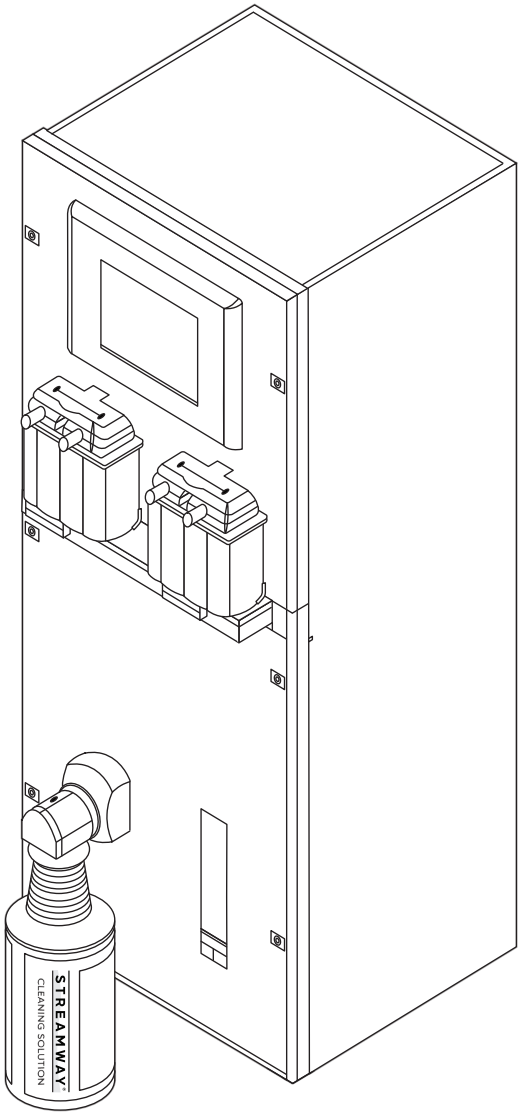
STREAMWAY®

DIRECT-TO-DRAIN MEDICAL FLUID DISPOSAL



INSTRUCTIONS FOR USE

DeRoyal®

TABLE OF CONTENTS

	SINGLE PATIENT USE
NON STERILE	NON-STERILE
MD	MEDICAL DEVICE
LATEX	NOT MADE WITH NATURAL RUBBER LATEX
RX ONLY	FEDERAL U.S.A. LAW RESTRICTS THIS DEVICE TO SALE OR USE BY OR ON THE ORDER OF A PHYSICIAN OR PROPERLY LICENSED PRACTITIONER.

IMPORTANT INFORMATION

Please read all instructions and warnings before use.

INTRODUCTION

The Streamway® system is installed in or on the wall of the procedure room or surgical suite and is connected directly to the facility vacuum and plumbing system. Blood, irrigant and other fluids that are removed by suction during procedures are collected by the Streamway system, stored briefly within the unit for viewing, and are then automatically disposed. The volume of fluid suctioned and subsequently disposed of is measured and displayed continuously on the touchscreen display panel on the front of the unit. At the completion of the procedure, the total volume of suctioned fluid can be recorded, after which the Streamway system is cleaned using a specially formulated fluid supplied by DeRoyal. **NOTE**: Sterile suction tubing and cannulas are not supplied with the Streamway system.

INTENDED USE

The Streamway system is intended to be used in areas such as operating rooms, intensive care units, pathology suites, emergency rooms, surgical centers, and doctors' offices to collect and dispose of procedural waste fluid.

⚠WARNINGS

- The Streamway system is not intended for liposuction procedures or fluid with particularly high lipid content.
- The Streamway system is not intended to be defibrillation proof.
- The Streamway system should be operated by trained health care professionals only. The clinical professional is responsible for determining the appropriate patient suction level and technique used with the Streamway system.
- The Streamway system should not be used to provide suction to other suction powered devices.
- The Streamway system should **NEVER** be used for procedures requiring no suction or low vacuum such as a passive patient drainage system. Such use could result in patient harm or death.
- To disconnect electric power, remove electrical plug from outlet.
- Failure to use Streamway Procedure Filters will result in voiding of the warranty and possible system failure. **NOTE:** Suction ports or suction lines not in continuous use must remain capped or closed off.
- Use only DeRoyal supplied Streamway Procedure Filters and Cleaning Solution.
- Use of other accessories, parts or accessories other than those specified and sold by DeRoyal and/or its authorized representatives as replacement parts will decrease electrical immunity of the Streamway system.
- Modifications to any Streamway system features, set up or accessories may affect correct system functionality. **DO NOT** make any modifications to the Streamway system.

