

To Our Valued Ferno Customers:

Ferno Model 175 Series Fastening Systems limit the movement of a Ferno ambulance cot inside the patient compartment of an ambulance. Regular inspection and preventive maintenance are critical to ensuring proper performance of cot fastening systems. Failure to maintain the fastening system puts EMS personnel and patients at risk for injury.

This Ferno Model 175 Series Fastening System Technical Service Bulletin addresses inspection, proper placement, and preventive maintenance of your antler and rail, safety hook, and floor plates, and includes identification of common wear-and-tear issues.

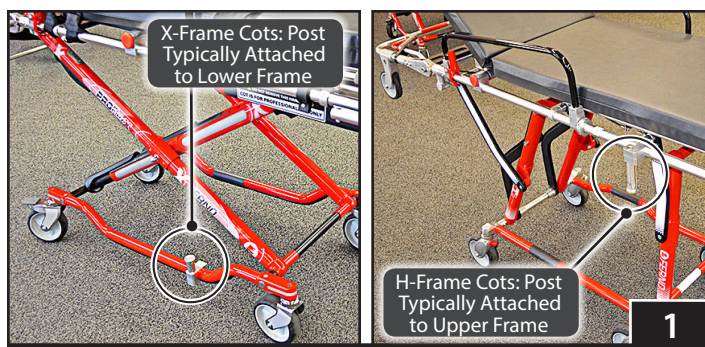
For additional assistance on Ferno Model 175 Series Cot Fastening System preventive maintenance, please contact Ferno Technical Support at 1.877.733.0911, or email to tscoordinator@ferno.com.

Additional copies of this technical service bulletin are available upon request by calling Ferno at 1.800.733.3766.

WARNING

Improper maintenance can cause injury. Maintain the fastening system and cot only as described in each product's users' manual.

This document contains inspection, placement, and related information as a service to EMS personnel. For complete instructions on proper use, maintenance, and operation of Ferno products, refer to the users' and or installation manuals.



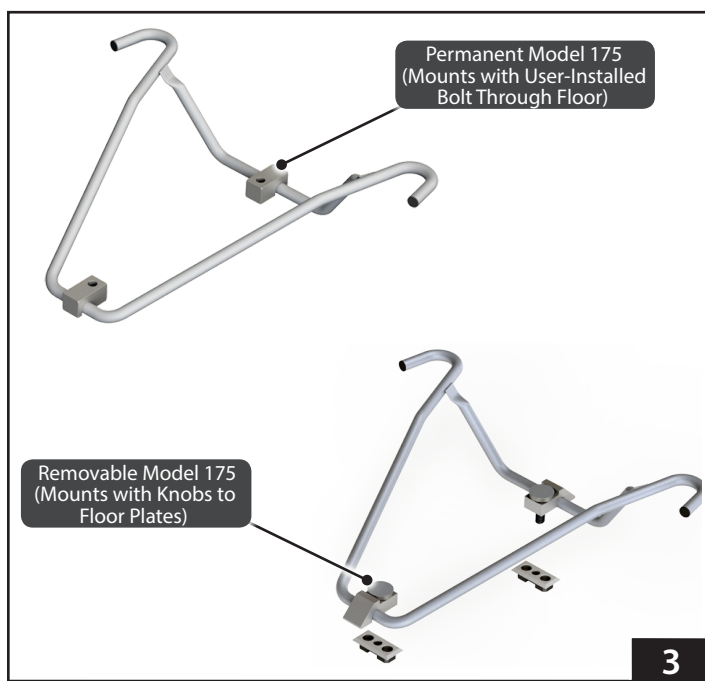
1 Inspect the Cot Retaining Post

1. Inspect the retaining post attached to the Ferno cot (examples shown in Figure 1). Verify the post is properly secured to the cot.
2. Verify the retaining post is fastened securely to the cot. Check that all nuts and bolts are tight and present. Replace loose or missing nuts and bolts.
3. Inspect the retaining post for wear and damage (Figure 2). If the surface of the post has pits or divots from contact with the rail release button, replace the post. A worn retaining post may not activate the rail release button.



