adjust the spring tension.
- Turn the nut clockwise to increase the spring tension and load-carrying capacity of the arm. Counter-clockwise will decrease the spring tension.
- Release the arm brake to test the setting, and make further adjustments as needed to achieve the desired balance.
- Re-install the plastic end caps when the adjustment is complete.

Delivery Unit Care

Infection control in the dental office continues to be a high priority for our customers and end users. OSHA, the ADA and the CDC are also involved in this complex issue.

Barrier Technique

The Manufacturer strongly advocates that 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.

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 disinfectant 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. Disinfectants solutions that are relatively harmless to surfaces at their recommended strengths can be corrosive at higher than recommended dilution ratios.

Control Head and Flex Arm

The control head, arm and post mounted utility housing can be cleaned with a solution of mild detergent and warm water. A variety of surface disinfectants are available for use in dental treatment rooms. Some of these can cause discoloration of painted, plated or anodized surfaces with repeated use. This can be minimized by careful adherence to the disinfectant manufacturer's instructions and by frequent washing with soap and water.

Waterline Asepsis

At the end of every day, the lines should be purged with air to reduce the growth of biofilm. The Dental Delivery System control unit is equipped with a handpiece flush system that allows you to periodically flush fresh water through the handpiece tubings. The need for this is that the low flow of water through the tubings during normal use can lead to stagnation and the potential growth of biofilm contamination.

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The weekly cleaning procedure should be performed at least once a week, preferably at the start of the week before treating patients. If the unit is to be stored for any length of time, perform the weekly maintenance routine immediately before and after storage.

1. Purge the unit with air.
2. Flush the system with disinfectant solution
3. Allow the disinfectant to remain in the unit for 10 to 20 minutes, then flush the system again until all the solution is used up.
4. Purge the unit with air.
5. Fill the unit with clean water.

Disinfecting and Sterilization

The use of chemical disinfecting agents is not necessary if the instrument is going to be sterilized. While their use may be easy and quick, it is important to know the effectiveness of any chemical disinfectant against the various agents of infection that may be encountered.

Table 1

Unacceptable Disinfectants

These disinfectants **will harm** the surface finishes of dental equipment and are not recommended. **Use of these products will void your warranty.**

<u>Chemical Composition</u>	<u>Trade Names</u>
Strong Phenols/ Phenol-Alcohol combinations	Lysol, Lysol 2, Lysol Professional, Coe Foam, Coe Spray Pump, Vitaphene, Omni II
Sodium Hypochlorite/ Household Bleach	Clorox, Ajax, Purex
Alcohol	
Household Cleaners	

Conditionally Acceptable Disinfectants

These disinfectants have been found to be the **least harmful** to the equipment surfaces by our test methods.

<u>Chemical Composition</u>	<u>Trade Names</u>
Iodophors**	Biocide, Aseptic-IDC, Wescodyne, SD5, Promedyn, Iodo-Five
Mild Phenols	Procide ES, Asepti-Steryl Aerosol
Glutaraldehyde/ Phenol Sprays	Sterall Spray, Coldspor
Synergized Super Quat	Dis-cide, Cavicide, Kleenaseptic
Phenol/Water Sprays	Top-Cide, Sporicidin Pump Spray Birex se

**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 discoloration 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 Promedyn are also available.*

While none of the products listed in Table 1 will adversely affect the performance of your instruments, most chemical disinfectants can be expected to cause some degree of discoloration. This can be minimized by frequent cleaning with soap and water, and in the case of Iodophors, regular use of Iodophor Neutralizers.

Sterilization

Any of the following sterilization methods may be safely used on your vacuum instruments:

- Steam Autoclave
- Ethylene Oxide Gas
- Chemical Vapor Process

Do not allow the instruments to come into contact with the walls of the sterilizer. Avoid placing the instruments in close proximity to the sterilizer heating element.

Dry heating sterilization is not recommended because of the difficulty in maintaining the precise temperature control necessary to prevent damage to the instruments.

