MINUS™

NEGATIVE PRESSURE WOUND THERAPY SYSTEM



With a focus ON MICRO LEVEL stimulation

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Minus™ Negative Pressure Wound Therapy

A “Revolutionary” Device That Offers Better Results

- Creating Subatmospheric Pressure with Vacuum Source
- O^2 and O^3 to the Wound Bed
- Maintaining Wound Temperature and Humidity
- Wound Infection and Inflammation



Mechanism of Action

Negative pressure interacts with the wound environment at different levels. Affects both the macrostructure and microstructure of the lesion and all these effects at all stages of wound development. into a single complex activity that promotes wound healing integrates. At the macro level, NPWT secretions from the lesion and removes fluids, reduces edema around the wound, local increases blood flow and reduces ulcer size and external sources Reduces the risk of wound contamination[1].

At the micro level, negative pressure affects cell surfaces and many cellular elements present in the lesion (nuclear parallel to a change in transcription activity) The stimulation it exerts changes both the shape and function of cells. causes positive changes. Angiogenesis of NPWT, fibrogenesis and activity of macrophages and leukocytes has been shown to support[2].

Acute and chronic, from cardiac surgery to diabetic feet and wounds, from venous leg ulcers to pressure ulcers and in almost all clinical conditions relevant to wound management. A number of NPWT studies have been conducted and its activity has been Confirmed for most conditions[3–6].

An interesting option regarding NPWT involves an antiseptic application. can be included. This means that antiseptics should treat the wound areas regularly. when they enter the system to wash it (in osteomyelitis as is) or used to fill the lesion occur when they are absorbed into the material.

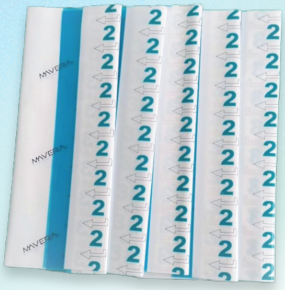
New antiseptics have a better efficacy and safety profile and has been successfully tested under various conditions. This situation requires indirect debridement of NPWT. Adds an antimicrobial effect[7].

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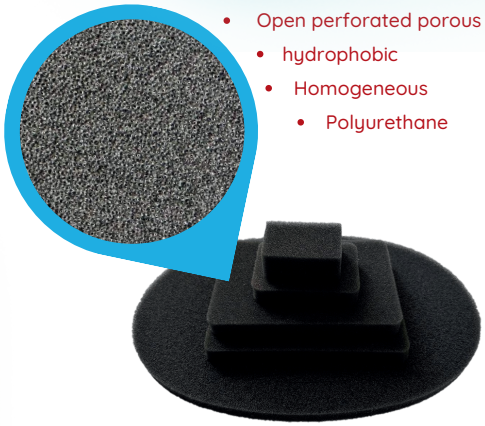
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The closure set supports wound closure treatment with the help of negative pressure. It has hydrophobic properties and an open, porous structure, whose negative pressure can be distributed homogeneously over the entire wound surface. There is a connection hose that provides the connection between the dressing in the closure set and the therapy unit, and a drape that will allow separation of the patient and the therapy unit. The drape is resistant to factors such as maceration and position changes and maintains its integrity.

The closure set includes a connection hose that provides the connection between the dressing and the therapy unit and a drape that will allow separation of the patient and the therapy unit.



Resistant to factors such as maceration and position change



- Open perforated porous
- hydrophobic
- Homogeneous
- Polyurethane

Foam size (MNSS 70*100*20mm, MNSM 120*180*20mm, MSNL 150*200*20mm)

Contents of Dressing Sets

MNSXS - NPWT Closure Set Extra Small

Content	Quantity	Dimensions
Foam	1	50*70*30 mm
Vacuum Access Port	1	1 m
Film Drape	1	300x300 mm

MNSS - NPWT Closure Set Small

Foam	1	70*100*30 mm
Vacuum Access Port	1	1 m
Film Drape	1	300*300 mm

MNSM - NPWT Closure Set Medium

Foam	1	120*180*30 mm
Vacuum Access Port	1	1 m
Film Drape	2	300*300 mm

Contents of Dressing Sets

MSNL - NPWT Closure Set Large (Standard)

