

# HÖVDING 2.0

## AIRBAG for CYCLISTS

USER MANUAL  
FOR HÖVDING 2.0  
3077-A1

Read this manual carefully before you use your Hövding for the first time. It contains information on how to use and maintain the product correctly. The user manual can be downloaded in several languages from our website.

### WHAT IS HÖVDING?

Hövding is a revolutionary bicycle helmet, an airbag for cyclists. It is not only one of the safest helmets on the market. Hövding is also a discreet chameleon. Its changeable shell means that it can easily match your outfit.

Unlike other bicycle helmets, you don't wear Hövding on your head. You wear it as a collar around your neck. The collar contains an airbag that inflates and protects your head if you have a cycling accident. The inflation is controlled by sensors that register abnormal movement if a cyclist has an accident.

Hövding offers by far the best shock absorbance capacity of any bicycle helmet worldwide and is also a practical, discreet accessory that is easy to take with you.

### QUICK FACTS

- Just like a new pair of shoes, Hövding is stiff at the beginning and needs to be worn for a while as you cycle to become soft, flexible and adapted to you. This takes around 2 to 3 weeks of use. If you want to accelerate this process, you can fold and knead your Hövding when it is new.
- The collar is optimised for the body's slightly forward leaning position when cycling. It is slightly heavier at the back than at the front so that the weight rests against your back when you are on your bike. Consequently, if you try on your Hövding while standing upright, it may feel a bit back-heavy.
- Only switch your Hövding on when you are wearing it and are about to ride your bike. Your Hövding is designed to protect you while cycling and it must, therefore, be switched off when you are not cycling.
- Do not switch your Hövding on when you are going to charge it or when you are holding it in your hands to show it to a friend. If you hold it in your hands when it is switched on, you can cause movements similar to those in an accident.
- When you put your Hövding on, it is important that you close the zip fully to ensure that it works properly.



Hövding  
Grimsbygatan 24  
211 20 Malmö Sweden



## HÖVDING - ONCE UPON A TIME ...

In spring 2005, we began our joint degree project in industrial design at Lund University's Faculty of Engineering. The recent legislation in Sweden on compulsory use of bicycle helmets for children up to the age of 15 had triggered intensive debate on extending the legislation to cover adults as well. To people like us, who could never imagine wearing a Styrofoam helmet, such legislation appeared as a threat. It seemed a much better option to develop a bicycle helmet that people would gladly want to use instead of forcing them to wear one with legislation. We realised that a degree project in industrial design was a perfect forum for finding out whether it was possible to improve on traditional bicycle helmets.

We conducted a survey and asked a number of cyclists why so few people use bicycle helmets. There were many reasons and excuses: "they are a pain to carry, they are ugly, they ruin your hair, no one else uses them, there's no room for a cap underneath them". Some were good

arguments, others were simply excuses. It was clear that bicycle helmets were a hot topic on which everyone had an opinion and to which everyone could relate. Cycling is an everyday phenomenon and strongly associated with a feeling of freedom. Although people are aware of the risks of cycling in traffic, the majority still choose to cycle without a helmet. People do want to protect their head in traffic, but not at any cost. However, it is not the users who need to change. The products need to be adapted to the users.

When we asked how people would like the bicycle helmet of the future to look, we got answers like these:

*"Like a nice cap with a built-in helmet."*

*"Small and foldable so you can put it in your pocket."*

*"With the option of changing its appearance, like mobile covers and wigs."*

*"Invisible."*

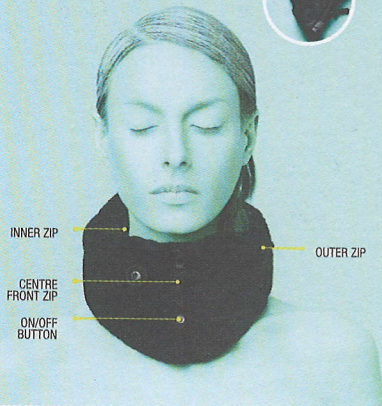
The instant we heard the word invisible, we understood that that was exactly what was needed. An invisible bicycle helmet. And so the first Hövding seed was sown.

