MONOSEM

Enhanced precision

Operating manual: US

Please read carefully before assembling and using the machine

OMM900005A 2022

Valoterra

BY MONOSEM

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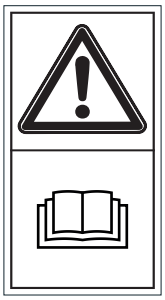
CONTENTS

1 - GENERAL SAFETY INSTRUCTIONS

1. General safety instructions



INTENDED USE OF THE MACHINE

▪ The seed planter may only be used for the work for which it was designed.
▪ Any damage related to the use of the machine outside the specifications of the manufacturer will not engage the manufacturer's responsibility.
▪ Any modifications to the machine are made at the user's own risk.
▪ Correct use of the machine requires:
- compliance with the manufacturer's instructions for use, care, and maintenance.
- mandatory use of spare parts, original accessories or accessories recommended by the manufacturer.
▪ Operation, maintenance, and repair shall only be carried out by competent persons who are informed of the dangers to which they are exposed.
▪ The user must comply with the regulation for:
- accident prevention
- safety at work (Labour Code)
- traffic (Highway Code)
▪ Make sure that the instructions provided with the machines are observed.
▪ Any modification to the equipment, without the written agreement of the manufacturer, engages the full responsibility of the owner.

PERSONNEL QUALIFICATION

▪ Improper use of the machine may result in serious injury or death.
▪ The machine may only be operated, maintained, and repaired by trained personnel who have been informed of the risks involved.
▪ The person must become familiar with the use of the machine before working with it. Getting familiar while working with it is too late.
▪ Persons working with the machine must be informed accordingly to carry out the various tasks (road transport, use and adjustment, operation, maintenance, fault finding and troubleshooting, etc.).
▪ The person must be able to understand the operation of the machine and be able to identify and avoid the dangers associated with its use.
▪ The person is familiar with the safe operation of agricultural machinery.
▪ For driving on the road, the person has the compulsory approved driving licence.
▪ Certain care and maintenance work may only be carried out by a specialist workshop.

DANGER FOR CHILDREN

▪ Children cannot estimate danger and may behave unpredictably, so they are particularly at risk.
▪ Keep children away from the machine.
▪ Before getting out of the cab, bring the tractor to a standstill.
▪ Before initiating any movement by the machine, ensure that there are no children in the danger zone.

PERSONAL PROTECTIVE EQUIPMENT

▪ Wearing personal protective equipment is an important part of personal protection.
▪ Missing or incomplete personal protective equipment increases the risk of health consequences.
▪ The user must avoid wearing loose clothing that could be caught by moving parts.
▪ Use suitable, close-fitting clothes that are close to the body and in perfect condition.
▪ Determine the personal protective equipment required for each intervention and make it available.
▪ Also observe the manufacturer's regulations when handling hazardous materials.
▪ Lists of necessary equipment: safety shoes, protective gloves, protective goggles or visor, respiratory protection mask, hearing protection helmet, suitable protective clothing.
▪ Do not wear a ring or other jewellery.

TRANSPORTING PASSENGER ON THE MACHINE

▪ The transport of people and animals during work or road transport is prohibited.
▪ Persons or animals can fall due to the movements of the machine and be seriously injured or killed.

ROAD SAFETY

▪ Observe the regulations of the Highway Code when driving on public roads.
▪ It is important to be aware of the machine's gauge and to consider the transport height, especially when crossing bridges and power lines.
▪ Axle loads, tyre load capacities and permissible weights must be observed.
▪ The front axle must always have a load of at least 20% of the tractor's unladen weight.
▪ Put the machine in the transport position according to the instructions before driving on public roads.
▪ Put the parking supports in the transport position.
▪ Set up and check the regulatory equipment during transport: lighting, signalling, etc.
▪ Adapt the speed and driving style to the terrain conditions. Consider the road, traffic, visibility, and weather conditions, avoid sudden changes in direction, consider the large overhang and the mass inertia of the mounted implement.
▪ Handling, steering, and braking are impacted by mounted and towed implements. For these reasons, be vigilant and ensure that you have sufficient control over the steering and braking systems.
▪ Always drive with empty hoppers.
▪ The tractor distributor must not be in the centre open position (float position) during road transport.
▪ All electronic control equipment in the tractor cab must be switched off before starting transport.

SAFETY WHILE OPERATING

- Observe the regulations of the Highway Code when driving on public roads.
- Before starting up and commissioning, make sure that nobody is in the vicinity of the machine and that there is sufficient visibility.
- It is absolutely forbidden to take passengers on the machine.
- Never leave the driver's cab while the tractor is in motion.
- Before working on the machine, make sure that it cannot be started up accidentally.
- Make sure that the protective devices are in place and in good condition before each use.
- Check the state of wear of the tools and their fastening.
- Before each use, check the tightness of the screws and nuts.
- Do not stand in the work area of the machine.
- There may be crushing and shearing zones on remote-controlled components, particularly those that are hydraulically controlled (chassis, furrowers, etc.).
- The remote controls (ropes, hoses, etc.) must be positioned in such a way as to avoid accidental activation of a manoeuvre that could lead to a risk of accident or damage.
- Be sure to turn off the engine, remove the ignition key and wait for all operating parts to come to a complete stop before leaving the tractor or performing any operation on the machine.
- When servicing, do not stand between the tractor and the machine without first applying the parking brake and/or placing wheel chocks under the wheels.
- Backing-up manoeuvres must not be carried out in the lowered position, as there is a risk of breakage and jamming of equipment in contact with the ground.
- In the event of a blockage, the PTO must be disengaged, the engine switched off and the ignition key removed before any maintenance work is carried out.

COUPLING THE MACHINE TO THE TRACTOR

- Coupling operations must be carried out with caution.
- Couple and transport the machine only with a suitable tractor.
- Couple the machine to the coupling points provided for this purpose in accordance with the standards in force.
- Before coupling the machine, make sure that the front axle of the tractor is properly ballasted.
- When coupling or uncoupling the machine to or from the tractor, the control lever for the hydraulic lift must be positioned in such a way that it cannot be raised.
- When coupling the machine to the tractor's 3-point linkage, the diameters of the pins or trunnions must correspond to the diameter of the tractor's ball joints.
- Risk of crushing and shearing in the 3-point lifting area.
- When operating the external control lever of the power lift, keep away from the area between the tractor and the machine.
- When transporting the machine, ensure that it is stabilised by means of the lifting linkages to prevent it from rubbing or moving sideways.
- When transporting the machine in lift-up mode, ensure that the lift control lever is locked.

UNCOUPLING THE MACHINE

- Uncoupling operations must be carried out with caution.
- Only park the machine on a flat and stable surface.
- When uncoupling, make sure that the supports are correctly positioned for good stability of the machine.
- Uncoupling the machine from the tractor or transport trolley: always store the machine unfolded.
- Be particularly careful when backing-up. It is forbidden to stand between the tractor and the machine.
- Secure the tractor to prevent it from moving.
- Never uncouple the machine when the hopper is full.
- Secure the machine with blocks to prevent it from moving.

HYDRAULIC CIRCUIT

- The hydraulic system is pressurised.
- When installing hydraulic jacks or motors, make sure that the circuits are properly connected in accordance with the manufacturer's instructions.
- Check that the circuits on the tractor side and on the machine side are not pressurized before any hose connection to the hydraulic circuit of the tractor.
- To avoid the risk of function reversal or connection errors, we recommend following the identification marks on the hydraulic connections between the tractor and the machine.
- Check the hydraulic hoses once a year:
  - injury and porosity of the outer layer
  - deformation with and without pressure
  - condition of fittings and joints
- The hoses must be replaced before 6 years of use and in accordance with the manufacturer's recommendations.
- If a leak occurs, make sure you take steps to avoid accidents.
- Any fluid under pressure, such as oil in the hydraulic system, can cause serious injury, puncture the skin, etc. In the event of injury, contact a doctor immediately to avoid the risk of infection.
- The machine must be lowered, the circuit depressurised, the engine switched off and the ignition key removed before carrying out any work on the hydraulic system.
- The tractor control unit must not be in the centre open position (floating position) during road transport.

DRIVERS (Power take-off and universal joint shafts)

- Make sure to use the universal joint shafts supplied with the machine or recommended by the manufacturer.
- Make sure that the PTO and drive shaft guards are in good condition and correctly fitted.
- Make sure that the tubes of the PTO drive shafts are properly coated in both working and transport positions.
- Make sure to disengage the PTO, switch off the engine, and remove the ignition key before connecting or disconnecting a PTO drive shaft.
- In the case of a transmission shaft with a torque limiter or a free wheel, they must absolutely be mounted on the machine's power take-off shaft.
- The assembly and locking of the universal joint shafts must be carried out correctly.
- The protective housings of the universal joint shafts must be prevented from rotating by means of chains.
- Check that the chosen speed and direction of rotation of the PTO conforms to the manufacturer's recommendations before engaging the PTO.
- Engage the PTO if you are sure that there are no people or animals near the machine.
- Disengage the PTO if the limits of the PTO shaft angle recommended by the manufacturer are likely to be exceeded.
- After the PTO has been disengaged, do not approach the PTO until it has come to a complete stop, as units may continue to rotate for a few moments.
- The universal joint shafts must be placed on their support when removing the machine.
- Cover the PTO drive shaft of the tractor PTO with its protective cap after it has been disconnected.
- Any damaged PTO and PTO shaft guard must be replaced immediately.

NOISE PROTECTION

- When the PTO is switched on, wear a hearing protection helmet.
- The noise level range depends on many factors such as machine configuration, machine condition and maintenance level, floor surface, working environment, operating cycles, ambient noise, as well as the equipment used.
- Exposure to high noise levels can cause hearing problems, including deafness.
- Always protect yourself against noise. To protect yourself from annoying or damaging noise, wear hearing protection such as ear protectors or earplugs.

DANGER ZONES

▪ The area shown in the diagram indicates the danger zone of the machine.
SEED PLANTER WITH DANGER ZONE DIAGRAM
▪ Failure to respect the danger zone can result in serious injury or death.
▪ Keep people away from the danger zone.
▪ Only move the machine when no one is in the danger zone.
▪ Operate the machine's various equipment only if no one is in the danger zone.
▪ When working on the machine, even for short periods of time or for close visual inspections, secure the tractor and the machine.
▪ Do not park in the zone of action of the furrowers.

OVERHEAD LINES

▪ Observe the maximum possible height of the three-point linkage.
▪ When folding and unfolding, ensure sufficient distance from power lines.
▪ Never get on or off the machine under power lines to avoid the risk of electric shock due to voltage discharges.
▪ When working, make sure you keep a sufficient distance from power lines.

FERTILIZERS AND TREATED SEEDS

▪ Only use fertilisers and seeds that meet the requirements.
▪ Avoid all contact, direct or by inhalation, with the products. Observe the instructions of the manufacturer of the supplies.
▪ Revise the use of damp fertilizer or seed to avoid blockage in the box or hopper.
▪ It is always recommended to mix talcum powder with the seeds to reduce friction between seeds.

MAINTENANCE AND REPAIR INSTRUCTIONS

▪ Make sure to switch off the engine, remove the ignition key and wait for all moving parts to come to a complete stop before leaving the tractor or performing any operation on the machine.
▪ The PTO must be disengaged, the engine switched off and the ignition key removed before carrying out any maintenance, servicing, or repair work on the machine.
▪ Screws and nuts must be tightened regularly. After the first hours of use (4 hours), all screws must be retightened. Repeat the operation every 80 hours.
▪ Before carrying out any maintenance work on a raised machine, first support it.
▪ Do not work under the machine without securing it.
▪ Do not use the lifting eye to lift the machine when it is loaded.
▪ Wear gloves and use only the correct tools when replacing a working part.
▪ It is prohibited to throw away oil, grease, or filters in consideration of the environment.
▪ The power source must be disconnected before any work is carried out on the electrical circuit.
▪ Parts subject to wear and tear should be checked regularly and replaced if worn or damaged.
▪ The use of MONOSEM spare parts is mandatory, as these correspond to the characteristics defined by the manufacturer.
▪ The alternator and battery cables must be disconnected before any electrical welding work is carried out on the tractor or coupled machine.
▪ Only qualified personnel may carry out repairs involving parts under voltage or pressure.

ENVIRONMENTAL PROTECTION

▪ Consumables such as hydraulic oil, lubricants, etc. can harm the environment and people's health.
▪ Make sure that used grease and substances such as oils, fats, or product residues after use are not spilled on the ground and are not disposed of in the sewer system.
▪ Absorb spilled consumables with absorbent material or sand, collect them in a leak-proof container and dispose them in accordance with legal requirements.
▪ Observe the instructions of the manufacturer of the consumables.
▪ Intervene when the weather conditions are favourable for the maximum efficiency of the phytosanitary product used, limiting the impact of this product on the environment as much as possible.

SPARE PARTS

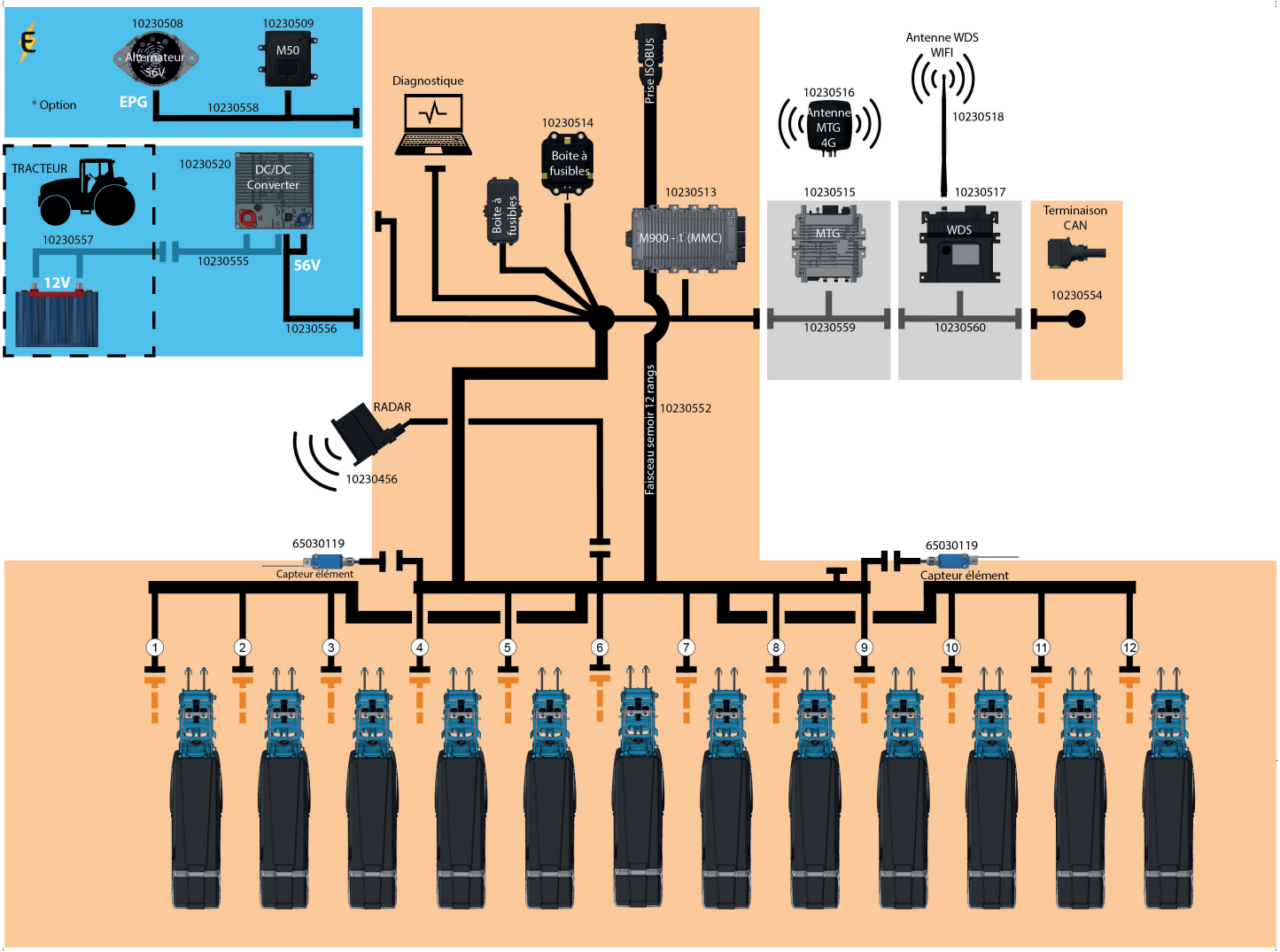
▪ The use of MONOSEM spare parts is mandatory, as these correspond to the characteristics defined by the manufacturer.
The installation or use of parts that are not original MONOSEM parts may, in some cases, endanger the safety of people and the machine.
▪ The company Ribouleau MONOSEM cannot be held liable for damage due to the use of non-original parts and accessories.
▪ If in doubt about the assembly of equipment and spare parts, contact your dealer or the MONOSEM customer service department.

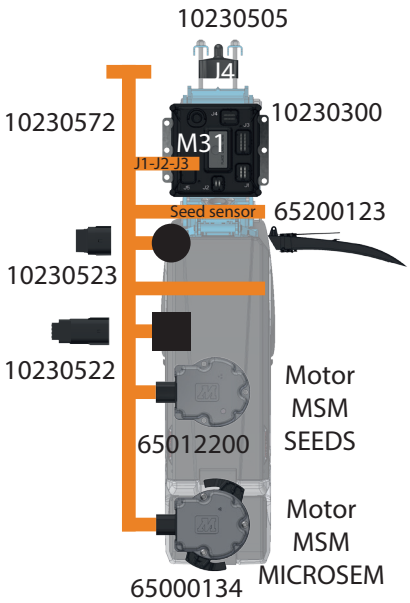
MODIFICATIONS TO THE MACHINE

▪ Construction modifications that are not authorised by MONOSEM may affect the correct operation and safety of the machine.
▪ The user or owner is responsible for any modifications to the machine that are not approved by MONOSEM.
▪ MONOSEM cannot be held liable for damage to persons or damage to property resulting from unauthorised modifications.

2 - VALOTERRA general planter architecture

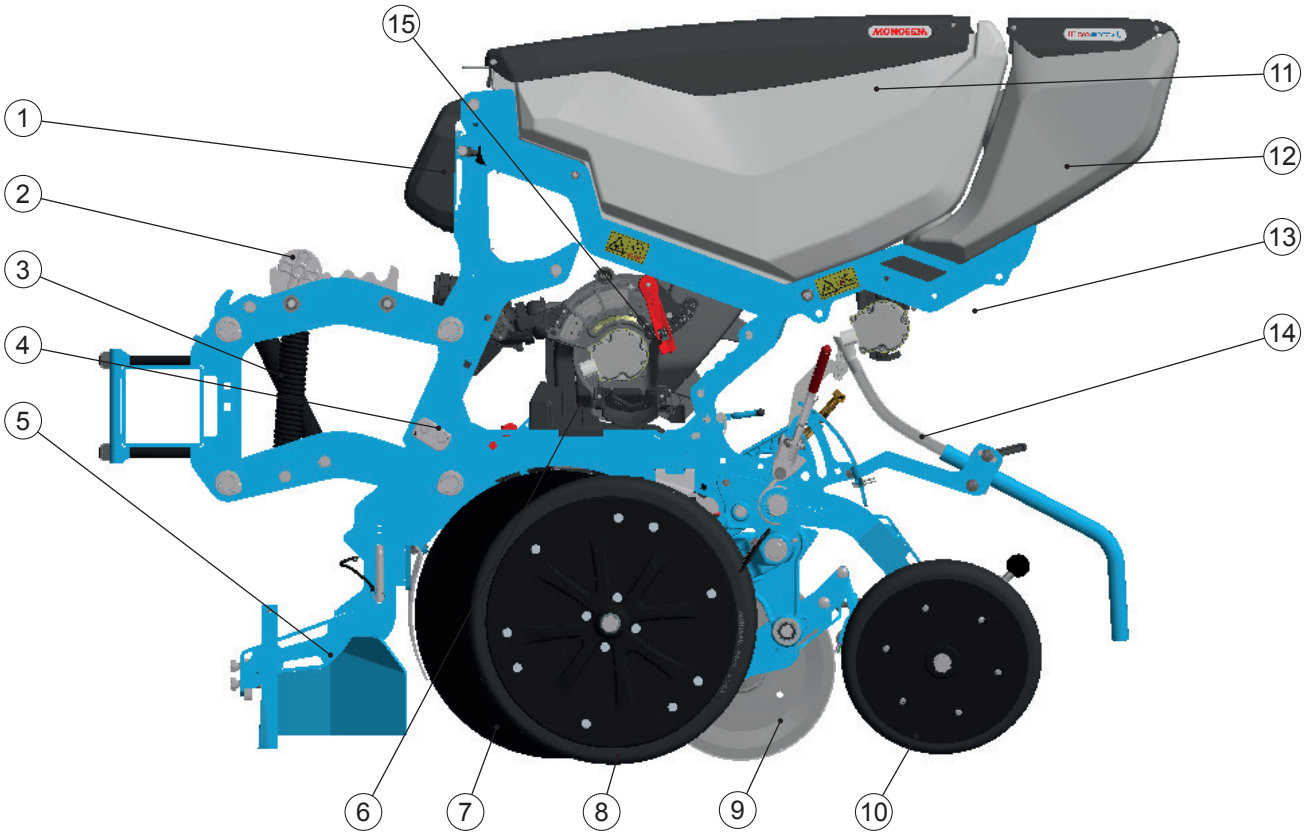
2.5 - VALOTERRA general architecture "12-row"

