11/2026 F

OPERATOR'S MANUAL

SUPER ORION 3000
SUPER ORION 4000

Seed drill



From serial number BB-54705

We reserve the right to make design changes

Read this manual before putting the machine into service!
Translation of the original instructions

EY- vaatimustenmukaisuusvakuutus koneesta
(Konedirektiivi 2006/42/EY, Liite II A)

Valmistaja: Tume-Agri Oy
Osoite: Sudenkorventie 1, 14200 TURENKI

Henkilön nimi, joka osoite, joka on valtuutettu kokoamaan teknisen tiedoston:
Nimi: Heimo Valli Osoite: Sudenkorventie 1, FI-14200 TURENKI
Vakuuttaa, että

Kylvökone Super Orion 3000 ja Super Orion 4000 Sarjanumero _____

- ovat konedirektiivin (2006/42/EY) asiaankuuluvien säädösten mukaisia

ja lisäksi vakuuttaa, että

- seuraavia eurooppalaisia yhdenmukaistettuja standardeja on sovellettu

SFS-EN ISO 12100–1:2003

EG-försakran om maskinens överensstämmelse
(Maskindirektivet 2006/42/EG, Bilaga II A)

Tillverkare: Tume-Agri Oy
Adress: Sudenkorventie 1, FI-14200 TURENKI

Namn och adress till den person som är behörig att ställa samman den tekniska dokumentationen:
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Försäkrar härmed att

Såmaskin Super Orion 3000 och Super Orion 4000 Serienummer _____

- överensstämmer med tillämpliga bestämmelser i maskindirektivet (2006/42/EG)

Vi försäkrar dessutom att

- följande europeiska harmoniserade standarder har använts

SFS-EN ISO 12100-1:2003

EC Declaration of Conformity for Machinery
(Machinery Directive 2006/42/EC, Annex II A)

Manufacturer: Tume-Agri Oy
Address: Sudenkorventie 1, FI-14200 TURENKI

Name and address of the person authorised to compile the technical file:
Name: Heimo Valli Address: Sudenkorventie 1, FI-14200 Turenki
Hereby declares that
Super Orion 3000 and Super Orion 4000 seed drills. Serial number _____

- comply with the applicable provisions of the Machinery Directive (2006/42/EC)

and further declares that

- the following harmonised European standards have been applied:

SFS-EN ISO 12100-1:2003

Paikka ja aika / Ort och datum / Place and Date: Turenki 24.01.2022

Allekirjoitus / underskriften / Signature :

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1. FOR OPERATORS AND PERSONS RESPONSIBLE FOR THE MACHINE

We wish you success with your TUME combination seed drill. This manual explains how to operate, adjust, maintain and store your Tume Super Orion. Follow these instructions to keep the machine working reliably for years. Read the manual well before the sowing season and keep it readily available. The manufacturer, Tume-Agri Oy, will be happy to help with any questions about the machine.

About this manual

This manual is distributed internationally. The standard and optional equipment shown may vary from country to country. In some illustrations, guards required by law in certain countries or otherwise important for safety have been opened or removed to show the parts more clearly. Never operate the machine without its guards. Before starting work, check that all guards are undamaged and in place.

Left and right are given as viewed from behind the machine, looking in the direction of travel.

Tume-Agri Oy continually develops its products and reserves the right to make changes and improvements without any obligation to retrofit products already sold.

2. GENERAL SAFETY INSTRUCTIONS



Anyone who operates, services or otherwise handles the TUME combination seed drill must read this manual carefully before starting work.

Never work or stand under a machine held up by hydraulics alone. To secure the machine in the raised position, close the lift cylinder safety valves and support the machine securely. Lower the machine before leaving it unattended.

Never ride on the machine or stand on its platform while it is moving. The operator must keep people clear of the machine during movement.

Never lubricate, adjust or clean the machine while it is moving. Switch off the tractor engine and apply the parking brake before servicing.

Keep all guards secured in place.

Check that the drawbar, hydraulic hoses and electrical cables are connected correctly between the tractor and the implement.

Replace damaged hydraulic hoses and couplings immediately. Keep the tractor's hydraulic valves and connections in good condition and free of leaks. They hold the machine in its transport position.

The machine's hydraulic system is designed to be operated only when the 12 V power supply is connected. If the power supply fails, use extreme caution when operating the hydraulics, as the movements are unrestricted!

The optional hydraulic row markers can move very quickly, particularly if the flow control valve is open wide and tractor hydraulic flow is high. Take particular care when raising and lowering the markers for the first time. Keep everyone clear of the path of each marker and away from the area beneath any marker held up by the hydraulics.

Make sure that the tractor's front axle carries at least 20% of the tractor's weight under all

conditions. Fit ballast if necessary. Take extra care when the drill is attached to an intermediate cultivator and you raise it with the tractor linkage, for example when reversing.

The machine is designed for a maximum transport speed of 40 km/h, empty or loaded. On public roads, follow the applicable traffic rules and any limits for the vehicle combination. The permitted speed may depend on the implement's brakes and the tractor's weight, among other factors.

Reduce speed on rough or uneven roads to suit the road and driving conditions. Avoid driving over stones and other obstacles that could damage the tyres.

Never carry loads on top of the machine.

Never drive with the outermost wheels unsupported. The machine could sway excessively or overturn.

Take care when moving on the machine's platforms while cleaning, servicing or filling the hoppers.

The paint can release harmful fumes when heated. Ventilate the work area thoroughly, for example when welding.

Use only options and attachments approved by the manufacturer. Anyone who modifies the machine contrary to the manufacturer's instructions is responsible for the modifications and their consequences.

The combination seed drill does not significantly increase the noise level in the tractor cab. The need for hearing protection depends on the noise level of the tractor. We recommend wearing safety footwear when handling heavy or sharp components, such as drawbar and coulter parts.

If the machine is transported on public roads, make sure it has the currently required road equipment. Regulations may change.

On a tractor without an ISOBUS socket, power the drill directly from the tractor battery with a dedicated cable. Consult the tractor manufacturer or its representative and have an authorised technician install the cable in a way suited to the tractor. Tume-Agri Oy is not liable for damage caused by an incorrectly connected cable.

Check the power cable regularly. A damaged cable can interfere with the operation of the drill or the tractor.

A damaged cable is a fire hazard.

A damaged cable can cause electric shock.

Never operate the machine with damaged power cables, for example if the insulation has worn through.

Do not connect or operate the machine while its electrical connectors are wet.

3. INTENDED USE

The Tume Super Orion combination seed drill is designed to sow seed and apply fertiliser in one pass. It is suitable for minimum-tillage and conventionally cultivated ground, and for direct drilling in good conditions.

The machine can also be used for sowing alone or applying fertiliser alone under the conditions below. The Super Orion's support wheels consolidate the soil and, in most conditions, close the furrows opened by the coulters.

With optional equipment, the Super Orion can also cultivate or level the field, or sow grass seed, during the same pass.

Use the Super Orion only for the stated purposes. The machine is not designed for high-speed material transport or for storing material in its hoppers. Fill it near the field to be sown. Drive slowly when loaded and adjust speed to suit the hopper load and road conditions. Never carry passengers on the machine!

3.1 Occasional use for sowing only

When no fertiliser is used, move the hopper partition to its foremost position to maximise seed capacity.

For maximum drilling capacity, sow seed from both hoppers at the same time. Calibrate both metering units separately and add the two results to obtain the total seed rate.

3.2 Use for fertiliser application only

The Tume Super Orion can be used to place fertiliser alone. Fill the fertiliser hopper, the seed hopper or both. The instructions for sowing alone also generally apply here. Fertiliser is usually heavier than seed, so do not fill the machine completely when both hoppers contain fertiliser.

4. GENERAL SOWING INSTRUCTIONS

4.1 Coulter design

The Super Orion has double-disc coulters with left and right discs of equal diameter. Seed and fertiliser are placed at the same depth in the same furrow.

4.2 Driving instructions

Always move the machine forwards while lowering it. Otherwise the coulters may become blocked.

The tractor's hydraulic valve holds the raised machine in position. Before transport, make sure the valve cannot open accidentally and does not leak.
WARNING! Always keep the safety shut-off valves on the outer lift cylinders open during road transport.

An optional drawbar cylinder allows the tractor hydraulics to raise the front of the machine while sowing, for example to avoid a blockage. Operate it with a dedicated double-acting valve. The

cylinder can also increase ground clearance during road transport. During sowing, use it only when necessary, for example to clear a blockage. Otherwise keep it fully retracted.

The machine should run level on flat ground. Lengthen the drawbar top link if the machine tilts forwards and shorten it if the machine tilts backwards. Check sowing depth after travelling a short distance and adjust it if necessary. Check the marker setting at the join between passes.

WARNING! RAISE AND LOWER THE MACHINE ONLY WHILE IT IS MOVING FORWARDS. NEVER REVERSE with the coulters or rear harrow on the ground.

Check the coulters periodically for blockages. Inspect all seed and fertiliser tubes and clear any obstructions.

Do not leave fertiliser or seed in the hoppers for several days. Damp fertiliser can cause metering problems.

Driving speeds:

- A suitable operating speed is usually around 8–14 km/h.
- When sowing peas or beans, the maximum speed is 6–10 km/h.
- The maximum transport speed is 40 km/h.

4.3 Operating tips

Some large, light seed, such as certain oat varieties, may not flow freely through the screens. In this case, remove the screens from the seed hopper. When filling, make sure that large particles do not enter with the seed and damage the metering units.

Calibrate the seed and fertiliser metering units using the trays beneath the metering chambers. Take care when inserting the trays and keep them straight relative to the machine. If a tray is forced in with its leading end tilted upwards, it may strike and damage a metering chamber.

Take care when removing the screens from the hoppers. A screen can damage a level sensor if it strikes it.

5. COMMISSIONING

5.1 Rear wheel assembly

The rear wheel assembly supports the machine. The longer cylinders at the outer ends pivot a full-width tubular beam that carries the outermost wheel pairs. The inner wheel pairs are hinged to the beam and have individual cylinders. All cylinders are connected in parallel in the same hydraulic circuit and operate at the same pressure. This allows the wheel pairs to follow uneven ground while maintaining a uniform packing force across the working width (Figure 1).

In the working position, the support wheel geometry distributes pressure almost equally across all wheel pairs. When the machine is fully raised, the independent inner wheel pairs take slightly more of the load. This helps protect the outermost wheel pairs from damage during transport.

When reversing, remember that the rear wheel scrapers and steps are close to the ground. Watch for obstacles. If you need to reverse over a high threshold, lowering the machine slightly raises the scrapers. Make sure the coulters have enough clearance to pass the obstacle.



Figure 1. Support wheel assembly.

5.2 Installing the drawbar

Assemble and attach the drawbar as shown in Figure 2. Always use the upper holes in the lower mounting brackets on the machine. Fit the hydraulic top link in its upper hole.

Secure the hydraulic hoses and electrical cables to the drawbar so they cannot be damaged, even during tight turns. Route the hoses through the box section of the drawbar.

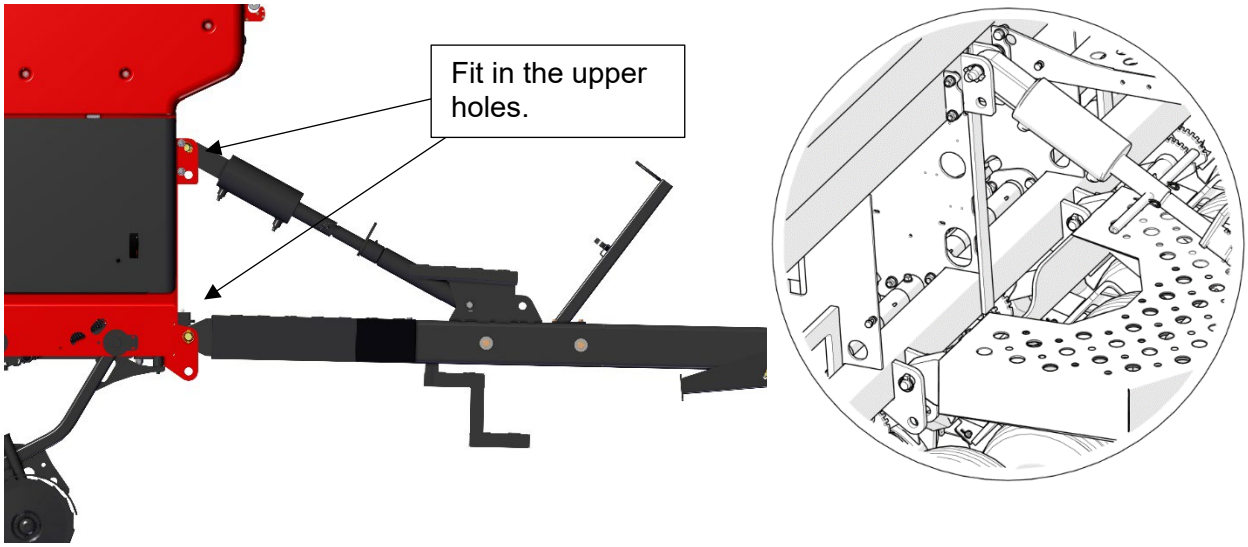


Figure 2. Drawbar attachment.

Adjust the top link so the machine sits level when lowered and attached to the tractor hitch, intermediate packer or intermediate cultivator. The top link cylinder must be fully retracted during this adjustment. Fine-tune the drawbar in the field under sowing conditions.

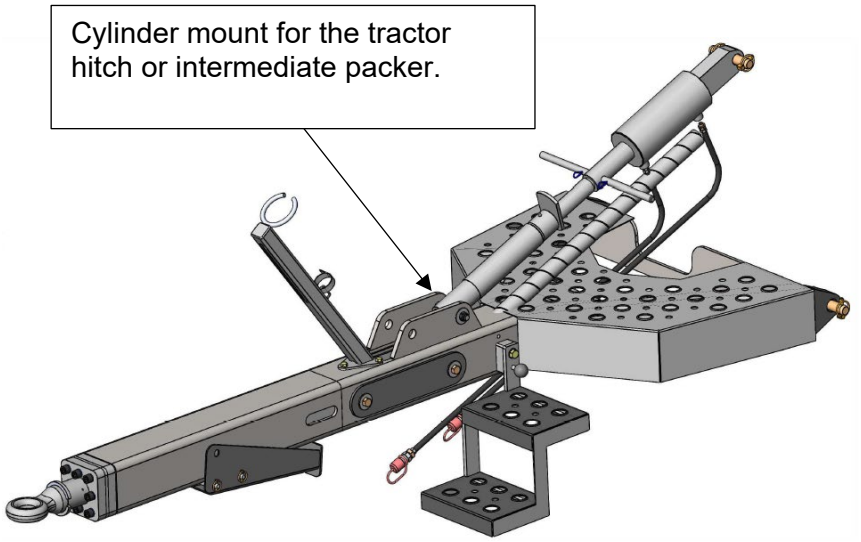


Figure 3. Fit the drawbar cylinder in the rear hole when attaching directly to the tractor hitch or using an intermediate packer.

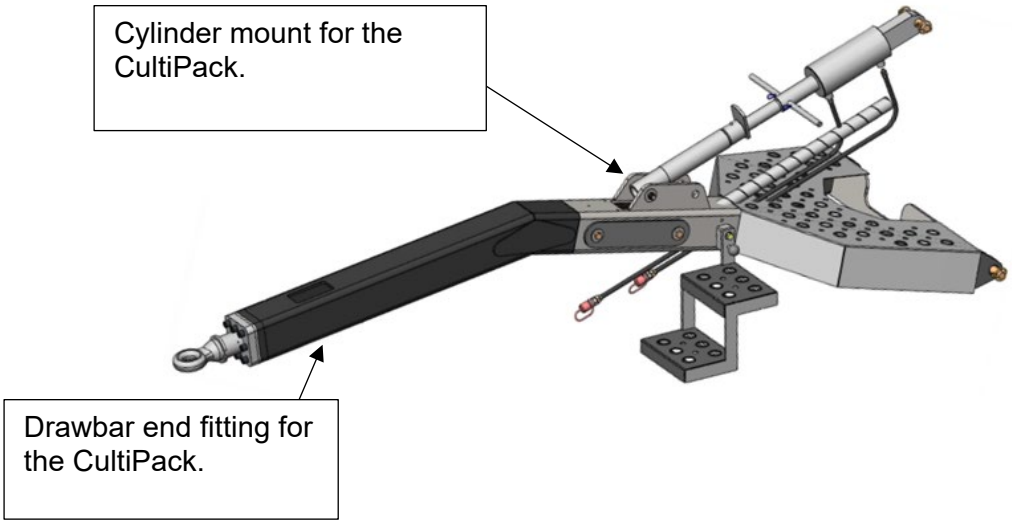


Figure 4. Fit the drawbar cylinder in the front hole when using a CultiPack intermediate cultivator. Use the dedicated drawbar end fitting for this connection.

5.3 Attaching the machine to the tractor

The Super Orion is normally attached to the tractor hitch, an intermediate packer or a CultiPack cultivator. We do not recommend attaching it to a drawbar carried by the tractor's lower links, as this reduces the load on the front axle and impairs steering.

5.4 Hydraulic connections

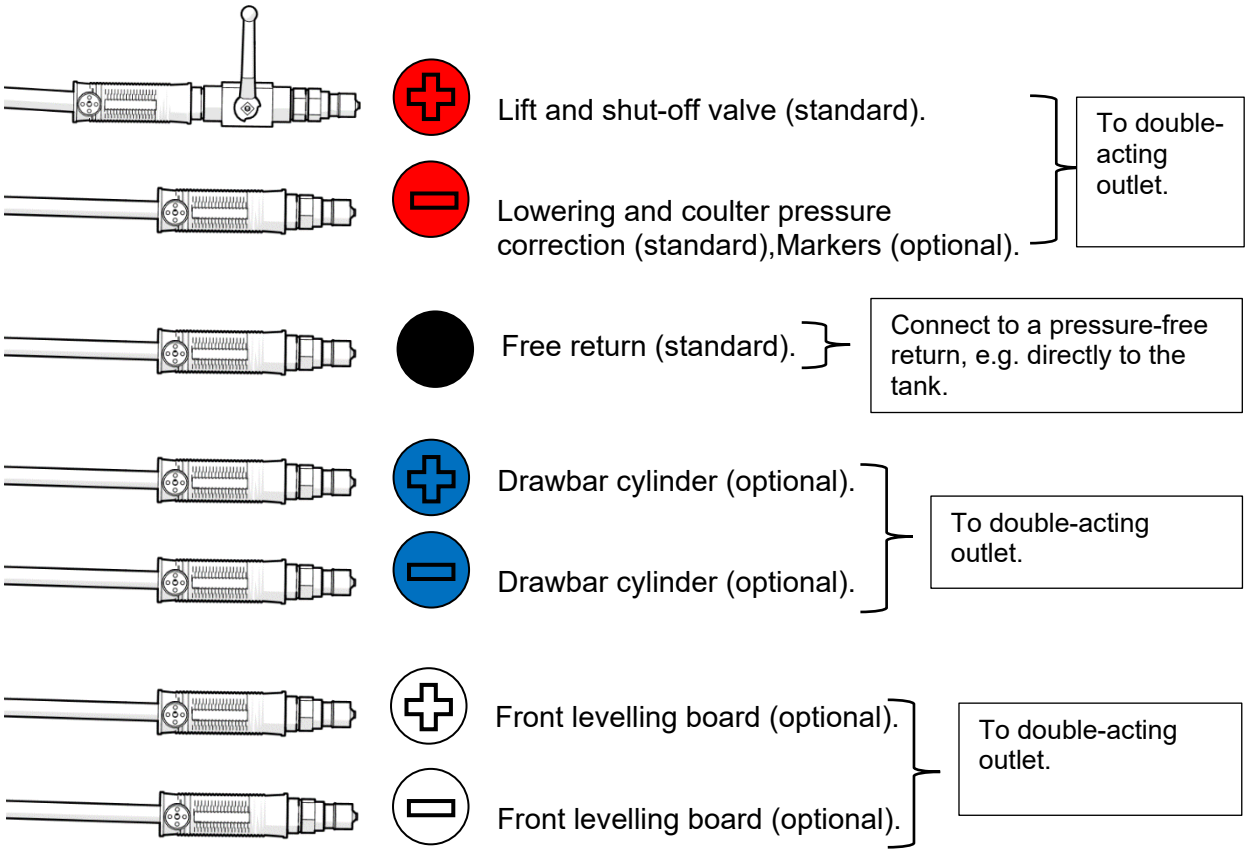
Connect the standard Super Orion's lift and lower circuit to a double-acting tractor outlet. The optional drawbar cylinder requires a separate double-acting outlet. Connect the free return to a pressure-free line, for example directly to the tank.

NOTE! Excessive back pressure in the free return slows or prevents lowering of the rear harrow.

Before disconnecting the lift hose from the tractor, close its shut-off valve by turning the handle across the hose. Open the valve only after reconnecting the hose.

If fitted, the row markers operate from the same valve as the machine lift and lower functions. Connect the machine to a double-acting hydraulic outlet.

The hydraulic front levelling board requires its own double-acting outlet.



Some tractors require manufacturer-specific hydraulic quick couplings. Replace the couplings with the type recommended by the tractor manufacturer if necessary.

Route the hydraulic hoses inside the drawbar for protection.

5.5 Electrical connections

5.5.1 Electrical connection to an ISOBUS tractor

The Super Orion draws operating power from the ISOBUS socket. Plug the implement's ISOBUS connector into the tractor's ISOBUS socket.

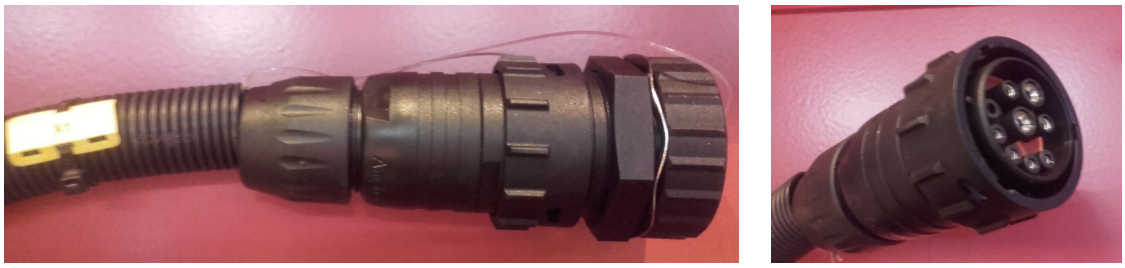


Figure 5. Implement ISOBUS connector.

The rear lights have a separate 7-pin plug. Connect it to the tractor's lighting socket.

5.5.2 Electrical connection with a separate wiring harness

If the tractor has no ISOBUS socket, draw power directly from the tractor battery using the cable supplied with the machine. Install the cable so it can remain on the tractor when the drill is disconnected.

Consult the tractor manufacturer or its representative about the installation and have an authorised technician fit the cable correctly for the tractor.

Route the cable so it cannot be pinched, for example by the cab suspension. Take account of any master switch on the tractor. The cable includes a fuse and a relay for the drill's master switch.
The cable can remain on the tractor when the drill is disconnected. If you use a different tractor for drilling, move the battery cable to it or order and fit an identical one.

Separate instructions are provided for connecting the wiring harness.

5.5.3 Electrically controlled lift and lower limits

NOTE! A solenoid valve controls the machine's upper and lower height limits (Figure 6).

WARNING! Keep the power supply connected whenever moving the machine. Without power, the tyres or coulters can be severely damaged.
If the power is disconnected, take extreme care when lifting. Do not raise the machine too far.

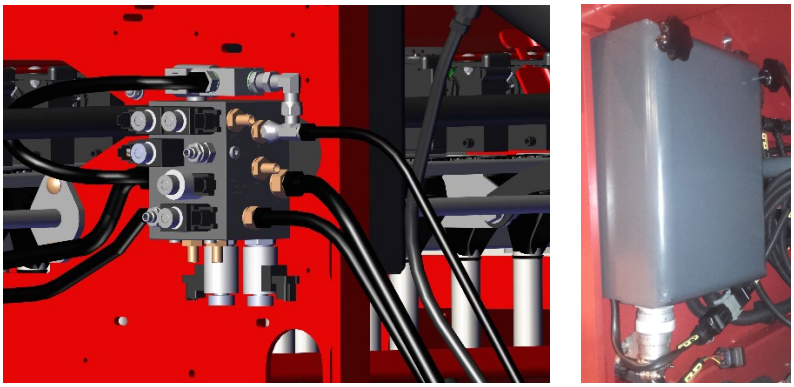


Figure 6. Hydraulic valve block and electrical box.

