inLINE™
Fastening System

FERNO®

Read this Manual and Retain for Future Reference

Ferno Customer Relations

For ordering assistance or general information:

CANADA AND THE U.S.A.

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

ALL OTHER LOCATIONS

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

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

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

i∫LINE Serial Number _____

Location: End of fastening system.

Disclaimer

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

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

Proprietary Notice

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

Limited Warranty Statement

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

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TABLE OF CONTENTS

1 - SAFETY INFORMATION

1.1 Warning

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

⚠ WARNING
Improper or inadequate installation can cause injury. The installer should test the fastening system setup to meet or exceed all applicable guidelines.
A fastening system installed without backing plates can fail in a crash. Use properly installed backing plates to secure the fastening system at all mounting points.
Improperly installed backing plates can fail in a crash. Secure the backing plates to primary structural members of the ambulance at all mounting points.
Untrained operators can cause injury or be injured. Permit only trained personnel to operate the fastening system.
Improper use can cause injury. Use the fastening system only for the purpose described in this manual.
An improper cot/transport system can cause injury. Use only a compatible Ferno product designed or properly modified for use with the fastening system.
Improper operation can cause injury. Operate the fastening system only as described in this manual.
An improperly-secured fastening system can fail in a crash. Confirm all fasteners are fully tightened and properly secure the fastening system to the floor.
Improper maintenance can cause injury. Maintain the fastening system only as described in this manual.
Improper parts and service can cause injury. Use only Ferno parts and Ferno-approved service on the fastening system.
Modifying the fastening system can cause injury and damage. Use the fastening system only as designed by Ferno.

1.2 Important

Important notices emphasize important usage or maintenance information. Failure to follow Important notices could result in damage to the product or property damage.

Important

1.3 Tip

Tips provide recommendations for easier use of the product.

Tip

1.4 Bloodborne Disease Notice

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

1.5 Fastening System Compatibility

Combining different manufacturers' products such as a Ferno cot/transport system with a non-Ferno fastening system can increase the user's risk of injury and damage.

Ferno-Washington, Inc. products are designed for use only with Ferno-manufactured fastening systems. Use of a Ferno cot/transport system with a non-Ferno fastening system is misuse of the Ferno product. The user assumes responsibility for the outcome of known, intentional misuse.

1.6 Symbol Glossary

The symbols defined at right are used on the fastening system and/or in this' manual. Ferno uses symbols recognized by the International Standards Organization (ISO), American National Standards Institute (ANSI) and the emergency medical services industry.

General Warning of Potential Injury

Read the Users' Manual

Unlocked   Locked   Do Not Lubricate

QR Code: Scan with an Internet-Connected Device for Online Content

Manufacturer

| EC | REP |

Authorized Representative in the European Community

Product meets European Union Standards

1.7 Safety and Instruction Labels

Safety and instruction labels place important information from the users' manual on the fastening system. Read and follow label instructions. Replace worn or damaged labels immediately.

General Information Label: Follow the instructions in this manual for proper and safe use of the fastening system.

ICS Label: Follow the instructions in this manual for proper and safe use of the charging system.

Floor Lock Label: Follow the instructions in this manual to properly lock the fastening system to the ambulance floor.

1.8 Compliance

SPECIFICATIONS AND STANDARDS

When properly installed and used with appropriate additional Ferno products, the iN∫LINE™ fastening system meets or exceeds the following global specifications and standards. Be aware: standards and specifications are updated periodically. Current guidelines are available from these organizations. See the contact information at right.

U.S.A.

- **AMD:** Ambulance Manufacturer's Division (AMD) of the National Truck Equipment Association Standard 004 (August 2007 edition), Litter Retention System Static Test.

- **KKK-A-1822 (F):** Federal Ambulance Specification KKK-A-1822 revision F (2007), Change Notice 8 as applicable.

- **NFPA:** National Fire Protection Association standard NFPA® 1917 (2016 edition).

- **SAE:** Society of Automotive Engineers SAE J3027 Recommended Practice (2014). See information at right.

- **CAAS:** Commission on Accreditation of Ambulance Services Global Vehicle Standard (GVS) v1.0

- **IP56:** Ingress Protection rating. Tested in compliance with dust and water infiltration standards.

CANADA

- **Ontario**: Ontario Land Ambulance Standard, Version 5.0, September 28, 2012; Section 20.1 Main Cot Retention.

- **BCAS:** BCAS Ambulance Performance Test Criteria E2 Stretcher Retention.

- **Alberta:** Alberta Health and Wellness Ambulance Vehicle Standard Code January 2010; Section 17.5 Cot Retention System Test.

- **AMD:** Ambulance Manufacturer's Division (AMD) of the National Truck Equipment Association Standard 004 (August 2007 edition), Litter Retention System Static Test. (Some provinces follow the U.S. AMD specification.)

AUSTRALIA/NEW ZEALAND
SPECIFICATIONS AND STANDARDS

- **AS/NZS 4535:1999.** Meets the requirements of the Ambulance Restraint Systems test.

EUROPEAN STANDARDS

- **CE:** Meets European Norms.

- **RoHS-2:** Meets the requirements of RoHS-2 (EU Directive 2011/65/EU) on the Restriction of the use of certain Hazardous Substances.

- **EN 1789 and EN 1865:** Vehicle, fastening system, and crash-test standards.

Specifications/Standards Contact Information

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 CAAS standards:
CAAS
1926 Waukegan Road, Suite 300
Glenview, IL, 60025-1770
Internet: www.caas.org

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

For information about SAE standards:
Warrendale, PA, USA - Headquarters
400 Commonwealth Drive
Warrendale, PA 15096
p: +1.724.776.4841
f: +1.724.776.0790
Internet: www.sae.org

For information in Alberta, Canada:
Internet: http://www.albertahealthservices.ca/

For information in British Columbia, Canada:
Internet: http://www.bcehs.ca/

How to Meet SAE J3027

U.S.A. SAE J3027 Recommended Practice requires all three elements to be present together:

1. Compliant ambulance cot or transport system *(iN∫X™ for iN∫LINE™ Transport & Loading System)*

2. Compliant fastening system, also called cot/litter retention system *(iN∫LINE™ Fastening System)*

3. Compliant restraint system *(Model 417-iN∫X Transport Restraint System)*

1.9 Responsibility of User to Maintain a Safe Fastening System

The Ferno® iN∫LINE™ fastening system is designed to securely hold a compatible Ferno product inside a ground-based ambulance. See "Compatible Ferno Products" on page 9.

