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Laerdal Suction Unit
Reusable

User Guide

LSU Reusable Cat.no 78 00 00

www.laerdal.com

Laerdal
helping save lives

Contents

Important Information

Intended Use

The Laerdal Suction Unit (LSU) is a portable, electrically powered, medical suction equipment intended for field and transport use. It is intended for intermittent operation to remove secretions, blood or vomit from a patient´s airway to allow ventilation.

Higher vacuum levels are generally selected for oropharyngeal suctioning, and lower vacuum levels are usually selected for tracheal suctioning and the suctioning of children and infants.

Read this User Guide carefully, and become thoroughly familiar with the operation and maintenance of the LSU before using it. Read all Cautions and Warnings before using the LSU.

⚠ Warnings and Cautions

A Warning states a condition, hazard, or unsafe practice that can result in serious personal injury or death.
A Caution states a condition, hazard, or unsafe practice that can result in minor personal injury or damage to the product.

⚠ Warnings

- *The LSU is not suitable for use in the presence of flammable liquids or gases; there can be a danger of explosion or fire.*
- *Not intended for use in MRI environments.*
- *Do not use the LSU under environmental conditions that are outside the ranges specified in Specifications section. This can endanger safety and adversely affect operation of the device.*
- *Do not block the Exhaust Outlet during use. This will lead to reduced flow and can also cause damage to the LSU.*
- *The LSU Reusable must not be used without the Aerosol Filter or the Float Ball.*
- *Disconnect the LSU from external power prior to cleaning. Use a minimum amount of liquid to prevent any electrical shock hazard.*
- *Do not immerse the LSU or allow it to stand in water or other liquids. This might damage the device, and cause electrical hazard.*

⚠ Cautions

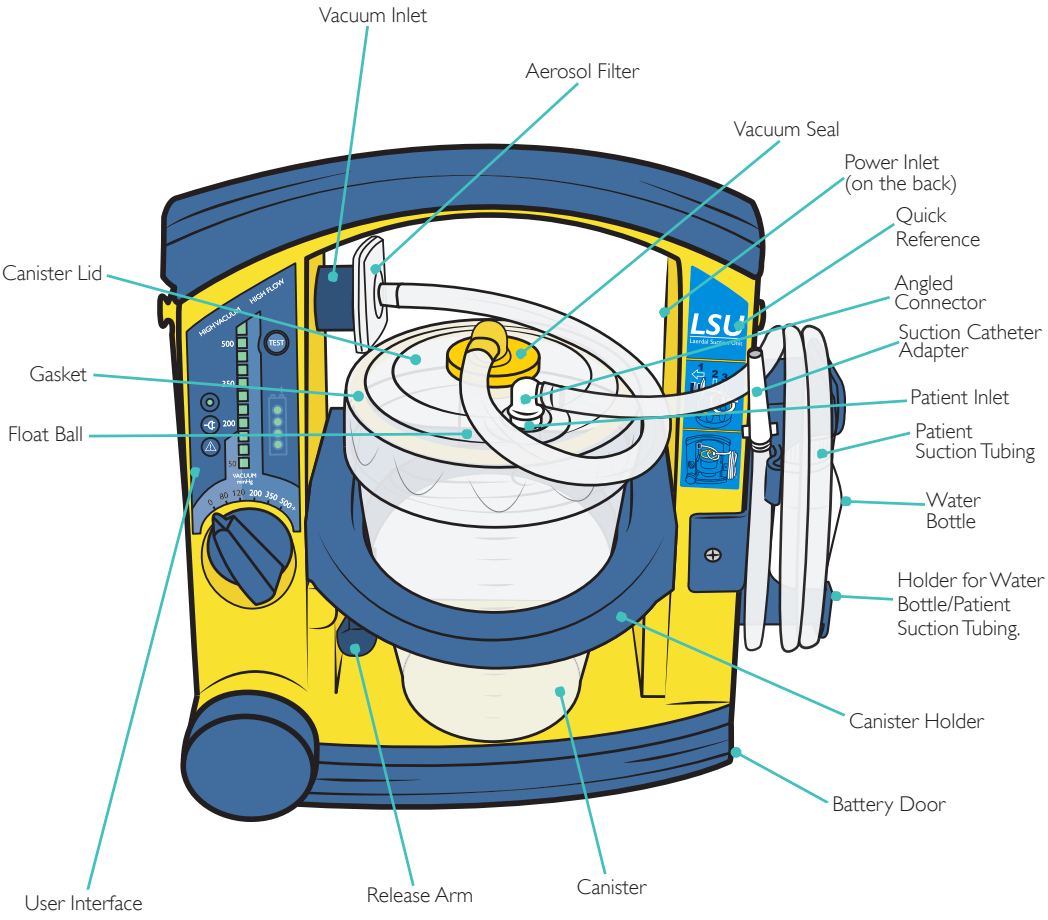
- *Do not pump any cleaning solution or other liquids through the vacuum pump, i.e. through the Vacuum Connector. This can damage the LSU.*
- *Use only parts and accessories supplied by Laerdal Medical or one of our authorised distributors to ensure that the LSU operates satisfactorily.*
- *Overflow of suctioned material can damage the device. If overflow of liquid from the Canister into the pump is suspected, contact your local Laerdal Medical representative.*
- *The LSU should only be used by persons trained in the use of medical suction equipment.*

Battery

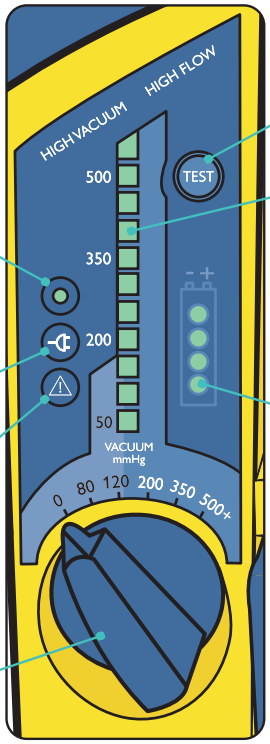
⚠ Cautions

- *Only use batteries approved by Laerdal Medical. Other batteries will have problems related to the battery status indicator of the LSU, the battery operation time and safety.*
- *The LSU must be charged between each clinical use.*
- *To maintain satisfactory operation of the battery, placing the LSU on continuous charge immediately after use and when not in use is recommended.*
- *If it is not possible to place the LSU on continuous charge when not in use, make sure the battery is charged for a minimum of 4 hours at least once a month.*
- *The LSU must be placed on charge for a minimum of 4 hours to reach full battery capacity. Fast charging gives approximately 80% battery capacity after 3 hours (for a new battery). Repetitive 3 hour charging is not recommended.*
- *Fully charging the battery is recommended. Repetitive charging to a lower capacity level will reduce battery life.*
- *Always fully charge the battery before storage.*
- *Do not store the battery when it is discharged.*
- *Do not store the LSU with a discharged battery.*
- *Laerdal recommends charging a spare battery every 6 months when stored in room temperature at 25 °C (77 °F).*

