SPINE®
CONCEPTS

FLUID MANAGEMENT SYSTEM

USER MANUAL

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Usage 1

The **FLUID MANAGEMENT SYSTEM** pressurizes the cavity with a liquid medium, making it suitable for arthroscopic surgery to create a visual space and perform cavity irrigation.
This equipment should be set strictly according to the pressure that the cavity required by different operations can bear.

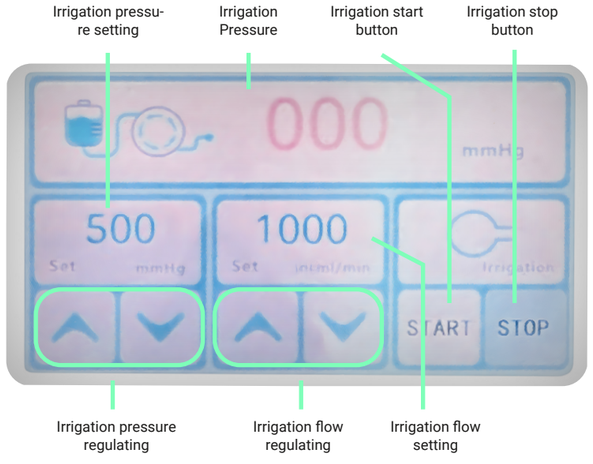
Structural 2

The **FLUID MANAGEMENT SYSTEM** consists of a main host and irrigation tubing. The irrigation tubing includes a sensor module, silicone tubes, and a plastic needle.

Main Host

1. Metal roller
2. Metal block
3. Metal sensor
4. Power switch

Display 3



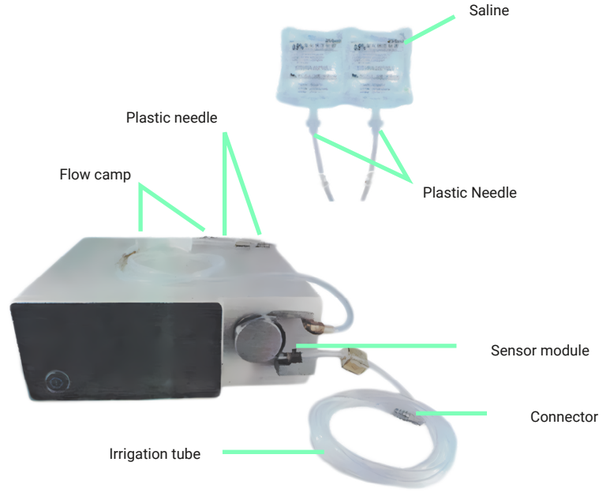
Display area

Irrigation pressure display, irrigation flow setting, irrigation pressure setting display.

Control button

Irrigation start button, irrigation stop button, irrigation pressure regulating button, irrigation flow regulating button.

Irrigation tube SET



After installing the irrigation tube, insert the plastic needle into the saline bag (open the flow clamp to discharge air wher the device is start working).

Technical Parameters 4

Voltage	AC220V 50. Hz
Rated Pwr	150VA
Range of Press	50~500mmHg
Range of flow	50ml~1000ml/min
Run mode	Continuously
Level of inlet protection	IPXO
Noise	<70dB (A)
Ambient temperature	+5°C~+40°C
Relative humidity	≤ 80% (RH)

- This equipment is an open pressure device, it is very convenient to add liquid medium and cleaning solution during the operation, just pour the medium and cleaning solution into the container. The two pins can also be inserted into the two infusion bags respectively, and the two infusion bags can be controlled by the flow clamp respectively, and the two infusion bags can be used in turn to ensure the continuity of the operation. If the container is big enough, you can add the liquid medium and leaner for one time, to content the operation need, to ensure the continuity of the operation.
- This device uses stepper motor drive, operate steadily, low noise.
- This device's work pressure and flow are controlled by computer, the power will cut off if the pressure is overvoltage, the control device is safe, the device will automatic enter into normal operation when the pressure get right.
- The setting range of the pressure is 50~ 500mmHg, the operator can arbitrarily change the setting value according to the actual work needs.
- The setting flow of the pressure is 50ml ~ 1000mL/min, the operator can arbitrarily change the setting value according to the actual work needs.
- The allowable error between the actual display value of irrigation flow and the actual measured value is ¥10%.
- This device has memory ability and shows the pressure and flow last time when it is started up.

Note

It is recommended that the machine be placed at the same height as the operating table.

Before use

When users use this equipment, the height and position of the main unit of the perfusion pump are not the same, which will cause the displayed value of the cavity pressure to be different from the actual pressure value in the cavity. The details are as follows:

1. The irrigation pump's pressure show is the intracavity actual pressure when the sense tube's output fluid level and the cavity on the same level.

