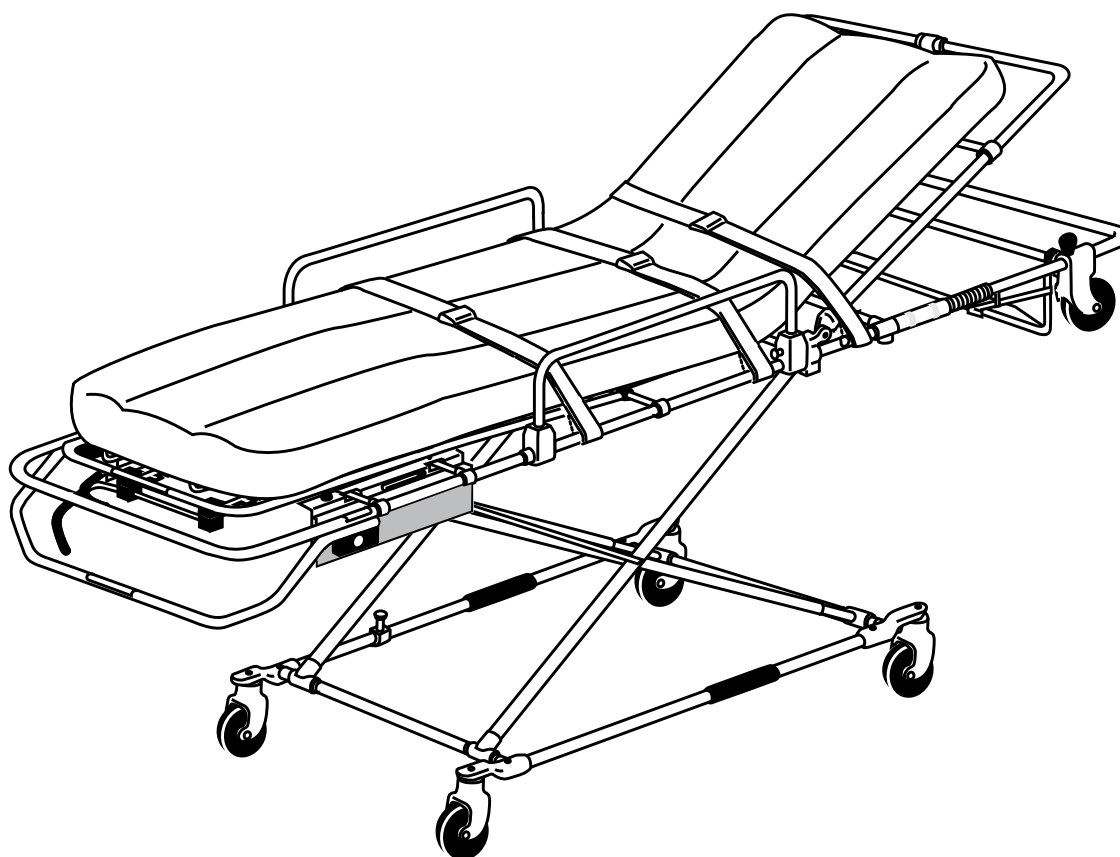


Model 35A-NM Mobile Transporter™



Users' Manual

September 2016
Pub. No. 234-3411-02



Read this Manual and Retain
for Future Reference 

Ferno Customer Relations

For ordering assistance or general information:

CANADA AND THE U.S.A.

Telephone (Toll-free)	1.877.733.0911
Telephone	1.937.382.1451
Fax (Toll-free)	1.888.388.1349
Fax	1.937.382.1191
Internet	www.ferno.com

ALL OTHER LOCATIONS

For assistance or information, please contact your Ferno distributor. If you do not have a Ferno distributor, please contact Ferno Customer Relations:

Ferno-Washington, Inc., 70 Weil Way
Wilmington, Ohio 45177-9371, U.S.A.

Telephone	Country Code +1.937.382.1451
Fax	Country Code +1.937.382.6569
Internet	www.ferno.com

Disclaimer

This manual contains general instructions for the use, operation and care of this product. The instructions are not all-inclusive. Safe and proper use of this product is solely at the discretion of the user. Safety information is included as a service to the user. All other safety measures taken by the user should be within and under consideration of applicable regulations and local protocol. Training on the proper use of this product must be provided before using this product in an actual situation.

Retain this manual for future reference. Include it with the product in the event of transfer to new users. Additional free copies are available upon request from Customer Relations.

Proprietary Notice

The information disclosed in this manual is the property of Ferno-Washington, Inc., Wilmington, Ohio, USA. Ferno-Washington, Inc. reserves all intellectual property rights, proprietary design rights, manufacturing rights, reproduction use rights, and sales use rights thereto, and to any article disclosed therein except to the extent those rights are expressly granted to others or where not applicable to vendor proprietary parts.

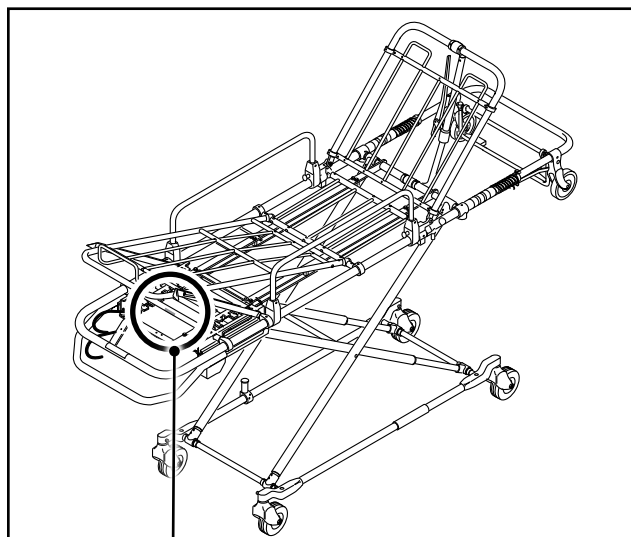
Limited Warranty Statement

The products sold by Ferno are covered by a limited warranty, which is printed on all Ferno invoices. The complete terms and conditions of the limited warranty, and the limitations of liability and disclaimers, are also available upon request by calling Ferno at 1.800.733.3766 or 1.937.382.1451.



USERS' MANUAL

To request additional free users' manuals, contact Ferno Customer Relations, your Ferno distributor, or visit www.ferno.com.



Product Name/Model

Date of Manufacture

Serial Number

Ferno-Washington Inc. | Wilmington, Ohio 45177 USA | +1.937.382.1451

(01) Global Trade Item Number
(11) Date of Manufacture
(21) Serial Number

Manufacturer

GS1 Data Matrix

UNIQUE DEVICE IDENTITY NOTICE

Ferno complies with the United States Food and Drug Administration's Unique Device Identification regulation to identify medical devices. The UDI label contains information in human- and machine-readable form. Device information is online at the FDA's Global Unique Device Identification Database (GUDID). The public can search and download information at AccessGUDID at www.fda.gov.

The label is located on the crosstube under the shock frame.



Ferno-Washington, Inc.
70 Weil Way
Wilmington, Ohio 45177-9371 U.S.A.



Ferno (UK) Limited
Stubs Beck Lane, Cleckheaton
West Yorkshire BD19 4TZ, United Kingdom

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1 - SAFETY INFORMATION

1.1 Warning

Warning notices indicate a potentially hazardous situation which, if not avoided, could result in injury or death.



WARNING

Untrained operators can cause injury or be injured. Permit only trained personnel to operate the cot.

Improper use of the cot can cause injury. Use the cot only for the purpose described in this manual.

Failure to use the safety hook can cause injury. Install and use the safety hook as described in this manual.

An unrestrained patient can fall off the cot and be injured. Use restraints to secure the patient on the cot.

Improper operation can cause injury. Operate the cot only as described in this manual.

An unattended patient can be injured. Stay with the patient at all times.

Rolling the cot sideways or in a loading position can cause the cot to tip and injure the patient or operators. Roll the cot only with the head-end or foot-end first, and only in a level (rolling) position.

False locking can cause injury. After changing positions, lift the cot until all the wheels are off the ground. This allows the lock to engage if it has not already done so.

Helpers can cause injury. Maintain control of the cot, operate the controls, and direct all helpers.

Helpers can be injured. Show helpers where to grasp the cot to avoid pinch points.

Improper maintenance can cause injury. Maintain the cot only as described in this manual.

Attaching improper items to the cot can cause injury. Use only Ferno-approved items on the cot.

Improper parts and service can cause injury. Use only Ferno parts and Ferno-approved service on the cot.

Modifying the cot can cause injury and damage. Use the cot only as designed by Ferno.

1.2 Important

Important notices emphasize important usage or maintenance information.

Important

1.3 Bloodborne Disease Notice

To reduce the risk of exposure to bloodborne diseases such as HIV-1 and hepatitis when using the cot, follow the disinfecting and cleaning instructions in this manual.

1.4 Cot and Fastener Compatibility

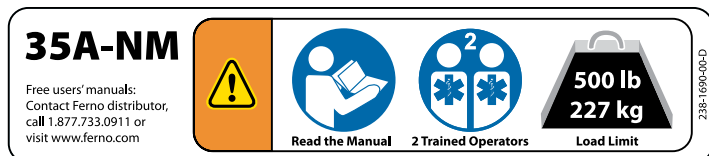
Combining different manufacturers' products into a "mixed-component" cot/cot fastener system can increase the user's risk of injury and damage.

Ferno-Washington, Inc. strongly recommends that only Ferno-manufactured cots be used in Ferno-manufactured cot fasteners, and that only Ferno-manufactured cot fasteners be used for securing Ferno-manufactured cots in ambulances.

ANY COMBINATION OF A FERNO COT OR COT FASTENER WITH A NON-FERNO COT OR COT FASTENER IS MISUSE OF THE FERNO PRODUCT. Responsibility for the outcome of known, intentional misuse rests squarely on the misuser.

1.5 Safety and Instruction Labels

Safety and instruction labels place important information from the users' manual on the cot. Read and follow label instructions. Replace worn or damaged labels immediately. New labels are available from EMSAR (page 28) or from your Ferno distributor (page 2).



General Information Label (Qty. 1)

This label identifies the cot by model name and warns the user to read this users' manual, operate the cot with two trained operators, and to observe the cot load limit.



Pinch Point Label (Qty. 4)

Keep hands clear of these areas.



Hand Guard Label (Qty. 2)

Removing the guard can expose operators or helpers to injury. Do not remove the guard.



Magnetic-Resonance Rating Label (Qty. 1)

See Section 1.7 on page 6 for Conditions of Use.

1.6 Symbol Glossary

The symbols defined below are used on the cot and in this users' manual. Ferno uses symbols recognized by the International Standards Organization (ISO), American National Standards Institute (ANSI), the American Society for Testing and materials (ASTM), and the emergency medical services industry.



Read the
Users' Manual



Cot Operation Requires
Two Trained Operators



Model 35A-NM Cot is
Magnetic-Resonance Conditional
(See Section 1.7, page 6)



General Warning
of Potential Injury



Pinch Point:
Keep Hands Clear



Load Limit



One Trained Operator
(Some Cot Functions)



Unlocked



Locked



Do Not
Lubricate



Lubricate



Product meets
European Union
Standards

1.7 MR Conditional Testing and Compliance

TESTING

The Ferno® Model 35A-NM cot has been tested and is listed as “MR Conditional”.

A product that is Magnetic-Resonance Conditional (called MR Conditional in this manual and on product labeling) has been shown to pose no hazards in a specified MR environment under listed conditions.

