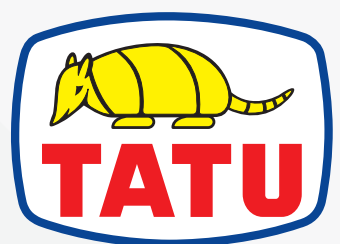


STP²

OPERATOR'S MANUAL



MARCHESAN

IDENTIFICATION

Dealer: _____

Owner: _____

Firm / Farm: _____

City: _____ State: _____

No. of the Certificate of Guarantee: _____

Serial / No.: _____

Date:____/____/____ Invoice No.:_____

Product: _____

Notes: _____

[illegible]

This operator's manual helps on the assembly process and provides the necessary information for the correct operation and maintenance, thus assuring a higher yield, safety and durability. This manual contains the necessary information for the best performance of your equipment. The operator and the maintenance staff must carefully read the entire manual before working with the equipment. They must also read and understand the safety recommendations.

For any further explanation or in the case of technical problems that may arise during the service, consult your dealer and the Technical support department of the factory, as they can ensure the fully functioning of your TATU equipment.

We reiterate that a careful read and an observation of every item on this manual are needed to assure a greater lifetime of your equipment.



MARCHESAN IMPLEMENTOS E MÁQUINAS AGRÍCOLAS "TATU" S.A.

Marchesan Av., 1979 - Zip Code 15994-900 - Matão - SP - Brazil

Telephone 55.16.3382.8282

www.marchesan.com.br

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1. To the owner

The acquisition of any Tatu product assures to the original purchaser the following rights:

- Warranty certificate;
- Operator's manual;
- Technical assistance by the dealer on equipment delivery.

However, the owner must check the condition of the equipment on delivery, as well as knowing the warranty terms.

Special attention should be given to the safety recommendations, operation precautions and maintenance of the equipment.

The instructions in this manual indicates how to get the best performance and allow the operator to get maximum income, increasing the equipment lifetime.

This manual should be read by operators and maintenance staff.



IMPORTANT!

- Only people who own a full knowledge of the tractor and equipment must transport, operate and carry out any maintenance on them;
- Marchesan is not responsible for any damage caused by accident on transporting, misuse or inadequate storage, either by negligence and/or lack of experience from any person;
- Marchesan is not responsible for any damage caused by unpredictable situations or for the incorrect use of the equipment.

General information

Right and left hand side indications are made observing the equipment from the rear.

To order any parts or request technical assistance services, it is required to provide the data contained on the nameplate, which is located on the equipment's frame.

MODELO MODEL			
Nº SÉRIE SERIAL NR			
DATA DATE		PESO WEIGHT	
MARCHESAN IMPLEMENTOS E MÁQUINAS AGRÍCOLAS "TATU" S.A. www.marchesan.com.br AV. MARCHESAN, 1979 - MATÃO-SP-BRASIL CNPJ: 52.311.289/0001-63			

NOTE

- The warranty shall not be applied to any equipment or any part that has been altered elsewhere than at the place of manufacture, or which the original purchaser thereof at retail has used or allowed to be used parts, not made or supplied by Marchesan.

2. To the operator

Be careful with the environment



Dear operator!

Respect the ecology. Do not throw trash away. This gesture of goodwill helps to protect our environment.



Products such as oil, fuel, filters, batteries and others are spilt over the soil and can penetrate to the underground layers, compromising nature. Ecological and conscious disposal of them should be done.



Recycle damaged and disposable items to preserve a clean environment.

Working safely

This equipment is simple to operate, requiring however the basic and essential cautions to its handling.

Always keep in mind that safety requires constant attention, observation and prudence during work, transportation, maintenance and storage. **The security aspects must be carefully observed to avoid accidents.**



ATTENTION!

- This symbol is a warning used to prevent accidents.
- The instructions under this symbol refers to the safety of the operator, mechanician or third parties, therefore they should be carefully read and observed. If the safety instructions are not being followed, a serious accident or even death may occur.



Read and understand the information before making any adjustment or maintenance.

Follow every recommendation, warning and safety practice that can be found inside this manual, as accidents may lead to injury or death.

REMEMBER, ACCIDENTS MUST BE AVOIDED!

2. To the operator

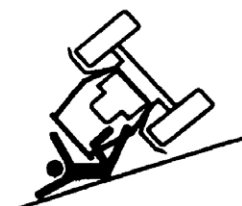
Working safely



Never use your bare hands to check hydraulic leaks, the high pressure can cause injuries.



Never attempt to change the adjustments, clean or lubricate the equipment when the same is switched on or in movement.



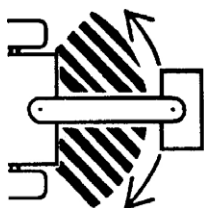
Be careful while driving on slopes. Risk of overturn.



Prevent that chemical products (i.e.: fertilizers and treated seeds) make any contact with your skin or clothes.



Keep access and work places clean or free from oil and grease. Risk of accidents.



Never transport the equipment on highways or paved roads. Avoid that the tractor wheels touch the drawbar in sharp turns.



Always use the safety locks to carry out any maintenance or to transport the equipment.



Have extreme caution when operating with the power take-off (PTO), which you should not get closer during operation.

2. To the operator

Working safely



The presence of any other people on the tractor or equipment is strictly forbidden.



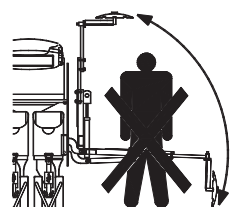
Have extreme caution when driving under electrical power lines. Any contact may result in severe shocks, injuries or death.



When hitching the equipment to the tractor, use a chain to lock the equipment drawbar to the tractor hitch bar. This procedure will prevent a possible rupture of any hydraulic hose or breaks on the hitching system, what would make the equipment tilt up.



Keep away from the moving elements of the equipments, as they are sharp and may cause accidents. Use protection gloves.



Before activating the equipment, check for people or animals close to the row markers action area.



Incorrect handling of fertilizer may cause intoxication and death. Follow the instructions on the safety sheet of the substance manufacturer. Define and supply personal protective equipments to the designated person as requested by the manufacturer.



Every professional should be oriented when lifting and carrying heavy loads to avoid any serious accident that a bad execution of this process may cause.

2. To the operator

Personal protective equipment (PPE)

The personal protective equipment must be used as stated by the Ministry of Labor and Employment on the working standards.



ATTENTION!

- Safety must be present on every working step to avoid accidents, such as the impact of objects, falling, noises, cuts and similar. Therefore, the working person is subject to inner and outer damages to the body.



Use earplugs or muffs to avoid loud noises that may lead to complications or hearing loss.



Use gloves to protect your hands and arms from the abrasive elements that may cause cuts or scratches. Whenever assembling or disassembling the equipment, always use safety gloves.



The safety helmet protect the worker's head from any injury that would be caused by falling objects.



The safety glasses protect the eyes from any type of debris that would cause irritation or injuries.



Use the respiratory protection to filter the air and avoid that any dirt particles or material debris may be inhaled by the worker, what would compromise its respiratory system.



The foot protection will prevent damages from the impact of objects, nails or bolts scattered on the floor, crushing hazards, injuries from falling on slippery or wet areas and so on. Always use foot protection during the job.



Personal clothing must be used. Avoid tight or hanging clothes that may become entangled to the moving parts of the equipment.

NOTE

- Only certified PPE must be used.

2. To the operator

General and mandatory safety measures



1. Only trained and qualified personnel are allowed to operate the equipment.
2. Do not allow any passengers on the equipment during work or transportation.
3. While working or during transportation, only the presence of the operator is allowed on the tractor.
4. Do not allow children to play or to get over the equipment while it is operating, during transportation or storage.
5. Have full knowledge of the soil before starting to work. Use the speed which is suitable to the conditions of the ground or pathways to be covered.
6. Provide the delineation of obstacles or hazardous locations.
7. Use personal protective equipment (PPE).
8. Wear appropriate clothes and footwear. Avoid tight or hanging clothes that may become entangled to the moving parts of the equipment.
9. Never operate the equipment without its **protective devices**.
10. Be careful while hitching the equipment to the tractor.
11. When lifting or lowering the equipment, check if there are no people or animals close or under it.
12. Never attempt to change the adjustments, clean or lubricate the equipment while it is moving.
13. In case of emergency, know how to stop the tractor and equipment quickly.
14. Always shut down the engine, remove the key and use the handbrake before leaving the tractor seat.
15. Only pull the equipment using a tractor with appropriate power.

General and mandatory safety measures



16. Do not allow any person or animal to get under the equipment at any time.
17. Carefully check the transport width on narrow locations.
18. Do not drive the equipment under the influence of alcohol or any soothing/ stimulating medicine, as it may result in a serious accident.
19. In case of a fire outbreak or any possible hazard, the operator must leave the area as fast as possible and look for a safe place. Always have emergency numbers in hands.
20. We suggest that you carefully read the manual, as it will be a guide for periodic verifications that need to be done and will allow that you assure the maintenance of your equipment.
21. If there is any doubt after reading it, ask your dealer. For more complicated operations, there will be the right person to help you there.
22. Whenever unhitching the equipment, either on the field or shed, do it on a flat and firm surface and use the jacks. Make sure that the equipment is properly supported.
23. Please check the general safety instructions on the back cover of this manual.

2. To the operator

Transportation over truck or trailer

Marchesan does not advise the equipment traffic on highways, because this practice involves serious security risks in addition to being prohibited by the current existing traffic law. The transportation for long distances should be done on truck, trailer or others by following these safety guidelines:



1. Use adequate ramps to load or unload the equipment. Do not make the loading on ditch banks, it can cause a serious accidents.
2. When lifting with a hoist, use the appropriate points to lift.
3. Use the jacks to support the equipment properly.
4. The drawbar must be lifted and locked on a vertical position or it must be removed and fastened to the load.
5. Fasten the moving parts that may get loose and cause accidents.
6. Underpin the equipment wheels properly.
7. Use chock blocks and safety chains to secure the equipment to the truck or trailer during the transport.
8. Stay away from the straps, cables or chains that are working under load.
9. Make sure the SMV (Slow moving vehicle) sign, and all the lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.
10. After 8 to 10 km transporting, please inspect the load condition. Repeat this procedure every 80 to 100 km. Give more attention when transporting the equipment on rough roads, slopes and other adverse conditions.
11. Always be careful with the load height, especially when passing under electrical power lines, bridges and others.
12. Check all laws and regulations regarding the height limits and load width while transporting the equipment on truck or trailer. If necessary use banners, lights and other devices to give adequate warning to the other drivers.

Working safety standards

It is important to have knowledge not only about the functioning, operation of the equipment and its technology, but also the working legal aspects when using the equipment, such as: safety standards, operator's manual and working safety. The equipment and tools used on the rural area must be properly handled, otherwise health and safety of involved personnel may be compromised.

The operator must be capable and authorized to operate the tractor, meaning that that person must comprehend the functioning instructions of the tractor and know about the safety standards regarding the job that will be performed.

The Ministry of Labor and Employment created safety standards that aim to decrease the risk of accidents that may occur to the rural worker. Related to the subject of agricultural machines and equipments, we specifically cited the **NR 06**, **NR 12**, **NR 17** and **NR 31** standards.

Regulatory Standard - **NR 06**:

- For purposes of applying this Regulatory Standard, personal protective equipment (PPE) is considered any device or product that is worn by an individual worker for protection against risks that could threaten safety and health at work.

Regulatory Standard - **NR 12**:

- This Regulatory Standard and its annexes provide technical references, basic principles and protective measures to ensure the health and physical integrity of workers and establishes minimum requirements for the prevention of accidents and occupational diseases in the design stages and use of machinery and equipment of all kinds, and also to its manufacture, importation, trading, exhibition and cession in any way. It is understood as using phase the construction, transportation, assembly, installation, adjustment, operation, cleaning, maintenance, inspection, disabling and dismantling of machinery or equipment.

Regulatory Standard - **NR 17**:

- The purpose of this Regulatory Standard is to establish parameters for the adaption of the working conditions to the psycho-physiological characteristics of the workers in order to provide maximum comfort, safety and efficient performance.

- The working conditions include the aspects of lifting, carrying and unloading materials, furnitures, equipments and environmental conditions of the job and the organization of work itself.

Regulatory Standard - **NR 31**:

- This Regulatory Standard has the purpose to establish the precept to be applied on the organization and on the working environment, in order to make compatible the planning and development of agriculture, livestock, forestry, forest exploration and aquaculture with safety on the working environment.

2. To the operator

Safety decals

The safety decals warn about the equipment points that require more attention and they should be kept in good repair. If these decals become damaged or illegible, replace them. Marchesan provides decals, upon request and indication of the respective serial number.



Decal set

Quantity	Model	Serial number
1	STP ² decal	05.03.06.0847
1	STP ² decal	05.03.03.2824
1	Read the manual decal	05.03.03.1428
1	Lubricate and tighten daily decal	05.03.03.1827

Intended use of the equipment

The STP² planter features quality, efficiency, low cost, easy operation and low maintenance.

It was designed to plant great grains such as: corn, soybean, rice, beans, sorghum, peanut and so on. The adequate dimensions of its components allows a higher resistance, row units following the soil profile unevenness and greater distribution of seeds and fertilizer.

The row units have a parallelogram for a greater flexibility of the moving parts that work over the soil, so it is possible to work through the soil unevenness.

The seed metering system use horizontal seed plates, mounted over the dosing hoppers, allowing the plantation of grains with several sizes.

The fertilizer metering system uses individual coil pitch augers and the amounts are obtained through the sprocket combinations, thus offering uniformity on every outlet tubes.

This equipment meets the ABNT NBR and ISO applicable standards.

Prohibited use of the equipment

1. To avoid damages, serious accidents or death, do NOT allow passengers on any part of the equipment.
2. The equipment must not be used by an inexperienced operator or one that do not know every conduction, operation and command controlling techniques.

3. Data sheet

STP²

Type: Row crop planter

Model: **STP²**

Fertilizer hopper capacity (each): 42 liters

Seed hopper capacity - radial system: 34 liters

Seed hopper capacity - Sigma system: 55 liters

Hitching type: II

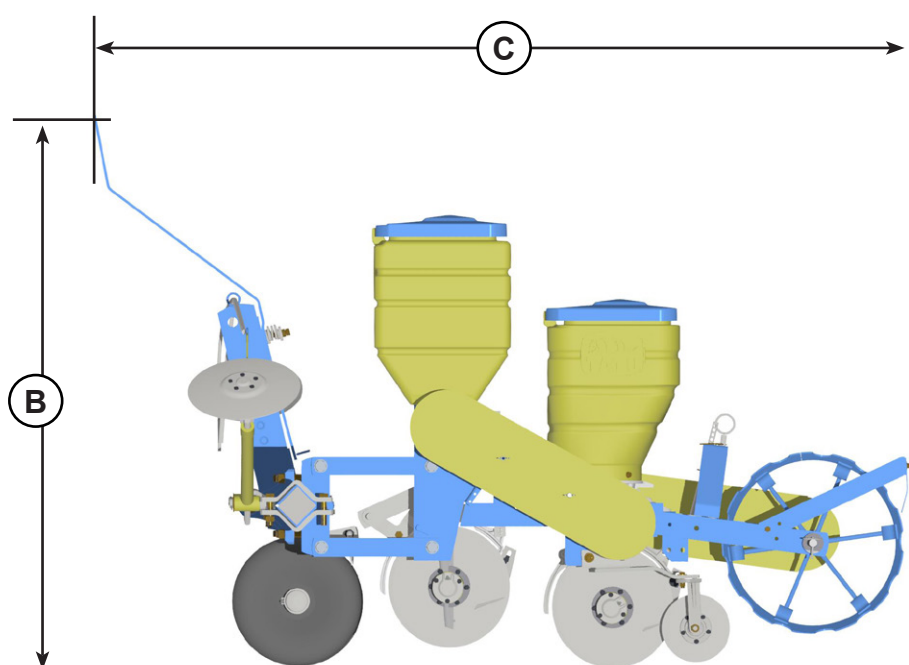
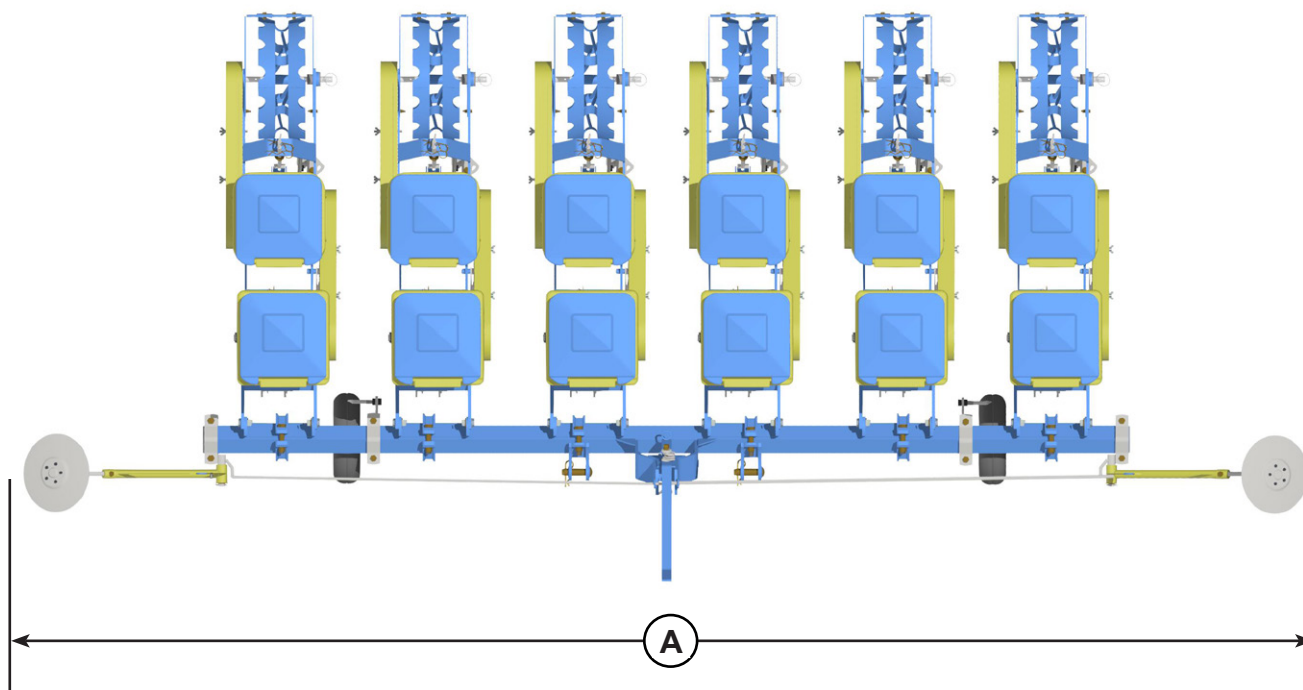
Model	Frame (mm)	Number of row units	Spacing (mm)		Weight (kg)	Tractor required power (cv)
			Max.	Min.		
STP ²	1800	02	1350	470	395	50-55
		03	700		567	60-65
		03	1100		562	60-65
		04	800		736	70-75
		05	600		874	70-75
	3200	04	900		732	75-80
		05	700		877	75-80
		06	550		1035	85
		04	1050		742	80-85
		05	800		898	80-85
		06	600		1046	90
	4200	06	750		*1013	95-100

IMPORTANT

- Approximated weights quoted using iron supporting wheel and iron gauge wheel.
- * Approximated weight quoted using iron supporting wheel and rubber gauge wheel.

3. Data sheet

STP² dimensions



3. Data sheet

STP² dimensions

Model	Frame (mm)	Number of row units	A	B	C
STP ²	1800	02	3197	1495	2215
		03	3197	1495	2215
	2800	03	4192	1495	2215
		04	4192	1495	2215
		05	4192	1495	2215
	3200	04	4590	1495	2215
		05	4590	1495	2215
		06	4590	1495	2215
	3600	03	4973	1495	2215
		04	4973	1495	2215
		05	4973	1495	2215
		06	4973	1495	2215
	4200	06	5593	1495	2215

NOTE

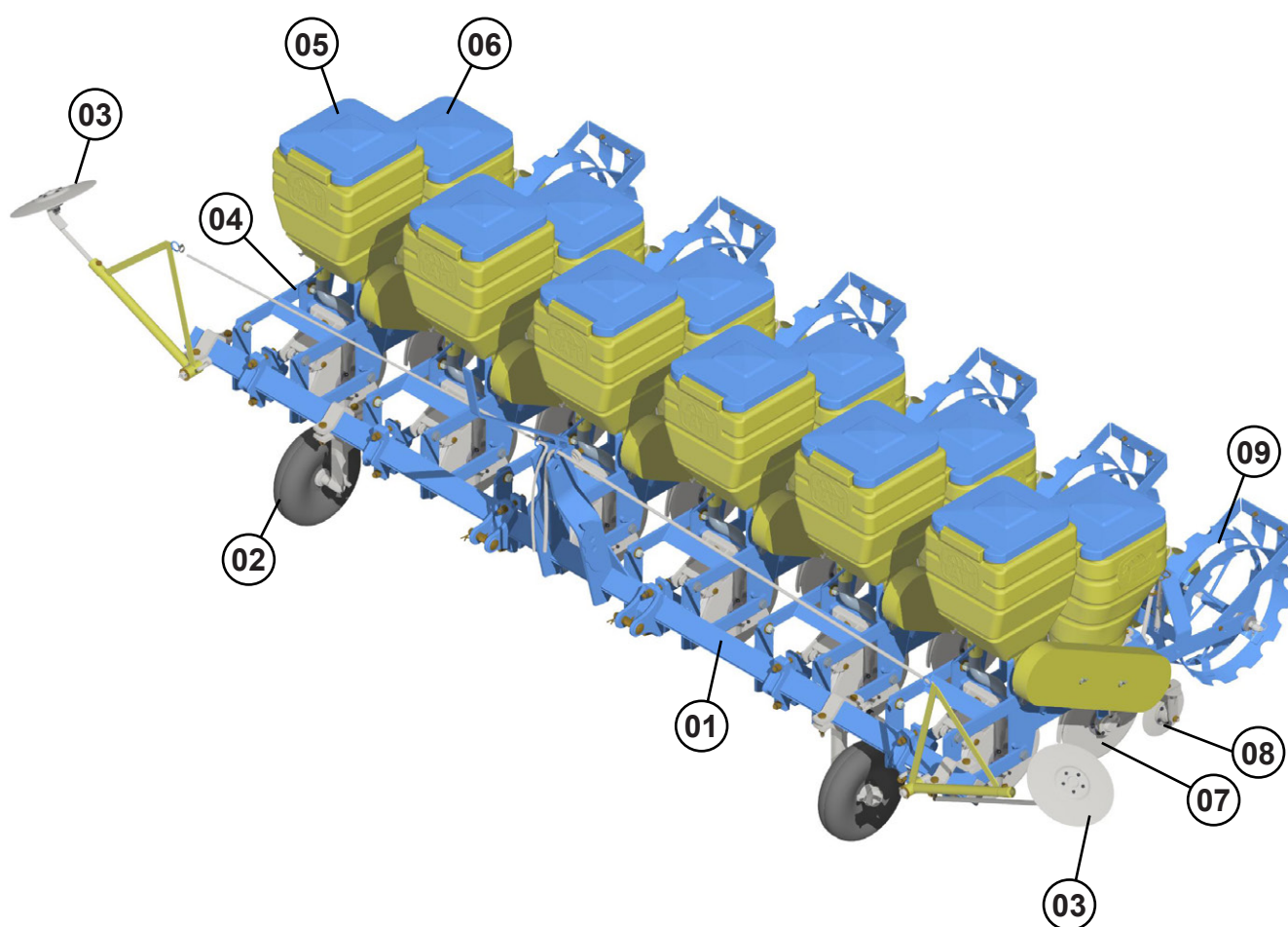
- Dimensions subjected to change.
- Measures in millimeters.

4. Components

STP²

- | | |
|-----------------------------|--------------------------------------|
| 01 - Frame | 06 - Seed hoppers |
| 02 - Iron supporting wheels | 07 - Double discs (Fertilizer/Seeds) |
| 03 - Row marker discs | 08 - Covering discs |
| 04 - Parallelogram | 09 - Iron gauge wheels |
| 05 - Fertilizer hoppers | |

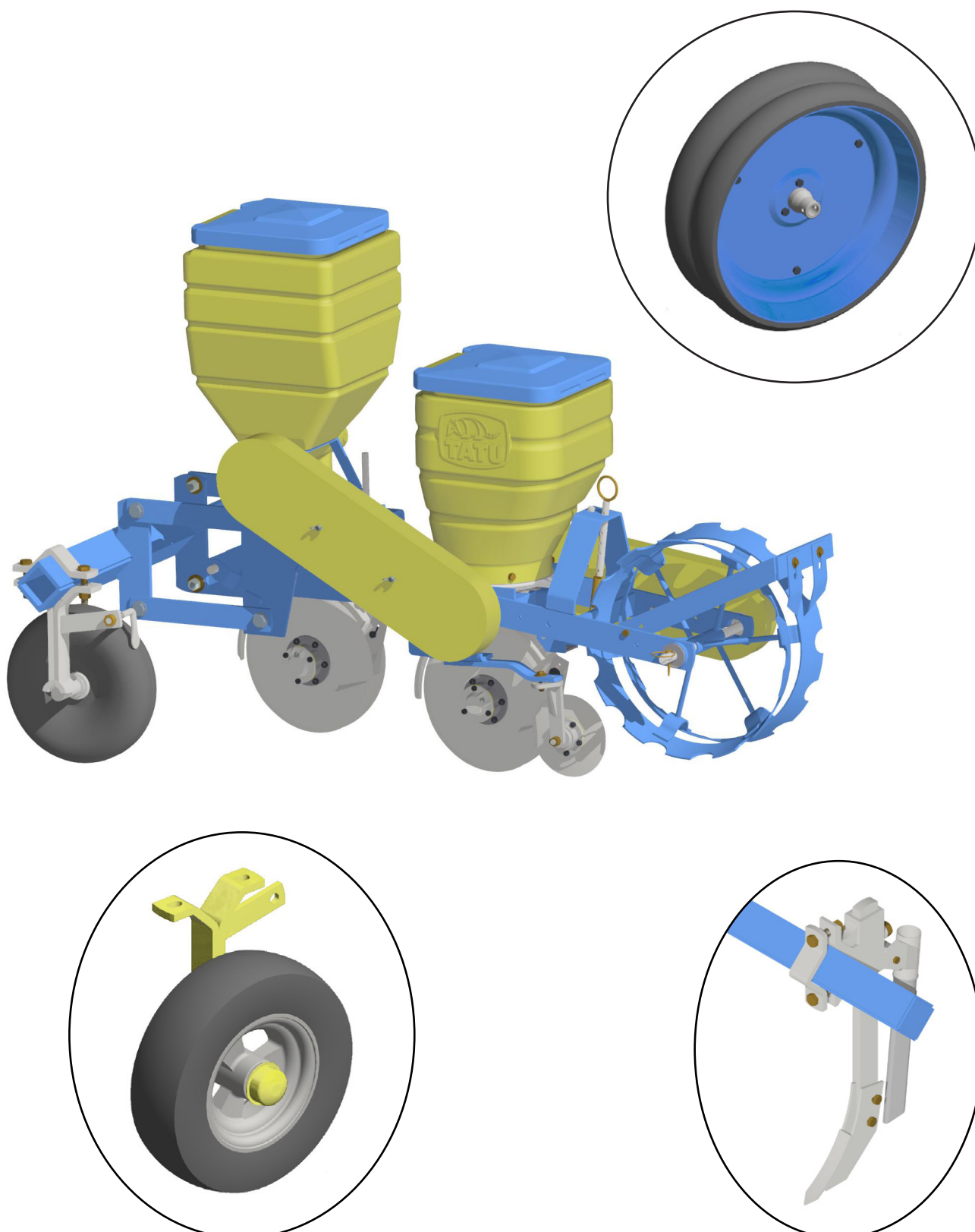
Check the "Optional" pages.



