

Description

The **Model 417-3 Transport Restraint System** includes a set of patient restraints designed to help secure a patient on a compatible Ferno® ambulance cot during transport in a ground-based ambulance.

The Model 417-3 harness, 417-3 waist restraint and Model 430 restraint are each defined by Ferno as **Primary-Use Restraints**.

FERNO DEFINITIONS

- **Transport Restraint System** is defined by Ferno as a set of Primary-Use restraints used together to properly restrain a patient in a ground-based ambulance.
- **Primary-Use Restraints** are defined by Ferno as suitable for use to secure a patient on compatible equipment during transport in a motor vehicle.
- **Secondary-Use Restraints** are defined by Ferno as NOT suitable for securing a patient during transport in a motor vehicle. They are for temporary use to secure a patient on a backboard, hand-carried stretcher, scoop stretcher, stair chair, or extrication device. Transfer the patient onto an ambulance cot or other device with primary restraints before transport in a motor vehicle.

Specifications

The restraint system is constructed with nylon webbing and metal buckles. The shoulder straps have a metal link. All straps have adjustable slide bars.

Load Limit

When properly attached and used as specified in this manual and in the cot users' manual, the restraint system is capable of securing a patient weighing the maximum allowable load limit of the cot. Do not exceed the load limit of the cot.

Compatibility Notice

The 417-3 Transport Restraint System is compatible only with Ferno® Model 35X-ST and POWERFlexx®-ST cots with serial number 13N-270027 and higher.

Cots 13N-270027 to 15N-325554 require installation of the restraint posts. Note that this update is not installable by an end-user. To update, a certified EMSAR or Cot Care-trained person is required. See "EMSAR" or "Ferno Customer Relations" on page 8.



WARNING

Improper installation and use of the restraint system can cause injury. Install and use the restraint system only as described in this manual.

Loose items can interfere with equipment operation and cause injury or damage. Keep restraints buckled when not in use. Verify mechanisms are free of obstruction before rolling, raising/lowering or making other equipment adjustments.

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

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

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

Important

Do not exceed the load limit of the cot on which the restraint is used. Refer to the cot users' manual for the cot load limit.

Compliance

SAE J3027 AMBULANCE LITTER INTEGRITY, RETENTION, AND PATIENT RESTRAINT

The Model 417-3 transport restraint system is compliant with the Society of Automotive Engineers **SAE J3027 Recommended Practice (2014)** when used with a compatible Ferno® ambulance cot and fastening system (cot/litter retention system).

Note: A compliant system must include **all three elements**: a compatible cot, fastening system, and transport restraint system.

- **Compliant Ferno® Ambulance Cots**
 - PROFlexx® 35X-ST Series Ambulance Cots
 - POWERFlexx®+ST Series Powered Ambulance Cots
 - **Note:** The cot must be equipped with mounting posts to accept the Model 417-3 Transport Restraint System.
- **Compliant Ferno® Fastening System**
 - Model 185 Series Stat Trac® Fastening System
- **Compliant Restraint System**
 - Ferno® Model 417-3 Transport Restraint System

U.S.A. SPECIFICATIONS AND STANDARDS

The Model 417-3 Transport Restraint System meets or exceeds the following U.S.A. specifications and standards:

- Ambulance Manufacturer's Division (AMD) of the National Truck Equipment Association Standard 004 (August 2007 edition), Litter Retention System Static Test.
- Federal Ambulance Specification KKK-A-1822 revision F (2007) as applicable.
- National Fire Protection Association standard NFPA® 1917 (2013 edition).

Standards and specifications are updated periodically. Current guidelines are available from these organizations. See the addresses at right.

U.S.A. Specifications/Standards

For information about Federal Ambulance Specification KKK-A-1822 revision F (2007):

Office of Motor Vehicle Management,
General Services Administration,
2200 Crystal Drive, Suite 1006
Arlington, VA, 22202
Internet: www.gsa.gov/automotive

For information about AMD standards:

Ambulance Manufacturer's Division
National Truck Equipment Association
37400 Hills Tech Drive
Farmington Hills, MI, 48331-3414
Internet: www.ntea.com

For information about NFPA® standards:

National Fire Protection Association
1 Batterymarch Park
Quincy, MA, 02169-7471
Internet: www.nfpa.org

Compatibility Notice

The 417-3 Transport Restraint System is compatible only with Ferno® Model 35X-ST and POWERFlexx®-ST cots with serial number 13N-270027 and higher.

