



## Total Performance System Console

REF 5100-1 and 5100-2

## Irrigation Console

REF 5100-50 and 5100-52

# User's Guide

.....  
*Includes setup, safety, repair, and warranty  
information for the Stryker Total Performance System.*

*For answers to questions about other equipment, see  
the information supplied with that equipment.*

**stryker**

**INSTRUMENTS**

4100 E. Milham  
Kalamazoo, Michigan 49001 U.S.A.  
1-800-253-3210  
1-816-323-7700  
Fax 1-800-999-3811

**European Authorized Rep:**  
**RA/QA Manager**  
Stryker  
BP 50040-95946 Roissy CDG  
France  
Phone: 33-1-48-17-50-00

TPS Console 5100-1, 5100-2, 5100-50, and 5100-52

# TPS Console

REF 5100-1



The following information is provided to help define the leakage current limits and measurements of the Stryker Total Performance System (TPS).

The TPS is designed to meet all safety requirements of the International Electrotechnical Commission, "Standard IEC 601-1, Medical Electrical Equipment, part 1: General Requirements for Safety".

This standard has been adopted by Underwriters Laboratories (UL), and the Canadian Standards Association (CSA), with national deviations. The UL standard is UL2601-1, and the CSA standard is CAN/CSA-C22.2 No.601.1-M90. Both CSA and UL allow the use of their older Medical Equipment Standards until the year 2002; CAN/CSA C22.2 No. 125-M1985 and UL544. However, they prefer to evaluate new products to the new standards. Please note that products meeting the older standards will need to be re-evaluated to new standards after 2005. For now, medical electrical equipment can be evaluated to either standard.

The TPS also meets requirements used by most Biomedical Hospital Staff, NFPA 99, "Health Care Facilities Handbook", fifth edition 1996. Leakage current limit and measurement techniques outlined in the handbook coincide with ANSI/AAMI ES1-1993 "Safe Current Limits for Electromedical Apparatus", (American National Standards Institute/Association for the Advancement of Medical Instrumentation), as well as UL2601-1.

**Table 1** contains leakage current limits which pertain to products such as the Stryker TPS (Class I Type BF), based on the new standards guidelines.

**Table 2** contains leakage current measurement data based on the TPS. When measuring, hospital staff must use measuring apparatus that contain the impedance circuitry in accordance with the new standards, e.g. 1000 ohm 1% resistor, in parallel with 10,000 ohm 5% resistor and 0.015 $\mu$ F  $\pm$ 5% capacitor, with a milli-voltmeter connected across the capacitor.

The following analyzers are capable of making correct measurements: Babco 601 Safety Analyzer, Bio-Tek 601 Pro, and the ED&D 601 Safety Analyzer.

TABLE 1

LEAKAGE LIMITS	NORMAL CONDITION SOURCE					SINGLE FAULT SOURCE					SINK
	UL2601-1	CSA 601.1	IEC 601-1	NFPA99	AAMI-ES1	UL2601-1	CSA601.1	IEC601-1	NFPA99	AAMI-ES1	
TPS HANPIECE TYPE BF PATIENT APPLIED PARTS	100	100	100	NA	NA	500	500	500	NA	NA	5000
ENCLOSURE	300	100	100	300	100	300*	500	500	300	300	NA
EARTH	300	500	500	NA	500	NA	1000	1000	NA	1000	NA

VALUES LISTED IN MICROAMPERES

\*LOSS OF PROTECTIVE EARTH ONLY

TABLE 2

TPS TYPICAL LEAKAGE	NORMAL CONDITION SOURCE		SINGLE FAULT CONDITION				
			SOURCE				SINK
	NORMAL POLARITY	REVERSE POLARITY	NORMAL POLARITY		REVERSE POLARITY		
			OPEN GROUND	OPEN NEUTRAL	OPEN GROUND	OPEN NEUTRAL	
TPS HANPIECE (TYPE BF)	<10	<10	<10	<10	<10	<10	<25
ENCLOSURE	<10	<10	<250	<10	<250	<10	NA
EARTH	<250	<250	NA	<500**	NA	<500**	NA

VALUES LISTED IN MICROAMPERES

\*\*MEASURING DEVICE IN SERIES WITH GROUND

INSTRUMENTS

4100 E. Milham  
Kalamazoo, Michigan 49001 U.S.A.  
1-800-253-3210  
1-616-323-7700  
Fax 1-800-999-3811

5100-1-706 Rev-

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## Software License Notice

Stryker® TPS™ Surgical Tool System products contain software that is installed in the products by Stryker Corporation. Stryker Corporation owns this software; this software is never sold. Each sale of a software containing product is not a sale of such software; it includes only a license to use the software in the product in which the software was initially installed.

Any license granted by Stryker Corporation to use the software contained in its products does not give the licensee the right to copy, alter, disassemble, reverse engineer, create derivative works of such software or to use such software in either original or modified form in any product other than the Stryker Corporation product in which the software was initially installed by Stryker Corporation.

# Where to Find Answers

When you have questions about your Stryker TPS products, there are several places to find the answers.

## In this book

Use this book to set up your system and select console options. This book also contains information on system safety, repair, and component warranty.

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## In TPS component instructions

For answers to questions about any TPS handpiece, attachment, or component, see the information supplied with that component. A copy of *TPS Cleaning, Maintenance and Sterilization Recommendations* is also supplied with each component.

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## From your Stryker Sales Representative

If you can't find an answer in any of the materials provided or you have questions about other Stryker Instruments products, call your Stryker Sales Representative.

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## From Stryker Customer Service

Please contact our Customer Service Department to order product information literature, a cutting accessories guide, additional TPS maintenance manuals, and component instructions by dialing 1-800-253-3210. Outside the U.S.A., contact your nearest Stryker subsidiary.

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## Warning • Caution • Note



This symbol is used to alert the reader to important safety and precautionary information. When displayed on the actual device, it refers the user to accompanying documents.

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

**WARNING:** The personal safety of the patient and/or user may be involved. Disregarding this information could result in injury to the patient and/or O.R. staff.

**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 more clear.



# IMPORTANT SAFETY INSTRUCTIONS

**WARNING:** The personal safety of the patient and/or user may be involved. Disregarding this information could result in injury to the patient and/or O.R. staff. Read and understand the following warnings.

## SYSTEM SAFETY

- DO NOT modify ground of power cord.
- Equipment not suitable for use in the presence of flammable anesthetic mixture with air or with oxygen or nitrous oxide.
- The Stryker Total Performance System is designed to be used by persons familiar with surgical procedures. Misuse may cause injury to both patient and system components. Prior to each use, system components should be inspected for damage. DO NOT use if damage is apparent.
- Use only Stryker TPS components and accessories unless otherwise specified.
- Clean and sterilize handpieces and accessories before first and every use.
- Use of safety glasses by user and O.R. staff is recommended to prevent eye injuries.

