

User Instructions

Dyna-Glide® Climbing Protection Systems



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⚠ WARNING!

These instructions must be provided to users before use of the product and retained for ready reference by the user. Read this manual carefully before using or maintaining the device. The device will perform as designed only if it is used and maintained in accordance with the manufacturer's instructions. Otherwise, it could fail to perform as designed, and persons who rely on this device could sustain serious injury or death.

The warranties made by MSA with respect to the product are voided if the product is not installed and used in accordance with the instructions in this manual. Please protect yourself and your employees by following the instructions.

Please read and observe the WARNINGS and CAUTIONS inside. For additional information relative to use or repair, call 1-800-MSA-2222 during regular working hours.

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The Safety Company

1000 Cranberry Woods Drive
Cranberry Township, PA 16066
USA
Phone 1-800-MSA-2222
Fax 1-800-967-0398

For your local MSA contacts, please go to our website www.MSAafety.com

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1 Important Information

WARNING!

- Users of Dyna-Glide systems shall be medically fit, suitably trained and competent in its safe use. The Dyna-Glide system shall not be used by pregnant women, minors or those under the influence of alcohol or drugs.
- Instructions for use, maintenance, and periodic examination shall be retained and provided to all Users of Dyna-Glide in the language of the destination country, even when resold.
- The Dyna-Glide is only to be used for its intended purpose and within its limitations. Further clarification may be obtained from MSA.
- The fall arrester is only to be used by a single user who is within the weight range of 60 - 140 kg (130 - 310 lbs) (including tools).
- DO NOT alter this equipment or intentionally misuse it. DO NOT use fall protection equipment for purposes other than those for which it was designed. DO NOT use fall protection equipment for towing, hoisting or material handling.
- Only MSA or persons or entities with written authorization from the manufacturer may make repairs to the Dyna-Glide. No unauthorized repairs, modifications, alterations and/or additions are permitted.
- DO NOT use combinations of components or subsystems, or both, which may affect or interfere with the safe function of each other.
- DO NOT extend, shorten, or add/ remove components to the provided connection between the fall arrester and full body harness.
- DO NOT use the Dyna-Glide for work positioning or to support either partial or full body weight. A separate work positioning system must be utilized.
- DO NOT hold the fall arrester while ascending or descending or in the event of a fall. Holding the fall arrester may disable or manually handle the lock/ release mechanism of the device during ascent or descent and should only be done from a safe position where there is no risk of a fall.
- Only anchor Dyna-Glide rails in locations represented in the User Instructions.
- This Dyna-Glide system shall be connected to a suitable support structure capable of supporting the required load. See Section [3 Planning the Installation](#) for details on anchorage strength.
- Ensure that the available fall clearance between the user and obstacles and between multiple users on the Dyna-Glide system is greater than the fall clearance shown in the User Instructions. Within this distance, the user may not be protected against hitting the working platform or obstacles below.
- DO NOT rely on feel or sound to verify proper snaphook or carabiner engagement. Ensure that gate and keeper are closed before use.
- DO NOT exceed the maximum fall arrest forces as specified by governing standards or subsystem components.
- If an issue is identified or any doubt exists as to the suitability of the Dyna-Glide, it shall be tagged “unusable” and withdrawn from service.
- If the Dyna-Glide is damaged or subjected to fall arrest or impact forces, it shall be tagged “unusable” and withdrawn from service.
- Operational temperature range is -30°C to 45°C (-22°F to 113°F). The Dyna-Glide is not to be used outside of this temperature range.
- Remove any surface contamination that could inhibit safe travel or accelerate cutting or abrading of attached components. This includes but is not limited to ice, concrete, stucco, and roofing material.
- Avoid using the Dyna-Glide adjacent to moving machinery, sharp edges, abrasive surfaces, electrical hazards, or in the presence of excessive heat, open flame or molten metal.
- Chemical hazards, high heat, severe cold and corrosive or harsh environments may damage and produce a harmful effect to the Dyna-Glide. More frequent inspections are required in environments in which these conditions may be present. Consult manufacturer in cases of doubt.

- DO NOT use the Dyna-Glide near energized equipment or where contact with high voltage power lines may occur. DO NOT use the Dyna-Glide in environmental conditions that may produce electricity. Metal components of the Dyna-Glide may provide a path for electrical current to flow, resulting in an electrical shock or electrocution.
- DO NOT leave the fall arrester installed in environments which could cause damage or deterioration to the product. Refer to the User Instructions for care and inspection details.
- RESCUE AND EVACUATION: before installing, the user must have a rescue plan and the means at hand to implement it. The plan must take into account the equipment and specific training necessary to affect prompt rescue under all foreseeable conditions. If the rescue be from a confined space, the provisions of OSHA regulation 1910.146 and ANSI Z117.1 must be taken into account. It is recommended to provide means for user evacuation without assistance of others. This will usually reduce the time to get to a safe place and reduce or prevent the risk to rescuers.
- Dyna-Glide Climbing Protection Systems are to be designated and used solely for approved applications.
- DO NOT use the Dyna-Glide Climbing Protection System for fall protection during installation or removal of the system. When installing or removing the Dyna-Glide Climbing Protection System, a separate independent fall arrest system must be used.
- Connect to a separate independent fall arrest system prior to dismounting from the Dyna-Glide Climbing Protection System at height.
- Always remove obstructions below the work area to ensure a clear fall path. Keep work area free from debris, obstructions, trip hazards, spills or other hazards which could impair the safe operation of the fall protection system.
- DO NOT install or use horizontal rail (P/N 506280) in vertical applications or in applications where fall arrest may be needed. Use of the horizontal rail is for restraint applications only and is not intended for fall arrest.

Failure to follow these warnings can result in serious personal injury or death.

2 Description of the Dyna-Glide Climbing Protection Systems

MSA Dyna-Glide™ Climbing Protection Systems are used to prevent and/or arrest falls from heights and facilitate the climber's performance of work. The systems are used for mounting to already-installed ladders, to corners of lattice towers, and to other suitably strong structures which must be climbed. This manual deals mainly with systems, which are center-mounted to the rungs of vertical fixed ladders. This is the most prevalent type of system.

Each Dyna-Glide fall arrester is designed for single user only within the weight range of 130 - 310 lbs (60 - 140 kg) (including tools). When correctly attached to a suitable support structure, the Dyna-Glide system can support multiple users at a time. A maximum of one user per section or rail is permitted. Each user must maintain a distance of at least 16 ft (5 m) apart during normal use. According to ANSI A14.3, the maximum number of users allowed per system is four. Depending on support structure capacity and system length, an application's maximum number of allowed users may be less.

A properly installed, used and maintained Dyna-Glide system will permit restricted travel of the climber along the rail, and will automatically stop an accidental fall within inches.

A complete system consists of:

- a. Standard join-able straight rail (or LRC, if applicable) sections of length 7 feet 4-3/16 inches (2240 mm);
- b. Standard rail connector assemblies used to couple rail sections together;
- c. Standard mounting assemblies for attachment of rail sections to fixed ladders and other structures;
- d. A carabiner if using Fall Arrester P/N 506277;
- e. A Dyna-Glide fall arrester which engages the rail sections, permits travel along the rail, and stops against a rail notch in case the climber falls;
- f. End stops to prevent the fall arrester from slipping out of the bottom or top end of a string of rail sections;
- g. A full body harness; and
- h. If needed, a variety of accessories which enhance mobility.

2.1 Rail Sections

The rail sections are made of hot galvanized steel. They have a C-profile cross section with rectangular cut outs (slots) at 5.51 inch (140 mm) intervals for coupling adjacent rail sections together and for connection of the rail sections to mounting assemblies. Notches are located at 5.51 inch (140 mm) intervals to serve as stops for the fall arrester. The standard length of a rail section is 7 feet 4-3/16 in.

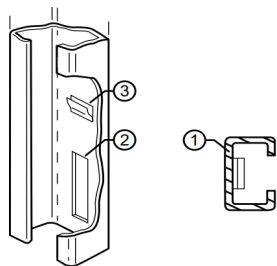


Figure 1 Notched Straight Rail Section (P/N 506270 GALV.)

