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USER MANUAL

SUPER NOVA COMBI 3000
SUPER NOVA COMBI 4000

Seeder



Starting with production number BJ-53884
12.5 / 16.7 cm row spacing
All rights to structural changes are preserved

Read the manual before using the machine!
Translation

EC declaration of conformity for machinery
(Machinery Directive 2006/42/EC, Annex IIa)

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

Name of the person who addresses who is authorized to compile the technical file:
Name: Heimo Valli
Address: Sudenkorventie 1, FI-14200 TURENKI

Assures that
Seeder Super Nova Combi 3000 ja Super Nova Combi 4000 Serial number
_____

- comply with the relevant legislation of the Machinery Directive (2006/42/EC)

and further affirms that

- The following harmonised European standards have been applied

SFS-EN ISO 12100-1:2003

EC declaration of conformity of the machine
(Machinery Directive 2006/42/EC, Annex II A)

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

Name and address of the person authorised to compile the technical documentation:

Name: Heimo Valli
Address: Sudenkorventie 1, FI-14200 Turenki

Hereby declares that:
Super Nova Combi 3000 and Super Nova Combi 4000 seed drills Serial number
_____

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

We also ensure that

- The following European harmonised standards have been used:

SFS-EN ISO 12100-1:2003

Place and time / Ort och datum: Turenki 20.2.2023

Signature :

Jorma Lähetkangas
President and CEO

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1. FOR THE OPERATOR OF THE MACHINE AND THOSE RESPONSIBLE FOR THE MACHINE

We wish you the best of success with your TUME seed fertiliser. This manual instructs you on the correct way to use, adjust, maintain and store the Tume Super Nova Combi. If you follow the instructions in this book, your machine will serve you for a long time and flawlessly. It is very important to familiarize yourself with the instructions well in advance of the season. Keep the user manual safe and easily accessible. The manufacturer, Tume-Agri Oy, is happy to help with machine-related matters.

Things to note about the presentation of the user manual.
Because this publication is distributed through an international sales network, the devices (both standard and accessory) shown in the images may vary by country. In some countries, legal and otherwise important covers have been opened or removed in some images to make the subject more visible. The machine must not be used without guards on. For your own safety, make sure that all guards are intact or fitted before you start working.

In this manual, when the "left" and "right" sides of the machine are mentioned, the machine is meant when viewed from behind in the direction of travel.

Tume-Agri Oy is constantly developing its products and therefore reserves the right to make changes and improvements to them without committing to making them to previously sold products.

2. GENERAL SAFETY INSTRUCTIONS



Anyone using, servicing or otherwise handling the TUME seed fertiliser should read these operating instructions carefully before taking any action.

It is strictly forbidden to work or stay under a machine that relies on unsupported hydraulics. To ensure that the machine stays upright, close the safety valves on the lifting cylinders and support the machine carefully. Lower the machine if you need to leave it unattended.

It is forbidden to stay on top of the machine or on the step level while the machine is moving. The operator must ensure that there are no people near the machine while the machine is moving.

Lubrication, adjustment or cleaning of the machine is prohibited while it is moving. Turn off the tractor engine and apply the handbrake during maintenance work.

All guards must be kept in place.

Ensure that the drive, hydraulic hoses and electrical wiring are correctly connected between the tractor and the implement.

Damaged hydraulic hoses and fittings must be replaced immediately. The hydraulic valves and connections of the tractor must be leak-free and in good condition. The transport position of the machine rests on them.

Due to the structure of the machine's hydraulics, the hydraulics may only be used when the 12V supply voltage is connected to the machine. If the power supply is out of order, use extreme caution when using the hydraulics, as the movements will be unrestricted!

Optional hydraulic line markers, i.e. markers, may move very quickly, especially if their hydraulic throttle valve is quite open and the tractor's hydraulic output is high. Use extra caution when trying to raise and lower markers for the first time. Make sure that no one is under the marker raised on the hydraulics or in the trajectory.

Make sure that at least 20 percent of the tractor's weight remains on the front axle of the tractor under all conditions. Use additional weights if necessary. Be especially careful if the seed fertiliser is connected to the intermediate cultivator and you lift it with the tractor's lifting device, for example. in the event of cancellation.

The machine is designed for a maximum transport speed of 40 km/h, both empty and fully loaded. When driving on public roads, always comply with applicable traffic regulations and restrictions concerning the tractor-machine combination. The permitted driving speed may be affected, for example, by the braking equipment of the machine and the mass of the towing tractor.

On rough or uneven roads, the driving speed must be reduced to a level appropriate for the road and driving conditions. Avoid driving over rocks and other obstacles to avoid flat tires.

It is forbidden to carry loads on top of the machine.

Never choose a driving line where the extreme wheels of the machine end up "on nothing". In this case, the machine can swing too much. Choosing the wrong driving line may result in the machine tipping over.

Use caution when moving around machine levels for cleaning or maintenance work or when filling containers.

The paintwork of the machine may emit gases that are harmful to health when heated. Take care of effective ventilation of the workspace, e.g. during any welding work.

Use only manufacturer-approved accessories and equipment. The person making the changes is responsible for any modifications that deviate from the manufacturer's instructions and their consequences.

The seed fertiliser does not cause a significant increase in the noise level at the work site in the tractor cab. The possible need for hearing protection depends on the noise level of the tractor. When handling heavy and sharp components (e.g. drawbar and coulter parts), we recommend the use of safety footwear.

Keep your machine up to date also with the required road equipment if the machine has to be transported on public roads. Changes to the regulations are subject to change.

If the Super Nova Combi is used with a tractor that does not have an ISOBUS connector, the operating power of the seed drill is taken directly from the tractor's battery via its own power cable. Contact the tractor manufacturer or its representative about the installation of the power cable and ask an authorized installer to install the cable in the appropriate manner for the tractor in question. Tume-Agri Oy is not responsible for any damage caused by a cable that may be connected incorrectly.

Check the condition of the power cable from time to time. A damaged cable may cause interference with the operation of the machine or tractor.

A damaged cable is a fire safety risk.

A damaged cable can cause electric shock.

The use of the machine is prohibited if the power cables are damaged. For example, if the insulation has rubbed.

Do not plug in or use the machine if the electrical connectors are wet.

3. INTENDED USE OF THE MACHINE

The Tume Super Nova Combi seed fertiliser is intended for simultaneous sowing and fertilisation. It is well suited for all sowing methods, direct sowing, sowing of minimally tilled or normally tilled soil.

The machine can also be used for sowing alone or for fertilization only, subject to the boundary conditions set out below. The Super Nova Combi also compacts the ground with its support wheels. In most conditions, the support wheels also close the grooves made by the coulters.

With the help of accessories, the features of the Super Nova Combi can be increased, so that the combination of machine and attachment can be used to cultivate or level the field and sow hay seeds in the same pass as sowing and fertilizing.

The use of Super Nova Combi for purposes other than those mentioned is prohibited. The machine is not e.g. intended for moving material at high speed or storing material in machine containers. The filling point of the machine should be located close to the field to be sown. The transition speed under load must be low and in reasonable proportion to the load in the hoppers and the unevenness of the roadway. Passenger transport by plane is completely prohibited!

3.1 Exceptional use of the machine for sowing only

If no fertiliser is used, it is advisable to move the partition in the machine's hopper to its forward position to maximise the volume of the seed container. If you want to e.g. Due to the risk of drying out of the soil, to ensure that the seed is located at the bottom of the deepest opened groove, the seeds can be sown through a fertilizer container. In this case, the calibration test must also be carried out using a fertiliser feeder and a calibration test tray. It should also be taken into account that the sieves on the fertiliser side may not pass through the seed to be sown. In this case, the sieves must be removed.

For maximum seeding performance, seeds can also be sown through both containers at the same time. When sowing through different hoppers, there is a 2 cm difference in the seeding depth if the coulters have discs of different sizes. In this case, calibration tests must be carried out on both feeders and the sum of the results forms a result describing the seeding rate.

3.2 Using the machine for fertilization alone

Tume Super Nova Combi can also be used for just fertiliser placement. In this case, the fertiliser is filled into either the fertiliser or seed hopper, or both. The special instructions related to the placement of fertiliser alone are more or less the same as the instructions in the previous paragraph. When filling the entire machine with fertilizer, it must be taken into account that fertilizer is usually a heavier material than seeds. Therefore, the machine must not be completely filled.

4. GENERAL INSTRUCTIONS FOR SOWING

4.1 Coulter structure when sowing

The Super Nova Combi is equipped with 2-disc coulters, where the right and left discs have different diameters as standard. A smaller disc essentially determines the seeding depth of the seeds, and a larger disc makes a slightly deeper groove for fertilizers. The machine is also available with discs of the same size, allowing the seed and fertiliser to go to the same depth.

4.2 Driving Directions

Every time the machine is lowered, it must be moved forward at the same time. Otherwise, the coulters may become clogged.

The machine rests in its upright position on the tractor's hydraulic valve. For this reason, it must be ensured that the tractor's hydraulic valve does not accidentally open or leak during the transfer operation.

NOTE! The safety valves of the end lift cylinders must always be kept open during road transport!

When sowing, the front end of the machine can be raised with the tractor's hydraulics, for example, to avoid blockages. This is done by the cylinder of the drive, which is controlled by its own 2-actuator valve. Em. The cylinder should also be used in road driving, as this will give you more ground clearance. When sowing, the front cylinder is used only when necessary. For example, to release a blockage. Otherwise, the cylinder will be in the shortest position during sowing work.

The machine should operate on level ground in a horizontal position. If the machine is tilted forward, the push rod of the drive device must be adjusted longer. If the machine is tilted backwards, the push rod must be shortened. If necessary, check and adjust the seeding depths after driving some distance. Check the adjustment of the markers by also examining the seam of the seed.

NOTE! RAISE AND LOWER THE MACHINE ONLY WHEN IT IS MOVING FORWARD. NEVER REVERSE THE MACHINE when the coulters or rear harrow are on the ground. The machine gives an alarm if the coulters are down when reversing or the trail harrow is on the ground.

Check from time to time that there are no blockages in the coulter. Also check the condition of all seed and fertiliser pipes and clean any blockages.

Do not store fertilizer or seed in containers for several days. Moistened fertilizer can cause supply failures.

Driving speeds:

- A suitable driving speed is usually around 8-14 km/h.
- When sowing peas and beans, the maximum speed is 6-10 km/h.
- In transfer driving, the maximum speed is 40 km/h.

4.3 Noteworthy tips for using the machine

Some large and light seeds (e.g. some oat varieties) may have difficulty draining the seeds through the sieves. In this case, remove the sieves from the seed container. When filling the hopper, take special care to prevent any large particles from getting into the seed and damaging the feeders.

The calibration tests of the machine are carried out on both the seed and fertiliser sides in the troughs below the feed chambers. Use caution when pushing the trays into place. Keep them in an absolutely straight line with the machine. If the chute is pushed hard so that its head is pointing upwards, the chute may hit some of the feed chambers and damage them.
Use caution when taking sieves from the hoppers. If the screen hits the level sensor, it may be damaged.

The most common operating error is that the coulters are over-emphasized. The weighting is sufficient when the adjusted working depth is reached, i.e. the rim step runs firmly on the adjustment wheel in front, no more. Excessive coulter weighting increases the risk of clogging the machine and puts unnecessary strain on the machine's structures.

5. COMMISSIONING THE MACHINE

5.1 Rear wheels

Rear wheels, i.e. the machine's support wheels. The longer cylinders at the ends of the machine turn the entire width of the machine's tubular frame, to which the outer pairs of wheels of the machine are also attached. The intermediate wheel pairs are attached to the tubular frame with joints and they operate with their own drive cylinders. All these cylinders are connected in parallel to the same hydraulic circuit and have the same pressure. This allows the wheelsets to adapt to the unevenness of the ground, but the rolling force is still constant over the entire working width (Figure 1).

The geometry of the support wheels is designed so that in the working position of the machine, the pressure is almost the same under all pairs of wheels. On the other hand, with the machine raised to the upper position, the loose pairs of wheels in the middle carry a little more load. This reduces the likelihood of damage to the outermost pairs of wheels in transport transport, where they are most often damaged.

Also pay attention to the scrapers and steps of the rear wheel when reversing, they are close to the ground. Watch out for obstacles! With a high threshold, etc. more than the cancellation of the above-mentioned The scrapers will rise higher if the machine is lowered slightly. Make sure that there is enough space under the coulters so that they do not hit an obstacle.



Figure 1. Rear wheels.

5.2 Front Axle

The support wheels at the front determine the depth to which the coulters can sow (Figure 2). When sowing, the wheels follow the surface of the soil and support the rim step behind them, which has two coulters attached. The seeding depth adjustment is incremental, i.e. one wheel adjusts two coulters. The adjustment is carried out with the help of quick-release fasteners, which are located on the front edge of the carriage. By adjusting the locking handle to the lowest notches, the maximum seeding depth is achieved. Correspondingly, by adjusting the above-mentioned handle to the upper notches, can be sown on the surface of the field. The adjustment of the seeding depth is described in more detail in chapter 9.



Figure 2. Front wheels.

The front wheels are held up by springs. Watch the tires when making sharp turns with the machine up. When the machine swings, the wheel can flex downwards and catch on the ground, causing tire damage!

5.3 Installation of the drawbar

The drawbar is assembled as shown in Figure 3, which shows the attachment of the drawbar to the machine. Please note that the drawbar is always attached to the upper holes of the lower lugs of the machine. The hydraulic push rod is attached to its upper hole.

Hydraulic hoses and electrical cables are carefully attached to the traction device so that they cannot be damaged in any driving situation (e.g. when driving the tractor into a linkage). Thread the hoses through the inside of the handlebar housing beam.

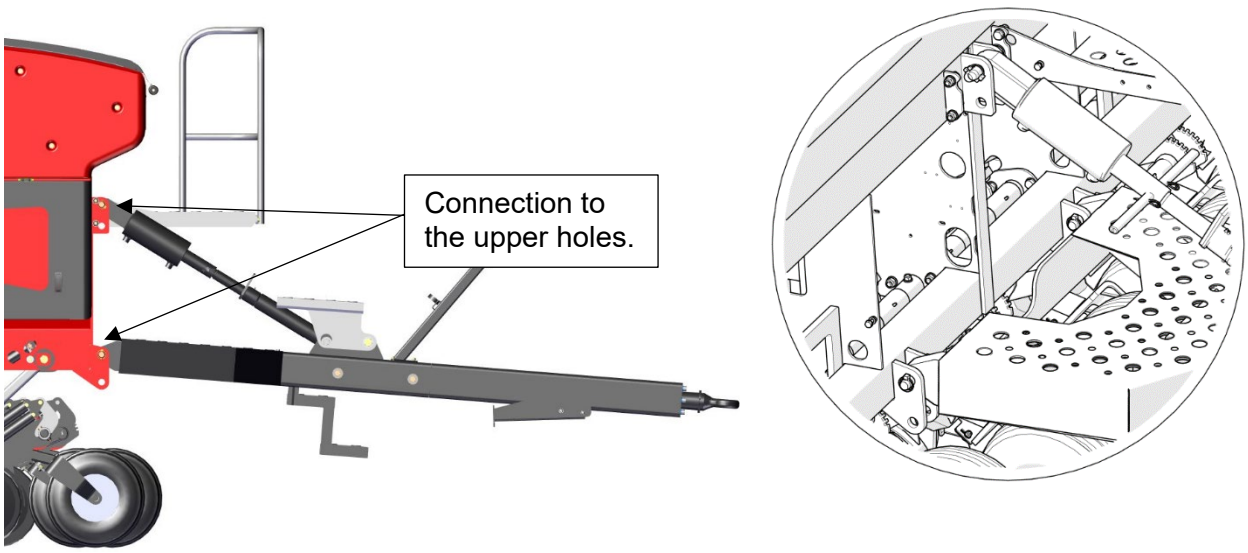


Figure 3. Connecting the drivetrain.

Adjust the length of the push rod so that the machine is level when it is lowered and connected to the tractor hitch, wheel packer or CultiPack. Make sure that the push rod cylinder is in its shortest position when making this adjustment. The fine-tuning of the drive is done in the field in sowing conditions.

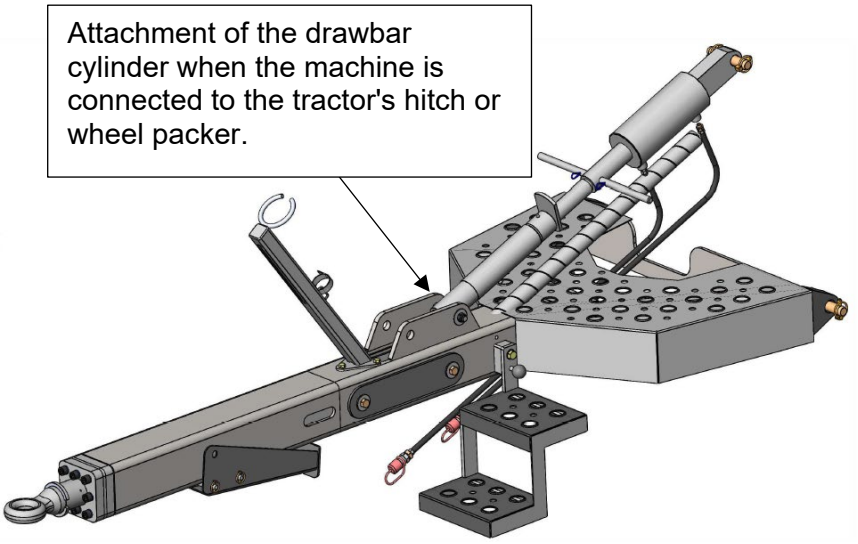


Figure 4. The tiller cylinder is connected to the rear hole if the machine is connected directly to the tractor's hitch or wheel packer.

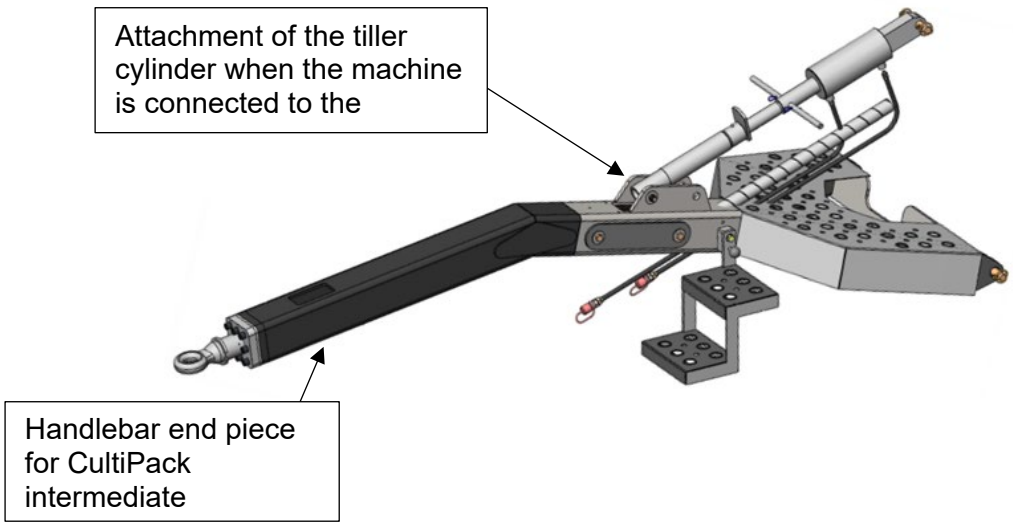


Figure 5. The drawbar cylinder is connected to the front hole if the machine is used in combination with the CultiPack intermediate cultivator. The connection to the CultiPack requires its own end piece for the drawbar.

5.4 Attaching the machine to the tractor

The Super Nova Combi is normally connected to the tractor's towbar, wheel packer or CultiPack cultivator. We do not recommend connecting the machine to a drawbar attached to the tractor's drawbars, as this lightens the front end of the tractor and reduces maneuverability.

5.5 Hydraulic couplings

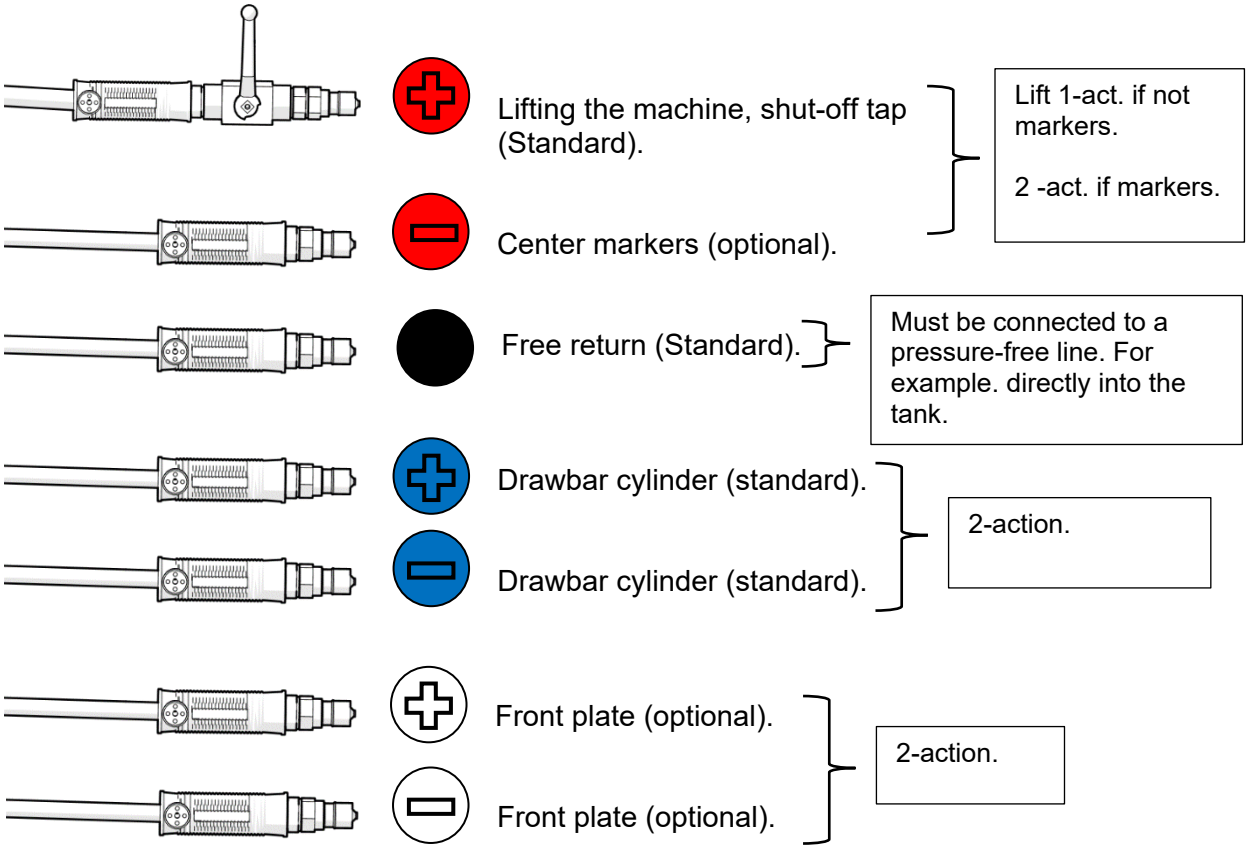
The lifting/lowering hydraulics of the standard Super Nova Combi are connected to a single-acting hydraulic take-off. The hydraulic cylinder of the drive unit needs its own 2-way connection. The free return is connected to a pressure-free line. For example, directly into the hopper.

Note! Too much free return back pressure slows down or even prevents the trail harrow from descending.

Before removing the hose from the tractor, close the tap on the lifting hose by turning the tap handle sideways to the hose. Only open the tap after you have connected the hose to the tractor.

If the machine has markers, they operate with the same hydraulic valve as the lifting and lowering of the machine, but then the machine must be connected to the tractor's dual-acting hydraulics.

The hydraulic front hub needs its own 2-way connection.



It should be noted that some tractor types require the use of their own type of hydraulic quick couplings recommended by the tractor manufacturer. Replace the If necessary, parts to the right type for your tractor to ensure proper hydraulic operation.

The hydraulic hoses are threaded into the shelter inside the drawbar.

5.6 Connecting electricity

5.6.1 Electrical connection to ISOBUS tractors

The Super Nova Combi draws the operating power from the ISOBUS connector. Connect the ISOBUS connector of the implement to the ISOBUS connector of the tractor.

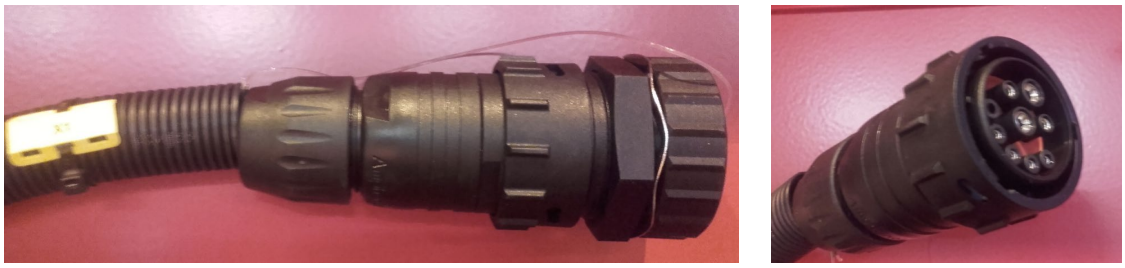


Figure 6. ISOBUS connector for the machine.

The rear lights of the machine have their own 7-pin light plug. Connect the plug to the tractor's light plug.

5.6.2 Connecting the electricity of a separate wiring harness

If the tractor does not have an ISOBUS connector, the power is drawn directly from the tractor battery via the power cable supplied with the machine. The power cable is installed on the tractor so that it does not need to be removed when disconnecting the seeder.

Contact the tractor manufacturer or its representative about the installation of the power cable and ask an authorized installer to install the cable in the appropriate way for the tractor in question!

When installing the cable, make sure that it cannot be pinched by anything, such as the cab suspension structures. Also take into account the possible main power switch of the tractor during installation. The cable has a fuse and a relay for the planter's main power switch.
This cable does not need to be disconnected when the seed drill is disconnected from the tractor. If you change the tractor used for sowing, move the battery cable to another tractor or order and install another similar battery cable.

There are separate instructions for connecting a separate wiring harness.

5.6.3 Electrically controlled lifting and lowering height

NOTE! The maximum lifting and lowering height of the machine is adjusted by means of an electric valve (Fig. 7).

NOTE! The electricity must always be connected when moving the machine. If the electricity is not connected, serious tyre / coulter damage can result.
If the electricity is not connected, great caution must be exercised when lifting! Do not lift the machine too high.

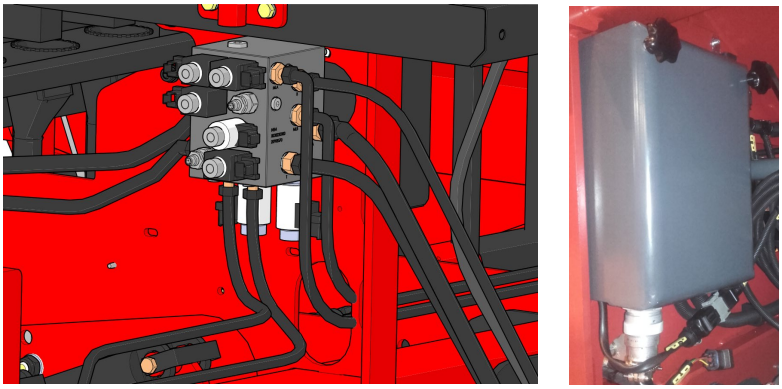


Figure 7. Hydraulic valve system and electrical housing.

Electrical cables are threaded inside the drawbar to protect them.

5.6.4 Fuses

The fuses are located under the electrical box (Fig. 9).

A – F1 – 15 A – Control unit/EPEC.
B – F2 – 15 A – Fertilizer engines.
C – F3 – 15 A – Left-side seed and small-seed engines.
D – F4 – 15 A – Right side seed and small seed engines.
E – F5 – 5 A – Sensors and tread servos.
F – F6 – 15 A – External power plug.

If the fuse blows, try to find the cause. Do not replace a fuse larger than the original!

6. FILLING THE HOPPERS

When starting sowing, it is recommended that the machine be moved to the field empty. Fertilizers and seed are brought to the field, for example. trailer and the filling of the seed fertiliser is done at the edge of the field block. If the machine has to be filled far from the plot to be sown, caution must be exercised when transporting with full hoppers. The maximum transfer speed of 40 km/h may only be used on roads in good condition.

The emptying of the hoppers can be monitored by observing with the machine's area meters when it has been determined how large an area can be sown with a hopper. The control unit will sound an alarm when there is a certain amount of fertiliser or seed in the hopper and the monitoring is switched on

.

6.1 Adjustable hopper volume

The partition between the fertiliser and seed containers is adjustable, so the volume ratios of the containers can be adjusted. The adjustment is carried out by unscrewing the locking screws of the support bars of the partitions and turning the partition to the desired position (Fig. 8). Be sure to lock the support bars after adjustment.



Figure 8. Hopper partition adjustment rod.

6.2 Filling method

The filling height of the machine is quite large and the hopper volume is large. For this reason, we recommend that you use big bags as the filling method (NOTE: sufficient lifting equipment) or e.g. filling screw technology.

Big bags can be handled with various loaders. Don't go under the hanging burden. The big bag must not be placed on top of the structures of the seed fertiliser. Do not overload the seed fertilizer. Find out about the methods for partially emptying the big bag.

7. EMPTYING THE HOPPERS

7.1 Emptying the fertilizer hopper

A large amount of fertiliser should be emptied using the drain pipe from the drain holes in the corners of the hopper (Figure 11). The fertiliser hopper can also be emptied through the coulters. Apply e.g. under the machine and turn the lever on the bottom flaps of the fertiliser side feeder (Fig. 9) past the value 4. In this case, the hopper is almost completely emptied. Direct the remaining fertilizer to e.g. brush into the feeding chambers. To rotate the feeder, press the calibration test button to empty the chambers. Finally, swing the bottom flaps quickly with the lever a few times so that no fertilizer remains on the flaps. Small quantities should be emptied into the rotational test trays by turning the trays to the calibration test position and pressing the calibration test button (Figure 9). Swing the bottom flaps a few times.

NOTE! The calibration test buttons only work when the seeding menu or rotation menu is open on the display.

