



GXm Modular Gangway System

GXm

SafeRack®

version
0226.1

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1.0 INTRODUCTION

Thank you for purchasing your new gangway from SafeRack. Your gangway has been manufactured using the latest technology and the highest quality materials. It is ergonomically designed and has been tested in the most critical applications.

This manual provides instructions for the:

- GX^m Self Adjusting Stairs (SAS) gangway
- GX^m Telescoping (FRT) gangway
- GX^m (SFR) gangway

The GX^m (SFR) uses RetractAlok power-assist technology so operators can lift and lower the gangway with the push of a foot pedal and the simple pull of a rope.

The GX RetractAlok (FRT) has the same technology as the SFR and, in addition, has the capability to extend the safety handles and telescoping platform.

The GX^m SAS Gangway offers unique modularity and multiple power assist options to adapt to your specific needs.

The gangways are available in multiple lengths and widths (24", 36", 48", 60" and 72"). Adding fall protection cages is easy and are available in various sizes.

Important! All personnel must read this manual and follow all guidelines and installation instructions to ensure their safety and gangway performance.

Contact Information

The SafeRack team is available if you have any questions, or needs, regarding the installation and assembly of the System. You may contact us at the following:

Phone: 1-866-761-7225

E-mail: info@saferack.com

Address: 219 Safety Ave, Andrews, S.C. 29510

Disclaimer

The information in this manual is provided without any warranty whatsoever, including any damages to personnel, equipment, or the system.



2.0 SAFETY

This section covers the following safety information:

- 2.1 Safety Signal Words and Symbols
- 2.2 Safety Warnings
- 2.3 Pinch Points
- 2.4 Location of Safety Labels on the System
- 2.5 Safety Data Sheet

2.1 Safety Signal Words and Symbols

Safety words and symbols are used in this manual to bring attention to potential physical, and material, hazards. All personnel engaged with operation, maintenance, and work around this system must read, and understand, all the safety warnings.

Safety signal words are used to indicate the severity of a hazard or unsafe practice. The following safety signal words explain the severity of a hazards or unsafe practices.

 **DANGER**

Indicates a hazard or unsafe practice that **will** result in severe injury or death.

 **WARNING**

Indicates a hazard or unsafe practice that **could** result in severe injury or death.

 **CAUTION**

Indicates a hazard or unsafe practice that **could** result in minor injury.

NOTICE

Indicates a hazard or unsafe practice that **could** result in property damage and general safety related information.

2.2 Safety Warnings

 **WARNING**



Failure to read and understand all the safety warnings, instructions in this manual, and OSHA requirements could result in serious injury or death. All personnel engaged with the operation, maintenance, and work around this system must read and understand all the safety warnings instructions in this manual and OSHA requirements.



Using the Manual Lower Valve button to lower the gangway may result in the gangway lowering at a high, unexpected rate and cause a person fall off or be impacted by the gangway resulting in serious injury or death. Ensure there are not any people on, or under, the gangway before pressing down on the Manual Lower Valve button and lowering the gangway.

WARNING



Rigging that cannot handle the weight, or movement, of the load may cause an unexpected release of the load that could result in serious injury or death to personnel, and product damage. Always use rigging hardware that's capable of handling, and movement, of the gangway. Ensure the rigging is securely attached and will not damage the gangway.



Failure to inspect the gangway for damage, worn parts, and working condition during operation, handling, or shipping could result in serious injury or death. Always inspect the gangway after receiving shipment and before each shift for damage, worn parts, and ensure the gangway is in proper working condition. Never operate the gangway if there is any damage, worn parts, or the system is not in proper working condition. Do not alter or modify the gangway from its original design without consultation, and approval from SafeRack LLC.



Movement of the gangway may crush, or impact, personnel in the work area and cause serious injury or death. Ensure all personnel are removed from the work area before engaging movement of the system. Note: If the gangway is configured with the power option, and personnel enter the work area, turn off the power immediately using the emergency stop button on the Control Panel.



Uneven surfaces between the gangway basetread and the top of the walk surface of the platform may result in personnel tripping, causing serious injury or death. Ensure the two surfaces are flush when the gangway is mounted to the platform.

A gangway that is tilted, slanted, or misaligned after installation may result in a person losing their balance, falling off the gangway and cause serious injury or death. Ensure the gangways basetread uprights and basetread are plumb and level before use.



Exposure to high voltage may result in electrical shock, skin burns and could cause serious injury or death. If there is a power issue do not attempt to troubleshoot when the power to the system is still live. Always ensure the power is turned off during installation, maintenance and repairs. Only qualified electricians should connect the power to the system, troubleshoot and repair the equipment.

CAUTION



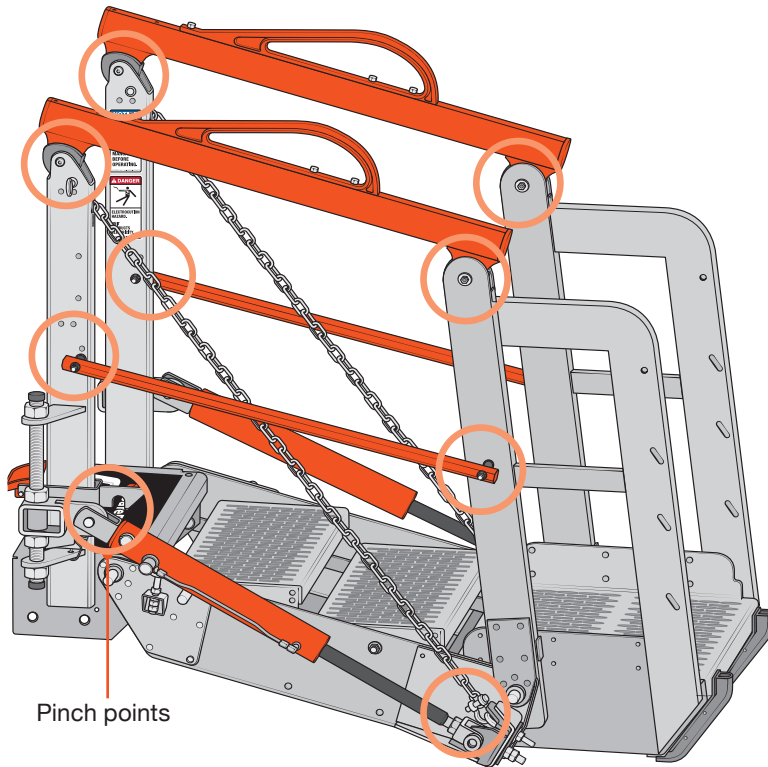
Movement of the gangway and system components may cut or pinch body parts and entangle items such as clothing or jewelry, which could cause personal injury. Always stop the movement of the gangway if a person becomes pinched or entangled.

Ensure that all personnel are appropriately trained on, and aware of, potential pinch points. Ensure all personnel wear proper PPE and remove any loose items that may become entangled while working with the gangway.



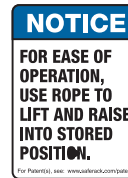
2.3 Pinch Points

Always avoid these potential pinch points during gangway movement.

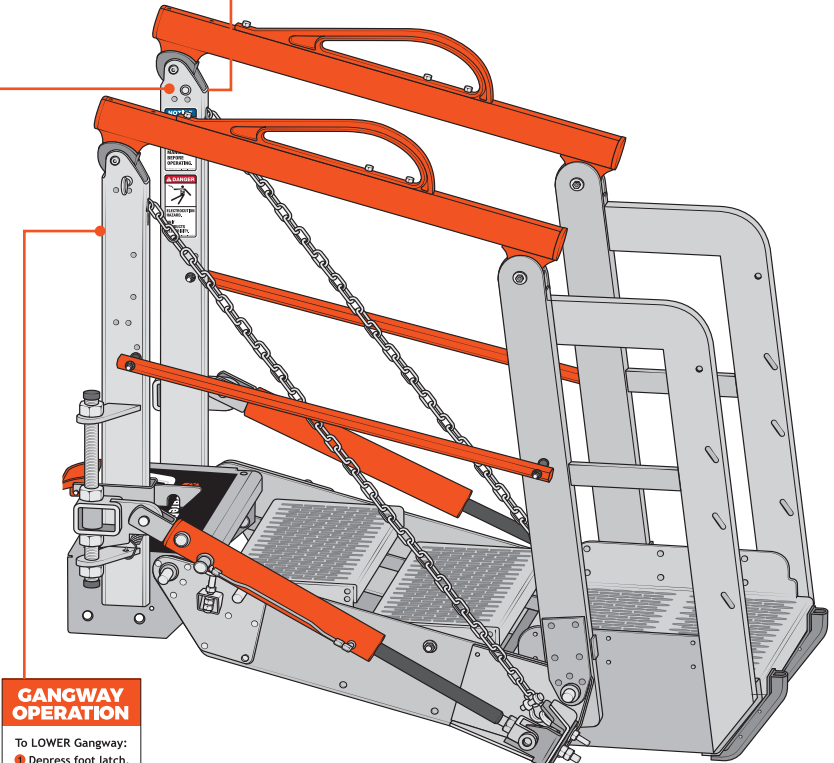


2.4 Location of Safety Labels

The image below shows the location of the safety labels. Always replace damaged labels.



Safety labels are located on inside of the basetread uprights



GANGWAY OPERATION

To LOWER Gangway:

- 1 Depress foot latch.
- 2 Push down on walk surface.
- 3 Set chain stops.

To RAISE Gangway:

- 1 Lift with rope.
- 2 Secure foot latch or set chain stops.



2.5 Safety Data Sheet

If needed, contact SafeRack at 1-866-761-7225 for a copy of the Safety Data Sheet

SAFETY DATA SHEET

Issue Date: 15 May 2015

Revision date: 15 May 2015

Version 1

1. - IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name: Bio-Ultimax 1000 Hydraulic Fluids ISO 46

Other means of identification

Product code: 81011, 81013, 81014, 81016, 81017

CAS NO: Mixture

Synonyms: None

Recommended use of the chemical and restrictions on use

Recommended Use: Biobased Hydraulic Oil, (Biodegradable), Compliant, EPA-VGP-EAL

Details of the supplier of the safety data sheet

Supplier and Manufacture

Renewable Lubricants, Inc.
476 Griggy RD NE, P.O. Box 474
Hartville, Oh 44632
Phone: (330) 877-9982
Fax: (330) 877-2266
www.renewablelube.com, www.renewablelubricants.com

Emergency telephone number

Emergency Telephone (CHEMTREC) 1-800-424-9300. Outside the U.S. (703) 527-3887

SECTION 2 - HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see SDS Section 15).

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1900.1200.

PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

HEALTH HAZARDS

This material has no known hazards when used as directed.

ENVIRONMENTAL HAZARDS

No significant hazards.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

Material Name: Bio-Ultimax 1000 Hydraulic Fluids ISO 46, Page 1 of 6
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SECTION 3 - COMPOSITION/INFORMATION on INGREDIENTS

No Hazardous Substance(s) or Complex Substance(s) required for disclosure. As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 - FIRST AID MEASURES

Eye contact: Flush eye with water for 15 minutes. If symptoms persist, call a physician.

Skin contact: Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. If skin irritation persists, call a physician.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. If symptoms persist, call a physician.

Ingestion: Do not induce vomiting. If conscious, drink plenty of water. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: No information available.

Indication of any immediate medical attention and special treatment needed

Notes to physician: Treat symptomatically

SECTION 5 - FIRE-FIGHTING MEASURES

Suitable extinguishing media: Use dry chemical, CO₂, water spray or "alcohol" foam.

Unsuitable extinguishing media: Do not use a solid water stream as it may scatter and spread fire.

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Incomplete combustion products, Smoke, Fume, Oxides of carbon.

Specific hazards arising from the chemical: In the event of fire, cool tanks and protect personnel with water spray. FLASH POINT (COC) 243°C (469°F)

Explosion data:

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

Special protective equipment for firefighters:

Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions: Use personal protective equipment. Keep unnecessary personnel away.

Environmental precautions

Environmental precautions: Prevent product from entering drains. Do not contaminate surface water. Check on local, national and international regulatory information to determine any reporting requirements for spills.

Methods and material for containment and cleaning up

Methods for containment: Prevent further leakage or spillage if safe to do so, confine spill immediately with booms.

Methods for cleaning up: Absorb spill with inert material (e.g. dry sand or earth). Where necessary collect using absorbent media, or skimming surface with suitable absorbent, then transfer material in approved containers.

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SECTION 7 - HANDLING AND STORAGE

Precautions for safe handling

Handling: Handle in accordance with good industrial hygiene and safety practice. Keep containers closed when not in use. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage Conditions: Keep containers tightly closed and store in a cool well-ventilated place free of contaminants. Empty containers may retain product properties. Follow all MSDS / Label warnings after container is emptied. No special storage precautions required.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Components	ACGIH TLV	OSHA (TWA mg/m ³):	IDLH
Oil Mist	5 mg/m ³	5 mg/m ³	

Appropriate engineering controls

Engineering measures to reduce exposure: Use only in area provided with appropriate exhaust ventilation.

Individual protection measures, such as personal protective equipment

Respiratory protection: No personal respiratory protective equipment normally required. In case of insufficient ventilation wear suitable respiratory equipment.

Hand protection: Nitrile rubber Neoprene gloves

Eye protection: Safety glasses

Skin and body protection: Impervious clothing

General Hygiene Considerations: Avoid contact with skin, eyes and clothing

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Typical information on basic physical and chemical properties

Specific Gravity (H ₂ O = 1):	88 @ 15.6°C
Flash Point (COC):	243°C (469°F)
Kinematic viscosity:	43.8 cSt @ 40°C
Pour Point:	-40°C (-40°F)
Explosive properties:	Material does not have explosive properties.
Oxidizing properties:	See Section 2, No significant hazards.
Volatile Organic Compound (VOC):	Components contain No VOC according to CARB
Physical state	Liquid
Appearance	Oil
Odor	Mild
Color	Light yellow liquid
Odor threshold	Not Determined
Melting point/freezing point:	Not Determined
Boiling point /boiling range:	Not Determined
Flammability (solid, gas):	Not Determined
Flammability Limit in Air	Not Determined
Evaporation rate: (n-Butyl Acetate=1)	Approx. <1
Percent Volatile:	Not Determined
Boiling Point:	Not Determined
Vapor Density (Air = 1):	<1
Vapor pressure:	Not Determined
Solubility in Water:	Insoluble
Upper flammability limit:	Not Determined
Lower flammability limit:	Not Determined
Partition coefficient:	Not Determined
Autoignition temperature:	Not Determined
Decomposition temperature:	Not Determined

Other information

The above data are typical values and do not constitute a specification.

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SECTION 10 - STABILITY AND REACTIVITY

Reactivity: Not applicable

Chemical stability

Stability: Stable under normal conditions

Possibility of Hazardous Reactions

Possibility of Hazardous Reactions: None under normal processing
Hazardous polymerization: Hazardous polymerization does not occur

Conditions to avoid

Conditions to avoid: No special storage conditions required

Hazardous Decomposition Products

Hazardous Decomposition Products: None under normal processing

Incompatible materials

Incompatible materials: Oxidizing agents

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information	Product does not present an acute toxicity hazard based on known or supplied information
Eye contact	Contact with eyes may cause irritation. May cause mild, short-lasting discomfort to eyes based on assessment of the components.
Skin contact	Acute Toxicity: Minimally Toxic, based on assessment of the components. Substance does not generally irritate and is only mildly irritating to the skin with prolonged exposure.
Inhalation	Acute Toxicity: Minimally Toxic, based on assessment of the components. Irritation: Negligible hazard at ambient/normal handling temperatures.
Ingestion	Acute Toxicity: Minimally Toxic, based on assessment of the components and structurally similar materials.
Aspiration	Not expected to be an aspiration hazard, based on physical and chemical properties of the material.
Respiratory Sensitization	Not expected to be a respiratory sensitizer, based on assessment of the components and structurally similar materials.
Germ Cell Mutagenicity	Not expected to be a germ cell mutagen, based on assessment of the components and structurally similar materials.
Carcinogenicity	Not expected to cause cancer, based on assessment of the components and structurally similar materials. This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
Reproductive Toxicity	Not expected to be a reproductive toxicant, based on assessment of the components.
Lactation	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	Single Exposure: Not expected to cause organ damage from a single exposure. Repeated Exposure: Not expected to cause organ damage from prolonged or repeated exposure.

OTHER INFORMATION

Product Information: Product does not present an acute toxicity hazard based on known or supplied information. Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitizing in test animals and humans.

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SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity: No known hazards to the aquatic environment

Biodegradation: Based on previous biodegradability studies, the product provides Ultimate Biodegradation Pw1 >60% within 28 days in ASTM D-5864 Aerobic Aquatic Biodegradation of Lubricants.

Aquatic/Ecotoxicity: OECD 201, 202, and 203: Based on previous studies, LC50/EC50 is greater than 3,000 ppm (3000 mg/L).

Bioaccumulation: No Potential to Bioconcentrate

Soil Mobility: Not Established

Persistence and degradability: Readily biodegradable >60% within 28 days

Water Mobility: The product is insoluble and floats on water. **WGK:** 1

SECTION 13 - DISPOSAL INFORMATION

Waste treatment methods

Disposal of waste: Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging: Do not reuse container.

SECTION 14 - TRANSPORTATION INFORMATION

UN number	ADR/RID Not regulated.
ICAO Not regulated.	IMDG Not regulated.
UN proper shipping name	ADR/RID Not regulated.
ICAO Not regulated.	IMDG Not regulated. Marine Pollutant: NO
Transport hazard class(es)	ADR/RID Not regulated.
ICAO Not regulated.	IMDG Not regulated.
Packing group	ADR/RID Not regulated.
AIR	IATA Not regulated.
LAND	TDG Not regulated.
LAND	DOT Not regulated.

SECTION 15 - REGULATORY INFORMATION

International Inventories

TSCA: Listed in TSCA

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

Global Chemical Inventories:

USA	All components of this material are on the US TSCA Inventory or are exempt.
EU	All components are in compliance with the EC Seventh amendment Directive 92/32/EEC.
Japan	All components are in compliance with the Chemical Substances Control Law of Japan.
Australia	All components are in compliance with chemical notification requirements in Australia.
Canada	All components are in compliance with the Canadian Environmental Protection Act and are Canadian DSL/NDSL.
Switzerland	All components are in compliance with the Environmentally Hazardous Substances Ordinance in Switzerland.
China	All components of this product are listed on the Inventory of Existing Chemical Substances in China
Korea	All components are in compliance in Korea.
Philippines	All components are in compliance with the Philippines Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 (R.A. 6969).
TSCA:	All ingredients in this product are listed or exempt from listing on the TSCA Chemical inventory.
CEPA:	All ingredients in this product are listed or exempt from listing on the Canadian DSL/NDSL.
Proposition 65:	This product contains no chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

State Regulations (RTK)

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product does not contain any known chemical substance on the SARA Extremely Hazardous Substances list.

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

SECTION 16 - OTHER INFORMATION

Read and follow all label directions and precautions before using the product.

NFPA:

Health: 0
Flammability: 1
Instability 0

HMIS health rating:

Health: 0
Flammability: 1
Physical hazards 0
The customer is responsible for determining the PPE code for this material.

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CARB = California Air Resource Board; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Revision:

Date	Revised Section
15 May 2015	new

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of Renewable Lubricants, Inc. knowledge; however, Renewable Lubricants, Inc. makes no warranty whatsoever, expressed or implied, of MERCHANTABILITY OF FITNESS FOR THE PARTICULAR PURPOSE, regarding the accuracy of such data or the results to be obtained from the use thereof. Renewable Lubricants Inc. assumes no responsibility for injury to recipient or to third persons or for any damage to any property and recipient assumes all such risks.

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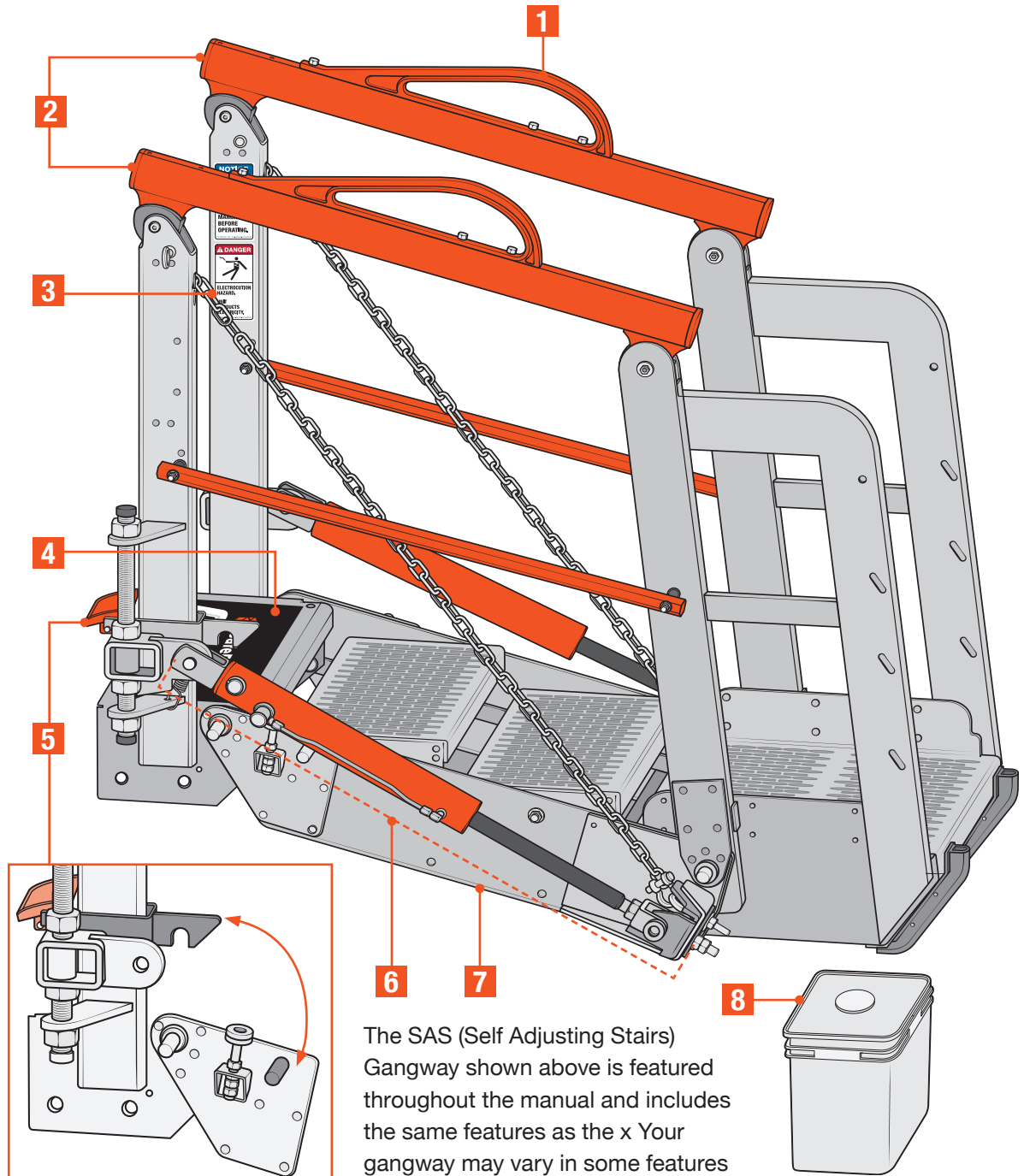
3.0 SYSTEM OVERVIEW

The GX™ gangway has two methods of operation; spring counterbalanced and hydraulically powered. The spring counter balanced gangway is raised and lowered manually. The hydraulically powered gangway is operated using the control panel.

3.1 Standard Gangway Features

Note: The *SAS*, *SFR* and *FRT* gangway are available in 24", 36", 48", 60", 72" widths. All models include the following features:

1. **Grabrail:** Main interaction point with the gangway, and one of many modular components on the gangway.
2. **Top Rails:** Provide fall protection and allows for customization of the operating system.
3. **Safety Chains:** Provides support for the gangway and are required to be set before use of gangway.
4. **Basetread:** The first step on the gangway.
5. **Footlock:** Locks the gangway in the stored position when not in use. Released by depressing the foot pedal.
6. **Operation Assembly:** This can be the counterbalanced spring assemblies or the hydraulic cylinders.
7. **SAS U-Body:** The center of modularity add-ons for the gangway
8. **Hardware Bucket:** Includes all hardware needed to mount the gangway.

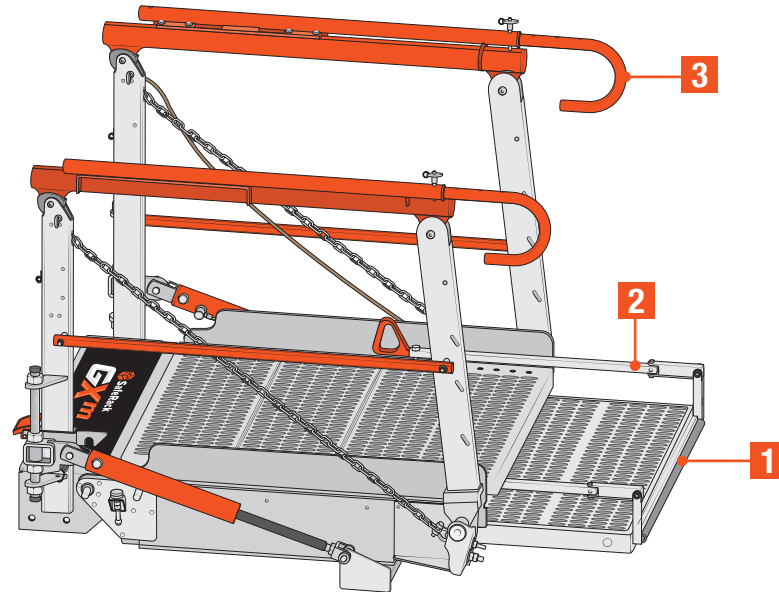


3.2 GX^m Gangway Models Specialty Features

Although the GX^m gangways share the same components and features described in section 3.1 there are some variations in the gangways. This section describes the GX^m models and their individual features.

