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Catalog N°26

Airsport equipment since 1974



www.finsterwalder-charly.de



Charly rescue systems: where you can count on!

Seit Specialized on rescue systems since 1986

Since flying with a rescue system became obligatory in aviation sports in 1986, Charly is one of the leading supplier of rescue systems for hanggliders and paragliders due to its innovation. Center lines construction, double cap technology, rocket output, steerable rescue systems; Charly has always been belonging to the pioneers. With Tom Grabner's DIAMONDcross, the first steerable cruciform canopy, Charly presented another major milestone in the construction of rescue systems.



Engineer Tom Grabner who has been leading the developments at Charly since 2016, is an experienced acro pilot for paragliders. In this function, he constantly tests the rescue systems under real-life conditions. With the G-force trainer, developed by him, the deployment of rescue systems has been trained in case of emergency for the paraglider course for years. Tom Grabner combines theoretical and practical experiences for the development of rescue systems like nobody else.



www.charly-produkte.de

DIAMONDcross



The safety innovation by



40 years of hang gliding & paragliding

Superlight, steerable cruciform canopy

steerable	optional steering
simple	easy packing
safe	quick opening
soft	smooth descent



DIAMONDcross

Tom Grabner
DESIGN

Further safety aspects:

- There are no potential hazards in consequence of the steer-ability: The twisting of the lines, which often is unavoidable when using a controllable rescue system, doesn't cause any special risks. The DIAMONDcross can also be controlled in twisted condition. The red colour marking on the front head indicates clearly visible the flight direction for the pilot.
- No risks can arise by excessive pulling or by non-use of the brake handles. There is no risk of stall. A pulling of the brakes is not required when landing, as the canopy already is trimmed at minimum sink rate. The forward speed also reduces significantly the risk of spine compression during the landing.
- The long suspension lines of the DIAMONDcross and the symmetric shape of the canopy lower the risk of causing a collapse with the rescue system and the glider.
- Forward movement and low sink rate reduce in addition the risk of a side slip between the rescue system and the glider, and therefore higher sink rates.
- A short stall phase of the DIAMONDcross after opening prevents the formation of a „downplane“-position. The DIAMONDcross merges without the help of the pilot after a short independent stall phase in an easy, very stable and swing-free forward flight.
- The special design of the inner container, optimized with the help of Tom Grabner's G-Force trainer ensures a safe deployment of the DIAMONDcross with low effort needed. Especially with regard to inconvenient pulling directions when deploying the rescue system. Therefore we absolutely recommend to use the original approved container with the rescue system and to adapt the rescue handle of the harness to the container by an authorized service company.
- The inner container has a separate space for the suspension lines.
- The canopy will only be deployed after aspect ratio of the suspension lines, which enables a fast and controlled opening. The risk of a cravat of rescue system and glider is therefore reduced.
- The superlight, optional steerable cruciform canopy from Charly's product designer Tom Grabner has been registered for patent and certified in four sizes.



i Do I have to disconnect my glider when opening the DIAMONDcross?

No.

Although if the pilot reacts in a passive way, the DIAMONDcross works perfectly. The risk of a side slip is very low for a DIAMONDcross. Nevertheless, the glider should be disconnected – if possible – from all rescue systems, no matter whether they are steerable or not. The disconnection can be made by separating the glider from the carabiner, as in this case, an automatic separation system for speed system is absolutely essential. Further opportunities are quick-out carabiners or cutting off the main lines by means of a jack knife. With the Finsterwalder quick-out carabiners, the disconnection is very simple.

As you can't make general statements about how the glider reacts after rescue deployment and every rescue system is always influenced by the residual resistance of the glider, a complete disconnection of the glider can only be an advantage – also if a disconnection is not absolutely necessary for the DIAMONDcross.

DIAMONDcross basic light

NEW

The non-steerable version of the DIAMONDcross ST is about 90 gram easier and cheaper than the steerable version. All other features and technical data are identical with the DIAMONDcross ST.

With a set of new risers you can subsequently modify the DIAMONDcross basic into a steerable system by the manufacturer or another authorized repair shop.

The modification costs 140,- and includes re-packing.

For more information and videos go to www.charly-produkte.de

Tom Grabner
DESIGN

DIAMONDcross ST light

DIAMONDcross basic light

	DIAMONDcross ST light 100	DIAMONDcross ST light 125	DIAMONDcross ST light 160	DIAMONDcross ST light 220	DIAMONDcross basic light 100	DIAMONDcross basic light 125	DIAMONDcross basic light 160	DIAMONDcross basic light 220
Max. load:	100 kg	125 kg	160 kg	220 kg	100 kg	125 kg	160 kg	220 kg
Flat surface:	25,2 m²	30,7 m²	41,0 m²	59,2 m²	25,2 m²	30,7 m²	41,0 m²	59,2 m²
Weight:	1170 g*	1390 g*	1780 g*	2520 g*	1140 g*	1350 g*	1750 g*	2460 g*
Sink speed:	4.7 m/s @ 100 kg 3.6 m/s @ 70 kg	4.5 m/s @ 125 kg 3.5 m/s @ 85 kg	4.5 m/s @ 160 kg 3.5 m/s @ 110 kg	4.5 m/s @ 220 kg 3.5 m/s @ 160 kg	4.7 m/s @ 100 kg 3.6 m/s @ 70 kg	4.5 m/s @ 125 kg 3.5 m/s @ 85 kg	4.5 m/s @ 160 kg 3.5 m/s @ 110 kg	4.5 m/s @ 220 kg 3.5 m/s @ 160 kg
Volumetric value:	3900 ccm	4700 ccm	5300 ccm	7300 ccm	3900 ccm	4700 ccm	5300 ccm	7300 ccm
Certification:	EN, LTF	EN, LTF	EN, LFT	EN, LTF	EN, LTF	EN, LTF	EN, LTF	EN, LTF
Article number:	HFa195/100	HFa195/125	HFa195/160	HFa195/220	HFa195/100B	HFa195/125B	HFa195/160B	HFa220B
Price:	798,00 €	848,00 €	948,00 €	1.298,00 €	778,00 €	828,00 €	923,00 €	1.273,00 €

* the weight includes the connection to the harness, as the V-line is not necessary

Second Chance

€



The worldwide top-selling PG rescue system has proven itself time and time again in emergency situations. Lightweight and with small packing dimensions at a great value for money

HFa150/86 Second Chance 86
HFa150/94 Second Chance 94
HFa150/118 Second Chance 118

499,00
519,00
549,00

Duo 160 PG tandem rescue system

€



Lightweight middle line chute with openings for high pendulum stability. Air scoops at the base reduce deployment time. Ideally suited also for engine-powered paragliders.

HFa190 Duo 160 GS

719,00

Charly Revolution

€



Charly's often copied rescue system. One of its main advantages is the fact that it makes landing upright easy as sink rate tests above ground show. Double canopy with high pendulum stability and rapid deployment

HFa180 Revolution GS 1
HFa185 Revolution GS 2

569,00
589,00

Duo 200 PG tandem rescue system

€



High-quality double canopy chute, designed for rapid deployment and minimum sink rates. One of the few rescue systems with an allowable load of 200 kg as determined by the DHV.

HFa192 Duo 200 GS

969,00

Charly Expert

€



The use of a new innovative parachute silk made in Germany enabled the reduction of both packing dimensions and weight. The lighter canopy allows for even shorter deployment times.

HFa152 Expert 100
HFa151 Expert 120

589,00
609,00

Charly round canopies for PG tandem

Modell	Duo 160 GS	Duo 200 GS
Max. load:	160 kg	200 kg
Flat surface:	55 m²	55 m²
Weight:	2960 g	3810 g
Sink speed:	5.8 m/s @ 140 kg 6.3 m/s @ 160 kg	4.3 m/s @ 140 kg 5.9 m/s @ 200 kg
Volumetric value:	13440 ccm	15900 ccm
Certification:	LTF	LTF
Article number:	HFa190	HFa192
Price:	719,00 €	969,00 €

Charly round canopies for PG

Modell	Second Chance 86	Second Chance 94	Second Chance 118	Revolution GS 1	Revolution GS 2	Expert 100	Expert 120
Max. load:	86 kg	94 kg	118 kg	100 kg	120 kg	100 kg	120kg
Flat surface:	28 m²	32 m²	36 m²	31 m²	35 m²	32 m²	38 m²
Weight:	1560 g	1620 g	1920 g	1820 g	1920 g	1500 g	1750 g
Sink speed:	5.5 m/s @ 70 kg 5.9 m/s @ 80 kg	4.7 m/s @ 70 kg 5.9 m/s @ 90 kg	4.9 m/s @ 100 kg 5.4 m/s @ 110 kg	4.9 m/s @ 80 kg 5.2 m/s @ 90 kg	4.9 m/s @ 100 kg 5.4 m/s @ 110 kg	4.6 m/s @ 90 kg 5.2 m/s @ 100 kg	5.0 m/s @ 110 kg 5.5 m/s @ 120 kg
Volumetric value:	4200 ccm	5620 ccm	7280 ccm	5500 ccm	7820 ccm	4220 ccm	4750 ccm
Certification:	LTF	LTF	LFT	LT	LTF	EN, LTF	EN, LTF
Article number:	HFa150/86	HFa150/94	HFa150/118	HFa180	HFa185	HFa152	HFa151
Price:	499,00 €	519,00 €	549,00 €	569,00 €	589,00 €	589,00 €	609,00 €

Front containers for rescue systems

€

Charly's rescue system containers allow for deployment in all directions and feature a window for an easy check of the fastening pin's correct position.

i The integrated **Charly loop tensioner system** provides for constant release force of the fastening pin, independent of the rescue system's packing pressure. The otherwise prescribed securing of the fastening pin by means of a predetermined breaking point becomes unnecessary. The use of a loop tensioner is recommended by the DHV to reduce the risk of unintentional deployments. Moreover, it allows for hassle-free test deployments that are strongly suggested for training purposes.

Charly Frontcontainer cockpit



HFa189



Front container for rescue system with detachable instrument compartment for flight instruments and other stuff like mobile phone, purse, adjustable fixing with line connector and snap-fits. The instruments are well protected during the flight and transportation. The instrument compartment can be brought easily in a slightly inclined position, so that an optimal perspective on the instruments is guaranteed. The upper part of the container with the valuables can be separated after the flight with a zipper and can be stowed separately while the lower part can stay with the rescue system and the harness. Fitting for all types of harnesses. Available for all sizes of rescue systems:

Size **M**, suitable, e.g., for SC84, SC94

Size **L**, suitable, e.g., for SC118, Revolution

Size **XL**, suitable, e.g., Duo160

Size **XXL**, suitable, e.g., for Duo 200, DC 100, DC 125, DC 160

HFa189 **Charly Frontcontainer cockpit**

89,50

Charly lightweight container compressible



HFa187



The compressible Charly lightweight container can be attached either in front of the pilot as a frontcontainer or sideways at the harness via attachment loops

Size **L** (270 g): suitable for e.g. SC84, SC94, Rev.1

Size **XL** (290 g): suitable for e.g. SC118, Rev. 2, DC 100, DC 125, DC 160

HFa187 **Charly lightweight container compressible**

72,00

Lightweight container „Expert“

The rescue system V-line, integrated in this 240g light Hike&Fly front container also serves to fix the containers with the carabiners.



The rescue system V-line, integrated in this 240g light Hike&Fly front container also serves to fix the containers with the carabiners.

HFa1875 **Charly lightweight front container „Expert“**

72,00

Service center for Charly PG & HG rescue systems

Charly recommends to consult the flight school Hochries for the checking and packing the pg and hg rescue systems.

Flugschule Hochries • Flintsbacher Str. 6 • D-83098 Brannenburg
Tel.+49(0)8034-6079618 • Mail: info@flugschule-hochries.de

Also the airworthiness review of the Charly rescue systems after an operating life of 10 years, provides the flight school Hochries on behalf of Charly

Inner container for rescue systems

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i The highly recommended deployment of the rescue systems at the G-Force-Trainer show again and again that it is hard for pilots pulling the rescue system out of the harness, when being in an emergency situation. The reason is that the rescue systems are mostly available in universal inner containers which are both compatible for harnesses with built-in containers, and for front containers. However, this compromise is not ideal. Tom Grabner therefore has developed for harnesses and front containers two different inner containers, optimised on the G-Force-Trainer.

NEW

Charly inner container for harnesses

Tom Grabner



Trials have shown that this soft container with its flat, conical shape and the rounded corners can be deployed much easier and with lower effort of the rescue system compartment of the harness, compared to cubic and volume compressed inner containers. However, this inner container is less suitable for front containers. The inner container have a separate area for the suspension lines, which is of advantage for a safe storage in the harness and a controlled deployment in emergency situations. The canopy will only be released after stretching the suspension lines, it opens fast and controlled. The risk of tangling from paraglider and rescue system is thereby minimised.

The closing rubbers consist of rubber straps with fabric coating. They are much more durable than conventional packing rubbers.

The inner containers are both suitable for the Diamond Cross rescue systems and the conventional Charly rescue systems. From our perspective, it is no problem to use this inner container for other rescue systems.

The re-packing of rescue systems into our containers is possible on request and costs 25,00 €. This work can also be done by all Charly authorised dealers.

Sizes: **S, M, L, XL**

HFa1950 Charly inner container for harnesses

29,00

NEW

Charly inner container for front container

Tom Grabner



The inner container for front containers has the conventional round shape. It also has a separate area for the suspension lines and is equipped with durable coated closing rubbers.

The inner containers are both suitable for the Diamond Cross rescue systems and the conventional Charly rescue systems. From our perspective, it is no problem to use this inner container for other rescue systems.

The re-packing of the rescue systems into our containers is possible on request and costs 25,00€. This work can also be done by all Charly authorised dealers.

Sizes: **S, M, L, XL**

HFa1951 Charly inner container for front containers

29,00

Light V-Lines

€

NEW

Charly Hike & Fly V-Line

Tom Grabner



If you want to reduce the weight of your paragliding equipment, you have definitely to choose Charly Hike & Fly V-Lines! They are integrated in the DIAMOND-cross paragliding rescue systems anyway and thus tested EN, LTF to 2400 DaN. They are suitable for Mono and Tandem. We recommend our softlink to be fixed on the harness.

- **Material:** High power dyneema
- **Lengths:** 140 cm, 160 cm or 210 cm
- **Weight:** 46g, 51g or 65g

HFa1882 Charly Hike & Fly V-Line 140 cm

39,50

HFa1884 Charly Hike & Fly V-Line 160 cm

44,50

HFa1886 Charly Hike & Fly V-Line 210 cm

53,50



Charly Minimum 55

€

Round canopy rescue system in a robust carbon fiber king post container, suitable for all current Minimum systems. A built-in auxiliary chute ensures fast and problem-free opening. Continuous suspension lines ensure high strength and balanced load transmission. 55 m², recommended load 150 kg. Weight 3,9 kg, DULV/DAeC certified. **When ordering, please indicate your king post dimensions!**

HFa6	Minimum 55	1100,00
HFa60	Minimum 55 without container	750,00
HFa161	Surcharge for rotator	89,00



Charly UL ES78

€

Round canopy reserve for microlight pilots in a robust carbon fiber king post container, suitable for all current microlight systems. Similar design as Minimum 55 with all the above advantages. 78 m², maximum load 220 kg. Weight 5,8 kg, DULV/DAeC certified. **When ordering, please indicate your king post dimensions!**

HFa61	UL ES78	1480,00
HFa610	UL ES78 without container	1130,00
HFa161	Surcharge for rotator	89,00

Charly DS 120M

€

Round canopy rescue system for two-seaters in a carbon fiber container with universal adapter, suitable for all current two-seater systems. Enhanced version of the DS 120 with new certification for 380 kg at a deployment speed of 156 km/h. A specially developed shock absorber ensures balanced load transmission to the UL. Maximum load 380 kg, weight 8,9 kg, DULV/DAeC certified. **When ordering, please indicate your king post dimensions!**

HFa62	DS 120M	1950,00
HFa622	DS 120M without container	1499,00
HFa161	Surcharge for rotator	89,00

Charly FRS 120M

€

Improved version of the FRS 120 with shock absorber. Rocket motor deployment and special ignition box construction. When the rocket motor is deployed, the drive motor is automatically turned off. The system has significantly shorter opening times compared to manual deployment. Round canopy rescue system 122 m², maximum load 380 kg at a deployment speed of 150 km/h, weight 9,8 kg. DULV/DEeC certified. **When ordering, please indicate your king post dimensions!**

HFa620	FRS 120M	1850,00
HFa621	FRS 120M canopy for existing container incl. packing and routine testing	1499,00

Charly Phantom 450T

€



Two-seat rescue system for a maximum load of 450 kg at a deployment speed of 156 km/h, 106 m² round canopy with shock absorber, air-impermeable fabric. Measured sink rate at 450 kg load only 6,4 m/s max.! King post container made with carbon fiber. Manual deployment by means of a spring and an auxiliary chute, weight 11 kg. DULV/DAeC certified. Maximum service life 15 years. **When ordering, please indicate your king post dimensions!**

HFa63	Phantom 450T	2100,00
HFa630	Phantom 450 T without outer container and deployment system, incl. packing and routine testing	1750,00

Phantom 450

€

Similar canopy as 450T, but with rocket motor deployment (not included in delivery). Textile container with packing tube. Maximum load 450 kg at a deployment speed of 150 km/h. DULV/DEeC certified.

HFa64	Phantom 450	1890,00
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Service center for Charly UL rescue systems



Charly recommends to consult Fallschirm-Wagner for the checking and packing the UL rescue systems.

Fallschirm-Wagner • Latscherstraße 8 • D-75365 Calw
Tel. +49(0)7051-3783 • www.fallschirm-wagner.de



DIAMONDcross delta light NEW

The sensationally light and small DIAMONDcross rescue systems by Tom Grabner are also available for hanggliders.

The most important features of the DIAMONDcross delta light at a glance:

- Reduction of weight and packing dimension due to high strength lighter material and dyneema lines
- Extremely low sink rates by lateral drifting of the cruciform canopy in diagonal direction and its pendulum-free condition
- Rapid deployment by fanned out canopy
- New type of inner container which makes deployment easier and minimizes the risk of tangling (cravats)

Charly HG

Well-proven, super lightweight middle line chute with small packing dimensions. Numerous documented rescues confirm its proper operation and reliability. DHV certified.

