



# PRO 28Z

Chair Cot



**FERNO**<sup>®</sup>

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## Ferno Customer Relations

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

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Fax	1.888.388.1349

### INSTRUCTIONS FOR USE



Read this Manual and Retain for Future Reference. To request additional free manuals, contact Ferno.

## Disclaimer

This manual contains general instructions for the use, operation and care of this product. 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. Ferno 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

Ferno products are covered by a limited warranty, printed on all Ferno invoices. Complete terms and conditions, and limitations of liability, are available from Ferno.

## Adverse Event Notice

In the event of an adverse event or serious incident related to the use of this device, the end user/operator must report the incident to Ferno at 1-877-733-0911, or via email at [tscoordinator@ferno.com](mailto:tscoordinator@ferno.com). If the incident occurred outside the U.S., report it to Ferno's Authorized Representative for that area.

## Disposal

Prior to disposal, clean and disinfect the product according to the Maintenance section of this manual. Recycle or dispose of the product following local protocols and regulations. Do not dispose of the product in municipal waste.



### Medical Device



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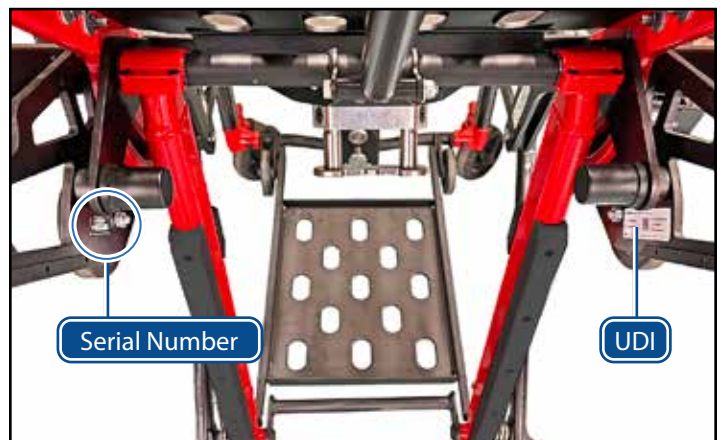


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## Unique Device Identification (UDI)



# 1 - SAFETY INFORMATION

## 1.1 Warning

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

**⚠ WARNING**

**Professional use by trained operators only. Maintain control of product and controls. Direct helpers where to grasp to avoid pinch points.**

**Exceeding the load capacity can cause injury and damage. Inspect the product if the load capacity has been exceeded.**

**Use the product only for its intended purpose. Improper use, operation, or maintenance can cause injury. Use, operate and maintain only as instructed.**

**Using the control handle during the unfolding or unloading process prevents the undercarriage from locking and can cause injury to the patient and/or operators. Do not use the control handle when unfolding or unloading the chair cot.**

**An unattended or unrestrained patient can be injured. Always stay with the patient and use patient restraints.**

**Sheets or other objects can interfere or become entangled in mechanisms and cause injury or malfunction. Tuck sheets between the mattress and the patient surface. Keep restraints and other articles above the mattress.**

**Pushing the chair cot by the backrest may cause it to tip and injure the patient and/or operators. Roll the chair cot only by grasping the main frame.**

**Trained operators must consider the environment and terrain before rolling.**

**Improper unloading can cause injury and damage. Guide the chair cot off a high (above load height) ambulance deck and set it on the ground.**

**Improper parts, modifications or items not designed for the product can cause injury. Use only Ferno-approved parts and service. Attach only approved items to the product. Do not modify the product.**

## 1.2 Compliance

When properly installed and used with appropriate Ferno products, the chair cot meets or exceeds the following specifications and standards listed below (\*).

AMD: Ambulance Manufacturer's Division (AMD), National Truck Equipment Association Standard 004, Litter Retention System Static Test.

CAAS: Commission on Accreditation of Ambulance Services Global Vehicle Standard (GVS)

KKK-A-1822 (F): Federal Ambulance Specification KKK-A-1822 revision F.

NFPA 1917: National Fire Protection Association standard.

SAE J3027: Society of Automotive Engineers Recommended Practice, Ambulance Litter Integrity, Retention, and Patient Restraint.

SAE J3043:2014 Ambulance Equipment Mount Device or Systems.

(\* SAE-Compliant version only. The chair cot must be configured for use with the Ferno® iN|LINE® Fastening System. Some areas of Canada follow U.S.A. standards/specifications.

## 1.3 Important

Notices emphasize important, but not hazard-related information. Failure to follow Notices could result in product or property damage.

**NOTICE**

## 1.4 Symbol Glossary

Ferno uses, as applicable, the following safety and regulatory symbols.

Symbol	Definition
	General warning of potential injury
	Pinch point; keep hands clear
	Do not push cot by the backrest
	Do not lubricate
	Remove items from equipment hook before transport
	Consider instructions for use (ISO 7000)
	Refer to instructions for use (ANSI Z535/ISO 3864)
	Two trained operators required
	Lubricate
	Disinfecting
	Cleaning
	Lock
	Unlock
	Load Capacity/Safe Working Load
	Restraint Attachment Point
	Lift here
	Raise (+) or Lower (-)

## 2 - OPERATOR TRAINING

### 2.1 Operator Training

Operators must: read and understand this manual, have the physical ability to assist the patient, be trained on proper product operation, be trained on emergency-medical service and patient-handling procedures, and practice with the product before using it with a patient. Keep training records.

If the ambulance is parked on an uneven surface, the control-end operator (and any trained helpers) may need to lift the product higher than normal to allow the legs to unfold completely and lock.

### 2.2 Daily Operator Duties

Unload the product from the ambulance and inspect it for readiness. Rotate the chair cot in a circle to verify it rolls easily. Fold the chair cot to the floor or ground, then raise the chair cot to the raised position. Convert the chair cot to a chair, and back to a cot.

Load the product into the ambulance and confirm it is secure in the fastening system.

### 2.3 Operator Height and Strength

When unloading the chair cot, the control-end operator must lift and hold the weight of the chair cot, patient, and equipment high enough for the wheels to remain off the ground until the undercarriage legs completely unfold and lock into place (Figure 1).

If the ambulance is parked on an uneven surface, the control-end operator (and any helpers) may need to lift the chair cot higher than normal to allow the legs to unfold completely and lock.

Use additional help as needed to lift the weight of the chair cot, patient and equipment. See page 5.

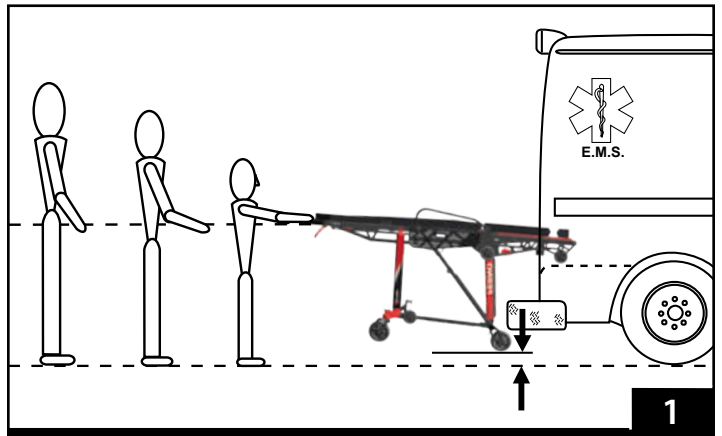
 **WARNING**

**Professional use by trained operators only. Maintain control of product and controls. Direct helpers where to grasp to avoid pinch points. Consider terrain and use a lowered position to minimize potential to tip.**

