EN

USER GUIDE

Flexi Mobile 4000C

Tru-Test DATAMARS

This guide provides instructions on how to assemble and use a Flexi Mobile 4000C WOW (Walk Over Weighing) system.

EN

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Conventions used in this document

Here are the conventions used in this document.

Symbol	Description	Examples
	Warning To mitigate risk of injury.	The solar panel has sharp edges. Always wear safety gloves when removing it from its packaging.
	Caution or Stop Take special care to prevent damage to a product. Important information to read before starting a procedure.	Do NOT overtighten the bolts as this may strip the threads.
	Tip Idea or recommendation.	For best results, do not charge the battery if the temperature is less than 0 °C (32 °F), or greater than 40 °C (104 °F).
	Information Reference to another source of information.	Refer to the Datamars Livestock Help Centre for videos showing this procedure.
	Note Related information.	Images are indicative of shipped part and not shown to scale.

Introduction

About this document

This document is intended for users of the Flexi Mobile 4000C.

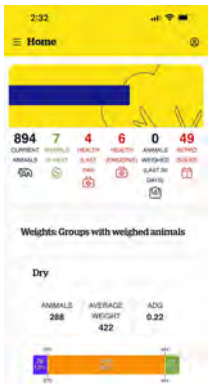
The purpose of this document is to provide information on how to assemble the Flexi Mobile 4000C and how to use it for walk over weighing.

What the Flexi Mobile 4000C does

The Flexi Mobile 4000C is specifically designed for a range of intensive grazing applications. Designed to be moved, the Flexi Mobile 4000C allows you to weigh, analyse and manage your cattle from anywhere.

It enables monitoring of weight trends with voluntary walk over weighing. It is used to monitor changes in weight to identify poor performing animals, optimise breeding programmes and catch animal health issues early. The system is integrated with Datamars Livestock cloud software which allow users to interpret and analyse data.

Datamars Livestock web app



Datamars Livestock on a mobile phone

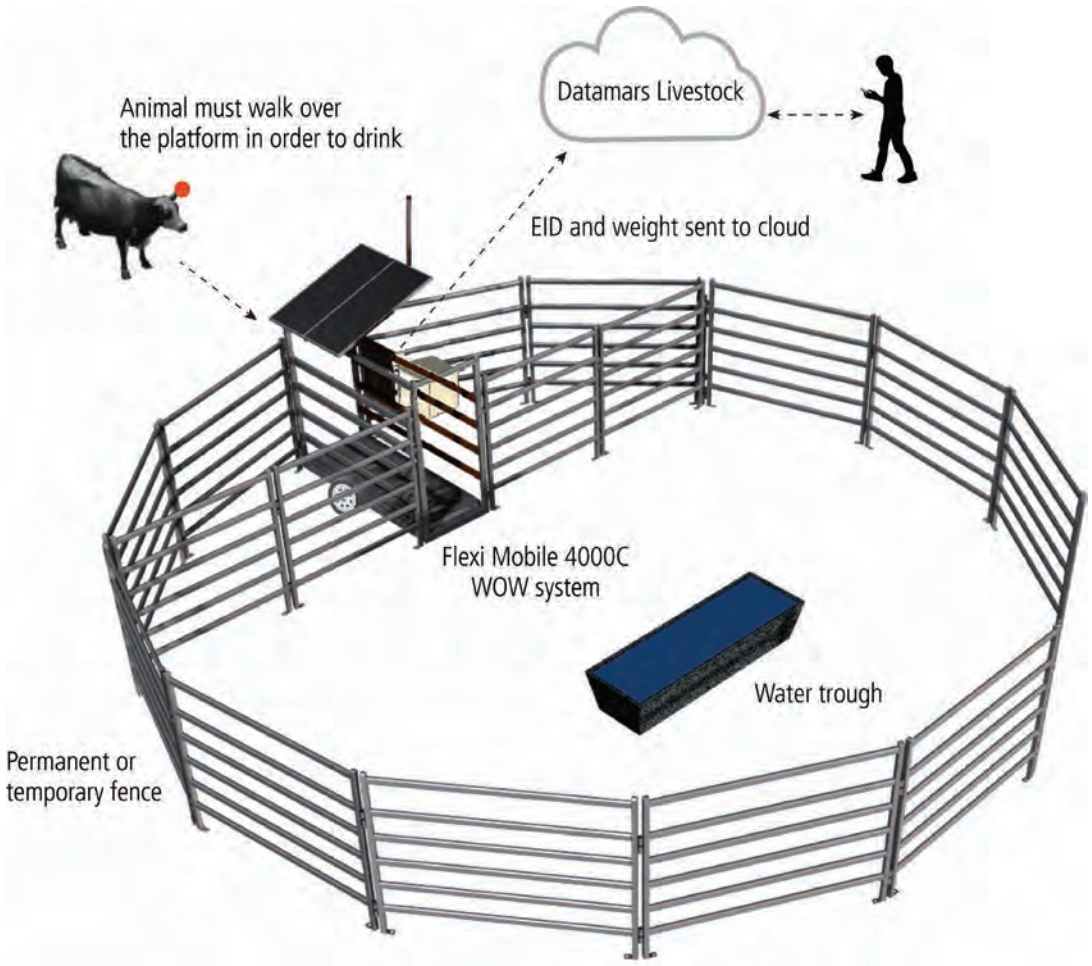
How the Flexi Mobile 4000C works

The Flexi Mobile 4000C consists of:

- A platform with built-in load bars
- A control box – this contains an EID reader, a weigh scale and a gateway to connect to the internet. The control box continually monitors the state of the antenna.
- An EID antenna – the antenna creates a magnetic field to energize the EID tag and it receives the very small signals transmitted by the tag.
- Datamars Livestock cloud software
- Datamars Livestock web and mobile apps

The Flexi Mobile 4000C can be set up in an area with permanent or temporary fencing and can be easily moved to a different location.

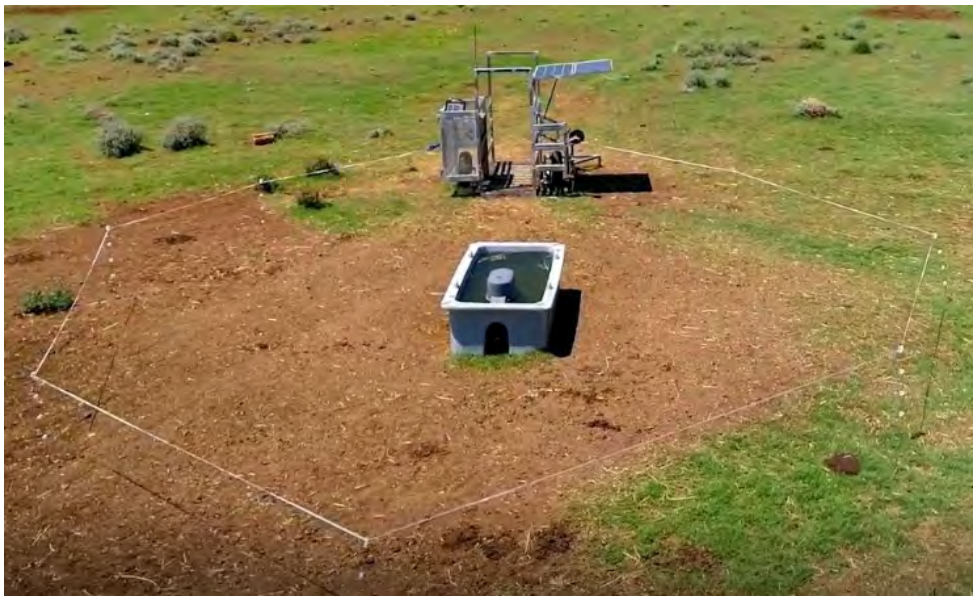
The system is fenced in with a water trough so that animals must walk over the platform in order to drink. When an animal walks over the platform, its EID tag is read by the antenna and its weight is captured. The animal's EID and weight is sent to Datamars Livestock cloud software via LTE, satellite or Wi-Fi. Animal data can be viewed or edited using the Datamars Livestock mobile or web app.



Photos of the Flexi Mobile 4000C in use

The Flexi Mobile 4000C is being hitched to a vehicle, ready to be moved to a new location.

The Flexi Mobile 4000C is being set up in a paddock. A temporary electric fence is being erected.



The completed installation is ready for use. A temporary electric fence encloses the Flexi Mobile 4000C and the water trough.

The Flexi Mobile 4000C in use with animals. A temporary electric fence has been set up to surround the water trough, so animals must walk over the platform in order to drink. As an animal walks over the platform, its weight and EID is transmitted to Datamars Livestock cloud software.

Datamars Technical Support

Datamars has a dedicated support team for the Flexi Mobile 4000C and other Smart Farming products. To contact the Datamars Smart Farming support team:

AU: 1800 248 774
NZ: 0800 243 282
US: +1 (888) 431 0957
UK: +44 20 4571 7717
IR and EU: +353 (21) 242 8844

Email: sf-support@datamars.com

Before you start

Before you install the Flexi Mobile 4000C check your health and safety provisions.

Health and safety

Personal protective equipment (PPE) to be worn during the assembly process

For health and safety reasons the following personal protective equipment (PPE) must be worn during assembly of the Flexi Mobile 4000C. These are compliant with regional standards.

Safety Shoes

Industrial quality safety shoes/boots (with steel caps) are mandatory for use by the installer (during assembly or during transit and handling) to mitigate the risk of heavy items (e.g. WOW platform, cattle frames) falling and causing injury to the installer's feet.

Safety recommendations

There is a crushing hazard during these assembly steps which could cause serious injury. Do not place any parts of the body underneath the platform or within the moving parts of the folding axle at any time.

The Flexi Mobile 4000C is heavy. Always use appropriate hoisting equipment, and at least two people for lifting or moving heavier equipment (e.g. WOW platform, steel housing). Take care to use both hands to lift and move equipment and avoid back injury caused by bending and lifting heavy objects.

Ensure that equipment is switched off before assembly and installation.

Do not short the battery (e.g. by inadvertent use of a large spanner near the battery terminals).

With use of the satellite modem - the satellite transmission emits radiation. Comply with safety recommendations.

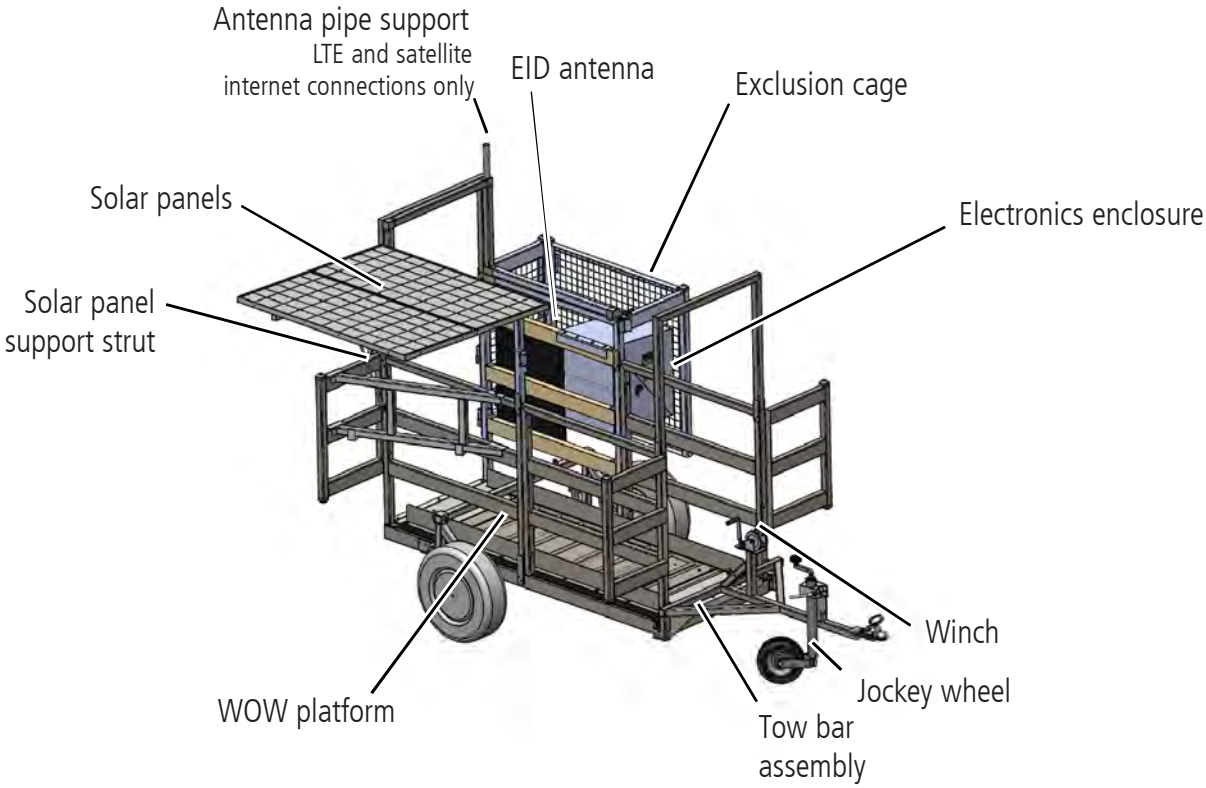
When using a satellite modem -

- Do not switch on without an antenna connected.
- If you need to remove the antenna, ensure that the satellite modem is switched off first.

Cattle training

Before you start using your Flexi Mobile 4000C for weighing, animals will require pre-training so that they are comfortable entering and exiting the fenced off area without human intervention. This will be covered later in the guide.

Parts of the Flexi Mobile 4000C



Solar panels	Two solar panels use energy from the sun to recharge the batteries. When the Flexi Mobile 4000C is being transported, the solar panels fold away. When in use, the solar panels are tilted to face the midday sun.
EID antenna	The EID antenna creates a magnetic field to energize the EID tag and receive the very small signals transmitted by the tag.
Electronics enclosure	An enclosure protects the control box and the two batteries. The control box contains an EID Reader which captures the EID tag, a weigh scale which captures the weight and a gateway which connects to the internet. Two batteries power the Flexi Mobile 4000C.
Exclusion cage	The exclusion cage protects the control box, batteries and EID antenna. It also prevents animals from standing in the active read zone when outside the race.
Drawbar assembly including jockey wheel and winch	The drawbar assembly is held in place with a side-pin when the Flexi Mobile 4000C is being transported. The winch allows the WOW platform to be lowered and raised. When in use, the side pin is removed so that the drawbar assembly can be folded to the side, out of the way.
WOW platform	The Walk Over Weighing (WOW) platform has built-in load bars. It can be raised and lowered using the winch.
Solar panel support strut	The solar panel support strut folds out to support the solar panel.

Internet connection options

The control box must be connected to the internet so that data can be uploaded to Datamars Livestock cloud software. The internet connection can be either:

- Satellite – Connection is via a satellite antenna. This is suitable for use in areas where there is no other way of accessing the internet.
- LTE – Connection to a cellular network is via a 4G antenna. This is suitable if a good cell signal strength exists in all the areas where the system will be used.
- Wi-Fi – This is suitable if a Wi-Fi internet connection exists in all the areas where the system will be used.

Assembling the Flexi Mobile 4000C

The Flexi Mobile 4000C will require some assembly before it can be used.

The assembly steps required will vary, depending on your market. For the purposes of this document, **all** assembly steps are detailed, however, you can skip a step if it doesn't apply.

Flexi Mobile 4000C may have a satellite, LTE (4G) or Wi-Fi internet connection. The internet connection type will affect:

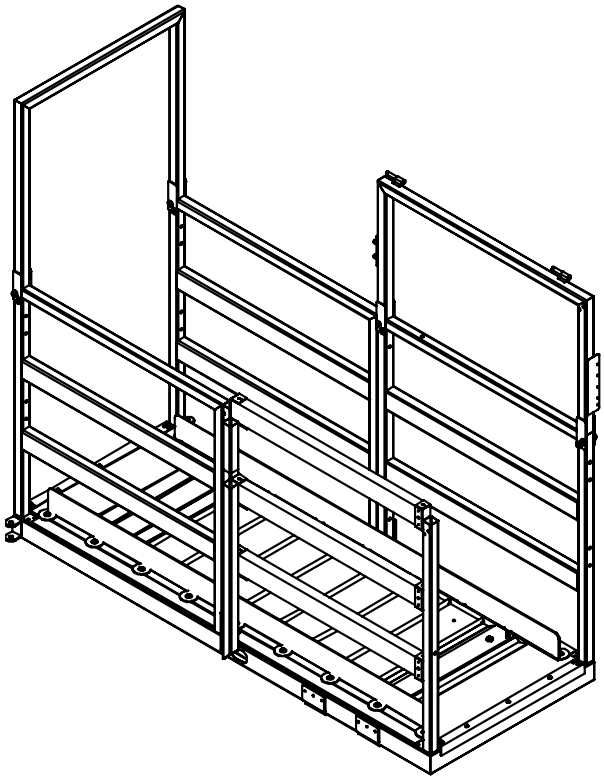
- Which internet antenna type is supplied
- The instructions for installing the internet antenna
- The instructions for connecting to the internet

The assembly instructions in this section only need to be followed **once** during the initial setup of the Flexi Mobile 4000C. The rest of the time, you can refer to *Setting up the Flexi Mobile 4000C in a new location* on page 64.

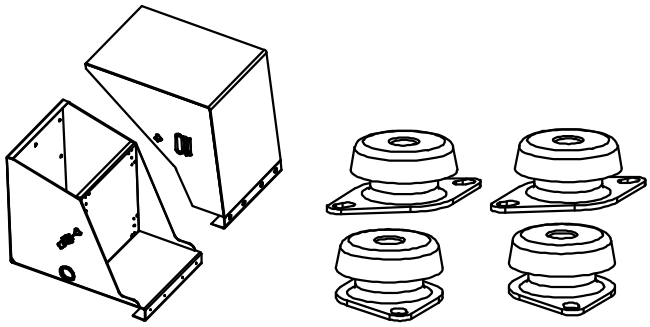
Unpacking the box

The Flexi Mobile 4000C is likely to arrive on a wooden pallet without the wheels or drawbar fitted. When removing the packaging, be sure to **leave the main housing on the pallet.** This will allow you to fit the wheels and drawbar without lifting the housing off the ground.

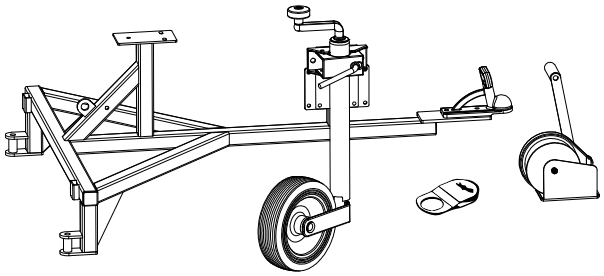
If the Flexi Mobile 4000C is supplied partly assembled, some parts may already be fitted rather than supplied as separate items.