Revolution HG

Charly's **double canopy** chute for super fast opening times and minimum sink rates. DHV certified.

Clou 2 HG SAS

Charly's top model. Combines very high max. loads, rapid opening times and low sink rates. Air-impermeable F111 fabric. Deployment accelerator and patented SAS shock absorbers. Ideal for high performance hanggliders. DHV certified.



Duo 200 HG

Carefully processed high-quality double **canopy chute** for rapid deployment and minimum sink rates. One of the few rescue systems with a recommended load of 200 kg

It is strongly recommended to order all HG and UL rescue systems with built-in rotator!

Rotor

€



Rotator for HG & UL rescue systems

In emergency situations, hanggliders and microlights tend to start rotating which can cause the reserve to tangle. This is avoided by our rotator.



We recommend the Rotor to be sewn into the main bridle at the ends of the suspension lines by the rescue system manufacturer. This can be done at the next packing inspection.

Equipped with loops, the Rotor can also be installed by the pilot himself.



Runs on 3 sets of bearings, tested breaking load of 5.000 kg at a weight of only 120 g, DHV certified for all HG and UL chutes when installed by the manufacturer.

HFa160	Rotor	72,00
HFa161	Rotor with loops/with installation	89,00

Rescue Systems for Hang Gliders

Modell	DIAMONDcross delta light 125 - new	DIAMONDcross delta light 160 - new	DIAMONDcross delta light 220 - new	Charly HG	Revolution HG	Clou 2 HG SAS	DUO 200 HG
Max. load:	125 kg	160 kg	220 kg	125 kg	125 kg	140 kg	200 kg
Flat surface:	30,7 m²	41,0 m²	59,2 m²	36 m²	35 m²	32 m²	55 m²
Weight:	1430 g	1830 g	2540 g	2080 g	2180 g	2880 g	4000 g
Weight incl. Rotor:	1600 g	1970 g	2710 g	2120 g	2320 g	3020 g	4140 g
Sink speed:	4.5 m/s @ 125 kg 3.5 m/s @ 85 kg	4.5 m/s @ 160 kg 3.5 m/s @ 110 kg	4.5 m/s @ 220 kg 3.5 m/s @ 160 kg	5.4 m/s @ 110 kg 4.9 m/s @ 100 kg	5.4 m/s @ 110 kg 4.9 m/s @ 100 kg	5.1 m/s @ 130 kg 4.6 m/s @ 120 kg	5.9 m/s @ 200 kg 4.3 m/s @ 140 kg
Volumetric value:	4700 ccm	5300 ccm	7300 ccm	7280 ccm	7820 ccm	9410 ccm	15900 ccm
Certification:	EN, LTF	EN, LTF	EN, LTF	LTF	LTF	LFT	LT
Article number:	HFa195/125HG	HFa195/160 HG	HFa195/220 HG	HFa110	HFa186	HFa171	HFa193
Price incl. Rotor:	948,00 €	1043,00 €	1.393,00 €	638,00 €	728,00 €	788,00 €	1088,00 €
Price without Rotor:	859,00 €	954,00 €	1.304,00 €	549,00 €	639,00 €	699,00 €	999,00 €

Kortel Design is a French manufacturing company, founded by Denis Cortella in 1999. Denis was French champion in paragliding in 1998, 2004 and 2005, as well as vice-champion in 1995 and 2000. The vice-world-champion (PWCA 2005) Max Jeanpierre joint as a partner in 2006. Since 2010, CHARLY Produkte has been taken over the German and Austrian general distribution for these innovative harnesses. KORTEL design offers a perfect complement to the products of CHARLY with its portfolio.



KORTEL Kruyer II

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KRUYER II is an ultra-light mountaineering harness by Kortel Design. Compared to its predecessor, it has become even lighter, more comfortable and easier to use. KRUYER II is equipped with the latest high-tech materials. Kevlar fabrics have been replaced by Dyneema which provides the same strength at lower weight. The supporting surfaces are filled with high density EVA foam that permanently retains its shape. The geometry has been completely reworked such that the pilot weight is ideally distributed and pressure points are avoided, thus ensuring greater sitting comfort. Overall, the new design allows for a weight saving of 30%.

- Dyneema rope system adapted from Kortel KLIFF
- Kortel's ultra-light model: up to 40% lighter than its predecessor
- Hip strap not adjustable
- Can be combined with Kortel SAK II (reversible backback with airbag) for improved comfort and handling
- Ready for use with a speed system
- Certification: EN; LTF with SAK II
- Weight: 285 g (S), 300 g (M), 320 g (L), 400 g (XL)
- Sizes: S (bis 1,70 m), M (bis 1,80 m), L (ab 1,80 m), XL (ab 1,90 m)
- Colours: yellow/black, blue/black

HG8 KORTEL Kruyer II

299,00



KORTEL Karver II

€

KARVER was the first shoulder strap-free paragliding harness worldwide. Kortel KARVER II retains the innovative concept of its predecessor yet saves another 35% of weight. In particular the improved thigh support system makes the new version even more comfortable. The ideal harness for mountaineering pilots and short XC flights.

- Special buckles for waist and leg strap adjustment
- Kortel's versatile lightweight model: buckles suitable for use in all conditions (snow, sand, etc.)
- Can be combined with Kortel SAK II (reversible backback with airbag) for improved comfort and handling
- Ready for use with a speed system
- Certification: EN; LTF with SAK II
- Weight: 775 g (S), 840 g (M), 945 g (L), 1050 g (XL)
- Sizes: S (bis 1,60 m), M (bis 1,80 m), L (ab 1,80 m), XL (ab 1,90 m)
- Colours: black/blue

HG91 KORTEL Karver II

345,00



KORTEL Sak II

€

Kortel's SAK II is a detachable reversible airbag with backpack functionality and can be attached to Kortel's KRUYER II or KARVER II within just 2 minutes. Various equipment can be fastened to the sides of the backpack. The volume is about 60 litres and offers enough space for well-folded standard equipment.

- Weight: 985 g
- Sizes: unisize
- Colours: black/yellow/red

HG4250 KORTEL Sak II

249,00



KORTEL Tandemmodul for Kruyer and Karver

€

Make two out of one: The tandem module for Kruyer II and Karver II. Quickly and easily installed it allows to use the light harness as pilot harnesses for tandem flights. The features of the main straps – like the high flexibility and the easy adjustment – are also possible with the tandem module to full extent.

- The rescue reserve container is installed at the back side
- Shoulder straps provide an optimal distribution of weight
- The rescue handle can also be mounted for left-handed people
- The tandem module has a little bag for personal stuff
- Certification: EN
- Weight: 1,35 kg (incl. 10 cm foam protector), together with a Karver II size M only 2,2 kg

HG910 KORTEL Tandemmodul f. Kruyer and Karver

299,00





KORTEL Karma II

€

This harness has been produced for an optimal comfort from an upright to a half-lying position. The new developed Krashbox is kept permanently in shape by a foam module, which guarantees an immediate effect of the airbag. The Karma II has been certified LTF! Much time was also invested in the choice of new materials when developing the seat, like harnesses made of dyneema, which guarantees a lower weight without influencing the resistance. All adjustments are accessible and adjustable during the flight. Roll damping adjustable during the flight and independent from the adjustment of the belly strap. In the back bag, there is an extra space for the drinking water system and/or radio. Two outside pockets on the sides. Direct access from the back-bag to the shoulder to install a beverage hose and /or microphone cable. Side air inlets are retractable to protect them during transportation.

- Certification: EN and LTF
- Weight: 2,9 kg (XS), 3,0 kg (S), 3,1 kg (M), 3,4 kg (L), 3,5 kg (XL)
- Sizes: XS (up to 1,62 m), S (as of 1,62 m), M (as of 1,70 m), L (as of 1,84 m), XL (as of 1,95 m)
- Colours: black/blue-grey/silver

HG320 KORTEL Karma II with carabiners

829,00



KORTEL Kool

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Basic intermediate and groundhandling harness. It combines passive safety, comfort and longevity. Its with foam pre-filled airbag and the innovative storage bag in the front part of the seating surface protect the pilot already in the starting phase.

The handle of the rescue system, integrated in the airbag at the back, can be easily deployed through the variable positioning from every single position. Besides, an additional protection of the deployment handle is possible for groundhandling or the training hill.

The different-coloured leg-straps simplify the usage and the various adjustment options are also good available during the flight. A very robust truck-canvas-cover protect the harness on the bottom and can be mounted easily and fast with the help of velcro.

- Spacious, pre-filled airbag with foam
- Rescue system integrated on the backside of the airbag
- Adjustable rescue handle with safety option
- Little storage on the upper side
- Robust and replaceable coloured valance
- Radio-bag integrated in the shoulder strap
- Easy adjustment options
- Certification: EN, LTF
- Weight: 3,4 kg (XS), 3,5 kg (S), 3,7 kg (M), 4,0 kg (L)
- Sizes: XS (bis 1,62 m), S (bis 1,71 m), M (bis 1,85 m), L (bis 1,90 m)
- Colours: black/blue

HG429 KORTEL Kool

790,00



KORTEL Kuik II

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The Kuik II is a multifunctional harness in modular design. The weight of the basis module is about 1,7 kg (M), it is a harness with single suspended leg rests without seat board. The geometry of this basis module is simply sensational. You feel comfortable right away and in the air, the Kuik II turns out to be a real miracle in handling in sitting and lying position. Thus, the Kuik II is the ideal basis for the perfect paragliding harness.

Depending on your requirements, the Kuik II can be equipped with different additional modules. The Kuik II is, depending on the module, a reversible harness with airbag and comfortable backpack, an around seat with pre-filled airbag or permanent protector, a reclined harness with best protection and aerodynamic full protection.

- Weight: basis harness: 1,85 kg (S), 2,0 kg (M), 2,1 kg (L)
- Sizes: S (1,54 - 1,68 m) M (1,67 - 1,83 m), L (1,82 - 1,95 m)
- Colors: black/yellow/white

HG93 KORTEL Kuik II basis harness incl. carabiners

539,00

HG931 Modul Crashbox

329,00

HG932 Modul reversible harness with airbag

375,00

HG933 Modul foam protector

299,00

HG934 Modul Race

675,00



HG93



HG932



HG931



HG933



HG934

KORTEL Kolibri

€

The Kolibri is a lightweight harness, developed for Hike& Fly, vol bi-vouac flights, competitions and is ideal for travelling. The result of a long development time and a lot of tests is a harness with:

- an innovatively adjustable dyneema- cord system
- Hybrid back protector of foam/ airbag combination

The thigh mounting which was independently of each other constructed makes the rolling softer and leads to a smoother response in difficult conditions. The comfort is unprecedented for a harness with this weight and can thus be used for flights of several hours. The frontal affixing of the rescue systems which is integrated in the leg fairing, enables an easy deployment, also for external positions. The handle is placed in such a way that it can be reached simply and intuitively. Furthermore, the Kolibri offers spacious storage by a huge bag in front of the protector, moreover, the spacious extra bag in the rear pocket also provides a stick holder. The optional protector can be easily removed and be replaced by e.g. a sleeping bag.

- Certification: EN and LTF
- Delivery with extra light soft-link-connection (Breaking load: 2300kg)
- Weight: 1,9 kg (M), 2,0 kg (L), 2,1 kg (XL)
- Sizes: M (up to 1,70 m), L (as of 1,70 up to 1,85 m), XL (as of 1,85 m)
- Colours: black/orange/green

HG94	KORTEL Kolibri	1299,00
HG941	KORTEL Kolibri Inside Protection	35,70



KORTEL K-Flex

€

NEW The first uni-size harness, fully adjustable for passengers and pilots with a body dimension of 1,50 – 2,00 m.

K-Flex is characterized by maximum flexibility. It is fully adjustable and thus fits easily to all tandem passengers. But also for pilots who are currently paragliding students or for the first flights, the K-Flex can convince! The seat board depth and breadth, back length and back angle are adjustable.

K-Flex has a pre-filled airbag with lateral air-inlet. It is equipped with a big storage bag, side handles for start help and a removable, washable cover, protecting the airbag.

- Weight: 3,1 kg
- Size: uni-size, fitting for body measurements 1,50 - 2,00 m
- Colour: blue

HG95	KORTEL K-Flex	580,00
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KORTEL Kid

€

NEW The first harness for little passengers and kids with body measurements from 0,80 - 1,50 m.

Equipment like K-Flex, but with foam protector.

- Weight: 1,9 kg
- Size: Uni-size, fitting for body measurements from 0,80 - 1,50 m
- Colour: blue

HG96	KORTEL Kid	425,00
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KORTEL Kockpit Safe

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Developed for even more pilot safety, Korte's Kockpit Safe is the successor of the Kockpit II. Time and again, deadly accidents happened due to untied leg straps. Investigations showed that an obstruction of the view on the plugs due to instruments mounted above was a frequent reason why pilots forgot to close the plugs. The unique attachment system of the Kockpit Safe automatically creates a connection between leg strap and main carabiner and thus prevents the pilot from falling out of the harness. For optimal instrument screen readability, the Kockpit Safe's attachment angle can be individually adjusted.

Compared to its predecessor, the Kockpit Safe provides even more storage space: The spacious upper compartment is roomy enough to store even larger flight instruments. A magnetic cover flap provides optimal protection during transport. The bottom compartment carries 3-4 liters and can be used for ballast or smaller equipment (e.g., gloves, wallet, snacks, etc.). An additional outside pocket that is easily accessible during flight is ideal for quick access to a map or a roadbook.

- Material: Cordura®, ripstop
- Colour: black
- Weight: 500 g

HG426 KORTEL Kockpit Safe

135,00



Charly Frontcockpit-XC

€

Frontcockpit with size-adjustable ballast compartment, suitable for a water ballast bag with a filling volume of up to 10 l. If the ballast compartment is not needed, it can easily be removed with a zipper.

The flight instruments are well protected in the padded lid compartment during transport and can easily be attached to the Frontcockpit by means of the integrated hook-and-loop plate. Inside dimensions of instrument pocket: approx. 26 x 16 cm. Weight: 700 g.

HFa1892 Charly Frontcockpit-XC

79,00



Charly Frontcontainer cockpit

€

Front container for rescue system with detachable instrument compartment for flight instruments and other stuff like mobile phone, purse, adjustable fixing with line connector and snap-fits. The instruments are well protected during the flight and transportation. The instrument compartment can be brought easily in a slightly inclined position, so that an optimal perspective on the instruments is guaranteed. The upper part of the container with the valuables can be separated after the flight with a zipper and can be stowed separately while the lower part can stay with the rescue system and the harness. Fitting for all types of harnesses. Available for all sizes of rescue systems:

Size **M**, suitable, e.g., for SC84, SC94

Size **L**, suitable, e.g., for SC118, Revolution

Size **XL**, suitable, e.g., Duo160

Size **XXL**, suitable, e.g., for Duo 200, DC 100, DC125, DC 160

HFa189 Charly Frontcontainer cockpit

89,50



KORTEL Cockpit FOTO

€

This special photo cockpit offers ideal protection for your photo equipment and can easily be turned into a practical backpack.

- Interior with adjustable Velcro dividers for flexible configuration
- Handle and shoulder strap
- Inner zipper pockets for memory cards etc.
- Reinforced fabric on the bottom
- Colour: black • Weight: 850 g

HG4260 KORTEL Cockpit FOTO

185,00





KORTEL Kolibri backpack

€

The Kolibri backpack weighs a mere 800 g and - just like the Kolibri harness - has been especially developed for vol-bivouac and hike & fly pilots. A unique compression system ensures the glider's optimal positioning and weight distribution. With its premium quality and innovativeness, it ideally complements Kortel's range of lightweight flight equipment.

- Unique compression system for the optimal positioning of the glider
- Compressible inner packsack for smaller pack size
- Carrying system with frame structure for optimal weight distribution and high wear comfort
- Sweat protection
- Special zipper design for easy access to the contents
- Several easily accessible side pockets, lid compartment for valuables
- Shoulder pockets for drinking bottles

HG4251 KORTEL Kolibri backpack
HG4253 Top pocket for Kolibri backpack

220,00
20,50



KORTEL quick pack sack Tandem

€

Convenient and time-saving packing of the mushroomed glider using only one strap. This quick pack sack has a volume of 200 l and is spacious enough for your biplace wing, passenger and pilot harnesses incl. rescue chute and two helmets.

- Ergonomically shaped shoulder and hip straps for easy transport
- 2 carry straps (one on each side)
- Vertically adjustable chest strap
- 2 compression straps with light metal quick release fasteners
- Padded side pocket (for camera, telescopic stick, etc.)
- Window pocket (for pilot's license, ID cards, etc.)
- Small zipper pocket (for wallet, keys, etc.)
- Reinforced fabric on the bottom
- Colors: blue, light blue mustard, purple
- Gewicht: 1,47 kg

HPa120 KORTEL quick pack sack Tandem

219,00



Charly Lite Concertina Bag

€

Charly's Lite Concertina Bag is a lightweight cell pack sack for hike & fly tours. Air-permeable cloth and mesh material at the sides enable minimum packing size. Integrated loops allow for proper glider and riser positioning during the packing process. Due to the completely separable zipper and a special opening at the bottom for paraglider lines, the harness can remain connected to the glider.

- Weight: 280 g • Length: 280 cm • Completely separable zipper
- Special opening at the bottom for paraglider lines
- Loops for riser fixation on the inside
- Air permeable cloth for minimum packing dimensions

HPa132 Charly Lite Concertina Bag

85,00



Nova Compression Bag

€

The Nova Compression Bag reduces the volume of the wing, protects it from sweat and helps to pack it flatter, which makes carrying it in your backpack more comfortable. The Compression Bag is equipped with a vent. When opened, any remaining air can be pushed out of the bag.

- 100% waterproof, protects the wing from sweat and dirt
- Volume: 30 l, 60 l
- 30 l for: IBEX (all sizes), SUSI Q (all sizes), MENTOR 3 light XXS & XS, ION 3 light XXS & XS
- 60 l für: all NOVA-paraglider (excl. Tandem)

HPa134 NOVA Compression bag 30 l

30,00

HPa135 NOVA Compression bag 60 l

36,00



Cross country ID plate

€

D-NFEX

For paragliders and hanggliders

Made from self-adhesive black ripstop nylon (other colors are not opaque enough).

