Please read this manual and follow its instructions carefully. The words WARNING, CAUTION and NOTE carry special meanings and should be carefully reviewed.

WARNING: The personal safety of the patient may be involved. Disregarding this information could result in injury to the patient.

CAUTION: These instructions point out special service procedures or precautions that must be followed to avoid damaging the instrument.

NOTE: This provides special information to make maintenance easier or important instructions clearer.
Versatility and performance best describe Stryker’s Command MicroElectric System*. A single console powers a wide range of saws and drills for most office or operating room procedures. The addition of the Command Wire and Pin Driver is the most recent touch to the most complete system available. Best of all, each of the handpieces afford the highest level of precision and power for a fast, accurate cut.

*Patents Pending.

(1) CONTROL CONSOLE
   (1A) Power switch - light illuminates to indicate system operation.
   (1B) Footswitch and Handpiece connectors - lights illuminate to indicate component electrical connection.
   (1C) Speed control - provides variable maximum speed setting ability. Scaled increments are percentages of maximum handpiece speed.

(2) FOOTSWITCHES
   (2A) Bidirectional Footswitch - provides forward and reverse operational modes.
   (2B) Unidirectional Footswitch - provides forward only operational mode.

(3) HANDSWITCH - slide bar can be adjusted to any position along length of handpiece by pushing slide bar forward or pulling it backward past its normal travel points.

(4) HANDPIECE CABLE - used in conjunction with footswitch. Not necessary when handswitch is used.

(5) HANDPIECES - compact design allows visibility and precise control.
   (5A) Sagittal Saw, (5B) Reciprocating Saw, (5C) Oscillating Saw, (5D) 40K and 100K Straight Drills, (5E) Low and High Speed Contra Angle Drills, (5F) Wire and Pin Driver.

(6) IRRIGATION TUBING - provides irrigation during surgical procedures. Choice of disposable PVC or reusable silicone tubing sets (not shown).

(7) IRRIGATION TIPS - used with irrigation tubing sets (not shown).

(8) PINCH VALVE ACCESSORY - used for ON/OFF irrigation flow control (not shown).

For a complete list of system accessories refer to product brochure.

WARNING: Read and understand the information in this manual. Familiarization with MicroElectric System prior to use is also important. For further information contact your Stryker representative.
WARNING: Prior to use, system components should be operated and inspected for any damage. DO NOT use if damage is apparent.

1. Plug console into wall outlet.
2. Attach handpiece to handpiece cable or handswitch.
3. Connect footswitch and handpiece cable, or handswitch cable, to appropriate console inputs.
4. Insert blade or bur of choice into handpiece.

WARNING: Use only Stryker approved accessories for each handpiece.

5. Turn console on.
6. Set maximum handpiece speed with touch control on console. Scale increments are percentage of maximum handpiece speed.

   NOTE: Maximum speed setting on console must at least be in "10%" position for system operation.

CAUTION: DO NOT stall instruments. This may damage system.

CAUTION: DO NOT modify accessory for use in handpiece.

WARNING: DO NOT attempt to change accessory while handpiece is running.

WARNING: Excessive pressure, such as bending and prying, may cause accessory to bend or break and cause harm to patient and operating room staff.

CAUTION: DO NOT pick up handpieces by cable. Damage to handpiece or cable may result.

CAUTION: These are PUSH/PULL connectors. DO NOT thread or twist for insertion or removal.

CONSOLE/CABLE CONNECTION

1. Align connector orientation marks.
2. Gently PUSH connectors together.
3. Remove by grasping connector and pulling. DO NOT pull on cable.

HANDPIECE/CABLE CONNECTION

1. Rotate handpiece collar fully counterclockwise. See Figure 2.
2. Align orientation mark of handpiece with orientation mark of cable connector or handswitch. See Figure 3.
3. Gently PUSH connectors together. DO NOT twist.
4. Rotate handpiece collar clockwise to secure.

Figure 2

Figure 3
CAUTION: These are PUSH/PULL connectors. DO NOT thread or twist for insertion or removal.

1. Rotate handpiece collar fully counterclockwise. See Figure 4.
2. Align orientation mark of handpiece with orientation mark of hand-switch. See Figure 5.
3. Gently PUSH connectors together. DO NOT twist.
4. Rotate handpiece collar clockwise to secure.
5. Handswitch slide bar position on handpiece can be adjusted by pushing slide bar forward or pulling backward past its normal travel points.

NOTE: Position handswitch slide bar prior to connection to console.

6. Plug other end of handswitch cable into console outlet marked "handpiece".
7. Align connector orientation marks. DO NOT thread or twist for insertion or removal.
8. Gently PUSH connectors together.
9. Regulate handpiece speed from zero to maximum set on console by pulling back on handswitch slide bar. See Figure 6.
10. Remove by grasping the connector and pulling. Do NOT pull on cable.

