FLUSHTECH GI™
Flexible Endoscope Flushing System

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Introduction

The FlushTech GI™ system (FlushTech) is a smart, easy-to-operate flexible endoscope flushing system with single and dual flushing modes to move detergent and rinse solutions through all the channels of an endoscope. The user simply selects the single or dual flush option and press Start to begin flushing.

FlushTech's unique pulsating technology creates fluid agitation to remove contaminants after manual brushing of the endoscope channels prior to final wash and high-level disinfection in an automated endoscope reprocessor (AER). FlushTech's precision flowmeter provides accurate monitoring and flow control for pre-cleaning. Visual indicators and audible alerts will notify the cleaning technician of insufficient fluid conditions, giving the technician an opportunity to make corrections and repeat the pre-cleaning step before continuing.

FlushTech has programmable settings, allowing the users to set flushing parameters to meet specific conditions for achieving optimum results. The built-in software can record the flushing of endoscopes by serial number and create reports that can document compliance with pre-cleaning protocols.

The FlushTech utilizes a diaphragm pump, a precision flowmeter, and a microcontroller to move water, detergent and air through tubing that are connected to the channels of an endoscope. FlushTech comes with tubing accessories that allow the connection to most brands of flexible endoscopes and is factory tested to meet the pre-cleaning requirements of the endoscope manufacturer's guidelines.

Always follow the endoscope manufacturer's guidelines and the established professional protocols for the cleaning, maintenance and care of endoscopes and endoscope accessories.

System Control Panel

Safety symbols

Listed below are explanations of the safety symbols that appear either on the unit, in the instruction manual, or both. Please familiarize yourself with the meaning of each symbol.

|	"ON" (power)
◯	"OFF" (power)
▣	Class II Equipment
📖ℹ	Operating Instructions
📖ℹ	Follow operating instructions
⚡	Refer to instruction manual/ booklet
⚠	General warning sign
🛇	Caution risk of electric shock or Attention Dangerous Voltage
🗑	This device contains electrical and/or electronic equipment that must be recycled per EU Directive 2012/19/EU – Waste Electrical and Electronic Equipment (WEEE)

Safety Precautions

- Wear protective clothing and eye protection whenever operating this system.

- Wear protective clothing and eye wear when dispensing chemicals. Observe safe handling instructions (MSDS) provided on chemical container or as supplied by chemical manufacturer.

- To avoid severe or fatal shock, physical injury, always disconnect main power when servicing the unit.

- When installing any equipment, ensure that all national and local safety, electrical and plumbing codes are met.

  - System is for indoor use only

  - Do not submerge or place in direct path of spray/moisture

  - System operates with safe 12 Volt DC power

  - Only approved, factory authorized technicians to service unit

Indication For Use

FlushTech is intended for channel flushing of flexible endoscopes during pre-cleaning prior to final wash and high-level disinfection. FlushTech is not a disinfection system and should not be used in place of high-level disinfection.

When using the FlushTech system, always follow the testing and cleaning protocols defined by the endoscope and chemical manufacturer, hospital and/or other facility at which the endoscope is reprocessed. Knight is not responsible for the adequacy or efficacy of testing and cleaning protocols.

The pump and flushing tubes for the FlushTech system require daily decontamination. See **Decontaminating FlushTech** on page 16.

Consult your chemical supplier for appropriate detergents for use in pre-cleaning of flexible endoscopes and appropriate high-level disinfection solutions for use in cleaning of pump and flushing tubes for the FlushTech system.

Specifications

Cabinet Materials	#304 Stainless Steel, Powder Coated
Dimensions	7" H x 8"W x 8"H 17.8 cm x 20.3 cm x 20.3 cm
Case Rating	IPXO
Flush Pump Flow Rate	0.75 GPM (open flow), 2.8 LPM
Flush Pump Suction	Maximum suction height = 24" / 61 cm
Flush Pulse Rate	Dual flush mode: low, medium, high Single flush mode: none
Power Supply/Voltage	Wall Mount Type In: 100-240 Volts AC 1A 50-60 Hz Out: 24 Volts DC 1.67A
Chemical Compatibility—Flush Pump	Industry standard enzymatic and other detergents in diluted form. Do not use Isopropyl Alcohol with the flush pump.
Flush Tubes/Hook Ups Compatibility	Industry standard enzymatic and other detergents in diluted form. Do not use Isopropyl Alcohol with the flush pump. Sterilization of flushing tubes can be achieved by use of cold sterilant solutions used for disinfection of medical devices. Consult your chemical supplier for recommended disinfectant soaking solution. Flushing tubes can be autoclaved at temperatures 250° for 40 minutes, except for foot valve and ceramic weight.
Unit Weight	9.6 lbs. (4.4 kg)
Safety Approvals	CAN/CSA-C22.2 No. 61010-1-04 UL Std. No. 61010-1 (2nd Edition) EN 61010-1:2010
Environmental Rating	Standard
Designed for Use	Indoor Use Only
Installation Category	II
Pollution Degree	2
Operating Temperature Range	15°C to 35°C
Operating Humidity Range	10-75% Non-Condensing
Storage Temperature Range	1°C to 52°C
Storage Humidity Range	5-90% Non-Condensing

Accessories

Item	Part Number	Qty.	Description
1	7117164	1	Flush Suction Tube, Suction Cup, 1" (2.54 cm)
2	7117165	1	Flush Discharge Tube
3	7117166	1	Flush Discharge Tube Extension
4	7117167	1	Auxiliary Flush Discharge Tube
5	0600759	2	Small Tubing, Silicone, 12" (30.48cm) Cut, 1/16" (.158 cm) ID x 1/8" (.317 cm) OD
6	0600726	6	Medium Tubing, Silicone, 12" (30.48 cm) Cut, 1/8" (.317 cm) ID x 1/4" (.635 cm) OD
7	0600767	2	Large Tubing, Silicone, 12" (30.48 cm) Cut, 3/16" (.476 cm) ID x 3/8" (.952 cm) OD
8	0600764	3	Fitting, Male Luer fitting w/ Lock Ring, 5/32" (.396 cm)
9	0600765	2	Fitting, Reducing, Coupling, 1/4" (.635 cm) x 5/32" (.396 cm) Hose Barb
10	0600766	2	Fitting, Female Luer fitting, 1/8" (.317 cm) Hose Barb
11	0600762	2	Fitting, Female Luer fitting, 5/32" (.396 cm) Hose Barb
12	0300121	6	Cable Ties, 3.5" (8.89 cm)
13	7117168-1	1	One-Way Adapter
14	7117168-2	1	Two-Way Adapter
15	7117168-3	1	Three-Way Adapter
16	7117168-4	1	Four-Way Adapter
17	7117168-5	1	Five-Way Adapter
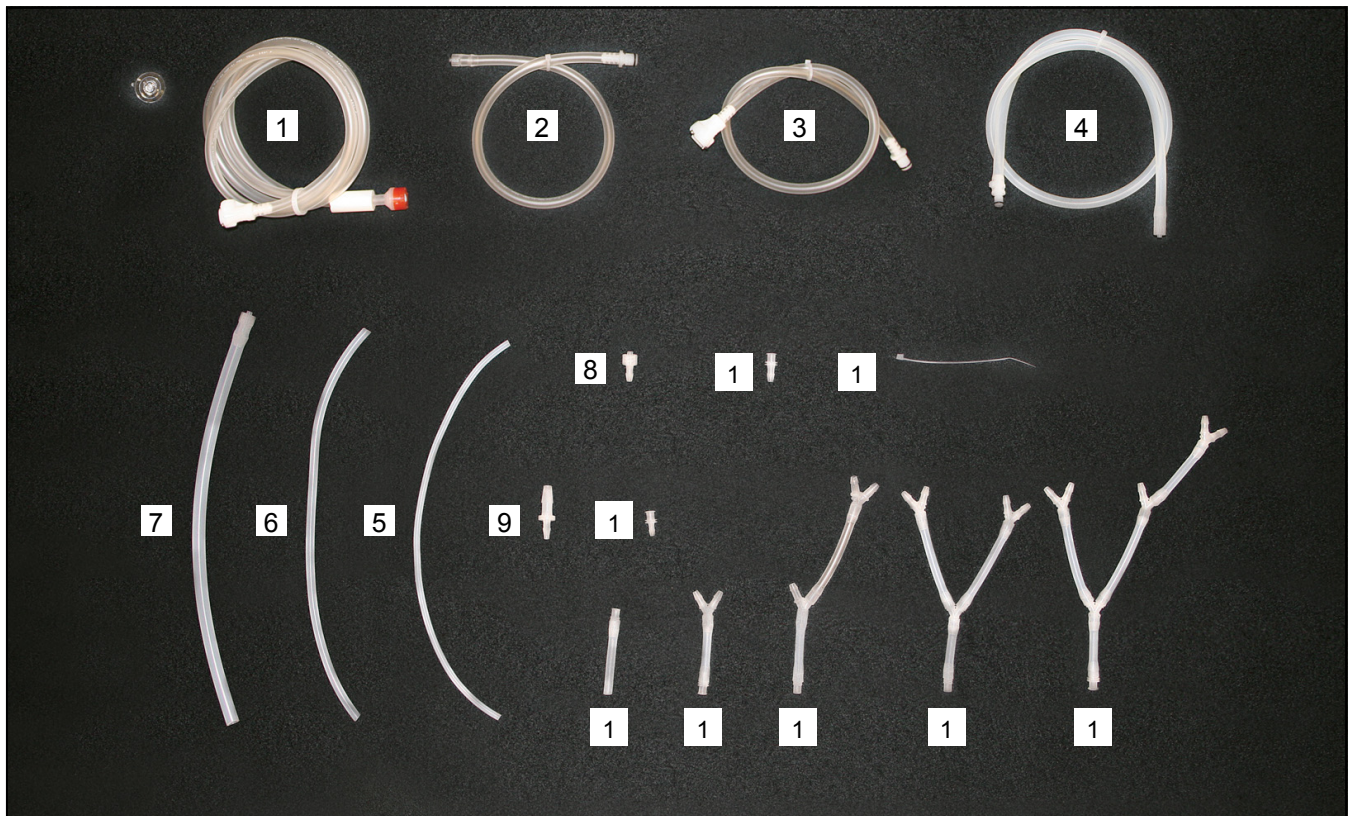
If items are missing from your accessory kits, please contact Knight customer service immediately: 1-800-854-3764.