HSe403	Complete set, height 30 cm	32,50
HSe405	kompl. Satz 50 cm hoch	49,80

Telefonisch vorbestellen !

Repair materials

€



HG/PG patches

Pre-packaged high adhesive ripstop nylon, 12 x 137 cm. Colors: white-transparent, black, red, dark blue, purple, pink

HSe11		8,50
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Self-adhesive sailcloth

Roll material 90 g/m2 for smaller repairs on hanggliders and paragliders. Minimum order quantity 0.3 running meters.

Colors: black, white, red, dark blue, purple, pink
Roll width 0,96 m.

HSe100	0.10 to 1.00 running meters, per 0.10 m	6,00
HSe10	from 1.00 m, per m	34,00

Rescue kit

€



HR	Rescue cord with lead weight	6,90
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HKa	SOS cutting knife for webbings	8,50
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Emergency knife with double blade made of carbon fiber

With an overall length of 16.2 cm very robust yet easy to handle. Extreme cutting performance thanks to two crossing blades. The knife enables easy cutting of lines and webbings.

HKa1		24,80
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Helmet pouch for radio set

€



Pouch for a radio set with hook-and-loop fastener for attachment at the chin guard of a full face helmet or at the harness shoulder strap.

HR100		14,80
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Hook-and-loop-fasteners

€



Hook-and-loop fasteners for sails and battens

HKI7	strap/buckle 18 x 5 cm	5,00
HKI800	strap/buckle 75 x 3 cm	9,50
HKI81	strap/buckle 100 x 3,8 cm	10,00
HKI82	strap/buckle 135 x 3,8 cm	11,50



Sew-on hook-and-loop fasteners.

Can be cut to the desired length without fraying.

HKI1	Hook tape, width 25 mm	1,85
HKI2	Loop tape, width 25 mm	1,85
HKI5	Hook or loop tape, width 100 mm, orange	5,35

Webbings

€/m



Abrasion resistant, pliant, UV stabilized.

HBa1	12x1,2 mm, Fangriemenband 700 kp	2,15
HBa2	13x2 mm weiß/blau	2,50
HBa3	50x2 mm	3,30
HBa5	25x2,5 mm, 1800 kp (e.g., for pilot hang-in)	2,60
HBa4	44x2 mm, 2200 kp	3,10
HBa40	44x1,5 mm multicolor	3,00

Windsock and accessories

€



CHARLY Windsock

Due to its size 32cm x 125cm good to see also from great distance, and due to the colours (blue in front, red at the back side), no danger of confusion of the wind direction.

Material: Robust and light Nylon Ripstop. Suitable for our rods.

Folding windsock pole and earth stake

HWi2



HWi20

HWi11	CHARLY Windsock ø 32 cm, Länge 125 cm	22,80
HWi2	Folding windsock pole, length 260 cm	25,50
HWi20	Earth stake for use with windsock pole, with robust pull-out handle	19,80



Dyneema super braid



New super fiber for smooth cords with higher tensile strength, lower weight, more abrasion resistance and almost the same non-stretching properties compared to Kevlar cords! The 3 mm Dyneema braid can be used as rescue cord for roping down in emergency situations.

Art. no.	ø	Weight (g/m)	Strength (kg)	€/m
HSeiD2	2 mm	5	250	1,20
HSeiD3	3 mm	7	400	1,40
HSeiD4	4 mm	10	650	2,00
HSeiD5	5 mm	15	1000	2,60
HSeiD6	6 mm	22	1500	3,45

Sail batten cord

€/m



Polyester cord, good tensile strength and abrasion resistance, 16-fold braided.

HSei2,5	2,5 mm, 110 kp	0,35
HSei4	4,0 mm, 290 kp	0,40

Elastic cord

€/m



Elasticated braid with nylon coating. Highly elastic yet resilient. Universally applicable.

HSeiGub	Rubber band 4,0x1,5 mm	2,00
HSeiGu	Rubber braid 4,0 mm	1,45

High-quality kernmanle cords

- Fully impregnated
- Highly abrasion resistant
- Highly UV resistant
- Favorable strength-to-weight ratio



Art. no.	ø	Weight (g/m)	Strength (kg)	€/m
HSei3	3 mm (VG-cord)	10	180	0,90
HSei6	6 mm	24	730	1,00
HSei7	7 mm	30,5	1200	1,50

Instrument protective material mount

€

to mount instruments either on the front cockpit pocket, on the rescue reserve front container, or by means of the flexible metal angled mount to the harness chest strap. With the Vario/GPS base board, two instruments can be mounted onto the flexible metal angled mount or to the paraglider leg mount.

Hi9640	Protective cover for Competino+, Compeo+, Flytec 6020/6030	12,50
Hi9641	Protective cover for IQ-One / IQ-One+ / IQ Basic GPS / IQ Alto Flytec 6000 / 6005 / 6015 / Element	12,50
Hi9642	Charly Protective cover for Oudie 4	15,00
Hi9600	Flexible metal angle mount	9,80



Hi9640



Hi9641



Hi9642



Hi9600



HG1433



HR11



HG142



HG1434K

CamelBak UnBottle

€

Separate insulated drinking system that turns any backpack into a hydration pack. D-rings for external attachment, fill capacity 2.0 l, empty weight 200 g.

HG1433	CamelBak UnBottle	45,00
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First Aid Kit

€

The waterproof sleeve made of PU coated nylon fabric with roll closure can easily and quickly be fixed to a backpack, harness, belt, etc. Contents: 1 pair surgery gloves, 2 first aid packets, 5 m tape, 1 set plaster strips, first aid instructions. Dimensions: 12 x 11 x 8 cm, Weight: 140 g

HR11	First Aid Kit	19,90
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High-pressure water ballast bag

€

HG142	High-pressure water ballast bag fill capacity 10 L Weight: 178 g	26,90
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HG1434K	High-pressure water ballast bag with tube fill capacity 15 L Weight: 142 g	37,90
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Towing releases and towing accessories

Mathes EASY QUICK

€



HS301	Mathes EASY QUICK towing release	95,00
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Single-stage, one-piece towing release for paragliders with integrated towing assistance. The Mathes QUICK EASY TOWING RELEASE manufactured by Dietmar Mathes meets the the airworthiness requirements of the DHV for paragliders and hang gliders. Max. trailer weight: 2000 N

Charly S2

€



HS300	Charly S2 Schleppklinke	54,00
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Improved version of the super light, reliable and approved release for PG or HG-UL towing (lower risk of injury in the case of rope breakage). Tensile strength 500 kg, 150 g, DHV certified.

Frontcontainerklinke SK1

€



HS420	Front container release SK1	56,00
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Single-stepped, split textile towing device for paragliding. It can be attached to the harness either at the main suspension or, if applicable, at towing loops. The TOWING DEVICE SK1 may as well be attached to harnesses with integrated front container.

Front container release SK2

€



HS421	Front container release SK2	92,00
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Similar to SK1, for PG towing, with integrated towing adapter and winch towing accelerator.

PG Accessories and Towing Devices

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Charly Express-Loop 12mm for fixing the PG tow release onto the risers directly over the karabiner (in order to avoid the risk of a deep stall when towing). Breakage strength 600 DaN.

HS5	Charly Express-Loop (Pair)	7,70
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Charly PG-Towing adapters for karabiners

When using a towing adapter, the PG will be automatically accelerated during the towing and this prevents the risk of deep stall. Thus, the start will be facilitated and more height in towing is gained. In case of rope breakage, the shooting forwards of the PG will be weaker.

HS50	Charly PG-Towing adapter (Pair)	16,80
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XC brake handle with swivel

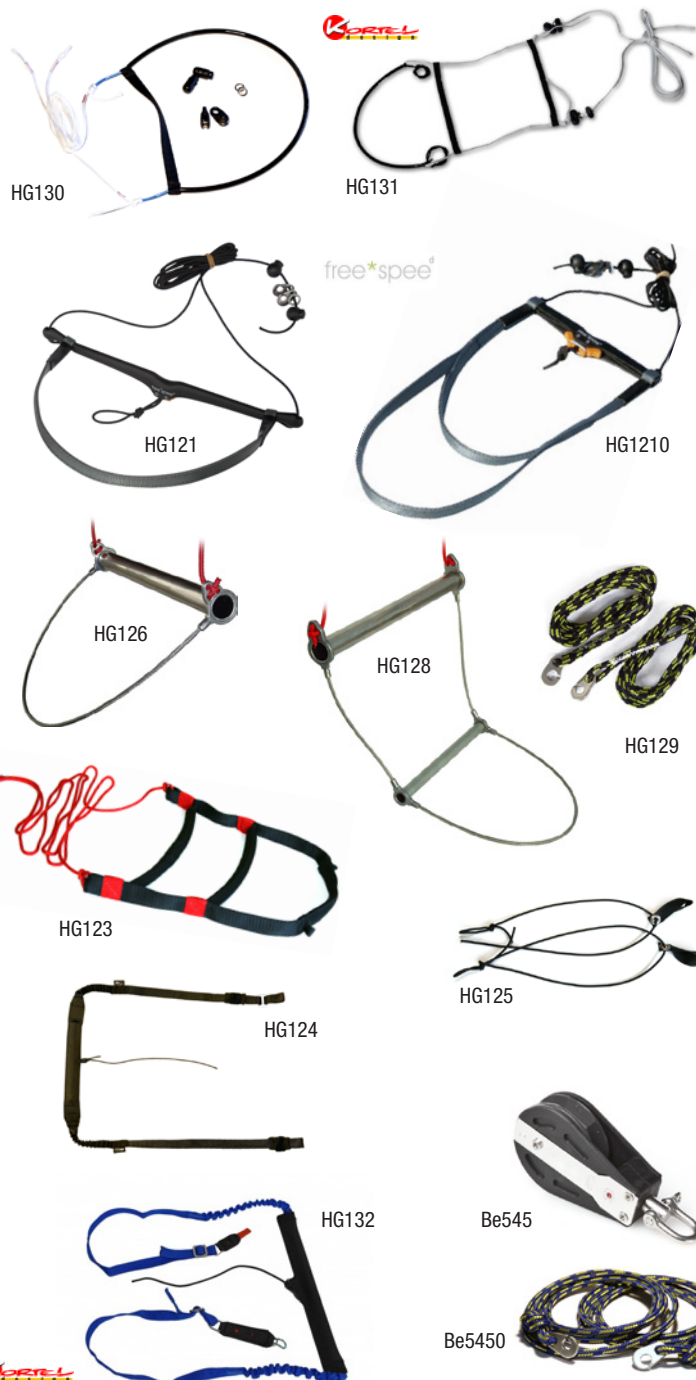
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High Adventure's new XC brake handle features an ergonomically shaped plastic bar right below the brake line knot and a large, padded brake loop. The plastic bar enables long-term energy-saving flying as the forearm does not need to be bent and thus put in a mechanically inefficient and tiring position for thermaling and good glider control. When steering using the plastic bar, the brake loop remains around the wrist. When flying accelerated, the hand slips into the loop and encourages a clean gliding position of the arm while ensuring that immediate active flying is available if necessary. Even with thick gloves, slipping out of the loop is easily possible at any time. Moreover, the XC brake handle is designed in such a way that it cannot get caught in the lines when not in use or during ground handling. Retrofitting at any glider is easily possible.

- Available in three sizes (stretched brake loop length in cm): S (18), M (19), L (21)
- Weight: 90 gr.
- With magnetic or popper attachment

Be2GM High Adventure XC brake handle, magnetic attachment 55,00

Be2GK High Adventure XC brake handle, popper attachment 55,00



KORTEL light speed pedal

€

Light speed pedal for Krüyer II, Karver II and Kliff

HG130 KORTEL light speed pedal 2-step, Weight: 45g 33,50

HG131 KORTEL light speed pedal 3 steps, Weight: 45g 35,00

free*spee speedbar

€

free*spee allows the optimal adjustment of the speed system at any time. Letting loose of the control lines completely is not necessary thanks to one-hand operation.

HG121 free*spee 2.0 speedbar, Weight: 80g 54,80

HG1210 free*spee XC Speedbar 3 steps, Weight: 90g 59,90

Charly single speed pedal

€

Length adjustment directly at the foot rest by means of a three holes system. Easy to install, with sturdy rope and super light foot rest tube. Weighs a mere 74 g!

HG126 Charly single speed pedal, adjustable 22,00

HG129 Brummel hooks (pair), sewn into the cord 7,90

Charly double speed pedal

€

Three-step speed system deluxe. Bent in flight direction for easy step-in. Length adjustment directly at the foot rest by means of a three holes system.

HG128 Charly double speed pedal, adjustable 32,00

HG129 Brummel hooks (pair), sewn into the cord 7,90

Charly soft speed pedal

€

Flexible speed system for dosed acceleration across three steps.

HG123 Charly soft speed pedal, 3 steps 25,60

Charly speed pedal return system

€

HG125 Charly speed pedal return system 9,90

Foot rest

€

HG124 Charly foot rest, optimal comfort through 2-point fixing. 24,80

HG132 Kortel foot rest, Weight: 90g 32,00

Automatic ratchet block with swivel shackle

€

High-quality ratchet block made of carbon compound with stainless steel reinforcements. Large (40 mm) plate for less energy expenditure during long accelerated flights. Overall length: 75 mm. For rope diameters of 4 to 6 mm.

Be545 Automatic ratchet block with swivel shackle 49,90

Be5450 2 x 1.50 m power lock cord 5 mm incl. Brummel hooks 9,90

Finsterwalder PINLOCK

€



The Pinlock, drop-forged from Titanal (7075 T6 alloy), is compatible with conventional paraglider carabiners and is suitable for all paragliders and harnesses with webbing widths of 40 to 45 mm. Separate strap chambers avoid lateral loads.

- Very long replacement interval at a weight saving of 80 to 120 g/pair compared to steel carabiners!
- Breaking load: 2,500 DaN, proven fatigue resistance!
- Replacement interval (mono): 8 years with unlimited hours of operation
- Replacement interval (tandem): 3 years with unlimited hours of operation

Weight: 80 g/pc. **Inside height:** 40 mm

HKar3	Finsterwalder Pin Lock (piece)	29,50
HKar33	Adapter sleeves for narrow webbing widths (pair)	9,40

Finsterwalder SNAPLOCK

€



The innovative paragliding and hanggliding carabiner for harnesses with a webbing width of 25 mm; suitable also for tucked in 44 mm straps • Breaking load: 3,000 DaN • Breaking load (open gate): 2,000 DaN • Load without permanent deformation (open gate): 1,600 DaN • Replacement interval (mono): 5 years with unlimited hours of operation • Replacement interval (tandem and hg): 2 years with unlimited hours of operation

- Drop-forged from Titanal

Weight: 76 g/pc.

HKar35	Finsterwalder Snaplock (piece)	26,00
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AustriAlpin POWERFLY

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Steel karabiner with automatic lock for webbing widths of 44 mm.

- Breaking load: 2.600 DaN* • Load without permanent deformation (open gate): 300 DaN* • yearly replacement recommended • Measures: 82 x 62 mm
- **Weight:** 140 g/pc. **Height inside:** 60 mm

HKar410	AustriAlpin Powerfly (piece)	25,90
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Finsterwalder QUICK-OUT Karabiners

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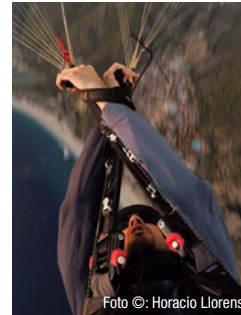
Our separation carabiner Finsterwalder QUICK-OUT is used whenever a reliable connection and if necessary a rapid separation also under load is important. It is suitable for the safe attachment of loads - in particular persons - and for outdoor use. It has proven itself especially during helicopter missions of the police, the military, and the mountain rescue service. In paragliding, the Finsterwalder QUICK-OUT is used for the separation of the glider when a steerable rescue system is deployed. By simultaneously pushing both release buttons, pilot and aircraft are separated effortlessly. In safety trainings, the separation of the glider after a rescue chute deployment turned out to be advantageous.

Besides the rescue options in case of emergency landings in water, trees, and high winds, the Finsterwalder QUICK-OUT also offers handling advantages compared to conventional carabiners.

- Breaking load: 4.000 DaN*, 2.000 DaN* individually tested
- No gate play, thus fatigue endurable with unlimited hours of usage for 150 DaN* hauled load!
- Double-button locking with multiple safety steps
- Replacement interval: 8 years, unlimited hours of usage

Weight: 200 g/pc.

HKar12	Quick Out Karabiner (piece)	63,50
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Quickout separation system for speed pedals & accessories



HKar141



HKar121



HKar128

HKar121	Extra insert for Quickout (piece)	19,90
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HKar128	Adapter sleeves for narrow webbing widths (pair)	9,40
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HKar14	Patent shackle separation system (pair)	29,80
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HKar141	Brummel hook separation system (pair)	17,90
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Separation systems for speed pedals are activated automatically by the operation of the Quickout carabiner.

On the fatigue resistance of air sports Carabiners:

Paragliding carabiners are permanently subject to oscillating loads.

The DHV found them to amount to between 10 and more than 100 kg, and to occur up to 26 times per second. Given the carabiners' high breaking loads (at least 1,500 kg), such oscillating loads should be unproblematic. However, conventional carabiners have a construction-conditioned peculiarity: their play in the gate. On the one hand, this play is necessary to allow the snap hook to open and close without friction. On the other hand, it leads to the snap hook becoming weight-bearing only at loads of between 30 and 120 kg, depending on the amount of play in the gate. Accordingly, one flies as if the snap hook was open when the carabiner is under smaller loads. Practice as well as dynamic fatigue tests show that already relatively low payloads during normal flights can lead to cracks caused by material fatigue since the carabiners are not designed for such load situations. To reliably exclude material fatigue, carabiners should be designed for fatigue resistance or should at least meet certain endurance limits. We recommend a yearly replacement of carabiners that lack a proof of fatigue resistance according to the test specifications of the DHV.

Steel is good ?