Front view

Top view

2 Slot

1 Rail section

3 Notch

NOTE: In horizontal rail systems, the rail sections do not contain notches for fall arrest. Use of the horizontal rail is intended for restraint applications only.

2.2 Rail Connector Assemblies

Rail connectors are used to fasten the rail sections together. These units are made of hot galvanized steel. One rail connector assembly is required to fasten together one pair of adjacent rail sections. The assembly consists of a connector plate and two each bolts, nuts, and lock washers. See Figure 2. During the installation of the rail system it is critically important that the butt joint between adjacent rail sections is very tight and secured by the rail connector assembly. See Figures 19 and 20.

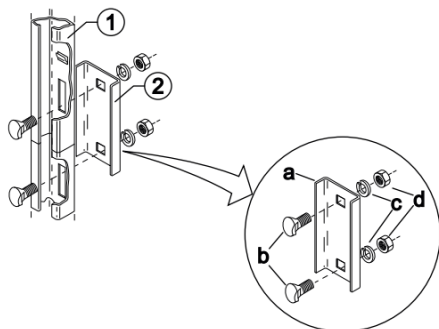


Figure 2 Rail Connector Assembly (P/N 506329 GALV.)

Installation diagram

1 Rail section (P/N 506270)

2 Rail connector assembly (P/N 506329)

Rail Connector Assembly (P/N 506329 GALV.)

a Connector plate (P/N R621496)

b Bolts (P/N R621267)

c Lock washers (P/N R621268)

d Nuts (P/N R621266)

2.3 Rail Mounting Assemblies

A variety of standard mounting assemblies are available to attach rail sections to the structure which is to be climbed. In general, all mounting assemblies have a bracket that is shaped and sized to mate with certain common structural members. The mounting interface with the rail section is always a standard bolt connection. At least two mounting assemblies are always required for each rail section and these must be spaced apart by no more than 66.14 in (1680 mm). Although this manual deals only with rung mounting of rails to fixed ladders, another type of mounting assembly is described below in order for the user to plan for future installations.

2.3.1 Rung Mounting Assembly

Fixed ladders are the most common of all structures to which rail systems are mounted. Fixed ladders are rigidly anchored to other structures. The ladder normally has rungs with diameter up to 1 1/4 in (32 mm) and width between side rails of 12-18 in (305 mm - 457 mm).

To comply with USA Federal OSHA requirements, rungs must be a minimum of 16 in (152 mm) wide. The Dyna-Glide rail sections are normally mounted in the center of the rungs - provided this leaves enough space on each side to easily place

the foot on the rungs even when winter work boots are being worn. The Dyna-Glide rail is 1.96 in (50 mm) wide. Assuming a winter boot width to be 5 in, the rung width must be at least 14 in.

Rungs are usually of circular cross-section, although some are angle, rectangular bar or channel. The standard rung mounting assembly is suitable for rungs of circular cross-section and right angle. The main part of the standard assembly is an alligator clamp (rung mounting assembly) which is bolted to the rail with two bolts, nuts and lock washers as shown in Figure 3.

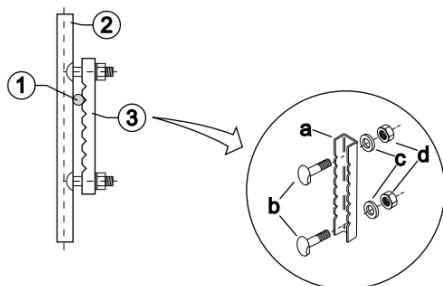


Figure 3 Rung Mounting Assembly (P/N 506273 GALV.)

Installation diagram

- 1 Ladder rung
- 2 Rail section (P/N 506270)
- 3 Rung mounting assembly (P/N 506273)

Rung mounting assembly

- a Rung clamp (P/N R621271)
- b Bolts (P/N R621267)
- c Lock washers (P/N R621268)
- d Nuts (P/N R621266)

2.3.2 Flat Mounting Assembly

This assembly provides means for attachment of a rail section to flat-surfaced structural members. It consists of a bracket and two bolts, washers, and nuts. Each mount requires a flat surface of at least 1.97 in x 0.39 in (50mm x 10mm).

2.4 Ladder/ Rail Combination (LRC) Sections

If using the standard rail section in Section 2.1 Rail Sections, disregard Section 2.4 Ladder/ Rail Combination (LRC) Section through Section 2.6 LRC Mounting Assemblies.

As an alternative to standard rail sections in Section 2.1 Rail Sections, a steel ladder section with an integral notched rail for fall protection can provide a means for climbing a vertical structure, such as a tower, not otherwise equipped with a permanent ladder or climbing safety system. The ladder rail combination (LRC) sections are made of hot galvanized steel. The ladder rungs are spaced at 11.02 inch (280 mm) intervals. The integral notched rail has a C-profile cross section with rectangular cut outs (slots) at 5.51 inch (140 mm) intervals for coupling adjacent rail sections together. Notches are located at 5.51 inch (140 mm) intervals to serve as stops for the fall arrester. The ladder side rails have pairs of square cut outs at 11.02 inch (280 mm) intervals for attachment of side rail connector assemblies and connection of LRC to mounting assemblies. The standard length of a LRC section is 7 feet 4-3/16 inches (2240 mm) and the standard width is 18 inches (457 mm). See Figure 4.

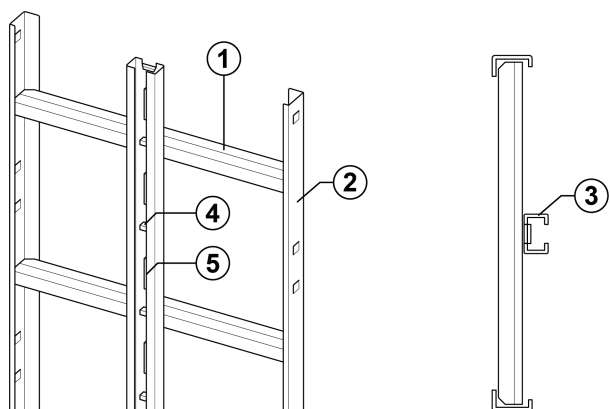


Figure 4 Ladder/Rail Combination (LRC) Section (P/N 506390 GALV.)

Front View

Top view

- 1 Ladder rung
- 2 Ladder side rail
- 4 Notch
- 5 Slot
- 3 Ladder notched rail

2.5 LRC Connector Assemblies

Two different connector assemblies are used to connect LRC sections.

First, the same rail connector assembly as described in Section 2.2 Rail Connector Assemblies is used to fasten the rail sections of the LRC together. These assemblies are made of hot galvanized steel. One rail connector assembly is required to fasten together one pair of adjacent LRC rail sections. The assembly consists of a connector plate and two bolts, nuts, and lock washers each. See Figure 2. During installation of the LRC system, it is critically important that the butt joint between adjacent rail sections is very tight and secured by the rail connector assembly.

Additionally, a side rail connector assembly is required to fasten the side rails of adjacent LRC sections together. Two assemblies are required per LRC section and they are mounted to the inside of each side of the LRC sections. This assembly is made of hot galvanized steel. The assembly consists of a connector plate and two bolts, nuts, and lock washers each. See Figure 5.

Figure 5 Side Rail Connector Assembly (P/N 506391 GALV.)

Installation View

1 Adjacent LRC Side Rails

2 Side Rail Connector Assembly (P/N 506391)

Front View

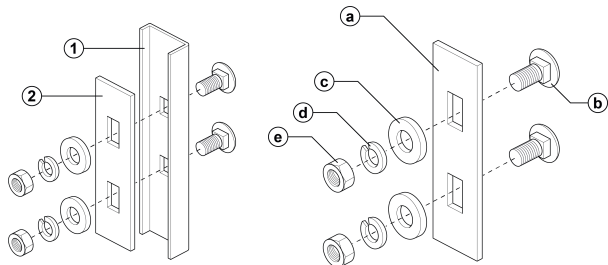
a Connector Plate (P/N R621627)

b Bolts (P/N R621626)

c Flat Washers (P/N R621465)

d Lock Washers (P/N R621268)

e Nuts (P/N R621266)



2.6 LRC Mounting Assemblies

LRC mounting assemblies are used to attach LRC sections to many different structural members. All LRC mounting assemblies establish a minimum standoff of at least 7 in (278 mm) between the ladder rungs and the structure to provide foot room. All mounting assemblies are attached to the outside of the LRC via adjustor brackets. The mounting interface with the LRC is always a standard bolt connection. No matter which mount is used, the bottom of the ladder should be high enough above the next lower surface so that there is room to install the fall arrester onto the LRC rail. All LRC mounts are required at intervals no more than 7 ft, 4 in (2235 mm) along the entire length of the LRC run.

