Instruction
Manual

PLB DIRECTA

Baldan Line Seeder

BALDAN

PRESENTATION

We thank you for preference and congratulate you on the excellent choice you have just made, as you have purchased a product made with **BALDAN IMPLEMENTOS AGRÍCOLAS S/A.**

This manual will guide you through the procedures necessary; from purchase to operating, safety and maintenance procedures.

BALDAN warrants that it has delivered this implement to the retailer complete and in perfect condition.

The retailer was responsible for the custody and conservation during the period in its possession, as well as for the assembly, retightening, lubrication, and overhaul.

At the technical delivery, the retailer should advise the user customer about maintenance, safety, their obligations in any technical assistance, the strict observance of the warranty term and the reading of the instruction manual.

Any warranty service claim should be made to the retailer where the implement was purchased.

We reiterate the need for careful reading of the warranty certificate and compliance with all items in this manual, as doing so will increase the life of your implement.

Instruction
Manual

PLB DIRECTA

Baldan Line Seeder

BALDAN IMPLEMENTOS AGRÍCOLAS S/A.
CNPJ: 52.311.347/0009-06
Insc. Est.: 441.016.953.110

Scan the QR Code on the identification plate of your device and access this Instruction Manual online.

BALDAN

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WARRANTY

PRODUCT WARRANTY

BALDAN IMPLEMENTOS AGRÍCOLAS S/A, ensures the dealer normal performance of the implement for a period of six (6) months as of the delivery date on the retail invoice to the first final consumer.

During this period, **BALDAN** undertakes to repair defects in material and/or of manufacture of its liability, including labor, freight and other expenses of the dealer's liability.

In the warranty period, request and replacement of eventual defective parts shall be made to the dealer of the area, who will submit the faulty piece to **BALDAN** analysis.

When this procedure is not possible and the resolving capacity of the dealer is exhausted, the dealer will request the support of **BALDAN** Technical Assistance through a specific form distributed to dealers.

After analyzing the replaced items by **BALDAN** Technical Assistance, and concluding that it is not a warranty, then the dealer will be responsible for the costs related to the replacement; as well as material expenses, travel including accommodation and meals, accessories, lubricant used and other expenses arising from the call out to Technical Assistance, and **BALDAN** company is authorized to carry the respective invoice in the name of the resale.

Any repairment carried in the product within the dealer warranty deadRow will only be authorized by **BALDAN** upon previous budget presentation describing parts and workforce to be executed.

The product is excluded from this term if it is repaired or modified by representatives not belonging to the **BALDAN** dealer network, as well as the application of non-genuine parts or components to the user's product.

This warranty is void where it is found that the defect or damage is caused by improper use of the product, failure to follow instructions or inexperience of the operator.

It is agreed that this warranty does not cover tires, polyethylene tanks, cardan, hydraulic components, etc., which are equipment guaranteed by their manufacturers.

Manufacturing and/or material defects, object of this warranty term, will not constitute, under any circumstances, grounds for termination of a purchase agreement, or for indemnification of any nature.

BALDAN reserves the right to change and/or perfect the technical characteristics of its products, without previous notice, and without obligation to proceed in the same way with the products previously manufactured.

GENERAL INFORMATION

TO THE OWNER

BALDAN IMPLEMENTOS AGRÍCOLAS S/A, is not responsible for any damaged caused by accident due to usage, transportation, or in the improper or incorrect transportation of its implement, whether by negligence and/or inexperience of any person.

Only people with complete knowledge of the tractor and the implement should carry their transportation and operation.

BALDAN is not responsible for any damaged caused in unpredictable or unrelated situations to the normal use of the implement.
The incorrect handling of this equipment may result in severe or fatal accidents. Before running the equipment, carefully read the instructions contained in this manual.
Make sure that the person responsible for the operation is instructed as the correct and safe handling. Also make sure that the operator has read and understood the instructions manual of the product.

⚠ ATTENTION

NR-31 - SAFETY AND HEALTH AT WORK IN AGRICULTURE, LIVESTOCK FARMING, FORESTRY, FOREST EXPLORATION AND AQUACULTURE.

This Regulatory Standard has the purpose of establishing precepts to be observed in the organization and work environment, compatible to the planning and development of agriculture, livestock, forestry, forest exploitation and aquaculture with safety and health and work environment.

MR. OWNER OR OPERATOR OF THE EQUIPMENT.

Read and carefully comply with provisions of NR-31.

For more information, refer to the site and read NR-31 in full.
http://portal.mte.gov.br/legislacao/normas-regulamentadoras-1.htm

SAFETY RULES

THIS SYMBOL INDICATES IMPORTANT SAFETY WARNING. IN THIS MANUAL, WHENEVER YOU FIND IT, READ THE FOLLOWING MESSAGE CAREFULLY AND PAY ATTENTION TO THE POSSIBILITY OF PERSONAL ACCIDENTS.

ATTENTION

• Carefully read the instructions manual tolearn about the recommended safety practices.

ATTENTION

• Do not work with the tractor if the front has insufficient ballast to the rear equipment. Should there be a trend to lift, add weights or ballasts to the front or the front wheels.

ATTENTION

• Only start to operate the tractor when you are properly seated and with the seat belt locked.

ATTENTION

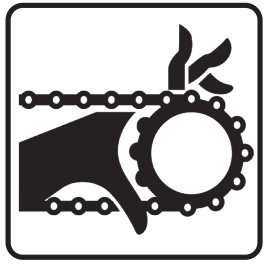
• There are risks of severe injuries due to tipping when working in sloped terrains.

• Do not over speed.

SAFETY RULES

⚠ ATTENTION

- Do not operate the PLB *Directa* if the transmission guards are not properly attached.
- Only remove guards to proceed with gear replacement, put them back immediately.
- When doing any service on the machine's transmission, deactivate the ratchets.
- Do not make adjustments with the seeder in motion.



⚠ ATTENTION

- Avoid accidents caused by the intermittent action of row markers.
- When activating the PLB *Directa*, check that there are no people under the Row markers or in their area of action.

⚠ ATTENTION

- Always stay away from the active elements of the seeder (discs), they are sharp and can cause accidents.
- When carrying out any work on discs, wear safety gloves on your hands.

⚠ ATTENTION

- Before performing any maintenance in your equipment, make sure it is properly stopped.
- Avoid being run over.

⚠ FOLLOW ALL RECOMMENDATIONS, WARNINGS, AND RECOMMENDED SAFETY PRACTICES IN THIS MANUAL, UNDERSTAND THE IMPORTANCE OF YOUR SAFETY. ACCIDENTS MAY CAUSE DISABILITIES OR EVEN DEATH. REMEMBER, ACCIDENTS CAN BE AVOIDED!

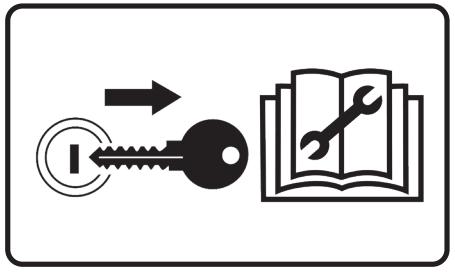
SAFETY RULES

⚠ ATTENTION

• Remove the ignition key before performing any maintenance on the PLB *Directa*.

• Protect yourself from possible injury or death, caused by an unexpected start of the PLB *Directa*.

• If the PLB *Directa* is not properly engaged, do not start the tractor.



⚠ ATENÇÃO

• Before working on or transporting the PLB *Directa*, check for people or obstructions near the machine.

⚠ ATTENTION

• Always maintain places of access and work free of residues such as oil or grease to prevent accidents.

⚠ ATENÇÃO

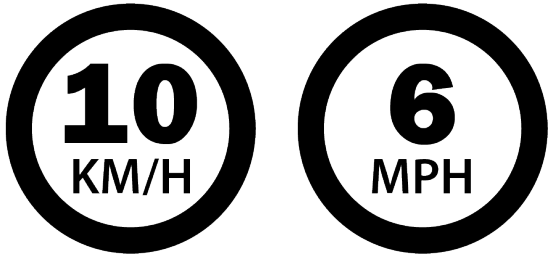
• Quando operar a PLB *Directa* não permita que pessoas mantenham-se sobre a mesma.

⚠ FOLLOW ALL RECOMMENDATIONS, WARNINGS, AND RECOMMENDED SAFETY PRACTICES IN THIS MANUAL, UNDERSTAND THE IMPORTANCE OF YOUR SAFETY. ACCIDENTS MAY CAUSE DISABILITIES OR EVEN DEATH. REMEMBER, ACCIDENTS CAN BE AVOIDED!

