

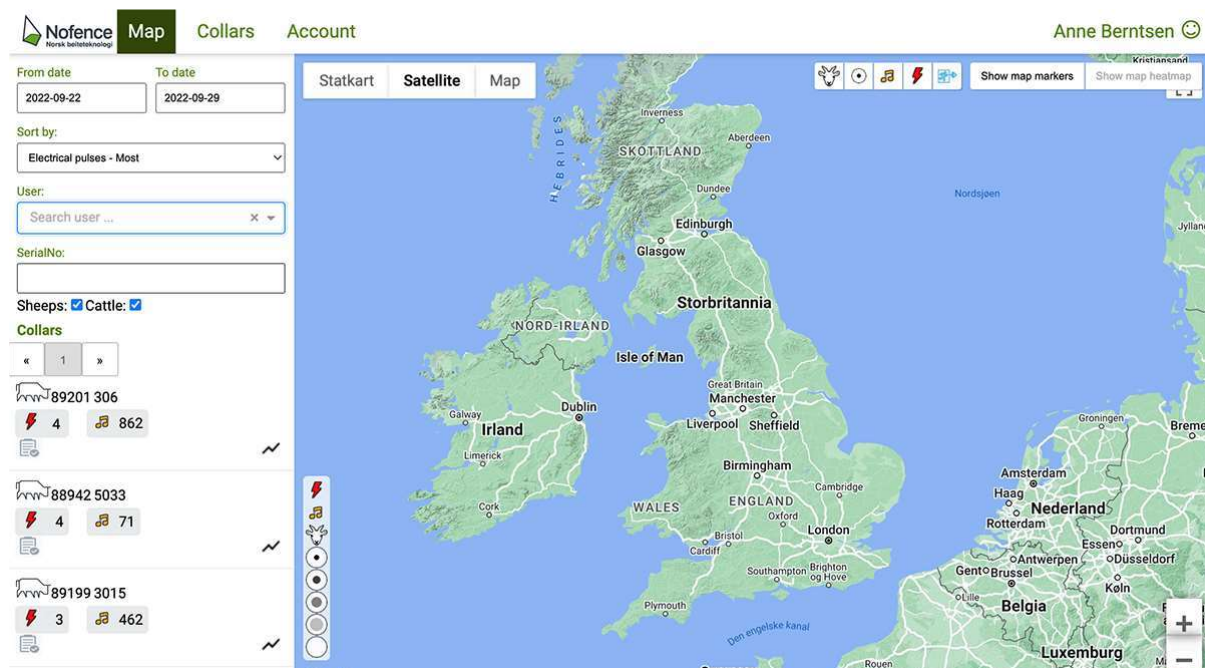
6.3. The web portal my.nofence.no

On our web portal my.nofence.no you can view the movement patterns for each of your collars, ever since you first started using them. This portal is a helpful tool to analyse the grazing, and makes it easier to optimize your pasture design. To login, please use the same login details as in the app.

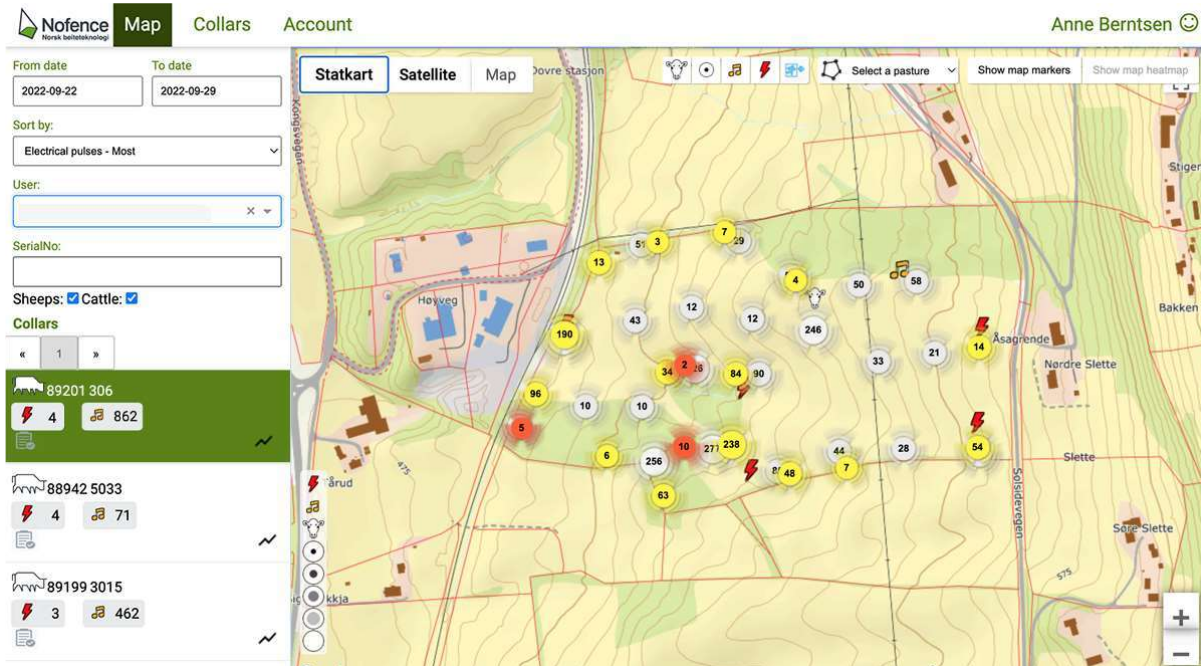
As mentioned, this portal gives you access to see where your collars have been located. However, please note that you can only watch the positions for one collar at a time. In the map you can view time an place for each registered position, as well as sound warnings, electric pulses and escapes.