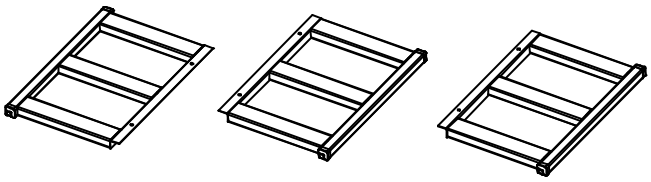
Main housing including solar panel frame.



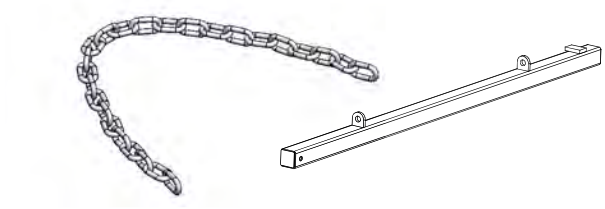
Electronics enclosure, four anti-vibration mounts and waterproof washers



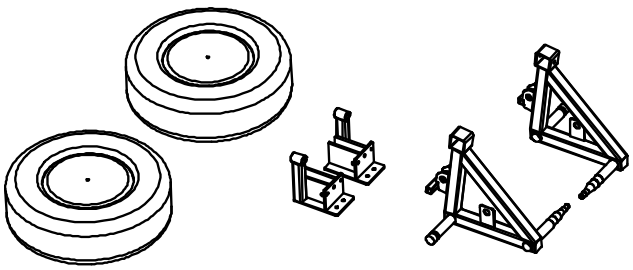
Drawbar assembly, pulley, winch and winch cable



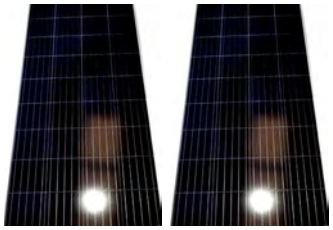
Wings

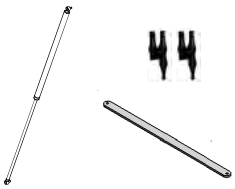


Axle bar and chain

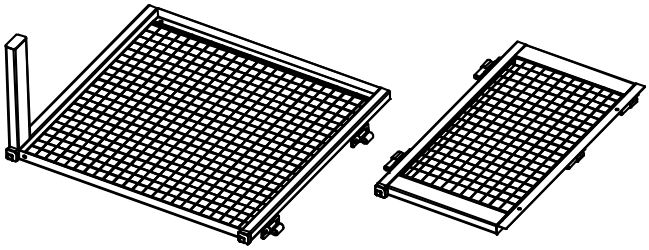


Wheels, axle platform mounts and axle wheel mounts





2 x solar panels, gas stay, solar panel stay, 2 x quick connectors and 5 m solar cable



Exclusion cage

EID antenna and 5.5 m EID antenna cable

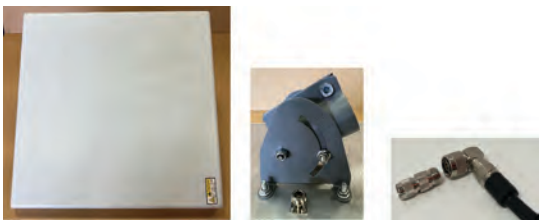
Control box

Fastenings kit containing bolts, screws, washers and nuts.
Pins (2 large, 2 medium and 4 small).

Battery power lead, jumper leads and battery clamp

One of these options, depending on the internet connection type being used:

LTE (4G) antenna and U-bolt kit
(LTE internet connections only)



Satellite antenna, bracket and adaptor
(Satellite internet connections only)

Wi-Fi antenna
(Wi-Fi internet connections only)

Tools you will need for assembly

To assemble the Flexi Mobile 4000C you will need these tools:

- A ladder
- An impact driver
- Spanners (8-16 mm in 2 mm increments, 17, 18 and 19 mm).
- Flat bladed screwdrivers, assorted sizes
- Philips screwdrivers, assorted sizes
- Battery powered electric drill and assorted drill bits
- Draw wire for running the cables.
- Loctite 263 or similar high strength threadlocker
- ½" drive torque wrench with 10-19 mm sockets in 1 mm increments with 12"extension bar

Fastenings

A kit of fastenings is supplied. This contains all the screws, washers, nuts, bolts etc required for assembly. The fastenings are separated into packets and marked with a reference (F1, F2, F3 etc). In the assembly instructions below, a description of each item is given, together with the packet reference e.g. Nyloc nut (F3). Torque fastenings are also supplied.

Always fasten bolts from the inside of the race pointing outwards, in the same direction as the flow of animals to prevent injury to animals as they pass through the Flexi Mobile 4000C.

Torque fastening recommendations must be followed for safety reasons and to prevent damage to components. If using an impact driver on fasteners, double check fastening torques with a torque wrench.

Battery specifications

To power the Flexi Mobile 4000C, you need to supply your own batteries.

We recommend using two 12 V 95 Ah deep-cycle lead-acid maintenance-free batteries with M8 terminals (e.g. Century N70T). The two batteries will be connected together in parallel using the supplied jumper lead, see *Placing the batteries in the enclosure and connecting them with a jumper lead* on page 47.

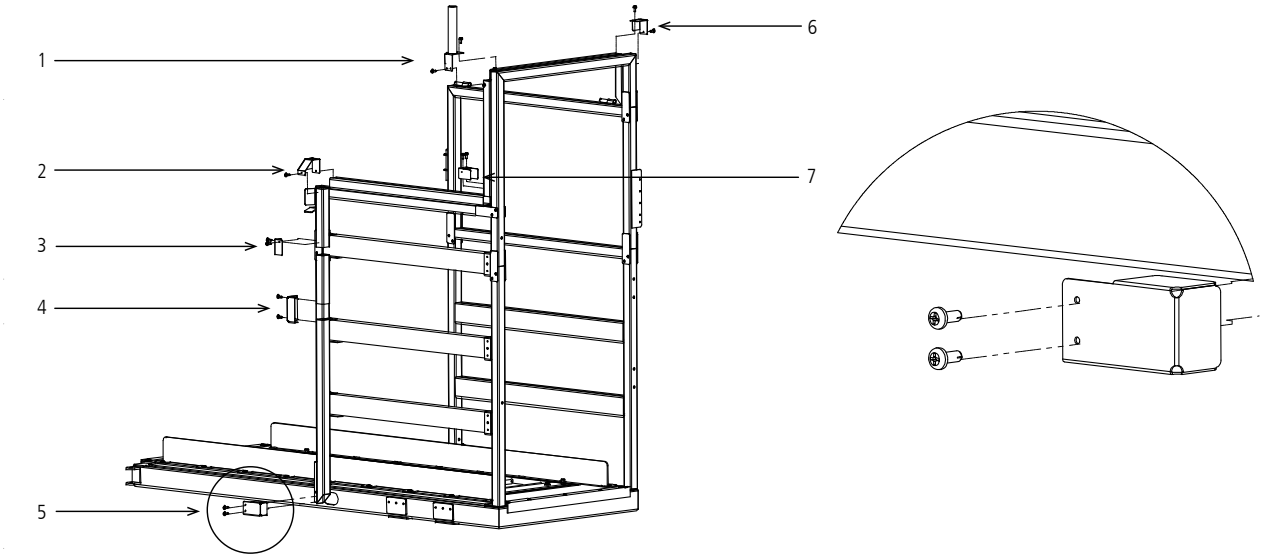
Batteries should be new and fully charged (>12.6 V). If the batteries are not fully charged, the Flexi Mobile 4000C may not operate.

Although the Flexi Mobile 4000C will technically operate using a single battery, we recommend using two batteries for best performance.

Removing the cable routing covers

We recommend removing the cable mounting covers while you are assembling the Flexi Mobile 4000C. Most of these will be replaced once all the cables have been run and assembly is complete.

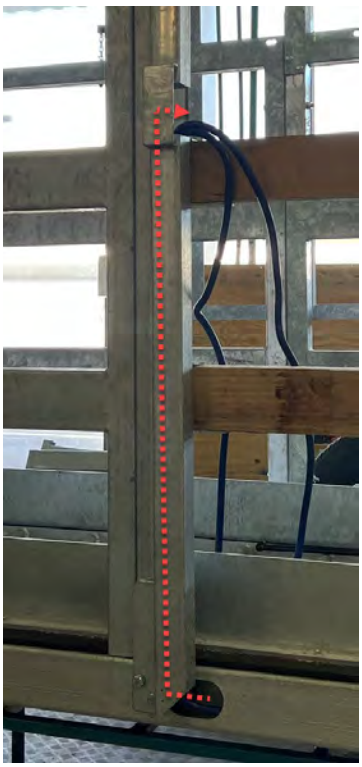
Remove the seven cable mounting covers. Set these aside until assembly is complete.



Running the load bar cables

It is easiest to run the load bar cables before attaching the wheels.

Link the two load bar cables together using the load bar caps then attach to a draw wire. Pull the load bar cables through the channel in the main housing.



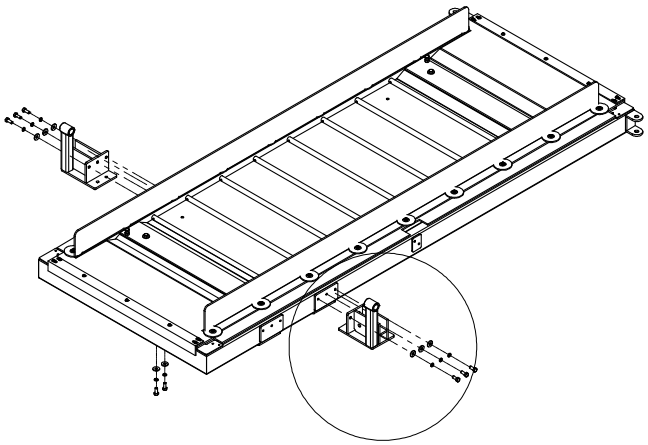
Attaching the wheels

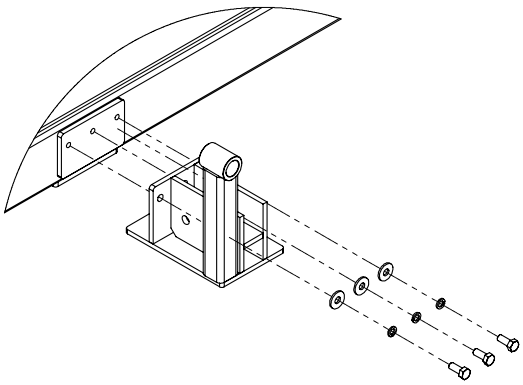
Apply Loctite 263 or other high strength threadlocker to all fastenings in this step.

Descriptions	Quantity	Fastenings kit	Torque fastening Nm (lb-ft)
M10x25 12.9 zinc plated hex bolts	10	F4	100 Nm (74 lb-ft)
M10 zinc plated spring washers	10		
M10 zinc plated washers	10		

To attach the axle platform mounts:

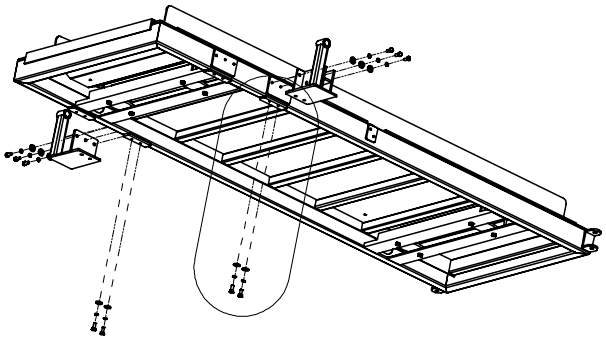
1 Affix the two axle platform mounts to the sides of the platform using three M10x25 bolts, regular washers and spring washers. Use an impact wrench OR an impact driver (if using an impact driver, you will need to check the torque fastening at the end of the procedure).

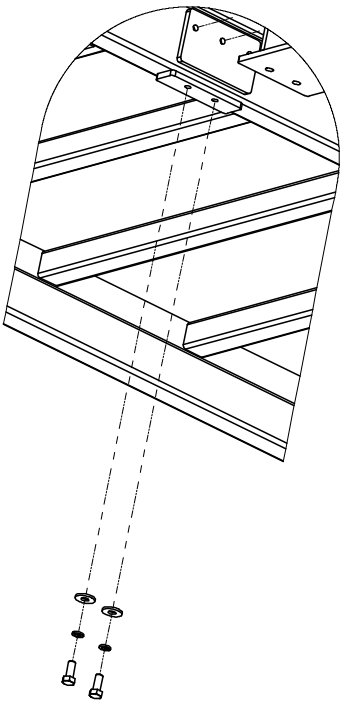




There are two possible mounting points. Use the mounting points closest to the middle of the platform, not the mounting points at the end of the platform.

2 Secure the axle mounts from underneath using two M10x25 bolts, regular washers and spring washers.



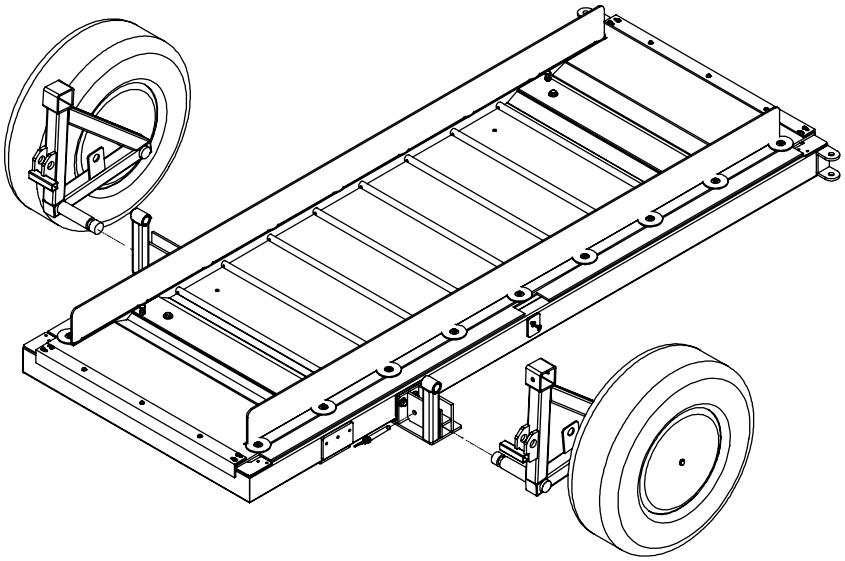


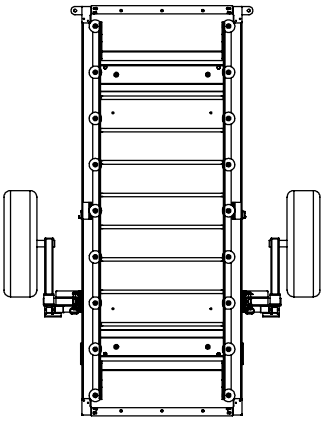
3 If you have used an impact driver to fasten the bolts, use a torque wrench to check the torque on all ten bolts. The torque measurement must be 100 nM (74 lb-ft).

To attach the axle wheel mounts to the axle platform mounts:

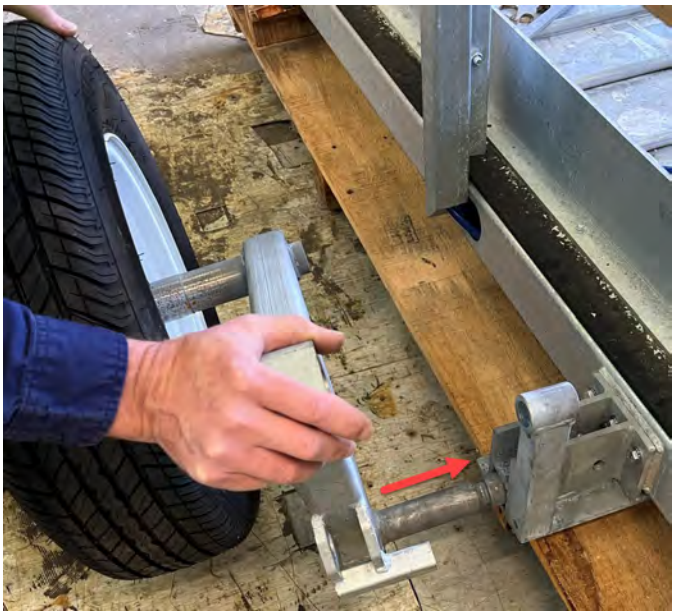
1 Push a wheel onto an axle wheel mount. It will click into place. Repeat with the other wheel.

2 Identify which wheel should go on the left and which should go on the right side.

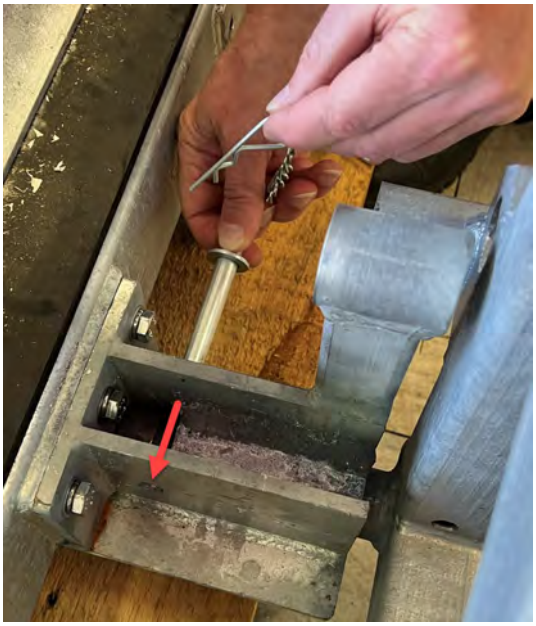




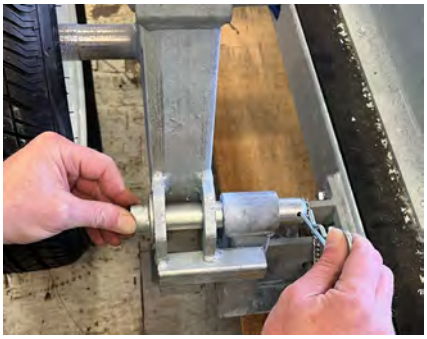
3 Push the male part of the axle wheel mount into the female part of the axle platform mount as shown. Repeat on the other side.



4 Insert a small pin into the axle platform mount and secure with the lynch pin. Repeat on the other side.



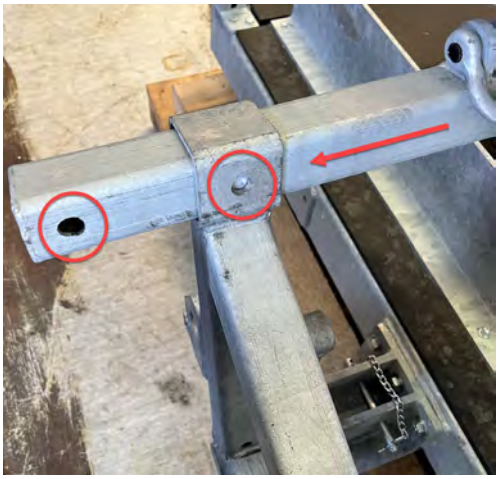
5 Insert a large pin into the axle wheel mount and secure with the lynch pin. Repeat on the other side.



