Where the Tow Assist came from, and why it's so important to safely towing a paraglider.

Its funny how time flies. As I'm updating this page I'm well aware that we have been towing now for over 20 years. We've come a long way since the early days. As a company we have sold well over 650 hydraulic winch systems and over 20,000 tow bridles worldwide since we started supporting the towing community. I'm grateful for the support and advice of our customers worldwide without whom this would never have been possible.

In order to fully explain the benefits of our towing bridles we really need to go back to the origins of paraglider towing. We believe that towing is one of the easiest ways to get high with a paraglider. At TowMeUp.com we all tow actively from both land based vehicles and boats over the water. We've been actively towing paragliders since the mid 90's, and in the early days getting decent equipment based on real life experience was difficult at best. We found it frustrating that there was no reliable source of well made, quality tow bridles available in the US. After testing many different models, and seeking advice from very active tow pilots in the industry, we developed an assortment of tow bridles for various applications which worked quite well.

We were smitten with the ease of paraglider towing, and trained several pilots, going to dozens of incident free towing events. But in the early days, paraglider towing was in its infancy, and there was no nationwide source of towing information. For the most part everybody in different areas of the country had their own ideas of how to tow a paraglider. The techniques we use worked well for us, yet we continued to hear of places around the country with serious launch accidents. Pilots were being injured by dramatic surges following weak link brakes after launch, which led to many operators refusing to use weak links because they "compromised" flight safety. We found this baffling, since we rarely saw a weak link break, and when we did, there was always a good reason for it. Eventually we started hearing complaints that towing was dangerous because it was putting way to much strain on the gliders, and stretching the lines to the point where the gliders were out of trim, giving them a propensity to constant stall. There were even a couple companies running SIV's that refused to tow Dyneema lined gliders because they were concerned that the lines stretched more than Kevlar lined gliders.

Now this got our attention, since all the gliders we used were Dyneema lined gliders. Was this hype to help steer people to a brand that coincidentally used Kevlar lines, or a real issue. We had to find out.

We went to even more towing events and we found some amazing things. We saw people scooter towing pilots to the point where they were literally right over top of the tow vehicle, and in one case watching the rear end of the tow vehicle come off the ground. O/K, we thought so perhaps, maybe this is why lines are getting stretched. How much force does it take to lift the rear of a vehicle off the ground in the first place?

Then of course, we knew that the tow force increases exponentially as the line angle increases. Once you get over 45 degrees of line angle, there is little to gain by towing at a steeper angle, even if it can be done. So why we wondered weren't weak links breaking when the gliders were being dramatically over towed we wondered. The answer was obvious when we started checking. They weren't being used. The schools that were over towing their students had decided weak links were dangerous and stopped using them entirely.

In our area we generally encountered 3 distinctly different tow launch conditions:

A steady breeze of over say 8 MPH. A super simple tow launch for a pilot with decent ground handling skills. Most pilots could hook up, inflate their glider and turn to face forward and as line tension increased they are gently lifted into the air. The upper limit of the wind speed was determined by the pilots abilities. If they could kite, they could typically launch easily. If their ground handling skills

sucked, they got pounded, but that had nothing to do with the towing part really anyway.

A gentle breeze of say 3 or 4 MPH. Not enough wind to kite in the early days. (ya, ya, today I too can do a walking reverse in no wind, but the gliders were just not that capable early on, remember…) Typically we laid out for a forward launch and as line tension was gradually increased the pilot would move forward to inflate the glider. It would rise cleanly overhead as the pilot accelerated, line tension would be applied, and the pilot would easily levitate into the air.

No wind launches. Seems to be everyone's least favorite, for no real reason. On tow they are stupid simple. For our pilots we had pilots do the exact same forward launch that they would do if there was a gentle breeze. We REQUIRED that the pilots had to make the effort to get the glider completely overhead before we would increase the line tension to safely launch them into the air. We never had any problems.

