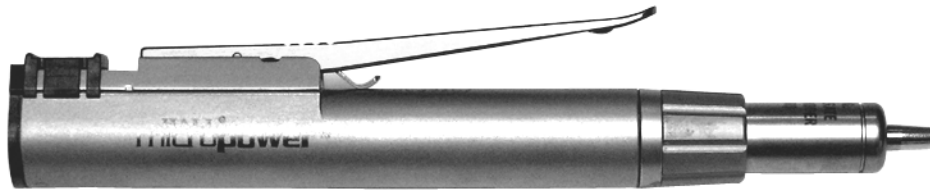


**Hall® MicroPower™ High Speed Drill**  
**Instruction Manual**  
(6020-026 / 6021-026)





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## 1.0 INTRODUCTION

**I**t is recommended that personnel study this manual before attempting to operate, clean or sterilize the MicroPower™ High Speed Drill and accessories. The safe and effective use of this equipment requires the understanding of and compliance with all warnings, cautionary notices, and instructions marked on the product, and included in this manual.

### 1.1 Intended Use

**T**he MicroPower High Speed Drill, which operates in conjunction with assorted bur guards, burs and drill bits, is designed to perform bone cutting, drilling, and soft tissue resection.

This handpiece can be operated using the *PowerPro*® (PRO2000/PRO2000I), the E9000® (E9000, E9000G, E9000J) or Advantage® (D3000, D3000I, D3000J) Controllers.


The MicroPower High Speed Drill is intended for small bone procedures such as: Arthroscopic, Neurosurgical, Orthopedic (hand, wrist, foot and ankle) and Plastic / Reconstructive.

### 1.2 Warnings and Cautions

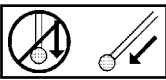
This equipment is designed for use by medical professionals completely familiar with the required techniques and instructions for use of the equipment. **Read and follow all warning and cautionary notices and instructions marked on the product and included in this manual.**

Service intervals, as listed in “**Table 2: Maintenance Schedule**” on page 20, are required to keep the MicroPower High Speed Drill and attachments at their optimum operating performance.

#### 1.2.1 Warnings

1. Eye protection is always necessary when operating equipment. Eye injury may result. 
2. **Continually check** all handpieces and attachments for overheating. If overheating is sensed, immediately discontinue use and return equipment for service. Overheating of the bur, bit or blade may cause damage to the bur, bit or blade and may cause thermal necrosis.
3. Do not attach, insert or remove attachments or accessories while the handpiece is operating. Serious injury may occur. **Place the handpiece safety mechanism to the safe position prior to installation or removal of items.**
4. Do not immerse handpieces in fluids.

5. Prior to each use, perform the following:
  - Inspect all equipment for proper operation.
  - Ensure all attachments and accessories are correctly and completely attached to the handpiece.
  - Perform the required Performance Tests for each associated handpiece prior to each use.
6. **Do not** use burs for plunge cutting. Injury or damage may occur.



### 1.2.2 Cautions

1. Handpieces are factory sealed. **Do not** disassemble or lubricate, as this may void the warranty. There are no user-serviceable parts inside.
2. Use only associated ConMed Linvatec attachments and accessories (i.e. drill bits) as defined within the descriptions of each attachment.
3. Handle all equipment carefully. If any equipment is dropped or damaged in any way, return it immediately for service.
4. Never operate the MicroPower High Speed Drill without a bur and appropriate bur guard in place and the **collet locked**. Damage will occur.
5. Do not stall handpieces, damage can occur.
6. Do not handle the handpieces by the cord. Do not pull on the cord to remove it from the handpiece or controller. Use the connector portion of the cord for disconnection.



7. Do not excessively bend or kink the handpiece cord. Always inspect cords for signs of excessive wear or damage. **If wear or damage is found, discontinue use and replace immediately.**

8. Always inspect for bent, dull or damaged burs, blades or drill bits before each use. Do not attempt to straighten or sharpen. Do not use if damaged. After use, dispose of properly.



9. Always use a bur of the proper length for the specific guard.
10. Bur and neuro guards should be checked frequently. Overheating can occur if bur guard bearings are worn or not kept clean. Follow the recommended maintenance schedule on page 20.
11. Perform the following steps to verify guards are in good operating condition.










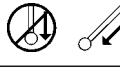
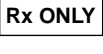

**NOTE: Bur and neuro guards are to be returned to the factory or a ConMed Linvatec authorized service facility for routine maintenance every six (6) months.**

- (a) Remove the guard from the handpiece and insert a bur into the nose of the guard.
- (b) While holding the bur, spin the guard. The guard should spin freely around the bur shaft without resistance.

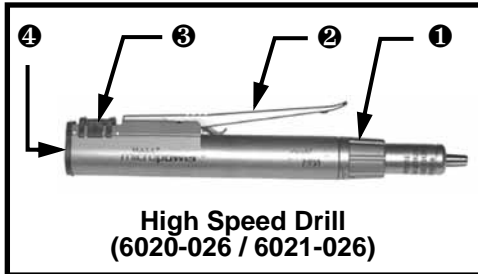


- (c) Attach the guard and bur to the handpiece.
  - (d) Operate the handpiece for approximately 30 seconds, then stop the handpiece. Once the bur has stopped moving, carefully feel the end of the guard where the guard encases the shaft of the bur for overheating. If overheating is noticed, return guard for service.
12. After each use, thoroughly clean the controller, handpieces, attachments and accessories (See “3.1 Cleaning and Sterilizing” on page 21).
  13. Do not use in the presence of flammable anesthetics, gases, disinfecting agents, cleaning solutions, or any material susceptible to ignition due to electrical sparking.