4. Components

Version with supporting/gauge wheels

1. Supporting wheel made of iron or rubber.
2. Gauge wheel made of iron or rubber.
3. Double disc or furrower shank for fertilizer.



5. Assembly



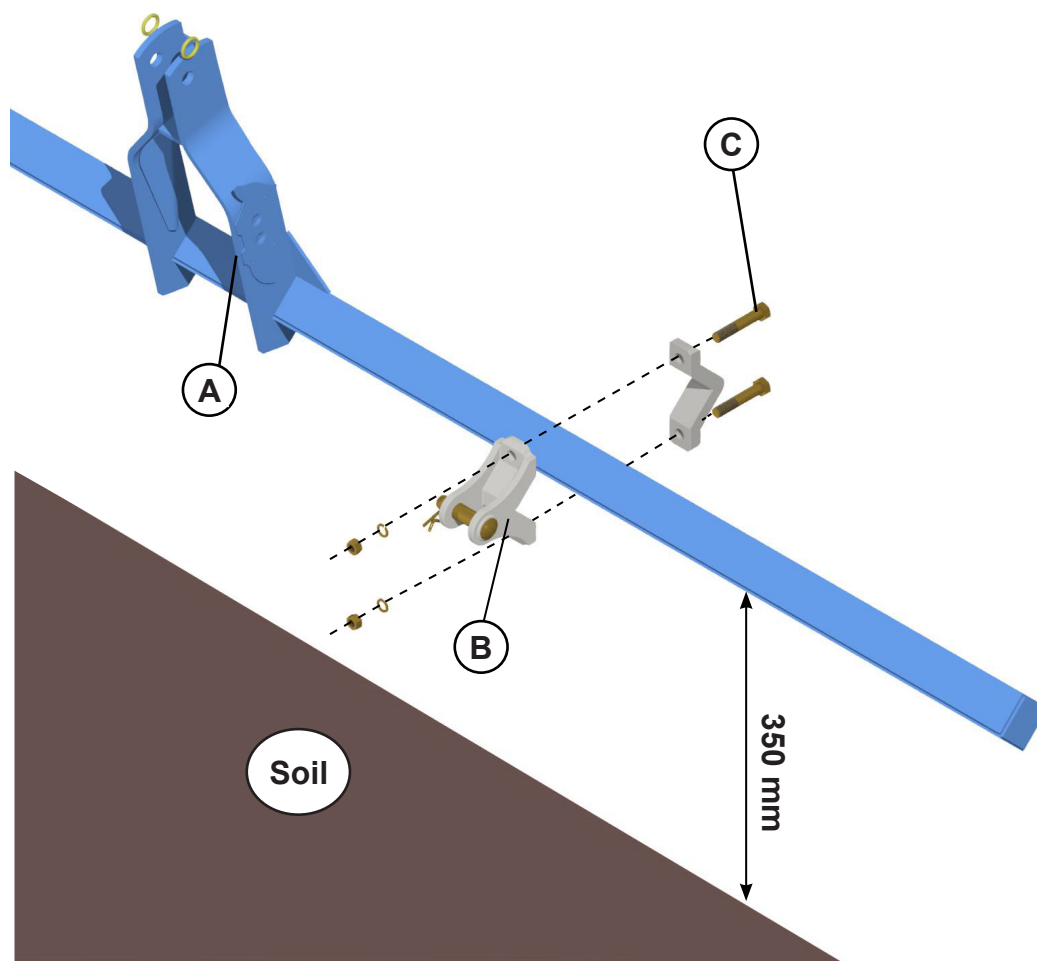
ATTENTION!

- Only **QUALIFIED** and **AUTHORIZED** personnel must assemble/disassemble the equipment.
- Use safety glasses, earplugs/muffs, protective gloves and any other required PPE.
- Avoid direct contact with the lubrication oil and do not throw it or any other type of oil or grease away on the environment.

Hitches assembly to the frame

To facilitate transportation, the planters leave the factory semi-assembled, being necessary the placement of a few components, according to the instructions below:

1. Choose a clean place and check the parts using the list that comes inside the package.
2. Place the hitches (B) of the lower hydraulic arms of the tractor to the frame (A) using bolts (C), spring washers and nuts, without totally tightening them.
3. Couple the frame (A) to the three-point hitch of the tractor, leaving it suspended for approximately **350 mm**.

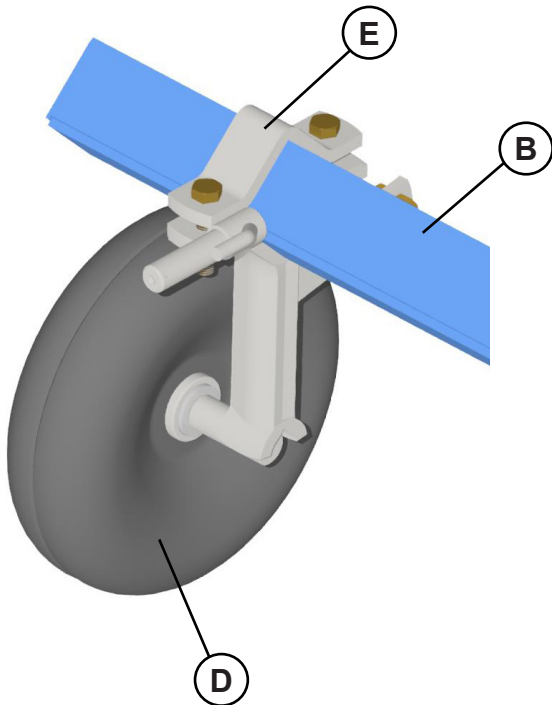


5. Assembly

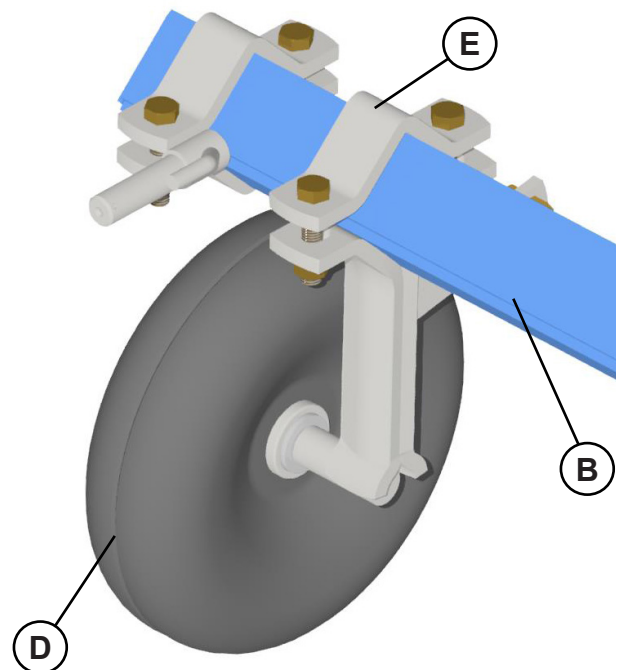
Supporting wheels assembly to the frame

1. For frames with 1800 or 2800 mm, fasten the supporting wheels (D) on the frame (B) ends using the supports (E), bolts, spring washers and nuts.
2. For frames with 3200 or 3600mm, the supporting wheels are independent, thus they can be assembled either on the end of the frame as well as between the row units, depending on the number of row units and spacing that is being used.

**For frames with
1800 or 2800 mm**



**For frames with 3200,
3600 and 4200 mm**



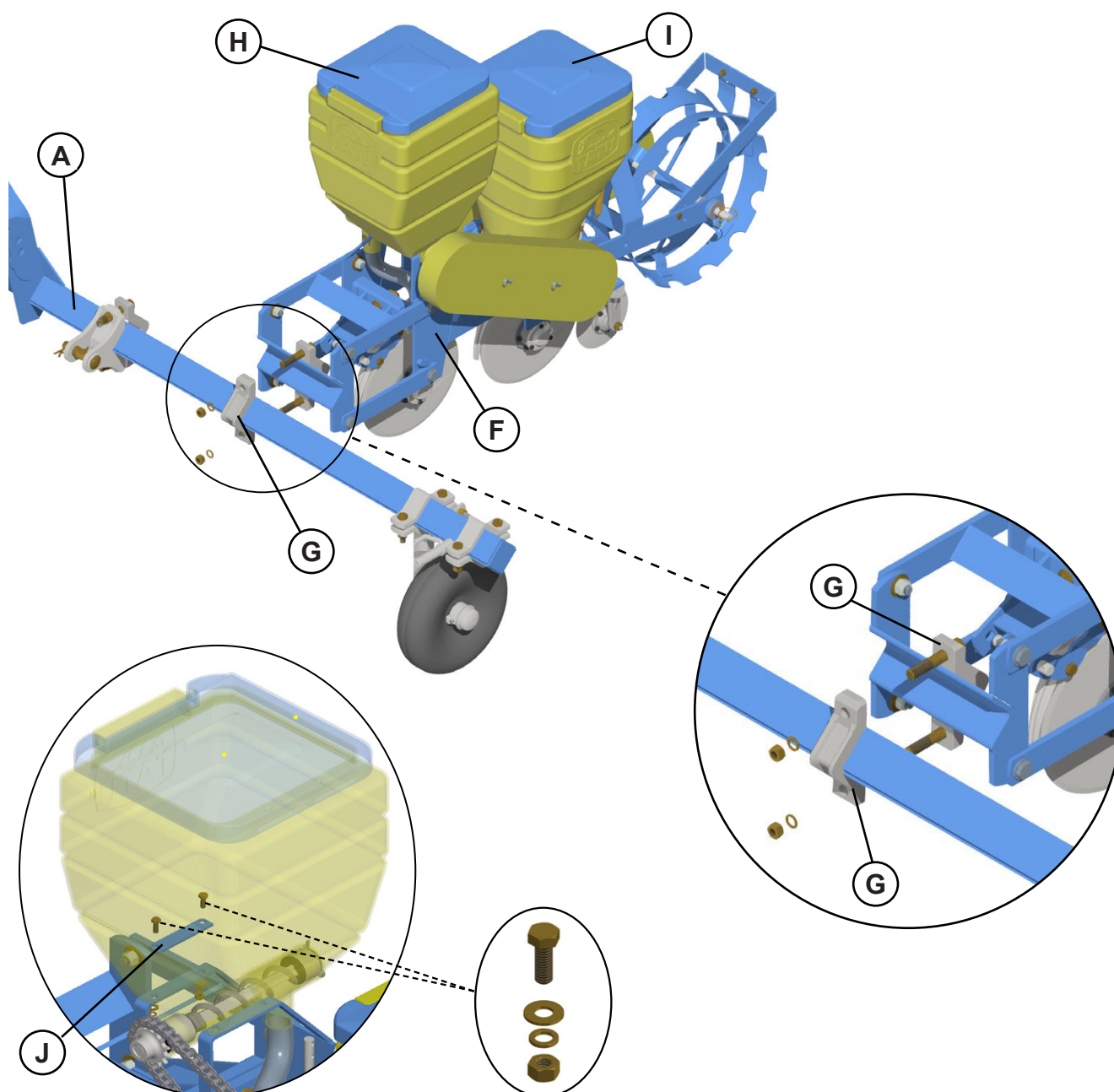
5. Assembly

Assembling the row units to the frame and fertilizer hopper to the row unit

1. Couple the row units (F) on the frame (A) using a hitch guide fastener (G), bolts, spring washers and nuts.
2. Fasten the fertilizer (H) and seed (I) hoppers to their respective supports with bolts, flat washers, spring washers and nuts.

NOTE

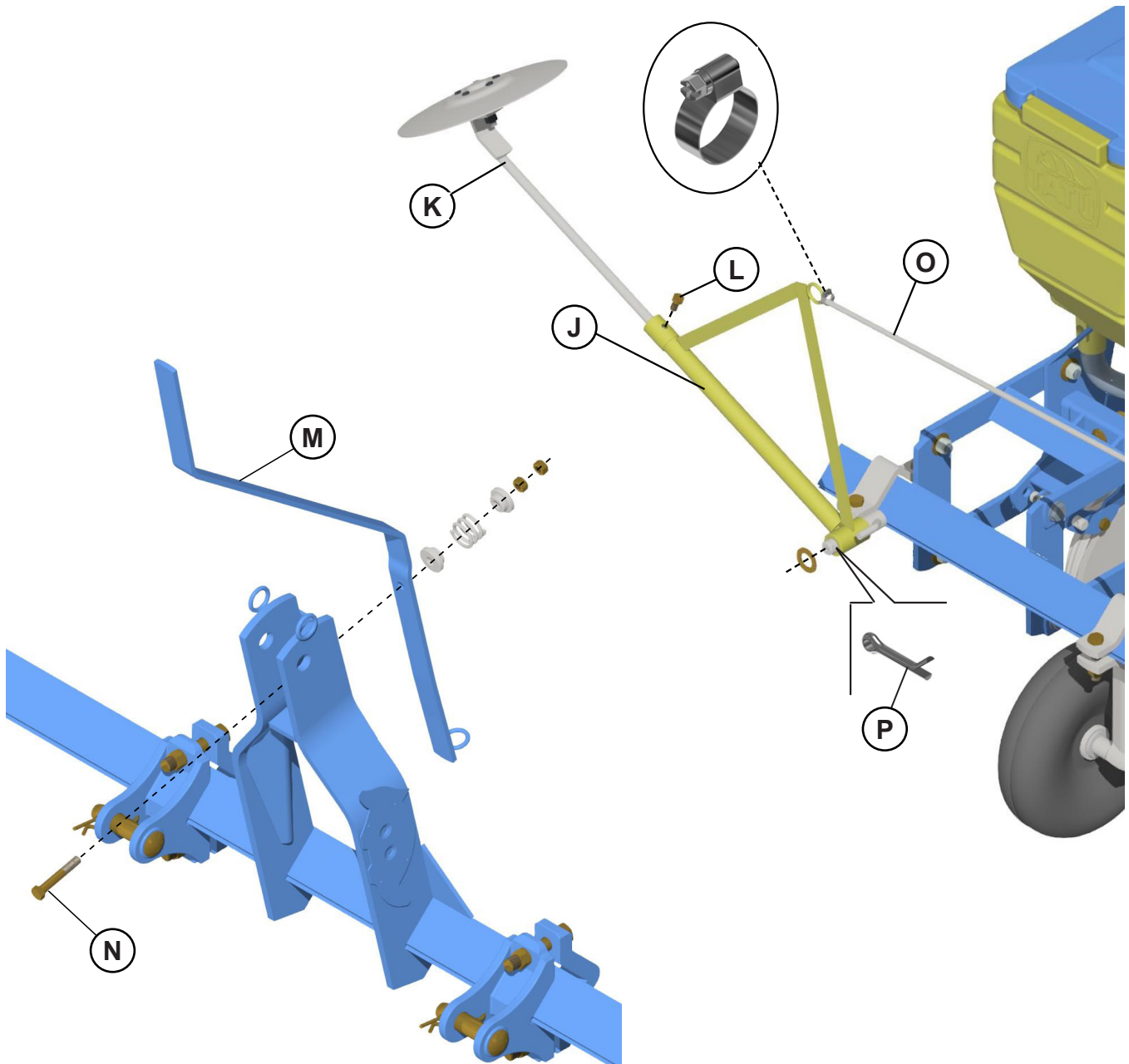
- For fastening the fertilizer hoppers, note the placement of the inner support plates (J), as shown below.
- Check the correct placement of even/odd row units on the 'positioning the row units on the frame' page.



5. Assembly

Markers assembly

1. Fasten the marker support (J) using flat washers and cotter pins (P). The arms (K) are assembled on the support and locked using bolts (L).
2. Couple the marker lever (M) to the frame using a bolt (N), flat washer, spring, spring guide and nuts.
3. Fasten the rope (O) to the marker supports using clamps.



NOTE

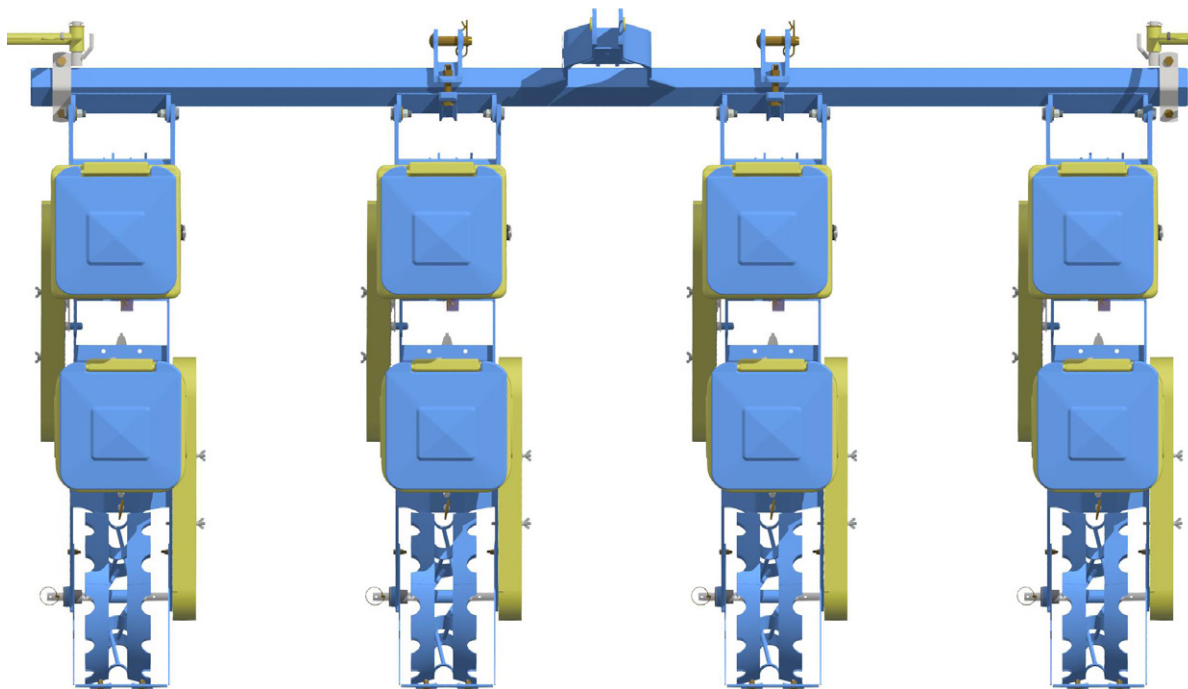
- For frames with 3200, 3600 mm or 4200 mm, the row markers are independent from the supporting wheels.

5. Assembly

Positioning the row units on the frame

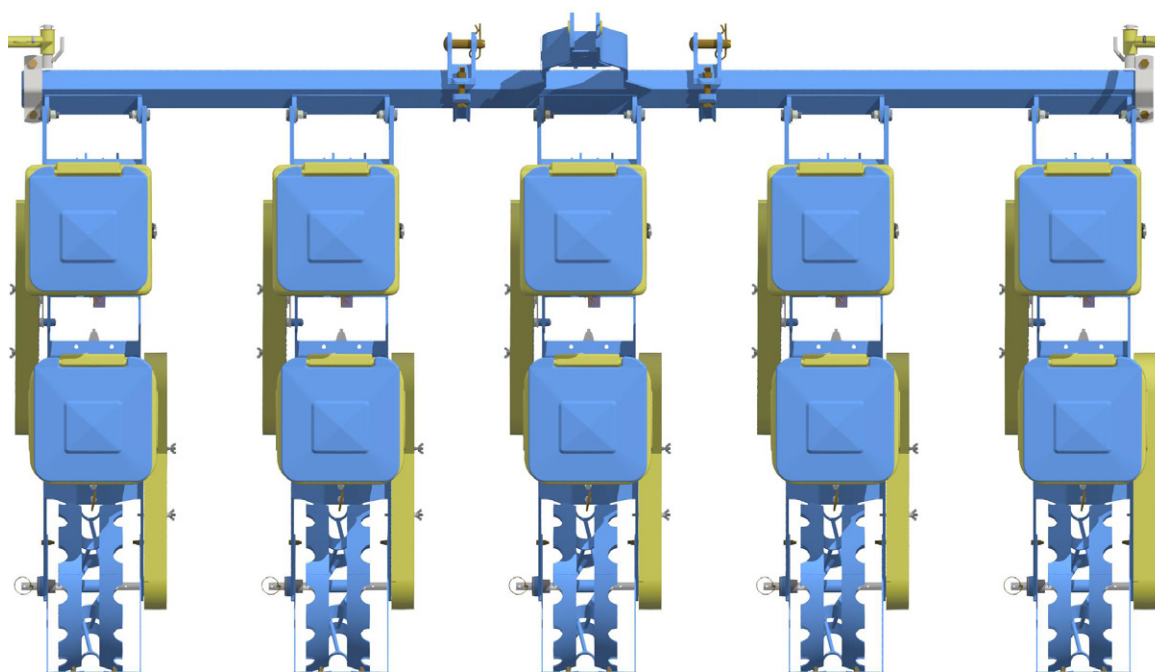
Even number of row units:

Set the frame center and measure half of a spacing to the right and half to the left, placing on these points the first two row units; from these rows, set the other ones with one spacing to each side.



Odd number of row units:

Place one row unit in the frame center and set the other ones with the desired spacing.



6. Set-up instructions



ATTENTION! RISK OF ACCIDENT

- Only **CAPABLE** and **AUTHORIZED** personnel must operate the equipment.
- Observe every safety condition and use safety glasses, foot protection, earplugs/muffs, protective gloves and any other required PPE.
- Before starting the job or transporting the equipment, check for any people or obstructions on the area.

The following instructions must be carefully observed in order to get the best working performance.

Preparing the tractor

Before starting the operations, prepare the tractor and equipment appropriately.

Check the general conditions of the tractor, especially the good functioning of the hydraulic system that must be in flotation mode.

The addition of water ballasts on the tires or a set of weights on the tractor front part or on the rear wheels are the most used ways to increase the traction over the soil and to assure a greater stability of the set.

The front and rear wheel gauges must be equal (consider a measure from the center of the tires).

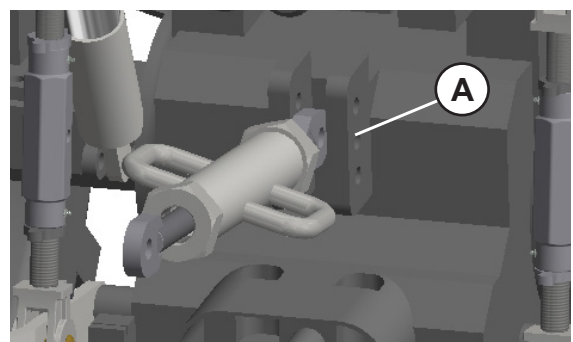
The reservoir fill-up process must be always done after the daily working period. This avoids that the air humidity that is inside the reservoir condenses. If filled up, the air volume inside the reservoir exits through the breather.

The operator must know the tractor operation commands to assure safety, preservation and integrity of the tractor, as well as to allow an efficient and correct operation.

The option to choose the hole on the third point on the control rod (A) is related to the type and humidity of the soil and the depth actuation of the equipment. For soils that have smooth texture and light equipments, use the upper hole.

When working over harder soils or to reach greater depths, the sensibility must be lowered in order to avoid that the control itself prevents the equipment penetration.

Follow the instructions on the tractor and equipment manual to assure the good functioning of both of them.



6. Set-up instructions

Preparing the equipment

The equipment must always be parked on a dry and flat place, free from any debris or strange objects. Follow this procedure to set the equipment up:

1. Clean up to remove strange objects from the equipment and from the working area;
2. Check if the fertilizer tubes are properly fixed;
3. Check the seed hoppers functioning and if the fertilizer tubes are free, because the equipment paintwork may block them. If blocked, clean the fertilizer tube outlet by scraping the paint excess to let the tubes free;
4. Lubricate all grease fittings appropriately (see the 'lubrication' page in the 'maintenance' section).

Centering and leveling the planter

NOTE

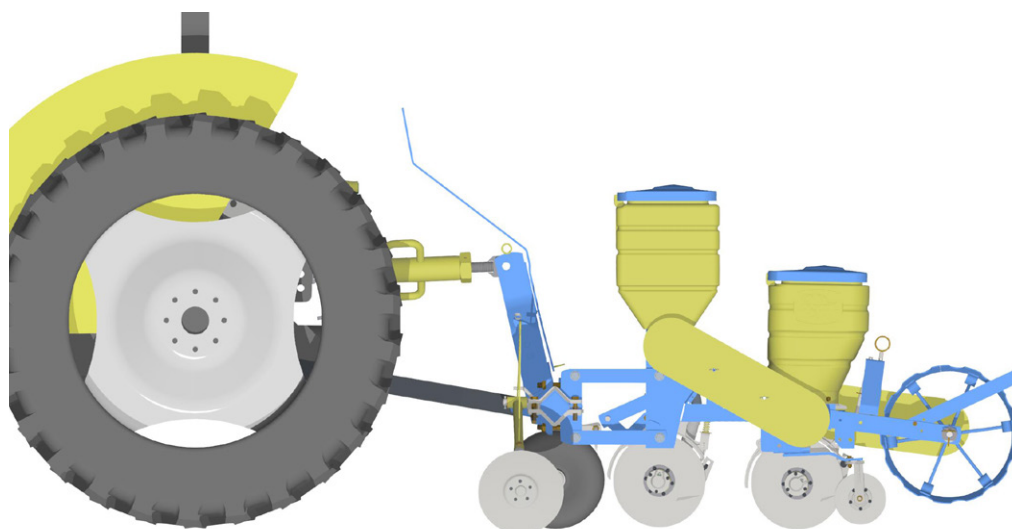
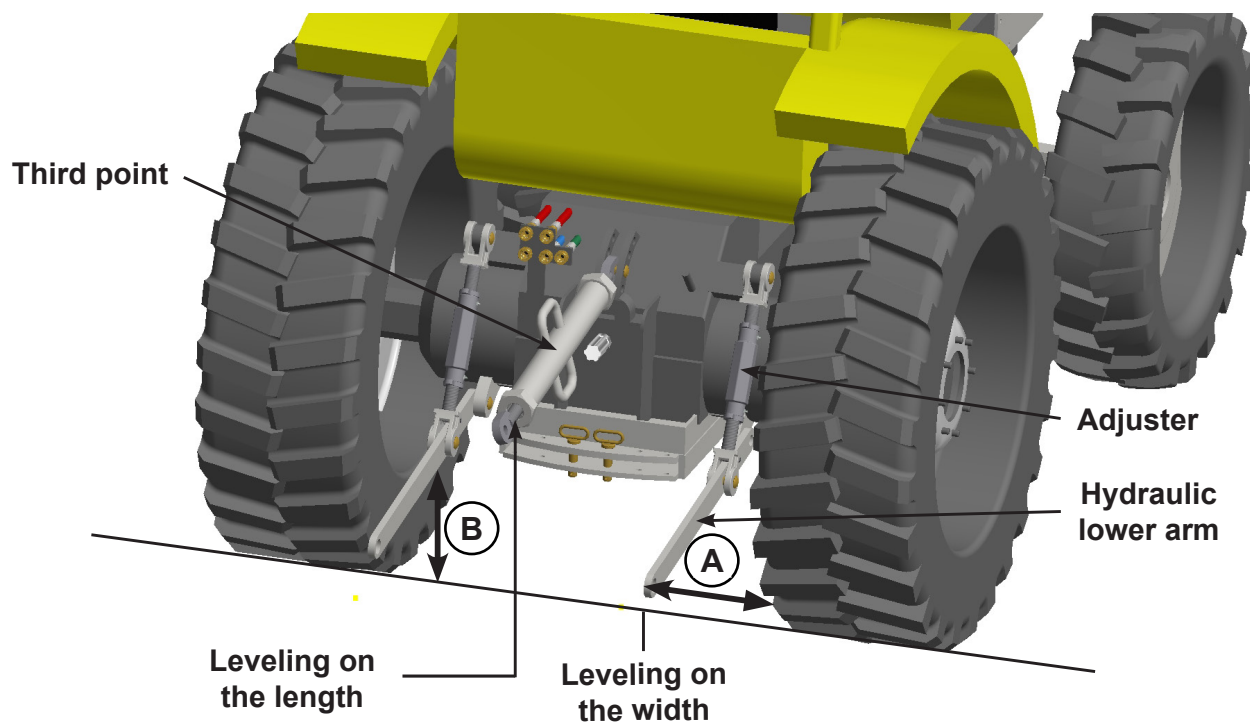
- We recommend using counterweights on the front part of the tractor.
- Adjust the front and rear gauges on the same opening (tires center-to-center).