1. Plug footswitch cable into console outlet marked "footswitch".
2. Align connector orientation marks.
3. Gently PUSH connectors together.

CAUTION: DO NOT pick up footswitch by cable. Damage to cable may result.

4. Regulate handpiece speed from zero to maximum setting on console by depressing footswitch pedal.
5. Remove by grasping connector and pulling apart. DO NOT pull on cable.

NOTE: Stryker Part No. 296-8 Bidirectional Footswitch may also be used for drills.

- Bidirectional footswitch allows handpiece to operate in both forward and reverse modes.
- Right half of footswitch allows handpiece to operate in forward direction. NOTE: Green "forward" light will turn on when forward mode is in operation and console is turned on.
- Left half of footswitch allows handpiece to operate in reverse direction. NOTE: Red "reverse" light will turn on when reverse mode is in operation and console is turned on.
OSCILLATING SAW
Flat Blade Attachment

1. Loosen blade retaining screw with allen wrench, Stryker Part No. 1322. See Figure 7.
2. Insert Blade. Orient blade slot to interlock onto retaining screw. See Figure 8.

CAUTION: Blade must be fully seated against screw.

3. Tighten blade retaining screw firmly with allen wrench. See Figure 7.

Intra-oral Blade Attachment

1. Remove blade retaining screws with allen wrench, Stryker Part No. 1322. See Figure 7.

NOTE: Save retaining screw for use with flat blades.

2. Attach blade. Hand tighten and then firmly tighten with allen wrench. See Figure 9.

SAGITTAL SAW
Blade Attachment

1. Loosen thumbscrew. See Figure 10.
2. Insert blade into nose of saw. Orient blade slot to straddle drive shaft. See Figure 11.

CAUTION: Blade must be fully seated against pivot pin.

3. Tighten thumbscrew firmly. See Figure 12.

CAUTION: Do not substitute a steel set screw that requires an allen wrench to retain the blade. To do so may subject the nose of the instrument to excessive force and potential damage.

4. An additional thumbscrew has been provided in the event that the original screw becomes lost or damaged.
RECPROCATING SAW
Blade and Rasp Attachment

1. Loosen locking nut, turn counter-clockwise. See Figure 13.
2. Insert blade or rasp. Twist until seated. Turn locking nut clockwise to tighten.

NOTE: Special orientation of blade or rasp is not required.

3. Tighten firmly.

Figure 13
STRAIGHT DRILLS
Bur Attachment

WARNING: Use only Stryker approved burs for each handpiece. DO NOT modify any burs to fit handpieces.

1. Twist lock collar to left until orientation marks line up. See Figure 14.
2. Insert bur of choice into handpiece.
   A.) When using Stryker 40K Straight Drill, select any Stryker J-notched bur. See Figure 15.
   B.) When using Stryker 100K Straight Drill, select only Stryker flat shank burs. See Figure 15.
3. Twist bur or handpiece until bur is seated.

WARNING: It is important that bur be fully seated in Stryker 100K Straight Drill before use. Each bur is marked with a "safety" line. If line is visible, bur is NOT fully seated.

4. Return lock collar to lock position. Orientation marks will now line up as shown in Figure 14.
5. Pull on bur gently to insure that it is properly locked in place.

BUR GUARD

1. Slip Bur guard over the distal tip of the 100K Straight Drill and twist. See Figure 16.
2. Bur Guard is in position when the lip snaps into the groove located on handpiece.
3. Insert bur as described under Straight Drills above.

WARNING: Bur Guard must be used with long series burs to reduce overheating of the distal tip of the 100K handpiece. Overheating could result in burns to patient.

CONTRA ANGLE DRILLS
Head Attachment

CAUTION: DO NOT attempt to attach contra angle head while motor is running.

1. Twist lock collar of handpiece open and hold in place. See Figure 17.
2. Insert contra angle head into handpiece. Line flanges of head with grooves of handpiece lock collar.
3. Release lock collar to lock position. Pull on head to insure proper attachment.

NOTE: 296-18 Contra Angle Drill, high speed ONLY. Head position adjustments can be made after attachment by twisting handpiece at neck.

NOTE: Heads are color coded for identification
Green - Reduction 10:1
Blue - Transition 1:1

WARNING: 10:1 head (296-17-40) is to be used in the Low Speed Contra Angle Drill (296-17) only.
Bur Attachment

WARNING: Use only Stryker approved burs for each handpiece. DO NOT modify any bur to fit the handpieces.

1. Push bur latch to right to open. See Figure 18.
2. Insert any R.A. (right angle) dental bur into handpiece.
3. Twist bur until seated.
4. Return bur latch to center lock position.
5. Pull on bur to insure that it is properly locked.