Route the electrical cables through the drawbar for protection.

5.5.4 Fuses

The fuses are below the electrical box (Figure 6).

A – F1 – 15 A – EPEC control unit and linear actuators
B – F2 – 15 A – Fertiliser metering motors.
C – F3 – 15 A – Left-hand seed and small-seed motors.
D – F4 – 15 A – Right-hand seed and small-seed motors.
E – F5 – 5 A – Sensors.
F – F6 – 15 A – External power socket

If a fuse blows, investigate the cause. Never fit a fuse with a higher rating than the original.

6. FILLING THE HOPPERS

We recommend taking the machine to the field empty. Bring the seed and fertiliser to the field, for example on a trailer, and fill at the field edge. If you must fill far from the field, take extra care when travelling with full hoppers. Use the maximum transport speed of 40 km/h only on roads in good condition.

If seed and fertiliser data have been saved, you can monitor the hopper levels on the display. With monitoring enabled, the controller sounds an alarm when the amount of seed or fertiliser falls to a set level.

6.1 Adjustable hopper volume

The adjustable partition changes the relative capacities of the fertiliser and seed hoppers. Loosen the locking screws on the support rods and pivot the partition to the required position (Figure 7). Lock the rods again after adjustment.



Figure 7. Hopper partition adjustment rod.

6.2 Filling method

The hoppers are large and have a relatively high filling height. We recommend using bulk bags with suitable lifting equipment, or a filling auger.

Bulk bags can be handled with various loaders. Never stand under a suspended load. Do not rest a bulk bag on the drill structure or overload the machine. Find out how to empty a bulk bag partially.

7. EMPTYING THE HOPPERS

7.1 Emptying the fertiliser hopper

Use the discharge tube at the openings in the hopper corners to empty large amounts of fertiliser (Figures 8 and 9). The hopper can also be emptied through the coulters. Place a sheet under the machine and move the fertiliser bottom flap lever (Figure 8) past setting 4. This empties most of the hopper. Brush any remaining fertiliser into the metering chambers. Turn the ground wheel to empty the chambers. Move the flap lever back and forth rapidly several times to clear fertiliser from the flaps. For small amounts, move the calibration trays into the test position and discharge into them. Operate the flap lever several times.

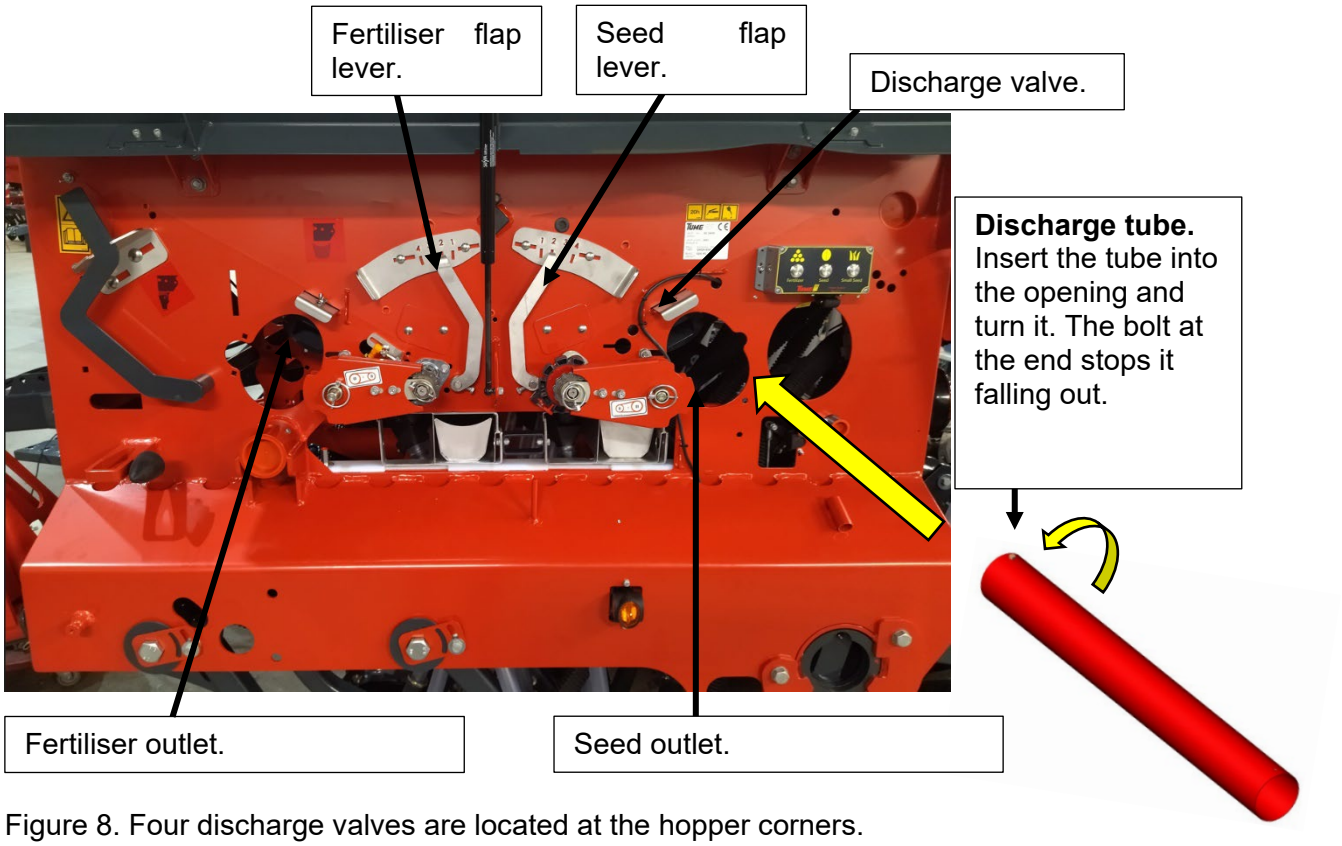


Figure 8. Four discharge valves are located at the hopper corners.
Fit the discharge tube to the outlet and open the valve.

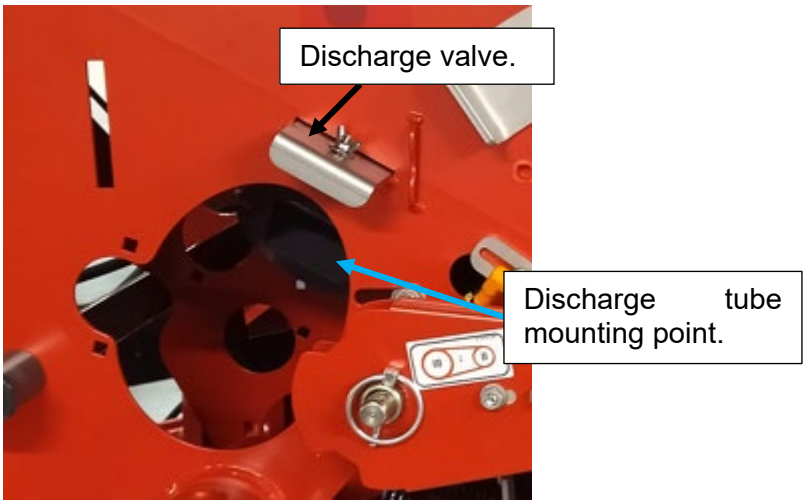


Figure 9. Fertiliser hopper discharge valve.

7.2 Emptying the seed hopper

Empty the seed hopper in the same way as the fertiliser hopper.

7.3 Metering units

The metering units consist of helical metering rollers, spring-loaded bottom flaps and adjustable shut-off slides (Figure 10).

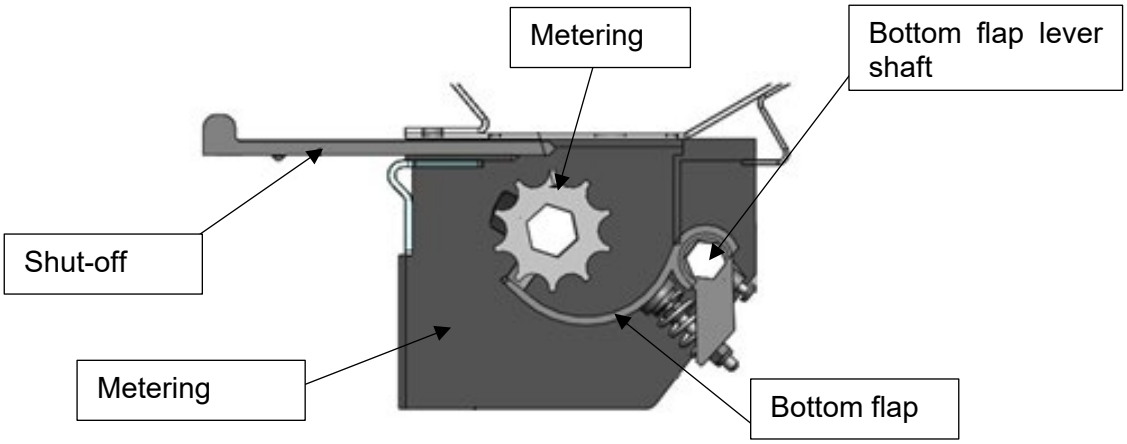


Figure 10. Metering unit.

7.3.1 Bottom flaps

Metering accuracy depends on the gap between the bottom flap (Figure 10) and the metering roller. Keep the flaps in the correct position and repeat the calibration test after adjustment. The flaps yield if a hard foreign object enters the gap. Four levers at the ends of the machine adjust the flaps under the metering rollers (Figures 11 and 12).

7.3.2 Shut-off slides

Each metering chamber has a shut-off slide between it and the bottom of the hopper (Figure 10). Normally the slides are fully open. Close individual slides if you want to stop metering through particular coulters, for example to sow through every other coulter. Push the slide fully into the chamber to close it.

7.4 Controls on the sides of the machine

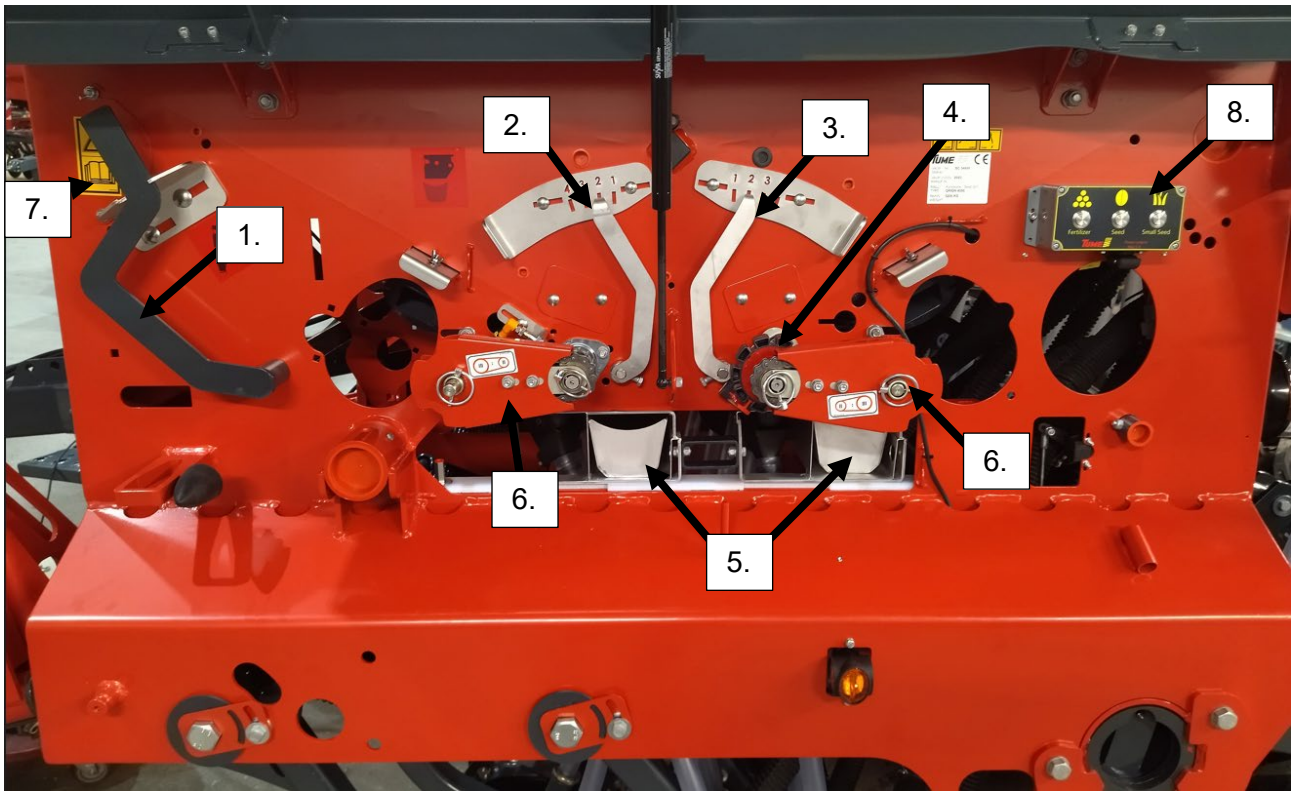


Figure 11. Controls on the left side of the machine.

1. Calibration/sowing selector lever. The illustration shows the sowing position.
2. Fertiliser bottom flap adjustment lever.
3. Seed bottom flap adjustment lever.
4. Seed metering handwheel.
5. Calibration trays
6. Drive cassettes
7. Storage compartment.
8. Calibration buttons and external power socket.

The right side has corresponding bottom flap levers and drive cassettes, plus the fertiliser metering handwheel.

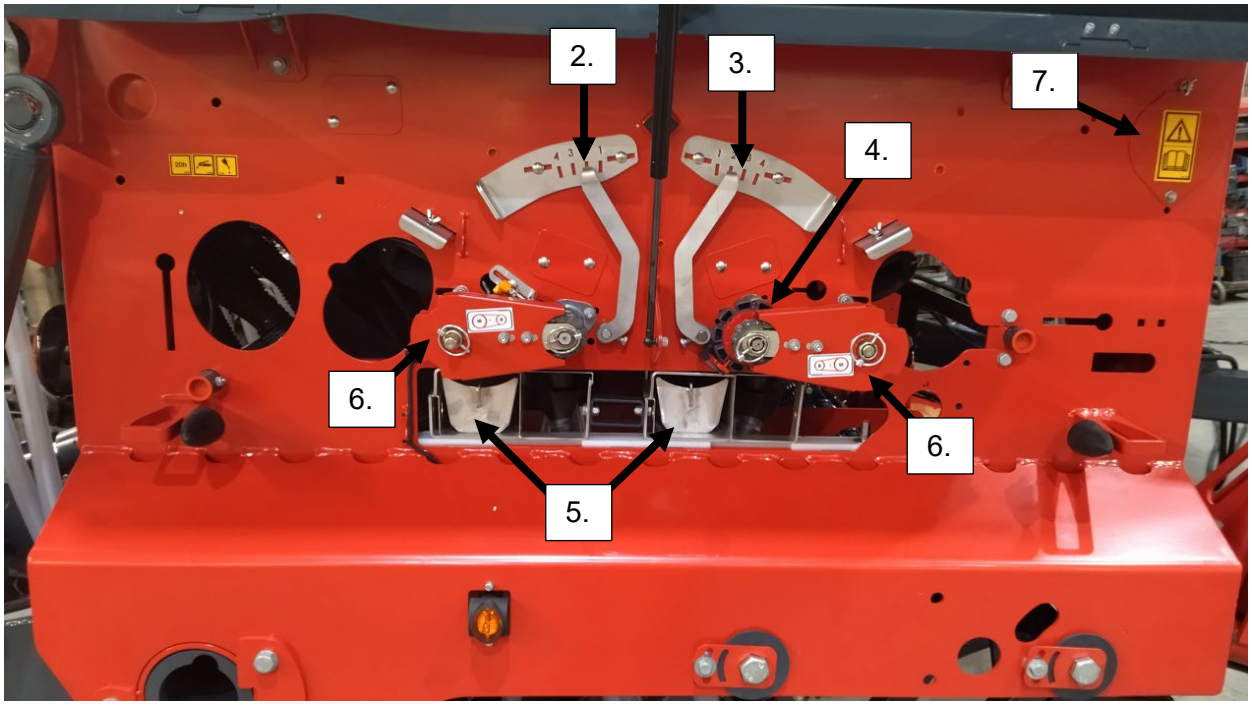


Figure 12. Controls on the right side of the machine.

1. -
2. Seed bottom flap adjustment lever.
3. Fertiliser bottom flap adjustment lever.
4. Fertiliser metering handwheel.
5. Calibration trays
6. Drive cassettes.
7. Storage compartment.

7.4.1 Calibration/sowing selector lever

The machine is set to sow when the lever (item 1 in Figure 11) is locked in the front slot. Move it fully rearwards to slide the calibration trays under the metering units and select the test position.

7.4.2 Fertiliser bottom flap adjustment lever

Use the fertiliser bottom flap levers (Figures 11 and 12) to set the gap between the flaps and metering rollers. Check the lever position on the four-notch scale during calibration.

NOTE! Always set the levers to the same position on both sides of the machine.

7.4.3 Seed bottom flap adjustment lever

Use the seed bottom flap levers (Figures 11 and 12) to set the gap between the flaps and metering rollers. Check the lever position on the four-notch scale during calibration.

NOTE! Always set the levers to the same position on both sides of the machine.

7.4.4 Seed and fertiliser metering handwheels

Use the handwheels to select the basic metering range. The available settings are 10.0, 6.0 and 2.0. Remove the drive cassette, push and turn the handwheel lock to release it, and turn the handwheel to the required setting. Read the setting at the inner face of the handwheel. A setting of 2.0 means that it is open exactly two turns from zero.

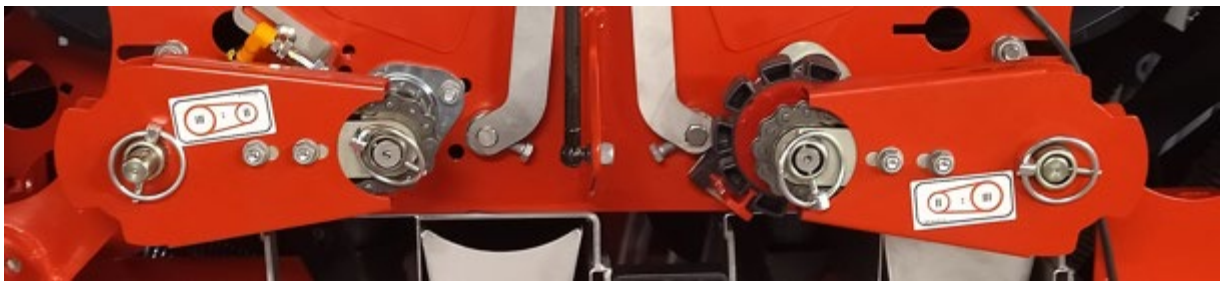
WARNING! Remove the drive cassettes on both sides before adjusting. Otherwise adjustment is not possible and the machine may be damaged.

7.4.5 Calibration trays

Remove the calibration trays (Figure 11) from the end of the machine after moving the selector lever to the calibration position.

7.4.6 Drive cassettes

The cassette drives the seed metering shaft. It can be reversed to suit the material being sown. See the calibration test section.



7.4.7 Calibration buttons and auxiliary power socket

Press the appropriate calibration button (item 8 in Figure 11) to run the fertiliser, seed or small-seed metering units during testing. The 3-pin power socket below the buttons is rated at a maximum of 5 A. Use it, for example, for work lights.

8. ADJUSTING SOWING DEPTH AND COULTER PRESSURE

Lower the machine while driving forwards. Stop the tractor with the machine lowered. Do not let the tractor roll backwards, as this can block the coulters. Make sure the machine is level. Adjust it, if needed, using the drawbar top link adjuster.

The Tume Super Orion has large, serrated double-disc coulters that provide good clearance for material to pass. The coulters are designed for minimum-tillage and conventionally cultivated ground. They can carry a downforce equivalent to up to 125 kg if needed. Lowering the frame tensions the coulter pressure springs (Figure 13) and increases downforce.

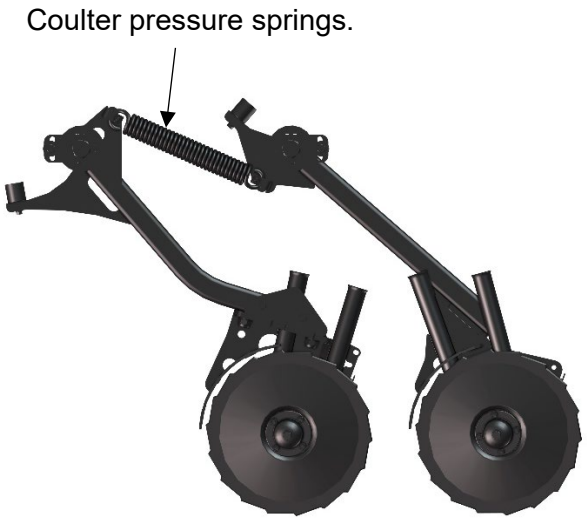


Figure 13. Coulter assembly.

Coulter pressure is sufficient when the seed is placed on the bottom of the seedbed or slightly below it, so that the disc cuts a shallow furrow into the seedbed base.

Avoid excessive coulter pressure. For example, sowing turnip rape too deep can reduce emergence.

As a rule, cultivate to the intended sowing depth. Set sowing depth for the crop and soil moisture. Place the seed in moist soil to ensure germination. Do not leave it in a dry, loose soil layer.

Adapt your driving speed. Excessive speed makes sowing depth less uniform. When conditions do not allow high coulter pressure, the coulters may bounce excessively at high speed. As a rule, the risk increases above 12 km/h.

Check sowing depth regularly as you work.

Setting coulter pressure

Coulter pressure depends on the machine height. The lower the machine, the higher the coulter pressure. The solenoid valves shut off the lift and lower circuit when the set limit is reached. If the Super Orion sinks below the set position, its automatic correction system uses pressure in the lower circuit to raise it slowly.

Increasing coulter pressure

Increase the setting with the **+** button or select a different sowing profile. Because coulter pressure depends on the machine height, increasing the pressure requires lowering the machine. Use the tractor hydraulics to lower it to the selected setting.

Reducing coulter pressure

Reduce the setting with the **–** button or select a different sowing profile. Because coulter pressure depends on the machine height, reducing the pressure

requires raising the machine from the lowered position. Raise it slightly while sowing and lower it again, or use the downforce correction valve. The machine opens the valve and rises when the lower circuit is pressurised. It stops when the set coulter pressure is reached. When lowered after a headland turn, it stops automatically at the selected position. If it lowers quickly past that position, the correction system raises it slightly.

9. ADJUSTING THE REAR HARROW



Figure 14. Rear harrow.

The rear harrow tines can be moved sideways and the working angle adjusted. Position the tines to run along the centres of the soil ridges between the support wheels and of the wheel tracks. Check the working depth every time you change the angle.

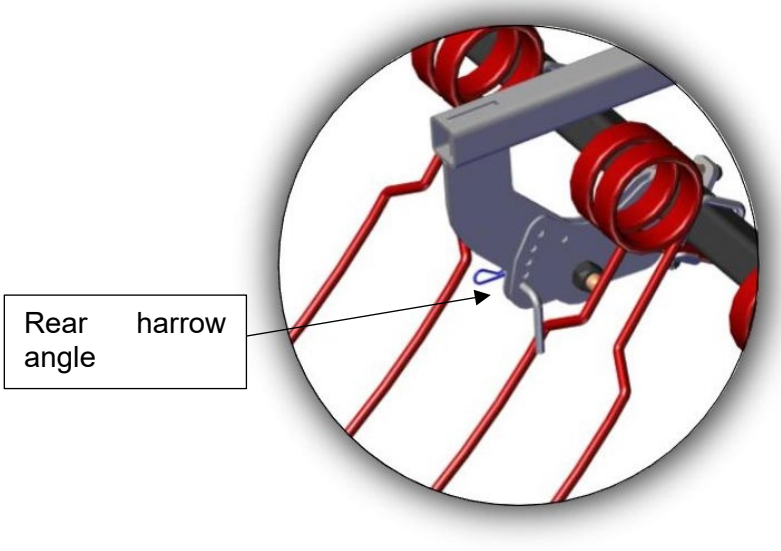


Figure 15. Rear harrow angle adjustment.