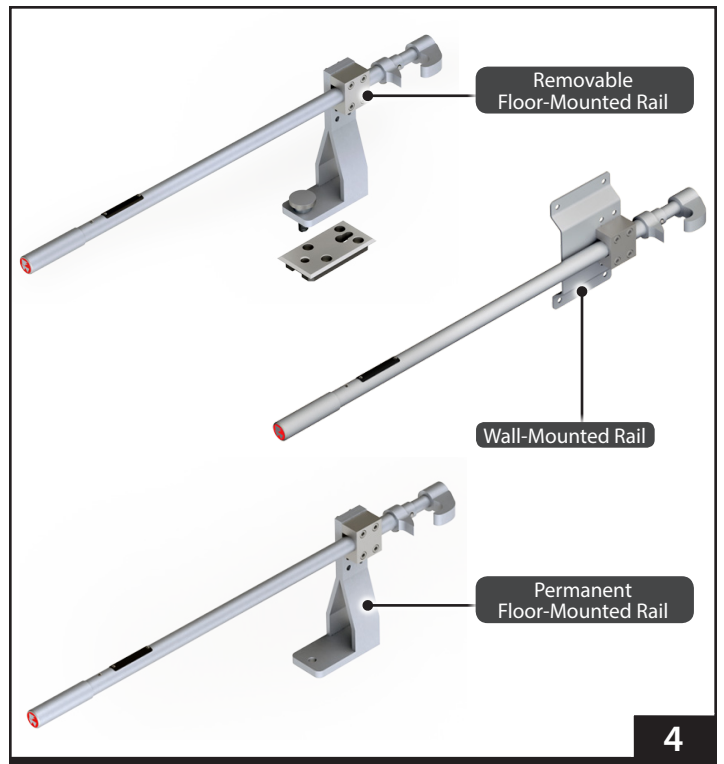
2 Inspect the Antler

1. Inspect the antler (Figure 3). Verify it is properly secured to the floor and all fasteners are tight and present.
2. Inspect the antler hooks. Are they in the proper position, and not bent or twisted? If removable mounting blocks are present, verify the slope of the blocks is away from the center of the antler, as shown in Figure 3.
3. Replace loose or missing knobs, blocks, bolts, nuts, etc.

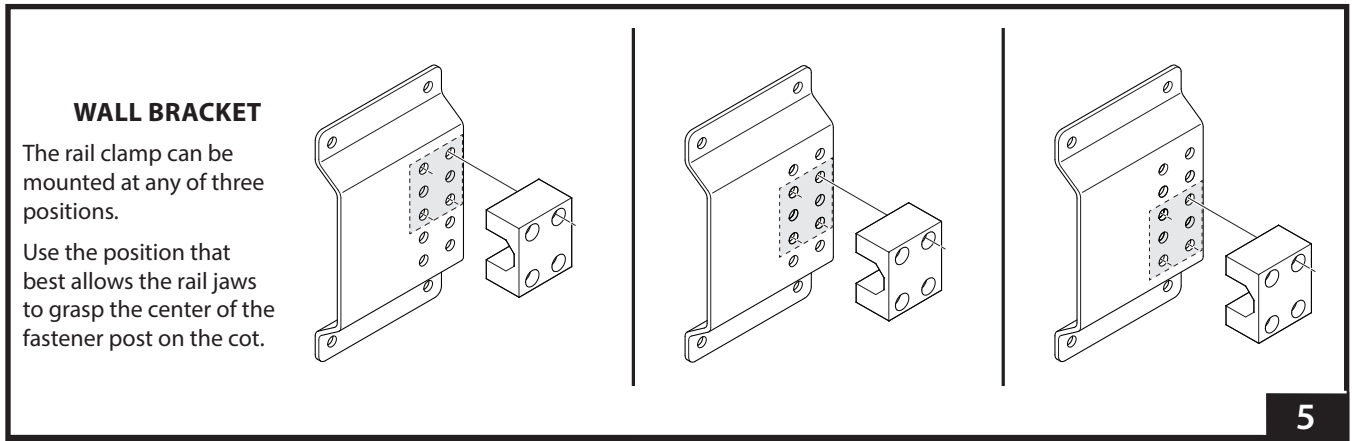


3 Inspect the Rail

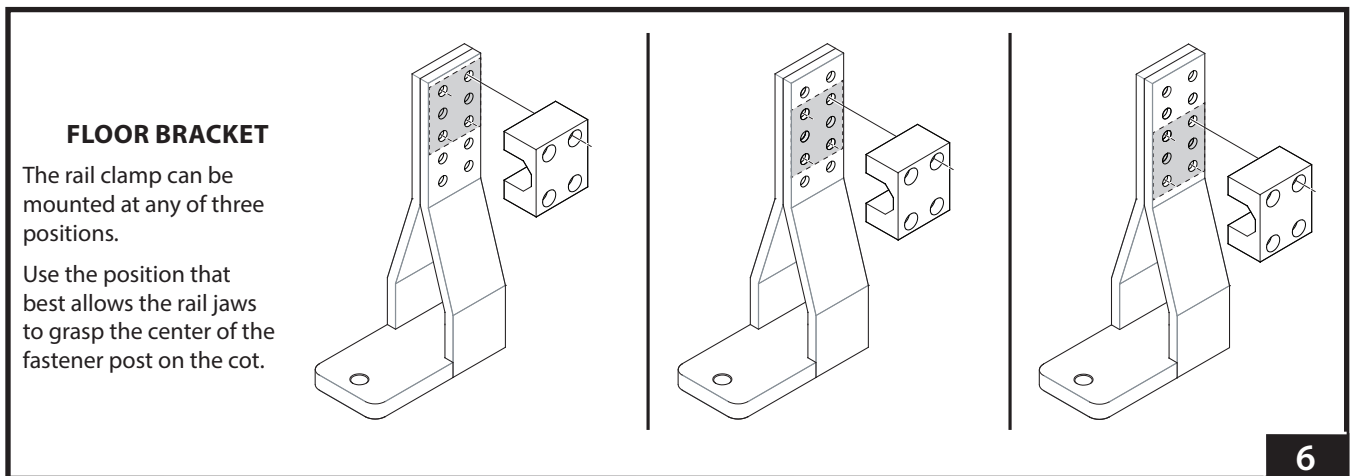
1. Inspect the rail (Figure 4). Verify it is properly secured to the floor or wall, and all fasteners are tight and present.
2. Inspect the clamp that secures the rail to the bracket. Is the rail clamp in the proper location? The clamp may be moved up or down on the bracket (Figure 5 and Figure 6). Verify the rail is held at the proper height for the cot retaining post.



