TPC

Mirage 2.0 Mobile Cart Delivery System

Installation Instructions MC 500 / 501

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Parts List is available online (Parts List)

Unpacking and Inventory

Each Mirage 2.0 Mobile Cart Delivery system will contain the following items in the box:

1. Delivery Unit Head Installed on H Frame

- Delivery unit head, H-Frame with casters
- HVE / SE (MC501 unit only)
- Suction canister 2 1/8" trap (MC501 unit only)
- 3-way syringe with tip
- Skid pad
- 1500 ml water bottle
- Junction box
- Air / Water master controls
- Wet / Dry foot control
- Factory-installed low-voltage wire / terminal block in unit head: 24V AC/DC Max

If at any time you have questions regarding your installation, please don't hesitate to contact TPC toll-free at 800-560-8222 or via email at service@tpcdental.com

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Installation Instructions

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The MC 500 / 501 mobile delivery carts come completely assembled. Once removed from the shipping box, you will only need to connect the air and water pilot valves to the city water supply and dental air compressor supply. (MC501 carts will need to have the suction line connected to a central vacuum system.)

Height Adjustment

To raise or lower the height of the cart, loosen the securing knob and gently lift the unit head assembly to raise. You will need to lay the umbilical flat to decrease the resistance when pulling up. In some cases, you may need to feed the umbilical into the frame to assist with raising the height. Tighten the securing knob to lock in place.

Delivery Head Leveling Adjustments

Leveling the Unit Head:

- Loosen the 4 Allen screws that attach the unit head to the short control arm (see image)
- Once the screws are loose, use the 4 adjustment screws in the center on each side to level the head and front to back and side to side.

Adjusting the Unit Head Tilt:

Route the Wet/Dry Foot Control Tubing

Run the Tubing into the Junction Box

Make sure each tube is correctly identified and routed according to its function:

Tubing Connections and Functions:

1. **Yellow / Grey Tubing (First)**
   - Yellow Line:
     → Supply the foot control from the master control
     → Source: J-Box
     → Destination: Foot control inlet port
2. **Yellow / Grey Tubing (Second)**
   - Yellow Line:
     → Supply FROM the foot control
     → Destination: Main Block flex arm

     ⚠ Even though both sets are Yellow/Grey, track them carefully based on their direction and function. They are keyed to connect in only one direction. If the tubing is reversed, air will be purged out of the foot control disc.

3. **Green / Grey Tubing**
   - Green Line:
     → Signal air to the water relay in the unit head
     → Used to control the water on / off function from the foot control

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Connect Tubing (Final Tubing Connections)

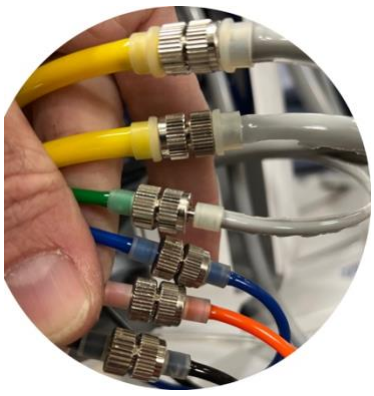
Connect the following color-coded tubing exactly as shown in your diagram, paying close attention to the tubing colors and their functions:

Tubing Connections and Their Functions:

1. Blue / Blue Tubing
    - Blue Line:
      → Water supply from the water master control to the unit head routing valve
      → Carries operational water used at the handpiece or utility head

2. Orange / Orange Tubing
    - Orange Line:
      → Signal air return from the master switch
      → This returns the air signal once the master switch is released/off

3. Black / Black Tubing
    - Black Line:
      → Signal air supply to the master switch
      → Delivers the air signal to activate the master switch



* A complete plumbing schematic is at the end of this manual*

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Connect & Configure Master Controls

- Before connecting the master controls, purge both air and water supply lines to remove:
  - Debris
  - Dust
  - Any contaminants that could damage valves or clog filters
- You can do this by briefly turning on the supply to flush out each line into a container or drain.

