MICRO IRRIGATION

Integrated into ASI Delivery Systems

Operation & Service Manual

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This guide provides important steps for setup, use, and maintenance of the ASI irrigation system. It includes important details which must be followed to ensure safety and proper use.

This document includes sections for optional components that may or may not be included in your system. Your system may contain built-in accessory instruments from other manufacturers. Please refer to the original manufacturer's instructions for operation and maintenance for those instruments.

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SYMBOLS & SAFETY PRECAUTIONS

Reference section 1 of the delivery system operation and service manual for detailed information about symbols and safety precautions.

PRODUCT DESCRIPTION

The irrigation system, featuring a bottle bracket, titanium handpiece(s) and corrosion resistant tubing, allows the use of common dental irrigating solutions. One to three irrigation solution bottles and handpieces can be provided. The irrigation system is configured to provide dedicated single-solution flow. The handpiece, internal tubing, solution flow control valve, and bottles are color-coded in matched colors (,red, green, and orange) to provide the identification of the solution type.

The handpiece has a tapered Luer-type tip to fit standard irrigation tips and needles. The irrigator handpiece base is designed to fit a standard dental handpiece holder which allows it to be placed alongside the other handpieces on the dental unit. The handpiece features a finger-activated push button valve for ergonomic ease. The button valve depresses to allow the solution to flow and releases to stop the flow.

The 250mL bottle is used to hold the solution and uses regulated low air pressure to push the solution through to the handpiece when the bottle is pressurized.

The individual solution flow control valve is used to vary the solution flow rate from a slow drip to a steady drip rate.

An active irrigation handpiece and tubing upgrade is available. The active irrigation is connected to air and solution. The air activates an orbiter in the handpiece and causes the orbiter to vibrate, by pressing the foot control, while dispensing solution simultaneously. The air activation intensity is controlled by an active intensity valve, mounted on the dental unit. The active irrigation solution dispenses with a finger-activated, push-button valve on the handpiece.

Handpiece rinse cups and blue-labeled flush bottles are provided for maintenance purposes with each dental unit.

THEORY OF OPERATION

The irrigation bottle bracket is connected to a source of compressed air regulated with a maximum pressure of 20 psi. The regulated air flows to a pressure on/off toggle valve that, when in the ON position, allows air to flow into the bottle and through the bottle pressure head. The air pressure in the bottle pushes the solution from the bottle, through the pick-up tube, internal solution tubing, the solution flow control valve, and out to the handpiece tubing to the irrigation handpiece. Solution is dispensed with a finger-activated, push-button valve on the handpiece. The flow is controlled by the solution flow control valve.

For an active irrigator, adjust the vibration of the orbiter by adjusting the active intensity valve to allow a slight vibration to an intense vibration to the handpiece orbiter.

SPECIFICATIONS

Reservoir Capacity per Bottle	250 mL
Bottle Bracket Pressure Range	0-20 psi Max
Bottle Bracket Dimensions	7”W x 3.5”D x 8”H
Handpiece Body Construction	Titanium
Handpiece Handle	Kynar
Solution Bottle Construction	HDPE

IRRIGATION SYSTEM OPERATION

Fill the solution bottle(s) with desired solution below the bottle neck. Do not overfill. Each bottle includes a sealing O-ring. The bottle(s) screw into a pressure head. Tighten the bottle to create a seal. Turn the pressure on/off toggle to the ON position to pressurize the bottle(s).



Fig. 1

Remove the irrigation handpiece from the holder and attach a tip onto the Luer shaft so that the taper engages and fits securely.



Fig. 2

> **i** *Poor quality tips are molded out of round and may not fit well and leak. In this case, replace the brand of tips with a higher-grade brand. Quality tips may be purchased through Ultradent or Dentsply. For standard irrigation handpieces, a Luer lock ring connector can be attached to the Luer shaft of the handpiece (P/N 95-0318).*

To test the irrigation unit, hold the handpiece over a sink or basin. Depress the button to allow the solution to flow from the handpiece. Adjust the solution flow using the solution flow control valve with the matching color

coding on the dental unit. Turn the valve knob clockwise to increase the flow and counterclockwise to decrease the flow. (Fig. 3)

> **i** *To refine the solution flow, decrease the air pressure at the bottle bracket using the air regulator. (Fig. 4) By decreasing the air pressure, a slow steady drip can be obtained and use the flow control valve to make incremental adjustments.*



Fig. 3



Fig. 4

For an active irrigation handpiece, adjust the orbiter vibration by pressing the foot control while adjusting the active intensity valve. To increase the vibration, turn the valve knob clockwise and to decrease the vibration, turn the valve knob counterclockwise.

MAINTENANCE

Performing the preventative maintenance on the irrigation system is essential for avoiding leaks and blockages. The preventative maintenance includes daily, weekly, and annual maintenance and the replacement of irrigation components. A maintenance routine in the office and the replacement of consumable parts will help prevent potential issues with the irrigation system.

