Integrated Power Console (IPC™)
Models EC300 and 1898001

Service Manual Console and Attachments
Rx Only
Notice

This manual is provided primarily for information purposes. Although there are certain troubleshooting actions that may be attempted by the customers as specifically listed in this manual, the majority of repairs must be undertaken by Medtronic Xomed or its authorized representative if otherwise being unsafe to maintain or repair this device.

Released documents are available for viewing/printing @ www.medtronicENT-TechComms.com

™ are trademarks and ® are registered marks of Medtronic, Inc.
Jacobs Chuck® is a registered mark of Jacobs Chuck Manufacturing Company

The information contained in this document was accurate at time of publication. Medtronic reserves the right to make changes in the product described in this manual without notice and without incorporating those changes in any products already sold.
Symbols

<table>
<thead>
<tr>
<th>SN</th>
<th>Serial Number</th>
</tr>
</thead>
</table>

Do not dispose of this product in the unsorted municipal waste stream. Dispose of this product according to local regulations. See http://recycling.Medtronic.Com for instructions on proper disposal of this product.

Do not use if package is open or damaged

Package Contents

1 Pump Head 1
2 Pump Head 2

Use by Date

Do not Reuse

Lot Number

Fuse

Accessory

Catalog Number

AC power

Output

Is approximately equal to

STERILE R Sterilized by radiation. Do not use if package is open or damaged

STERILE Non sterile

STERILE EO Sterilized by ethylene oxide. Do not use if package is open or damaged

EC REP Authorized representative in the european community

This device complies with medical device directive 93/42/EEC

Rx Only Caution: federal law (U.S.A.) Restricts this device to sale by or on the order of a physician

USA Only

Quantity

Manufacturer

Date of Manufacture

ROHS - Environmental friendly use period - China (SJ/T11364-2006.)
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="Image" alt="120 VAC" /></td>
<td>Not greater than 120 VAC</td>
</tr>
<tr>
<td><img src="Image" alt="ON" /> <img src="Image" alt="OFF" /></td>
<td>Applied part duty cycle</td>
</tr>
<tr>
<td><img src="Image" alt="Recommended storage temperature and limits." /></td>
<td>Recommended storage temperature and limits.</td>
</tr>
<tr>
<td><img src="Image" alt="Conforms to ANSI/AAMI ES 60601-1, IEC/EN 60601-1. Certified to CSA C22.2 No.601.1" /></td>
<td>Conforms to ANSI/AAMI ES 60601-1, IEC/EN 60601-1. Certified to CSA C22.2 No.601.1</td>
</tr>
<tr>
<td><img src="Image" alt="Handpiece" /></td>
<td>Handpiece</td>
</tr>
<tr>
<td><img src="Image" alt="Skeeter® handpiece" /></td>
<td>Skeeter® handpiece</td>
</tr>
<tr>
<td><img src="Image" alt="EMC compliance mark" /></td>
<td>EMC compliance mark</td>
</tr>
<tr>
<td><img src="Image" alt="Protective Earth" /></td>
<td>Protective Earth</td>
</tr>
<tr>
<td><img src="Image" alt="Equipotential" /></td>
<td>Equipotential</td>
</tr>
<tr>
<td><img src="Image" alt="Consult instructions for use" /></td>
<td>Consult instructions for use</td>
</tr>
<tr>
<td><img src="Image" alt="Attention see instructions for use" /></td>
<td>Attention see instructions for use</td>
</tr>
<tr>
<td><img src="Image" alt="IPX1" /></td>
<td>Protected against vertical water drops</td>
</tr>
<tr>
<td><img src="Image" alt="IPX7" /></td>
<td>Protected against the effects of temporary immersion in water</td>
</tr>
<tr>
<td><img src="Image" alt="Type BF applied part" /></td>
<td>Type BF applied part</td>
</tr>
<tr>
<td><img src="Image" alt="Manual Start/Stop" /></td>
<td>Manual Start/Stop</td>
</tr>
<tr>
<td><img src="Image" alt="RF transmitter (interference may occur)" /></td>
<td>RF transmitter (interference may occur)</td>
</tr>
<tr>
<td><img src="Image" alt="Precaution: Pinch hazard. Keep fingers clear of rollers" /></td>
<td>Precaution: Pinch hazard. Keep fingers clear of rollers</td>
</tr>
<tr>
<td><img src="Image" alt="STIM BUR connector" /></td>
<td>STIM BUR connector</td>
</tr>
<tr>
<td><img src="Image" alt="NIM® console connector" /></td>
<td>NIM® console connector</td>
</tr>
<tr>
<td><img src="Image" alt="Electrical high speed handpiece connector" /></td>
<td>Electrical high speed handpiece connector</td>
</tr>
<tr>
<td><img src="Image" alt="Foot pedal connector" /></td>
<td>Foot pedal connector</td>
</tr>
<tr>
<td><img src="Image" alt="Fine irrigant adjustment" /></td>
<td>Fine irrigant adjustment</td>
</tr>
<tr>
<td><img src="Image" alt="Left foot control unit button" /></td>
<td>Left foot control unit button</td>
</tr>
<tr>
<td><img src="Image" alt="Right foot control unit button" /></td>
<td>Right foot control unit button</td>
</tr>
<tr>
<td><img src="Image" alt="Top foot control unit button" /></td>
<td>Top foot control unit button</td>
</tr>
<tr>
<td><img src="Image" alt="Locked" /></td>
<td>Locked</td>
</tr>
</tbody>
</table>

### General

Uppercase Alphabetic list (A. B. C. etc.) contain introductory information where Numeric list (1. 2. 3. etc.) are “How To” instructions.