### 1.3 Symbol Definitions

	<b>Attention, consult accompanying documents</b>
	<b>Type B equipment</b>
	<b>Single Use Only</b>
	<b>Eye Protection Required</b>
	<b>No user service recommended. Refer servicing to qualified ConMed Linvatec service personnel.</b>
	<b>Indicates product component should not be sterilized.</b>
	<b>Indicates product component should not be immersed in any type of fluid.</b>
	<b>Indicates handpiece should not be immersed in any fluid.</b>
	<b>Indicates product should not be oiled or lubricated.</b>
	<b>Not to be used for plunge cutting</b>
	<b>Caution: Federal Law restricts this device to sale by or on the order of a physician.</b>
	<b>WEEE (Waste Electronics and Electrical Equipment) Symbol. Regarding European Union end-of-life of product.</b>

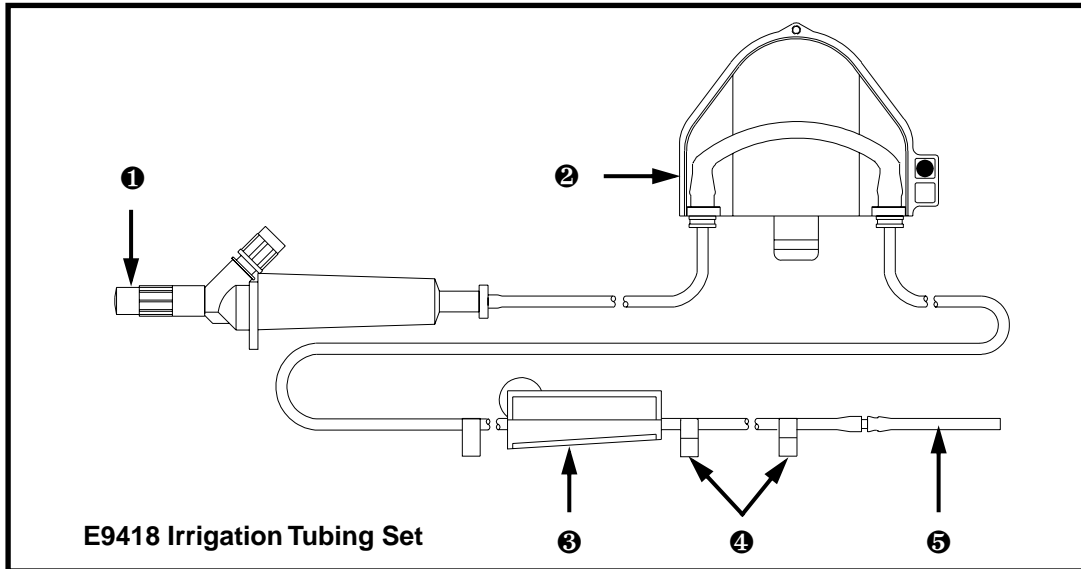
## 1.4 MicroPower High Speed Drill



- ❶ **Bur Lock Collar** — Rotate to lock or unlock a bur.
- ❷ **Activation Lever** — Depress to operate the handpiece. The activation lever can be removed for leverless operation on the 6020-026 handpiece (Reference “**2.3.4 Removing the Detachable Handpiece Activation Lever**” on page 16).
- ❸ **Safe/Run Slide** — Place in the “SAFE” position prior to inserting or removing attachments and/or accessories (blades, bits, burs) and when the handpiece is not in use. Place in the “RUN” position to activate the handpiece.
- ❹ **Handpiece Cord Connector** — The handpiece cord connects here to provide power to the handpiece. Uses the MC5057 Handpiece Cord.

**NOTE:** Do not allow saline to enter into the handpiece cord connector and cord. Damage may occur to the handpiece.





### 1.5 Irrigation Tubing Set (E9418) for use with the MicroPower High Speed Drill

The E9418 Tubing Set is used to provide irrigation for blades, bits and burs while using the MicroPower High Speed Drill.

- ❶ **Spike Line** — Connects to the fluid supply for fluid distribution to the surgical site.
- ❷ **Cassette** - Attaches to the peristaltic pump of the controller to aid in fluid delivery.
- ❸ **Roller Clamp** — Used to adjust the fluid flow to the surgical site.
- ❹ **Handpiece Cord Clips** — Used to attach the tubing to the handpiece cord.

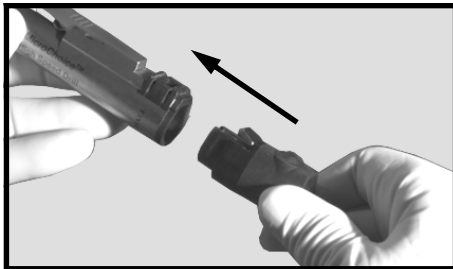
- ❺ **Irrigator Tip** — Accepts various irrigation tips (See “4.4 Handpieces, Attachments and Accessories” on page 30) for the MicroPower High Speed Drill for fluid distribution to the surgical site.

## 2.0 HANDPIECE INSTALLATION and OPERATION

### 2.1 Handpiece Cord Installation

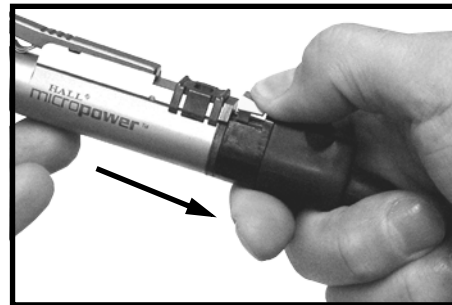
1. To attach the handpiece cord:
  - (a) Ensure pins on cord and handpiece are completely dry prior to connecting.
  - (b) Insert the handpiece cord into the cord receptacle of the handpiece. Push together until fully seated.