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Tip

SAE J3027 Compatibility

To comply with the SAE J3027 Recommended Practice, all three elements are required.

- Compliant ambulance cot
- Compliant restraint system
- Compliant fastening system (cot/litter retention system)

General Guidelines for Use

- For transport in an ambulance, Ferno requires the use of a Transport Restraint System. Refer to the definition on page 1.
- For placement on a patient, follow local protocols.
- Adjust restraints to safely secure the patient to the cot without causing discomfort or impairing circulation.
- Keep restraints buckled when not in use to prevent interference with cot operation.
- The Model 417-3 is not approved by the United States Federal Aviation Administration for use in aircraft. Please contact Ferno Aviation at 1.770.521.1005 for FAA-approved patient restraints and shoulder harness assemblies.

Before Using the Restraint System

- Personnel who will work with the restraint system must read this manual.
- Confirm that the restraint system operates properly. See "Inspection Checklist" on page 8.

About the Restraint System

The restraint system includes an integrated chest strap and shoulder harness restraint assembly, a Y-connection waist restraint, and two-piece leg restraint (Figure 1). Restraints are positioned both above and below the patient. To prepare the compatible Ferno® cot for use, follow the instructions in this manual.

- To attach restraints, see "Bracket and Post System" on page 4 and "Attaching the Restraints" on page 4.
- To use the restraint system, see "Using the Restraint System" on page 7.
- Keep restraints buckled when not in use.

WARNING

Improper installation and use of the restraint system can cause injury. Install and use the restraint system only as described in this manual.

Loose items can interfere with equipment operation and cause injury or damage. Keep restraints buckled when not in use. Verify mechanisms are free of obstruction before rolling, raising/lowering or making other equipment adjustments.



Bracket and Post System

Note: A post system must be installed on the cot. If the post system is not pre-installed, contact EMSAR or Ferno Customer Relations (page 8). The post system is **not** installable by the end-user.

Each part of the chest strap/shoulder harness and Y-connection waist straps attach to the cot using a bracket-and-post system. To attach a restraint bracket to a cot-mounted post:

1. Orient the bracket with the bend facing the center of the cot, and with the webbing up.
2. Slide the bracket over the post, then pull the bracket upward (Figure 2) to seat the post in the small end of the bracket.
3. Verify the bracket is fully seated on the post.

Attaching the Restraints

CHEST AND WAIST STRAPS

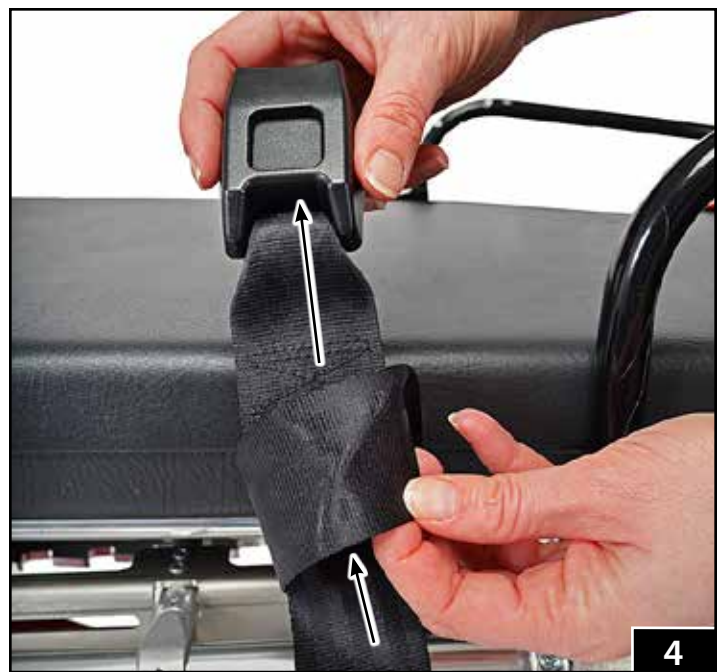
1. With the patient pad in place, attach the two chest strap brackets to posts on opposite sides of the backrest (Figure 2). The portion of the chest strap that runs between the two brackets will lie against the pad, (and will remain between the pad and the patient when a patient is on the cot).
2. Verify the chest strap is attached properly: the chest strap will compress the pad slightly, this is normal. Also, the Ferno logo will be upright on the shoulder strap buckles when they are in place. If the shoulder strap buckles are upside-down, reverse and reattach the chest strap.
3. Attach the four parts of the Y-connection waist strap brackets to posts on opposite sides of the seat panel (Figure 3).
4. Verify all six brackets are seated on the posts and the straps are not twisted.
5. Keep restraints buckled when not in use. See "Buckling" on page 5, "Unbuckling" on page 5, and "Adjusting the Restraint" on page 6 for additional information.

