



Skylaunch Limited

(Glider Winches & Special Projects)
E11 - E12 Wem Industrial Estate,
Wem, Shropshire. SY4 5SD ENGLAND
Tel: + 44(0) 1939 235845
Email: mike.groves@skylaunch.com
www.skylaunch.com

GLIDER END CABLE EQUIPMENT EXPLAINED

07/01/2020

Skylaunch assist the RAF, BGA (British Gliding Association) and other Gliding authorities around the World to update safe winching procedures and guidelines, many of which were introduced a long time ago.

Even these current designs are subject to further updates as developments are always ongoing.



The design needs to be as simple as possible for safety, with the least amount of connections and metalwork to reduce the risk of launch failure or damage when falling away from the Glider.

1. Strops (short length from glider to weak link)

The normal length for strops is 3 metres - this is recommended for safety as this is long enough to clear the front of the longest Glider noses (preventing damage to the Gel coat) but short enough so if the weak link breaks it won't reach the elevator, rudder or ailerons.

A 3m strop can be repaired down to 2.5 metres length if compatible with your Glider fleet – any shorter than 2.5m and the strop should be replaced.

As a principle, shorter is safer and will minimise any potential for springing back.

It is important to enclose the rope (recommended 16mm diameter) or cable in a rigid and large diameter hose to help prevent damage and any hang ups around glider wheels, etc.

Skylaunch now offer hose in hi-vis orange to make them more visible, especially if lost after a Weak Link break.

There have been incidents where longer length Strops have wrapped around the tail of a Glider.

(There was an incident recently with a Puchacz glider where an over length Strop wrapped around the elevator)



4. Weak links

For safety, the BGA recommend using only one weak link per cable assembly, as the use of the reserve weak link can lead to mistakes being made if 2 main or 2 reserve weak links are fitted, therefore doubling the breaking load.

There has been an incident of glider structural failure where two of the same weak links were used, and this was a contributory failure.

If the reserve link is used then strict regulations must be made to ensure the correct links are fitted and checked. Only fit the weak link colour / strength listed by the glider manufacturer for the exact model / specification to be launched.

Weak links must be inspected as part of the full Cable Equipment DI to ensure no stretching / damage is apparent



Weak links must also be inspected before hook-up to the Glider at each launch for damage and correct load rating

5. Weak link holders / housings

Skylaunch manufacture open type steel and plastic H section types which are designed to protect and display the weak link, so it can be checked easily and shown to the pilot before the launch.

There are other types which are made from sheet steel which fold around and encase the weak link but these are prone to bending which traps the weak link.

Also, this design does not give vision of the weak link to check type and colour / load rating.

We now offer a range of Large (300mm x 160mm) Weak Link Colour Indicator Flags, designed to be spliced into the Weak Link end of the Strop.

Made of hard wearing but flexible material, it also assists in finding lost Strops after a Weak Link break.



It is also recommended for safety that only one weak link holder assembly is connected, rather than the practice of having 2 or 3 attached all the time.

This reduces unnecessary weight / metalwork in the air which could potentially strike a Glider or fall from the sky in the event of a cable break.

2. Traces (long length from weak links to parachute)

For safety, the Trace is recommended to be 17metres long and made from either a larger stiff / rigid rope – recommended 16mm – 20mm diameter (or cable in hose.)

The material should not allow too much stretch – in case of a “break” to prevent spring back to the glider.

The reason larger diameter, rigid material is used is in case the Trace becomes entangled with a Glider – this way it is less likely to disable movement of a control surface.

Using a heavier assembly is also important to help it fall away quickly from the glider.

The 17m length is connected to the 3m Strop (via the Weak Link assembly) to give a total minimum of 20 metres between the Glider and Parachute - this allows for a safer separation distance in case of a low and shallow launch cable release/break situation (in the Netherlands this rule is 30m).

There have been incidents where a glider has flown into the parachute after low level launch failure, because the parachute was too close to the glider.



3. Parachutes

For glider safety, parachutes should be as small as possible while still allowing the winch driver to control the cable descent without problems. Skylaunch layout photo (last page of this document) states recommended sizes.

NOTE- If the parachute is larger than the recommended sizes then the trace length must be longer than the standard 17 metres until a smaller parachute can be sourced.



