

## CIRCUMSTANCES FOR USING AN EPA-REGISTERED PRODUCT WITH LABEL CLAIMS FOR REMOVING BIOFILM IN DUWL

There are very few products with EPA-label claims for removing biofilm in DUWL. All other EPA-registered DUWL microbial products improve water quality and may kill or remove thin layers of biofilms. Unless an excessive biofilm layer has formed in the DUWL, it is not necessary to use a biofilm removal product due to the harsh nature of the product. The following circumstances may require use of a biofilm removal product (such as Crosstex® Liquid Ultra™ Solution):

- If visual indicators suggest that there is biofilm in DUWL (i.e. contaminants are visibly present in air/water syringe or hand-piece water or visible in the transparent control head tubing).
- If repeated use of EPA-registered DUWL microbial treatments (continuous or intermittent) do not result in in-house or 3rd-party laboratory test results under 250 CFU/mL.
- If visual or olfactory (smell) indicators suggest that the DUWL or reservoir water bottle has been contaminated (e.g. discolored water or noxious odors).

**⚠ WARNING:** Consult the IFU and the Safety Data Sheet (SDS) of the disinfectant manufacturer to be aware of any hazards. Products intended to remove biofilm are pesticides and hazardous to humans and animals. Wear protective eyewear and rubber gloves when handling and wash thoroughly with soap and water after handling.

**⚠ CAUTION:** Use of products such as those intended to remove biofilm may cause damage to, or affect the performance of the dental equipment's water system. Forest™ product warranty does not cover damage to equipment resulting from the use of such agents. It is recommended to remove syringe tip and all dental instruments from water line tubing while performing biofilm removal treatment.

**ℹ NOTE:** Follow the biofilm removal product IFU. After biofilm removal treatment, test DUWL and repeat if results are greater than 250 CFU/mL. If repeated attempts of product use fail to produce results under 250 CFU/mL, call Forest Technical Support as dental unit components may need to be replaced.

## GENERAL WARNINGS

**⚠ WARNING:** You must follow the Forest IFU to maintain, treat and monitor the quality of the dental unit water and source water. You must also follow the IFUs for any water

## GENERAL WARNINGS (CONTINUED)

treatment products used with the Forest dental unit. If there are contradictory guidelines, contact Forest or water treatment manufacturer.

**⚠ WARNING:** All local, State and Federal regulations and guidelines should be followed for dental water line maintenance and infection control.

**⚠ WARNING:** The water reservoir system installed on the Forest dental unit and in-office water processing systems (such as distillers) can grow bacteria as readily as dental units. Using source water from these systems do not control bacteria levels in DUWL or the reservoir water bottle.

**⚠ WARNING:** When handling reservoir water bottle and administering or installing water treatment products, wear clean gloves. Handling water bottle with contaminated gloves may introduce contaminants into the dental unit water system. Follow Forest Equipment Operatory Asepsis Operator's Guide for external bottle cleaning and disinfection.

**⚠ WARNING:** If your city has issued a boil-water notice, use distilled water to fill your water bottle reservoir until notice is over. Treat DUWL and water bottle with an EPA-registered bacteria treatment product and test bacteria levels in DUWL. Repeat until results are less than 250 CFU/mL.

## RESOURCES

The Centers for Disease Control and Prevention's (CDC) recommendations for the cleaning, disinfection, and sterilization of dental equipment can be found at: [www.cdc.gov](http://www.cdc.gov)

Guidelines for Infection Control in Dental Health Care Settings

Guidelines for Disinfection and Sterilization in Healthcare Facilities

Summary of Infection Prevention Practices in Dental Settings

The American Dental Association's recommendations can be found at: [www.ada.org](http://www.ada.org)

The Organization for Safety and Asepsis Procedures recommendations can be found at: [www.osap.org](http://www.osap.org)

FDA Guidelines for Dental Unit Water Line Maintenance can be found at: [www.fda.gov](http://www.fda.gov)

# Forest

## DENTALEZ



## OVERVIEW

These instructions for use (IFU) are intended to be a guide in the monitoring and maintenance of the Forest™ dental unit water lines (DUWL) and dental unit reservoir water bottle and in the improvement of source water used for dental procedures.