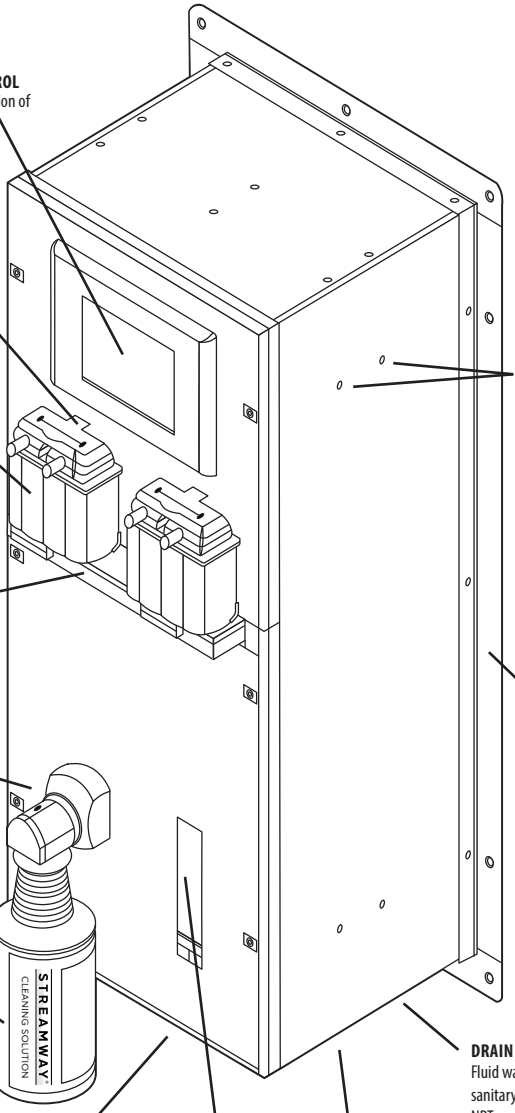
CAUTIONS

- Before using the Streamway system, read and understand the information supplied in this Instructions for Use document. Familiarization with the Streamway system is important. If you have any questions, contact DeRoyal Customer Support at 888-938-7828.
- Surgical waste fluid is potentially contaminated.
- Use only DeRoyal authorized accessories with the Streamway system.
- Follow federal, state, and local requirements for disposal of all bio-hazardous materials.
- **DO NOT** use the Streamway system if damaged upon inspection prior to use.
- If a leak is detected in or from the Streamway system, immediately unplug the power cord and notify your maintenance or biomedical engineering personnel.
- The Streamway system repairs should **ONLY** be attempted by an authorized, trained technician.
- The Streamway system should be installed

by a trained technician according to the Site Preparation and Installation Guide.
- Familiarization with the Occupational Safety and Health Administration's (OSHA's) Bloodborne Pathogens Standard at 29 CFR 1910.1030 is important prior to using the Streamway system.
- Follow facility procedures when handling surgical tubing and Streamway system accessories as they may contain waste fluid after use.
- Read and follow the important safety information provided on the label of the Streamway Cleaning Solution.
- Always follow state and federal electrical regulations and safety suggestions when plugging and unplugging electrical devices from an outlet.
- The volumetric reading displayed on the touch-screen is intended to be used as an approximate volume of fluids suctioned and disposed of by the Streamway system; it is **NOT** intended to be used as an indicator of fluids retained by the patient.
- Use only DeRoyal approved Streamway Cleaning Solution. Other sterilants, detergents or cleaners may be chemically incompatible and damage the Streamway system therefore voiding the warranty.
- **DO NOT** use the Streamway system in close proximity to a flammable anesthetic mixture with air, oxygen, or nitrous oxide.
- Always have an easily accessible back up fluid suction containment device in case of an emergency.
- Always unplug power to the unit before accessing any internal accessories.
- The Streamway system is not supplied with suction tubing, cannulas or surgical suction tools.
- The Streamway system should never be connected to a passive patient wound drain or other passive drainage devices.
- If only one Streamway Procedure Filter is used, the sliding manifold cover on the unused side must be properly positioned for the device to function properly.
- If only one 2-port Streamway Procedure Filter is used, ensure that the filter cover on the manifold is in a proper position by gently sliding it toward the device and allowing it to spring back to its resting position. **NOTE:** A new Streamway Procedure Filter must be used for each surgical case. The Streamway Procedure Filter is a single-use accessory.
- Use **ONLY** the approved DeRoyal Streamway Cleaning Solution. The Streamway Cleaning Solution is a premeasured amount of fluid to be used for cleaning the Streamway system after each individual procedure. Use of any cleaning agent or sterilant other than the Streamway Cleaning Solution or use of more than the premeasured amount of fluid in the Streamway Cleaning Solution container could result in system damage and warranty will be void.
- Use of other accessories, parts, or components other than those specified and sold by DeRoyal and/or its authorized representatives as replacement parts may result in decreased device performance and/or potential failure, voiding the manufacturer's warranty.

DEROYAL STREAMWAY SYSTEM FEATURES
- Connects directly to existing hospital plumbing and vacuum system for continuous fluid flow from suction to disposal.
- Replaces the existing facility system of collecting fluids in canisters, transporting and manually dumping of the fluid canisters down the drain, or solidifying the contents and sending to an approved waste hauler.
- Automated self-cleaning cycle prepares system for subsequent procedures utilizing specially formulated Streamway Cleaning Solution.
- Virtually hands free system for removing fluid, displaying fluid volume, and disposing of fluid waste during medical procedures.
- Unlimited volume of fluid collected and disposed of during the procedure, minimizing possible procedure interruption associated with changing canisters.
- Provides volumetric measurement of disposed fluid continuously during the procedure.
- Decreases potential exposure of healthcare worker to potentially infectious fluids.
- Eliminates the use and expense of adding gelling agents to solidify surgical fluids, reducing red bag waste.
- Minimizes biohazard disposal costs.