## HANDPIECE SAFETY

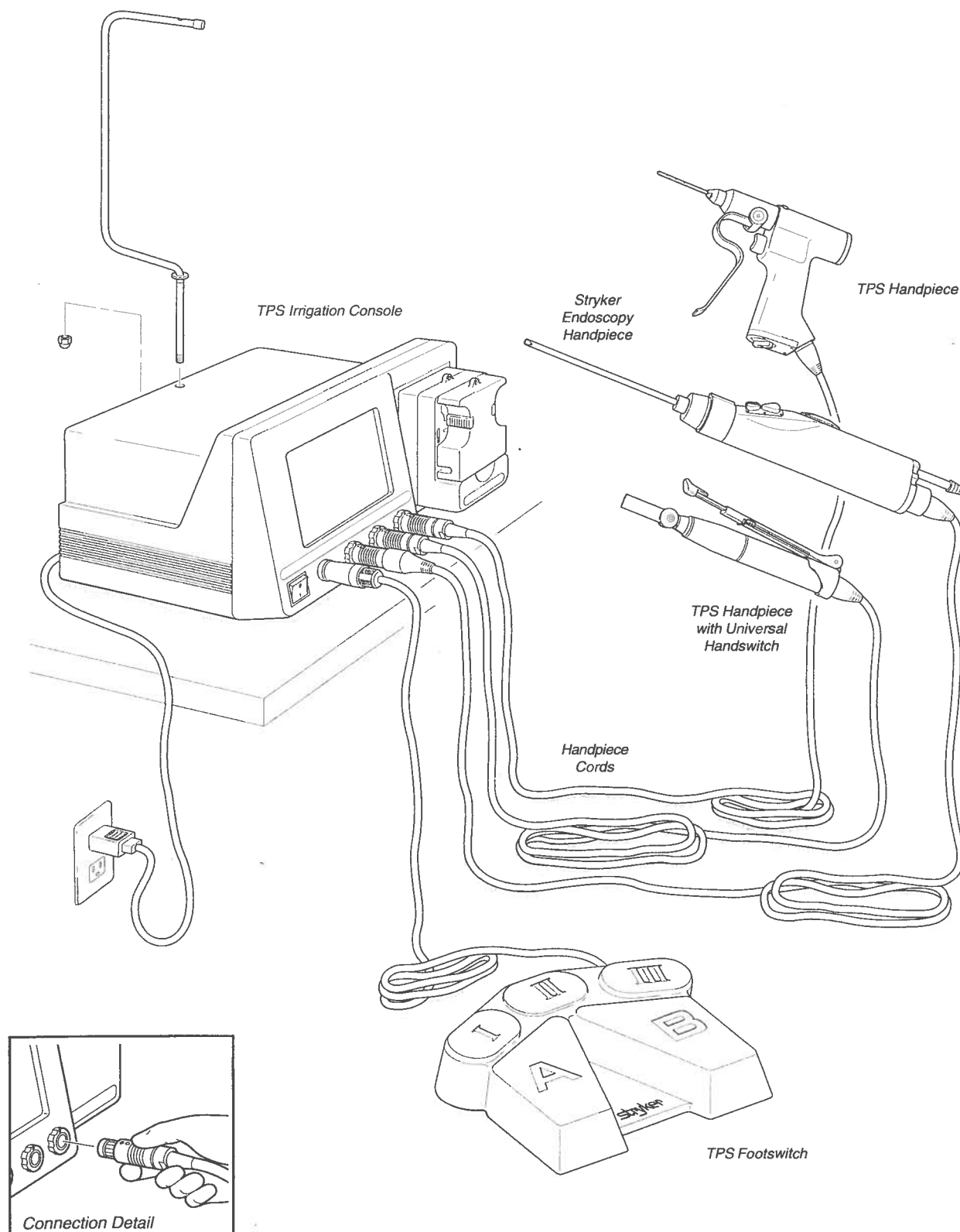
- **Read this booklet and the information supplied with your TPS components. Component instructions provide specific safety information. Refer to the instructions supplied with Stryker Endoscopy handpieces when using those handpieces in conjunction with the TPS console.**
- Activate and deactivate handpieces from the same trigger device. For example, if a handpiece is activated by the footswitch it must be deactivated from the footswitch. *Exception:* In the 1T mode, handpieces can be deactivated from any device.
- DO NOT attempt to change a saw, bur, or drill while handpiece is running.
- Stryker handpieces which fail due to long life and/or nose bearing failure may allow foreign matter to migrate or emit from the distal tip of the handpiece. Fluid may leak into the surgical site, such that measures may be required, per the physician's discretion, to protect the patient from infection.
- Never rest handpiece on the patient. Improper handling of a handpiece could result in damage or burns to tissue.
- Do not place a footswitch-controlled TPS handpiece near or on a magnetic pad or tray. The magnetic field can simulate a Universal Handswitch and may cause the handpieces to run inadvertently.
- DO NOT modify any bur to fit the handpieces. Use

only Stryker approved burs. Other burs may not fit properly in the handpiece. During use they may come out of the handpiece or bend which would result in damage to tissue in the surgical site due to loss of control of the bur.

- Burs and blades are intended for single use only.
- Excessive pressure, such as bending or prying, may cause accessory to bend or break and cause tissue damage to patient and/or O.R. staff.
- Heavy sideloads and/or long operating periods occasionally will cause overheating of the distal tip and the body of handpieces to the point where the handpiece is uncomfortable to hold or causes injury to the patient.
- If the recommended duty cycle is not followed, the handpiece may overheat and cause injury to patient and/or operating room staff. See the *Duty Cycle* information supplied with each handpiece.
- Excessive pressure, such as bending and/or prying with a bur, may cause the bur to bend or fracture. If operated at a high speed, it is possible that the bur will bend yet further. This could result in damage to tissue in the surgical site, handpiece vibration that causes lost tactile control, or breakage of the bur such that the broken piece would be ejected at a high velocity endangering the patient and/or O.R. staff. It is therefore recommended that safety glasses be used.
- Excessive pressure, such as bending and prying with blade, may cause the blade to bend or fracture and could result in damage to tissue in the surgical site and/or loss of tactile control.
- If using a device with a safety lock, such as a MicroDriver or Universal Handswitch, always place that device in the SAFE position when not in use. **IMPORTANT:** Be aware that the TPS footswitch will override the Universal Handswitch SAFE setting.
- DO NOT use a bur or blade without the appropriate guard or attachment as user and/or patient injury may result.
- Please note the handpiece starts with rapid acceleration when the footswitch or handswitch is activated.
- During initial use of your TPS handpieces, monitor the heat response in relation to the type of surgical procedure being performed. Frequently check the distal tip and body until you are familiar with its temperature rise characteristics. Failure to pay close attention to handpiece temperature may cause burn injury to patient.

# System Overview

The Stryker Total Performance System is intended for use in the cutting, drilling, decorticating, and smoothing of bone and other bone related tissue in a variety of surgical procedures. It is also used for the placement or cutting of screws, wires, pins, and other fixation devices as it can be used to cut metal.



# Operating Instructions

The TPS Console powers multiple handpieces while allowing the user to program a number of customized settings.



**WARNING:** Before using this system, read and understand the information in this manual and the instructions supplied with each TPS component and Stryker Endoscopy handpieces. Pay close attention to the *User/Patient Safety Information*.

**WARNING:** Familiarization with the Total Performance System prior to use is important. If you have any questions, contact your Stryker Instruments representative or Stryker Customer Service at 1-800-253-3210.

**WARNING:** Prior to use, system components should be operated and inspected for any damage. DO NOT use if damage is apparent.

## Connecting the Equipment

This is a system overview. For specific instructions on each TPS component, refer to the information supplied with the component.

1. Place your console on a sturdy, flat surface near a hospital grade outlet.
2. Plug the console's power cord into the recessed power socket on the back of the console.
3. Plug the other end of the power cord into a hospital-grade wall outlet.
4. Turn on the console. The on/off switch is located on the front of the console.

NOTE: As you set up the system, the console's screen will change to indicate the various components as they are plugged in.

5. If using a Footswitch, plug the footswitch cable into the console port marked **FOOTSWITCH**. Align orientation marks and gently push connectors together.