Connect to the Junction Box

- Connect the air and water master controls to a suitable angle stop (usually found inside the junction box).
- Ensure secure, leak-free connections.

Micron Filter

- Note: A replaceable micron filter is located inside the pilot valve body.
  - This filters fine particles from the air line, protecting sensitive components.
  - Replace this filter periodically as part of regular maintenance.

Set Regulator Pressures

- **Air Master Regulator**:
  → Set to 80 PSI
- **Water Master Regulator**:
  → Set to 40 PSI

🔧 **To Adjust the Regulators:**

1. Loosen the lock nut on the mini regulator.
2. Turn the adjustment knob:
   - Clockwise = Increase pressure
   - Counter-clockwise = Decrease pressure
3. Once the desired pressure is reached:
   - Tighten the lock nut to secure the setting.

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Set the Water Bottle Pressure

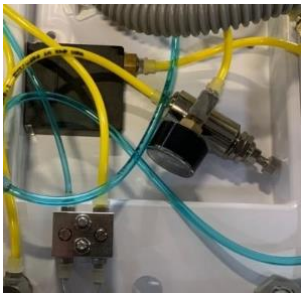
🔧 **Procedure:**

Open the Unit head cover. Remove all perimeter thumb screws to detach the top cover.

- Locate the mini regulator that controls pressure to the water bottle.

Adjust the Mini Regulator

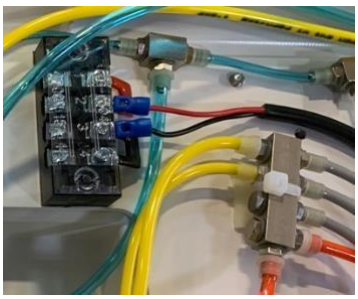
- Turn the adjustment knob to set the pressure:
  - Set to 35 PSI
  - ⚠ Do not exceed 40 PSI — exceeding this may cause leaks or damage the bottle.
  - If the regulator has a lock nut, tighten it after adjustment to prevent unintentional pressure changes.



Low Voltage Power Terminal Setup (Unit Head)

⚡ **Power Connection Overview:**

- The unit umbilical has a pre-run low-voltage wire that can be connected in the junction box.
  - Powering the unit head
  - Supporting 24VAC low-voltage devices



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Operation Instructions

Master Controls ON/OFF Toggle

- The **master control toggle** switches the **master pilot valves** located inside **the junction box** between the **ON and OFF** positions.
- When toggled **ON,** the pilot valves allow air and water flow to the delivery unit systems.
- When toggled **OFF,** the pilot valves shut off supply lines, disabling system functions for safety or maintenance.

Adjusting the Air Coolant Spray Pattern

1. **Ensure the Air Coolant Valve is Open**
   - Make sure **the air coolant valve** is open to allow airflow.
2. **Activate the High-Speed Handpiece**
   - Run **the high-speed handpiece** with the **water turned on.**
3. **Observe the Spray Pattern**
   - You should see a **spray pattern** of air and water cooling the handpiece.
4. **Adjust the Valve**
   - **Open** the air coolant valve to **increase** the spray intensity.
   - **Close** the valve partially to **decrease** the spray.

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Flush Valve Operation

1. **Toggle the Flush Valve**
   - Press or toggle the flush valve button to **flush water through all three handpiece tubings** at the same time.
2. **Catch the Water**
   - Place all handpiece tubing ends into a **capture basin** or suitable container to collect the flushed water.
3. **Stop Flushing**
   - **Release the button** to stop the water flow through the handpieces.

☑ Tips:

- Use this flushing process to clear debris or stagnant water from handpiece lines.
- Regular flushing helps maintain hygiene and equipment performance.
- If the unit is not going to be used for an extended period, it's recommended that you flush all the water out of the lines. To do this, operate the flush till all the water is expelled from the system.