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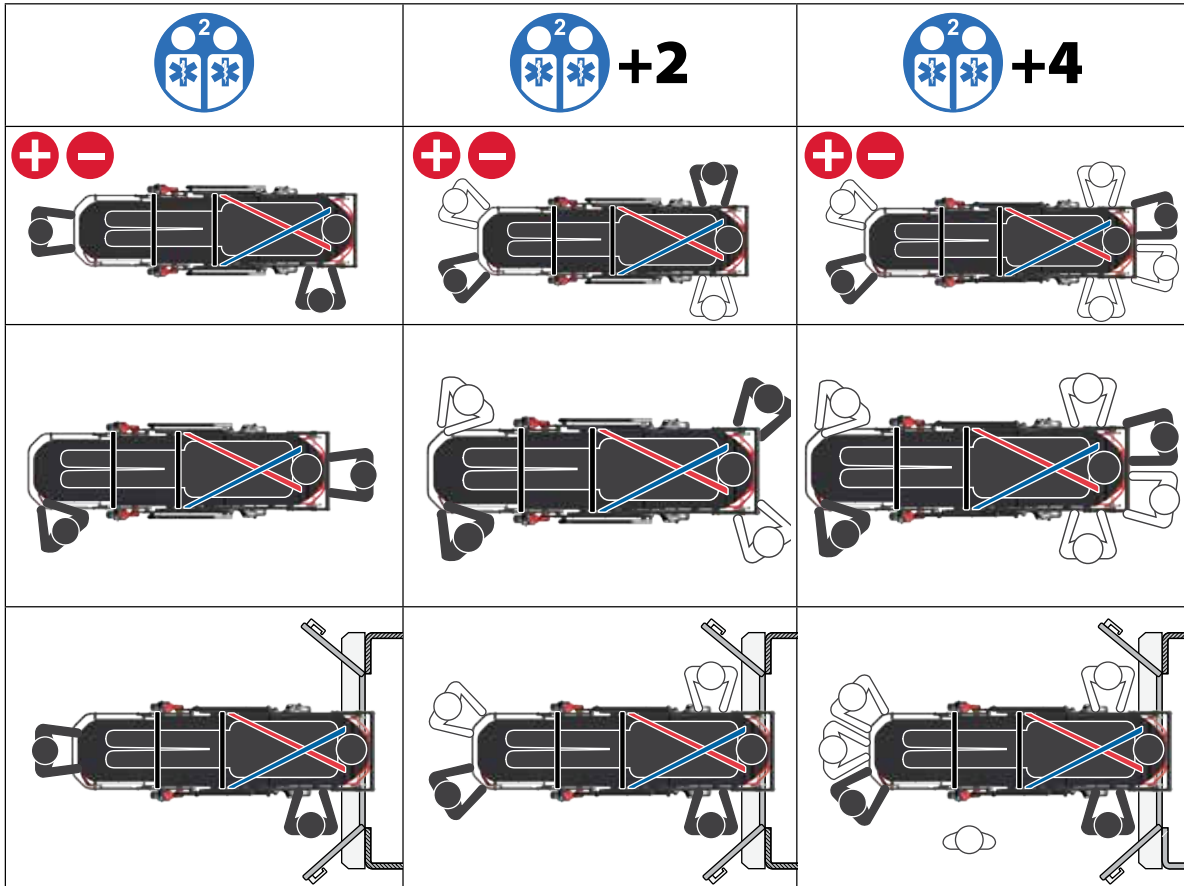


**Exceeding the load capacity can cause injury and damage. Inspect the product if the load capacity has been exceeded.**



## 2.4 Using Additional Help

Operation requires a minimum of two trained operators. Use help when working with heavy loads (patient plus equipment). Trained operators stand at the ends of the product, maintain control of the product, operate the controls, and direct helpers on where to stand and how to grasp the product. Refer to the chart for suggested placement for operators and helpers.



## 3 - ABOUT THE CHAIR COT

### 3.1 Description

The PRO 28Z Chair Cot is an emergency patient-handling device designed to transport a patient in a ground-based ambulance. It 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 chair cot is compatible only with manufacturer-approved restraints and cot fastening systems. Contact your Ferno representative for the most recent cross-compatible chair cot/cot fastening system/patient restraint information.

For SAE compliance, the iN|LINE fastening system is required. The model option for only Model 173 antler-and-rail fastening system does not meet SAE standards.

Your cot may be shipped with accessories per your order. These items are also available separately. See "Accessories" on page 27.

#### FEATURES

- Easy conversion between cot and chair positions
- One intermediate chair position
- Adjustable pneumatic backrest
- Backrest-mounted equipment hook
- 6-inch swivel transport wheels
- Wheel locks (control end)
- Locking mattress
- Set of SAE-compliant patient restraints
- Loading-end scuff guards
- (Optional) Carry handles for control end and sides

#### MODEL OPTIONS

- Chair Cot for use with both the Ferno® iN|LINE® fastening system (Meets SAE standard) and Model 173 fastening systems.
- Chair Cot for use with Ferno® Model 173 (antler and rail) fastening system only.
- Swing-down sidearms or SX Surface Xtenders
- Lower metal tray

#### WARNING

**Use the product only for its intended purpose. Improper use, operation, or maintenance can cause injury. Use, operate and maintain only as instructed.**

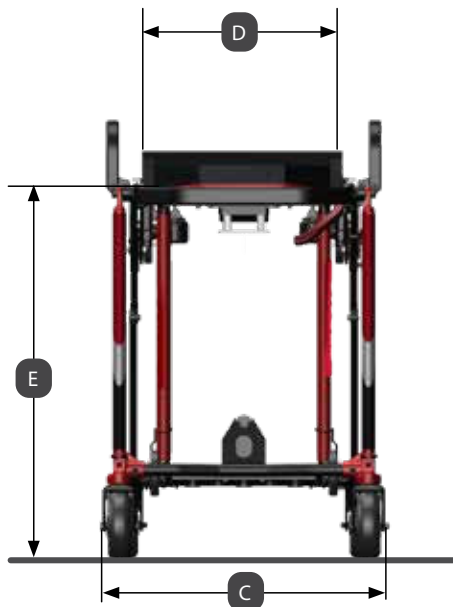
### 3.2 General Specifications

Specifications for the chair cot are shown in the tables. General specifications are rounded. Metric conversions are calculated before rounding the Imperial measurement.

Ferno reserves the right to change specifications without notice. For more information, contact Ferno Customer Relations or your Ferno distributor (page 2).

Cot height is the distance from the ground to the patient surface at the seat panel. Loading height is the distance from the ground to the bottom of the loading wheel.

Weight is without mattress, patient restraints and optional features.



Specifications	Imperial	Metric
Load Capacity	700 lb	318 kg/50 st
Weight	96 lb	43.5 kg
Chair Cot Construction	Aluminum	
Wheels	Sealed, stainless steel; non-conductive wheels	
Mattress	Heat-sealed vinyl exterior with Polyurethane foam pad interior	

Dimensions	Imperial	Metric
<b>Cot Configuration</b>		
A) Wheels (Diam. x Width)	6" x 2"	153 x 52 mm
<b>Length</b>		
Folded	81"	2063 mm
B) Raised	76"	1925 mm
<b>Width</b>		
C) Overall	25"	643 mm
D) Patient Surface	18"	448 mm
<b>Height</b>		
Folded (minimum)	8"	203 mm
E) Raised (maximum)	33"	832 mm
F) Loading height	26"	658 mm
<b>Chair Configuration</b>		
G) Height	54.5"	1384 mm
Width	25"	643 mm
H) Depth	47"	1202 mm

## 4 - FEATURES



## 4.1 Chair/Cot Conversion Handle

The chair/cot conversion handle is located at the loading end of the chair cot (Figure 2). The conversion handle disengages the locking mechanism and adjust the chair cot to any of its three locking positions: cot; intermediate; and chair (Figure 4).

When converting the chair cot, Ferno recommends operating the conversion handle with two hands (Figure 3). One hand may be used if local protocols, operator strength, and patient weight permit.

Before Use:

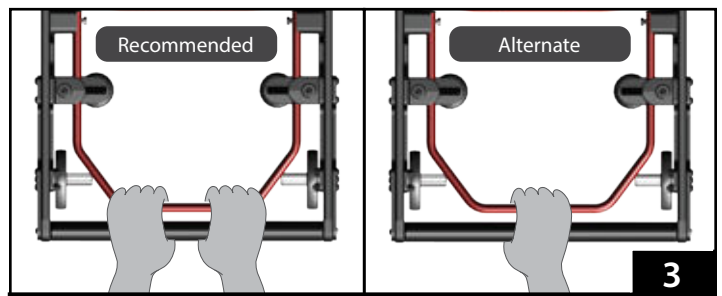
- Loosen the restraints before converting to a cot position.
- Lower the backrest before moving from the cot position to the intermediate or chair position. This prevents the patient's upper body from leaning forward in an uncomfortable angle.

Using the conversion handle:

- **Cot to chair:** Lower the backrest. Exert a little downward pressure on the loading-end crosstube to relieve the load on the lock mechanism, then squeeze the conversion handle (Figure 3) while raising the crosstube until the chair position is reached.
- **Chair to cot:** Exert a little upward pressure on the loading-end crosstube to relieve the load on the lock mechanism, then squeeze the handle (Figure 3) while pushing down on the loading-end crosstube until the cot position is reached.
- **To use the intermediate position:** Follow either of the conversion instructions above, but release the handle when you begin to raise or lower the loading-end crosstube. The lock will engage when the intermediate position is reached.
- **Confirm** the chair cot has locked into the new position and adjust the restraints if needed.

### NOTICE

Before adjusting from the cot to the intermediate or chair positions, lower the backrest to prevent leaning the patient's upper body forward and causing discomfort.