**CAUTION:** All TPS Cords have push/pull connectors. Do not thread or twist for insertion or removal.

6. Plug the handpiece cord(s) into the console port(s) marked **HANDPIECE**. Align connector orientation marks and gently push connectors together.  
NOTE: Ports marked TPS 1 and TPS 2 are for Stryker TPS handpieces only. The port marked ENDO is intended for the following list of Stryker Endoscopy handpieces: SE5 Hand-controlled, (272-704); QuadraCut Shaver (275-701); QuadraCut Bone Plug (275-705); and QuadraCut small Joint (275-601).

NOTE: If using a TPS Universal Handswitch, attach it to the handpiece before you plug the cord into the handpiece.

7. Plug the other end of the handpiece cord(s) into the handpiece(s).
8. Attach cutting accessories to handpieces. Instructions supplied with each handpiece or attachment provide details for cutting accessory assembly.



**WARNING:** Use only Stryker approved cutting accessories.

9. If using an Irrigation Console (REF 5100-50 or 5100-52), assemble Irrigation Pole (REF 5100-50-28) to the console as shown. Hang irrigation bag from pole. Install irrigation cassette into the pump. Attach irrigation clips to handpieces and connect tubing.

### Symbol Definition

 Power ON

 Power OFF



Footswitch Connector



ENDO  
Endoscopy Handpiece Port



TPS1  
TPS Handpiece Port 1



TPS2  
TPS Handpiece Port 2

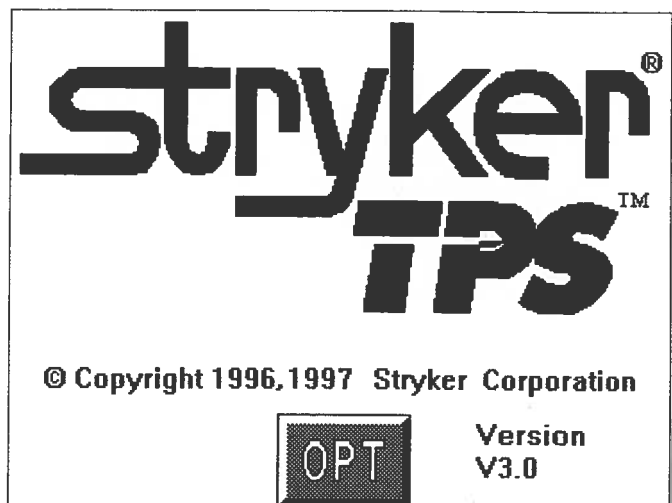


Type B  
Equipment



Type BF  
Equipment

## The Control Screen



## TPS Start-Up Screen

This display appears on the screen every time the console is turned on.

This display remains on the screen until a cord is plugged into one of the TPS handpiece ports or the OPT button is depressed.

If a handpiece cord is plugged into a handpiece port when the console is turned on, this display shows momentarily before changing to either a no handpiece detected screen or to the screen of the selected handpiece.



This example shows that no handpiece is attached to the cord plugged into the TPS2 port.

## No Handpiece Detected

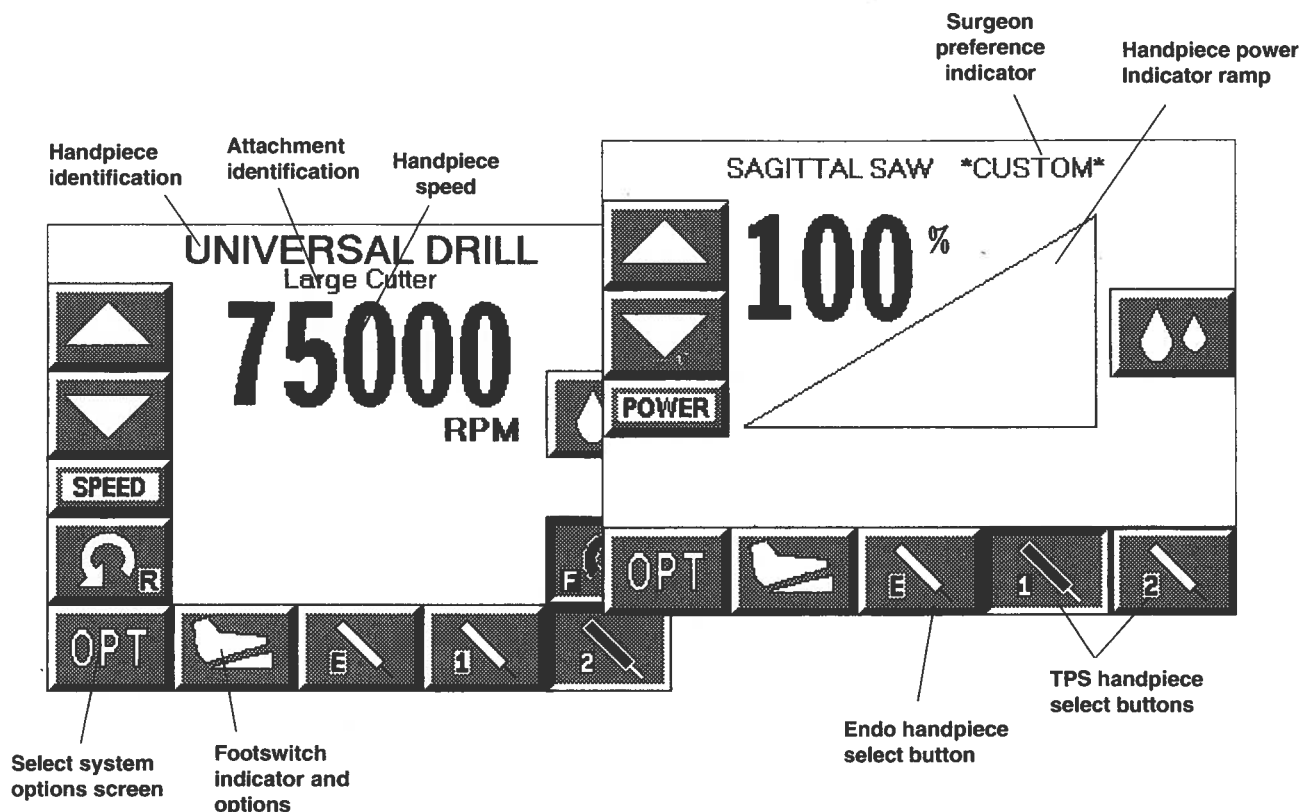
This image indicates that no handpiece is attached to the cord plugged into the selected port. The screen will change to the handpiece screen when the missing handpiece is connected to the cord.

**NOTE:** This screen will also appear if the console is unable to recognize the handpiece. This could be caused by a handpiece that is not compatible with the TPS console, or a faulty or damaged handpiece or cord.



# Functions of the Control Screen

The TPS console allows the user to select functions and settings such as handpiece selection, speed, and direction. Designed to be easy to use and understand, the touch sensitive **control screen** allows you to set the system controls with the touch of a finger. Interactive **icons** on the control panel represent system components and functions. The control screen also provides important monitoring information for the selected handpiece.



## Elements of the Control Screen

**Control screen** visually presents options which can be set for the selected handpiece.

**Icons** represent elements of your TPS system. Icons are functional buttons. Each function may be selected by pressing the screen where the button is displayed. When you touch an icon, the icon appears to be pressed down and the graphic symbol highlights to indicate that it is activated. (See Icon Identification).

NOTE: An audible signal indicates interface with icons.

