Integrated Power Console (IPC™)

Models EC300 and 1898001

Service Manual Console and Attachments

Rx Only

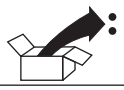
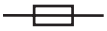
Notice

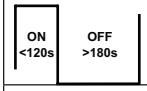
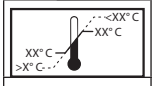
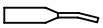
This manual is provided primarily for information purposes. Although there are certain troubleshooting actions that may be attempted by the customers as specifically listed in this manual, the majority of repairs must be undertaken by Medtronic Xomed or its authorized representative it otherwise being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

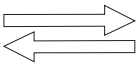
Released documents are available for viewing/printing @ www.medtronicENT-TechComms.com

Table of Contents

Symbols

SN	Serial Number
	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	Lot Number
	Fuse
ACC	Accessory
REF REF	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
CE 0123 CE 0086	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	USA Only
	Quantity
	Manufacturer
	Date of Manufacture
	ROHS - Environmental friendly use period - China (SJ/T11364-2006.)

	Not greater than 120VAC
	Applied part duty cycle
	Recommended storage temperature and limits.
	Conforms to ANSI/AAMI ES 60601-1, IEC/EN 60601-1. Certified to CSA C22.2 No.601.1
	Handpiece
	Skeeter® handpiece
	EMC compliance mark
	Protective Earth
	Equipotential
	Consult instructions for use
	Attention see instructions for use
IPX1	Protected against vertical water drops
IPX7	Protected against the effects of temporary immersion in water
	Type BF applied part
	Manual Start/Stop
	RF transmitter (interference may occur)
	Precaution: Pinch hazard. Keep fingers clear of rollers
BUR	STIM BUR connector
NIM	NIM® console connector
EHS	Electrical high speed handpiece connector
	Foot pedal connector
Fr	World Wide Standard for medical tubing diameter.
	Fine irrigant adjustment
	Left foot control unit button
	Right foot control unit button
	Top foot control unit button
	Locked

	Unlocked
	On/Off (main power)
	Use with
Instrument Case	Instrument case
Lubricant/Diffuser	Lubricant/Diffuser
Dissecting Tool	Dissecting Tool
Attachment	Attachment
Control Unit	Control Unit
Refurbished	Refurbished
Accessory	Accessory
Regulator	Regulator
Bone Mill	Bone Mill
Motor	Motor
Brush	Brush
Adapter	Adapter
TOOL	Tool control
TUBE	Tube control
Multi-Use Disposable Attachment	Multi-Use Disposable Attachment

NOTE

IT IS IMPORTANT THAT THE OPERATOR BE FAMILIAR WITH THIS MANUAL AND THE USER'S GUIDE WITH THEIR WARNINGS, PRECAUTIONS, PROCEDURES AND SAFETY ISSUES.

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 turn 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.

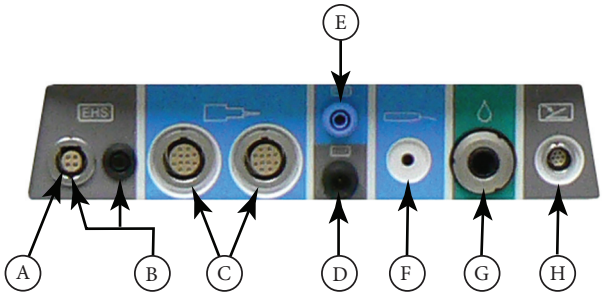
Components

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



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

Connector Panel Cable Connection

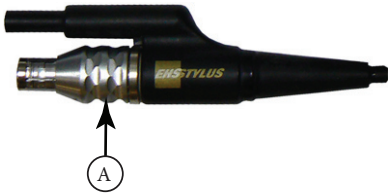
Cable to console connection red/silver dot
Red or silver dot connections are multi pin and must be correctly aligned (oriented).
Cable to console connection without dot
Connectors without the red or silver dot are single pin and may be inserted without regard to orientation.

Connector Panel Cable Disconnection (multi pin)

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

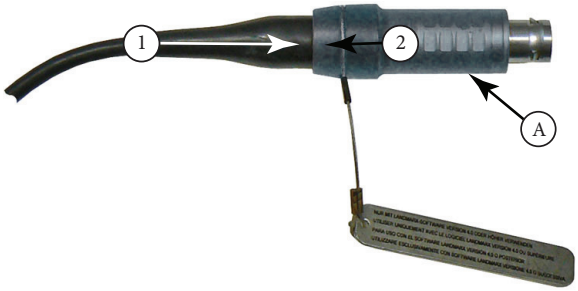
1. Push the cable towards the motor or console.
2. Then pull out by locking ring (A).

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).

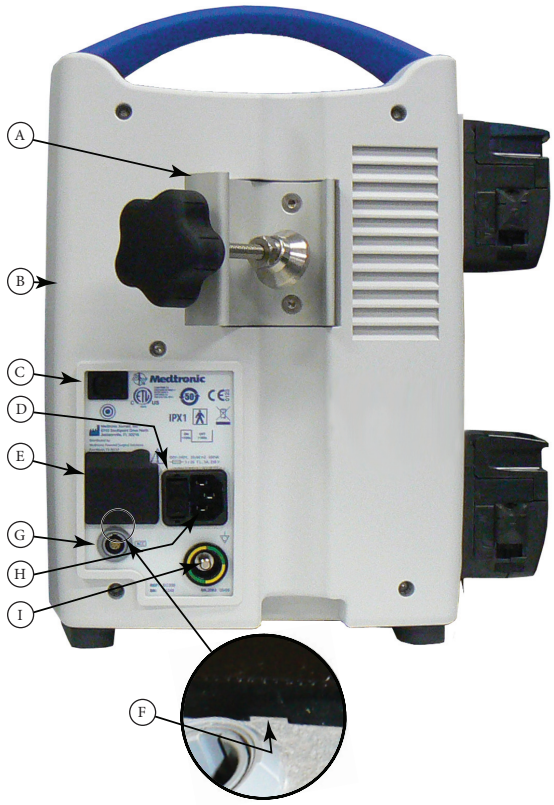
To Remove cables (multi pin) with silicone insulating boots:

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

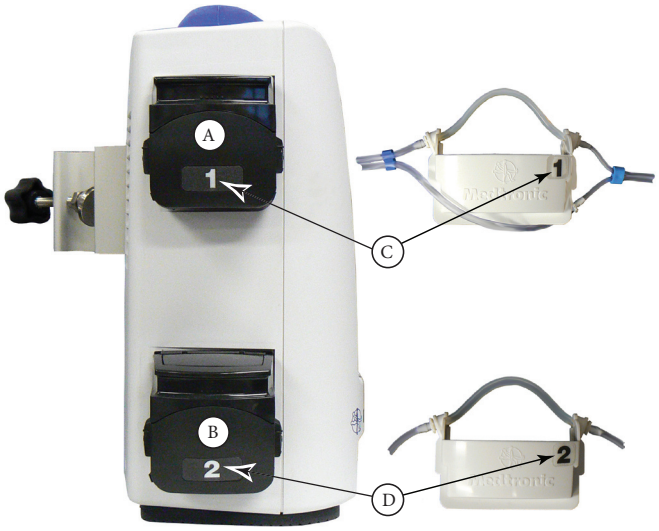


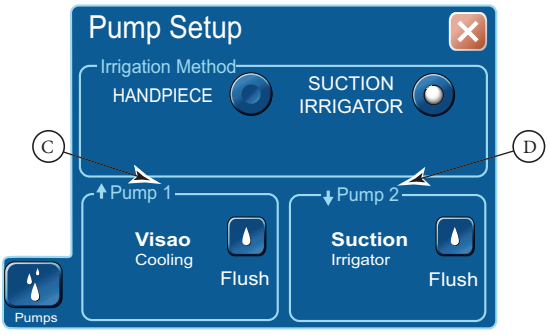
A. Pole Clamp.
B. Compact Flash Card port (factory use only).
C. Manual Start Stop Button
D. Fuse Access – Replace only with 5 x 20 T. L. 5A, 250V fuse.
E. Auxiliary Power Outlet with protective cover:
   - For use at grid voltage < 120VAC only.

- HydroDebrider™, or Bone Mill consoles only. See Warning W5.

F. To remove cover, place small screwdriver in notch at bottom and pull/pry off.
G. Endo-Scrub® 2 - power connector.
H. 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.
I. 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		
ANSI / AAMI: - ES 60601-1	Medical electrical equipment -- Part 1: General requirements for basic safety and essential performance	2005
IEC - 60601-1	Medical electrical equipment -- Part 1: General requirements for basic safety and essential performance	2005
EN - 60601-1	Medical electrical equipment -- Part 1: General requirements for basic safety and essential performance (IEC 60601-1:2005))	2006
IEC - 60601-1-4	Medical Electrical Equipment – Part 1: General Requirements for Safety, Part 4: Programmable Electrical Medical Systems	2000
EN - 60601-1-2	Medical Electrical Equipment – Part 1-2: General Requirements for Safety – Collateral Standard: Electromagnetic Compatibility – Requirements and Tests	2001/ A1: 2006
CSA - C22.2 No. 601.1	Medical Electrical Equipment - Part 1: General Requirements for Safety.	2005

Physical Dimensions

Size: 277mm W x 353mm H x 267mm D
Weight: 7.3kg

Operational Environment

Temperature:	+10°C to +33°C
Humidity:	30% to 75% RH
Barometric Pressure:	700 - 1060 hPa

Transport and Storage Environment

Temperature:	-40°C to +70°C
Humidity:	10% to 95% RH
Barometric Pressure:	500 to 1060 hPa

Display / Touch Screen

Type:	High contrast, digital, graphic Color, visible in complete darkness.
Resolution:	Display 21cm diagonal, resolution 480 X 640 pixels

Audio Output

Baseline Audio Sound Level	60dBA minimum SPL (1m)

Electrical

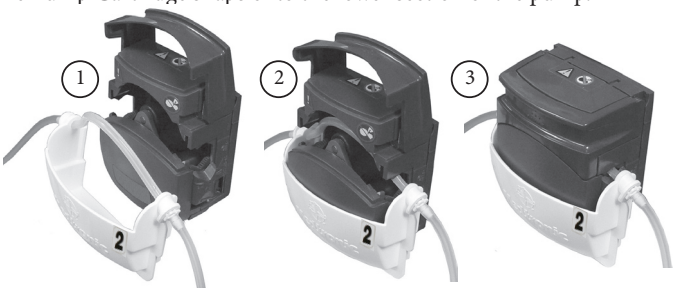
Input Voltage	100V-240V ± 10%
Frequency	50/60 Hz
Power Consumption:	500VA
Auxiliary AC output:	200VA Max.
Internal Fuse	5 x 20mm T. L. 5A, 250V Medtronic Xomed P/N 11270066

Duty Cycle for Applied Part Maximum On Time 120 Seconds
Minimum Off Time 180 Seconds

Irrigation/Coolant Pumps

Pump Cartridge Set-up

The Pump Cartridge snaps onto the lower section of the pump.