3.2.2 GX^m FRT Gangway Features

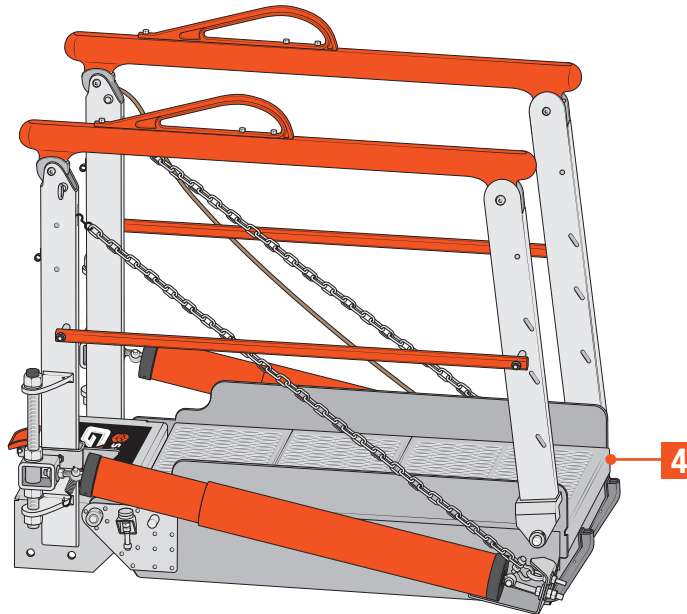
1. **Flat ramp telescoping (FRT)** walk surface.
2. **Lift and push/pull handle** to extend or retract the walk surface.
3. **Candy-cane top rail** attachment provides extendable handholds which extend to match the length of the walk surface.



GX^m Telescoping FRT gangway

3.2.1 GX^m SFR Gangway Features

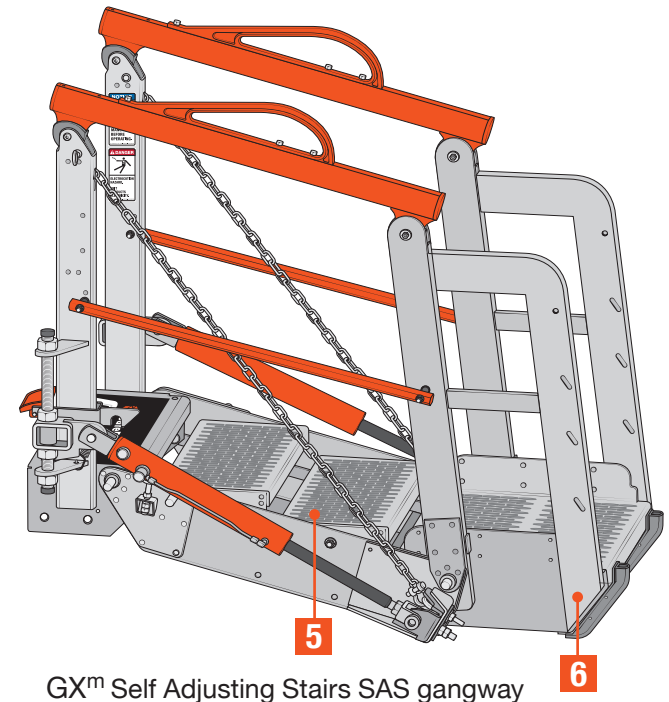
4. **SafeRack flat ramp (SFR)** fixed walk surface.



GX^m SFR gangway

3.2.3 GX^m SAS Gangway Features

5. **Self adjusting stairway (SAS).** Available in 3–7 steps.
6. **Seatainer:** The larger last step on the gangway.



GX^m Self Adjusting Stairs SAS gangway

3.3 Gangway Power Options

There are two power options available for the GX^m gangway; **electric** and **pneumatic**. The power options are pre-installed to the gangway if purchased with the gangway from the factory.

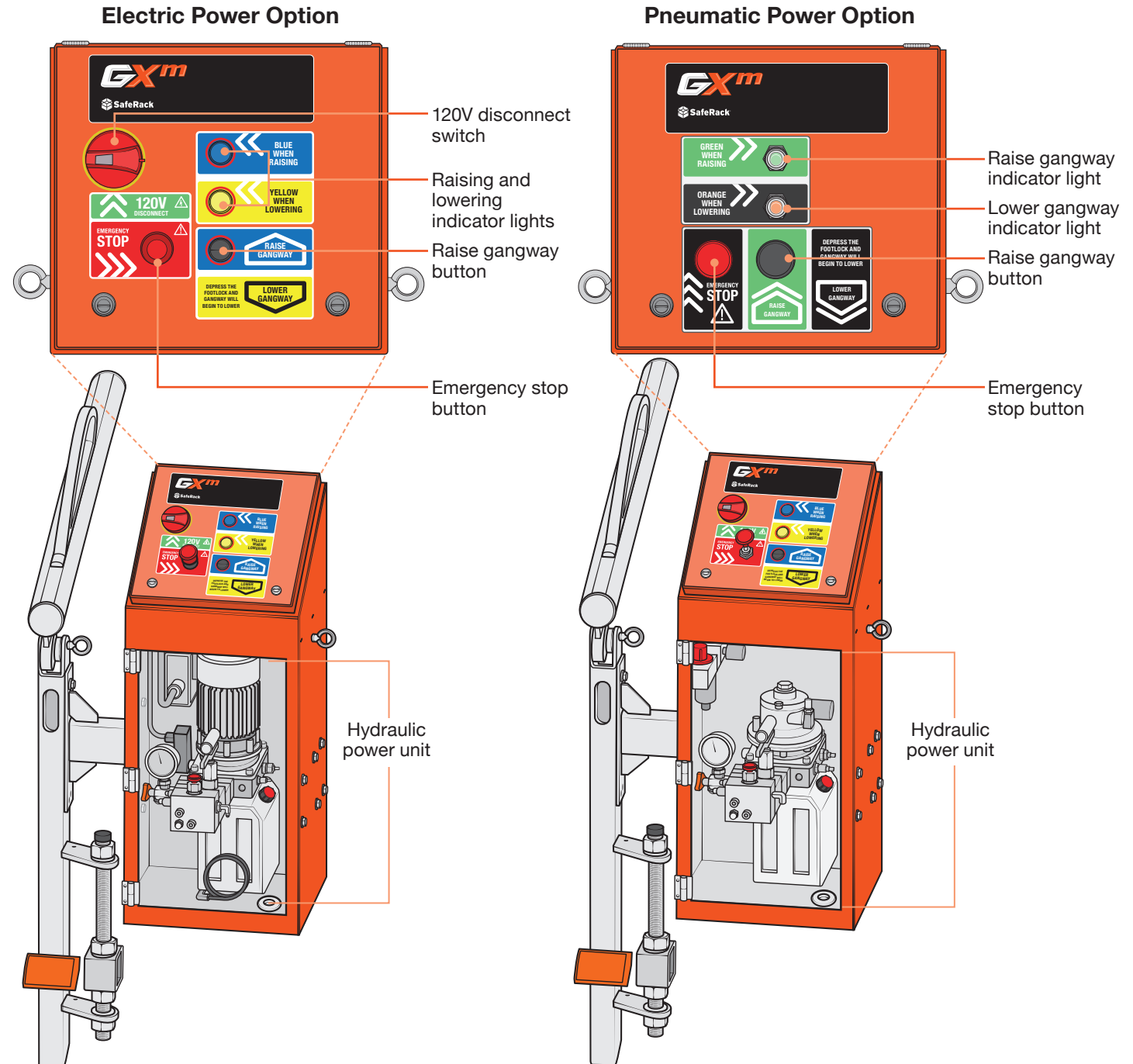
All electrical, or pneumatic, inlet connections will need to be made.

Electric power: 120V system will require a single phase, 20-amp circuit (20-amp power draw, 30-amp breaker on the system). Includes a 1.5hp motor and hydraulic power unit.

Pneumatic power: Control requires 80 PSI 32 CFM clean and dry air or nitrogen supply. Includes a pneumatic control, and hydraulic power unit.

Gangway controls: used for raising and lower the platform. Controls include:

- Indicator lights
- Emergency stop button
- Raise gangway button



4.0 INSTALLATION

The following section covers:

4.1 Pre-installation

- 4.1.1 Overview
- 4.1.2 Mounting Types
- 4.1.3 Mounting Hole Preparation

4.2 Gangway Installation

- 4.2.1 Gangway Preparation
- 4.2.2 Mounting the Gangway using the Standard Mounting Type
- 4.2.3 Universal Mounting

4.1 Pre-installation

Important! Do not proceed with the installation if the gangway is damaged or missing parts. Installation of the gangway should only be done by personnel who are trained in handling and installing heavy equipment.

The first step after receiving the gangway is to inspect it for any shipping damage or any loose banding which might indicate a missing part. Always check the Packing List against your order to ensure all the parts have arrived. Contact SafeRack at 1-866-761-7225 if there is shipping damage or missing parts.

4.1.1 Overview

The GX^m gangway can be mounted to most platforms using one of the following types of mounting. Follow the instructions for the mounting type appropriate for your platform.

- Standard Mount
- Side Mount
- Raised Side Mount
- Top Mount
- Universal Mount
- Underslung Mount

Important! The instructions for the mounting options are based on platform frames made of structural channel or wide flanged beams. It is the responsibility of the customer to ensure that the platform can withstand the load of the gangway. Contact SafeRack at 1-866-761-7225 if you require additional information.

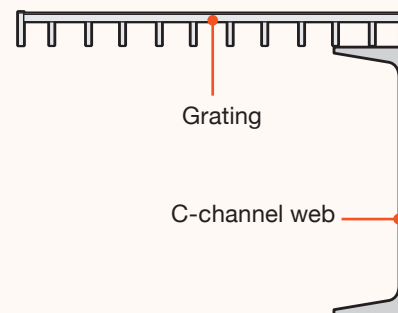
4.1.2 Mounting Types

This section provides guidelines for each mounting type.

Standard Mount

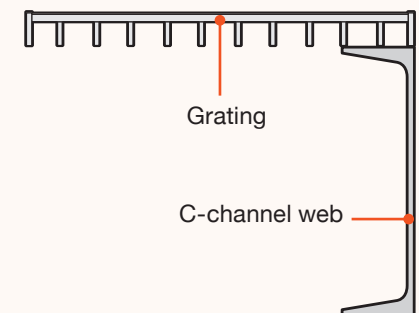
Use: when mounting the gangway to the C-channel web and the mounting holes **do not overlap**.

Note: This is the preferred mounting type.



Side Mount

Use: when mounting the gangway to the C-channel web and the standard mounting holes **overlap** the existing mounting holes.

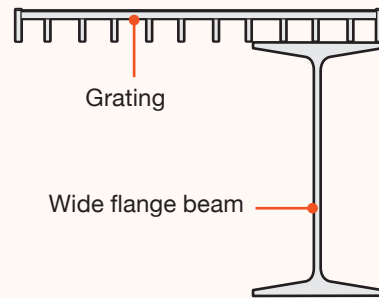




Top Mount

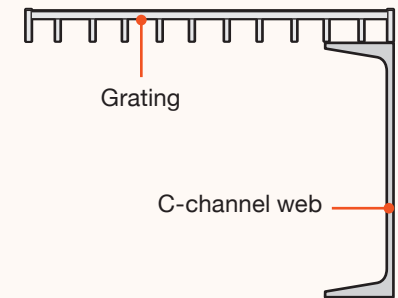
Use: when mounting the gangway on top of the platform.

Important! The gangway must be mounted directly to structural steel.



Raised Side Mount

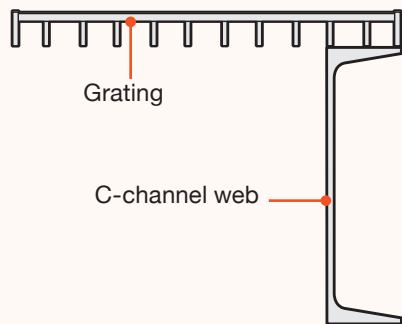
Use: when mounting the gangway to the C-channel web and need to raise the gangway above the platform.



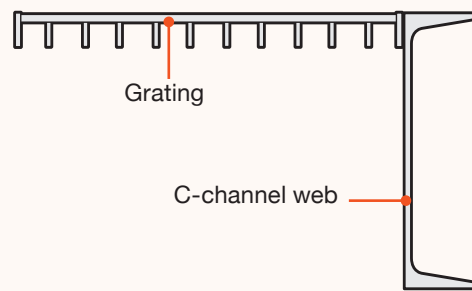
Universal Mount

Use: when the flanges on the C-channel, or wide flange beam, extend *out and away* from the platform. The grating may be flush or on top of structural beams

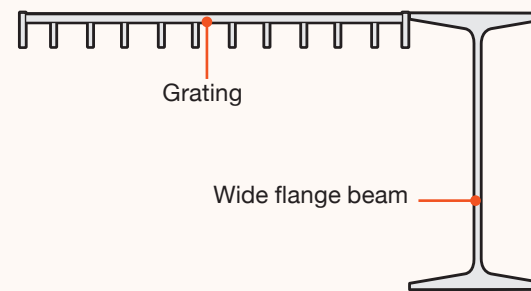
Grating on top of C-channel



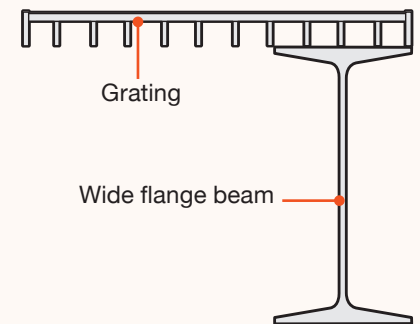
C-channel flush to grating



Wide flange beam flush to grating



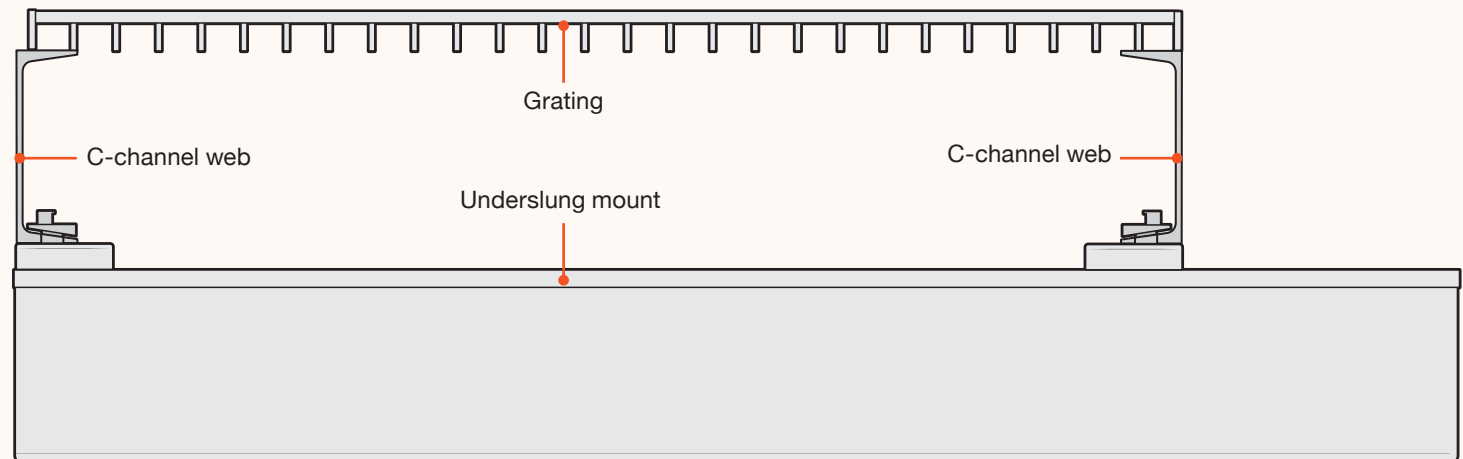
Grating on top of wide flange beam



Underslung Mount

Use: when additional support for the gangway is needed.

Note: These are custom solutions for an existing platform and should be installed using an engineering drawing.



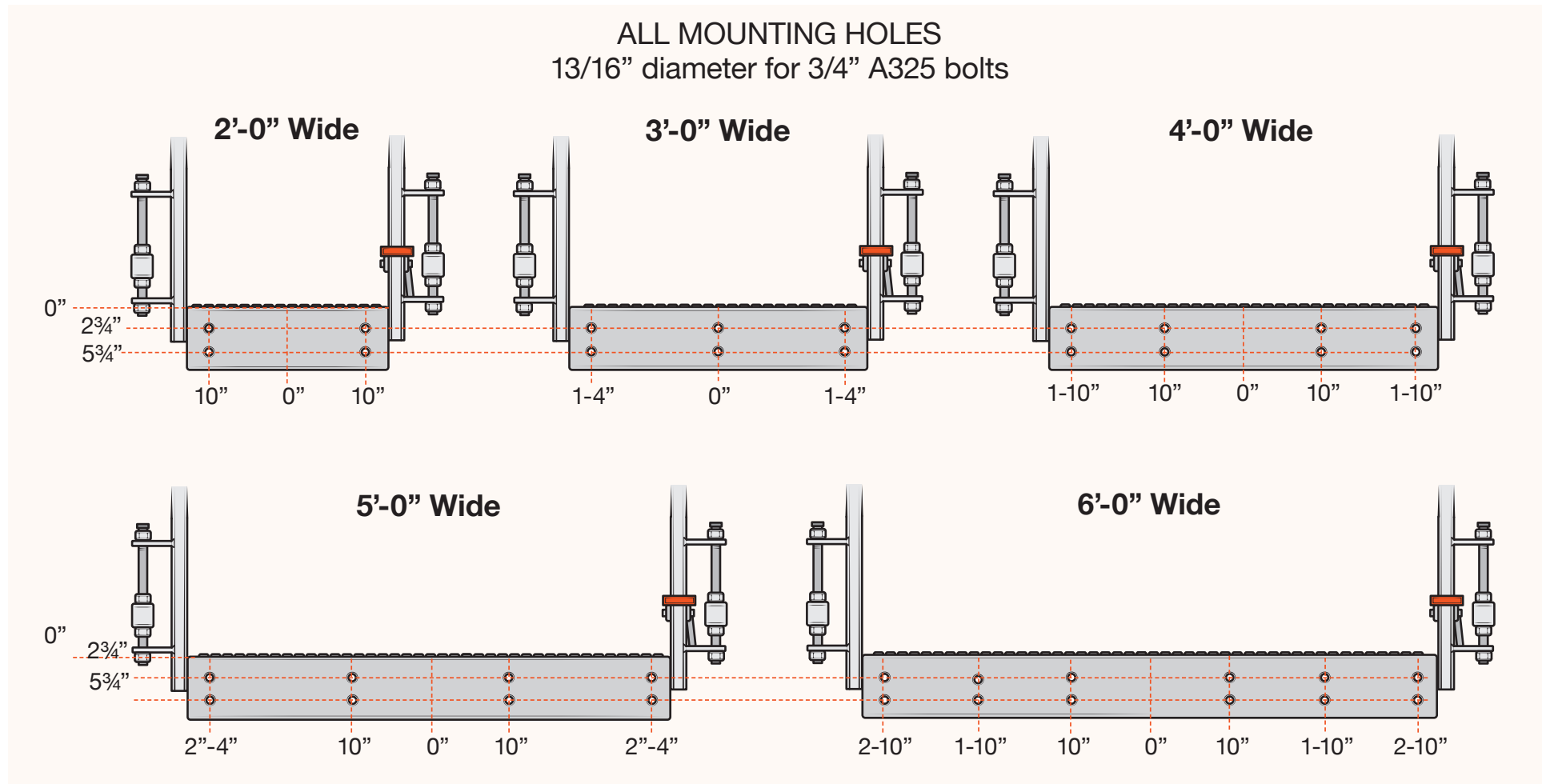
4.1.3 Mounting Hole Preparation

Before mounting the gangway, you should prepare the platform for mounting. The GX^m gangway is available in 24", 36", 48", 60" and 72" widths. Each width has its own mounting hole pattern. **Note:** Platforms provided by SafeRack come with pre-drilled holes. Follow the appropriate steps to prepare the gangway for your mounting type.

Standard Mount

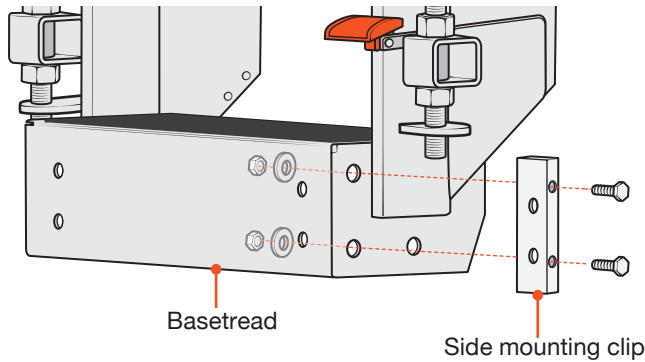
1. Use the standard hole pattern for your gangway and pre-drill 13/16" diameter holes on the C-channel web.

Important! Ensure new holes *do not overlap* existing holes and create an oversized hole. If the holes overlap, use a different mounting type.



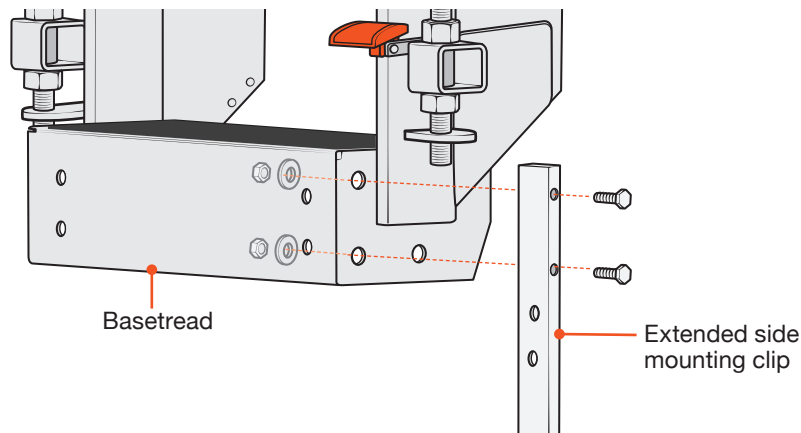
Side Mount

1. Add the **side mounting clip** to both sides of the **basetread** using the 3/4" x 2 1/4" bolts, nuts and washers.
2. Loosely tighten the clips to both sides of the **basetread**.
3. Use the **erection drawings** (if applicable), or measure the hole pattern, and pre-drill 13/16" diameter holes on the C-channel in the top of existing member.



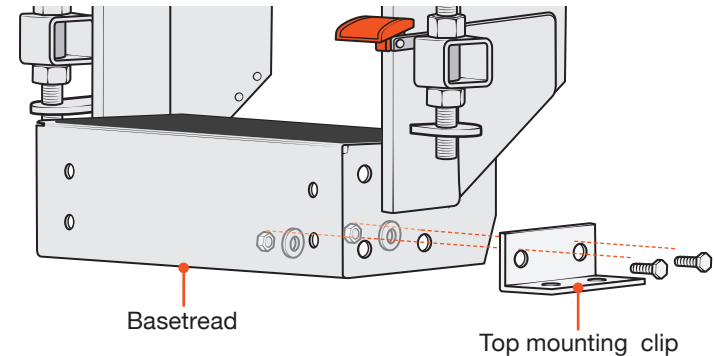
Raised Side Mount

1. Add the **extended side mounting clip** to both sides of the **basetread** using the 3/4" x 2 1/4" bolts, nuts and washers.
2. Loosely tighten the clips to both sides of the **basetread**.
3. Use the **erection drawings** (if applicable), or measure the hole pattern, and pre-drill 13/16" diameter holes on the C-channel in the top of existing member.



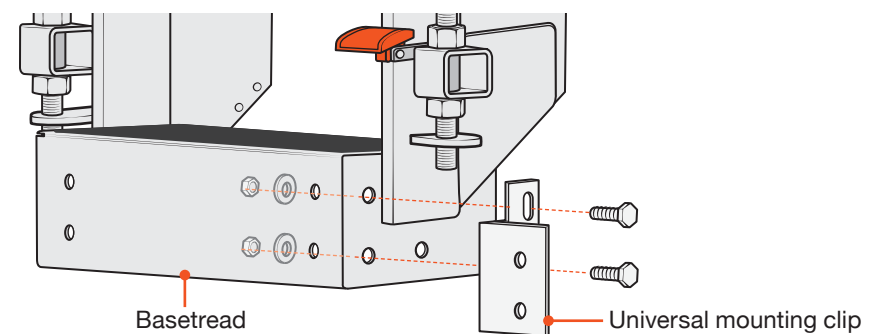
Top Mount

1. Add the **bottom mounting clip** to both sides of the **basetread** using the 3/4" x 2 1/4" bolts, nuts and washers.
2. Loosely tighten the clips to both sides of the **basetread**.
3. Use the **erection drawings** (if applicable), or measure the hole pattern, and pre-drill 13/16" diameter holes on the C-channel in the top of existing member.



Universal Mount

1. Add the **universal mounting clip** to both sides of the **basetread** using the 3/4" x 2 1/4" bolts, nuts and washers.
2. Loosely tighten the clips to both sides of the **basetread**.
3. Use the **erection drawings** (if applicable), or measure the hole pattern, and pre-drill 13/16" diameter holes on the C-channel in the top of existing member.