NOTE: Buttons such as the adjust arrows or OPT button which are temporary toggles or adjustment buttons only highlight while depressed.

NOTE: Buttons with a white background are toggle buttons.

NOTE: Options vary among different handpieces. The console will only display the options available for a given handpiece.

**Handpiece identification** displays the name of the active handpiece. NOTE: Handpieces can be plugged into each of the console's handpiece ports, but only one can be selected at a time.

NOTE: When \*custom\* is displayed at the top of the screen, the console's default settings are selected from Surgeon Preferences. The console is able to capture the preferred settings for several different users. When this feature is activated, the preferred settings act as default settings. See Surgeon Preference for further details.

**Handpiece speed information** displays the default speed for each handpiece until you reset speed settings. While the handpiece is running, the display shows the actual handpiece speed. If the handpiece is not running the default or selected speed is displayed.

NOTE: Incremental information displayed on the control screen is accurate within +/-1% or better.

# Select Your System Settings

**NOTE:** When the console is turned on, its default setting is factory default unless a Surgeon Preference setting is selected as the start up default. See Surgeon Preference for further details.

1. Handpiece select buttons enable you to activate the handpiece plugged into one of the three ports on the front of the console. **To display the control screen for the handpiece plugged into the TPS 1 port, touch the corresponding handpiece select icon.** The icon highlights and appears pressed down.

**NOTE:** Selecting a handpiece icon activates the corresponding handpiece and displays its specific control screen.

2. **Change the maximum handpiece speed.** Press the adjustment arrows to change the handpiece speed setting incrementally until the desired speed is reached.

- Saws - The set point is displayed as a percentage of maximum power and vertical line on the speed ramp. During handpiece operation, the percentage reading and speed ramp displays the power level.

- Rotary handpieces - The speed set point is displayed. During handpiece operation, the current speed is displayed.

3. **Select various settings as desired.** Refer to the control screens on the following pages for details for each handpiece.
4. **Select the OPT icon to access the MAIN OPTION screen.** This screen allows access to general console and user settings as well as direct access to each handpiece option screen.

**NOTE:** Alternatively, the screen returns to the active handpiece control screen when the handpiece is activated or the handpiece name is touched.

5. **Touch the EXIT icon to return to the active handpiece control screen.**

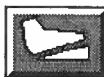
## Standard Features

### Option Icon



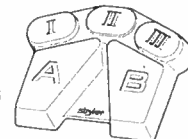
The option icon appears on all handpiece screens and allows access to the MAIN OPTION screen. See MAIN OPTION SCREEN for further details.

### Footswitch Icon

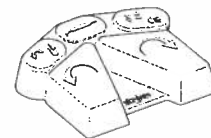


The footswitch icon only appears when a footswitch is plugged into the console.

If using a footswitch with these graphics, pedal functions can be reprogrammed. See Footswitch Adjustments and Footswitch Button Mapping.



A footswitch with these graphics cannot be reprogrammed.



### Handpiece Irrigation

**Irrigation functions pertain only to consoles with the built-in irrigation pump (REF 5100-50 and 5100-52).**



Press the icon to start irrigation flow while the handpiece is running.

If irrigation is desired while the handpiece is stopped, press and hold the icon until the pump is activated. The pump can be turned off by touching the icon again.

**Irrigation flow rate can be adjusted from the HANDPIECE screen or the HANDPIECE ADJUSTMENTS screen.**



From the HANDPIECE screen, toggle the SPEED icon to WATER before using the arrows to adjust flow rate.

**-OR-**



From the HANDPIECE ADJUSTMENTS screen, select the WATER icon and use the arrows to adjust flow rate. Flow rate diminishes as the setting approaches zero.



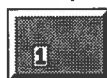
**NOTE:** Flow rate may vary among handpiece models.

The pump can also be turned on and off with the footswitch.

## Quick Reference Guide

### Icon Definition

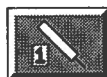
#### Handpiece Select



This type of icon appears when a cord (without a handpiece) is plugged into the corresponding Endo, TPS 1 or TPS 2 port.



It appears depressed when selected.



The handpiece graphic appears when a handpiece is attached to the corresponding cord.

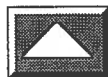


The handpiece graphic highlights and the icon appears depressed when selected.



**Footswitch Indicator:** Appears when a footswitch is connected to the console. Also gives access to footswitch adjustments screen.

**Adjustment Arrows:** Use in conjunction with other options to set handpiece speed or power, braking, acceleration, irrigation flow, screen contrast etc.



**Increase**



**Decrease**

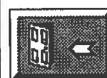
#### System Options



**Options:** Gives access to handpiece adjustments, system information, console controls and user preference.



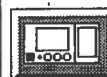
**Handpiece option:** Accesses corresponding handpiece adjustment screens.



**Exit:** Returns to previous screen.



**Information:** Displays system information screen.



**Console:** Gives access to console adjustment screen.



Allows access to the surgeon preference screen.

**Direction Arrows:** Sets handpiece mode.



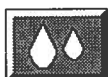
**Forward** (clockwise)



**Reverse** (counterclockwise)



**Oscillate**



**Irrigation:** Activates or deactivates handpiece irrigation.



**High:** Enables handpiece to operate in a high speed mode.



**Low:** Enables handpiece to operate in a low speed mode.

#### Toggle Buttons

**NOTE:** For easy identification, only toggle buttons have a white background.



**Speed:** Use with the increase and decrease icons to adjust rotary handpiece speed.



**Water:** Use with the increase and decrease icons to adjust irrigation flow.



**Power:** Use with the increase and decrease icons to adjust saw power.



**Variable:** Handpiece speed responds to varying degrees of pressure on the footswitch or handswitch.



**Nonvariable:** Handpiece operates at constant set-point speed/power level.



**One touch:** Handpiece is activated by one touch of a trigger device and continues to run when the trigger device is released. Handpiece is deactivated by touching any trigger device. In this mode, the handpiece operates at constant set-point speed/power level.



**Advanced:** - Accesses the advanced footswitch mapping screen.



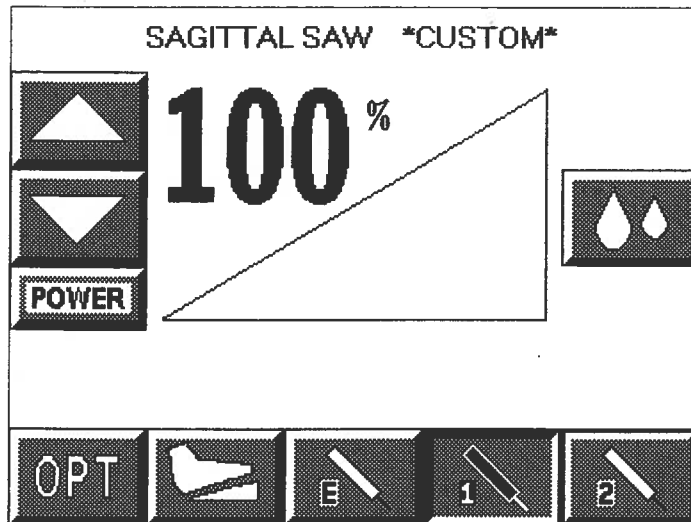
**Button:** Access button mapping screen.



**Return to full screen:** Return from large to full handpiece screen.

**NOTE:** TPS Console models REF 5100-1 and 5100-2 will not display options related to handpiece irrigation.

# Saw Handpiece Screen



This screen appears when a TPS saw is selected at the TPS1 port with the maximum power set at 100%.

ENDO, TPS2 and the footswitch icons indicate other instruments are plugged into the console.