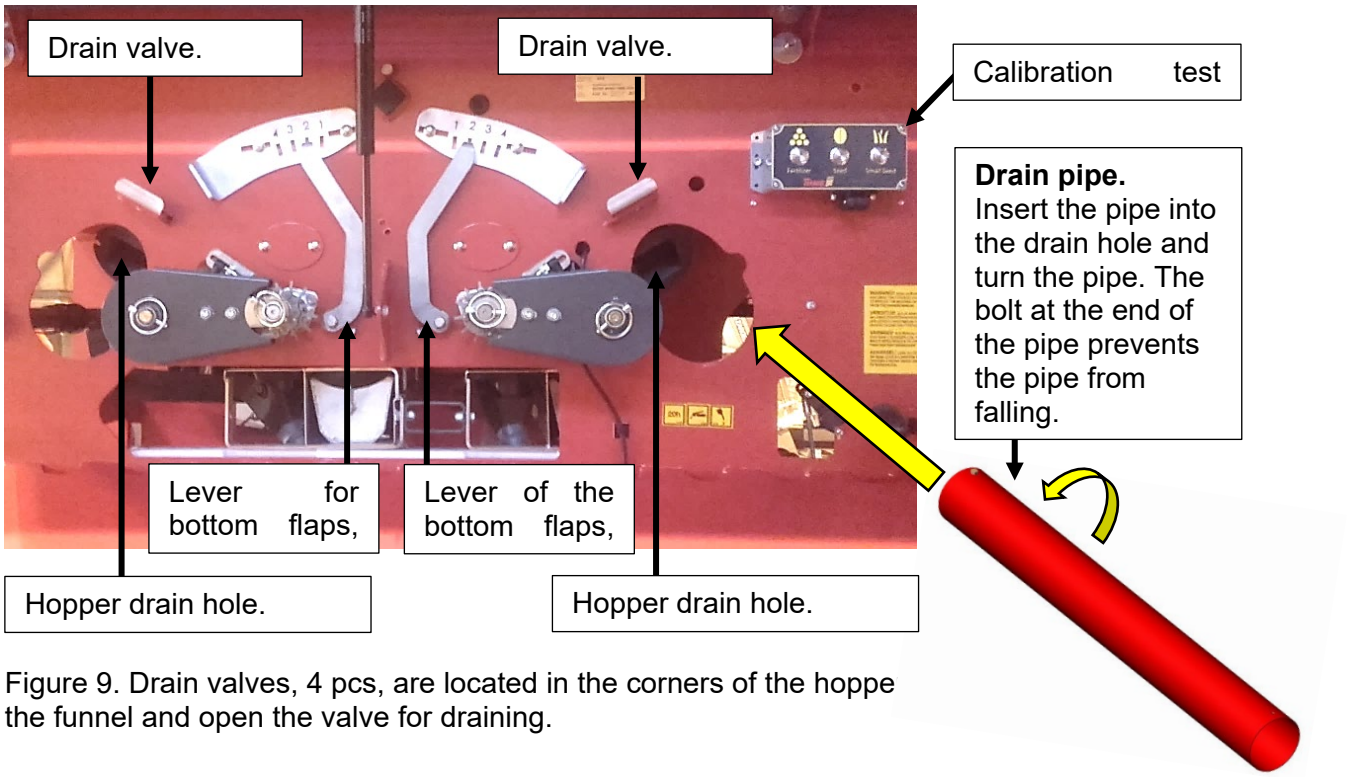


Figure 9. Drain valves, 4 pcs, are located in the corners of the hoppe the funnel and open the valve for draining.

7.2 Emptying the seed container

The seed container is emptied in the same way as the fertilizer hopper.

8. FEEDING EQUIPMENT AND ITS ADJUSTMENT

8.1 Measuring Speed and Determining Feed

The feed motors are powered by the tractor's battery. The computer calculates the feed speed based on the lap test result and the driving speed on both sides of the machine. The machine with a working width of four metres is divided into two two-metre sections and a three-metre machine into two 1.5-metre sections.

The sensors that control the feed volume can be found on the hubs of two different rear wheels (Figure 10). The feed volume is determined in curves so that the feeders on the inside curve slow down and the feeders on the outer curve speed up. This keeps the seeding rate more even even when cornering. The same sensors also measure the surface area.

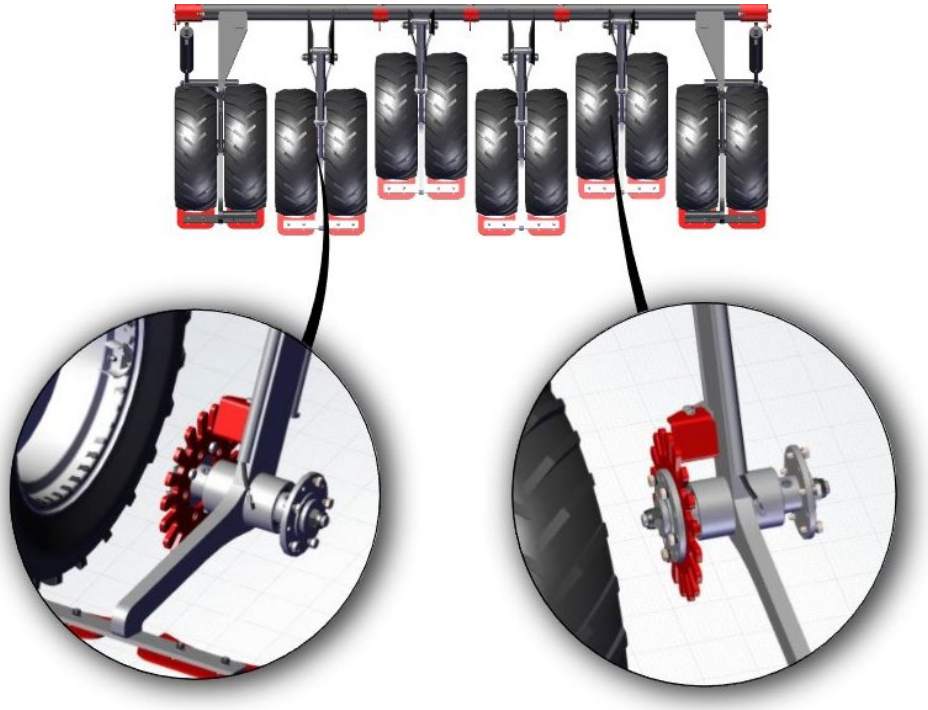


Figure 10. Sensors for speed and surface area measurement, left and right.

NOTE! **Clean the speed sensor and the notched plate if soil accumulates on them, e.g. when the machine sinks.**

8.2 Feeders

The feeder consists of spiral fertiliser rollers and on the seed side studded rollers, spring-loaded bottom flaps and adjustable shut-off doors (Figure 11).

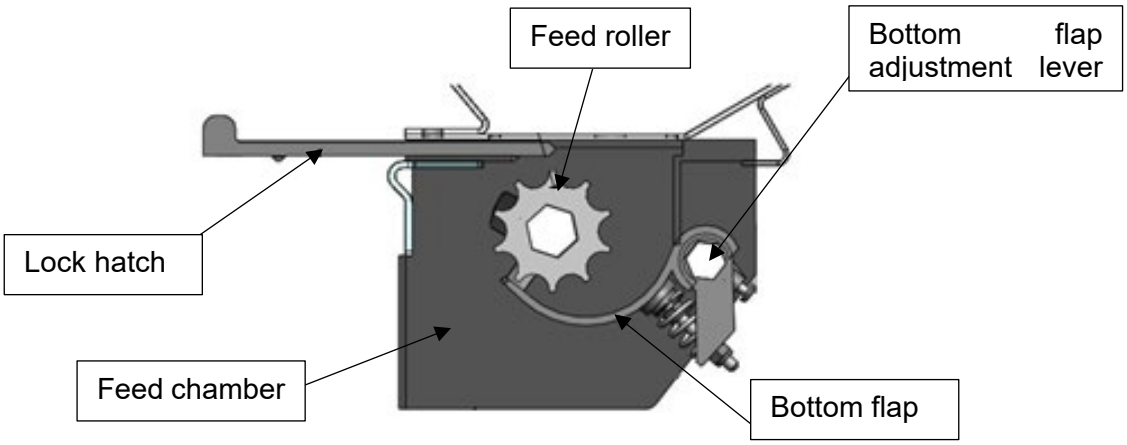


Figure 11. Feeder.

8.2.1 Bottom flaps

The feeding accuracy depends on the distance between the bottom flap (Fig. 11) and the feed roller, so it is important that the bottom flaps are in the correct position. A new calibration test if you adjust the bottom flaps. The bottom flaps are flexible if a hard foreign object gets between the bottom flap and the feed roller. The bottom flaps under the feed rollers are adjustable, there are four adjustment levers and they are located at the ends of the machine (Fig. 18).

8.2.2 Shutters

There is a shut-off hatch between each feed chamber and the bottom of the hopper (Fig. 11). The hatches are usually kept wide open. Individual supply chambers can be disabled by closing the chamber shut-off door. This can be done, for example, when you want to sow through every other coulter. Closing is done by pushing the door all the way inside the chamber.

8.2.3 Seed Feeder Fillers

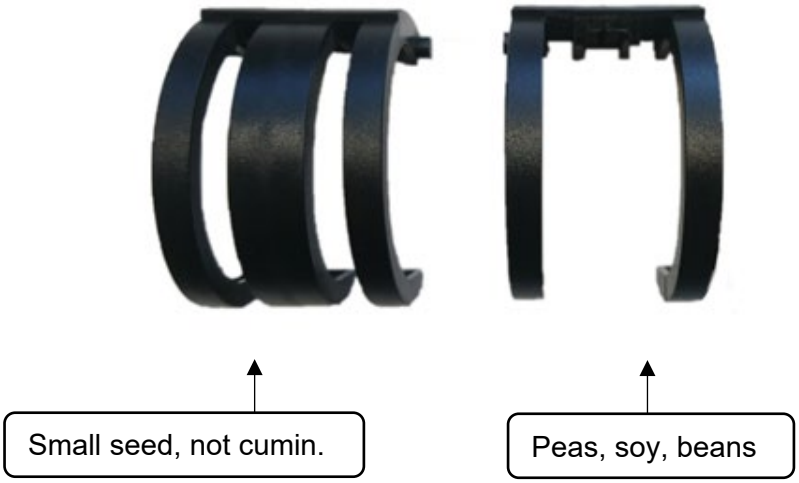


Figure 12. Fillers.

The necessary filling pieces are installed in the feeding chambers according to the seed to be sown. The filler pieces can be installed without tools as shown in Figures 13-15. When we move back to e.g. grain sowing, they must be removed. When disconnecting, it is good to use e.g. a small screwdriver. Do not damage the plastic parts. Inserting and removing the filler pieces is done with light force.

Note! Do not use filler pieces with cumin.



Figure 13. Installation of the filler.



Figure 14. Filling piece in place.



Figure 15. Removal of the filler.

8.3 Controls on the sides of the machine

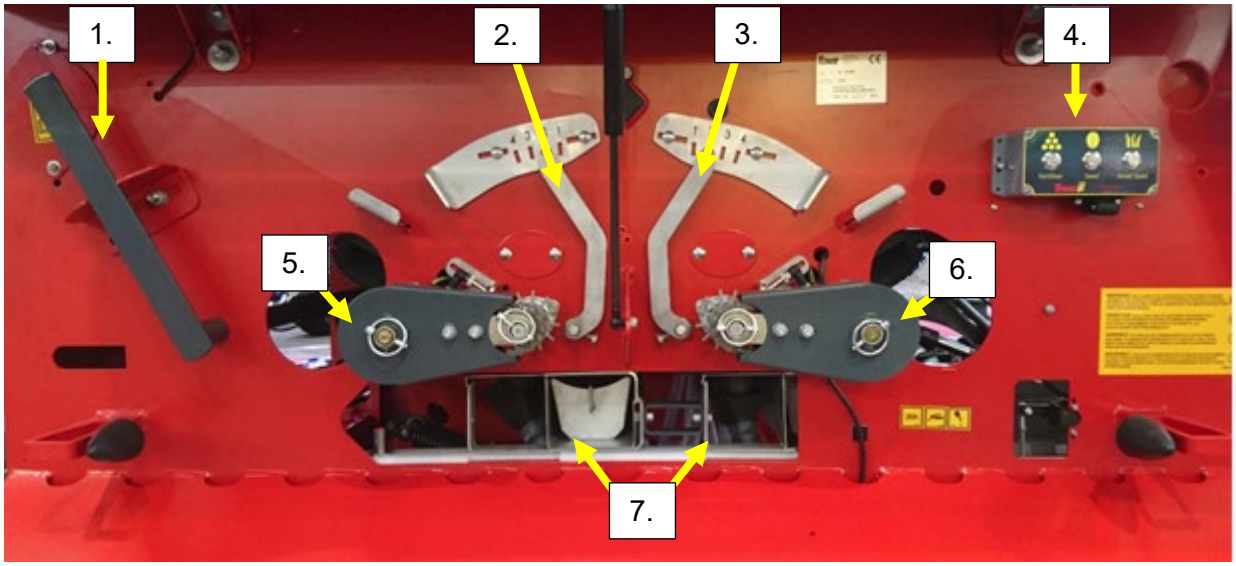


Figure 16. Left side of the machine with the protective cover open.

1. Lever for calibration test / sowing position selection. In the picture, the lever is in the seeding position.
2. Adjustment lever for bottom flaps, fertilizer.
3. Adjustment lever for bottom flaps, seed.
4. Calibration test buttons and auxiliary power plug.
5. Transmission cassette fertilizer.
6. Transmission cartridge seed.
7. Touring test troughs

On the right side of the machine, you can find the corresponding transmission cassettes and adjustment levers for the bottom flaps.

8.3.1 Calibration test/seed selection handle

The seeding position is selected when the handle (Fig. 16) is in the forward position locked in the slot. By turning the handle all the way back, the rotation trays slide under the feeders and the calibration test position is selected.

8.3.2 Adjustment lever for bottom flaps, fertilizer

The adjustment lever on the bottom flaps of the fertiliser feeders (2nd Figure 16) adjusts the distance of the bottom flap from the feed roller. When performing the calibration test, check the correct position of the lever on a 4-notch scale.

NOTE! The adjustment lever must always be placed in the same position on both sides of the machine.

8.3.3 Adjustment lever for bottom flaps, seed

The adjustment lever on the bottom flaps of the seed feeders (3. Fig. 16) adjusts the distance of the bottom flap from the feed roller. When performing the calibration test, check the correct position of the lever on a 4-notch scale.

NOTE! The adjustment lever must always be placed in the same position on both sides of the machine.

8.3.4 Calibration test buttons and auxiliary power plug

By pressing the calibration test button (4. Fig. 16), fertiliser / seed / small seed, the feeders are rotated for the calibration test. Below the buttons there is a 3-pin power plug, max. 5 A. You can use an auxiliary power plug, e.g. installation of task lighting.

8.3.5 Transmission cassette fertilizer

Transmits power from the motor to the fertilizer supply shaft. The cassettes (5th Fig. 16) should be facing the same way at both ends of the machine.

8.3.6 Transmission Cartridge Seed

Transmits power from the motor to the seed feed shaft. The cassettes (6th Fig. 16) should be facing the same way at both ends of the machine.

8.3.7 Touring test troughs

The two-part calibration test trays (7. Fig. 16) can only be emptied at the left end of the machine. Turn the calibration test handle to the calibration test position and you can remove the trays.

9. SEEDING DEPTH ADJUSTMENT

The buckets are mounted on rim steps, with adjustable bracket wheels in front of which adjust the working depth of the coulters. Each support wheel determines the working depth of the two coulters on the carriage. By installing the adjustment hooks of the support wheels in the lowest notches, the maximum working depth is achieved. In the uppermost notches, on the other hand, sowing can be carried out almost to the surface of the field (Figure 17). Use the same working depth for all rim steps.

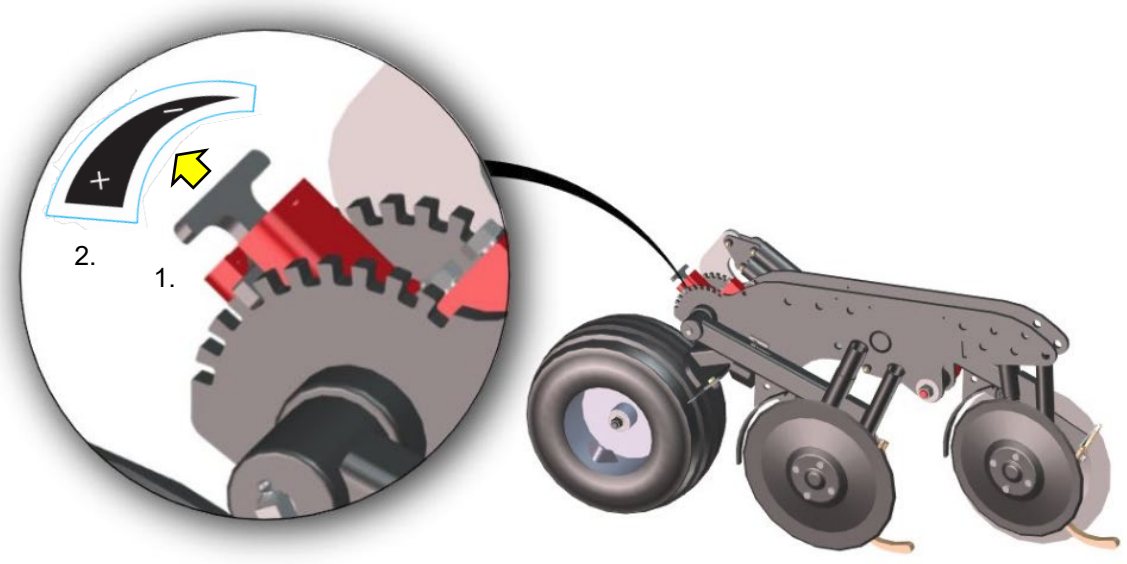


Figure 17. The seeding depth is adjusted on a step-by-step adjustment handle above the front ring.

1. Pull the T-handle. 2. Turn the handle and move it to the desired notch. Make sure that the handle locks into place.

The seeding depth increases when the handle is turned forward and decreases when the handle is turned backwards. The adjustment is only possible when the front wheel is in the air. You can make it easier to adjust the T-handle by pressing the front wheel downwards, for example, with your foot.

Seed and fertiliser are sown through the same coulters. The fertiliser is directed into the ground into a deeper groove made by a larger disc. The seed is directed to the upper groove made by the smaller disc (Figure 18). The distance between the fertiliser and the seed cannot be changed.

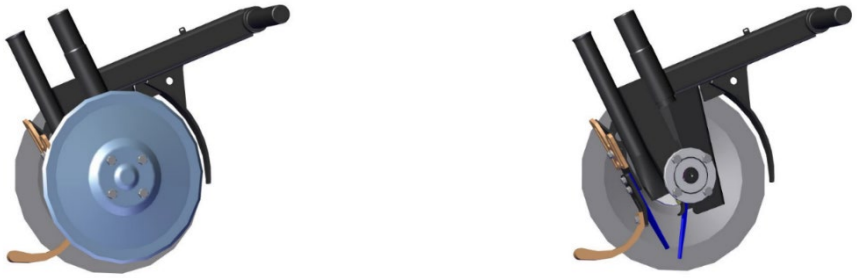


Figure 18. Coulter structure.

Seeding depth adjustment must be carried out in the field under sowing conditions

1. Adjust the support wheels of the rim step, for example. to its middle control notches.

2. Lower the machine while driving forward. Stop the tractor with the machine down. Do not allow the tractor to jerk backwards to prevent the coulters from clogging. Before leaving the cab, make sure that the tractor cannot move.

3. Check the correct position of the machine. The machine must be horizontally in the direction of travel. If necessary, adjust the drive rod adjustment screw. Horizontal straightness is easy to examine by comparing the edge of the grey edge plate to the surface of the field.

   NOTE! The handle cylinder must be in its minimum length in the working position!

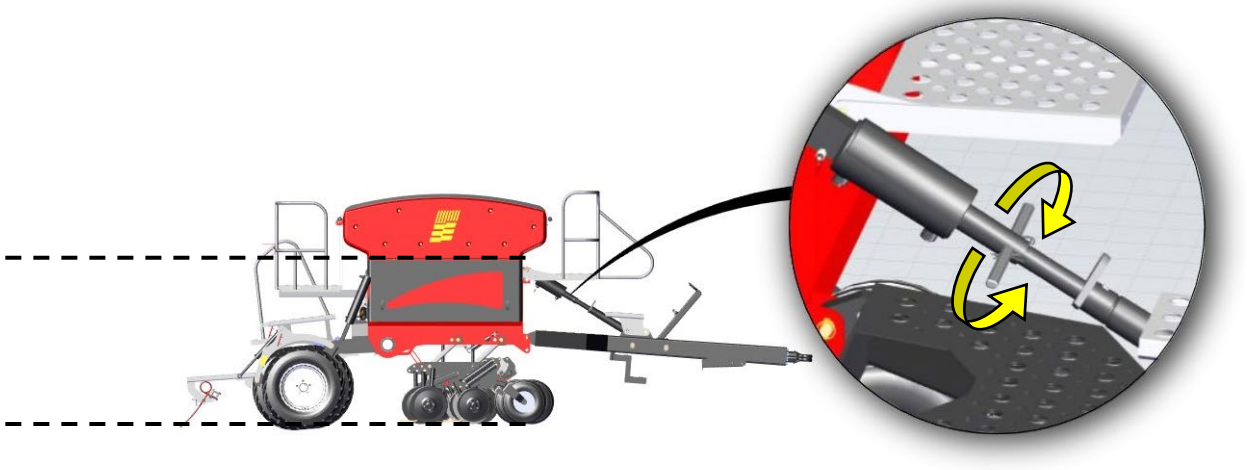


Figure 19. Adjusting the machine horizontally.

4. If the machine is parallel to the field surface and the drive rod does not need to be adjusted, the seeding depth can be checked. It is advisable to check the seeding depth behind the trail harrow.

If the seeding depth is not correct, use the T-handle to adjust the seeding depth in the desired direction and check the seeding depth again.

9.1 The effect of coulter weighting on seeding depth

The coulter emphasis affects whether the target seeding depth is reached. The desired coulter weight is adjusted by changing the height of the machine's hopper. When the machine is lowered almost to its lower position, the pull springs that cause coulter weighting begin to tighten. The lower the lowering of the machine, the greater the weighting force created by the tension spring pairs increases (Figure 20). The maximum lower position (i.e. coulter weighting) is adjusted from the controller by changing the print value using the plus and minus buttons (chapter 11.2.4). A higher value means a higher coulter print.

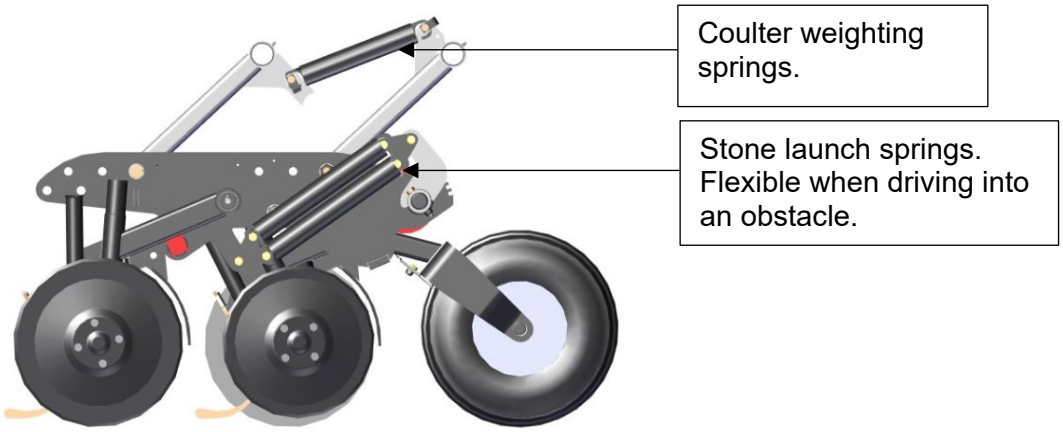


Figure 20. Coulter sledge..

Do not put more weight on the machine than necessary. Adjust the maximum weighting so that sufficient coulter weighting is obtained in the hardest part of the field plot to achieve the correct seeding depth. When the soil type becomes lighter, raise the machine slightly if necessary, i.e. lighten the coulter weight appropriately.

Too much coulter weighting increases the pulling resistance, deepens the seeding than desired, and puts unnecessary strain on the machine structures. At the same time, the gravity of the rear axle that closes the furrow decreases.

The coulter weight adjustment is done from the user interface.

10. ADJUSTING THE REAR HARROW



Figure 21. Rear harrow.

The tine of the rear harrow can be adjusted laterally. In addition, the working angle of the harrow can be adjusted. The lateral direction is adjusted so that the tines run in the middle of the earthen embankment between the support wheels and the wheel track. Whenever the angle adjustment of the rear harrow is changed, the working depth must also be checked.

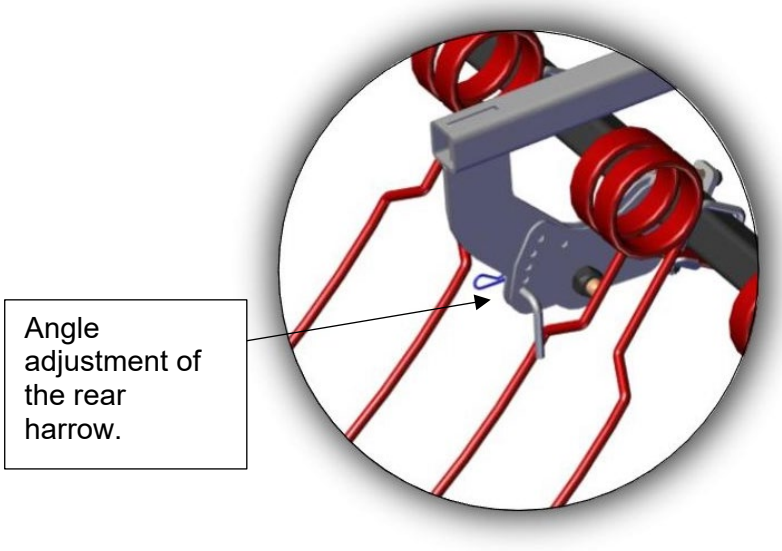


Figure 22. Angle adjustment of the rear harrow.

The operation of the rear harrow can be controlled from the user interface using the half-lift function. The use of half-lift is described in section 11.2.14 Half-lift.

The pitch rate of the rear harrow can be adjusted from the throttle valve on the front edge of the

machine, blue knob. For adjustment, loosen the hex screw from the side of the knob, rotate the knob, and lock the appropriate adjustment with the hex screw. The adjustment should be done with full hoppers at the normal operating temperature of the oil.

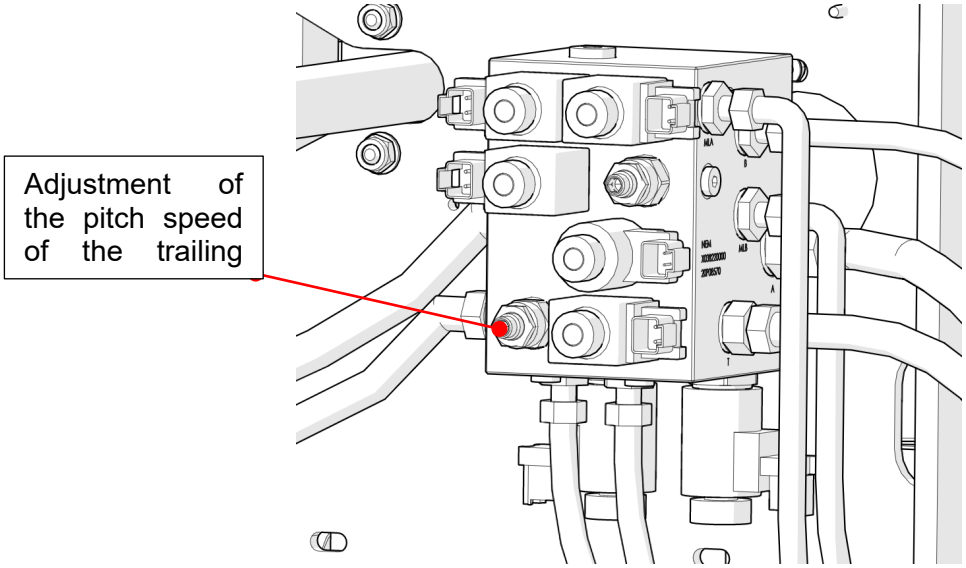


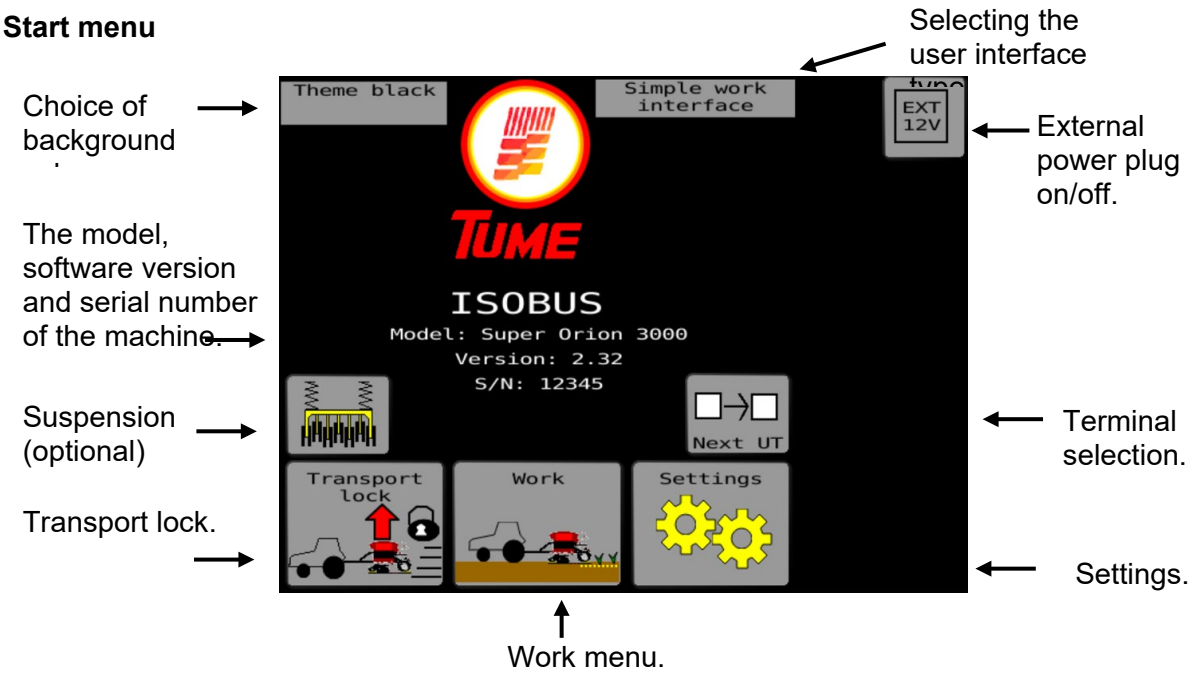
Figure 23. Adjustment of the pitch speed of the rear harrow.