LISTED CONDITIONS OF USE

The Ferno® Model 35A-NM cot has undergone testing and has been determined to be MR Conditional. In general, the cot is intended for use under the conditions listed here:

- Static magnetic field of 3-Tesla or less
- Spatial gradient magnetic field of 720-Gauss/cm or less
- Inside the MR environment (e.g., in the MR system room, close to the scanner)

The cot is not designed or designated for use directly inside the MR system (e.g., inside the bore of the scanner).



**MR Conditional
at 3-Tesla or less**

238-1630-00

Magnetic-Resonance Rating Label

FERNO COMPLIANCE

Ferno adheres to the ASTM International classification and definitions found in the following document:

The American Society for Testing and Materials (ASTM) International, Designation: F2503-05, *Standard Practice for Marking Medical Devices and Other Items for Safety in the Magnetic Resonance Environments*. [Published August, 2005]

Non-clinical magnetic field interaction testing has been conducted by an independent, third-party testing service.

ASTM Contact Information

ASTM International
100 Barr Harbor Drive
P.O. Box C700
West Conshohocken, PA 19428-2959, USA
Internet: www.astm.org

2 - OPERATOR SKILLS AND TRAINING

2.1 Skills

Operators using the cot need:

- a working knowledge of emergency patient-handling procedures.
- the ability to assist the patient.

2.2 Training

Operator trainees need to:

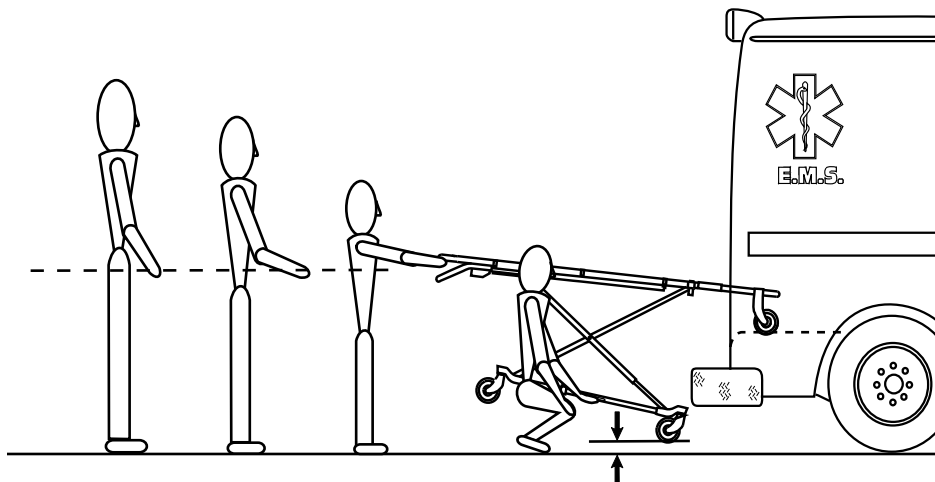
- read and understand this manual.
- be trained on the use of the cot.
- practice with the cot before using it with a patient.
- record their training information. A sample training record sheet is provided on page 30.



WARNING

**Untrained operators can cause injury or be injured.
Permit only trained personnel to operate the cot.**

2.3 Height and Strength Considerations



When unloading the cot, the foot-end operator must lift and hold the weight of the cot, patient and equipment high enough for the wheels to remain off the ground until the undercarriage legs completely unfold and lock into place.

Supporting this weight requires greater strength from short operators than from tall operators because short operators must raise their arms higher in relation to their shoulders.

Be aware that if the ambulance is parked on an uneven surface, the foot-end operator (and any helpers) may need to lift the cot higher than normal to allow the legs to unfold completely and lock.

Note: Use additional help as needed to lift the weight of the cot, patient and equipment (see Using Additional Help, page 24).

3 - ABOUT THE COT

3.1 Description

The Ferno® Model 35A-NM Mobile Transporter™ (called the “cot” in this manual) is an emergency patient-handling device designed to transport a patient in a ground-based ambulance.

The cot is for professional use by a minimum of two trained operators. It is designed for roll-in loading to help reduce the risk of back injury to medical service personnel.

The cot is rated MR Conditional at 3-Tesla or less. This means it can be used in magnetic-resonance environments of 3-Tesla or less, under the conditions listed in Section 1.7 on page 6.

The cot is designed for use with the Ferno® Model 175 Cot Fastener Series (not included).



WARNING

Improper use of the cot can cause injury. Use the cot only for the purpose described in this manual.



COT FEATURES

- Rated MR Conditional at 3-Tesla or less
- Clear-anodized handling surfaces keep hands and clothes clean
- Eight height positions
- Two loading positions for vehicle floors 28"-32" (711-810 mm)
- Adjustable backrest with seven raised positions
- Two-position shock frame
- Two-position drop frame
- Swing-down sidearms
- Four 5"x1.25" (127x32 mm) transport wheels and two 5"x1" (127x25 mm) loading wheels
- Safety hook (for use with Model 175 fastener)
- Wheel locks (4)
- Set of three restraints
- Mattress
- Users' manual

U.S.A. NOTICE

The cot is for use with ambulances that meet the requirements of the “Star of Life” certification via Federal Ambulance Specification KKK-A-1822. For information, contact:

Federal Supply Services, Specifications Section
Suite 8100
470 E. L’Enfant Plaza, SW
Washington, DC 20407

3.2 General Specifications

Most general specifications below are rounded to the nearest whole number. Metric conversions are calculated before rounding the Imperial measurements. For more information, contact Ferno Customer Relations (page 2) or your Ferno distributor.

Ferno reserves the right to change specifications without notice.

Construction	Tubular aluminum
Wheels	
Diameter	5 in./127 mm
Width	1.25 in./32 mm
Wheel Bearings	Sealed/greaseless
Bed Surface	Aluminum tubes
Height¹	
Bed Position 8	35 in./883 mm
Loading Position 2	32 in./810 mm
Bed Position 7	33 in./834 mm
Loading Position 1	28 in./711 mm
Bed Position 6	30 in./772 mm
Bed Position 5	28 in./699 mm
Bed Position 4	24 in./616 mm
Bed Position 3	20 in./521 mm
Bed Position 2	16 in./413 mm
Bed Position 1 (folded)	10 in./257 mm
Length	
Maximum	79 in./2007 mm
Minimum	61 in./1549 mm
Width (Overall)	24 in./610 mm
Weight²	71 lb/32 kg
Strength to Weight Ratio³	6.6 SWR
Load Limit	500 lb/227 kg

Note: All Ferno® mattresses for emergency medical service use are heat-sealed.

¹Height measurements are as follows: Loading Position is the distance from the ground to the bottom of the loading wheel. Bed Position is the distance from the ground to the patient surface, measured at the casting in the center of the bed surface.

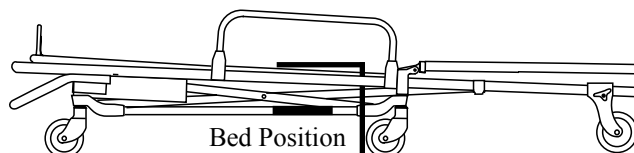
²Weight is without mattress, restraints and optional features.

³Strength to Weight Ratio is the load limit of the cot divided by the cot's weight.

3.3 Cot Positions

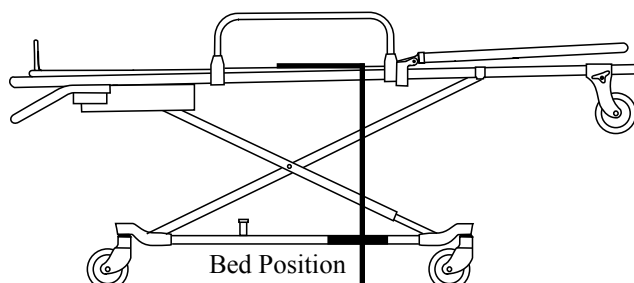
FOLDED POSITION

Use the folded position to transfer the patient, secure the cot inside an ambulance, or to store the cot.



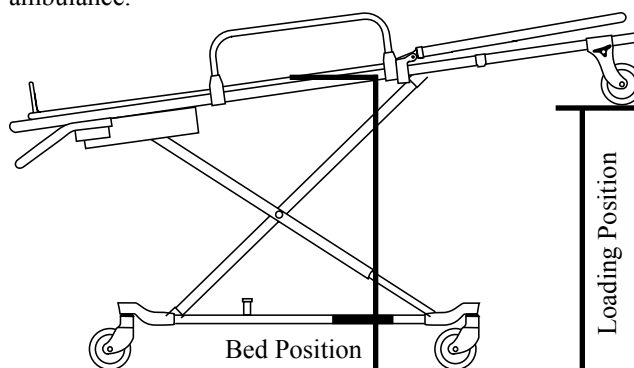
ROLLING/TRANSFER POSITION (5)

Use a level position to roll the cot and for transferring the patient to or from the cot.



LOADING POSITION (2)

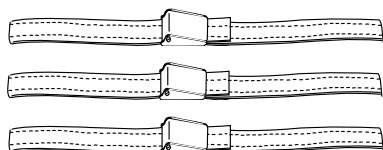
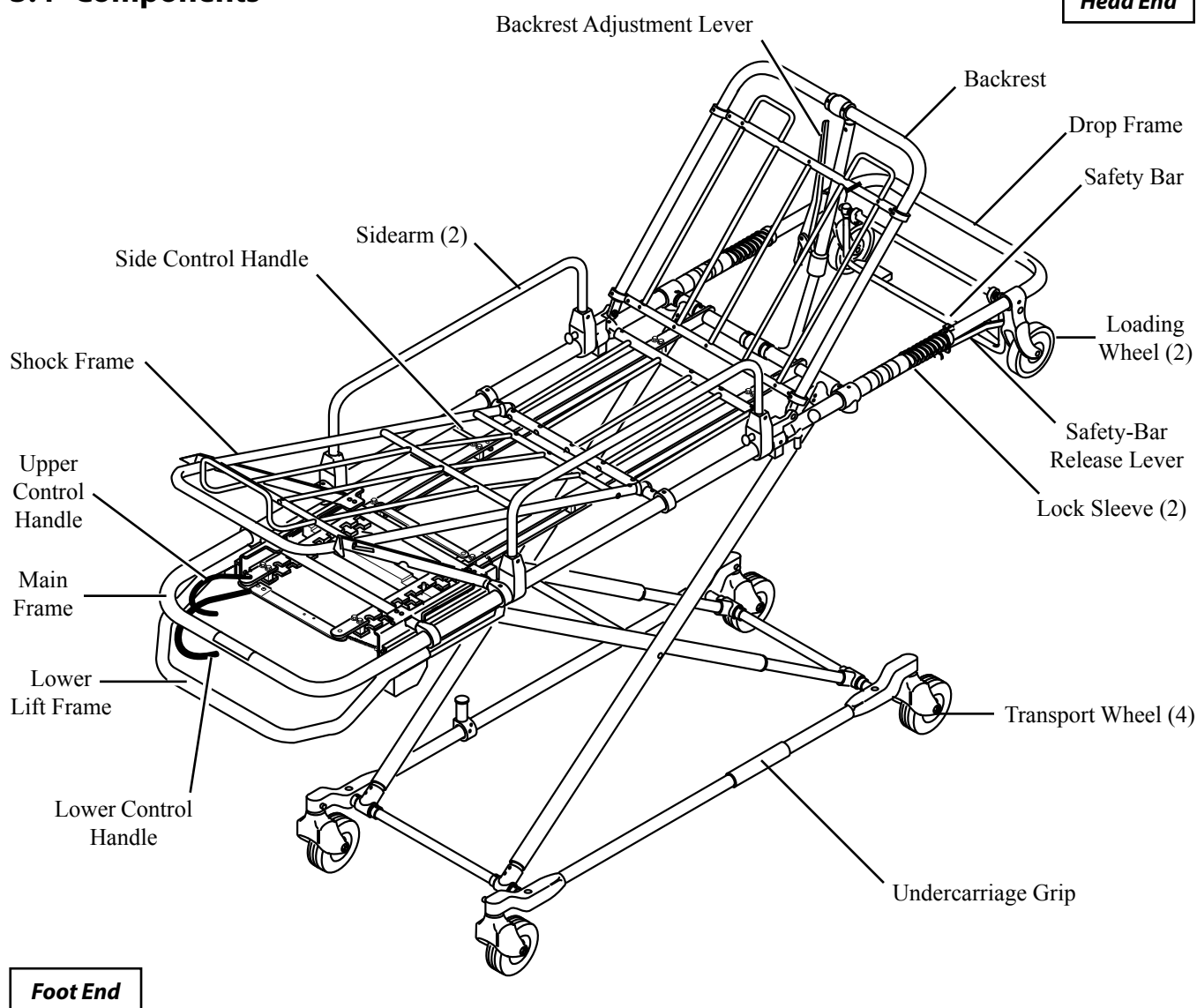
The loading positions are for use only when loading the cot into, or unloading the cot from, an ambulance. Use the lowest loading position that allows the cot to roll into the ambulance.