Overview


Vacuum Inlet
Aerosol Filter
Vacuum Seal
Power Inlet (on the back)
Quick Reference
Angled Connector
Suction Catheter Adapter
Patient Inlet
Patient Suction Tubing
Water Bottle
Holder for Water Bottle/Patient Suction Tubing.
Canister Holder
Battery Door
Canister Lid
Gasket
Float Ball
User Interface
Release Arm
Canister
HIGH VACUUM
HIGH FLOW
TEST
LSU

User Interface



Power On Indicator
- Continuously lit - LSU is switched on.
- Rapid flash (approx. twice per second) - Device Test in progress.
- Slow flash (approx. once per second) - Automatic power save mode activated; Device Test interrupted or battery discharged.

External Power Indicator
AC or DC power connected

Failure Mode Indicator
Possible malfunction detected

Operating Knob
On/Off switch
Vacuum selector

Test Button
Run the Device Test program

Vacuum Indicator*
Actual vacuum level during operation. Each fully lit segment represents 50 mmHg. If a segment has a dim light, this represents 25 mmHg (e.g 125 mmHg is shown by 2 fully lit and 1 dimly lit segments).

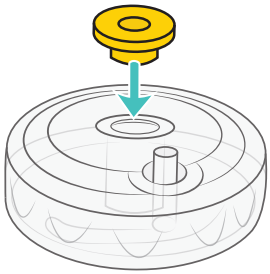
Battery Status Indicator

*Pressure conversion chart

mmHg	80	120	200	350	500
kPa	10.6	16.0	26.6	46.6	66.5
mBar	107	160	267	467	667

Assembly - LSU Reusable Canister System

1



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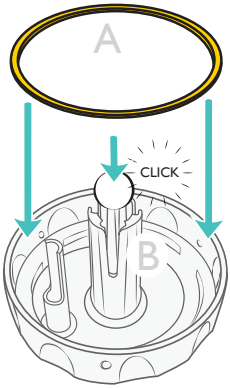

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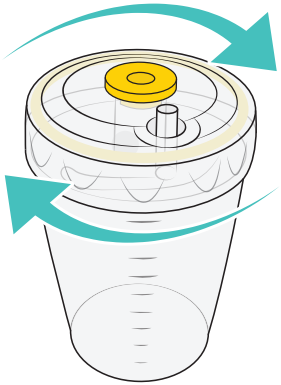

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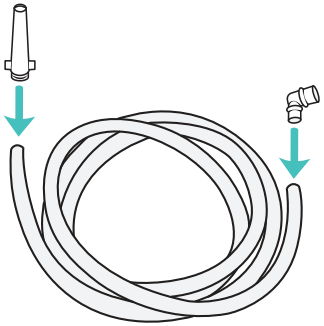

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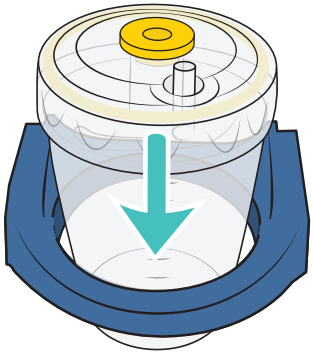

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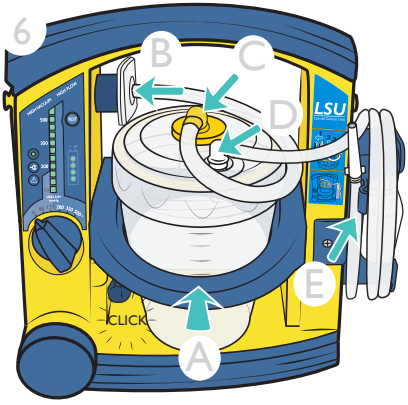
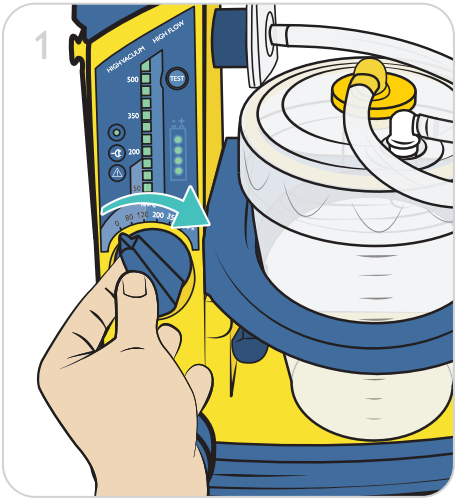


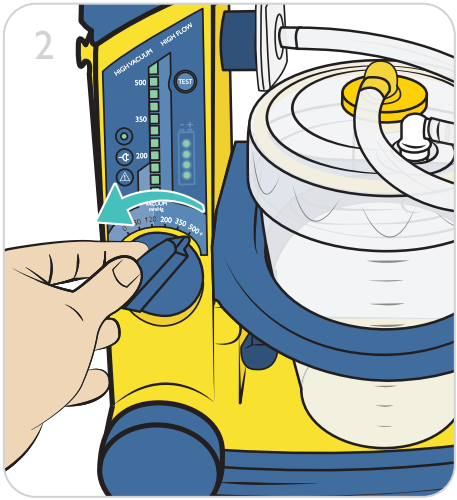
Before Use Checklist

- Check that no parts are missing and that all parts are clean.
- To operate the LSU from an external power source, connect to either external AC or DC power. To operate the LSU from the internal battery, check that the battery is installed.
- Run Device Test.
- Check that the Patient Suction Tubing is securely connected to the Patient Inlet on the Canister Lid; and the Aerosol Filter is securely fastened in the LSU and the lid.
- Check that a suction catheter is attached to the patient suction tube or suction adapter. Do not use the suction tube or suction adapter without a suction catheter attached.