## 4.2 Undercarriage Control Handle

The undercarriage control handle (Figure 5) is located at the control end of the chair cot, at the patient's left side. The control handle disengages the undercarriage lock and allows the chair cot to fold.

- Use the control handle to unlock and fold the legs/undercarriage only when the chair cot is in the cot configuration.
- Do not use the control handle when unfolding the chair cot, or when unloading the chair cot from the ambulance.

### NOTICE

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

Squeezing the control handle when unfolding or unloading the chair cot will prevent the undercarriage from locking. Do not use this control handle when unfolding or unloading the chair cot from an ambulance.

Do not activate the control handle when the chair cot is in the chair or intermediate positions.

### WARNING

Using the control handle during the unfolding or unloading process prevents the undercarriage from locking and can cause injury to the patient and/or operators. Do not use the control handle when unfolding or unloading the chair cot.



## 4.3 Backrest

The backrest adjusts between 0° and 85° to elevate the patient's torso for patient comfort or medical necessity. Follow your local medical protocols when deciding to change positions, and always work from the loading end of the cot.

The gas spring is under pressure to ease raising and lowering. With a heavy patient and equipment, support the backrest while making adjustments. With a light patient, control the upward movement of the backrest so it does not move too quickly.

To adjust the backrest:

1. Unfasten or loosen the patient restraints and remove items from equipment hook.
2. Working from the loading end of the cot, grasp the backrest frame with both hands. Support the weight of the backrest and patient and any equipment on the backrest.
3. Squeeze either red control handle toward the backrest frame to unlock the backrest (Figure 6), then raise or lower the backrest to the desired position.
4. Release the control handle to lock the backrest at the new position.
5. Fasten and adjust the patient restraints.



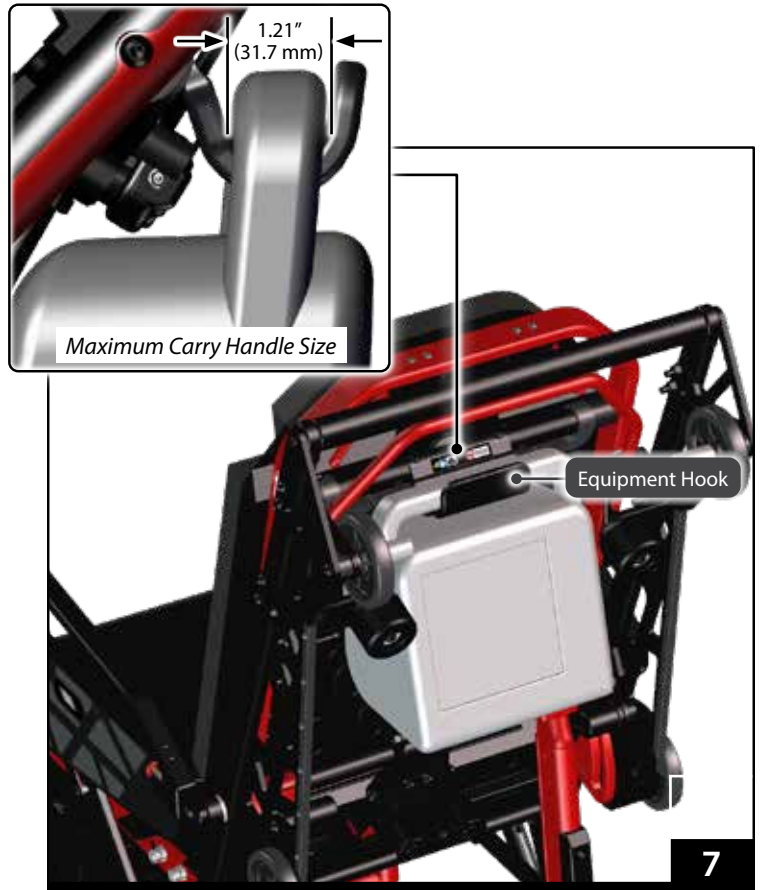
### 4.4 Equipment Hook

The backrest-mounted equipment hook is capable of holding equipment, bags, etc. weighing up to 50 lb (22 kg) with a maximum 1.21" (31.7 mm) diameter carry handle (Figure 7).

The equipment hook does not secure items during transport in an ambulance. Remove items from the equipment hook before transport.

Only use equipment that fits properly into the equipment hook.

1. Raise the backrest to access the equipment hook.
2. Set the carry handle of the equipment in the hook. Verify the equipment is stable in the hook.
3. Remove equipment from the hook prior to transport inside a motor vehicle. For transport of equipment inside a motor vehicle, secure only to a crash-stable equipment holder designed for this purpose.
4. Remove equipment from the hook before lowering the backrest.



### 4.5 Wheel Locks (Control End)

The two wheel locks help keep the chair cot from rolling during patient transfer and certain medical procedures. Wheel locks are on the control-end transport wheels only (Figure 8).

To lock, press the lever down.

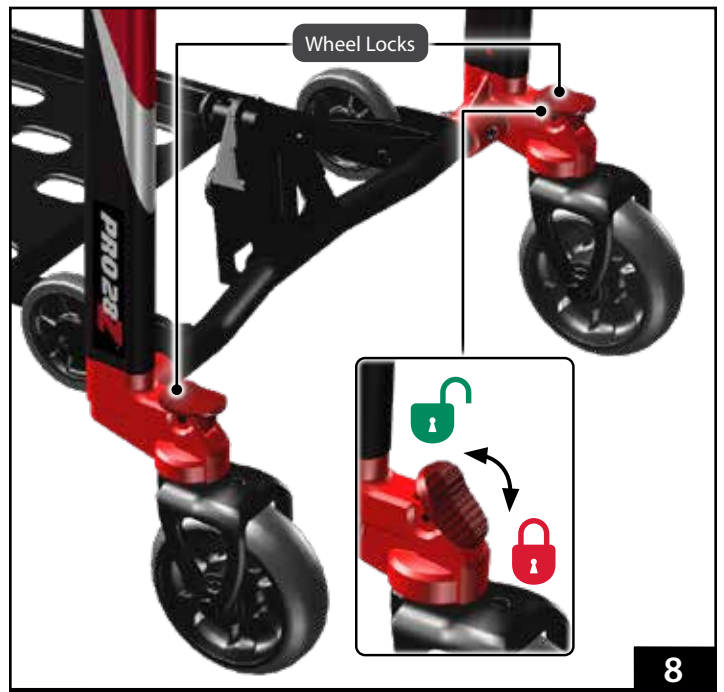
To unlock, press the opposite end of the lever.

NOTICE

Wheel locks are not a substitute for operator control. The operators must remain with the cot and keep control of it at all times. Do not leave the patient unattended.

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Wheel locks are not brakes. Do not use wheel locks to slow a moving cot.



## 4.6 Swing-Down Sidearms

The swing-down sidearms provide patient security and comfort.

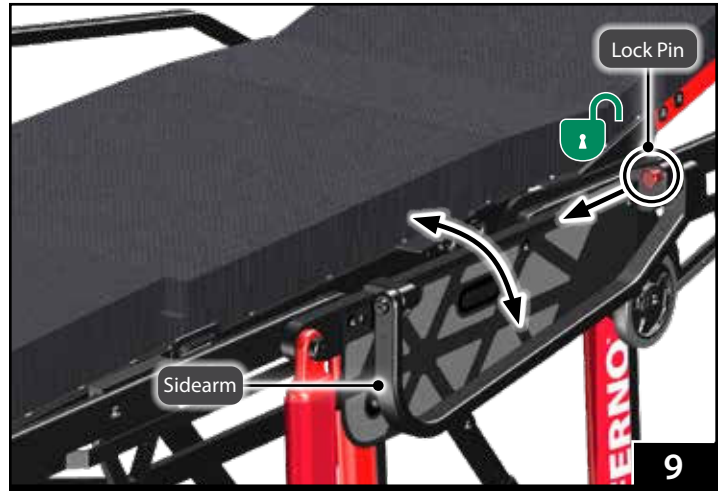
**To Lower:** Pull the lock pin and swing the sidearm down (Figure 9).

**To Raise:** Swing the sidearm up until it locks in place.

Do not use the sidearms to lift the chair cot. Grasp only the main frame or optional lift handles when lifting.

### NOTICE

Sidearms are not designed for lifting. Lift the chair cot by grasping the loading-end crosstube, the main frame at the control end, and/or optional lifting handles.



