

# D&D Flyer

## Zip Line (Cable Ride) Owners Manual



Designed for the kid in all of us!

Supplied By,  
LeanMachineSurplus of E-Bay 9-2005  
[www.asapziplines.com](http://www.asapziplines.com)

# D&D Flyer Zip Line - Contents



- 1) Zip Line Trolley
- 2) 100ft of DIA. 7/32" Galvanized Cable
- 3) (2) Cable Clamp Sets (each set includes 3-clamps and a thimble)

Trolley and handle are made of high strength aluminum alloy 6061-T6. The trolley is uniquely designed to prevent the cable from slipping off the pulleys. The trolley comes fully assembled.

The two cable pulleys are made of tough, wear resistant glass reinforced nylon with integral ball bearings.

Trolley return rope is included.

The kit is complete for mounting around two large trees.

The zip line is rated for 350 lbs (uniformly distributed across the handle).

Designed and manufactured in the USA.

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## Zip Line - Warnings

If installed safely, this Zip Line ride should give you years of riding enjoyment.

Please, read the following warnings and the rest of the Owners Manual to aid with installation.

Do not install the cable ride above, below, or near any electrical lines.

Do not attach cable to brick or masonry walls, swing sets, play structures, roof overhangs, or any other weak or unstable structures.

Remove any obstructions from the area of the cable ride.

Do not install the zip line near roads, sidewalks, biking, or walking paths. The cable can be hard to see and is a major hazard to bikers, motorcyclers, and joggers.

Layout a safe cable ride by not allowing the rider to encounter more than a four foot drop to the ground if the rider were to drop from the trolley during any part of the cable ride. Do not install the zip line over ditches, ravines, or drop-offs.

Do not hang upside down on the trolley.

The cable ride should be tested by an adult several times and the clamps inspected for slippage before letting any children on the ride.

**Inform all zip line riders to hold onto the trolley until it has come to a complete stop before releasing grip and letting go.**

**The trolley must be returned to the next rider by handing the trolley rope to the awaiting rider; do not push, throw, or fling the trolley to next rider (you don't throw a bat at the next batter in baseball; don't throw the trolley at the next rider).**

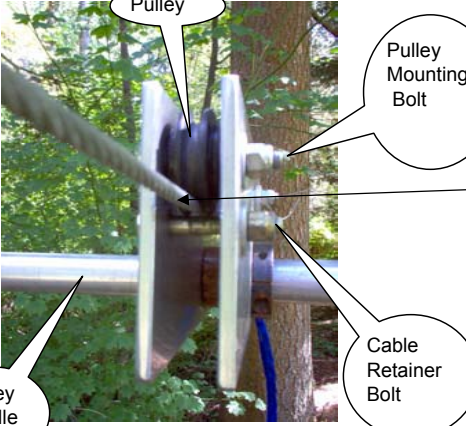

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## Zip Line

Set-up Instructions and Suggestions (pg 1 of 3)