Pre-Installation

FlushTech can be set on the counter top or shelf. Select a place for the unit within 6' (1.8m) of a GFI protected power outlet. It is important to keep the power supply cable above the sink level. It is not recommended to use an extension cord. It is important to place or mount the unit on a hard, flat dry surface that is level.

Before beginning the installation, make sure you have the following tools and materials ready.

- Phillips screw driver
- Tube cutters (utility knife)
- Needle nose pliers
- Side cutters
- 100 ml graduated cylinder

Installation

Power Supply
1. Route the power supply cable to the power outlet and secure with the cable ties. Keep the power supply cable above the sink level.

Suction and Discharge Tubes
2. Connect the **Flush Suction Tube (part #7117164)** to the **Flush In** port. **Fig. 1** Push the tube into the port until it snaps into place to form a watertight seal. The flush suction tube draws detergent or rinse solutions from the sink into the FlushTech.

Fig. 1

3. Connect the **Flush Discharge Tube (part # 7117165)** to the **Main Flush** port. **Fig. 2** Push the tube into the port until it snaps into place to form a watertight seal.

4. Connect the **Flush Discharge Tube Extension (part #7117166)** to the **Flush Discharge Tube**. The flush discharge tube extension delivers detergent or rinse solutions to the Flushing Tube Assembly.

Fig. 2

5. Dual port operation is used for flushing the elevator wire channel, auxiliary water channel, or when dual port flushing is needed. Connect the **Auxiliary Flush Discharge Tube (part#7117167)** to the **Auxiliary Flush** port. **Fig. 3** Push the tube into the port until it snaps into place to form a watertight seal.

   Before connecting an endoscope for flushing, you will need to assemble the flushing tubes. See **Flushing Tube Assembly Guidelines**.

Fig. 3
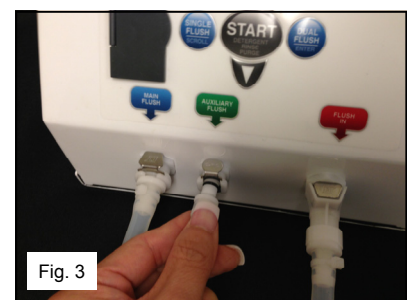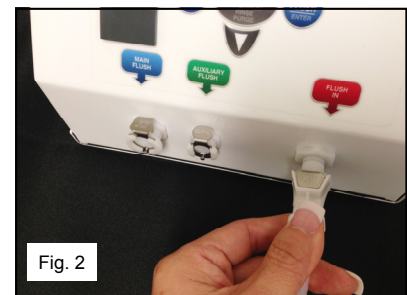
Flushing Tube Assembly Guidelines

Endoscopes can have different flushing tube assembly requirements depending on the number of ports on the scope. The Flushing Tube Kit comes with different types of tubing accessories to allow connections to most endoscopes. The steps for the flushing tube assembly in this manual are general guidelines. Follow the manufacturer's endoscope manual to determine the type of tubing assembly and fluid volume needed for proper cleaning.
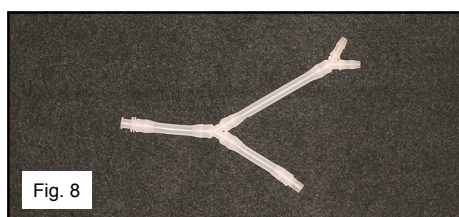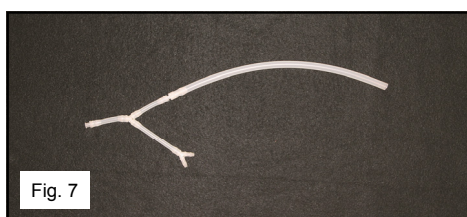
Flushing Tube Assembly Guidelines (Cont.)

Two-Way Flushing Assembly

1. Connect the **one-way adapter (part # 7117168-1)** to a barb on the **two-way adapter (Part # 7117168-2)**. **Fig. 1** Push the tube over the barb until it reaches the bottom of the barb. **Fig. 2**

2. Attach a **large silicone tube with male luer fitting and lock ring (part # 0600767)** to the one-way adapter by screwing the male luer fitting luer fitting ting with lock ring clockwise onto the female luer fitting. **Fig. 3**

3. Connect a **medium silicone tube (part # 0600726)** to the remaining barb on the two-way adapter. Make sure to push the tube over the barb until the tube reaches the bottom of the barb. **Fig. 4**

Fig. 1

Fig. 2

Fig. 3

Fig. 4
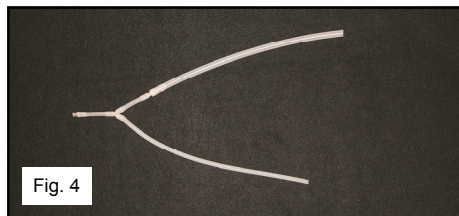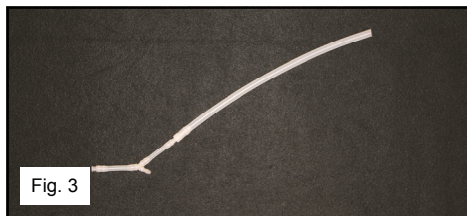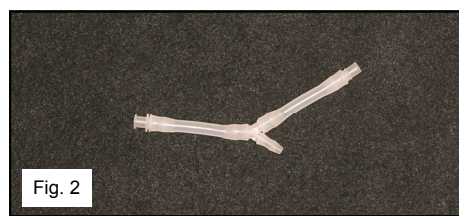
Three-Way Flushing Assembly

1. Connect the **one-way adapter (part # 7117168-1)** to a barb on the **three-way adapter (Part # 7117168-3)**. **Fig. 5** Push the tube over the barb until it reaches the bottom of the barb. **Fig. 6**

2. Attach a **large silicone tube with male luer fitting and lock ring (part # 0600767)** to the one-way adapter by screwing the male luer fitting with lock ring clockwise onto the female luer fitting. **Fig. 7**

3. Connect two **medium silicone tubes (part # 0600726)** to the remaining barbs on the three-way adapter. Make sure to push the tubes over the barbs until the tubes reach the bottom of the barbs. **Fig. 8**

Fig. 5

Fig. 6

Fig. 7

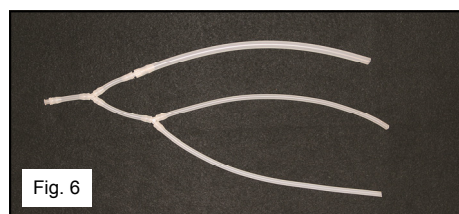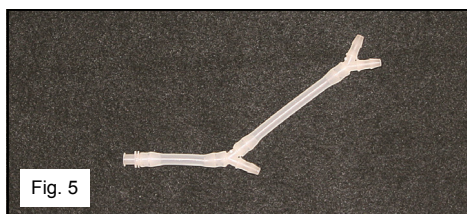Fig. 8

Flushing Tube Assembly Guidelines (Cont.)