WARNING: When using large diameter dental implant reamers, trephines or cannon burs in the 296-18 Contra Angle Drill, DO NOT exceed speeds greater than 10,000 RPM.

Follow Sterile Procedures.

1. Attach irrigation tip to tubing set.
2. Attach irrigation tip to handpiece.
   A.) External irrigation tips may be positioned along neck of handpiece as required.
   B.) Internal irrigation tip secures onto bur latch of contra head.
3. Attach tubing set to handpiece and cable with handpiece and cable clips.

CAUTION: Only silicone tubing set may be assembled onto handpiece and cable prior to system sterilization.
There are two recommended methods for providing delivery or irrigation:

- Gravity
- Syringe

1. Install pinch valve assembly. See Figure 22.
2. Align pinch valve connector with console connector and push together.
3. Install screws.
4. Handswitch or footswitch activation actuates pinch valve allowing irrigation flow.
5. Actuate pinch valve and insert irrigation tubing. See Figure 23.

NOTE: Stretch tubing to assist installation.

6. Turn console off to avoid inadvertent irrigation.
7. Spike irrigation source.
8. Regulate flow rate of irrigation by adjusting height of irrigation source.

NOTE: A height of 3 feet above surgical site will provide 1.2 PSI of water pressure.

1. Attach irrigation tip of choice to handpiece.
2. Attach any 1/32" (0.8mm) OD tubing to irrigation tip.
3. Connect other end of tubing to a prefilled syringe.
4. Irrigate surgical site as required by depressing syringe plunger.
Note the following features on the Wire and Pin Driver: See Figure 24.

**Wire Advance Control:**
Squeezing this control holds the wire or pin in the instrument. Releasing it allows movement of the wire or pin.
- Load the wire or pin into the nose of the collet or back cap of instrument.
- Squeeze the Wire Advance Control against the instrument to hold the wire at the desired length exposed in the end of the instrument.

**Trigger:**
Depress the trigger to run the instrument. The trigger is pressure sensitive for variable speed operation.

**Forward/Safe/Reverse Control:**
Instrument can be set at three positions.
- Reverse by turning control dial until the "R" clicks into position at the orientation line.
- Lock by aligning "Safe" with orientation line.
- Forward by turning control dial to align the "F" with the orientation line.

**WARNING:** Always put Wire and Pin Driver in "Safe" position to prevent inadvertent running of the instrument before attaching or removing any accessories or before passing the instrument to another person.

**Collet Release Button:**
Sliding this button in the direction of the arrow releases attached accessory.

**To Insert Collet and Chucks:**
Align flats on shaft with flats in bore of handpiece, rotate so J-slot in collet aligns with button located on top of instrument. Insert collet into handpiece until the collet "snaps" into position. See Figure 25.

**To Change Collets and Chucks:**
Disengage collet by sliding Collet Release Button on handpiece and withdraw collet from instrument.

**To Operate the Wire and Pin Driver:**
- Take the Forward/Safe/Reverse Control dial out of the "Safe" position.
- Squeeze the Wire Advance Control and hold it down.
- Holding the wire or pin against the bone, depress the trigger to drive the wire or pin.
- The instrument's pressure sensitive trigger allows variable speed operation.
- To obtain additional wire length for inserting, release the Wire Advance Control and pull back the instrument. Then squeeze the Wire Advance Control and the Trigger to drive more wire.
- To withdraw threaded pins, put the instrument in reverse, squeeze the Wire Advance Control and then depress the Trigger.
NOTE: The following table indicates the direction the Wire and Pin Driver turns based on the set-up of the instruments when using the Bidirectional Footswitch (296-8).

**Instrument Settings:**

<table>
<thead>
<tr>
<th>Wire and Pin Driver Setting</th>
<th>Footswitch Setting</th>
<th>Handpiece Actually Operates:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse</td>
<td>Reverse</td>
<td>Forward</td>
</tr>
<tr>
<td>Reverse</td>
<td>Forward</td>
<td>Reverse</td>
</tr>
<tr>
<td>Forward</td>
<td>Reverse</td>
<td>Reverse</td>
</tr>
<tr>
<td>Forward</td>
<td>Forward</td>
<td>Forward</td>
</tr>
<tr>
<td>Safe</td>
<td>Forward</td>
<td>Forward</td>
</tr>
<tr>
<td>Safe</td>
<td>Reverse</td>
<td>Reverse</td>
</tr>
</tbody>
</table>

- **Wire Collet** (included with instrument) (296-80-62). This holds K-wires having diameters from .028" through .071" (0.71mm through 1.80mm).

- **Pin Collet** (296-80-125). This optional collet holds pins having diameters from .078" through .125" (1.98mm through 3.18mm).