By: LeanMachineSurplus of E-Bay

**LEGEND:** + = SAFETY

VISUAL AID	Sym.	Step #	STEPS TO FOLLOW	
	+		<p><b>Cable Rides required regular inspection. Inspect the following after every 75 rides: inspect cable and replace any frayed cable, inspect clamp bolts and trolley bolts tighten bolts if required.</b></p> <p style="text-align: center;"><b>Installation of Trolley onto Cable</b></p> <p>Feed cable between trolley pulleys and retainer bolts before attaching the cable to both trees.</p> <p>NOTE: The Pulley Mounting Bolts and nylon-insert locknuts should be tight to the aluminum trolley side plates, to ensure the ball bearings will work properly and take the load from the spinning pulley.</p> <p>NOTE: the Cable Retainer Bolts and nylon-insert locknuts must be tightened enough so that the bolt threads pass completely through the Nylon-insert locknut but not so tight as to contact and clamp the aluminum trolley side plates.</p> <p>NOTE: Do not replace the nylon-insert locknuts with regular hex nuts because they will vibrate loose and fall off the trolley, causing a dangerous situation.</p>	
			<b>Cable End Connections</b>	
	+		<p><b>Read warnings on previous page. Do not attach cable to brick or masonry walls, swing sets, play structures, roof overhangs, or any other weak or unstable structures.</b></p>	
			<b>1</b>	<p>The most common and most recommended method is to attach the cable ends to two <b>sturdy</b> anchor trees. There are two common ways of accomplishing this.</p>
			<b>1a</b>	<p>The first method is to drill a hole (example: 11/16" diameter) through the tree, place a <b>forged steel eyebolt</b> (5/8"-11 threads, 3500 lb working load, length 2" to 4" longer than tree diameter) through the tree; the threads must be long enough for a washer and two nuts to be screwed on the bolt once it has passed through the tree. Once the eyebolt is secured to the tree from the first nut, screw the second nut onto the screw and tighten it up against the first nut to lock this nut in place. The cable can be attached directly to the eye of the bolt using the thimble and three of the supplied clamps. If desired a <b>forged steel</b> turnbuckle (5/8"-11 thread or larger) could be attached to the eyebolt for tension adjustment.</p>
		+		<p><b>Warning! Do not</b> use open wire or standard eyebolts, wood screw eyebolts or economy turnbuckles; they will not hold! Most home improvement stores do <b>not</b> have the proper eyebolts or turnbuckles. One source for the proper forged products is McMaster-Carr Supply Company 562-692-5911</p>

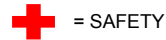





## Zip Line

Set-up Instructions and Suggestions (pg 2 of 3)

By: LeanMachineSurplus of E-Bay

LEGEND:




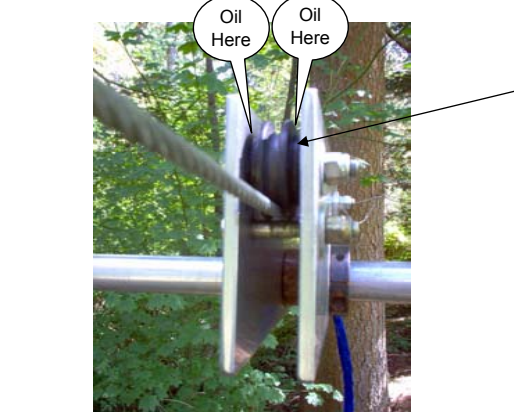



VISUAL AID	Sym.	Step #	STEPS TO FOLLOW
<b>Cable End Connections (continued)</b>			
		<b>1b</b>	<p>The second method is to wrap the cable around the tree. This the preferred, least intrusive method. This second method is most common in the northwest because many of the trees are larger then 24" in diameter ( I have never seen eyebolts longer than 24 inches in length).</p> <p>If you choose to wrap the cable around the tree, protect the tree from cable by placing the part of cable, that will be in contact with the tree, inside a piece of garden hose, plastic tubing, rubber tubing, or slinging the cable in an inside-out bike tire (see photo on left).</p> <p>If you choose the second method, it is best to wrap the trees and complete the zip line run with one piece of cable, it minimizes the number of clamps required and stress points on the cable. Do not wrap the cable tightly against the tree, leave some slack, to minimize sharp bend angles and stress in the cable. If the 100 ft of cable supplied falls a little short from making the full run and wrapping the two trees, it is possible to wrap the trees with a couple of short lengths of cable and attach to the main cable, as shown in the example to the left (two extra sets of clamps and thimbles are required for these short cable wraps).</p>
			<p>If you choose to wrap the cable around the tree, use a minimum of three 16d nails to support the rear side of the wrapped cable. As needed (i.e. kids grow) move the nails up to make the cable ride higher.</p>
		<b>2</b>	<p>Which ever cable end connection method you use, use three clamps to attach each cable connection and use a thimble where ever the cable is expected to make a sharp bend.</p>
		<b>3</b>	<p>When attaching the clamps the u-bolt part of the clamp goes against the nonworking end of the cable, therefore the bridge part of the clamp, that is tightened by the nuts, is against the zip line or working end of the cable. (torque the clamp nuts as stated on the package, or approximately 5 ft-lb for 3/16" clips; or 15 ft-lb for 1/4" clips).</p>
		<b>4</b>	<p>The height of cable has to slope in order for the zip line to work properly. If the ground between the two anchor trees has a gradual slope then slope the zip line in the same direction as the ground. If the ground is level, select a cable starting height of approximately two feet above the average height of the riders. If you have a full 100 ft run of cable you will probably be closer to a cable starting height of four feet above the average rider. When determining the cable height, keep in mind the age of the riders. For example, do not set the cable height two feet above an adults height if the main riders are grade school children. Make the cable ride safe, minimize the rider drop height to prevent injuries.</p>
		<b>5</b>	<p>To reach the trolley at the start of the ride, build a launching ramp, use a large diameter log, or any sturdy platform.</p>