Four-Way Flushing Assembly

1. Connect the **one-way adapter (part # 7117168-1)** to a barb on the **four-way adapter (Part # 7117168-4)**. **Fig. 9** Push the tube over the barb until it reaches the bottom of the barb. **Fig. 10**

2. Attach a **large silicone tube with male luer fitting and lock ring (part # 0600767)** to the one-way adapter by screwing the male luer fitting with lock ring clockwise onto the female luer fitting. **Fig. 11**

3. Connect three **medium silicone tubes (part # 0600726)** to the remaining barbs on the four-way adapter. Make sure to push the tubes over the barbs until the tubes reach the bottom of the barbs. **Fig. 12**

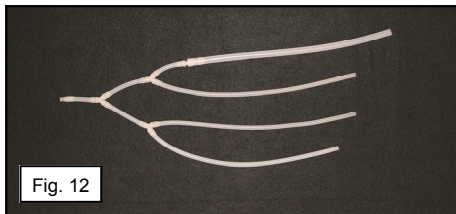Fig. 9

Fig. 10

Fig. 11

Fig. 12
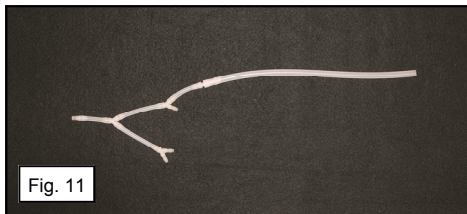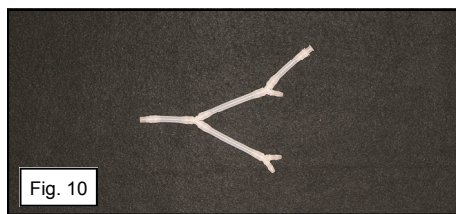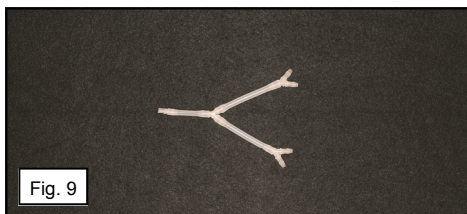
Five-Way Flushing Assembly

1. Connect the **one-way adapter (part # 7117168-1)** to a barb on the **five-way adapter (Part # 7117168-5)**. **Fig. 13** Push the tube over the barb until it reaches the bottom of the barb. **Fig. 14**

2. Attach a **large silicone tube with male luer fitting and lock ring (part # 0600767)** to the one-way adapter by screwing the male luer fitting with lock ring clockwise onto the female luer fitting. **Fig. 15**

3. Connect four **medium silicone tubes (part # 0600726)** to the remaining barbs on the five-way adapter. Make sure to push the tubes over the barbs until the tubes reach the bottom of the barbs. **Fig. 16**

Fig. 13

Fig. 14

Fig. 15

Fig. 16
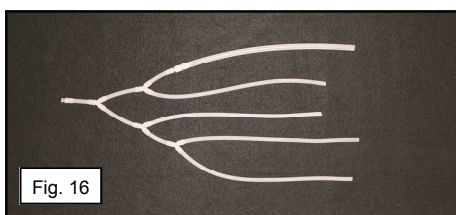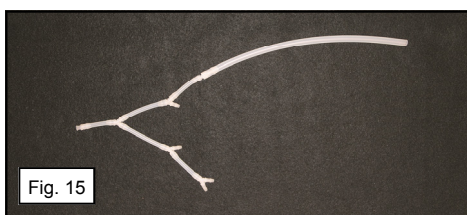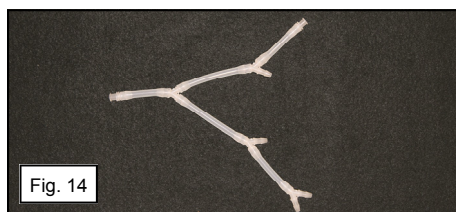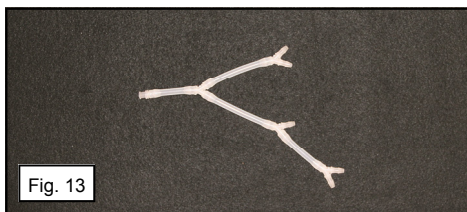
Flushing Tube Assembly Guidelines (Cont.)

FlushTech has a dedicated auxiliary port for the flushing of the elevator wire channel of a duodena scope or the auxiliary water channel. Follow the endoscope manufacturer's instructions for proper connection and fluid volume needed for proper cleaning.

Elevator Flushing Assembly

To make the elevator flushing assembly, connect the **1/8" (.317cm) female luer fitting (part # 0600766)** to the **small tubing, 1/16" (.158cm) ID (part #0600759)**. Then attach the endoscope adapter to the elevator flushing assembly. See the guidelines below for **Connecting the Endoscope Adapters**.

Auxiliary Flushing Assembly

To make the Auxiliary Flushing Assembly, connect the **5/32" (.396cm) female luer fitting (part # 0600762)** to the **medium tubing, 1/8" (.317cm) ID (part # 0600726)**. Then attach the auxiliary water channel adapter to the auxiliary flushing assembly. See the guidelines below for **Connecting the Endoscope Adapters**.

Connecting the Endoscope Adapters

After you have assembled the flushing tubes for the type of endoscopes that will be flushed, gather the port adapters that were supplied with the endoscope from the manufacturer. Connect the endoscope adapters to the flushing tubes to complete the flushing tube assembly. Follow the endoscope manufacturer's instructions for connecting the endoscope adapters to the channels of their endoscopes prior to pre-cleaning.

Olympus Endoscope Adapters

Attaching the Olympus Endoscope adapters to the flushing tubes.

WATER CHANNEL   AIR / WATER CHANNEL

WATER CHANNEL   AIR / WATER CHANNEL   EXAMPLE CONNECTIONS FOR OLYMPUS ENDOSCOPE
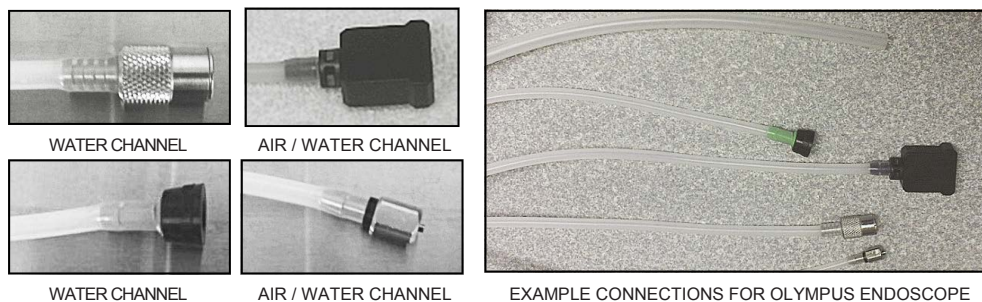
Fujinon Endoscope Adapters

Attaching the Fujinon Endoscope adapters to the flushing tubes.

WATER CHANNEL ADAPTER   AIR/WATER CHANNEL ADAPTER

CLEANING ADAPTER   EXAMPLE CONNECTIONS FOR FUJINON ENDOSCOPE

Flushing Tube Assembly Guidelines (Cont.)

Pentex Endoscope Adapters
Attaching the Pentex Endoscope adapters to the flushing tubes.

WATER PORT ADAPTER

AIR / WATER CHANNEL

BIOPSY PORT ADAPTER

SUCTION CHANNEL

EXAMPLE CONNECTIONS FOR PENTEX ENDOSCOPE
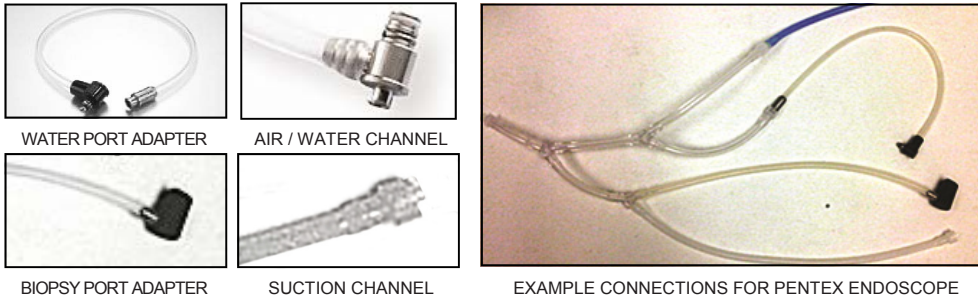
Connecting the Flushing Tubes to an Endoscope
After you have assembled the flushing tubes and attached the endoscope adapters, you are ready to connect the endoscope to the FlushTech. Connect the endoscope adapters to the endoscopes.