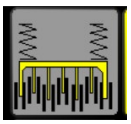
NOTE! Do not reverse when the trail harrow is on the ground!

11. USER INTERFACE

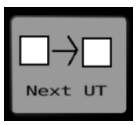
Please note that the appearance of the user interface and the locations of the icons may differ from the Figures in this book, depending on the terminal you are using.

Start menu

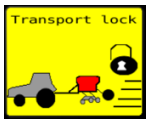




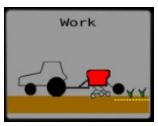
Rear suspension on or off (yellow) when driving on the road (yellow). Suspension is an option. The suspension only works when the start menu is active.



With the Next UT button, you can move the user interface to another terminal if you have more than one isobus terminal in use.



Transport lock. Grey = off. Yellow = on. **Can only be activated when the machine is fully up.** Make sure that the trail harrow is also up before activating the function. Prevents the plane from landing unintentionally during transport, e.g. if you accidentally use the hydraulics or the tractor valve leaks.

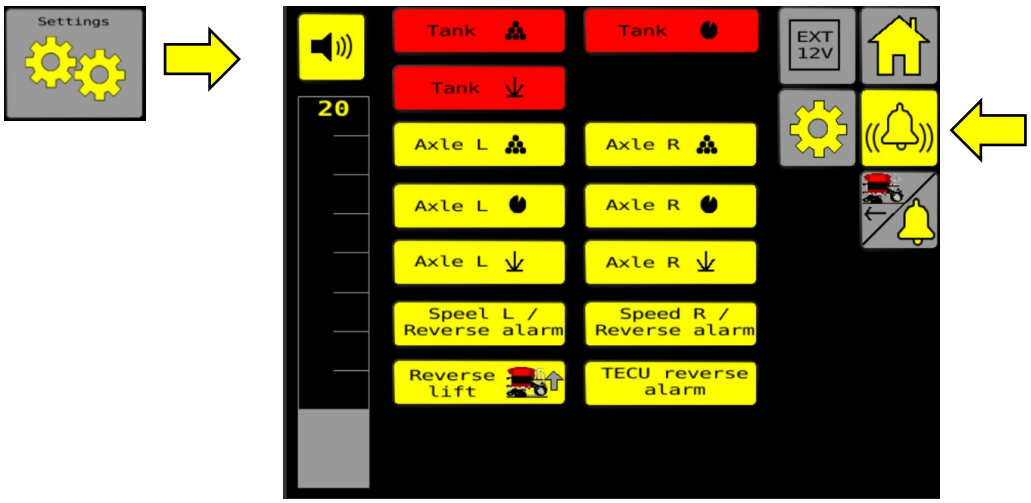


The work menu is selected for the duration of the sowing work.



Options menu. From here, you can change e.g. alarms, progress, actuator and valve settings, calibration of the altitude sensor, and speed source.

11.1 Alarm management, ALARM CONTROL



The following controls can be selected on or off from the ALARM CONTROL display:

- Speaker = Sounds on or off. Below you can adjust the volume from 0 to 100.
- Hopper = Fertilizer hopper level guard
- Hopper = Seed hopper level guard
- Hopper = Level guard for small seed/starter fertiliser hopper (accessory)
- Axle L = Fertilizer Supply Shaft Monitoring, Left Edge
- Axle R = Fertiliser feed shaft monitoring, on the right edge
- Axle L = Seed Feed Axis Monitoring, on the Left Edge
- Axle R = Seed Feed Shaft Monitoring, Right Edge
- Axle L = Monitoring of the small seed/starter input shaft, left.
- Axle R = Monitoring of the feed shaft of the small seed/starter device, right.

- Speed L / Reverse Alarm = Left-side speed sensors
- Speed R / Reverse Alert = Right-side speed sensors
- Reverse lift = Automatic lifting of the rear harrow when reversing
- TECU reverse alarm = Cancellation alert from TECU.

Supervision is enabled when its icon is yellow. Press the icon to make a selection. To deselect, press the icon again and it will turn gray.

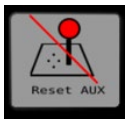
Please note that there will be no alarms if the selection is gray!

A red icon means that the sensor in question is alerting. The alarm can be e.g. almost empty hopper.

Speed L and Speed R mean that the wheel sensor in question is on. If the left is active and the right is not, then the speed of the left sensor is also copied to the right side and vice versa.

11.2 AUX, Total Accretions, Alarm Delays, Speed Settings





Reset AUX resets the memory slots of the external control unit located in the seeder's ECU unit. When the seed drill is restarted, they are no longer presented to be returned to their places, but the AUX-N functions must be set again.



Retry AUX will attempt to restore the memory slots of the external management device if the original automatic backfeed has failed. Required on some tractors where the UT display does not receive programming until the AUX-N functionality is activated.

AUX-N functionalities

AUX-N, or Auxiliary control New, is an auxiliary controller as defined in the ISOBUS standard. The machine can be controlled via ISOBUS using the tractor's own controls or an additional controller provided by a third party. The AUX-N controller makes it easier to work because the buttons/levers are physical and are much easier to use compared to using the touch screen when the machine is moving and swinging. All functions of the seed drill are available on the touch screen. The use of the AUX-N controller is not mandatory for seeding work, but sowing can also be done without it. The following can be controlled via AUX-N:

1. Profile selection
2. Adjusting the seeding rates
3. Print adjustment
4. Lowering the driving grooves forward/backward
5. Activating/deactivating the post charge
6. Use of markers

Programming the AUX-N Controller

The AUX-N functions are programmed via ISOBUS-UT numbered 1. If there are more than one displays on the ISOBUS bus, each one must have its own UT number. Even if the seeder's user interface is on display 2, the AUX-N functions must be programmed in display 1. The UT number of the display can be found and is interchangeable in the UT settings of the display. Please note that the presence of two screens with the same UT number on the bus will cause an error and

the system will not work.
The programming protocol depends on the New Testament's own practices. Please refer to the New Testament guidelines for programming and practices for AUX-N.

Once the programming is done, the seeder links to the AUX-N controller via UT and starts executing the commands given from the buttons. The seed drill stores programmed functions in its memory, and remembers them over power outages.

AUX-N controller on restart

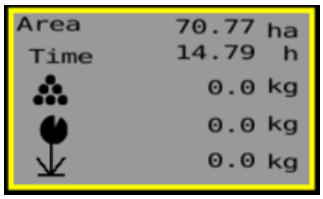
When the seed drill is restarted or reconnected to the same tractor after a break, the UT will indicate that the programmed functions are attempting to resume. The user must accept the return, or the AUX-N will not work. AUX-N is then available if the tractor or auxiliary controller's own safety measures do not prevent it. Check that the AUX-N is active on behalf of the controller before you start reusing.

On some terminals or tractors, auto-recovery does not work until AUX-N is activated from the terminal. In this case, the Retry AUX button in the main screen of the seeder can be used to attempt a reset after the AUX-N has first been manually activated from the terminal.

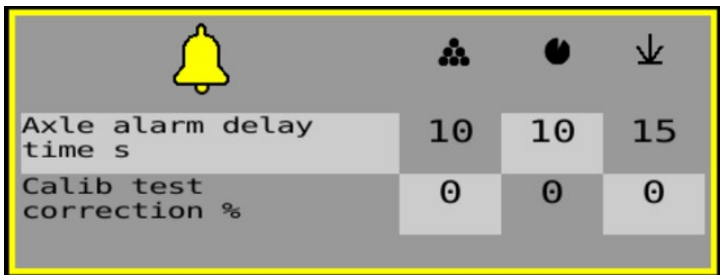


UT on the start icon number allows you to choose which terminal (if you have more than one terminal) to start the interface when the power is turned on.

NOTE: In some situations, the second terminal starts up so slowly compared to the other terminals that the seeder considers that it cannot be found on the fairway. In this case, the seed drill presents itself on a screen with the smallest UT number that it can find on the fairway.

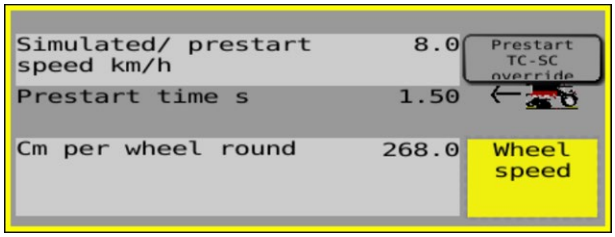


Total accumulations for area, working hours, fertiliser and seeds. Cannot be reset.



Axle alarm delay time s
Time delay for axis alarms. Note! Too short a time delay will cause unnecessary axis alarms.

Calib test correction %
Deviation of the seeding rate in relation to the calibration test. For example, if the seeding rate of a fertiliser is systematically higher or lower than the calibration test gives, the actual seeding rate can be corrected with this value.



Simulated / prestart speed km/h
The driving speed used for simulated driving and pre-start.

Prestart time s
Prestart running time

Cm per wheel round
The progress of the machine in one turn of the rear wheel. Affects the accumulation of surface area and the measurement of velocity.

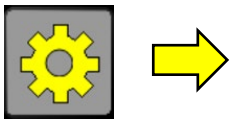
Factory values:

Tyre 7.5 – 16 = 240
Ring 7.5 - 20 = 268
Tire 280/70-18 = 262



Speed information selection. The factory setting is the speed coming from the planter's wheelset.

11.3 Equipment and features





Manufacturer's settings.

11.3.1 Sowing menu

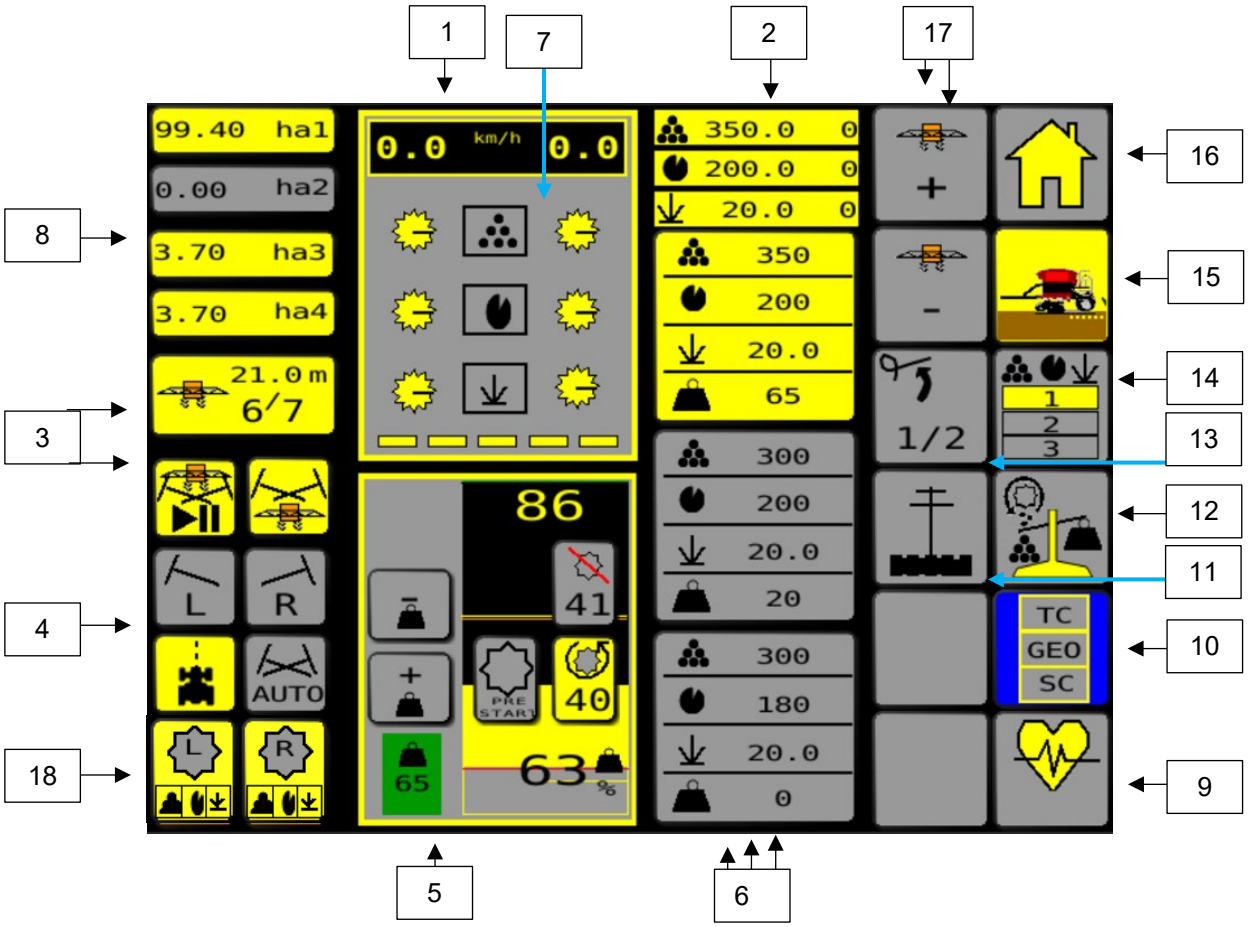


Figure 24. Sowing menu.

Interface icons:

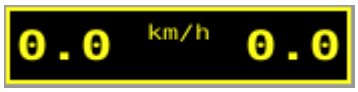
1. Driving speed display.
2. Active feed volumes.
3. Tramlines and tramline display.
4. Squeegees (line markers)
5. Weight adjustment, machine position,
   Start and end of the serve, prestart.
6. Sowing profiles 3 pcs.
7. Hopper and axle guards.
8. Area meters.
9. Diagnostics and acknowledgment of alarms.
10. ISOBUS functionalities.
11. Post Charging
12. Calibration Test Settings
13. Half-lift
14. Seeding profile settings
15. Sowing menu.
16. Home Screen
17. Next and previous tramlines.
18. Feed motors

NOTE! To exit the seeding menu during the transfer run, press EXIT WORK.

Please note that depending on the equipment of the machine, not all of the icons mentioned above may be in use, in which case they will not be visible on the screen. Missing icons can be the activity information of the ISOBUS task controller, the axle and hopper guards of the small seed device, the sling marking, the left and right markers, and the automatic function of the

markers. Depending on the terminal used, the positions of the icons and the graphical representation may also differ from those shown here.

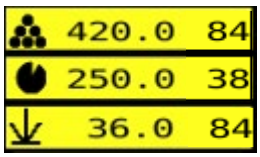
11.3.2 Driving speed display



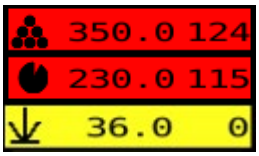
When sowing, the display shows the speed measured by the machine in km/h. Since the machine has two speed sensors, on the left and right side, the display also shows two speeds. As a rule, the speed is measured from the support wheels, but another speed source can also be selected in the settings, if available (GPS, tractor, radar). The speed data is needed to measure the surface area and adjust the feed volume to match the driving speed.

Note! The speed shown by the monitor may differ from the speed of the tractor. This can be due to various reasons, such as slippage, sinking of the tires, the tire size specified in the tractor's settings relative to the actual one, cornering, and rounding of the speed value. A small difference in speed does not cause any action.

11.3.3 Active feed rates



The icons show the amount to be sown at that time in kg/ha and the percentage of the maximum input rate. A calibration test must be done for the number to show real value.



If the icon is red, the target number of feeds has not been reached. The reason may be too high or too small a catch in kg/ha, which the feeder cannot feed at the current driving speed.

11.3.4 Tramlines and tramline display



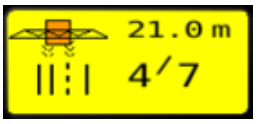
Pause/**play**. The tramlines and markers step forward as the plane takes off.



Pause/play. The tramlines and markers do not step forward when the plane takes off. The markers do not go down when the plane is lowered.

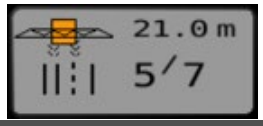


Tramlines active. Set the function to active (yellow) when you want to make tramlines automatically. In this case, the track setting button will also turn yellow.

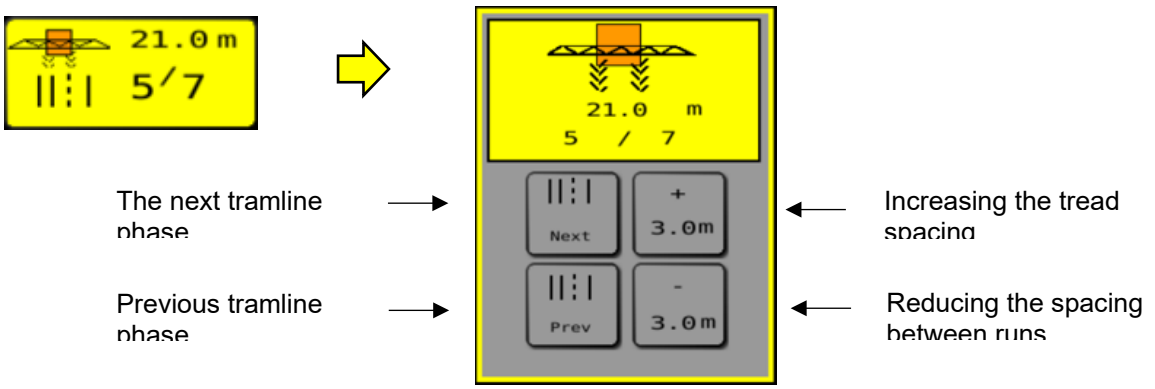




Tramlines off (grey). Set the function off when you don't want to make tracks at all. In this case, the track setting button will also turn grey.

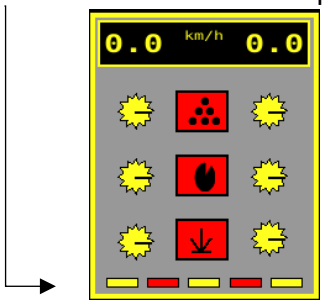


Wayline settings



The first digit on the display indicates the current wayline. The latter number indicates the distance between waylines. The latter number is set according to the plant protection sprayer in use. In the example, it is a 3-metre seeder and a 21-metre plant protection sprayer. The tramlines are formed halfway between the amount of waylines. In this example, step 4 of 7.

When tramlines are being made, the display notifies you at regular intervals with an audible signal, and in addition, the tramline equipment in use is shown in red in the middle of the display.



11.3.5 Markers (line markers)



Left marker disabled.



Left marker in use.



The real marker is out of use.



The right marker is in use.



Ritz function.



Ritz function in use.

With the ritz function, the location of the tramlines is marked in the field using markers. This function is necessary when cultivating plants that are subject to plant protection even before the plant has been visibly seeded. At that time, the actual tramlines are not yet visible. The markin only works when both tracks have been made on the previous run.

With the wayline following the tramline, both machine markers are lowered. Then the second marker draws a line in the middle of the previous sown tramline phase. The mark thus acts as a center marker when spraying. The Ritsi marking is switched on by pressing the button shown in the Figure above. The color of the key will change to yellow. Correspondingly, pressing the key again will change the color back to gray and the slingshot marking function will be disabled.



Be very careful in the slingshot marking mode, because both markers of the machine will go down. This can pose a danger to the environment.



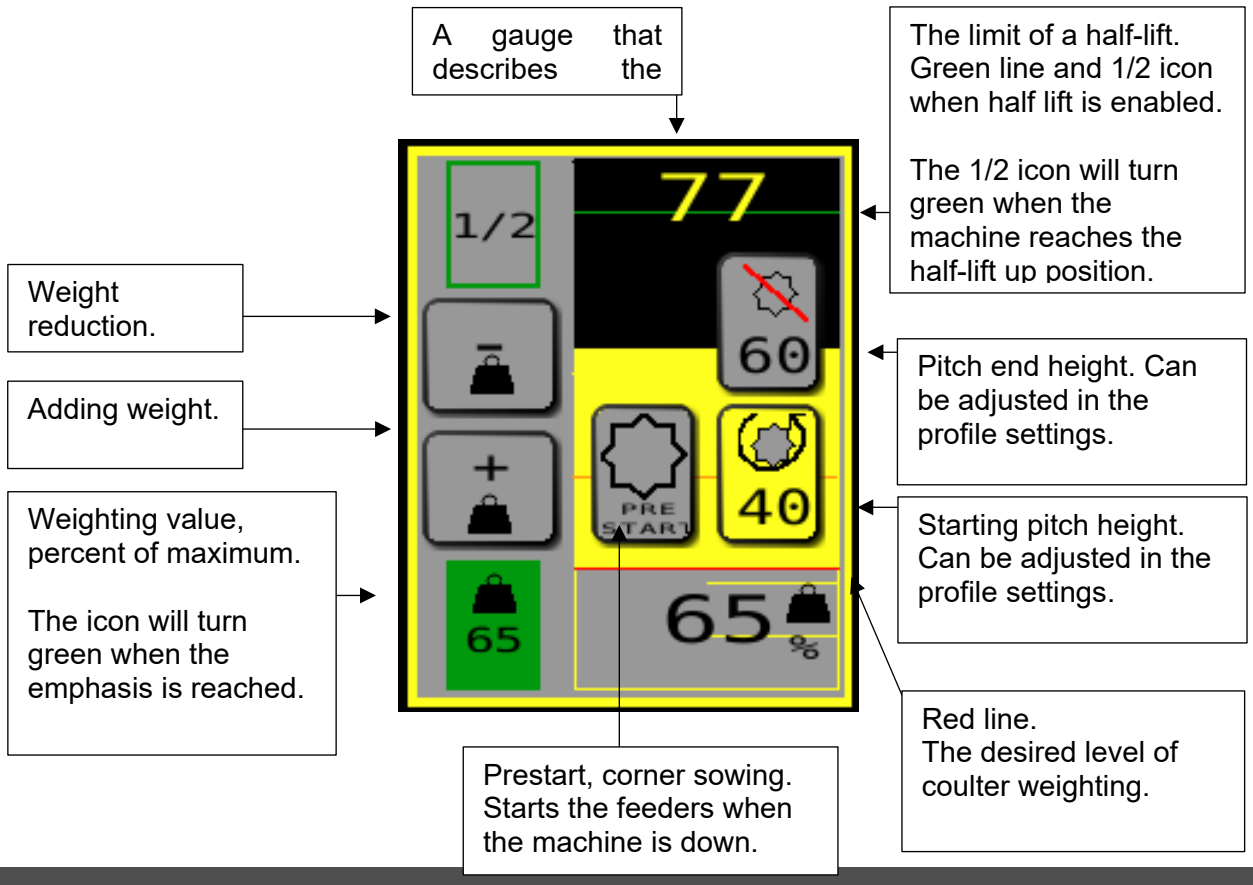
Automatic rotation of left and right markers turned off.



Automatic rotation of left and right markers is on. The markers go to the ground alternately when driving back and forth is on.

When the automatic marker function is on, the marker that goes down changes every time the machine is lowered.

11.3.6 Coulter weight adjustment, machine position



The coulter weight depends on the height of the machine. The lower the machine is lowered, the higher the coulter weight increases. The solenoid valves of the machine close the lifting/lowering hydraulics when the set limit is reached.

By pressing the start and stop feed buttons, the feed motors can be rotated or stopped regardless of the position of the machine. This way, for example, you can check at the headland with the machine up if all the coulters are producing seed and fertilizer.

Increasing the coulter pressure

Increase the coulter pressure using the + button on the print screen or by changing the seeding profile. Since the coulter pressure is determined by the height of the machine, increasing the pressure requires lowering the machine. Lower the machine downwards using the tractor's hydraulics. If the plane descends too low, by pressing down the pressure, the plane corrects its height a little higher, correcting the error.

Reducing coulter pressure

Reduce the coulter pressure value on the display – by pressing a button or by changing the seeding profile. Since the coulter pressure is determined by the height of the machine, reducing the pressure requires lifting the machine while the machine is down. This can be done either by lightly raising the machine and lowering it back down in the middle of sowing. It is easier to correct the print by pressing down on the machine after the print has been reduced. In this case, the plane slowly rises upwards. When lifting at the headland and lowering the machine back down, the machine stops automatically at the place determined by the weighting value by pressing down with pressure for a sufficient amount of time.

11.3.7 Seeding profiles 3 pcs



You have three seeding profiles at your disposal, where you can store the sowing rate of fertiliser and seed in kg/ha, as well as coulter weighting. You can change the profile in use, for example, between fields, or within a parcel for different soils.

The profile with a yellow background is selected. The profile can be changed in the middle of the ride by pressing the desired profile.

The settings of the profiles can be changed by pressing the profile settings key.

NOTE! The seeding rates cannot be changed in the settings if the amount adjustment is done with a handwheel.

NOTE! A calibration test must be carried out to ensure that the fertiliser and seed quantities stored in the sowing profiles are correct!

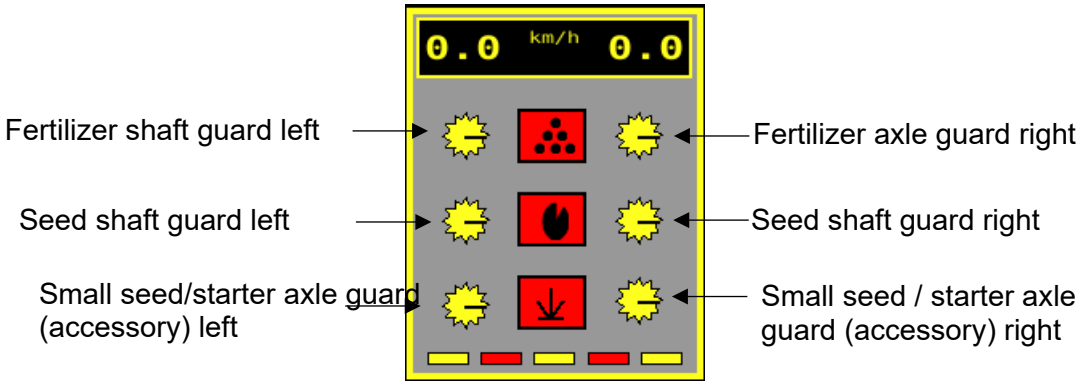
NOTE! The seeding profiles use the selected calibration test result!

Remember to choose the calibration test results you want to use to achieve the right amount of seeding!

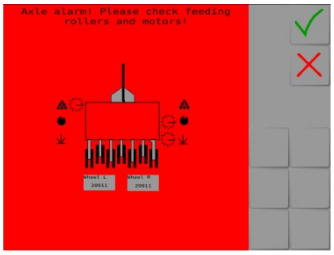
11.3.8 Axle and hopper guards

Axle Guards

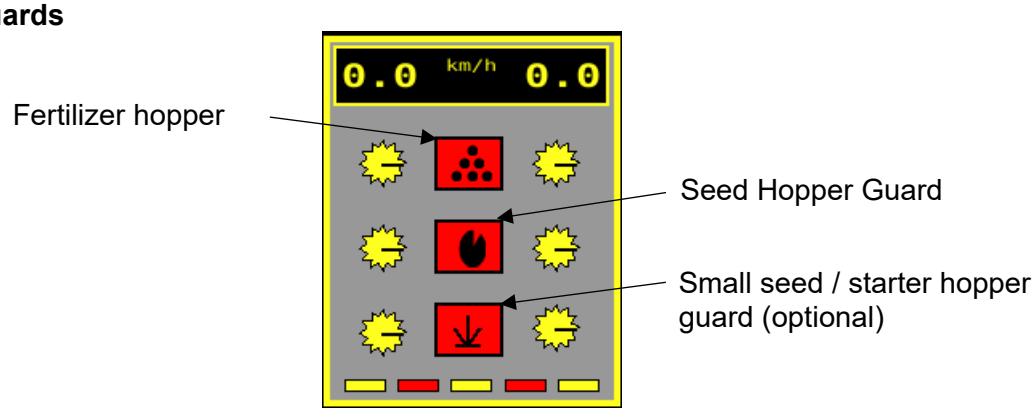
The sensors of the axle guards are located at the end of each supply shaft.



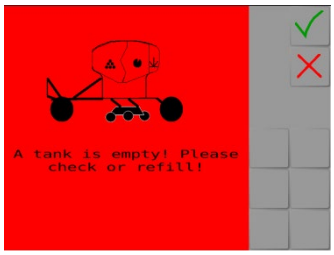
Yellow background color = axle guard in use, no interference.
Gray background color = axle guard not in use.
Red background color = axle guard in use, axle does not rotate → Alarm!



Hopper Guards

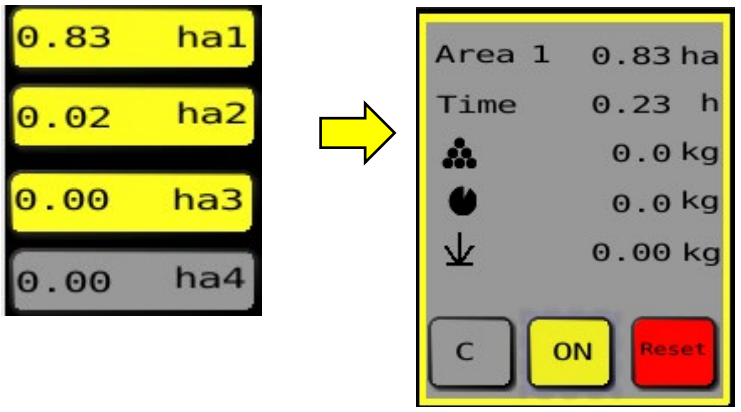


Yellow background color = hopper guard in use, no disturbance.
Gray background color = hopper guard not in use.
Red background color = hopper guard enabled, hopper is empty→ Alarm!