Load Limit

Inspect the cot if the load limit has been exceeded (See *Inspecting the Cot*, page 26).

3.4 Components

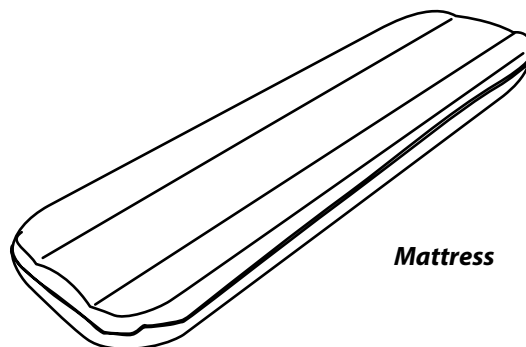


Cam-Lock Restraint (3)



Users' Manuals

To request additional free users' manuals, please contact Ferno Customer Relations (page 2), your Ferno distributor, or visit www.ferno.com.



Mattress

4 - SETUP AND INSTALLATION

4.1 Ambulance Information

The ambulance bumper extension should not exceed 14 inches (356 mm). The patient compartment should have a level floor large enough for the folded cot and a Ferno® cot fastener installed (not included). See *Cot and Fastener Compatibility*, page 4.

4.2 Fastener Compatibility

Read the cot fastener users' manual for instructions on using the fastener (see *Cot and Fastener Compatibility*, page 4).

The Model 35A-NM cot is compatible with all versions of the Ferno® Model 175 antler-and-rail cot fastener. The cot fastener must be configured for use with the Ferno® Model 35 Series. See the fastener installation manual for complete installation details.

Using the Model 175 cot fastener requires the installation of the safety hook (included with the cot).

4.3 Installing the Safety Hook

The safety hook (Figure 1) provided with the cot must be installed on the ambulance floor. The safety hook is used with the Ferno® Model 175 Cot Fastener.

The safety hook catches the cot safety bar (Figure 2) to ensure that the cot remains secure inside the ambulance while the operators raise or lower the undercarriage during loading or unloading.

Installing the safety hook requires the skills of a mechanic familiar with ambulance construction.

Before installing the safety hook, consult the ambulance manufacturer regarding:

- the location of wiring, oxygen or fuel lines, and other elements under the ambulance floor
- the ambulance warranty.



WARNING

Failure to use the safety hook can cause injury. Install and use the safety hook as described in this manual.

Important

Before installing the safety hook, consult the ambulance manufacturer about possible interference with wiring and other elements under the ambulance floor, and about the ambulance warranty.

Important

Loose items and debris on the patient compartment floor can interfere with the operation of the cot with the fastener. Keep the patient compartment floor clear.

Important

A "sloped" (or low-profile) mounting block (shown here) must be used when the antler portion of the cot fastener is **removable** (installed with large turn-knobs for easy removal).

If your **removable** fastener does not already have this mounting block, contact Ferno Customer Relations, page 2.

This block is **not** used with fasteners permanently-mounted to the floor with a large bolt.



**Figure 1 -
Safety Hook
(One Shipped
with Cot)**

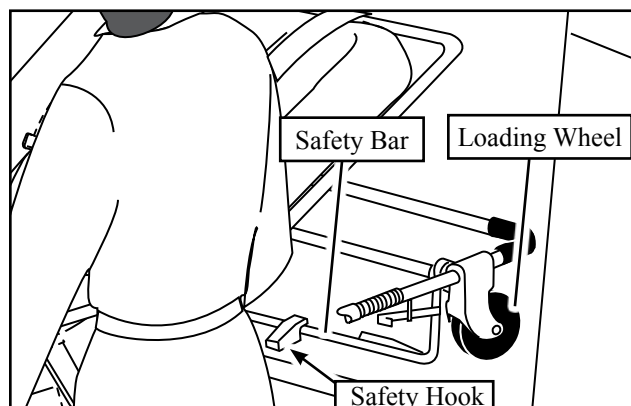
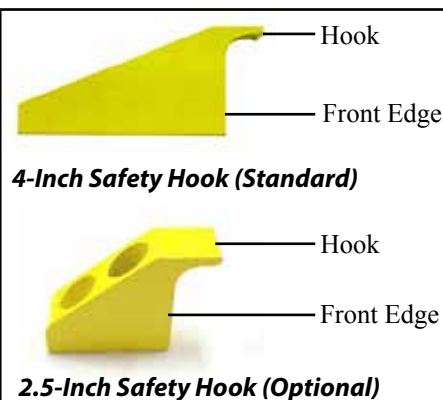


Figure 2 - Safety Hook Catches Safety Bar

HARDWARE REQUIRED (NOT SUPPLIED)

2	1/4-20 Socket-head cap screws
2	Flat washers
2	Lock washers
2	1/4-20 Nuts

- The socket-head cap screws must be long enough to pass through the safety hook, patient compartment floor, both washers, **and** still have at least two full threads extending past the nut.
- The hardware should be of at least SAE Grade 5 with UNC-2 threading (or equivalent).

PROPER SAFETY HOOK PLACEMENT

Position the safety hook as close to the rear of the ambulance as possible, within the limits below:

- The bumper or extended folding bumper must not exceed 14 inches (356 mm).
- Position the safety hook with the hook facing the front of the ambulance.
- Position the safety hook at least 11 inches (279 mm) from both sides of the door frame (Figure 3) so the cot safety bar will engage the hook when the cot is loaded or unloaded.
- Position the safety hook no more than 19-7/8 inches (505 mm) from the front edge of the hook to the rear of the ambulance, **including** the bumper and folding bumper step in the extended (open) position.

INSTALLING THE SAFETY HOOK

1. Mark the position of the safety hook on the floor.
2. Drill holes for the screws and attach the safety hook to the floor (Figure 4).
3. To test the hook, load and unload the cot. Verify that there is no interference with folding or unfolding the legs.

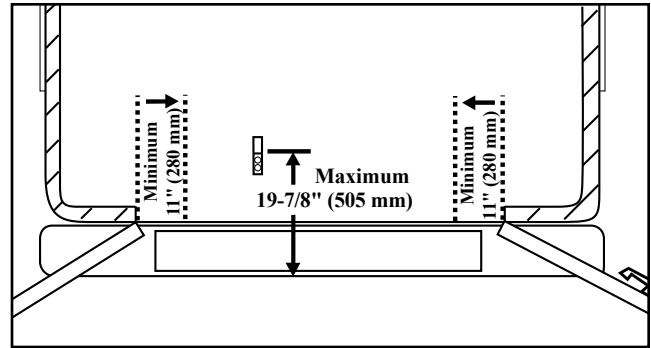


Figure 3 - Safety Hook Placement

Important

If the safety hook is installed too far inside the ambulance, you will not be able to properly fold or unfold the cot undercarriage when it is secured by the hook. Measure and install the safety hook as instructed in this manual.

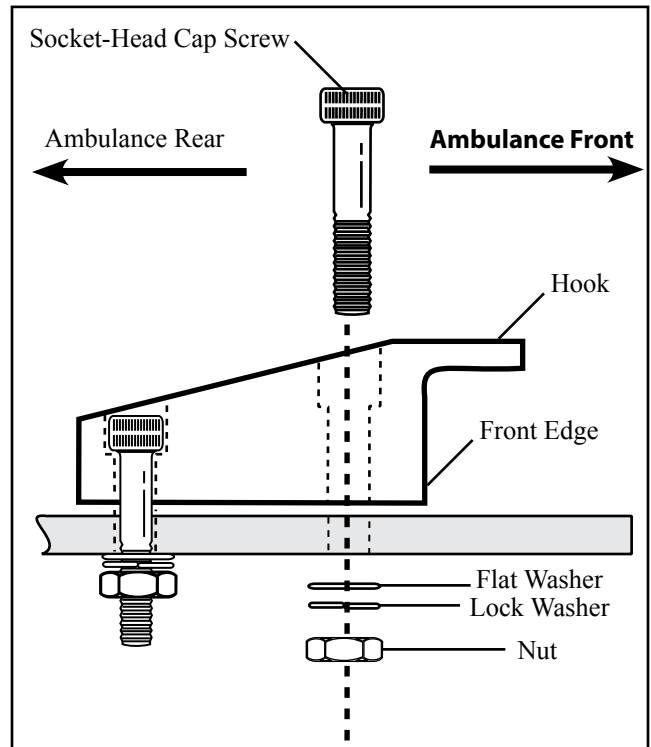


Figure 4 - Installing the Safety Hook

4.4 Patient Restraints

SAFETY INFORMATION

The cam-buckles on the three restraints provided with the cot are made from plastic and are suitable for use in an MR environment but are not intended to be placed inside the bore of the MR scanner.

Primary restraints (not provided) must be used when the cot is in an ambulance. NEVER use the cam-buckle restraints to secure a patient for transport in an ambulance.

GENERAL GUIDELINES FOR USE

- Always use a complete set of three patient restraints to secure the patient on the cot. Adjust restraints to safely secure the patient without causing discomfort or impairing circulation.
- Keep restraints fastened when not in use to prevent them from interfering with cot operation.

ATTACHING THE RESTRAINTS

1. Select the points where the cam-buckle restraints are to be attached to the cot main frame, ensuring solid anchorage for the straps and proper restraint of the patient (Figure 5). Make certain restraints will not interfere with equipment adjustments or use of accessories.
2. Unbuckle a restraint and slide the looped end of a strap up between the mattress and main frame of the cot.
3. Wrap the other end of the strap up around the main-frame tube, thread it through the loop (Figure 6) and pull it until the loop is tight around the tube.
4. Repeat Steps 1-3 with the remaining five restraint straps.
5. Fasten the restraints.

FASTENING AND UNFASTENING THE RESTRAINTS

- **To fasten a restraint:** Open the cam lock and thread the restraint through the opening (Figure 7), then close the cam lock to hold the restraint in place (Figure 8).
- **To unfasten the restraint:** Open the cam lock and pull the restraint backward through the open lock.