To facilitate the adjustments, the planter must be centralized with the tractor, which is done as follows:

1. Place the tractor and planter on a flat place.
2. Align the planter drawbar with the tractor third point.
3. Totally lift the planter.
4. Check if the distances between the lower arms and tires are equal on both sides (as in "A"), being both of them leveled (as in "B").
5. Level the equipment through the upper arm (third point).

6. Set-up instructions

Centering and leveling the planter



Setting the planter to transport position

- Totally lift the planter to activate the hydraulic system.

NOTE

- It is recommended to fill up the planter on the working place only to avoid overloads to the hydraulic lift system during the transportation.
- Never transport the planter with load excess.

6. Set-up instructions

Procedures before the plantation

- Before starting the plantation, make a general inspection on the equipment. Retighten all bolts and nuts and check the condition of all pins and cotter pins, avoiding future damages. Repeat this operation after the first day of work.
- Also check if there is no strange object inside the hoppers, which may damage the metering mechanisms.
- Lubricate all grease fittings appropriately. (See the 'lubrication' page on the 'maintenance' section).

Ideal working speed

- The STP² planter works with higher efficiency from 5 to 7 km/h.

ATTENTION

- Keep a constant speed during the whole job.

Correct seed rate

Consider that the amount of plants in the harvest is always smaller than the number of seeds distributed in the planting operation, due to the following factors: germination rate, plagues, diseases and others.

Therefore, we recommend the distribution of some more seeds related to the plants/hectare that is wanted to obtain on the crop.

The following table shows the number of corn seeds that must drop in 10 meters on every row unit, considering different spacings and different amount of seeds per hectare.

Auxiliary table for corn

Number of seeds per hectare	Spacings				
	75 cm	80 cm	85 cm	90 cm	95 cm
45 000	34	36	38	40	43
50 000	38	40	42	45	47
55 000	41	44	47	49	52
60 000	45	48	51	54	57
65 000	49	52	55	58	62
70 000	53	56	59	63	66

Example: When planting 60,000 corn seeds with a spacing of 90 cm, an average of 54 seeds per 10 linear meters must drop on every row unit.

7. Tatu metering - mechanical equipment

Seed metering system

The **TATU** seed metering is a mechanical distribution seed system. It provides an easy maintenance to the farmer.

It is an easy-to-use equipment because it works as a seed plate. It features several technologies in order to provide a greater security and an excellent planting to the farmer.



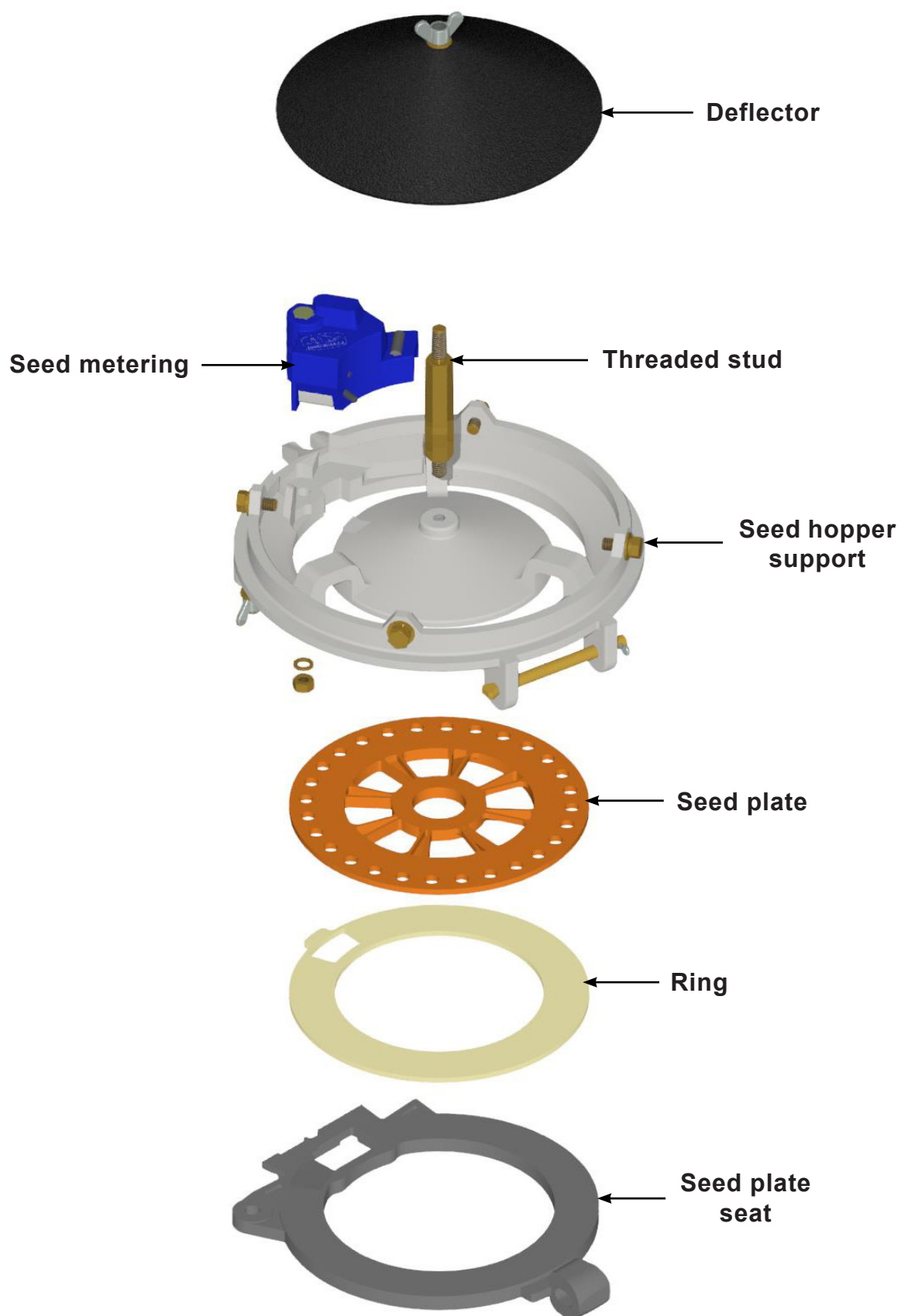
Radial seed system
- until 03/2022



Sigma seed system
- from 04/2022

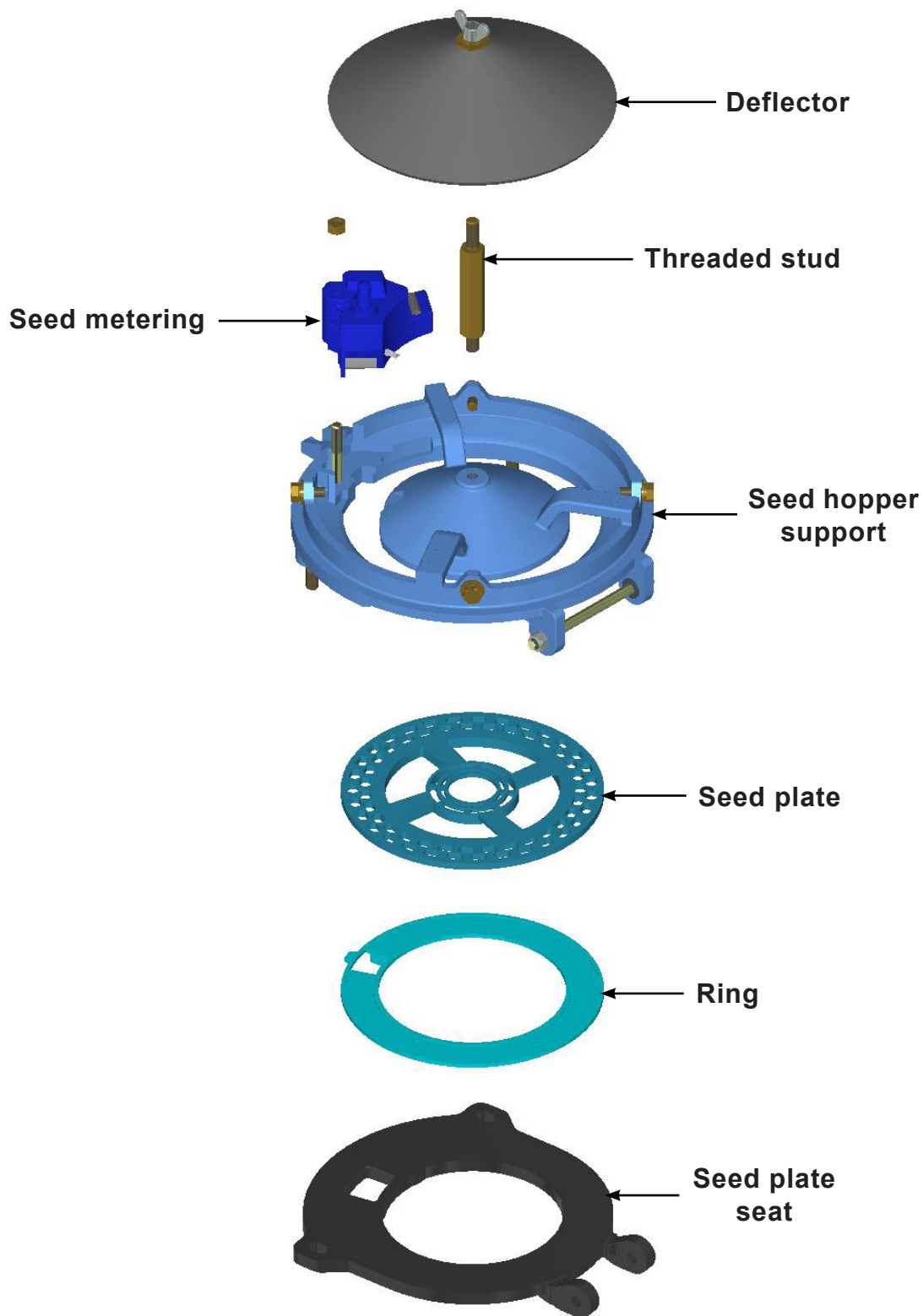
7. Tatu metering - mechanical equipment

Components (Radial seed system) - until 03/2022



7. Tatu metering - mechanical equipment

Components (Sigma seed system) - from 04/2022



7. Tatu metering - mechanical equipment



ATTENTION! RISK OF ACCIDENT

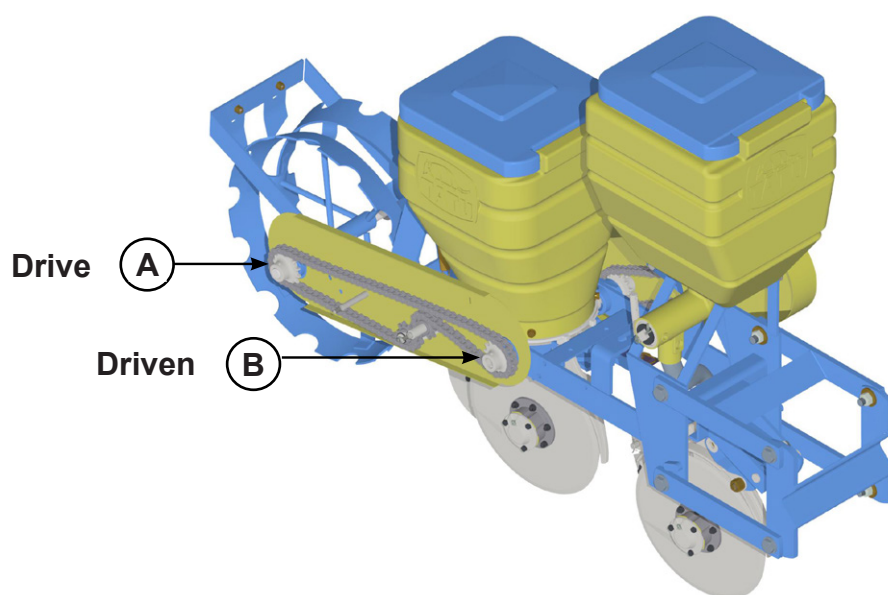
- Only **CAPABLE** and **AUTHORIZED** personnel must carry out adjustments and operations.
- Observe every safety condition and use safety glasses, foot protection, earplugs/muffs, protective gloves and any other required PPE.
- Do not carry out any adjustment when the equipment is working.

Seeds distribution

The seeds distribution is done through perforated plates which are horizontally placed.

The number and size of the holes or tears on the seed plates, as well as their thickness may change due to the grain size and the desired amount.

The amount of seeds per linear meter can be changed when another combination of the **drive (A)** and **driven (B)** shaft sprockets is used (01).



Scheme 01
(Seed)

IMPORTANT

- See, on the following pages, the different amounts of distributed seeds for several crops, according to the sprocket combinations in the drive and driven shafts.
- Observe that the table for the plates of corn relates to 10 (ten) linear meters (radial system).
- The correct adequacy of the plates to the used seeds is of utmost importance. Previously define the holes on the seed plate using some treated seeds with graphite.
- Never combine seeds from different sieves.

7 . Tatu metering - mechanical equipment

Seeds distribution - radial

CORN (Standard seed plate)

For planting corn:

Serial number **05.03.03.2127** - Seed plate with a thickness of 4.5 mm and 28 holes of Ø 9 mm, for flattened/short sieves.

01 (one) seed per hole is being considered.

Variation of the number of seeds per 10 linear meters according to the used sprockets.

STP ² drive / driven	Number of seeds in 10 linear meters
14 x 22	42
16 x 22	48
14 x 18	52
18 x 22	54
14 x 16	58
16 x 18	59
18 x 18	66
18 x 16	75
16 x 14	76
22 x 18	81
18 x 14	85
22 x 16	91
22 x 14	104

NOTE

- Use a false ring with a thickness of 4 mm.

SOYBEAN (Standard seed plate)

For planting soybean:

Serial number **05.02.02.0407** - Seed plate with a thickness of 5.5 mm and 40 slots of 9 x 14 mm.

02 (two) seeds per slot are being considered (medium/big seeds).

Variation of the number of seeds per meter according to the used sprockets.

STP ² drive / driven	Number of seeds per linear meter
14 x 22	12
16 x 22	13
14 x 18	14
18 x 22	15
14 x 16	16
16 x 18	16
18 x 18	18
18 x 16	21
16 x 14	21
22 x 18	22
18 x 14	24
22 x 16	25
22 x 14	29

NOTE

- Use a false ring with a thickness of 3 mm.

7 . Tatu metering - mechanical equipment



Seeds distribution - radial

SOYBEAN (Standard seed plate)

For planting soybean:

Serial number **05.02.02.0407** - Seed plate with a thickness of 5.5 mm and 40 slots of 9 x 14 mm.

03 (three) seeds per slot are being considered (medium/big seeds).

Variation of the number of seeds per meter according to the used sprockets.

STP ² drive / driven	Number of seeds per linear
14 x 22	18
16 x 22	20
14 x 18	22
18 x 22	23
14 x 16	24
16 x 18	25
18 x 18	28
18 x 16	31
16 x 14	32
22 x 18	34
18 x 14	36
22 x 16	38
22 x 14	44

NOTE

- Use a false ring with a thickness of 3 mm.

BEAN (Standard seed plate)

For planting bean:

Serial number **05.02.02.0407** - Seed plate with a thickness of 5.5 mm and 40 slots of 9 x 14 mm.

01 (one) seed per slot is being considered.

Variation of the number of seeds per meter according to the used sprockets.

STP ² drive / driven	Number of seeds per linear meter
14 x 22	6
16 x 22	7
14 x 18	8
18 x 22	8
14 x 16	9
16 x 18	9
18 x 18	10
18 x 16	11
16 x 14	11
22 x 18	12
18 x 14	13
22 x 16	13
22 x 14	15

NOTE

- Use a false ring with a thickness of 3 mm.

7 . Tatu metering - mechanical equipment

Seeds distribution - radial

BEAN (Optional seed plate)

For planting bean:

Serial number **05.02.02.0333** - Seed plate with a thickness of 5.5 mm and 34 slots of 10 x 16.5 mm.

02 (two) seeds per slot are being considered.

Variation of the number of seeds per meter according to the used sprockets.

STP ² drive / driven	Number of seeds per linear meter
14 x 22	10
16 x 22	12
14 x 18	13
18 x 22	13
14 x 16	14
16 x 18	14
18 x 18	16
18 x 16	18
16 x 14	18
22 x 18	20
18 x 14	21
22 x 16	22
22 x 14	25

NOTE

- Use a false ring with a thickness of 3 mm.

SORGHUM (Optional seed plate)

For planting sorghum:

Bore the 5.5 mm blind seed plate to make 40 holes that allows 2 (two) seeds passing in each hole.

Variation of the number of seeds per meter according to the used sprockets.

STP ² drive / driven	Number of seeds per linear meter
14 x 22	12
16 x 22	13
14 x 18	14
18 x 22	15
14 x 16	16
16 x 18	16
18 x 18	18
18 x 16	21
16 x 14	21
22 x 18	22
18 x 14	24
22 x 16	25
22 x 14	29

NOTE

- Special pulley provided as an optional part. (See 'optional' section).

- Use a false ring with a thickness of 3 mm.

7 . Tatu metering - mechanical equipment



Calculation of the amount of seeds/meter for the seed plates - radial

The amount of seeds for every seed plate can be found by making the calculation below, which has a factor for every sprocket combination (scheme 01).

STP ² drive / driven	Factor*
14 x 22	0.1642
16 x 22	0.1877
14 x 18	0.2007
18 x 22	0.2112
14 x 16	0.2258
16 x 18	0.2292
18 x 18	0.2581
18 x 16	0.2903
16 x 24	0.2949
22 x 18	0.3154
18 x 14	0.3318
22 x 16	0.3549
22 x 14	0.4055

* These factors represent the amount that the seed plate turns at every linear meter.

How to calculate:

Factor x Number of holes on the plate x Number of seeds on each hole x slippage index (+ or - 10%, which is expressed by 0.90).

Example:

14 x 16 combination and a seed plate with 90 holes, 1 (one) seed for each hole.

Calculation:

0.2258 x 90 x 1 x 0.90 = 18.28 - approximately **18 seeds** for every meter.

Make the calculation using different factors and find the combination that distributes the desired amount of seeds using the chosen seed plate.

7. Tatu metering - mechanical equipment

Seed plates table - radial

Seed plate	Amount of holes / slots	Ø of hole / slot (mm)	Thickness (mm)	Serial number
Corn	28	9	4.5	05.03.03.2127
Bean/soybean	40	9 x 14	5.5	05.02.02.0407
False ring	-	-	3	05.01.01.3355

ATTENTION

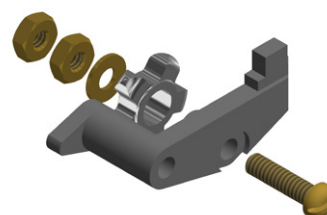
- The amount of seed plates that are included with the equipment corresponds to the number of row units.



Seed plates with 4.5 mm, 5.5 mm or 8.5 mm (without false ring)



False ring of 3 mm



Check the 'optional' section to see the seed plates list for different cultures.

NOTE

- The available height for the placement of the plate plus the false ring is 8.5 mm, however:
- If a plate has a thickness of 4.5 mm, the false ring must have 4 mm.
- To use a plate that has a thickness of 5.5 mm, place a false ring of 3 mm.

7. Tatu metering - mechanical equipment

Seeds distribution - Sigma

TABELA DE DISTRIBUIÇÃO DE SEMENTES TABLE FOR DISTRIBUTION OF SEEDS TABLA DE DISTRIBUCIÓN DE SEMILLAS									
Número de Furos / Rasgos Number of Holes / Slots Número de Agujeros	28	36	44	50	52	62	86	90	150
Qtde. Sementes por Furos/Rasgo Quantity of Seeds per Holes/Slots Cantidad de semillas por Agujero	1	1	1	1	1	1	1	1	1
Engrenagem/Sprockets/Engranajes	Sementes em 1 Metro* Seeds in 1 Meter* Semillas en 1 Metro*	Sementes em 1 Metro* Seeds in 1 Meter* Semillas en 1 Metro*	Sementes em 1 Metro* Seeds in 1 Meter* Semillas en 1 Metro*	Sementes em 1 Metro* Seeds in 1 Meter* Semillas en 1 Metro*	Sementes em 1 Metro* Seeds in 1 Meter* Semillas en 1 Metro*	Sementes em 1 Metro* Seeds in 1 Meter* Semillas en 1 Metro*	Sementes em 1 Metro* Seeds in 1 Meter* Semillas en 1 Metro*	Sementes em 1 Metro* Seeds in 1 Meter* Semillas en 1 Metro*	Sementes em 1 Metro* Seeds in 1 Meter* Semillas en 1 Metro*
Eixo Motor Drive Shaft Eje Motor									
Eixo Movido Driven Shaft Eje Movido									
14	22								
16	22								
14	18								
18	22								
14	16								
16	18								
18	22								
18	16								
22	18								
18	14								
22	16								
18	14								
22	16								
22	14								

* Metro Linear / Linear Meter / Metro Lineal

7. Tatu metering - mechanical equipment

Corn seed plates table - Sigma

Use a good proportion of graphite.
The colors in the table corresponds to the real product color.

Culture		Corn (round holes)									
Part number	Name	05.13.01.0115	05.13.01.0116	05.13.01.0117	05.13.01.0118	05.13.01.0119	05.13.01.0120	05.13.01.0121	05.13.01.0122	05.13.01.0123	05.13.01.0124
Plate		Corn	Corn	Corn	Corn	Corn	Corn	Corn	Corn	Corn	Corn
Number of holes		28	28	28	28	28	28	28	28	28	28
Set of holes		Single	Single	Single	Single	Single	Single	Single	Single	Single	Single
Hole diameter (in)		0.31	0.33	0.35	0.37	0.39	0.41	0.43	0.45	0.43	0.49
Hole diameter (mm)		8	8.5	9	9.5	10	10.5	11	11.5	11	12.5
Reference		BRB8R	AMFOS8.5R	AMC9R	VLD9.5R	SAL10R	RSP10.5	LRA11R	MAG11.5R	VDA12R	AMP12.5R
Standard			X	X	X	X	X	X	X	X	X
Optional		X									
05.13.01.0164						Seed plate ring					
05.13.01.0159						Seed plate ring (0.8 mm)					
05.13.01.0160						Seed plate ring (1.4 mm)					
05.13.01.0163						Seed plate ring (2 mm)					
05.03.06.3413						Seed hopper					

Culture		Corn (round holes)									
Part number	Name	05.13.01.0125	05.13.01.0126	05.13.01.0128	05.13.01.0129	05.13.01.0130	05.13.01.0131	05.13.01.0187	05.13.01.0188	05.13.01.0189	05.13.01.0190
Plate		Corn	Corn	Corn	Corn	Corn	Corn	Corn	Corn	Corn	Corn
Number of holes		28	28	28	28	28	28	28	28	28	28
Set of holes		Single	Single	Single	Single	Single	Single	Single	Single	Single	Single
Hole diameter (in)		0.05	0.53	0.55	0.57	0.59	0.531 x 0.350	0.582 x 0.394	0.433 x 0.314	0.492 x 0.334	0.452 x 0.334
Hole diameter (mm)		13	13.5	14	14.5	15	13.5 x 8.9	14.8 x 10	11 x 8	12.5 x 8.5	11.5 x 8.5
Reference		VMV13R	RXR13.5R	OCR14R	LLE14.5R	RSM15R	VD7	VM4	BR8.1	A28.2	CZ8
Standard		X	X					X	X	X	
Optional				X	X	X	X				X
05.13.01.0164						Seed plate ring					
05.13.01.0159						Seed plate ring (0.8 mm)					
05.13.01.0160						Seed plate ring (1.4 mm)					
05.13.01.0163						Seed plate ring (2 mm)					
05.03.06.3413						Seed hopper					

7. Tatu metering - mechanical equipment

Soybean seed plates table - Sigma

Use a good proportion of graphite.
The colors in the table corresponds to the real product color.

Culture	Soybean (round holes)						
Part number	05.13.01.0760	05.13.01.0761	05.13.01.0132	05.13.01.0133	05.13.01.0134	05.13.01.0135	05.13.01.0762
Plate	Soybean						
Number of holes	44	44	44	44	44	44	44
Set of holes	Single	Single	Single	Single	Single	Single	Single
Hole diameter (in)	0.25	0.27	0.29	0.31	0.33	0.35	0.37
Hole diameter (mm)	6.5	7	7.5	8	8.5	9	9.5
Reference	AMFOS44.65	AMP44.70	LRA44.75	RSP44.80	RXR44.85	AZM44.90	AZC44.95
05.13.01.0158	Seed plate ring					AZMSOJA	
05.13.01.0161	Seed plate ring (0.8 mm)					AZCSOJA	
05.13.01.0162	Seed plate ring (1.5 mm)					RSPSOJA	
05.03.06.xxxx	Seed hopper					Soybean 4Z	

Culture	Soybean (round holes)					
Part number	05.13.01.0765	05.13.01.0766	05.13.01.0136	05.13.01.0137	05.13.01.0138	05.13.01.0139
Plate	Soybean					
Number of holes	62	62	62	62	62	62
Set of holes	Double	Double	Double	Double	Double	Double
Hole diameter (in)	0.26	0.28	0.30	0.31	0.33	0.35
Hole diameter (mm)	6.5	7	7.5	8	8.5	9
Reference	AMFOS62.65	AMP62.70	LRA62.75	RSP62.80	RXR62.90	AZM62.90
05.13.01.0158	Seed plate ring				AZMSOJA	
05.13.01.0161	Seed plate ring (0.8 mm)				AZCSOJA	
05.13.01.0162	Seed plate ring (1.5 mm)				RSPSOJA	
05.03.06.3413	Seed hopper				Soybean / Corn 4Z	

Culture	Soybean (round holes)					
Part number	05.13.01.0763	05.13.01.0764	05.13.01.0140	05.13.01.0141	05.13.01.0142	05.13.01.0143
Plate	Soybean					
Number of holes	90	90	90	90	90	90
Set of holes	Double	Double	Double	Double	Double	Double
Hole diameter (in)	0.26	0.28	0.30	0.31	0.33	0.35
Hole diameter (mm)	6.5	7	7.5	8	8.5	9
Reference	AMFOS90.65	AMP90.70	LRA90.75	RSP90.80	RXR90.85	AZM90.90
05.13.01.0158	Seed plate ring				AZMSOJA	
05.13.01.0161	Seed plate ring (0.8 mm)				AZCSOJA	
05.13.01.0162	Seed plate ring (1.5 mm)				RSPSOJA	
05.03.06.3405	Seed hopper				Soybean / Corn 5Z (90F)	

NOTE

- The soybean plates with 44 holes are sold as optional parts.