4



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3. Is the rail clamp properly tightened to secure the rail?
 - Is the rail too loose? (If loose, the rail can be rotated or moved inside the clamp.)
 - Is the rail too tight? (If tight, inspect for damage. Look for dented or crushed rail tubing.)
 - Is the rail clamp positioned properly? The rail clamp must not cover the red line on the adjustment-limit label (Figure 7).
 - If adjustment is needed, follow the procedure in “Adjusting the Rail Clamp” below.

⚠ WARNING

Improper adjustment can cause injury. Stay within the range between the jaw and the adjustment limit label.

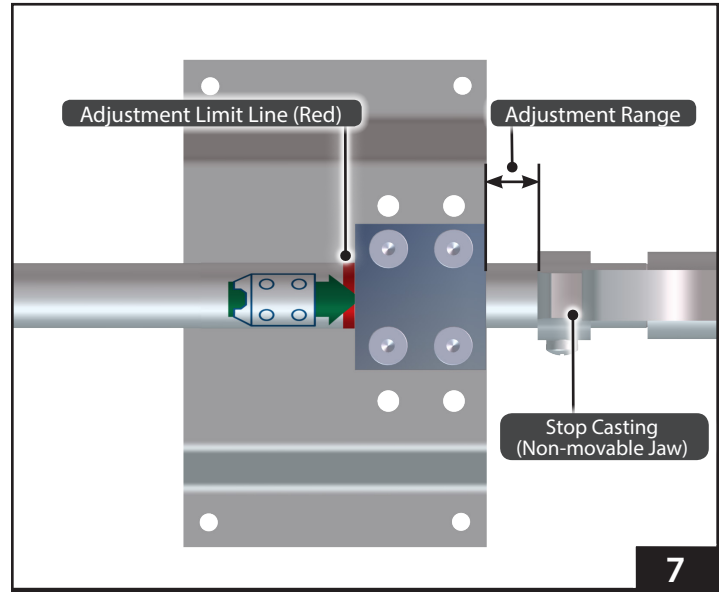
Important

The adjustment limit label ensures the cot will be held near the reinforcements offered by the bracket. Do not exceed the adjustment range between the jaw and the label.

Adjusting the Rail Clamp

1. Load a compatible Ferno cot into the fastening system.
2. Verify the antler hooks properly engage the loading-wheel forks of the cot.
3. Verify the rail jaws properly grasp the center of the fastener post. If not, adjust the rail clamp so it secures the cot but does not cover the red line on the adjustment-limit label (Figure 5):
 - Adjust the height of the rail clamp on the mounting bracket if needed.
 - Adjust the rail clamp side-to-side within the adjustment range indicated by the adjustment-limit label (Figure 5). The rail clamp must not cross the red line on the label.
4. Secure the rail to the bracket. Use a torque wrench and tighten the rail clamp screws in an X-pattern to provide even pressure. Set the torque wrench as follows:
 - 180 inch-pounds **OR**
 - 15 foot-pounds **OR**
 - 20.337 Newton-meters