Dental unit water lines, reservoir water bottles and water distillers/processors contain bacteria (unless sterile water is used), measured in colony forming units per milliliter (CFU/mL) of heterotrophic water bacteria. The bacteria, if not controlled, can reach elevated levels and form into biofilms on the walls of the plastic tubing that can be resistant to microbial treatment.

Any level of bacteria can be dangerous to some who encounter the water or water aerosols. To align with infection control standards, the goal in maintaining the Forest dental unit water lines is to achieve the lowest possible levels of microbial contamination (as close to 0 CFU/mL).

The CDC recommends using procedural water in routine dentistry that does not exceed 500 CFU/mL. To achieve these levels, Forest suggests an action level of 250 CFU/mL to limit microbial proliferation. By closely following both the Forest and water treatment product manufacturer's instructions for use (IFU), it is possible to maintain procedural water within CDC guidelines.

**⚠ WARNING:** Before initial use of the Forest dental unit, you must treat DUWL with an EPA-registered antimicrobial "shock" product intended to eliminate bacteria in DUWL (such as the provided Citrisil™ Shock or equivalent). Allow treated water to remain in DUWL unused for the minimum dwell/contact time according to the antimicrobial product IFU. The initial DUWL "shock" treatment is an important step in preparing the dental unit for initial use.

**⚠ WARNING:** Isolated water sources (as opposed to city water hook-up) are highly recommended to allow full control of the source and quality of water circulating through the dental unit water line.

## TREAT AND TEST DENTAL UNIT WATER LINES (DUWL) AND WATER BOTTLE BEFORE INITIAL USE

**STEP 1:** After the Forest dental unit is installed and before initial use, treat dental unit with an EPA-registered antimicrobial "shock" product intended to eliminate bacteria in DUWL (such as the provided Citrisil™ Shock or equivalent) following the IFU. Treatments have varied dwell/contact times so ensure adequate time before patient use.

**ⓘ NOTE:** Refer to step by step instructions on page 6 & 7 for loading water lines with shock product.

**STEP 2:** After dwell/contact time has been met, empty reservoir water bottle and run DUWL dry of treatment product.

**ⓘ NOTE:** Refer to step by step instructions on page 6 & 7 for emptying water lines.

**STEP 3:** Fill the reservoir water bottle with water and run the handpiece flush system, air/water syringe and cuspidor cup fill until water begins flowing from all DUWL.

**ⓘ NOTE:** Refer to step by step instructions on page 6 & 7 for loading water lines.

**STEP 4:** Stop water flow and allow water to sit in DUWL for at least 5 minutes.

**STEP 5:** Collect water samples from all DUWL (handpiece, air/water syringe, scaler, cuspidor cup fill and additional ancillary water lines) using the provided in-house AquaSafe Water Test Kit (or equivalent) following test kit IFU, repeat if results are greater than 250 CFU/mL. If repeated attempts of product use fail to produce results under 250 CFU/mL, call Forest Technical Support as dental unit components may need to be replaced.

**STEP 6:** After initial treatment and water sampling, install an EPA-registered DUWL bacteria prevention/maintenance treatment product (continuous or intermittent). Refer to DUWL MAINTENANCE PROGRAM IMPLEMENTATION on page 3 and 4 for more information.

**STEP 7:** Run the handpiece flush system, air/water syringe and cuspidor cup fill to charge the DUWL with treated water.

**ⓘ NOTE:** Refer to step by step instructions on page 6 & 7 for loading water lines.

**STEP 8:** Your system is now ready for use.

**⚠ WARNING:** When handling reservoir water bottle and administering or installing water treatment products, wear clean gloves. Handling water bottle with contaminated gloves may introduce contaminants into the dental unit water system.