Follow the endoscope manufacturer's instructions for pre-cleaning and connecting the endoscope adapters to the channels of their endoscopes.

AIR / WATER CHANNEL BLOCKER

BIOPSY PORT CAP

FLUSHING TUBE TO SUCTION VALVE

AIR/WATER CHANNEL ADAPTER

FLUSHING TUBE TO AIR PIPE

AUXILIARY WATER CHANNEL ADAPTER
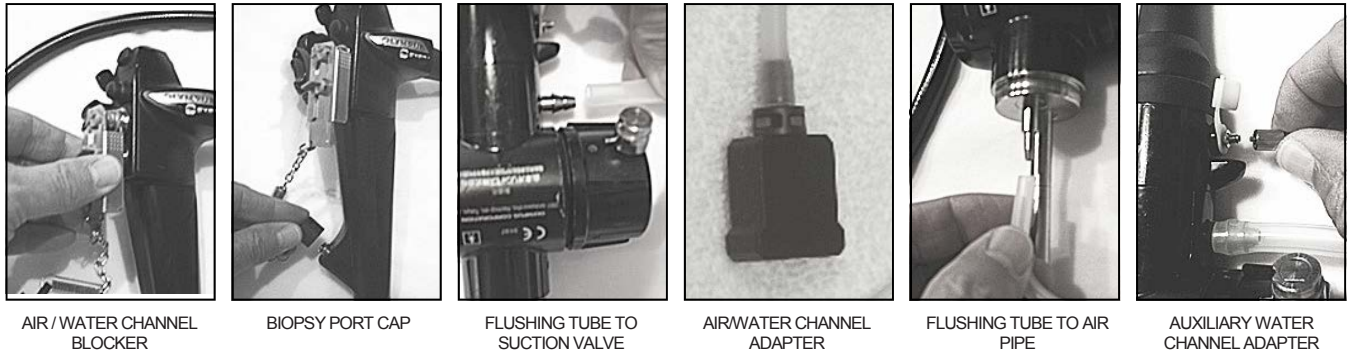
Endoscope Connection Examples
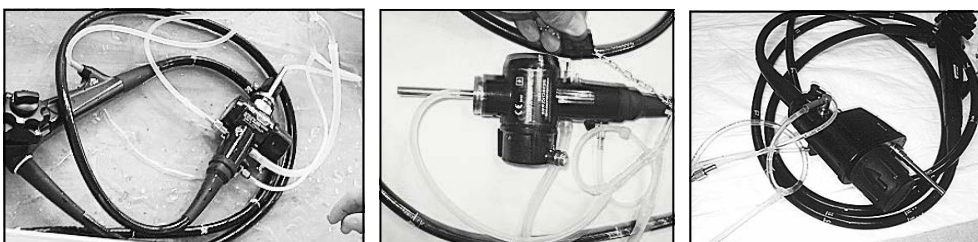
Programming Menu

The Enter key is the main navigation key that will advance the menu from function to function each time it is pressed. Pressing and holding the Enter key will save any changes and exit you from the programming menu. The screen is blue when the unit is in run mode and purple when it is in the programming mode.
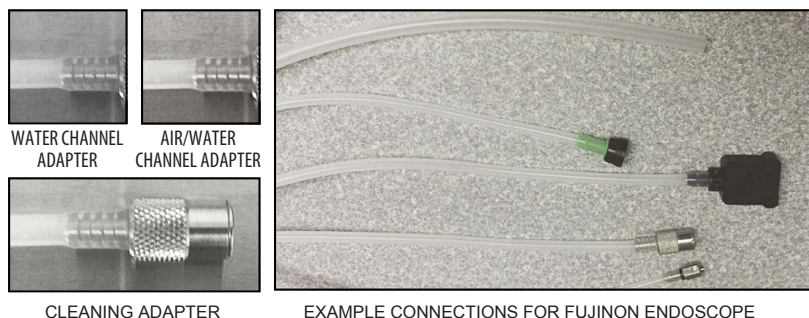
Accessing the Menu
To access the programming menu, press and hold the ENTER key until the screen changes to a purple screen.

To save changes and exit the programming menu, press and hold the ENTER key until the display changes back to the blue screen.

PRESS START FOR
CONTAMINATION
CYCLE

01:12:14 PM
01/15/14

Flush Time: 020s
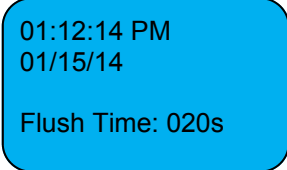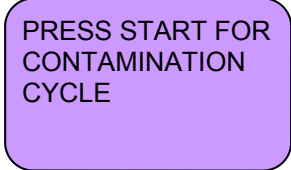
Passcode Protection
A private usercode protects the system settings and allows only authorized personnel to make programming changes and view reports.

To enter the private usercode, use the Scroll and Up/Down keys on the Enter Usercode screen. The default code is: 0000.

PRESS SCROLL UP/
DOWN
ENTER PASSCODE

0000
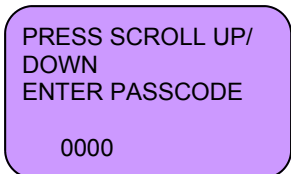
Change Private Access Code
To set or change a private usercode, use the Scoll and Up/Down keys on the Change Usercode screen.

PRESS SCROLL UP/
DOWN
CHANGE USERCODE

0000
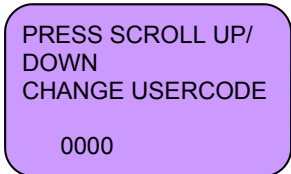
Prime and Re-Prime
The flush line should be primed before doing a Flowrate Verification. Prime and re-prime the flush line as needed.

To prime the flush line, press the Up key to start and stop the flush pump from the Start or Stop Flush screen. The flowmeter counts should be 5 or more before completing the prime.

PRESS UP TO START
OR STOP FLUSH

PRESS UP TO START
OR STOP FLUSH

FLOWMETER CTS 33
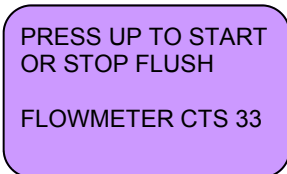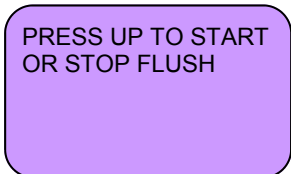
Flowrate Verification
Flowrate Verification should be performed to verify that the liquid flow and flowmeter are synchronized and there are no obstructions in the lines.

**NOTE:** For initial setup, the Flush Volume Calibration should be done prior to running the Flowrate Verification. See page 14 for **Flush Volume Calibration**.

To run Flowrate Verification, press the Up key on the Flowrate Verification screen. The Calibration and Flowmeter rate variation should be +/- 10%.

PRESS UP TO START
FLOWRATE
VERIFICATION

FLOWRATE
VERIFICATION
PASSED

Calibration: 037
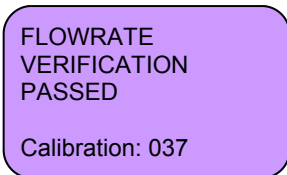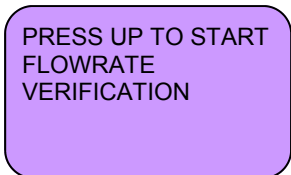
Unit Serial Number
The serial number is used for warranty and summary reporting purposes. To enter the serial number, use the Scroll and Up/Down keys.

PRESS SCROLL UP/
DOWN
TO ENTER UNIT S/N:
S/N: 0000000
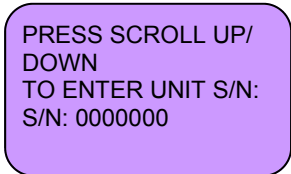
Programming Menu (Cont.)

Summary Date Range
The summary date range is used for the quick summary screen and the summary report for download. To select the summary date range, use the Scroll and Up/Down keys.

> ENTER DATE RANGE TO VIEW SUMMARY DATE
> FROM 01-10-14
> TO 01-15-14

Summary Data Screen
The Summary Data screen provides "at a glance" visibility of the number of scopes processed and decontaminations performed within the selected date range.

> Summary Data:
> Scope Processed: 0015
> Decontaminations: 0002
> PRESS UP TO SAVE DATA TO USB MEMORY

Download Summary Report to USB Drive
A detailed report of the summary data can be downloaded to a USB drive. The USB drive must be a FAT32 format. See page 17 to **Format USB Drive** and see **Summary Report**.

To download the summary report, insert the USB drive into the USB port. From the Summary Data screen, press the Up key. The data transfer is complete when the message "Done" appears. You can remove the USB drive.

> DONE

Load Endoscope Setup File
To record the data for different endoscopes used in your institution, you must load the endoscope information to FlushTech with a Setup File. See page 17 to create the **Endoscope Setup File**.