Please note that it is not possible to create or edit new pastures in the web portal.

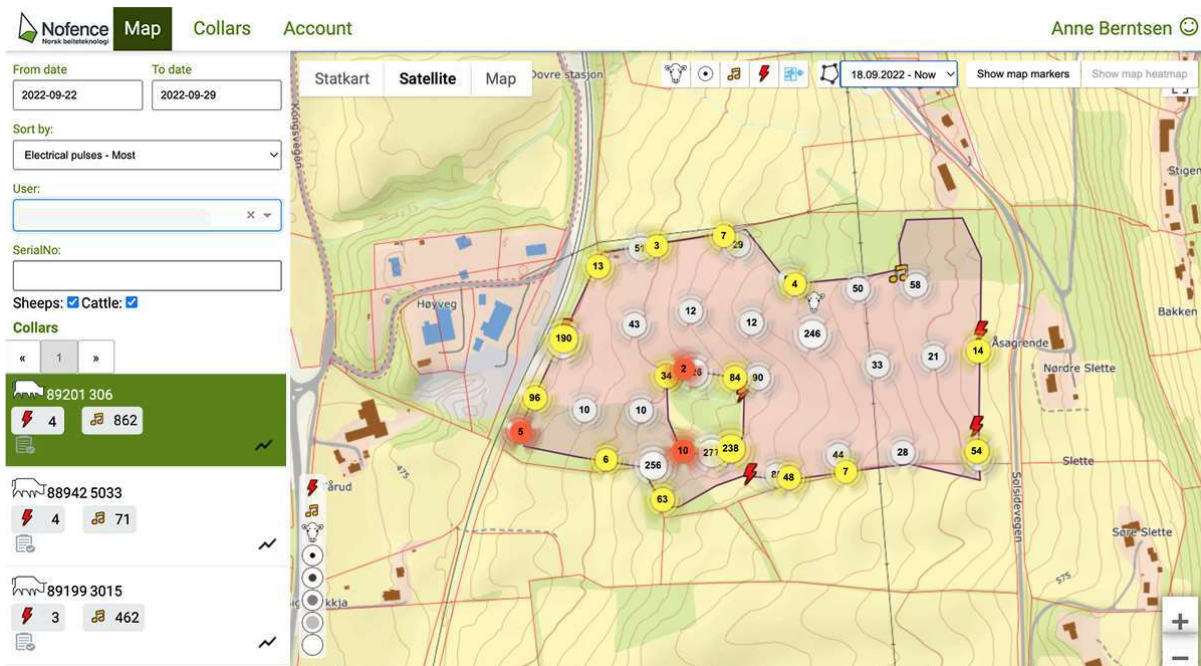
Select the time frame you want to view positions from in the upper left corner.



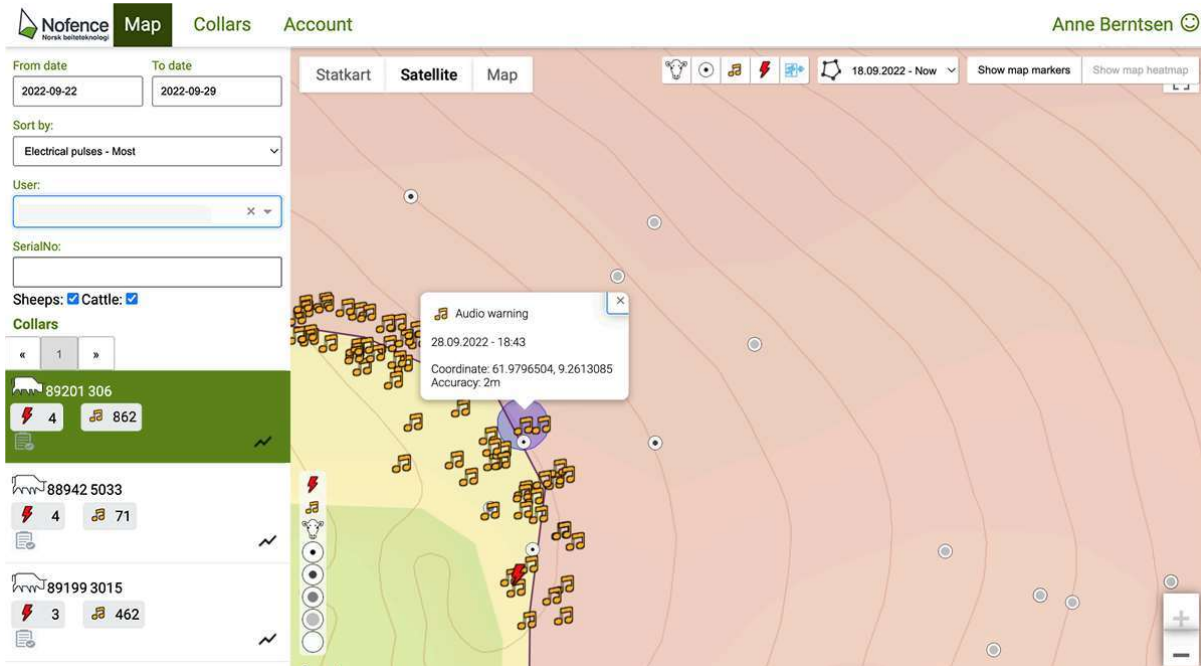
Click on the collar you want to view positions from in the column to the left. You can only select one collar at a time.