Over the years, we have learned that nothing is impossible. We have learned that those who call themselves realists are cowards who don't dare think big. At Hövding, we have open debate, we question custom and practice, and curiosity is a virtue. Hövding means chief, and a chief is a leader and a role model who wants to influence and change the world. We want to challenge others to dare take themselves extremely seriously as well. We are a small company but we think big and we have lofty ambitions. Megalomania is healthy for us.

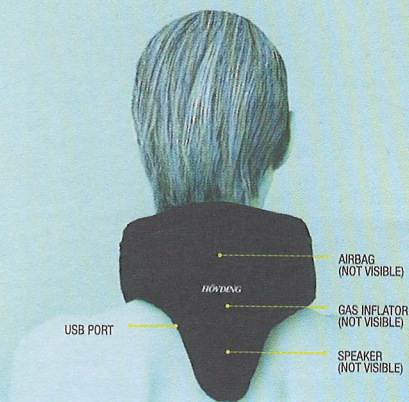
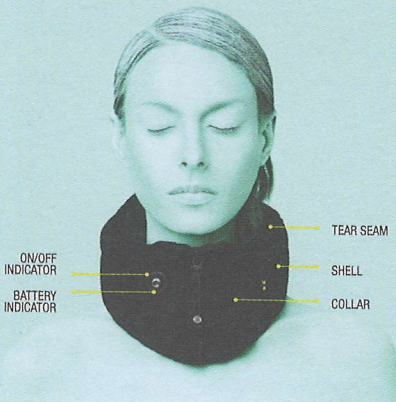
**/Anna Haupt and Terese Alstin.**

## HÖVDING OVERVIEW

TAPE FOR HANGING UP



ACCESSORIES THE FOLLOWING ACCESSORIES ARE SUPPLIED WITH HÖVDING 2.0: BASIC SHELL, MICRO USB CABLE (FOR CHARGING VIA A COMPUTER)



**COLLAR WITHOUT SHELL**

**COLLAR WITH SHELL**





### CHOOSE YOUR SIZE

Hövding is available in two collar sizes: Small (S) and Medium (M). In terms of operation, it makes no difference whether your Hövding is tight or loose around your neck. The collar sizes that are currently available (S, M) are both adapted to the same head size range: 52-59 cm in circumference. Choose the size that feels best.

Small is recommended for neck sizes of less than 36 cm.  
Medium is recommended for neck sizes of 34–42 cm.

If your neck size is 34-36 cm:

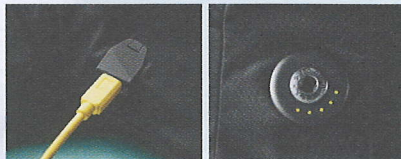
Choose Small if you have a long neck and/or prefer a tight collar.

Choose Medium if you have a short neck and/or prefer a loose collar.

Hövding 2.0 is adapted to and tested for neck sizes up to 42 cm in circumference. These are absolute maximum dimensions. If your neck is larger, unfortunately you will have to wait until larger sizes are produced.

### CHARGING THE BATTERY

Hövding contains a rechargeable battery. The battery is partially charged on delivery. Fully charge the battery before you use your Hövding for the first time. It takes approximately three hours to fully charge the battery.




Hövding is charged via a computer using the USB cable supplied. This is connected to the USB port on the back of the collar. The computer must be switched on and not in sleep or eco mode. During charging, the LEDs on the front of the collar flash and all LEDs light up without flashing when Hövding is fully charged.

Hövding's battery lasts for approximately nine hours of use. Hövding draws power from the battery only when it is switched on.

You can also charge your Hövding via a power socket using a standard mobile phone charger with micro USB.

The five LEDs on the battery indicator show the battery level. When your Hövding is fully charged, all LEDs light up.

If the battery is fully discharged, it can take a while before the LEDs start to light up after you have connected your Hövding to a computer or power socket.

- i** Battery life, switched on: approximately 9 hours.  
Battery life, switched off: approximately one year.
- i** You can check the battery level by holding down the battery button  on the inside of the collar for approximately two seconds. The battery level can also be checked when your Hövding is switched off.
- i** Heat may reduce battery performance. Do not store your Hövding at a high temperature, for example in a car when the sun is shining.
- i** Charge the battery at a temperature between +5°C (+41°F) and +40°C (+104°F).
- i** Never force a connector into the USB port. If you cannot insert the connector without force, the connector is probably the wrong way round. It is bevelled on two corners and therefore fits only one way. Try rotating the connector 180°.