When the hopper is almost empty, the sensor will sound an alarm, and the icon for that hopper will turn red. At the same time, there will also be an audible alarm. The alarm can be turned off by pressing the acknowledge alarms button. If the hopper guard is switched off (switching on and off from the settings page), the icon will be greyed out.

11.3.9 Area, working time and seeding volume meters 4 pcs



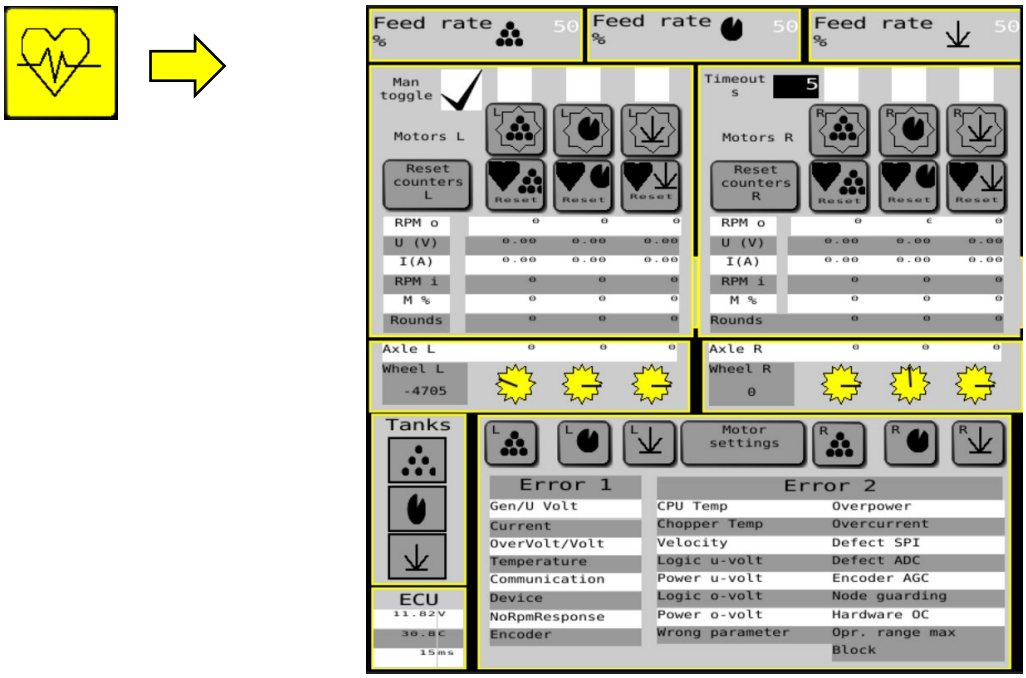
There are four indicators of area, working hours and sowing volumes. By pressing the area meter, the area meter change menu opens. The area meters are selected for use by pressing the **ON** button on the meter in question to turn yellow. ON when the key is gray, the meter is disabled.

By pressing one of the **keys ha1, ha2,** etc., the stored data of the meter in question opens. These include the area, working time, amount of fertiliser sown and amount of seed sown during the measurement period.

Note! The amounts sown are calculated, not weighed.
Note! The measurement of time is hours, not hours and minutes. For example. 0.5 h = 30 min.

The selected meter can be reset by pressing **the RESET** key. You can exit the menu without making any changes by pressing **the C** key.

11.3.10 Diagnostics and acknowledgment of alarms



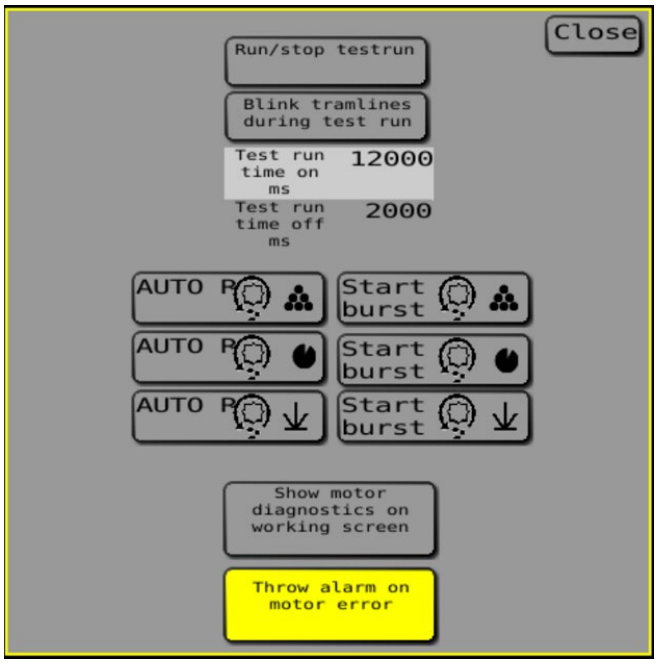
The Diagnostics menu shows the pulses coming from the sensors. These values can be used for troubleshooting. The menu also shows active alarms. The counters can be reset using the Reset Count keys. Under the ECU you can see its voltage, temperature and program cycle time in ms.

The Motor settings button takes you to the engine settings.

Auto R rotates the feeder backwards in the rut phase. NOTE! do not use the Auto R function on small seeds, it may cause an unseeded area at the headland.

Start burst gives the engine a fairer initial acceleration when it starts.

DO NOT CHANGE THE MOTOR SETTINGS WITHOUT SPECIAL NEED!



11.3.11 ISOBUS functionalities



The ISOBUS task controller is controlled from the tractor's ISOBUS terminal settings. The icons are for the user's information.

To use the various features of the Task Controller to control the seeder, you need to deploy them from the tractor terminal. Check out the tractor's manual on how to do it. These functions are only available if the tractor is equipped with these features.

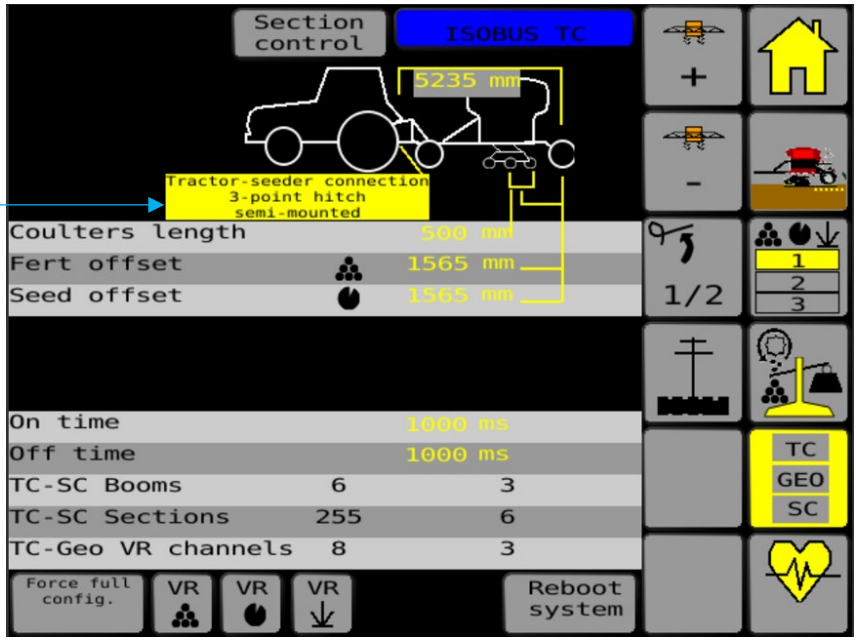
In Super Orion, the ISOBUS task controller can be used

- Recording accumulated area, working time, and calculated seed and fertiliser accumulations (TC)
- to adjust seeding rates with a precision cropping map (GEO)
- Block automation (SC)

The activated activity of the functionalities (TC, GEO or SC) is shown in the seeder user interface on a yellow background. The functionality of the icon on a gray background is not active.

The geometry and start and end times to be reported to the task controller can be changed from the menu. When the Isobus TC button in the upper right corner is blue, the task controller is in use from the seeder side. When the button is grayed out, the task controller cannot control the seeder.

Selection of connection

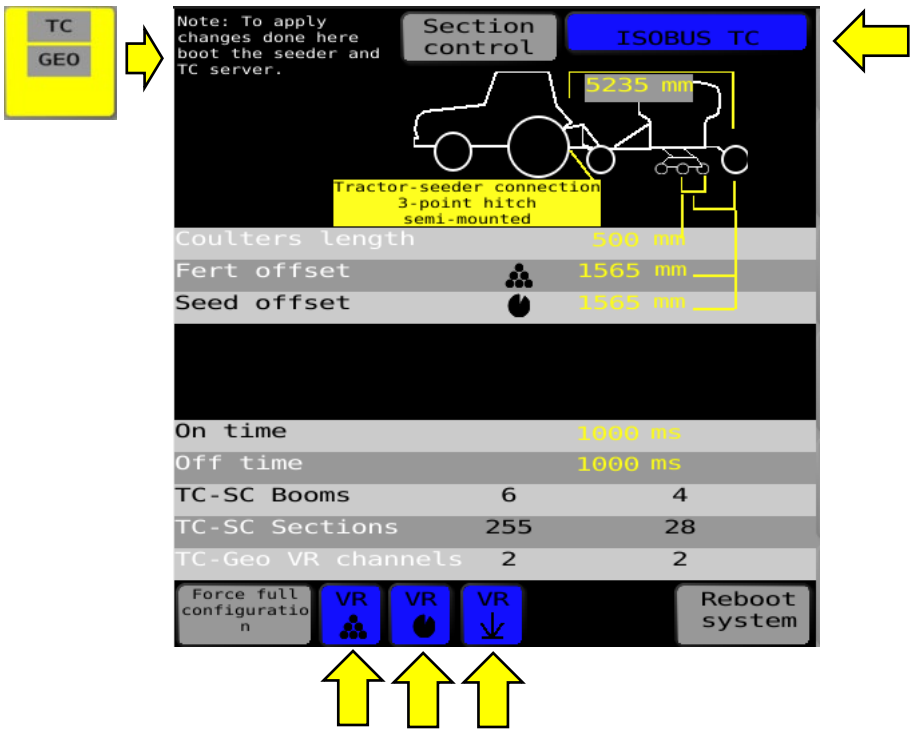


NOTE! Depending on the terminal, the position of the coulter system can be interpreted either on the front or rear side of the support gear, offset value + or -. With a dirt bike machine, this mainly affects the accuracy of the painting of the coverage map.

TC GEO functionality

With the TC-GEO functionality, the seeding rates of seeds and/or fertilizers can be controlled according to the precision cultivation map. Read the instructions in the tractor terminal on how to start using the recipe map and how to control it.

Enable TC-GEO functionality from the tractor terminal. After this, select the "**ISOBUS TC" button in the seeder's user interface** and the fertiliser and/or seed at the bottom of the window, which you want to adjust according to the map.



When the task controller determines the amount of seed or fertilizer to use, the seeding rates shown in the seeding profiles are irrelevant.



+



The fertilizer supply changes according to the command in the task controller (Variable Rate).



The seeding rate of the fertiliser is the seeding rate selected in the seeding profile.



+



The seed input changes according to the command of the task controller (Variable Rate).



The seeding rate of the seed is the seeding rate selected in the seeding profile.



+



The input of the small seed changes according to the command of the task controller (Variable Rate).



The seeding rate of a small seed is the seeding rate selected in the seeding profile.

TC SC functionality

Enable TC-SC functionality from the tractor terminal. After this, select the button "Section control" from the seeder's user interface to active = blue. Please note that activating the Section control button from the seeder settings alone may not be sufficient to activate the automatic section.



Section control is available.



Section control is not available.

11.3.12 Pole lift



Pole lift off. The marker rises up as the machine stays down.



Post charging on. Only the marker rises when the machine is lifted.

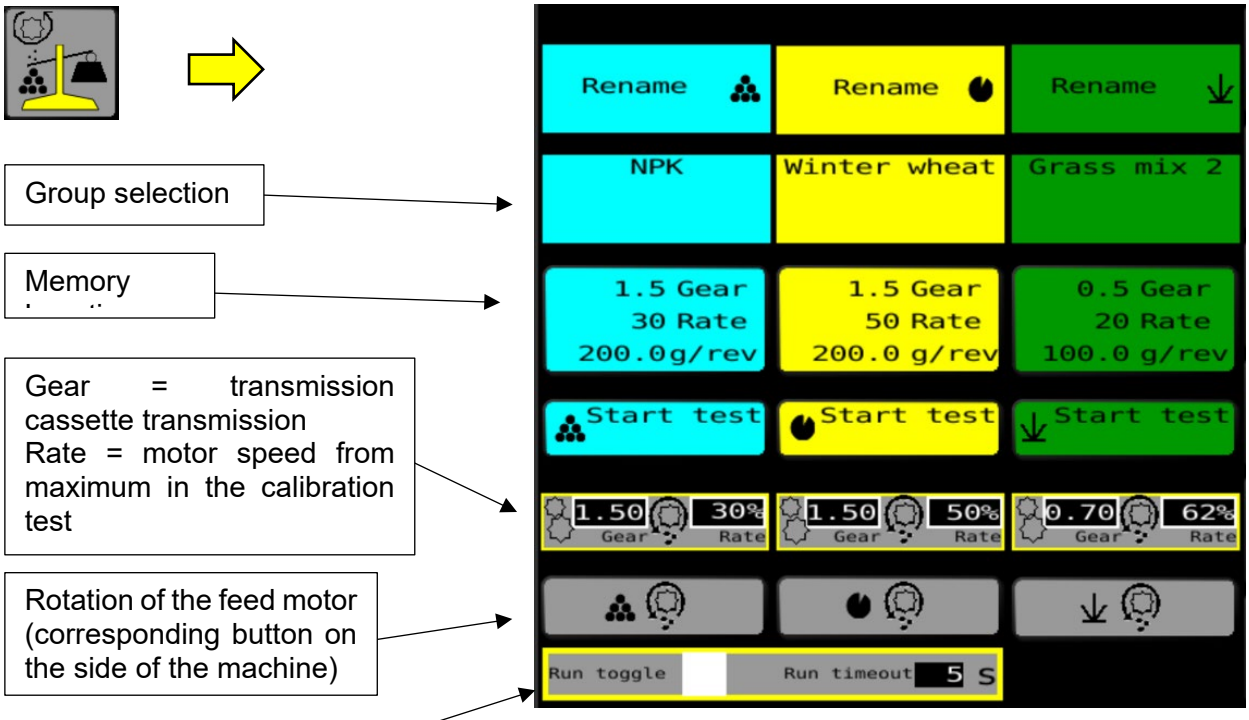
By pressing the post charge active, its color will change to yellow. In this case, when the machine is lifted up, only the marker rises and the machine remains in the seeding position. The function is used when you do not want to interrupt the sowing, but the marker has to be raised due to an obstacle.

The post charge switches off automatically after 20 seconds.

Do not reverse with the post input on, because the machine is in the seeding position!

11.3.13 Calibration test settings

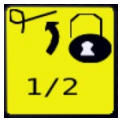
The results of the calibration tests are stored in the calibration test settings menu. You can save 11 different calibration tests for each fertiliser, seeds and small seed/starter fertiliser and name the products. The calibration test results are used as basic information for feed volume adjustment and counters, so it is important that they are correct and that the correct calibration test value is used at any given time.



11.3.14 Half-lift



Half lift off. The trail harrow rises and falls with the machine. The plane goes all the way up.



Half-lift on. The trail harrow remains in the position it was in when the button was activated, i.e. up or on the ground. When the plane is lifted, it rises to the set half-lift limit.

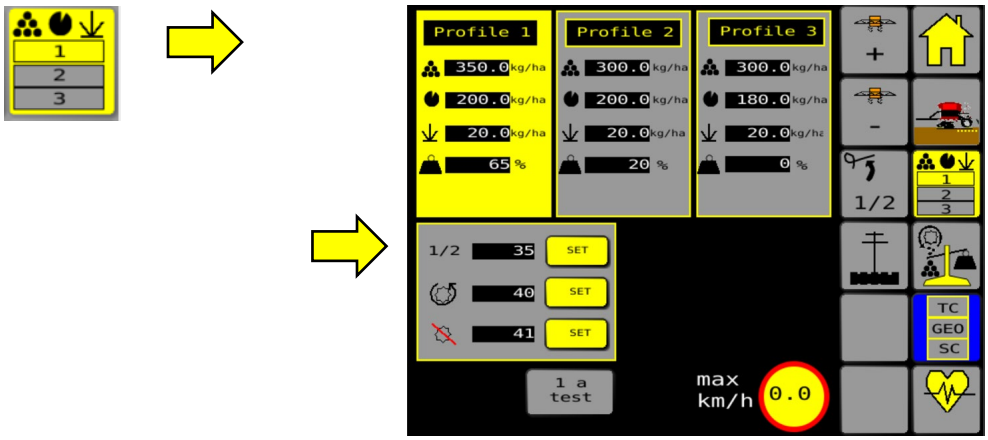
With the half-lift activated, the plane's take-off height can be limited. This can speed up headland work, for example.

With the half-lift function, the rear harrow can be locked in the upper or lower position. If you don't want to use the rear harrow and want it to stay up all the time, switch on the half-lift when the rear harrow is up. If you want the rear harrow to stay on the ground even when the machine is raised, switch on the semi-lift when the harrow is down.

The feature is good for e.g. When you want the track harrow to break the tire tracks even in the headland turns of the field.

You can change the height of the half-raise in the profile settings with a value of 1/2. The higher the value, the lower the plane will be in the half-lift.

Half-lift does not affect the operation of markers or tramlines.



NOTE! Do not adjust the half-lift so low that the ground bike or the coulters do not rise up sufficiently from the ground! When turning or reversing, the land wheel and coulters can be damaged!

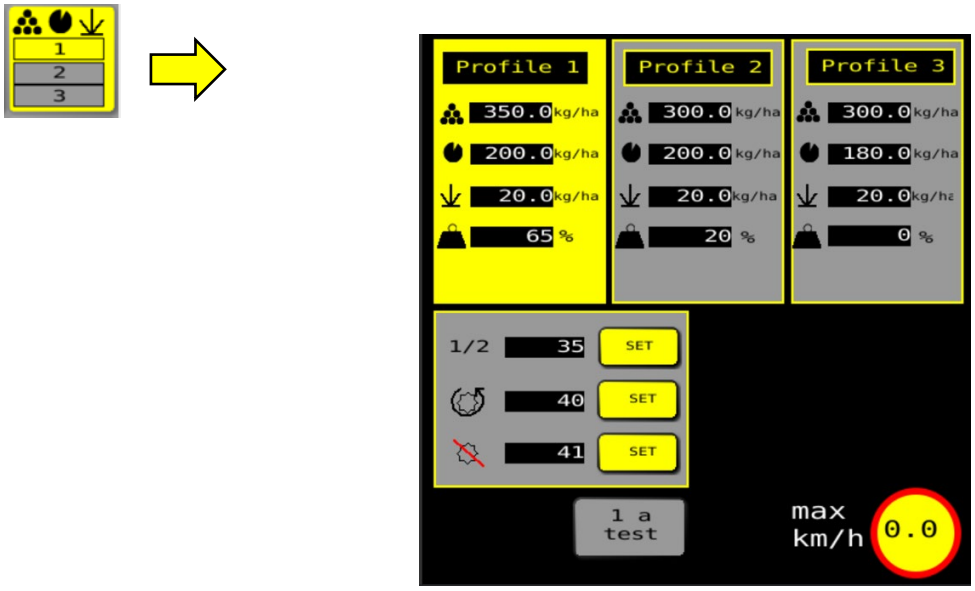
Half-raising does not affect the operation of markers or tramlines!

Note! Remember to turn off the half-lift when you reverse or start a transfer drive. The structures of the tracking harrow will be damaged if the tracking harrow has been left down!

The rear harrow has a protective function where the rear harrow rises up using the oil pressure of the machine's lifting cylinders if the machine is reversed and the rear harrow is not in the up position. This can easily happen when using a half-lift. In this case, the machine descends slightly downwards and raises the trail harrow.

STILL, DON'T REVERSE YOUR TRACKS ON THE GROUND! THERE IS A RISK OF DAMAGE DESPITE THE PROTECTIVE FUNCTION!

11.3.15 Seeding profile settings, feed start and stop, acre test seeding



The values of the seed profiles can be freely changed in each of the three profiles (Profile 1, Profile 2 and Profile 3). These include:

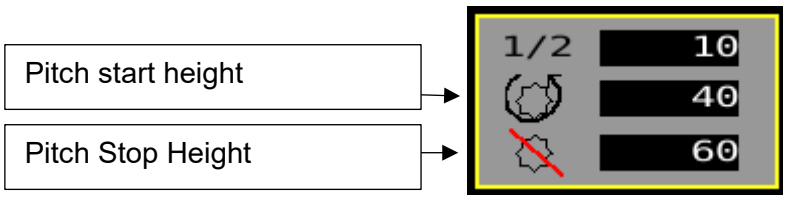
- Fertiliser application in kg/ha (kilograms per hectare)
- Seed rate in kg/ha (kilograms per hectare)
- Seeding rate of small seed/starter fertiliser in kg/ha (optional, kilograms per hectare)
- Coulter weighting value %

Select the value you want to change by pressing the number field. Enter the desired value and accept it. Make the necessary changes to the fertilizer and seed quantities, as well as the printing.

NOTE! The calibration test must be done carefully to ensure that the fertilizer and seed quantities given to the seeding profiles are correct!

NOTE! The seeding rates cannot be changed in the settings if the amount adjustment is done with a handwheel.

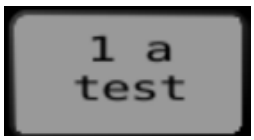
In the seeding profile menu, you can also change the height of the machine at which the feed starts and ends.



NOTE! INCORRECT FEED START AND END HEIGHT VALUES CAN CAUSE MALFUNCTIONS!

- **For example. Setting the feed starting height very low will prevent the feeder from starting when using a slight coulter weighting!**

IF YOU CHANGE THE VALUES, MAKE SURE THAT THE FEEDER IS WORKING BEFORE STARTING WORK!



The 1 A Test button opens a menu from which you can start the Aare test seeding for the desired feeder. The machine sows an are with the selected seeding profile. This will allow you to check the sowing accuracy.

11.3.16 Sowing menu



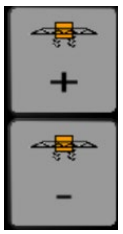
Opens a view of the seeding menu.
Closes all other open windows.

11.3.17 Home Screen



Return to the start menu. Leaves work.

11.3.18 Next and Previous Driving Path Phase



The buttons can be used to change the tread phase forward + or backward -.
You can, for example. quickly make corrections to an unintentional change of tramline.

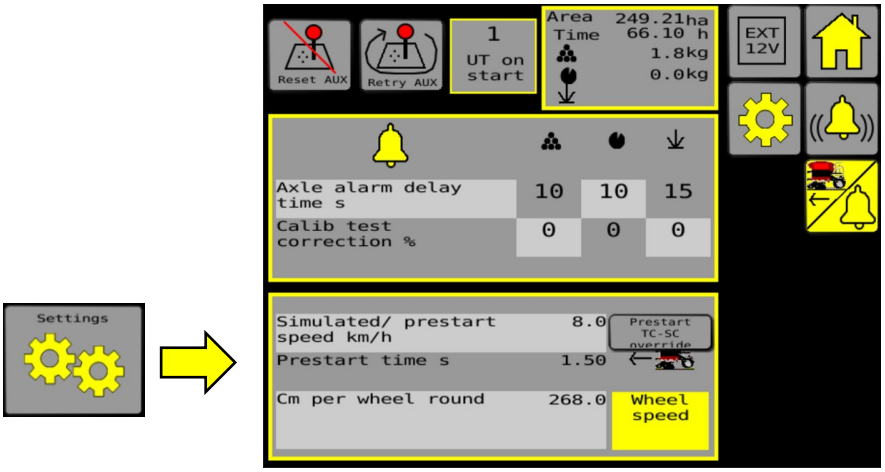
11.3.19 Corner sowing, Prestart



With the Prestart function, sowing can be started right in the corner of the field.

By pressing the icon, the feed motor starts if the machine is in the seeding position and rotates at a preset speed, even if the machine is not moving forward. The running time of the function and the simulated seeding rate for it are set from the 123 menu.

The prestart TC-SC function when active the prestart button overrides the task controller commands.



For example. With the above settings, the machine will sow 1.5 seconds with a feed rate equivalent to 8 km/h, regardless of the actual speed of the machine. This function only works when the machine is in the down position.

11.3.20 Motor icons, halving

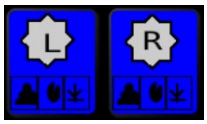
L = left, R = right.



The feed motors are active and the feed is running if the machine is moving.



The feed motors are active, but the feed is not running.



Feed motors stopped by task controller



Manual halving on.

By pressing the motor icon L or R, you can stop the feed from the left or right side, e.g. approaching the area that has already been sown diagonally and thus reduces the amount of overlapping sowing. This can also be assigned to the task controller based on the GPS location.

10.5 AUX-N Functionalities

AUX-N, or Auxiliary control New, is an auxiliary controller as defined in the ISOBUS standard. Tume Super Orion is able to control via ISOBUS using the tractor's own controls or an additional controller provided by a third party. The AUX-N controller makes it easier to work because the buttons/levers are physical and are much easier to use compared to using the touch screen when the machine is moving and swinging. All functions of the seed drill are available on the touch screen. The use of the AUX-N controller is not mandatory for seeding work, but sowing can also be done without it. The following can be controlled via AUX-N:

7. Profile selection
8. Adjusting the seeding rates
9. Print adjustment
10. Lowering the driving grooves forward/backward
11. Activating/deactivating the post charge
12. Use of markers

10.5.1 Programming the AUX-N Controller

The AUX-N functions are programmed via ISOBUS-UT numbered 1. If there are more than one displays on the ISOBUS bus, each one must have its own UT number. Even if the seeder's user interface is on display 2, the AUX-N functions must be programmed in display 1. The UT number of the display can be found and is interchangeable in the UT settings of the display. Please note that the presence of two screens with the same UT number on the bus will cause an error and the system will not work.

The programming protocol depends on the New Testament's own practices. Please refer to the New Testament guidelines for programming and practices for AUX-N.

Once the programming is done, the seeder links to the AUX-N controller via UT and starts executing the commands given from the buttons. The seed drill stores programmed functions in its memory, and remembers them over power outages.

10.5.2 AUX-N Controller on Reboot

When the seed drill is restarted or reconnected to the same tractor after a break, the UT will indicate that the programmed functions are attempting to resume. The user must accept the return, or the AUX-N will not work. AUX-N is then available if the tractor or auxiliary controller's own safety measures do not prevent it. Check that the AUX-N is active on behalf of the controller before you start reusing.

On some terminals or tractors, auto-recovery does not work until AUX-N is activated from the terminal. In this case, the Retry AUX button in the main screen of the seeder can be used to attempt a reset after the AUX-N has first been manually activated from the terminal.

12. CALIBRATION TEST

12.1 Initial preparations for the calibration test

Before starting the calibration test, the machine is adjusted according to the seed and fertiliser to be sown.

1. Connect the seeder to the tractor and turn on the planter's power. Open the protective covers on the sides of the machine.

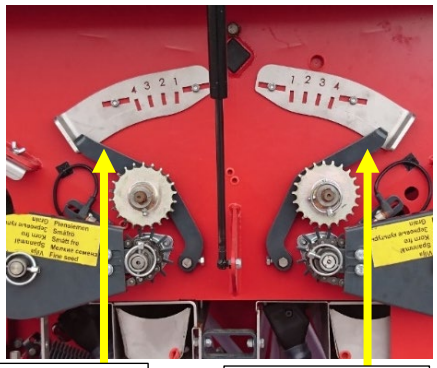
2. Move the calibration test trays to the calibration test position from the left side of the machine. By turning the calibration test handle back, the seed and fertilizer calibration test troughs move under the feeders for the test.

   If the machine is equipped with a hayseed/starter fertiliser, it is also adjusted to the calibration test position. The hose holder moves away from under the feeders. In this freed space, calibration test troughs are placed. Use the same troughs as those used under the seed or fertiliser feeders.



3. Position the levers on the bottom flaps according to the seed/fertilizer to be sown.

SEED/FERTILIZER	BOTTOM FLAP POSITION
Granular fertilizers	2
Cereals	2
Small seeds	1
Peas	3
Large beans	4



Fertilizer bottom flap adjustment

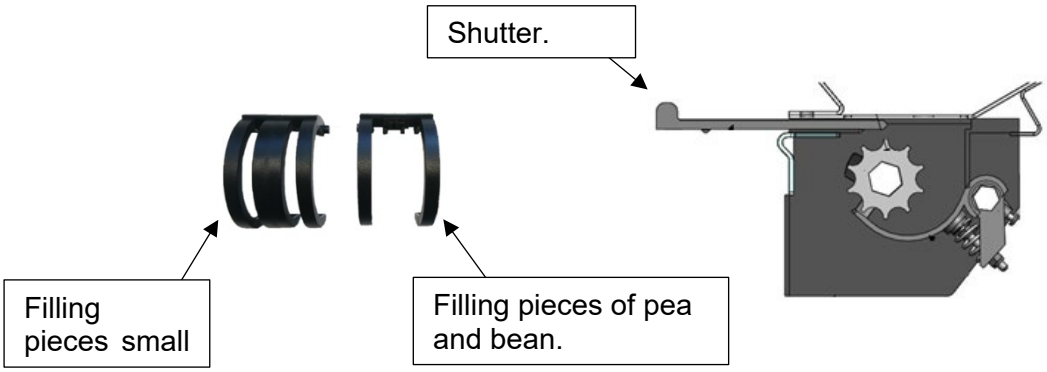
Seed bottom flap adjustment

NOTE! The bottom flaps must be adjusted to the same position on both sides of the machine.

Seeds other than those listed above: Compare the seed size with the seeds mentioned above and their corresponding settings.

4. Check that the shut-off doors are open, the tramline device is switched off and that the seed side feed chambers have the correct filling pieces.

   With grains, poorly draining hay and caraway, fillers are not used.

