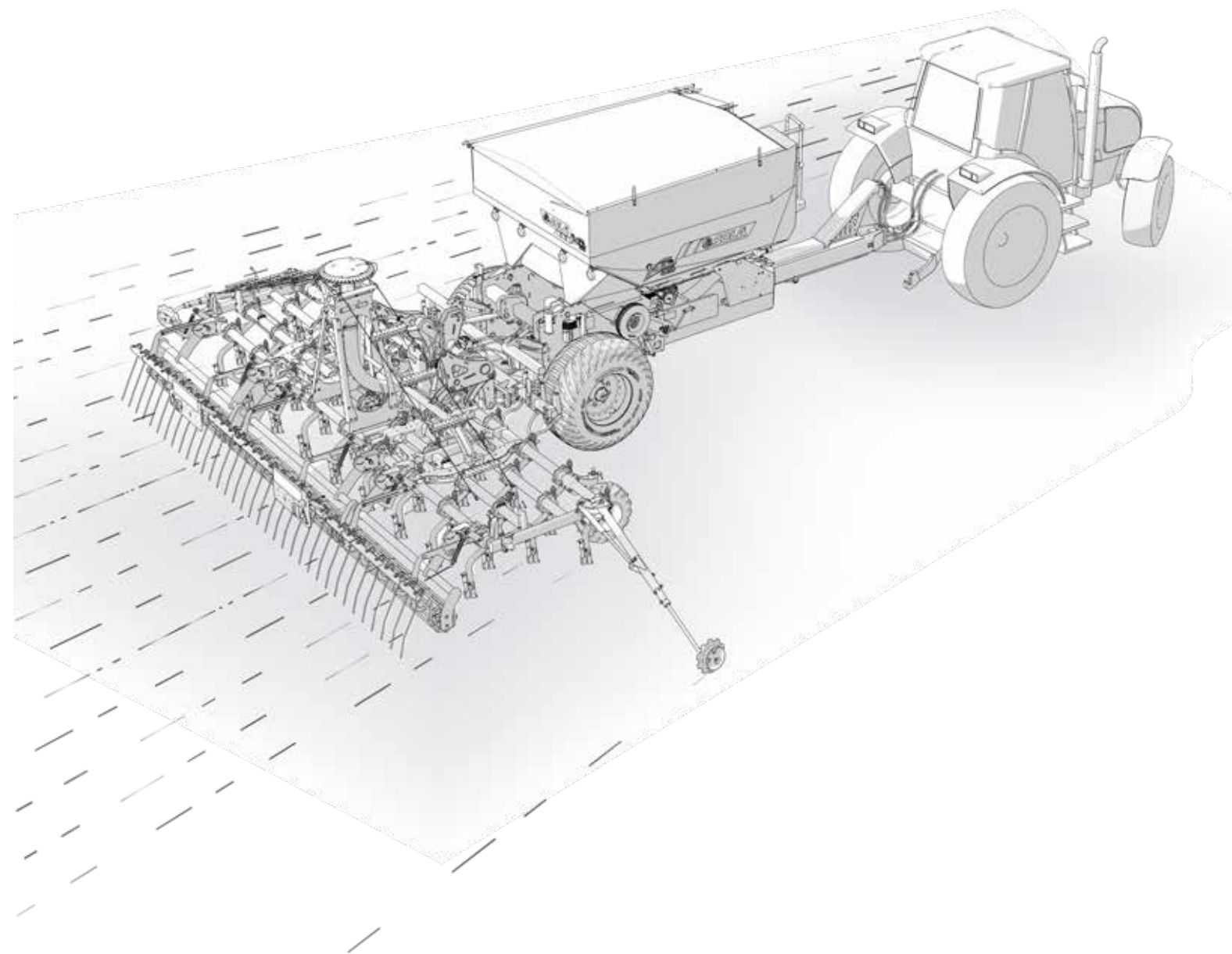




VESTA-2813

SM / NS PLUS

Trailed pneumatic seed drill



STARTING MANUAL

COMMISSIONING, MAINTENANCE AND DOSAGE

WWW.SOLAGRUPO.COM

SOLÀ Seed Drills and Fertilizer Spreaders are manufactured in a factory specialised exclusively in this segment and backed by the experience in use of many thousands of users.

They are high-tech machines designed for long, trouble-free service in a wide variety of conditions, equipped with simple, effective devices for excellent performance with minimum maintenance.

Our goal in providing full information about its possibilities and settings is to help you achieve what you expect from our machine.

3rd Edition - Novembre 2022

Ref.: CN-811138/GB

Created by: MAQUINARIA AGRÍCOLA SOLÀ, S.L.

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Specifications subject to change without notice.

The photographs do not necessarily show the standard version of the machine.

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1- INTRODUCTION

READ THE INSTRUCTIONS AND RECOMMENDATIONS in this manual before using **THE VESTA-2813 SEED DRILL**. This will reduce the risk of accidents, prevent damage to the seed drill due to improper use, increase its performance and lengthen its service life.

The manual should be read by everyone performing operational (including preparation, repairs in the field and general care of the machine), maintenance (inspection and technical assistance) and transportation tasks.

For your own safety and that of the machine, observe the safety instructions at all times. **SOLÀ** will not accept liability for any damage or malfunction caused by failure to comply with the instructions given in this manual.

The first chapters contain the Technical Characteristics, the Safety Instructions and Basic Concepts for Sowing. The basic knowledge required to operate the machine is covered in the sections on Commissioning and Maintenance.

The manual is completed with Dosage Tables for different types of seed and fertilizer.



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2. SAFETY INSTRUCTIONS

2.1 SAFETY SYMBOLS

You will find three types of safety and hazard symbols in this manual:



To make it easier to work with the seed drill.



To avoid damaging the seed drill or the optional accessories.



To avoid personal injuries.

You will find the following warning pictograms on the machine:



Carefully read and observe the operating instructions and safety advice given in the instruction manual.



Stand clear of the tractor rear during the hitching manoeuvre. **Danger of serious injury.**



Turn off the tractor engine and remove the key from the ignition before carrying out repairs or maintenance operations on the machine.



Never stand under the coulter unit or within its operating range. **Danger of serious injury.**



Danger of crushing if you are working underneath the coulter unit; secure it to prevent it from dropping. **Danger of serious injury.**



Do not climb on the machine while it is in operation. **Danger of falling.**



Possibility of entry of pressurised hydraulic fluid. Keep the pipes and hoses in good condition. **Danger of serious injury.**



Do not stand under the track markers or within their operating range. **Danger of serious injury.**



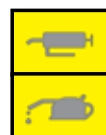
Do not put your hand in the hopper while the wheels are turning. **Danger of serious injury.**



Hitching point for loading and unloading the machine by crane. See section 2.3 LOADING AND UNLOADING INSTRUCTIONS.



Do not exceed the maximum load



Keep the parts of the machine that show these lubrication and greasing symbols in good condition and greased. See section 8.4 GREASING AND LUBRICATION.



Direction of rotation and speed of the power take-off (only on machines with mechanically driven turbine).

2.2 GENERAL SAFETY PROVISIONS



- Check that working and traffic conditions are safe each time before starting the machine.



- Do not place foreign objects in the hopper.



- Check that no-one is in the machine's working area or nearby.



- Depressurise the circuit and stop the tractor engine before working on the hydraulic system.



- Observe the traffic signs and regulations when using public highways.



- The hydraulic circuits' pipes and hoses undergo natural ageing in normal conditions. These parts' service life should not exceed 6 YEARS. They should be inspected regularly and replaced at the end of their service life.



- It is strictly forbidden to climb on the machine during work and transport.



- Lock the lowering control when transporting the seed drill with the coulter unit raised. Before leaving the tractor, mount the support legs, lower the coulter unit to the ground and remove the starter key from the tractor.



- Before starting the machine, familiarise yourself with all drive parts and their operation.



- Pay particular attention when hitching and unhitching the machine to the tractor.



- When carrying out maintenance work with the machine raised, always use sufficient support elements to prevent the machine from lowering.



- The power take-off transmission must be protected and in good condition. Use the chain provided to prevent the protective tube from turning.



- Before sowing, assess the possible risks that the area may have, such as steep slopes, possible contact with overhead power lines due to unevenness of the ground and/or the position of the machine's moving parts.



- Only fit the power take-off transmission with the engine turned off.



- Not circulate with the machine exceeding the load limits imposed by the manufacturer.



- Make sure that everyone is at a safe distance before turning on the power take-off.



- Never leave the driver's seat while the machine is moving.



- On machines equipped with a braking system (service, emergency or storage brake), all components must be connected to the tractor and machine in order to be able to drive and/or store the machine.

2.3 LOADING AND UNLOADING INSTRUCTIONS



THESE OPERATIONS MUST BE PERFORMED BY QUALIFIED, EXPERIENCED PERSONNEL.



CAUTION: THE TRUCK MUST BE LOADED AND UNLOADED WITH THE ASSISTANCE OF A GANTRY CRANE, IF POSSIBLE. SEE SECTION 3.2 TECHNICAL CHARACTERISTICS FOR THE LOAD THAT THE GANTRY CRANE MUST BEAR.



WHEN RECEIVING THE MACHINE, CHECK WHETHER IT HAS BEEN DAMAGED DURING TRANSPORT OR, FAILING THAT, WHETHER PARTS ARE MISSING. REPLACEMENTS DUE TO DAMAGE CAN ONLY BE MADE IF THE CORRESPONDING CLAIM IS FILED IMMEDIATELY WITH THE CARRIER.

The images show the layout of the lifting straps and attachment points for this operation:

- **Front:** two straps attached to the points provided on the inside of the hopper front (Fig. 2.2).
- **Rear:** two straps attached to the coulter unit's chassis (Fig. 2.3).

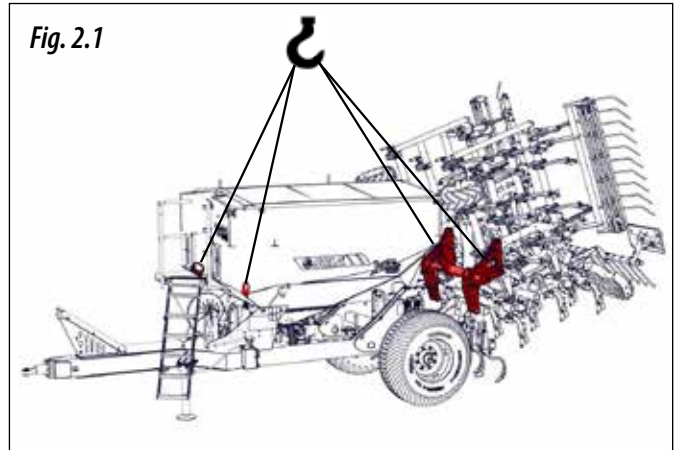


Fig. 2.1

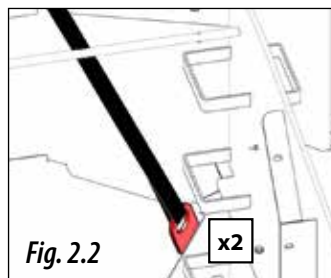


Fig. 2.2

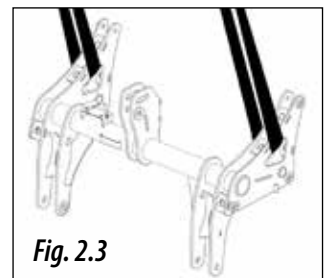
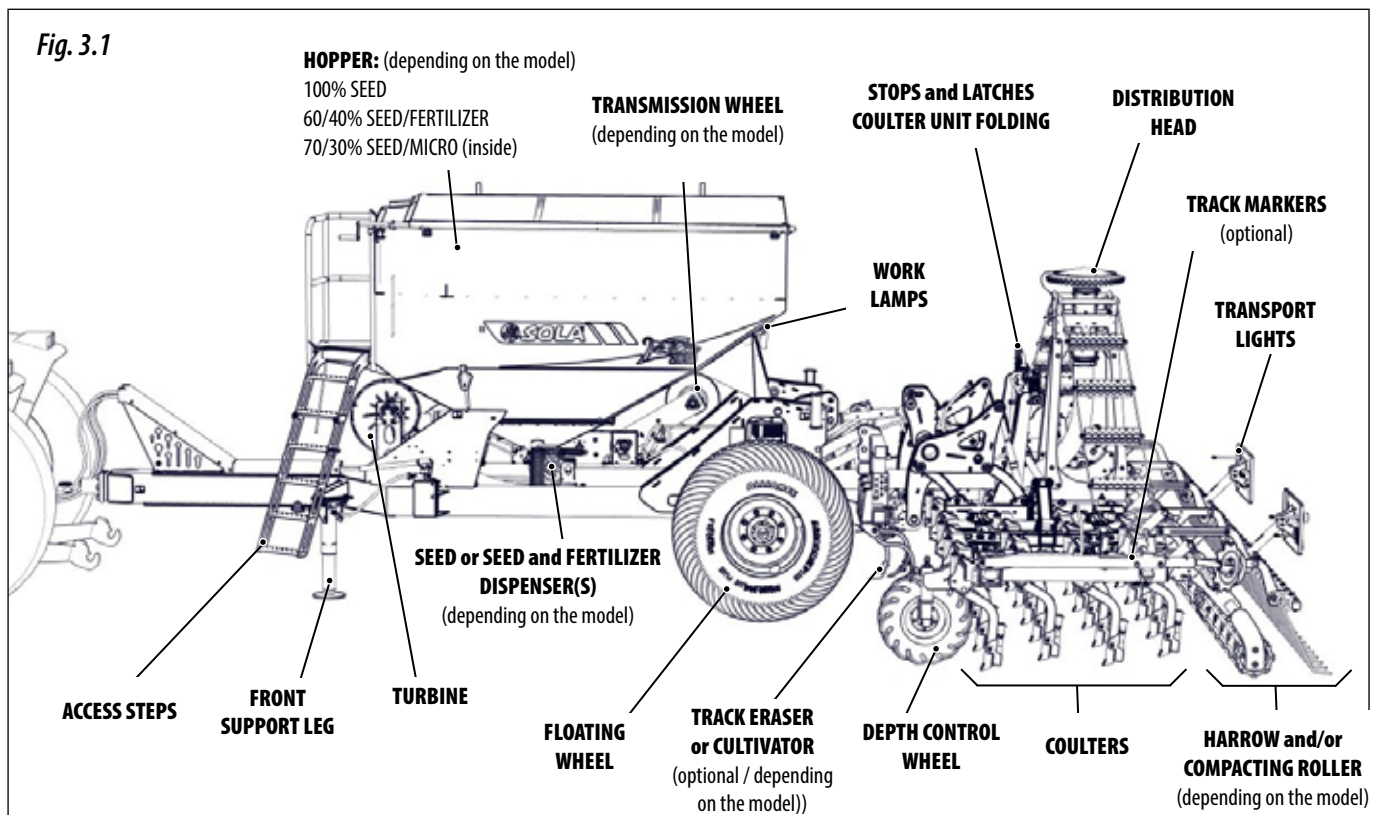


Fig. 2.3

3. GENERAL DESCRIPTION

3.1 OVERVIEW OF THE MACHINE



3.2 TECHNICAL SPECIFICATIONS

MACHINE TYPE No. COULTERS	SEPARATION BETWEEN COULTERS (cm)	HOPPER CAPACITY (Litres)	TILLING WIDTH (m)	TRANSPORT WIDTH (m)	MAX. HEIGHT (m) without track markers	LENGTH (m)	TYRES
SM 600/30	20	7100	6	3	3.4	9	550/60-22.5
SM 600/37	16	7100	6	3	3.4	9	550/60-22.5
NS 600/43	14	7100	6	3	3.4	9	550/60-22.5
NS 600/48	12.5	7100	6	3	3.4	9	550/60-22.5
SM 680/34	20	7100	6.8	3	3.9	9	550/60-22.5
SM 700/43	16	7100	7	3	3.9	9	550/60-22.5
NS 700/48	14.5	7100	7	3	3.9	9	550/60-22.5
SM 770/47	16	7100	7.7	3	4.25	9	550/60-22.5

3.3 MACHINE IDENTIFICATION

The machine has an IDENTIFICATION PLATE on the carriage chassis, which specifies:



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3.4 USE ACCORDING TO DESIGN

The **VESTA-2813** seed drill has been specifically designed for sowing cereals and other grain seeds and adding fertilizer (depending on the model).

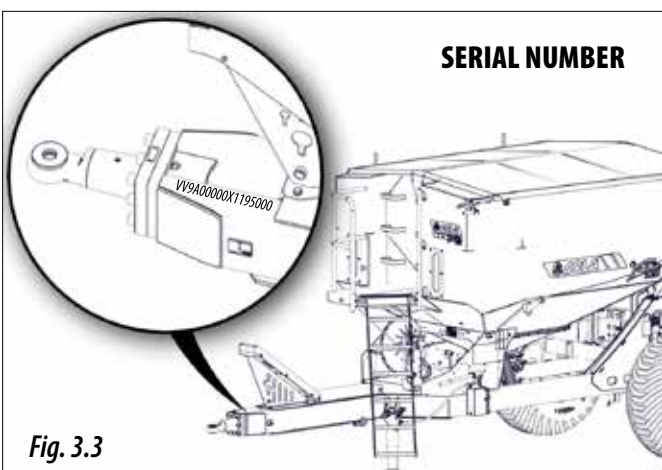
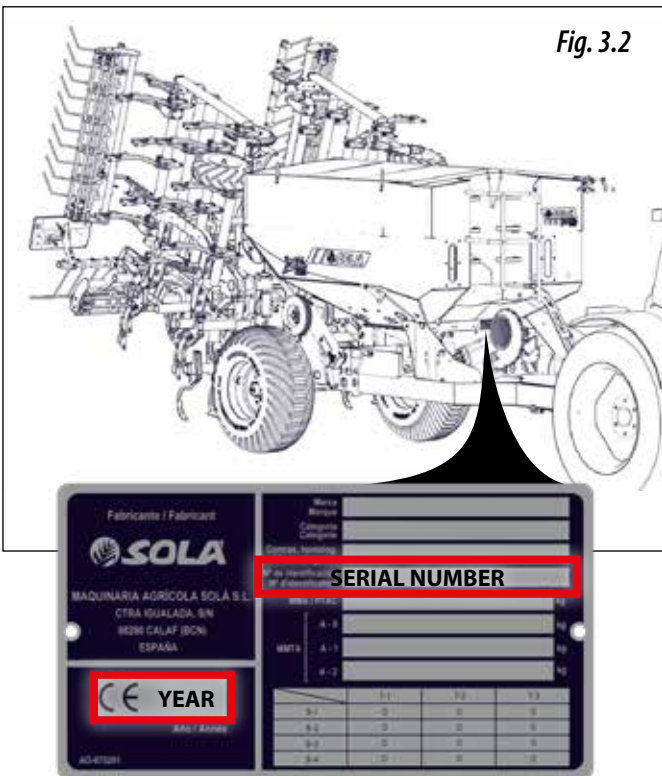
The machine is designed to be towed by a farm tractor.

The manufacturer accepts no liability for damage that may be caused by other uses of the machine (see section 10. WARRANTY).

All statutory provisions relating to machine safety, traffic regulations, and health and safety at work must be complied with.

Any modification made by the user will void the manufacturer's warranty for any defects or damage that may arise as a result (see section 10.). WARRANTY).

Avoid using wet seeds and fertilizers, as these can cause clogging and breakage of components.



4. KEY CONCEPTS FOR SOWING

4.1 SOIL

A well-prepared soil significantly improves sowing quality. It is not possible to obtain good results if the soil is in large clods or the furrows are very uneven. Although the machines can withstand harsh working conditions; the seeding will not be good quality if the seedbed is not properly prepared.

4.2 SEED

It is essential to use quality, clean and, in the case of barley, well-threshed seed.

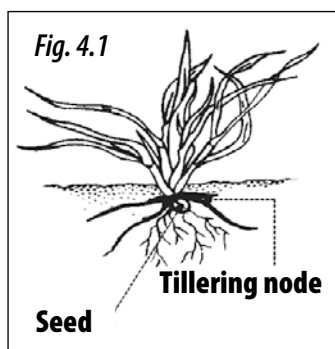
4.3 DEPTH

Sowing depth influences tillering, plant vigour, frost and drought resistance: the tillering node is always 1 to 2 cm below the surface, regardless of the depth at which the seed is buried.

Sowing deeper will not mean deeper roots. Only a few roots grow from the lower part of the seed. The main mass originates at the tillering node almost at ground level.

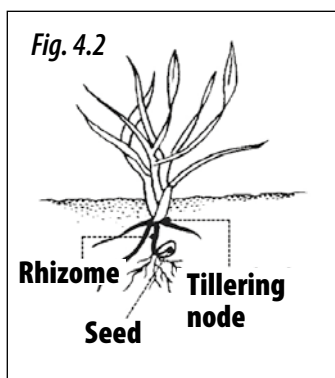
Sowing at normal depth: 2 to 4 cm

- Thick stem, short rhizome and good frost resistance.
- Multiple tillering with 3 to 6 tillers and many leaves, between 6 and 10.
- Substantial rooting, 5 cm wide and 10-12 cm deep.
- Fewer grains per square metre of sowing yields more ears.



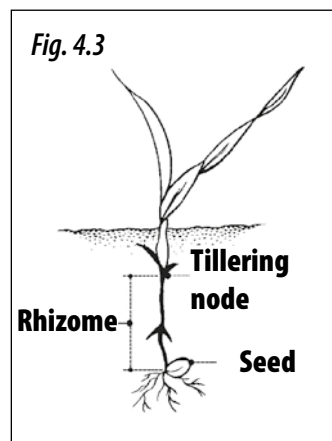
Sowing slightly deeper: between 5 and 6 cm

- Thin stem, rhizome exposed to frost.
- Delayed and poor tillering, 1 or no tillers and few leaves, about 3 or 4.
- Regular rooting, 3 cm wide and 5 cm deep.
- We need more grains per square metre to obtain the same number of ears as in the first case.



Very deep sowing: 8 to 10 cm

- Very slender stem. No tillers and a single leaf.
- The grain's reserves are depleted in a long rhizome that can be easily cut by frost.
- Poor rooting, 1 cm wide and 3 cm deep.
- We need twice as many grains per square metre to obtain the same number of ears as in the first case.



IMPORTANT: SOWING DEPTH WITH STRAIGHT COULTER UNITS IS NOT UNIFORM AS IT DEPENDS ON SOIL CONDITION AND REGULARITY.



IMPORTANT: BEFORE STARTING TO SOW OR WHEN CHANGING THE FIELD, A TEST MUST BE CARRIED OUT TRAVELING 20 METERS IN THE SOWING POSITION TO VERIFY THE DEPTH OF THE ADJUSTABLE COULTER ARMS IN COMPARISON WITH THE FIXED ARMS.



IN VERY COLD AREAS, SUCCESSIVE FROSTS CAN CAUSE THE TOP LAYER OF THE SOIL TO SWELL AND BREAK UP, WITH THE DANGER OF LOOSENING THE INCIPIENT ROOTS OF THE PLANT AND CAUSING ITS DEATH. IN THESE CASES, A SLIGHTLY DEEPER SOWING DEPTH MAY BE ADVISABLE OR, IF POSSIBLE, A ROLLER SHOULD BE USED TO COMPACT THE SOIL AND PROVIDE MORE SHELTERED CONDITIONS FOR THE SEEDS.



WHEN THE MACHINE IS STARTED, NO SEEDS ARE PLACED IN THE FURROWS DURING THE FIRST METRE OF TRAVEL. HOWEVER, WHEN THE MACHINE IS STOPPED, THE GRAINS THAT ARE TRAVELLING DOWN THE PIPES WILL FALL OUT AND PILE UP IN THE LAST METRE. KEEP THIS IN MIND TO ENSURE A GOOD FINISH OF THE PASS.



ALWAYS WORK AT A UNIFORM SPEED. SUDDEN CHANGES IN SPEED WILL CAUSE UNEVEN SEED DISTRIBUTION.



THE RECOMMENDED SEEDING DEPTH WILL VARY ACCORDING TO THE TYPE OF CROP AND FARMERS ARE ADVISED TO SEEK PROFESSIONAL ADVICE FROM TECHNICIANS OR SPECIALISTS IN THIS FIELD.

5. COMMISSIONING

The points to be taken into account before using the machine are described below:

- Make sure that the machine's mechanical components are well lubricated. Grease the mechanical components regularly (see section 8.4 GREASING AND LUBRICATION).
- Check the tyre pressure (see section 8.5 TYRE PRESSURE).
- Check that the machine's hydraulic circuit pipes and hoses and the compressed air lines (product transport) are in good condition.
- Check the cable layout and that the connectors are firmly coupled.

After coupling the seed drill to the tractor:

- Ensure that the machine is securely attached to the tractor.
- Before starting up the machine, familiarise yourself with all the components and their settings.
- Run the turbine with the machine empty to expel condensed water or any impurities from the product conveying pipes.
- Adjust the machine and all its components to the type of soil and seed to be sown.

5.1 COUPLING THE SEED DRILL TO THE TRACTOR

The **VESTA-2813** seed drill is equipped with a category 4 swivel pintle ring hitch or ball hitch.



WHEN COUPLING AND UNCOUPLING, MAKE SURE THAT THERE ARE NO PEOPLE OR OBJECTS BETWEEN THE TRACTOR AND THE SEED DRILL.



THESE OPERATIONS REQUIRE UTMOST CARE TO AVOID INJURY TO THE OPERATOR.

For the coupling manoeuvre, follow the steps below:

- 1- Connect the seed drill's swivel ring or ball hitch to the tractor, at the hitching point for trailers (Fig. 5.1).
- 2- Raise the machine's support leg (see section 5.6.1 FRONT SUPPORT LEG).



Fig. 5.1



IF THE COUPLING POINT IS TOO LOW, LOWER THE FRONT SUPPORT LEG, SEE SECTION 5.6.1 FRONT SUPPORT LEG.

- 3- Connect the machine's hydraulic circuit connectors to the tractor's distributor.



THE HYDRAULIC CONNECTIONS REQUIRED FOR THE MACHINE ARE SPECIFIED IN SECTION 5.3 HYDRAULIC CONNECTIONS.

- 4- If your machine model does not have a hydraulic turbine, connect the hydraulic pump to the tractor's power take-off.
- 5- Connect the 7-pin electrical plug for the signalling lights and work lamps to the tractor.
- 6- Connect the NEUMASEM MFDC monitor with the 16-pin cable for mechanical transmission models or connect the ISOBUS cable to the tractor's ISOBUS socket.



BEFORE MOVING THE MACHINE, MAKE SURE THAT IT IS SECURELY ATTACHED TO THE TRACTOR.



TO UNCOUPLE THE MACHINE FROM THE TRACTOR, PERFORM THE STEPS DESCRIBED IN THIS SECTION IN THE REVERSE ORDER. BEFORE DISCONNECTING THE HYDRAULIC CONNECTORS CONNECTED TO THE TRACTOR'S DISTRIBUTOR, IT IS ADVISABLE TO FIRST CLOSE THE SHUT-OFF VALVES.



IMPORTANT: WHEN UNCOUPLING THE MACHINE FROM THE TRACTOR, MAKE SURE THAT NO HYDRAULIC CIRCUITS ARE CONNECTED TO THE TRACTOR'S DISTRIBUTOR.

5.2 ELECTRICAL CONNECTIONS

The machine has electrical connections for:

- SIGNALLING LIGHTS and WORK LAMPS.
- ISOBUS CONNECTION (depending on the model).

5.2.1 WORK LAMPS

The machine is equipped with adjustable work lamps at the rear of the carriage. Press the button to turn the lamps on or off (Fig. 5.2).

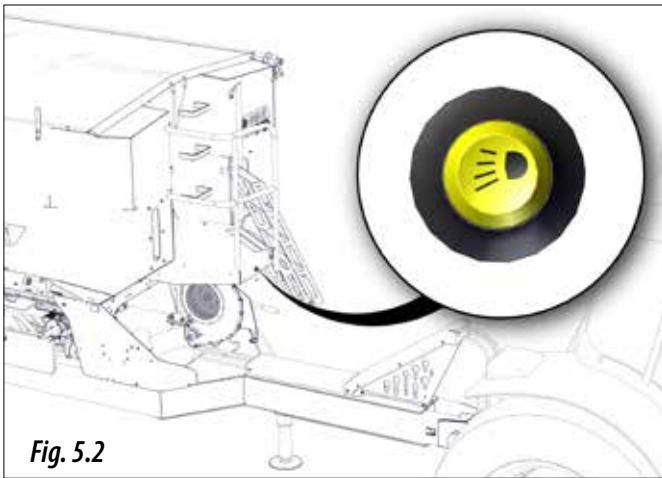
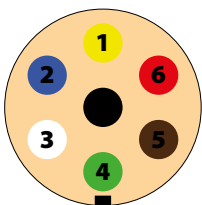


Fig. 5.2

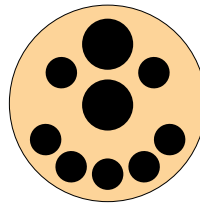
5.2.2 SIGNALLING LIGHTS

All models have a 7-pin connector for the signalling lights. Layout and table of the 7-pin connector (according to ISO 1724):



Pin No.	Standard	FUNCTION
1	L	Left indicator
2	54G	Fog lamps
3	31	Ground
4	R	Right indicator
5	58R	Right position lamp
6	54	Brake
7	58L	Left position lamp

5.2.3 ISOBUS



The machine must have the 9-pin connector to connect to the tractor's ISOBUS (according to ISO 11783).



MAKE SURE THAT THE WORK LAMPS ARE TURNED OFF WHEN TRANSPORTING THE MACHINE ON PUBLIC HIGHWAYS.

5.3 HYDRAULIC CONNECTIONS

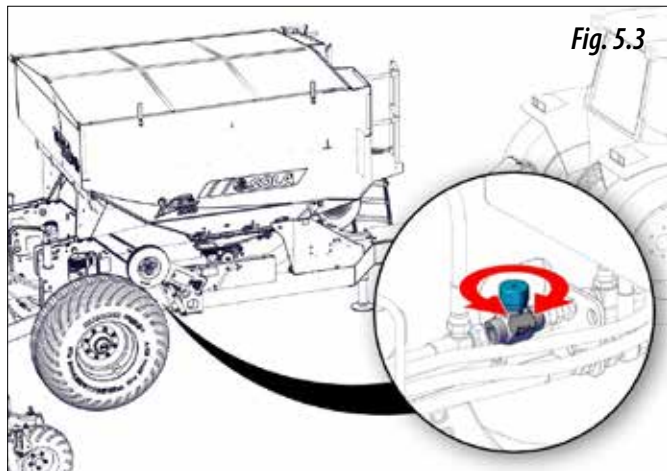
The machine needs hydraulic connections to:

- UNFOLD AND FOLD THE FOLDING PARTS OF THE COULTER UNIT. A double output.
- UNFOLD AND FOLD THE TRACK MARKERS: A double output.
- LOWER AND RAISE THE COULTER UNIT, THE TRACK ERASER (optional) AND THE TRANSMISSION WHEEL (depending on the model). A double output with a key to override the transmission wheel.
- HYDRAULIC TURBINE (depending on the model). A double output.
- HYDRAULIC SERVICE BRAKE. A single output.

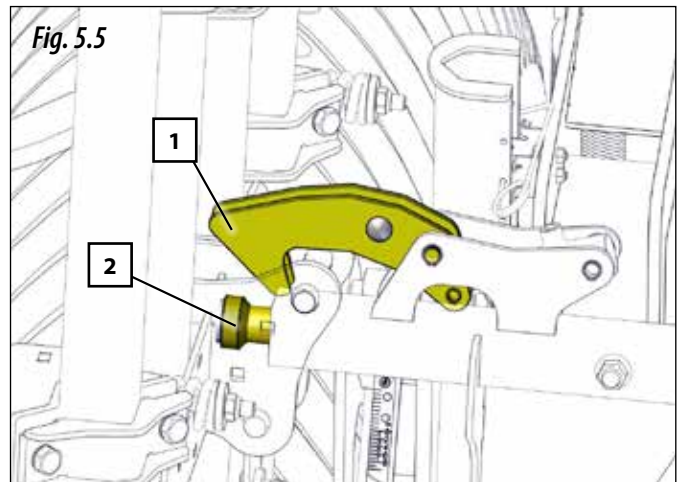
The different hydraulic circuits are colour-coded as described in the following table:

PLUG COLOUR	DESCRIPTION
BLUE	Hydraulic circuit for the track markers
GREEN	Hydraulic circuit for folding the coulter unit
RED	Hydraulic circuit for the service brake and turbine (for versions with hydraulic turbine only)
YELLOW	Hydraulic circuit for lifting the coulter unit, track eraser and transmission wheel

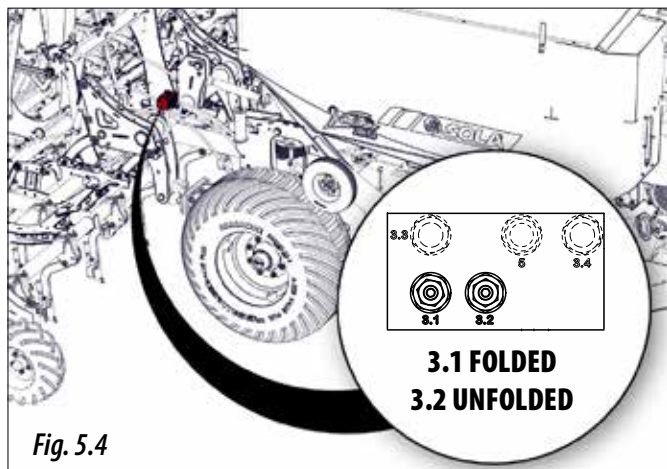
There is a hydraulic flow controller inside the carriage to ensure that the coulters unit is lowered smoothly to the ground (Fig. 5.3).



Depending on the model, the machine is equipped with safety latches (1, Fig. 5.5). These must be used to secure the side units during machine transportation. Figure 5.5 shows the latch in the securing position.



Flow controllers are installed in the hydraulic block to ensure that the coulters unit's folding parts fold and unfold smoothly (Fig. 5.4). There is one controller for each operation, which must be adjusted to the hydraulic flow supplied by the tractor.



IF THE FOLDING PARTS DO NOT UNFOLD WHEN THEIR HYDRAULIC CIRCUIT IS PRESSURISED, MAKE SURE THAT THE SAFETY LATCHES (1, Fig. 5.5) HAVE BEEN RELEASED. IF THEY HAVE NOT, FOLD THE UNIT AGAIN AND ADJUST THE FOLDING STOPS (2, FIG. 5.5).



WHEN CLOSING OR OPENING FOLDING PARTS AND TRACK MARKERS, MAKE SURE THAT THERE ARE NO PEOPLE NEAR THE MACHINE OR FOREIGN OBJECTS IN THE PATH OF MOVING PARTS.



IF HYDRAULIC PRESSURE IS APPLIED AND THE MACHINE DOES NOT RESPOND, CHECK THAT THE HYDRAULIC CONNECTORS ARE PROPERLY CONNECTED TO THE TRACTOR'S DISTRIBUTOR AND THAT THE HYDRAULIC CIRCUITS' SHUT-OFF VALVES ARE OPEN.



TO CARRY OUT MAINTENANCE WORK ON THE MACHINE. ALWAYS DO THIS WITH THE HYDRAULIC CONNECTIONS DISCONNECTED.



KEEP THE HYDRAULIC LINES IN GOOD CONDITION. PRESSURISED OIL CAN PENETRATE THE SKIN AND CAUSE VERY SERIOUS INJURIES.



ALWAYS USE THE HYDRAULIC CONNECTORS SUPPLIED BY THE MANUFACTURER.



