

INX™



 **FERNO®**

Users' Manual
Integrated Patient Transport
& Loading System™



Pub. No. 234-3500-02

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

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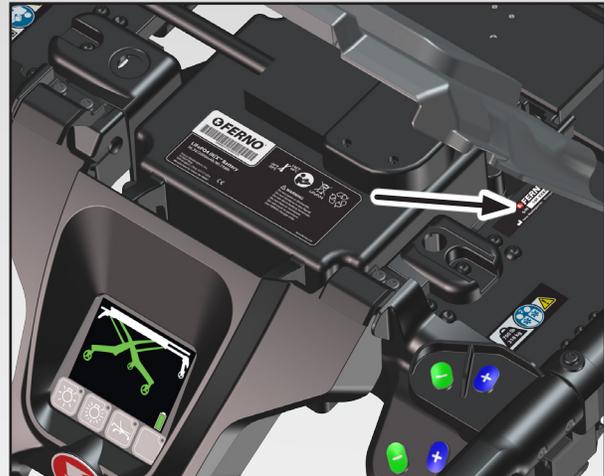
For assistance or information, please contact your Ferno distributor. If you do not have a Ferno distributor, please contact Ferno Customer Relations:

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

FOR iNjX SUPPORT

Contact us at _____ inxsupport@ferno.com



Serial Number _____

Location: Patient-left main frame, under battery cover

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

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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.

Enhanced Manual



When this symbol appears in the manual or on the iNjX, scan the QR code (using a smart-phone) or click (in the electronic manual) for online information and video content (requires internet access).

www.fernoems.com/inx



Read this manual and retain for future reference. A training DVD is also provided. To request additional manuals or DVDs, contact Ferno.



Ferno-Washington, Inc.
70 Weil Way
Wilmington, Ohio 45177-9371 U.S.A.
1.937.382.1451



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

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1 - SAFETY INFORMATION

1.1 Warning

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

WARNING

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

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

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

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

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

An unrestrained patient can be injured. Use properly-installed patient restraints to secure the patient on the iNjX.

Rolling the iNjX above the factory-set maximum transport height can cause it to tip. Only roll the iNjX at or below the factory-set maximum transport height.

Uncontrolled movement can cause injury or damage. Support and control the iNjX at all times.

Rolling the iNjX sideways can cause it to tip. Roll the iNjX only toward the control end or loading end.

Failure to engage the safety hook during loading or unloading can cause injury. Operators must visually ensure each safety bar engages the safety hook and the iNjX is secure inside the ambulance before raising or lowering the legs.

A severe angle can injure the patient and/or operators. Control the iNjX when using a direct-power mode.

Uncontrolled movement can cause injury or damage. Support the load before using an actuator-release handle.

A severe angle can injure the patient and/or operators. Control the iNjX when operating without power.

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

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

Failure to use the iNjX antler and iNjX safety hook (provided) can cause injury. Use the iNjX only with these items.

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

1.2 Important

Important notices emphasize important operation and/or maintenance information. Failure to follow Important notices could result in product damage 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 iNjX, follow the disinfecting and cleaning instructions in this manual.

1.5 Fastening System Compatibility

Combining different manufacturers' products such as a Ferno cot 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 product with a non-Ferno fastening system is misuse of the Ferno product. The user assumes responsibility for the outcome of known, intentional misuse.

Safety Information

1.6 Symbol Glossary

The symbols defined below are used on the iNjX and/or in this users' 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	Laser Class 2M Warning: Do Not Stare Into Light	Pinch Point Keep Fingers Clear	Read the Users' Manual	Operation Requires Two Trained Operators	Load Capacity
					
OFF	ON	Scene Lights	Emergency Lights	Chair Position	Extend Legs
					
Retract Legs	Locked	Unlocked	Lubricate	Do Not Lubricate	Status Indicator: Low or Medium Priority
					
Status Indicator: High Priority	Manufacturer	DC (Direct Current) electricity	European Community Authorized Representative	WEEE Directive: Dispose of Battery Properly	Do Not Open No User Service In This Area
					
QR Code (To Access Online Material, Scan with Smartphone)					

1.7 Safety and Instruction Labels

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



Safety Reminders
Location: Control and Loading Ends



Ferno Battery Only
Location: Battery Cradle



Do Not Open
Location: Display Bottom



Safety Reminders
Location: Control and Loading Ends



Sidearm Unlock Labels (2 ea.)
Location: Sidearm



Pinch Point
Location: Actuator Sliding Surface



Laser Emitter Warning (2)
Location: Laser Apertures



Do Not Open/Laser Notice
Location: Controller Housing



Non-Powered Operation
Location: Actuator-Release Handles (2)



Non-Powered Operation Handle Lock/Unlock (2)
Location: Handle Mounts

2 - OPERATOR FOCUS

2.1 Operator Training

Operators using the iNjX:

- must read and understand this manual.
- must have training on proper use of the iNjX.
- must have training on emergency-medical service and emergency patient-handling procedures.
- must have the physical ability to assist the patient.
- must practice with the iNjX before use with a patient.
- must keep training records. For a sample training record sheet, see "Training Record" on page 58.

Ferno cares about operator and patient safety. For more information, visit our iNjX Quick Start training website and download the Ferno Injury Free training program from your smartphone store.

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.

2.2 Operator Height and Strength

The iNjX is designed to minimize the need for lifting. Whenever possible, use the powered hydraulic system to:

- extend and retract the legs.
- load the iNjX into and unload it from an ambulance.
- transition between surfaces of varying levels.
- place the iNjX at good height to establish a proper, ergonomic lifting position for the operators.

An excessive load (exceeding the 700 lb/318 kg load capacity) or non-powered operation may require the operators to lift a portion of the load. Use additional help as needed. See "Using Additional Help" on page 8.

WARNING

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



Download our free training program,
Ferno Injury Free
Available from the iTunes™ App Store™ *
or Google Play™ for Android™ *
<http://www.fernoems.com/injuryfree>

*iTunes and App Store are trademarks of Apple Inc. Corp.; Cupertino, CA, USA
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iNjX Quick Start Training

Tip

To supplement this users' manual, visit the iNjX Quick Start video training support page online:

<http://www.fernoems.com/inx/training>

Or, scan this QR Code with a smartphone:



Important

If the ambulance is parked on an uneven surface, the operators (and any helpers) may need to extend the legs higher than the user-set loading height to allow the iNjX to roll into the ambulance.

Tip

Weight Distribution

The amount of weight that the control-end operator must support and balance during the loading and unloading process is reduced when the patient is lying supine, and is increased when the patient is sitting upright (the backrest is raised fully).

No-Lift Loading/Unloading

Do not lift the iNjX off the ground when using power during the loading or unloading process.

Support and balance the control end of the iNjX while the control-end legs are off the ground. Keep the wheels on the ambulance floor.

Supporting and Balancing

Support and balance the iNjX by keeping the iNjX level with the ambulance floor.

This includes keeping all iNjX wheels on the floor at all times during loading/unloading.

2.3 Support and Balance the Load

WHEN LOADING AND UNLOADING

The control-end operator should be prepared to support and balance a portion of the load when the control-end legs are off the ground during the process of loading the iNjX into, or unloading it from an ambulance.

The amount of weight the operator should be prepared to support and balance is lower when the patient is lying supine (Figure 1), and higher when the patient is sitting upright with the backrest raised (Figure 2).

The operator does not need to lift the iNjX. Simply provide support the iNjX during loading/unloading. Keep all iNjX transport and intermediate wheels rolling on the ambulance floor.

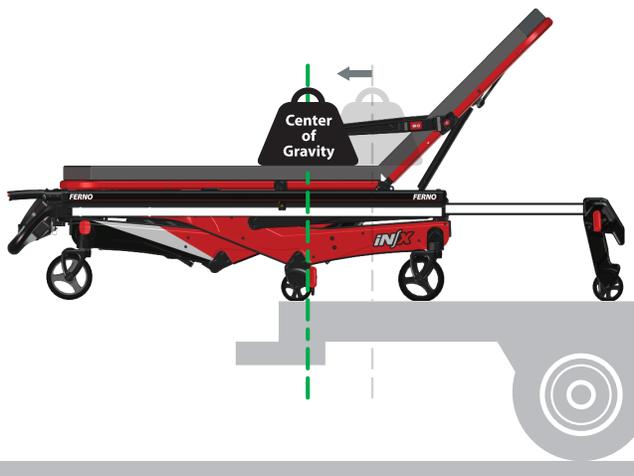
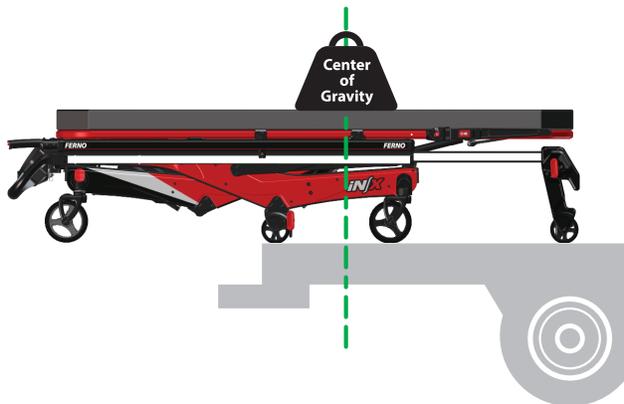
For complete loading and unloading procedures, see "Loading the iNjX" on page 36 and "Unloading the iNjX" on page 38.

Do not lift the iNjX off the ground during the loading or unloading process.

WHEN ROLLING

Operators and helpers must keep both hands on the main frame (or guide bar), support and balance the load, and maintain control of the iNjX at all times. Use care on rough or uneven terrain.

Roll the iNjX only at, or below, the maximum transport height. This height is programmed into the iNjX. See "Rolling the iNjX" on page 34.



2.4 Using Additional Help

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

- Operators stand at the loading and control ends of the iNjX, maintain control of the iNjX, operate the controls, and direct all helpers.
- Side helpers may need to walk sideways under some circumstances. Follow local protocols.
- Ferno recommends that helpers work in pairs to help maintain iNjX balance.

The chart below shows suggested placement for operators and helpers.

Use special techniques to raise, lower, load, or unload the iNjX without power. See the following sections:

- "Non-Powered Operation: Raising and Lowering" on page 42
- "Non-Powered Operation: Loading" on page 44
- "Non-Powered Operation: Unloading" on page 45

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

700 lb
318 kg Load Capacity*

* Operators (and helpers) must provide lift assistance when the load exceeds the load capacity. Inspect the iNjX if the load capacity has been exceeded (see "Inspecting the iNjX" on page 48).

Tip
Directing Helpers
 Trained operators position themselves at the loading and control ends of the iNjX and operate the controls. Show helpers where to stand and how to grasp the iNjX.

	Raising and Lowering	Rolling	Loading and Unloading
Two Operators			
Two Operators and Two Helpers			
Two Operators and Four Helpers			

Key: O = Operator H = Helper

2.5 Terms

- **AUTO-EQUALIZE:** During normal operation, if the legs are not equally extended, pressing  or  will extend or retract one set of legs until both sets of legs are equally extended. Then, both sets of legs extend or retract simultaneously.
- **AUTOMATIC STOPS:** The iNjX stops automatically at the maximum safe transport height (factory-set) and at the loading height (user-set). To continue raising or lowering, press  or  again.
- **CONTROL END:** The control end of the iNjX is where the display, telescoping handles and shock frame are located. This area is also known as the foot end.
- **DISPLAY:** The display provides operators with the status of many iNjX systems, including the legs, patient surface, battery charge, and special operating modes. See "Display Zones" on page 16.
- **GUIDE BAR:** The curved guide bar is used by the control-end operator to guide and maintain control of the iNjX. The display is affixed between the guide bar and the patient surface. A set of  buttons is attached to the right-hand side.
- **INTEGRATED CHARGING SYSTEM (ICS®):** The ICS allows the iNjX to be charged each time it is secured in the fastening system. (Power to the ICS from the ambulance inverter or shore power must be ON). An ICS system helps keep the iNjX battery fully charged.
- **INTERACTIVE CONTENT:** For training videos and proper use of the iNjX, scan a QR code in this manual, click a link in an electronic version of this manual or visit our website at <http://www.fernoems.com/inx/training>.
- **LIFT-ASSIST:** Under extreme weight conditions (loads), the operators may need to provide lift-assistance. Use additional help if needed. See "Using Additional Help" on page 8.
- **LIGHTS:** Drive lights attached to the actuators illuminate the ground around the wheels and increase iNjX visibility in low-light conditions. Surround lights are bars that span the length of the iNjX and provide steady light to illuminate the iNjX or flash in an attention-grabbing alert pattern to increase safety. See "Light Buttons" on page 15.
- **LOAD:** The load is the overall weight of the patient plus equipment placed on (or attached to) the iNjX.
- **LOADING END:** The loading end of the iNjX is where the backrest, telescoping frame and one of two safety bars are located. This area is also known as the head end.
- **LOADING HEIGHT:** Users can set the iNjX to stop at the proper normal loading height for an ambulance. See "Set the Loading Height" on page 53. Extend the iNjX to the loading height only to load it into an ambulance or unload it from an ambulance.
- **OPERATORS:** The trained operators are referred to as the Control-end Operator and Loading-end Operator in this manual. The trained operators maintain control of the iNjX, operate the controls, and direct helpers.
- **TELESCOPING HANDLES:** Telescoping handles extend or retract to provide the control-end operator with additional ergonomic positions to grasp and guide the iNjX. A set of  buttons is attached to the right-hand telescoping handle. See "Telescoping Handles" on page 21.
- **TRANSPORT HEIGHT:** An alarm beeps when the patient surface is higher than the recommended maximum transport height. Keep the iNjX at or below this height when rolling it.
- **SHEETS:** Sheets or other articles that are placed, or find their way, beneath the patient surface can become caught in the power system. Take care to appropriately place sheets between the pad and the metal patient surface. Keep other articles above the pad.

3 - iNjX OVERVIEW

3.1 Description

The iNjX™ Integrated Patient Transport & Loading System™ is an emergency patient-handling device designed to transport a patient over various terrain, to be loaded into and unloaded from an ambulance, and for transport inside a ground-based ambulance. The iNjX is for professional use by a minimum of two trained operators.

The iNjX is designed to help reduce the risk of back injury to medical service personnel by eliminating or minimizing the amount of lifting required during raising, lowering, or loading into or unloading from an ambulance. It is for use with Ferno® fastening systems (not included).

COMPATIBLE FASTENING SYSTEM

- Ferno® Model 175 antler and rail fastening system (update required, see "Initial Setup" on page 52)

INCLUDED

- Ferno® battery charger and adapter cable
- iNjX battery
- Locking pad constructed of 2-way stretch polyurethane cover; sealed; cover treated with antimicrobial additive
- Set of patient restraints
- Users' manual and training DVD
- iNjX Safety Hook
- ICS® charging contacts standard

WARNING

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

FEATURES

- 700 lb/318 kg lifting capacity (load capacity)
- Independent-leg, powered transport loading system
- Legs auto-equalize before raising or lowering
- Surround Lights safety lighting system
- Drive Lights illuminate the ground around the wheels
- Variable height adjustment allows level loading into an ambulance with a floor of up to 35" (889 mm)
- User-set loading height (maximum 35"/892 mm)
- Meets IP 56 (Ingress Protection rating) dust, water
- 36-Volt DC power system with dual actuators
- Multifunction display
- Position-indicator lights
- Simple   operation
- Multi-position sidearms
- Telescoping handles (control end)
- Coated handling surfaces keep hands/clothes clean
- Four 6-inch, tri-spoke swivel transport wheels
- 2 Wheel locks
- Pneumatic backrest
- Three-position telescoping loading-end frame
- Two-position shock frame
- Direct power and manual backup systems

3.2 General Specifications



Dimensions	Imperial	Metric
A) Wheels	6" x 1.7"	152 mm x 43 mm
B) Length (Adjustable)	63" – 81"	1594-2045 mm
C) Width (Overall)	24"	597 mm
D) Width (Patient Surface)	16"	406 mm
E) Height ¹ (Adjustable)	14" – 49"	356-1245 mm
F) Maximum Transport height (Factory-Preset, measurement is to patient surface)	34"	864 mm
G) Loading Height ² (Adjustable, measurement is to bottom of loading wheel)	35" Maximum	892 mm Maximum
H) Backrest Adjustment	0°–76°	
I) Shock Frame Adjustment	0°–16°	

Weight	
Equipped for Updated Ferno® Model 175 Fastening system ³	180 lbs/81.6 kg

Load Capacity	
Imperial/Metric	700 lbs/318 kg
Stone (UK)	50 st

Power System	
Operating Temp.	-20°F to 140°F (-29°C to 60°C)
Battery Output	36 Volts DC
Charging Time (1 transport, charge maintained by ICS®)	As little as 15 minutes ⁴
Charging Time (depleted)	Up to 1 hour, 45 minutes
Charger Input	100 – 240 Volts AC
Charger Output	Up to 39.6 Volts DC, 2 Amps (for iNjX LiFePO4 battery)

iNjX Construction	
Frame	Aluminum
Legs	Carbon-Fiber Composite
Bed Surface	Aluminum
Wheels	Stainless steel, sealed bearings; Nonconductive wheels
Position Indicator Lights	Class 2M Laser

Soft Goods	
Locking Pad	72.5"x16.5"x3"/1842x419x73 mm

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

¹Height: Distance from the ground to the patient surface.

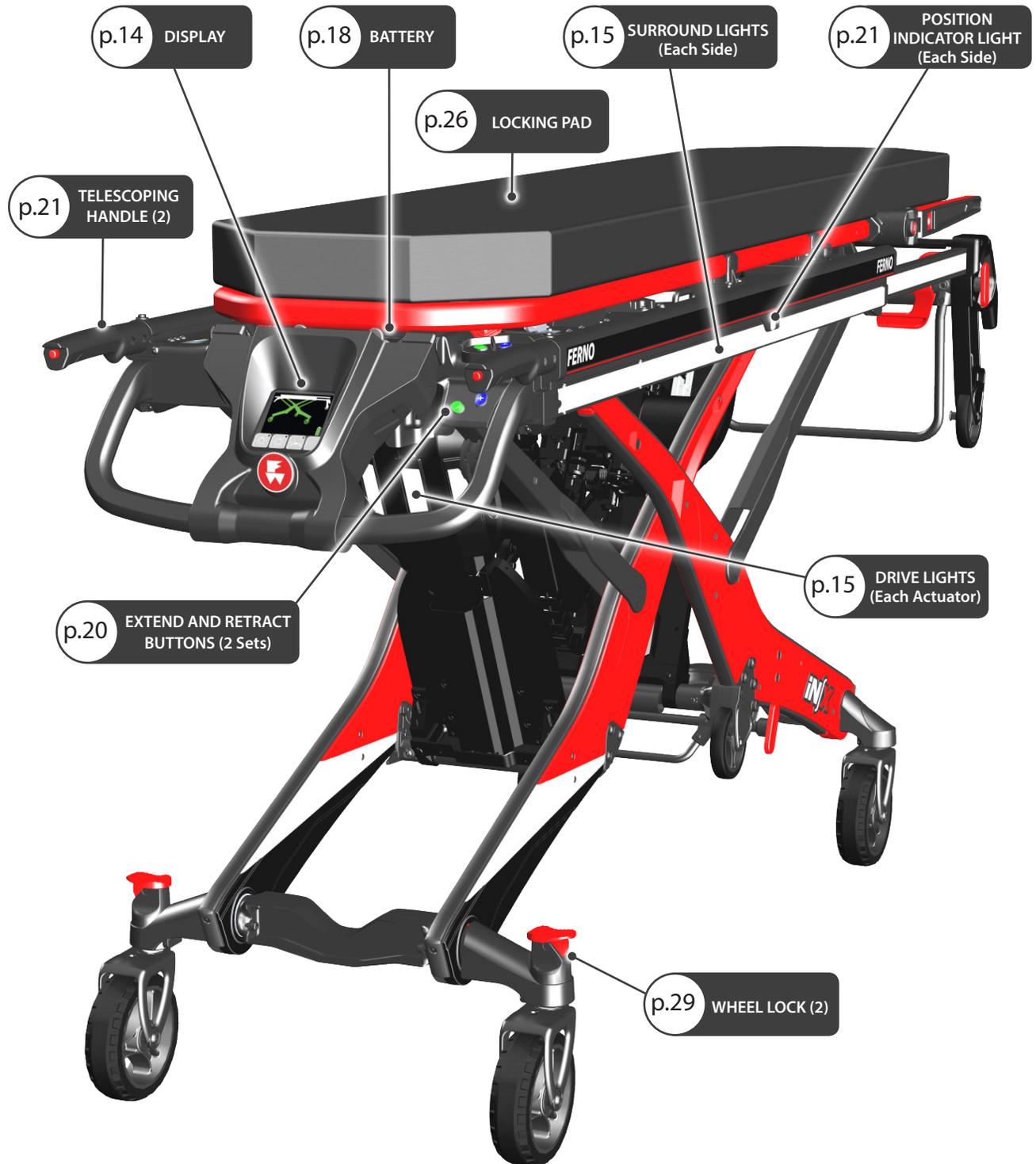
²Loading Height: Distance from the ground to the bottom of the loading wheels.

