

EVS RF™ Instructions for Use

VC-10A2.5-6F-60 LB-0027.K
VC-10A2.5-6F-100



Venclose, Inc.

Symbols Glossary located at the end of this IFU.

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EN INSTRUCTIONS FOR USE: Venclose® Endovenous Sectional Radiofrequency (EVS RF™) Ablation Catheter

Contents: (1) Venclose® EVSRF™ catheter, for use with the Venclose® digiRF™ generator
Sterile, Single-Use Only

NOTE: Thoroughly read all instructions, including the Venclose digiRF radiofrequency generator (model VC-RFG-1) User's Manual, before using the Venclose system. Observe all warnings, precautions and cautions noted throughout these instructions. Failure to do so may result in patient complications. These instructions are designed as a general guideline, they do not supersede institutional protocols or professional clinical judgment concerning patient care.

CAUTION: Contents are sterile unless package is damaged or open.

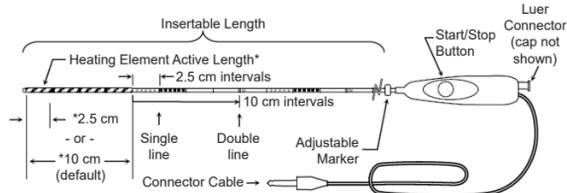
DEVICE DESCRIPTION

The EVSRF catheter [the catheter] is a sterile single-use disposable medical device for endovenous radiofrequency ablation, a procedure in which a refluxing vein is thermally coagulated to permanently eliminate the vein from blood circulation. The catheter has a long shaft for insertion into a vein, a handle with start/stop button and a connector cable. The catheter shaft has a heating element that is energized by the digiRF radiofrequency generator [the generator], which is a multi-voltage energy delivery system with touchscreen control that automatically sets the non-adjustable treatment parameters for the EVSRF catheter. A button on the catheter (or a foot pedal attached to the generator) begins an automated treatment cycle 20 seconds long at a set temperature of 120°C and the treatment stops automatically when complete. The catheter is used within a sterile operative field while the generator remains outside the sterile operative field at all times. The catheter connector cable exits the sterile field and connects to the generator.

INTENDED USE

The Venclose EVSRF Catheter is intended to be used with the Venclose digiRF Generator as a system.

DEVICE COMPONENTS



Catheter Model:	VC-10A2.5-6F-60	VC-10A2.5-6F-100
Heating Element Active Length	Adjustable, 10 cm or 2.5 cm	Adjustable, 10 cm or 2.5 cm
Heating Element Diameter (max. catheter outer diameter)	6F (2.0 mm)	6F (2.0 mm)
Insertable Length (cm)	60 cm	100 cm

INDICATIONS FOR USE

The Venclose EVSRF catheter is intended for endovascular coagulation of blood vessels in patients with superficial vein reflux.

CONTRAINDICATIONS

The Venclose EVSRF catheter is contraindicated in patients with thrombus in the vein segment to be treated.

WARNINGS

- Potential impact to active implanted medical devices located nearby the intended treatment location in the lower limbs has not been evaluated. It is recommended not to coil the EVSRF connector cable directly above active implanted medical devices.
- The Venclose system is not intended to be used with magnetic resonance imaging.
- Thermal treatment of the vein may damage adjacent sensory or motor nerves. Risk of damage is greater near the calf or if no local anesthetic is used around the treated vein.
- Treatment of a vein section closer than 1 cm to the skin may result in a skin burn. Direct external compression may reduce the distance between the vein and skin.
- Treatment of a vein located near the skin surface may result in a skin burn if the skin is not protected with fluid infiltration.
- Care should be taken to preserve adequate blood circulation, especially for patients with documented peripheral arterial disease.
- Catheter is for single patient use only. A contaminated catheter may lead to illness or death of the patient. Cleaning damage to the catheter may lead to ineffective treatment or injury. Venclose will not be responsible for any direct, indirect, incidental or consequential damages or expenses resulting from reuse of the catheter.
- Transcutaneous ultrasound imaging is recommended to confirm and maintain device tip and heating element position in the target superficial vessel. Do not place heating element in a vein valve (for the purpose of restoring valve function), a perforating or non-superficial communicating vein, or in the deep venous system.

- If electromagnetic interference associated with stray energy from the digiRF System is encountered, reposition the imaging system and/or the digiRF generator to eliminate such interference. See the "Separations Distances" table in Section 12 in the digiRF System User's Manual for further information.
- Nerve injury may occur from thermal damage to adjacent sensory nerves. Risk of nerve injury may be higher with treatment at or below the calf, or without perivenous fluid infiltration.
- Flammable agents for cleaning, disinfecting, or as solvents of adhesives shall be allowed to evaporate before using the Venclose system.
- Interference caused by use of the Venclose system may adversely influence operation of other electronic equipment.

