

# ***EVAC-U-SPLINT*<sup>®</sup>**

## **Vacuum Mattress**

### **APPLICATION GUIDELINES**



#### **Applies To Model Numbers:**

MT 1075-6  
MT 3075-6  
MT 3075-6BP  
EVS 9075-6C



# EVAC-U-SPLINT® Vacuum Mattress

## APPLICATION GUIDELINES

### INTRODUCTION

The purpose of the EVAC-U-SPLINT® Mattress is to provide full body stabilization when lifting and moving a patient to a stretcher or cot for transport. It provides an alternative to the full spineboard with sufficient rigidity to immobilize and protect a patient with a suspected spinal injury. Unlike a flat board, the mattress uses vacuum technology to conform to the exact shape and contours of the patient's body, providing improved lateral and axial immobilization, and eliminating the discomfort of pressure points associated with traditional spine immobilization.

Hartwell Medical has produced various training videos showing the recommended use and care use of the EVAC-U-SPLINT Adult Mattress which is available on our website ([www.HartwellMedical.com](http://www.HartwellMedical.com)).

Practical “hands-on” training is required prior to the use of this medical device. If you become aware of any serious incident related to the use of the device, you should report the incident to Hartwell Medical and to your medical device regulatory authority. If there are any questions, or if additional technical support is required, contact your local Hartwell Medical Distributor or Hartwell Medical Customer Service between the hours of 7:30 am to 4:30 pm Pacific Time, Monday through Friday, at 760-438-5500.

These Application Guidelines are written on the premise that the user of this medical device has received approved emergency medical service training and certification, and is operating under physician medical control and protocols.

### PREPARATION

1. Lay the EVAC-U-SPLINT® Mattress out on a flat surface near the patient. The “head and shoulder” logo indicates the head end of the mattress.
2. Remove the red vinyl leashed cap from the valve. Release any vacuum in the mattress by pushing in the red valve stem. Keep the valve stem pushed in until the mattress is pliable.
3. Disconnect the patient restraint strap from the mattress. Or, if desired, disconnect the strap only from the side of the mattress nearest the patient.
4. Manually smooth out the beads to form a level surface.
5. Connect the pump to the mattress by fastening the pump hose connector to the MaxiValve™ on the mattress. The pump can be attached either at the foot end or the head end. **NOTE:** The Pediatric EVAC-U-SPLINT Mattress only has one valve at the foot end of the mattress. Evacuate enough air to make the mattress semi-rigid.

The objective is to be able to move the mattress as a unit during positioning and have the beads stabilized enough to place the patient onto the mattress without pushing the beads to one side. With the correct amount of evacuation, the mattress surface should be smooth, but not dimpled.

### POSITIONING AND APPLICATION

1. Place the mattress next to the patient with the first buckle in-line with the patient's axilla (armpit). The first buckle is positioned just below the “head and shoulder” logo on the mattress.
2. Log-roll the patient using standard patient care techniques.
3. Bring the mattress in tight behind the patient, keeping the first buckle in-line with the patient's axilla.
4. Log-roll the patient back onto the mattress. Center the patient if necessary. You may find it easier to log-roll the patient onto the mattress with the patient's head three to four feet down from the head end of the mattress. You can then move the patient along the long axis of their body into a position that is centered on the mattress.
5. Open the MaxiValve at the foot end, allowing air to enter. Keep the MaxiValve open until the mattress softens and begins to conform to the shape of the patient. It may be necessary to move beads either away from, or under the head of the patient, depending on the anatomy of the patient. Make sure there are sufficient beads to maintain neutral alignment of the patient. If necessary, pad appropriately to ensure neutral alignment. **Always follow your local medical protocols approved by your medical director.**

**NOTE:** An alternate method is to use a CombiCarrierII®, a scoop stretcher or a breakaway stretcher as a transfer means onto the EVAC-U-SPLINT® vacuum mattress. The use of the CombiCarrierII or the scoop-type stretcher should be determined by your medical director. If the CombiCarrierII or a scoop-type stretcher is used, it is recommended to evacuate a small amount of air from the mattress to make it flexible, but not flaccid - more like modeling clay. Simply place the patient (who is secured to the CombiCarrierII) onto the vacuum mattress and then remove the CombiCarrierII from around the patient. Proceed with the normal application procedures as follows (*See page 3*).