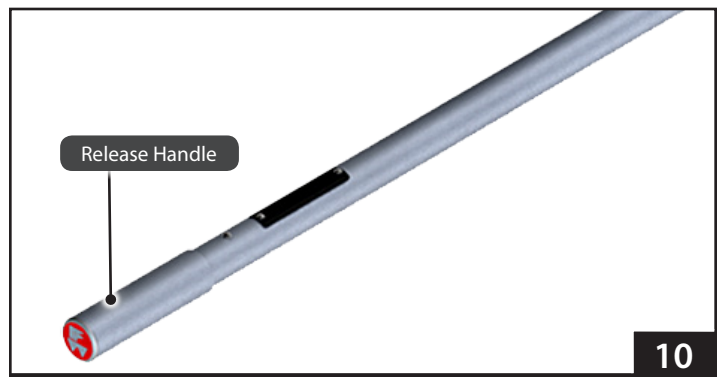
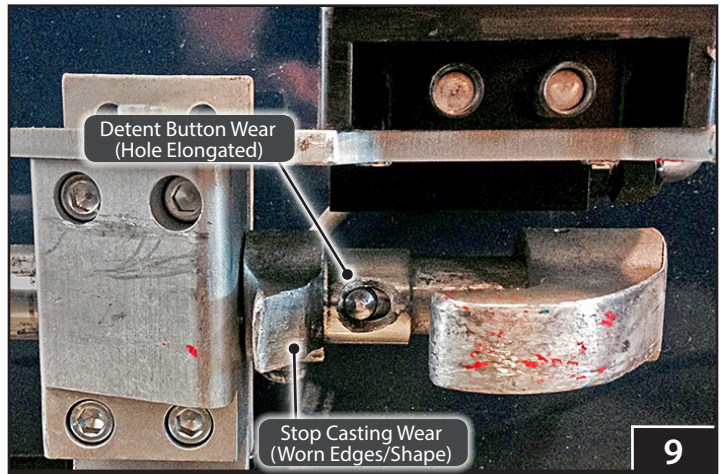
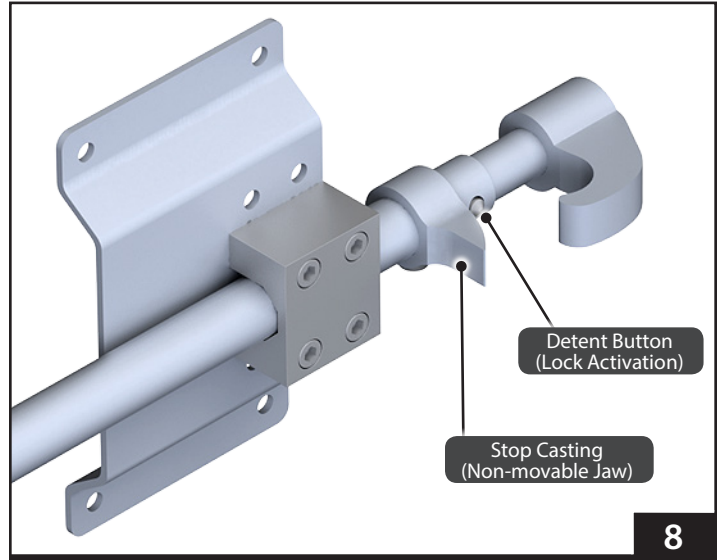
Note: Do not apply oil or lubricant to the screws prior to tightening.



4. Inspect the rail tube. Is the tube bent or damaged?
5. Inspect the locking jaws and detent button (Figure 8) but **do not activate it with your fingers. This can cause injury. Use only a cot to activate the lock.** Inspect the following:
 - Is the hole around the detent button worn (Figure 9)?
 - Is the button present and does it function properly, with proper spring-activated action?
 - Is the stop casting (non-movable jaw) in good condition, without excessive wear? For an example of damage, see Figure 9.
6. Inspect the release handle at the far end of the rail from the locking mechanism (Figure 10). Is the mechanism tight? Is the handle in good condition and does it function properly? If the release handle is loose, turn it clockwise to tighten.

⚠ WARNING

Pressing the detent button with your fingers can cause injury. Use caution when inspecting or lubricating the jaw shaft. Always use the cot to activate the detent button.



4. Inspect for Proper Placement Of the Cot Inside the Ambulance

KKK SPECIFICATION (THROUGH CHANGE NOTICE 7)

U.S.A. Federal Ambulance Specification KKK-A-1822 revision F, Section 3.10.4 (through Change Notice 7) requires the cot to be within a certain distance of the ambulance attendant's chair seat back and rear doors (Figure 11).

Be Aware: Not all states require or use the KKK-A-1822 specification. If your state does not require ambulances to meet this specification, you may skip this section.

1. With the cot secured in the fastening system, measure from the foot end of the mattress to the closed rear ambulance doors. Is the distance 10" (254 mm) or more?
2. With the cot secured in the fastening system, measure from the head end of the mattress to the seat back surface of the attendant's seat. Is the distance 25" (635 mm) or more?
3. Verify the Model 175 fastening system is installed to meet both requirements. Follow your state and local protocols to verify the cot is positioned to meet both minimum distances.

Tip

Positioning Tip

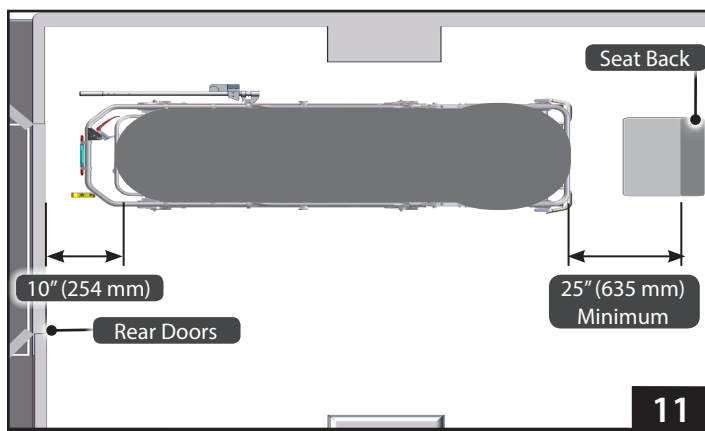
If space is limited, be aware that KKK specifies the **end of the mattress** to be 10" (254 mm) from the rear doors. In many cases, the end of the mattress does not lie at the end of the cot.