SYSTEM OVERVIEW



TOUCHSCREEN DISPLAY & CONTROL
Touchscreen control panel for operation of unit and display of parameters.

PROCEDURE FILTER RETENTION CLIP
The retention clip is used to hold the Streamway® Procedure Filter in proper position and assists in sealing the filter to the filter manifold.

PROCEDURE FILTER (SINGLE-USE)
The Streamway system Single Use Procedure Filter comes with two suction inlet ports and a built-in tissue trap. A new filter should be used for every procedure.

PROCEDURE FILTER MANIFOLD
Manifold used to insert Streamway system Single Use Procedure Filter. The manifold can accommodate up to 2 Streamway Procedure Filters. The manifold contains two receiving suction inlet ports for proper filter attachment. For use only with Streamway Procedure Filters manufactured by DeRoyal®.

CLEANING SOLUTION PORT
Designed to securely hold the Streamway system Cleaning Solution bottle in the proper position. The Streamway Cleaning Solution Port inverts for use during the cleaning cycle.

STREAMWAY CLEANING SOLUTION
A specially formulated Cleaning Solution for the Streamway system.

RECESSED MOUNTING HOLES
Recessed mounting hole locations to secure the device to the mounting bracket. Preset hole locations correspond to 4 or 6 inch wall depths. The mounting flange can be connected to the device in a surface mount fashion (as shown in Figure) or at a 4 inch or 6 inch wall depth.

MOUNTING FLANGE
Brackets secure device on, or recessed in, the wall. Figure depicts an on-the-wall or surface mount installation. See "Site Preparation and Installation Guide."

DRAIN CONNECTION (NOT SHOWN)
Fluid waste drain connects to facility sanitary sewer drain line – ½ inch female NPT connection.

VACUUM SOURCE CONNECTION (NOT SHOWN)
Connect from Streamway system unit to a central suction outlet; used to provide vacuum through unit to quick connect fluid inlet port – ⅜ inch female NPT connection.

FLUID VIEWING WINDOW
Back-lit window through which suctioned fluid may be viewed.

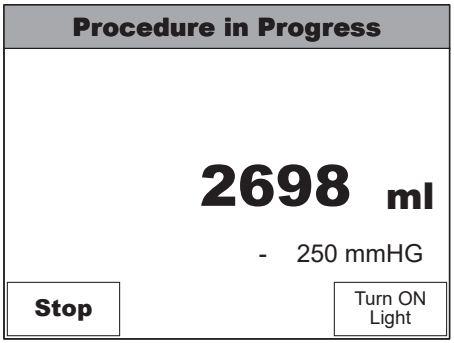
POWER SUPPLY CORD (NOT SHOWN)
Hospital grade power/appliance cord NEMA 515P, connects to Class I power supply with the Streamway system.

- Installs in or on the wall of the procedure or operating room, freeing valuable floor space.
- Viewing window provides visualization of collected fluid.
- Intuitive touchscreen control requires minimal interaction by user.
- Multiple port procedure filters offer connection of multiple suction lines.
- Self-cleaning cycle initiated after every procedure to clean the interworking of the Streamway system.
- Facilitates quick operating room turn time between procedures.

TOUCHSCREEN DISPLAY OVERVIEW

The touchscreen display is activiated by touch and allows the operator to activate certain control functions of the Streamway system for each procedure. Practice with the touchscreen is necessary for the operator to acquire the proper touch pressure and time for the Streamway system to respond.

The example of the display below depicts the touchscreen during normal operation. The process bar at the top of the screen shows the device is currently running.



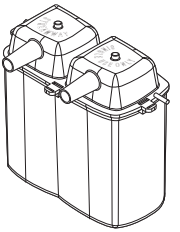
PROCESS BAR	The bar in gray at the top of the screen indicates the current state of operation.
FLUID VOLUME	The amount of fluid suctioned and disposed by the Streamway system will be displayed in a large numerical format followed by the units of measure in ml (milliliters). Totals are cleared at the end of the procedure. **NOTE:** Total fluid suctioned is precision weighed and then displayed when the collection chamber is emptied.
VACUUM LEVEL	The safe vacuum level set during the initial setup sequence will be displayed in mmHg (millimeters of Mercury). The units of measure for vacuum pressure can be changed in the Menu screen from mmHg to inHg.
STOP	At any time during the procedure the Stop button may be pressed to shut off vacuum.
LIGHT	Turn the internal Light On or Off during a procedure.

ACCESSORIES

Operation of the Streamway® system requires at least one non-sterile, single-use Streamway Procedure Filter and one bottle of Streamway Cleaning Solution. To ensure the performance and safety of the system, use ONLY accessories supplied by DeRoyal. Suction tubing of a different brand may be used.

2-PORT PROCEDURE FILTER (STM2013)

Up to two 2-port Streamway Procedure Filters may be connected to the device at a time. This non-sterile, single-use accessory has 2 ports for connection to ¼" internal diameter or ⅜" internal diameter surgical suction tubing sizes.