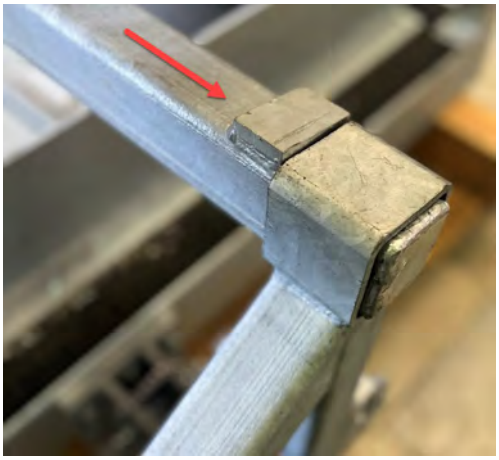
Insert the axle bar

The axle bar has holes at one end for a pin and a square welded stopper at the other.

1 Insert the end of the axle bar with holes into the axle wheel mount with matching holes. Push it through the axle wheel mount and beyond.

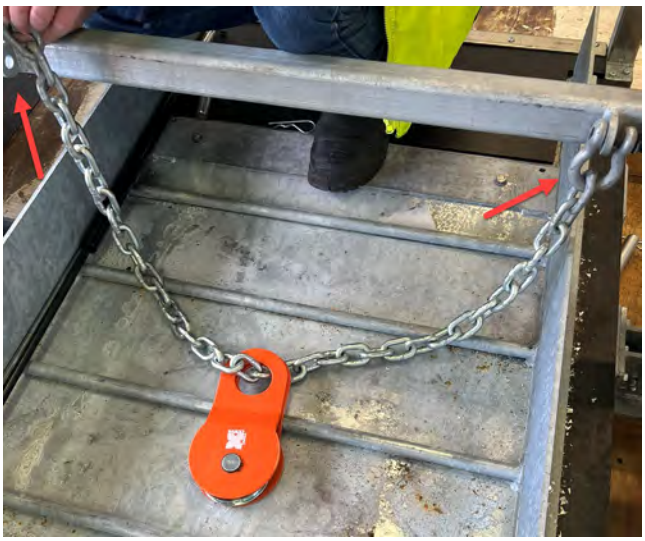


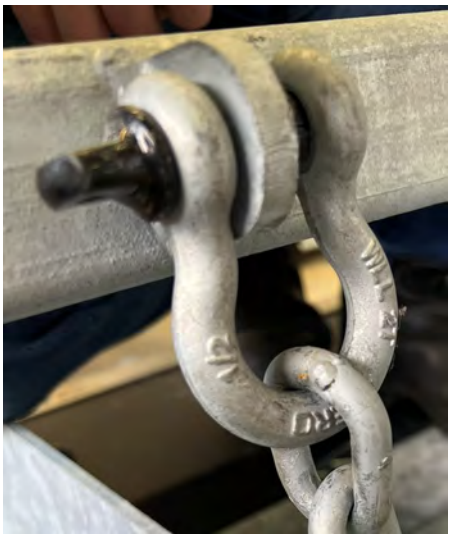
2 Thread the other end of the axle bar with a stopper into the axle wheel mount.



3 Insert a small pin and lock it with a lynch pin to secure the axle bar.

4 Thread the pulley onto the chain and attach the chain to the axle bar using two D shackles.



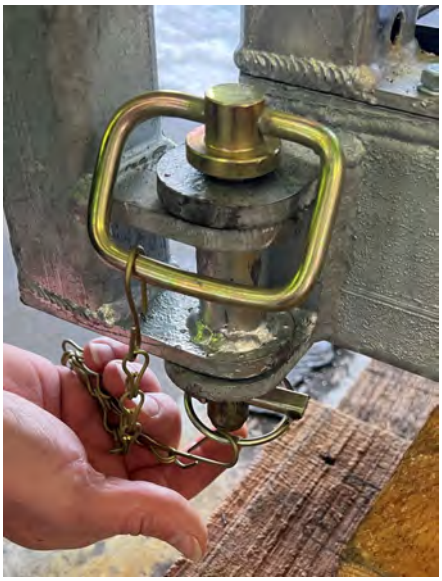


Attaching the drawbar assembly

1 Position the drawbar beside the main housing, as shown.

2 Use the jockey wheel to raise the drawbar to a suitable height. Move the drawbar into position, ready to attach to the main housing.

3 On one side, insert a medium sized pin and lock with lynch pin. Repeat on the other side to secure the drawbar.

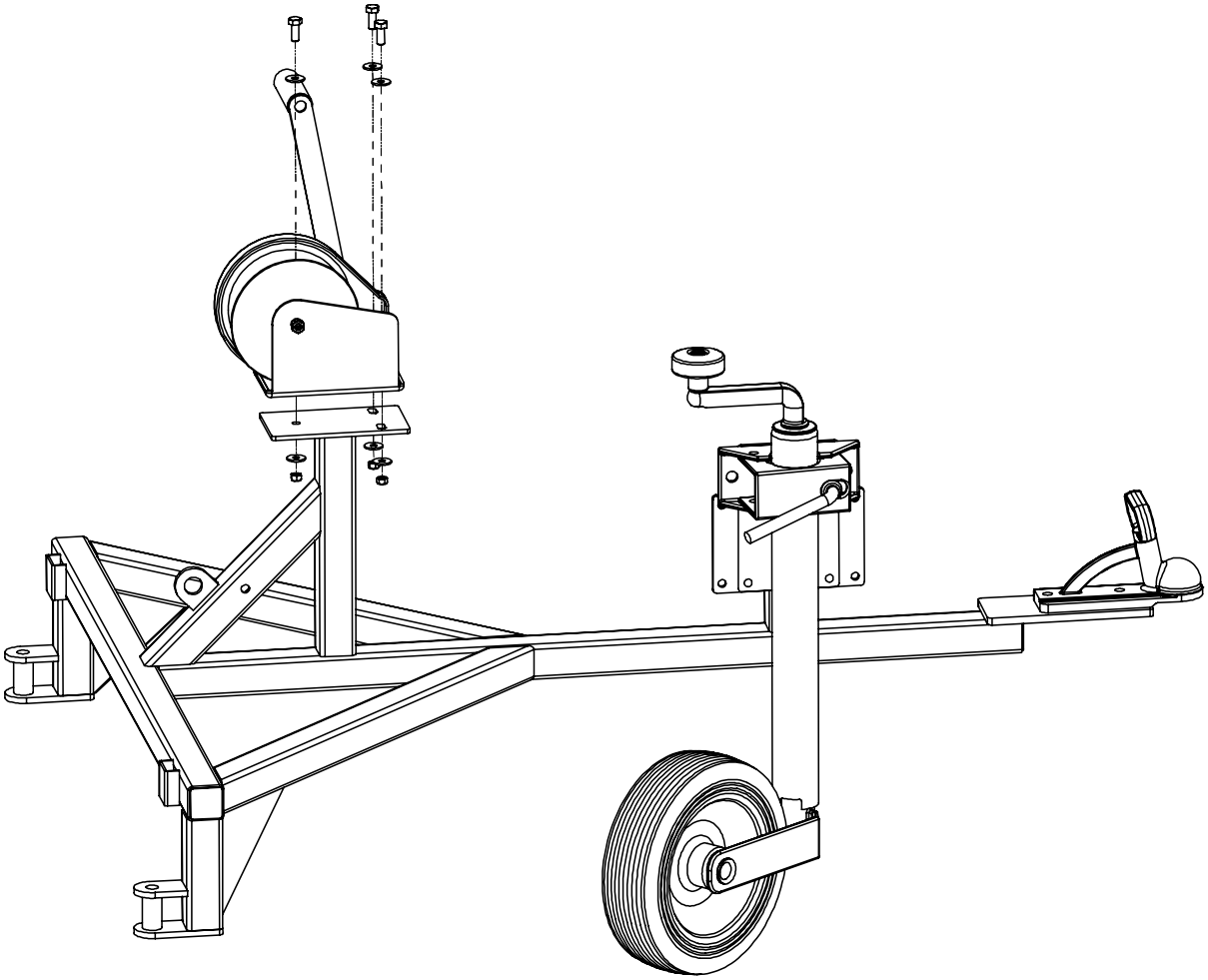


Attaching the winch, winch cable and pulley

Descriptions	Quantity	Fastenings kit	Torque fastening Nm (lb-ft)
M8x25 8.8 zinc plated hex bolts	3	F9	30 Nm (22 lb-ft)
M8 zinc plated washers	6		
M8 nyloc zinc plated nuts	3		

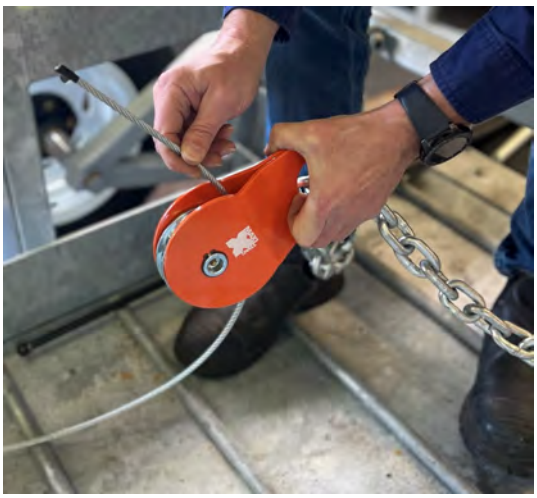
1 Remove the two pins securing the axle wheel mounts. This will allow the wheels to pivot when the winch is in use. The pins securing the axle bar and the two axle platform mounts should remain in place:

2 Attach the winch to the drawbar using three M25x25 hex bolts, six washers and 3 nyloc nuts.

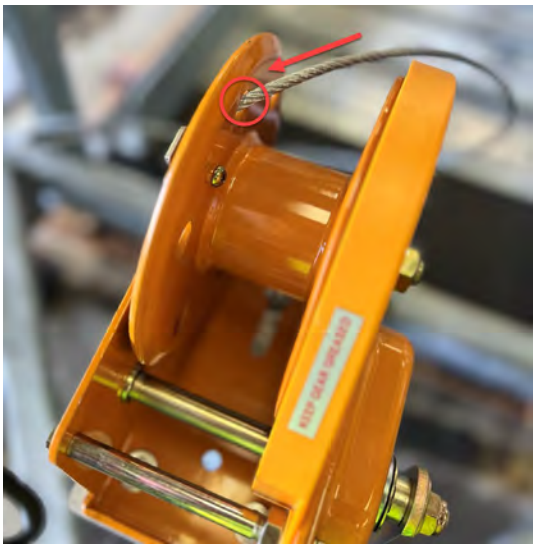


3 Hook the end of the winch cable to the drawbar.

4 Thread the winch cable through the pulley.



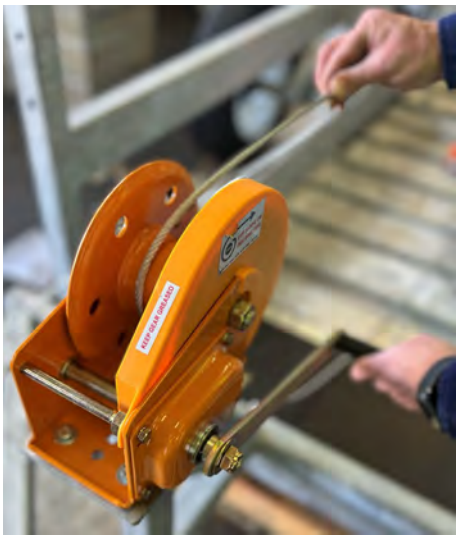
5 Thread the winch cable through a hole in the side of the spool.



6 Clamp the end of the winch cable to the side of the spool.

7 Undo the nut and washer on the other side of the spool. Attach the winch handle.

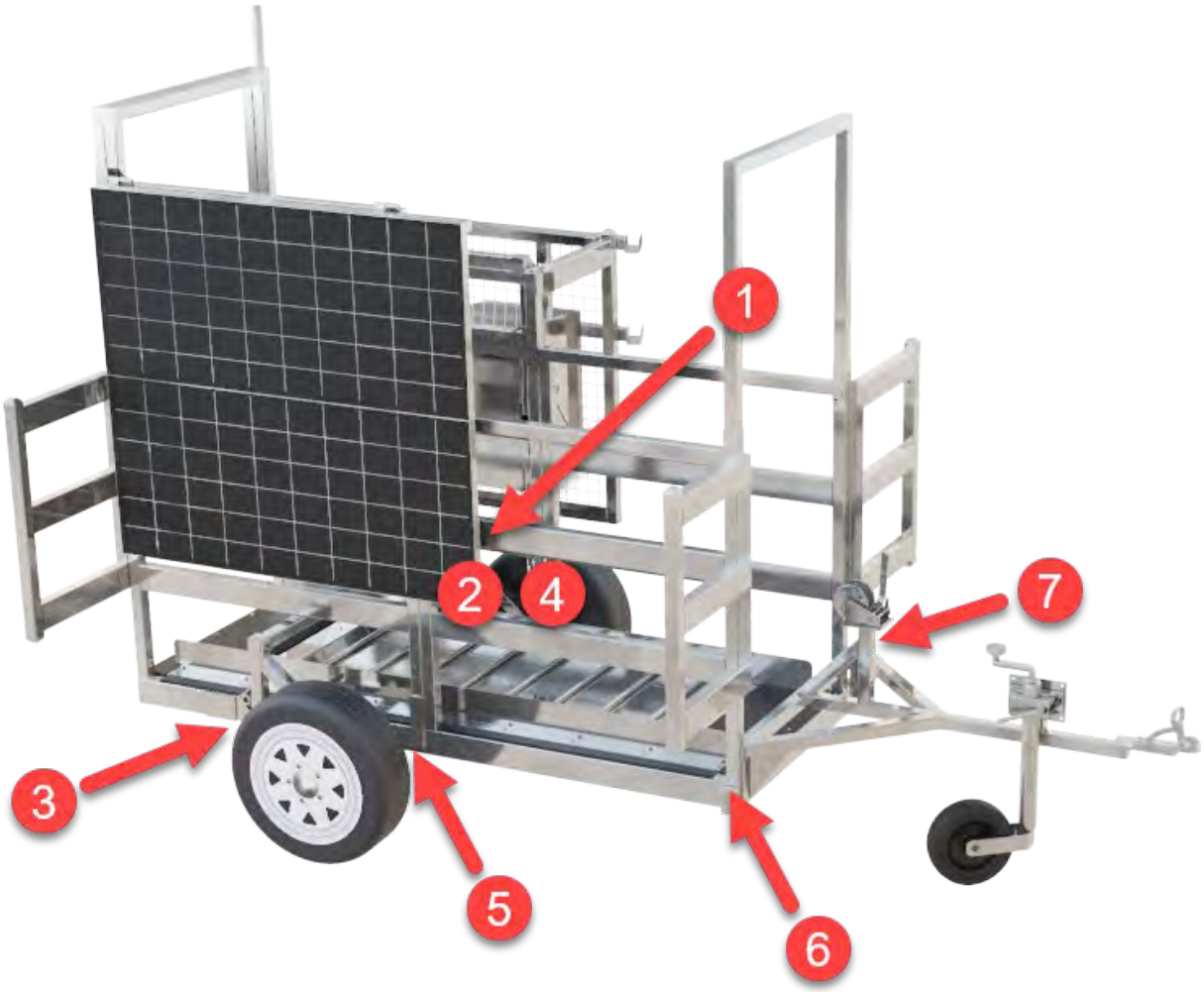
8 Slowly wind up the winch cable, making sure the cable is neatly coiled. Winch until the platform hits the stops on the axle bar.

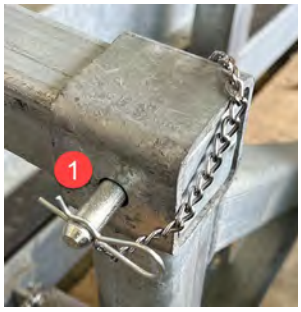


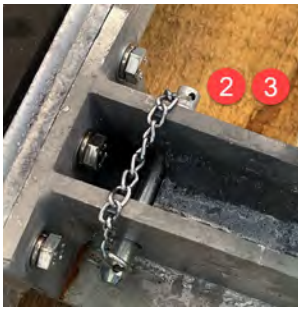
9 Replace the two pins securing the axle wheel mounts.

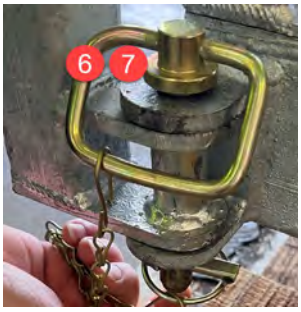
Important safety information

Once the platform is raised up off the ground, never allow any part of your body to go underneath the platform unless all 7 locking pins are in place.







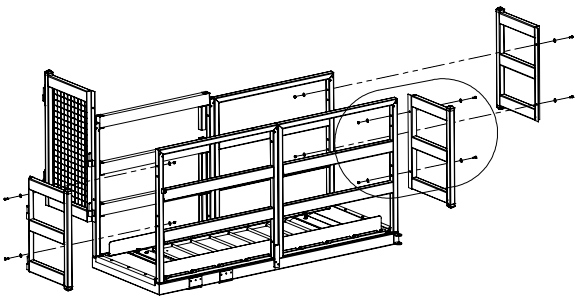


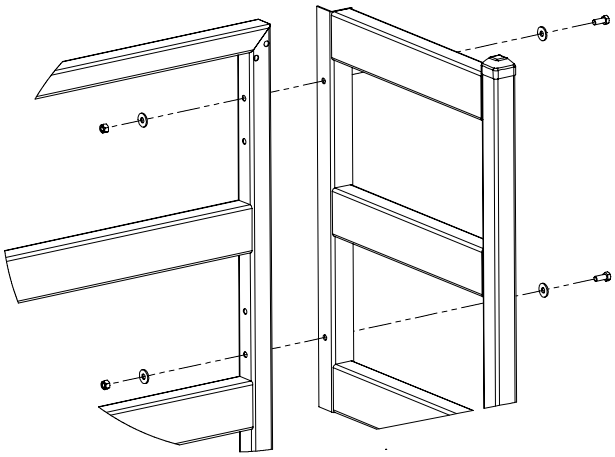
Attaching the wings

There are three wings to attach to the main housing. One wing has hinges and this goes at the back, furthest away from the drawbar.