### FITTING THE SHELL ON THE COLLAR

Hövding is supplied with a detachable black basic shell. It is a discreet shell, sewn using the same type of durable, dirt-repellent functional fabric as the collar itself.

Fitting the shell: Place the shell on top of the collar. Close the two zips at the top of the outside and inside of the collar.

Take off the shell: to remove the shell, open the two zips at the top of the outside and inside of the collar.



---

## PUTTING ON YOUR HÖVDING

Put on your Hövding by placing it around your neck and closing the zip at the front under your chin all the way up. You can pull out the lower edge of your Hövding under your chin to see the zip when you need to close it. The zip tag has an on/off button. Switch your Hövding on by pulling up the zip and attaching the on/off button on the right side of the collar. An acoustic signal and LEDs that light up tell you that your Hövding is switched on.

- ⚠ Do not put your Hövding on any other way than as described above.
- ⚠ Do not switch your Hövding on by attaching the on/off button without closing the zip at the front – all the way up.
- ⚠ Hövding must not be used with other head and neck protection.
- ⚠ Ensure that the tear seam is not covered by any garment.

---

## CYCLING WITH YOUR HÖVDING

Make sure that your Hövding is switched on by listening for the on signal when you have attached the on/off button or by checking that the on/off LED is on before you start to cycle.

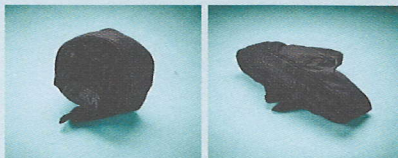
Only switch your Hövding on when you are wearing it and are about to ride your bike. It is a good idea to get into the habit of not switching your Hövding on until you are about to get on your bike. Otherwise there is a risk of you forgetting that you are wearing your Hövding, switched on, and of causing your Hövding to inflate by mistake. This can happen when you are not sitting on your bike, for example if you jump down from a height or similar. You can, of course, wear your Hövding when it is switched off when you are doing something other than cycling.

An acoustic signal will make you aware in good time that the battery needs to be charged.

If you cycle in a loud environment, it may be a good idea to check the battery level every now and again.

When you have finished cycling and want to take off your Hövding, detach the on/off button and open the zip at the front under your chin. You will hear an acoustic signal to indicate that your Hövding has been switched off.

When you have taken off your Hövding after cycling, you can fold up the collar and put it in your bag.



- ⚠ The on/off button contains a magnet that activates your Hövding. Therefore, avoid your Hövding coming into contact with other magnets (magnetic locks, loudspeakers, etc.).

---

## CLEANING YOUR HÖVDING

**Collar:** The collar cannot be washed as it contains moisture-sensitive components. However, you can carefully rub away stains on the collar with a damp cloth. The collar is protected against wear, sweat and dirt by the surrounding fabric shell.



**Shell:** See the washing instructions for each shell.

---

## MAINTENANCE

- ⚠ Check regularly that your Hövding does not have any visible damage. If your Hövding has visible damage, you must not use it until you have contacted our customer service department for further information.

---

## RECYCLING

For information on recycling, see the FAQs on our website.

---

## IN THE EVENT OF A FAULT

Each time Hövding is switched on, the product automatically carries out an internal check, testing that

all components are working properly. This internal check is also carried out continuously as you ride. If anything is faulty, your Hövding will warn you with a clear acoustic signal and subsequently switch itself off.

If your Hövding does not work properly, please contact our customer service department:

[www.hovding.com](http://www.hovding.com) or +46 (0) 40-23 68 68

---

## INDIVIDUAL MARKING

Each Hövding has an individual label for traceability.



Behind the top edge of the woven information label on the inside of the collar, there is a QR code containing the product's serial number. The 9-digit serial number indicates the year of production, date of production and product serial number.

Specify the serial number when notifying us of any fault.

YY = Year of production

DDD = Date of production

LLLL = Serial number

If you have been involved in a cycling accident and buy a new Hövding, we give you a discount. To obtain the discount, contact us via our customer service department and provide the serial number of the inflated collar.

In some countries the cost of a new Hövding is covered by your standard home insurance, and in some countries our national distributor offers insurance. Visit our website or contact our customer service department to find out what applies in your country.