Do not microwave vacuum instruments or syringes as this may cause internal damage to your microwave oven.

Assistant's Package Care

Cuspidor

Daily care of the cuspidor bowl and components should be a regular part of the equipment cleaning schedule.

After Each Patient

Rinse the cuspidor bowl thoroughly by pouring a few cups of water down the drain. This will flush out the drain lines and prevent material from accumulating.

Vacuum Utilities

Daily care of the vacuum utilities and components should be a regular part of the equipment cleaning schedule.

After Each Patient

Draw clear water through each valve while opening and closing it several times. Leave the valve open for several seconds to allow all of the water to clear the hoses. The HVE and SE tips should always be replaced with sterile ones before each patient.

At the End of Each Day

It is recommended that a vacuum system sanitizing solution be drawn through each valve while opening and closing it.

Cleaning the Solids Collector

At least once a day, the solids collector screen should be removed for cleaning. Turn off the vacuum pump. Remove the solids collector cap and lift out the screen. If there is an excessive amount of material in the screen, more frequent cleaning is necessary.

Cleaning

Clean the external surfaces of the vacuum instruments using a solution of mild detergent and warm water. Thoroughly rinse the syringe with clear water, then dry with a soft, lint-free cloth.

Ultrasonic cleaning is not recommended, as the chemicals used may damage the surface finishes of the instrument.

Sterilization

Remove each valve from its tubing for sterilization. A vacuum plug may be inserted into the quick disconnect while there is no valve in place. In any situation involving high risk patients, it is recommended that the instruments be removed for sterilization after every patient.

As Needed

Disassemble the valve and lubricate the internal parts when operation becomes stiff or sticky. Clean the inner surfaces and apply a small amount of O-ring lubricant to the moving parts and O-rings.

Warranty

TPC Advanced Technology equipment is warranted by the manufacturer to be free from defective material and workmanship under normal use and service, for a period of one (1) year* from date of shipment to the Buyer, except that any part or parts that are replaced under this Warranty within ninety (90) days of the completion of the two year period shall be warranted to be free from defective material and workmanship for a period of ninety (90) days from date of shipment of said parts to Buyer. TPC Advanced Technology will repair or replace any defective part under this Warranty, provided the part is returned to our factory with prepaid postage, delivery or freight charges. In the event Warranty service must be performed to correct any defect, only TPC Advanced Technology and / or one of its authorized dealers shall provide same upon mutually agreeable arrangements made in advance.

Except as otherwise provided herein, there is NO WARRANTY, representation or condition of ANY KIND, express or implied (including NO WARRANTY OF MERCHANTABILITY OR FITNESS) and none shall be implied by law. THE EXPRESS WARRANTY AND THE REMEDIES CONTAINED HEREIN (1) ARE MADE SOLELY TO THE FIRST PURCHASER FOR BENEFICIAL USE (THE BUYER), (2) ARE THE SOLE WARRANTIES AND REMEDIES, (3) ARE IN LIEU OF ALL OTHER WARRANTIES, GUARANTEES, AGREEMENTS OR OTHER LIABILITIES, WHETHER EXPRESS OR IMPLIED, AND ALL OTHER REMEDIES FOR BREACH OF WARRANTY OR ANY OTHER LIABILITY OF TPC ADVANCED TECHNOLOGY. IN NO EVENT SHALL TPC ADVANCED TECHNOLOGY BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES.

No person, agent, distributor or dealer is authorized to change, modify or extend the terms of the Warranty in any manner, whatsoever.

This Warranty is void when failure or defect is caused by conditions beyond the manufacturer's control, such as damage resulting from mishandling, neglect, misuse, improper maintenance, accident or alteration or repair by anyone other than TPC Advanced Technology or an authorized TPC Advanced Technology dealer.

Labor is required to repair, replace or retrofit is not included during the warranty period by the manufacturer.

TPC Advanced Technology Dental Units have a 1 year warranty from the date of shipment to the Buyer.

TPC Advanced Technology

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