Descriptions	Quantity	Fastenings kit	Torque fastening Nm (lb-ft)
M10x75 8.8 zinc plated hex bolts	12	F3	30 Nm (22 lb-ft)
M10 zinc plated spring washers	6		
M10 zinc plated nyloc nuts	6		

1 Position the two wings without hinges at the drawbar end of the main housing, as shown. Secure each wing using two M10x75 hex bolts, four washers and a nyloc nut. Use the top and bottom holes in the main housing, not the two middle holes.





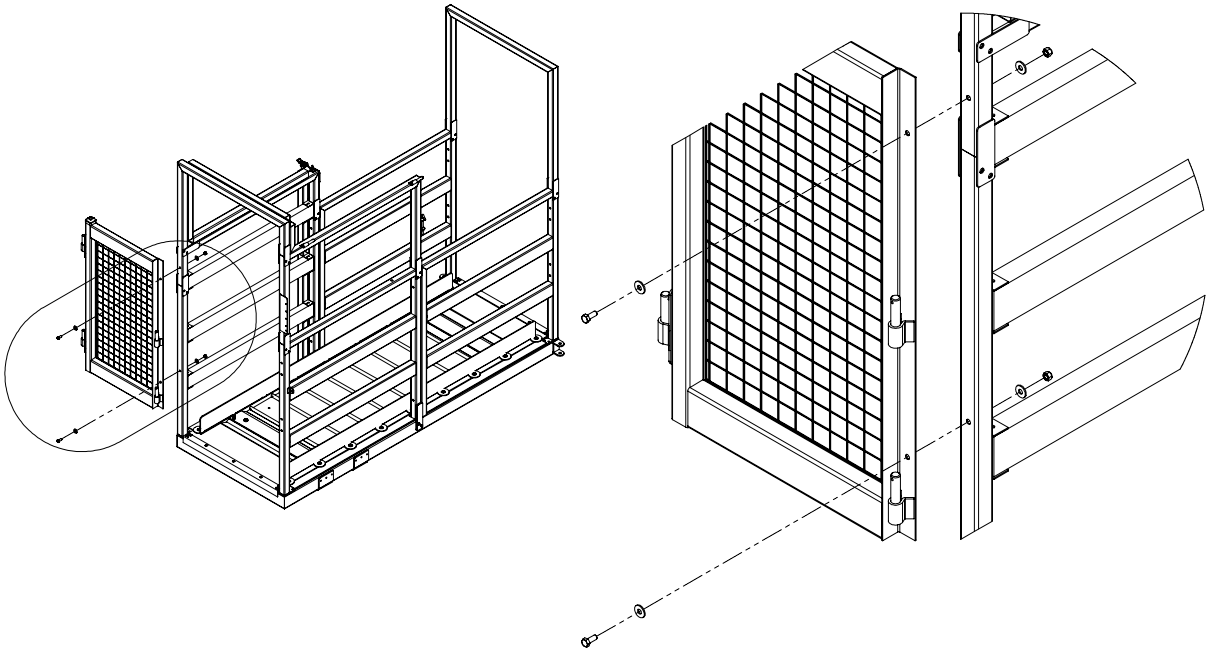
2 Position the wing with hinges at the far end of the main housing, furthest from the drawbar. Attach the wing using two M10x75 hex bolts, four washers and a nyloc nut. Use the top and bottom holes in the main housing, not the two middle holes.

Attaching the exclusion cage

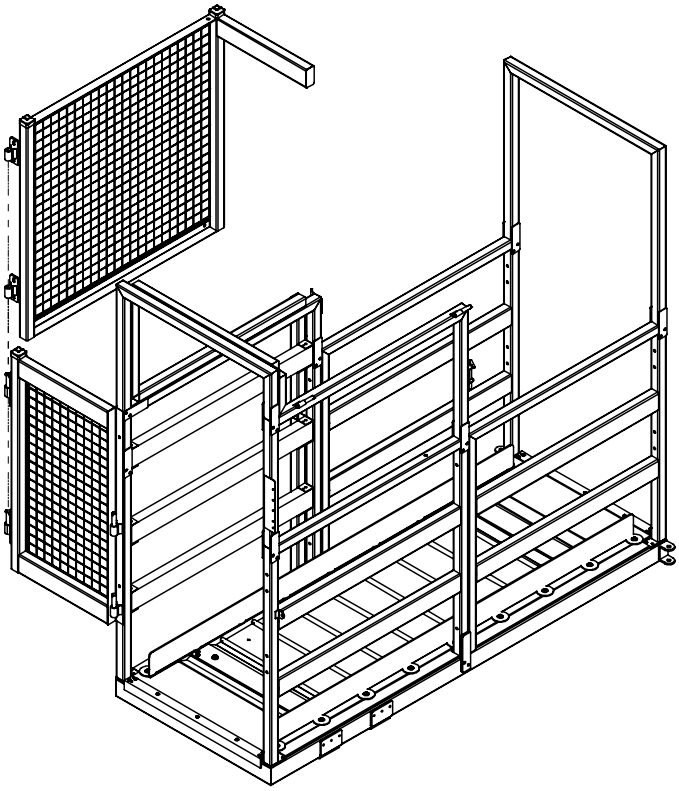
The exclusion cage is made up of two main parts – a mesh side wall and an L-shaped mesh hinged door with fastening catch at the top.

Descriptions	Quantity	Fastenings kit	Torque fastening Nm (lb-ft)
M10x75 8.8 zinc plated hex bolts	2	F3	30 Nm (22 lb-ft)
M10 zinc plated washers	4		
M10 zinc plated nyloc nuts	2		
M4x25 A2/70 SS304 hex socket cap screw	2	F6	N/A
M4 A2/70 SS304 nyloc nut	2		

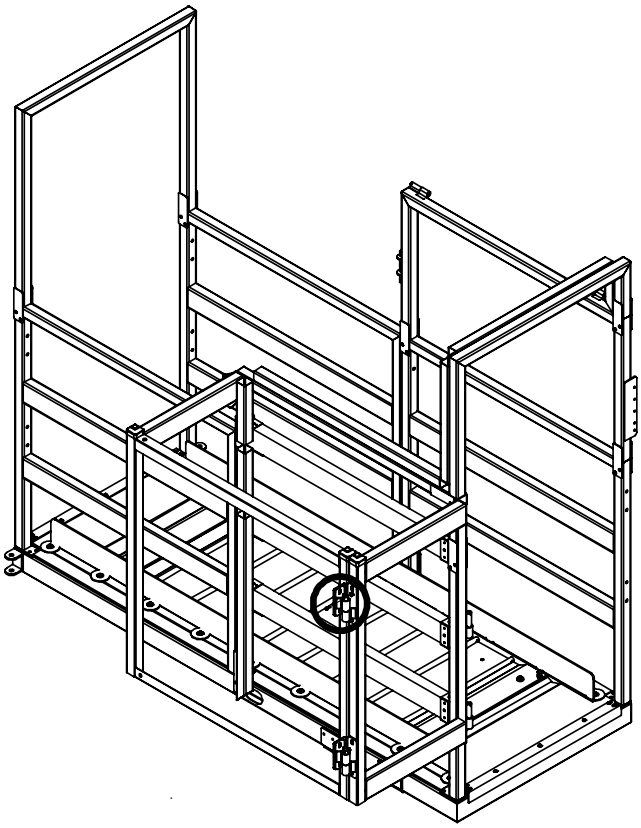
1 Orient the side wall so that the gudgeons are the correct way up, as shown in the diagram. Affix the mesh side wall to the main frame using two M10x75 hex bolts, four washers and 2 nyloc nuts.

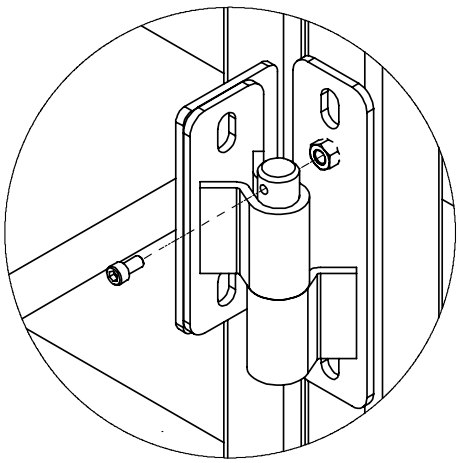


2 Hang the door on the gudgeons.



3 Secure the top hinge using a M4x25 hex cap screw and nyloc nut.
Repeat with bottom hinge.





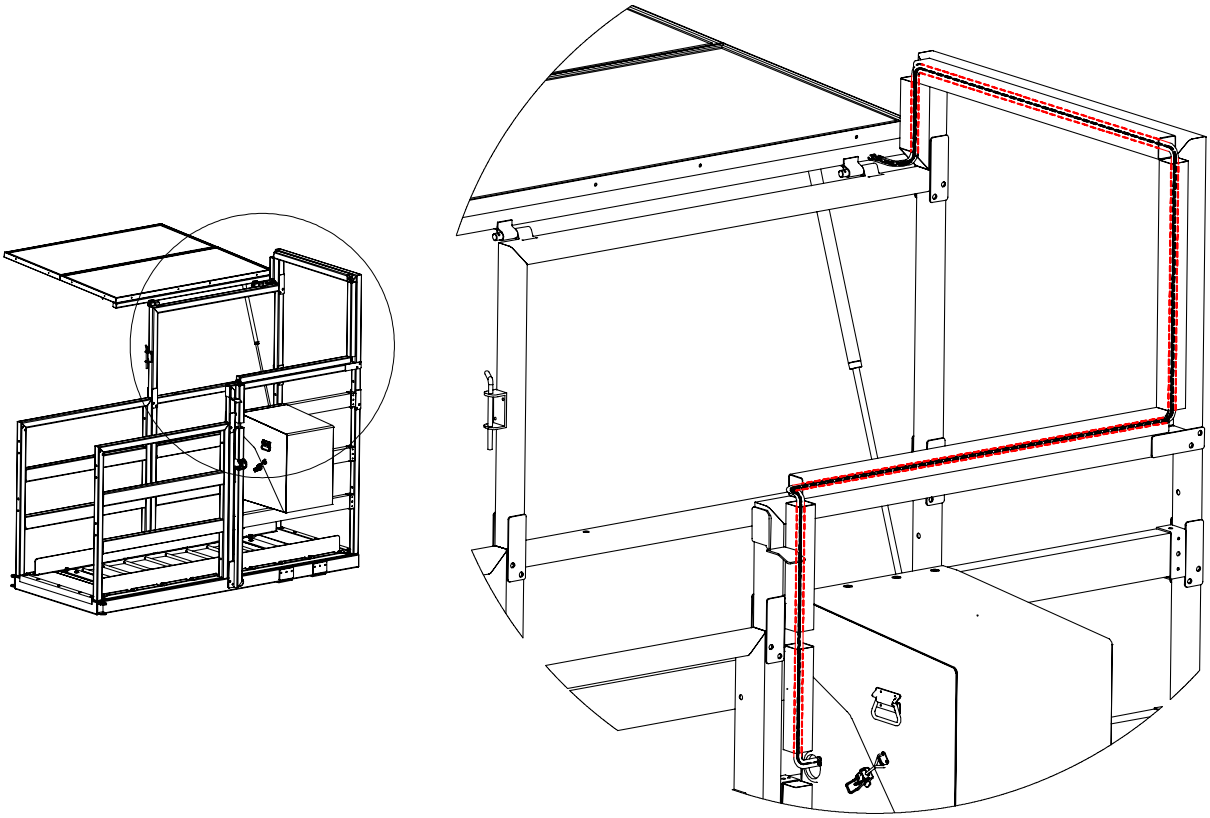
We recommend leaving the door off while you are still assembling the Flexi Mobile 4000C for easy access. Hang the door and secure it once you have finished all the assembly steps.

Mounting and connecting the solar panels

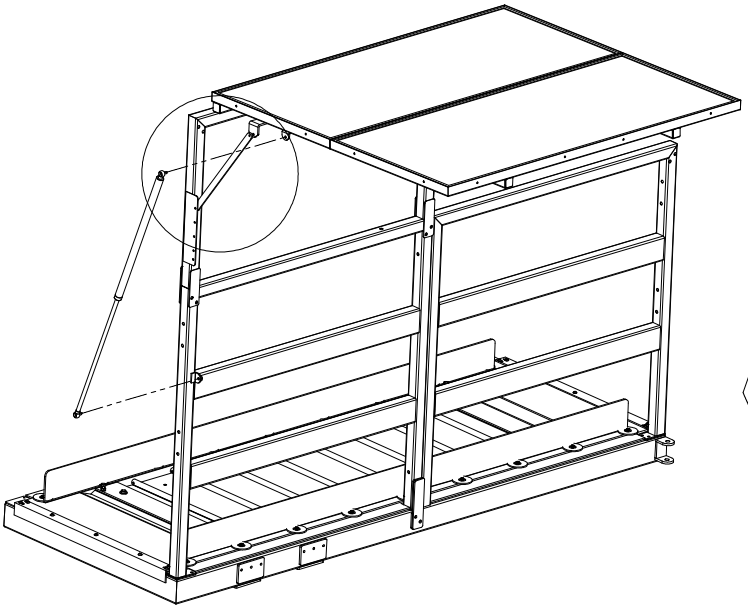
Descriptions	Quantity	Fastenings kit	Torque fastening Nm (lb-ft)
M6x60 8.8 zinc plated bolts	4	F5	12
M6 zinc plated nyloc nuts	24		
M6x20 8.8 zinc plated bolts	12		
M6 zinc plated washers	32		
M6x30 8.8 zinc plated bolts	2	F7	N/A
M6 zinc plated washers	4		
M6 zinc plated nyloc nuts	2		

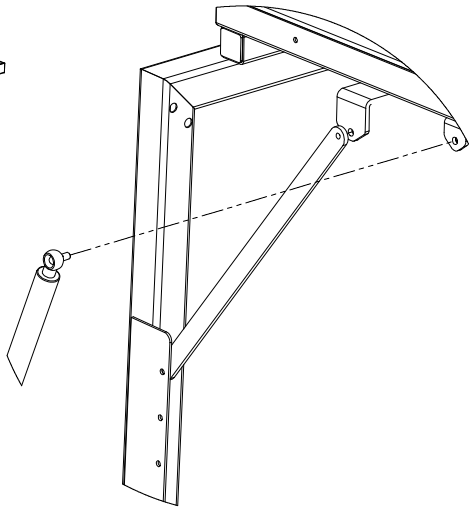
1 If necessary, remove the cable routing covers. See page 17.

2 Run the solar panel cables through the main housing, starting from the solar panel frame ending at the control box. Use a draw wire to pull them through the channel.



3 Unlatch the solar panel frame. Attach the gas stay using the fastenings it is supplied with.
The gas stay will allow the solar panel frame to rise.





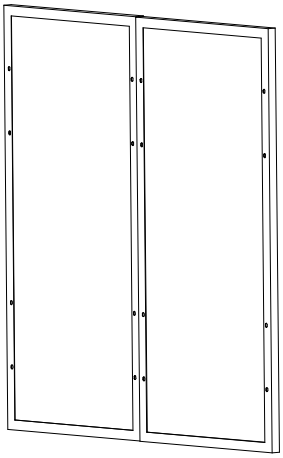
4 Remove the solar panels from their packaging and gently lift them into the solar frame, ensuring that the black boxes are nearest the gas stay.

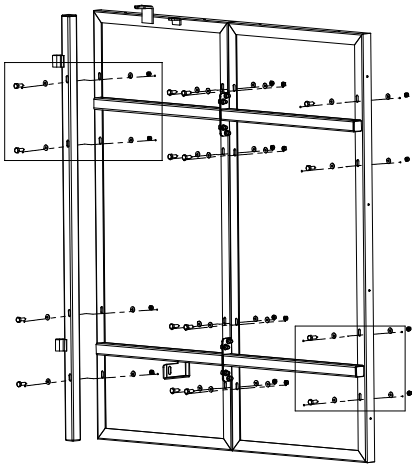
5 Affix the solar panels to the frame.

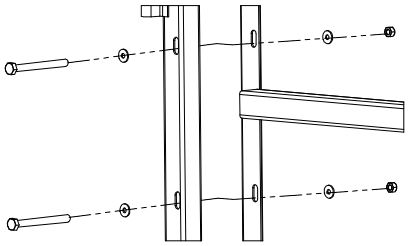
For the edge nearest the hinges, use four **long** M60x60 hex bolts, eight washers and four nyloc nuts.

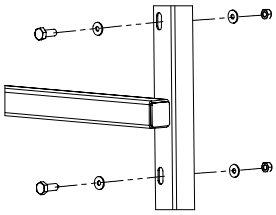
For the central pillar and the edge furthest away from the hinges, use twelve **short** M6x20 hex bolts, twenty four washers and twelve nyloc nuts.

6 Once all the bolts are in place, tighten all bolts to torque 12 nM (9 lb-ft). Do not overtighten.









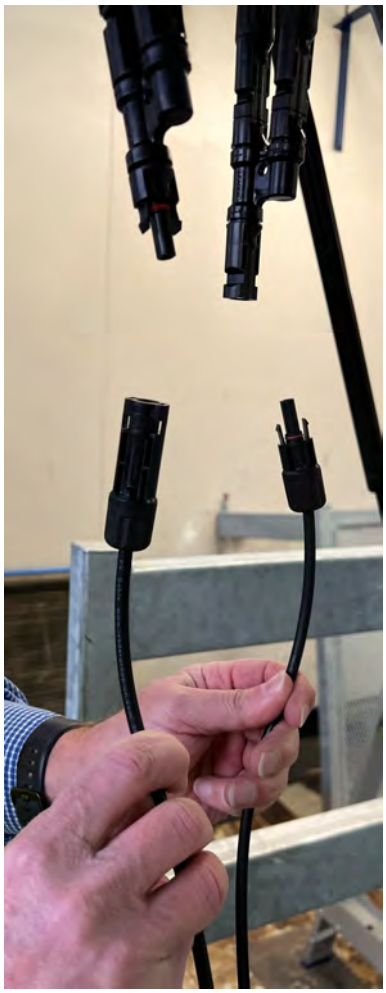
7 Connect the two pairs of solar cables to the black boxes. There is a positive and negative cable in each set and they can only be connected one way.

8 Locate the two 2-1 connectors.
- One is a positive connector (+) with a red stripe.
- One is a negative connector (-) which is completely black.

Use the positive 2-1 connector to connect the two positive cables.