**ⓘ NOTE:** Retain the Forest installed pick-up straw for future use if the treatment product selected requires you to replace or cut the Forest installed pick-up straw in the water bottle to adapt the microbial treatment straw. For accurate monitoring of water quality, water samples cannot contain a microbial agent otherwise bacteria counts will be understated. Refer to COLLECTING WATER SAMPLES FOR WATER QUALITY TESTING instructions on page 5 for more information on how to collect water samples for water quality testing.

**⚠ WARNING:** If your delivery unit contains a routing valve to bypass the clean water system and access a centralized purification system or city water, make sure the toggle is switched back to the clean water system during daily elution of antimicrobials and/or periodic shock treatments.

## DENTAL UNIT WATER LINE (DUWL) MAINTENANCE PROGRAM IMPLEMENTATION

The CDC recommends designating a member of the office staff as the Infection Control Coordinator with responsibilities not limited to (refer to RESOURCES on page 8 for more information on Dental Office Infection Control):

- Staying informed about current recommendations on improving procedural water quality.
- Education of all members of the dental team.
- Implementation of all procedures related to maintaining and monitoring procedural water quality.
- Maintaining water maintenance and monitoring records/logs per state regulations and/or office procedures.

**⚠ WARNING:** The water reservoir system installed on the Forest™ dental unit does not control bacteria levels in DUWL or the reservoir bottle therefore bacteria levels must be maintained and monitored by the dental team. Forest recommends immediately consulting with, selecting and purchasing from an authorized Forest dealer:

- An EPA-registered DUWL treatment product (either continuous or intermittent, such as a continuously dispensing "straw cartridge", a daily water bottle additive or weekly shock treatment) intended to improve procedural water by controlling bacteria levels and preventing formation of biofilm. Always follow the treatment product manufacturer's IFU.

**⚠ WARNING:** Dental units do not deliver sterile water. Sterile solutions must be used as a coolant/irrigant for all surgical procedures from an isolated source (such as a sterile bulb syringe or sterile tubing that bypasses DUWL) as recommended by the CDC.

**⚠ CAUTION:** Obtain and review information when selecting treatment products to ensure the safety, effectiveness and compatibility with dental equipment and dental unit water systems.

**⚠ CAUTION:** Make certain that the EPA-registered DUWL treatment products are compatible, non-corrosive and safe for use. You must read the EPA-label and use the product accordingly. Whatever products you choose to maintain and treat the water bacteria levels and DUWL, the treatments systems must be compatible under the manufacturer's EPA-label to avoid unwanted chemical reactions within the dental unit.

**⚠ CAUTION:** Never mix chlorine- or iodine-based treatment with silver-based treatments in DUWL. Purge DUWL of treatment product before switching to another product to avoid unwanted chemical reactions in the dental unit.

**ⓘ NOTE:** The pH, total dissolved solids (TDS), sulfates, iodine and chlorine levels of the source water may influence what DUWL treatment product is used. It may be necessary to test source water before selecting a product.

- An in-house test system (conforming to AWWA Method 9215 or HPC Methods) to monitor CFU/mL levels and implement according to Forest Dental Unit Water Line Maintenance Operator's Guide. Always follow the test kit manufacturer's IFU.

**ⓘ NOTE:** For the lifetime of the Forest dental unit, Forest recommends maintaining microbial levels in all DUWL and reservoir water bottle by:

PREVENTING biofilm and improving procedural water quality using an EPA-registered DUWL bacteria prevention/maintenance treatment product (continuous or intermittent, such as a continuously dispensing "straw cartridge", a daily water bottle additive or weekly shock treatment). Implement prevention/maintenance treatment ideally before initial use or as soon as possible. By treating the dental unit as part of a prevention/maintenance program, the bacteria levels of the dental unit should stay well below 250 CFU/mL and the formation of biofilm can be avoided. Always follow the treatment system manufacturer's IFU.

CONTINUOUS: Forest recommends installing for the life of the dental unit a continuously dispensing antimicrobial water treatment product (a "straw cartridge" or daily water bottle additive such as Citrisil™ Blue) which is intended to continuously deliver an antimicrobial into the DUWL. Install and maintain the continuously dispensing antimicrobial water treatment system according to manufacturer's IFU.