Filling and securing the water bottle

1. **Use Only Distilled Water**
   - Fill the bottle **only with *distilled water*** to prevent mineral buildup and ensure equipment longevity.
2. **Fill the Bottle**
   - Fill the bottle to the recommended level.
3. **Secure the Bottle to the Cap**
   - Turn the bottle **clockwise** to screw it onto the bottle cap securely.
   - **Do not over-tighten**, as this can damage the bottle cap threads or gasket.

☑ Tips:

- Check the gasket regularly for wear or damage. Replace if worn or damaged.
- Proper sealing prevents leaks and maintains system pressure.

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Activating Bottle Pressure

- This control **activates the pressure supply to the bottled water system**, enabling water flow from the bottle.
- Ensure the bottle is properly installed and the pressure regulator is set before turning on.

Selecting the Water Source

- Choose between **City Water** or **Bottled Water** as the water supply source.
- Ensure the selector valve or switch is set to the desired source before operating the system.

☑ Tips:

- Use **bottled water** when city water quality is uncertain or as recommended.
- Confirm the correct setting during setup and maintenance.

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Adjusting Water Flow to Handpiece Tubing

- Each **handpiece** has its own **water adjustment knob**.
- To **decrease water flow**, turn the knob **clockwise**.
- To **increase water flow**, turn the knob **counterclockwise**.

☑ Tips:

- Adjust flow gradually for optimal cooling and patient comfort.
- Check each handpiece separately to ensure proper water delivery.

Adjusting Handpiece Drive Air Pressure

1. **Loosen the Stop Nut**
   - Before adjusting, **loosen the stop (lock) nut** on the adjustment knob to allow movement.
2. **Adjust the Drive Air Pressure**
   - Turn the **HP adjustment knob counterclockwise** to **increase** the drive air pressure.
   - Turn the knob **clockwise** to **decrease** the drive air pressure.
3. **Secure the Lock Nut**
   - After achieving the desired pressure, **tighten the stop nut** to lock the adjustment knob in place.

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Handpiece Pressure Gauge

- The **HP (Handpiece) pressure gauge** is located on the **lower left side** of the instrument head.
- To get a **pressure reading**, both the **foot control** must be engaged, and an **active handpiece** must be in use.
- Without these, the gauge will not display the correct pressure.

☑ Tips:

- Use the gauge to monitor and adjust handpiece drive air pressure for optimal performance.
- Ensure the foot control and handpiece are functioning properly to get accurate readings.

Handpiece Exhaust Particulate Collector

- This component **collects all exhausted particulates** coming from the **handpiece tubing exhaust line**.
- It helps maintain cleanliness and prevents debris from contaminating the surrounding area or equipment.

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Operating Foot Control and Wet/Dry Switch

1. **Activate Air Pressure**
    - **Press down on the foot control disc** to supply **air pressure to the main block**.
    - This engages the air drive for the handpiece.
2. **Turn On Water Supply**
    - Toggle the **wet/dry switch to the right** to **turn on the water supply** to the handpiece tubing.
    - This enables water flow for cooling and irrigation.

Solids Collector Trap

Location: On top of the assistance arm cover.

Before Removing the Lid:

1. **Turn off** the vacuum system.

To Change the Solids Collector Trap:

1. **To remove the cap:** Grasp the cap with one hand.
2. Turn it **¼ rotation.**
3. Gently **lift the cap off.**
4. **Lift** the trap out of the solid's collector canister.
5. **Place** a new trap into the solid's collector canister.
6. **Inspect the O-ring** on the top cap to ensure it is intact and seated properly.
7. **Reinstall** the cap.