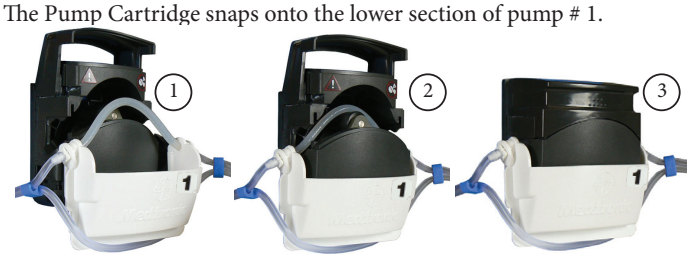
Visao® Pump Cartridge

The Visao® Pump Cartridge has both a pump tube and a return tube.

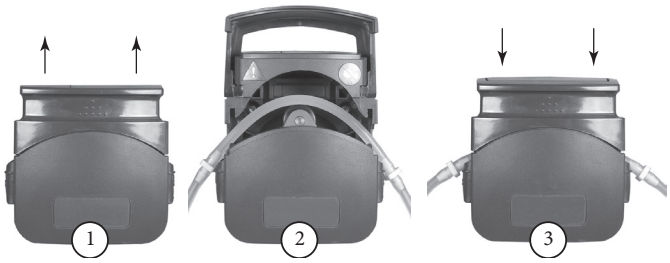
A. Pump tubing.
B. Pump tubing is clipped into the Pump Cartridge.
C. Return tube.

Visao® Coolant Pump Set-Up

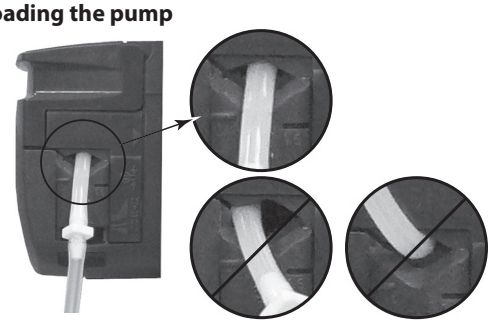
The Pump Cartridge snaps onto the lower section of pump # 1.



Standard Pump Set-up



Tips on loading the pump



Accessories/attachments

Multifunction Foot Control Unit (FCU)

Part No. 1898430 or EF200

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

Microdebrider

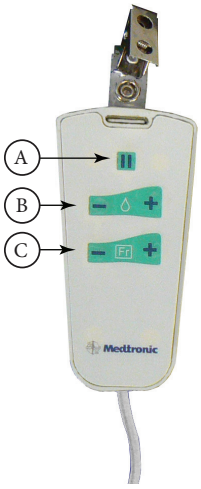
A. Pedal Start-Stop, Variable speed (Start/Stop, or Variable speed selectable via FCU button on Main Screen).
B. Right Button - IF Mode is set to OSC this button will, rotate inner tube on blades 180º. IF Mode is set to FWD this button will, select Pedal function (Start/Stop, or Variable speed).
C. Top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

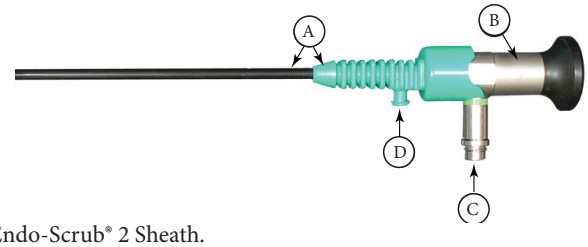


A. Pause/On-Off:
   - Pause if used with handpiece irrigation (Flow rate will flash yellow).
   - On-Off/Pause if used with Suction Irrigator.
B. Increase/Decrease:
   - Handpiece Irrigation - fine adjustment for irrigation rate.
   - Suction Irrigator - fine adjustment for irrigation rate.
C. Increase/Decrease: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

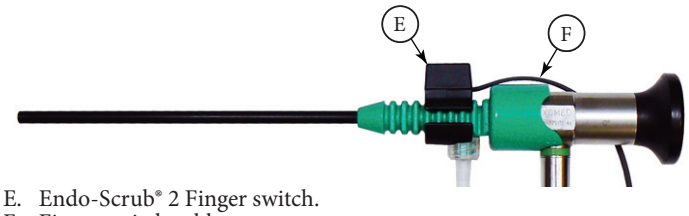
Endo-Scrub® 2

NOTE: Can be used only with a microdebrider.

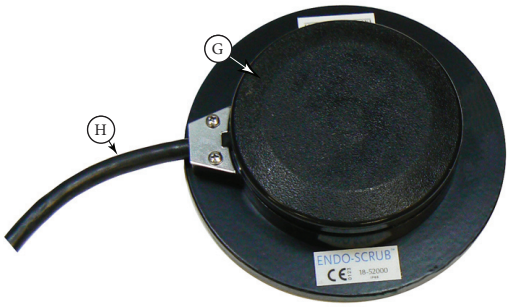
The IPC™ System incorporates Endo-Scrub® 2 functionality by using irrigation pump number one (1) and controlling operation with the touch screen and an external footswitch or finger switch.
It is not to be used for infusion, for disinfection or sterilization of an endoscope, or for suction removal of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