³Weight is without pad, patient restraints and optional features.

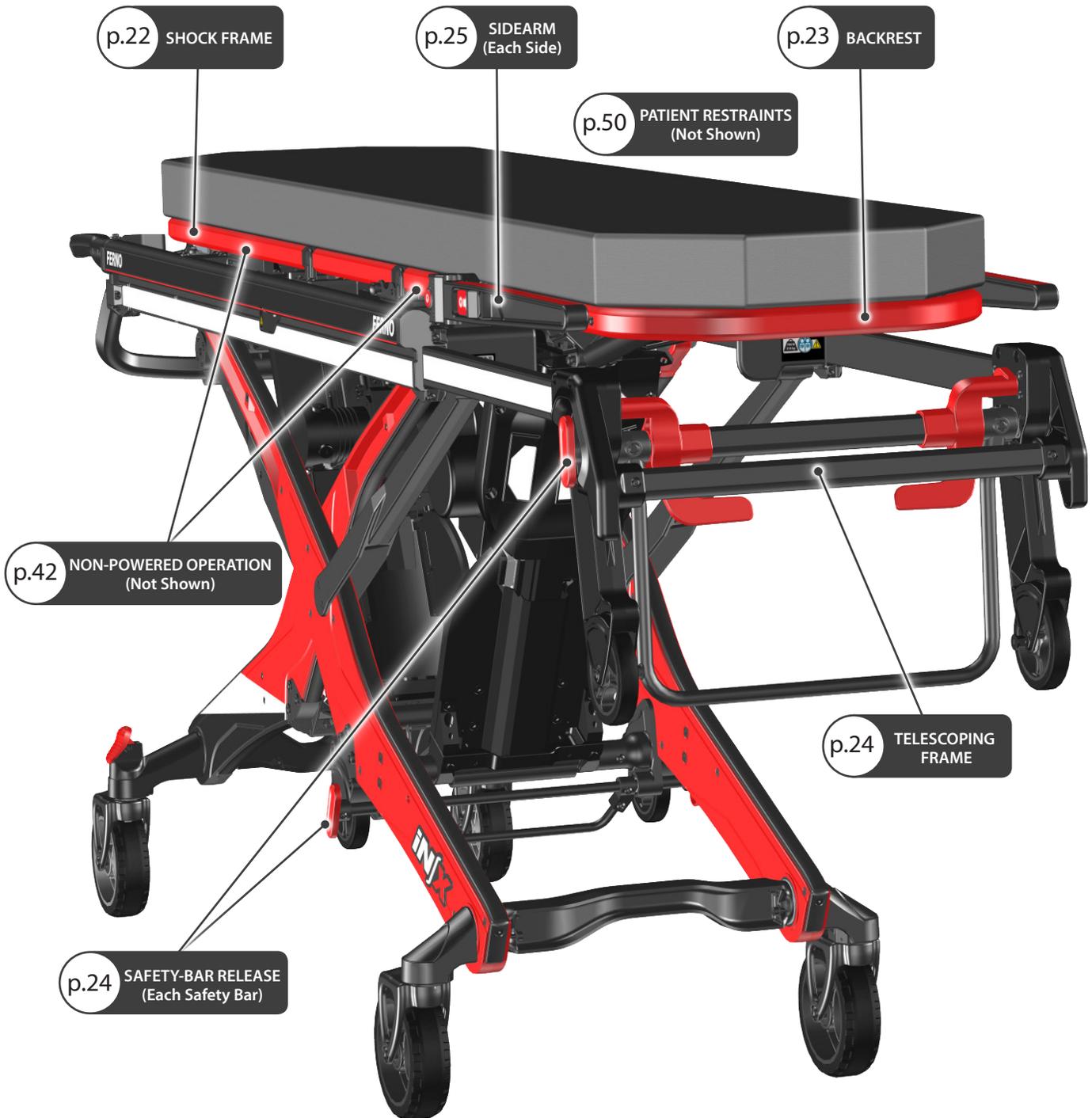
⁴Integrated Charging System Maintains the battery charge when the iNjX is secured in the fastening system. See "Integrated Charging System (ICS)" on page 19.

Note: The locking patient pad is sealed.

Control-End View



Loading-End View



4 - FEATURES AND CONTROLS

4.1 Display Overview



Tip

Display UV Protection

The display screen inner surface is coated with a layer to protect it against ultraviolet (UV) light and pressure damage. This clear surface is normally invisible but may sometimes be seen as lines of clear "dots" when viewed at an angle. This is normal.

Important

Turn the power OFF when the iNjX will not be in use. For extended storage, see "Storing the iNjX" on page 48.

ON



OFF

4.2 Power Switch

The power switch (Figure 3) is located on the right side of the display. Keep the switch in the ON (I) position for all iNjX operations.

If the iNjX will not be used for more than 30 minutes, turn the power switch OFF (O) to conserve battery power.

After 10 minutes of non-use, the iNjX will enter Sleep Mode to conserve power. See "Sleep Mode" on page 20.

If the iNjX is secured in a fastening system with the Ferno® ICS® Integrated Charging System, the switch can be left ON. The ICS disables the iNjX powered mode and charges the battery. See "Integrated Charging System (ICS)" on page 19.

4.3 Light Buttons

The iNjX safety lighting system (Figure 4) provides light to see the patient, the terrain around the iNjX, and increases operator and patient safety by increasing visibility of the iNjX.

- **Surround Light Bars** are white and red lights that span the length of each side of the iNjX to increase visibility of the iNjX. These lights can flash or provide steady light.
- **Drive Lights** are affixed to each actuator and provide steady light to illuminate the terrain around the iNjX.

Note: Surround Light Bars and Drive Lights are ON or OFF at the same time.

The iNjX safety lighting system is controlled by two buttons.



Scene Lights – Press to activate the Drive Lights and Surround Light Bars. The Surround-Light Bars illuminate with steady white light.



Emergency Lights – Press to activate the Drive Lights and Surround Light Bars. The Surround Light Bars flash in a sequence of red-red-white.

Press either button to turn the lights ON. An LED in the upper-right corner of the button indicates the active lights.

Press the button again to turn the lights OFF. Lights also turn OFF when the iNjX enters Sleep Mode. See "Sleep Mode" on page 20.

3

Using Lights

- Drive Lights illuminate the ground around the iNjX to assist the operators.
- Surround Light Bars increase the visibility of the iNjX and the area around it.

Tip



4

4.4 Display Zones

The display is ON when the power switch is ON, and OFF when the power switch is OFF or when the iNjX enters Sleep Mode.

To turn the display ON, use the power switch (see "Power Switch" on page 15). To awaken from Sleep Mode, press or . See "Sleep Mode" on page 20.

The display is divided into four zones (Figure 5):

- **iNjX ZONE:** This zone displays the iNjX with areas color-coded to indicate the current status of each area.
- **TIMER ZONE:** This zone is illuminated when the iNjX is in a special operating mode. It displays a countdown timer. See "Direct-Power Modes" on page 40.
- **STATUS ZONE:** This zone illuminates to provide status-condition information. Based on the condition, a warning triangle, other symbol, and/or alphanumeric code may be displayed. See "Status Zone" on page 17 and "Status Indicators" on page 55.
- **BATTERY ZONE:** This zone indicates the charge of the battery. See "Battery Zone" on page 17.

Note: For alternate-mode screens, see "Direct-Power Modes" on page 40 and "Set the Loading Height" on page 53.

4.5 iNjX Zone

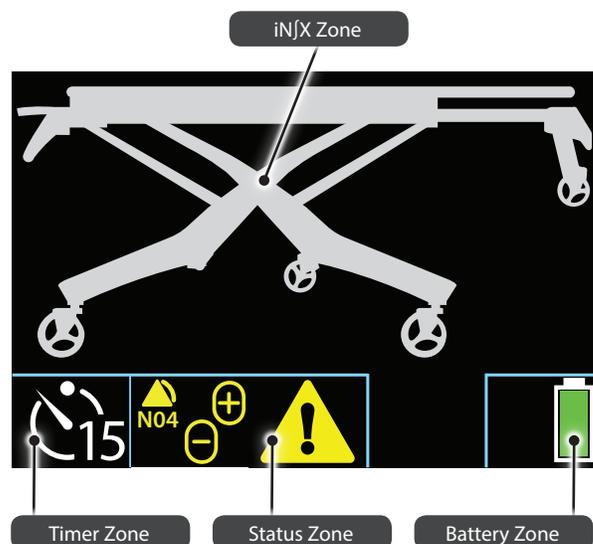
The main portion of the display contains a side view of the iNjX (Figure 5). The color of the legs and patient surface indicates the current status of these areas. Refer to the iNjX Zone Indicators chart to learn what each color indicates.

The iNjX zone is illuminated whenever the power is ON.

4.6 Timer Zone

A countdown timer is visible in the lower-left corner of the display only when a special operating mode is selected (Figure 6). Use the mode-select button to select a special operating mode. See "Mode-Select Button" on page 21 and "Direct-Power Modes" on page 40.

If the countdown timer is allowed to expire, the iNjX returns to its default operational mode and normal display screen.



5

iNjX Zone Indicators

LEG

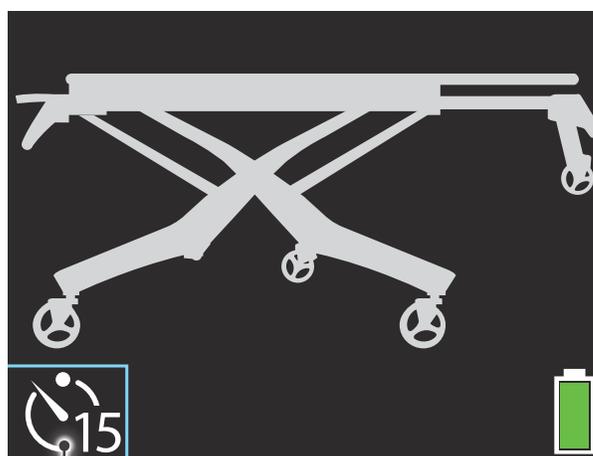
Green	The legs may be extended and/or retracted.
White	The legs will not extend or retract.
Blue	The iNjX is in a Direct Power Mode. The blue legs will move when a button is pressed.

PATIENT SURFACE

White	The iNjX is at a safe transport height.
Yellow/Red	The iNjX is above the maximum recommended transport height. Lower the iNjX before rolling.

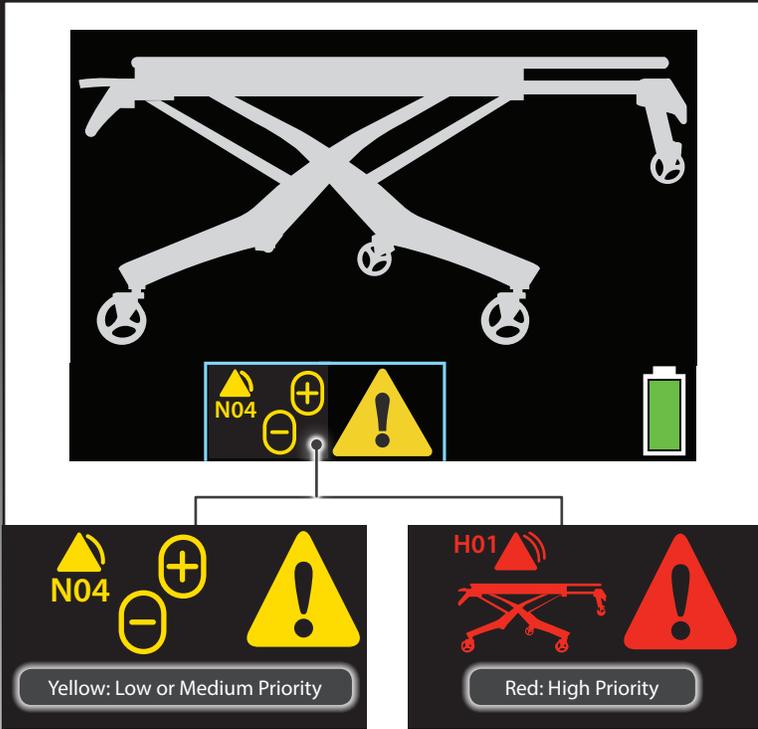
WHEELS

Green/White	The iNjX may be rolled, if the patient surface is at a suitable transport height.
Red	Do not roll the iNjX.



Countdown Timer

6



4.7 Status Zone

The status zone alerts the user to important or unsafe conditions, or faults. A warning triangle indicates safety notices. The warning triangle is yellow for medium-level notices, and red for high-priority notices (Figure 7).

The status zone is illuminated only when a status condition is being displayed. See "Status Indicators" on page 55 for a chart of status indicators.

4.8 Audible Alarm

The iNjX will sound a series of beeps when a status indicator is displayed. The number of beeps is dependent on the severity of the situation. The alarm continues to sound until the status returns to normal.

- **High-priority:** 2+3 beeps, pause, repeat
- **Medium-priority:** 2 beeps/15 seconds
- **Low-priority:** 1 beep/minute

4.9 Battery Zone

The battery zone indicates the charge remaining in the battery. The color of the indicator shows the approximate charge (Figure 8).

Green with Lightning Bolt: Connected to ICS, full charge

Yellow with Lightning Bolt: Connected to ICS, charging

Green: Full charge

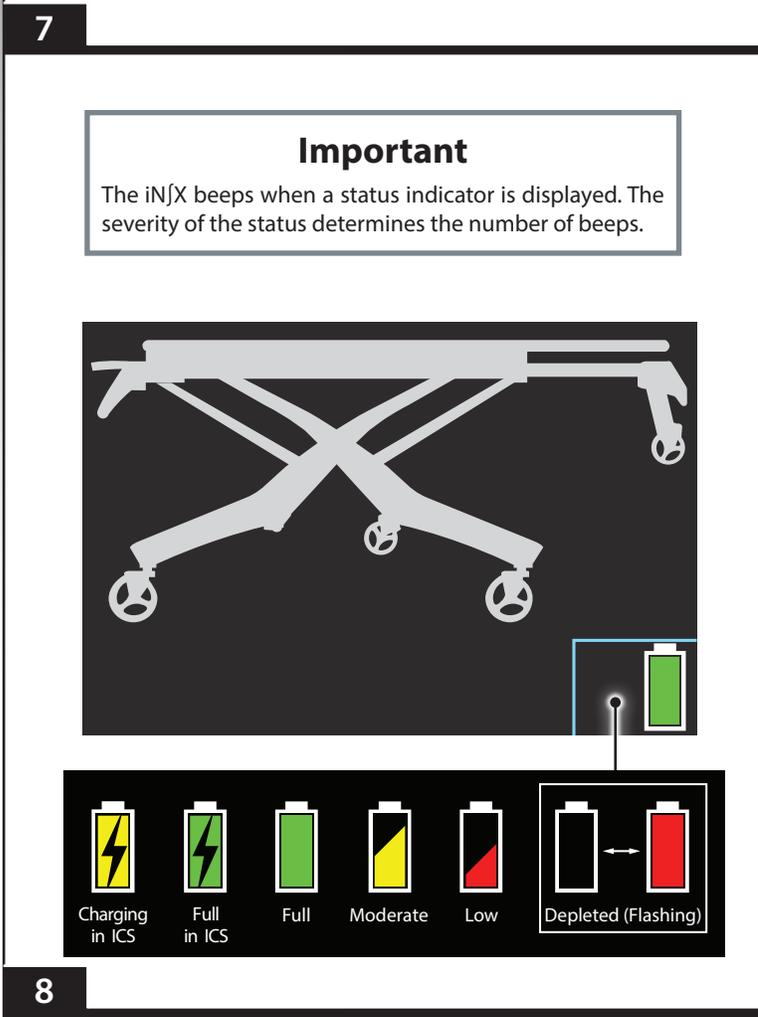
Yellow: Moderate charge

Red: Low charge (one-third of the indicator is steady red)

Flashing (final warning): The battery is depleted. The indicator flashes between an empty battery outline and a filled red battery. Swap for a charged battery as soon as possible, or connect to the ICS.

See "Attaching the Battery" on page 18 or "Integrated Charging System (ICS)" on page 19.

The battery zone is illuminated whenever the power is ON or the iNjX is connected to the ICS.



4.10 Battery

The iNjX is powered by a rechargeable, 36 Volt DC lithium iron phosphate battery (displayed as "LiFePO₄" on the battery label). The battery is installed under the patient surface, behind the display (Figure 9).

BATTERY OVERVIEW

- Charge the battery only with the Ferno-provided battery charger or Integrated Charging System (ICS). See "Battery Charger" on page 19 and "Integrated Charging System (ICS)" on page 19.
- The battery has no "battery memory." You do not need to fully discharge before recharging.
- Patient weight and extreme temperatures affect the amount of use available from each battery charge.
- Minimum charging time is 15 minutes, after one transport and maintaining the charge using the ICS.
- Maximum charging time is 1:45 hours, using the battery charger (not with ICS) with a depleted battery.
- Actual charging time varies based on frequency of recharge, depth of discharge, and battery age. If a battery becomes deeply discharged, extend the charging time.

REMOVING THE BATTERY

1. Turn the power switch OFF.
2. Raise the shock frame.
3. Place your thumbs under the front corners of the battery cover and lift to remove.
4. Grasp the battery-cable plug and disconnect the cable from the battery port (Figure 10). Do not pull on the cable to disconnect the plug.
5. Use the battery carry handle to lift the battery up and away from the cradle.

ATTACHING THE BATTERY

1. Verify the power switch is OFF.
2. Raise the shock frame.
3. Angle and slide the battery into the cradle. Press down to lock the battery in place in the cradle.
4. Connect the battery cable plug to the battery port.
5. Lower the shock frame.
6. Insert the front tabs of the battery cover into the slots and then press down the area near the display to snap the cover into place.

Tip

Battery Tips

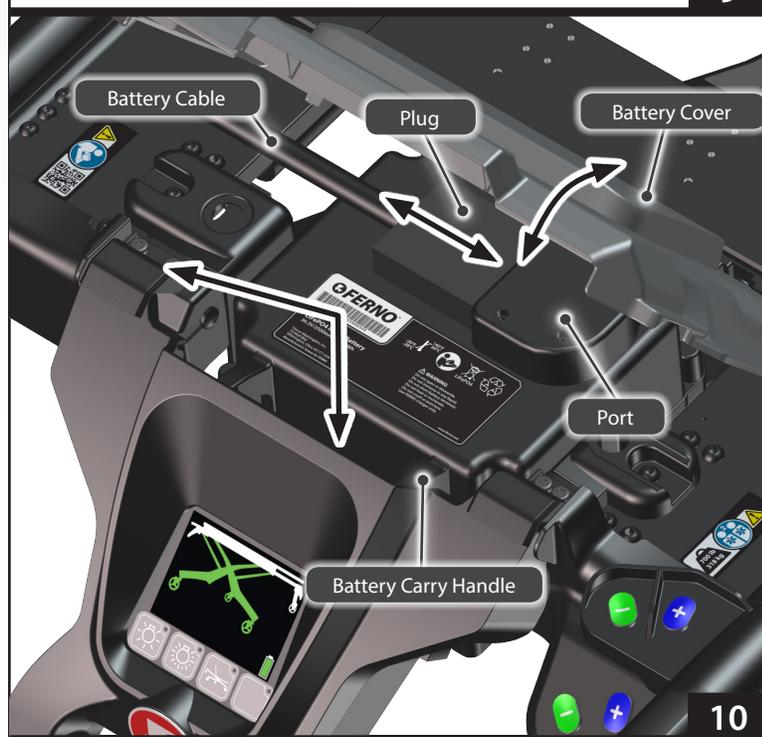
You do not need to fully discharge the battery before recharging. Place the battery on the charger at any time to maintain a full charge.

