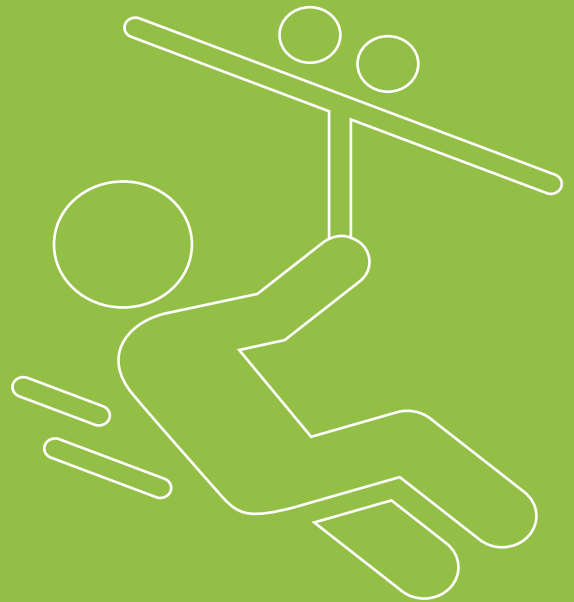


# ZIPBACK RETRACTION DEVICE



## Installation Manual

Model: ZB-01



### NOTE TO INSTALLERS

Always Read Instructions Before Use

The Installation manual contains information relating to the proper installation, configuration, and testing of the zipBACK Retraction Device. This document must be supplied to the owner after installation. Ensure that this manual is readily available to the responsible parties at all times.

Head Rush Technologies Manual - zipBACK Installation Manual  
P/N 12350-02

**zip**BACK

# SAFETY INFORMATION

## READ BEFORE INSTALLATION & OPERATION

### WARNING



## DEVICE PROVIDES NO BRAKING. FOR RIDER TROLLEY RETRACTION ONLY!

The Head Rush Technologies zipBACK Retraction Device is designed to automatically retrieve rider trolleys back to the start of a zip line. The zipBACK can be installed on a terminal structure of a zip line up to 40m where the rider trolleys remain on the zip wire. Oftentimes these zip lines are ridden without a harness and protected with fall attenuation such as foam, padding, airbags, water, etc. **This device has no braking capabilities and should never be used as part of a life safety system.** As such this device has no mandatory annual recertification and should be inspected daily by qualified persons per this manual to ensure proper function.

### Warranty

Manufacturers sole warranty. The zipBACK Retraction Device will be sold free from defects in materials and workmanship, excluding field replaceable wear parts, for a period of one (1) year from date of purchase. This warranty only applies to the original purchaser, and is contingent upon the Responsible Parties using and maintaining the device in accordance with the zipBACK instructions.

This warranty is expressly in lieu of other warranties, express or implied, and any implied warranty of merchantability or fitness for a particular purpose is hereby expressly excluded. The sole remedy for breach of said warranty or for any claim in negligence or strict liability in tort is the repair or replacement of any defective parts at the discretion of the manufacturer. Such parts claimed to be defective shall be returned to the Head Rush Technologies Service Center, transportation prepaid, for inspection by an authorized Head Rush service technician to determine to its satisfaction that said part(s) are defective.

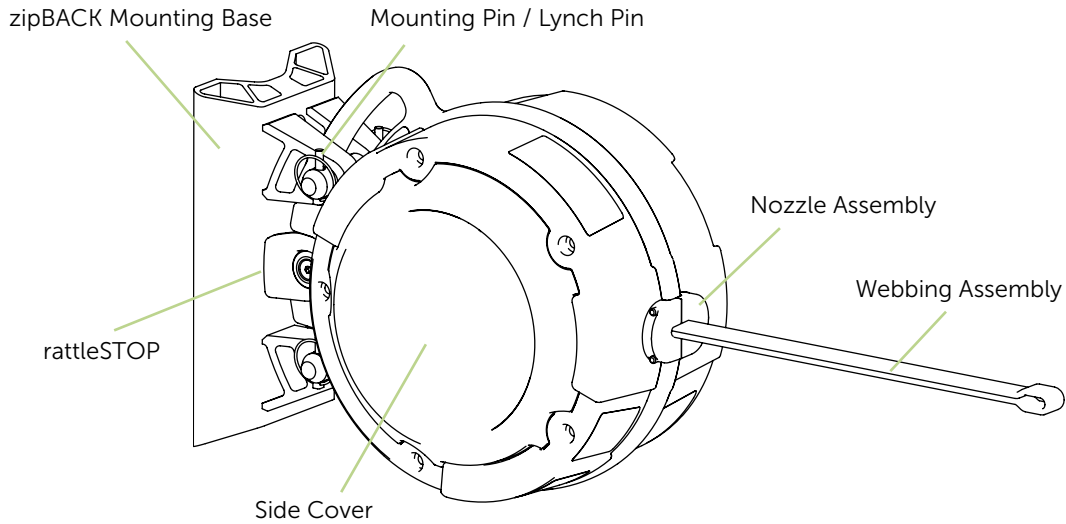
This warranty is null and void if other than genuine parts are used, if any modifications are carried out to the zipBACK Retraction Device or zipBACK components without the expressed written permission of the manufacturer, or if used outside of intended application.

