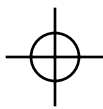
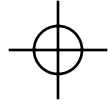
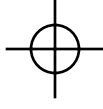
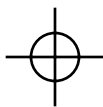


# The Hall® *MicroChoice*™ System Instruction Manual







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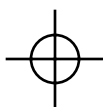
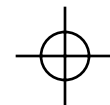
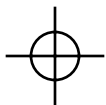
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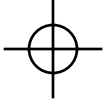

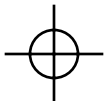
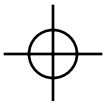
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## GENERAL WARNINGS

1. Prior to each use, all handpieces and accessories must be inspected for proper operation.
2. The surgeon and all others in the area must always wear eye protection when operating any Hall<sup>®</sup> Surgical equipment. Eye injury or blindness can result from dislodged drill bits, blades or bone/tooth fragments.
3. To assure safety of the patient and operating room personnel, use only Hall Surgical accessories and attachments.
4. Handle all medical instruments carefully. If a Hall device is dropped, immersed or damaged in any way, it should be returned immediately for service.
5. Do not attempt to service or open the *MicroChoice*<sup>™</sup> Controller. There are no user serviceable parts inside. If the system malfunctions, return it to Hall Surgical for service.
6. Put the handpiece in the "safe" position before changing any accessories, burs or blades. Accidental activation could injure the patient or operating room personnel.
7. Before each use, be sure accessories are correctly attached to the handpiece as they could be thrown from the handpiece with great force, possibly causing serious injury.
8. Always inspect for bent or otherwise damaged burs/blades before each use. A bent blade or bur can whip severely and could be propelled with great force, causing injury. Do not use excessive force on any bur or blade. Do not attempt to straighten a bent blade or bur.
9. The use of dull burs and blades may cause heat build-up in the handpiece and the bone. It is recommended that single-use burs and blades be used or, if the hospital does not want to use single-use burs and blades, inspections with a magnifying glass of all burs and blades must be done to check for dull and chipped cutting surfaces.

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10. Overheating might occur if the handpiece or accessory bearings are worn or are not kept clean. Continually check all parts of the handpiece and attachments for overheating. Discontinue use and return the equipment for service as necessary. Overheating can cause serious injury to the patient or operating room personnel.
  11. Please pay close attention to the "Care and Cleaning Instructions" and all "Cautions" in the "*MicroChoice™ System Instruction Manual*".
  12. Never immerse the *MicroChoice* Controller, Footswitch or handpieces in any solution.
  13. Do not lubricate any *MicroChoice* handpiece.
  14. Hall® Surgical equipment is designed for use by medical professionals who are completely familiar with the required surgical techniques and instructions for use of the equipment.
  15. Do not autoclave the *MicroChoice* Controller.
  16. Always inspect cords for signs of excessive wear or damage. Discontinue use and replace immediately or return for repair.
  17. Never lock the collet on the High Speed or Medium Speed Drills without a bur in place, or damage to the collet may result.
  18. Do not pick up *MicroChoice* handpieces or the Footswitch by the cord. Damage to the connection or cord may result.
  19. Do not press the Mode button on the Handpiece Cord until a handpiece is attached.
- 
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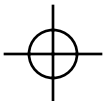
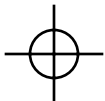


## MICROCHOICE™ CONTROLLER

The Hall® *MicroChoice* Controller is designed and manufactured specifically to power only *MicroChoice* and levered Micro E® handpieces. The *MicroChoice* Controller is designed to operate on grounded electrical power.

**Important Note: The Controller will not detect improper grounding between itself and the electrical outlet. Proper procedures must be followed to assure proper grounding of the Controller.**

The system is designed to meet standard electrical safety requirements for surgical instruments that are likely to be applied to a patient in a health care facility.




**Notes: The *MicroChoice* Controller is designed with "closed loop feedback". This design provides immediate electronic feedback to hold handpiece speed constant even with increasing load. Caution should be exercised while becoming familiar with the operation of the *MicroChoice* system.**


Each *MicroChoice* Controller is shipped from the factory pre-set to your power requirements. See page 61, Technical Specifications, for information regarding fuses and selecting voltage options.

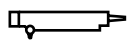
**PRIOR TO PUTTING THE SYSTEM INTO USE, REFER TO THE "RECEIVING/PERIODIC INSPECTION" SECTION ON PAGE 64 FOR IMPORTANT INFORMATION**


**Symbol Definitions:**


 Power "OFF"


 Power "ON"

 Attention, consult accompanying documents


 Handpiece Connection

 Footswitch Connection

 Irrigation Pump Connection

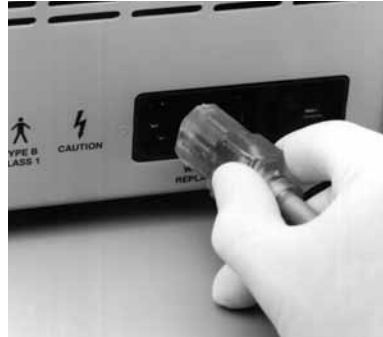
 Type B, Class 1 Equipment

 Caution

 Flammable Anesthetics - Risk of explosion if used in the presence of flammable anesthetics.

**To Activate *MicroChoice*™ Controller:**

1. Plug the power cord into the receptacle on the rear of Controller. Plug remaining end of power cord into a standard grounded wall outlet. Once the power cord has been connected, no front panel lights should be activated. If the display panel is activated, depress the Power On/Off switch to deactivate the system.



2. Align the red indicator dot on the Handpiece Cord connector with the matching dot above the Handpiece receptacle. Push the connector into the Handpiece receptacle. The receptacle and cord connector are color coded (red) and keyed so the cord cannot be improperly attached. Care must be exercised so as not to bend or break the contact pins within the Controller receptacle.



3. Attach the Handpiece Cord to the desired handpiece. (See General Handpiece Instructions, starting on page 8.) The Handpiece Cord and handpiece connection area are keyed so the connection is simple and unique. Care should be taken so as not to bend or break the connector pins within the Handpiece.





4(a) Once the chosen handpiece has been attached, activate the system by depressing the On/Off power switch on the back of the Controller. When the power switch has been depressed, the display panel will display with **HALL SURGICAL**. The Controller will go through a self-diagnostic check indicating the software version. At the conclusion of the check, the attached handpiece I.D. and speed will be displayed followed by **SETTING DONE!!!**. Lastly displayed is the handpiece I.D. and **SAFE ON**. The system is activated and ready for use. Detailed instructions regarding operation of the *MicroChoice*<sup>TM</sup> Controller and handpieces can be found on pages 38 - 47, Handpiece Mode Selections.



(b) With the power on, the Handpiece Cord may be disconnected from one handpiece and installed on another handpiece. (When power is "ON" and the Handpiece Cord is removed from one handpiece, power is disconnected within the Handpiece Cord). When a second handpiece is connected to the Handpiece Cord, power is restored to the Handpiece Cord. The Controller will display the I.D. of the second handpiece with **SAFE ON**.

- (c) Operation of the handpiece can begin by moving the Safe/Run Slide to the "run" position. Each handpiece will initially operate at its default setting. Desired settings can be stored in memory by following the instructions outlined in the Handpiece Mode Selection section (See Handpiece Mode Selection, pages 38 - 47, for default settings and "Day-to-Day" memory setting instructions).



### GENERAL HANDPIECE INSTRUCTIONS

With the exception of the Pencil Grip Wiredriver and Wiredriver/Fixation Drill, all *MicroChoice* handpieces have the same basic configuration and many features in common. (See pages 29 - 36, Wiredriver/Fixation Drill.)

1. To prevent accidental activation of the handpiece, always keep the "safe/run" Slide on the handpiece in the back or "safe" position. The word "safe" on the handpiece barrel is visible through the opening on the Safety Slide.
2. To attach the handpiece to the Handpiece Cord:
  - (a) Place the handpiece in the "safe" position.



(b) Firmly grasp both the connection end of the handpiece and the connector end of the Handpiece Cord.

(c) The Handpiece Cord connector has been designed in a fashion where attachment can only occur in one orientation. Improper attachment of the cord is not possible.

(d) Align the mechanical "spring lock" mechanism portion of the Handpiece Cord with the top of the handpiece.

(e) Once the cord connector and the handpiece receptacle are properly aligned, push together until the cord connector is fully seated in the handpiece. The Controller will identify the handpiece I.D. connected and display **SAFE ON**.



3. To activate the handpiece, move the Safe/Run Slide forward. "Run" will be visible through the opening. The Controller will display the connected handpiece I.D. along with the maximum RPM or speed setting.
4. Without any user input selections (see Handpiece Mode Selection instructions for available settings) the Controller will display the default setting and the handpiece will operate within this range. (For an explanation of default settings and other available options, see the Operating Instructions of the connected handpiece.) The handpiece is now ready for operation. Depress the Activation Lever or Footswitch to activate.