4.2 Gangway Installation

WARNING



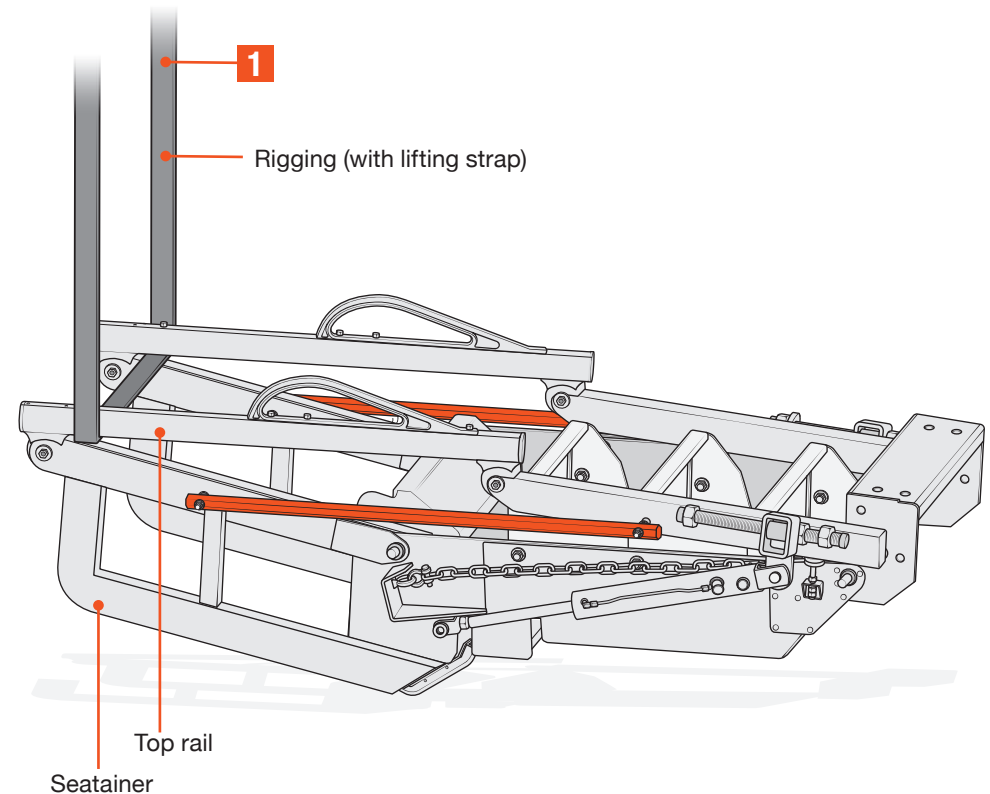
Rigging that cannot handle the weight, or movement, of the load may cause an unexpected release of the load that could result in serious injury or death to personnel, and product damage. Always use rigging hardware that's capable of handling, and movement, of the gangway. Ensure the rigging is securely attached and will not damage the gangway.

4.2.1 Gangway Preparation

Follow these instructions to prepare the gangway for mounting.

1. Place a lifting strap, or other acceptable rigging, that is rated to handle the weight of the gangway between the **top rails** and **seatainer**. Securely fasten the lifting strap to the moving equipment. Ensure it cannot move or fall off the lifting equipment in transit to its location.
2. Lift the gangway slightly off the ground and verify that the rigging is secure and capable of handling the load of the gangway.

Note: SafeRack is not responsible for damage to the gangway due to improper rigging, and handling, during installation.



4.2.2 Mounting using the Standard Mount Type

WARNING



Uneven surfaces between the gangway basetread and the top of the walk surface of the platform may result in personnel tripping, causing serious injury or death. Ensure the two surfaces are flush when the gangway is mounted to the platform.

A gangway that is tilted, slanted, or misaligned after installation may result in a person losing their balance, falling off the gangway and cause serious injury or death. Ensure the gangways basetread uprights and basetread are plumb and level before use.

The steps to mount the gangway to a platform are the same for each mounting type *except the Standard mount type*. This section will provide the steps on how to mount the gangway using the **Standard** mount.

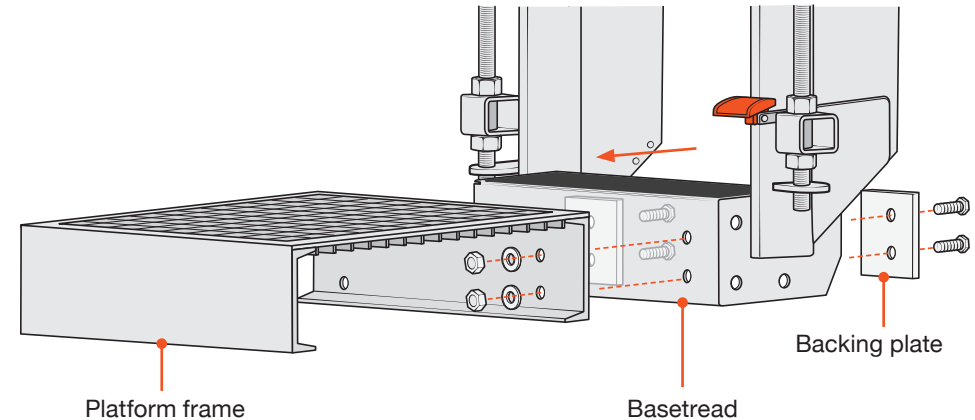
Note: The Standard Mounting type doesn't use mounting clips. It uses a standard hole pattern shown in Section 4.1.3.

Follow these steps when mounting the gangway using the Standard Mount.

1. Move the gangway to its location and align the holes on the face of the **basetread** to the pre-drilled mounting holes in the platform.
2. Place the bolts through the **backing plate**, the face of the **basetread**, and the pre-drilled holes in the platform.
3. Loosely bolt the gangway into place nuts, flat washers.
4. Verify the gangway is plumb and square.
5. Tighten and torque all bolts.

Note: Use tightening/torque guide provided in Section 6.0.

Standard Mount



4.2.3 Mounting the Gangway using the Side, Raised Side, Top, Universal and Underslung Mount Types

Follow these steps to mount the gangway to all mounting types **except** the Standard mount.

1. Move the gangway to its location and align the holes in the mounting clips attached to the **basetread** to the pre-drilled mounting holes in the platform or the holes in the **underslung mount**.
2. If necessary, slightly adjust the mounting clips on the **basetread** so they align with the pre-drilled holes in the platform. **Important!** Do not redrill and oversize the holes in the mounting clips or platform if the holes do not align.

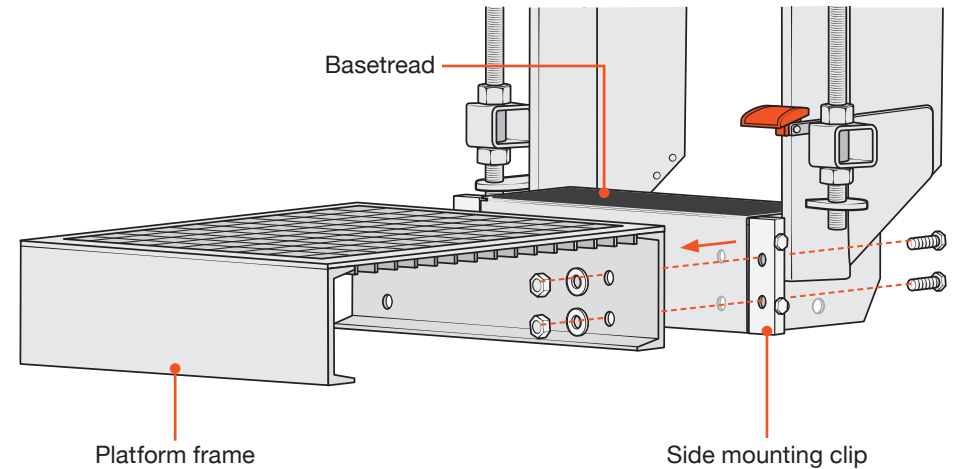
Note: With the **universal mount**, you may use up to three **backplates** to ensure the back of the basetread and the edge of structural channel have a minimum gap.

If your unsure on how to proceed, call SafeRack at 1-866-761-7225 to discuss your mounting conditions.

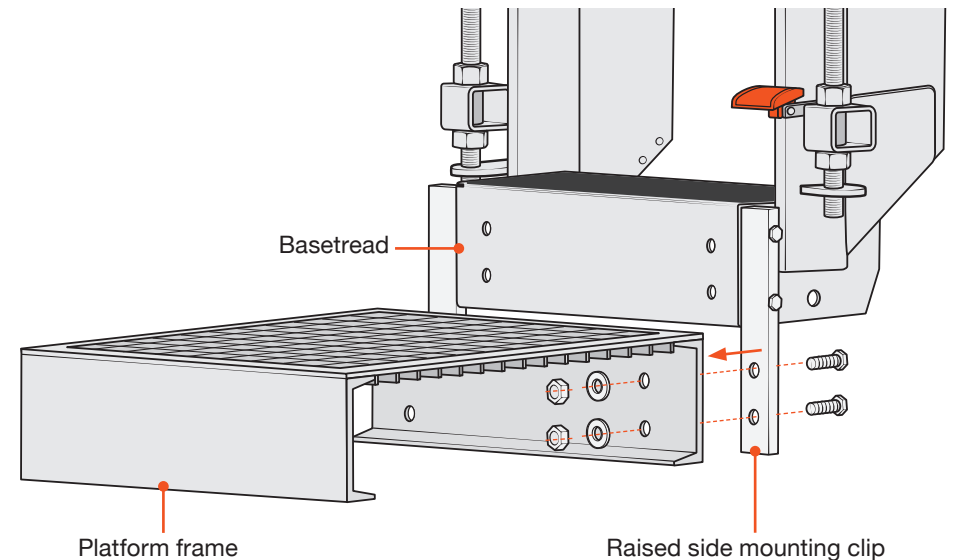
3. Verify the gangway is plumb and square.
4. Tighten and torque all bolts.

Note: Use tightening/torque guide provided in Section 6.0.

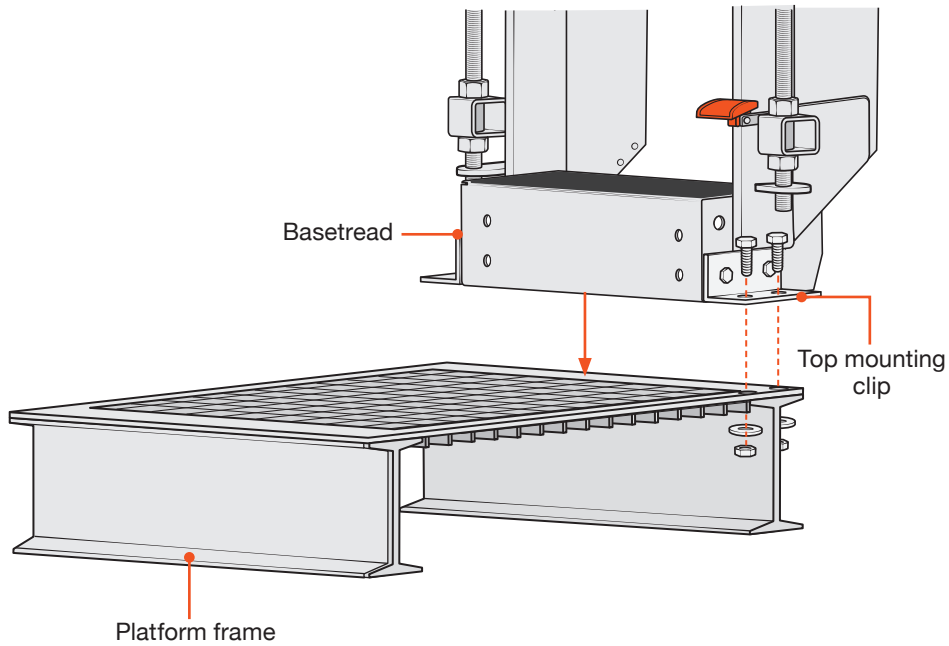
Side Mount



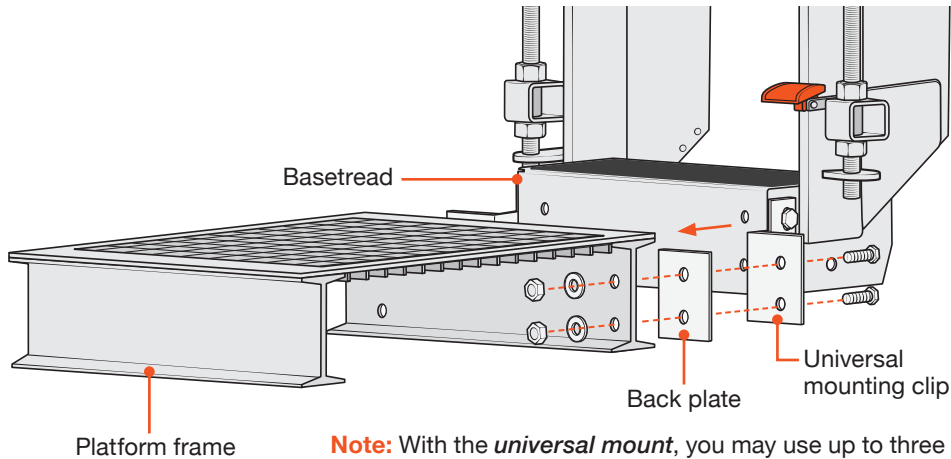
Raised Side Mount



Top Mount

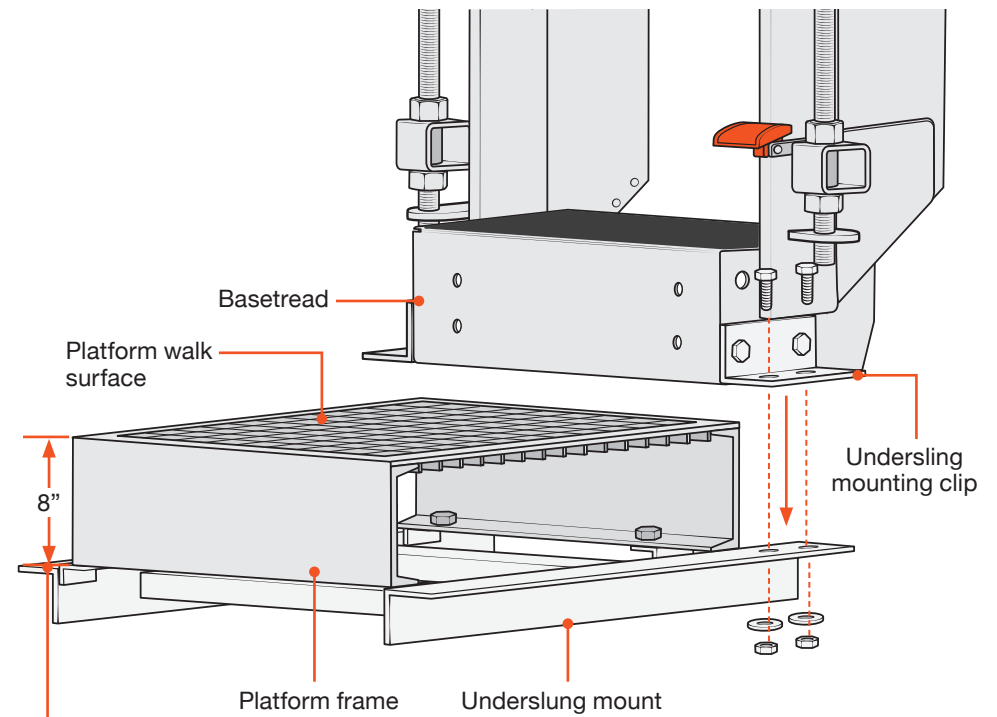


Universal Mount



Note: With the *universal mount*, you may use up to three *backplates* to ensure the back of the basetread and the edge of structural channel have a minimum gap.

Underslung Mount



Important! When assembled, the top of the underslung mount should be 8" below the platform walk surface.

5.0 OPERATION

The following section covers:

5.1 Manual Spring Gangway Operation

- 5.1.1 Manually Lowering the Gangway
- 5.1.2 Manually Raising the Gangway

5.2 Electrical Power Operation (optional)

- 5.2.1 Connecting Electrical Power
- 5.2.2 Lowering the Gangway with Electrical Power
- 5.2.3 Raising the Gangway with Electrical Power

5.3 Pneumatic Power Operation (optional)

- 5.3.1 Connecting Pneumatic Power
- 5.3.2 Lowering the Gangway with Pneumatic Power
- 5.3.3 Raising the Gangway with Pneumatic Power

5.1 Manual Spring Gangway Operation

WARNING



Movement of the gangway during operation could impact, or crush, personnel in the work area causing serious injury or death. Always ensure there are no personnel in gangway's exclusion zone during operation of the gangway.



Failure to inspect, and maintain, the gangway before use may result in unexpected movement during operation and cause serious injury or death. Inspect the gangway for damage and component wear before each use. If necessary, perform maintenance to correct the condition.

CAUTION



Movement of the gangway during operation creates pinch points that could result in personal injury. Always keep your hands, feet, and long hair away from the pinch points during operation. Do not wear clothing or jewelry that may become caught in the pinch points during operation.

The GX^m gangway has multiple options for raising and lowering the gangway. These include:

- Manual spring counterbalanced operation
- Electrical power operation (optional)
- Pneumatic power operation (optional)

Note: Section 5.1 provides information related to operating the manual spring counterbalanced gangway. Section 5.2 provides information related to the electrical powered gangway and Section 5.3 provides information related to the pneumatic powered gangway. Proceed to the appropriate section for your gangway.

5.1.1 Manually Lowering the Gangway

Follow these steps to manually lower the gangway.

1. Check the workspace around the gangway, and in its articulating path of movement, is clear of obstructions and personnel.
2. Loosen the **safety chains** from the **chain keyways** on the **basetread uprights**. Adjust until each chain is fully unloaded/relaxed.
3. Check the **safety chains** are securely connected to the gangway and are not tangled or pinched.

Important! Change in the weight of the gangway (i.e., with a cage) may affect the operation of the gangway. If the gangway is supposed to have a cage and the cage has not been attached, do not operate the gangway until the cage is attached. The spring tension is set at the SafeRack factory and normally does not need adjustment. If the gangway still does not operate in an acceptable manner, call SafeRack at 1-866-761-7225.

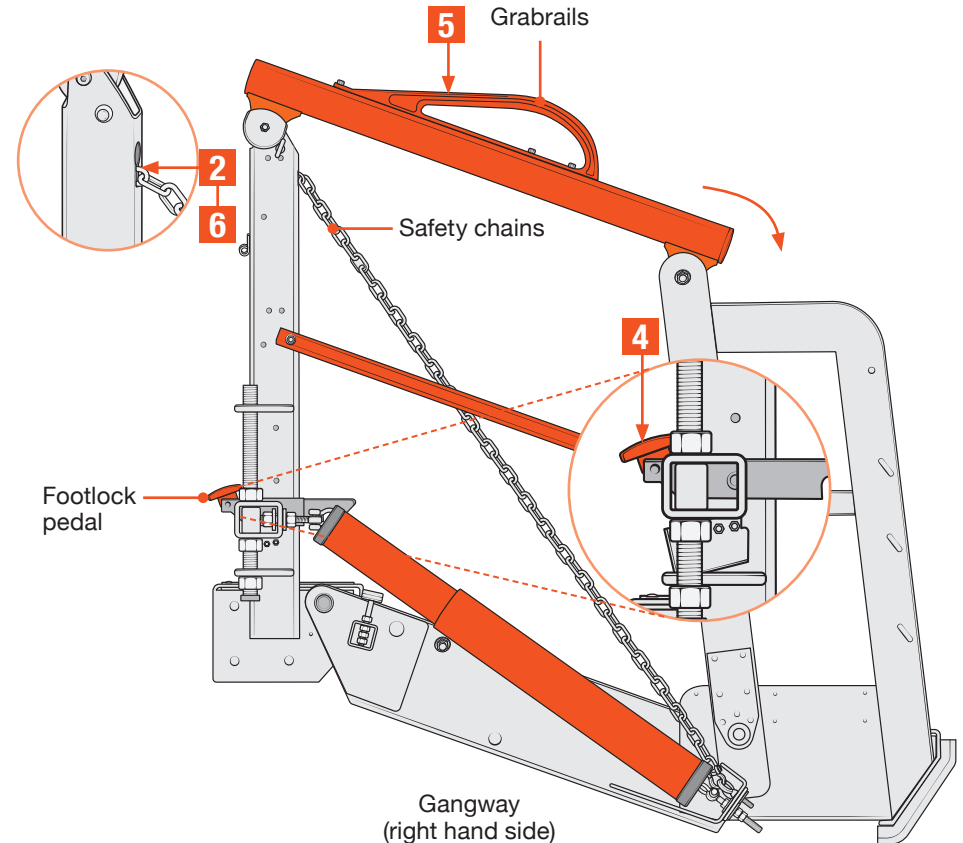
4. Depress the **footlock pedal** on the right hand side of the **basetread** and release the **footlock**. The gangway will begin to lower. Once the locking peg on the side of the u-body clears the **footlock latch**, the **foot pedal** can be released.

Note: See Section 8.0 Troubleshooting if the gangway is hard to lower, not lowering or lowering slowly.

5. Use the **grabrails** on top of the **handrail** to slowly lower the gangway until it is in the desired position and approximately level with surface to be accessed.

Note: The gangway treads, or optional cage, should not rest on the vehicle.

6. After reaching the desired position, set the **safety chains** in the **chain keyways** so they are taunt and the chain stops are set.
7. Check the gangway is secure and ready for use.

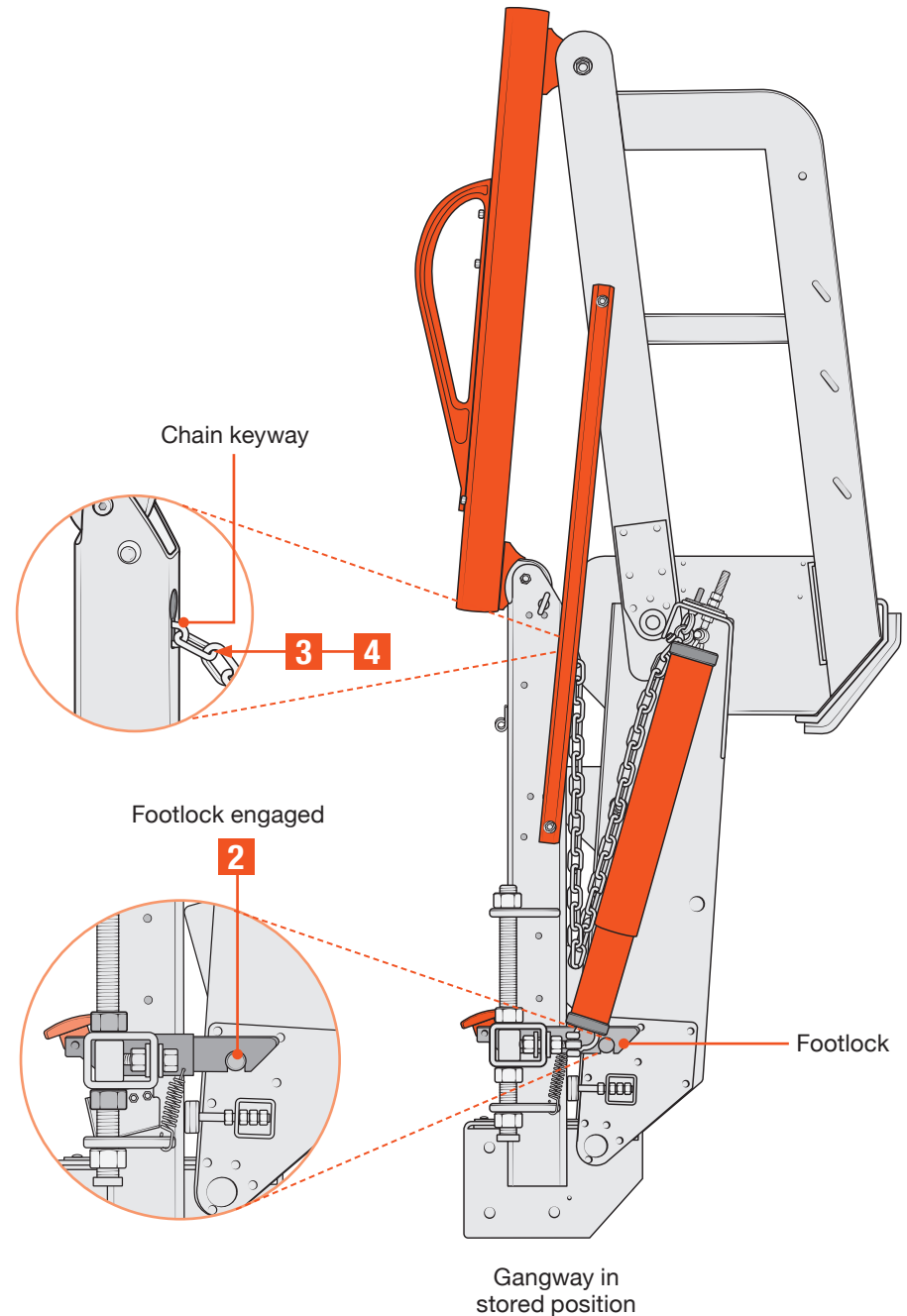
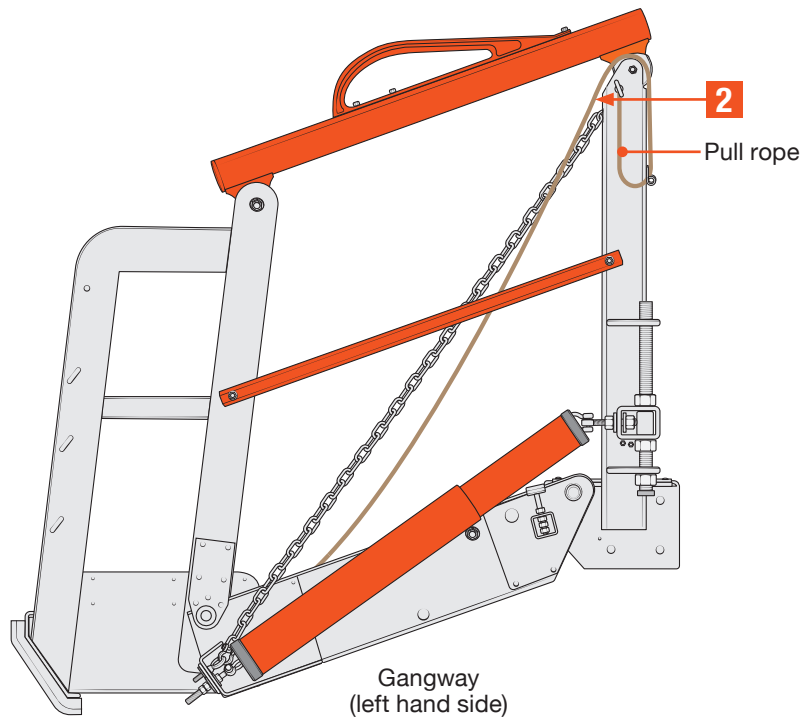


5.1.2 Manually Raising the Gangway

Follow these steps to manually raise the gangway.