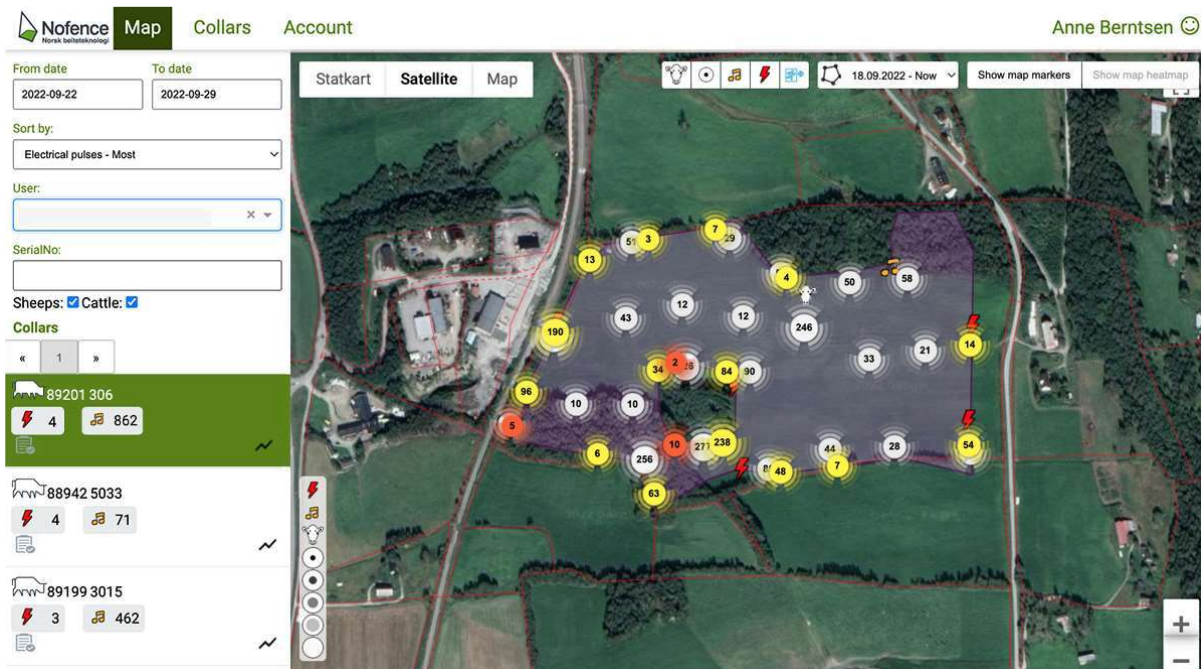
In the upper right corner you can select which pasture you want to view. All pastures from within the selected time period will appear in the drill-down menu. The pasture you select will be marked in purple in the map.



Zoom in to take a closer look at positions and incidents. Click on the position or incident to get more information about each one.



You can choose between satellite map and fly photo. In Norway you can also choose “Statkart”. The pictures are from the satellite map.



Choose heat map in the top right corner to see what part of the pasture the animals are using the most.



Symbols in the map



6.4. Second Hand sale of collars?

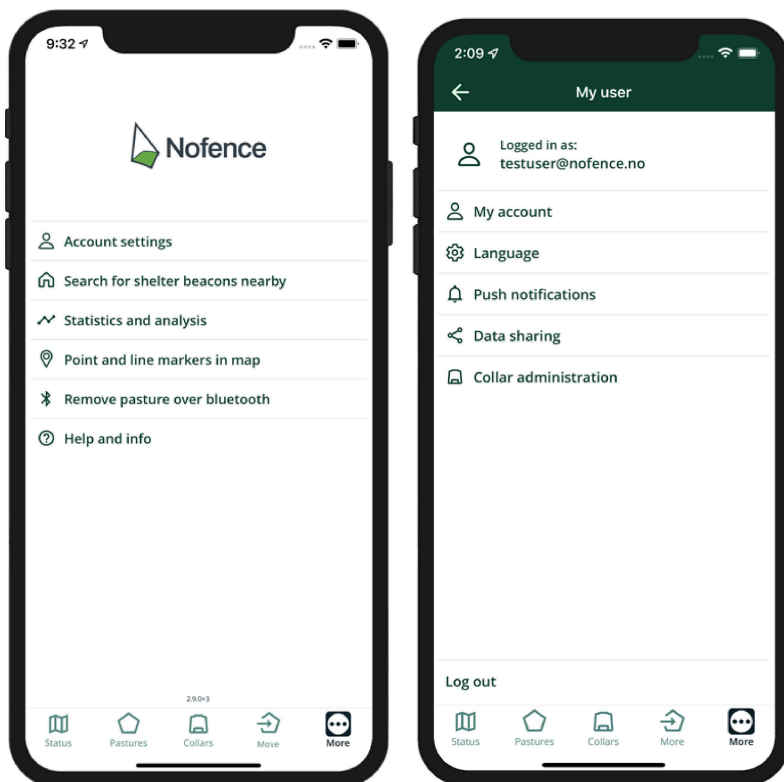
Do you not need your collars anymore, and want to sell them?