**NOTE:** Do not force the cord into the handpiece cord connector. This may bend the pins and damage the handpiece.



2. Connect the handpiece cord to the appropriate console.

3. To remove the handpiece cord:
  - (a) Press the latch and remove the cord from the handpiece.



---

## 2.2 Hall Bur Guard Assembly Instructions

### WARNINGS:

1. **Do not operate the drill without the appropriate bur guard. Always use a bur of the proper length. The tip of the bur guard should cover the safe line on the bur, if applicable. Without the stabilization that the proper guard provides, the bur can break and be propelled with great force.**
2. **To reduce the risk of injury, prior to surgery, spin the bur guard on a bur. If the bur guard spins freely, the bearing is still good. Otherwise, the bur guard must be sent for repair immediately. DO NOT USE.**
3. **When not in use and prior to connecting or removing attachments and accessories, always place the handpiece in its safe, or off position, if applicable.**



**Table 1: Bur Guard and Attachment Guide**

<b>REF</b>	<b>Description</b>	<b>Instructions</b>
1375-012	<b>Medium Bur Guard</b> - Use only 5091 series medium burs except 5091-080, 5091-081, 5091-082 and 5091-083	See page 8
1375-011	<b>Long Bur Guard</b> - Use only 5092 series long burs	See page 8
1375-023	<b>Cloward Extra-Long Bur Guard</b> - Use only 5093 series extra-long burs	See page 8
1375-020	<b>Laminectomy Bur Guard</b> - Use only 5092-103 Long Carbide Bur	See page 10
1387-022	<b>Tissue Retractor Guard</b> - Use only with long burs (5092 series) which have a diameter of 4.0mm or less. Recommended bur: 5092-136	See page 8
1375-032	<b>20° Angle Attachment</b> - Use only 5092 series long burs	See page 11
1375-033	<b>20° XL Angle Attachment</b> - Use only 5093 series extra-long burs	See page 11
1375-034	<b>70° Contra-Angle Attachment with Dental Head</b> Use friction grip burs only - size 1/16" or 1.58mm in diameter	See page 12
1375-035	<b>70° Contra-Angle Attachment with Surgical Head</b> Use only 5089 extra-short burs and 5090 series short burs	See page 12
1375-036	<b>90° Angle Attachment</b> Use only 5089 extra-short burs and 5090 series short burs	See page 12

- 2.2.1 Assembly Instructions for the:**
- **Medium Bur Guard (1375-012)**
  - **Long Bur Guard (1375-011)**
  - **Cloward Extra-Long Bur Guard (1375-023)**
  - **Tissue Retractor Guard (1387-022)**

**NOTE:** When using the Tissue Retractor Guard, use only 5092 series long burs which have a diameter of 4.0 mm or less. The recommended bur is the 5092-136 Long Oval Cutting Bur.

1. Place the handpiece in the “SAFE” position.



2. To install a bur guard:
  - (a) Slide the appropriate bur guard over the end of the drill. Ensure it is seated completely. Do not operate the drill without the bur guard completely seated to the nose of the drill.



Photo below shows the Tissue Retractor Guard.



3. Prior to installing a bur, but only while using the 1375-012 Medium Bur Guard, it is recommended that a SmartGuard<sup>®</sup> Protector Sleeve (1375-112) be attached. Reference the associated insert that comes packaged with the SmartGuard for additional information.

**NOTES:**

- **SmartGuard Protector Sleeves are designed to be attached to the Medium Bur Guard during surgical applications. They are intended to be used as a heat-sensing and insulating device that changes color from PURPLE (SAFE to use bur guard) to PINK (REPLACE bur guard) to indicate over-heating of the attached bur guard.**
- **Overheating might occur if bearings are worn or are not kept clean. If overheating occurs while a SmartGuard Protector Sleeve is attached to the Medium Bur Guard, the SmartGuard Protector Sleeve will change color from PURPLE to PINK. Immediately discontinue use of the bur guard to prevent possible injury to the patient and/or operator. Replace the bur guard and return original bur guard for service.**

- **Under prolonged use or intense cutting, the tip of the SmartGuard Protector Sleeve may turn pink while the rest of the sleeve retains its purple color. If more than 50% of the SmartGuard Protector Sleeve turns pink, discontinue use immediately to prevent possible injury to the patient and/or operator. Replace the bur guard and return original bur guard for service.**

4. To attach a SmartGuard Protector Sleeve:

- Remove the SmartGuard Protector Sleeve from its sterile packaging within the sterile field.
- Press-fit the SmartGuard Protector Sleeve onto the end of the associated bur guard until fully seated (see figure below).



- After the SmartGuard Protector Sleeve is attached, install a bur.

5. To install a bur:

- Select a proper length bur for the guard.
- Ensure the bur lock is in the unlocked position.



- Insert the bur to the safe line or until the bur seats completely if no safe line is observed.



- Lock the bur in place by twisting the bur lock clockwise until the red indicator dots are aligned. Always pull on the bur to ensure bur is fully locked in position.

**CAUTION: Never lock the collet without a bur inserted. Damage to the collet may result.**



- To remove the SmartGuard Protector Sleeve, first remove the bur. Grasp the tabs of the SmartGuard Protector Sleeve between the thumb and forefinger and pull.

- Discard the used SmartGuard Protector Sleeve properly.



### 2.2.2 Assembly Instructions for the Laminectomy Bur Guard (1375-020)

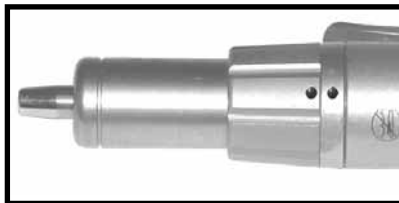
#### NOTES:

1. Use the 5092-103 Long Carbide Bur with the 1375-020 Laminectomy Bur Guard.
2. The Laminectomy burs are the only burs that can be inserted prior to placing the appropriate bur guard on the handpiece.

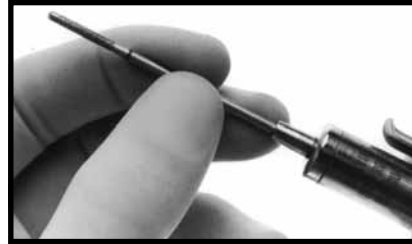
1. Place the handpiece in the "SAFE" position.



2. To install a bur:
  - (a) Ensure the bur lock is in the unlocked position.



- (b) Insert the laminectomy bur into the handpiece until the bur seats completely.



- (c) Lock the bur in place by twisting the bur lock clockwise until the red indicator dots are aligned.

**CAUTION: Never lock the collet without a bur inserted. Damage to the collet may result.**



3. To install a bur guard:
  - (a) Slide the appropriate bur guard over the bur and the end of the handpiece. Ensure it is seated completely. Do not operate the drill without the bur guard completely seated to the nose of the drill.