WARNING

An unrestrained patient can fall off the cot and be injured. Use restraints to secure the patient on the cot.

Important

Different styles of patient restraints are required in different situations.

- When the cot will be placed in an MR environment, use only the cam-buckle restraints provided. Metal-buckle or other styles of restraint may not be suitable for use in the MR environment.
- When the cot will be transported in an ambulance, use only primary restraints, such as restraints with metal buckles. The cam-buckle restraints are not suitable for restraining a patient in a moving vehicle.

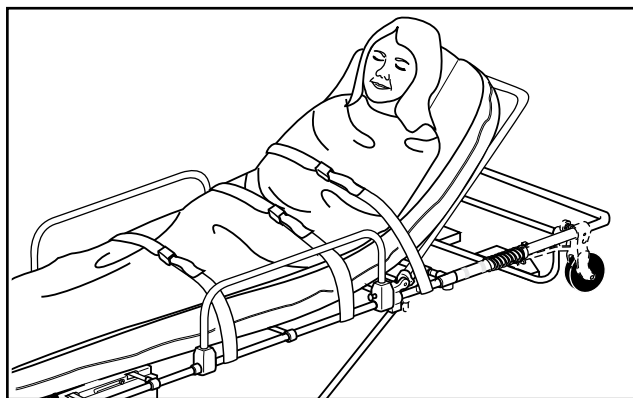
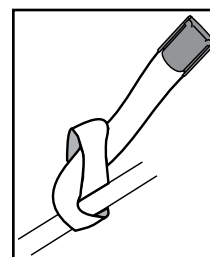


Figure 5 - Restraint Placement



**Figure 6 -
Attaching a
Restraint**

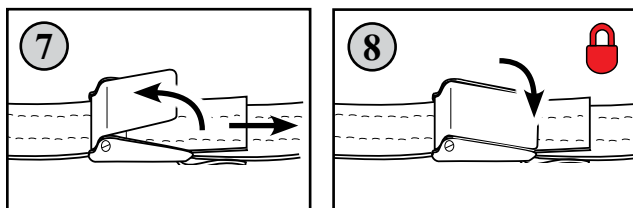


Figure 7 and Figure 8 - Fastening a Restraint

5 - USING THE FEATURES

5.1 Lift-First Control Handles

- **Purpose:** An operator uses one of the Lift-First control handles to disengage the locking mechanism and raise or lower the cot.
- **Location:** There are three Lift-First control handles: an upper and a lower control handle at the cot foot end (Figure 9 and Figure 10), and a side control handle at the patient's right side of the cot (Figure 11).
- **Use:** Any one of the control handles may be used to disengage the undercarriage lock.
 - A “Lift-First” style control handle requires the operators to lift the weight of the cot, patient and accessories off the locking mechanism **BEFORE** pulling the control handle.
 - To lift the cot evenly, the two trained operators must stand opposite one another. If using a foot-end control handle, position the assisting operator at the cot head end. If using the side control handle, position the assisting operator at the opposite side of the cot.
 - Use the control handle that is best for the lifting situation. For example, the lower control handle gives a short operator better leverage for lifting.
 - After the position change, both operators continue to support the weight of the cot, patient and accessories while the operator releases the control handle to allow the undercarriage to lock. Both operators verify that the cot has locked at the new position before relaxing their grasp on the main frame.

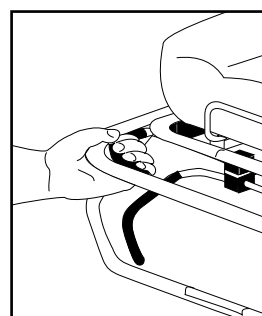


Figure 9 - Upper Control Handle

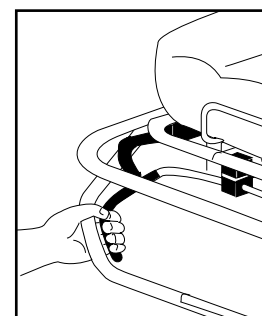


Figure 10 - Lower Control Handle

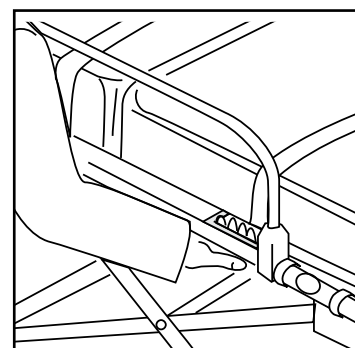


Figure 11 - Side Control Handle

Using the Lift-First Control Handle

1. **All Operators/Helpers:** In a movement coordinated between the operators and any helpers, lift the cot to take the weight off the locking mechanism.
2. **Control Operator:** While continuing to hold the weight of the cot, open the control-handle hand and pull the control handle to unlock the cot's locking mechanism.
3. **All Operators/Helpers:** Raise or lower the cot to the desired height.
4. **Control Operator:** Release the control handle when the cot is near the desired height.
5. **All Operators/Helpers:** Continue to raise or lower the cot until the lock engages.
6. **All Operators/Helpers:** Before relaxing your grasp on the cot main frame, verify that the cot has locked at the new position.

5.2 Lower Lift Frame

The lower lift frame can provide extra lifting leverage for short operators (Figure 12).

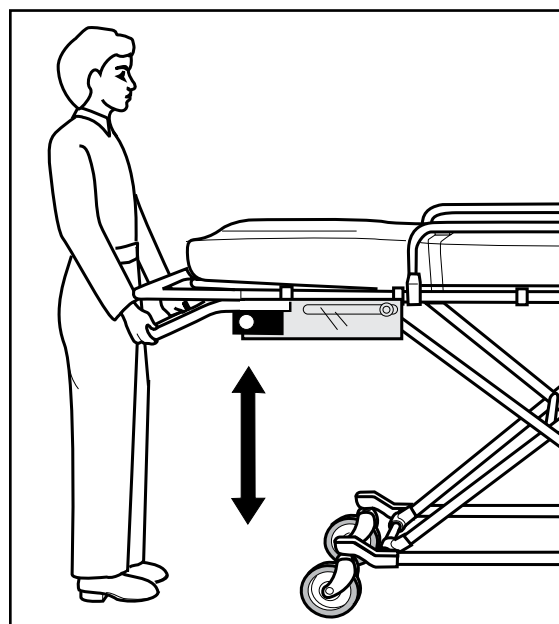


Figure 12 - Using Lower Lift Frame

5.3 Adjustable Backrest

- **Purpose:** The backrest allows the patient's torso to be elevated for comfort or for medical necessity. The backrest has a flat position and seven raised positions.
- **Before Use:**
 - Loosen or unbuckle the torso restraint.
 - Support the weight of the backrest and patient.
- **Use:**
 - **To raise the backrest from the flat position** to the first raised position, grasp the backrest frame and lift. When the backrest has locked into position, release your grasp on the backrest frame.
 - **To raise or lower the backrest from any other position**, use one hand to support and raise/lower the backrest while you squeeze and hold the adjustment lever with the other hand (Figure 13). When the backrest is at the desired height, release the adjustment lever and raise or lower the backrest to verify that it has locked into the new position.
- **After Use:** Buckle and/or adjust the torso restraint.

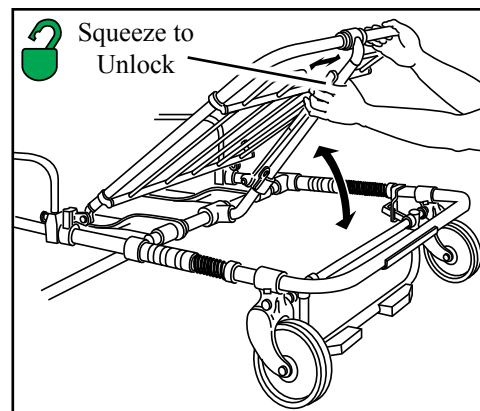


Figure 13 - Using the Backrest

Important

An unlocked backrest can cause injury. Support the backrest frame until the backrest locks into position.

5.4 Sidearms

- **Purpose:** Sidearms provide patient security and comfort. Keep the sidearms raised except when transferring a patient to or from the cot.
- **Use:**
 - **To lower**, pull the locking-pin knob (Figure 14) and swing the sidearm down.
 - **To raise**, lift the sidearm until it locks. You do not need to use the locking-pin knob.

Important

Do not use the sidearms to lift the cot. Sidearms are not designed for lifting. Lift the cot only by grasping the main frame.

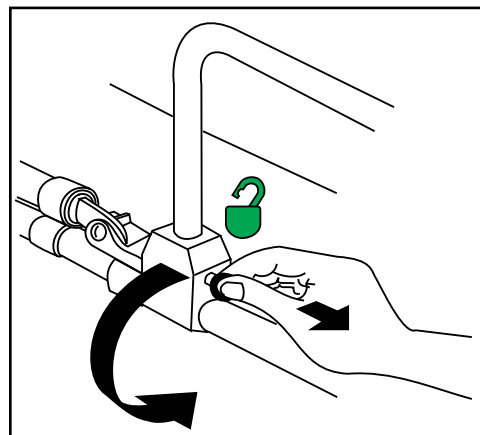


Figure 14 - Releasing the Sidearm Lock

5.5 Wheel Locks

- **Purpose:** The wheel locks help keep the cot stationary during patient transfer and certain medical procedures. When engaged, the wheel lock stops wheel rotation.
- **Location:** All four transport wheels have wheel locks.
- **Use (Figure 15):**
 - **To engage:** The trailing end of the lock lever is marked with the word "ON"; press this end of the lever to engage the lock.
 - **To disengage:** The shank-end of the lever is marked with the word "OFF". Press this end of the lever to disengage the wheel lock.
 - Wheel locks are **NOT** brakes. Engage the wheel locks only when the cot is stationary. Stay with the cot and maintain control of it at all times. Do not leave the patient unattended.

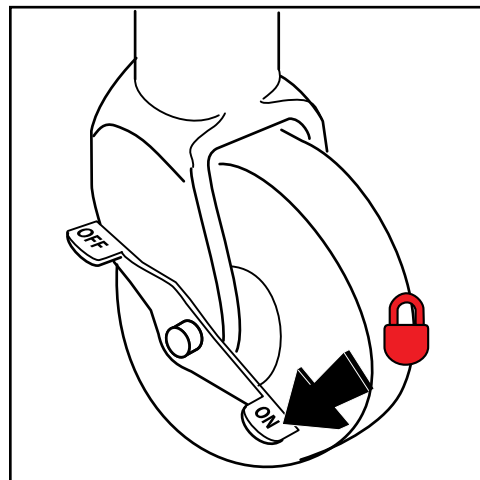


Figure 15 - Wheel Lock

5.6 Shock Frame

- **Purpose:** The shock frame allows the operator to elevate the patient's legs to treat shock or for patient comfort.
- **Use:**
 - **Before Use:** Loosen or unbuckle the leg restraint.
 - **To raise,** stand at the foot end of the cot. Use both hands to lift the shock frame until it locks in the raised position.
 - **To lower,** stand at the foot end of the cot. Lift the shock frame slightly to support the weight (Figure 16), then press the two thumb levers and lower the shock frame.
 - **After Use:** Buckle and/or adjust the leg restraint.