- **5/32" Jacobs Chuck** (296-80-131) manages wires, pins and drill bits up to 5/32" (4mm) diameter.

- **Synthes Chuck** (296-80-110) accepts all Synthes drill bits, taps and automatic screwdrivers with the appropriate snap-lock shank.

- **Trinkle Chuck** (296-80-112) accepts drill bits and automatic screwdrivers with Trinkle fitting.

- **Sagittal Saw Head Attachment** (296-80-134) accepts a variety of Stryker Precision Thin Blades. Four blade angles provide control and visibility.

- **Wire Guard** (296-80-119) Optional Wire Guard protects against wire whip. (Not Shown).
CAUTION: DO NOT immerse handpieces, console, footswitch, or power cord.

CAUTION: DO NOT use solvents, lubricants, or other chemicals, unless specified otherwise.

HANDPIECE AND ACCESSORIES

1. Wipe clean with a lint free-cloth, mild detergent, ivory soap, or surgical instrument cleaning solution and water. A stiff bristle brush may be used to remove debris from the distal end of the straight drills.

2. Use a lint-free cloth and sterile water to wipe away cleaning agent.

CAUTION: DO NOT allow water to run into electrical connections or into the distal end of the handpiece.

3. Dry with lint free towel. Pay special attention to electrical connections, avoid bending. If available, forced air drying is preferred.

CONSOLE

Console may be wiped down with standard disinfectant or mild detergent and water.

FOOTSWITCH

Wipe outside of footswitch with mild detergent and water.

BLADES AND RASPS

1. Clean with a mild detergent, ivory soap, or surgical instrument cleaning solution. A stiff bristle brush may be used. Pay particular attention to cleaning between cutting teeth.

2. Rinse with sterile water.

NOTE: Blades and rasps can be cleaned in an ultrasonic cleaner.

3. Dry with a lint-free towel. If available, forced air drying is preferred.

TUBING SETS

296-2-25 PVC Tubing Set is a sterile disposable intended for single use only. DO NOT resterilize or reuse.

296-2-20 Silicone Tubing Set:

1. Outside of tubing may be cleaned with mild detergent and water.

2. Rinse with sterile water.

3. Dry with lint-free towel. If available, forced air is preferred.
WARNING: System components should be operated and inspected for any damage. DO NOT use if damage is apparent.


Console, footswitch, handswitch and handpiece cable require no maintenance other than cleaning.

HANDPIECES

MicroElectric handpieces are permanently lubricated and no further lubrication is necessary as part of normal maintenance.

NOTE: Handpieces may be cooled by wrapping in sterilized damp sponge or cloth. DO NOT immerse handpiece to cool.

- Contra angle heads should be lubricated after final surgery only. Clean as recommended. Remove head from handpiece and spray with C.R.C. cleaner/lubricant, Stryker Part No. 1605-8. Wipe all parts clean.

BLADES AND RASPS

- The useful life of blades is significantly reduced if they are allowed to come into contact with each other and various objects in sterilization pans and trays.
- Inspect blade and rasp with care to confirm that it is not bent or cracked, that no teeth are missing, and that teeth are sharp.
- Check blades for wear before and after each use. See Worn Blade illustration, Figure 27.

WORN BLADE

- Blunted points and edges on teeth.
- Metal discoloration and staining may be present after extended autoclaving.

BURS

Carbide burs are intended for single use only. DO NOT reuse.

Stainless Steel Burs

- The useful life of burs is significantly reduced if they are allowed to come into contact with each other and various objects in sterilizing pans and trays.
- Under regular use - 15 minutes maximum bur life can be expected, and never more than 3-4 surgical procedures.
- Check burs for wear before and after each use. See Bur Wear Analysis Chart, Figure 29 and worn Bur illustration, Figure 28 on next page.
Figure 28

Worn Bur
- Blunted flutes (cutting edges)
- Pitting and nicks at bur head
- Stains and metal discoloration (not harmful in themselves, but indicative of a bur that has been used and autoclaved many times)

Figure 29: Bur Wear Analysis

PERIODIC MAINTENANCE SCHEDULE FOR SAWS, DRILL AND WIRE DRIVER

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>INTERVAL</th>
<th>TOOLS &amp; EQUIPMENT REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run handpiece for 1 minute to determine temperature. If the distal tip and body of the handpiece are uncomfortably hot to the touch (approximately 110°F), return the instrument for service.</td>
<td>3 Months</td>
<td>N/A</td>
</tr>
<tr>
<td>Check leakage current, ground impedance, and power draw to Page 21 specifications.</td>
<td>12 Months</td>
<td>True RMS digital multimeter and safety analyzer</td>
</tr>
</tbody>
</table>

Inspect handpiece to ascertain that it is in proper working order and that there are no loose or missing components. Check all moving parts for free movement. Use one (1) drop of lubricant, as necessary, to ensure free movement.