The filter is connected to the Procedure Filter Manifold on the front of the device. After inserting the exit ports on the bottom of the 2-port Procedure Filter into the mating ports on the 2-port Procedure Filter Manifold, push the 2-port filter back toward the device until the Procedure Filter Manifold snaps into place and makes an audible click. Any unused ports should remain capped to avoid a reduction in suction. The port cap on the filter must be removed to attach a suction line.

STREAMWAY CLEANING SOLUTION (STM2003)

The specially formulated Streamway Cleaning Solution is required to clean the Streamway system after each procedure. The system can **ONLY** be cleaned with the Streamway Cleaning Solution. Use of any other cleaning agent will void the manufacturer's warranty. After the procedure is complete press the Clean button and follow the proceeding steps to perform a cleaning cycle. The touchscreen display will instruct the user to invert the bottle prior to the starting of the cleaning cycle. The bottle is inverted by swinging the bottle 180 degrees to the right (counter clockwise) until it reaches slightly past a vertical position.

NOTE: The Streamway Cleaning Solution bottles are recyclable.

NOTE: The cleaning cycle will not operate if a bottle of Streamway Cleaning Solution is not attached or properly inverted.

NOTE: Be careful not to overtighten the Streamway Cleaning Solution in the bottle inverter.

OPERATING PROCEDURES

SYSTEM SET UP AND OPERATION

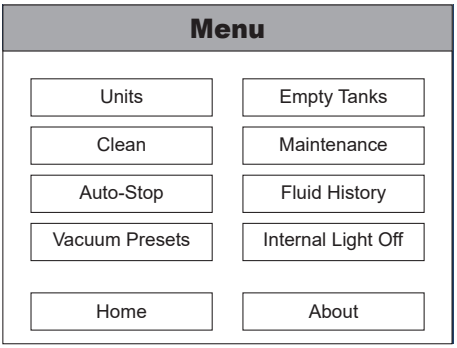
1. Retrieve one or two 2-port Streamway Procedure Filters and a bottle of the Streamway Cleaning Solution.
2. Remove Streamway Procedure Filters from packaging.
3. Press the touchscreen display to illuminate the display. The Welcome screen will appear.
4. When the Welcome screen appears, follow the directions on screen by inserting one or two 2-port Streamway Procedure Filters into the receiving suction inlet ports on the filter manifold. Once the bottom ports of the 2-port Streamway Procedure Filter have been inserted, lean the 2-port Streamway Procedure Filter back towards the device until a "click" is heard indicating the filter retention clips have been secured to the top of the 2-port Streamway Procedure Filter. Confirm the plastic knobs on top of the 2-port Procedure Filter are protruding through the hole in the retention clip.
5. Attach the suction tubing from the surgical field to a port(s) on the Streamway Procedure Filter(s).
6. Confirm the port caps are tightly seated on any of the unused ports on the Streamway Procedure Filter to maintain suction pressure throughout the operative procedure.
7. Press *Start* on the Welcome Screen once the filters have been inserted.
8. On the Set Safe Vacuum Level screen, touch the selection bar on screen to adjust the vacuum level to a safe level for the impending procedure.The vacuum level will be displayed below. Alternatively, the numeric display field can be touched to directly input a specific vacuum level by typing in the number and touching the return arrow. Preset vacuum levels may be selected as well. Directions for Setting the Presets can be found below on page 9.
9. On the Confirmation Page ensure that the determined and required safe vacuum level is correct and press *Start* to begin suction.
10. As fluid enters the Streamway system and is evacuated, a fluid estimate will be displayed on the touchscreen in ml (milliliters). The system will capture a precise fluid total amount when the procedure is completed.
11. The vacuum set level can be adjusted by pressing the *Stop* button and then the *Resume* button. After pressing the *Resume* button, the Set Safe Vacuum Level screen will appear. Touch the selection bar on screen to adjust the vacuum level to a safe level required for the procedure. The vacuum level will be displayed on the screen. Use the up or down arrows to make fine adjustments to the vacuum level.
12. When suction is no longer required, remove the suction device(s), tool(s) or tubing from surgical field and continue suctioning to remove any residual fluid remaining in the suction tubing.
13. Press the *Done* button to continue to the Cleaning Cycle page. **NOTE:** If necessary, the *Resume* button may be pressed to continue suctioning. A safe vacuum level will need to

be selected as described in step 11. Repeat step 13 when applicable.

