



# **AURORA**

## POWERTRAINS

### eSled Operator's Guide



*English*

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# Introduction

Dear customer,

Thank you for choosing Aurora Powertrains! Your eSled is designed to give you mile after mile of reliable, carefree and silent riding. We hope that you will enjoy the pleasant and effortless travel it provides.

We are constantly developing our products. Visit us on the web for the latest news:

<http://www.esled.com/>

Happy riding,

the eSled team

# EU Declaration of Conformity

We, Aurora Powertrains Ltd, with sole responsibility, declare that the company conforms with the following standards:

<i>ISO 9001:2015</i>	<i>Quality management systems</i>
<i>ISO 14001:2015</i>	<i>Environmental management systems</i>
<i>ISO 45001:2018</i>	<i>Occupational health and safety management systems</i>

We also declare that eSled snowmobiles meet these directives and regulations:

<i>2006/42/EC</i>	<i>Machinery directive</i>
<i>2014/30/EU</i>	<i>Electromagnetic compatibility directive</i>
<i>2014/53/EU</i>	<i>Radio equipment directive</i>
<i>2023/1542</i>	<i>Battery regulation (EU)</i>

Additionally, eSled snowmobiles use technology developed according to these standards and regulations:

<i>ISO 12100:2010</i>	<i>Safety of machinery</i>
<i>IEC 61000-6</i>	<i>Electromagnetic compatibility</i>
<i>CISPR 12:2007/A1:2009</i>	<i>Radio disturbance characteristics</i>
<i>UNECE R100.03</i>	<i>Electric vehicle battery systems</i>
<i>EN 61851-1:2019</i>	<i>Energy transfer systems for electric vehicles</i>
<i>EN 61851-21-1:2017</i>	<i>Electric vehicle on-board charger EMC requirements</i>
<i>EN 62196-1:2022</i>	<i>Conductive charging of electric vehicles</i>
<i>EN 50342-7:2015</i>	<i>Starter batteries</i>

Rovaniemi, February 2026



Timo Kulkki, Managing Director

## Important safety information

This guide will tell you the basics of how to operate your eSled pleasantly and safely. Read the whole guide carefully before taking the snowmobile into use. Ignoring these instructions can cause property damage or personal injury.

This guide doesn't teach how to ride at speed, handle corners, climb, go downhill, ride across an incline or a hillside, cross ditches or snowbanks, navigate, travel in deep snow or through dense woods, avoid avalanche hazards, or other such things. We urge you to take a snowmobile safety course and learn from a professional how to handle a snowmobile.

The manuals that came with your charging cable or home charging station contain important information that you must be familiar with before charging. If you use a snowmobile trailer to transport the eSled, or a pulk or sled to carry cargo, refer to the documentation that came with that equipment to learn how to operate them safely.

Keep this operator's guide for future reference. If you sell or otherwise transfer your eSled, present this guide with the snowmobile. Also present this guide to any person who is servicing the snowmobile.

This guide is based on Aurora Powertrains' experience and testing. It represents the latest information available at the time of release, but no guarantee of its accuracy is made or implied, nor responsibility taken for its use. We reserve the right to make changes at any time, without notice, in documentation, equipment, specifications, materials, services and pricing, and to discontinue any product or service, without obligation to make similar changes to products or services sold prior to the date of such changes.

Pay special attention to sections marked with the following sign:



This symbol indicates a warning of risk of injury and property damage.



## Best practices

Read this whole operator's guide and get familiar with the controls of your snowmobile. Make sure that you know how to stop the snowmobile quickly and how to power it down. Do not let anyone else operate the snowmobile unless they have read these instructions and you are certain that they are capable of using the snowmobile safely.

Only ride when the weather is safe. Snowfall and blowing snow limit visibility. Low temperature and wind chill may cause hypothermia.

Wear an approved helmet, warm clothing, snowmobiling boots, goggles, mittens or gloves, and other necessary protective gear when riding. Do not wear any tangling garments such as a scarf. Loose clothing may get grabbed by a branch or another obstacle or become trapped in moving parts and cause injury.

Carry a mobile phone, map, first aid kit and any other safety equipment necessary in the terrain. You need to be in good physical condition, sober and alert to ride a snowmobile.

Always make sure that there are no people or obstacles in front of or behind the eSled before powering up.

Always check that nothing is clogging the track before powering up. Branches, ice, grass or other items can get tangled within the track mechanism and cause damage.

Check that the steering bar points in the intended direction and that there is nothing restraining the handlebars before powering up. When you unload the eSled from a trailer or a truck, check that any lines or ropes used to anchor the eSled have been removed to make sure that the snowmobile doesn't head off in an unexpected way.

Before powering up the eSled, always sit down on it, and make sure that the accelerator lever is free and in its rest position. The lever must move without restriction and return to its rest position when released. Ensure that the battery has a sufficient charge level before you start riding.

Sit with your feet securely in the toe guards on the footrails. Check that your feet do not stick out but fit completely inside the edges of the footrails. Lean into turns when cornering. Lean towards higher ground on slopes. If you are carrying a passenger, ensure that they do the same.

You may only transport a passenger if the eSled is equipped with the optional backrest. Ensure that the passenger holds the grips of the backrest. Never have a passenger sit between you and the handlebars.

Stop the snowmobile immediately if someone enters your path. Be especially careful when reversing.

You may only transport cargo if the eSled is equipped with a cargo box approved by Aurora Powertrains.

You may only haul a pulk or a cargo sled if the eSled is equipped with a tow hook or tow hitch installed by Aurora Powertrains. The pulk or sled must couple with the snowmobile with a rigid drawbar. Do not use a line to pull a sled because the sled could run into the snowmobile when you slow down.

Do not reverse when a pulk, sled or similar is attached to the eSled. Detach the in-tow load, maneuver the snowmobile as required, then reattach the load.

The eSled is only designed to be ridden on snow. Never take the eSled to terrain where sand, rocks, hard surfaces or vegetation are exposed. The skis, track mechanism and other parts of the snowmobile may break if you hit an obstacle, and dirt, sand and other such matter cause friction and wear.

Do not ride on frozen lakes, rivers or other bodies of water unless you know that the ice is thick enough to carry the snowmobile safely. Be aware that ice thickness varies from place to place, especially in flowing waters.

Don't ride on ice where the snow cover is thin or not present for more than a couple hundred meters. When there is little snow, or its surface is hard packed, the track mechanism may heat up and get damaged. Drive very slowly because on slippery or hard surfaces the snowmobile cannot stop or turn easily. Be aware that on these surfaces the snowmobile may start sliding sideways and flip over when it hits even a small obstacle.

Don't ride in slush or water. Be aware that slush can be hidden under a layer of snow, especially when riding on frozen lakes, rivers or other bodies of water.

Never ride across a steep hillside or another incline, or directly up a steep hill, especially in deep snow. The snowmobile may tilt and fall on top of you.

If you need to cross a road, bring the snowmobile to a complete stop and look both ways before proceeding. Do not cross unless you are sure it is safe.

Squeeze the accelerator lever gently to keep the snowmobile under control. Avoid quick turns, fast acceleration and stopping on short notice as other riders could crash into you. If you have a passenger, they could fall off.

When turning left, pull the left-hand grip of the handlebar with your left hand. Do not push with your right hand because you could unintentionally squeeze the accelerator lever and make the snowmobile run faster. Just let your right hand follow the handlebar as it turns. Similarly, when turning right, pull with your right hand and follow the handlebar with your left hand, instead of pushing the handlebar.

Never pull the brake lever while you are squeezing the accelerator lever. Let go of the accelerator lever before braking.

When you park on an incline such as a hillside, always pull the brake lever all the way back and engage the park lock lever.

Always power eSled down and remove the tether key when you stop and step off it. Take the tether key with you when you leave the snowmobile. This immobilizes the eSled and prevents unauthorized use. Every tether key is unique and only works with eSleds that are specifically assigned to it.

Never leave the snowmobile unattended when the tether key is plugged in. Someone could power it up and press the accelerator lever, causing damage.

When leaving the eSled for any extended period of time, switch power off. This prevents slow draining of the battery, as the touchscreen and other parts of the system consume some power even when in standby.

Always remove the tether key and push the red kill switch down before servicing any part of the snowmobile.

Do not modify the eSled or add accessories unless they are approved by Aurora Powertrains. Unapproved modifications increase the risk of damage and injury and render the eSled's warranty null and void.

No person other than a certified electrician may service the high-voltage electrical components of the eSled. Don't try to disconnect the snowmobile's orange high-voltage cables and don't touch their terminals with your hands or with any tools. The opening or manipulation of any electrical component will make the eSled's warranty null and void unless performed by a technician authorized by the manufacturer.

Never tow the eSled for any longer distance with the track touching the ground when the belt drive is in place. Use a trailer, a flatbed truck, a cargo sled, a hauling sheet, a sliding carpet or similar, or remove the belt drive. If the track is forced to rotate, the motor will turn and generate electricity that can damage the snowmobile.

Do not tow or lift the snowmobile from the front bumper, the handlebars or the skis. Tow and lift from ski legs and the rear bumper.

Check the lubrication of mechanical parts regularly as instructed in this guide, and follow the servicing timetable.

The motor runs hot and retains heat for some time after use. Let the motor cool down properly before opening the front hood, touching the motor, or servicing any component under the front hood.

Wait until the system has cooled off before checking coolant level or adding coolant. It may take up to two hours for the system to cool off after you finish driving. If you open the coolant reservoir cap when the heat-transfer fluid is still hot, it may burst out under pressure.

Always keep both charging socket covers in place when riding and any time the charge cable is disconnected. In the event debris or water enters the charging socket, clean it with a soft cloth. Do not poke at the terminals with any tools.

The snowmobile runs on limited power when the battery is cold or low on charge. Never attempt to drive the snowmobile when the battery is at 0%. Forcing the battery to give power when it's empty may damage the battery.

To ensure optimal battery health, keep the eSled in moderately cool ambient temperature. Don't expose the eSled to a temperature below -30°C for an extended period. Observe the weather forecast and move the snowmobile to a warm garage or similar before a cold snap.

If you have a medical condition that necessitates a wearable cardiovascular defibrillator, a pacemaker, or another such medical device, consult your physician before riding a snowmobile.

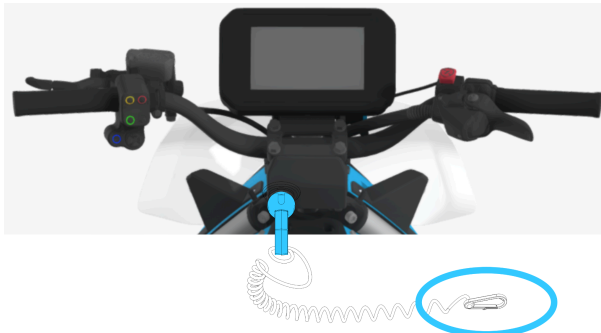
Snowmobiles are only permitted in designated routes and areas. Observe speed limits and other traffic signs. Follow national and local rules and regulations. Obtain any permits and licenses that are necessary in your jurisdiction.

Only ride in groomed trails and open areas where permitted. Avoid uneven terrain where obstacles may be hidden under snow. Keep a safe distance from other snowmobiles, obstacles and people. Slow down if there is a hump, ramp or kicker in the path in front of you. Do not try to jump. If you need to stop on a trail, drive to the side, away from traffic.

If there is a problem with the eSled, stop immediately, check the touchscreen, write down any error codes, power down, remove the tether key, and contact Aurora Powertrains or its authorized service partner. Follow the instructions later in this guide.

# Your first ride

Before you start a ride, check that the battery is charged. A charge level of 60%–80% is usually sufficient unless you're planning an extended trip. Top up the charge level just before a ride to ensure that the battery is warm and ready to go. See [Charging](#).



