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For Your Safety:

- Before operation, read the following safety terms.
- Throughout this manual we will use the following safety terms for different levels of severity:

**RISK NOTICE:** Failure to heed a warning of this nature could result in death or serious injury.

**WARNING NOTICE:** Failure to heed a warning of this nature could result in physical injury or damage to the equipment.

**SECURITY NOTICE:** Failure to heed a warning of this nature may result in minor injury or damage to the equipment.

**Risk Notice:**

- Do not install, use, or fill the unit near any source of heat or open flame. In use, the unit will contain oil which can be highly flammable.
- Keep the unit out of direct sunlight or any area with temperatures in excess of 104° F.
- Operate the unit only in a well ventilated area.
- Use of this unit in any manner other than specified or for any purpose other than cleaning and lubricating of dental handpieces is expressly prohibited.

**Warning Notice:**

- To avoid electrocution, keep water away from the power cord and electrical connections.
- Always keep the unit dry when plugged in -- do not spray with water nor immerse.
- Do not disassemble nor alter the equipment without express direction from American Dental Accessories. For service, please contact American Dental Accessories, Inc.
- Unit must be installed on a level surface.
- If the machine is smoking and/or burning odor is noticed, please unplug the unit and contact American Dental Accessories.

**Security Notice:**

- Always sterilize handpieces in accordance with CDC guidelines after cleaning and lubrication.
- The unit should be installed in a well-ventilated area, an air gap of approximately 2” around the unit is recommended.
- Air pressure should be supplied to the unit at 50-80 psi.
- Do not open the unit or the oil fill cap during operation, always wait for the cycle to complete.
- If a cycle is interrupted, wait for 5 minutes before opening the lubricant reservoir.
- After use, please switch off power and air supply.
- Compressed air supplied to the machine should be kept clean and dry. Drain moisture from air compressors and change air filters regularly.
- If expecting to have out of use for a prolonged period, disconnect the unit from power and air.
- When storing lubricants, keep away from sources of heat or open flame as well strong caustic chemicals.
Handpiece Flushing System Overview

Basic Features:

- Providing lubrication and flushing of dental handpieces.
- Up to three dental handpieces can be oiled and cleaned at the same time.
- After a cycle is complete, any excess lubricant can be purged from attached handpieces by pressing the “air” button.
- Different handpieces can be oiled by choosing the short mode, the long mode, and the longer mode.
- The absorbent cotton pad in the cover will collect expelled oil and debris.

Specifications:

Item #: HF-400  
Voltage rating: AC110V±10 v 50Hz ± 1Hz  
Air pressure: 50-80 psi  
Reservoir volume: 350ML  
Weight: 7.0kg

Installation:

1. Place the unit on a clean dry and level surface leaving approximately 2” of space around all sides of the unit open for ventilation.
2. Attach power cord to back of the unit and plug into a grounded 110V outlet. Do not attach to an ungrounded power supply, and do not alter the plug.
3. Connect the air line by inserting one end of the hose into the quick release coupling at the back of the unit and connect the other end to a source of compressed air. Contact American Dental Accessories, Inc. if you need assistance and/or fittings to attach to your compressed air.
4. Fill the reservoir by unscrewing the cap and carefully pouring in lubricant. Always make certain the unit is unplugged before adding oil, and make certain that the funnel is clean and dry.

Warning Notices:

- Supply Air pressure should be regulated to 50-80 psi
- Make certain that air line is free of obstructions and is not kinked or pinched.
- Compressed air supplied to the unit should be clean and dry.
- Be certain to keep the unit and oil supplies away from sources of heat or flame.
Security Notices:

- Always make certain that the funnel is clean and dry when adding oil to the reservoir.
- Do not overfill the reservoir. Pour slowly so you can stop pouring when the “full” line is reached.
- Air pressure supplied must not be lower than 50 psi.
- If difficulty is encountered in attaching the air line, contact American Dental Accessories, Inc.
- After filling the reservoir, take care that the reservoir lid is securely replaced.
- Do not unscrew the reservoir cap during operation of the unit.
- If a cycle is interrupted, wait for at least 5 minutes before unscrewing the reservoir cap.