7. Tatu metering - mechanical equipment

Sorghum, brachiaria, canola and millet seed plates table - Sigma

Use a good proportion of graphite.

The colors in the table corresponds to the real product color.

These plates must be placed along ring with border.

Optional seed plates.

Culture	Sorghum, brachiaria, canola and millet (round holes)						
Part number	05.13.01.0758	05.13.01.0759	05.13.01.0148	05.13.01.0149	05.13.01.0150	05.13.01.0151	05.13.01.0152
Plate	Name	Sorghum	Sorghum	Sorghum	Sorghum	Sorghum	Sorghum
Number of holes	52	52	52	52	52	52	52
Set of holes	Single	Single	Single	Single	Single	Single	Single
Hole diameter (in)	0.10	0.10	0.14	0.16	0.18	0.20	0.22
Hole diameter (mm)	2.5	2.5	3.5	4	4.5	5	5.5
Reference	AZ2.5C	BR3.0C	MR3.5C	PR4.0C	MRC4.5C	CZ5.0C	VLD5.5C
05.13.01.0168	Sorghum ring with border					BR006D	
05.03.06.3653	Seed hopper					Sorghum 5Z (52F)	

Culture	Sorghum, brachiaria, canola and millet (round hole)					
Part number	05.13.01.0153	05.13.01.0154	05.13.01.0155	05.13.01.0156	05.13.01.0156	05.13.01.0771
Plate	Name	Sorghum	Sorghum	Sorghum	Sorghum	Sorghum
Number of holes	86	86	86	86	86	150
Set of holes	Single	Single	Single	Single	Single	Single
Hole diameter (in)	0.14	0.16	0.18	0.20	0.22	0.18
Hole diameter (mm)	3.5	4	4.5	5	5.5	4.5
Reference	MR3.5D	PR4.0D	MRC4.5D	CZ5.0D	VDL5.5D	PR150.45D
05.13.01.0168	Sorghum ring with border				BR006D	
05.03.06.6351	Seed hopper				Sorghum 5Z (86F)	

7. Tatu metering - mechanical equipment

Bean, rice and cotton seed plates table - Sigma

Use a good proportion of graphite.

The colors in the table corresponds to the real product color.

The AM36.1 seed plate is not supplied with recess. Single plate.

Use a ring with 4.3 mm of thickness with the MR62.8 seed plate.

Optional seed plates.

Culture		Bean, rice and cotton (oblong holes)					
Part number		05.13.01.0145	05.13.01.0146	05.13.01.0144	05.13.01.0194	05.13.01.0147	05.13.01.0768
Plate	Name	Bean / rice	Bean / rice	Bean / rice	Bean / rice	Bean / rice	Bean / rice
Number of holes		62	62	62	62	50	36
Set of holes		Double	Double	Double	Double	Double	Double
Hole diameter (in)		0.47 x 0.33	0.49 x 0.37	0.45 x 0.29	0.45 x 0.25	0.65 x 0.35	0.49 x 0.37
Hole diameter (mm)		12 x 8.5	12.5 x 9.5	11.5 x 7.5	11.4 x 6.3	16.5 x 9	12.5 x 9.5
Reference		BR62,2	AM62,1	AZTC62.3	MR62.8	AZ62.4	AM36.1
05.13.01.0167		Bean seed plate ring				AZMSOJALISO	
05.13.01.0166		Ring with recess 0.8 mm (bean)				AZCSOJAR0.8	
05.13.01.0165		Ring with recess 1.5 mm (bean)				RSPSOJASR1.5	
05.03.06.3412		Seed hopper				Soybean / bean 4z (62F)	

Culture		Bean, rice and cotton (oblong holes)					
Part number		05.13.01.0769	05.13.01.0770	05.13.01.0612	05.13.01.0613	05.13.01.0614	05.13.01.0194
Plates	Name	Bean / rice	Bean / rice	Delinted cotton	Delinted cotton	Delinted cotton	Delinted cotton
Number of holes		36	36	62	62	62	62
Set of holes		Double	Double	Double	Double	Double	Double
Hole diameter (in)		0.47 x 0.33	0.45 x 0.29	0.65 x 0.36	0.37 x 0.20	0.40 x 0.21	0.40 x 0.21
Hole diameter (mm)		12 x 8.5	11.5 x 7.5	11 x 5.5	9.5 x 5.2	10.4 x 5.4	11.4 x 6.3
Reference		BR36.2	AZTC36.3	VDE62.5	PR62,6	AZ62,7	MR62.8
05.13.01.0167		Bean seed plate ring				AZMSOJALISO	
05.13.01.0166		Ring with recess 0.8 mm (bean)				AZCSOJAR0.8	
05.13.01.0165		Ring with recess 1.5 mm (bean)				RSPSOJASR1.5	
05.03.06.3412		Seed hopper				Soybean / bean 4z (62F)	
05.13.01.0195		Universal ring 4.3 mm (Delinted cotton)				AM000	
05.13.01.0611		Universal ring 4.3 mm (Delinted cotton)				CZ001.08	
05.03.06.3650		Seed hopper				Cotton 4z (62F)	

7. Tatu metering - mechanical equipment



Seed plates with 44, 62 and 90 holes - soybean

Marchesan works to provide a better plantation performance and thus offer three soybean seed plates with 44, 62 and 90 holes.

Every seed has its genetic features regardless of their size.

The seed manufacturers perform an standard size classification on the same selling batch and in relation to the culture that will be planted.

This classification is done by dividing a great batch of clean and mechanically pure seeds into smaller batches but keeping them uniform in shapeness and size. Even highly selected seeds on well-cultivated fields may show variations related to their shapeness and size.

Using the selected seeds by size facilitates the operation of seeders/planters and the seed distribution, allowing to reach the adequate ratio on the field (plants/hectare), that means, number of plants per linear meter.

By doing so, the equipment will have the transmission options and ideal seed plates to perform a precise and correct plantation.

The seed plate rotation speed must not be too low or too high, so that an equilibrated speed must be kept to place the seeds on the soil correctly, maintaining the proper number of plants per linear meter and determined by the culture variation.

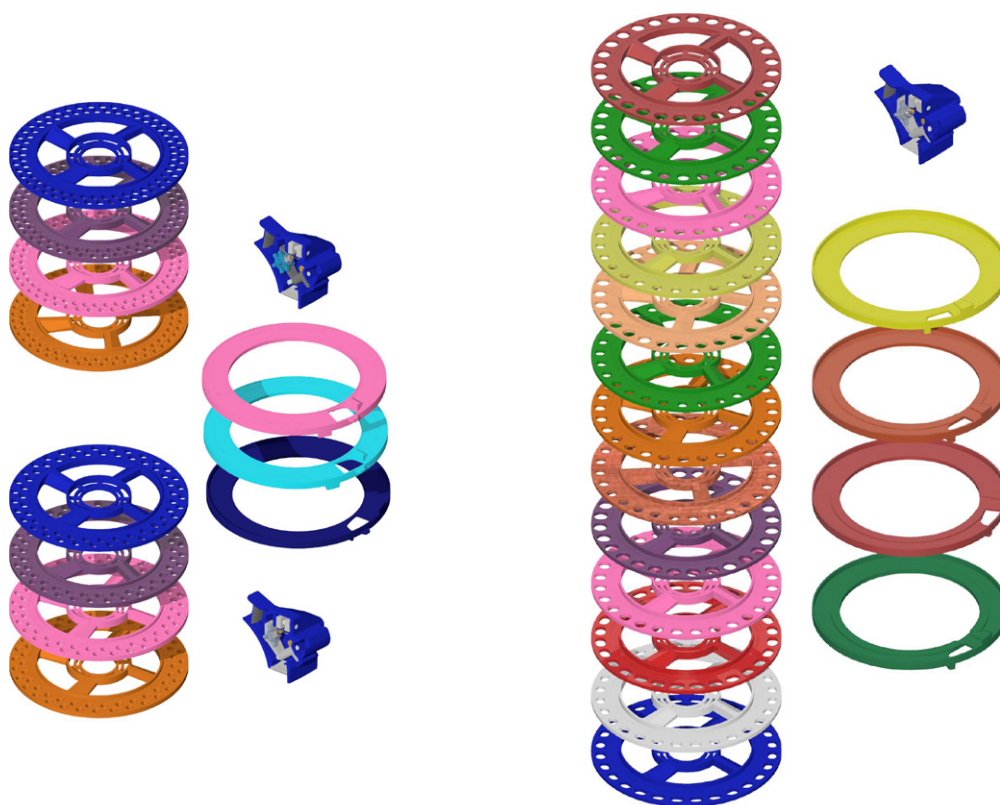
7. Tatu metering - mechanical equipment

Assembly orientation



ATTENTION!

- Only **QUALIFIED** and **AUTHORIZED** personnel must assemble/disassemble the equipment.
- Use safety glasses, earplugs/muffs, protective gloves and any other required PPE.
- Before starting to replace the seed plates, check if the equipment is turned off and if the row units are properly supported on the soil.
- The following instructions must be carefully observed in order to achieve the best performance during assembly.



NOTE

- The available height for the placement of the plate plus the false ring is 8.5 mm.
- The farmer is the person responsible to define the thickness of the plate, hole size and amount of holes.
- Use the specific false ring for each seed type.
- The metering hopper feature a height adjustment on the singulator to relieve the seed plate and the singulator itself to assure efficiency when the mechanism is working.

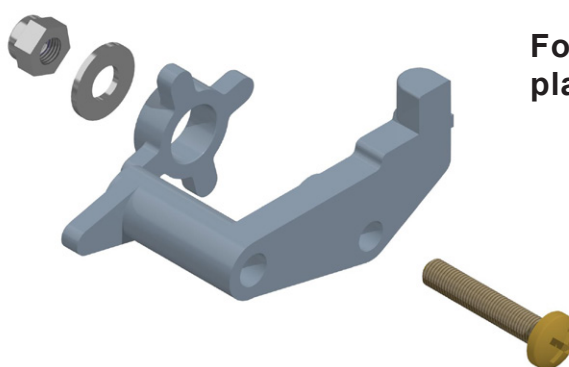
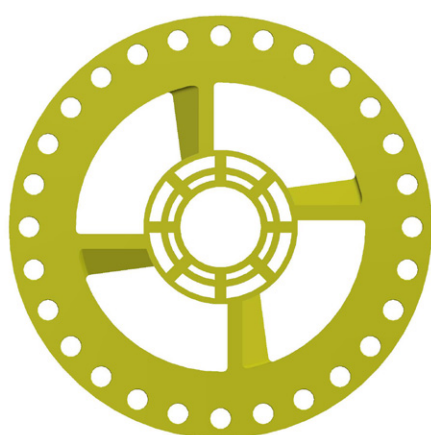
7. Tatu metering - mechanical equipment

Seed plates kit - Sigma

Special attention should be given to the rocker arm and seed sprocket, as well as the good operation of all seed meterings.

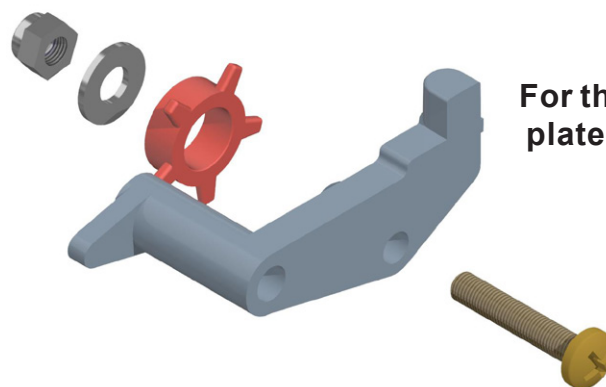
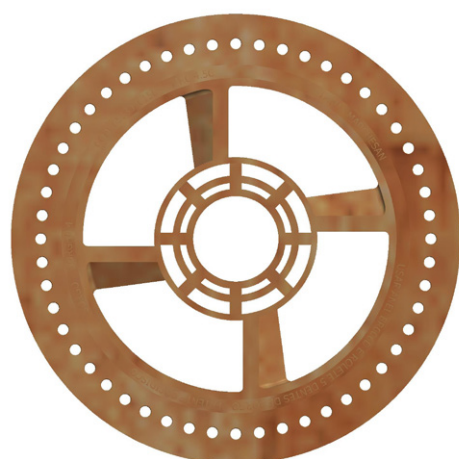
Since there is a great variety of disc blades with different number of holes to every seed type and size, specific pulleys must be used. See below the existing models that must be used according to the seed tables on the previous pages.

For the plate for corn, use the pulley with 4 teeth.



For the corn seed plates with 28 holes.

For the sorghum seed plate with 52 holes with a single set of holes, use a pulley with 5 teeth.



For the sorghum seed plates with 52 holes.

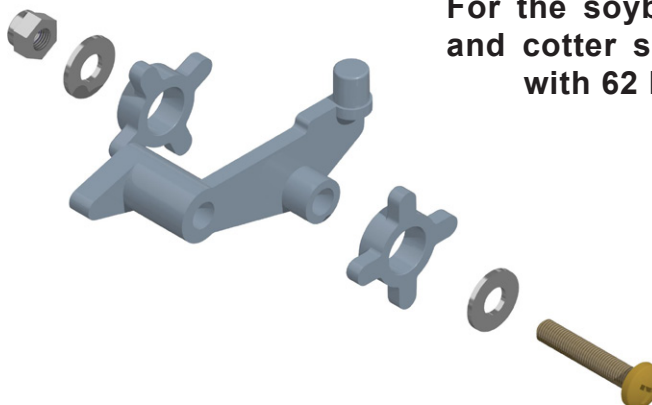
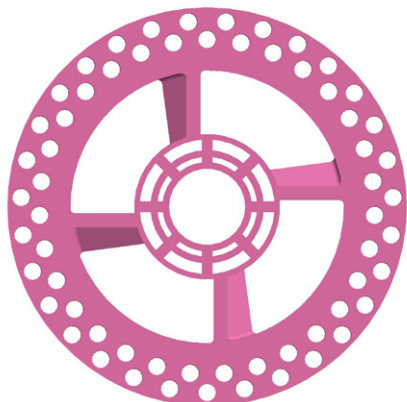
NOTE

- The conical rollers must be aligned with the seed plate holes.

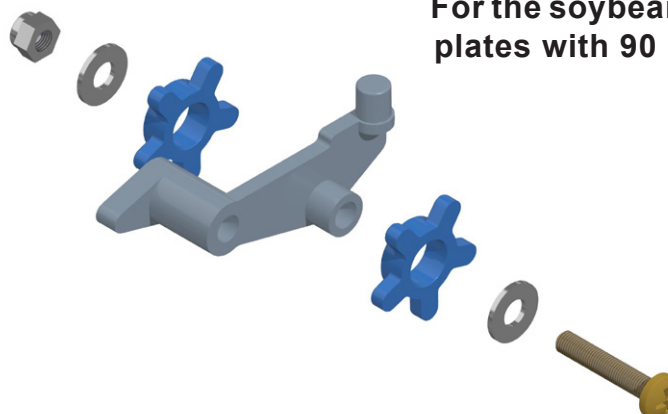
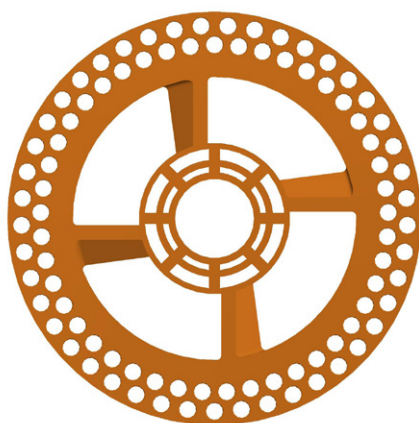
7. Tatu metering - mechanical equipment

Seed plates kit - Sigma

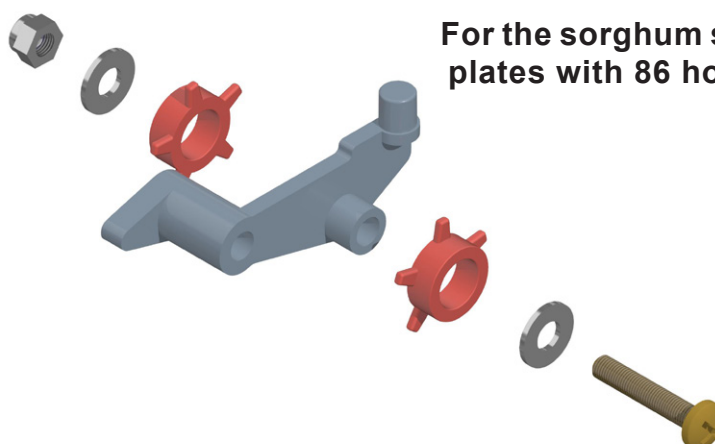
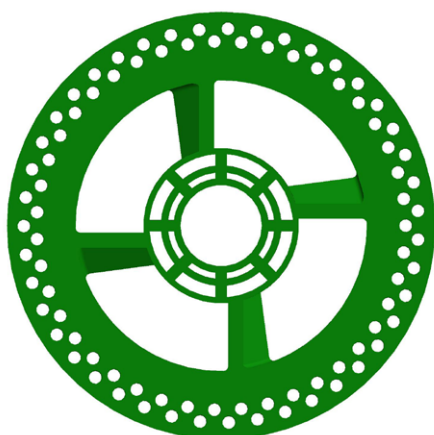
For the soybean, bean and sorghum seed plates with a double set of holes, it is necessary to use the double rocker arm (with two pulleys).



For the soybean, bean and cotter seed plates with 62 holes.



For the soybean seed plates with 90 holes.



For the sorghum seed plates with 86 holes.

NOTE

- The conical rollers must be aligned with the seed plate holes.

7. Tatu metering - mechanical equipment

Pulley tables

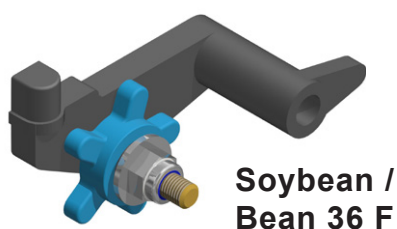
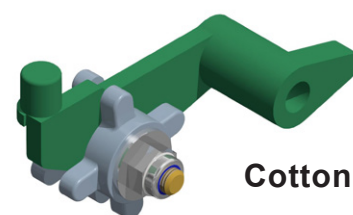
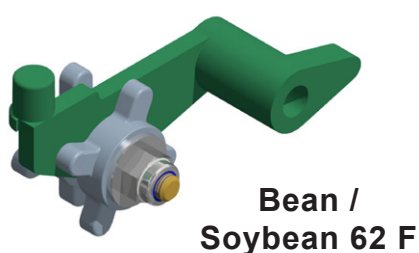
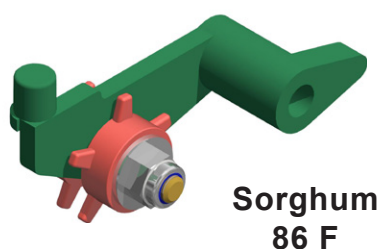
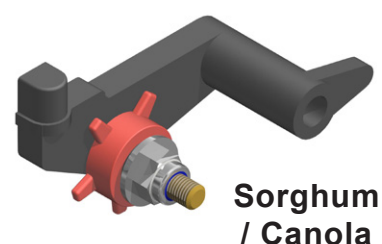
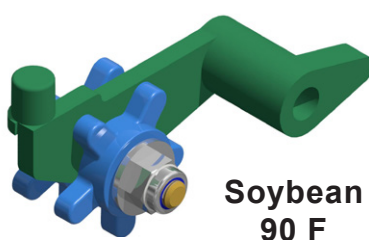
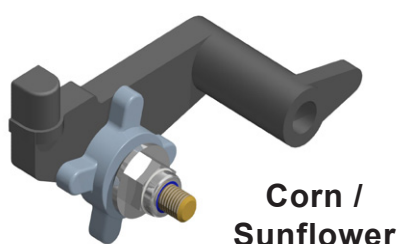
Use a good proportion of graphite.

The colors in the table corresponds to the real product color.

The pulleys must be aligned with the holes on the seed plate.

Culture	Corn / Sunflower	Soybean 90F	Sorghum / Canola	Sorghum 86 F	Bean / Soybean 62F
Part number	05.03.06.3411	05.03.06.3406	05.03.06.3409	05.03.06.3408	05.03.06.3407
No. of teeth	4	5	5	5	4
Pulleys	Single	Double	Single	Single	Double
Reference	ARUM4DU	ARODS5DU	ARUSG5DU	ARODS5DU	ARODF4DU

Culture	Cotton	Millet	Sorghum / Canola	Canola	Bean / Soybean 36F
Part number	05.03.06.3649	05.03.06.3777	05.03.06.xxxx	05.03.06.3776	05.03.06.3410
No. of teeth	4	7	5	5	5
Pulleys	Double	Double	Double	Single	Single
Reference	ARODA4DU	ARODSG7DU	ARODSG5DU	ARUC5DU	ARUS5DU



NOTE

- It may be necessary to replace the rocker arm when changing the culture.

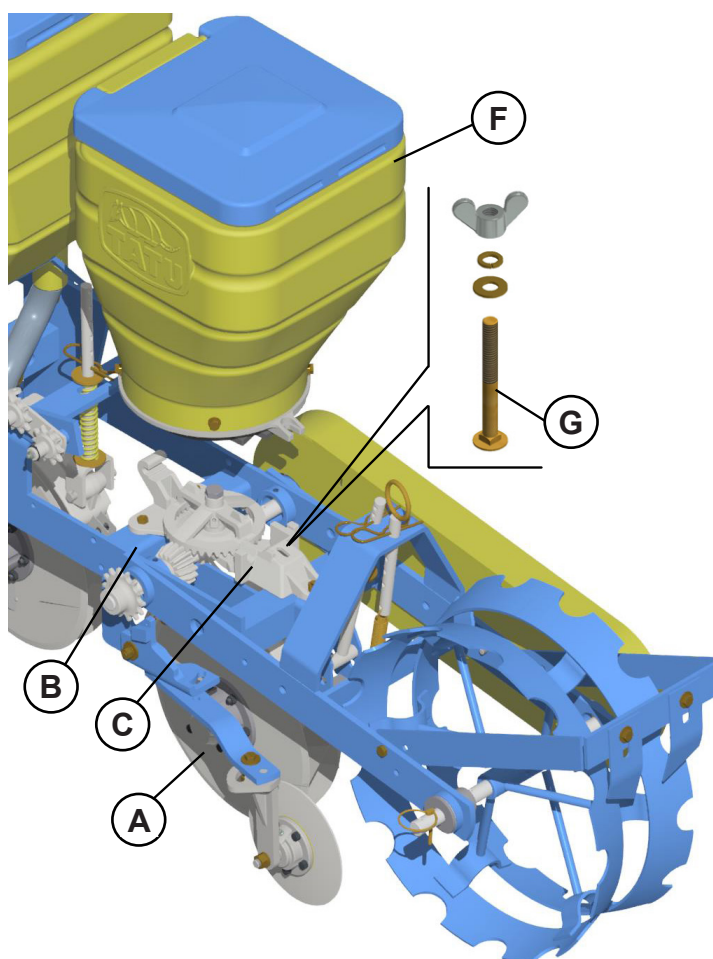
7. Tatu metering - mechanical equipment

Seed row unit rear part assembly

1. Lock the unaligned double disc support (A) on the frame (B) using bolts, spring washers and nuts.
2. Fasten the seed hopper (F) using a bolt (G), flat washer, spring washer and butterfly nut on the support (C).

NOTE

- To avoid damages to the seed plates, never tight the bolt (G) totally. By doing so, the seed plate may lock.

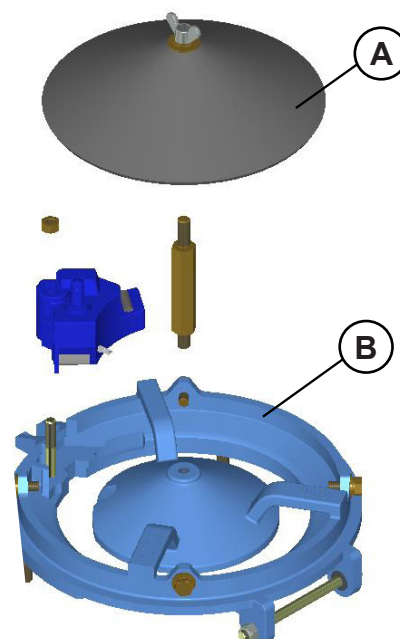


7. Tatu metering - mechanical equipment

Deflector

The deflector (A) must be placed over the seed hopper support (B) and has the function to relieve the seed row weight over the seed plate.

With less weight, the seeds are more free and breaks and friction of the seeds against the plate holes are reduced, thus providing a greater precision on the distribution, increasing the germination and the seed plate lifetime.



Graphite powder use

The natural roughness of the seeds difficult their flow on several plantation systems. This may happen either because of their physical features or the chemical treatments that they receive.

As a result, the friction may lower the germination power and lead to an irregular plantation, characterized by skips (holes without seed) or doubles (more than one seed on the same hole). To solve this problem, the use of graphite is recommended.

The graphite powder must be mixed to already treated and dry seeds, to facilitate their flow and to increase the distribution. The use of graphite reduce the seed damage rate and increase the lifetime of the metering device.