Second hand sales of collars is a deal between seller and buyer. You will have to remove the collars you are selling from your user in the app. If the buyer of the collars isn't a Nofence customer they will have to contact us via support@nofence.no to create a new user before the buyer is able to use the collars. The annual fee on the collars does not follow the collars, but the user, meaning that there will be generated a new invoice for the annual fee for the new user.

Before the transaction, it's important that you disinfect the collars. Use Virkon S and follow the instructions below.

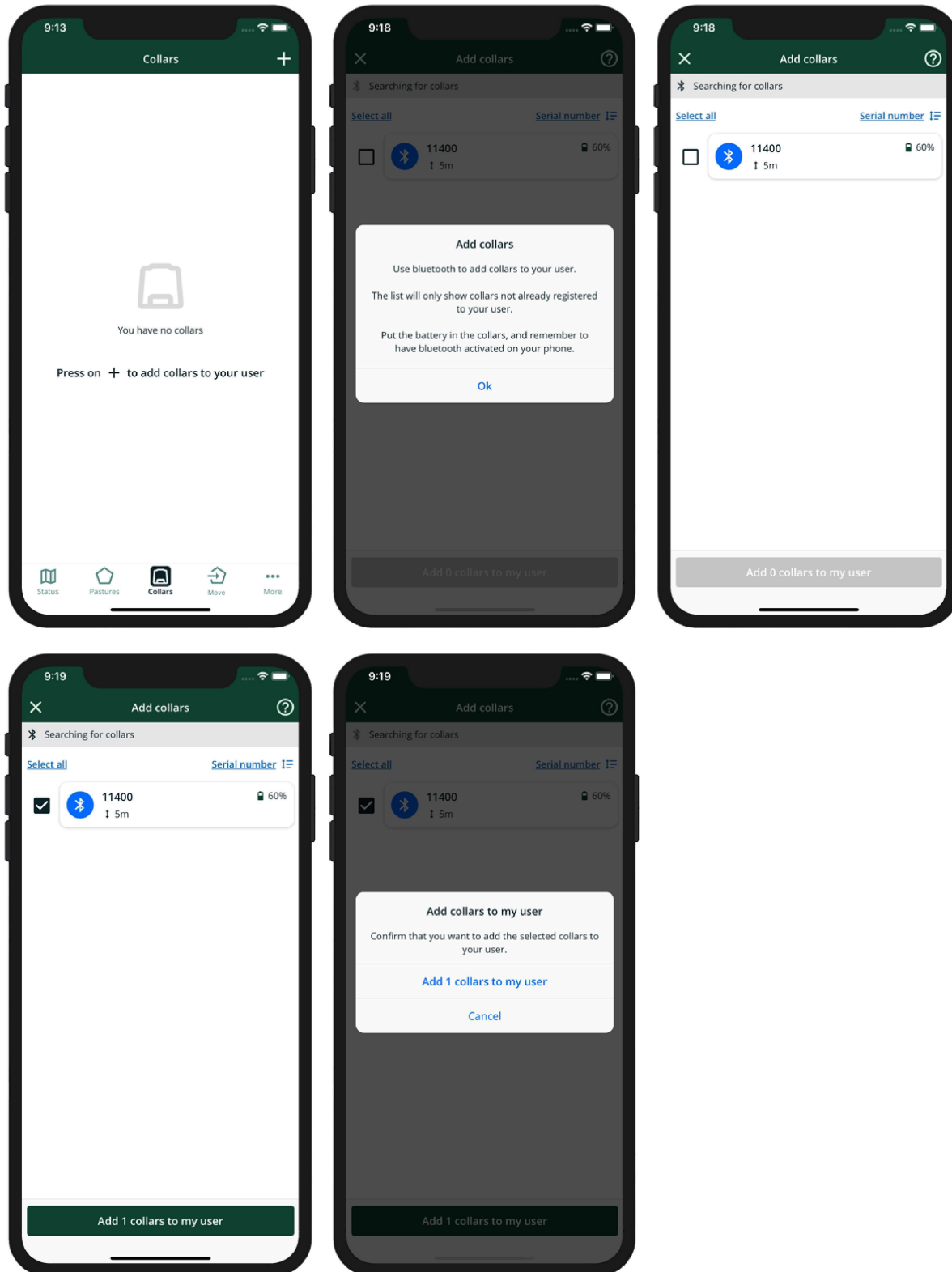
This is how you do it:

To remove the collars you are selling from your user, select More from the main menu, then press Account settings and Administrate collars. Tick the boxes of the collars you want to remove and follow the instructions. Be sure the collars are set to "No pasture". Only you, or anyone who has access to your app, are able to remove your own collars from your own user.