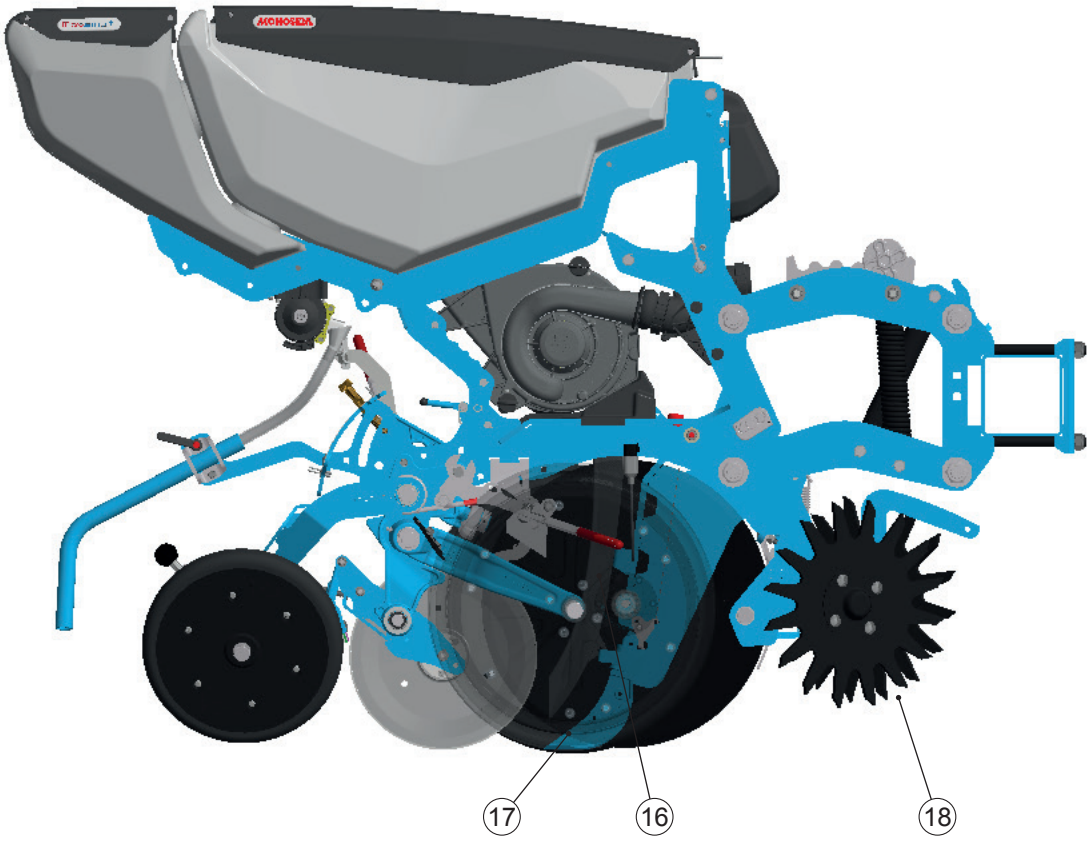




3 - VALOTERRA METERING UNIT

3.1 - Views of the ValoTerra metering unit



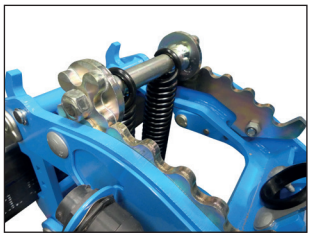
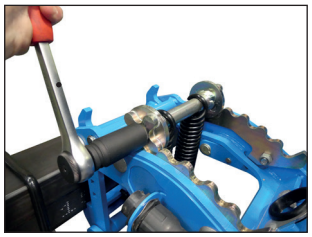
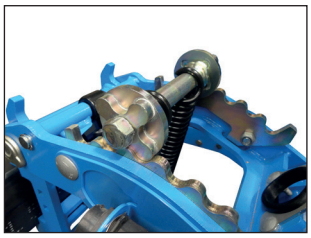
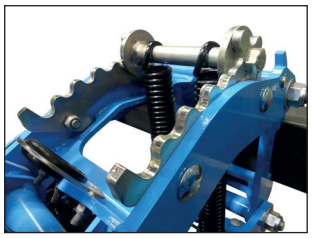


3.1 - Views of the ValoTerra metering unit

Description of the ValoTerra metering unit:

① - Unit ECU with plastic housing
② - Spring-loaded unit pressure adjustment system
③ - Shock absorber
④ - Unit bottom stop
⑤ - Front clod remover
⑥ - Protective sensor cover
⑦ - Opener discs
⑧ - Gauge wheel
⑨ - Press wheel
⑩ - Rear closing wheel unit with 2" wheels
⑪ - Seed hopper (approximately 70L capacity)
⑫ - MicroSmart hopper (approximately 20L capacity)
⑬ - MicroSmart microgranulator
⑭ - MicroSmart drop tube
⑮ - Row monitor
⑯ - Chute sensor
⑰ - Furrowing tip
⑱ - Front rotating trash wheels

3.2 - Adjusting ground pressure

Presentation:

- Two large tensioned springs allow adjustment of the metering unit's ground pressure.
- A pivoting rack and pinion system allows several adjustment positions.
- 4 possible positions.
- Each position increases or reduces the pressure by approximately 30kg compared to the previous position.

Adjustment:

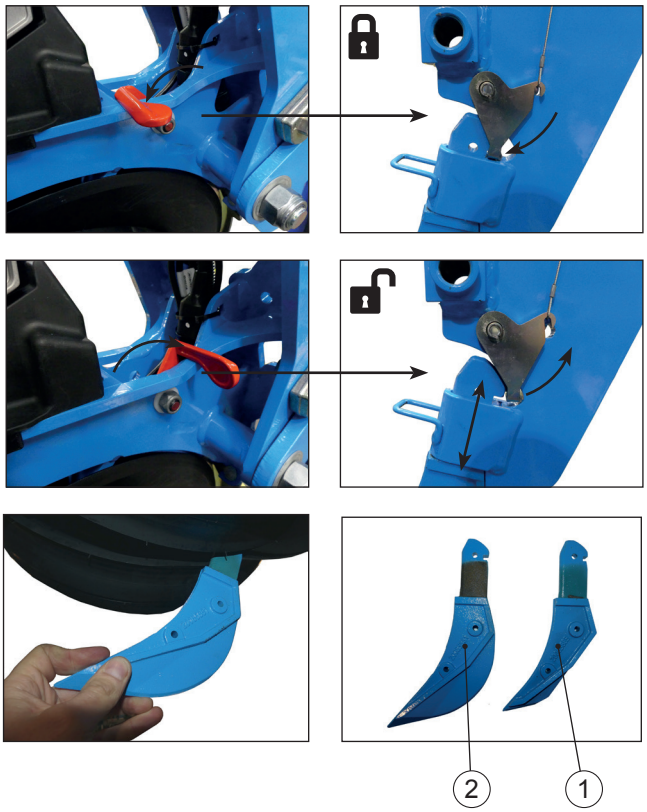
- Perform with the planter raised.

Risk of trapping.

▪ Adjustment can be performed to the right or left of the unit depending on the available space. This makes the process faster and easier.

- Forwards, reduced ground pressure.
- Forwards, increased ground pressure.

3.3 - Furrowing tip installation



Presentation:

- The tip is used to finish the furrow bottom for optimal seed placement. It is easy to remove using its quick locking system.

Description:
① - Short tip
② - Long tip

Benefits:
- Can be installed tool-free by hand.
- No need to remove the gauge wheel or opener disc.

Tip locking system:
The red lever is used to lock or unlock the tip.
- Pull backwards to lock the tip.
- Pull forwards to release the tip.

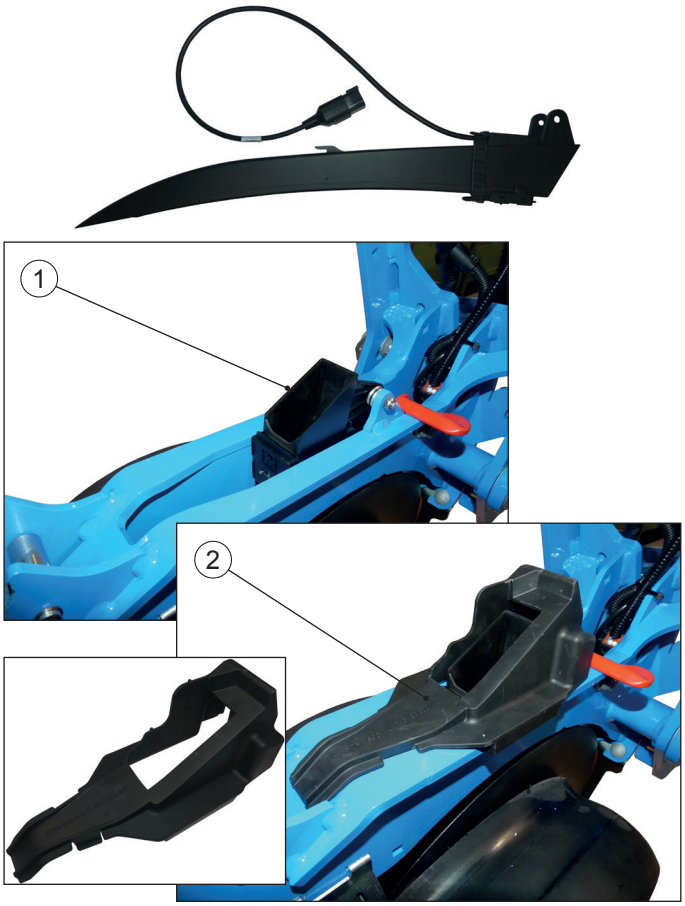
Installing the tip:
- Move the red lever to its rear position. Insert the tip between the two discs and, by touch, slip the tip head as far as it will go into the U-shaped slot to automatically lock it.

▪ Check that the tip is still free with a small amount of clearance.

▪ Check that all the tips are properly engaged prior to operation (with the planter raised).

▪ Check the tip for wear every 50 hours.

3.4 - ValoTerra TT2 V4 seed sensor



Presentation:

- The specially designed curved drop tube guides the seeds gently into the furrow.
- The integrated sensor at the top of this chute is used to monitor seed flow.
- A rubber cover conceals the upper section of the chute and protects the sensor from any light-related disturbances.

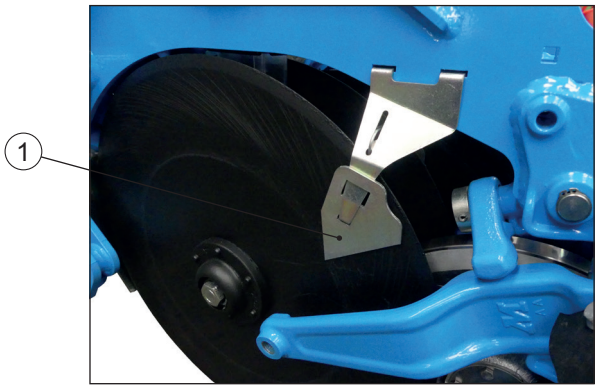
Assembly:

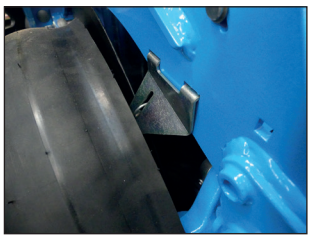
▪ Raise the hopper assembly and lock it in position for safe handling.

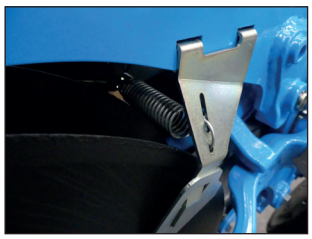
- Use a 10mm spanner to remove the pin
- The chute ① should be installed between the two furrow opener discs.
- The rubber cover ② fits naturally on top of the sensor.

▪ Never reverse with the planter resting on the ground. There is a risk of clogging the chutes in the bottom section. If this manoeuvre is performed accidentally, we strongly advise checking all the chutes in the bottom section.

3.5 - Replacing the disc opener scrapers







Presentation:

The scrapers clean the outside of the disc openers.
It is important to check the scrapers for wear and replace the lower part if it is worn.

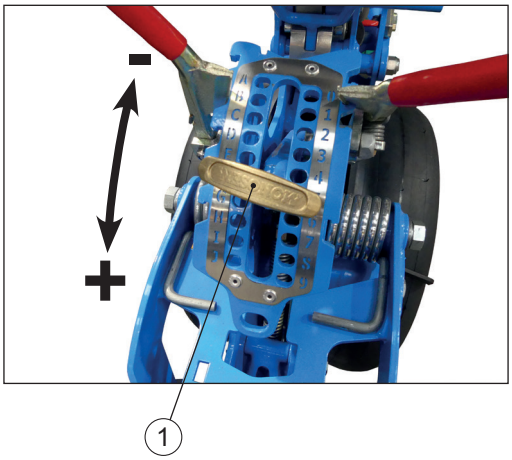
Replacement:

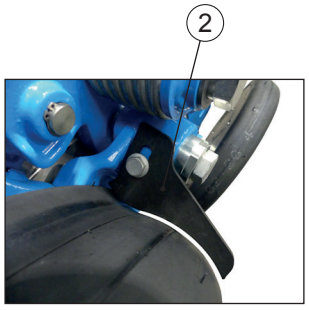
- When replacing scrapers, remove the gauge wheel and use a ratchet handle with a 24mm socket (right-threaded both sides).

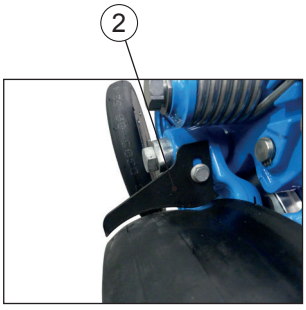
Benefits:
- Scrapers ① can be replaced tool-free.

▪ Check the tension of the spring after refitting it. It should bring the two scrapers into contact with each disc.

3.6 - Adjusting planting depth







Presentation:

Planting depth is adjusted using a lever that alters the height difference between the 2 gauge wheels and the furrow-opening discs.
The notched adjustment system is quick and easy to use.
Notches are identified by letters and numbers to simplify adjustment.

Adjustment:

- Pull lever ① downwards to increase the depth (+).
- Pull lever ① upwards to reduce the depth (-).
- The gauge wheel scrapers ② are adjusted using a 13mm wrench.
- Allow for 3-4mm clearance from the wheel.

▪ It is important to check the scrapers for wear and replace them if they are worn.

▪ Please note that the depth increment value is 3/8" for: A0➞B1; B1➞C2; C2➞D3, etc.

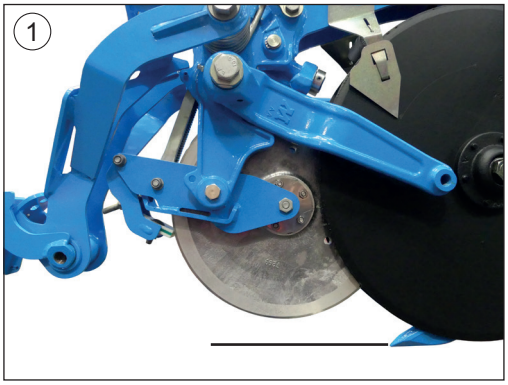
▪ An intermediate 3/16" increment can be achieved by positioning the lever diagonally.

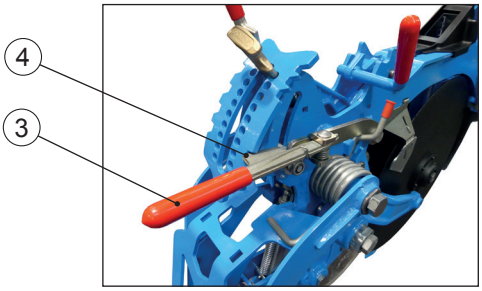
▪ Units should be adjusted to suit planting conditions.

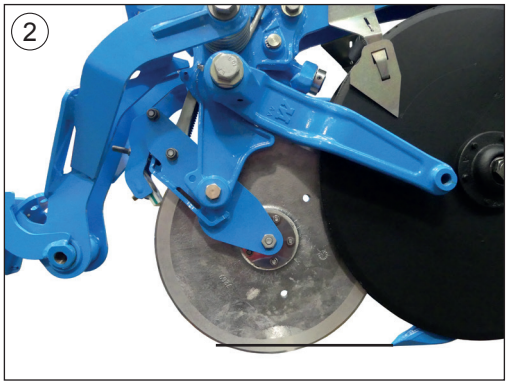
▪ Position A0 should be used if the unit is left standing for long periods or stored over winter.

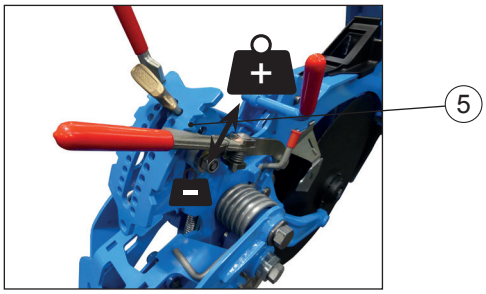
▪ The equaliser can be replaced if it is worn and the gauge wheel arms can also be switched if they are worn.

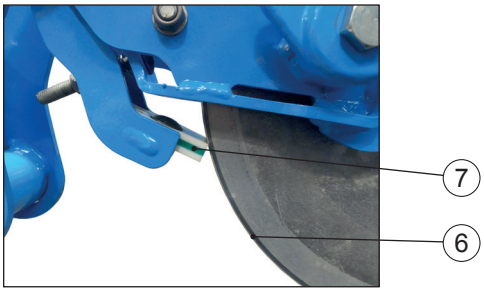
3.7 - Adjusting and retracting the PRO wheel











Presentation:

- The wide PRO wheel has a large diameter, enabling quality pressing and superior seed placement. By improving seed-soil contact, it ensures faster and more even emergence.
- This pressing wheel is suitable for relatively dry soil and all seeds.
- On soil that is too damp, there is always potential for the wheel to jam. If the conditions are not appropriate for using the PRO wheel, it can be retracted very quickly using a lever.

- The PRO wheel is fitted with a stainless steel band ⑥ and a plastic scraper ⑦.

Description:

① - Retracted position
② - Planting position
- The different PRO wheels available:
  - Aluminum PRO wheel with stainless-steel band
  - Cast-iron PRO wheel with stainless-steel band
  - Flexible self-cleaning PRO wheel (cool and damp soil)

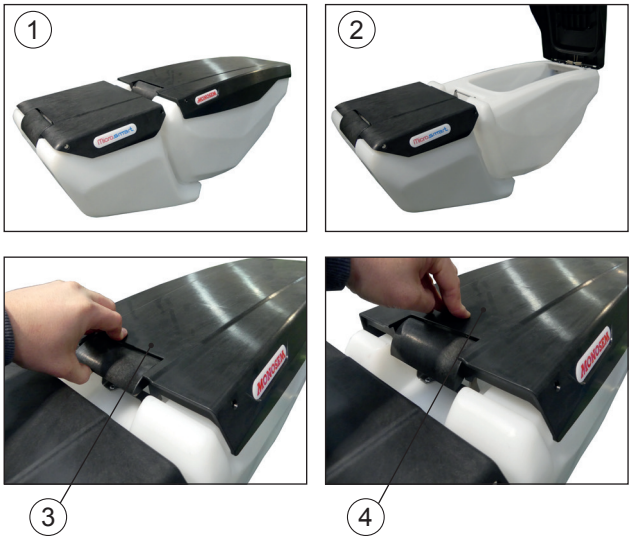
Adjustment:

③ - The lever on the right is used for maneuvering the PRO wheel.
④ - The bottom notch is used to retract the PRO wheel.
⑤ - The 3 top notches are used to adjust the wheel's pressure
  - Upwards = increased pressure
  - Downwards = reduced pressure

The scraper ⑦ should brush against the wheel's stainless-steel band ⑥. Use a 13mm wrench for adjustment.

- When the scraper becomes worn, it can be turned around to use a new surface (4 positions possible before it is totally worn).
- When using a flexible PRO wheel, allow 5mm clearance between the scraper and the flexible wheel.

3.8 - Seed hopper cover



Description:

① - Hopper cover closed
② - Hopper cover open

Opening the cover:

- Pull the handle ③ upwards to release the hooks.
- The cover remains in its open position due to the spring's torsion effect.

Closing the cover:

- Lower the cover and apply pressure ④ to the top to automatically lock the hooks.

Filling the hopper:

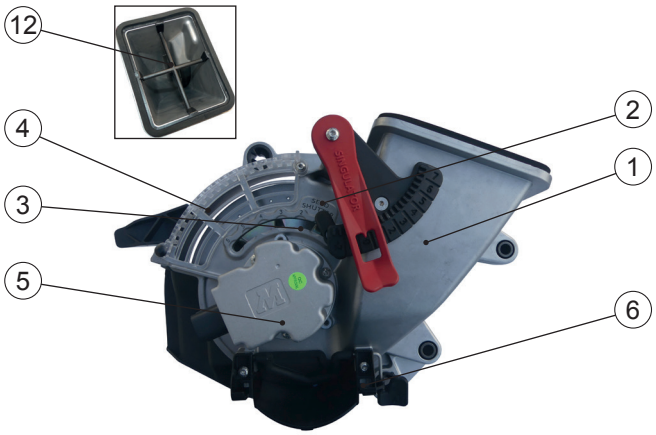
- Prior to filling:
  - ▪ Check that there are no foreign objects in the hopper.
  - ▪ Check that the seed disc is in position.
  - ▪ Check that the emptying shutter in the metering box is properly closed.

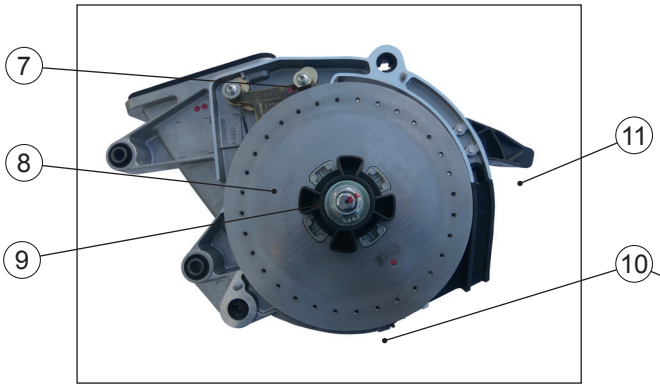
- Repeat this process for each hopper.

▪ When performing cleaning and maintenance, it is essential to wear suitable protective clothing (gloves, overalls, safety goggles and mask).

▪ You should also follow the seed manufacturer's safety advice.