Amount of graphite per kilogram of seed			
Planter distribution system:	Seeds treated with insecticide		
	Small and round	Big and round	Flattened
Horizontal seed plates	04 grams	02 grams	04 grams

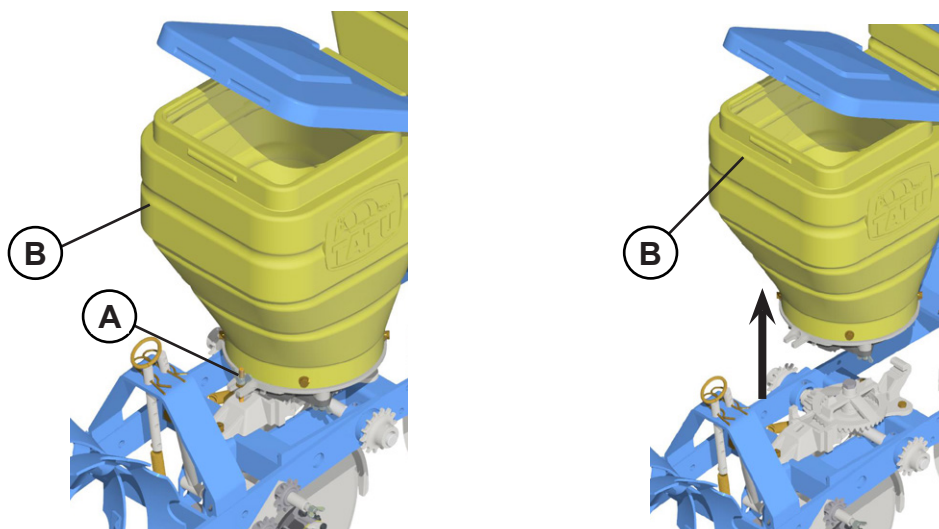
Recommendations:

- The graphite should not be combined before the seed treatment.
- The graphite should not be combined to the insecticide to apply in the seeds.
- For non-treated seeds, use only half of the graphite mentioned in the previous table.
- For treated seeds, clean the metering mechanism at least once a day.

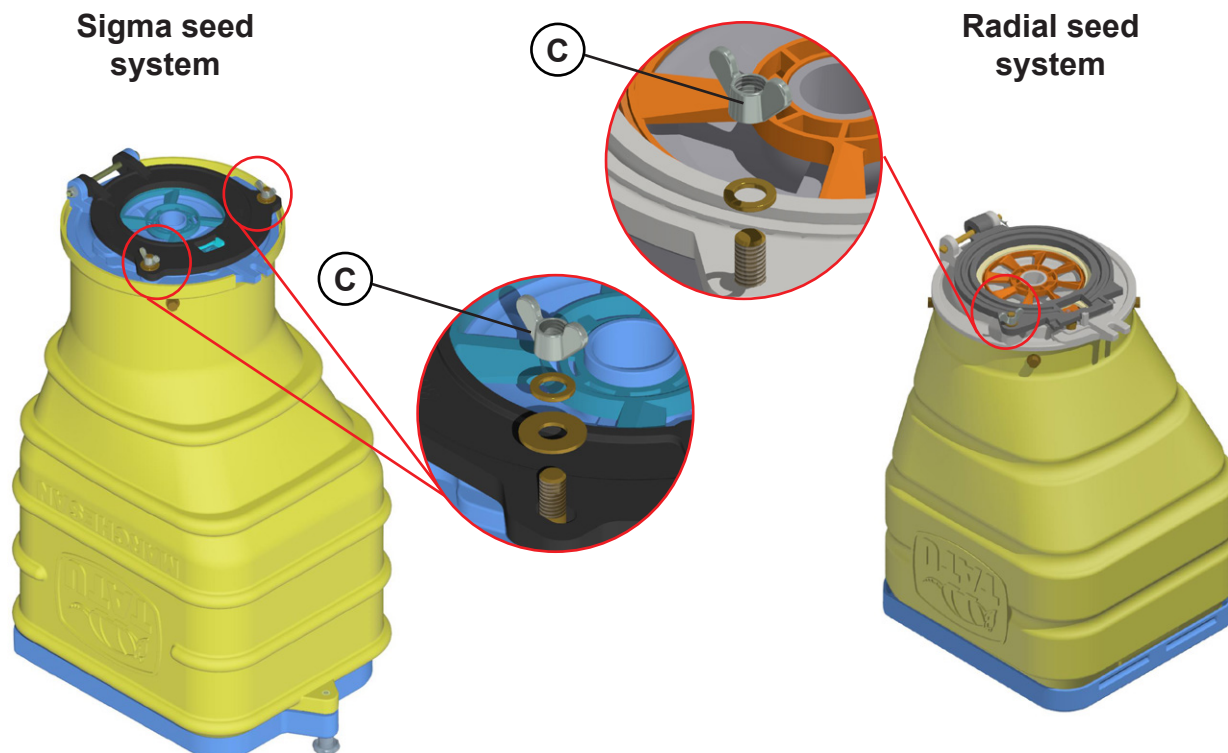
7. Tatu metering - mechanical equipment

Seed plate replacement

1. Before replacing the seed plate, loosen up the lock (A) to free the seed hopper (B).
2. Then, remove the seed hopper (B) from the row unit.



3. Turn the hopper upside down and loosen up the butterfly nut (C), flat and spring washer.

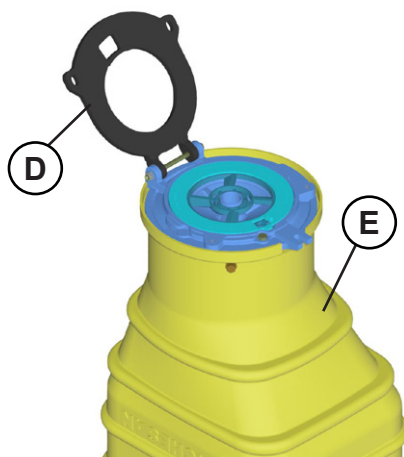


7. Tatu metering - mechanical equipment

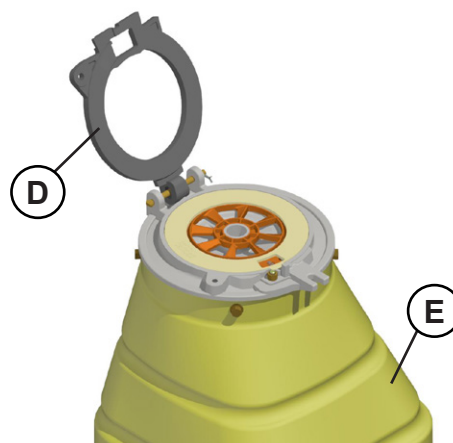
Seed plate replacement

4. Articulate the lower ring (D) to let the seed hopper support (E) completely free.

Sigma seed system

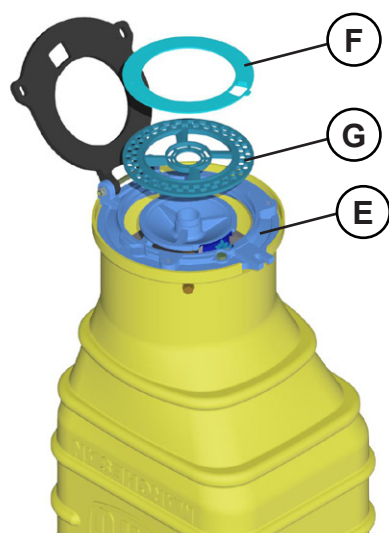


Radial seed system

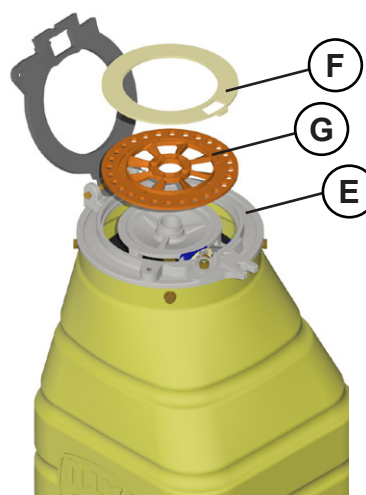


5. Remove the hopper support (E), the ring (F) and the seed plate (G).
6. Now it is possible to replace the seed plate (G) and the ring (F).

Sigma seed system



Radial seed system



ATTENTION

- Always use the ring (F) along with the seed plate (G). Be sure that both have the same measure.

7. Tatu metering - mechanical equipment

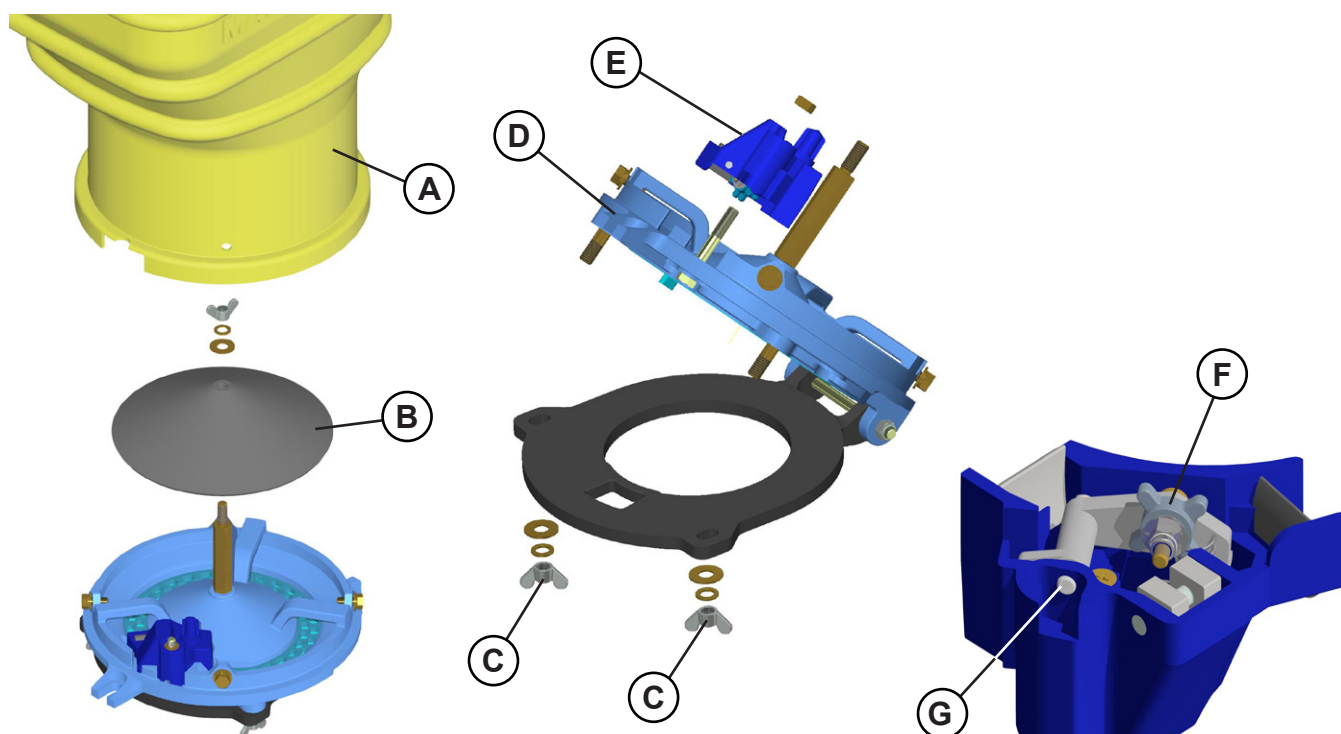
Replacing the seed hopper

To replace the seed hopper (A), proceed as follows:

Release the seed hopper (A) and the deflector (B) that is locked with butterfly nut;

Remove the butterfly nuts (C) that fasten the support (D) on the hopper, articulate the support to let the bolt that lock the seed metering (E) free;

Replace the rocker arm set (F) by removing it from the axle (G).



NOTE

- The conical rollers must be aligned with the seed plate holes.

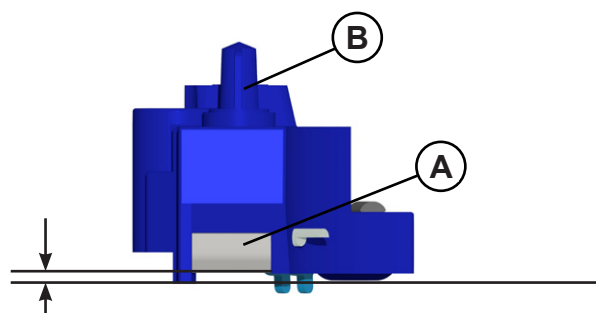
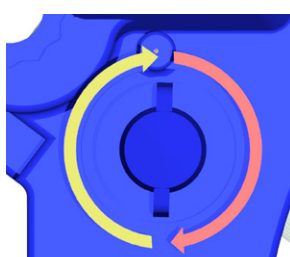
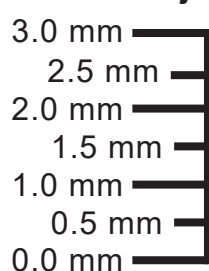
Singulator adjustment

To adjust the singulator (A), proceed as follows:

Turn the adjusting button (B) to the clockwise direction to make the singulator to go up;

Turn the adjusting button (B) to the counterclockwise direction to make the singulator to go down.

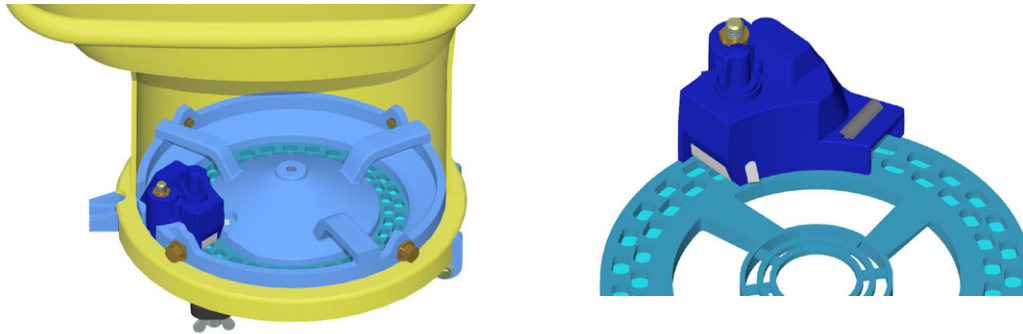
Adjusting button



7. Tatu metering - mechanical equipment

Seed metering cleaning and maintenance

Carry out a general cleaning on the seed system daily. To do so, remove the seed plate and check the functioning of the distribution hopper to assure the best planting performance.



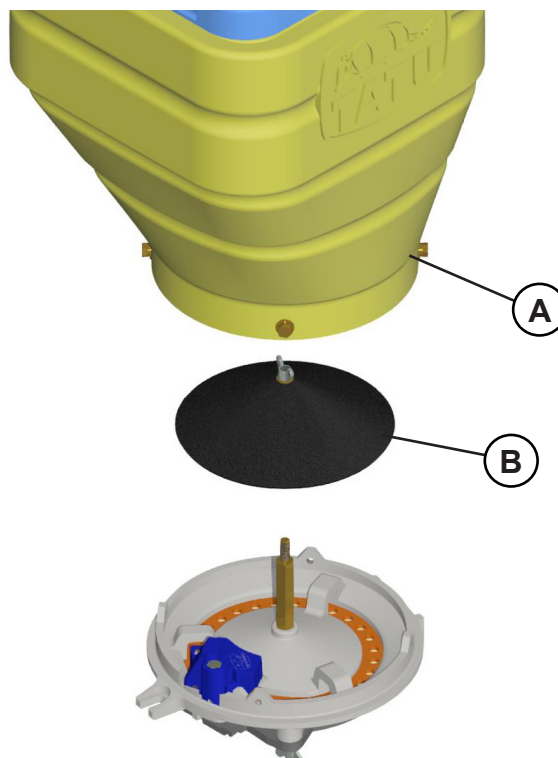
NOTE

- When using graphite with the treated/inoculated seeds, it is necessary to clean the system twice a day.

Replacing the seed ejector and pulleys

To replace the singulator and pulley set, proceed as follows:

1. Release the seed hopper (A) bolts and the deflector (B) that is locked with butterfly nut;

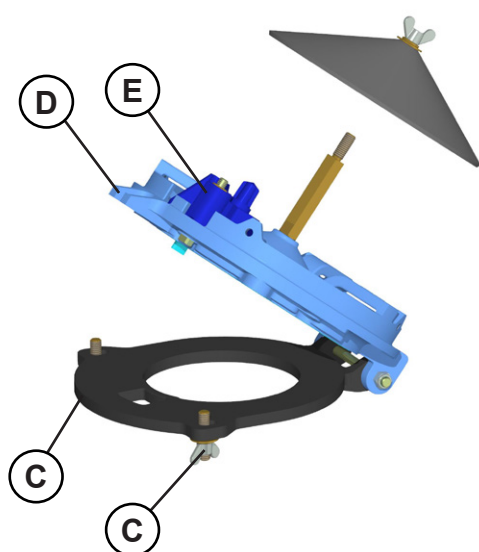


7. Tatu metering - mechanical equipment

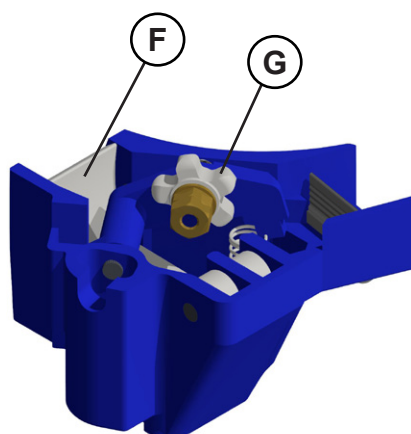
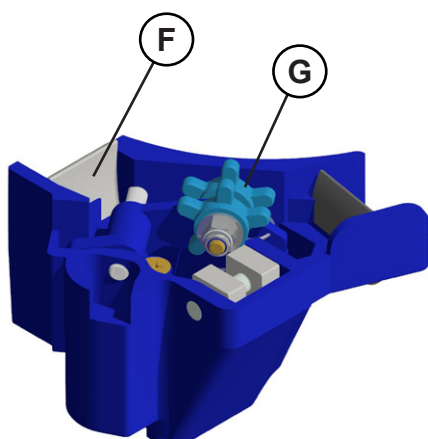
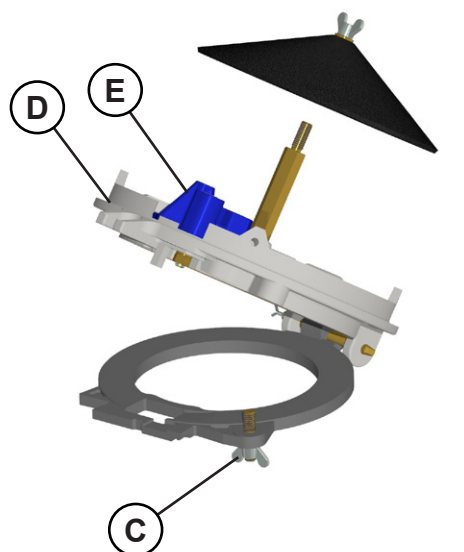
Seed metering cleaning and maintenance

2. Remove the butterfly nuts (C) that fasten the support (D) on the hopper, articulate the support to let the bolt that locks the seed metering (E) free;
3. Replace the singulator (F) and the pulley set (G) according to the planting needs or when wear is noticed.

Sigma seed system



Radial seed system



8. Adjustments and operations



ATTENTION! RISK OF ACCIDENT

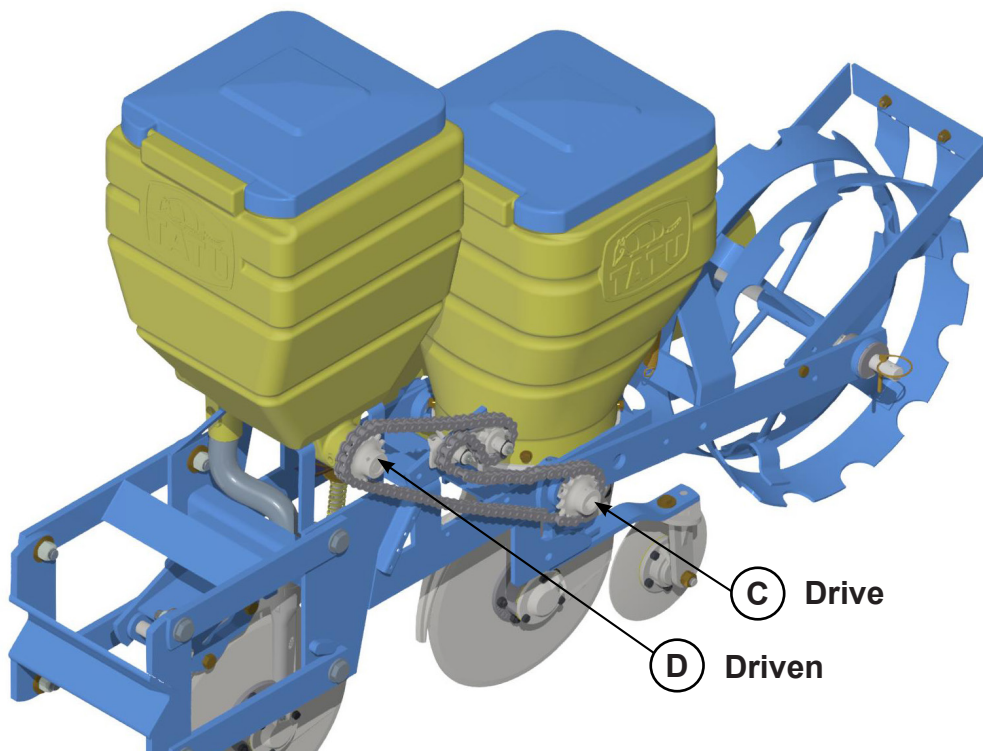
- Only **CAPABLE** and **AUTHORIZED** personnel must carry out the adjustments and operations of the equipment.
- Observe every safety condition and use safety glasses, foot protection, earplugs/muffs, protective gloves and any other required PPE.
- Do not carry out any adjustment while the equipment is working.

Fertilizer distribution

The fertilizer distribution is done through the individual coil pitch augers and the different amount are obtained through the **Drive {C}** and **Driven {D}** sprockets. (Scheme 02).

The definition of the sprockets of the **Scheme 02 (Fertilizer)** is done after the ones on the **Scheme 01 (Seed)** has been defined. Consult the tables on the following pages to check the used combinations to apply different amounts of fertilizer, having spacings that goes from 450 to 900 mm.

**Scheme 02
(Fertilizer)**



NOTE

- Note that the fertilizer table is divided in function to the previously determined combinations.
- The amounts on the table are approximated values, so it is indispensable to carry out the practical distribution test as stated on the 'practical test for seeds and fertilizer distribution' page.

8. Adjustments and operations

Fertilizer distribution

Sprockets			Grams on 50 linear meters for each row unit	Granulated commercial fertilizer distribution table - STP ²											
				Amount of kg/hectare for the different spacing between row units (mm)											
				450	500	550	600	650	700	750	800	850	900		
Scheme 1	Seeds Drive/Driven	Scheme 2 Fertilizer Drive/Driven													
14 x 22	14 x 22	14 x 30	300	133	120	109	100	95	86	80	75	71	67		
14 x 22	14 x 22	16 x 30	343	152	137	125	114	106	98	91	86	81	76		
14 x 22	14 x 22	18 x 30	385	171	154	140	128	118	110	103	96	91	86		
14 x 22	14 x 22	14 x 22	409	182	164	149	136	126	117	109	102	96	91		
14 x 22	14 x 22	16 x 22	467	208	187	170	156	144	133	125	117	110	104		
14 x 22	14 x 22	22 x 30	471	209	188	171	157	145	135	126	118	111	105		
14 x 22	14 x 22	14 x 18	500	222	200	182	167	154	143	133	125	118	111		
14 x 22	14 x 22	18 x 22	526	234	210	191	175	162	150	140	132	124	117		
14 x 22	14 x 22	14 x 16	562	250	160	204	187	173	161	150	141	132	125		
14 x 22	14 x 22	16 x 18	571	254	225	208	190	176	163	152	143	134	127		
14 x 22	14 x 22	18 x 18	642	285	228	233	214	198	183	171	161	151	143		
14 x 22	14 x 22	16 x 14	734	326	257	267	245	226	210	196	184	173	163		
14 x 22	14 x 22	22 x 18	785	349	294	285	262	242	224	209	196	185	174		
14 x 22	14 x 22	18 x 14	826	367	314	300	275	254	236	220	207	194	184		
14 x 22	14 x 22	30 x 22	876	389	330	319	292	270	250	234	219	206	195		
14 x 22	14 x 22	22 x 16	883	392	350	321	294	272	252	235	221	208	196		
14 x 22	14 x 22	22 x 14	1010	449	404	367	337	311	289	269	253	238	224		
14 x 22	14 x 22	30 x 18	1071	476	428	389	357	330	306	286	268	252	238		
14 x 22	14 x 22	30 x 16	1205	536	482	438	402	371	344	321	301	284	268		
14 x 22	14 x 22	30 x 14	1377	612	551	501	459	424	393	367	344	324	306		
16 x 22	16 x 22	14 x 30	343	152	137	125	114	106	98	91	86	81	76		
16 x 22	16 x 22	16 x 30	392	174	157	143	131	121	112	105	98	92	87		
16 x 22	16 x 22	18 x 30	441	196	176	160	147	136	126	118	110	104	98		
16 x 22	16 x 22	14 x 22	467	208	187	170	156	144	133	125	117	110	104		
16 x 22	16 x 22	16 x 22	534	237	214	194	178	164	153	142	134	126	119		
16 x 22	16 x 22	22 x 30	538	239	215	196	179	166	154	143	135	127	120		
16 x 22	16 x 22	14 x 18	571	254	228	208	190	176	163	152	143	134	127		
16 x 22	16 x 22	18 x 22	601	267	240	219	200	185	172	160	150	141	134		
16 x 22	16 x 22	14 x 16	642	285	257	233	214	198	183	171	161	151	143		
16 x 22	16 x 22	16 x 18	653	292	261	237	218	201	187	174	163	154	145		
16 x 22	16 x 22	18 x 18	734	326	294	267	245	226	210	196	184	173	163		
16 x 22	16 x 22	16 x 14	839	373	336	305	280	258	240	224	210	197	186		
16 x 22	16 x 22	22 x 18	897	399	359	326	299	276	256	239	224	211	199		
16 x 22	16 x 22	18 x 14	944	420	378	343	315	290	270	252	236	222	210		
16 x 22	16 x 22	30 x 22	1001	445	400	364	334	308	286	267	250	236	222		
16 x 22	16 x 22	22 x 16	1010	449	404	367	337	311	289	269	253	238	224		
16 x 22	16 x 22	22 x 14	1154	513	462	420	385	355	330	308	289	272	256		
16 x 22	16 x 22	30 x 18	1224	544	490	445	408	377	350	326	306	288	272		
16 x 22	16 x 22	30 x 16	1377	612	551	501	459	424	393	367	344	324	306		
16 x 22	16 x 22	30 x 14	1573	699	629	572	524	484	449	419	393	370	350		