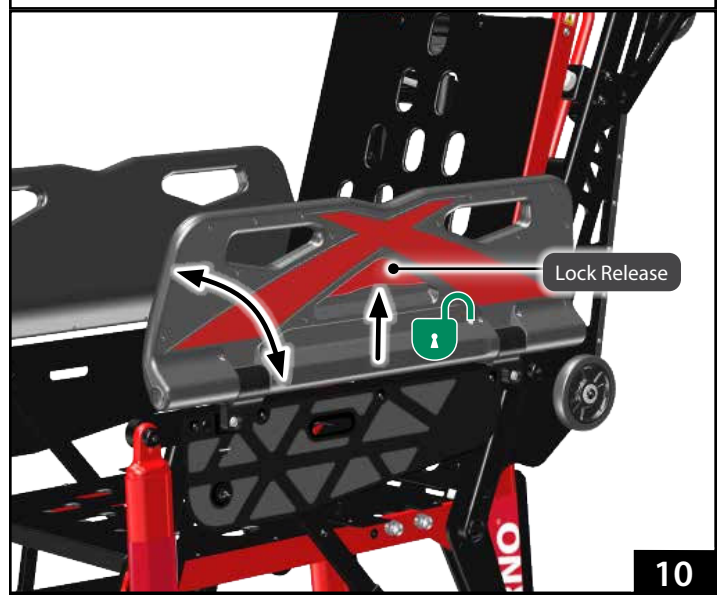
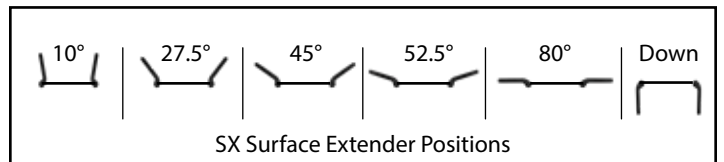
## 4.7 SX Surface Xtender

The SX surface extenders provide added patient security and comfort, and increase the width of the patient surface for large patients. They also provide a location to place a patient's arm to start an IV. Each side locks individually. There are five locking positions and an unlocked, 'down' position (Figure 10).

**To raise the SX:** Rotate the SX up until it locks at the desired position. There is no need to use the lock release. The SX will ratchet upward, locking in each position.

**To lower the SX:** Lift up the SX slightly to take the weight off the locking mechanism. Squeeze the red lock release (Figure 10) and lower the SX to the desired position.

**Note:** The SX has a safety feature which prevents the release mechanism from being overloaded. If the release is operated while there is weight on the SX, the lock will not release. Lift up on the SX to assume the weight and release the lock before lowering.



### 4.8 Locking Mattress

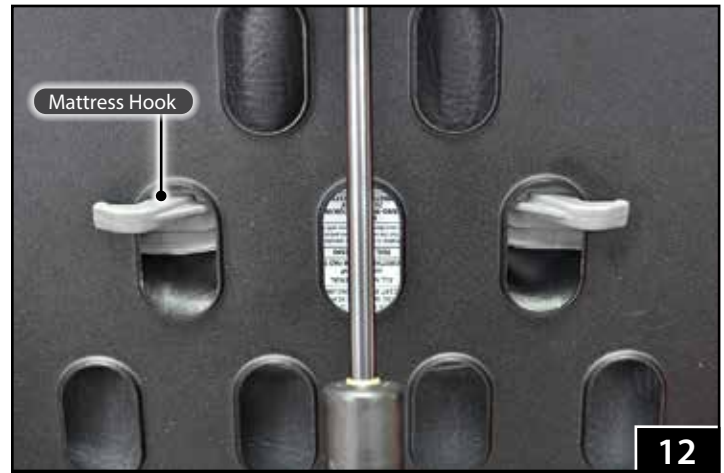
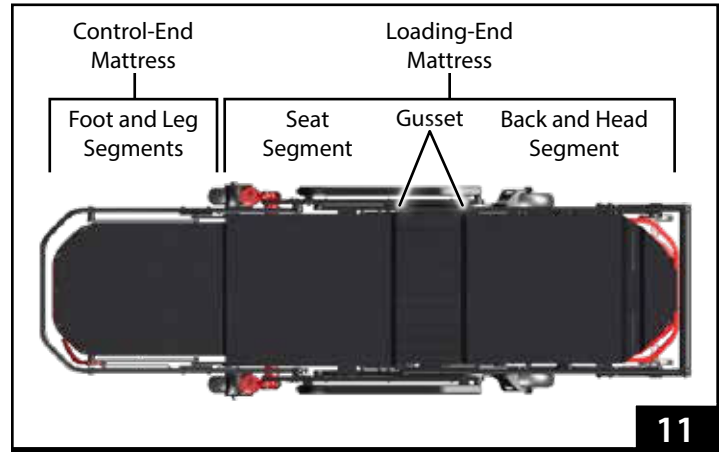
The two-piece mattress is designed with articulated segments that conform to the chair cot in all positions (Figure 11).

Hooks on the underside of each mattress anchor it to the chair cot for easier patient transfer (Figure 12). The head segment is secured with hook-and-loop fastener.

Attach the gusset segment first (Figure 11). This positions the upper mattress properly for attaching the seat and back segments.

To attach a mattress, align the mattress segments with their matching bed panels, then feed the hooks through the bed-panel holes. Press down on the head segment to affix the hook-and-loop fastener.

To remove a mattress, slide one hand under the mattress and apply gentle upward pressure as you use your other hand to slide the hooks from the bed-panel holes. Lift up on the head segment to detach the hook-and-loop fastener.



### 4.9 Lower Tray

The lower metal tray is affixed between the legs and transport wheels (Figure 13). It is designed to hold equipment, patient effects, and light objects totaling less than 50 lb (22 kg).

Include the weight of items placed on the tray when calculating the total load on the chair cot.

Remove objects from the tray before folding the chair cot or loading it into an ambulance.



## 5 - USING THE CHAIR COT

### 5.1 General Guidelines for Use

Medical advice is beyond the parameters of this manual. It is the operators' responsibility to ensure safe practices for the patient and themselves.

A minimum of two trained operators is required.

Operators must:

- Work together and maintain control of the product at all times. Communicate with one another and use coordinated movements to operate the product.
- Select and use appropriate, compatible patient restraints to secure the patient on the product.
- Loosen patient restraints before converting from a chair or intermediate position to a cot position.
- Use additional trained helpers as needed. See page 5.
- Follow standard emergency patient-handling procedures when operating the chair cot.
- Operators must stay with the patient at all times.
- When changing chair cot positions or loading/unloading, verify that the undercarriage has locked into the new position.
- Read the fastening system users' manual for instructions on using the fastening system.



### WARNING

**Use the product only for its intended purpose. Improper use, operation, or maintenance can cause injury. Use, operate and maintain only as instructed.**

**An unattended or unrestrained patient can be injured. Always stay with the patient and use patient restraints.**

**Sheets or other objects can interfere or become entangled in the product mechanisms and cause injury or malfunction. Tuck sheets between the mattress and the patient surface. Keep restraints and other articles above the mattress.**



### Load Capacity

Inspect the chair cot if the load capacity has been exceeded. See "Inspecting the Chair Cot" on page 23.

## 5.2 Guidelines for Changing Positions

- Changing positions with a patient on the chair cot requires a minimum of two trained operators who are communicating, working together, and maintaining control of the chair cot at all times.
- Operators stand at opposite ends of the chair cot, using an underhand grip (palms up) to grasp the main frame and loading-end crosstube with both hands.
- Lift the weight of the chair cot off its transport wheels (and locking mechanism) before squeezing the control handle. See "Undercarriage Control Handle" on page 10.
- Be prepared to control the normal downward movement of the chair cot that occurs when the control handle is used.
- When raising, verify the undercarriage has locked at the raised position before releasing your grasp on the frame.
- If local protocols allow, one operator may raise or lower an empty chair cot. For details, refer to the sections for an empty chair cot in this section.

## 5.3 Unfolding the Chair Cot With a Patient

Raising the chair cot from the folded to the unfolded position with a patient on the chair cot requires a minimum of two trained operators who are communicating, working together, and maintaining control of the chair cot at all times.

The Loading-end Operator grasps the loading-end crosstube, not the backrest frame or the chair/cot conversion handle. The backrest frame and conversion handle are not designed for lifting the chair cot.

Do not use the control handle when unfolding the chair cot. Use the control handle only to unlock and fold the legs/undercarriage.

1. **Both Operators:** Stand at opposite ends of the chair cot, facing each other. Grasp the main frame or the loading-end crosstube.
2. Lift the chair cot until the undercarriage unfolds completely and locks in place (Figure 14). Use additional help as needed.
3. Confirm the lock has fully engaged by lifting the chair cot until all four transport wheels are off the ground (Figure 14). This allows the lock to fully engage if it has not already done so.
4. Set the chair cot down.

### NOTICE

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

After unfolding the chair cot, lift the chair cot until all four wheels are off the ground. This allows the locking mechanism to fully engage if it has not already done so.

When lifting the chair cot, the loading-end operator grasps the loading-end crosstube. Do not grasp the backrest frame to lift the chair cot. The backrest is not designed for lifting.