SAFETY RULES

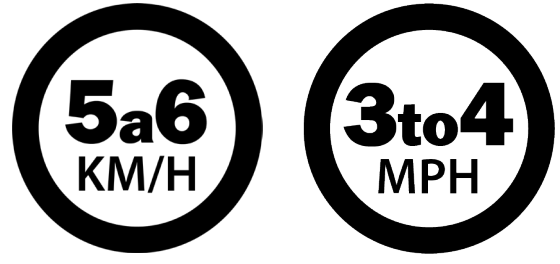
⚠ ATTENTION

• When transportation the PLB *Directa*, do not exceed 10Km/h or 6 MPH, avoinding risks of injury and accident.



⚠ ATTENTION

• When working with the PLB *Directa*, do not exceed of 5 to 6 Km/h or 3 to 4 MPH, avoiding risks of injury and accidents.



⚠ ATTENTION

• Do not perform adjustments while the PLB *Directa* in operation.

• When performing any service on the PLB *Directa*, switch off the tractor first.

⚠ ATTENTION

• Improper waste disposal affects the environment and ecology as it will pollute rivers, canals, or the soil.

• Find out how to properly recycle or dispose of waste.

PROTECT THE ENVIRONMENT!

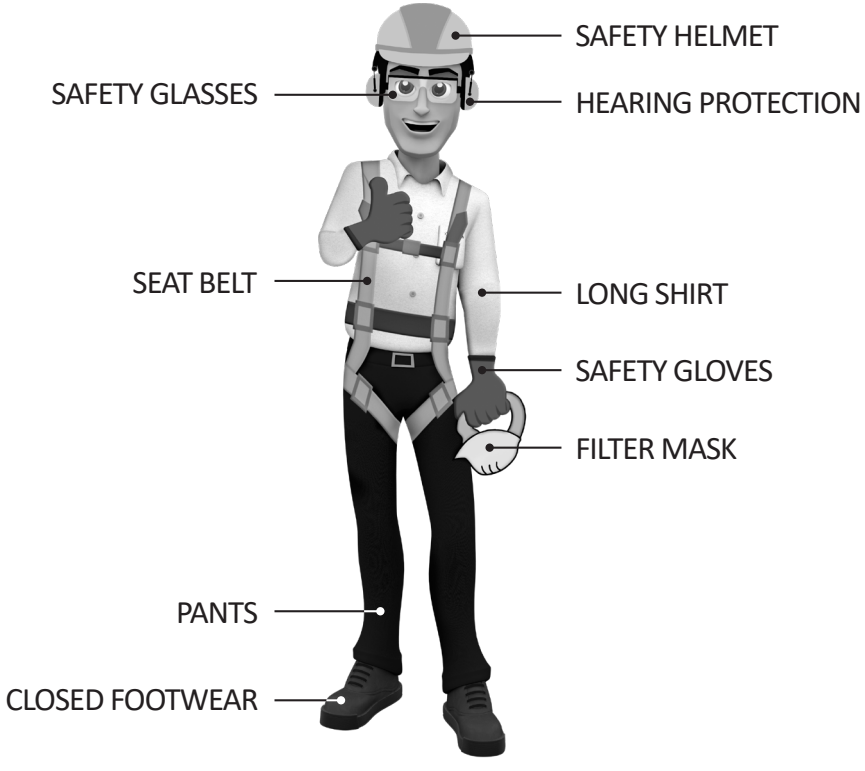
⚠ ALCOHOLIC BEVERAGES OR SOME MEDICATIONS MAY CAUSE LOSS OF REFLEXES AND CHANGE THE OPERATOR'S PHYSICAL CONDITION. THEREFORE, NEVER OPERATE THIS SEEDER UNDER THE USE OF THESE SUBSTANCES.

SAFETY RULES

PPE EQUIPMENT

ATTENTION | ***Do not work with the* PLB *Directa* *without first wearing PPE (Safety Equipment). Ignoring this warnings may cause health damages, serious accident, or death.***

When performing certain procedures with the **PLB** *Directa*, place the following PPE (Safety Equipment) below:



NOTE | ***All PPEs (Safety Equipament) must have an authenticity certificate.***

IMPORTANT

The safety practice must be carried out in all stages of work with the* PLB *Directa*, *thus avoiding accidents such as impact of objects, falling, noise, cuts and ergonomics, that is, the person responsible for operating the* PLB *Directa* *is subject to internal and external bodily damage.

WARNINGS

01 - ⚠ When operating the PLB *Directa*, do not allow people to remain too close or on top of it.

02 - ⚠ When servicing the machine, wear PPE.

03 - ⚠ Do not wear loose clothing, as they may become entangled in the PLB *Directa*.

04 - ⚠ When starting the tractor engine, be properly seated in the operator's seat and aware of the full knowledge of the correct and safe handling of both the tractor and the seeder. Always put the shift lever in the neutral position, disconnect the control gear from the PTO and put the hydraulic controls in the neutral position.

05 - ⚠ Do not start the tractor engine indoors without adequate ventilation as exhaust fumes are harmful to health.

06 - ⚠ When maneuvering the tractor to engage the seeder, make sure you have the necessary space and that no one is very close, always do the maneuvers at idle and be prepared to brake in an emergency.

07 - ⚠ Do not make adjustments with the PLB *Directa* in operation.

08 - ⚠ When working on slopes, be careful to always maintain the required stability. In the event of imbalance, reduce acceleration, turn the wheels to the side of the slope and never raise the PLB *Directa*.

09 - ⚠ Always drive the tractor at safety compatible speeds, especially when working on rough or sloping terrain, always keep the tractor hitched.

10 - ⚠ When driving the tractor on roads, keep the brake pedals interconnected.

11 - ⚠ Do not work with the tractor with a light rear. If the rear tends to lift, add more weights to the rear wheels.

12 - ⚠ When leaving the tractor, place the gearshift lever in neutral and apply the parking brake. Never leave the PLB *Directa* engaged in the raised position of the hydraulic system.

13 - ⚠ All refueling or inspection must be done with the PLB *Directa* stopped and the tractor turned off, using the means of safe access.

14 - ⚠ Do not drive on highways, especially at night. Use warning signs all along the way.

15 - ⚠ If it is necessary to travel with the PLB *Directa* on highways, consult the traffic authorities.

16 - ⚠ Do not allow people who have not been trained to use the PLB *Directa*, that is, who do not know how to operate it correctly.

17 - ⚠ The transportation of people on self-propelled machines and implements is forbidden.

WARNINGS

18 - ⚠ Changes to the original characteristics of the PLB *Directa* are not authorized, as they may alter safety, operation, and affect the useful life.

19 - ⚠ Read carefully all the safety information in this manual and on the PLB *Directa*.

20 - ⚠ Only operate the PLB *Directa* if all guards are installed and correctly.

21 - ⚠ Do not under any circumstances remove the PLB *Directa* protection components.

22 - ⚠ Always check that the PLB *Directa* is in perfect condition. In case of any irregularity that could interfere with the operation of the PLB *Directa*, provide proper maintenance before any work or transport.

23 - ⚠ Maintenance and especially inspection in risk areas of the PLB *Directa*, must be carried out only by a trained or qualified worker, observing all safety guide rows. Before starting maintenance, disconnect all drive systems from the PLB *Directa*.

24 - ⚠ Periodically check all components of the PLB *Directa* before using it.

25 - ⚠ According to the equipment used and the working conditions in the country or in areas of maintenance, precautions are necessary. Baldan has no direct control over precautions, so it is the responsibility of the owner to put the safety procedures into practice while working with the PLB *Directa*.

26 - ⚠ Check the minimum tractor power recommended for each PLB *Directa* model. Only use tractors with power and ballast compatible with the load and terrain topography.

27 - ⚠ Only fill the PLB *Directa* at the job site to avoid overloading the hydraulic lift during transport.

28 - ⚠ During the transport of the PLB *Directa*, travel at speeds compatible with the terrain and never exceeding 10 km/h, this reduces maintenance and consequently increases the life of the PLB *Directa*.

29 - ⚠ Alcoholic beverages or some medications may cause loss of reflexes and change the operator's physical condition. Therefore, never operate this seeder under the use of these substances.