*Positioning and application continued.*

6. Attach the patient restraint strap. Keep in mind that one of the primary functions of the strap is to bring the sides of the mattress up around the patient's body.

**Method #1:** Start at the chest with the first buckle and work toward the feet. In a zig-zag pattern, attach the black buckles and the white buckles in an alternating fashion. Finish by attaching the black buckle at the foot end.

**Method #2:** Attach all of the black buckles on one side of the patient. Then follow by attaching all of the white buckles on the other side.

**NOTE:** You may find it helpful to store your vacuum mattress with all the buckles attached and then unfasten only the buckles on the side of the mattress that will be slid under the patient. This should make it easier and faster to apply the mattress at the scene.

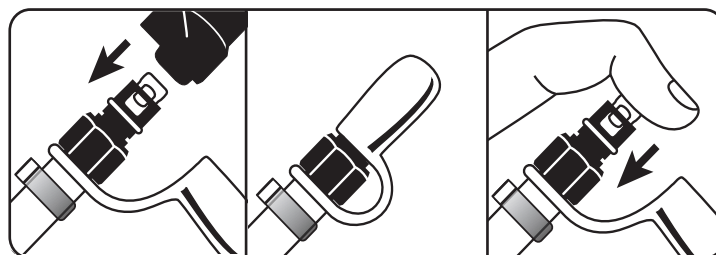
7. Starting at the head end of the mattress, remove slack by lifting at the center of each section of strap that spans the distance between two buckles. Excess strap is pulled through the BLACK buckle at the foot end of the mattress. **VIGOROUS PULLING ON THE STRAP MAY CAUSE THE PATIENT AND/OR MATTRESS TO ROTATE. THIS CAN BE AVOIDED BY ALWAYS FEEDING THE STRAP THROUGH THE BUCKLES WHILE YOU TIGHTEN THE STRAP.**

Repeat the strap tightening procedure working from the head end toward the foot end of the patient. If the buckles at the foot end are very close together, it may be easier to remove any excess slack by tightening the strap in the reverse direction, moving from the foot end toward the head end of the patient.

**ALWAYS USE CAUTION WHEN TIGHTENING THE PATIENT RESTRAINT STRAP TO AVOID RESPIRATORY COMPROMISE OR APPLICATION OF PRESSURE TO ANY INJURED AREA.**

8. Push any beads away from the area above the patient's head, but do not alter the support under the patient's head which is maintaining neutral alignment. Shape the mattress around the head, making sure to fill the voids by the shoulders and the base of the neck of the patient. Transfer stabilization to the outside of the mattress and continue to hold these "head blocks" that you have formed until the mattress is evacuated.

9. Evacuate the air from the mattress, using the valve located at the foot end. The head-end valve can be used, or both valves can be used simultaneously, but it is preferred to use the foot-end valve. This makes it easier to work around the patient's head. Under normal conditions, the EVAC-U-SPLINT® manual vacuum pump may require up to 35 strokes to achieve rigid immobilization. At higher altitudes (4,000 ft.+ ) it may be necessary to use 40-45 strokes to completely evacuate the mattress.



10. To prevent accidental valve opening, whenever a patient is being moved in the mattress or when the mattress is being put away, make sure to **ALWAYS** place the RED LEASHED CAP over the end of the MaxiValve™.
11. Finish securing the patient's head using medical grade adhesive tape.
12. Snug up the patient restraint strap and check the patient's neurovascular status before moving the patient. **Always follow your local medical protocols approved by your medical director.**

## IMPORTANT NOTES

**DO NOT** lift the EVAC-U-SPLINT® mattress by itself from the ends. Use the point-of-balance lifting handles only. A minimum of two persons positioned at the sides are required. Patient size and weight will determine the number of personnel required to properly lift and move the patient for transport. The large handles on each side allow for two rescuers to grasp the mattress on each side. This provides four support points on both sides of the mattress for large or very tall patients. For extremely heavy patients, additional supportive devices may be needed in addition to the vacuum mattress.