NEVER STAY UNDER THE TINE COULTER UNIT OR WITHIN ITS OPERATING RANGE



IMPORTANT: IT IS BEST TO START WITH THE CONTROLLERS ALMOST CLOSED TO PREVENT THE UNIT FROM FOLDING TOO FAST, WHICH COULD DAMAGE THE SEED DRILL.

5.4 TRANSPORT POSITION

With the machine coupled to the tractor and the hydraulic circuits connected to the tractor, follow the steps below to transport the machine:

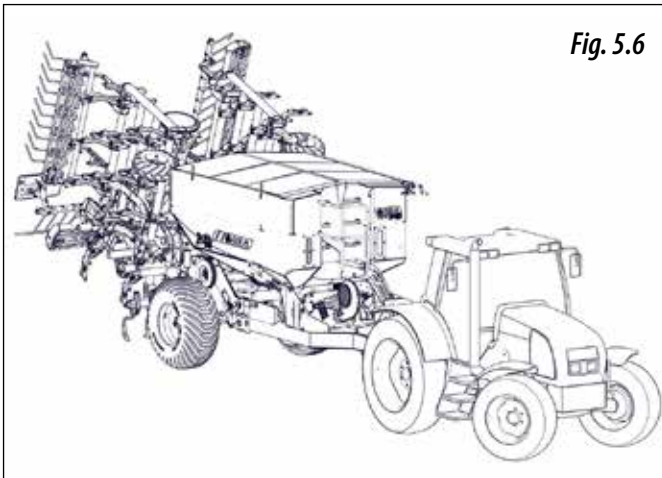


Fig. 5.6

- 1- Fold the track markers if the machine is equipped with them (Fig. 5.7).
- 2- Depending on the machine model, secure the COMPACTING ROLLERS by fitting the two bolts (A, Fig. 5.8).

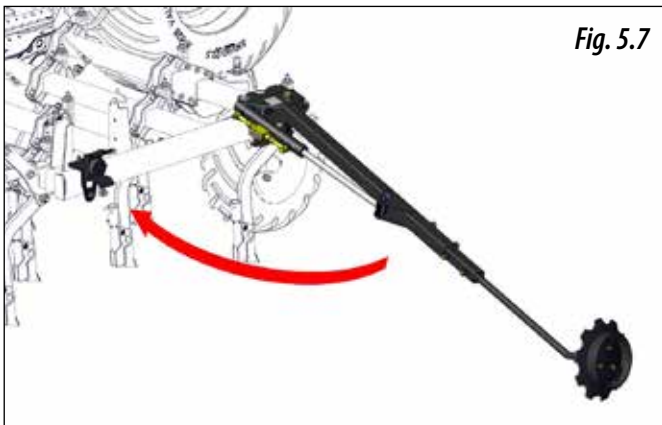


Fig. 5.7

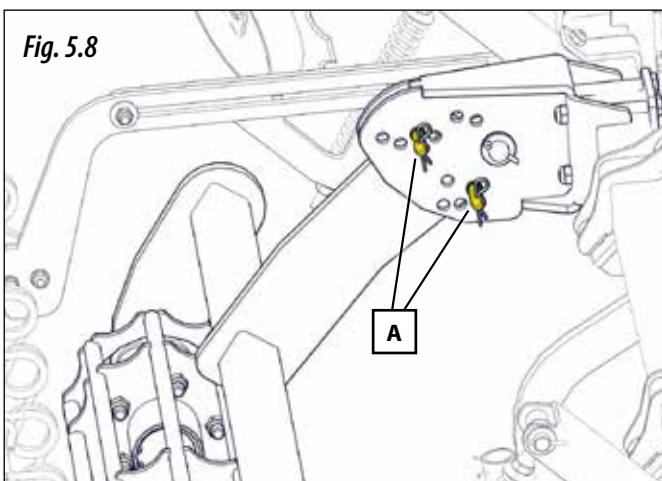


Fig. 5.8

- 3- Lift the side units and make sure that the safety latches have been secured with the bolts (Fig. 5.9).

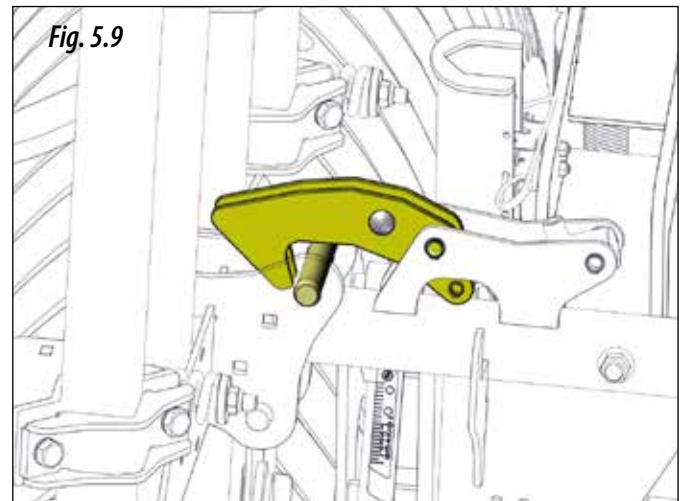


Fig. 5.9

- 4- Raise the coulter unit, the track eraser and the transmission wheel to their maximum height (Fig. 5.10).

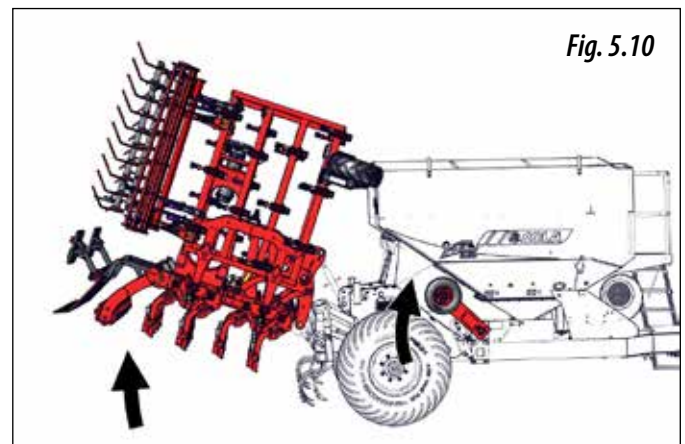


Fig. 5.10



IMPORTANT: IF HYDRAULIC PRESSURE IS APPLIED AND THE COULTER UNIT, TRACK ERASER AND TRANSMISSION WHEEL DO NOT RISE, CHECK THAT THE TRACTOR DISTRIBUTOR'S SHUT-OFF VALVE IS OPEN.



IMPORTANT: THE OFFICIALLY APPROVED COUPLINGS FOR TRAVELLING ON PUBLIC HIGHWAYS ARE THE ONLY RING COUPLINGS PROVIDED BY THE MANUFACTURER.



IMPORTANT: DEPENDING ON THE MACHINE MODEL, IF HYDRAULIC PRESSURE IS APPLIED AND THE TRANSMISSION WHEEL IS NOT LIFTED BUT THE COULTER UNIT AND THE TRACK ERASER ARE, CHECK THAT THE SHUT-OFF VALVE AND THE THROTTLE LOCATED NEXT TO THE TRANSMISSION WHEEL ARE OPEN (FIG. 5.11).

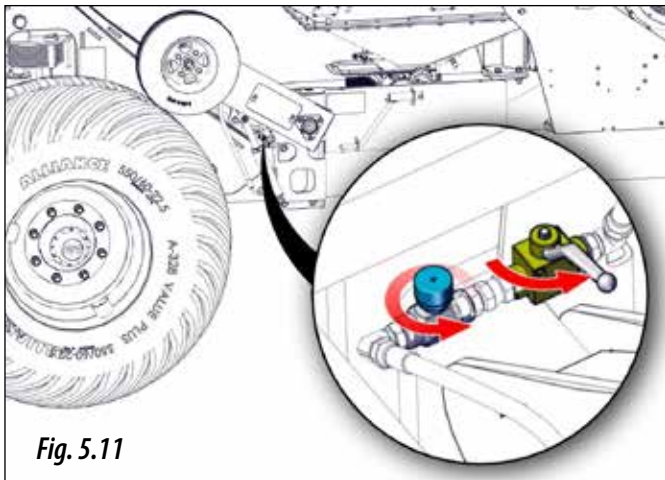


Fig. 5.11

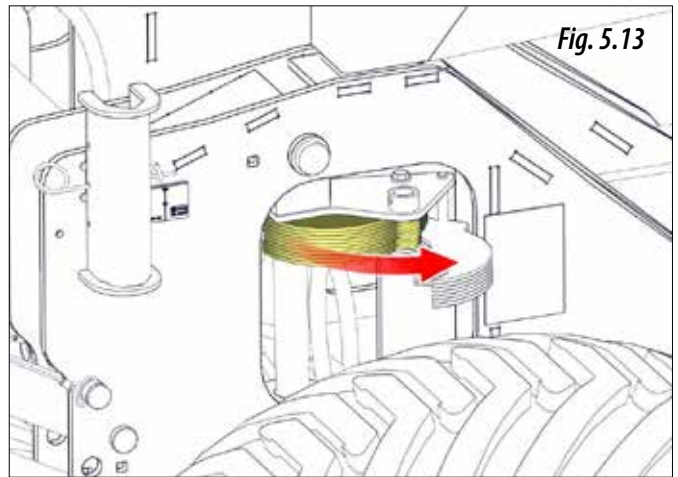


Fig. 5.13

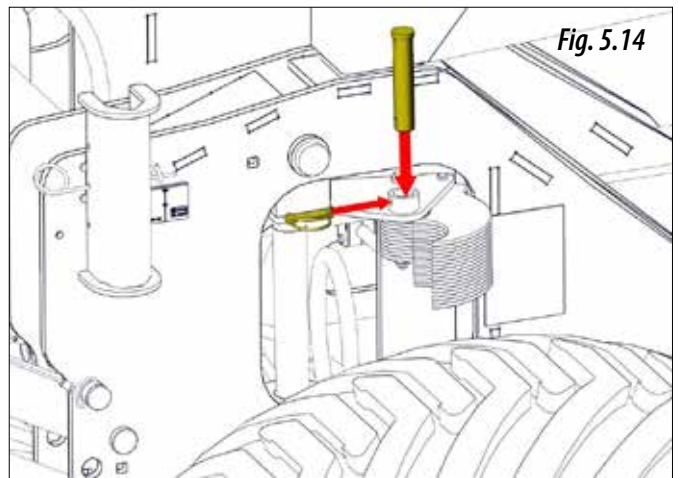


Fig. 5.14

5- Remove the cylinder stops from the carriage by removing the pin and bolt (Fig. 5.12), move the stops (Fig. 5.13) and reassemble the bolt and pin to lock them (Fig. 5.14).

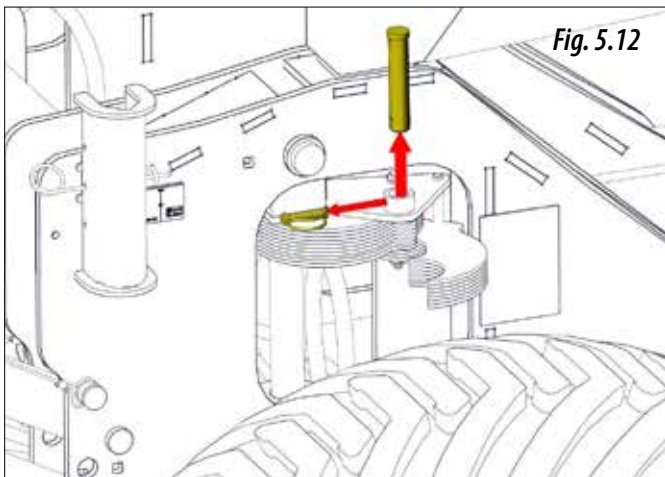


Fig. 5.12

6- Place the two transport blocks in the carriage cylinders (Fig. 5.15) and lock them in position with the latches.

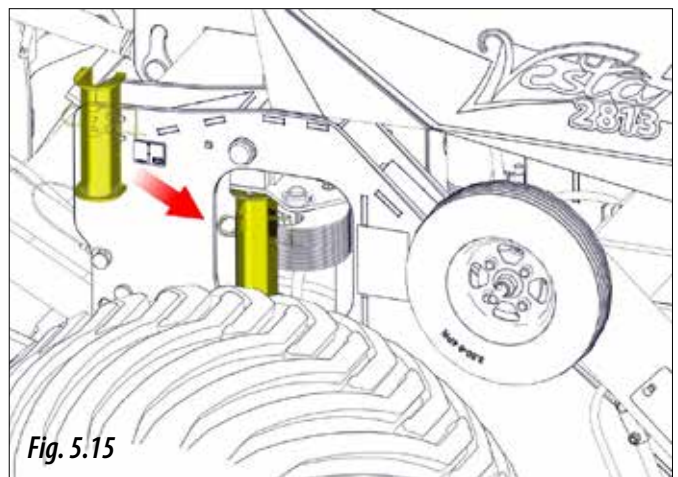


Fig. 5.15

The braking system has a valve located at the front of the machine. This valve is regulated by means of a lever (Fig. 5.16), which will be placed in the correct position according to the hopper's filling level:

Position 1/1 - with the hopper full of product.

Position 1/2 - with the hopper at half capacity.

Position 1/4 - with the hopper empty or with very little product.

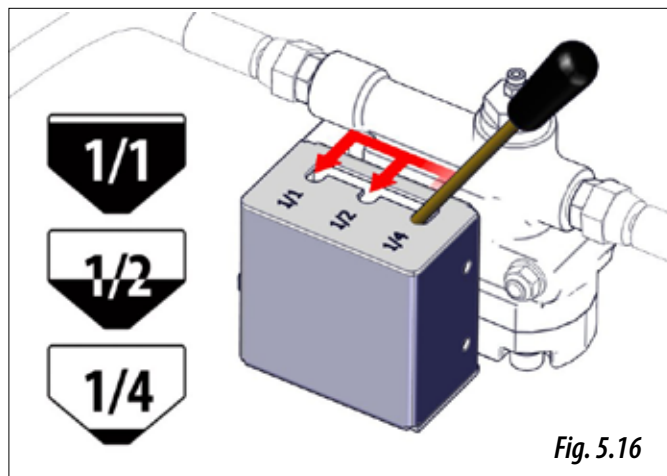


Fig. 5.16



IMPORTANT: INCORRECT USE OF THIS DEVICE MAY BE DANGEROUS AND MAY RESULT IN INADEQUATE BRAKING OF THE VEHICLE, WITH THE RISKS THAT THIS ENTAILS.



IMPORTANT: CLOSE ALL SHUT-OFF VALVES IN THE HYDRAULIC CIRCUITS, IF FITTED, BEFORE GETTING ON THE TRACTOR TO TRANSPORT THE MACHINE.



IMPORTANT: CHECK THAT THE SERVICE BRAKES ON BOTH THE TRACTOR AND THE MACHINE ARE IN GOOD WORKING ORDER BEFORE TRANSPORTING THE MACHINE ON ANY TYPE OF ROAD.



DEPENDING ON THE SERVICE CONDITIONS DEFINED BY THE MACHINE'S END USER AND THE OPTIONAL EQUIPMENT FITTED, THE MACHINE MAY NOT COMPLY WITH THE REGULATIONS IN FORCE ON PUBLIC HIGHWAYS OR ROADS IN TRANSPORT SITUATIONS. THE MACHINE'S END USER IS SOLELY RESPONSIBLE FOR COMPLYING WITH VEHICLE TRAFFIC REGULATIONS. MAQUINARIA AGRÍCOLA SOLÀ WILL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR THE CONSEQUENCES OF NOT COMPLYING WITH CURRENT TRAFFIC REGULATIONS ON PUBLIC HIGHWAYS IN THE COUNTRIES IN WHICH ITS MACHINES ARE USED.

5.5 LOADING AND EMPTYING THE HOPPERS

It is best to use a continuous loader for safe, fast hopper loading. A hydraulic crane can also be used to lift a BIG BAG to the hopper. Follow the BIG BAG manufacturer's instructions to fasten the BIG BAG to the crane.



IMPORTANT: BEFORE FILLING THE HOPPER, CHECK FIRST THAT THERE ARE NO FOREIGN OBJECTS INSIDE THE HOPPER.



IMPORTANT: BEFORE FILLING THE HOPPER, CHECK THAT THE GUILLOTINE DOORS, PRODUCT EXITS AND PLUGS ARE SECURELY CLOSED (GUILLOTINE DOORS FIG. 5.17, PRODUCT EXITS FIG. 5.18 AND PLUGS FOR EXTERNAL MICROGRANULATE KIT FIG. 5.19).

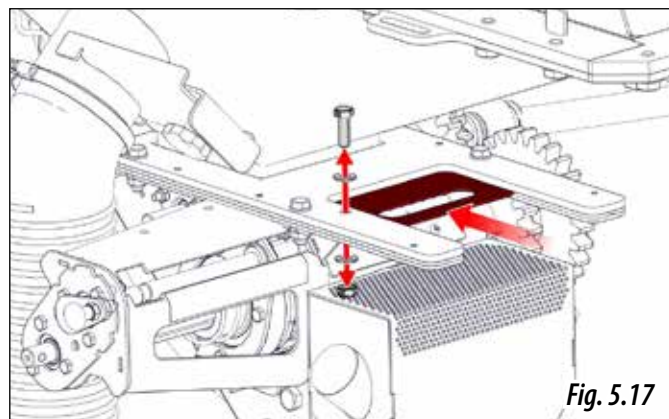


Fig. 5.17

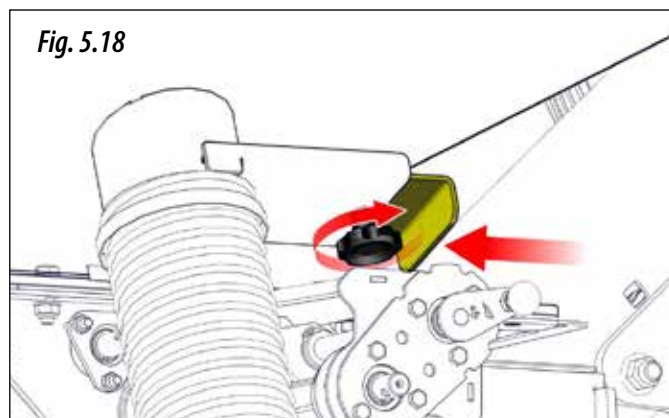


Fig. 5.18

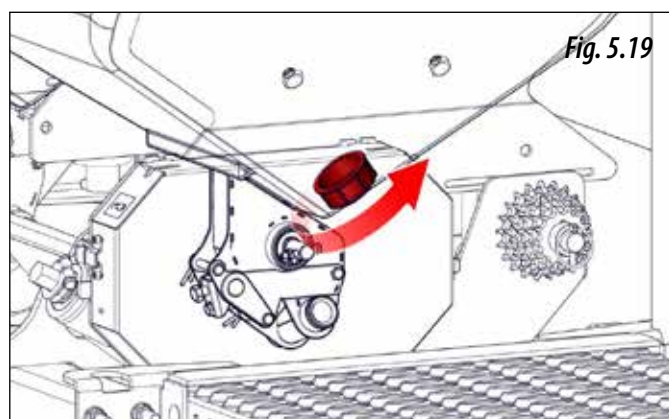


Fig. 5.19

5.5.1 SEED/FERTILIZER HOPPER (depending on the model)

To **FILL** the hopper, follow the steps below:

1- on the latch (Fig. 5.20) to release the steps and then unfold them (Fig. 5.21).

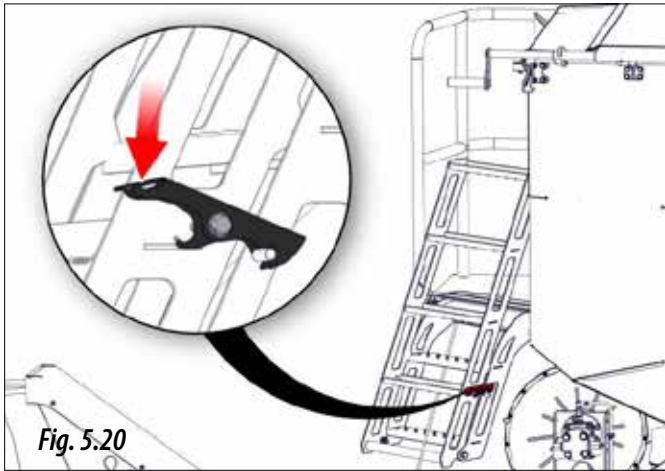


Fig. 5.20

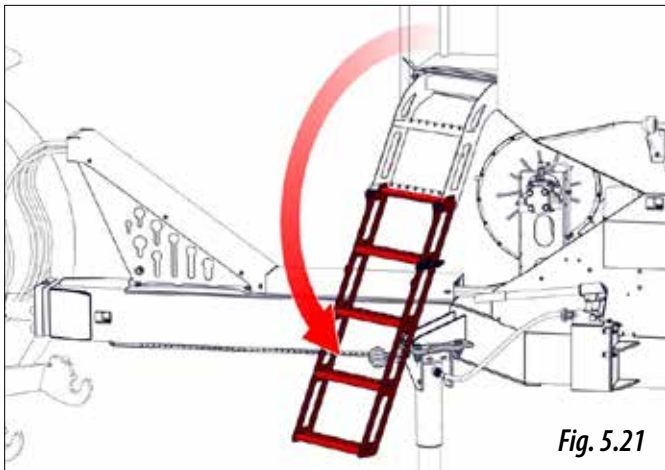


Fig. 5.21

2- Remove the tarpaulin fastener (Fig. 5.22)

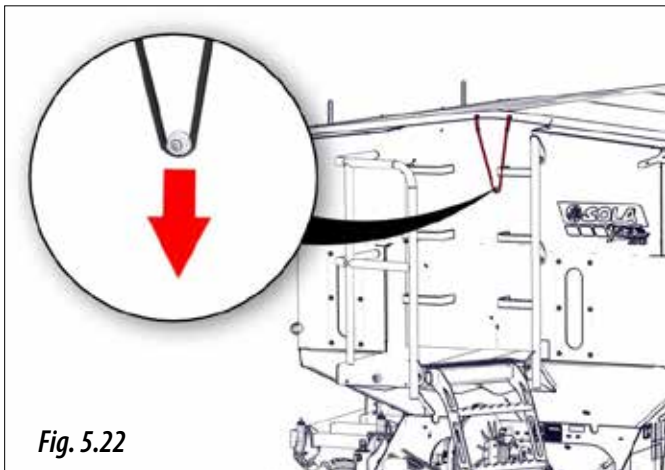


Fig. 5.22

3- Release the tarpaulin locking device by pulling out the handle slightly and then turning it (Fig. 5.23).

4- Take the crank handle and place it on the end of the tarpaulin (Fig. 5.24). Turn the handle to remove the tarpaulin (Fig. 5.25).

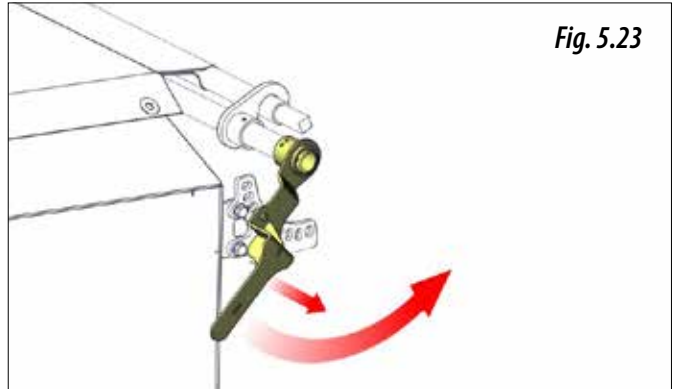


Fig. 5.23

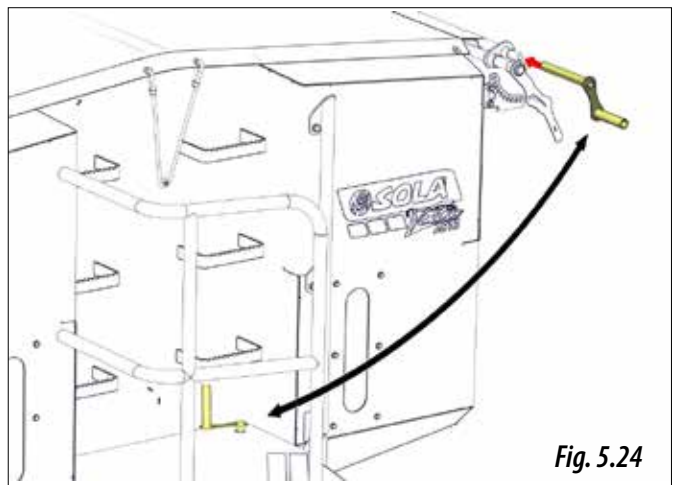


Fig. 5.24

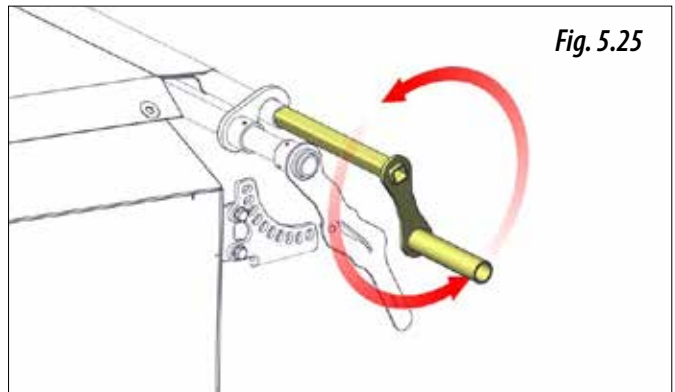


Fig. 5.25



IMPORTANT: BEFORE LOADING THE PRODUCT HOPPER, MAKE SURE THAT THE DOOR OF THE PRODUCT EXISTS AND THE DISPENSER FLAP OR LID ARE CLOSED.

5- Load the hopper with product.

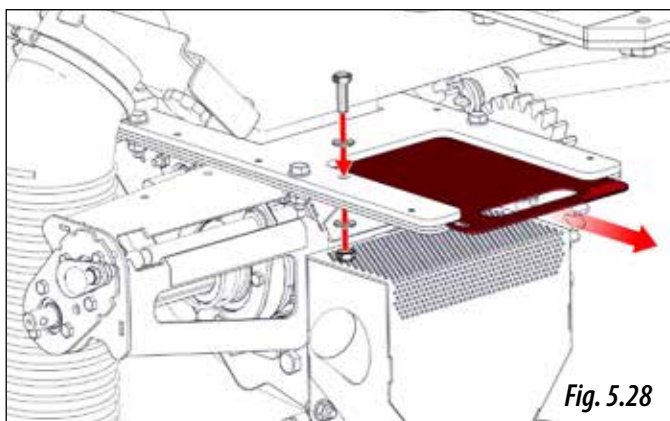
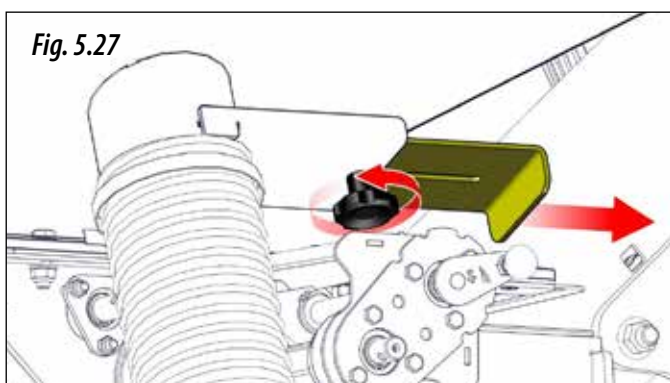
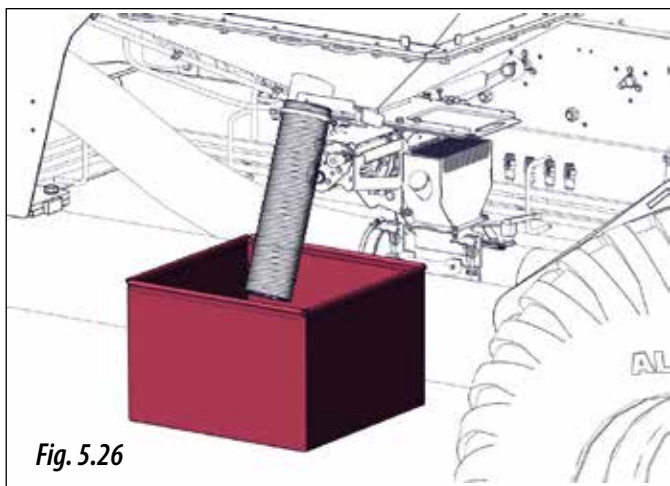
6- Once the hopper has been filled, perform the above steps in the reverse order to close the tarpaulin, stow the handle and fold the access steps.



FOLD THE STEPS WHEN YOU HAVE FINISHED LOADING OR INSPECTING THE HOPPER.

To **EMPTY** the hopper, follow the steps below:

- 1- Place a sack or container under the product exits, then guide the emptying hoses (depending on the model) to the desired location. (Fig. 5.26).
- 2- Open the product exit by loosening the knob and pulling the door; the hopper or, depending on the machine model, the corresponding hopper compartment, will start emptying (Fig. 5.27).
- 3- Once the product has finished flowing out of the product exits, open the guillotine doors (Fig. 5.28).



4- Open the dispensers provided with the machine (depending on the model):

4.A- Models with mechanical transmission:

4.A.1- Empty the dispenser through the emptying flap (Fig. 5.29) or by removing the cover by turning the knobs (Fig. 5.30).

4.A.2- Open the Venturi injector cover by lifting the two quick-release fasteners and moving the calibration control to the "NO" position (Fig. 5.31).

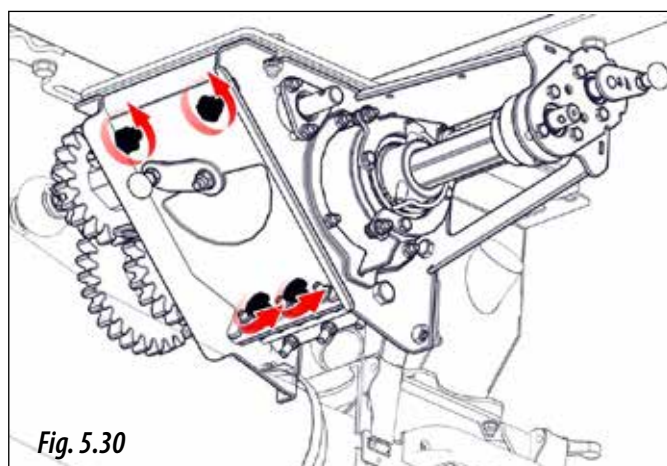
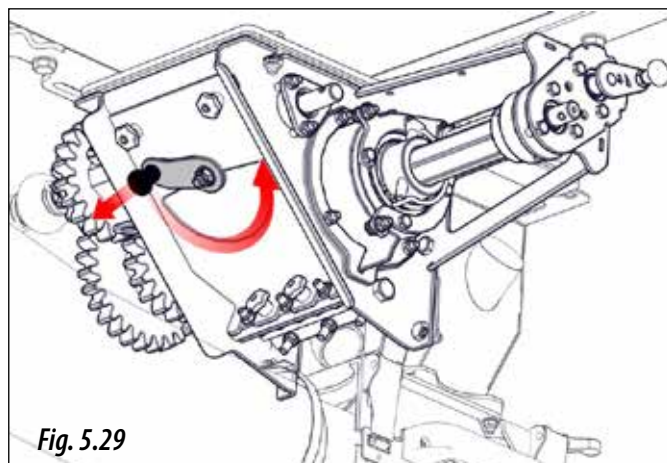
4.A.3- Place the bag supplied or a container under the Venturi injector outlet (Fig. 5.32).

4.A.4- Rotate the machine transmission to empty the product from the dispenser (Fig. 5.33).



CLEAN THE DISPENSER WITH A BRUSH AND/OR COMPRESSED AIR. DO NOT CLEAN WITH WATER UNDER ANY CIRCUMSTANCES.

4.A.5- When no more product comes out, close the Venturi injector cover, move the calibration control to the "OK" position and lock it (Fig. 5.34).



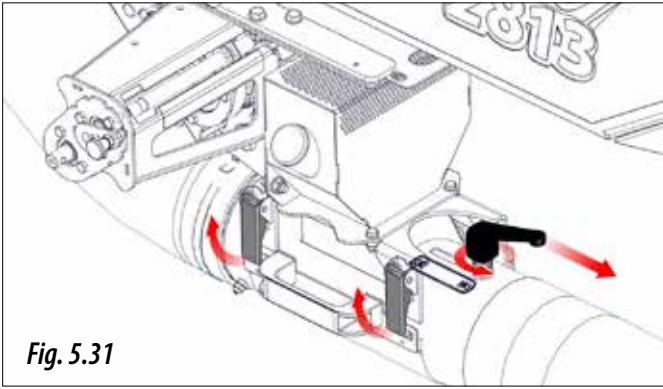


Fig. 5.31

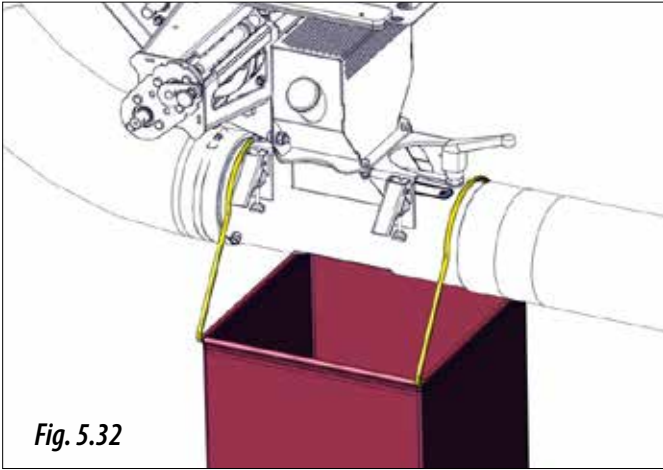


Fig. 5.32

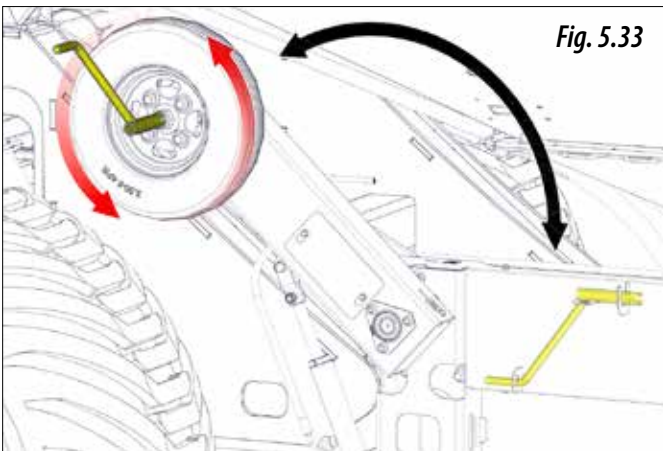


Fig. 5.33

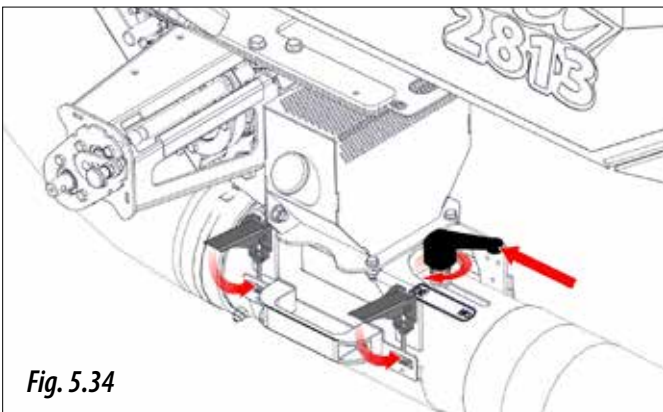


Fig. 5.34

4.B- Models with electric transmission:

4.B.1- Pull out the "R" pin (Fig. 5.35).