Once you have removed the collars you want to sell from your user, the new owner can add them to their account. This functionality uses Bluetooth technology, so make sure to switch on Bluetooth on your mobile and insert a battery into the collar before you start.

Go to Collars in the main menu to see the collar list. Press on the plus icon on the top right of the screen to add the new collar to your user. The app will now show a list of all collars with Bluetooth contact. Select the one(s) you want to add to your user and confirm your choice.



The collars that appear with Bluetooth contact on the list, are all collars with Bluetooth contact. You will however only be able to add collars that do not have an owner. If you attempt to add a collar belonging to another user, an error message will appear.

7. Technical description

7.1. The cattle collar



A complete collar weighs 2lbs/1.3kg. The product has an IP rating of 67 and has a robust design tailored to withstand the wear and tear from cattle during grazing.

The chain that connects the collar house to the neck strap comes in two lengths – one standard size that fits most cattle individuals, and one large size that fits breeding bulls – and has two functions:

- Simplifies the adjustment of the collar's size as animals come in different sizes
- Carries the electric pulse from the collar house to the animal's neck.

For most animals, the chain will be more than long enough. If the chain is excessively long, we recommend cutting the outermost links off.

Should the chain be too short, you should add extra length to it. Let us know if you need to order extenders.

The collar has two solar panels – one on each side of the collar house. Direct sunlight makes for optimal charging conditions, but due to its innovative design, the collar also charges fine under less optimal

conditions. The solar panels have a robust design so that everyday wear causes only marginal decrease in the ability to charge.

The clasp that connects the chain and neck strap to the collar house can be dismantled if need be.

The collar communicates mainly via the mobile network, opting for the network with the best coverage at any time. The collar is also able to connect with your mobile phone using Bluetooth and NFC technology.

In order to optimize the receiver conditions, the antennas inside the collar are placed on the side of the collar, where the Nofence logo is found. The NFC tag is placed by the small notch on the short side of the collar.

The neck strap is made from TPU plastic, and is shaped to be as comfortable as possible for the animal. The neck strap design is identical on both sides, but remember to insert the chain from the inside when fitting the collar to an animal. This will result in proper chain contact with the neck. A metal slate has been cast into each end of the neck strap to prevent the chains from being ripped out during use. At high loads, the neck strap will stretch considerably and has a capacity of 440lbs/200kg.



Do not write on the solar panels as it impairs charging (and we don't want that to happen, do we? :)

7.2. The sheep and goat collar



The complete collar weighs 1lb/0.5kg. The product has an IP rating of 67 and has a robust design tailored to withstand the wear and tear from sheep and goat during grazing.

The chain that connects the collar house to the neck strap has either nine or thirteen links. Collars with 9 links are suitable for females of most breeds, while collars with 13 links are suitable for rams and large female animals. A swivel joins the chain to the base in order to avoid twisting. The chain has two functions:

- Simplifies the adjustment of the collar's size as animals come in different sizes
- Carries the electric pulse from the collar house to the animal's neck

For most animals, the chain will be long enough. If the chain is excessively long, we recommend cutting the outermost links off. Should the chain be too short, you should add extra length to it. Let us know if you need to order extenders!

Please note that if you use the collar on the second outermost chain link, the outermost link may become vulnerable to mechanical stress (e.g. when scratching against wood or other materials), possibly causing the collar to fall off. In such cases, we recommend using a joint kit, but remember that the joint itself should not be used in the fastening mechanism on the neck strap.

The collar has two solar panels – one on each side of the collar house. Direct sunlight makes for optimal

charging conditions, but due to its innovative design, the collar also charges fine under less optimal conditions. The solar panels have a robust design so that everyday wear and tear causes only a marginal decrease in the ability to charge.

The collar mainly communicates via the mobile network, opting for the network with the best coverage at any time. The collar is also able to connect with your mobile phone using Bluetooth and NFC technology.

The antennas inside the product are placed in the front and to the sides in order to optimize the receiver conditions. The NFC tag is situated at the bottom of the collar.

The neck strap is made from TPU plastic, and is shaped to be as comfortable as possible for the animal. The neck strap design is identical on both sides, but remember to insert the chain from the inside when fitting the collar to an animal. A metal slate has been cast into each end of the neck strap to prevent the chains from being ripped out during use. At high loads, the neck strap will stretch considerably and has a capacity of 220lbs/100kg.

If you need to change the chains of the collar you will need to remove the lid on top of the collar. [Take a look at this video](#) to see how you change your chains.