No person, Agent or Distributor is authorized to give any warranty, other than the one herein expressed, on behalf of the Company or to assume for it any liability pertaining to such products. The company makes no warranties in respect to trade accessories or component parts which are not manufactured by the company, same being subject only to such warranties, if any, as may be made by their respective manufacturers.

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The following nomenclature and components are referenced throughout the manual.



### **WARNING**



The following items are critical and must be understood by all persons involved with the installation, operation, and service of a zip line utilizing a zipBACK. This includes, but is not limited to: all Responsible Parties, guides / operators, owners, service technicians, designers, installers, etc.

- All zip lines must be tested for proper function both with and without the zipBACK attached to the system
- zipBack must be monitored to prevent entanglement of webbing or redirection lines
- Ensure zipBACK retraction cannot create an unsafe condition due to moving webbing, ropes, or hardware
- zipBACK system must be inspected daily per this manual. If improper function or excessive wear is found, device must be put out of service until repairs are made
- Max webbing extension 20m. Max zip line length 40m with 2:1 reduction system

# REDIRECTION AND REDUCTION SYSTEMS

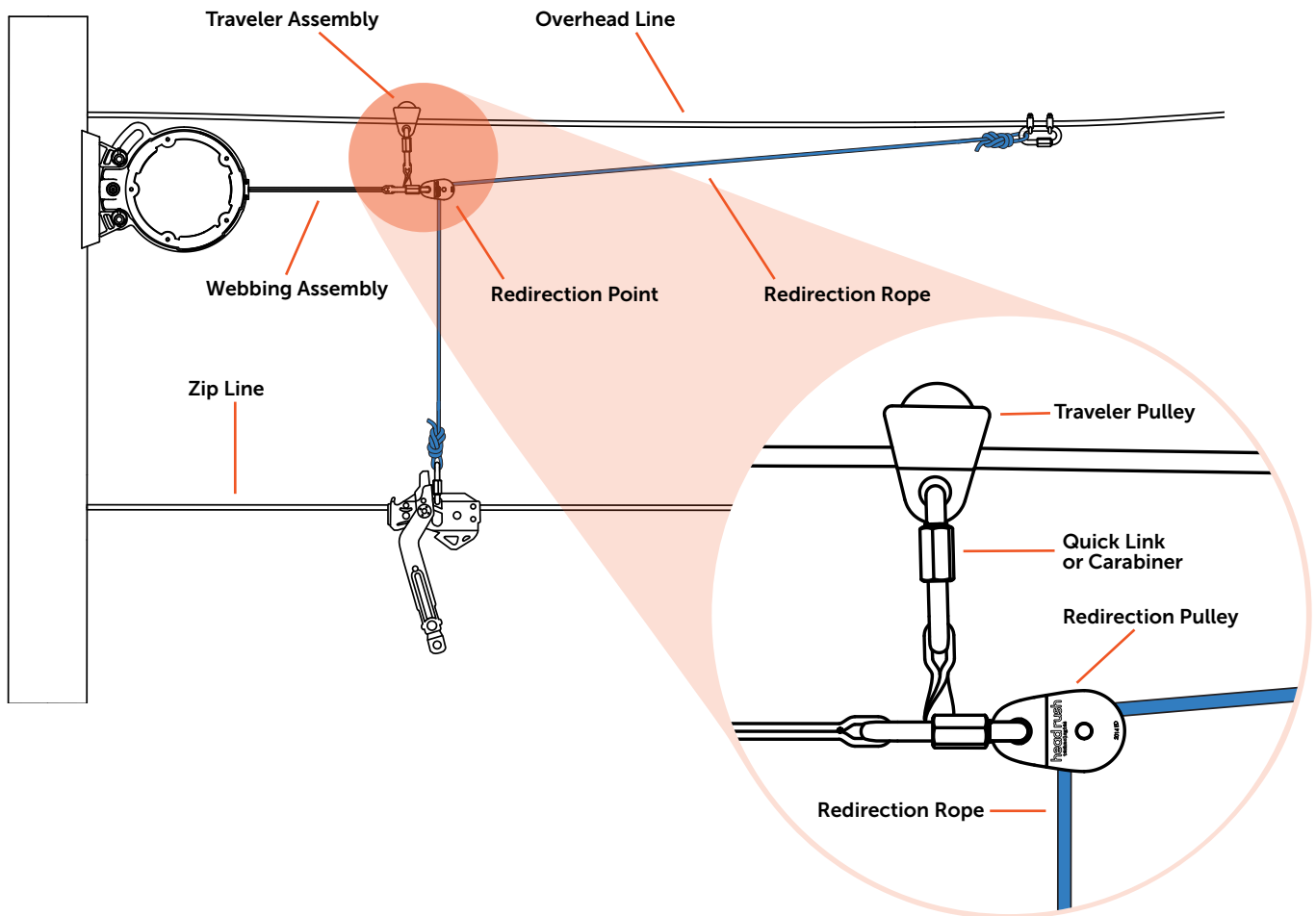
A reduction system is a redirection system that utilizes pulleys to reduce the webbing speed and extension relative to the rider speed. The following sections include diagrams and explanations to illustrate these systems.