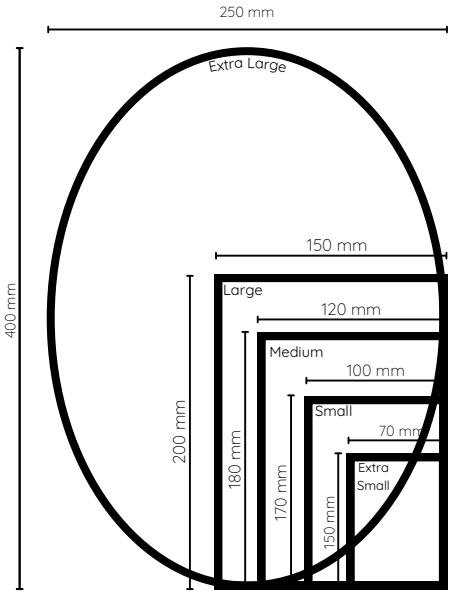
Content	Quantity	Dimensions
Foam	1	150*200*30 mm
Vacuum Access Port	1	1 m
Film Drape	2	300*300 mm

MNSXL - NPWT Closure Set X Large

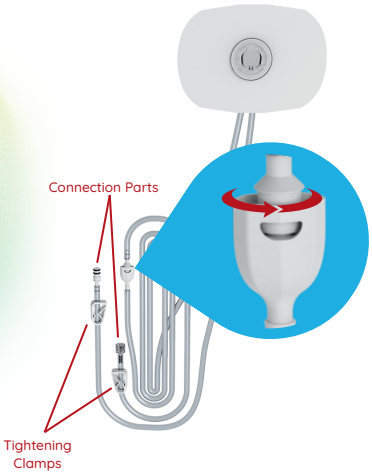
Foam	1	250*400*30 mm
Vacuum Access Port	1	1 m
Film Drape	3	300*300 mm

MNSA - NPWT Closure Set Abdominal

Foam	2	250*400*30 mm
Vacuum Access Port	2	1 m
Film Drape	5	300*300 mm
Y Connector	1	
Fenestrated Visceral Protective Layer	1	600*800 mm



The dressing inside is resistant to tearing in wet conditions. The closure set is compatible with the apparatus that provides fluid delivery to the therapy unit, jewelry and the wound bed, and is sterile. The washing liquid is withdrawn from its sterile packaging and transmitted to the bed via the sterile apparatus and connection hose, without entering the device and without damaging its sterilization, automatically deactivating the negative pressure. Here, the liquid is kept for a certain period of time and after the waiting period, the negative pressure must be activated and the liquid must be withdrawn. The closure set is compatible with the therapy unit. The therapy unit used with the closure set can transmit pressure without deviation in negative pressure. (Within ±5mmHg standard deviation.)



With the help of negative pressure, it can close the fascia earlier and speed up the treatment. The closure set has a hydrophobic perforated sponge that can distribute negative pressure homogeneously to the entire abdomen. It has the feature of providing separation between the abdominal wall and the viscera and protecting the abdominal contents. It has a single or two-layer silicone visceral layer. The closure set does not require sutures to place the visceral protective layer and facilitates re-entry into the abdomen. The visceral protective layer inside is made of material with organ protection properties and has a porous structure that can be cut and allows the passage of exudate.

The closure set transmits negative pressure through the hydrophobic perforated sponge and creates medial tension, minimizing fascial retraction and area loss. The coating set is disposable, sterile and presented in its original packaging. There is expiration date, UBB and LOT information on the packaging.

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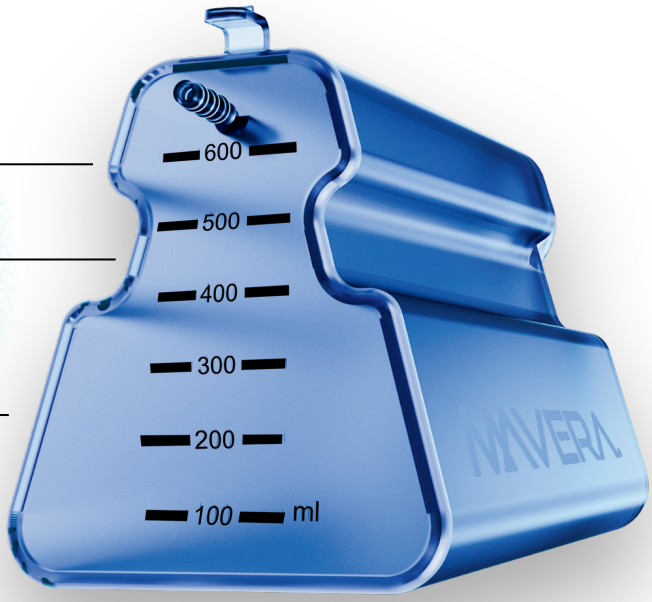
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The collection set has one size 600ml.. There are gel and non-gel varieties. It is fixed to the therapy unit via a mechanism. Where the therapy unit transmits negative pressure, there are carbon and similar filters that prevent odor, bacteria and liquid from passing to the outside.