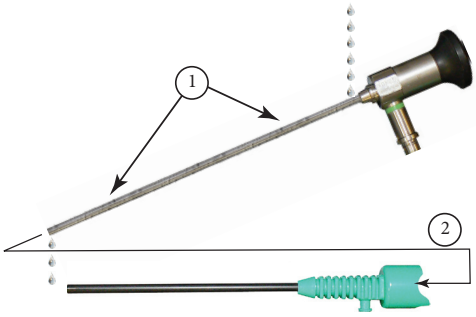


E. Endo-Scrub® 2 Finger switch.
F. Finger switch cable.

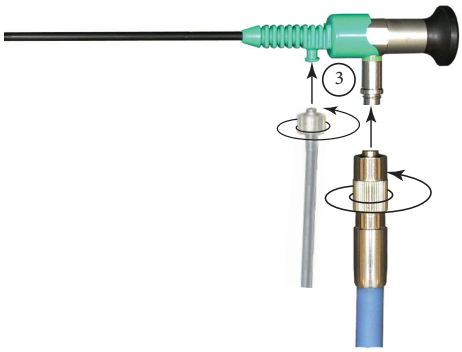


G. Endo-Scrub® 2 Footswitch.
H. Endo-Scrub® 2 Footswitch cable.

Endo-Scrub® 2 Assembly



1. Wet.
2. Slowly insert.

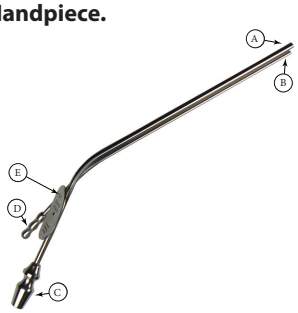


3. Attach irrigation and light source.

Suction Irrigator

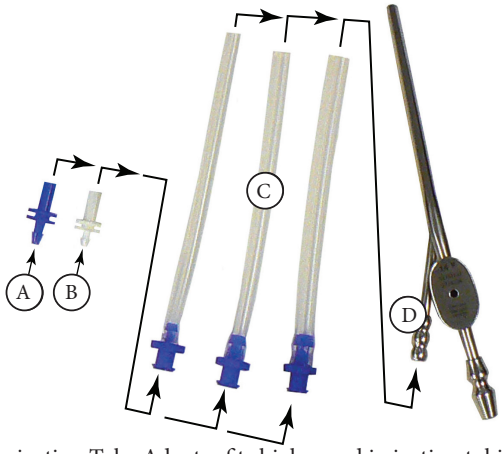
The Suction Irrigator may be selected via the radio button within the Irrigation Method box.
NOTE: The suction irrigator is NOT available for microdebrider handpieces.

Suction Irrigator Handpiece.



A. Suction Tube.
B. Irrigation tube.
C. Suction Fitting.
D. Irrigation Fitting.
E. Tube Size.
NOTE: The Suction Irrigator shown here is available to all drills provided a microdebrider is not attached to the console.

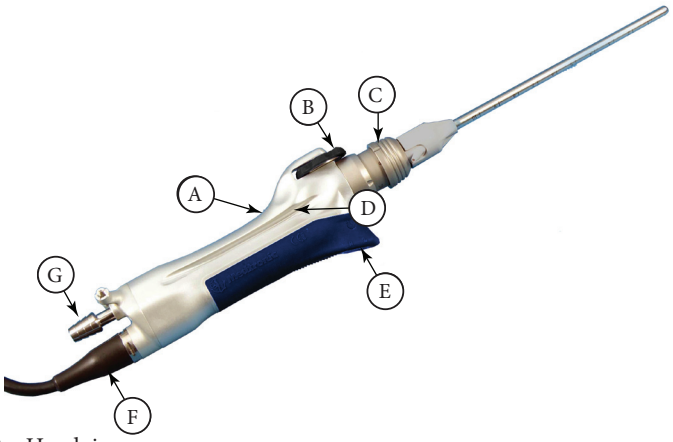
Suction Irrigator Adapter Kit



A. Blue Irrigation Tube Adapter fits high speed irrigation tubing - 3318503.
B. White Irrigation Tube Adapter fits IPC™ Visao® irrigation tubing - 3318603.
C. Irrigation Connector Set is used to adjust the Blue or White Adapter to the stainless steel Irrigation Fitting.
D. Irrigation Fitting.

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.

Technical Specifications

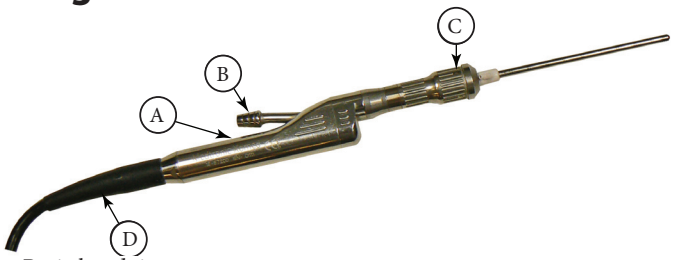
StraightShot® M4 Microdebrider Part No. 1898200T

Midas Rex® SC1 Part No. ED100

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

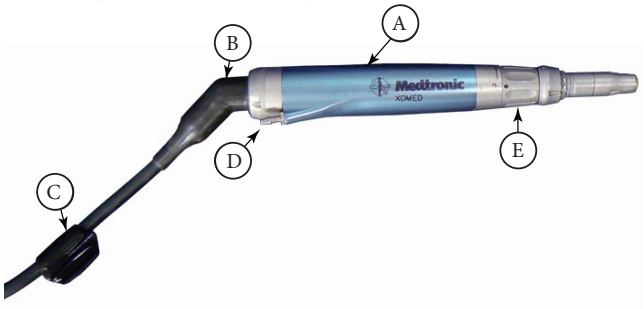
Handpiece - Straightshot® Magnum® II, Part No. 1897200
Straightshot® III Part No. 1897201

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)



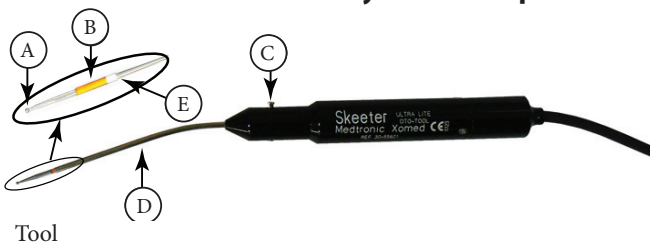
A. Handpiece
B. Cable
C. Cable clip
D. Cooling barbs
E. Locking collar