Turn the iNjX power OFF if it will not be used for more than 30 minutes.

If the iNjX or battery will be placed in storage, charge the battery first. Store only a fully-charged battery.



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Important

To charge the iNjX inside an ambulance, use only the Ferno® ICS®.



4.11 Battery Charger

Use only the provided Ferno battery charger (Figure 11) to charge Ferno batteries, and charge only Ferno batteries with the charger. A battery-adapter cable (supplied) connects the battery charger to an iNjX battery. The charger has two indicator lights (red and green). See the chart below.

- **Charger Compatibility:**
 - 110 Volts AC, 50/60 Hz (U.S.A., Japan)
 - 230 Volts AC, 50/60 Hz (Europe and other areas)
- **Charger Input:** 100-240 Volts AC, 47-63 Hz

There are two ways to charge the battery: Secure the iNjX in a fastening system equipped with the Integrated Charging System (ICS), or remove the battery from the iNjX and connect the battery directly to a Ferno battery charger.

See "Charging the Battery" on page 49.

Charger Indicator Lights

Flashes three times	Battery disconnected/not connected
Red light (steady)	Battery is charging
Green flash (slow 1/sec.)	Battery is charging (deeply discharged)
Green light (steady)	Charging complete
Red/Green flash	Battery cannot be charged
Green flash (quickly)	Over voltage (check AC input)

Deeply-Discharged Battery

Tip

If the battery is deeply discharged, the ICS may not be able to charge the battery. Connect the battery directly to the charger.

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4.12 Integrated Charging System (ICS®)

The Ferno® Integrated Charging System (ICS®), disables powered operation when the iNjX is locked in the fastening system (Figure 12) and the ICS is connected and powered. The ambulance ignition, inverter, and/or outlet switch may need to be turned ON to supply electrical power to the ICS.

Notice: If a previous installation is present, the ICS® must be updated for use with the iNjX. Refer to the *ICS® for iNjX™ Installation Manual* for details. For information, contact Ferno. See "Ferno Customer Relations" on page 2.

4.13 Extend and Retract Buttons

Two sets of Extend and Retract buttons are affixed to the control end of the iNjX, where they are accessible to the operator's right hand. One set is affixed to the telescoping handle, while the other set is affixed to the guide bar (Figure 13). The function of each set of buttons is identical.

AUTO-EQUALIZING FEATURE

When a button is pressed, one set of legs extends or retracts until both sets of legs are equally-extended. Continue pressing the button to extend or retract the iNjX.

+ EXTEND : If the legs are not extended equally, the more-retracted set of legs extends to equalize the legs. Then, both sets of legs extend together.

- RETRACT: If the legs are not extended equally, the more-extended set of legs retracts to equalize the legs. Then, both sets of legs retract together.

STOPS

In addition to stopping at the maximum and minimum heights, the iNjX stops automatically when it reaches the factory-set maximum recommended transport height and the user-set loading height.

When the iNjX stops at the transport or loading height, press **+** or **-** again to continue extending or retracting the legs.

Note: *The iNjX stops at the user-set loading height only when extending (raising).*

LOADING AND UNLOADING

If the iNjX is being supported by the ambulance floor, pressing **+** or **-** will extend or retract only one set of legs at a time. See "Loading the iNjX" on page 36 and "Unloading the iNjX" on page 38.

4.14 Sleep Mode

Sleep Mode conserves battery power. If the iNjX is not in use (no buttons pressed for more than 10 minutes), the system enters Sleep Mode. In Sleep Mode, the display and all lights are OFF.

Press **+** or **-** briefly to activate the iNjX, then press again to extend or retract the legs.

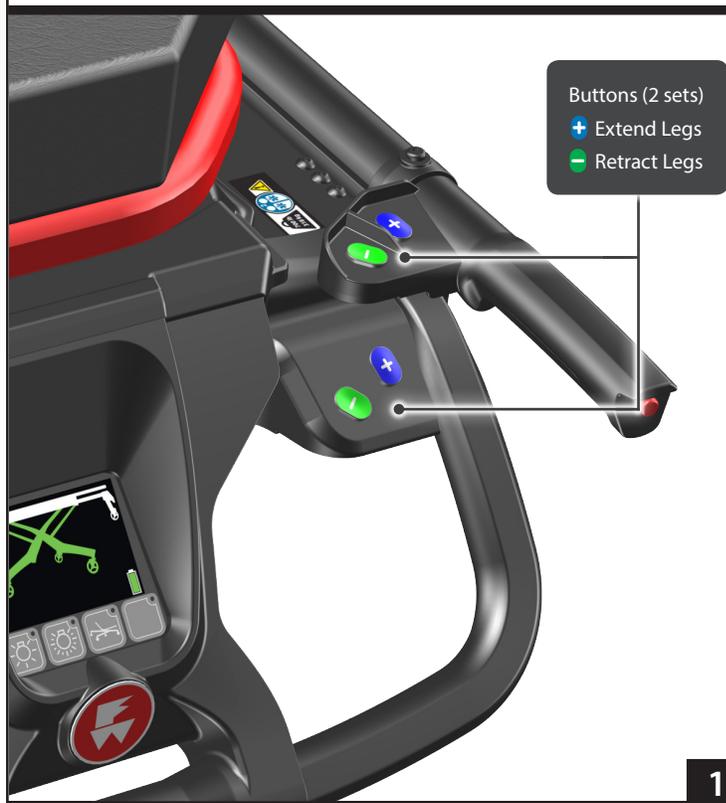
Tip

Automatic Stops

The iNjX automatically stops at:

- the factory-set maximum transport height
- the user-set loading height

To continue, re-press **+** or **-**.





4.15 Mode-Select Button

The mode-select button is located on the left side of the display (Figure 14) and allows the user to cycle between three direct-power modes and the set-loading height feature. Direct-power modes are rarely used. See "Direct-Power Modes" on page 40.

Each button press cycles to the next mode, with matching images on the display. The button-press sequence is:

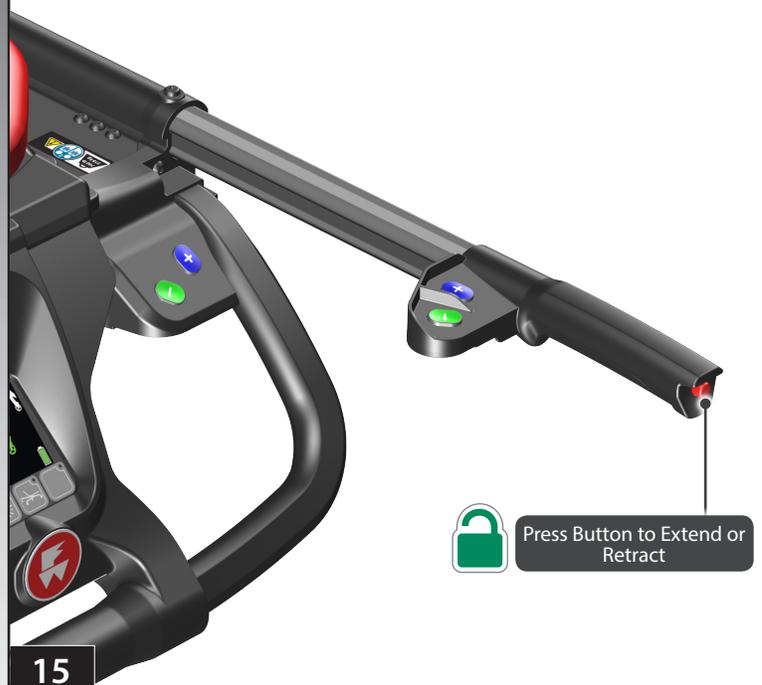
- Direct-power both legs
- Direct-power loading-end legs only
- Direct-power control-end legs only
- Loading-height set mode. See "Set the Loading Height" on page 53.
- Standard operating mode

4.16 Telescoping Handles

The telescoping handles lock in two positions: fully retracted and extended (about 9 in/225 mm). Use the telescoping handles only when they are in a locked position.

To change the handle position:

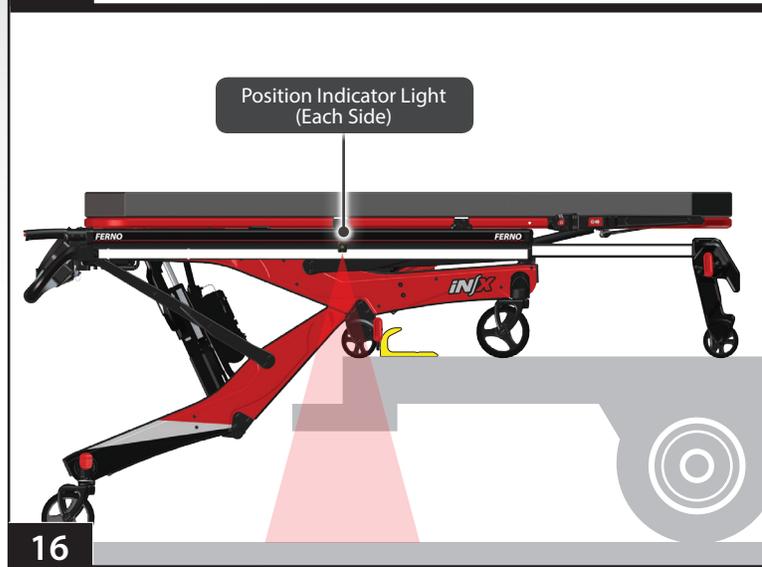
1. Press the red button on the end of the handle (Figure 15), then push or pull the handle to the desired position.
2. Release the button. Push or pull the handle to verify it has locked.



Tip

Extend/Retract Buttons

The attached set of + - buttons remains with the hand grip in either position.



4.17 Position Indicator Lights

The position indicator lights (Figure 16) project a red line on the ambulance floor as a visual aid for the operators. The lights have no effect on iNjX operation.

The position indicator lights are activated during the loading and unloading processes to help the operators visually locate the proper position to stop rolling the iNjX and extend or retract the control-end legs.

The red line shows the approximate position of the intermediate loading wheels. If the line is visible on the ambulance floor, then the intermediate loading wheels and the majority of the load (the weight on the iNjX) are also inside the ambulance.

4.18 Shock Frame

The shock position elevates the patient's feet approximately 16° (Figure 17). Follow your local medical protocols when deciding to use the shock frame.

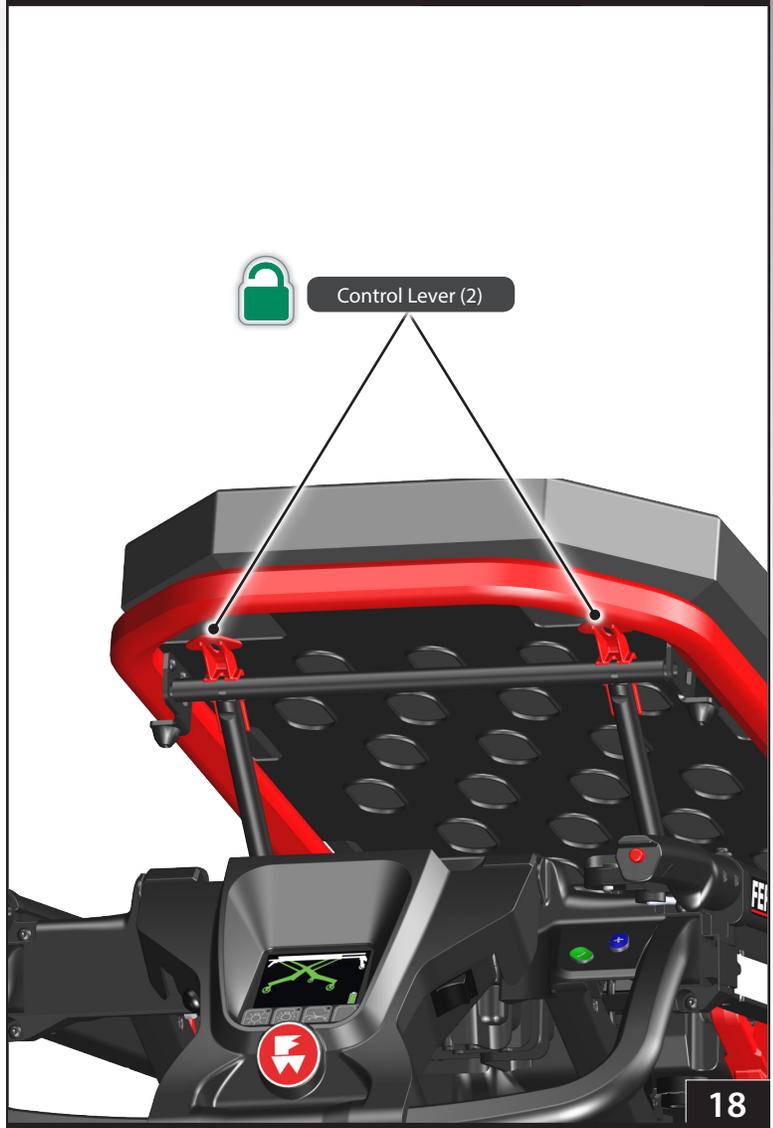
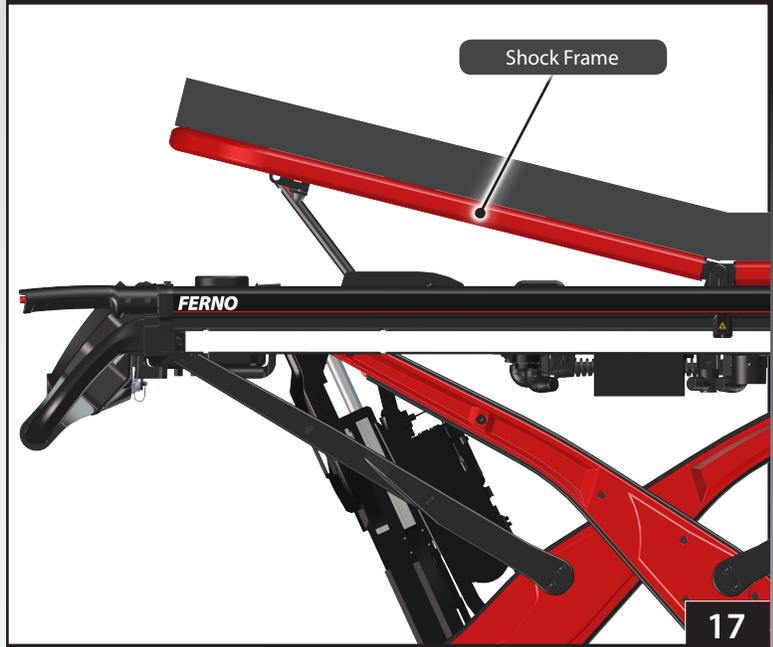
Use an underhand grip (palms up) to support the shock frame when raising or lowering it. For proper, ergonomically-correct operation, always work from the control end of the iNjX.

RAISING THE SHOCK FRAME

1. Unfasten or loosen the leg restraint.
2. Lift the shock frame with both hands until it locks in the raised position. The support bars engage automatically.
3. Fasten and adjust the leg restraint.

LOWERING THE SHOCK FRAME

1. Unfasten or loosen the leg restraint.
2. Support the weight of the shock frame with both hands and lift slightly.
3. Using both thumbs, press the shock frame control levers (Figure 18) to disengage the support bars, then lower the shock frame.
4. Fasten and adjust the leg restraint.



Important

Do not lift the iNjX by the backrest. Lift only by grasping the main frame.



4.19 Backrest

The backrest adjusts between 0° and 76° to elevate the patient's torso for patient comfort or medical necessity (Figure 19).

The gas spring is under pressure to ease raising and lowering. With a heavy patient, support the patient's weight before adjusting the backrest. With a light patient, control the upward movement of the backrest so it does not move too quickly.

USING THE BACKREST

1. Loosen or unbuckle the pelvis and/or chest straps if needed. See "Patient Restraints" on page 50.
2. Adjust the sidearms. See "Sidearms" on page 25.
3. Support the weight of the backrest and patient before using the control handle.
4. Squeeze either red control handle toward the backrest frame to unlock the backrest (Figure 20).
5. Raise or lower the backrest to the desired position, then release the control handle to lock the backrest.
6. Adjust the sidearms as needed for patient comfort.
7. Adjust and fasten the patient restraints.



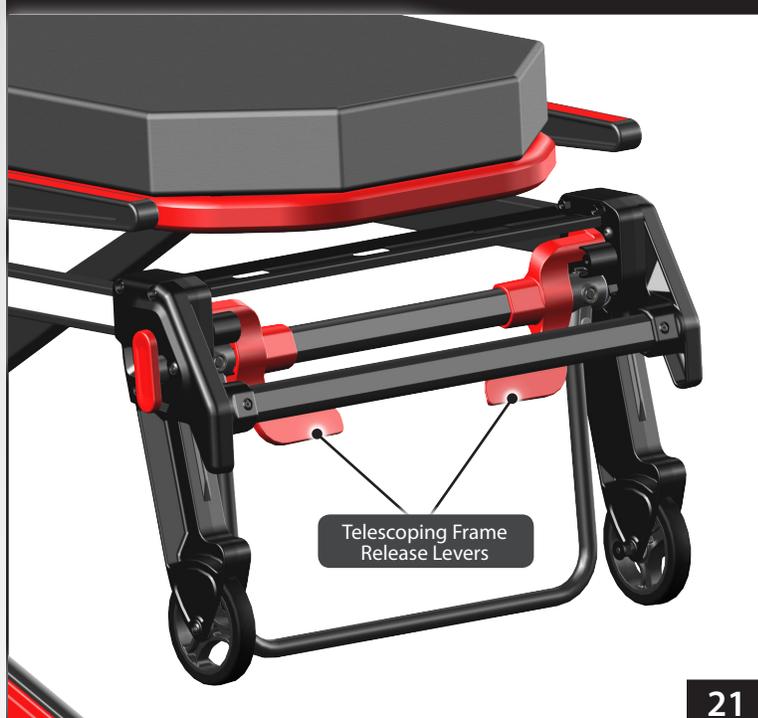
4.20 Telescoping Frame

Use the telescoping frame (Figure 21), (Figure 22) to shorten the iNjX and improve maneuverability in tight spaces. There are two locked positions (extended and retracted). A third, unlocked position fully retracts the frame to shorten the iNjX to its minimum length (when used with a raised backrest).

- Use only a locked position when lifting the iNjX.
- The telescoping frame must be locked in the extended position before loading the iNjX into an ambulance or unloading the iNjX from an ambulance.
- Do not lower the iNjX to its minimum height with the frame in the fully-retracted position.

USING THE TELESCOPING FRAME

1. Loosen or unbuckle the pelvis strap if needed.
2. Raise the backrest.
3. Adjust and fasten the pelvis strap.
4. Squeeze the telescoping frame release handle (Figure 21) and begin pushing or pulling the frame, then release the handle. Continue pushing or pulling the frame until it locks at the new position.