The small diameter tubing and the valve in the handpiece can easily clog if solution is allowed to dry out. It is important to thoroughly flush the system with warm water and not air dry the tubing and handpiece.

The handpiece and connections use small O-rings that can dry out or be damaged during disassembly of the handpiece. Always use dielectric O-ring lubricant when reattaching the handpiece to the tubing or replacing the handpiece finger-activated button valve.

Common Maintenance Replacement Parts

These replacement parts are available online at asisupport.com.

P/N 95-0500	Irrigation Bottle *Colors: Blue, Green, Orange, Red*	annual maintenance replacement
P/N 95-0192W	Standard Irrigator Button Valve	annual maintenance replacement
P/N 95-0245P	Active Irrigator Button Valve	annual maintenance replacement
P/N 95-0511	Active Irrigator Orbiter Assembly	annual maintenance replacement
P/N 95-0234	Standard Irrigator Connector Valve	annual maintenance replacement
P/N 95-0225	Active Irrigator Connector Valve	annual maintenance replacement
P/N 95-0512	Active Irrigation Orbiter O-Ring Kit	replace as needed
P/N 95-0503	Standard Irrigator Connector Valve O-Ring Kit	replace as needed
P/N 95-0504	Active Irrigator Connector Valve O-Ring Kit	replace as needed
P/N 95-0085-1	Dielectric O-Ring Lubricant	reapply as needed

Daily Maintenance

Daily Maintenance for all Irrigation Systems

- Clean and disinfect the outside of the micro irrigator system bottle bracket, the tubing and handpieces with wipes rated for dental surfaces. Remove any build-up of dried solution around the handpiece button valve and Luer connection.
- Turn the pressure OFF on the irrigator bottle bracket at the end of the day.

  i *If dried solution is left undissolved for too long, O-rings may dry out and crack, causing leaks.*

Daily Maintenance for Standard Irrigation Handpieces

- Fill the irrigator rinse cup halfway with warm water and place the rinse cup into the handpiece holder. Place the handpiece, tip down, into the rinse cup and soak overnight. This will help break down solution crystallization that may have built up during use.
- The next morning, remove the handpiece from the rinse cup. Remove the rinse cup from the holder. Test handpiece for solution flow.

Daily Maintenance for Active Irrigation Handpieces

- Fill the irrigator rinse cup halfway with warm water and place the rinse cup into the handpiece holder.
- Loosen handpiece nose cone 2-3 turns; do not remove nose cone.
- Place the handpiece, tip down, into the rinse cup and soak overnight. This will help break down solution crystallization that may have built up during use.

  i *Do not remove the orbiter assembly from the handpiece body during the daily soak. If the orbiter is removed, lubricate the O-rings with dielectric O-ring lubricant (P/N 95-0085-1) before reassembly to prevent leaking.*

- The next morning, remove the handpiece from the rinse cup and retighten the nose cone to the handpiece. Remove the rinse cup from the holder. Test handpiece for solution flow and orbiter vibration.

Weekly Maintenance

- Clean pressure head threads of dried solution buildup.
- Check the air pressure gauge on the bottle bracket. The pressure should be set from 10 psi to a maximum of 20 psi. To adjust the pressure, rotate the regulator knob counterclockwise to decrease or clockwise to increase. If the pressure cannot be set within this range, replace the in-line regulator/check valve assembly (P/N 95-0171) or contact ASI for assistance.
- For each irrigation solution, fill the blue labeled accessory flush bottle(s) with warm water. Assure the bottle bracket is depressurized. Remove the solution bottle(s) and attach the accessory flush bottle(s).
- Pressurize the bottle bracket and run water through each of the irrigation handpieces to flush out and dissolve solution residue crystallization.
- Depressurize the bottle bracket, remove the accessory flush bottle(s), and reattach the solution bottle(s).
- Inspect the handpiece(s) and tubing(s) for kinks, cuts, or damage.

Annual Maintenance

See Common Maintenance Replacement Parts section above for part information. See Component Replacement Procedures below for replacement steps.

- Replace solution bottle(s)
- Replace irrigator handpiece button valve(s)
- Replace irrigator connector valve(s)
- Replace orbiter assembly (active irrigation only)
- Lubricate handpiece O-rings

Component Replacement Procedures

Replacing the Button Valve

Check the button valve for sticking or leaks. ASI recommends replacing the button valve annually.

- Standard irrigator: P/N 95-0192W.
- Active irrigator: P/N 95-0245P.

Step 1 – Turn the pressure OFF on the irrigation bottle bracket. The pressure on/off toggle will relieve the air pressure in the system.

Step 2 – Using an 11/32" nut driver, loosen the button valve by turning it counterclockwise.

> **i** *For the round valve style, place a piece of plastic bag with a hole punched in the center around the valve to prevent the tool from scratching the handpiece.*

Step 3 – Pull the button valve straight out to remove it from the handpiece.

Step 4 – Thoroughly clean and dry the handpiece.