INTERMITTENT: If you choose not to use a continuously dispensing antimicrobial product, Forest recommends using an intermittent (i.e. weekly) EPA-registered DUWL bacteria microbial treatment to treat the reservoir water bottle and DUWL (such as Citrisil™ Shock, avoid harsh products such as Crosstex® Liquid Ultra™ for routine treatments). Implement according to manufacturer's IFU. Empty water from DUWL each night to prevent stagnation of water.

**ⓘ NOTE:** Refer to step by step instructions on page 6 & 7 for emptying water lines.

**ⓘ NOTE:** Retain the Forest installed pick-up straw for future use if the treatment product selected requires you to replace or cut the Forest installed pick-up straw in the water bottle to adapt the microbial treatment straw. For accurate monitoring of water quality, water samples cannot contain a microbial agent otherwise bacteria counts will be understated. Refer to COLLECTING WATER SAMPLES FOR WATER QUALITY TESTING instructions on page 5 for more information on how to collect water samples for water quality testing.

*DENTAL UNIT WATER LINE (DUWL)  
MAINTENANCE PROGRAM IMPLEMENTATION  
(CONTINUED)*

MONITORING CFU/mL of heterotrophic water bacteria of source water and DUWL by testing with an in-house test kit or 3rd-party lab in the following circumstances:

- After installation and initial shock but before initial use of dental unit.
- After installation of dental unit, test monthly for the first three months of initial use; if results are less than 250 CFU/mL test at minimum quarterly with an inhouse test kit or 3rd-party lab. Increase test frequency if quarterly test results are greater than 250 CFU/mL.
- ! *NOTE: Refer to the COLLECTING WATER SAMPLES FOR WATER QUALITY TESTING instructions section on page 5 for more information on how to collect water samples for water quality testing.*
- ! *NOTE: If using an in-house test kit, Forest™ recommends at least annually using a 3rd-party lab to validate the in-office monitoring program and to provide more accurate counts. Select a testing laboratory that uses the most current version of the 9215C or 9215D method from Standard Methods for the Evaluation of Water and Waste Water published by AWWA or the most current equivalent method.*
- If dental units have been in operation without the use of an EPA-registered DUWL microbial treatment product (continuous or intermittent).
- After dental unit repair involving DUWL in utility center, umbilical, control head, self-contained clean water system, or handpiece or syringe tubing.
- After extended periods of not using dental unit.
- Upon municipal advisory to boil water from taps and after boil-water notice has been lifted.

ACTING: If test results are greater than 250 CFU/mL considering the following:

- Adjust frequency if using an intermittent microbial treatment product or consider switching to a continuously dispensing product (refer to CONTINUOUS on page 3).
- Verify dental team compliance with office procedures and treatment product IFU's.
- Verify there are no "dead-legs" in the dental unit. Refer to MAINTAINING AND INSPECTING on this page for description and recommendation for removal of "dead-legs".

- Shock DUWL and reservoir bottle (with a product such as Citrisil™ Shock). If after repeated attempts test results are not below 250 CFU/mL, remove biofilm build-up in the dental unit using a EPA-registered product with label claims for removing biofilm (refer to page 8).
- Verify the source water used for procedural water is not contaminated by testing the source water.
- Change the microbial treatment product selected to control bacteria levels in the DUWL.

TREATING reservoir water bottle at least one time per week with an EPA-registered antimicrobial "shock" treatment product (such as Citrisil™ Shock) or a 10:1 bleach/water solution; fully fill the bottle with solution and leave for at least 30 minutes or according to water treatment product IFU. Empty and rinse with water.