8. Adjustments and operations

Fertilizer distribution

Sprockets			Grams on 50 linear meters for each row unit	Granulated commercial fertilizer distribution table - STP ²											
Scheme 1	Scheme 2	Amount of kg/hectare for the different spacings between row units (mm)													
Seeds Drive/Driven	Fertilizer Drive/Driven	450		500	550	600	650	700	750	800	850	900			
14 x 18	14 x 30	163	146	133	122	113	105	98	92	86	81				
14 x 18	16 x 30	186	168	152	140	129	120	112	105	99	93				
14 x 18	18 x 30	209	188	171	157	145	135	126	118	111	105				
14 x 18	14 x 22	222	200	182	167	154	143	133	125	118	111				
14 x 18	16 x 22	254	228	208	190	176	163	152	143	134	127				
14 x 18	22 x 30	256	230	209	192	177	165	154	144	136	128				
14 x 18	14 x 18	272	244	222	204	188	175	163	153	144	136				
14 x 18	18 x 22	285	257	233	214	198	183	171	161	151	143				
14 x 18	14 x 16	305	275	250	229	211	196	183	172	162	153				
14 x 18	16 x 18	310	279	254	233	215	199	186	175	164	155				
14 x 18	18 x 18	349	314	285	262	242	224	209	196	185	174				
14 x 18	16 x 14	399	259	326	299	276	256	239	224	211	199				
14 x 18	22 x 18	427	384	349	320	295	274	256	240	226	213				
14 x 18	18 x 14	449	404	367	337	311	289	269	253	238	224				
14 x 18	30 x 22	476	428	389	357	330	306	286	268	252	238				
14 x 18	22 x 16	480	432	393	360	332	309	288	270	254	240				
14 x 18	22 x 14	548	494	449	411	380	353	329	309	290	274				
14 x 18	30 x 18	582	524	476	436	403	374	349	327	308	291				
14 x 18	30 x 16	654	589	535	491	453	421	393	368	346	327				
14 x 18	30 x 14	748	673	612	561	518	481	449	421	396	374				
18 x 22	14 x 30	171	154	140	128	118	110	103	96	91	86				
18 x 22	16 x 30	196	176	160	147	136	126	118	110	104	98				
18 x 22	18 x 30	220	198	180	165	153	142	132	124	117	110				
18 x 22	14 x 22	234	210	191	175	162	150	140	132	124	117				
18 x 22	16 x 22	267	240	219	200	185	172	160	150	141	134				
18 x 22	22 x 30	269	242	220	202	186	173	162	152	143	135				
18 x 22	14 x 18	285	257	233	214	198	183	171	161	151	143				
18 x 22	18 x 22	300	270	246	225	208	193	180	169	159	150				
18 x 22	14 x 16	321	289	263	241	222	207	193	181	170	161				
18 x 22	16 x 18	326	294	267	245	226	210	196	184	173	163				
18 x 22	18 x 18	367	330	300	275	254	236	220	207	194	184				
18 x 22	16 x 14	420	378	343	315	290	270	252	236	222	210				
18 x 22	22 x 18	449	404	367	337	311	289	269	253	238	224				
18 x 22	18 x 14	472	425	386	354	327	303	283	266	250	236				
18 x 22	30 x 22	500	450	409	375	346	322	300	282	265	250				
18 x 22	22 x 16	505	454	413	379	350	325	303	284	267	252				
18 x 22	22 x 14	577	519	472	433	399	371	346	325	305	288				
18 x 22	30 x 18	612	551	501	459	424	393	367	344	324	306				
18 x 22	30 x 16	688	620	563	516	477	443	413	387	364	344				
18 x 22	30 x 14	787	708	644	590	545	506	472	443	416	393				

8. Adjustments and operations

Fertilizer distribution

Sprockets			Grams on 50 linear meters for each row unit	Granulated commercial fertilizer distribution table - STP ²											
				Amount of kg/hectare for the different spacings between row units (mm)											
				450	500	550	600	650	700	750	800	850	900		
Scheme 1	Seeds Drive/Driven	Scheme 2	Fertilizer Drive/Driven	183	165	150	137	127	118	110	103	97	92		
14 x 16	14 x 16	14 x 30	14 x 30	209	188	171	157	145	135	126	118	111	105		
14 x 16	14 x 16	18 x 30	18 x 30	236	212	193	177	163	151	141	133	125	118		
14 x 16	14 x 16	14 x 22	14 x 22	250	225	204	187	173	161	150	141	132	125		
14 x 16	14 x 16	16 x 22	16 x 22	285	257	233	214	198	183	171	161	151	143		
14 x 16	14 x 16	22 x 30	22 x 30	288	259	236	216	199	185	173	162	152	144		
14 x 16	14 x 16	14 x 18	14 x 18	305	275	250	229	211	196	183	172	162	153		
14 x 16	14 x 16	18 x 22	18 x 22	321	289	263	241	222	207	193	181	170	161		
14 x 16	14 x 16	14 x 16	14 x 16	344	309	281	258	238	221	206	193	182	172		
14 x 16	14 x 16	16 x 18	16 x 18	349	314	285	262	242	224	209	196	185	174		
14 x 16	14 x 16	18 x 18	18 x 18	392	353	321	294	272	252	235	221	208	196		
14 x 16	14 x 16	16 x 14	16 x 14	449	404	367	337	311	289	269	253	238	224		
14 x 16	14 x 16	22 x 18	22 x 18	480	432	393	360	332	309	288	270	254	240		
14 x 16	14 x 16	18 x 14	18 x 14	505	454	413	379	350	325	303	284	267	252		
14 x 16	14 x 16	30 x 22	30 x 22	536	482	438	402	371	344	321	301	284	268		
14 x 16	14 x 16	22 x 16	22 x 16	540	486	442	405	374	347	324	304	286	270		
14 x 16	14 x 16	22 x 14	22 x 14	617	555	505	463	427	397	370	347	327	308		
14 x 16	14 x 16	30 x 18	30 x 18	654	589	535	491	453	421	393	368	346	327		
14 x 16	14 x 16	30 x 16	30 x 16	736	662	602	552	510	473	442	414	390	368		
14 x 16	14 x 16	30 x 14	30 x 14	841	757	688	631	582	541	505	473	445	421		
16 x 18	16 x 18	14 x 30	14 x 30	186	168	152	140	129	120	112	105	99	93		
16 x 18	16 x 18	16 x 30	16 x 30	213	192	174	160	147	137	128	120	113	106		
16 x 18	16 x 18	18 x 30	18 x 30	239	215	196	179	166	154	143	135	127	120		
16 x 18	16 x 18	14 x 22	14 x 22	254	228	208	190	176	163	152	143	134	127		
16 x 18	16 x 18	16 x 22	16 x 22	290	261	237	218	201	187	174	163	154	145		
16 x 18	16 x 18	22 x 30	22 x 30	292	263	239	219	202	188	175	165	155	146		
16 x 18	16 x 18	14 x 18	14 x 18	310	279	254	233	215	199	186	175	164	155		
16 x 18	16 x 18	18 x 22	18 x 22	326	294	267	245	226	210	196	184	173	163		
16 x 18	16 x 18	14 x 16	14 x 16	349	314	285	262	242	224	209	196	185	174		
16 x 18	16 x 18	16 x 18	16 x 18	355	319	290	266	246	228	213	200	188	177		
16 x 18	16 x 18	18 x 18	18 x 18	399	359	326	299	276	256	239	224	211	199		
16 x 18	16 x 18	16 x 14	16 x 14	456	410	373	342	316	293	274	257	241	228		
16 x 18	16 x 18	22 x 18	22 x 18	488	439	399	366	338	313	293	274	258	244		
16 x 18	16 x 18	18 x 14	18 x 14	513	462	420	385	355	330	308	289	272	256		
16 x 18	16 x 18	30 x 22	30 x 22	544	490	445	408	377	350	326	306	288	272		
16 x 18	16 x 18	22 x 16	22 x 16	548	494	449	411	380	353	329	309	290	274		
16 x 18	16 x 18	22 x 14	22 x 14	627	564	513	470	434	403	376	353	332	313		
16 x 18	16 x 18	30 x 18	30 x 18	665	598	544	499	460	427	399	374	352	332		
16 x 18	16 x 18	30 x 16	30 x 16	748	673	612	561	518	481	449	421	396	374		
16 x 18	16 x 18	30 x 14	30 x 14	855	769	699	641	592	549	513	481	452	427		

8. Adjustments and operations

Fertilizer distribution

Sprockets			Grams on 50 linear meters for each row unit	Granulated commercial fertilizer distribution table - STP ²										
Scheme 1	Scheme 2	Amount of kg/hectare for the different spacings between row units (mm)												
Seeds Drive/Driven	Fertilizer Drive/Driven	450		500	550	600	650	700	750	800	850	900		
18 x 18	14 x 30	209	188	171	157	145	135	126	118	111	105			
18 x 18	16 x 30	239	215	196	179	166	154	143	135	127	120			
18 x 18	18 x 30	269	242	220	202	186	173	162	152	143	135			
18 x 18	14 x 22	285	257	233	214	198	183	171	161	151	143			
18 x 18	16 x 22	326	294	267	245	226	210	196	184	173	163			
18 x 18	22 x 30	329	296	269	247	228	211	197	185	174	164			
18 x 18	14 x 18	349	314	285	262	242	224	209	196	185	174			
18 x 18	18 x 22	367	330	300	275	254	236	220	207	194	184			
18 x 18	14 x 16	392	353	321	294	272	252	235	221	208	196			
18 x 18	16 x 18	399	359	326	299	276	256	239	224	211	199			
18 x 18	18 x 18	449	404	367	337	311	289	269	253	238	224			
18 x 18	16 x 14	513	462	420	385	355	330	308	289	272	256			
18 x 18	22 x 18	548	494	449	411	380	353	329	309	290	274			
18 x 18	18 x 14	577	519	472	433	399	371	346	325	305	288			
18 x 18	30 x 22	612	551	501	459	424	393	367	344	324	306			
18 x 18	22 x 16	617	555	505	463	427	397	370	347	327	308			
18 x 18	22 x 14	705	635	577	529	488	453	423	397	373	353			
18 x 18	30 x 18	748	673	612	561	518	481	449	421	396	374			
18 x 18	30 x 16	841	757	688	631	582	541	505	473	445	421			
18 x 18	30 x 14	961	865	787	721	666	618	577	541	509	481			
18 x 16	14 x 30	236	212	193	177	163	151	141	133	125	118			
18 x 16	16 x 30	269	242	220	202	186	173	162	152	143	135			
18 x 16	18 x 30	303	272	248	227	210	195	182	170	160	151			
18 x 16	14 x 22	321	289	263	241	222	207	193	181	170	161			
18 x 16	16 x 22	367	330	300	275	254	236	220	207	194	184			
18 x 16	22 x 30	370	333	303	278	256	238	222	208	196	185			
18 x 16	14 x 18	392	353	321	294	272	252	235	221	208	196			
18 x 16	18 x 22	413	372	338	310	286	265	248	232	219	206			
18 x 16	14 x 16	442	398	361	331	306	284	265	249	234	221			
18 x 16	16 x 18	449	404	367	337	311	289	269	253	238	224			
18 x 16	18 x 18	505	454	413	379	350	325	303	284	267	252			
18 x 16	16 x 14	577	519	472	433	399	371	346	325	305	288			
18 x 16	22 x 18	617	555	505	463	427	397	370	347	327	308			
18 x 16	18 x 14	649	584	531	487	449	417	389	365	344	324			
18 x 16	30 x 22	688	620	563	516	477	443	413	387	364	344			
18 x 16	22 x 16	694	625	568	521	481	446	417	391	368	347			
18 x 16	22 x 14	793	714	649	595	549	510	476	446	420	397			
18 x 16	30 x 18	841	757	688	631	582	541	505	473	445	421			
18 x 16	30 x 16	947	852	775	710	655	609	568	533	501	473			
18 x 16	30 x 14	1082	974	885	811	749	695	649	609	573	541			

8. Adjustments and operations

Fertilizer distribution

Sprockets			Grams on 50 linear meters for each row unit	Granulated commercial fertilizer distribution table - STP ²											
				Amount of kg/hectare for the different spacings between row units (mm)											
				450	500	550	600	650	700	750	800	850	900		
Scheme 1	Seeds Drive/Driven	Scheme 2 Fertilizer Drive/Driven													
16 x 14	16 x 14	14 x 30	538	239	215	196	179	166	154	143	135	127	120		
16 x 14	16 x 14	16 x 30	615	273	246	224	205	189	176	164	154	145	137		
16 x 14	16 x 14	18 x 30	692	308	277	252	231	213	198	185	173	163	154		
16 x 14	16 x 14	14 x 22	734	326	294	267	245	226	210	196	184	173	163		
16 x 14	16 x 14	16 x 22	839	373	336	305	280	258	240	224	210	197	186		
16 x 14	16 x 14	22 x 30	846	376	338	308	282	260	242	226	212	199	188		
16 x 14	16 x 14	14 x 18	897	399	359	326	299	276	256	239	224	211	199		
16 x 14	16 x 14	18 x 22	944	420	378	343	315	290	270	252	236	222	210		
16 x 14	16 x 14	14 x 16	1010	449	404	367	337	311	289	269	253	238	224		
16 x 14	16 x 14	16 x 18	1026	456	410	373	342	316	293	274	257	241	228		
16 x 14	16 x 14	18 x 18	1154	513	462	420	385	355	330	308	289	272	256		
16 x 14	16 x 14	16 x 14	1319	586	528	480	440	406	377	352	330	310	293		
16 x 14	16 x 14	22 x 18	1410	627	564	513	470	434	403	376	353	332	313		
16 x 14	16 x 14	18 x 14	1484	660	594	540	495	457	424	396	371	349	330		
16 x 14	16 x 14	30 x 22	1573	699	629	572	524	484	449	419	393	370	350		
16 x 14	16 x 14	22 x 16	1587	705	635	577	529	488	453	423	397	373	353		
16 x 14	16 x 14	22 x 14	1813	806	725	659	604	558	518	483	453	427	403		
16 x 14	16 x 14	30 x 18	1923	855	769	699	641	592	549	513	481	452	427		
16 x 14	16 x 14	30 x 16	2163	961	865	787	721	666	618	577	541	509	481		
16 x 14	16 x 14	30 x 14	2473	1099	989	899	824	761	707	659	618	582	550		
22 X 18	22 X 18	14 x 30	576	256	230	209	192	177	165	154	144	136	128		
22 X 18	22 X 18	16 x 30	658	292	263	239	219	202	188	175	165	155	146		
22 X 18	22 X 18	18 x 30	740	329	296	269	247	228	211	197	185	174	164		
22 X 18	22 X 18	14 x 22	785	349	314	285	262	242	224	209	196	185	174		
22 X 18	22 X 18	16 x 22	897	399	359	326	299	276	256	239	224	211	199		
22 X 18	22 X 18	22 x 30	905	402	362	329	302	278	259	241	226	213	201		
22 X 18	22 X 18	14 x 18	960	427	384	349	320	295	274	256	240	226	213		
22 X 18	22 X 18	18 x 22	1010	449	404	367	337	311	289	269	253	238	224		
22 X 18	22 X 18	14 x 16	1080	480	432	393	360	332	309	288	270	254	240		
22 X 18	22 X 18	16 x 18	1097	488	439	399	366	338	313	293	274	258	244		
22 X 18	22 X 18	18 x 18	1234	548	494	449	411	380	353	329	309	290	274		
22 X 18	22 X 18	16 x 14	1410	627	564	513	470	434	403	376	353	332	313		
22 X 18	22 X 18	22 x 18	1508	670	603	548	503	464	431	402	377	355	335		
22 X 18	22 X 18	18 x 14	1587	705	635	577	529	488	453	423	397	373	353		
22 X 18	22 X 18	30 x 22	1683	748	673	612	561	518	481	449	421	396	374		
22 X 18	22 X 18	22 x 16	1697	754	679	617	566	522	485	453	424	399	377		
22 X 18	22 X 18	22 x 14	1939	862	776	705	646	597	554	517	485	456	431		
22 X 18	22 X 18	30 x 18	2057	914	823	748	686	633	588	549	514	484	457		
22 X 18	22 X 18	30 x 16	2314	1028	926	841	771	712	661	617	579	544	514		
22 X 18	22 X 18	30 x 14	2644	1175	1058	961	881	814	755	705	661	622	588		

8. Adjustments and operations

Fertilizer distribution

Sprockets			Grams on 50 linear meters for each row unit		Granulated commercial fertilizer distribution table - STP ²											
Scheme 1	Scheme 2	Amount of kg/hectare for the different spacings between row units (mm)														
Seeds Drive/Driven	Fertilizer Drive/Driven	450			500	550	600	650	700	750	800	850	900			
18 x 14	14 x 30	606	269	242	220	202	186	173	162	152	143	135				
18 x 14	16 x 30	692	308	277	252	231	213	198	185	173	163	154				
18 x 14	18 x 30	779	346	312	283	260	240	223	208	195	183	173				
18 x 14	14 x 22	826	367	330	300	275	254	236	220	207	194	184				
18 x 14	16 x 22	944	420	378	343	315	290	270	252	236	222	210				
18 x 14	22 x 30	952	423	381	346	317	293	272	254	238	224	212				
18 x 14	14 x 18	1010	449	404	367	337	311	289	269	253	238	224				
18 x 14	18 x 22	1062	472	425	386	354	327	303	283	266	250	236				
18 x 14	14 x 16	1136	505	454	413	379	350	325	303	284	267	252				
18 x 14	16 x 18	1154	513	462	420	385	355	330	308	289	272	256				
18 x 14	18 x 18	1298	577	519	472	433	399	371	346	325	305	288				
18 x 14	16 x 14	1484	660	594	540	495	457	424	396	371	349	330				
18 x 14	22 x 18	1587	705	635	577	529	488	453	423	397	373	353				
18 x 14	18 x 14	1669	742	668	607	556	514	477	445	417	393	371				
18 x 14	30 x 22	1770	787	708	644	590	545	506	472	443	416	393				
18 x 14	22 x 16	1875	833	750	682	625	577	536	500	469	441	417				
18 x 14	22 x 14	2040	907	816	742	680	628	583	544	510	480	453				
18 x 14	30 x 18	2163	961	865	787	721	666	618	577	541	509	481				
18 x 14	30 x 16	2434	1082	974	885	811	749	695	649	609	573	541				
18 x 14	30 x 14	2782	1236	1113	1012	927	856	795	742	696	655	618				
22 x 16	14 x 30	648	288	259	236	216	199	185	173	162	152	144				
22 x 16	16 x 30	740	329	296	269	247	228	211	197	185	174	164				
22 x 16	18 x 30	833	370	333	303	278	256	238	222	208	196	185				
22 x 16	14 x 22	883	392	353	321	294	272	252	235	221	208	196				
22 x 16	16 x 22	1010	449	404	367	337	311	289	269	253	238	224				
22 x 16	22 x 30	1018	452	407	370	339	313	291	271	255	240	226				
22 x 16	14 x 18	1080	480	432	393	360	332	309	288	270	254	240				
22 x 16	18 x 22	1136	505	454	413	379	350	325	303	284	267	252				
22 x 16	14 x 16	1215	540	486	442	405	374	347	324	304	286	270				
22 x 16	16 x 18	1234	548	494	449	411	380	353	329	309	290	274				
22 x 16	18 x 18	1388	617	555	505	463	427	397	370	347	327	308				
22 x 16	16 x 14	1587	705	635	577	529	488	453	423	397	373	353				
22 x 16	22 x 18	1697	754	679	617	566	522	485	453	424	399	377				
22 x 16	18 x 14	1785	793	714	649	595	549	510	476	446	420	397				
22 x 16	30 x 22	1893	841	757	688	631	582	541	505	473	445	421				
22 x 16	22 x 16	1909	848	764	694	636	587	545	509	477	449	424				
22 x 16	22 x 14	2181	969	872	793	727	671	623	582	545	513	485				
22 x 16	30 x 18	2314	1028	926	841	771	712	661	617	579	544	514				
22 x 16	30 x 16	2603	1157	1041	947	868	801	744	694	651	612	578				
22 x 16	30 x 14	2975	1322	1190	1082	992	915	850	793	744	700	661				

8. Adjustments and operations

Fertilizer distribution

Sprockets			Granulated commercial fertilizer distribution table - STP ²												
			Grams on 50 linear meters for each row unit	Amount of kg/hectare for the different spacings between row units (mm)											
				450	500	550	600	650	700	750	800	850	900		
Scheme 1	Scheme 2														
Seeds Drive/Driven	Fertilizer Drive/Driven														
22 x 14	14 x 30		740	329	296	269	247	228	211	197	185	174	164		
22 x 14	16 x 30		846	376	338	308	282	260	242	226	212	199	188		
22 x 14	18 x 30		952	423	381	346	317	293	272	254	238	224	212		
22 x 14	14 x 22		1010	449	404	367	337	311	289	269	253	238	224		
22 x 14	16 x 22		1154	513	462	420	385	355	330	308	289	272	256		
22 x 14	22 x 30		1163	517	465	423	388	358	332	310	291	274	258		
22 x 14	14 x 18		1234	548	494	449	411	380	353	329	309	290	274		
22 x 14	18 x 22		1298	577	519	472	433	399	371	346	325	305	288		
22 x 14	14 x 16		1388	617	555	505	463	427	397	370	347	327	308		
22 x 14	16 x 18		1410	627	564	513	470	434	403	376	353	332	313		
22 x 14	18 x 18		1587	705	635	577	529	488	453	423	397	373	353		
22 x 14	16 x 14		1813	806	725	659	604	558	518	483	453	427	403		
22 x 14	22 x 18		1939	862	776	705	646	597	554	517	485	456	431		
22 x 14	18 x 14		2040	907	816	742	680	628	583	544	510	480	453		
22 x 14	30 x 22		2163	961	865	787	721	666	618	577	541	509	481		
22 x 14	22 x 16		2181	969	872	793	727	671	623	582	545	513	485		
22 x 14	22 x 14		2493	1108	997	907	831	767	712	665	623	587	554		
22 x 14	30 x 18		2644	1175	1058	961	881	814	755	705	661	622	588		
22 x 14	30 x 16		2975	1322	1190	1082	992	915	850	793	744	700	661		
22 x 14	30 x 14		3400	1511	1360	1236	1133	1046	971	907	850	800	756		

8. Adjustments and operations

Practical test of seed and fertilizer distribution

IMPORTANT

- The data on the previous tables (seed and fertilizer) can vary due to several factors. Therefore, carefully observe the following procedures.

The most indicated way to assess the amount of seed and fertilizer rate is performing the test on the same field the plantation will take place, following these steps:

1. Whenever possible, use the same tractor and operator to perform the plantation.
2. Mark the distance for the test. Fertilizer table example: 50 linear meters.
3. Adjust the pressure of the row units over the soil, according to the instructions on the 'row units pressure adjustment and gauge wheels adjustment' page.
4. Fill up the planter hoppers at least to the half and then drive some meters to completely fill the meterings before entering in the delimited area.
5. Place the collection bags in the fertilizer dispensers (preferably use plastic bags). In the seed dispensers, use cotton waste to hinder the exits.
6. Drive the tractor in the delimited space, using the same speed that will be used in the whole plantation.
7. Recommended speeds:
 - **5 to 6 km/h** for corn and sunflower plantation.
 - **6 km/h** for bean/sorghum/acid delinted cotton plantation.
 - **7 km/h** for soybean plantation.
8. Weigh the fertilizer contained in the bags and compare it to the tables on the previous pages. **(Grams in 50 meters on each row unit)**.
9. Remove the cotton waste of the seed dispensers, picking up the seeds for counting. By doing so, it is also possible to check if there is any damage on them.
10. If necessary, redo the tests changing the adjustments.
11. After getting the desired amount and still in the field, move the tractor in the same speed, leaving the fertilizer and seed to reach the soil for better verifying the distribution uniformity. Check the depth adjustment on the 'fertilizer position and depth on the soil' and 'row units pressure adjustment and gauge wheels adjustment' pages.

ATTENTION

- The working speed affects the uniform seed distribution.
- When there is a change in the batch of seeds as well as in the fertilizer manufacturer, everything must be assessed again.
- It is important to assess all adjustments again after the first day of work.

8. Adjustments and operations

Auxiliary calculation for fertilizer distribution

To distribute other amounts of fertilizer in different spacings and areas from those presented in the tables we suggest a quick calculation, where all used data can be changed to ones of your own interest. Use the formula below, which contains the following elements:

A = Area to be fertilized (m²).

B = Spacing between rows of the crop (m).

C = Amount of fertilizer to be distributed in the area (kg).

D = Distance to travel for the distribution test (m).

X = How many grams should be dropped in "D"?

Formula:

$$X = \frac{B \times C}{A} \times D$$

Example:

A = 10,000 m²

B = 0.90 m

C = 250 kg

D = 50 m

X = ?

$$X = \frac{0.90 \times 250}{10,000} = 0.0225 \times 50$$

X = 1.125 kg or

X = 1,125 grams on 50 meters for each row unit.

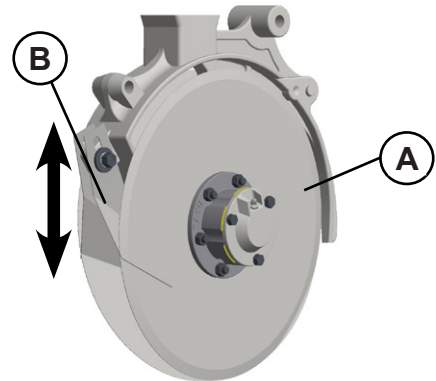
Adjust the equipment to distribute the found amount or the best approximation in the delimited space for the test.

The amount of "grams on 50 meters for each row unit" appears on the column of several tables of this manual.

8. Adjustments and operations

Opening the furrows for fertilizer and seeds

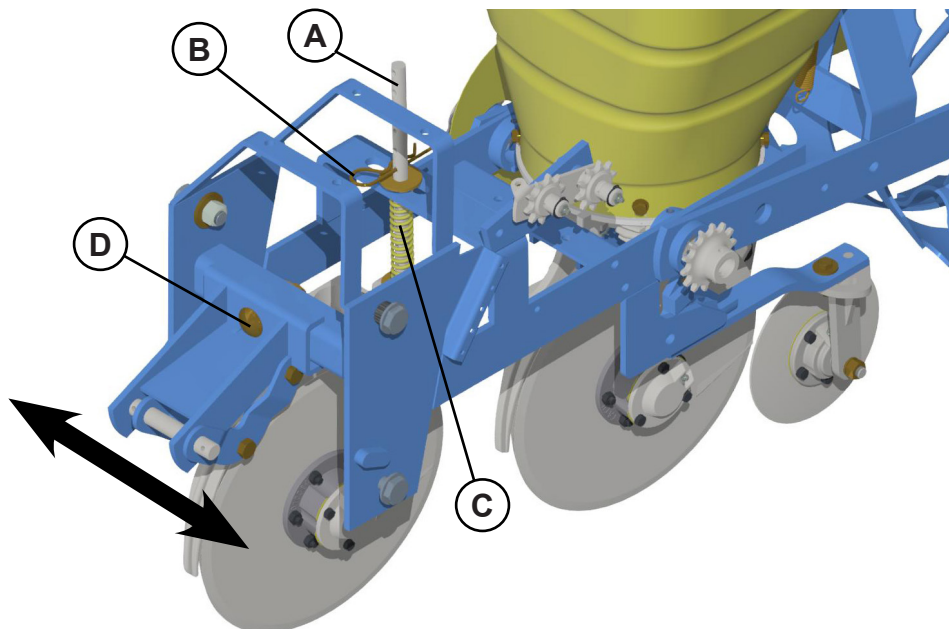
The opening of the furrows is done using the double discs (A), which have adjustable and flexible internal scrapers (B) to remove the earth that accumulates on the inner part of the discs.



Fertilizer depth and position over the soil

The fertilizer is deposited over the soil using the double discs, which have adjustments to change the depth and position related to the seeds, as follows:

1. The fertilizer depth is adjusted by the slotted rod (A); change the cotter pins (B) proportionally for a greater spring (C) pressure.
2. The fertilizer position related to the seeds (on the same row or below, or on the lateral and below) must be adjusted by loosening the bolt (D) and displacing the double disc to the desired position.