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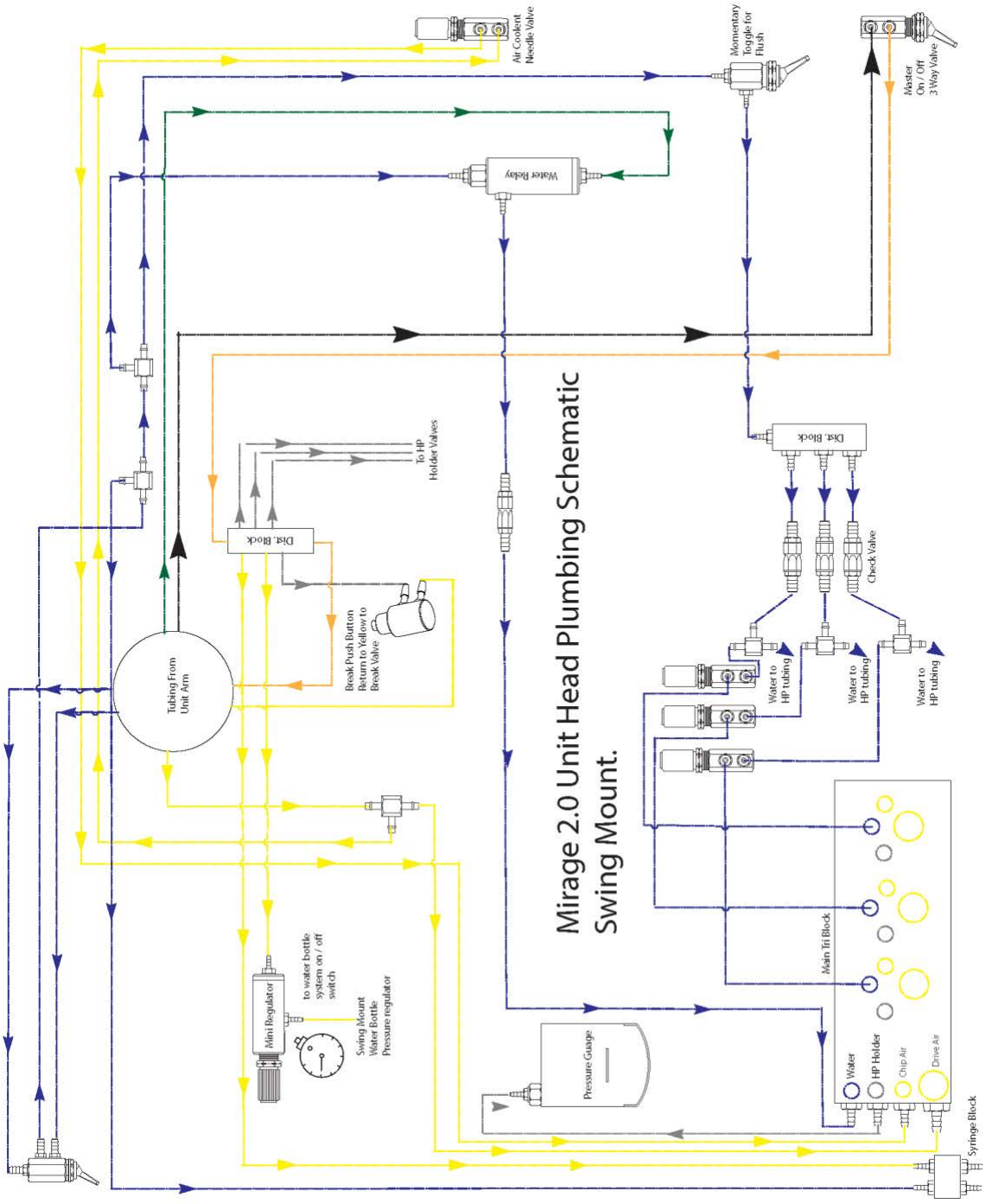
Tubing Diagram Unit