A variety of LRC mounting assemblies are available. The choice of mounting assembly is determined by the size and configuration of the structure to which the mount will be installed. Some of these mounts come in two configurations: one mount for the base of the ladder and one mount for the rest of the ladder. The details below, as well as the Dyna-Glide catalog, provide the specification for the mount and if there is a base mount needed for the bottom of the ladder.

2.6.1 Twin Arm Plate and Adjustor Plate Standoff Mounting Assembly

This assembly (P/N 506392) fastens LRC sections to structures with horizontal or diagonal support members. Two mounting assemblies (one for each side of the ladder) are required for each LRC section to be mounted. This assembly may be used on round support members up to 2.5 in (64 mm) in diameter or angular supports up to 4 inch x 4 inch (102 x 102 mm) in width. See Figure 6.

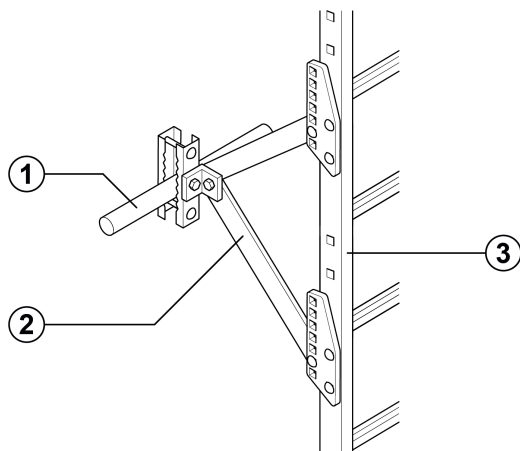


Figure 6 Twin Arm Plate and Adjustor Plate Mounting Assembly (P/N 506392 GALV.)

Installation View

- 1 Support member
- 2 Twin Arm/ Adjustor Mount (P/N 506392)
- 3 Ladder/ Rail Combination

2.6.2 Standoff Corner Mounting Assembly

This assembly (P/N 506398) attaches LRC sections to vertical corner members of a structure. One mounting assembly is required for each LRC section to be mounted. This assembly may be used on round supports up to 3.5 in (89 mm) in diameter or angled supports up to 4 inch x 4 inch (102 x 102 mm) in width. See Figure 7.

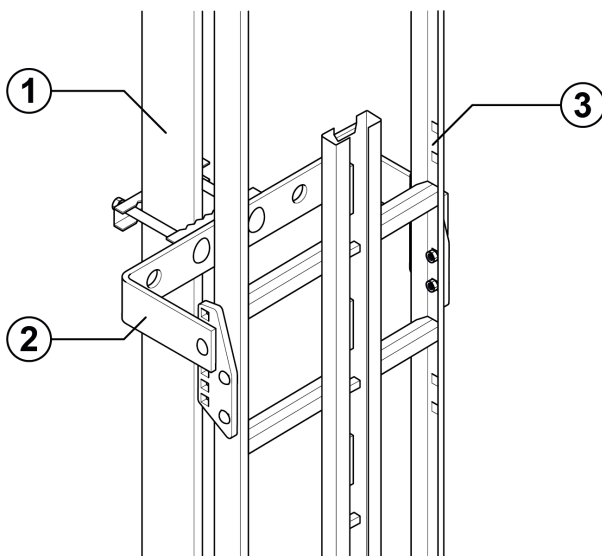


Figure 7 Standoff Corner Mounting Assembly (P/N 506398 GALV.)

Installation View

- 1 Support member
- 2 Standoff corner mount
- 3 Ladder/ Rail Combination

For installation using the standoff corner mounting assemblies, one standoff corner base mounting assembly (P/N 506400) must be attached to the base of the bottom section of the LRC. See Figure 8.

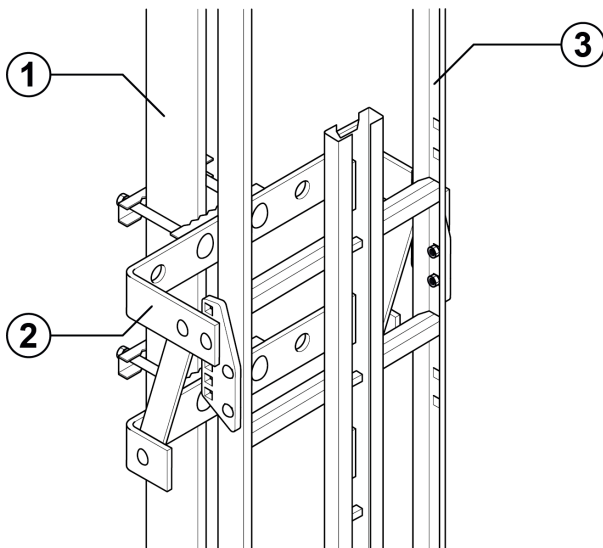


Figure 8 Standoff Corner Base Mounting Assembly (P/N 506400 GALV.)

Installation View

- 1 Support member
- 2 Standoff corner mount (P/N 506400)
- 3 Ladder/ Rail Combination

2 Description of the Dyna-Glide Climbing Protection Systems

2.6.3 Standoff Plate and Adjustor Plate Mounting Assembly

This assembly (P/N 506387) attaches LRC sections to a structure with horizontal support members. Two mounting assemblies (one for each side of the ladder) are required for each LRC section to be mounted. This assembly may be used on round supports up to 2.5 in (64 mm) in diameter or angled supports to 2.5 inch x 2.5 inch (64 x 64 mm) in width.

2.6.4 Standoff Mounting Assembly

This assembly (P/N 506388) anchors LRC sections to structures which have adjacent vertical support members spaced for 8-1/2 inch to 19-1/2 inch (216 mm to 495 mm) apart. One mounting assembly is required for each LRC section to be mounted. This assembly may be used on round supports up to 3 in (76 mm) in diameter or angled supports up to 3 inch x 3 inch (76 mm x 76 mm) in width.

2.6.5 Standoff Flat Mounting Assembly

This assembly (P/N 10011502) anchors LRC sections to a structure with a flat surface, such as a wall. One mounting assembly is required per LRC section. Due to the number of types of structures this bracket can be used on, surface mounting hardware is not included.

For installation using the standoff flat mounting assemblies, one standoff base mounting assembly (P/N 10011503) must be attached to the base of the bottom section of the LRC.

2.7 Fall Arresters

The fall arrester is a device that engages and travels in the channel of all rail sections. It will allow , restricted travel along the rail and will arrest a fall within inches by interference of it's cam with one of the notches in the rail section.

2.7.1 Dyna-Glide Fall Arrester (P/N 506277)

The Dyna-Glide fall arrester can be used on rail, which is installed either vertically or horizontally. It permits ascent without resistance and descent by leaning slightly backward. The Dyna-Glide fall arrester consists of an aluminum body with a forged steel cam and ring in the vertical plane. See Figure 9. Connection to the body support is accomplished by means of a locking carabiner.

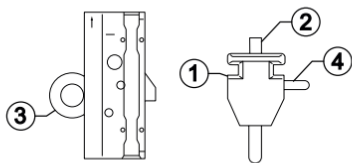


Figure 9 Dyna-Glide Fall Arrester (P/N 506277)

Arrow must point up

3 Connection ring

Top view

1 Dyna-Glide Aluminum Body

2 Steel cam

4 Security pin

2.7.2 Fall Arrester (P/N 10183914)

An alternative fall arrester (P/N 10183914) may be purchased and used with the Dyna-Glide notched rail in order to meet additional standards and requirements. See Section 7 [Codes, Standards, and Regulations](#) for details.