MAINTAINING AND INSPECTING your dental unit and water quality treatment product:

- At least annually, use the provided anti-retraction valve test kit (Forest part number 0008-040) and follow kit IFU to verify that the anti-retraction valve in the dental unit is working properly. The dental unit anti-retraction valve ("Clippard valve" Forest part number 1100-145) stops handpiece water coolant from retracting back into the water tubing when the foot control is released avoiding cross contamination. The Clippard valve is life-cycle tested for the life of the dental unit; annual testing of the valve will verify the part has not mechanically failed.
- Avoid "dead ends" or "dead legs" of DUWL. The unused tubings or water lines can support microbial proliferation by being out of the main flow of the dental unit water, but by still being connected to the higher flow lines bacteria can move from the stagnant lines to the higher flow lines. Forest recommends using an authorized Forest dealer to remove or block off dead legs. Your Authorized Dealer can contact Forest for additional instructions.
- If dental unit has not been used for longer than 14 days, follow water treatment product instructions for treating water before putting dental unit back into service.
- Remove all water from DUWL if the unit will be moved or stored for any length of time. Follow water treatment product IFU and test bacteria levels of DUWL before putting unit back in service.

**!** *WARNING: The CDC recommends flushing handpiece and air/water syringe between patients for 30 seconds and at the beginning and end of each day to temporarily reduce the number of bacteria in DUWL and to avoid cross contamination.*

*COLLECTING WATER SAMPLES FOR WATER  
QUALITY TESTING*

For the lifetime of the Forest™ dental unit, Forest recommends maintaining microbial levels in all DUWL and reservoir water bottle by monitoring CFU/mL of heterotrophic water bacteria of source water and DUWL by testing with an in-house test kit or 3rd-party lab in the following circumstances:

- After installation and initial shock but before initial use of dental unit.
- After installation, test monthly for the first three months of initial use; if results are less than 250 CFU/mL test at minimum quarterly with an in-house test kit or 3rd-party lab. Increase test frequency if quarterly test results are greater than 250 CFU/mL.
- ! *NOTE: If using an in-house test kit, Forest recommends at least annually using a 3rd-party lab to validate the in-office monitoring program and to provide more accurate counts. Select a testing laboratory that uses the most current version of the 9215C or 9215D method from Standard Methods for the Evaluation of Water and Waste Water published by AWWA or the most current equivalent method.*
- If dental units have been in operation without the use of an EPA-registered DUWL microbial treatment product (continuous or intermittent).
- After dental unit repair involving DUWL in utility center, umbilical, control head, self-contained clean water system, or handpiece or syringe tubing.
- After extended periods of not using dental unit.
- Upon municipal advisory to boil water from taps and after boil-water notice has been lifted.

For accurate monitoring of water quality, water samples cannot contain a microbial treatment product otherwise bacteria counts will be understated. Remove treated water from the DUWL and fill DUWL with untreated water for collecting water samples:

*STEP 1:* Before testing water in DUWL, remove the water bottle and empty the treated water from the bottle.

*STEP 2:* Empty DUWL of all treated water.

! *NOTE: Refer to step by step instructions on page 6 and 7 for emptying water lines.*

*STEP 3:* If using a straw cartridge treatment product, remove the treatment straw following the treatment straw IFU. Temporarily install the Forest provided water bottle pick-up straw by reversing the treatment straw installation instructions following the water treatment IFU.

*STEP 4:* Fill the reservoir water bottle with untreated water.

*STEP 5:* Run the handpiece flush system, air/water syringe and cuspidor cup fill until water begins flowing from all DUWL.

! *NOTE: Refer to step by step instructions on page 6 & 7 for loading water lines.*

*STEP 6:* Stop water flow and allow water to sit in DUWL for at least 5 minutes.

*STEP 7:* Collect water samples from all DUWL (handpiece, air/water syringe, scaler, cuspidor cup fill and additional ancillary water lines) using the in-house or 3rd-party test kit and follow test kit IFU.

*STEP 8:* Collect source water sample to determine if water source for dental unit is contaminated. If using city water connection, incoming water sampling connection point is in the Utility Center. If using self-contained water system, sample source water used to fill water bottle.

*STEP 9:* If using a straw cartridge, after collecting water samples remove the Forest provided water bottle pick-up straw and replace with the microbial straw cartridge.