When faced with a situation that requires lifting end-to-end (i.e., going up or down stairs), use a CombiCarrierII®, a long spineboard, scoop-type stretcher, or a "flat" stretcher underneath the mattress. Vertical rescue requires the use of a basket stretcher or similar device. When using any accessory stretcher always make sure the vacuum mattress is secured to the stretcher prior to moving the patient.

Always check the rigidity of the mattress before lifting the patient off the ambulance cot or other patient handling device.

The EVAC-U-SPLINT Mattress is X-ray compatible (the MaxiValve is plastic with an internal stainless steel spring).



# EVAC-U-SPLINT® Vacuum Mattress

## APPLICATION GUIDELINES

### CLEANING, MAINTENANCE AND STORAGE

The mattress and patient restraint strap are easily cleaned using soap and water, a mild detergent, or a commercial cleaner/disinfectant. **ALWAYS** place the red leashed cap on the end of the MaxiValve before cleaning the mattress. Sodium hypochlorite (bleach) solutions may be used, but avoid prolonged exposure of the fabric to high concentrations of bleach because discoloration is possible. A 1-2% bleach solution will not harm the material, but **ALWAYS** rinse the mattress thoroughly after cleaning. Allow the mattress to air dry or towel dry before placing the EVAC-U-SPLINT® Mattress in its storage/carry case. Check the mattress initially for leaks, and after each use.

### STORAGE

Always inspect the product for damage prior to storing it. This will help ensure that the EVAC-U-SPLINT® Vacuum Mattress is always ready to use under emergency conditions. The mattress should be stored in an area that is above freezing (32°F/0°C). The mattress can be used in environments below freezing, down to -30°F (-34°C), but it **should not be stored in an area where the temperature is below freezing**. If there is any doubt, bring the product to a temperature that is above freezing before using it in the field.

### LOT NUMBER

The lot number is located on the back of the mattress. Record this number with other important information, such as date of purchase and distributor name in the space provided. Retain this manual for reference and include it with any change in ownership of this product.

Should you need to contact us, please always provide the model number and lot number of your product. If you become aware of any serious incident related to the use of the device, you should report the incident to Hartwell Medical and to your medical device regulatory authority.

Should you have any questions about your EVAC-U-SPLINT Adult Mattress, our customer service personnel will be happy to help you. Our customer service department can be reached by calling:

(760) 438-5500, Monday - Friday, 7:30 am - 4:30 pm PST.

<b>Product:</b>	EVAC-U-SPLINT Adult Mattress
<b>Model Number:</b>	_____
<b>Lot #:</b>	_____
<b>Date Purchased:</b>	_____
<b>Purchased from:</b>	_____
<b>Date Product Inspected And Approved for Use:</b>	_____
<b>In-Service Training Completion Date:</b>	_____



# EVAC-U-SPLINT®

## APPLICATION GUIDELINES

## REPAIR PROCEDURES

### VINYL PATCH MATERIAL AND ADHESIVE

These instructions are intended for **minor repairs** of small holes or tears in the fabric material of the extremity splints. **Large rips or tears may require the product to be replaced.** Contact your authorized Hartwell Medical Distributor or call us directly if you have questions about the repair of your EVAC-U-SPLINT® product.

#### For holes or tears less than 3/4" (1.9 cm) in size:

- Locate the hole or tear in the material and mark it with a piece of masking tape for easy identification.
- Clean the surface to be repaired thoroughly using isopropyl (rubbing) alcohol. Make sure the area is dry and free of fingerprints before applying adhesive.

#### If the hole is less than 1/8" (0.3 cm) in size:

- Apply a small amount of vinyl glue to the damaged area, thoroughly covering the area.
- Vacuum a small amount of air out of the splint to pull some of the glue into the damaged area.
- Release the vacuum to let air back into the splint.
- Allow the glue to dry thoroughly for 24 hours at room temperature.

#### If the hole or tear is larger than 1/8" (0.3 cm), but less than 3/4" (1.9 cm) in size:

- Make a patch from the material supplied that is at least 3/4" larger than the tear on all sides. Example: for a 3/4" tear make a patch that measures 1.5" x 2.25". Make sure to round the corners of the patch so they do not peel.
- Using your finger (wear rubber gloves), apply the glue to the splint and to one side of the patch. Use a thin even coating. Don't apply a heavy layer because it will take longer to dry and will be squeezed out around the edges of the patch.
- Allow the glue to become tacky, then place the patch over the damaged area. Press the patch and the splint material firmly together. Make sure the entire edge of the patch is glued securely to the splint.
- Allow the glue to dry thoroughly for 24 hours at room temperature.