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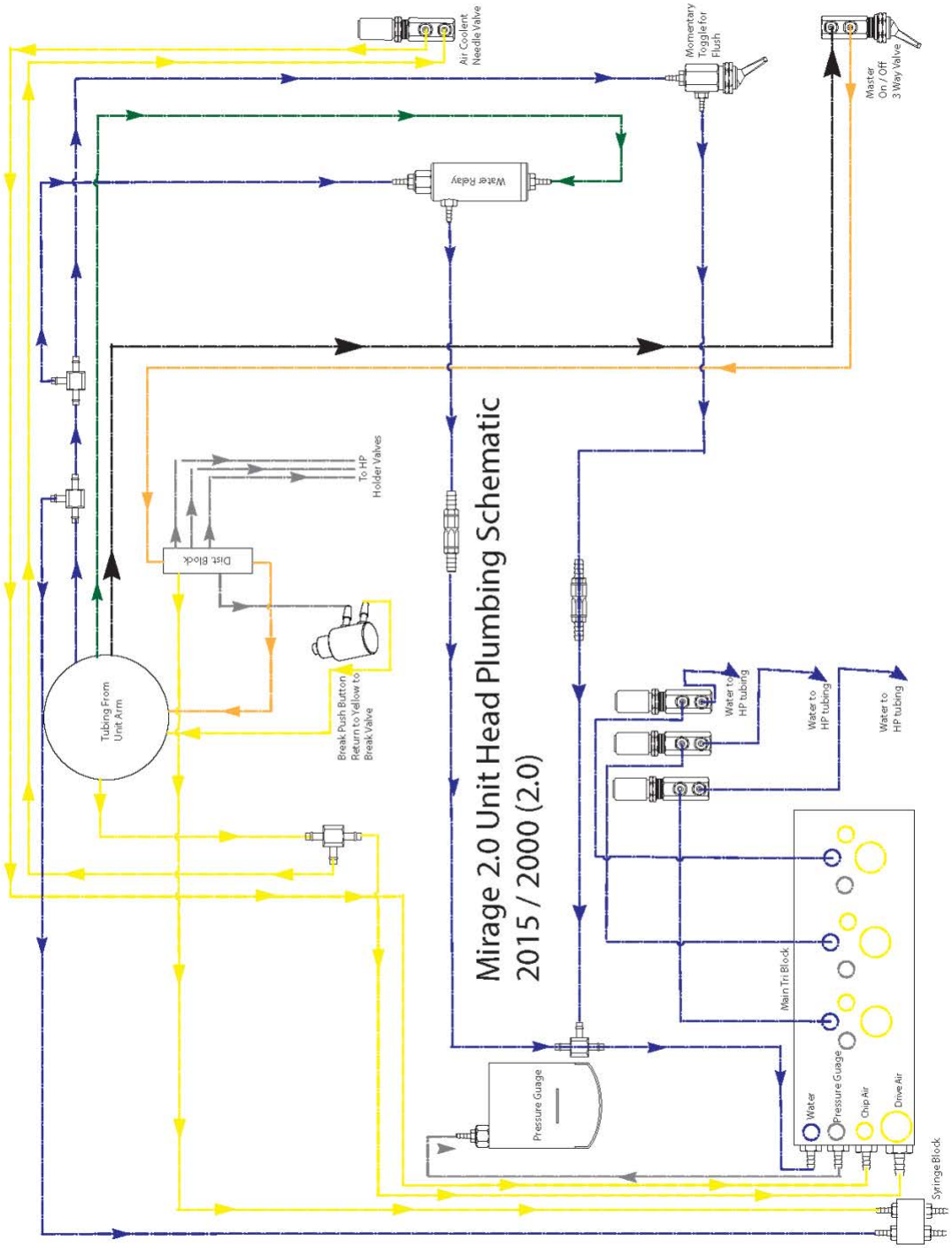
(Flush Bypass)