To load the endoscope setup file, insert the USB drive with the configured Setup file into the USB port and press the Up key. The endoscope information from the Setup file will load to FlushTech. When the loading is complete you will see "Done" on the screen.

> PRESS UP TO START LOAD NEW SETUP INTO FLUSH SYSTEM MEMORY

> DONE

Date Format
The date can be displayed as Month-Day-Year or Day-Month-Year. To change the date format, use the Scroll key.

> PRESS SCROLL TO SELECT WHICH DATE FORMAT TO USE MM-DD-YY

Date and Time
To set the date and time, use the Scroll and Up/Down key in the Change Date/Time screen.

> PRESS SCROLL /UP/ DOWN TO CHANGE DATE/TIME
>
> TIME 08:52:30 AM

Select Language
The FlushTech screen is available in English, French, German, or Spanish. To change the language, use the Scroll key.

> PRESS SCROLL TO SELECT WHICH LANGUAGE TO USE ENGLISH

> PRESS SCROLL TO SELECT WHICH LANGUAGE TO USE FRENCH

Flush Pulse Rate
Pulsating fluid technology creates agitation that enhances the effect of bio-burden breakdown and removal from the endoscope. The Dual flushing mode has a pulsating speed of low, medium and high. To change the flush pulse rate, use the Scroll key.

> PRESS SCROLL TO SET FLUSH PULSE RATE
>
> PULSE RATE IS LOW

Programming Menu
Flush Audio Alarm
When the fluid flow is insufficient, the user will get a visual indicator a with a red screen and an audible alert. To turn the audible alert ON/OFF, use the Scroll key.

> PRESS SCROLL TO
> TURN FLUSH ALARM
> SOUND
> ON OR OFF
> ALARM SOUND IS

Decontamination Settings
The FlushTech has factory default decontamination settings with a flush, soak, rinse, and purge time. To change the decontamination settings, use the Scroll and Up/Down keys.

Flush Time is the time required to prime the flush tube from suction to discharge. **Soak Time** is the soak time required for proper high-level disinfection (HLD). This should be set per the use instruction of the HLD solution you are using. See the manufacturer's Instruction for Use. **Rinse Time is** the time required to displace disinfectant solution from flushing tubes and pump with rinse solution. **Purge Time** is the time required to purge rinse water from the flushing tubes and pump.

> Decontamination Set-
> tings
> Flush Time   020s
> Soak Time   480s
> Rinse Time   030s

Flush Run Time
The factory default flush run time is set for 20 seconds. Follow the endoscope manufacturer's guidelines for detergent and rinse volume required for proper pre-cleaning.

To change the default flush run time, use the Scroll and Up/Down keys from the Flushtime screen.

> PRESS SCROLL /UP/
> DOWN TO ENTER
> FLUSHTIME IN SEC-
> ONDS
> 030

Processing Steps
FlushTech's default processing procedure is set for 3 steps to account for a flush, rinse, and purge step. This processing step number is used to calculate the number of scopes processed reporting purposes. Make sure you set the number of steps to match the channel flushing procedure used at your institution.

To change the number of steps, use the Up/Down keys from the Processing Steps screen.

> PRESS UP/DOWN TO
> SELECT NUMBER OF
> PROCESSING STEPS
> # OF STEPS: 003

Flush Volume Calibration
To calibrate flush volume, place the flushing discharge tube (part #7117155-D) into a 100-200 milliliter graduated cylinder. Press the UP key from the Flush Pump Caliber screen. The pump will run and stop on its own. The target calibration volume is 100 mls +/- 10%.

Enter the volume captured, use the Scoll and Up/Down keys to enter the volume from the Enter Captured screen. Then press the Enter key to get the resulting flowrate. The flowrate should be 1152 mL/min +/- 10%. Otherwise, repeat the Flush Volume Calibration.

> PRESS UP TO START
> FLUSH PUMP CALI-
> BER MEASURE 100ml

> ENTER CAPTURED
> VOLUME IN ML
> VOLUME = 096ml

> FLOWRATE FOR THE
> PUMP IN ML/MN IS:
>
> FLOWRATE = 1152

Programming Menu (Cont.)

Clear Usage Data Memory

FlushTech saves usage data. When the unit reaches its maximum data capacity, the system will overwrite the old data. You may choose to clear all usage from the memory.

From the Usage Data Memory screen, press the Scroll and Down keys simultaneously to clear all data. Press the Scroll and Down keys again to confirm.

> PRESS SCROLL AND DOWN TO CLEAR USAGE DATA MEMORY

Clear Scope Data Memory

From the Clear Scope Data Memory screen, press the Scroll and Down keys simultaneously to clear the endoscope data from memory. Press the Scroll and Down keys again to confirm

> PRESS SCROLL AND DOWN TO CLEAR SCOPE DATA MEMORY

Operating FlushTech

NOTE: Always wear appropriate personal protective equipment (PPE) and follow the endoscope manufacturer's guidelines and the established professional protocols for pre-cleaning and disinfection of endoscopes.

Operating the FlushTech is as easy as selecting a single or dual flush mode and pressing Start to begin flushing. The flush time for any flush operation can be changed by increments of 5 seconds by pressing the Up or Down keys. FlushTech will return to the default flush time when the flush cycle is complete. To change the default flush time, see page 14 Flush Run Time.

Endoscope Flush

1. Attach the flush tube assembly with endoscope adapters and the channel blockers to the endoscope.
2. Place the flush suction tube into a sink or container filled with the detergent solution.
3. If you loaded Endoscope information to FlushTech, use the Up or Down keys to find the Endoscope. Press Enter to select the endoscope.
4. Select single channel flush (Single Flush) or dual channel flush (Dual Flush).
5. Press Start to begin flushing the detergent through the endoscope. Allow the timer to count down to zero.

> 01:12:14 PM
> 01/15/14
>
> Flush Time: 020s
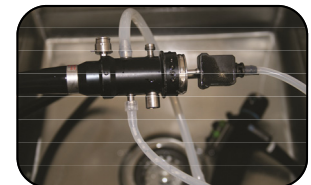
Endoscope Rinse

1. Fill the sink or container with fresh rinse water to the desired level. If a separate sink is used for rinsing, move the endoscope to the rinse sink.
2. Make sure the flush suction tube is in the rinse water. Press Start to begin rinsing the detergent from the endoscope. Allow the timer to count down to zero.

> 01:12:14 PM
> 01/15/14
>
> Flush Time: 020s

Operating FlushTech (Cont.)

Rinse Purge

1. Remove the flush suction tube from the sink or container and place it on the counter.

2. Press the Start key to begin purging water from the scope. The tube will draw air in and displace the water. Allow timer to count down to zero.

> 01:12:14 PM
> 01/15/14
>
> Flush Time: 020s

Decontaminating FlushTech

The FlushTech system requires daily decontamination to disinfect the internal parts and flush tubing. Consult your chemical supplier for appropriate detergents and requirements for proper high-level disinfection (HLD).
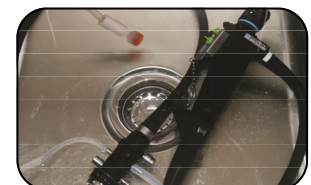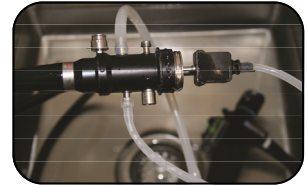
1. Insert the pump suction tube into the detergent solution. Press and hold the Enter key until the FlushTech screen changes to the purple Decontamination screen. Press Start to begin flushing the detergent solution through the internal tubing. Allow the timer to count down to zero.

> PLACE SUCTON IN DISINFECT. THEN PRESS START

> TIME REMAINING 20 SEC.
>
> DECONTAMINATION FLUSH

2. Insert the flush suction tube into the container or sink with the HLD solution and press Start to begin flushing the internal components with HLD solution. Allow the timer to count down.

   Soak time will automatically start count down. An audible alert will beep when soak time is done.

> TIME REMAINING 480 SEC.
>
> DECONTAMINATION SOAK

3. Insert the flush suction tube into the container or sink with fresh water and press Start to rinse the internal components with HLD solution. Allow the timer to count down.

> PLACE SUCTON IN WATER AND PRESS START

> TIME REMAINING 30 SEC.
>
> DECONTAMINATION RINSE

4. Remove the flush suction tube from the water and place it on the counter and press Start. The system will pull in air to purge the water from the internal components.

> REMOVE SUCTION FROM WATER AND PRESS START

> TIME REMAINING 20 SEC.
>
> DECONTAMINATION PURGE

Formatting USB Drive

The USB drive you use to download reports from FlushTech must be formatted to FAT32. If it is not properly formatted you will not be able to save report files.