### WARNING

Using the control handle during the unfolding or unloading process prevents the undercarriage from locking and can cause injury to the patient and/or operators. Do not use the control handle when unfolding or unloading the chair cot.



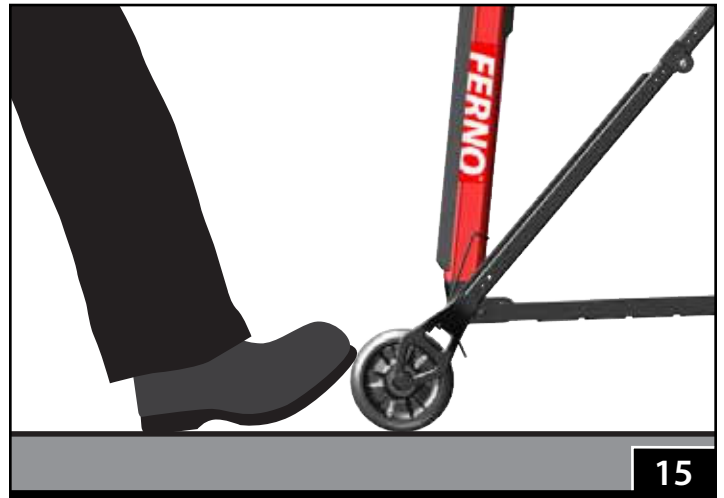
## 5.4 Folding the Chair Cot With a Patient

It is rarely necessary to fold the chair cot with a patient on it, but if needed, the operators will require a third person as a trained helper. To fold the chair cot with a patient on it:

1. **Both Operator:** Verify all patient restraints are fastened and face each other at opposite ends of the chair cot with hands in the lifting position.
2. **Trained Helper:** Stand beside the chair cot near the loading end. Place one foot firmly against the nearest transport wheel (Figure 14). Prevent the undercarriage from rolling forward when the operators begin folding it.
3. **Both Operators:** Lift the weight of the chair cot slightly off the transport wheels.
4. **Control-end Operator:** Squeeze the undercarriage control handle.
5. **Both Operators:** Roll the chair cot slightly toward the control-end operator.
6. **Helper:** As soon as the undercarriage begins to fold, step away from the chair cot.
7. **Both Operators:** Continue lowering the chair cot until the undercarriage folds completely.

### NOTICE

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



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## 5.5 Empty Chair Cot: Folding/Unfolding With One Operator

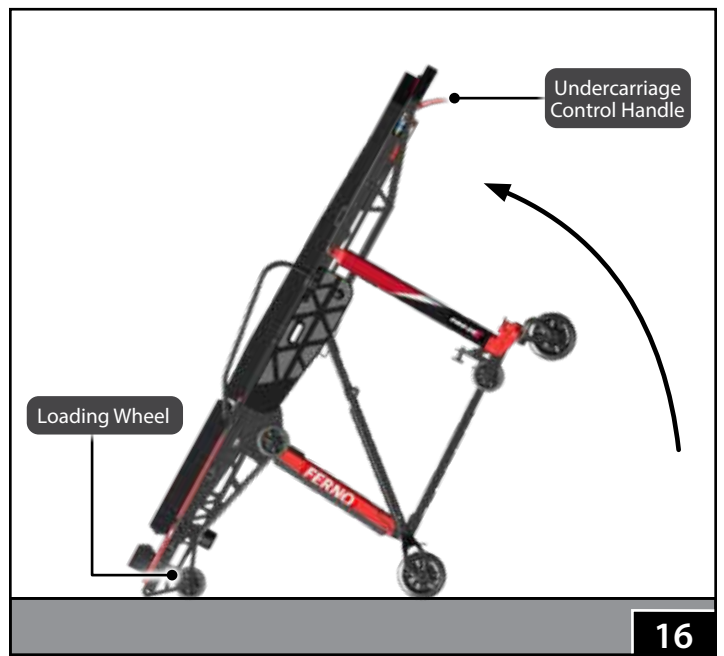
If permitted by local protocols, and when there is no patient on the chair cot, it may be folded and unfolded by one operator.

To fold the empty chair cot:

1. Tip the chair cot onto its loading wheels (Figure 15).
2. Grasp the corners of the control-end main frame, squeeze the undercarriage control handle, and fold the chair cot.

To unfold the empty chair cot:

1. Grasp the corners of the control-end main frame and raise the control end of the chair cot until it tips onto its loading wheels and the undercarriage unfolds completely and locks into place (Figure 15).
2. Set the chair cot onto its four transport wheels.



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## 5.6 Transferring the Patient Onto the Cot

1. Choose the raised or lowered position and place the chair cot next to the patient.
2. Lock the wheel locks, lower the sidearms and unbuckle the patient restraints. Arrange the straps so they will not interfere with transferring the patient onto the chair cot.
3. Transfer the patient onto the chair cot using approved emergency medical procedures and following your local protocols.
4. Adjust the backrest and raise the sidearms.
5. Fasten and adjust the patient restraints. See "Securing a patient" on page 25.
6. Before moving the chair cot or changing its position, make sure sheets and other articles will not interfere with chair cot operation.
7. Unlock the wheel locks.

### **WARNING**

**Sheets or other objects can interfere or become entangled in mechanisms and cause injury or malfunction. Tuck sheets between the mattress and the patient surface. Keep restraints and other articles above the mattress.**

## 5.7 Transferring the Patient Onto the Chair

1. Convert the chair cot to the chair position and place the chair cot near the patient.
2. Lock the wheel locks.
3. Unbuckle the patient restraints and arrange the straps so they will not interfere with transferring the patient onto the chair cot.
4. Assist the patient into the chair cot using approved emergency medical procedures and following your local protocols.
5. Fasten and adjust the patient restraints.
6. Before changing the chair cot position or rolling the chair cot, make sure sheets and other articles will not interfere with operating the chair cot.
7. Unlock the wheel locks.

## 5.8 Rolling the Cot and Chair

### GENERAL GUIDELINES

- Rolling the chair cot with a patient on it requires a minimum of two trained operators who are communicating, working together, and maintaining control of the chair cot at all times.
- Roll the chair cot on smooth, unobstructed surfaces whenever possible.
- Do not push the chair cot using the backrest. Roll the chair cot only with both hands grasping the chair cot main frame or loading-end crosstube.
- Use additional trained helpers as needed to safely control the weight of the patient and chair cot. See page 5.

### ROLLING AS A COT

1. **Control-End Operator:** Grasp the main frame and pull the chair cot (Figure 17). Keep both hands on the main frame.
2. **Loading-End Operator:** Stand at the loading end of the chair cot, grasp the loading-end crosstube, and help guide and roll the chair cot (Figure 17).
3. **Trained Helpers:** Position the trained helpers at the corners or sides of the chair cot. See page 5.

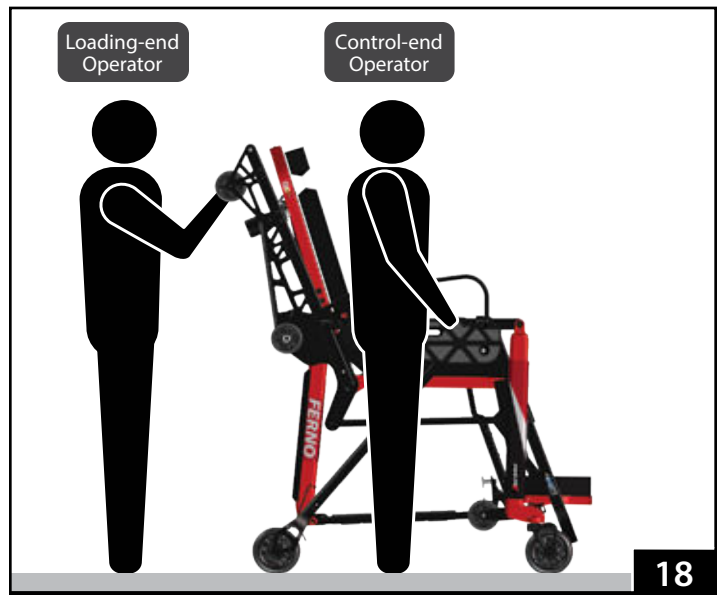
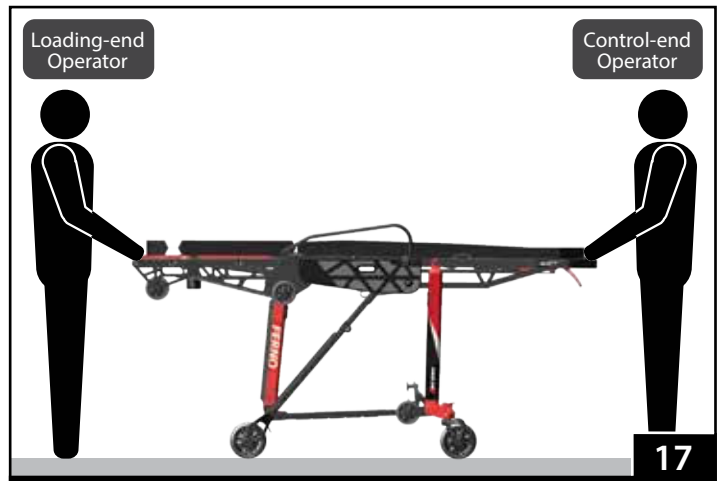
### ROLLING AS A CHAIR

1. **Loading-End Operator:** Grasp the loading-end crosstube and push and steer the chair cot (Figure 18).
2. **Control-end Operator:** Stand at the side of the cot, grasp the main frame and assist rolling (Figure 18).