> **i** *For handpieces that have dried buildup, soak in warm water to loosen the scale.*

Step 5 – Using a foam applicator swab, clean all inside features of the handpiece body, including the threads.

i *Do not use cotton swabs.*

Step 6 – Apply ASI's silicone O-ring grease (P/N 95-0085-1) to the O-rings on the exterior of the new button valve.

Step 7 – Using the nut driver, thread the new button valve into the handpiece clockwise until it is lightly seated.

Step 8 – Wipe excess lubricant off the handpiece body.

Step 9 – Test the function and check for leaks through the handpiece and around the valve.

Replacing the Active Orbiter Assembly

Replace the active orbiter assembly (P/N 95-0511) annually, or sooner if it stops working properly and the problem persists after soaking and verifying air pressure.

Step 1 – Turn the pressure OFF on the irrigation bottle bracket.

The pressure on/off toggle will relieve the air pressure in the system.

Step 3 – Unscrew and remove the nose cone.

Step 4 – Remove the existing orbiter by pulling it away from the handpiece body.

Step 5 – Apply silicone O-ring grease (P/N 95-0085-1) to all O-rings on the new orbiter assembly. Insert the new orbiter assembly into the handpiece body.

Step 6 – Rethread and tighten the nose cone.

Step 7 – Test the handpiece for solution flow and orbiter vibration.

Replacing the Active Orbiter O-Rings

Active Irrigation Orbiter O-Ring Kit: P/N 95-0512.

Step 1 – Turn the pressure OFF on the irrigation bottle bracket.

Step 2 – The pressure on/off toggle will relieve the air pressure in the system.

Step 3 – Unscrew and remove the nose cone.

Step 4 – Remove the orbiter by pulling it away from the handpiece body.

Step 5 – Replace the entire orbiter assembly (P/N 95-0511), or replace only the O-rings (P/N 95-0512).

Step 6 – Tweezers, needle-nose pliers, a scaler, or other small tools may help remove the O-rings.

i *When installing new O-rings, roll them into place. Pulling them on with a tool may damage them and cause leaks.*

Step 7 – Apply silicone O-ring grease (P/N 95-0085-1) to each O-ring on the orbiter assembly.

Step 8 – Reassemble the orbiter, nose cone, and handpiece body.

Step 9 – Test the handpiece for solution flow and orbiter vibration.

TROUBLESHOOTING

Irrigation Handpiece Drips out the Tip or Button Sticks

- Soak handpiece in rinse cup and press handpiece button to break up dried solution crystals.
- O-rings in button valve are worn or internal button valve spring has failed. Replace button valve. Standard irrigation (P/N 95-0192W) or active irrigation (P/N 95-0245P).

No Flow or Low Flow through Handpiece

- Verify solution flow control valve is open.
- Check if the bottle is sealing. Replace bottle if leaking (P/N 95-0500).
- Solution line may be clogged with dried solution. Run warm water through bottle, tubing and handpiece. The handpiece may need to be soaked in rinse cup.
- Check pressure on bottle bracket. If below 5 psi and it does not adjust higher, replace the in-line regulator/check valve assembly (P/N 95-0171).
- Check for kinks in the solution tubing, in the bottle bracket, or through the unit.

No Pressure Showing on the Bottle Bracket

- Check if pressure on/off toggle on bottle bracket is in the ON position.
- Verify bottle is tight to the pressure head. If leaking, replace the solution bottle (P/N 95-0500).
- Check if main air tube is supplying the bottle bracket with air. If air is being supplied to the bracket, replace the in-line regulator/check valve assembly (P/N 95-0171).

Leaking Solution from Bottom of Handpiece Handle

Check Connector Valve and O-Rings

- **Standard Irrigation** - Verify if there is dried solution on the connector valve. If dried solution is present, soak connector valve in warm water to break down solution crystallization. Inspect connector valve O-ring for damage or wear. If damage is present, replace connector valve (P/N 95-0234). Lubricate O-ring before reassembling handpiece.
- **Active Irrigation** - Verify if there is dried solution on the active connector valve. If dried solution is present, soak connector valve in warm water to break down solution crystallization. Inspect connector valve O-rings for damage or wear. If damage is present, replace the connector valve (P/N 95-0225). Lubricate the O-rings before reassembling the handpiece.

Leaking from Outer Jacket of Handpiece Tubing (Active Irrigation)

The internal solution tube does not have a solid connection to the connector valve barb or the internal solution tube is damaged. Replace the active irrigator handpiece tube (P/N 95-0243W - 50” or 95-0243LW - 60”).

Active Irrigator Handpiece Does Not Vibrate, Solution is Flowing

- Orbiter is frozen from dried solution. Remove the orbiter from the handpiece and soak the orbiter in warm water. Soak other handpiece parts in rinse cup. After soaking, lubricate the O-rings before reassembling the handpiece.
- Check orbiter O-rings for damage, if damage is present, replace the orbiter O-ring kit (P/N 95-0512). Lubricate O-rings before reassembling handpiece.
- If orbiter is damaged, replace the orbiter (P/N 95-0511). Lubricate O-rings before reassembling the handpiece.