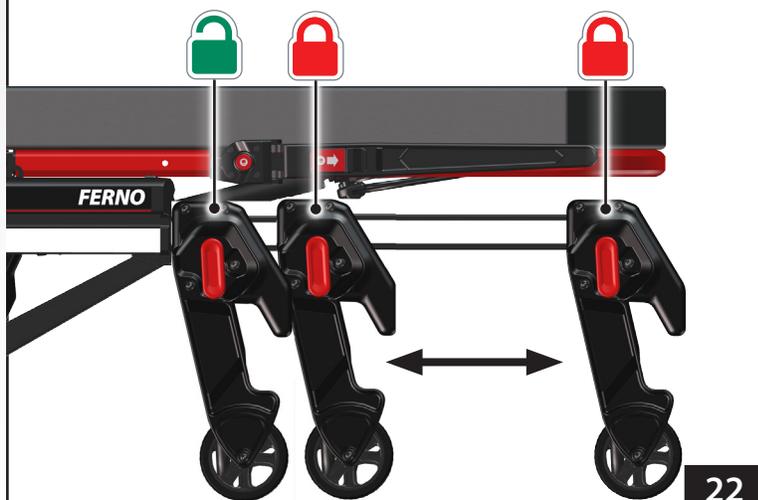


4.21 Safety-Bar Release Levers

Use the safety-bar release levers to disengage each safety bar from the safety hook.

A set of release levers is located on the telescoping frame and on the loading-end legs (Figure 23).

Release each safety bar from the safety hook by turning the bottom of the release lever away from the center of the iNjX. Also see "Loading the iNjX" on page 36 and "Unloading the iNjX" on page 38.

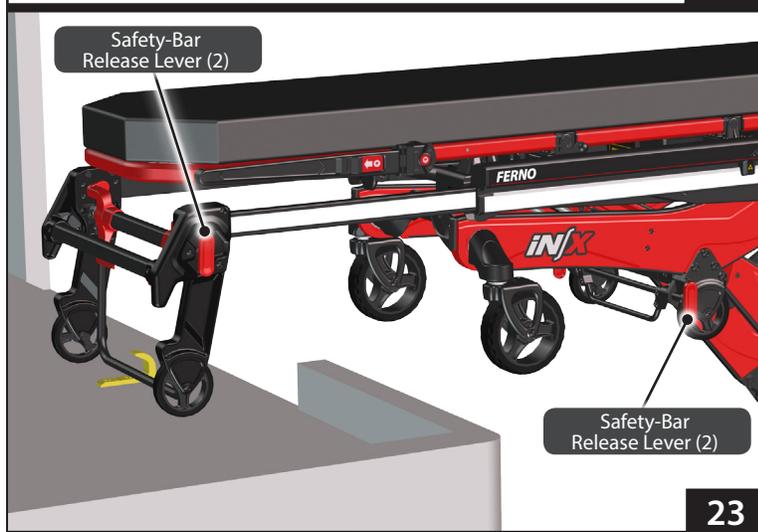


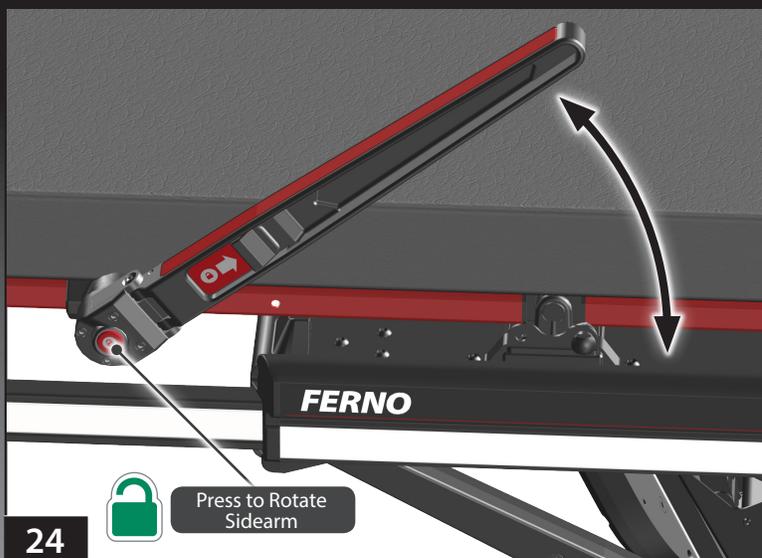
Using Release Levers

Turn the bottom of the lever away from the center of the iNjX.

When standing at the patient left side, turn the bottom of the lever counter-clockwise.

When standing at the patient right side, turn the bottom of the lever clockwise.





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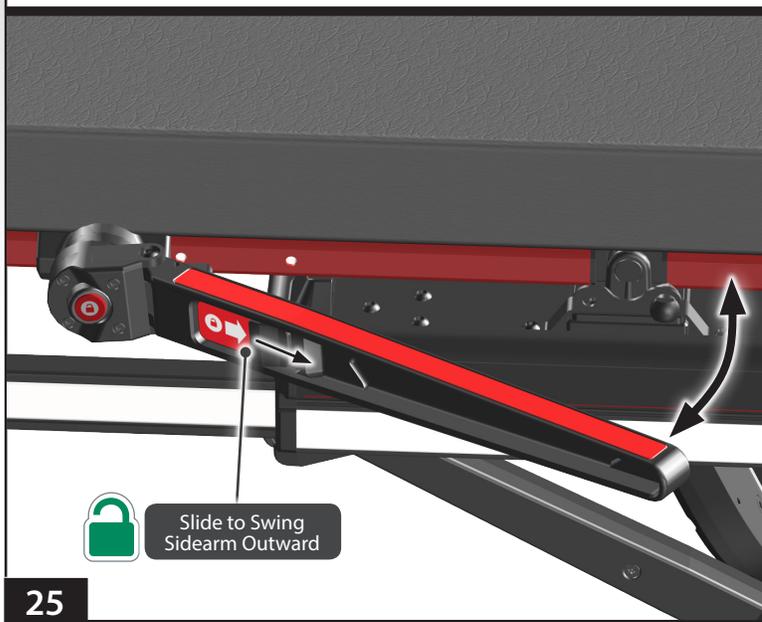
Important

When used in the outward position, sidearms increase the overall width of the iNjX. Use caution when moving through doorways or other narrow areas. Swing the sidearms to the in-line position if needed.

Tip

Sidearm Hole

The small hole in the end of each sidearm allows attachment of handcuffs by law enforcement or other devices to restrain a combative patient (not supplied).



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4.22 Sidearms

Sidearms provide patient security and comfort.

Note: Each sidearm adjusts independently.

- **To rotate a sidearm:** Press the red button in the center of the sidearm mount casting (Figure 24) and rotate the sidearm to a new position. Locking positions are at approximately 45° intervals.
- **To swing the sidearms outward:** Slide the lever away from the mount casting to unlock the sidearm and swing it away from the patient surface (Figure 25). This position is useful for a large patient or to position the patient's arm at a convenient angle for starting intravenous (IV) lines.
- **To swing the sidearms inward:** Push the sidearm toward the center of the iNjX to lock the sidearm in the in-line position.
- **To store the sidearm:** Rotate the sidearm toward the loading end of the iNjX, aligned with the backrest.

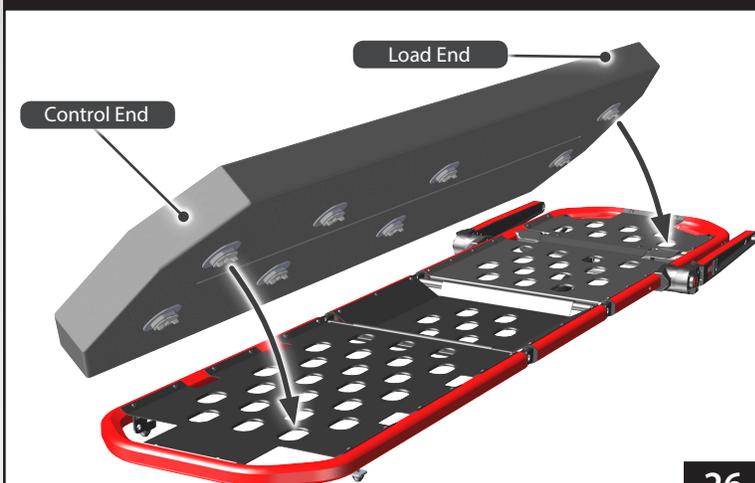
4.23 Locking Pad

The pad is fitted with eight locking discs to secure it on the patient surface (Figure 26). To attach the pad:

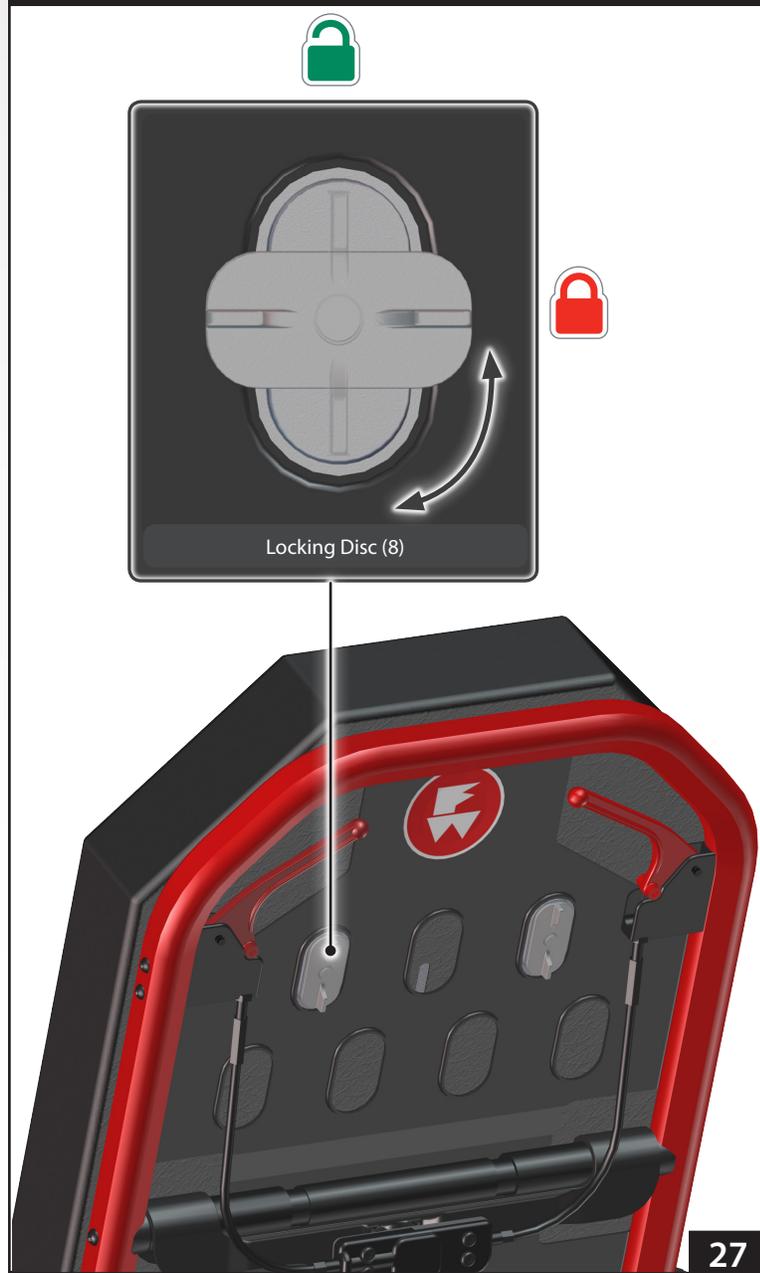
1. Position the pad on the patient surface. Raise the iN|X if desired.
2. Press down the center of the pad to guide the locking discs through the seat panel. Twist the discs 90° to lock them in place (Figure 27).
3. Raise the backrest and shock frame as needed.
4. Guide each locking disc through a hole in the patient surface and twist 90° to lock (Figure 27).

Note: The locking discs can be turned in either direction.

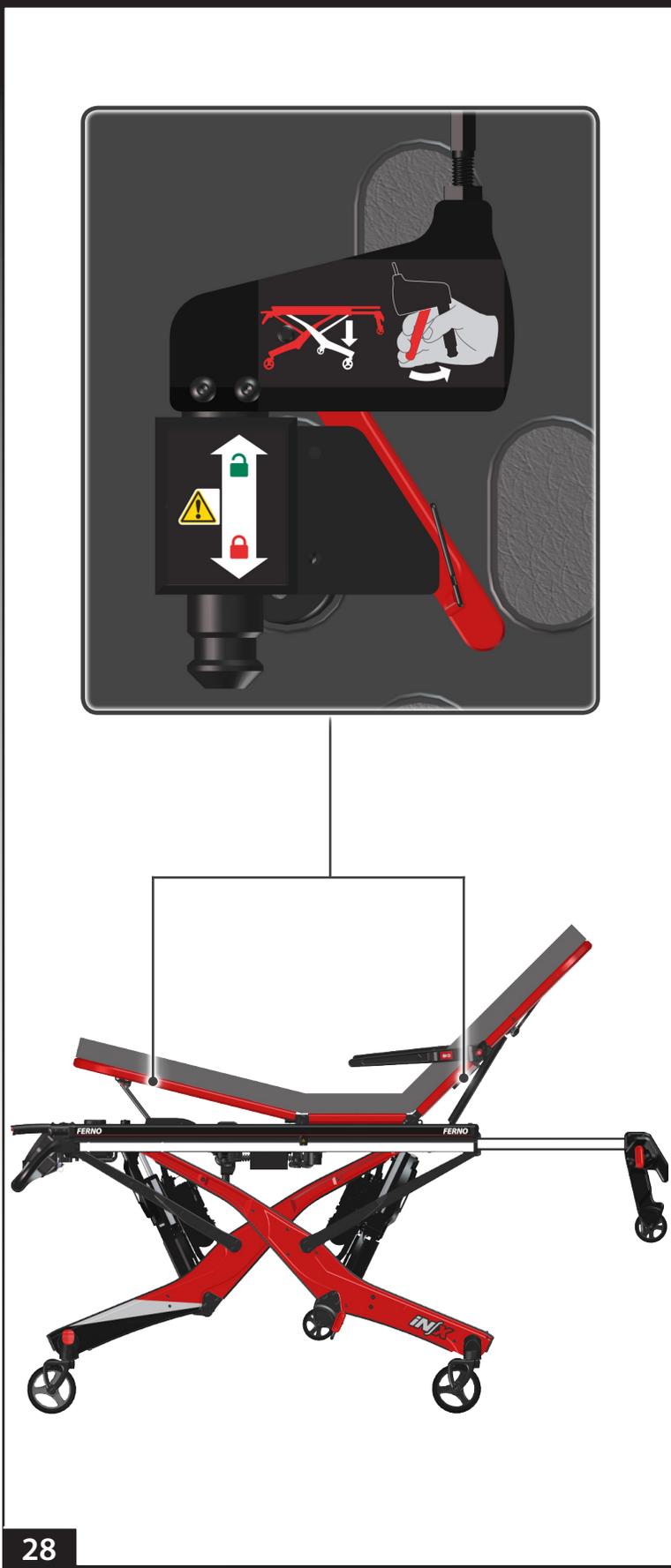
To remove the pad, twist the locking discs 90° and guide them through the patient surface.



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4.24 Non-Powered Operation (Actuator-Release Handles)

The actuator-release handles allow non-powered operation. Each handle allows one set of legs to be raised or lowered without power. The handles are located:

- Control-end legs: below the shock frame (Figure 28)
- Loading-end legs: below the backrest frame (Figure 28)

To unlock a handle from the storage mount, pull the handle straight out of the mount. To re-secure, press the handle into the mount until it snaps into the locked position.

For instructions on operating the iNjX using the actuator-release handles, see the following sections:

- "Non-Powered Operation: Raising and Lowering" on page 42
- "Non-Powered Operation: Loading the iNjX" on page 44
- "Non-Powered Operation: Unloading the iNjX" on page 45

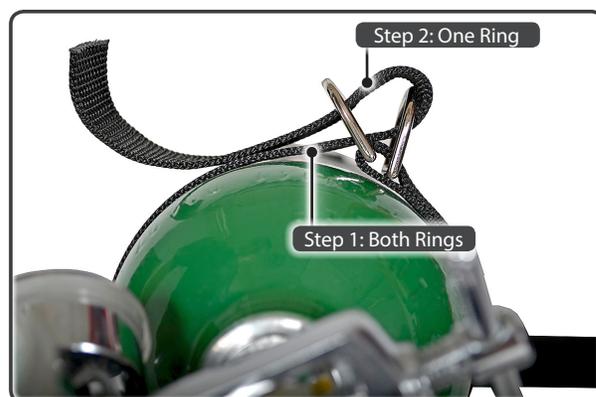
4.25 Oxygen Cylinder Holder

The iNjX features an integrated oxygen-cylinder holder, mounted to the telescoping frame (Figure 29).

The oxygen cylinder holder can carry a D or Jumbo D-sized portable oxygen cylinder, up to a maximum 5.3 inches in diameter by 18.75 inches in length (135 mm diameter x 476 mm length). Spiracle Technology's "DD-Lite" oxygen cylinder is also compatible with this oxygen cylinder holder.

To secure a cylinder on the holder:

1. Center the cylinder on the holder. Wrap the strap around the cylinder and thread the strap through **both** D-rings (inset).
2. Thread the fastening strap back through the inside D-ring (inset).
3. With one hand holding the oxygen bottle in place, firmly pull the loose end of the strap to cinch the fastening straps tight.





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Important

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



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4.26 Patient-Restraint System

The iNjX features a unique patient-restraint system that includes a combination pelvis strap/shoulder harness, chest strap, and two-piece leg restraint (Figure 30).

For instructions on placement, attaching, and using the patient-restraint system, see "Patient Restraints" on page 50.

4.27 Accessory Rail

The main frame of the iNjX acts as an attachment point to secure a variety of accessories to the iNjX (Figure 30). Accessories may be attached to either side of the iNjX, with a few limitations.

For information on attaching, placing and using accessories, see "Accessories" on page 54.

4.28 Wheel Locks

The two wheel locks help keep the iNjX from rolling during patient transfer and certain medical procedures. Wheel locks are attached to the control-end transport wheels.

Press the lock lever down to engage (Figure 31). Press the opposite end of the lock lever to disengage.

- The lock stops the rotation of the wheel when engaged.
- Wheel locks are used to help hold the iNjX stationary. Do not use wheel locks to slow an iNjX while it is being rolled.
- Remain with the iNjX and keep control of it at all times. Do not leave the patient unattended.

5 - USING THE iNfX

5.1 Before Placing the iNfX in Service

- Before use, personnel who will work with the iNfX must read and understand this manual. Appropriate skills and training are also required. See "Operator Training" on page 6.
- Set up the iNfX. Install the iNfX antler, iNfX safety hook, the slide plate, and any other accessories. See "Initial Setup" on page 52.
- Confirm that the iNfX operates properly. See "Inspecting the iNfX" on page 48.
- Set the loading height for the ambulance you will use with the iNfX. See "Set the Loading Height" on page 53.

5.2 General Guidelines for Use

- Medical advice and procedural protocol is beyond the parameters of this manual.
- It is the users' responsibility to ensure safe practices for the patient and themselves.
- A minimum of two trained operators is required.
- Follow standard emergency patient-handling procedures when operating the iNfX.
- **Operators must work together** and maintain control of the iNfX at all times.
- **Operators must communicate** with one another and use coordinated movements to operate the iNfX.
- **Operators must stay** with the patient at all times. Do not leave a patient unattended.
- Always use patient restraints to secure the patient on the iNfX.
- Keep the iNfX lowered when the load exceeds the load capacity.
- Lift only the weight you can safely handle. Use additional help when working with heavy loads (patient and equipment). For placement of helpers, see "Using Additional Help" on page 8.

5.3 Status Indicators and Audible Alarm

The iNfX has two systems to alert the operators to important or unsafe conditions or faults.

- The Status Zone displays a symbol and code indicating the status of the iNfX. See "Status Zone" on page 17 and "Status Indicators" on page 55.
- An audible alarm beeps in a pattern corresponding to the priority of the status code. See "Audible Alarm" on page 17.

WARNING

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

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

An unrestrained patient can be injured. Use properly-installed patient restraints to secure the patient on the iNfX.

Rolling the iNfX above the factory-set maximum transport height can cause it to tip. Only roll the iNfX at or below the factory-set maximum transport height.