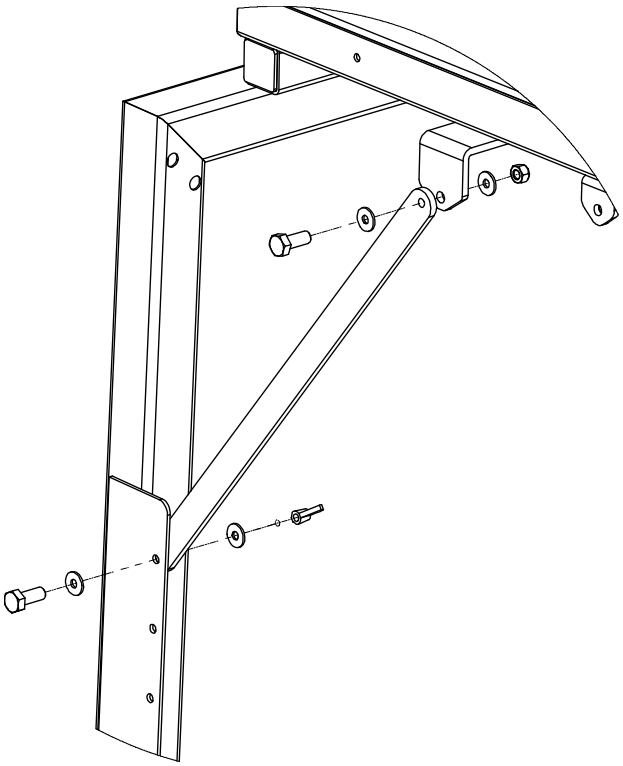
Use the negative 2-1 connector to connect the two negative cables.

9 Connect both 2-1 connectors to the main solar panel cabling. These can only be connected one way.

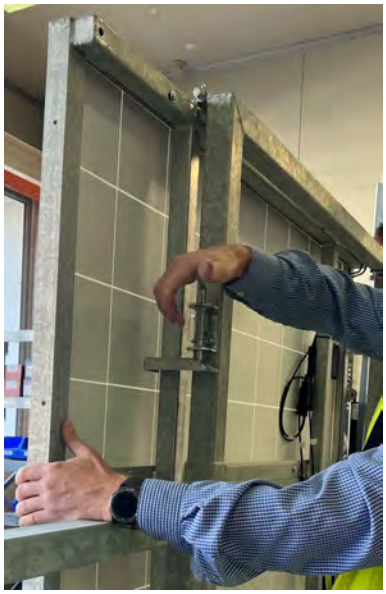


10 Use cable ties to tidy away all the solar panel cables.

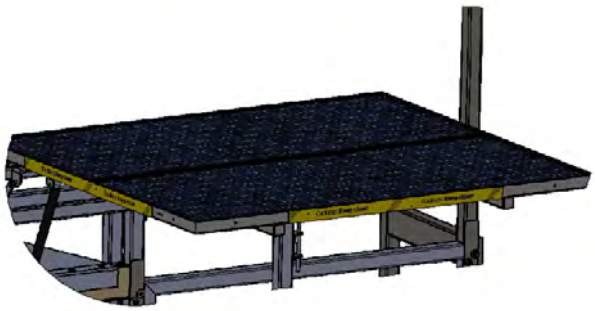
11 Secure the solar panel stay using two M6x30 hex bolts, four washers and two nyloc nuts.



12 Fold down the solar panel frame and secure it with the latch.



13 Affix the labels to the three outer edges of the solar panel frames.



Attaching an antenna for connection to the internet

Attaching a satellite antenna

1 Attach the antenna post using two 10Gx10 pan pozi screws (F11). This was removed during the step *Removing the cable routing covers* on page 17.

2 Using a draw wire, run the antenna cable down through the antenna post, through the channels in the housing to the control box.

3 Affix the angle bracket to the back of the satellite antenna using the fasteners supplied with the antenna.

4 Place the antenna on the antenna post and secure by tightening the two bolts on the angle bracket. Connect the antenna cable.

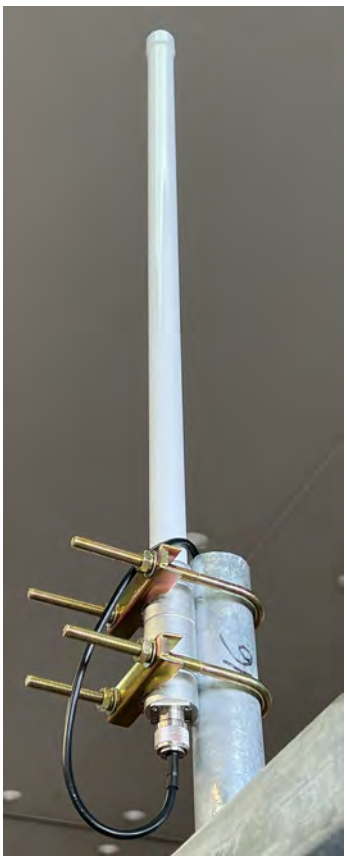
5 At the end of the antenna cable nearest the control box, attach the elbow connector and converter socket required for connection to the control box.

Attaching an LTE antenna

1 Attach the antenna post using two 10Gx10 pan pozi screws (F11). This was removed during the step *Removing the cable routing covers* on page 17.

2 Using a draw wire, run the antenna cable down through the antenna post, through the channels in the housing to the control box.

3 Affix the LTE antenna to the antenna post using the two D-clamps supplied with the antenna. Connect the antenna cable:



Attaching a Wi-Fi antenna

Place the Wi-Fi antenna on top of the housing. Run the antenna cable through the housing to the control box.

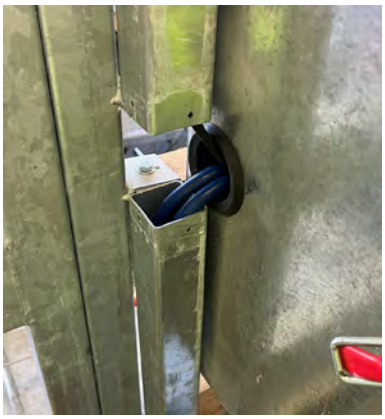
Attaching the electronics enclosure

The electronics enclosure houses the control box and batteries. It is waterproof with a removable lid. There is a gland on either side which cables are fed through.

Descriptions	Quantity	Fastenings kit	Torque fastening Nm (lb-ft)
T17 12gx50 mm timber tek screws	6	F8	N/A
M6 zinc plated washers	2		
M8x25 zinc plated hex bolts	8	F9	30 (22 lb-ft)
M8 zinc plated washers	16		
M8 zinc plated nyloc nuts	8		

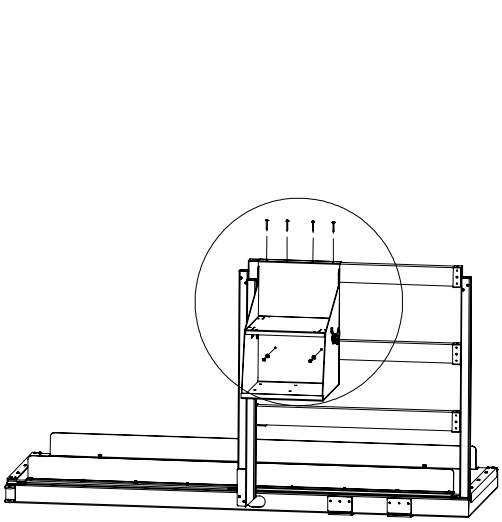
To mount the electronics enclosure:

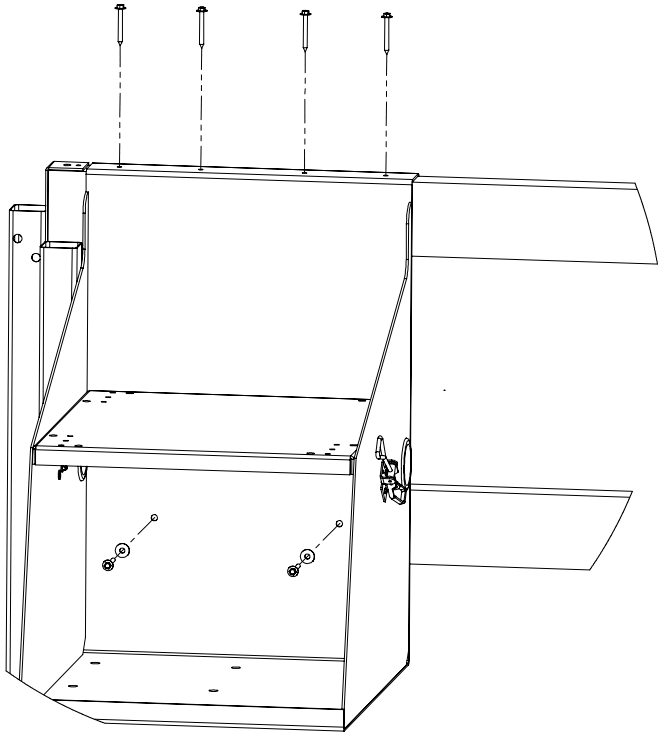
1 Remove the cable routing covers, see page 17.
2 Hang the electronics enclosure on the top wooden rail.
3 Thread the load bar, solar cables and internet cables through the gland:



4 Push the enclosure as far left as possible. There must be enough space on the other side for the EID antenna.

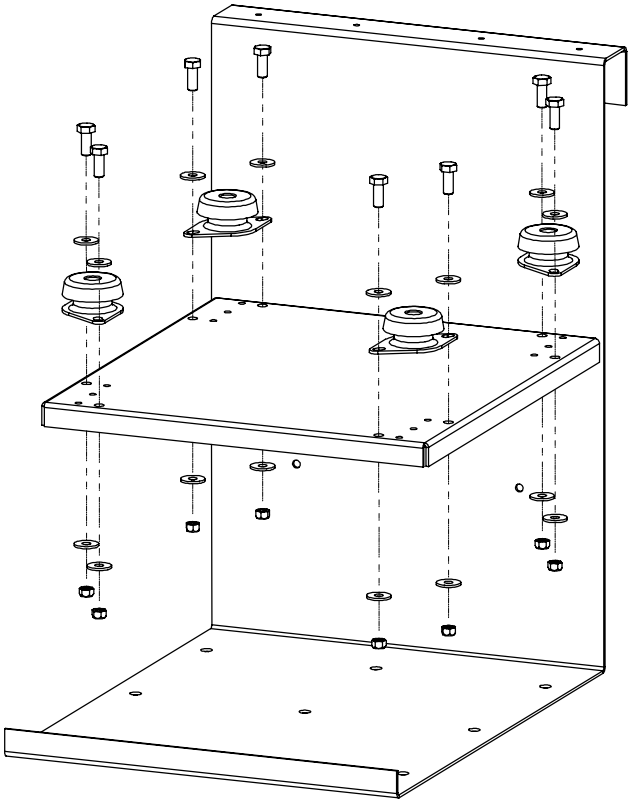
5 Mount the enclosure to the top rail using four 50 mm tek screws. There are two mounting points on the inside to affix the enclosure to the second rail. Use two 50 mm tek screws and two M6 washers.

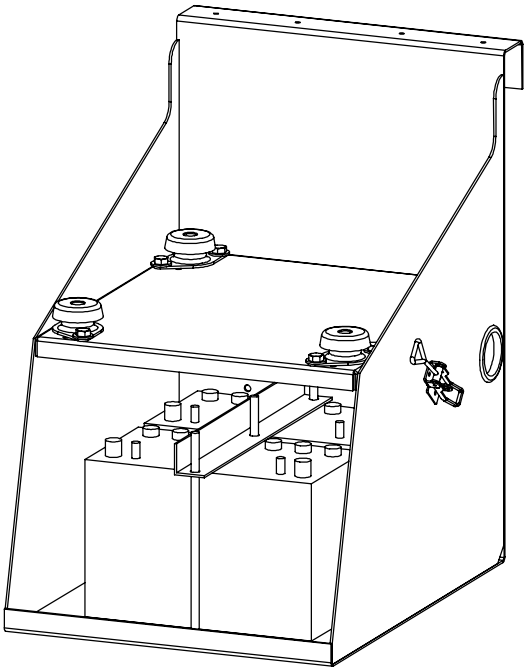




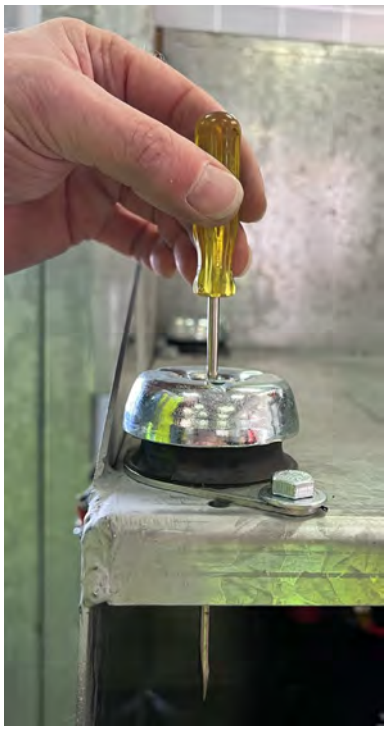
To attach the anti-vibration mounts:

1 Attach the four anti-vibration mounts using four M8x25 hex bolts, eight washers and eight nyloc nuts.





Use a screwdriver to make sure that the holes in the mounts align with the pre-drilled holes in the shelf. This will be important later, when mounting the control box on the anti-vibration mounts.

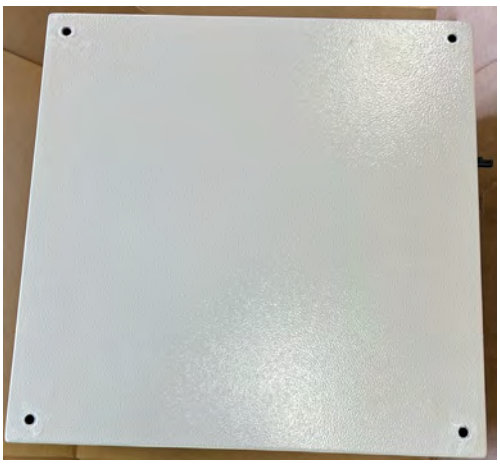


Placing the control box in the enclosure

The control box goes on the top shelf of the electronics enclosure, affixed to the four anti-vibration mounts.

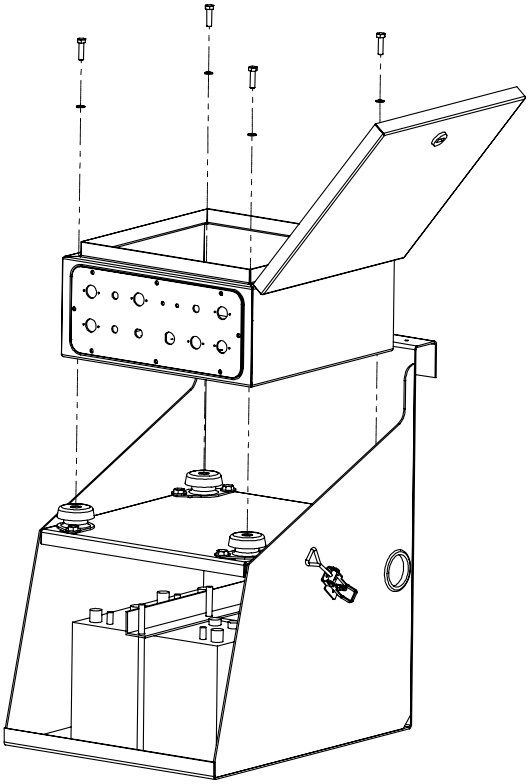
Descriptions	Quantity	Fastenings kit	Torque fastening Nm (lb-ft)
Waterproof washers	4	F9	30 Nm (22 lb-ft)
M8x30 8.8 zinc plated hex bolts	4		

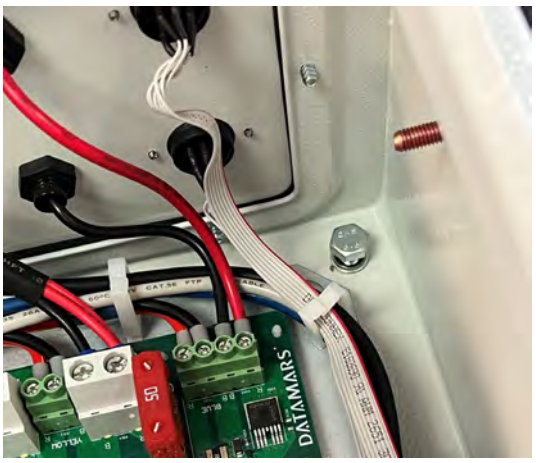
1 Remove the four rubber bungs from the corners of the control box.



2 Place the control box on the top shelf of the electronics enclosure with the connectors facing outwards.

3 Open the control box and secure it using four M8x30 hex bolts and four waterproof washers. These screw into the four anti-vibration mounts:

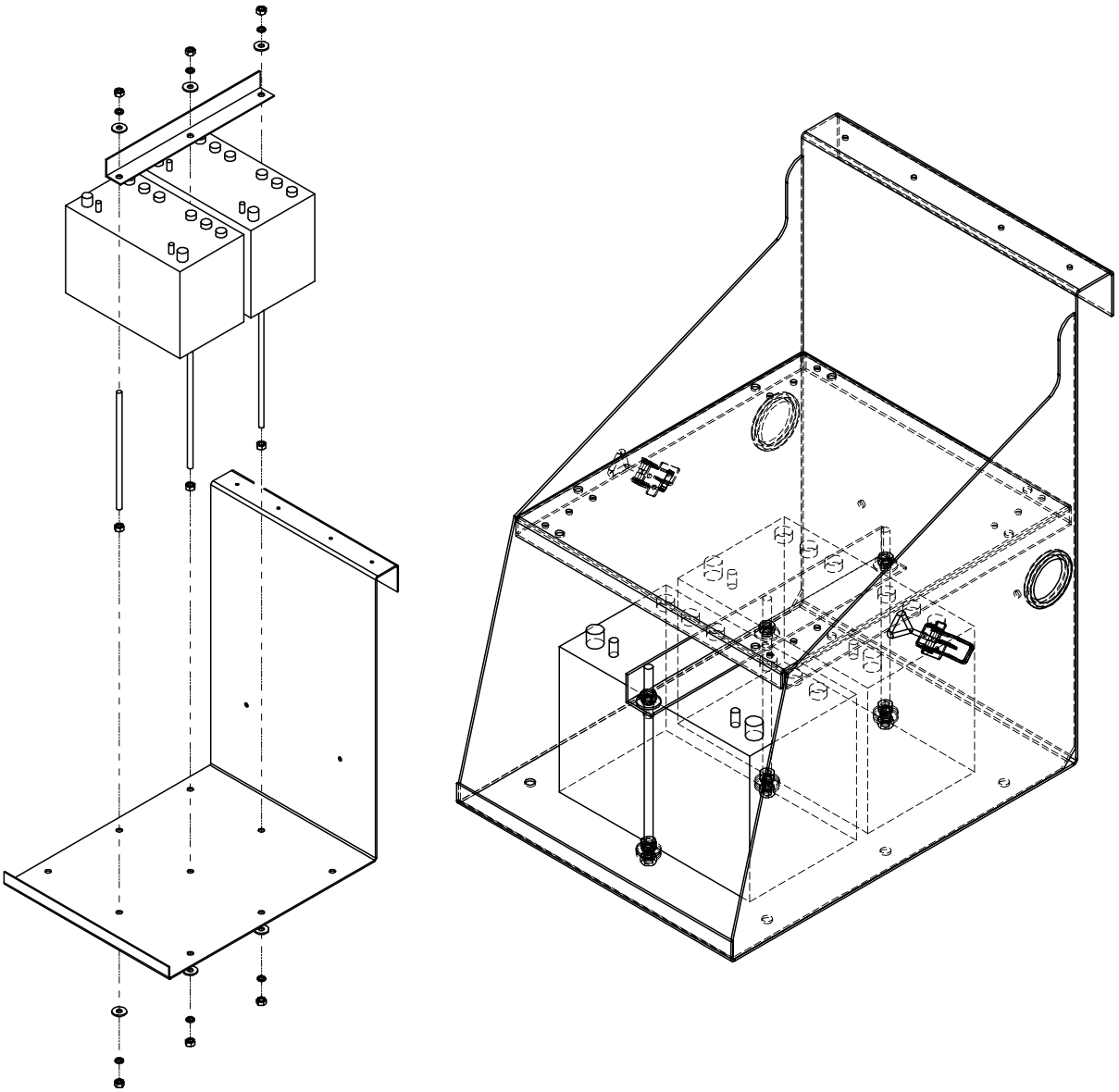




Placing the batteries in the enclosure and connecting them with a jumper lead

Descriptions	Quantity	Fastenings kit	Torque fastening Nm (lb-ft)
M10x270 zinc plated rods	3	F10	20 Nm (15 lb-ft)
M10 zinc plated spring washers	6		
M10 zinc plated washers	6		
M10 8.8 zinc plated nuts	9		

1 Examine an overview of how the batteries are fitted:



2 Prepare three M10 battery securing rods by threading onto each an M10 nut, spring washer and regular washer:

3 In the lower shelf of the enclosure at the back, insert one of the battery securing rods from underneath. Thread on an M10 nut to hold it in place. Position the first battery. Insert the middle battery securing rod from underneath, thread on an M10 nut to hold it into place.