If needed, position the cot closer to the rear doors to meet the attendant's chair specification and allow the operators to easily grasp the cot from outside the ambulance.

KKK-A-1822 Change Notice 8 (July 1, 2015)

If your state requires **new ambulances** to meet the KKK specification published by the U.S. General Services Administration, be aware that the Model 175 fastening system no longer complies as of July 1, 2015. Contact Ferno for compatible fastening systems and ambulance cots. See "Ferno Customer Relations" on page 12.

Ambulances already purchased and/or in service with Model 175 are not required to be updated to meet Change Notice 8. Meaning: the Change Notice applies only to new fastening systems installed on new ambulances. Cots and ambulances already in use are not required to be updated.



5. Inspect for Proper Placement of the Antler and Rail

ANTLER TO RAIL LENGTH MEASUREMENT

Are the antler and rail the proper front-to-back distance from one another? Does the cot fit properly in the fastening system? Refer to the measurement in the table at right, Figure 12, and the instructions below.

- Using a pencil and ruler or straight edge, mark a line perpendicular to the rail release button on the floor.
- Using a pencil and ruler or straight edge, mark a line from the inside of the antler hook to meet the line you made in Step 2.
- Verify the antler and rail are the proper distance apart and the cot fits properly into both fastening-system components.

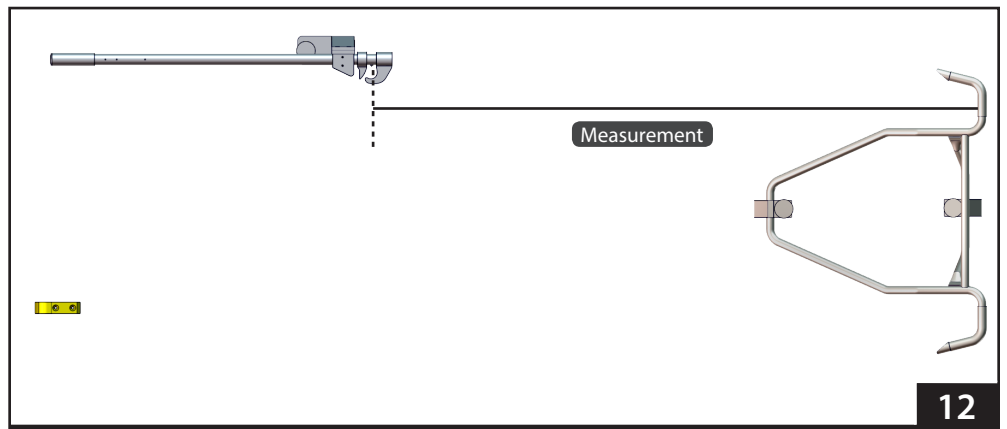
ANTLER TO RAIL CENTERLINE MEASUREMENT

Are the antler and rail the proper side-to-side distance from one another? Refer to Figure 13 and the instructions below.

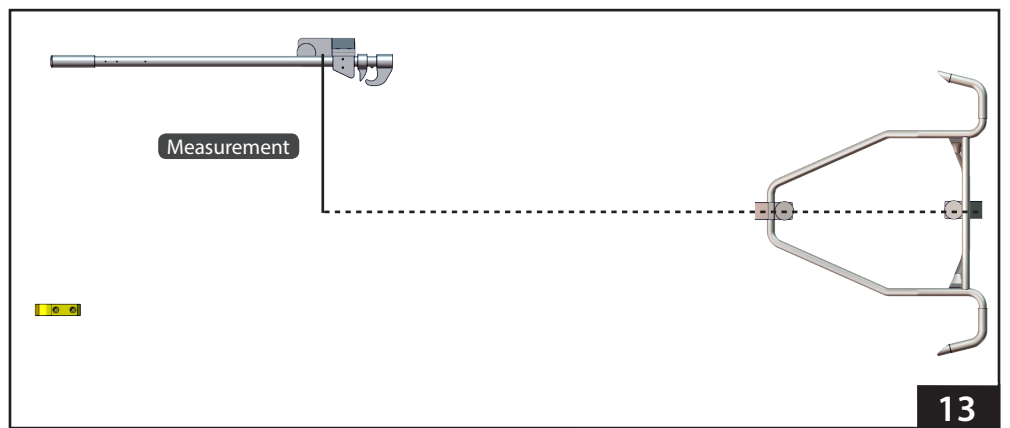
- Using a pencil and measuring tape, mark a line from the center of **both** antler mounting blocks to the rail.
- Using a pencil and measuring tape, mark a line perpendicular to the line you made in Step 1 to the center of the rail bracket.
- Verify the antler and rail are the proper distance apart.
 - A wall-mounted rail should be 13" (330 mm) from the antler centerline.
 - A floor-mounted rail should be 14-1/2" (368 mm) from the antler centerline.