1. Check the workspace around the gangway, and in its articulating path of movement, is clear of obstructions and personnel.
2. Raise gangway by pulling up on the **pull rope** attached to the left side of the gangway until the **footlock** engages and the gangway is in its stored position.
3. After completing the work, release the **safety chains** from **chain keyways**.
4. Pull the **safety chains** and place them in the **chain keyways**.

Important! Ensure the gangway is in the stored position and the **footlock** is fully engaged before leaving the gangway.



5.2 Electrical Power Operation (optional)

! WARNING



Movement of the gangway during operation could impact, or crush, personnel in the work area causing serious injury or death. Always ensure there are no personnel in gangway's exclusion zone during operation of the gangway.



Failure to inspect, and maintain, the gangway before use may result in unexpected movement during operation and cause serious injury or death. Inspect the gangway for damage and component wear before each use. If necessary, perform maintenance to correct the condition.



Exposure to high voltage may result in electrical shock, skin burns and could cause serious injury or death. If there is a power issue do not attempt to troubleshoot when the power to the system is still live. Always ensure the power is turned off during installation, maintenance and repairs. Only qualified electricians should connect the power to the system, troubleshoot and repair the equipment.

! CAUTION



Movement of the gangway during operation creates pinch points that could result in personal injury. Always keep your hands, feet, and long hair away from the pinch points during operation. Do not wear clothing or jewelry that may become caught in the pinch points during operation.

5.2.1 Connecting Electrical Power

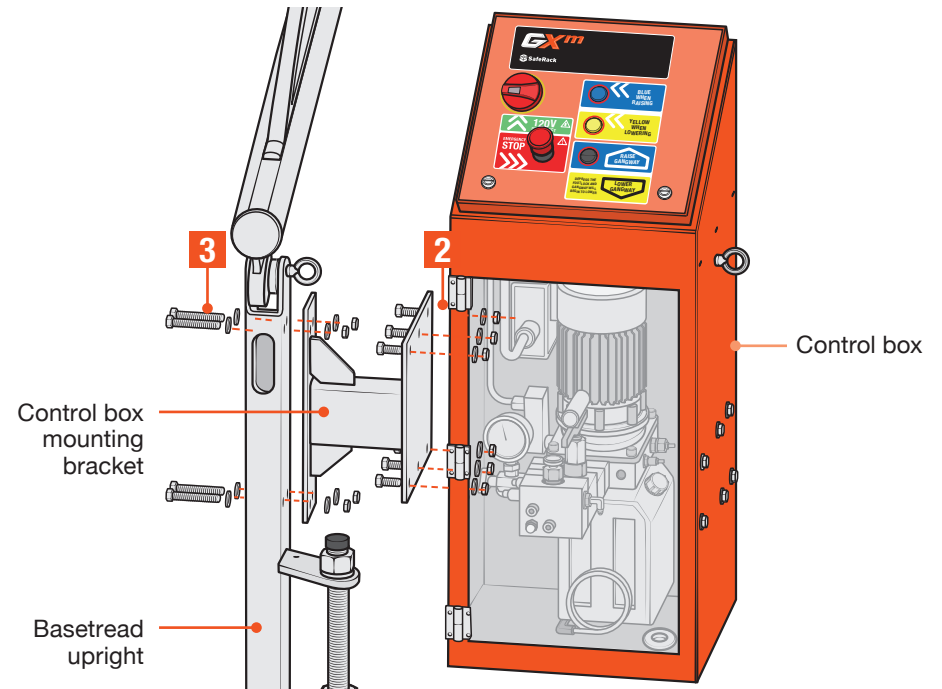
Gangway operation with electrical power is an optional feature. If the power option was purchased at the same time as the gangway, then it will be installed at the factory. Start at step 4 if the electrical power came installed on the gangway.

Follow these steps to connect electric power to the gangway.

1. Choose the side of the gangway you want to mount the **control box**.

Note: It should be mounted on the side where the operator can see all the moving parts of the gangway and provides easy access to the gangway. The **control box** can also be mounted within 10' of the **basetread upright**, using the **remote location kit** included in the **control box**.

2. With the provided hardware, attach the **control box mounting bracket** to the **control box**.
3. With the provided hardware, attach the **control box** to the **basetread upright**.



4. Replace the **black non-vented cap** on the **hydraulic reservoir** with the **red vented cap**.

Note: The black non-vented cap needs to be replaced with the red vented cap regardless if the power option is installed at the factory. Do not operate the system with the non-vented cap on the hydraulic reservoir.

5. Run a 120V system, will require a single phase, 20-amp circuit (20-amp power draw, 30-amp breaker on the system) electrical connection to the **control box**. Open the **control panel** by unlocking the **1/4 turn locks** in the bottom corners, and lifting the lid up. Connect the wiring to the DIN rail terminal blocks.

Note: See Section 7.4 for the Electric and Electrical Hydraulic Schematics.

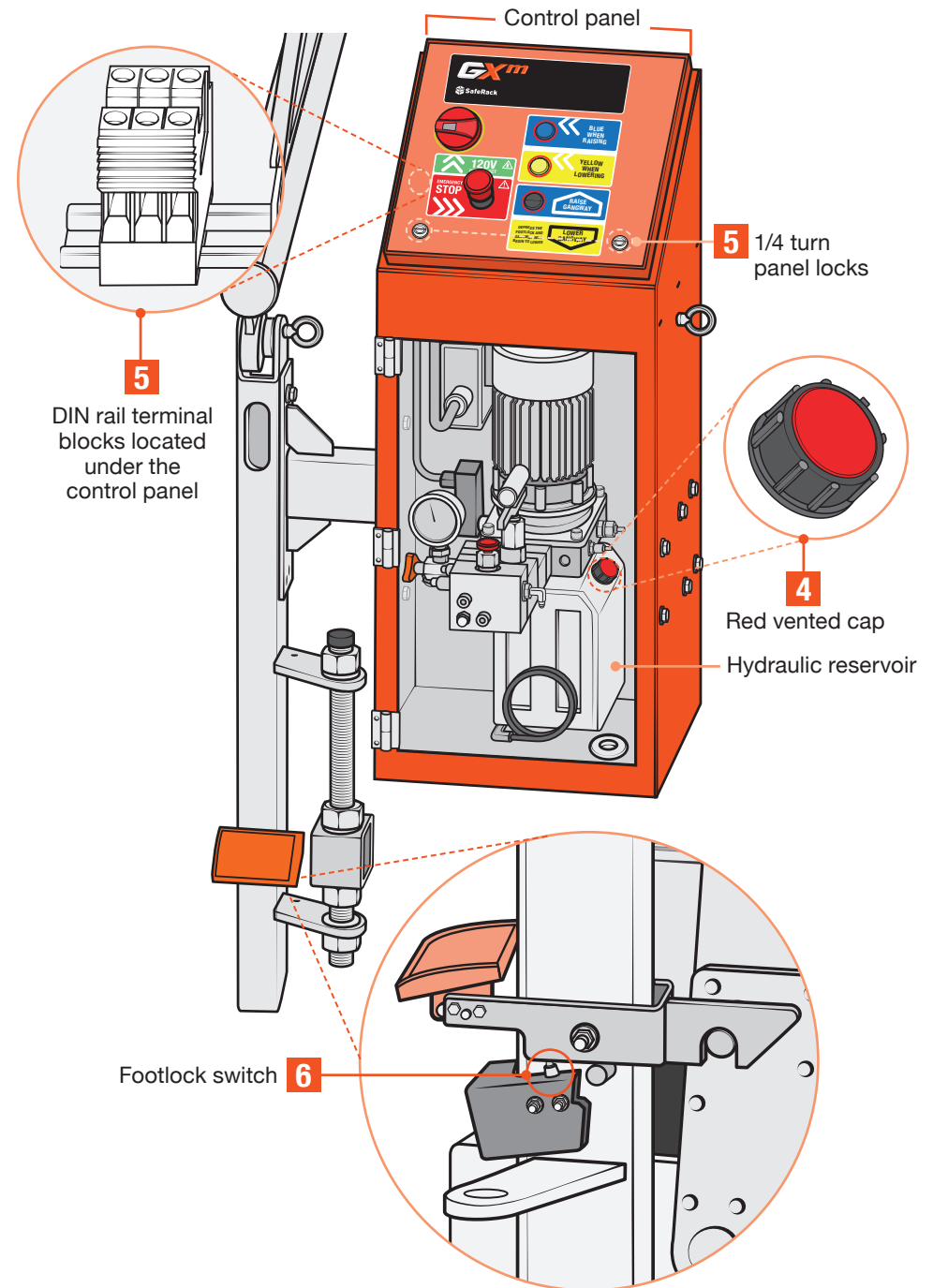
6. Ensure connection between **footlock switch** on the gangway and **control panel** is made.

Note: The **footlock switch** is located under the **footlock**.

7. Ensure all hydraulic hose connections on the power unit, basetread, and cylinders are all tight.

Note: The hydraulic fittings could loosen between factory testing and installation. Use the tightening/torque guide for hydraulic fittings in Section 7.0.

8. Test the gangway by following the operating procedures. Ensure to look for any leaking fittings that need to be tightened after a few operations.



5.2.2 Lowering the Gangway with Electric Power

Follow these steps to lower the gangway using electric power.

1. Check the workspace around the gangway, and in its articulating path of movement, is clear of obstructions and personnel.
2. **Important!** Check the **120V disconnect switch** is in the ON position and the **emergency stop push button** is in the UP position.
Note: The red emergency stop indicator light should be OFF.
3. Loosen the **safety chains** from the **chain keyways** on the **basetread uprights**. Adjust until each chain is fully unloaded/relaxed.
4. Check the **safety chains** are securely connected to the gangway and are not tangled or pinched.

Important! Change in the weight of the gangway (i.e., with a cage) may affect the operation of the gangway. If the gangway is supposed to have a cage and the cage has not been attached, do not operate the gangway until the cage is attached. If the gangway still does not operate in an acceptable manner, call SafeRack at 1-866-761-7225.

5. Depress the **footlock pedal** on the right hand side of the **basetread**. The gangway will begin to lower.

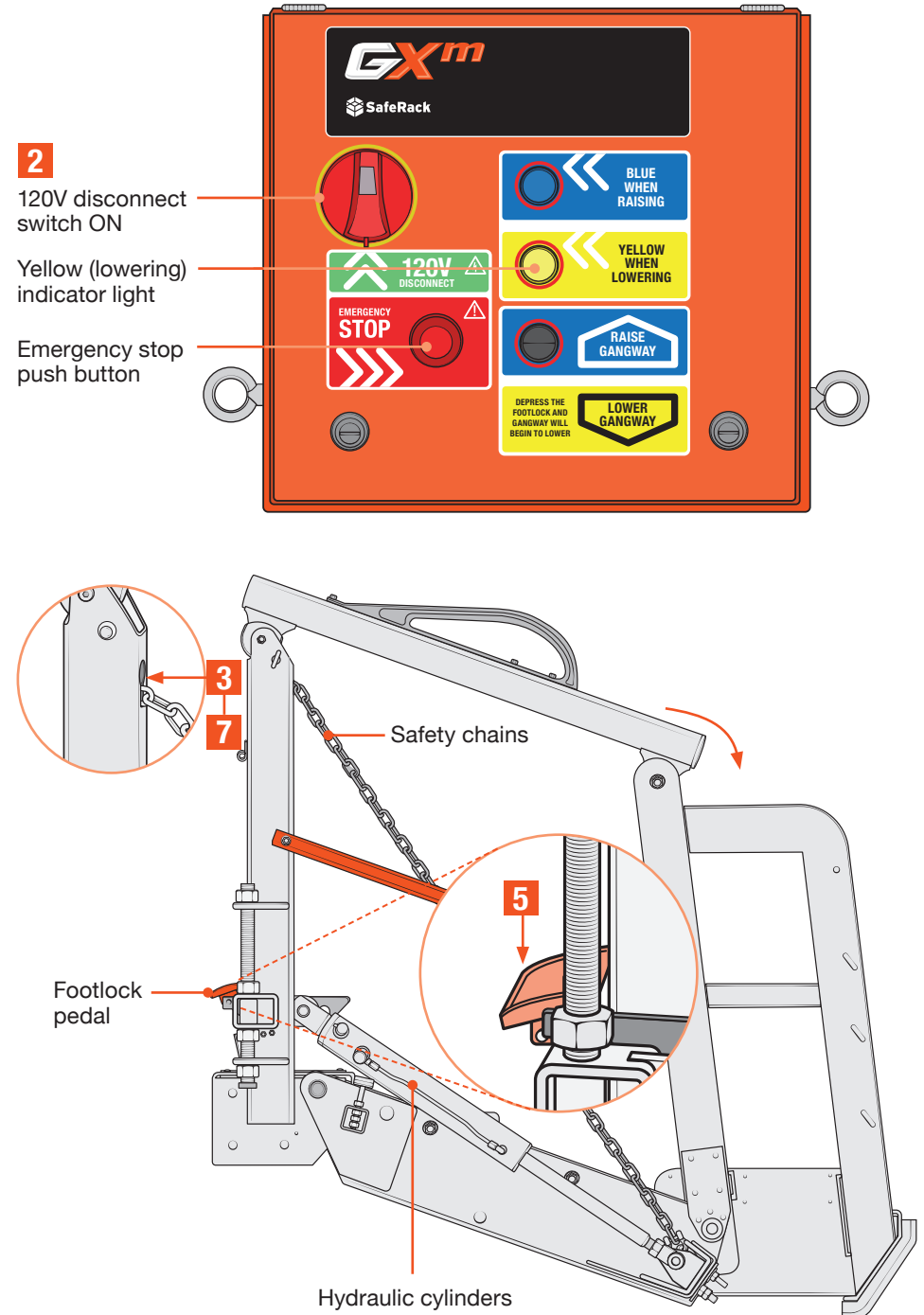
Note: The **yellow indicator light** on the **control panel** is active when lowering the gangway.

6. Keep the **footlock pedal** depressed and slowly lower the gangway until it is in the desired position and approximately level with surface to be accessed. Release the **footlock pedal** to stop the lowering of the gangway.

Important! If necessary, use the **emergency stop push button** to stop the operation of the gangway. This should only be used in an emergency and not as a daily operation practice.

Note: See Section 8.0 Troubleshooting if the gangway is hard to lower, not lowering or if the **emergency stop push button** needs to be used daily.

7. After reaching the desired position, set the **safety chains** in the **chain keyways** so they are taut and the chain stops are set.
8. Check the gangway is secure and ready for use.



5.2.3 Raising the Gangway with Electric Power

Follow these steps to raise the gangway using electric power.

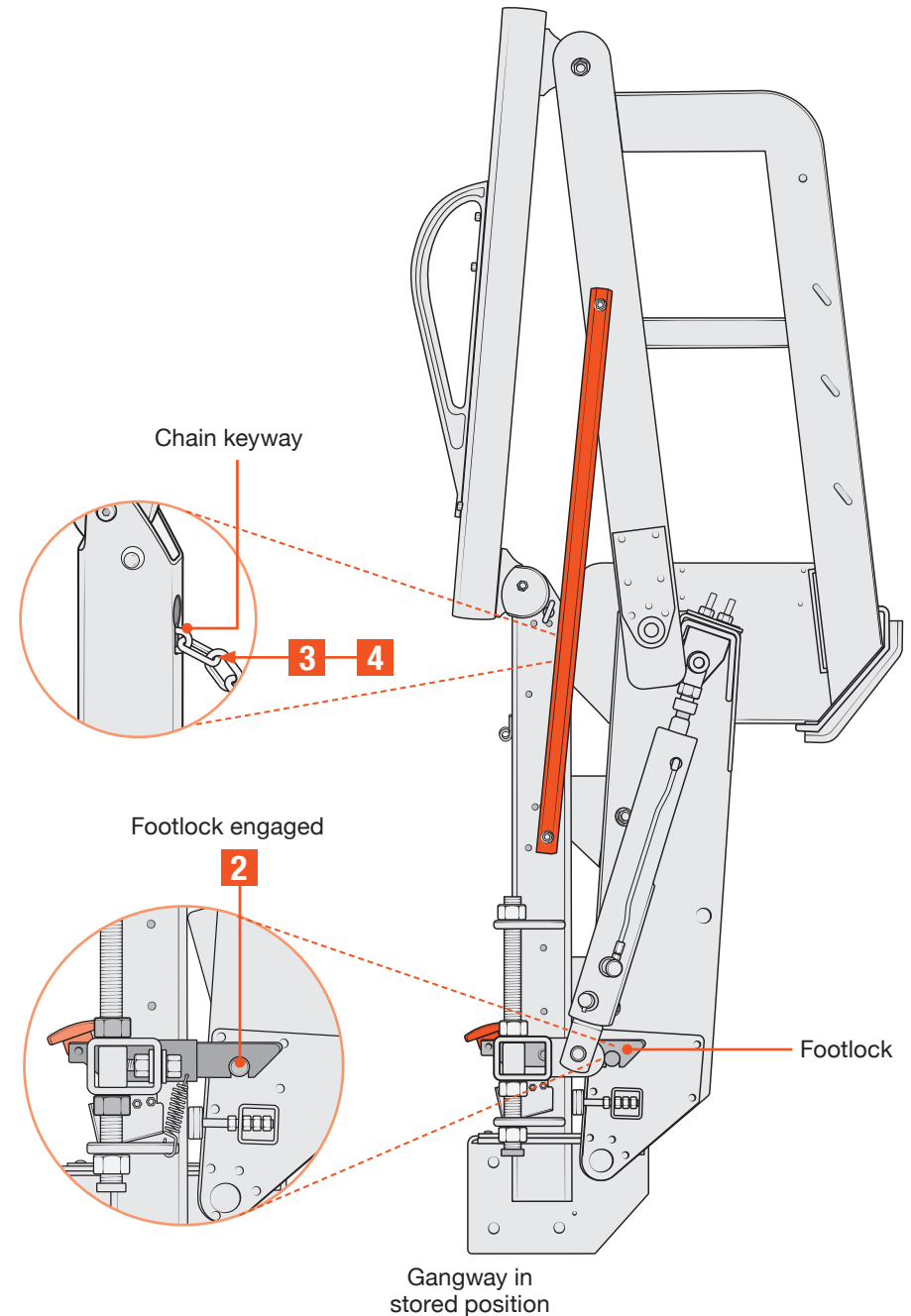
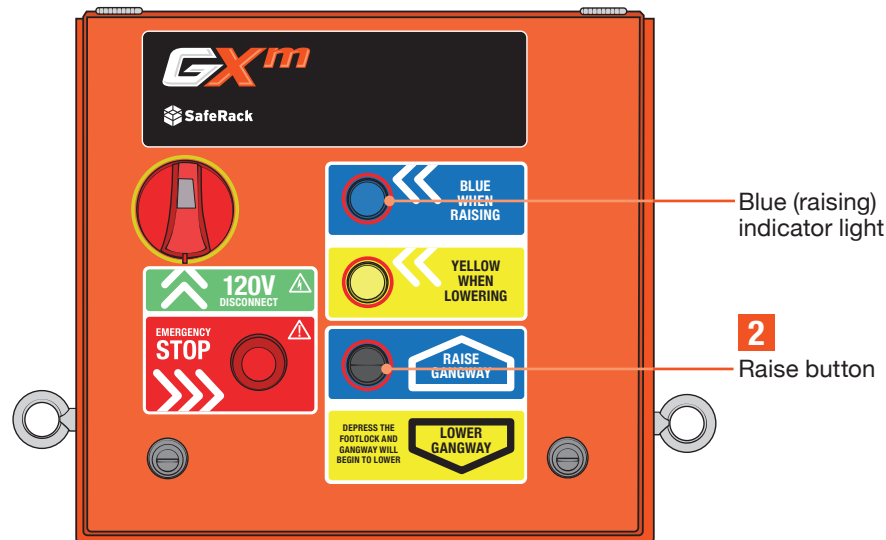
1. Check the workspace around the gangway, and in its path of movement, is clear of obstructions and personnel.
2. Press, and hold, the **raise button** on the **control panel** until the gangway reaches the fully stored position and the **footlock** is engaged.

Note: The **blue indicator light** on the **control panel** is active when raising the gangway.

3. After completing the work, release the **safety chains** from **chain keyways**.
4. If the gangway will not be used for an extended amount of time, turn the 120V disconnect to the off position.

Important! Ensure the gangway is in the stored position and the **footlock** is fully engaged before leaving the gangway.

Note: See Section 8.0 Troubleshooting if the gangway is hard to lower, not lowering or if the **emergency stop push button** needs to be used daily.



5.3 Pneumatic Power Operation (optional)

! WARNING



Movement of the gangway during operation could impact, or crush, personnel in the work area causing serious injury or death. Always ensure there are no personnel in gangway's exclusion zone during operation of the gangway.



Failure to inspect, and maintain, the gangway before use may result in unexpected movement during operation and cause serious injury or death. Inspect the gangway for damage and component wear before each use. If necessary, perform maintenance to correct the condition.

! CAUTION



Exposure to unexpected or sudden air pressure may result in skin puncture or damage to the eyes, personal injury. Always wear proper PPE when operating or performing maintenance. Ensure the air source is turned off during maintenance and repairs.



Movement of the gangway during operation creates pinch points that could result in personal injury. Always keep your hands, feet, and long hair away from the pinch points during operation. Do not wear clothing or jewelry that may become caught in the pinch points during operation.

5.3.1 Connecting Pneumatic Power

Gangway operation with pneumatic power is an optional feature. If the power option was purchased at the same time as the gangway, then it will be installed at the factory. Start at step 4 if pneumatic power came installed on the gangway.

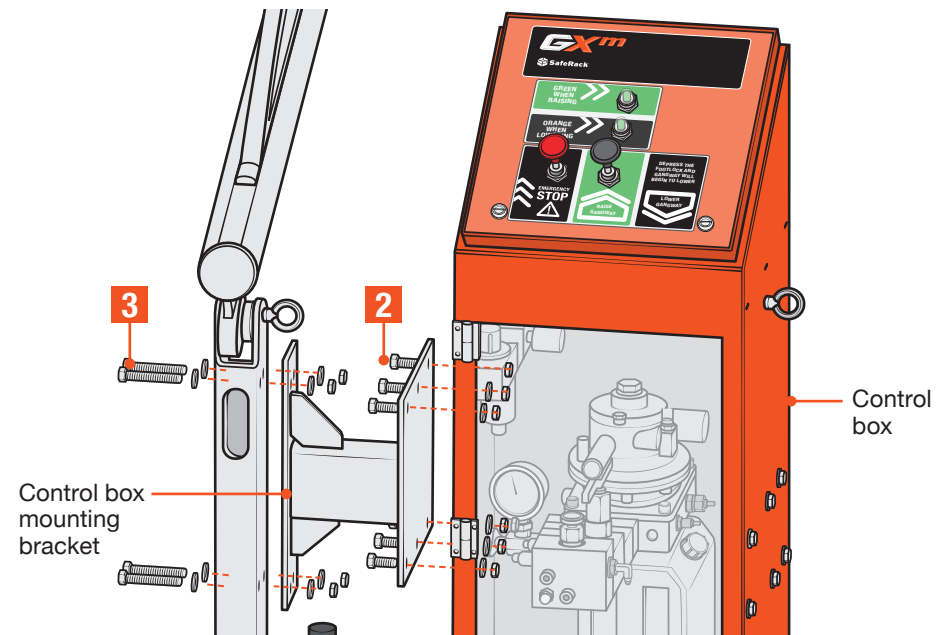
Follow these steps to connect pneumatic power to the gangway.

1. Choose the side of the gangway you want to mount the **control box**.

Note: It should be mounted on the side where the operator can see all the moving parts of the gangway and provides easy access to the gangway.

Note: The **control box** can also be mounted within 10' of the right side of the **basetread upright**, using the remote location kit included in the control box.

2. With the provided hardware, attach the **control box mounting bracket** to the **control box**.
3. With the provided hardware, attach the **control box** to the **basetread upright**.