The integrity of the fastening system relies heavily on the installer to secure the fastening system to the ambulance in a way that meets or exceeds these guidelines. Also, the integrity of the fastening system relies on the user to regularly inspect and maintain the system.

The iN∫LINE™ fastening system, when installed and maintained properly, meets or exceeds all applicable global specifications and standards listed in "Compliance" on page 6. To help the user achieve a compliant system, Ferno strongly recommends:

USER:

1. **Inspect the fastening system a minimum of once each month, or more often with frequent use.** Check under the ambulance to see if exposure to the environment has damaged the backing plates, nuts or bolts. Replace the fastening system if its integrity is in question.

2. **During inspections, make sure all fastening system components are tight, however, DO NOT repeatedly tighten the bolts with powered equipment.** Over time, using powered tools to repeatedly tighten connections can cause damage to the fastening system by compressing the nut and bolt through the backing plate. If inspection indicates the components are "pulling through" the backing plate, **immediately** take the ambulance out of service and install a new fastening system with new backing plates.

3. **The installer must be able to verify that the fastening-system has been installed to meet all applicable standards.** The installer should be able to confirm that the ambulance floor and backing plate system meets or exceeds the standards in your country.

4. **Make sure your fastening system has been installed with backing plates beneath the ambulance floor at all mounting points.** If the backing plates are not present, **immediately** take the ambulance out of service and have a new fastening system with backing plates installed.

⚠ WARNING
Improper or inadequate installation can cause injury. The installer should test the fastening system setup to meet or exceed all applicable guidelines.
A fastening system installed without backing plates can fail in a crash. Use properly installed backing plates to secure the fastening system at all mounting points.
Improperly installed backing plates can fail in a crash. Secure the backing plates to primary structural members of the ambulance at all mounting points.

2 - OPERATOR FOCUS

2.1 Operator Training

Operators using the fastening system:

- must read and understand this manual.

- must have training on proper use of the fastening system.

- must have a training on emergency-medical service and emergency patient-handling procedures.

- must have the physical ability to assist the patient.

- must practice with the fastening system before using it with a patient.

- must keep training records. For a sample training record sheet, see "Training Record" on page 22.

The **Ferno Injury Free** program from Ferno provides training on nutrition, exercise, management of stress and fatigue, ergonomics, and injury prevention, all from an emergency-medical services perspective.

http://www.fernoems.com/injuryfree

<div style="border:1px solid #000">

⚠ **WARNING**

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

</div>

Tip

EMT: Injury Free

For training on nutrition, exercise, ergonomics, injury prevention, and more, scan the QR Code below with an internet-connected device.

2.2 Terms

The following terms are used in this manual.

- **FASTENING SYSTEM:** The fastening system is a generic term for a device that secures a compatible ambulance cot or transport system inside an ambulance for ground-based transport.

- **INTEGRATED CHARGING SYSTEM (ICS):** The ICS is the system of cables and connections from the battery charger to the fastening system. The ICS delivers charging power to the iN∫X when the power to the charger is ON and the iN∫X is secured in the fastening system.

- **INTERACTIVE CONTENT:** For training videos and proper use of the iN∫X, scan a QR code in this manual, click a link in an electronic version of this manual or visit our website at www.ferno.com.

- **NOSE:** The nose is located at the end of the fastening system nearest the rear ambulance doors (or furthest from the ambulance driver.)

3 - OVERVIEW

3.1 Description

The **Ferno® iN∫LINE™ Fastening System** is a device designed to secure a compatible Ferno ambulance cot or iN∫X® transport system inside a ground-based ambulance. See "Fastening System Compatibility" on page 4 and "Compatible Ferno Products" below.

Three lengths are available: iN∫LINE-S, iN∫LINE-M, and iN∫LINE-L.

In this manual, the term fastening system is used to refer to all models of the iN∫LINE. When differences exist, the specific model name (iN∫LINE-S, iN∫LINE-M or iN∫LINE-L) is used.

The fastening system is for professional use only by trained Emergency Medical Service operators. See "Operator Skills and Training" on page 8.

FEATURES

- **Aluminum Construction:** The exterior is impact-resistant and easy to clean.
- **Automatic Charging with ICS:** The charging system is integrated into the fastening system and charges or maintains the charge in the iN∫X battery whenever the iN∫X is secured in the fastening system. The iN∫X power switches to OFF when it is secured in a powered ICS.
- **Automatic Switching (Charging):** If the ambulance electrical system allows automatic switching, the ICS can use the ambulance electrical system when the ambulance is running, or utility power when the ambulance is parked and connected to utility power.
- **Safety Hook:** The integrated safety hook functions as a safety stop to hold the cot or iN∫X secure inside the ambulance while operators raise and lower the legs during the loading and unloading process
- **Release Button:** Single-press button unlocks the cot or iN∫X for unloading.
- **Tested and Certified for Worldwide Standards Compliance:** See "Compliance" on page 6.
- **Track Loading:** Allows loading of the cot or iN∫X from a variety of angles.

3.2 Compatible Ferno Products

The fastening system is compatible only with Ferno products. See "Fastening System Compatibility" on page 4.

- Ferno® iN∫X® Patient Transport & Loading System™

⚠ WARNING

Improper use can cause injury. Use the fastening system only for the purpose described in this manual.

An improper cot/transport system can cause injury. Use only a compatible Ferno product designed or properly modified for use with the fastening system.


Installation Overview

To install the fastening system, follow the instructions in an iN∫LINE installation manual. A manual is provided with each installation kit. For additional manuals, contact Ferno. See "Ferno Customer Relations" on page 2.