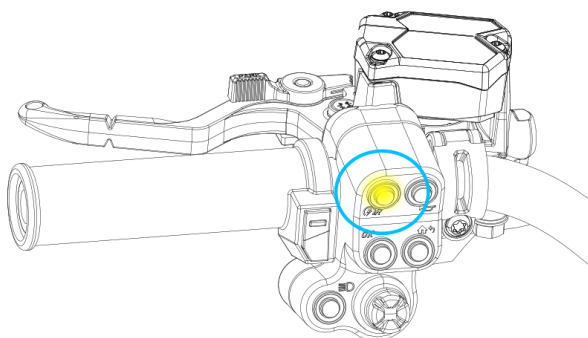
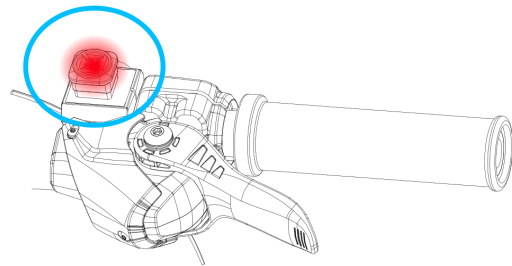
To **start riding**, sit down on the snowmobile. Place your feet securely in the toe guards on the footrails. Check that your feet do not stick out but fit completely inside the edges of the footrail.

Fasten the tether key clip to a belt loop or similar in your clothing. Push the tether key in its socket.

Make sure that there are no people or obstacles in front of or behind the eSled.

To **prepare** the eSled for riding, pull up the red kill switch.

Firmly grip the handlebars.



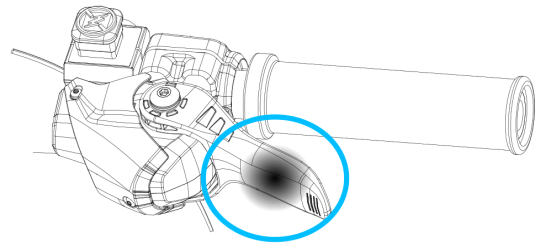
To **power up**, press and hold the yellow ignition key for several seconds. You can stop pressing when the headlights turn on. You'll see a green headlights symbol in the bottom row of the touchscreen.



Pull the brake lever and let go of it to release the park lock lever if it's engaged.

To **move forward**, gently squeeze the accelerator lever with your right thumb.

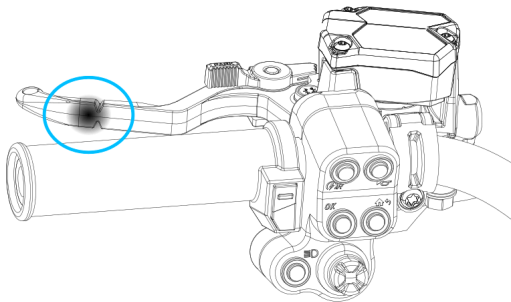
To **slow down**, gently release pressure on the accelerator lever. The eSled has a regenerative braking system that collects energy when going downhill or decelerating.



To **turn left**, pull the left-hand grip of the handlebar with your left hand. Do not push with your right hand because you could unintentionally squeeze the accelerator lever and make the snowmobile run faster. Just let your right hand follow the handlebar as it turns.

To **turn right**, pull with your right hand and follow the handlebar with your left hand.

Lean into turns when cornering. Lean towards higher ground on slopes. If you are carrying a passenger, ensure that they do the same.

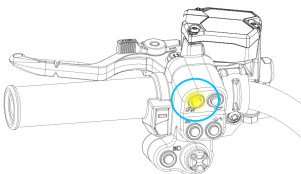


To **stop**, gently release pressure on the accelerator lever and squeeze the brake lever with your left hand. Continue squeezing until the snowmobile has come to a complete stop.

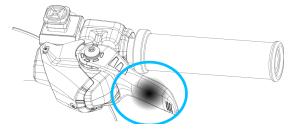
Avoid locking the track completely while slowing down. A locked track provides less control.

Never squeeze the accelerator lever while braking. Let go of the accelerator before pulling the brake lever.

To **reverse**, first make sure that the snowmobile is stationary, you are firmly sitting down, and there are no people or obstacles behind you.

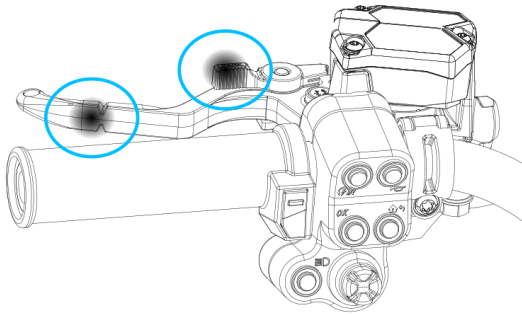


Then press and hold the yellow ignition key, and gently squeeze the accelerator lever. A beep will sound while the snowmobile is moving back to alert others.

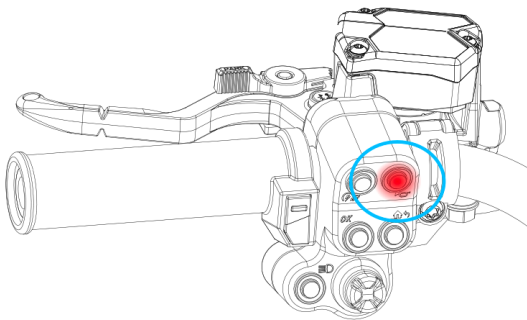


Don't stand up while reversing. Stay seated.

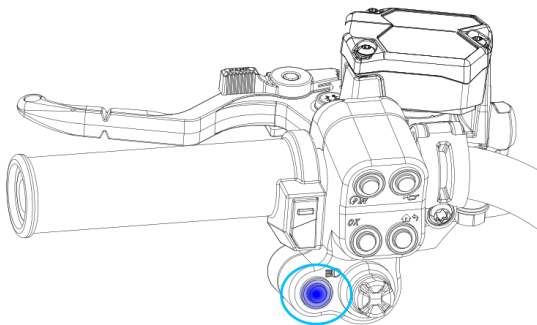
Keep pressing the yellow ignition key as long as you're reversing. Bring the snowmobile to a complete stop before releasing it.



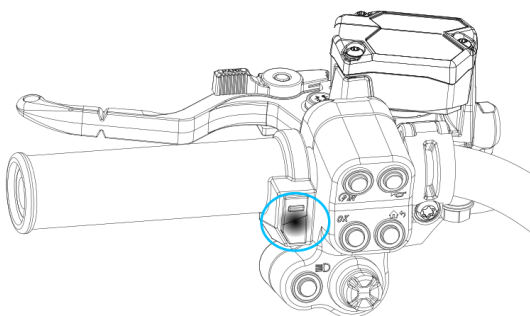
To **park**, bring the snowmobile to a complete stop, pull the brake lever all the way back and engage the park lock lever. This is especially important when the snowmobile is on a hillside or another incline, and when transporting it on a trailer.



To **warn** another snowmobile rider or simply to get the attention of someone, press the red horn key to make the eSled honk.

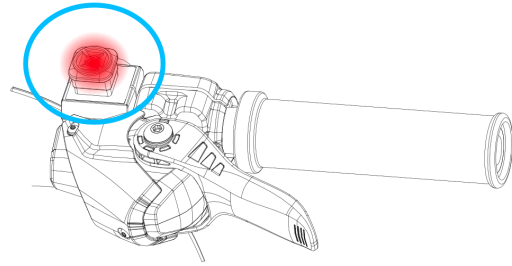


To turn **high beam headlights** on, press the blue high beam key. To switch back to low beam lights, press the key again.



To **heat handlebar grips** in cold weather, press the heating control key. Press the key repeatedly to set the desired heating intensity.

To **power down**, push the red kill switch down and remove the tether key from its socket.

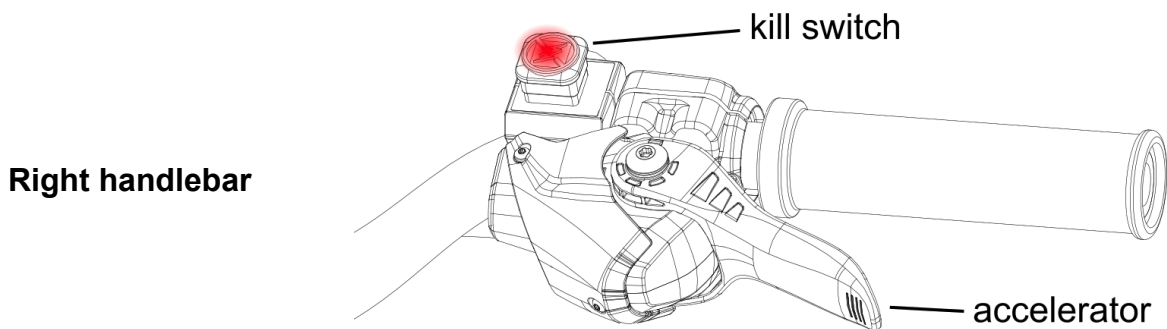
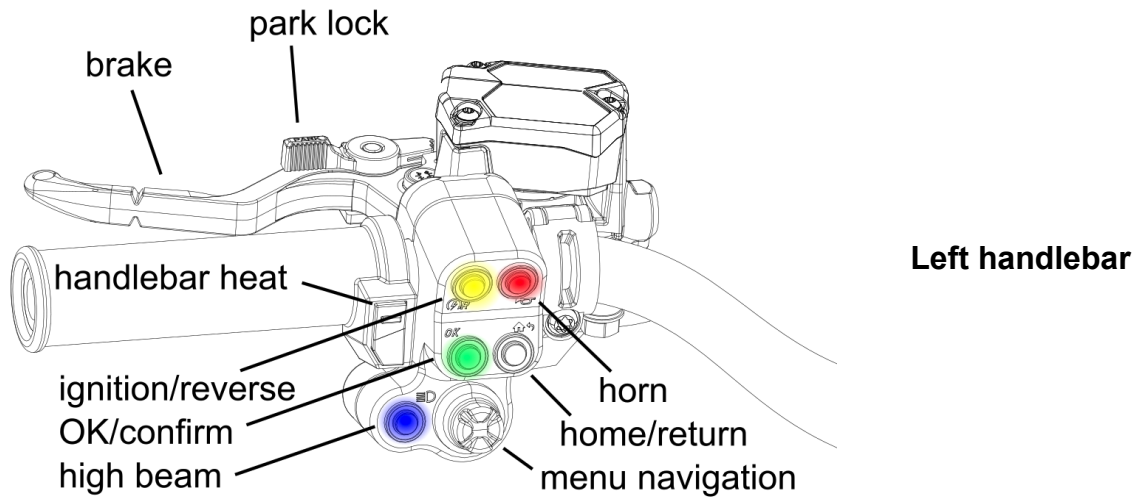


Take the tether key with you when you leave the snowmobile. This immobilizes the eSled and prevents unauthorized use. Every tether key is unique and only works with eSleds that are specifically assigned to it.



Clear the track of snow and slush after riding. Watery snow can freeze in low temperatures and prevent the track belt from turning, causing damage. See [Track mechanism](#).

# Controls



There are additional controls on the touchscreen. See [Touchscreen](#).

# Charging

It usually makes sense to charge the eSled just before a ride. That ensures that the battery is warm and ready to go. Further, there are benefits to battery health if it spends its non-riding time between charge levels of 30% and 60%.

Here are some useful rules of thumb:

- It's often most convenient to charge at home from a regular wall socket, a higher-powered three-phase socket, or from a car charging station in your garage. You can also charge at Type 2 and CCS charging stations.
- Always charge the eSled before you ride. This is especially important if the eSled is stored outdoors. Charging warms the battery to optimal riding temperature.
- Charge until you have enough to cover the distance, plus a safety margin.
- When you're going for a short ride, 60%–80% is usually enough. It's also fine to charge more if you wish, as long as you start riding right after charging.
- Don't let the battery stay close to 100% for an extended period.
- Don't let the battery stay below 20% for an extended period. You should always charge the battery at the first opportunity when it's below that level.
- It's OK to charge at any time. You don't have to wait until the battery is low.
- If you're not planning to ride soon, stop charging at 60%. Top up the charge level just before a ride.
- A warm battery will charge faster than a cold battery. If you have a heated garage, park the eSled there after a ride, and optimally wait until the battery is at room temperature before charging.
- Slow charging at low power benefits battery health.

Charging speed depends on your charger. Most home chargers will supply 3.3 kW of power to the eSled. That means that if the battery is currently at 20%, you can reach 80% in approximately three to four hours, depending on whether you have a standard 60 km range eSled or the 100 km long range eSled.