A carabiner's fatigue resistance is not a matter of material but a matter of design! In dynamic fatigue tests, some aluminum carabiners exhibited considerably higher resistance values than steel carabiners. In fact, stainless steel is usually more fatigue resistant, harder and more corrosion resistant than aluminum, but these advantages in strength can easily be outweighed by a slightly larger width of a corresponding aluminum component. Due to its better strength-to-weight ratio, high-quality aluminum alloys are the standard in aircraft construction.



The crack in the steel carabiner on the left occurred after 1,739,700 load changes between 5 and 50 kg. The steel carabiner on the right broke after 287,000 load changes between 7 and 70 kg. Not quite reassuring, particularly considering safety factors of 1.5 and 1.145 for scratches/corrosion that are required due to the statistical spread in the tests!

For comparison: Pinlock carabiners endured the required 5,000,000 load changes between 40 and 400 kg without damage. For further information (e.g., a simple method to determine the amount of play in the carabiner gate), please visit: www.finsterwalder-charly.de

AustriAlpin Stratus INOX

€



Inox steel karabiner with automatic lock for webbing widths of up to 25 mm

- Breaking load: approx 2.800 DaN*
- yearly replacement recommended
- Measures: 78 x 55 mm
- **Weight:** 129 g/pc.

HKar10	AustriAlpin Stratus Inox (piece)	25,90
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STUBAI 5000

€



The Stubai SUPER 5000 is a drop-forged steel karabiner with an extreme D-form for rope suspensions. Thanks to its high gate-open-load, this karabiner has no problems concerning fatigue endurance.

- Breaking load: approx. 4.500 DaN*
- Load without permanent deformation gate open: approx. 1.500 DaN*
- Replacement interval: 8 years, unlimited hours of usage
- **Weight:** 220 g/pc. **Inner height:** 85 mm

HKar5	AustriAlpin Stubai 5000 (piece)	24,80
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AustriAlpin Stratus ALU

€



The AustriAlpin STRATUS ALU is an aluminium paragliding karabiner with automatic lock for webbing widths of up to 25 mm.

- Breaking load: approx 1.800 DaN*
- yearly replacement recommended
- Measures: 78 x 55 mm
- **Weight:** 63 g/pc.

HKar11	AustriAlpin Stratus Alu (piece)	25,90
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AustriAlpin TROPOS

€



The AustriAlpin TROPOS is a steel hang gliding karabiner for webbing widths of up to 30 mm and a screw-on security sleeve.

- Breaking load: approx. 3.200 DaN*
- Replacement interval: yearly (recommended)
- **Weight:** 225 g/Stk. **Inner height:** 77 mm

HKar20	AustriAlpin TROPOS (Stück)	24,80
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Glider-harness connection link for paragliders

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Kortel's SOFT LINKS are ideally suited for attaching the rescue system to the harness. Moreover, they can be used as a fatigue resistant alternative to carabiners if harness and glider are only rarely disconnected from each other. The operation is simple and safe.

- Breaking load: 2.300 kg

- **Weight:** 12 g/pc.

HKar110 Kortel Softlinks (pair)

23,90

SPECIAL SCREW LOCK LINK

€

NEW



Screw lock link for lightweight harnesses 13 x 20 mm

- Stainless steel Ø 5 mm • Opening: 8 mm

- Length: 50 mm

- Breaking strength: approx. 2.600 kg

- Payload: 325 kg

- Suitable as an alternative to carabiners

- Fatigue endurable if screwed down

- **Weight:** 25 g/pc.

Be303 Special screw lock link (piece)

19,95

Rectangular screw lock link

€



Rectangular screw lock link 34 x 50 mm

- Stainless steel Ø 7 mm • Opening 10 mm

- Breaking strength: approx. 2.125 kg

- Payload: 625 kg

- Suitable as an alternative to carabiners

- Fatigue endurable if screwed down

- **Weight:** 63 g/pc.

Be304 Rectangular screw lock link (piece)

12,50

TRAPEZIUM SCREW LOCK LINK

€



Trapezium screw lock link for band width 28/42 mm

- Stainless steel Ø 6 mm • Opening 8 mm

- Breaking strength: approx. 2.000 kg • Payload: 250 kg

- Suitable as an alternative to carabiners

- Fatigue endurable if screwed down

- **Weight:** 47 g/pc.

Be305 Trapezium screw lock link (piece)

8,00

Be350 dto. for band 18/30 mm

8,00

GLIDER-HARNESS CONNECTION LINK

€



- Steel Ø 7 mm • Opening 9 mm

- Breaking strength: approx. 2.800 kg

- Payload: 550 kg

- Inner height: 53 mm

- **Weight:** 50 g/pc.

Be31 Glider-harness connection link (piece)

4,20

Be310 dto. Stainless steel Ø 6 mm, 41 g

8,00

Finsterwalder mini control handle swivels

€



Prevents an annoying twisting and curling of the paraglider control lines. Can be knotted into the control lines. Ø 8/10 mm

- Length: 33 mm • Breaking strength: 300 kg

- Payload: 150 kg

Be2 Mini control handle swivels (piece)

8,00

Finsterwalder Speedsystem hooks

€

Brummel hooks are commonly used in sailing. Finsterwalder's SPEED SYSTEM HOOKS are manufactured according to the same principle and have been developed especially for paragliding. They serve as a connection between the speed system that is attached to the harness and the glider and are hence also called speed system hooks. Nearly all paraglider manufacturers use Finsterwalder's SPEED SYSTEM HOOKS.



Finsterwalder Speedsystem hooks

- Material: Stainless steel & Titanal • Breaking str.: 230 kg

- **Weight:** 5,2 g/pc. (Stainless steel) 2,1 g/pc. (Titanal)

Be18 Speedsystem hooks Stainless steel (piece)

2,00

Be180 Speedsystem hooks Titanal (piece)

2,00

Finsterwalder Speedsystem hooks adjustable

- Titanal • Breaking strength: 230 kg

- **Weight:** 6,9 g/pc.

Be181 Speedsystem hooks adjustable (piece)

2,75

Finsterwalder mini guide roller for speed system

€



For ropes of up to Ø 5 mm, Avional, hardened steel axle, quiet-running

- Length: 28 mm • Breaking strength: 600 kg

Be541 Mini guide roller for speed system

4,30

Links and more

€



Screw chain link steel Ø 5 mm

- Inner height: 42 mm • Opening: 8 mm

- Breaking load: 1.200 kg • Payload: 280 kg

- **Weight:** 20 g/pc.

Be30 Screw chain link Ø 5 mm

3,40



Screw chain link steel Ø 4 mm

- Inner height: 31 mm • Opening: 6 mm

- Breaking load: 1.500 kg • Payload: 180 kg

- **Weight:** 11 g/pc.

Be29 Screw chain link Ø 4 mm

2,90



Triangular screw lock link stainless steel Ø 6 mm

- Inner height: 42 mm • Inner width: 35 mm

- Opening: 8 mm

- Breaking load: 2.250 kg • Payload: 450 kg

- **Weight:** 40 g/pc.

Be2900 Triangular screw lock link Ø 6 mm

9,00



Triangular screw lock link stainless steel Ø 4 mm

- Inner height: 32 mm • Inner width: 25 mm

- Opening: 5 mm

- Breaking load: 900 kg • Payload: 100 kg

- **Weight:** 14 g/pc.

Be300 Triangular screw lock link Ø 4 mm

5,50



Patented shackle

- Length: 40 mm

- Breaking load: 300 kg

- **Weight:** 26 g/pc.

Be22 Patented shackle

9,95

Be23 Ring for patented shackle 4 mm, Ø14 mm

2,40



Charly Snap-fit stainless steel

- Length: 50 mm • Eye: 6,5 x 10,5 mm

- Breaking load: 200 kg

- **Weight:** 20 g/pc.

Be20 Snap-fit stainless steel

5,40



Mini-karabiner steel Ø 5 mm

- Length: 50 mm • Payload: 120 kg

- **Weight:** 16 g/pc.

HKar91 Mini-karabiner steel Ø 5 mm

2,70



Mini-karabiner steel Ø 4 mm

- Length: 40 mm • Payload: 40 kg

- **Weight:** 8 g/pc.

HKar90 Mini-karabiner steel Ø 4 mm

1,65



Double button buckle

Many harness manufacturers use the DOUBLE BUTTON BUCKLE to attach the front container to the harness. The stainless steel plug is corrosion-resistant and lightweight.

- Adjustable, suitable for webbings 18-20 mm

- Dimensions: 30 x 45 x 9 mm

- Breaking strength: approx 350 kg • **Weight:** 36 g/pc.

HSi20 Double button buckle

5,80



Jamming buckel 20 mm

- Material: Zinc diecasting

- Breaking strength: approx. 290 DaN* • **Weight:** 26 g/pc.

HSi94 Jamming buckel for webbings 20 mm

3,20



Jamming buckel 25 mm

- Material: Zinc diecasting

- Breaking strength: approx. 350 DaN* • **Weight:** 35 g/pc.

HSi95 Jamming buckel for webbings 25 mm

3,50

Finsterwalder components



Manufacturer inquiries welcome!

For more than 40 years, Finsterwalder has been developing, manufacturing and selling components for airborne sports. Our products are used by many renowned manufacturers and have an excellent reputation worldwide.

Approved development, manufacturing and maintenance organization according to the civil aircraft and aviation appliance ordinance (ZLLV) BGBl 191/1995

INSIDER

Its unbeatable fit and good value for money make the Insider an all-time bestseller. Pilots appreciate that the helmet offers full protection while not restricting the field of view. Moreover, the chin guard is designed in such a way that conversation before and after flight is easily possible. The helmet edges are curved inward, thereby contributing to a larger field of view and a reduction of air drag.

Insider features

- Thanks to a vacuum high-pressure die casting process, the aramid fiber reinforced outer shell is weight-optimized and of constant quality. The choice of material and production process ensures optimum strength and durability.
- The Insider causes minimum wind noise that does not interfere with the Vox operation of radio sets. As hearing is only marginally affected by the helmet, airspeed estimation is still possible.
- The helmet shell is drawn far down at the sides, improving the fit on the head and providing for pressure-free ear padding. The wide, well cushioned internal chin strap contributes to the wearing comfort.
- Aerodynamically clean without a long tail: The Insider permits an unrestricted upward view and avoids neck injuries.
- The skin-friendly, breathable and antibacterial full textile lining (made in EU) provides for a pleasant climate inside the helmet. Comfortable fit also in special sizes like XS and XXL.
- Wear-resistant multi-layer enamel surface (paintable). 14 different colors/styles.



HHe70 bicolor dark red metalli

Weight: 650 g
Sizes: XS=53/54, S=55/56, M=57/58, L=59/60, XL=61/62, XXL=63 cm head circumference (XS and XXL only for HHe7 and HHe70)

Art.#	Insider	€
HHe7	Insider unicolor white, red, blue	178,00 €
HHe70	Insider bicolor metallic	191,00 €
HHe75	Insider softcolor black	185,00 €
HHe75S	Insider softcolor red and blue SALE	172,00 €
HHe77	Insider carbon-optic	200,00 €



HHe7 unicolor white



HHe7 unicolor red



HHe7 unicolor blue



HHe75 softcolor red



HHe75 softcolor blue



HHe75 softcolor black



HHe70 bicolor silver metallic



HHe70 bicolor blue metallic



HHe70 bicolor turquoise metallic



HHe70 bi. anthracite metallic



HHe70 bi. black metallic



HHe70 bicolor yellow



HHe73

Art.#	Insider accessories	€
HHe702	Extra lining, cheek + chin pads	12,50 €
HHe703	Extra lining incl. attachment	25,00 €
HHe73	Premium fleece helmet/instrument bag	8,50 €



NO LIMIT

The No Limit competition visor helmet provides maximum safety at minimum drag. Its high-quality materials and an elaborate production process guarantee for constant quality, maximum safety and durability.

No Limit features

- The aramid fiber reinforced outer shell made by high-pressure die casting can even beat carbon fiber helmets in terms of impact strength and resistance.
- Classy look: The No Limit features a scratch-proof multi-layer enamel surface. Its shell material and finish make the helmet highly resistant to aging.
- The visor fits the contour of the helmet and reduces drag considerably. Its extra wide panoramic view is important for safety. Glasses can be easily worn under the visor.
- The included clear polycarbonate visor is break-proof and anti-reflex, anti-scratch and anti-fog coated. Thanks to its 100% UV protection, it can substitute for extra sunglasses. The clear visor can easily be replaced by a toned brown one that is available as an accessory.
- The chin guard creates virtually no blind area. Conversation is easily possible with open visor.
- Aerodynamically clean without a long tail: The No Limit permits an unrestricted upward view and avoids neck injuries.
- The skin-friendly, breathable and antibacterial full textile lining (made in EU) provides for a pleasant climate inside the helmet. Pressure-free ear pads and a wide, well cushioned internal chin strap contribute to the wearing comfort.

Weight: 650 g + visor 114 g

Sizes: S=55/56, M=57/58, L=59/60, XL=61/62, **XXL**=63 cm head circumference



HHe30 white with toned visor (HHe350)



HHe32 carbon-optic



HHe300 white

Art.#	No Limit with clear visor	€
HHe30	No Limit white with clear visor	254,00 €
HHe31	No Limit blue, anthracite metallic with clear v.	257,00 €
HHe32	No Limit carbon look with clear visor	277,00 €

NO LIMIT JET

High-class PG visor helmet with an unrestricted downward view.

No Limit Jet features

- Premium quality at a reasonable price. The aramid fiber reinforced outer shell made by high-pressure die casting can even beat carbon fiber helmets in terms of impact strength and pierce resistance.
- Classy look: The No Limit features a scratch-proof multi-layer enamel surface. Its shell material and finish make the helmet highly resistant to aging.
- Aerodynamically clean without a long tail: The No Limit permits an unrestricted upward view and avoids neck injuries.
- The included clear polycarbonate visor is break-proof and anti-reflex, anti-scratch and anti-fog coated. Thanks to its 100% UV protection, it can substitute for extra sunglasses. The clear visor can easily be replaced by a toned brown one that is available as an accessory.
- The skin-friendly, breathable and antibacterial full textile lining (made in EU) provides for a pleasant climate inside the helmet. Pressure-free ear pads and a wide, well cushioned internal chin strap contribute to the wearing comfort.

Weight: 620 g + visor 114 g

Sizes: S=55/56, M=57/58, L=59/60, XL=61/62 cm head circumference
XXL=63 cm (only in white and carbon-optic available)



HHe31J blue metallic



HHe310J anthracite metallic



HHe73

Art.#	No Limit Jet with clear visor	€
HHe30J	No Limit Jet white with clear visor	254,00 €
HHe31J	No Limit Jet blue, anthracite metallic with c.v.	257,00 €
HHe32J	No Limit Jet carbon look with clear visor	277,00 €

Art.#	No Limit Jet without visor	€
HHe300J	No Limit Jet white without visor	208,00 €
HHe310J	No Limit Jet blue, anthrac. metallic without v.	211,00 €
HHe320J	No Limit Jet carbon look without visor	231,00 €

Art.#	No Limit accessories	€
HHe35	Clear visor	46,00 €
HHe350	Toned visor	49,00 €
HHe3500	Dark toned visor	49,00 €
HHe352	Mirrored visor	59,00 €
HHe351	Visor screw kit with ratchet inserts	9,00 €
HHe73	Premium fleece helmet/instrument bag	8,50 €



* The mirrored visor is very sensitive, a careful handling is required. (e.g. Transportation in the helmet bag)

LOOP

Innovative ABS helmet with optional visor, certified to CE EN 966 (airborne sports) and CE EN 1077 (skiing and snowboarding).

Loop features

- Top quality made in Europe. Charly offers a lifetime guarantee.
- The highly effective ventilation of the EPS calotte (foam-padded cushioning cap) permanently provides for a pleasant climate inside the helmet. Unlike some skiing and air sports helmets, the Loop is equipped with generous vents in the interior lining such that the air in-takes on the outer shell are not covered from the inside. They are thus not just a visual gimmick but part of an effective ventilation system. The flow of fresh air is guided through the foam padding, distributed throughout the textile cap and channeled away again. The breathable interior lining thereby provides for comfortable temperatures without the need to adjust the airstream manually.
- The Loop's antibacterial textile lining envelops the whole head, is replaceable and washable. It offers considerably more comfort than adjustable headbands and is available for head circumferences of 53-55 cm (XS), 54-57 cm (S), 56-59 cm (M), 59-61 cm (XL) and 62-63cm (XL) provides for a pleasant climate inside the helmet.
- The helmet is equipped with very comfortable, pressure-free ear pads but can also be worn without ear covers.
- A high-quality ratchet closure allows a precise adjustment of the chin strap.
- The Loop has small dimensions and weighs only 480 g.
- A helmet protection bag is included in the price.
- The optional Charly VS sun visor reduces drafts and protects from UV radiation. The visor fits over most glasses. As it is very well ventilated, glasses worn under the visor are prevented from fogging up. Tight-fitting ski goggles that are recommended during snowfall and for racing can of course also be used with the helmet.



HHe9C matt black

Weight: 480 g
Sizes: XS=53-55cm, S=54-56cm, M=57-59cm, L=59-61cm, XL=62-63cm head circumference

Art.#	Loop	€
HHe9C	Loop (matt blue, m. black, m. red, m. orange)	135,00 €
HHe9C	Loop (glossy white)	135,00 €
HHe9N	Loop with Nova design	112,50 €



HHe9C matt blue with visor lachs (HHe950)



HHe9C matt-red



HHe9C glossy white with visor grey (HHe950)



HHe9C matt-orange with visor yellow (HHe950)



HHe9N glossy white with Nova Design



HHe950 Visor grey, lachs, yellow



HHe9500 Visor toned and mirrored



HHe952 Extra lining



HHe951 Visierschrauben



HHe73

Art.#	Loop Zubehör	€
HHe952	Extra lining for Loop	15,00 €
HHe950	Visor gray, orange, yellow	31,00 €
HHe9500	Visor toned and mirrored	41,00 €
HHe951	Visor screw kit	7,00 €
HHe73	Premium fleece helmet/instrument bag	8,50 €



ACE

Very comfortable, safe and reasonably priced paragliding and winter sports helmet with optional visor, prepared for chin guard attachment.