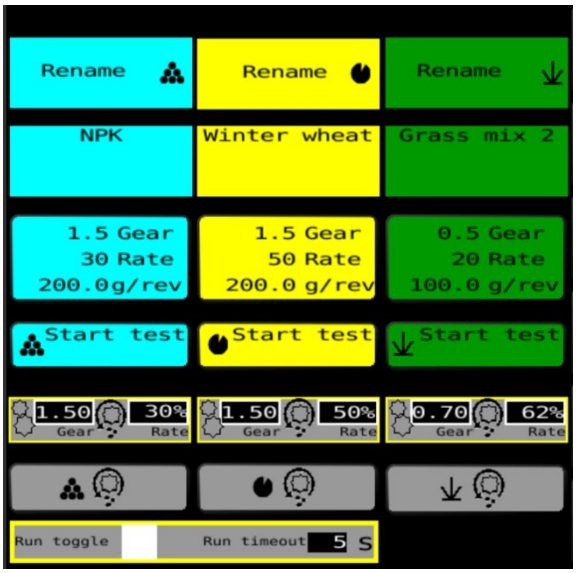


TIP: Peas can be sown well through a fertiliser container. Take off the sieves so that the pea doesn't arch over them.

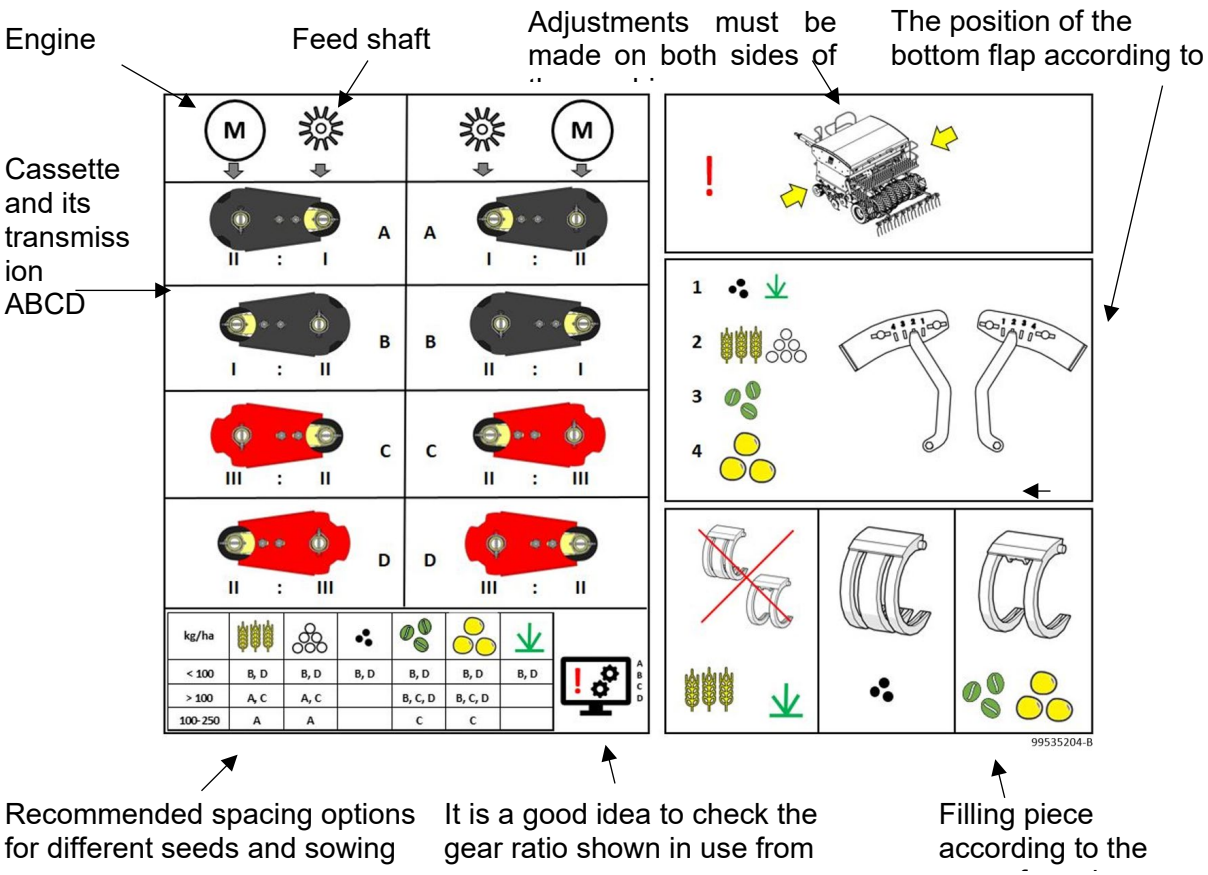
5. Position the transmission cartridges according to the material and quantity to be bathed.

   The machine calculates the Gear value automatically according to the cartridge in use. It is the gear ratio of the transmission cassette between the feed motor and the feed shaft.

   The Rate value adjusts how fast the motors spin at the button. In a calibration test, a 20-30% rate is a good value.



You can check the appropriate cartridge position, the position of the bottom flaps and any fillers in the instruction table.



Explanations of the figures:

Cereals Hay | Fertilizer | Rapeseed, rapeseed | Peas | Beans

NOTE! If you change the positions of the cassettes, bottom flaps or filler pieces in the middle of sowing, do the calibration test again with the new settings before continuing the work.

Example 1. We want to sow 260 kg/ha of wheat and 400 kg/ha of fertiliser. Select transmission gear A for seed and A for fertiliser. No fillers are placed in the feeders. All bottom flaps are set to position 2.

Example 2. We want to sow rapeseed 6 kg/ha and fertilizer 350 kg/ha. Select transmission gear B or D for seed and gear A for fertiliser. Put the fertiliser base flaps in position 2, the seed base flaps in position 1.

6. Add enough seed and fertilizer to the containers so that all feeders are properly covered.

7. Rotate the feeders a few turns by pressing the calibration test button to fill the feed chambers. Empty the calibration examination trays.

The machine is now ready for the calibration test.

12.2 Calibration test for fertiliser

Once you have made the initial preparations for the rotation experiment (chapter 11.1), you can perform the rotation experiment.

1. Turn the orbital test lever to the calibration test position and make sure that the calibration test trays are empty. Select the calibration test menu from the seeding menu.

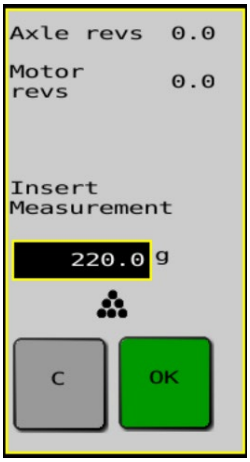


2. Choose a fertiliser memory location and name it if you wish.

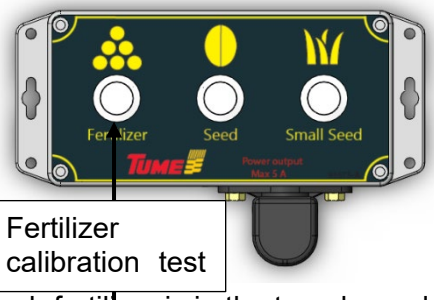
You can save the results of the calibration test for different fertilizers and return them later by selecting the product in question again.



Press **Start test**, a gray window will open.



3. Press the fertilizer calibration test button and the fertilizer shaft will start rotating. Press and hold the button until enough fertilizer has entered the calibration test trough for reliable weighing.



You can also press the calibration test button on the screen.

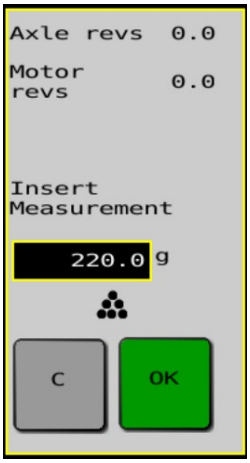


If you wish, you can pause the button, check how much fertilizer is in the troughs and press the button again.

NOTE! If "Run toggle" is enabled in the lap test menu, the engine will remain running until the timeout! The rotation can be interrupted by pressing the button again.

4. Carefully pull out the rotation troughs and weigh the amount of fertilizer.

5. Check the screen to make sure that the "Axle revs" is more than 0.0.



6. In the "Insert measurement" field, enter the weighing result in grams and press OK. The controller calculates the result from the input amount in grams per revolution and it remains valid in the selected memory location.

The calibration test memory site of the fertiliser you have now chosen has been calibrated for the fertiliser in question.

The controller also calculates the transmission of the cassette used in the calibration test. If the 18/12 tooth cassette is on the uplift, the 'Gearing' result should be 1.5. If the 'Gearing' result is strange, check the correct orientation of the cassettes and that the axle guards are working properly. Gearing guideline values:

1,5	-	3/2 cassette with uplift
0,7	-	3/2 cassette with reducer
2	-	2/1 cassette with uplift
0,5	-	2/1 cassette with reducer

(C = exit without making any changes).

7. When you want to sow the fertiliser in question, select the fertiliser memory slot for the use for which you carried out the calibration test. The button will turn yellow.

Note! Remember that the calibration test must be done again when changing the fertilizer quality if you use the same fertilizer memory slot.

Note! If you use different fertilisers, save the results of the different fertiliser calibration test in your own fertiliser calibration test memory locations.

NOTE! Once you have done the calibration tests, be sure to turn the calibration test lever back to the front. After this, the seeds and fertilisers go back to the coulters instead of the calibration test troughs.

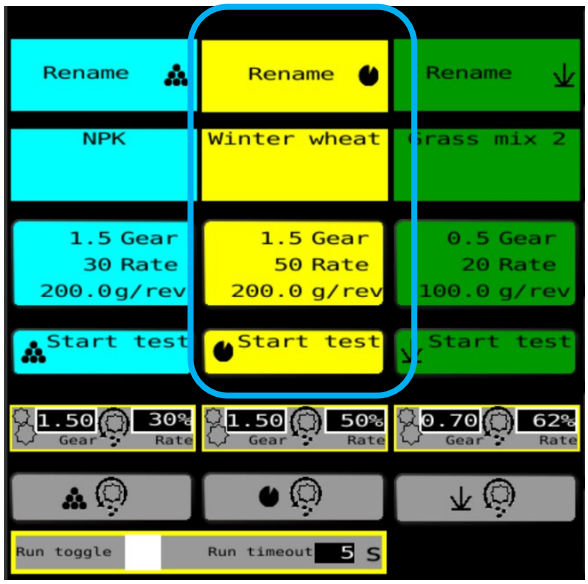
12.3 Calibration test for seed

Once you have made the initial preparations for the rotation experiment (chapter 11.1), you can perform the rotation experiment.

1. Turn the orbital test lever to the calibration test position and make sure that the calibration test trays are empty. Select the calibration test menu from the seeding menu.

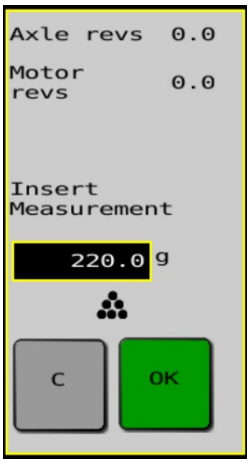


2. Choose a memory location for the seed and name it if you want.



You can save the results of the calibration test for different seeds and return them later by selecting the product in question again.

Press **Start test**, a gray window will open.



3. Press the calibration test button and the seed shaft will start rotating. Press and hold the button until there is enough seed in the orbital trough for reliable weighing.



Seed calibration test

You can also press the calibration test button on the screen.



If you wish, you can pause the button, check how much seed is in the troughs and press the button again.

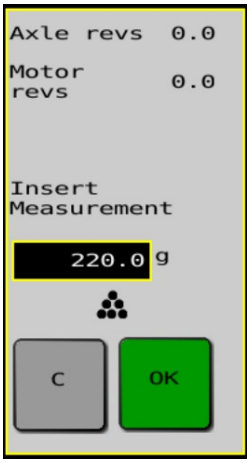
NOTE! If "Run toggle" is enabled in the lap test menu, the engine will remain running until the timeout! The rotation can be interrupted by pressing the button again.

_ _

4. Carefully pull out the rotation troughs and weigh the seed quantity.

_ _

5. Check the screen to make sure that the "Axle revolutions" is more than 0.0.



6. In the "Insert measurement" field, enter the weighing result in grams and press OK. The controller calculates the result from the input amount in grams per revolution and it remains valid in the selected memory location.

   Now, the calibration test memory location of the seed you have chosen is calibrated for that seed.

   The controller also calculates the transmission of the cassette used in the calibration test. If the 18/12 tooth cassette is on the uplift, the 'Gearing' result should be 1.5. If the 'Gearing' result is strange, check the correct orientation of the cassettes and that the axle guards are working properly. Gearing guideline values:

   1,5 - 3/2 cassette with uplift
   0,7 - 3/2 cassette with reducer
   2 - 2/1 cassette with uplift
   0,5 - 2/1 cassette with reducer

   (C = exit without making any changes).

_ _

7. When you want to sow the seed in question, select the memory location for which you did the rotation experiment, the button will turn yellow.

_ _

Note! Remember that the calibration test must be done again when changing seeds if you use the same seed calibration test memory slot.

Note! If you use different seeds, save the results of the different seeds in their own memory locations.

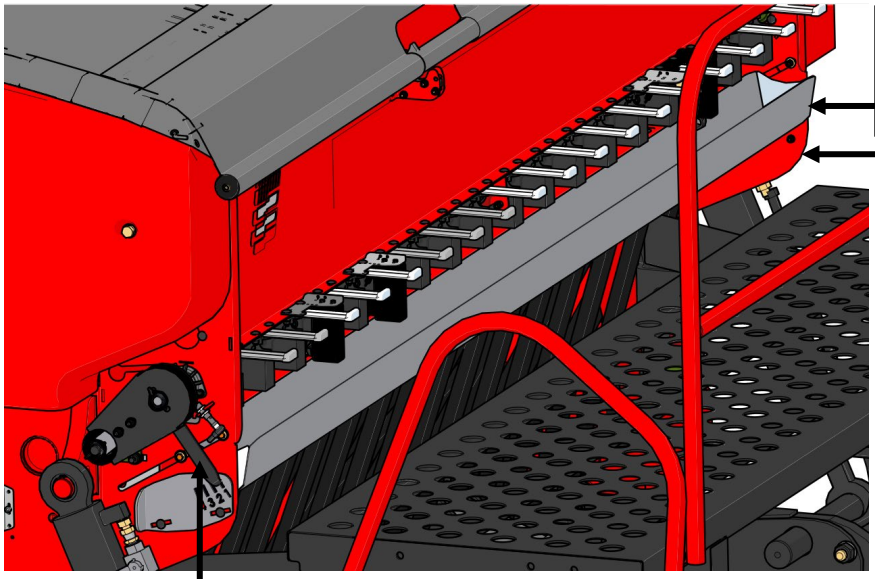
NOTE! Once you have done the calibration tests, be sure to turn the calibration test handle back to the front. After this, the seeds and fertilisers go back to the coulters instead of the calibration test troughs.

12.4 Calibration test for hay seed/starter dosing device (optional)

Make the initial preparation for section 11.1 with the following exceptions.

- The bottom flaps are adjusted from the edges of the small seed device. Be sure to make an adjustment on both sides of the machine. For small seeds, the setting is 1 and for granular fertilizers 2.

- Use seed or fertiliser rotation troughs.



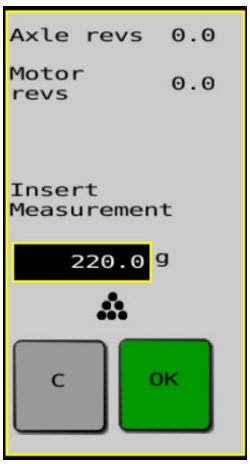
1. Select the calibration test menu from the seeding menu. 

2. Choose the memory location of the small seed/starter fertilizer and name it if desired.



You can save the results of the calibration test for different seeds and return them later by selecting the product in question again.

Press **Start test.** A gray window will open.

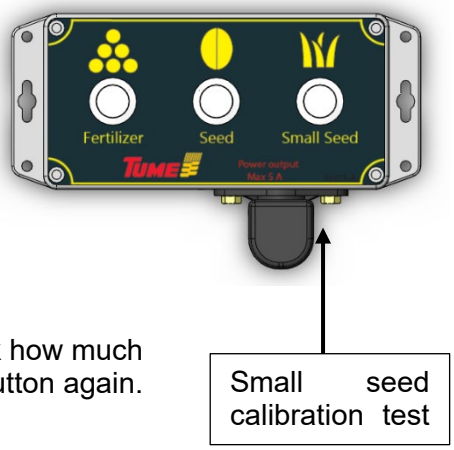


3. Press the calibration test button and the seed shaft will start rotating. Press and hold the button until enough seed/fertilizer has entered the calibration test trough for reliable weighing.

You can also press the calibration test button on the screen.

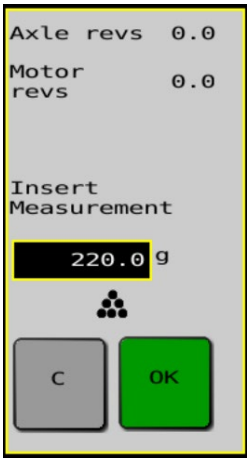


If you wish, you can pause pressing the button, check how much There is seed/fertilizer in the troughs and press the button again.



4. Carefully pull out the rotation trough and weigh the amount of seed/fertilizer.

5. Check the screen to make sure that the "Axle revolutions" is more than 0.0.



6. In the "Insert measurement" field, enter the weighing result in grams and press OK. The controller calculates the result from the input amount in grams per revolution and it remains valid in the selected memory location.

   Now the calibration test memory site of the small seed has been calibrated for the seed/fertilizer in question.

   The controller also calculates the transmission of the cassette used in the calibration test. If the 18/12 tooth cassette is on the uplift, the 'Gearing' result should be 1.5. If the 'Gearing' result is strange, check the correct orientation of the cassettes and that the axle guards are working properly. In the small seed device, the cassettes can only be used in the lowering position.

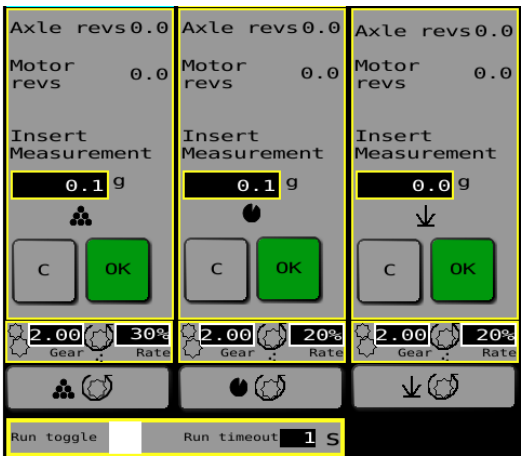
   Gearing guideline values:
   0,7 - 3/2 cassette with reducer
   0,5 - 2/1 cassette with reducer

   (C = exit without making any changes).

_ _

11.5. TIPS FOR DOING A CALIBRATION TEST

You can open the calibration test menus for all containers, fertiliser, seed and small seed at the same time. In this way, you can perform rotational tests and weigh the results in front of the machine without having to enter the result separately after each test.



13. FIELD TEST

A field test is the surest form of feeding volume testing. If the field test is carried out on a field to be sown and on a ready-made seedbed, the conditions correspond very closely to the sowing process. A field test can be done for both seed and fertiliser.

To complete the field test:

- Adjust the machine according to the instructions in the calibration test
- Measure the driving distance corresponding to the sown area of the acre, which is by machine type:

Super nova combi 3000 → 33.3 m
Super nova combi 4000 → 25 m

- Outside the test run, drive about 10 meters with the machine in the working position so that each seeding chamber feeds the seed.
- Empty the contents of the test seeding troughs.
- Drive the distance shown in the table above at normal seeding speed with the machine lowered to the seeding position.
- Weigh the seeds and fertilisers in the calibration test trays.
- Multiply the weighing results (kg) by 100 to get the actual seeding rate in kg/ha.

14. ACCESSORIES

TUME is constantly developing its machines and accessories. If you want to order new equipment for older machines, you should check the compatibility of the devices by contacting the manufacturer's representatives.

Only the following original TUME accessories may be used with TUME seed fertilisers. It is imperative to follow the factory instructions for the installation of accessories. Improper installation or the use of non-original TUME accessories may compromise the user's safety or cause the machine to fail. The manufacturer is not responsible for any damage caused by modifications contrary to the factory instructions.

The following accessories are available for the Super Nova Combi:

- Line markers or tough ones.
- Hayseed/starter fertiliser planter
- Hydraulinen etulata
- Agitator shafts
- Wheel packer
- CultiPack Intermediate Editor

14.1 Row markers

If the machine is equipped with row markers, the lifting hose of the seed fertiliser and the hose of the markers must be connected to the same double-acting hydraulic valve of the tractor. The markers are connected in parallel with the machine's lifting and lowering circuit. The seed fertilizer itself works with single-acting hydraulics, but the marker requires dual operation. The arm will not go down if it is not pushed down hydraulically.

The use of markers is controlled from the controller.

The speed of movement of the markers can be adjusted from the hydraulic block (Figure 25). Adjust the speed to a low flow at first. This is because the movement of the marker arms is calm and does not cause damage or dangerous situations. Adjust the screw to the appropriate speed during the actual seeding work, when e.g. the tractor's operating oil has reached normal temperature.

NOTE: If you use markers, always remember to remove the locking pins on the arms. When driving on the road, it is recommended to put the above-mentioned locking pins back in place.

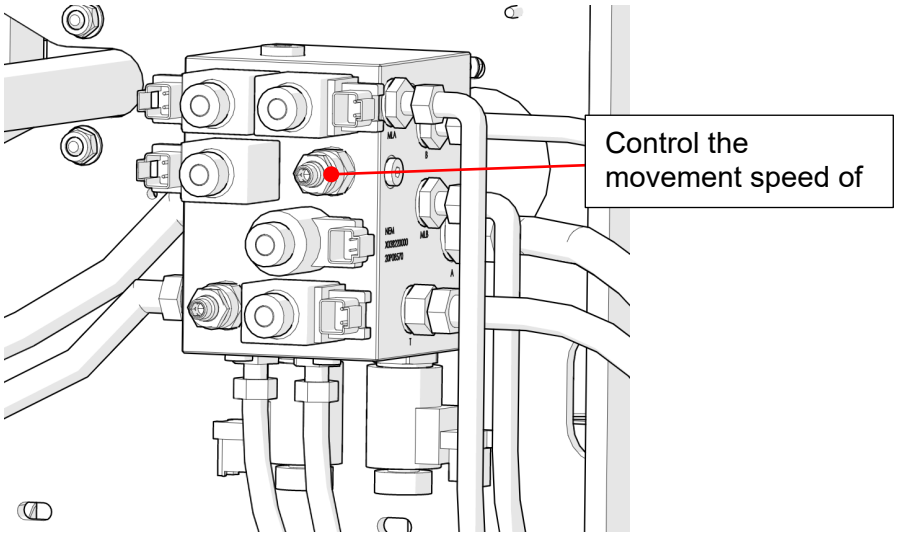


Figure 25. Control the movement speed of the markers.

The angle and distance of the marker plates can be changed. Adjust the length of the arm so that the groove drawn by the marker plate is the length corresponding to the working width of the machine in the middle of the machine (Fig. 26). The angle of the plate should be so that it throws the ground towards the machine. The angle affects the visibility of the groove. Use an angle that is as gentle as possible so that the groove does not become unnecessarily deep. For length and angle adjustments, see chapter 14.1.1, Installing row Markers, Section 3.

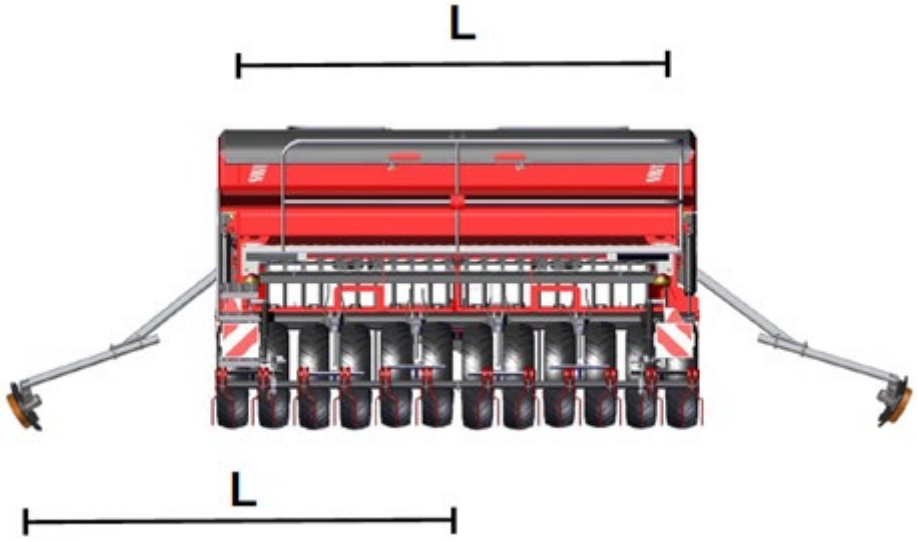
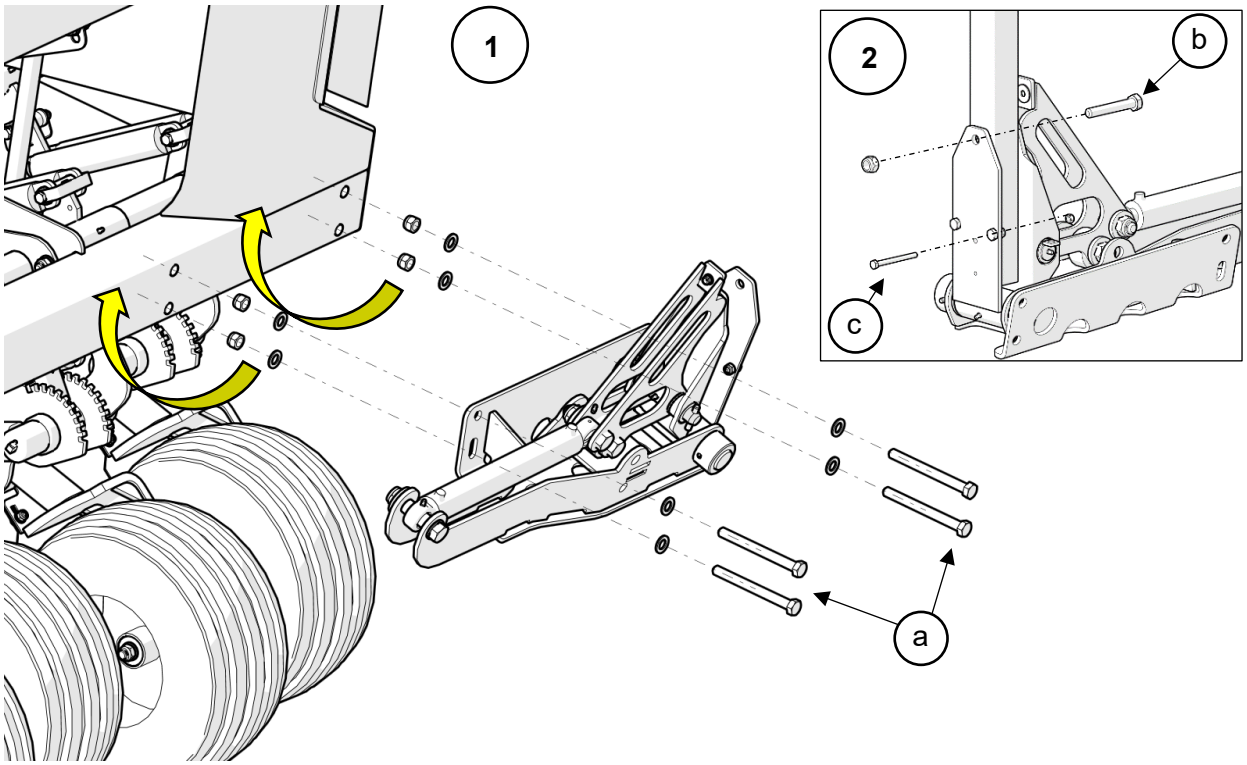


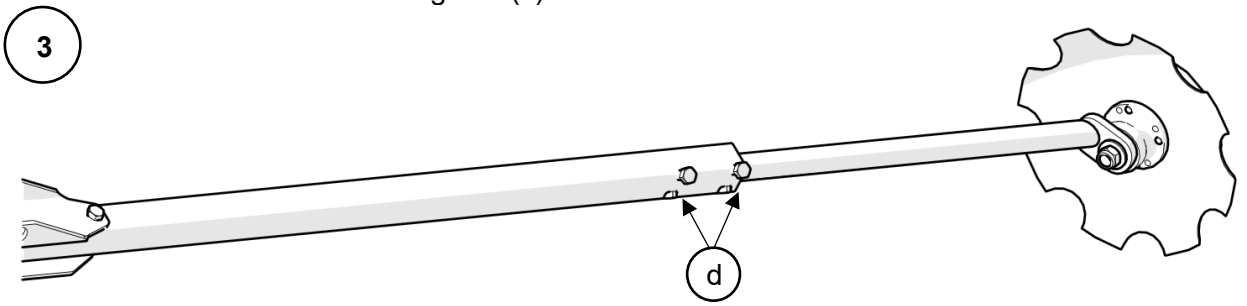
Figure 26. Adjusting the length of markers.

Making sharp bends with the markers on the ground can cause damage to the marker!