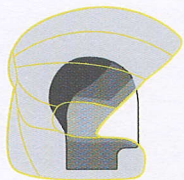


# How **HÖVDING** works



Airbag

## AIRBAG



The airbag is inflated and encloses your head in an accident. The illustration shows the area around your head and neck covered by the airbag. The airbag consists of outer and inner hoods that are joined with straps at various points. It is made of durable nylon fabric that does not rip when scraped against asphalt. The airbag is designed and folded into the collar in such a way that it can be inflated fast and safely. Inflation takes around one tenth of a second (0.1 second) and the airbag is fully inflated before the cyclist experiences any head impact. Your Hövding protects a large part of your head, while leaving your field of vision free.

The area protected reflects current accident statistics and protection is greatest where it is most needed. The darker the colour in the illustration, the better the protection. The airbag is weakest along the seams at the front and strongest against the back of the head and the crown.

Gas is an optimum protective material. It provides very gentle and effective shock absorbance, superior to all other bicycle helmets on the market. The airbag keeps the gas

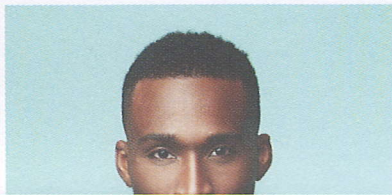
**\*Direct hit:** Hövding only reacts and is inflated if the cyclist makes an abnormal movement in an accident. The airbag in Hövding is fully inflated in roughly one tenth of a second (0.1 second). A head impact that occurs before Hövding has reacted and is fully inflated, is called a direct hit.

Examples of direct hits include an icicle falling onto a cyclist's head or a cyclist riding into a branch at head height. However, direct hits are a very unusual category of cycling accident.

No bicycle helmet can protect you against all types of cycling accident. In a collision with a motor vehicle, the speed at impact is always a factor that limits the protection a bicycle helmet can provide. At higher speeds, the risk of direct hits increases, and of the cyclist suffering internal injuries against which a bicycle helmet offers no protection.

**Accidents without head impact:** Certain types of cycling accident rarely affect the head. Accidents in slippery conditions are one such category. They are also one of the most common cycling accidents and often do not involve head injury. For example, you may fall but regain your balance and land on your feet or knees without your head coming close to hitting the ground. The experience may still be upsetting, but a bicycle helmet would have made no difference as you did not hit your head.

Our attitude is that Hövding should be triggered in those cycling accidents in which it can do some good. As a cyclist, you do not want the airbag to be inflated unnecessarily. In these relatively mild accidents, the airbag will be triggered if the pattern of movement of the cyclist indicates an imminent risk of head impact.



Tear seam

The collar is sewn in waterproof functional fabric, selected to provide the best possible protection for the airbag system inside. The collar cannot be washed, but is protected against wear, sweat and dirt by the surrounding fabric shell. However, you can carefully rub away stains on the collar with a damp cloth.

Although it is possible to use the collar without a shell, we recommend that you use a shell as the collar cannot be washed.

The label on the inside of the collar shows you which way up it is worn.

There is also a tape inside the collar to hang it up.





against several head impacts in the same accident. The airbag then slowly begins to be emptied of gas.

## G A S I N F L A T O R

The gas inflator that fills the airbag with gas is located in a container in the collar against the cyclist's back. The gas inflator in your Hövding is a cold gas inflator with helium gas, one of the smallest gas inflators available on the market.

## S E N S O R S

The airbag is triggered using sensors (accelerometers and gyroscopes) that register a cyclist's abnormal movement in an accident. The sensors send a signal to the gas inflator to inflate the airbag.

The sensors continuously (200 times a second) register the cyclist's movements when Hövding is switched on. A cyclist's pattern of movement is divided into two categories:

**Normal movements:** All urban cycling and cycling on main roads, including getting on and off your bike, are categorised as normal movements. Hövding is not inflated in connection with normal movements.