Specific to the use of this fall arrester, please disregard Section 2.7.1 [Dyna-Glide Fall Arrester \(P/N 506277\)](#) and Section 6.2.4 [Inspection of a Fall Arrester](#) of this Dyna-Glide Climbing Protection Systems manual (MSA P/N R621501) as they do not pertain to this specific fall arrester. Refer to the included supplemental fall arrester device manual for all pre-use, inspection, use, maintenance, and warranty information for this portion of the system. Please read and adhere to said instruction prior to use.

2.8 End Stop Assemblies

End stops prevent the Dyna-Glide fall arrester from accidentally slipping out of the top or bottom end of a string of rail sections. The end stops are available in either gated or ungated models. The gated models have a gate that can pivot,

which permits the climber to remove the fall arrester from the rail in a controlled way. See Figure 10 to 14. The gated models also prevent the climber from inserting the fall arrester in the wrong direction (upside down).

The ungated model of end stop is rigidly mounted to the rail end and completely prevents the fall arrester from being taken off the rail system. Obviously, therefore, when the ungated end stop is used at one end of the rail system, a gated end stop must be used at the other end in order to permit the insertion and removal of the fall arrester. Alternatively, if an ungated end stop is used on both ends, the fall arrester must be permanently left on the rail system. This is not recommended unless the system is located in a place, which is secured from the weather and from unauthorized users.

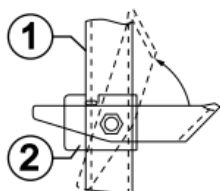


Figure 10 End Stop Assembly (Stainless) - Top End Stop (Gated) (P/N 506274)

1 Rail section
2 End stop assembly

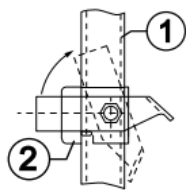


Figure 11 End Stop Assembly (Stainless) - Bottom End Stop (Gated) (P/N 506275)

1 Rail section
2 End stop assembly

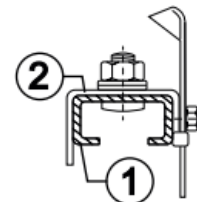


Figure 12 End Stop Assembly (Stainless) - Top End Stop (Gated) (P/N 506274)

1 Rail section
2 End stop assembly

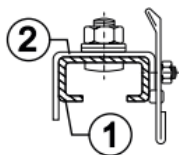


Figure 13 End Stop Assembly (Stainless) - Bottom End Stop (Gated) (P/N 506275)

1 Rail section
2 End stop assembly

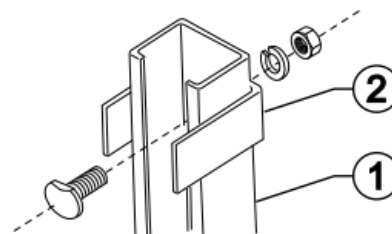


Figure 14 End Stop Assembly (Stainless) - Ungated End Stop (P/N 506312)

1 Rail section
2 End stop assembly

2.9 Body Supports

The Dyna-Glide Climbing Protection System is designed to be used with a Full Body Harness which attaches to the fall arrester at chest level.

This full body harness has the benefit of serving a wide range of climber needs in addition to attachment to the fall arrester. A variety of full body harnesses may be suitable for use in the Dyna-Glide system provided they have a compatible means of frontal connection to the fall arrester which is located between the waist and sternum of the climber.

2 Description of the Dyna-Glide Climbing Protection Systems

The MSA Dyna-Glide is designed to be used with other MSA-approved products. Use of the Dyna-Glide with products that are not approved in writing by MSA may adversely affect the functional capability between system components and reliability of the complete system.

2.10 Accessories

Beyond the basic components described above, several optional accessories are available. These accessories can enhance the climber's mobility, extend the range of continuous protection, and provide added convenience and comfort.

2.10.1 Folding Footrest

This is a pedestal, just large enough for both feet, which attaches to a rail section with a hinged bracket that enables the footrest to be pivoted up, out of the way of the climber, or down to stand on. See Figure 15. The travel of the fall arrester is not interfered with. The footrest is normally installed at fixed points where there may be a need to rest or perform work or inspections. It can be mounted at any point on a rail section except the very ends where a rail connector assembly is installed. It is made from hot galvanized steel and is attached to the rail using two bolts, lock washers and nuts.

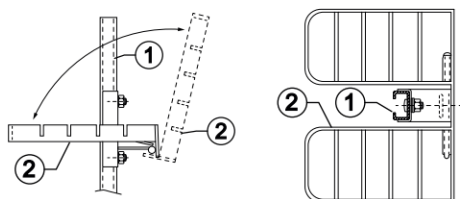


Figure 15 Folding Footrest Assembly (P/N 506384 GALV.)

1 Rail section

2 Footrest assembly

2.10.2 Ice Scraper

In climates where the rail system may be covered with ice; an ice scraper is recommended to clear ice off the rail and enable the fall arrester to travel properly. The ice scraper is a lightweight glide with aluminum body, stainless steel ice chisel and stainless steel grip. See Figure 16. Unlike the fall arrester, it has no locking mechanism. It is manually pushed up the rail ahead of the fall arrester, cracking off ice on the rail surface. The following fall arrester can then travel on the rail.

WARNING!

The presence of ice prevents or severely limits the ability of the fall arrester to travel along the rail. In extreme cases where ice cannot be adequately removed with the ice scraper, do not use the system.

Failure to follow this warning can result in serious personal injury or death.

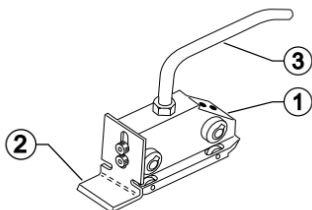


Figure 16 Ice Scraper (P/N 506405)

1 Ice scraper body

2 Ice chisel

3 Grip

2.10.3 Pivot Davit Assembly

The pivot davit assembly is a component that can be attached at the very top of a rail or LRC section and permit the user to pivot onto a ladder landing or work platform without disconnecting from the Dyna-Glide system. Once on the platform or ladder landing, the user can then disconnect from the fall arrester and remove the fall arrester from the davit. This component is particularly useful where successive ladders are offset from each other. The user must provide a separate means of fall protection prior to disconnection from the Dyna-Glide system if environmental work conditions warrant its use. See Figure 17.

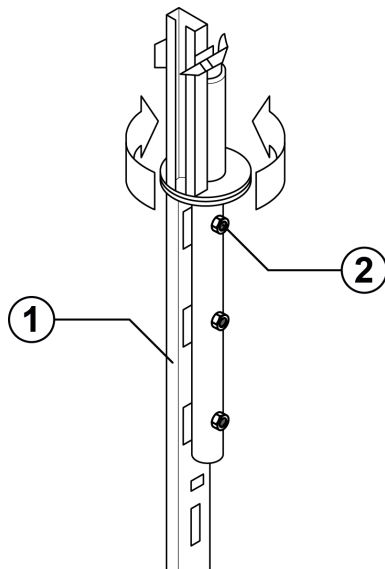


Figure 17 Pivot Davit Assembly (P/N 506357 GALV.)

1 Rail section

2 Pivot davit assembly

3 Planning the Installation

In the preceding section of this manual, we described the many components of the Dyna-Glide system. Before these can be assembled into a system, the requirements which the system must satisfy have to be determined. This starts by identifying the places which must be accessed, the climbing path, the footing and hand holds for the climber, and the structure to which the rail system will be attached. It is important to maintain an unobstructed climbing path or envelope for the climber and the system.

Special attention must be paid to the workplace geometry and required mobility of the user. The objective of the system design is to provide protection throughout the user's ascent and descent. Consideration must be given to environmental factors and the location and nature of hazards before a plan can be developed which eliminates or effectively controls the user's exposure to these hazards.

Avoid installation where objects falling from above can strike the climber or damage the rail system. It is recommended to remove hoops or cages from climbing ladders prior to installation as they may reduce the effectiveness of the Dyna-Glide. Do not use near energized equipment or where contact with high voltage power lines may occur. Always have a plan for rescue of personnel using the rail system.