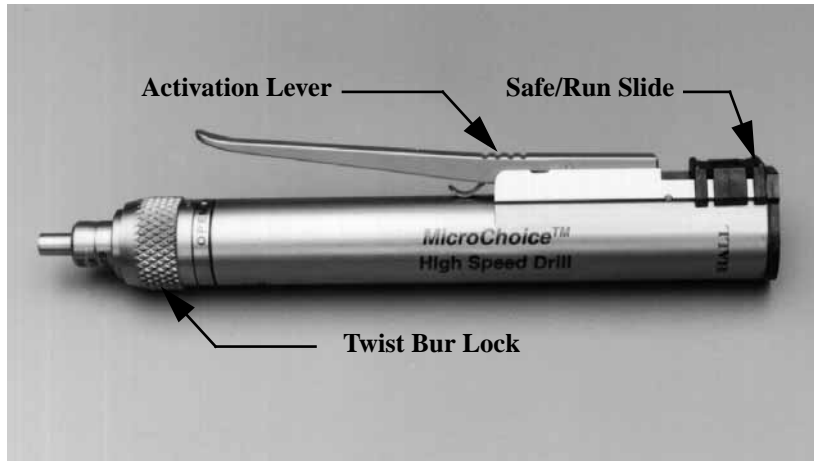


**Note 1:** If a *MicroChoice*<sup>™</sup> handpiece is placed on a magnetic drape, the Controller may display **MAGNETIC FIELD**. The handpiece will be inoperable until the magnet and handpiece are separated. Once separated, the Controller will reset after three (3) seconds.

**Note 2:** Handpieces are inoperable if the Activation Lever or Footswitch are depressed while the connection to the Handpiece Cord is made.

**Note 3:** Operation of a *MicroChoice* drill without a bur in place is considered a failure mode. When the handpiece is activated for several seconds the Controller will display **STALL CHECK BUR LOCK**. Operation can not be initiated until a bur is locked in place and at least five (5) seconds have elapsed without either the Footswitch or Activation Lever depressed.

## HIGH SPEED DRILL



### Specifications:

Operating Speed	100,000 rpm Maximum
Maximum Speed Settings	10,000 to 100,000 rpm in 10,000 rpm increments
Torque	2 in. oz.
Bur Pull Out Force	Exceeds 12.0 lbs. (5.4 kg.)

**Warning: Place Safe/Run Slide in the "safe" position when not in use.**

Always operate the High Speed Drill with the appropriate bur guard or attachment. Use a bur of the appropriate length - the tip of the bur guard should cover the safe line on the bur. Without the stabilization that the proper guard provides, the bur can break and be propelled with great force.

Check each bur before use in the High Speed Drill. Never use a bent bur. For additional information, refer to the *MicroChoice™* Bur Guard Package Insert, or contact Hall® Surgical.

1. To insert a bur, slide the appropriate bur guard over the end of the High Speed Drill. Be certain it is completely seated.



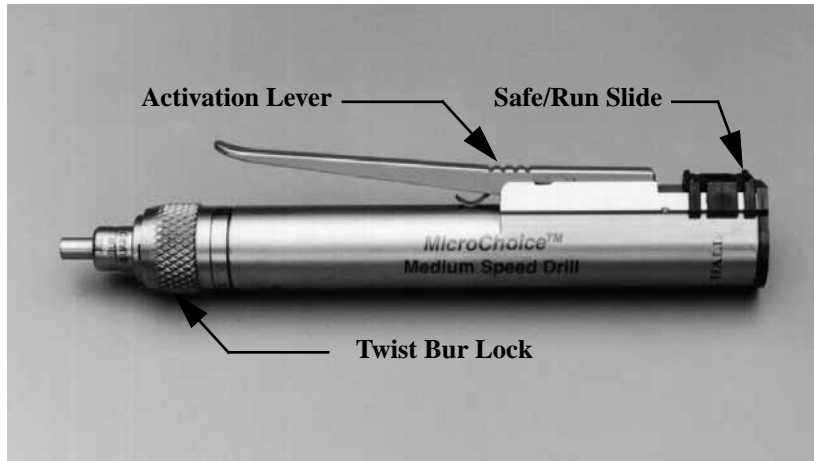
2. Twist the bur lock to the "Open" position. Insert the bur to the safe line or until the bur seats completely.



3. To secure the bur, twist the bur lock until the red indicator dots are aligned in the "Lock" position.

**Warning: Before each use be sure that burs are completely seated and locked in the handpiece.**

## MEDIUM SPEED DRILL



### Specifications:

Operating Speed	25,000 rpm Maximum
Maximum Speed Settings	1,000 to 25,000 rpm in 2,000 rpm increments
Torque	6 in. oz.
Bur Pull Out Force	Exceeds 12.0 lbs. (5.4 kg.)

**Warning: Place Safe/Run Slide in the "safe" position when not in use.**

Always operate the Medium Speed Drill with the appropriate bur guard or attachment. Use a bur of the appropriate length - the tip of the bur guard should cover the safe line on the bur. Without the stabilization that the proper guard provides, the bur can break and be propelled with great force.

Check each bur before use in the Medium Speed Drill. Never use a bent bur. For additional information, refer to the *MicroChoice™* Bur Guard Package Insert, or contact Hall® Surgical.

1. To insert a bur, slide the appropriate bur guard over the end of the Medium Speed Drill. Be certain it is completely seated.



2. Twist the bur lock to the "Open" position and insert the bur to the safe line or until the bur seats completely.

3. To secure the bur, twist the bur lock until the red indicator dots are aligned in the "Lock" position.



**Warning: Before each use be sure that burs are completely seated and locked in the handpiece.**



**DRILL ATTACHMENTS AND ACCESSORIES**  
***MicroChoice*<sup>™</sup> High Speed and Medium Speed Drills**

**Warning: Place handpiece in the "safe" position prior to connection with the attachment. Be certain the attachment/accessory is completely seated on the handpiece prior to each use.**

To use the *MicroChoice* Drill Attachments/Accessories:

Open the handpiece collet to the "Open" position by twisting the bur lock to the left (counterclockwise).



Seat the attachment/accessory completely over the end of the Drill.



To lock the attachment/accessory into place, twist the bur lock (clockwise) until the red indicator dots are aligned.

20° and Extra-Long 20° Angle Attachments:

**Caution: Use only Hall® long 5092 burs with the 20° Angle Attachment and only Hall extra-long 5093 burs with the Extra-Long 20° Attachment.**

Twist the bur lock on the attachment to the "Open" position.

Insert the bur to the safe line or until the bur seats completely.



Twist the bur lock until the indicator dots are aligned in the "Lock" position.



70° Surgical Head and 90° Angle Attachments:

**Caution:** Use only Hall® short 5090 and extra-short 5089 series burs with the 70° Contra-Angle Attachment and the 90° Angle Attachment.

Place the bur in the opening on the attachment.



Use the grooved side of the bur changer (1375-003) to press the bur firmly in place.



To remove the bur: Place the bur changer in the opening at the rear of the attachment.

Press firmly on the bur changer to push the bur out.



70° Dental Head

The 70° Dental Head attachment uses friction grip burs only - size 1/16" or 1.58 mm in diameter. Friction grip burs are not marketed by Zimmer. They are available through dental supply dealers.

Tissue Retractor Bur Guard:

Slide the guard over the end of the drill so it is completely seated.

Open the handpiece collet to the "Open" position by twisting the bur lock to the left (counterclockwise).

Insert the bur (any 5092 series bur with a head diameter of 4mm or less) through the tip of the bur guard and into the handpiece collet. The recommended bur is 5092-136, Long Oval Cutting Bur.

Twist the bur lock (clockwise) until the red indicator dots are aligned to lock the bur into place.



Laminectomy Bur Guard:

Twist the bur lock to the "Open" position and insert the correct bur (5092-103 shown).

Twist the bur lock until the red indicator dots are aligned in the "Lock" position.



Slide the Laminectomy Guard over the bur and the end of the drill. Be certain the guard is completely seated.



**Notes:** These are the only burs inserted prior to placing a guard or an attachment on the handpiece.

For additional information refer to the *MicroChoice*<sup>™</sup> Angled Attachment Package Insert or the *MicroChoice* Bur Guard Package Insert.

**LOW SPEED DRILL:**



**Specifications:**

Drill Head (single color band)

Operating Speed

2,500 rpm Maximum

Maximum Speed Settings

250 to 2,500 rpm in

250 rpm increments

Torque

15 in. oz.

Screw/Tap Head (two color bands)

Operating Speed

30 rpm Maximum

Maximum Speed Settings

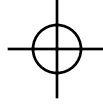
2 to 30 rpm in 2 rpm increments

Torque

25 in. oz. (screw)

55 in. oz. (tap forward)

60 in. oz. (tap reverse)

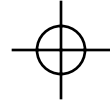
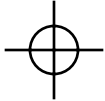


**Warnings:**

1. Place Safe/Run Slide in the "safe" position when not in use.
2. Always operate the Low Speed Drill with the appropriate attachment.
3. Check each bur before use in the Low Speed Drill. Never use a bent bur.