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

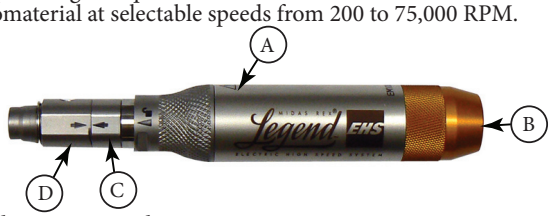
Part No.	3055601
Speed	1,000-16,000 RPM forward/reverse
Size	17 cm length x 1.6 cm diameter
Weight	57 g
Duty Cycle	Continuous run

Storage

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

Midas Rex® Legend EHS® Motor

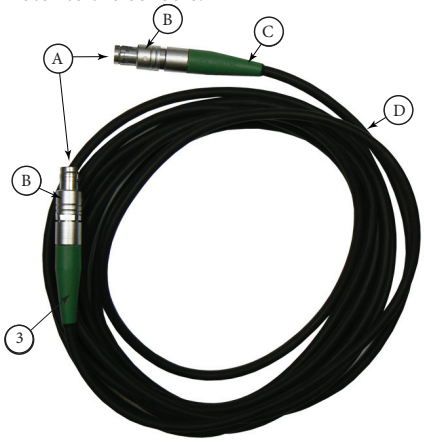
High speed, high torque, reversible electric motor used to dissect bone and biomaterial at selectable speeds from 200 to 75,000 RPM.



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

Legend EHS® Motor Cable

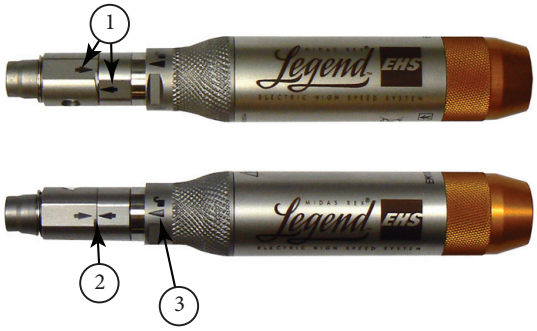
Connects the motor to the console.



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.



1. Improperly aligned collets.
2. Properly aligned collets.
3. Motor side attachment alignment arrow.

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

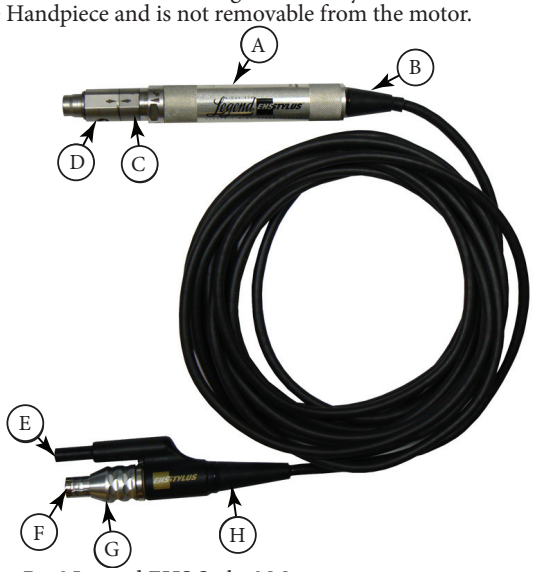
Part No.	EM100-A
Speed	200-75000 RPM forward/reverse
Size	9.02 cm length x 2.03 cm diameter
Weight	180 g

Duty Cycle (To avoid overheating):

- For continuous use in operating room temperatures up to 40°C , the Legend EHS® Motor is rated for a cutting time of 3 minutes, at 70,000 RPM.
- For normal operating room temperatures (typically 20°C) the Legend EHS® Motor is rated for a continuous cutting time of 10 minutes followed by 25 minutes of rest.
- The Legend EHS® Motor is rated for intermittent use of 20 seconds ON / 20 seconds OFF, indefinitely at 70,000 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.



A. Midas Rex® Legend EHS Stylus® Motor.
B. Cable.
C. Rotational collet.
D. Stationary collet.
E. Ground connector.
F. 4-pin connect
G. Locking sleeve.
H. Black boot.

Technical Specifications

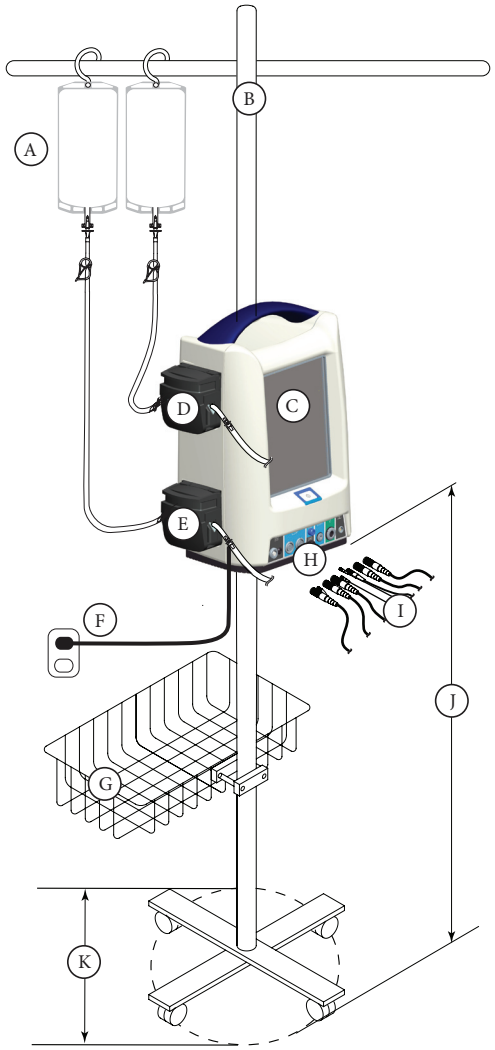
Legend EHS Stylus® Motor

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.