The structure to which the rail system is installed must be capable of supporting the applied loads imposed on the system in the event of a fall. The magnitude of the loading is dependent on a number of factors such as the fall arrester being used, the intended number of users on the system at once, and total weight of the system components. For determination of the minimum support structure capacity, use the following:

4 Making the Installation

For any systems using fall arrester P/N 506277:

$$\text{Minimum Support Structure Capacity (lbf)} = 5000 \text{ lbf}$$

OR, if Total Applied Load (lbf) is > 5000 lbf,

$$\text{Minimum Support Structure Capacity (lbf)} = \text{Total Applied Load (lbf)}$$

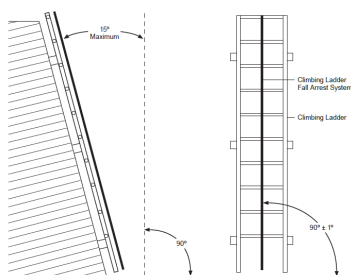
where

$$\begin{aligned} & \text{Total Applied Load (lbf)} \\ & = 3600 \text{ lbf} + 2((\text{Max \# of users} - 1) * (310 \text{ lbs}) + (\text{Total Weight of Dyna-Glide System Components})) \end{aligned}$$

For systems using ONLY fall arrester P/N 10183914:

$$\text{Minimum Support Structure Capacity (lbf)} = \text{Total Applied Load (lbf)}$$

$$\begin{aligned} & \text{Total Applied Load (lbf)} \\ & = 2700 \text{ lbf} + 2((\text{Max \# of users} - 1) * (310 \text{ lbs}) + (\text{Total Weight of Dyna-Glide System Components})) \end{aligned}$$



NOTE: The Dyna-Glide Climbing Protection System can be used on installations that are vertical (90 +/- 1 degrees) when viewed from the front elevation and within 15 degrees of vertical when view from the side elevation and that do not slope towards the climber.

4 Making the Installation

The following installation instructions outline the procedure and planning for the assembly of a Dyna-Glide system with a notched rail.

NOTE: For a Dyna-Glide system including a ladder rail combination (LRC), the same procedures for fastener torque, rail alignment, etc. apply. A competent person must design and install the Dyna-Glide LRC Climbing system using the specifications in Section 2 [Description of the Dyna-Glide Climbing Protection Systems](#), and following the instructions in this section.

4.1 Equipment Required

WARNING!

When installing at height take appropriate precautions to prevent the equipment from being dropped and becoming a dropped object hazard to those working below.

Failure to follow this warning can result in serious personal injury or death.

The only equipment, which is normally necessary to make an installation of a rail system to a fixed ladder is:

- Wrenches, eight inches long, open and box ends of 3/4 in.
- A bolt bag and rope for conveying the clamps, brackets, bolts, nuts and washers from the ground to the installer.
- A pulley and rope for raising rail sections and the bolt bag to the installer.
- A clamp to temporarily bolt a rail section in place until attachment to the rail connector is made.
- A full body harness.
- A work positioning lanyard.
- A suitable temporary fall arrester / lifeline with anchorage means.

- A tool belt with separate bags for bolts, nuts and washers.
- A tape measure.
- Two-way radios (2) (optional)
- If required, a miter box for cutting steel rail.

4.2 Personnel Required

Two persons are required to make an installation to a fixed vertical ladder. One person (the “climbing installer”) climbs and installs the rail sections one at a time. The second person is on the ground (the “ground person”) and deploys materials to the climber.

The climbing installer and the ground person should both be trained and experienced climbers versed in safety at heights - including rescue procedures. Unless there are other personnel at ground level who are trained and equipped for rescue, the ground person must be prepared to immediately effect a rescue operation. This includes wearing the proper equipment at all times and having means of calling others for emergency assistance. If the climbing installer and ground person switch roles to relieve each other, then both must be equipped, trained and fit to assume the duties and responsibilities of both roles.

4.3 Installers' Personal Safety Equipment

The first thing the installers must do is don and put in place their personal protective equipment. This consists primarily of the climber's personal fall arrest system but also includes hard hat, gloves, protective eye wear, safety shoes and other special equipment called for in the circumstances. When anchoring the temporary personal fall arrest system, the climbing installer should also anchor the pulley and hand-line for raising the rails and installation hardware.

⚠ WARNING!

The Dyna-Glide system must not be used as the installer's personal fall arrest system during installation. A separate personal fall arrest system is required as shown in Figure 18.

Failure to follow this warning can result in serious personal injury or death.

Carefully follow the manufacturer's instructions for anchoring and use of the personal fall arrest system and materials pulley/ hand-line. The pulley/ hand-line should be rigged so as to permit lifting components to the climbing installer so they are easily within his reach and can be stabilized by the ground person until mounted to the structure. See Figure 18.

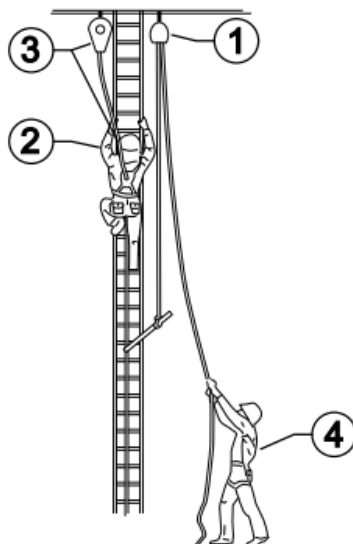


Figure 18 Use of Personal Arrest System

- 1 Pulley/ Handline
- 2 Climbing installer
- 3 Personal fall arrest system
- 4 Ground person

4.4 Preparation of Materials at the Installation Site

Locate all rail sections and installation hardware in a dry place outside the zone of any possible trajectory of tools or materials, which could fall from overhead during the installation. If this is not possible, install protective netting of proper strength and mesh above where the ground worker may be while assisting the climbing installer.

4 Making the Installation

NOTE: In some installations, such as confined spaces underground, the materials must be moved downward. If materials are outside or where they can be contaminated, protect them with tarp and keep them off the ground with pallets.

Before mounting, clean all parts of any residual foreign matter - especially at the connecting areas. Avoid contact with mortar, concrete or other materials, which may adhere to surfaces. Remove any such contaminants immediately. The running surfaces for the fall arrester are particularly important to check for foreign matter. Check all parts for deformations, improper surface finish, alterations and manufacturing defects which could affect performance or fit.

Segregate all parts and orient rail sections to facilitate connection at the end which is to be uppermost (notch opening “up”) when being moved for mounting.

WARNING!

Always check to be sure the rail notches are oriented upwards as shown in Figure 1. Incorrect orientation of the notches will prevent the system from arresting a fall.

Failure to follow this warning can result in serious personal injury or death.

Place installation hardware into a bolt bag and/or climber - borne pouches to ease removal for installation aloft. Consult the installation plan and lay out rails in the sequence they will be installed. Two-way radio contact is very helpful on long runs of rail to coordinate when things such as special sections are needed next in the installation sequence. Radio contact is also important to keep the two installers aware of their respective needs or problems and to provide means of communicating safety hazards or emergencies.

To assist the climbing installer, it is sometimes preferred to pre-assemble some parts on the ground. For example, the rail connector assembly can be attached (not tightly) to the bottom of a rail section before it is moved to the mounting point. (Care must be taken to assure the parts do not come loose and fall during movement.) The climbing installer is thus saved some time and motion in making the first coupling of that rail section. It is usually not advisable to pre-assemble parts of mounting assemblies on the ground as their precise location must be decided by the climbing installer.

As an extra precaution, the ground person may install a piece of heavy wire at the top of each rail section before moving it to the mounting place with the handline. The wire goes through the top slot in the rail, then around one side of the rail, and is secured by twisting the wire ends together. The wire must not be removed until the next rail section is properly connected. This helps to remind the climbing installer which end is “up”. It also prevents the Dyna-Glide fall arrester from slipping out of the top rail and falling to the ground.