Load Capacity*

* Operators (and helpers) must provide lift assistance when the load exceeds the load capacity. Inspect the iNfX if the load capacity has been exceeded. See "Inspecting the iNfX" on page 48.

Tip

Audible Alarm

The iNfX beeps when a status indicator is displayed. The severity of the status determines the number of beeps.

WARNING

Uncontrolled movement can cause injury or damage. Support and control the iNfX at all times.

Important

Operators must maintain a firm grasp on the main frame and control the iNfX at all times. Be prepared to help raise or lower the iNfX.

Tip

Automatic Stops

The iNfX automatically stops at:

- the factory-set maximum transport height
- the user-set loading height

To continue, press  or .

Providing Lift-Assistance

Allow the iNfX to lift the load. The operators and helpers need to provide lift-assistance only when the load exceeds the load capacity.

Auto-Equalize Feature

When  or  is pressed, the iNfX extends or retracts one set of legs until both sets of legs are equally extended. Then, both sets of legs extend or retract simultaneously.

5.4 Raising or Lowering the iNfX

Raising or lowering with a patient on the iNfX requires a minimum of two trained operators who are communicating, working together, and maintaining control of the iNfX at all times.

1. **Both Operators:** Keep both hands on the iNfX main frame. Maintain control of the iNfX so it does not shift during raising or lowering.
2. **Control Operator:** Press  or  (Figure 32) until the iNfX reaches the desired height.
3. **Both Operators:** During the position change, both operators (and any helpers) move with the iNfX and maintain their grasp on the main frame.

Note: The color of the display zone assists the operators in understanding the height condition of the iNfX. See "Display Zones" on page 16.

LOAD CAPACITY

The iNfX load capacity is 700 lbs/318 kg. Extremely heavy loads may require assistance from the operators (and any helpers). See "Using Additional Help" on page 8.

If the iNfX will not extend the legs, do the following:

1. **Both Operators and Helpers:** Trained operators stand at opposite ends of the iNfX and use an underhand grip to grasp the main frame. Guide helpers where and how to grasp the iNfX. See "Using Additional Help" on page 8.
2. **Control Operator:** Press  and tell the Loading-end Operator and helpers to help raise the iNfX.
Allow the iNfX to lift the load. The operators and helpers need to provide lift-assistance only for the portion of the load that exceeds the load capacity.
3. **Both Operators and Helpers:** Together, raise the iNfX to the desired height, then hold the iNfX at that position.
4. **Both Operators and Helpers:** Slowly lower your hands to test that the iNfX has stabilized at the new position. Relax your grasp when you are certain the iNfX has stabilized at the new position.



5.5 Transferring the Patient

TRANSFERRING THE PATIENT ONTO THE iNjX

1. Unfasten the patient restraints. Arrange the straps so they will not interfere with transferring the patient onto the iNjX.
2. If needed, rotate the sidearms out of the way.
3. Place the iNjX beside the patient. Press **+** or **-** to adjust the iNjX to the patient's level.
4. Lock the wheel locks.
5. Transfer the patient onto the iNjX using approved emergency-medical procedures and following local protocols.
6. Adjust the backrest, shock frame, and sidearms as needed for patient comfort or medical care.
7. Fasten and adjust the patient restraints (Figure 33).
8. Before moving the iNjX or changing its position, make sure sheets and other articles will not interfere with iNjX operation.
9. Unlock the wheel locks.
10. Press **+** or **-** until the iNjX reaches the desired height. See "Raising or Lowering the iNjX" on page 31.

With an excessively load (patient plus equipment exceeds the load capacity), the iNjX legs may not extend when a button is pressed, and/or one or both ends of the iNjX may settle downward several inches. See the "load capacity" section under "Raising or Lowering the iNjX" on page 31.

TRANSFERRING THE PATIENT OFF THE iNjX

To transfer the patient from the iNjX onto another surface, such as a hospital bed:

1. Roll the iNjX near the destination surface. Press **+** or **-** to adjust the iNjX to, or slightly above, the destination surface.
2. Lock the wheel locks.
3. Rotate the sidearms out of the way.
4. Unfasten the patient restraints. Arrange the straps so they will not interfere with transferring the patient off the iNjX.
5. Transfer the patient onto the destination surface using approved emergency-medical procedures and following local protocols.
6. Fasten and arrange the patient restraints so they will not interfere with using the iNjX.
7. Before moving the iNjX or changing its position, make sure sheets and other articles will not interfere with iNjX operation.
8. Unlock the wheel locks.
9. Press **+** or **-** until the iNjX to a suitable transport height. See "Raising or Lowering the iNjX" on page 31.



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Important

Sheets or other articles that are placed, or find their way, beneath the metal bed of the iNjX can become caught in the power system. Take care to tuck sheets between the pad and the metal bed of the iNjX. Keep other articles above the pad.



Chair Position

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5.6 Transferring the Patient: Chair Position

The chair position allows a patient to be transferred to a seated position on the iNjX patient surface. Follow local protocols to determine the best situations to use chair position. To place the iNjX in chair position:

1. Roll the iNjX toward the control-end to position all four swivel wheels in the same orientation.
2. Raise the shock frame.
3. Press the chair-position button (Figure 34).

Note: When the chair-position button is pressed, a 15-second timer begins. To cancel, press the chair-position button again or allow the timer to expire.

4. Before the timer expires, press . Maintain control of the iNjX as the legs adjust to place the iNjX in the chair position (Figure 35).
5. Lock the wheel locks.
6. Unbuckle the restraints. If needed, rotate one or both sidearms out of the way.
7. Adjust the backrest to suit the patient.
8. If needed, have one operator or assistant steady the iNjX so it will not move as the patient is seated.
9. Assist the patient onto the iNjX following approved emergency-medical procedures and local protocols.
10. Fasten and adjust the patient restraints.
11. Before moving the iNjX or changing its position, make sure sheets and other articles will not interfere with iNjX operation.
12. Inform the patient that you are about to adjust the iNjX.
13. Verify the display is not showing the chair position screen: the regular operating screen should appear after the timer expires.
14. Press or until the iNjX reaches the desired height. See "Raising or Lowering the iNjX" on page 31.
15. Make further adjustments to the backrest, shock frame, and/or sidearms as needed for patient comfort or medical care.
16. Unlock the wheel locks.

5.7 Rolling the iNjX

GUIDELINES

- Rolling the iNjX with a patient on it requires a minimum of two trained operators who are communicating, working together, and maintaining control of the iNjX at all times.
- Roll the iNjX on smooth, unobstructed surfaces whenever possible. To cross a low obstacle such as a threshold, each operator lifts slightly as both operators roll the iNjX across the obstacle. Avoid jarring the patient.
- Roll the iNjX only at or below the recommended transport height. Rolling above this height can increase the chance for the iNjX to tip. An audible alarm sounds when the iNjX is above the maximum transport height.
- Do not roll the iNjX sideways. Rolling the iNjX sideways can increase the chance for it to tip and injure the patient and/or operators.
- Use additional help as needed to safely control the weight of the patient and iNjX. See "Using Additional Help" on page 8.

ROLLING THE iNjX

1. Fasten and adjust the patient restraints.
2. **Both Operators:** Press **+** or **-** to adjust the iNjX height to, or below, the factory-set maximum transport height.
3. **Both Operators:** Position both operators at the sides of the iNjX. Grasp and maintain control of the iNjX using the main frame. If additional help is used, position the helpers at the sides of the iNjX and the operators at the control and loading ends. See "Using Additional Help" on page 8.

WARNING

Rolling the iNjX above the factory-set maximum transport height can cause it to tip. Only roll the iNjX at or below the factory-set maximum transport height.

Rolling the iNjX sideways can cause it to tip. Roll the iNjX only toward the control end or loading end.

Important

Roll the iNjX downhill control-end first. If it is not medically appropriate to do this, roll with the loading-end first, but to maintain balance, the Loading-end Operator must exert upward force on the main frame.

Operating the iNjX requires a minimum of two trained operators. They may need additional help when working with heavy loads (patient plus equipment) or when operating the iNjX manually. See "Using Additional Help" on page 8.

Rolling



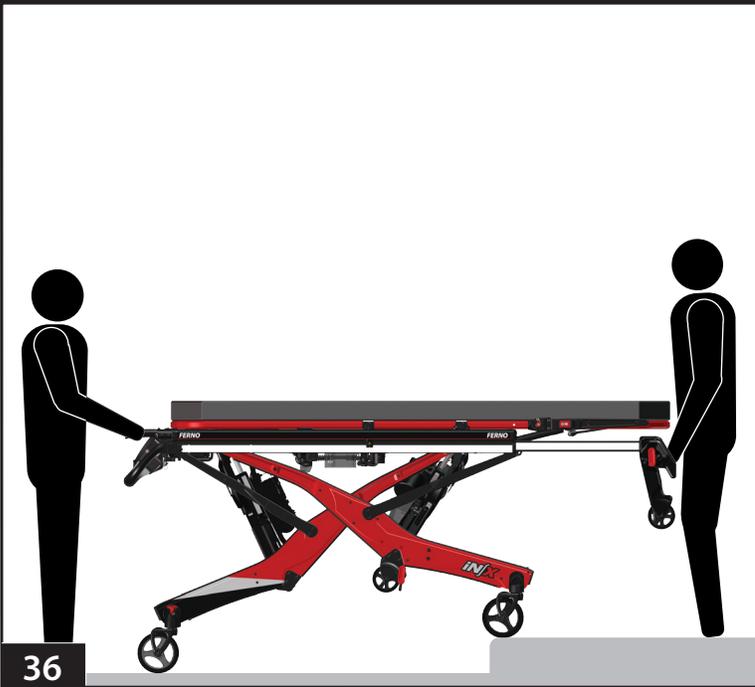
Tip

Talk to the Patient

Reassure the patient. Communicate before adjusting the height and during the loading and unloading processes.

Full 360° Movement

The iNjX allows full maneuverability at any height, even when fully folded.



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CROSSING HIGH OBSTACLES

The operators can use the iNjX auto-equalize feature to cross high obstacles such as curbs and some steps. To do this:

1. **Both Operators:** Roll the iNjX to the obstacle, with one set of transport wheels at the edge of the obstacle. Position the operators at the loading and control ends of the iNjX.
2. **Operator Nearest the Obstacle:** Position yourself on firm ground across, on top of, or at the bottom of the obstacle. Prepare to support the load of your end of the iNjX (use additional help as needed). Do not lift.
3. **Control Operator:** Press **+** or **-** to adjust the height. The iNjX will stop when the leg nearest the obstacle is no longer supporting weight.
4. **Operator Nearest the Obstacle:** Support the weight of your end of the iNjX. Do not lift.
5. **Control Operator:** Press **+** or **-** to adjust the height of the set of legs that will cross the obstacle. Stop when the transport wheels are at the appropriate height to cross or roll onto or over the obstacle.
6. **Both Operators:** Together, roll the iNjX partway onto the new surface (Figure 36). The operator nearest the obstacle can relax his/her grasp when the iNjX is fully supported on the new surface. Continue rolling the iNjX to position the second operator near the obstacle.
7. **Both Operators:** Repeat Steps 2-6 to support the load, adjust the iNjX legs, and maneuver over the obstacle and/or onto the new surface.

5.8 One Operator, Empty iNjX

If local protocols permit, an empty iNjX (no patient) may be operated by one trained operator. Always use two operators when a patient is on the iNjX.

Raising/Lowering: Press **+** or **-** to adjust the iNjX height.

Loading and Unloading: Follow the procedures as for two operators. See "Loading the iNjX" on page 36 or "Unloading the iNjX" on page 38.

Guide the iNjX toward the safety hook so the hook catches the center of each safety bar during loading or unloading. Use the position indicator lights to assist you in the proper times to extend or retract the control-end legs (Figure 37).

Reminder: The operator must support and balance a portion of the remaining weight of the empty iNjX when the control-end legs are off the ground.

5.9 Loading the iNjX

Loading the iNjX 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 iNjX at all times.



1. Raise the ambulance folding bumper, if present.
2. Extend the telescoping load frame and verify it is locked in the fully-extended position.
3. Align the iNjX and keep it parallel with the ambulance side walls (Figure 38).
4. Grasp the iNjX with both hands.
5. **Control-end Operator:** Press **+** to raise the iNjX to the user-set loading height (see "Set the Loading Height" on page 53) or, if needed, press **+** and **-** to position the loading wheels level with the ambulance floor.
6. **Both Operators:** Roll the iNjX into the ambulance until the loading wheels and load-frame safety bar pass the safety hook. Guide the iNjX toward the safety hook so the hook will be captured by the center of the load-frame safety bar.
7. **Loading-end Operator:** Visually confirm the safety bar has been captured by the safety hook.
8. **Both Operators:** Confirm the safety bar has captured the safety hook by attempting to pull the iNjX out of the ambulance. The iNjX must be stopped by the hook (Figure 39). If not, adjust the height and retry.
9. **Control-end Operator:** Press **-** to begin retracting the loading-end legs. The legs will retract slightly, then stop when they are no longer supporting the weight of the iNjX. This is a safety check to verify that the load is being supported.

Tip

Talk to the Patient

Reassure the patient. Communicate before adjusting the height and during the loading and unloading processes.

No-Lift Loading/Unloading

Do not lift the iNjX off the ground when using power during the loading or unloading process.

Support and balance the control end of the iNjX while the control-end legs are off the ground. See "Support the Load During Loading/Unloading", page 9.

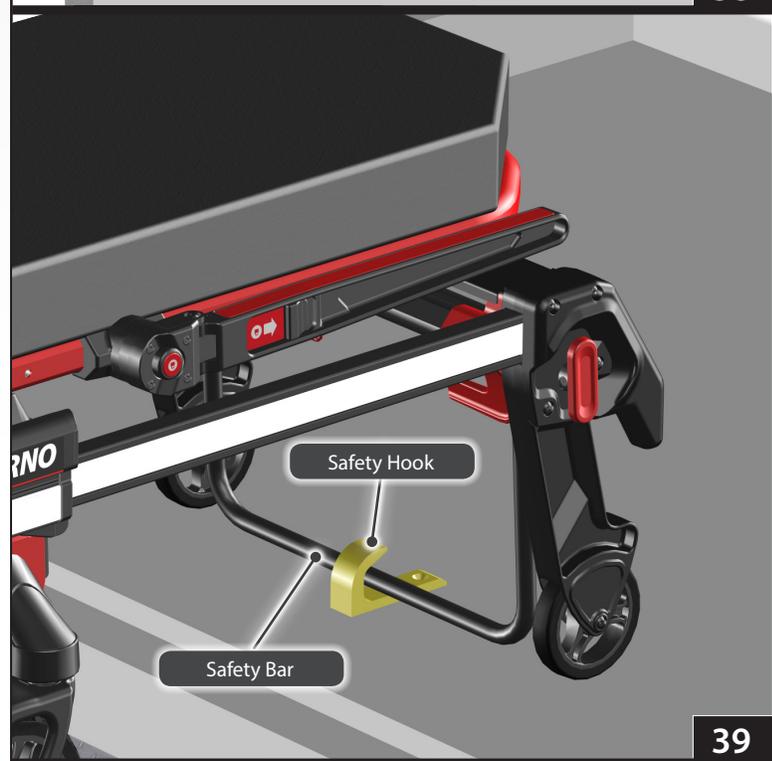
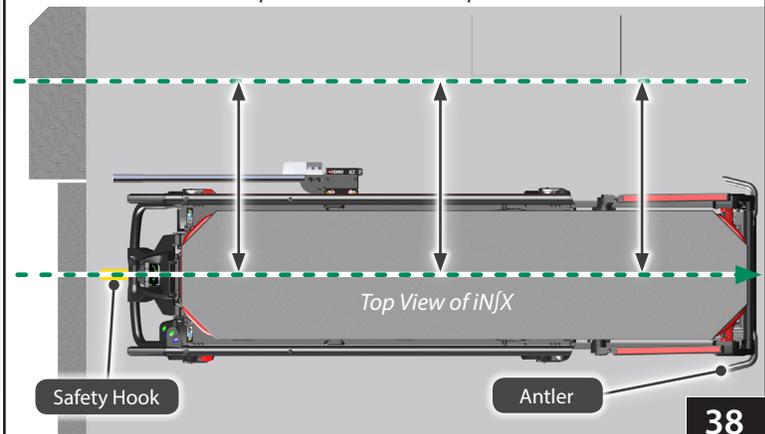
WARNING

Failure to engage the safety hook during loading or unloading can cause injury. Operators must visually ensure each safety bar engages the safety hook and the iNjX is secure inside the ambulance before raising or lowering the legs.

Important

If the ambulance is parked on an uneven surface, the operators (and any helpers) may need to extend the legs higher than the user-set loading height to allow the iNjX to roll into the ambulance.

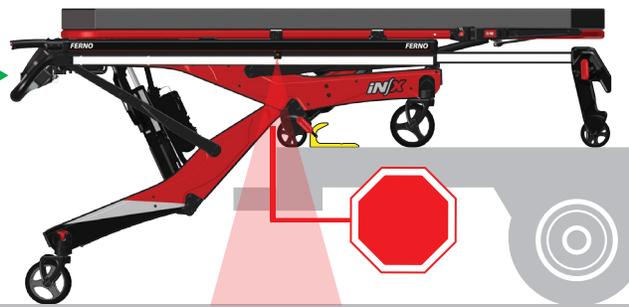
Top View of Patient Compartment



Using the iNjX



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- Control-end Operator:** The display shows the loading-end legs green (ready to retract) and control-end legs white (will not retract). Press  and completely retract the loading-end legs (Figure 40).

Note: The iNjX has a leg "kick-up" feature to position the control end slightly above the level of the ambulance floor. This feature helps aid a smooth transition into the ambulance and reduces bumps for the patient and operators as each set of wheels rolls into the ambulance.

- Both Operators:** Push the iNjX into the ambulance until the intermediate wheels and position indicator lights are on the ambulance floor and the intermediate safety bar passes the safety hook, then stop (Figure 41). If needed, press  to lower the frame slightly.

- Loading-end Operator:** Visually confirm the intermediate safety bar has captured the safety hook.

Note: If needed, use the release lever to lift the safety bar over the safety hook, and then lower the safety bar to engage the safety hook.

- Both Operators:** Pull the iNjX against the safety hook to confirm the intermediate safety bar has been captured by the safety hook.

- Both Operators:** Keep the iNjX main frame level with the ambulance floor. Support and balance the remaining weight of the iNjX and patient as you continue to Step 15.

- Control-end Operator:** Press  to begin retracting the control-end legs (Figure 42).

Note: The legs will retract slightly, then stop when they are no longer supporting the weight of the iNjX. This is a safety check to verify that the load is being supported.

- Control-end Operator:** Press  to finish retracting the control-end legs. **Note:** If the iNjX is not kept level with the floor, additional presses of  may be needed.

- Both Operators:** Push the iNjX into the ambulance (Figure 43), keeping it parallel with the ambulance side walls. Secure the iNjX in the fastening system.

Tip

Legs Pause (Loading Process)

Each set of legs will retract slightly and then stop retracting when they are no longer supporting the weight of the iNjX. This is a safety check to verify the weight is supported by the ambulance and/or operator(s).

Position Indicator Lights

When the red line is visible on the ambulance floor, the intermediate loading wheels are also on the ambulance floor, indicating it is safe to retract the control-end legs.

Use the Telescoping Handles

Extend the telescoping handles to more easily maneuver the iNjX into the fastening system and reduce the amount of reaching required. Retract the handles before closing the ambulance rear doors.

5.10 Unloading the iNjX

Unloading the iNjX 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 iNjX at all times.