4 Place the battery securing clamp on the top of the battery. Connect the jumper lead (red to +, black to -). Add onto each rod an M10 nut, spring washer and regular washer but only fit these loosely.

5 Position the second battery in front of the first battery by sliding it beneath the battery securing rod. Join the two batteries using the jumper lead (again, red to +, black to -). Connect the main battery cables to the terminals on the front battery (again, red to +, black to -) ready for connection to the control box. Insert the third battery securing rod. Secure the battery clamp using an M10 nut, spring washer and regular washer. Tighten all the nuts to secure both batteries in place to a maximum torque of 20 Nm (15 lb-ft).

If the battery terminals have wing nuts, these can be tightened by hand. If they have hex nuts:

- take care not to short the battery when using a fastening tool (such as a spanner) to tighten the nuts.
- preferably use a torque adjustable nut driver to ensure the nuts are not overtightened.

Attaching the EID antenna

Descriptions	Quantity	Fastenings kit	Torque fastening Nm (lb-ft)
T17 12gx50 mm timber tek screws	4	F8	N/A
M6 zinc plated washers	4		

1 Mount the EID antenna to the top wooden rail using two 50 mm tek screws and two M6 washers. Make sure that the top of the EID antenna is level with the top rail. Repeat with the bottom rail.

2 Attach the EID antenna cable and thread it through the gland in the enclosure.

Connecting cables on the control box

Satellite internet connections - the satellite antenna **must** be connected to the control box first, before the battery and solar panels, or the control box could be damaged by a power surge.

To connect the cables on the control box:

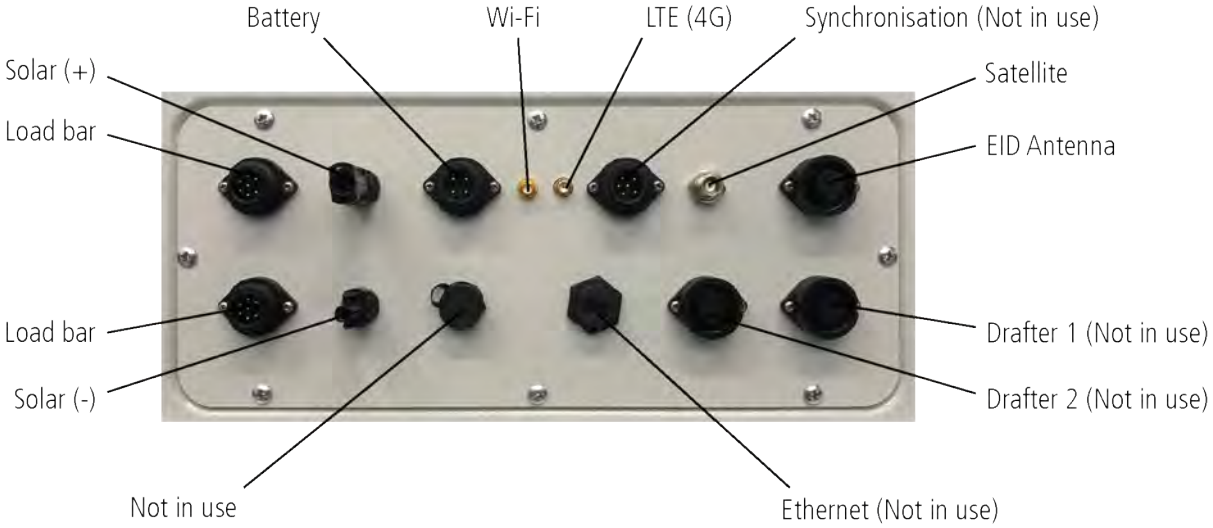
1 Ensure that all cables leading to the control box have been neatly run within the steel channels in the main housing and through the glands in the electronics enclosure.

2 Connect the blue load bar cables. These ports are interchangeable and will not affect the operation of the scales.

3 Connect the Satellite, LTE (4G) or Wi-Fi antenna cable.

4 Connect the EID Antenna cable.

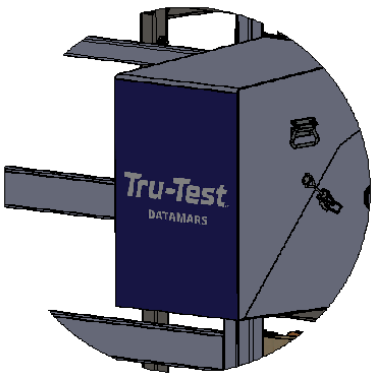
5 Lastly, connect the solar panels and battery.



To fit the lid:

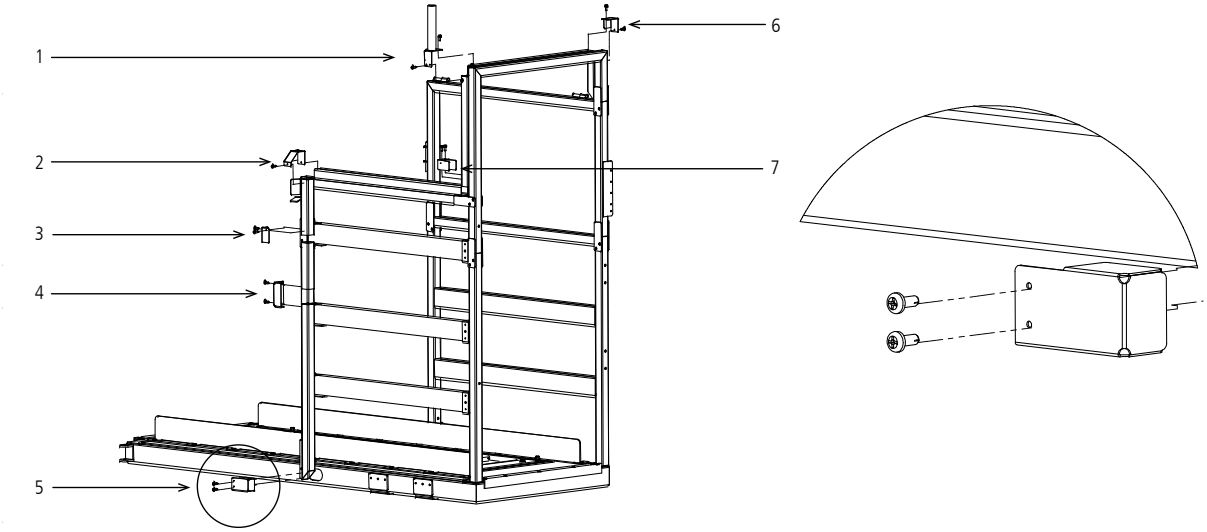
1 Place the metal lid over the electronics enclosure.

2 Fasten the catch and apply the label.



Replace the cable routing covers

Replace the cable routing covers, as required.



Testing and commissioning

Before testing and commissioning the system, you need to book an appointment with the Smart Farming support team. See *Contacting the Datamars Smart Farming support team* on page 10. The team will step you through the commissioning and testing process and make sure that data is flowing from the Flexi 4000C to the Datamars Livestock cloud software. The process is documented here for reference.

During the testing and commissioning process, you will:

- Connect the Flexi Mobile 4000C to the internet
- Check that weights are being recorded correctly
- Check that EIDs are being recorded correctly
- Check that Datamars can see farm data.

Items you will need for testing and commissioning

To test and commission the Flexi Mobile 4000C you will need:

- 2-4 EID tags (HDX type)
- A smartphone or tablet (Android or iOS)

Connecting the Flexi Mobile 4000C to the internet via satellite

There are three steps required:

1 Determine the satellite details for your farm (normally a one-time procedure during setup).
2 Orient the satellite antenna.
3 Check the satellite signal strength.

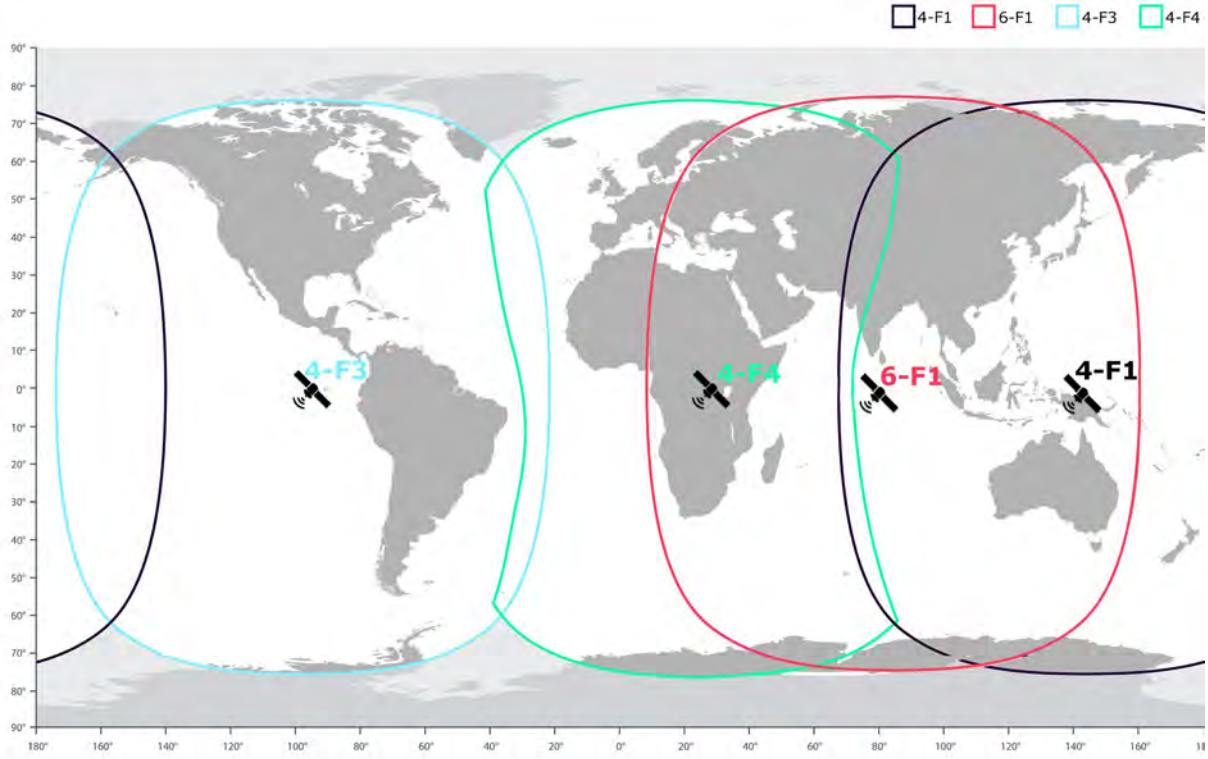
Determine the satellite details for your farm

You should only need to determine the satellite details once, during setup. This is because the satellites used by the Flexi Mobile 4000C are geo-stationery and the details should remain the same as long as the Flexi Mobile 4000C remains on your farm. The only time you will need to repeat this process is if the Flexi Mobile 4000C is moved to a different global location e.g. more than 200 km away.

Internet coverage is required for this procedure, so we recommend you do this step at your home base, rather than out on the farm.

To determine the satellite details:

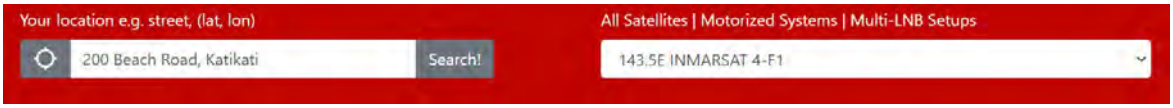
1 Examine the map below to determine the Inmarsat satellite nearest to your location. If there are two options, you may need to try both to see which gives you the best signal strength.



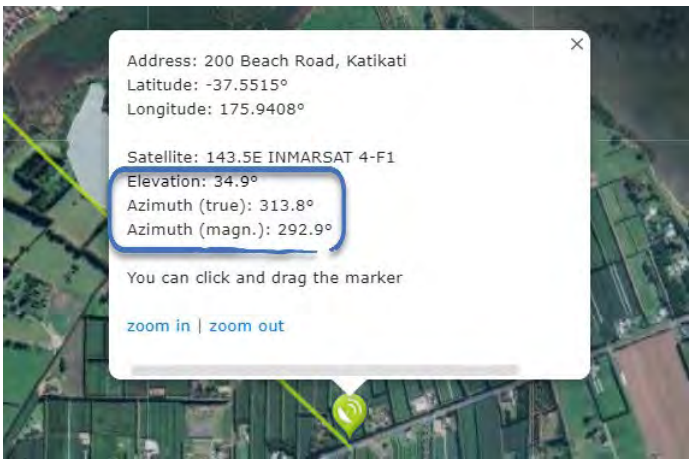
2 The four satellites available for use are:

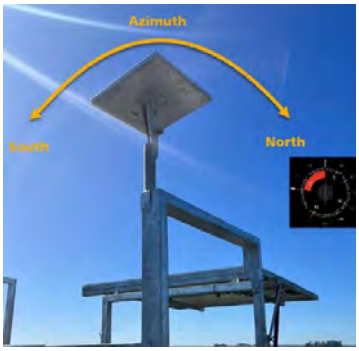
Satellite	Satellite location	Name of satellite on the Dishpointer website
4-F1	143.5° E	143.5E INMARSAT 4-F1
6-F1	83.7° E	83.8E INMARSAT 6-F1
4-F3	97.6° W	97.6W INMARSAT 4-F3
4-F4	24.8° E	24.8E ALPHASAT

3 Go to the Dishpointer website **www.dishpointer.com** to find the satellite from your location. To do this, enter your location (your address or GPS coordinates) and search for the satellite name using the details in the table above.



The website will return the information required to precisely orient the satellite antenna:





The Dishpointer website displays Azimuth values for both True North and Magnetic North. Use should use Magnetic North whether you are using a compass or a compass app on your mobile phone. If you are using a compass app on your mobile phone, make sure it is configured for Magnetic North.

Orienting the satellite

You will need to orient the satellite antenna and test the signal strength during setup, but also whenever you move the system to a new location on your farm.

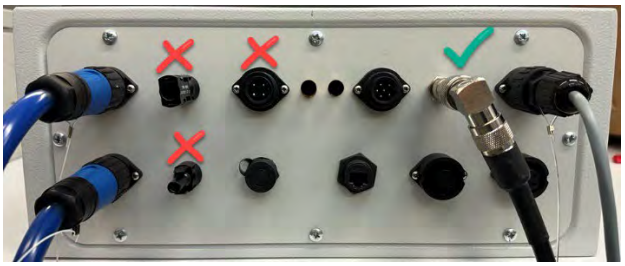
You will need:

- A step-ladder to reach the satellite antenna.
- A 10 mm socket to adjust the orientation of the satellite antenna
- A compass or you can use a compass app on your mobile phone. If you are using a compass app, make sure that it is configured to use Magnetic North.

Before you start:

1 Make sure that the satellite antenna frame is **level** with the horizon.

2 Make sure that the satellite antenna is connected. Disconnect the battery power connector and the solar panel connectors while you are orienting the satellite antenna:

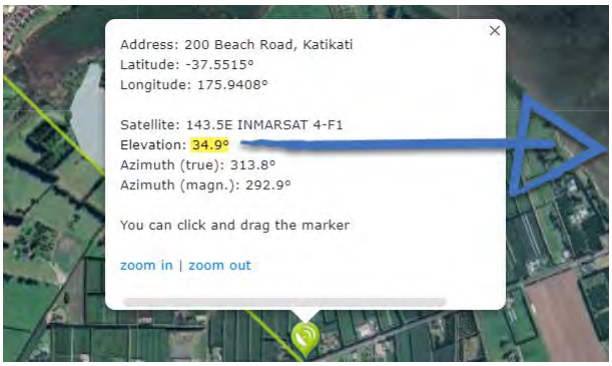


The front of the satellite antenna emits radiation. Do not allow any part of your body to come within 1 m (3') of the front of the antenna

Start by adjusting the Elevation (tilt angle) of the satellite antenna:

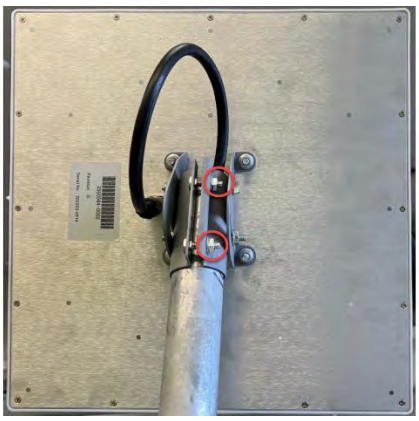
1 Use a 10 mm socket to loosen the nut on the angle bracket:

2 Set the Elevation using the markings as a guide, then tighten the nut finger-tight:

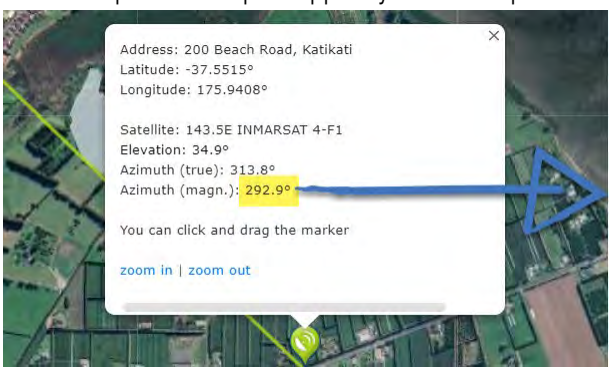


Next, adjust the Azimuth (compass direction) of the satellite antenna:

1 Use a 10 mm socket to loosen the two nuts on the satellite antenna:



2 Use a compass or compass app on your mobile phone to determine the compass direction.



3 Swivel the antenna to the correct Azimuth, then tighten the two nuts finger-tight.

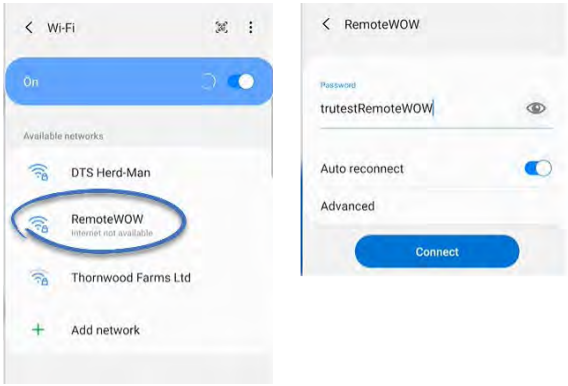
Checking the satellite signal strength

You will need to orient the satellite antenna and test the signal strength during setup, but also whenever you move the system to a new location on your farm. During this procedure, you will need to power up/reboot the Flexi Mobile 4000C.