LEG RESTRAINT

1. Wrap the loop around the cot main frame, then insert the buckle (or tang) through the loop (Figure 4).
2. Pull the strap tight against the cot main frame.

Removing the Restraints

1. Unbuckle the patient restraints.
2. To detach chest and waist 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 cot main frame.



Buckle Placement

Attach all patient restraints with the buckles at the same side for operator convenience and efficiency.

Attaching the Bracket to the Post

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.

Tip

Buckling

SHOULDER AND WAIST STRAPS

Note: The shoulder straps and Y-connection waist straps have red webbing near the buckles. Attach red-to-red when buckling.

1. Insert the male buckle/tang through both shoulder-strap links and into the female buckle/receiver until it locks into place (Figure 5 and Figure 6).

CHEST STRAPS AND TWO-PIECE LEG RESTRAINT

Note: The chest straps and two-piece leg restraint have only black webbing. Connect the chest straps over the shoulder straps. Connect black-to-black when buckling.

1. Adjust and buckle the chest straps across the patient's high diaphragm/ribcage.
2. Adjust and buckle the two-piece leg restraint across the patient's legs.
3. Always confirm that all buckles are securely buckled.

Unbuckling

To unbuckle all restraints: Press the release button in the center of the buckle (Figure 7) and separate the straps.



Restraint Colors

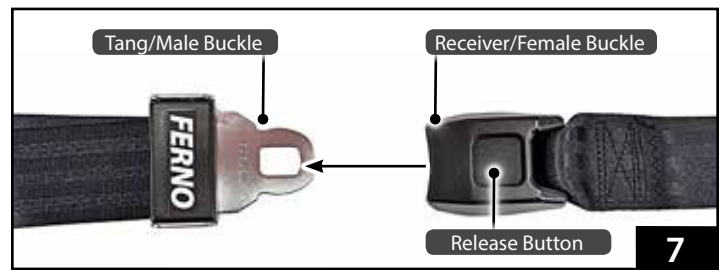
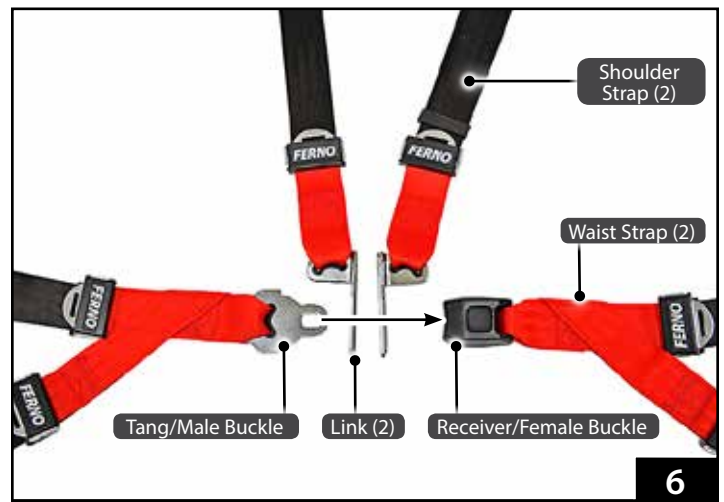
When buckling the patient restraints, match the color-coded pieces:

- **Red-to-Red** (Harness links connect to waist strap buckle)
- **Black-to-Black** (Harness chest-strap and leg-restraint buckles)

Buckle Placement

Attach all patient restraints with the buckles at the same side for operator convenience and efficiency.

Tip



Adjusting the Restraint

To lengthen a strap:

1. Unfasten the restraint.
2. Grasp the strap slider bar and turn it perpendicular to the webbing (Figure 8). Pull the slider bar away from the strap attachment point until the strap is the desired length.
3. At minimum, adjust shoulder and waist straps to center the harness buckle on the patient when buckled. Follow local protocols for restraint placement and use.