14. Detach the surgical tubing from the Streamway Procedure Filters. Fluid totals for the procedure can be recorded at this point or at any of the following stages of the cleaning cycle. Total fluid suctioned is precision weighed and then displayed when the collection chamber is emptied.
15. To begin the cleaning cycle, press *Start* from the Clean Cycle screen. Follow the steps on the Setup Clean page by first removing the Streamway Procedure Filters. Disconnect the Procedure Filters from the Streamway system unit by pressing the thumb latch on top of the quick connect fitting of the suction inlet ports and grasping the Streamway Procedure Filters to remove. Pull the Streamway Procedure Filter tab forward and press the *Next* button to continue.
16. Follow instructions on the screen to complete the Cleaning Cycle by installing the Streamway Cleaning Solution bottle, inverting the bottle by pivoting the bottle 180 degrees to the right (counter clockwise) and pressing start. **NOTE:** If the Streamway Cleaning Solution bottle is not attached or is improperly inverted, the touchscreen will show the Cleaning Failed screen. Simply connect the Streamway Cleaning Solution bottle or properly invert the bottle and press *OK*.
17. The screen will indicate the status of the system on the Cleaning screen. At any time the cleaning cycle can be canceled by pressing the *Cancel* button. **WARNING:** This is the last opportunity to record the total fluid suctioned value for the completed procedure. The Streamway Cleaning Solution volume and elapsed cleaning time are **NOT** included with the final fluid or run time totals.
18. When the Cleaning Cycle is complete, press the *Continue* button to reset fluid totals and go to the Welcome screen. Be sure to remove the empty cleaning bottle and return the filter manifold covers to their normal position. The device is now ready for the next procedure.

OPTIONAL OPERATION PROCEDURES

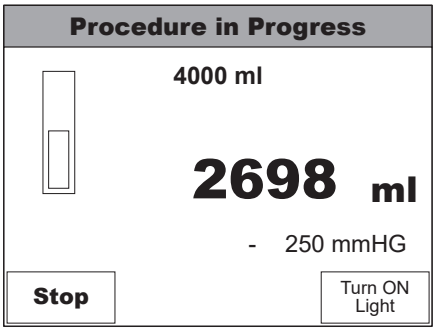
MENU PAGE OVERVIEW



UNITS	Change the unit of measure between mmHg and inHg.
CLEAN	Initiate the cleaning cycle.
AUTO-STOP	Pre-select a volumetiric amount for the device to automatically stop suction.
VACUUM PRESETS	Enter preset vacuum level for easy selection prior to a procedure.
HOME	Return to Welcome screen
EMPTY TANKS	Cycles the disposal sequence to remove any residual fluid.
MAINTENANCE	Pass code protected for advance maintenance functions.
FLUID HISTORY	Documents the historical annual fluid totals by month.
INTERNAL LIGHT	Turn the internal light on and off.
ABOUT	Company and device information.

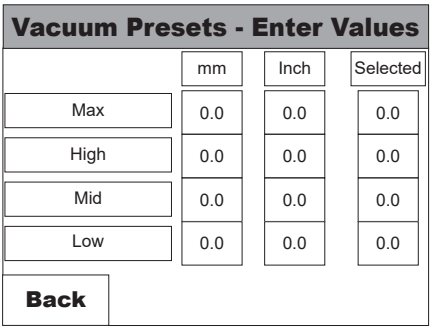
AUTO-STOP OPERATION

1. To use the Auto-Stop feature to preset a predetermined amount of fluid to be removed, first go to the Menu Screen and press *Auto-Stop*.
2. From the Auto Stop Volume Set point page press the volume field to change the amount of fluid in ml to be drawn.
3. From the Welcome screen, you will see the Auto-Stop feature has been enabled. Press *Start*. Select a safe vacuum level by pressing the vacuum level field, touching the vacuum indicator bar, or selecting a preset vacuum level.
4. The touchscreen will have "Procedure in Progress" in the process bar at the top. The fluid totals will accumulate and be shown as a digital readout. Additionally, a vessel icon will indicate an approximate amount of fluid collected as it pertains to the inputted amount next to the arrow. The *Stop* button may be pressed at any time to shut off vacuum. See below.



5. At the end of the procedure, the system will stop automatically. Alternatively, the *Stop* button may be pressed any time during the procedure.
6. If suction needs to resume in order to draw more fluid, then the *Resume* button may be pressed. If finished, press the *Done* button.
7. Record fluid totals and proceed to the cleaning cycle as detailed in steps 15 - 18 of the Operating Procedure.

SET PRESET VACUUM LEVELS



1. To enter the 4 optional vacuum presets, go to the Menu screen and press the *Vacuum Presets* button.
2. Select the field in mmHg next to one of the four descriptors (Max, High, Mid, Low). The default amount is 0 mmHg. Any amount may be entered from 1 to 760 mmHg. If the Streamway system is installed at sea level and is at a height measured 30 inches from the floor to the bottom of the device, then 100mmHG will be the default amount necessary to overcome gravity and draw fluid into the device.
3. Presets must be entered as mmHg. mmHg will automatically be converted to InHg as entered.
4. After the desired number of fields are inputted, press the *Back* button and then the *Home* button.

MAINTENANCE

All Streamway system internal inspections, cleaning, maintenance and parts replacement must be performed by only those trained and authorized by DeRoyal or its designates. Regular inspections should be performed on an annual basis. **WARNING:** For healthcare worker safety, only facility authorized personnel should open the cabinet door of the unit.

EXTERIOR CLEANING AND MAINTENANCE

The Streamway system has a powder coated anodized aluminum exterior shell. The exterior of the unit may be wiped down with a cloth moistened with a hospital grade germicidal or disinfectant. Concentrated germicidal or disinfectant should be diluted per manufacturer recommendations.