### Definitions

Explaining the essential meaning of a word or acronym as used in this manual. Also explains changes in words or phrases variations from one product generation to the next.

- **FCU** - Foot Control Unit
- **IPC** - Integrated Power Console
- **I.V.** - Intravenous
- **NIM®** - Nerve Integrity Monitor - One or all of the following units: NIM-Response®, NIM-Pulse®, NIM-Response® 2.0, NIM-Pulse® 2.0, NIM-Neuro® 2.0, NIM-Response® 3.0, NIM-Pulse® 3.0, NIM-Neuro® 3.0

### Nomenclature

The act or process or an instance of naming

### Warnings and Precautions

#### Warnings

W1 The IPC™ shall only be serviced by trained technicians at an authorized Medtronic service facility

W2 The IPC™ contains live circuitry that can cause injury or death if the enclosure is opened.
W3 The IPC™ contains live circuitry that can cause injury or death to operators or patients if assembled incorrectly. This document and the documents referenced herein are not sufficient to guarantee correct assembly and operation of the device. Product specific training and product specific test equipment is required to ensure the correct operation and assembly of the IPC™.

W4 This system requires insulated connectors for the StraightShot® M4 Microdebrider, Straightshot® Magnum™ II Microdebrider, Straightshot® III Microdebrider, Midas Rex® SC1, Visao®, or Skeeter™ handpieces and the Multi Function Foot Control Unit.

W5 Auxiliary Power Outlet with protective cover is for use with the HydroDebrider™, or Bone Mill consoles only.

Precaution
P1 Prime/Flush Priming is a feature designed to purge air out of the tubing set(s) during setup. The first time a Prime or Flush button is pressed it will press on pump 1 and/or 2 long enough to purge air out of the tubing set(s). Turning power Off and On resets the Prime feature. Once pressed all Prime buttons will change to Flush buttons.

System Description
The IPC™ System is a powered microdebrider, drill and saw system that will remove soft tissue, hard tissue, bone, and biomaterials during surgical procedures. The system consists of a power control console, footswitch, connection cables, and assorted handpieces to drive various burs, blades, drills, rasps, cannulae, and saws. It includes integrated irrigation pumps for irrigation of blades, burs and for motor coolant.

The Nerve Integrity Monitor (NIM™) is a separate device that stimulates and monitors the nerve. This system has connections that allow the NIM™ to be connected with the Visao® handpiece and Stimulating Bur Guard enabling the NIM™ to stimulate and monitor the nerve at the surgical site.

The system can be used to clear the end of a rigid rod endoscope in order to maintain good visualization of endoscopic procedures without having to remove the scope from the surgical site. This device is intended for use by physicians trained in the procedures described.

Sales and Customer Care
Medtronic is committed to provide the highest standard of workmanship in manufacturing its products. Your system requires minimal maintenance and calibration. Servicing and/or modification to the system, or any accessory/attachment by anyone other than qualified service personnel may significantly compromise the systems performance and void the equipment warranty. For best performance, it is recommended that all service be performed by Medtronic Xomed service personnel.

Medtronic recommends preventative maintenance and screen calibration scheduled at yearly intervals. Comprehensive testing and calibration should be performed by returning the entire system to Medtronic Customer Service.

U.S. Customers
Should your console or related equipment malfunction, Medtronic provides, at no charge, loaner equipment shipped to your facility by UPS or Federal Express for use while your equipment is being serviced by Medtronic. Please adhere to the following guidelines:
1. When a loaner console is ordered, please reuse the shipping material and carton when you return your console to Medtronic. Insure the unit.
2. When a loaner is not ordered, please package the console as safely as possible and insure.
3. A return goods authorization number is required on repairs. A copy of your purchase order is required. Make certain the purchase order includes the following:
   • Shipping and billing information
   • Purchase order number
   • Contact person
   • Phone number
   • Description of malfunction
   • Your Medtronic account number
4. Please indicate preferred method of return shipment. Otherwise the unit will be shipped back via UPS ground.
5. When the malfunctioning unit is not covered by warranty, Medtronic will contact your facility promptly with a repair cost estimate if requested. The customer will be responsible for freight charges on non-warranted units.
6. When you have loaner equipment and you receive your repaired unit, please package the loaner equipment as safely as possible using the foam provided with your repaired equipment. Include paperwork indicating the unit is a loaner, and Medtronic will credit your account.
7. Loaner equipment not received by Medtronic within 30 days from the date that repaired equipment is shipped will be invoiced at full purchase price.