Use the half-lift function on the display to control the rear harrow. See section 10.3.14, Half lift.

Adjust the harrow's lift speed using the flow control valve with the blue knob at the front of the machine. Loosen the hex screw on the side of the knob, turn the knob and retighten the screw. Adjust with full hoppers and the oil at normal operating temperature.

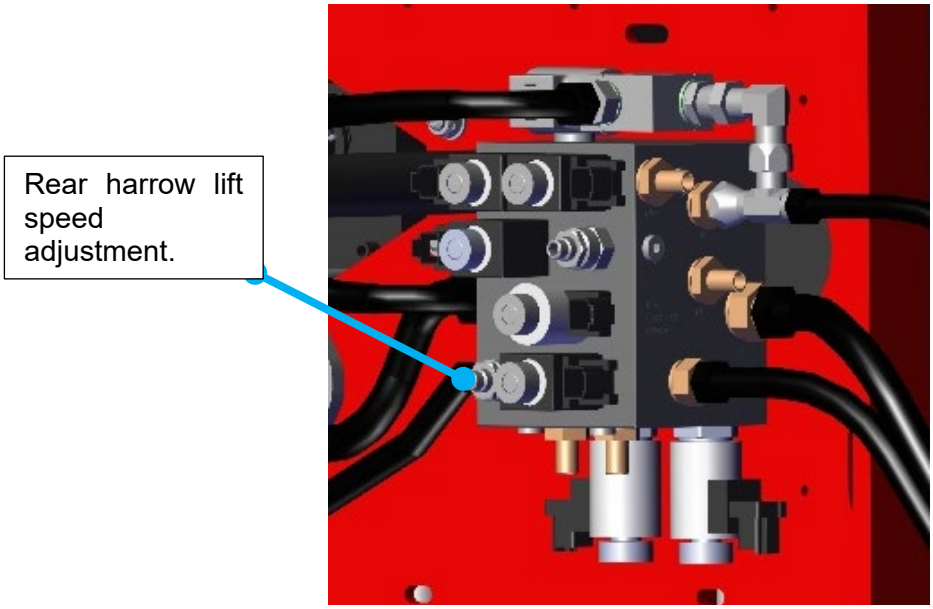


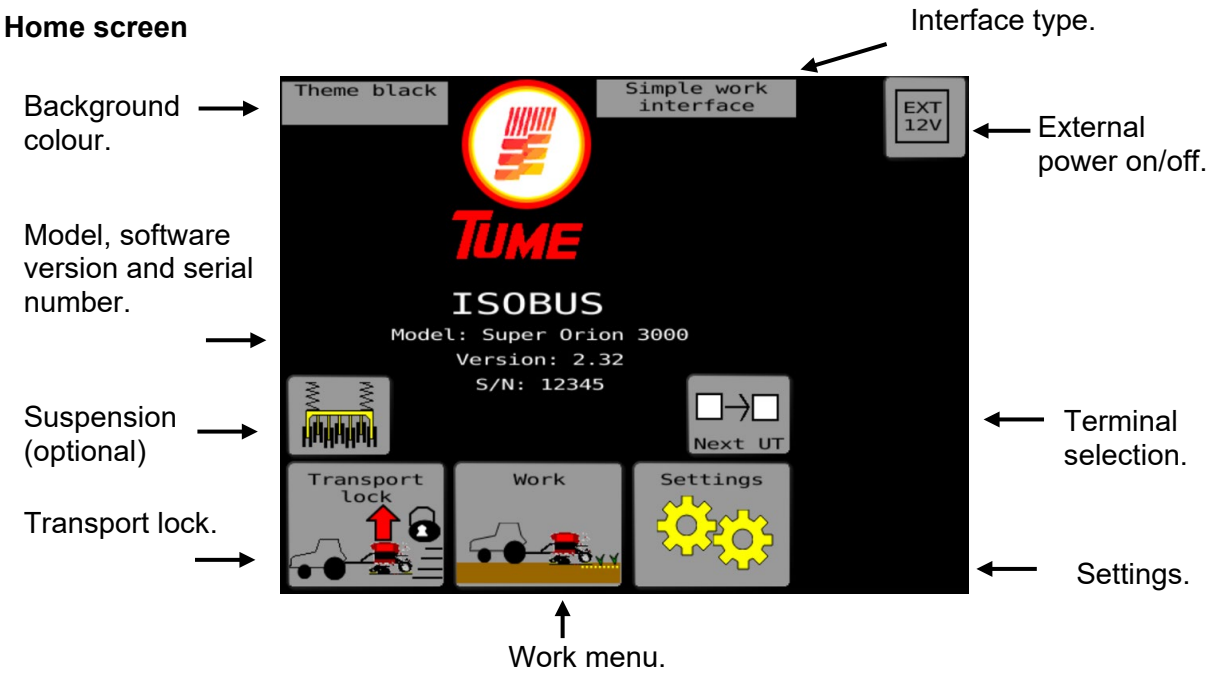
Figure 16. Rear harrow lift speed valve. Loosen the hex screw to increase the lift speed and tighten it to reduce the speed. Secure the setting with the locknut.

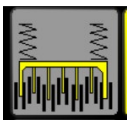
WARNING! Do not reverse with the rear harrow on the ground!

10. USER INTERFACE

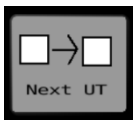
The interface and icon positions may differ from the illustrations depending on your terminal.

Home screen

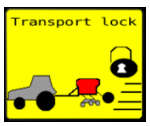




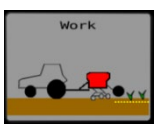
The optional rear wheel suspension is active for road travel when its icon is yellow and inactive when grey. It operates only when the home screen is active.



Use Next UT to move the interface to another terminal if more than one ISOBUS terminal is available.



Transport lock. Grey = off. Yellow = on. Activate **it only with the machine fully raised. Check** that the rear harrow is also raised. The lock prevents unintentional lowering during transport, for example if the hydraulics are operated accidentally or a tractor valve leaks.

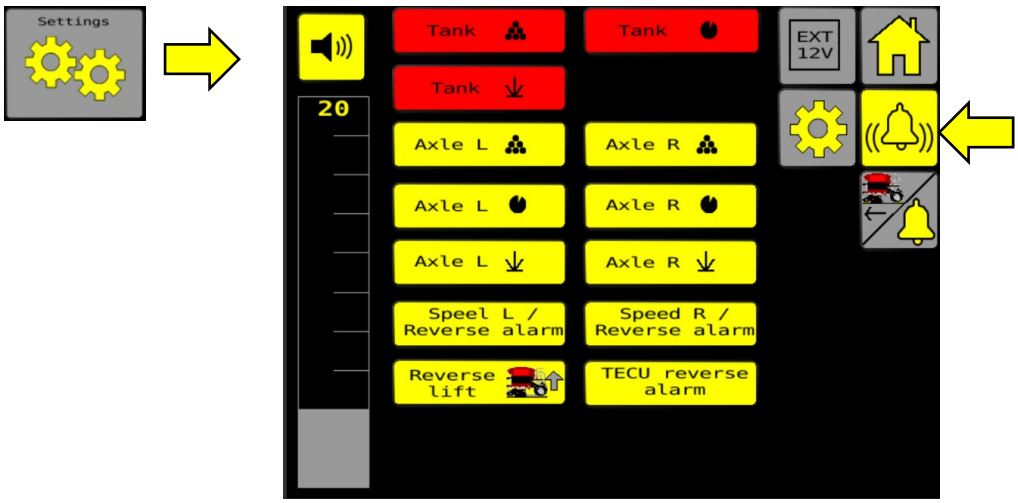


Select the work menu while sowing.



Use the settings menu to adjust alarms, distance per wheel revolution, actuator and valve settings, height sensor calibration and the speed source.

10.1 Alarm management, ALARM CONTROL



On the ALARM CONTROL screen, you can enable or disable the following functions:

- Speaker = Sound on/off. Set the volume below on a scale of 0–100.
- Tank = Fertiliser hopper level sensor.
- Tank = Seed hopper level sensor.
- Tank = Small-seed/starter fertiliser hopper level sensor (optional).
- Axle L = Left fertiliser metering shaft monitor.
- Axle R = Right fertiliser metering shaft monitor.
- Axle L = Left seed metering shaft monitor.
- Axle R = Right seed metering shaft monitor.
- Axle L = Left small-seed/starter fertiliser metering shaft monitor.
- Axle R = Right small-seed/starter fertiliser metering shaft monitor.
- Speed L / reverse alarm = Left wheel speed sensors.
- Speed R / reverse alarm = Right wheel speed sensors.
- Reverse lift = Automatically raises the rear harrow when reversing.
- TECU reverse alarm = Reverse alarm from the tractor ECU.

A yellow icon indicates that monitoring is active. Press the icon to enable monitoring. Press it again to disable monitoring. The icon turns grey.

No alarm is issued when the icon is grey.

A red icon indicates an active alarm from the corresponding sensor, for example when a hopper is nearly empty.

Speed L and Speed R indicate whether the corresponding wheel speed sensor is active. If only one side is active, its speed is also used for the other side.

10.2 AUX, totals, alarm delays and speed settings





Reset AUX clears the stored external control assignments in the drill ECU. After restart, the old assignments will not be offered for restoration. Set up the AUX-N functions again.



Retry AUX attempts to restore the external control assignments if automatic restoration fails. Some tractors require this because the UT terminal accepts assignments only after AUX-N has been enabled.

AUX-N functions

AUX-N (Auxiliary Control New) is an auxiliary control defined by the ISOBUS standard. The machine can be operated via ISOBUS using the tractor controls or a third-party auxiliary control. Buttons and levers are easier to operate than a touchscreen when the implement is moving and shaking. All drill functions are available on the touchscreen, so an AUX-N control is optional. You can use AUX-N to:

1. Select a profile
2. Adjust application rates
3. Adjust coulter pressure
4. Step the tramline counter forwards or backwards
5. Toggle marker-only lift
6. Operate the row markers

Assigning AUX-N controls

Assign AUX-N functions from the ISOBUS terminal with UT number 1. If several terminals are on the ISOBUS bus, give each one a different UT number. Even if the drill interface is on terminal 2, assign AUX-N functions on terminal 1. View or change the UT number in the terminal settings. Two terminals with the same number cause a bus error and the system will not work.
The assignment procedure depends on the terminal. Refer to its instructions for setting up AUX-N.

After assignment, the drill connects to the AUX-N control through the UT terminal and responds to the assigned buttons. The drill retains the assignments when power is lost.

AUX-N after a restart

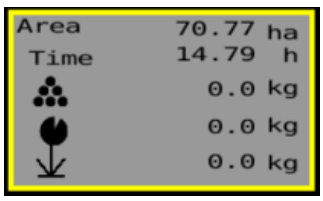
When the drill is restarted or reconnected to the same tractor after a break, the UT terminal offers to restore the assignments. Accept restoration to use AUX-N. The controls are then available if permitted by the tractor and auxiliary control safety functions. Check that AUX-N is active before resuming work.

Some terminals or tractors do not restore the assignments automatically until AUX-N has been enabled on the terminal. Enable AUX-N manually, then press Retry AUX on the drill's main screen.

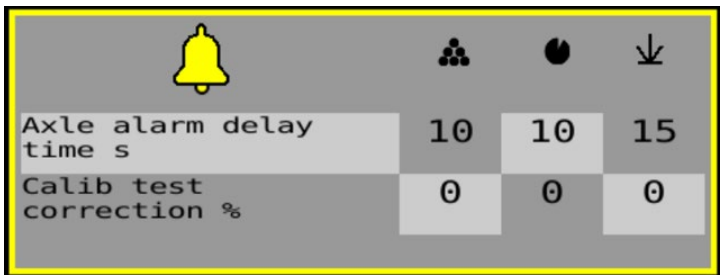


If there is more than one terminal, use the number in the UT on start icon to select which terminal shows the drill interface at start-up.

NOTE! If a terminal starts too slowly, the drill may not find it on the bus. The interface will then appear on the available terminal with the lowest UT number.

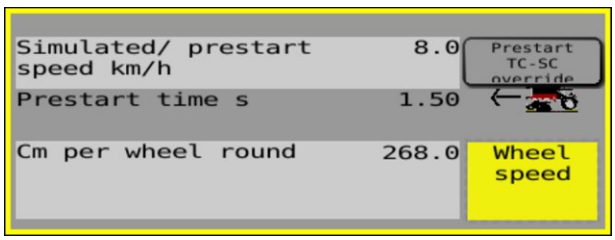


Lifetime totals for area, working time, fertiliser and seed. These cannot be reset.



Axle alarm delay time s
Delay before a shaft alarm is triggered. NOTE! Too short a delay can cause unnecessary alarms.

Calib test correction %
Offsets the application rate relative to the calibration result. Use it if, for example, a particular fertiliser regularly gives an actual rate higher or lower than the calibration result.



Simulated / prestart speed km/h
Driving speed used during simulation and Prestart.

Prestart time s
Prestart running time.

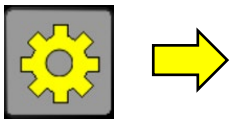
Cm per wheel round
Distance travelled per rear wheel revolution. This affects the area and speed readings.

Factory settings:
Tyre 7.5–16 = 240
Tyre 7.5–20 = 268
Tyre 280/70-18 = 262



Select the speed source. The factory setting uses the drill's support wheels.

10.3 Equipment and features





Settings for manufacturer use.

10.3.1 Sowing menu

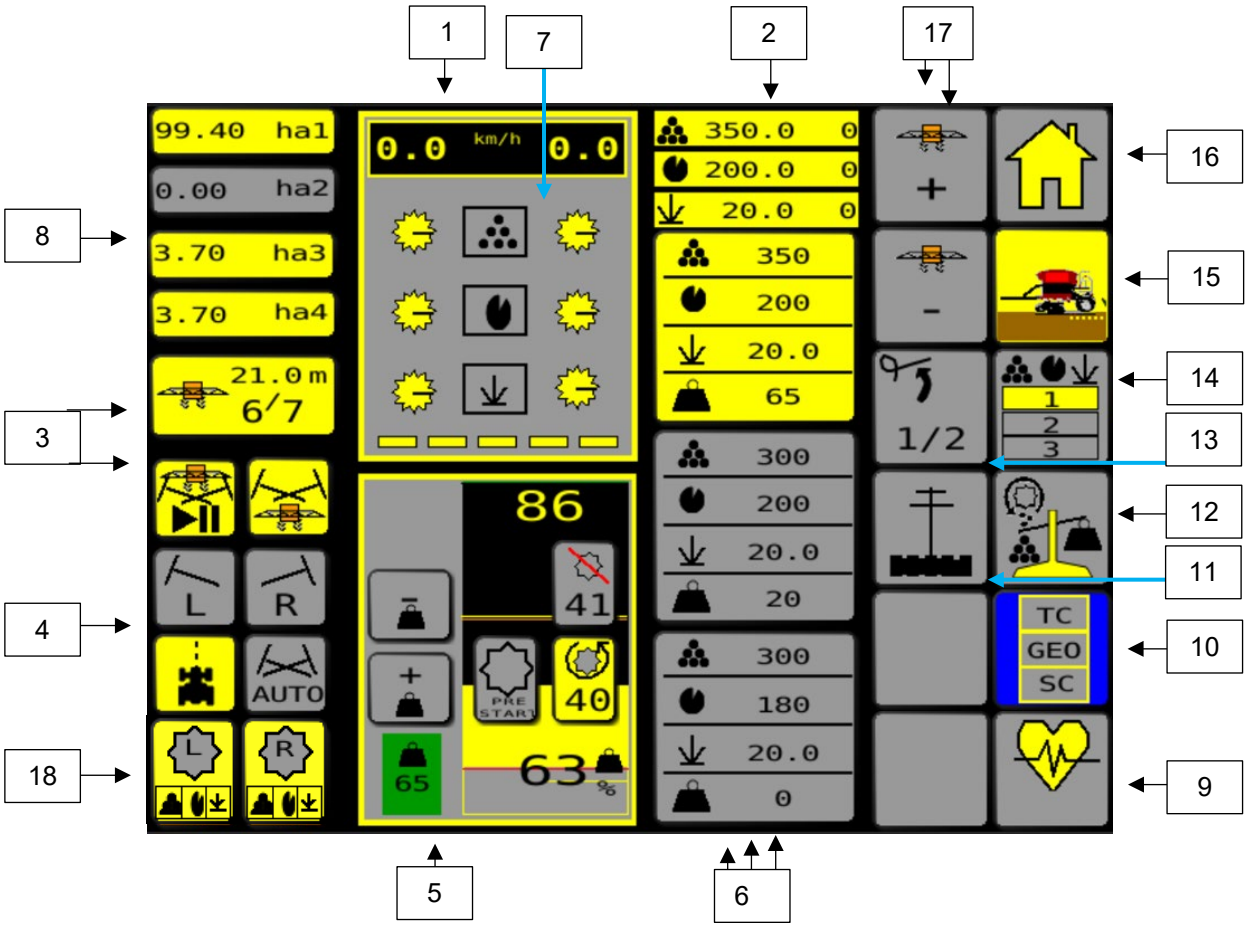


Figure 17. Sowing menu.

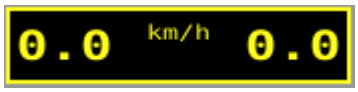
Interface icons:

1. Driving speed display.
2. Current application rates.
3. Tramlines and tramline display.
4. Row markers
5. Coulter pressure and machine position,
   metering start/stop and Prestart.
6. Three sowing profiles.
7. Hopper level and shaft monitors.
8. Area counters.
9. Diagnostics and alarm
   acknowledgement.
10. ISOBUS functions.
11. Marker-only lift
12. Calibration test settings
13. Half lift
14. Sowing profile settings
15. Sowing menu.
16. Home screen
17. Next and previous tramline step.
18. Metering motors

NOTE! Leave the sowing menu during transport by pressing button 16 (EXIT WORK).

The icons shown depend on the equipment fitted. Depending on your machine, the icons for ISOBUS Task Controller status, small-seed shaft and hopper sensors, pre-emergence marking, left and right markers or automatic marker alternation may be absent. The terminal can also affect icon position and appearance.

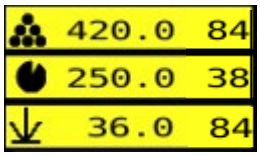
10.3.2 Driving speed display



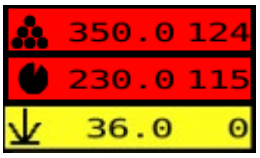
When sowing, the display shows the measured speed in km/h. The machine has left and right speed sensors, so two speeds are displayed. Normally the speed is measured at the support wheels. You can select another available source, such as GPS, tractor or radar, in the settings. The speed signal is used to measure area and adjust the application rate to travel speed.

NOTE! The display and the tractor may show different speeds due to wheel slip, tyre sinkage, a difference between actual and configured tyre size, cornering or rounding. A small difference requires no action.

10.3.3 Current application rates



The icons show the current rate in kg/ha and as a percentage of maximum metering capacity. Run a calibration test to make sure the displayed rate is accurate.



A red icon indicates that the target rate has not been reached. The metering unit may be unable to deliver the requested kg/ha at the current speed.

10.3.4 Tramlines and tramline display



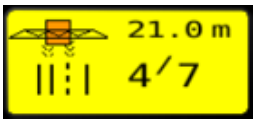
Pause/**play**. The tramline counter and marker sequence advance when the machine is raised.



Pause/play. The tramline and marker sequences do not advance when the machine is raised. The markers remain up when the machine is lowered.

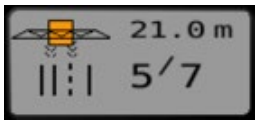


Tramlines active. Enable this function (yellow) to make tramlines automatically. The tramline settings button also turns yellow.

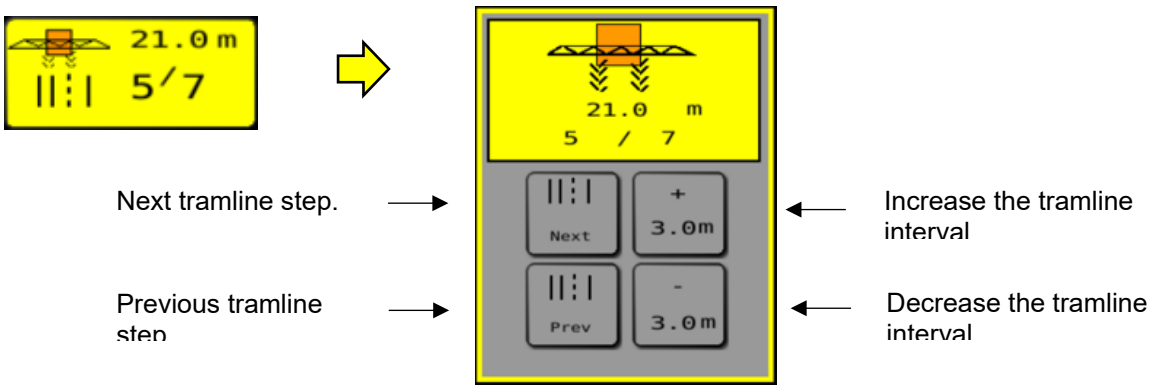




Tramlines off (grey). Disable this function to sow without tramlines. The tramline settings button also turns grey.

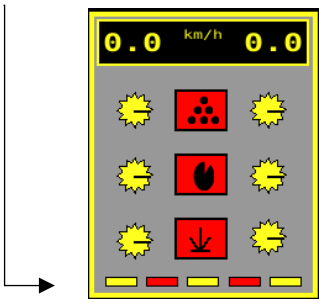


Tramline settings



The first number shows the current step in the tramline cycle. The second is the interval, which you set to suit the sprayer width. The example shows a 3 m drill and a 21 m sprayer. Tramlines are made in the middle of the cycle, on step 4 of 7 in this example.

When the drill makes tramlines, the terminal sounds at regular intervals. The active tramline units are shown in red at the centre of the display.



10.3.5 Row markers



Left marker off.



Left marker active.



Right marker off.



Right marker active.



Pre-emergence marking off.



Pre-emergence marking active.

Pre-emergence marking uses the row markers to mark the tramline location in the field. Use this function when a crop needs spraying before emergence, while the tramlines are still invisible. It works only if both tramlines were made on the preceding tramline pass.

On the pass after making a tramline, both row markers lower. One marker draws a line down the centre of the preceding tramline pass. This provides a centre guide for spraying. Press the button shown above to activate pre-emergence marking. It turns yellow. Press again to switch off the function. The button turns grey.



Take extreme care when using pre-emergence marking. Both markers lower, creating a hazard for anyone nearby.