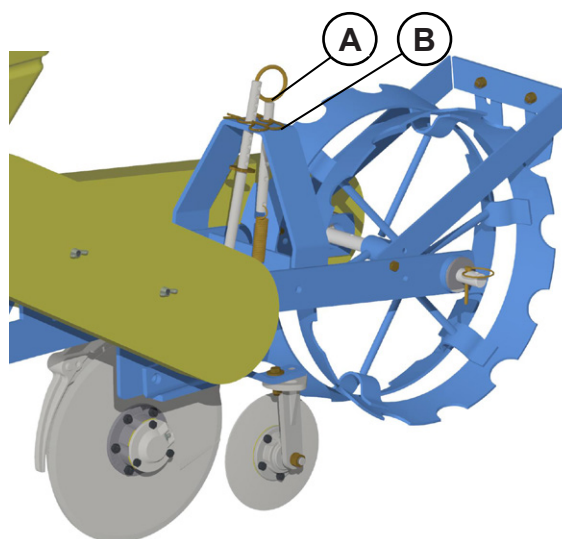
NOTE

- The fertilizer position related to the seeds must be well observed so it will not compromise the crop.

8. Adjustments and operations

Row units pressure and gauge wheels adjustment

For a better oscillation of the row units during the crop and to reduce the slippage index of the gauge wheels, use the adjustment on the rods with springs (A). To do so, apply pressure to the springs using the cotter pins (B).



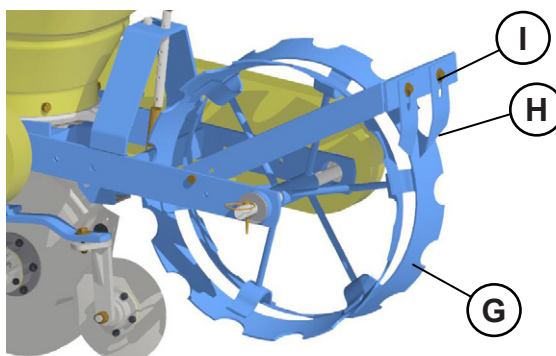
NOTE

- As an starting point, we suggest to use the second hole on the rod (A), which may be adjusted depending on the local conditions.
- This adjustment induce the plants emergence, so it must be properly controlled.
- Greater or lesser pressure on the row units increase or decrease the slippage index of the gauge wheels.

The iron gauge wheel (G) has the function to press the soil around the seed, letting it loose over it.

The scrapers (H) are adjusted through the bolts (I) to keep the wheels clean and to assure a depth uniformity.

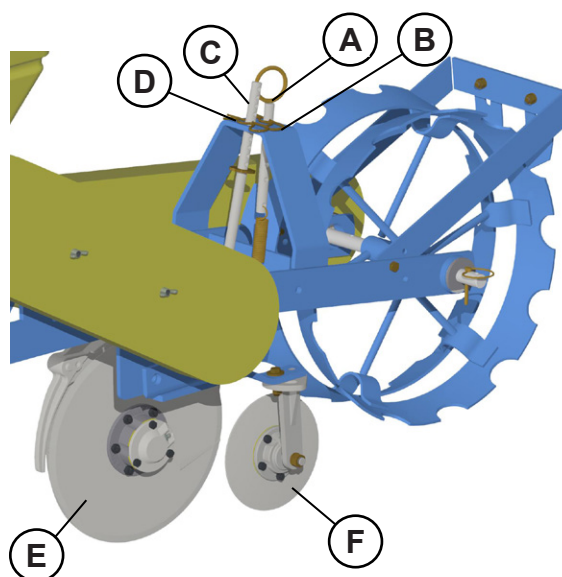
The rubber gauge wheel is used for cultures that do not required pressure over the seeds.



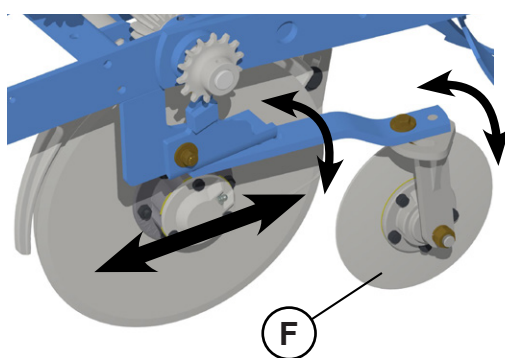
8. Adjustments and operations

Depth and coverage of the seeds

The seeds depth is adjusted by the rod (C) when changing the cotter pin (D) position. This adjustment determines the working depth of the double discs (E).



The seed coverage is done using the gauge wheels (iron or rubber), with the aid of the covering discs (F). These discs have distance and angle adjustments that relates to the double disc, therefore throwing more or less earth over the seeds.



8. Adjustments and operations

Row markers

The row marker utilization is very important to achieve an uniform spacing in the plantation, thus facilitating the cultivation and harvest.

To adjust the marker discs it is just necessary to loosen up the bolts (A) and displace the marker to the desired position. This distance can be obtained as follows:

NOTE

- For this practical adjustment it is necessary to keep the front and rear gauges with the same measure, being the central measure of the front tires equal to the rear ones.

Drive some meters on a prepared soil, being the planter hitched.

Measure the distance (D) between the center of the tractor trace and the center of the first seed row (row in the planter extremity).

Sum up the found measure with the spacing between rows (E) measure, considering the spacing that is being used in the equipment.

The result is the distance (F) that should exist between the row marker disc and the center of the first seed row (row in the planter extremity).

Example:

D - Tractor trace center to the center of the first seed row = 600 mm.

E - Spacing between row crops = 900 mm.

F - Distance to be found (?).

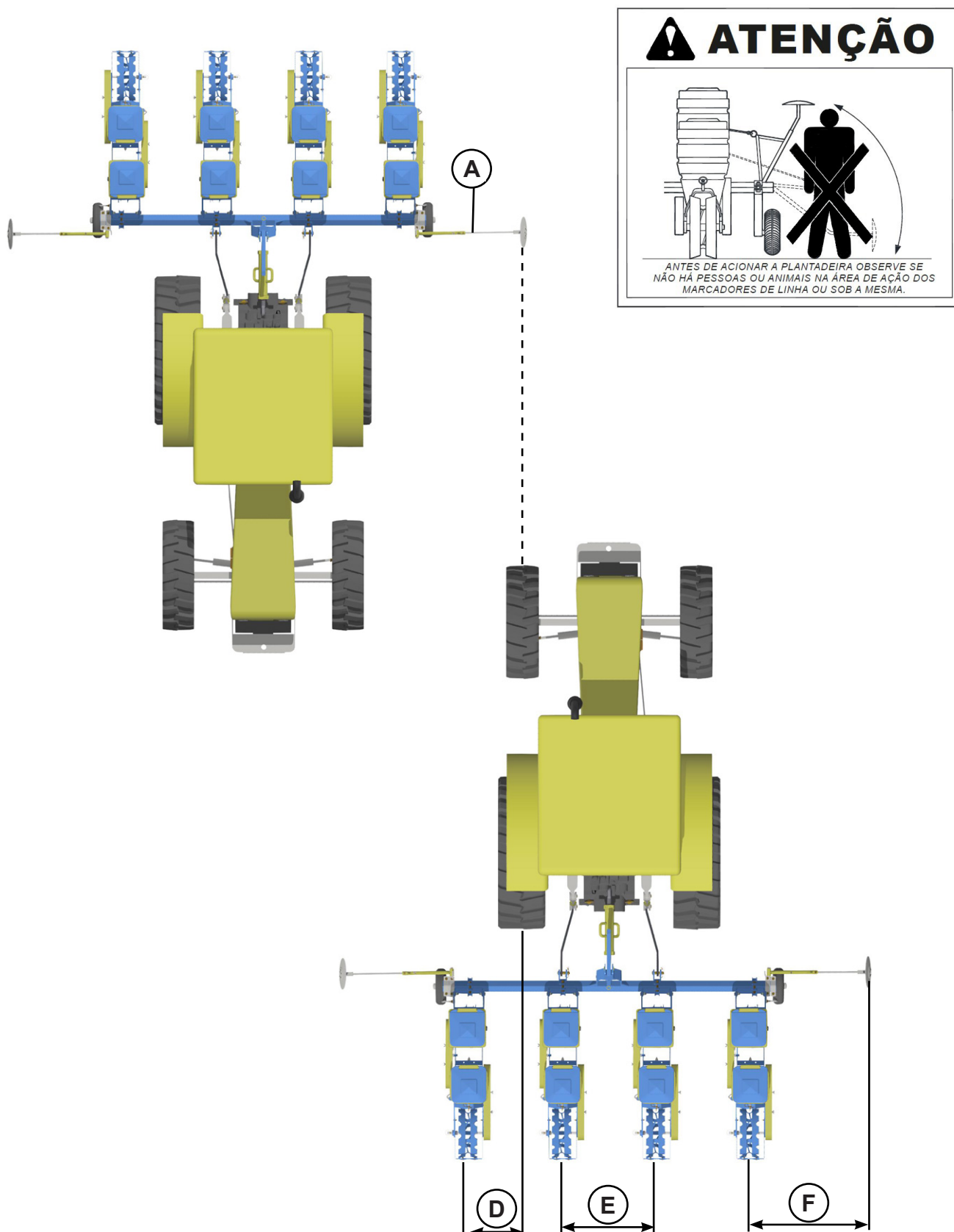
$$\begin{array}{rclclcl} \text{So:} & \mathbf{D} & + & \mathbf{E} & = & \mathbf{F} \\ & 600 & + & 900 & = & 1,500 \text{ mm.} \end{array}$$

$$\mathbf{F = 1,500 \text{ mm}}$$

This is the distance between the center of the first seed row and the marker disc lowered to the soil.

8. Adjustments and operations

Row markers



8. Adjustments and operations

Operations - important points



1. Retighten nuts and bolts after the first day of planting. Check the conditions of all pins and cotter pins.
2. Carefully observe the lubrication intervals.
3. Keep the lower arms of the tractor hydraulic lift adjusted.
4. When filling up the planter, observe its proper hitching to the tractor. Verify if there is any object inside the hoppers that may cause damage to the metering devices.
5. Always use seeds and fertilizer free from impurities.
6. Clean the seed hoppers twice a day and check the proper functioning of the fertilizer metering system.
7. Keep the equipment leveled.
8. Periodically check the established adjustments in the beginning of the plantation.
9. Always remember to adjust the seeds first and then the fertilizer.
10. Give special attention to the fertilizer position related to the seed.
11. Carefully check the seed depth and the compaction pressure.
12. It is important to maintain a constant speed in the whole plantation.
13. Use the row markers correctly to avoid future wastes.
14. Never make maneuvers or use reverse gear when the rows are touching the soil.
15. To make any verification in the equipment, it is necessary to lower it to the ground and shut down the tractor engine.
16. During working or transportation, the presence of passengers on the tractor or equipment is not allowed.
17. As previously mentioned, this planter features several adjustments. However, only the local conditions can determine its best adjustment.

9. Optional

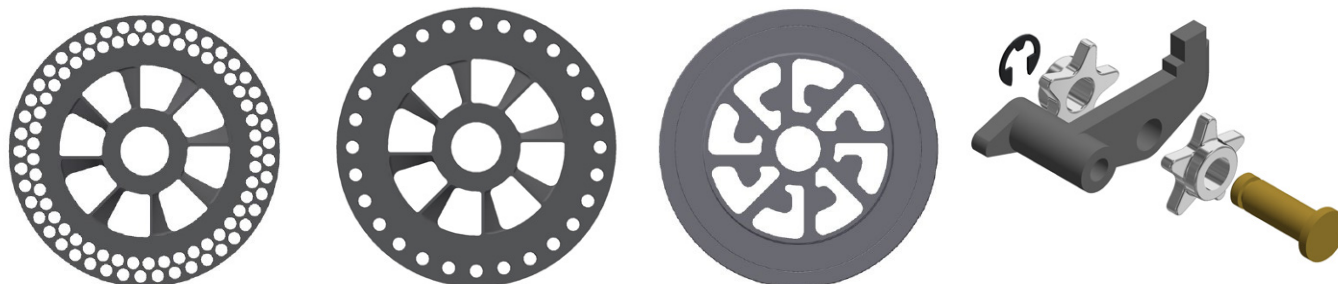
Seed plates - radial (until 03/2022)

Optionally, MARCHESAN supplies slotted, perforated or blind seed plates for several crops, according to the list below:

Seed plates	Amount of holes/slots	Hole/slot dimension	Thickness	Serial number
Corn	24 holes	Ø 11 mm	4.5 mm	05.02.02.0351
Corn	24 holes	Ø 9.5 mm	4.5 mm	05.02.02.0366
Soybean	40 slots	9 x 14 mm	8.5 mm	05.02.02.0329
Soybean	94 holes	Ø 8 mm	5.5 mm	05.03.03.1933
Soybean	34 slots	10 x 16 mm	8.5 mm	05.02.02.0328
Bean	34 slots	10 x 16.5 mm	5.5 mm	05.02.02.0333
Bean	38 slots	9 x 19.5 mm	5.5 mm	05.02.02.0408
Bean/Delinted cotton	40 slots	7 x 12 mm	4.5 mm	05.02.02.0419
Bean/Delinted cotton	64 slots	7 x 12 mm	4.5 mm	05.02.02.0585
Sorghum	40 holes	Ø 6 mm	5.5 mm	05.03.03.2007
Rice	40 slots	7 x 17 mm	5.5 mm	05.02.02.0346
Sunflower	28 slots	4.5 x 12 mm	3.0 mm	05.03.03.2008
Sunflower	28 slots	6 x 13 mm	4.5 mm	05.02.02.0554
* Soybean	100 holes	Ø 7 mm	5.5 mm	05.02.02.0564
* Soybean	90 holes	Ø 9 mm	5.5 mm	05.02.02.0565
* Blind	Ø 190 mm	—	4.5 mm	05.03.03.1677
* Blind	Ø 190 mm	—	5.5 mm	05.03.03.1678
* Blind	Ø 190 mm	—	8.5 mm	05.02.02.0340

NOTE

- These seed plates have two rows of holes and need a complete double rocker arm.



9. Optional

Furrower for corn

When the planter is equipped with a furrower rod for the fertilizer, acquire a shank of 8" (B) and fasten it to the rod (A).

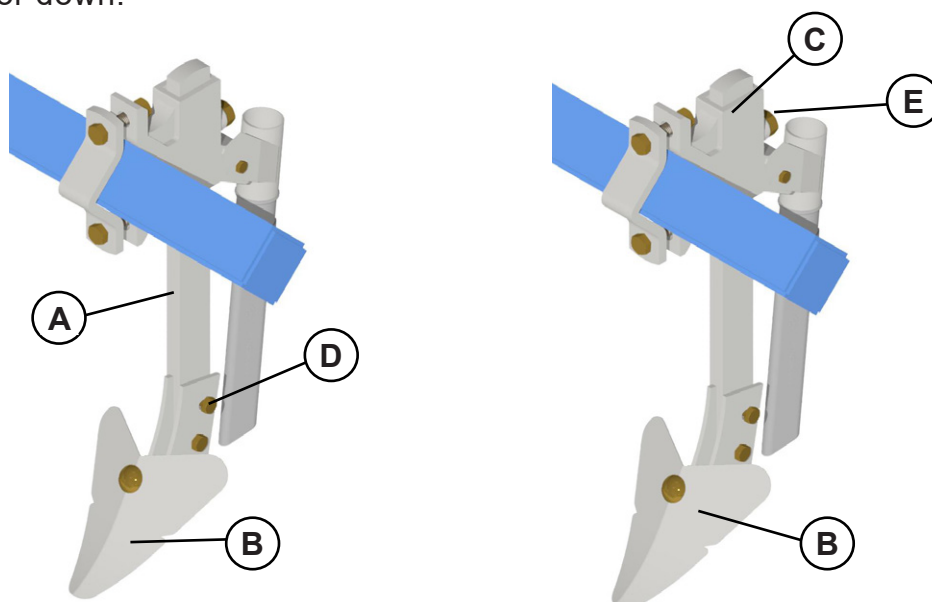
When the planter is assembled with a double disc for the fertilizer, acquire the complete furrower rod with a shank of 8" (C), which is coupled to the frame.

The furrower has a device to retrieve the shank through the bolt (D) so it is easier to pass over obstacles such as stones, roots and others.

NOTE

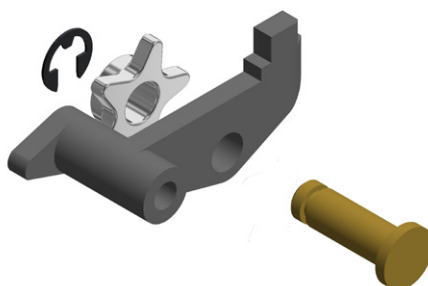
- Place the shank back on its original position manually.

The depth adjustment of the furrower is done through the bolt (E), which allows the set to go up or down.



Special pulley for sorghum - radial (until 03/2022)

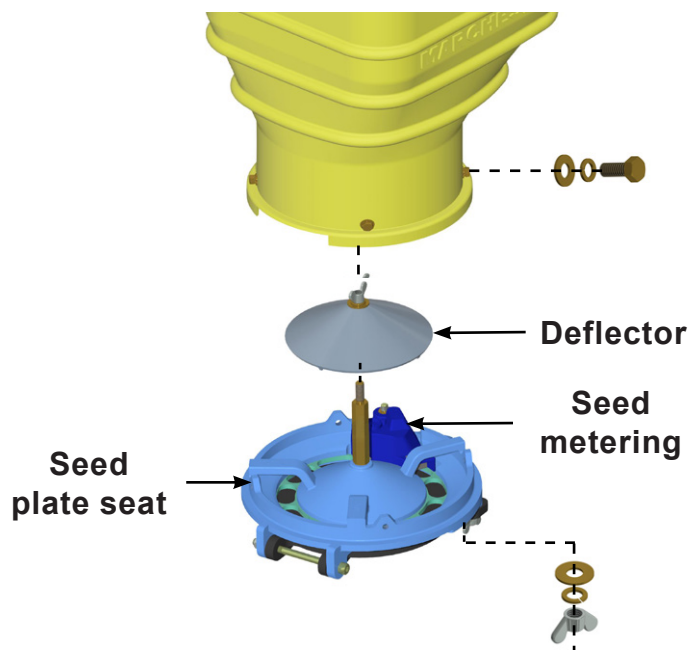
For planting sorghum, where the holes on the seed plates vary from 4 to 6 mm, it is necessary to taper the pulley so that they enter on the holes and execute its function properly.



9. Optional

Set for planting peanut

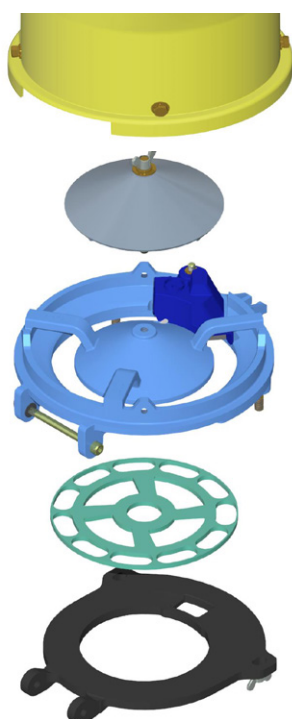
For the peanut culture, use the kit that is composed by:



NOTE

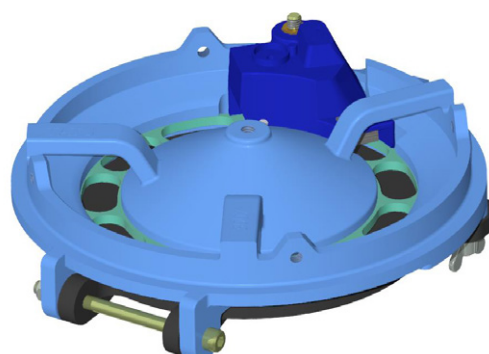
- The amount of seed plates that are included with the equipment corresponds to the number of row units.

Description	Color	Serial number
Peanut seed plate with 11 slots	Light green	05.13.01.0615
Peanut seed plate with 22 holes Ø20 mm	Pink	05.13.01.0609
Peanut seed plate with 22 holes Ø16 mm	Red	05.13.01.0610
Peanut seed metering	-	05.03.06.3415



IMPORTANT

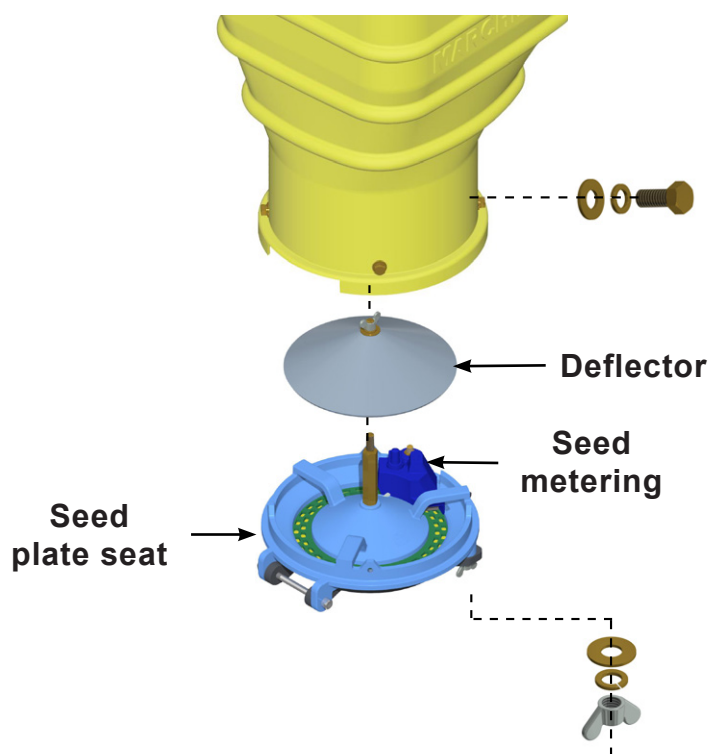
- The available height for the placement of the plate plus the false ring is 8.5 mm, however:
- If a plate has a thickness of 8.3 mm, do not use a false ring.



9. Optional

Set for planting cotton

For the cotton culture, use the kit that is composed by:

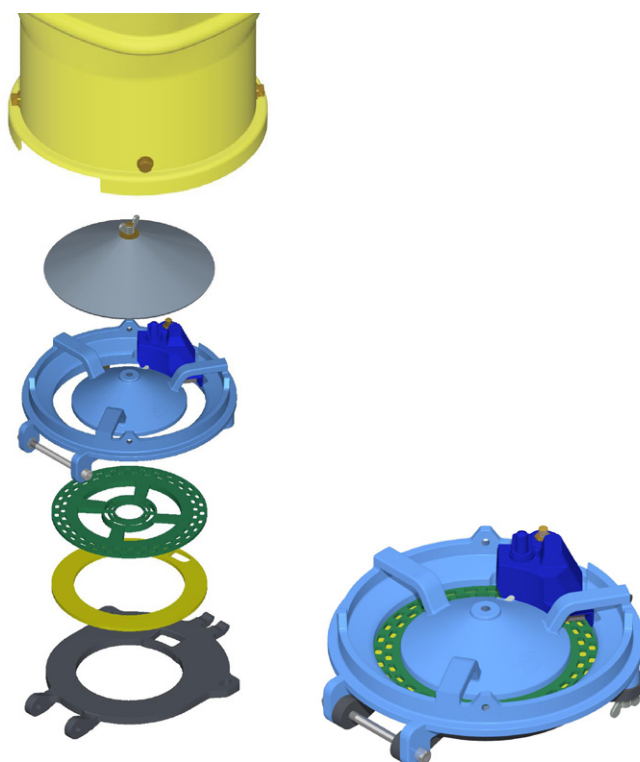


NOTE

- The amount of seed plates that are included with the equipment corresponds to the number of row units.
- Consult the seed plate and pulley tables on the 'Tatu metering - mechanical equipment' section.

IMPORTANT

- The available height for the placement of the plate plus the false ring is 8.5 mm.
- The farmer is the person responsible to check the seed size and define the thickness of the plate, hole size and amount of holes.
- Use the specific false ring for each seed type.
- The metering hopper feature a height adjustment on the singulator to relieve the seed plate and the singulator itself to assure efficiency when the mechanism is working.

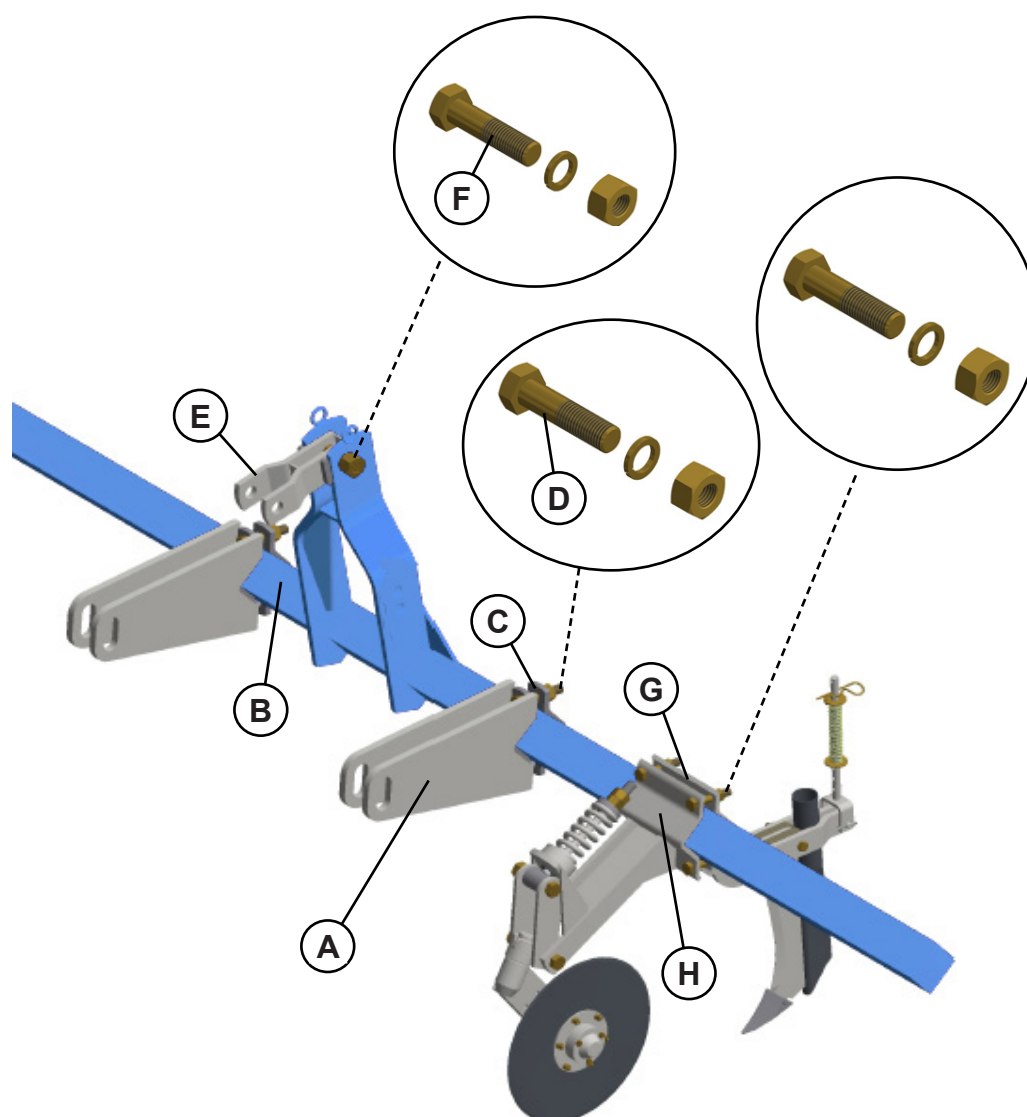


9. Optional

Set for semi-tillage plantation

The kit for a semi-tillage plantation is optionally supplied. Assemble it as follows:

1. Couple the hitch (A) to the frame (B) using the fixation elements: hitch guide fastener (C), bolt (D), spring washers and nuts that can be found on the frame structure.
2. Fasten the drawbar supplement (E) using the fixation elements: bolt (F), spring washer and nut.
3. Assemble the fastener support of the rod (G) along with the arm fastener of the disc blade (H) using a bolt, spring washer and nut in a way that the frame (B) stay coupled between both of them.