Medtronic Xomed, Inc.
6743 Southpoint Drive North
Jacksonville, FL 32216 USA
WWW.medtronicENT.com

U.S. Help Line
(800)-874-5797.

Medtronic Powered Surgical Solutions
4620 North Beach Street
Fort Worth, TX  76137   USA
WWW.medtronic.com

U.S. Help Line
(800) 468-9710

International Service
International customers should contact their local Medtronic representative.

Components
Integrated Power Console
Console Front

A. Touchscreen – User interface.
B. Pump 1 – Coolant, lens cleaning, or irrigation.
C. Pump 2 – Irrigation.
D. Connector Panel - peripheral devices.
E. Power Switch – System On/Off switch.
### Connector Panel

<table>
<thead>
<tr>
<th>Port #</th>
<th>Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Midas Rex® Legend EHS® motor.</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>Midas Rex® Legend EHS Stylus® motor.</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>StraightShot® M4 Microdebrider</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Straightshot® Magnum® II Microdebrider</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Straightshot® III Microdebrider</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Midas Rex® SC1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Visao®</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Stimulus input from Patient Interface connection (NIM).</td>
<td>1</td>
</tr>
<tr>
<td>E</td>
<td>Stimulus output to STIM Bur Guard.</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>Skeeter® Handpiece</td>
<td>1</td>
</tr>
<tr>
<td>G</td>
<td>Endo-Scrub® 2 Finger Switch</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Endo-Scrub® 2 Footpedal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IntelliFlow Irrigation Remote Control.</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>Foot Control Unit (FCU)</td>
<td>1</td>
</tr>
</tbody>
</table>

### Connector Panel Cable Connection

Cable to console connection red/silver dot
Red or silver dot connections are multi pin and must be correctly aligned (oriented).
Cable to console connection without dot
Connectors without the red or silver dot are single pin and may be inserted without regard to orientation.

### Connector Panel Cable Disconnection (multi pin)

**To Remove Midas Rex® Legend EHS® Motor and Legend EHS Stylus® Motor, Cable from motor or console:**

1. Push the cable towards the motor or console.
2. Then pull out by locking ring (A).

**To Remove Midas Rex® Legend EHS Stylus® Cable from console:**

Push the cable towards the console, then pull by locking ring (A)

---

### To Remove cables (multi pin) with polymer insulating boots:

**NOTE:** Confirm handpieces contain polymer insulating boot (A). If handpiece contain missing or cracked polymer boots, contact Medtronic Customer Care for upgrade.

**NOTE:** If units with polymer insulating boots have debris under the insulator:
- Reclean according to Cleaning and Sterilization instructions.
- If debris was not removed return for warranty servicing.

See warning W4.
1. Push the cable towards the console.
2. Then pull out by the polymer insulating boot (A).

### To Remove cables (multi pin) with silicone insulating boots:

Silicone insulated connectors do not have a locking device (ring) and may be removed by pulling straight out on the connector.

### Cable Disconnection (single pin)

Single pin connectors do not have a locking device (ring) and may be removed by pulling straight out on the connector.

---

### Console Rear

A. Pole Clamp.  
B. Compact Flash Card port (factory use only).  
C. Manual Start Stop Button  
D. Fuse Access – Replace only with 5 x 20 T.L 5A, 250V fuse.  
E. Auxiliary Power Outlet with protective cover:  
- For use at grid voltage < 120VAC only.
HydroDebrider™, or Bone Mill consoles only. See Warning W5.

To remove cover, place small screwdriver in notch at bottom and pull/pry off.

Endo-Scrub® 2 - power connector.

Power Cord Connector: See Appendix B for part numbers.

Hospital grade power cord connects here.

Means of disconnecting device from Mains voltage by the power cord.

**Equipotential:**

Uniform potential.

Means for eliminating noise or interference with sensitive equipment by application of a POTENTIAL EQUALIZATION CONDUCTOR.

---

**Console Pump Designator**

A. Pump 1 – Coolant, lens cleaning, or irrigation.
B. Pump 2 – Irrigation.
C. Pump 1 Designator – This designator number is used to coordinate the "Pump Task" (pump setup panel pump number) with the "Pump Number" (number on the side of the pump) and the "Irrigation/ Coolant Cartridge" (number on the cartridge). When setting up the console *all of these numbers must be the same.*

D. Pump 2 Designator – This designator number is used to coordinate the "Pump Task" (pump setup panel pump number) with the "Pump Number" (number on the side of the pump) and the "Irrigation/ Coolant Cartridge" (number on the cartridge). When setting up the console *all of these numbers must be the same.*

**NOTE:** Not all Pump Cartridges have pump designator numbers. For these cartridges the operator should view the Pump Setup Screen prior to installing the cartridge.