*STEP 10:* Run the handpiece flush system, air/water syringe and cuspidor cup fill to recharge the DUWL with treated water.

! *NOTE: Refer to step by step instructions on page 6 & 7 for loading water lines.*

**!** *WARNING: When handling reservoir water bottle and administering or installing water treatment products, wear clean gloves. Handling water bottle with contaminated gloves may introduce contaminants into the dental unit water system.*

! *NOTE: Continue to page 6 for loading water lines.*

**UNIT OPERATION INSTRUCTIONS FOR MAINTAINING DENTAL UNIT WATER LINES (DUWL)**

Forest™ dental units have various “control head” (aka delivery control) styles depending on the model ordered. A control head is the “control center” of the dental unit containing various adjustment knobs/toggles and instrument holders. Identify the control head style on the dental unit and location of the handpiece flush toggle.

**CONTROL HEAD VARIATIONS ON DENTAL UNIT (FIG. 1-1.7)**

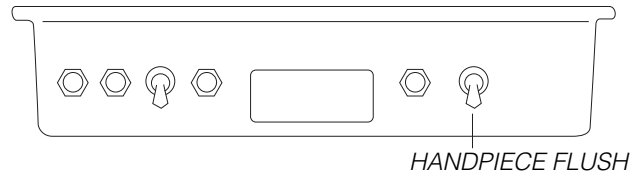


FIG. 1: STANDARD IC CONTROL HEAD (BACK VIEW)

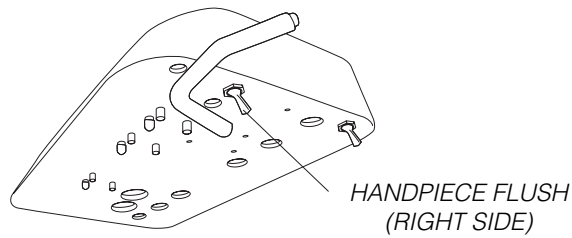


FIG. 1.1: VALUE CONTROL HEAD (UNDERNEATH VIEW)

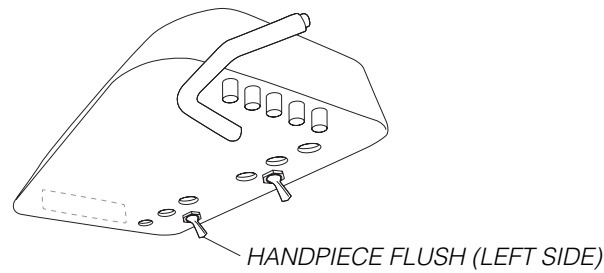


FIG. 1.2: FUSION CONTROL HEAD (UNDERNEATH VIEW)

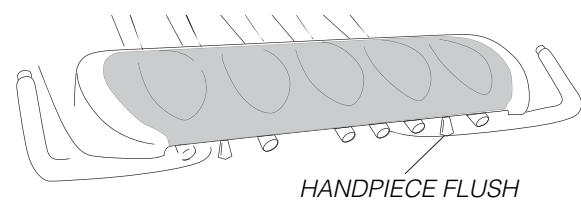


FIG. 1.3: EURO CONTROL HEAD (FRONT VIEW)

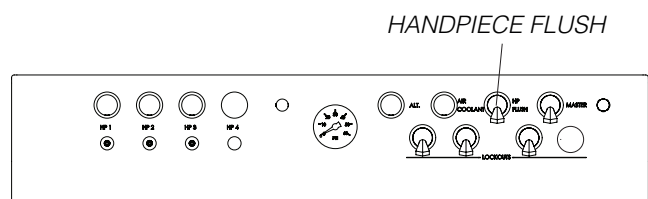


FIG. 1.4: 7000 SERIES CONTROL HEAD (FRONT VIEW)