## 2:1 Reduction Ratio

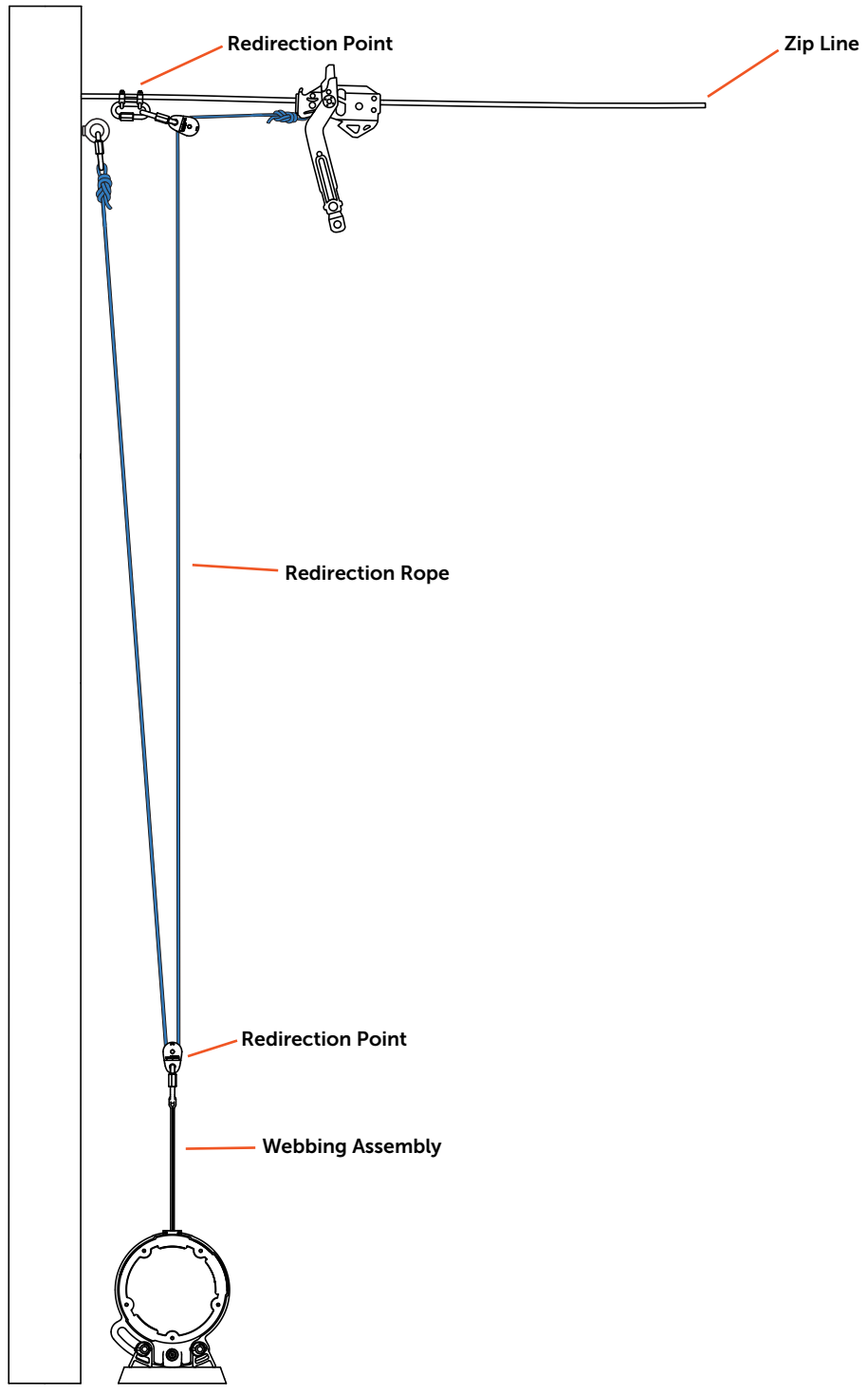
In a 2:1 Reduction Ratio system, the redirection rope connecting the rider trolley to the zipBACK webbing is routed through a pulley at the end of the webbing to produce a 2:1 ratio. For every 2m the rider trolley moves, the zipBACK webbing extends by 1m and at half the speed of the rider trolley.