PREVENTATIVE MAINTENANCE

Preventative maintenance should be performed at scheduled intervals of 12 months and be performed only by those authorized by DeRoyal to service the unit. Failure to complete preventative maintenance as recommended and by those authorized by DeRoyal may void the warranty. Preventative maintenance can be scheduled by calling 888.938.7828.

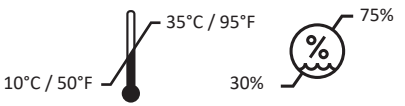
Preventative maintenance will encompass numerous system inspections, cleaning of components and replacement of components as necessary. Software upgrades may be performed as well. Some common preventative maintenance actions are as follows:

- The Streamway system runtime information inspection
- Fluid system and vacuum integrity checks

For additional or more detailed information regarding troubleshooting the Streamway system, contact your local authorized representative or DeRoyal at 888.938.7828.

SYSTEM SPECIFICATIONS

ENVIRONMENTAL CONDITIONS FOR OPERATION, TRANSPORT, AND STORAGE



POWER SUPPLY SPECIFICATIONS

- **MODEL:** MEGA EM11011M 120 watt with hospital grade power/appliance cord
- **INPUT VOLTAGE RANGE:** 100-240 VAC, 2.0 – 1.0 A
- **FREQUENCY:** 50-60 Hz
- 5.0 Amp output current
    - Output voltage range: 24VDC ±5%
    - Class I, IEC 60320-C13
- **WARNING:** To avoid risk of electrical shock, this equipment must only be connected to a supply main with protective earth.

CLASSIFICATION PER UL/IEC/EN 60601-1 AND 60601-1-2:

- Class I equipment
- Type B applied part
- IPX0
- Equipment is not suitable for use in the presence of flammable anesthetics.
- Continuous operation

IN THE EVENT OF SPORADIC ELECTRIC INTERFERENCE:

1. Turn off all electrical equipment not in use in the operating room.
2. Plug operating room equipment into alternative outlets other than the Streamway system.

POTENTIAL ELECTROMAGNETIC OR OTHER INTERFERENCE

1. Medical electrical equipment requires special precautions regarding electromagnetic compatibility (EMC) and must be installed and put into service according to the EMC information.
    - Portable and mobile radio frequency (RF) communications equipment can affect medical electrical equipment. The Streamway system is intended for use in the electromagnetic environments specified. The end user of the Streamway system should assure it is used in such an environment.
        - ◊ Portable and mobile RF Communications equipment (cell phones) should not be used in close proximity.
        - ◊ Power frequency magnetic fields should be at levels characteristic of a typical location in a medical facility.
2. As long as there are properly installed and functioning power, vacuum, and drain connections in the medical facility, the system will be able to dispose of bio-hazardous fluids into the sewer system.

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC EMISSIONS

THE STREAMWAY SYSTEM IS INTENDED FOR USE IN THE ELECTROMAGNETIC ENVIRONMENT SPECIFIED BELOW. FACILITY PERSONNEL SHOULD ASSURE THAT IT IS USED IN SUCH AN ENVIRONMENT.

EMISSIONS TEST	COMPLIANCE	ELECTROMAGNETIC ENVIRONMENT – GUIDANCE
RF emissions CISPR 11	Group 1	The Streamway system uses RF energy only for its internal function. Therefore its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	Used in medical/industrial environments.

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IMMUNITY TEST	IEC 60601 TEST LEVEL	COMPLIANCE LEVEL	ELECTROMAGNETIC ENVIRONMENT – GUIDANCE
Electrostatic Discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±2, 4, 6 kV contact ±2, 4, 8 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a medical facility.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV line(s) to line(s) ±2 kV line(s) to earth	Mains power quality should be that of a medical facility.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	‹5% U_T (› 95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles ‹5% U_T (› 95% dip in U_T) for 5 seconds	‹5% U_T (› 95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles ‹5% U_T (› 95% dip in U_T) for 5 seconds	Mains power quality should be that of a typical medical facility. If the user of the the Streamway system requires continued operation during power mains interruptions, it is recommended that the Streamway system be powered from an uninterruptable power supply. (Note: U_T is the a.c. mains voltage prior to application of the test level)
Power Frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical medical facility.

GUIDANCE AND MANUFACTURER'S DECLARATION – ELECTROMAGNETIC EMISSIONS			
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IMMUNITY TEST	**IEC 60601 TEST LEVEL**	**COMPLIANCE LEVEL**	**ELECTROMAGNETIC ENVIRONMENT – GUIDANCE**
Conducted RF IEC 61000-4-6	3Vrms 150kHz to 80 MHz	3 V (V_1)	Portable and mobile RF communications equipment should be used no closer to any part of the Streamway system, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d = [3.5/V_1] * \sqrt{P}$ where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range.
Radiated RF IEC 61000-4-3	3V/m 80 MHz to 2.5 GHz	3V/m (E_1)	Portable and mobile RF communications equipment should be used no closer to any part of the Streamway system, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d = [3.5/E_1] * \sqrt{P}$ 80 MHz to 800 MHz $d = [7/ E_1] * \sqrt{P}$ 800 MHz to 2.5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range.