As a user, be aware of the following:

- The ambulance must comply with the standards of the country in which it is used. See "Compliance" on page 6 for a list of standards met by the fastening system.
- Installation requires the use of backing plates beneath the ambulance floor at all mounting points. If your ambulance does not have the required backing plates, have them installed.
- Inspect the fastening system regularly to ensure it meets all required standards required by your local government. See "Inspecting the Fastening System" on page 15.
- Install a new fastening system when remounting an ambulance box. Removing and reinstalling an old fastening system can weaken the fastening system.
- If the ambulance is involved in a traffic accident, inspect it. See "Inspecting the Fastening System" on page 15. Replace any damaged components.

3.3 General Specifications
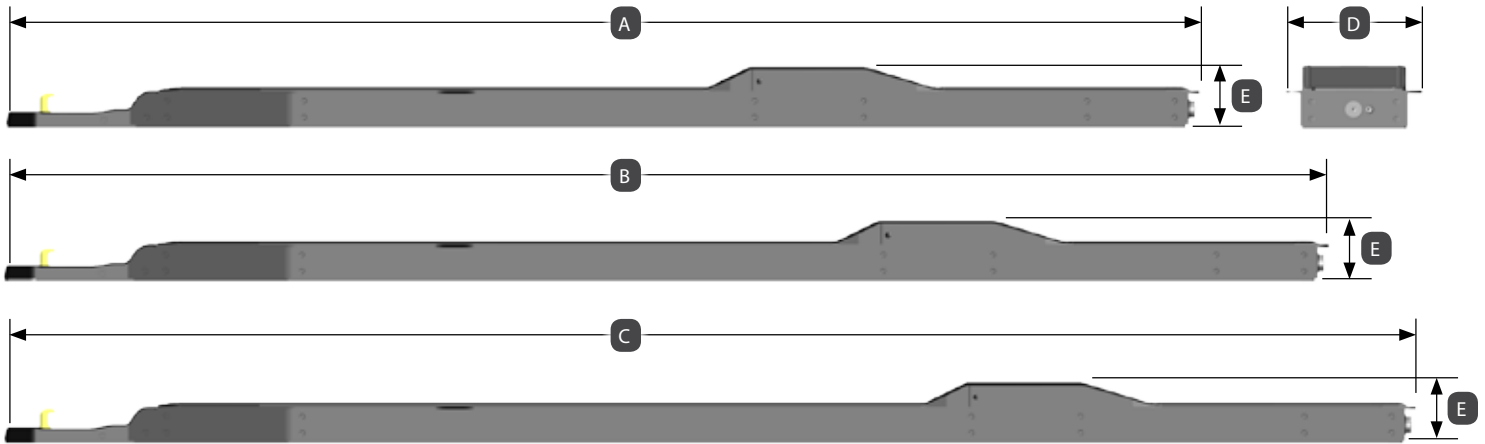
Length Comparison (Top to Bottom): iN∫LINE-S, iN∫LINE-M, iN∫LINE-L

Dimensions	Imperial	Metric
A) iN∫LINE-S Length	86 in	2184 mm
B) iN∫LINE-M Length	95 in	2424 mm
C) iN∫LINE-L Length	102 in	2584 mm
D) Overall Width-S, M, L	9.5 in	240 mm
E) Overall Height-S, M, L	4.5 in	115 mm

Weight		
iN∫LINE-S	72 lb	32.7 kg

General specifications are rounded. Metric conversions are calculated before rounding. Ferno reserves the right to change specifications without notice.

iN∫Line Construction	
Frame	Aluminum
Internal Components	Steel
Other	Plastic

3.4 Components

Integrated Charging System

Fastening Post Lock

Floor Lock Indicator Window

Rear of Ambulance

Floor Lock Screws

Fastening Post Retainer

Release Button

Safety Hook

Nose

Tip

Components Common to All Models

The only variations between iN∫LINE models is the distance of the components from the nose/safety hook.

4 - FEATURES

4.1 Release Button

The release button is located on the nose of the fastening system (Figure 1). Press the button to unlock the compatible Ferno product for unloading. See "Using the Fastening System" on page 14.
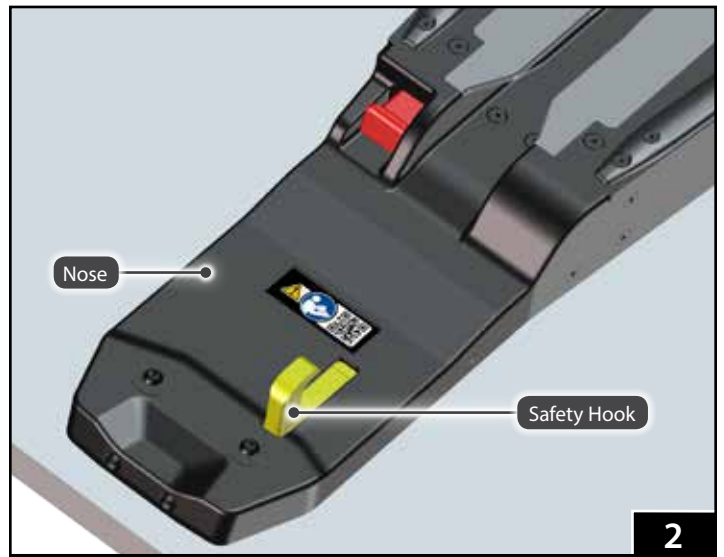

Release Button

Nose

1

4.2 Safety Hook

The safety hook is located on the nose of the fastening system (Figure 2).

During both the loading and unloading processes, the safety hook holds the compatible Ferno product securely inside the ambulance while the operators raise and lower the undercarriage legs.

See "Using the Fastening System" on page 14.

Nose

Safety Hook

2

4.3 Fastening-Post Retainer

The fastening-post retainer is located on the nose of the fastening system (Figure 3).

The fastening-post retainer captures the control-end post of the compatible Ferno product and helps hold it in the fastening system during vehicle transport.