Ace features

- Certified to CE EN 966 (airborne sports) and CE EN 1077 (skiing and snowboarding).
- High-class quality helmet made in Europe. Charly offers a lifetime guarantee.
- The helmet shell is drawn far down at the sides, improving the fit on the head and providing for pressure-free ear padding. The wide, well cushioned internal chin strap contributes to the wearing comfort.
- The Ace's high-quality EPS cushioning foam is fully padded with skin-friendly and antibacterial textile fabric (made in EU) on the inside.
- The interior lining in sizes XS, S, M, L, XL is replaceable and washable.
- The optional Charly VS sun visor reduces drafts and protects from UV radiation. The visor fits over most glasses. As it is very well ventilated, glasses worn under the visor are prevented from fogging up. Tight-fitting ski goggles that are recommended during snowfall and for racing can of course also be used with the helmet.
- The Ace is upgradable with different chin guards: slim, e.g., for protection from slalom poles when used for winter sports; wide, e.g., for protection from rebounding towing releases when used for air sports.



HHe5v red

Weight: 530 g

Sizes: XS=53-54cm, S=55-56cm, M=57-58cm, L=59-60cm XL=61cm head circumference

Art.#	Ace	€
HHe5v	Ace (black, white, red)	94,00 €
HHe51v	Ace carbon optic	109,00 €



HHe5v black
with visor yellow (HHe950)



HHe5v white



HHe5v red
with visor gray (HHe950)



HHe51v carbon look
with visor toned and mirrored (HHe9500)



HHe952 Extra lining



HHe950 Visor gray, orange, yellow



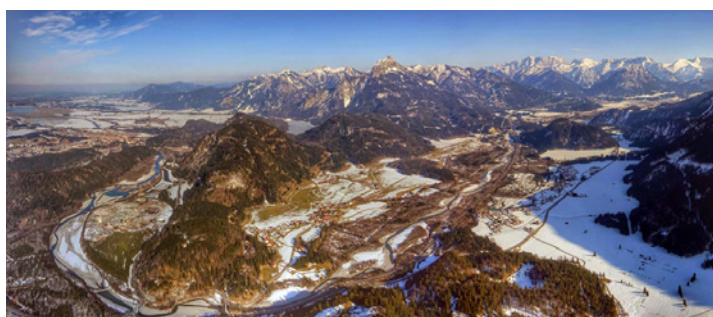
HHe9500 Visor toned and mirrored



HHe951 Visor screw kit

Art.#	Ace accessories	€
HHe252V	Extra lining for Ace	15,00 €
HHe950	Visor gray, orange, yellow	31,00 €
HHe9500	Visor toned and mirrored	41,00 €

Art.#	Ace accessories	€
HHe951	Visor screw kit	7,00 €
HHe510s	Chin guard incl. visor screw kit	10,00 €
HHe73	Premium fleece helmet/instrument bag	8,50 €



HHe510s Chin guard



HHe73 Premium fleece helmet/instrument bag

BREEZE VS

Very comfortable, safe and reasonably priced paragliding and winter sports freestyle helmet with optional visor.

Breeze Features

- Certified to CE EN 966 (airborne sports) and CE EN 1077 (skiing and snowboarding).
- High-class quality helmet made in Europe. Charly offers a lifetime guarantee.
- The Breeze's high-quality EPS cushioning foam is fully padded with skin-friendly and antibacterial textile fabric (made in EU) on the inside.
- The interior lining in sizes XS, S, M, L, XL is replaceable and washable.
- The ear pads can be detached in warmer conditions.
- The optional Charly VS sun visor reduces drafts and protects from UV radiation. The visor fits over most glasses. As it is very well ventilated, glasses worn under the visor are prevented from fogging up. Tight-fitting ski goggles that are recommended during snowfall and for racing can of course also be used with the helmet.



HHe2v matt black

Weight: 475 g

Sizes: XS=53-55cm, S=54-56cm, M=57-58cm, L=59-60cm, XL=61cm head circumference

Art.#	Breeze	€.
HHe2v	Breeze VS (matt-black, white)	99,80 €



HHe2v white



HHe2v white with visor grey (HHe950)



HHe2v matt-black with visor lachs (HHe950)



HHe2v white



HHe950 Visor grey, lachs, yellow



HHe9500 Visor toned and mirrored



HHe951 Visor screw kit



HHe73



HHe952V Extra lining

Art.#	Breeze accessories	€.
HHe252V	Extra lining for Breeze	15,00 €
HHe950	Visor gray, lachs, yellow	31,00 €
HHe9500	Visor toned and mirrored	41,00 €
HHe951	Visor screw kit	7,00 €
HHe73	Premium fleece helmet/instrument bag	8,50 €

BREEZE VS TANDEM

Size adjustable helmet for tandem passengers or use as rental helmet; certified according to CE EN 966 (airborne sports), with detachable ear pads and optional visor.

Weight: 480 g

Sizes: XS-M=54-57cm, M-XL=58-61cm

Art.#	Breeze VS Tandem	€.
HHe2T	Breeze VS Tandem (white)	99,80 €





Bertoni Anti-Fog

€



Air sports sunglasses/helmet glasses that do not disturb the field of view. Distortion-free 2 mm polycarbonate lenses, 100% UV protection, anti-fog and anti-scratch coating, incl. microfiber pouch.

Color: silver mirror

HM71 Bertoni Anti Fog

42,00

Charly fleece balaclava

Our super soft balaclava leaves nothing to be desired: It features a smooth outer surface and combines high-quality ClimaWarm elastic fleece, functional design and a sufficiently long neck.

HM7F

€ 18,00



HANWAG Sky GTX

€



Extremely lightweight (600 g) thanks to a combination of Air Mesh and suede leather. Permanently waterproof, highly breathable Gore-Tex lining. Smooth-running dual-zone lacing system (special clamping eyelets enable different lacing tensions at the fore/mid foot and around the ankle). Warm insulated shaft and sole. Exceptional fit. Vibram Mars sole with extra large contact surface for safe takeoffs and landings. Rubber reinforced toes. Comfortable midsole cushioning for smooth heel-to-toe transition



Colours: marine, mango

Sizes UK: 4 - 12 (not deliverable in all sizes)

HM811 Hanwag Sky GTX

239,00

La Sportiva Hyper Mid Gore-Tex

€



Lightweight, supportive and waterproof Gore-Tex® paragliding shoe for all sporting activities including ambitious day hikes and easier boulder problems.

Thanks to its innovative shaft and sole/midsole construction, the Hyper Mid GTX is flexible and light like a sports shoe and surprisingly comfortable from the first step. Yet, it offers excellent stability.

An EVA midsole with Rock Guard platform in the front part prevents unnatural torsion of the ankle. The Vibram® Idro-grip sole is equipped with an Impact Brake System at the heel and inner side, suction cups at the outer side and a Climbing Zone in the front part, and thus provides for traction both on unmade terrain, e.g., launch sites and landing fields, and on trails and rocks.

At the outside, soft and sturdy suede leather is combined with robust synthetic leather. Abrasion-resistant rubber reinforcements in the area of the toes protect the upper from pebbles and sharp rocks. At the inside, a moisture-transporting Gore-Tex® lining with an integrated Gore-Tex® membrane ensures your feet stay dry and comfortable. Weight: 750 g

Color: black/red

Sizes: 37 - 47,5

HM86 La Sportiva Hyper Mid GTX



129,50

HANWAG Super Fly GTX

€



The Super Fly GTX made from cowhide leather is permanently waterproof and highly breathable thanks to its Gore-Tex Dura-therm membrane. The shock absorbing dual layer cushioning wedge provides for smooth landings. All-round rubber around the lower part of the upper protects the leather from scree and rocks and significantly increases stability and durability. New eyelets for easy lacing. Weight: 990 g

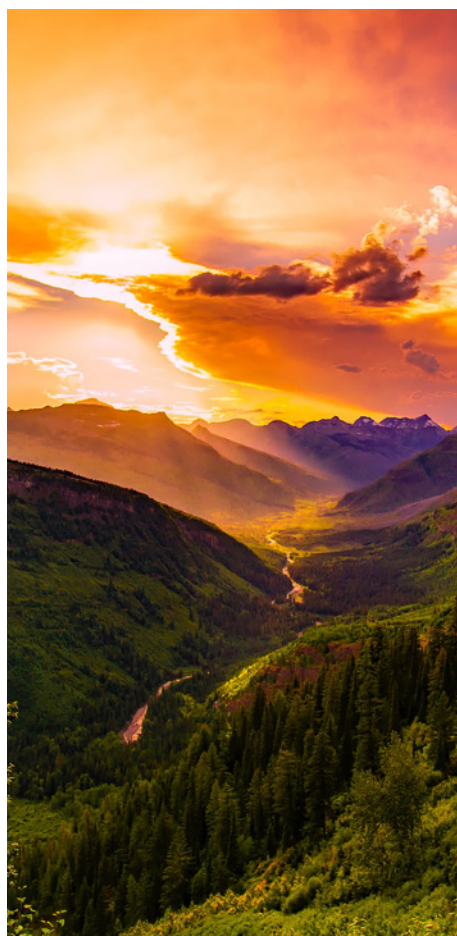
Colours: alpin

Größen UK: 4 - 12

(Potentially not deliverable in all sizes, please ask for it)

HM81 Hanwag Super Fly GTX

279,95



CHARLY Windstopper Fleece

€



Windproof and breathable paragliding gloves for the summer with heatable hotliner- wristlet and touch function

- Improved follow-up model of our bestseller with fleece-lined goat nappa leather on the palm and ergonomically engineered reinforcements made of robust Supergrip at areas that are particularly exposed while paragliding
- Elastic neoprene inserts in the knuckle area and pre-shaped fingers for easier gripping
- Sensitive, slip-proof and breathable palm
- Long, wide fleece gauntlet that locks out the wind
- Hotliner pulse warmer: Pocket for activated carbon heat packs at the inside of the wrist
- Touch functionality: Conductive, robust synthetic leather at the thumb and index finger enable precise operation of touch screens

Sizes: 7 = S, 8 = M, 9 = L, 10 = XL, 10,5 = XXL

HM18 Charly WS-Fleece glove

39,90

CHARLY Touch Leder

€



Comfortably soft, breathable and pliant all year round paragliding gloves.

- Smooth, windproof, breathable and pliant soft shell outer layer; high-quality goat nappa leather on the palm for improved grip and a pleasant climate inside
- Soft PrimaLoft® insulation for warm and dry hands; equipped with a pocket for Hotliner activated carbon heat packs (HM151) on the back of the hand; activated by oxygen in the air, they provide pleasant warmth for up to six hours on very cold days
- Special leather reinforcements on the palm, at the sides and between the little finger and the ring finger reduce abrasion
- Conductive fabric at both index fingers and thumbs enables precise operation of devices with capacitive touchscreens (e.g., MP3 players, smartphones, tablet computers, etc.)
- Elasticated inserts and preformed fingers improve the wearing comfort and provide a secure grip

Sizes: 7 = S, 8 = M, 9 = L, 10 = XL, 10,5 = XXL

HM1940 Charly Touch Leder

58,80

CHARLY Protect

€



The Charly Protect is a comfortable, windproof and breathable all year round fingered glove that is ideally suited for paragliding, cross-country skiing and for biking and horseback riding in the winter.

- The windproof, breathable and pliant soft shell outer layer and high-quality goat nappa leather on the palm ensure a pleasant climate and sensitive grip; comfortable neoprene gauntlets keep the cold outside and your wrists warm.
- Extra leather reinforcements on the palm, at the sides and between the little finger and the ring finger reduce abrasion at the critical wear points; elasticated inserts and preformed fingers improve the wearing comfort and provide a secure grip.
- A waterproof finger cover that is tucked away in the back of the hand offers additional protection against sudden weather changes.
- Conductive fabric at both index fingers and thumbs enables precise touchscreen operation.

Sizes: 7 = S, 8 = M, 9 = L, 10 = XL, 10,5 = XXL

HM180 Charly Protect

SALE
39,90

CHARLY Touch Combi

€



Heatable paragliding fingered glove and mitten.

The Charly Touch Combi is a comfortably soft, breathable and pliant all year round paragliding fingered glove, ideally suited also for cross-country skiing and for biking and horseback riding in the winter. The mitten is invisibly tucked away in the back of the hand and can be pulled out and put over the fingers when needed. Precise flight instrument operation is still possible. Moreover, conductive fabric at both index fingers and thumbs enables easy operation of devices with capacitive touchscreens.

Two pockets inside the mitten can be equipped with Hotliner activated carbon heat packs (HM151). The heat packs are placed exactly where they are needed most and can provide warmth to the fingers from both sides in very cold weather. They are aerated very well inside the mitten and can thus emit heat for up to six hours.

- Other features similar to the Charly Touch Leather

Sizes: 7 = S, 8 = M, 9 = L, 10 = XL, 10,5 = XXL

HM1945 Charly Touch Combi

69,90

Activated carbon heat packs & Li-Ion replacement batteries

€



Extra warmth for your gloves.

Shrink-wrapped pouches filled with activated carbon and pulp; after opening the packaging, they are activated by oxygen in the air and provide pleasant warmth for up to six hours

HM151 Activated Carbon heat packs (pair)

1,60

Li-Ion polymer spare batteries

3.7 V 2000MAH for electrically heatable gloves



HM1932 Spare batteries for Alpenheat

Set Li-Ion battery for a glove (right or lefthand side)

59,50

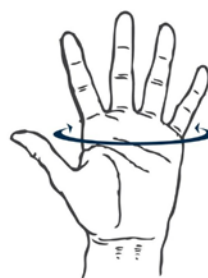
HM1931 Set Li-Ion battery for a glove (right or lefthand side)

Fitting for **ZanierHeat** (per glove one set)

fitting for **ZanierAviator** (per glove two sets)

49,80

Size chart gloves



Hand circumference around the knuckles, without thumb

Hand circum.	Size
17,9 - 20,6 cm	S
20,7 - 21,8 cm	M
21,8 - 23,0 cm	L
23,1 - 24,4 cm	XL
24,5 - 27,0 cm	XXL

ZANIER Heat GTX Li-Ion

€



Electrically heatable gloves for air sports, skiing, snowboarding and horseback riding.

- The Heat GTX provides maximum quality at a moderate price; its breathable Gore-Tex® lining keeps your hands pleasantly warm and dry; moisture is quickly wicked away from the skin and transported to the exterior
- Optimum heat insulation and wearing comfort thanks to a functional multi layer lining
- The outer layer is a mix of 4-way stretch fabric and goat leather, making the gloves extremely comfortable and sensitive yet hard-wearing
- Sturdy leather palm and reinforcements at the sides, the outer edge of the index finger and the critical area between thumb and index finger increase durability
- Perfect fit through preformed fingers and stretch zones at the back of the hand

Sizes: 7 = S , 8 = M , 9 = L , 10 = XL , 11 = XXL
Women's sizes M (8), L (9)

HM1920 Zanier Heat GTX Li-Ion

189,00

ALPENHEAT FireMitten deluxe

€



Wind and waterproof mitten with electrically heatable finger area.

The Alpeanheat FIRE MITTEN DELUXE features an electrically heatable finger area at the back of the hand, at the finger tips and the thumb. One of three different heat levels can be selected. Each is indicated by a red, yellow or green LED which is integrated in the push buttons. Two flat li-ion batteries (7,4 V / 1800mAh) that are well concealed inside the cuffs provide for the necessary power. Depending on the selected setting, the heat duration with one battery charge is between 3 and 8 hours. The batteries can be recharged numerous times and last for years (charging time approx. 4 h).

- Fast and effective heating even at your fingertips in just a few minutes
- Multi-layered construction with Dintex membrane 3M Thinsulate 100g insulation , fine fleece lining and outer shell made of nylon and goat leather
- Windproof, waterproof and breathable

Sizes: 7 = S , 8 = M , 9 = L , 10 = XL , 11 = XXL

HM1928 ALPENHEAT FireMitten deluxe

239,90

CHARLY Li-Ion Fire Plus

€



Electrically heated gloves, which could be both used as undergloves and as normal gloves.

Rapid heating allround glove for sport and leisure. The hardly perceptible textile heating wires are integrated between the fingers, where the heat loss is the lowest. When activating them by clicking a push button on the wrist, the fingers will be comfortably warm. You can choose between three heating levels, displayed each by a red, yellow or green lighted LED, integrated in the push button. Two high-performance Li-Polymer-batteries in the cuffs provide the necessary power. Depending on the adjusted heating level, the heating time with one battery charge is between 1,5 and 5,5 hours. The batteries can be charged any number of times and last for years.

The CharlyFire Plus fits like a second skin and optimally conducts the generated heat to the fingers. The integrated windblocker isolation in the upper part of the glove is breathable and protects against draught. If you wear the Charly Fire Plus alone, they ideally warm your hands when going for a wintry walk, for cross-country skiing or jogging.

As undergloves, they warm when doing sports and when working in extreme cold. When hang gliding or paragliding, they are used together with handfairings. So, flight instruments can be operated without any problems.

The most important features of the Charly Fire Plus at a glance

- Material: Tight, breathable and skin-friendly windblocker softshell in the upper hand. Thus usable both as independent glove and underglove ideal for mittens and work gloves
- High-performance Li-Polymer-batteries Hochleistungs without memory effect. Shortened charging time to 4 hours.
- At the click of a button fast and effective heating in three heating levels with a heating time of up to 5,5 hours
- Charge status display
- Due to the conductive leather at index finger and thumb, you can perfectly operate the smartphones and tablets with touchscreen.
- Incl. Functional textile box for gloves, batteries and battery charger

Sizes (unisex): Hand width (cm) at the finger tab:
S = 8 cm, M = 8,5 cm, L = 9 cm, XL = 10 cm

HM1929 CHARLY Li-Ion Fire Plus

179,80



CHARLY T-shirt Evolution paragliding graphic €



High-quality cotton T-shirt.

Color: gray-blue

Sizes: M,L,XL

HM412G T-Shirt Evolution PG ~~38,50~~ **29,00** 

CHARLY T-shirt Evolution hanggliding graphic €



High-quality cotton T-shirt.

Color: gray-blue

Sizes: M,L,XL

HM412H T-Shirt Evolution HG ~~42,00~~ **34,50** 

CHARLY T-shirt Evolution hanggliding graphic €



High-quality Hanes functional shirt

Color: mid blue

Sizes: L,XL

HM410H Funktionshirt Evolution HG ~~44,00~~ **36,50** 

ALPENHEAT HEATED VEST FIRE FLEECE €



 Li-ion

The specially developed thermal fabric heat cell system is embedded in the back area of the vest. The battery pack goes into the outside pocket and a simple touch of the button on the battery pack regulates the desired temperature, with 5 different settings giving 2.5 to 7.5 hours of blissful warmth.