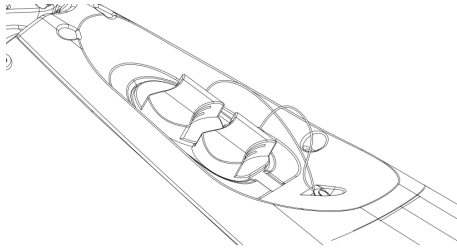
If the eSled has the onboard charger upgrade to 6.6 kW, you can get from 20% to 80% in less than two hours.

The eSled also supports fast charging at compatible CCS charging stations with up to 30 kW of power, which lets the eSled charge from 20% to 80% in about half an hour, allowing for battery warm-up.

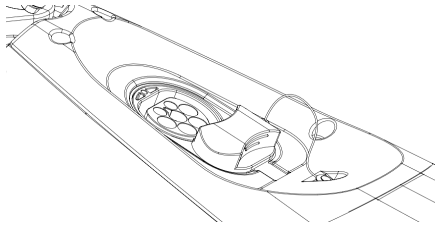


For any trip, the required charge level depends on trip elevation profile, snow conditions, trip length, riding speed, load, wind, air temperature and other factors. Always play it safe, plan your trip carefully, and charge until you have a healthy safety margin. Only use charging cables approved by Aurora Powertrains. See [High-voltage battery](#).

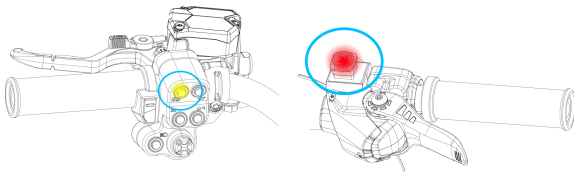
## Start charging



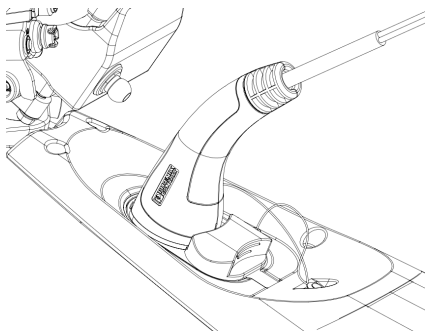
The charging socket is on top of the snowmobile. Remove the upper cover for Type 2 charging, or both covers for CCS charging.



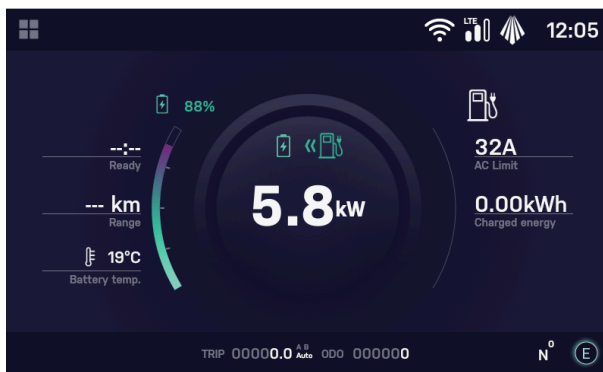
Check the charging socket for debris and water, and clean it with a soft cloth if necessary. Do not poke at the terminals with any tools.



If the eSled isn't powered up, plug in the **tether key**, pull up the **red kill switch**, and press the **yellow ignition key**.



Connect a charging cable by pushing its Type 2 (Mennekes) or CCS connector in the socket.



Look at the touchscreen. When you see that charging has started, remove the **tether key** to immobilize the snowmobile.

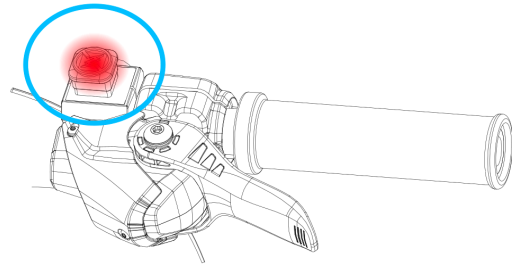
Check back from time to time to see charging progress, and stop charging when you've reached the desired charge level.

The battery thermal management system activates automatically to ensure optimal charging temperature. You may hear sounds from the coolant pump, heat exchange fan and valves during heating or cooling. This is normal.

The eSled locks the charging cable in its socket during charging. Stop charging to unlock and remove the cable.

## Stop charging

When the battery is sufficiently charged, plug in the **tether key**, push the **red kill switch** down, and wait for the charging status to change to *Paused*.



The eSled unlocks the charging cable. You can then remove the cable and close the charging socket cover. Remove the tether key from its socket and take it with you when you leave the snowmobile.

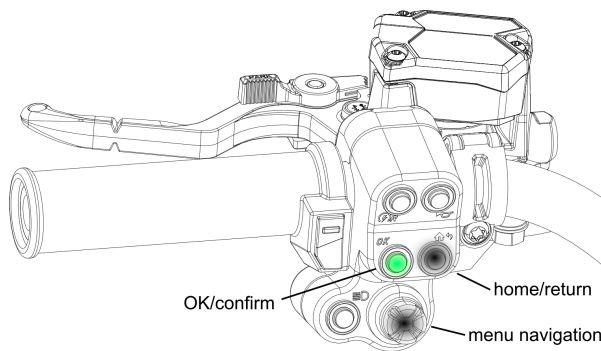
# Touchscreen



The touchscreen lets you view status information and control various parameters. It is always on when the snowmobile is powered up.

You can navigate the touchscreen by touching buttons directly. Only do that when the snowmobile is stationary or it's otherwise safe to operate the touchscreen.

When riding, it's usually easier and safer to use the keys in the control cluster in the left handlebar. Those keys work also well with gloves on.



To go to the home view or return to the previous view, press the **home/return key**.

To move from one view or item to another on the touchscreen, rock the **menu navigation key**.

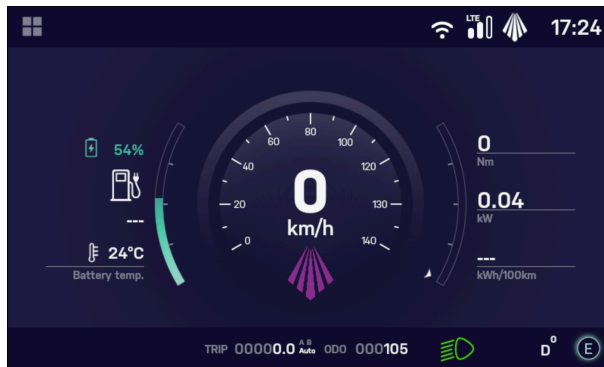
To choose an item, press the green **OK/confirm key**.

Connectivity and warning indicators show at the top of the touchscreen. See [Connectivity indicators](#) and [Warning indicators](#).



Always pay attention to the surroundings when viewing the touchscreen. Do not operate the touchscreen while riding at speed. Drive to the side of the trail away from traffic and stop before viewing details or touching buttons on the touchscreen.

## Drive view



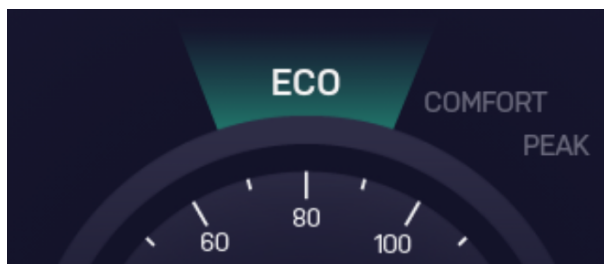
**top:** home button, connectivity indicators, time of day  
**left:** battery charge level, estimated remaining range, battery temperature  
**middle:** speedometer  
**right:** torque, current power, average consumption on this trip  
**bottom:** tripmeter, odometer, headlights, gear, drive mode indicator

Touch the **tripmeter** at the bottom of the view to toggle between trips A, B and Auto. Trips A and B measure the distance since the most recent reset of that trip. To reset the tripmeter for the currently displayed trip A or trip B, touch and hold for a couple of seconds. The Auto trip resets automatically when you stop for more than three hours, and when you charge the snowmobile.

The **headlights** indicator shows green for low beam and blue for high beam. To toggle between low beam and high beam, press the **blue high beam key** in the left handlebar. See [Controls](#).

The **gear** indicator shows D for drive, R for reverse, N for neutral and P for park. The superscript number indicates the power level of the regenerative braking system that collects energy when going downhill or decelerating.

The **drive mode** indicator shows E for eco mode, C for comfort mode and P for peak mode.

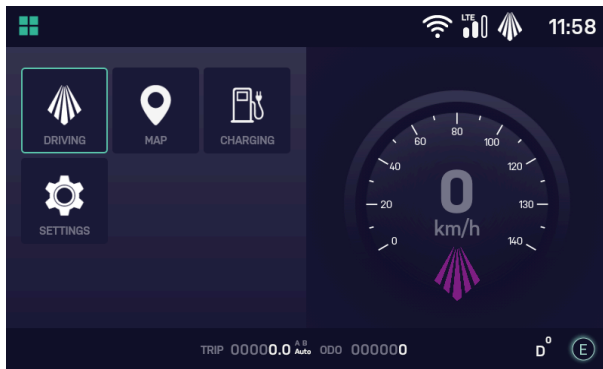


To set drive mode while riding, rock the menu navigation key up to reveal the drive mode selector at the top of the speedometer, and rock the menu navigation key left or right to choose a drive mode.

The indicators at the top of the view show connectivity status. See [Connectivity indicators](#).

Touch the **home button** in the top left-hand corner to choose another view.

## Home view

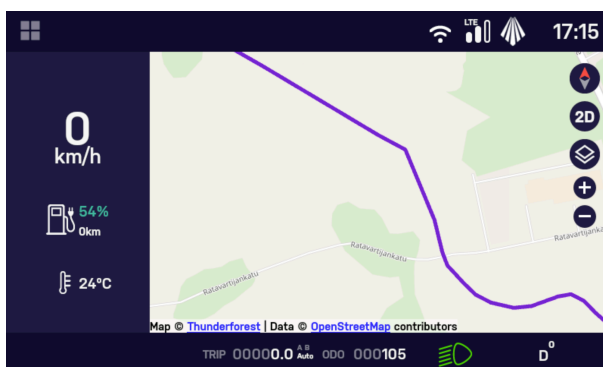


**left:** choose view  
**right:** speedometer

To go to the Home view, touch the **home button** in the top left-hand corner in any view, or press the **home/return key** in the left handlebar.

Touch one of the buttons on the left to choose that view, or rock the **menu navigation key** in the left handlebar to move from one button to another, and press the green **OK/confirm key** to choose a view.

## Map view



**left:** speedometer, battery charge level, estimated remaining range, battery temperature  
**right:** map

The map shows your current location with prominent street names and snowmobile tracks where that information is available.

To see areas around the current location, touch and swipe the map.



To recenter the map to the snowmobile's current location and to turn the map north up, touch the compass button.

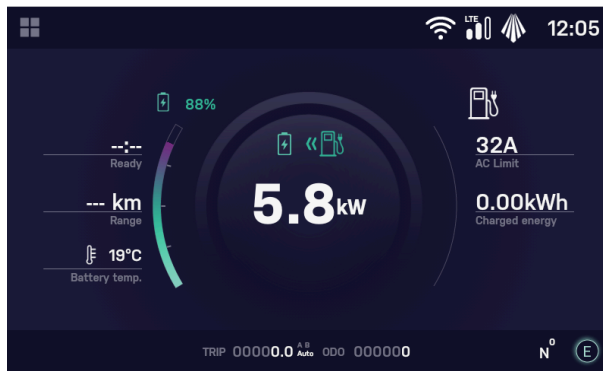


To toggle between an overhead map view and a three-dimensional view, touch the 2D/3D button.



To zoom in and out, touch the plus and minus buttons, or touch the map with two fingers and pinch.

## Charge view

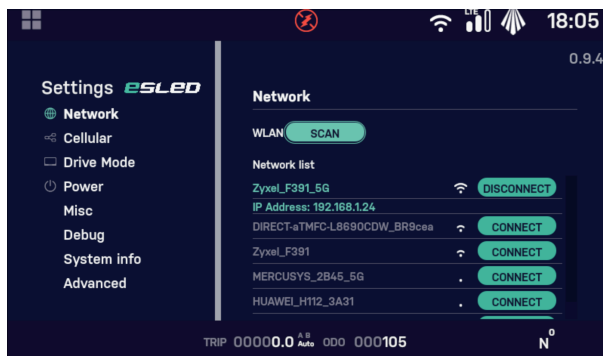


**left:** battery charge level, estimated range, battery temperature  
**middle:** charging status  
**right:** charging current (amperes), charged energy (kWh)

To charge, power the eSled up, connect the charging cable, wait for charging to start, and remove the tether key. See [Start charging](#).