Use



1. Unwind the Suction Tubing. Set the Operating Knob to the required vacuum level. The LSU will switch on and start to operate. The Power On Indicator lights up during operating.



2. When suction is complete, set the Operating Knob to "0" to turn off.

⚠ Caution

Even if the Operating Knob is set to "0", voltage is present on some of the internal circuitry when the LSU is connected to external power. Disconnect from the mains to fully remove power.

Note

The LSU has an automatic power save mode which switches the pump motor off. While in this mode, the Power On Indicator will flash slowly (approx. once per second). Power save mode is activated when the Operating Knob is set to 200, 350 or 500+ mmHg and the actual vacuum level has been continuously higher than 120 mmHg for more than 2 minutes. To exit power save mode and revert to normal operation, set the Operating Knob to any other position and then go back to required setting.

After Use Checklist

- Inspect all parts of the LSU for damage and excessive wear. Replace parts if necessary.
- Clean the LSU cabinet. Clean and disinfect reusable parts. See Cleaning section.
- Perform Device Test. See *Device Test* section.
- Place the LSU on charge.

The Aerosol Filter protects the LSU by preventing aerosols from entering the Pump Unit.

	Efficiency
Bacterial Filtration Efficiency	>99.999 %
Viral Filtration Efficiency	>99.999 %

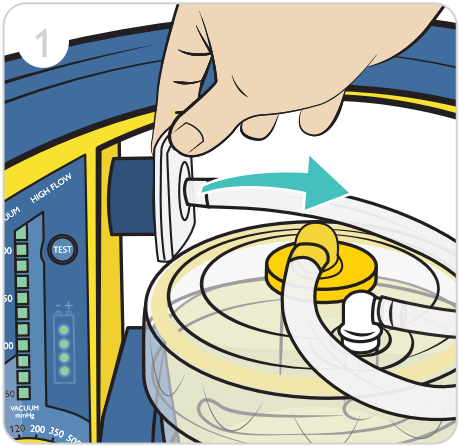
It is recommended that the Aerosol Filter be replaced after each use or at least once every shift. If the LSU is used on patients in areas where cross contamination is not an issue, the Aerosol Filter should be replaced at least once a month. It is recommended always to have extra Aerosol Filters with the LSU in case one has to be discarded. If the Aerosol Filter becomes wet, it should be replaced immediately or as soon as possible after use.

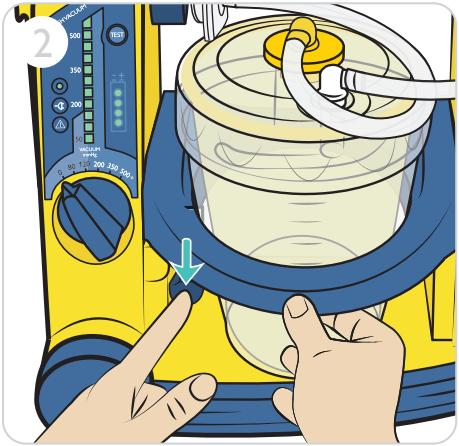
Notes

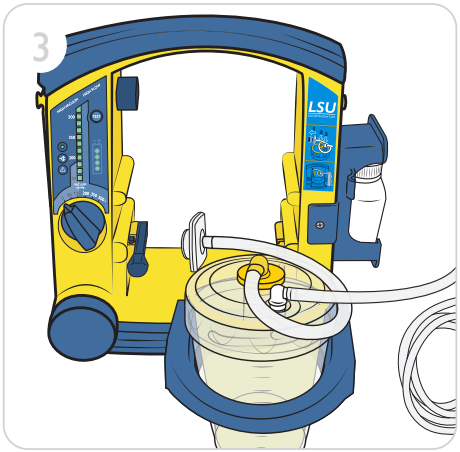
- *Check the filter after each use. If the filter is broken so liquid penetrates the membrane, the pump will be contaminated. Contact Laerdal Service.*
- *The Float Ball (in the Canister lid) shuts off the vacuum if the Canister is full or the LSU tips over. To restore the vacuum, remove the Angled Connector from the Vacuum Inlet. The Float Ball will be released and the Angled Connector can be reattached.*

To prevent damage and keep the LSU in good working order; empty the Canister when 3/4 full. Overflow of suctioned material can damage the LSU.

When liquid reaches the top of the Canister, the LSU will stop suctioning. To continue suctioning, empty the Canister and replace the filter.

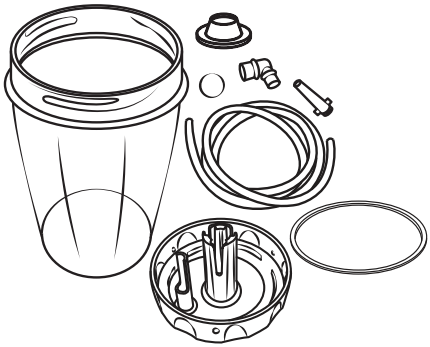
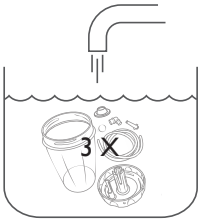
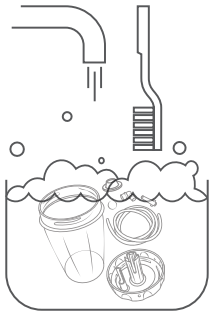


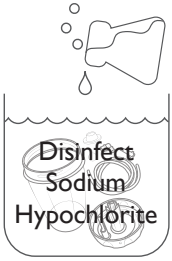




Safely dispose of the contents of the Canister according to local protocols.