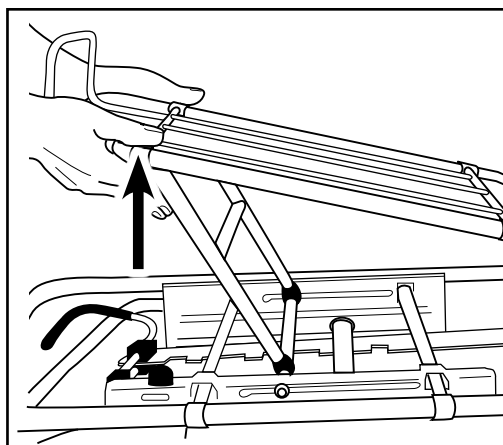


Figure 16 - Lift Before Unlocking and Lowering the Shock Frame

5.7 Two-Position Drop Frame

- **Purpose:** In the extended position, the two-position drop frame is used for raising, lowering, loading, and unloading the cot. In the lowered position (Figure 17), it is used to shorten the cot where space is limited, such as in an elevator or narrow hallway. The frame is unlocked in the lowered position and is not usable for lifting.
- **Use:**
 - **To lower the drop frame:**
 1. Place the cot in Position 5 or Position 6.
 2. Unfasten or loosen the torso restraint and raise the backrest.
 3. Grasp the lock sleeves on the drop frame and slide them toward the head end of the cot to expose the hinges (Figure 18).
 4. Push the drop frame down.
 5. Fasten and/or adjust the harness restraint.
 - **To extend the drop frame,** raise the frame until the lock sleeves automatically snap over and lock the hinges.

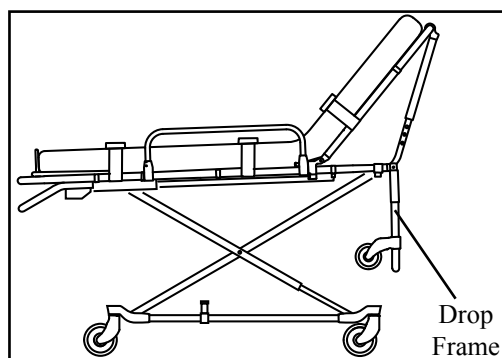


Figure 17 - Lowered Drop Frame

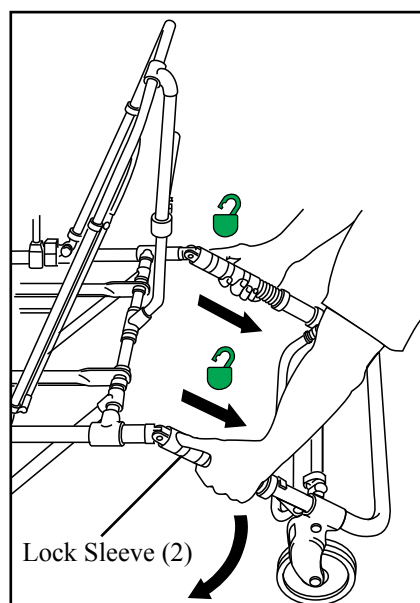


Figure 18 - Lowering Drop Frame

6 - USING THE COT

6.1 Before Placing the Cot in Service

- Personnel who will work with the cot need to read this manual.
- Set up the cot, following the instructions in *Setup and Installation*, pages 11-13.
- Confirm that the cot operates properly. See *Inspecting the Cot*, page 26.
- The vehicle must have a Ferno® cot fastener system installed.



Read the Users'
Manual



Operation Requires
Two Trained Operators



Load Limit

6.2 General Guidelines for Use

- Medical advice is beyond the parameters of this manual.
- It is the users' responsibility to ensure safe practices for the patient and themselves.
- A minimum of two trained operators is required.
- Follow standard emergency patient-handling procedures when operating the cot.
- **Operators work together and maintain control of the cot at all times.**
- Operators communicate with one another and use coordinated movements to operate the cot.
- Lift only the weight you can safely handle. Use additional help when working with heavy loads (patient and equipment). For placement of helpers, see *Using Additional Help*, page 24.
- Stay with the patient at all times.
- Always use patient restraints to secure the patient on the cot.

6.3 Fully Engaging the Locking Mechanism

False locking is a condition in which the locking mechanism does not fully engage when a control handle is released. This can occur after changing cot positions if the locking pin rests exactly on the tip of a ratchet bar tooth, and can allow the cot to lower to the next locking position when moved.

To ensure the locking mechanism fully engages after changing positions, lift the cot until all the wheels are off the ground. This allows the lock to fully engage if it has not already done so.



WARNING

Improper operation can cause injury. Operate the cot only as described in this manual.



WARNING

An unattended patient can be injured. Stay with the patient at all times.



WARNING

An unrestrained patient can fall off the cot and be injured. Use restraints to secure the patient on the cot.



WARNING

Rolling the cot sideways or in a loading position can cause the cot to tip and injure the patient or operators. Roll the cot only with the head-end or foot-end first, and only in a level (rolling) position.



WARNING

False locking can cause injury. After changing positions, lift the cot until all the wheels are off the ground. This allows the lock to engage if it has not already done so.

6.4 Raising and Lowering the Cot

Changing cot positions with a patient on the cot requires a minimum of two trained operators working together.

PREPARING TO RAISE OR LOWER THE COT

1. **Both Operators:** Stand at opposite ends or sides of the cot (Figure 19 or Figure 20).
2. **Assisting Operator:** Raise the drop frame to the extended position if needed.
3. **Both Operators:** Select the lifting position that provides the best leverage. Use an underhand grip to grasp the cot frame (see *Lower Lift Frame*, page 14).
4. **Foot-End or Side-Control Operator:** Position your hand to use the control handle.

Important

Operators should expect and be prepared to control the normal downward movement of the cot that occurs when a control handle is squeezed.

RAISING OR LOWERING THE COT

1. **Both Operators:** Lift the cot slightly to take the weight off the locking mechanism.
2. **Both Operators:** As the control operator squeezes and holds the control handle, both operators raise or lower the cot. If the control handle is difficult to squeeze, both operators lift the cot a little higher to free the locking mechanism.
3. **Control Operator:** Release the control handle when the cot is near the desired height.
4. **Both Operators:** Together, lift the cot until all four transport wheels are off the ground. This ensures the undercarriage lock engages if it has not already done so.
5. **Both Operators:** Set the cot onto the floor or ground. Do not release your grasp until you are sure the undercarriage is locked at the new position.

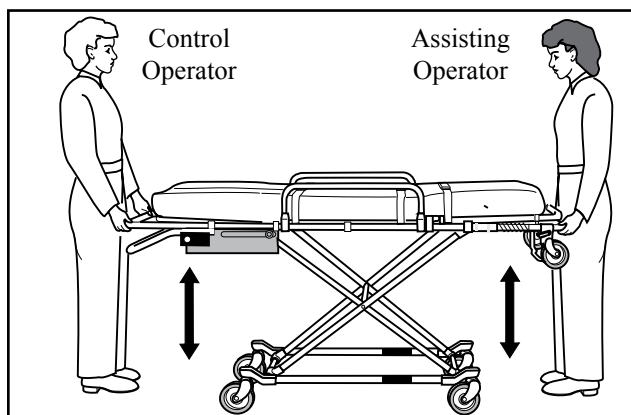


Figure 19 - Using the Foot-end Control Handle

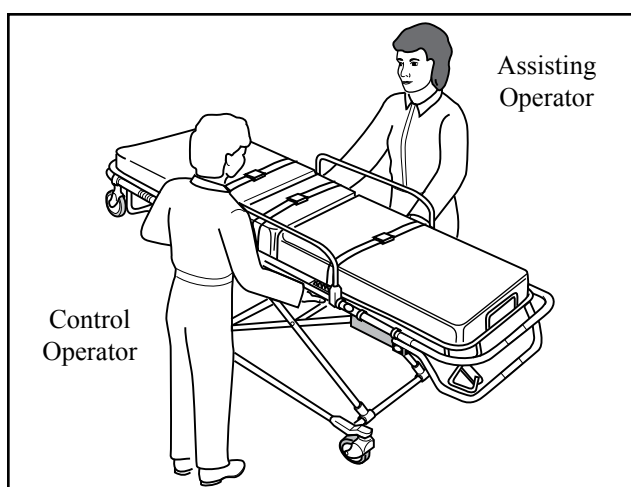


Figure 20 - Using the Side Control Handle

6.5 Transferring the Patient to the Cot

To transfer a patient onto the cot:

1. Make sure the style of restraint on the cot is correct for the cot's use before transferring the patient to the cot (see Section 4.4, *Patient Restraints*, page 13).
2. Unfasten the restraints and arrange the straps so they will not interfere with transferring the patient onto the cot.
3. Place the cot beside the patient and adjust it to the patient's level.
4. Engage the wheel locks and lower the sidearms.
5. Transfer the patient onto the cot using approved EMS procedures and following your local protocols.
6. Raise the sidearms. Adjust the backrest and shock frame as needed.
7. Fasten and adjust the patient restraints (Figure 21).
8. Disengage the wheel locks.
9. Before moving the cot or changing its position, make sure sheets and other articles will not interfere with cot operation.

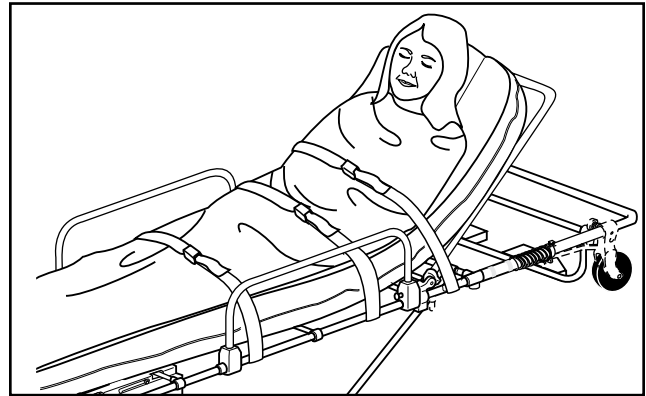


Figure 21 - Using Patient Restraints

Important

Different styles of patient restraints are required in different situations.

- When the cot will be placed in an MR environment, use only the cam-buckle restraints provided. Metal-buckle or other styles of restraint may not be suitable for use in the MR environment.
- When the cot will be transported in an ambulance, use only primary restraints, such as restraints with metal buckles. The cam-buckle restraints are not suitable for restraining a patient in a moving vehicle.

Important

Sheets or other articles that are placed, or find their way, beneath the metal bed of the cot can become caught in the ratchet mechanism and cause it to malfunction. Take care to tuck sheets between the mattress and the metal bed of the cot. Keep other articles above the mattress.

6.6 Rolling the Cot

GENERAL GUIDELINES

- Rolling the cot with a patient on the cot requires **a minimum of two trained operators working together and maintaining control of the cot at all times.**
- Rolling the cot in a loading position can increase the chance for the cot to tip. Always use a rolling position to roll the cot (See *Cot Positions*, page 9).
- Roll the cot on smooth, unobstructed surfaces whenever possible.
- To cross a low obstacle such as a door sill, lift the cot slightly to take the weight off the wheels so the wheels roll smoothly over the obstacle.
- Lift and carry the cot over a high obstacle such as a curb. **Do not** apply downward force on one end of the cot in order to raise the other end of the cot over the obstacle.
- Do not roll the cot sideways. Rolling a cot sideways can increase the chance for the cot to tip and injure the patient and/or operators.
- Use additional help as needed to safely control the weight of the patient and cot (see *Using Additional Help*, page 24).
- When rolling over rough terrain, the operators (and helpers) should grasp the cot with both hands.
- Side helpers may need to walk sideways under some circumstances. Follow local protocols.