To stop charging, plug in the tether key, push down the red kill switch, and wait for the charging status to change to *Paused*. See [Stop charging](#).

## Settings view



**left:** setting categories  
**right:** setting details pane

### Network pane

Software updates arrive fastest when the snowmobile is connected to a WLAN wireless network. To find available networks, touch **Scan**. To connect to a network, touch **Connect**. To disconnect, touch **Disconnect**.

### Cellular pane

This pane shows information about the current mobile network connection.

### Drive mode pane

The drive mode determines acceleration profile and top speed. Touch **Mode up** and **Mode down** to choose between Eco, Comfort and Peak drive modes.

The regeneration level determines how much energy the regenerative braking system collects when going downhill or decelerating. Touch **Regen up** and **Regen down** to set regeneration level to your preference on a scale from 0 to 9. The current regeneration level is shown by the superscript number of the gear indicator in the bottom right-hand corner of the touchscreen. The recommended setting for riding on groomed trails is 6.

Most riders find it natural to slow down by simply releasing pressure on the accelerator lever. When the brake lever is pulled less often, there is less wear on the brake pads, and they last longer.

### **Power pane**

To restart the snowmobile's operating system, touch **Restart display**. This view also includes options for restarting only the graphical output system, the mechanics control unit and the vehicle charge control unit, in isolation of other systems.

### **Misc pane**

Use this pane to adjust display brightness.

### **Debug pane**

This pane shows various metrics that are useful in identifying the root cause of certain issues.

### **System info pane**

Use this pane to find your eSled's vehicle identification number (VIN) and component version numbers.

### **Advanced pane**

This pane can be used by Aurora Powertrains and its authorized service partners to test various components in the snowmobile. Don't run these tests yourself unless instructed to do so.

## Exploring groomed trails

If you ride leisurely and cover under 50 km between stops on groomed trails, range anxiety simply isn't an issue. Just take it easy and enjoy the ride.

When you're planning a longer trip, you should always play it safe, plan your trip carefully, and charge until you have a healthy safety margin. Make sure that charging is available every 40–70 km of the trip, depending on whether you have the standard 60 km range eSled or the 100 km long range eSled. It's OK to charge at any time. You don't have to wait until the battery is low. Frequent charging ensures optimal battery health.

The important thing is to stop worrying. The eSled will take you there, as long as you've planned ahead and taken a look at the map.

### Keeping the battery warm during breaks

When you stop to take a longer break, place a sled cover or a light tarp over the snowmobile. This helps ensure that both your seat and the battery stay warm.

### Driving on low charge

The eSled is a highly optimized electric snowmobile with the best efficiency and one of the largest batteries in its class. Even so, for any trip, power consumption and the required charge level depend on trip elevation profile, snow conditions, trip length, riding speed, load, wind, air temperature and other factors.

The touchscreen shows battery percentage and estimated remaining range. When the battery indicator shows less than 20%, you should plan your next charge.

When the battery indicator shows less than 15%, you should slow down and avoid fast acceleration and steep uphill climbs.

When the battery indicator shows less than 10%, you should charge at the first opportunity.

You can extend the range by driving slower. A speed of 25 km/h is more economical than 50 km/h, and 10 km/h is more economical still. Use the estimated remaining range indicator as a guide to make sure you reach your destination.

When the charge level is low, the snowmobile enters a limited power mode to maximize remaining range. The percentage where that happens depends on battery temperature. When the battery is at 20°C, limiting starts at a charge level of 15%, at 0°C it starts at 25%, and at -10°C it starts at 40%. Note that the battery warms up in use so its temperature is usually higher than the ambient temperature. Observe the battery temperature indicator. See [Touchscreen](#).

If you notice that the snowmobile is limiting available power, drive slowly to reach your destination, and charge the snowmobile to warm the battery up.



Never attempt to drive the snowmobile when the battery is at 0%. Forcing the battery to give power when it's empty may damage the battery.

In the event you run out of charge, and there are no power outlets or charging stations nearby, you'll have to transport or tow the snowmobile to a suitable charging location. See [Transportation](#) and [Towing](#).

## Off-season storage

At the end of the season, inspect the eSled and complete the required maintenance tasks. See [Maintenance](#) and [Lubrication](#).

When you have finished maintenance, charge the eSled to 60%, move it to a garage, a sheltered space or a safe shadowed spot, and power it down by removing the tether key and pushing the red kill switch down.

The chemistry of the low-voltage 12 V battery differs from that of the snowmobile's high-voltage battery, and its recommended storage practice differs as well. During off-season storage, the 12 V battery keeps best when it is disconnected, removed from its tray, and stored indoors.

For optimal 12 V battery health during off-season storage, check its voltage level at the start of storage and every four months. If the voltage is below 13.2 V, charge the 12 V battery to 13.2 V at room temperature with a LiFePO<sub>4</sub> compatible charger. This voltage level corresponds to a 50% state of charge. Disconnect the charger when done. Don't leave the 12 V battery connected to a charger for an extended period. See [Low-voltage battery](#).

In contrast, the high-voltage battery should be charged to 60% at the start of off-season storage. Unplug the charging cable for the duration of off-season storage. See [High-voltage battery](#).

The snowmobile must be horizontal when in storage, but you can lift the track partly or fully off the ground to lessen pressure on rear suspension and track belt lugs. That is especially helpful if you are storing the snowmobile outdoors. See [Lifting the track off the ground](#).

The park lock lever must not be engaged during storage. Pull the brake lever and let go of it to release the park lock lever if it's engaged.

If you leave the eSled outdoors, protect it from the elements with a transport cover, sled cover, a heavy but breathable tarp, or similar. Ensure that there is proper ventilation.

It's OK to keep the eSled out in the cold, including freezing temperatures, but don't expose it to below -30°C for an extended period. Observe the weather forecast and move the snowmobile to a warm garage or similar before a cold snap.

Never store the eSled in direct sunlight, even if covered. The optimal storage temperature is between 0°C and 15°C. The high-voltage battery will age faster if stored in warmer temperatures.

Do not leave the high-voltage battery close to 100% or close to 0% for storage. Charge the snowmobile to 60%. Do not leave the charging cable plugged in. If the

battery is at more than 60%, ride the snowmobile, or leave it powered up with the high beam on, until the charge level has gone down sufficiently. See [High-voltage battery](#).

## **At the start of a new season**

If you disconnected or removed the 12 V battery for storage:

1. Charge the 12 V battery at room temperature to 13.8 V with a LiFePO<sub>4</sub> compatible charger. This corresponds to a charge level of 100%, which lets the battery management system perform cell balancing to equalize charge across cells in the battery.
2. Open the front hood and place the 12 V battery on its tray. See [Front hood](#).
3. Reconnect the 12 V battery. See [Low-voltage battery](#).

Charge the snowmobile to 60%. See [High-voltage battery](#) and [Charging](#).

Check brake fluid level. See [Brake fluid](#).

Check coolant level. See [Coolant](#).

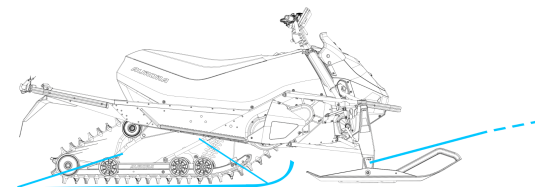
If you didn't lubricate the track mechanism and brake lever at the end of the previous season, do it now. See [Lubrication](#).

# Transportation

To load the snowmobile on a trailer or a flatbed truck, use a ramp to drive the snowmobile up.

If you need to pull or winch the snowmobile instead of driving it up:

1. Lift the track off the ground and place a hauling sheet or a sliding carpet under the track of the snowmobile. See [Lifting the track off the ground](#).



2. Pull the brake lever all the way back, and engage the park lock lever.
3. Use lines to secure the snowmobile safely on the sheet, attaching the lines to the frame inside the track mechanism.
4. Thread lines through the openings in the lower parts of the ski legs. You can use the frame inside the track mechanism as an additional attachment point.
5. Attach the lines to a winch or similar and pull evenly at slow speed.
6. Do not pull the snowmobile from the skis, the front bumper, or the handlebars. Pull from the ski legs. See [Towing](#).

If you cannot use a hauling sheet or a sliding carpet, pull the brake lever all the way back, engage the park lock lever, and pull the snowmobile so that the track doesn't rotate but slides on the ramp. Alternatively, remove the belt drive so that the motor doesn't turn when the track rotates. See [Belt drive](#).

When you've loaded the snowmobile, remove the hauling sheet or sliding carpet, pull the brake lever all the way back, and engage the park lock lever. Use lines to secure the snowmobile safely in place for transport. Attach the lines to ski legs and the frame inside the track mechanism. Use padding between the lines and the snowmobile. Do not place lines over the handlebars or the seat as the lines could leave markings and cause damage.



Always place the snowmobile on the trailer or flatbed facing forward. If it faces backward, wind could catch the windshield or other parts and cause damage. Use a transport cover. Fix the transport cover securely in place.

When you unload the snowmobile, check that you've removed all lines used to anchor it to make sure that the snowmobile doesn't head off in an unexpected way.

Never tow the eSled for any longer distance with the track touching the ground when the belt drive is in place. See [Towing](#).

# Towing

## Pulling a short distance

You should avoid pulling the eSled for any longer distance with the track touching the ground when the belt drive is in place. Use a trailer, a flatbed truck, a cargo sled, a hauling sheet, a sliding carpet, or similar.

Nevertheless, you can pull or tow the eSled for a short distance, such as when loading the snowmobile on a trailer or a flatbed truck. To do that:

1. Power up the snowmobile. Insert the tether key, pull up the red kill switch and press the yellow ignition key for several seconds.
2. Check that the powertrain and battery are operational. The touchscreen must be in Drive view and the *battery disconnected* symbol must not be visible. See [Warning indicators](#).
3. Check that power regeneration is on. The indicator in the lower right-hand corner should show  $D^6$ . The superscript number indicates the regeneration power level and it must be 3 or higher. To set the regeneration power level, go to the Drive mode pane in [Settings view](#).

Alternatively, remove the belt drive. See [Belt drive](#) and [Transportation](#).



If the snowmobile's track is forced to rotate with the belt drive in place, the motor will turn and generate electricity. If the snowmobile is inoperational or its power regeneration feature is off, that electricity won't get directed to the battery but will instead build currents in the motor and other parts of the powertrain, which can heat up and damage those components. Damage will occur at speeds of over 5 km/h and also with distances of over 100 meters.

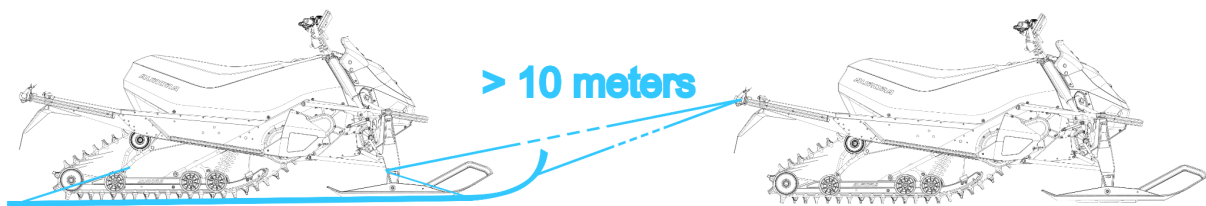
## Towing with a hauling sheet

In the event no trailer, truck or cargo sled is available, and the snowmobile cannot run under its own power, place a hauling sheet or a sliding carpet under the track of the snowmobile. Tow the whole package so that the sheet or carpet slides on snow with the snowmobile on top. See [Lifting the track off the ground](#).

A hauling sheet is a smooth metal sheet with an upward curved leading edge. On smooth even terrain, you can use a hauling sheet that extends the whole length of the snowmobile, including the skis. Note that the snowmobile cannot be steered when the skis rest on the hauling sheet.