Decontaminating and disinfection of Reusable Canister

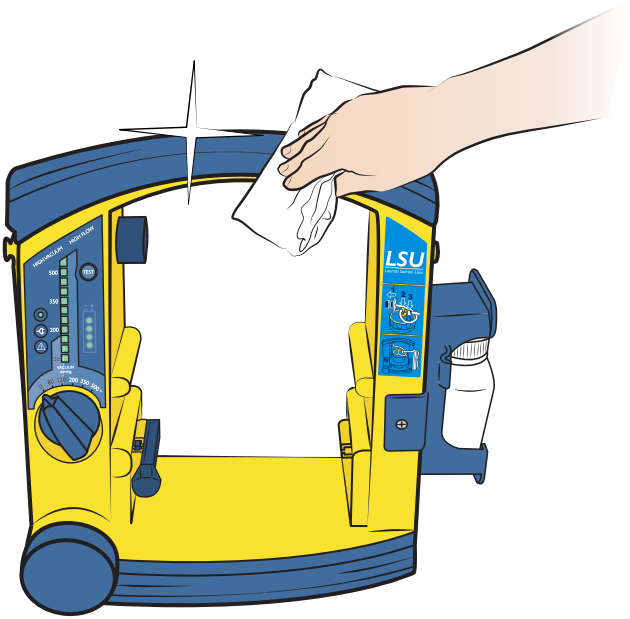
1. Dismantle	
• Dismantle parts to be decontaminated after each use. • The Float Ball can be snapped out of the lid.	
2. Rinse	
• Rinse all parts under cold running water a total of 3 times. • Immerse in warm water.	
3. Clean	
• Immerse all parts in hot water (60-70 °C) containing a mild detergent. • Thoroughly clean all surfaces, use a brush where possible. • Rinse in warm water and allow to dry. • Inspect all parts to be visibly clean and dry. • Note *Thorough rinsing and cleaning are very important steps prior to disinfection.*	

4. Disinfection of Reusable Parts		
Method		Post-treatment
Glutaraldehyde Room temperature / concentration: 2% 60 minutes.		Rinse all parts warm water. Allow to dry.
Sodium Hypochlorite (not cleared for use in the US) Room temperature / concentration: 0.5% 20 minutes.		Rinse all parts warm water. Allow to dry.
Virkon Room temperature / concentration: 1% 10 minutes.		Rinse all parts warm water. Allow to dry.
Steam autoclaving Autoclave at max. 121 °C 60 minutes.		Allow parts to cool.

Clean the Cabinet

Use a minimum amount of liquid to prevent any electrical shock hazard. Do not immerse the LSU or allow it to stand in water or other liquids. This can damage the device, and cause electrical shock resulting in injury to persons.

Use a cloth or sponge that is dampened with a mild detergent (hand dishwashing liquid or similar) to clean the external surfaces of the LSU.
Use a detergent that is compatible with the materials listed in the *Material Chart*, and follow the detergent manufacturer´s instructions.
Use a cloth or sponge dampened with water and wipe the surfaces again.
Dry the surfaces using a clean cloth or a paper towel.



The Device Test is a user initiated test program to identify whether the LSU operates satisfactorily or if it needs service. If the device is not in frequent use (i.e. less than once a month), the Device Test should be performed both on a monthly basis and after each Cleaning and Assembly process.

The program runs 4 different tests:

1. Occlusions - Blockages in the Suction System, including canister and tubing.
2. Vacuum efficacy - How much vacuum builds up in the Pump System within 3 seconds.
3. Maximum vacuum level - The maximum achievable vacuum level of the LSU within 10 seconds.
4. Leakages - Air leakages in the Pump System, including canister and tubing.

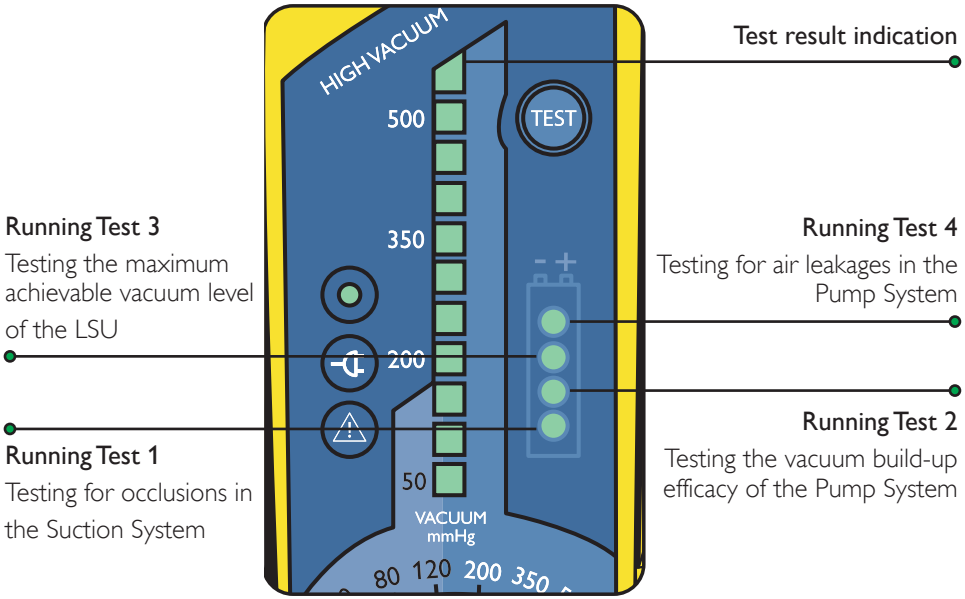
Before Device Test Checklist:

- Ensure the LSU is correctly assembled and the Patient Suction Tubing is unwound.
- The Suction Catheter Adapter is removed from its holder (if applicable).
- Ensure the battery is not being charged (the device is not connected to AC/DC power source).

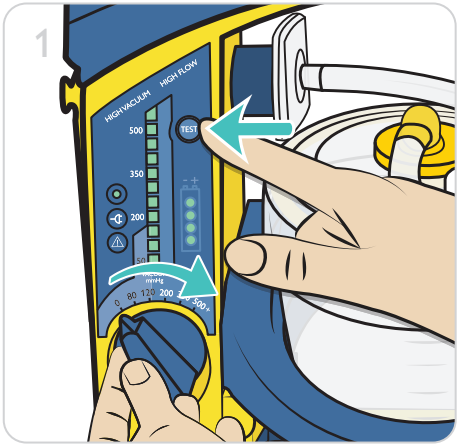
Note

If you need to interrupt the test and revert to normal operation, turn the Operating Knob to another position and then select the required setting.