The collection set is fully compatible with the soft connection hose coming from the closing set and can be easily attached.

The collection container never leaks the waste materials it contains and there is no backflow. The collection set cannot be opened in any way, has no open ends and cannot be broken.

There is a material that allows the liquid inside to gel. The collection set is for single use. It is the same brand as the therapy unit and other consumables it will be used with.





- ±5mmHg deviation.
- Continuous/Intermittent + Variable negative pressure mode.
- Audio and visual warning system. (Clogging, leakage, low battery, collection container full, connection hose closed, etc.)
- Pressure values between 20-300mmHg.
- Adjustable timing system.
- Phase selection. (Wash/Negative Pressure)
- Solution bag hanging apparatus integrated into the unit.

With the help of negative pressure, it can close the wound earlier and speed up the treatment. The closure set has a hydrophobic perforated sponge that can distribute negative pressure homogeneously to the entire abdomen. It has the feature of providing separation between the abdominal wall and the viscera and protecting the abdominal contents. It has a single or two-layer silicone visceral layer. The closure set does not require sutures to place the visceral protective layer and facilitates re-entry into the abdomen. The visceral protective layer inside is made of material with organ protection properties and has a porous structure that can be cut and allows exudate to pass through. The closure set transmits negative pressure through the hydrophobic perforated sponge and creates medial tension, minimizing fascial retraction and area loss.

Operating room, clinic etc. It provides one-on-one training to the personnel who will use the relevant product in the places when the first delivery is made. Trainings continue at periodic intervals upon institutional request. Periodic training is given using any of various training methods (visual, video, audio recording, user manual, face-to-face training). If there is a malfunction in the existing devices, the faulty device is received and the new device is delivered within 12 hours from the moment the hospital reports this situation. In case of any adverse event, a spare device is left to be used without interrupting the treatment or when the number of available devices is not sufficient.

Indications

The MINUS™ Negative Pressure Wound Therapy System is a non-pharmacological method for patients who would benefit from a vacuum device. It is intended to be used to physically promote wound healing through irrigation and removal of fluids, including body fluids, wound exudates, and infectious materials. It is indicated for patients with Acute Wounds, Chronic Wounds, Pressure Ulcers, Diabetic Foot Ulcers, Venous Leg Ulcers, Traumatic wounds, Cleft wounds, Partial thickness burns, Flaps and grafts. No studies have been conducted on the use of the Minus™ NPWT System in pregnant and pediatric patients. It is the surgeon's responsibility to use the device in such patients. Patient weight and age should be taken into consideration when prescribing the device. Minus™ Negative Pressure Wound Therapy System (NBWT) is designed for use on acute and chronic wounds in continuous, intermittent and variable setting modes.

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Oxygen Supply to the Wound Bed

Oxygen is the basic requirement for all stages of wound healing. Oxygen serves as a nutrient for cell metabolism, phagocytes, and other cells of the immune system, which convert oxygen into reactive oxygen species (ROS) that are then used for wound healing. Oxygen also promotes angiogenesis by inducing vascular endothelial growth factor (VEGF) transcription and myofibroblast production and functions as a cofactor in collagen synthesis. Lack of oxygen in the wound bed hinders the healing process.

Oxygen needs to go deep into the transdermal layer. Minus™ Negative Pressure Wound Therapy System delivers O2 to the wound bed with a low-frequency O2 delivery system. Thus, the wound bed is fed with the oxygen needed by the healing process.

Maintaining Wound Temperature and Humidity

When the temperature drops, healing stops. Moreover, cooled tissues cause vasoconstriction and increase the oxygen demand of hemoglobin. As a result, less oxygen is available for the type of white blood cells called neutrophils to fight off any potential infection. Once wound tissues have cooled - for example, when left open during a dressing change - it may take up to 4 hours for the wound base to return to normal healing temperature. If the caregiver changes the dressing TID, the wound may be outside the optimal healing range 50% of the time.

The Minus™ Negative Pressure Wound Therapy System delivers thermally conditioned oxygen-rich solution to the wound bed at specific predetermined intervals. Thus, heat loss is eliminated as the temperature is kept at the optimum recovery level at 38°C. Moreover, the solution not only helps irrigate the wound bed at the target temperature and penetrate dead corners of the wound edges, but also helps retain moisture without masking the tissue surroundings[9].