- Heated fleece vest with battery and charger
- 5 heat settings
- Heat duration: 2.5 - 7.5 hours
- Ideal to wear as a mid-layer


Colour: black

Sizes:XS,S,M,L,XL,XXL

HM781 Alpenheat FireFleece vest 169,50

Alpenheat FirePantliner €



- Heated pants with battery and charger
- Heating element in knee and kidney areas
- Heat duration: up to 5 hours
- Ideal to wear under ski pants, trousers, jeans
-  Li-ion Akkus 7.4V , 2.2 Ah

Colour: black

Sizes:S,M,L,XL

HM7810 Alpenheat FirePantliner 159,50

Bodywarmer €



Too cold? Our high-quality active carbon heat packs provide relief within minutes! They are air activated and immediately begin heating up to approx. 50°C for a guaranteed period of at least 12 hours when unpacked.

Ideally suited, e.g., for use in trouser or jacket pockets, a handbag or a sleeping bag. Thanks to its large format, it can even be used for sitting outside or for heating up temperature-sensitive electronic devices.

HM44 Heat pack 9,5 x 13 cm (piece) 1,60



Self-adhesive active carbon body warmers can be attached to the clothing at any part of the body, e.g., underneath the speed shirt. They release a pleasant heat of approx. 50°C for a guaranteed period of at least 8 hours. The body warmers are air activated and immediately begin heating up when unpacked. They can also be used as a remedy for muscular or rheumatic pains. The thin adhesive coating leaves no stains on clothes.

HM441 Heat pack 9.5 x 13 cm with thin adhesive coating (piece) 1,60

NAVITER Oudie 4

€

Oudie⁴

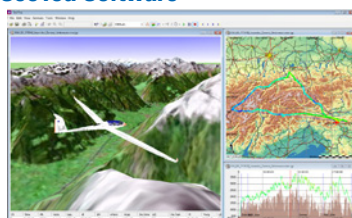

Hi522

Hi9642



Hi5221

SeeYou Software



The all-in-one vario and navigation solution for paragliding and hang gliding! Easy to use and works right out of the box.

Oudie 4 is delivered with the latest version of SeeYou Mobile software. Vector maps for the whole world (topo and ground elevation data, cities, rivers, lakes, roads, etc.) are preinstalled. Airspace files for much of the world are also pre-installed.

Oudie 4 works great in combination with other Naviter products such as SeeYou software, Soaring Spot website and others. It was developed with the help of top pilots to answer the question: „Why don't you build a device for paraglider and hang-glider pilots?“ A bright LCD which is a significant improvement over the standard colour LCDs available in similar devices elsewhere. The screen has an anti-glare coating and is nicely sunlight readable even in direct sunlight. The touch panel can be operated with gloves, no problem.

- Extremely responsive and accurate Vario
- Sunlight readable LCD with Touch Panel optimized for gloves
- Long lasting battery with Quick charger
- **new vario:** Now assisted by inertial sensors (gyros, accelerometers and magnetometers). Contrary to our initial expectations the inertial vario - when done right - is a real benefit and does provide additional information to pilot through its instantaneous response without being nervous or too sensitive.
- Software which fully supports Competition and XC Pilots
- Thermal Assistant
- **new wind:** The new sensors (and clever use of the Kalman filters if you like) allowed us to improve wind prediction considerably. In the best case scenario Oudie 4 will give a useful wind estimate already after a single 180 degree turn on the ridge. It also works at wind speeds higher than your airspeed. Additional turns make the prediction better of course. There is even lots of room for improvement of this in the future.
- Full support for FAI Triangles
- Full support for Competition tasks (Race to Goal, Elapsed time)
- Easy and free software updates
- 14 hours of battery autonomy

Dimensions: 155 x 125 x 35 mm, Weight: 610 g with Batterie

Hi522	Naviter Oudie 4	749,00
Hi9642	Protective case for Oudie 4	15,00

NAVITER Oudie 4 Basic

€

The Oudie 4 Basic is a response to many pilot requests who really like the Oudie but would be happy to live without its high-end features. It was developed with the recreational pilot in mind who flies in complicated airspace, is learning to thermal or just needs a no-setup device to fly with. Absent are the competition-related navboxes, task options, Profiles and FAI Triangle features for example. That makes the software more intuitive and easy but still packs the most important features that you expect from a Vario & GPS & Colour moving map combo.

Hi5223	Naviter Oudie 4 Basic	599,00
Hi5222	Naviter Oudie 4 Basic with SeeYou 7 Software in Bundle	680,00
Hi9642	Protective case for Oudie 4	15,00

The Oudie 4 Basic will grow with you. If you become the high-end competition or XC pilot later in your career a software upgrade is available which gives you all the features of an Oudie 4.

Hi5224	Upgrade Oudie 4 Basic to Oudie 4	199,00
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FLYTEC ELEMENT SPEED

€



The perfect vario for beginners and occasional pilots! This compact vario in shockproof ABS housing has glove-compatible buttons as well as a black-white display with high contrast and is very easy to operate.

- Altimeter and rising/sinking in outstanding Flytec-quality
- Speed above ground and current gliding
- Wind direction and wind speed (graphical and absolute)
- Distance and direction to the take-off and to the last thermal (direction graphical and absolute, distance)
- Five pre-defined, individually adaptable vario profiles (weak / medium / strong thermal, ridge-soaring, balloon)
- GPS-receiver with 48 channels positioning with 1 Hz
- Dimensions: 138 x 74 x 23 mm, weight: 178 g with 2 Alkaline batteries, operating time: ca. 35 h, operating temperature: -10°C up to 50°C

Hi496F	FLYTEC ELEMENT SPEED	349,00
Hi9641	Fabric protective cover	12,50

FLYTEC ELEMENT TRACK

€



Despite its low dimensions, the ELEMENT TRACK has a high-sensitive 48 channel GPS-receiver and accurately indicates for paragliding pilots the important speed above ground. The ELEMENT TRACK is perfectly adapted to the requirements of paragliding- and hanglider pilots and provides an amazingly simple operation.

- Buttons also easily to operate when wearing gloves
- Black-white screen with high contrast
- Altimeter (absolute and relative height)
- All fundamental frequencies and modulations of the acoustic signals are adjustable
- GPS-receiver with 48 channels
- Capacity for 200 waypoints
- Wind direction and wind speed
- Current glide ratio
- Last thermal (Direction graphical and numerical, distancy)
- Connection with every computer via Micro-USB-interface
- Dimensions: 138 x 74 x 23 mm, Weight: 178 g with 2 Alkaline batteries, operating time: ca. 30 h, operating temperature: -10°C up to 50°C

Hi497F	FLYTEC ELEMENT TRACK	415,00
Hi9641	Fabric protective cover	12,50

Mobile solar charging set

€

The **Goal Zero Guide 10 Plus** Solar Set consists of the Nomad 7 solar panel and the Guide 10 Plus power pack. Using solar energy, the solar panel charges smartphones, tablets, GPS or other portable devices in only few hours. Alternatively, it charges 4 AA or 4 AAA batteries and the thus stored energy is immediately available whenever you need it!

Dimensions: 6,0 x 10,0 x 2,0 cm (power pack), 15 x 2,5 x 26 cm (solar panel)
Weight: 180 g (power pack), 360 g (solar panel)

Hi75	Goal Zero Guide 10 Plus Solar Set	129,90
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GOALZERO



SKYWATCH® BL

SWISS + MADE

The weather station with Bluetooth®-support!

The weather station represents the measuring and GPS coordinates graphically and digitally. The own measured values are retrievable as well as the representation on a map.

With the Skywatch App for iOS 8.4 available free of charge or newer and Android 4.4 or newer, the measured weather data can easily be shown and saved in real time on your own smartphone or tablet and can be shared via Facebook, Twitter, Instagram and www.skywatch-bl.com.

SKYWATCH BL 400 €



Similar features as Skywatch BL 300 + additionally:

- **Pressure in hPa, mbar**
 - Resolution: 0,1 Einheiten
 - Accuracy $\pm 0,2$ hPa
 - Measuring range: 300 bis 1200hPa
- Dimensions: \varnothing 26 mm, length 116 mm
- Weight: 66 g

Hi1542 SKYWATCH BL 400 195,00




SKYWATCH BL 300 €

Features BL 300:

- **Windspeed in km/h, m/s, Knoten, Beaufort**
 - Resolution: 0,1 Einheiten
 - Accuracy $\pm 3\%$ / $\pm 0,5$ km/h
 - Measuring range: 3 bis 150 km/h
- **Temperatur in °C, °F**
 - Resolution: 0,1 Einheiten
 - Accuracy $\pm 0,3$ °C
 - Measuring range: -25 bis +60°C
- **Luftfeuchtigkeit in %**
 - Resolution: 0,1 Einheiten
 - Accuracy $\pm 3\%$ (10-90%)
 - Measuring range: 0 bis 100%
- Dimensions: \varnothing 26 mm x Länge 116 mm
- Weight: 66 g

Hi1541 SKYWATCH BL 300 175,00



SKYWATCH BL 500 €

Similar features as Skywatch BL 400 + additionally:

- **UV-Index in UV**
 - Resolution: 1 Einheit
 - Accuracy ± 1
 - Measuring range: 0 bis 15
- Dimensions: \varnothing 26 mm, length 116 mm
- Weight: 66 g

Hi1543 SKYWATCH BL 500 225,00

Windoo - The anemometer for smartphones and tablets



Windoo
feel the air!

SKYWATCH®



Ingeniously simple operation and smallest dimensions – the personal weather station for your keychain!

Functions:

Windoo 1: Wind, temperature
 Windoo 2: Wind, temperature, humidity
 Windoo 3: Wind, temperature, humidity, pressure

The measured weather data can easily be viewed in real time on your personal smartphone or tablet (see below for compatible devices), and can be stored and shared worldwide via Facebook, Twitter or windoo.ch.

The Windoo is a Swiss precision measuring instrument! The impeller with sapphire bearings is well protected in a cage, the sensor system is positioned inside a robust anodized aluminum body. A classy carbon cap quickly transforms the Windoo in a key ring and provides protection during transport.

Scope of delivery:
 Windoo, carbon cap, key ring, wrist strap




Windoo 1

Features Windoo 1:

- Windspeed in km/h, m/s, Knoten
 - Resolution: 0,1 units
 - Accuracy $\pm 2\%$
 - Measuring range: 0 bis 150 km/h
- Temperature in °C, °F
 - Resolution: 0,1 units
 - Accuracy $\pm 0,3$ °C
 - Measuring range: 0 bis 150 km/h
- Dimensions: \varnothing 20 mm, length 52 mm
- Weight: 38 g

Hi151 Skywatch Windoo 1 59,90




Windoo 2

Similar features as Windoo 1 + additionally:

- Humidity in %RH
 - Resolution: 0,1 units
 - Accuracy $\pm 4,5$ %RH
 - Measuring range: 0 -100 %RH
- Dimensions: \varnothing 20 mm, length 52 mm
- Weight: 38 g

Hi152 Skywatch Windoo 2 64,90



Windoo 3

Similar features as Windoo 1 & 2 + additionally:

- Pressure in hPa, mbar, inHg
 - Resolution: 0,1 units
 - Accuracy $\pm 0,2$ hPa
 - Measuring range: 300 bis 1.100 hPa
- Dimensions: \varnothing 20 mm, length 52 mm
- Weight: 38 g

Hi153 Skywatch Windoo 3 99,90

Compatible devices:	
iOS:	Android
• iPhone 4S	• Samsung Galaxy A3, A5
• iPhone 5S, 5C, 5, 6, 6+	• Samsung Galaxy S3, S4, S4 mini, S5, S5 mini
• iPad Mini, 3, 2	• Samsung Galaxy K Zoom
• iPod Air	• Samsung Galaxy Tab 10.1
• iPod Touch	• Samsung Galaxy Tab2 10.1
• iOS 6.0 or newer	• Samsung Galaxy TabPRO 10.1, 12.2
	• Samsung Galaxy Tab S 10.5 (SM-T805)
	• Samsung Galaxy Note 3, Note 4
	• Nexus 4
	• HTC One S, One M8
	• One M9, One mini 2
	• HTC Desire EYE
	• Sony Xperia Z3 compact
	• LG G3
	• Huawei MediaPad M1 8.0

Skywatch Xplorer 2 pocket anemometer

€



Pocket anemometer with replaceable lithium battery for approx. 250.000 measurements. Features: Balanced instant wind speed, maximum wind speed, calculation of the windchill factor, units: km/h, m/s, knots, mph, fps, maximum reading: 150 km/h, 42 m/s, 81 knots, 97 mph, 138 fps, backlight, stainless steel back, replaceable lithium battery, waterproof, temperature measuring range of sensor -40°C to 80°C (-40°F to 176°F), accuracy according to swiss standards.

Hi156 Skywatch Xplorer 2 49,90

Skywatch Xplorer 4 pocket anemometer

€



Pocket anemometer with replaceable lithium battery for approx. 250.000 measurements. Features: Balanced instant wind speed, maximum wind speed, calculation of the windchill factor, electronic compass in degrees, absolute pressure from 300 to 1.100 hPa, relative pressure with calibration, weather forecast with barometric pressure tendencies, altitude with calibration (definition: 1 m/foot; maximum altitude: 8.000 m), units: km/h, m/s, knots, mph, fps, maximum reading: 150 km/h, 42 m/s, 81 knots, 97 mph, 138 fps, backlight, waterproof.

Hi157 Skywatch Xplorer 4 119,00

Skywatch Eole 1 anemometer

€



Directionally independent anemometer with aluminum bottom plate for tripod attachment (compatible with our instrument/camera mounts)

Features: Waterproof • floats • wind speed in km/h, m/s, knots, mph, fps, Beaufort (average determination: 3 s to 24 h) • detachable protective cap with openings • LCD with backlight • power supply via two standard AA Mignon batteries • operational from -20°C to 70°C • accuracy according to swiss standards • ø 65 x 155 mm, 235 g.

Hi158 Skywatch Eole 1 anemometer 69,90

Skywatch Meteos 1 anemometer

€



Directionally independent anemometer and compass with aluminum bottom plate for tripod attachment (compatible with our camera mounts).

Similar features as Eole 1 + additionally:

- Calculation of the windchill factor

Hi159 Skywatch Meteos 1 anemometer 89,90

Hall Speed sensor

€



Proven, astonishing accurate and robust speedometer. Hangglider edition 10-80 km/h or 10-130 km/h. Length 19 cm, weight with mount and material sleeve 170 g. Paraglider edition 10-50 km/h. Length 11 cm, weight with mount and material sleeve 70 g. The Finsterwalder mounting is suitable not only for all types of faired tubing, but can also be attached to a paraglider harness.



Hi141(80)	HG hall speedometer 10 - 80 km/h, 19cm, 60g	39,90
Hi141(130)	HG hall speedometer 10 - 130 km/h, 19cm, 60g	39,90
Hi1410	PG hall speedometer 10 - 50 km/h, 11cm, 34g	39,90
Hi140	Bracket short	13,50
Hi142	Bracket long	16,00
Hi1400	PG-bracket	8,50



Charly 2-point leg mount

€



The comfortable 2-point leg mount provides for reliable instrument fixation on the thigh.

The dual leg straps ensure a uniform pressure distribution. The variable angle can be adjusted easily and quickly. The leg mount is attached to the harness and secured by means of a safety strap with closure. Weight: 108g

Hi5520 Charly 2-point leg mount 29,80

Charly instrument cockpit mount

€



Thanks to its individually adjustable angle, the frontcockpit mount provides for good display readability in any situation. Weight: 37g

Hi5521 Charly instrument cockpit mount 15,90

Variometer mount

€



Hi550(HG)



Hi550(GS)



Hi94



Hi940



Hi552

Hi550	Ball joint mount with arm for PG or HG	45,00
Hi94	Speedbar mount for Bräuniger varios	19,00
Hi940	Double mount vario/GPS for speedbar	43,50
Hi552	Paraglider leg mount	22,50

Instrument protective material mount

€

to mount instruments either on the front cockpit pocket, on the rescue reserve front container, or by means of the flexible metal angled mount to the harness chest strap. With the Vario/GPS base board, two instruments can be mounted onto the flexible metal angled mount or to the paraglider leg mount.



Hi9640



Hi9641



Hi9642

Hi9640	Protective cover f. Bräuniger Competino+/ Compeo+/ Flytec 6020/6030	12,50
Hi9641	Protective cover f. IQ-One/ -One+/ -Basic GPS/ -Alto/ Flytec 6000/ 6005/ 6015/ Element	12,50
Hi9642	Charly Protective cover f. Oudie 4	15,00
Hi9600	Flexible metal angle mount	9,80



Hi9600

Instrument/camera mounts

€

The 3/8 inch thread of the Finsterwalder mount is suitable for all camera ball heads. These, in turn, can be screwed onto any instrument casing by means of the plate with 1/4 inch thread that is available as an accessory.



Hi81



Hi85



Hi86



Hi89



Hi80

Hi81	mount for up to 5 kg (without ball head)	17,50
Hi80	mount for up to 1,5 kg (without ball head)	9,80
Hi85	ball head, small (bottom 3/8 inch, top 1/4 inch thread)	13,80
Hi86	ball head, large (bottom 3/8 inch, top 1/4 inch thread)	18,50
Hi89	plate with inch thread for camera ball heads	3,00

Dimensions 13 x 50 x 3 mm



Charly premium fleece helmet & instrument bag

€



The surface of this luxurious microfibre Charly PREMIUM FLEECE HELMET BAG is smooth at the outside and soft and fleecy on the inside such that its content is optimally protected during transport. The Charly PREMIUM FLEECE HELMET BAG offers enough room for one helmet plus flight instruments, gloves, etc. and is equipped with a practical draw cord.