3.9 - Metering box

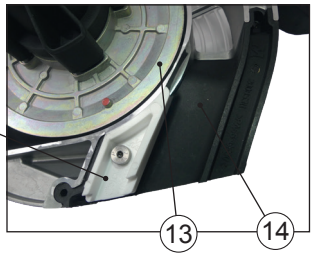




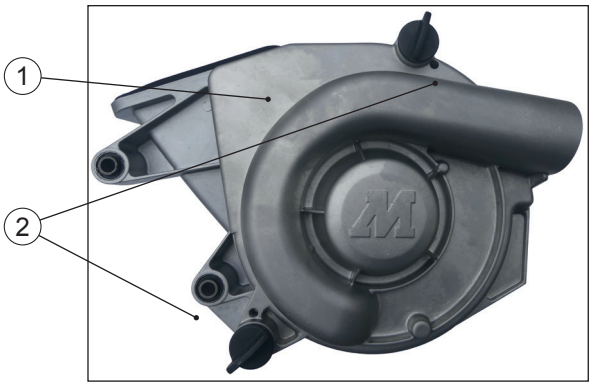
Description of the seed metering box:

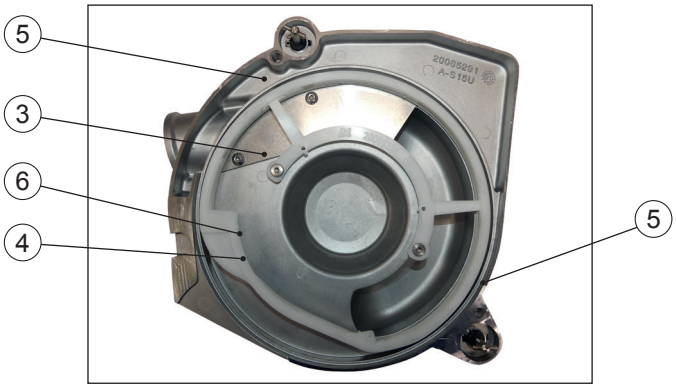
① - Box body
② - Seed selection adjustment handle
③ - Seed flow adjustment handle
④ - Viewing hatch
⑤ - Seed disc drive motor
⑥ - Emptying shutter
⑦ - Seed selector (one for all seed types)
⑧ - Seed disc
⑨ - Disc lock
⑩ - Seed ejector
⑪ - Positioning guide
⑫ - Guard blocking access to the bottom of the box
⑬ - Seed agitator (one for all seed types)
⑭ - Ejector support

▪ Be careful of the metering box during static testing. Never reach down to the bottom of the hopper with your fingers, as there is a risk of injury from rotating parts.



3.10 - Metering box cover





Description of the metering box cover:

① - Cover body
② - Cover locking buttons (quarter-turn)
③ - Cover partition for airflow
④ - Floating insert with seal
⑤ - Centring holes for positioning the cover
⑥ - Spring for the floating insert (not visible in this view)

Use:

- Centring pins on the metering box ensure that the cover is fitted in the correct position.
- Turn the locking buttons a quarter turn when fitting or removing the cover ②.
- The floating insert cuts off the suction from the disc's holes and releases the seed into the chute.

▪ Two centring pins ⑤ on the metering box are used for guiding the cover to its correct position.

▪ An indicator on the insert can be used for checking wear. If the indicator is no longer visible, the floating insert must be changed.

▪ It is easier to fit and remove the cover when the hopper is raised.

3.11 - Assembling the seed disc

1

2

3

Assembly:

① - Open the cover and take the disc in your hand.
② - Position the seed disc. A locating hole helps you put the disc on the right way. There is only one possible position (with the engraving facing the user).
③ - Lock the disc by turning the plastic handle a half quarter turn "≈ 22.5°".

▪ Do not turn the plastic handle if the disc is not in place.

▪ A wide range of seed discs is available. When choosing a disc, please refer to the recommendation table to ensure you choose the right disc for your seed type.

▪ A reference number on the disc indicates the number of holes and the hole diameter (e.g.: "3225" 32 holes diam. 2.5 mm).

▪ The metering box has one agitator for all seed types.

▪ Never drill the discs to increase the diameter of the suction holes. This may significantly reduce planting precision.

▪ When changing crops, we recommend numbering the discs to determine their respective locations.

▪ Before performing any work on the machine, switch off the tractor engine, remove the ignition key and apply the handbrake.

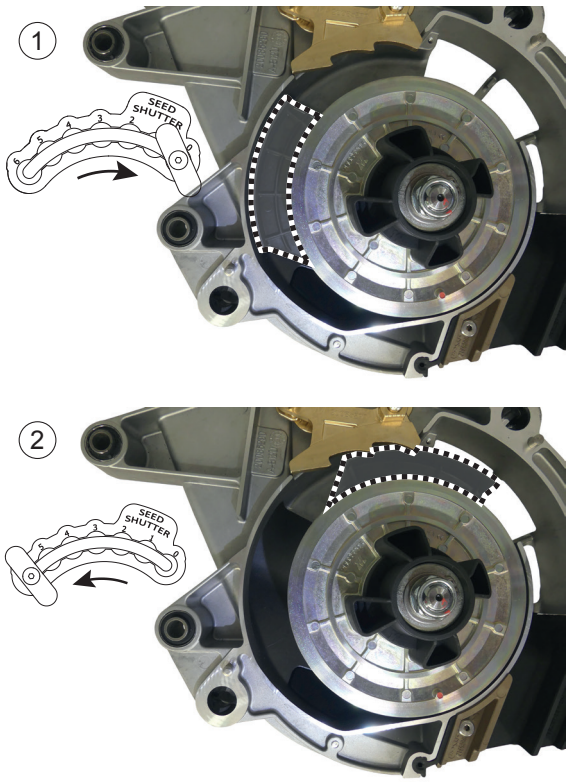
▪ The recommended settings shown in the table below are provided for information only. They should only be used as a basis for field testing.

▪ MONOSEM cannot be held liable for users selecting inappropriate settings. Settings are left to users' discretion.

Seed disc recommendation table

Disc reference	Seed type	Number of holes	Hole diameter (mm)	Recommended seed flow (0 → 6)	Recommended selector (-2 → 7)
23086013	Squash	6	3.5		
23086012	Cotton	12 x 3	3		
23086016	Cucumber	32	1.6		
23085931	Sugarbeet	32	2		
23086075	Sunflower	32	2.2		
23085937	Sunflower	32	2.5		
23086010	Sweetcorn	32	3.3		
23086011	Cotton	32	3.5		
23085936	Sweetcorn	32	3.7		
23086072	Maize	32	4		
23086071	Maize	32	4.5		
23085930	Maize	32	5		
23085930	Broad beans	32	5		
23085935	Peanuts	32	6.5		
23086076	Chickpeas	56	4.5		
23085933	Rapeseed	60	1.2		
23086078	Sorghum	72	2		
23086017	Sorghum	72	2.2		
23086079	Soyabeans	72	4		
23085939	Soyabeans	72	4.5		
23086014	Rice	72	1.6		
23086015	Canola	100	1		
23085932	Rapeseed	100	1.2		

3.12 - Adjusting seed flow



Presentation:

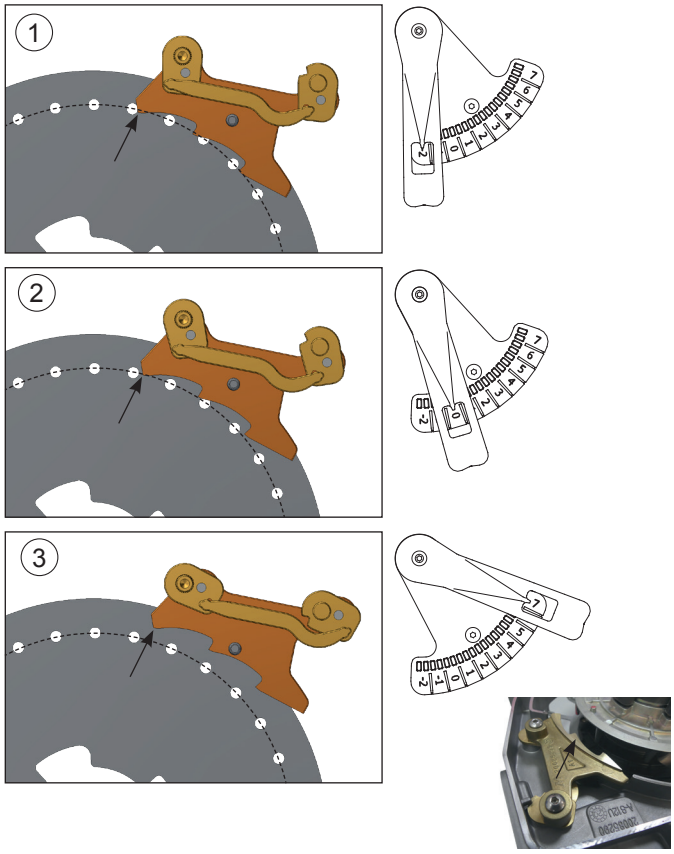
Using an adjustable shutter in the box, it is possible to control seed flow based on size, planting speed and planting density, and thus prevent jamming or compacting of seed in the metering box.
Pull the lever and move it to the required position (0 → 6).

Adjustment:

① - Position 0: the shutter is fully closed.
This position stops the seed feed to the box for maintenance without having to empty the entire hopper.
② - Position 6: the shutter is fully open.

- There are 5 intermediate shutter opening positions.
- It is easier to perform adjustments when the hopper is raised.
- Poor seed flow to the metering box may disrupt seed selection. Settings should be adjusted for undulating, sloping or stony ground.
- Set the seed flow shutter to 6 to facilitate emptying.
- Do not forget to adjust the seed flow shutter after emptying!

3.13 - Seed selection adjustment



Presentation:

The selector selects seeds on the seed disc (based on their size). It is adjustable, which means its position can be altered in relation to the disc's holes, thus correcting duplicates or omissions.

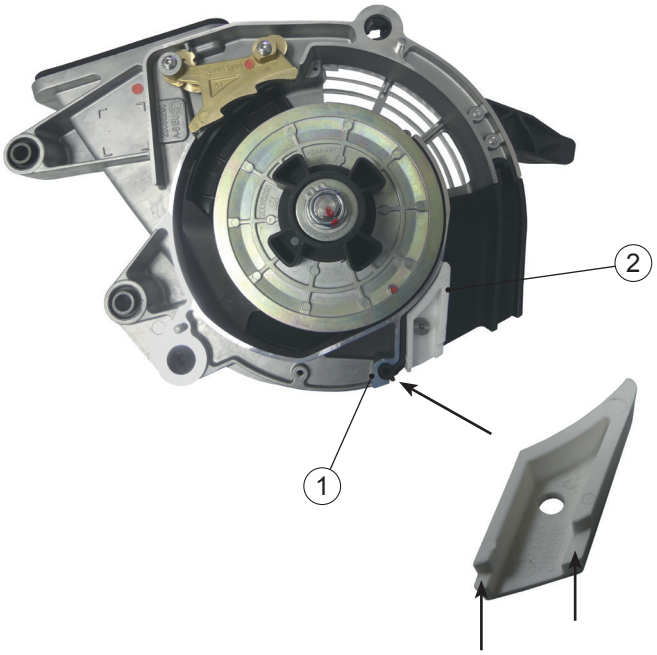
Setting the seed selection plate:

① - Position "-2", tip of the selector inside the pitch diameter.
② - Position "0", tip of the selector on the pitch diameter.
③ - Position "7", tip of the selector outside the pitch diameter.

Pull the lever upwards "↑" if you have any duplicates in the selection.
Pull the lever downwards "↓" if you have any omissions in the selection.

- One selector for all seed types.
- Perform static testing at planting speed when starting up the planter.
- Settings should be tailored to planting conditions (working speed, soil type, density, TGW). It is essential to adjust settings each time you change grain varieties or seed types.
- You can check selector wear visually by inspecting the recess. If the recess is no longer visible, the selector is worn and must be replaced.

3.14 - Seed ejection



Presentation:

When suction on the seed disc is cut off by the insert, the ejector releases the seed if it is not trapped in the disc hole. It is then guided towards the chute.²

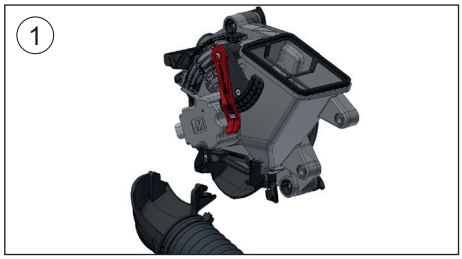
① - Ejector
② - Ejector support

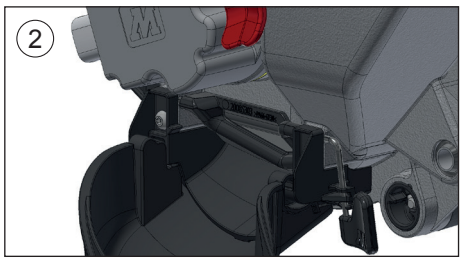
Assembly:

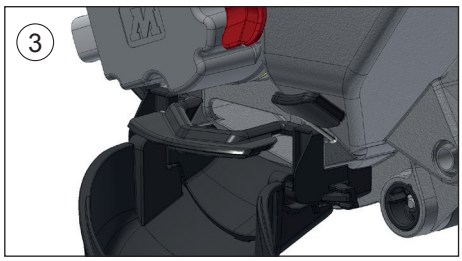
- A spring mounted behind the ejector presses the ejector against the seed disc.
- Press the ejector with your finger to check the spring tension.

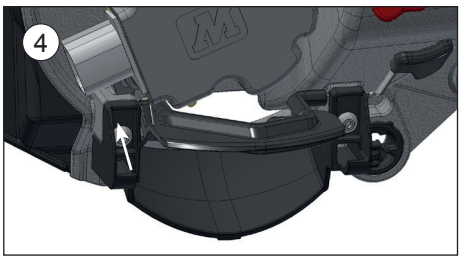
- You can check ejector wear visually by inspecting the recess. If the recess is no longer visible, the ejector is less effective and the part must be replaced.
- To facilitate ejector replacement, the ejector support assembly can be removed easily and tool-free by hand.
- Use a 3mm Allen key to unscrew the ejector fastening.

3.15 - Emptying the metering box









Use:

① - Plastic emptying chute for the metering box
② - Position the chute on the metering box using the guide pins. Place a container under the emptying chute to collect the seeds.
③ - Open the metering box's emptying shutter by unlocking it using the lever.
④ - Keep the shutter open using the small stud on the side.

- Repeat this process for each hopper.

▪ Set the seed flow shutter to 6 to facilitate emptying.

▪ When you close the emptying shutter, make sure you lock it!
▪ Do not forget to adjust the seed flow shutter after emptying!

3.16 - MicroSmart microgranulator unit

Presentation:

MicroSmart individual rear microgranulators are available as optional equipment for metering units. This endless screw-operated metering system can be used for insecticide, molluscicide or starter fertiliser, ensuring even application of microgranulates. It is electrically controlled, so the required rate can be programmed from the tractor cab using the ISOBUS terminal.

Description of the MicroSmart system:

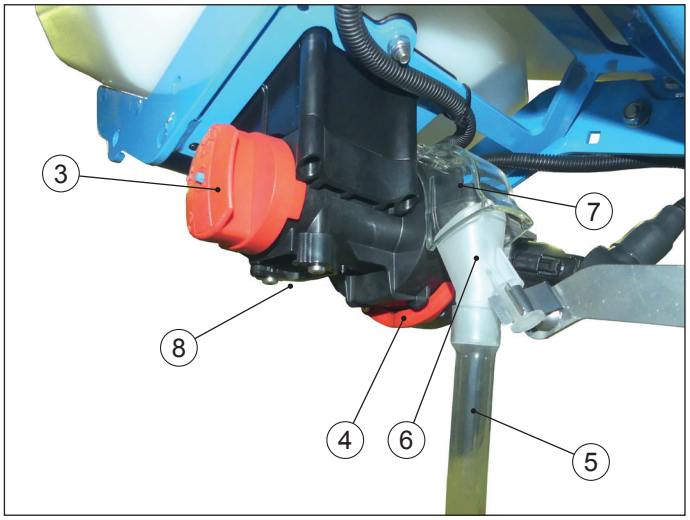
① - Hopper cover (manual opening)
② - Plastic hopper (approximately 20L capacity with markings showing the filling level)
③ - Microgranulator (controlled by an electric motor)
④ - Rear delivery line with products ejected between the furrow opener discs "Line 3".
⑤ - Rear delivery line with products ejected in the row behind the closing wheel unit "Line 5".

▪ A sticker inside the hopper cover reminds users of the risks of handling hazardous products.

▪ When performing filling, emptying, cleaning and maintenance, it is essential to wear suitable protective clothing (gloves, overalls, safety goggles and mask).

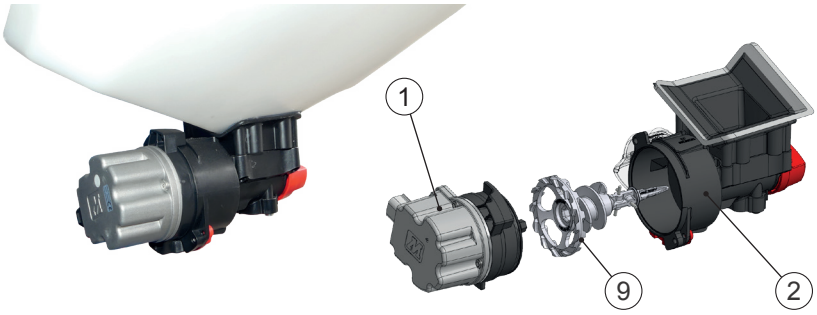
▪ You should also follow the safety advice issued by the plant protection product manufacturer.

3.17 - MicroSmart microgranulator

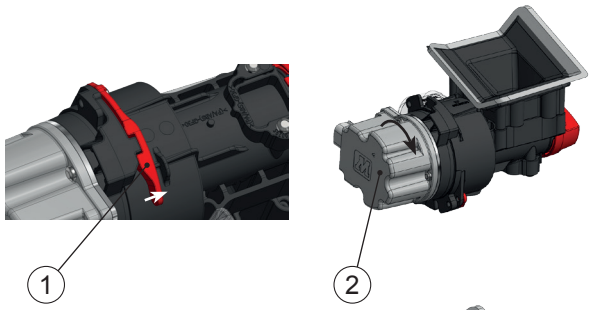


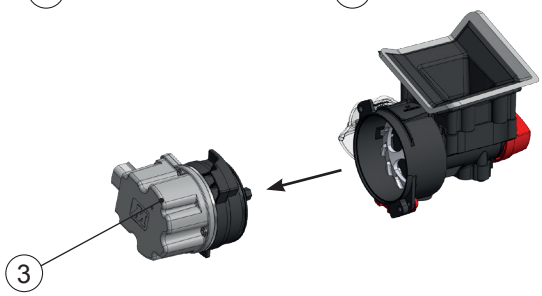
Description of the MICROSMART microgranulator:

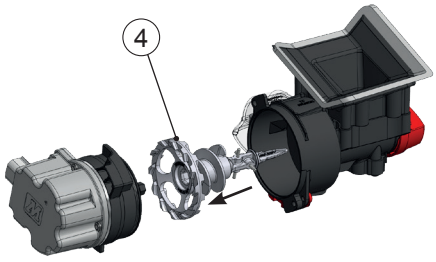
① - MicroSmart motor
② - Microgranulator body
③ - Position selector
④ - Motor locking tab
⑤ - Product drop tube
⑥ - Snap-on metering funnel "position 3 & 5"
⑦ - Protective cap
⑧ - Microgranulator emptying outlet
⑨ - Metering screw



3.18 - Removing the MicroSmart unit for maintenance







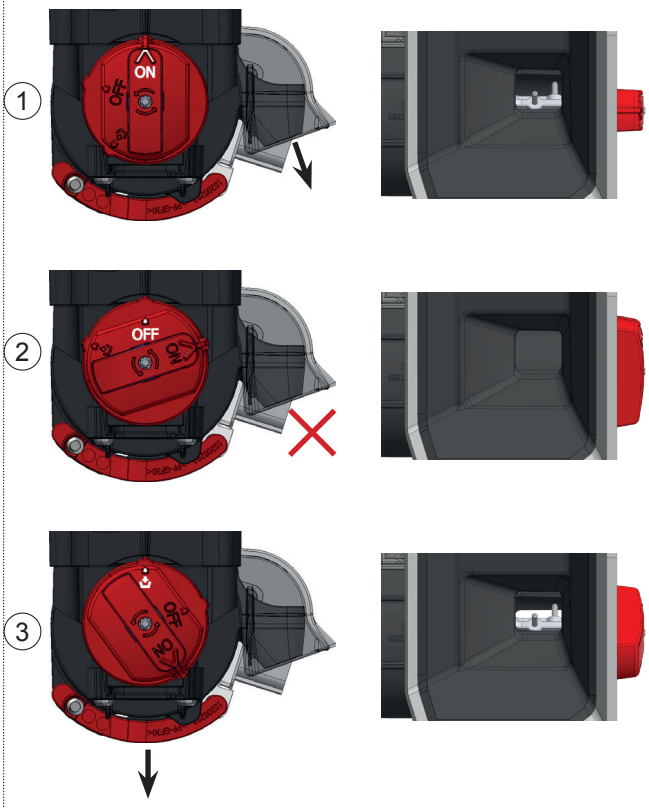
Removal:

The motor and metering screw can be easily removed tool-free.

① - Remove the red tab to free the stud.
② - Turn the motor assembly a quarter turn clockwise.
③ - Remove the motor.
④ - Remove the metering screw.

▪ When reinstalling the unit, ensure that the motor is securely locked using the red tab. Only one position is possible.

3.19 - Operating the MICROSMART microgranulator



Presentation:

There is a 3-position selection dial on the right side of the microgranulator.

Use:

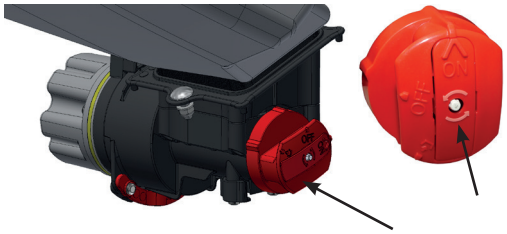
To change position, pull the red selector and rotate to the required position.

① - "ON" position to distribute the product.
② - "OFF" position to block the microgranulator input.
③ - "EMPTY" position to completely empty the hopper.

▪ "OFF" position for maintenance or transport.

▪ Avoid placing your hands in the microgranulator via the hopper while the screw is rotating!

3.20 - Checking the metering screw

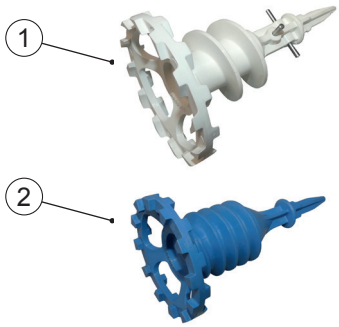


Use:

When starting up the MicroSmart system, it is easy to check that the metering screw has been properly fitted, as the screw should be protruding from the red control dial.
A marking on the tip can be used to check that the screw is rotating in the correct direction during start-up.

▪ Check that the red selector is in the "ON position" in order for the unit to operate and distribute granulates.