---

**Console Specifications**

### Functional Standards for Electric Systems

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSI / AAMI: ES 60601-1</td>
<td>Medical electrical equipment -- Part 1: General requirements for basic safety and essential performance</td>
</tr>
<tr>
<td>IEC - 60601-1</td>
<td>Medical electrical equipment -- Part 1: General requirements for basic safety and essential performance</td>
</tr>
<tr>
<td>EN - 60601-1</td>
<td>Medical electrical equipment -- Part 1: General requirements for safety, Part 4: Programmable Electrical Medical Systems</td>
</tr>
<tr>
<td>CSA - C22.2 No. 601.1</td>
<td>Medical Electrical Equipment - Part 1: General Requirements for Safety.</td>
</tr>
</tbody>
</table>

**Physical Dimensions**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>277mm W x 353mm H x 267mm D</td>
</tr>
<tr>
<td>Weight</td>
<td>7.3kg</td>
</tr>
</tbody>
</table>

**Operational Environment**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>+10°C to +33°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>30% to 75% RH</td>
</tr>
<tr>
<td>Barometric Pressure</td>
<td>700 - 1060 hPa</td>
</tr>
</tbody>
</table>

**Transport and Storage Environment**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-40°C to +70°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>10% to 95% RH</td>
</tr>
<tr>
<td>Barometric Pressure</td>
<td>500 to 1060 hPa</td>
</tr>
</tbody>
</table>

**Display / Touch Screen**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>High contrast, digital, graphic Color, visible in complete darkness.</td>
</tr>
<tr>
<td>Resolution</td>
<td>480 X 640 pixels</td>
</tr>
</tbody>
</table>

**Audio Output**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Audio Sound Level</td>
<td>60dBA minimum SPL (1m)</td>
</tr>
</tbody>
</table>

**Electrical**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>100V-240V ± 10%</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>500VA</td>
</tr>
<tr>
<td>Auxiliary AC output</td>
<td>200VA Max.</td>
</tr>
<tr>
<td>Internal Fuse</td>
<td>5 x 20mm T. L. 5A, 250V</td>
</tr>
</tbody>
</table>

**Duty Cycle for Applied Part**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum On Time</td>
<td>120 Seconds</td>
</tr>
<tr>
<td>Minimum Off Time</td>
<td>180 Seconds</td>
</tr>
</tbody>
</table>

**Irrigation/Coolant Pumps**

### Pump Cartridge Set-up

The Pump Cartridge snaps onto the lower section of the pump.
**Visao® Pump Cartridge**
The Visao® Pump Cartridge has both a pump tube and a return tube.

A. Pump tubing.
B. Pump tubing is clipped into the Pump Cartridge.
C. Return tube.

**Visao® Coolant Pump Set-Up**
The Pump Cartridge snaps onto the lower section of pump # 1.

**Standard Pump Set-up**

**Tips on loading the pump**

**Buttons and Pedal**

**NOTE:** Each button must be depressed and held for one (1) second to activate its function.

**Drills**

A. Foot Pedal - Start/Stop, Variable speed.
B. Right Button - Pedal function, (Start-Stop or Variable speed).
C. Top Button - Active handpiece selection
D. Left Button - Mode selection, (FWD/REV).

**Microdebrider**

A. Pedal Start-Stop, Variable speed (Start/Stop, or Variable speed selectable via FCU button on Main Screen).
B. Right Button - IF Mode is set to OSC this button will, rotate inner tube on blades 180°. IF Mode is set to FWD this button will, select Pedal function (Start/Stop, or Variable speed).
C. Top Button - Active handpiece selection.
D. Left Button - Mode/RPM selection - FWD/OSC (FWD @ 12000) (OSC @ 5000, 3000, 1500, or 300).

**SC1**

A. Pedal Start-Stop, Variable speed (Start/Stop, or Variable speed selectable via FCU button on Main Screen).
B. Right Button - IF Mode is set to OSC or CUT this button will, rotate inner tube on blades 180°. IF Mode is set to FWD this button will, select Pedal function (Start/Stop, or Variable speed).
C. Top Button - Active handpiece selection.
D. Left Button - Mode selection - FWD/OSC/CUT.

**NOTE:** If any of these condition are different check your set-up, if still incorrect contact Customer Service.

**Intelliflow Irrigation Remote Control**

A. Pause/On-Off:
   - Pause if used with handpiece irrigation
   - On-Off/Pause if used with Suction Irrigator.
B. Increase/Decrease:
   - Handpiece Irrigation - fine adjustment for irrigation rate.
   - Suction Irrigator - fine adjustment for irrigation rate.
C. Increase/Decrease:
   - Handpiece Irrigation - coarse adjustment for irrigation rate.
   - Suction Irrigator - selects stainless steel (Fr) tubing size.

**Endo-Scrub® 2**

**NOTE:** Can be used only with a microdebrider.

The IPC™ System incorporates Endo-Scrub® 2 functionality by using irrigation pump number one (1) and controlling operation with the touch screen and an external footswitch or finger switch. It is not to be used for infusion, for disinfection or sterilization of an endoscope, or for suction removal of blood and debris.

**NOTE:** Use the Endo-Scrub® 2 sheath only with an endoscope listed on the sheath product label, as malfunction or poor performance could result.

A. Endo-Scrub® 2 Sheath.
B. Endoscope.
C. Light source connection.
D. Irrigation connection.
Endo-Scrub® 2 Assembly

1. Wet.
2. Slowly insert.
3. Attach irrigation and light source.

Suction Irrigator

The Suction Irrigator may be selected via the radio button within the Irrigation Method box.