Test handpiece by assembling system and running. Attach power source and assemble the accessories, then operate. Be aware of unusual sounds or vibrations and note operating speed. Be conscious of any overheating of Micro handpieces at the distal end after 10-30 seconds of operation. If overheating occurs, return the instrument to Stryker for service.

Refer calibration and operating difficulties not detailed in this manual to your Stryker representative, distributor or Stryker Customer Service of the nearest subsidiary.

To ensure the longevity, performance, and safety of this equipment, package in original package materials when storing or transporting.
CAUTION: DO NOT sterilize console or footswitch.
CAUTION: DO NOT immerse console, footswitch, handpieces, or power cord.

HANDPIECES, CABLES, AND ACCESSORIES

WARNING: Contra angle heads and drills must be separate during sterilization.

"Flash" Autoclave:
- Gravity displacement sterilizer
- 270-272°F (132-134°C)
- Unwrapped in an instrument tray
- 10 minute minimum exposure

Hi-Vac:
- Pre-vacuumed sterilizer
- 270-272°F (132-134°C)
- Wrapped or Unwrapped
- 4 minute minimum exposure
- 8 minute minimum dry time

270°F Gravity:
- Gravity displacement sterilizer
- 270-272°F (132-134°C)
- Wrapped in an instrument tray or fully perforated sterilization box
- 35 minute minimum exposure time
- 8 minute minimum dry time

250°F Gravity:
- Gravity displacement sterilizer
- 250-254°F (121-123°C)
- Instruments wrapped in an instrument tray or fully perforated sterilization box
- 45 minute minimum exposure time
- 8 minute minimum dry time

ETO:
- 12% ETO, 88% Freon
- Wrapped in an instrument tray or fully perforated sterilization box
- 120-135°F (49-57°C)
- 1 hour 45 minute minimum exposure time
- 8 hour minimum aeration time

CAUTION: DO NOT leave handpieces in steam sterilizer, remove from sterilizer immediately after sterilization.

TUBING SET

296-2-25 PVC Tubing Set is a sterile disposable intended for single use only. DO NOT resterilize or reuse.

296-2-20 Silicone Tubing Set to be "Flash" autoclaved ONLY.

"Flash" Autoclave:
- Gravity displacement sterilizer
- 270-272°F (132-134°C)
- Unwrapped in an instrument tray
- 10 minute minimum exposure

* Validation based on HIMA-AORN protocol.
<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bur does not turn</td>
<td>Lock collar not in clockwise run position</td>
<td>Turn lock collar to clockwise position</td>
</tr>
<tr>
<td></td>
<td>User placing excessive pressure on bur by prying with it</td>
<td>Release pressure and allow handpiece and bur to do work</td>
</tr>
<tr>
<td>Blade does not oscillate or reciprocate</td>
<td>Blade not seated properly</td>
<td>Reseat blade</td>
</tr>
<tr>
<td></td>
<td>User placing excessive pressure on on blade by prying with it</td>
<td>Release pressure and allow handpiece and blade to do work</td>
</tr>
<tr>
<td>Pin/Wire does not drive</td>
<td>Wrong size collet</td>
<td>Select proper collet</td>
</tr>
<tr>
<td>Handpiece will not run</td>
<td>A.) Console power light is not on</td>
<td>Make sure power cord is fully seated</td>
</tr>
<tr>
<td></td>
<td>Power cord is not fully seated in wall socket or console</td>
<td>Replace power cord</td>
</tr>
<tr>
<td></td>
<td>Fuse is bad</td>
<td>Replace fuse</td>
</tr>
<tr>
<td></td>
<td>Power cord is bad</td>
<td>Replace power cord</td>
</tr>
<tr>
<td></td>
<td>B.) Handpiece light is not on or flashes</td>
<td>Make sure cable connector is fully seated</td>
</tr>
<tr>
<td></td>
<td>Handpiece connector not fully seated in handpiece or console</td>
<td>Replace cable</td>
</tr>
<tr>
<td></td>
<td>Cable is bad</td>
<td>Repair handpiece, see Page 25</td>
</tr>
<tr>
<td></td>
<td>Handpiece is bad</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C.) Footswitch light is not on</td>
<td>Make sure cable connector is fully seated</td>
</tr>
<tr>
<td></td>
<td>Cable connector not fully seated in console</td>
<td>Replace cable</td>
</tr>
<tr>
<td></td>
<td>Cable is bad</td>
<td>Replace cable</td>
</tr>
<tr>
<td></td>
<td>D.) Wire Driver will not operate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handpiece set in “Safe” position</td>
<td>Set to “F” or “R”</td>
</tr>
<tr>
<td>Handswitch will not operate</td>
<td>Footswitch is plugged into console</td>
<td>Remove footswitch, see Page 25</td>
</tr>
<tr>
<td></td>
<td>Cable is bad</td>
<td>Replace cable</td>
</tr>
<tr>
<td></td>
<td>Touch control on console is set too low</td>
<td>Set speed setting to at least “10%”</td>
</tr>
<tr>
<td></td>
<td>Handpiece is bad</td>
<td>Replace handpiece, see Page 25</td>
</tr>
<tr>
<td>Footswitch will not operate</td>
<td>Touch control on console is set too low</td>
<td>Set speed setting to at least “10%”</td>
</tr>
<tr>
<td></td>
<td>Footswitch is bad</td>
<td>Replace footswitch, see Page 25</td>
</tr>
</tbody>
</table>
1. Unplug console from the wall.
2. Unlatch the fuse door. You may need to press tab on door with a slender screwdriver to release latch.
3. Press tab on side of fuse holder and pull fuse holder from console.
4. Replace fuse.
5. Reinstall fuse holder.