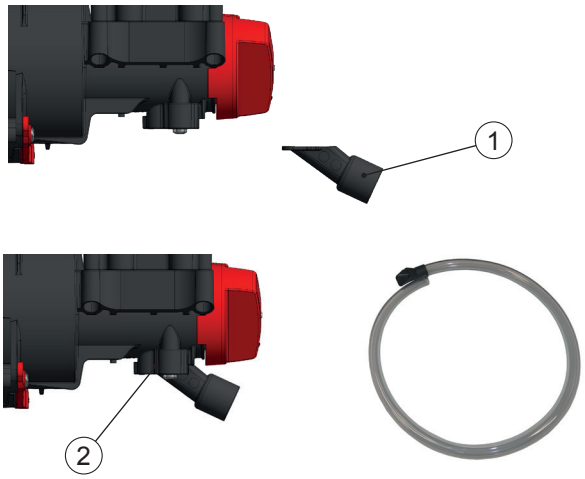
▪ While the MicroSmart system is rotating, check that the screw is turning and that the direction of rotation is correct.



The different metering screws available:

① - White metering screw for MicroSmart insecticide and starter fertiliser.
② - Blue metering screw for MicroSmart molluscicide.

3.21 - Emptying the MICROSMART microgranulator



Use:

It is very easy to fit the emptying chute ① without any tools. Insert the chute in the grooves below the microgranulator.

▪ Check that the selection dial is in "position 3" to fully empty the hopper.

▪ The motor can be removed quickly, providing easy access to the microgranulator interior.

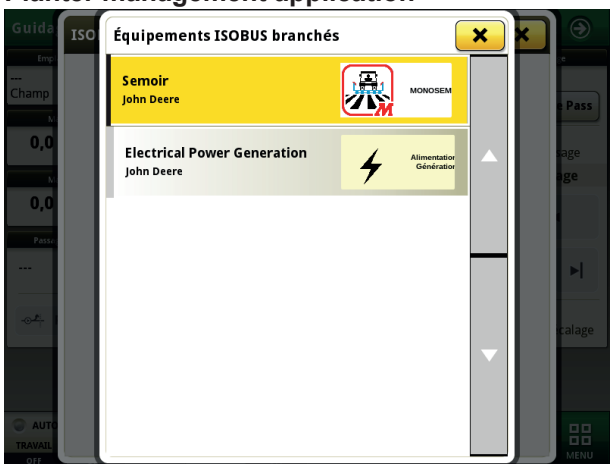
▪ Since moisture entails a risk of clogging, it is essential to empty and clean the MICROSMART microgranulators at the end of each day regardless of the products used and quantity remaining.

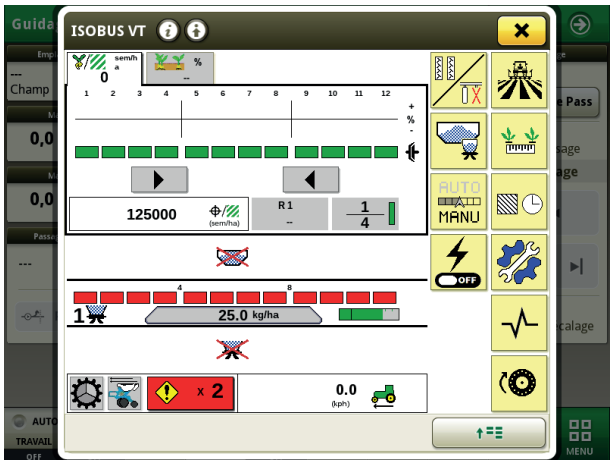
5 - SOFTWARE ACTIVATION

5.1 - Application displays

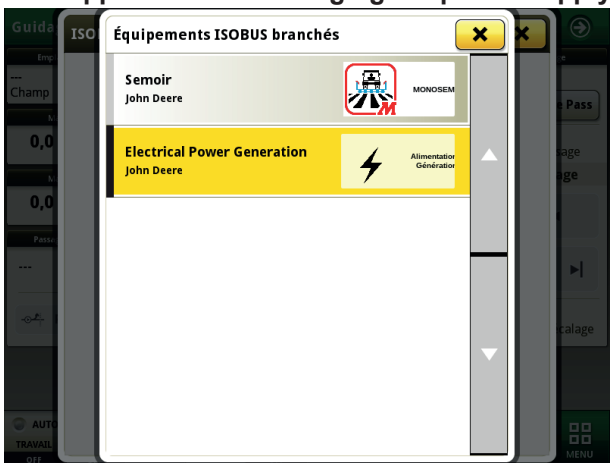
ISO ISOBUS VT

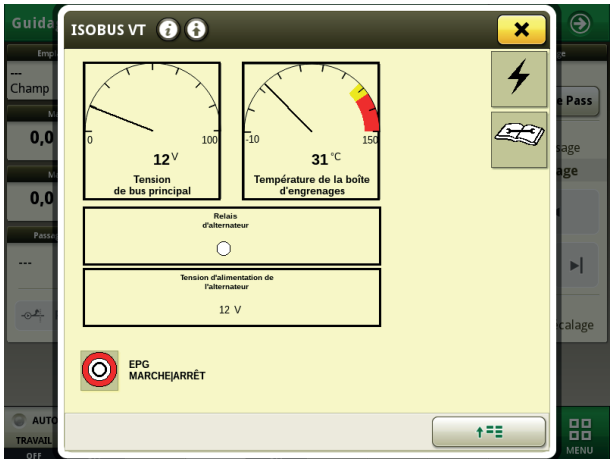
Planter management application



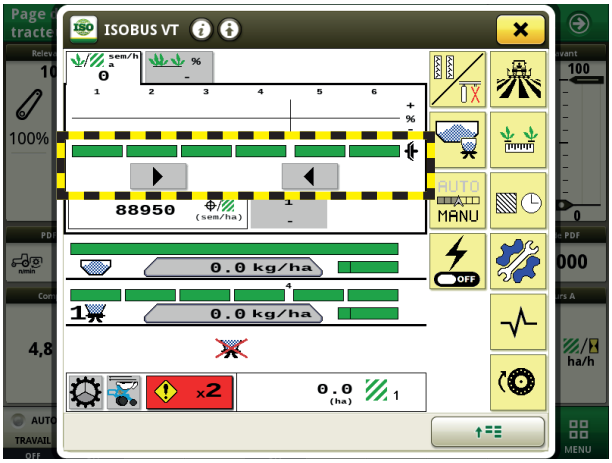


EPG application for managing the power supply





5.2 - PLANTER APPLICATION - working screen description



Description of programming keys:

For accessing the working screen.

For accessing the seed configuration screen.

For accessing the total counters screen.

For accessing the planter configuration screen.

For accessing the diagnostics screen.

Disc filling prior to start-up.

Shows disc filling progress.

For accessing the tramline and section configuration screen.

For accessing the FertiSmart and MicroSmart configuration screen.

When a GPS signal is available, the key for enabling or disabling the section-control function appears on the screen.

Section-control mode enabled.

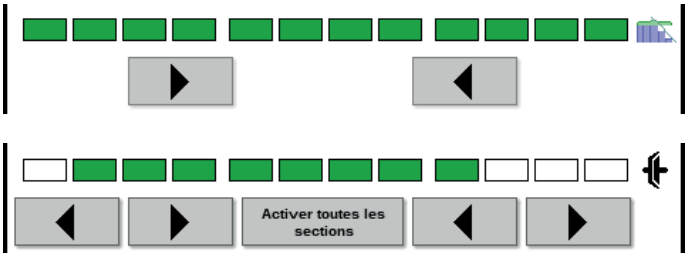
Section-control mode disabled.

These keys are used for generating electricity with the M50 management module and the 56V generator.

EPG OFF.

EPG ON.

Description of the planter sections display:



Status: active section.

Status: section manually cut off.

Status: section cut off by section-control mode.

Status: section cut off by tramline mode.

Status: section permanently cut off.

Section-control mode not enabled AUTO MANU.

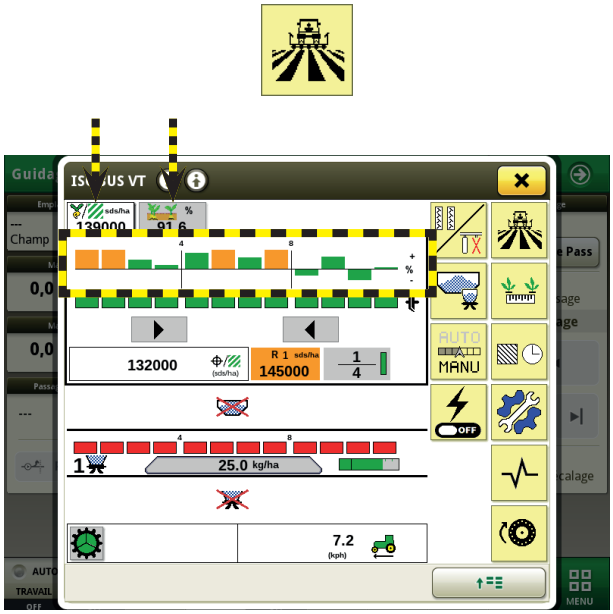
Section-control mode enabled AUTO MANU.

Disabling sections manually:

Icons used for disabling or enabling sections to the left or right.

Activer toutes les sections Icon used to reactivate all sections simultaneously.

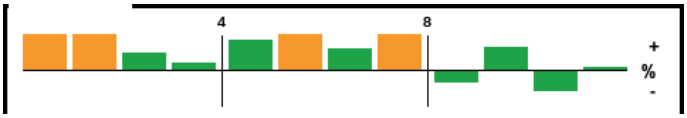
5.2 - PLANTER APPLICATION - working screen description



Description of the bar graphs:

139000 Tab displaying the % population bar graph.

"139,000" mean value calculated in real time for all rows.



Green indicates that the rate per hectare is within the tolerated range and below the programmed tolerated limit "e.g. plus or minus 0 to 10%".

Orange indicates that the rate per hectare has reached the programmed tolerated limit, a "non-programmable, fixed range of 10-50% in relation to the target population".

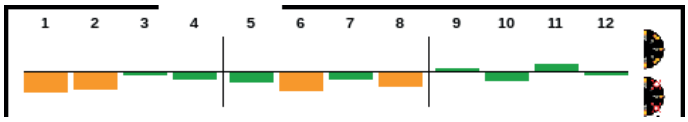
Red indicates that the rate per hectare is ">50% higher or lower than the target population".

- An audible alarm sounds every 5 seconds when the orange and red statuses are activated.
- A visual alarm is displayed on screen when the red status is activated.

Description of the bar graphs:

91.6 Tab displaying the bar graph showing the percentage of selected seeds.

"91.6", the mean value calculated in percentage in real time for all rows.



- The top part of the graph shows the percentage of duplicates detected by the sensor.
- The bottom part of the graph shows the percentage of omissions detected by the sensor.

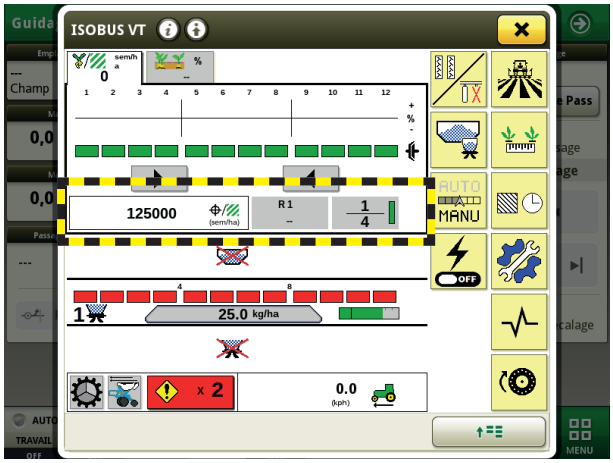
Green indicates that the rate per hectare is within the tolerated range.

Orange indicates that the rate has reached the tolerance limit.

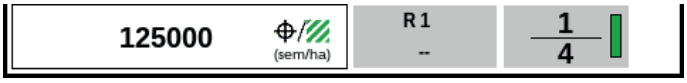
Red indicates that the rate per hectare is outside the tolerated range.

- No alarm is available when using this bar graph.

5.2 - PLANTER APPLICATION - working screen description



Description of the top information bar:



(sem/ha) Target rate saved in the seed configuration menu as a number of seeds per hectare.
(E.g.: 125,000 seeds per hectare programmed).

ⓘ - If two targets are set (125,000 and 90,000), it is possible to switch targets by tapping once.
ⓘ - If three targets are set (125,000, 100,000 and 90,000), it is possible to switch targets by tapping once to open a window and choose the required target.

Display showing changes in the rate on row no. 1 "R1".

To choose a row, tap the icon and choose the required row number (if R=0, automatic scrolling of the rate on each row).

Seeds not counted: the planter is in its raised position or its speed is zero.

Grey indicates that the rate is within the tolerated range.

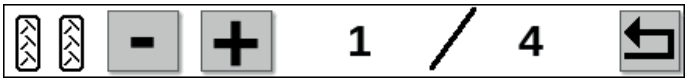
Orange indicates that the rate has reached the tolerance limit.

Red indicates that the dispensing rate is outside the tolerated range.

Description of the top information bar:

Display showing tramline runs.

To change the run in progress, tap the icon and choose the required run number.



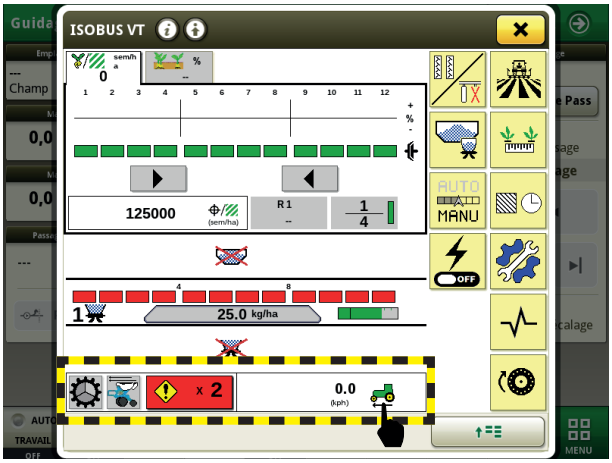
Decrease the run number manually.

Increase the run number manually.

1 / 4 Run no. 1 of 4 runs is in progress.

Back to the smaller icon for the tramline runs display.

5.2 - PLANTER APPLICATION - working screen description



Description of the bottom information bar:

- Planter status icon used to confirm initiation of planting
The icon is split into 3 areas, each corresponding to a part of the planter.

The 3 statuses are not active.

The left-hand status turns grey when it is active, indicating that "56V RUC power supply OK".

There is 10 seconds' latency before the status changes.

The right-hand status turns grey when it is active, indicating detected working speed "> 0".

The bottom status turns grey when it is active, indicating that the planter is in its "low position".

The 3 statuses turn green when they are all activated. Planting can then be initiated.

- x 2 Alarm reminder.

- "Fast start" icon displayed when two conditions are active and the working speed is not yet recognised.

This key is used for initiating planting even if working speed is not detected, thus avoiding unplanted areas on start-up.

Description of the bottom information bar:

- Tap to access the information display listing.

1 Area counter no. 1

2 Area counter no. 2

Tractor working speed

Remaining area counter

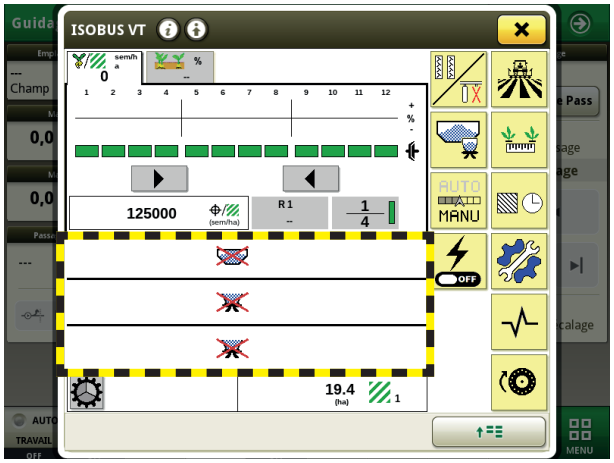
Area per hour counter

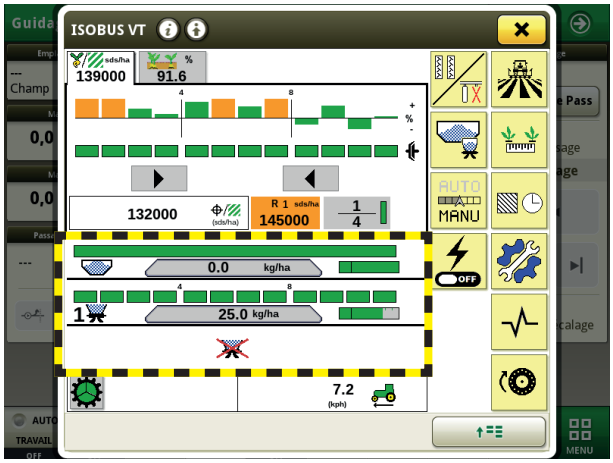
Mean population per hectare

Vacuum sensor (maximum of 4 sensors).

- Only one item can be displayed at a time.

5.2 - PLANTER APPLICATION - working screen description





Description of the FertiSmart et MicroSmart information bar:

If the FertiSmart and MicroSmart accessories are not enabled, the following icons are displayed:

 Fertiliser accessory disabled.

 MicroSmart accessory 1 disabled.

 MicroSmart accessory 2 disabled.

If the FertiSmart and MicroSmart accessories are enabled, the following icons are displayed:

 FertiSmart accessory enabled.

 MicroSmart accessory 1 enabled.

 MicroSmart accessory 2 enabled.

- MicroSmart 1 is located behind the seed metering unit. MicroSmart 2 is located in front of the seed hopper.

Description of the FertiSmart et MicroSmart information bar:

● Sections' status:

 Status: active section.

 Status: section manually cut off.

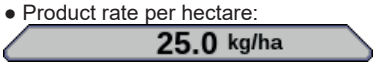
 Status: section cut off by section-control mode.

 Status: section cut off by tramline mode.

 Status: section permanently cut off.

 Status: default section.

● Product rate per hectare:



To edit the programmed product rate per hectare, tap the icon and enter the new value as required.

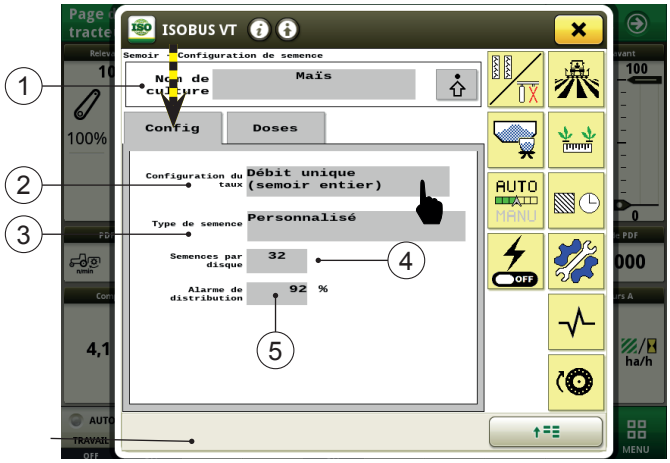
● Hopper filling indicator:

- The MicroSmart filling indicator aggregates data for all the planter's hoppers

● Adjusting filling indicator settings:

- TARE key for resetting the indicator.
- Enter the required weight by tapping the value.

5.3 - PLANTER APPLICATION - seed settings



Seed settings:

① - Seed type selection field.
It is possible to create customised seed types.
Tap to access a crop list.
Key for changing the crop name.

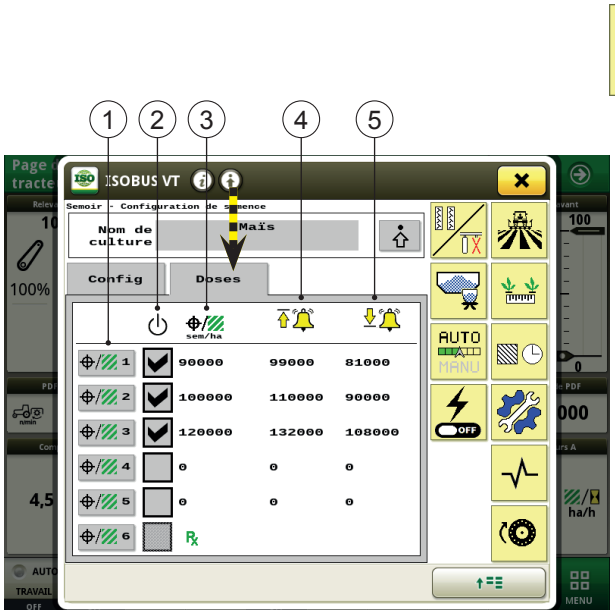
② - Rate settings:
For accessing the settings list.
● Single rate (whole planter)
- Used for applying the same rate to all rows.
● By mapping group
- Used with the TC-GEO feature
- For further information on use, please contact MONOSEM customer services.
● Customised (maize seed)
- For further information on use, please contact MONOSEM customer services.

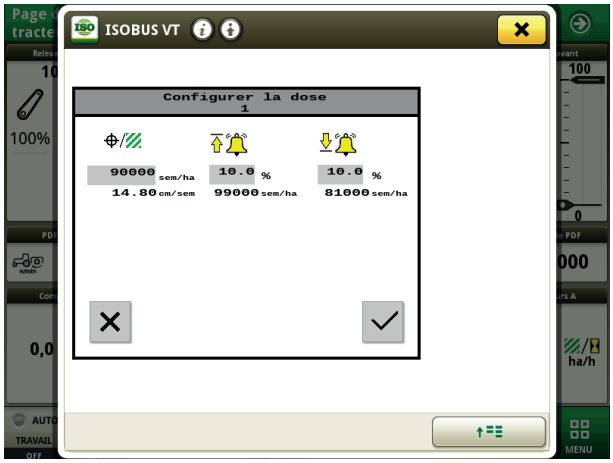
③ - Seed type
Customised seed type selection field.

④ - Seeds per disc:
Enter the number of seed disc holes.

⑤ - Metering alarm:
Enter an alarm limit for using the bar graph for duplicates and omissions detected by the sensor.