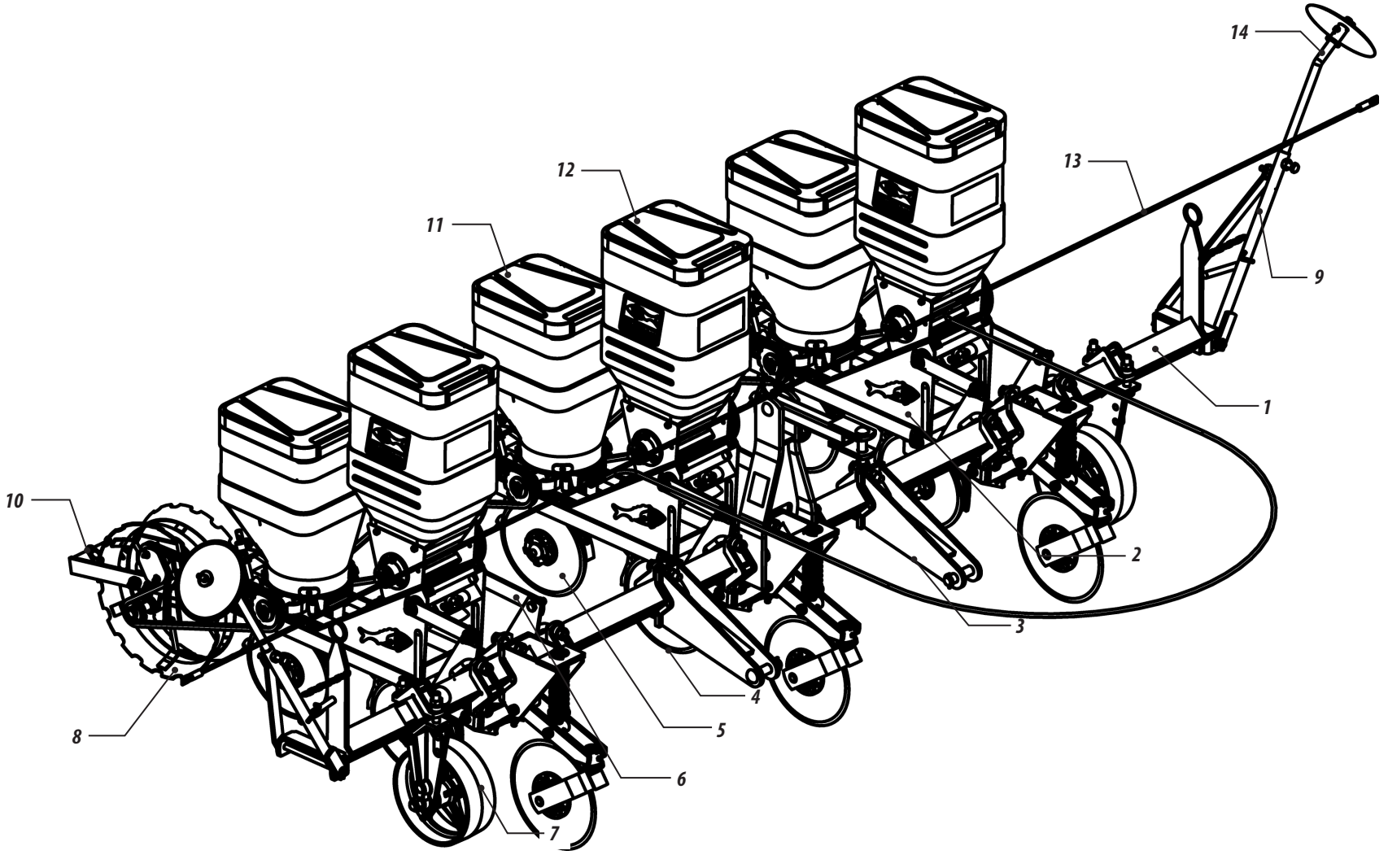
30 - ⚠ Read or explain all procedures in this manual to a user who cannot read.

If in doubt, contact After Sales.
Telephone: 0800-152577 / E-mail: posvenda@baldan.com.br

PLB Directa - BALDAN SEED LINE

COMPONENTS

1 - Tool Bar
2 - Row unit
3 - Tool bar hitch
4 - Fertilizer double discs
5 - Seed double discs
6 - Top articulating plate
7 - Depth wheel
8 - Iron compactor wheel
9 - Dust cover
10 - Wiper
11 - Seed hopper
12 - Fertilizer hopper
13 - Line markers trigger cord
14 - Liner marker
15 - Marker limiter



TECHNICAL SPECIFICATIONS

Model	Nr of rows	Toolbar width (mm)	Useful width (mm)	Total width (mm)	Minimum row spacing (mm)	Working depth (mm)	Estimated weight (Kg)	Seed hooper capacity (L)	Fertilizer hooper capacity (L)	Tractor power (Hp)
PLB Directa	2	1800	1400	2300	450	0 - 120	449	45	60	40 - 50
PLB Directa	2	2800	2400	3300	450	0 - 120	471	45	60	40 - 50
PLB Directa	2	3800	3400	4300	450	0 - 120	492	45	60	40 - 50
PLB Directa	3	1800	1400	2300	450	0 - 120	597	45	60	50 - 66
PLB Directa	3	2300	1900	2800	450	0 - 120	608	45	60	50 - 66
PLB Directa	3	2800	2400	3300	450	0 - 120	618	45	60	50 - 66
PLB Directa	3	3800	3400	4300	450	0 - 120	640	45	60	50 - 66
PLB Directa	4	2800	2400	3300	450	0 - 120	766	45	60	60 - 75
PLB Directa	4	3300	2900	3800	450	0 - 120	777	45	60	60 - 75
PLB Directa	4	3800	3400	4300	450	0 - 120	787	45	60	60 - 75
PLB Directa	4	4400	4000	4900	450	0 - 120	841	45	60	60 - 75
PLB Directa	5	2800	2400	3300	450	0 - 120	913	45	60	75 - 90
PLB Directa	5	3800	3400	4300	450	0 - 120	935	45	60	75 - 90
PLB Directa	5	4400	4000	4900	450	0 - 120	989	45	60	75 - 90
PLB Directa	6	2800	2400	3300	450	0 - 120	1014	45	60	85 - 95
PLB Directa	6	3800	3400	4300	450	0 - 120	1082	45	60	85 - 95
PLB Directa	6	4400	4000	4900	450	0 - 120	1136	45	60	85 - 95

Baldan reserves the right to change and or improve the technical characteristics of its products without notice and without the obligation to do so with the products previously manufactured. The technical specications are approximate and informed in normal working conditions.

INTENDED USE OF PLB DIRECTA

- **PLB** Directa is a seeder in which the project design was developed for conventional planting, but also works in semi-direct planting.
- **PLB** Directa must only be driven and operated by a properly instructed operator.

PROHIBITED USE OF PLB DIRECTA

- To avoid damage, serious accident or death, DO NOT transport people on any part of **PLB** Directa.
- It is NOT permitted to use **PLB** Directa to attach, tow, or push other implements or accessories.
- **PLB** Directa should NOT be used by an inexperienced operator who does not know all the driving, command and operation techniques.

ASSEMBLY AND PREPARATION FOR PLANTING

The machine leaves the factory semi-assembled, but it is necessary to prepare it for use.

1 - The most practical method for assembling the **PLB** *Directa* is to use easels or similar.

ASSEMBLY OF THE HEADER

2 - Fix the hitch (1), on the header (2), through the support (3), screws (4), washers and nuts (5).

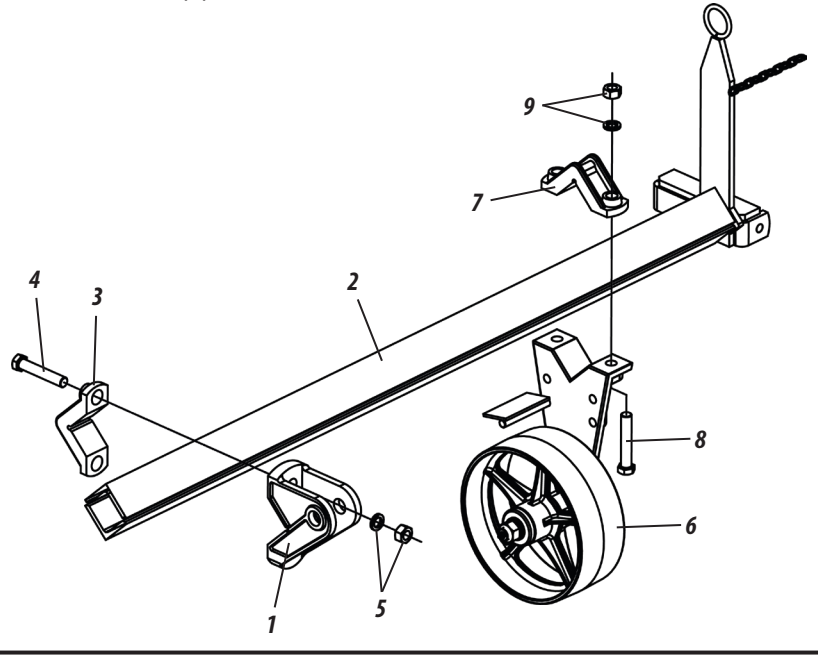
3 - Adjust the couplings according to the tractor category that will operate with the seeder.