**Note:** The Low Speed Drill accepts standard dental latch burs or Hall® Surgical burs of the 5088 series.

The Low Speed Drill operates with two different head attachments. When the Drill Attachment is in use, the handpiece will operate at a maximum speed of 2,500 rpm with 15 in. oz. of torque. The Screw/Tap Attachment operates with a maximum speed of 30 rpm. In the Screw function there are 25 in. oz. of torque, while in the Tap mode there are 55 in. oz. of torque in the forward direction and 60 in. oz. of torque in the reverse direction.



**Note:** Low Speed Drill torques while in use:

Drill mode	15 in. oz. will be maintained.
Screw mode	If 25 in. oz. is exceeded the handpiece will stop and <b>MAXIMUM TORQUE</b> will be displayed. The handpiece can only be reset by secondary activation of the footswitch.
Tap mode	55/60 in. oz. will be maintained.

**Note:** The Low Speed Drill can only be operated by the Footswitch.

**Warning:** Place handpiece in the "safe" position prior to connection with the attachment. Be certain the attachment/accessory is completely seated on the handpiece prior to each use.



**Bur insertion and removal:**

1. Completely seat the Angled Attachment on the Low Speed Drill.



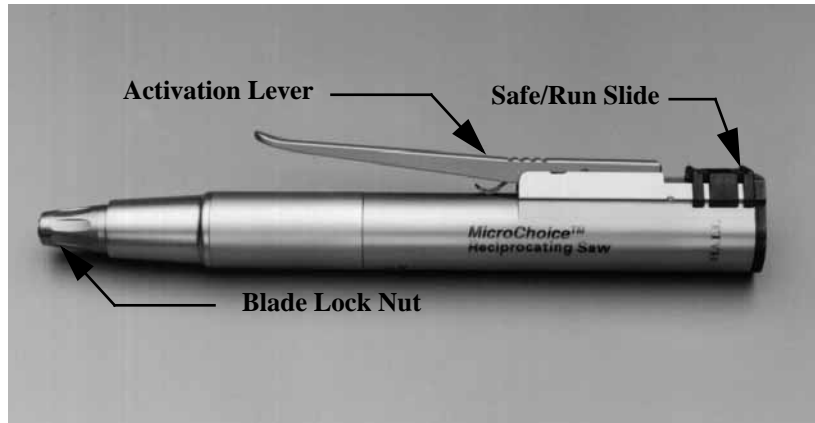
2. To insert bur: Press the rear portion of the head of the attachment, place the bur in the opening on the front of the attachment, insert and rotate the bur into place.



3. To remove the bur: Press firmly on the rear portion of the head of the attachment and pull the bur out.



## RECIPROCATING SAW



### Specifications:

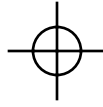
Operating Speed	17,000 cpm
Maximum Speed Settings	20 - 100% in increments of 10%
Stroke	1/10 in. (2.54 mm)

**Warning:** Place Safe/Run Slide in the "safe" position when not in use.

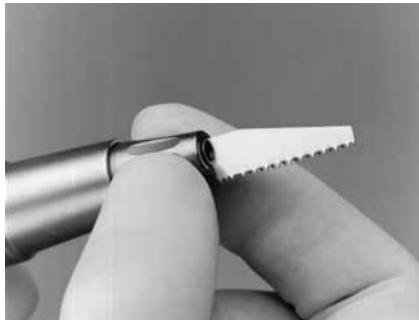
Use only Hall® 5053 series blades. Be certain the saw blades are tightly secured before use.

1. To insert flat blades: Twist the blade locking nut counter-clockwise to loosen and insert the blade into the end of the handpiece. Be certain the blade is fully seated.



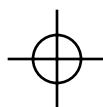
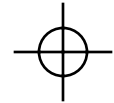
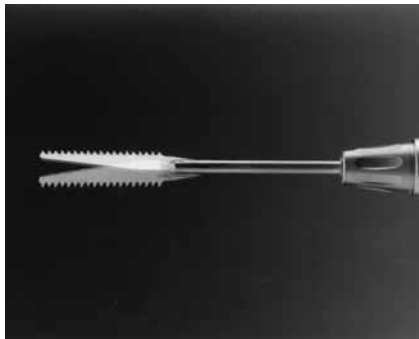


2. To secure the blade: Twist the blade locking nut clockwise until it is completely tightened. Briefly activate the handpiece and retighten the blade locking nut.

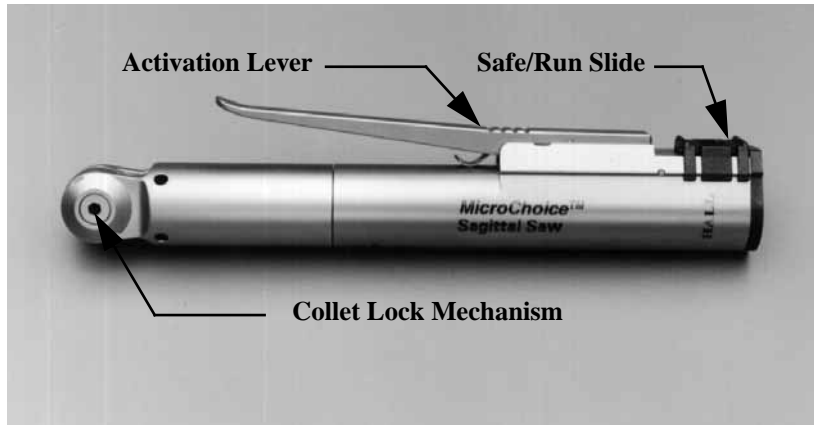


3. To secure round shank blades follow steps 1 and 2.

4. Round shank blades can be seated at any position within a 360° range.



## SAGITTAL SAW



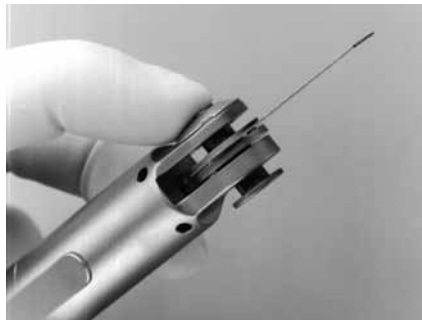
### Specifications:

Operating Speed	20,000 cpm
Maximum Speed Settings	20 - 100% in increments of 10%
Stroke	4° arc

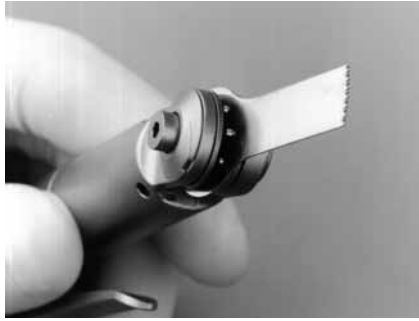
**Warning:** Place Safe/Run Slide in the "safe" position when not in use.

Use only Hall® 5023 series blades. Be certain the saw blades are tightly secured before use.

1. To attach saw blades: Depress the collet lock mechanism to open the collet. Position the blade on the pins inside the collet.

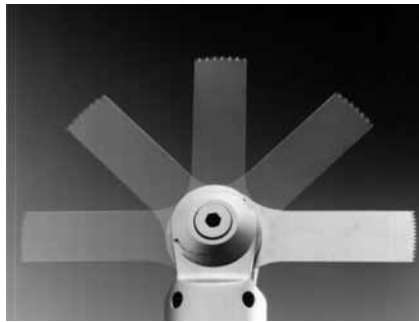


2. Depress the opposite side of the handpiece collet area to lock the blade into position. Briefly activate the handpiece to verify that the blade is attached.



3. Blades may be positioned at 45° intervals within a 180° arc.

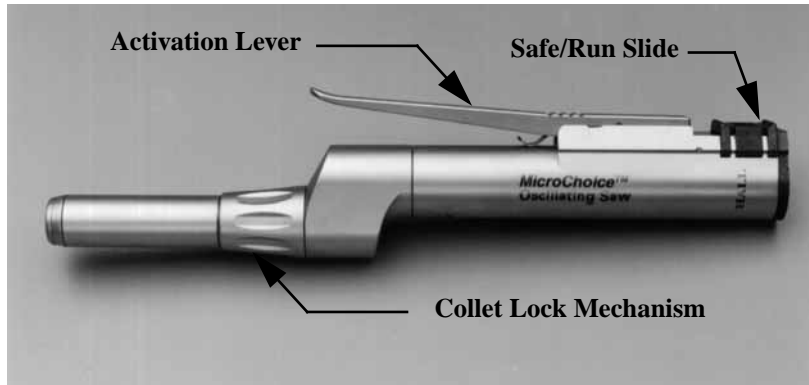
4. To remove saw blades: Depress the collet lock mechanism and remove the blade.