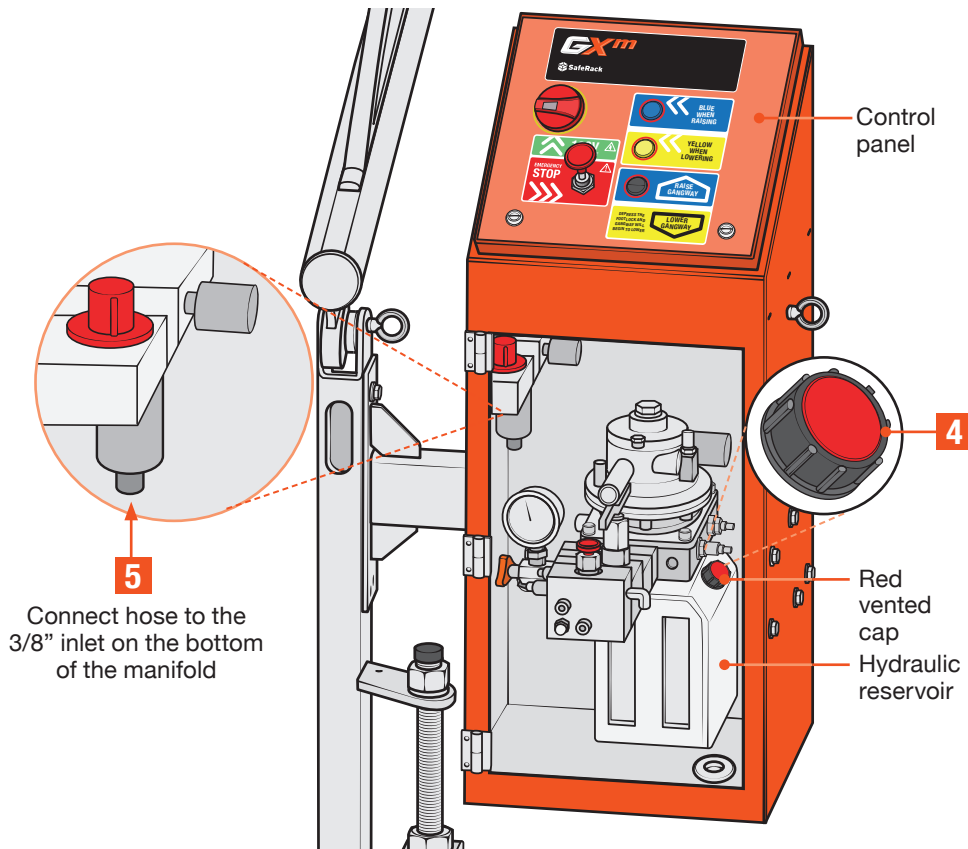
4. Replace the **black non-vented cap** on the **hydraulic reservoir** with the **red vented cap**.

Note: The black non-vented cap needs to be replaced with the red vented cap regardless if the power option is installed at the factory. Do not operate the system with the non-vented cap on the hydraulic reservoir.

5. Run a pneumatic hose with a 3/8" NPT male connector through the **control box**. Connect the hose to the bottom left side of the air prep unit.

Important! The system requires **CLEAN AND DRY** air or nitrogen at 80 psi and 32 cfm.

Note: See Section 7.4 for the Pneumatic Fluid Power Schematic.



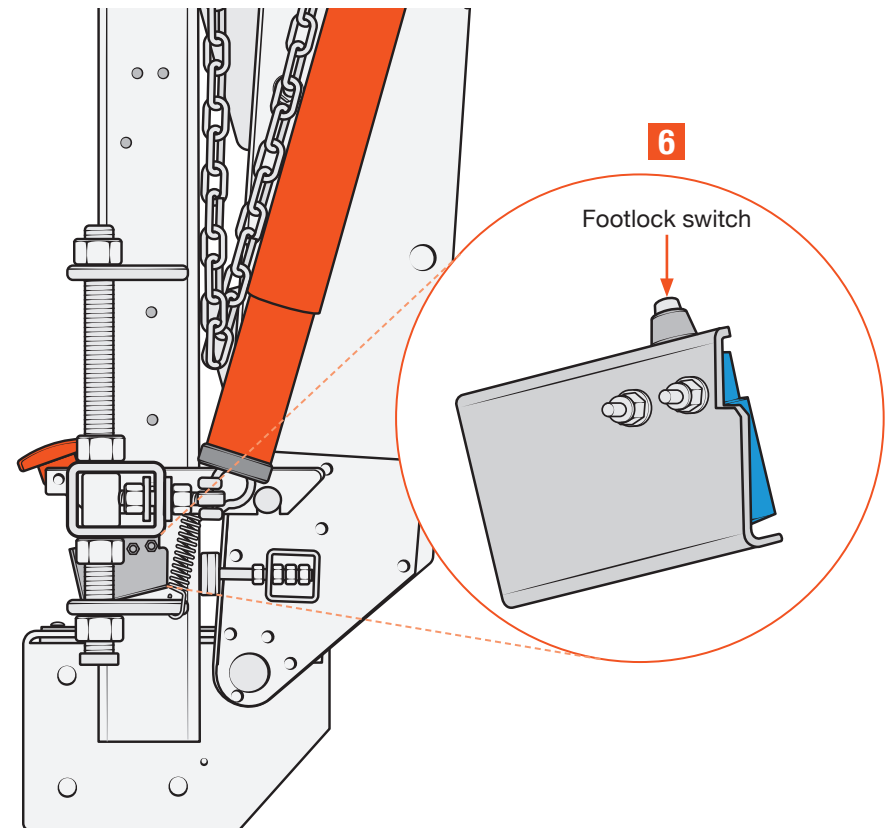
6. Ensure connection between **footlock switch** on the gangway and **control panel** is made.

Note: The **footlock switch** is located under the **footlock**.

7. Ensure all hydraulic hose connections on the power unit, basetread, and cylinders are all tight.

Note: The hydraulic fittings could loosen between factory testing and installation. Use the tightening/torque guide for hydraulic fittings in Section 7.0.

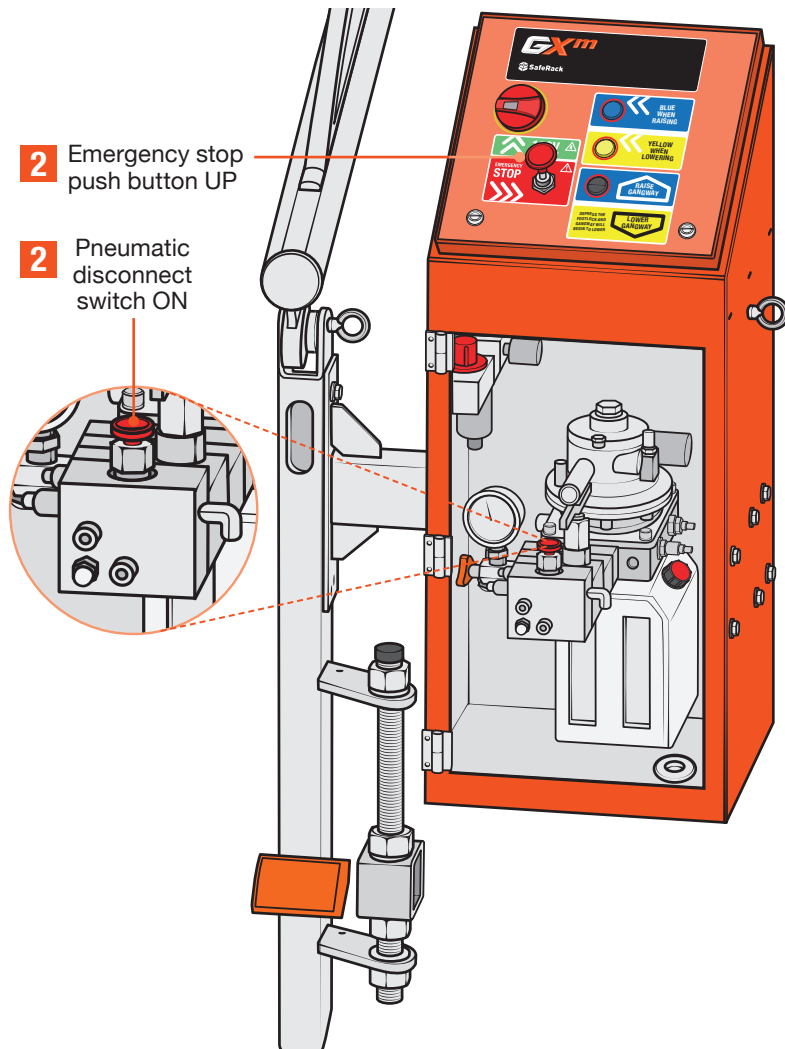
8. Test the gangway by following the operating procedures. Ensure to look for any leaking fittings that need to be tightened after a few operations.



5.3.2 Lowering the Gangway with Pneumatic Power

Follow these steps to lower the gangway using pneumatic power.

1. Check the workspace around the gangway, and in its articulating path of movement, is clear of obstructions and personnel.
2. **Important!** Check the *pneumatic disconnect switch* is in the ON position and the *emergency stop push button* is in the UP position.
3. Loosen the *safety chains* from the *chain keyways* on the *basetread uprights*. Adjust until each chain is fully unloaded/relaxed.

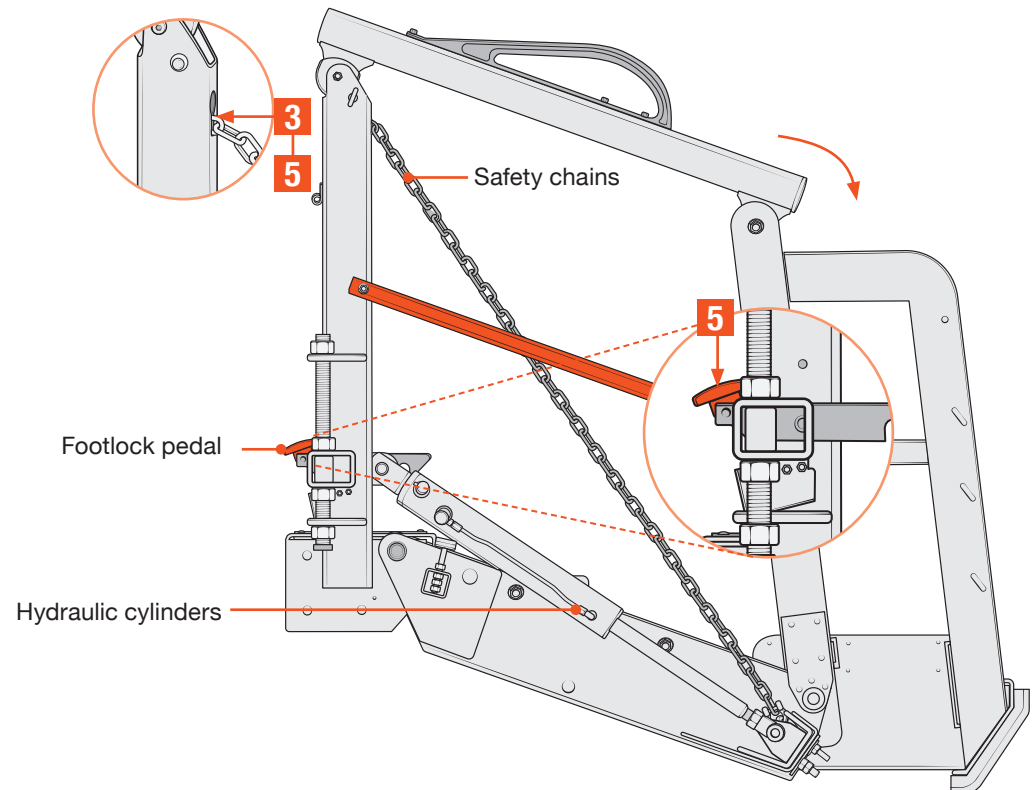


4. Check the *safety chains* are securely connected to the gangway and are not tangled or pinched.

Important! Change in the weight of the gangway (i.e., with a cage) may affect the operation of the gangway. If the gangway is supposed to have a cage and the cage has not been attached, do not operate the gangway until the cage is attached. If the gangway still does not operate in an acceptable manner, call SafeRack at 1-866-761-7225.

Note: See Section 8.0 Troubleshooting if the gangway is hard to lower, not lowering or if the *emergency stop push button* needs to be used daily.

5. Depress the *footlock pedal* on the right hand side of the *basetread*. The gangway will begin to lower. The *orange pneumatic indicator light* on the *control panel* is active when lowering the gangway.



6. Keep the **footlock pedal** depressed and slowly lower the gangway until it is in the desired position and approximately level with surface to be accessed. Release the **footlock pedal** to stop the lowering of the gangway.

Important! If necessary, use the **emergency stop push button** to stop the operation of the gangway. This should only be used in an emergency and not as a daily operation practice.

Note: See Section 8.0 Troubleshooting if the gangway is hard to lower, not lowering or if the **emergency stop push button** needs to be used daily.

7. After reaching the desired position, set the **safety chains** in the **chain keyways** so they are taut and the chain stops are set.

Note: See Section 8.0 Troubleshooting if the gangway is hard to lower, not lowering or lowering slowly.

8. Check the gangway is secure and ready for use.

Orange (lowering)
indicator light

Emergency stop
push button



5.3.3 Raising the Gangway with Pneumatic Power

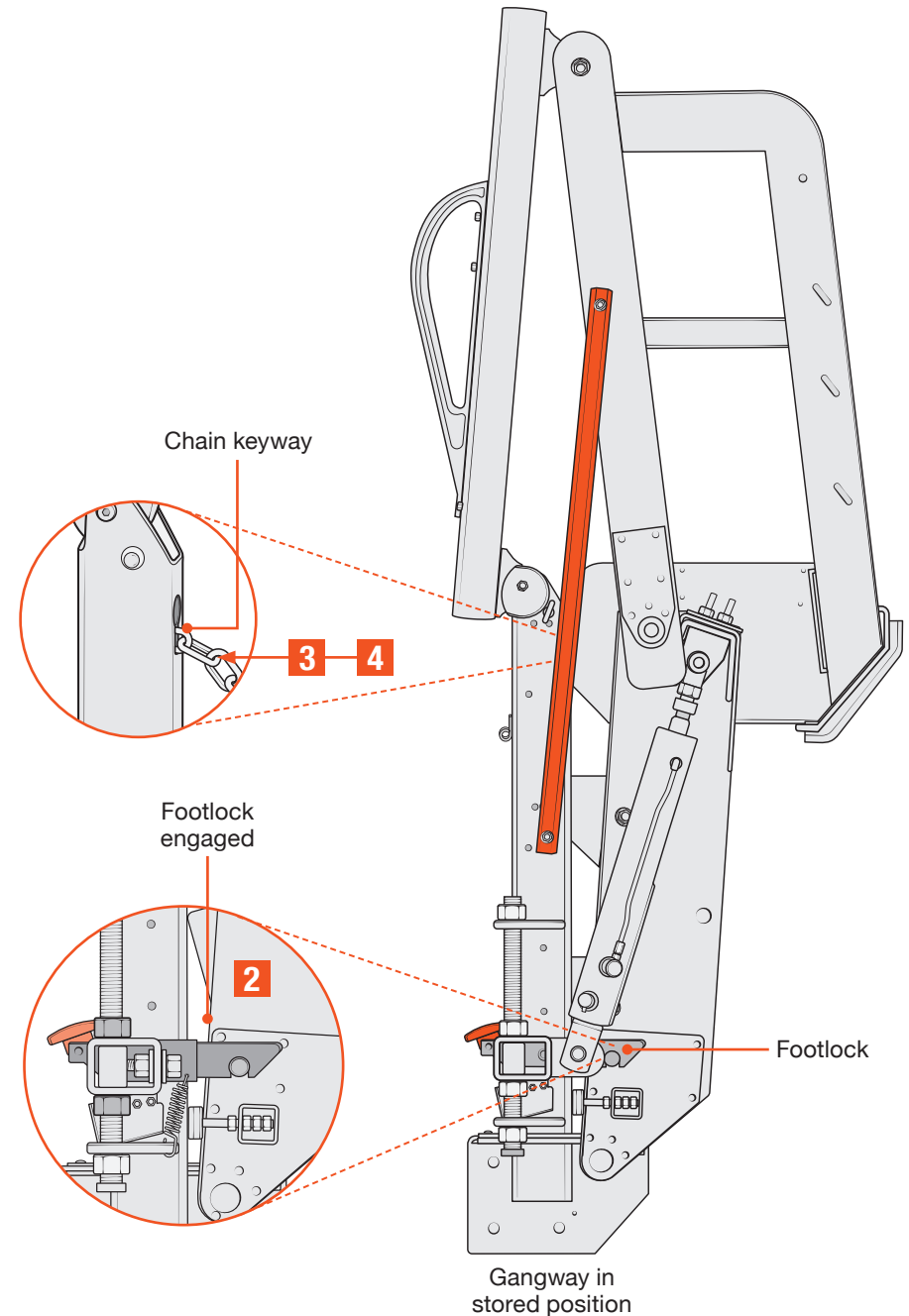
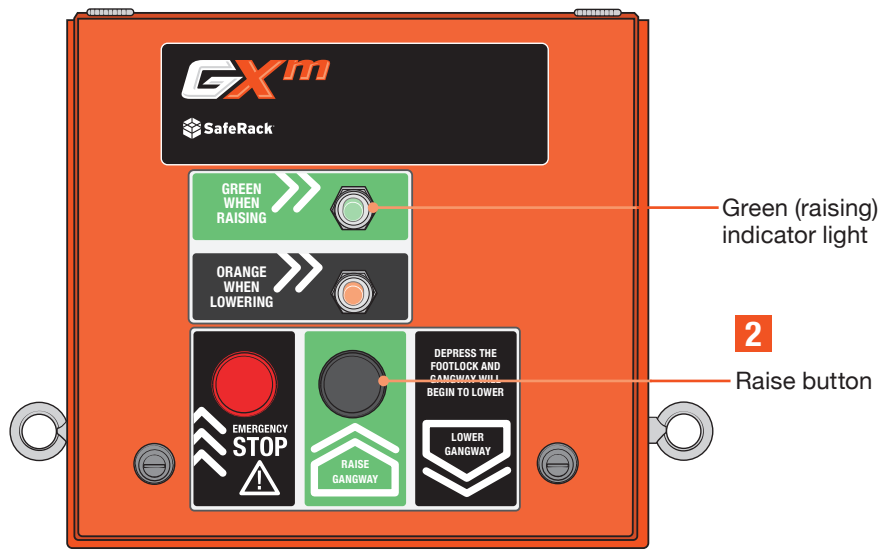
Follow these steps to raise the gangway using pneumatic power.

1. Check the workspace around the gangway, and in its path of movement, is clear of obstructions and personnel.
2. Press, and hold, the **raise button** on the **control panel** until the gangway reaches the fully stored position and the **footlock** is engaged.

Note: The **green pneumatic indicator light** on the **control panel** is active when raising the gangway.

3. After completing the work, release the **safety chains** from **chain keyways**.
4. If the gangway will not be used for an extended amount of time, turn the pneumatic disconnect to the off position.

Important! Ensure the gangway is in the stored position and the **footlock** is fully engaged before leaving the gangway.



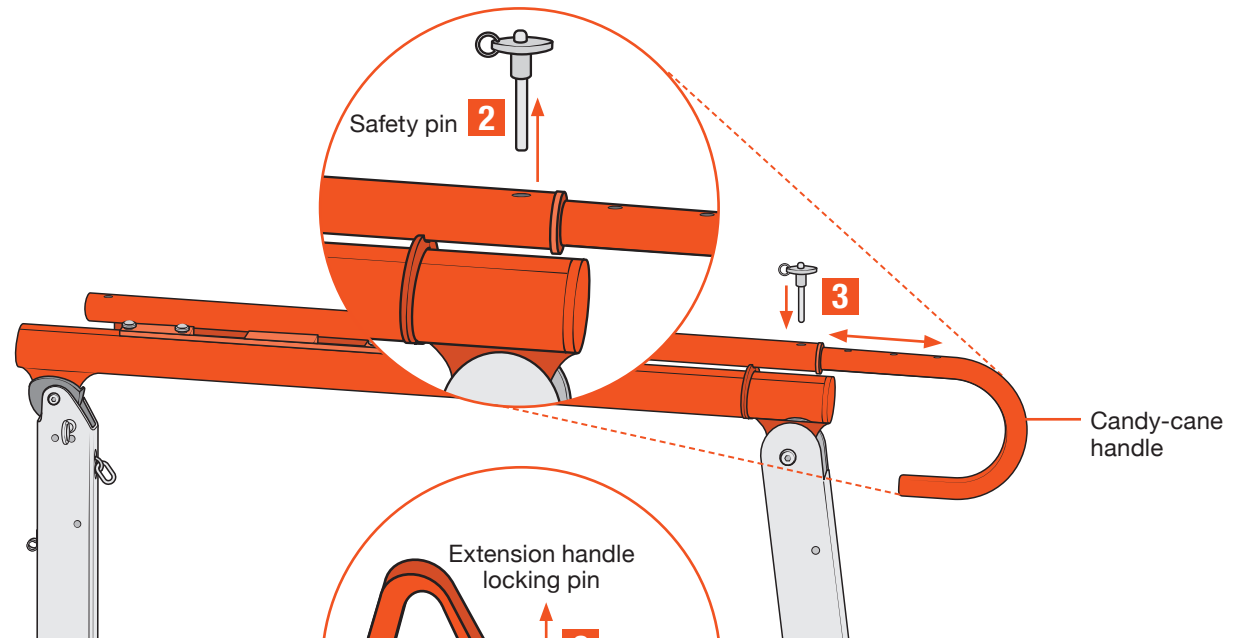
5.4 Using the FRT Telescoping Walk Surface

Follow these steps to extend or retract the walk surface.

5.4.1 Extend or Retract the Candy-cane Handrail

1. Check the workspace around the gangway, and in its path of movement, is clear of obstructions and personnel.
2. Remove the safety pin from the handle and slide the candy-cane to the desired length.
3. Re-insert the safety pin into the candy-cane to secure the new position.
4. Ensure gap is closed between gangway and vehicle.

Note: When storing, verify that the candy cane is fully retracted and secured with safety pin before raising gangway.



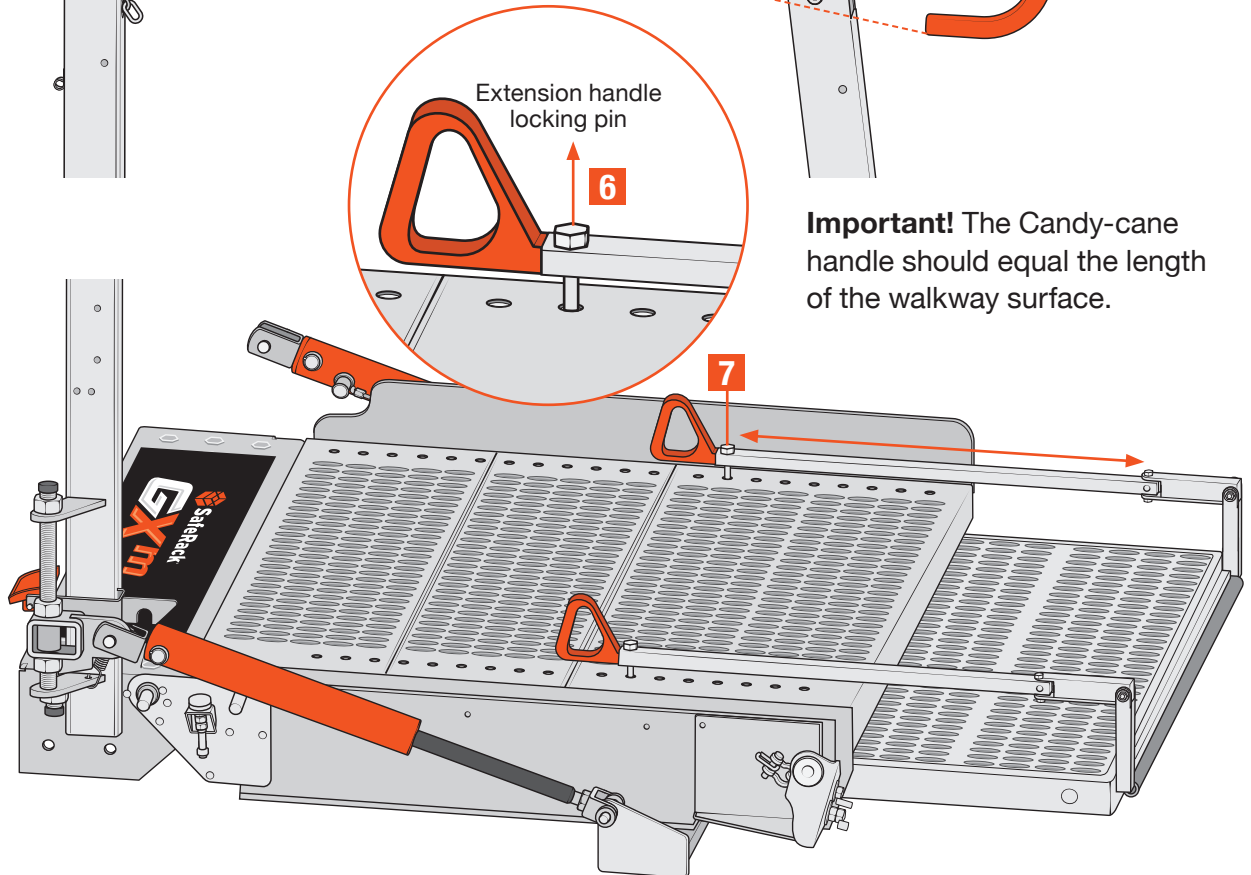
Important! The Candy-cane handle should equal the length of the walkway surface.

5.4.2 Extend or Retract the walk surface

5. Check the workspace around the gangway and in its path of movement, is clear of obstructions and personnel.
6. Lift the extension handle and push or pull to the desired length of the walk surface.
7. Lower the extension handle locking pin into one of the position holes in ramp walk surface.

Note: Wider units will have two extension arms.

Important! When storing, verify that the extension is fully retracted and secured with arm locking pin before raising gangway.