4.B.2- Unscrew the knobs (Fig. 5.36).

4.B.3- Pull out the side piece and remove the roller (Fig. 5.37 and Fig. 5.38); the material accumulated in the dispenser will then start to empty.



CLEAN THE DISPENSER WITH A BRUSH AND/OR COMPRESSED AIR. DO NOT CLEAN WITH WATER UNDER ANY CIRCUMSTANCES.

4.B.4- Reassemble the dispenser by performing the above steps in the reverse order.

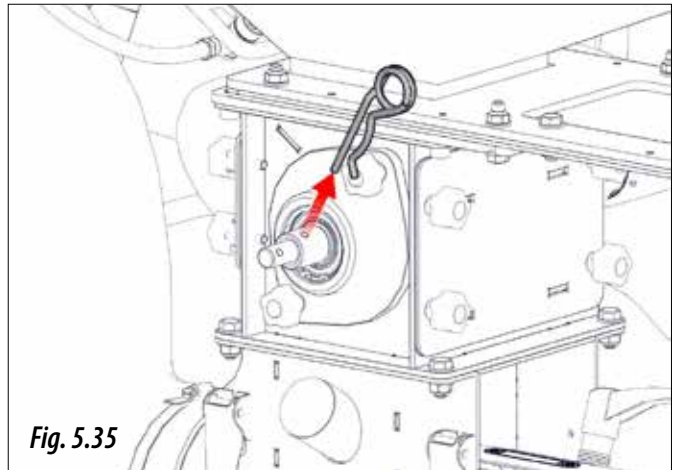


Fig. 5.35

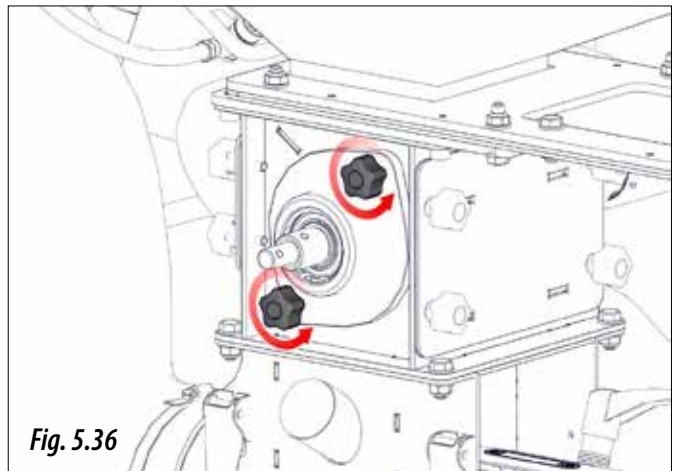
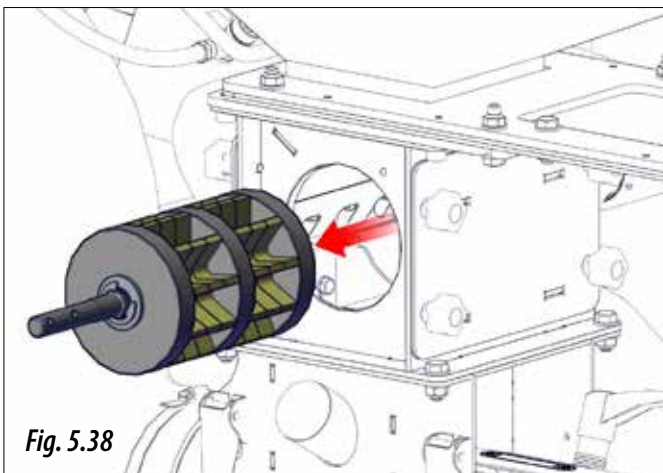
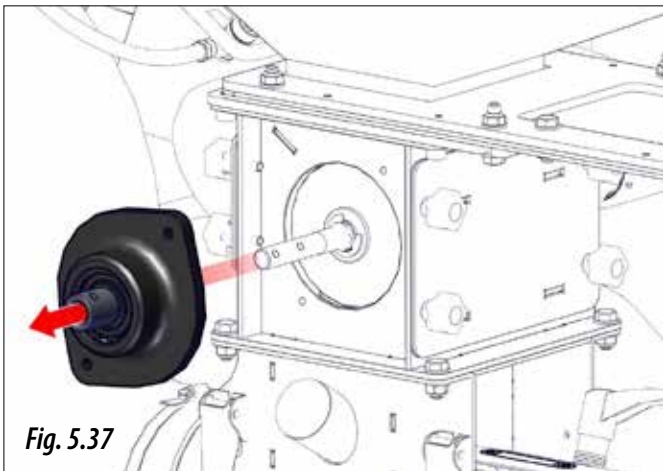
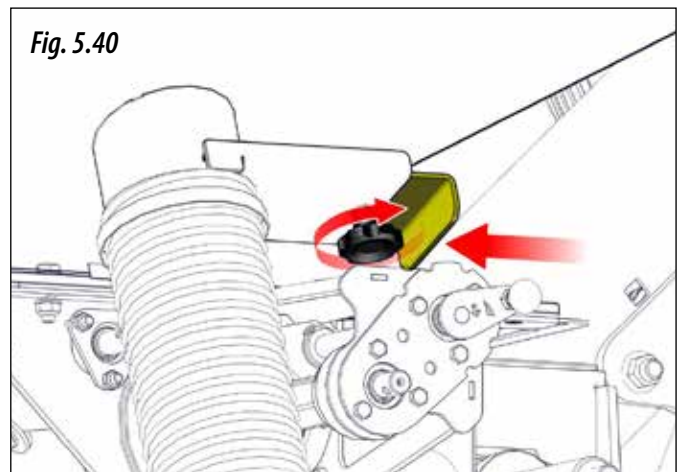
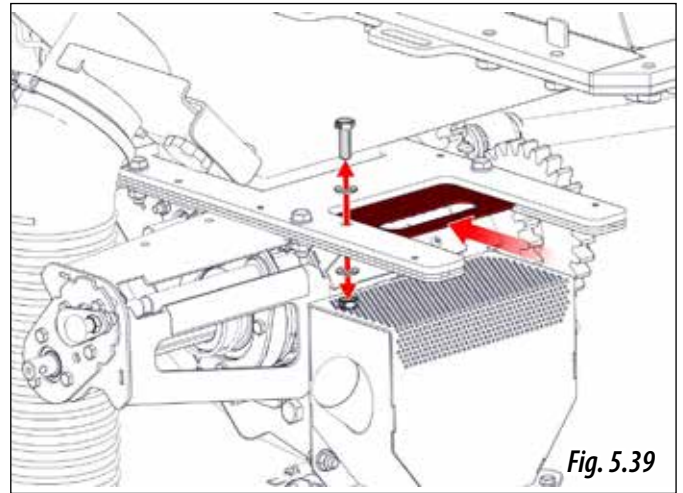


Fig. 5.36



- 5-** Close the guillotine doors above the dispensers (Fig. 5.39).
- 6-** Close the product exits and secure them with the knob (Fig. 5.40).



5.6 SUPPORT LEGS

The machine is equipped with one support leg for the carriage (see section 5.6.1 FRONT SUPPORT LEG) and three or four support legs for the coulter unit, depending on the model (see section 5.6.2 REAR SUPPORT LEGS).



RAISE THE SUPPORT LEGS BEFORE WORKING WITH THE MACHINE. USING THE MACHINE WITH THE SUPPORT LEGS LOWERED CAN CAUSE DAMAGE.



MAKE SURE THAT THE MACHINE IS COUPLED TO THE TRACTOR WHEN HANDLING THE SUPPORT LEGS.

5.6.1 FRONT SUPPORT LEG

The front support leg is located on the hopper tow bar. To **LOWER** the support leg:

- 1- Hold the support leg and release the latches so that the leg can be moved (Fig. 5.41).
- 2- Lower the support leg until the latches engage.
- 3- Use the lever to adjust the leg height (Fig. 5.42).

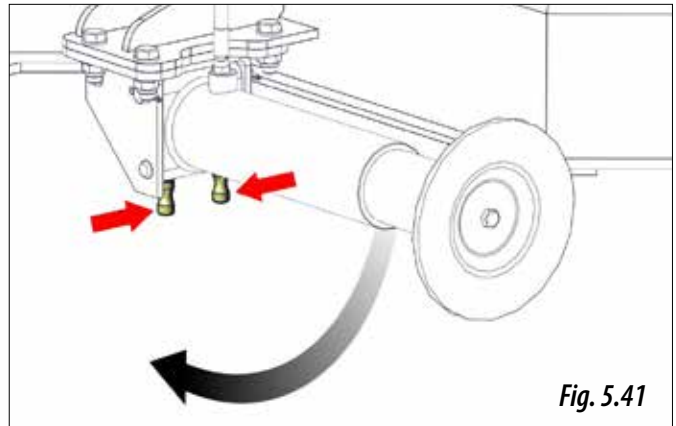


Fig. 5.41

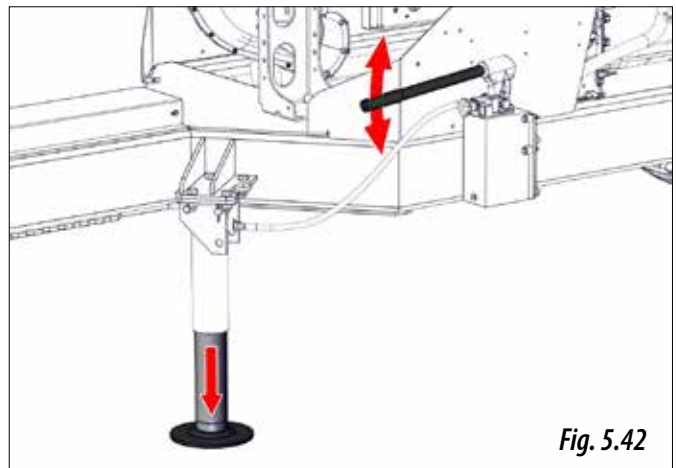


Fig. 5.42



IMPORTANT: BEFORE LOWERING THE SUPPORT LEG, MAKE SURE THAT THE HAND-OPERATED HYDRAULIC PUMP KEY IS PROPERLY CLOSED.

To **RAISE** the support leg:



IMPORTANT: WITH THE MACHINE COUPLED TO THE TRACTOR.

- 1- Loosen the hand pump key (Fig. 5.43) to raise the telescopic leg. Once the leg is up, tighten the key again.
- 2- Release the latches (Fig. 5.44) and raise the support leg until the latches are engaged again.

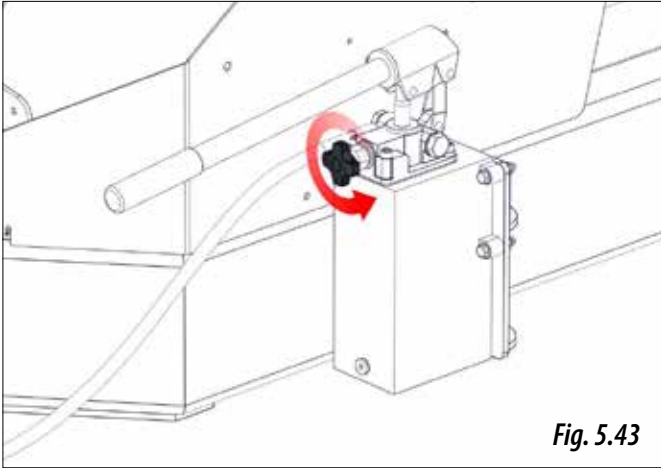


Fig. 5.43

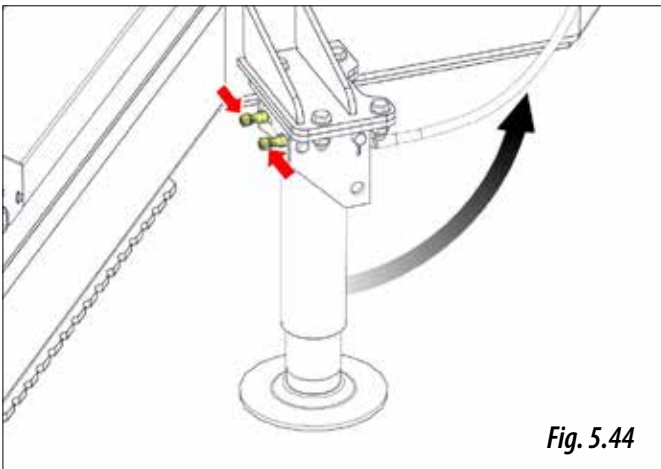


Fig. 5.44

5.6.2 REAR SUPPORT LEGS

The rear support legs are located on the coultter unit. To **RAISE** or **LOWER** the support leg:

- 1- Remove the pin and the bolt (Fig. 5.45) to release the leg.
- 2- Move the support leg to the desired position (Fig. 5.46).
- 3- Fit the bolt and the pin (Fig. 5.47).

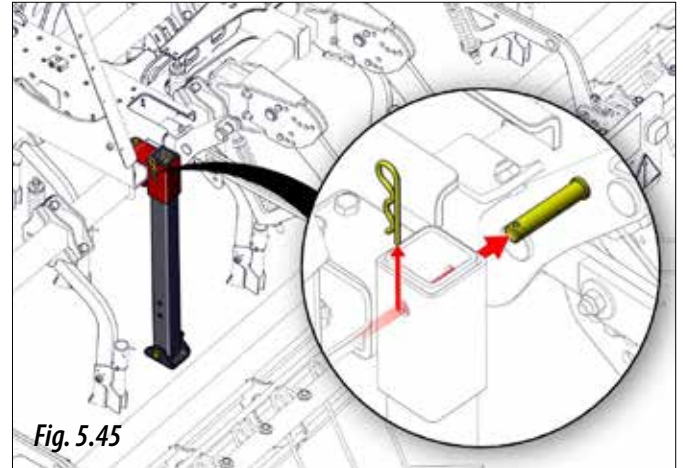


Fig. 5.45

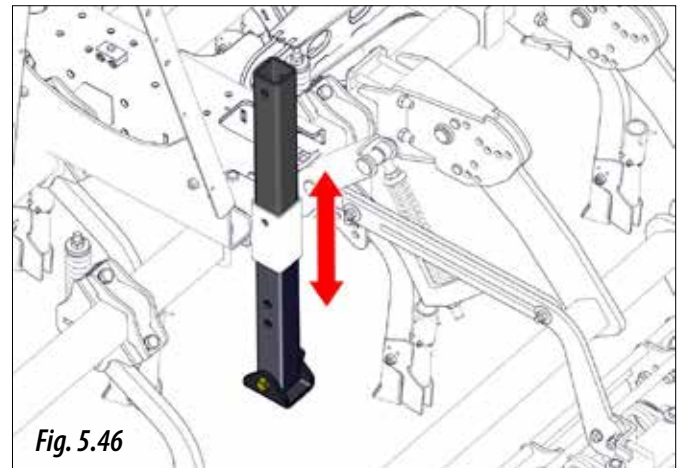


Fig. 5.46

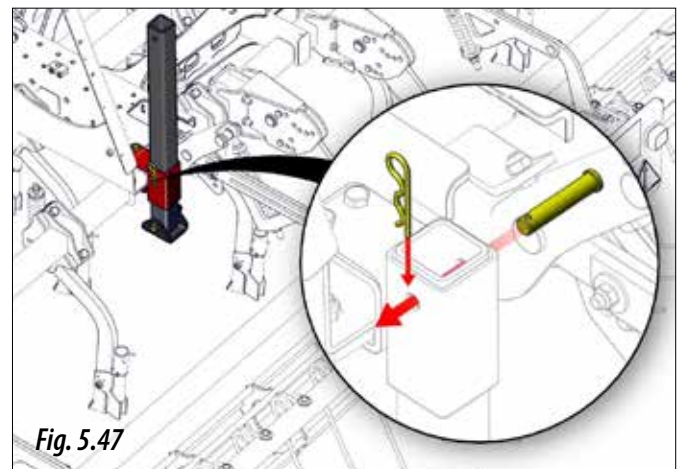


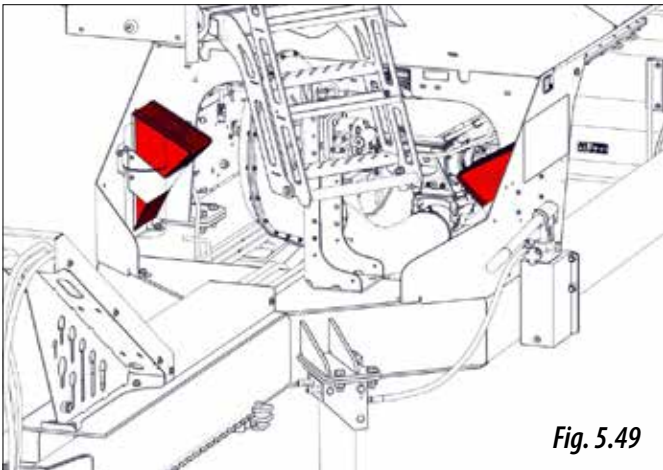
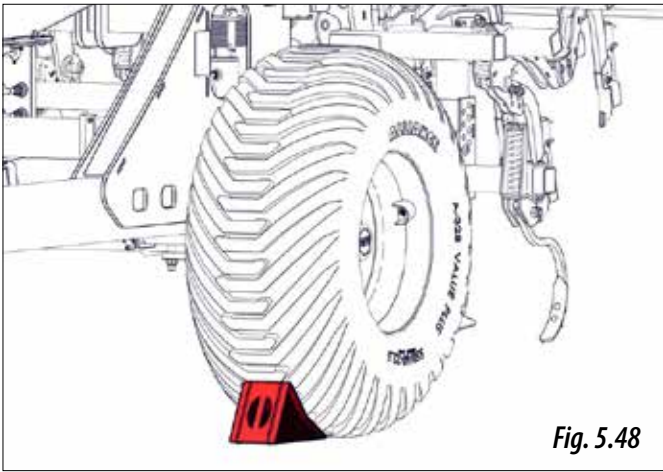
Fig. 5.47



IMPORTANT: RAISE ALL REAR SUPPORT LEGS WITH THE COULTTER UNIT RAISED OFF THE GROUND. IN WORKING CONDITIONS, ALL SUPPORTING LEGS MUST BE RAISED.

5.7 PARKING

The transport wheels must be held by blocks when unhitching the seed drill from the tractor and parking it (Fig. 5.48). The blocks are located at the front of the machine (Fig. 5.49).



IMPORTANT: THE BLOCKS MUST ALSO BE PLACED WHEN THE SEED DRILL IS NOT UNCOUPLED FROM THE TRACTOR AND BOTH MACHINES ARE PARKED ON A SLOPE.

5.8 END OF WORK WITH THE MACHINE

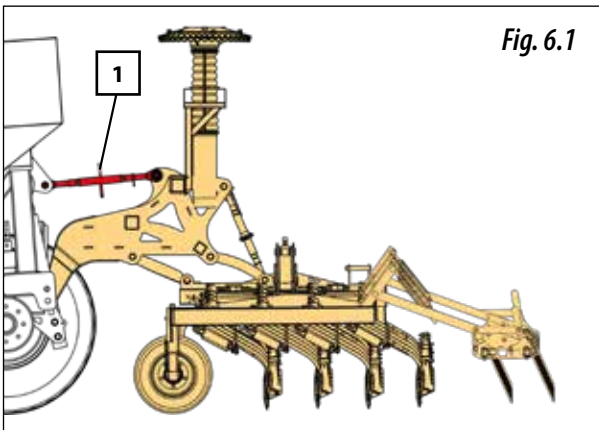
- Empty the seed and fertilizer hopper completely:
- Clean the machine with pressurised air, in particular the tanks in which chemicals have been used (see section 8.3 CLEANING THE SEED DRILL).
- Check that the machine components are in good condition. Replace those parts that need to be replaced due to wear and tear.
- Remove any particles that may cause corrosion. If necessary, protect these areas with paints or enamels.
- Grease and lubricate the parts where this is indicated, transmission chains and gears (see section 8.4 GREASING AND LUBRICATION).

6. ADJUSTMENTS

This chapter describes the adjustments to be made to the VESTA-2813 seed drill in order to adapt it to the requirements of the soil and the type of seed to be sown. The values given in this manual may vary depending on ground conditions, climate factors or machine condition.

6.1 LEVELLING THE COULTER UNIT

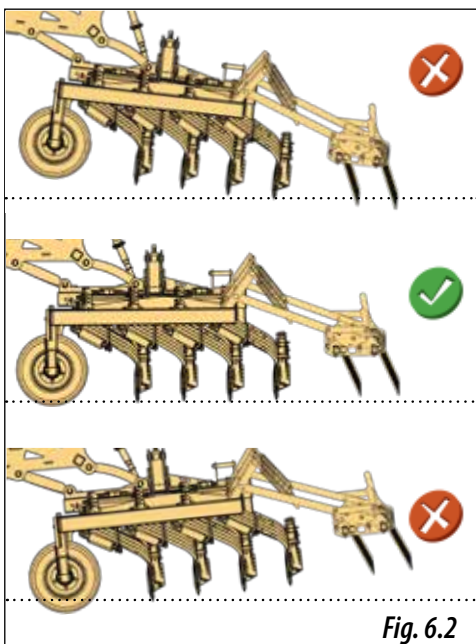
To level the coulters unit, use the adjuster (1, Fig. 6.1) located at the rear of the hopper.



VERY IMPORTANT: PERFORM THIS ADJUSTMENT WITH THE MACHINE COUPLED TO THE TRACTOR.



LEVEL THE COULTER UNIT SO THAT ALL THE COULTERS TOUCH THE GROUND AT THE SAME TIME (FIG. 6.2).



6.2 DEPTH CONTROL

The sowing depth is controlled by means of:

- The **DEPTH ADJUSTERS** see section 6.2.1.
- The **DEPTH CONTROL WHEELS** see section 6.2.2.
- The **FOLDING PART ANGLE STOPS** see section 6.2.3.
- The **COULTERS** see section 6.2.4.



VERY IMPORTANT: THE COULTER UNIT MUST BE LEVELLED BEFORE ADJUSTING THE SOWING DEPTH (SEE SECTION 6.1 LEVELLING THE COULTER UNIT).

In order to ensure correct adjustment of the sowing depth, you are advised to follow the steps given below:

- 1-** Raise all depth control wheels (see section 6.2.2 DEPTH CONTROL WHEELS). If the machine model is equipped with compacting rollers, these should be left loose (see section 6.8 COMPACTING ROLLER).
- 2-** Set the desired sowing depth by means of the coulters unit's main adjusters or the carriage stops (see section 6.2.1 DEPTH ADJUSTERS).
- 3-** Travel 10 metres with the coulters unit in working position and floating mode.
- 4-** Check that the sowing depth of the coulters in the central section is at the desired level. If not, adjust the depth again by means of the coulters unit's main adjusters or the carriage stops (see section 6.2.1 DEPTH ADJUSTERS) and travel a further 10 metres to check.
 - 4.1-** Once the depth has been set in the central section, for those models that have a compacting roller or control wheels in the central part, lower the central part of the coulters unit until it touches the ground. Proceed as specified in sections 6.2.2 DEPTH CONTROL WHEELS or 6.8 COMPACTING ROLLER.

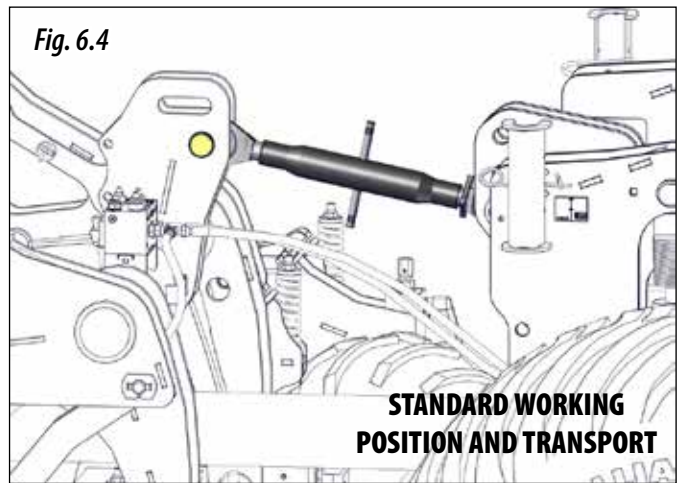
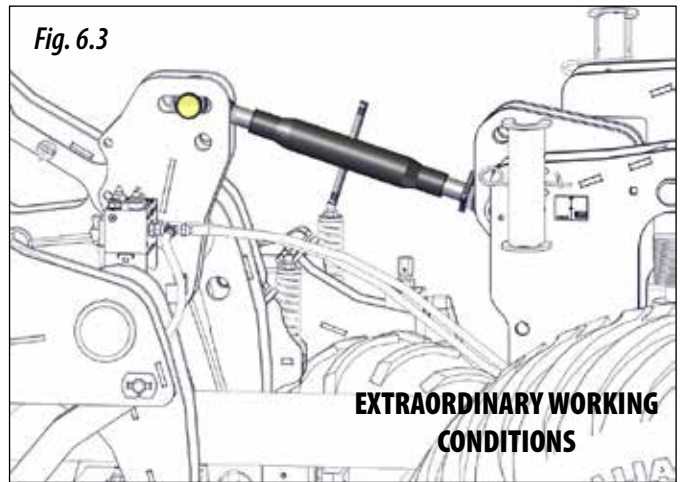
- 5- Once the central section has been set. Lower the depth control wheels of the machine's folding parts until they touch the ground, proceeding as specified in section 6.2.2 DEPTH CONTROL WHEELS. Observe the depth of the machine's end coulters. If the coulters dig too deep into the soil, lower the folding parts' wheels further to decrease the sowing depth. If the coulters do not penetrate the soil, lower the folding parts' angle stop (see section 6.2.3 FOLDING PART TILT STOPS). Then travel 10 metres to check the setting.
- 6- Adjust the height-adjustable coulters (see section 6.2.4 COULTERS)



DEPENDING ON YOUR MACHINE MODEL. ONLY IN EXTREME WORKING CONDITIONS WITH MAJOR LEVEL CHANGES, THE ADJUSTER CAN BE MOUNTED IN THE SLIDE BRACKET SO THAT THE COULTER UNIT CAN BE ADAPTED BETTER TO THE TERRAIN (Fig. 6.3). ONCE THE WORK HAS BEEN COMPLETED, THE ADJUSTER MUST BE REFITTED IN THE USUAL HOLE FOR TRANSPORTING THE MACHINE (FIG. 6.4).



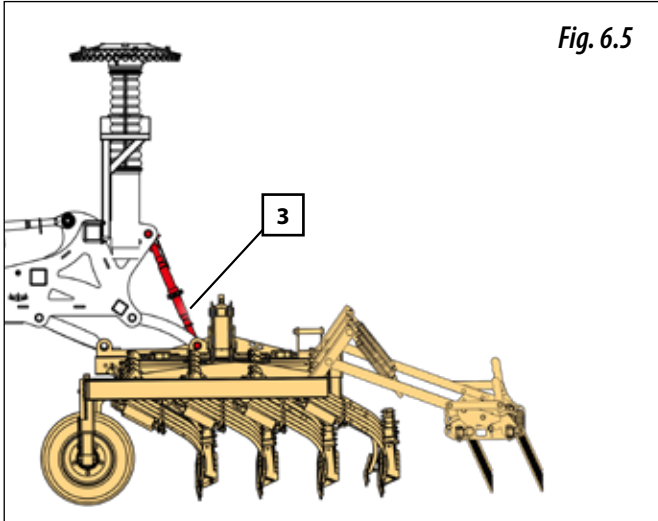
TO ASSIST IN ADAPTING TO THE TERRAIN, LEAVE THE HYDRAULIC CIRCUIT THAT FOLDS THE COULTER UNIT IN THE NEUTRAL POSITION.



IT IS ADVISABLE TO CARRY OUT A PRE-TEST BEFORE STARTING WORK. MOVE A FEW METRES FORWARD AND CHECK WHETHER THE COULTERS DIG PROPERLY INTO THE SOIL.

6.2.1 DEPTH ADJUSTERS

The sowing depth will be defined by the main adjusters (3, Fig. 6.5). Both must be adjusted to the same depth. The adjusters are located at the rear of the machine.



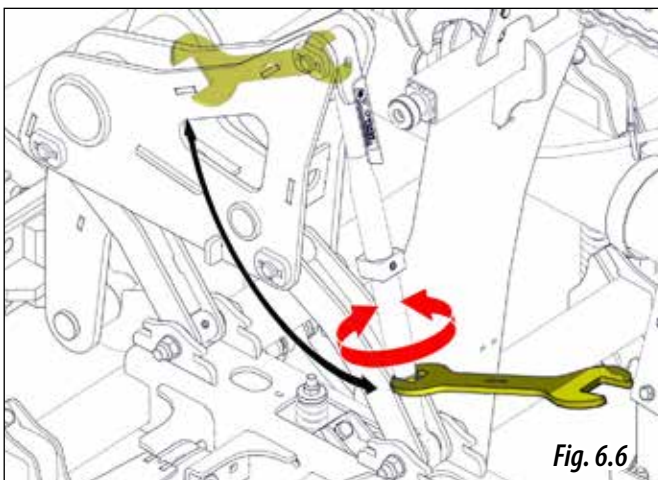
To set the adjusters, follow the steps below:

- 1- Use the specific wrench located on the coulter unit chassis to loosen the locknut (Fig. 6.6).
- 2- Set the adjuster length by turning the central square bar (Fig. 6.7).



VERY IMPORTANT: USE THE GRADUATED SCALE TO ADJUST BOTH ADJUSTERS EQUALLY (FIG. 6.7). OTHERWISE, THE MACHINE COULD BE DAMAGED.

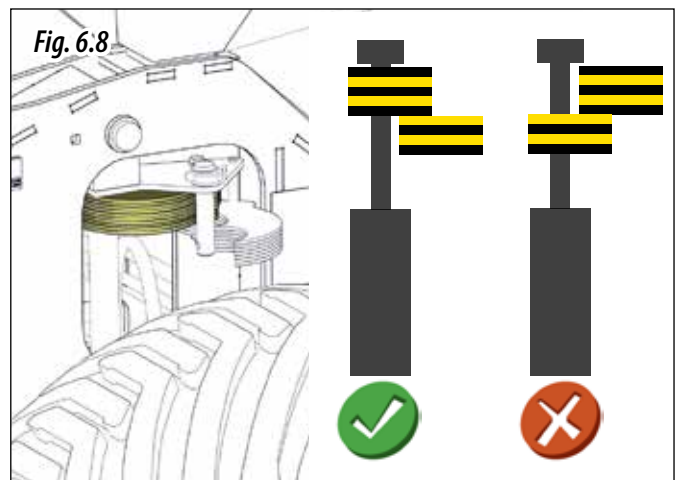
- 4- Tighten the locknut and put the specific wrench back in its location on the coulter unit chassis (Fig. 6.6).



FOR QUICK ADJUSTMENT OF THE SOWING DEPTH, SET THE ADJUSTERS (3, FIG. 6.5) TO THE **POSITION (0)**, THEN SET THE CARRIAGE STOPS (FIG. 6.8).

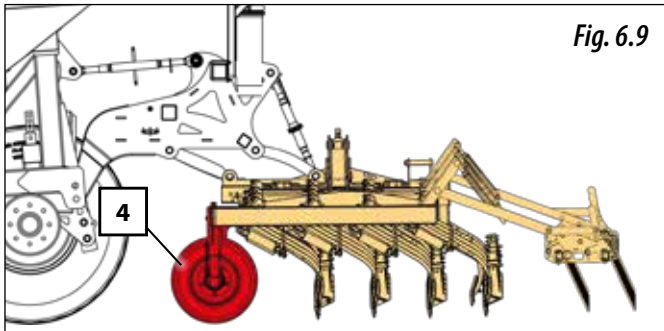


VERY IMPORTANT: REMOVE THE SAME QUANTITY OF STOPS ON BOTH SIDES, IN ASCENDING ORDER, FROM THE BOTTOM UPWARDS (FIG. 6.8).



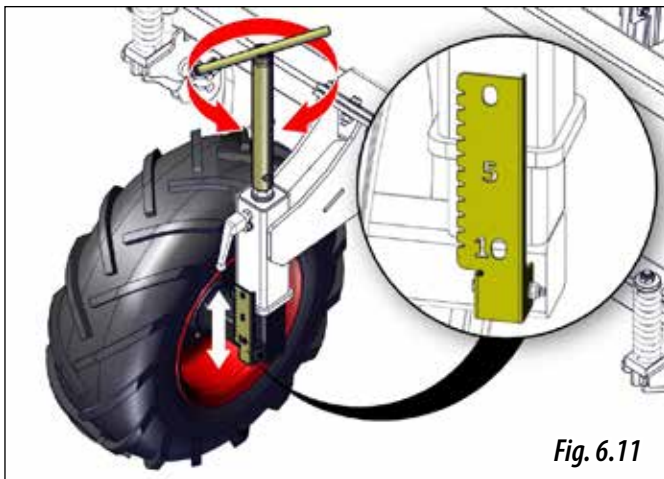
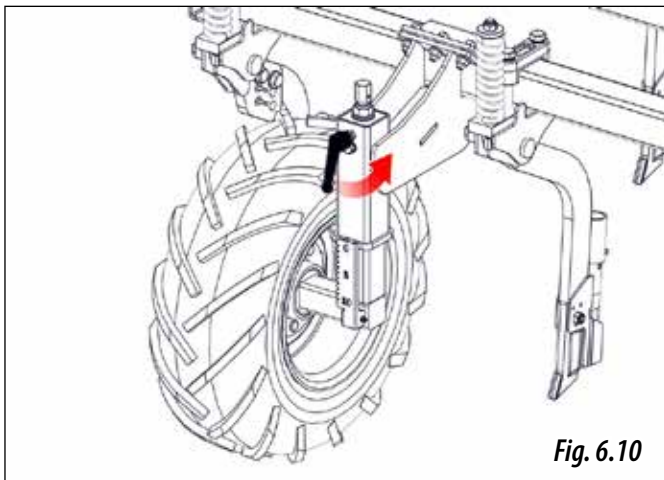
6.2.2 DEPTH CONTROL WHEELS

The coulters unit's side wheels (4, Fig. 6.9) control the folding parts' sowing depth. Use the specific wrench supplied with the machine to adjust these wheels.

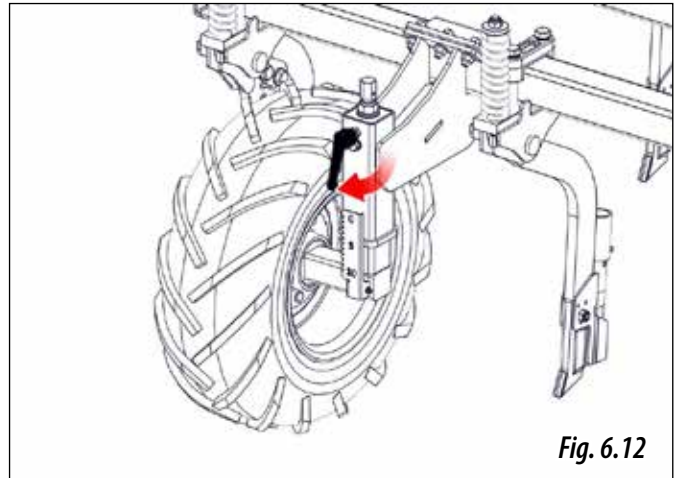


The steps to follow for adjusting are:

- 1- Use the locking handle to unlock the wheel (Fig. 6.10).
- 2- Use the specific wrench located on the coulters unit chassis. Place the wrench on the wheel spindle and turn to lower or raise the wheel (Fig. 6.11).
- 3- Use the graduated scale (Fig. 6.11) to check the height you want to work at.