NOTE: During rail installation it is suggested that a fall arrester be mounted on the rail by the climbing installer and moved upward with each rail section installation to check for misfit rail abutments and unsatisfactory fall arrester-to-rail interfacing which may require remedy before the installation is complete.

WARNING!

The climber must never connect himself to this fall arrester until the entire system installation is completed and inspected.

Failure to follow this warning can result in serious personal injury or death.

4.5 Assembly Sequence

Assembly of the Dyna-Glide system must start at the bottom of the run and be built upward toward the top. The first rail section installed should be the one that contains the bottom end stop. Be certain the notches on the rail point upward (see Figure 1, Item 3) and that the bottom end stop is installed in its proper orientation. See Figure 11 and Section [4.8 End Stop Installation](#). Positioning the bottom end stop close to waist level will ease attachment of the Dyna-Glide fall arrester when preparing to climb.

If the first rail section is located near enough to the ground, no climbing or use of the pulley/ handline will be necessary to mount it. However, when mounting the first rail section in an elevated location the worker must be positioned correctly and securely attached to a fixed anchorage. Install the rail section according to the procedure in Section [4.7 Coupling Rails and Mounting to Ladder Rails](#). It may be necessary to cut a rail section to shorter than its 88-3/16 in (2240 mm) length. When rail sections must be shortened, the proper location of the cut must be determined. The Dyna-Glide rail sections are made with tabs and slots located on 5-1/2 in centers. Any cut on a rail section is best made in 5-1/2 in increments through the top

of the notch closest to the desired length. (See Figure 1, Item 3) This provides the proper distance of the slot from the end of the rail, which allows a standard connector plate (Figure 2, Item 2) to fit.

Whenever galvanized rail sections are cut, it is necessary to cover the cut end with a protective coating such as a 90% zinc galvanizing paint. Cuts should be made with a miter box to assure squareness of ends. The lead-in edges on the short legs of the C shape should be chamfered 1/16 in with a file to allow easy passage of the Dyna-Glide fall arrester through the joint.

For proper installation the Dyna-Glide rung mounting assemblies should be located symmetrically, 11.12 in to 18 in (282 mm to 457 mm) from each end of a rail section. The maximum permissible distance between rung mounting assemblies is 66.14 in (1680 mm). Specifications on the location and spacing of applicable LRC mounts can be found in the Dyna-Glide catalog and/or Section [2.6 LRC Mounting Assemblies](#) in this manual. On rail sections that must be shortened, the minimum permissible cut length is 44.09 in (1120 mm). This allows sufficient length to enable the shortened rail section to be supported by a minimum of two rung mounting assemblies while holding the mounting assemblies the correct distance from each end.

Once the first rail is mounted, the climbing installer connects to his temporary independent fall arrest system (not the Dyna-Glide system). He climbs to the upper end of the next installed rail and connects his work positioning lanyard to the ladder and/or structural member. He should not connect to the just-installed rail. The ground person connects the handline to the next rail section and raises it to the place where the climbing installer can make the attachment of the rail connector assembly between the two rail sections. See Section [4.7 Coupling Rails and Mounting to Ladder Rails](#). The ground person steadies the suspended rail with the handline while the connection is made. Once done, the climber can disconnect the handline and send the handline end back to the ground person. The climber then proceeds to attach the mounting assemblies to the rail and ladder in the manner described in Section [4.7 Coupling Rails and Mounting to Ladder Rails](#), making sure the rail alignment and abutment is correct before tightening the nuts.

4.6 Torque Range for Tightening Nuts

The following torque range must be adhered to in order to secure the various fasteners:

- Rung Mounting Assembly 15-20 lb.-ft. (21-27.5 N-m)
- End Stops 20-25 lb.-ft. (27.5-34 N-m)
- Rail Connector Assembly 20-25 lb.-ft. (27.5-34 N-m)
- Side Rail Connector Assembly 20-25 lb.-ft. (27.5-34 N-m)
- LRC Mounting Assembly Connections involving Alligator Clamp 15-20 lb.-ft. (21-27.5 N-m)
- LRC Mounting Assembly Connections NOT involving Alligator Clamp 20-25 lb.-ft. (27.5-34 N-m)
- Accessories 20-25 lb.-ft. (27.5-34 N-m)

4.7 Coupling Rails and Mounting to Ladder Rails

The first step for installing a rail section is to stabilize the rail and install the rail connector assembly shown in [Figure 2](#). Do not yet tighten the nuts. Next, install the rail mounting assemblies from the lowest to highest end of the rail section. Do not yet tighten the nuts. Most rail systems will have the rail sections attached to the ladder rungs by “alligator” rung clamps.

When attaching a rung (alligator) clamp, hold the rail against the front of ladder rungs and align the clamp on the back of the rung with teeth engaging the rung. See [Figure 3](#) Insert bolts through the rail slots and rung clamp holes. Secure with lock washers and nuts. Before tightening nuts, shift the rail into correct alignment with the adjacent rail. See Figures 19 and 20.

NOTE: Rung mounting assemblies must be spaced apart by no more than 66 inches (1680 mm) in order to securely stabilize the rail section.

The second rung clamp is secured in the same way. A final check is made to assure the butt joint between rails is tight and that the rail alignment is correct. See Figures 19 and 20. Then torque all nuts in accordance with torque limits in Section [4.6 Torque Range for Tightening Nuts](#).

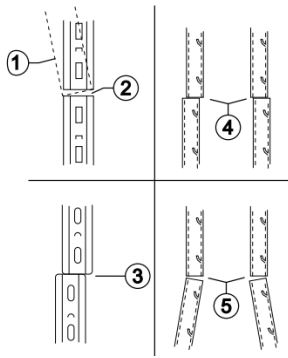


Figure 19 Improper Alignment and Abutment of Adjacent Rail Sections

Front view

Side view

1 Angulation

4 Offset

2 Gap

5 Gap due to Angulation

3 Shift

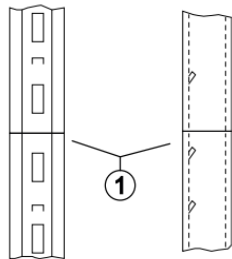


Figure 20 Proper Alignment and Abutment of Adjacent Rail Sections

Front view

Side view

1 No Gap, Shift, Offset or Angulation

4.8 End Stop Installation

End stops are installed at the very bottom of the first (lowest) rail section and the very top of the last (highest) rail section. The bottom end stop is installed at the time the first rail section is installed.

⚠ WARNING!

The bottom end stop is not intended to be exposed to fall arrest forces and must be installed within 4 feet of the ground or platform.

Failure to follow this warning can result in serious personal injury or death.

The end stops are marked “Bottom” and “Top.” Be sure they are used in the correct places. See Figures 10 to 14. Use the bolt, lock washer, flat washer and nut provided in order to secure the end stops in the manner shown. The lock washer is placed nearest the nut. When finished, the end stop lever must be at the right when facing the rail. Check to be sure the end stop functions correctly when the fall arrester comes against it. For gated end stops, rotating the end stop gate should permit the fall arrester to be removed from the rail.

4.9 Folding Footrest Installation

The footrest is attached to the back of the rail by use of two bolts and associated nuts and lock washers. It is mounted between ladder rungs. There is a square slot and a rectangular slot in the mounting bracket of the footrest. The square slot is placed at the lower end. Adjust the elevation of the footrest until there is clearance between the pedestal and the rung above when the pedestal is pivoted upward. Then fix the footrest in place with the bolts, lockwashers and nuts. Torque the nuts per Section 4.6 [Torque Range for Tightening Nuts](#). Make a final check to be sure the pedestal properly folds upward and has sufficient clearances. See Figure 15.

4.10 Pivot Davit Installation

The pivot davit is attached to the back of the topmost rail in a Dyna-Glide System by use of two bolts and associated nuts and lock washers. For installation on a rail section, the rail must be mounted using the pair of slots immediately below the bottom of the pivot davit. For installation on a LRC section, the top rung must be cut-out to make a clear path for the pivot davit to mount to the rail. No additional bracing is necessary when removing the top rung. The cut ends must be touched up with cold-galv coating. The pivot davit is fixed in place with the provided bolts, lock washers and nuts. Torque the nuts per Section 4.6 [Torque Range for Tightening Nuts](#). Make a final check to be sure the pivot davit properly rotates and has sufficient clearances. See Figure 17.