Dimensions: 40 x 50 cm • Weight: 67 g

HHe73	Charly Micro fleece helmet- and instrument bag	8,50
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Speed sensor

€



Hi5600

Suitable for all Bräuniger and Flytec Instruments with speed input

Hi5600	Towed sensor S3 for PG	110,00
Hi560	Speed sensor S2 or HG	110,00



Lightweight precision flat compass

€

High-quality special design for orienteering and air sports. With its significantly improved damping and reliable directional information even at a 35° tilt, it clearly outclasses common car, boat or orientation compasses. Very well readable rose and rotatable 360° scale ø 60 mm. 60 x 120 x 15 mm, 80 g. Optionally with hook-and-loop tape for attachment to a front container (the loop tape can be sewn onto the thigh), with a long elastic thigh strap or with speedbar mount.



Hi170



Hi168

Hi170	with speedbar mount	27,00
Hi168	with hook-and-loop tape	



Miscellaneous mounts

€



Hi94



Hi83



Hi95

Hi94	HG mount 60 x 120 mm (for use with different kinds of instruments)	19,00
Hi83	universal ball joint mount (attachment of instruments by means of 2 screws)	12,50
Hi95	Universal mount (for radio sets and instruments without camera thread)	21,40



HGu110

Spreader bar

€

HGu110	Spreader bar for paraglider harnesses for use on skyfloaters	89,00
HGu111	Spreader bar in special lengths (made to measure)	124,00

Pilot hang-in

€

Sewn-on velcro bands ensure that this hang-in strap does not loosen once secured around the keel tube. Can be secured against slipping by rivets or tube clasps at the keel tube. Given lengths are from end to end. Please note that the required length will also depend upon the diameter of your keel tube!

Au10/45	Length 28, 34, 48 cm	15,50
Au10/65	Length 61, 75 cm	19,90



Runner sling for pilot hang-in

€

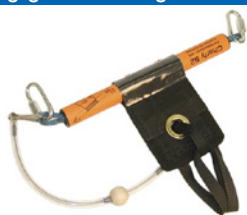


Suitable for pilot hang-ins. Breaking strength 2.500 kp, width 25 mm.

Au12/40	30, 35, 40 cm	6,00
Au12/60	45, 50, 55 cm	7,50
Au12/120	60, 65, 70 cm	8,50

Hang glider towing release

€



Charly S2: E One-stepped towing release for HG-UL towing, 150 g, DHV certified.

HS300	Charly S2 towin release	54,00
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HGu101

Skyfloater Supine seat

€



Extremely comfortable skyfloating harness, does not hinder by take-off, thus ideal for the practise hill. Take-off and flight also possible with skis. The supine seat weighs only 1,2 kg and can be easily slipped into the glider cover. The rescue system can be attached on the side or (if equipped with special aid-chute container) the back.

HGu101 Skyfloater Supine seat incl. leg hang-in

250,00

Charly Knee hangers

€

Comfortably padded, certified harness, originally developed for hanggliding. This harness is also used for climbing gardens, adventure play-grounds and theatre stages. The pulley on the suspension enables continuously positions between lying, tilted forward and hanging forward.

Material: robust Cordura fabric and scrub-resistant straps. Weight 2,4 Kg. From an order of 4 harnesses, you can ask for individual modifications for an additional charge. Colours on request.

Deliverable in 3 sizes

S (1,50-1,68 m)

M (1,70-1,85 m)

L (1,82-2,00 m)



HGu5 Charly Knie hangers

389,00

Charly brake chute STOP for hanggliders

€



The Charly brake chute is installed in a bag on the hangglider harness and fixed on the suspension. If you use it during the landing approach, it shortens the landing approach and considerably facilitates the landing. Attention! The brake chute has to be deployed behind the control bar, otherwise there is danger to life.

HGu32 Charly brake chute STOP

109,00



Corrosion protection oil

€

Transparent and odorless **acid-free** special penetrating oil for the care of high-strength hang glider tubings. Sprayed into the tubes once a year, it avoids dangerous corrosion and pitting, and provides for smooth plug-in connections.

Apply only a very thin film to avoid stains on the sail!

HÖL

22,00

Hook-and-loop tape with buckle

€



For batten and sail fastening.

HKI8...	HKI800	75 x 3 cm	9,50
	HKI81	100 x 4 cm	10,00
	HKI82	135 x 4 cm	11,50
	HKI7	18 x 5 cm	5,00

Sail fasteners

€



Elastic multipurpose rubber rope, length 35 cm, ø 4 mm, with nylon hook. Can be used, e.g., for fastening the wire ropes and sail of long packed up gliders. Contains 4 pieces

HSe50 Liros Sail fasteners

5,50

Three reasons that make Finsterwalder's gliders so popular:

While other hang glider manufacturers worry about decreasing sales figures, Finsterwalder's „Fexes“ are experiencing a revival and have almost attained cult status. More than 1.000 highly satisfied leisure pilots currently fly our gliders and gladly recommend them to others.

1. Good flight qualities

Good flight qualities are the result of a perfect interplay between several construction components: sail cut, batten and wing tube flexibility, frame geometry,...Finsterwalder's „Fexes“ represent the perfect mix that has been found after many years of optimization. While competition gliders achieve their performance through a high aspect ratio and accept handling disadvantages, Finsterwalder's concept for all-round gliders is a relatively small, negatively V-shaped sail area. This way, performance is achieved by a low profile offset. This special concept enables the combination of excellent flight qualities and surprisingly high performance. Thanks to their effortless steering behavior and the advantages of the negative V-shape during thermal centering, the Fexes' performance can easily be accessed even by less experienced pilots. Finsterwalder's concept for intermediate gliders has meanwhile been copied several times, however, until now, has not yet been fully achieved. You can assure yourself of our gliders' qualities in the test reports of several air sports magazines. You can access them online via www.finsterwalder-charly.de/en/downloads.html (we will gladly send you printed copies of the test reports on request).

2. Unique 2 m short pack possibility

Alle In addition to the conventional rigging system and packing dimensions of 5,50 respectively 3,80 m, all Finsterwalder gliders can optionally be short-packed to just 2,00 x 0,35 x 0,25 m thanks to their unique click system. Finsterwalder's sophisticated click system, where the sail is pulled off the tubing, has been brought to perfection over many years. The procedure does not stress the material and allows for the use of supported leading edges. The Snap Lock System with Finsterwalder's specially developed quick release fasteners enables the complete tool-less disassembly respectively rigging of the glider within 10-20 minutes. Moreover, the click system is advantageous for transport,



storage, checks and repairs. Please find further details in the test reports of several air sports magazines. The Snap Lock System is the only super short pack system for hang gliders that is widely used today. You can visit our shop in Munich and we will gladly demonstrate or instruct you on the system free of charge.

3. Unbeatably light and robust

Thanks to their well-engineered construction and high-quality materials, the Fexes endured all trials on the DHV test vehicle even at top speed. Years of tough use at flight schools show that despite their lightweight construction and short pack possibility, the Fexes do not have to compromise in terms of robustness. All components have demonstrated their durability. Due to their high quality, used Fexes regularly achieve top prices when resold. We exclusively use specially manufactured tubes in special sizes, seamlessly drawn from 7075 T6 aluminum alloy with a strength of 650 N/mm2. The tubes are eddy-current tested, mechanically polished and anodized both inside and outside. All Fexes are delivered with aerodynamically shaped fittings and ultra-light profiled AEROFIL® and AEROSAFE® king posts and A-frame tubes forged from aircraft-grade aluminum.



Fex details from left to right: A-frame attachment with high-tech fittings, aerodynamically shaped A-frame corner and Perunal nose plate.

Lightfex Floater

The smaller version of the Perfex corresponds to its prototype in terms of flight qualities, performance and technical features. However, with respect to tube dimensions and sail cut, the construction is specially tailored to light pilots. Just like the Perfex, the Lightfex achieved top marks in the „Drachenflieger“ magazine's test reports. 14 m2, optimum payload 55-80 kg! Packing dimensions 5,20/3,70/1,85 m. DHV certified! Available with speedbar for a lying down flight position or with a smaller, specially adapted supine A-frame.

L1000

€ 4270,00



Perfex Floater

DHV certified 2 m short pack sky floater. Can be flown at extremely low speeds while still being very agile. The Perfex' handling is absolutely fantastic, less than 1 m/s sink rate, top speed supine 65 km/h, lying down 80 km/h. Due to its low weight, robustness and handiness very well suited for the practice hill, however, almost too powerful and agile for the training of beginners. With its 100% Perunal frame, sliding tube diameters, Perunal sail battens with different flex zones, Perunal nose plate, profiled king post, Finsterwalder king post mounting, Aerosafe A-frame, aerodynamic fittings and quick release fasteners, the Perfex has far more to offer than its price tag would lead you to expect. The sail is made from superfine woven, lightweight and very durable fabric and features a perfectly profiled Mylar reinforced leading edge with nose cover. 16 m2, optimum payload 70-105 kg! Weight from 21 kg. Available with speedbar for a lying down flight position or with a smaller, specially adapted supine A-frame.

P1000

€ 4270,00

Ask for our special hang glider brochure!



Optionen

€

	Supine A-frame incl. special rigging instead of A-frame for a lying down position	no surcharge
	Round pipe or lightweight round pipe uprights instead of Aerosafe uprights for Perfex/Lightfex	no surcharge
	Speedbar with bayonet fitting and safety rope instead of straight base tube	no surcharge
A40	Special lower sail colors/fabric for double sail gliders or per upper sail front respectively back part for all gliders	60,00
A30	Neon color for leading edge	30,00
A60	Neon colors/printed fabric for lower sail Airfex/Funfex or per upper sail front respectively back part for all gliders	90,00
A84	Wing tip protectors, pair	25,00

FHa63	Keel tube extension for Funfex (rigging aid)	63,00
Pa10	Packing bag short (2,00 m) with premium shoulder carrying straps	146,00
Pa20	Premium packing bag long	146,00
HRA7/28	Wheel stoppers/base tube protectors, pair	5,20
Tr22M1	AS replacement upright for Funfex/Airfex	48,00
Tr22M2	AS replacement upright for Perfex/Lightfex	51,50
Tr22M3	AS replacement upright for Speedfex	58,00

Please do not forget to order the most important replacement parts. We will gladly give you advice.



More information about Finsterwalder hanggliders including assembly videos can be found on our website: www.fensterwalder-charly.de

Funfex S Intermediate

The Funfex S with double sail is the missing link between floaters and high performance gliders. Its compelling concept made the Funfex the prototype for a whole new glider category. However, its imitators never managed to surpass its flight qualities, performance, handling and lightness. Plus, it is perfectly crafted and features our unique 2 m short pack possibility.

16 m², optimum payload 70-105 kg. Weight from 23,5 kg. Available with speedbar for a lying down flight position or with a smaller, specially adapted supine A-frame.

F1000 € 4690,00



Airfex Intermediate

Specially designed intermediate glider for light pilots with level 2 classification. Top-class hardware, thus unbeatably light, handy and robust. The Airfex is characterized by a particularly hassle-free landing behavior. 13,8 m², optimum payload 55-70 kg. Weight from 22 kg.

A1000 € 4690,00



Test reports:

Read what air sports magazines write about our Fexes' as yet unsurpassed concept.

Download at www.fensterwalder-charly.de

AEROSAFE/AEROFOIL AND ROUND A-FRAME TUBES

AEROSAFE/AEROFOIL UPRIGHTS

We cut uprights to the desired length and deliver them undrilled (customized tubes are nonreturnable!):

Aerosafe-Profil* (weight only 520 g/m)	Width 26 mm, length 53,5 mm (inner diameter 22 mm)	Tr22M2 matte silver or gold up to 1,80 m Tr22M3 polished silver up to 1,65 m	59,20 € 66,70 €
Aerofoil-Profil* (weight only 417 g/m)	Width 26 mm, length 49,5 mm (inner diameter 22 mm)	Tr22M1 matte silver up to 1,80 m Tr22M3 polished silver up to 1,80 m	55,20 € 66,70 €
Round-tubes Tr25... (405 g/m)	inner-ø 21,1 mm, outer-ø 25,0 mm	Tr25M1 up to 1,645 m Tr25M2 up to 2,18 m	40,50 € 53,40 €
Round-tubes Tr28... (400 g/m)	inner-ø 25,1 mm, outer-ø 28,5 mm	Tr28M1 up to 1,645 m Tr28M2 up to 2,18 m	46,00 € 61,00 €

* for improved grip and reduced risk of injury. ** drillings for round tubes on request!

Extra reinforcement tubes (installed reinforcement tubes are nonreturnable!):

The Aerosafe reinforcement tube system allows for customized upright stability. The tubes can be adapted to different pilots and upright lengths in such a way, that optimum crash safety is provided.

Reinforcement tube length 0,83 m	Tr221 without installation	7,00 €	Tr221M with installation	10,00 €
Reinforcement tube length 1,00 m	Tr22 without installation	8,00 €	Tr222M with installation	11,00 €
Reinforcement tube length 1,25 m	Tr23 without installation	10,00 €	Tr223M with installation	13,00 €

Pre-cut Aerosafe/Aerofoil uprights (stated reinforcement tubes included), other lengths on request:

	Choose if applicable AS = Aerosafe AF = Aerofoil	Surface	Profile length in mm	Reinforcement length in mm	Special fittings	€
Finsterwalder						
Funflex S, Airflex S, Perflex S	AS/AF	s	1470	-	-	55,20
Funflex S, Airflex S, Perflex S supine	AS/AF	s	1326	-	-	55,20
Funflex, Perflex, Lightflex	AS/AF	s	1511	-	-	59,20
Funflex, Perflex, Lightflex supine	AS/AF	s	1367	-	-	59,20
Speedflex	AS/AF	s	1570	-	-	66,70
Topflex	AS/AF	s	1645,5	-	□	66,70
Airborn						
Sting 118	AS	p	1485	0,83	-	74,80
Sting 145, 154	AS	p	1650	0,83	-	74,80
Blitz 137	AS/AF	p	1570	0,83	-	74,80
Blitz 146, Blade 141	AS	p	1700	0,83	-	76,50
Blitz 155, Blade 153	AS	p	1750	1,00	-	76,50
Aeros						
Stealth 14	AF	s	1620	0,83	-	66,20
Stealth klein	AF	s	1520	-	-	55,20
Airwave						
Calypto	AS	s	1575	0,83	□	66,20
K2, K4, K5, Kiss	AS/AF	s	1649	1,00	□	71,40
K3, Magic 185	AS/AF	s	1778	1,25	□	74,80
Apco						
Santana	AS	s	1620	-	-	55,20
Enterprise Wings						
Rage 157, Desire 141	AS/AF	p	1616	1,00	□	78,80
Desire 151, Elite 150	AS/AF	p	1670	1,00	□	78,80
Foil 139C, Aero 165	AS/AF	p	1640	1,00	□	78,80
Aero 145	AS/AF	p	1568	0,83	□	77,60
Foil 150, 160, 170, 152C	AS/AF	p	1740	1,00	□	80,30
Foil 140	AS/AF	p	1558	0,83	□	77,60
Firebird (ab Bj. 1998)						
Laser, Uno, New Wave, Classic, Quattro	AS/AF	w	1640	0,83	-	77,60
Flight Design						
Exotacy (exkl. Umlenkrollen)	AS	p	1480	-	-	66,70
Guggenmos						
RCS	AS/AF	s	1698	-	-	55,20
Cut	AS/AF	s	1650	-	-	55,20
Icaro 2000						
GTR 148	AS	p	1595	0,83	-	74,80
GTR 162, 175, Brazil 142, 155, 169	AS	p	1650	0,83	-	74,80
Laminar, Relax	AS	p	1650	0,83	-	74,80
La Mouette						
Atlas, Azur, Profil, Probe	AS	g	1600	-	-	59,20
Topless	AS	g	1700	-	-	70,20
Moyes						
XS 142	AS	p	1567	-	-	59,20
XS 155, 169	AS/AF	p	1567	0,83	-	70,20
XT 145	AS/AF	s	1498	-	-	55,20
XT 165	AS/AF	s	1651	0,83	-	66,10
Seedwings						
Sensor 510	AF	p	1702	0,83	-	74,80
Merlin 145, 148, 158, 610	AS/AF	p	1653	0,83	-	74,80
Merlin 611	AS/AF	p	1750	1,00	-	79,90
Kestrel 133, 148, 158	AS/AF	p	1653	0,83	-	74,80
Spyder 14, 15	AS/AF	p	1653	0,83	-	74,80
Solar Wings						
Ace	AS	g	1650	0,83	-	77,60
Rumor	AS	g	1595	-	-	66,70
Thalhofer						
Reflex C, Vektor	AS/AF	s	1628	-	-	59,20
Reflex CS	AS/AF	s	1580	-	-	59,20
GT	AS	w	1600	-	-	77,60
UP						
Speed	AF	p	1630	1,00	-	79,90
Wills Wing						
Supersport 143, Spektrum 144	AS/AF	p	1575	0,83	-	70,20
Supersport 153, Spektrum 165, Sport AT167, HP AT145 links	AS/AF	p	1651	1,25	-	73,60
HP AT145 rechts	AF	p	1651	1,25	-	86,30
Supersport 163, Ram Air, Fusion, HP AT158 links	AS/AF	p	1727	1,25	-	81,70
HP AT158 rechts	AF	p	1727	1,25	-	86,30

Abbreviations: s = silver mat anodised, g = gold mat anodised, p = silver polished anodised, w = white powder coated
□ = if not existent, please order special AS/AF-adapters for top/bottom of your uprights € 11,50

AEROSAFE/AEROFOIL FITTINGS AND A-FRAME HEAD PIECE ON REQUEST:



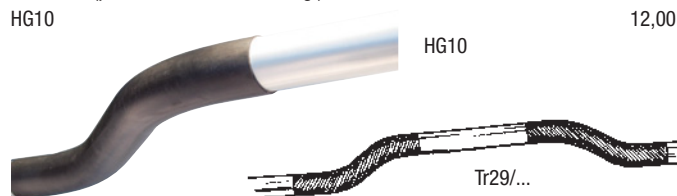
Speedbar

Suitable for fittings ø 28,5 mm (1,125"). Inner ø 25,1 mm, suitable for wheel rods, high-strength aircraft-grade aluminum (Avional), mechanically polished, thus light and stable. Rubber coated grip area. Overhang 14 cm.