CAUTION: To avoid the risk of fire, replace only with fuse rated as marked. See specifications, Page 21.
Please note the following WARNINGS:

- DO NOT modify ground of power cord.
- Explosion hazard. Do not use in the presence of flammable anesthetics.
- The Stryker MicroElectric system is designed to be used by persons familiar with small bone surgical procedures. Misuse may cause damage to both patient and system components. Prior to use, system components should be inspected for damage. DO NOT use if damage is apparent.
- Confirm that the MicroElectric System is set up for power system to be used (i.e., 115 VAC or 230 VAC).
- Heavy sideloads and/or long operating periods occasionally may cause overheating of the distal tip and the body of the Stryker MicroElectric handpieces to the point where the handpiece is uncomfortable to hold or could burn a patient.
- Bur Guard must be used with long series burs to reduce overheating of the distal tip of the 100K handpiece. Overheating could result in burns to patient.
- Excessive pressure, such as bending and prying with bur, may cause bur to bend or fracture. If a bent bur is operated at the high speed of a Stryker rotary handpiece, it is possible that the bur will bend yet further. This could result in damage to tissue in the surgical site; vibrating of the handpiece such that tactile control is lost; or breaking of the bur such that the broken piece would be ejected with a high velocity, thereby endangering the patient and O.R. staff.

The Stryker Command MicroElectric System utilizes electronic feedback to hold the saw speed constant with increasing load. As blade sideload increases in heavy cutting or with dull blades, the power to the saw is increased to keep the saw speed constant. As neither feedback speed, stabilization control nor the high power levels available in the Stryker command MicroElectric Saws are available in other micro pneumatic saws, caution should be exercised when becoming familiar with the Stryker 296-31, 296-34 and 296-37 saws.

During initial use of your Command MicroElectric Saws, monitor its heat response in relation to the type of surgical procedure you perform. Frequently check the distal tip and body until you are familiar with its temperature rise characteristics.

See Duty Cycle Pages 22-24 for safe operating specifications of Saws and Drills.
Model No. 296-7 Unidirectional Footswitch
Model No. 296-8 Bidirectional Footswitch