NOTE: The suction irrigator is NOT available for microdebrider handpieces.

Suction Irrigator Handpiece.

A. Suction Tube.
B. Irrigation tube.

Handpieces Microdebriders and SC1

Straightshot® M4, Microdebriders, and Midas Rex® SC1

A. Handpiece.
B. Finger wheel.
C. Locking collar.
D. Irrigation-tubing groove.
E. Finger-wheel lock.
F. Cable.
G. Suction barb.

NOTE: The Suction Irrigator shown here is available to all drills provided a microdebrider is not attached to the console.
Technical Specifications

StraightShot® M4 Microdebrider  Part No. 1898200T
Speed  50-5,000 RPM oscillate
50-12,000 RPM forward
Size  14.3 cm length x 1.8 cm width (1898200T)
Weight  228 g  1898200T
240 g  1897200
254 g  1897200T
240 g  1897201
Duty Cycle  The StraightShot®, M4, and SC1 Handpiece under full load are rated for intermittent operation per the following:
Maximum On Time 60 seconds
Minimum Off Time 30 seconds
NOTE: If any of these condition are different check your set-up, if still incorrect contact Customer Service.

Straightshot® Magnum® II and Straightshot® III Microdebriders

A. Basic handpiece
B. Suction barb
C. Locking collar
D. Cable

Technical Specifications
Handpiece - Straightshot® Magnum® II, Part No. 1897200
Straightshot® III Part No. 1897201
Size  17 cm length x 1.6 cm diameter (1897200)
Speed  50-5,000 RPM oscillate
50-12,000 RPM forward
Size  17 cm length x 1.6 cm diameter
Weight  240 g
Duty Cycle  Under full load are rated for intermittent operation per the following:
Maximum On Time 60 seconds
Minimum Off Time 30 seconds

Handpieces Drills
Caution: do not use Xcalibur or Powerforma handpieces with the IPC™ console.

Visao® High-Speed Otologic Drill (Water-Cooled)

A. Handpiece
B. Cable
C. Cable clip
D. Cooling barbs
E. Locking collar

Technical Specifications
Visao® High-Speed Otologic Drill  Part No. 3334800
Speed  200-80,000 RPM forward/reverse, Water-Cooled
Size  16.0 cm length x 2.0 cm diameter
Weight  148 g
Duty Cycle  The Visao® High-Speed Otologic Drills under full load are rated for intermittent operation per the following:
Maximum On Time: 60 seconds
Minimum Off Time: 30 seconds

Skeeter® Ultra-Lite Oto-Tool System Set-Up and Use

A. Tool
B. Tool’s color code.
C. Tool lock/release button.
D. Cannulated shaft.
E. PTFE Bearing.

Technical Specifications
Part No. 3055601
Speed  1,000-16,000 RPM forward/reverse
Size  17 cm length x 1.6 cm diameter
Weight  57 g
Duty Cycle  Continuous run

Storage
Temperature: -40°C to +70°C
Humidity: 10% to 100% RH
Barometric Pressure: 500 to 1060 hPa

Midas Rex® Legend EHS® Motor
High speed, high torque, reversible electric motor used to dissect bone and biomaterial at selectable speeds from 200 to 75,000 RPM.

A. Midas Rex® Legend EHS® Motor.
B. 4-pin cable connection.
C. Rotational collet.
D. Stationary collet.

Legend EHS® Motor Cable
Connects the motor to the console.

A. 4-pin connector.
B. Locking sleeve.
C. Green boot.
D. Cable.
Motor Collet

Prior to installing an attachment, ensure that arrows on the motor collet are in proper alignment.

If the arrows are not aligned, use the Motor Wrench to turn the rotational collet until its arrow is aligned with the arrow on the stationary collet.

Technical Specifications

Legend EHS Stylus® Motor

Part No. EM200
Speed 200-75000 RPM forward/reverse
Size 7.77 cm length x 1.65 cm diameter
Weight 90 g

Duty Cycle (To avoid overheating):
• For continuous use in operating room temperatures up to 40°C, the Legend Stylus® Motor is rated for 3 minutes at 60,000 RPM, followed by 25 minutes of rest.
• For normal operating room temperatures (typically 20°C) the Legend Stylus® Motor is rated for continuous cutting indefinitely at 60,000 RPM.

Midas Rex® Legend EHS Stylus® Motor

A smaller compact high speed, high torque, reversible electric motor used to dissect bone and biomaterials at selectable speeds from 200 to 75,000 RPM. The Midas Rex® Legend EHS Stylus® Motor cable is integral with the Handpiece and is not removable from the motor.

System Overview

A. Irrigation and Coolant Bags.
B. Irrigation Pole.
C. Integrated Power Console™.
D. Pump 1 coolant, lens cleaning, or irrigation.
E. Pump 2 irrigation.
F. Power Cord.
G. Irrigation Pole Basket for Footswitch.
H. Console Connector Array (see also Accessories/Attachments and Handpieces Drills).
I. Accessory Cables.
J. Maximum height from floor 89cm.
K. Minimum base diameter 53cm.
Set-Up

General instructions for set-up, inspection, and use of the Integrated Power Console.
The IPC™ is designed to require no regular maintenance or service. The following recommended sustaining care may be performed annually or at more frequent intervals to extend the life of the IPC™.