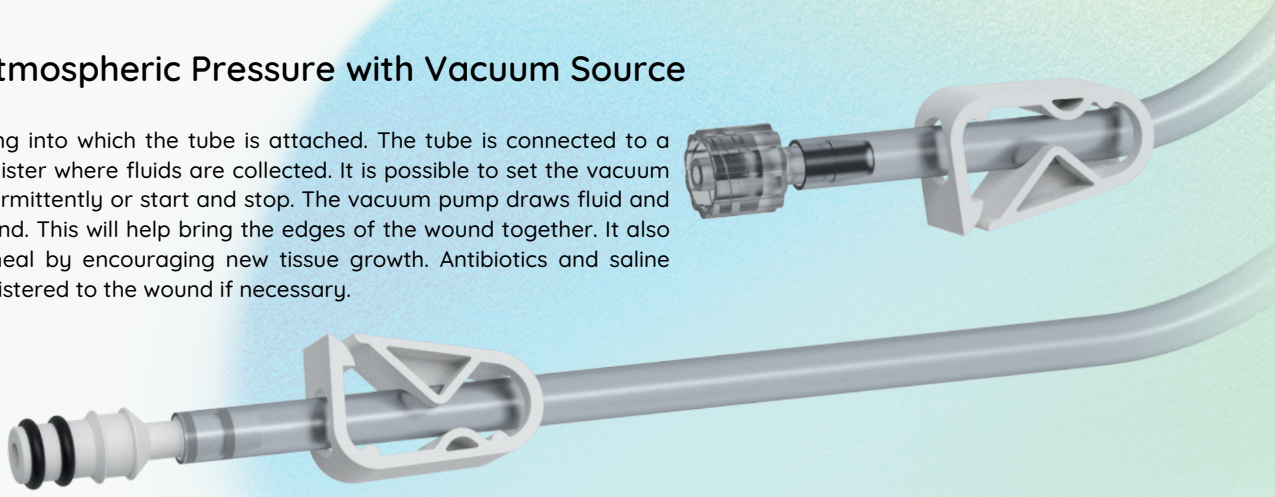
Wound Infection and Inflammation

The wound cannot be healed in the presence of debris, necrotic tissue and infection. Not only must there be effective removal of debris and necrotic tissue, but also a solution for infection must be provided. Mechanical removal of infection from the wound surface is important up to a point, but dead corners of the wound in general cannot be addressed.

The Minus™ Negative Pressure Wound Therapy System also uses oxygen-rich solution to help fight infection with the help of a pooling function at surface level and in dead corners. It allows the user to adjust the waiting time depending on the solution they administer to the wound bed if they do not want to use oxygenated solution[10].

Creating Subatmospheric Pressure with Vacuum Source

The film has an opening into which the tube is attached. The tube is connected to a vacuum pump and canister where fluids are collected. It is possible to set the vacuum pump mode to run intermittently or start and stop. The vacuum pump draws fluid and infection from the wound. This will help bring the edges of the wound together. It also allows the wound to heal by encouraging new tissue growth. Antibiotics and saline solutions can be administered to the wound if necessary.



References

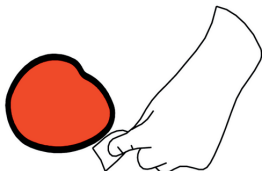
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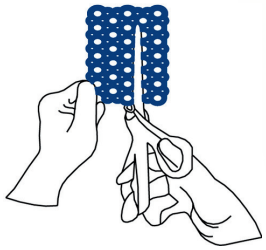
User's Guide

1



- The wound bed is prepared according to local health rules.
- Appropriate dressing sponge sizes are selected for the wound.
- The wound bed is cleaned and dried.

2



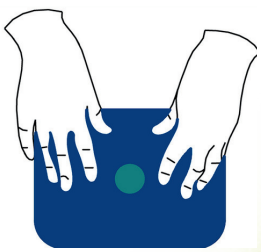
- Products are removed from their sterile packages according to aseptic techniques.
- Depending on the wound size, the sponge size is cut when necessary and other pieces are discarded.

3



- Preferably, the wound bed is moistened with saline solution.

4



- The sponge is gently placed on the wound bed and it is ensured that the wound contour and the sponge are the same size. If more than one sponge will be used, make sure that these sponges are in direct contact with each other for an evenly distributed negative pressure. Count the number of dressing sets used and record this in the patient chart.
- Make sure the sponge is not in direct contact with healthy tissue.