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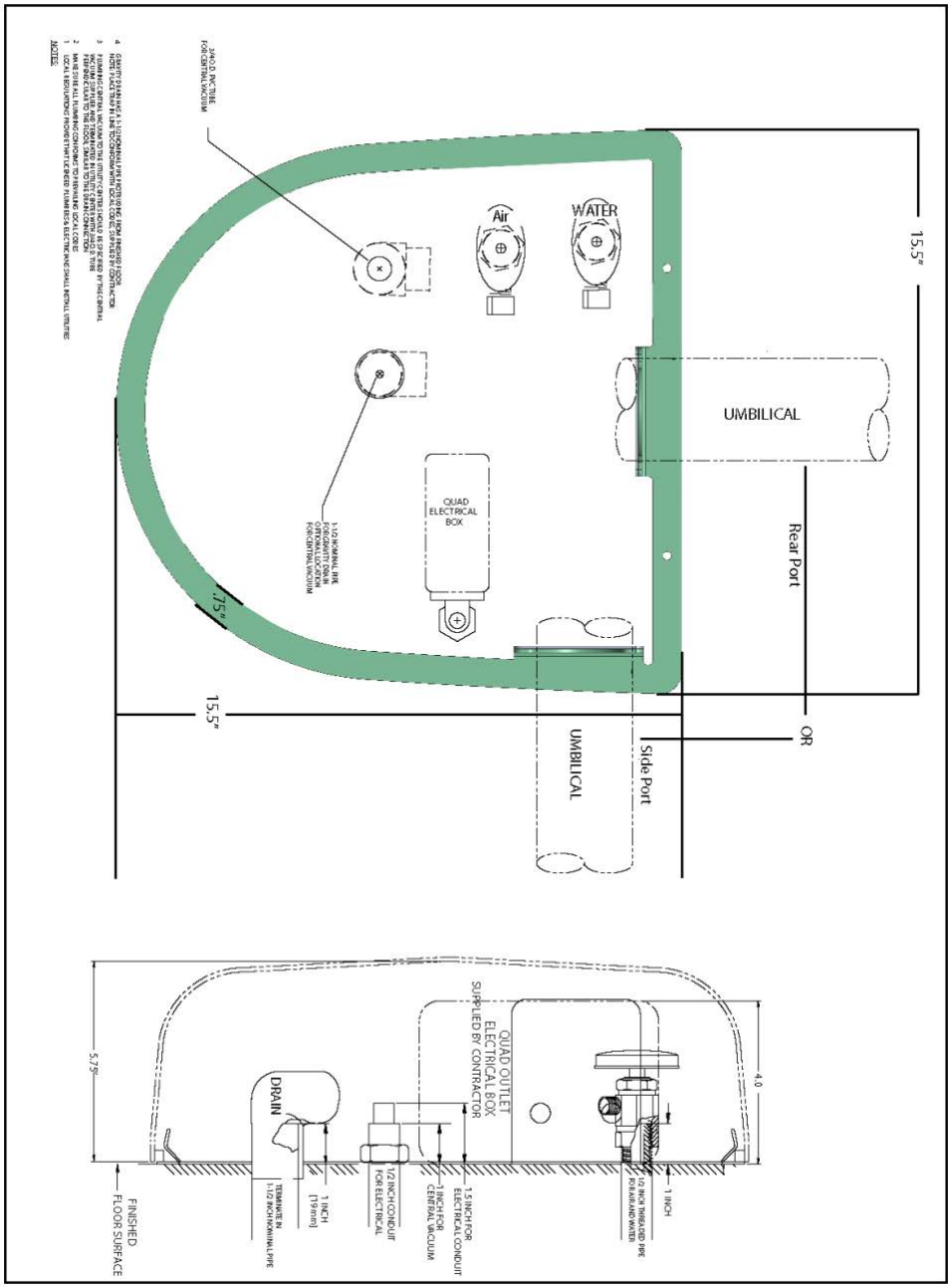
Junction Box Template



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WARRANTY INFORMATION

TPC 5 Year Limited Warranty

All TPC products sold are guaranteed to be free from defects in workmanship and materials under the following terms:

Coverage Periods

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5 Year Warranty Coverage:

- Main Block
- Metal arms/bearing assemblies/holder bars
- Transformers
- Electrical wiring
- Internal delivery unit tubing
- Major cast components
- Brake assemblies
- All internal valving

1-Year Warranty Coverage:

• Upholstery
• Armrests
• Plastic Components
• Handpiece Tubing / Syringe Tubing
• All other parts and components

What is Covered

TPC will repair or replace any defective part at no charge during the applicable warranty period. All parts must be returned to TPC for inspection and warranty verification.