ROLLING THE COT

- Securely fasten the restraints around the patient.
- Both Operators:** Place the cot in a rolling position. See *Cot Positions*, page 9.
- Control Operator:** Position yourself at the foot end of the cot, grasp the main frame, and pull or push the cot (Figure 22).
- Assisting Operator:** Position yourself at either the head-end of the cot (grasping the drop frame) or at the side of the cot near the patient's torso (grasping the main frame, Figure 22). Attend the patient and assist in rolling and steering the cot.



WARNING

Rolling the cot sideways or in a loading position can cause the cot to tip and injure the patient or operators. Roll the cot only with the head-end or foot-end first, and only in a level (rolling) position.

Important

Roll the cot downhill foot-end first. If it is not medically appropriate to do this, roll the cot head-end first, but do the following:

To maintain cot balance while rolling the cot downhill head-end first, the Assisting Operator must exert upward force on the drop frame.

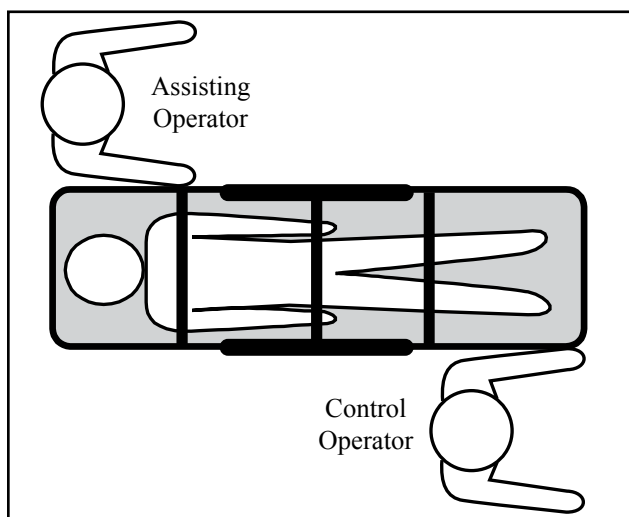


Figure 22 - Typical Operator Placement When Rolling the Cot

6.7 Preparing to Load the Cot

1. Raise the ambulance folding bumper, if present.
2. Place the cot in a loading position (see *Cot Positions*, page 9).
3. Place the drop frame in the extended position.
4. Roll the cot to the patient compartment door.

Note: Use additional help as needed when working with heavy loads (patient and equipment). See *Using Additional Help*, page 24.

Important

If the ambulance is parked on an uneven surface, the operators (and any helpers) may need to lift the cot higher than normal to unlock the undercarriage.

Important

Loose items and debris on the patient compartment floor can interfere with the operation of the cot with the fastener. Keep the patient compartment floor clear.

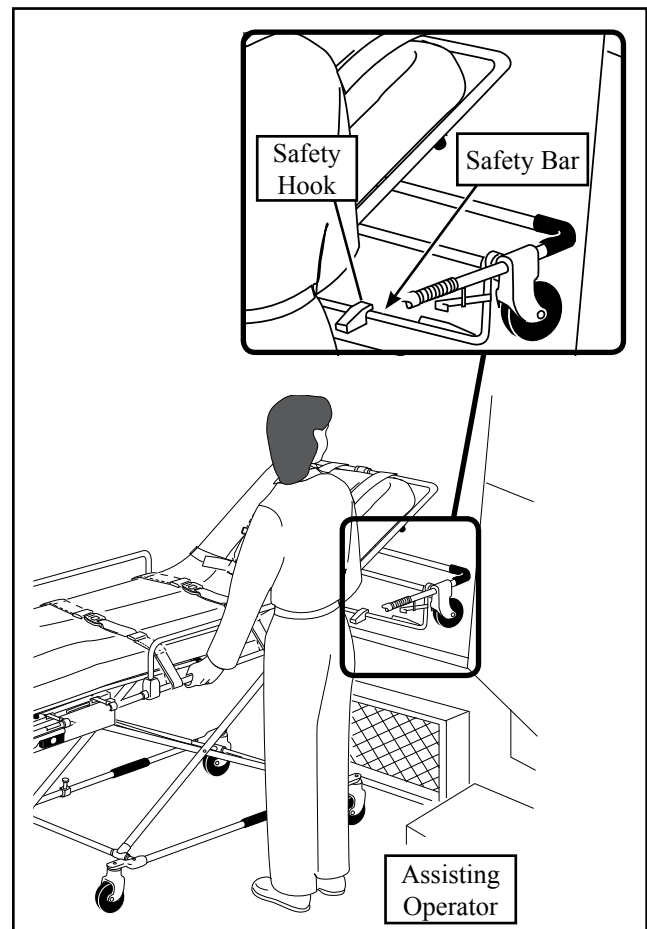


Figure 23 - Secure the Cot Safety Bar On the Safety Hook

6.8 Loading the Cot

Loading the cot with a patient on it requires a minimum of two trained operators working together.

1. **Both Operators:** Roll the cot forward until both loading wheels are on the patient compartment floor and the safety bar passes the safety hook (Figure 23).
2. **Control Operator:** Lift the foot end of the cot until it is level with the ambulance floor.
3. **Control Operator:** Squeeze and hold the undercarriage control handle and tell the Assisting Operator to lift the undercarriage.
4. **Assisting Operator:** Grasp the undercarriage grip (Figure 24). When the Control Operator communicates that he/she is ready, lift the undercarriage all the way up and hold it in the folded position.
5. **Control Operator:** Let go of the undercarriage control handle to lock the undercarriage in the folded position. Push the cot into the ambulance.
6. **Assisting Operator:** Assist the Control Operator as necessary. Release your grip on the undercarriage after all of the cot's wheels are inside the ambulance.
7. **Either Operator:** Secure the cot in the cot fastener.

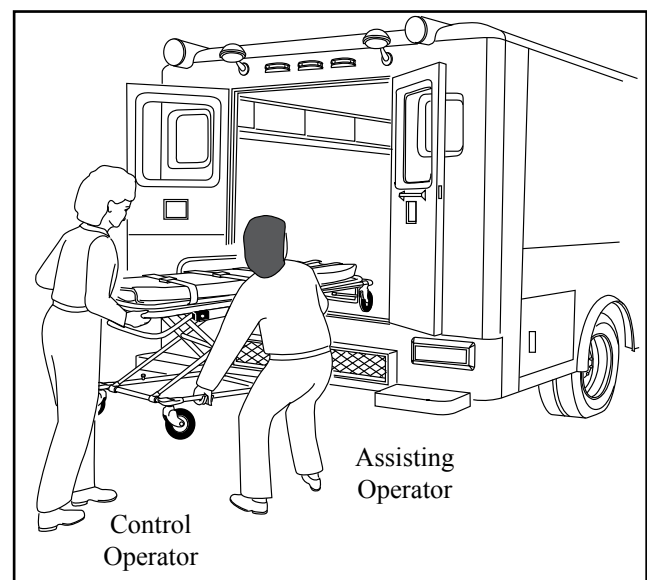


Figure 24 - Loading the Cot

6.9 Unloading the Cot

Unloading the cot with a patient on it requires a minimum of two trained operators working together.

1. Raise the ambulance folding bumper, if present.
2. Release the cot from the cot fastener.
3. **Control Operator:** Grasp the main frame or lift frame at the foot end of the cot and squeeze the undercarriage control handle.
4. **Control Operator:** Keeping the foot end raised and level with the ambulance floor, pull the cot slowly from the ambulance until the cot is stopped by the safety hook.
Assisting Operator: As the cot is pulled from the ambulance, grasp the undercarriage hand grip and lower the undercarriage to the ground (Figure 25).
5. **Control Operator:** Let go of the control handle.
6. **Control Operator:** Lift the cot until all four transport wheels are off the ground to verify that the undercarriage has unfolded completely and is locked, then set the cot on the ground.
7. **Assisting Operator:** Pull the safety-bar release lever toward the foot end of the cot to disengage the safety bar from the safety hook (Figure 26).
8. **Both Operators:** Roll the cot completely out of the ambulance. As the cot is rolled away from the safety hook, the Assisting Operator lets go of the safety-bar release lever.
9. **Both Operators:** Place the cot in a rolling position (See *Cot Positions*, page 9).

Important

Verify that the undercarriage is locked before operating the safety-bar release lever. An unlocked undercarriage will allow the cot to fold.

Important

If the ambulance is parked on an uneven surface, the operators and any helpers may need to lift the cot higher than normal to allow the undercarriage to lock.

Important

Loose items and debris on the patient compartment floor can interfere with the operation of the cot with the fastener. Keep the patient compartment floor clear.

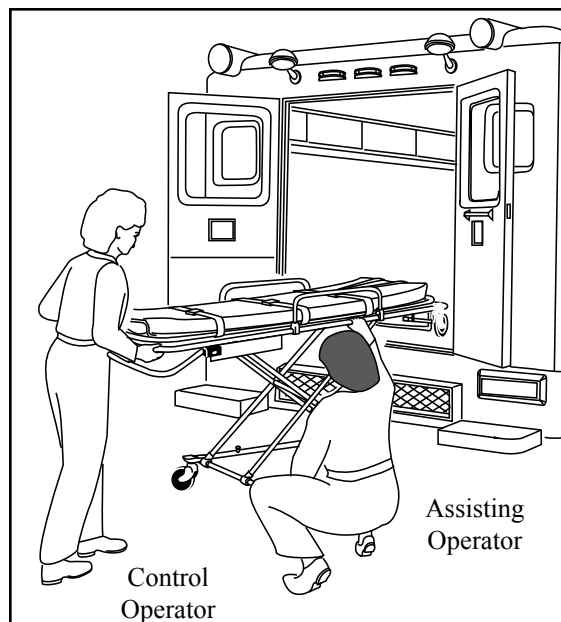


Figure 25 - Lowering the Undercarriage

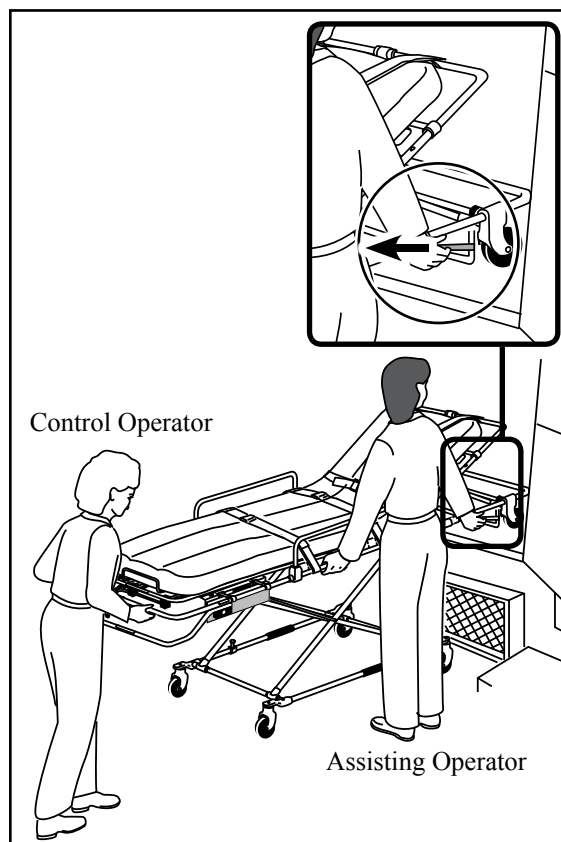


Figure 26 - Releasing the Safety Bar

6.10 One Operator, Empty Cot

CHANGING POSITIONS

When the cot is empty (no patient), one operator can change the cot position. Tip the empty cot onto its loading wheels, squeeze the control handle and raise or lower the cot to the desired position. Then, let go of the control handle and return the cot to its transport wheels.