Fastening Post Retainer

Nose

3
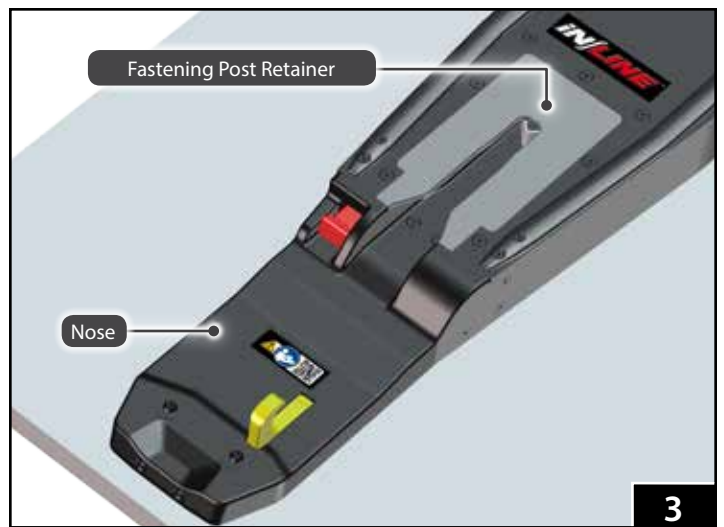
4.4 Fastening-Post Lock

The fastening-post lock is located near the center of the fastening system (Figure 4). It captures the loading-end post of the compatible Ferno product during the loading process and securely locks it in the fastening system during vehicle transport. See "Using the Fastening System" on page 14.

Fastening Post Lock

4

4.5 Integrated Charging System (ICS®)

The Ferno® Integrated Charging System (ICS®) is located near the center of the fastening system (Figure 5). When a Ferno® iN∫X is locked in the fastening system and the ICS is connected and powered, the ICS will:

- disable powered operation of the iN∫X
- charge the iN∫X battery

The ambulance ignition, inverter, and/or outlet switch may need to be turned ON to supply electrical power to the ICS.


ICS Charging Contacts

5

4.6 Floor Lock Indicator Window

The floor lock indicator window is located at the end of the fastening system (Figure 6) and helps verify that the fastening system is secured to the ambulance floor.

The indicator window is fully red when the fastening system is properly locked to the floor.

If the indicator window shows any portion of green (unlocked), the fastener is not properly secured to the ambulance floor.

The upper fastener is removable from the floor for cleaning. See "Removing the Fastening System from the Floor for Cleaning" on page 17 and "Attaching the Fastening System to the Ambulance Floor" on page 18.

Not Locked to Floor   Locked to Floor

6
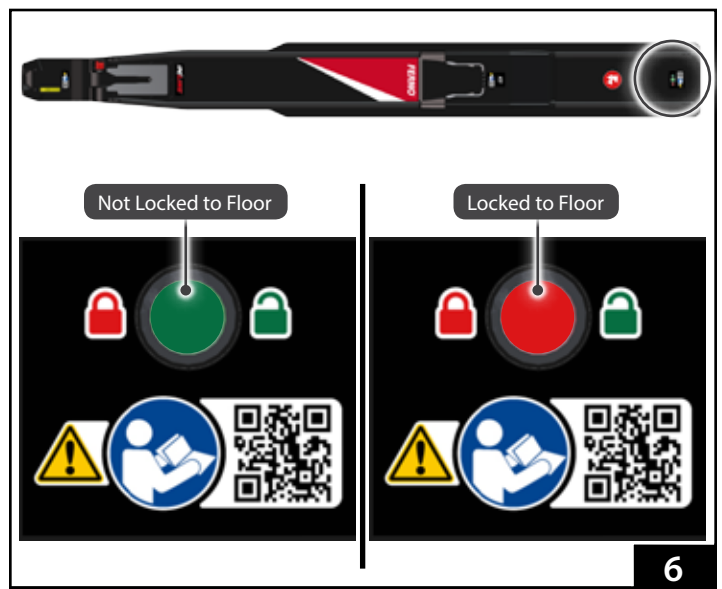
5 - USING THE FASTENING SYSTEM

5.1 Before Placing the Fastening System in Service

- Before use, personnel who will work with the fastening system must read and understand this manual. Appropriate skills and training are also required. See "Operator Skills and Training" on page 8.

- Confirm that the fastening system operates properly. See "Inspecting the Fastening System" on page 15.

- Confirm that the fastening system is securely locked to the floor. See "Inspecting the Fastening System" on page 15.

- The fastening system is for use with Ferno® products only. See "Compatible Ferno Products" on page 9.

5.2 General Guidelines for Use

- Medical advice is beyond the scope of this manual.

- It is the users' responsibility to ensure safe practices for the patient and themselves.

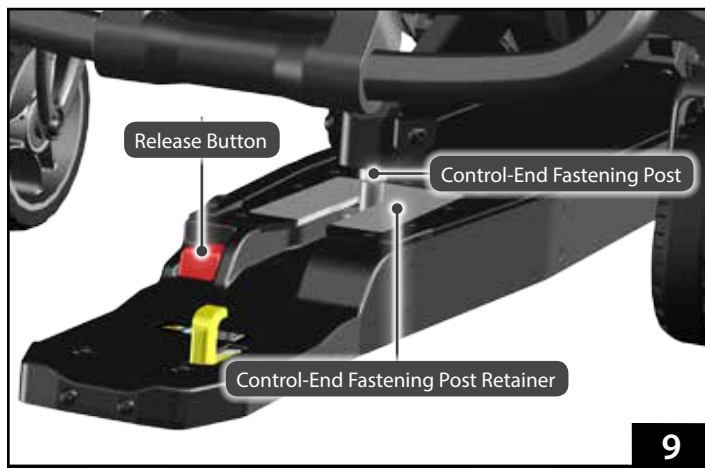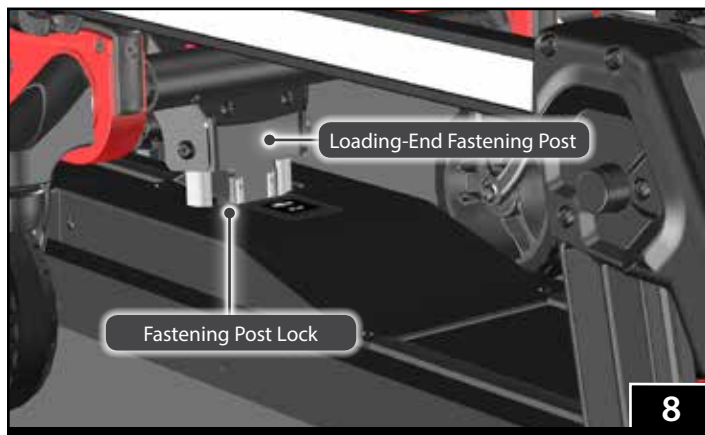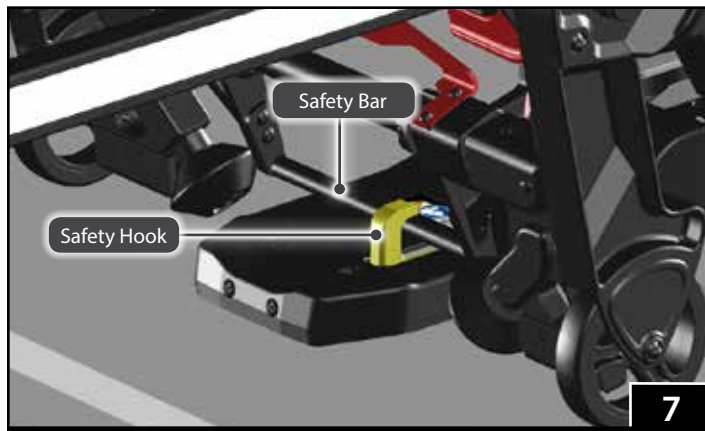## 5.3 Using the Fastening System