### Zip Line

Set-up Instructions and Suggestions (pg 3 of 3)

LEGEND:  = SAFETY

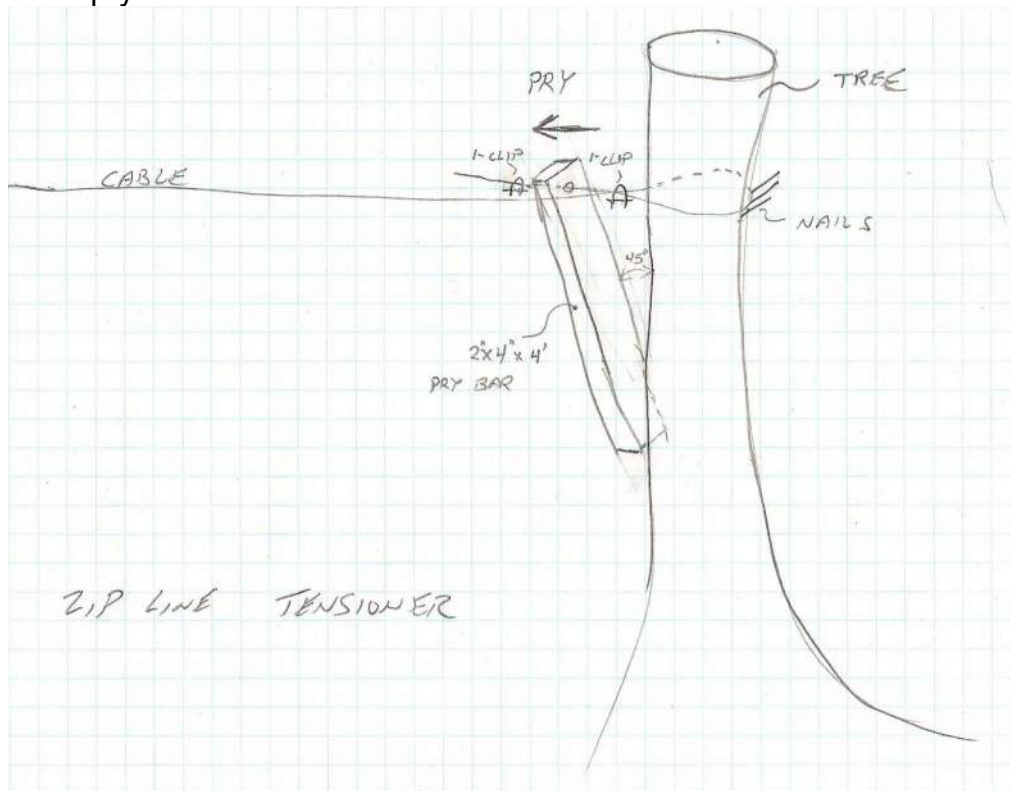
VISUAL AID	Sym.	Step #	STEPS TO FOLLOW
		6	To stop the trolley at the end of the ride, use slack in the cable and gravity. It is also recommended to install a bumper at the end of the cable ride. The bumper should be restrained by additional cable clamps, not the clamps that are supporting the zip line. A few potential bumpers are: pieces of garden hose (6-pieces, split and bound), rubber or rubber tubing zip tied to the cable, or wheel barrel / lawn tractor tires.
		7	<b>Inform all riders to hang on to the trolley until it has come to a complete stop.</b> If the trolley comes in contact with the end of the line bumper, generally it will bounce backwards for a short distance. Inform all riders to not let go until the trolley has come to a complete stop.
		8	The trolley must be returned to the next rider by handing the trolley rope to the awaiting rider; <b>do not push, throw, or fling the trolley to next rider</b> (you don't throw a bat at the next batter in baseball; don't throw the trolley at the next rider).
		9	If you don't have trees to anchor the zip line, it is possible to build supports which is outside the scope of these installation suggestions. Contract a P.E. (professional engineer) Civil engineer or local county building department for structural design assistance.
<b>Zip Line Maintenance</b>			
		1	<b>Cable Rides required regular inspection. Inspect the following after every 75 rides: Inspect cable and replace any frayed cable, Inspect clamp bolts and trolley bolts tighten bolts if required.</b>
		2	Oil the pulley bearings, located on both sides of the pulleys, every couple of months (or more frequently if the bearings feel like they are not rolling freely). You can use the same oil that is used for bike chains, any general purpose oil is fine..
		3	If you need replacement parts contact LeanMachineSurplus on E-Bay. Enjoy!!!