Operation:

1. Open the translucent cover by grasping at the top and pulling down and forward.
2. There are attachments for up to three instruments. Two will accept a stand 4 or 5 hole handpiece, and one will accept an E-Type attachment.
3. To attach a standard handpiece to either of the two handpiece attachments, simply attach as you would to a unit hose. That is, push the handpiece onto the fitting and then thread the collar over the threads of the handpiece to secure it in place.
4. To attach an E-type attachment (including some electric handpieces), simply snap the attachment onto the E-type adaptor.
5. When attaching angled handpieces or attachments take care that the handpiece is not angled such that it will interfere with closing the lid of the unit.
6. Close the lid of the unit securely.
7. Turn the power on, the indicator light will illuminate.
8. Set the time for each station according to your needs. Each station has its own button (labeled “1”, “2”, or “3”). Pressing the button once will cause “S” to illuminate indicating short mode has been selected. Pressing twice will cause “L” to illuminate indicating long mode has been selected. Pressing three times will cause “E” to be illuminated indicating extended mode has been selected. Pressing the button a 4th time will disable this station for a cycle, no indicators will be illuminated. Choose this if you do not have a handpiece or attachment connected to this position.
9. See the table on the following page for appropriate settings.
10. Once the appropriate cycle has been selected for each station, press the start key. This will initiate the cleaning and lubrication process.
11. The unit will emit an audible signal (beep) once the cycle is complete
12. Depress the air button to purge any remaining excess oil in the handpiece(s)
<table>
<thead>
<tr>
<th>Mode</th>
<th>Handpiece Style</th>
<th>Cleaning Time</th>
<th>Drying Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Mode</td>
<td>Highspeed handpiece or E-type straight attachments</td>
<td>35 seconds</td>
<td>60 seconds</td>
</tr>
<tr>
<td>Long Mode</td>
<td>Contra angle attachments</td>
<td>45 seconds</td>
<td>80 seconds</td>
</tr>
<tr>
<td>Extended Mode</td>
<td>Surgical Handpieces or any handpiece which is anticipated to have a large build-up of debris. Also suitable for old handpieces which have been removed from service due to sluggishness or poor performance</td>
<td>50 seconds</td>
<td>90 seconds</td>
</tr>
</tbody>
</table>

**Note:** The next-longest recommended mode for a given handpiece can be selected after prolonged procedures or if other circumstances dictate.

**Security notice:**

- Only connect the unit to a 110V grounded outlet.
- At least one station must have a cycle time indicated- unit will not operate if the Mode Indicator Light is off.
- Always make certain the cover is securely closed before attempting to operate. The Error Indicator Light will illuminate if the cover is ajar.
- For new handpieces or those which have been out of service for a prolonged period, multiple cycles may need to be run.
- The approach of disassembly
- Do not remove any attachments or handpieces until the cycle has fully completed and the unit has shut off.
- Excess lubricant can collect on the inside bottom of the cover. An absorbent cloth pad has been installed to collect this excess. Additional lubricant can accumulate and should be wiped up with any convenient soft cloth. Dispose of saturated pads or other materials in accordance with local regulations. A package of spare pads has been included with your unit. Additional pads are available from American Dental Accessories, Inc.
- Thick rectangular pads are also installed in the face of the lid to collect excess lubricant as it is expelled from handpieces and attachments. Dispose of saturated pads in accordance with local regulations. Each pad should last for approximately 50 cycles.
**Maintenance:**

- Replace oil collection pads as needed. They should normally last for approximately 50 cycles before becoming saturated.
- The o’ring on the E-type station should be checked weekly for wear. Replacements are available from American Dental Accessories.
- Check the air filter housing for accumulation of moisture. There is a drain valve at the bottom of the bowl, simply press this valve with a finger to expel excess moisture. Cover the valve with a towel to collect any expelled moisture.
- To change the filter element, turn off the supply of compressed air. Remove the air line from the filter by pressing on the black sleeve and pulling the tubing off. Unscrew the filter bowl and remove the spent filter. Install new filter, replace the bowl, re-attach the air line and turn compressed air back on.
- To replace the fuse: The fuse is contained in a compartment directly below the receptacle for the power cord on the back of the unit. This compartment opens similarly to a drawer. Use a flat head screw driver to slide the “drawer” open. Once the drawer is pulled completely out, the fuse can be easily removed. The unit is provided with two 3.15 Amp 250V fast acting fuses (one spare and one “active”). The front compartment of the drawer (the first compartment revealed when the drawer is opened) holds a spare fuse. The rear-most fuse is the active fuse. Replace this fuse with a like rated fuse as necessary. Use only a 3.15A 250 V fast acting fuse.