**Caution:** The collet lock mechanism must be completely closed to ensure the blade is held firmly in place.

**WARNING:** Do not use the XL Handpiece Activation Lever with the Sagittal Saw. Personal injury may result.

## OSCILLATING SAW



### Specifications:

Operating Speed	25,000 cpm
Maximum Speed Settings	20 - 100% in increments of 10%
Stroke	8° arc

**Warning:** Place Safe/Run Slide in the "safe" position when not in use.

Use only Hall® 5023 series blades. Be certain the saw blades are tightly secured before use.

1. To attach saw blades: Open the collet lock mechanism by twisting the mechanism until the arrows are no longer aligned in the "Lock" position.



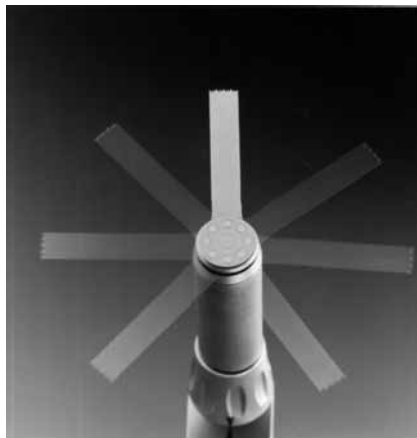
2. Position the blade on the pins inside the collet.



3. Twist the collet lock mechanism so the arrows are again aligned in the "Lock" position to secure the blade. Briefly activate the handpiece to verify the blade is attached.



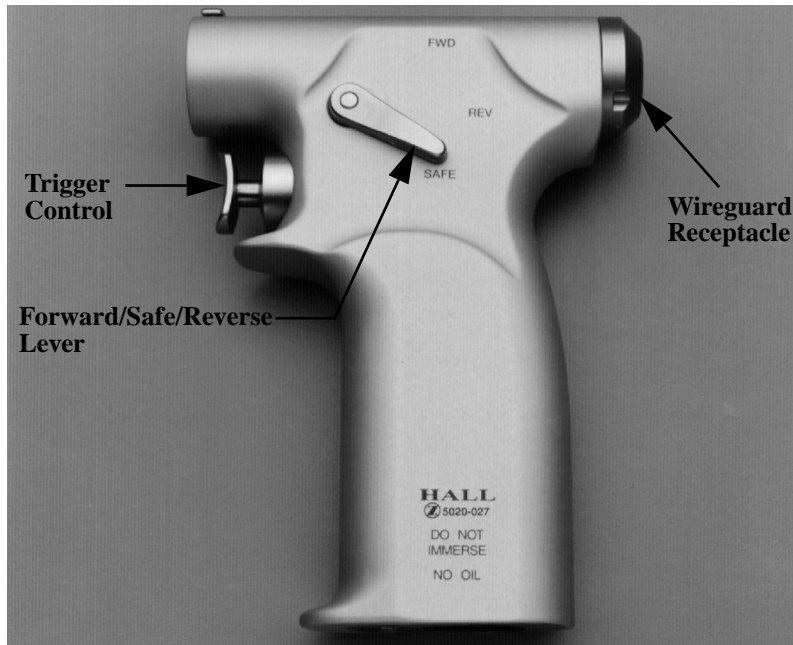
4. Blades may be positioned at 45° intervals within a 360° circumference of the collet.
5. To remove saw blades: Open the collet lock mechanism and remove the blade.



**Note: Intra-Oral blades and Crescentic blades do not require the use of an adapter.**

**Caution: The collet lock mechanism must be completely closed to ensure the blade is held firmly in place.**

## WIREDRIVER/FIXATION DRILL



### Specifications:

Operating Speed	1,000 rpm, forward or reverse
Maximum Speed Settings	100 to 1,000 rpm in 100 rpm increments
Cannulated:	Maximum .125 in. (3.2mm) diameter

**Warning:** Place the Operating Switch in the "safe" position prior to the connection of any attachment.

**Notes:** The Wiredriver/Fixation Drill does not operate with the Footswitch or Irrigation Pump.

**Make sure the head attachment matches the function selected. Improper head selection may cause erroneous speed or torque (Reference Handpiece Mode Selection, page 38).**

1. The handpiece is placed in the "safe" position by aligning the Operating Switch in the down position. The Forward/Safe/Reverse Lever is directed towards "SAFE".
2. Attach the Handpiece Cord per the General Handpiece Instructions (pages 8 - 10).



### **Wiredriver Attachment**

#### Specifications:

Operating Speed 1,000 rpm either forward or reverse

Maximum Speed 100 to 1,000 rpm in 100 rpm increments

Settings

Cannulated: Accepts K-Wires from 0.028 in. (0.7mm) to 0.062 in. (1.6mm)





1. Attach Wiredriver Attachment to the handpiece by orienting the two and pressing them until they "snap" together.



2. The Wiredriver Attachment will accept threaded or unthreaded wires from 0.028 to 0.062 in. (0.7mm to 1.6mm) in diameter.

3. Insert the wire from the front or the rear of the handpiece.



4. Place the Forward/Safe/Reverse Lever to an operating position.

5. Grip the wire by depressing the Advancement Lever. Depress trigger and drive the wire.



6. To advance wire: Release the trigger to stop rotation. Release the Advancement Lever and reposition the handpiece up the wire until approximately 1 in. (2.5cm) of wire is exposed.

7. Depress the Advancement Lever. Collet will regrip the wire for further advancement.
8. The wire can be removed from the Wiredriver by releasing both the trigger and the Advancement Lever.
9. To remove threaded wires from patient: Place the Operating Lever in the "safe" position. Insert the wire into the front of the attachment (step 3). Place the Operating Switch in the "reverse" position, then grip the Advancement Lever and activate the trigger.

**Note: The Wire Guard (5053-123) may be attached to the rear of the handpiece to keep long wires from bending and for user protection.**

**Pin Driver Attachment**

Specifications:

Operating Speed	1,000 rpm either forward or reverse
Maximum Speed Settings	100 to 1,000 rpm in 100 rpm increments
Cannulated:	Accepts Steiman Pins from 0.062 in. (1.6mm) to 0.125 in. (3.2mm)

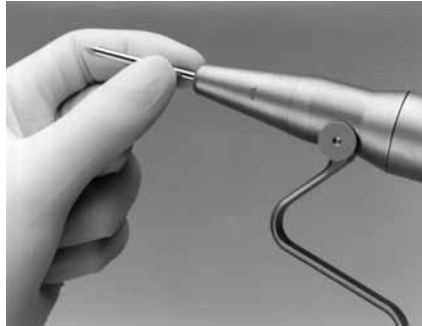


1. Attach the Pin Driver Attachment to the handpiece by pressing the two until they "snap" together.
2. The Pin Driver Attachment will accept Steiman Pins from 0.062 to 0.125 in. (1.6mm and 3.2mm) in diameter.

3. To insert the pin, push the lever forward.

4. Grip the pin by squeezing the Advancement Lever. Depress trigger and drive the pin.

5. To advance pin: Release the trigger to stop rotation. Release the Advancement Lever and reposition the handpiece up the pin until approximately 1 in. (2.5cm) of pin is exposed. (Pressing the Advancement Lever forward allows the pin to slide more freely).



6. Squeeze the Advancement Lever. The collet will regrip the pin for further advancement.

### **Universal Drill Attachment and 5/32" Jacobs Chuck**

#### Specifications:

Operating Speed	1,000 rpm either forward or reverse
Maximum Speed	100 to 1,000 rpm
Settings	in 100 rpm increments



Attach Universal Drill Attachment to the handpiece by pressing the two until they "snap" together.



*Trinkle Shank Accessories*  
Pull collet sleeve back.



Align dimple on trinkle shank with black arrow on outer collet sleeve. Insert trinkle shank into collet. When trinkle shank is inserted, spring-loaded inner sleeve will retract.



With shank totally inserted, release collet sleeve and rotate attachment until it is completely engaged. Pull attachment firmly to ensure proper engagement.

To remove attachment, grip attachment firmly, then pull back outer collet sleeve and remove the attachment.

*A. O. Drill Bits*

Align flat portion of the Quick Disconnect Drill Shank with the black arrow on the collet sleeve and insert into the collet.



Insert the shank as far as it will go without pulling back the collet sleeve. Twist the shank to make sure it is aligned properly. If it is, it will not spin in the collet. Then pull back on the collet sleeve while pushing the shank further into the collet.



Release collet sleeve. Shank is then locked into the collet. Pull drill bit firmly to verify that it is properly seated.

To remove drill bit, pull back on the outer sleeve and remove.

**High Torque Jacobs Chuck Attachment**

Specifications:

Operating Speed 275 rpm either forward or reverse  
Maximum Speed 25 to 275 rpm in Settings 25 rpm increments



1. Attach the High Torque Jacobs Chuck Attachment to the handpiece by pressing the two until they "snap" together.



2. Secure the item in the chuck with the chuck key (999-053).



**Note: The High Torque Jacobs Chuck has roughly a 4:1 gear ratio reduction.**

## MICRO E® HANDPIECE OPERATION

Hall® Micro E handpieces can be used in conjunction with the *MicroChoice*™ Controller.