## Appendix: Additional Tips - Removing Slack in the Zip Line

The first thing to consider is if the land under your cable ride has a gentle slope, set-up your cable so that the start of the ride is at the higher elevation end. This will minimize the starting height of the ride.

**Reducing Cable Slack:** you want the cable to sag a little so that it will slow the rider down near the end of the ride. To remove slack in the cable fully attach one end of the cable with the three clamps. Wrap the second end of the cable around the tree and temporarily attach the cable with one clamp. Have a second person (if available) hold the weight of the trolley up. With the wrench in your hand loosen the single clamp while you are pulling on the free end of the cable. Pull the cable as tight as you would like through the single clamp and then tighten the single clamp. Repeat this tightening process until you achieve the desired tension in the line. Then add the two remaining clamps and test the ride.

If you want to remove all the slack in the line you can use a four foot piece of 2x4 (wood) as a pry bar tensioning device or a hands free technique using a ratchet strap and welded ring. These methods work much better than a turnbuckle because a turnbuckle only has 6 or 8 inches of stroke before it is used up and it requires more cable connections and clamps. To use the wood pry bar method, drill a .313 (or 3/8") inch hole in the center of the four inch side of the 2x4, one inch from the end. Place the end of the cable that you were pulling on in the above instructions through the hole in the 2x4 install a second clamp on the cable to hold the piece of wood at about a 45 degree angle against the tree. With one hand pry the piece of 2x4 against the tree, the other hand loosens the clamp holding the cable and then retightens it once the desired tension is achieved. Repeat this process, if you would like, by moving the clamp that holds the 2x4 pry bar in six inch increments.



For a "hands free" method to tension the cable; obtain a ratchet strap and a 3/16" thick welded ring. See the photo below for details. One end of the cable is rigidly attached as



described above. Install the trolley and an end of ride bumper, if desired. Loop the free end of the cable around the second tree, pull cable tight, and clamp to the main cable run with two clamps. Install a cable clamp to support the welded ring and install the ratchet strap as shown in the photo below. Ratchet in the cable slack and re-tension the main line clamp, repeat, as necessary. See the photo below.



Ratchet Strap and Welded Ring Cable Tensioning Method



Tensioning Kit and Tire Bumper Arrangement



Assemble as shown below. Thread on cable in this order: tire, washer, clamp, clamp, clamp with ring