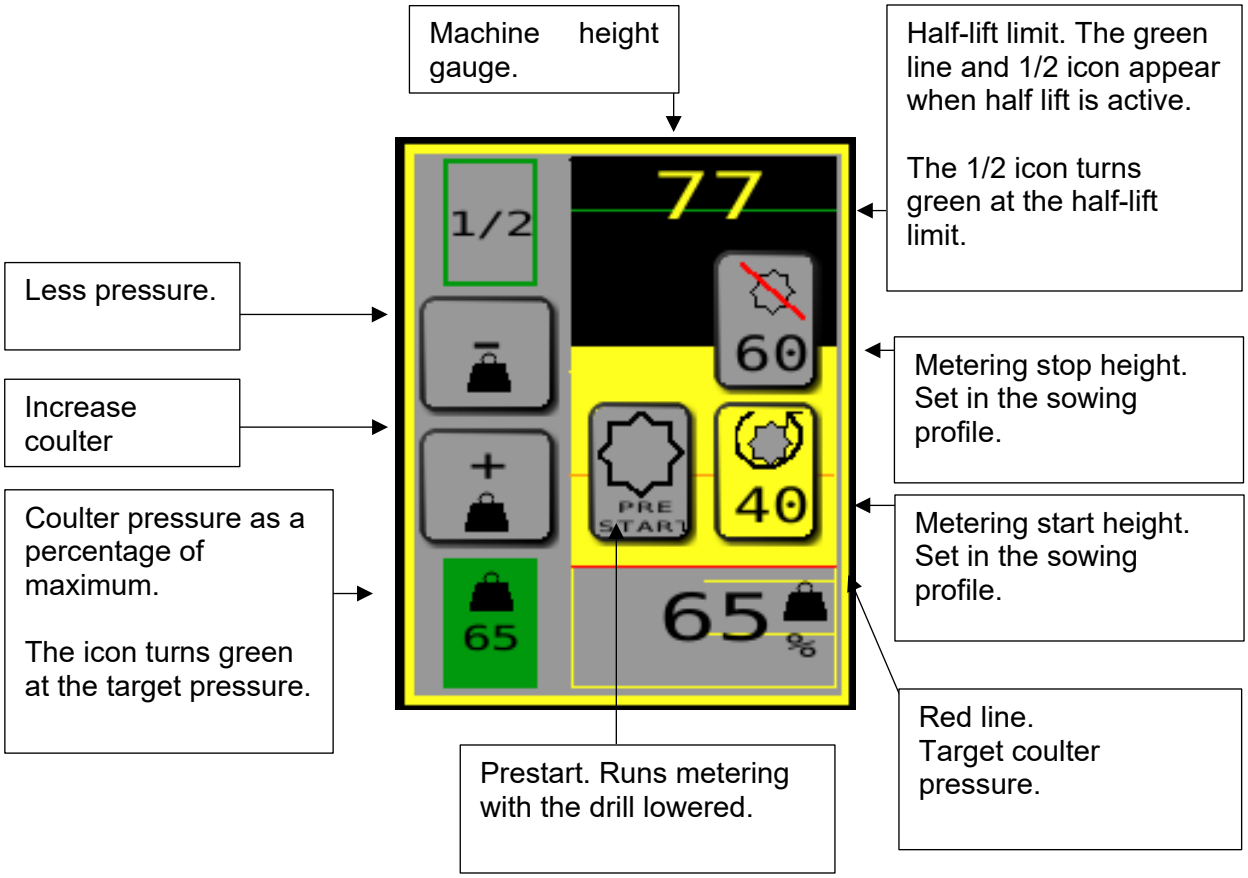
Automatic left/right marker alternation off.



Automatic left/right marker alternation on. The markers lower alternately on successive passes.

When automatic alternation is enabled, the opposite marker lowers each time the machine is lowered.

10.3.6 Coulter pressure adjustment and machine position



Coulter pressure depends on the machine height. Lowering the machine increases coulter pressure. The solenoid valves shut off the lift and lower circuit at the set limit.

Use the metering start and stop buttons to run or stop the motors at any machine height. At the headland, for example, you can check that seed and fertiliser come out of every coulter with the machine raised.

Increasing coulter pressure

Increase the setting with the + button or select another sowing profile. Lower the machine with the tractor hydraulics to increase coulter pressure. If it goes too low, keep the lower circuit pressurised. The correction system raises the machine slightly to the set height.

Reducing coulter pressure

Reduce the setting with the – button or select another sowing profile. To reduce actual pressure, raise the machine from the lowered position. You can lift it slightly while sowing and lower it again. An easier method is to hold hydraulic pressure in the lower circuit after reducing the setting. The machine then rises slowly. After lifting at the headland, hold the lower circuit pressurised long enough for the machine to stop automatically at the selected pressure.

10.3.7 Three sowing profiles



Each of the three profiles stores fertiliser and seed rates in kg/ha and a coulter pressure setting. Switch profiles when moving between fields or between different soil types in one field.

The active profile has a yellow background. Press a profile to select it while driving.

Press the profile settings button to edit the profiles.

NOTE! When a handwheel sets the rate, the rate cannot be changed from the settings screen.

NOTE! Run calibration tests to make sure the fertiliser and seed rates in the profiles are accurate.

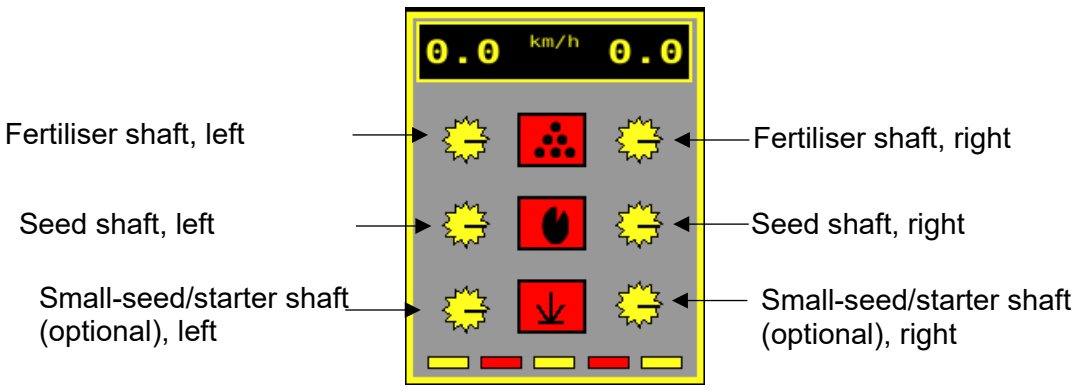
NOTE! Profiles use the active calibration result.

Select the calibration result for the product in use to obtain the correct rate.

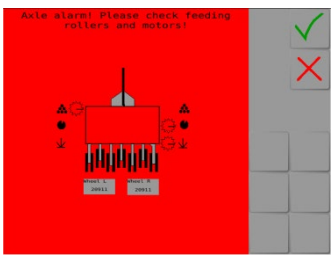
10.3.8 Shaft and hopper monitors

Shaft monitors

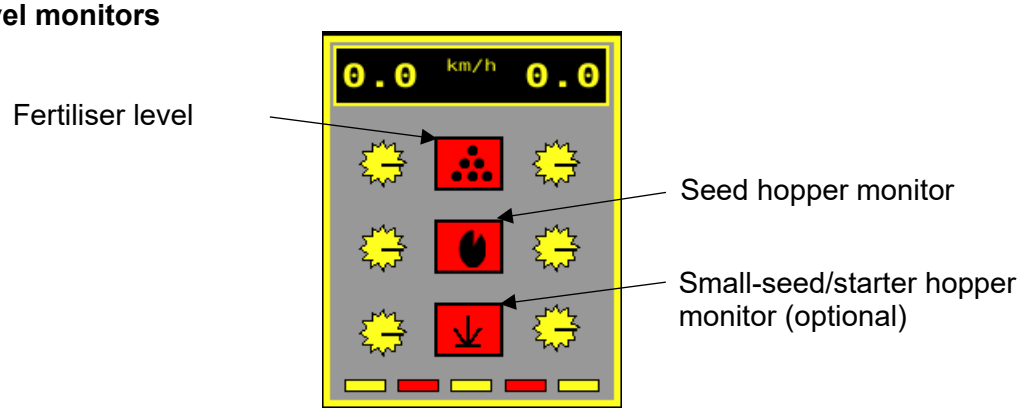
A sensor is fitted at the end of each metering shaft.



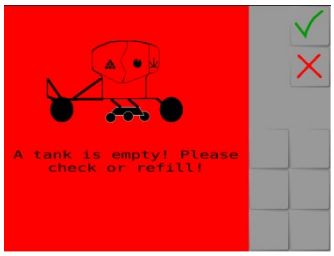
Yellow background = shaft monitor active, no fault.
Grey background = shaft monitor off.
Red background = shaft monitor active, shaft stationary. Alarm!



Hopper level monitors

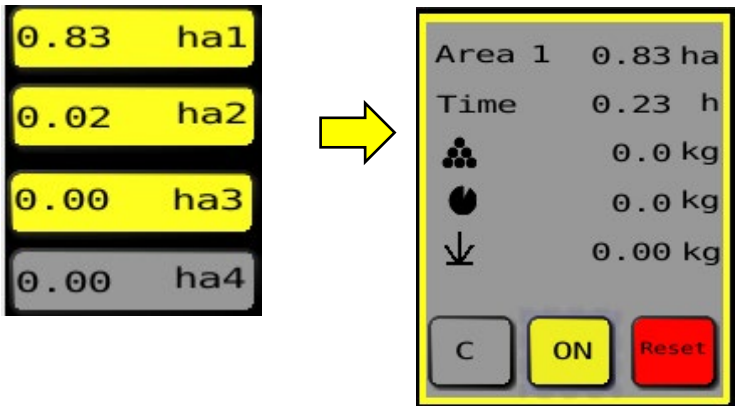


Yellow background = hopper monitor active, no fault.
Grey background = hopper monitor off.
Red background = hopper monitor active, hopper empty. Alarm!



When a hopper is nearly empty, its icon turns red and an audible alarm sounds. Press the alarm acknowledgement button to silence it. A grey icon indicates that the monitor is disabled. Switch it on or off on the settings screen.

10.3.9 Four counters for area, working time and quantities



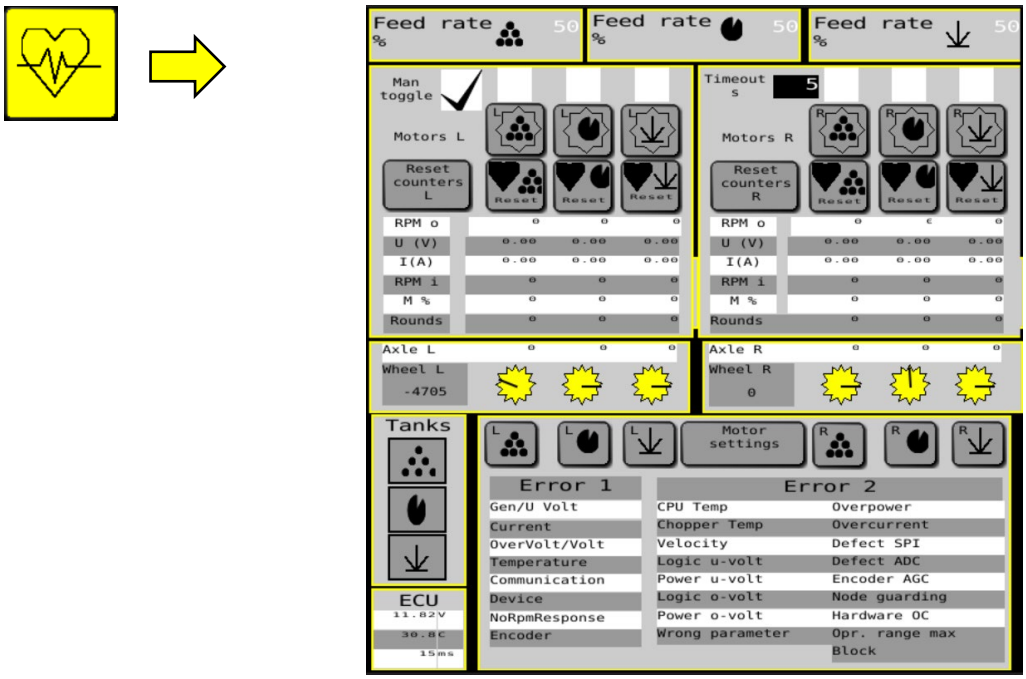
There are four counters for area, working time and quantities. Press the area counter to open the settings. Press a counter's ON butt**on** so it turns yellow to enable it. A grey button means that the counter is off.

Press **ha1, ha2** or another counter to view its recorded area, working time, fertiliser and seed quantities for the measurement period.

NOTE! Applied quantities are calculated, not weighed.
NOTE! Time is displayed in decimal hours. For example, 0.5 h = 30 min.

Press **RESET** to clear the selected counter. Press **C** to close the menu without making changes.

10.3.10 Diagnostics and alarm acknowledgement



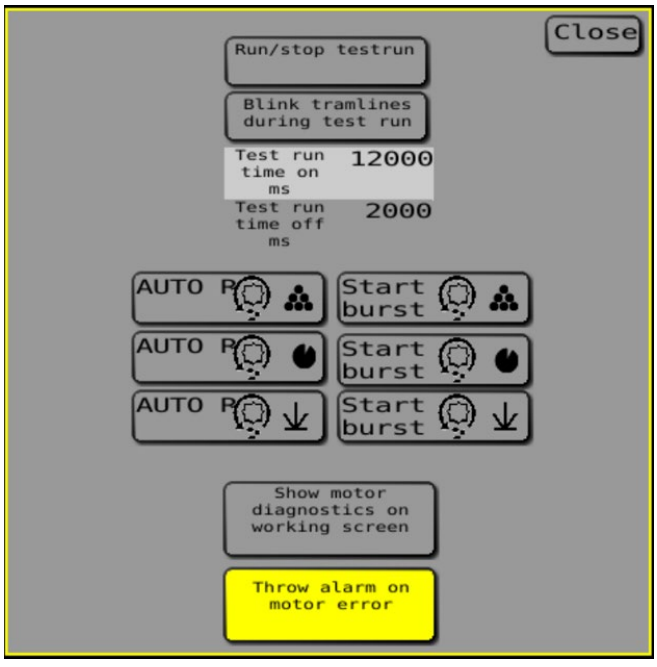
The diagnostics menu displays sensor pulses and active alarms. Use the pulse readings to troubleshoot faults. Press Reset Count to clear the counters. Under ECU, the screen shows voltage, temperature and program cycle time in ms.

Press Motor settings to open the motor settings.

Auto R reverses the metering unit at the tramline step. NOTE! Do not use Auto R for small seed, as it may leave an unsown area at the headland.

Start burst increases motor acceleration at start-up.

CHANGE MOTOR SETTINGS ONLY WHEN SPECIFICALLY REQUIRED!



10.3.11 ISOBUS functions



Manage the ISOBUS Task Controller from the tractor terminal settings. The icons show the status of the functions.

Activate each required Task Controller function on the tractor terminal before using it to control the drill. Refer to the tractor manual. These functions require a suitably equipped tractor.

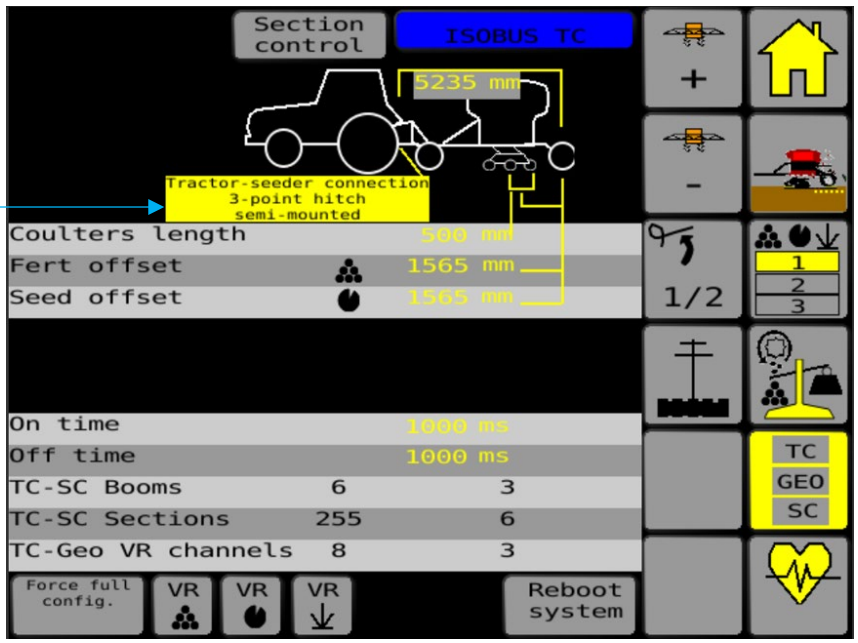
On the Super Orion, the ISOBUS Task Controller can:

- record area, working time and calculated seed and fertiliser totals (TC)
- vary application rates using a prescription map (GEO)
- control sections automatically (SC).

Active functions (TC, GEO or SC) have a yellow icon background. A grey icon means that the function is inactive.

Use the menu to edit the geometry and start and stop times reported to the Task Controller. The blue ISOBUS TC button at the top right indicates that the drill has enabled Task Controller operation. When it is grey, the Task Controller cannot control the drill.

Hitch type selection.

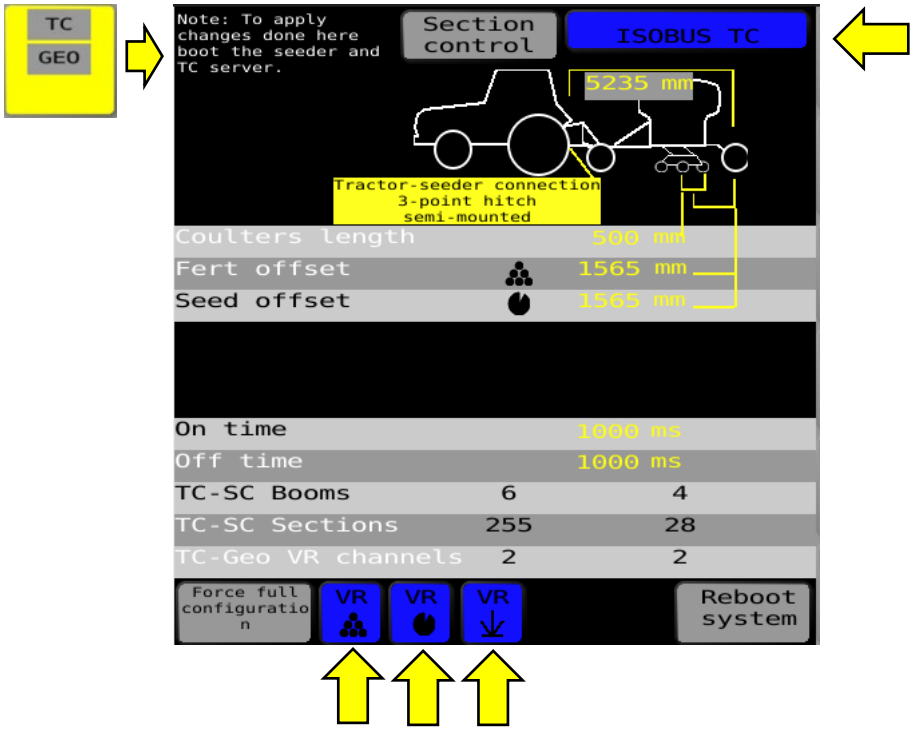


NOTE! Depending on the terminal, the coulter assembly offset relative to the support wheels may be interpreted as positive or negative. On a ground-wheel-driven machine, this mainly affects how the coverage map is drawn.

TC-GEO function

TC-GEO adjusts seed and/or fertiliser application rates according to a prescription map. Refer to the tractor terminal instructions for loading and using the map.

Enable TC-GEO on the tractor terminal. Press **ISOBUS TC** in the drill interface and select at the bottom of the window whether the map controls fertiliser, seed or both.



When the Task Controller sets the seed or fertiliser rate, the map takes precedence over the rates shown in the sowing profile.



+



Fertiliser metering follows the Task Controller command (Variable Rate).



Fertiliser metering follows the rate selected in the sowing profile.



+



Seed metering follows the Task Controller command (Variable Rate).



Seed metering follows the rate selected in the sowing profile.



+



Small-seed metering follows the Task Controller command (Variable Rate).



Small-seed metering follows the rate selected in the sowing profile.

TC-SC function

Enable TC-SC on the tractor terminal. On the drill interface, activate Section control so the button turns blue. Enabling Section control on the drill alone may not activate automatic section control.



Automatic section control available.



Automatic section control unavailable.

10.3.12 Marker-only lift



Marker-only lift off. The marker rises with the machine.



Marker-only lift on. Only the marker rises when you operate the lift.

Press the marker-only lift button to activate it. The button turns yellow. When you operate the lift, only the marker rises. The machine stays in the sowing position. Use this function to raise the marker over an obstacle without interrupting sowing.

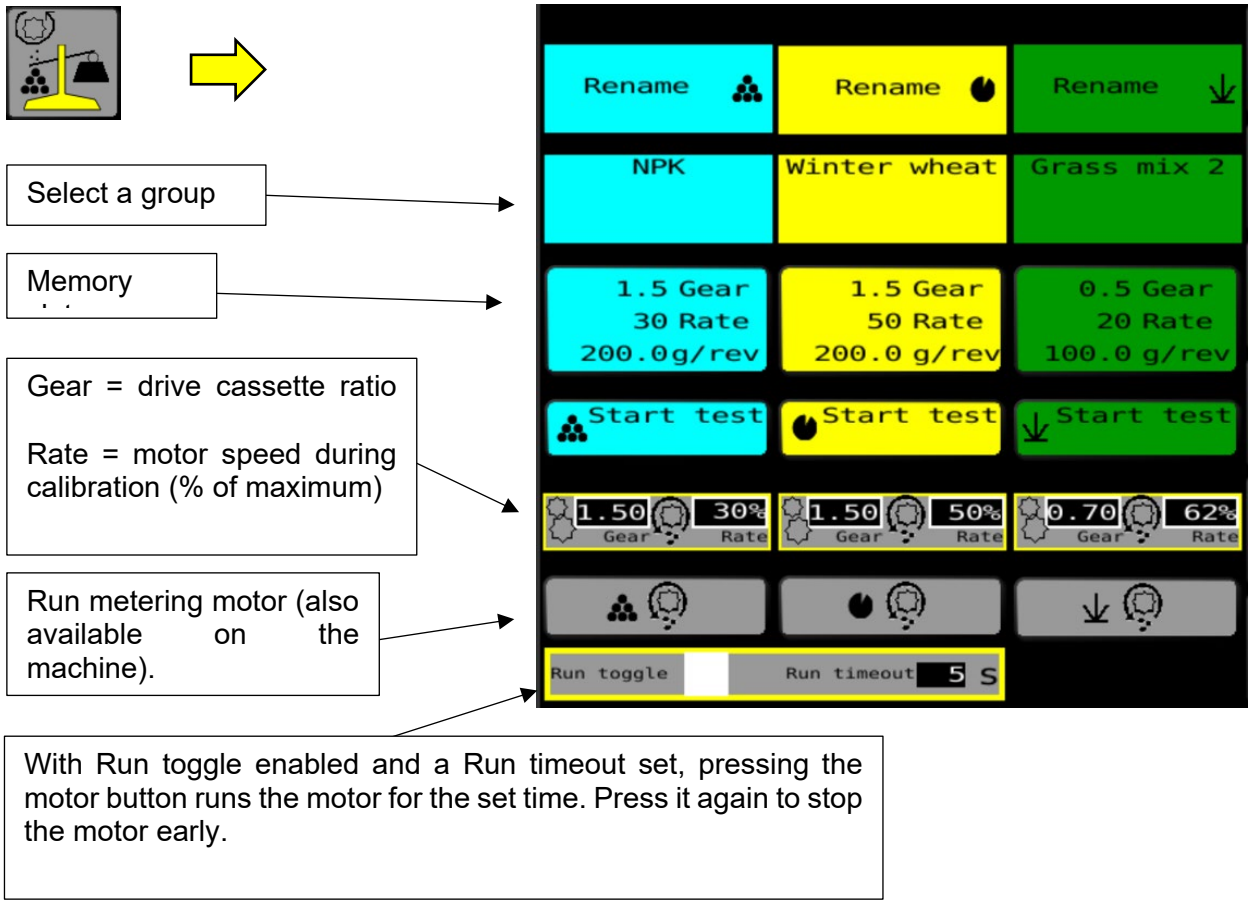
Marker-only lift switches off automatically after 20 seconds.

Do not reverse with marker-only lift active. The drill is still in the sowing position!

10.3.13 Calibration test settings

Store calibration results in this menu. You can save and name 11 tests each for fertiliser, seed and small seed/starter fertiliser. The results are used for metering and counters. Check that the results are correct and that the correct result is active.

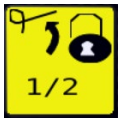
See the calibration test and preparation sections for more information.



10.3.14 Half lift



Half lift off. The rear harrow rises and lowers with the machine. The machine rises to its full height.



Half lift on. The rear harrow remains in its raised or lowered position at the time of activation. The machine rises to the set half-lift limit.

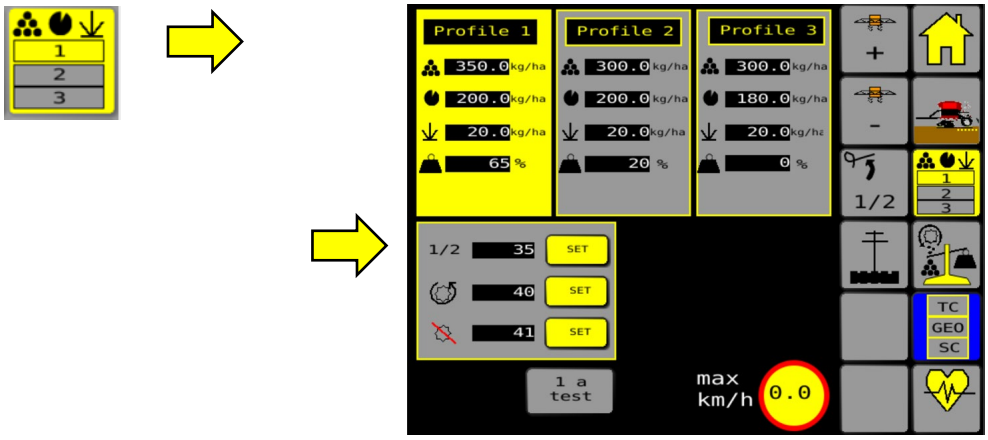
Use half lift to limit how far the machine rises, for example to turn faster at headlands.