Note: *Refer to the users' manual for loading and unloading instructions specific to your product. For additional manuals, contact Ferno. See "Ferno Customer Relations" on page 2. For a list of compatible Ferno products, see "Compatible Ferno Products" on page 9.*

1. Always fully engage the yellow safety hook with each safety bar on your product (Figure 7).

2. During the loading process, roll the product into the fastening system until it engages the locking mechanism.

   ○ An audible "click" can be heard when the fastening post lock engages the loading-end fastening post (Figure 8).

   ○ The control-end fastening post slides into the retainer channel (Figure 9).

3. Verify the product is locked in the fastening system by attempting to roll it out of the ambulance. If the lock has engaged, the product will remain locked in the fastening system.

4. Push the red release button (Figure 9) to unlock the product and allow it to be removed from the fastening system. If the button is difficult to press, push the product away from the nose of the fastening system to free the lock mechanism.

Tip

Engaging the Safety Hook

The safety hook holds the compatible Ferno product secure while the operators raise or lower the undercarriage legs during loading and unloading.

Operators should roll the product firmly against the safety hook and verify it is held securely by the hook **before** raising or lowering the undercarriage legs.

⚠️ **WARNING**

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

An improper cot/transport system can cause injury. Use only a compatible Ferno product designed or properly modified for use with the fastening system.

Safety Bar
Safety Hook
7

Loading-End Fastening Post
Fastening Post Lock
8

Release Button
Control-End Fastening Post
Control-End Fastening Post Retainer
9

6 - MAINTENANCE

6.1 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. For a sample record sheet, see "Maintenance Record" on page 23.

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

6.2 Disinfecting the Fastening System

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

6.3 Cleaning the Fastening System

1. Hand clean all surfaces of the fastening system with warm water and a mild detergent.

2. Rinse with warm, clear water. Dry the fastening system with a towel or allow it to air-dry.

6.4 Inspecting the Fastening System

Have your service's equipment maintenance personnel inspect the fastening system regularly.

Follow the checklist at right and operate the fastening system through all its functions as described in this manual. See "Responsibility of User to Maintain a Safe Fastening System" on page 7.

If inspection shows damage or excessive wear, remove the fastening system from service until repair is made. See "Parts and Service, Accessories" on page 20.

⚠ WARNING

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

Minimum Maintenance	Each Use	As Needed	Monthly
Disinfecting (this page)	•		
Cleaning (this page)		•	
Inspecting (this page)		•	•

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 can cause damage. Do not use abrasive materials to clean the fastening system.

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

Make sure all connections are tight, but **do not overtighten the hardware**. Overtightening, especially with powered tools, can cause the nut and bolt beneath the ambulance floor to pull through the backing plate.

If inspection indicates the components are pulling through the backing plate, take the fastening system out of service immediately and install a new fastening system with new backing plates.

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 properly to the mounting rail?
- Does the product load and unload properly?
- Does the product lock properly into the fastening system?
- Monitor the ambulance floor, including beneath the ambulance, and check the integrity of the fastening system. Is the system worn? Has exposure to the environment caused noticeable damage?
- Are the required backing plates present, and are they securely welded to a primary structural member of the ambulance floor?
- Is all hardware tight? (Reminder: Do not overtighten the hardware.)

6.5 Lubricating the Fastening System

The fastening system is constructed with lubrication-free materials. Do not lubricate the fastening system.

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

Do Not Lubricate

6.6 Pressure-Washing

Use caution when using pressurized water, spray-wands and equipment when cleaning the fastening system. Wear all safety equipment recommended by the pressure-sprayer manufacturer.

PREPARING TO PRESSURE-WASH

1. Remove the cot or iN∫X from the fastening system.

2. If you have the iN∫X, disconnect power to the Ferno battery charger, or turn the power to the charger OFF.

3. If you have removed the upper fastening system from the floor for cleaning, cover the ends of the ICS cables with a plastic bag held closed by a rubber band. This will prevent water from entering a disconnected cable.

PRESSURE-WASHING THE FASTENING SYSTEM

1. Set the nozzle pressure at or below 3000 psi (20,684 kPa). Ferno recommends you use a nozzle with a wide angle of spray (25° or 40°). Keep the nozzle at least 18 inches (457 mm) away from the fastening system at all times. Do not spray directly into the ICS contacts.

2. Wipe the fastening system dry with a towel if desired.

3. Allow the fastening system to dry for 10 minutes. (If any water penetrates the case, this allows time for it to drain away under the ambulance.)