6.0 GANGWAY ADD-ONS

The following section covers:

6.1 Safety Cages

- 6.1.1 Assemble the Safety Cage
- 6.1.2 Attach the Safety Cage Bump-outs to the Safety Cage
- 6.1.3 Attach the Safety Cage to the Seatainer

6.2 Extended Top Rail

6.3 Cement Body Stiffener

6.4 EZ-Lift

The GX^m gangway has four optional add-ons. They include the following:

- Safety cages
- Extended top rail
- Cement Body Stiffener
- EZ-Lift

This section will cover their use and provide instructions on how to attach them to the gangway.

Note: All modular add-ons require at least 2 people to install. All modular add-ons will be installed on the gangway at the factory if ordered with the gangway, except for safety cages. They are always shipped separately.

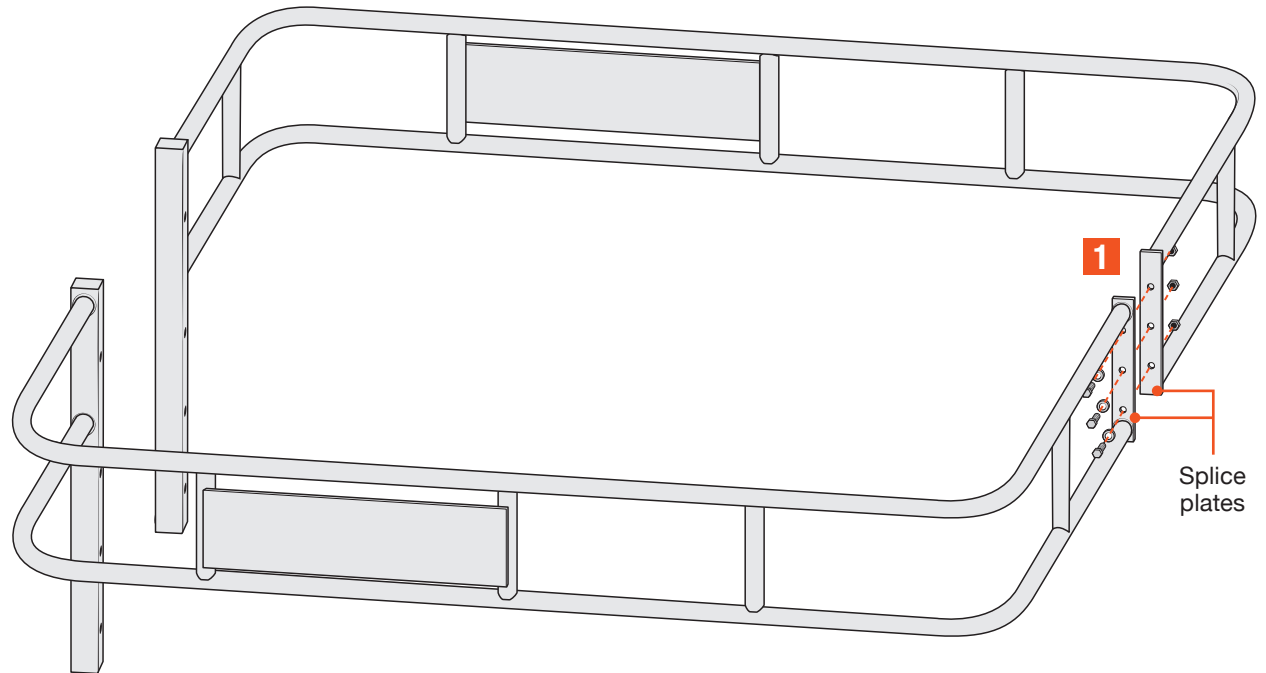
6.1 Safety Cages

6.1.1 Assemble the Safety Cage

SafeRack manufactures a wide variety of safety cages for the gangway. Some of the larger safety cages are shipped disassembled and will need to be assembled on-site.

Follow these steps to assemble the *safety cage*.

1. Insert the provided bolts through the holes in the *splice plates* and fasten with the provided bolts, nuts and washers.
2. Firmly tighten the bolts.





6.1.2 Attach the Safety Cage Bump-outs to the Safety Cage

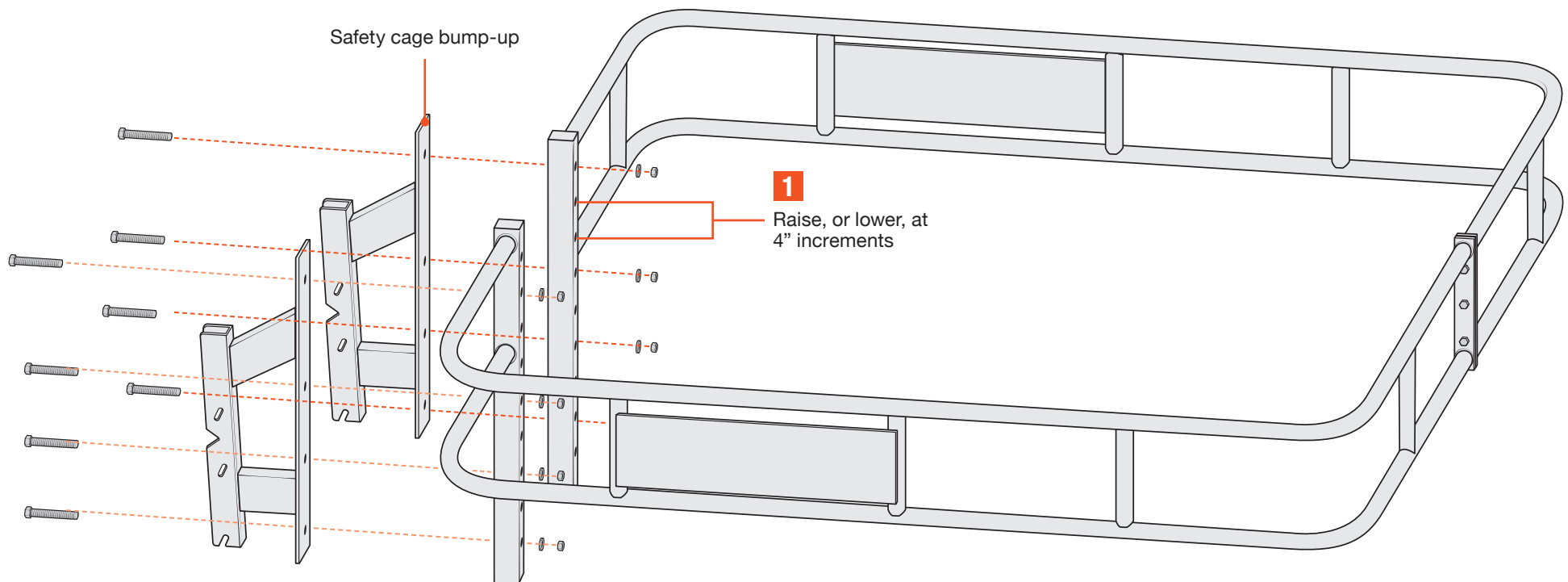
Follow these steps to attach the *safety cage Bump-outs* to the *safety cage*.

1. Determine the height the safety cage needs to be at and align the mounting holes on the *safety cage bump-outs* with holes in the *safety cage*.

Note: The *safety cage* can be raised, or lowered, in 4" increments.

2. Use the supplied stainless steel bolts, nuts and washers to attach the *safety cage bump-outs* to the *safety cage*.

Note: Use anti-seize to help prevent stainless steel hardware from galling.



6.1.3 Attach the Safety Cage to the Gangway

Follow these steps to attach the **safety cage** to the seatainer.

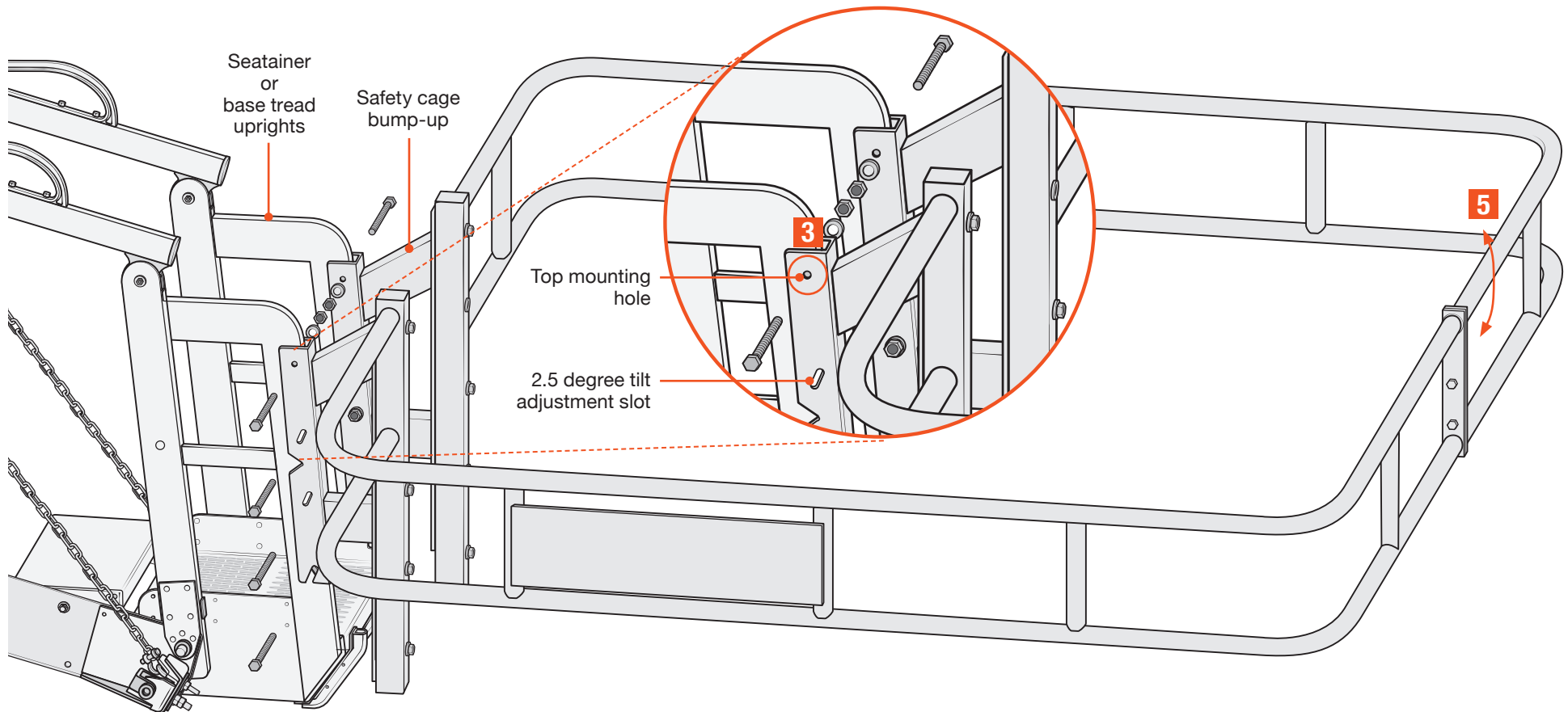
1. Verify all rigging hardware (slings, shackles) have the capacity to handle the weight and movement without damage to the **safety cage**
2. Ensure there are no obstructions in the path of movement. Move the **safety cage** to the gangway.
3. Align the top hole in the **safety cage bump-outs** with the top hole in the **seatainer**.
4. Use the supplied stainless steel bolts, nuts and washers and loosely attach the **safety cage bump-outs** to the **seatainer or gangway uprights** in models FRT or SFR.

5. Adjust the safety cage to desired angle.

Note: There is 2.5 degree of tilt adjustment for safety cage. If cage appears to sag, loosen the bolts and lift the cage up **from the front** (outside edge **off-level**) and then re-tighten the bolts.

6. Insert the remaining stainless steel bolts, nuts and washers and tighten the bolts.

Note: Use anti-seize to help prevent stainless steel hardware from galling.



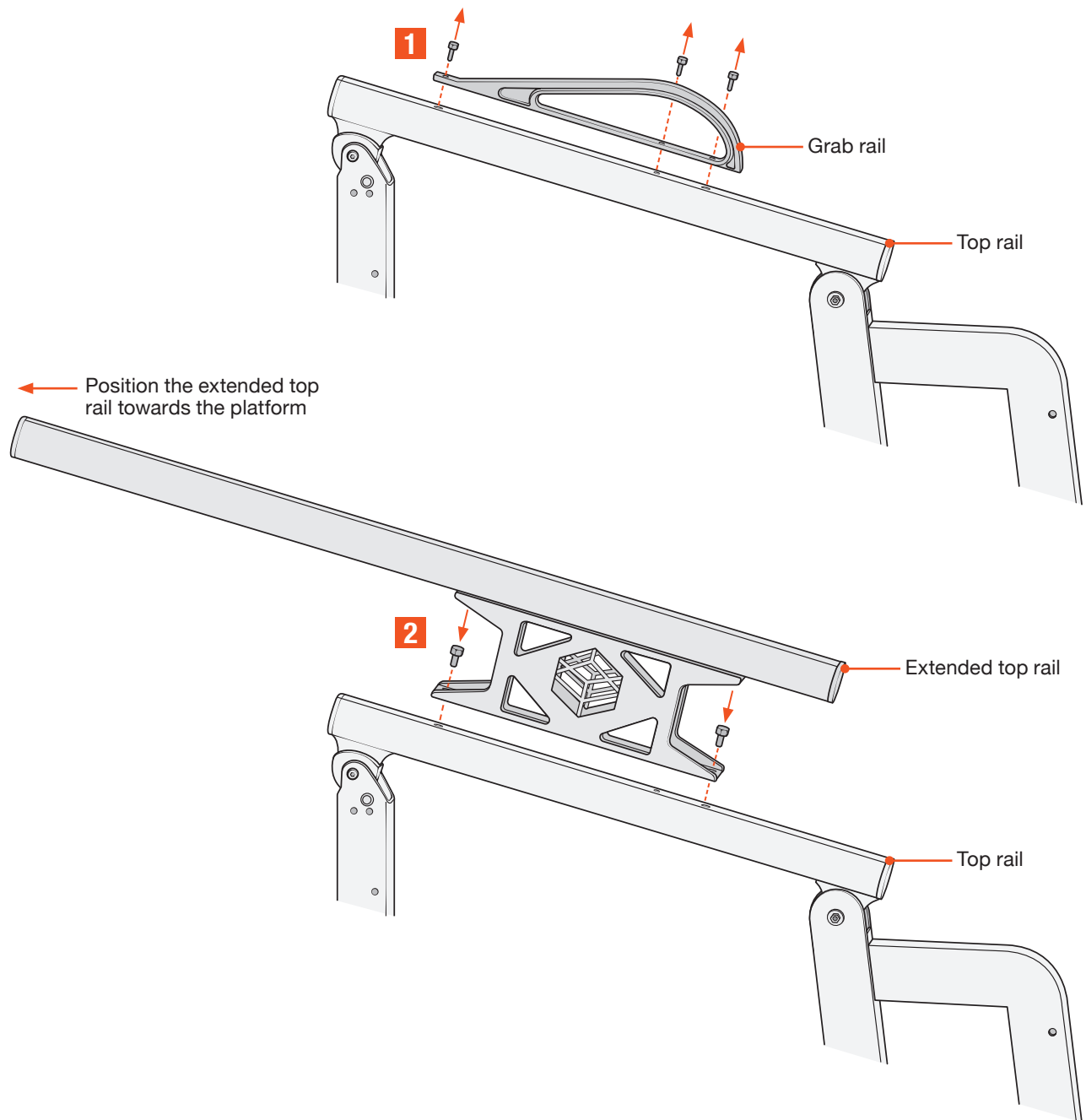
6.2 Extended Top Rail

The **extended top rail** adds to workspace safety by creating an exclusion zone behind the gangway during operation and allowing for a visual barrier between the gangway and the platform access stairs to help ensure the gangway is in the stored position before the operator leaves the platform.

Note: If the **extended top rail** is ordered at the same time as the gangway, it will come installed on the gangway from the factory.

Follow these steps to attach the **extended top rail**.

1. Remove the existing **grabrail** on top of the **top rail**.
2. Position the **extended top rail** on top of the **top rail** with the extension pointing out towards the platform.
3. Reusing the included bolts and washers, attach the **extended top rail** to the **top rail**.



6.3 SAS Cement Body Stiffener

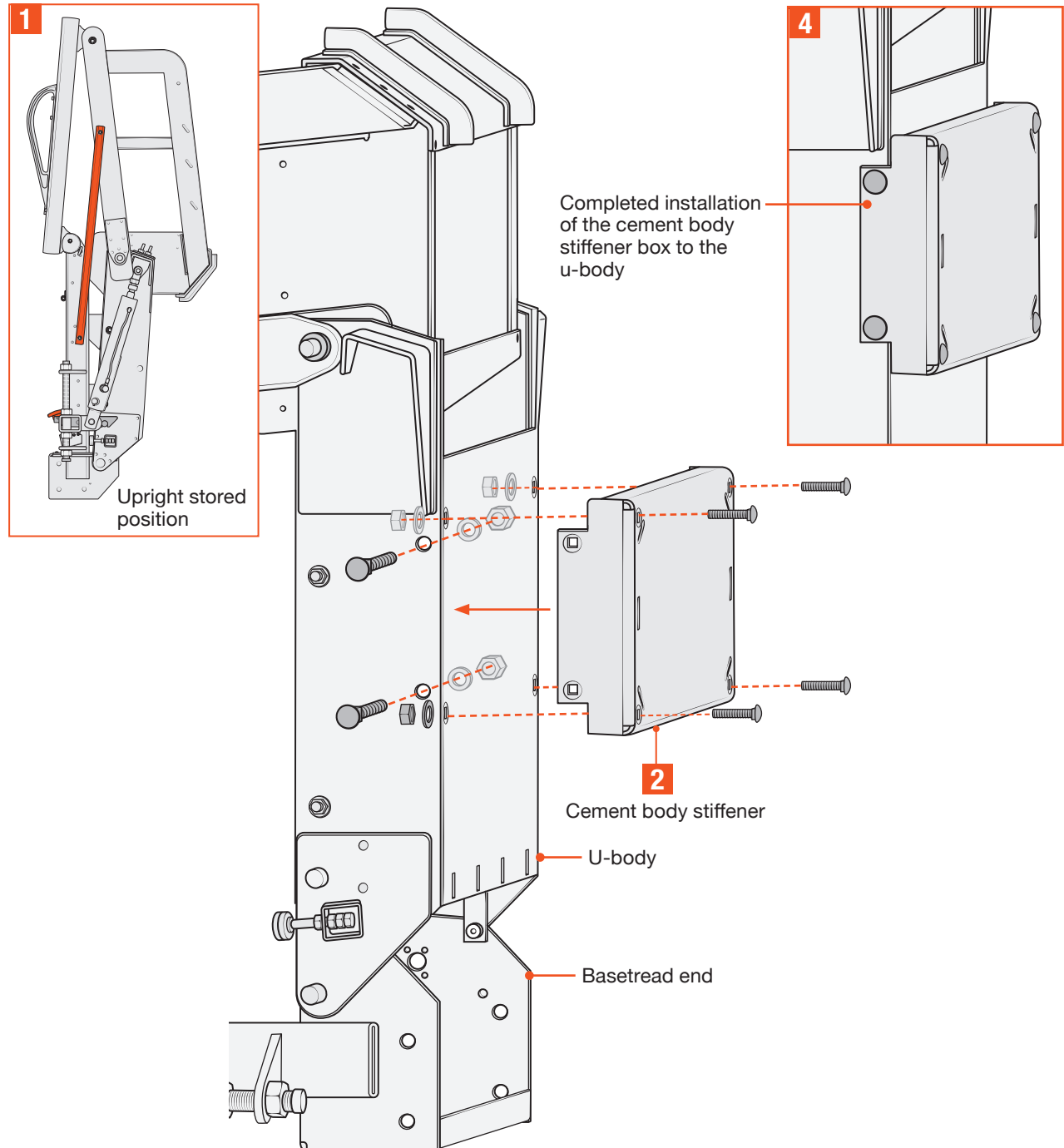
The **cement body stiffener** adds additional rigidity to the gangway for high use applications and inclement conditions. The number of **stiffener boxes** that must be added depends on the length of the gangway

Gangway steps	Stiffener boxes
4	1
5	2
6	3
7	4

Note: If the **cement body stiffener** is ordered at the same time as the gangway, it will come installed on the gangway from the factory.

Follow these steps to attach the **cement body stiffener** to an **u-body**.

1. Ensure the gangway is in the upright, stored and locked position.
2. Starting at the **basetread** end of the gangway, align the **cement body stiffener** to the **u-body**. Insert the carriage head bolts through the **cement body stiffener** and install the washer and nut on inside of the **u-body**.
3. Loosely tighten this connection and continue to install all stiffeners required for the correct length of body you have.
4. Once all stiffeners are loosely installed, tighten/torque bolts with tighten guide (see Section 7.1).





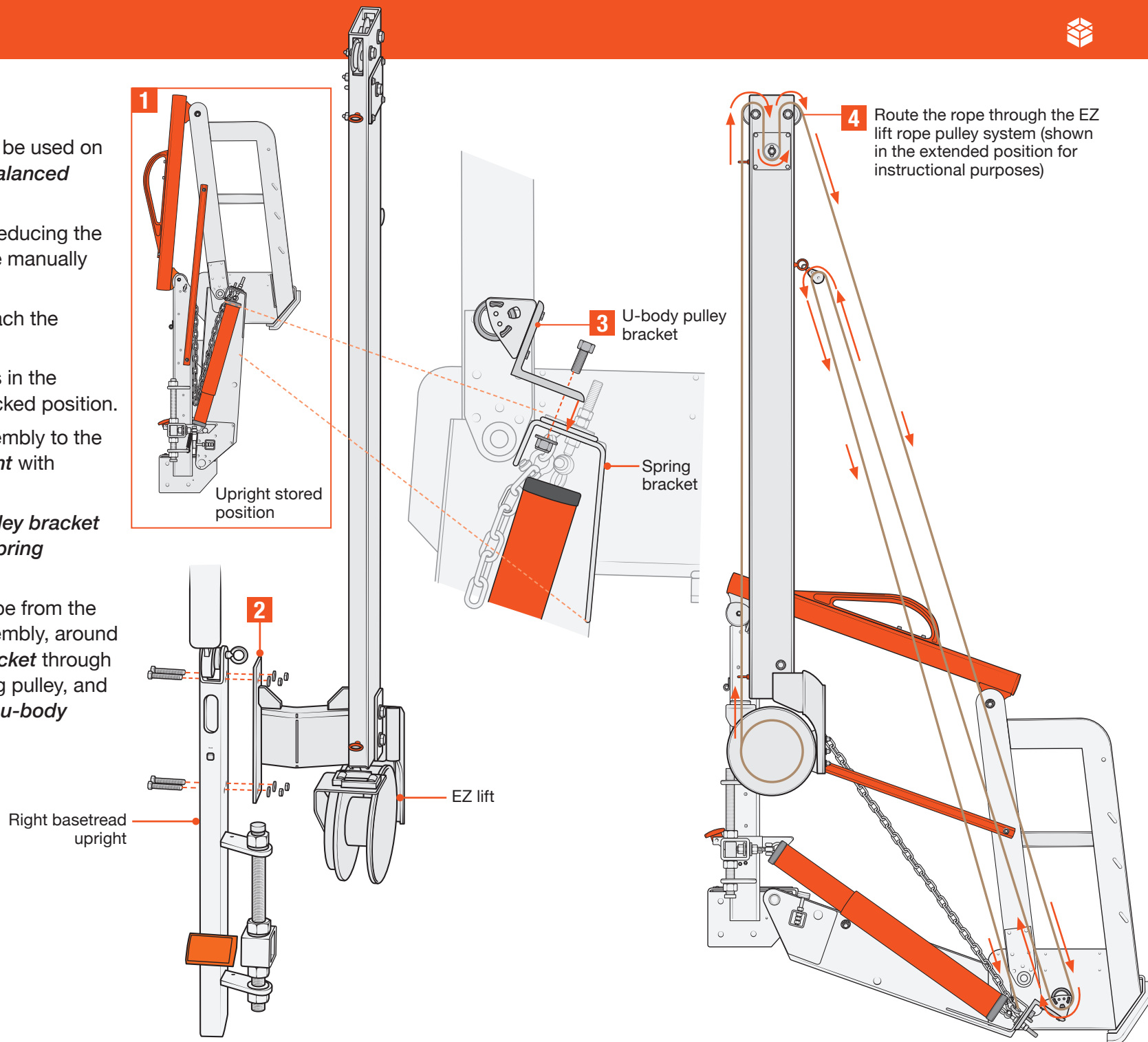
6.4 EZ-Lift

Note: The *EZ-Lift* to only be used on *manual spring counterbalanced* gangways.

The *EZ-Lift* assists with reducing the force, needed to raise the manually operated gangway.

Follow these steps to attach the *EZ-Lift* to the gangway.

1. Ensure the gangway is in the upright, stored and locked position.
2. Install the *EZ-Lift* assembly to the right *basetread upright* with provided hardware.
3. Mount the *u-body pulley bracket* to the outside of the *spring bracket*.
4. Route the included rope from the top of the *EZ-Lift* assembly, around the *u-body pulley bracket* through the secondary hanging pulley, and terminate back on the *u-body pulley bracket*.



7.0 MAINTENANCE

The following section covers:

7.1 Bolt Torque Guide

7.2 Spring Tension Adjustment

- 7.2.1 Spring Tension Adjustment - Hard to Lift
- 7.2.2 Spring Tension Adjustment - Hard to Lower

7.3 Inspection and Maintenance Schedule

- 7.3.1 Gangway Inspection and Maintenance
- 7.3.2 Spring Hardware Inspection and Maintenance
- 7.3.3 Chain Inspection and Maintenance
- 7.3.4 Hydraulic Inspection and Maintenance

7.4 Schematics

7.1 Bolt Torque Guide

Follow these guidelines when tightening the bolts using the Turn of Nut method.