What we didn't know was that around the country, dramatically different launching techniques were being taught, particularly for no wind. The rational was simple enough. A lot of the tow knowledge at the time came from hang glider pilots. Wonderful people that taught us a lot of the techniques we use today. They had learned the hard way that the easiest way to foot launch a hang glider in no wind was for the pilot to hold back as long as possible while launch tension was quickly increased, and the pilot was forced to run, literally sling shooting them into the air. As long as they didn't trip, things went well.

Unfortunately, paraglider pilots adopted the same technique and numerous launch accidents occurred. There are dozens and dozens of YouTube videos available from the pioneering days showing pilots pounding in right off launch. We saw, made note of the issues, and suggested better techniques to pilots and tow techs that was corroborated with our experience.

The typical launch accident occurred in no wind when the pilot was holding back while line tension was rapidly increased. Their glider would inflate, and begin to come overhead, but hang back significantly. This was a key point that was not recognized for being as dangerous as it really was at the time. The glider was open, but essentially constant stalled; it provided more drag than lift at this point. The winch operator, seeing the glider inflated would increase the tension. The pilot wouldn't climb faster (the glider is constant stalled after all, so why should it) so they increase the tension further. Eventually the tow forces get high enough where something breaks. If it was a weak link, it would break down low, if one wasn't used something else would fail higher up.

Imagine for a few seconds how you would react if you were say 40 feet off the ground with your glider waaaaay back behind you, and suddenly the weak link breaks. If you were a super hot dog acro pilot, you would casually let the glider surge out in front of you, catch the surge as it shoots forward, get back off the brakes and use this energy stored in the glider to flare to a smooth although quick landing. Ya, right. Remember this was the early days. We only had a handful of acro pilots who could pull this off, and few of them used weak links… go figure.

More realistically, pilots did nothing except go aaaaaaahahhhhhhhhieeeeeeeee, THUMP! If they were down low, they would typically pendulum in backwards and pound in on their butt. A bit higher, and the glider would surge and they would pendulum in and pound in on their face. Higher still and the glider would surge forward, deflate, and they would pound in hard. Occasionally pilots would take the opportunity to jam on full and complete brakes to try to "flare" with the glider behind them, which predictably resulted in a stall or a spin, and a visit to the emergency room.

At TowMeup.com, we knew what was causing the launch accidents, and that the way to prevent them was to ensure that the pilot made the effort to get the glider completely overhead before line tension was applied to launch the pilot. What we didn't have was a cure for the problem.

At the time a unique development was occurring. In early 2000 Firebird came out with a paraglider called the Matrix. We immediately bought one and started flying it. It towed well enough, but there was something odd and not quite right that originally we couldn't put out finger on. We typically towed up to well over 3000' before releasing so we were unaware of a peculiar characteristic of this design. One day we attended a scooter tow event put on by a local paragliding school we really quite liked. The field was relatively short, so the tows were only to 400' or so. One thing that was immediately apparent was that after releasing from tow, the glider was constant stalled and dropped straight down before restarting into normal flight. We did several tests and confirmed this was not a fluke, and even called the manufacturer to query them on the subject. Interestingly enough, within a couple weeks the DHV came out with an advisory circular regarding the Matrix and its flight performance that deviated from the originally issued type certificate. It turns out it had a propensity to enter a stable stall (DHV GS-01-0746-00). We loved the flight performance of this glider, and elected to trim it slightly faster and continued to fly it, but we chose not to tow with it due to the potential hazards of being constant stalled if we came off tow unexpectedly at low altitude.

After a few months The Firebird engineers came out with a novel solution to address the towing issues. They developed a "Tow Assist Device" that caused the glider to be accelerated when under tow and eliminated the propensity of the glider to constant stall. Since we happened to have a Matrix we received one and went out to test it and found it cured the problem. After towing with it for a while, we decided to try it on other gliders as well, and found that almost without exception, they were easier to launch on tow. It turns out that while solving a trim issue on the Matrix, Firebird had actually created the single greatest improvement to towing safety I have seen in my towing history. We started buying the device and using them on all kinds of gliders, eventually determining that the safety benefits were so enormous that we required them to be used by all new tow pilots, on all gliders. Of course then we ran into that age old problem. Since it was essentially an attachment to a tow bridle, they parts and pieces were continually being lost, and we could never get a reliable supply of tow assist devices.