The collar is not designed to withstand wear against concrete, nor should it be used together with an ordinary bell. Such use will result in significant wear and tear on the collar and limit the product lifetime.



Do not write on the solar panels as it impairs charging (and we don't want that to happen, do we? :))

7.3. Batteries



Battery for the cattle collar: The battery has six 18650 Li-Ion cells. A fully charged battery is at 20,000 mAh, and takes fourteen hours to charge. The battery has an IP rating of 67.

The battery is clicked out by pressing the green buttons on both sides of the collar simultaneously. You will have to press with some force in order to release the button. If dust and debris collects around the button, press the button out, dismantle, and wash it for easier use. The collar should play the startup melody when a charged battery is inserted.

It is not possible to contact the collar via the mobile app unless the battery has sufficient power.



Battery for the sheep and goat collar: The battery has three 18650 Li-Ion cells. A fully charged battery is at 10,000 mAh, and takes eight to ten hours to charge. The battery has an IP rating of 67.

To switch the collar on, simply click the battery into the battery slot. To switch it off, take the battery out of the slot again. Make sure the battery sits well, you should hear a click as you insert it. You can change the collar's battery without taking the collar off of the animal.

It is not possible to contact the collar via the mobile app unless the battery has sufficient power.



To ensure long battery lifetime, make sure the battery doesn't run empty. When the app reports the battery status at 5% it is time to charge.

7.4. Chargers



Battery charger for the cattle collar:

Charging an empty battery takes approximately 14 hours. When the battery is completely charged, the charging indicator will display a constant green light.

**Battery charger for the sheep and goat collar:**

Charging an empty battery takes approximately 8-10 hours. When the battery is completely charged, the charging indicator will display a constant green light.

The charging indicator:

Constant yellow: Charging up to 80-95% of full capacity

Flashing yellow: Charges the battery to 100% capacity. This stage takes a maximum of one hour.

Constant green: Battery is fully charged.

Error indicators:

Two red flashes: The battery has been connected to the charger the wrong way.

Three red flashes: Charging has been interrupted. Check connection.

Four red flashes: Low battery voltage. Check the battery's status. If the voltage is too low, the charging will stop. Take the battery out of the charger and insert it again. Repeat until the charging indicator starts displaying a constant yellow light.

Five red flashes: Safety timer has run out. Check battery status or the voltage.

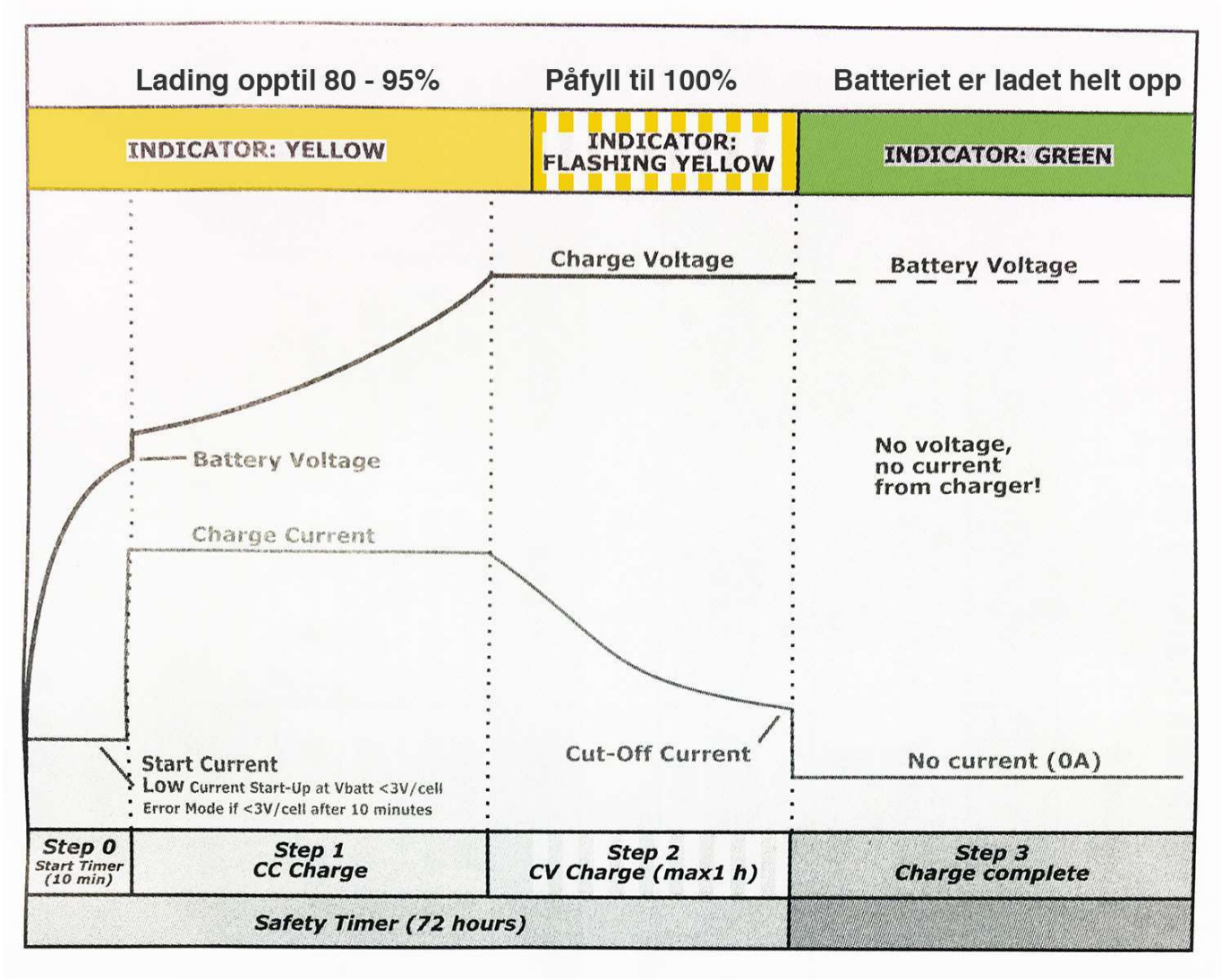
LED off: Battery voltage is too high. Check voltage.