When powering up/rebooting the Flexi Mobile 4000C, always make sure that the satellite antenna is connected first, before connecting the battery and solar panels, or the control box could be damaged by a power surge.

To check the satellite signal strength:

1 Position yourself next to the Flexi Mobile 4000C.
2 Go into your mobile phone settings and check that Wi-Fi is set to **On**.
3 From the list of available networks, select **RemoteWOW** and enter the password **trutestRemoteWOW**.

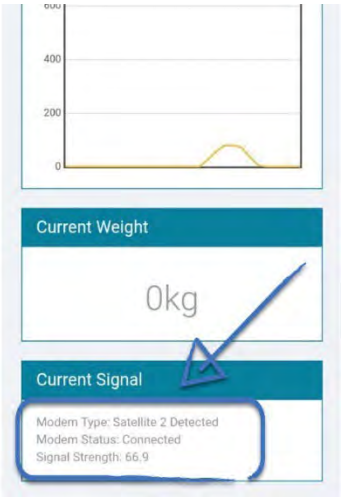


4 Open a browser (e.g. Google or Safari) and type **192.168.50.1** into the address bar.
This will launch the Datamars WOW Configuration app:

5 Make sure that the **satellite antenna** is still connected. Power up/reboot the control box by disconnecting the solar panel connectors and the battery power connector, wait for two minutes, then reconnect the battery power connector only:

6 Go back to the Datamars WOW Configuration app and refresh the browser.

7 Go to the **Settings** screen and scroll down to **Current Signal**:



- **Modem Status** should be Connected.
- **Signal Strength** should be >62.

You must determine the **Signal Strength** value within the first 2 minutes of powering up/rebooting. After this period, the value will drop.

If the **Signal Strength** is below >62, adjust the direction and angle of the satellite antenna slightly, wait for 10 seconds, then refresh the browser. If you try repeatedly and still can't achieve a good signal strength, see *Troubleshooting* below.

8 Once a good signal strength of >62 has been achieved, tighten the 3 nuts using the 10 mm socket to secure the satellite antenna in place.

9 Reconnect the solar panel connectors.

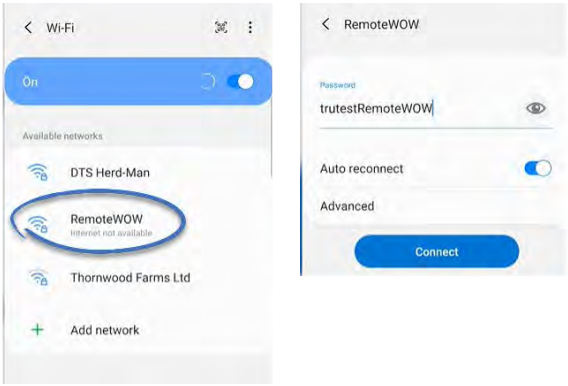
After you have confirmed a reliable satellite connection, you may like to use a permanent marker to write the Azimuth and Elevation details for your farm on the back of the satellite antenna for future reference.

Connecting the Flexi Mobile 4000C to the internet via LTE

1 Position yourself next to the Flexi Mobile 4000C.

2 Go into your mobile phone settings and check that Wi-Fi is set to **On**.

3 From the list of available networks, select **RemoteWOW** and enter the password **trutestRemoteWOW**.



4 Open a browser (e.g. Google or Safari) and type **192.168.50.1** into the address bar. This will launch the Datamars WOW Configuration app:

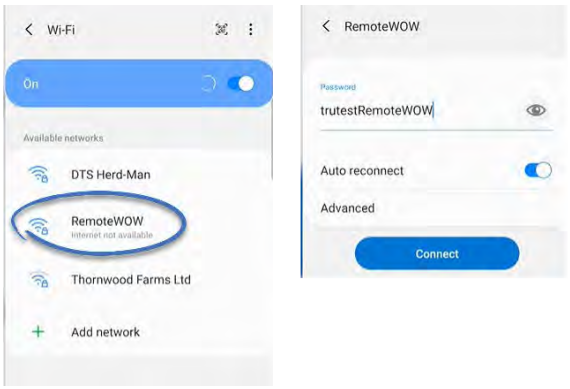
5 In the **APN (LTE connection)** section, enter the APN details for the internet provider being used. Contact the Smart Farming support team if you do not have this information. See *Contacting the Datamars Smart Farming support team* on page 10.

6 Scroll down to **Current Signal**.
The **Signal Strength** should be between -30 and -90 dBm.

- If the **Signal Strength** is 0, check that the 4G LTE antenna is plugged in correctly on the control box.
- If the **Signal Strength** is between -91 and -100 dBm, reposition the 4G LTE antenna. If this doesn't work, try a third-party antenna with a longer cable and/or a different location (e.g high on a pole).

Connecting the Flexi Mobile 4000C to the internet via Wi-Fi

1 Position yourself next to the Flexi Mobile 4000C.
2 Go into your mobile phone settings and check that Wi-Fi is set to **On**.
3 From the list of available networks, select **RemoteWOW** and enter the password **trutestRemoteWOW**.



4 Open a browser (e.g. Google or Safari) and type **192.168.50.1** into the address bar.
This will launch the Datamars WOW Configuration app:

5 In the **Wi-Fi Configuration** section, select the name of the your Wi-Fi network and enter the password.

6 Scroll down to **Current Signal**.

The **Connection Type** should display the Wi-Fi network.

The **Adaptor Status** should display **Connected**.

The **Signal Strength** should be between -20 and -70 dBm.

- If the **Connection Type** is not displaying the Wi-Fi network, check that the Wi-Fi network has been configured correctly.
- If the **Adaptor Status** is Not connected, check that the Wi-Fi antenna is plugged in correctly on the control box.
- If the **Signal Strength** is between -71 and -100 dBm, reposition the Wi-Fi antenna. If this doesn't work, try a third-party antenna with a longer cable and mount it in a different location (e.g high on a pole).

Checking that weights are being recorded correctly

1 In the Datamars WOW Configuration app, go to the *Home* screen and scroll down to view the **Current Weight**.

2 Stand on the middle of the platform and check that your weight is displayed correctly on the app.

Checking that EIDs are being recorded correctly

1 In the Datamars WOW Configuration app, go to the *Home* screen and scroll down to view the **Last RFID**.

2 Hold a sample HDX tag in front of the antenna and check that the EID tag number is displayed correctly in the app. Test another tag to check that the app updates with the new EID tag number. There may be up to 15 seconds delay before the EID tag number is displayed.

Checking that Datamars can see farm data

The Smart Farming team will check that farm data can be seen in the Datamars Livestock cloud app.

Setting up the Flexi Mobile 4000C in a new location

To set up the Flexi Mobile 4000C at a new location on your farm:

1 Position the Flexi Mobile 4000C 5 m (16') away from the water trough. The drawbar should be furthest away from the water trough so that the EID antenna captures animals as they *exit* the fenced area, assuming that their EID tags are in their right ears. Orient the platform so that the solar panels can be adjusted to face the midday sun (North in the Southern hemisphere or South in the Northern hemisphere).

⚠ Make sure that the Flexi Mobile 4000C is on flat ground or use chocks to prevent the wheels moving.

2 Pull the pin and swivel the jockey wheel until it is vertical then pin it in place.

3 Lift the lever to un-hitch the Flexi Mobile 4000C from the towing vehicle. With the jockey wheel taking all the weight, move the towing vehicle out of the way.

4 Wind the handle to lower the front half of the Flexi Mobile 4000C.

5 Remove the two locking pins behind each of the wheel hubs.

Stow the pins in the extra holes provided for safe-keeping.

6 Wind the winch handle to lower the platform and wheels. Stop when the platform is completely flat on the ground.

7 Undo one of the D shackles on the axle bar.

8 Unthread the chain through the hole in the pulley.

9 Remove the pin securing the axle bar. Slide the axle bar out of the housing. Remove the axle bar and put it somewhere out of the way. It is only used during transit.

10 Wind up the excess winch cable and secure it tidily.

11 Remove the right-hand pin securing the drawbar (same side as the control box). Do not remove both pins.

12 Swivel the drawbar to the side so that it doesn't block animals walking over the platform.

Replace the pin for safe keeping.

13 Unlatch the solar panel frame.

14 The gas stay will cause the solar panel frame to rise.

Pitch the solar panel to make the most of the midday sun in your location.

Secure the solar panel frame with the locking arm.

15 Hang the extra piece of triangular shaped housing on the main housing to protect the gas stay and solar panel cables. Pin it in place.

16 Satellite internet connections only – Orient the satellite antenna, see page 55.

17 Cover the platform with dirt. This disguises the platform and creates a natural and familiar surface for animals to walk over. Accuracy will not be affected as the scale is set to auto zero between animals.

18 Check the internet signal strength:

- Satellite internet connections, see page 57.
- LTE (4G) internet connection, see page 59.
- Wi-Fi internet connection, see page 61.

19 Check weights and EID tags are being read. See page 63.

Preparing the Flexi Mobile 4000C for transportation

Follow these steps when moving the Flexi Mobile 4000C to a new location on your farm:

The Flexi Mobile 4000C should not be towed at speeds faster than 20 km/h (12 mi/h)

1 Move the drawbar back into position and replace the pin.

2 Replace the axle bar by sliding it into the housing. Pin it in place.

3 Make sure that the two pins have been removed behind the wheel arches so that the folding wheel axle can rotate freely.

5 Loosen the winch cable so that the pulley assembly is close to the axle bar. Thread the chain through the hole in the pulley assembly.

6 Fasten the chain to the other end of the axle bar using the D shackle.

7 Wind the winch handle to raise the platform and wheels.

8 Replace the pins behind the wheel arches.

9 Wind the handle to raise the jockey wheel. The coupling needs to be aligned with the tow-ball on the towing vehicle.

10 Hitch the Flexi Mobile 4000C to the towing vehicle.

11 Swivel the jockey wheel until it is horizontal and pin it in place.

12 Pull out the pin and remove the extra piece of triangular shaped housing protecting the gas stay and solar panel cables. Stow it safely for transportation.

13 Undo the locking arm and fold down the solar panel frame.

14 Latch the solar panel frame.

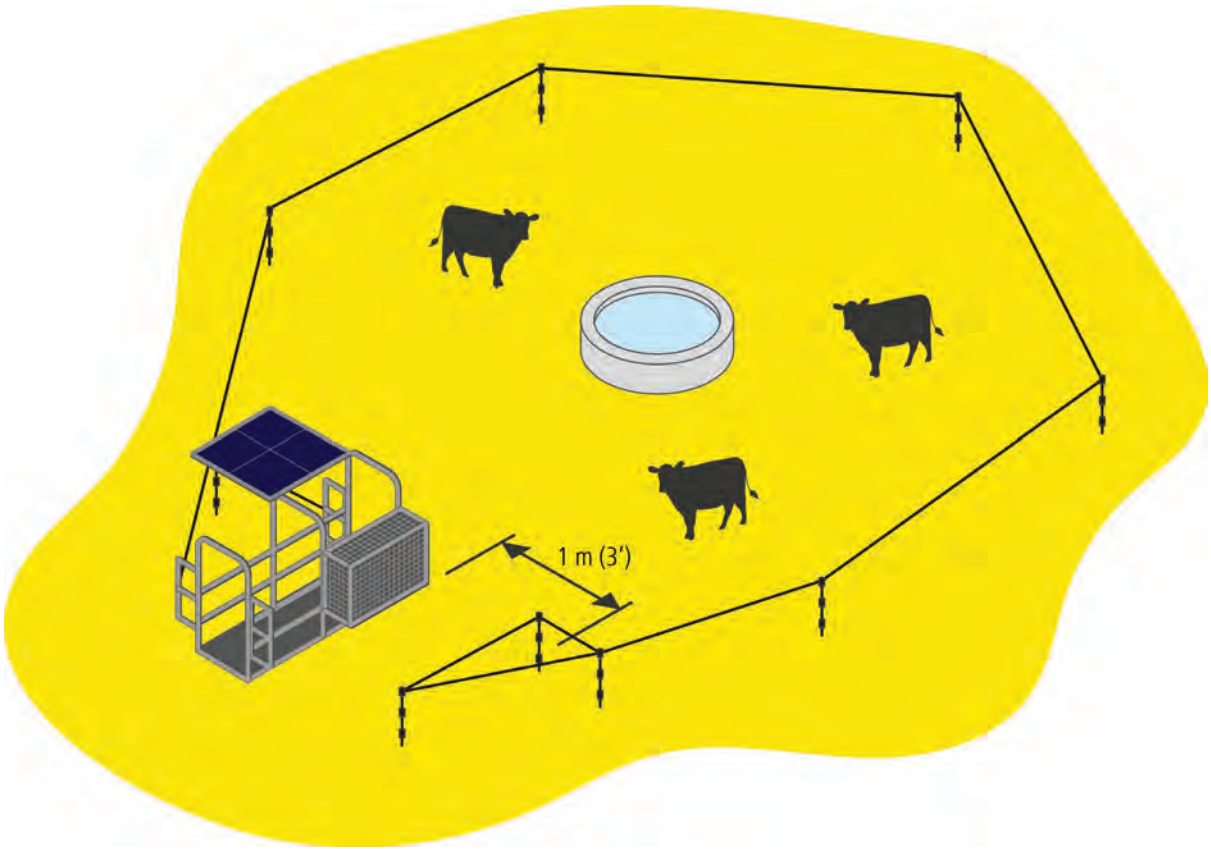
Cattle training programme

Animals must be trained in order to be comfortable stepping onto the walk over weighing platform. We recommend a two step training programme to help animals become accustomed to the hardware.

Animals will remember their training for life and only need to be trained once. Animals which are familiar and comfortable walking over the platform will often act as coaches for new animals but you should observe new animals carefully to be sure.

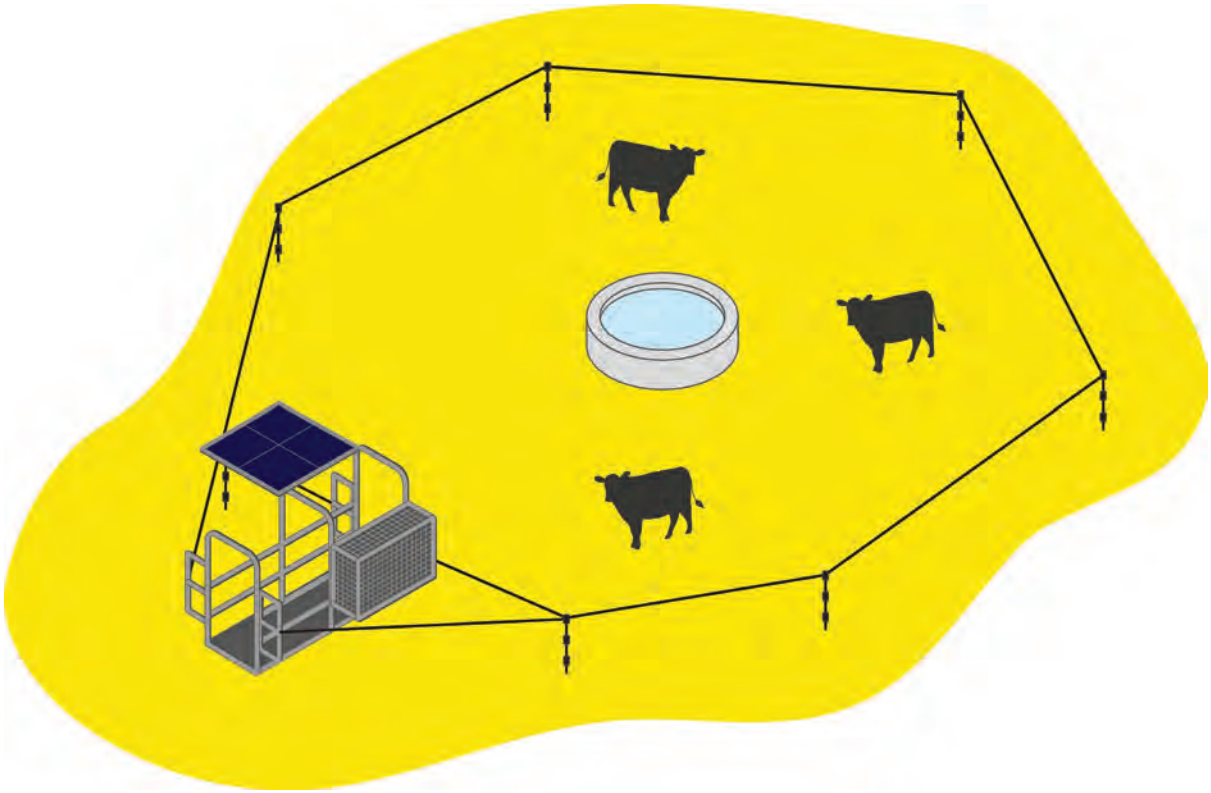
Step 1

Set up a temporary fence with a 1 m (3') gap for animals to access the water trough without walking over the platform. Over a period of a few days, they will get used to the presence of the Flexi Mobile 4000C. Proceed to Step 2 when you can see that animals are comfortable using the gap to access water.



Step 2

Close up the 1 m (3') gap so that animals are required to walk over the platform in order to access the water trough. Observe animals until you are sure that they are walking over the platform to access water.