### WARNING

Pushing the chair cot by the backrest may cause it to tip and injure the patient and/or operators. Roll the chair cot only by grasping the main frame.

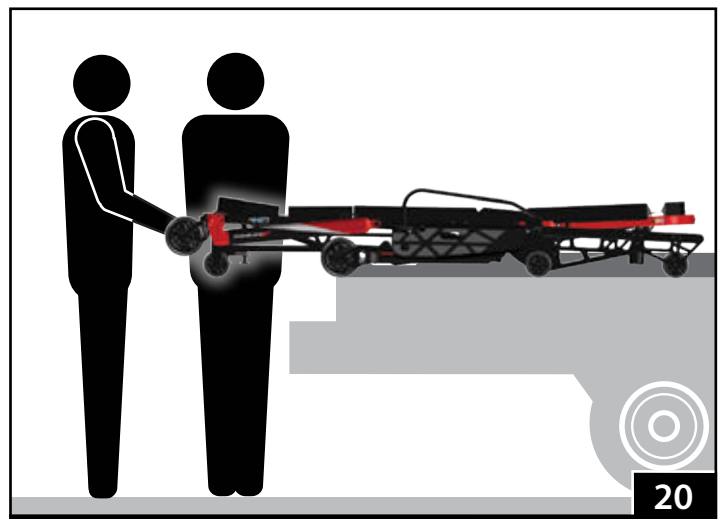
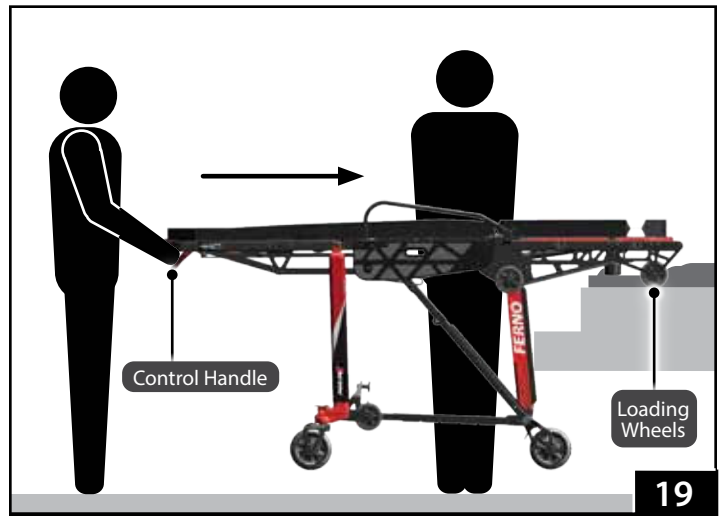
Trained operators must consider the environment and terrain before rolling.



## 5.9 Loading the Chair Cot

Loading the chair cot into an ambulance with a patient on it requires a minimum of two trained operators who are communicating, working together, and maintaining control of the chair cot at all times. Use additional trained helpers as needed. See page 5.

1. **Both Operators:** Raise the ambulance folding bumper, if present and roll the chair cot to the patient compartment door.
  2. **Both Operators:** Convert the chair to a cot if needed. See "Chair/Cot Conversion Handle" on page 9.
  3. **Both Operators:** Align the chair cot with, and keep it parallel to, the ambulance side walls. Push the chair cot into the ambulance until both loading wheels are on the ambulance floor and the chair cot loading-end legs contact the vehicle bumper (Figure 19).
  4. **Loading-end Operator:** Verify both loading wheels are securely on the ambulance floor.
  5. **Control Operator:** Lift the chair cot until the transport wheels are off the ground, then squeeze the control handle (Figure 18) and push the chair cot completely into the ambulance (Figure 20). The undercarriage will fold as the chair cot is pushed into the ambulance (Figure 20).
- Loading-end Operator:** Assist pushing the chair cot into the ambulance and guiding it into the fastening system.
6. **Control Operator:** Release the control handle.
  7. **Either Operator:** Secure the chair cot in the fastening system. Lower the ambulance folding bumper.



## 5.10 Unloading the Chair Cot

Unloading the chair cot from an ambulance with a patient on it requires a minimum of two trained operators who are communicating, working together, and maintaining control of the chair cot at all times. Use additional help as needed. See page 5.

Do not use the control handle when unloading the chair cot from the ambulance. Use the control handle only to unlock and fold the legs/undercarriage.

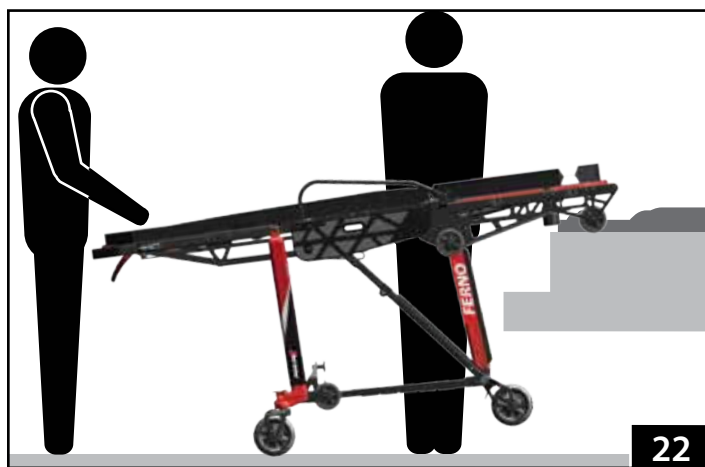
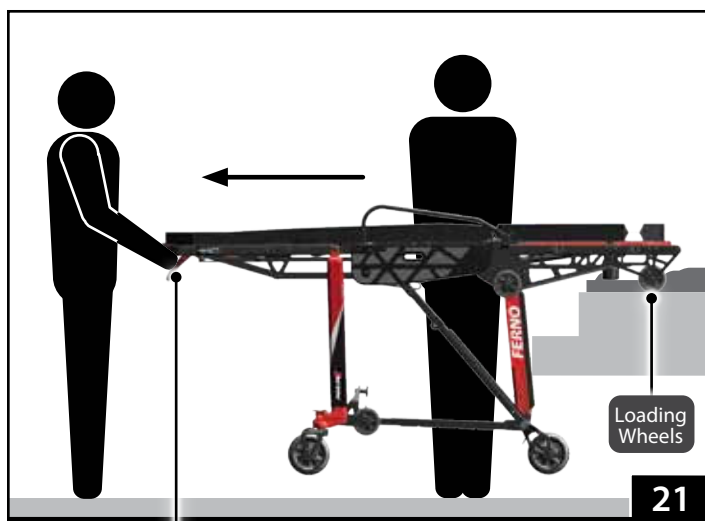
1. **Either Operator:** Raise the ambulance folding bumper, if present, and release the chair cot from the fastening system.
2. **Control-end Operator:** Grasp the control-end main frame and begin pulling the chair cot out of the ambulance. **DO NOT** squeeze the undercarriage control handle. Keep the loading wheels on the ambulance floor (Figure 21). The undercarriage will begin to unfold. As you roll the chair cot out of the ambulance in the following steps, do the following:
  - Keep the chair cot level with the ambulance floor and parallel with the ambulance side walls.
  - Provide balance, support the load, and confirm that the undercarriage legs lock.
3. **Loading-end Operator:** Stand at the patient compartment door and make sure the loading wheels remain securely on the ambulance floor.
4. **Control Operator:** Raise the control end of the chair cot high enough for the undercarriage to unfold completely and lock into place (Figure 21).
 

**Loading-end Operator:** When the undercarriage has unfolded, verify that it has locked into place and communicate this to the control-end operator.
5. **Control Operator:** Lower the control-end of the chair cot until all four transport wheels are on the ground.
6. **Both Operators [high ambulance deck]:** If all four wheels are not on the ground after the undercarriage lock is engaged, use additional help as needed to guide the chair cot off the ambulance deck and set it on the ground (Figure 22).
7. **Both Operators:** Roll the chair cot away from the ambulance.
8. **Either Operator:** Lower the ambulance folding bumper.