This reduction system allows for less resistance while riding a zip line up to 40m, and more controlled retraction of the rider trolley.

The diagrams below illustrate components within a typical zipBACK retraction system. Depending on the installation, additional or fewer components may be required.



*2:1 Reduction Ratio in the Reset Position*



*Alternate 2:1 Reduction Ratio Configuration in the Reset Position*

## Redirection Rope

The redirection rope is an important component that connects the zipBACK to the rider trolley. Proper rope selection and frequent (at least daily) inspection is important for correct operation. All textile components are subject to wear, degradation, can become damaged suddenly, and will need to be replaced periodically. Correct selection and the integrity of the redirection rope is the most important component within a redirection system.



HEAD RUSH TECHNOLOGIES' GORILLA ROPE IS AN OPTIMIZED CONSTRUCTION FOR USE AS A REDIRECTION ROPE.

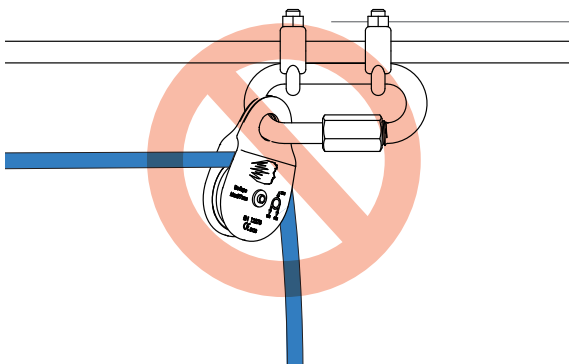
## Pulleys

Pulleys used within a redirection system can be used as the redirection pulley, reduction pulley, and/or as part of the traveler assembly. Proper pulley selection and frequent (at least daily) inspection is important for correct operation. Pulleys are subject to wear, loss of efficiency, corrosion and will need to be replaced periodically.

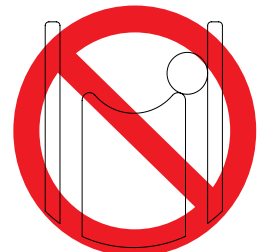
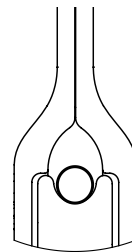
Use of an improper pulley may result in poor performance, accelerated rope wear, sudden rope damage, entanglement or binding of the redirection rope or pulley itself. Pulleys may be exposed to harsh environments, heavy wear, shock loads and high velocities and must be able to sustain high performance. Correct selection and the integrity of pulleys is critical to ensuring proper performance.



THE REDIRECTION ROPE MUST BE ROUTED CLEANLY AND IN LINE THROUGH THE PULLEY SYSTEM TO PREVENT ANY TANGLING, SNAGGING OR BINDING THAT WILL HINDER RELIABLE AUTOMATIC RESET. THE REDIRECTION PULLEYS MUST BE ALIGNED, REFER TO THE FIGURES BELOW.