Cat. I = 685 mm

Cat. II = 826 mm

Important : The minimum spacing between lines is 450 mm.

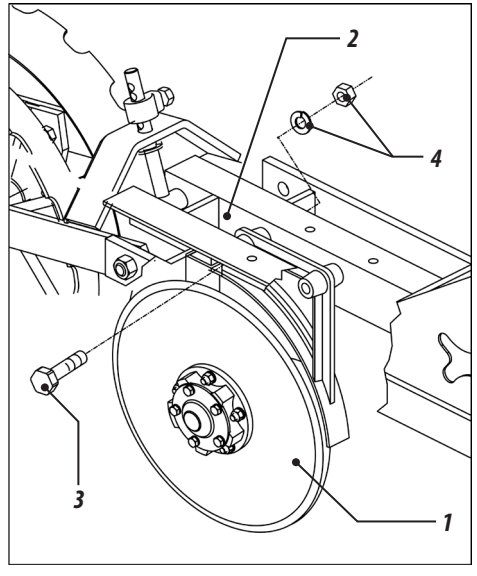
4 - Fix the complete wheel (6) to the header (2), through the bracket (7), bolt (8), washers and nuts (9).



ASSEMBLY OF DOUBLE DISCS IN PLANTING ROWS

Seed double disc

5 - Insert the seed double disc unit (1) between frame (2) and fix with bolts (3), washers and nuts (4).

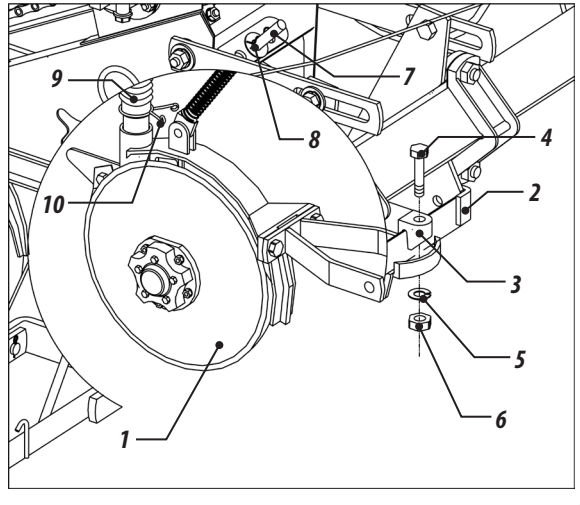


Fertilizer double disc

6 - Attach the fertilizer double disc cart (1) to the row support (2) fixing it with the lock (3), screw (4), washer (5) and nut (6).

7 - Insert the rod (7) in the support and lock it with the cotter pin (8).

8 - Place the conductive sleeve (9) in the mouth of the double disc, fixing it through the lock (10).

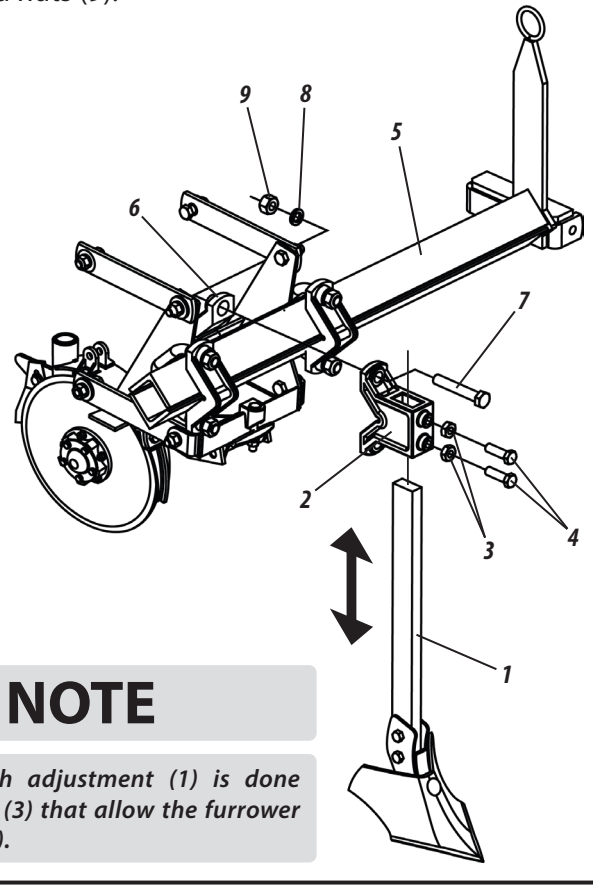


ASSEMBLING THE FURROWER WITHOUT SUPPORT FOR FERTILIZER CONDUCTOR (OPTIONAL)

To assemble the furrower without a fertilizer conductor support (optional), proceed as follows:

1 - Attach the furrower (1) to the fixing bracket (2), fixing it through the nuts (3) and screws (4).

2 - Then, attach the fixing bracket (2) to the hitch header (5), in the center of the line, fixing through the clamp (6), screws (7), lock washers (8) and nuts (9).



NOTE

The furrower depth adjustment (1) is done through the screws (3) that allow the furrower to go up or down (1).

ASSEMBLING THE FURROWER WITH SUPPORT FOR FERTILIZER CONDUCTOR (OPTIONAL)

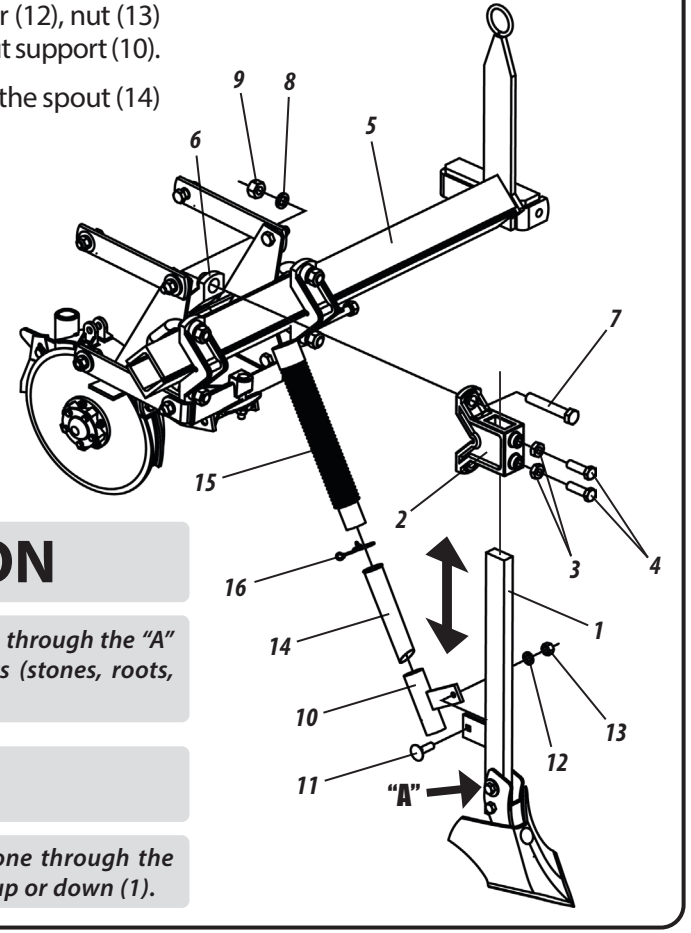
To assemble the furrower with a fertilizer conductor support (optional), proceed as follows:

1 - Attach the furrower (1) to the fixing bracket (2), fixing it through the nuts (3) and screws (4).

2 - Then, attach the fixing bracket (2) to the hitch header (5), in the center of the line, fixing through the clamp (6), screws (7), lock washers (8) and nuts (9).

3 - Then, fix the spout support (10) on the furrower (1) through the screws (11), lock washer (12), nut (13) and attach the spout (14) to the spout support (10).

4 - Finish by attaching the hose (15) to the spout (14) through the clip (16).



ATTENTION

The furrower has a hoe disarming system through the "A" screw, facilitating the passage of objects (stones, roots, etc.). The hoe reset is done manually.