### Electrical:
- **Input:** 12.0VDC, 100mA
- **Output:** 6VDC to 11VDC

### Dimensions:
- 8.25 in. (210mm) Wide
- 5.50 in. (140mm) Deep
- 1.38 in. (35mm) High

---

Model No.: 296-2 Pinch Valve

### Electrical:
- **Input:** 12.0VDC, 200mA

### Dimensions:
- 3.5 in. (89mm) Long
- 1.75 in. (44mm) Square

### Weight:
- 0.70 lbs. (0.32 Kg)

---

Model No.: 2296-100 Straight Drill

### Size:
- 6.25 in. (159mm) Long
- 0.81 in. (21mm) Diameter

### Weight:
- 0.31 lbs. (0.15Kg)

### Speed:
- 100K RPM

---

Model No.: 296-18 High Speed Contra

### Size:
- 6.0 in. (152mm) Long
- 0.81 in. (21mm) Diameter

### Weight:
- 0.32 lbs. (0.15Kg)

### Speed:
- 40K RPM

---

Model No.: 296-10 Straight Drill

### Size:
- 7.13 in. (181mm) Long
- 0.81 in. (21mm) Diameter

### Weight:
- 0.41 lbs. (0.19 Kg)

### Speed:
- 40K RPM

---

Model No.: 296-17 Low Speed Contra

### Size:
- 6.0 in. (152mm) Long
- 0.81 in. (21mm) Diameter

### Weight:
- 0.32 lbs. (0.15Kg)

### Speed:
- 1.6K RPM

---

Model No.: 296-31 Oscillating Saw

### Size:
- 7.3 in. (188mm) Long
- 0.90 in. (23mm) Diameter

### Weight:
- 0.65 lbs. (0.29Kg)

### Speed:
- 19,500 CPM

### Excursion:
- 7" ARC

---

Model No.: 296-34 Sagittal Saw

### Size:
- 6.5 in. (165mm) Long
- 0.79 in. (20mm) Diameter

### Weight:
- 0.50 lbs. (0.23Kg)

### Speed:
- 23,000 CPM

### Excursion:
- 4.5" ARC

---

Model No.: 296-37 Reciprocating Saw

### Size:
- 7.5 in. (191mm) Long
- 0.90 in. (23mm) Diameter

### Weight:
- 0.55 lbs. (0.25Kg)

### Speed:
- 17,000 CPM

### Excursion:
- .106 in.

---

Model No.: 296-80 Wire and Pin Driver

### Size:
- 5.337 (135mm) High
- 1.020 (26mm) Wide
- 5.467 (139mm) Long

### Weight:
- 1.04lbs. (0.47Kg)

### Speed:
- 900 RPM
**All Consoles**

**Electrical:**
- Leakage Current: <=100 A
- Ground Impedance: <0.1 ohm @ 25.0A
- Secondary: 31 VAC @ 0.5A  
  17VAC @ 1.0A

**Dimensions:**
- 9.75 in. (250mm) wide
- 8.50 in. (216mm) Deep
- 6.25 in. (160mm) High

**Weight:**
- 9.21 lbs. (4.17Kg)

**Model No.: 296-1-2 Console**

**Electrical:**
- Primary: 120VAC 50/60Hz 1.6/1.5A
- Fuse: 2.0A 3AG 250V Slo-Blo

**Approvals:**
- Canadian Standards Association approved
- ETL Testing Laboratories approved

**Model No.: 296-102-1 Console**

**Electrical:**
- Primary: 100VAC 50/60Hz 1.5/1.4A
- Fuse: 2.0A 3AG 250V Slo-Blo

**Model No.: 296-220-2 Console**

**Electrical:**
- Primary: 220VAC 50/60Hz 0.8/0.75A
- Fuse: 1.0A 3AG 250V Slo-Blo

**CLASS 1 EQUIPMENT:**

Equipment in which the protection against electric shock does not rely on Basic Insulation only, but which includes an additional safety precaution in such a way that means are provided for the connection of Accessible Conductive Parts to Protective (Earth) Conductor in the fixed wiring of the installation in such a way that Accessible Conductive Parts cannot become live in the event of a failure of the Basic Insulation.

**TYPE B EQUIPMENT:**

Equipment that provides an adequate degree of protection against electric shock, particularly regarding:

<table>
<thead>
<tr>
<th>Allowable Leakage Current: (in Milliamperes)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Path</td>
<td>N.C.</td>
</tr>
<tr>
<td>Earth Leakage Current</td>
<td>0.5</td>
</tr>
<tr>
<td>Enclosure Leakage Current</td>
<td>0.1</td>
</tr>
<tr>
<td>Patient Leakage Current</td>
<td>0.1</td>
</tr>
<tr>
<td>Patient Auxiliary Current</td>
<td>0.01</td>
</tr>
</tbody>
</table>

N.C. Normal Condition  
S.F.C. Single Fault Condition

Type B Equipment is suitable for intentional external and internal application to the patient excluding Direct Cardiac Application.

Reliability of Protective Earth Connection: (<0.2 ohm @ 25.0A).

**Note:** Specifications listed are approximate and may vary slightly from unit to unit or by power supply fluctuations.
Stryker Corporation accepts full responsibility for the effects on safety, reliability, and performance of this equipment only if:

- Assembly operations, extensions, re-adjustments, modifications, or repairs are carried out by persons authorized by Stryker Corporation.
- The electrical installation of the relevant room complies with the IEC requirements.
- The equipment is used in accordance with the instructions for use.

**SYMBOL DEFINITION**

- **A lightning bolt within a triangle** is intended to alert service personnel of the presence of high voltage, that may cause injury or fatal electrical shock.
- **An exclamation point within a triangle** is intended to alert the user to the presence of important operating and maintenance (service instructions) in the literature accompanying the product.

**DUTY CYCLE (SAWS)**

**CAUTION:** Based on these specifications listed below, the Stryker Surgical Division recommends the following duty cycle to ensure safe handpiece operating temperatures.