*Redirection Pulley with Incorrect Alignment*



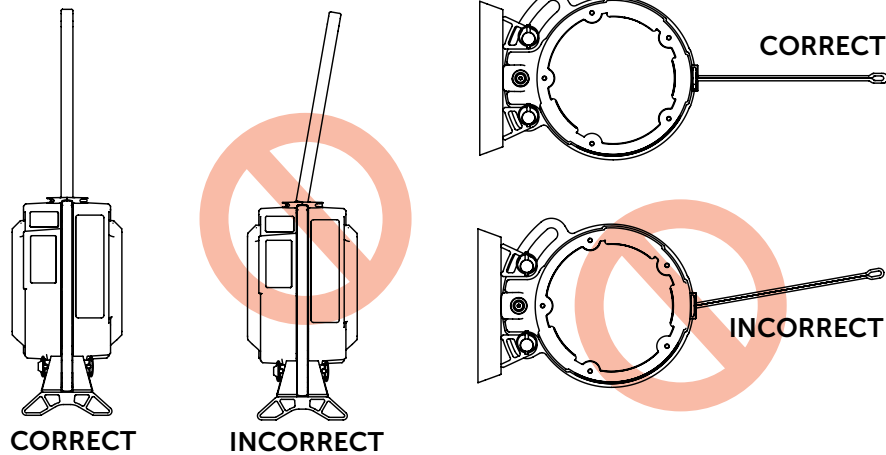
*Correct Pulley Size / Side Plate Gap - Incorrect Pulley Size / Excessive Side Plate Gap*

## Primary Anchor Point

The Primary Anchor Point provides support for the zipBACK Retraction Unit. Every zipBACK device is provided with a mounting base which can accommodate mounting on a flat or cylindrical anchor structure. The terminal structure is commonly used as the primary anchor point and as the anchor point for an overhead cable. The location and orientation of the primary anchor point shall be chosen to ensure the webbing is aligned with the redirection point and pulls straight out of the device. If using an overhead line, the primary anchor point must be positioned just below the line and as close as possible to it.

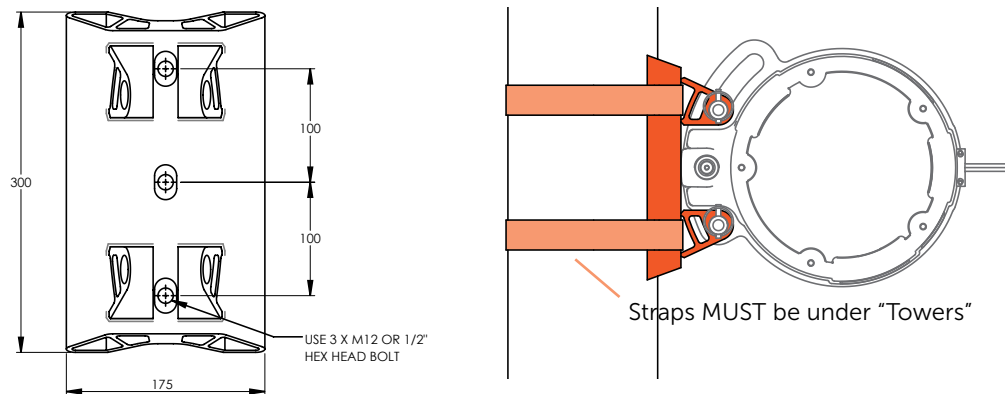


THE WEBBING MUST BE PROPERLY ALIGNED TO PREVENT ACCELERATED WEBBING WEAR.



*Correct and Incorrect Webbing Alignment*

## Mounting Base Installation



*Mounting Base can be bolted or strapped to terminal structure.*

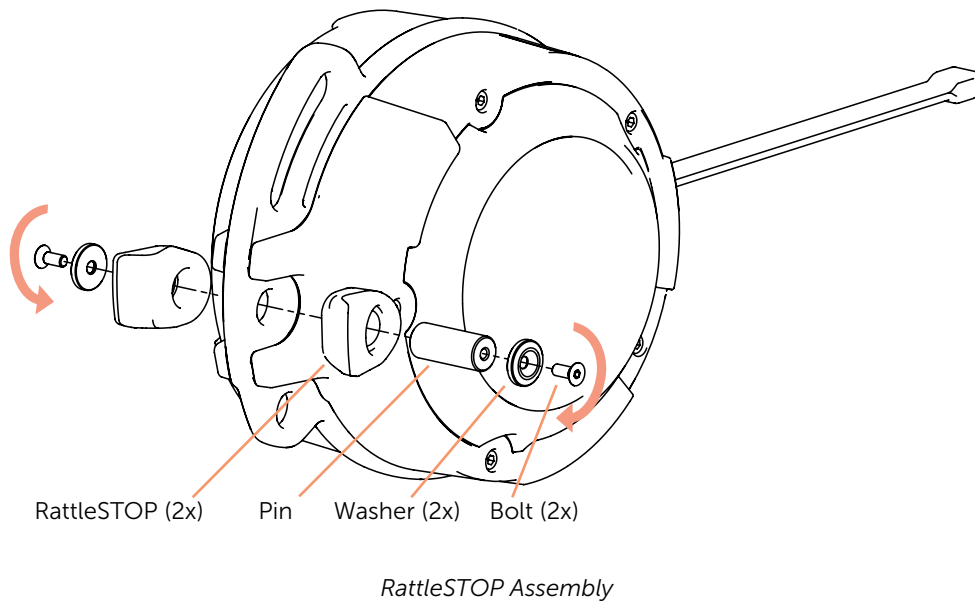


# INSTALLING THE RETRACTION SYSTEM COMPONENTS

The following steps outline the predominate actions and hardware required to install the remainder of the system.