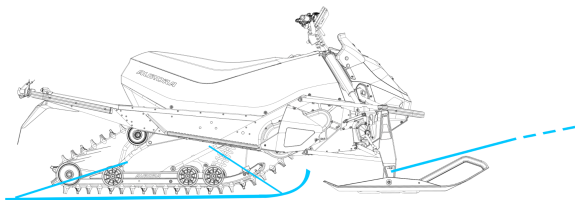
To help ensure that the snowmobile stays in place and that its track doesn't rotate, pull the brake lever all the way back and engage the park lock lever. Use lines to secure the snowmobile safely on the sheet, attaching the lines to ski legs and the frame inside the track mechanism. You can use the rear bumper as an additional attachment point.

Attach a rigid drawbar between the sheet and the hauling vehicle. If you cannot use a drawbar, attach tow lines in the sheet and the openings in the lower parts of the ski legs. Do not pull the snowmobile from the skis, the front bumper, or the handlebars. Pull from the ski legs.



If you must use lines to haul the snowmobile, they must be long enough to allow the hauling vehicle to slow down without the snowmobile in the back running into it. Use a tow bungee to ease yanks on the line. Drive very slowly and with extreme care.

Do not haul the snowmobile downhill. Detach the snowmobile and guide it down with ropes and winches.



In the event you need to navigate among trees or make sharper turns for some other reason, place the hauling sheet or sliding carpet under the track only. Thread lines through the openings in the lower parts of the ski legs and sit on the snowmobile to steer and follow the hauling vehicle.



Note that pulling the brake lever of the towed snowmobile won't slow it down because its track is on the hauling sheet. The lines between the two snowmobiles must be long enough to allow a healthy safety margin when slowing down.

Towing a snowmobile with a line or rope may be forbidden in some jurisdictions. Follow national and local rules and regulations.

## **Towing with the motor decoupled**

If you cannot use a hauling sheet or a sliding carpet for some reason, and absolutely need to tow the snowmobile for an extended distance, remove the belt drive so that the motor doesn't turn when the track rotates. See [Belt drive](#).

# Maintenance

To preserve the value of your eSled, follow this list of periodic maintenance tasks and safety inspections. It is important that you stick to these recommendations. If you ride frequently or use the snowmobile for work, service components more often.

task / inspection	maintenance frequency				
	every ride	monthly	annually	every two years	every five years
check high-voltage battery charge level	X				
clear track of debris and ice before riding	X				
clear track of snow and slush after riding	X				
check brake lights, headlights and taillights	X				
check brake fluid level and brake operation	X				
inspect and clean charging socket and all visible parts		X			
check track belt, lugs and sliders for wear and damage		X			
inspect and adjust idler wheels and track tension			X		
inspect ski runners and replace if necessary			X		
lubricate track mechanism and brake lever			X		
check coolant level, add coolant if necessary			X		
disconnect 12 V battery for off-season storage			X		
charge and connect 12 V battery at the start of a new season			X		
check 12 V battery voltage and replace if necessary				X	
check track mechanism and service if necessary				X	
inspect brake pads and replace if necessary				X	
drain and replace brake fluid				X	
replace track belt					X



Always remove the tether key and push the red kill switch down before servicing any part of the snowmobile.

No person other than a certified electrician authorized by the manufacturer may service the high-voltage electrical components of the eSled.

Don't try to disconnect the snowmobile's orange high-voltage cables and don't touch their terminals with your hands or with any tools.

Pay special attention to warning labels and prohibitory signs. None of the enclosures of the components may be opened except when instructed so in this operator's guide. If you suspect a problem in a component, have it serviced by a professional authorized by the manufacturer, or contact Aurora Powertrains or its authorized service partner.

Only use parts, fluids and supplies approved by Aurora Powertrains.

## **Cleaning**

Wipe visible parts with a soft cloth. Dampen the cloth with water as necessary. Don't use any detergents. Don't use a power washer.

## **Lights**

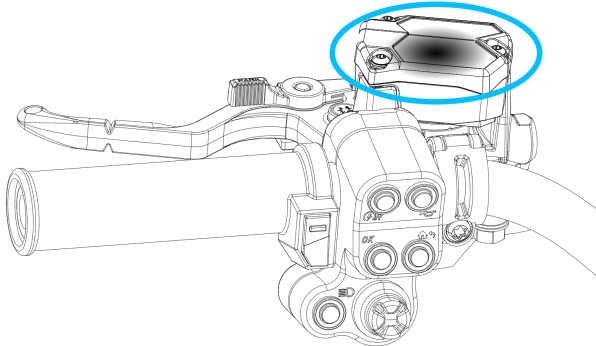
Check lights before every ride:

- headlights, low beam and high beam
- taillight and brake light

If a light malfunctions, replace the entire light module. Contact Aurora Powertrains or its authorized service partner for a replacement.

## Brake fluid

The eSled has a hydraulic brake mechanism that requires the correct amount of DOT 4 brake fluid to work. To check brake fluid level:



1. Remove the tether key and push the red kill switch down.
2. Make sure that the snowmobile is level and the handlebar is in the neutral position.
3. Look at the reservoir at the base of the brake lever in the left handlebar.

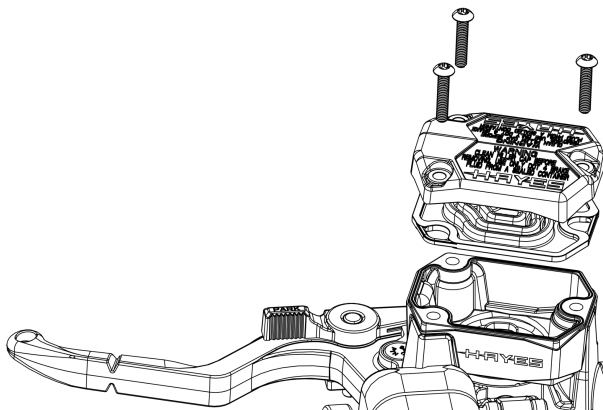
The normal level is indicated by the fill line in the reservoir. If the brake fluid level does not meet the fill line, immediately add fresh DOT 4 brake fluid.



Brake fluid is toxic and can damage plastic, rubber and painted surfaces. Observe safety warnings in the brake fluid container. Wear necessary protection. Use DOT 4 brake fluid. Do not use DOT 3 or DOT 5.

To add brake fluid:

1. Move the snowmobile to a sheltered space.
2. Remove the tether key and push the red kill switch down.
3. Make sure that the snowmobile is level and the handlebar is in the neutral position.
4. Wear gloves and eye protection.
5. Clean the brake lever and brake fluid reservoir of any snow, water and dirt.



6. Remove the screws of the cap of the brake fluid reservoir and pull out the cap, including the diaphragm piece.
7. Add enough fresh DOT 4 brake fluid to meet the fill line. Don't overfill.

8. Push in the middle part of the diaphragm piece to flatten it.

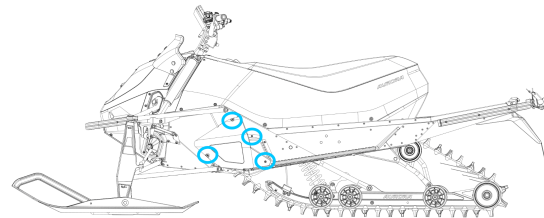
- Put the cap and the diaphragm piece back on the reservoir. Brake fluid is degraded by air and moisture so do that immediately. Don't let water, snow or ice get in the brake fluid.

If the brake fluid seems dark, cloudy, degraded or dirty, or two years have passed since its last replacement, you should drain and replace it.

To drain and replace brake fluid:

- Use a syringe or a bleed kit to suck out the used brake fluid in the reservoir.
- Refill the reservoir with fresh DOT 4 brake fluid.

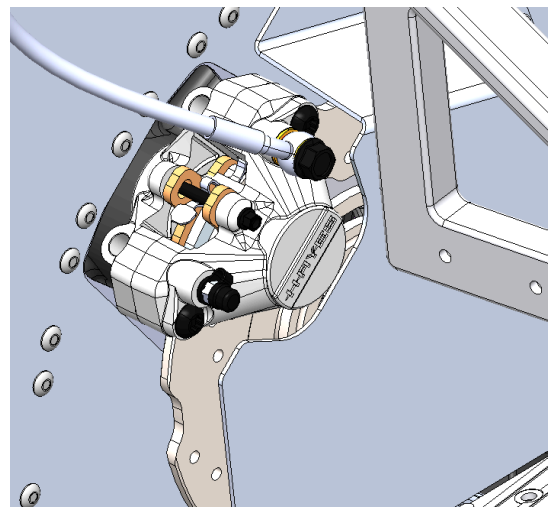
- Unscrew the bolts on the left toe guard at the head of the left footrail.
- Remove the left toe guard to access the brake assembly.



- Place a tub under the brake assembly.

- Locate the bleeder screw on the brake assembly and remove its cap.
- Attach a clear plastic tube to the bleeder screw to lead used brake fluid into a bottle or the tub.

- Pump the brake lever a couple of times and after the final pull hold it in position, or engage the park lock lever. Stop before the reservoir is empty.



- Refill the reservoir. No air must be allowed to enter the brake lever cylinder.
- Slowly loosen the bleeder screw to let used brake fluid flow into the tube and drain into the bottle or the tub.
- Tighten the bleeder screw.
- Release the park lock lever and the brake lever.

- Again pump and hold the brake lever, refill reservoir, loosen the bleeder screw, drain used fluid, and tighten the bleeder screw.

- Repeat until the fluid that comes into the tube is clear and has no air or bubbles.

- Check brake operation by pressing the brake lever and confirming that the caliper pistons correctly squeeze against the brake disk.

- Replace the reservoir cap, the bleeder screw cap and the left toe guard.

- Dispose of used brake fluid responsibly.

Don't use brake fluid that has been kept in an opened bottle, because it degrades fast when exposed to air and moisture.



Brake fluid moves in a closed circuit and doesn't get consumed when braking. A rapid drop in brake fluid level indicates a leak in the system. If that happens, stop riding the snowmobile and have it serviced by Aurora Powertrains or its authorized service partner.

## Brake pads

The eSled has a regenerative braking system that collects energy when going downhill or decelerating, and lessens the need to use the brake. Most riders find it natural to slow down by simply releasing pressure on the accelerator lever. When the brake lever is pulled less often, there is less wear on the brake pads, and they last longer. The recommended regeneration level for riding on groomed trails is 6. See [Settings view](#).

## Front hood

Some of the components that require maintenance are under the front hood.



To open the front hood:

1. Remove the tether key and push the red kill switch down.
2. Look at the underside of the nose of the eSled and locate the four bolts that hold the hood in place.
3. Unscrew the four bolts with a 4 mm hex key.
4. Lift the hood up from its edges to detach it, and place it on a clean level surface.

The front bay holds the low-voltage 12 V battery, the heat exchange radiator, the coolant reservoir, the electric motor, the belt drive and cabling. When you're servicing these components, be careful not to touch the terminals of the orange high-voltage cables with your hands or with any tools.

To close the front hood, reverse the steps you took to open it. Make sure that all bolts are properly tightened and that there is a firm connection between the hood and the body.

## Coolant

The eSled uses pink antifreeze Si-OAT ethylene glycol and distilled water 50% / 50% mix to cool the inverter and the battery. The system doesn't usually require maintenance, but coolant level should be checked annually, and new coolant added if its level is low.



Wait until the system has cooled off before checking coolant level. The level varies because coolant expands when hot. It may take up to two hours for the system to cool off after you finish driving. If you open the coolant reservoir cap when the heat-transfer fluid is still hot, it may burst out under pressure.

To check coolant level:

1. Remove the tether key and push the red kill switch down.
2. Make sure that the snowmobile is level.
3. Open the front hood. See [Front hood](#).
4. Check that there is nothing blocking the heat exchange radiator. Remove any snow or debris.
5. Locate the coolant reservoir.
6. Wait until the coolant reservoir no longer feels warm to the touch. The liquid inside should be at room temperature or colder.
7. Observe the level of coolant fluid in the semi-transparent reservoir.

If coolant level is below the cold level line, add Valvoline HT-12 Pink RTU Antifreeze Coolant ready-to-use pre-mixed coolant (SKU 908815 or 889278) or similar pink ready-to-use antifreeze silicate hybrid organic acid technology (Si-OAT) coolant until its level meets the cold level line.