14.1.1 Installation of row markers

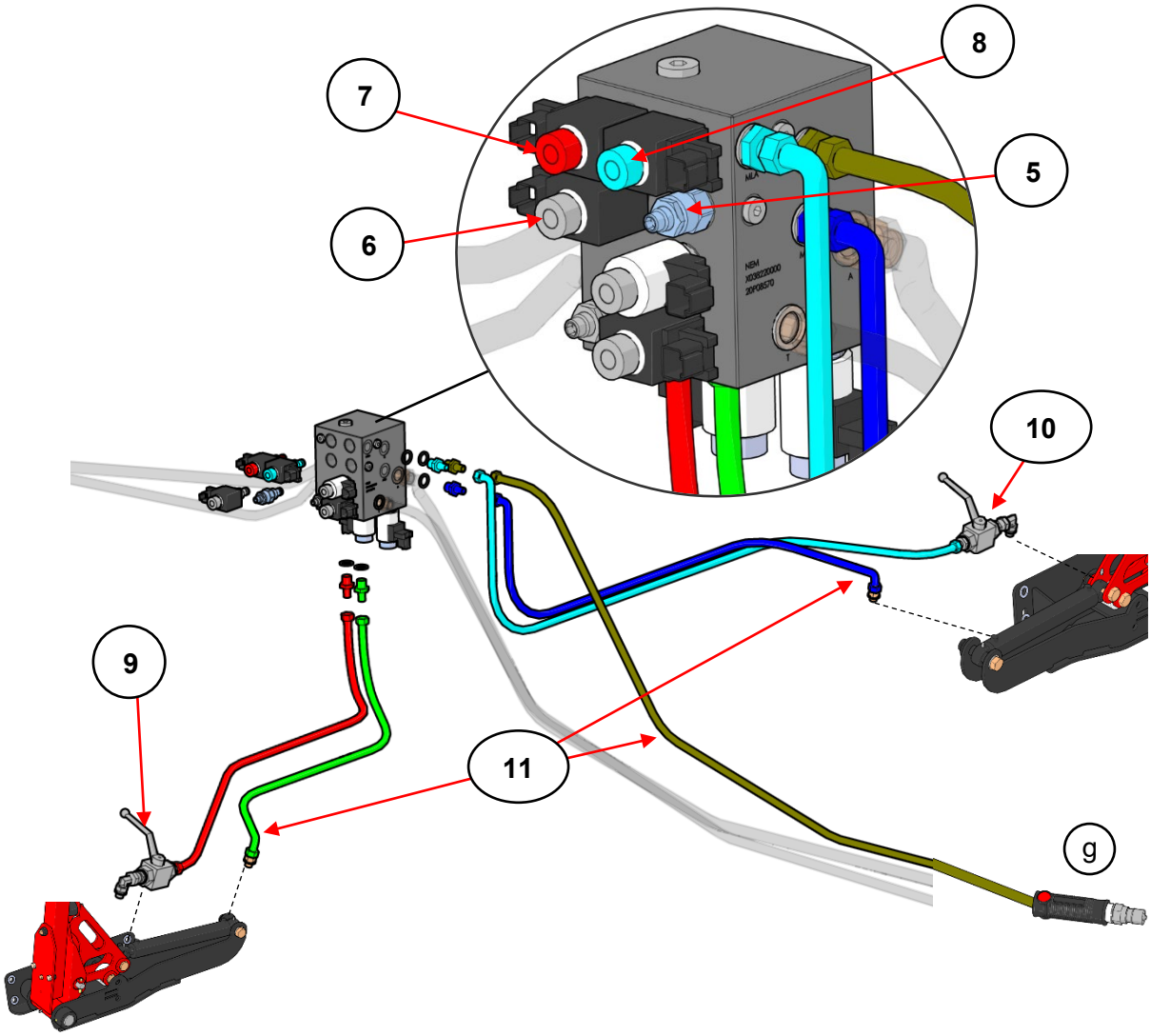


1. Attach the marker frame to the seeder frame with four M16x160 screws (a).
2. Attach the arm of the marker to the joint. The M16x100 screw (b) acts as the pivot and the M8x90 as the breaking bolt (c).



3. Attach the saucer handle to the marker handle. The length and angle can be adjusted by loosening the screws (d) at the end of the arm and making adjustments. Tighten the screws after adjustments. The angle of the plate should be so that it throws the ground towards the machine.

4. Connect the stem on the other side in the same way.



5. Install the resistance valve 01451327
6. Install the anti-lift valve 01454250 the markers and connect the electrical connector **CM to the coil**
7. Install the valve of the right marker 01454248 and connect the electrical connector **R to the coil**
8. Install the valve on the left marker 01454248 and connect the electrical connector **L to the coil**
9. Connect the hose with a tap on the stem side of the cylinder of the right marker.
10. Connect the hose with a tap on the cylinder arm side of the left marker.
11. Connect the hoses on the piston side of the cylinder. The longest hose to the quick coupling (g).
12. Finally, select the markers to be enabled in the controller settings. See section 11.1.3 Equipment and features.

14.2 Small Seed/Starter Fertilizer Device

The seeder is the same in both cases. When used as a hayseed device, the seeds are led along hoses in front of the roller, where they are spread as scattered sowing. When used as a starter fertiliser, the fertiliser is led through hoses to the seeding coulters, so that the fertiliser goes into the same furrow as the seeds.

The device is integrated into the back wall of the seed fertiliser. The tarpaulin cover of the base machine thus also covers the small seed/starter fertiliser. The device is partially attached to the base machine and reduces the seed volume.

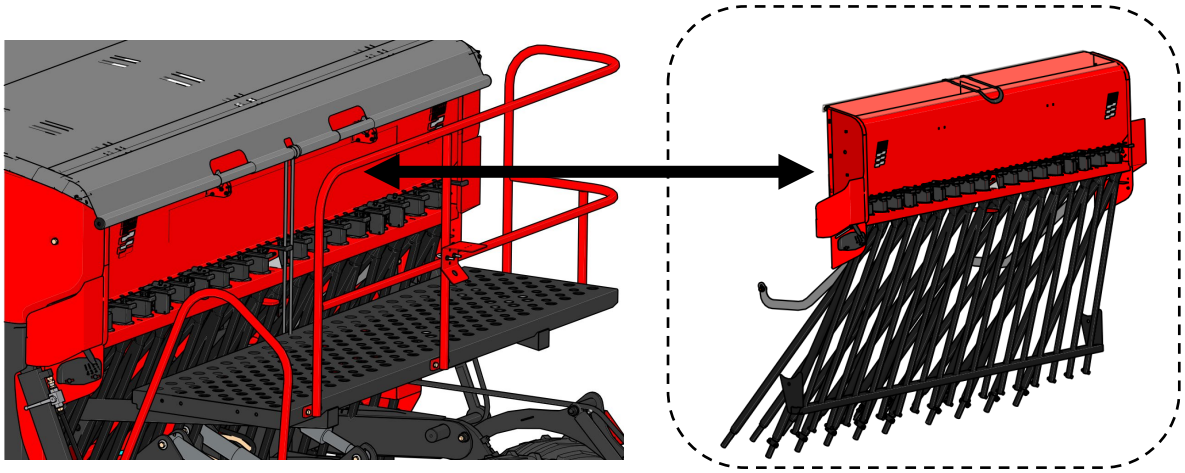


Figure 27. Small seed/starter fertilizer device.

14.2.1 Use for hay seed sowing

The hayseed seeder is intended for sowing or for sowing different types of hay seed and mixtures. Small seeds are led into the field through hoses. The hoses are installed so that the seeding coulter slightly mulches the seeds. For example, the sowing speed affects how strongly the hay seeds are covered.

The shut-off doors between the bottom of the hopper and the feed chamber must be adjusted to the half-closed position if the appliance is used to sow small and easily flowing materials (e.g. clover). On the other hand, lightweight, easily vaulted hay seeds (e.g. meadow fescue) must have their locking hatches fully open.

14.2.2 Use for sowing starter fertilizer

The starter fertiliser is intended for sowing additional fertiliser in the same furrow as the seed. The fertiliser is led with its own hoses to the upper end of the seed coulters.

The shut-off doors between the bottom of the hopper and the feed chamber must be fully opened.

NOTE! Only granular fertilizers may be used in the device. Floury fertilizers can clog the system.

14.3 Hydraulinen front board

With the front board, it is possible to level the field surface when sowing. In good conditions, you can even sow directly on the plough. The hydraulic front bar requires its own double-acting hydraulic block to work. This allows the charge to be adjusted mid-drive without affecting other machine functions. The working depth of the front board should be kept as small as possible. This reduces the need for traction and unnecessary land displacement. The angle of the board is changed by moving the place of the hole punch and locking it with a pin, the adjustment must be made on both sides (Fig. 28).

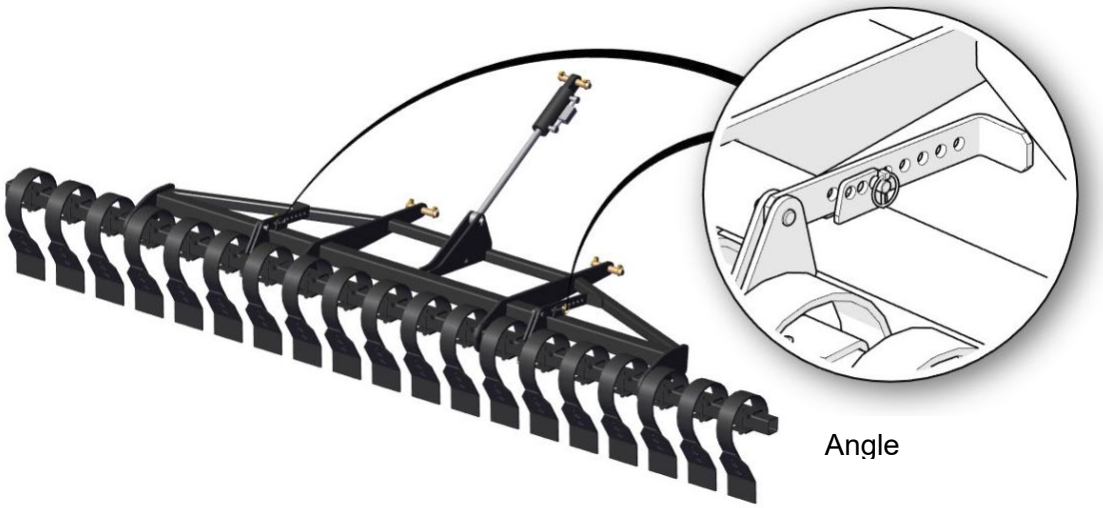


Figure 28. Super Nova Combi etulata.

The front deck arms are connected with pins to the holes under the drawbar attachment points. The cylinder of the front deck is connected under the upper end of the drawbar cylinder. The hoses are passed through the handle like any other hose.

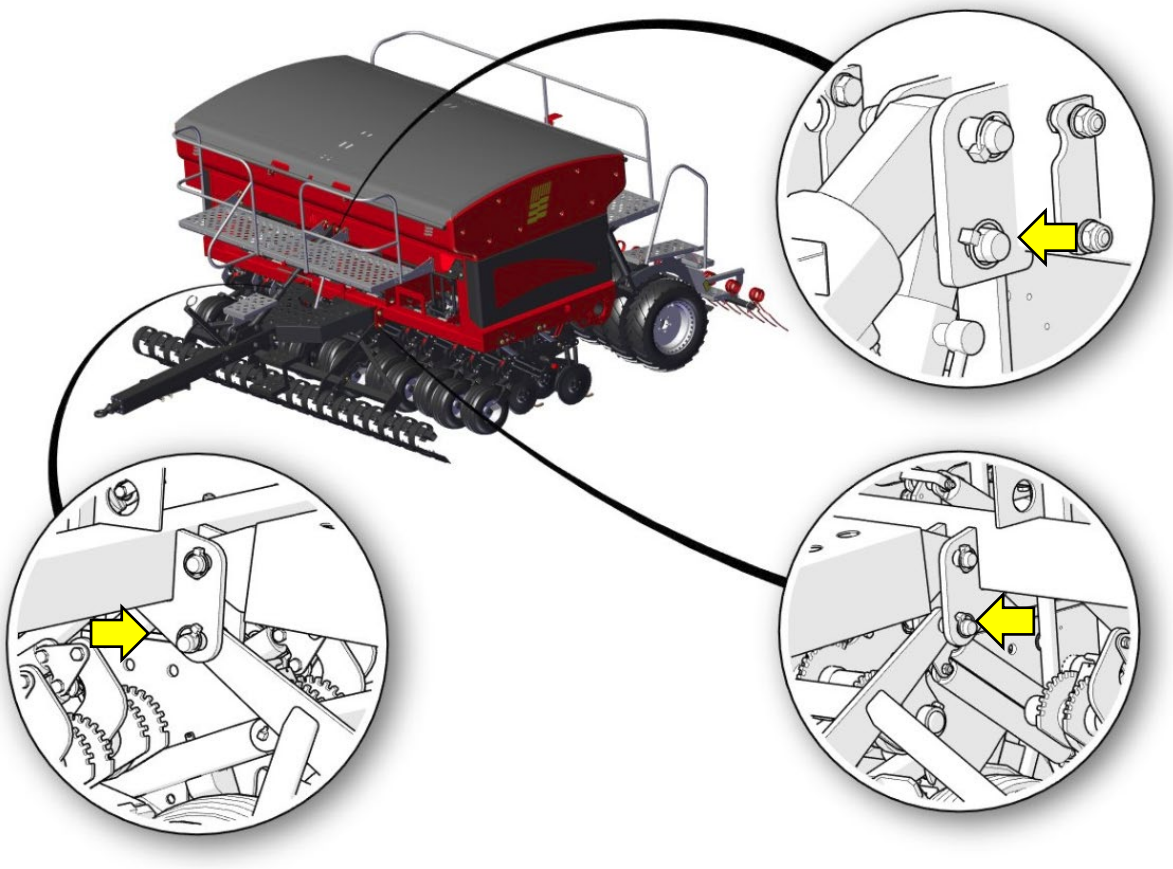
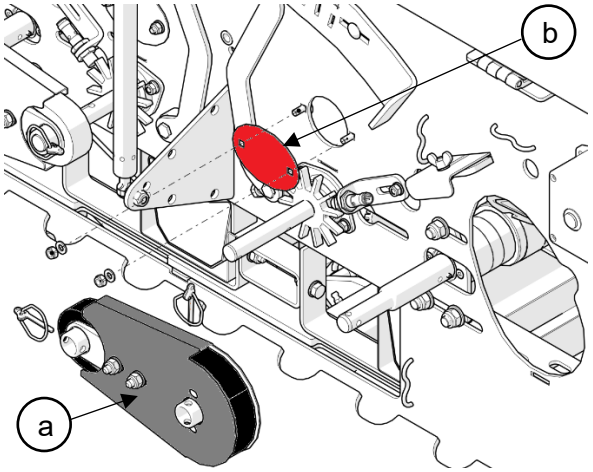


Figure 29. Front board installation.

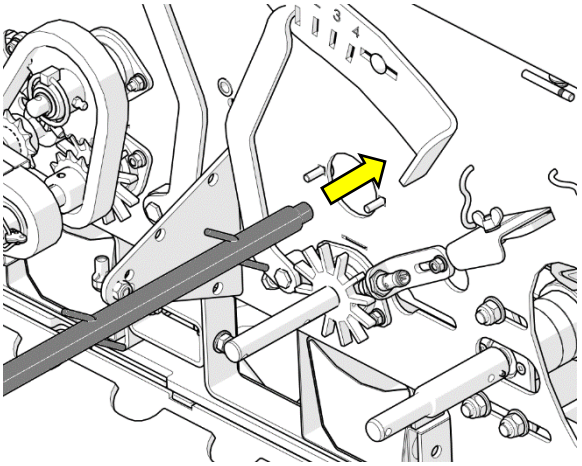
14.4 Agitator shafts

The agitator shafts can be installed in the fertiliser and seed hopper, as well as in the hopper of the small seed/starter fertiliser. The agitator shaft can be used to promote the flow of poorly draining/vaulting materials to the feeders.

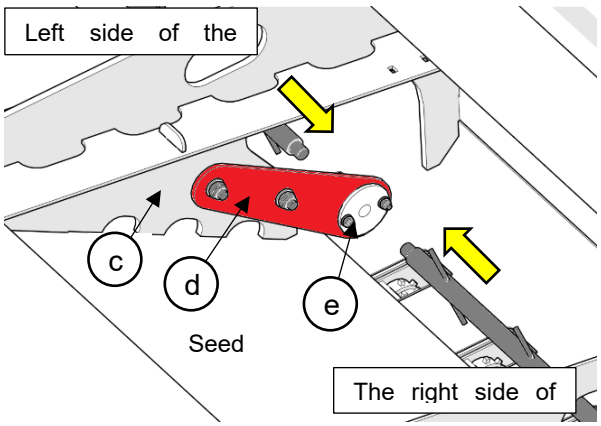
14.4.1 Agitator shaft installation



1. Remove the chain cassettes (a) from the ends of the feed shafts and motor shafts. Both sides of the machine.
2. Remove the cover plates (b). Both sides of the machine.

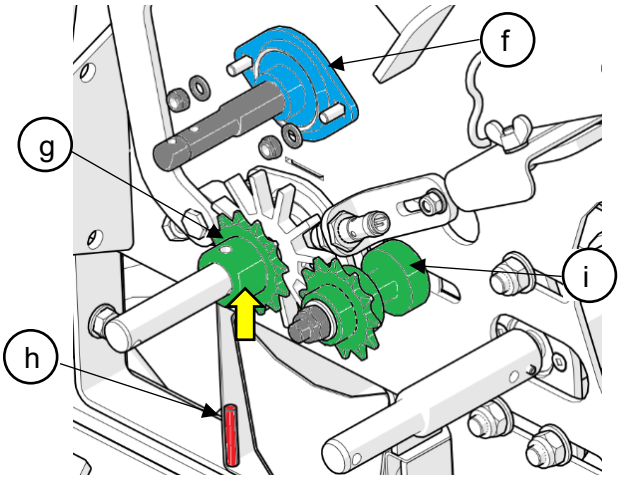


3. Thread the shafts inside the hopper. Thread the end of the shaft in front that is thinned and has no cotter holes.



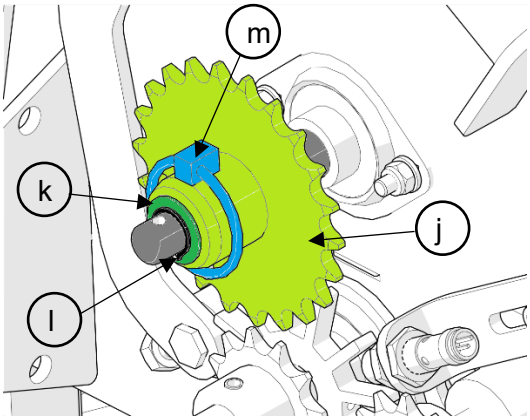
4. Attach the center support (d) to the right side of the center plate (c) of the seed container, so that the flat side of the bearing (e) points to the right.

In the fertiliser hopper, the centre support (d) is attached to the left side of the centre plate (c) of the fertiliser hopper so that the flat side of the bearing (d) points to the left.

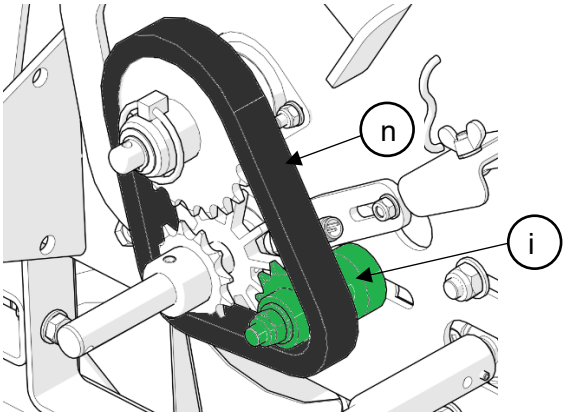


Thread the ends of the shafts into the bearing.

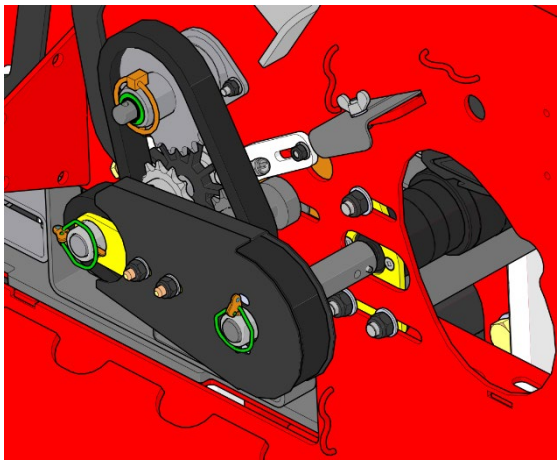
5. Place the flange bearing (f) on the mixer shaft and secure it to the hopper with bolts. Place the sprocket (g) on the feed shaft and lock it with the pin (h). Leave the chain tensioner (i) loose.



6. Install the sprocket (j), spacer (k), locking ring (l) and ring pin (m).



7. Insert the chain (n) and tighten the chain tensioner so that the chain remains slightly loose (i).



8. Replace the drivetrain chain cassette.
Make a similar assembly on the other side of the machine as well.

14.5 Wheel packer



In wheel packer operation, the lower end of the drawbar cylinder is connected to the rear hole of the drawbar (Figure 30). It is recommended to keep the wheel packer in the air when driving on the road. When reversing, the wheel packer roller must be lifted off the ground.



Figure 30. Connecting the wheel packer.

The packer is connected to the end of the drawbar by first removing the drawbar eye. The flange of the packer goes into the same bolt holes at the end of the drawbar.

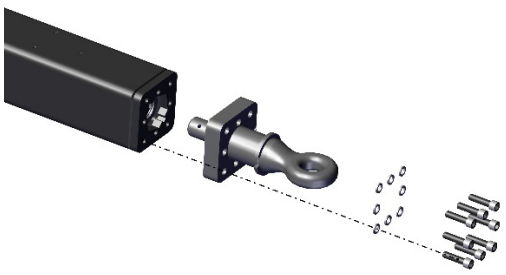


Figure 31. The packer is connected to the end of the drawbar by first removing the drawbar eye. The flange of the packer goes into the same bolt holes at the end of the drawbar. It is imperative to ensure that the bolts do not come loose and that they are strong enough. Hardness 12.9, tightening torque 375 Nm, use nordlock washer.

NOTE! Check the tightness of the fastening screws at least once per season!

1.1 CultiPack Intermediate Editor

The Super Nova Combi is connected to the CultiPack tiller with its own drawbar (see section 5.3 Installing the drive). The lower end of the drawbar cylinder is connected to the front hole of the drawbar. The drawbar loop is connected to the CultiPack pulling point (Fig. 35). Be sure to lock the latch with a pin and cotter pin.

In transport and headlands, the CultiPack can be kept on the ground by turning the cultivator plates up with hydraulics. The CultiPack rear axle lock must be kept unlocked. The Modifier must be lifted up when reversing.

NOTE! CultiPack has its own manual. Read the book before using CultiPack.

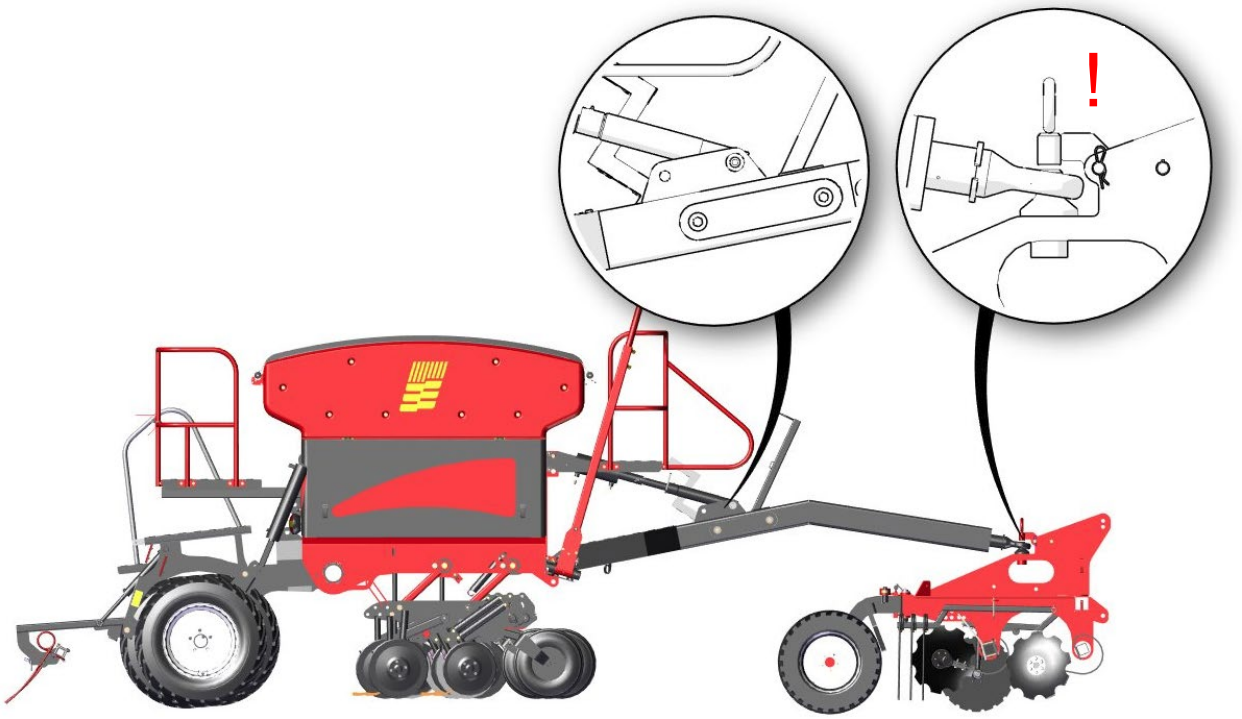


Figure 32. A combination of Super Nova Combi and CultiPack. Make sure that the seed drill drive is locked to the CultiPack drive with the latch on top of its pull pin.

2. MAINTENANCE

For the most demanding repairs, we advise you to contact the manufacturer. Read the maintenance instructions carefully. Acting according to the instructions, the TUME seed fertiliser works flawlessly year after year. Failure to perform maintenance in accordance with the instructions will cause the warranty to be voided.



Always switch off the tractor engine before starting maintenance work and apply the handbrake. Make sure that no one can use the machine/tractor in the middle of maintenance work.

Danger!
Always close the safety valves on both lifting cylinders if the machine needs to be raised during maintenance. Don't go under a machine that relies solely on hydraulics!

At regular intervals of 100 hours of operation, check the tightness of the bolted joints. With the new machine, the bolted joints must be checked twice after 25 hours of operation and then every 100 hours.



Figure 33. Lifting cylinder safety valve closed.

NOTE! With the safety valves (Fig. 36) closed, no transfer must be carried out.

The machine's hydraulic circuit is pressurized even when it is disconnected from the tractor.

Danger!
The paintwork of the machine may emit gases that are harmful to health when heated. Make sure that the workspace is adequately ventilated, e.g. During welding work.

2.1 Removing the coulter arm clearance

There are two M24 screws (key 36) at each end of the machine, which are used to tighten the butt clearance of the rim steps axially with the help of tensioning pieces at the ends. The screws are equipped with separate anti-rotation parts, which must be removed during tightening. In addition, the machine comes with fitting plates (inner diameter 50 mm) that can be installed behind the clamping pieces, if necessary, if there is so much butt clearance that the inner surface of the clamping piece catches the end plate of the machine (= out of tensioning allowance).

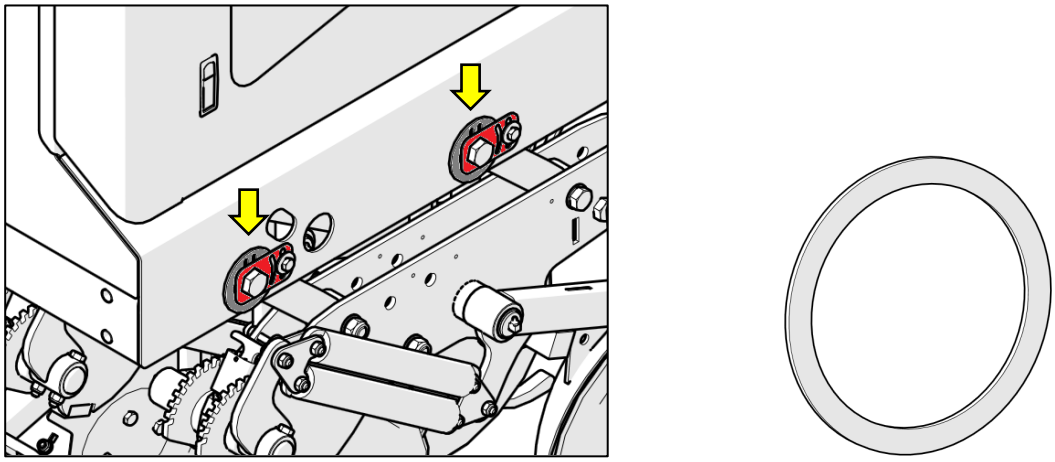


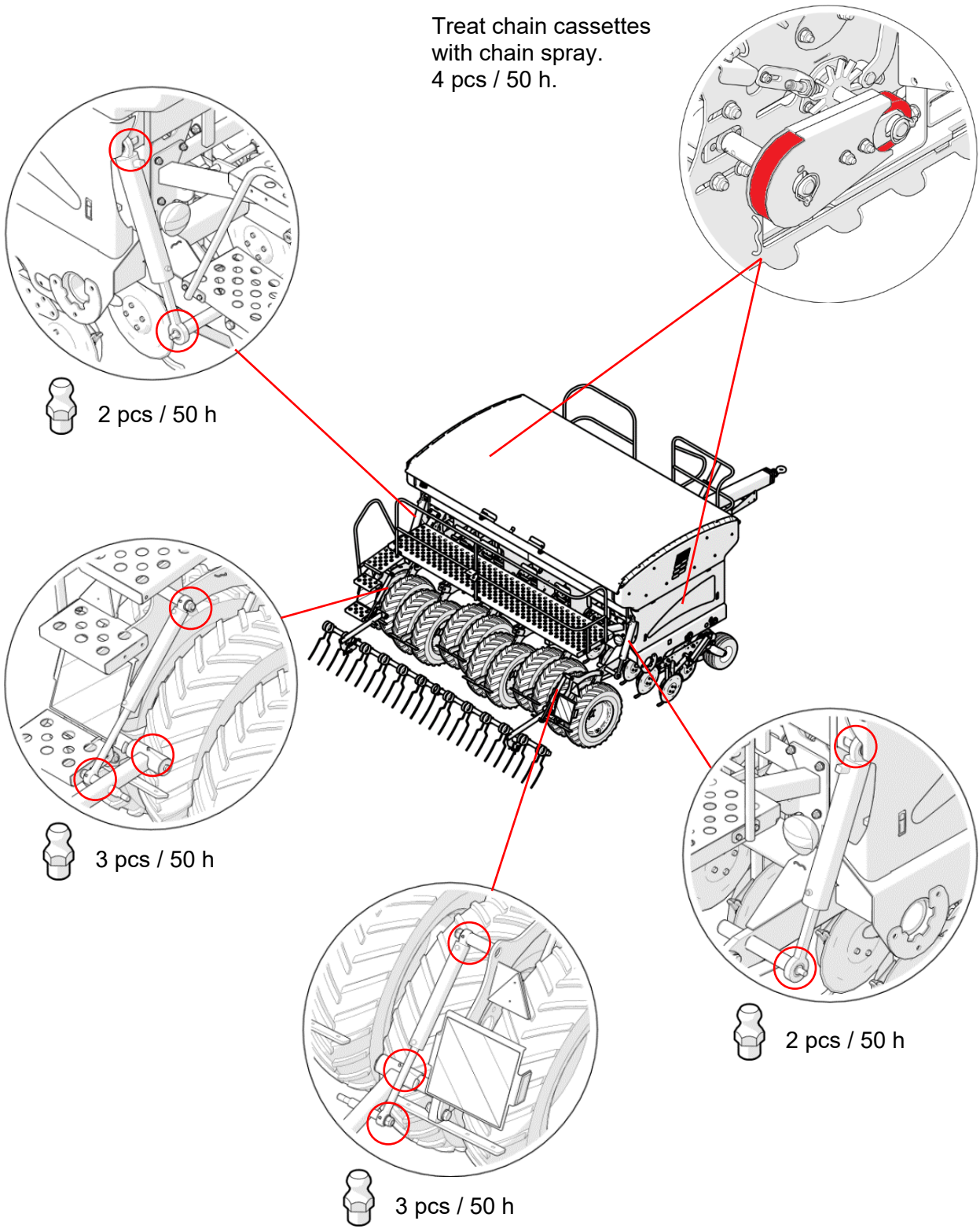
Figure 34. Clamping screws for the bottom clearance of the coulter and the fitting plate.