**Abnormal movements:** The pattern of movement of a cyclist in a cycling accident is categorised as abnormal movements. In an accident, the pattern of movement of a cyclist is completely different from that during normal cycling. Therefore, the airbag is only activated in the event of an accident.\*

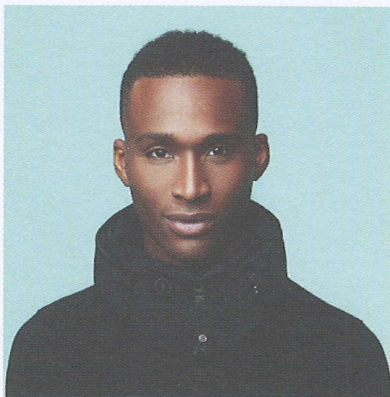
In order to be able to distinguish between these two categories of pattern of movement, the patterns of movement from large numbers of people's everyday cycling have been gathered, as well as the patterns of movement from all known types of cycling accident from thousands of re-enacted accidents. Potentially fatal cycling accidents were re-enacted with crash test dummies, but the vast majority of cycling accidents were re-enacted with real people, both male and female stunt performers. This data was used to develop a unique, patented, mathematical method of distinguishing between these patterns of movement. This method, combined with the sensors, is the brain of your Hövding.



Collar without shell

## C O L L A R

The collar and shell are the visible parts of Hövding that enclose the entire airbag system. All components are located inside the collar to ensure optimum ergonomics and operation. The weight of the collar is evenly distributed across the shoulders. It is heavier at the back than at the front so that the weight rests against your back when you are on your bike. You should, therefore, lean forwards when you try Hövding to feel the weight distribution as it will be when you are riding.



Collar with shell

In the moment of inflation, the seam at the top of the collar tears as a result of the pressure from the airbag so that the protective hood can unfold around your head. Consequently, it is important that you leave space **above** the tear seam and do not cover it with a tight-fitting scarf or similar. However, you can wear a shawl or scarf both **outside** and **inside** your Hövding.



Tape for hanging up

## S H E L L

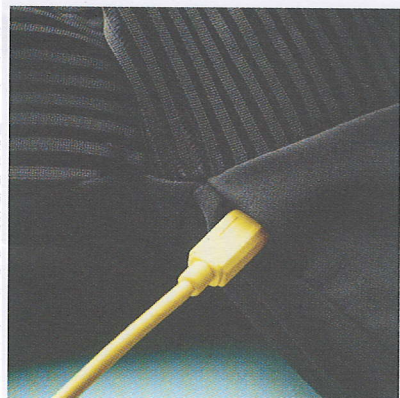
The shell encloses the collar. The most important function of the shell is to allow you to change the appearance of your Hövding. You can do this every day if you want. The shell is removable and is attached to the collar with zips. It is easy to change the shell to match your outfit or the season or to wash it.

The appearance of the shell can be varied with an infinite number of shapes, colours, patterns and fabrics. This makes Hövding a personal accessory. For example, there are shells with functional fabric that removes sweat from your skin. You can see the various shell models currently available for purchase on our website.

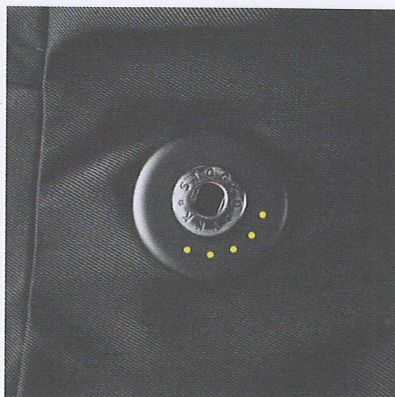


Example shell: Hidden Place

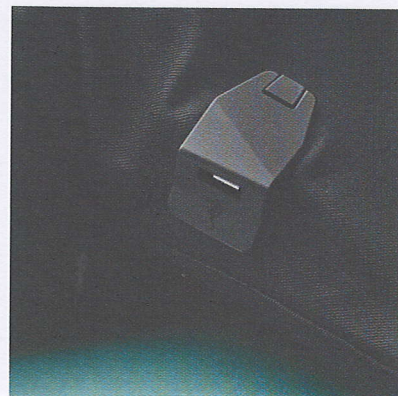




Opening in the shell for charging with the USB cable



Battery indicator



USB port

The basic shell that is supplied with the collar when you buy it has no opening for charging via the USB port. You need to open the zip on the shell to access the USB port. However, the other shells in our range have such an opening.

All shells are washable, unlike the collar.