**Warning: Place Safe/Run Slide in the "safe" position when not in use.**

1. Align the red indicator dot on the Handpiece Cord connector with the matching dot above the Handpiece receptacle. Connect the Micro E Handpiece Cord (5020-048) to the *MicroChoice* Controller.
2. Connect the opposite end to the Micro E Handpiece. The Controller will recognize the handpiece and display **MICRO E**. Depress the Handpiece Activation Lever to activate.



**Note: Although the *MicroChoice* Controller will allow operation of a Micro E handpiece, the selection of maximum speed or irrigation is not possible.**

## HANDPIECE MODE SELECTION

The *MicroChoice*<sup>™</sup> Controller is equipped with a microcontroller which allows the user complete system control from within the sterile field. Speed and irrigation flow can be set and controlled by depressing the Mode Select Button located on the Handpiece Cord.

**Caution:** Each handpiece has an initial or default speed and irrigation setting. The "Operating Speed" identified within the description of each handpiece is the initial or default setting.

### General Mode Selection:

1. Prior to connection, place the Safe/Run Slide in the "safe" position. Align the red indicator dot on the Handpiece Cord connector with the red dot above the Handpiece receptacle on the Controller. Insert the Handpiece Cord into the Handpiece receptacle. If the *MicroChoice* Controller is "ON", the display will indicate **CONNECT HANDPIECE**. Attach a handpiece to the cord.



2. The Controller will display the handpiece I.D and its speed followed by **SETTING DONE!!!**. Lastly displayed is the handpiece I.D. and **SAFE ON**.
3. Move the Safe/Run Slide to the "run" position. The Controller will display the connected handpiece I.D. along with its default speed setting (maximum speed displayed in rpm or %).
4. Depress the Activation Lever or Footswitch to activate if the default speed setting is acceptable.



**Handpiece Default Settings:**

<b><u>Handpiece</u></b>	<b><u>Speed</u></b>	<b><u>Irrigation</u></b>
High Speed Drill	100,000 rpm	100%
Medium Speed Drill	25,000 rpm	100%
Low Speed Drill		
Drill	2,500 rpm	100%
Screw/Tap	30 rpm	100%
Reciprocating Saw	17,000 cpm	100%
Sagittal Saw	20,000 cpm	100%
Oscillating Saw	25,000 cpm	100%
Pencil Grip Wiredriver	1,000 rpm	N/A
Wiredriver/Fixation Drill		
Wiredriver Attachment	1,000 rpm	N/A
Pin Driver Attachment	1,000 rpm	N/A
Universal Drill Attachment	1,000 rpm	N/A
High Torque Jacobs	275 rpm	N/A
5/32" Jacobs Chuck	1,000 rpm	N/A
Micro E <sup>®</sup>	N/A	N/A

**Changing the Default Speed Setting:**

1. Depress the Mode Select Button twice, within two (2) seconds, to return the Controller to display the speed setting (the speed setting will be blinking).
2. The connected handpiece I.D. is displayed with its default speed setting (blinking). Depress the Mode Select Button until the desired speed setting is displayed. Discontinue pressing the Mode Select Button.
3. The Controller will acknowledge the new setting - **SETTING DONE!!!** This is followed by the handpiece I.D. displayed with the new maximum speed setting.
4. Lever or Footswitch activation will provide variable speed control up to the selected setting.



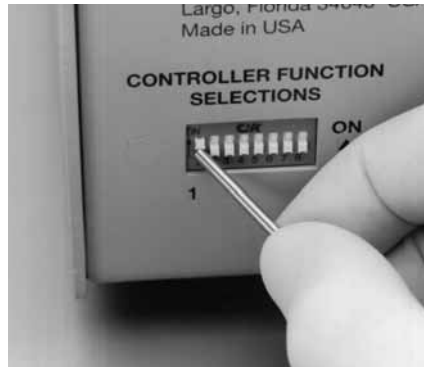
**Notes: When the Low Speed Drill is set to the SCREW or TAP mode, the speed is not variable in the reverse direction.**

**As long as the Controller remains "On", the last setting is retained in memory after the handpiece is disconnected from the Handpiece Cord. When reconnected, the memory setting is the previous handpiece setting.**

### Day-to-Day Memory Storage

The *MicroChoice*<sup>™</sup> Controller has the capability of "Day-to-Day" memory storage. "Day-to-Day" memory storage retains handpiece settings between Controller uses (even if Controller power is turned "Off"), and is only available when DIP switch number 1 is set to the "On" position.

1. Make sure Controller is in the "OFF" position.
2. Locate the 8 position DIP switch on the rear panel, labelled Controller Function Selections.
3. Move selection switch 1 to the "ON" position.
4. Turn "ON" the Controller and utilize the system.



The last setting for all handpieces (including irrigation flow rate) will be the initial setting the next time the Controller is turned "ON". If no setting change was made, the initial or default setting for that (those) handpieces will be retained.

Selection of "Day-to-Day" memory bypasses the start-up Controller display settings. Connection of a handpiece immediately displays the handpiece with its previously selected setting(s).

Selection of a new speed setting (or irrigation flow rate) can be initiated by depressing the Mode Select Button twice - within two (2) seconds (see step 1, Changing the Default Speed Settings).

Activation of "Day-to-Day" memory can occur at any time by following steps 2 and 3 above.

**Note:** If DIP switch selection 1 is moved to the "OFF" position while the Controller is turned "ON", the initial handpiece settings revert to the default settings when the Controller power is cycled. See page 39 for handpiece default settings.

**To Set Irrigation Flow:**

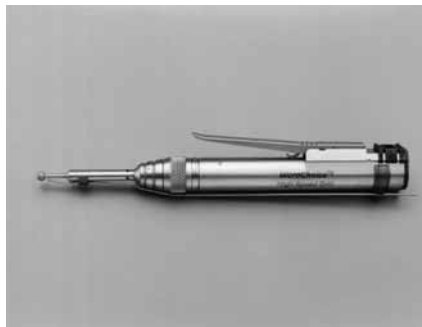
1. Move the Safe/Run Slide to the "safe" position.
2. Attach the Irrigation Cord to the Irrigation Pump and the Irrigation receptacle on the Controller. Turn the pump on. Rotate the flow control dial on the Irrigation Pump to the maximum setting.



3. Press the Mode Select Button twice, within two seconds. The **IRRIGATION SPEED** menu will display (**IRRIGATION** will blink). After two seconds, **IRRIG. LIMIT: 100%** will display (**100%** will blink). To select a new flow rate, press the Mode Select button until desired rate displays. Stop pressing Mode Select button. **IRRIGATION DONE** will display.



4. The handpiece I.D. and the speed are displayed (speed will be blinking). Selection of a new maximum speed is possible. See Changing the Default Speed Setting (page 40).
5. The Controller display will alternate between the irrigation flow rate setting and the maximum speed setting.
6. Connect Irrigation Tips and Tubing. For additional information refer to Hall® Irrigation Instruction Manual.
7. Depressing the Handpiece Activation Lever or Footswitch will activate the Irrigation Pump and handpiece simultaneously.



**Note: The flow rate default setting for all handpieces and attachment options is 100%.**

**Low Speed Drill:**

Selection of the appropriate attachment and/or function.

1. Move Safe/Run Slide to the "safe" position.

2. Insert the Footswitch Cord into the Footswitch receptacle on the Controller (see Footswitch Instructions for additional information).



3. Attach appropriate head to the Low Speed Drill.



4. Depress the Mode Select Button twice, within two (2) seconds. The **SCREW TAP DRILL** menu will display (**DRILL** will be blinking). Depress the Mode Select Button until the desired function is blinking. Discontinue pressing.



5. The selected function will display with the maximum speed setting (blinking). Depress the Mode Select Button until the desired speed is displayed. Discontinue pressing.
6. The Controller will display the selected function and **SAFE ON**.
7. Move the Safe/Run Slide to the "run" position. The function and maximum rpm will be displayed.
8. Depress the Footswitch to activate.

**Warning: Make sure the head attachment matches the function selected. Improper head selection may result in erroneous speed or torque.**

**Notes: When the Low Speed Drill is set to the SCREW or TAP mode, the speed is not variable in the reverse direction.**

**Wiredriver/Fixation Drill:**

Selection of the appropriate attachment.

1. Place the Selector Switch in the "safe" position.
2. Secure the appropriate attachment to the handpiece.

3. Depress the Mode Select Button twice, within two seconds. The **WIRE DRILL HTQ PIN** menu will display (**WIRE** will be blinking). Depress the Mode Select Button until the desired function is blinking. Discontinue pressing.



4. The selected function will display with the maximum speed setting (blinking). Depress the Mode Select Button until the desired speed is displayed. Discontinue pressing.
5. The Controller will display the selected function and **SAFE ON**.
6. Move the Selector Switch to the Forward or Reverse position. The attachment and maximum rpm will be displayed.