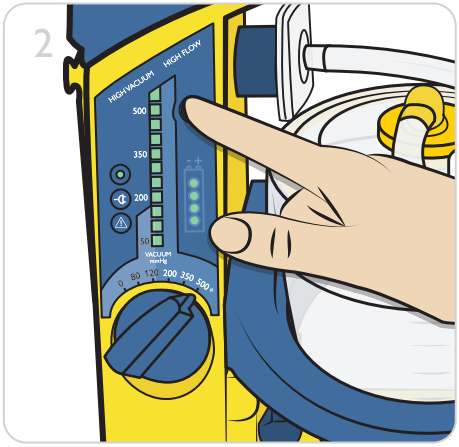
Device Test Indicators



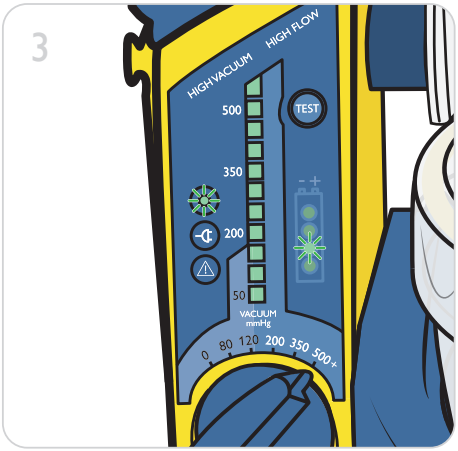
Run the Test



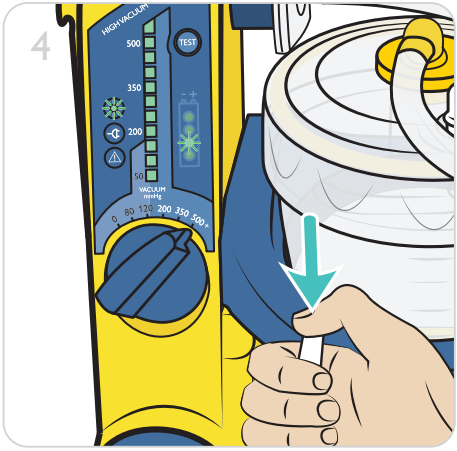
1. Press and hold the Test Button while turning the Operating Knob to 500+ mmHg.



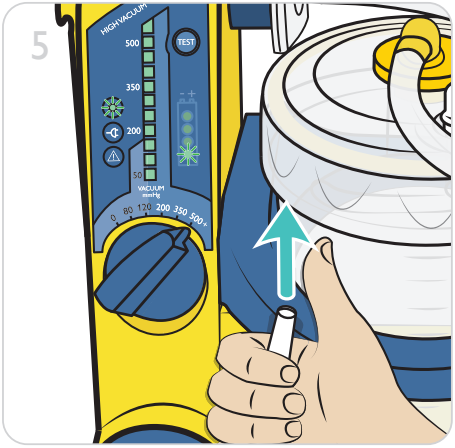
2. Hold the Test Button in for 2 seconds.



3. The test will start immediately. During test mode, the Power On Indicator will flash rapidly.



4. When LED 2 lights up, block the Patient Suction Tubing with your thumb.



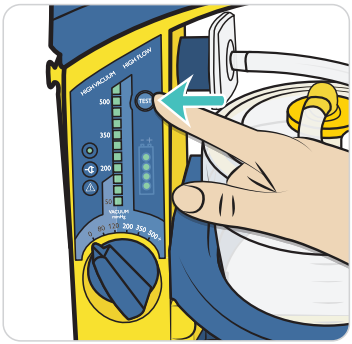
5. Keep the tubing blocked while LED 2, 3 and 4 light up. Release the tubing when LED 1 lights up again.

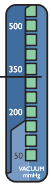
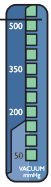
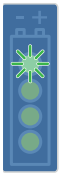
Notes

- *If the tubing is not blocked within 2 minutes, the test will be interrupted. During interrupted device test, the Power On Indicator will flash slowly.*
- *To restart the test, set the Operating Knob to "0" and start over again.*
- *To evaluate test results, do not tun off the LSU after running Device Test.*

Evaluation of Device Test Results

After the test is completed, the Vacuum Indicator will display the results. Press the Test Button to scroll through the results of each test to display the results.

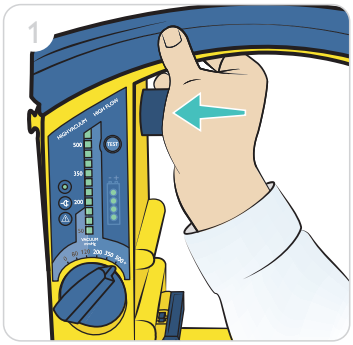


Test No.	Test result indication	Action if test failed
Test 1 - Occlusions 	✗ ✓ Test Passed <100 mmHg 	• Check possible blockages (e.g. twisted tubing, blocked filter, blocked filter in the liner) and run the Device. Test again. • If the High Efficiency Filtration Kit is installed the pass limit is 150mmHg.
Test 2 – Vacuum efficacy 	Test Passed ✓ >300 mmHg ✗ 	• Check Connectors, Tubes and Canister Lid for leakage* or damage. • Check exhaust outlet for occlusion and run the Device Test again.
Test 3 – Maximum vacuum 	Test Passed ✓ >500 mmHg ✗ 	• Check Connectors, Tubes and Canister Lid for leakage* or damage. • Check exhaust outlet for occlusion and run the Device Test again.
Test 4 - Leakages 	Test Passed ✓ >450 mmHg ✗ 	Check Connectors, Tubes and Canister Lid for leakage* or damage and run the Device Test again.

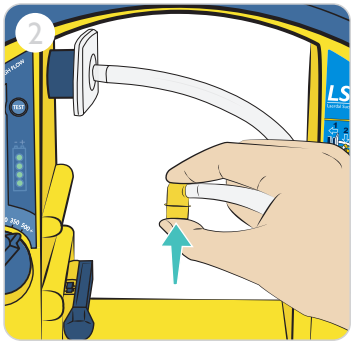
After evaluating the test results turn the Operating Knob to "0" to exit the Device Test.

Troubleshooting for Leakages

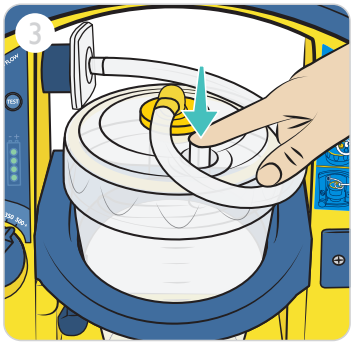
If the device test has failed, check whether the system is leaking. Run the Device Test again blocking different parts in turn, until you find the failure.



Test by blocking the Pump System
Run the Device Test whilst blocking the outlet. If the device passes the test, there are no leakages in the Pump System.



Test by blocking the Vacuum Tube
Run the Device Test whilst blocking the Vacuum Tube. If the device passes the test, there are no leakages in the Tube.