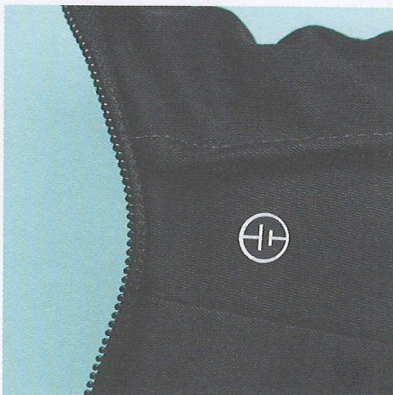
The shell is attached to the collar with zips

## BATTERY INDICATOR

The following functions can be found around the on/off snap fastener at the front of the collar:

- An LED that shows that your Hövding is switched on
- Five LEDs showing the battery level

To see the battery level, hold down the button marked with the following symbol:



Symbol for the button that shows the battery level



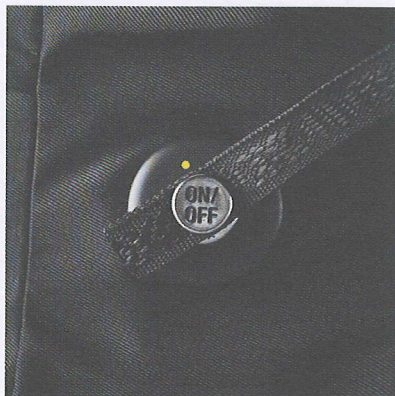
Micro USB cable for charging via a computer

## THE 'BLACK BOX'

There is a black box inside your Hövding. The box saves 10 seconds of data from the cyclist's pattern of movement during (and just before) a cycling accident. In certain cases, data from an accident may be both interesting and valuable to us in our continued development work. So please contact us if you have been involved in an accident.



closing the zip at the front under your chin. The zip must be completely closed for Hövding to work properly. The Hövding on/off button is on the zip tag.



On/off indicator

## ON/OFF FUNCTION

You switch your Hövding on and off using the zip at the front of the collar. The zip tag has an on/off button. Switch your Hövding on by pulling up the zip and attaching the on/off button on the right side of the collar. Switch your Hövding off by detaching the on/off button.

An acoustic signal and an LED that lights up tell you that your Hövding is switched on. When you switch your Hövding off, the LED goes out and a different acoustic signal indicates that your Hövding is off.

- The on/off button contains a magnet that activates your Hövding. Therefore, avoid your Hövding coming into contact with other magnets (magnetic locks, loudspeakers, etc.).

When the battery level is low, the LEDs on the front light up and the battery indicator.

When your Hövding is fully charged, all LEDs light up. The LEDs go out as the battery level falls. When only one of the five LEDs lights up, the battery level is very low and your Hövding needs to be charged before your next cycle.

Battery life, switched on: approximately 9 hours.

Battery life, switched off: approximately one year.

When the battery level is low, your Hövding emits an acoustic battery warning. The beep sound recurs every five minutes until you charge the device or until the battery runs out and your Hövding is deactivated. When your Hövding beeps for the first time, there is battery power for approximately one hour of cycling left. When the battery runs out, your Hövding emits ten successive acoustic warnings before it is finally deactivated. When your Hövding has switched itself off on account of low battery power, it is unable to offer you any protection until you have recharged it.

## USB PORT

Hövding is charged via a computer using the USB cable supplied. This is connected to the USB port on the back of the collar. During charging, the LEDs on the front of the collar flash and all LEDs light up without flashing when Hövding is fully charged. Remember that your computer needs to be switched on and not in sleep or eco mode when your Hövding is being charged.

You can also charge your Hövding via a power socket using a standard mobile phone charger with micro USB.

## ACOUSTIC SIGNALS

There are acoustic signals for the following functions:

**On** – ascending tone in three steps.

**Off** – descending tone in three steps.

**Low battery level** – two short beeps that are repeated once: beep-beep, beep-beep. The signal recurs every five minutes.

**Critical battery level** – 10x 'low battery level' in a row. The 'off' signal then sounds and Hövding switches itself off.

**Product fault** – a loud, long signal that is hard to mistake for other sounds. The 'off' signal then sounds and Hövding switches itself off.



## EC DECLARATION OF CONFORMITY

Hövding conforms to the regulations in Council Directive 89/686/EEC. Certifying body no. 0402 (SP). There is a copy of the declaration of conformity on our website under CE.

