

E-45-4 Eco 45 Highspeed Handpiece

1. User and Intended Use

User: Qualified Professionals. Intended Use: Dental Treatment
(Operations on third molars and impacted tooth removal)

2. Precautions for Handling and Operation

-Please read these precautions carefully and use only as intended or instructed

-Safety instructions are intended to avoid potential hazards that could result in personal injury or damage to the device. Safety instructions are classified as follows in accordance with the seriousness of the risk.

Warning: A hazard that could result in serious injury or damage to the device if the safety instructions are not followed.

Caution: A hazard that could result in light or moderate injury or damage to the device if the safety instructions are not followed.

Notice: General product specification information highlighted to avoid product malfunction and performance reduction.

Caution:

- Read this Operation Manual before use to fully understand the product functions.
- When operating the handpiece always consider the safety of the patient.
- Users are responsible for the operational control, maintenance, and continual inspection of this product.
- Do not attempt to disassemble the handpiece or tamper with the mechanism, except as recommended by Vector in the Operational Manual.
- Do not allow any impact on to the handpiece and do not drop the handpiece.
- Operators and all others in the area, must wear eye protection and a mask when operating this handpiece.
- Should the handpiece function abnormally, cease operation immediately and contact an authorized Vector dealer.
- Depressing the push button while the handpiece is rotating, will result in overheating of the chuck mechanism. **Special caution must be exercised during use to keep the cheek tissue AWAY from the push button. Direct contact with cheek tissue may cause the push button to be depressed and cause a burn injury to the patient.**
- Do not use high acid water or sterilizing solutions to wipe, immerse, or clean the handpiece.
- The products are delivered in a non-sterile condition and must be autoclaved prior to use.
- Perform regular function and maintenance checks.
- If the product is not used for a long period of time, check if it is functioning correctly before using it on the patient.
- To avoid clinical downtime, it is recommended that a spare be kept on hand in case of a breakdown during surgery.
- U. S. Federal law restricts this device to sale by or on the order of a licensed physician.

3. Setting Air & Water Supply Pressure

Measure the supply pressure at the handpiece /hose connection point, and set the pressure to the value specified on the specification table.

Warning: Do not exceed the optimum pressure specified on the specification table.

Caution: Do not use air contaminated by dust, moisture, and oil.

4. Connection & Disconnection of the Handpiece

Refer to Operation Manuals of coupling and hose before connection the handpiece

(1) Connection

- 1) Insert the handpiece into the Coupling.
- 2) Make sure the handpiece is firmly connected to the coupling
- 3) Disconnection

Pull back the Retention Lock Ring and remove the handpiece from the coupling

Caution: Do not operate Retention Lock Ring while under drive air pressure. The high pressure may cause sudden release of the handpiece from the coupling.

5. Insertion & Removal of the Bur

5-1 To Insert the Bur

- 1) Insert the bur until it is correctly seated in place.
- 2) Depress the Push Button and insert the bur into the chuck until it is secure. Then, release the button.
- 3) Ensure that the bur is secure by gently pulling and pushing the bur WITHOUT depressing the Push Button.

5-2 To Remove the Bur

Depress the Push Button firmly and remove the bur.

Notice: Grip the handpiece while placing your thumb tip on the Push button. This will make it easier to depress the button.

Caution:

- Always insert the bur all the way into the chuck.
- Remove the bur only after the handpiece has completely stopped rotating.
- Always keep the bur shank clean.
- Entry of debris into the chuck (via the bur shank) could cause bur rotation slip and also prevent the bur from being securely located in the chuck.
- Do not exceed the bur speed recommended by the bur manufacturer.
- Do not exceed the maximum bur length recommended by the handpiece manufacturer.
- Do not apply excess pressure to the bur as it may break or bend or become difficult to remove.
- DO NOT use burs with problems listed below, as the bur may break or disengage from the chuck.
 - Bent, deformed, worn, rusted, broken, deficient bur.
 - A bur that is cracked on the edge of the axis
 - Non-ISO standard, or tampered bur

6. Check before treatment

Check that the Head Cap is firmly tightened. Also, check for the handpiece vibration, noise, and overheating. If any abnormalities are found, do not use the handpiece and contact authorized Vector Dealer.

7. Maintenance

After each patient, maintain the handpiece as follows.

7-1 Cleaning Handpieces

After treatment of each patient, clean the Head.

- 1) Remove dirt and debris from the slotted Holes with the cleaning wire and brush (supplied as an accessory for the handpiece)
- 2) Fill a cup half way with clean water.
- 3) Rotate the handpiece and immerse half of the handpiece head into the cup of water.
- 4) Rotate then stop the handpiece intermittently 3 times for 2-3 seconds each.
- 5) Wipe the handpiece dry.