Do not pressure animals to walk over the platform, instead allow them to become comfortable with doing this in their own time.

Setting up a temporary electric fence

The Flexi Mobile 4000C is designed for use with a temporary electric fence, allowing the whole system to be set up easily in a new location.

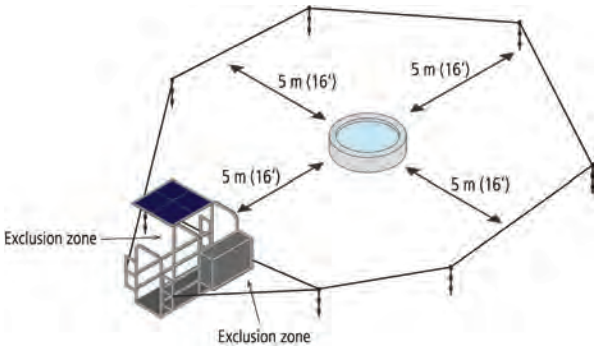
If a location is used frequently, you could set up a permanent fence.

Set up the temporary electric fence to surround a water trough and the Flexi Mobile 4000C. Allow 5 m (16') between the water trough and the fence. This is an area large enough for animals to drink and move around each other, but not so large that they will camp in the area continuously.

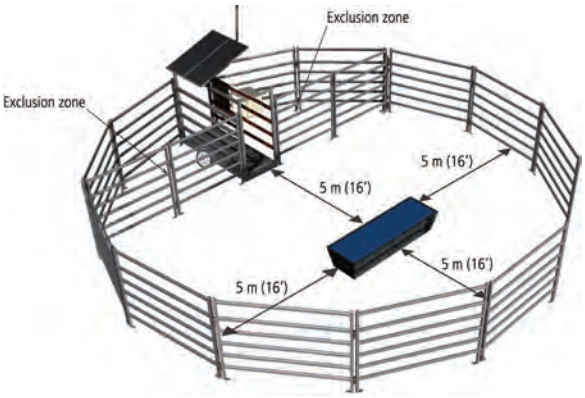
There must only be a single entrance/exit so that animals are forced to walk over the platform to access the water trough.

Set up an exclusion zone at the sides of the platform to prevent nearby animals having their EID tags read. Animals should not be allowed within 1.5 m (4') of the EID antenna unless they are on the platform being weighed.

Exclusion zone on a temporary fence



Exclusion zone on a permanent fence



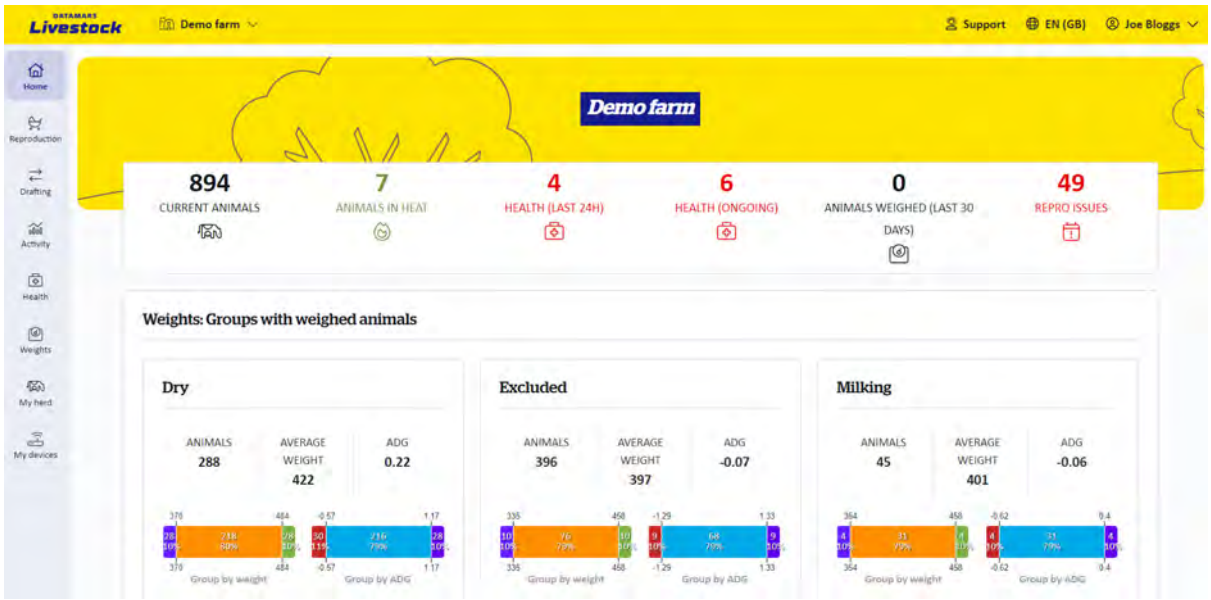
Before using the Flexi Mobile 4000C, cattle must be trained to be comfortable walking over the platform. See *Cattle training programme* on page 73.

Viewing the data in Datamars Livestock

Datamars Livestock cloud software allows you to view and analyse weighing data for your animals.

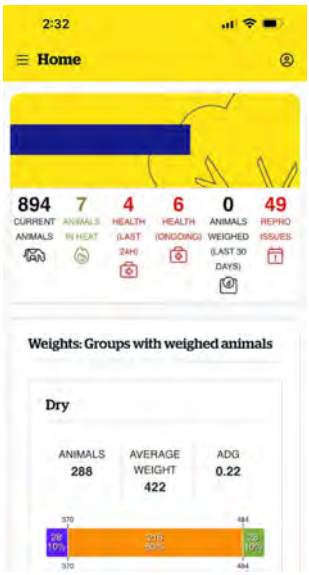
Web app

1 Access the Datamars Livestock cloud software at **monitoring.livestock.datamars.com**
2 Bookmark the URL.
3 The Datamars Smart Farming support team will set up your farm and supply you with login details.



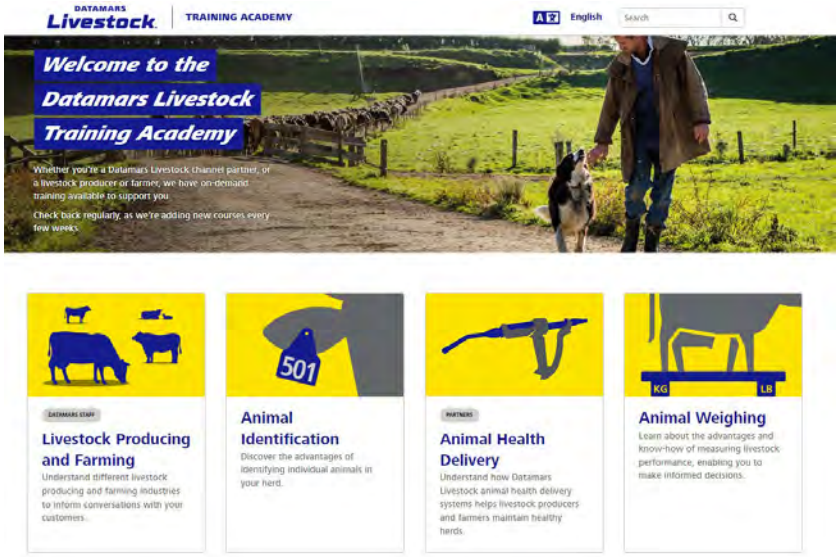
Mobile

1 Open a browser (on an iPhone, use Safari).
2 Navigate to **monitoring.livestock.datamars.com**
3 Add the site to your Home screen.
4 The Datamars Smart Farming support team will set up your farm and supply you with login details.

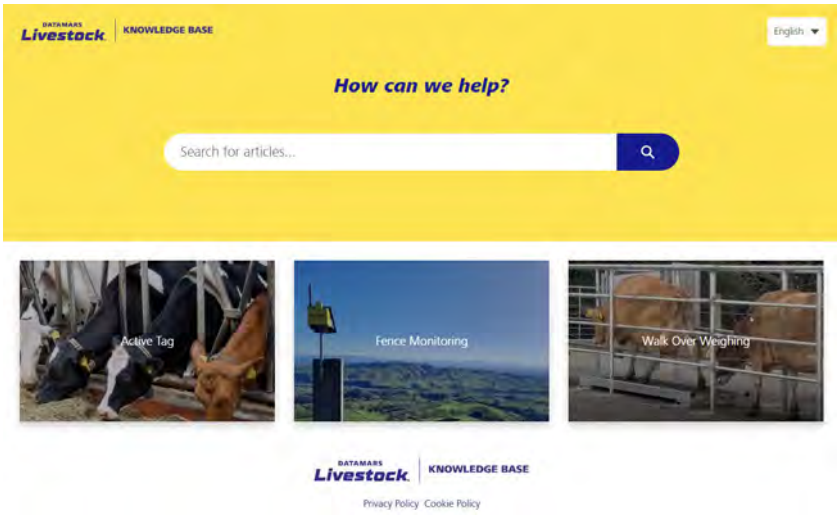


Training and help

A range of online training courses is available at **academy.livestock.datamars.com**. We recommend completing *Your First 30 Days with Walk Over Weigh*.



For information and advice on using your Flexi Mobile 4000C and Datamars Livestock cloud software, visit the Datamars Livestock Knowledge Base **support.livestock.datamars.com**. The Knowledge Base can also be accessed via the Datamars Livestock PC app.



Troubleshooting

Troubleshooting a satellite internet connection

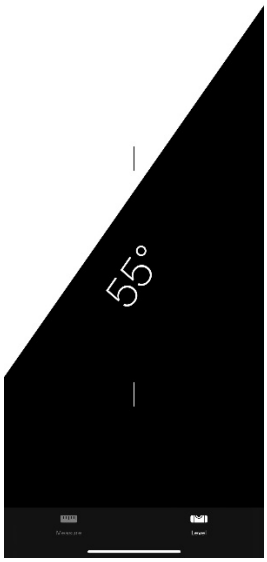
Have you moved the Flexi Mobile 4000C?

If you have moved the Flexi Mobile 4000C to a different location since the satellite details were first determined, you will need to repeat the procedure for connecting the Flexi Mobile 4000C to the internet (see page 53). If there are still issues, follow the steps below.

Is the Flexi Mobile 4000C on even ground?

Make sure that the Flexi Mobile 4000C is on even ground. If this is not possible, you will need to adjust the angle of the satellite antenna to compensate. Use an inclinometer or level (or an app on your mobile phone) to set the angle and disregard the measurements on the angle bracket on the satellite antenna bracket. Inclinometers and levels work from a *horizontal* plane so you will need to calculate the angle required by subtracting the Elevation from 90°. For example, if the Dishpointer website advises the satellite is at an Elevation of 35°, the incline will be 55 (90 minus 35).

This example shows the iPhone Measure tool with 55° incline:

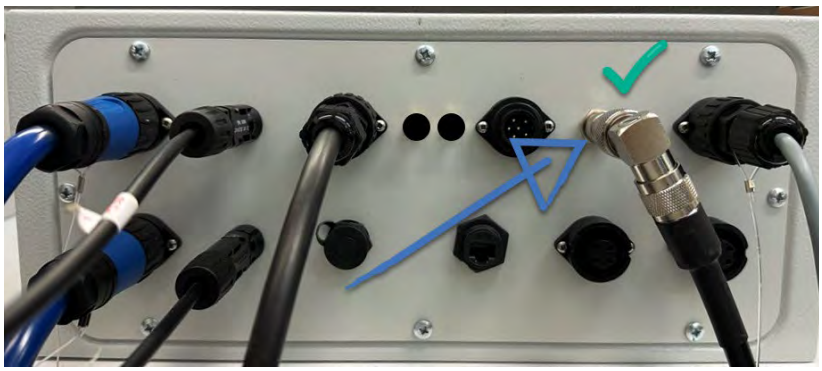


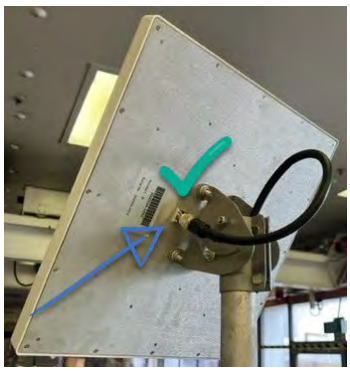
After re-orienting the satellite antenna using an inclinometer or a level, check the **Signal Strength** value again (see page 57).

If the satellite Signal Strength is 0 (zero)

Check that the satellite antenna is plugged in correctly.

The satellite antenna **must** be connected to the control box first, before the battery and solar panels, control box could be destroyed by a power surge.

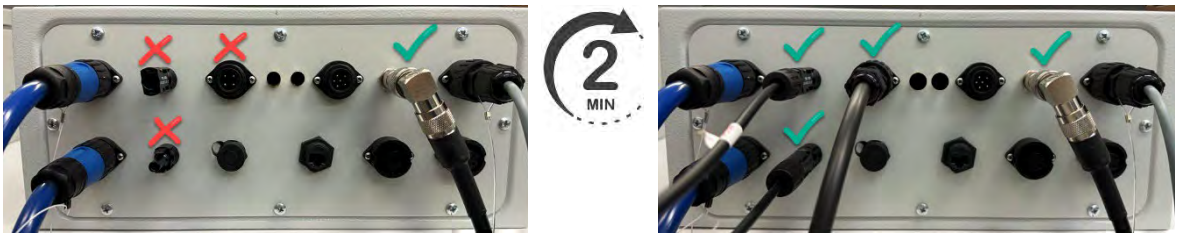




If an Error is displayed

1 The **WOW system may require rebooting** if the battery voltage has dropped significantly at some point:

- Reboot the control box by disconnecting one of the solar panel connectors and the battery power connector, wait for two minutes, then reconnect:

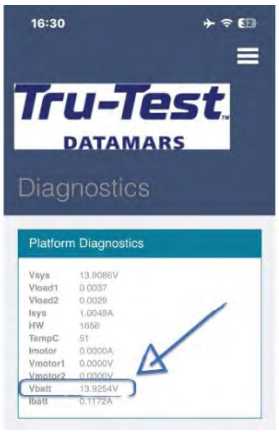


2 Check the **solar panels** as they may not be recharging the battery properly:

- Check that the solar panels are facing the midday sun with no obstacles or shadows affecting them.
- Check that the solar panels are clean. A build-up of dust or bird excreta can affect performance.
- Check the solar panel cables and battery cables are connected and are not damaged.
- Check the solar controller on the inside lid of the control box. A green LED should indicate it is charging:

3 Check the **battery** as it may be faulty:

- Check the battery using a battery tester. It should be above 12.2 V.
- Try recharging the battery using a charger with a de-sulfation capability. This may help recover the battery, depending on how sulfated it is.
- Replace the battery.
- After trying any of the above remedies, monitor the battery voltage for a few weeks using the Datamars WOW Configuration app. Go to the *Diagnostics* screen and view the **Vbatt** field. It should remain above 12.2 V:



If Modem Status is Not Attached

The satellite data limit has been reached and the SIM needs to be reset. Contact the Datamars Smart Farming support team (see page 10).

Product warranty

Terms and conditions for Autonomous Weighing (WOW) products

Datamars SA's warranty obligations for Autonomous Weighing (WOW) products manufactured by, or for Datamars SA, are limited to the terms set out in this policy.

Datamars SA warrants its products to be free of defective materials and workmanship for the periods outlined below.

If a warranted defect occurs, please return the product along with proof of purchase to the place of purchase. If Datamars SA receives a valid claim within the warranty period, Datamars SA will, at its option:

- Repair the product at no charge, using new replacement parts.
- Exchange the product with a product that is new or has functionality equivalent to the original product; or
- Refund the product's original purchase price.

Warranty period

The period of warranty (warranty period) begins at original date of purchase and runs for the following terms:

- Two years against manufacturing defect.

Exclusions and limitations

This warranty applies only to Datamars products manufactured or supplied by, or for Datamars SA.

The liability of Datamars SA under this warranty is excluded to the extent that any defect has been caused or contributed to, by:

- Any accident, contamination, tampering, modification, wilful damage, improper storage, improper use or negligent act of, or by omission by, any person other than Datamars SA
- Improper installation of the unit
- The use of the unit for any other purpose than drafting animals and/or weighing livestock
- The use of the unit for any other purpose than for which it was intended
- The use of anything other than the original equipment or manufacturer's parts
- Any damage to the unit caused by storm, landslide, fire, lightning, earthquake, tornado or any other naturally occurring phenomenon
- Any damage to the cabling of the Autonomous Weighing (WOW) products caused by production animals, vermin, bird life or other pest
- This warranty specifically excludes the unit colour, which may fade or change over time.

To the maximum extent permitted by law, this warranty is exclusive, personal to you, non-transferable, and in lieu of all other warranties, representations or conditions relating to this product (whether express or implied and whenever arising) whether originating by statute, law, trade, custom or otherwise.

The product warranty is only valid in the original country of purchase. Any claims made in another country may incur full repair costs at the owner's expense.

Compliance

FCC notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.
- Any changes or modifications not expressly approved by Datamars could void the user's authority to operate the equipment

FCC warning

Note: Users are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment should be installed and operated with a minimum distance of 20 cm (8") between the antenna within this device and your body.

Responsible party in the USA

This product is supplied by:
Datamars Inc
528 Grant Road
Mineral Wells
Texas 76067
UNITED STATES
Toll free: 800 874 8494

ISED Canada notice

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
(1) this device may not cause interference
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

ISED Canada warning

Installation within Canada: To maintain compliance with ISED Canada RF exposure compliance requirements, please follow the operation instructions as documented in this guide. This equipment should be installed and operated with a minimum distance of 20 cm (8") between the antenna within this device and your body.

UK declaration of conformity

Hereby, Datamars declares that the radio equipment type Flexi Mobile 4000C WOW is in compliance with the relevant statutory requirements. The full text of the declaration of conformity is available at the following internet address http://livestock.tru-test.com/en/compliance

UK Importer:
Datamars UK,
Pheasant Mill, Dunsdale Rd,
Selkirk TD7 5DZ,
United Kingdom

EU declaration of conformity

Hereby, Datamars declares that the radio equipment type Flexi Mobile 4000C WOW is in compliance with Directive 2014/53/EU. The full declaration of conformity is available at the following internet address **http://livestock.tru-test.com/en/compliance**

Operating frequency bands and related maximum radio-frequency power transmitted

RFID emissions for all gateway models:

This radio equipment emits a maximum of 0.8 dBm e.i.r.p in the frequency band 134.18 kHz to 134.22 kHz

Emissions under different radio technologies:

LTE - This radio equipment emits a maximum of 24 dBm e.i.r.p across all frequency bands

Wi-Fi - This radio equipment emits a maximum of 20 dBm e.i.r.p. in the frequency band 2412 mHz to 2472 mHz

Satellite - This radio equipment emits a maximum of 34.75 dBm e.i.r.p. in the frequency band 1626.5 mHz to 1660.5 mHz