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

G***eneral*** 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 connectors
   - 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:

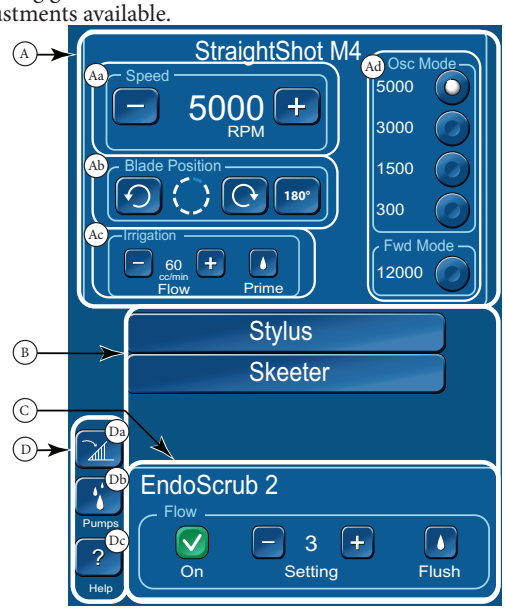
4. On Irrigation pole, mount IPC™ and irrigation/coolant bag(s).
Note: Irrigant and coolant bags should be placed above the console to ensure adequate flow.
5. Position the IPC™ in a manner that does not obstruct the power inlet for the purpose of disconnecting the Mains voltage by the power cord. Plug 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

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.

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 handpices. 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.

Handpiece Touchscreen Default Value Table		RPMs		Mode				Pump 1			Pump 2	
Handpiece Name	Touchscreen Display Name	RPM Range	Default RPMs	Fwd (Forward)	Rev (Reverse)	Osc (Oscillate)	Cut (1 revolution)	Cooling	Irrigation	EndoScrub 2	Irrigation	Suction Irrigator
Visao	Visao	200-80000	80000	X				X			X	
		200-80000	80000		X							
Suction Irrigator Optional												X
Midas Rex SC1	SC1 Handpiece	50-5000	5000			X						
		50-12000	12000	X							X	
			1				X					
StraightShot M4 Microdebrider	StraightShot M4	50-5000	5000			X					X	
		50-12000	12000	X								
EndoScrub 2 Optional										X		
Straightshot III Microdebrider	StraightShot M4	50-5000	5000			X					X	
		50-12000	12000	X								
EndoScrub 2 Optional										X		
Straightshot Magnum II Microdebrider	StraightShot M4	50-5000	5000			X					X	
		50-12000	12000	X								
EndoScrub 2 Optional										X		
Midas Rex Legend EHS® motor.	EHS	200-75000	70000	X	X				X			
Suction Irrigator Optional												X
Midas Rex Legend EHS Stylus motor	Stylus	200-75000	60000	X	X				X			
Suction Irrigator Optional												X
Skeeter Handpiece	Skeeter	1000-16000	16000	X	X							
Suction Irrigator Optional												X

1. Prime irrigation and cooling. See Precaution P1.
   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

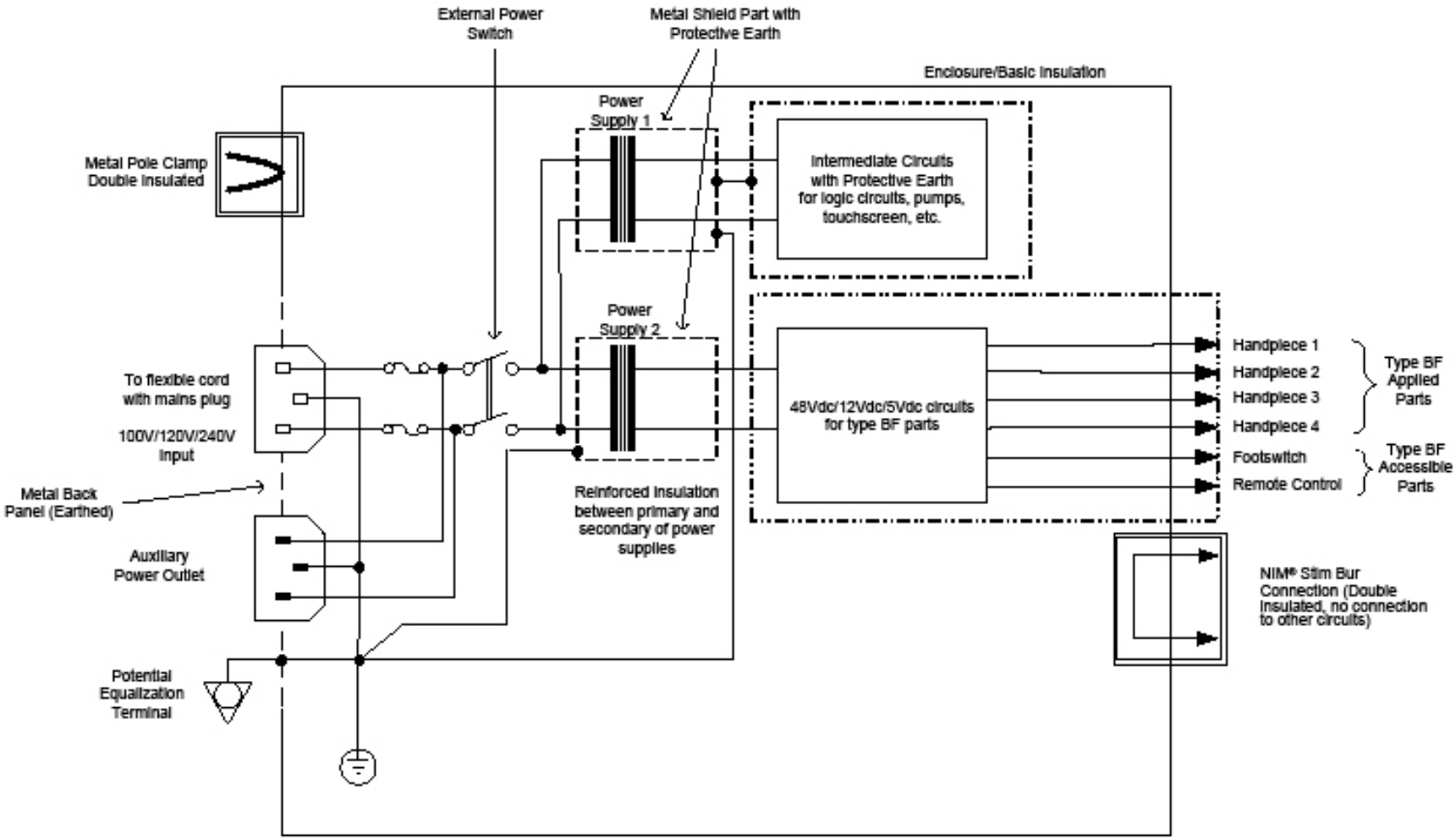
Applicable components: Equalization Terminal (PN 11190620) and Components in direct contact with the Back Panel (PN 11683316).
Applicable test: 25 Ampere/60Hz ground bond for 5 seconds, (per IEC 60601-1 Clause 8.6.4.a)
Applicable result: <100 milli-Ohm impedance