RECOMMENDED SEPARATION DISTANCES BETWEEN PORTABLE & MOBILE RF COMMUNICATIONS EQUIPMENT AND THE STREAMWAY SYSTEM

The Streamway system is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The user of the Streamway system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Streamway system as recommended below, according to the maximum output power of the communications equipment.

Rated Maximum Output Power of Transmitter (watts, W)	Separation Distance According To Frequency of Transmitter (meter, m)		
	150 kHz to 80 MHz $d = [3.5/V_1] * \sqrt{P}$	80 MHz to 800 MHz $d = [3.5/E_1] * \sqrt{P}$	800 MHz to 2.5 GHz $d = [7/ E_1] * \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.69	3.69	7.38
100	11.67	11.67	23.33

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE: AT 80 MHz and 800 MHz, the separation distance for the higher frequency applies.

NOTE: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES		SOLUTIONS
NO SUCTION OR LOW SUCTION	1.	Open suction line during procedure	Use clamp on suction line to reduce vacuum loss
	2.	Plugged filter	Change out filter
	3.	Facility vacuum not on or is weak	Have facility check vacuum is on, operating properly and gauge
	4.	Missing O-ring under filter cover	Replace O-ring
	5.	Filter tabs are in wrong position	Reposition filter tabs
	6.	Cap is open on unused side of filter	Close cap on unused side of filter
	7.	Valves (72-on-Y/N) Other valves not activating 122 valve stuck	On run screen, select menu, select maintenance, select password, enter 2915, this will bring up the maintenance page. Select manual, manual mode will become enabled, select valve 72 this should now be "on". Open top cover and look for red LED light on valve 72. If red LED light on valve is on - turn on valve 112, should have suction at filter cover. If red LED light is not on – contact DeRoyal®.
	8.	"4 into 1" collector on top tank is not seated or hose is disconnected	Open top cover and reposition tank or reconnect hose
	9.	Missing O-ring on top tank inlet (mostly after tech or new build from shipping)	Replace O-ring part #2501-3181
	10.	Spiral hose has rip or leak	Replace spiral ring part #3501-3055
	11.	Regulator is sticking	Call Service
	12.	Hose from manifold to "4 in 1" unplugged	Open top cover and reinstall hose to top tank

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES		SOLUTIONS
CLEANING FLUID LEAKING	1.	O-ring on bottle adapter missing	Call DeRoyal® for new Bottle Turn Assembly **PREVENTION:** Apply gentle pressure to secure bottle. Be careful to not over tighten.
	2.	Duck bill valve fell out	Check that the duck bill valve is attached to bottle connector. Reattach if disconnected.
	3.	One touch and tube not secure	Re-install ¼ tube to filter door. **NOTE:** Check securement by gently pulling on ¼ tube.
	4.	Fitting on bottle flip not installed, ¼ NPT thread on fitting is loose	Turn fitting into bottle flip to secure
	5.	¼ tube to filter door fitting is not secure	Re-install ¼ tube to filter door. **NOTE:** Check securement by gently pulling on ¼ tube.
CLEANING CYCLE ERROR	1.	Filter cover positioned incorrectly	Confirm both filter tabs are pulled out
	2.	Bottle Flip O-ring in wrong place	Assure O-ring is in correct place
	3.	Tanks may have fluid in them, check tares	Empty tank and retare
	4.	One touch and tube not secure on filter cover	Push in clear tube to secure
	5.	Fitting on bottle flip not installed, ¼ NPT thread on fitting loose.	Remove front lower panel and tighten fitting into bottle flip to secure
	6.	⅜ tube to filter door fitting not secure	Re-install ⅜ tube to filter door. **NOTE:** Check securement by gently pulling on ⅜ tube.
	7.	Valves stuck	Check valves to assure they are operating properly, replace them where needed.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES		SOLUTIONS
NOT BRINGING IN CLEANING FLUID	1.	Filter doors not positioned correctly	Confirm both filter tabs are pulled out
	2.	Hose not connected correctly to flip mount fitting inside cover	Reinstall to one-touch fitting and assure it is secure
	3.	One touch and tube not secure on filter covers	Push in tube to secure on back of filter covers. **NOTE:** Check securement by gently pulling on clear tube
	4.	Fitting on bottle flip not installed, ¼ NPT thread on fitting loose	Remove front lower panel and tighten fitting into bottle flip to secure
	5.	⅜ tube to filter door fitting not secure	Re-install ⅜ tube to filter door. **NOTE:** Check securement by gently pulling on ⅜ tube.
	6.	Valves stuck	Check valves to assure they are operating properly, replace where needed
LEAK DETECTION ALARM TRIPPED	1.	Corrugated tube leaking	Call Service
	2.	⅝ rigid drain from bottom tank not connected correctly	Twist the tube and center the ⅝ pipe by feeling the engagement of the O-rings. **NOTE:** Verify the drain is connected correctly using the black marking in the tube.
	3.	Bottle flip leaking at fittings	Tighten one-touch elbow fitting bottle flip
	4.	Weigh and dwell tank leaking	Call Service