NOTE: Use sterile water or saline for irrigation and cooling.

Inspect:
1. Visually inspect:
   - the entire console for signs of cracks or other damage.
   - the front and back connector panel for damaged or loose connections.
   - air inlet and exhaust on the bottom and rear of console is clean and free of debris.
2. Check that the handle is securely attached to console and slowly rotate the IPC™ to an inverted position while listening for loose material inside the enclosure.
3. Ensure pole clamp is securely attached to console and knob spins freely.

Configure System:
4. On Irrigation pole, mount IPC™ and irrigation/coolant bag(s).
   Note: Irrigant and coolant bags should be placed above the console to ensure adequate flow.
5. Position the IPC™ in a manner that does not obstruct the power inlet for the purpose of disconnecting the Mains voltage by the power cord. Plug unit into power source.
6. Connect FCU.
7. Connect the accessories to console (test all accessories available one at a time).
8. Irrigation/Coolant Pumps
   - Connect tubing as needed (suction, cooling, irrigation).

Functional Test Splash Screen

Functional Test Splash Screen

Main Screen

During the boot up/self-test operation the IPC™ will identify attachments such as handpiece(s) foot pedal etc. Actual screen displayed is dependent on attachment found.
The following generalized screen is meant to familiarize the technician with adjustments available.

A. Handpiece Panel - This panel shows the active handpiece.
   Aa Speed - Variable adjustment on most handpieces. Default value is handpiece specific.
   Ab Blade Position - Handpiece specific, allows the user to rotate the inner cutting tip of specially designed rotatable blades.
   Ac Irrigation - Adjust the flow rate of irrigation. Default value is handpiece specific.
   Ad Mode - Handpiece specific cutting mode selection.

B. Augment Area - Shows supplemental information such as inactive handpiece(s), special function panel, pump panel etc.

C. Special Function Panel - Shows Suction Irrigator or Endo-Scrub® 2 panel.

D. Main Screen subsection
   Da Foot Control Unit (FCU) Button - changes foot pedal from variable speed control to On/Off.
   Db Pumps - Opens pump panel.
   Dc Help - Opens help screens.

<table>
<thead>
<tr>
<th>Handpiece Name</th>
<th>Touchscreen Display Name</th>
<th>RPMs</th>
<th>Mode</th>
<th>Pump 1</th>
<th>Pump 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visao</td>
<td>Visao</td>
<td>200-80000</td>
<td>Default RPMs</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Suction Irrigator</td>
<td>Optional</td>
<td>200-8000</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Midas Rex SC1</td>
<td>SC1 Handpiece</td>
<td>50-5000</td>
<td>5000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Microdebrider</td>
<td></td>
<td>50-12000</td>
<td>12000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>StraightShot M4</td>
<td>StraightShot M4</td>
<td>50-5000</td>
<td>5000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Microdebrider</td>
<td></td>
<td>50-12000</td>
<td>12000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>EndoScrub 2 Optional</td>
<td></td>
<td>50-5000</td>
<td>5000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>StraightShot III</td>
<td>StraightShot M4</td>
<td>50-5000</td>
<td>5000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Microdebrider</td>
<td></td>
<td>50-12000</td>
<td>12000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>EndoScrub 2 Optional</td>
<td></td>
<td>50-5000</td>
<td>5000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>StraightShot Magnum II</td>
<td>StraightShot M4</td>
<td>50-5000</td>
<td>5000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Microdebrider</td>
<td></td>
<td>50-12000</td>
<td>12000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>EndoScrub 2 Optional</td>
<td></td>
<td>50-5000</td>
<td>5000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Midas Rex Legend</td>
<td>EHS motor</td>
<td>200-75000</td>
<td>7000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>EHS Stylus motor</td>
<td></td>
<td>200-75000</td>
<td>6000</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Suction Irrigator</td>
<td>Optional</td>
<td>1000-16000</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

1. Turn power switch ON and verify:
   - the power switch operates smoothly
   - switch lamp illuminates
   - fan on bottom of device is turning by listening for fan noise.
   - The Splash Screen is displayed while the system is starting up and executing its self tests
   - System passes self test
   - Default screen opens.
   a. Adjust clamp on the irrigation tubing to OPEN.
   b. Manually prime the clear drip chamber (if used).
   c. Depress and release the prime button on the touch screen panel.

Verify:
   • Pump(s) run until all air has been purged out of the tubing.
   • A small amount of irrigant is observed flowing at the tip of irrigation device(s).
   • Pump(s) turns off.

2. Confirm system operation.

Verify:
   • Pedal (Coolant): Starts handpiece and coolant flow (coolant pump continues to run for 1 minute after pedal is released).
   • Pedal (Irrigation): Starts and stops the handpiece and irrigation flow (At this step you should also verify that the characters on the SPEED display changed from white (set RPMs) to yellow (actual RPMs)).
   • Left Button: Changes Mode selection (FWD, REV, OSC, or CUT/Cut Direction).
   • Top Button: Change Handpiece Selection if there are additional handpieces.
   • Right Button: Changes pedal operation from Start/Stop or Variable speed.