Antler to Rail Measurement	
Series	C Distance (Antler to Rail)
25, 26	46.187" 1173 mm
35X-EFNY	46.886" 1191 mm
35A, 35A+	52.187" 1326 mm
PROFlexx 35P, 35X	51.529" 1309 mm
POWERFlexx	51.529" 1309 mm
93ES, 93EX	52.439" 1332 mm
PROFlexx 93P, 93H	52.439" 1332 mm

All measurements +/- .125" (3 mm)



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MODEL 175 MAINTENANCE

Maintenance Schedule

The fastening system requires regular maintenance. Set up and follow a maintenance schedule. The table at right represents **minimum** intervals for maintenance. Keep maintenance records.

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

Disinfecting and Cleaning

- **To disinfect:** Wipe all surfaces with disinfectant. Follow the disinfectant manufacturer's instructions for application method and contact time. Inspect the fastening system for damage as you disinfect it.
- **To clean:** Hand clean all surfaces of the fastening system with warm water and a mild detergent. Rinse with warm, clear water. Dry with a towel or allow the fastening system to air-dry.

Lubricating the Jaw Shaft

Disinfect and clean the fastening system before applying lubricant.

To lubricate the jaw shaft, push the release handle until the jaws lock in the unlocked (open) position. Apply a small amount of WRL-191-S or white lithium grease to the shaft of the movable jaw (Figure 14).

After applying lubricant, cycle the jaw a few times, using **only** the cot to activate the detent button.

- **Do not use your fingers to activate the detent button.**
- **Do not use Teflon or silicone-based lubricants.**

⚠ WARNING

Improper maintenance can cause injury. Maintain the fastening system only as described in this service bulletin, or the users' manual.

Pressing the detent button with your fingers can cause injury. Use caution when lubricating the jaw shaft. Always use the cot to activate the detent button.

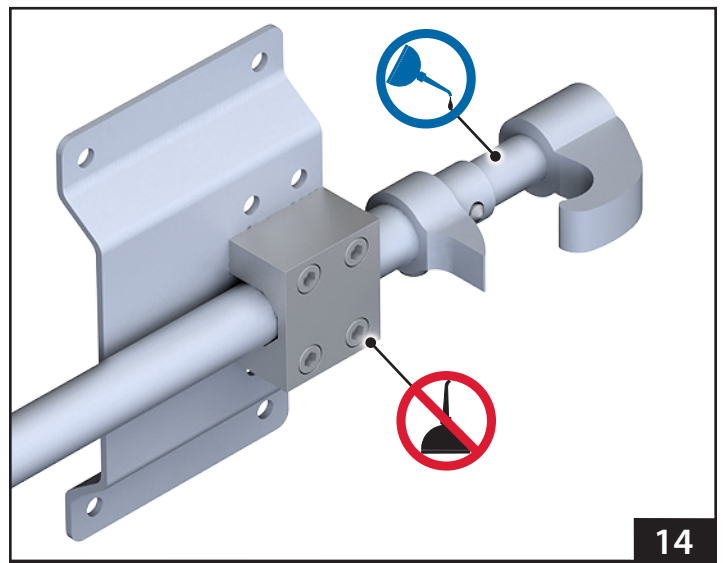
Table 3 - Minimum Maintenance	Each Use	As Needed
Disinfecting (this page)		•
Cleaning (this page)		•
Lubricating (this page)		•
Routine Inspection (page 9)	•	

Important

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

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

Using Teflon or silicone-based lubricants can lead to silicone buildup on parts, causing damage. Use only the lubricants specified in this service bulletin or the users' manual.



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Inspecting the Fastening System

Have your maintenance personnel inspect the fastening system regularly. Follow the checklist below and operate the fastening system through all its functions as described in this service bulletin or the users' manual.

If inspection shows damage or excessive wear, remove it from service until repair is made.

See the recommended Minimum Maintenance table on page 8.

WARNING

Pressing the detent button with your fingers can cause injury. Use caution when lubricating the jaw shaft. Always use the cot to activate the detent button.

Important

If the required backing plates are not present, take the ambulance out of service and have the backing plates installed. Then, install a new fastening system.

Make sure all connections are tight, but do not overtighten. Overtightening can cause damage. See "Adjusting the Rail Clamp" on page 4.

If inspection indicates components are pulling through the backing plates, remove the fastening system. Install a new fastening system and new backing plates.

Routine Inspection Checklist

- Are all components present?
- Is the fastening system free of excessive wear?
- Are all parts in good condition (no cracks, corrosion, or damage)?
- Do all moving parts operate smoothly and properly?
- Does the fastening system lock and unlock properly?
- Can the cot be loaded into and unloaded from the fastening system properly?
- Do the antler hooks properly engage the cot loading wheel forks (or transport-wheel forks on a Model 30 Series cot)?
- Do the rail jaws firmly lock onto the center of the fastener post on the cot?
- For removable components: do the components lock properly to the floor plates?
- Is the fastening-system setup worn? Has exposure to the environment caused noticeable damage? Inspect the ambulance floor (and wall, for wall-mounted components) including beneath the ambulance.
- Continue to monitor the integrity of the fastening system.
- Are the required backing plates present, and are they securely welded to primary a structural member of the ambulance floor?
- Is all hardware tight? Verify the hardware is tight but is NOT pulling through the backing plates (See the Important notices at right).