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES		SOLUTIONS
PRESSURE PUMP RUNS CONSTANTLY	1.	¼ hose internally is leaking	Select menu, select maintenance, select password and enter 2915, this will bring up maintenance page. Select manual, manual mode will become enabled. In manual mode, see if pump turns off. Call Service for additional maintenance as needed.
	2.	Stuck 122 vent valve or 132 valve	Select menu, select maintenance, select password and enter 2915, this will bring up maintenance page. Select manual, manual mode will become enabled, toggle 142, 132, 122 – should all have same audible sound when operated. If valve is found to be faulty, replace as needed.
	3.	Spiral hose in bottom tank leaking	Remove check valve and clear any debris. Re-install check valve.
	4.	The check valve in top tank is stuck open. Air bubbles are present in top tank.	Remove check valve and clear any debris. Re-install check valve.
LOW SENSOR ALARM TRIPPED "CAUTION" - KEEPS RUNNING	1.	Fluid in vacuum vessel	Empty vacuum vessel when possible, to clear fluid. Call Service if problem persists.
	2.	Stuck valve or bad relay	A. Check valves 102, 122, 132 & 112 and assure they operate B. In manual control mode – turn pressure pump on, remove hose cap on vacuum drain, place hose end in bucket, turn on valve 112 and then 132. When drained, replace hose cap and stow drain hose.
	3.	Fluid backed up into vacuum trap- Chain not connected from install or maintenance	Assure bottom tank is suspended by bead chain. Empty vacuum vessel when possible, to clear fluid. Call Service if problem persists.
	4.	Fluid backed up to vacuum trap from cumulative foam from cleaning fluid	Assure bottom tank is suspended by bead chain. Empty vacuum vessel when possible, to clear fluid. Call Service if problem persists.
	5.	Stuck 122 vent valve	Call Service
	6.	The check valve in top tank is stuck open. Air bubbles are present in top tank.	Remove check valve and clear any debris. Re-install check valve.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES		SOLUTIONS
HIGH SENSOR ALARM TRIPPED "CAUTION" STOPPED	1.	Fluid filled vacuum trap	Follow instructions on "Draining The Vacuum Tank (Trap)" in the Streamway System Service Manual
	2.	Stuck 122 valve	Call Service
TANKS NOT EMPTYING – TIME OUT OCCURRED	1.	Pressure Pump Assembly	1. Press pump ON button to check if pump runs manually. 2a. Does it pump up and shut off? 2b. Does pressure pump turn on often when activated in manual mode (15 second intervals or less)? If it does this indicates a leak in system or the pressure tank . Call service for possible replacement of pump.
	2.	Corrugated tube leaking	Call Service
	3.	Stuck 122 valve	Call Service
	4.	122 & 142 valve won't turn off	Check I/O module on back of PLC for possible replacement
	5.	Chain loose, but connected to tanks	Set up wrong. Clip must suspend tank. Check integrity of the chain and clip configuration. Run and tare.
	6.	Tanks on bottom pins not on brackets	Assure tank brackets are installed correctly on bracket pins. Assure drain pipe is not bound to tank by uninstalling tube and lubricating with molykote 111 then reinstall. Follow the Load Cell Re-tare and simulated procedure steps.
	7.	Tare not reset	See manual for reset instructions
	8.	Work was done on dwell & weigh tanks not re-installed on guide pins or was bumped off guide pins	Call Service
TOP TANK NOT EMPTYING	1.	Ship bracket fell on top of bottom tank cover	Lift bracket up and tighten hex nut to retain in the up position
	2.	Valve 102 stuck	Replace valve 102. Part #2501-3219
	3.	102 relay is bad	Replace relay. Part #2501-3252

AFTER ANY INTERNAL MAINTENANCE HAS BEEN COMPLETED ON THE STREAMWAY SYSTEM, A LOAD CELL RE-TARE AND SIMULATED PROCEDURE SHOULD BE PERFORMED. PLEASE REFERENCE THE PREVENTATIVE MAINTENANCE MANUAL FOR INSTRUCTIONS.

DISPOSAL / END OF LIFE

- Consult the manufacturer, DeRoyal®, as well as federal, state, and local requirements for safe disposal of the Streamway system at end of life. The Streamway system must be thoroughly cleaned using the specially formulated Streamway Cleaning Solution prior to disposal or transport.

TRANSPORTATION

- Consult the manufacturer, DeRoyal, regarding safe transportation or shipment of the Streamway system.
- The Streamway system must be thoroughly cleaned using the specially formulated Streamway Cleaning Solution prior to transport or shipment.

EXPLANATION OF SYMBOLS

DeRoyal uses the symbols and meanings from standards ISO 15523-1. These symbols are placed next to the text explaining their meaning in this instructions for use (IFU), a complete symbols glossary is available online at deroyal.com/symbols or by contacting customer service.

STORAGE AND TRANSPORT CONDITIONS

	**KEEP DRY**
	**KEEP AWAY FROM SUNLIGHT**

In addition to the competent authority in the country where the patient resides, serious incidents must be reported to DeRoyal Industries, Inc.

WARRANTY

DeRoyal® products are warranted for ninety (90) days from the date of shipment from DeRoyal® as to product quality and workmanship. **DEROYAL'S WRITTEN WARRANTIES ARE GIVEN IN LIEU OF ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

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