- 4- Put the specific wrench back in its place and lock the wheel with the locking handle (Fig. 6.12).



WHEN SOWING ON PREPARED SOIL, SET ONE OR TWO POINTS LESS ON THE SIDE WHEELS TO COMPENSATE FOR THE WHEEL SINKING INTO THE GROUND.



TO ENSURE REGULAR SEEDING, ADJUST BOTH WHEELS TO THE SAME HEIGHT.



DEPENDING ON THE MACHINE MODEL, THERE MAY ALSO BE DEPTH CONTROL WHEELS IN THE CENTRAL PART OF THE COULTERS UNIT. ADJUST THEM AFTER DRIVING THE COULTERS INTO THE SOIL DURING A DEPTH CONTROL TEST.

6.2.3 FOLDING PART ANGLE STOPS

There are adjustable stops at the point where the folding parts rest on the chassis that can be used to change the drop angle (Fig. 6.13).

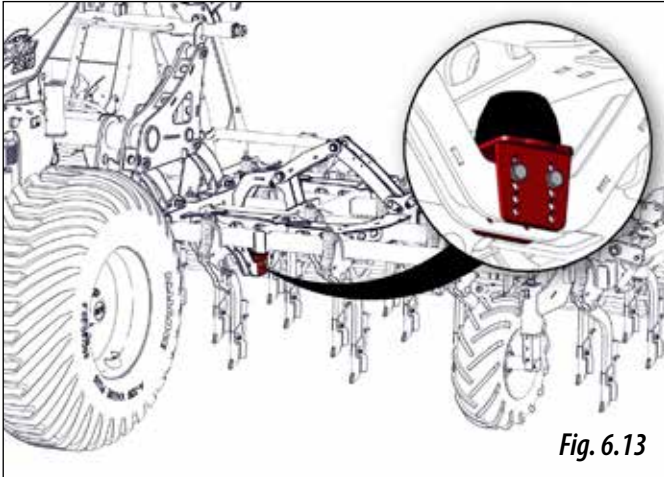


Fig. 6.13

These angle stops must be used if it is wished to change the folding parts' drop angle. To do this, follow the steps below:

- 1- The machine must be in the transport position; if not, fold the coulters unit's folding parts.
- 2- Remove the bolts and nuts (Fig. 6.14).
- 2- Move the stop to the desired position (Fig. 6.14).
- 3- Insert the 2 bolts and fasten them with the 2 nuts in the new location.

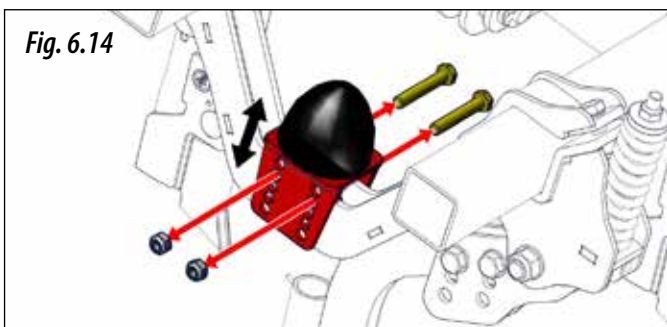


Fig. 6.14



IN NORMAL SOWING CONDITIONS, IT IS ADVISABLE TO HAVE THE FOLDING PARTS ANGLED SLIGHTLY DOWNWARDS TO ADAPT BETTER TO UNEVEN TERRAIN.



IN VERY TILLED OR LOOSE SOILS OR IN VERY DAMP SOIL, THE FOLDING PARTS SHOULD BE LEVELLED SO THAT THEY ARE HORIZONTAL.

6.2.4 COULTERS

The seed drill is fitted with coulters for opening furrows in which the seeds or fertilizer will be placed. Several coulters models are available for different soil conditions:

- **SM MODEL:** for sowing on fields with no tillage (direct sowing) or minimum tillage.
- **NS-PLUS MODEL (STRAIGHT COULTERS):** for sowing on prepared land.
- **NS-PLUS MODEL (SUFFOLK COULTERS):** for sowing on well-prepared land with no stones.



VERY IMPORTANT: ANY CHANGES TO THE COULTER PRESSURE MUST BE MADE WITH THE COULTER UNIT RAISED AND THE COULTERS OFF THE GROUND.

6.2.4.1 SM MODEL

This model is fitted with two types of couler:

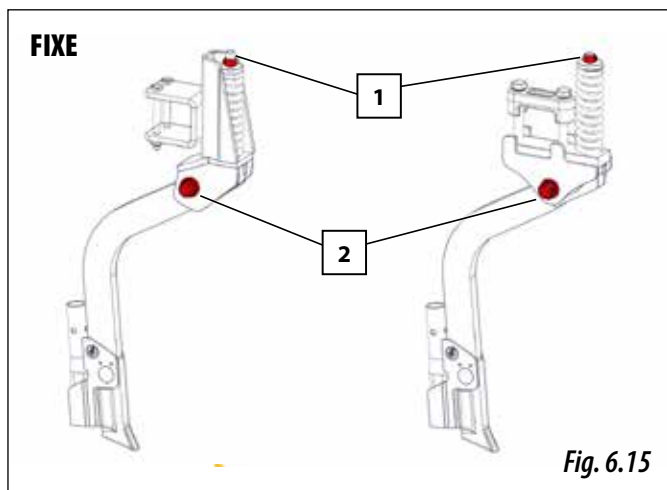
FIXED COULTERS

These coulters are not height-adjustable. Consequently, the sowing depth will be defined by the adjusters on the couler unit's chassis (see section 6.2.1 DEPTH ADJUSTERS). It is only possible to change the couler pressure by adjusting the nut at the top of the spring (1, Fig. 6.15).



THESE COULTERS HAVE A DUAL SPRING. REMOVE THE INNER SPRING TO REDUCE SUBSTANTIALLY THE PRESSURE EXERTED BY THE COULER.

The couler is fastened to the bracket by a special SOLÀ bolt (2, Fig. 6.15) with a self-locking nut. The couler's side clearance is adjusted using this nut.



HEIGHT-ADJUSTABLE COULTERS

These coulters are aligned with the wheels of the tractor and seed drill.



IMPORTANT: IT IS ADVISABLE TO ADJUST THESE COULTERS IF THE RUTS ARE VERY DEEP.

Adjust the spring nut to set the pressure exerted by the couler on the soil (1, Fig. 6.16).

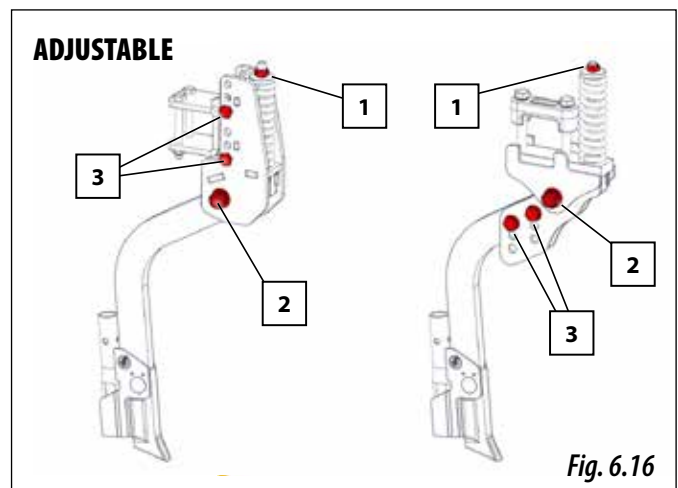


THESE COULTERS HAVE A DUAL SPRING. REMOVE THE INNER SPRING TO REDUCE SUBSTANTIALLY THE PRESSURE EXERTED BY THE COULER.

These coulters are fastened to the bracket by a special SOLÀ bolt (2, Fig. 6.16) with a self-locking nut. This nut is used to set the couler's clearance.

These coulters' depth can be adjusted individually, enabling the coulters to be lowered to adjust their height, as follows:

- 1- Remove the bolts and nuts (3, Fig. 6.16).
- 2- Place the couler in the desired position.
- 3- Insert the bolts and nuts in the new position (3, Fig. 6.16).



6.2.4.2 NS PLUS MODEL (STRAIGHT COULTERS)

This model is fitted with two types of couler:

FIXED COULTERS

These coulters are not height-adjustable. Consequently, the sowing depth will be defined by the adjusters on the couler unit's chassis (see section 6.2.1 DEPTH ADJUSTERS).

It is only possible to change the couler pressure by adjusting the nut at the bottom of the spring (1, Fig. 6.17).

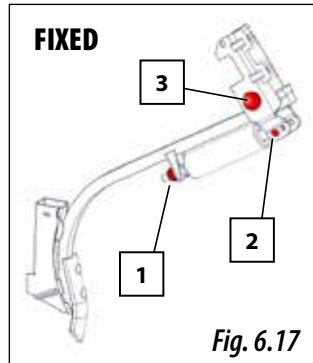


Fig. 6.17

The pressure can also be adjusted by changing the bolt's position (2, Fig. 6.17).

The couler is fastened to the bracket by a special SOLA bolt (3, Fig. 6.17) with a self-locking nut. The couler's side clearance is adjusted using this nut.

HEIGHT-ADJUSTABLE COULTERS

These coulters are aligned with the wheels of the tractor and seed drill.



IMPORTANT: IT IS ADVISABLE TO ADJUST THESE COULTERS IF THE RUTS ARE VERY DEEP.

Adjust the spring nut to set the pressure exerted by the couler on the soil (1, Fig. 6.18). The pressure can also be adjusted by changing the bolt's position (2, Fig. 6.18).

These coulters are fastened to the bracket by a special SOLA bolt (3, Fig. 6.18) with a self-locking nut. This nut is used to set the couler's clearance.

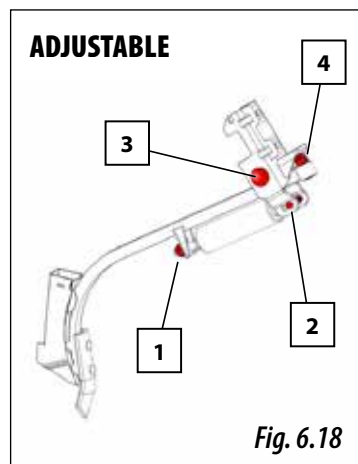


Fig. 6.18

These coulters' depth can be adjusted individually, enabling the coulters to be lowered to adjust their height, as follows:

- 1- Adjust the nut and bolt (4, Fig. 6.18).
- 2- Place the couler in the desired position.

6.2.4.3 NS PLUS MODEL (SUFFOLK COULTERS)

These coulters are not height-adjustable. Consequently, the sowing depth will be defined by the adjusters on the couler unit's chassis (see section 6.2.1 DEPTH ADJUSTERS).

The pressure on the soil can be adjusted using three spindles, one for each folding part and another for the centre of the machine.

Turn the spindle clockwise to increase pressure, anticlockwise to decrease it.

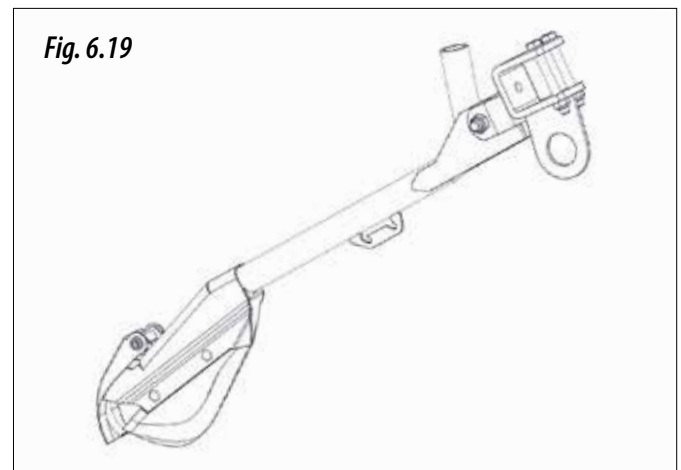


Fig. 6.19

6.3 DOSAGE

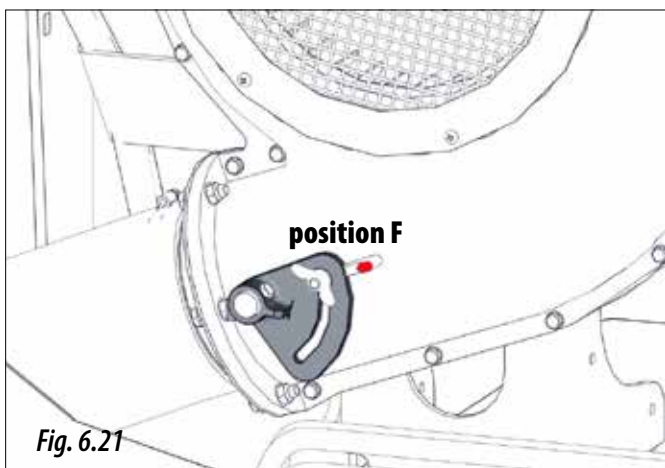
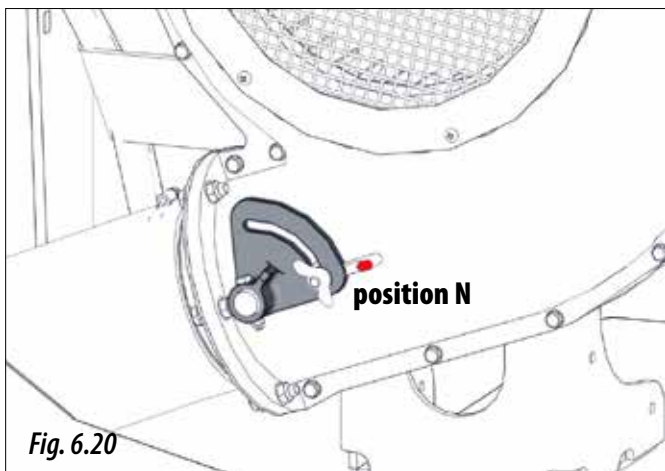
Depending on the machine model, different types of dispenser can be installed. The available types are the following:

- Volumetric.
- Settable roller.

Dispensers can be used with small (e.g., rapeseed) or normal-sized seeds (wheat or barley) or fertilizer. The dispenser should be set to the type of product and the quantity to be dispensed.



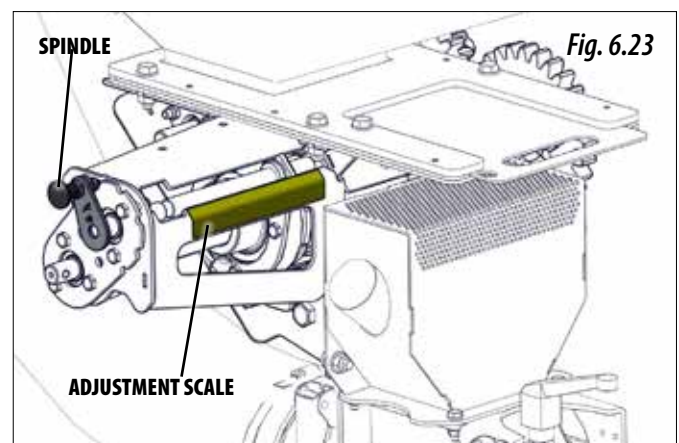
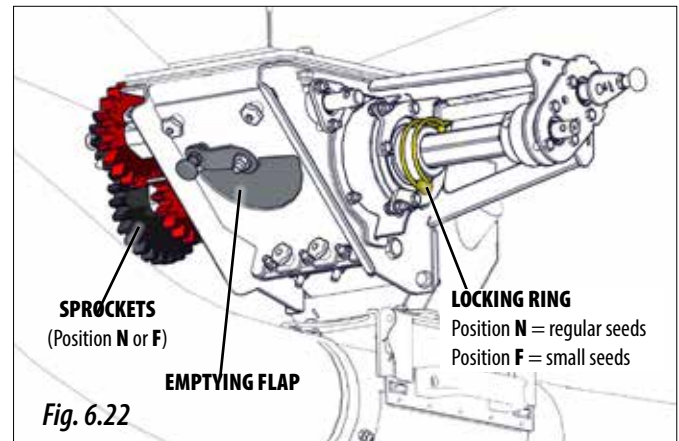
IMPORTANT: FOR NORMAL-SIZED SEEDS, THE TURBINE AIR REGULATOR SHOULD BE SET TO POSITION N (FIG. 6.20), AND FOR SMALL SIZES WITH VERY SMALL QUANTITIES TO BE DOSED, IT SHOULD BE IN POSITION F (FIG. 6.21). PERFORM FIELD TESTS BEFORE STARTING WORK. CHECK THAT THE SEEDS ARE NOT BLOWN OUT OF THE FURROW AND THAT THERE IS NO MATERIAL BUILD-UP WHICH COULD CLOG THE COMPRESSED AIR SYSTEM.



6.3.1 VOLUMETRIC DISPENSER

This seed or fertilizer dispenser (Fig. 6.22 and Fig. 6.23) provides 2 dosage modes:

- For **NORMAL**-sized seeds or fertilizers (Position N).
- For **SMALL/FINE** seeds or fertilizers, with minimum flows (Position F).



TO CHANGE THE POSITION OF THE SEED OR FERTILIZER DISPENSER FROM NORMAL TO FINE, THE SPINDLE (FIG. 6.23) MUST BE ABLE TO TURN AND THE HOPPER MUST BE EMPTY.

In order to change the position of the locking ring to position N or F, the dispenser must be completely closed (position 0) and there must be no material inside it. If the hopper and dispenser are full of product, proceed as follows:

- 1- Close the guillotine door (Fig. 6.24).
- 2- Open the Venturi injector cover by lifting the two quick-release fasteners and moving the calibration control to the "NO" position (Fig. 6.25).
- 3- Place the bag supplied or a container under the Venturi injector outlet (Fig. 6.26).
- 4- Rotate the machine transmission a few turns to empty the product from the dispenser (Fig. 6.27).
- 5- Lastly, close the Venturi injector cover, move the calibration control to the "OK" position and lock it.

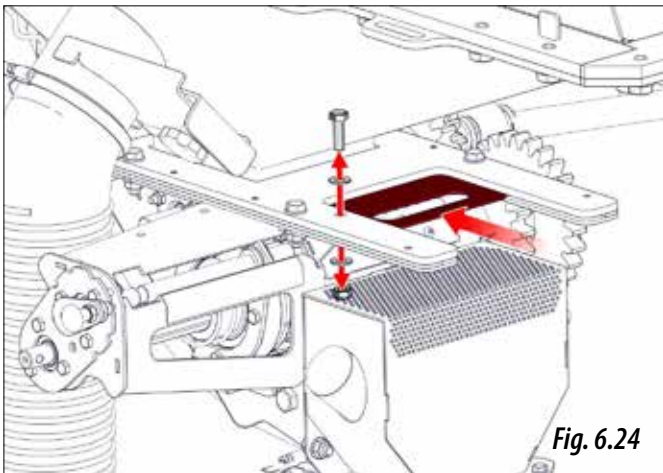


Fig. 6.24

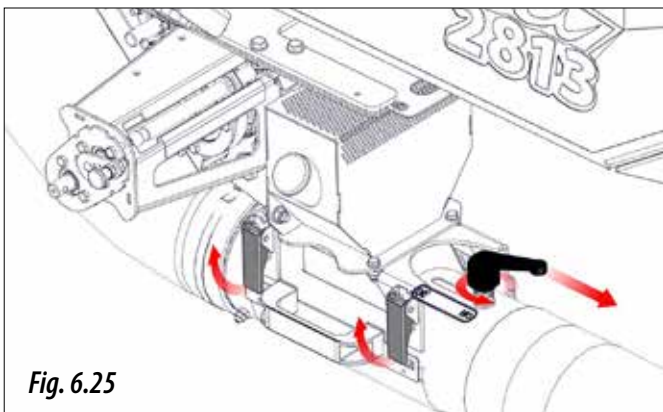


Fig. 6.25

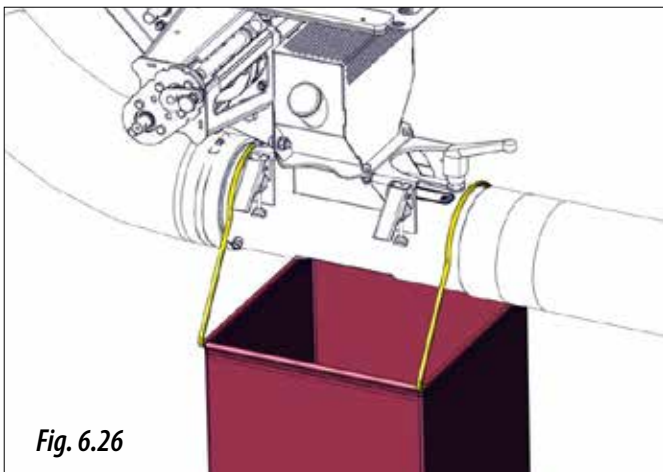


Fig. 6.26

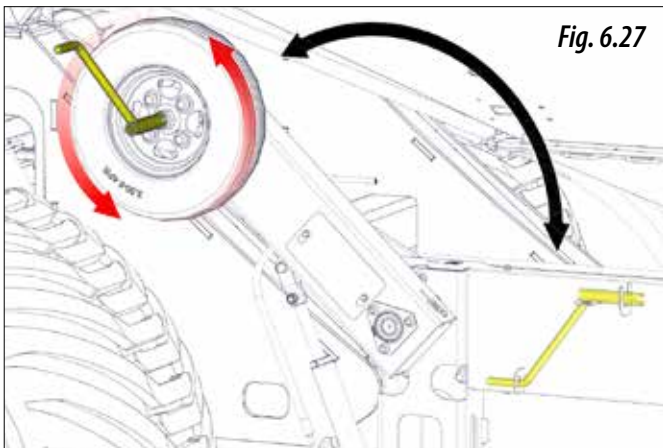


Fig. 6.27

6.3.1.1 REGULAR SEED OR CONVENTIONAL FERTILIZER

Proceed as follows for sowing with **REGULAR SEEDS** or fertilising with **CONVENTIONAL FERTILIZERS**:

1- The locking ring must be in **position N** (Fig. 6.29).



IMPORTANT: IF IT IS NECESSARY TO CHANGE FROM POSITION F TO POSITION N, PROCEED AS DESCRIBED IN SECTION 6.3.1 VOLUMETRIC DISPENSER.

2- Pull out slightly and turn the knob (Fig. 6.28) to adjust the dosage to the desired position, as specified in the dosage tables.

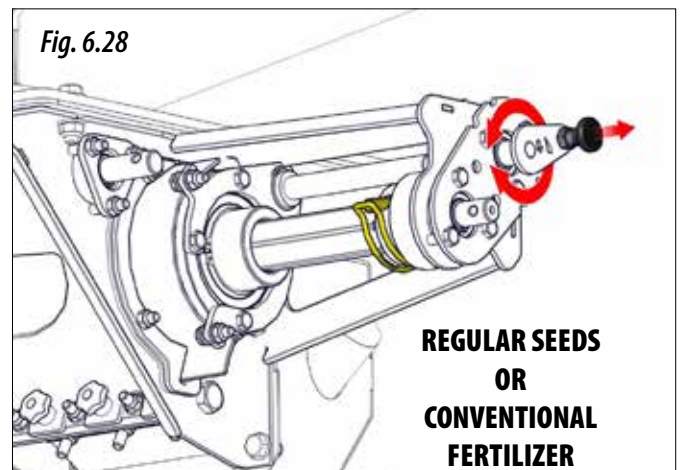


Fig. 6.28

3- Set the dispenser sprockets to **position N**, (Fig. 6.29).

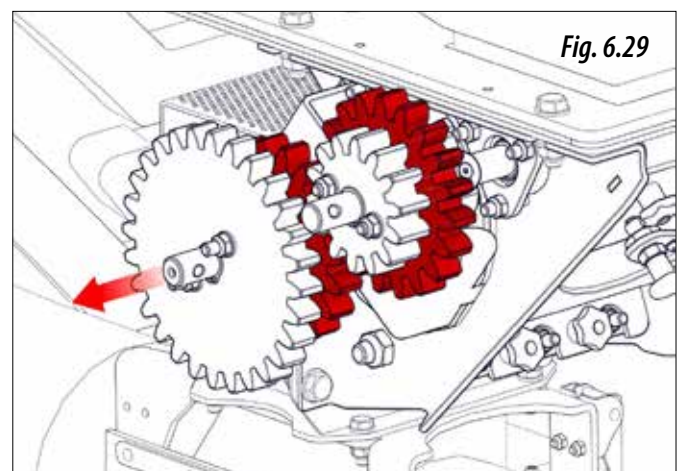


Fig. 6.29

6.3.1.2 FINE SEED OR MICROGRANULATE FERTILIZER

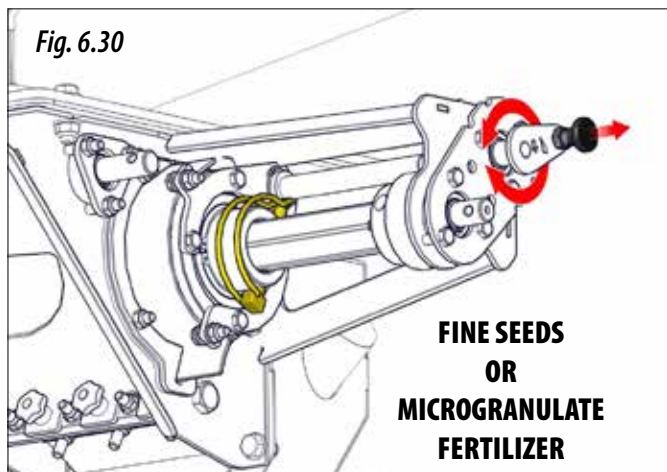
Proceed as follows for sowing with **FINE SEEDS** or fertilising with **MICROGRANULATE FERTILIZERS**:

1- Place the locking ring in **position F** (Fig. 6.30).



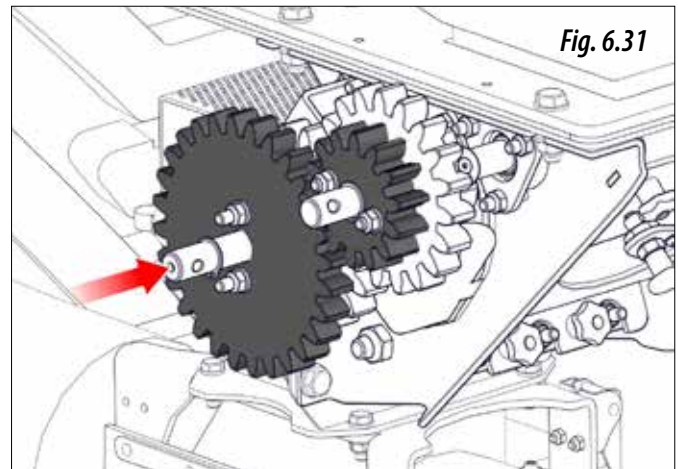
IMPORTANT: IF IT IS NECESSARY TO CHANGE FROM POSITION F TO POSITION N, PROCEED AS DESCRIBED IN SECTION 6.3.1 VOLUMETRIC DISPENSER.

2- Pull out slightly and turn the spindle (Fig. 6.30) to adjust the dosage to the desired position, as specified in the dosage tables.



3- Set the dispenser sprockets to **position F**, (Fig. 6.31).

4- For models equipped with a NEUMASEM MFDC monitor, the controller must be set to MICRO mode (see the monitor's specific manual).



THE MICRO-DOSING SYSTEM IS USED TO IMPROVE DISTRIBUTION OF SMALL SEEDS AND REGULAR SEEDS IN SMALL QUANTITIES.



SEE THE DOSAGE TABLES (SECTION 9.1.2) FOR THE APPROPRIATE VALUE FOR SMALL SEEDS WITH THE MICRODOSING SYSTEM F.



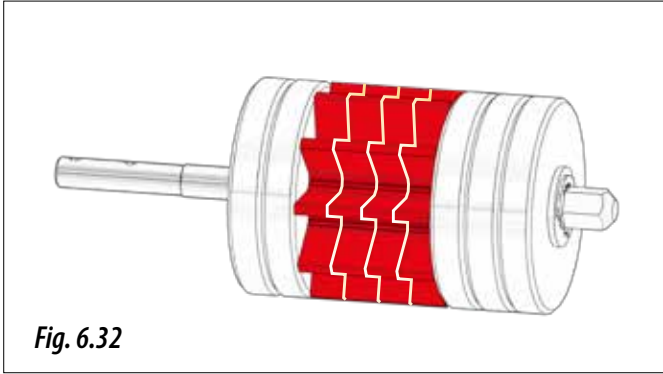
CHECK THE CONDITION OF THE CLEANING BRUSH BEFORE STARTING TO SOW SMALL SEEDS.



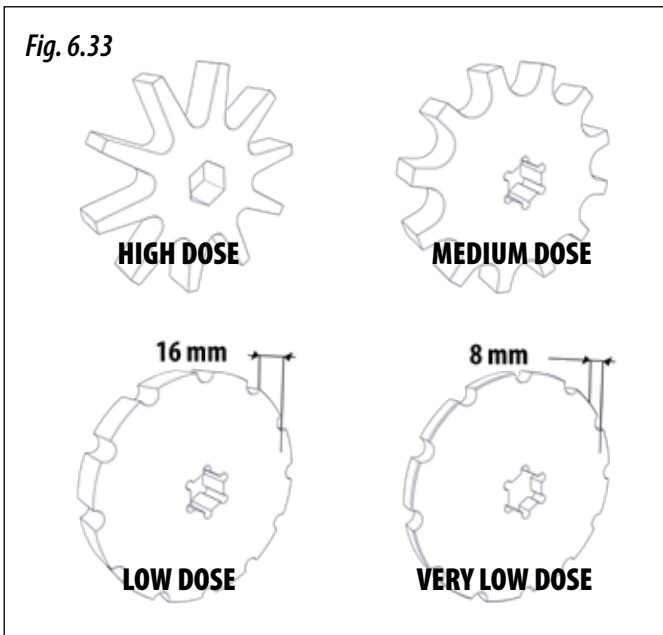
WHEN MICRODOSING SMALL SEEDS, DO NOT EXCEED 25 ON THE ADJUSTMENT SCALE.

6.3.2 ROLLER DISPENSER

This dispenser has a roller that can be assembled with different numbers of sectors (e.g. 4 sectors, Fig. 6.32). Between 1 and 7 sectors can be mounted.

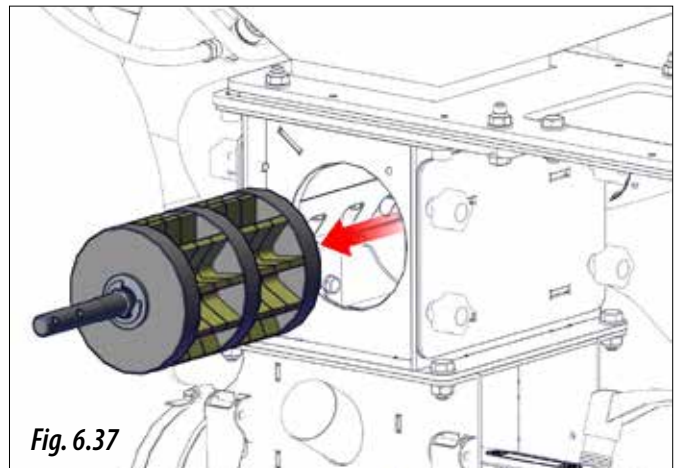
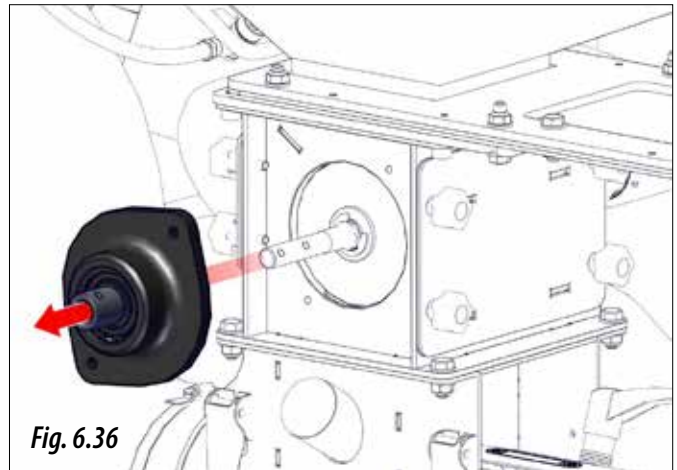
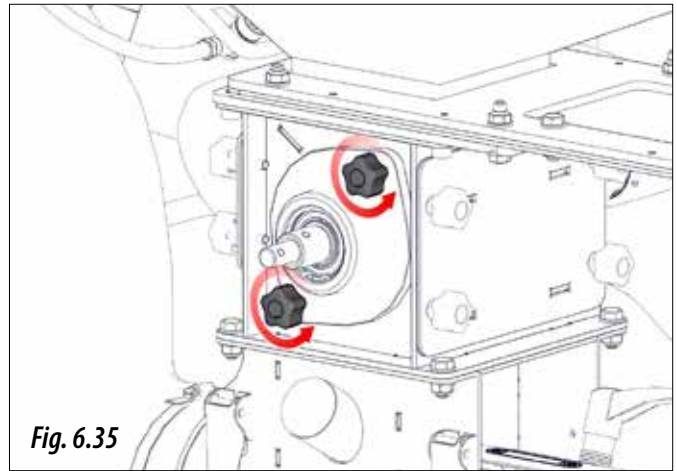
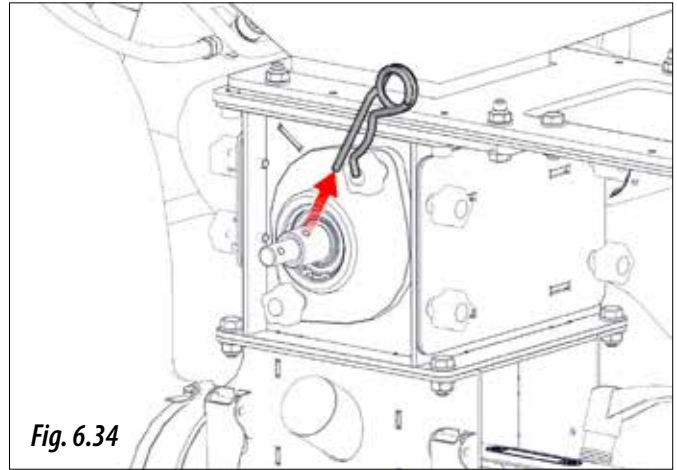


THERE ARE SEVERAL TYPES OF SECTORS FOR: HIGH, MEDIUM, LOW OR VERY LOW DOSES (FIG. 6.33).



Follow these steps to set the number of sectors to adjust the dispenser to the desired dose:

- 1- Pull out the "R" pin (Fig. 6.34).
- 2- Remove the two knobs (Fig. 6.35).
- 3- Pull out the side piece (Fig. 6.36) and take out the roller (Fig. 6.37).

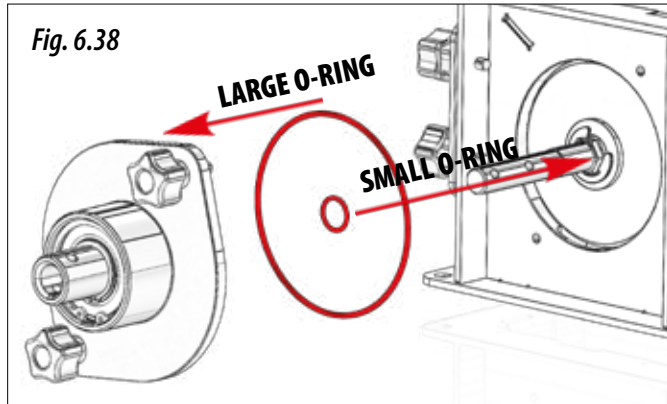




WHEN TAKING OUT THE ROLLER, TAKE CARE NOT TO LOSE THE O-RINGS ON THE SHAFT (SMALL) AND ON THE SIDE PIECE (LARGE) AND REPOSITION THEM CORRECTLY WHEN ASSEMBLING THE ROLLER (FIG. 6.38).