### WARNING

Using the control handle during the unfolding or unloading process prevents the undercarriage from locking and can cause injury to the patient and/or operators. Do not use the control handle when unfolding or unloading the chair cot.

Improper unloading can cause injury and damage. If the ambulance deck is above load height, guide the chair cot off the ambulance deck and set it on the ground.



## 5.11 One Operator Loading/ Unloading An Empty Chair Cot

If permitted by local protocols, one trained operator may load an empty chair cot into and an ambulance or unload it from the ambulance.

### ONE-OPERATOR LOADING

1. Raise the ambulance folding bumper.
2. Roll the chair cot to the open doors of the ambulance patient compartment, aligning the chair cot with the fastening system. Push the chair cot into the ambulance until both loading wheels are on the ambulance floor and the chair cot loading-end legs contacts the vehicle bumper.
3. Lift the chair cot until the transport wheels are off the ground, then squeeze the control handle and push the chair cot completely into the ambulance.
4. Release the control handle.
5. Secure the chair cot in the fastening system.
6. Lower the ambulance folding bumper.

### ONE-OPERATOR UNLOADING

Do not use the control handle when unloading the chair cot from the ambulance. Use the control handle only to unlock and fold the legs/undercarriage.

1. Raise the ambulance folding bumper and release the chair cot from the fastening system.
2. Grasp the control-end main frame and begin pulling the chair cot out of the ambulance. **DO NOT** squeeze the undercarriage control handle. Keep the loading wheels on the ambulance floor.
3. Raise the control end of the chair cot high enough for the undercarriage to unfold completely and lock into place.
4. Lower the control end of the chair cot until all four transport wheels are on the ground.
5. **[High Ambulance Deck]:** If all four wheels are not on the ground after the undercarriage lock is engaged, move to the loading end of the chair cot, or use additional help as needed to guide the chair cot off the ambulance deck and set it on the ground.
6. Finish rolling the chair cot out of the ambulance.
7. Lower the ambulance folding bumper.
8. Roll the chair cot away from the ambulance.

### WARNING

Using the control handle during the unfolding or unloading process prevents the undercarriage from locking and can cause injury to the patient and/or operators. Do not use the control handle when unfolding or unloading the chair cot.

Improper unloading can cause injury and damage. If the ambulance deck is above load height, guide the chair cot off the ambulance deck and set it on the ground.



## 6 - MAINTENANCE

### 6.1 Maintenance Schedule

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

Keep maintenance records. For a sample record sheet, see "Maintenance Record" on page 31.

When using maintenance products, follow the manufacturers' directions and read the manufacturers' material safety data sheets.

### 6.2 Service Life

Factors affecting product service life include frequency of use, local environment (temperature, humidity, etc.); maintenance (adherence to the inspection and maintenance schedule); and other factors. Follow the disinfecting, cleaning, and inspection procedures in this manual to ensure long life for the product.

### 6.3 Bloodborne Disease Notice

To reduce the risk of exposure to blood or other potentially infectious materials when using the chair cot, follow the disinfecting and cleaning instructions in this manual.

### 6.4 Disinfecting and Cleaning

Remove the mattress and restraints as needed. Refer to the restraint users' manuals to disinfect and clean restraints. Reattach mattress and restraints only when clean and dry. Inspect all items for damage while disinfecting and cleaning.



Wipe all surfaces with disinfectant. Follow the disinfectant manufacturer's instructions for application method and contact time.



Hand clean with warm water and a mild detergent. Rinse with warm, clear water. Dry with a towel or allow it to air-dry.

### 6.5 Waxing the Chair Cot

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

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

#### WARNING

**Improper parts, modifications or items not designed for the product can cause injury. Use only Ferno-approved parts and service. Attach only approved items to the product. Do not modify the product.**

Minimum Maintenance	Each Use or Daily	As Needed	Monthly
Daily Operator Duties (page 4)	•		
Disinfecting (this page)	•		
Cleaning (this page)		•	
Waxing (this page)		•	
Inspecting (page 23)		•	•
Lubricating (page 23)		•	

#### NOTICE

Do not use disinfectants or cleaners containing phenolics or iodines. If bleach is used, rinse with plenty of clear water to remove bleach residue.

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

Do not immerse restraint metal buckles or slide bars in liquids or by washing-machine action. See the restraint users' manuals.

Lubricating parts that should not be lubricated allows dirt and foreign particles to collect on those parts, resulting in damage.

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 23.

## 6.6 Inspecting the Chair Cot

A basic inspection is recommended at the beginning of each operator shift. See page 4.

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

If inspection shows damage or excessive wear, remove the chair cot from service until repair is made. See "Parts and Service" on page 28.

### Inspection Checklist

- Are all components present, in good condition, and free of excessive wear?
- Are all screws, nuts, bolts, rivets, and roll pins securely in place?
- Inspect for metal fatigue, cracks, or damage throughout the cot.
- Do all moving parts operate smoothly and properly?
- Does the undercarriage lock function properly?
- Does the chair/cot conversion bar lock function properly?
- Does the chair cot load and unload properly?
- Does the chair cot roll smoothly?
- Do the wheels have some tread?
- Do the wheel locks engage properly and stop wheel rotation?
- Are the patient restraints properly installed?
- Is patient-restraint webbing in good condition with no cuts or frayed edges?
- Are patient-restraint buckles free of visible damage and do they operate properly?
- Is the ambulance properly prepared for the chair cot with an approved Ferno fastening system installed?
- Do installed accessories operate properly without interfering with chair cot operation?

### NOTICE

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.

## 6.7 Lubricating the Chair Cot

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






There are two identical lubrication points, located on opposite sides of the chair at the main hinge (Figure 24). Apply one or two drops of lubricant inside the opening, then work the chair cot through alternating chair and cot positions a few times to distribute the lubricant.

After applying lubricant, wipe off excess.

### LUBRICATION POINTS

1. Main hinge WRL-191S, E-Z-1, or SAE 30-weight oil (1-2 drops)

### LUBRICATION-FREE ITEMS

- |  |                  |
|--|------------------|
|  Transport wheels               | Do not lubricate |
|  Loading wheels                 | Do not lubricate |
|  Control mechanism              | Do not lubricate |
|  Chair/cot conversion mechanism | Do not lubricate |
|  Control handles                | Do not lubricate |



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## 6.8 Patient Restraints

Attach all patient restraints with the buckles at the same side for operator convenience and efficiency. Attach the shoulder strap male buckles/tangs to the backrest crosstube.

When attaching the shoulder restraints, match the color-coded straps to the posts on the cot.

If you have difficulty attaching the brackets to the posts, stand on the opposite side of the cot from the post. Pull upward and toward yourself to attach the bracket to the post.

### SHOULDER AND PELVIC RESTRAINTS

Each shoulder and pelvic strap attaches to the chair cot with a bracket-and-post system (Figure 25).

1. Locate the restraint post with the color-coded label identifying the location of a blue, red or black restraint.
2. The shoulder straps with the male buckle/tang pass through slots in the mattress and openings in the backrest and attach to posts mounted to a backrest crosstube (Figure 26).
3. Orient the bracket with the bend facing the center of the chair cot, and with the webbing up.
4. Slide the bracket over the post and pull the bracket upward to seat the post in the small end of the bracket (Figure 25).
5. Verify the brackets are seated on the posts and the strap is not twisted.
6. Keep restraints buckled when not in use.

### TWO-PIECE LEG RESTRAINT

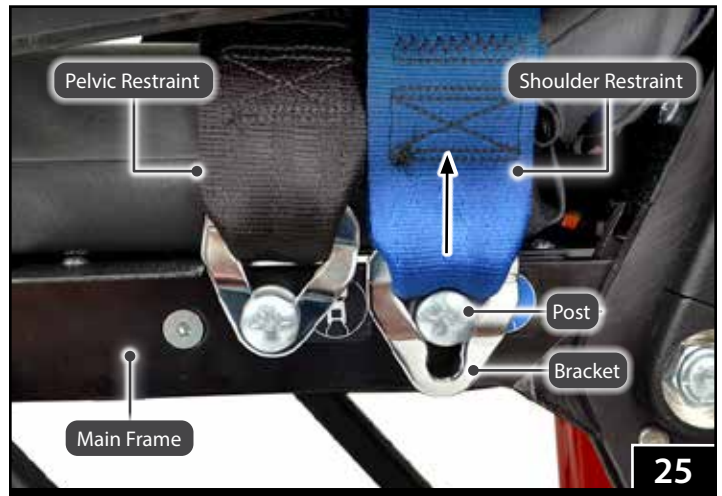
1. Unbuckle the restraint and separate the straps.
2. Wrap the loop end of a strap around the designated attachment point on the chair cot patient surface.
3. Thread the male buckle/tang or female buckle/receiver through the loop and pull the webbing through the loop until the loop is snug around the attachment point (Figure 27).
4. Repeat Steps 2 and 3 to attach the other strap to the selected attachment point on the opposite side of the chair cot.