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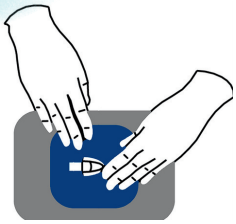
User's Guide

5



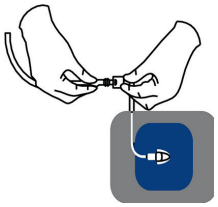
- Cut the drape to cover 3-5 cm of healthy tissue and make a circular hole with a diameter of 1 cm in the middle.
- Cover the drape with sponge and make sure it is leak-proof.

6



- Place the drape by centering the hole on it and make sure the hole is in the center.
- Attach the vacuum inlet port to the Canister.

7

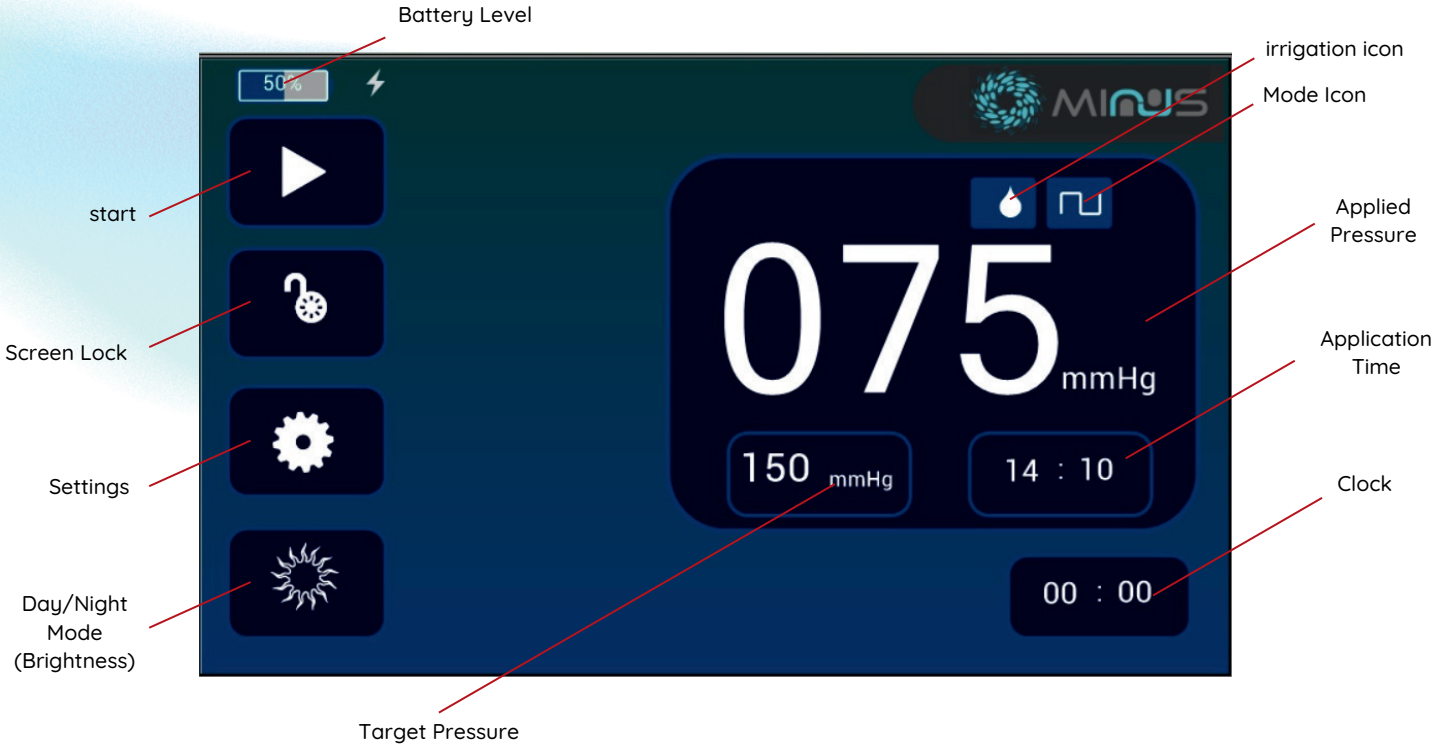


- Turn on the device and let the negative pressure begin.
- Make sure that the sponge has a hard structure and is airtight under pressure.
- Proceed according to the instructions for use of the NPWT device.
- The negative pressure level is determined by the physician according to the size and pathological condition of the wound.