<table>
<thead>
<tr>
<th>Cycle Time</th>
<th>Cycle Frequency</th>
<th>Break Between Cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>On 20 sec.</td>
<td>Off 20 sec.</td>
<td>4</td>
</tr>
</tbody>
</table>

The following standards have been established by the various approval agencies as guidelines for handpiece temperature tolerances.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Temperature</th>
<th>Material</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Standards</td>
<td>140 F-60°C</td>
<td>Metal</td>
<td>Intermittent User Contact</td>
</tr>
<tr>
<td>Underwriters Laboratories</td>
<td>122 F-50°C</td>
<td>Metal</td>
<td>Casual Patient Contact</td>
</tr>
<tr>
<td>International Electrotechnical Com-</td>
<td>131 F-55°C</td>
<td>Metal</td>
<td>Continuously Held by User</td>
</tr>
</tbody>
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<th>Cycle Frequency</th>
<th>Break Between Cycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>On 20 sec.</td>
<td>Off 20 sec.</td>
<td>x10</td>
</tr>
</tbody>
</table>

The following standards have been established by the various approval agencies as guidelines for handpiece temperature tolerances.

<table>
<thead>
<tr>
<th>Agency</th>
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<td>131°F-55°C</td>
<td>Metal</td>
<td>Continuously Held by User</td>
</tr>
</tbody>
</table>

**HANDPIECE (DRILLS)**

<table>
<thead>
<tr>
<th>Handpiece</th>
<th>Max RPM*</th>
<th>Bur Lock Style</th>
<th>Irrg Tip Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>296-10 Straight Drill</td>
<td>40,000</td>
<td>J-Notch</td>
<td>External</td>
</tr>
<tr>
<td>2296-100 Straight Drill</td>
<td>100,000</td>
<td>Flat Shank</td>
<td>External</td>
</tr>
<tr>
<td>296-17 Contra Angle Drill</td>
<td>1,600</td>
<td>R.A. Dental</td>
<td>External/Internal</td>
</tr>
<tr>
<td>296-18 Contra Angle Drill</td>
<td>40,000</td>
<td>R.A. Dental</td>
<td>External/Internal</td>
</tr>
</tbody>
</table>

*All RPM indications are maximum driving speeds

**Console Speed Control Setting**

<table>
<thead>
<tr>
<th>Handpiece RPM (Maximum Driving Speed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Console Speed</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
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<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

**With 1:1 Contra Angle Head**
<table>
<thead>
<tr>
<th>Console Speed</th>
<th>Handpiece RPM (Maximum Driving Speed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>180</td>
</tr>
<tr>
<td>3</td>
<td>270</td>
</tr>
<tr>
<td>4</td>
<td>360</td>
</tr>
<tr>
<td>5</td>
<td>450</td>
</tr>
<tr>
<td>6</td>
<td>540</td>
</tr>
<tr>
<td>7</td>
<td>630</td>
</tr>
<tr>
<td>8</td>
<td>720</td>
</tr>
<tr>
<td>9</td>
<td>810</td>
</tr>
<tr>
<td>10</td>
<td>900</td>
</tr>
</tbody>
</table>

296-10 Straight Drill, 40K
2296-100 Straight Drill, 100K
296-17 Contra Angle Drill, Low Speed
296-18 Contra Angle Drill, High Speed
296-31 Oscillating Saw
296-34 Sagittal Saw
296-37 Reciprocating Saw
296-80 Wire and Pin Driver
296-80-62 Small Collet
296-80-125 Large Collet
296-80-131 5/32 Jacobs Chuck
296-80-110 Synthes Chuck
296-80-112 Trinkle Chuck
296-80-134 Sagittal Saw Head
296-80-118 Wire Guard
296-1220 Control Console, 230 VAC
296-1 Control Console
296-7 Footswitch, Unidirectional
296-8 Footswitch, Bidirectional
296-9 Handswitch
296-2 Pinch Valve Accessory
296-3 IV, Stand
296-3-10 Mounting Bracket and Console Base
296-2-20 Silicone Irrigation Tubing Set, Non Sterile, Quantity 1
296-2-25 PVC Irrigation Tubing Set, Sterile, Quantity 10
296-17-40 Contra Angle Head, Reduction 10:1
296-18-40 Contra Angle Head, Transmission 1:1
296-17-41 Internal Irrigation Tip, Contra Angle Drills
296-10-259 Irrigation Tip, 40K Straight Drill
296-31-299 Irrigation Tip, Oscillating Saw
296-34-339 Irrigation Tip, Sagittal Saw
296-37-300 Irrigation Tip, Reciprocating Saw
296-100-264 Irrigation Tip, 100K Straight Drill
296-101-139 Irrigation Tip, 100K Straight Drill with Bur Guard
296-17-43 External Irrigation Tip, Contra Angle Drills
296-2-30 Tubing Clips for Handpiece and Cable
296-101 Bur Guard for 100K Drill

WARNING: Use only Stryker approved accessories