## Install the RattleSTOP

The RattleSTOP assembly utilizes an elastomeric bushing to reduce vibration between the zipBACK device and mounting base. Install the assembly as shown in the below figure prior to installing the device onto the mounting base. Tighten the bolts until firmly seated.

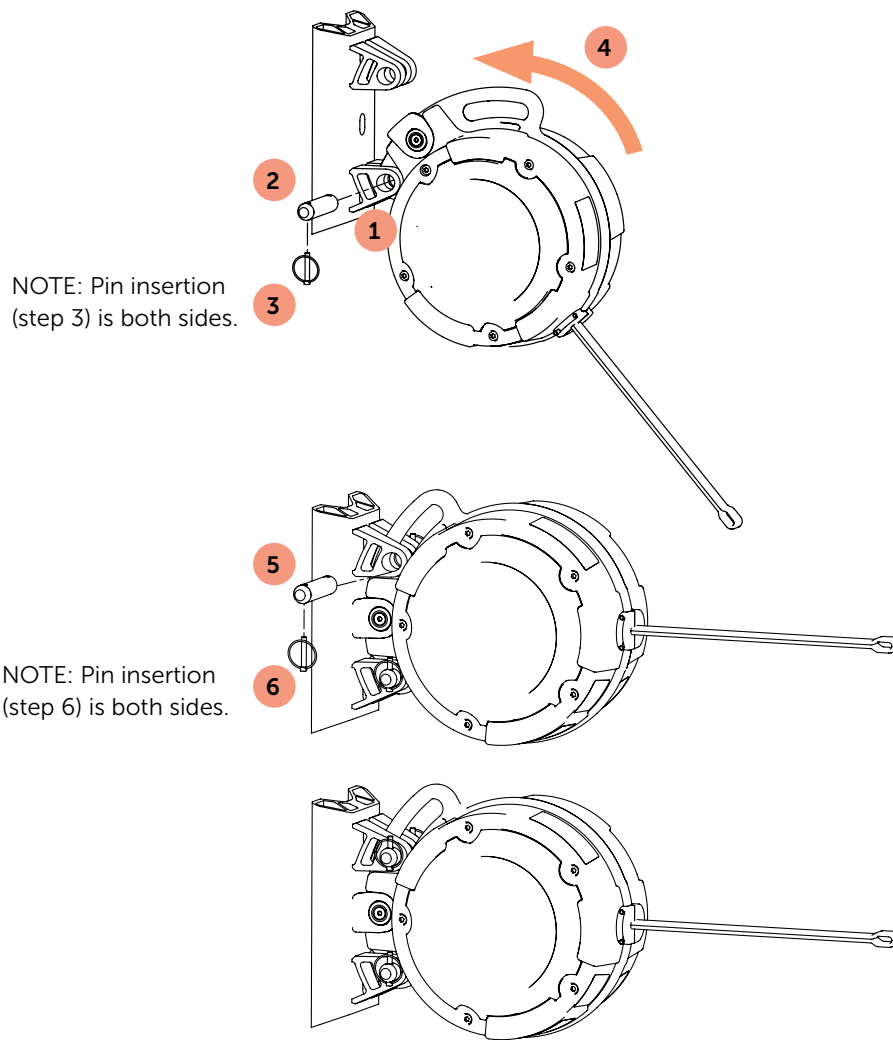


## Install zipBACK onto Mounting Base

The zipBACK can be installed onto the mounting base by following the below steps. Refer to Section: **zipBACK Base Mounting** for instructions on how to install the base onto the primary anchor point. A padlock may be used in place of the lynch pins to secure the device in place.

Installation Procedure:

1. Align bottom hole of central plate with bottom hole of mounting base.
2. Insert mounting pin through holes.
3. Insert lynch pins through end holes of mounting pin.
4. Pivot zipBACK device up to align handle with top mounting base hole.
5. Insert mounting pin through holes.
6. Insert lynch pins through end holes of base pin.