## DECLARATION ON ABSENCE OF HAZARDOUS SUBSTANCES

We declare that this product with accompanying shells does not contain substances that are known or suspected to affect the health of the user.





## USAGE

Hövding is designed to protect your head in cycling accidents by registering your pattern of movement. The airbag can be triggered to be inflated by extreme movements when Hövding is in use and switched on, for example jumping from high heights. Therefore, do not use your Hövding when you are out clubbing or when stagediving.

**WHEN? Hövding is designed only for cycling**, and not for other activities such as horse riding, riding a moped, skiing, in-line skating, skateboarding, etc. Cycling means urban cycling and cycling on main roads, but not extreme cycling such as BMX, off-road, downhill, trick cycling and similar.

**HOW? Hövding is designed to be used with standard bikes**, including e-bikes and bikes with small wheels, including folding bikes. Hövding can be used with road bikes, but is ergonomically optimised for a more upright sitting position. Hövding is not designed for use with special bikes such as monocycles, tandems, BMX bikes, recumbents, etc.

**WHO? Hövding fits head sizes (circumference) of 52-59 cm (20.5-23.2") and neck sizes up to 42 cm (16.5") in circumference.** These are absolute maximum dimensions. If your head or neck is larger, unfortunately you will have to wait until larger sizes are produced.

Hövding is designed for cyclists aged 15 and over. Hövding is not suitable for small children because they move differently from adults, both when cycling normally and in accidents. Consequently, Hövding cannot distinguish between an accident and normal cycling in a child with a sufficient level of reliability. The exact age limit cannot be fixed for Hövding as the transition to adult patterns of movement is a gradual one and is individual to each child. However, we consider that all children have acquired an adult pattern of movement at the age of 15.

**The specifications for use above apply to the function specified.**



## IMPORTANT INFORMATION

- You must not repair, sew in, dismantle or change your Hövding. Only authorised staff may service a Hövding. Hövding contains parts that may be dangerous if they are removed from the collar and are handled incorrectly.
- Hövding is rainproof. However, Hövding may not be immersed in water or otherwise be exposed to extreme water impact. Don't try to dry your Hövding with an external heat source such as a hairdryer or microwave.
- Do not use your Hövding if holes have been made in it, if it has been damaged by water or if seams have torn.
- Only switch your Hövding on when you are wearing it and are about to ride your bike (see also 'Cycling with your Hövding').
- Leave space above your Hövding's tear seam. Do not cover it with a tight-fitting scarf, for example.
- Extreme hairstyles or headgear may impede inflation of the airbag if they are too bulky, stiff and heavy. Most hairstyles and headgear create no problems for inflation. For information on the hairstyles and headgear that are not recommended with Hövding, see the FAQs on our website or contact our customer service department.
- Do not store your Hövding at a high temperature, for example in a car when the sun is shining. Hövding must not be used at temperatures below 20°C (-4°F) or above +50°C (+122°F).
- Do not expose your Hövding to naked flames. Hövding contains a gas inflator that can break if it is exposed to a temperature over +130°C (+266°F), and a lithium polymer battery (mobile phone battery) that can be damaged and, in extreme cases, catch fire if it is exposed to a temperature over +60°C (+140°F).
- Hövding contains sensitive parts and should be handled with care. Keep out of the reach of children.

- Ensure that your Hövding is switched off when you travel by other means of transport such as a car, train, bus, plane, etc.
- You may not be permitted to take your Hövding on board a plane. Check with your airline what rules they apply. Legal proceedings are currently in progress to have Hövding included in the list of permitted baggage on planes. See the FAQs on our website to read the latest information.
- Hövding cannot guarantee absolute protection against all sharp objects.
- There is virtually no risk of temporary hearing impairment from inflation of the airbag. Hövding has a cold gas inflator, which uses compressed gas (helium) instead of solid propellant to inflate the airbag, unlike most airbag systems in vehicles. This makes Hövding's inflation slower, softer and quieter than airbags in vehicles (faster airbag systems are required in vehicles on account of the higher speeds).
- No safety products can guarantee 100% protection in all conceivable situations. Depending on how a collision occurs, accidents that happen at very low speeds may also cause severe head injuries and even be fatal. Always ride carefully, and follow the highway code.