### REMOVING THE RESTRAINTS

1. Unbuckle the patient restraints.
2. To detach shoulder and pelvic straps, press the brackets down toward the cot main frame to unseat the post from the bracket, then remove the bracket from the post.
3. To remove the leg restraint, unbuckle the restraint. Feed the buckle (or tang) through the loop, and remove the loop from the chair cot.

## WARNING

An unattended or unrestrained patient can be injured. Always stay with the patient and use patient restraints.



### SECURING A PATIENT

To secure a patient on the cot (Figure 28):

1. Unbuckle the shoulder, pelvic, and leg restraints and position the straps out of the way.
2. Transfer the patient onto the chair cot following local protocols. Adjust the backrest and restraint length as needed.
3. Lay the red and blue shoulder straps over the patient's shoulders and attach them across the patient's chest in an X-formation.
4. Fasten the pelvic restraint across the patient's pelvis.
5. Fasten the leg restraint over the patient's legs.
6. Adjust the restraints so they are snug on the patient.

### ADJUSTING A RESTRAINT

Loosen all restraints before converting from a chair or intermediate position to a cot position.

To lengthen a strap, unbuckle the restraint. Grasp the male buckle/tang and turn it perpendicular to the webbing and pull outward, away from the strap attachment point until the strap is the desired length.

To shorten a strap, grasp the hemmed tab and pull the webbing through the male buckle/tang until the strap is the desired length.



## 6.9 Adjusting Tension of the Backrest Control Handle

The cable attached to the backrest control handle may require occasional adjustment to retain proper function.

If the backrest lowers without operating the control handle, the cable is too tight. Decrease tension on the cable.

If the backrest does not lower when the control handle is used, or lowers too slowly, the cable is too loose. Increase tension on the cable.

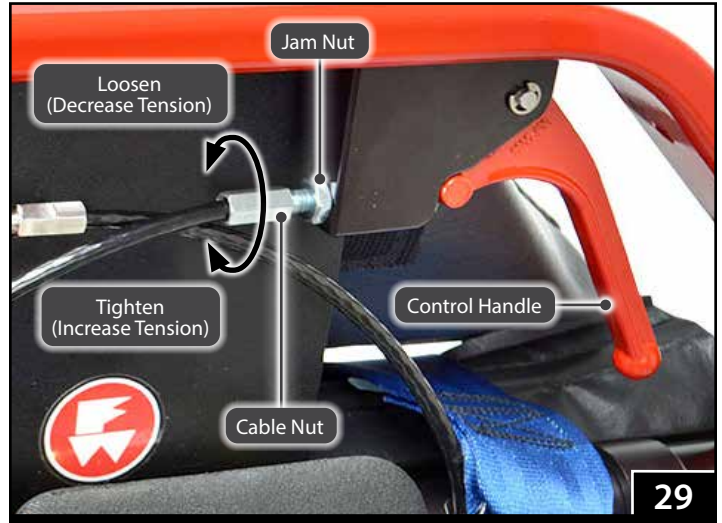
### ADJUSTING THE CABLE TENSION

Follow the same procedure for each control handle (Figure 27).

1. Use a 7/16"/11 mm wrench to loosen the jam nut.
2. While using the 7/16" or 11 mm wrench to prevent the jam nut from rotating, use a 5/16"/ 8 mm wrench to rotate the cable nut until the control handle functions properly. As viewed from the top of the assembly (where the cable attaches to the assembly):
  - Rotate the cable nut counterclockwise to loosen or decrease the tension of the cable.
  - Rotate the cable nut clockwise to tighten or increase the tension of the cable.
3. Tighten the jam nut.
4. Test the backrest and confirm proper function. Repeat the steps above if further adjustment is needed. Contact Ferno if repair is needed. See page 2 .

### NOTICE

Improper adjustment can damage the mechanism. Loosen the jam nut before adjusting the cable nut.



## 7 - INITIAL SETUP

### 7.1 Ambulance Information

The ambulance bumper extension should not exceed 356 mm (14"). The patient compartment should have a level floor large enough for the fully-lowered cot, and a compatible Ferno fastening system installed (not included).

### 7.2 Restraints, Mattress, Accessories

Before placing the cot in service, assign appropriate personnel to install the mattress, patient restraints, and any accessories shipped with the cot. Keep restraint and accessory users' manuals with this manual for future reference. For additional free manuals, contact Ferno (page 2).

A set of patient restraints is provided. Attach patient restraints only as instructed in this manual. See "Patient Restraints" on page 24.

#### WARNING

**Improper parts, modifications or items not designed for the product can cause injury. Use only Ferno-approved parts and service. Attach only approved items to the product. Do not modify the product.**

#### NOTICE

Loose items and debris on the patient compartment floor can interfere with the operation of the product with the fastening system. Keep the patient compartment floor clear.

## 8 - ACCESSORIES

Ferno offers a full line of accessories approved for use with the chair cot. Follow all instructions in accessory users' manuals. Keep the instructions with this manual.

When using accessories, be aware of any special considerations such as doorway heights and widths, or other factors which may be affected by the addition of the accessory/accessories to the chair cot.

Contact Ferno Customer Relations (page 2) or your Ferno distributor for product information.

Description	Part Number
Auxiliary Lifting Handles, Short	082-2137
Backrest Storage Pouch	037-4907
Lower Metal Tray	082-2494
Sto-Net	082-2501
274-S PacRac™ Instrument Platform	081-8952

#### WARNING

**Improper parts, modifications or items not designed for the product can cause injury. Use only Ferno-approved parts and service. Attach only approved items to the product. Do not modify the product.**

Restraints	Number
Restraints, set, X-Restraint system	082-2489
Restraint, pelvic only, 2-piece w/brackets, black	031-4196
Restraint, shoulder only, 2-piece w/brackets, red	031-4197
Restraint, shoulder only, 2-piece w/brackets, blue	031-4198
Restraint, legs, 2-piece, black, 5' (1524 mm)	031-3892

Pediatric Restraint Systems	Number
Pedi-Mate® PLUS 4.5-45.4 kg / 10-100 lbs	031-4115
NeoMate 2.3-6.4 kg / 5-14 lbs	031-4116
Kangoofix 1.6-5 kg / 3.5-11.1 lbs	037-4906

## 9 - PARTS AND SERVICE

### 9.1 Ferno Parts and Service

For parts or professional repair, contact your Ferno distributor, Ferno Customer Relations, or visit our website for a list of Authorized Service providers.

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

Information [www.ferno.com](http://www.ferno.com)  
Authorized Service [ferno.com/service-and-support](http://ferno.com/service-and-support)

U.S., Canada	1.877.733.0911
International	Country Code +1.937.382.1451
Fax	1.888.388.1349

### WARNING

**Improper parts, modifications or items not designed for the product can cause injury. Use only Ferno-approved parts and service. Attach only approved items to the product. Do not modify the product.**

### 9.2 Parts List

No.	Description	Kit
1	Transport Wheel	090-6031
2	Wheel Lock Pedal	090-6033
3	Wheel Lock	090-6034
4	Sidearm, Fold-Down (pair)	082-2495
	Sidearm, Fold-Down (patient-right only)	090-6082
	Sidearm, Fold-Down (patient-left only)	090-6083
5	Patient Surface Panel, Seat	090-6069
6	Seat Panel Finger Guard	090-6074
7	Patient Surface Panel, Lumbar	090-6068
8	Patient Surface Panel, Backrest	090-6067
9	Bumpers, Backrest (Pair)	090-6075
10	Loading Wheel, Loading End	090-6063
11	Scuff Strips, Load Frame (Pair)	090-6073
12	Loading Wheel, Mid	090-6065
13	Bumpers, Load Leg (Pair)	090-6072
14	Finger Guard, Side Panel (Pair)	090-6077
15	Scuff Strips, Loading-End Leg (Pair)	090-6125
16	Loading Wheel, Lower Frame	090-6064
17	Mattress (2-Piece Set)	082-2498
18	Mattress (Head Section Only)	031-4205
19	Mattress (Foot Section Only)	031-4204
20	SX Surface Xtender (pair)	082-2497









70 Weil Way  
Wilmington, OH 45177

Aviation

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Military

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Mortuary

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EMS

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Rescue

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