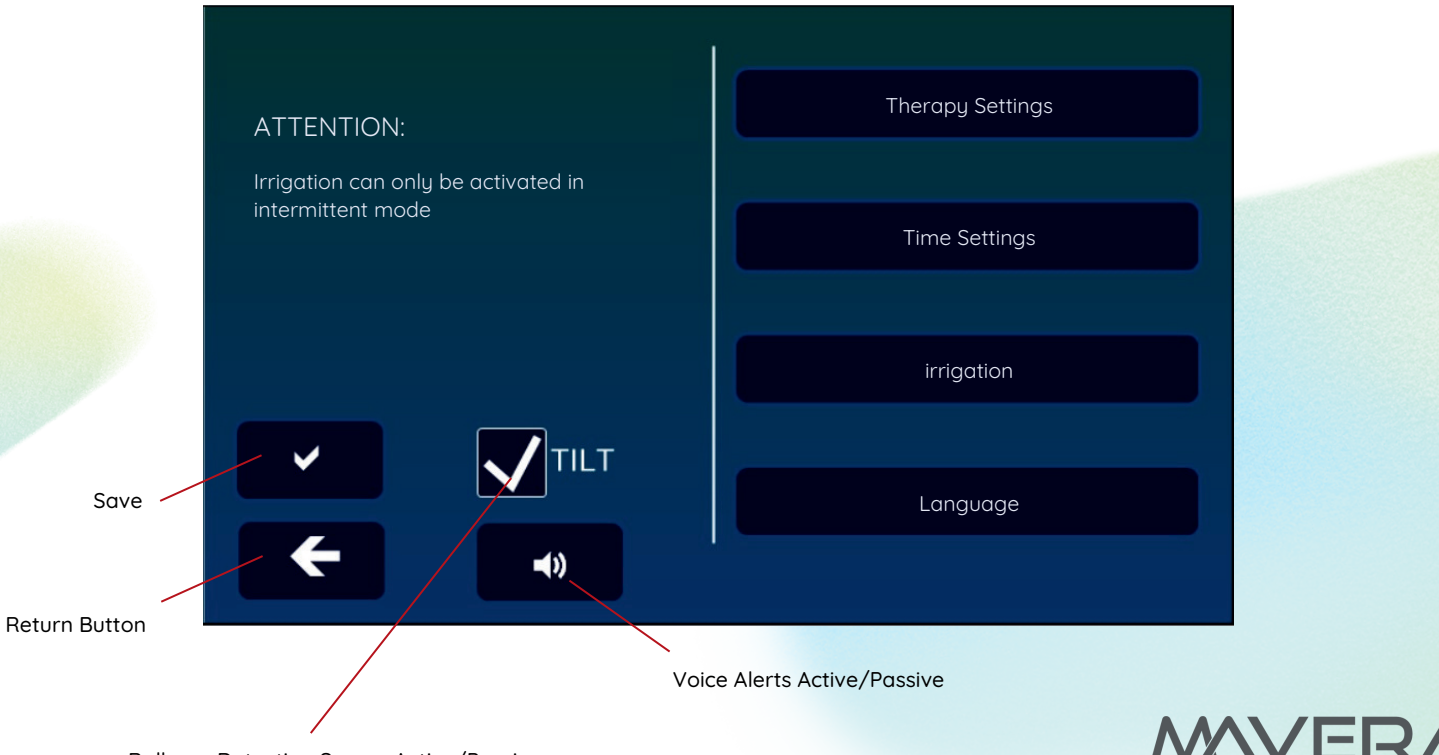
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Main Screen