NOTE

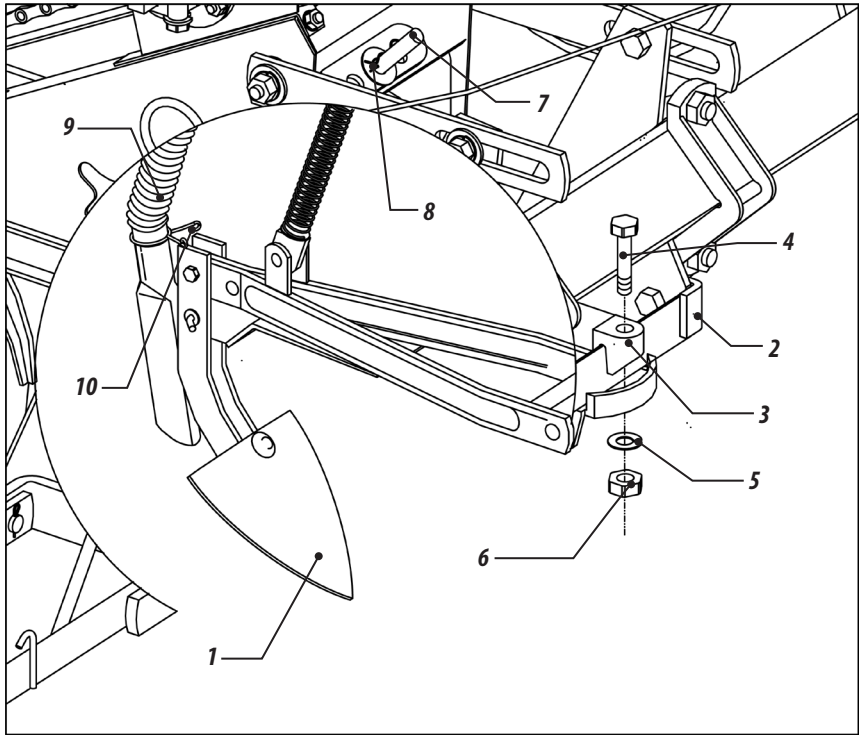
The furrower depth adjustment (1) is done through the screws (3) that allow the furrower to go up or down (1).

ASSEMBLING THE FERTILIZER FURROWER FOR CORN (OPTIONAL)

9 - Attach the furrower carriage (1) to the thread support (2) fixing it with lock (3), screw (4), washer (5) and nut (6).

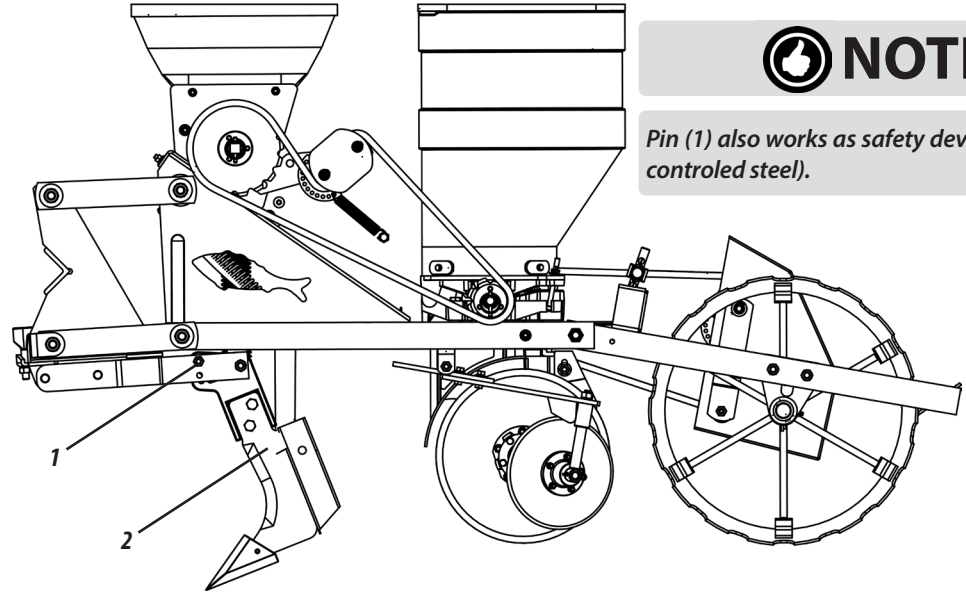
10 - Insert the rod (7) in the support and lock it with the cotter pin (8).

11 - Place the guide sleeve (9) in the furrower spout, fixing it through the lock (10).



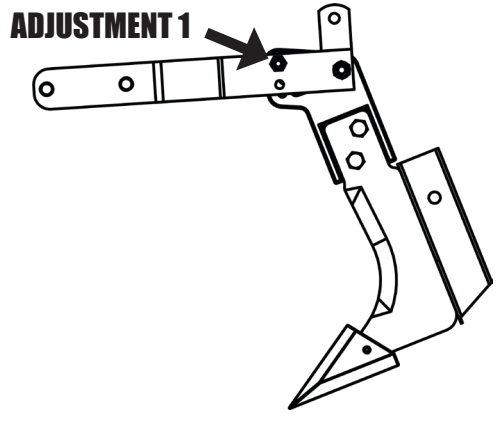
POSITION OF THE FURROWER FOR DEEP FERTILIZING (OPTIONAL)

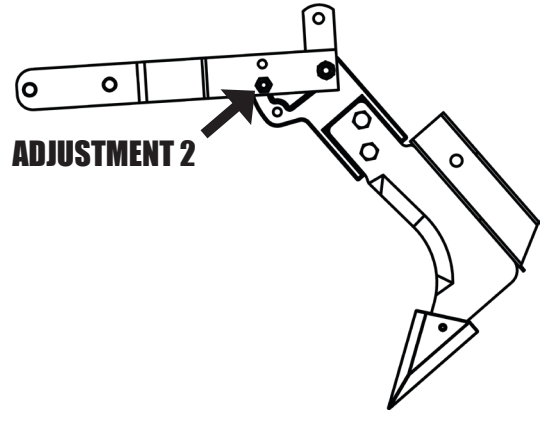
12 - The furrower can work in two positions. To adjust, remove pin (1) and move furrower (2) until you find the desired position. Replace pin (1).



NOTE

Pin (1) also works as safety device. (hardness controled steel).

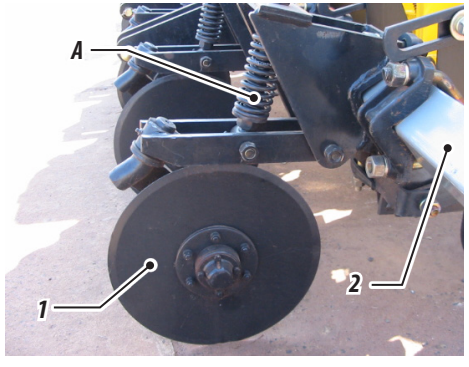


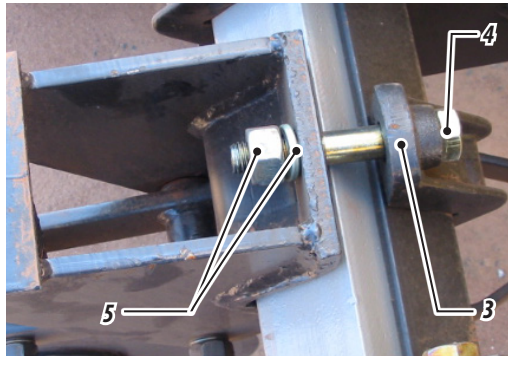


ASSEMBLING THE CUTTING COULTER (OPTIONAL)

- The **PLB** *Directa* was initially developed to work in conventional conditions. Now you can also work with this planter in No-Till conditons by attaching the No-Till kit (cutting coulter). Please proceed as follows :

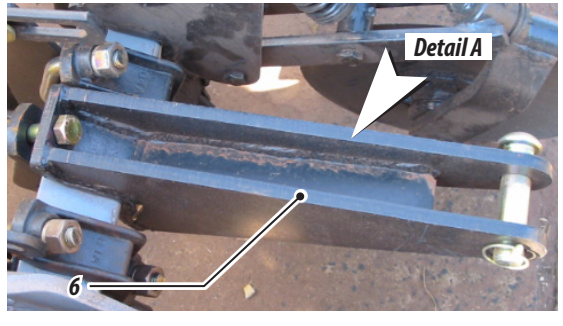
13 - Attach the cutting coulter (1) to the tool bar (2) fixing with bratchet (3), bolt (4), washers and nut (5).

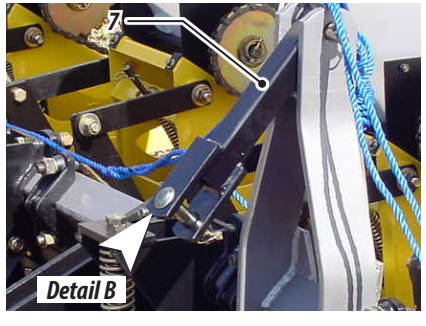




Spring "A" is preset by the factory. Do not increase the pressure, otherwise you will loose articulation on the coulter.