*zipBACK Installation onto Mounting Base*

## Webbing Replacement

Replacement of the webbing assembly may be carried out with the zipBACK in place or removed and secured to a workbench.

To replace the webbing assembly:

1. Disconnect the redirection system from the end of the zipBACK webbing
2. Remove the nozzle assembly
3. Extract the entire length of webbing including the drum lead
4. Use a suitable holding pin through the loop in the drum lead above the shackle, Figure 6. This will prevent the line from retracting back into the device.



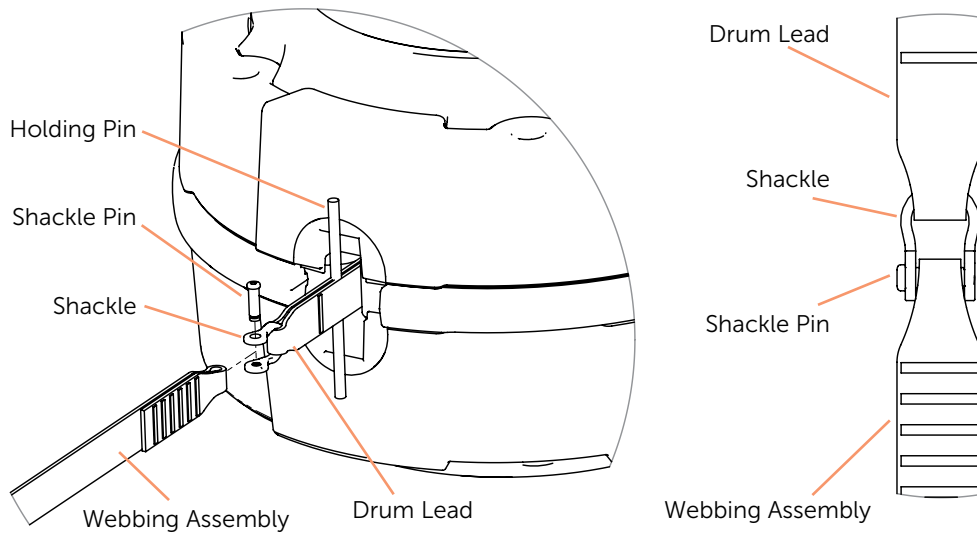
**IF THE DRUM LEAD RETRACTS BACK INTO THE DEVICE THE DEVICE WILL REQUIRE REPAIR BY AN AUTHORIZED SERVICE AGENT, DO NOT USE.**

5. Unscrew the shackle pin and remove webbing assembly. Discard the old shackle pin. Cut off ends of used webbing before discarding to ensure it is not accidentally re-used.



**ALWAYS USE A NEW SHACKLE PIN PROVIDED WITH THE WEBBING REPLACEMENT. NEW SHACKLE PINS COME WITH SINGLE USE ONLY THREAD LOCKING COMPOUND.**

6. Install the new webbing assembly and shackle pin ensuring the shackle loop is fitted to the drum lead and shackle pin to the end of the webbing. Ensure that the new webbing assembly is correct for the device model.
7. Tighten the shackle pin until fully seated
8. Remove the holding pin and allow the line to slowly retract without twisting until the drum lead and sewn webbing end are inside the device
9. Replace the nozzle assembly
10. Allow the webbing to slowly retract into the device without twisting while maintaining constant tension. Ensure the retraction force is smooth and adequate resistance is felt.
11. Once the line is fully retracted, pull the line out a short distance (~1m) and allow it to retract. Repeat two or three times to ensure the line is firmly wound onto the drum.
12. If necessary, reinstall the zipBACK and reconnect the redirection system.