4. If you have the iN∫X, reconnect the Ferno battery charger or turn power to the charger ON. Load the iN∫X into the fastening system and verify the ICS charges and disables the iN∫X powered mode.

5. When fully dry, return the fastening system to service.

> ### Important
>
> The fastening system is water-resistant.
>
> - **DO:** Keep the nozzle pressure setting **at or below** the listed pressure setting:
>   - 3000 psi/20,684 kPa
>   - 4 gallons per minute
>   - 5 liters per minute
> - **DO:** Keep the nozzle at least 18"/457 mm from the surface of the fastening system at all times.
> - **DO:** Cover both ICS cable connectors if the upper fastening system has been removed from the floor.
> - **DO:** Keep track of the four locator pins if the upper fastening system has been removed from the floor.
> - **DO NOT:** Spray water into the ICS port.

> ### Ingress Protection Rating
>
> The iN∫LINE fastening system is rated **IP 56.** IP stands for Ingress Protection, and indicates the fastening system has been tested in compliance with dust and water infiltration standards.
>
> **Solid Particle Protection (Rating: 5):** Dust-protected
>
> **Liquid Ingress Protection (Rating: 6):** Protected against water infiltration
>
> *The IP Rating system was developed by the European Committee for Electrotechnical Standardization (CENELEC) to show compliance of ANSI/IEC 60529, Degrees of Protection Provided by Enclosures (IP Code).*

6.7 Removing the Fastening System from the Floor for Cleaning

The upper fastening system is designed to be removable for cleaning.

1. Use an M4 Allen wrench to remove the two screws and washers from the nose (Figure 10). Do not discard the screws or washers.

2. Use an M6 Allen wrench to loosen the set screw at the end of the fastening system near the floor lock window (Figure 11).

3. Use an M6 Allen wrench to loosen the fastening bolt (Figure 11) until the floor lock window changes from red (locked) to fully green (not locked). See "Lock Window" on page 13.
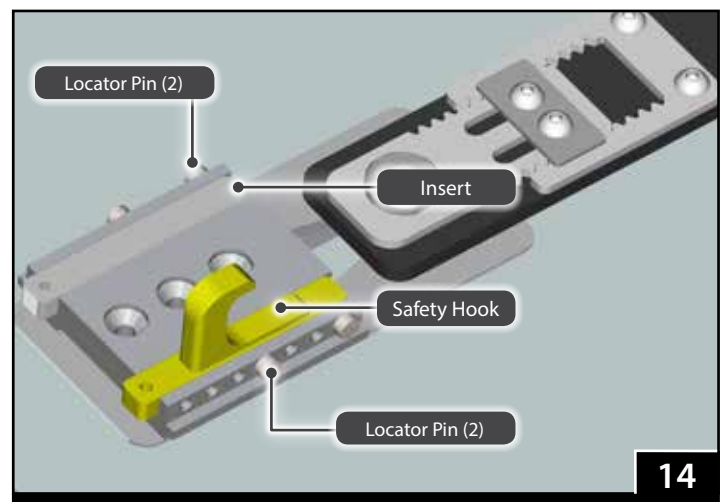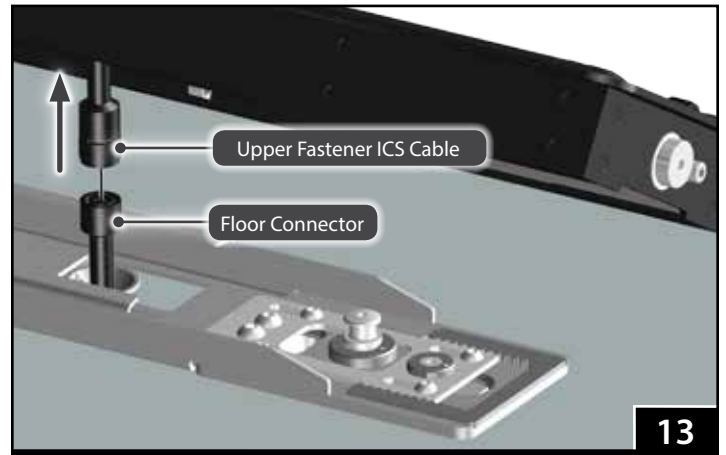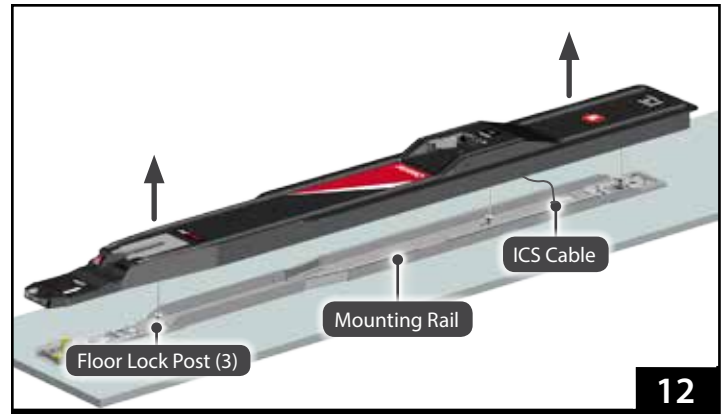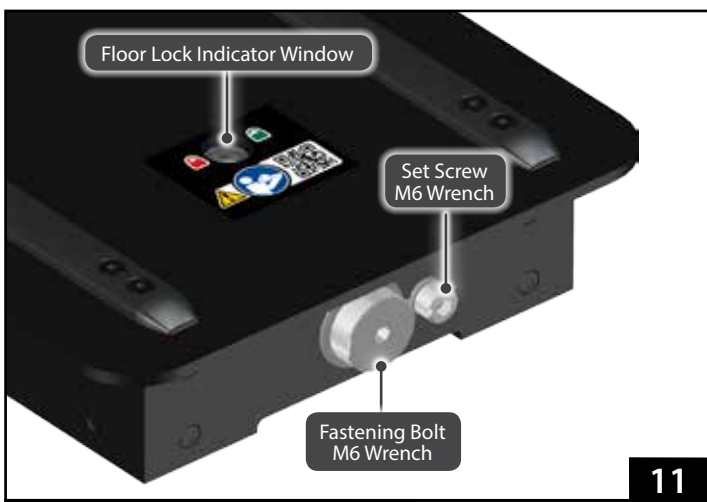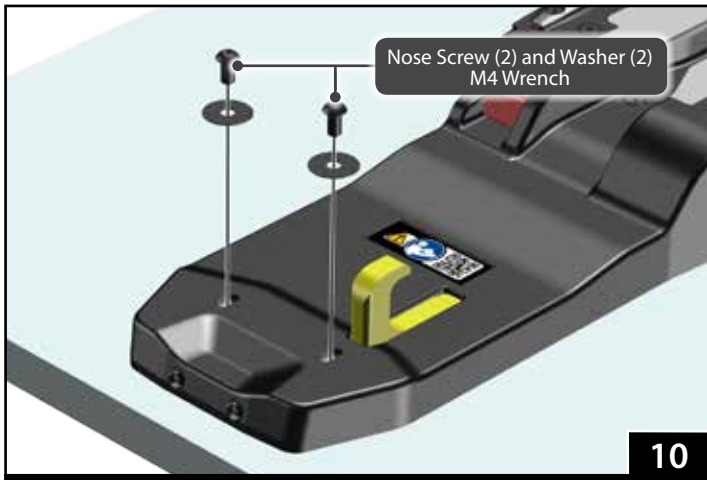
Note: *Before Step 4, be aware the ICS cable is connected to the floor outlet under the fastening system. Take care when lifting the fastening system off the floor posts. Do not stretch or damage the ICS cable.*