5.3 - PLANTER APPLICATION - seed settings





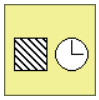
Configuring the rate and alarm limits:

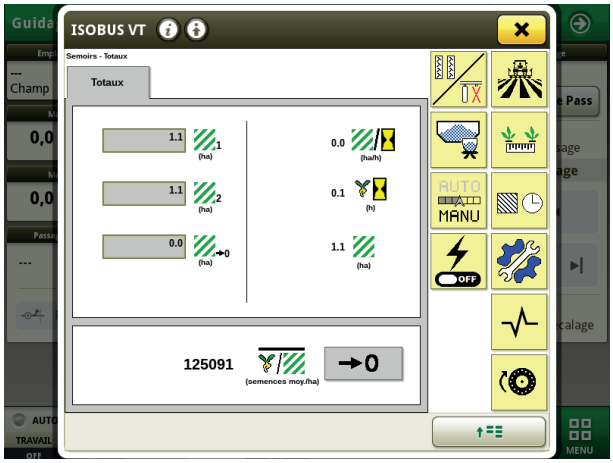
① - For accessing settings for target rate no. 1.
② - For enabling the target rate.
☑ Target rate enabled
☐ Target rate disabled
③ - Displays the target rate setting.
④ - Displays the upper alarm limit.
⑤ - Displays the lower alarm limit.

Configuring rate no. 1 and alarm limits:

⌖/▨ - Target rate setting for number of seeds per hectare.
- Upper alarm limit setting as a percentage.
- Lower alarm limit setting as a percentage.
✕ - Leave the configuration without saving.
✓ - Confirm the rate configuration.

5.4 - PLANTER APPLICATION - total counters screen





Description of the area counters:

Area counter no. 1.

Area counter no. 2.

Deduction from a known area.

Area planted per hour (in hectares).

Working time in hours.

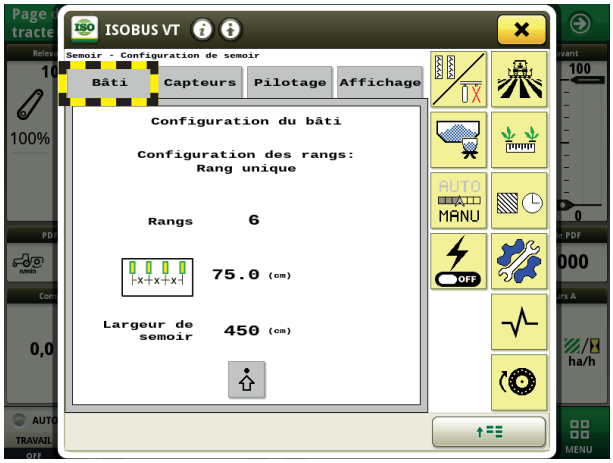
Total area counter (hectares).

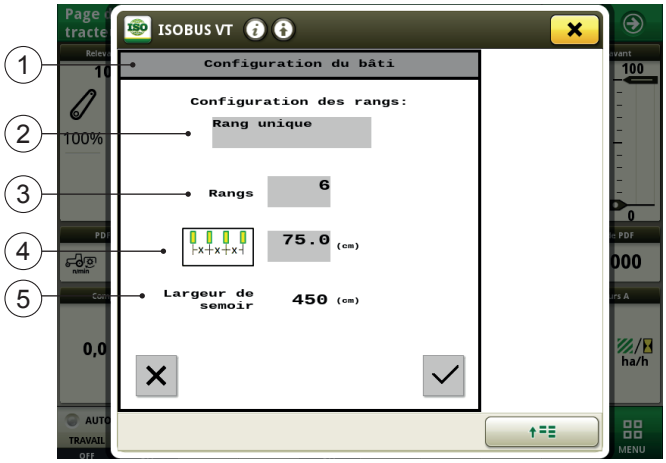
Mean rate value per planted hectare.
(E.g.: 125,091 seeds per hectare)

(semences moy./ha)

→0 Mean value reset key.

5.5 - PLANTER APPLICATION - planter configuration





Frame configuration:

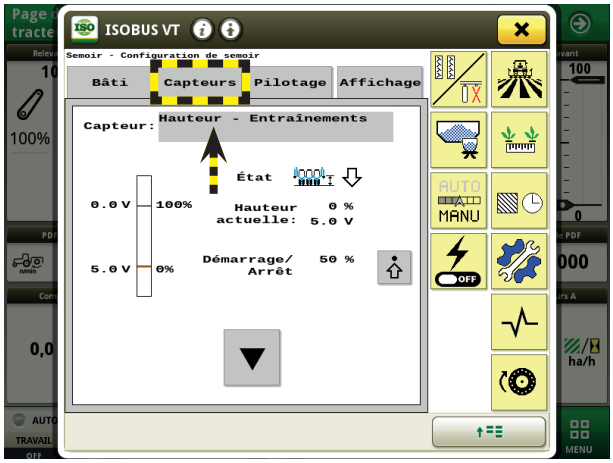
Key for accessing frame settings.

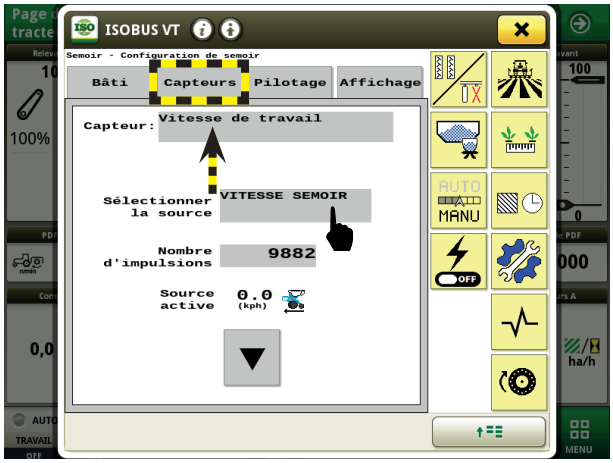
① - Frame configuration display.
② - Row configuration
● Single row (factory setting)
③ - Number of planter rows.
④ - Inter-row (cm).
⑤ - Planter width (cm).

- Leave the configuration without saving.

- Confirm the row configuration.

5.5 - PLANTER APPLICATION - planter configuration





Sensor configuration:

"Height"

- This screen is used for checking that the planter's position sensors are functioning properly.

① - Information on sensor status and programming.
- Filling indicator empty 0%, planter in lowered position.
- Filling indicator full 100%, planter in raised position.

▪ Any functions in this screen that have not been described are not necessary for normal use.

Sensor configuration:

"Working speed"

Tap to access a the list of speed sources:

- TECU - WHEEL
Shows speed data from the tractor's wheel sensor.

- TECU - RADAR
Shows speed data from the tractor's radar.

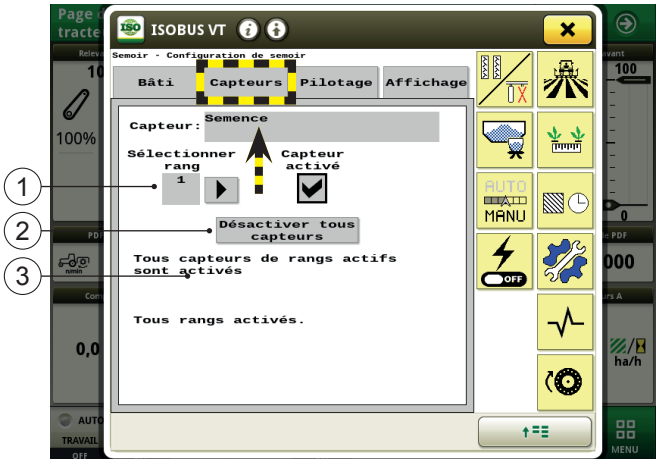
- CAN - GPS
Shows speed data from the tractor's GPS antenna.

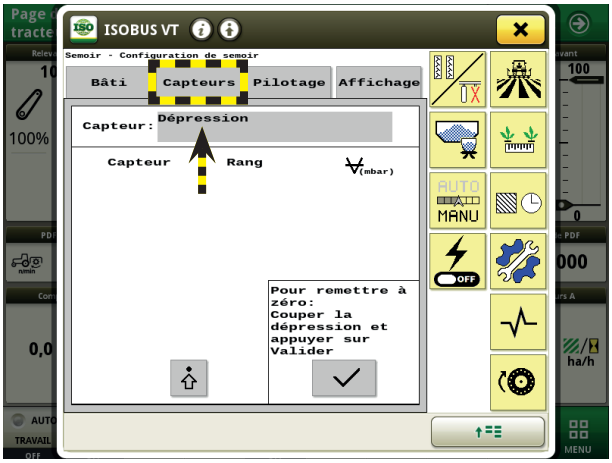
- MANUAL

- Planter speed

Key to initiate sensor calibration.
- Lower the machine, drive at the working speed, and tap "Start" before crossing the starting line.
- Continue until the finish line and tap "Stop".
- Repeat calibration to calculate a mean number of pulses and thus improve accuracy.

5.5 - PLANTER APPLICATION - planter configuration





Sensor configuration:

"Seed"

- This display is used for disabling one or more counting sensors.

① - Row selection.
☑ Sensor enabled for the selected row.
☐ Sensor disabled for the selected row.
② - Key for enabling or disabling all sensors.
③ - Message providing information on sensors.

Sensor configuration:

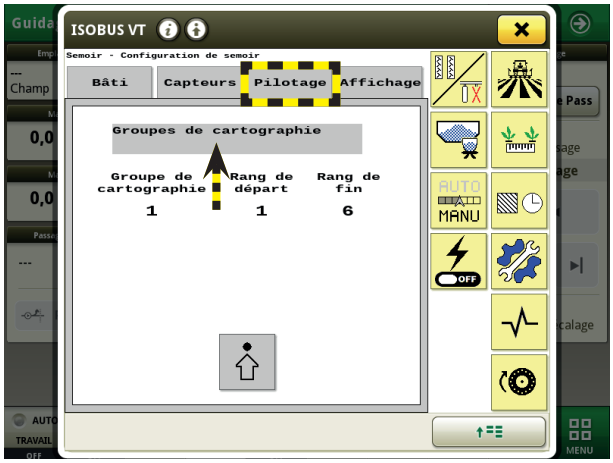
"Vacuum"

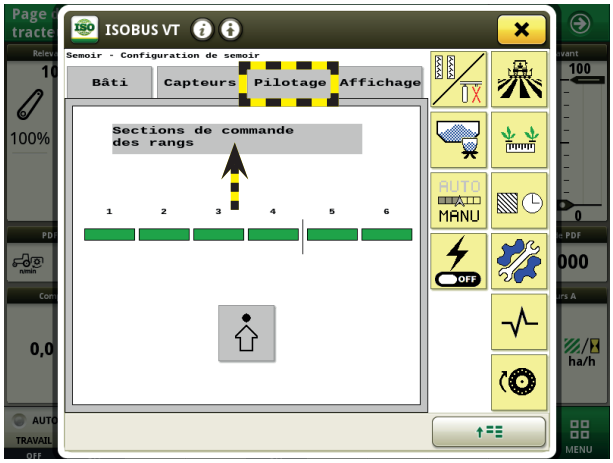
- Used for setting vacuum sensors.
- Up to 4 sensors may be included.

Key for setting the number of vacuum sensors and allocating them to rows.

Key for resetting the vacuum sensor(s).
Please note: when resetting sensors, you should ensure that the turbofan is switched off.

5.5 - PLANTER APPLICATION - planter configuration





Drive configuration:

① - Mapping groups
- Used to configure groups for the TC-GEO function
- Define groups and allocate the relevant rows to them.
- A specific density is defined for each group.

- For further information on use, please contact MONOSEM customer services.

Key for accessing "Mapping groups" settings.

▪ You must restart the terminal after making any changes.

Drive configuration:

② - Row control sections
- Used to configure rows for the section-control function.
- Define sections and allocate the relevant rows to them.

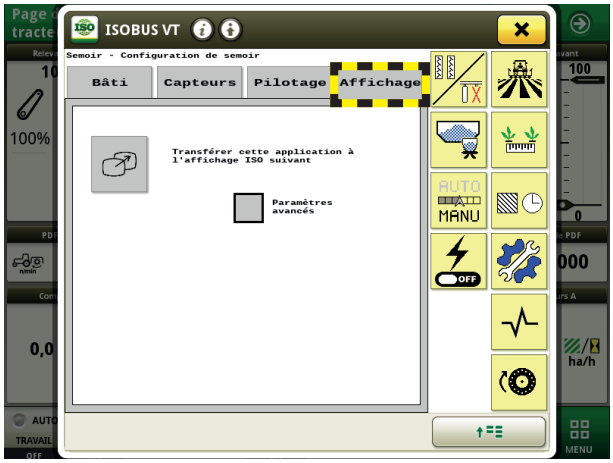
Example options:
- 6 rows with 6 independent sections
- 6 rows with 1 section.
- 6 rows with 2 independent sections
  - Section 1: rows 1, 2, 3.
  - Section 2: rows 4, 5, 6.
- 6 rows with 3 independent sections
  - Section 1: rows 1, 2.
  - Section 2: rows 3, 4.
  - Section 3: rows 5, 6.

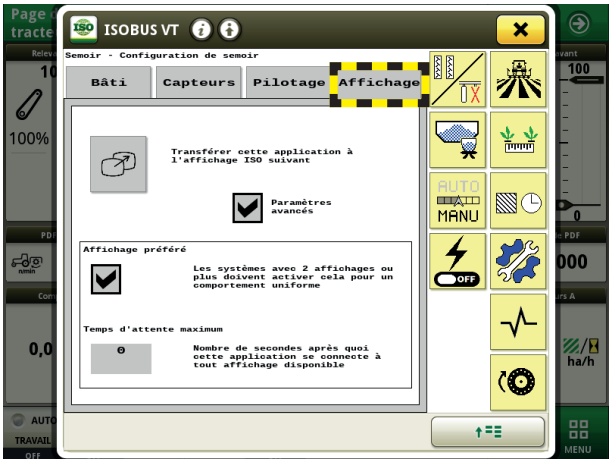
- For further information on use, please contact MONOSEM customer services.

Key for accessing "Row control sections" settings.

▪ You must restart the terminal after making any changes.

5.5 - PLANTER APPLICATION - planter configuration





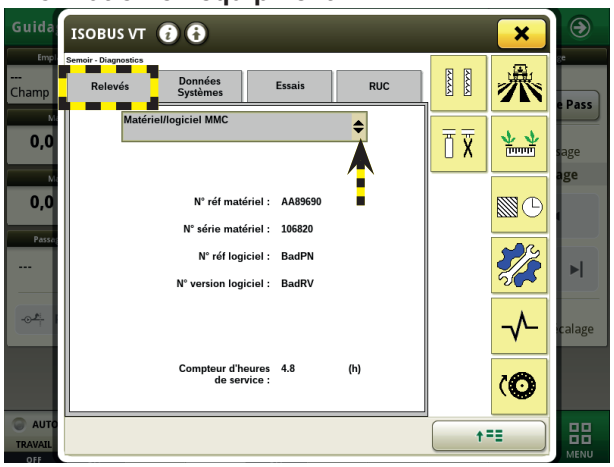
Configuring the display screen:

- Used for switching the planter application to another ISOBUS terminal.
- Please note: the two terminals must be connected on the tractor ISOBUS.

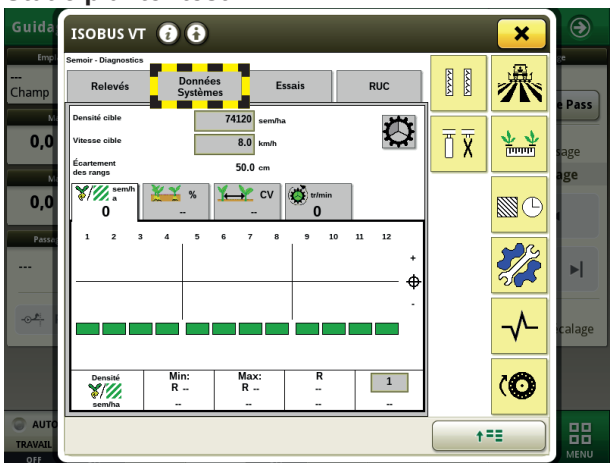
- For further information on use, please contact MONOSEM customer services.

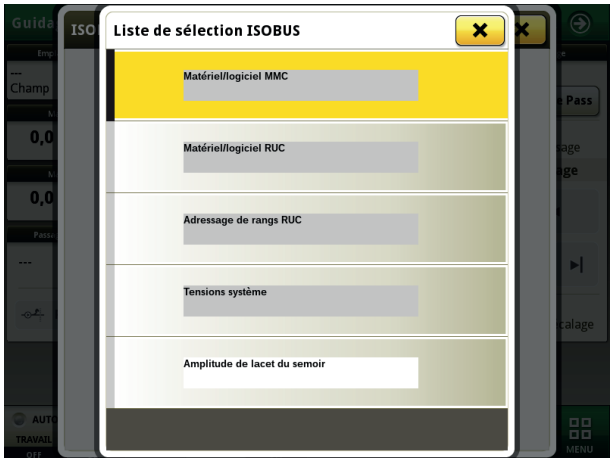
5.6 - PLANTER APPLICATION - diagnostics screen

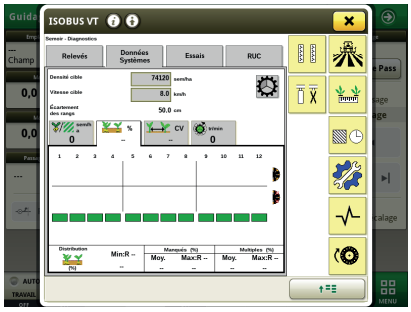
Information on equipment:

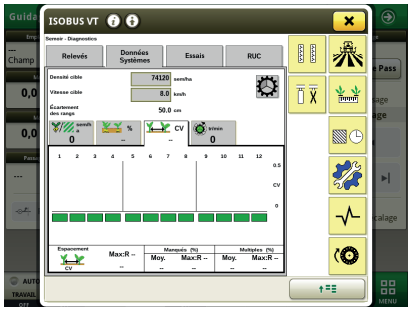


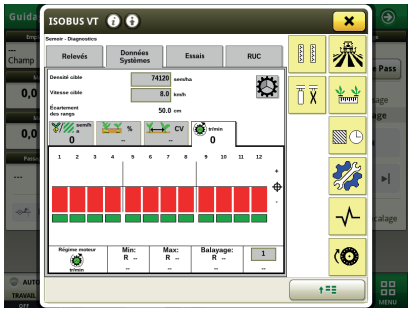
Static planter test:





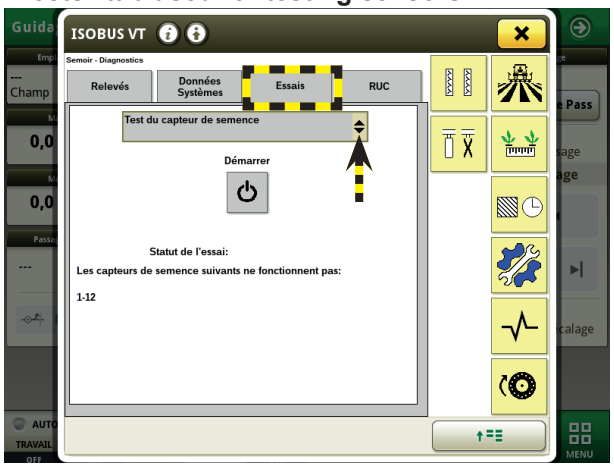




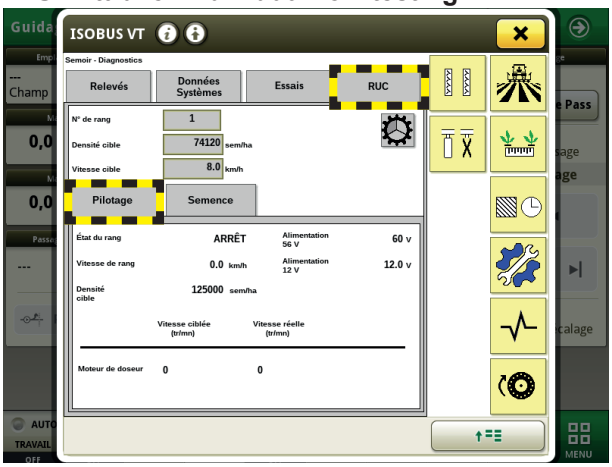


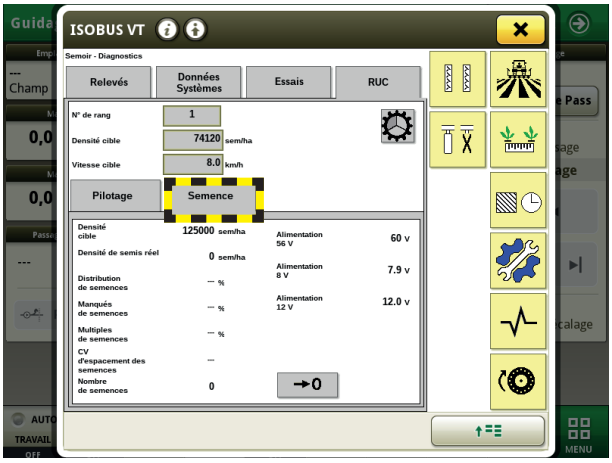
5.6 - PLANTER APPLICATION - diagnostics screen

"Tests" tab used for testing sensors:

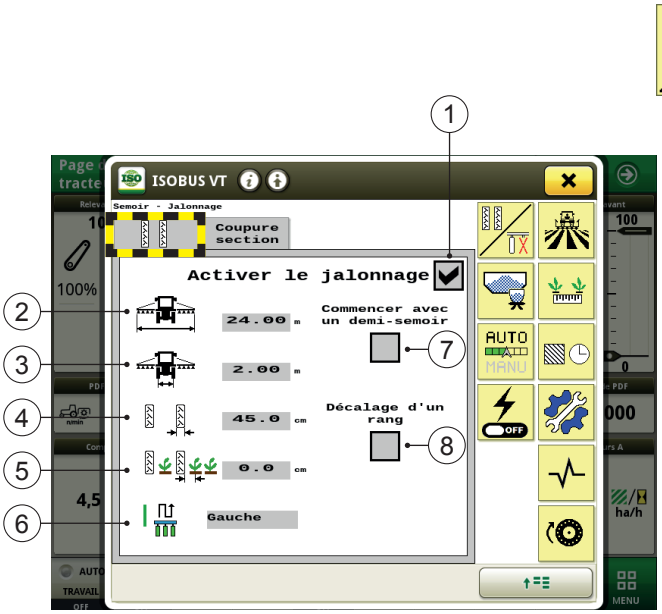


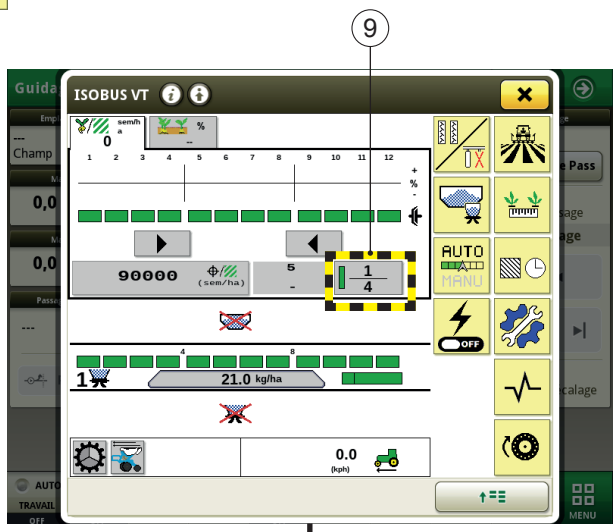
"RUC" tab for individual row testing:

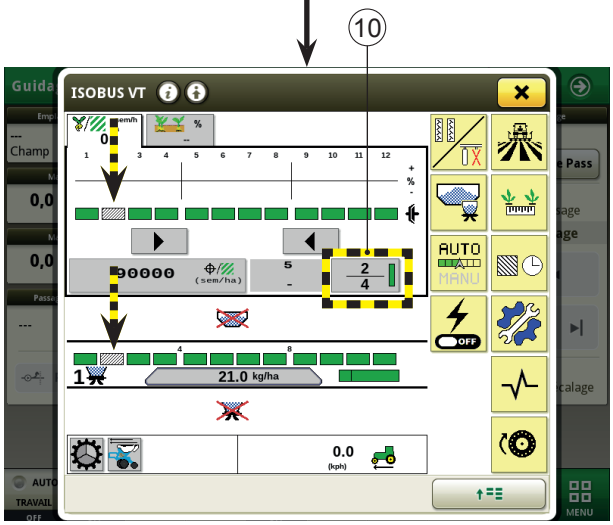




5.7 - PLANTER APPLICATION - tramline configuration screen



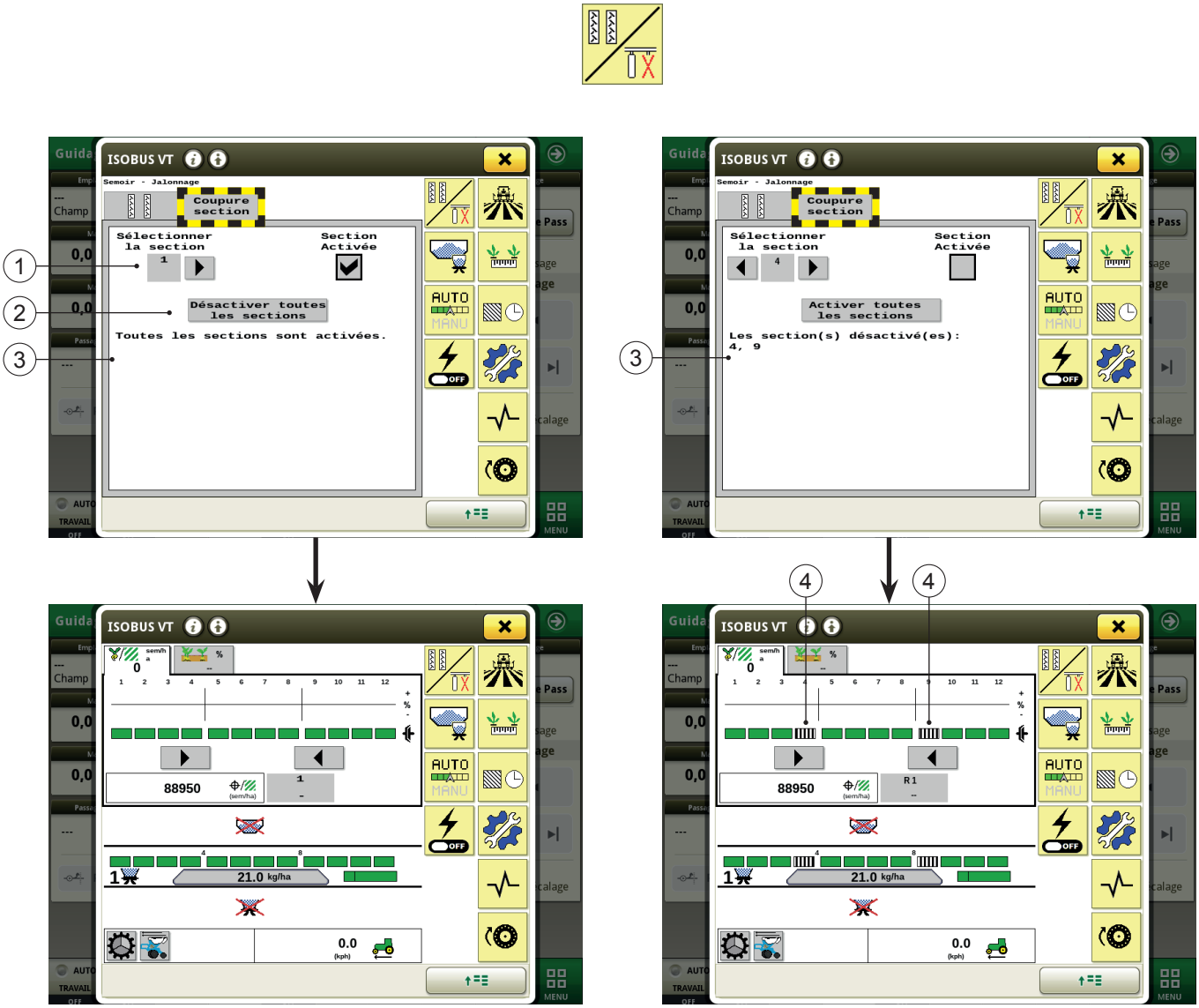




Tramline configuration:

① - Enable tramlines.
② - Sprayer width (m).
③ - Sprayer lane (m).
④ - Wheel width (cm).
⑤ - Tyre distance from young plants (cm).
⑥ - Start from the left or right.
⑦ - Enable the "start with a half planter" option.
This enables row cut-offs on the same run in certain circumstances.
⑧ - For enabling the "row shift" option.
On start-up, the programme is adjusted by one row to avoid spraying at the field edge.
⑨ - Displays the tramline programme on the work screen
⑩ - Displays the row cut off by the tramline on the work screen.

5.8 - PLANTER APPLICATION - section configuration screen



Permanent section cut-off configuration:

① - For selecting the section you wish to configure

☑ Section or row enabled

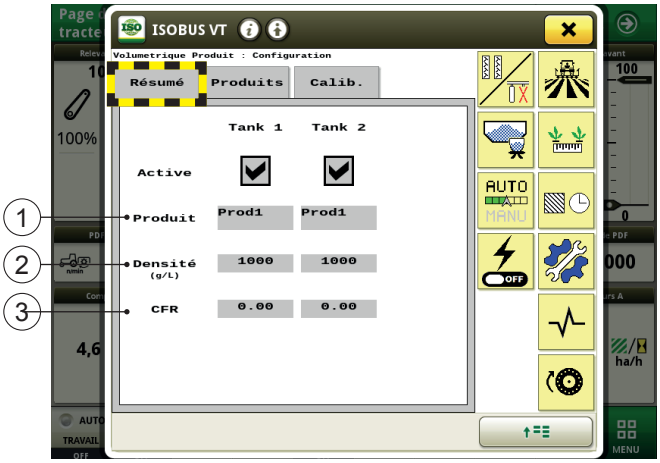
☐ Section or row disabled

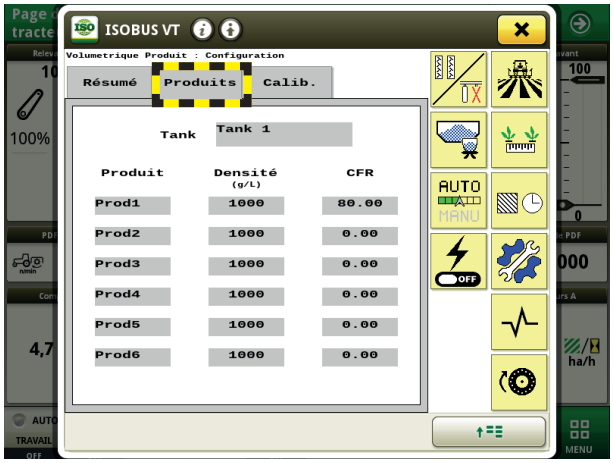
② - Enables or disables all sections.

③ - Message indicating the status of sections.

④ - Displays any disabled rows on the work screen

5.9 - PLANTER APPLICATION - FertiSmart and MicroSmart configuration screen





FertiSmart/MicroSmart configuration:

"Summary" tab

Tank 1: Relates to the FERTISMART hopper
Tank 2: Relates to the rear MicroSmart hopper
Tank 3: Relates to the front MicroSmart hopper

☑ Function enabled on the work screen: 

☐ Function disabled on the work screen: 

① - Indicates the selected product type and provides access to the product list.
② - Indicates the density of the selected product "in grams per litre".
③ - Indicates the calculated "CFR" calibration value.

- For further information on use, please contact MONOSEM customer services.

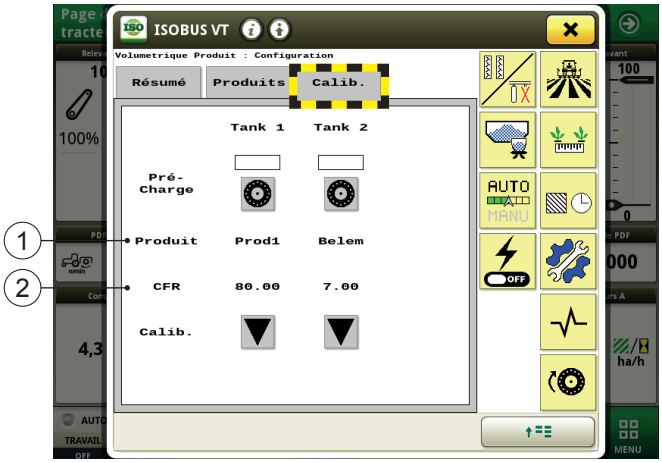
FertiSmart/MicroSmart configuration:

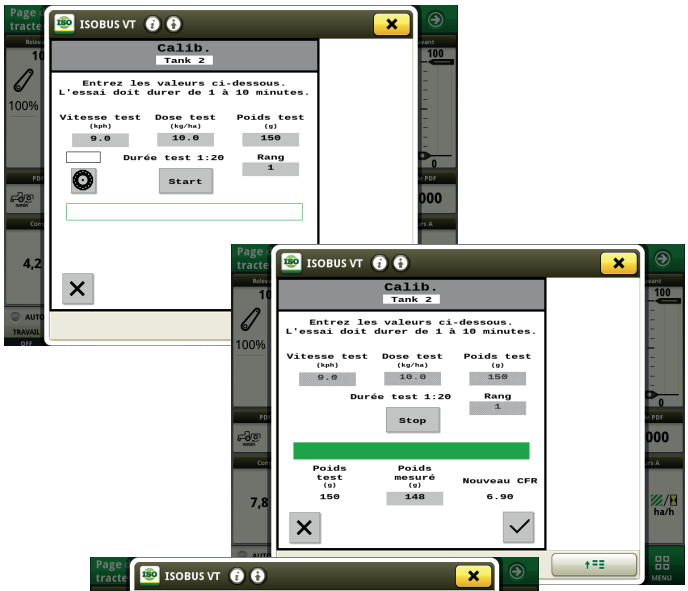
"Products" tab

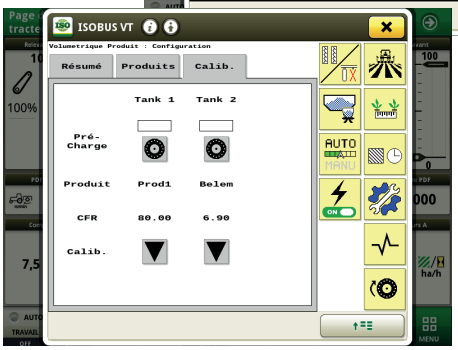
Tank: For accessing a list from which you can select the tank you wish to configure "Tank 1, Tank 2 or Tank 3".

- It is possible to program up to 6 different products per tank.
- It is possible to rename products.
- It is possible to manually edit the density of each product.
- It is possible to manually edit the calibration value of each product.

5.9 - PLANTER APPLICATION - FertiSmart and MicroSmart configuration screen







FertiSmart/MicroSmart configuration:

"Calibration" tab

① - Indicates the product selected in the "summary" tab.
② - Indicates the "CFR" calibration value of the selected product.

For accessing the calibration screen for the selected product.
- Microgranulator preload

Sample calibration for insecticide in tank 2.

Procedure:
Step 1: Fill the hopper for row 1 to perform the calibration.
Step 2: Place a bucket under the end of the translucent pipe.
Step 3: Switch on the power take-off and activate 56V power generation if the planter is equipped with a generator.

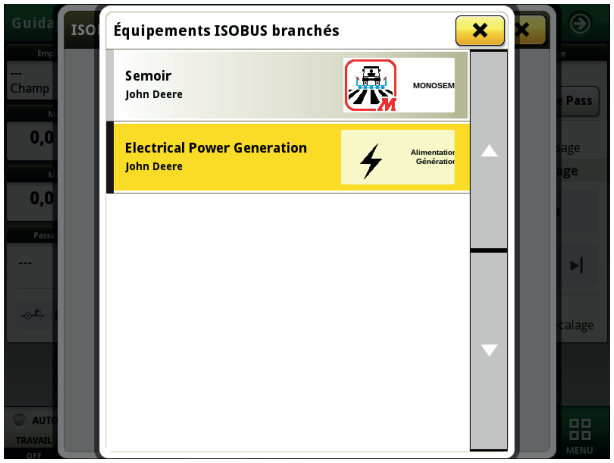
Step 4: Tap the preload button to fill the microgranulator and check the flow. The bar turns green to indicate that the motor is running. Once you have completed this, empty the bucket for the next step.
Step 5: Enter the calibration values.
- Test speed: actual planting speed (kph).
- Test rate: product quantity per hectare (kg/ha).
- Test weight: estimated weight for calibration (g).

"Test duration": calibration should last between 1 and 10 minutes. Estimate a weight ensuring that calibration lasts more than one minute.
- Row: Enter the row on which you are performing the calibration.

Step 6: Tap the Start button to initiate the test and wait until the progress bar is completed.
Step 7: Once the test is completed, enter the measured weight to get the new "CFR" calibration value and validate the test.

▪ Repeat the test 2-3 times to get the most accurate possible CFR value.

5.10 - "EPG" (Electrical Power Generation) APPLICATION



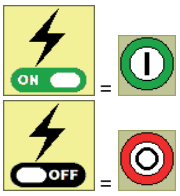
Start-up procedure with EPG (Electrical Power Generation):

This application manages 56V power generation by the generator operating the drive motors.

Use:

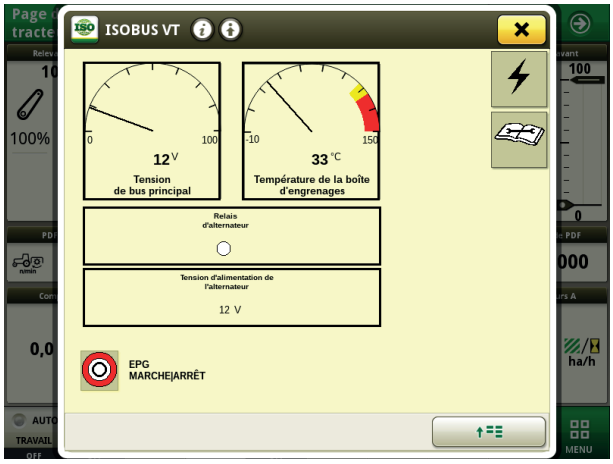
1 - Start up the tractor PTO and operate at the appropriate speed.
(IMPORTANT)
2 - Start up 56V power generation in the planter or EPG application.

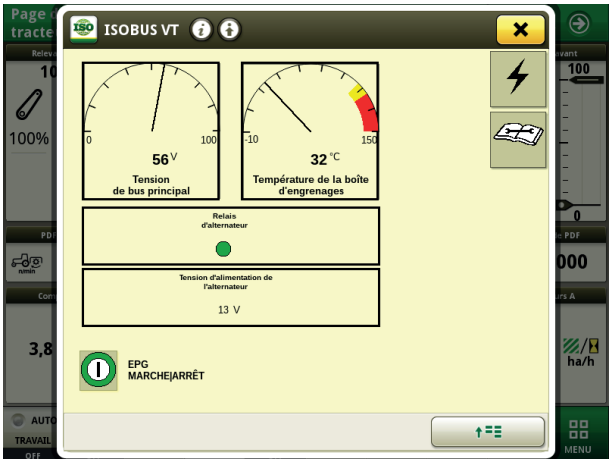
A shortcut button on the planter application can be used to initiate or stop 56V power generation.

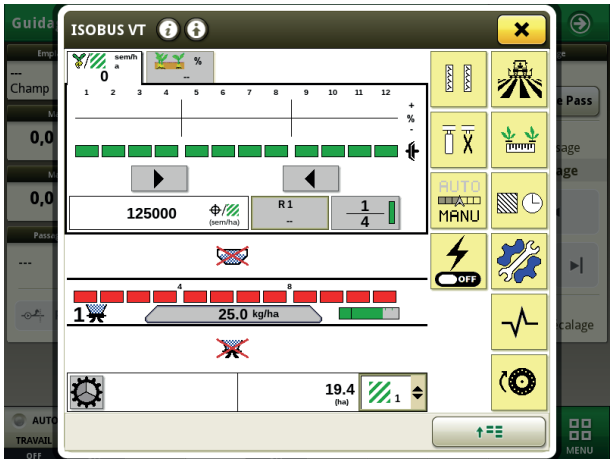


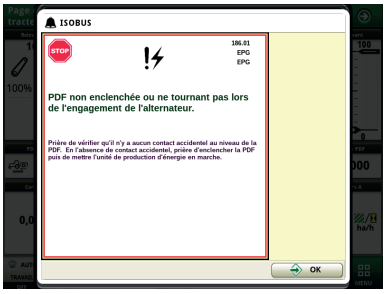
▪ The 56V power generation system is managed manually by the driver. If a problem with the 56V power generation system is detected, the user is alerted to this by an alarm message.

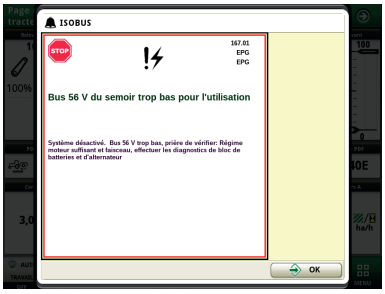
5.10 - "EPG" (Electrical Power Generation) APPLICATION











6 - START-UP AND TESTING IN THE FIELD

6.1 - Start-up in the field

Hitching the machine:

▪ Hitching should be performed cautiously.

▪ There is a risk of crushing and shearing in the area around the 3-point hitch.

Preparing the tractor:

▪ The tractor's power take-off should be running at the rate indicated on the planter turbofan.
▪ Adjust and lock the tractor's lift links to ensure that the trunnions are parallel with the ground.
▪ The tractor should be equipped with side lift stabilisers and the clearance should be evenly distributed either side of the hitch.
▪ Adjust the lift links so that the lower hitch arms are in a floating position.
▪ Check the pressure of the tractor's tyres and adjust the pressure according to the measured loads.

Procedure:

▪ Preparing the hitch on the planter side:
  · Position the hitch balls with the pins on the planter's lower hitch.
  · Position the u-joint on the turbofan side. (It needs to be length-adjusted before being put in place – see u-joint operating manual).
▪ Preparing the hitch on the tractor side:
  · ▪ Adjust and lock the tractor's lift links to ensure the pins are parallel with the ground.
  · Prepare minimal spacing of the lower hitch arms.
  · Adjust the lift links so that the lower hitch arms are in a floating position. In this position, the machine is able to freely adjust to any undulating ground.
▪ Reverse slowly to access and connect the u-joint on the tractor side, and also to connect the hydraulic lines and lighting extension to the tractor.

▪ For safety reasons, leave a gap of at least 20cm between the tractor wheel and the planter frame.

▪ Raise the tractor's lower arms to hitch the machine and check locking.
▪ Finally, pin the third point and check that the machine is vertical in relation to the ground.

▪ Stabilisers should be free during work and attached during transport.

▪ To improve safety and ease-of-use, Monosem recommends using a tractor whose hitch is equipped with an automatic third point.

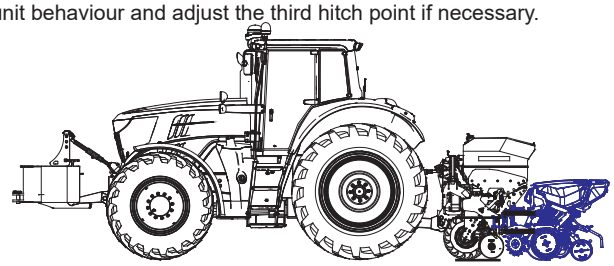
Connecting the tractor's electric components:

▪ Stop and secure the tractor.
▪ Connect the ISOBUS connector to the tractor.
▪ Connect the 7-pin lighting connector to the tractor.

Performing start-up in the field:

▪ It is important to ensure that the planter is vertical in relation to the ground.

- The frame's tool bar should be parallel to the ground and ready to plant when the planter is lowered, as should the metering unit's parallelogram arms.
- If the planter is not vertical, this may cause:
  · Poor planting
  · Poor seed laying
  · Poor furrow closing
  · Premature wear
- While empty, drive 50m across the field to check frame and metering unit behaviour and adjust the third hitch point if necessary.



Performing an initial test:

▪ Travel 50m at a consistent speed.
▪ Seeds should be planted at the normal working speed.
▪ Clear the furrows across the working width over a distance of 10m.
▪ Measure the planting depth.
▪ Check that seeds are evenly spaced:
  ▪ Uncover 11 seeds.
  ▪ With a rule, measure the distance between seeds.
  ▪ Divide the result by 10 to calculate the actual mean distance between seeds.
  ▪ Compare this with the value on screen.
▪ Check the actual population:
  ▪ Count the number of seeds over an adequate test distance.
  distance (m) = 1,000 ÷ inter-row (m)
  ▪ Multiply the result by 1,000 to calculate the actual planting density.
  ▪ Compare this with the value on screen.