1. Connect the USB drive to your PC.
2. Open My Computer. **Fig. 1**
3. Right-click on the **Removable** USB drive and select Format from the drop-down menu. Select FAT32 in the File System drop-down menu. **Fig. 2**. Click Start to reformat the USB drive.

WARNING: Make sure you have selected the removable USB drive when formatting your USB. You may loose unrecoverable data if you select the wrong drive. Consult your IT administrator when possible.
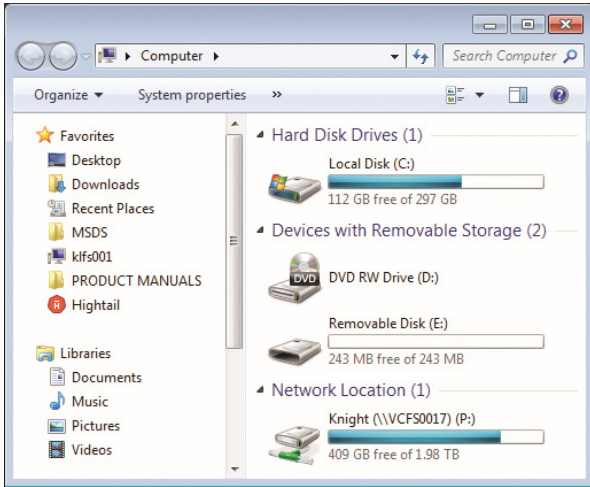
Operating FlushTech (Cont.)

Fig. 1
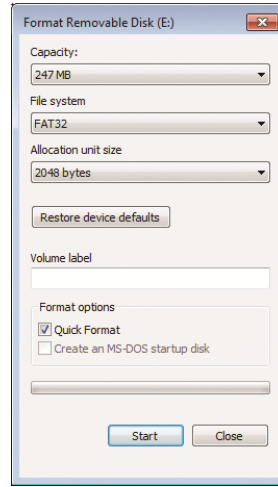
Fig. 2

Summary Report

To download the Summary Report for viewing on your PC, follow the instructions on page 13 **Summary Date Range** and **Download Summary Report to USB Drive**.

The summary report is a text file. After you set the serial number for the system (See page 12 **Unit Serial Number**) the file name of the report will contain the serial number followed by the letter R. For example 7564898R.txt. If you did not set the unit serial number the default report name will be 0000000R.txt.

The summary report has the flush data on individual scopes traceable by serial number, date, time, flush run time, and flush type for each of the processing steps and the decontamination activities. Make sure the number of processing steps set in FlushTech match the channel flushing procedure used at your institution. See page 13 for **Processing Steps**.

In the sample report, **Fig. 3**, you will see that there are 3 sets of data for each scope. This is because the processing steps was set to 3 and FlushTech recorded data for the Flush, Rinse, and Purge. The Decontamination cycle is reported as 1 event.

| Dispenser S/N: 7564898 |
| Report Date: 11/16/13 |
| From Date: 11/14/13 |
| To Date: 11/16/13 |

Scopes processed: 0010

Serial #	Date	Time	Event Time	Event Type
0000000	11/15/13	03:16:26PM	0075	Decontamination
3298567	11/15/13	03:16:26PM	0010	Single Channel
3298567	11/15/13	03:16:26PM	0010	Single Channel
3298567	11/15/13	03:16:26PM	0010	Single Channel
3875649	11/15/13	03:16:26PM	0010	Single Channel
3875649	11/15/13	03:16:26PM	0010	Single Channel

Fig. 3

Endoscope Setup File

Endoscope Setup File

To record the pre-cleaning activities for different endoscopes used at your institution, you must load the endoscope information to FlushTech. The endoscope Setup file allows you to load the endoscope information to the FlushTech. Please contact your Regional Sales Manager for the Setup file template. Follow the steps below to configure and save the Setup file.

1. The Setup file is an MS Excel document. Open the scope setup file and modify the Scope Types to match the Endoscopes used in your institution. **Fig. 1**

2. Enter the Scope Count. This tells the FlushTech how many scopes to read from the setup file. The Scope Count must be a 3 digit number. For example, if you have 7 scopes enter 007. **Fig. 2**

3. Enter your scope serial number under the Scope S/N column and select the corresponding scope type from the drop down menu. **Fig. 2**

4. Save the file as a Text (Tab delimited) file to a USB drive. Name the file as Setup.txt. **Fig.3**

Scope Types:	
1	Colonoscope
2	Gastroscope
3	Bronchoscope
4	Duodenoscope
5	Pediascope
6	Sigmoidoscope
7	Cystoscope

Fig. 1

Scope Count:	007		
Scope S/N:			
1111111	1	Colonoscope	
2222222	2	Gastroscope	
5535345	3	Bronchoscope	
1233445	4	Duodenoscope	
	4	Duodenoscope	
	5	Pediascope	
	6	Sigmoidoscope	
	7	Cystoscope	

Fig. 2

Save As

Computer ▸ Removable Disk (E:)   Search Removable Disk (E:)

File name: Setup.txt

Save as type: Text (Tab delimited)

Authors: sschmode   Tags: Add a tag

Browse Folders   Tools   Save   Cancel
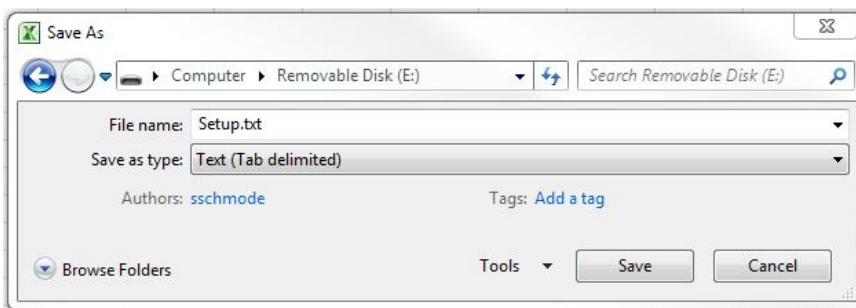
Fig. 3

Troubleshooting

Symptom	Indication	Solutions / Cause
Flush alarm	No fluid flow or purge event screen alert	• Suction tube sucking air • Suction tube not sinking to bottom of sink • Recalibrate flush pump • Flush fitting broken or leaking
Flush pump not working	Water or detergent solution is not being pumped through the FlushTech	• Pump seals worn out • Pump suction tube obstructed • Pump suction filter dirty
Can't access system menus	Screen unresponsive	• Reboot the system • User interface switch inoperable • Incorrect pass code - contact Knight for temporary pass code
No data in the reports	Reports contain no data	• Check for FAT32 formatting on USB drive • Clear usage data • Contact Knight for assistance
Files not transferring from USB drive to unit	Set-up data does not appear loaded on the FlushTech	• Check for FAT32 formatting • No file on report to transfer • Check USB port connection
Data in reports incorrect	Incorrect data appearing in reports	• Check set-up report • Check system settings • Reset date/time • Clear usage data
Pump tube broken or worn	Tube looks visually worn or is leaking	• Replace with factory tube only

FlushTech GI Rinse Comparison Matrix (Water)