### 2.2.3 Assembly Instructions for the 20° (1375-032) and 20° Extra Long (1375-033) Angle Attachments

**NOTE:** Use only long burs (5092 series) in the 1375-032, 20° Angle Attachment and extra long burs (5093 series) in the 1375-033, 20° Extra Long Angle Attachment.

1. Place the handpiece in the “SAFE” position.



2. To install the attachment:
  - (a) Ensure the bur lock is in the unlocked position.



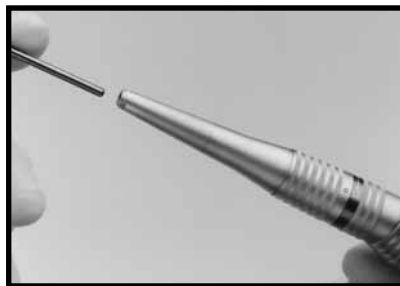
3. Slide the attachment over the end of the drill. Ensure it is seated completely.



4. Lock the attachment in place by twisting the bur lock clockwise until the red indicator dots are aligned.



5. Open the attachment collet by twisting the attachment bur locking ring counter-clockwise until the ring is fully open.
6. Insert the bur into the attachment until it is completely seated.



7. Twist the attachment bur locking ring clockwise until the locking ring is in the locked position.

**2.2.4 Assembly Instructions for the**

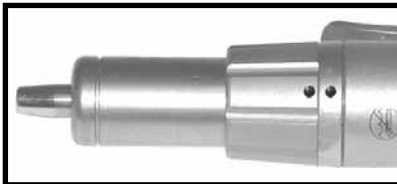
- **70° Contra-Angle with Surgical Head (1375-034)**
- **70° Contra-Angle with Dental Head (1375-035)**
- **90° Angle (1375-036) Attachments**

**NOTE:** Use only short burs (5090 series) and extra short burs (5089 series) with these attachments.

1. Place the handpiece in the “SAFE” position.



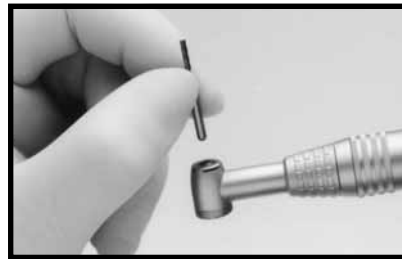
2. To install the attachment:
  - (a) Ensure the bur lock is in the unlocked position.



3. Place the attachment over the end of the drill. Ensure it is seated completely.
4. Lock the attachment in place by twisting the bur lock clockwise until the red indicator dots are aligned.



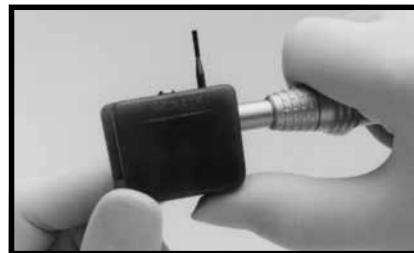
5. To insert a bur:
  - (a) Place the bur in the opening of the attachment.



- (b) Use the grooved side (the side without the pin) of the bur changer (1375-003) to press the bur firmly in place.



6. To remove a bur:
  - (a) Place the side of the bur changer with the pin into the opening at the rear of the attachment.
  - (b) Press firmly on the bur changer to push the bur out.





## 2.3 Handpiece Operation

**WARNING:** When not in use and prior to connecting or removing attachments and accessories, always place the handpiece in its safe, or off position, if applicable.

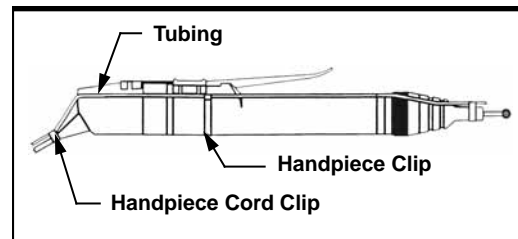
### NOTES:

1. If a handpiece is placed on a magnetic drape, the controller may display “MAGNETIC FIELD”. The handpiece will be inoperable until the magnet and handpiece are separated. Once separated, the controller will reset after three (3) seconds.
2. Operation of a high speed drill without a bur locked in place is considered a failure mode. If the handpiece is activated for several seconds without a bur in place, the controller will display “STALL, CHECK BUR LOCK”. Operation cannot be initiated until a bur is locked in place and at least five (5) seconds have elapsed without the footswitch or handpiece activation lever being depressed.
3. The handpiece cord may be disconnected from one handpiece and connected to another handpiece, if applicable, without turning off the controller.
4. Handpieces are inoperable if the activation lever or trigger is depressed while connecting the handpiece cord.

### 2.3.1 Tubing Set Attachment (E9418) for the MicroPower High Speed Drill

The E9418 Tubing Set is used to provide irrigation for blades, bits and burs while using the MicroPower High Speed Drill.

1. To attach the E9418 irrigation tubing set to the MicroPower High Speed Drill:
  - (a) Securely press the tubing into the slot of the irrigation handpiece clip (5040-130).
  - (b) Attach the clip to the back of the handpiece.



- (c) Snap the handpiece cord clips onto the handpiece cable to secure the tubing.
2. Attach the appropriate irrigation tip to the tubing and the handpiece. (See “4.4 Handpieces, Attachments and Accessories” on page 30).

---

### 2.3.2 Preoperative Functional Test for the MicroPower High Speed Drill

Prior to operating the MicroPower High Speed Drill, perform the following preoperative tests to verify proper functioning. Any operating difficulties should be reported to your local Sales Representative or ConMed Linvatec Customer Service.