The machine's penetration capacity is given by the adequate and combined pressure of its active elements.





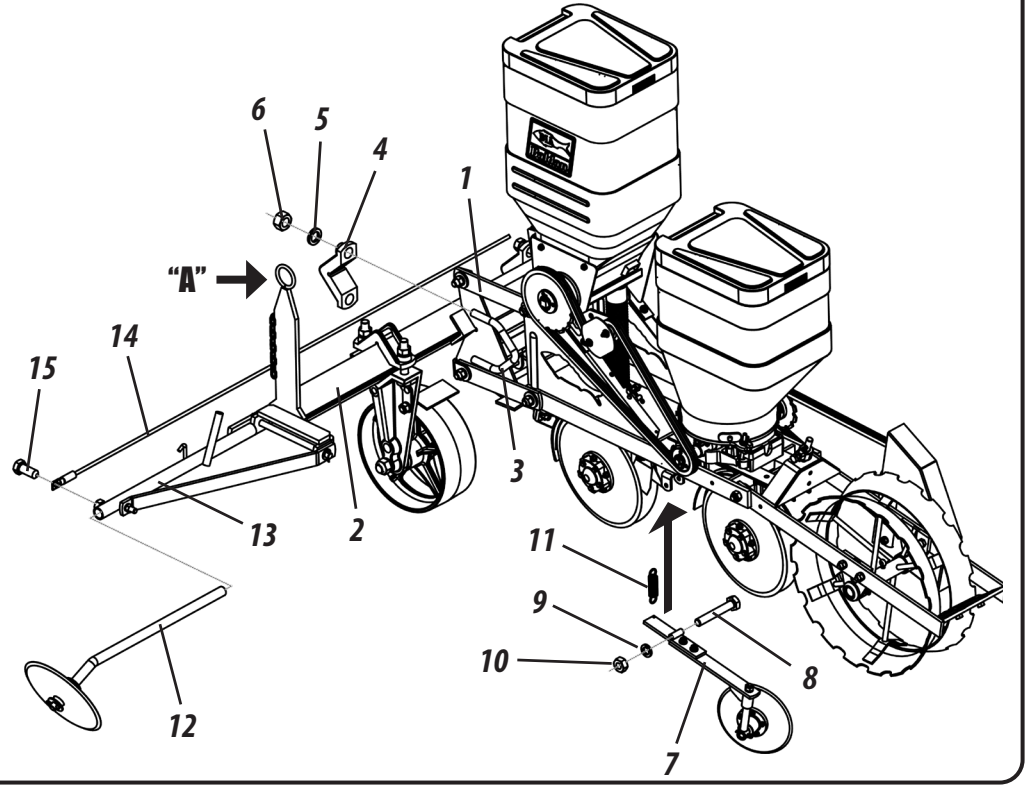
When placing the cutting disc, the hitch of the header (6) must be replaced and a bar (7) added, as shown in details "A" and "B".

ASSEMBLY OF THE PLANTING LINE, DISC COVERAGE AND LINE MARKER

14 - Fix the planting line (1) to the header (2) through the clamps (3 and 4), lock washers (5) and nuts (6).

15 - Insert the cover disc (7) between the frames of the frame, fixing it through the screw (8), lock washer (9) and nut (10); place the spring (11) between the cover disc support (7) and the planting line hook (1).

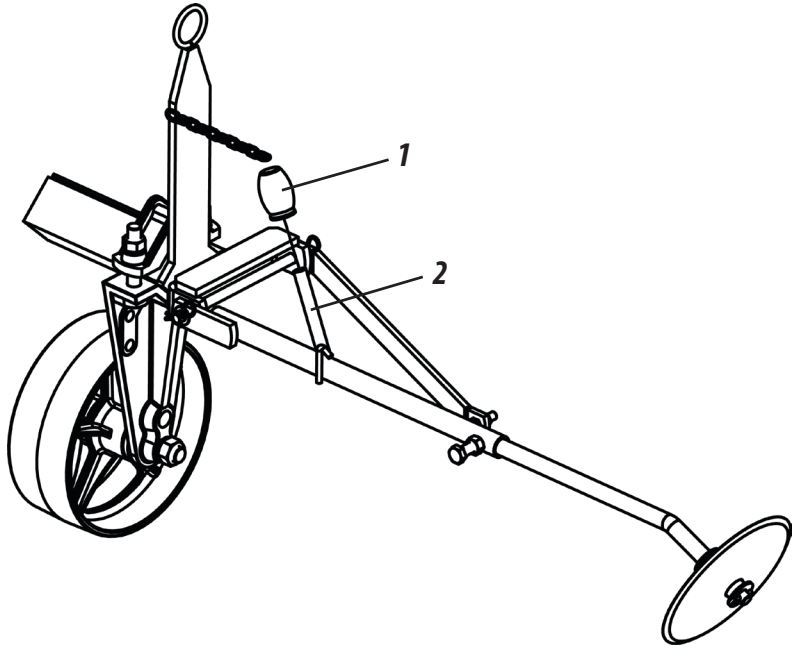
16 - Insert the line marker (12) in the goal (13), place the rope terminal (14) and fix it with the screw (15), passing it through the **"A"** rings of the header (2), fixing the other end to the line marker on the opposite side.



ASSEMBLY OF THE HYDRAULIC SYSTEM FOR LINE MARKER (OPTIONAL) - PART I

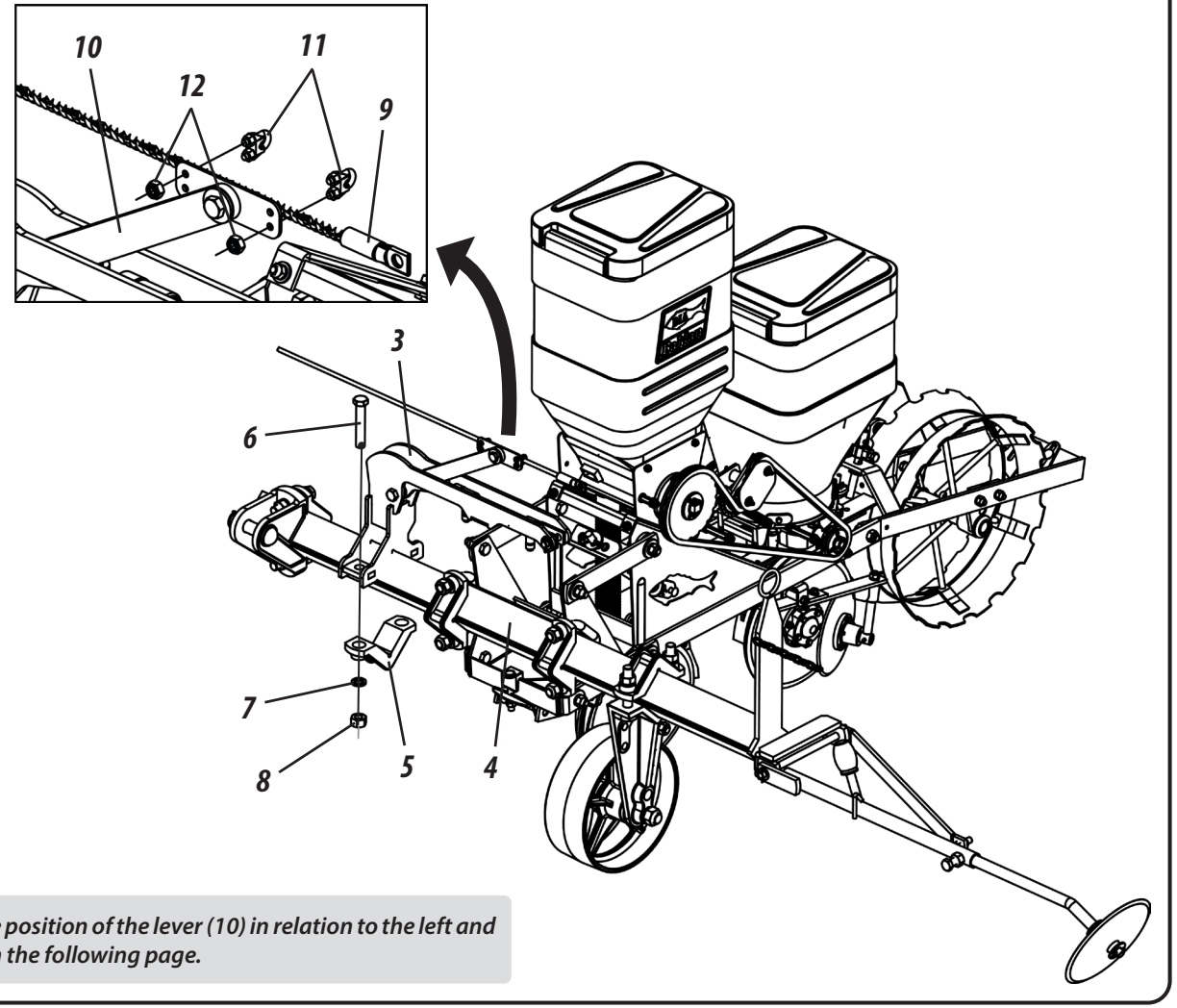
- The **PLB** *Directa* can be purchased optionally with a hydraulic system on the line marker. To assemble the hydraulic system, proceed as follows:

1 - Attach the shock beats (1) to the row markers (2).