- The test results are dependent on the following factors:
  · The seed disc
  · The seed selection setting
  · The seed flow setting
  · The seed quality (in terms of shape, consistent size, coatings and seed moisture).
  · The vacuum setting
  · Atmospheric conditions
  · Planting conditions (soil type)
  · Working speed
  · Frame position (tool bar parallel to the ground)

▪ Based on the results of tests and the conclusions drawn, adjust settings and repeat the test until optimal settings are achieved.

▪ Only change one parameter per test to facilitate comparison and identify the value required to improve the test!

6.2 - Tests in the field

Performing tests in the field during planting:

- The test results are dependent on the following factors:
  - The seed disc
  - The seed selection setting
  - The seed flow setting
  - The seed quality (in terms of shape, consistent size, coatings and seed moisture).
  - The vacuum setting
  - Atmospheric conditions
  - Planting conditions (soil type)
  - Working speed
  - Frame position (tool bar parallel to the ground)

- Planting quality may also be dependent on other factors:
  - Shocks and metering unit instability (adjust the ground pressure)
  - Proper PRO wheel function
  - Planting depth
  - The condition of the opener discs and tip
  - The vacuum setting
  - Seed cleanliness (dry and free of dust and contaminants).
  - Front equipment settings
  - Working speed
  - Frame position (tool bar parallel to the ground)

▪ Planting should be checked before starting work and also regularly during work so that any necessary adjustments can be made.

▪ Where possible, plant perpendicularly to the slope. If this is not possible, the maximum tolerable gradient for effective metering is 15% to the left or right.

▪ Tolerable gradients for effective metering on uphill or downhill sections is 15%.

▪ MONOSEM cannot be held liable for users selecting inappropriate settings. Settings are left to users' discretion.

7 - MAINTENANCE

7.1 - General information

Warning before performing work:

- Read the operating manual carefully.
- Any work performed on the machine should be carried out by qualified and trained staff.
- Maintenance work entails a risk of injury.
- Before performing any work on the machine, switch off the tractor engine, remove the ignition key and apply the handbrake.
- Maintenance work should only be performed while the machine is secured.
- Follow all safety instructions related to maintenance.
- When performing cleaning and maintenance, it is essential to wear suitable protective clothing (gloves, overalls, safety goggles and mask).
- To ensure the machine operates effectively, it should be maintained regularly at the recommended maintenance intervals. If machines are well maintained, there is a lower risk of faults.

Action:

- Before using the machine, check that all the screws and nuts on the metering units are properly tightened.
- After several hours' use, check that all screws and nuts on the metering units are properly tightened (see table for standard and specific tightening torques).
- Regularly check tightening torques during the planting season.
- Monitor the metering unit's wearing parts.
- Always use MONOSEM original spare parts to ensure that the planter continues to operate effectively and safely.
- Never clean or rinse bearings and articulations with a high-pressure water jet. Grease the bearings after washing them in water.
- The planter is fitted with electronic equipment. Always switch off the ISOBUS terminal before performing any work on the planter.
- Clean electrical components with pressurised air. It is also possible to use a slightly damp cloth.

- Maintenance intervals:

- Maintenance intervals are determined by numerous factors.
  - Road travel speed
  - Working speed
  - Soil type
  - Seeds used
  - Plant protection products
  - Lubricant quality
  - Atmospheric conditions
- The recommended maintenance intervals should therefore only be used as a guideline.
- When deviating from normal conditions of use, maintenance intervals should be adjusted to take account of such conditions.
- In many cases, the intervals recommended in the table are:
  - Daily maintenance
  - Every 20 hours' use
  - Every 50 hours' use
  - Every 100 hours' use
  - Once per season

Lists of wearing parts:

- It is important to closely monitor the general condition of metering units and particularly that of wearing parts.
- Wearing parts should be changed before they become too worn and affect planting quality.

Parts connected to the planting unit:
- Opener discs
- Scrapers for opener discs
- Spring for opener disc scrapers
- Opener disc guard
- Long or short furrowing tip
- Clod remover coulter
- Trash wheel discs
- Closing wheel with stainless steel/flexible/cast iron tyre
- PRO wheel scrapers
- Gauge wheels
- Gauge wheel scrapers (RJ115 & RJ65)
- Equaliser for adjusting depth
- Gauge wheel arm
- Rear wheel unit
- ECU

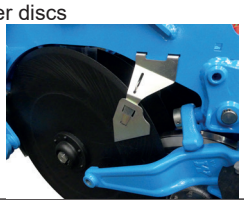
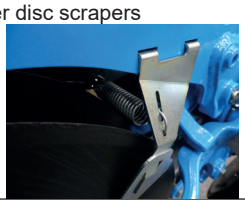
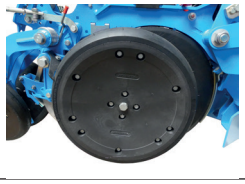
Parts connected to the seed metering box:
- Floating insert
- Ejector
- Selector
- Seed disc
- Sensor chute
- Sensor wiring harness
- Unit wiring harness

Parts connected to the MicroSmart unit:
- Microgranulator ring
- Feed funnel
- Transparent drop tube

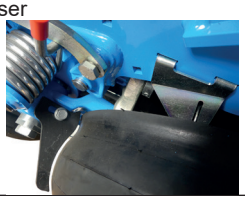
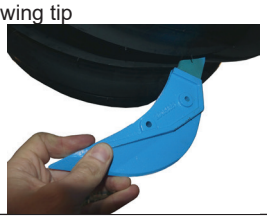
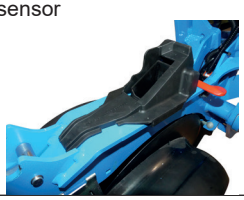
Normal and extended winter storage:

- When the machine is not being used, it should be stored indoors to protect its electronic equipment.
- Empty all the hoppers
- After washing the machine, dry it and grease the articulation points.
- Protect the machine against rust and only spray it with easily biodegradable oils.
- Take care not to spray plastic parts with lubricant or penetrating oil.
- Place chocks beneath the machine to prevent it from moving.
- Adjust the unit pressure lever to A0 to reduce the pressure on the tips and opener discs.

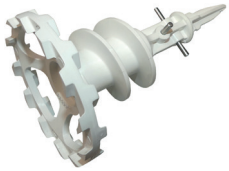
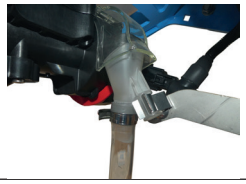
7.2 - Metering unit maintenance and greasing table

Maintenance table for the ValoTerra metering unit (Maintenance intervals are given for normal conditions of use)		
Location	**Maintenance instructions**	**Intervals**
Metering unit components		
The vacuum system 	- Check that pipes are properly connected and the vacuum interface is leak-tight. - Check that the interface is clean and use pressurised air to remove any dust and other residues. - Check that the correct operating rate is being applied. - Check the condition of the pipe (for holes or cuts).	Annual 50 hours Daily 50 hours
Opener discs 	- Check that the discs can be turned by hand - Check that the discs are touching at the front. - Check for wear by measuring the discs' diameter "diam. > 440mm" - Check the general condition of the opener discs' guard - Check the discs' tightening torque "160 Nm".	50 hours 50 hours Annual Annual Annual
Opener disc scrapers 	- Check the scrapers for wear. - The scrapers must touch the disc in order to scrape it. - Check the fitting and tension of the spring.	50 hours 50 hours 50 hours
Clod remover 	- Check the coulter and wings for wear. - Check that it has been properly adjusted to suit the soil type.	Annual Daily
Trash wheels 	- Check the toothed discs for wear. - Check that the discs can be turned by hand - Check that they have been properly adjusted to suit the soil type.	Annual 50 hours Daily
PRO wheel 	- Check the wheel for wear. - Check wheel mobility, rotation and closing spring tension. - Check the wheel scraper for wear and tightening torque. (4 possible positions in case of wear). - Check the tightening torque of the PRO wheel.	50 hours 50 hours 20 hours Annual
Gauge wheels 	- Check that the gauge wheels can be turned by hand - Check that the wheel arms are greased. - Check the point of contact with the equaliser for wear. - In case of excessive wear, it is possible to switch the arms to access a new point of contact. - Check the gauge wheels' tightening torque "160 Nm".	50 hours Daily Annual Annual Annual
Gauge wheel scrapers 	- Check the scrapers for wear. - Check the clearance between the scraper and wheel (3-4mm clearance). - Check the scrapers' tightening torque.	50 hours 50 hours 50 hours

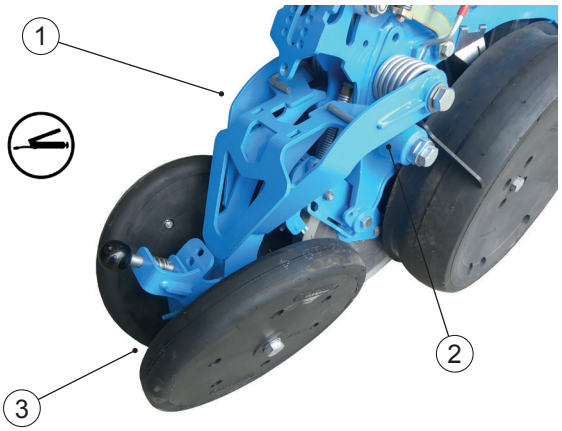
7.2 - Metering unit maintenance and greasing table

Equaliser 	- Check the equaliser's points of contact with the arms for wear. - With the planter raised, test the depth lever to check that it moves freely. - With the planter raised, raise the gauge wheels to check that they are moving properly.	Annual 50 hours 50 hours
Furrowing tip 	- Check the tips for wear. - Check the automatic release system. - Check that the tips are securely snapped in.	20 hours Annual Daily
Closing wheels 	- Check the wheels for wear. - Check that the wheels can be turned by hand - Check the wheels' tightening torque "160 Nm". - Check that the rear wheel unit is properly greased.	Daily 50 hours Annual 20 hours
ECU 	- Remove the guard and eliminate any dust using pressurised air. - Perform a visual check of connections. - Check the electric cable routing.	Before each season Before each season Annual
Metering box		
Metering box cover 	- Open the cover to check that it is clean. - Clean the entire cover with pressurised air, focusing on the area around the floating insert. - Check the floating insert for wear, which can be done quickly using the wear indicator. - Check the cover lock ensuring that the metering box is leak-proof.	20 hours 20 hours 50 hours 50 hours
Metering box 	- Open the cover to clean the entire box with pressurised air. - Remove the seed disc and clean it. - Clean all parts of the box with pressurised air. - Check the seed selector for wear, which can be done quickly using the wear indicator. - Operate the seed selector lever to check for mobility. - Press the seed selector with your finger to check the spring tension. - Check the ejector for wear, which can be done quickly using the wear indicator. - Press the ejector with your finger to check the spring tension. - Operate the seed flow shutter to check that it is functioning properly.	20 hours 20 hours 20 hours Annual 50 hours 50 hours 50 hours 50 hours 50 hours
Chute sensor 	- Remove the protective cover and eliminate any dust. - Check that the chute is clear and unobstructed. - Using a cloth, clean the windows on the sensor.	20 hours 50 hours 20 hours
Drive motor 	- Remove dust from the motor using pressurised air. - Clean the connections using pressurised air. - Turn the motor clockwise by hand to check that it is not jammed. - Only clean with a damp cloth. - Do not spray water directly onto the motor. - Check the electric cable routing.	50H Before each season Before each season / / Annual

7.2 - Metering unit maintenance and greasing table

Maintenance table for the ValoTerra metering unit (Maintenance intervals are given for normal conditions of use)		
Location	**Maintenance instructions**	**Intervals**
MicroSmart micrograniulator		
MicroSmart micrograniulator 	- Remove the motor and check that the micrograniulator interior is clean. - Fully empty the hopper using the emptying position. - Turn the screw by hand to estimate the plastic ring's clearance. - Remove the metering screw and visually check the plastic ring for wear.	50 hours Daily 50 hours 100 hours
Metering screws 	- Check the cleanliness and general condition of the metering screw. - Check the agitator shafts for the white screw.	100 hours 100 hours
Flexible drop tube 	- Check the cleanliness and general condition of the drop tube along its full length. - Check that the tube is clear and unobstructed.	50 hours 50 hours
Feed funnel 	- Check that the feed funnel is clean. - Check that the funnel is clear and unobstructed.	50 hours 50 hours
Delivery lines 	- Check that the delivery lines are clean. - Check that the lines are clear and unobstructed.	50 hours 50 hours
Drive motor 	- Remove dust from the motor using pressurised air. - Clean the connections using pressurised air. - Turn the motor by hand to check that it is not jammed. - Only clean with a damp cloth. - Do not spray water directly onto the motor. - Check the electric cable routing.	50H Before each season Before each season / / Annual

7.3 - Metering unit grease points



Use:

- Check and clean the grease fittings before greasing.
- Lubricate articulation points with grease fittings.
- Use NLGI 2 grade multiservice "Unil Opal grease 182 DS"

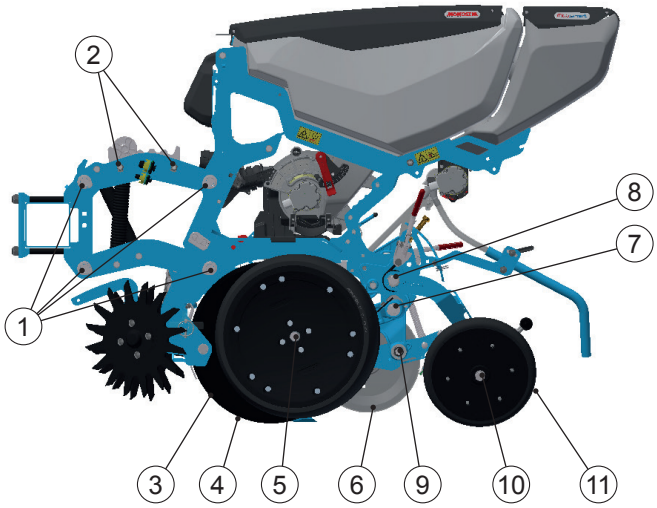
Grease points:

① - Left gauge wheel arm: all operating days, grease liberally so that excess grease emerges either side of the gauge wheel arm.

② - Right gauge wheel arm: all operating days, grease liberally so that excess grease emerges either side of the gauge wheel arm.

③ - Closing wheel axle: every 20 operating hours.

7.4 - Table of specialised tightening torques



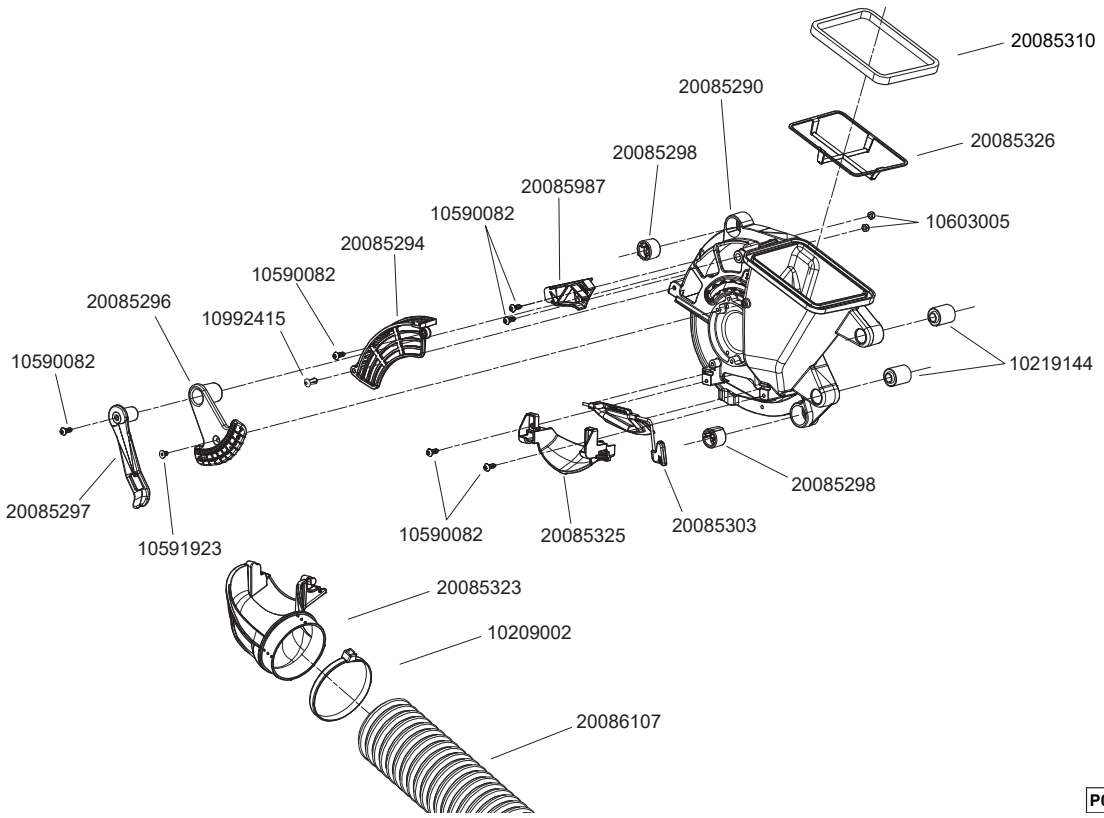
1	Parallelogram axle		2	Pressure system	
	Quantity	4		Quantity	4
	Torque	50 Nm		Torque	50 Nm
	Thread	right-handed		Thread	right-handed
3	**Left furrow opener disc**		4	**Right furrow opener disc**	
	Quantity	1		Quantity	1
	Torque	160 Nm		Torque	160 Nm
	Thread	left-handed		Thread	right-handed
5	**Gauge wheel**		6	**PRO wheel**	
	Quantity	2		Quantity	2
	Torque	160 Nm		Torque	40 Nm
	Thread	right-handed		Thread	right-handed
7	**Gauge wheel arm**		8	**Rear closing wheel unit**	
	Quantity	2		Quantity	2
	Torque	300 Nm		Torque	160 Nm
	Thread	right-handed		Thread	right-handed
9	**PRO wheel fork**		10	**Rear unit left wheel**	
	Quantity	2		Quantity	1
	Torque	80 Nm		Torque	80 Nm
	Thread	right-handed		Thread	left-handed
11	**Rear unit right wheel**				
	Quantity	1			
	Torque	80 Nm			
	Thread	right-handed			

7.5 - General table of tightening torques

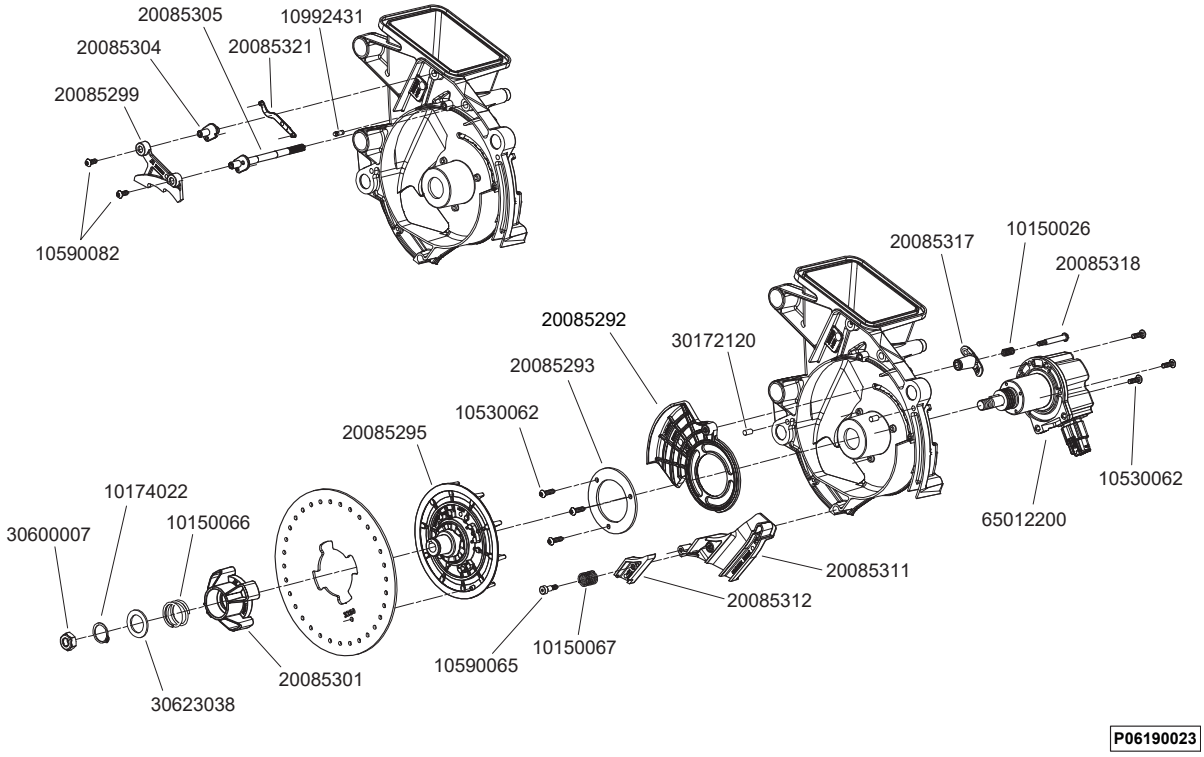
RECOMMENDED TIGHTENING TORQUES FOR SCREWS AND BOLTS WITH M THREADS Values are given in Nm				
	Steel fastener class			
Dimensions	**4.8**	**8.8**	**10.9**	**12.9**
M3	0.6	-	-	-
M4	1.4	-	-	-
M5	2.8	5.7	8.3	9.7
M6	4.8	9.8	14.4	16.9
M8	11.6	23.8	35	41
M10	23	47	69	87
M12	-	81	120	140
M14	-	130	190	223
M16	-	202	297	348
M20	-	408	581	679
M22	-	550	784	917
M24	-	701	999	1169
M30	-	1030	2001	2342
M36		2445	3483	4075

8 - SPARE PARTS

8.1 - Metering box (1)

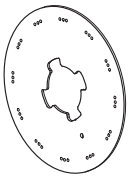


8.2 - Metering box (2)