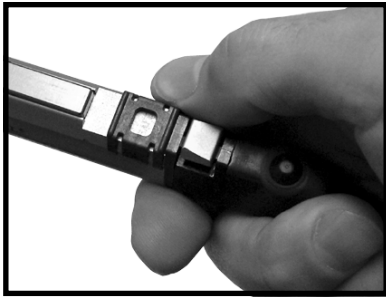
1. Before operating the drill, check for:
  - any loose or missing parts
  - any physical damage
  - movable parts that do not move freely
2. Performance Testing:
  - (a) Assemble the appropriate guard and bur according to the instructions on pages 15 through 16. **Warning: Ensure that the guard and bur are properly installed, otherwise injury to the patient or medical personnel can result.**
  - (b) Operate the drill at 100,000 rpm for one minute according to operating instructions contained on pages 15 through 18. Monitor the drill for any of the following:
    - excessive noise
    - excessive vibration
    - the drill or bur guard are hot to the touch during the test procedure or during surgical use

- the drill does not operate up to its maximum preset speed (verify the maximum preset operating speed by fully depressing the drill activation lever or appropriate footswitch pedal and verifying that the maximum speed is displayed on the controller).

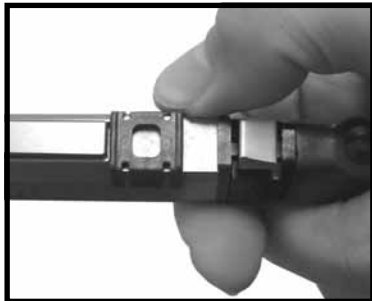
### 2.3.3 High Speed Drill Attachments and Accessories

**CAUTION:** Do not operate the MicroPower High Speed Drill without the proper bur guard attached and the collet locked. Damage may result.

1. Prior to connecting any attachment or accessory, or while the handpiece is not in use, place the “SAFE/RUN” Slide in the “SAFE” position.



2. To attach bur guards, attachments and burs reference information on pages 7 to 12.
3. To operate the handpiece after the guard and bur are attached:
  - (a) Place the “SAFE/RUN” Slide in the “RUN” position.



Without any user input selections, the handpiece will initially operate at its default setting.

- (b) Depress the handpiece Activation Lever or the preferred footswitch pedal.
4. To change operating speeds, reference “**2.5 Handpiece Cord Button Operation**” on page 18.

### 2.3.4 Removing the Detachable Handpiece Activation Lever

#### CAUTIONS:

1. Before attempting to remove the detachable Handpiece Activation Lever, ALWAYS place the “SAFE/RUN” Slide in the “SAFE” position.
2. Always remove the detachable Activation Lever when operating the handpiece with a footswitch.
3. The handpiece and footswitch operate on a first come, first served basis. If the handpiece is activated with the footswitch, the handpiece activation lever is inoperative until the footswitch pedal is released, and vice versa.

1. To remove the handpiece detachable Activation Lever:
  - (a) Place the “SAFE/RUN” Slide in the “SAFE” position.



- (b) Depress the ribbed portion of the detachable Activation Lever. Push towards the “SAFE/RUN” Slide until it disengages from the handpiece.



2. To reattach the handpiece Activation Lever:
  - (a) Insert the Lever pins into the grooves and reverse the above steps.



---


## 2.4 Footswitch Operation

### WARNINGS:


1. To avoid unintentional handpiece activation, unplug the footswitch when using a levered handpiece. When the footswitch is attached to the controller it will remain active.
2. The handpiece and footswitch operate on a first come, first served basis. If the handpiece is activated with the footswitch, the handpiece activation lever is inoperative until the footswitch pedal is released, and vice versa.
3. Always remove the detachable handpiece activation lever when operating the handpiece with a footswitch. Accidental activation of the handpiece may occur.

---

### 2.4.1 Operation of the 2-Pedal Footswitch (5020-053)

1. Depress the right pedal to activate the handpiece in the forward direction. 




2. Depress the left pedal to activate the handpiece in the reverse direction. 

**NOTE:** There is no oscillate mode with these drills.




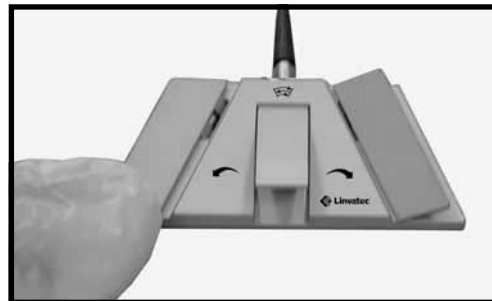
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### 2.4.2 Operation of the 3-Pedal Footswitch (C9863)

1. Depress the right pedal to activate the handpiece in the forward direction. 



2. Depress the left pedal to activate the handpiece in the reverse direction. 

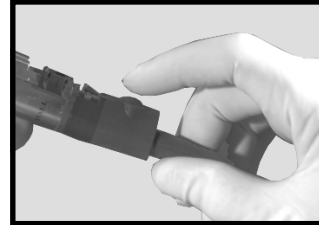


**NOTE:** The center pedal is inoperative using these handpieces.

## 2.5 Handpiece Cord Button Operation

The Advantage, *PowerPro* and E9000 Controllers allow the user complete system control from within the sterile field. Speed settings can be changed using the handpiece cord button.

1. To enter the Speed menu, press the handpiece cord button either two or three times, quickly.
  - (a) Pressing the handpiece cord button twice allows the user to decrease the operating speed.
  - (b) Pressing the handpiece cord button three times allows the user to increase the operating speed.



2. After entering the Speed menu the attached handpiece I.D. will display along with the current operating speed (the speed will be blinking). Press the handpiece cord button to change speed.

The Speed menu will scroll until the minimum or maximum speeds are reached.

3. When the desired speed is reached, stop pressing the button. After a few seconds the speed menu will time out. The handpiece is now ready for use.

### Handpiece Speed Adjustment



To enter the menu options to adjust the handpiece speed, press the handpiece cord button two or three times.

#### Text Display Mode

The menu will default to the speed menu and display the attached handpiece and the current speed setting.

“HIGH SPEED”                      “###K RPM”

“###” is blinking



Press the handpiece cord button until the desired speed is displayed. Stop pressing the button.

#### Graphics Display Mode

(PowerPro controller and Advantage controller, Port 3 Only)



**70K RPM**



**100K RPM**

## **3.0 MAINTENANCE**

This section explains the importance of keeping your MicroPower handpieces and attachments well maintained. It contains a maintenance schedule to assist you in determining the maintenance interval requirements of your instruments.

