



GLIDING NEW ZEALAND INCORPORATED

ADVISORY CIRCULAR

AC 3-04

WINCH & AUTO LAUNCH CABLE CONFIGURATION

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1 Introduction

Each winch or auto launch cable must incorporate a weak link, which must not exceed the weak link strength recommended in the glider's Flight Manual. Where no specific strength is given, the maximum strength of the weak link should be approximately one and one-third times the gross weight of the glider being launched.

2 Cable set-up

Appendix 1 depicts the recommended cable set-up for TOST fittings using a steel wire cable. Note that if more than two weak link values are required to accommodate the glider types typically launched at the site, it is preferable to minimise the assembly weight by combining each weak link in a separate colour-coded strop instead of multiple weak links attached to the end of the trace. The appropriate strop/weak link assembly for the glider is then clipped onto the trace at the launch point using a quick-release hook. This is normal Skylaunch practice.

Appendix 2 depicts the Skylaunch configuration preferred for synthetic cables, such as Dyneema.

Appendix 3 sets out some general best practice tips (born of long experience) for glider-end cable equipment.

3 BGA approved winch launch weak link strengths

The British Gliding Association (BGA) maintains a list of TOST weak links to be used in winch launching various gliders. For convenience, extracts from this table are reproduced in the table on page 3 for glider types on the NZ register, and may be relied upon to ensure compliance with the GNZ MOAP (Section 2-10, paragraph 2.6). If in doubt, consult the relevant glider Flight Manual.

4 Maximum winch launching speeds

The table on page 3 also includes maximum winch launching speeds for each glider type, taken from historical, Skylaunch, BGA and glider Type Certificate data. The speeds given are for guidance only – if in any doubt, consult the relevant glider placards or Flight Manual.

Note: The TOST colour coding assumed in the table is as follows:

White = 500 kg

Blue = 600 kg

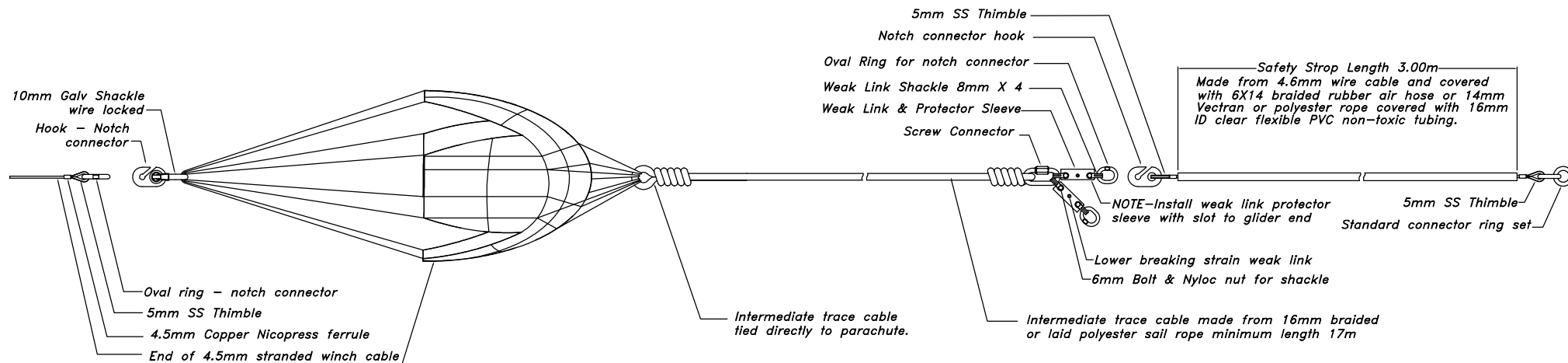
Red = 750 kg

Brown = 850 kg

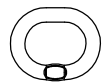
Black = 1000 kg

Glider Type	Tost Weak Link	Max Speed Kt		Glider Type	Tost Weak Link	Max Speed Kt
Arcus all models	Black	80		Ka 6E	Blue	56
ASH 25	Brown	70		Ka 7	Black	66
ASH 26	Red	70		Ka 8	Blue	60
ASK 21	Black	81		Ka 13	Brown	65
ASH 31 Mi	Brown	70		Kestrel 17/19	Blue	70
Astir/Grob single	Blue	65		LAK 12	Blue	75
Astir/Grob twin	Brown	65		LAK 17	Blue	75
ASW 15	White	59		Libelle all models	Blue	65
ASW 17	Blue	65		LS 1f	Blue	65
ASW 19B	Blue	67		LS 3 & 4	Blue	70
ASW 20	Blue	65		LS 6 & 8	Red	75
ASW 27	Blue	70		Mini Nimbus	Blue	81
ASW 28	Blue	75		Mosquito	Blue	81
ASW 28-18	Red	75		Nimbus 2	Blue	65
ASG 29	Red	65		Nimbus 3D	Black	81
Bocian	Black	54		Olympia 463	White	66
Cirrus (Open)	Brown	59		Phoebus C	Red	65
Cirrus (Standard)	Blue	65		PIK 20	Blue	67
Cobra	Red	59		Pirat	Blue	64
Dart 15 & 17	Blue	71		Puchacz	Red	59
DG 100/200/300	Blue	70		Puchatek	Black	67
DG 400/600/800	Blue	81		PW 5	Blue	65
DG 500/505	Black	75		PW 6	Black	65
DG 1000	Black	81		Rhonlerche (Ka 4)	Brown	49
Discus & Discus 2	Blue	81		SHK	Blue	56
Duo Discus	Brown	81		Skylark 2B	Blue	61
Hornet	Blue	75		Skylark 3F	Blue	71
Jantar Standard 2	Blue	67		Skylark 4	Blue	76
Janus a & b	Red	65		T 53	Red	70
Janus c	Brown	81		Vega	Blue	70
Ka 6BR & CR	Blue	60		Ventus & Ventus 2	Blue	81

APPENDIX 1



9980 Cross panel parachute 1450m for steel cables
 9983 BT Parachute 1800mm for steel cables
 9985 BT Parachute 1200mm for synthetic ropes
 9988 Special Parachute 1200mm for synthetic ropes



Notch Connector Oval Ring
 Test O/N 10012



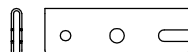
Notch Connector Hook
 Test O/N 10011



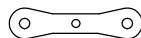
Test O/N 9992
 8mm Weak Link Shackle
 with 6mm bolt & Nyloc nut



Screw Type Connector
 Test O/N 1000



Protector Sleeve for weak link
 Test O/N 9950 or Skylaunch H
 section P/N CC-WLH-S or CC-WLH-P



Weak link - Insert No 2 Brown 850 daN Test O/N 9901
 Insert No 3 Red 750 daN Test O/N 9902
 Insert No 4 Blue 600 daN Test O/N 9903



5mm SS Thimble
 Test O/N 10035



10mm Galv Shackle High Tensile
 to NZ Standard NZS 5467

SKYLAUNCH RECOMMENDED LAUNCH EQUIPMENT - GLIDER END

Layout updated 07.12.18

Parachute
Triangle
Connector
& Optional
Quick Release
Hook and Ring



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



Weak Link Assembly
(Slot in housing
towards Glider)

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



Parachute— Selection of
Designs to Suit Airfield

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



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

17 Metre Trace
with Quick
Release Hook



APPENDIX 3



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

22/07/19

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.

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)



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.



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 fracture.

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.



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.

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