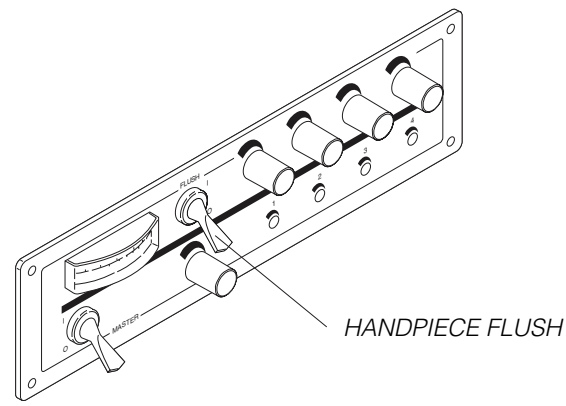


FIG. 1.5: LARGE PANEL MOUNT CONTROL HEAD (FRONT VIEW)

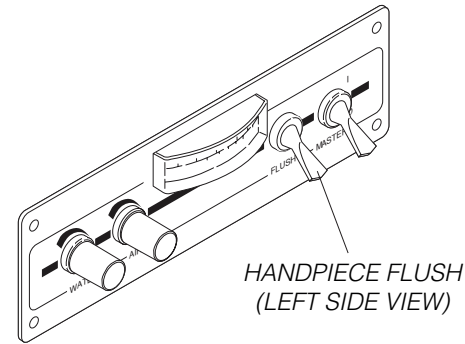


FIG. 1.6: SMALL PANEL MOUNT CONTROL HEAD (FRONT VIEW)

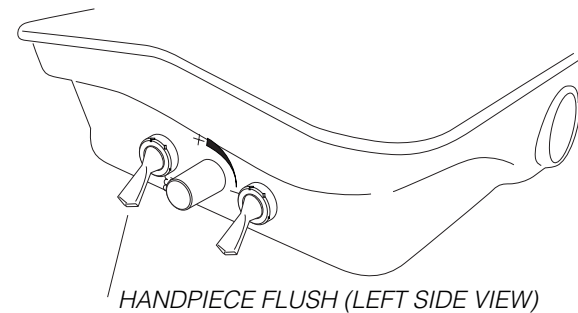


FIG. 1.7: MT CONTROL HEAD (SIDE VIEW)

**LOADING WATER LINES (WITH WATER OR WATER TREATMENT PRODUCT)**

**HANDPIECE DUWL (INCLUDING SCALERS AND OTHER ACCESSORIES):**

- STEP 1: Fill water bottle and reattach.
- STEP 2: Open all water coolant flow adjustment valves.
- STEP 3: Hold all handpiece tubings together over a receptacle such as a basin or cuspidor bowl.
- STEP 4: Turn on handpiece flush toggle until all tubings are flowing water (FIG. 1-1.7).
- STEP 5: Once all tubings are flowing water, turn off flush toggle.