Floating Metal

Applicable components: Pole Clamp (PN 66320173) and bezel of irrigation port in Connector Panel (PN 44681784 or PN 11249350)
Applicable test: 4000VAC 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



IPC™ Block Diagram

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.

Troubleshooting

Symptom	Cause	Solution (Customer)
Enclosure, pump, or touchscreen is cracked	Mechanical impact to affected component	Contact customer care.
Loose material inside enclosure	Loose or damaged component due to mechanical impact or vibration	
Handle is loose or damaged	Mechanical damage to handle	
Pole clamp is loose or damaged	Mechanical damage to pole clamp	
Air inlet is blocked	Screen is obstructed with debris	Use a dry soft bristle brush to dislodge debris (vacuum)
Mains switch is damaged/non-functional/does not latch	Component cracked, worn, obstructed by debris	Contact customer care.
Mains switch lamp does not illuminate, unit functional	Hardware fault.	
Fan does not turn		
Console does not power on (power lamp on)		
Console does not power on (power lamp off)	Blown Fuse	Replace fuses. REF 1898125 - Fuses, 5A/250V 2/Pack
	Mains cable not connected properly or damaged	Check mains connection, replace faulty mains cable if necessary
Display not visible (power lamp on)	Hardware fault.	Contact customer care.
Display contains horizontal/vertical lines or color streaks		
Incorrect language displayed	Language set incorrectly.	Cycle power on console. Press “Settings” button on display during initial boot up and select desired language.
Touchscreen does not respond correctly	Touchscreen not calibrated.	Cycle power on console. Press “Settings” button on display during initial boot up and perform touchscreen calibration.
Touchscreen not responsive (cannot be calibrated)	Hardware fault.	Contact customer care.
Pump does not turn	Incompatible tubing	Use only Medtronic approved tubing sets
Pump is noisy (erratic motion)	Hardware fault.	Contact customer care
Pump is noisy, but functional		
Little or no irrigation/cooling flow	Incompatible or incorrect tubing	Use only Medtronic approved tubing sets
	Incorrect irrigation setting	Verify correct settings in “Pump” set-up screen
	Tubing occluded	Ensure tubing is not pinched or occluded by roller/slide clamps, or tissue. Ensure fluid source is above pump.
Damaged or loose connector on connector panel	Mechanical damage to panel	Contact customer care.
Damaged or loose connector on back panel	Mechanical damage to component	Contact customer care.
No line voltage on AC outlet	Mains cable not connector properly or damaged	Check mains connection, replace faulty mains cable if necessary
	Blown fuse	Replace fuses. REF 1898125 - Fuses, 5A/250V 2/Pack
	Hardware fault.	Contact customer care.
Handpiece or accessory will not connect	Damaged connector	Verify handpiece/accessory plug is not damaged. Verify correct boot is installed.
Handpiece not recognized	See Error Code 11 through 14 troubleshooting	
Handpiece recognized, but does not run	Handpiece or FCU fault	Check faulty FCU by using manual switch on back of console.
	Hardware fault.	Contact customer care.
Handpiece does not reach full speed	Handpiece fault	
	FCU pedal obstructed	Check for obstructions below/near pedal
	FCU fault	Contact customer care.
	Hardware fault. (Console)	Contact customer care.
Handpiece does not reach full speed or is noisy	Collet unlocked	Lock collet
Wrong handpiece identified	Handpiece fault	Contact customer care
	Hardware fault.	
Footswitch not recognized	See Error Code 17	Contact customer care
Footswitch buttons not correctly recognized	Hardware fault.	
	FCU fault	
Manual switch does not run handpiece	FCU connected	Disconnect FCU. Manual switch is disabled when FCU is connected.
	Hardware fault.	Contact customer care
Console fails 4kVAC hi-pot	Hardware fault.	Contact customer care
Console fails 2.5kVAC hi-pot	Hardware fault.	Contact customer care