Tr29/1	Speedbar undrilled, up to 1,57	79,00
Tr29/2	Speedbar cut to length, drilled	95,00
Tr29/3	Speedbar with fitting for base tube locking system, custom made to the required length, suitable for our control bar corners	112,00
Tr29/S	Surcharge for safety cable installation	25,30
Tr29	Safety cable for own installation	9,50

Rubber grip

Soft rubber tubing for installation on uprights and control bars. The included talcum powder makes installation easy. 1,5 m rubber grip set, available for A-frame tubes ø 25 or 28 mm (please state when ordering!)



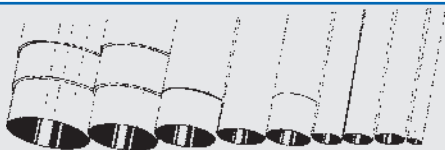
Bolts with ring, screws, blind rivets

P5/...	Bolt 5 mm, drilled, usable length 26, 47 or 54 mm	1,25
P6/26	Bolt 6 mm, drilled, pan head, usable length 26 mm	1,35
R5	Retaining ring 1,0 x 11 mm	0,30
R6	Retaining ring 1,5 x 17 mm	0,75
DIV	Standard stainless steel screws used in glider manufacture	on request
M4-6	Stainless steel Polystop nuts M4, M5, M6	0,40
M8	Stainless steel Polystop nuts M8	0,60
N2,8-6,4	high-strength Monel metal blind rivet in different lengths	on request

Wire ropes and miscellaneous hardware

Ve40/1,5	Stainless steel wire rope 1,5 to 2,0 mm PA coated, per m	2,45
Ve40/2,5	Stainless steel wire rope 2,5 to 3,5 mm PVC coated, per m	2,30
Ve30/2	Nicopress sleeve ø 2 mm for coated wire rope 1,5 mm	0,80
Ve30/2,5	Nicopress sleeve ø 2,5 mm	0,80
Ve30	Wire clamp (screw-tightened) for wire rope ø 2-4 mm	2,50
Ve20/2	Stainless steel thimble for rope ø 2-3 mm	0,85
Ve10	High-strength light metal tang 3 mm	2,70
Ve15	Stainless steel tang 1,2 mm	2,70
Ve70	Flexible PVC tubing, transparent	2,00
Ve71	Heat shrink tubing, transparent, ø 9,5/4 mm, per m	7,80





Info aluminium alloys

The most commonly used alloys in HG-construction are:

AlMgSi0,5 = Extrudal = 6061 (tempered warm)

Most frequently used alloy for line-pressed sections above 1 mm wall strength. Strength 25-28 kp/mm². Can be polished and anodised in all colors.

AlMgSi1 = Anticorodal 100 = 6081 (tempered warm)

Alloy for inexpensive, seamless drawn tubes. Strength 32-36 kp/mm². Can be polished and anodised in all colours. Is approx. 1,5 x more expensive than Extrudal.

Hochwertige Legierung für nahtlos gezogene Rohre, Bleche

Abbreviations:

L = length of uncut tube (minimum order)

54x0,9 means outer diameter 54 mm, wall thickness 0,9 mm

F = tensile and compression strength per mm² (is also the measurement for bending)

Finsterwalder is famous for a large selection of high strength super light-weight tubing from special aluminium alloys unavailable elsewhere. The tubing is also used for sport aviation purposes. We should like to draw attention to the fact, that each individual tube should be specially tested when used in safety critical situations. *All tubing used in Finsterwalder gliders is from tested tubing of 7075 alloy!*

AlCuMg1 = Avional 100 = 2017A (tempered cold)

High quality alloy for seamless drawn tubing, sheet metal and forged parts. Strength 38-44 kp/mm². In spite of greater strength, it can be deformed more strongly than Anticorodal 100. Cannot be color-anodised and can only be polished mechanically. Is approx. 3 x more expensive than Extrudal.

AlZnMgCu1,5 = Perunal = 7075 (tempered warm)

High quality alloy for seamless drawn tubing and sheet metal. Strength 53-64 kp/mm². By approx. double the strength, the elongation after fracture is somewhat lower than by Anticorodal. Perunal tubing is much more resistant

to damage when knocked than anticorodal tubing, in spite of the lower wall strength (minimal weight) and has more safety reserve under bending stress. Perunal tubing cannot be anodised in various colours, and can only be mechanically polished. Perunal tubes are 5 x more expensive than Extrudalrohre. Mechanical polishing is 4 x more expensive than chemical or electrical shining.

When used for the construction of hang gliders the following should always be observed: that the higher strength of the tubes should only be utilised to a maximum of 10% by normal usage.

Moment of inertia: Information about the rigidity and compression stability of the tube. Is for all practical purposes independent of the alloy type and tensile strength.

Art.No.		Moment of inertia	€/m	Art.No.		Moment of inertia	€/m
A10	Saw cut, per cut		0,75	R42PE	42x1,0, anticorodal pol.-anodised F = 28, L = 4,50 m		44,70
R06GFK	Solid fibreglass, diameter 6 mm, L = 6 m		4,00	R44E	43,8x0,9, anodised, 340 g/m, Perunal F = 60, L = 1-3,8 m	27917	44,70
R12/0,45	112x0,45, unanodised, 46 g/m, Perunal F = 60, L = 4,8 m	273	6,70	R45	45,6x0,85, unanodised, 330 g/m, Perunal F = 60, L = 6 m	29923	40,90
R12/0,45E	12x0,45, anodised, 46 g/m, Perunal F = 60, L = 2,4 m	273	10,40	R45E	45,6x0,85, anodised, 330 g/m, Perunal F = 60, L = 6 m	29923	43,70
R13	13,3x0,6, unanodised, 67 g/m, Perunal F = 60, L = 4,8 m	484	7,40	R47	47,3x0,8, unanodised, 330 g/m, Perunal F=60, L=5,75 m	31596	41,40
R13E	13,3x0,6, anodised, 67 g/m, Perunal F = 60, L = 2,4 m	484	11,90	R47*	47,3x0,8, unanodised, 330 g/m, Perunal F = 60, L = 1,91 m	31596	28,80
R22E	21,9x0,9, 150 g/m, AlZn4,5Mn F = 38, L = 4,75 m	2660	8,00	R47PE	47,3x0,8, pol.-anodised, 330 g/m, Perunal F = 60, L = 2 m	31596	52,90
R22/0,4EP	22x0,45, anodised, 85 g/m, Perunal F = 60, L = 4,75 m	1770	15,90	R47/0,65	47,3x0,65, unanodised, 265 g/m, Perunal F=60, L=1,91 m	25752	28,80
R25/2E	25x2,0, anodised, 405 g/m, Avional F = 38, L = 6,58 m	9445	21,30	R52	52x0,9, unanodised, 390 g/m, Perunal F = 60, L = 5,8 m	47173	45,40
R28	28,5x1,7, unanodised, 400 g/m, Avional F = 38, L = 6,58 m	12902	21,00	R52PE	52x0,9, pol.-anodised, 390 g/m, Perunal F = 60, L = 1,92 m	47173	59,20
R28E	28,5x1,7, anodised 400 g/m, Avional F = 38, L = 6,58 m	12902	24,35	R54	54x0,9, unanodised, 420 g/m, Perunal F = 60, L = 5,9 m	52931	47,40
R32/0,9	32,4x0,9, unanodised, 234 g/m, Avional F = 38, L = 6 m	11056	14,00	R54PE	54x0,9, pol.-anod., 420 g/m, Perun. F=60, L=1,92/1,495 m	52931	61,20
R32/0,9E	32,4x0,9, eloxiert, 234 g/m, Avional F = 38, L = 6 m	11056	17,30	R54PE*	54x0,9, pol.-anod., 420 g/m, Perun. F = 60, L = 1,92 m	52931	34,50
R32/0,9PE	32,4x0,9, pol.-anodised, 234 g/m, Avional F = 38, L = 2 m	11056	21,00	R60	60x0,9, unanodised, 470 g/m, Perunal F = 60, L on request	72974	57,80
R40PE	40x0,85, pol.-anodised, 295 g/m, Avional F=60, L=1,62 m	11056	21,00	R60PE	60x0,9, pol.-anodised, 470 g/m, Perunal F = 60, L = 1,91 m	72974	71,90
				R62PE	62x0,9, pol.-anodised, 485 g/m, Perun. F = 60, L=1,78/1,83 m	80634	74,80

* second choice

Please note that we usually stock tubes only in the stated lengths. Other lengths might be available but often have long delivery times.

Tubes with a length of more than 2 m often involve high packing and shipping costs. We split the tubes at 0,75 €

per cut but must, however, charge for unusable offcuts. The minimum purchase quantity is 1 tube. We do not have cutoffs from our glider production.

Rebates for bulk purchasers are possible. Please ask us for a quote.

Please give us one day's notice when picking up orders so that the tubes can be collected from our stock.

Ball lock pins / Quickpins

€

Bolts with push button locking for countless uses, esp. in glider/aerospace construction and in the Reha branch. With the exception of the aluminium grips all parts are constructed from high strength stainless steel. Three ball bearings instead of the usual 2 result in twice the pull out strength. Editions with 2 ball bearings and/or special lengths **on request!** The security cap with inserted steel ring protects the quickpin from dirt and freezing and is available as an accessory. Breaking load in transverse direction 2,8 to.

Be64/22	Use length 22 mm	11,90
Be64/33	Use length 33 mm	11,90
Be64/38	Use length 38 mm	11,90
Be64/45	Use length 45 mm	14,80
Be64/48	Use length 48 mm, suitable for Pin Lock	14,80
Be64/...	Use length 50/70 mm	14,80
Be65	Security cap for ø 6,35 mm, with high strength nylon cord and sprung ring	2,25

Detent button sprung snappers

€

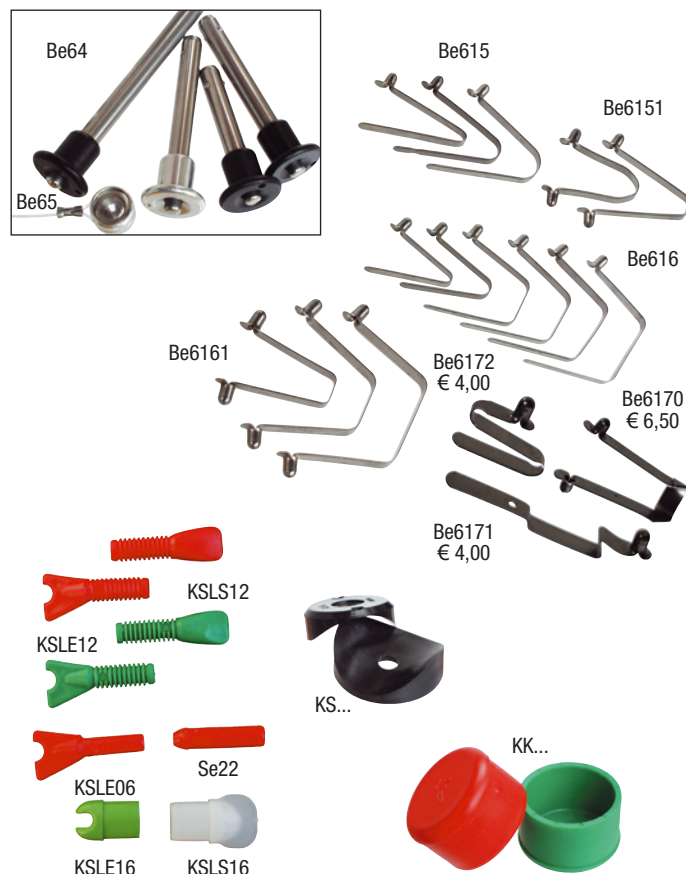
Finsterwalder speciality made of chrome-nickel stainless steel. **Please state version and inner tube diameter as several sizes are grouped under the same article number!**

Be615	Single detent button, ø 5,1 mm, 11-25 mm	1,55
Be6151	Twin detent button, ø 5,1 mm, 18-25 mm	1,80
Be616	Single detent button ø 6,4 mm, 19-52 mm	1,75
Be6161	Twin detent button, ø 6,4 mm, 25-52 mm	2,10

Tube accessories

€

KK18-25	Tube end caps for inner diameter 18, 20, 25 mm	0,60
KK36-58	Tube end caps for inner diameter 36, 38, 44, 48, 50, 58 mm	1,50
KS47	Saddle piece 45 x 60 for tube diameter 38 mm	1,30
KS52	Saddle piece 50 x 60 for tube diameter 45 mm	1,30
KSLS/KSLE	Tips/ends for sail battens for inner diameter 11, 12 mm	1,50
KSLE16	Tips/ends for sail battens for inner diameter 16 mm	2,50
Se22	Adapter fitting, batten inner diameter 11 mm, to fiberglass 6 mm	0,80



HANFAIRINGS AND BAR WHEELS FOR HANGGLIDERS

Charly HG handfairings for profiled speedbars

€



Specially designed neoprene gloves for profiled speedbars with Velcro strip for quick attachment and removal from the control bar. As slipping in and out is easy, re-gripping after takeoff and instrument operation during flight is easily possible

Thanks to the neoprene fabric's excellent insulation qualities, the handfairings can be worn without glove liners in the summer. In combination with thin glove liners, they are ideal for the winter. The front part of the handfairings is equipped with inner pockets for Chiba Hotliner activated carbon heat packs (HM151). These provide pleasant warmth for up to six hours, even in arctic conditions.

HM934	HG handfairings for profiled speedbars (pair)	69,50
HM151	Activated carbon heat packs (pair)	1,60

Charly HG handfairings for round speedbars

€



The neoprene handfairings are simply pulled over the control bar. As slipping in and out is easy, re-gripping after takeoff and instrument operation during flight is easily possible

Thanks to the neoprene fabric's excellent insulation qualities, the handfairings can be worn without glove liners in the summer. In combination with thin glove liners, they are ideal for the winter. The front part of the handfairings is equipped with inner pockets for Chiba Hotliner activated carbon

bon heat packs (HM151). These provide pleasant warmth for up to six hours, even in arctic conditions.

HM931	HG handfairings for round speedbars (pair)	46,90
HM151	Activated carbon heat packs (pair)	1,60



Specially designed warming handfairings for the control bar with a practical map pocket on the back of the hand. The hands remain free for takeoff and instrument operation. The handfairings can also be worn without glove liners in the summer.

HM9N	HG handfairings with map pocket (pair)	29,50
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Finsterwalder QUICK-SAFE

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These unbelievable light-weight, aerodynamic, unbreakable pull apart control bar wheels have proven their worth now for years. Their smooth elliptical shape produces no airresistance worth mentioning, making them also preferred by competition pilots.

It should be clear that even the best control bar wheels (especially when they are not pneumatic) will not survive every crash intact. QUICK-SAFE wheels help to keep the damage as small as possible. They are suitably robust for normal touch down on the wheels. In situations, where similar wheels break and the control bar is bent, the snappers on the QUICK-SAFE open, preserving the wheels and base tube from destruction. QUICK-SAFE can be attached to the rigged glider within a few seconds. Problems with putting down on steep rigging sites therefore do not exist. QUICK-SAFE is made of polyamid (nylon) and weighs only 270 g by measurements of 180x70 mm. QUICK-SAFE is available for control bar diameters of 25,5 mm, 28,5 mm, 30,5 mm and 32,5 mm; for VG-cord channel also available with diameter 35 mm.

Tip: Pay attention to the accompanied instructions for use! Choose the right hub diameter! Crash-resistance is only warranted if there is no more than 1,5 mm play between wheel-hub and control bar. Guarantee: We replace broken wheel-halves!

HRa001/25/28	QUICK-SAFE ø 25,5 mm, 28,5 mm, each	15,00
HRa001/35	QUICK-SAFE for use with VG-hub, each	17,00
HRa5/33	Hub with VG-cord channel for control bar ø 25,5mm	18,00
HRa5/34	Hub with VG-cord channel for control bar ø 28,5mm	18,00

Wheel spacers

€

Practical accessory for every hangglider pilot! Hard rubber rings ø 54/24 or ø 54/27 mm, 20 mm wide with rounded edges for base tubes of ø 25 or 28 mm. Protects your base tube against scratching during the hang check. Also prevents lateral travel when using wheels. QUICK-SAFE wheels are mounted directly onto the base tube protectors!

To mount the rings lubricate the base tube with water, glycerine or talcum powder and push them on - when dry the rings are stationary. They can also be glued in place. Please state the required diameter!

HRa7/25/28	Wheel spacers, each (ø 25,5 mm oder 28,5 mm)	4,60
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Light-weight inflatable wheels

€

Dimensions 200 x 50mm, ø 35mm, Reduziernaben müssen dazu bestellt werden.

HRa01	Light-weight inflatable wheels, piece	27,50
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Trainer wheels

€

Dimensions 260 x 50mm, ø 35mm, Adapter sleeves should be ordered in addition.

HRa1	Trainer wheels inflatable, piece	25,50
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Adapter sleeves

€

Please state the required diameter! For each wheel one pair of adapter sleeves will be required!

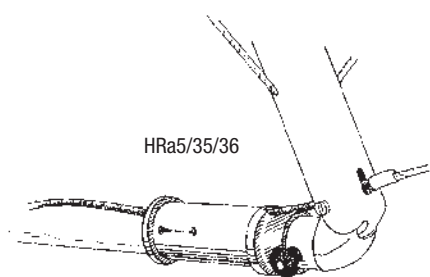
HRa5/25/28	Adapter sleeves ø 25,5 mm or 28,5 mm, pair	3,00
	Add. price ø 35/30 und ø 35/32 mm	1,00

Hub with VG-cord channel for pneumatic wheels

€

Hub diameter 35 mm with a cord channel for inflatable wheels on gliders with variable geometry. The VG-hub with the left wheel rim is attached to the control bar by a screw or pop rivet and the wheel runs over the hub. The right wheel rim can be removed, if the A-frame control bar and upright are separated. Suitable for inflatable tires with a hub hole diameter of 35 mm. Please state the required diameter!

HRa5/35	Hub with VG-cord channel for control bar ø 25 mm	20,00
HRa5/36	Hub with VG-cord channel for control bar ø 28 mm	20,00



HG / PG Sticker

Fiinsterwalder Sticker with transfer film,
different colours

150x160 mm
HL81 € 4,50



190x80 mm
HL85 € 4,50



110x140 mm
HL82 € 4,50