4. Using additional help as needed, lift the fastening system straight up and off the floor posts and set it beside the floor plate, taking care to not stretch or damage the ICS cable (Figure 12).

5. Disconnect the ICS cable from the floor connector (Figure 13).

6. During cleaning, be aware:

   ○ Four locator pins hold the position of the safety hook and insert (Figure 14). Keep these pins in place while cleaning.

   ○ If power-washing with the upper fastening system removed, cover both ends of the ICS connector cables with a plastic bag, held closed by a rubber band.

Important

To prevent damage to the ICS charging wire, monitor the position of the charging wire as you lift the fastening system off the floor adapter.

Do not remove the locator pins that hold the position of the safety hook and insert (Figure 14). Verify all four pins are present. Keep the pins in position.

ICS Cable

Mounting Rail

Floor Lock Post (3)

12

Nose Screw (2) and Washer (2)
M4 Wrench

10

Upper Fastener ICS Cable

Floor Connector

13

Floor Lock Indicator Window

Set Screw
M6 Wrench

Fastening Bolt
M6 Wrench

11

Locator Pin (2)

Insert

Safety Hook

Locator Pin (2)

14

6.8 Attaching the Fastening System to the Ambulance Floor

1. After cleaning, verify that the four locator pins that hold the position of the safety hook and insert are in position (Figure 15).

2. Remove the rubber band and plastic bag cover from the two halves of the ICS cable.

3. Verify that the floor lock indicator window is showing green (no red). See "Floor Lock Indicator Window" on page 13.

Note: *Monitor the position of the ICS cable as you attach the fastening system to the mounting rail.*
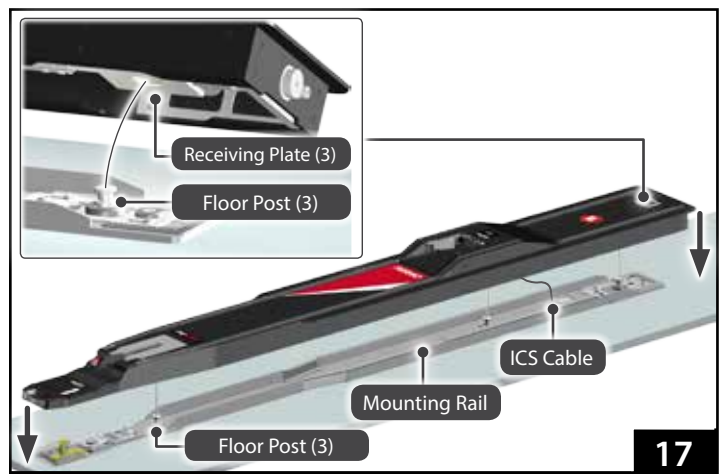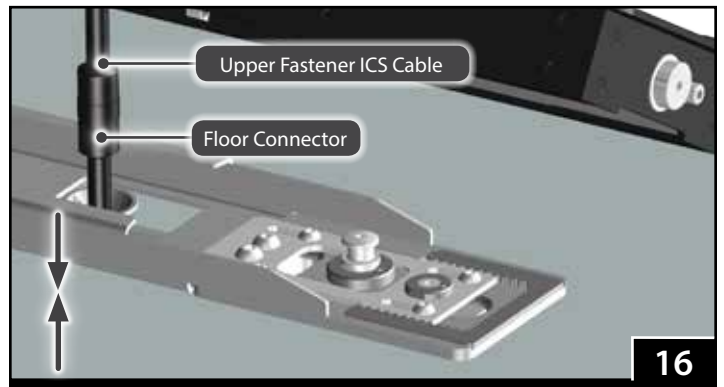
4. Connect the ICS cable to the floor connector (Figure 16). Center any excess cable in the middle of the mounting rail where it will not be kinked or damaged.

5. Using additional help as needed, orient the upper fastening system over the mounting rail with the receiving plates over the floor posts. Set the upper fastening system in place (Figure 17).

6. Verify the upper fastening system is properly positioned on the mounting rail, with the safety hook passing through the slot in the nose. The fastening system should be in contact with the floor.

⚠ **WARNING**

An improperly-secured fastening system can fail in a crash. Confirm all fasteners are fully tightened and properly secure the fastening system to the floor.

Important

Do not remove the locator pins that hold the position of the safety hook and insert (Figure 14). Verify all four pins are present. Keep the pins in position.