To shorten a strap: Grasp the hemmed tab and pull the webbing through the slide bar assembly until the strap is the desired length (Figure 9). This can be done with the restraint buckled or unbuckled.

Properly-buckled cot-mounted restraints will match Figures 10.

Tip

Strap Keepers

The shoulder straps have elastic bands to allow excess strap to be stored neatly.



WARNING

Improper installation and use of the restraint system can cause injury. Install and use the restraint system only as described in this manual.

Loose items can interfere with equipment operation and cause injury or damage. Keep restraints buckled when not in use. Verify mechanisms are free of obstruction before rolling, raising/lowering or making other equipment adjustments.

Using the Restraint System

A properly restrained patient will match Figure 11 and Figure 12.

1. To secure a patient on the cot, unbuckle all restraints and position the straps out of the way.
2. Transfer the patient onto the cot following local protocols. Adjust the backrest and shock frame as needed.
3. Lay the shoulder straps over the patient's shoulders, with the links placed near the patient's waist.
4. Evenly adjust the length of each shoulder strap and waist-restraint strap to position the buckle at the patient's waist, at the midline of the patient.

Note: The shoulder straps and Y-connection waist straps have red webbing near the buckles. Attach red-to-red when buckling.

5. Guide the waist restraint tang through both shoulder-strap links and fasten the buckle.
6. Adjust the shoulder straps so they are snug against the patient's shoulders.

Note: The chest straps and two-piece leg restraint have only black webbing and connect over the shoulder straps. Connect black-to-black when buckling.

7. Fasten the chest straps across the patient's ribcage. Adjust as needed.
8. Fasten the leg restraint over the patient's legs (Figure 11). Adjust as needed.



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Tip

Restraint Colors

When buckling the patient restraints, match the color-coded pieces:

- **Red-to-Red** (Harness Links connect to Waist Strap buckle)
- **Black-to-Black** (Harness Chest Strap and Leg Restraint buckles)

Buckle Placement

Attach all patient restraints with the buckles at the same side for operator convenience and efficiency.

WARNING

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

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

Important

Metal buckles and slide bars can be damaged by immersion in liquids or by washing-machine action. Disinfect and clean only as described in this manual.

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

Maintenance Schedule

The restraint system requires regular maintenance. Set up and follow a maintenance schedule. Conduct maintenance as follows:

- **Inspecting:** Inspect the restraint system before each use, following the Inspection Checklist below.
- **Disinfecting:** Disinfect the restraint system after each use.
- **Cleaning:** Clean the restraint system as needed.

Inspection Checklist

- Are all components present?
- Is restraint webbing in good condition (no cuts/frayed edges)?
- Are restraint buckles and slide bars free of visible damage?
- Do buckles open and close smoothly and properly?
- Can strap length be adjusted smoothly and properly?
- Are the restraint keepers present and in good condition?

If inspection indicates damage or excessive wear, take the restraint system out of service and destroy it. Purchase new components or a complete new restraint system as needed.

Disinfecting

1. Remove the restraint system from the cot.
2. Spray the metal buckles and slide bars with a disinfectant cleaner, following the disinfectant manufacturer's instructions for application method and contact time. **Do not immerse buckles or slide bars in liquid.**
3. Hang the restraint system to air-dry if needed. Attach only dry restraints to the cot.

Cleaning

1. Immerse the restraint webbing in a solution of mild soap and water. **Do not immerse the buckles or slide bars in the solution.**
2. Repeatedly dip the webbing in clear water to rinse. **Do not immerse buckles or slide bars in liquid.**
3. Hang the restraint system components to air-dry. Attach only clean, dry restraints to the cot.

Ferno Customer Relations

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.



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1.937.382.1451



Ferno (UK) Limited
Stubs Beck Lane, Cleckheaton
West Yorkshire BD19 4TZ, United Kingdom
44 (0) 1274 851999

Parts

Kit Name	Number
430 Restraint, 2 piece, 5'	031-3892
417-3 Shoulder Harness	031-4183
417-3 Waist Restraint	031-4184
417-3 Shoulder Bolt (cot-mounted post), qty. 1	031-4185
417-3 Shoulder Bolt spacer (plastic), qty. 1	031-4186
1/4-20 Elastic Locknut, qty. 1	330-6427

Professional Installation, 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