reflects on the different spin characteristics. Once again we are talking of a different training culture, so those results shouldn't be taken as gospel for us. What I would like to see is someone from the GFA do the same numbers and see how we compare. It may, in fact, give us a clearer indication of where we're going wrong (if in fact we are).

If anyone would like to read the good doctor's report in full, you can find it at:-

http://www.fai.org/gliding/documents/reduce_gliding_accidents.pdf

For those without internet access, I'll leave a copy on the briefing room notice board.

By the way, I've spoken with a couple of our "instruct meisters" and at least one was keen for me to put this in GliChat.

Meanwhile, the hunt for a PDA with GPS continues unabated (Personal Digital Assistant with Global Positioning System, just so you don't feel left out).

Cheers,

Dayle

AUTO PULLEY LAUNCH SYSTEM

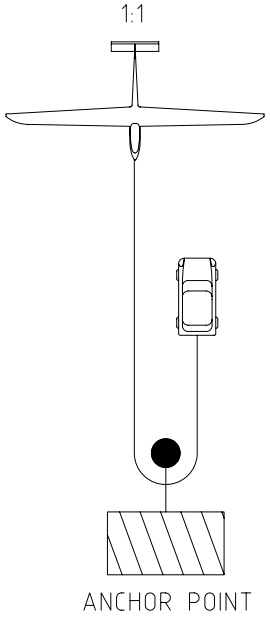
By Michael Derry

It works

It is efficient It is safe

It is practical

About five years ago a group of us stumbled onto the concept of using pulleys as a simple winch system to enable us to launch hang gliders by towing in the metropolitan area. The key advantage of using pulleys over a winch was that the main part of the system, a car, was readily available, reliable and completely suitable for the job.

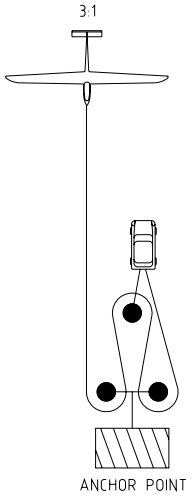


Above: The 1:1 pulley system.

When I took up gliding I had it in the back of my mind that a pulley system would work for launching sailplanes and would be very efficient. I wanted to try it out immediately. However, I knew that a lot of ingredients had to come together before the project was a goer, the main one being me gathering experience and involving other experienced glider pilots. In the interim, I studied numerous books on winches for hang gliders and sailplanes, read up lots on the internet and spoke to as many experienced winch drivers and pilots as I could directly, and using e-mail discussion lists. My brain was saturated with information about anything to do with pulley/auto/winch systems.

I had learnt a lot from practical experience in developing new winch/pulley launch systems as well as rope winding systems for hang gliding. Our hang gliding group developed circle towing, hand towing with people and towing paragliders with a wind-in system. Every new system required a lot of thought; i.e. how to control tension?; should I use rope or cable?; how will the rope stretch or the lack of it affect the ability of the system to control tension?; what type of weak link should be used?; what is the most suitable joining method?; wear of knots on the surface?; use, or not, of drogue chute, etc., etc. etc….the list is unending.

Anyhow, I was at Narrogin one weekend and happened to mention to Paul Rose about the pulley launch concept and it captured his imagination. From that time onwards there was feverish action at my house on many late afternoons during the week, with Paul cutting, welding and drilling. Many of the weekends for the next few months were up at Paul's farm at Dandaragan, initially testing the pulley system by dragging truck tyres at high speed and then dragging my trusty Holden Apollo



Above: The 3 to1 pulley system.

car. We used both a 100 hp Chamberlain tractor and the Rose 6-cylinder farm utility and we were easily able to get the Apollo up to 70 km/h, which was the maximum speed we felt we could take the Apollo over the bumpy farm paddock. Paul's brother, Brett, helped us lots, as did Paul's girlfriend Jean.

Over the previous couple of years a number of trips had been taken up to Morawa by myself, Peter Lane, Ray Defraine and Paul to either learn about winching or become current.

We had been keeping Regional RTO Ops, Kevin Saunders, and Dick Sasse, CFI from Morawa, informed of our plans so once we were ready to roll I organized a meeting with them at the Air Show. Kevin decided to appoint Dick to oversee the initial testing of the system. Dick kindly offered to carry out the testing at Morawa.

We elected to take up the Morawa Club's offer and headed up to Morawa on 15 April 2005. The next day, Peter Lane volunteered to be the test pilot. However, Dick felt obligated to do the first launches to keep the commitment he had given to Kevin. We launched the Morawa Blanik to 1100 feet using 1200 metres of 8 mm polypropylene rope on the short strip using Dick's little 4WD 4-cylinder ute with a 3:1 pulley ratio. A fresh breeze made up for the low power of Dick's small ute. Dick's comment after the first launch was that it was just like a winch launch, only the smoothest he had ever had. The next day was almost nil wind, however we managed to get the Blanik to 1400 feet using 1500 metres of rope and Tony's 4-litre diesel Nissan Patrol ute. A couple of weeks later Rob Hanbury brought his 4-litre Falcon station wagon up to Morawa and we managed to get the other Blanik to 1200 feet using 1200 metres of rope and a 1:1 pulley ratio. The pulley system was compared with the winch on a couple of days and achieved the same heights.

The big feature of the pulley launch system is its safety track record:

-'The record indicates that launch safety of all auto-tow operators over the last 20 years has been considerably better than that of winch clubs over the same period' (GFA Winch Launching Manual, 1998, page 68).