6.3.3 DISPENSERS FOR FERTILIZER AND/OR MICROGRANULATOR KITS

There are several fertilizer and/or microgranulator kits. Namely:

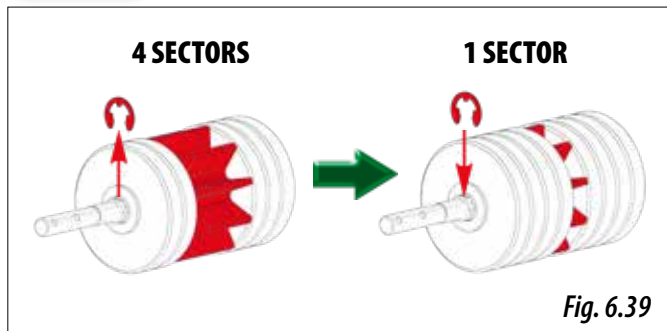


- **INTERNAL KIT HOPPER WITH MECHANICAL OR ELECTRICAL TRANSMISSION** (with ISOBUS). This kit can be used to dispense conventional or microgranulate fertilizer.
- **EXTERNAL KIT HOPPER WITH MECHANICAL OR ELECTRICAL TRANSMISSION** (with ISOBUS). This kit can only be used to dispense microgranulate fertilizer.

4- Mount the number of sectors required for the desired dose. In order to change the sector setting, you must remove a seeger ring, mount the desired sectors and replace the seeger ring (Fig. 6.39).



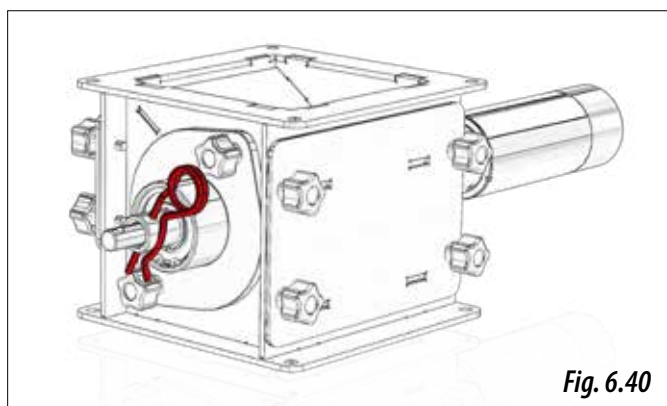
SEE SECTION 6.5.2 MODELS WITH ISOBUS ELECTRICAL TRANSMISSION TO DETERMINE THE NUMBER OF SECTORS TO MOUNT



5- Reassemble the roller and the side piece and fasten with the two knobs.



MAKE SURE THAT THE SEEGER RINGS ARE PROPERLY MOUNTED IN THEIR HOUSINGS BY TURNING EACH RING. DO NOT FORGET THE "R" PIN; THE DISPENSER WILL NOT WORK WITHOUT IT (Fig. 6.40).

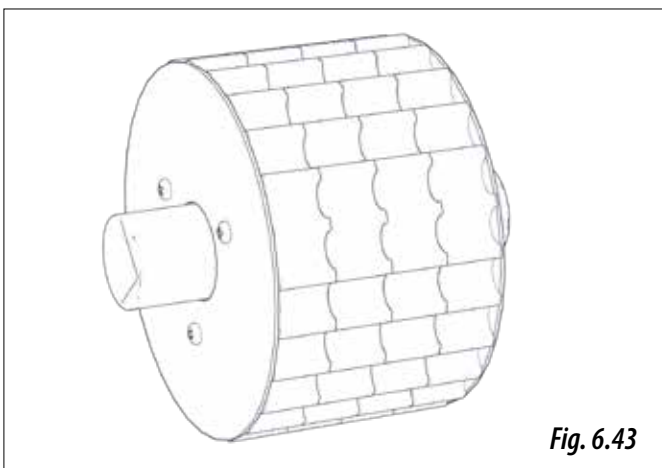
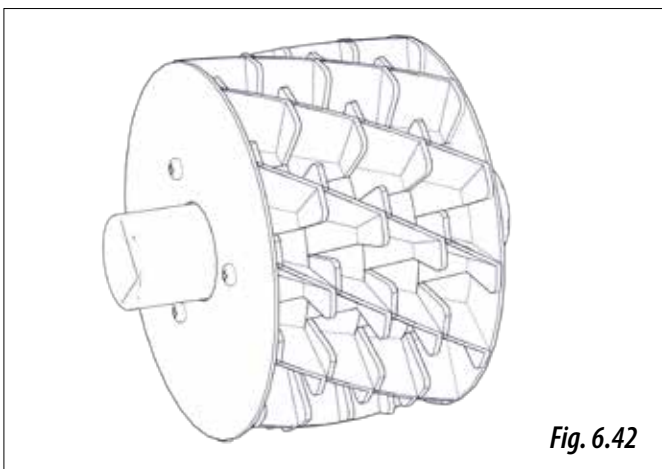
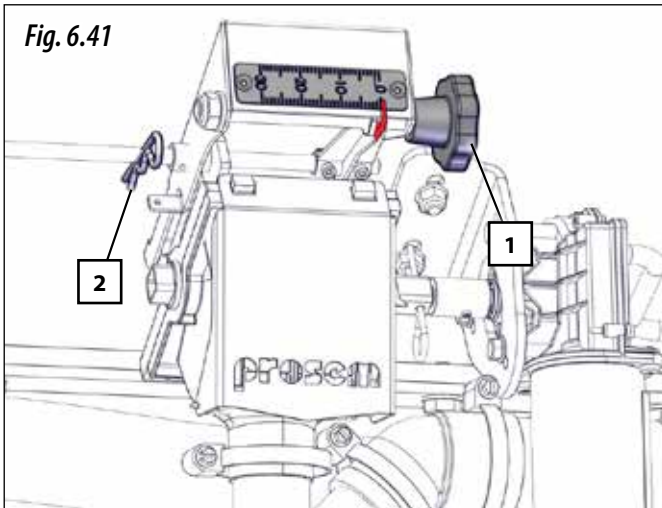


6.3.3.1 INTERNAL KIT HOPPER - FERTILIZER AND/OR MICROGRANULATE DISPENSER

This kit for conventional or microgranulate fertilizer has two dispensers. These are adjusted by turning the hand wheel (1, Fig. 6.41) until the indicator is in the position recommended by the dosage table.

This dispenser can be set to the specific product to be dispensed, using:

- **ROLLER FOR CONVENTIONAL FERTILIZER** (Fig. 6.42).
- **ROLLER FOR MICROGRANULATE FERTILIZER** (Fig. 6.43).



FOR MODELS WITH MECHANICAL TRANSMISSION AND A SINGLE DISTRIBUTION HEAD, IF THE DOSE TO BE DISTRIBUTED IS LESS THAN THAT SPECIFIED IN THE DOSAGE TABLES, ONE DISPENSER SHOULD BE OVERRIDDEN. IN THIS CASE, THE VALUE GIVEN IN THE TABLE SHOULD BE DIVIDED BY 2.



IMPORTANT: IT IS NOT POSSIBLE TO OVERRIDE ANY DISPENSER FOR MODELS WITH ELECTRICAL TRANSMISSION (ISOBUS).



IMPORTANT: IF THE COULTER UNIT HAS TWO DISTRIBUTION HEADS, IT WILL NOT BE POSSIBLE TO OVERRIDE ANY DISPENSERS. IN ADDITION, BOTH DISPENSERS MUST BE SET TO THE SAME VALUE.

For models with mechanical transmission. If you wish to override a dispenser, follow these steps:

- 1- Fully close the dispensers by turning the hand wheel (1, Fig. 6.41) until the indicator is in position 0.
- 2- Remove the connecting pin (2, Fig. 6.41).
- 3- To set the dose to a single dispenser, you must first divide the dosage values given in the tables by 2 (see Section 9.3.1 INTERNAL KIT HOPPER WITH MECHANICAL TRANSMISSION) and set the position.

6.3.3.2 EXTERNAL KIT HOPPER - MICRO-GRANULATE FERTILIZER DISPENSER

This kit for microgranulate fertilizer has two hoppers (Fig. 6.44) with a total capacity of 410 litres; each hopper feeds a dispenser.

Depending on the number of distribution heads in the coulter unit, this kit can dispense two different products (one in each hopper) or just one product. If the coulter unit has only one distribution head, two different products can be dispensed; if the coulter unit has two distribution heads, only one product can be dispensed.

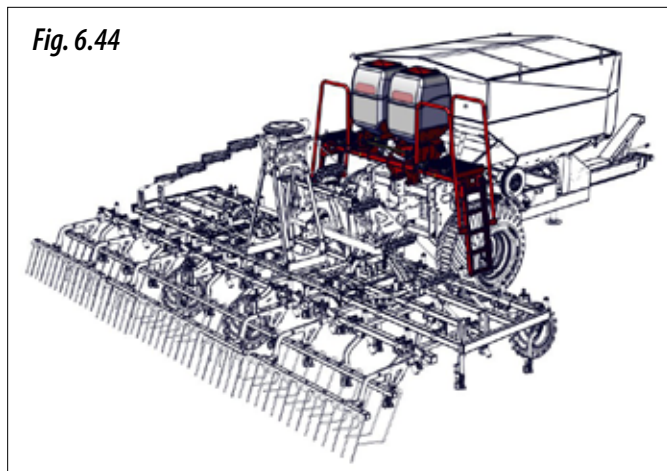


Fig. 6.44

The dose is variable. For models with ISOBUS, you must activate the monitor; and for models with mechanical transmission, you will have to change some sprockets. If your machine has a mechanical transmission, follow the steps below to change the sprockets:

1- Release the two fasteners to remove the chain cover (Fig. 6.45).

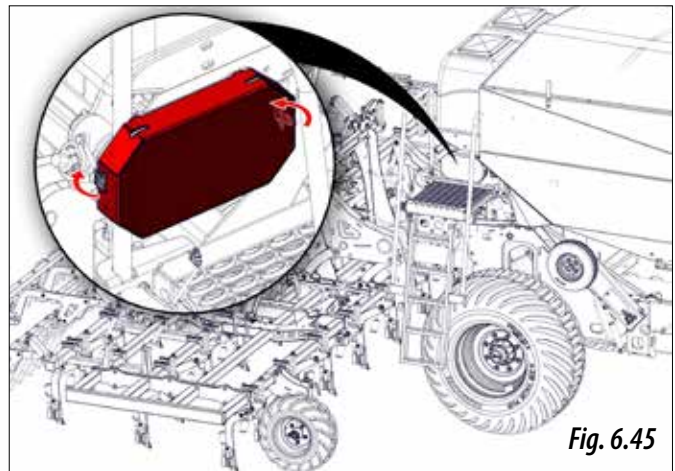


Fig. 6.45

2- To remove the chain, loosen the take-up sprocket with the handle located at the rear of the housing (Fig. 6.46).

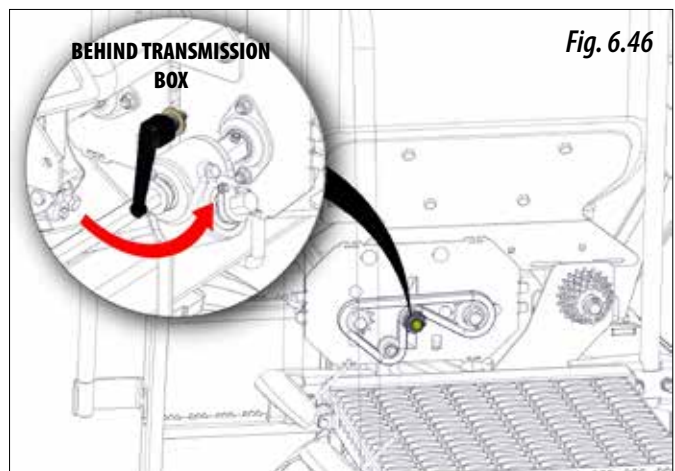


Fig. 6.46

3- Remove the ring pins and change the sprockets as required by the dose it is wished to distribute. Once modified, reassemble the ring pins (Fig. 6.47).



VERY IMPORTANT: TO MODIFY THE TRANSMISSION, SEE THE DOSAGE TABLES IN SECTION 9.3.3 EXTERNAL KIT HOPPER WITH MECHANICAL TRANSMISSION.

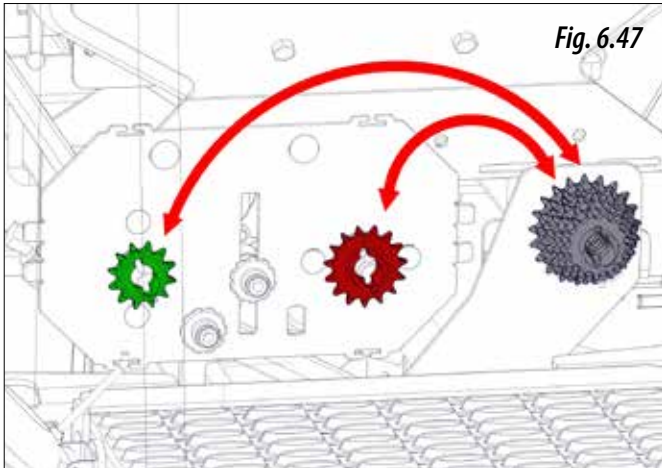


Fig. 6.47

- 4- Reassemble the chain and tension it with the take-up sprocket, tighten the handle securely (Fig. 6.48).
- 5- Use the two fasteners to assemble the chain cover (Fig. 6.49)
- 6- Repeat the above steps to modify the transmission on the opposite side

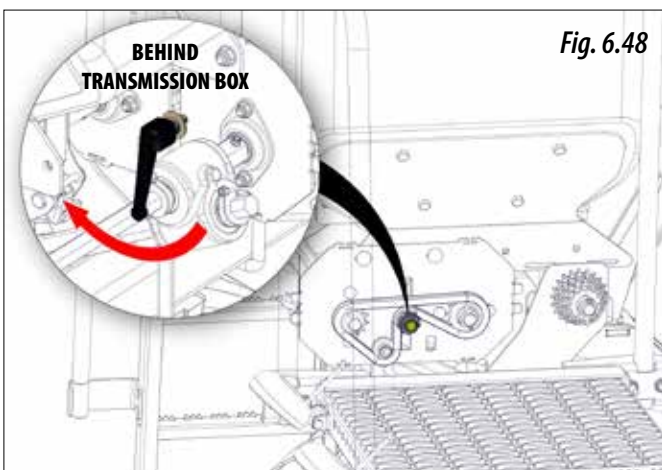


Fig. 6.48

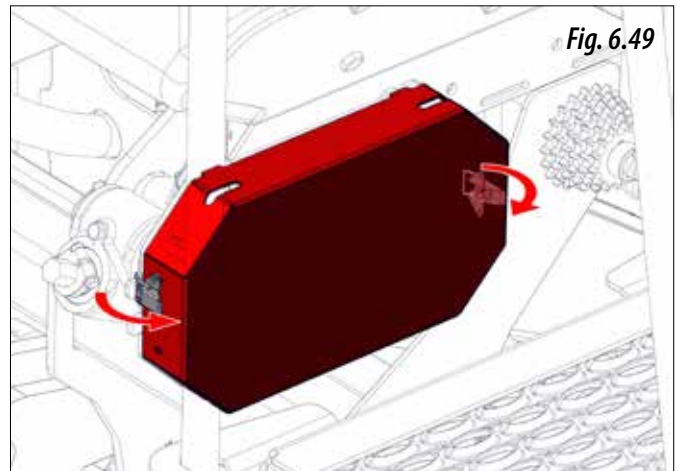


Fig. 6.49



IF THE DOSE TO BE DISTRIBUTED CANNOT BE ADJUSTED WITH THE TRANSMISSION, THERE IS THE POSSIBILITY OF CHANGING THE DISPENSERS' STANDARD ROLLER TO A HALF-DOSE ROLLER. IN THAT CASE, THE VALUES GIVEN IN THE DOSAGE TABLES FOR THIS KIT MUST BE HALVED (FIG. 6.50).



IMPORTANT: IF THE COULTER UNIT HAS TWO DISTRIBUTION HEADS, ONLY ONE PRODUCT CAN BE DISPENSED. IN THIS CASE, THE SAME TYPE OF ROLLER MUST BE INSTALLED IN BOTH DISPENSERS.

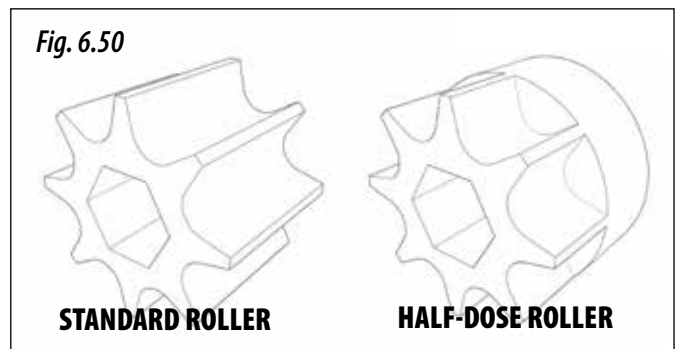


Fig. 6.50

STANDARD ROLLER

HALF-DOSE ROLLER

6.4 SETTING THE SEED DOSE

Using high-quality certified seeds is not enough to determine the weight in kilograms to be distributed with the machine, since the final result of the harvest will depend on the number of plants that reach full maturity.

Each plant requires a certain amount of soil space from which it will obtain nutrients. Thus, a low plant density can be just as bad as a plant density that is too high. To calculate the number of kilograms to be sown per hectare, we must first know how many plants we are going to sow per square metre.

As a guideline, the number of plants recommended for wheat and barley in dry farming fields is as follows:

AUTUMN	SPRING
Early sowing, 200 plants per m ²	Early sowing, 310 plants per m ²
Late sowing, 265 plants per m ²	Late sowing, 445 plants per m ²

Seed doses must be adjusted to each soil according to its texture, fertilization level, rainfall and sowing season, grain quality, germination and tillering power, etc.

In addition, it should be remembered that the seed's germination capacity is variable and depends on many factors. Experimentally, it can be calculated between 70 and 80%, which in practice is equivalent to multiplying the number of grains to be sown by 1.43 or 1.25, respectively.

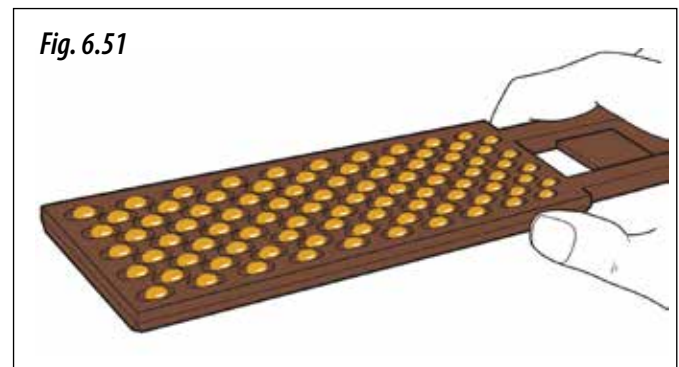


NOTE THAT IN SPRING, TILLERING IS ALWAYS LOWER AND THEREFORE THE AMOUNT TO BE SOWN SHOULD BE INCREASED.



MAQUINARIA AGRÍCOLA SOLÀ, S.L., RECOMMENDS THAT FARMERS SEEK PROFESSIONAL ADVICE FROM TECHNICIANS OR SPECIALISTS IN THIS FIELD.

The following describes a practical method for calculating the kilograms per hectare to be distributed, based on the number of plants per square metre that we want to obtain.



- 1- Insert the "grain counter" (Fig. 6.51) into the seed bag to fill it.
- 2- When you take it out, brush your hand over it so that only one grain remains in each cavity (100 grains in total).
- 3- Repeat the operation 10 times to obtain 1,000 grains.
- 4- Weigh the 1,000 grains on a precision scale.

The weight obtained in **GRAMS** is called the **OPERATING WEIGHT**. When you know the grains you are going to sow per square metre, the kilograms per hectare that we must set in the dosage control are:

$$\text{KILOGRAMS PER HECTARE} = \frac{(\text{grains per m}^2 \times \text{OPERATING WEIGHT})}{100}$$

6.5 FLOW PRE-TEST

Having determined the seed dose to be distributed (see section 6.4 SETTING THE SEED DOSE), and before starting work, a flow test should be carried out to confirm that the dose to be distributed is the desired dose.



BEFORE PERFORMING THIS TASK, FIRST STOP THE TRACTOR ENGINE AND REMOVE THE KEY FROM THE IGNITION.



IN MACHINE MODELS WITH A DUAL SEED DISPENSER, BOTH DISPENSERS MUST BE SET TO THE SAME VALUE AND THE FLOW TEST MUST BE CARRIED OUT ON BOTH.



AS REGARDS THE DOSES OF CONVENTIONAL OR MICROGRANULATE FERTILIZERS AND INSECTICIDES TO BE DISTRIBUTED, FARMERS ARE RECOMMENDED TO SEEK PROFESSIONAL ADVICE FROM TECHNICIANS OR SPECIALISTS IN THIS FIELD. BEFORE STARTING WORK, A FLOW TEST SHOULD BE CARRIED OUT TO CONFIRM THAT THE DOSE TO BE DISTRIBUTED IS THE DESIRED DOSE.



TOO MUCH TREATMENT POWDER ON THE SEEDS MAY CAUSE DECREASED FLOW. CONSEQUENTLY, IT IS RECOMMENDED TO PERFORM A SECOND TEST AFTER HAVING DISPENSED ABOUT THREE HOPPERS.

6.5.1 MODELS WITH MECHANICAL TRANSMISSION

A series of steps must be taken before performing the test:

- 1- Couple the machine to the tractor in a slightly raised position (the coulters unit does not touch the ground).
- 2- Fill the hoppers or compartments with product (see section 5.5.1 SEED/FERTILIZER HOPPER).
- 3- Open the cover of the Venturi injector using the two quick-release fasteners and move the calibration control to the test position, "NO" (Fig. 6.52).
- 4- Place the bag supplied or a container under the Venturi injector outlet (Fig. 6.53).

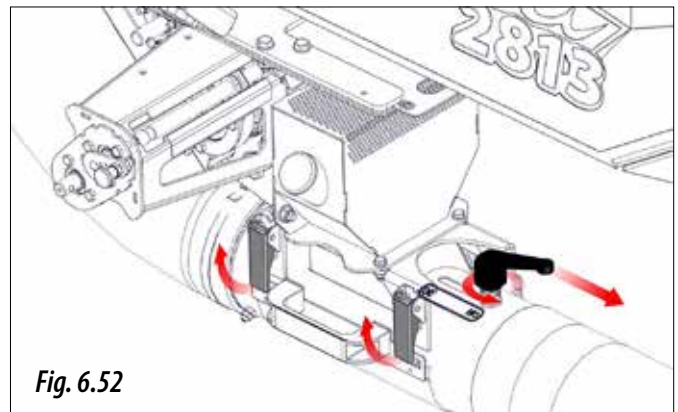


Fig. 6.52

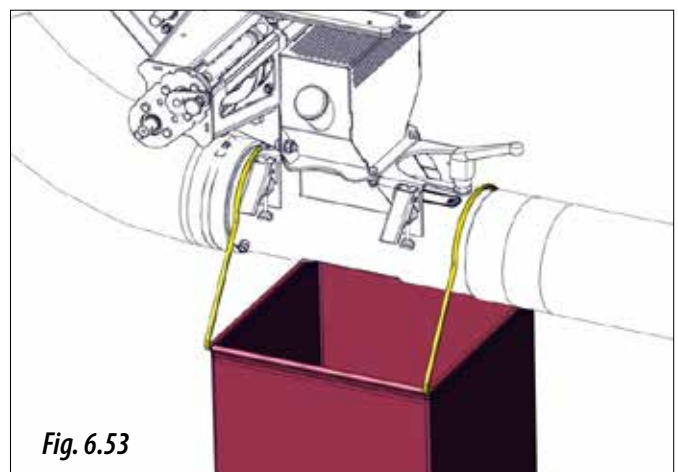


Fig. 6.53

- 5-Adjust the transmission and the dispensers' settings.

SEE SECTIONS	SEED AND FERTILIZER	INTERNAL MICRO KIT	EXTERNAL MICRO KIT
TRANSMISSION ADJUSTMENT	6.7	6.7	6.7 and 6.3.3.2
DISPENSER ADJUSTMENT	6.3.1	6.3.3.1	6.3.3.2
DOSAGE TABLE	9.1	9.3.1	9.3.3



ALL THE DISPENSERS MUST BE IN THE TEST POSITION WHEN PERFORMING THE CALIBRATION TEST. OTHERWISE, PRODUCT WILL ACCUMULATE IN CERTAIN LOCATIONS AND MAY CLOG THE COMPRESSED AIR SYSTEM.



FOR MODELS WITH A DUAL SEED (OR SEED AND FERTILIZER) DISPENSER, THE CALIBRATION TEST MUST BE PERFORMED IN BOTH DISPENSERS AT THE SAME TIME.



IF THE MACHINE HAS THE INTERNAL CONVENTIONAL OR MICROGRANULATE FERTILIZER KIT, BOTH PIPES OF THE MICROGRANULATE AND/OR CONVENTIONAL FERTILIZER KIT MUST BE DISCONNECTED FROM THE COLLECTION BOXES IN ORDER TO PERFORM THE CALIBRATION TEST (Fig. 6.54), POINTING THE PIPE TOWARDS A BAG OR CONTAINER.

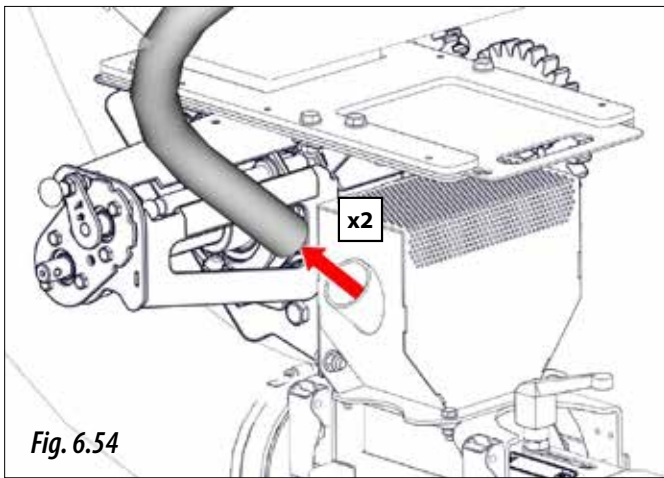


Fig. 6.54

6- If the machine has a microgranulate or conventional fertilizer kit, the calibration test must be performed beforehand on the seed (or seed/fertilizer) dispensers. Disconnect the transmission from the kit by removing the pin (Fig. 6.55).

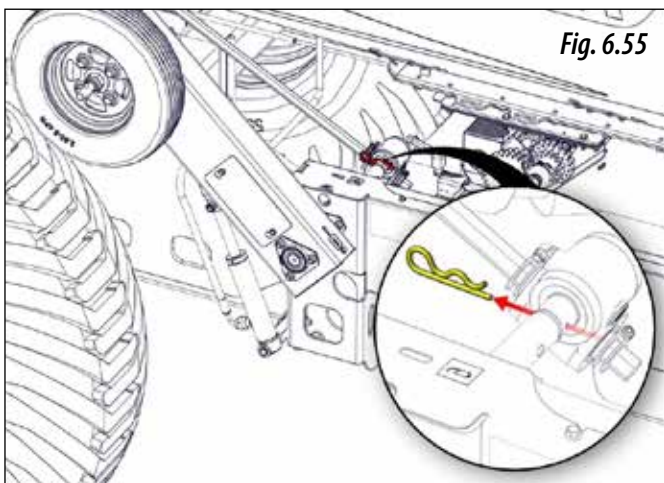


Fig. 6.55

7- Next, place the hand crank in the transmission wheel (Fig. 6.56). Turn the wheel anticlockwise the number of turns indicated in the table below (the number of turns will vary depending on the machine model).

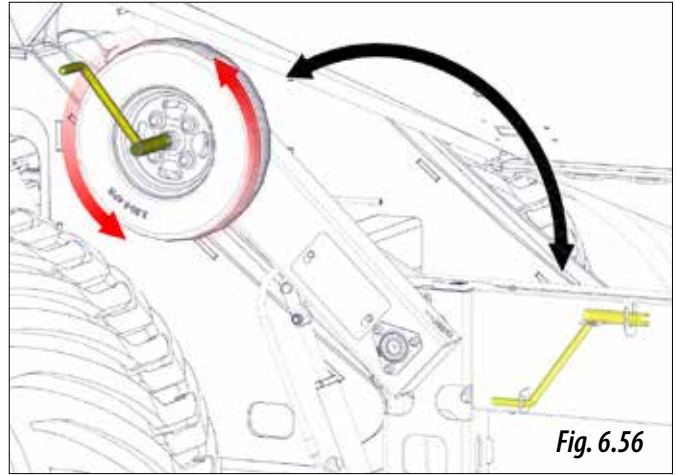


Fig. 6.56

MACHINE TYPE	No. OF WHEEL TURNS
600	35.25
680	31.1
700	30.2
770	27.5

8- After turning the wheel the required number of times, collect the seed, or seed and fertilizer. Subsequently, disconnect the transmission from the seed/fertilizer dispensers and connect the transmission of the conventional and/or microgranulate fertilizer kit using the pins (Fig. 6.57).

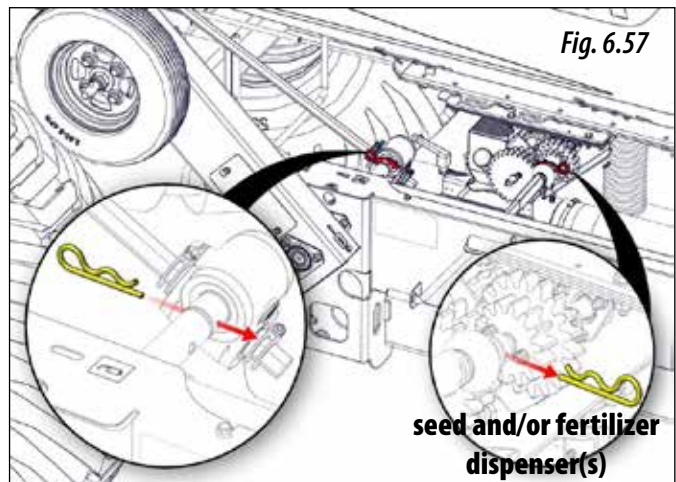


Fig. 6.57



VERY IMPORTANT: IF THE MACHINE HAS TWO SEED (OR SEED/FERTILIZER) DISPENSERS, BOTH MUST BE DISCONNECTED FOR THE MICROGRANULATE KIT CALIBRATION TEST.

9- Turn the seed drill transmission wheel the number of turns given in the table in point 7 of this section.



AFTER TURNING THE WHEELS THE REQUIRED NUMBER OF TIMES, TURN ON THE TURBINE FOR A FEW SECONDS TO COLLECT ANY PRODUCT REMAINING IN THE CONVEYING PIPES.

10- After turning the wheel the required number of times, collect the microgranulate fertilizer. Subsequently, re-connect the transmission for the seed (or seed/fertilizer) dispensers. (Fig. 6.58).

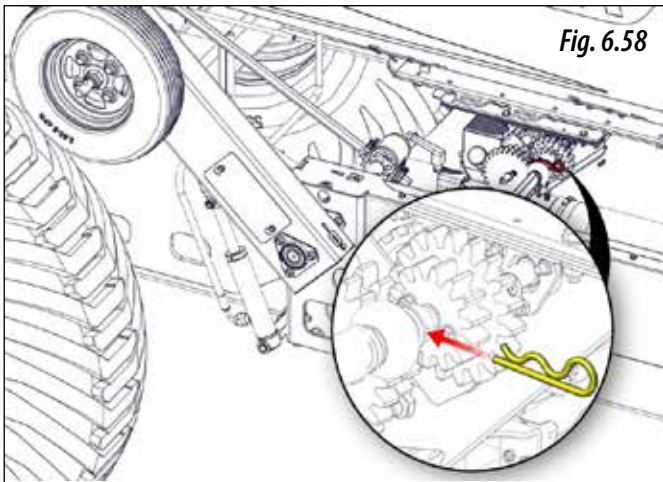


Fig. 6.58

11- Accurately weigh the collected products.

12- **MULTIPLY by 40** the result of the weighing to obtain the kilograms per hectare that the machine will distribute with the opening selected previously.

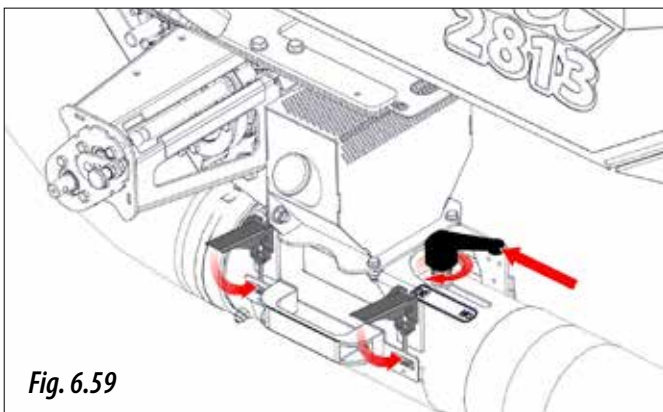


Fig. 6.59



UPON COMPLETING THE FLOW TESTS, CLOSE THE VENTURI INJECTOR COVER, MOVE THE CALIBRATION CONTROL TO THE "OK" POSITION AND LOCK IT (Fig. 6.59).



UPON COMPLETING THE FLOW TESTS, IF THE MACHINE HAS THE MICROGRANULATE OR CONVENTIONAL FERTILIZER KITS, RECONNECT THE PIPES TO THE COLLECTION BOXES



VERY IMPORTANT: UPON COMPLETING THE FLOW TESTS, REINSERT THE TRANSMISSIONS' "R" PINS.



THE TURNS MUST BE MADE AT A CONSTANT SPEED, APPROXIMATELY ONE TURN PER SECOND. THE NUMBER OF TURNS IS APPROXIMATE AND MAY VARY DEPENDING ON THE SOIL, THE TYRE MANUFACTURER OR THE WHEEL PRESSURE. ACCORDINGLY, IT IS RECOMMENDED TO PERFORM A FIELD TEST (SEE SECTION 6.6 FIELD TEST FOR DOSAGE).



IMPORTANT: IN DOSAGES THAT ARE CLOSE TO TOTAL PRODUCT QUANTITIES OF 450 kg/ha (TAKE INTO ACCOUNT SEED, FERTILIZER AND MICROGRANULATE), CHECK THAT THERE IS NO MATERIAL BUILD-UP CLOGGING THE COMPRESSED AIR SYSTEM. IF THERE IS, REDUCE THE DOSE.



IMPORTANT: AFTER COMPLETING THE FIRST HECTARE OF WORK, CHECK THAT PRODUCT CONSUMPTION IS AT THE DESIRED LEVEL.

6.5.2 MODELS WITH ISOBUS ELECTRIC TRANSMISSION

A series of steps must be taken before performing the test:

- 1- Couple the machine to the tractor in a slightly raised position (the coulter unit does not touch the ground).
- 2- Close the dispensers' guillotine door by removing the bolt that blocks the door's position (Fig. 6.60).