Bolts shall be installed in all holes of the connections and brought to a snug-tight condition.

Note: Snug tight is defined as the tightness that exist when the plies if the joint are in firm contact. This may be attained by a few impacts of an impact wrench or the full effort using an ordinary spud wrench.

Table 7.1 Bolt torque

BOLT LENGTH	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	Both faces normal to bolt axis	One face normal to bolt axis and other sloped no more than 1:20	Both faces sloped not more than 1:20 from normal to the bolt axis
Not more than 4 diameters	1/3 turn	1/2 turn	2/3 turn
More than 4 diameters but not more than 8 diameters	1/2 turn	2/3 turn	5/6 turn
More than 8 diameters but no more than 12 diameters	2/3 turn	5/6 turn	1 turn

Note: Guidelines are from the AISC Steel Manual, Section A14 – ASO bolt Specification. Applicable only to steel joints. Beveled washers not used.

Following this initial operation, all bolts in the connection shall be tightened further by the applicable amount of rotation specified in the Table 7.1.

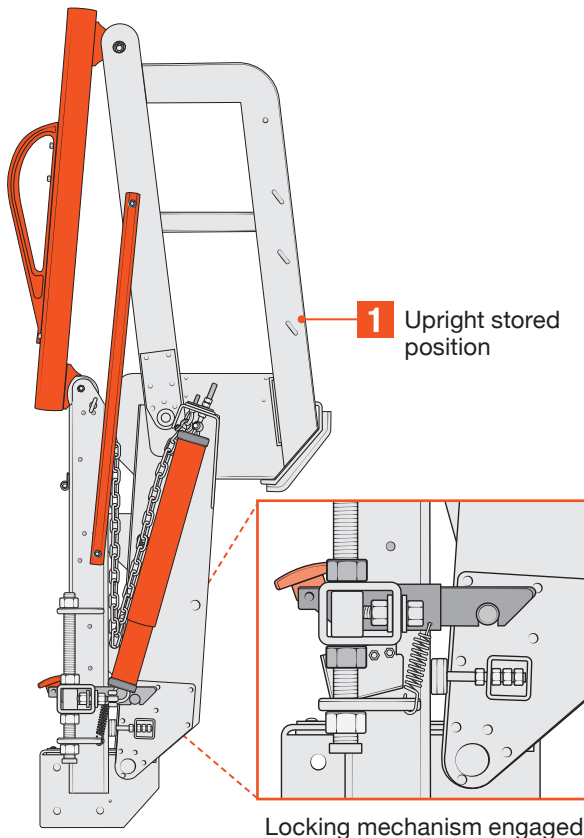
During the tightening operation, there shall be no rotation of the part not turned by the wrench.

Note: Nut rotation is relative to the bolt regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn or less, the tolerance should be +/- 30 degrees. For bolts installed by 2/3 turn and more, the tolerance should be +/- 45 degrees.

7.2 Spring Tension Adjustment

The spring tension is set at the SafeRack factory and field adjustments should not be required.

Note: Any changes in the weight of the gangway or cage can dramatically affect the gangway operation. If the gangway is supposed to have a cage and the cage has not been attached, **do not** operate the gangway until the cage is attached. If necessary, try the following procedures. If the gangway still does not operate in an acceptable manner, call SafeRack at 1-866-761-7225.



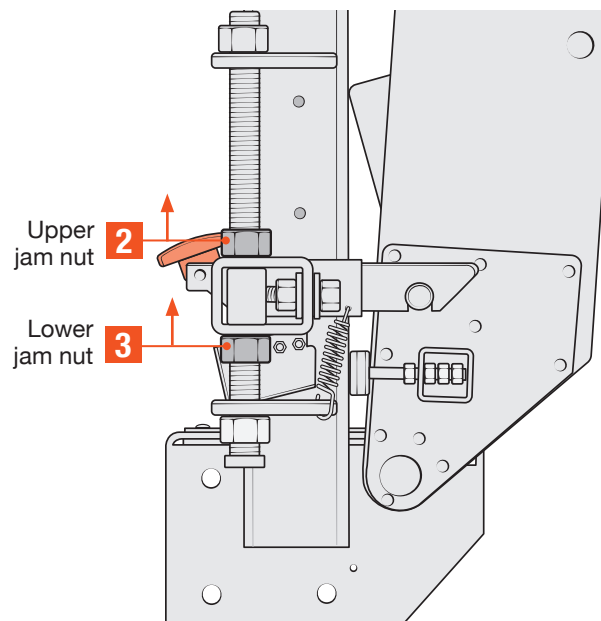
7.2.1 Spring Tension Adjustment - Hard to Lift

If the gangway is hard to lift, increase the spring tension as follows:

1. Raise the gangway to the upright, stored position and make sure the **locking mechanism** is fully engaged.
2. Raise the **upper jam nut** on the threaded rod about 1/2" on each side of the gangway.
3. Raise the **lower jam nut** on the threaded rod until it is tight to the new position.
4. Test the gangway, if necessary, repeat these steps.

Note: The main spring adjustment is on the threaded rod of the **basetread uprights**.

Important! Ensure the position of the **jam nuts** are in the same on both sides of the gangway.



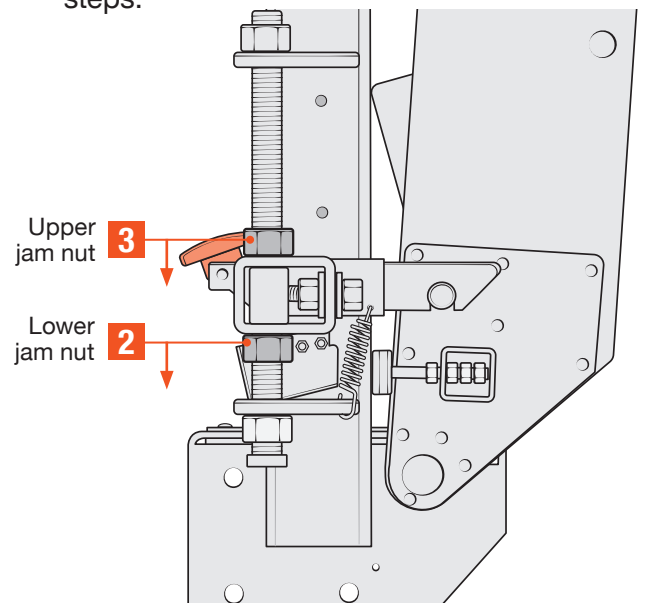
7.2.2 Spring Tension Adjustment - Hard to Lower

If the gangway is hard to lower or will not stay down at the vehicle height, decrease the spring tension as follows:

1. Raise the gangway to the upright, stored position and make sure the **locking mechanism** is fully engaged.
2. Lower the **bottom jam nut** on the threaded rod about 1/2" on each side of the gangway.
3. Lower the **upper jam nut** on the threaded rod until it is tight to the new position.
4. Test the gangway, if necessary, repeat these steps.

Note: The main spring adjustment is on the threaded rod of the **basetread uprights**.

Important! Ensure the position of the jam nuts are the same on both sides of the gangway.



7.3 Inspection and Maintenance Schedule

The following section details when to inspect, and how to maintain:

- Gangway inspection and maintenance
- Spring hardware inspection and maintenance
- Chain inspection and maintenance
- Hydraulic inspection and maintenance (optional powered gangways only)

7.3.1 Gangway Inspection and Maintenance

Inspection

- **Before each use:** inspect the gangway for damage that may affect operation. Repair any damage before use.
- **Before each use:** inspect the *chain eyebolts* are not loose. Tighten the eyebolts if necessary.

Maintenance

- **Bi-annually:** Lubricate all pivot points with a multi-purpose white lithium grease.

7.3.2 Spring Hardware Inspection and Maintenance

The spring hardware requiring inspection and maintenance consists of the *shackle* and the *spring rod end*. The *shackle* is located inside the spring cylinder and attached to the *spring rod end*.

Inspection

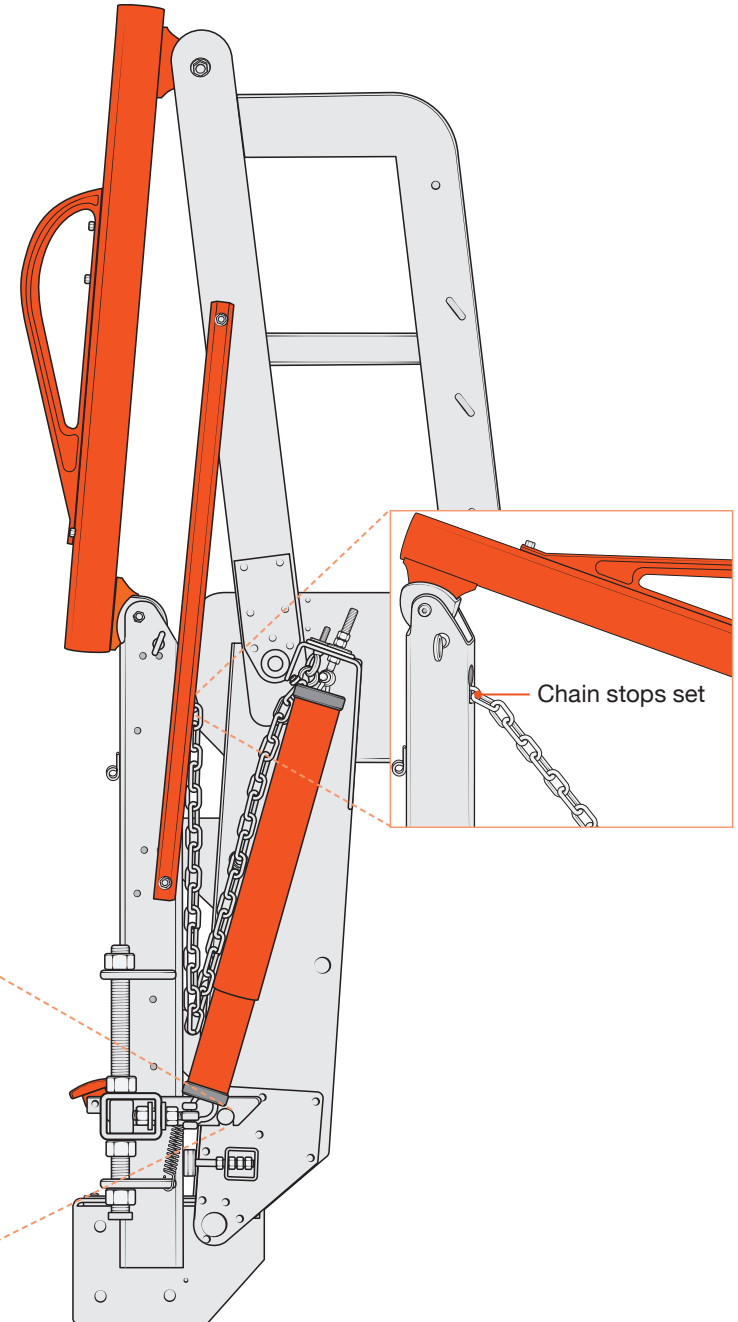
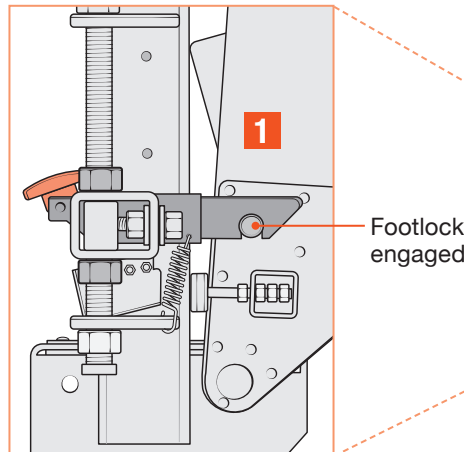
- **Monthly:** Check all bolted connections to ensure that they are properly tightened. Tighten if needed.
- **Bi-annually:** Inspect all spring connections hardware for wear or damaged. Replace if needed.

Maintenance

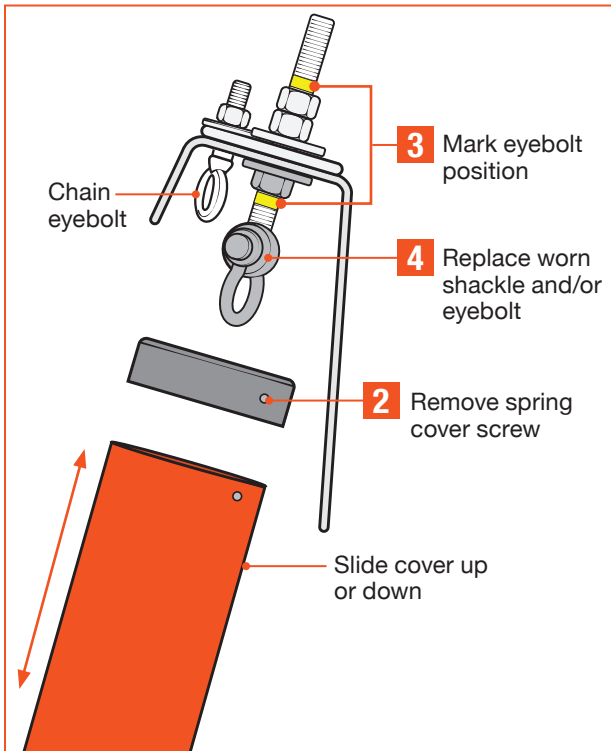
Follow these steps if you need to replace the spring hardware.

1. Raise the gangway to the upright, stored position and make sure the *footlock* is engaged.

Note: Verify that the *chain stops* on both sides of the gangway are set.



2. Remove the screws that holds the **spring cover** in place. Slide the cover up, or down, to expose the **shackle** and **eyebolt**.
3. Mark the position of the **eyebolts** on the bracket before removing it to ensure proper position of new eyebolt.
4. Replace worn shackle and/or eyebolt.
Note: Position the new hardware in the same position as the previous hardware.
5. Replace **spring cover** and bolt back in into the original position.
6. If necessary, adjust the spring tension (see section 7.2)



7.3.3 Chain Inspection and Maintenance

Inspection

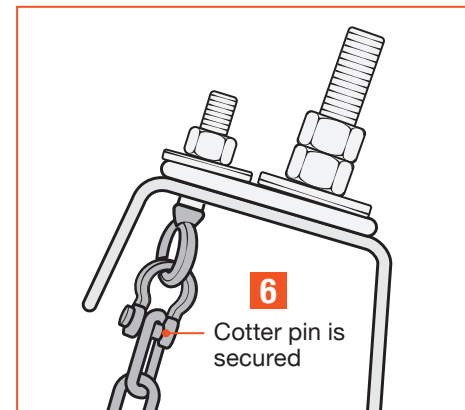
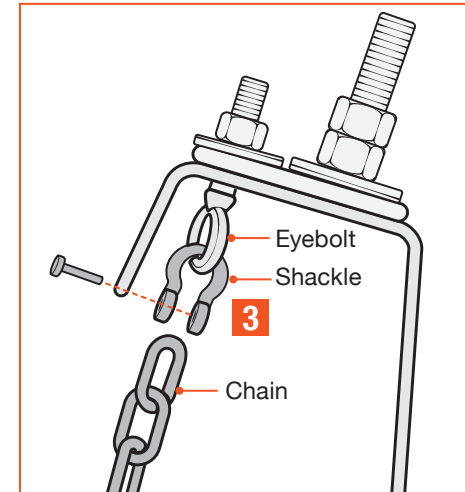
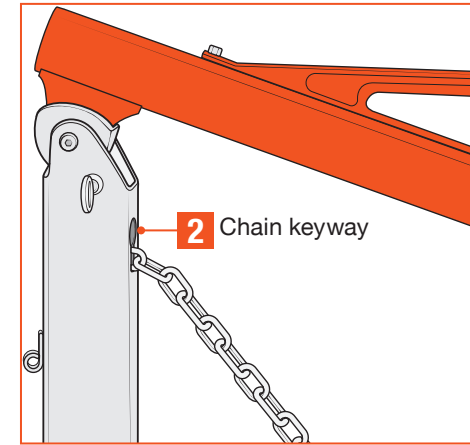
Monthly: Inspect all chain connection hardware for wear or damaged. Replace if needed.

Maintenance

Follow these steps if the chain hardware needs replacement.

1. Raise the gangway to the upright, stored position and make sure it is locked in place.
2. If necessary, remove the **chain** from the **chain keyway** and release the tension on the chain.
3. Remove and replace the worn **shackle** that is connected to the **chain eyebolt**.
4. Verify chain is not twisted.
5. If necessary, place the chain back into the **chain keyway**.
6. Verify **shackle pin** and **cotter pin** are secure.

Note: For chain replacement, verify chains match the original chain size and length.



7.3.4 Hydraulic Inspection and Maintenance

Inspection

- **Monthly:** Check all power wires/hoses going into the hydraulic motor to ensure good connections.
- **Monthly:** Check all bolted connections to ensure that they are properly tightened.

Note: Stainless steel hardware should only be hand tightened to prevent binding.

- **Monthly:** If the gangway is used extremely frequently (excess of 100 cycles per day), check hydraulic fluid color and viscosity **monthly**. If hydraulic fluid becomes discolored, flush and replace.

Note: At least 3 gallons of oil is required if the system is completely flushed.

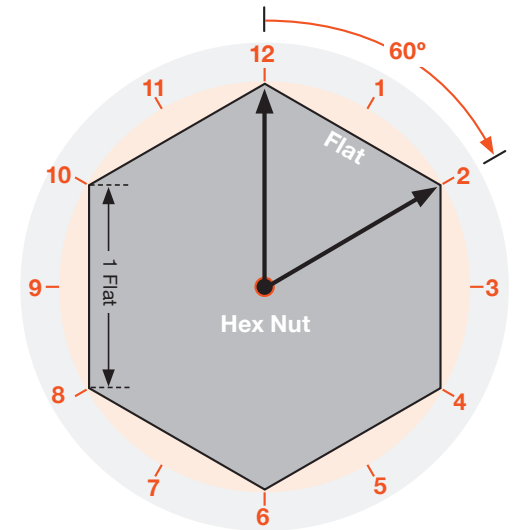
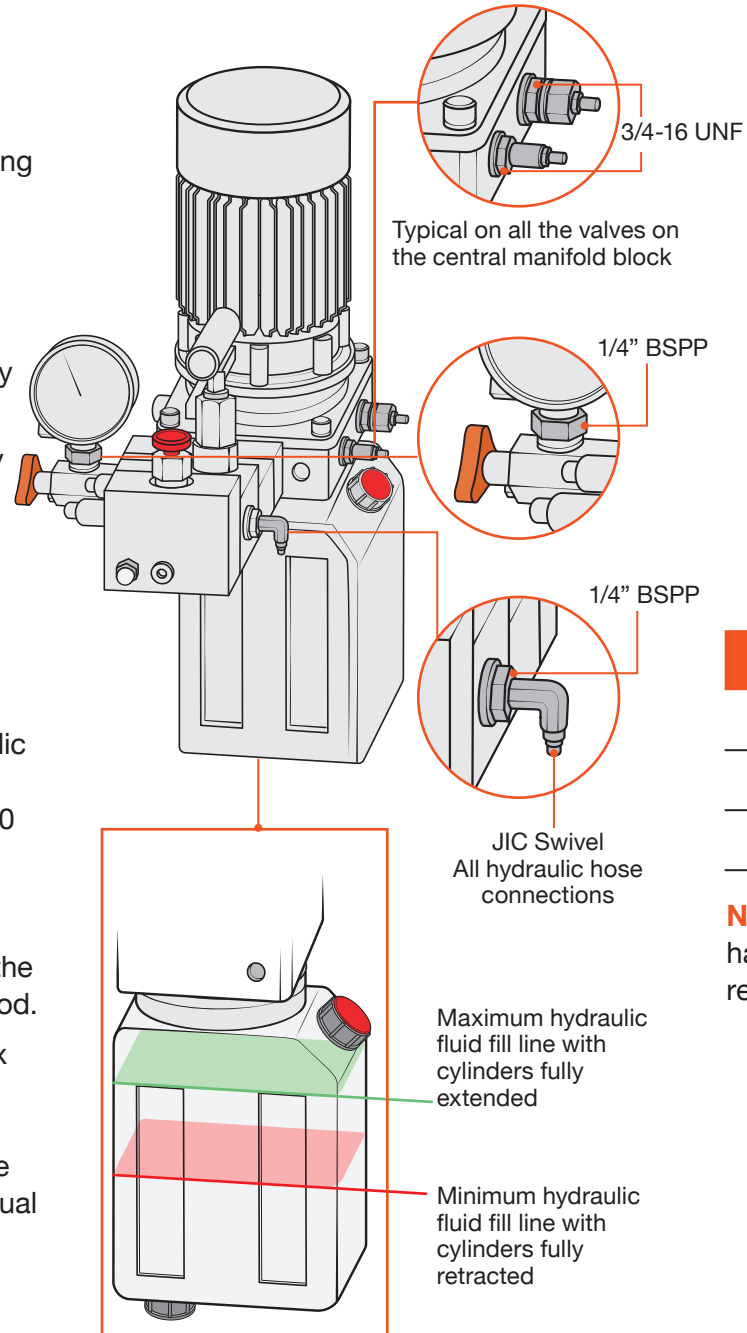
- **Bi-annually:** Flush and replace the hydraulic fluid. The reservoir should require approximately 1 gallon of Bio-Ultimax 1000 hydraulic fluid ISO 46.

Maintenance

Hydraulic fittings should be tightened using the Flats From Wrench Resistance (FFWR) method.

This method is based on the hexagon, or hex nut, of the fitting. The hex nut is divided into angles of rotation of a circle or 360 deg. One hex nut side is a Flat and makes up 1/6 of the circle or 60 deg. Hence, to turn one flat is equal to 60 degrees of rotation.

For example, we can think of a hex nut like a clock face. One flat equals 2 hours or 60 degrees of rotation.



FFWR Diagram

Identifier	Torque
JIC Swivel	1/4"-1/2" FFWR
1/4" BSPP	2 FFWR
3/4-16 UNF	19 ft-lbs + 25%-0%

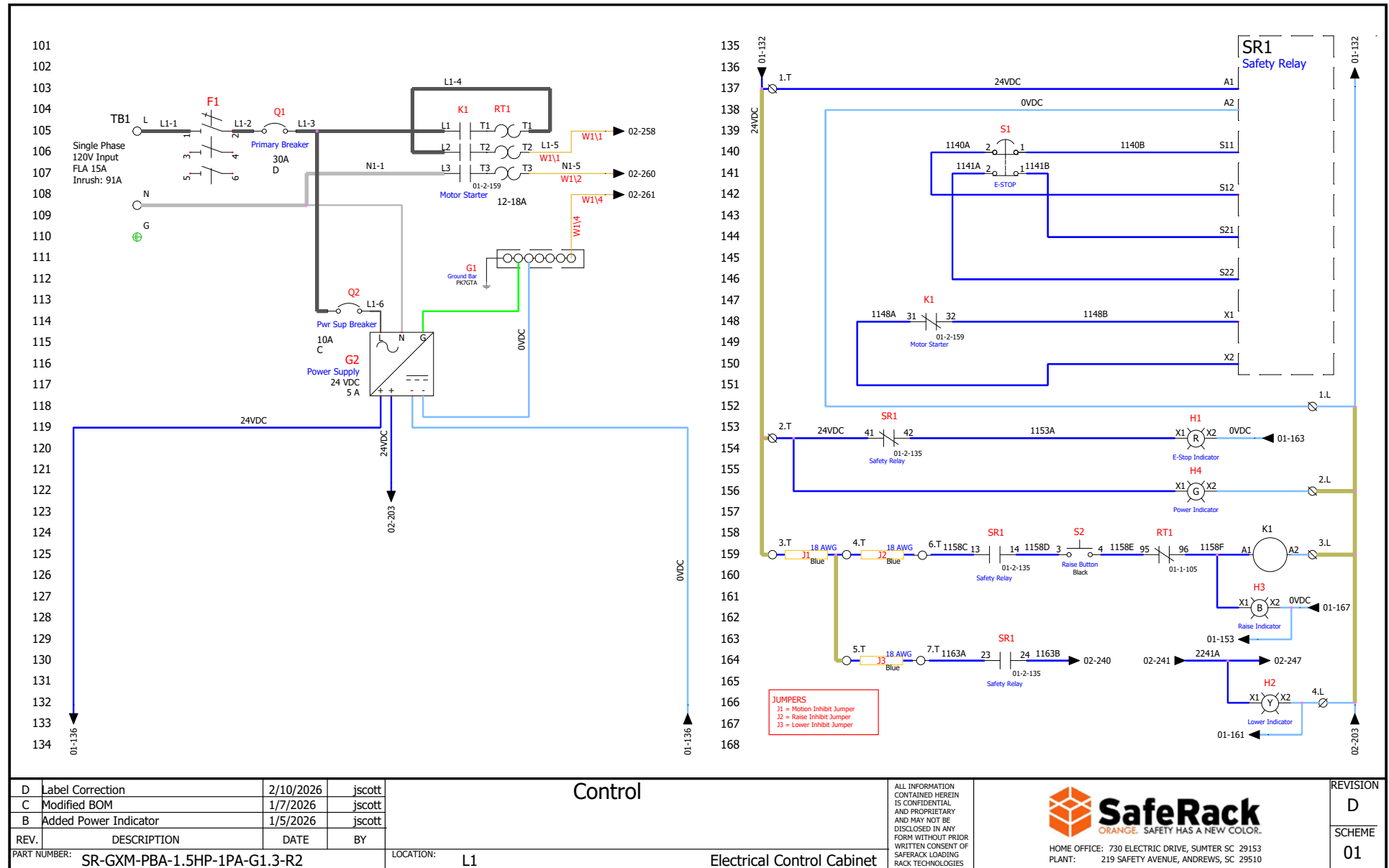
Note: The electric and pneumatic gangways have the same hydraulic fittings and torque requirements.