Waiting mode indicators:

Yellow with a red flash: Battery temperature is too low (less than 0 C).

Yellow with two red flashes: Battery temperature is too high.

The charge cycle illustrated:

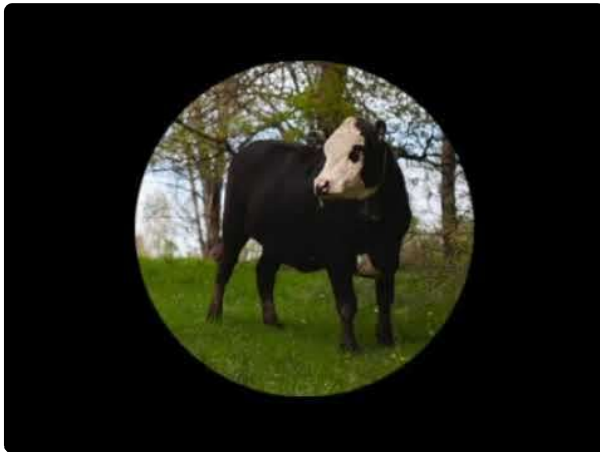


7.5. The audio cue

The collar's audio cue is set off when the GPS receiver perceives the collar to be outside the Nofence boundary. It consists of a scale of tones, starting at a low pitch. The pitch will increase until the animal makes a turn and starts walking back to the Nofence pasture.

The audio cue is switched off as soon as the collar records a position that is one meter prior to where it started. The tone scale takes somewhere between five to 20 seconds to play, depending on the animal's speed.

The audio cue is designed to be predictable to the animal. If the tone scale is played to the end, the electric pulse is triggered. If the animal continues to walk away from the Nofence boundary, a new audio cue will start sounding two seconds after the previous electric pulse was emitted. If the animal has turned and is heading towards the Nofence pasture again, no audio cue is emitted. A third and final audio cue will start playing if the animal continues heading away from the Nofence boundary. After receiving a third electric pulse the animal is considered escaped and receives no further signals until it has returned into the pasture.



<https://www.youtube.com/embed/6SuDvg49uX4?rel=0>

This is how the audio cue sounds.

Other audio signals

In addition to the audio cue, the collar has a start-up sound that is played when the battery is inserted. Further, it can play a locating tone if you need to find a collar that you cannot see.



https://www.youtube.com/embed/g_M4SqCdB1k?rel=0



<https://www.youtube.com/embed/pnjAENc-jZ8?rel=0>

7.6. The electrical pulse



The **sheep and goat** collar's power unit has a stored power of 0.1 Joule and max 3 kV. The **cattle** collar's power unit has a stored power of 0.2 Joule and max 3 kV. In comparison, a conventional energiser may not exceed a 5 Joule output rating, according to EU standards.*

All our collars are tested to make sure that the electric pulse is at least 1.5 kV. The pulse must be felt in order for the system to work, as

this makes the system predictable to the animal. Moisture, and the substance of the animal's fur may impact the animal's experience of the electric pulse. Nofence has documented that effective containment can be achieved when the electric pulse is between 1 and 3 kV. Thus, not too strong, but not too weak.



People with heart diseases or a Pacemaker should avoid receiving a pulse from the collar.



So-called "intelligent" electric fence devices can have up to 15 Joules of stored energy.