4.11 Reinforcement Assembly Installation

For systems using fall arrester PN 10183914 and rail PN 506270, an additional reinforcement assembly may need to be installed to the last (highest) rail section for ANSI Z359.16 compliance if either of the following conditions are also met:

- A pivot davit assembly, PN 506357 or 506414, is used
- The rail extends past the top of the ladder (maximum of 18 in)

The installation for the top rail reinforcement can be found in the supplement (PN 10179346) included with fall arrester PN 10183914.

4.12 Final Inspection of Rail Assembly

After finishing assembly of the rail in accordance with the above, make a final check as follows. Take a bearing on the vertical alignment of all rail sections. If the alignment is not straight, adjustment must be made. All abutments of rail sections must be tight. See Figure 19 and 20. If there is misalignment or gaps between rail sections the fall arrester will not run smoothly and excessive wear of the fall arrester will result. If one rail section is moved downward to close a gap, all rail sections above it must also be moved accordingly. All bolts/ nuts must be checked for tightness to the torque ranges in Section 4.6 [Torque Range for Tightening Nuts](#). Be sure the lock washers are in place. Pass the fall arrester over the entire rail string to be sure it travels smoothly. In particular, check to be sure it passes the joints of rail sections without hanging up. Be sure all rail sections have the notch opening up. Otherwise the fall arrester will not stop a fall. At each rail section, pull downwards suddenly on the fall arrester to ensure that it locks on a notch on the rail.

5 Use of Dyna-Glide System

WARNING!

- Failure to insert the fall arrester per the following instructions will prevent the fall arrester from arresting a fall and can result in serious injury or death.
- DO NOT extend, shorten, or add/ remove components to the provided connection between the fall arrester and full body harness.

Failure to follow these warnings can result in serious personal injury or death.

1. Put on body harness. All instructions included with the body harness must be understood and followed prior to use. Keep the harness snug to prevent slack to ensure that the linkage between the climber and rail is as short as possible.
2. Insert fall arrester into rail and pass-through bottom gate. Be sure that the arrow on the fall arrester points up and the security pin is to the right.
3. Complete pre-use inspections per Section 6.1 [Inspection Prior to Use](#), and conduct the following functional check on fall arrester:
 - Pull horizontally and slowly move up and down, the runner should move freely on the rail.
 - Pull downwards suddenly, the runner must lock on the notches of the rail.

NOTE: Do not use the system if it does not pass the pre-use inspection and fall arrester functional check.

4. Attach carabiner to the frontal D-ring on the body support. Follow instructions included with carabiner, verify that it is properly closed and locked. (For 506277, the carabiner will also need to be attached to the ring of the fall arrester).
5. Ascend (and descend) without any resistance. To descend, the climber must lean horizontally away from the rail to release the cam on the fall arrester so that it will pass the notches in the rail.
 - If the climber intends to work position during the climb, the climber should carry a work positioning lanyard of proper length with them. Do not use the Dyna-Glide for work positioning.
6. When attempting to disconnect from the system, lift the end stop gate and remove the fall arrester from the rail. The fall arrester should not be left in the weather or for someone else to use without proper instruction.

WARNING!

The fall arrester shall only be installed and removed from the rail when the user is in a position where there is no risk of a fall occurring. If a user is attempting to install or remove the fall arrester at height, they should always first anchor and connect their body harness to a secondary fall arrest system.

Failure to follow this warning can result in serious personal injury or death.

6 Inspection and Maintenance

The following inspection and maintenance instructions outline the procedure for a Dyna-Glide system with a notched rail.

NOTE: For a Dyna-Glide system including a ladder rail combination (LRC), the same procedures for system inspection apply. A competent person should inspect the Dyna-Glide LRC Climbing system using the specifications found in [Section 2 Description of the Dyna-Glide Climbing Protection Systems](#) and following the instructions in this section.

6.1 Inspection Prior to Use

Before each use, inspect the:

- Fall arrester
 - Pull horizontally and slowly move up and down, the runner should move freely on the rail.
 - Pull downwards suddenly, the runner must lock on the notches of the rail.
- Carabiner
- Body support
- End stops

Look for excessive wear, damage, alteration, missing parts, corrosion and foreign matter that may impair proper function. Inspect the carabiner and body support per the manufacturer's instructions. Immediately remove from service any components that do not pass inspection.

During ascent and descent, check the rails, rail connectors, and mounting assemblies to be sure they are intact and tight. Look for excessive wear, damage, alteration, missing parts, corrosion and foreign matter that may impair proper function. If there are signs of excessive wear, damage, alteration, missing parts, corrosion or foreign matter that may impair proper function, stop the ascent or descent and reverse direction to return to a safe location.

6.2 Periodic Examination

The rail sections and their connections must be formally inspected according to the instructions in the following sections by a competent person or qualified engineer at least every six months and immediately after arresting a fall or experiencing any impact loading. Inspections should be logged, records preserved and made available for examination upon request. Remove from service any components that do not pass inspection.

6.2.1 Rail Inspection Checklist

1. Check for smooth travel of the fall arrester. If it sticks, remove the rail section where this occurs or make the needed adjustments at joints. Check that the fall arrester locks on a notch on the rail when pulled downwards suddenly.
2. Check tightness and alignment of butt joints between rail sections. See Figure 19 and Figure 20. Make the necessary adjustment. This may necessitate adjusting several rail sections after the first joint is corrected. Be sure alignment of rails is preserved.

WARNING!

Use an auxiliary fall arrest system and work positioning lanyard when loosening rail sections for adjustment. Do not rely on the Dyna-Glide fall arrester during such operations.

Failure to follow this warning can result in serious personal injury or death.

3. Check for corrosion. If excessive corrosion is evident, replace the rail section.
4. Remove any foreign matter from the rail surface.
5. Check for build up of zinc on the bottom end of rail sections that will cause excessive gap in rail joints. Remove buildup with hand file as necessary but do not cut fully through protective zinc layer.

6.2.2 Inspection of Rail Connectors and Mounting Assemblies

- Check for tightness of all nuts/ bolts. Torque requirements are in [Section 4.6 Torque Range for Tightening Nuts](#). Replace bolts and nuts with fouled threads.

6 Inspection and Maintenance

- Check for presence and proper placement of lock washers.
- Check for damage to any plates, brackets or clamps and replace damaged units. Two mounting assemblies must be present for every rail section longer than 48 in.
- Check for corrosion and replace if corrosion exists

6.2.3 Inspection of End Stops

- Check to be sure the proper end stops are mounted at top and bottom of the system. They are marked “Top” and “Bottom”.
- Check to see that the end stop gate is situated at the right when facing the rail. Be sure it functions correctly, is not damaged, and that it automatically returns to the closed position after being intentionally opened.
- Check for proper tightness of bolts/ nuts and replace units with damaged threads.
- Remove any foreign matter that impairs operation.
- Be sure lock washers are present and properly placed.

6.2.4 Inspection of a Fall Arrester

- Check all parts for alteration, damage or missing parts. If any evidence of this exists, remove the fall arrestor from use and return it to MSA for service.
- Check the cam for complete freedom of movement under the spring force. It must snap back into position under spring force when the cam ring is pulled out and released. If the spring is weak or inoperative, remove the fall arrestor from use and return to MSA for service.
- Check the steel wheels for damage, wear and freedom of rotation. If foreign matter impedes rotation, clean the unit and recheck. If the wheels do not function or are damaged or excessively worn, remove the unit from use and return to MSA for service.
- Check the wheel dowel pins (8 in all). If any are missing, damaged, or not flush with the side of the body, remove the fall arrestor from use and return it for service.
- Check the security pin, which projects from the right side of the body. It must be straight and tight.
- Check the spring pin and cam stop pin (inside the body) and the cam pivot pin. If damaged, altered or missing, remove the fall arrestor from use and return to MSA for service.
- Check for corrosion and remove from use if evident.
- The fall arrestor requires no lubrication.
- Store the fall arrestor in a clean, dry place and not where it can come into contact with corrosives.