## TPS Oscillating and Sagittal Saws

### POWER/WATER ADJUSTMENT



The power icon functions as a toggle switch for power and water settings.



Power and irrigation adjustments are made using the adjustment arrows.

As the power setting is reduced from 100%, a vertical bar displays to correspond to the lower selected maximum power.

The irrigation setting is not displayed on this screen. However, it can be seen on the Handpiece Adjustments screen.

### METHOD OF OPERATION

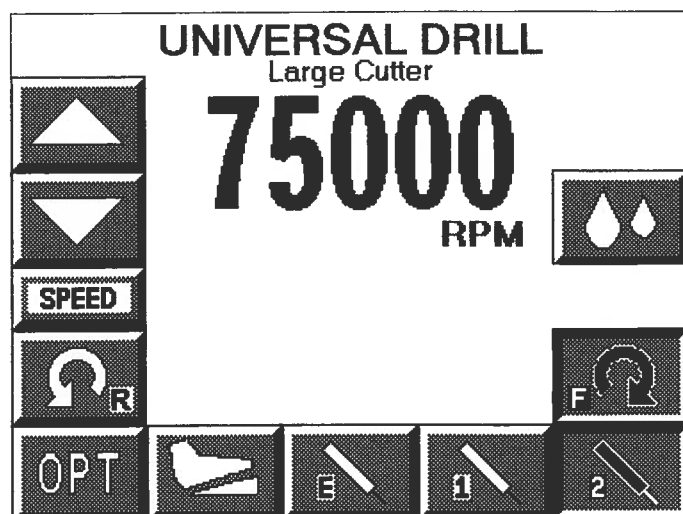
Saws can be operated with the TPS Universal Handswitch or TPS Footswitch.

**Handswitch** Handpiece selection can be made by depressing the handswitch once. The handpiece select icon changes to indicate the active handpiece. Depress the handswitch again to run the handpiece.

Handpiece runs from start-up to the maximum selected speed.

**Footswitch** Handpiece runs from start-up to the maximum selected speed with either the forward or reverse pedal.

# Rotary Handpiece Screen



This screen appears when a TPS rotary handpiece is selected. The TPS Universal Drill is plugged into the TPS2 port and the speed is set at 75,000 RPM.

ENDO, TPS1 and the footswitch icons indicate that other instruments are plugged into the console.

## TPS Universal and Micro Drills

### METHOD OF OPERATION

The Universal Drill can be operated with the TPS Universal Handswitch or TPS Footswitch.

**Handswitch** Handpiece selection can be made by depressing the handswitch once. The handpiece select icon changes to indicate the active handpiece. Depress the handswitch again to run the handpiece.

Handpiece runs from start-up to the maximum selected speed. Speed and cutting direction corresponds to what is selected on the screen.

**Footswitch** Handpiece runs from start-up to the maximum selected speed.

Handpiece direction is controlled by selecting the forward or reverse pedals. The direction icon on the screen changes when the corresponding footswitch pedal is depressed.

### SPEED/WATER ADJUSTMENT



The speed icon functions as a toggle switch for speed and water settings.



Speed and irrigation adjustments are made using the adjustment arrows.

### DIRECTION OPTIONS



FORWARD Clockwise



REVERSE Counterclockwise

## TPS MicroDriver

### METHOD OF OPERATION

The TPS MicroDriver can be operated with its built-in trigger and rotary control switch or with the TPS Footswitch.

**NOTE:** The handpiece will not run when the rotary switch is in the SAFE position.

**Trigger** The built-in speed control trigger runs the handpiece from start-up to the maximum selected speed.

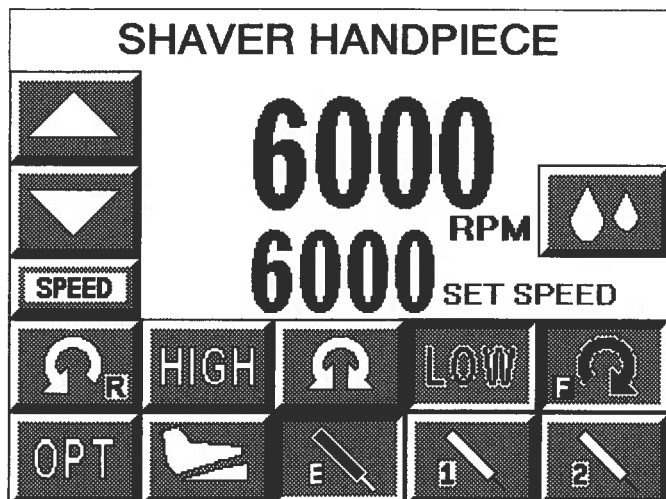
Select cutting direction with the rotary switch on the handpiece. Direction icon will highlight to match the rotary switch position.

**Footswitch** Handpiece runs from start-up to the maximum selected speed.

The direction icon on the screen changes when the corresponding footswitch pedal is depressed.

Footswitch operation overrides handpiece settings.  
*Example:* If the footswitch reverse pedal is depressed while the handpiece rotary switch is set in forward, the handpiece operates in the reverse direction and the reverse icon highlights. However, after the pedal is released, the direction icon will revert to the direction set on the rotary switch.

# The Stryker Endoscopy Handpiece Screen



This screen appears when the Endo icon is selected. The HI mode and forward direction icons are selected and Set Speed is set at 6,000 RPM.

TPS1, TPS2 and the footswitch icons indicate that other instruments are plugged into the console.

Depress the mode icon and set the maximum speed using the adjustment arrows. Speed settings are individually selected for each mode.

Default speed settings and incremental steps are specific to each handpiece.

## MODES



Operation in high speed mode.



Operation in oscillate mode.



Operation in low speed mode.



**WARNING:** Read and understand the Stryker Endoscopy handpiece instructions.

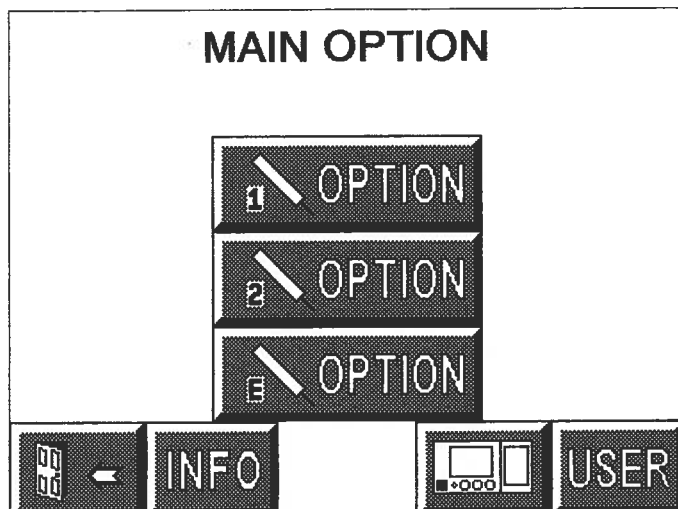
**If instructions were not supplied with your handpiece, refer to the appropriate *Stryker Endoscopy Operating and Maintenance Manual* listed below.**

Handpiece	Manual
272-704	1000-400-120
275-701	1000-400-034
275-705	1000-400-034
275-601	1000-400-034
290-601	1000-400-288

## IMPORTANT INFORMATION

The hand-controlled Endo Shaver can be controlled by the footswitch or by the hand-control buttons built into the handpiece.

## Main Option Screen



Select the OPT icon to access the MAIN OPTION screen. This screen allows direct access to the handpieces attached to the console and to console and user settings.