INSPECTING THE FERNO SAFETY HOOK

Safety Hook Purpose

The safety hook is designed to prevent the cot from being rolled out of the ambulance and secure the cot while the operators extend or retract the legs. After the legs are locked, the cot may be disengaged from the safety hook.

A correctly-positioned safety hook allows the cot to be loaded into the ambulance and unloaded from the ambulance without interference, but will engage the safety bar during every loading and unloading sequence (Figure 15).

Versions: Ferno offers three safety hooks (Figure 16). Select and install a safety hook that accommodates your ambulance. If the position of your safety hook is incorrect, contact Ferno to order a safety hook. See "Ferno Customer Relations" on page 12.

WARNING

Failure to install and use a compatible Ferno safety hook (provided with the cot) can cause injury. Install and use the cot only with these items.

Improper installation can cause injury. Install the safety hook so the safety bar will engage the hook during every loading and unloading sequence.

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

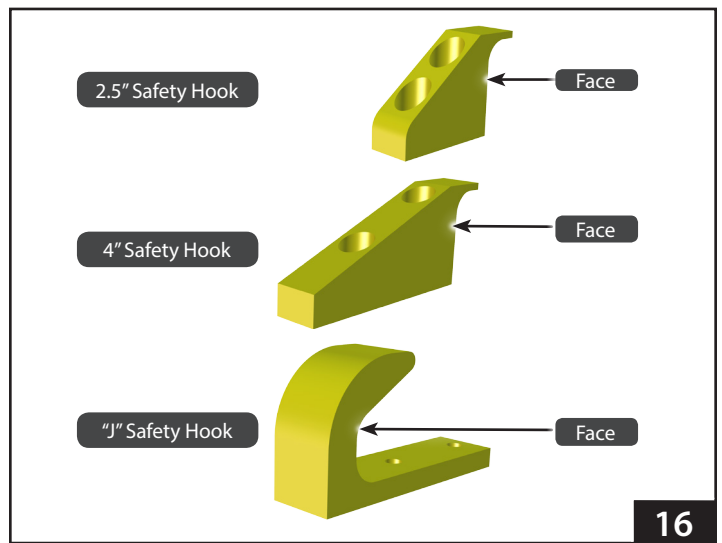
Important

A properly-positioned, compatible Ferno safety hook must be used with Ferno cots. Difficulty loading and/or unloading may result from improperly placed components.

Before installing the safety hook, consult the ambulance manufacturer for the location of wiring and other elements under the ambulance floor, and about the ambulance warranty.



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Ferno Safety Hook Placement

Verify the safety hook is installed as shown in Figures 17-18. The safety hook must be installed to meet both the front-to-back and side-to-side requirements below.

FRONT-TO-BACK POSITIONING

1. Position the hook a **minimum of 3-3/4"** (95 mm) from the edge of the door sill to the face of the hook (Figure 17). The face of the hook is the inner surface where the safety bar engages the hook (Figure 16 on page 10).

SIDE-TO-SIDE POSITIONING

Determine a location for the safety hook where it will engage the center of the cot safety bar during every loading and unloading sequence.

1. Disengage the cot from the fastening system and unload it from the vehicle.
2. While the cot is being unloaded from the ambulance, note the position where the load wheels and the safety bar cross the doorway (Figure 18).
3. Use a piece of tape or marker to mark the center of the cot safety bar on the vehicle floor.
4. Verify that the position marked in Step 3 is where the safety bar engages the safety hook **every time** when unloading the cot in a variety of positions (all the way to the left and all the way to the right), regardless of cot position.

If there is any position in which the safety bar does not engage the safety hook (left, center, or right) modify the vehicle so the safety bar cannot miss the hook. Do not modify the cot or safety hook.

If the cot safety bar engages the safety hook every time, the safety hook is positioned properly and no modification is required.

WARNING

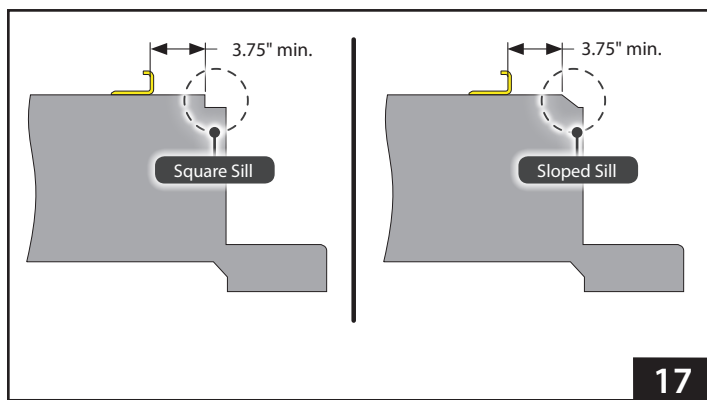
Improper safety hook installation can cause injury to the patient and/or operators if the cot misses the safety hook. Verify the safety hook will engage the cot safety bar regardless of how the cot is unloaded from the vehicle.