We decided to redesign our tow bridles to incorporate the tow assist as a built in feature of the product, and streamline the production by bringing the production entirely in house. Many people have asked us why we are so passionate on the tow assist device as a key component of our bridle and why it is so important.

It's important to remember that while towing is really pretty simple and safe, it can go wrong very quickly. The most serious issues are caused by the pilot being dramatically over towed right off launch and then having the weak link break. The Tow Assist, as it is incorporated into our bridles does almost nothing when everything is going right. The sliding link removes most of the tension on the speed trim system. If the pilot is being over towed though say, right off launch and the glider is hanging back a wee bit, it automatically trims the glider faster to allow it to come overhead. This allows the glider to climb more efficiently and dramatically reduces the towline forces. Once the glider is overhead the speed input that has been introduced is automatically eliminated. A side benefit is that if the glider starts to turn away from the tow line, the side that is diverging will automatically have a bit of the

speed system engaged to help turn the glider back towards the tow line. This makes it dramatically easier for a new tow pilot to stay in line with the tow.

There are a few purists out there who complain that the tow assist device makes the pilot lazy, by requiring them to use less effort and skill to fly a perfect tow. Our response is that yes, and power steering in my truck makes me lazy as well, but I'm not about to give up the benefits to be considered a purist…

This device dramatically reduces the potential for a pilot to enter a constant stall right off launch, helps to prevent weak link breaks down low, and makes it easier to control the glider while towing to altitude. As if that wasn't enough, wait there's more….

If you are the tow tech, you have all seen the lazy assed pilot who launches, and pays no attention to where the glider is going. As the glider goes way off to the side, there is really very little you can do about it if the pilot decides to act like a rock. Your only option is to reduce line tension. This allows pendular stability to take over. The pilot should fall underneath their glider and hopefully regain control. If there is room and time, you can increase tension and continue the tow. If not you have to hope they flare or hope for the best before impact.

Sometimes a tow launch doesn't go quite as well as planned. You'll get pilots who do a brilliant launch only to sit down immediately as the glider lifts off. This weights the glider, which surges forward and the pilots butt skips the ground, the glider shoots forward and frontals, and the pilot pounds in hard. Or maybe the pilot does a great inflation and starts to run but trips and is about to pound in. My least favorite is when the pilot get airborne and heads off toward a certain lockout on one side, but I know well and good that if I reduce the tension they will pound into the tree, stump, rock, or obstacle that they have decided to become intimately familiar with.

If the pilot has a tow assist device, however, you have another great trick in your arsenal. You can quite safely crank on the towline tension and pluck the pilot into the air. The tow assist dramatically reduces the potential for the glider to constant stall and fall out of the sky. Once the pilot is safely airborne you can reduce the tow tension, stabilize the climb rate and continue the tow. For the pilot that is headed towards lockout, increasing the tension will actually pull the glider faster back towards the tow line. Unless the pilot jams on the brake to continue to diverge for the tow, you can often drag the pilot airborne safely sometimes with the glider skewed way sideways by a huge amount. Once you get the pilot away from danger, you can reduce the tension and coach them into getting things back under control or safely dump them in the lake.

So there you have it. You know why we love the assist device. If the towing operation you choose to work with uses the slingshot launch technique, you definitely want to use a tow assist type bridle. I really don't care who's you use, but I highly recommend them. I'm pretty sure that we sell more tow bridles annually than many other manufacturers combined. I'm also pretty sure that we're one of the very few, if not the only one picky enough that every critical load bearing stitch on our bridles is sewn on a computerized pattern tacker. This is a highly specialized sewing machine that is designed to place the exact number of stitches exactly where we need them. Every tow bridle is sewn out in a special fixture so you can easily replace components if you lose them. It's even designed to be machine washable, but we see them mostly getting washed after pilots end up in the lake at an SIV.

Before using our product, or any product; PLEASE make sure you understand exactly how your equipment is designed to work. **ALWAYS TOW WITH A WEAK LINK**. Have a plan, and fly your plan, but be willing to change the plan if you need to. **Most of all Tow High, and have a great flight!**