Approximate times in seconds to flush 90 mls through each channel or compination of endoscope as applicable.
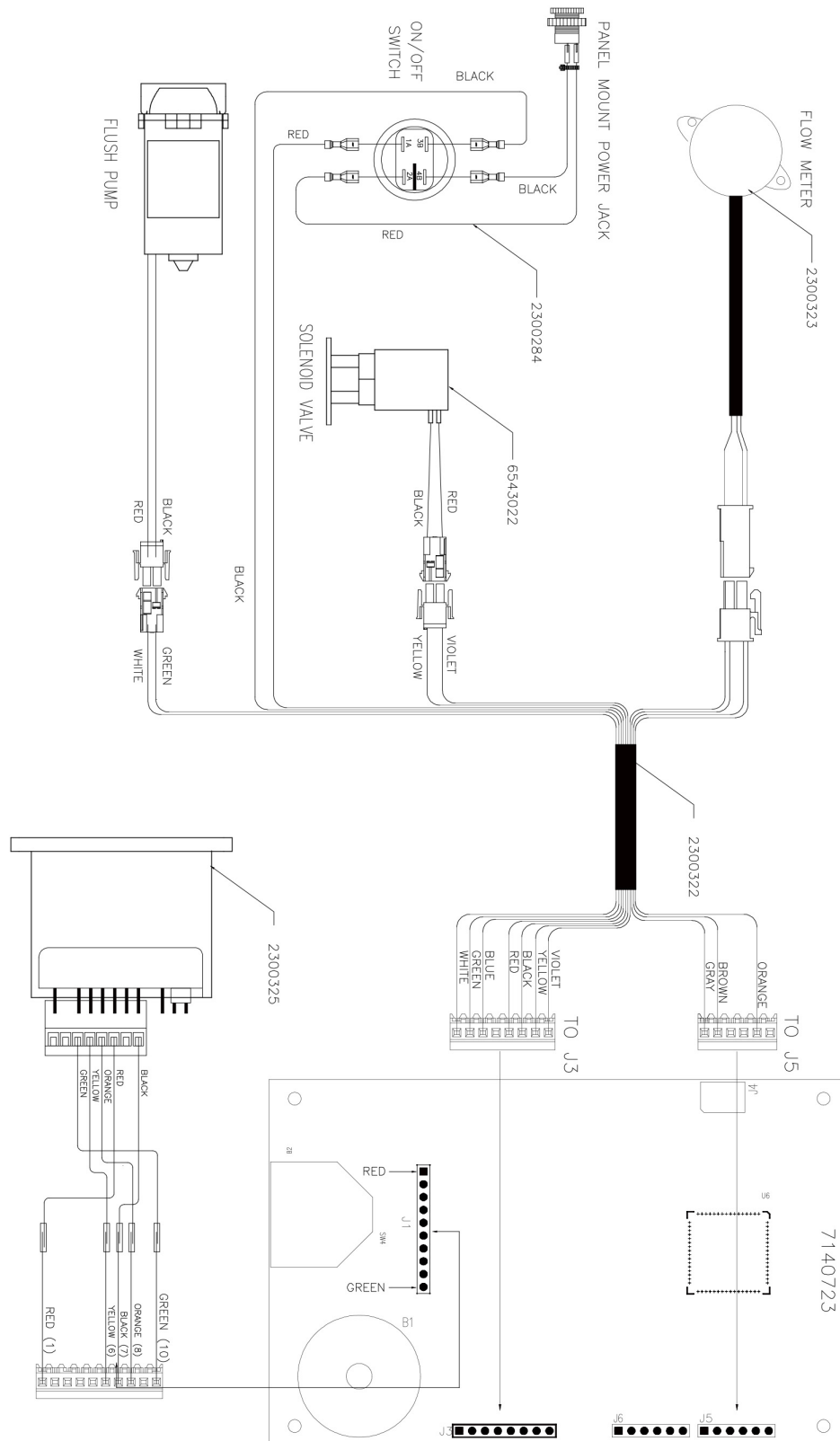
Updated September 2015

Type	Model	Ports			MODE	Avg Time (sec) (Lines Full)	Avg Time (sec) (Lines Clear)
		Olympus Endoscopes					
Colonoscope	**CFQ 140L**	**Suction**	**Air**	**n/a**			
		x			Single	5	15
			x		Dual	21	31
		x	x		Dual	6	16
		Olympus Endoscopes					
Colonoscope	**Q180AL**	**Suction**	**Air**	**Irrigation (Aux)**			
		x			Single	5	14
			x		Single	10	19
		x	x		Single	10	19
		x	x	x	Dual	15	22
		Olympus Endoscopes					
Gastroscope	**GIF 160**	**Suction**	**Air**	**n/a**			
		x			Single	6	16
			x		Dual	35	45
		x	x		Dual	6	16
		Olympus Endoscopes					
Duodenoscope	**TJF-160F**	**Suction**	**Air**	**Elevator**			
Total volume through elevator channel while simultaneously flushing suction and air ports							
90		x	x	x	Dual	16	38
60		x	x	x	Dual	11	25.5
30		x	x	x	Dual	5.5	12.8
15		x	x	x	Dual	2.6	6.4
		Olympus Endoscopes					
Cystoscope	**CYF-3**	**Bio**			Single	5	14
		Olympus Endoscopes					
Type	**Model**	**Ports**				Avg Time (sec) (Lines Full)	Avg Time (sec) (Lines Clear)
Cystoscope	**CYF V2**	**Bio**			Single	5	14
Type	**Model**	**Ports**				Avg Time (sec) (Lines Full)	Avg Time (sec) (Lines Clear)
Bronchscope	**BF 1T180**	**Air**	**Water**	**Biopsy**	**Single**		
			x	x	Single	5	11
		x		x	Single	9	16
		Pentax Endoscopes					
Gastroscope	**EG 2970K**	**Suction**	**Water (air)**	**Irrigation (Aux)**			
		x			Single	5	15
			x		Dual	17	27
				x	Dual	12	22
		x	x	x	Dual	5	15
		x	x	block	Dual	5	15
x		x	block	x	Dual	5	15
		Pentax Endoscopes					
Colonoscope	**EC 3872 TLK**	**Suction**	**Water (air)**	**Irrigation (Aux)**			
		x			Single	7	17
			x		Dual	21	31
		x	x	x	Dual	5	15
		x	x	block	Dual	6	16
		x	block	x	Dual	6	16
		block	x	x	Dual	5	15
		Pentax Endoscopes					
Bronchoscope	**EB 1750K**	**Suction**	**Water**	**Biopsy**	**Single**		
			x	x	Single	7	12
		x		x	Single	12	18
		x	x	x	Single	14	20

Replacement Parts

Item	Part No.	Description
1	7140723	Circuit Board Assembly
2	0600723	Fitting, 1/4 Tube
3	0600728	Fitting, 3/8 MPT x 1/4 Tube, Elbow
4	0600784	Fitting, Elbow PVDF, 1/8 MNPT X 1/4 Barb
5	0600770	Fitting, Panel MT Plug Valved, 1/4 Flow, 1/4 Barb, Acetal
6	0600754	Fitting, PNL MT Socket Valved, 1/4 Flow, 1/4 Barb, Acetal
7	0600771	Fitting, PNL MT Socket Valved, 1/4 Flow, 1/4 Barb, Acetal
8	2300323	Flow Meter Assembly
9	7117167	Flush Discharge Auxiliary Tube
10	7117166	Flush Discharge Extension Tube
11	7117165	Flush Discharge Tube
12	7117164	Flush Suction Tube
13	2300325	FTDI Interface Module
14	7117169	Kit, Flushing Tube
15	0901131	Label, FlushTech
16	2000519	Power Supply, 40W 24VDC Wall, 1.67A, 1.5 Cord, 2.1mm Plug
17	1600152	Pump, 24VDC PP Head w/Bypass, 0.75 GPM Santo/Silicone Seal
18	6543022	Solenoid 3-Way 24VDC
19	0600776	Tubing, Tygon ND-100-65, 1/4 ID x 1/2 OD
20	0600817	Fitting, Straight, barb 1/4" x 1/8" NPT
21	7225858	Flow Meter Mount Bracket, S.S.