1. Raise the ambulance folding bumper, if present.
2. Release the iNjX from the fastening system.
3. Grasp the iNjX with both hands, provide balance, and support the load. Keep the iNjX level with the ambulance floor and parallel with the ambulance side walls as you roll it out of the ambulance (Figure 44). Watch for the position indicator lights on the ambulance floor.
4. Guide the iNjX toward the safety hook so the hook will be captured by the center of the intermediate safety bar.
5. Stop rolling when the iNjX is engaged with the safety hook and the position indicator lights align with the edge of the ambulance floor (Figure 45). Visually confirm that the safety bar has been captured by the safety hook.
6. **Control-end Operator:** Press **+** to extend the control-end legs (Figure 46). Stop pressing the button when the control-end legs are supporting the load.
7. **Control-end Operator:** Tell the Loading-end Operator to disengage the intermediate safety bar from the safety hook.

Tip

Talk to the Patient

Reassure the patient. Communicate before adjusting the height and during the loading and unloading processes.

No-Lift Loading/Unloading

Do not lift the iNjX off the ground when using power during the loading or unloading process.

Support and balance the control end of the iNjX while the control-end legs are off the ground. See "Support the Load During Loading/Unloading", page 9.

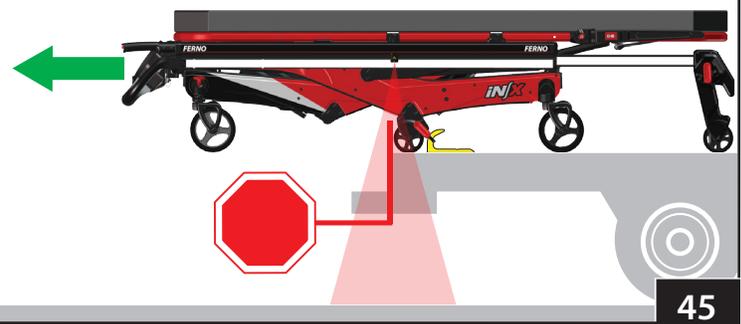
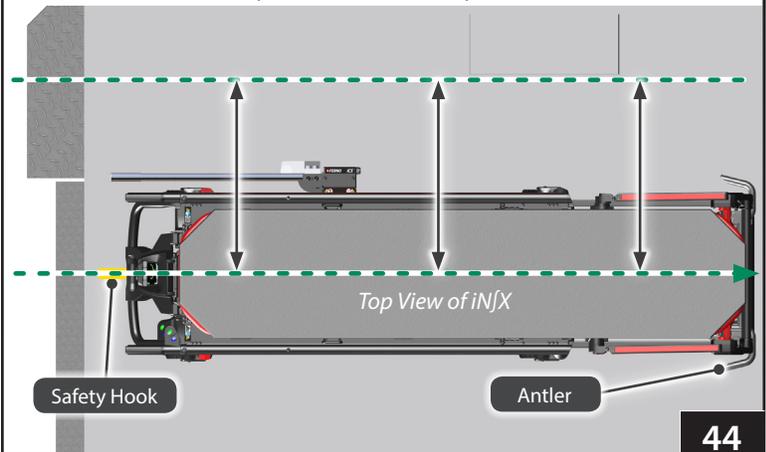
Position Indicator Lights

When the red line is visible at the edge of the ambulance floor and the safety bar is engaged with the safety hook, the control-end legs are ready to be extended.

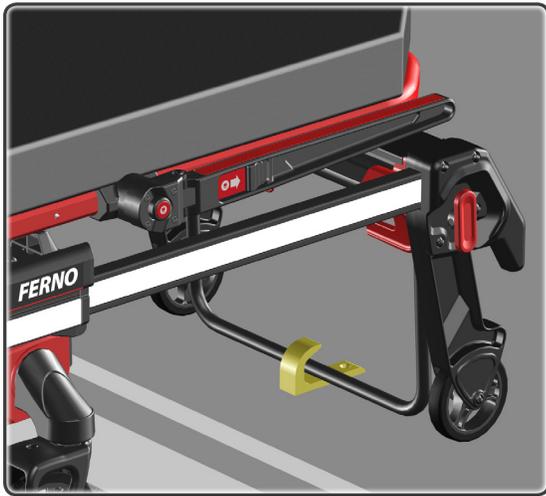
WARNING

Failure to engage the safety hook during loading or unloading can cause injury. Operators must visually ensure each safety bar engages the safety hook and the iNjX is secure inside the ambulance before raising or lowering the legs.

Top View of Patient Compartment



Using the iNjX



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8. **Both Operators:** Keeping the iNjX parallel with the ambulance side walls, resume rolling the iNjX out of the ambulance. Guide the iNjX toward the safety hook so the hook will be captured by the center of the loading-frame safety bar (Figure 47).
9. **Control-end Operator:** Press **+** to extend the loading-end legs. Stop pressing the button when the loading-end legs are supporting the load (Figure 48).
10. **Control-end Operator:** Tell the Loading-end Operator to disengage the load-end safety bar from the safety hook.
11. **Both Operators:** While maintaining your grasp on the main frame and guide bar with both hands, roll the iNjX out of the ambulance, then stop rolling.
12. **Control-end Operator:** Press **-** to lower the iNjX to the factory-set transport height.

5.11 Direct-Power Modes

Direct-power allows the operators to independently control one or both sets of legs to raise, lower, load or unload the iNjX. Use the mode button to select from three direct-power modes. These are considered alternate modes and are not part of the normal operation of the iNjX.



Note: If an obstruction prevents the iNjX from moving, stop pressing or , carefully remove the obstruction, and continue using the iNjX. Direct Power is not needed.

Note: When using Direct Power, the iNjX extends and retracts the legs at a slower speed than when using the normal powered mode.

SELECTING DIRECT POWER

Each button press cycles to the next mode, with corresponding display images. The button-press sequence is:

- **Direct-Power Both Legs.** Both sets of legs move when or is pressed. Depending on the weight on the iNjX, one set of legs may extend or retract more quickly than the other.
- **Direct-Power Loading-end Legs Only.** Only the loading-end legs move when or is pressed.
- **Direct-Power Control-end Legs Only.** Only the control-end legs move when or is pressed.

Note: The fourth button-press enters the Load-Height Set Mode. See "Set the Loading Height" on page 53.

Note: The fifth button-press returns the iNjX to its standard operating mode.

USING DIRECT POWER

Use extreme care when using direct-power with a patient on the iNjX. The iNjX will not automatically match or maintain an even extension between the loading-end and control-end legs. Avoid placing the patient at a severe angle as patient and/or operator injury can occur if the load shifts.

In each direct-power mode, a countdown timer counts down from 15 seconds. If no further action is taken, the iNjX reverts to its standard operating mode.

WARNING

A severe angle can injure the patient and/or operators. Control the iNjX when using a direct-power mode.

Important

When using direct-power, the auto-equalize feature is disabled. Do not place the iNjX at a severe angle where the patient or equipment could shift and become unbalanced.

Tip

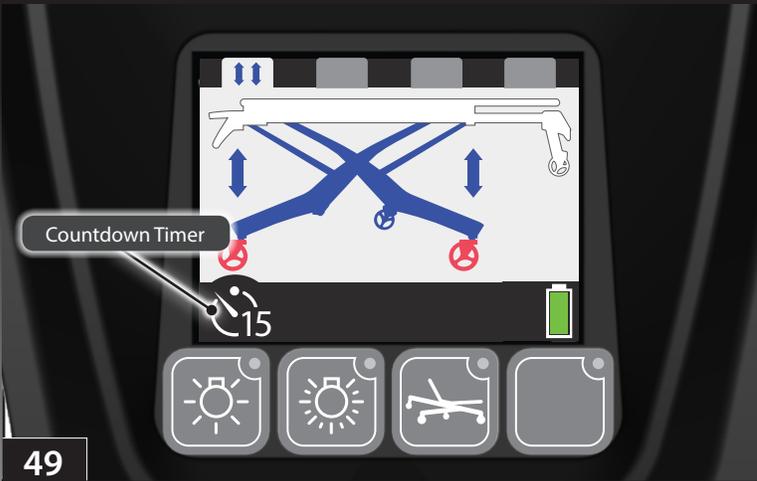
Direct-Power Modes

The direct-power modes are easily identified by the icons and the white or blue background on the display screen.

During the normal operation, the display background remains black.

Return to Normal Operation

To return to the standard or normal operating mode, wait for the 15-second timer to expire while on any alternate mode screen, or cycle the mode button until the normal screen appears.



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5.12 Direct Power: Both Legs

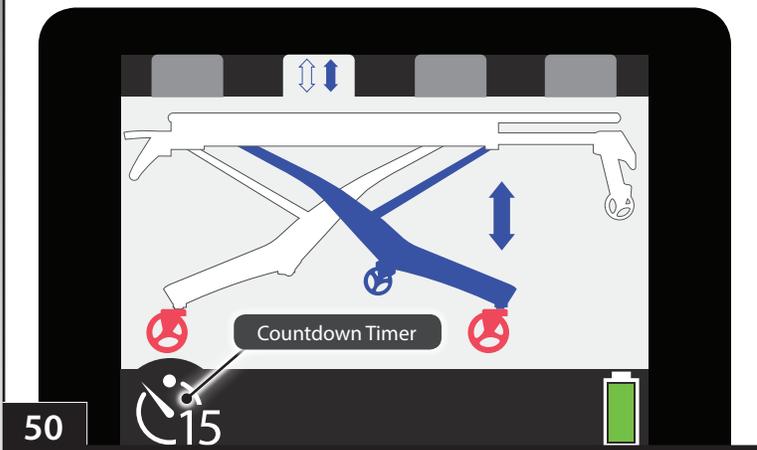
In this mode, both sets of legs move when **+** or **-** is pressed. Be aware:

- The operators must maintain control of the iNjX and not place the patient at a severe angle.
- The weight of the patient and equipment may cause the legs to move at different speeds.
- Display (Figure 49):
 - White background
 - Blue legs and double-headed arrows indicates both legs will move.
 - Red wheels indicate that the iNjX must not be rolled.
 - If the 15-second countdown timer expires, the iNjX returns to its standard operating mode.

5.13 Direct Power: Loading-End Legs

In this mode, only the loading-end legs move when **+** or **-** is pressed. Be aware:

- The operators must maintain control of the iNjX and not place the patient at a severe angle.
- Display (Figure 50):
 - White background
 - Blue loading-end legs and double-headed arrow indicates only the loading-end legs will move.
 - Red wheels indicate that the iNjX must not be rolled.
 - If the 15-second countdown timer expires, the iNjX returns to its standard operating mode.

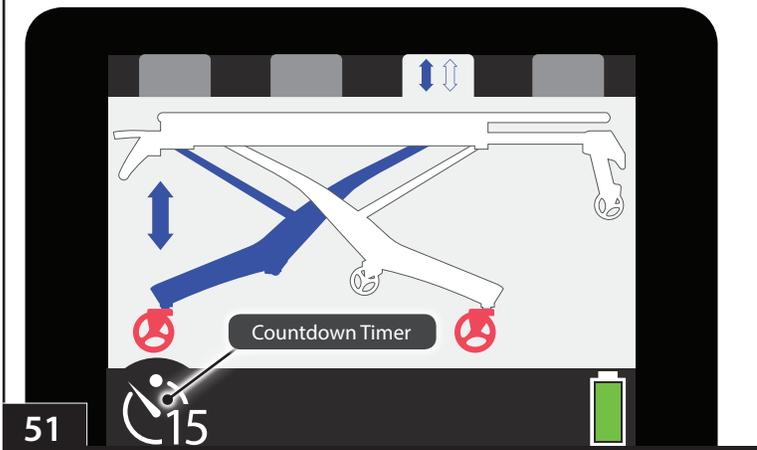


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5.14 Direct Power: Control-End Legs

In this mode, only the control-end legs function when **+** or **-** is pressed. Be aware:

- The operators must maintain control of the iNjX and not place the patient at a severe angle.
- Display (Figure 51):
 - White background
 - Blue control-end legs and double-headed arrow indicates only the control-end legs will move.
 - Red wheels indicate that the iNjX must not be rolled.
 - If the 15-second countdown timer expires, the iNjX returns to its standard operating mode.



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5.15 Non-Powered Operation: Raising and Lowering

To raise or lower the iNjX without power, raise or lower in stages, repeating until the iNjX is at the desired height. Refer to the table on page 41 as you follow the procedure below.



USING TWO OPERATORS:

PREPARING TO RAISE OR LOWER THE iNjX

1. **Both Operators:** Stand together at one end of the iNjX and grasp the main frame. Communicate and work together to raise or lower the iNjX. Do not place the patient at a severe angle.
2. **Both Operators:** Raise the backrest and shock frame (Figure 52) as needed. Release the actuator-release handles from their mounts.
3. **Lead Operator:** Grasp the main frame with both hands, support and balance the iNjX.
4. **Handle Operator:** Be ready to use the actuator-release handle at the proper time and assist with raising or lowering the legs.

RAISING THE iNjX

1. **Lead Operator:** Raise the end of the iNjX several inches off the ground. Tell the handle-operator you are ready for the position change.
2. **Handle Operator:** Squeeze the actuator-release handle (Figure 53) and push the legs down until the transport wheels are on the ground. Release the handle to lock the legs.
3. **Lead Operator:** Maintain your grasp on the iNjX. Verify it is stable at the new position.
4. **Both Operators:** Move to the opposite end of the iNjX and repeat Steps 1-3.
5. **Both Operators/Helpers:** Repeat Steps 1-4 until the iNjX is level and is at the desired height.

Tip

Control the Load

Lift the iNjX slightly before squeezing an actuator-release handle. This ensures that you have assumed the load.

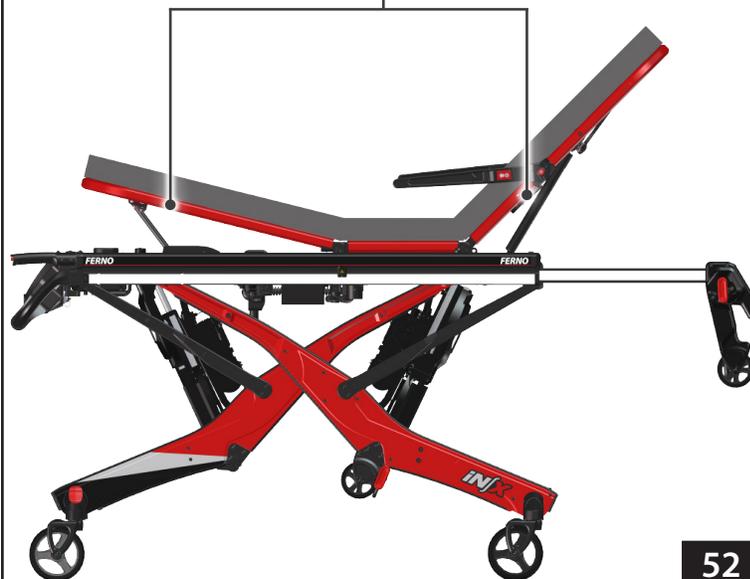
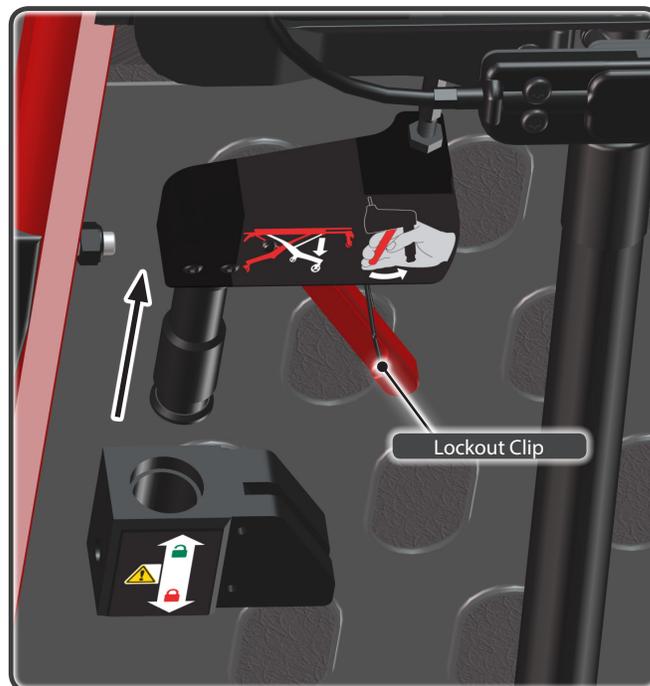
Non-Powered Recommendation

When raising the iNjX without power, Ferno recommends you begin at the loading end. Raise the loading end first, then the control end.

WARNING

Uncontrolled movement can cause injury or damage. Support the load before using an actuator-release handle.

A severe angle can injure the patient and/or operators. Control the iNjX when operating without power.





Tip

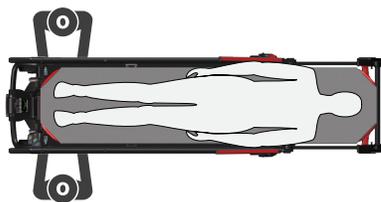
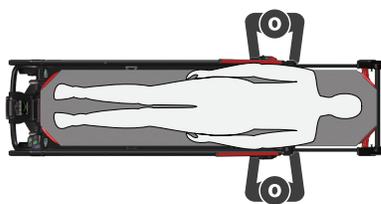
Deploying the Handles

Push the base of the actuator-release handle to remove it from its mount. Position the loading-end handle at the patient-right side of the iNjX, and the control-end handle at the patient-left side.

Non-Powered Recommendation

When lowering the iNjX without power, Ferno recommends you begin at the control end. Lower the control end first, then the loading end.

Raising and Lowering (with Patient)



Raising and Lowering (No Patient)



LOWERING THE iNjX

1. **Lead Operator:** Lift slightly and assume the load (example: lift until the wheels are off the ground slightly). Communicate to the handle-operator that you are ready for the position change.
2. **Handle Operator:** Grasp the main frame and handle.
3. **Both operators:** As the handle operator squeezes the handle, both operators assist the lowering process. Release the handle to lock the legs.
4. **Lead Operator:** Maintain your grasp on the iNjX. Verify it is stable at the new position.
5. **Both Operators:** Move to the opposite end of the iNjX and repeat Steps 1-4.
6. **Both Operators:** Repeat Steps 1-5 until the iNjX is level and is at the desired height.

FOLDING WITHOUT A PATIENT

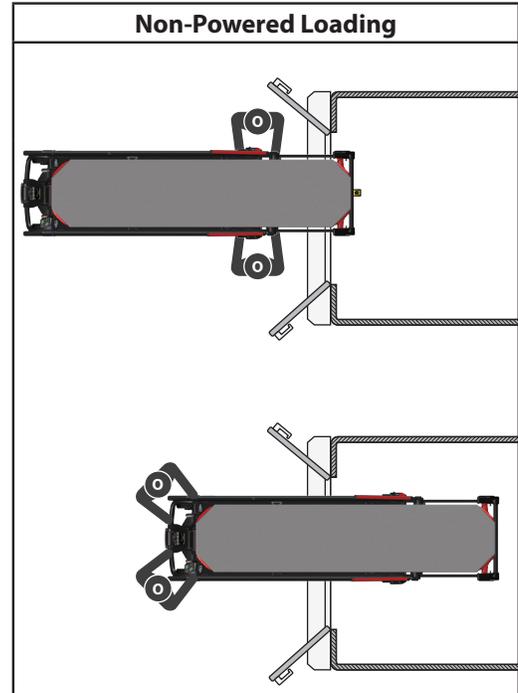
To fold the iNjX with no patient, the operators stand at opposite ends of the iNjX and squeeze the handles at the same time. Control the descent of the iNjX and keep it level as you fold it.

5.16 Non-Powered Operation: Loading

The independent-leg design of the iNjX allows the operators to reduce the amount of lifting required even when loading the iNjX into an ambulance without power. Refer to the table at right and use additional help as needed. See "Using Additional Help" on page 8.