**Warning: Make sure the head attachment matches the function selected. Improper head selection may cause erroneous speed or torque.**

**Caution: The Irrigation Pump is inoperable with the Wiredriver/Fixation Drill, Micro E<sup>®</sup> and the Pencil Grip Wire Driver.**

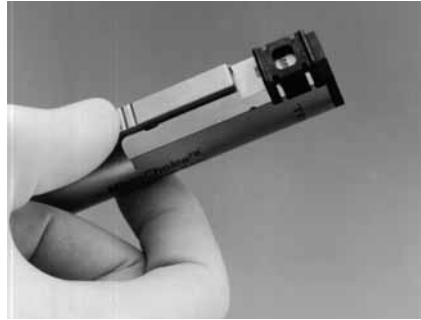


## LEVERLESS OPERATION

The *MicroChoice*<sup>™</sup> High Speed Drill, Medium Speed Drill, Reciprocating Saw, Sagittal Saw and Oscillating Saw can also be operated with the Footswitch.

To remove the Handpiece Activation Lever:

1. Place the Safe Slide in the "safe" position.
2. Depress the Activation Lever on the ribbed portion.



3. At the same time, push the Activation Lever towards the Safety Slide until it disengages from the handpiece. For a brief period, as the Activation Lever is disengaged from the handpiece, the *MicroChoice* Controller will display **MAGNETIC FIELD**.



4. To reattach the Activation Lever, reverse the steps above.

**Cautions:** Always remove the Handpiece Activation Lever when operating the handpiece by the Footswitch.

If the Handpiece Activation Lever has not been removed, and the Footswitch is in use, depressing the Activation Lever will not control the handpiece until use of the Footswitch has been discontinued.

**Note:** The Handpiece Activation Lever Cover (5020-070) can be attached to the area where the Activation Lever was disengaged.



**Note:** If the Activation Lever provided with a handpiece is too short to operate in a comfortable position, remove the lever and attach the XL Handpiece Activation Lever (5020-059).



**WARNING:** XL Handpiece Activation Lever cannot be used with the Sagittal Saw. Personal injury may result.

## MICROCHOICE™ FOOTSWITCH CONTROL

**Warning:** Place the Safe Slide in the "safe" position when not in use.

**Warning:** To avoid unintentional activation, unplug the Footswitch when using a levered handpiece. When the Footswitch is attached to the Controller it will remain active.

**Caution:** The mode of activation initiated first, Activation Lever or Footswitch, has operational control of the handpiece even if the other is inadvertently depressed simultaneously. The second activation mode will not control the handpiece until both activation methods are released.

**Caution:** The Medium Speed Drill and High Speed Drill will operate in reverse if the left (Reverse) pedal is depressed.

**Note:** Micro E® Handpieces will not operate with the *MicroChoice* Footswitch.

1. Align the red indicator dots and plug the Footswitch Cord connection into the Footswitch receptacle on the front of the Controller.
2. To activate the handpiece, move the Safe/Run Slide to the "run" position, then depress the Footswitch.



3. For forward motion depress the right pedal.
4. For reverse motion depress the left pedal. An audible beep will sound while the pedal is depressed indicating reverse motion.



## IRRIGATION

The Hall® Surgical Irrigation Pump should be utilized if irrigation is required. Place the Irrigation Pump on top of the *MicroChoice™* Controller in the defined footrest area.

1. Plug the AC cord into the rear of the Irrigation Pump. Plug the remaining end of the power cord into a standard grounded wall outlet whose voltage and frequency characteristics are comparable with those listed on the unit.
2. Attach the irrigation hanger and solution bag to the pump. Set irrigation flow rate to the maximum setting (4).



3. Attach the Irrigation Cord to the front of the Irrigation Pump. Connect the remaining end of the cord to the Irrigation receptacle on the *MicroChoice™* Controller.

4. Fully assemble Irrigation Tubing to the Irrigation Pump and the Handpiece Cord.

5. Push Handpiece Clip on the handpiece.

6. Attach the proper Irrigation Tip to the nose of the bur guard, Angled Attachment or saw. Connect the Irrigation Tubing to the Irrigation Tip. Press the Irrigation Tip into the correct slot on the Handpiece Clip for a low profile and secure hold.



For additional information about Irrigation set-up, refer to the Hall® Irrigation Instruction Manual. If the Instruction Manual can not be located, contact Hall Surgical for information concerning these issues. Replacement Instruction Manuals are available.

See Handpiece Mode Selection instructions for setting irrigation flow rates (page 38).



## CONTROLLER STAND

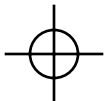
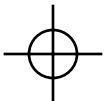
To attach the *MicroChoice*™ Controller to the stand:

1. For assembly of the Controller stand, follow the directions included with the stand.
2. Match the opening on the underside of the Controller with the top plate on the stand and push the two together.
3. Position the Controller in the center of the stand by pulling down the single metal, spring-loaded screw located in the center of the stand.
4. Ensure the two (2) plastic screws are centered with the openings on the bottom of the Controller. Tighten the screws securely to attach the Controller to the stand.



## CARE AND CLEANING INSTRUCTIONS

### Care and Cleaning Precautions:

1. **DO NOT LUBRICATE.** Lubrication of the *MicroChoice*<sup>™</sup> handpieces is not required.
  2. **NEVER IMMERSE** *MicroChoice* handpieces, cords or Footswitch. Immersion in any solution may permanently damage the handpiece or Footswitch from liquid entering the mechanical parts. Some solutions will corrode metal and delicate moving parts, and also may break down internal lubricants and/or insulation.
  3. **NEVER CLEAN MICROCHOICE COMPONENTS WITH LIQUID OR CHEMICAL DISINFECTANTS.** This may damage handpieces.
  4. **NEVER CLEAN MICROCHOICE COMPONENTS IN AN ULTRASONIC CLEANER.** Ultrasonic cleaning will dislodge lubricants from the bearings and render handpieces inoperative.
  5. **HANDLE ALL POWERED SURGICAL EQUIPMENT CAREFULLY.** Should handpieces be dropped, they must be returned for service.
  6. **BE SURE THE CORD IS SECURELY FASTENED TO THE HANDPIECE AND DISCONNECTED FROM THE CONTROLLER DURING CLEANING.** Disconnect the handpiece from the cord prior to sterilization.
  7. **STEAM STERILIZE** *MicroChoice* components per the instructions on page 56. **DO NOT** gas sterilize.
  8. **DISCONNECT** the Handpiece Lever Cover prior to cleaning and sterilization.
  9. **THOROUGHLY CLEAN THE DENTAL HEAD Attachments** by utilizing the Dental Head Cleaning Ring. **Do not attempt to clean the Angled Attachments in a similar manner.**
  10. **BE SURE TO WIPE UNDERSIDE** of the Footswitch to ensure that no metal objects have attached themselves to the Footswitch.
- 
- 

**Cleaning Instructions:**

1. It is recommended that the Handpiece Cord remain attached to the handpiece during cleaning. Remove prior to sterilization.
2. Thoroughly scrub the handpiece and attachments/ accessories with a soft brush and mild detergent. Remove all traces of blood and debris.



3. Keeping the nose of the handpiece pointed downward, rinse under running water.





4. To dry, wipe surfaces with a clean, lint-free towel.

5. It is best to use burs and blades only once. However, if burs or blades are reused, clean cutting surfaces with a wire brush and mild detergent. Be certain that all surfaces are free of debris. Rinse with running water. Check burs and blades for dull or chipped surfaces.



6. To clean the cannulated section of Wiredrivers:

- \* Remove the wire guard.
- \* Feed the wire end of the cleaning brush through the back of the handpiece.
- \* Pull the brush through the handpiece. Repeat until debris is removed.



7. For care, cleaning, lubrication and maintenance instructions of bur guards and attachments/accessories, check the package instruction sheet that accompanies the attachment/accessory. If the instruction sheet cannot be located, contact Hall® Surgical for information concerning these issues. Replacement instruction sheet(s) are available.



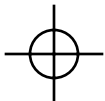
## STERILIZATION RECOMMENDATIONS

### Handpiece Sterilization Recommendations:

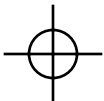
The *MicroChoice*<sup>™</sup> System and attachments may be processed in a pre-vacuum steam sterilizer. Place the handpieces in an instrument tray or a fully perforated, wrapped container. Four *MicroChoice* Sterilization Trays are available for this purpose. The recommended exposure time for pre-vacuum steam sterilization is:

#### Steam Pre-Vacuum

1. Set temperature and corresponding exposure time:



<u>Temperature</u>	<u>Exposure Time</u>
270° - 272 °F (132° - 133 °C)	4 minutes



Drying cycle of **EIGHT** (8) minutes minimum.

Where a pre-vacuum steam sterilizer is not available, a gravity (downward) displacement unit may be used. Employ the following recommended exposure times:

#### Steam Gravity

1. Set temperature and corresponding exposure time:

<u>Temperature</u>	<u>Exposure Time</u>
270° - 272 °F (132° - 133 °C)	15 minutes*
250° - 254 °F (121° - 123 °C)	60 minutes*

2. Set drying time for **EIGHT** (8) minutes minimum.

\* For Sterilization Containers with filters add **FIVE** (5) minutes to Gravity Cycle.