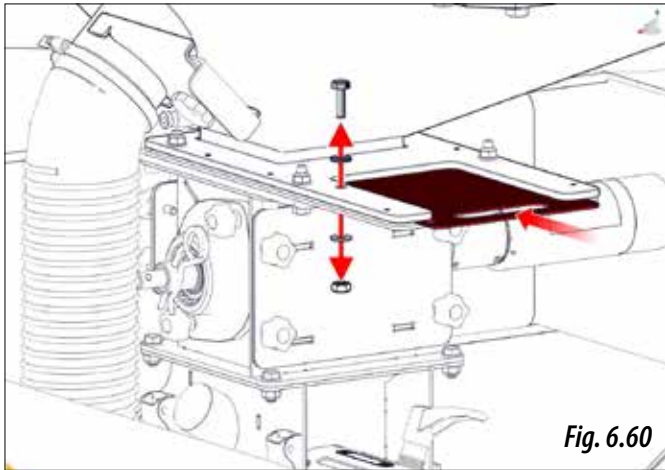


Fig. 6.60

- 3- Fill the hoppers with product (see section 5.5.1 SEED/FERTILIZER HOPPER).
- 4- Open the cover of the Venturi injector using the two quick-release fasteners and move the calibration control to the test position, "NO" (Fig. 6.61).

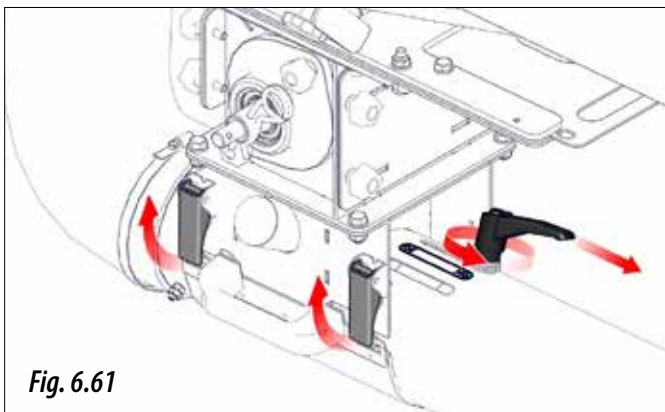


Fig. 6.61

- 5- Place the bag supplied or a container under the Venturi injector outlet (Fig. 6.62)

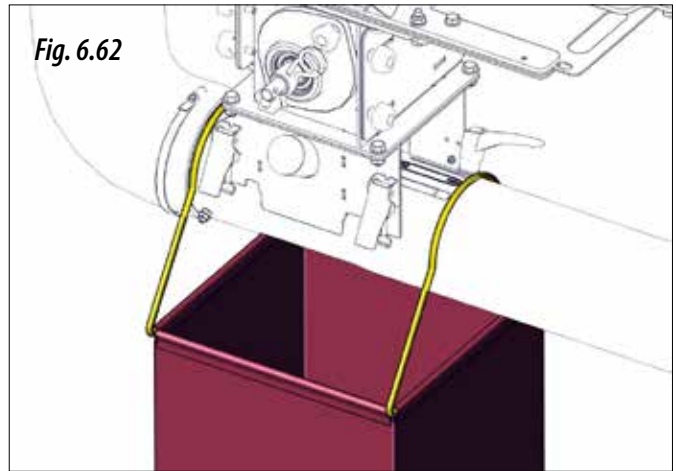


Fig. 6.62

- 6- Remove the roller to identify the type and quantity of sectors installed (Fig. 6.63. To remove the roller, see section 6.3.2 ROLLER DISPENSER).
- 7- Reinsert the roller in the dispenser and place the "R" pin (Fig. 6.64).

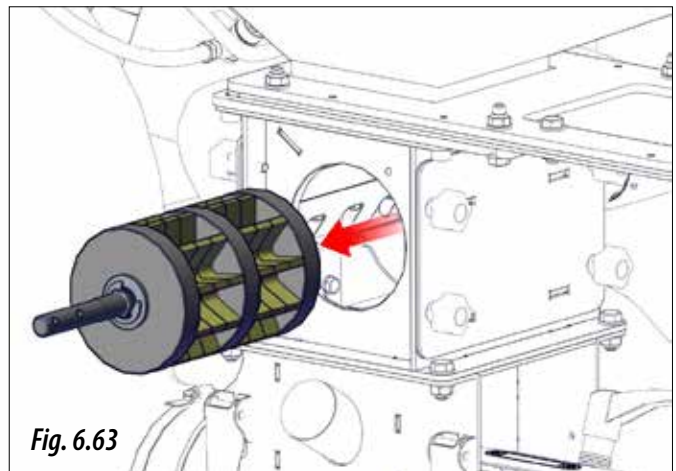


Fig. 6.63

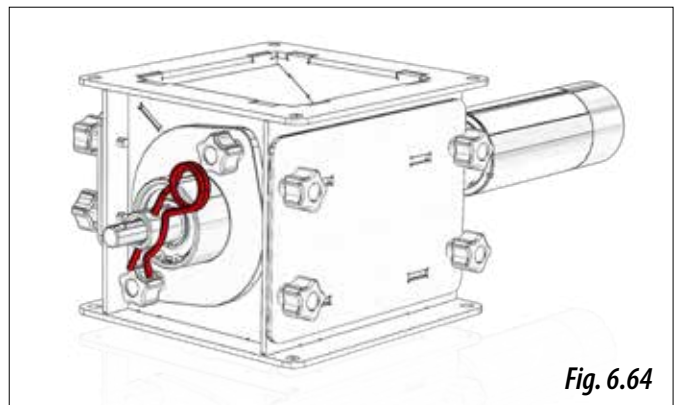


Fig. 6.64



IF THE MACHINE HAS THE INTERNAL CONVENTIONAL OR MICROGRANULATE FERTILIZER KIT, BOTH PIPES OF THE MICROGRANULATE AND/OR FERTILIZER KIT MUST BE DISCONNECTED FROM THE COLLECTION BOXES IN ORDER TO PERFORM THE CALIBRATION TEST (FIG. 6.65), POINTING THE PIPE TOWARDS A BAG OR CONTAINER.

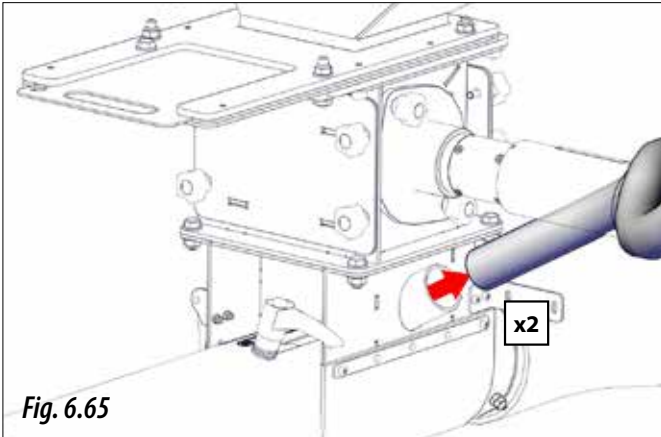


Fig. 6.65

8- To continue with the calibration, see the ISOBUS manual supplied with the machine (see the section PERFORMING THE CALIBRATION TEST). Where you must enter the following values (Fig. 6.66):

- Desired **OPERATING SPEED** (km/h).
- Desired **RATE (dose)**, (kg/ha),
- **CALIBRATION FACTOR**, this value can be found from: the specific gravity of the product to be used; the type and number of sectors mounted in the roller (see section 9.2 ROLLER DISPENSER CALIBRATION FACTOR TABLE).

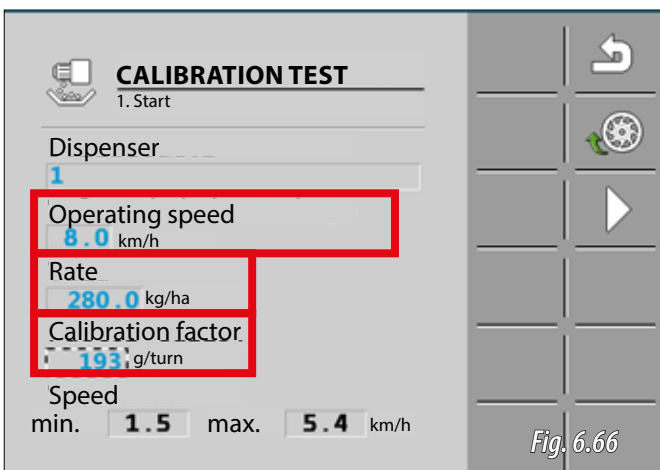


Fig. 6.66



A VALUE MUST BE ENTERED FOR THE CALIBRATION FACTOR. IF THE FACTOR IS NOT CORRECT, IT WILL NOT BE POSSIBLE TO PERFORM THE CALIBRATION.

9- After entering the 3 desired values, check the minimum and maximum operating speeds on the controller screen. When the speed that you wish to work at is between these two values (in red Fig. 6.67), open the guillotine door and block it with the bolt, fill the dosing cells (in blue, Fig. 6.67) and then perform the test (in yellow, Fig. 6.67).



IF THE SPEED YOU WISH TO WORK AT IS ABOVE THE MAXIMUM SPEED SHOWN BY THE CONTROLLER, YOU WILL NEED TO MOUNT MORE SECTORS OF THE SAME TYPE IN THE ROLLER OR CHANGE THE SECTOR TYPE. THEN CHANGE THE CALIBRATION FACTOR TO THE NEW SETTING (SEE SECTION 9.2 ROLLER DISPENSER CALIBRATION FACTOR TABLE).



IF THE SPEED YOU WISH TO WORK AT IS BELOW THE MINIMUM SPEED SHOWN BY THE CONTROLLER, YOU WILL NEED TO REMOVE SECTORS FROM THE ROLLER OR CHANGE THE SECTOR TYPE. THEN CHANGE THE CALIBRATION FACTOR TO THE NEW SETTING (SEE SECTION 9.2 ROLLER DISPENSER CALIBRATION FACTOR TABLE).

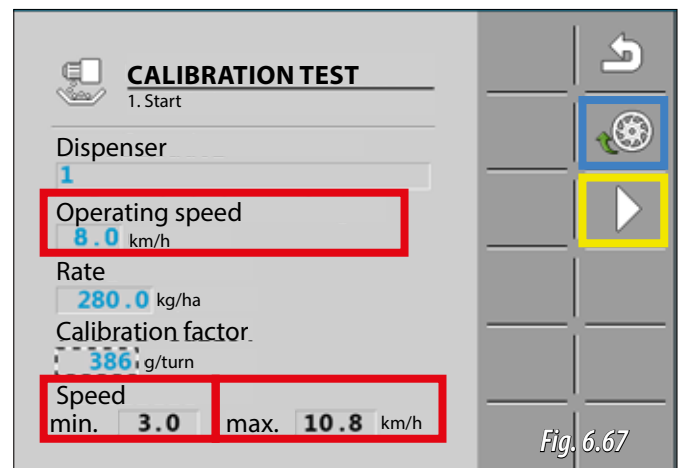


Fig. 6.67

10- With the controller settings made. Hold down the calibration button (Fig. 6.68) to start the calibration test.



HOLD DOWN THE BUTTON TO COLLECT THE MAXIMUM QUANTITY OF PRODUCT. THE MORE PRODUCT YOU COLLECT, THE MORE PRECISE THE CALIBRATION TEST WILL BE.

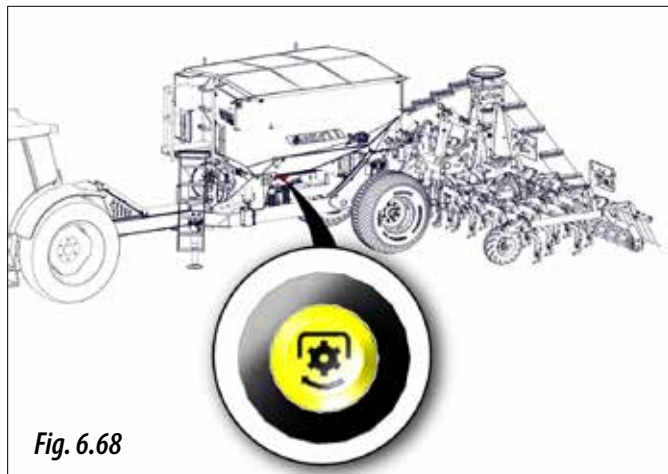


Fig. 6.68



PERFORM THE CALIBRATION TEST ON ALL OF THE MACHINE'S DISPENSERS. THE SEED DISPENSER IS No. 1, THE FERTILIZER OR SECOND SEED DISPENSER IS No. 2 (DEPENDING ON THE MACHINE MODEL) AND THE INTERNAL OR EXTERNAL FERTILIZER OR MICROGRANULATE KITS ARE Nos. 3 AND 4 (Fig. 6.69).



THE RATE IS THE TOTAL THAT THE MACHINE WILL DISTRIBUTE. IF YOUR MACHINE MODEL IS COMBINED AND YOU WISH TO USE BOTH DISPENSERS FOR SEEDS, THE RATE TO BE ENTERED FOR EACH DISPENSER WILL BE HALF OF THE TOTAL DESIRED DOSE.



UPON COMPLETING THE FLOW TESTS, CLOSE THE VENTURI INJECTOR COVER, MOVE THE CALIBRATION CONTROL TO THE "OK" POSITION AND LOCK IT (Fig. 6.70).

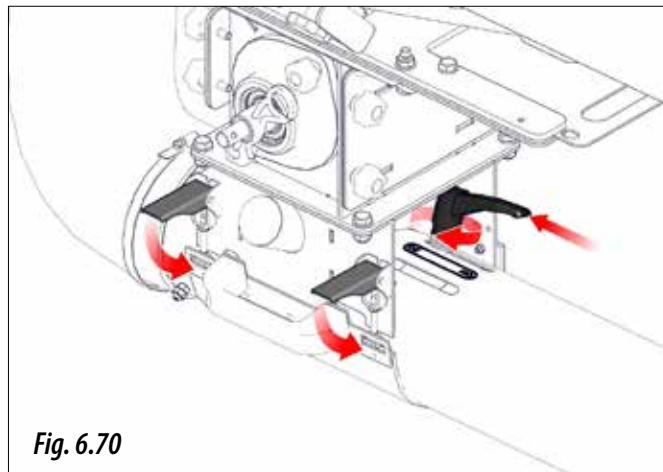


Fig. 6.70



IMPORTANT: IN DOSAGES THAT ARE CLOSE TO TOTAL PRODUCT QUANTITIES OF 450 kg/ha (TAKE INTO ACCOUNT SEED, FERTILIZER AND MICROGRANULATE), CHECK THAT THERE IS NO MATERIAL BUILD-UP CLOGGING THE COMPRESSED AIR SYSTEM. IF THERE IS, REDUCE THE DOSE.



IMPORTANT: AFTER COMPLETING THE FIRST HECTARE OF WORK, CHECK THAT PRODUCT CONSUMPTION IS AT THE DESIRED LEVEL.

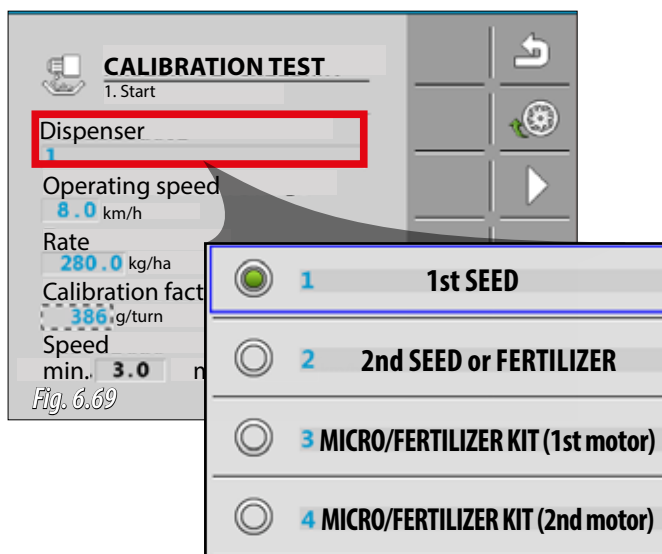


Fig. 6.69

6.6 FIELD TEST FOR DOSAGE (models with mechanical transmission)

The field test to verify the dose that the machine will distribute can only be performed for models with mechanical transmission. If differences appear between the test and the dose actually distributed by the machine, for example, due to very uneven or very soft ground, or tyres with low pressure, etc., an experimental test can be carried out to determine the **NUMBER OF ACTUAL TURNS** to be made with the **TRANSMISSION WHEEL**.



Fig. 6.71

1- With the help of a tape measure, mark on the plot the distance in metres indicated in the following table:

MACHINE TYPE	METRES TO BE TRAVELLED
600	41.7
680	36.8
700	35.7
770	32.5

2- Make a mark on the tyre to make it easier to count wheel turns while moving (Fig. 6.72).

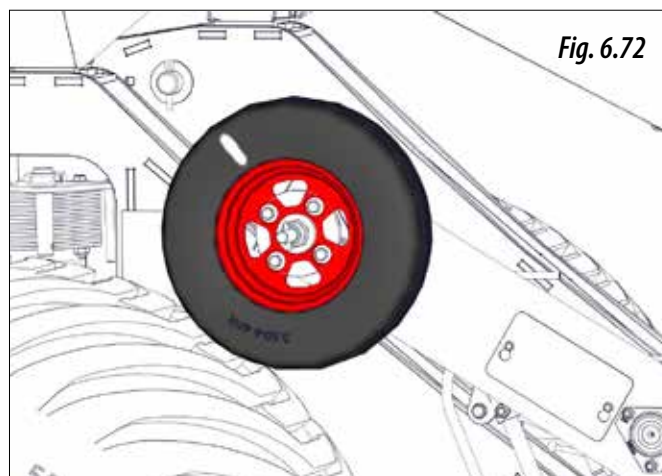


Fig. 6.72

3- Travel the aforementioned distance with the seed drill in working position. This will give the true number of turns to be made in the flow pre-test. By performing the test with this number of turns, we will obtain the kilograms per hectare actually dispensed by the machine.



IF THERE IS A LARGE DIFFERENCE BETWEEN THE TURNS OBTAINED IN THE FIELD TEST AND THE TURNS INDICATED (SECTION 6.5 FLOW PRE-TEST), MAKE SURE THAT THE TRANSMISSION WHEEL IS IN CONTACT WITH THE FLOATING WHEEL AT ALL TIMES.

6.7 MECHANICAL TRANSMISSION

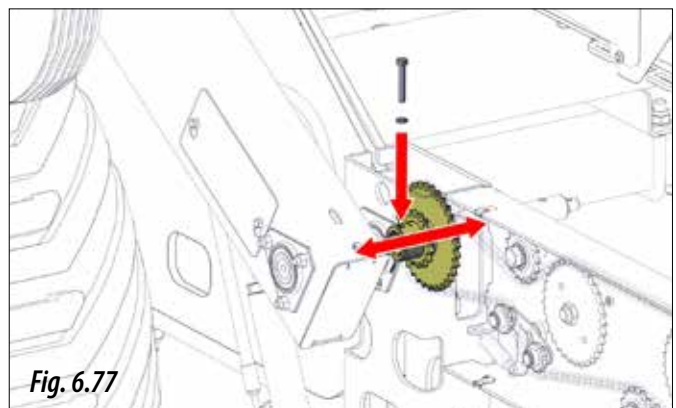
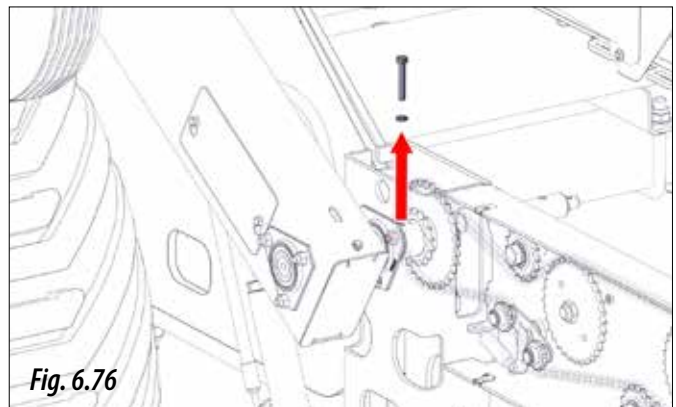
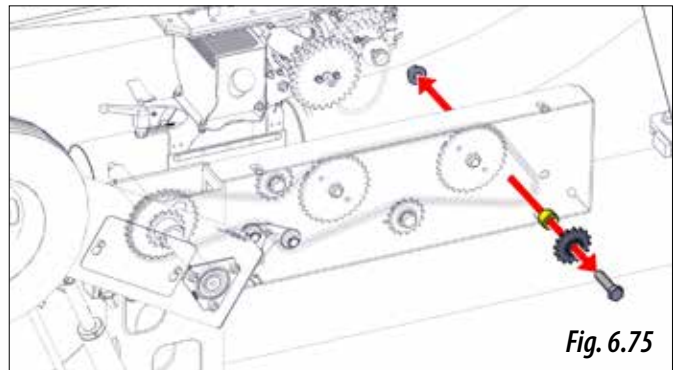
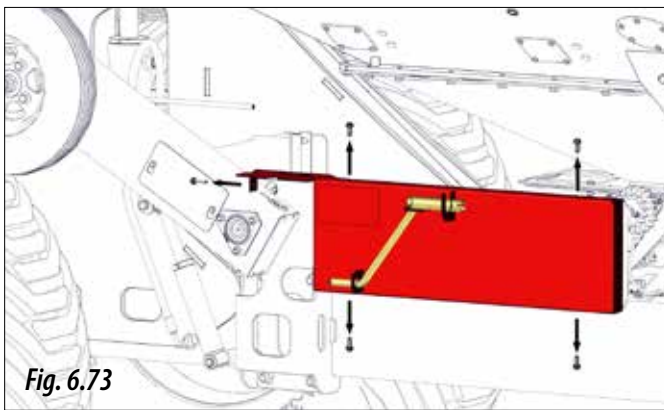
The transmission can be varied through the transmission box to adjust the dose that the machine will distribute (Fig. 6.73).



FOR MODELS PRIOR TO 2018, THE TRANSMISSION CANNOT BE MODIFIED AND THE TRANSMISSION IS CONSIDERED TO BE IN POSITION R.

To modify the transmission:

1- Open the transmission chain cover by removing all 5 screws (Fig. 6.73).



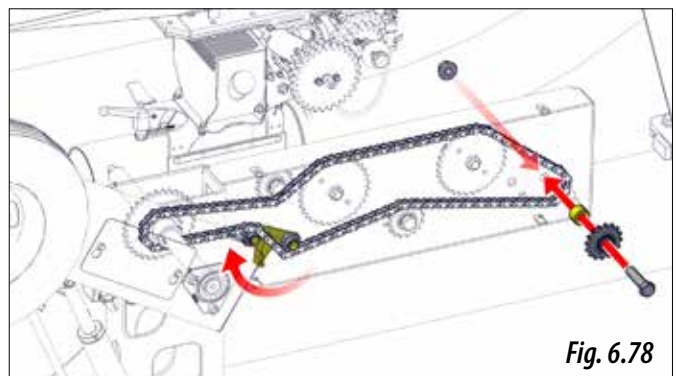
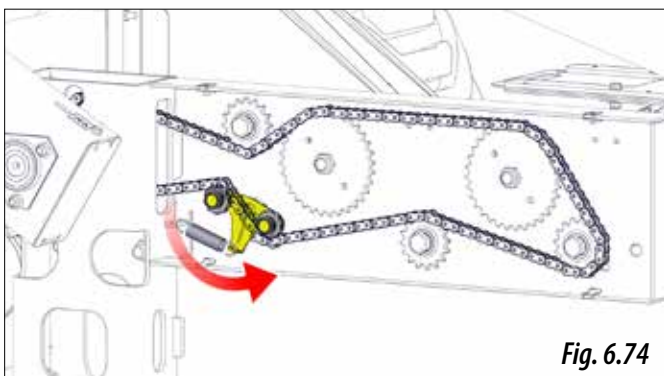
2- Turn the automatic tensioner anticlockwise to release the chain (Fig. 6.74).

3- Take out the take-up sprocket by removing the nut and bolt (Fig. 6.75).

4- Remove the dual sprocket screw (Fig. 6.76).

5- Move the dual drive sprocket and tighten the screw again (Fig. 6.77).

6- Reinstall the take-up sprocket in the new location, guide the chain through all the sprockets and turn the automatic tensioner clockwise to tauten the chain (Fig. 6.78).





VERY IMPORTANT: THE CHAIN MUST BE PROPERLY ALIGNED. OTHERWISE, IT MAY STOP DRIVING.



THE DOSAGE TABLES REFER TO THE POSITION OF THE GEARBOX AT **POSITION R** (IN RED) OR **POSITION L** (IN GREEN). SEE THE FIGURE BELOW (FIG. 6.79).

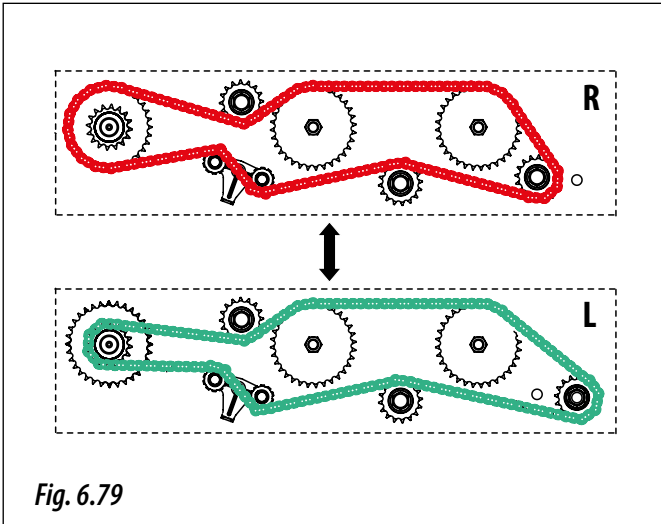


Fig. 6.79

6.8 HARROW

The harrow has several adjustments to adapt to different types of soils. It can be adjusted by:

HEIGHT.

Adjust the bottom nut (1, Fig. 6.80).

PRESSURE.

Adjust the top nut (2, Fig. 6.80).

TINE ANGLE

Adjust the slide bracket (3, Fig. 6.80).

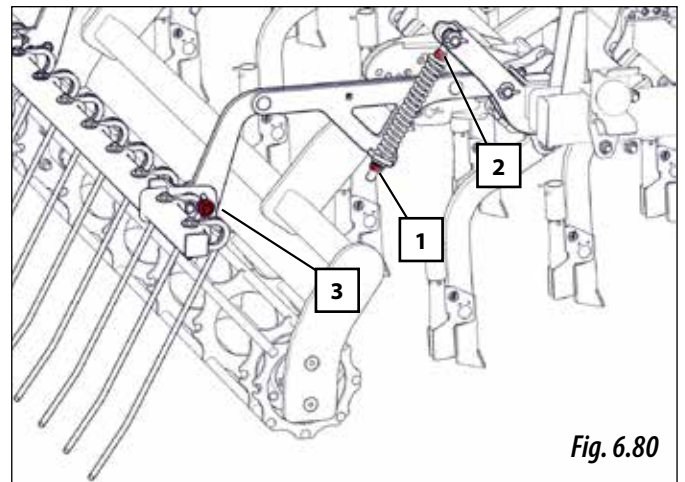
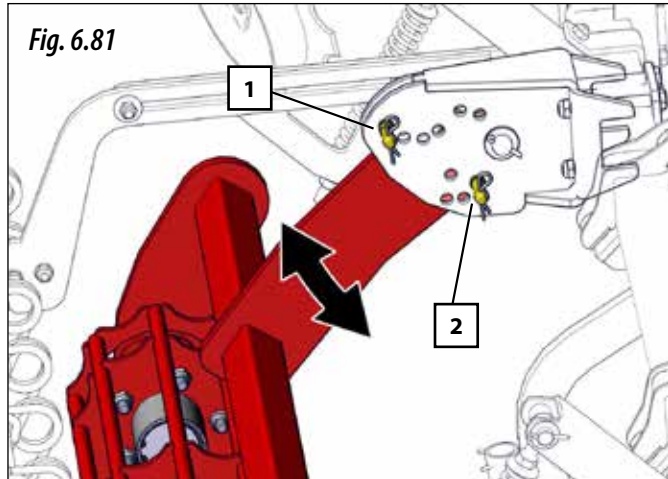


Fig. 6.80

6.9 COMPACTING ROLLER

There are two BOLTS on each coulter that allow the following adjustments:

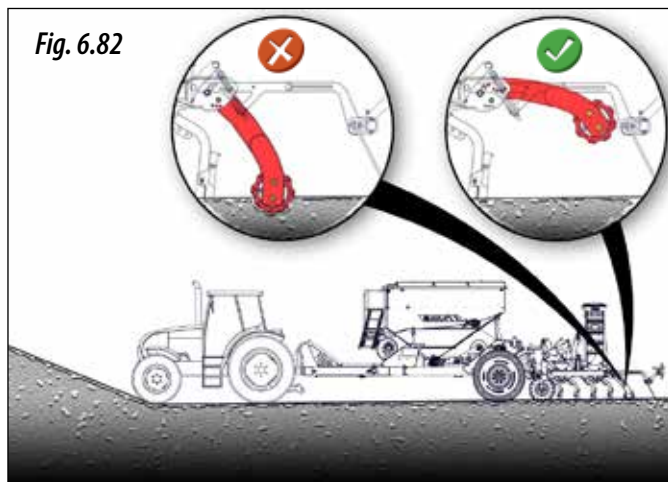
- a. Use the top bolt (1, Fig. 6.81) to lock the roller's position.
- b. Use the bottom bolt (2, Fig. 6.81) to control the roller's penetration in the soil.



VERY IMPORTANT: DO NOT BLOCK THE COMPACTING ROLLER, AS IT MUST MOVE FREELY BETWEEN THE BOLTS (1 AND 2, FIG. 6.81).

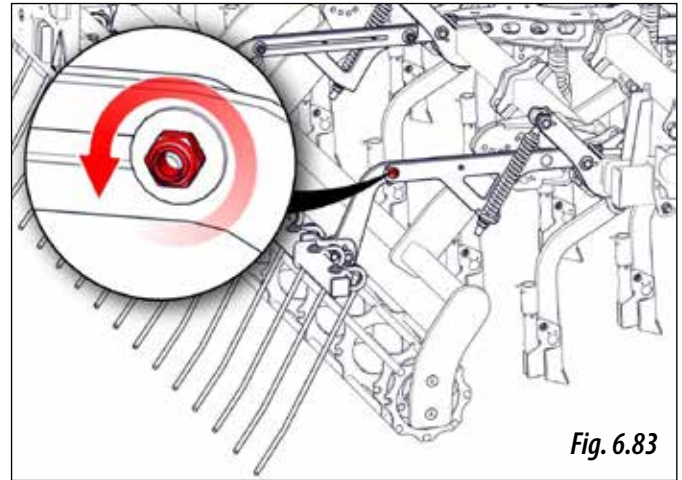


VERY IMPORTANT: THE COMPACTING ROLLER CANNOT BE USED ON ROUGH LAND OR SLOPES, AS THIS COULD DAMAGE THE MACHINE (FIG. 6.82). YOU MUST FIRST MOVE BACK THE HARROW TO DISCONNECT THE ROLLER.

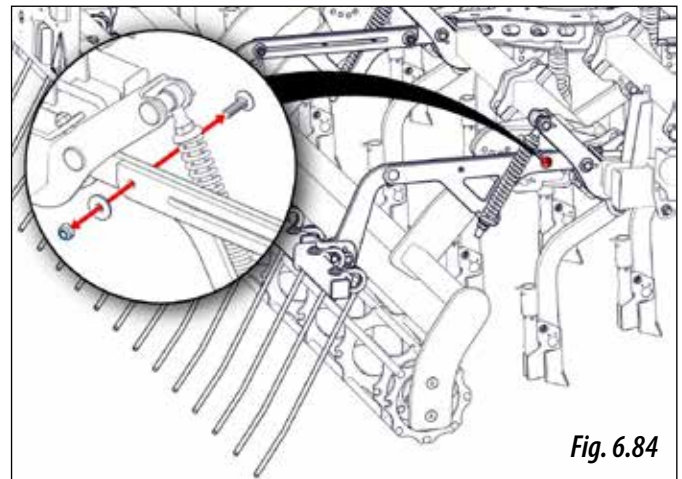


When the roller is raised to disconnect it, the harrow must be moved back following these steps:

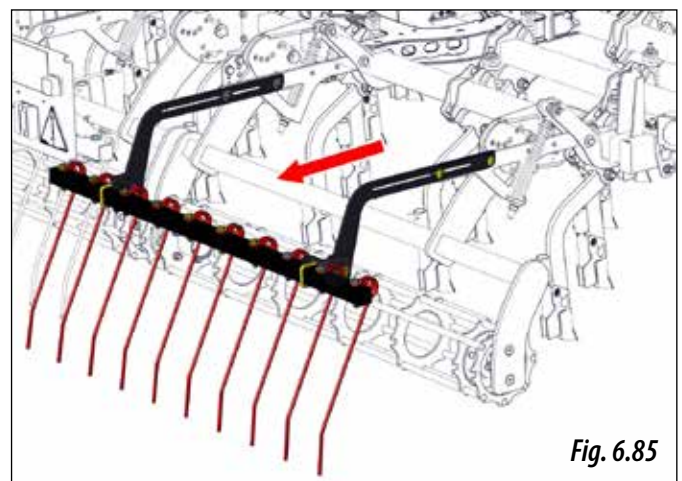
- 1- Loosen the nut (Fig. 6.83).



- 2- Remove the bolt and nut (Fig. 6.84).



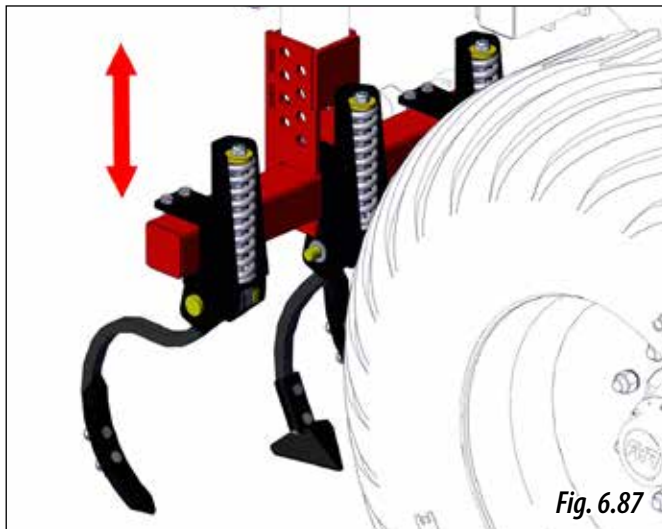
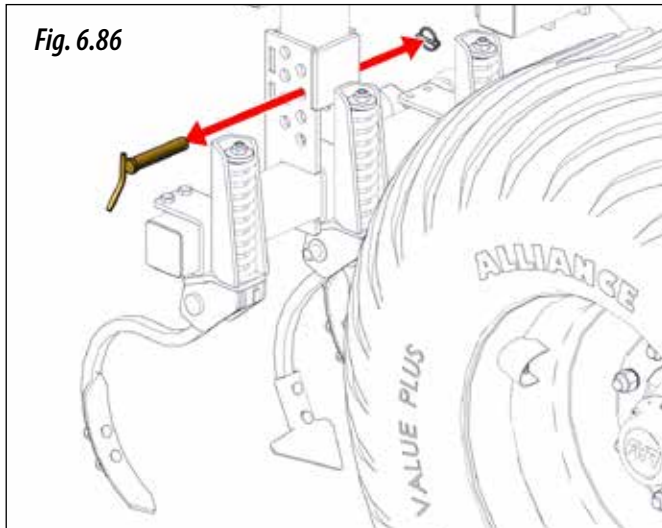
- 3- Repeat this procedure for the other harrow bracket.
- 4- Move the brackets backwards (Fig. 6.85).