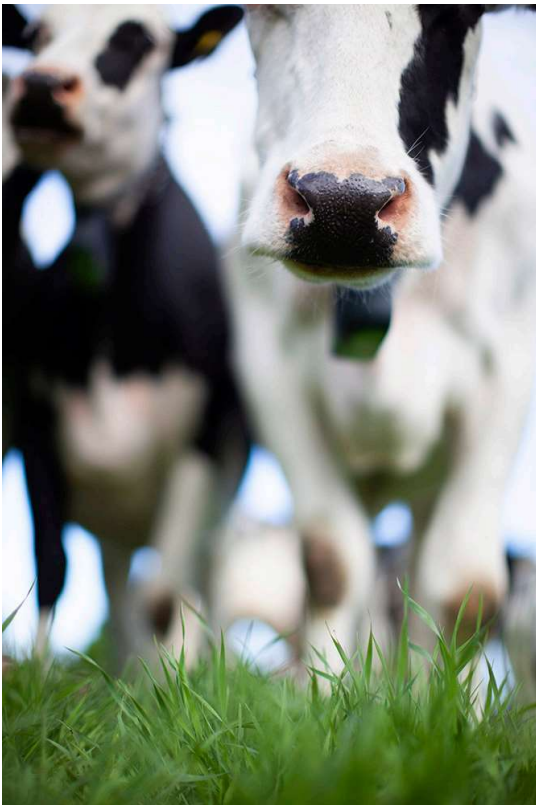
7.7. The accelerometer

The collar is equipped with an accelerometer that records movement. The accelerometer data aids the decision to play the audio cue quickly or slowly. Data from the accelerometer is also used to determine whether the animal is at rest.

If very little movement is recorded over a period of 10 minutes, the collar's GPS is switched off in order to save power.



7.8. Firmware update



Nofence is constantly evolving and will, therefore, update the collar's firmware from time to time. The collar is in contact with the Nofence server via the mobile network. When the collar is communicating with the server, it checks for available updates. If the server has a new firmware version, the collar will automatically download it. The criteria is that the collar is reporting, which means that it must have mobile coverage and a battery with sufficient power.

After storing collars over winter, we recommend inserting the batteries overnight before using them on animals. This gives the collars sufficient time to download any available updates.

8. Downloads

8.1. Grazing Posters

Click on the links below to find the grazing posters:

[Grazing poster cattle](#)

[Grazing poster sheep](#)

[Grazing poster goat](#)

8.2. Product data sheet

Click on the links below to find product sheets:

[Cattle collar](#)

[Cattle collar battery](#)

[Cattle collar battery charger](#)

[Sheep and goat collar](#)

[Sheep and goat collar battery](#)

[Sheep and goat battery charger](#)

9. What is good animal welfare?

The concept of animal welfare is concerned with the individual animal, the type of situation the animal is in, and how the animal experiences its situation. When animals have good welfare, they thrive. Well-being draws on interactions between health, environment, animal care, and the characteristics of the animal itself.

An often-used explanation of what good animal welfare is, can be found in the 'Five Freedoms' laid out by the Brambell Committee (1965):

- Freedom from Hunger and Thirst: by ready access to fresh water and a diet to maintain full health and vigour.
- Freedom from Discomfort: by providing an appropriate environment including shelter and a comfortable resting area in all situations.
- Freedom from Pain, Injury, and Disease: by working towards prevention or rapid diagnosis and treatment of sick animals.
- Freedom from Fear and Distress: by ensuring that the animal has conditions and treatment that avoid mental suffering.
- Freedom to Express Normal Behaviour: by providing sufficient space, proper facilities, and company of the animal's own kind.

So on one hand, we must make ethical assessments, while on the other, we must use facts from research.

The subject of ethics addresses subjective values in relation to animal welfare. We can ask ourselves 'What would our society consider to be a sufficient quality of life for animals?' Another question is 'How can we understand the concept of "quality of life" for animals specifically?' How are animals affected by their surroundings and how do they experience their situation? We often try to describe the condition of an animal based on its mastery of the environment in which it lives. The level of welfare is described as the balance between positive and negative experiences. Based on such an understanding, we use the following definition of animal welfare:

"Animal welfare is the subjective experience of the individual of its psychological and physical condition as a result of its attempts to master its environment."

Within biology, 'mastery' is defined as the mechanisms used by an individual in order to maintain control. An animal displaying normal behaviour for its kind, thus shows signs of good physical and mental health.

Nofence Grazing Technology has been developed with a focus on animal well-being. Therefore, it is vital that you are knowledgeable about your animals and take the time to learn how the technology works. Key points for achieving good animal welfare by using Nofence are:

- All adult animals in the herd should wear a collar.
- Become well-acquainted with our recommendations.
- Create Nofence boundaries that are easy for the animals to understand and follow our

recommendations for the design of the Nofence pasture.

- Follow up on all electric pulses. You should take the time to analyse why goats are receiving electric pulses and take action. Actively use our online portal my.nofence.no to analyse grazing movements. Are there challenging restrictions, temptations, places outside the boundary where they enjoy dwelling, or are they just heading towards people? Perhaps a small adjustment of the boundary will suffice? Should the app notify you of multiple electric pulses, you should check that the equipment is fitted properly and is hanging correctly. If you suspect that the collar's power supply is defective, you should take the equipment off the animal before testing its functionality.
- Checking that the equipment is properly fitted to the animal and that it is hanging correctly.
- Pay close attention to any chafing. Should the coat of the animal wear away completely, the collar must be removed to avoid wounds. If an open wound develops, it may be a long time before the animal can wear the collar again. A veterinarian should be consulted in the event of an open wound.

10. Contact us



If you have any questions concerning the use of Nofence, please do not hesitate to call us at +44 1952 924012 or send an email to support@nofence.no.