6. Swivels

Swivels can be used in the cable assemblies to help prevent unwanted twisting of cable / ropes / parachutes etc.

BUT- If using twisted design launch cable / rope (as opposed to braided) the swivels must be the type that lock under load.

These are usually a simple design with a bolt as the swivel.

If using braided cable (usually Dyneema/Spectra) then bearing type (free spinning under load) can be used but caution must be used to ensure it operates correctly.

NOTE: If a bearing type swivel is used with twisted type launch cable it will unwind and destroy the cable after only 1 launch!

Please contact Skylaunch for advice.



Bearing swivel



Locking swivels

Minimum recommended strengths for glider launch cables and equipment

<u>Item</u>	<u>Strength over strongest weak link to be used</u>
Launch cable	1.5 x
Connection / shackle (base of parachute)	2.5 x
Parachute	4 x
Connection / shackle (top of parachute)	2.5 x
Trace rope / cable	4 x
Connection to weak link assembly (usual quick release hook / ring)	2.5 x
Weak link connections	2.5 x
Connection to strop	2.5 x
Strop rope / cable	4 x

WEAK LINK STRENGTHS*

BLACK - No 1 1000 daN = 2200 lbs
 BROWN - No 2 850 daN = 1870 lbs
 RED - No 3 750 daN = 1650 lbs
 BLUE - No 4 600 daN = 1320 lbs
 WHITE - No 5 500 daN = 1100 lbs

*Manufacturers stated Weak Link strengths listed are to within tolerance of 10%

It is the responsibility of the operators to ensure all the components are correct specification and checked to be serviceable for use.

Product ID	Description	Dimensions (Weights listed are approximate)	Suitability 1 (Poor) – 5 (Good)			Notes	Picture
			Steel Cable	Synth Cable	Cross Wind		
CC-HDIP	Heavy Duty Intermediate Parachute (In Vinyl only)	1.0m Ø Open 2.8m Long (closed) Weight 2.5kg Hessian 1.7kg	2	5	3	Ideal if fast cable descent is required	
CC-HDLP	Large Heavy Duty Parachute (In Vinyl only)	1.4m Ø Open 3.1m Long (Closed) Weight 3.5kg Hessian 2.5kg	5	3	2	Good universal 'chute but not the best in crosswind conditions	
CC-HDAC	Heavy Duty Aerodynamic Design Parachute. (In Vinyl** or Hessian*)	1.2m Ø Open 2.8m Long (closed) Weight 3.2kg Hessian 2.4kg	5	5	5	Best design for most conditions / operations	
CC-HLAC	Heavy Duty Large Aerodynamic Design Parachute. (In Vinyl** or Hessian*)	1.4m Ø Open 3.4m Long (closed) Weight 5.2kg	5	2	5	Best design for slow cable descent. Larger than necessary for synthetic cable	

When selecting a suitable Parachute, for Glider safety use the smallest practically possible for your operations

***Poly Woven "Hessian" material is lighter in the air, and also gives better life expectancy on abrasive Airfield surfaces, such as asphalt.**

**Vinyl Colours Available: Yellow – "Y" Blue – "B" Red – "R" Hessian (White only) – "H"

All our parachutes are non absorbent, so don't gain weight in wet conditions

SKYLAUNCH RECOMMENDED LAUNCH EQUIPMENT - GLIDER END

Layout updated 07.12.18

Parachute Triangle Connector & Optional Quick Release Hook and Ring



Parachute— Selection of Designs to Suit Airfield

Max open diameter:-
Synthetic cables = 1.2m
Steel cables = 1.5m

Plastic Cable End Buffer and Launch Cable From Winch

3 Metre Strop with Stiffener Hose, Connecting Ring & Glider Rings (Optional High-Visibility Flag and Sleeving)

FOR USE WITH VEHICLE RETRIEVE WINCHING

Glider Rings to Glider



Plastic Weak Link Housing & Weak Link with shackles & Quick Release Ring – optional Steel Weak Link Housing also available



Weak Link Assembly (Slot in housing towards Glider)

17 Metre Trace with Quick Release Hook

Top and Bottom of Parachute - Karabiner or Bow D-Shackle – Optional Bearing Swivel (for Dyneema) or Locking Swivel (for Steel cables or twisted ropes)