3. Disconnect the FCU and press OK on the touchscreen.
4. Depress the intraoperative button on the back of the console.

Verify:
   • Starts and stops the handpiece, irrigation and/or coolant flow.

5. Touch Screen

Verify:
   • Speed can be adjusted.
   • Mode can be changed.
     • In oscillate and cut modes check:
       • The Blade Position panel opens.
       • The clockwise and counterclockwise buttons move the position indicator and blade in the appropriate direction.
       • Depressing the 180° button moves the position indicator and blade 180°.
   • Flow rate for irrigation is adjustable.

Power Down
1. Turn power switch Off.
2. Disconnect:
   a. Accessories.
   b. Suction, irrigation, and coolant tubing.
   c. Power cord.
3. Discard disposables following health-care facility guidelines on contaminated materials.

NOTE: If any of these condition are different check your set-up, if still incorrect contact Customer Service.

Cleaning

IPC™, Foot Control Unit, and Endo-Scrub® 2 Footswitch
   • Do not immerse or sterilize the units.
   • Do not use alcohol, other solvents, or abrasive cleaners.

1. Wipe down the IPC™, Foot Control Unit, and Endo-Scrub® 2 Footswitch with a cloth dampened with a neutral enzymatic detergent, pH 6.0-8.0 or phenol based disinfectant.

Non-Slip Pad ONLY
1a. Spray a neutral enzymatic detergent, pH 6.0 – 8.0, or a phenol based disinfectant, mixed to manufactures instructions, directly onto foot pad.
1b. Allow the solution to remain in contact with the surface for approximately 10 minutes.
1c. Wipe the solution or disinfectant off the foot pedal until visually clean.
2. Dry the units with a clean, non-abrasive cloth.

NOTE: If debris is found under the Foot Control Unit’s boot, return for warranty service.

Calibration

Settings Screen

During the boot up/self-test operation the Splash Screen will display the Setting button for about 5 seconds. To change language or calibrate the touch screen you must depress this button while it is displayed.
1. To calibrate the screen:
   a. Depress the large “Touch Screen Calibration” button in center of the screen.
   b. Follow on screen instructions.

Console Test-Electrical Safety Specifications

See also Block Diagram

Precaution
Each IPC™ has been factory tested to the dielectric and ground bond test levels described within this section. These levels are in accordance with IEC/AAMI/EN 60601-1 Third Edition. Only technicians familiar with the 60601-1 standard and adequately trained in performing testing to the 60601-1 standard shall perform the dielectric and ground bond tests described within this section.

Protectively Earthed Exposed Metal
Applicable components: Equalization Terminal (PN 11190620) and Components in direct contact with the Back Panel (PN 11683316).
Applicable test: 25 Ampere/60Hz ground bond for 5 seconds, (per IEC 60601-1 Clause 8.6.4.a)
Applicable result: <100 milli-Ohm impedance

Floating Metal
Applicable components: Pole Clamp (PN 66320173) and bezel of irrigation port in Connector Panel (PN 44681784 or PN 11249350)
Applicable test: 4000V AC high potential, 60Hz, 60 seconds, 10 second ramp-up (per IEC 60601-1 Clause 8.8.3)
Applicable result: <10mA leakage

Metal Shells of Type BF Electrical Connectors
Applicable components: Shells of footswitch, 12-position handpiece, and 4-position handpiece connectors of Connector Panel (PN 44681784 or PN 11249350)
Applicable test: 2500VAC high potential, 60Hz, 60 seconds, 10 second ramp-up (per IEC 60601-1 Clause 8.8.3)
Applicable result: <10mA leakage
**Protective Earthing:**
1. No protection devices specified in Section 14.2.4 of JIS T 1001 are used.