Wiring Diagram

Parts Diagram

4X 1900603

7140723

4X 1400419

6368003

0901131 LABEL

2300325
FTDI INTERFACE
MODULE ASSY

PART OF 0600754

PART OF 0600771

PART OF 0600770

0600754

0600771

0600770

6368003
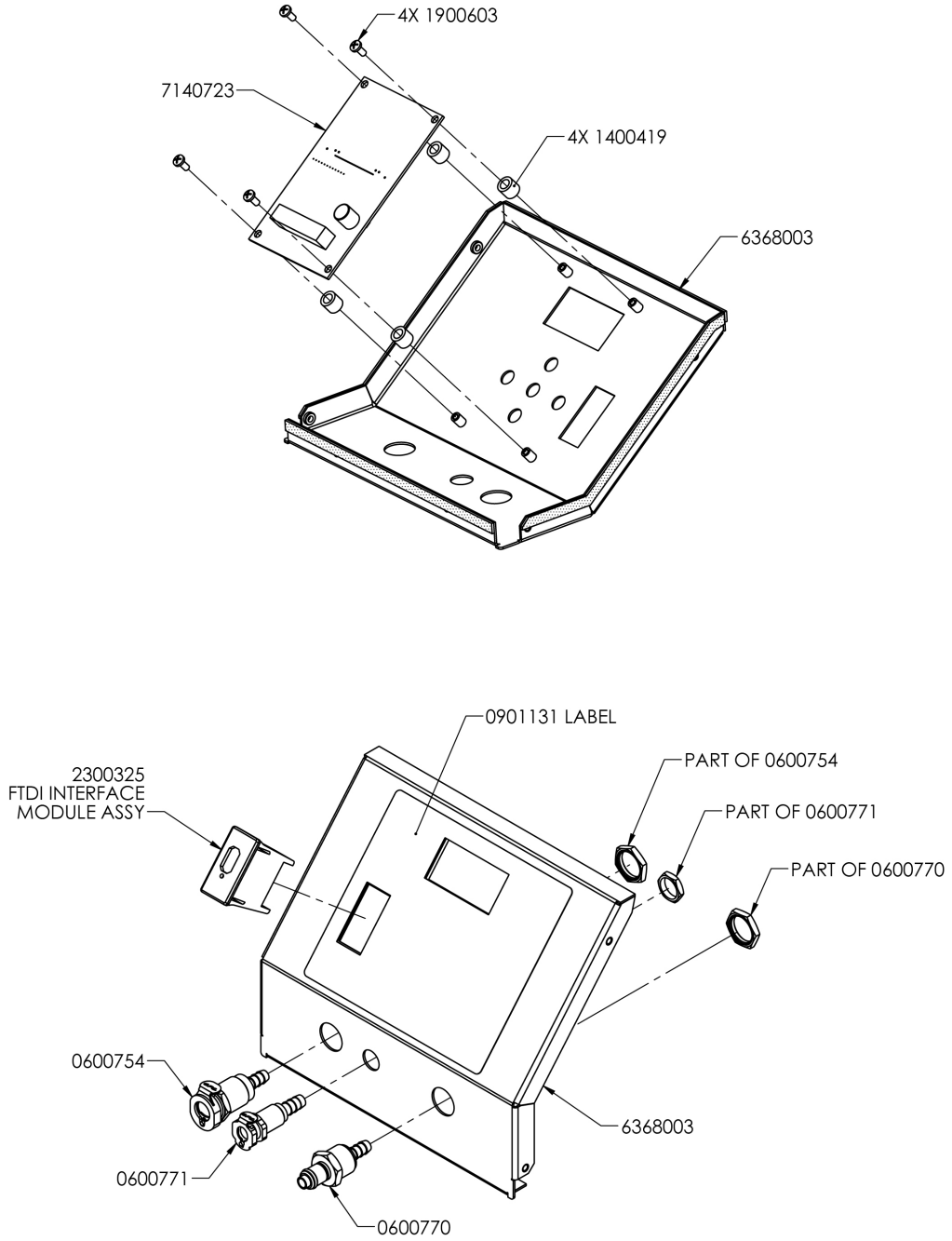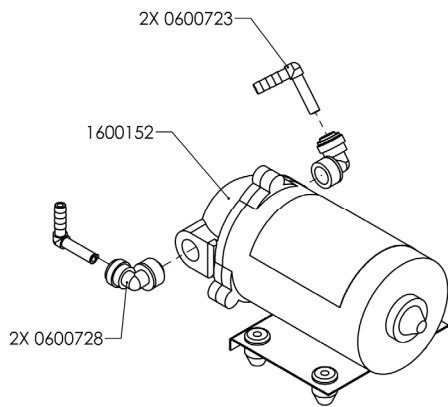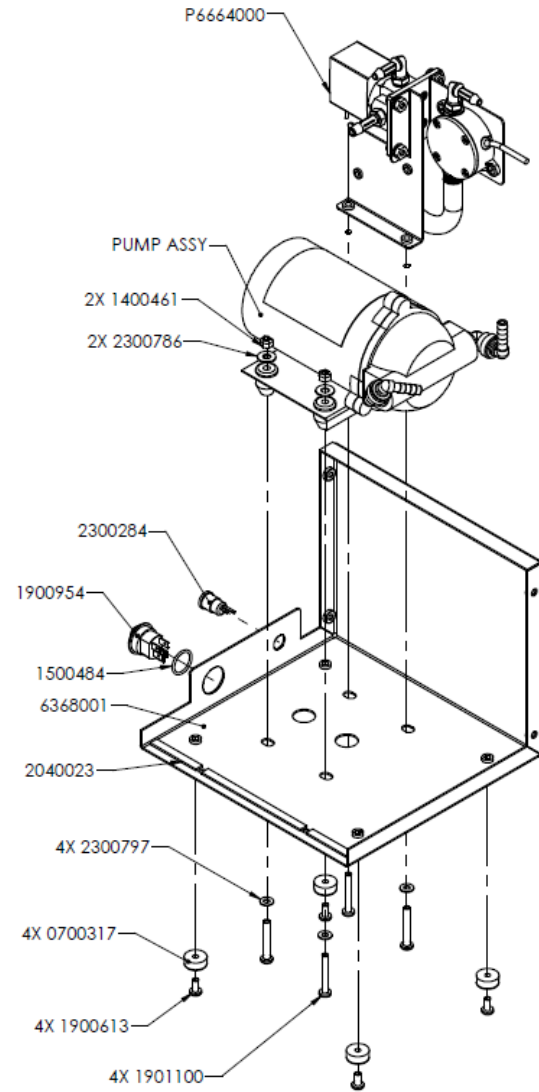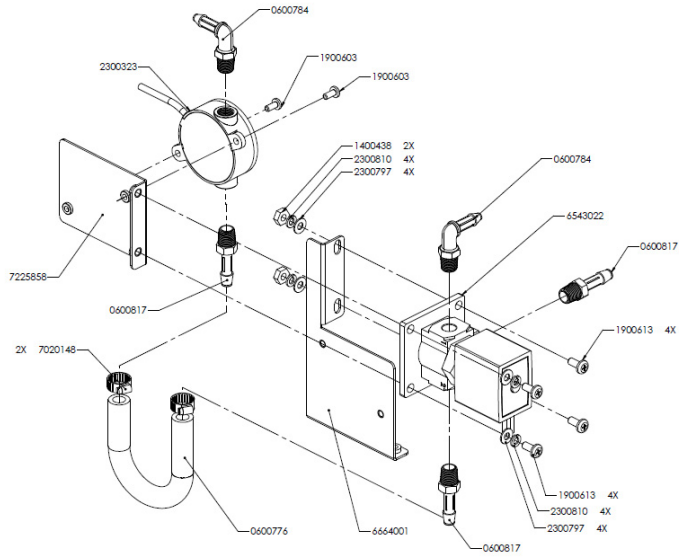
KNIGHT

EC – Declaration of Conformity

We declare that the product listed below, to which this Declaration of Conformity relates, is in conformity with the Standards and other Normative Documents listed below:

Equipment Description: Flushing system to be used in flexible endoscope pre-cleaning process
Type/Model Number: MDCS-05 (FlushTech GI ™)

Low Voltage Directive - 2006/95/EC (and former Directive 73/23/EEC)
Standards to which Conformity is Declared:

Electrical Safety IEC/EN 61010-1:2010 (Third Edition) - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements.

For Information: The "Electrical Safety Test" took place at the CSA International, Irvine, CA, U.S.A

Electromagnetic Compatibility
EMC Directive - 2004/108/EC and former Directive 89/336/EEC as amended by 92/31/EEC and 93/68/EEC)
Standards to which Conformity is Declared:

EMC Emissions: CISPR 11: Industrial, scientific and medical (ISM) radio-frequency
EN 55011: Equipment - Radio disturbance characteristics - Limits and methods of measurement

EN 61000-3-2: Limits for harmonic current emissions
EN 61000-3-3: Limitation of voltage changes, voltage fluctuations and flicker in public

EMC Immunity: EN 61326-1: 2006 Electrical Equipment Measurement,Control & Laboratory Use (Normal Environment)
EN 61000-4-2: Electrostatic discharge immunity test
EN 61000-4-3: Radiated, radio-frequency, electromagnetic field immunity test
EN 61000-4-4: Electrical fast transient/burst immunity test
EN 61000-4-5: Surge immunity test
EN 61000-4-6: Immunity to conducted disturbances, induced by diofrequency fields
EN 61000-4-11: Voltage dips, short interruptions and voltage variations immunity test

For Information: The "Electromagnetic Test" took place at the Aegis Labs,, Lake Forest, CA, U.S.A

Certification Marking: CE

We declared that the equipment specified above conforms to the referenced EU Directives and Harmonized Standards."
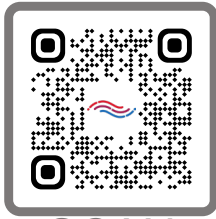
Signature: _____ Date: _____ 5/29/14 _____.

Name: _____ John Chiechi _____ Title:. Director of Engineering _____.

NOTES:

NOTES:

WARRANTY

For complete product terms and conditions scan the QR code below or enter the following URL into your browser:
http://cfstech.info/t-and-c

SCAN

DISCLAIMER

Knight LLC does not accept responsibility for the mishandling, misuse, or non-performance of the described items when used for purposes other than those specified in the instructions. For hazardous materials information consult the label, MSDS, or Knight LLC. Knigh products are not for use in potentially explosive environments. Any use of of our equipment in such an environment is at the risk of the user. Knight does not accept any liability in such circumstances.

FOOTNOTE

The information and specifications included in this publication were in effect at the time of approval for publishing. Knight LLC reserves the right to discontinue or change specifications or design at any time without notice and without incurring any obligation whatsoever.

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