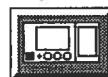
OPTION 1, 2, and E icons appear only when handpieces are plugged into the corresponding console ports. A handpiece must be plugged in to program its settings.

To go to the HANDPIECE ADJUST screen, touch the option button that corresponds to the desired handpiece. Refer to HANDPIECE ADJUST.

The MAIN OPTION screen also gives **DIRECT** access to:



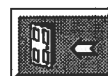
Refer to SURGEON PREFERENCE.



Refer to CONSOLE ADJUSTMENT.



Refer to SYSTEM INFORMATION.



EXIT: Return to handpiece screen.



## System Information Screen

### SYSTEM INFORMATION

**Console:**

Software Rev 3.0

Hardware Rev 5 200W

Footswitch: TPS FOOTSWITCH

5100-008-000 Rev 2

TPS1: SAGITTAL SAW

5100-034-000 Rev 1

TPS2: UNIVERSAL DRILL

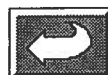
5100-010-000 Rev 2

ENDO: SHAVER HANDPIECE

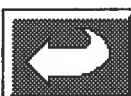
0275-704-000 Rev 1

Selecting the INFORMATION icon from the MAIN OPTION menu displays the part numbers and revision levels of the configured system components.

This information is used as a diagnostic aid only.



Return to the MAIN OPTION screen.







## Handpiece Adjustment Screen

**UNIVERSAL DRILL**  
TPS1 Handpiece Adjustments

BRAKE

ACCEL

TURNS

WATER

100% 100% 10 100%

▽

ATTACHMENT

None

△

OPT

BUTTON

RUN MODE

VAR

▽

Select a Handpiece Option icon from the MAIN OPTION screen to access this screen.

**NOTE:** For quick access to this screen, touch the handpiece title displayed at the top of any handpiece screen. And return to the handpiece screen by touching the handpiece title displayed on this screen.

Depending on the type of handpiece, one or more of the following options will be available.

Select BRAKE, ACCEL, TURNS, or WATER then press the arrow icons to change the setting.



**Brake:** At 100%, the handpiece stops abruptly. Deceleration slows as the setting nears zero.



**Accelerate:** At 100%, handpiece speed accelerates quickly. Acceleration slows as the setting approaches zero.



**Turns:** Use to set the number of turns per direction when running a handpiece in the oscillate mode. The minimum setting will set the oscillate function to operate in a TIME-BASED mode where the number of turns are based on the speed of the handpiece.



**Water:** At 100%, irrigation volume is greatest. Volume decreases as the setting approaches zero.

**ATTACHMENT:** Use the arrow icon on the left to scroll through the list of attachments. Display the attachment that is assembled to the handpiece by stopping on it.

Displaying the proper attachment will optimize the performance of the handpiece for the attachment and display the appropriate speed scale on the handpiece screen.

**RUN MODE:** Use the RUN MODE toggle button to scroll through the options and stop on the desired setting.



**Variable:** Handpiece speed responds to the degree of pressure applied to the footswitch or handswitch.



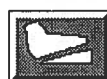
**Nonvariable:** Handpiece speed runs at the maximum setting only. Varying pressure on the footswitch or handswitch does not vary the handpiece speed.



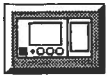
**One touch:** Toggle the handpiece on and off with a single touch of a trigger device. The trigger device can be the footswitch, handswitch or handpiece trigger buttons.



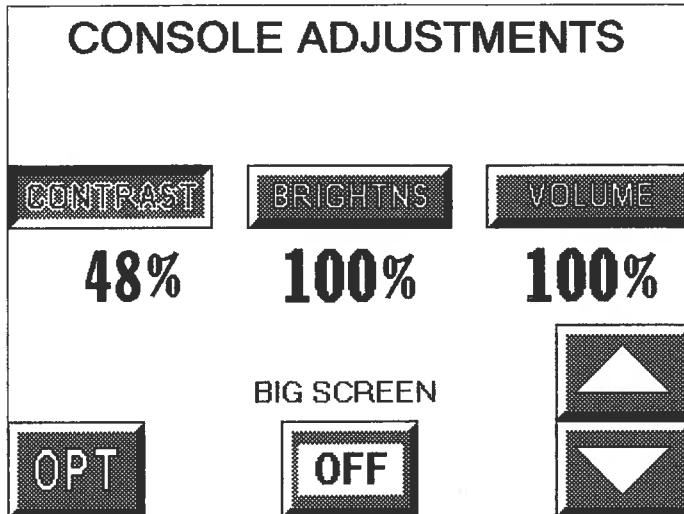
**BUTTON:** See Handswitch Button Mapping.



**FOOTSWITCH:** Activates FOOTSWITCH ADJUSTMENTS. See Footswitch Adjustments.



## Console Adjustment Screen



Select the **CONSOLE ADJUSTMENTS** icon from the **MAIN OPTION** screen to access this screen.

Select **CONTRAST**, **BRIGHTNESS** or **VOLUME** then press the arrow icons to change the setting.



**Contrast:** Screen contrast lightens at higher settings. The chosen setting remains until reset.



**Brightness:** Screen brightness intensifies at higher settings.



**Volume:** The audible signal is louder at higher settings.

Use the **BIG SCREEN** toggle button to select one of the following options.



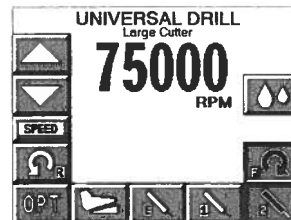
**Automatic:** A big screen is displayed while the handpiece is running and automatically returns to the full screen when handpiece stops.



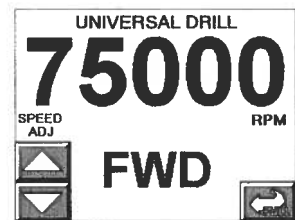
**On:** The big screen is continuously displayed. It can be temporarily switched back to the full screen by touching the Full Screen icon which appears in the lower right corner of each handpiece screen. See example of screens below.



**Off:** The big screen option is turned off. Only a full screen is displayed.



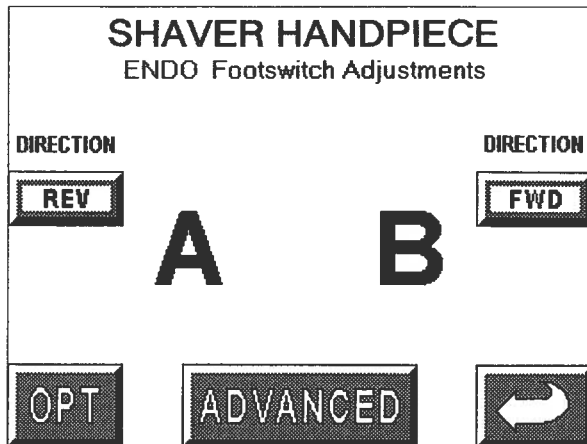
Example of full screen.



Example of big screen.



## Footswitch Adjustment Screen



This screen appears only when a newer model TPS Footswitch is used. See Standard Features.

Access this screen by selecting the Footswitch icon on the HANDPIECE CONTROL SCREEN or HANDPIECE ADJUSTMENTS screen.

NOTE: These footswitch settings function only for the handpiece for which they were selected. The handpiece is identified at the top of the screen.

From this screen, the default functions of footswitch pads A and B can be reprogrammed to accommodate the user's preferences. The left and right toggle icons correspond respectively to footswitch pads A and B. Press each icon to scroll through the following function options and stop on the desired setting.