Regular and proper maintenance of your MicroPower handpieces and attachments are the best way to protect your investment. It is essential that you have your powered surgical instruments serviced as scheduled so as to retain their optimum performance and reliability, which will reward you with safer, less problematic product performance over time. The following maintenance schedule specifies which instruments need attention and how often you should have them serviced.

The service and time intervals shown in the maintenance schedule assume you will use the instruments as indicated in this manual, including proper day-to-day operation, cleaning, and sterilization. Proper care and handling of the instruments on a day-to-day basis are extremely important to ensure safe and efficient operation.

Your authorized ConMed Linvatec service department is the most knowledgeable about the MicroPower System instruments and will provide competent and efficient service. Service at ConMed Linvatec at the indicated service intervals is mandatory to keep your product warranties in effect. Any services and/or repairs done by any unauthorized repair facility may result in reduced performance of the instruments or instrument failure.

**Table 2: Maintenance Schedule**

Catalog Number	Product Description	(Months)	
		6	12
6020-026	MicroPower High Speed Drill (Removable Lever)		•
6021-026	MicroPower High Speed Drill (Permanent Lever)		•
1375-032	20° Angle Attachment		•
1375-033	Extra-Long 20° Angle Attachment		•
1375-034	70° Contra Angle Attachment w/ Dental Head		•
1375-035	70° Contra Angle Attachment w/ Surgical Head		•
1375-036	90° Angle Attachment		•
	<b>Guards</b>		
1375-012	MicroPower Medium Bur Guard	•	
1375-011	MicroPower Long Bur Guard	•	
1375-023	MicroPower Cloward Extra-Long Bur Guard	•	
1375-020	MicroPower Laminectomy Guard	•	
1387-022	MicroPower Tissue Retractor Guard	•	

**WARNING:** Failure to follow the maintenance schedule above could result in reduced instrument performance or overheating of the handpiece or attachment. In addition, heavy use of the handpiece exceeding the recommended duty cycle can cause the handpiece to overheat. Refer to “4.0 TECHNICAL SPECIFICATIONS and ACCESSORIES” on page 29 for the associated handpiece duty cycle. Overheating can lead to possible burn injury to the patient or medical personnel. Rotation of handpiece usage per day will assist with proper performance.






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### 3.1 Cleaning and Sterilizing

---

#### 3.1.1 Cleaning Precautions

1. Follow universal precautions for protective apparel when handling and cleaning contaminated instruments.
2. Dispose of all non-reusable tubing sets, irrigation tips, burs, saw blades and bits properly after use. 
3. Do not lubricate any handpieces. 
4. ConMed Linvatec does not recommend immersing any of our handpieces, as this may affect long-term reliability. 
5. The use of bleach, chlorine-based, or sodium hydroxide based liquid or chemical disinfectants, detergents, enzymatic cleaners, or soaps may cause degradation of the aluminum coating on the outside of our handpieces.
6. Never clean equipment in an ultrasonic cleaner or a combination washer/sterilizer.

---

#### 3.1.2 Handpiece Cleaning Instructions

Clean handpieces and attachments as soon as possible after use.

1. Remove all attachments and accessories (i.e., saw blades, burs) from the handpiece prior to cleaning. For handpieces with detachable levers, remove the Activation Lever (Reference “**2.3.4 Removing the Detachable Handpiece Activation Lever**” on page 16 for removal information).
2. Disconnect the handpiece cord from the controller prior to cleaning.
3. Ensure the handpiece cord is securely fastened to the handpiece during cleaning.
4. With the nose of the handpiece facing downward, thoroughly scrub the handpiece, handpiece cord, attachments, and activation lever, if applicable, with a clean, soft brush dampened with a mild, pH-balanced detergent cleaner of your choice. Remove all traces of blood, debris and stains. Remove cleaning solution under running water. **Do Not immerse handpiece.**



5. **Manipulate all moving parts of the handpiece and attachments to ensure all debris is removed. If not, continue cleaning until all debris is removed.**

6. Keeping the nose of the handpiece pointed downward, rinse under running water to remove all traces of soap. Rinse all attachments likewise.



7. Flush all surfaces free of tap water with distilled water to prevent metal discoloration.
8. Gently shake the equipment free of water and wipe the surfaces with a clean, lint-free towel.

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### 3.1.3 Attachment Lubricating Instructions

**CAUTION:** Only the angle attachments (1375-032, -033, -034, -035 and -036) are to be lubricated. Do not lubricate any handpieces or other attachments.

**NOTES:**

1. Attachments must be cleaned prior to lubrication.
2. Use only Pana Spray Attachment Lubricant (1375-037).

**WARNING:** The spray container is pressurized and the contents are flammable (contains LP gas). Do not expose can to temperatures exceeding 40°C (104° F). Do not puncture or burn can, even when empty. Do not spray on or near open flames or incandescent material.

1. Before using, shake the can well. Read all the information and instructions on the spray can label.
2. If the spray nozzle is not attached, securely attach it to the spray can dispenser.



3. Completely insert the spray nozzle in the bottom of the attachment.



4. With the can in an upright position, depress the button and spray the lubricant for one to two seconds or until lubricant is flowing from the attachment. Wipe any excess lubricant from the attachment.
5. After lubrication is complete, connect the attachment to the handpiece and operate for approximately 5 seconds.

---

### 3.1.4 Sterilization Information

**S**team sterilization is safe and effective and has no contraindications for its use in sterilizing powered surgical handpieces, attachments and accessories.