1. **Both Operators:** Raise the iNjX to the loading height for your ambulance. See "Non-Powered Operation: Raising and Lowering" on page 42 to raise the iNjX in stages until it is the desired height. Do not put the patient at an extreme angle.
2. **Both Operators:** Roll the iNjX into the ambulance and secure the loading-end safety bar on the safety hook. Verify the iNjX is engaged with the hook before proceeding.
3. **Handle Operator:** Remove the loading-end actuator-release handle from its mount under the backrest.
4. **Both Operators:** Stand together at the loading end of the iNjX. Grasp the main frame with one hand and the loading-end legs with the other hand.
5. **Both Operators:** Communicate and work together. As the handle operator squeezes the actuator-release handle, both operators fold the loading-end legs. Release the handle to lock the legs.
6. **Both Operators: After folding the loading-end legs, resume your grasp on the main frame.**
7. **Both Operators:** Roll the iNjX into the ambulance until the intermediate safety bar passes the safety hook. Verify that the iNjX is engaged with the hook before proceeding.
8. **Handle Operator:** Squeeze the actuator-release handle one more time to verify the loading-end legs have folded completely. Position the handle out of the way so it will not interfere with the fastening system.
9. **Handle Operator:** Remove the control-end actuator-release handle from its mount under the shock frame.
10. **Both Operators:** Stand together at the control end of the iNjX. Grasp the main frame with one hand and the control-end legs with the other hand.
11. **Both Operators:** Communicate and work together. As the handle operator squeezes the actuator-release handle, both operators fold the control-end legs. Release the handle to lock the legs.
12. **Both Operators:** Resume your grasp on the main frame, then roll the iNjX into the ambulance and secure it in the fastening system.



Important

As you load the control-end of the iNjX into the ambulance, arrange the actuator-release handles/cables so they will not interfere with the fastening system.

Tip

Reduce the Load

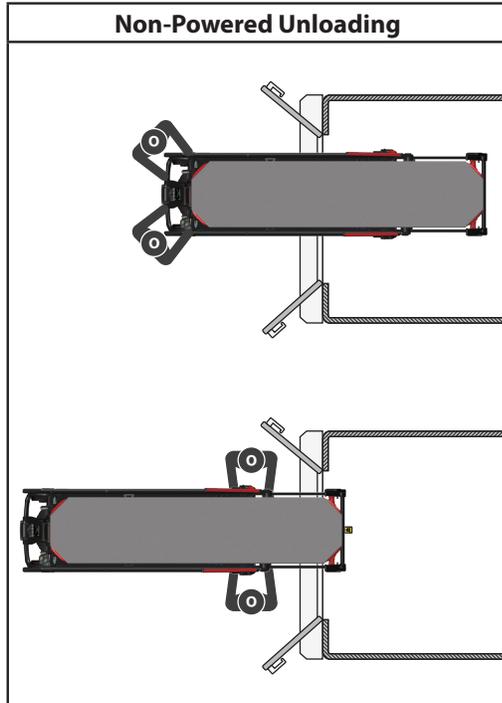
If medically appropriate, lower the backrest and lay the patient flat. This puts more of the load inside the ambulance and reduces the amount the operators must support during loading.

Urgent Non-Powered Loading

If enough operators and helpers are available, roll the iNjX to the ambulance and fully lower it. Working together, the operators and helpers lift and set the iNjX inside the ambulance.

Using the Lockout Clip

Use the lockout clip (Figure 52) to hold the handle in the compressed state. This allows the handle operator to use both hands to assist raising/lowering or maintaining control of the iNjX.



Tip

Non-Powered Unloading

When using the non-powered unloading process, the iNjX is not at its normal height. The operators and patient may experience a slight bump when the iNjX is released from the safety hook. Both operators should lift the iNjX slightly as it is rolled out of the ambulance.

Urgent Non-Powered Unloading

If enough operators and helpers are available, work together to roll the iNjX out of the ambulance without unfolding the legs and set it on the ground. Then, raise the iNjX for rolling.

5.17 Non-Powered Operation: Unloading

The independent-leg design of the iNjX allows the operators to reduce the amount of lifting required even when unloading the iNjX from an ambulance without power. Refer to the table at left and use additional help as needed. See "Using Additional Help" on page 8.



1. **Either Operator:** Remove the control-end actuator-release handle from its mount under the shock frame.
2. **Both Operators:** Support and balance the load as the iNjX is rolled out of the ambulance in Step 3.
3. **Both Operators:** Disengage the iNjX from the fastening system and roll it out of the ambulance until the intermediate safety bar engages the safety hook. Verify the iNjX is engaged with the hook before proceeding.
4. **Both Operators:** Use additional help as needed to support the load.
 - **Lead Operator:** Support and balance the load throughout the process.
 - **Handle Operator:** Squeeze the actuator-release handle and lower the control-end legs to the ground. Release the handle to lock the legs in the extended position.
5. **Both Operators:** As one operator disengages the intermediate safety bar from the safety hook, both operators roll the iNjX out of the ambulance until the loading-end safety bar engages the safety hook. Verify the iNjX is engaged with the hook before proceeding.
6. **Handle Operator:** Remove the loading-end actuator-release handle from its mount under the backrest.
7. **Both Operators:**
 - **Lead Operator:** Support and balance the load throughout the process.
 - **Handle Operator:** Squeeze the actuator-release handle and lower the loading-end legs to the ground. Release the handle to lock the legs in the extended position.
8. **Either Operator:** Disengage the iNjX from the safety hook. Together, roll the iNjX out of the ambulance.
9. **Both Operators:** Lower the iNjX to a transport height, or fold it. See "Non-Powered Operation" on page 27 to lower each end of the iNjX in stages, repeating the process until the iNjX is the desired height. Do not put the patient at an extreme angle.

6 - MAINTENANCE

6.1 Maintenance Schedule

The iNjX requires regular maintenance. Set up and follow a maintenance schedule. The table at right represents minimum intervals for maintenance. Keep maintenance records. See "Maintenance Record" on page 59.

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

6.2 Service Life

Many factors affect a product's service life, including frequency of use (high versus low volume ambulance service); local environment (extreme temperature, high 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 iNjX.

6.3 Disinfecting Patient Restraints

1. Remove the patient restraints from the iNjX.
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 the buckles or slide bars in liquid.**
3. Hang the restraints to air-dry if needed. Attach only dry restraints to the iNjX. See "Patient Restraints" on page 50.

6.4 Cleaning Patient Restraints

1. Immerse the restraint webbing in a solution of mild soap and water. **Do not immerse the metal buckles or slide bars in the solution.**
2. Repeatedly dip the webbing in clear water to rinse. **Do not immerse metal buckles or slide bars in liquid.**
3. Hang the restraint to air-dry. Attach only clean, dry restraints to the iNjX. See "Patient Restraints" on page 50.

6.5 Disinfecting/Cleaning the Pad

1. Remove the pad from the iNjX.
2. **To disinfect:** Apply disinfectant to the pad, following the disinfectant manufacturer's instructions for application method and contact time.
3. **To clean:** Wash the pad with warm, soapy water and a soft cloth. Rinse the pad with clear water. Hang the pad to dry, or dry it with a towel. To attach the pad to the iNjX, see "Locking Pad" on page 26.

WARNING

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

Minimum Maintenance	Each Use	As Needed	Monthly
Disinfecting (pages 46-47)	•		
Cleaning (pages 46-47)		•	
Lubricating (page 47)		•	
Inspecting (page 48)		•	•

Important

Disinfectants and cleaners containing phenolics or iodines can cause damage. Do not use products containing these chemicals. If bleach is used, rinse with plenty of clear water to remove bleach residue.

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

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.

Ingress Protection Rating

The iNjX is rated **IP 56**. IP stands for Ingress Protection, and indicates the iNjX 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

Battery Care

The battery is water-resistant and is suitable for outdoor use. Do not submerge the battery in water.

Wipe the battery terminals with a clean dry cloth if they become dirty or wet.

Do not open the sealed battery case. Do not dismantle, open or shred the battery.

Before pressure-washing the iNjX, remove the battery and cover the battery cable plug with a bag.

Important

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

Tip

Applying Lubricant

Use a small amount of lubricant (one or two drops). Lubricate identical points on each side of the iNjX. After applying lubricant, wipe off any excess.



Lubricate (Both Sides, Both Safety Bars)



Lubricate (Both Sides, Both Ends)



6.6 Disinfecting the iNjX

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

6.7 Cleaning the iNjX

1. Remove the patient restraints, pad, and accessories. Verify that all cords, cables, connectors, etc. are connected.
2. Remove the battery. Cover the battery cable plug with a bag. Tie the bag closed or use a rubber band to make a watertight seal around the plug.
3. For battery care, see "Battery" on page 18 and the Battery Care Important box at left.
4. Hand clean all surfaces of the iNjX with warm water and a mild detergent, or pressure-wash the iNjX within the limits described below.
 - o Do not spray water directly into ports, wire harnesses, cable connections, etc.
5. Rinse with warm, clear water. Dry the iNjX with a towel or allow it to air-dry.

6.8 Lubricating the iNjX

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

LUBRICATION POINTS

- | | |
|--------------------------|-----------------------------|
| 1. Safety Bar Pivot (x4) | WRL-191S, E-Z-1 light oil* |
| 2. Slider Rails | TFE (Teflon) rarely needed* |

LUBRICATION-FREE ITEMS

- | | |
|--------------------------|------------------|
| Wheels (sealed bearings) | Do not lubricate |
| Legs | Do not lubricate |
| Patient Surface | Do not lubricate |

Safety-Bar Pivot Points: Apply a few drops of lubricant as needed (near the red handle). Wipe off any excess.

Sliding Rails: If the sliding rails squeak during use, clean the rails. If this does not solve the problem, clean and then apply a light coating of TFE lubricant (Teflon) to the rails.



Do Not Lubricate



Lubricate

6.9 Inspecting the iNjX

Have your service's equipment maintenance personnel inspect the iNjX regularly. Follow the checklists at right and operate the iNjX through all its functions as described in this manual. If inspection shows damage or excessive wear, contact Ferno. See "Ferno Customer Relations" on page 2.

ELECTRICAL INSPECTION

- Does the power switch function properly?
- Do the Extend and Retract buttons function properly?
- Does the powered system operate properly through the full range of motion?
- Does the powered system operate smoothly, without binding or excessive noise?
- Does the controller stop the iNjX at the transport height, user-set loading height, and at the fully-extended and lowered positions?
- Do the lights and position indicator lights operate as expected?
- Is there visible sign of damage to the controller case, display, battery, or battery charger?
- Does the battery attach properly to the iNjX?
- Does the display function properly?
- Are all cords and cables free of excessive wear, cuts, and fraying?

MECHANICAL INSPECTION

- Are all components present?
- Is the iNjX free of excessive wear?
- Is all hardware securely in place?
- Do all moving parts operate smoothly and properly?
- Does the iNjX load and unload properly?
- Does the safety hook engage each safety bar?
- Do the legs show signs of wear or damage?
- Does the iNjX roll smoothly?
- Do the wheels show excessive wear or damage?
- Do the wheel locks engage properly and stop wheel rotation?
- Do the wheel casters remain level and perpendicular to the ground through 360° rotation and through the full range of leg motion?
- Are the patient restraints properly installed?
- Is restraint webbing in good condition with no cuts or frayed edges?
- Are restraint buckles free of visible damage and do they operate properly?
- Is the ambulance properly prepared for the iNjX with an approved Ferno fastening system installed (iNjX antler and iNjX safety hook)?
- Do installed accessories operate properly without interfering with iNjX operation?

6.10 Storing the iNjX

To store the iNjX (Figure 55):

1. Lower the iNjX to the fully-lowered position and turn the power switch OFF.
2. Remove and charge the battery. See "Charging the Battery" on page 49 and "Storing the Battery" on page 49.
3. Cover the battery cable connector on the iNjX with a bag. Seal the bag (for example, with a rubber band) to prevent moisture from entering the connector.

Before returning the iNjX to service:

1. Attach a fully-charged battery.
2. Turn the power switch ON.
3. Have your service's equipment maintenance personnel inspect the iNjX. See "Inspecting the iNjX" on page 48.



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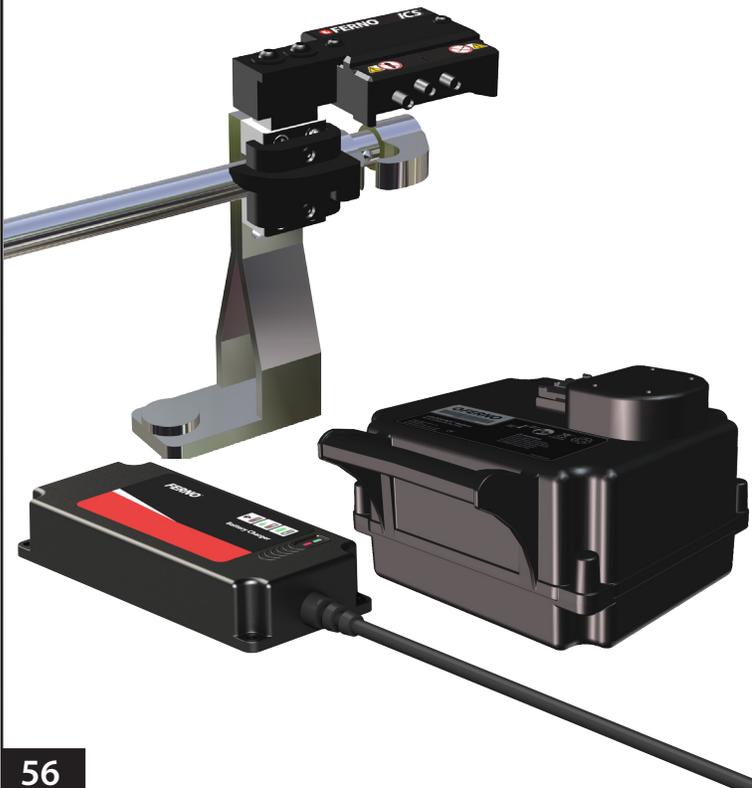
Deeply-Discharged Battery

If the battery is deeply discharged, the ICS may not be able to charge the battery. Connect a deeply-discharged battery directly to the charger.

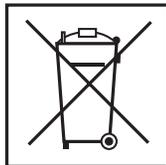
Charging Inside an Ambulance

To charge a battery inside an ambulance, the Ferno® ICS® must be used.

Tip



56



LiFePO₄ Battery (36 Volts DC)
A type of Lithium-ion (Li-ion) Battery

6.11 Charging the Battery

There are two ways to charge the battery: Secure the iNjX in a fastening system equipped with the Integrated Charging System (ICS®), or remove and connect the battery directly to a Ferno battery charger.

- **To charge the battery using the ICS:** Verify the ambulance power to the ICS is ON and secure the iNjX in the fastening system. See "Integrated Charging System (ICS)" on page 19.
- **To charge the battery using the charger:** Remove the battery from the iNjX and connect it to a Ferno® battery charger (Figure 56). See "Battery" on page 18.

BATTERY CARE

- To store the battery if it will not be used for an extended period of time, see "Storing the Battery" below.
- The battery is water-resistant and is suitable for outdoor use. Do not submerge the battery in water.
- To clean the battery, wipe the battery port with a clean dry cloth if it becomes dirty or wet.
- Do not open the sealed battery case. Do not dismantle, open or shred the battery.
- Recycle the battery when it can no longer maintain a charge. Do not dispose of batteries with municipal waste. See "Recycling Notice" on page 49.
- Replace a damaged or cracked battery.

6.12 Storing the Battery

- Fully-charge the battery before storing it. Do not store the battery with less than a full charge.
- Store the battery only in a cool, dry place. Battery capacity can be affected if the battery is stored for long periods outside of the recommended temperature range.
- After an extended period of storage, charge the battery fully before use.

6.13 Recycling Notice

The iNjX uses a rechargeable, 36 Volt DC lithium-iron battery (specifically "LiFePO₄" as noted on the battery label).

Recycle the battery when it can no longer hold a charge. Do not dispose of the battery with municipal waste. Contact your government for proper recycling.

U.S.A. – Recycling is regulated by the Environmental Protection Agency (EPA). Contact your state EPA for recycling information.

WEEE Directive (E.U.) – European Union directive 2002/96/EC Waste Electrical and Electronic Equipment (WEEE) limits the disposal of electrical and electronic equipment in landfills. Contact the government in the country in which you reside for recycling information.

6.14 Patient Restraints

The restraint system includes a pelvis strap, chest strap, harness, and two-piece leg restraint (Figure 57). The patient restraints are positioned both above and below the pad. To prepare the iNjX for use, follow the procedures in this section.

WARNING

An unrestrained patient can be injured. Use properly-installed patient restraints to secure the patient on the iNjX.

To attach patient restraints, refer to “Bracket-and-Post System” below and the instructions on the next page. Keep the patient restraints buckled when not in use.

1. To secure a patient on the iNjX, unbuckle the harness, pelvis, and leg restraints and position the straps out of the way.
2. Transfer the patient onto the iNjX following local protocols. Adjust the backrest, shock frame, and restraint length as needed.
3. Lay the shoulder straps on the patient’s chest, with the links extended to the patient’s waist.
4. Guide the pelvis-strap tang (metal buckle) through the links and fasten the buckle (Figure 57).
5. Adjust the pelvis strap and shoulder straps so they are snug on the patient.
6. Fasten the chest strap across the patient’s ribcage (Figure 57).
7. Fasten the leg restraint over the patient’s legs (Figure 57).

BRACKET-AND-POST SYSTEM

The pelvis strap and harness attach to the iNjX with a bracket-and-post system. To attach the straps:

1. Orient the bracket on the restraint strap with the bend facing the center of the iNjX and the tab up (Figure 58).
2. Slide the bracket over the post and pull the bracket upward to seat the post in the small end of the bracket.
3. Insert the retaining plug into the bracket (Figure 58).

Tip

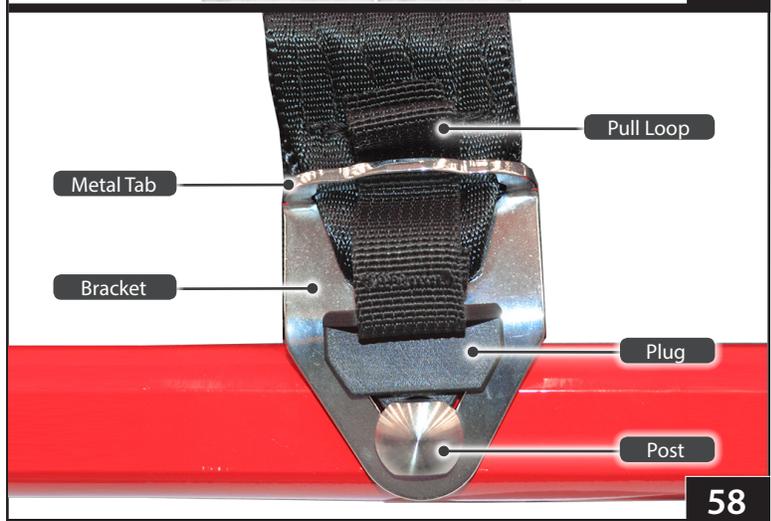
Restraint Colors

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

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

Buckle Orientation

Ferno recommends that you attach all patient restraints with the buckles at the same side for operator convenience and efficiency.



1 – ATTACH THE PELVIS STRAP

The pelvis straps have red webbing near the buckles (Figure 59). With the pad removed, attach the pelvis strap brackets to the mounting post at each side of the seat panel. Verify the brackets are seated on the posts and the strap is not twisted. Insert the retaining plugs.

2 – ATTACH THE CHEST/SHOULDER STRAPS

The chest straps have only black webbing and are connected to the shoulder straps, which have red webbing near the links (Figure 59). Attach the chest strap brackets to the mounting post at each side of the backrest. Verify the brackets are seated on the posts and the strap is not twisted. Insert the retaining plugs.