- 5- Place the nuts and bolts in the new hole and tighten.
- 6- Repeat this procedure for all three harrow sections.

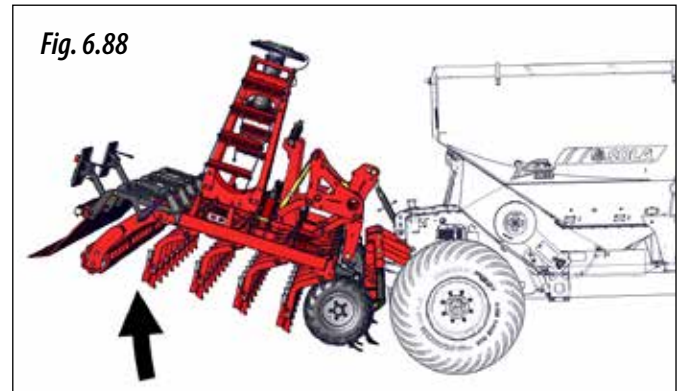
6.10 TRACK ERASERS

The seed drill is equipped with height-adjustable track eraser arms to clear the tractor's tracks. To change the working depth, loosen the retaining bolts (Fig. 6.86), move the arms vertically (Fig. 6.87), and fasten them at the desired height by means of the bolt and pin (Fig. 6.86).

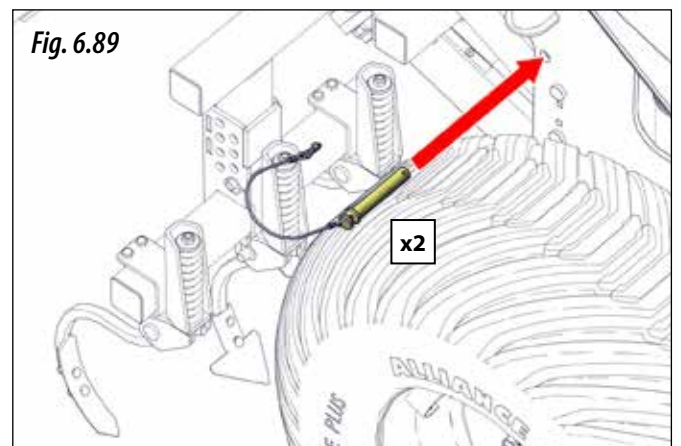


To override the track eraser, proceed as follows:

- 1- Raise the coulters to its maximum height (Fig. 6.88).



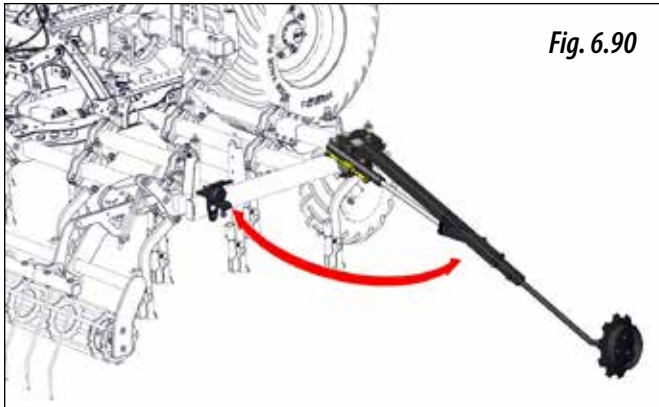
- 2- Place the pin and locking ring on both sides of the machine (Fig. 6.89).



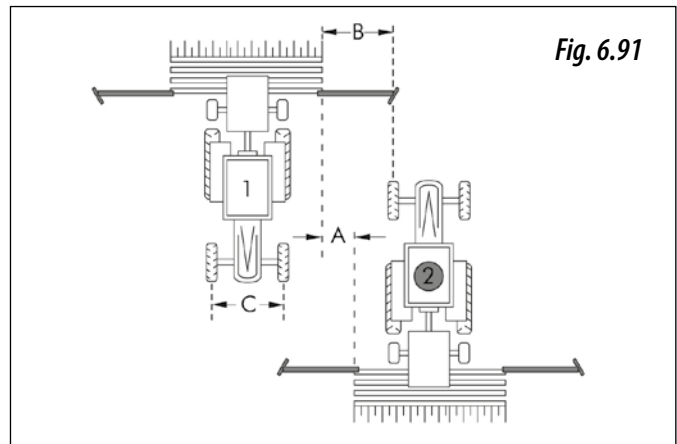
6.11 HYDRAULIC TRACK MARKERS

The track marker arms are adjustable by:

- **LENGTH**, horizontal distance between the disc and the outermost coulter.
- **INCLINATION** of the discs, penetration angle.



To calculate the horizontal distance BETWEEN THE TRACK MARKER DISC AND THE OUTERMOST COULTER (B, Fig. 6.91), apply the following formula:



$$B = \frac{A \times (\text{no. of coulter} + 1) - C}{2}$$

WHERE:

- A**= distance between the coulter's centre points.
- B**= horizontal distance between the disc and the outermost coulter.
- C**= tractor width.



KEEP THE HYDRAULIC LINES IN GOOD CONDITION. PRESSURISED OIL CAN PENETRATE THE SKIN AND CAUSE VERY SERIOUS INJURIES.



NEVER STAND WITHIN THE TRACK MARKER'S DEPLOYMENT RADIUS.



THE TRACK MARKERS MUST BE FOLDED WHEN TRANSPORTING THE SEED DRILL.



THE DISTANCE **B** CALCULATED WITH THE ABOVE FORMULA IS THE ADJUSTMENT LENGTH TO THE CENTRE OF THE TRACTOR WHEEL (FIG. 6.91).



MAKE THE CALCULATION WITH THE MEASUREMENTS EXPRESSED IN CENTIMETRES.

To set the track marker disc's distance and inclination, proceed as follows:

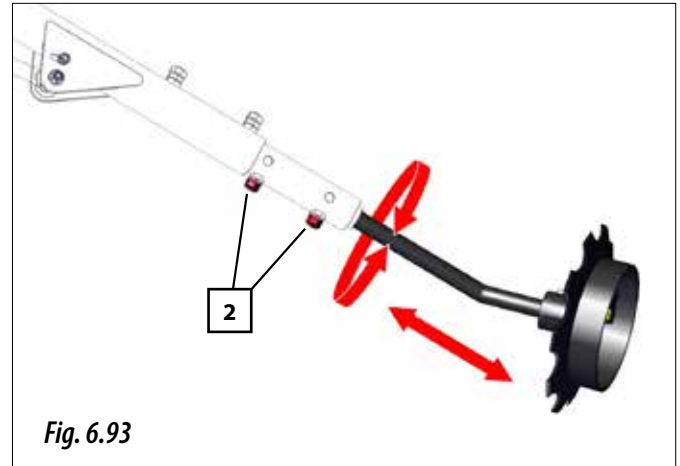
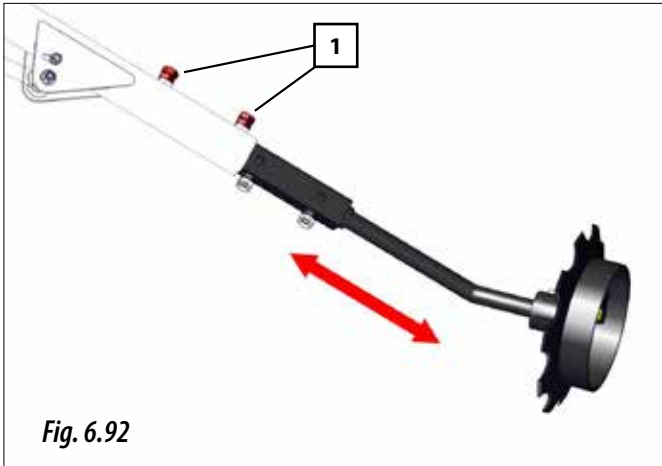
- 1- Adjust the length of the first section of the track marker by loosening the 2 nuts and bolts (1, Fig. 6.92), then retighten the bolt and the locknut.
- 2- Adjust the length of the second section of the track marker and the track marker disc's inclination by loosening the 2 nuts and bolts (2, Fig. 6.93), then retighten the bolt and the locknut.



ADJUST THE WORKING LENGTH TO THE DISTANCE B CALCULATED PREVIOUSLY. (**B**= DISTANCE BETWEEN THE TRACK MARKER DISC AND THE LAST COULTER CLOSEST TO THE TRACK MARKER)



YOU ARE ADVISED NOT TO INCLINE THE DISCS TOO MUCH AS THIS COULD CAUSE FAILURES.



7. DISTRIBUTION TYPE



IMPORTANT: MAKE SURE TO ROTATE THE TURBINE AT THE RATED SPEED BEFORE THE TRANSMISSION WHEEL STARTS TO TURN. WHEN SOWING HAS FINISHED, DO NOT LOWER THE TURBINE ROTATION SPEED UNTIL THE TRANSMISSION WHEEL HAS BEEN DISCONNECTED.

CONNECTION

Connect the quick-connect fitting of the small turbine hose to a pressure outlet on the tractor. Connect the 1/2" hose with the large quick-connect fitting to a free return.



THE MAXIMUM RETURN PRESSURE IS 1.5 BAR. IF THIS PRESSURE IS EXCEEDED, THE MOTOR MAY FAIL.

7.1 WITH MECHANICALLY DRIVEN TURBINE

In order to guarantee seed supply to the coulters, the turbine must rotate between 4200 and 4500 rpm. This requires bringing the tractor power take-off to a speed of 1000 rpm. At lower speeds, some seeds may remain in the pipes and clog them.



IF THE SEED DRILL IS TRAILED ON THE GROUND WITH THE AIR TURBINE STOPPED, THE SEED LEAVING THE DISPENSER WILL CLOG THE COLLECTOR PIPE THAT FEEDS THE VENTURI INJECTOR. IF THIS HAPPENS, REMOVE THE COLLECTOR AND EMPTY IT BEFORE RESTARTING THE SEED DRILL.

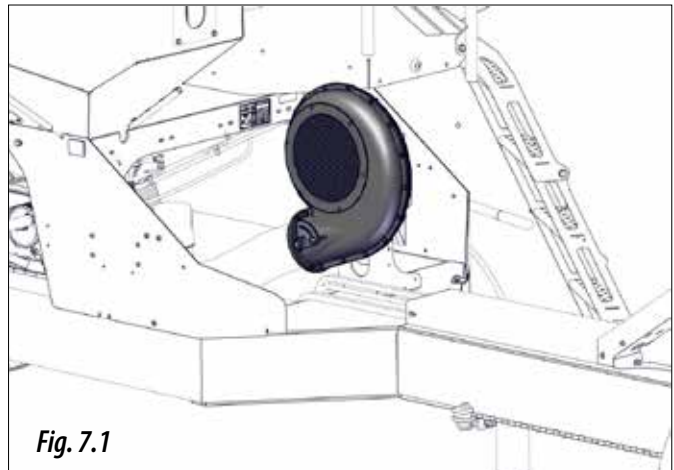


Fig. 7.1

7.2 WITH HYDRAULICALLY DRIVEN TURBINE

MACHINE TYPE	HYDRAULIC MOTOR	
	Absorption capacity (cm ³ /rev.)	Speed (rpm)
600	8	4500
680	8	4500
700	8	4500
770	8	4500

MACHINE TYPE	OIL SUPPLY		
	Min. output pressure (bar)	Max. return pressure (bar)	Oil flow rate (L/min)
600	160	1.5	33-41
680	160	1.5	33-41
700	160	1.5	33-41
770	160	1.5	33-41

ADJUSTMENT

The turbine's turning speed is controlled by adjusting the tractor's hydraulic output.

In order to guarantee seed supply (and fertilizer, depending on the model) to the coulters, the turbine must rotate between 4200 and 4500 rpm. Depending on the type of product and the quantities to be dispensed, material may accumulate in the pneumatic conveying pipes and clog them. Perform a check after seeding 1 hectare.



IF THE OIL GETS TOO HOT BECAUSE THE FLOW RATE PUMPED BY THE TRACTOR IS TOO HIGH OR THE OIL RESERVE IS TOO SMALL, IT WILL BE NECESSARY TO MOUNT AN ADDITIONAL OIL TANK OR A COOLING SYSTEM.



IF THE FLOW RATE OF THE TRACTOR'S HYDRAULIC PUMP IS NOT SUFFICIENT TO FEED THE TURBINE MOTOR OR IT CANNOT ALSO DRIVE ANOTHER NECESSARY COMPONENT, IT WILL BE NECESSARY TO INSTALL AUXILIARY EQUIPMENT WITH A PUMP DRIVEN BY THE POWER TAKE-OFF AND AN OIL TANK WITH A COOLER. CONSULT THE SEED DRILL'S OPERATION WITH YOUR DISTRIBUTOR.

8. MAINTENANCE



IN CASE OF BREAKDOWN, STOP THE MACHINE IMMEDIATELY AND REMOVE THE KEY FROM THE IGNITION. GET DOWN FROM THE TRACTOR AND VISUALLY CHECK THE EXTENT OF THE PROBLEM. PERFORM THE NECESSARY OPERATIONS ON THE MACHINE BEFORE WORKING WITH IT AGAIN.



MAINTENANCE OPERATIONS MUST BE CARRIED OUT BY QUALIFIED PERSONNEL IN PROPERLY EQUIPPED WORKSHOPS, WITH THE MACHINE STOPPED.



REPAIRS SHOULD NOT BE CARRIED OUT WITHOUT SUFFICIENT KNOWLEDGE. THE INSTRUCTIONS GIVEN IN THIS MANUAL MUST BE FOLLOWED; IN THE ABSENCE OF SUCH INSTRUCTIONS, CONTACT THE DISTRIBUTOR OR EXPERT PERSONNEL.



OPERATORS MUST USE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) (BOOTS, GLOVES, EAR PROTECTORS, DUST MASK AND GOGGLES) WHEN CARRYING OUT ADJUSTMENT, MAINTENANCE OR REPAIR WORK ON THE MACHINE.



AVOID WEARING LOOSE-FITTING CLOTHING THAT COULD BECOME ENTANGLED WITH THE MOVING PARTS OF THE MACHINE.

Before performing any task on the machine, the following factors must be taken into account:

- Machine maintenance and repair operations must be carried out on flat, compact ground, with the tractor engine stopped and the key out of the ignition.
- The lifting device chosen must be suitable for the operations to be performed. Ensure that safety regulations are complied with.
- Use the necessary protective equipment for each task to be performed.
- If compressed air is used to clean the machine or if any part is to be painted by airbrushing, mask and protective goggles must be worn.
- In the case of operations that must be carried out at heights above 1.5 metres from the ground and cannot be accessed by the means available on the machine (hopper access steps), ladders should be used or, failing that, platforms complying with current regulations.
- Prolonged and/or repeated skin contact with fuels and lubricants is harmful. In the event of accidental contact of these products with the eyes or other sensitive parts, wash the affected area with plenty of water. If swallowed, contact the medical services.

8.1 FREQUENCY OF CHECKS

The frequencies of maintenance operations are given as a guideline and may vary depending on the type of service and use of the machine, environment, temperature, climate factors, etc.

- BEGINNING OF THE SEASON

Check the machine's general operation; this check should be performed with the seed drill empty.

Run the turbine for a few minutes to remove any moisture that may be present in the pneumatic circuit due to condensation.

Check that the plastic parts are in good condition. Any deterioration of this material due to natural ageing or other factors may cause damage to these machine components.

Check that the mechanical components are in good condition and are not rusted.

Clean the parts that are in contact with seeds or fertilizer, such as hoppers and dispensers; if necessary, disassemble the component.

Check that the signalling lights are working properly.

Check that the hydraulic circuit couplings and lines are not leaking oil.

For models with a separate hydraulic circuit. Check the oil filter. If it is saturated, change the oil and the filter (use ATF DEXRON II oil - fill up to the dipstick level, approximately 45 litres). Check the pump's Valvoline oil level. If necessary, top up to the level mark (SAE 90).

- PERIODICALLY

Make sure that there is no seed or fertilizer in the hoppers before cleaning the seed drill with compressed air.

Check the condition of all the nuts and bolts. Especially the parts that are in contact with the ground. Tighten all screws and bolts.

Check that there are no traces of material, dust, etc. in the dispensers or in the pneumatic circuits. The accumulation of debris can damage the pneumatic system.

- END OF THE SEASON

Clean the machine thoroughly with pressurized air; make sure that there is no seed or fertilizer in the hoppers and pipes. Pay particular attention when cleaning parts that are in contact with chemicals.

Adequately lubricate the machine's moving parts (see section 8.4 GREASING AND LUBRICATION).

Paint any metal components that have lost their paint due to wear and tear.

To properly store the machine, you can cover it with a tarpaulin and store it in a dry place.

Thoroughly inspect all parts and replace any that are damaged or worn.

It is recommended to place the machine under cover to protect it from bad weather.



KEEP THE COULTER UNITS CLEAN; ACCUMULATION OF SOIL, STONES, GRASS, ETC. MAY OBSTRUCT THE SEEDING LINES.



THESE OPERATIONS MUST BE CARRIED OUT WITH THE TRACTOR ENGINE COMPLETELY STOPPED AND THE IGNITION KEY REMOVED FROM THE IGNITION.

Careful maintenance of the machine ensures good performance and long life.

The following table shows the maintenance operations to be carried out with their **approximate frequency**.

MAINTENANCE AREA	OPERATION TO BE PERFORMED	HOURS			
		20	50	100	500
Machine parts	Grease all parts (connecting rods, axles, hubs, etc.)	X	X		
	Check tyre pressures			X	
Wheels	Check the condition of the floating wheel joints				X
	Lubricate the chains		X		
Mechanical transmissions	Adjust the drive chain tension				X
	Lubricate and grease the transmission components			X	

8.2 SCREW CONNECTIONS

All of the seed drill's screw connections should be checked and, if necessary, retightened.



ALL NUTS AND BOLTS SHOULD BE CHECKED AND TIGHTENED AFTER THE FIRST 10 HOURS OF MACHINE OPERATION.

8.3 CLEANING THE SEED DRILL

Clean the seed drill with pressurized air; do not wash with water under any circumstances.

Foreign objects may get stuck in certain parts of the machine during operation. Remove any foreign body and check that it has not caused damage.



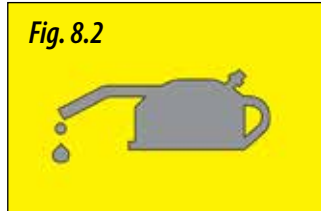
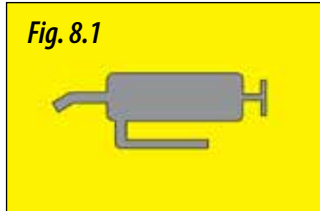
ALWAYS USE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) WHEN CLEANING WITH COMPRESSED AIR EQUIPMENT (SEE SECTION 8. MAINTENANCE).



CLEAN THE DISPENSERS WHEN NOT IN USE.

8.4 GREASING AND LUBRICATION

All metal components of the machine that are not painted are exposed to atmospheric and climate factors, which may cause rusting. Consequently, it is important to grease and lubricate these parts properly. You will find stickers on the machine with the symbols that indicate the points that must be GREASED (Fig. 8.1) and LUBRICATED (Fig. 8.2).



THE SEED DRILL HAS SEVERAL GREASING POINTS. FAILURE TO COMPLY WITH THESE GREASING INSTRUCTIONS MAY CAUSE DAMAGE TO THE MACHINE.



BEFORE LUBRICATING AND GREASING THE MACHINE, CLEAN THE SEED DRILL TO REMOVE ANY SOIL LEFT AFTER WORKING (SEE SECTION 8.1 FREQUENCY OF CHECKS).



DO NOT GREASE OR LUBRICATE THE SEED OR FERTILIZER DISPENSER.

LUBRICATE the drive chains. Remove the protective covers to access them.



USE HIGH PERFORMANCE CHAIN OILS AT THE LUBRICATION POINTS.

GREASE the following points:

- Track markers.
- Floating wheel, transmission wheel and depth control wheel hubs.
- Joints.
- Transmission components.



USE CONSISTENT CALCIUM-BASED GREASE FOR THE POINTS TO BE GREASED.

8.5 TYRE PRESSURE

Check the air pressure in the tyres before using the seed drill.

In general and in poorly prepared soils, it is recommended to lower the pressure in the floating and depth control tyres slightly to compensate for uneven terrain and produce a more uniform seeding.



IMPORTANT: KEEP THE MACHINE'S TYRES IN GOOD CONDITION, ESPECIALLY THE FLOATING TYRES.



IMPORTANT: WHEN TRANSPORTING THE MACHINE ON PUBLIC HIGHWAYS, THE FLOATING TYRES MUST HAVE THE AIR PRESSURE GIVEN IN THE TABLE BELOW. OTHERWISE, THE MACHINE MAY BE DAMAGED.

TYRE	TYRE FUNCTION	AIR PRESSURE (bar)
550/60-22.5	FLOTATION - TRANSPORT ON PUBLIC HIGHWAYS	3.0
3.5-8	MECHANICAL TRANSMISSION (depending on the model)	2.1
23x8.50-12	DEPTH CONTROL (depending on the model)	3.0
18x7" - 8" 14PR	DEPTH CONTROL (depending on the model)	3.75

9. DOSAGE TABLES



FOR PRECISION WORK, FOLLOW THE DOSAGE PROCEDURE DESCRIBED IN SECTION 6 OF THIS MANUAL.



THE QUANTITIES INDICATED IN THE TABLES SHOULD BE CONSIDERED APPROXIMATE ESTIMATES, SINCE THE EXPECTED FLOW RATE MAY VARY DUE TO THE POSSIBLE PRESENCE OF DISINFECTANT POWDER, VARIABLE SEED SIZE, FERTILIZER GRANULOMETRY, DENSITY, SPECIFIC GRAVITY, MOISTURE CONTENT, ETC.

9.1 TABLES FOR VOLUMETRIC DISPENSER WITH MECHANICAL TRANSMISSION

The dosage tables are expressed in kg/ha that the machine will distribute, depending on the dispenser setting (see section 6.3.1 VOLUMETRIC DISPENSER).

The tables vary depending on the specific gravity of the product to be used. It is recommended to perform a test if this value is not provided. Proceed as follows:

- 1- Take a 1-litre container and a scale.
- 2- Tare the scale with the empty container.
- 3- Fill the container with the product to be used up to the 1-litre mark.
- 4- Weigh the container on the scale. The value shown will be the specific gravity.



IMPORTANT: IF THE SCALE'S MEASURING UNIT IS GIVEN IN GRAMS, DIVIDE THE VALUE OBTAINED BY 1,000.

If it is not possible to perform this test, the following table lists the most common products and their approximate specific gravity:

PRODUCT	SPECIFIC GRAVITY (kg/L)
WHEAT	0.77
RYE	0.74
BARLEY	0.68
OATS	0.50
BEANS	0.85
PEAS	0.81
LUPIN	0.76
CAROB	0.83
MAIZE	0.79
GRASS	0.36
RAPESEED	0.65
CLOVER	0.77
TURNIPS	0.70
FERTILIZERS	Not specified

9.1.1 REGULAR SEED OR CONVENTIONAL FERTILIZER

DISPENSER NORMAL POSITION (kg/ha)																					
WORKING WIDTH (cm)	600																				
NUMBER OF DISPENSERS	1										2										
GEARBOX	R					L					R					L					
SPEC. GRAVITY (kg/L)	0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2	
GRADER POSITION	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	10	16.4	24.5	33	41	49	8.2	12.3	16.4	20.4	24.5	33	49	65	82	98	16.4	24.5	33	41	49
	15	24.5	37	49	61	74	12.3	18.4	24.5	31	37	49	74	98	123	147	24.5	37	49	61	74
	20	33	49	65	82	98	16.4	24.5	33	41	49	65	98	131	164	196	33	49	65	82	98
	25	41	61	82	102	123	20.4	31	41	51	61	82	123	164	204	245	41	61	82	102	123
	30	49	74	99	123	148	24.7	37	49	62	74	99	148	197	247	296	49	74	99	123	148
	35	58	86	115	144	173	28.8	43	58	72	86	115	173	230	288	345	58	86	115	144	173
	40	66	99	132	164	197	33	49	66	82	99	132	197	263	329	395	66	99	132	164	197
	45	74	111	148	185	222	37	56	74	93	111	148	222	296	370	444	74	111	148	185	222
	50	82	123	164	206	247	41	62	82	103	123	164	247	329	411	-	82	123	164	206	247
	55	88	131	175	219	263	44	66	88	110	131	175	263	351	438	-	88	131	175	219	263
	60	96	143	191	239	287	48	72	96	120	143	191	287	382	-	-	96	143	191	239	287
	65	104	155	207	259	311	52	78	104	129	155	207	311	414	-	-	104	155	207	259	311
	70	112	167	223	279	335	56	84	112	139	167	223	335	446	-	-	112	167	223	279	335
	75	120	179	239	299	359	60	90	120	149	179	239	359	-	-	-	120	179	239	299	359
	80	127	190	253	316	380	63	95	127	158	190	253	380	-	-	-	127	190	253	316	380
	85	134	202	269	336	403	67	101	134	168	202	269	403	-	-	-	134	202	269	336	403
	90	142	213	285	356	427	71	107	142	178	213	285	427	-	-	-	142	213	285	356	427
	95	150	225	300	376	-	75	113	150	188	225	300	-	-	-	-	150	225	300	376	-
100	158	237	316	395	-	79	119	158	198	237	316	-	-	-	-	158	237	316	395	-	
105	167	250	333	417	-	83	125	167	208	250	333	-	-	-	-	167	250	333	417	-	
110	175	262	349	437	-	87	131	175	218	262	349	-	-	-	-	175	262	349	437	-	
115	183	274	365	-	-	91	137	183	228	274	365	-	-	-	-	183	274	365	-	-	
120	191	286	381	-	-	95	143	191	238	286	381	-	-	-	-	191	286	381	-	-	
125	198	298	397	-	-	99	149	198	248	298	397	-	-	-	-	198	298	397	-	-	
130	206	310	413	-	-	103	155	206	258	310	413	-	-	-	-	206	310	413	-	-	



WHEN THE DOSE TO BE SOWN (kg/ha) IS VERY SMALL (GRADER POSITION ≤ 10), A MORE UNIFORM SEEDING CAN BE OBTAINED BY MICRODOSAGE, EVEN IN THE NORMAL SOWING RANGE (CEREAL AND THICK SEEDS).

DISPENSER NORMAL POSITION (kg/ha)

WORKING WIDTH (cm)		680																			
NUMBER OF DISPENSERS		1										2									
GEARBOX		R					L					R					L				
SPEC. GRAVITY (kg/L)		0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2
GRADER POSITION	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10	14.4	21.6	28.9	36	43	7.2	10.8	14.4	18.0	21.6	28.9	43	58	72	87	14.4	21.6	28.9	36	43
	15	21.6	32	43	54	65	10.8	16.2	21.6	27.1	32	43	65	87	108	130	21.6	32	43	54	65
	20	28.9	43	58	72	87	14.4	21.6	28.9	36	43	58	87	115	144	173	28.9	43	58	72	87
	25	36	54	72	90	108	18.0	27.1	36	45	54	72	108	144	180	216	36	54	72	90	108
	30	44	65	87	109	131	21.8	33	44	54	65	87	131	174	218	261	44	65	87	109	131
	35	51	76	102	127	152	25.4	38	51	63	76	102	152	203	254	305	51	76	102	127	152
	40	58	87	116	145	174	29.0	44	58	73	87	116	174	232	290	348	58	87	116	145	174
	45	65	98	131	163	196	33	49	65	82	98	131	196	261	326	392	65	98	131	163	196
	50	73	109	145	181	218	36	54	73	91	109	145	218	290	363	435	73	109	145	181	218
	55	77	116	155	193	232	39	58	77	97	116	155	232	309	387	-	77	116	155	193	232
	60	84	127	169	211	253	42	63	84	105	127	169	253	337	422	-	84	127	169	211	253
	65	91	137	183	228	274	46	69	91	114	137	183	274	366	-	-	91	137	183	228	274
	70	98	148	197	246	295	49	74	98	123	148	197	295	394	-	-	98	148	197	246	295
	75	105	158	211	264	316	53	79	105	132	158	211	316	422	-	-	105	158	211	264	316
	80	112	167	223	279	335	56	84	112	140	167	223	335	446	-	-	112	167	223	279	335
	85	119	178	237	297	356	59	89	119	148	178	237	356	-	-	-	119	178	237	297	356
	90	126	188	251	314	377	63	94	126	157	188	251	377	-	-	-	126	188	251	314	377
	95	133	199	265	331	398	66	99	133	166	199	265	398	-	-	-	133	199	265	331	398
	100	140	209	279	349	419	70	105	140	174	209	279	419	-	-	-	140	209	279	349	419
105	147	221	294	368	441	74	110	147	184	221	294	441	-	-	-	147	221	294	368	441	
110	154	231	308	385	-	77	116	154	193	231	308	-	-	-	-	154	231	308	385	-	
115	161	242	322	403	-	81	121	161	201	242	322	-	-	-	-	161	242	322	403	-	
120	168	252	336	420	-	84	126	168	210	252	336	-	-	-	-	168	252	336	420	-	
125	175	263	350	438	-	88	131	175	219	263	350	-	-	-	-	175	263	350	438	-	
130	182	273	364	-	-	91	137	182	228	273	364	-	-	-	-	182	273	364	-	-	



WHEN THE DOSE TO BE SOWN (kg/ha) IS VERY SMALL (GRADER POSITION <= 10), A MORE UNIFORM SEEDING CAN BE OBTAINED BY MICRODOSAGE, EVEN IN THE NORMAL SOWING RANGE (CEREAL AND THICK SEEDS).

DISPENSER NORMAL POSITION (kg/ha)

WORKING WIDTH (cm)		700																			
NUMBER OF DISPENSERS		1										2									
GEARBOX		R					L					R					L				
SPEC. GRAVITY (kg/L)		0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2
GRADER POSITION	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10	14.0	21.0	28.0	35	42	7.0	10.5	14.0	17.5	21.0	28.0	42	56	70	84	14.0	21.0	28.0	35	42
	15	21.0	32	42	53	63	10.5	15.8	21.0	26.3	32	42	63	84	105	126	21.0	32	42	53	63
	20	28.0	42	56	70	84	14.0	21.0	28.0	35	42	56	84	112	140	168	28.0	42	56	70	84
	25	35	53	70	88	105	17.5	26.3	35	44	53	70	105	140	175	210	35	53	70	88	105
	30	42	63	85	106	127	21.1	32	42	53	63	85	127	169	211	254	42	63	85	106	127
	35	49	74	99	123	148	24.7	37	49	62	74	99	148	197	247	296	49	74	99	123	148
	40	56	85	113	141	169	28.2	42	56	70	85	113	169	226	282	338	56	85	113	141	169
	45	63	95	127	159	190	32	48	63	79	95	127	190	254	317	381	63	95	127	159	190
	50	70	106	141	176	211	35	53	70	88	106	141	211	282	352	423	70	106	141	176	211
	55	75	113	150	188	225	38	56	75	94	113	150	225	300	376	-	75	113	150	188	225
	60	82	123	164	205	246	41	61	82	102	123	164	246	328	410	-	82	123	164	205	246
	65	89	133	178	222	266	44	67	89	111	133	178	266	355	444	-	89	133	178	222	266
	70	96	143	191	239	287	48	72	96	120	143	191	287	382	-	-	96	143	191	239	287
	75	102	154	205	256	307	51	77	102	128	154	205	307	410	-	-	102	154	205	256	307
	80	108	163	217	271	325	54	81	108	136	163	217	325	434	-	-	108	163	217	271	325
	85	115	173	230	288	346	58	86	115	144	173	230	346	-	-	-	115	173	230	288	346
	90	122	183	244	305	366	61	91	122	152	183	244	366	-	-	-	122	183	244	305	366
	95	129	193	258	322	386	64	97	129	161	193	258	386	-	-	-	129	193	258	322	386
	100	136	203	271	339	407	68	102	136	169	203	271	407	-	-	-	136	203	271	339	407
105	143	214	286	357	429	71	107	143	179	214	286	429	-	-	-	143	214	286	357	429	
110	150	225	299	374	449	75	112	150	187	225	299	449	-	-	-	150	225	299	374	449	
115	157	235	313	391	-	78	117	157	196	235	313	-	-	-	-	157	235	313	391	-	
120	163	245	327	408	-	82	122	163	204	245	327	-	-	-	-	163	245	327	408	-	
125	170	255	340	425	-	85	128	170	213	255	340	-	-	-	-	170	255	340	425	-	
130	177	265	354	442	-	88	133	177	221	265	354	-	-	-	-	177	265	354	442	-	



WHEN THE DOSE TO BE SOWN (kg/ha) IS VERY SMALL (GRADER POSITION <= 10), A MORE UNIFORM SEEDING CAN BE OBTAINED BY MICRODOSAGE, EVEN IN THE NORMAL SOWING RANGE (CEREAL AND THICK SEEDS).

DISPENSER NORMAL POSITION (kg/ha)

WORKING WIDTH (cm)		770																			
NUMBER OF DISPENSERS		1										2									
GEARBOX		R					L					R					L				
SPEC. GRAVITY (kg/L)		0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2	0.4	0.6	0.8	1.0	1.2
GRADER POSITION	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10	12.7	19.1	25.5	32	38	6.4	9.6	12.7	15.9	19.1	25.5	38	51	64	76	12.7	19.1	25.5	32	38
	15	19.1	28.7	38	48	57	9.6	14.3	19.1	23.9	28.7	38	57	76	96	115	19.1	28.7	38	48	57
	20	25.5	38	51	64	76	12.7	19.1	25.5	32	38	51	76	102	127	153	25.5	38	51	64	76
	25	32	48	64	80	96	15.9	23.9	32	40	48	64	96	127	159	191	32	48	64	80	96
	30	38	58	77	96	115	19.2	28.8	38	48	58	77	115	154	192	231	38	58	77	96	115
	35	45	67	90	112	135	22.4	34	45	56	67	90	135	179	224	269	45	67	90	112	135
	40	51	77	103	128	154	25.6	38	51	64	77	103	154	205	256	308	51	77	103	128	154
	45	58	86	115	144	173	28.8	43	58	72	86	115	173	231	288	346	58	86	115	144	173
	50	64	96	128	160	192	32	48	64	80	96	128	192	256	320	384	64	96	128	160	192
	55	68	102	137	171	205	34	51	68	85	102	137	205	273	341	410	68	102	137	171	205
	60	74	112	149	186	223	37	56	74	93	112	149	223	298	372	447	74	112	149	186	223
	65	81	121	161	202	242	40	61	81	101	121	161	242	323	404	-	81	121	161	202	242
	70	87	130	174	217	261	43	65	87	109	130	174	261	348	435	-	87	130	174	217	261
	75	93	140	186	233	279	47	70	93	116	140	186	279	372	-	-	93	140	186	233	279
	80	99	148	197	246	296	49	74	99	123	148	197	296	394	-	-	99	148	197	246	296
	85	105	157	209	262	314	52	79	105	131	157	209	314	419	-	-	105	157	209	262	314
	90	111	166	222	277	333	55	83	111	139	166	222	333	444	-	-	111	166	222	277	333
	95	117	176	234	293	351	59	88	117	146	176	234	351	-	-	-	117	176	234	293	351
	100	123	185	246	308	370	62	92	123	154	185	246	370	-	-	-	123	185	246	308	370
105	130	195	260	325	390	65	97	130	162	195	260	390	-	-	-	130	195	260	325	390	
110	136	204	272	340	408	68	102	136	170	204	272	408	-	-	-	136	204	272	340	408	
115	142	213	285	356	427	71	107	142	178	213	285	427	-	-	-	142	213	285	356	427	
120	148	223	297	371	445	74	111	148	186	223	297	445	-	-	-	148	223	297	371	445	
125	155	232	309	387	-	77	116	155	193	232	309	-	-	-	-	155	232	309	387	-	
130	161	241	322	402	-	80	121	161	201	241	322	-	-	-	-	161	241	322	402	-	



WHEN THE DOSE TO BE SOWN (kg/ha) IS VERY SMALL (GRADER POSITION <= 10), A MORE UNIFORM SEEDING CAN BE OBTAINED BY MICRODOSAGE, EVEN IN THE NORMAL SOWING RANGE (CEREAL AND THICK SEEDS).