8.3 - Seed discs

6	Ø3,5	0635	23086013	100	Ø1,2	10012	23085932
24	Ø2,5	2425	23085934				
32	Ø1,6	3216	23086016				
32	Ø2,0	3220	23085931				
32	Ø2,2	3222	23086075				
32	Ø2,5	3225	23085937				
32	Ø2,7	3227	23086191				
32	Ø3,3	3233	23086010				
32	Ø3,5	3235	23086011				
32	Ø3,7	3237	23085936				
32	Ø4,0	3240	23086072				
32	Ø4,5	3245	23086071				
32	Ø5,0	3250	23085930				
32	Ø6,5	3265	23085935				
40	Ø4,5	4045	23086073				
48	Ø3,5	4835	23086074				
56	Ø4,5	5645	23086076				
60	Ø1,2	6012	23085933				
72	Ø1,6	7216	23086014				
72	Ø2	7220	23086078				
72	Ø2,2	7222	23086017				
72	Ø4	7240	23086079				
72	Ø4,5	7245	23085939				
100	Ø1,0	10010	23086015				

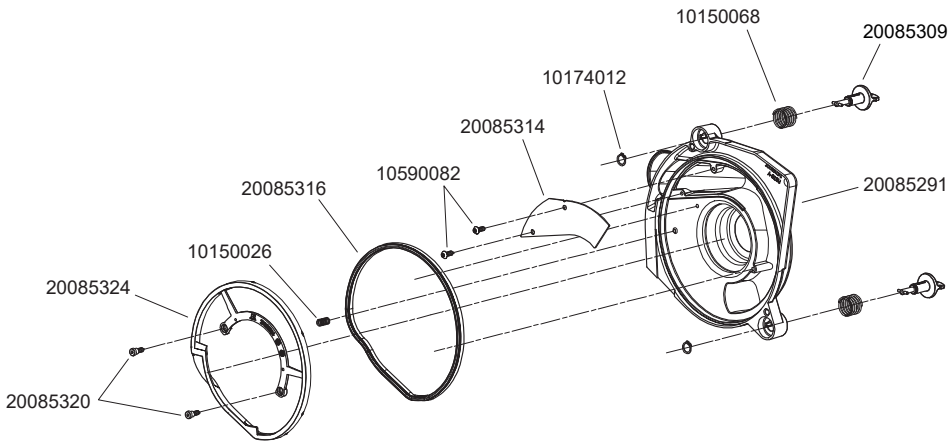


12	Ø3,0	1230T3.7	23086012

49	Ø3,5-4,5	2S 4935-45	23085938
60	Ø3,5-4,0	2S 6035-40	23086018
60	Ø4,0-4,0	2S 6040-40	23086019
60	Ø3,5-4,5	2S 6035-45	23086070

P06190220

8.4 - Metering box (3)



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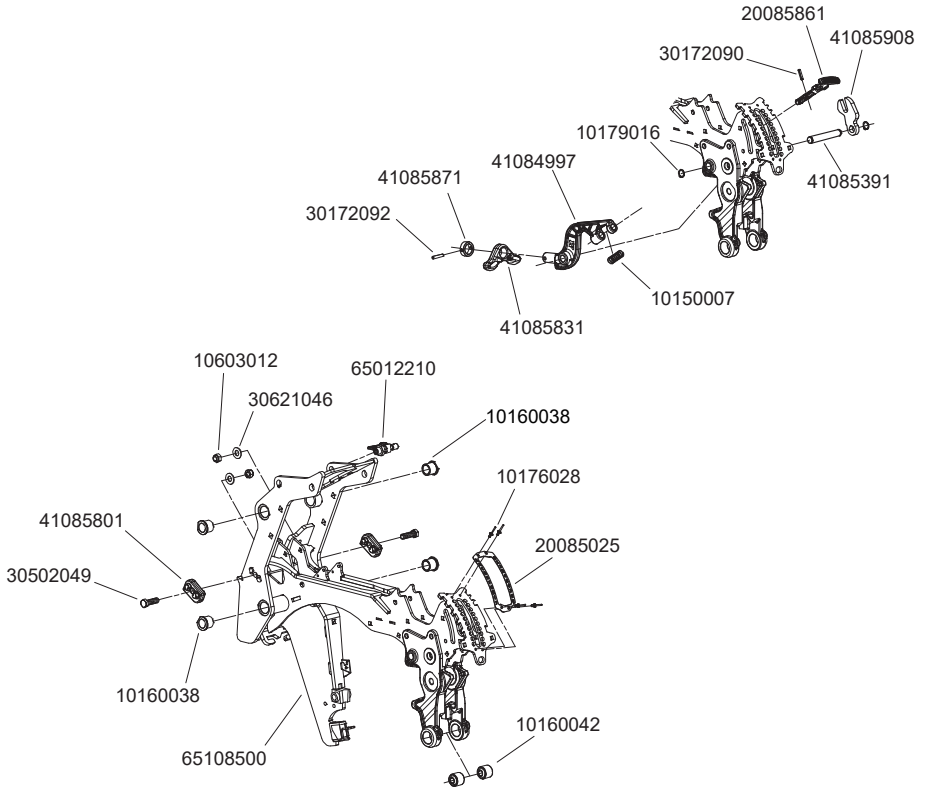
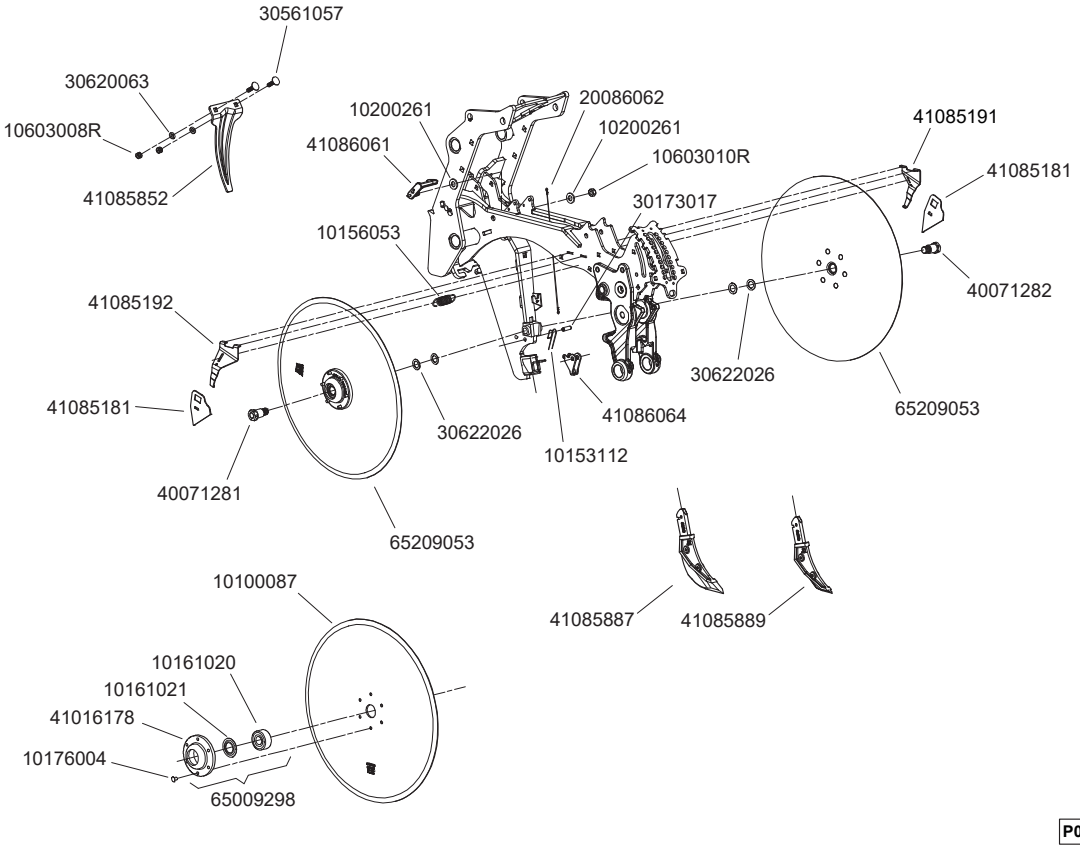
8.5 - Metering unit body



P06190063

8.6 - Double opener discs



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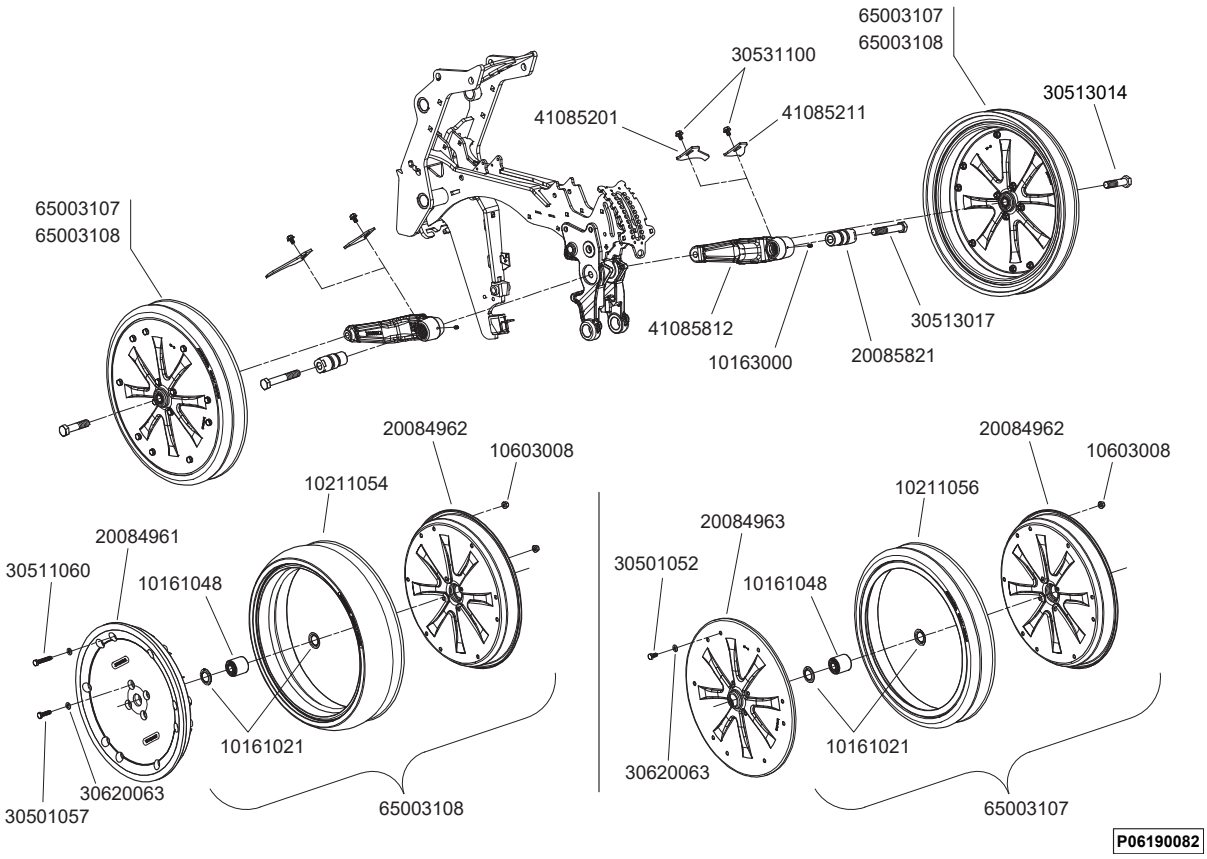
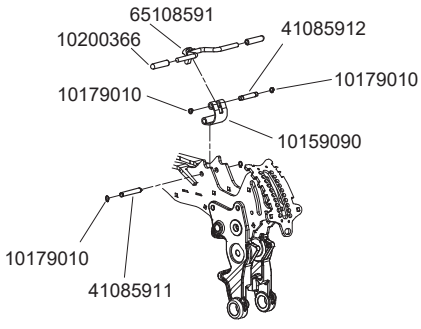
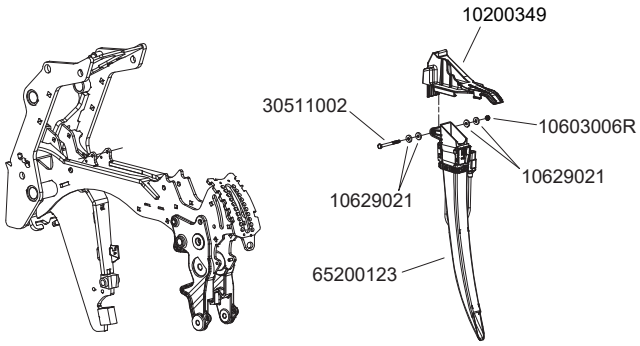
8.7 - Gauge wheels



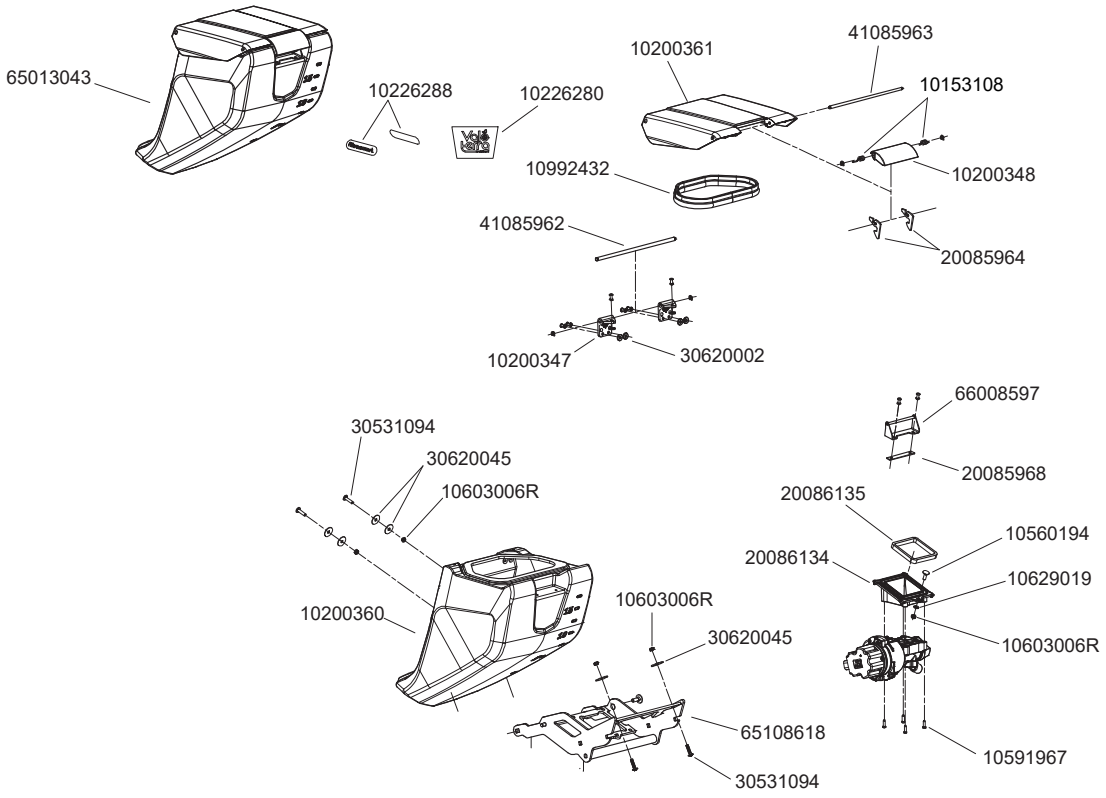
8.8 - Hopper cradle latch



8.9 - TT2 seed tube



8.10 - Rear MicroSmart hopper assembly



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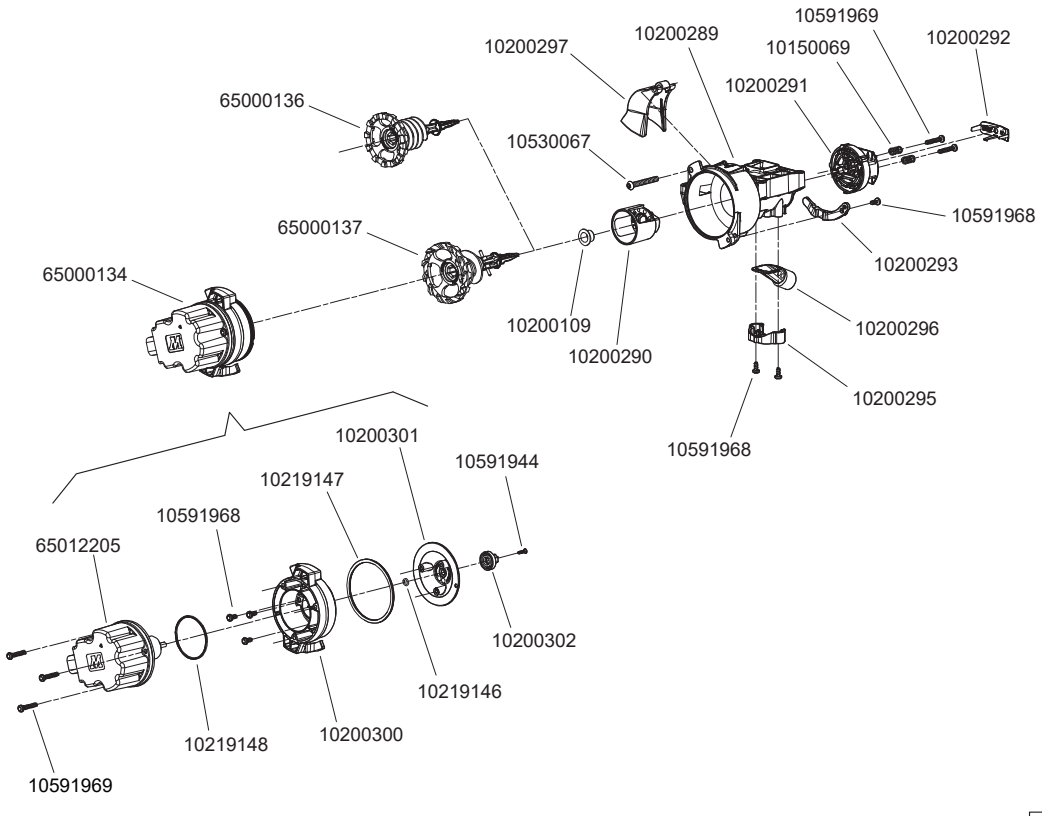
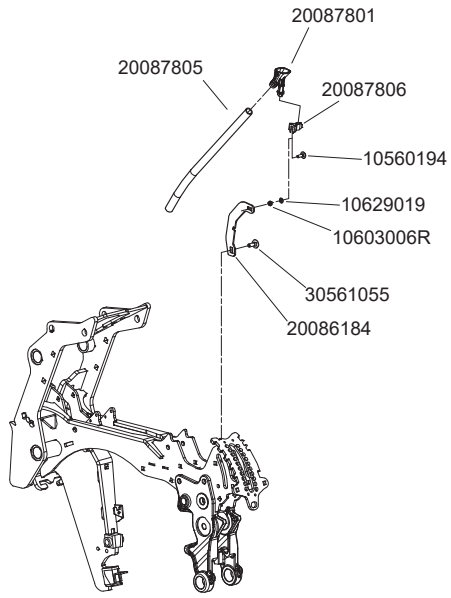
8.11 - MicroSmart microgranulator (1)

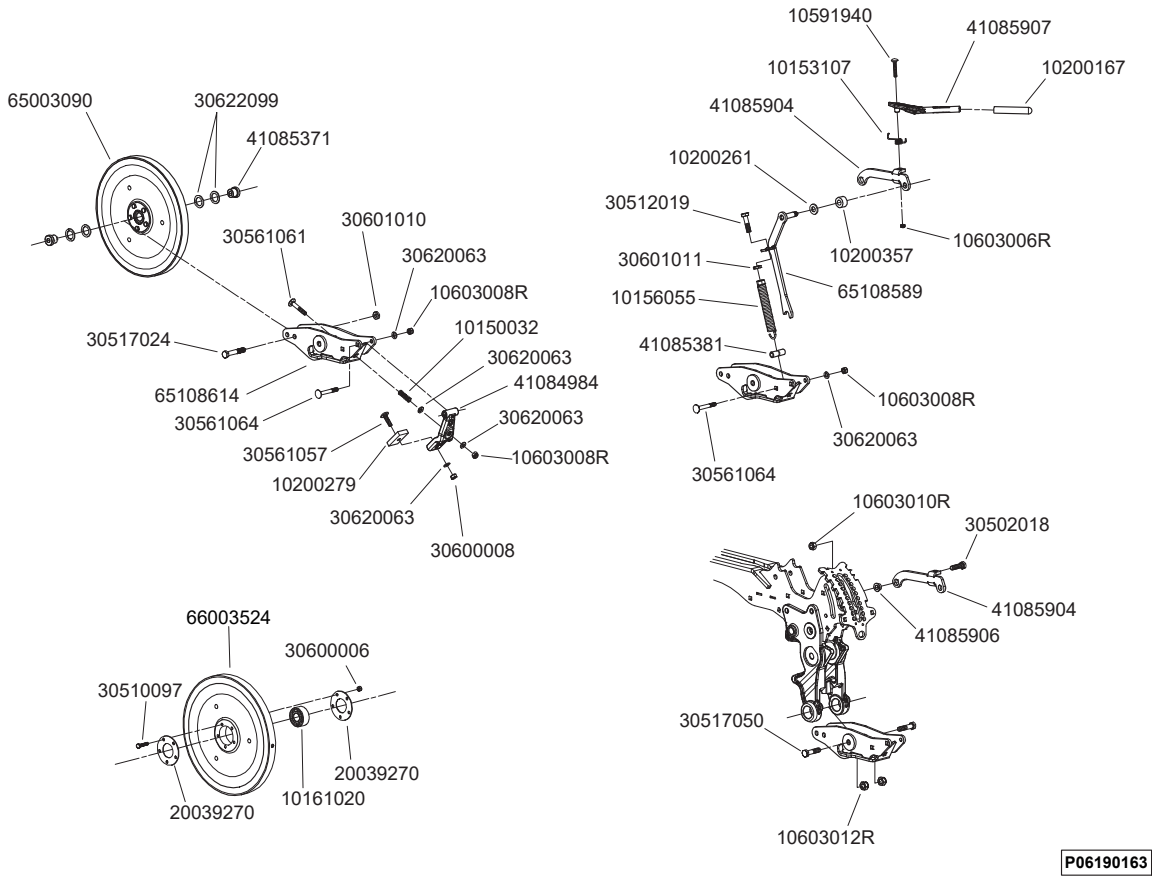


P06190042

8.12 - MicroSmart drop tube assembly



8.13 - PRO wheel



NOTES

In order to continually improve our products, we reserve the right to alter our equipment without prior notice, and therefore some details may differ from those described in this manual.

Products may differ from the photographs presented.

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