2. The intracavity actual pressure will rise or drop when the sense tube's output fluid level rise or drop to the cavity, the numerical value equal to intracavity pressure show add or minus liquid level and cavity's pressure difference (1 meter =10KPa).

3. Example

Example 1

Put the main device higher, 0.5m higher than the sense tube's output fluid level, if you want the intracavity actual pressure be 10KPa, you should set the pressure 10 KPa-5 KPa-SKPa (height difference is 0.5m, pressure difference is 5KPa) .That is when the pressure show is SKa, the intracavity actual pressure is 10KPa.

Example 2

Put the main device in the same height with the sense tube's output fluid level (height difference is 0), if you want the intracavity actual pressure be 10KPa, you should set the pressure to 10 KPa, that is when the pressure show is 10KPa, the intracavity actual pressure is 10KPa.

Example 3

Put the main device lower, 0.5m lower than the sense tube's output fluid level, if you want the intracavity actual pressure be 10KPa, you should set the pressure 10 KPat5 KPa-15KPa.That is when the pressure show is 15KPa, the intracavity actual pressure is 10KPa.

Install the sensor module of the irrigation tube set into the metal roller and metal sensor, insert the needle of the irrigation tube into the saline bag, and connect the other end of the irrigation tube to the instrument by metal connector. After determining the parameters of the device, press the start button and stop button to control the irrigation working of the host.

- During the operation, the use of equipment is different, and the set pressure and flow rate are also different. If it is used for pressure expansion of the cavity to maintain the specified pressure, the smaller pressure should be selected. If the set pressure and flow rate are smaller in the arthroscopic expansion and are used for cavity flushing, a larger set pressure and flow rate can be selected.
- Before every parts use, pay attention to the height difference between out liquid level of the main device and patient's cavity, in accordance with the "before use" to calculate different pressure in different condition.
- After the device connect the power supply, it is forbidden to take apart the hull, or will electric shock. Don't use the device in the environment around with fire gases.
- Make sure the sense tube's water inlet not leave the liquid swell medium when the device gets into work, the water inlet pot should be put at the bottom of the container.
- Before the endoscope into the cavity, let the device work for a few time, let the bubble ejectment in sense tube and endoscope, to insure there's no bubble in the tube.
- If a bag of saline has been used up during the operation, another flow clamp with saline branch should be opened to replenish and the flow clamp on the no saline branch should be closed. Then replace the saltwater bag. If it is placed in the container, the expansion medium needs to be added, and the medium should be poured along the inner wall of the container, or press the START/STOP button on device to make the irrigation pump stop running. To ensure that there are no bubbles in the tube
- It is forbidden that put container that has solution in it on the instrument shelter, to avoid any liquid into the device.
- Turn off the power supply immediately when the device out of work or something wrong with the power, and remove the battery socket.
- Check the integrity of the device and accessories often.
- When this device is used with other medical electrical equipment, in order to avoid potential safety hazards due to common use, it is recommended not to use the same power supply, and it is required to be well grounded.
- If the function of the endoscope device fails during use, in order to ensure the safety of the patient, the use of the device should be stopped immediately and medical personnel should be contacted immediately.

- It is forbidden that the device is impacted, shake severely and wet environment, the transportation requires according to the contract provision.
- Transportation & Storage condition: Keep the device in the environment that without corrosive gas, and keep drafty.
- Ambient temperature range: 5°C~40°C;
- Humidity range: < 80% (RH)
- Atmospheric pressure range: 760hPa~ 1060hPa

Maintenance 10

1. The product should be used, maintained by persons who are familiar with the performance of the device.
2. Cleaning
   Unplug the device before cleaning!
   For external surface cleaning can be used will not damage the surface coating cleaning agent or disinfectant, avoid the use of flammable and explosive preparations, if you must use this preparation, must wait until completely volatilized before opening the equipment, and to ensure that no cleaning agent into the equipment inside.
3. Periodic inspection
   This device must be inspected by an authorized service technician at least once a year.
   In order to comply with the safety regulations for medical applications, all service work, such as annual inspection, repair, replacement, calibration, etc., can only be performed by the manufacturer or its specially authorized personnel.
4. If the instrument fails during use, the power supply should be turned off in time to check whether the fuse is in good condition. If the fuse has been blown, replace the fuse according to the requirements of "Replace the fuse" in this manual. If the instrument still cannot work normally, it should be sent to the manufacturer for repair in time.
   Fuse replacement steps: pull out the fuse holder, take out the burnt fuse, replace the fuse with the same specification, and then reset the fuse holder.

Self life 11

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2. Cleaning
   Unplug the device before cleaning!
   For external surface cleaning can be used will not damage the surface coating cleaning agent or disinfectant, avoid the use of flammable and explosive preparations, if you must use this preparation, must wait until completely volatilized before opening the equipment, and to ensure that no cleaning agent into the equipment inside.
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