Important

If the hook is installed too far inside the ambulance, you will not be able to properly extend or retract the cot legs.

Install the safety hook only with hardware of at least SAE Grade 5 with UNC-2 threading (or equivalent). Hardware is not supplied.

Two door-sill styles are in use: a straight or square style, and a sloped style. Use the front-to-back measurement where the flat floor (ambulance deck) meets the door sill for your type of ambulance (Figure 17).



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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	+1.937.382.1451
Fax	+1.937.382.6569
Internet	www.ferno.com

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.

Repairs or Parts

EMSAR® is the only organization authorized by Ferno to manage, service, and repair Ferno products.



Telephone (Toll-free)	1.800.73.EMSAR
Telephone (Worldwide)	1.937.383.1052
Fax (Worldwide)	1.937.383.1051
Internet	www.EMSAR.com

Parts

Model 175-					Description	Kit Number	Qty.
1	2	3	4	5			
•	•	•	•	•	Ferno J-Safety Hook	082-2019	1
•	•	•	•	•	Ferno 2.5"/64 mm Safety Hook	090-5015	1
•	•	•	•	•	Ferno 4"102 mm Safety Hook	090-1308	1
•	•	•	•	•	Standard Antler (only)	090-0271	1
•	•	•	•	•	iN X Antler (only)	056-7052	1
		•	•	•	Antler Mounting Block (Removable)	090-0264	1
•	•				Antler Mounting Block (Permanent)	090-0272	2
		•	•	•	Floor Plate for Removable Antler	090-0265	2
		•	•		Floor Plate for Removable Mounting Bracket	090-0266	1
		•	•	•	Removable Tie-Down Knob, Short (for Bracket or Antler)	090-0268	1
•	•	•	•	•	Replacement Split Fastener Post (25, 26, 29-M, 35A/35A+, 93ES/93EX)	090-0277	1
•	•	•	•	•	Replacement Split Fastener Post (35P, 35X PROFlexx, POWERFlexx)	190-1240	1
•	•	•	•	•	Replacement Split Fastener Post (93P, 93H PROFlexx)	190-1154	1
•	•	•	•	•	Replacement Split Fastener Post (original side-mount POWERFlexx)	190-1469	1
•	•	•	•	•	Label Kit (Set)	090-4229	1
		•	•		Removable Floor Mounting Bracket (10-Hole)	090-0263	1
	•				Permanent Floor Mounting Bracket (10-Hole)	190-1400	1
•				•	Wall Mounting Bracket	190-1398	1
•				•	Rail Clamp for Wall Bracket w/hardware (New wide clamp, 4-hole)	190-1451	1
	•	•	•		Rail Clamp for Floor Bracket w/hardware (New wide clamp, 4-hole)	190-1399	1
•	•	•	•	•	Rail, Aluminum (Standard)	090-0278	1
•	•	•	•	•	Rail, Stainless Steel	090-5692	1
•	•	•	•	•	Rail Push Handle	090-4226	1
•	•	•	•	•	Rail Spring and Bushing	090-4227	1
		•	•		1.5" SHCS and Nut (Coverts Permanent Floor Rail Bracket to Removable)	090-5048	1
		•	•		Mounting Plate Plastic Cover Kit (set: 2 antler, 1 rail)	081-9734	1
		•	•	•	Modified Antler Mounting Block for Series 35 and Series 30 in-line	081-9912	1
•	•	•	•	•	Rail Clamp Hardware (Set: Wall or Floor)	190-2091	1

A Note About KKK-A-1822 and New Requirements from SAE

Ferno Model 175 Series Fastening Systems were originally designed for compliance with the KKK-A-1822 Ambulance Specification as created by U.S. Government Services Administration (GSA) in the 1970s. An updated version (KKK-A-1822-F, Change Notice 8) released on July 1, 2015 references new “recommended practices” from the Society of Automotive Engineers (SAE).

The Society of Automotive Engineers (SAE) “recommended practices” for testing the crashworthiness of litters, or cots (SAE J3027) were federally funded and scientifically validated by industry and federal partners, including NIOSH, NIST, and DHS. These practices describe testing procedures and design parameters to ensure equipment integrity and crashworthiness in a 30 mph vehicle crash (30 mph change in velocity), or the equivalent of a 22.5g forward impact and 26g side impact.

The practical effect of this is traditional “antler and rail” cot fastening systems, like the Ferno Model 175 Series Fastening Systems, will no longer be compliant for use in new ambulances contracted for purchase after July 1, 2015 (or later, depending on how your state adopts SAE compliance through KKK or other standards). Ferno provides a range of SAE J3027 compliant cots and cot fastening-system solutions and price points to help EMS providers comply. These options include the 35X PROFlexx® and POWERFlexx+® with Stat Trac® Fastening System, and the iNjX™ with iNjLine™ Fastening System.

For more information, contact Ferno at 877-733-0911 or visit www.fernoems.com/stattrac.