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#### 3.1.4.1 Sterilization Warnings, Precautions and Notes

**WARNING:** The use of disinfecting solutions for an exterior instrument wipe will not sterilize the equipment.

1. Do not sterilize equipment with Ethylene Oxide (EtO).
2. Never sterilize any handpiece in a Washer/Sterilizer, STERIS System, STERRAD System, Abtox Plazlyte™ or comparable sterilization methods.
3. Do not sterilize handpieces in cold sterilants like CIDEX.
4. **Do Not** “Peel Pack” handpieces or attachments for sterilization. Sterilization in a sealed pouch traps moisture which, over time, can cause internal corrosion of the handpiece.
5. ALWAYS lubricate the appropriate attachments **prior** to sterilization. See “**3.1.3 Attachment Lubricating Instructions**” on page 22.
6. **Do not** run handpieces while warm. Allow adequate time for cooling prior to surgery. **Do not immerse** in liquid or cover with a damp cloth to cool. Cool by exposure to room temperature.

#### NOTES:

1. The following guidelines do not guarantee that the device is sterile after the procedure. Your institution is still responsible for the normal sterility assurance validation.
2. Additional drying time may be required for complete heat and moisture dissipation. Operation of a handpiece that is not completely cool or dry may decrease performance and/or reliability.
3. Sterilization validation is based on AAMI guidelines (Association for the Advancement of Medical Instrumentation).

All handpieces and attachments may be processed in a pre-vacuum steam sterilizer (Steam Pre-vacuum) or in a gravity (downward) displacement sterilizer (Steam Gravity). Place handpiece(s), handpiece cord(s), and/or attachments/accessories in an appropriate instrument tray or a fully perforated, wrapped container, when applicable. Follow the recommended minimum sterilization exposure times listed on the following pages.

Recommended minimum sterilization exposure times are as follows:

**Table 3: Sterilization Parameters**

<b>Sterilization Type</b>	<b>Recommended Temperature</b>	<b>Recommended Minimum Exposure Time</b>	<b>Dry Time</b>
<b>Sterilization parameters for sterilizing the MicroPower High Speed Drills (6020-026 / 6021-026) in the PRO6000 Sterilization Tray</b>			
Steam Pre-vacuum	270-279°F (132-137°C)	4 minutes	10 minutes minimum
Steam Gravity	270-279°F (132-137°C)	35 minutes	10 minutes minimum
<b>Sterilization parameters for sterilizing individual MicroPower High Speed Drills (6020-026 / 6021-026), associated attachments, and handpiece cords, individually wrapped without a sterilization tray</b>			
Steam Pre-vacuum	270-279°F (132-137°C)	3 minutes	8 minutes minimum *
Steam Gravity	270-279°F (132-137°C)	10 minutes	8 minutes minimum *
Steam Gravity	250-254°F (121-123°C)	50 minutes	8 minutes minimum *
<p><b>* CAUTION: An eight (8) minute minimum dry cycle must be run on all handpieces, guards and attachments every time the product is sterilized. Failure to use a dry cycle on the products may lead to reduced product performance or premature product failure. Operation of a handpiece that is not completely cool or dry may decrease performance and/or reliability.</b></p>			

### 3.2 Troubleshooting

**Table 4: Troubleshooting**

Symptom	Possible Cause	Corrective Action
Handpiece does not operate.	<ul style="list-style-type: none"> <li>◆ Handpiece cord not connected securely.</li> <li>◆ Handpiece cord and/or button faulty.</li> <li>◆ Handpiece faulty.</li> <li>◆ If using a footswitch, cord not connected securely.</li> <li>◆ Footswitch cord or footswitch faulty.</li> <li>◆ Handpiece safety is in the safe, or off position.</li> <li>◆ Twist collet not in the fully locked position.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Securely connect handpiece cord to handpiece and controller.</li> <li>◆ Replace handpiece cord.</li> <li>◆ Return for service.</li> <li>◆ Securely connect footswitch cord to controller receptacle.</li> <li>◆ Return for service.</li> <li>◆ Move safety to the appropriate operating position.</li> <li>◆ Twist collet to the fully locked position.</li> </ul>
Handpiece overheats	<ul style="list-style-type: none"> <li>◆ Worn bearings in the bur guard.</li> <li>◆ Moisture in the handpiece.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Reference <b>“3.3 Bur Guard Testing Procedure” on page 26</b>. If resistance is noticed, return bur guard for service. If no resistance is noticed, return for service.</li> <li>◆ Resterilize the handpiece according to sterilization parameters and drying times, reference <b>“3.1.4 Sterilization Information” on page 23</b>.</li> </ul>
<p><b>“Magnetic Field”</b></p> <div style="border: 1px solid black; padding: 2px; display: inline-block; text-align: center;"> <b>N ◆ ◆ S</b> </div> <p>is displayed on the controller.</p>	<ul style="list-style-type: none"> <li>◆ The handpiece is in close proximity to a magnetic drape.</li> <li>◆ Removable activation lever partially connected.</li> <li>◆ Faulty handpiece.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Remove the handpiece from the magnetic drape area. Wait five seconds before restarting.</li> <li>◆ Completely connect the activation lever (See <b>“2.3.4 Removing the Detachable Handpiece Activation Lever” on page 16</b>).</li> <li>◆ Return handpiece to ConMed Linvatec for service.</li> </ul>

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### 3.3 Bur Guard Testing Procedure

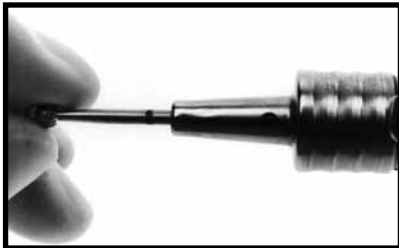
**NOTE: Bur and neuro guards are to be returned to the factory or a ConMed Linvatec authorized service facility for routine maintenance every six (6) months.**

---

#### 3.3.1 Bur and Neuro Guard Testing

**NOTE: This test excludes the Medium Bur Guard, 1375-012.**

1. Prior to testing, remove the guard from the handpiece.
2. Check for worn bearings:
  - (a) Insert a bur into the nose of the guard.
  - (b) While holding the bur, spin the guard. The guard should spin freely around the bur shaft without resistance.



- (c) Attach the guard and bur to the drill.
- (d) Operate the handpiece for at least 30 seconds. Stop the handpiece and carefully feel the end of the guard where the guard encases the shaft of the bur for overheating. If overheating is noticed, return the guard for service.