7-2 Cleaning (Handpiece)

- 1) Remove dirt and debris from the handpiece. Do not use a wire brush.
- 2) Wipe clean with alcohol-immersed cotton swab or cloth

Caution:

- After washing and prior to lubrication, dry the handpiece until all internal moisture is thoroughly removed.
- Moisture remaining inside the handpiece could reduce the effect of lubrication and could cause corrosion.
- To clean the handpiece, never use any solvent such as benzene or thinner.

7-3 Cleaning (Spray Port)

When spray ports are clogged, or the spray does not exit evenly from the ports, clean the ports as follows.

Caution:

- Do not forcibly insert the wire into the port. Resultant port damage could cause the spray to be directed away from the bur, and the cooling efficiency reduces.
- Do not blow the air into the slotted hole.

7-4 Lubrication - Use Vector Spray

Apply Vector Spray every time after each use, and/or before autoclaving

- 1) Remove the bur from the handpiece
- 2) Insert the Spray Nozzle into the Spray Port nozzle on the can.
- 3) Insert the Spray Nozzle in rear of the handpiece.
- 4) Hold the handpiece and spray approximately 2-3 Seconds. Apply Lubricant until it expels from the handpiece head for at least 2 seconds.

Caution:

- When applying spray be sure to hold the handpiece firmly to prevent the handpiece from slipping out of the hand due to pressure.
- Hold the spray can upright.

7-5 Chuck Cleaning Clean Push Button chuck once a week.

- 1) Mount the arrow-head spray nozzle tip into the spray can port.
- 2) Lubricate the chuck for 1-2 seconds directly through the bur insertion hole.
- 3) Lubricate handpiece by using Vector Spray.

Caution: If the chuck is not regularly cleaned, the chuck grip may be weakened and the bur may be accidentally released while in operation.

7-6 Sterilization Sterilize the product by autoclave sterilization. Remove the bur after each patient and sterilize as noted below.

- 1) Insert into an autoclave pouch, then seal the pouch
- 2) Autoclave under the conditions below
Autoclave for more than 20 min. at 121 C, or 15 min, at 132 C or 3 min. at 134 C
- 3) The handpiece should remain in the autoclave pouch until required for use.

Caution:

- Do not autoclave the handpiece with other instruments even when it is in a pouch. This is to prevent possible discoloration and damage to the handpiece from chemical residue on other instruments.
- Keep the handpiece in suitable atmospheric pressure, temperature, humidity, ventilation, and sunlight. The air should be free from dust, salt, and sulphur.
- Immediately after use, the handpiece should be cleaned, lubricated and sterilized. If blood remains on the external or internal surfaces, it can become clotted and cause rust.
- Do not heat or cool the handpiece too quickly. Rapid change in temperature could cause damage to the handpiece.
- If the sterilizer chamber temperature may exceed 135 C during the drying cycle, then delete the dry cycle.
- Autoclave sterilization is recommended for the product. The validity of other sterilization methods is not confirmed.

- Do not touch the handpiece immediately after autoclaving as it will be very hot and must remain in sterile condition.

Notice: Vector recommends Class B sterilizers as stated in EN13060.

Caution:

- Do not force the new replacement O-ring with excessive pressure
- When inserting new O-rings, make sure they are inserted in the correct grooves
- Make certain that the taper ring is firmly tightened. If the taper ring loses water and air, leakage can occur.

8. Periodical Maintenance Checks

Perform periodical maintenance checks every three months, referring to the check sheet below. If any abnormalities are found, contact your authorized Vector dealer.

Points to check: Details

Head cap is loose: Check that the Head Cap is firmly tightened.

Rotation: Rotate the handpiece and check for abnormalities such as abnormal rotation, vibration, noise, and overheating.

9. Specifications

Model:	E-45-4
Hose Connection Type:	Is09168 Type B
Max Rotation Speed:	380,000-450,000min
Bur Type:	ISO 1797 1.59-1.60mm Surgical Long Shank Bur (25mm)
Chucking Length:	10.7mm
Max. Bur Length:	25mm
Max. Working Part Diameter:	1mm
Drive Air Pressure:	0.25-0.3MPa (2.5-3.0kgf/cm) 0.18-0.22MPa (1.8-2.2kgf/cm)
Max. Air Consumption:	45+5NL/min (0.25MPa), 35+5NL/min (0.22MPa)
Water Pressure:	0.1-0.2Mpa
Consumption Current:	0.38A Typical (3.3V)
Use Environment:	Temperature: 10-40 C Humidity: 30-75% Atmospheric Pressure: 700-1,060hPa
Transportation and Store Environment:	Temperature: -10-50 C Humidity: 10-85% Atmospheric Pressure: 500-1,060Pa

*The handpiece is a water jet type. The coolant water is not sprayed.

11. Warranty

Vector Products are warranted against manufacturing errors and defects in materials. Vector reserves the right to analyze and determine the cause of any problem. Warranty is voided if the handpiece is not used correctly, has been purposely tampered with by unqualified personnel, or has had non Vector parts installed. Replacement parts are available for seven years beyond discontinuation of the model. Limited warranty 1 year.