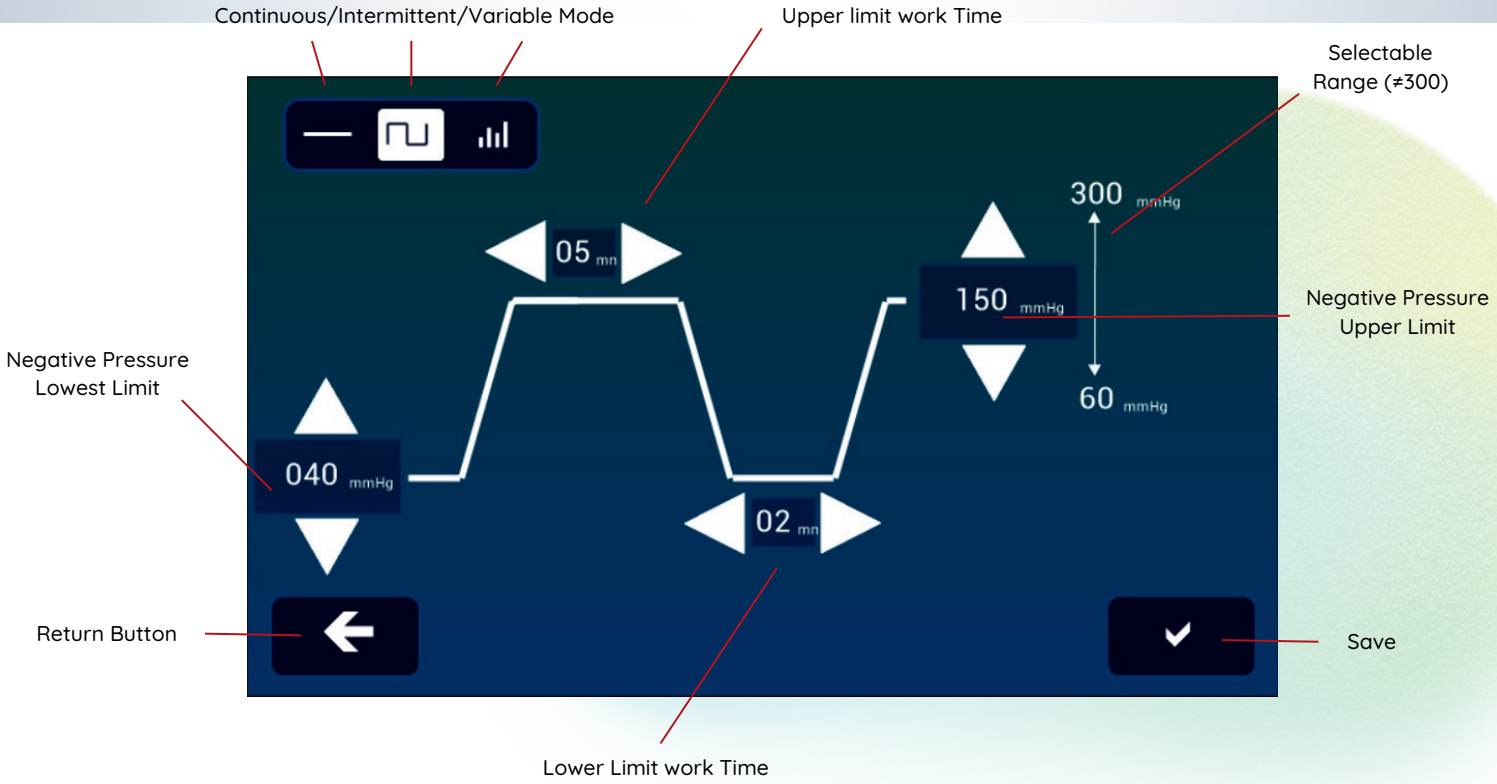
Settings



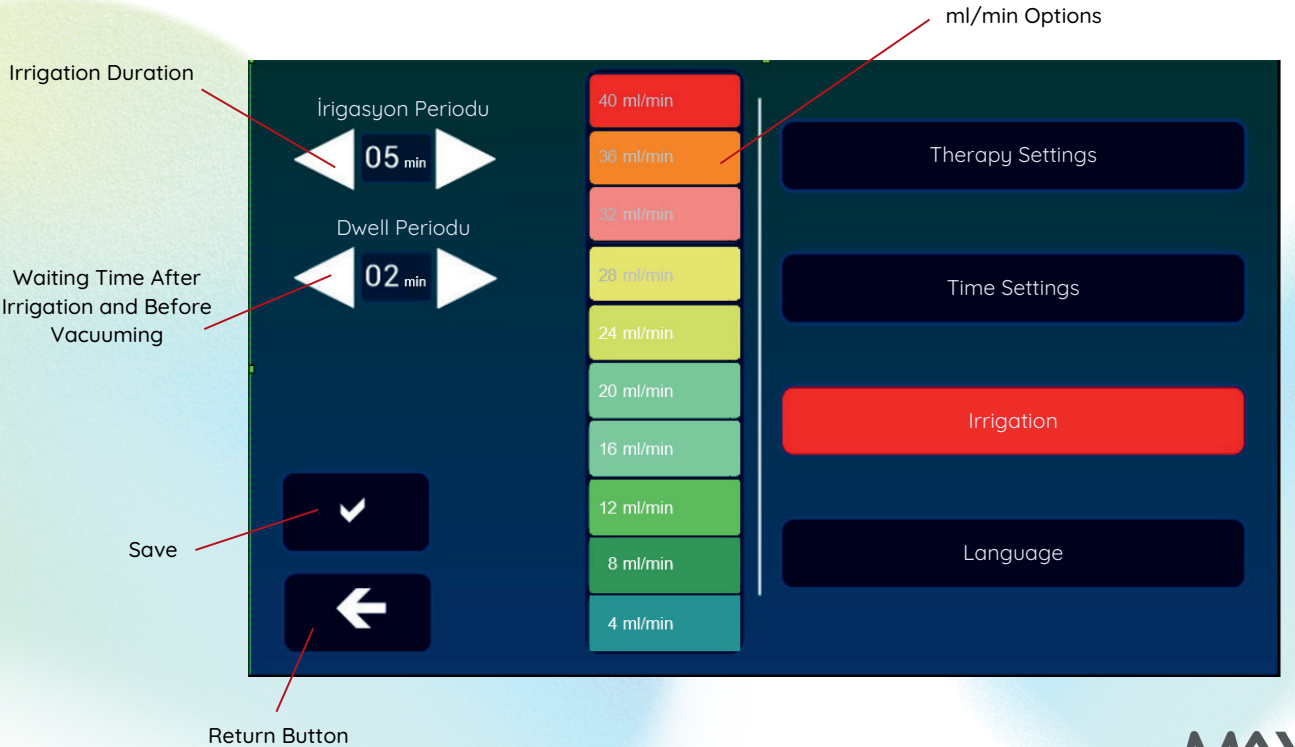
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Therapy Settings