Half lift can hold the rear harrow up or down. To keep it raised, activate half lift with the harrow up. To keep it on the ground even when the machine is raised, activate half lift with the harrow down.

This is useful, for example, on soil prone to capping, when the harrow should break up wheel tracks even during headland turns.

Set the half-lift height with the 1/2 value in the profile settings. A higher value makes the machine stop lower.

Half lift does not affect the markers or tramlines.



WARNING! Do not set half lift so low that the ground wheel or coulters cannot clear the ground. Turning or reversing may damage them!

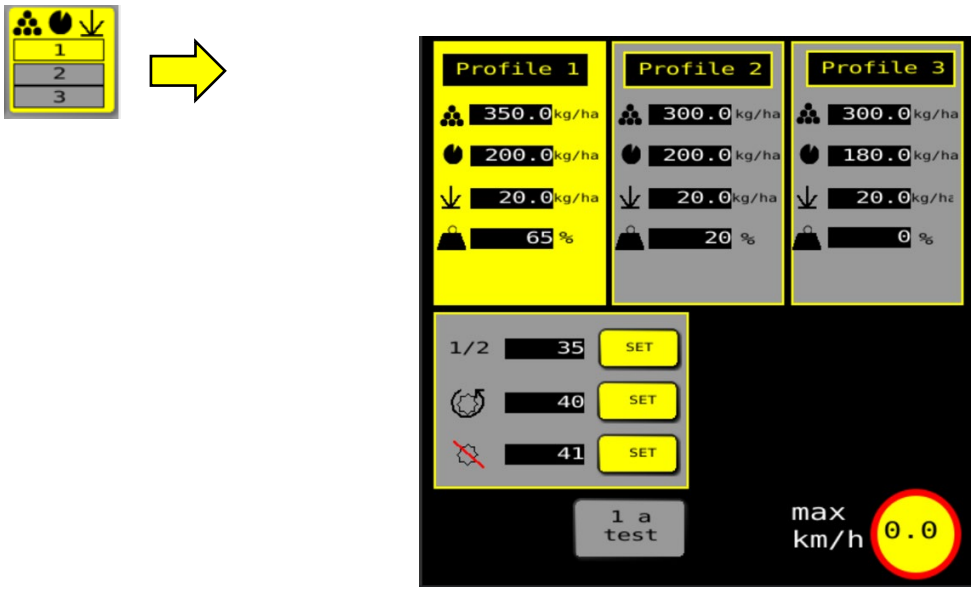
Half lift does not affect the markers or tramlines.

WARNING! Disable half lift before reversing or transport. The rear harrow can be damaged if left down!

If you reverse without the rear harrow fully raised, its protection function uses oil pressure from the machine's lift cylinders to raise it. This can occur when using half lift. The machine lowers slightly as the harrow rises.

NEVER REVERSE WITH THE REAR HARROW ON THE GROUND! THE PROTECTION FUNCTION DOES NOT ELIMINATE THE RISK OF DAMAGE.

10.3.15 Sowing profiles, metering start/stop and 100 m² test



You can change the following values for each of the three profiles (Profile 1, Profile 2 and Profile 3):

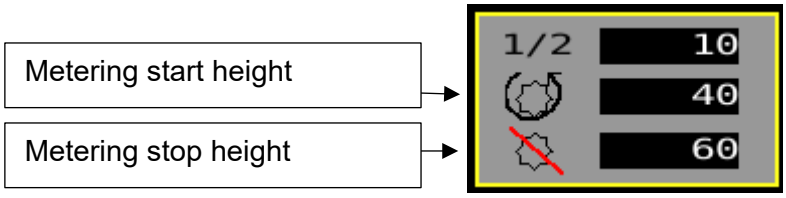
- Fertiliser rate, kg/ha (kilograms per hectare)
- Seed rate, kg/ha (kilograms per hectare)
- Small-seed/starter fertiliser rate, kg/ha (optional, kilograms per hectare)
- Coulter pressure, %

Press the number field, enter the new value and confirm it. Adjust seed rate, fertiliser rate and coulter pressure as required.

NOTE! Run calibration tests carefully so that the fertiliser and seed rates in the profiles are accurate.

NOTE! When a handwheel sets the rate, the rate cannot be changed from the settings screen.

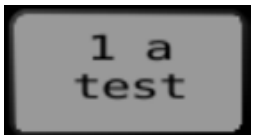
In the sowing profile menu, you can also set the machine heights at which metering starts and stops.



NOTE! INCORRECT START AND STOP HEIGHT SETTINGS CAN CAUSE MALFUNCTIONS!

- **For example, a very low start height may prevent metering from starting when coulter pressure is low.**

IF YOU CHANGE THESE VALUES, CHECK THAT METERING WORKS BEFORE STARTING WORK!



Press 1 a test to open the menu for a 100 m² sowing test with the selected metering unit. The machine sows one are (100 m²) using the selected profile. Use the result to check the application rate.

10.3.16 Sowing menu



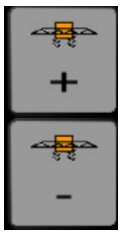
Opens the sowing menu.
Closes all other open windows.

10.3.17 Home screen



Returns to the home screen and exits work mode.

10.3.18 Next and previous tramline step



Press + to step forwards or – to step backwards.
Use these buttons, for example, to correct an unintended change of tramline step.

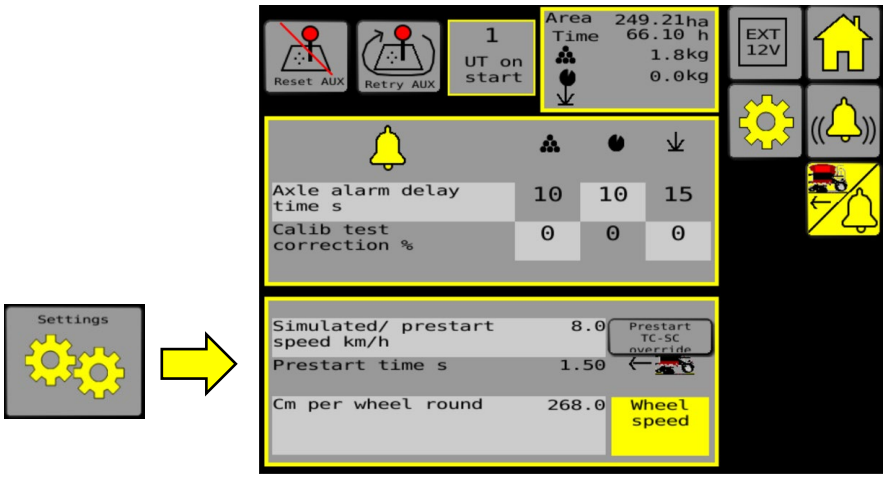
10.3.19 Sowing from a field corner, Prestart



Use Prestart to begin sowing in a field corner.

Press the icon with the machine in the sowing position. The metering motors run at the preset speed even if the machine is stationary. Set the run time and simulated driving speed in menu 123.

If TC-SC is active, the Prestart button overrides Task Controller commands.



With the settings shown above, the machine sows for 1.5 seconds at the rate for 8 km/h, regardless of actual speed. The function works only when the machine is lowered.

10.3.20 Motor icons and half-width shut-off

L = left, R = right.



Motors active. Metering runs when the machine moves.



Motors active. Metering is stopped.



Motors stopped by the Task Controller.



Manual half-width shut-off active.

Press the L or R motor icon to stop metering on the left or right side. This reduces overlap, for example when entering a sown area at an angle. The Task Controller can also do this automatically based on GPS position.

10.5 AUX-N functions

AUX-N (Auxiliary Control New) is an auxiliary control defined by the ISOBUS standard. The Super Orion can be operated through ISOBUS using the tractor's own controls or a third-party auxiliary control. Physical buttons and levers are easier to operate than a touchscreen when the implement is moving and shaking. All functions are available on the touchscreen, so AUX-N is optional. You can use AUX-N to:

7. Select a profile
8. Adjust application rates
9. Adjust coulter pressure
10. Step the tramline counter forwards or backwards
11. Toggle marker-only lift
12. Operate the row markers

10.5.1 Assigning AUX-N controls

Assign AUX-N functions from the ISOBUS terminal with UT number 1. If several terminals are on the ISOBUS bus, give each one a different UT number. Even if the drill interface is on terminal 2, assign AUX-N functions on terminal 1. View or change the UT number in the terminal settings. Two terminals with the same number cause a bus error and the system will not work.

The assignment procedure depends on the terminal. Refer to its instructions for setting up AUX-N.

After assignment, the drill connects to the AUX-N control through the UT terminal and responds to the assigned buttons. The drill retains the assignments when power is lost.

10.5.2 AUX-N after a restart

When the drill is restarted or reconnected to the same tractor after a break, the UT terminal offers to restore the assignments. Accept restoration to use AUX-N. The controls are then available if permitted by the tractor and auxiliary control safety functions. Check that AUX-N is active before resuming work.

Some terminals or tractors do not restore the assignments automatically until AUX-N has been enabled on the terminal. Enable AUX-N manually, then press Retry AUX on the drill's main screen.

11. CALIBRATION TEST

11.1 Preparing for calibration

Set up the machine for the seed and fertiliser you intend to use before starting the calibration test.

1. Connect the drill to the tractor and switch on the drill. Open the guards on both sides.

2. Set the trays to the calibration position from the left side of the machine. Move the selector lever rearwards to slide the seed and fertiliser trays under the metering units.

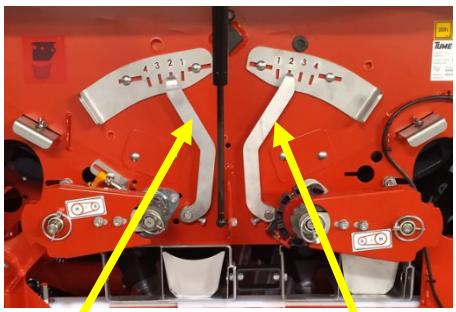
   If a grass seed/starter fertiliser unit is fitted, it also moves into the calibration position. The hose bracket moves away from the metering units. Place the trays in the space it leaves. Use the same trays as for the seed or fertiliser metering units.



3. Set the bottom flap levers for the seed or fertiliser to be used.

SEED / FERTILISER	FLAP SETTING
Granular fertiliser	2
Cereals	2
Small seeds	1
Peas	3
Large beans	4

NOTE! Use the same bottom flap settings on both sides.

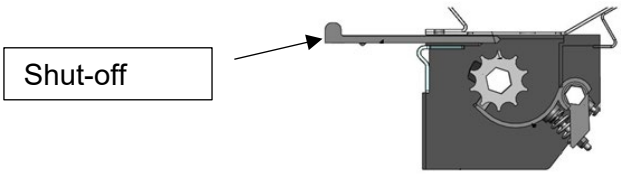


Fertiliser flap lever, left side.

Seed flap lever, left side.

For other seeds, compare their size with those listed above and use the corresponding setting.

4. Check that the shut-off slides are open and tramlining is off.

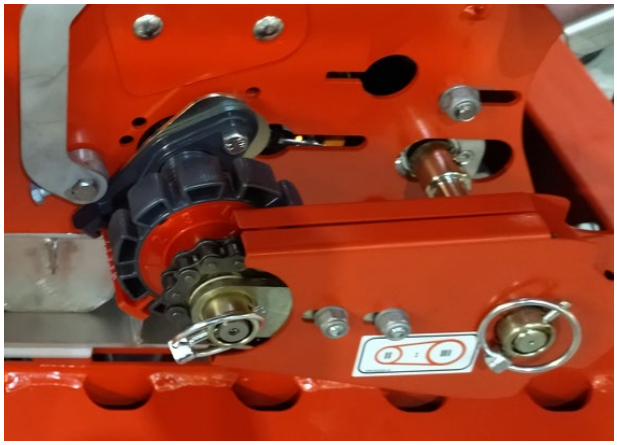


5. Set the handwheel for the approximate application rate required.

   WARNING! Remove the cassette pins from the metering motor shafts on both sides before adjusting!

   Otherwise the handwheel cannot be adjusted or the drive may be damaged. After adjustment, fit the pins in the appropriate holes in the motor shafts. The cassette must have play on the shaft.

   - Rate below 100 kg/ha → setting 2.0
   - Rate 100–300 kg/ha → setting 6.0
   - Rate above 300 kg/ha→ setting 10.0



   The standard cassettes have 18- and 12-tooth sprockets. The ratio is 3/2.

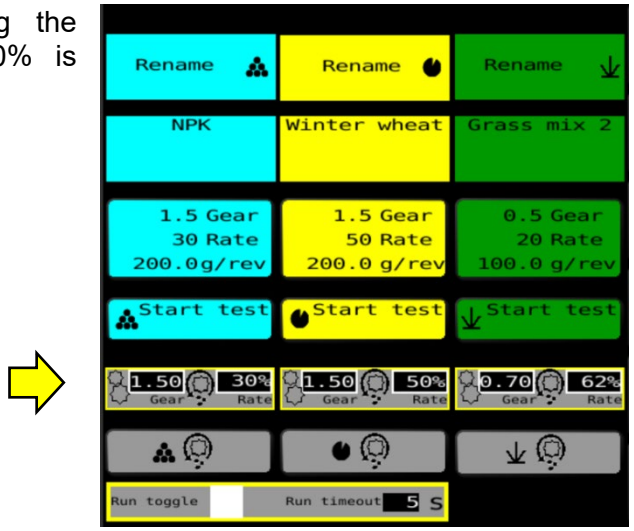
   For cereals, install the cassette with the larger sprocket on the motor shaft and the smaller one on the metering shaft.

   For peas and very low rates, such as for turnip rape or oilseed rape, reverse the cassette so the larger sprocket is on the metering shaft and the smaller one on the motor shaft.

   INSTALL THE CASSETTES THE SAME WAY ON BOTH SIDES OF THE MACHINE!

   ALWAYS REPEAT THE CALIBRATION TEST AFTER REVERSING A CASSETTE OR CHANGING THE HANDWHEEL SETTING!

6. Rate sets the motor speed during the calibration test. A setting of 20–30% is suitable for the test.



_ _

7. Add enough seed and fertiliser to cover all the metering units.

_ _

8. Press the calibration button to run the metering units for a few revolutions and fill the chambers.

_ _

The machine is now ready for the calibration test.

11.2 Fertiliser calibration test

Complete the preparations in section 11.1 before starting the test.

1. Move the lever to the calibration position and check that the trays are empty. Open the calibration menu from the sowing menu.

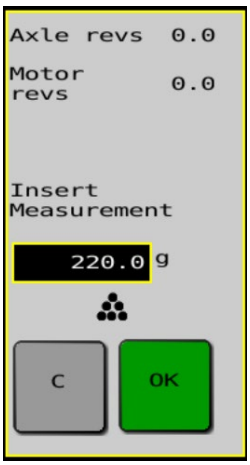


2. Select a fertiliser memory slot and name it if needed.

   You can save calibration results for different fertilisers and recall them later by selecting the product again.



Press **Start test**. A grey window opens.



3. Press the fertiliser calibration button to turn the fertiliser shaft. Hold it until enough fertiliser has collected in the tray for an accurate weighing.



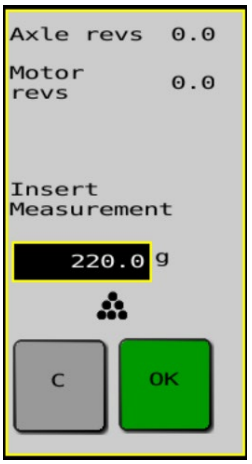
You can also press the calibration button on the display. 

Release the button if you want to check the amount in the trays, then press it again.

WARNING! If Run toggle is enabled in the calibration menu, the motor continues running until the timeout expires. Press the button again to stop it early.

4. Carefully pull out the calibration trays and weigh the fertiliser.

5. Check that Axle revs is greater than 0.0.



6. Enter the measured weight in grams under Insert measurement and press OK. The controller calculates grams per revolution and saves the result in the selected memory slot.

The selected memory slot is now calibrated for this fertiliser.

The controller also calculates the cassette ratio used during the test. Gearing should read about 1.5 with the 18/12-tooth cassette geared up. If the reading is unexpected, check that the cassettes are installed the right way round and the shaft monitors work.

Reference values for Gearing:

1.5	–	3/2 cassette geared up
0.7	–	3/2 cassette geared down
2	–	2/1 cassette geared up
0.5	–	2/1 cassette geared down

(C = exit without making changes).

7. To apply this fertiliser, select the memory slot where its calibration was saved. The button turns yellow.

NOTE! Repeat the test if you change fertiliser and use the same memory slot.

NOTE! Save the test results for different fertilisers in separate memory slots.

NOTE! Return the calibration lever to the front after testing so the seed and fertiliser go to the coulters instead of the trays.

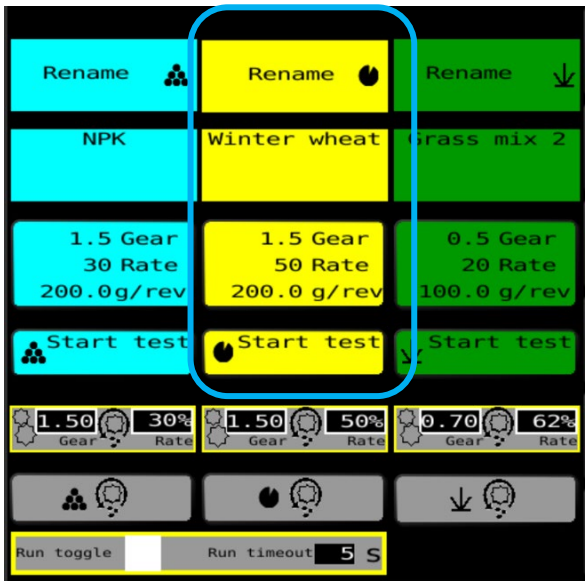
11.3 Seed calibration test

Complete the preparations in section 11.1 before starting the test.

1. Move the lever to the calibration position and check that the trays are empty. Open the calibration menu from the sowing menu.

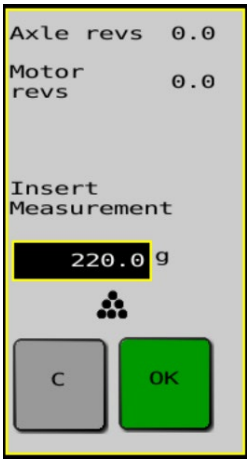


2. Select a seed memory slot and name it if needed.



You can save calibration results for different seeds and recall them later by selecting the product again.

Press **Start test**. A grey window opens.

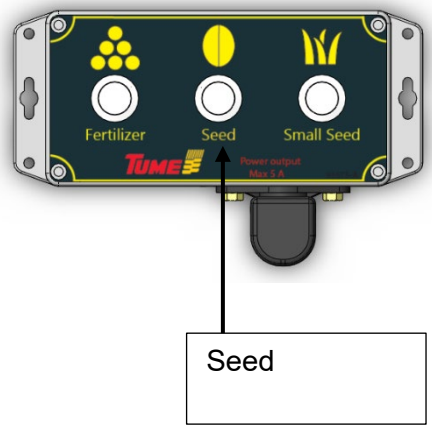


3. Press the calibration button to turn the seed metering shaft. Hold it until enough seed has collected in the tray for an accurate weighing.

   You can also press the calibration button on the display.



   Release the button to check the amount of seed in the trays, then press it again.



   WARNING! If Run toggle is enabled in the calibration menu, the motor continues running until the timeout expires. Press the button again to stop it early.

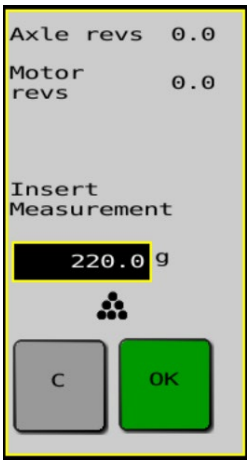
   _

4. Carefully pull out the calibration trays and weigh the seed.

   _

5. Check that Axle revolutions is greater than 0.0.

6. Enter the measured weight in grams under Insert measurement and press OK. The controller calculates grams per revolution and saves the result in the selected memory slot.



   The selected memory slot is now calibrated for this seed.

   The controller also calculates the cassette ratio used during the test. Gearing should read about 1.5 with the 18/12-tooth cassette geared up. If the reading is unexpected, check that the cassettes are installed the right way round and the shaft monitors work.

   Reference values for Gearing:

1.5	–	3/2 cassette geared up
0.7	–	3/2 cassette geared down
2	–	2/1 cassette geared up
0.5	–	2/1 cassette geared down

   (C = exit without making changes).

   _

7. To sow this seed, select the memory slot where its calibration was saved. The button turns yellow.

   _

NOTE! Repeat the test if you change seed and use the same memory slot.

NOTE! Save the test results for different seeds in separate memory slots.

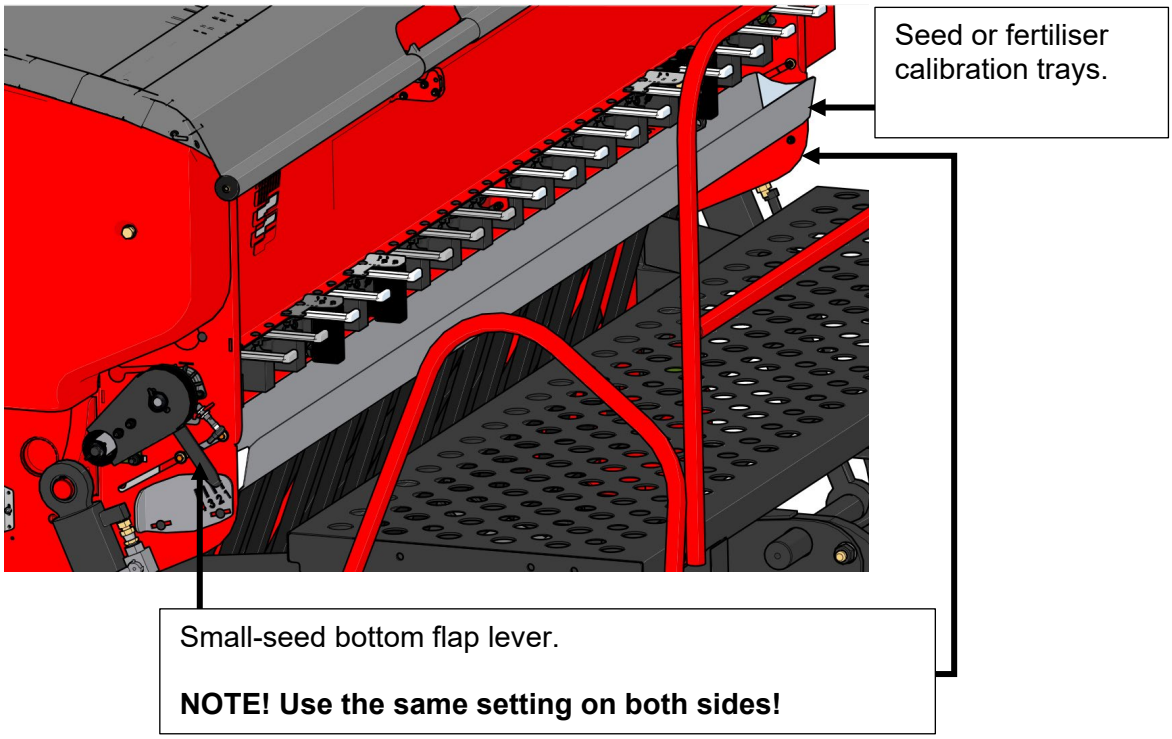
NOTE! Return the calibration lever to the front after testing so the seed and fertiliser go to the coulters instead of the trays.

11.4 Grass seed/starter fertiliser calibration test (optional)

Follow the preparation instructions in section 11.1 with the following exceptions.