CAUTIONS

- Store in a dry, cool place.
- Do not bend catheter shaft into a tight radius; kinking of the shaft may render the catheter inoperable.
- To prevent damage to the guidewire, ensure that the guidewire does not protrude from the catheter tip when inserting catheter into vein.
- If fluid contacts the EVSRF cable connector, wipe it clean and dry before inserting into the generator.
- Do not leave the guidewire within the catheter lumen at the heating element location during treatment as it will cause the guidewire to become stuck within the catheter lumen.
- Do not advance the catheter against resistance, or vein perforation may occur.
- Uneven blood pooling or flow along the heating element may result in inconsistent effectiveness and/or may damage the catheter.
- Do not begin treatment without verifying that the length of heating element that will actively heat remains inserted a length of at least 2.5 cm from the vein access point.
- The portion of the catheter shaft within 2.0 cm of the heating element may exceed 41°C during treatment. Testing of this region has shown that a maximum temperature of 42°C can be reached.
- If the generator stops treatment due to improper heating, remove the catheter and inspect. Replace the catheter if damage is found. Failure to respond to advisory indicators can result in damage to the catheter.
- If using direct external compression, do not compress the skin closer than 1 cm to the heating element or a skin burn may occur.
- Do not administer more than three energy delivery cycles within any vein section.
- Do not re-advance the catheter and re-treat an acutely treated vein section or it may increase risk of embolism.
- Do not treat with the 2.5 cm heating element length and then pull back according to the 10 cm shaft markings; such a combination will likely trap blood between non-continuous treatments and may cause phlebitis.
- Do not treat with the heating element within the access sheath or closer than 2.5 cm to the point of skin access or a skin burn, catheter damage or sheath damage may result.
- The vein wall may be thinner in an aneurysmal segment. To effectively occlude a vein with an aneurysmal segment, additional compression may be needed over the aneurysmal segment, and the treatment of the vein should include segments proximal and distal to the aneurysmal segment.
- Use of a flush through the catheter while the heating element is active will interfere with treatment and heat the fluid exiting the end of the catheter. Avoid fluid delivery through the catheter when tip of catheter is near an area that should not be thermally coagulated.
- Failure to evenly compress the vein over the full length of the heating element may result in inconsistent effectiveness and/or possible catheter damage.
- Place monitoring electrodes as far as possible from the Venclose catheter when the digiRF generator and physiological monitoring equipment are used simultaneously on the same patient.
- Do not use needle monitoring electrodes.
- Use monitoring systems incorporating high frequency current-limiting devices.
- There is a risk of pooling of flammable solutions under the patient, or in body depressions such as the umbilicus, and in body cavities such as the vagina. These fluids should be mopped up before using the Venclose system.
- Endogenous gases (e.g., cotton and gauze saturated with oxygen) may be ignited by sparks produced within the generator during normal use of the Venclose system.
- The Venclose system is for use without a neutral electrode.
- The patient should not come into contact with grounded conductive components or conductive components with appreciable capacitance to earth, such as metallic operating table supports.
- Do not begin energy delivery (by pressing the catheter handle button or a connected foot switch) before the catheter is properly positioned within the intended treatment vessel and anesthesia is administered, or discomfort or injury may occur.
- Avoid contact of cords and cables with patient, lead, or other equipment.

POTENTIAL ADVERSE EVENTS

Potential adverse events include, but are not limited to the following: vessel perforation, skin discoloration, nerve injury, temporary paresthesia, thrombosis, deep vein thrombosis, phlebitis, hematoma, infection, skin burn, pulmonary embolism, pain.

SUPPLIES AND EQUIPMENT

The following supplies are necessary for the procedure but are not provided with the catheter:

- Venclose digiRF generator
- Duplex ultrasound console
- Supplies for sterile procedure
- Tilt table (recommended)
- 6F introducer sheath, with appropriate dilator, guidewire and percutaneous access needle
- Local or general anesthesia
- Post-operative compression as recommended by physician

GENERATOR SET-UP

Refer to the digiRF generator User's Manual for startup instructions.

DIRECTIONS-FOR-USE

Patient Preparation

Gain vessel access with a compatible introducer sheath per the sheath manufacturer's instructions. Use aseptic technique.

Catheter Inspection & Preparation

- Inspect catheter packaging and pouch for damage. If the packaging is damaged, call customer service and return the device with complete packaging to the company.
- Open pouch and remove product using aseptic technique.
- Inspect catheter. Although the catheter will function properly if the shaft becomes kinked once, IF CATHETER IS PHYSICALLY DAMAGED IN ANY OTHER WAY, DO NOT USE.
- Pass the catheter cable connector out of the sterile field and connect to the generator by plugging fully into the catheter connector jack.

CAUTION: If fluid contacts the cable connector, wipe it clean and dry before inserting into the generator.

- Prepare the catheter lumen by flushing with sterile physiologic saline and then cap the lumen at the handle. Wipe the surface of the shaft with saline and a sterile wipe.
- If using a guidewire, refer to the manufacturer's instructions for use. Following removal of the wire, re-flush catheter lumen with sterile Normal Saline and cap the lumen at the end of the catheter.

CAUTION: Do not deliver fluid through the catheter lumen during treatment, as it will interfere with the treatment and deliver hot fluid from the tip of the catheter.

CAUTION: Do not leave the guidewire within the catheter lumen at the heating element location during treatment as it will cause the guidewire to become stuck within the catheter lumen.