**MicroChoice™ Kit Configuration Sterilization Parameters:**

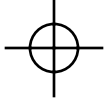
The recommended exposure time for pre-vacuum steam sterilization of a *Microchoice* System Kit is:

Steam Pre-Vacuum

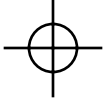
1. Set temperature and corresponding exposure time:

<u>Temperature</u>	<u>Exposure Time</u>
270° - 272°F (132° - 133°C)	4 minutes

Drying cycle of **EIGHT** (8) minutes minimum.



Where a pre-vacuum steam sterilizer is not available, a gravity (downward) displacement unit may be used. Employ the following recommended exposure times:



Steam Gravity

1. Set temperature and corresponding exposure time:

<u>Temperature</u>	<u>Exposure Time</u>
270° - 272°F (132° - 133°C)	45 minutes*
250° - 252°F (121° - 122°C)	100 minutes*

2. Set drying time for **EIGHT** (8) minutes minimum.

\* For Sterilization Containers with filters add **FIVE** (5) minutes to Gravity Cycle.

Steam sterilization has no contraindications for its use in sterilizing Hall® Powered Surgical Handpieces, attachments/accessories, burs and blades.

**DO NOT** use Ethylene Oxide sterilization.

**DO NOT** immerse in liquid to cool. Cool by exposure to room temperature.

**DO NOT** run handpieces while warm. Allow adequate time for handpiece cooling prior to surgery.

**ALWAYS** sterilize the High Speed and Medium Speed Drills with the collet mechanism in the "Open" position.

**NEVER CLEAN** a handpiece in an Ultrasonic Cleaner or **STERILIZE** a handpiece in a Washer/Sterilizer, Steris System or Sterrad System.

**ALWAYS** lubricate the 20°, 70°, 90°, Modular Wiredriver and Low Speed attachments prior to sterilization. Pana Spray 1375-037 is recommended.



**DO NOT STERILIZE CONTROLLER OR IRRIGATION CORD.**

**DO NOT** "Peel Pack" handpieces or attachments for sterilization. Sterilization in a sealed pouch traps moisture which can cause damage.

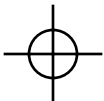
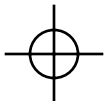


## HALL<sup>®</sup> SURGICAL INSTRUMENT WARRANTY

Hall Surgical, Linvatec Corporation, a division of Zimmer ("Hall Surgical"), warrants to the first purchaser or lessee ("Customer") that the instrument and parts ("Instruments") have been tested, inspected, and shipped in proper working order, free of visible defects.

Hall Surgical warrants all new Instruments to be free from defects in materials and workmanship for the following periods after the date of shipment from the factory:

1. Powered surgical equipment - One (1) Year.
2. Cords and hoses - Six (6) months.
3. Batteries - Three (3) months.
4. Burs, blades and Z-Wires<sup>®</sup> - Upon delivery to Customer.



All parts replaced under these limited warranties shall become the property of Hall Surgical.

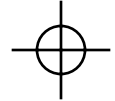
Hall Surgical warrants that any service or repair work done by Hall Surgical shall be free from defects in materials and workmanship for a period of six (6) months after the date of shipment back to the customer. This limited warranty applies only to the actual work performed by Hall Surgical service representatives. Hall Surgical warrants that all parts used in the repair or service of instruments meet new part functional specifications although some parts or assemblies may have been reconditioned. All parts replaced under these limited warranties shall become the property of Hall Surgical.

If upon inspection within the specified warranty period (or within a reasonable time after delivery in the case of burs and blades), the Customer discovers that an Instrument has a defect in material or workmanship, it must promptly notify Hall Surgical in writing. Within a reasonable time after such a notification, Hall Surgical shall correct any defect by providing, at its option, either repair service, a replacement unit or a refund of the purchase price. These remedies are the Customer's exclusive remedies for breach of warranty.



The foregoing limited warranties do not apply to the following:

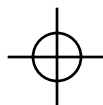
1. Instruments which have in any way been tampered with, altered or misused.
2. Instruments used with other than Hall Surgical authorized accessories and attachments.
3. Instruments, including components or parts, not manufactured by Hall Surgical.
4. Instruments used for purposes other than those for which they were designed, including use in any way inconsistent with the instructions and warnings contained in Hall Surgical instructions manuals.
5. Damage caused by unauthorized accessories, attachments, modifications, or use of Instruments in any way inconsistent with instructions or warnings contained in Hall Surgical instruction manuals.
6. Any other abuse or misuse by the Customer.



**The foregoing limited warranties are in lieu of all other warranties, expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.**

In no case shall Hall Surgical be liable for any special, incidental or consequential damages based upon breach of warranty or any other legal theory.

This equipment is available with an extended three (3) year warranty. See your Hall Surgical Representative for details.





**TECHNICAL SPECIFICATIONS**  
**MICROCHOICE™ SYSTEM**


Controllers: 5020-020 and 5020-040  
5020-Series Handpieces and accessories.  
(5040-Series Micro E® handpieces may also be used with 5020-020 or  
5020-040 Controllers.)

**Power Requirements, (Mains)**

5020-020	100-120 VAC, 50-60~Hz, 2.5 A
5020-040	220-240 VAC, 50~Hz, 1.2 A

**Protection Classifications:** (5020-040 only) Designed for Patient Applied, continuous operation with intermittent loading; IEC 601-1; Class 1, Type B.

**MicroChoice Duty Cycles:**



**Controller:** 25% duty cycle. Designed to operate at its rated maximum load for a time period of 2 minutes ON, with a ramp-down time of 6 minutes OFF

**High Speed Drill:** 25% duty cycle; 2 minutes ON, 6 minutes OFF

**Medium Speed Drill:** 50% duty cycle; 2 minutes ON, 2 minutes OFF

**Low Speed Drill**

**Drill Head:** 25% duty cycle, 2 minutes ON, 6 minutes OFF

**Screw/Tap Head:** 100% duty cycle

**Modular Handpiece:** 100% duty cycle

**Reciprocating Saw:** 4 cycles of 30 seconds ON/OFF, then rest 30 minutes

**Sagittal Saw:** 4 cycles of 60 seconds ON/30 seconds OFF, then rest 30 minutes

**Oscillating Saw:** 4 cycles of 30 seconds ON/OFF, then rest 30 minutes

**Fuses:** 5020-020, T 3.15 A, 250 V  
5020-040, T 2.0 A, 250 V

**Output:** 3 phase motor drive and control circuits.

**Physiological effects:** Handpieces: Cutting, drilling of bone.

**Cooling:** Convection cooling, do not cover.

**Mounting:** Table top or custom pole mount. Four non-slip feet.

**Protective Packing:** Use original packing when shipping.

**Protective Grounding:** All models use ground protection. Use only with grounded line or mains supply and medical grade cord set (5039-003 AC Power Cord).

**Voltage Selection Means:** Each Controller is factory pre-set for a specific voltage range. Make sure you have the correct setting for your local line (mains) supply. However, should there ever be a need for changing this requirement, the following instructions should be utilized:

1. Turn power off, and disconnect the main power cord.
2. Remove the fuse holder.

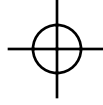


3. The voltage regulator can then be removed, rotated, and reinserted with the correct selection. The voltage selected will be displayed through the opening in the fuse holder.



**Control Panel Features:** A digital display on the front panel of the Controller provides information on handpiece type in use, handpiece speeds, and control system malfunctions. This display, in conjunction with a Mode Select Button on the Handpiece Cord, is also used to change menu selectable features described on pages 38 through 48 of this manual. Read these pages for a full explanation of how to set menu selectable features prior to placing the system in use.





### **Technical information for Service:**

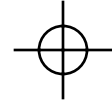
No parts of this system are serviceable except by Hall® Surgical or authorized service centers. Do not attempt to open the unit or make any repairs, this could render the unit unsafe.

Environmental Conditions: Storage: -40 to +50°C, 10 to 100% non-condensing humidity, atmospheric pressure 500 to 1060 millibars.

**Operational:** 0 to 30°C, 0 to 100% non-condensing humidity, atmospheric pressure 500 to 1060 millibars.

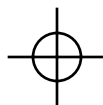
### **System Functional Summary Description:**

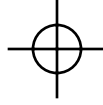
The *MicroChoice* Controller provides power to a series of small-bone surgical tools which can be used to cut, drill and shape bone. The Controller can supply power for only one handpiece at a time. A complete system consists of a Controller, handpieces (listed in this manual), an Irrigation System, and a Footswitch.



## **CALIBRATION**

The *MicroChoice* System is calibrated at the factory. No additional calibration is required unless the Controller is serviced or updated. If the Controller displays “**CALIBRATE?**”, the calibration prompt was inadvertently activated. No further operator action is required. The system will automatically return to operating status.





## RECEIVING/PERIODIC INSPECTION

Read the user section of this manual to assure yourself that you understand the *MicroChoice*<sup>™</sup> safety features. Periodic inspections should be performed at least every six months to ensure safe and proper operation.