- Adjust the bottom flaps at the sides of the small-seed unit. Use the same setting on both sides. Select setting 1 for small seed and 2 for granular fertiliser.

- Use the seed or fertiliser calibration trays.



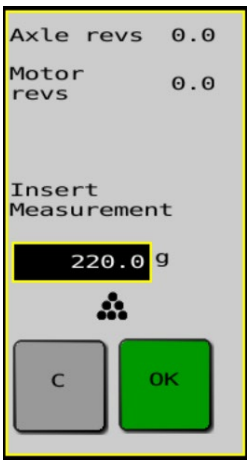
1. Open the calibration menu from the sowing menu. 

2. Select a memory slot for small seed or starter fertiliser and name it if needed.



You can save calibration results for different seeds and recall them later by selecting the product again.

Press **Start test.** A grey window opens.



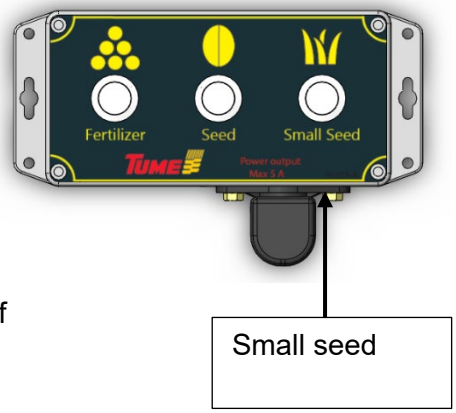
---

3. Press the calibration button to turn the metering shaft. Hold it until enough seed or fertiliser has collected in the tray for an accurate weighing.

   You can also press the calibration button on the display.



   Release the button if you want to check the amount of seed or fertiliser in the trays, then press it again.

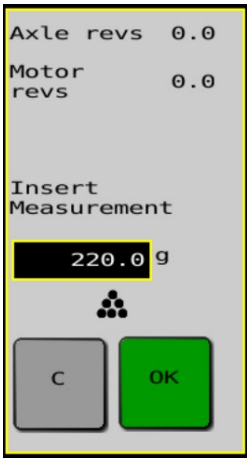


---

4. Carefully pull out the calibration tray and weigh the seed or fertiliser.

---

5. Check that Axle revolutions is greater than 0.0.



6. Enter the measured weight in grams under Insert measurement and press OK. The controller calculates grams per revolution and saves the result in the selected memory slot.

   The selected small-seed memory slot is now calibrated for this seed or fertiliser.

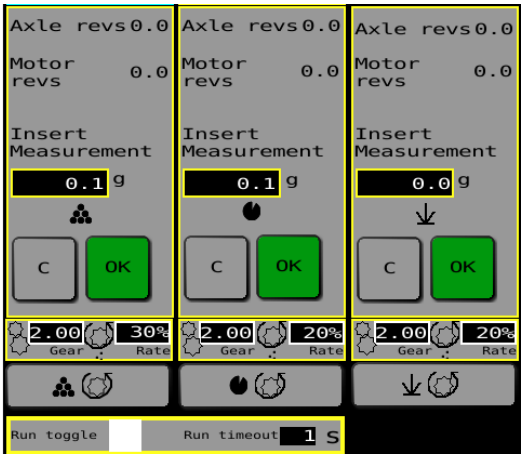
   The controller also calculates the cassette ratio used during the test. Gearing should read about 1.5 with the 18/12-tooth cassette geared up. If the reading is unexpected, check cassette orientation and shaft monitor operation. On the small-seed unit, the cassettes may only be used in the geared-down position.

   Reference values for Gearing:
   0.7 – 3/2 cassette geared down
   0.5 – 2/1 cassette geared down

   (C = exit without making changes).

11.5 CALIBRATION TIPS

You can open the fertiliser, seed and small-seed calibration menus at the same time. This lets you run all the tests and weigh the samples at the machine, then enter the results together.



11.6 Bypassing the calibration test

You can bypass the calibration test for a quick function check or if you already know the flow rate of the material in grams per metering shaft revolution. Proceed as follows:

1. At the bottom of the screen, select the ratio of the cassette fitted to the relevant hopper in its Gear field.
    a. 2 = 2:1, geared up
    b. 0.5 = 1:2, geared down
    c. 1.5 = 3:2, geared up
    d. 0.66 = 2:3, geared down
2. Open the relevant calibration screen. Enter the known value directly in the g/axle rev field.
3. Press OK.
4. The bypass is now complete. For an accurate calibration result, follow the full calibration procedure.

12. FIELD TEST

A field test is the most reliable way to verify the application rate. Testing on the prepared seedbed in the field to be sown closely reproduces actual sowing conditions. You can test both seed and fertiliser.

Performing a field test:

- Set up the machine as described in the calibration instructions.
- Measure a test distance equivalent to one are (100 m²) for your model:

Super Orion 3000 → 33.3 m
Super Orion 4000 → 25 m

- Before the measured section, drive about 10 m in the working position so that each metering chamber starts delivering seed.
- Empty the test trays.
- Drive the measured distance at normal sowing speed with the machine lowered to the sowing position.
- Weigh the seed and fertiliser in the calibration trays.
- Multiply each weight in kg by 100 to obtain the actual application rate in kg/ha.

13. OPTIONAL EQUIPMENT

TUME continually develops its machines and options. Before ordering new equipment for an older machine, check compatibility with the manufacturer's representative.

Use only the genuine TUME options listed below. Follow the factory installation instructions. Incorrect installation or non-genuine equipment can endanger the operator or damage the machine. The manufacturer is not liable for damage resulting from modifications made contrary to the factory instructions.

The following options are available for the Super Orion:

- Electric remote adjustment of fertiliser rate
- Electric remote adjustment of seed rate
- Row markers
- Grass seed/starter fertiliser unit
- Hydraulic front levelling board
- Agitator shafts
- Intermediate packer
- CultiPack intermediate cultivator
- Hydraulic drawbar cylinder
- Seed screens
- Hydraulic rear wheel suspension
- 7-inch terminal with wiring harness
- 12-inch terminal with wiring harness
- Reversing camera kit with one camera
- Additional camera
- Additional display

13.1 Row markers

When row markers are fitted, connect the machine lift hose and marker hose to the same double-acting tractor valve. The markers are plumbed in parallel with the machine lift and lower circuit. The markers require double-acting hydraulics. The arms lower only when driven down hydraulically.

Adjust marker speed at the hydraulic block (Figure 18). Start with low flow so the arms move slowly and do not cause damage or create a hazard. Fine-tune the speed with the adjustment screw during sowing, when the tractor oil is at normal operating temperature.

NOTE! Remove the arm locking pins before using the markers. We recommend refitting them for road transport.

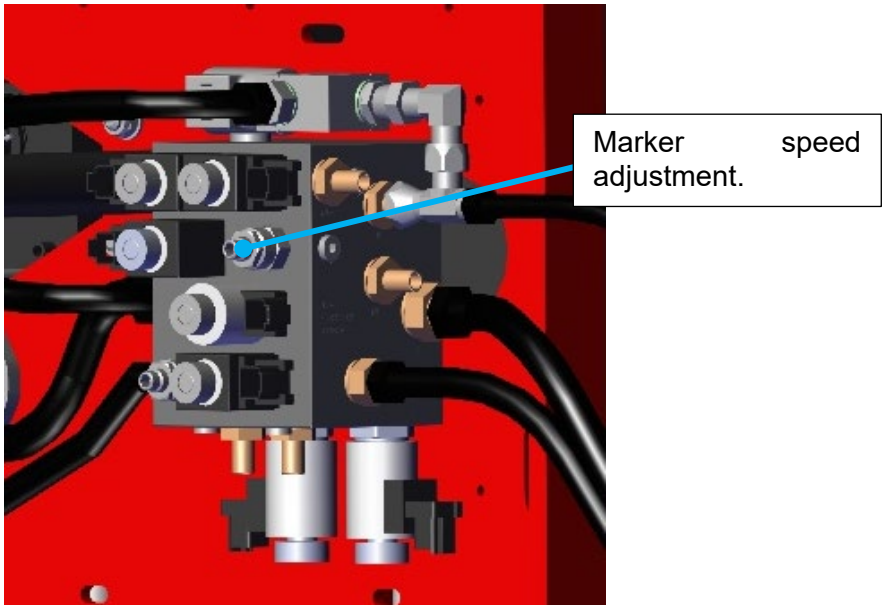


Figure 18. Marker speed adjustment.

You can adjust the angle and reach of the marker discs. Set the arm so that the distance from the centre of the machine to the bottom of the marked furrow equals the working width (Figure 19). Angle the disc to throw soil towards the machine. Use the smallest angle that leaves a visible mark, to avoid an unnecessarily deep furrow. See section 13.1.1, Installing the row markers, step 3.

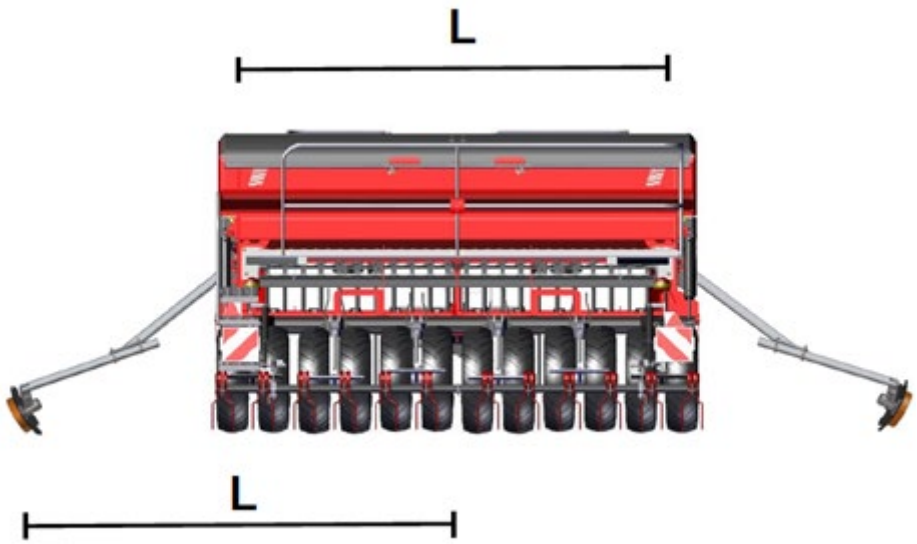
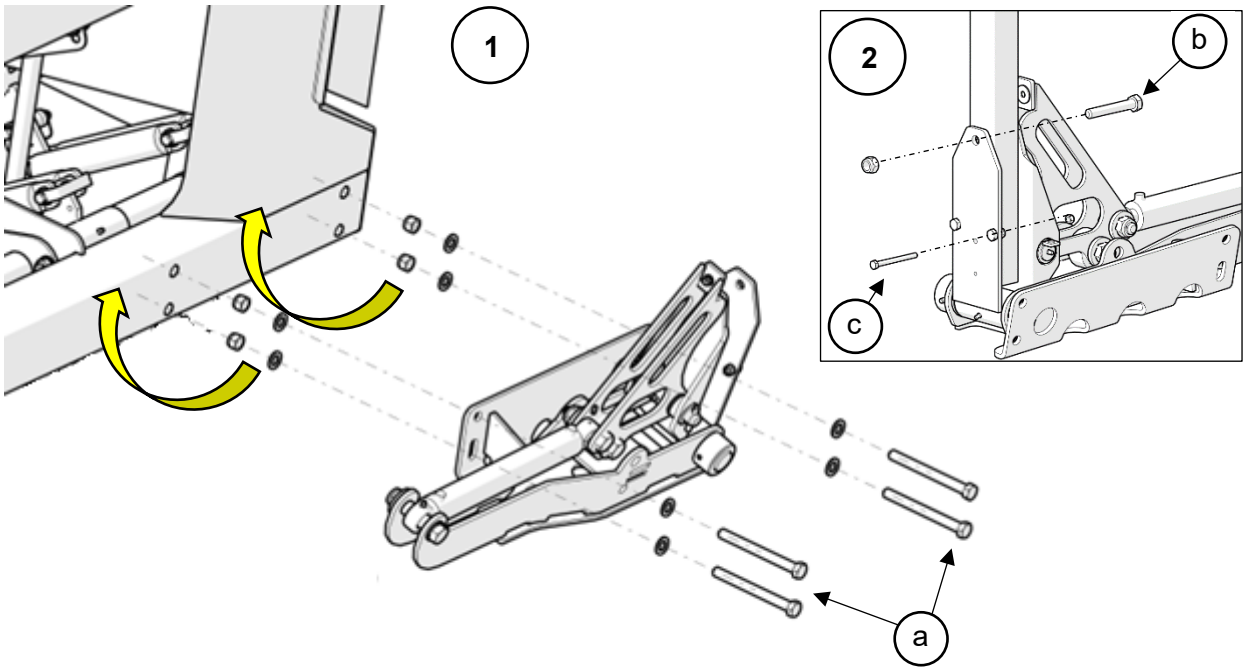


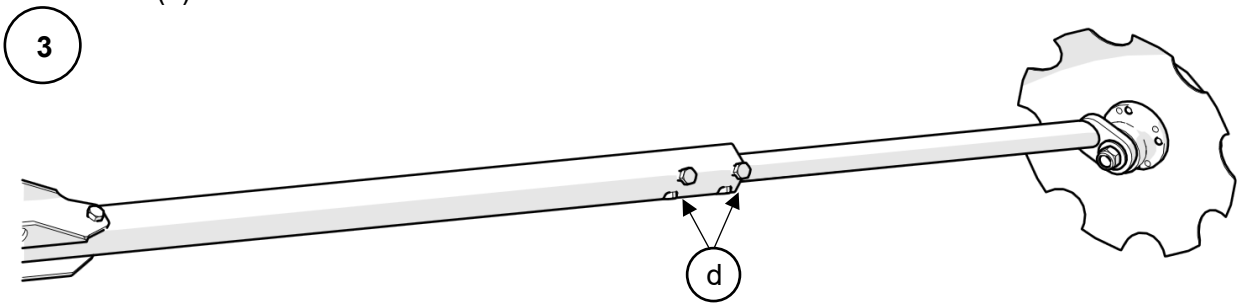
Figure 19. Adjusting marker reach.

Sharp turns with the markers on the ground can damage them!

13.1.1 Installing the row markers

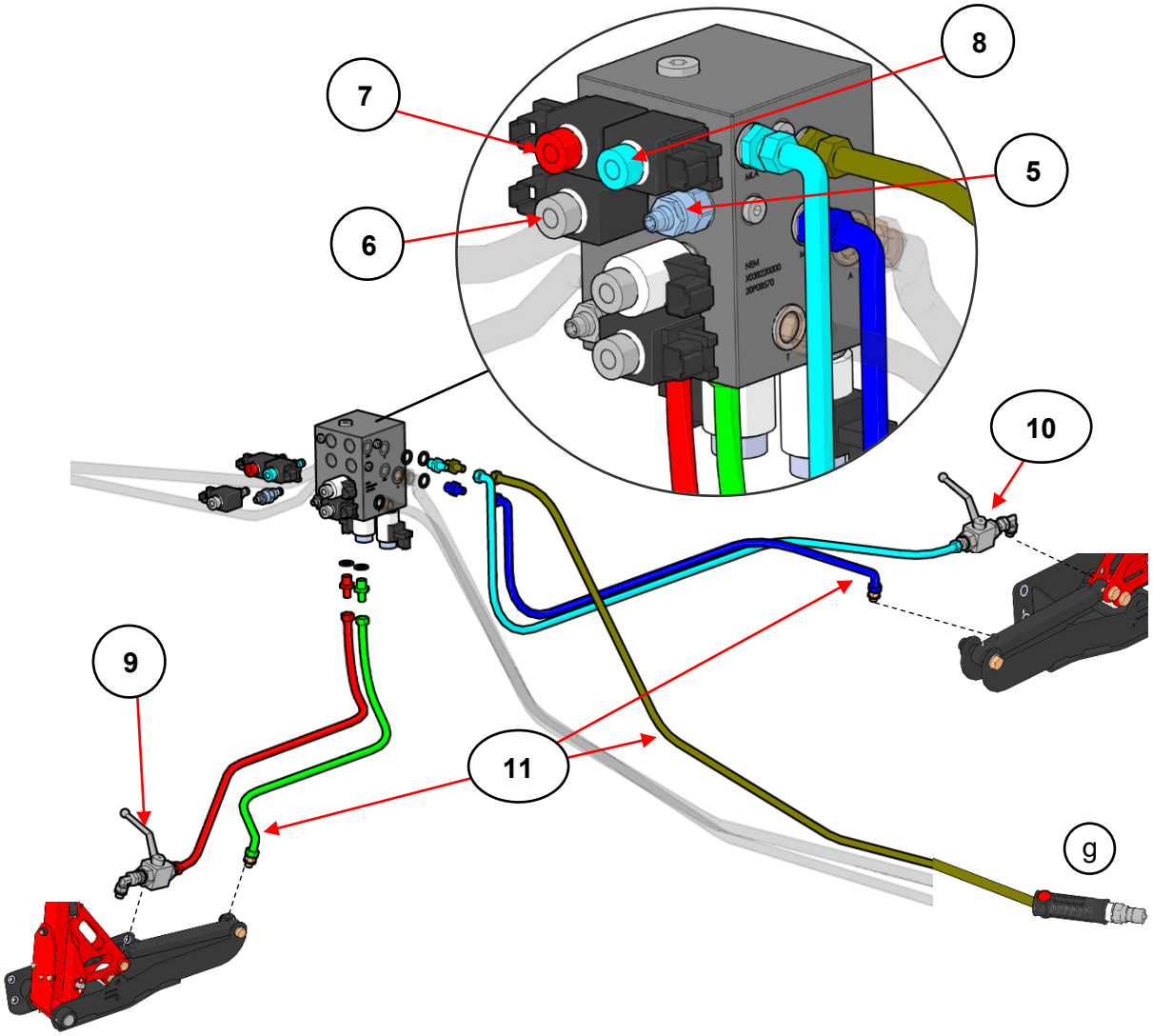


1. Attach the marker frame to the drill frame with four M16 × 160 bolts (a).
2. Fit the marker arm to the pivot. The M16 × 100 bolt (b) is the pivot bolt and the M8 × 90 bolt (c) is the shear bolt.



3. Fit the disc arm to the marker arm. Loosen the bolts at the end of the arm (d) to set the length and angle. Retighten the bolts. Angle the disc so it throws soil towards the machine.

4. Fit the opposite arm in the same way.



5. Fit back-pressure valve 01451327.
6. Fit marker lift inhibit valve 01454250 and connect electrical connector **CM to the coil.**
7. Fit right marker valve 01454248 and connect electrical connector **R to the coil.**
8. Fit left marker valve 01454248 and connect electrical connector **L to the coil.**
9. Connect the hose with the shut-off valve to the rod side of the right marker cylinder.
10. Connect the hose with the shut-off valve to the rod side of the left marker cylinder.
11. Connect the hoses to the piston sides of the cylinders. Connect the longest hose to quick coupling (g).
12. Finally, enable the markers in the controller settings. See section 10.3, Equipment and features.

13.2 Small-seed/starter fertiliser unit

The same unit serves both purposes. When sowing grass seed, the hoses broadcast the seed in front of the packer wheels. When applying starter fertiliser, the hoses feed it to the coulters so it is placed in the same furrow as the seed.

The unit is integrated into the rear wall of the drill, under the main hopper cover. It sits partly inside the drill and reduces seed hopper capacity.

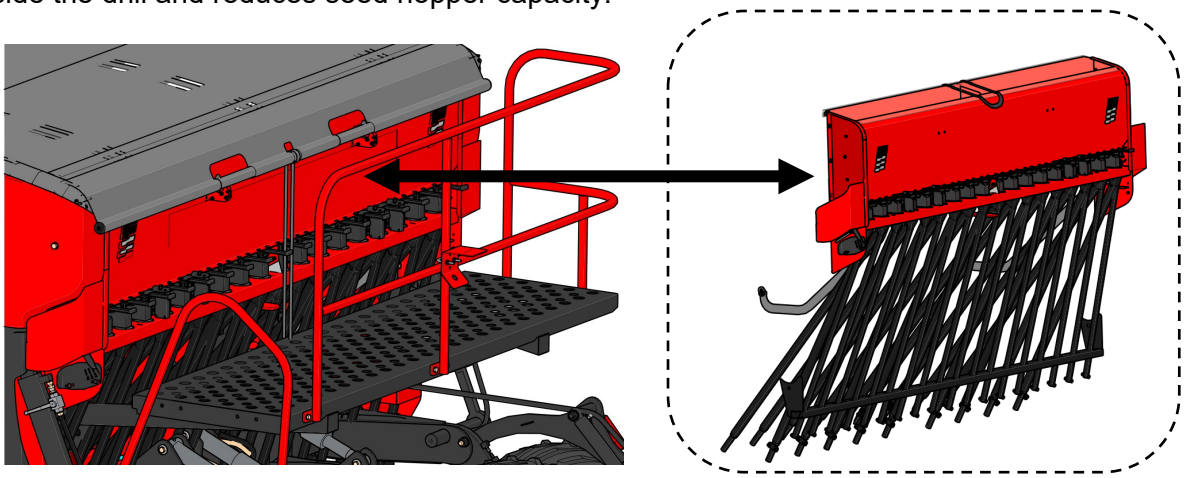


Figure 20. Small-seed/starter fertiliser unit.

13.2.1 Sowing grass seed

The unit can sow various grass seeds and mixtures. The hoses deposit the seed so the coulters cover it lightly with soil. The driving speed affects how much seed is covered.

Set the shut-off slides between the hopper and metering chambers half open for small, free-flowing material such as clover. Open them fully for light grass seed that tends to bridge, such as meadow fescue.

13.2.2 Applying starter fertiliser

The unit places extra fertiliser in the same furrow as the seed. Separate hoses deliver it to the tops of the seed coulters.

Open the shut-off slides between the hopper and metering chambers fully.

NOTE! Use only granular fertiliser in the unit. Powdered fertiliser can block the system.

13.3 Hydraulic front levelling board

The front levelling board levels the soil during sowing. In good conditions you can drill directly into ploughed ground. The hydraulic board requires a separate double-acting circuit so you can adjust it while driving without affecting other functions. Keep its working depth as shallow as possible to reduce draft and unnecessary soil movement. Set the angle by moving the perforated plate and locking it with the pin on both sides (Figure 21).

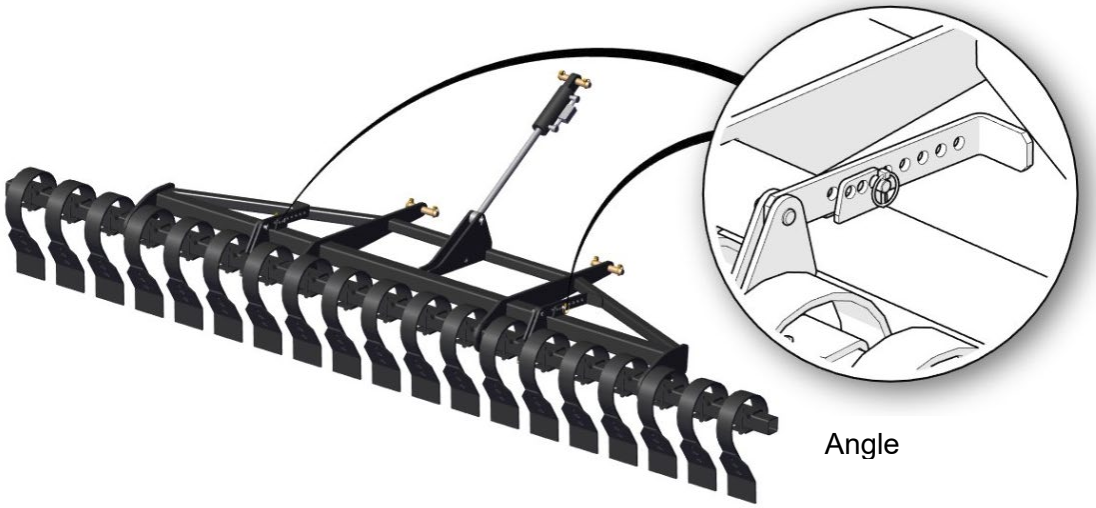


Figure 21. Front levelling board.

Pin the board arms to the holes below the drawbar mounting points. Fit the board cylinder below the upper drawbar cylinder mount. Route its hoses through the drawbar with the other hoses.