Error Code		
Symptom	**Cause**	**Solution (Customer)**
Error Code 1 displayed	Internal communication fault	Contact customer care
Error Code 3 displayed		
Error Code 4 displayed		
Error Code 5 displayed		
Error Code 6 displayed		
Error Code 7 displayed		
Error Code 9 displayed	Pump 1 stalled	Check tubing / contact customer care
Error Code 10 displayed	Pump 2 stalled	
Error Code 11 displayed	Unrecognized/damaged handpiece plugged in on Port 1 (left most 12 position)	Possible handpiece or console problem, contact customer care
Error Code 12 displayed	Unrecognized/damaged handpiece plugged in on Port 2 (right most 12 position 12 pin)	
Error Code 13 displayed	Unrecognized/damaged handpiece plugged in on Port 3 (4 position)	
Error Code 14 displayed	Unrecognized/damaged handpiece plugged in on Port 4 (Skeeter®)	
Error Code 15 displayed	Handpiece Stalled	
Error Code 16 displayed	Excessive current or heat detected	
Error Code 17 displayed	Unrecognized/damaged FCU plugged in	
Error Code 19 displayed	Self test failure	Contact customer care
Error Code 20 displayed		
Error Code 21 displayed		
Error Code 23 displayed		
Error Code 24 displayed		
Error Code 25 displayed		
Error Code 26 displayed		
Error Code 27 displayed		
Error Code 28 displayed		
Error Code 29 displayed		
Error Code 30 displayed		
Error Code 31 displayed		
Error Code 32 displayed		
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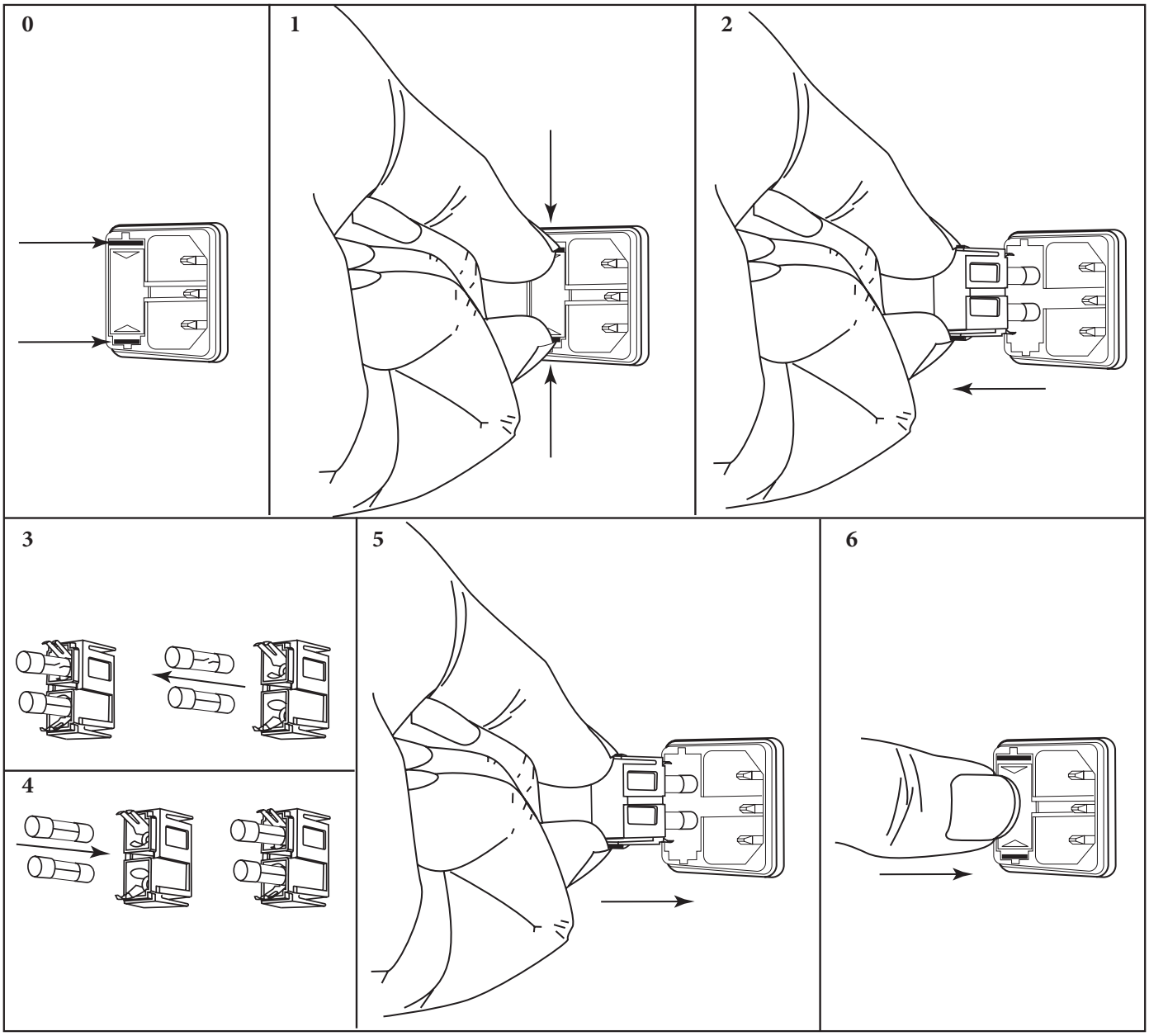
Error Code 38 displayed		
Error Code 39 displayed		

Changing the Fuse



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