To add coolant:

8. Wear gloves and eye protection.
9. Press down on the coolant reservoir cap and slowly turn it counterclockwise to open it. Be aware that some pressure may remain in the system. Relieve pressure gradually by opening the cap little by little.
10. Add pink HT-12 coolant until the reservoir is filled to the cold level line.

Do not use yellow, red, green or blue coolant. Use pink HT-12 ready-to-use coolant.

In the event you need to add coolant frequently, or the coolant seems dark, cloudy, degraded or dirty, contact Aurora Powertrains or its authorized service partner to inspect the system and have coolant replaced.

When you're finished, close the coolant reservoir cap tightly, and close the front hood.

## Low-voltage battery

The eSled's low-voltage system is powered by a 12 V 9 Ah LiFePO<sub>4</sub> lithium iron phosphate rechargeable battery.

The snowmobile charges the low-voltage 12 V battery automatically when you're charging or riding.

During off-season storage, the 12 V battery keeps best when it is disconnected, removed from its tray, and stored indoors. For optimal 12 V battery health, check its voltage level at the start of storage and every four months. If the voltage is below 13.2 V, charge the 12 V battery to 13.2 V at room temperature with a LiFePO<sub>4</sub> compatible charger. This voltage level corresponds to a 50% state of charge.

When the next season starts, charge the 12 V battery to 13.8 V at room temperature. This voltage level corresponds to a 100% state of charge, which lets the battery management system perform cell balancing to equalize charge across cells in the battery.

To disconnect the 12 V battery:

1. Remove the tether key and push the red kill switch down.
2. Open the front hood and locate the 12 V battery. See [Front hood](#).
3. Disconnect the black cable from the negative terminal marked **—**.
4. Disconnect the red cable from the positive terminal marked **+**.
5. Don't touch the two 12 V battery terminals at the same time with your hands or with any tools.
6. Don't touch the **+** terminal before you have disconnected the **—** terminal.

To check that the 12 V battery is properly charged:

7. Measure the voltage between the terminals of the disconnected battery with a voltmeter, following the instructions that came with the voltmeter.
8. The 12 V battery has a nominal voltage of 12.8 V and will normally be at 13 V or higher. A lower voltage indicates that you need to charge the battery.

To charge the 12 V battery:

9. Remove the strap that holds the 12 V battery in place and lift it out of its tray.

10. Move the 12 V battery indoors and wait until it has thoroughly warmed to room temperature. If you have a warm garage, you can also drive the snowmobile there and open the front hood to let the 12 V battery warm up.
11. Do not charge the 12 V battery when its temperature is less than 0°C. Wait until the 12 V battery is at room temperature.
12. Use a LiFePO<sub>4</sub> compatible battery charger.
13. If the charger is connected to a wall socket, unplug it before connecting it to the battery. First attach the charger's red cable to the battery's positive terminal marked **+**, then attach the charger's black cable to the negative terminal marked **-**, and then connect the charger to a wall socket.
14. Top up the battery at a charging voltage of 14.6 V and a charging current of 9 A or less, following the instructions that came with the LiFePO<sub>4</sub> compatible charger. The maximum charging voltage is 14.8 V and the maximum charging current is 10 A. Don't exceed those values.
15. To disconnect the charger, first unplug it from the wall socket, then remove the charger's black cable from the battery's negative terminal marked **-**, and then remove the charger's red cable from the positive terminal marked **+**.
16. To charge to 50% during storage, disconnect the charger when the battery is at 13.2 V.
17. To charge to 100% at the start of a new season, disconnect the charger when the battery is at 13.8 V.
18. Don't leave the 12 V battery connected to a charger for an extended period.
19. If the 12 V battery won't charge to the desired voltage level, it has come to its end of life, and you need to replace it.

You can replace the 12 V battery yourself. Use a Topband TB-BL1209F 12 V 9 Ah LiFePO<sub>4</sub> rechargeable battery or similar.

To change the 12 V battery:

20. Observe the orientation of the used battery.
21. Remove the strap that holds the battery in place.
22. Lift the used battery out of the battery tray and set it aside.
23. Check cable terminals and remove any dirt or corrosion with a wire brush and a soft cloth.
24. Place a new recently charged LiFePO<sub>4</sub> battery onto the tray in the correct orientation.
25. Reattach the battery strap.

To reconnect the 12 V battery:

26. Connect the red cable to the positive terminal marked **+**.
27. Connect the black cable to the negative terminal marked **-**.
28. Don't connect the **-** terminal before you have connected the **+** terminal.
29. Close the front hood.



Be careful to not touch the two 12 V battery terminals at the same time with your hands or with any tools. Follow the correct terminal disconnection and connection order.

Do not charge the 12 V battery in a freezing temperature as that can damage the 12 V battery permanently. Move the 12 V battery indoors and wait until it has thoroughly warmed to room temperature before charging.

Use a LiFePO<sub>4</sub> compatible charger. Don't use a Li-ion NMC charger or a lead-acid car battery charger.

If you are unsure how to disconnect, charge or change the 12 V battery safely, use the services of a certified electrician, or contact Aurora Powertrains or its authorized service partner.

Dispose of a used battery responsibly.

## High-voltage battery

The eSled's high-voltage system is powered by a 120 V Li-NMC lithium-ion nickel manganese cobalt oxide rechargeable battery. Its capacity is 14 kWh on the standard 60 km range eSled and 21 kWh on the 100 km long range eSled.

All batteries degrade gradually over time. To ensure optimal battery health, follow the recommended idle charge levels and storage temperatures.

When you're not using the snowmobile, the optimal charge level is between 30% and 60%. The high-voltage battery will age faster if kept closer to 0% or closer to 100%. Do not leave the charging cable plugged in when you're not planning to ride soon. Top up the charge level just before a ride. See [Charging](#).

The optimal storage temperature is between 0°C and 15°C. The high-voltage battery will age faster if kept in warmer temperatures. It's OK to keep the eSled out in the cold, including freezing temperatures, but don't expose it to below -30°C for an extended period. Observe the weather forecast and move the snowmobile to a warm garage or similar before a cold snap.

To prepare for off-season storage, charge the battery to 60%. If the battery is at more than 60%, ride the snowmobile, or leave it powered up with the high beam on, until the charge level has gone down sufficiently. Unplug the charging cable for the duration of off-season storage. When a new season starts, charge again to 60%. See [Off-season storage](#).

Don't leave the snowmobile without charging when the battery is close to 0%. Charge to 60%. Never attempt to drive the snowmobile when the battery is at 0%. See [Driving on low charge](#).

The battery management system performs cell balancing automatically during use. Additional balancing takes place if the battery is charged to above 90% of capacity. It's OK to charge the battery that high as long as you start riding right after charging. Don't let the battery stay close to 100% for an extended period.

The high-voltage battery doesn't require maintenance, and cannot be serviced in place but needs to be repaired or replaced when it no longer meets your needs. It is covered by the manufacturer's five-year battery warranty. Contact Aurora Powertrains or its authorized service partner for repair or replacement.

## **Fuse box**

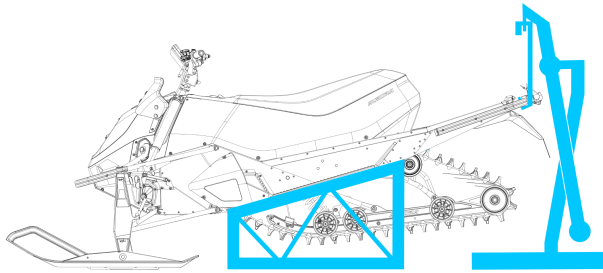
To check and replace fuses:

1. Remove the tether key and push the red kill switch down.
2. Open the front hood. See [Front hood](#).
3. Locate the fuse box and open it.
4. Remove fuses one by one and inspect them to locate a blown fuse.
5. If a fuse is intact, put it back in its place.
6. Replace a blown fuse with an automotive fuse of the same rating and size.
7. Close the fuse box and the front hood.

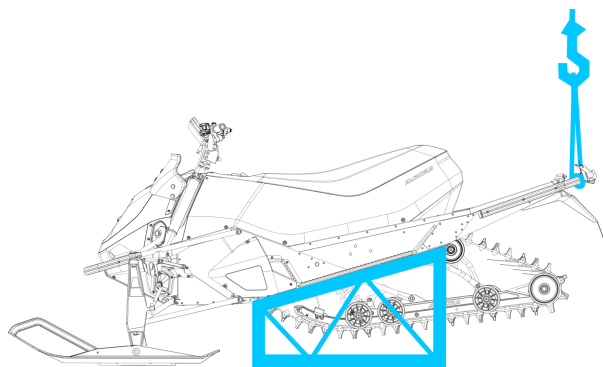
Other electrical components, such as relays, aren't user-replacable. To inspect and replace them, have the snowmobile serviced by Aurora Powertrains or its authorized service partner.

## Lifting the track off the ground

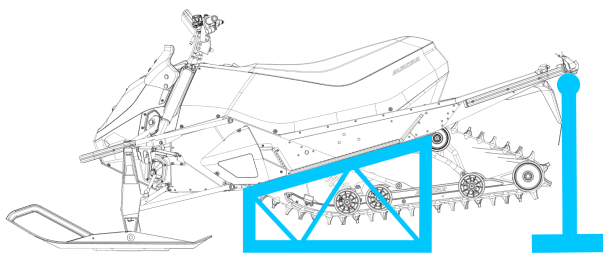
Track inspection, track maintenance and some other tasks require that you lift the rear of the snowmobile off the ground and secure the snowmobile by placing supports under the footrails. Remove the tether key and push the red kill switch down before lifting. There are three alternative ways to lift.



Lifting method 1: use a track stand. Lift the back of the snowmobile up from the rear bumper with a wide-base track stand, snowmobile stand or a similar lifting device. Make sure that the lifting device stands firmly on the ground. Follow the instructions that came with the lifting device.



Lifting method 2: use lines and a winch. Thread a line around the rear bumper a couple of times, make a loose loop, and lift the back of the snowmobile from the loop with a winch or similar. Ensure that the loop doesn't slip and that the snowmobile stays firmly upright. Follow the instructions that came with the winch.



Lifting method 3: lift manually. It takes two people to lift the snowmobile this way so ask for assistance. Take a firm hold of the rear bumper, lift the rear of the snowmobile up, and place a support under the rear bumper.

The recommended lifting method is to use a track stand. Do not use a car jack or similar. The jack may slip or fall, causing damage.

Lift until all of the track is off the ground. Secure the snowmobile by placing supports under the footrails.

Be careful not to damage the rear snow flap, tow hook, tow hitch, taillight, brake light, or other parts.

You can leave the snowmobile on a track stand and supports for a longer period such as off-season storage. That lessens pressure on rear suspension and track belt lugs, and is especially helpful when you are storing the snowmobile outdoors.

## **Track mechanism**

Snowmobile track belts must be handled gently during their first 100 km. Avoid high speeds, fast acceleration, abrupt braking, and hauling a heavy pulk or sled during this break-in period. Check track belt tension when you reach the 100 km milestone.

The track mechanism requires annual inspection and lubrication. It is also a good practice to do a quick visual check and clear the track after every ride.

## **Clearing the track**

Clear the track of snow, slush and debris after every ride. Watery snow can freeze in low temperatures and prevent the track belt from turning, causing damage.

You can clear the track manually, or clear it by running the motor when the track is off the ground. When the track rotates, snow and ice in the track get thrown out.

To clear the track manually:

1. Remove the tether key and push the red kill switch down.
2. Use a car brush, snow brush or similar to remove snow and slush from inside the track mechanism.
3. If there is powdery snow in the track mechanism, you can also use a leaf blower or similar. Follow the instructions that came with the blower.
4. Remove ice with an ice scraper, wood stick or similar.
5. Remove branches and debris by hand. Wear gloves.
6. Dry the inside of the track belt with a soft cloth.