3 – ATTACH THE LEG RESTRAINT

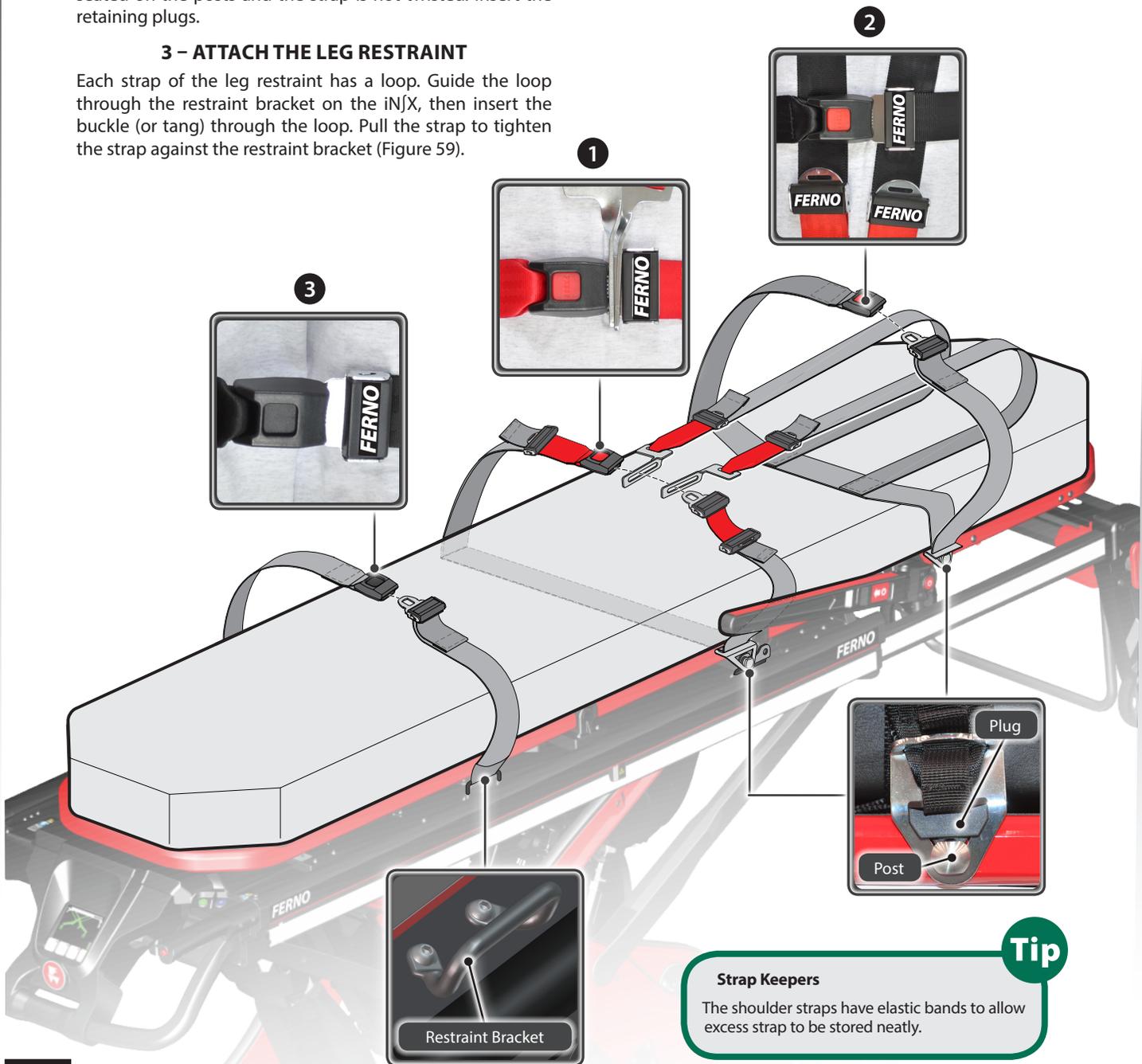
Each strap of the leg restraint has a loop. Guide the loop through the restraint bracket on the iNjX, then insert the buckle (or tang) through the loop. Pull the strap to tighten the strap against the restraint bracket (Figure 59).

REMOVING PATIENT RESTRAINTS

Unbuckle the patient restraints.

To detach the pelvis and chest/shoulder straps, use the pull loop (Figure 58) to pull the retaining plugs out of the brackets, then press the brackets down toward the main frame to unseat the post from the bracket. Lift the bracket off the post. If the brackets are difficult to remove, stand on the opposite side of the iNjX and pull across the patient surface.

To remove the leg restraint, unbuckle the restraint and feed the buckle (or tang) through the loop. Then, remove the loop from the restraint bracket.



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

7 - INITIAL SETUP

7.1 Ambulance Information

The ambulance bumper extension must not exceed 13" (330 mm). The patient compartment must have a level floor large enough for the fully lowered iNjX, and an (updated) Ferno® Model 175 fastening system installed.

The required iNjX antler and iNjX safety hook (provided) must be used. If the Integrated Charging System will be used, update or install the ICS before use. See also "Fastening System Compatibility" on page 4.

Important

Loose items and debris on the patient compartment floor can interfere with locking the iNjX into the fastening system. Keep the patient compartment floor clear.

The iNjX antler and iNjX safety hook (provided) must be used. The iNjX is compatible only with these components.

7.2 Prepare the Ambulance For the iNjX

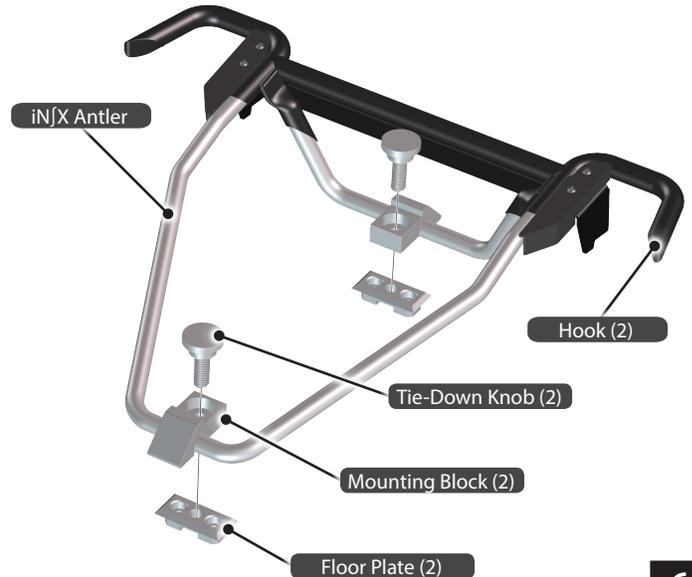
See the manual "iNjX Retrofit/Conversion Kits" to prepare your ambulance for the iNjX. For a free manual, contact Ferno. See "Ferno Customer Relations" on page 2.

- **iNjX antler** (Figure 60). The iNjX antler **must** be installed and used. The iNjX antler is compatible with other products designed for use with the Model 175 fastening system.
- **iNjX safety hook** (Figure 61). The iNjX safety hook **must** be installed and used. The iNjX safety hook is compatible with other Ferno® cots with safety bars.
- **Slide plate** (not shown). The slide plate allows the operators to more easily slide the iNjX toward the fastening-system rail to secure it in the fastening system.
- **ICS®** (Figure 62). Update or install the Integrated Charging System to allow in-the-fastener charging of the iNjX. For information on the ICS, see "Integrated Charging System (ICS)" on page 19. or the *ICS® for iNjX Installation and Users' Manual*.

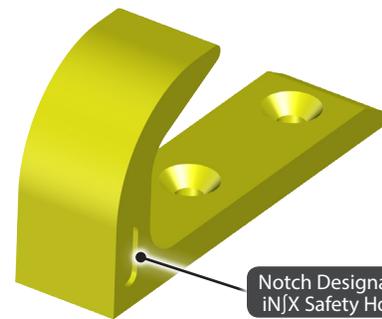
WARNING

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

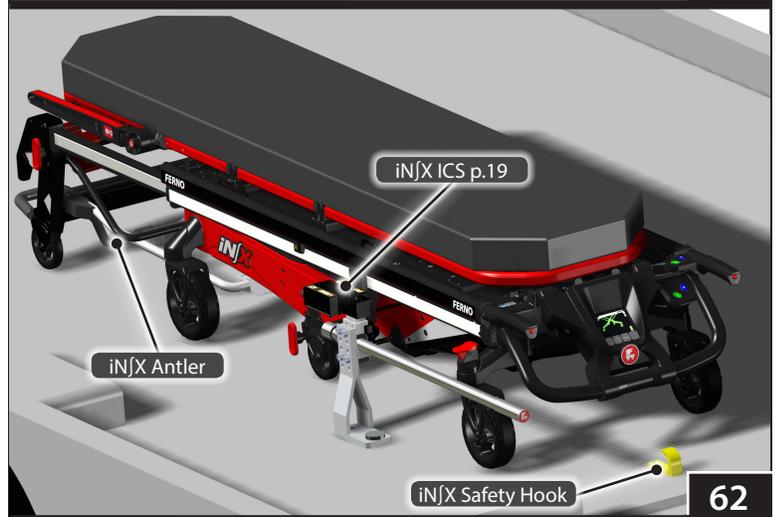
Failure to use the iNjX antler and iNjX safety hook (provided) can cause injury. Use the iNjX only with these items.



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7.3 Charge and Install the Battery

Charge the battery using **only** the provided battery charger (Figure 63) or using the provided charger as part of an Integrated Charging System (ICS). The charger is compatible with standard household electricity.

The charger is supplied with the proper cable and plug for your location. See "Battery Charger" on page 19 and "Charging the Battery" on page 49.

To install the battery, see "Attaching the Battery" on page 18.

Error Setting the Loading Height

Tip

No loading height will be set when the iNjX is at the factory-set **maximum transport height** or **maximum height**.



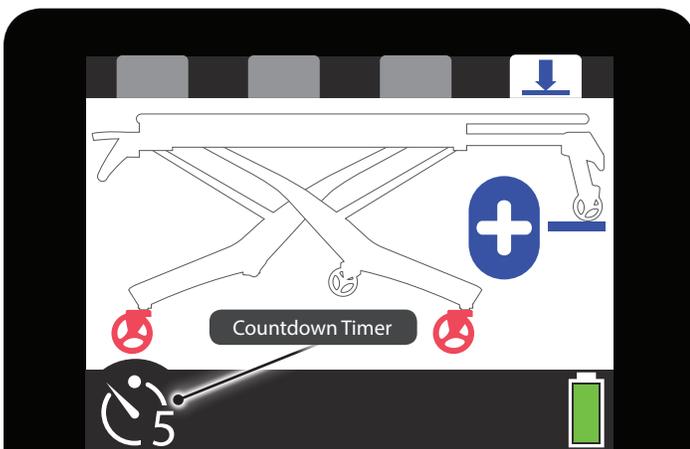
64

7.4 Set the Loading Height

The user can set the iNjX so it stops automatically at the proper loading height for the assigned ambulance. To set or change the loading height:

1. On a level surface, raise or lower the iNjX until the loading wheels roll directly onto the ambulance floor (Figure 64). Verify that the loading wheels are resting on the ambulance floor, the safety bar is caught by the safety hook, **and** that the loading-end legs have not lifted off the ground.
2. Press the Mode-Select button four times to enter the load-height set mode. See "Mode-Select Button" on page 21.
 - The background screen is white to indicate the load-height set mode (Figure 65). The wheels are red to indicate that the iNjX must not be rolled.
 - A blue line is displayed below the loading wheel, and a 15 second countdown timer is shown in the lower-left corner of the display.
 - The **+** symbol is displayed to indicate that pressing the button will set a new loading height.
3. Press and hold **+** before the timer expires. When pressed, a new, 5-second timer appears on the display. Continue holding **+** until the timer expires.
4. Turn the power switch OFF and then ON. See "Power Switch" on page 15.
5. Retract and extend the legs to verify the iNjX stops at the new loading height. Test loading and unloading the iNjX with the ambulance.

Note: The iNjX stops at the user-set loading height only when extending (raising).



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7.5 Install Accessories

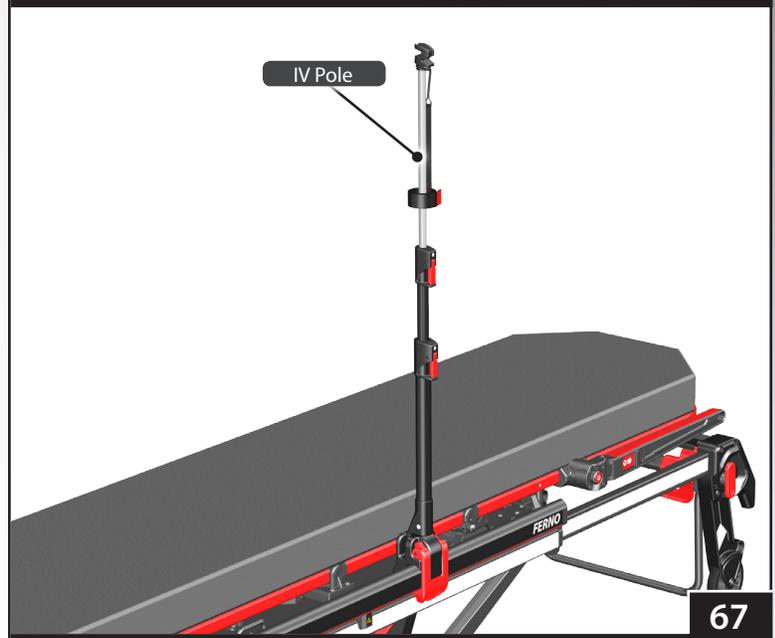
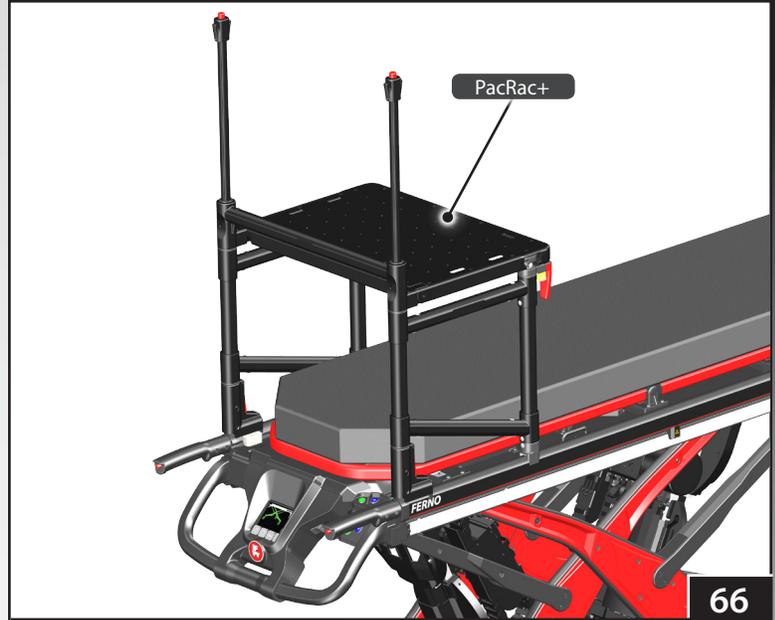
A variety of accessories are compatible with the iNjX. For a complete list of accessories, contact Ferno.

Some accessories are designed to mount directly to the iNjX main frame.

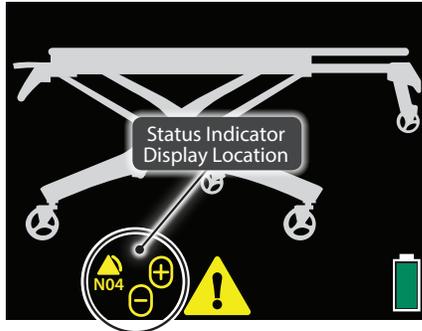
Before placing the iNjX in service, assign appropriate personnel to install any accessories shipped with the iNjX. Keep accessory users' manuals with this manual for future reference. For additional, free manuals, contact Ferno. See "Ferno Customer Relations" on page 2.

ACCESSORY KITS

Kit	Description	Qty
FWEPR	PacRac+	1
LAIV3SCL	iNjX, Monobloc 3-stage IV pole	1



8 - TROUBLESHOOTING



8.1 Status Indicators

Status codes alert the operator to function or safety issues. The codes are grouped into four priority levels: no priority, low, medium, and high.

Status codes are color-coded. High-priority codes are red; all others are yellow. When a safety issue arises, a warning triangle is displayed next to the error code.

Refer to the chart below. Some codes indicate the need for service. See "Parts and Service" on page 56.

Icon	Meaning	Solution
	A button has been pressed longer than the maximum time allowed.	Release the button.
	Auto-equalize problem. The iNjX is having trouble equalizing the legs.	If there is an obstruction in the legs, clear the obstruction. Use caution. The load on the iNjX may exceed the load capacity. Use additional help and provide lift-assistance. Use Direct Power.
	The battery is expecting to see charging power, but the iNjX is not detecting power at the ICS contacts.	Wait 30 seconds. If the error does not resolve itself in this time, there is a problem with the ICS. Report the problem to Ferno (page 2).
	Both buttons are being pressed at the same time.	Stop pressing the buttons. Press only or . If the situation continues, report the issue to Ferno (page 2).
	Improper charge voltage (voltage too high).	Verify the connections between the iNjX and the ICS; verify ICS connections to the ambulance power supply. The ICS or charger may be plugged into an outlet providing an incorrect power voltage.
	The battery is not charging. Charging power has been detected at the ICS contacts, but the battery is not detecting a charge.	Wait 30 seconds. If the error does not resolve itself in this time, this indicates a possible problem with the ICS, charger, iNjX, or battery. Report the problem to Ferno (page 2).
	Battery over-temperature.	Allow time for the battery to cool. Use manual lower to complete the transport.
	The actuator motor has overheated. The actuators are deactivated until the motor cools.	Allow time for the motors to cool. Use manual mode to complete the transport.
	A cable is routed from the controller to each actuator. One or both of these cables is disconnected.	Re-connect the cable(s).
	With weight on the iNjX, the legs are not moving at the proper speed, indicating: 1) Excessive weight on the iNjX; 2) Leg obstruction; 3) Mechanical problem.	1) Remove weight from the iNjX or provide lift-assistance. 2) Clear the obstruction from the legs. Use caution. 3) Call Ferno for service (page 2).
	Without weight on the iNjX, the legs are not moving at the proper speed, indicating: 1) An obstruction in the legs; 2) A mechanical problem.	1) Clear the obstruction from the legs. Use caution. 2) Call Ferno for service (page 2).
	Communication error.	Use direct power to complete the patient transport, and call Ferno for service (page 2).
	Patient-surface has been above the maximum safe transport height longer than 30 seconds; is disabled. The patient surface and warning triangle are red. The audible alarm sounds a pattern of 2+3 beeps.	Use to lower the iNjX to a safe transport height.

9 - PARTS AND SERVICE

9.1 U.S.A. and Canada

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

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

9.2 Worldwide

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

9.3 Parts List

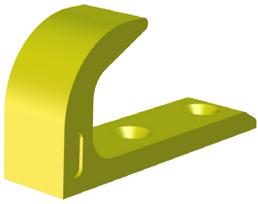
INjX COMPONENTS

Description	Qty	
031-4113	iNjX locking pad (mattress)	1
031-4114	iNjX harness restraint	1
037-4881	iNjX harness waist strap (only)	1
031-3892	Restraint, 2 pc., 5' black	1



WARNING

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



iNjX Safety Hook



iNjX Model 175 Antler



iNjX ICS Floor Plate



iNjX ICS Connector Cup



iNjX ICS Model 175 Module

MODEL 175, SAFETY HOOK, SLIDE PLATE KITS

Kit	Description	Qty
056-7052	iNjX Antler (only)	1
082-2446	Slide Plate (only)	1
082-2447	iNjX Safety Hook (only)	1
000175INXUPDATE	Ferno Retrofit (update existing Model 175)*	1
0001751INX	New Install/Conversion iNjX Model 175-1*	1
0001752INX	New Install/Conversion iNjX Model 175-2*	1
0001753INX	New Install/Conversion iNjX Model 175-3*	1
0001754INX	New Install/Conversion iNjX Model 175-4*	1
0001755INX	New Install/Conversion iNjX Model 175-5*	1

Note: * Includes iNjX antler, slide plate, and iNjX safety hook.

INTEGRATED CHARGING SYSTEM KITS

Kit	Description	Qty
082-2442	iNjX ICS deep connector cup	1
082-2443	iNjX ICS shallow connector cup	1
082-2444	iNjX ICS deep floor plate	1
082-2445	iNjX ICS shallow floor plate	1
082-2423	iNjX ICS Model 175 module	1