---

#### 3.3.2 Medium Bur Guard (1375-012) Testing

1. Prior to testing, remove the guard from the handpiece.
2. Check for worn bearings:
  - (a) Insert a bur into the nose of the guard.
  - (b) While holding the bur, spin the guard. The guard should spin freely around the bur shaft without resistance.



3. Attach the bur guard to the drill.
4. Prior to installing a bur, attach a SmartGuard Protector Sleeve (1375-112). Reference the associated insert that comes packaged with the SmartGuard for additional information.

#### NOTES:

- **SmartGuard Protector Sleeves are designed to be attached to the Medium Bur Guard during surgical applications. They are intended to be used as a heat-sensing and insulating device that changes color from PURPLE (SAFE to use bur guard) to PINK (REPLACE bur guard) to indicate over-heating of the attached bur guard.**

- **Overheating might occur if bearings are worn or are not kept clean. If overheating occurs while a SmartGuard Protector Sleeve is attached to the Medium Bur Guard, the SmartGuard Protector Sleeve will change color from PURPLE to PINK. Immediately discontinue use of the bur guard to prevent possible injury to the patient and/or operator. Replace the bur guard and return original bur guard for service.**
  - **Under prolonged use or intense cutting, the tip of the SmartGuard Protector Sleeve may turn pink while the rest of the sleeve retains its purple color. If more than 50% of the SmartGuard Protector Sleeve turns pink, discontinue use immediately to prevent possible injury to the patient and/or operator. Replace the bur guard and return original bur guard for service.**
5. To attach a SmartGuard Protector Sleeve:
- (a) Remove the SmartGuard Protector Sleeve from its sterile packaging within the sterile field.
  - (b) Press-fit the SmartGuard Protector Sleeve onto the end of the associated bur guard until fully seated (see figure below).



- (c) After the SmartGuard Protector Sleeve is attached, install a bur.

6. To install a bur:
- (a) Select a proper length bur for the guard.
  - (b) Ensure the bur lock is in the unlocked position.



- (c) Insert the bur to the safe line or until the bur seats completely if no safe line is observed.



- (d) Lock the bur in place by twisting the bur lock clockwise until the red indicator dots are aligned. Always pull on the bur to ensure bur is fully locked in position.

**CAUTION: Never lock the collet without a bur inserted. Damage to the collet may result.**





7. Operate the handpiece for at least 30 seconds. Stop the handpiece and carefully feel the end of the guard where the guard encases the shaft of the bur for overheating. If overheating is noticed, return the guard for service. Or, if the SmartGuard Protector Sleeve changes color from PURPLE to PINK, immediately discontinue use of the bur guard. Replace the bur guard and return original bur guard for service
8. To remove the SmartGuard Protector Sleeve, first remove the bur. Grasp the tabs of the SmartGuard Protector Sleeve between the thumb and forefinger and pull.
9. Discard the used SmartGuard Protector Sleeve properly.





## 4.0 TECHNICAL SPECIFICATIONS and ACCESSORIES

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### 4.1 System Environmental Requirements

**Operating:**

**Ambient Operating Temperature:** + 50°F to 104°F (+ 10°C to + 40°C)

**Relative Humidity:** 30% to 75%

**Atmospheric Pressure:** 700 hPa to 1060 hPa

**Transport and Storage:**

**Ambient Temperature:** - 40°F to 158°F (- 40°C to + 70°C)

**Relative Humidity:** 10% to 100% including condensation

**Atmospheric Pressure:** 500 hPa to 1060 hPa

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### 4.2 Handpiece Cord (MC5057)

**Cord Length:** Approx. 12 ft. (3.6 m)

**Weight:** 10.9 oz. (309 g)

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### 4.3 Handpieces

**MicroPower High Speed Drill (6020-026, 6021-026)**

**Speed Settings:** 10,000 to 100,000 rpm (nominal) in 10,000 rpm increments

**Default Speed:** 70,000 rpm

**Torque:** 2 in. oz.

**Bur Pull Out Force:** Exceeds 12.0 lbs. (5.4 kg)

**Length:** 5.85 in. (14.9 cm)

**Diameter:** 0.75 in. (1.9 cm)

**Weight:** 7 oz. (196 g)

**Material:** Stainless Steel

**Duty Cycle at 25°C Ambient:** 2 minutes ON, 8 minutes OFF

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#### 4.4 Handpieces, Attachments and Accessories

<u>REF</u>	<u>Description</u>
<u>Handpieces and Footswitches</u>	
6020-026	MicroPower High Speed Drill, Detachable Lever
6021-026	MicroPower High Speed Drill, Permanent Lever
5020-053	Two Pedal Footswitch
C9863	Three Pedal Footswitch

<u>MicroPower Guards &amp; Attachments</u>	
1375-012	Medium Bur Guard
1375-011	Long Bur Guard
1375-023	Cloward Extra Long Bur Guard
1375-032	20° Angle Attachment
1375-033	XL 20° Angle Attachment
1375-035	70° Contra Angle Attachment w/Surgical Head
1375-036	90° Angle Attachment
1375-020	Laminectomy Guard
1387-022	Tissue Retractor Guard
1375-034	70° Contra Angle Attachment w/Dental Head

<u>Consoles</u>	
E9000	E9000 Console
D3000	Advantage Console
PRO2000	PowerPro Console
MC5057	Handpiece Cord

**REF****Description****MicroPower Miscellaneous**

1375-037	Pana Spray
5020-057	Replacement Safety Slide
5020-058	Handpiece Replacement Lever
5053-008	Bur Rack
5053-124	Cleaning Brush

**MicroPower Irrigation Accessories**

5040-130	Reusable Irrigation Handpiece Clip
5040-200	Reusable Medium Bur Tip
5040-201	Reusable External 70° & 90° Angle Tip
5040-202	Reusable Long Bur Tip
5040-203	Reusable Internal 70° & 90° Angle Tip
5040-208	Reusable XL Bur Tip

**MicroPower Irrigation Tubing**

E9418	Disposable Irrigation Tubing Set
5040-128	Reusable Y Tubing Set
5040-129	Reusable Tubing Set











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