What is NOT Covered

This guarantee does not cover:

- Normal wear or stains on surface finishes
- Damage resulting from improper installation
- Damage from misuse or accidents
- Damage incurred during shipping and handling
- Labor charges for installation or removal
- Shipping charges to/from the TPC facility

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Shipping Damage Claims

All claims against the freight carrier must be initiated at the time damaged items are received. Filing the claim is the responsibility of the customer.

Service Requirements

⚠ **IMPORTANT:** Only authorized service technicians should attempt to service TPC equipment. Service performed by unauthorized technicians may result in a voided warranty.

Product Modifications

TPC continuously improves its products and reserves the right to make modifications without prior notification. TPC is not obliged to modify previously manufactured items.

Contact Information

For additional information, contact your TPC dealer

For technical support, contact:
TPC Dental
Phone: 800-560-8222
Email: service@tpcdental.com
Web: www.tpcdental.com

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Troubleshooting:

1. Water is flowing out of all three handpieces when in the HP holder

- *Cause:*
  - Flush Valve Activated
  - Flush Valve Damaged
- *Solution:*
  - Turn the Flush Valve
  - Replace Flush Valve

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2. When I use one handpiece, water leaks out of another HP position

- *Cause:*
  - Check Valve Failed
  - HP Holder Valve pressure is neutral
- *Solution:*
  - Replace Check Valve
  - Check and verify the HP holder valves are tied into the return of the master switch and not the 3-Way syringe

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3. Water is leaking from the exhaust jar on the bottom of the unit

- *Cause:*
  - Water is leaking into the exhaust line in the HP tubing
  - Water in the supply air
- *Solution:*
  - Check the HP gasket
  - Tighten the HP nut to the HP
  - Check the compressor for moisture

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4. Air is purging out of a handpiece position that is in its holder when I'm using a different handpiece

- *Cause:*
  - HP tubing is not in the proper holder location
  - The Main Block Diaphragm is damaged
- *Solution:*
  - Place the HP tubing in the correct holder

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- Replace the Main Diaphragm on the Block

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5. The water from my HP is a stream and not spraying

- *Cause:*
  - Chip Air adjustment closed
- *Solution:*
  - Open chip air adjustment

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6. Water from my 3-way syringe is very low

- *Cause:*
  - Low water pressure
  - Buttons have built debris on O-rings
- *Solution:*
  - Increase water pressure
  - Remove, clean, or replace buttons

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7. When I use a HP position, the air pressure drops quickly

- *Cause:*
  - The Main Regulator in the junction box has failed or is below 80 psi
  - Pinched line
- *Solution:*
  - Replace the Main Air Pressure Regulator, and adjust the air pressure if it's below 80 psi
  - Check plumbing for pinched air line

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8. The water bottle leaks air

- *Cause:*
  - The water bottle gasket is damaged or missing
- *Solution:*
  - Inspect the water bottle gasket. Replace if needed or missing

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9. The HP will not cut, but it sounds like it is at the correct rpm

- *Cause:*
  - Pinched air line
  - Bad handpiece
- *Solution:*
  - Check for pinched lines from the master control to the foot control, then to the main control block
  - Check the Handpiece in another position or another delivery unit

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11. The suction is low to the HVE, SE valves

- *Cause:*
  - The solids trap is full
  - Clog on the main suction line or canister
- *Solution:*
  - Check and replace the solids trap if it's full
  - Clear the obstruction or replace the main suction line

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12. The silicon jacket is torn on the handpiece tubing

- *Cause:*
  - Chemical exposure
  - Excessive pulling on the coupling
- *Solution:*
  - Replace the tubing
  - Be gentle when pulling on the silicone jacket against the coupling

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