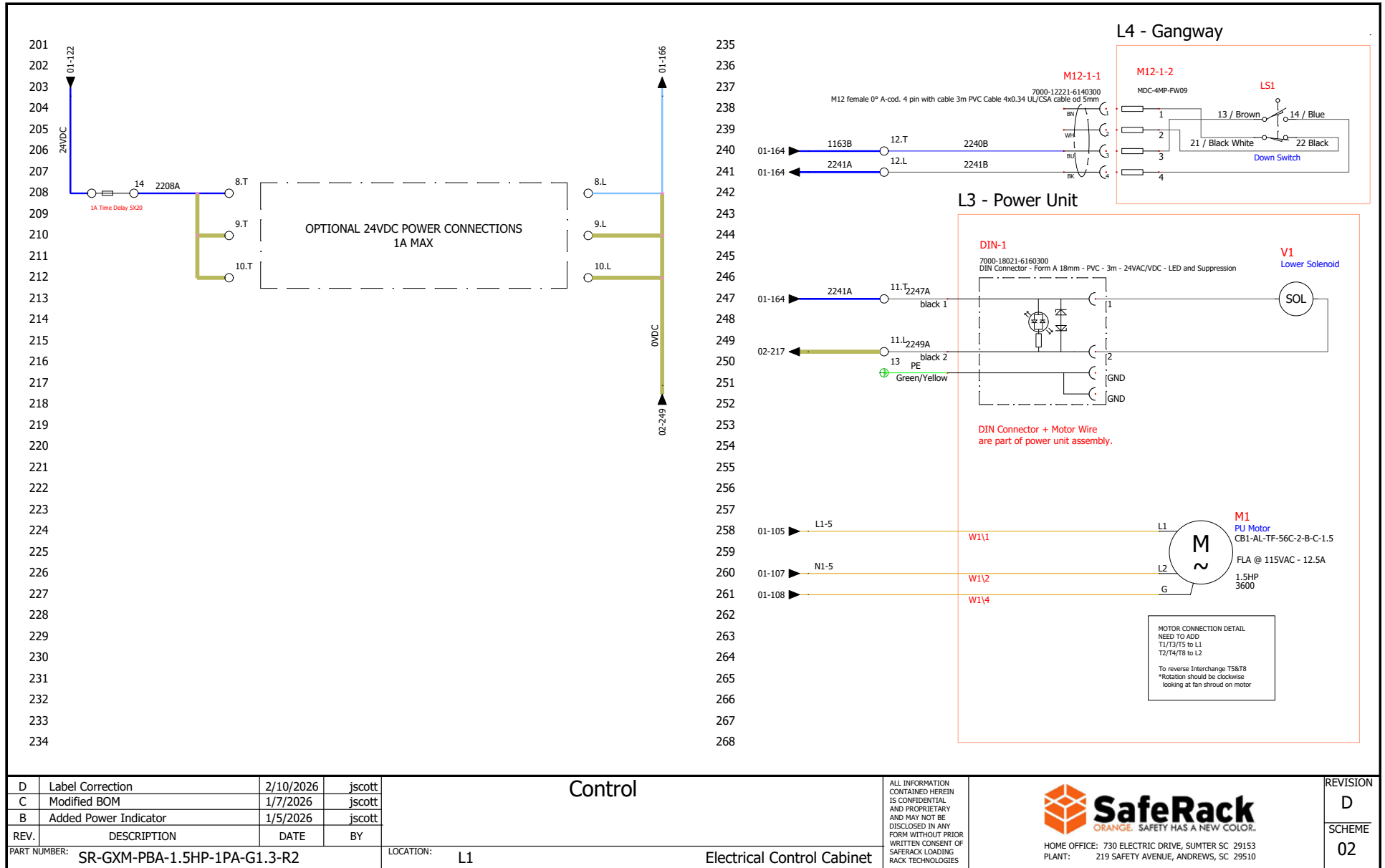
7.4 Schematics

This section includes the electrical, electrical hydraulic, and the pneumatic fluid power schematics.

Electrical Schematic

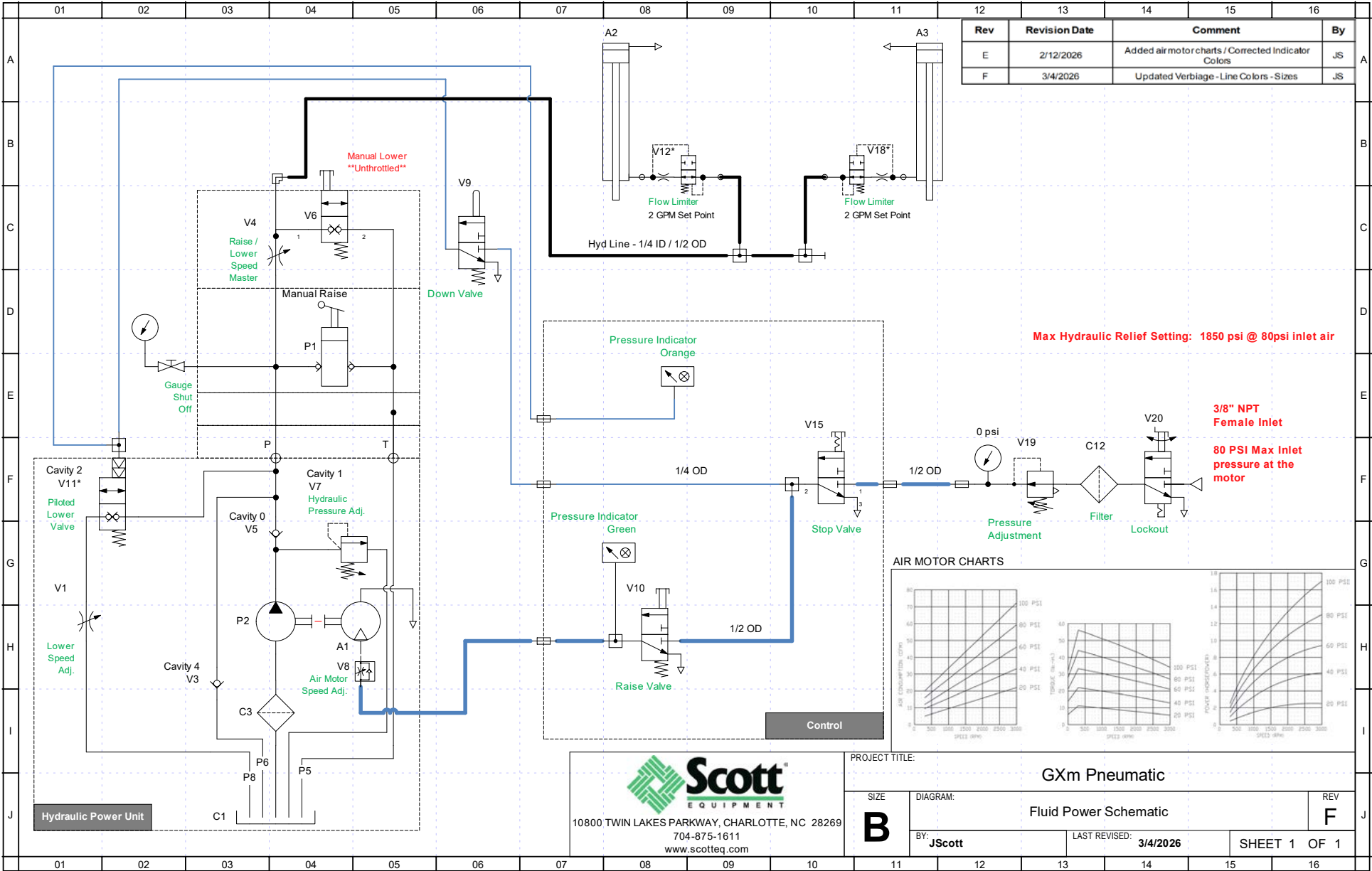


Electrical Hydraulic Schematic





Pneumatic Fluid Power Schematic



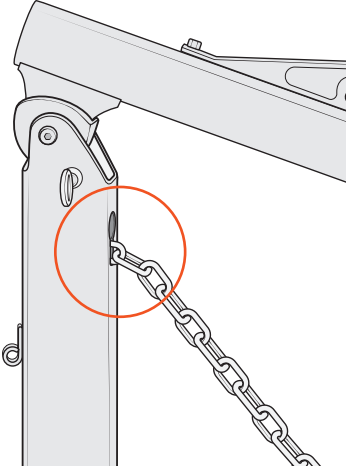
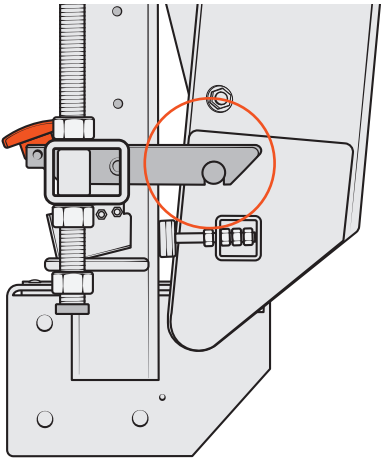
8.0 TROUBLESHOOTING

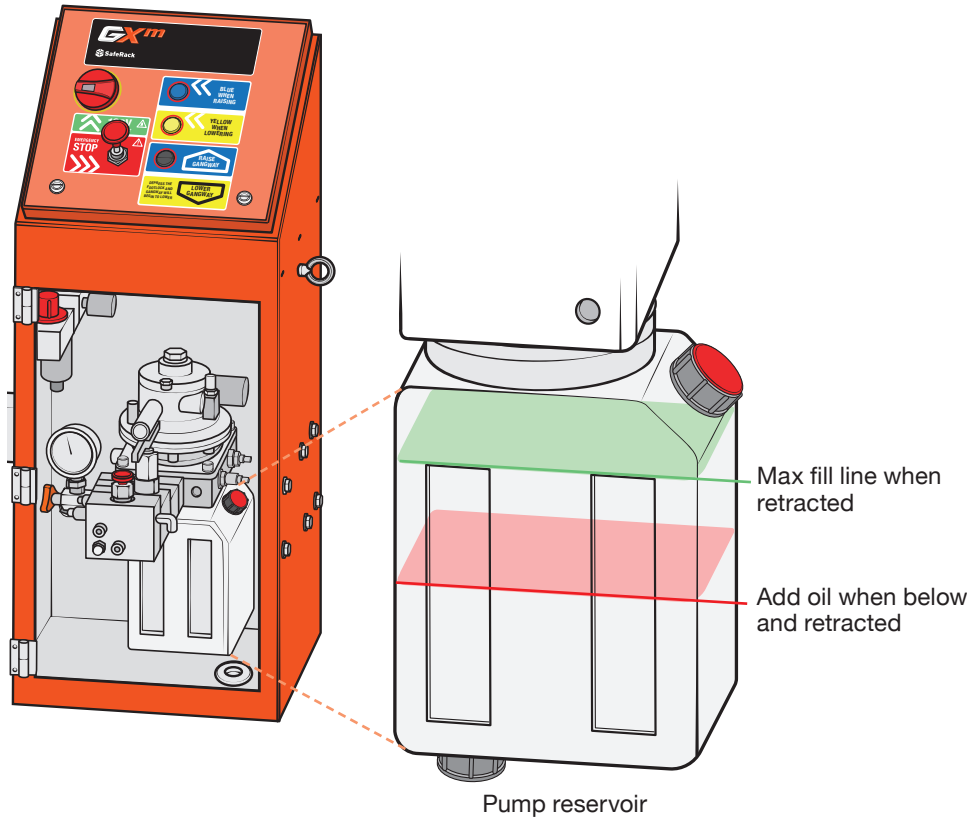
8.1 Manual Spring Counterbalanced Gangway

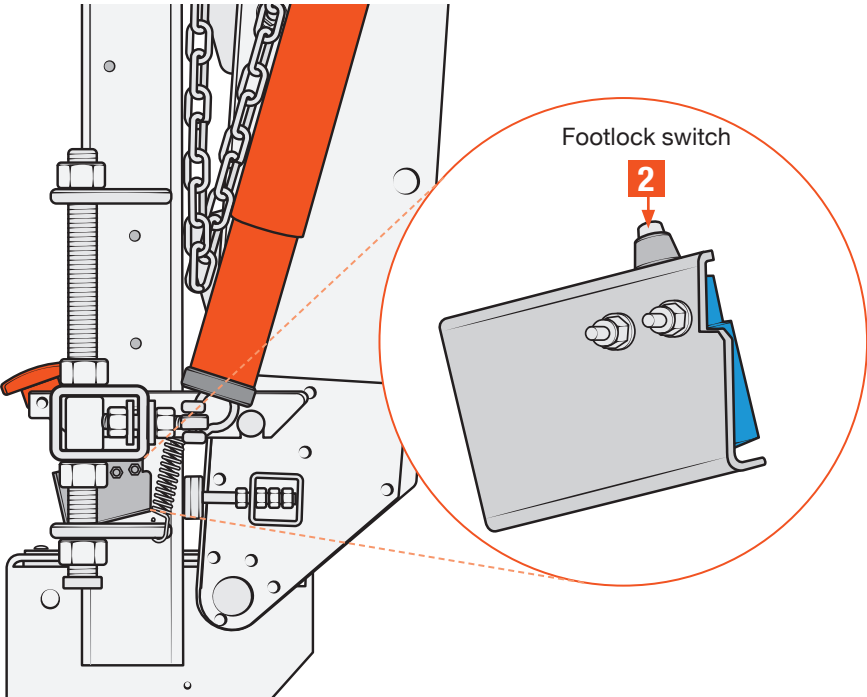
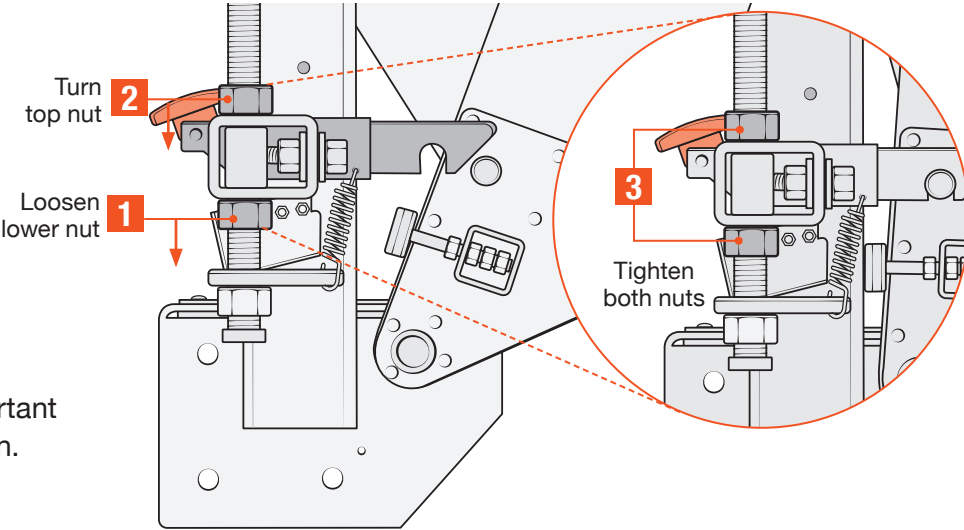
PROBLEM	SOLUTION
A. Unit is hard to lower or raise	• Check for obstructions. • Use pull rope. • Check for gangway damage. • Springs need to be adjusted. (See Section 7.2)
B. Unit falls too fast when lowering	• Spring attachment is broken. • Missing hardware. • Springs need to be adjusted. (Refer to spring adjustment page)
C. Footlock not engaging	• Check for obstructions. • Spring stretched or broken. • Lock and/or pin is bent. • Check for gangway damage.
D. Gangway leaning away from platform	• Check for obstructions. • Bolts loose on mounting bracket/basetread mount. • Check for gangway damage
E. Safety cage leaning and/or sagging	• Check for obstructions. • Bolts loose where connected to gangway. • Cage bent or broken. • Check for gangway damage. • Bolts loose on mounting bracket/basetread mount.
F. Safety chains won't engage	• Check for obstructions. • Verify chains have not been replaced with ones that do not match original chain size/length.

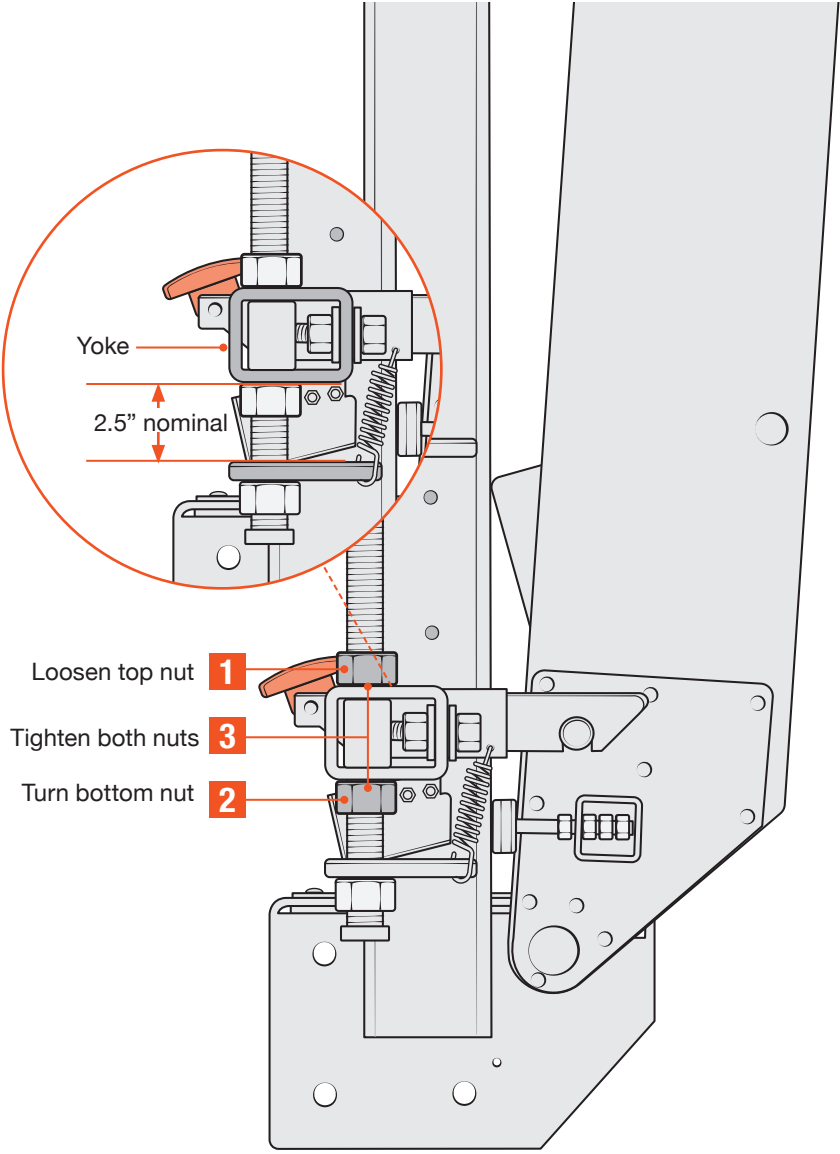


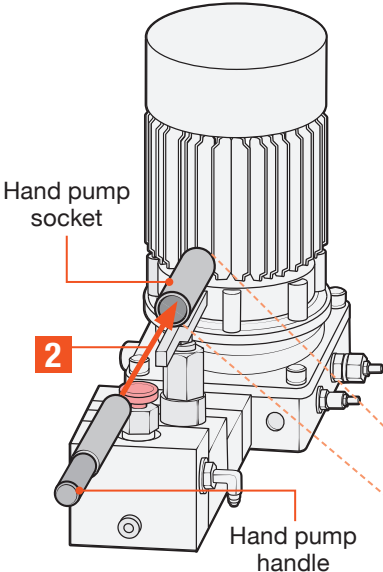
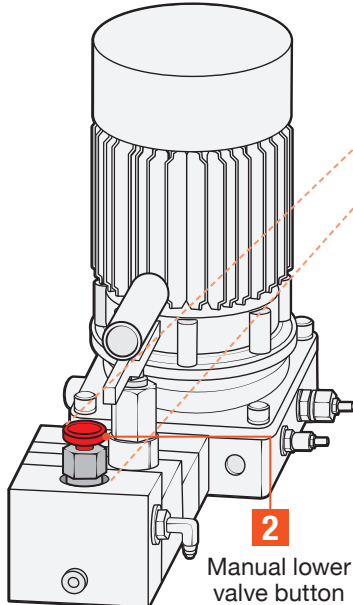
8.2 Electrical and Pneumatic Powered Gangways

PROBLEM	SOLUTION
A. Footlock not engaging	• Check for obstructions. • Check for gangway damage.
B. Gangway leaning away from platform	• Check for obstructions. • Bolts loose on mounting bracket/basetread mount. • Check for gangway damage.
C. Safety cage leaning and/or sagging.	• Check for obstructions. • Bolts loose where connected to gangway. • Cage bent or broken. • Check for gangway damage. • Bolts loose on mounting bracket/basetread mount.
D. Safety chains won't engage	• Check for obstructions. • Verify chains have not been replaced with ones that do not match.
E. Hydraulic system failure	In the event of a hydraulic system failure when gangway is in a lowered position and needs to be raised. Place winch in a secure position above unit and connect to the gangway. Engage the safety chains, remove the pins on the end of the cylinders, then raise the gangway with the winch until the foot lock is engaged. Pull the safety chains until they are in fully locked position on the uprights and gangway is secure in place and will not lower.  Footlock engaged Safety chain in locked position

PROBLEM	SOLUTION
F. The GX^m is lowering without pressing down on the footlock	1. Attempt to raise gangway by pressing the corresponding button on the control panel back to a locked position. If it will not, set safety chains at tightest position to lock gangway in place and prevent further falling. 2. Open the control box and check the fluid level in the pump reservoir, level should be just below $\frac{1}{2}$ the tank at fully stored. If level is significantly lower, add fluid until level is reached. 3. Inspect all seals along cylinder and at hose fittings for leaks. If a leak is found replace the hose or fitting. 4. If needed: Repeat steps 1-3 until gangway lowers only when foot lock is pressed.  Pump reservoir

PROBLEM	SOLUTION
G. The GX^m does not lower when pressing down on the foot lock	1. Set safety chains with 1" (inch) of slack in the chain. 2. Use a flathead screwdriver or similar tool to manually depress the footlock switch below the foot lock while raising the U-body catch pin out of the foot lock slot. 3. If gangway still does not lower, replace plunger switch. If gangway does lower, re-adjust plunger switch position by loosening hardware, raising and tilting plunger switch back slightly, and re-tightening hardware. 4. Re-check whether foot lock is operational as normal. 5. If needed: Repeat steps 1-3 until gangway lowers when foot lock is pressed. Note: If this does not correct the issue, the same procedure should be employed at the other end of the basetread. 
H. The GX^m is not storing with the foot lock engaged	If cylinders are bottoming out before the lug can catch the foot lock, lower the bottom cylinder yoke. As you lower the yoke, the U body will rise, and the lug will get closer to capture by the foot lock. 1. Loosen lower nut. 2. Use wrench to turn top nut to drive down yoke. 3. Tighten both nuts to lock yoke in place. Note: Adjust the nut ¼ turn at a time, its important to keep the yokes roughly at the same elevation. 

PROBLEM	SOLUTION
I. The GX^m is storing before the cylinders are fully retracted If cylinders are not fully retracting before the lug can catch the foot lock, raise the bottom cylinder yoke. The indicator that the cylinders are not fully retracted include: • Basetread uprights flexing away from each other. • Deformation at top cylinder attachment bracket. • Cylinders should fully retracted with the lug centered in the foot lock. • Set height of spring yoke to 2.5" before beginning adjustment. 1. Loosen top nut. 2. Use wrench to turn bottom nut to drive yoke up. 3. Tighten both nuts to lock yoke in place Note: Adjust the nut ¼ turn at a time, its important to keep the yokes roughly at the same elevation.	 Yoke 2.5" nominal Loosen top nut 1 Tighten both nuts 3 Turn bottom nut 2

PROBLEM	SOLUTION
J. The GX^m cannot be raised, or lowered, using the electric or pneumatic power function	Important! Disconnect the main power supply to the <i>control box</i> before manually raising or lowering the gangway. Ensure the power is not restored while the operator has the box open to utilize the manual lower or raise function. To Manaully Raise the Gangway: 1. Release the <i>chain stops</i> if set. 2. Open the <i>control box</i> door and attach the provided <i>hand pump handle</i> to the <i>hand pump socket</i> on the front of the power unit. 3. Operate the hand pump until the gangway is raised to the stored position and the <i>footlock</i> is secured. 4. Set the <i>chain stops</i>. To Manually Lower the Gangway: 1. Release the <i>chain stops</i> if set. Note: It is recommended to set the chain stops with a moderate amount of slack rather than fully released. The gangway may lower faster than expected. 2. Depress the <i>manual lower valve button</i> on the power unit. Note: The <i>manual lower valve</i> can partially be used to throttle the lower speed depending on how much it is depressed. 3. Lower the gangway to the desired position and release the <i>manual lower valve</i>. Note: The gangway will lower under its own weight until the button is released. Important! The manual lower function utilizes an unrestricted flow from the cylinder flow limiter back to the power unit. The cylinder velocity flow limiters will limit the lower speed once the fluid velocity exceeds the limit of the velocity flow limiters. The gangway will lower at a higher rate briefly until this limit is reached then lower at a constant speed. This lower speed should be assumed to be faster than normal operation. Manually Raise the Gangway  Hand pump socket 2 Hand pump handle Manually Lower the Gangway  2 Manual lower valve button



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