Locator Pin (2) · Insert · Safety Hook · Locator Pin (2)

15

Upper Fastener ICS Cable · Floor Connector

16

Receiving Plate (3) · Floor Post (3) · ICS Cable · Mounting Rail · Floor Post (3)

17
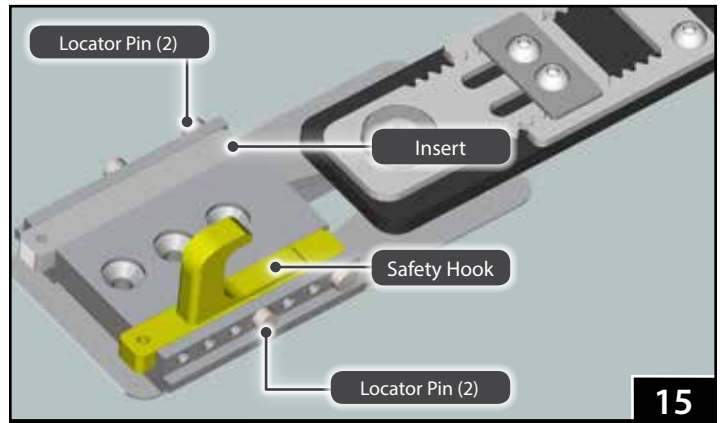
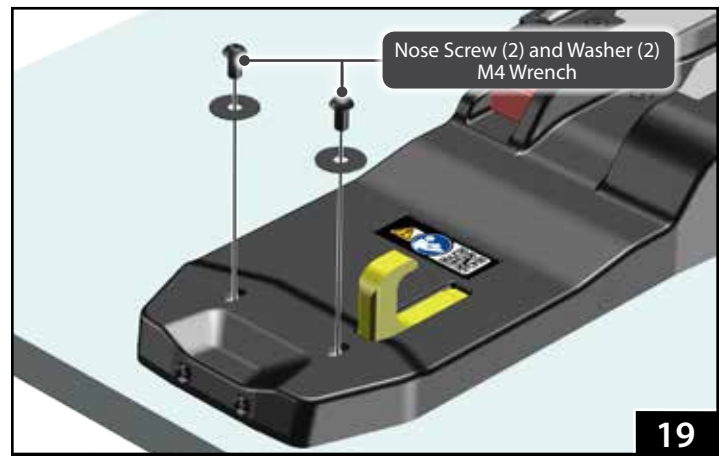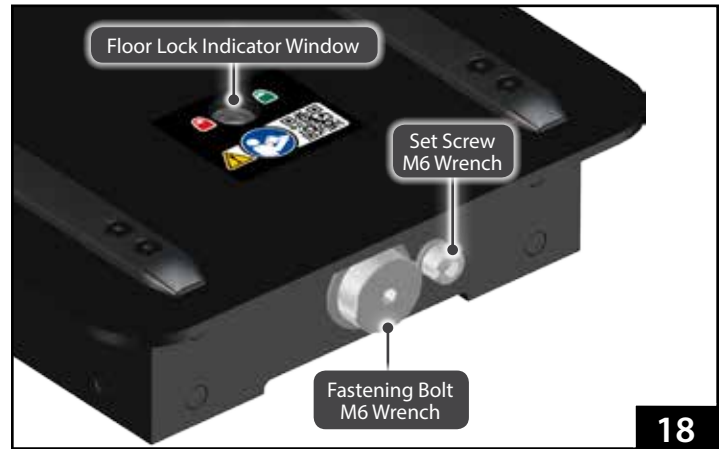7. Use an M6 Allen wrench to tighten the fastening bolt (Figure 18). Verify the floor lock indicator window changes from green (unlocked) to **fully red** (locked). See "Floor Lock Indicator Window" on page 13.

8. Use an M6 Allen wrench to tighten the set screw (Figure 18). Tighten until snug.

9. Clean and prepare the two M4 nose screws as follows:

   ○ Clean the threads of the screws, plus the mating threads of the safety-hook mounting block with acetone or an appropriate Loctite® cleaner/primer (not supplied). Allow the threads to dry completely.

   ○ Apply 1 drop of threadlocker (Blue Loctite® 242®) to the threads of the screws. Install the screws immediately. Wipe of any excess threadlocker.

10. Use and M4 Allen wrench to attach the two nose screws (Figure 19). Tighten until snug. Do not overtighten.

Important

When tightening the fastening bolt, the bolt should be able to rotate at least 12 complete 360° rotations. If the bolt stops prior to this, or if any green shows in the window, the fastening bolt is not tight enough. Remove and reposition the fastening system and verify it is properly engaged with the floor posts.

Floor Lock Indicator Window
Set Screw M6 Wrench
Fastening Bolt M6 Wrench

18

Nose Screw (2) and Washer (2) M4 Wrench

19

7 - PARTS AND SERVICE, ACCESSORIES

7.1 U.S.A. and Canada

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

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

⚠ WARNING
Improper parts and service can cause injury. Use only Ferno parts and Ferno-approved service on the fastening system.
Modifying the fastening system can cause injury and damage. Use the fastening system only as designed by Ferno.

7.2 Australia

In Australia, contact Ferno to order parts or for professional repairs.

Ferno-Australia
11 Johnstone Road, Brendale, QLD 4500
Queensland, Australia

Telephone (Toll-Free)	+1.800.804.647
Telephone	+617.3881.4999
Fax	+617.3881.1125
Internet	http://www.ferno.com.au/

7.3 United Kingdom/EU Representative

In the European Union or in the United Kingdom, contact Ferno to order parts or for professional repairs.

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

Telephone	+44 (0) 1274.851999
Telephone (Service)	+44 (0) 1274.854511
Fax	+44 (0) 1274.851111
Internet	http://www.ferno.co.uk/

7.4 Worldwide

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

7.5 Accessories

Ferno offers a full line of accessories approved for installing the fastening system. Always follow the instructions packed with accessories. Keep the instructions with this manual.

Ferno also offers a full line of emergency products for the EMS professional. Contact Ferno or your Ferno distributor for product information. See "Ferno Customer Relations" on page 2.

NOTES

TRAINING RECORD

Date	Printed Name	Signature	Training Method			Trainer Initials
			Read Manual	Video/ Online	Hands-On	

MAINTENANCE RECORD

Date	Maintenance Performed	By