2.2 Lubrication sites

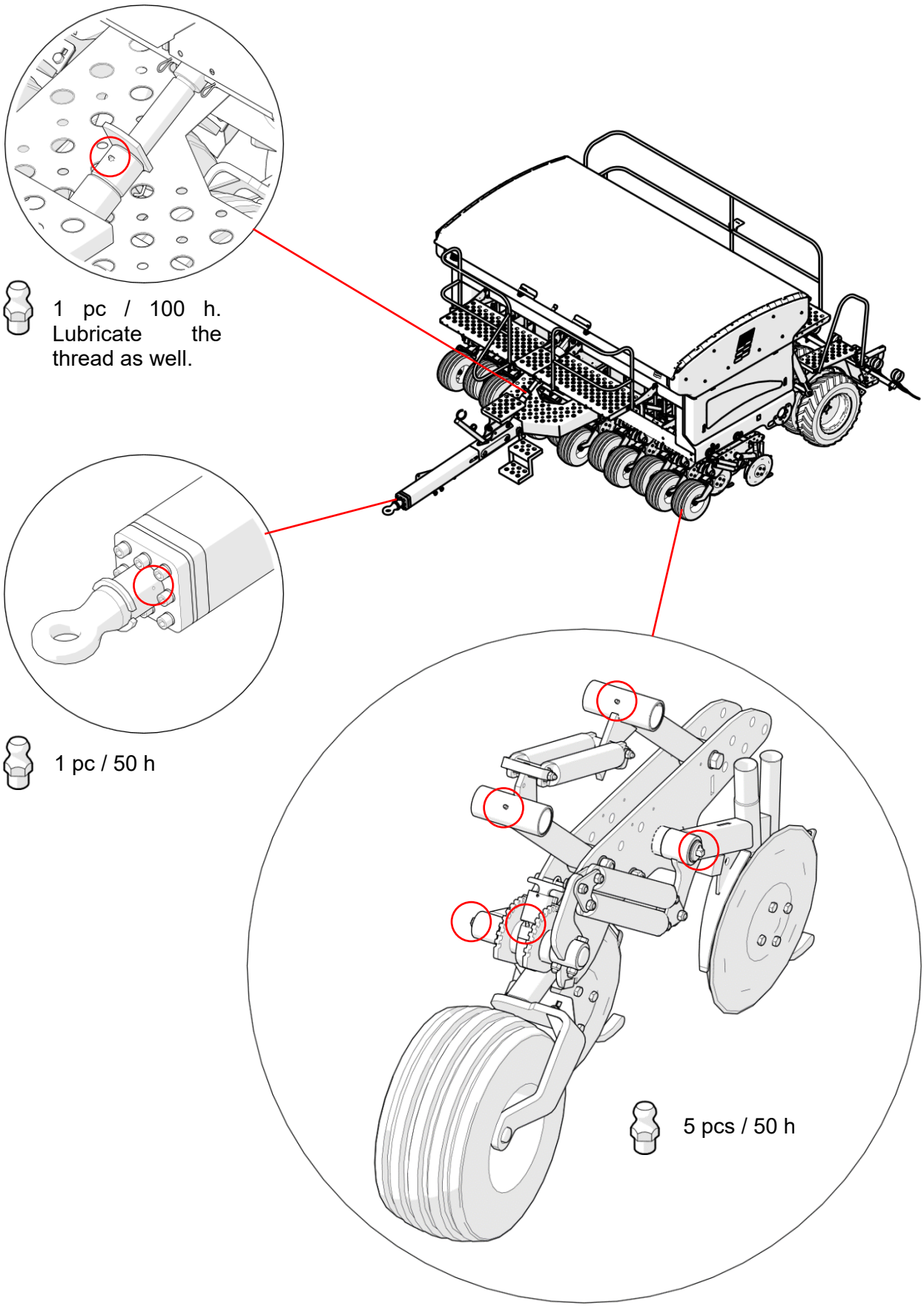
The machine must be lubricated at least once per season and always after washing. The machine must be lubricated before storage.

The bearings of the coulter wheels are permanently lubricated and therefore do not need to be maintained.

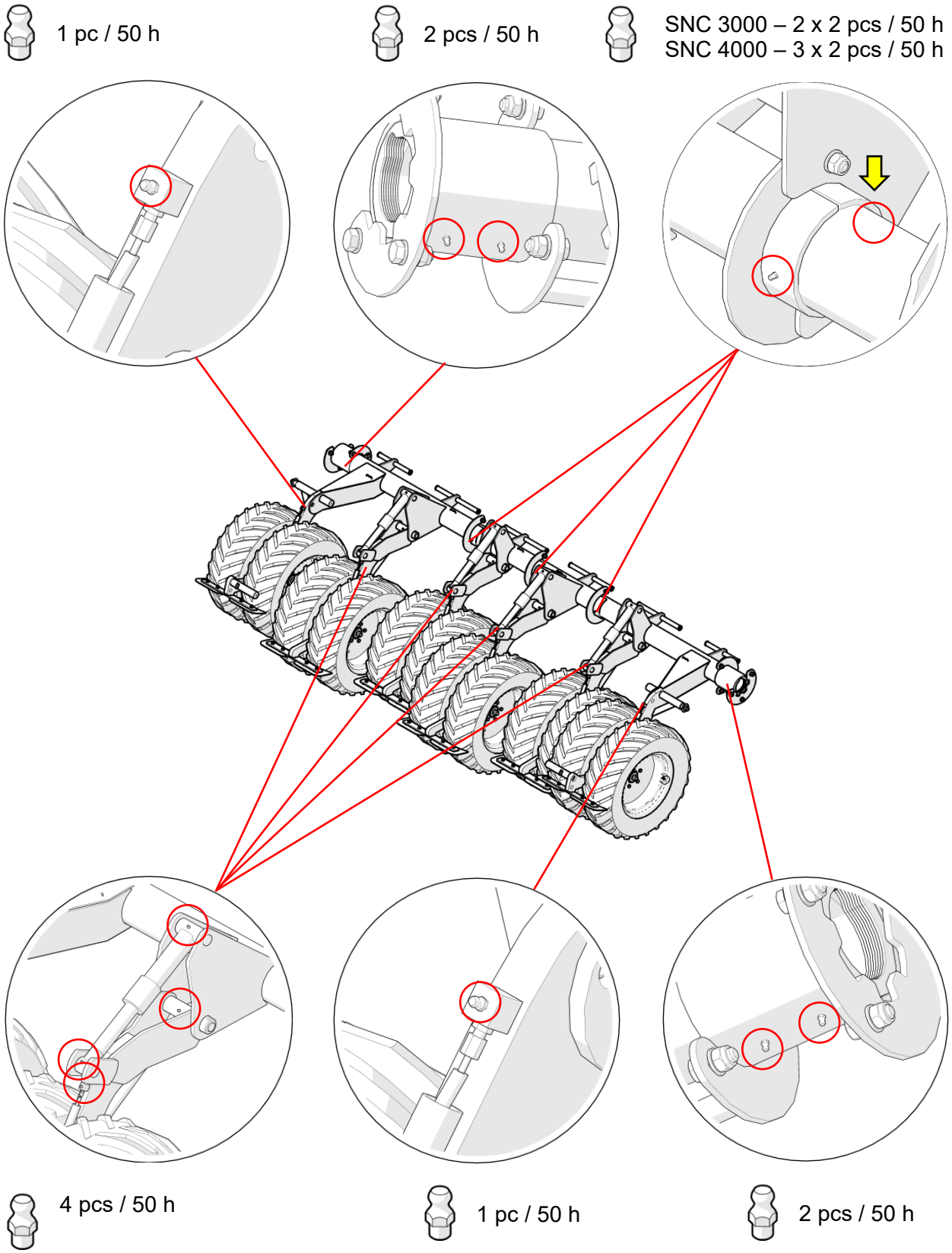
SIDES AND BACK



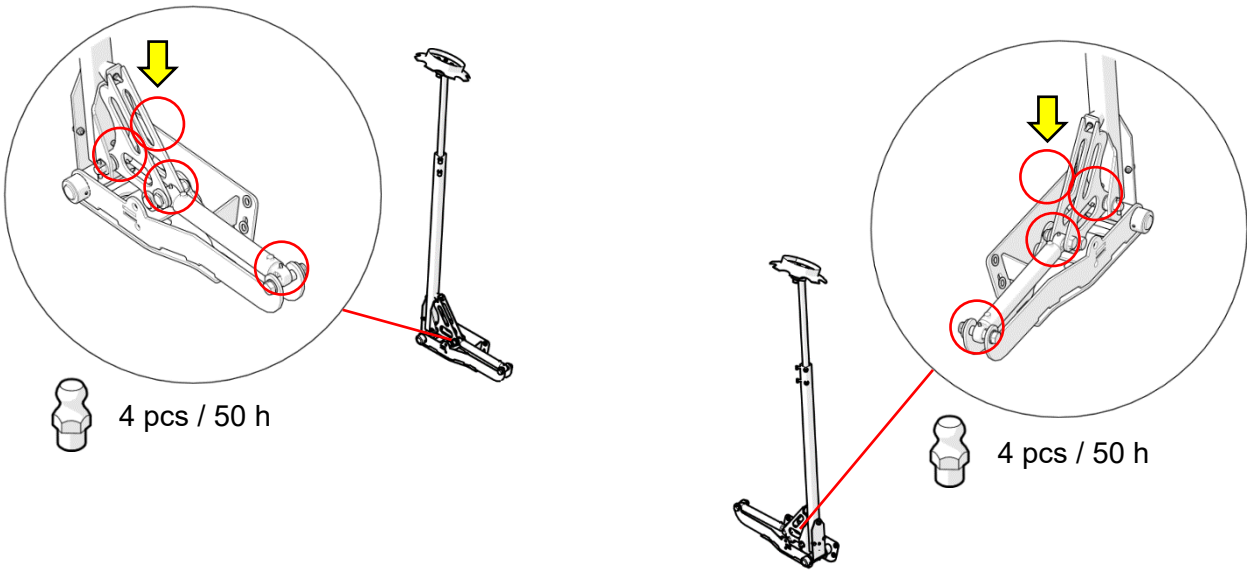
FRONT



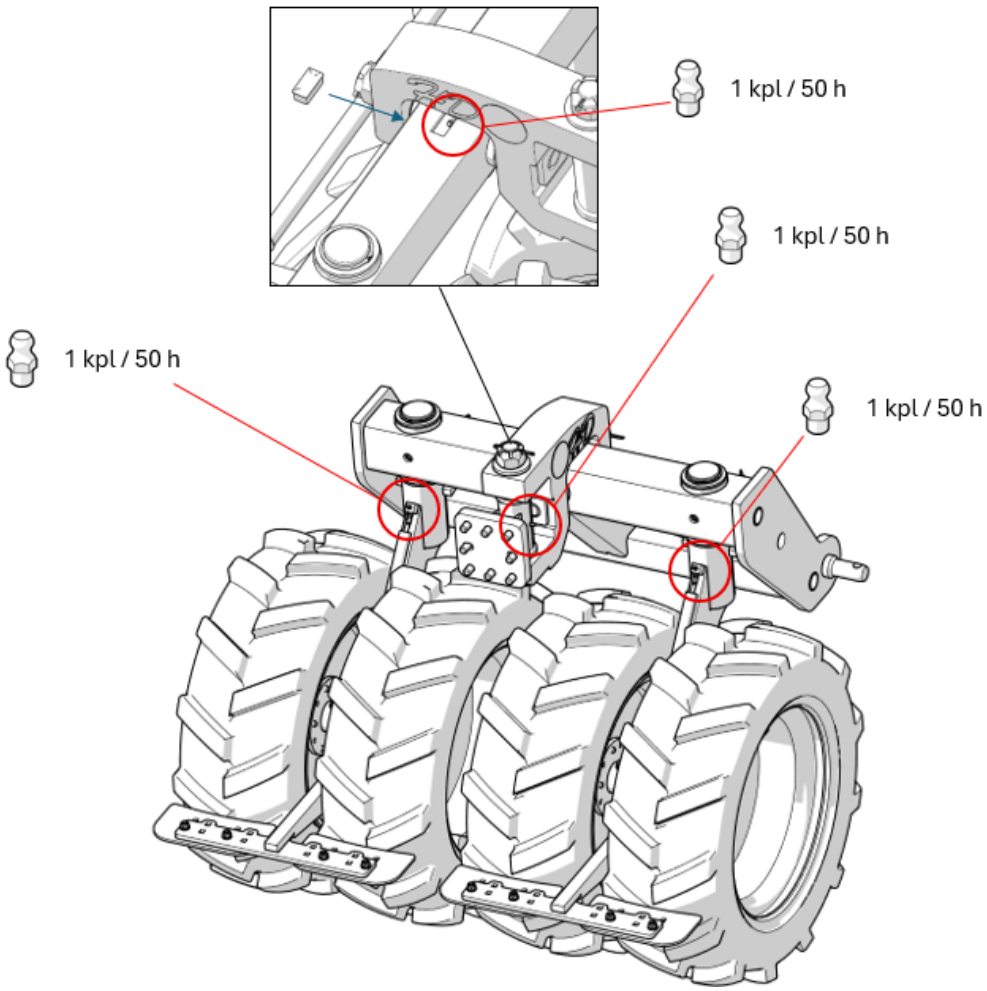
REAR WHEELS


1 pc / 50 h
2 pcs / 50 h
SNC 3000 – 2 x 2 pcs / 50 h
SNC 4000 – 3 x 2 pcs / 50 h
4 pcs / 50 h
1 pc / 50 h
2 pcs / 50 h

MARKERS (OPTIONAL)



WHEEL PACKER ROLLER (ACCESSORY)



2.3 Tire pressure

Front tires 18x8,5-8	1.5 – 2.0 bar.
Rear tyres 280/70 R18	1.5 – 2.0 bar.

The easiest way to check the tire pressure is with the tool that comes with the machine. The tires of the machine have automatic valves, and there is no need to remove separate valve caps. Blow the valve end clean first, and then press the tool into the valve. Measure the tire pressure and adjust if necessary.

NOTE! If dirt gets between the valve, it can leak. Cleaning is usually done by blowing and lowering the air back and forth a few times.

2.4 Changing tires

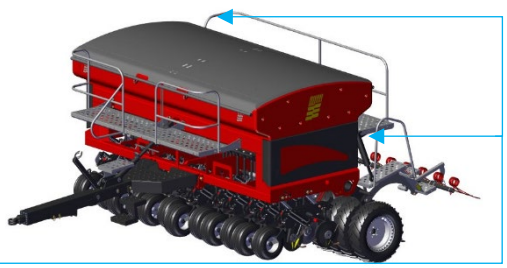
Empty the machine and drive it on a hard, flat surface before changing the tire.

When changing tires, always make sure that the machine cannot move or outsiders can move it.

Tires and the structures that support them are heavy and can cause damage if they fall!

2.4.1 Changing the front tire

1. Lift the machine up so that the front wheels lift off the ground.

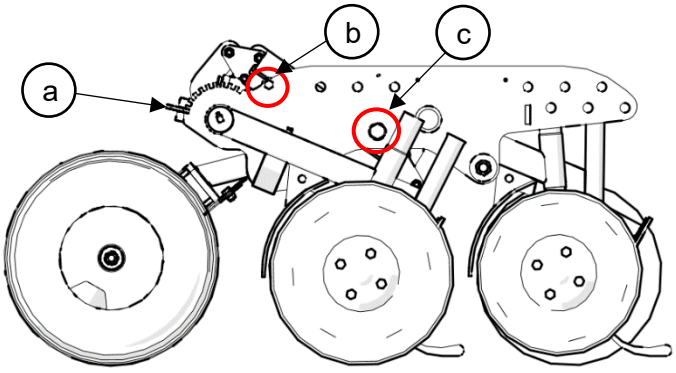


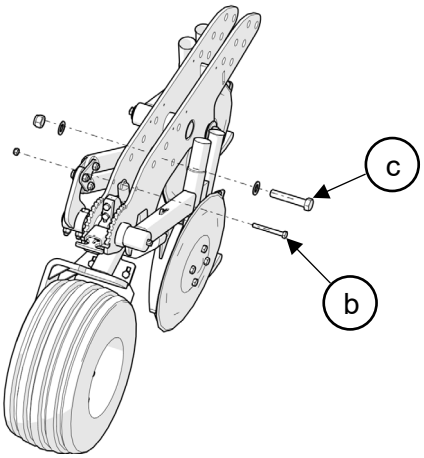
2. Turn off the safety valves of the lifting cylinders!

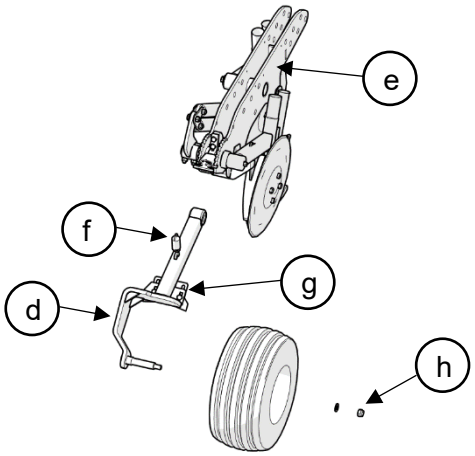


3. Turn the seeding depth adjustment handle (a) all the way forward.

4. Removable screws (b) and (c).







5. Remove the screw (b) on the spring holding the wheel arm. M10x90. Wrench 17 mm.

6. Remove the wheel stem screw (c) M20x140. Wrench 30 mm.

7. Pull the wheel arm (d) out of the rim step (e). Do not lose the wheel stem spring (f).

8. Loosen the scraper (g). Wrench 17 mm.

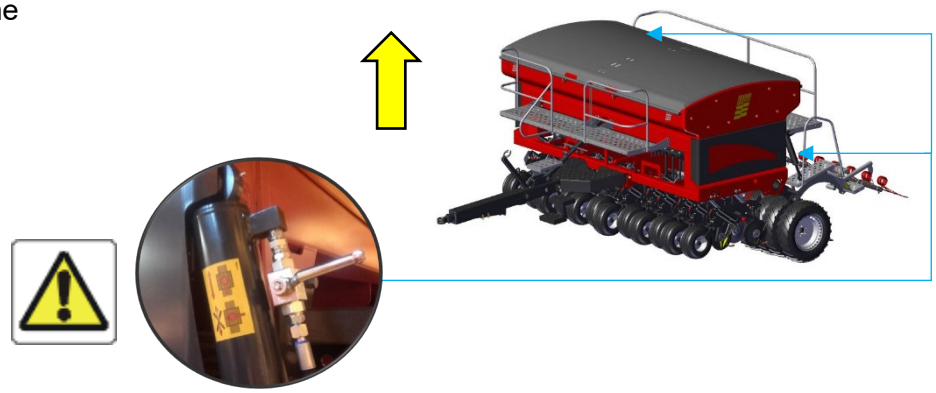
9. Remove nut (h) M16, key 24 mm. You can now remove the ring.

Assembly is done in reverse order. Be sure to attach the spring (f) that supports the wheel arm and check the position of the scraper (g).

2.4.2 Replacing the rear tire

1. Lift the machine all the way up, power on.

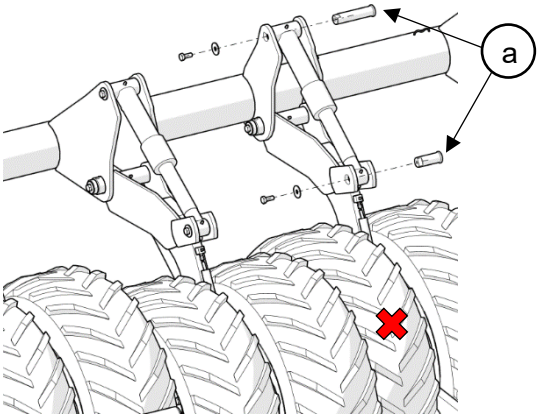
2. Turn off the safety valves of the lifting cylinders.



3. Place the hydraulic valve that lifts the machine from the tractor to float.

The machine stays up, but the pressure in the intermediate cylinders of the wheels

4. Remove the cylinder pins (a) from the wheel stem where the tire (x) to be replaced is.



Be careful not to damage the hydraulic hoses of the disconnected cylinder! The risk of the hose connection breaking is high when lifting the wheel arm!

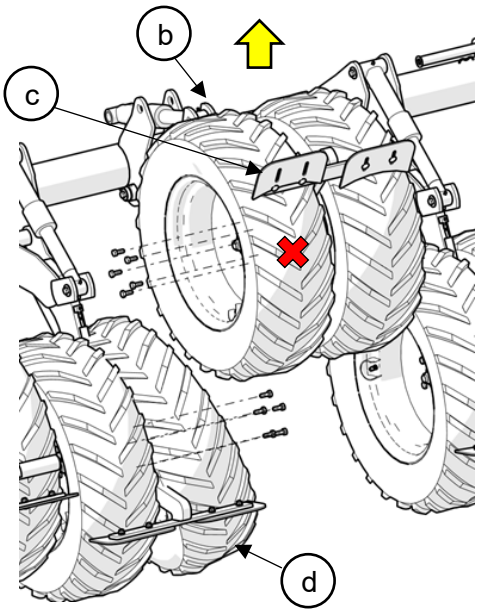
5. Lift the pair of wheels into the air (b).

You can use e.g. a cargo strap attached to the back level and the scraper handle.

6. Loosen the scraper (c).

7. Lighten the adjacent ring (d) and remove its bolts to make more space.

8. Remove the ring (x) to be



Assembly is done in reverse order.

2.5 Replacing the print springs

The machine has to be raised and lowered during the changeover. Always lock the safety valves of the lifting cylinders on both sides of the machine between lifts and lowers.

DANGER! When the machine is down, the compression springs of the coulter are in great tension. Do not attempt to remove any spring while it is under tension. The released spring can cause serious injury.

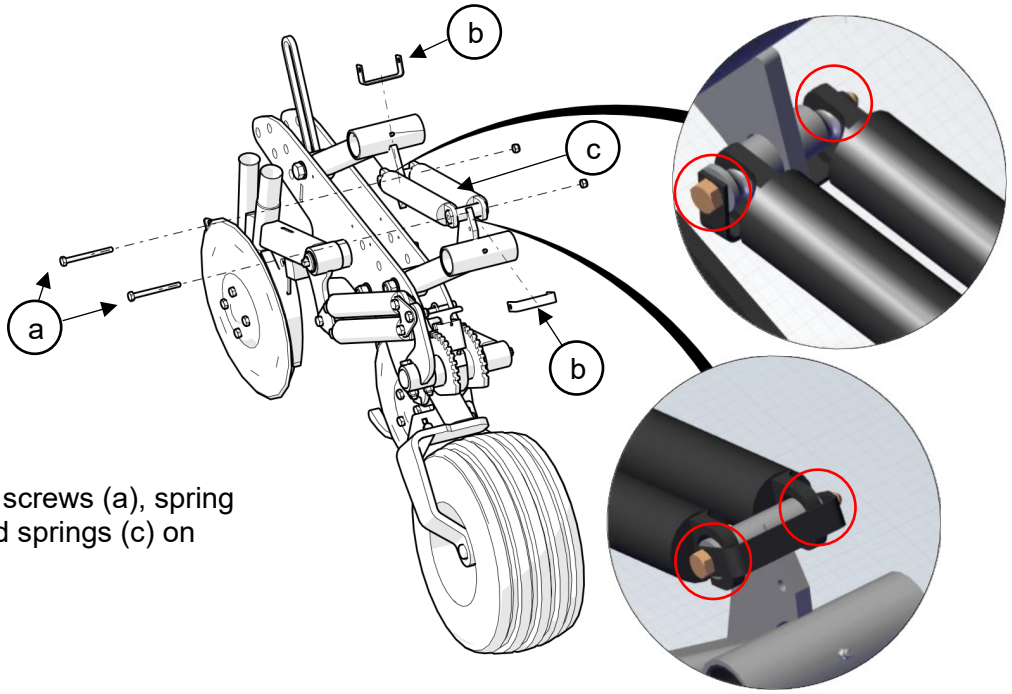
1. Lower the machine so that the coulters touch the ground lightly. The print springs are loosened.

You have to find the right spot very carefully.

Turn off the safety faucets.







2. Remove the screws (a), spring holders (b), and springs (c) on

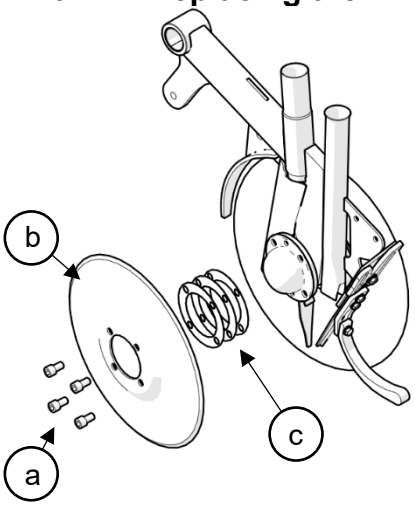
Assembly is done in reverse order.

2.6 Repairs to the coulter

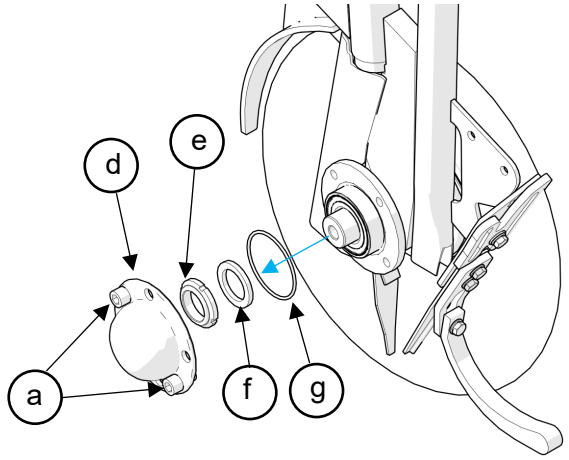
2.6.1 Adjusting the disc clearance

The clearance of the coulter discs can be adjusted. Worn discs can be brought closer together by removing the adjustment plates between the bearing housing and the wheel. See Figure 1 in the next section. The discs are allowed to touch each other lightly, but they are supposed to rotate lightly.

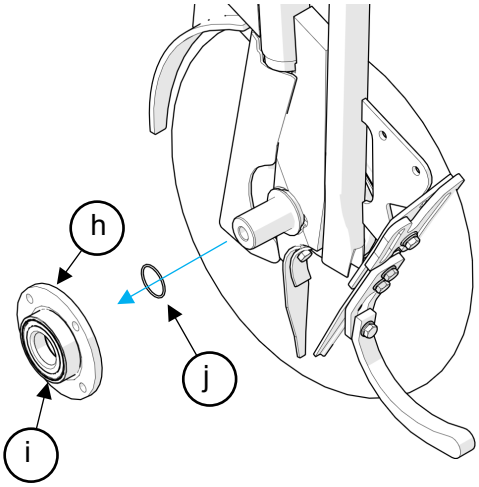
2.6.2 Replacing the Wheel and Bearing



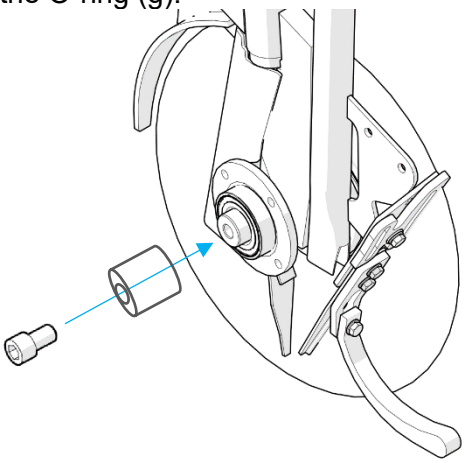
1. Remove the 4 Allen screws, M12 (a), the disc (b) and the plate spacing fitting plates (c).



2. Screw the two Allen screws (a) you just removed into the threaded holes in the bearing housing M12. Tighten both screws evenly, allowing the bearing housing (d) to open. Remove the locking nut (e), the strut (f), and the O-ring (g).



3. Remove the rear of the bearing housing (h) and bearing (i) using a suitable puller. Behind the bearing housing at the base of the shaft is an O-ring (j). Replace the new O-ring.



4. **Assembly:** You can push the back of the bearing housing and the bearing back together, e.g. using a bushing of the appropriate size and an M16 screw. The sleeve presses the bearing to the bottom when the screw is tightened.