2 - Then, couple the support (3) to the chassis (4), fixing through the clamp (5), screws (6), spring washers (7) and nuts (8).

3 - Then, secure the rope (9) on the lever (10), through the clamps (11) and nuts (12).

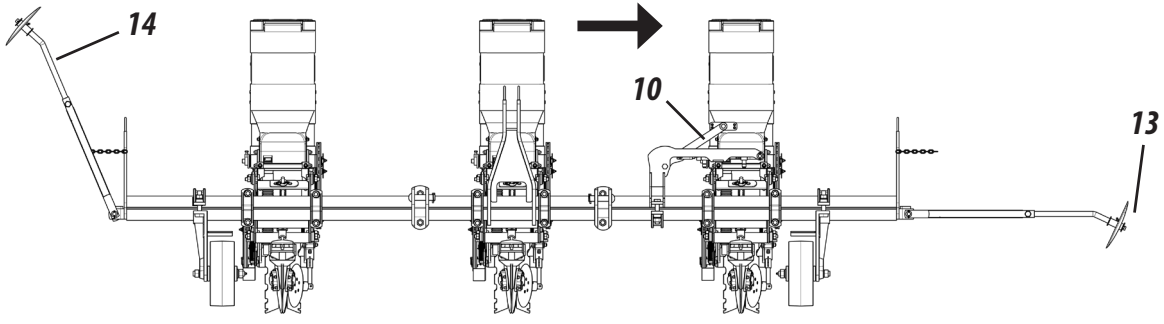


ATTENTION

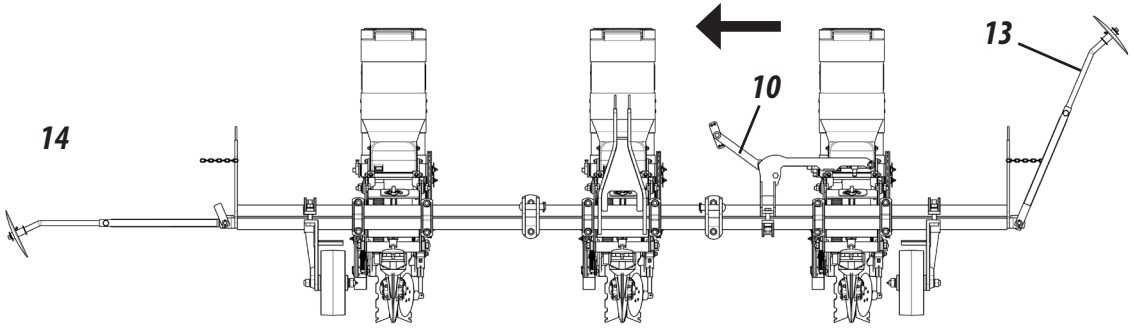
Before attaching the rope (9), note the position of the lever (10) in relation to the left and right thread markers, as instructed on the following page.

ASSEMBLY OF THE HYDRAULIC SYSTEM FOR LINE MARKER (OPTIONAL) - PART II

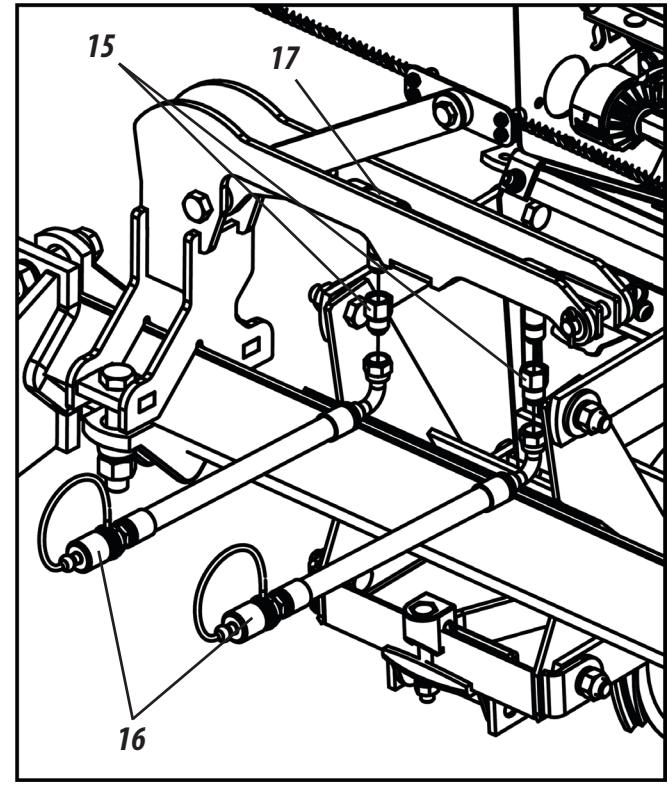
- Lever (10) positioned to left: Left marker (13) down and right marker (14) raised.



- Lever (10) positioned to the right: Right marker (14) down and left marker (13) up.



4 - Finish by attaching the reducing nipples (15) and hydraulic hoses (16) to the hydraulic cylinder (17).



⚠ ATTENTION

Failure to observe the position of the lever (10) in relation to the left (13) and right (14) markers will cause the rope (9) to break when adding the hydraulic system.

IMPORTANT

The "right" and "left" positions of the lever (10) are called looking behind the seeder.

⚠ ATTENTION

Do not mount hydraulic hoses (16) without reducing nipples (15). Ignoring this warning could cause damage or serious accidents.