To clear the track by running the motor:

1. Lift the rear of the snowmobile off the ground and secure the snowmobile by placing supports under the footrails. See [Lifting the track off the ground](#).
2. Make sure that the full length of the track is off the ground.
3. Make sure that there isn't anybody, or anything that could be damaged, behind the snowmobile. Snow, ice and debris get thrown out of the track belt when it rotates.
4. Stand next to the snowmobile on the right-hand side and power it up.
5. Look down to ensure that your feet are well clear of the track belt.
6. Gently squeeze the accelerator lever to rotate the track. If the track won't start moving, immediately release the accelerator lever, power the snowmobile down, and clear the track manually.
7. Watch the speedometer and release the accelerator lever when the speed shown reaches 20 km/h.

8. Remove the tether key and push the red kill switch down.
9. Finish track cleanup manually.

You can also move the snowmobile to a warm garage to thoroughly melt snow and ice in the track and let it dry.

### Inspecting the track

To inspect the track belt:

1. Remove the tether key and push the red kill switch down.
2. Lift the rear of the snowmobile off the ground and secure the snowmobile by placing supports under the footrails.
3. Manually rotate the track belt.
4. Check the track belt for damage such as holes, tears, exposed fiber, delaminated layers, and missing, damaged or worn track clips and lugs.
5. Check that the track belt is evenly aligned, with equal space between track belt edge and idler wheels on both sides.

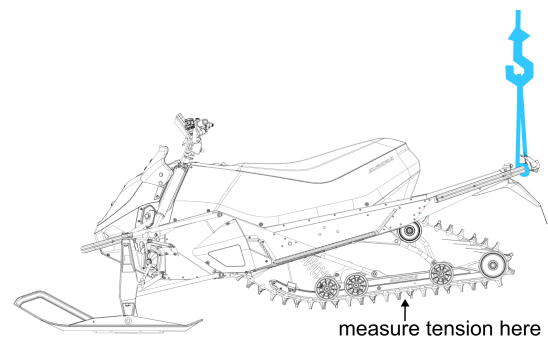
If the track belt no longer meets your needs, contact Aurora Powertrains or its authorized service partner for a replacement.

To inspect idler wheels and sliders:

6. Check the idler wheels. They guide the track belt along and support its weight. If an idler wheel shows wear and tear, or fails to rotate freely, adjust or replace it.
7. Check the sliders, also known as hyfax. They are the long plastic strips that support the track belt and help it move smoothly. Find the wear indicator line on the side of each slider, and replace a slider that's worn down to the line. You can get a slider out by unfastening it and gliding it through an opening in the track belt.

To check track belt tension:

8. Push the edge of the track belt down between the middle idler wheels with a tension meter until the meter shows a weight of 10 kg, and observe the displacement reading.
9. Alternatively, attach a 10 kg weight to the edge of the track belt and measure the displacement, or droop, of the track belt.



10. If the tension meter reading or displacement is more than 45 mm, increase tension. If the reading or displacement is less than 35 mm, decrease tension.

To adjust track belt tension:

11. Remove rear idler wheel caps on both sides.
12. Slightly loosen the bolts that hold rear idler wheels in place.
13. To increase tension, tighten the adjustment screw on the axle between the rear idler wheels.
14. To decrease tension, loosen the adjustment screw.
15. Tighten idler wheel bolts.
16. Recheck track belt tension and alignment.
17. Replace idler wheel caps.

## Lubrication

Most parts of a snowmobile are self-lubricating, but the track mechanism and the brake lever pivot require annual lubrication. It is recommended that you lubricate them at the end of the riding season as that keeps them better during storage.

### Lubricating the track mechanism

There are three grease fittings in the track mechanism.

To lubricate the track mechanism:

1. Lift the track mechanism off the ground to reach grease fittings more easily. See [Track mechanism](#).
2. Locate the grease fittings and clean them with a soft cloth.
3. Fill a grease gun with synthetic low-temperature lubrication grease.
4. Push lubrication grease into the mechanism through each grease fitting.

Use synthetic NLGI grade 2 grease with an Extreme Pressure (ET) label and high water resistance.

### Lubricating the brake lever

To lubricate the brake lever:

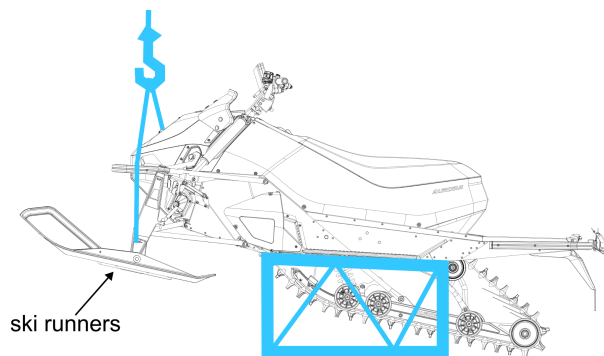
1. Clean the brake lever and its pivot with a soft cloth or brush.
2. Pull the brake lever all the way back.
3. Spray contact cleaner on the pivot point.
4. Wipe the contact cleaner off with clean cloth.
5. Apply a small amount of synthetic grease to the pivot point and the parts of the lever that connect with other parts.
6. Release and pull the brake lever repeatedly to ensure it moves smoothly.
7. Check brake fluid level. See [Brake fluid](#).

## Ski adjustment

When the handlebar is in the central position, the skis should point in the same direction straight ahead parallel to the track with a slight toe-out. The tips of the skis should be 10 mm farther away from each other than their heels.

To lift the front of the snowmobile:

1. Remove the tether key and push the red kill switch down.
2. Pull the brake lever all the way back and engage the park lock lever.



3. Thread a line through the openings in the lower parts of the ski legs and make a loose loop. Ensure that the loop doesn't slip.
4. Lift the front of the snowmobile from the loop with a winch or similar until both skis are about 20 cm off the ground.

5. Secure the snowmobile by placing supports under the footrails. Ensure that the snowmobile stays firmly upright.

Do not lift the snowmobile from the front bumper, the handlebars, or the skis. Lift from ski legs.

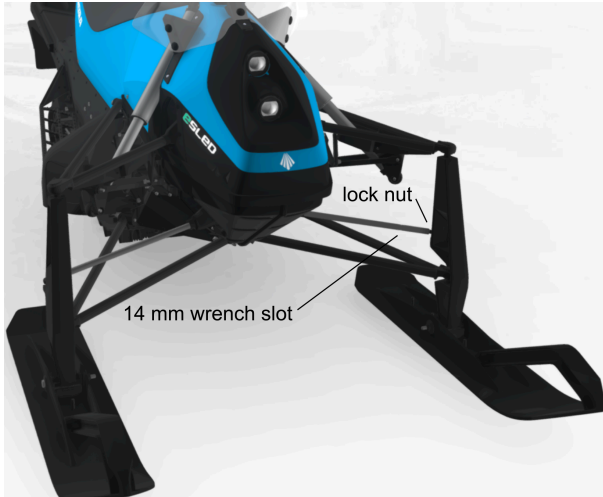
Ski runners are hard metal bars mounted underneath the skis. They help skis grip snow, let you handle corners more easily, and help avoid getting pulled into grooves left by others. Replace worn out ski runners to ensure that the snowmobile is easy to control.

To replace a ski runner:

6. Unfasten the nuts that hold the ski runner in place.
7. Slide the used ski runner out from the bottom of the ski.
8. Slide the new ski runner in. Observe markings that indicate which way it should go.
9. Refasten the nuts to secure the ski runner in place.

To adjust ski alignment and toe-out:

10. Set the handlebar to the neutral position and secure it with lines so that it doesn't turn.
11. Fix a straightedge such as a beam of wood or similar against the track so that it reaches between the skis and extends to the line between the tips of the skis. The straightedge marks a line parallel to the midline of the snowmobile.



12. Locate the tie rod, also known as track rod, that connects the ski leg to steering.

13. Use a 14 mm open-end wrench to hold the tie rod using the slot in the rod.

14. Loosen the lock nut on the tie rod.

15. Measure the distance from the ski tip to the straightedge, and the distance from the ski heel to the straightedge.

16. Rotate the tie rod to adjust the ski's alignment until there is a 5 mm difference between the two distances. The tip must be further out than the heel.

17. Tighten the lock nut, holding the wrench in the tie rod slot to make sure the tie rod doesn't rotate.

18. Repeat the same with the other ski.

19. Measure the distance between ski tips, and the distance between ski heels. The tips of the skis should be 10 mm farther away from each other than their heels.

20. Untie the handlebar and turn it from side to side to test steering. Have someone hold on to the skis when you turn to ensure there's no looseness.

## Suspension

The eSled has shock absorbers and other suspension components supporting the skis and the track mechanism. These components require inspection from time to time.

To check front suspension:

1. Slide up the black rubber O-rings in the front shock absorbers until they meet the upper absorber shell. If the shock absorbers have no O-rings, place rubber bands or similar markers around the lower part of front shock absorbers and slide them up instead.
2. Lift the snowmobile from the attachment points of the front bumper until the skis come just off the ground. Don't lift from the middle of the front bumper but from the parts between the attachment points on each side of the nose of the eSled. Use lines and a winch, or ask for assistance so that you're lifting from one side and another person is lifting from the other side.
3. Observe the distance between the O-rings or markers and the shock absorber upper shell. It should be about five centimeters.
4. Lower the snowmobile.

5. Mount the snowmobile, hold the handlebars, stand up, lean forward, and rock your weight back and forth, pushing down and pulling back on the handlebars.
6. Step off the snowmobile and observe the new distance between the O-rings or markers and the shock absorber upper shell. It should be about five centimeters.
7. Check the surface of the lower part of the shock absorbers. Any traces of oil on their surface indicate an issue with shock absorber seals.

The eSled is configured to work for most riders as-is, but if you wish, you can adjust its suspension according to your preferences, trip elevation profile, snow conditions, load, riding speed and other such factors.

Always adjust suspension the same way on both skis. Test the snowmobile after adjusting suspension to ensure that those changes work the way you expected.

If you need to replace shock absorbers, use these models:

- Front shock absorbers: Radflo 2.0" Air Shock, 1.25" shaft
- Middle shock absorber: KYB HPG 25
- Rear shock absorber: KYB HPG 25



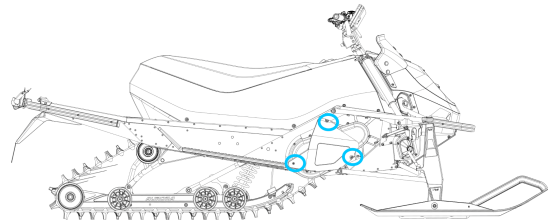
Shock absorbers are pressurized. Do not open them, and do not remove them when they bear a load. Lift the snowmobile before working on shock absorbers. See [Track mechanism](#) and [Ski adjustment](#).

## Belt drive

The belt drive transfers mechanical power from the motor to the track belt. It doesn't usually require maintenance, but may need to be changed when it shows wear and tear, and may need to be removed temporarily in some situations. For example, in the event the snowmobile has to be towed, and no hauling sheet or sliding carpet is available, you need to remove the belt drive so that the motor doesn't turn when the track rotates. See [Towing](#).

To remove the belt drive:

1. Remove the tether key and push the red kill switch down.
2. Unscrew the bolts on the right toe guard at the head of the right footrail.
3. Remove the right toe guard to access the belt drive housing.
4. Unscrew the bolts on the belt drive housing and remove it.
5. Open the front hood. See [Front hood](#).
6. Locate the bolts that hold the motor in place.
7. Carefully loosen the bolts to tilt the motor and give slack to the belt drive.
8. Slide the belt off the pulleys to remove it.
9. Fasten the bolts to reattach the motor.
10. Reattach the front hood.
11. Reattach the belt drive housing.
12. Reattach the toe guard.



To replace the belt drive, reverse the steps you took to remove it. If you need to change a used belt drive to a new one, contact Aurora Powertrains to obtain a replacement.

## Electric motor

The electric motor doesn't require maintenance. If you suspect an issue with it, contact Aurora Powertrains or its authorized service partner.

# Troubleshooting

## Connectivity indicators

Connectivity indicators show at the top right-hand corner of the touchscreen.



The WLAN indicator shows whether the snowmobile is connected to a WLAN wireless network, and displays signal strength.



The mobile network indicator shows signal strength and mobile network type: 2G GPRS, 4G LTE or 4G LTE+.



The Aurora Powertrains indicator tells that the snowmobile can currently access software updates and other online services.



The location indicator tells that the snowmobile's global navigation satellite system has successfully determined the current location.