**Off:** Pedal is turned off.



**Default:** Footswitch defaults to the settings selected on the handpiece screen.



**Forward:** Pedal setting default is overridden. Pedal will provide handpiece rotation in the forward (clockwise) direction.



**Reverse:** Pedal setting default is overridden. Pedal will provide handpiece rotation in the reverse (counterclockwise) direction.



**Advanced:** Use to access the Footswitch Button Mapping screen. It will allow you to reprogram all the footswitch pedals.



**Return:** Return to the previous screen.

## ADVANCED

# Footswitch Button Mapping Screen

Access this screen by selecting the ADVANCED icon on the Footswitch Adjustments screen. The default functions of each footswitch pad can be reprogrammed to accommodate the user's preferences.

Depending on the type of handpiece displayed at the top of the screen, one or more of the following options will be available on this screen.

The **DIRECTION**, **OP MODE**, and **RUN MODE** icons correspond respectively to the two largest footswitch pads. Press each icon to scroll through the following function options. And stop on the desired function setting.

### DIRECTION



Pedal is turned off.



Footswitch defaults to the settings selected on the handpiece screen.



**Forward:** Pedal setting default is overridden. Pedal will provide handpiece rotation in the forward (clockwise) direction.



**Reverse:** Pedal setting default is overridden. Pedal will provide handpiece rotation in the reverse (counterclockwise) direction.

### OP MODE



Footswitch defaults to the settings selected on the handpiece screen.



Handpiece operates in the high speed range.



Handpiece operates in the low speed range.



Oscillate mode.

### RUN MODE



Footswitch defaults to the settings selected on the handpiece adjust screen.



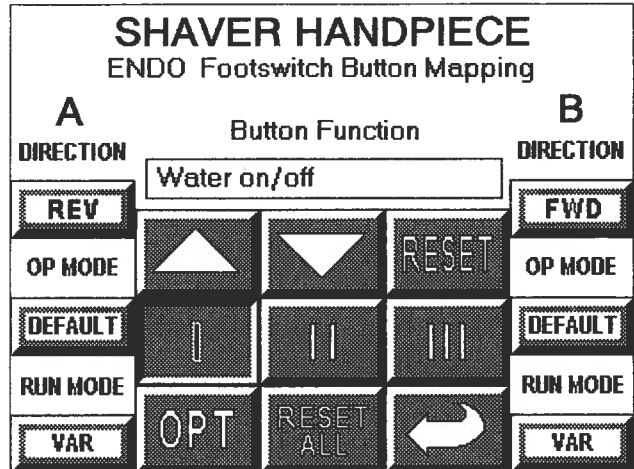
**Variable:** Variable speed control. Speed responds to varying degrees of pressure on the footswitch or handswitch.



**Nonvariable:** Handpiece operates at a constant speed level determined by the maximum speed selected from the handpiece screen.



**One touch:** The one touch function is similar to an on/off toggle. Tap the footswitch to operate the handpiece at the maximum speed selected from the handpiece screen. Tap any trigger device again to stop operation.



### BUTTON FUNCTION

The I, II, and III icons correspond to the three small pads across the top of the footswitch.

**Button Function** displays the active function of the corresponding pedal.

Use the arrow icons to scroll through the functions and stop on the desired setting.

See Button Functions listed on next page.



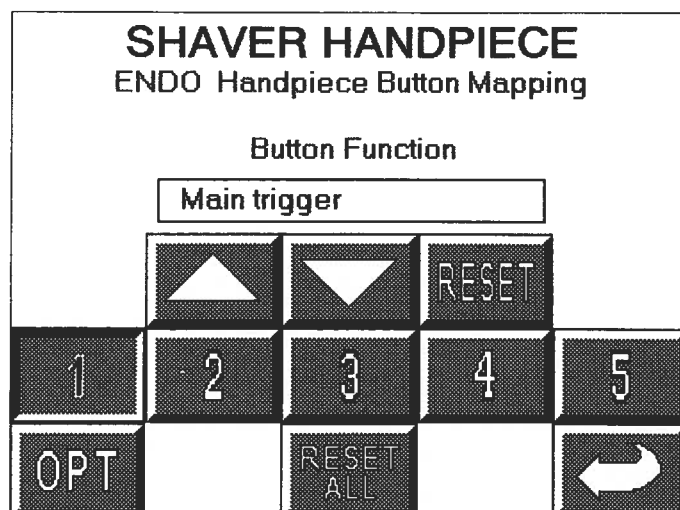
**Reset all:** Press to return all pedals back to their default setting.



**Reset:** Press to return the selected footswitch button back to its default setting.



# Handpiece Button Mapping Screen



Access this screen from the Handpiece Adjustment screen. Use it to change handpiece button functions.

Depending on the features of the handpiece, as many as five buttons can be reprogrammed. Identify corresponding button numbers by pressing the buttons on the handpiece. When the handpiece button is selected, the corresponding function is displayed on the screen. Use the arrow icons to scroll through the function options. Stop on the desired option. See the list below for a description of the options.

NOTE: Available options are handpiece specific.

## BUTTON FUNCTIONS



**Reset:** Select to return a single button to its default function.



**Reset all:** Select to return all buttons to their default functions.



**Return:** Return to previous screen.

## Button Functions List

Button Function	Description	Button Function	Description
<b>Main trigger</b>	Starts handpiece in default direction and mode.	<b>Osc &lt;&gt; High/low</b>	Toggles the run mode between oscillate and high or low.
<b>FWD trigger</b>	Starts handpiece in forward direction in default mode.	<b>High &lt;&gt; Low</b>	Toggles the run mode between high and low.
<b>REV trigger</b>	Starts handpiece in reverse direction in default mode.	<b>Forward &lt;&gt; Reverse</b>	Toggles the running direction.
<b>OSC trigger</b>	Starts handpiece in oscillate mode.	<b>Change port</b>	Changes the active handpiece port.
<b>Speed increment</b>	Increments the set point speed.	<b>Change attachment</b>	Scrolls through the attachment list for the selected handpiece.
<b>Speed decrement</b>	Decrements the set point speed.	<b>Pump flush</b>	Turns the pump on at the flush rate. Once started the pump can be stopped by pressing the button again or by starting the handpiece.
<b>Water increment</b>	Increments the pump flow set point.	<b>Make port active</b>	Makes the selected handpiece active.
<b>Water decrement</b>	Decrements the pump flow set point.		
<b>Water on/off</b>	Toggles the pump on/off button. If pressed and held, the pump can be turned on without running the handpiece. Once started, the pump can be stopped by pressing the button again or by starting the handpiece.		



## Surgeon Preference Screen

SURGEON PREFERENCE

Dr. Stryker

▲

▼

EDIT

DEL

Procedure

Factory default

▲

▼

EDIT

DEL

OPT

LOAD

NEW

DEFLT

Access the SURGEON PREFERENCE screen from the MAIN OPTIONS screen.

The console is able to capture and store the preferred settings of different users.

There are three options:

- Factory default settings
- Settings saved by a previous user
- Collection and storage of new settings

### Using factory settings

1. Use the arrows to obtain "Stryker" and "Factory Default."

NOTE: The EDIT, DELETE and padlock icons do not function while factory default settings are selected.

### Using the settings saved by a previous user

1. Use the arrows to select the surgeon and procedure.
2. Select LOAD. Screen returns to the MAIN OPTION screen.
3. Proceed with surgery.