Irrigation Settings



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NPWT Pumps

PRODUCT DEFINITION	FEATURE	REF #
NPWT Pump HMI Major	N/A	MNSHMIMJR
NPWT Pump HMI Major with Irrigation	N/A	MNSHMIMJRI
NPWT Pump 571	N/A	MNS571
NPWT Pump 571 with irrigation	N/A	MNS571IR
NPWT Pump HMI Gamechanger	N/A	MNSGMCHM

Pump Accessories

PRODUCT DEFINITION	FEATURE	REF #
NPWT Pump Adaptor	N/A	MNSADPT
NPWT Pump Serum Hanger	N/A	MNSHNG
NPWT Pump Carrying Bag	N/A	MNSCBG
NPWT Canister 600 ml	N/A	MNSCNS60
NPWT Filter Cartridge for HMI Gamechanger Pump	N/A	MNSFLTRGMC
NPWT Filter Cartridge for HMI Major Pump	N/A	MNSFLTRMJR
NPWT Filter Cartridge for 571 Pump	N/A	MNSFLTR571
NPWT Filter Cartridge for 646 Pump	N/A	MNSFLTR646

Collection Set

PRODUCT DEFINITION	FEATURE	REF #
NPWT Collection Set 600ml	N/A	MNS600

NPWT Closure

PRODUCT DEFINITION	FEATURE	REF #
NPWT Closure Set Extra Small	Standard	MNSXS
NPWT Closure Set Small	Standard	MNSS
NPWT Closure Set Medium	Standard	MNSM
NPWT Closure Large	Standard	MSNL
NPWT Closure Set Extra Large	Standard	MNSXL
NPWT Closure Set Abdominal	Standard	MNSA

NPWT Closure

PRODUCT DEFINITION	FEATURE	REF #
NPWT Closure Set Extra Small	Irrigation	MNSXSI
NPWT Closure Set Small	Irrigation	MNSSI
NPWT Closure Set Medium	Irrigation	MNSMI
NPWT Closure Large	Irrigation	MNSLI
NPWT Closure Set Extra Large	Irrigation	MNSXLI
NPWT Closure Set Abdominal	Irrigation	MNSAI

NPWT Incision Closure

PRODUCT DEFINITION	FEATURE	REF #
NPWT Incision Dressing Set Large	N/A	MNSLID
NPWT Incision Dressing Set Medium	N/A	MNSMID
NPWT Incision Dressing Set Small	N/A	MNSSID

Tubings and Parts

PRODUCT DEFINITION	FEATURE	REF #
NPWT Irrigation Tubing	Irrigation	MNSTI
NPWT Vacuum Access Port Irrigation	Irrigation	MNSVAPIR
NPWT Vacuum Access Port Standard	Standard	MNSVAPS
NPWT Vacuum Tubing	Standard	MNSVT
NPWT Perilstatic Pump Tubing	Standard	MNSPPT
NPWT Y Connector Tubing	Standard	MNSYT
NPWT Extra Long Tubing	Standard	MNSXTRLT
NPWT Connector	Standard	MNSCON
NPWT Y Connector	Standard	MNSYCON
NPWT Connector Standard	Standard	MNSCONS

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