Test by blocking the Patient Tubing Inlet
Run the Device Test whilst blocking the Patient Tubing inlet on the Canister. If the device passes the test, there are no leakages in the Canister.

Note

If the LSU does not pass one or more of the steps in this test after suggested actions are taken, the device might need to be returned for service (see the Troubleshooting guide).

Battery

The LSU can be operated from the internal battery, and can be operated or charged from one of the following external power sources:
AC mains when used with the AC Power Cord: 100-240 VAC (50/60 Hz).
DC mains when used with the DC Power Cord: 12-28 VDC.

The LSU battery can also be charged in an optional External Battery Charger. A Wall Bracket to hold the LSU during operation and (optional) charging is available separately. See Accessories and Parts for more information.

Battery Status Indicator

This Battery Status Indicator has 3 functions:

- During operation from internal battery: indicates approximate remaining battery capacity.
- During charging: indicates approximate achieved battery capacity.
- During device testing: indicates which device test is in progress.

If no battery is installed, the battery status indicator will be fully lit for approx. 5 sec. until it is turned off.

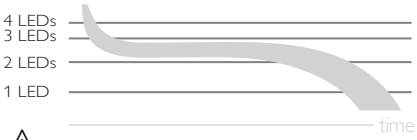
Note

During operation from internal battery and during charging, the displayed values must only be used as indications.

Battery Capacity

Capacity	Output
< 75%	The LEDs will be lit sequentially
75 - 80%	3rd LEDs lit and 4th flashing
> 80%	4 LEDs lit

Immediately after turning the LSU on or switching from external power to internal battery operation, all 4 LEDs will flash for 5 seconds before the remaining battery capacity is displayed. Due to the nature of voltage based battery capacity measurement, the battery status indication may differ from unit to unit. Each battery may vary in voltage versus remaining capacity, thus allowing for variability in the reading. Other outside variables such as temperature may also affect accuracy. The indicator is targeted to show battery capacity as indicated below. The graph shows how the accuracy of the indication can vary.



⚠ Caution

If the LSU or the NiMH battery has been stored at low temperatures (< 12 °C / < 54 °F), the LSU may indicate lower remaining battery capacity than actual when first switched on. This is due to the nature of NiMH batteries. The battery indicator may flash on one LED, which normally indicates Battery Low. The LED may continue to flash until the LSU temperature is above 12 °C / 54 °F and the LSU is switched off and on again. The low battery indication in this instance is not a correct indication of the residual battery capacity.

Charge the Battery

The internal rechargeable battery can be charged directly from external AC or DC power.

1. Ensure the Operating Knob is set to "0".
2. Connect either external AC or DC power to the LSU and charging will start automatically.
3. During charging, the Battery Status Indicator will indicate approximate achieved battery capacity. Minimum charging time for full charge is 4 hours.

A completely discharged battery cannot be charged by the LSU and must be replaced. If LSU battery is kept on constant charge, perform device test at least once a month to exercise battery.

⚠ Cautions

- *Do not perform the Device Test during battery charging.*
- *The recommended ambient temperature for charging is from 15°C to 25°C.*
- *The battery will not be charged when the LSU is in operation.*

Check the Battery Quality

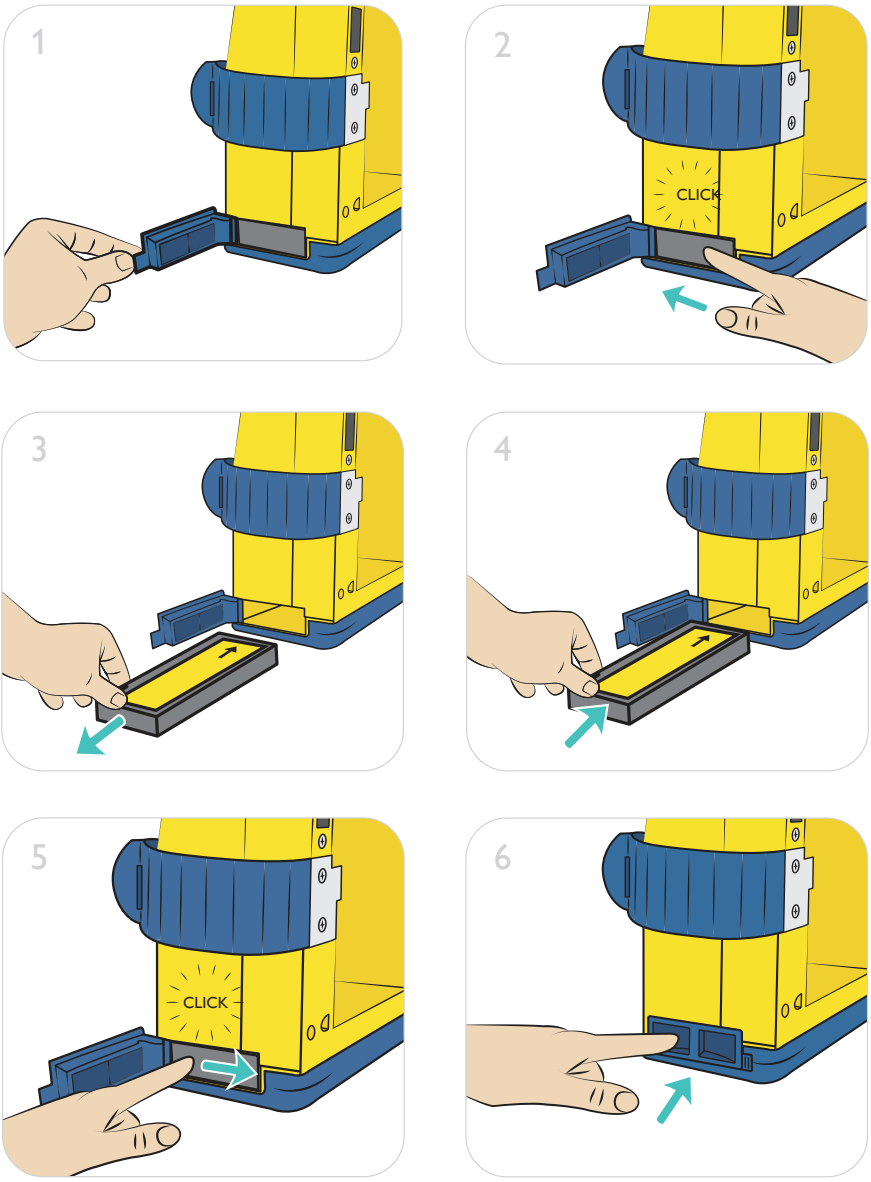
If poor battery quality is suspected, charge the battery for a minimum of 4 hours and then perform the following test. Do not connect to external power.