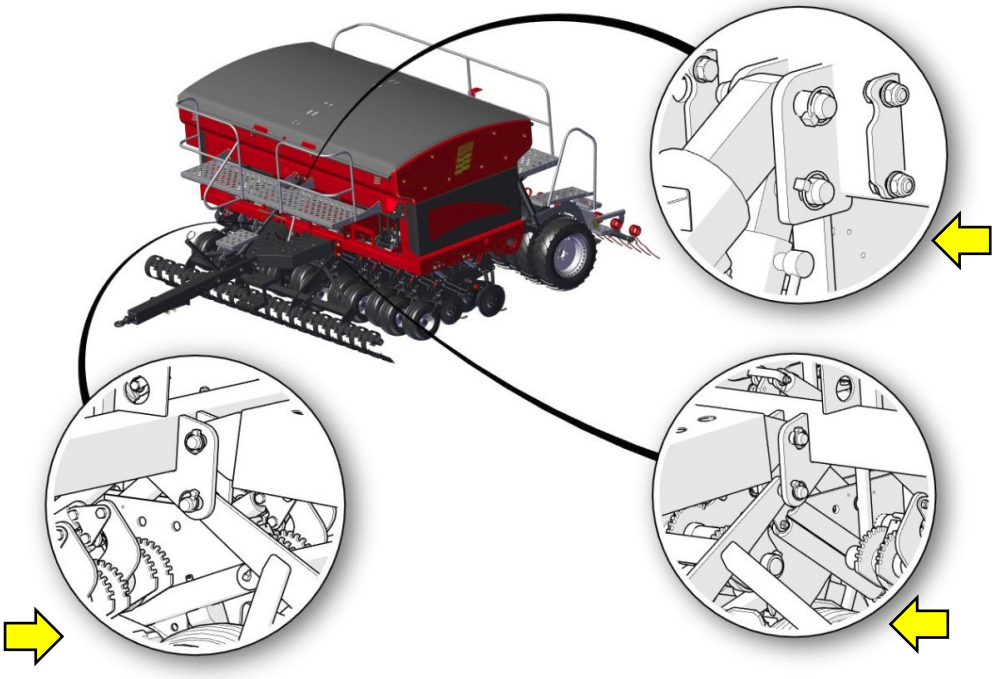


Figure 22. Installing the front levelling board.

13.4 CultiPack intermediate cultivator

Attach the drill to the CultiPack with the dedicated drawbar (see section 5.2, Installing the drawbar). Fit the lower end of the drawbar cylinder in the front hole and attach the towing eye to the CultiPack hitch point (Figure 25). Lock the latch with the pin and retaining clip.

At headlands and during transport, the CultiPack can remain on the ground if the cultivating discs are raised hydraulically. Keep its rear wheel assembly pivot lock open. Raise the cultivator before reversing.

NOTE! Read the separate CultiPack manual before using the cultivator.

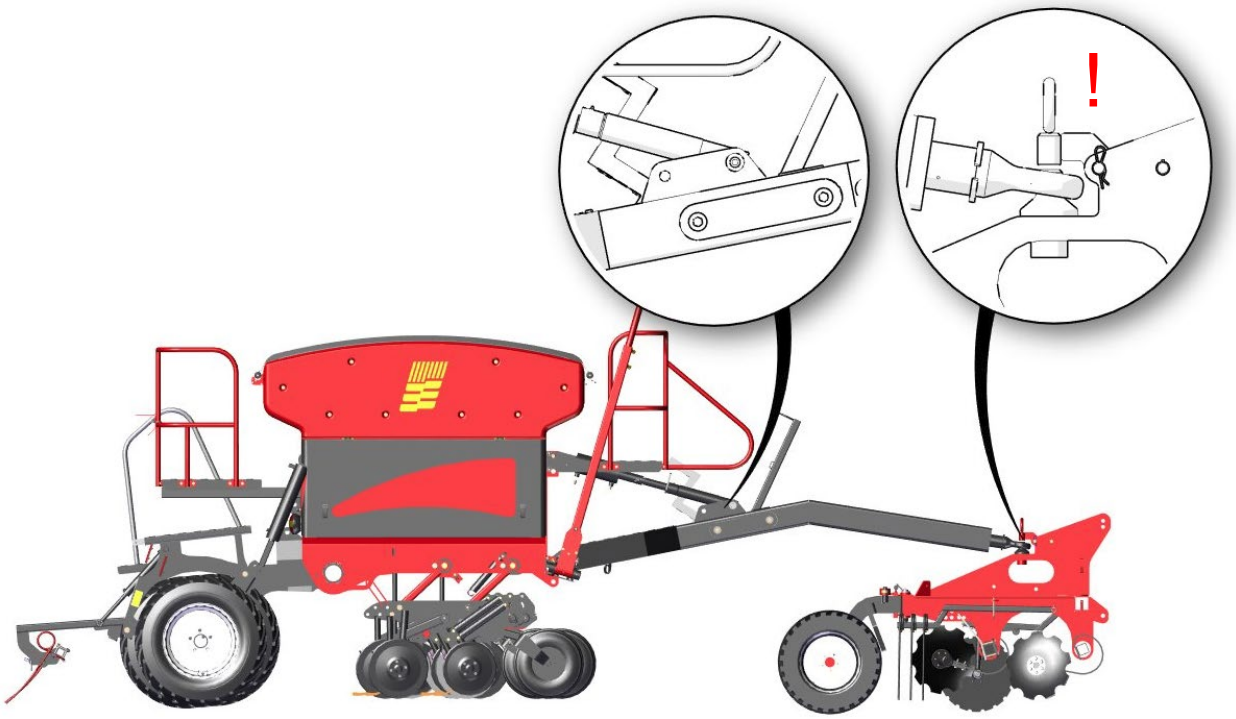


Figure 25. Drill and CultiPack combination. Make sure the drill drawbar is locked to the CultiPack hitch by the latch above the hitch pin.

13.5 Intermediate packer



When using an intermediate packer, fit the lower end of the drawbar cylinder in the rear hole (Figure 26). We recommend keeping the packer raised during road transport. Raise it off the ground before reversing.



Figure 26. Intermediate packer connection.

Remove the towing eye before installing the intermediate packer on the end of the drawbar. Its flange fits the existing bolt holes.

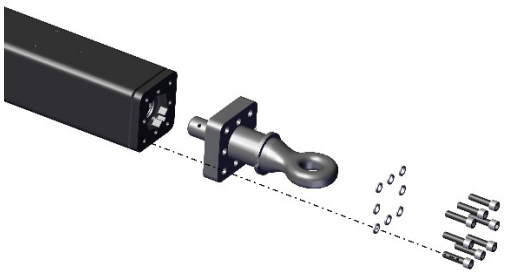


Figure 27. Remove the towing eye and attach the intermediate packer flange to the same bolt holes. It is essential to use bolts of sufficient strength and prevent them from loosening. Use property class 12.9 bolts, tighten to 375 Nm and use Nord-Lock washers.

NOTE! Check the mounting bolts for tightness at least once per season.

14. MAINTENANCE

Contact the manufacturer for major repairs. Read the servicing instructions carefully. Regular maintenance as specified will keep your TUME drill working reliably for years. Failure to carry out the prescribed maintenance voids the warranty.

Always stop the tractor engine and apply the parking brake before servicing. Secure the machine and tractor so that no one can operate them while work is in progress.

Danger!
Always close both lift cylinder safety valves if the machine must be raised during maintenance. Never go under a machine held up by hydraulics alone!
Check bolted joints for tightness every 100 operating hours. On a new machine, check them twice after 25 operating hours and every 100 hours thereafter.



Figure 28. Lift cylinder safety valve closed.

WARNING! Never transport the machine with the safety valves closed (Figure 28).

The hydraulic circuit remains pressurised even when disconnected from the tractor.

Danger!
Heating the machine's paint may release harmful fumes. Provide adequate ventilation, for example during welding.

14.1 Removing coulter assembly end play

Two M24 bolts (36 mm spanner) at each end adjust axial play in the coulter carriers by acting on the end clamping blocks. Remove the separate anti-rotation pieces before tightening. The machine comes with shims with a 50 mm inside diameter. Fit these behind the blocks if the play is so large that the inner face of the block contacts the end plate and there is no adjustment left.

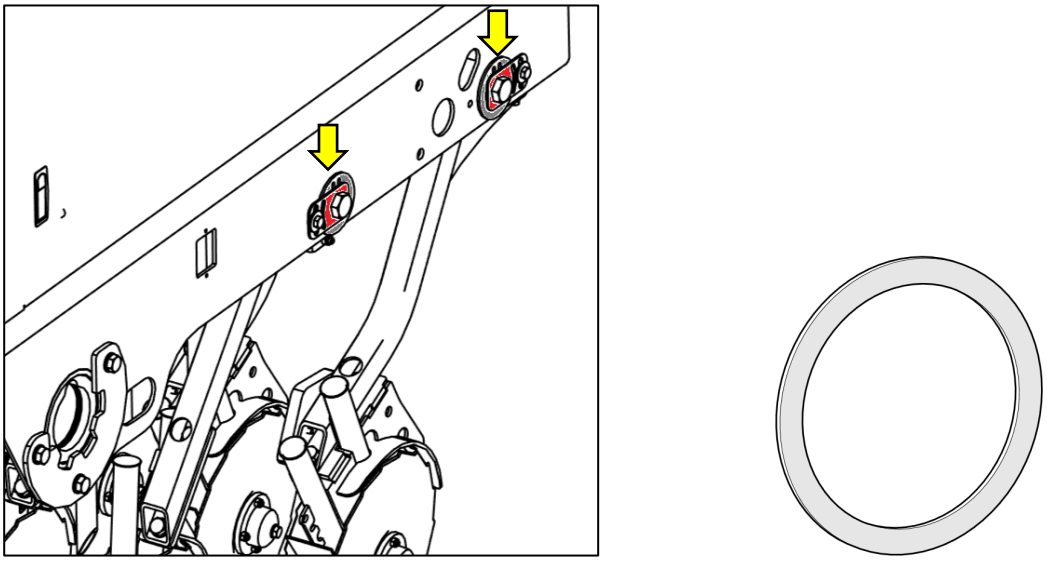


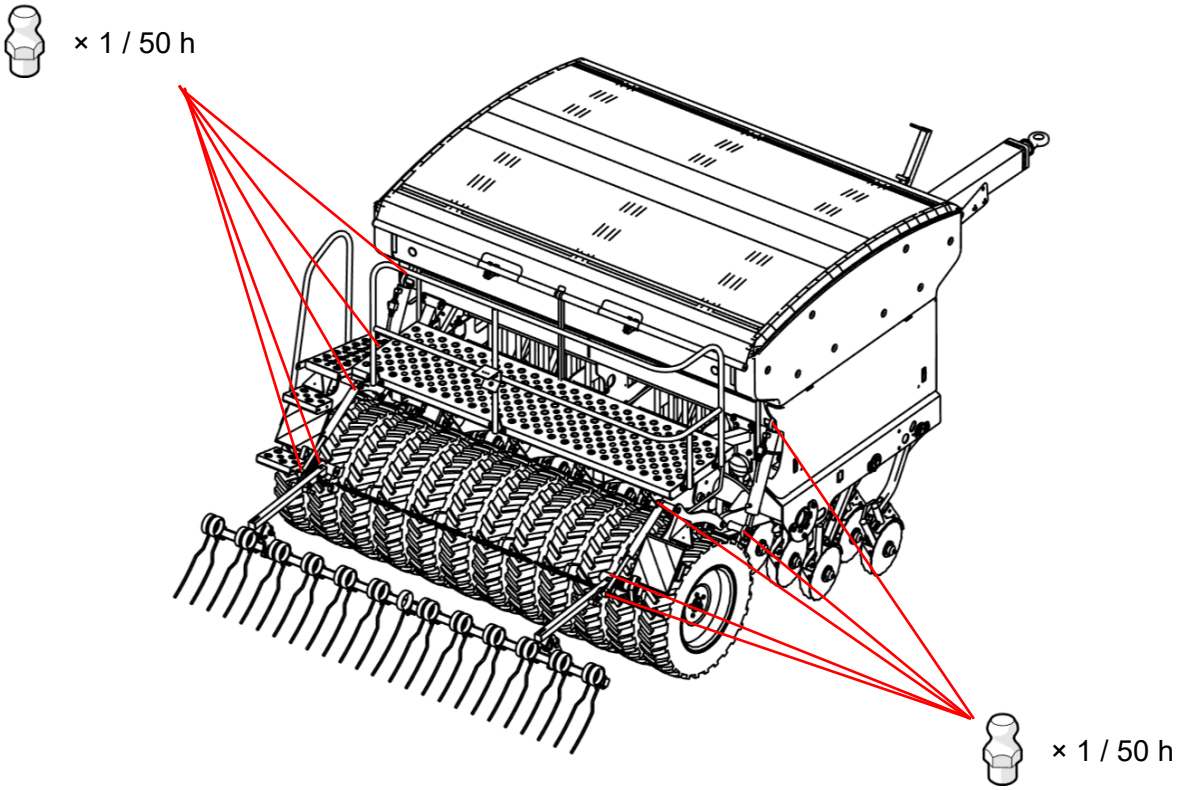
Figure 29. Coulter assembly end-play adjustment bolts and shim.

14.2 Lubrication points

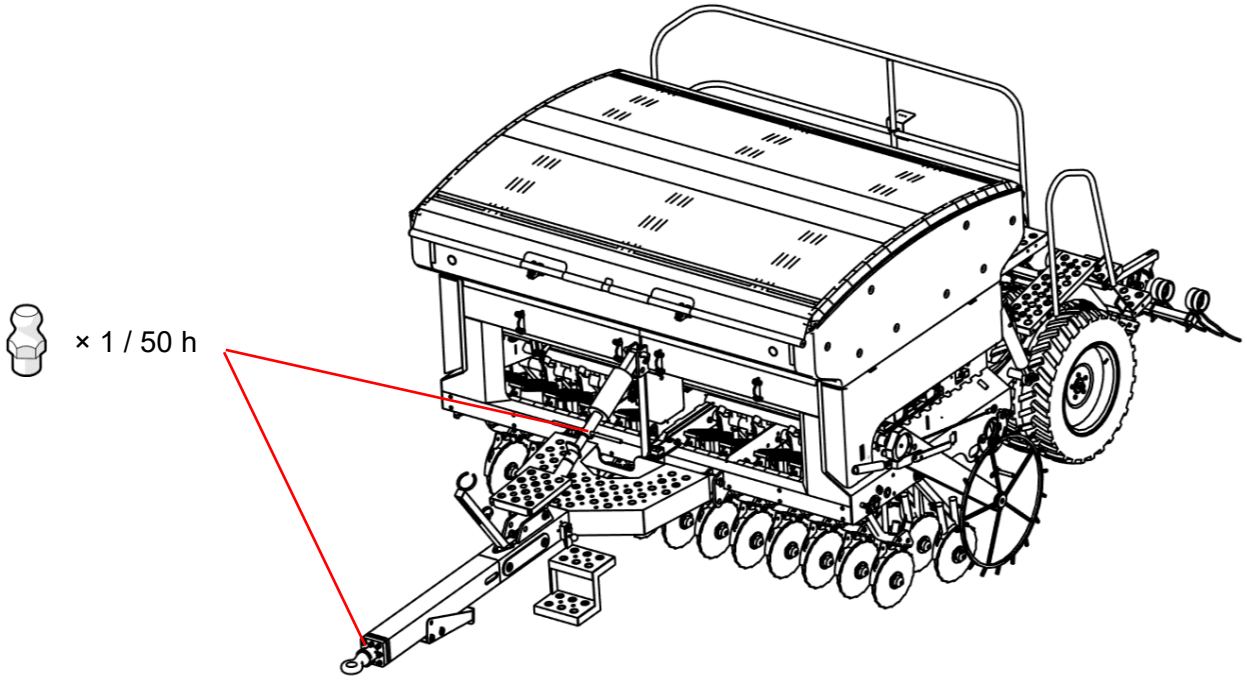
Lubricate the machine at least once per season, after washing and before storage.

The coulter disc bearings are lubricated for life and require no maintenance.