NOTE

- The fixation elements, hitch guide fastener (C), bolt (D), spring washer and nut are the same ones that were removed from the tractor hitch.



ATTENTION! RISK OF ACCIDENT

- Only **QUALIFIED**, **CAPABLE** and **AUTHORIZED** personnel must carry out the maintenance of the equipment.
- Every maintenance must follow the recommendations that are included on the NR-12 (July/19 version) on the chapter 'maintenance, inspection, preparation, adjustment and repairs' (from item 12.11.1 to 12.11.5).
- Observe every safety condition and use safety glasses, foot protection, earplugs/muffs, protective gloves and any other required PPE.
- Remove the ignition key before carrying out any type of maintenance on the equipment. If the equipment is not properly hitched, do not start the tractor engine.

Lubrication

The lubrication is an indispensable practice for a good performance and greater durability of the moving parts of the equipment, thus helping on saving costs for maintenance.

To reduce the wear caused by the friction caused by the moving parts of the equipment, it is necessary to carry out a proper lubrication, as indicated below:

a) Every 10 working hours, lubricate the articulations through the grease fittings as instructed:

1. Be sure about the lubricant quality in relation to its efficiency and purity, avoiding the use of products contaminated by water, dirt or others;
2. Use medium consistency grease;
3. Remove the remainder old grease around the articulations;
4. Clean the grease fittings with a cloth before inserting lubricant and replace the damaged ones;
5. Insert an enough amount of new grease.

b) The chains lubrication must be done using oil as follows:

1. It can be done with drops, bath or jet.
2. Never place a new link among old ones.
3. Do not use a new chain with old sprockets.
4. Check if the chains and sprockets are perfectly aligned.

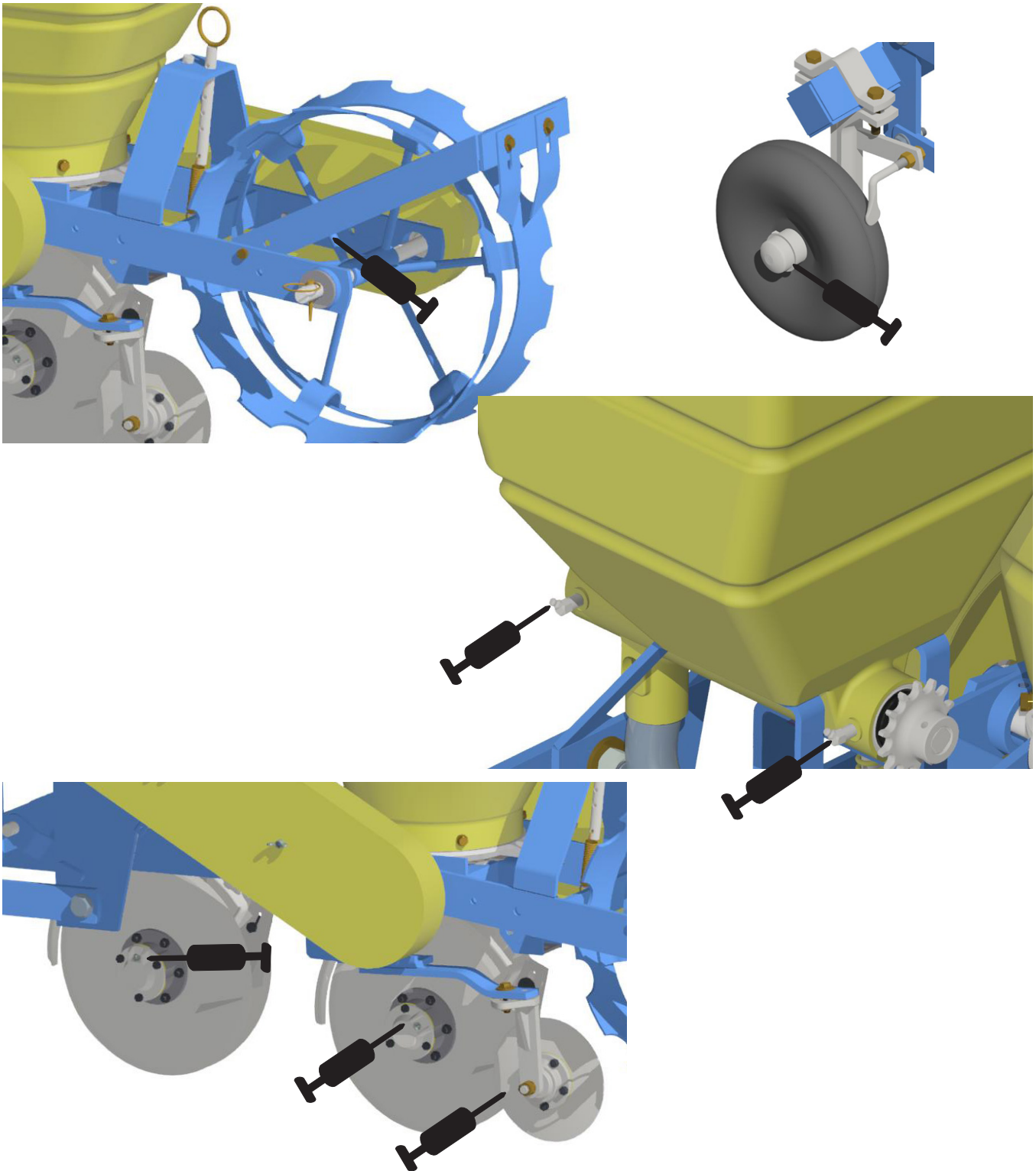
NOTE

- Carry out the lubrication intervals stricly on the different spots of the equipment.

10. Maintenance

Lubrication points

Lubricate every 10 working hours.



NOTE

- Lubricate the points shown above and all grease fittings as well.

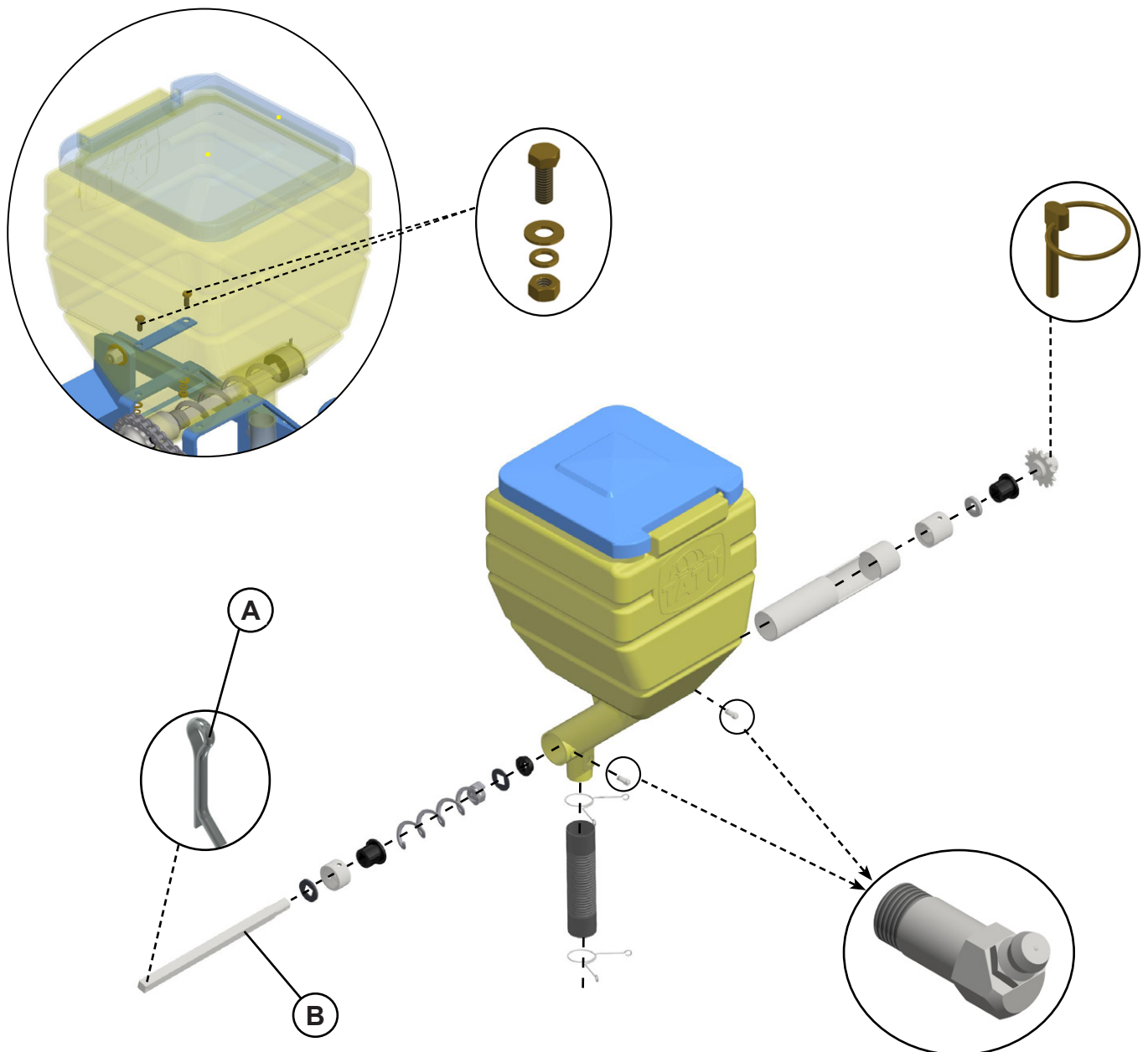
Fertilizer metering system maintenance

For the correct fertilizer metering system maintenance or to make any kind of repair in its internal parts, proceed as follows:

1. Loosen up the bolts that fasten the hoppers and remove them.
2. Remove the cotter pin (A) to let the square shaft (B) totally free, disassemble it completely and replace any parts, if necessary.

NOTE

- Do not forget to lubricate the metering grease fittings daily, as mentioned on the 'lubrication' section to avoid future problems.
- Use TATU original parts only.



10. Maintenance

Troubleshooting guide

TYPE	PROBLEM	CAUSES	POSSIBLE SOLUTIONS
Mechanical seed metering	Seed skips on the culture	Seed plate and ring	Always use the adequate seed plate-ring for each seed that are about to be sowed. It is important to mention that due to the diversity and format of the cultures, the seeds must be well placed and in a way that only one fits the hole.
		Lack of seeds on the metering	Check the lack of seeds on the hopper and always respect the weight limit to assure the system efficiency.
		Obstructed seed plate hole	Clean the seed plate and ring before the plantation.
		Strange object inside the metering	Check the physical purity of the seeds that are about to be sowed, as well as the presence of strange objects inside the hoppers or system. Normally, seeds with a lower physical purity are more prone to clog and lock the system due to strange objects.
		Graphite utilization	It is recommended to use the graphite (solid lubricant) to increase the system efficiency and to decrease mechanical wears.
		Equipment speed	The equipment speed is one of the main factors that cause problems on the number of plants. Always keep the ideal plantation speed. Marchesan recommends a speed of 5 - 7 km/h.

IMPORTANT

- Only **QUALIFIED**, **CAPABLE** and **AUTHORIZED** personnel must carry out the maintenance of the equipment.

Troubleshooting guide

TYPE	PROBLEM	CAUSES	POSSIBLE SOLUTIONS
Fertilizer spreader.	Clogging	Product quality	Be sure about the fertilizer quality. Normally when a product has excess of powder, it may get in contact with humidity and transform to a pasty product, thus clogging the metering.
		Strange material inside the fertilizer metering	Check the existence of strange objects that may eventually fall inside the hoppers during the filling process.
	Excess or lack of fertilizer	Sprockets	Check the drive-driven shafts combination. Carry out a practical test on the field to determine the correct amount.
	Heavy/hard to turn metering	Lack of lubrication	Check and lubricate the metering mechanism.
		Cobbled fertilizer	Clean the fertilizer meterings.

IMPORTANT

- Only **QUALIFIED**, **CAPABLE** and **AUTHORIZED** personnel must carry out the maintenance of the equipment.

Equipment maintenance

1. Wash the whole equipment using only water.
2. Remove the hoses and wash them immediately using water and neutral soap.
3. Verify all moving parts of the planter for wearing occurrence. If necessary, replace some parts and leave the planter ready for the next planting season.
4. Repair the damaged paintwork.
5. Spray the metallic parts with protective oil. Never spray used engine lubricant oil.
6. The driving mechanism chains should be removed at the end of the planting season, cleaned and stored in a recipient with oil until the next planting season.
7. Tighten the bolts and nuts of all components that may get loose if any vibration occurs.
8. Clean and lubricate all grease fittings.
9. After making all repairs and maintenance cares, store the planter in a covered and dry place. Keep the planter properly supported and avoid the direct contact of the disc blades and tires with the soil.
10. Replace the missing or damaged safety decals. Marchesan supplies these decals, upon request and indication of their respective serial numbers. The operator must know the need and importance to keep the decals in the proper place and in good conditions. The operator also have to know the need to follow the instructions, as the lack of safety may increase the risk of accidents.

NOTE

- Use TATU original parts only.
- Do not use chemical detergents to clean the equipment, as they may damage the paintjob.
- When any component is disassembled and is not going to be used anymore, send that part to a company that could recycle it and that respects the local law to avoid causing damages to the environment.

11. Important data

Torque table

The table below gives correct torque values for various bolts. Tighten all bolts to the torques specified in chart unless otherwise noted. Check the tightness of bolts periodically, using this bolts torque chart as a guide. Replace hardware with the same strength (grade/class) bolt.

 TORQUE TABLE 													
Bolt Size (Inches) (a)	 Grade 2		 Grade 5		 Grade 8		Bolt Size (Metric) (D)	 4.6		 8.8		 10.9	
	Lbs-ft (b)	N.m (c)	Lbs-ft	N.m	Lbs-ft	N.m		Lbs-ft	N.m	Lbs-ft	N.m	Lbs-ft	N.m
1/4" - 20	5,5	7,5	8,5	11,5	12	16,3	M5 x 0.8	2,5	3,39	5	6,78	8,5	11,526
1/4" - 28	6	8,1	9,5	12,9	14	19,0	M 6 x 1	3	4,068	8	10,85	11,5	15,594
5/16" - 18	10,5	14,2	17,5	23,7	24,5	33,2	M 6 x 0.75	3,5	4,746	8,5	11,53	13	17,628
5/16" - 24	12	16,3	19,5	26,4	27,5	37,3	M 8 x 1.25	7	9,492	19,5	26,44	28	37,968
3/8" - 16	19,5	26,4	31,5	42,7	44	59,7	M 8 x 1	8	10,848	21	28,48	30,5	41,358
3/8" - 24	22	29,8	35	47,5	50	67,8	M 10 x 1.5	14	18,984	38,5	52,21	56	75,936
7/16" - 14	31	42,0	50	67,8	70,5	95,6	M 10 x 1	16	21,696	43	58,31	63	85,428
7/16" - 14	34,5	46,8	56	75,9	79	107,1	M 12 x 1.75	25	33,9	66,5	90,17	98	132,888
1/2" - 13	47	63,7	76	103,1	107,5	145,8	M 12 x 1.25	27	36,612	73	98,99	107,5	145,77
1/2" - 20	53,5	72,5	86	116,6	121,5	164,8	M 14 x 2	40	54,24	107	145,09	156,5	212,214
9/16" - 12	68	92,2	110	149,2	155	210,2	M 14 x 1.5	43	58,308	115,5	156,62	169	229,164
9/16" - 18	76	103,1	122,5	166,1	173	234,6	M 16 x 2	62	84,072	165,5	224,42	243,5	330,186
5/8" - 11	94	127,5	151,5	205,4	214,5	290,9	M 16 x 1.5	66,5	90,174	177	240,01	260	352,56
5/8" - 18	106,5	144,4	171,5	232,6	242,5	328,8	M 18 x 2.5	86	116,616	229	310,52	336	455,616
3/4" - 10	167	226,5	269,5	365,4	380,5	516,0	M 18 x 1.5	96,5	130,854	257	348,49	378	512,568
3/4" - 16	186	252,2	300	406,8	424,5	575,6	M 20 x 2.5	121,5	164,754	323,5	438,67	475	644,1
7/8" - 9	169,5	229,8	434	588,5	612,5	830,6	M 20 x 1.5	134,5	182,382	359	486,80	527	714,612
7/8" - 14	187	253,6	478,5	648,8	676,5	917,3	M 22 x 2.5	165,5	224,418	441	598,00	647,5	878,01
1" - 8	254,5	345,1	650	881,4	918,5	1.245,5	M 22 x 1.5	182	246,792	484	656,30	711,5	964,794
1" - 12	285,5	387,1	729,5	989,2	1031	1.398,0	M 24 x 3	210	284,76	559	758,00	821	1113,276
1.1/8" - 7	360,5	488,8	921,5	1.249,6	1302	1.765,5	M 24 x 1.5	238,5	323,406	636	862,42	933,5	1265,826
1.1/8" - 12	404,5	548,5	1033,5	1.401,4	1460	1.979,8	M 27 x 3	307	416,292	820	1111,92	1204	1632,624
1.1/4" - 7	508,5	689,5	1300	1.762,8	1837,5	2.491,7	M 27 x 1.5	344	466,464	918	1244,81	1348,5	1828,566
1.1/4" - 12	563,5	764,1	1439,5	1.952,0	2034,5	2.758,8	M 30 x 3.5	416,5	564,774	1111,5	1507,19	1632,5	2213,67
1.3/8" - 6	667	904,5	1704,5	2.311,3	2408	3.265,2	M 30 x 1.5	477,5	647,49	1273	1726,19	1870	2535,72
1.3/8" - 12	759,5	1.029,9	1940	2.630,6	2741,5	3.717,5	M 33 x 3.5	567	768,852	1512,5	2050,95	2221,5	3012,354
1.1/2" - 6	885,5	1.200,7	2262,5	3.068,0	3197	4.335,1	M 33 x 1.5	641,5	869,874	1709,5	2318,08	2511	3404,916
1.1/2" - 12	996	1.350,6	2545,5	3.451,7	3597	4.877,5	M 36 x 4	729	988,524	1943	2634,71	2854	3870,024
a) Nominal thread diameter in inches-threads per inch b) Foot pounds c) Newton-meters d) Nominal thread diameter in millimeters x thread pitch							M 36 x 1.5	838,5	1137,006	2236	3032,02	3284	4453,104
							M 39 x 4	943	1278,708	2515	3410,34	3693,5	5008,386
							M 39 x 1.5	1073	1454,988	2860,5	3878,84	4201,5	5697,234

Values are for reference and are based on average steel-to-steel friction conditions.



ATTENTION!

- MARCHESAN S/A reserves the right to make improvements in the design, material or specifications of machinery, equipment or parts at any time, without thereby becoming liable to make similar changes in machinery, equipment or parts previously sold.
- Images are for illustration purposes only.
- Some illustrations in this manual appear without the safety devices, removed to allow a better view and detailed instructions. Never operate the equipment without these safety devices.

TECHNICAL PUBLICATION DIVISION

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Notes

[illegible]



ATENÇÃO

- RECOMENDAÇÕES GERAIS DE SEGURANÇA -

- 1 - Apenas pessoas que possuem o completo conhecimento do trator e dos implementos devem conduzi-los.
- 2 - Para engatar os implementos, faça as manobras em marcha lenta, em local espaçoso e esteja preparado para aplicar os freios.
- 3 - Para acoplamento na tomada de força, desligue o motor do trator.
- 4 - O motor não deve funcionar em locais sem o ideal arejamento, devido à toxicidade dos gases expelidos.
- 5 - Faça todos os lastreamentos necessários para tracionar equipamentos que os exigem, assim as operações tornam-se mais seguras.
- 6 - Em operações com o trator estacionado, trave os freios e calce as rodas.
- 7 - Todas as peças móveis como correias, pallas, engrenagens etc. merecem cuidados especiais.
- 8 - Vista roupas e calçados adequados para a operação das máquinas e implementos agrícolas.
- 9 - Não permita que demais pessoas acompanhem o operador no trator ou no implemento.
- 10 - O uso das roçadeiras exige cuidados especiais. Não permita a aproximação de pessoas ou animais durante o serviço.
- 11 - Não efetue regulagens com o implemento em funcionamento.
- 12 - Não permita que crianças brinquem sobre ou próximo o implemento estando o mesmo em operação, transporte ou armazenado.
- 13 - A velocidade de operação deve ser cuidadosamente controlada.
- 14 - Em terreno inclinado mantenha a estabilidade ideal. Em início de desequilíbrio abaixe a aceleração e não levante o implemento.
- 15 - Os implementos de controle hidráulico devem ser abakados até o solo e aliviados da pressão antes de desconectar qualquer tubulação.
- 16 - Não verifique vazamentos nos circuitos hidráulicos com as mãos. A alta pressão pode provocar lesões corporais, use papelão.
- 17 - No término do trabalho, os implementos deverão ser desengatados e devidamente apoiados no solo ou sobre cavaletes, não podendo ficar suspensos pelo hidráulico do trator.
- 18 - Não transite em rodovias ou estradas pavimentadas.
- 19 - Os implementos agrícolas tais como grades, arados e outros possuem normalmente órgãos ativos afilados, com bordas cortantes que oferecem riscos de acidentes mesmo quando não estão operando. Portanto, estes devem ser mantidos em local apropriado, devidamente apoiados no solo e impedindo-se o acesso de crianças e pessoas alheias ao manuseio dos mesmos.
- 20 - Para estacionar o trator, desligue o motor, neutralize a ação dos comandos e aplique os freios.



ATENCIÓN

- RECOMENDACIONES GENERALES DE SEGURIDAD -

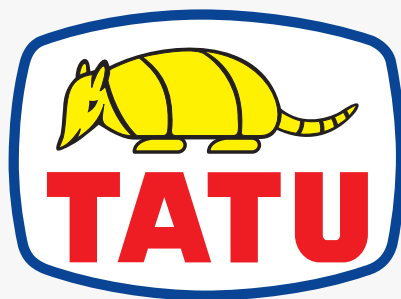
- 1 - Solamente personas con el completo conocimiento del tractor y de los implementos deben conducirlos.
- 2 - Para enganchar los implementos, proceda con maniobras en marcha lenta, en local con espacio y este preparado para aplicar los frenos.
- 3 - Para acoples en la toma de potencia apague el motor del tractor.
- 4 - El motor no debe funcionar en locales sin ventilación suficiente debido a la toxicidad de los gases expelidos.
- 5 - Proceda con los lastres necesarios para traccionar equipos que así exigir de esta manera, las operaciones se tornan mas seguras.
- 6 - En operaciones con el tractor estacionado (parqueado) trabar los frenos y las ruedas.
- 7 - Todas las piezas móviles como: bandas, poleas, engranajes, etc., necesitan cuidados especiales.
- 8 - Vestir ropas y calzados adecuados para operación de las máquinas e implementos agrícolas.
- 9 - No permita que otras personas acompañen el operador en el tractor o en el implemento; salvo si posee asiento adecuado.
- 10 - El uso de las rotativas (cortamalezas) exige cuidados especiales. No permita la aproximación de personas o animales durante el trabajo.
- 11 - No efectuar regulajes con el equipo en funcionamiento.
- 12 - No permitir que niños jueguen sobre o próximo de los equipos, en operación, durante el transporte o almacenado.
- 13 - La velocidad de operación debe ser cuidadosamente controlada.
- 14 - En terreno inclinado mantenga la estabilidad ideal. En inicio de desequilibrio baje la aceleración y no levante el implemento.
- 15 - Los implementos de control hidráulico deben ser rebajados hasta el suelo y aliviar la presión antes de desconectar cualquier tubería.
- 16 - No verifcar filtraciones en los circuitos hidráulicos con las manos, la alta presión puede provocar lesiones corporales, use carton u otro objeto adecuado.
- 17 - Después del término del trabajo, los equipos deberán ser desenganchados y debidamente apoyados en el suelo o sobre caballetes, aliviando el hidráulico del tractor.
- 18 - No transitar en carreteras o caminos pavimentados.
- 19 - Los implementos agrícolas, como: rastras, arados y otros, tienen normalmente órganos activos afilados, con bordes cortantes que ofrecen riesgos de accidentes, aún cuando detenidos, por lo tanto, estos deben ser mantenidos en local apropiado, debidamente apoyados en el suelo e impidiendo el acceso de niños y personas ajenas al uso de los mismos.
- 20 - Para estacionar (parquear) el tractor, apague el motor, neutralice la acción de los comandos y aplique los frenos.



ATTENTION

- GENERAL RECOMMENDATION ABOUT SAFETY -

- 1 - Only person who owns a full knowledge of tractor and implements must operate them.
- 2 - Take care to prevent injury to the hands or fingers when hitching the implement to the tractor.
- 3 - Always shut the tractor off before connecting the power take off.
- 4 - Never turn on the tractor engine within not aired places, due to toxic gases expelled.
- 5 - Before start the season it is necessary to prepare adequately the tractor and the implement to make the operations safer.
- 6 - Lock the tractors parking brake and block the wheels before dismounting the tractor for service or to make adjustments.
- 7 - Never allow riders to accompany the operator on tractor or implement, except if there is an adequate seat.
- 8 - Be sure that everyone is standing clear before operating the agricultural implement or machinery.
- 9 - Use extreme caution and wear gloves when handling the disc blades or gang assemblies.
- 10 - Wear adequate clothes and shoes to operate agricultural implements and machinery.
- 11 - Do not attempt to make adjustments when the unit is running.
- 12 - Disconnect the hydraulic hoses from breakaway couplers after bleeding off the system.
- 13 - Always block-up raised equipment when servicing. Never rely on the hydraulic system.
- 14 - The speed must be controlled when transporting the implement on rough roads, bridges, steep grades or any other adverse conditions.
- 15 - Lower the implement or machinery completely to the ground before unhitching from the tractor.
- 16 - Before making any inspection on hydraulic hoses for leaks, cycle the hydraulic cylinders several times to purge entrapped air from the system.
- 17 - When the tractor is equipped with swinging drawbar, lock the drawbar in the fixed position.
- 18 - Agricultural implements such as: disc harrows, disc ploughs and others have disc blades that are sharp and could cut hands, feet etc, even when they are not in operation. In order to avoid serious accidents, use chock blocks to prevent the gang assembly from rolling surfaces before assembly to the frame. Wear gloves when handling the blades or gang assemblies.
- 19 - On the transport of the harrow, always install transport lock devices.
- 20 - When parking the tractor, turn the engine off, lock the tractors parking brake and remove the key.



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