ONE OPERATOR LOADING AND UNLOADING

If local protocols permit, an empty cot may be loaded into and unloaded from the ambulance by one trained operator.

To load the cot:

1. Raise the ambulance folding bumper, if present.
2. Place the cot in a loading position and roll the cot into the ambulance until both loading wheels are on the patient compartment floor and the safety bar passes the safety hook.
3. Lift the cot until the wheels are off the ground, squeeze and hold the undercarriage control handle, and lower the foot end of the cot to the ground (Figure 27).
4. Release the control handle to allow the undercarriage to lock.
5. Grasp the undercarriage frame with one hand and pull the undercarriage upward against the main frame to verify that the cot has locked in the folded position.
6. Lift the foot end of the cot until it is level with the patient compartment floor. Push the cot into the ambulance.
7. Secure the cot in the cot fastener.

To unload the cot:

1. Raise the ambulance folding bumper, if present, and release the cot from the cot fastener.
2. Begin pulling the cot from the ambulance but do not operate the control handle. Continue pulling until the safety hook catches the safety bar.
3. Lower the cot foot end to the ground (Figure 27).
4. Squeeze the undercarriage control handle and raise the foot end until the cot wheels are off the ground and the undercarriage unfolds completely and locks.
5. Release the control handle and set the cot on the ground.
6. Pull the safety-bar release lever toward the foot end of the cot to disengage the safety bar from the safety hook, then roll the cot away from the ambulance.

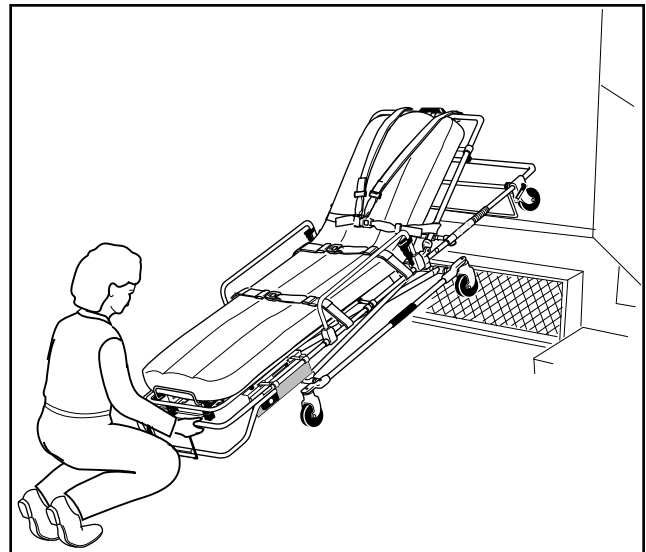
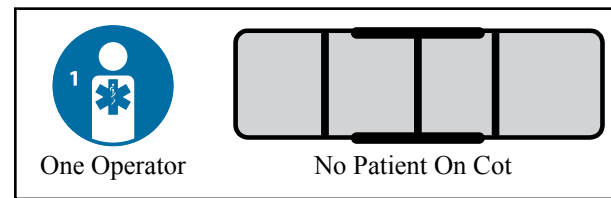


Figure 27 - One-Operator Loading or Unloading the Cot

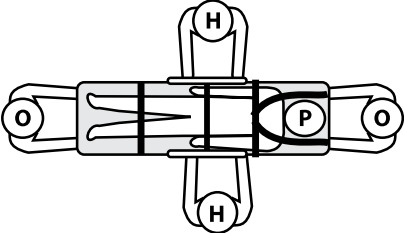
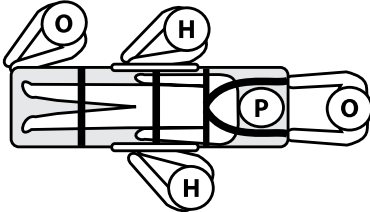
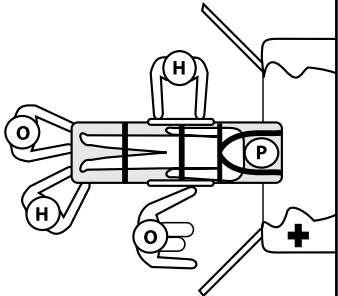
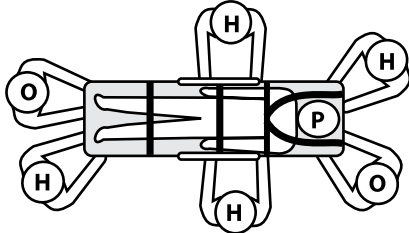
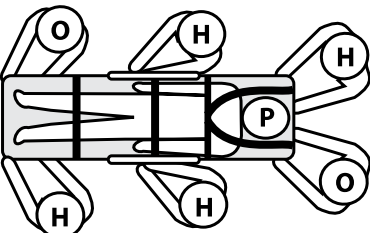
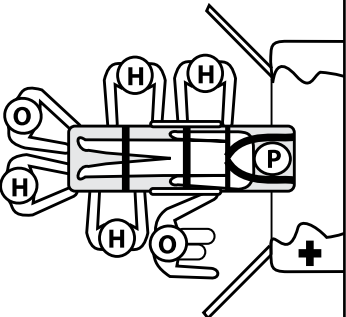
6.11 Using Additional Help

Operating the cot requires a minimum of two trained operators. They may need additional help when working with heavy loads (patient plus equipment).

- Operators stand at the head and foot ends of the cot, maintain control of the cot, operate the controls, and direct all helpers.

- Side helpers may need to walk sideways under some circumstances. Follow local protocols.
- Ferno recommends that helpers work in pairs to help maintain cot balance.

The chart below shows suggested placement for operators and helpers.

Helpers	Changing Levels	Rolling	Loading/Unloading
Two Operators + Two Helpers			
Two Operators + Four Helpers			

Key: O = Operator H = Helper P = Patient

WARNING

Helpers can cause injury. Maintain control of the cot, operate the controls, and direct all helpers.

WARNING

Helpers can be injured. Show helpers where to grasp the cot to avoid pinch points.

Load Limit

500 lb
227 kg

Inspect the cot if the load limit has been exceeded (See *Inspecting the Cot*, page 26).

7 - MAINTENANCE

7.1 Maintenance Schedule

The cot requires regular maintenance. Set up and follow a maintenance schedule. The table at right represents minimum intervals for maintenance.

Keep maintenance records. A sample maintenance record sheet is provided on page 31.

When using maintenance products, follow the manufacturers' directions and read the manufacturers' material safety data sheets. You can purchase a recommended disinfectant from your Ferno distributor or Ferno Customer Relations (page 2).

7.2 Disinfecting and Cleaning the Restraints

Remove the restraints from the cot before disinfecting or cleaning them.

CAM-BUCKLE RESTRAINTS

Disinfecting: Apply disinfectant to the cam-buckle restraints, following the disinfectant manufacturer's directions for application method and contact time.

Cleaning: Place the cam-buckle restraints in a mesh bag (not supplied) and machine wash in warm water with a mild detergent. Hang the restraints to dry. Do **not** place the restraints in a dryer.

METAL-BUCKLE OR OTHER RESTRAINTS

Disinfect and clean only as directed in the restraint users' manuals provided with the restraints. For Ferno restraints, additional, free users' manuals can be obtained from Ferno Customer Relations (page 2).

7.3 Disinfecting and Cleaning the Mattress

1. Remove the mattress from the cot.
2. **To disinfect:** Apply disinfectant to the mattress, following the disinfectant manufacturer's instructions for application method and contact time.
3. **To clean:** Wash the mattress with warm, soapy water and a soft cloth. Rinse the mattress with clear water. Hang the mattress to dry, or dry it with a towel.

Note: To prevent exposure to bloodborne disease, remove the mattress from service if it becomes ripped or torn.

7.4 Disinfecting the Cot

Wipe all surfaces with disinfectant. Follow the disinfectant manufacturer's instructions for application method and contact time. Ferno recommends you inspect the cot for damage as you disinfect it.



WARNING

Improper maintenance can cause injury. Maintain the cot only as described in this manual.

Minimum Maintenance Intervals	Each Use	As Needed	Each Month
Disinfecting (this page)	•		
Cleaning (this page, page 26)		•	
Waxing (page 26)		•	
Inspecting (page 26)		•	•
Lubricating (page 27)		•	

Important

Disinfectants and cleaners containing bleach, phenolics, or iodines can cause damage. Do not use products containing these chemicals.

7.5 Cleaning the Cot

1. Remove the restraints, mattress and any accessories.
2. Hand clean all surfaces of the cot with warm water and a mild detergent.
3. Rinse with warm, clear water. Dry the cot with a towel or allow it to air-dry.

7.6 Waxing the Cot

While it is not necessary to wax this cot, waxing the aluminum main frame or legs will not damage them, and will help maintain the cot's appearance.

Disinfect and clean the cot before applying wax. Use an automotive wax as directed by the wax manufacturer.

7.7 Inspecting the Cot

Have your service's equipment maintenance personnel inspect the cot regularly. Follow the checklist at right and operate the cot through all its functions as described in this manual.

If inspection shows damage or excessive wear, remove the cot from service until repair is made. See *Parts and Service*, pages 28 and 29.

Important

Water under high pressure, or steam, can penetrate joints, flush away lubricant, and cause corrosion. Use caution when cleaning moving parts such as joints and hinges, and reapply lubricant if needed (see page 27).

Important

Using abrasive cleaning compounds or applicators on the cot can cause damage. Do not use abrasive materials to clean the cot.

INSPECTION CHECKLIST

- Are all components present?
- Is the cot free of excessive wear?
- Are all screws, nuts, bolts, rivets, and roll pins securely in place?
- Do all moving parts operate smoothly and properly?
- Does the cot lock properly into each position?
- Does the cot load and unload properly?
- Does the safety hook engage the safety bar?
- Does the cot roll smoothly?
- Do the wheels show signs of excessive wear?
- Do the wheel locks engage properly?
- Are the restraints properly installed?
- Is restraint webbing in good condition with no cuts or frayed edges?
- Are restraint buckles free of visible damage and do they operate properly?
- Is the ambulance properly prepared for the cot with an approved Ferno® cot fastener installed (and safety hook)?
- Do installed accessories operate properly without interfering with cot operation?

7.8 Lubricating the Cot

Disinfect and clean the cot before applying lubricant. Use the lubricants designated below to lubricate the cot. Do not lubricate points marked with the “do not lubricate” symbol.

LUBRICATION POINTS

Use a small amount of lubricant (1-2 drops)

Lubricate identical points on each side of the cot

1. Sidearm Lock Pins	WRL-191S, E-Z-1, SAE 30-weight oil
2. Drop-Frame Hinges	WRL-191S, E-Z-1, or white lithium grease
3. Loading Wheel Bearings	WRL-191S, E-Z-1, SAE 30-weight oil
4. Telescoping Leg	WRL-191S, E-Z-1, white lithium grease
** Transport Wheels (only cots before S/N L-322137)	WRL-191S, SAE 30-weight oil

Important

Lubricating parts that should not be lubricated allows dirt and foreign particles to collect on those parts, resulting in damage. Lubricate **only** the numbered reference points shown.