## Warning indicators

Warning indicators show at the top middle of the touchscreen.



Coolant temperature is too high. Stop and allow the system to cool down before starting again. If the problem persists, check coolant level. See [Coolant](#).



Issue with the powertrain. Stop, power down, and step off the snowmobile. Allow the motor to cool down. Check the track for ice and debris, and clear the track before powering up. If the problem persists, contact Aurora Powertrains or its authorized service partner. See [Maintenance](#).



The brake or the park lock is engaged. Pull the brake lever and let go of it to release the park lock lever before squeezing the accelerator lever. If the brake warning indicator continues to show, immediately stop and check brake fluid level and brake pads. See [Brake fluid](#) and [Brake pads](#).



Issue with the low-voltage 12 V battery. Don't power down but keep the snowmobile powered up until you have reached your destination, then check the 12 V battery. See [Low-voltage battery](#).



The battery is unconnected because the red kill switch is pushed down. The snowmobile cannot be driven or charged. Pull up the red kill switch to operate the snowmobile.



The controls are locked because no tether key is detected. The tether key is missing or it's not properly plugged in. Push it all the way in its socket.



The controls are locked because the tether key couldn't be read. Remove the tether key and push it all the way in its socket.



The controls are locked because the tether key isn't authorized for this eSled. Make sure that you have the right tether key.

## Notifications, alerts and error messages

Alerts and error messages are shown in the middle of the touchscreen. Read those messages carefully and write down any error codes that are shown.

## Tracing and correcting faults

### Snowmobile won't start up

Check that the tether key is properly plugged in and that the red kill switch is pulled up. Press and hold the yellow ignition key for several seconds to power up. Stop pressing when the headlights turn on. See [Your first ride](#).

Check that you have a tether key that's authorized for this eSled. Every tether key is unique and only works with eSleds that are specifically assigned to it.

Check that the 12 V battery has sufficient voltage. See [Low-voltage battery](#).

Check that the high-voltage battery is properly charged. See [Charging](#).

Check the fuses. See [Fuse box](#).

If the snowmobile has been stored in very cold weather for an extended period, you may need to connect it to a charger or move it to a garage to warm it up.

### Snowmobile won't start charging

Check the power source, its fuse and its circuit breaker.

Check the charging socket for debris and water, and clean it with a soft cloth if necessary. Do not poke at the terminals with any tools.

Check that the tether key is properly plugged in and that the red kill switch is pulled up. Make sure that you have the right tether key. Press and hold the yellow ignition key for several seconds. When the headlights turn on, you can stop pressing and connect the charging cable.

Check that the 12 V battery has sufficient voltage. See [Low-voltage battery](#).

Ensure that you follow the correct charging initialization steps. See [Charging](#).

### **Snowmobile won't start moving**

Check that the tether key is properly plugged in. Make sure that you have the right tether key.

Check that the accelerator lever is free and has fully extended to its neutral position.

Ensure that the park lock lever is disengaged. Pull the brake lever and let go of it to release the park lock lever. See [Your first ride](#).

Check that the charging cable is unplugged. See [Stop charging](#).

Check the touchscreen for warning indicators. See [Warning indicators](#).

The motor could be in a “standstill” position. Try reversing for a short distance. Press and hold the yellow ignition key and gently squeeze and release the accelerator lever to nudge the snowmobile back a few centimeters, then release the yellow ignition key to drive forward.

There could be ice or debris in the track. Power down and clear the track before trying again. You may need to move the snowmobile to a warm garage to thoroughly melt ice in the track. To avoid a frozen track belt, always clear the track of snow and slush after riding. See [Track mechanism](#).

The track mechanism relies on snow to lubricate it and keep it cool. If you drive a longer distance on hard packed snow, or on ice where there is little or no snow, the track belt and sliders may heat up. When you stop, overheated sliders may stick to the track belt and prevent it from turning. If there is little snow, go easy and limit riding to a couple hundred meters at a time. If you frequently need to ride on hard surfaces, install ice scratchers to lift lubricating snow into the track mechanism.

Clear any error conditions by restarting the snowmobile. Power off by pressing the red kill switch down, wait two minutes, and power up the snowmobile. If the problem persists, contact Aurora Powertrains or its authorized service partner.

### **Snowmobile runs slowly**

The eSled has several drive modes that affect its responsiveness. Check that the current drive mode matches your preference. You can set it in the Drive mode pane in [Settings view](#). To set drive mode while riding, rock the menu navigation key up to reveal drive mode symbols at the top of the speedometer, and rock the menu navigation key left or right to choose one of them.

When the charge level is low or the battery is cold, the snowmobile may enter a limited power mode to maximize remaining range. You can continue driving but

should slow down and avoid fast acceleration and steep uphill climbs. Charge the snowmobile to warm the battery up. See [Driving on low charge](#).

Check the touchscreen for warning indicators. See [Warning indicators](#).

The snowmobile may be running too hot. Stop and allow the system to cool down before starting again. Check coolant level. Check that there is nothing blocking the heat exchange radiator. See [Coolant](#).

Check the track for ice and debris. Remove any debris before trying again. To avoid a frozen track belt, always clear the track of snow and slush after riding. See [Track mechanism](#).

### **Snowmobile won't turn**

Take corners more slowly.

Lean into the turn. If you have a passenger, they need to lean too.

Check ski runners for wear and replace them if necessary. See [Ski adjustment](#).

### **Snowmobile feels unsteady**

If the snowmobile won't run in a straight line, check ski alignment.

If the snowmobile tends to dart, check ski toe-out.

If the skis get easily pulled into grooves left by others, check ski runners.

See [Ski adjustment](#).

### **Brake lever feels soft or spongy**

Brake fluid may be degraded, or there could be air mixed in. Replace brake fluid. See [Brake fluid](#).

### **Braking has little or no effect**

Immediately stop and check brake fluid level, and add or replace brake fluid if needed. Inspect brake pads and replace them if necessary. See [Brake fluid](#) and [Brake pads](#).

### **Track belt heats up**

When you're riding on hard packed snow, or on ice where there is little or no snow, the track mechanism may heat up. Stop and let the track belt, sliders and idler wheels cool down before continuing. Drive slowly and limit riding on these surfaces to a couple hundred meters at a time. If the track heats up too much, it can get damaged.

If you frequently need to ride on hard surfaces, install ice scratchers to lift lubricating snow into the track mechanism. Contact Aurora Powertrains or its authorized service partner for advice.

### **Handlebar grips won't heat up**

There are several handlebar heating levels. Press the heating control key repeatedly to set the desired heating intensity.

If the heating control key appears to have no effect, the 12 V battery may have too low voltage. Charge the snowmobile, then check the voltage of the 12 V battery. See [Low-voltage battery](#).

Check the fuses. See [Fuse box](#).

### **System software shows an error**

Stop the snowmobile, write down any error codes, power off by pressing the red kill switch down, wait two minutes, and power up the snowmobile. If the problem persists, contact Aurora Powertrains or its authorized service partner.

## **Contacting Aurora Powertrains**

To find our most current contact details, go to <http://www.esled.com/>.

When contacting Aurora Powertrains, please mention the eSled's vehicle identification number (VIN).

## **Vehicle identification number**

To find your eSled's vehicle identification number (VIN), press the **home/return key** in the left handlebar, touch **Settings**, and touch **System info**.

Alternatively, find the CE mark in the right-hand side of the snowmobile, right above the footrail. The VIN is shown next to the CE mark.

## **Battery number**

The battery number is marked on the side of the modular battery pack.

# Technical data

## Aurora Powertrains eSled Model A04-1002

Manufactured 2024-11-15 –

Vehicle identification number	YK9041002S9023 . . .
Top speed	105 km/h
Range	up to 100 km depending on battery capacity
Dry weight	263 kg (14 kWh battery) – 282 kg (21 kWh)
Maximum load	165 kg
Towing limit	200 kg in pulk or sled, 30 kg tow hitch weight
Total weight	428 kg – 447 kg
Total length	3015 mm
Total width	1283 mm
Total height	1168 mm
Trail width	1074 mm
Seat capacity	one driver, plus one passenger when equipped with the optional backrest
<b>Electric motor</b>	EA-193-080-10A+
Type	interior permanent magnet synchronous motor, 3-phase
Max revolutions per minute	7,000 rpm
Peak power	40 kW
Peak torque	140 Nm
Motor controller	3-phase permanent magnet AC (PMAC) controller
<b>Modular battery pack</b>	4 modules (14 kWh) or 6 modules (21 kWh)
Type	lithium-ion NMC
Battery management system	integrated
Maximum capacity	14 kWh (standard range model) / 21 kWh (long range model)
Nominal capacity	13.2 kWh (standard range model) / 19.8 kWh (long range model)
Maximum voltage	120 VDC
Life estimate	80% capacity remaining at 50,000 km
<b>Onboard charging system</b>	Type 2 (Mennekes)
Nominal AC supply voltage	120 / 240 VAC
Charging power (max.)	3.3 kW, 6.6 kW with optional charger upgrade
Efficiency	93 % (3.3 kW charger) / 96 % (6.6 kW charger)
Charging time	14 kWh battery, 3.3 kW charger: about 3:30 from 20% to 80% 21 kWh battery, 6.6 kW charger upgrade: 3:30 from 0% to 95% 4:00 from 0% to 100%

### **Fast DC charging on charging stations**

Max charging power	up to 30 kW, depending on battery capacity
Vehicle inlet	CCS Type 2 (IEC 62196-3)
Charging time	21 kWh battery, 30 kW DC charging: 0:30 from 20% to 80% 1:00 from 0% to 100%

### **Thermal management**

Electric motor	air cooling
Inverter	liquid cooling
Battery pack	liquid cooling, integrated heating
Coolant type	Si-OAT ethylene glycol (CH <sub>2</sub> OH) <sub>2</sub> and distilled water mix 50% / 50%

### **Traction**

Transmission	single speed, direct drive, clutchless
Final drive	belt drive
Gear ratio	upper sprocket 32, lower sprocket 78
Drive shaft teeth	8
Track width	380 mm
Track length	3487 mm
Track lug profile height	34 mm
Track tension	35 – 45 mm

### **Brake system**

Type	hydraulic
Fluid	DOT 4

### **Suspension**

Front suspension	Aurora Powertrains proprietary
Front shock absorber	Radflo 2.0" Air Shock, 1.25" shaft
Rear suspension	Aurora Powertrains proprietary
Rear shock absorber	KYB HPG 25
Middle shock absorber	KYB HPG 25
Maximum suspension travel	front 249 mm, back 390 mm

### **Low-voltage system**

Battery	12 V 9 Ah LiFePO <sub>4</sub> rechargeable battery
Nominal voltage	12.8 V
Charging power	up to 500 W with DC/DC
High and low beam	2 x LED 16 W, 1TL 998 670-047, 1KL 998 670-057
Brake light	2 x LED 1.4/0.4 W

## Aurora Powertrains eSled Model A04-1001

manufactured 2024-01-01 – 2024-11-14

Identical to A04-1002, except for the following:

Vehicle identification number	YK9 <b>041001</b> P9023 . . .
Top speed	120 km/h
<b>Electric motor</b>	AFT140i
Type	axial flux synchronous permanent magnet, 3-phase
Max revolutions per minute	8,000 rpm
Peak power	50 kW
Peak torque	140 Nm
Motor controller	3-phase permanent magnet AC (PMAc) controller, integrated with motor

# Legal

## Limited warranty

The eSled is covered under the manufacturer's limited warranty for two years, covering defects in components, materials, and workmanship.

The warranty remains valid only as long as you follow all driving, maintenance and off-season storage instructions in this operator's guide. The warranty doesn't cover wear and tear, consumables, lights, or tasks or parts described under [Maintenance](#), such as brake pads.

See the full legal text in the General Terms & Conditions of Sale document.

## Five-year battery warranty

The high-voltage battery is covered under the manufacturer's limited high-voltage battery warranty for five years.

The warranty remains valid only as long as you follow all driving, charging, maintenance, off-season storage and high-voltage battery health instructions in this operator's guide.

When five years have passed from the original purchase or handover date, whichever comes first, contact Aurora Powertrains if the capacity of the high-voltage battery is below 80% of its nominal value.

See the full legal text in the General Terms & Conditions of Sale document.

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