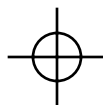
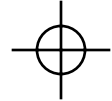
### Chassis Inspection:

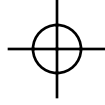
Before shipment, this unit was inspected and found to be free of mechanical and electrical defects. Our equipment is shipped using quality, custom packing materials; however, it is possible for mechanical damage to occur from shock and vibration during transit.

Unpacking: After removing external wrappings, carefully remove the Controller and Power Cord, if supplied. Examine the unit for any damage that may have occurred. Carefully inspect all exterior components, surfaces and corners for signs of physical abuse.

If signs of damage are observed, immediately file a claim with the transporting agency and notify your Hall Surgical Representative or Customer Service. Do not attempt to use the unit if any damage has occurred, and do not return the unit until the carrier has inspected it and you have received authorization, then pack the unit carefully and return via air freight, prepaid.

Any unit that has been dropped should be disassembled and checked internally by a qualified technician to verify that no components or hardware have been damaged.

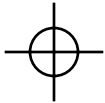




### **Mechanical Inspection:**

1. Check that your local mains input voltage and cycle frequency match the rating label on the back of the Controller.
2. Inspect the power cable; verify that the insulation is intact and that there are no sharp bends or kinks. Damaged cables should be replaced.
3. Ensure that the handpiece and Footswitch cables and connectors are in good condition; no cracked insulation or bent pins.
4. Ensure that the Handpiece, Irrigation and Footswitch receptacles are clean and not showing excessive wear.

Before putting the Controller into use, a low frequency leakage test and ground bond test should be performed by a qualified technician.



### **Low Frequency Leakage Test**

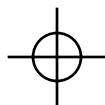
The purpose of this test is to measure the amount of 50/60 cycle leakage from the transformer primary to the circuitry of the instrument. The AC leakage from any exposed metal part to earth ground and from all exposed metal parts having a return to chassis must not exceed 300 $\mu$ a.

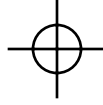
Test Equipment Required:

Bio-Tek Instrument, Model 501 or equivalent.

Procedure:

1. Assure the power cord is plugged into the rear of the Controller. Plug the Controller power cord into the Bio-Tek instrument test receptacle and the Bio-Tek instrument into a 120 VAC receptacle.
2. Turn Controller ON and allow to warm up a minimum of two (2) minutes.





3. Measure the leakage current as follows (300µa maximum):

Drive Power Switch	Ground Switch	Polarity Switch
ON	Closed	Normal
ON	Open	Normal
ON	Closed	Reversed
ON	Open	Reversed

4. Turn the Controller and test equipment off. Disconnect all test equipment from the Controller.
5. If leakage exceeds limits, unit may have faulty line cord or power transformer and should not be placed into service until the problem has been resolved.

#### **Ground Bond Test**

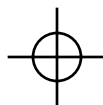
The purpose of this test is to check the continuity of the ground bond from the power plug to the chassis.

Test Equipment Required:

Multimeter capable of measuring less than 0.1 ohm

Procedure:

1. Set the multimeter to the lowest ohms range. Connect the test leads to each other and zero the instrument.
2. With the Controller unplugged from the AC power source, connect one test lead to chassis ground and the other test lead to the power cord ground pin. Measure the resistance value. The meter should measure less than 0.1 ohm.
3. If the reading obtained is greater than 0.1 ohm, the line cord or chassis wiring may be damaged. The unit should not be placed into service until the source of the problem is determined and corrected.

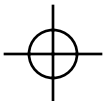
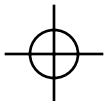




**MICROCHOICE™ SYSTEM HANDPIECES AND  
ATTACHMENTS/ACCESSORIES**

**Product Numbers**

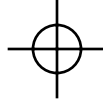
**Description**



5020-020	<i>MicroChoice</i> Controller with AC cord and Handpiece cord
5020-040	<i>MicroChoice</i> Controller (220-240 VAC) with Power cord and Handpiece cord
5020-021	Medium Speed Drill
5020-022	Sagittal Saw
5020-023	Reciprocating Saw
5020-024	Oscillating Saw
5020-025	High Speed Drill
5020-026	Low Speed Drill
5020-027	Wiredriver/Fixation Handpiece
5020-028	Wiredriver Attachment
5020-029	Universal Drill Attachment
5020-030	5/32" Jacobs Chuck Attachment w/key
5020-031	High Torque Jacobs Chuck Attachment w/key
5020-032	Pin Driver Attachment
5020-033	Pencil Grip Wiredriver
5020-053	<i>MicroChoice</i> Footswitch
5020-054	<i>MicroChoice</i> Controller Stand

**Kits**

5020-049	<i>MicroChoice</i> Trauma Kit
5020-050	<i>MicroChoice</i> System Kit
5020-051	<i>MicroChoice</i> Oral Kit
5020-052	<i>MicroChoice</i> Implant Kit

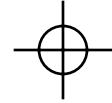


**Product Numbers**

**Description**

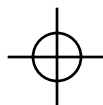
**Guards & Attachments**

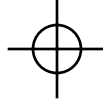
1375-003	Bur Changer
1375-037	Pana Spray
5020-034	Dental Implant Drill Head
5020-035	Dental Implant Screw/Tap Head
5020-060	Medium Bur Guard
5020-061	Long Bur Guard
5020-062	Extra Long Bur Guard
5020-063	20° Angle Attachment
5020-064	XL 20° Angle Attachment
5020-065	70° Contra Angle Attachment w/Surgical Head
5020-066	90° Angle Attachment
5020-067	Laminectomy Guard
5020-068	Tissue Retractor Guard
5020-069	70° Contra Angle Attachment w/Dental Head
5020-074	Dental Attachment Cleaning Ring
5020-075	Low Speed Attachment Wrench



**Sterilization Trays**

5020-091	Sterilization Tray - System Kit
5020-092	Sterilization Tray - Oral Kit
5020-093	Sterilization Tray - Dental Kit
5020-094	Sterilization Tray - Trauma Kit



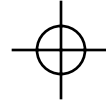


**Product Numbers**

**Description**

**Irrigation Accessories**

5040-039	Irrigation Pump
5040-239	Irrigation Pump (220-240 VAC)
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
5040-205	Reusable Sagittal Saw Tip
5040-206	Reusable Oscillating Saw Tip
5040-207	Reusable Reciprocating Saw Tip
5040-208	Reusable XL Bur Tip
5040-219	Disposable Universal Irrigation Tip
5040-220	Disposable Medium Bur Tip
5040-222	Disposable Long Bur Tip
5040-228	Disposable XL Bur Tip

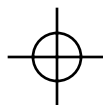


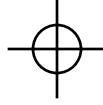
**Irrigation Tubing**

5040-120	Disposable Tubing Set
5040-128	Reusable Y Tubing Set
5040-129	Reusable Tubing Set

**Cords**

5020-048	Micro E <sup>®</sup> to <i>MicroChoice</i> <sup>™</sup> Controller Cord
5020-055	Irrigation System Cord
5020-056	Handpiece Cord
5039-003	AC Power Cord





**Product Numbers**

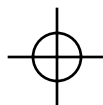
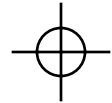
**Description**

**Levers**

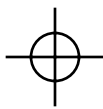
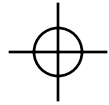
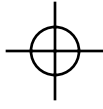
5020-058	Handpiece Replacement Lever
5020-059	XL Handpiece Lever
5020-070	Handpiece Lever Cover

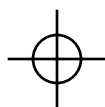
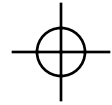
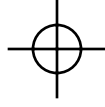
**Miscellaneous**

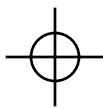
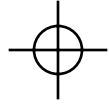
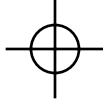
0999-053	Replacement Chuck Key
1375-015	Bur Cleaning Brush
5020-057	Replacement Safe Slide
5053-008	Bur Rack
5053-123	Wire Guard
5053-124	Cleaning Brush





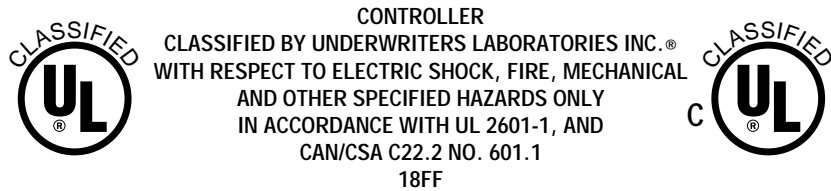






**Safety Agency Testing:** The *MicroChoice*<sup>™</sup> Controller and electrical accessories have been inspected, tested and certified and are in compliance with the applicable requirements of the Standard for Medical Electrical Equipment, UL2601-1 and CSA601.1.

The Controller has been tested and has demonstrated protection against SAFETY HAZARDS caused by spillage per IEC 601-1, section 44.3 and UL 2601-1, section 44.3.



Hall<sup>®</sup> Surgical  
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