**Troubleshooting:**

Some problems that may be observed and possible remedies are provided below. If other problems are encountered, or if the selected solutions fail to resolve and encountered problem, contact American Dental Accessories, Inc.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No power</td>
<td>Unit is not plugged in</td>
<td>Make certain cord is securely attached to a live 110V outlet &amp; cord is securely attached to the back of the unit</td>
</tr>
<tr>
<td></td>
<td>Outlet is not “live”</td>
<td>Check the circuit breaker for the outlet. Plug a known functional device into the outlet and test for function</td>
</tr>
<tr>
<td></td>
<td>Unit fuse is burned out</td>
<td>Replace the fuse being certain to use only a 3.15A 250V fast acting fuse</td>
</tr>
<tr>
<td></td>
<td>Unit is not turned on</td>
<td>Make certain the power switch is in the “on” position</td>
</tr>
<tr>
<td>Unit fails to cycle</td>
<td>A cycle is not selected on any station</td>
<td>Make certain the “S”, “L”, or “E” indicator light is illuminated for at least one station</td>
</tr>
</tbody>
</table>
### Troubleshooting cont’d:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit fails to cycle</td>
<td>Door is ajar</td>
<td>Make certain the access door is fully closed. Error light will be illuminated.</td>
</tr>
<tr>
<td></td>
<td>No or inadequate air pressure</td>
<td>Check the air filter on the back of the unit for clogs. Check the air line for kinks or obstructions. Depress the purge valve on the bottom of the filter to verify air is present (it should make a hissing sound). Verify incoming pressure with a gauge (there may be a gauge at the source, or a test gauge may be required). Supply air pressure should be 50-80 psi.</td>
</tr>
<tr>
<td>Oil under unit</td>
<td>Saturated oil collection pad(s)</td>
<td>Change pad(s)</td>
</tr>
<tr>
<td></td>
<td>Oil leak</td>
<td>Remove back cover and check connections to and from the reservoir. Make certain that tubing is securely attached and the fittings are not broken. Check tubing for signs of wear or damage. Replace as necessary. Make certain that reservoir is secure.</td>
</tr>
<tr>
<td></td>
<td>Longer cycle is being run then necessary</td>
<td></td>
</tr>
<tr>
<td>Handpieces are not being adequately purged</td>
<td>No oil in reservoir</td>
<td>Check oil reservoir level &amp; re-fill reservoir</td>
</tr>
<tr>
<td></td>
<td>Inadequate supply pressure</td>
<td>Check supply air pressure to verify that it is at least 50 psi (should be 50-80 psi)</td>
</tr>
<tr>
<td></td>
<td>Cycle time selected is too short</td>
<td>Select the next longest cycle time. Note, for new handpieces or handpieces which have been out of service for some time, multiple cycles may be required.</td>
</tr>
<tr>
<td></td>
<td>Inadequate lubricant flow</td>
<td>Calibrate lubricant flow (see below).</td>
</tr>
</tbody>
</table>
**Lubricant Flow Calibration:**

To adjust lubricant flow, adjust the two micro switches (labeled “1” and “2”) on the back of the lubricator to one of the four configurations depicted below:

1. **“Least”** – Set both switches to the lower position for the lowest possible flow rate.
2. **“Standard”** – This is the factory default setting providing a “medium” level of flow. Switch “1” is down and “2” is up.
3. **“Fewer”** – This setting is slightly below the factory default. Switch “1” is up and “2” is down.
4. **“Larger”** – This setting will provide the maximum flow rate. Both switches are in the upper position.

**Warranty:**

The handpiece lubricating and flushing system is warranted to be free of defects in materials and workmanship for a period of 2 years after the date of purchase as shown on the original invoice. There is no warranty for fitness of sale or any purpose. If difficulty is encountered within 2 years of the purchase date, the unit should be shipped freight pre-paid to American Dental Accessories, Inc. for repair or replacement at our discretion. No other remedy is offered under this warranty. Warranty does not cover wear and tear due to normal use, nor damage resulting from misuse or abuse. The tubing, filters, o’rings, fuses and similar components are not covered by this warranty and should be replaced as part of routine maintenance. Neither are paint, labels, nor exterior surface finish covered by this warranty. Warranty does not cover labor or any other incidental or consequential damages or expenses. No other warranty is expressed or implied.