### Collect and store preferred settings

1. Select NEW. The editor screen will appear with the selected surgeon's name.
2. To create a new procedure under this surgeons name, select ENTER. Or if you wish to collect and store settings under a new surgeon name, use the key pad to delete (DEL) the existing name then key-in the new name. Upon completion, select ENTER.
3. Use the key pad to enter the procedure name.
4. Upon completion, select ENTER. The screen returns to the SURGEON PREFERENCE screen.
5. Toggle padlock icon so that the padlock appears open.
6. Select LOAD.
7. Configure system settings.
8. Upon completion, return to the SURGEON PREFERENCE screen.
9. Toggle the padlock icon so that the padlock appears locked.

NOTE: If the padlock icon remains in the unlocked position, the selected settings will be continuously updated with current settings.

SURGEON NAME

0	1	2	3	4	5	6	7	8	9
A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	W	X	Y	Z	.	-	/	Æ
À	É	Î	Ó	Ú	Ä	Ë	Ï	Ö	Ü
ESC	UPPER	←	→	DEL	ENTER				

This is the key pad screen used to enter the doctor's name and name of procedure.



Padlock opened to gather preferences.



Padlock closed to store preferences.



Select to add a surgeon name.



Select to change the doctor name and/or procedure.



NOTE: Toggle the UPPER/LOWERCASE pad on the editor screen to select letter case.

**Delete:** Select to delete the currently displayed file.



Select and use with the open padlock to gather (load) new preference settings.



**Default:** Using the arrows, scroll the SURGEON PREFERENCE screen to the desired surgeon and procedure settings before activating DEFLT. This selection becomes the default power on setting for the system until a different selection is made.

# Messages

## Message

Delete all the surgeon's procedures?

Change the name of all the surgeon's procedures?

## If you select OK to this question:

The surgeon ID and all procedures will be deleted.

Procedures listed under the surgeon will be moved under the current surgeon's name.

---

Identical record found.

Maximum number of records exceeded. Please delete inactive records.

Initializing console hardware. Please wait.

Handpiece has reached recommended service interval. Please return for service at earliest convenience.

Handpiece does not support the selected preference. Default handpiece setting will be used.

Handpiece temperature has exceeded its nominal operating range and may cause burning.

Handpiece temperature has exceeded its operating range. Allow to cool before restarting.

Procedure name unspecified.

Ensure handpiece speed does not exceed specified attachment limitations. Failure to do so may result in user and/or patient injury.

---

## Error Messages

### Message

- Error 001. Console hardware fault detected.
- Error 002. Console hardware fault detected.  
Contact your Stryker service representative.
- Error 003. Console hardware fault detected.  
Contact your Stryker service representative.
- Error 004. Footswitch fault detected, right pedal will be disabled.  
Contact your Stryker service representative.
- Error 005. Footswitch fault detected, left pedal will be disabled.  
Contact your Stryker service representative.
- Error 006. Footswitch unreadable.  
Contact your Stryker service representative.
- Error 007. Handpiece fault detected, handpiece triggers will be disabled. Contact your Stryker service representative.
- Error 008. Handpiece unreadable.  
Contact your Stryker service representative.
- Error 009. Handpiece requires additional console hardware.  
Contact your Stryker service representative.
- Error 010. Handpiece requires additional console hardware.  
Contact your Stryker service representative.
- Error 011. Handpiece requires additional console hardware.  
Contact your Stryker service representative.

### Action to Take

- Return console to Stryker for repair.
- Turn unit off and on again. If problem persists, return console to Stryker for repair.
- Turn unit off and on again. If problem persists, return console to Stryker for repair.
- Unplug Footswitch from console and plug in again.  
If problem persists, return footswitch to Stryker for repair.
- Unplug Footswitch from console and plug in again.  
If problem persists return footswitch to Stryker for repair.
- Unplug Footswitch from console and plug in again.  
If problem persists, return footswitch to Stryker for repair.
- Unplug cord from handpiece and plug in again.  
If problem persists, return handpiece to Stryker for repair.
- Unplug handpiece from console and plug in again.  
If problem persists, return handpiece Stryker for repair.
- Call your Stryker Instruments sales representative.
- Call your Stryker Instruments sales representative.
- Call your Stryker Instruments sales representative.

# Specifications

## Models: 5100-1, 5100-2 5100-50, and 5100-52

**Size:** 11.8 in. [299 mm] wide  
6.0 in. [152 mm] high  
9.0 in. [229 mm] deep  
12.2 in. [310 mm] deep (units with pump)

**Weight:** 6 lbs. [2.7 Kg]  
11 lbs. [5.0 Kg] (units with pump)

### Class I

PORT	TYPE	SYMBOL
Endo	B	
TPS1	BF	
TPS2	BF	

**IPX0** Ordinary Equipment



**Protective Earth Ground**

**Duty Cycle:** Continuous operation with intermittent loading  
Refer to cycle times defined in the TPS handpiece instructions.



## Models: 5100-1 Console 5100-50 Irrigation Console

**Electrical:** 120V~ 50-60Hz 3.0A

**Approvals:** Canadian Standards Association  
• CAN/CSA C22.2 No. 601.1 M-90  
• UL 2601-1



## Models: 5100-2 Console 5100-52 Irrigation Console

**Electrical:** 220-240V~ 50-60Hz 1.5A

**Approvals:**  This mark is applicable to the European Medical Device Directive.

EN 60601-1-2 (IEC 601-1-2)

- CISPR 11, Group 1, Class B, Electromagnetic emissions (0.15-30MHz conducted, 30-1,000MHz radiated)
- IEC 1000-4-2 Electrostatic Discharge Immunity (+/-3KV Contact Discharge, +/-8KV Air Discharge), Criteria B
- IEC 1000-4-3 Electric Field Immunity (3V/m, 26mHz-1,000mHz), Criteria A
- IEC 1000-4-4 Electric Fast Transient/Burst Immunity (1KV at plug, 0.5KV interconnecting cords >3M), Criteria B
- IEC 1000-4-5 Surge Immunity (1KV Differential Mode, 2KV Common Mode), Criteria B

**SAFETY** EN 60601-1 (IEC 601-1)

## Handling your console and equipment

- When setting up your console, place on a sturdy, flat surface, and carefully follow all setup instructions.
- When connecting or disconnecting a cable, always hold the cable by its connector (the plug, not the cord).
- Never force a connector into a port. If the connector and port do not join with reasonable ease, they probably don't match. Make sure that the connector matches the port and that you have positioned the connector correctly in relation to the port.
- To ensure the longevity, performance, and safety of this equipment, package in original package materials when storing or transporting.

### If the console experiences sporadic electrical interference:

- Turn off all electrical equipment not in use in the O.R.
- Relocate electrical equipment; increase spacial distance.
- Plug the TPS console and other O.R. equipment into different outlets.

## Environmental Conditions

**These conditions apply to all components of the TPS system unless otherwise specified in the information supplied with that device.**

	<u>Temperature</u>	<u>Relative Humidity</u>	<u>Atmospheric Pressure</u>
Operation:	37 to 80°F [10 to 26.7°C]	30 to 75%	700 to 1,060 hPa
Storage and Transportation	-4 to 104°F [-20 to 40°C]	10 to 75%	500 to 1,060 hPa

## Important Information

**See the *TPS Cleaning, Maintenance, and Sterilization Recommendations* booklet for care information.**

**The incremental information displayed on the TPS Console control screen is accurate within +/-1% or better.**

Specifications listed are approximate and may vary slightly from unit to unit or by power supply fluctuations.

The Total Performance System is not field repairable. In case of operating difficulties, Stryker products must be returned for maintenance or repair.