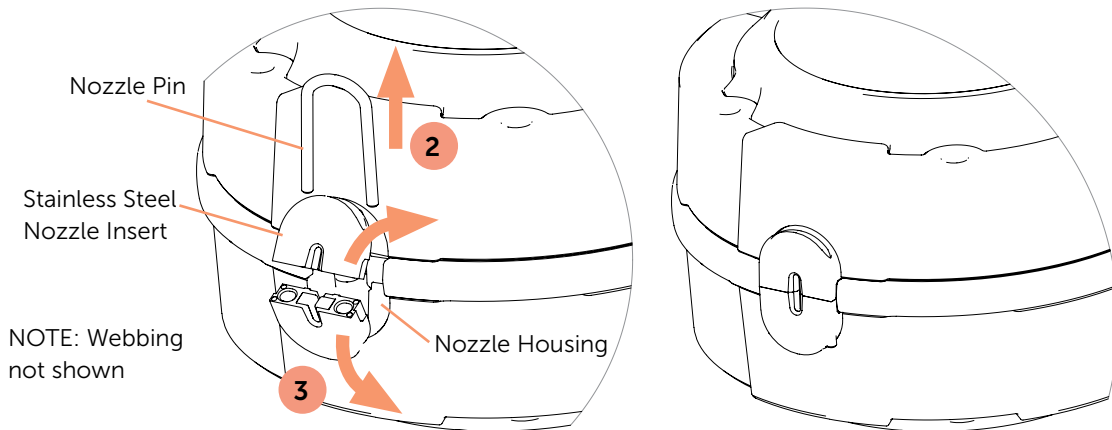
Webbing - Drum Lead Connection

## Nozzle Assembly Replacement

The nozzle assembly is located on the zipBACK Retraction Device casing and provides guidance for the webbing during extraction/retraction. The nozzle assembly is a wear component and will need to be inspected regularly; replacement is on a conditional basis. Service of the nozzle assembly may be carried out with the zipBACK in place or removed and secured to a workbench.

To remove the nozzle assembly:

1. Secure or hold the webbing to prevent it retracting into the device when the nozzle is removed.
2. Extract the U-shaped nozzle pin using a flat head screwdriver or comparable tool
3. Remove the two nozzle halves



Nozzle Assembly

To re-install the nozzle assembly, reverse the above steps.



**DO NOT OPERATE THE ZIPBACK WITHOUT THE NOZZLE ASSEMBLY PROPERLY INSTALLED.**

# TESTING THE RETRACTION SYSTEM

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Since the zipBACK Retraction Device is not designed to be part of a life safety system, it is imperative that the zip line functions as designed with and without the zipBACK installed. Proper testing should be carried out on the zip line both with and without the zipBACK installed as prescribed by the designer, manufacturer, installer, or other responsible parties. All testing must be documented as mandated by the Authority having jurisdiction.



## TESTING THE RETRACTION SYSTEM IN ACCORDANCE WITH THIS MANUAL IS REQUIRED

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### Testing the Retraction System

- zipBACK resistance does not impede rider movement down the line.
- A disconnected zipBACK will not result in an unsafe condition due to rider speed, positioning, etc.
- Retraction speed or force of rider trolley will not result in an unsafe condition for anyone in the area. This can be accomplished through controlled retraction, operational considerations, or both.
- Redirect systems or webbing cannot create an unsafe condition or entanglement hazard to anyone in the area.
- Testing should be completed across the spectrum of rider sizes and environmental conditions.



## FAST OR UNCONTROLLED TROLLEY RETRACTION CAN CAUSE DEVICE DAMAGE OR INJURY.

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### Inspect Daily

- Inspect entire length of webbing
- Inspect device nozzle for wear
- Inspect the redirect system to ensure proper function and condition of components. Replace worn components before use.
- Test for proper webbing retraction.



## IF IMPROPER FUNCTION OR EXCESSIVE WEAR IS FOUND DEVICE MUST BE PUT OUT OF SERVICE UNTIL REPAIRS ARE MADE.

## Troubleshooting

Refer to the below table for troubleshooting items. Contact Head Rush Technologies for additional information. When requesting additional assistance, please have any relevant information available: device serial number, performance information, photos, video, etc.

Installation Troubleshooting Chart	
Problem	Cause/Solution
Sudden and Severe Webbing Wear	Webbing not routed straight out of device.
	Webbing has abraded on structure, cables, etc.
Device Fails to Retract	Components or rope jammed/tangled
	Redirection ropes, webbing not running free and clear
	Broken retraction spring, requires service by authorized servicing agent
Retraction is Unreliable	Incompatible components - check sheave diameters, all components, Redirection rope
	Ropes are tangled, rubbing on itself during retraction
	Webbing not coming straight out of device
	Poor redirection rope routing
Excessive Redirection Rope Sag	Webbing not fully retracted or system not properly reset.
	Rope may need traveler assembly
	Rope may be too long or have stretch, remove slack from system
Excessive Tangling of Redirect System	Add secondary rider cable and trolley to prevent trolley from rotating around cable.
Trolley Retraction too Fast	Add bumper or spring to catch trolley near full retraction
	Add tension in redirect system

*Retraction Performance Troubleshooting*

# MANUFACTURER'S DETAILS

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## ADDRESS

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Boulder, CO 80301

## CONTACT DETAILS

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**zip** BACK



**DEVICE PROVIDES NO BRAKING.  
FOR RIDER TROLLEY RETRACTION ONLY!**