1. Run the Device Test.
2. Let the LSU operate continuously at 500+ mmHg setting and free air flow for 20 minutes.
3. If the LSU stops before completing the 20 minutes, the battery should be discarded.

⚠ Caution

Replace the battery when it does not pass the Battery Quality Check or after 3 years, whichever comes first.

Replace the Battery



⚠ Caution

Use only batteries recommended by Laerdal Medical. When you discard the battery, dispose of safely in accordance with local protocols for Nickel Metal Hydride (NiMH) batteries.

Service

There are no user serviceable parts inside the cabinet. Do not open the LSU Cabinet. It is recommended that the LSU is serviced at a minimum of every three years. Note that the required service interval may be shorter or longer depending upon actual frequency of use. Refer servicing to personnel qualified by Laerdal Medical, or to Laerdal Medical or one of its authorised distributors.

Fastening brackets

The fastening bracket is used to hold the LSU in the optional wall bracket. Inspect the fastening brackets for wear and tear regularly. Replace if worn.

Warranty

The LSU comes with a five (5) year limited warranty*. See the enclosed "Laerdal Global Warranty" for terms and conditions. The warranty is also available at www.laerdal.com.
* Excluding the canister, tubing systems and battery

Troubleshooting

Fault	Condition	Action
The LSU does not operate with the AC or DC Power Cord connected.	External Power Indicator is not lit when the Operating Knob is set to "0".	Check power cord connections and the external AC or DC power source.
	External Power Indicator is lit.	The LSU must be returned for service. See *Service and Maintenance* section.
The LSU cannot be operated from the internal battery.	Power ON Indicator is OFF. OR All the lights in the front panel flash on and off repeatedly.	Check that battery is installed.
		Place the LSU on charge.
		If still faulty after charging completed, remove and replace the battery.
The LSU operates, but little or no suction available.	Vacuum Seal blocked by float ball.	Unplug the Vacuum Seal to release the vacuum.
	Canister full.	Remove and replace the Canister.
	Poor vacuum connection between Pump Unit and Canister.	Install the Vacuum Connector Tubing correctly.
	Patient Suction Tubing twisted or blocked.	Replace the filter or liner if the filter is blocked Untwist the Patient Suction Tubing and/or clear blockage or replace the tubing.
Battery Status Indicator is not ON.	Battery is not charged.	Check power cord connections and that battery is installed.
Vacuum Indicator indicates more than 100 mmHg with free air flow	Tube(s) is kinked or twisted	Straighten / untwist the tube(s).
The LSU does not charge with the AC or DC power cord connected	The external Power indicator is not lit.	Check power cord connections and the external AC- or DC-power source. The LSU must be returned for service. A flat battery cannot be recharged.

Classification

Electrically powered medical suction equipment for field and transport use, according to ISO10079-1.
High vacuum/high flow.
The LSU is designed for use in road ambulances in accordance with IEC 60601-1-12.
Not suitable for use in the presence of flammable liquids or gases.
Internally powered/class II equipment type BF, according to IEC 60601-1
The degree of protection provided by the chassis is according to IP34:

- Protected against solid foreign objects of 2.5 mm Ø and greater.
- Protected against splashing water.
- Protected against access with a wire.

General tolerance

Overall tolerance ±5%

Dimensions	
Size (h x w x d)	315 mm x 330 mm x 160 mm (12.4 in x 13 in x 6.3 in)
Weight	4 kg. (8.4 lbs) (including battery NiMH)
Canister Capacity	1000 ml
Canister graduation accuracy	±5% of full scale
Patient Suction Tubing (non-sterile) Cat.No 770410: 8 mm (0.315 in.) inside diameter x 1.5 m (59 in.) length.	

Temperature and Environment	
Operating/Charging Temperature	0 °C to 40 °C (32 °F to 104 °F)
Recommended Charging Temperature	15 °C to 25 °C (59 °F to 77 °F)
Long term Storage Temperature	0 °C to 40 °C (32 °F to 104 °F)
Max. 24 hour Storage Temperature	-30 °C to 70 °C (-22 °F to 158 °F)
The time required for the LSU to warm from the minimum storage temperature between uses until it is ready for intended use is min 90 minutes at room temperature.	
The time required for the LSU to cool from the maximum storage temperature between uses until it is ready for intended use is min 90 minutes at room temperature.	
Humidity (Operating & Storage)	5 - 95% RH non-condensing
Altitude	0 - 4000 m

Battery and Charging	
Operating/charging AC	** 100-240 VAC, 50-60 Hz
Operating/charging DC	** 12-28 VDC

Battery	12 VDC 2 Ah, NiMH, rechargeable
Charging Time	3 hours for approx. 80% battery capacity, 4 hours for fully charged.
Fuses	The LSU has no fuses to be replaced by the user.
Supply Mains	When the unit is connected to SUPPLY MAINS through one of its power cords, SUPPLY MAINS voltages are present within the unit. To isolate the unit from SUPPLY MAINS, disconnect the unit from the power cord, or disconnect the power cord from SUPPLY MAINS. If placed in a mounting bracket, disconnect the unit from the mounting bracket.
** The external AC power source must be able to deliver a current of min. 1A and the external DC power source min. 5A, if not the LSU may switch to battery operation.	

Operation

Approx. free air flow at different settings:

mmHg	80	120	200	350	500+
l/min	12	16	20	23	>25

Approx. battery operation time (free air flow) at different settings (±10%):

mmHg	80	120	200	350	500+
min	3h20	2h20	1h30	1h	45

Approx noise levels (free air flow) at different settings:

mmHg	80	120	200	350	500+
dBA	48	48	51	53	56

Vacuum - Max: > 500 mmHg (66.5 kPa).
Vacuum - Range: 80 - 500+ mmHg (11 - 66.5 kPa).
Vacuum Indicator accuracy: ±5% of full scale.

Expected Service Life

10 years contingent on following service guidelines. See Service and Maintenance section.