- Insert the catheter through the introducer sheath and advance the catheter tip to the desired treatment start location under direct ultrasound guidance to ensure that the catheter remains within the desired treatment vessel. Catheter navigation may be assisted by direct palpation, limb repositioning and/or use of a guidewire.

CAUTION: Do not advance the catheter against resistance, or vein perforation may occur.

Local Anesthesia Administration

- Using ultrasound guidance, along and beyond both ends of the entire length of vein to be treated, inject local anesthetic adjacent to the vein wall to create a layer of anesthetic fluid around the vessel. Also under ultrasound guidance ensure that there is a minimum 1 cm distance between the vein wall and the skin; if the distance is less than 1 cm, inject additional fluid between the vein and skin to achieve the acceptable distance of 1 cm or greater. Consult manufacturer labeling on the maximum injected anesthetic dose for the patient.

Final Catheter Positioning

- Maximally empty the treatment vein of blood, creating direct contact of the vein wall with the heating element, such as by raising the patient's legs above the level of the heart in Trendelenburg position.

CAUTION: Uneven blood pooling or flow along the heating element may result in inconsistent effectiveness and/or may damage the catheter.

- Before starting energy treatments with the catheter, verify that the catheter and heating element are in the desired position within the desired vein. For Great Saphenous Vein (GSV) treatment, a tip position 2.0 cm inferior to the Saphenofemoral Junction (SFJ) is recommended. Verify the desired position under ultrasound guidance with both transverse and longitudinal views.

WARNING: Do not treat the deep venous system. Verify that the heating element is not within the deep venous system.

Thermal Treatment

- If the desired heating length is 2.5 cm (the adjustable active heating length defaults on the generator to the full 10 cm length), press the image of the heating element on the generator touchscreen to toggle selection between the two lengths. Verify that the screen shows the desired heating length and that you hear the rising tones for 2.5 cm. The active heating length displayed on the screen will stay as last selected until changed by the user, except unplugging the catheter and reconnecting will cause it to return to the default 10 cm heating length. Following this procedure, active heating length can be changed toggling between 2.5 cm and 10 cm.

CAUTION: Do not begin treatment without verifying that the length of heating element that will actively heat remains inserted a length of at least 2.5 cm from the vein access point.

CAUTION: The portion of the catheter shaft within 2.0 cm of the heating element may exceed 41°C during treatment. Testing of this region has shown that a maximum temperature of 42°C can be reached.

- After confirming the desired heating length, begin an RF treatment by pressing the button on the catheter handle or by stepping on the optional generator foot pedal. Treatment will stop automatically after 20 seconds of heating.
- In the event of patient pain or other emergency, the treatment cycle may be stopped before the 20 seconds have elapsed by pressing the button on the catheter handle, by stepping on the optional generator foot pedal, or by pressing the main power button on the digiRF generator. If none of these measures stops the RF energy delivery, disconnect the mains power cable from the generator.
- If the set temperature is not reached or maintained during the treatment there may be blood flow within the vein that is cooling the catheter; if so, stop the treatment (see step 13), verify proper catheter tip position (it should not be in the deep venous system) and effectiveness of exsanguination methods, correct as necessary, and re-start treatment of the vein section.

CAUTION: If the generator stops treatment due to improper heating, remove the catheter and inspect. Replace the catheter if damage is found. Failure to respond to advisory indicators can result in damage to the catheter.

- Continued temperature readings below the set temperature may indicate the presence of blood within the vein that has a cooling effect on treatment. This may be caused by large vein diameter and/or a high rate of reflux blood flow.
- If low temperatures are observed, or if the digiRF generator displays an indication of fluid around the heating element, repeat exsanguination methods to maximally empty the vein. Direct external compression may be employed, provided the compression is evenly applied along the entire active length of the heating element.

CAUTION: If using direct external compression, do not compress the skin closer than 1 cm to the heating element or a skin burn may occur.

- A recommended protocol for vein treatment is to administer a number of treatment cycles to each section of vein based on the maximum diameter of that vein section according to the following table (SFJ = saphenofemoral junction), although the user may administer up to three treatments per vein section as desired.

Recommended vein section treatment protocol:

Vein Section Diameter	Section nearest SFJ or reflux source	Remaining sections
Less than 10 mm	2 treatments	1 treatment
10 mm - 17.9 mm	3 treatments	2 treatments
18 mm and larger	3 treatments	3 treatments

CAUTION: Do not administer more than three energy delivery cycles within any vein section.

CAUTION: Do not re-advance the catheter and re-treat an acutely treated vein section or it may increase risk of embolism.

- Using a line on the skin or other reference with respect to the shaft markings, pull the catheter a distance equal to the active heating element length so that the active heating element length is adjacent to the previous treatment location. If desired, withdraw the sheath from the skin so that the catheter shaft markings can be seen near the point of catheter entry into the skin. Note that the catheter has double lines to indicate distances at 10 cm intervals from the heating element and single lines to indicate distances at 2.5 cm intervals from the heating element. Numbers printed on the catheter shaft represent the distance from the distal end of the heating element.