**Accessible Parts:**
Metal Pole Clamp has no conductive connection to other parts of console

**Separation from commercial power source:**
1. For separation from commercial power source, the system shall be simultaneously disconnected from all the poles using a flexible cord with external mains plug.
2. Power Switch is not installed in power cord.
3. Each phase conductor is equipped with overcurrent fuse.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Solution (Customer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure, pump, or touchscreen is cracked</td>
<td>Mechanical impact to affected component</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Loose material inside enclosure</td>
<td>Loose or damaged component due to mechanical impact or vibration</td>
<td>Use a dry soft bristle brush to dislodge debris (vacuum)</td>
</tr>
<tr>
<td>Handle is loose or damaged</td>
<td>Mechanical damage to handle</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Pole clamp is loose or damaged</td>
<td>Mechanical damage to pole clamp</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Air inlet is blocked</td>
<td>Screen is obstructed with debris</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Mains switch is damaged/non-functional/does not latch</td>
<td>Component cracked, worn, obstructed by debris</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Mains switch lamp does not illuminate, unit functional</td>
<td>Hardware fault.</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Fan does not turn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Console does not power on (power lamp on)</td>
<td>Blown Fuse</td>
<td>Replace fuses. REF 1898125 - Fuses, 5A/250V 2/Pack</td>
</tr>
<tr>
<td>Console does not power on (power lamp off)</td>
<td>Mains cable not connected properly or damaged</td>
<td>Check mains connection, replace faulty mains cable if necessary</td>
</tr>
<tr>
<td>Display not visible (power lamp on)</td>
<td>Hardware fault.</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Display contains horizontal/vertical lines or color streaks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect language displayed</td>
<td>Language set incorrectly.</td>
<td>Cycle power on console. Press “Settings” button on display during initial boot up and select desired language.</td>
</tr>
<tr>
<td>Touchscreen does not respond correctly</td>
<td>Touchscreen not calibrated.</td>
<td>Cycle power on console. Press “Settings” button on display during initial boot up and perform touchscreen calibration.</td>
</tr>
<tr>
<td>Touchscreen not responsive (cannot be calibrated)</td>
<td>Hardware fault.</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>No line voltage on AC outlet</td>
<td>Mains cable not connector properly or damaged</td>
<td>Check mains connection, replace faulty mains cable if necessary</td>
</tr>
<tr>
<td>Pump does not turn</td>
<td>Incompatible tubing</td>
<td>Use only Medtronic approved tubing sets</td>
</tr>
<tr>
<td>Little or no irrigation/cooling flow</td>
<td>Hardware fault.</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Pump is noisy (erratic motion)</td>
<td>Incompatible or incorrect tubing</td>
<td>Verify correct settings in “Pump” set-up screen</td>
</tr>
<tr>
<td>Damaged or loose connector on connector panel</td>
<td>Mechanical damage to panel</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Damaged or loose connector on back panel</td>
<td>Mechanical damage to component</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Handpiece or accessory will not connect</td>
<td>Damaged connector</td>
<td>Verify handpiece/accessory plug is not damaged. Verify correct boot is installed.</td>
</tr>
<tr>
<td>Handpiece not recognized</td>
<td>See Error Code 11 through 14 troubleshooting</td>
<td></td>
</tr>
<tr>
<td>Handpiece recognized, but does not run</td>
<td>Handpiece or FCU fault</td>
<td>Check faulty FCU by using manual switch on back of console.</td>
</tr>
<tr>
<td>Handpiece does not reach full speed</td>
<td>Handpiece fault</td>
<td>Contact customer care.</td>
</tr>
<tr>
<td>Handpiece does not reach full speed or is noisy</td>
<td>Collet unlocked</td>
<td>Lock collet</td>
</tr>
<tr>
<td>Wrong handpiece identified</td>
<td>Handpiece fault</td>
<td>Contact customer care</td>
</tr>
<tr>
<td>Footswitch buttons not correctly recognized</td>
<td>Hardware fault.</td>
<td>Contact customer care</td>
</tr>
<tr>
<td>Manual switch does not run handpiece</td>
<td>FCU fault</td>
<td>Contact customer care</td>
</tr>
<tr>
<td>Console fails 4kVAC hi-pot</td>
<td>Hardware fault.</td>
<td>Contact customer care</td>
</tr>
<tr>
<td>Console fails 2.5kVAC hi-pot</td>
<td>Hardware fault.</td>
<td>Contact customer care</td>
</tr>
<tr>
<td>Error Code</td>
<td>Symptom</td>
<td>Cause</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Error Code 1 displayed</td>
<td>Error Code 3 displayed</td>
<td>Internal communication fault</td>
</tr>
<tr>
<td>Error Code 4 displayed</td>
<td>Error Code 5 displayed</td>
<td>Error Code 6 displayed</td>
</tr>
<tr>
<td>Error Code 9 displayed</td>
<td>Internal communication fault</td>
<td>Contact customer care</td>
</tr>
<tr>
<td>Error Code 11 displayed</td>
<td>Pump 1 stalled</td>
<td>Check tubing / contact customer care</td>
</tr>
<tr>
<td>Error Code 12 displayed</td>
<td>Unrecognized/damaged handpiece plugged in on Port 1 (left most 12 position)</td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 13 displayed</td>
<td>Unrecognized/damaged handpiece plugged in on Port 2 (right most 12 position 12 pin)</td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 14 displayed</td>
<td>Unrecognized/damaged handpiece plugged in on Port 3 (4 position)</td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 15 displayed</td>
<td>Unrecognized/damaged handpiece plugged in on Port 4 (Skeeter*)</td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 16 displayed</td>
<td>Pump 2 stalled</td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 17 displayed</td>
<td>Excessive current or heat detected</td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 18 displayed</td>
<td>Unrecognized/damaged FCU plugged in</td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 19 displayed</td>
<td>Self test failure</td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 20 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 21 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 22 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 23 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 24 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 25 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 26 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 27 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 28 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 29 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 30 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 31 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 32 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 33 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 34 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 35 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 36 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 37 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 38 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
<tr>
<td>Error Code 39 displayed</td>
<td></td>
<td>Possible handpiece or console problem, contact customer care</td>
</tr>
</tbody>
</table>
Changing the Fuse

0

1

2

3

4

5

6