Material Chart	
Cabinet front	Poly Cabonate/Acrylonitrile Butadiene Styrene (PC/ABS)
Protector for front	Styrene Ethylene Betyl Styrene (SEBS)
Cabinet back	PC/ABS
Cabinet base w/Protector	PC/ABS + SEBS
Battery door	SEBS
Connector retainer for battery	Poly Oxy Methylene (POM)
Operating Knob	POM
Rotor for Operating Knob	PC/ABS
Manifold for vacuum	POM
Canister Holder	PP
Handle w/Protector	PC/ABS + SEBS
Manifold for exhaust	POM
Strap for patient suction tubing	SEBS
Canister Holder Release Arm	POM
User Interface	Polyester
Vacuum Connector	Silicone
Suction Catheter Adapter	PC
Suction Catheter Adapter Holder	PC
LSU Reusable Canister	PC - HT
Lid w/Floater Valve Cylinder, Gasket for Lid, LSU Reusable Canister	Silicone
Full covering Carrying Bag	PVC coated Polyester
Side Pouch	PVC coated Polyester
Shoulder Strap	POM + Polyester
Wallbracket	Aluminium + Steel + PA with fibers
Aerosol Filter, LSU Reusable Canister	PVC + ABS Styrene-Butadiene Copolymer (SBC)
Float Ball, LSU Reusable Canister	PP
Vacuum Plug, LSU Reusable Canister	Silicone
LSU Water Container	PE

Specifications

Symbol Glossary	
⎓	Direct Current
~	Alternating Current
	Class II Equipment, according to IEC 60601-1
	Type BF applied part, according to IEC 60601-1 Applied part of the LSU is the catheter (not supplied by Laerdal) which is connected to the catheter adaptor.
IP34	The degree of protection provided by the chassis according to IP34
CE 2460	This product is in compliance with the essential requirements of MDD 93/42/EEC as amended by Council Directive 2007/47/EC and Council Directive 2011/65/EU relating to restriction on the use of certain Hazardous Substance (RoHS 2)
	Date of Manufacture
	Manufacturer
REF	Catalogue Number
SN	Serial Number
	This appliance is marked according to the European directive 2012/19/EC on Waste Electrical and Electronic Equipment (WEEE). The symbol on the product, or on the documents accompanying the product, indicates that this appliance may not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment.
	The products is eligible to bear the CSA Mark with adjacent indicators 'C' and 'US' for Canada and US
	Consult User Guide

Electromagnetic Conformity

Laerdal Suction Unit is intended for use in the following environments: Professional Healthcare Facility environment and Emergency Medical Services environment.

Essential performance of the LSU is identified as connection of the patient hose to the exhaust outlet. This is prevented by coding of the outlet and identifying the exhaust using a label on the device. EMC disturbances cannot affect this behavior.

No particular actions are required to maintain safety and performance with regard to electromagnetic disturbances for the expected service life.

⚠ Warnings

- *Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.*
- *Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.*
- *Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the LSU, including cables specified by the Laerdal Medical. Otherwise, degradation of the performance of this equipment could result.*

Electromagnetic Emissions Tests

Emissions Test	Standard or test method	Compliance
RF emissions	CISPR 11	Group 1 Class B
Harmonic emissions	IEC 61000-3-2	Class A
Voltage fluctuations/ flicker emissions	IEC 61000-3-3	Complies

Electromagnetic Immunity Tests

Immunity Test	Standard or test method	Compliance Level
Electrostatic discharge	IEC 61000-4-2	± 8 kV contact ± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air
Radiated RF EM fields	IEC 61000-4-3	3 V/m 80 MHz – 2.7 GHz 80 % AM at 1 kHz
Proximity fields from RF wireless communications equipment	IEC 61000-4-3	380-390 MHz: 27 V/m 430-470 MHz: 28 V/m 704-787 MHz: 9 V/m 800-960 MHz: 28 V/m 1700-1990 MHz: 28 V/m 2400-2470 MHz: 28 V/m 5100-5800 MHz: 9 V/m
Rated power frequency magnetic fields	IEC 61000-4-8	30 A/m 50 Hz or 60 Hz
Electrical fast transients / bursts, AC power port	IEC 61000-4-4	± 2 kV 100 kHz repetition frequency
Surges: Line-to-line, AC power port	IEC 61000-4-5	± 0.5 kV, ± 1 kV
Conducted disturbances induced by RF fields, AC power port	IEC 61000-4-6	3 V; 0.15 MHz – 80 MHz 6 V in ISM bands between 0.15 MHz and 80 MHz 80 % AM at 1 kHz
Voltage dips, AC power port	IEC 61000-4-11	0 % UT; 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0 % UT; 1 cycle and 70 % UT; 25/30 cycles Single phase: at 0°
Voltage interruptions, AC power port	IEC 61000-4-11	0 % UT; 250/300 cycle
Electrical transient conduction along supply lines, DC power port	ISO 7637-2	Test pulse severity level: III in Table A2 of ISO 7637-2

For latest version of Parts and Accessories, visit www.laerdal.com

78 00 00 XX	LSU w/Reusable Canister

Reusable

78 12 00	Aerosol Filter for LSU Reusable Canister
77 04 10	Suction Tubing 150 cm w/o tip
65 01 13	Suction Catheter adapter, pkg. 10
78 40 00	LSU Reusable Canister
78 10 06	Angled Connectors, pkg. 10
78 10 02	Float Ball, pkg. 10
78 40 07	Vacuum Seal, pkg. 10
78 40 08	Gasket, pkg. 10
78 04 30	LSU Reusable Canister Holder

All versions

78 04 33	Strap for Tubing
78 04 32	Release Arm
78 02 00	DC-Power Cord
78 02 10	AC-Power Cord US
78 02 20	AC-Power Cord EU
78 02 30	AC-Power Cord UK
78 08 00	LSU Battery - NiMH
78 04 36	Fasten bracket left/right
78 04 35	Holder for water bottle
79 35 00	Water Container
78 40 09	LSU Protection cap, 5 pkg
78 20 00	Carrying Bag (full covering)
78 26 00	Wall Bracket w/DC-Power Cord
78 26 10	Wall Bracket w/AC-Power Cord US
78 26 20	Wall Bracket w/AC-Power Cord EU
78 26 30	Wall Bracket w/AC-Power Cord UK
78 26 40	Wall Bracket wo/ Power Cord
78 23 00	Shoulder Strap
78 24 00 01	Side Pouch
78 04 40	External Charger kit

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www.laerdal.com

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