6.2.5 Inspection of a Folding Footrest

- Check all parts for excessive corrosion, damage, distortion or alteration and replace if any of these conditions are evident.
- Check for complete freedom of movement. Be sure it will remain folded up until the pedestal is intentionally lowered for use. Clean away any foreign matter that impedes freedom. If the pedestal does not clear the rungs when folding, adjust to function properly. Replace if rung spacing does not allow it to completely fold out of the way.
- Check the welded joints. Be sure the pedestal locks securely when down.
- Check all bolts/ nuts for proper tightness to torque settings in [Section 4.6 Torque Range for Tightening Nuts](#). Replace if threads are damaged or stripped. Be sure lock washers are present and properly placed. Check the hinge pin and be sure that it is properly retained with a cotter pin.

6.3 Cleaning Instructions

As part of general maintenance, cleaning of Dyna-Glide components may be required. Clean with water and a damp cloth. Other detergents and cleaning agents should not be used. Components should be allowed to air dry naturally. Do not use a heat source to dry.

6.4 Storage

Removable Dyna-Glide components (i.e. fall arresters) shall always be removed from the system when not in use and be stored away from light, excessive heat, high humidity, sharp edges, corrosives, or other foreseeable causes of damage. Wet equipment shall be dried naturally away from direct heat. The equipment shall be protected from unnecessary stress, pressure, or rough handling. During periods of transportation, components shall be transported in a toll box or bag and protected from potential damage.

7 Codes, Standards, and Regulations

It is the buyer's responsibility to check with the authorities to all applicable local, state, and federal codes and regulations pertaining to climbing protection systems and the structures to which they will be attached. Any variances required must be normally obtained by the buyer in advance of installation of a Dyna-Glide system.

When properly installed, used and maintained, Dyna-Glide systems and components using the following fall arrester and rail section combinations meet the requirements of the following standards and regulations:

Fall Arrester P/N	Rail/ LRC P/N	Standards and Regulations
10183914	506270	ANSI Z359.16- 2016
		ANSI A14.3- 2008
		USA Federal OSHA
506277	506270	ANSI A14.3- 2008
		USA Federal OSHA
10183914 or 506277	506390	USA Federal OSHA

*Pertinent Federal OSHA regulations are contained in 29 CFR 1910.23 - Ladders, and 29 CFR 1926.1053 - Ladders.

Similar (but not necessarily identical) regulations may exist in places outside the jurisdiction of Federal OSHA. This may include certain municipalities, states, public works, maritime, and military facilities. Check with the appropriate authorities. If you are uncertain as to the identity of prevailing authority and regulations, ask MSA for assistance.

8 Parts List for Assemblies

Assembly P/N	Assembly Component P/N	Quantity per each Assembly	Description
506329	R621496	1	Rail Connector Assembly Galv. Special Rail Connector Plate
	R621267	2	Bolt (1/2 - 13 unc. x 1-1/4)
	R621266	2	Nut, Galv., Hex (1/2 - 13 unc.)
	R621268	2	Lock Washer (1/2 nom.)
506273	R621271	1	Rung Mounting Assembly Galv. Rung Clamp
	R621269	2	Bolt (1/2 - 13 unc. x 2-1/2)
	R621266	2	Nut, Galv., Hex (1/2 - 13 unc.)
	R621268	2	Lock Washer (1/2 nor.)
506274	R621407	1	Top End Stop Assembly (Gated) - S.S. Top End Stop Housing
	R621267	1	Bolt (1/2 - 13 unc. x 1 1/4)
	R621266	1	Nut, Galv., Hex (1/2 - 13 unc.)

8 Parts List for Assemblies

Assembly P/N	Assembly Component P/N	Quantity per each Assembly	Description
	R621268	1	Lock Washer (1/2 nom.)
506275			Bottom End Stop Assembly (Gated) - S.S.
	R621409	1	Bottom End Stop Housing
	R621267	1	Bolt (1/2 - 13 unc. x 1-1/4)
	R621266	1	Nut, Galv., Hex (1/2 x 13 unc.)
	R621268	1	Lock Washer (1/2 nom.)
506312			End Stop Assembly (Ungated) - S.S.
	R621477	1	End Stop Housing
	R621500	1	Bolt - (Carriage) (5/16 - 18 x 2 3/4 S.S.)
	R621429	1	Nut, Hex 5/16 - 18 Nyloc S.S.)
	R621430	1	Flat Washer (5/16 nom. S.S.)
506384			Folding Footrest Assembly Galv.
	R621267	2	Bolt (1/2 - 13 unc. x 1-1/4)
	R621266	2	Nut, Galv., Hex (1/2 - 13 unc.)
	R621268	2	Lock Washer (1/2 nom.)
	R621414	1	Foot Rest LRC Weldt Galv.
	10009160	1	Support Footrest LRC Weldment Galv.
	R621803	1	Nut Hex Lock 0.38- 16 SST.
	R621870	1	Bolt Hex 0.38- 16x4. 00LG SST.
506391			Side Rail Connector Assembly
	R621627	1	Rail Connector Plate
	R621626	2	Bolt (1/2 - 13 UNC x 1)
	R621465	2	Flat Washer (1/2 nom.)
	R621268	2	Lock Washer (1/2 nom.)
	R621266	2	Nut, Galv., Hex (1/2 - 13 unc.)
506392			Twin Arm and Adjustor Plate Assembly
	R621625	2	Plate, Adjustor
	R621656	2	Arm, Twin
	R621736	1	Angle, Swivel
	R621657	1	Rung Clamp, 3-Hole
	R621271	1	Bolt (1/2 - 13 UNC x 1)
	R621626	6	Bolt (1/2 - 13 UNC x 1-1/14)
	R621267	2	Bolt (1/2 - 13 UNC x 5)
	R621684	2	Lock Washer (1/2 nom.)
	R621268	10	Nut, Galv., Hex (1/2 - 13 unc.)
	R621266	10	
506398			Standoff Corner Mounting Assembly
	R621625	2	Plate, Adjustor
	R621417	1	Bracket, Standoff
	R621271	2	Rung Clamp
	R621626	4	Bolt (1/2 - 13 UNC x 1)

Assembly P/N	Assembly Component P/N	Quantity per each Assembly	Description
	R621267	2	Bolt (1/2 - 13 UNC x 1/4)
	R621416	2	Bolt (1/2 - 13 UNC x 6)
	R621268	8	Lock Washer (1/2 nom.)
	R621266	8	Nut, Galv., Hex (1/2 - 13 unc.)
506400			Standoff Corner Mounting Base Assembly
	R621625	2	Plate, Adjustor
	R621417	1	Bracket, Standoff
	R621418	1	Bracket, Support
	R621656	2	Arm, Twin
	R621271	4	Rung Clamp
	R621626	4	Bolt (1/2 - 13 UNC x 1)
	R621267	6	Bolt (1/2 - 13 UNC x 1/4)
	R621416	4	Bolt (1/2 - 13 UNC x 6)
	R621268	14	Lock Washer (1/2 nom.)
	R621266	14	Nut, Galv., Hex (1/2 - 13 unc.)

9 Warranty

Express Warranty – MSA warrants that the product furnished under this order is free from mechanical defects or faulty workmanship for a period of one (1) year from first use or eighteen (18) months from date of shipment, whichever occurs first, provided it is maintained and used in accordance with MSA's instructions and/or recommendations. Replacement parts and repairs are warranted for ninety (90) days from the date of repair of the product or sale of the replacement part, whichever occurs first. MSA shall be released from all obligations under this warranty in the event repairs or modifications are made by persons other than its own authorized service personnel or if the warranty claim results from misuse of the product. No agent, employee or representative of MSA may bind MSA to any affirmation, representation or modification of the warranty concerning the goods sold under this contract. MSA makes no warranty concerning components or accessories not manufactured by MSA, but will pass on to the Purchaser all warranties of manufacturers of such components. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AND IS STRICTLY LIMITED TO THE TERMS HEREOF. MSA SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. For additional information please contact the Customer Service Department at 1-800-MSA-2222 (1-800-672-2222).