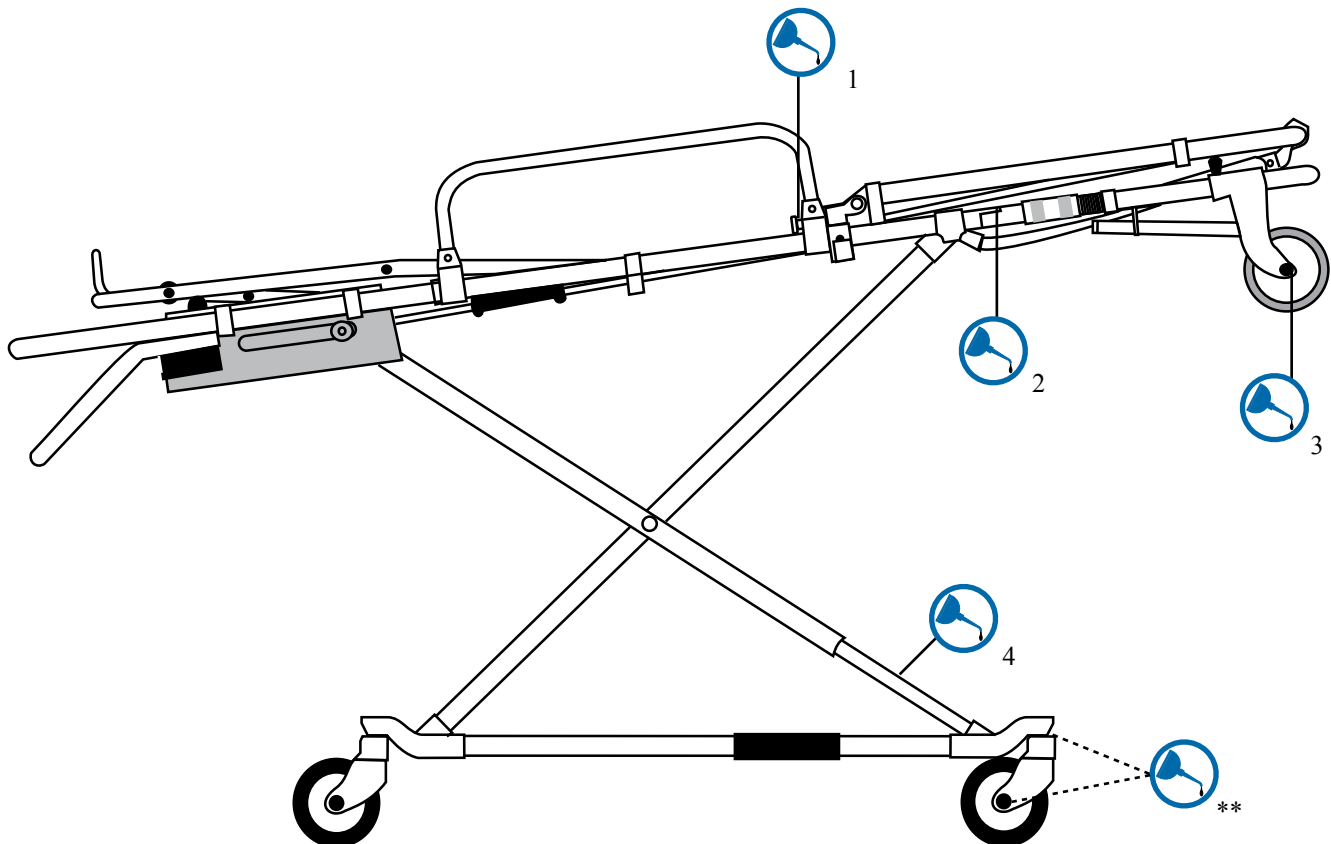
Do Not Lubricate



Lubricate

LUBRICATION-FREE ITEMS

Transport Wheels	Do not lubricate
Center Leg Crosstube	Do not lubricate
Backrest Hinge	Do not lubricate
Shock Frame Hinge	Do not lubricate
Control Mechanisms	Do not lubricate



**** Cot Serial Numbers Before L-322137:**
Lubricate wheel bearings and wheel shanks
with WRL-191S or SAE 30-weight oil

8 - ACCESSORIES AND RELATED PRODUCTS

Ferno offers a full line of emergency medical service accessories (fasteners, IV poles, immobilizers, blankets, etc.). Selected items approved for use with the cot are listed below.

Follow all instructions packed with accessories. Keep the instructions with this manual. When using accessories, be aware of any special considerations such as doorway heights and widths, etc. Contact Ferno Customer Relations (page 2) or your Ferno distributor for product information.

RESTRAINTS

Description	Part Number
Non-magnetic cam-buckle restraint (set of 3)	039-0285
417-1 Harness restraint (maroon)	031-3896
417-1 Harness restraint (orange)	031-3914
417-1 Harness restraint (black)	031-3915
430 Restraint, 2-piece, 5 ft. (1.5 m) maroon	031-3890
430 Restraint, 2-piece, 5 ft. (1.5 m) orange	031-3891
430 Restraint, 2-piece, 5 ft. (1.5 m) black	031-3892
430 Restraint, 2-piece, 7 ft. (2.1 m) maroon	031-3913
430 Restraint, 2-piece, 7 ft. (2.1 m) orange	031-3912
430 Restraint, 2-piece, 7 ft. (2.1 m) black	031-3911



WARNING

Attaching improper items to the cot can cause injury. Use only Ferno-approved items on the cot.

MATTRESSES

Description	Part Number
460 Bolster Mattress (orange)	031-2720
460 Bolster Mattress (burgundy)	031-3063
360 Flat Mattress (orange)	031-3691
360 Flat Mattress (burgundy)	031-3692

ACCESSORIES

513-10 Non-magnetic IV Pole	008-7156
255 StoNet™ (drop-frame storage net/pouches)	081-9503
678 Pedi-Mate® Child Restraint	031-3778
One-hand sidearm release handle (1 only)	090-5596

9 - PARTS AND SERVICE

9.1 U.S.A. and Canada

In the United States and Canada, to order parts or for professional cot repair, contact EMSAR®, the only agent authorized by Ferno to manage, service, and repair Ferno products.

Telephone (Toll-Free)	1.800.73.EMSAR
Telephone	1.937.383.1052
Fax	+1.937.383.1051
Internet	www.EMSAR.com

9.2 Worldwide

To order Ferno parts, and for professional cot repair, contact your Ferno distributor. Your distributor is the only agent authorized by Ferno to manage, service, and repair Ferno products.



WARNING

Improper parts and service can cause injury. Use only Ferno parts and Ferno-approved service on the cot.



WARNING

Modifying the cot can cause injury and damage. Use the cot only as designed by Ferno.

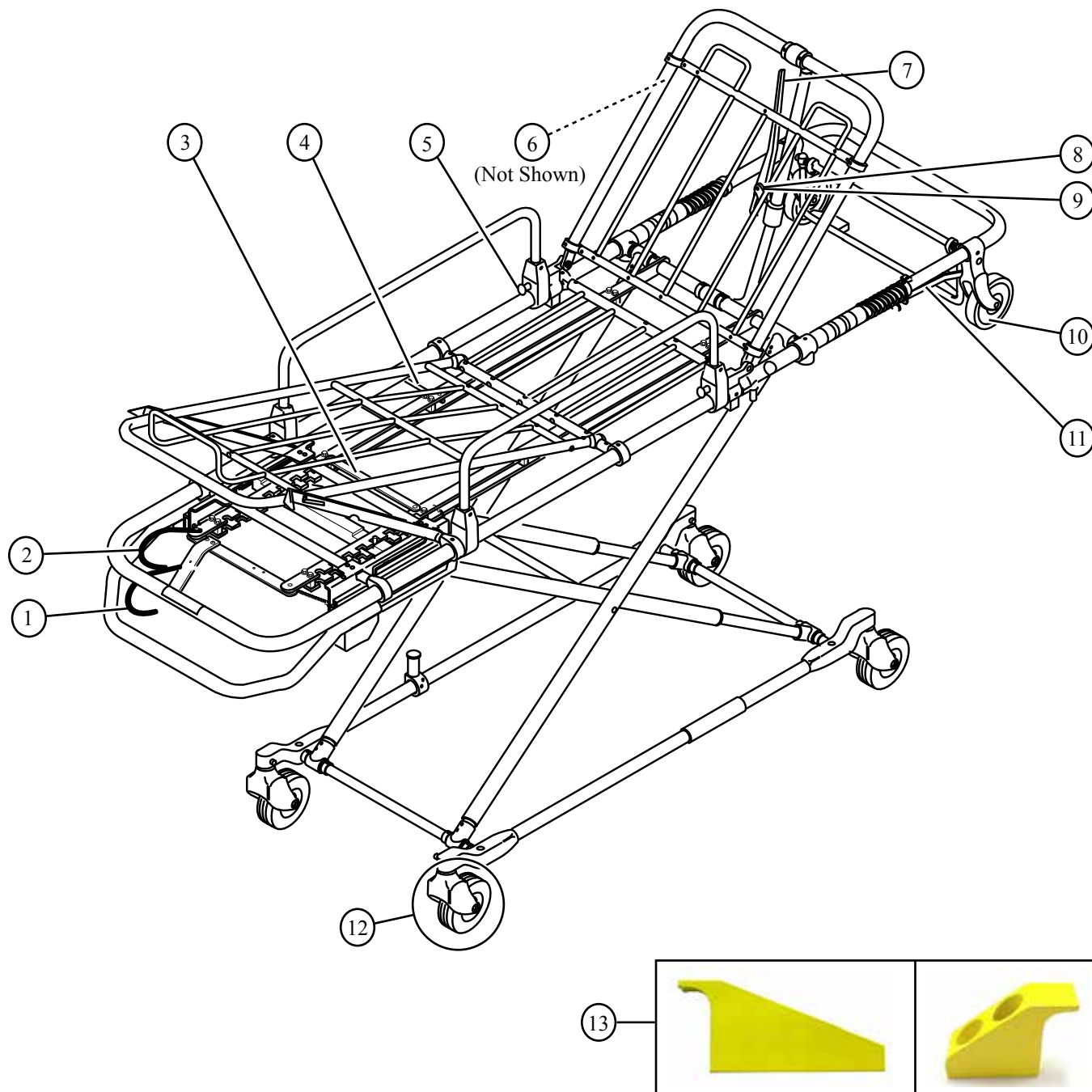
9.3 Parts List

All kits "with hardware" include non-magnetic, stainless steel hardware.

No.	Part	Description	Qty
1	090-5614	35A-NM Lower release handle w/hardware	1
2	090-5613	35A-NM Upper release handle w/hardware	1
3	190-1267	Ratchet bar and tie bar w/hardware	1
4	190-1236	35A-NM Side release handle w/hardware	1
5	190-1079	Sidearm Pin, stainless, w/spring and knob	1
6 n/s	190-1354	35A-NM Backrest bumper w/hardware	2
7	190-1355	35A-NM Backrest adjustment lever w/hardware	1
8	090-3077	30-NM and 35A-NM Backrest adjustment assembly lock pin w/hardware	1

No.	Part	Description	Qty
9	090-2948	Backrest adjustment assembly "V" spring	1
10	190-2068	35A-NM Load wheel w/hardware	1
11	090-5180	35A-NM Safety bar release w/hardware	1
12	190-2069	35A-NM 5" Ultraglide caster w/brake, hardware	1
13	090-1308	Safety hook 4 in. (102 mm)	1
	090-5015	Safety hook 2.5 in. (64 mm)*	1
14 n/s	190-1752	Label kit	1

*The 2.5" (64 mm) safety hook is for ambulances without a folding bumper.
n/s = Not Shown



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