9.1.2 FINE SEED OR MICROGRANULATE FERTILIZER

DISPENSER FINE POSITION (kg/ha)																																			
WORKING WIDTH (cm)	600																																		
NUMBER OF DISPENSERS	1										2																								
GEAR BOX	R					L					R					L																			
DISPENSER POSITION	N	F	N	F	N	N	F	N	F	N	N	F	N	F	N	N	F	N	F	N															
SPEC. GRAVITY (kg/L)	0.4					0.6					0.8					0.4					0.6					0.8									
2.5	0.63	0.31	0.94	0.47	1.25	0.63	0.31	0.63	0.23	0.47	0.16	0.31	0.47	0.70	1.88	0.94	0.31	0.63	1.25	2.50	1.25	0.63	1.88	0.94	1.25	0.63	0.31	0.94	0.47	1.25	0.63	0.31	0.63	0.23	0.47
5	1.25	0.63	1.88	0.94	2.50	1.25	0.63	1.25	0.47	0.94	0.31	0.63	0.94	1.41	3.8	1.88	0.94	1.25	2.50	5.0	2.50	1.25	3.8	1.88	2.50	1.25	0.63	1.88	0.94	2.50	1.25	0.63	1.25	0.47	0.94
7.5	1.88	0.94	2.82	1.41	3.8	1.88	0.94	1.41	0.70	1.88	0.47	0.94	1.41	2.82	7.5	5.6	2.82	3.8	7.5	10.0	7.5	3.8	10.0	5.6	7.5	3.8	1.88	7.5	2.82	10.0	3.8	1.88	3.8	0.70	1.41
10	2.50	1.25	3.8	1.88	5.0	2.50	1.25	1.88	0.94	2.50	0.63	1.25	1.88	3.4	13.7	7.5	3.8	5.0	10.0	13.7	10.0	5.0	13.7	7.5	10.0	5.0	2.50	10.0	3.8	13.7	5.0	2.50	5.0	0.94	1.88
12.5	2.85	1.43	4.3	2.14	5.7	2.85	1.43	2.14	1.07	2.85	0.71	1.43	2.14	4.3	11.4	8.6	4.3	5.7	11.4	15.1	11.4	5.7	15.1	8.6	11.4	5.7	2.85	11.4	4.3	15.1	5.7	2.85	5.7	1.07	2.14
15	3.4	1.71	5.1	2.57	6.9	3.4	1.71	2.57	1.28	3.4	0.86	1.71	2.57	5.6	16.0	10.3	5.1	6.9	16.0	21.0	16.0	8.0	21.0	10.3	16.0	8.0	4.0	16.0	5.1	21.0	8.0	4.0	8.0	1.28	2.57
17.5	4.0	2.00	6.0	3.00	8.0	4.0	2.00	3.00	1.50	4.0	1.00	2.00	3.00	6.0	18.3	12.0	6.0	8.0	18.3	24.0	18.3	8.0	24.0	12.0	18.3	8.0	4.0	18.3	6.0	24.0	8.0	4.0	8.0	1.50	3.00
20	4.6	2.28	6.9	3.4	9.1	4.6	2.28	3.4	1.71	4.6	1.14	2.28	3.4	6.9	20.0	13.7	6.9	9.1	20.0	26.7	20.0	9.1	26.7	13.7	20.0	9.1	4.6	20.0	6.9	26.7	9.1	4.6	9.1	1.71	3.4
22.5	5.5	2.74	8.2	4.1	11.0	5.5	2.74	4.1	2.06	5.5	1.37	2.74	4.1	8.2	22.0	16.5	8.2	11.0	22.0	29.3	22.0	11.0	29.3	16.5	22.0	11.0	5.5	22.0	8.2	29.3	11.0	5.5	11.0	2.06	4.1
25	6.1	3.05	9.1	4.6	12.2	6.1	3.05	4.6	2.29	6.1	1.52	3.05	4.6	9.1	24.4	18.3	9.1	12.2	24.4	31.7	24.4	12.2	31.7	18.3	24.4	12.2	6.1	24.4	9.1	31.7	12.2	6.1	12.2	2.29	4.6
27.5	6.7	3.4	10.1	5.0	13.4	6.7	3.4	5.0	2.52	6.7	1.68	3.4	5.0	10.1	26.8	20.1	10.1	13.4	26.8	35.0	26.8	13.4	35.0	20.1	26.8	13.4	6.7	26.8	10.1	35.0	13.4	6.7	13.4	2.52	5.0
30	7.3	3.7	11.0	5.5	14.6	7.3	3.7	5.5	2.74	7.3	1.83	3.7	5.5	11.0	29.3	22.0	11.0	14.6	29.3	38.3	29.3	14.6	38.3	22.0	29.3	14.6	7.3	29.3	11.0	38.3	14.6	7.3	14.6	2.74	5.5





DISPENSER FINE POSITION (kg/ha)																							
WIDTH		680																					
WIDTH (cm)		1											2										
DISPENSER POSITION	GEAR BOX	R					L					R					L						
		N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F		
SPEC. GRAVITY (kg/L)		0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	
2.5		0.55	0.28	0.83	0.41	1.10	0.55	0.28	0.41	0.21	0.55	0.28	1.10	0.55	1.66	0.83	2.21	1.10	0.55	0.28	0.41	0.21	0.55
5		1.10	0.55	1.66	0.83	2.21	1.10	0.55	0.83	0.41	1.10	0.55	2.21	1.10	3.3	1.66	4.4	2.21	1.10	0.55	0.83	0.41	1.10
7.5		1.66	0.83	2.49	1.24	3.3	1.66	0.83	0.41	1.24	0.62	1.66	0.83	3.3	5.0	2.49	6.6	3.3	1.66	0.83	0.41	1.24	0.62
10		2.21	1.10	3.3	1.66	4.4	2.21	1.10	0.55	1.66	0.83	2.21	1.10	4.4	6.6	3.3	8.8	4.4	2.21	1.10	0.55	1.66	0.83
12.5		2.52	1.26	3.8	1.89	5.0	2.52	1.26	0.63	1.89	0.94	2.52	1.26	5.0	7.6	3.8	10.1	5.0	2.52	1.26	0.63	1.89	0.94
15		3.02	1.51	4.5	2.27	6.0	3.02	1.51	0.76	2.27	1.13	3.02	1.51	6.0	9.1	4.5	12.1	6.0	3.02	1.51	0.76	2.27	1.13
17.5		3.5	1.76	5.3	2.64	7.1	3.5	1.76	0.88	2.64	1.32	3.5	1.76	7.1	10.6	5.3	14.1	7.1	3.5	1.76	0.88	2.64	1.32
20		4.0	2.01	6.0	3.02	8.1	4.0	2.01	1.01	3.02	1.51	4.0	2.01	8.1	12.1	6.0	16.1	8.1	4.0	2.01	1.01	3.02	1.51
22.5		4.8	2.42	7.3	3.6	9.7	4.8	2.42	1.21	3.6	1.82	4.8	2.42	9.7	14.5	7.3	19.4	9.7	4.8	2.42	1.21	3.6	1.82
25		5.4	2.69	8.1	4.0	10.8	5.4	2.69	1.35	4.0	2.02	5.4	2.69	10.8	16.1	8.1	21.5	10.8	5.4	2.69	1.35	4.0	2.02
27.5		5.9	2.96	8.9	4.4	11.8	5.9	2.96	1.48	4.4	2.22	5.9	2.96	11.8	17.8	8.9	23.7	11.8	5.9	2.96	1.48	4.4	2.22
30		6.5	3.2	9.7	4.8	12.9	6.5	3.2	1.61	4.8	2.42	6.5	3.2	12.9	19.4	9.7	25.8	12.9	6.5	3.2	1.61	4.8	2.42

GRADER POSITION

DISPENSER FINE POSITION (kg/ha)																					
700																					
1										2											
WIDTH WIDTH (cm)	NUMBER OF DISPENSERS	R					L					R					L				
		N	F	N	F	N	N	F	N	F	N	N	F	N	N	F	N	N	F	N	
SPEC. GRAVITY (kg/L)		0.4		0.6		0.8		0.4		0.6		0.8		0.4		0.6		0.8			
GRADER POSITION	2.5	0.54	0.27	0.80	0.40	1.07	0.54	1.07	0.27	0.13	0.40	0.20	0.54	0.27	1.07	0.54	1.61	0.80	2.15	1.07	
	5	1.07	0.54	1.61	0.80	2.15	1.07	2.15	0.54	0.27	0.80	0.40	1.07	0.54	2.15	1.07	3.2	1.61	4.3	2.15	
	7.5	1.61	0.80	2.41	1.21	3.2	1.61	3.2	0.80	0.40	1.21	0.60	1.61	0.80	3.2	1.61	4.8	2.41	6.4	3.2	
	10	2.15	1.07	3.2	1.61	4.3	2.15	4.3	1.07	0.54	1.61	0.80	2.15	1.07	4.3	2.15	6.4	3.2	8.6	4.3	
	12.5	2.45	1.22	3.7	1.83	4.9	2.45	4.9	1.22	0.61	1.83	0.92	2.45	1.22	4.9	2.45	7.3	3.7	9.8	4.9	
	15	2.94	1.47	4.4	2.20	5.9	2.94	5.9	1.47	0.73	2.20	1.10	2.94	1.47	5.9	2.94	8.8	4.4	11.7	5.9	
	17.5	3.4	1.71	5.1	2.57	6.9	3.4	6.9	1.71	0.86	2.57	1.28	3.4	1.71	6.9	3.4	10.3	5.1	13.7	6.9	
	20	3.9	1.96	5.9	2.94	7.8	3.9	7.8	1.96	0.98	2.94	1.47	3.9	1.96	7.8	3.9	11.7	5.9	15.7	7.8	
	22.5	4.7	2.35	7.1	3.5	9.4	4.7	9.4	2.35	1.18	3.5	1.76	4.7	2.35	9.4	4.7	14.1	7.1	18.8	9.4	
	25	5.2	2.61	7.8	3.9	10.5	5.2	10.5	2.61	1.31	3.9	1.96	5.2	2.61	10.5	5.2	15.7	7.8	20.9	10.5	
27.5	5.7	2.87	8.6	4.3	11.5	5.7	11.5	2.87	1.44	4.3	2.16	5.7	2.87	11.5	5.7	17.2	8.6	23.0	11.5		
30	6.3	3.1	9.4	4.7	12.5	6.3	12.5	3.1	1.57	4.7	2.35	6.3	3.1	12.5	6.3	18.8	9.4	25.1	12.5		

DISPENSER FINE POSITION (kg/ha)																																									
WIDTH		770																																							
WIDTH (cm)																																									
NUMBER OF DISPENSERS		2																																							
GEAR BOX		R						L						R						L																					
DISPENSER POSITION		N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F																
SPEC. GRAVITY (kg/L)		0.4						0.6						0.8						0.4						0.6						0.8									
2.5		0.49	0.24	0.73	0.37	0.98	0.49	0.24	0.12	0.37	0.18	0.49	0.24	0.98	0.49	1.46	0.73	0.49	0.24	0.98	0.49	1.46	0.73	0.49	0.24	0.98	0.49	1.46	0.73	0.49	0.24	0.98	0.49	1.46	0.73	0.49	0.24	0.98	0.49	1.46	0.73
5		0.98	0.49	1.46	0.73	1.95	0.98	0.49	0.24	0.73	0.37	0.98	0.49	1.46	0.73	1.95	0.98	0.49	0.24	0.73	0.37	0.98	0.49	1.46	0.73	1.95	0.98	2.93	1.46	3.9	1.95	0.98	0.49	1.46	0.73	1.95	0.98	2.93	1.46	3.9	1.95
7.5		1.46	0.73	2.19	1.10	2.93	1.46	0.73	0.37	1.10	0.55	1.46	0.73	2.93	1.46	4.4	2.19	1.46	0.73	2.93	1.46	4.4	2.19	2.93	1.46	4.4	2.19	5.9	2.93	7.8	3.9	1.46	0.73	2.19	1.10	2.93	1.46				
10		1.95	0.98	2.93	1.46	3.9	1.95	0.98	0.49	1.46	0.73	1.95	0.98	3.9	1.95	5.9	2.93	1.95	0.98	3.9	1.95	5.9	2.93	3.9	1.95	5.9	2.93	7.8	3.9	1.95	0.98	2.93	1.46	3.9	1.95						
12.5		2.22	1.11	3.3	1.67	4.4	2.22	1.11	0.56	1.67	0.83	2.22	1.11	4.4	2.22	6.7	3.3	2.22	1.11	4.4	2.22	6.7	3.3	4.4	2.22	6.7	3.3	8.9	4.4	2.22	1.11	3.3	1.67	4.4	2.22						
15		2.67	1.33	4.0	2.00	5.3	2.67	1.33	0.67	2.00	1.00	2.67	1.33	5.3	2.67	8.0	4.0	2.67	1.33	5.3	2.67	8.0	4.0	5.3	2.67	8.0	4.0	10.7	5.3	2.67	1.33	4.0	2.00	5.3	2.67						
17.5		3.1	1.56	4.7	2.34	6.2	3.1	1.56	0.78	2.34	1.17	3.1	1.56	6.2	3.1	9.3	4.7	3.1	1.56	6.2	3.1	9.3	4.7	6.2	3.1	9.3	4.7	12.5	6.2	3.1	1.56	4.7	2.34	6.2	3.1						
20		3.6	1.78	5.3	2.67	7.1	3.6	1.78	0.89	2.67	1.33	3.6	1.78	7.1	3.6	10.7	5.3	3.6	1.78	7.1	3.6	10.7	5.3	7.1	3.6	10.7	5.3	14.2	7.1	3.6	1.78	5.3	2.67	7.1	3.6						
22.5		4.3	2.14	6.4	3.2	8.6	4.3	2.14	1.07	3.2	1.60	4.3	2.14	8.6	4.3	12.8	6.4	4.3	2.14	8.6	4.3	12.8	6.4	8.6	4.3	12.8	6.4	17.1	8.6	4.3	2.14	6.4	3.2	8.6	4.3						
25		4.8	2.38	7.1	3.6	9.5	4.8	2.38	1.19	3.6	1.78	4.8	2.38	9.5	4.8	14.3	7.1	4.8	2.38	9.5	4.8	14.3	7.1	9.5	4.8	14.3	7.1	19.0	9.5	4.8	2.38	7.1	3.6	9.5	4.8						
27.5		5.2	2.61	7.8	3.9	10.5	5.2	2.61	1.31	3.9	1.96	5.2	2.61	10.5	5.2	15.7	7.8	5.2	2.61	10.5	5.2	15.7	7.8	10.5	5.2	15.7	7.8	20.9	10.5	5.2	2.61	7.8	3.9	10.5	5.2						
30		5.7	2.85	8.6	4.3	11.4	5.7	2.85	1.43	4.3	2.14	5.7	2.85	11.4	5.7	17.1	8.6	5.7	2.85	11.4	5.7	17.1	8.6	11.4	5.7	17.1	8.6	22.8	11.4	5.7	2.85	8.6	4.3	11.4	5.7						

9.2 ROLLER DISPENSER CALIBRATION FACTOR TABLE

CALIBRATION FACTOR (g/turn)		NUMBER OF SECTORS			1			2			3			4			5			6			7		
		SPECIFIC GRAVITY (kg/L)			0.8	1	1.2	0.8	1	1.2	0.8	1	1.2	0.8	1	1.2	0.8	1	1.2	0.8	1	1.2	0.8	1	1.2
SECTOR TYPE		51	64	77	103	129	154	154	193	231	206	257	308	257	321	386	308	386	463	360	450	540			
		28	35	42	56	70	84	84	105	126	112	140	168	140	175	210	168	210	252	196	245	294			
		4	5	6	8	9	11	11	14	17	15	19	23	19	24	28	23	28	34	27	33	40			
		2	2	3	4	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			

9.3 TABLES FOR CONVENTIONAL OR MICROGRANULATE FERTILIZER KITS



9.3.1 INTERNAL KIT HOPPER WITH MECHANICAL TRANSMISSION

The table below shows the values that both dispensers will distribute with the sectors for MICROGRANULATE FERTILIZER:

The table below shows the values that both dispensers will distribute with the sectors for CONVENTIONAL FERTILIZER:

MICRO FERTILIZER DISPENSERS (kg/ha)									
MODEL (cm)		600		680		700		770	
		8-10	12-14	8-10	12-14	8-10	12-14	8-10	12-14
DISPENSER POSITION	5	25.3	23.5	21.9	20.4	21.6	20.2	19.4	18.2
	10	35.5	33.8	30.8	29.3	30.5	29	27.5	26.1
	15	46.5	44.9	40.3	38.9	40	38.5	36.0	34.7
	20	56	54.2	48.5	47	47.9	46.5	43.1	41.9
	25	58.6	58.6	50.8	50.8	50.3	50.3	45.3	45.3
	30	60	59.6	52	51.7	51.4	51.1	46.3	46.0

CONV. FERTILIZER DISPENSERS (kg/ha)					
MODEL (cm)		600	680	700	770
DISPENSER POSITION	5	36	31	30	25
	10	68	59	58	48
	15	99	86	85	71
	20	132	114	113	95
	25	164	142	141	118
	30	196	170	168	141

*Reference fertilizer: Agristar Complet (specific gravity: 0.990 kg/L).

*For a compound fertilizer: specific gravity 1,000 kg/L.

9.3.2 INTERNAL KIT HOPPER WITH ISOBUS



IMPORTANT: THE TABLES BELOW SHOW THE CALIBRATION FACTORS TO BE ENTERED IN THE MONITOR, DEPENDING ON THE DISPENSER'S POSITION AND THE ROLLER TYPE.



IMPORTANT: IF THE COULTER UNIT HAS TWO DISTRIBUTION HEADS, IT WILL NOT BE POSSIBLE TO OVERRIDE ANY DISPENSERS. BOTH DISPENSERS MUST BE SET TO THE SAME VALUE.

CALIBRATION FACTOR MICRO FERTILIZER (g/turn)		SPEED (km/h)				
		8	9	10	11	12
DISPENSER ADJUSTMENT	5	9	9	9	9	8
	10	18	18	17	17	17
	15	27	26	26	26	25
	20	36	35	35	34	33
	25	44	44	43	43	42
	30	53	53	52	51	50

*Reference fertilizer: specific gravity: 1.056 kg/L.

CALIBRATION FACTOR CONVENTIONAL FERTILIZER (g/turn)		SPEED (km/h)				
		8	9	10	11	12
DISPENSER ADJUSTMENT	5	32	31	31	31	30
	10	64	63	62	61	60
	15	96	94	93	92	90
	20	127	126	124	122	120
	25	159	157	155	153	150
	30	191	189	186	183	180

*Reference fertilizer: specific gravity: 1.056 kg/L.

9.3.3 EXTERNAL KIT HOPPER WITH MECHANICAL TRANSMISSION



VERY IMPORTANT: THE TABLES BELOW SHOW THE VALUES THAT WILL BE DISTRIBUTED BY **A SINGLE DISPENSER.**



IMPORTANT: IF THE COULTER UNIT HAS TWO DISTRIBUTION HEADS, ONLY ONE PRODUCT CAN BE DISPENSED. IN THIS CASE, BOTH TRANSMISSIONS MUST HAVE THE SAME SETTINGS AND THE SAME TYPE OF ROLLER MUST BE INSTALLED IN BOTH DISPENSERS.

MICROGRANULATE FERTILIZER DOSAGE WITH 1 STANDARD ROLLER (kg/ha)													
WIDTH		600			680			700			770		
ENTRY SPROCKET	EXIT SPROCKET	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE
12	23	5.94	8.36	7.31	5.24	7.37	6.45	5.09	7.16	6.27	4.63	6.51	5.70
13	23	6.44	9.05	7.92	5.68	7.99	6.99	5.52	7.76	6.79	5.02	7.05	6.17
12	21	6.51	9.15	8.01	5.74	8.07	7.07	5.58	7.84	6.86	5.07	7.13	6.24
13	21	7.05	9.91	8.68	6.22	8.75	7.66	6.04	8.50	7.44	5.49	7.72	6.76
12	19	7.19	10.11	8.85	6.35	8.92	7.81	6.16	8.67	7.59	5.60	7.88	6.90
15	23	7.43	10.44	9.14	6.55	9.22	8.06	6.37	8.95	7.83	5.79	8.14	7.12
12	18	7.59	10.68	9.34	6.70	9.42	8.24	6.51	9.15	8.01	5.92	8.32	7.28
13	19	7.79	10.96	9.59	6.88	9.67	8.46	6.68	9.39	8.22	6.07	8.54	7.47
12	17	8.04	11.30	9.89	7.09	9.97	8.73	6.89	9.69	8.48	6.26	8.81	7.71
15	21	8.13	11.44	10.01	7.18	10.09	8.83	6.97	9.80	8.58	6.34	8.91	7.80
13	18	8.22	11.57	10.12	7.26	10.21	8.93	7.05	9.91	8.68	6.41	9.01	7.89
17	23	8.42	11.84	10.36	7.43	10.44	9.14	7.21	10.15	8.88	6.56	9.22	8.07
13	17	8.71	12.25	10.72	7.68	10.81	9.46	7.46	10.50	9.19	6.79	9.54	8.35
15	19	8.99	12.64	11.06	7.93	11.16	9.76	7.71	10.84	9.48	7.01	9.85	8.62
12	15	9.11	12.81	11.21	8.04	11.30	9.89	7.81	10.98	9.61	7.10	9.98	8.74
17	21	9.22	12.96	11.35	8.13	11.44	10.01	7.90	11.11	9.72	7.18	10.10	8.84
19	23	9.41	13.23	11.58	8.30	11.67	10.22	8.06	11.34	9.92	7.33	10.31	9.02
15	18	9.49	13.35	11.68	8.37	11.78	10.31	8.13	11.44	10.01	7.39	10.40	9.10
18	21	9.76	13.73	12.01	8.61	12.11	10.60	8.37	11.77	10.30	7.61	10.70	9.36
13	15	9.87	13.88	12.15	8.71	12.25	10.72	8.46	11.90	10.41	7.69	10.81	9.46
15	17	10.05	14.13	12.37	8.87	12.47	10.91	8.61	12.11	10.60	7.83	11.01	9.64
17	19	10.19	14.33	12.54	8.99	12.64	11.06	8.73	12.28	10.75	7.94	11.17	9.77
19	21	10.30	14.49	12.68	9.09	12.78	11.19	8.83	12.42	10.87	8.03	11.29	9.88
21	23	10.40	14.62	12.80	9.17	12.90	11.29	8.91	12.53	10.97	8.10	11.39	9.97
12	13	10.51	14.78	12.94	9.28	13.04	11.42	9.01	12.67	11.09	8.19	11.52	10.08
17	18	10.76	15.12	13.24	9.49	13.35	11.68	9.22	12.96	11.35	8.38	11.79	10.31
18	19	10.79	15.17	13.28	9.52	13.39	11.72	9.25	13.00	11.38	8.41	11.82	10.35
17	17	11.39	16.01	14.02	10.05	14.13	12.37	9.76	13.73	12.01	8.87	12.48	10.92



STANDARD ROLLER

MICROGRANULATE FERTILIZER DOSAGE WITH 1 STANDARD ROLLER (kg/ha)													
WIDTH		600			680			700			770		
ENTRY SPROCKET	EXIT SPROCKET	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE
19	18	12.02	16.90	14.79	10.61	14.92	13.05	10.30	14.49	12.68	9.37	13.17	11.53
18	17	12.06	16.96	14.84	10.64	14.96	13.09	10.34	14.53	12.72	9.40	13.21	11.56
13	12	12.34	17.35	15.18	10.89	15.31	13.40	10.57	14.87	13.01	9.61	13.52	11.83
23	21	12.47	17.54	15.35	11.01	15.48	13.54	10.69	15.03	13.16	9.72	13.67	11.96
21	19	12.59	17.70	15.49	11.11	15.62	13.67	10.79	15.17	13.28	9.81	13.79	12.07
19	17	12.73	17.90	15.66	11.23	15.79	13.82	10.91	15.34	13.43	9.92	13.95	12.21
17	15	12.91	18.15	15.88	11.39	16.01	14.02	11.06	15.56	13.61	10.06	14.14	12.38
15	13	13.14	18.48	16.17	11.59	16.30	14.27	11.26	15.84	13.86	10.24	14.40	12.60
21	18	13.29	18.68	16.35	11.72	16.49	14.43	11.39	16.01	14.02	10.35	14.56	12.74
18	15	13.67	19.22	16.82	12.06	16.96	14.84	11.71	16.47	14.42	10.65	14.97	13.11
23	21	12.47	17.54	15.35	11.01	15.48	13.54	10.69	15.03	13.16	9.72	13.67	11.96
21	17	14.07	19.78	17.31	12.41	17.45	15.28	12.06	16.96	14.84	10.96	15.41	13.49
15	12	14.24	20.02	17.52	12.56	17.66	15.46	12.20	17.16	15.02	11.09	15.60	13.65
19	15	14.42	20.28	17.75	12.73	17.90	15.66	12.36	17.39	15.22	11.24	15.81	13.83
23	18	14.55	20.46	17.91	12.84	18.06	15.80	12.47	17.54	15.35	11.34	15.94	13.95
17	13	14.89	20.94	18.33	13.14	18.48	16.17	12.76	17.95	15.71	11.60	16.32	14.28
23	17	15.41	21.67	18.96	13.59	19.12	16.73	13.21	18.57	16.25	12.01	16.88	14.78
18	13	15.77	22.17	19.41	13.91	19.56	17.12	13.52	19.01	16.63	12.29	17.28	15.12
21	15	15.94	22.42	19.62	14.07	19.78	17.31	13.67	19.22	16.82	12.42	17.47	15.29
17	12	16.13	22.69	19.85	14.24	20.02	17.52	13.83	19.45	17.02	12.57	17.68	15.47
19	13	16.64	23.41	20.48	14.69	20.65	18.07	14.27	20.06	17.56	12.97	18.24	15.96
18	12	17.08	24.02	21.02	15.07	21.20	18.55	14.64	20.59	18.02	13.31	18.72	16.38
23	15	17.46	24.56	21.49	15.41	21.67	18.96	14.97	21.05	18.42	13.61	19.13	16.75
19	12	18.03	25.36	22.19	15.91	22.37	19.58	15.46	21.73	19.02	14.05	19.76	17.29
21	13	18.40	25.87	22.64	16.23	22.83	19.98	15.77	22.17	19.41	14.33	20.16	17.64
21	12	19.93	28.02	24.53	17.58	24.73	21.64	17.08	24.02	21.02	15.53	21.84	19.11
23	13	20.15	28.33	24.80	17.78	25.00	21.88	17.27	24.29	21.25	15.70	22.08	19.32
23	12	21.83	30.69	26.86	19.26	27.08	23.70	18.71	26.31	23.02	17.01	23.92	20.93



HALF-DOSE ROLLER

MICROGRANULATE FERTILIZER DOSAGE WITH 1 HALF-DOSE ROLLER (kg/ha)

WIDTH		600			680			700			770		
ENTRY SPROCKET	EXIT SPROCKET	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE
12	23	2.97	4.18	3.66	2.62	3.69	3.23	2.55	3.58	3.13	2.31	3.26	2.85
13	23	3.22	4.53	3.96	2.84	3.99	3.49	2.76	3.88	3.39	2.51	3.53	3.09
12	21	3.25	4.58	4.00	2.87	4.04	3.53	2.79	3.92	3.43	2.54	3.57	3.12
13	21	3.52	4.96	4.34	3.11	4.37	3.83	3.02	4.25	3.72	2.75	3.86	3.38
12	19	3.60	5.06	4.43	3.17	4.46	3.91	3.08	4.33	3.79	2.80	3.94	3.45
15	23	3.71	5.22	4.57	3.28	4.61	4.03	3.18	4.48	3.92	2.89	4.07	3.56
12	18	3.80	5.34	4.67	3.35	4.71	4.12	3.25	4.58	4.00	2.96	4.16	3.64
13	19	3.90	5.48	4.79	3.44	4.83	4.23	3.34	4.70	4.11	3.04	4.27	3.74
12	17	4.02	5.65	4.95	3.55	4.99	4.36	3.45	4.84	4.24	3.13	4.40	3.85
15	21	4.07	5.72	5.01	3.59	5.05	4.42	3.49	4.90	4.29	3.17	4.46	3.90
13	18	4.11	5.78	5.06	3.63	5.10	4.47	3.52	4.96	4.34	3.20	4.51	3.94
17	23	4.21	5.92	5.18	3.71	5.22	4.57	3.61	5.07	4.44	3.28	4.61	4.04
13	17	4.35	6.12	5.36	3.84	5.40	4.73	3.73	5.25	4.59	3.39	4.77	4.18
15	19	4.50	6.32	5.53	3.97	5.58	4.88	3.85	5.42	4.74	3.50	4.93	4.31
12	15	4.56	6.41	5.61	4.02	5.65	4.95	3.90	5.49	4.81	3.55	4.99	4.37
17	21	4.61	6.48	5.67	4.07	5.72	5.01	3.95	5.56	4.86	3.59	5.05	4.42
19	23	4.70	6.61	5.79	4.15	5.84	5.11	4.03	5.67	4.96	3.67	5.15	4.51
15	18	4.75	6.67	5.84	4.19	5.89	5.15	4.07	5.72	5.01	3.70	5.20	4.55
18	21	4.88	6.86	6.01	4.31	6.06	5.30	4.18	5.88	5.15	3.80	5.35	4.68
13	15	4.93	6.94	6.07	4.35	6.12	5.36	4.23	5.95	5.21	3.85	5.41	4.73
15	17	5.02	7.07	6.18	4.43	6.23	5.46	4.31	6.06	5.30	3.91	5.51	4.82
17	19	5.09	7.16	6.27	4.50	6.32	5.53	4.37	6.14	5.37	3.97	5.58	4.89
19	21	5.15	7.24	6.34	4.55	6.39	5.59	4.42	6.21	5.43	4.01	5.65	4.94
21	23	5.20	7.31	6.40	4.59	6.45	5.65	4.46	6.27	5.48	4.05	5.70	4.99
12	13	5.26	7.39	6.47	4.64	6.52	5.71	4.51	6.34	5.54	4.10	5.76	5.04
17	18	5.38	7.56	6.62	4.75	6.67	5.84	4.61	6.48	5.67	4.19	5.89	5.16
18	19	5.39	7.59	6.64	4.76	6.69	5.86	4.62	6.50	5.69	4.20	5.91	5.17
17	17	5.69	8.01	7.01	5.02	7.07	6.18	4.88	6.86	6.01	4.44	6.24	5.46



HALF-DOSE ROLLER

MICROGRANULATE FERTILIZER DOSAGE WITH 1 HALF-DOSE ROLLER (kg/ha)

WIDTH		600			680			700			770		
EXIT SPROCKET	EXIT SPROCKET	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE	FERTILIZER MICROGRANULATE	MYCORRHIZAE	INSECTICIDE
19	18	6.01	8.45	7.40	5.30	7.46	6.53	5.15	7.24	6.34	4.68	6.59	5.76
18	17	6.03	8.48	7.42	5.32	7.48	6.55	5.17	7.27	6.36	4.70	6.61	5.78
13	12	6.17	8.67	7.59	5.44	7.65	6.70	5.29	7.44	6.51	4.81	6.76	5.92
23	21	6.24	8.77	7.67	5.50	7.74	6.77	5.35	7.52	6.58	4.86	6.83	5.98
21	19	6.29	8.85	7.75	5.55	7.81	6.83	5.39	7.59	6.64	4.90	6.90	6.04
19	17	6.36	8.95	7.83	5.62	7.90	6.91	5.45	7.67	6.71	4.96	6.97	6.10
17	15	6.45	9.07	7.94	5.69	8.01	7.01	5.53	7.78	6.81	5.03	7.07	6.19
15	13	6.57	9.24	8.09	5.80	8.15	7.13	5.63	7.92	6.93	5.12	7.20	6.30
21	18	6.64	9.34	8.18	5.86	8.24	7.21	5.69	8.01	7.01	5.18	7.28	6.37
18	15	6.83	9.61	8.41	6.03	8.48	7.42	5.86	8.24	7.21	5.32	7.49	6.55
23	21	6.24	8.77	7.67	5.50	7.74	6.77	5.35	7.52	6.58	4.86	6.83	5.98
21	17	7.03	9.89	8.66	6.21	8.73	7.64	6.03	8.48	7.42	5.48	7.71	6.75
15	12	7.12	10.01	8.76	6.28	8.83	7.73	6.10	8.58	7.51	5.55	7.80	6.83
19	15	7.21	10.14	8.88	6.36	8.95	7.83	6.18	8.69	7.61	5.62	7.90	6.92
23	18	7.28	10.23	8.95	6.42	9.03	7.90	6.24	8.77	7.67	5.67	7.97	6.98
17	13	7.45	10.47	9.16	6.57	9.24	8.09	6.38	8.98	7.85	5.80	8.16	7.14
23	17	7.70	10.83	9.48	6.80	9.56	8.37	6.60	9.29	8.13	6.00	8.44	7.39
18	13	7.88	11.09	9.70	6.96	9.78	8.56	6.76	9.50	8.32	6.14	8.64	7.56
21	15	7.97	11.21	9.81	7.03	9.89	8.66	6.83	9.61	8.41	6.21	8.74	7.64
17	12	8.07	11.34	9.93	7.12	10.01	8.76	6.91	9.72	8.51	6.29	8.84	7.74
19	13	8.32	11.70	10.24	7.34	10.33	9.04	7.13	10.03	8.78	6.48	9.12	7.98
18	12	8.54	12.01	10.51	7.54	10.60	9.27	7.32	10.29	9.01	6.66	9.36	8.19
23	15	8.73	12.28	10.74	7.70	10.83	9.48	7.48	10.52	9.21	6.80	9.57	8.37
19	12	9.02	12.68	11.10	7.95	11.19	9.79	7.73	10.87	9.51	7.03	9.88	8.65
21	13	9.20	12.93	11.32	8.12	11.41	9.99	7.88	11.09	9.70	7.17	10.08	8.82
21	12	9.96	14.01	12.26	8.79	12.36	10.82	8.54	12.01	10.51	7.76	10.92	9.56
23	13	10.07	14.17	12.40	8.89	12.50	10.94	8.63	12.14	10.63	7.85	11.04	9.66
23	12	10.91	15.35	13.43	9.63	13.54	11.85	9.35	13.15	11.51	8.50	11.96	10.47



9.3.4 EXTERNAL KIT HOPPER WITH ISOBUS



IMPORTANT: THE TABLE BELOW SHOWS THE CALIBRATION FACTOR TO BE ENTERED IN THE MONITOR DEPENDING ON THE ROLLER MOUNTED.



IMPORTANT: IF THE COULTER UNIT HAS TWO DISTRIBUTION HEADS, ONLY ONE PRODUCT CAN BE DISPENSED. IN THIS CASE, THE SAME TYPE OF ROLLER MUST BE INSTALLED IN BOTH DISPENSERS.

CALIBRATION FACTOR (g/turn)		PRODUCT NAME	0.8	0.9	AGRISTART N PLUS 1.015	1.1	1.2
SPECIFIC GRAVITY (kg/L)							
ROLLER TYPE			21	24	27	29	32
			11	12	13	14	16



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