#### For holes or tears larger than 3/4" (1.9 cm) in size.

Contact your local authorized Hartwell Medical Distributor.

Temporary field repairs may be accomplished using a small piece of nonporous adhesive tape or duct tape over the damaged area. If you have any questions about these repair procedures, please contact us directly.

### PEEL AND STICK PATCHES

If you have a need to patch your EVAC-U-SPLINT® mattress or splint product you may find Peel and Stick Patches for Vacuum Splints patches easy to use and quick to apply. Read ALL directions before applying a patch.

For best results wash and dry your hands before applying the patch. Apply to a clean, dry surface. Surface temperature of the materials to be repaired should be 50° F or warmer. The splint should be soft, not evacuated. Move the beads inside of the vacuum splint or mattress away from the area to be patched, creating as flat an area of fabric as possible. These patches are designed for and will provide the best results for use on small holes or cuts that are 1/4" or LESS in length.

**STEP 1. CLEAN & DRY:** Clean the surface to be repaired with an alcohol prep pad or a 50/50 mixture of rubbing (isopropyl) alcohol and water. Before proceeding, make sure the surface is completely dry.

**STEP 2. PEEL:** Carefully peel back half of the paper liner, touching just the edges or corners of the patch.

**STEP 3. STICK:** Position and anchor the exposed portion of the patch. Position the patch so the small hole or tear will be in the center area of the patch. Slowly peel back the rest of the liner while carefully applying the patch over the small hole – take care to avoid air bubbles. Smooth out the patch working from the center of the patch to the outside edges of the patch. Rub all edges to seal the patch and then rub the entire patch aggressively. Let the splint or mattress sit, undisturbed and not evacuated for one hour. Repair is now complete.

**ALWAYS TEST THE PRODUCT BEFORE PLACING IT BACK IN SERVICE.** Do not place repaired products into a washer or dryer. For best results, store patch material at room temperature.

Note: Temporary field repairs can be made using a small piece of nonporous adhesive tape or duct tape placed over the damaged area. If you have any questions about these repair procedures please contact us directly at 760-438-5500 or [customerservice@hartwellmedical.com](mailto:customerservice@hartwellmedical.com).

**Additional repair kits can be ordered online at**  
**[www.HartwellMedical.com](http://www.HartwellMedical.com)**



# EVAC-U-SPLINT® Vacuum Mattress

## APPLICATION GUIDELINES

### HARTWELL MEDICAL WARRANTY

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EVAC-U-SPLINT® mattresses have a two-year limited warranty against defects in material and workmanship. The EVAC-U-SPLINT MaxiValve is guaranteed for life. **REMEMBER TO ACTIVATE YOUR WARRANTY BY COMPLETING A PRODUCT REGISTRATION FORM AVAILABLE ON OUR WEBSITE ([www.HartwellMedical.com](http://www.HartwellMedical.com))**. Should you require service under the terms of this warranty, contact your local Hartwell Medical Distributor or Hartwell Medical Customer Service at 760-438-5500 during normal business hours.

Hartwell Medical accepts no liability for use other than set forth herein.

### DOCUMENTATION OF TRAINING

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Everyone who will be using or operating the EVAC-U-SPLINT® Mattress should be required to actively participate in the initial training and all subsequent refresher training sessions. This will ensure a clear understanding of the function and capabilities of the EVAC-U-SPLINT Mattress. You should utilize the training process that has been approved by your organization and is in accordance with your medical director's guidelines. Important items to document should be the training date, names of attendees, the instructor's name and title, and the training location.

### MAINTENANCE LOG

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Routine inspection and maintenance is required to keep the EVAC-U-SPLINT® Mattress ready for immediate use. If, at any time, the EVAC-U-SPLINT Mattress is suspected of not functioning properly it should be taken out of service until such time that it can be thoroughly inspected and properly repaired or replaced.

## HARTWELL MEDICAL



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