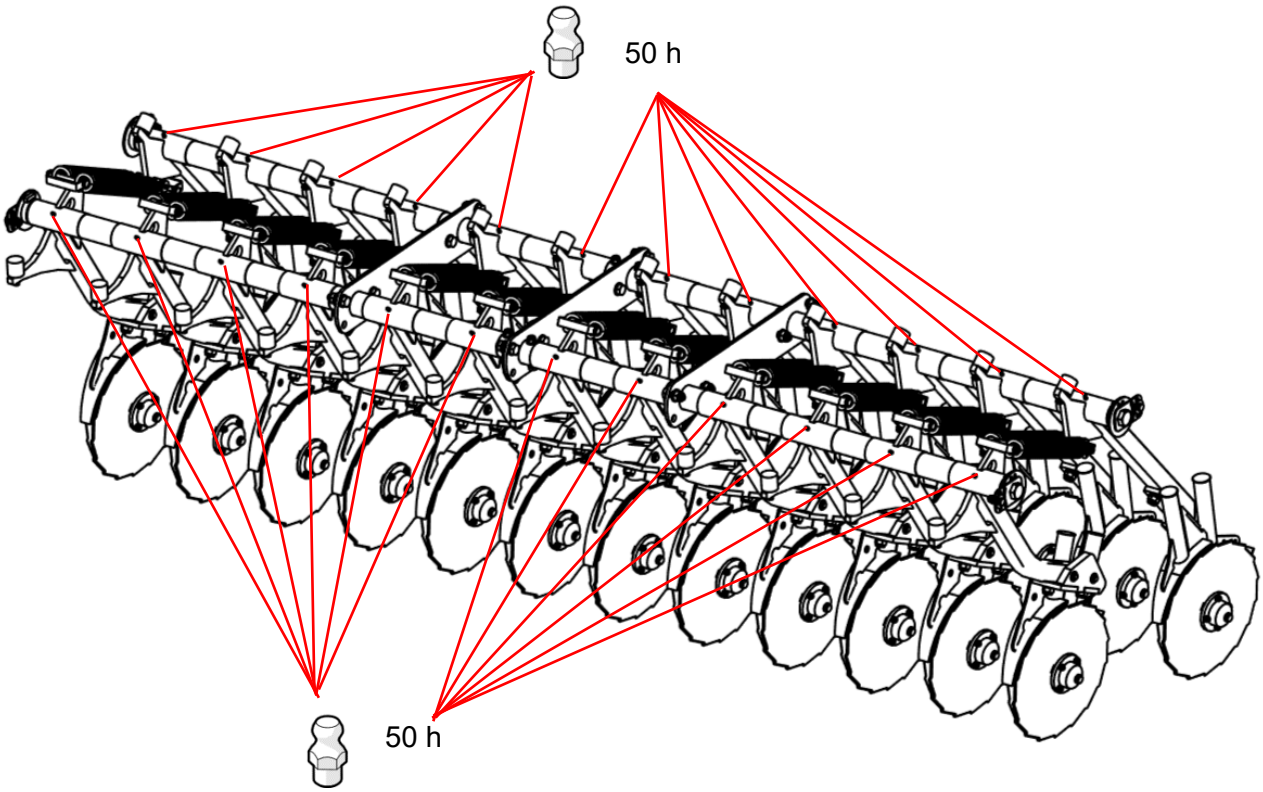
SIDES AND REAR



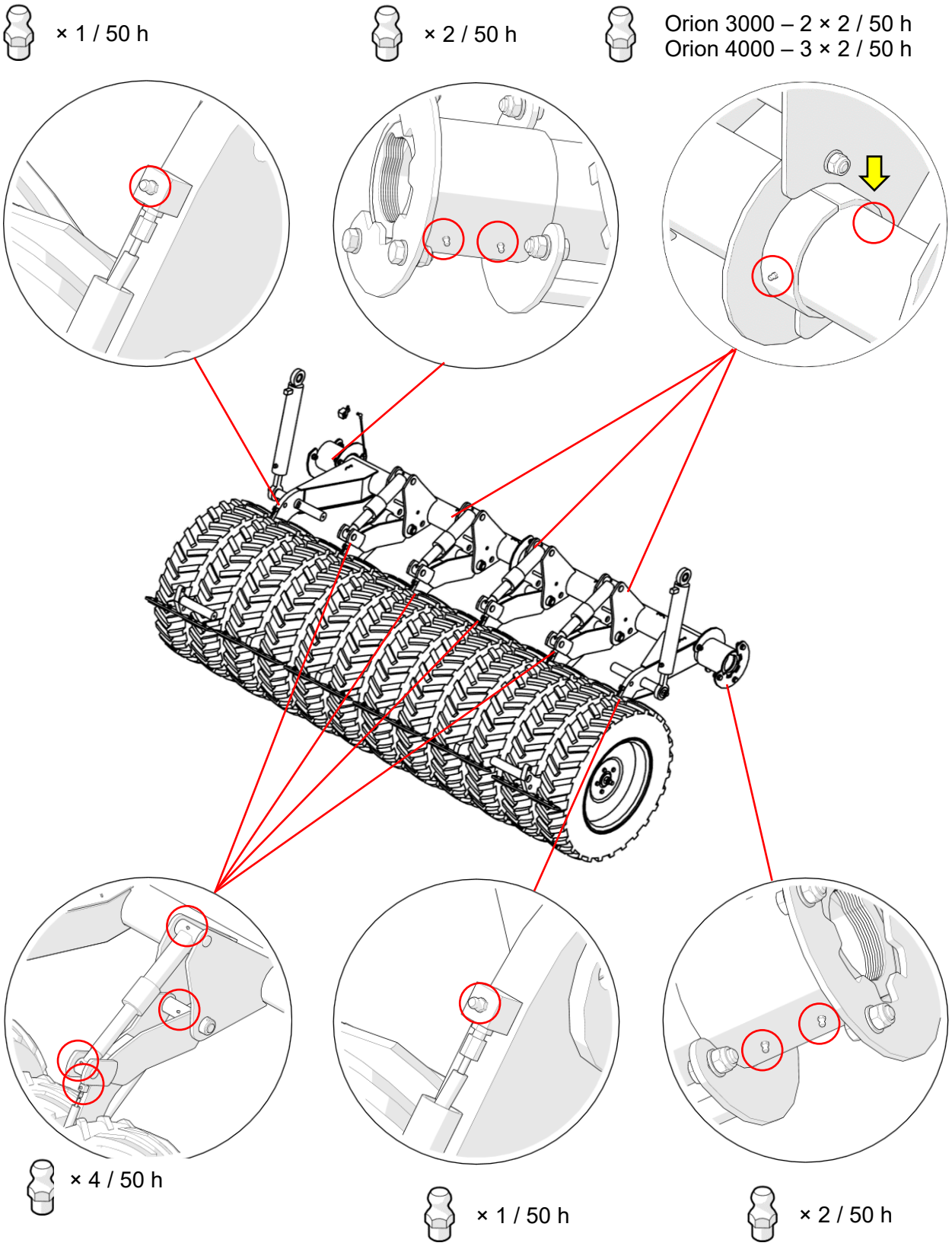
FRONT



COULTER ASSEMBLY



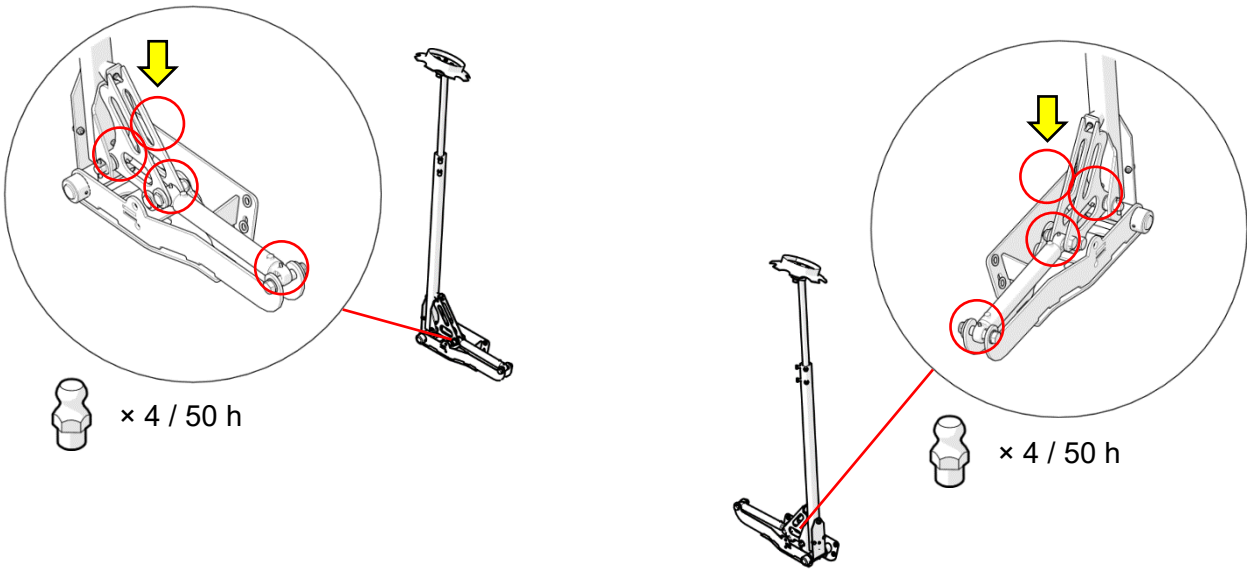
REAR WHEEL ASSEMBLY



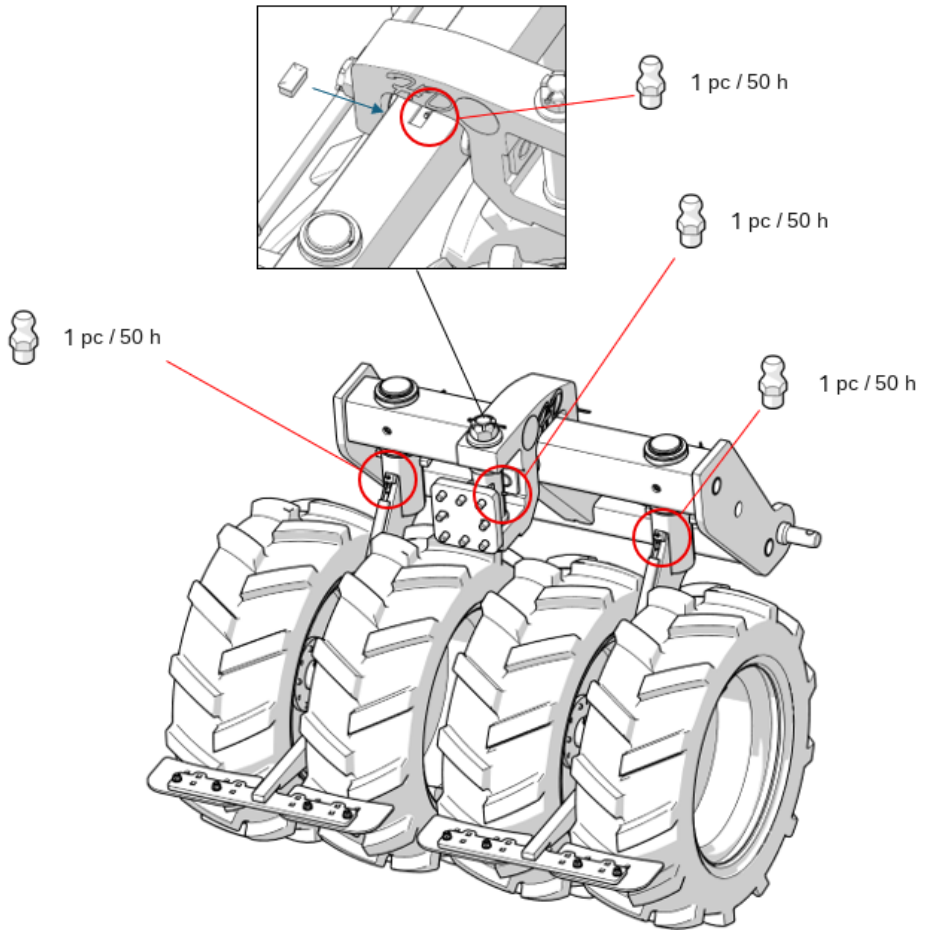
DRIVE CHAINS AND SPROCKETS

Apply chain spray every 50 h.

ROW MARKERS (OPTIONAL)



INTERMEDIATE PACKER (OPTIONAL)



14.3 Tyre pressures

Rear tyres 1.5–2.0 bar.

Use the tool supplied with the machine to check the tyre pressures. The tyres have automatic valves with no separate caps to remove. Blow dirt off the valve end and press the tool against the valve. Measure and adjust the pressure as required.

NOTE! Dirt in the valve can cause leakage. Blowing air in and releasing it several times will usually clear the dirt.

14.4 Changing tyres

Empty the machine and move it onto firm, level ground before changing a tyre.

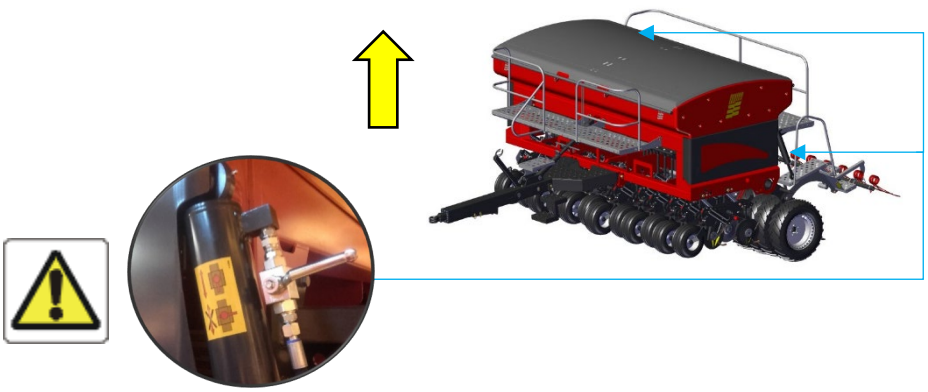
Secure the machine against movement and make sure no one can move it during the work.

Tyres and their supporting components are heavy and can cause injury or damage if they fall!

14.4.1 Changing a rear tyre

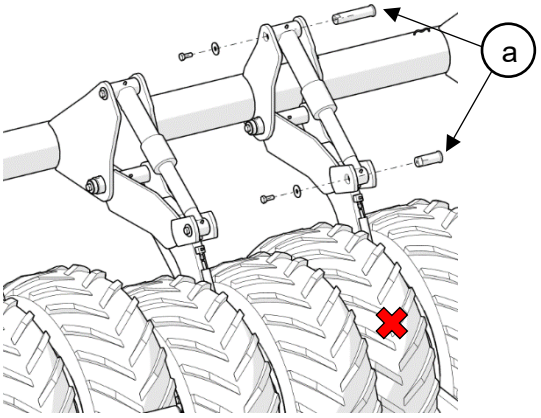
1. Raise the machine fully with the power on.

2. Close the lift cylinder safety valves.



3. Set the tractor's machine lift hydraulic valve to float.

The machine stays raised while pressure is released from the inner wheel cylinders.



4. Remove the cylinder pins (a) at the wheel arm carrying the tyre to be changed (x).

Take care not to damage the hydraulic hoses on the disconnected cylinder. The hose coupling can break when the wheel arm is raised!

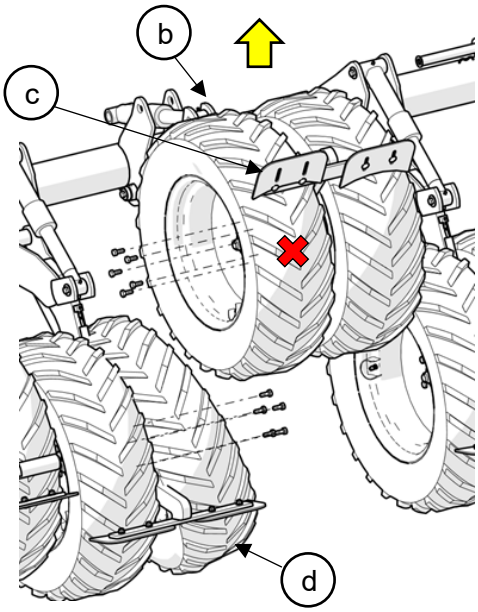
5. Raise the wheel pair (b).

For example, use a load strap attached to the rear platform and scraper arm.

6. Loosen the scraper (c).

7. Take the load off the adjacent wheel (d) and remove its bolts to create more room.

8. Remove the wheel (x).



Reassemble in reverse order.

14.5 Replacing the coulter pressure springs

The machine must be raised and lowered during replacement. Always close the lift cylinder safety valves on both sides between movements.

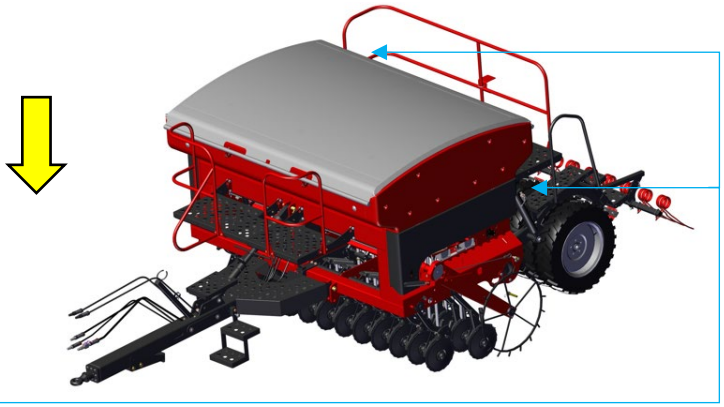
DANGER! When the machine is lowered, the coulter pressure springs are under high tension. Never remove a spring while it is under tension. A released spring can cause serious injury or damage.

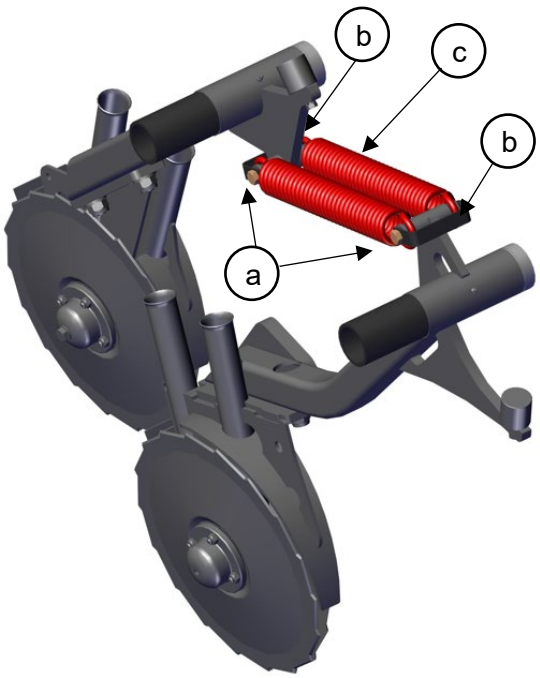
1. Lower the machine until the coulters just touch the ground and the springs are unloaded.

Find the exact position where the springs become unloaded.

Close the safety valves.



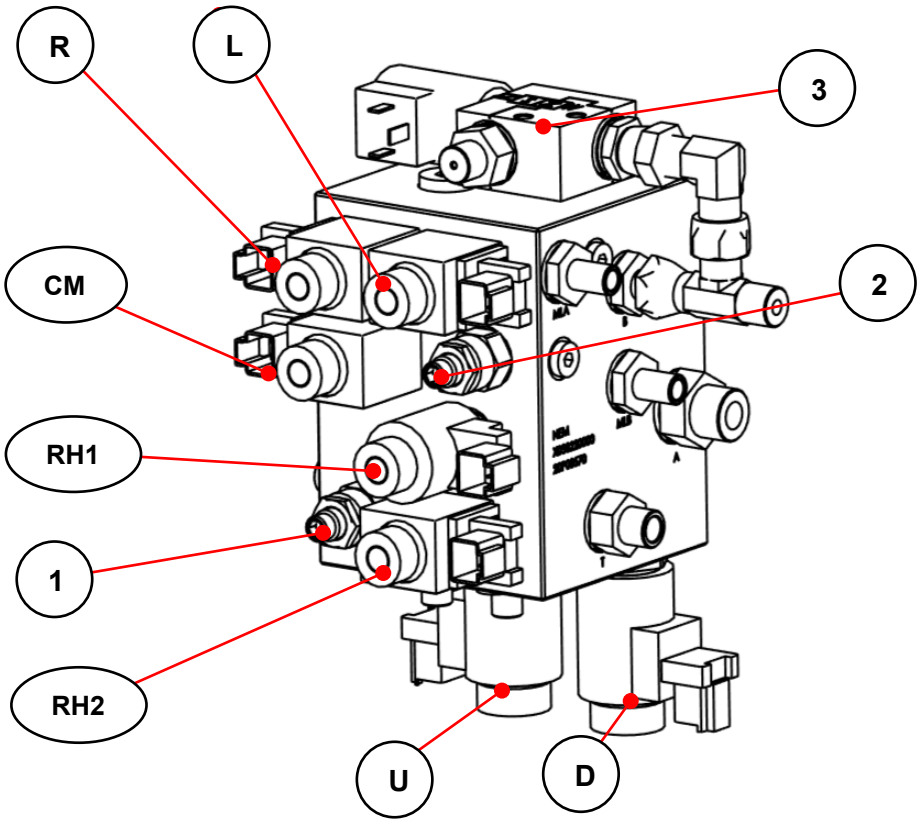




2. Remove the spring retainer bolts (a), retainers (b) and

Reassemble in reverse order.

14.6 Hydraulic valves



RH1 – Rear harrow operating valve.

RH2 – Rear harrow free return valve. Allows the harrow to float.

1 – Rear harrow lift speed control valve.

2 – Marker lift speed control valve.

CM – Marker lift inhibit valve. Delays raising the markers.

R – Right marker. Lowers the right marker.

L – Left marker. Lowers the left marker.

U – Upper limit. Stops the machine rising.

D – Lower limit. Stops the machine lowering.

3 – Coulter pressure adjustment valve.

15. STORAGE

Clean and service the machine before storing it under cover. Lower it and do not leave it held up by the tractor hydraulics. Empty the fertiliser and seed hoppers.

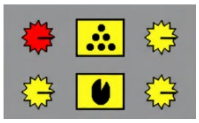
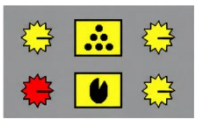
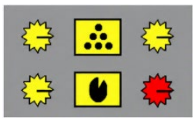
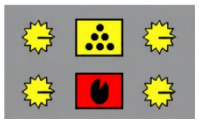
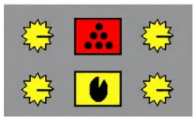
Wash the inside and outside of the machine with water. Use a pressure washer carefully, with water at no more than 60 °C and 100 bar. Do not direct the jet at bearings. Lubricate the machine as specified before storage. Protect areas of worn paint with protective oil.

16. TECHNICAL DATA

	Super Orion 3000	Super Orion 4000
Working width, cm	300	400
Transport width, cm*	298	398
Filling height, cm	240	240
Length, cm*	605	605
Unladen weight, kg*	3450	4450
Total hopper capacity, l	4020	5570
Seed capacity min./max., l	1545/2475	2140/3430
Fertiliser capacity min./max., l	1545/2475	2140/3430
Row spacing, cm	12.5 or 16.7	12.5 or 16.7
Support wheels**	7.50–20 or 280/70-18	7.50–20 or 280/70-18
Maximum pressure per coulter, kg	125	125
Number of coulters	18 or 24	24 or 32
Minimum hydraulic connections	1 × single-acting	1 × single-acting
Load-sensing hydraulics	Optional	Optional
Power requirement, kW	66	88
Noise level	Below 70 dB(A)	Below 70 dB(A)

*Dimensions are for the base machine. Optional equipment can affect dimensions.
**Tyre options depend on the wheel assembly.

17. FAULTS AND ALARMS

	Problem / alarm	Cause	Remedy
1		Left fertiliser shaft is not turning.	Check the metering shaft, metering units and drive cassette. See item 5 in the table.
2		Left seed shaft is not turning.	Check the metering shaft, metering units and drive cassette. See item 5 in the table.
3		Right fertiliser shaft is not turning.	Check the metering shaft, metering units and drive cassette. See item 5 in the table.
4		Right seed shaft is not turning.	Check the metering shaft, metering units and drive cassette. See item 5 in the table.
5	False shaft alarm.	The sensor is too far from the shaft.	Adjust the shaft sensor.
6		Seed hopper nearly empty.	Fill the hopper.
7		Fertiliser hopper nearly empty.	Fill the hopper.
8	Application rate falls below target at high sowing speed.	Driving speed is too high for the selected rate.	Check the maximum speed in the sowing profile settings. Reduce driving speed or the application rate.
9	Left wheel sensor alarm.	Left wheel sensor is not working.	Check the sensor. Disable it in the settings. The right sensor then controls metering across the full width.
10	Right wheel sensor alarm.	Right wheel sensor is not working.	Check the sensor. Disable it in the settings. The left sensor then controls metering across the full width.

	Problem / alarm	Cause	Remedy
11	Hose comes out of the coulter tube.	Wrong orientation of the upper hose end and/or bend.	Turn the hose and/or funnel at the upper end and check whether the hose stays in place.
12	Machine does not start sowing.	1. Half-width shut-off is active on both sides. 2. The machine does not detect the lowered position. 3. The Task Controller is active and the machine is in a no-sow area.	1. Disable half-width shut-off on both sides. 2. Check the height sensor. 3. Check the Task Controller.
13	One metering motor is not turning.	1. Metering shaft or metering unit jammed. 2. Broken wire or poor connection. 3. Motor faulty.	1. Check and clean the metering shaft, unit and chain cassette. 2. Check the motor connection. 3. Join the shafts with the coupling sleeve and disconnect the faulty motor cable and drive cassette.
14	Two metering motors are not turning.	1. Application rate set to 0 kg/ha. 2. Metering shaft or metering unit jammed. 3. Fuse blown.	1. Set the application rate and select the correct calibration slot. 2. Check and clean the metering shaft or unit. 3. Replace the fuse.
15	Hopper monitor does not alarm.	1. Alarm disabled. 2. Sensor does not respond.	1. Check the settings. 2. Adjust the sensor sensitivity with its adjustment screw.
16	Rear harrow does not rise.	1. Half lift is on. 2. Rear harrow cylinder flow control valve is shut.	1. Switch off half lift. 2. Open the flow control valve.
17	Rear harrow does not lower.	1. Half lift is on. 2. Linkages are seized. 3. Excessive back pressure in the free return.	1. Switch off half lift. 2. Grease the linkages. 3. Connect the free return to a pressure-free line.
18	Row markers do not alternate.	1. Only one marker is active. 2. Automatic control is paused. 3. Machine was not fully raised.	1. Enable both markers. 2. Enable automatic control. 3. Raise the machine fully or to the half-lift position at the headland.
19	Tramline step does not advance.	1. Setting is 0/0. 2. Automatic control is paused. 3. Machine was not fully raised.	1. Change the tramline settings. 2. Enable automatic control. 3. Raise the machine fully or to the half-lift position at the headland.
20	Actual application rate differs substantially from the setting.	1. Calibration was omitted or incorrect. 2. Wrong calibration memory slot is active.	1. Run a calibration test. 2. Select the slot storing the calibration for the seed or fertiliser in use.

18. WARRANTY

Warranty period

Tume-Agri Oy grants a two-year warranty on its products. It starts on the date the machine is handed over to the end user and ends no later than 36 months after dispatch from the factory.

Warranty coverage

The warranty covers proven manufacturing and material defects. It covers the faulty part and repair or replacement labour by a technician authorised by Tume-Agri Oy. Agree the warranty work with a Tume-Agri Oy representative.

Warranty exclusions

The warranty excludes faults due to normal wear, negligence, incorrect operation or installation, incorrect adjustment or inadequate maintenance.

Travel costs for minor work, such as replacing a seal or tightening bolts, are excluded.

The warranty is void if the machine is altered from its original configuration, including by modification, adjustment, addition of structures or use of replacement parts or accessories other than genuine parts supplied by the manufacturer.

The warranty excludes indirect losses, including working time, travel costs and effects on yield or contracts. It also excludes transport damage, vandalism, theft and similar losses.

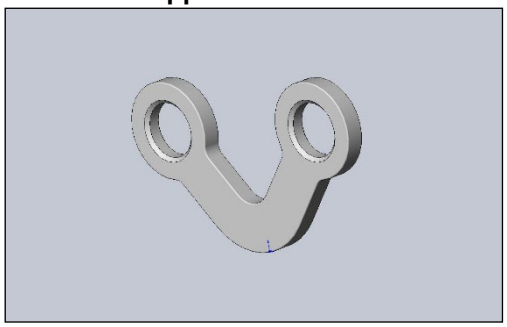
Warranty repairs do not extend the warranty period.

Reporting a fault

Report damage to the manufacturer immediately so that warranty coverage can be determined.

Appendix 1. Loading and transport instructions

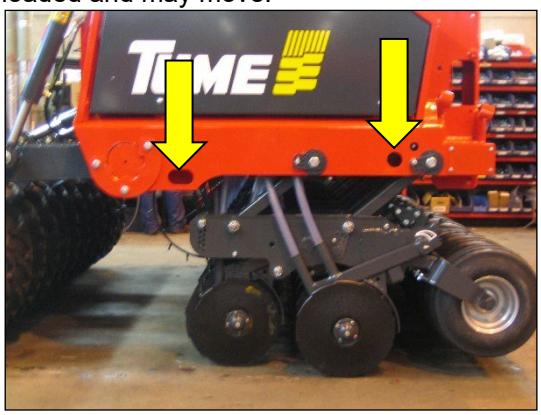
When lifting the machine for loading, use suitable lifting links in the holes in the centre partition **inside the hopper**.



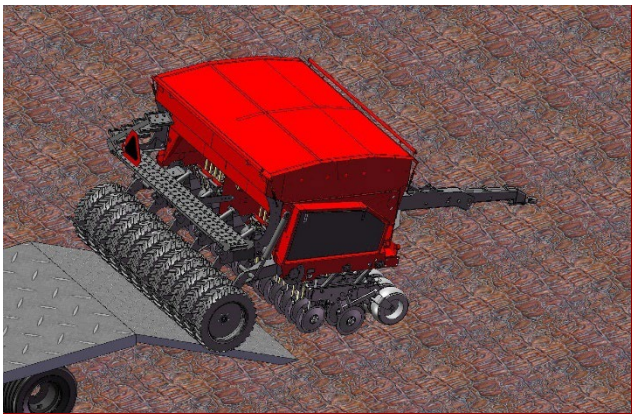
A chain can also be used on its own.



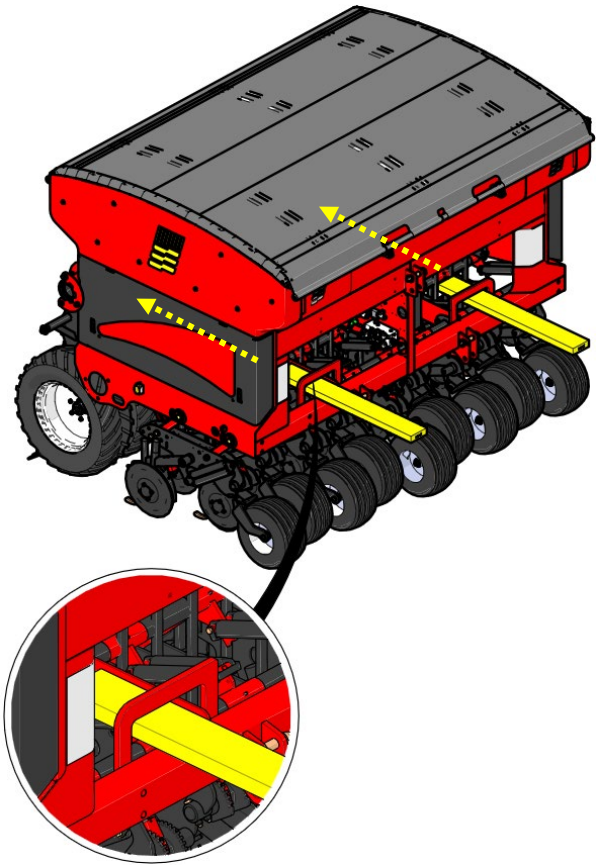
Use the holes at the ends of the machine to secure it for transport. The coulters are spring-loaded and may move.



When loading the machine with a tractor, support each **rear wheel pair on a** load-bearing surface or ramp.



Use a suitably rated forklift to lift the packed machine. Insert the forks into the fixed lifting loops below the hopper. The forks must reach the rearmost loops. Move seed and fertiliser hoses clear of the forks.



19. NOTES



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