-10's of thousands of launches conducted safely by the IGA in the early 70s using a single pulley and 1:1. The worst incidents were drogue chutes briefly wrapped around the leading edge of gliders twice that harmlessly released.

The safety record could be explained by the fact that the system has a lot more give in it than a winch as throughout the launch the full amount of rope or cable is in use and that due to the weight of the car, and its inertia, acceleration and deceleration is much more gentle.

The key advantages I see of the car pulley system compared with winch or auto tow are:

fantastic for long-distance cross-country safaris/mobile operations;

can use an ordinary 6-cylinder car;

no need to maintain a separate piece of equipment on site;

with a 1:1 pulley system launch turnaround time is much faster (no need for retrieval vehicle);

2:1 or 3:1 is ideal for a farm paddock where there may only be a short or rough area for the car to travel and the speed required by the tow vehicle need only be half or 1/3 of a 1:1 pulley tow;

a car is easier to operate and more comfortable than a winch (i.e. air conditioning/heater, etc.);

overheating is not an issue as the vehicle is moving and plenty of air flowing over the radiator;

you get much more height than auto tow (approx 1/3 length of strip);

1800 to 2000 feet would be the standard launch height at Cunderdin;

tangle problems can be avoided by using rope.

As a result of our successes with using a car and the pulley system, a number of other variants or ideas have sprouted and some were already in various stages of development:

Peter Lane – use of normal winch and try out 9:1 pulley system using 4WD tractor;
Paul Rose – winch powered by a PTO on the rear of a tractor;
Dick Sasse – 1:1 pulley system using wire rather than rope;
Bill Verboom – his winch;
Jim Paynter – pulley design modifications;
Alf & Paul Williams – ambulance rope winch.

Credits: Peter Lane for the photos and Marek Duckowicz for the artwork.

E-mailed Advice from Damien O'Reilly

Subject: Pulley Launching Advice

Michael

If you are still interested in reverse auto towing I might be able to give you some of my experience based on over 600 launches using this method exclusively.

I personally launched about 3,000 flights during the period 1971 through to the end of 1974 when I then emigrated to Mt Isa in Qld.

Strangely as it may seem (and no it is not Blarney) the Irish Gliding Association perfected this method thanks to the assistance of the University of Dublin in the mid sixties.

A senior engineering faculty lecturer at this University (Prof John Byrne) worked out all the stresses and strains and calculated the appropriate angles of attack and speeds to fly in various scenarios.

Aiding and abetting this process was the patronage of the club by the Slazenger Family (son 'Mike' and father 'Ralph') of sporting goods fame who facilitated many of the loans required to modernise the fleet, being dedicated aviation enthusiasts themselves.

On the 20th of October 1974 flying a Schleicher ASK13 (EI-113) I believe that I achieved a World Record for launch height using this system from the military airfield at Baldonnel in Ireland (Casement Aerodrome).

In winds of 15 knots on the ground coupled with a strong wind gradient, myself and a trainee launched to 4,100 feet AGL. Later that same day, I flew a KA7 to 3,700 feet AGL on the wire.

I only held this record for a few months until it was broken by a KA6CR which went to 4,600 feet using 12 SWG fencing wire through the same reverse auto pulley system.

The tow car was a 1959 Ford Canada built 6 litre Fairlane fitted with a unique tensionometer which allowed you to control the pull on the cable at any time. I clearly record the details of its design and manufacture.

We used a 1947 Plymouth as the combined anchor, pulley, and cable laying vehicle. It was the type of pulley that was widely used in the ski fields of Europe at that time.

The pulley could rotate on a gimble through a 360 degree arc in the vertical plain.

These launches ceased in 1975 when the Irish Aer Corps withdrew their patronage from the club and flying subsequently moved to Gowran Grange in County Kildare using a Piper Cub. They are still there today.

We called it the 'high wire' and it is a launch system, if properly managed and resourced, that is second to none. It is also one of the most exhilarating experiences you could possible imagine and I can still hear the wind in the wire as up to seven thousand feet of it was launched skyward.

Whilst I still marvel at the fact that a glider could haul so heavy a cable in addition to its own weight, I don't ever record a weak link failure. The cable used to break from getting ground down on the concrete runways.

A close friend of mine (Captain Peter Hynes) towed 120 gliders aloft in one day with an average launch to 2,000 feet. He now flies Boeing 737's for Aer Lingus.

I would be happy to talk to you further about my experiences at any time, and or put you in contact with those who could truly be described as both pioneers and experts in this field.

Regards

Damien O'Reilly

Beverley Soaring Society, Western Australia

QUIZ ANSWER

There will be no noticeable difference in the size of the shadows. (Because the light source is about 490,000,000,000 feet away from Narrogin)

WAGA AGM

The Annual General Meeting of the West Australian Gliding Association Inc will be held on Thursday 18 August 2005 at 7.00 p.m. at the Windsor Hotel, Corner Mends St, 112 Mill Point Rd, South Perth, in the Zephyr Room off the Charthouse Restaurant.

Agenda:

Receive committee reports and balance sheet

Elect Committee members

Transact such other business as shall be presented.

We will then show some videos and socialise among members from all the clubs. This is an opportunity to catch up with pilots from other clubs in a friendly and hospitable location.

WAGA will supply some drinks and nibbles. Encourage your fellow pilots to attend.

The Gliding Federation is undertaking a Marketing and Development initiative to help spread the word among potential new members out in the public domain by way of special advertising in magazines. Part of the promotion is to encourage the use of www.soaring.org.au as a marketing contact on the web and www.gosoaring.com.au as a site for