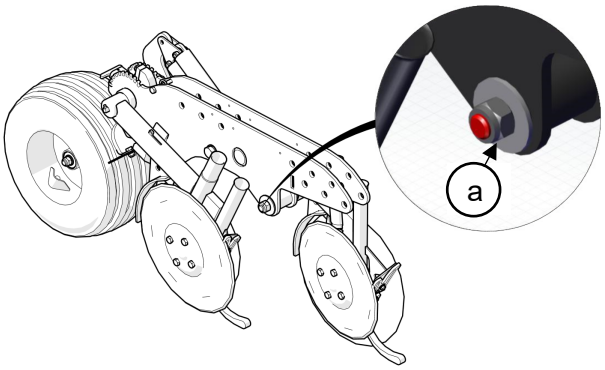
5. Assemble points 2 and 1 in reverse order. Insert the support nut (f) in section 2 and tighten the locking nut (e). Lightly press the heated bearing housing (d) into place. Insert the fitting plates (c) and wafer (b) from point 1 and tighten the screws (a).

2.6.3 Replacing the rear coulter arm

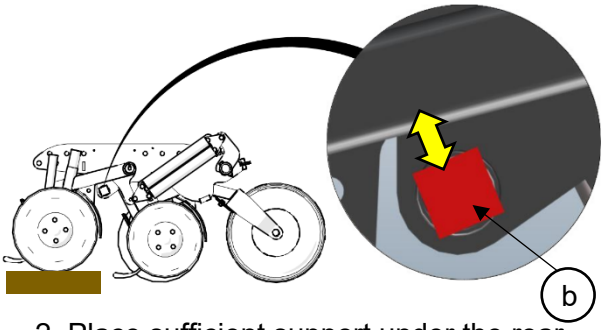
WARNING! The coulter arms are tightened with springs against the limiters. To replace the coulter arm, the tensioning of the springs must be loosened. Uncontrollably released tension on the springs can cause a serious dangerous situation!



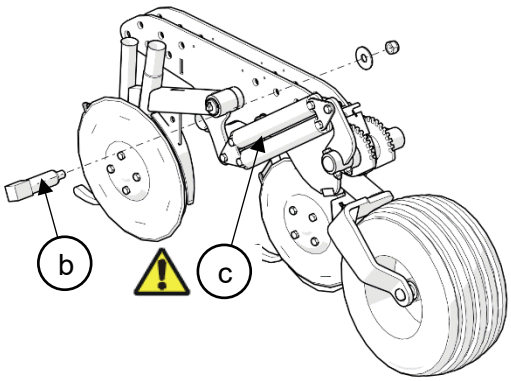
The machine has to be raised and lowered during the changeover. Always lock the safety valves between lifts and lowerings.



1. Loosen the stop nut (a) M20. Wrench 30 mm.



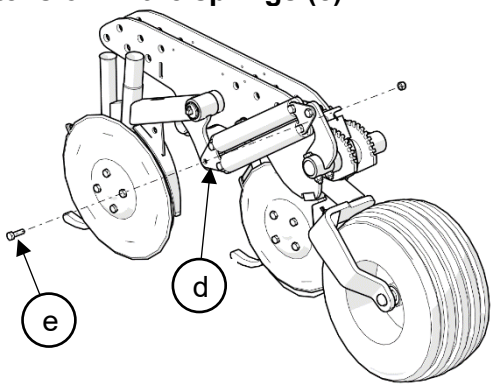
2. Place sufficient support under the rear coulter, e.g. metal bar and lower the machine. The coulter arm detaches from the stop (b).



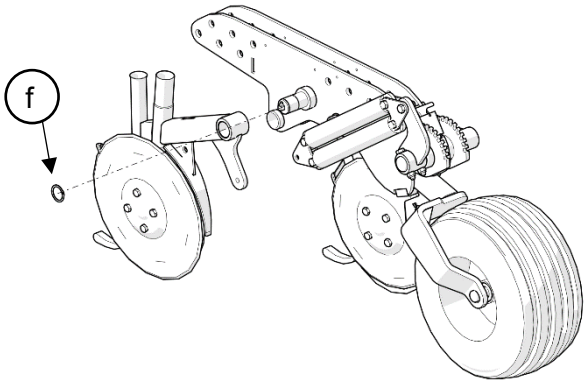
3. Remove the limiter (b). **NOTE! there is tension in the springs (c)!**



4. Lift the machine to relieve the tension on the springs. Turn off the safety faucets.



5. Remove the screw (e) on the spring holder (d) from the coulter arm. Screw M12x40. Wrench 19 mm.



6. Remove the locking ring (f) from the end of the shaft of the coulter arm. You can now remove the coulter arm.

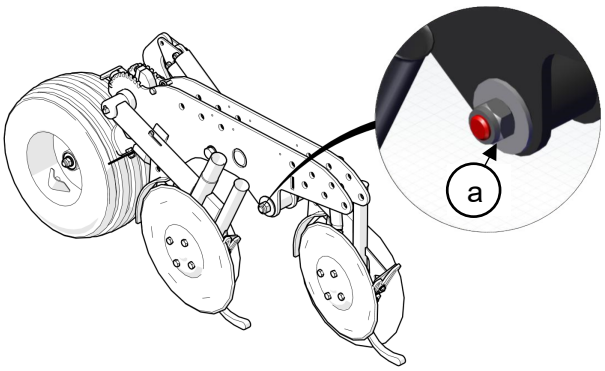
Assembly is done in reverse order.

2.6.4 Replacing the front coulter arm / removing the coulter step

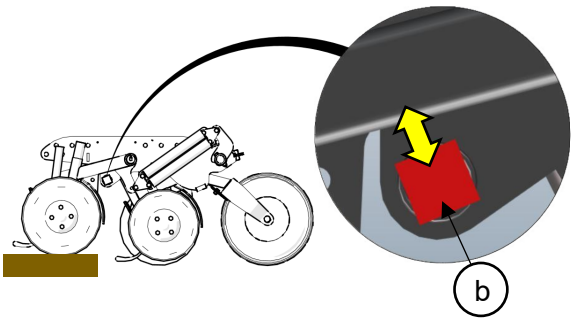
Replacing the front coulter arm is easiest when the entire coulter step has been removed.

WARNING! The coulter arms are tightened with springs against the limiters. To replace the coulter arm, the tensioning of the springs must be loosened. Uncontrollably released tension on the springs can cause a serious dangerous situation!

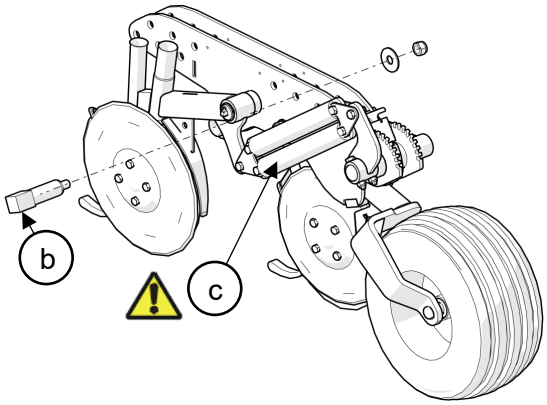
The machine has to be raised and lowered during the changeover. Always lock the safety valves of the lifting cylinders on both sides of the machine between lifts and lowers.



1. Loosen the stop nut (a) M20. Wrench 30 mm.



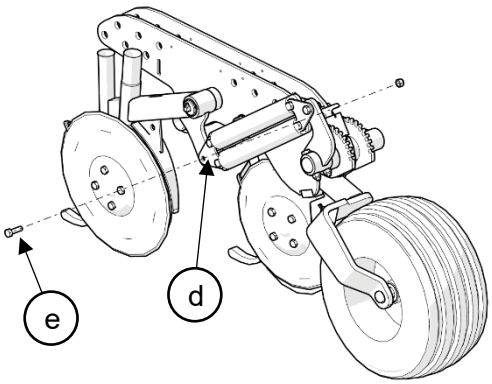
2. Place sufficient support under the rear coulter, e.g. metal bar and lower the machine. The coulter arm detaches from the stop (b).



3. Remove the limiter (b). **NOTE! there is tension in the springs (c)!**



4. Lift the machine to relieve the tension on the springs. Turn off the safety faucets.

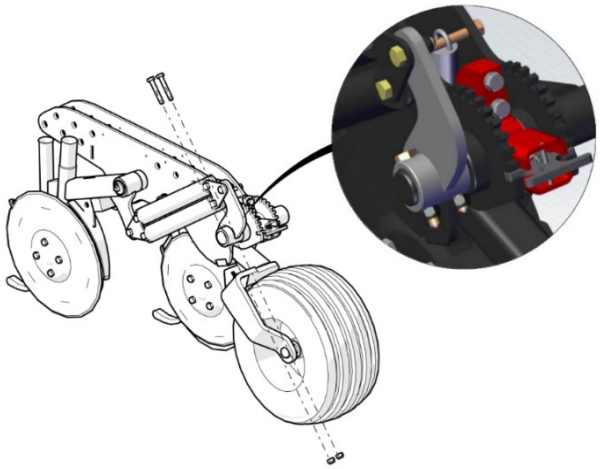


5. Remove the screw (e) on the spring holder (d)

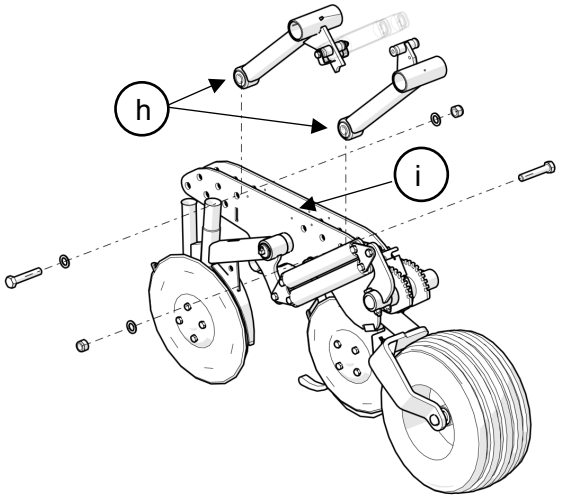


Vannasvarresta. Screw M12x40. Key 19 mm.

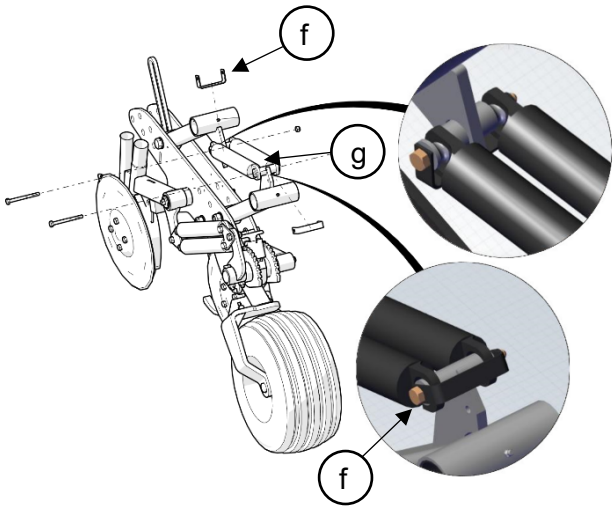
6. Lower the machine so that the coulters



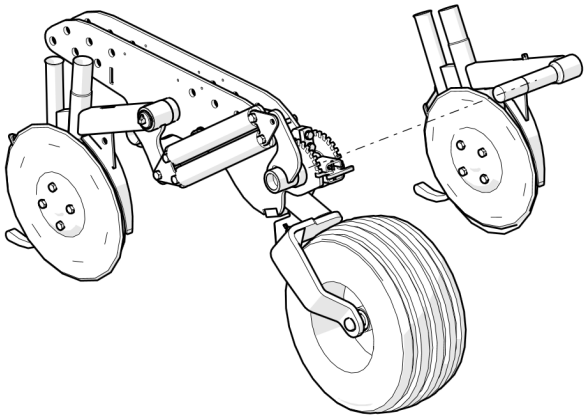
touch the ground lightly. The print springs are loosened. **Turn off the security taps!**



8. Adjust the seeding depth to the very surface (front ring all the way down). This makes it easier to keep the sled upright. Remove the parallelogram arms (h) from the rim step (i). You can now pull out the rim step.



7. Remove the print spring holders (f) and springs (g).

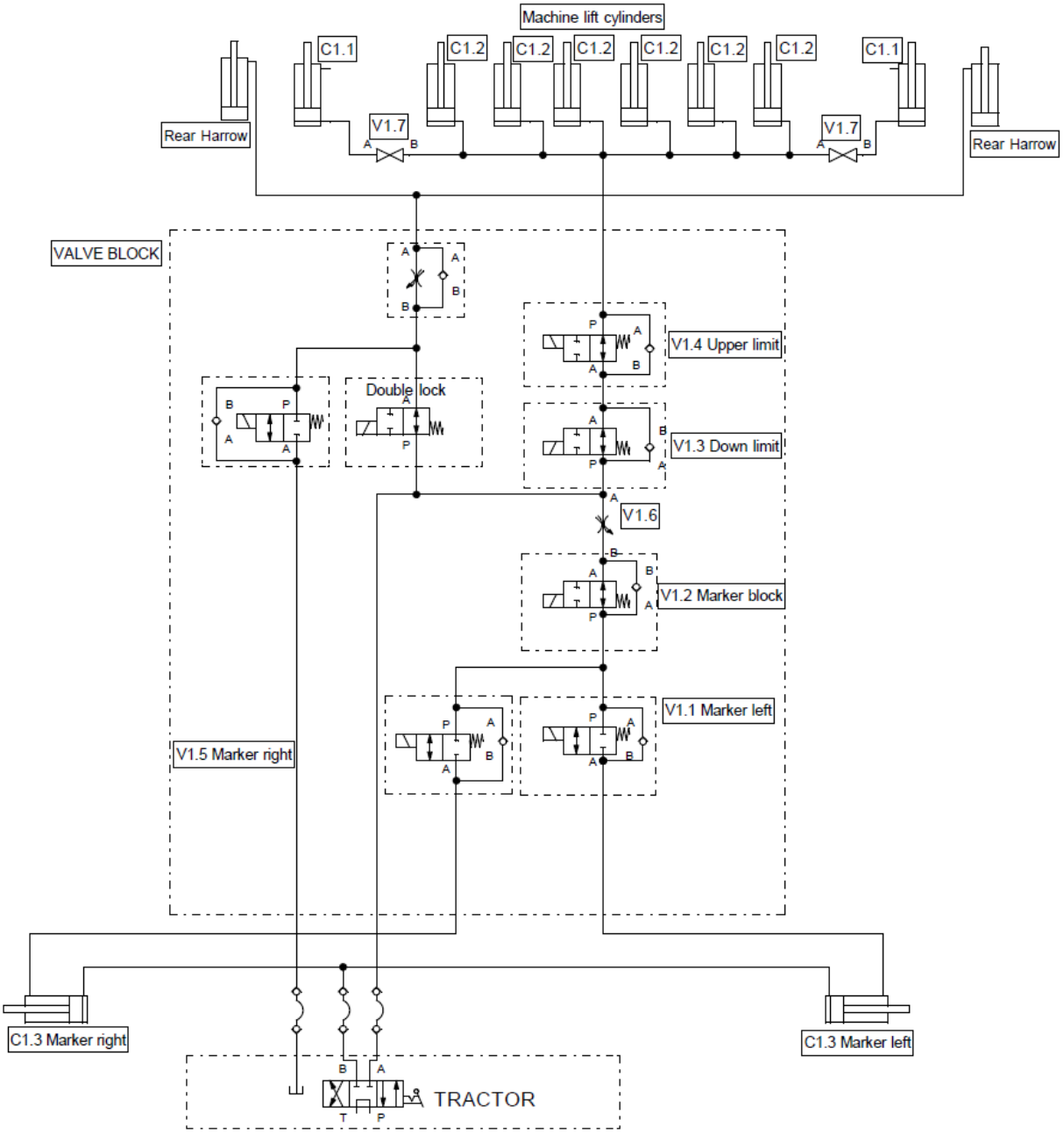


9. Remove the drive bolts 2 pcs, M12x75. Wrench 19 mm.

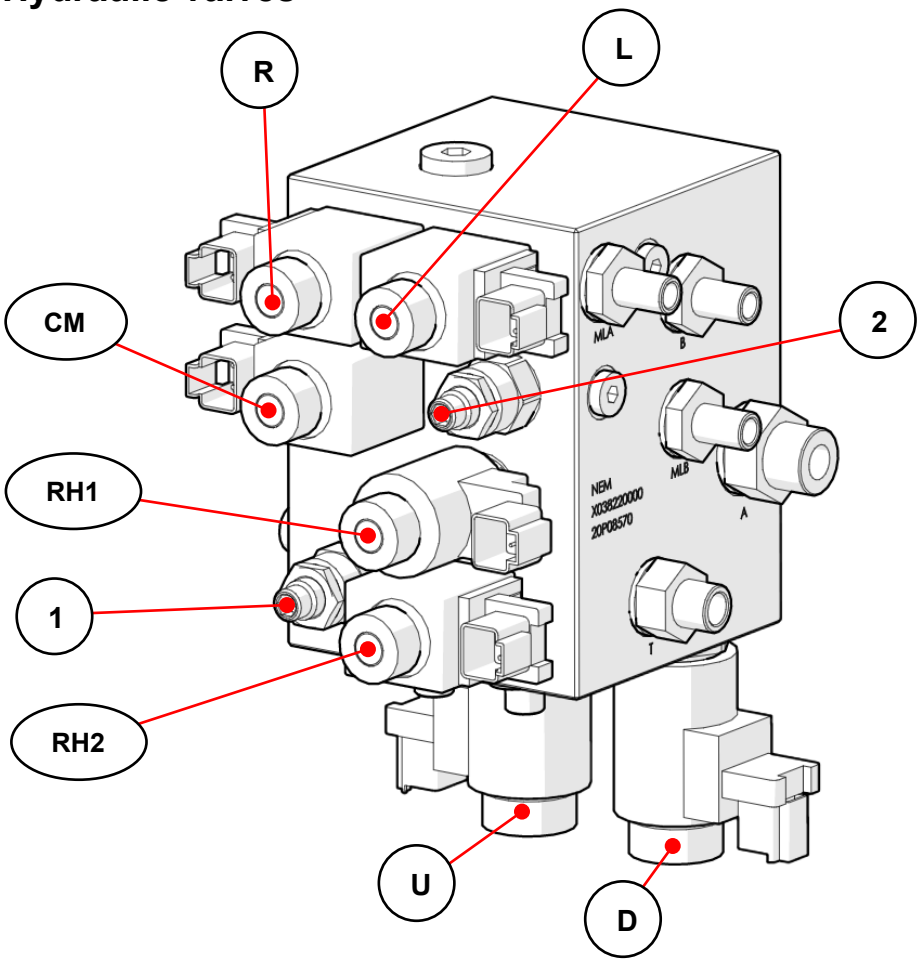
10. You can now remove the front coulter stem.

Assembly is done in reverse order.

2.7 Hydraulic diagram



2.8 Hydraulic valves



RH1 – Follow-up harrow control valve.

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

1 – Follow-up harrow pitch control valve.

2 – Marker pitch speed control valve.

CM – Marker rise prevention valve. Makes a delay in the increase of markers.

R – A real marker. Lowers the right marker down.

L – Left marker. Lowers the left marker down.

U – Upper limit. Stops the machine’s upward movement.

D – Lower limit. Stops the machine’s downward movement.

3. STORAGE

When the machine is not in use, it must be stored in a covered area cleaned and maintained. Lower the machine. Do not leave the machine to the tractor's hydraulics. The containers are emptied of fertilizer and seed.

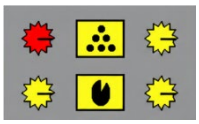
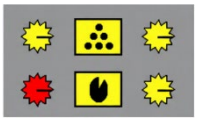
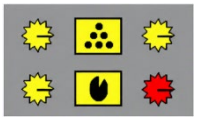
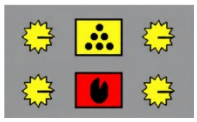
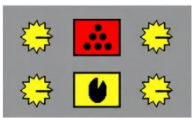
Wash the top and inside of the machine with water. Use the pressure washer with caution, (Max. water temperature 60 degrees, pressure 100 bar), do not direct the spray directly at the bearings. Lubricate the machine according to the instructions before leaving it in storage. Areas where the paint has worn off can be protected with anti-rust oil.

4. TECHNICAL SPECIFICATIONS

	Super Nova Combi 3000	Super Nova Combi 4000
Working width cm	300	400
Transport width, cm*	298	398
Filling height, cm	240	240
Length, cm*	605	605
Weight empty, kg*	3450	4450
Total hopper capacity, l	4020	5570
Seed capacity min/max, l	1545/2475	2140/3430
Fertiliser volume min/max, l	1545/2475	2140/3430
Row spacing, cm	12.5 or 16.7	12.5 or 16.7
Carrier wheels**	7.50-16 7 or 7.50–20 or 280/70-18	7.50-16 7 or 7.50–20 or 280/70-18
Coulter pressure/coulter max, kg	200	200
Number of coulters, pcs	18 or 24	24 or 32
Hydraulic couplings, minimum requirement	1×1 action 1x2 Function	1×1 action 1x2 Function
LS hydraulics	Accessory	Accessory
Power requirement, kW	66	88
Noise level	less than 70 dB (A)	less than 70 dB (A)

*Measurements from basic machines. Accessories may affect dimensions.
**The type of wheelset affects the available tyres

5. DISTURBANCES AND ALARMS

	Problem/Alarm	Cause	Solution
1		The left fertilizer shaft does not rotate.	Check the feed shaft, feeders, and transmission cassette. See table 5.
2		The left seed shaft does not rotate.	Check the feed shaft, feeders, and transmission cassette. See table 5.
3		The correct fertilizer shaft does not rotate.	Check the feed shaft, feeders, and transmission cassette. See table 5.
4		The right seed shaft does not rotate.	Check the feed shaft, feeders, and transmission cassette. See table 5.
5	The axle guard alarms in vain.	The axle guard sensor is set too far away.	Adjust the axle guard sensor.
6		The seed container is almost empty.	Fill the hopper.
7		The fertilizer hopper is almost empty.	Fill the hopper.
8	At a high seeding rate, the seeding rate is below the target.	Too high driving speed with the selected feed volume.	Check the maximum driving speed in the seeding profile settings. Slow down the driving speed or reduce the number of feeds.
9	Left wheel sensor alarm.	The left wheel sensor does not work.	Check the condition of the sensor. In the settings, turn off the left wheel sensor. The correct wheel sensor then controls the seeding across the entire width.
10	Correct wheel sensor alarm.	The correct wheel sensor does not work.	Check the condition of the sensor. In the settings, turn off the correct wheel sensor. The left-hand wheel sensor then controls the seeding over the entire width.

11	The Vantaa hose does not stay in the Vantaa pipe.	Alignment of the top end of the hose and/or the curvature of the hose.	Turn the hose and/or funnel from the top end to a different position and check the situation.
12	The machine does not start sowing.	1. Both halves on. 2. The machine does not detect the down position. 3. The task controller is on and the machine is in a place where it should not be drilled.	1. Disable halvings. 2. Check the operation of the altitude sensor. 3. Check the operation of the task controller.
13	One feed motor does not rotate.	1. Feed shaft/feeder stuck. 2. Electrical cord broken/bad connection. 3. The engine is broken.	1. Check and clean the feed shaft/feeder/chain cassette. 2. Check the motor connection. 3. Connect the feed shafts together with an intermediate sleeve and disconnect the wire and transmission cartridge of the broken engine.
14	The two feed motors do not rotate.	1. Seeding rate 0 kg/ha. 2. Feed shaft/feeder stuck. 3. Fuse blown.	1. Adjust the seeding rate. Select the correct calibration test memory location. 2. Check and clean the feed shaft/feeder. 3. Replace the fuse.
15	The hopper guard does not sound the alarm.	1. Alarm off. 2. The sensor is unresponsive.	1. Check the settings 2. Adjust the sensitivity of the sensor using the sensor screw.
16	The trail harrow does not rise up.	1. Half-lift on. 2. The throttle of the rear harrow cylinder is closed.	1. Turn off the half-lift 2. Open the throttle valve.
17	The trail harrow does not go down.	1. Half-lift on. 2. Joints are stuck. 3. Too much back pressure in free return.	1. Turn off the half-lift 2. Lubricate your joints. 3. Connect the free return to the depressurized line.
18	Markers (tough guys) don't alternate.	1. Only one switched on. 2. Automatic stopped. 3. The machine was not fully lifted.	1. Turn on both 2. Turn on the automation 3. Lift the machine fully up/half-lift at the headland.
19	The tramline phase will not change.	1. Set to 0/0. 2. Automatic stopped. 3. The machine was not fully lifted.	1. Change the tramline settings 2. Turn on the automation 3. Lift the machine fully up/half-lift at the headland.
20	The seeding rate differs clearly from the values in use.	1. Not doing the calibration test, or doing it incorrectly. 2. The wrong memory location of the calibration test is used.	1. Take a calibration test. 2. Select the memory location of the rotation experiment where the seed/fertilizer you are using is stored.

6. WARRANTY

Warranty period

Tume-Agri Oy's products are granted a two (2) year warranty. The warranty comes into effect from the date the machine is handed over to the end user. However, the warranty period expires no later than 36 months after delivery from the factory.

Warranty Matters

The warranty applies to proven defects in workmanship and materials. The warranty covers the defective part and the work of an installer authorized by Tume-Agri Oy to repair or replace it. Warranty work must be agreed upon with a representative of Tume-Agri Oy.

Things not covered by warranty

The warranty does not cover defects caused by normal wear and tear, negligence or improper use, improper self-installation, improper adjustment, or inadequate maintenance.

The warranty does not cover travel costs for minor labor, such as replacing a seal or tightening bolts.

The warranty is not valid if the machine has been modified so that it differs from its original shape, e.g. modifications, adjustments, additional constructions or replacements for spare parts or accessories other than the manufacturer's original ones.

The warranty does not cover indirect losses, such as working hours, travel expenses, possible effects on crops or contracts. The warranty also does not cover shipping damage, vandalism, theft, or similar damage.

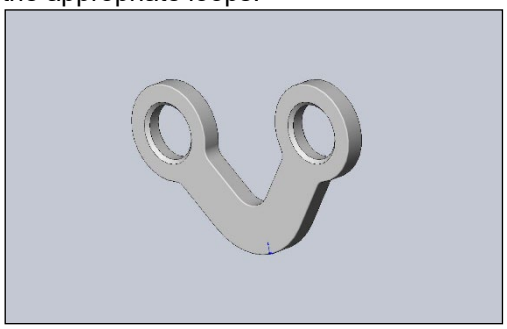
Warranty repairs do not extend the warranty period of the machine.

Report an error

The manufacturer must be informed immediately of the damage that has occurred, so that it is determined whether the matter is covered by the warranty.

Appendix 1. Loading and moving instructions

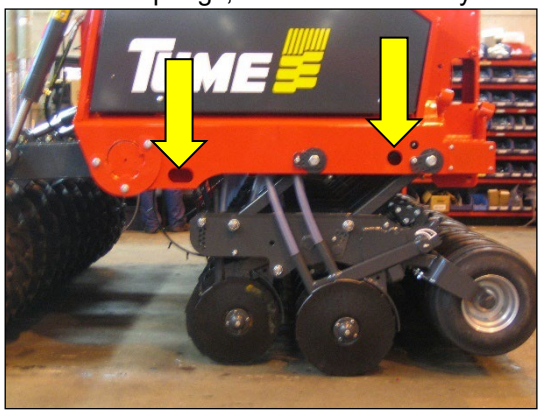
If the loading is carried out by lifting the machine, the lifting is done through the **holes in the middle wall inside** the machine's hopper with the appropriate loops.



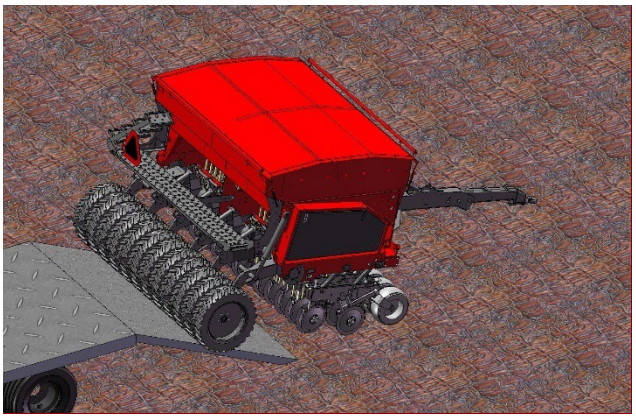
Or with just a chain.



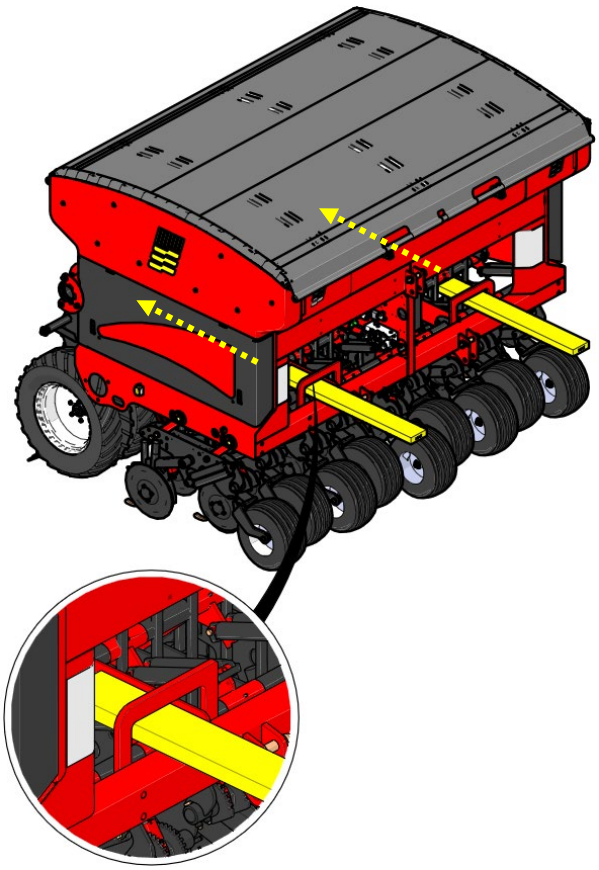
For transport, holes have been made at the ends of the machine to secure the load. Note that the coulter has springs, so the coulters may move.



The loading of the machine with a tractor must be carried out in such a way that **there must be a load-bearing chassis or ramp** under each pair of rear wheels of the machine.



The machine in the transport package can be lifted with a sufficiently sturdy forklift. The forklift tines are inserted into the fixed lifting loops under the hopper. The forklift tines must be long enough to reach the rear loops. Move the seed and fertiliser hoses out of the way of the forklift tines.



20. NOTES



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