**FIG. 2: AIR/WATER SYRINGE**

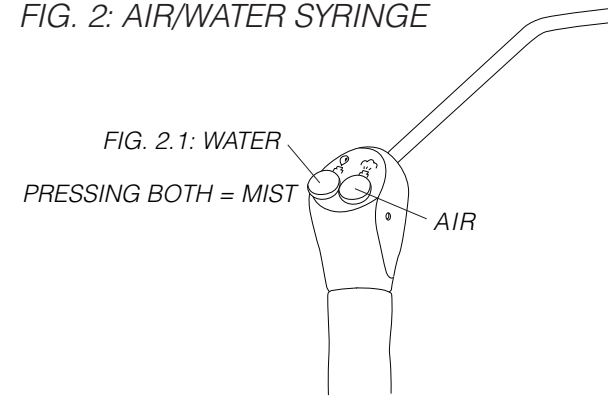


FIG. 3: DELUXE CUSPIDOR

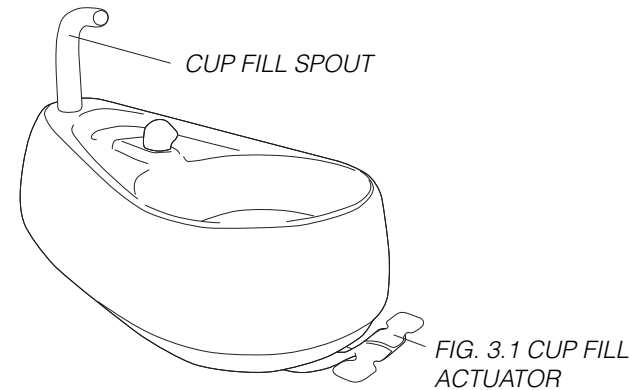
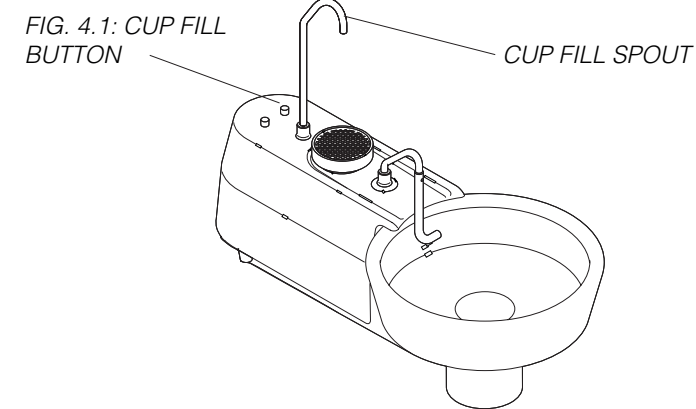


FIG. 4: BASIC CUSPIDOR



**AIR/WATER SYRINGE DUWL (FIG. 2):**

- STEP 1: Push air/water syringe water button until syringe tip is flowing water (FIG. 2.1).
- STEP 2: Release water button.

**CUSPIDOR CUP FILL (FIG 3.1 & 4.1)**

**DELUXE CUSPIDOR (FIG. 3):**

- STEP 1: The actuator activates the cup fill. Swivel the actuator to cup fill position (FIG. 3.1).

- STEP 2: Press cup fill symbol to activate water flow from the cup fill spout until water begins flowing (FIG. 3.1).

**BASIC CUSPIDOR (FIG. 4):**

- STEP 1: Push cup fill button to activate water flow from the cup fill spout until water begins flowing (FIG. 4.1).

**EMPTYING WATER LINES (WITH WATER OR WATER TREATMENT PRODUCT)**

**HANDPIECE DUWL (INCLUDING SCALERS AND OTHER ACCESSORIES)**

- STEP 1: Empty water bottle and reattach.
- STEP 2: Open all water coolant flow adjustment valves.
- STEP 3: Hold all handpiece tubings together over a receptacle such as a basin or cuspidor bowl.
- STEP 4: Turn on handpiece flush toggle until all water is expelled from tubings (FIG. 1-1.7).
- STEP 5: Allow air to flow through tubings for at least 1 minute to rid lines of moisture.
- STEP 6: Turn off flush toggle.

**AIR/WATER SYRINGE DUWL (FIG. 2):**

- STEP 1: Push air/water syringe water button until all water is expelled (FIG. 2.1).
- STEP 2: Allow air to flow from air/water syringe tubing for at least 1 minute to rid lines of moisture.

- STEP 3: Release water button.

**CUSPIDOR CUP FILL (FIG. 3.1 & 4.1)**

**DELUXE CUSPIDOR (FIG. 3):**

- STEP 1: The actuator activates the cup fill. Swivel the actuator to cup fill position (FIG. 3.1).

- STEP 2: Press cup fill symbol to activate water flow from the cup fill spout (FIG. 3.1).

- STEP 3: Release actuator when water stops flowing.

**BASIC CUSPIDOR (FIG. 4):**

- STEP 1: Push cup fill button to activate water flow from the cup fill spout (FIG. 4.1).

- STEP 2: Release button when water stops flowing.

**⚠ WARNING: Do not use dental vacuum lines connected to amalgam separators to dispose of water used to perform DUWL shock treatments or for bulk disposal of used or outdated dental unit water line treatment products. Refer to the following link for the latest Federal EPA amalgam law: [www.EPA.gov](http://www.EPA.gov).**