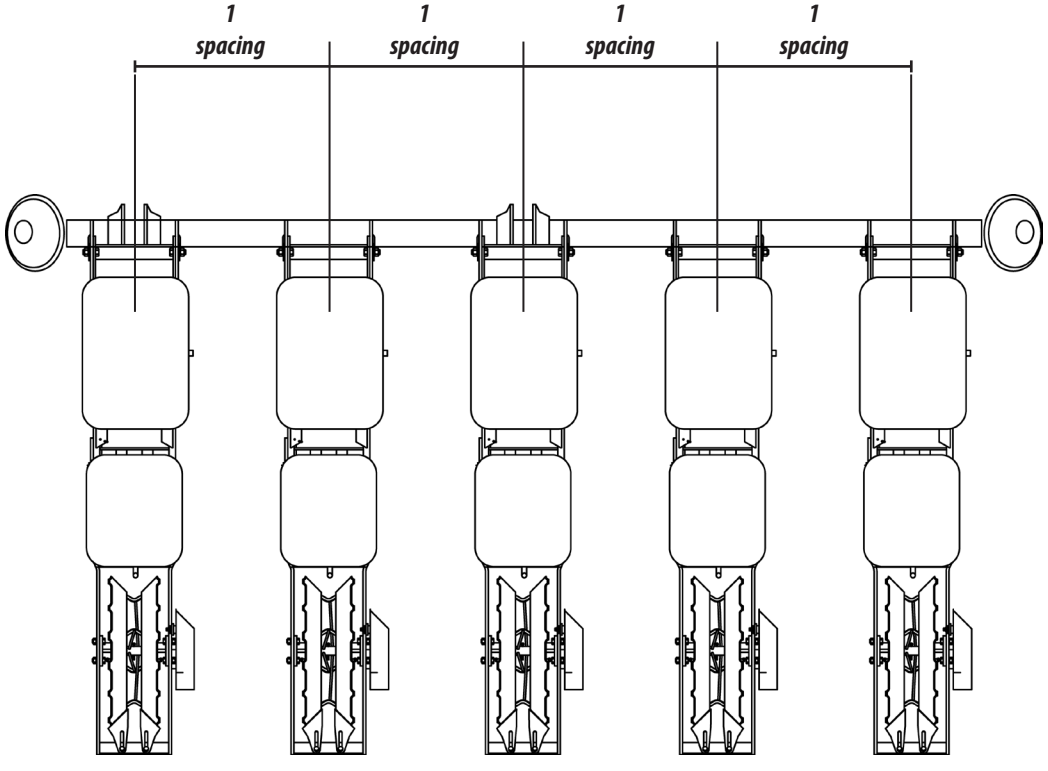
MARKING THE LINES IN THE HEADER

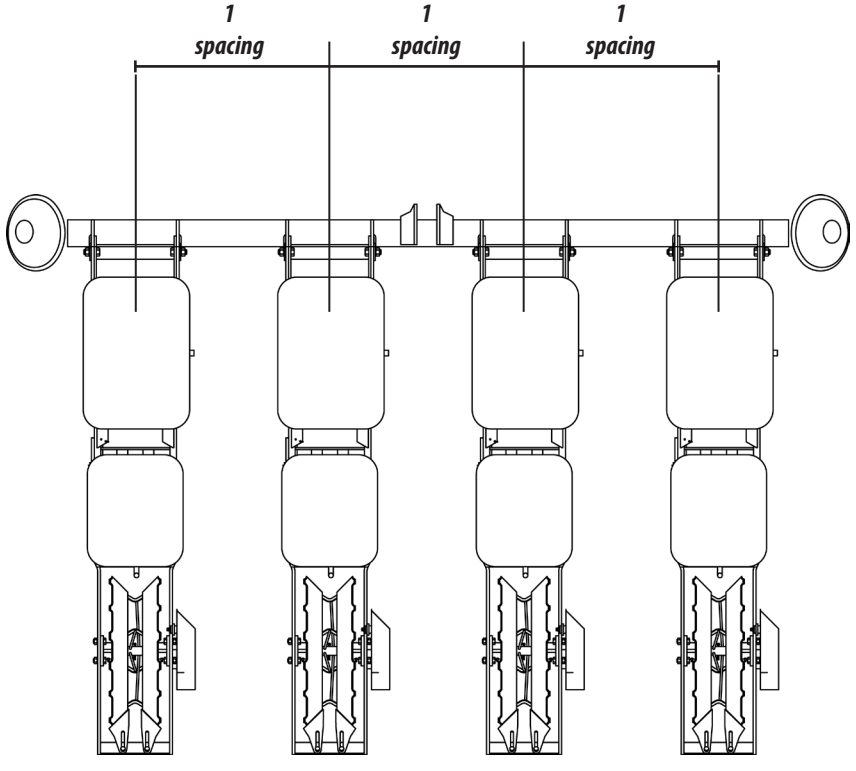
17 - Mark in the header the place where the planting lines will be fixed. For odd number of lines, fix one line in the center of the header, following to the others, according to the desired spacing.

18 - For even number of lines, mark the center of the header, divide 1 spacing and mark 1/2 (half) spacing to the left and 1/2 to the right. Fix there the first two lines, starting from them fix the others in the desired spacing.

19 - At the end of the assembly, do a general overhaul of the seeder, check that there are no objects (nuts, screws, etc.) inside the tanks.

20 - Retighten all screws and nuts, check all pins and cotter pins.





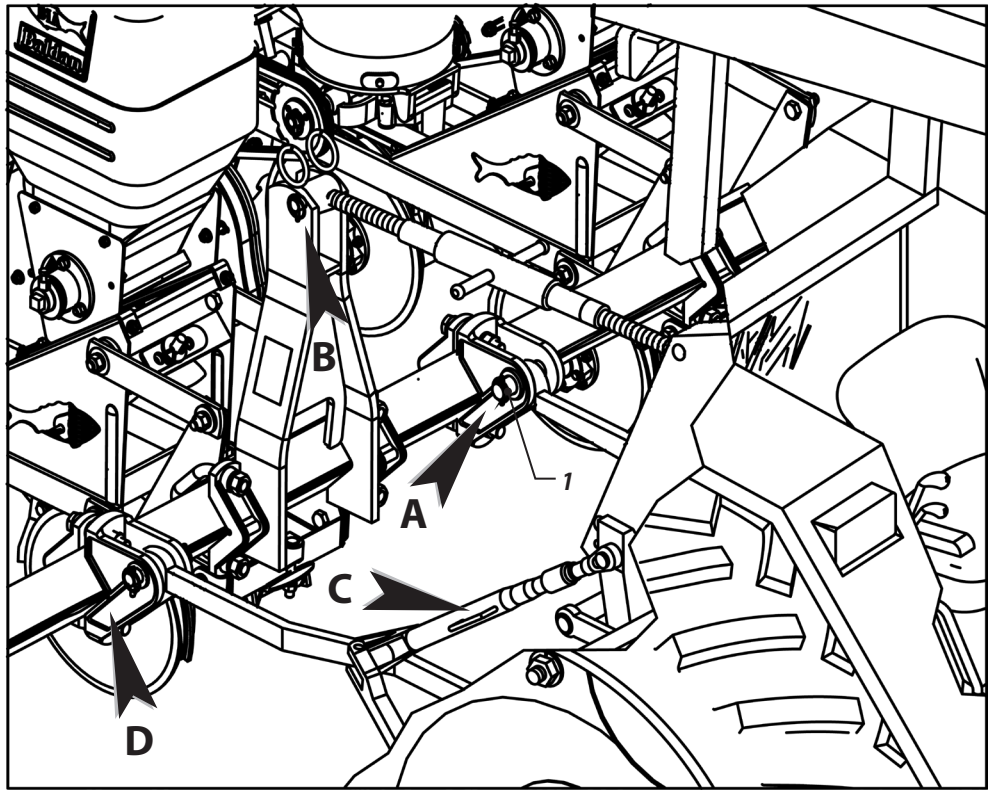
HITCH

TRACTOR HITCH

1 - Hitch the tractor's lower left arm with the hitch pin (1) on the **"A"** support of the seeder.

2 - Attach the 3rd point of the tractor to the **"B"** support of the seeder.

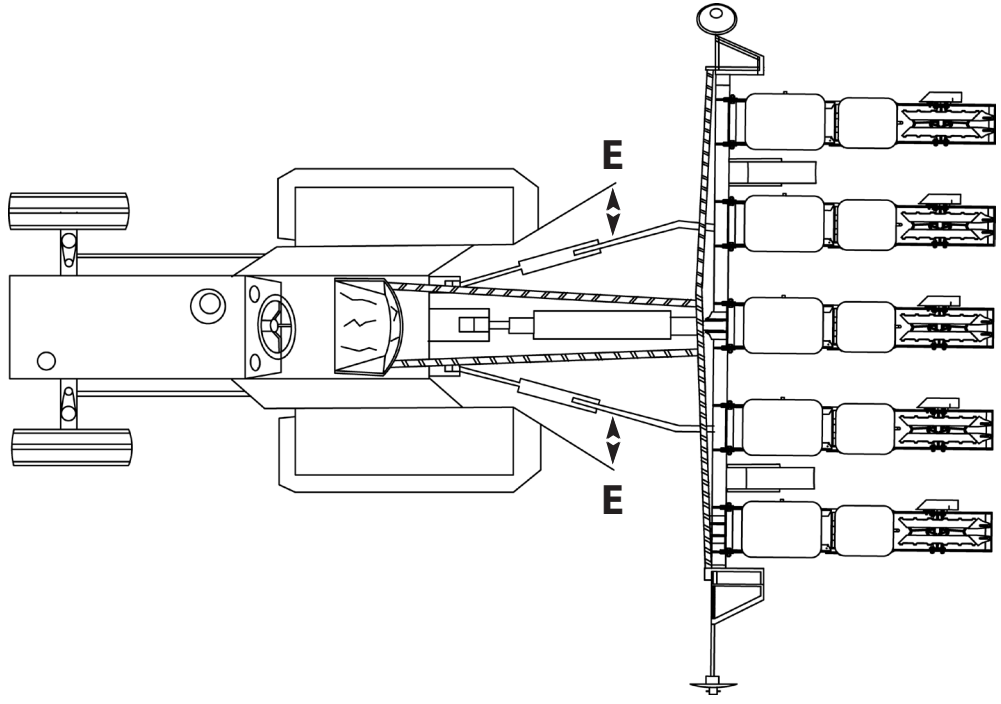
3 - Finally, with the help of the height adjustment lever **"C"** hook the lower right arm of the tractor to the support **"D"** of the seeder.



CENTRALIZATION OF THE SEEDER

- To center the **PLB** *Directa* in relation to the longitudinal axis of the tractor, proceed as follows:

4 - Align the top hitch of the seeder with the 3rd point of the tractor, checking that the distances **"E"** of the lower hydraulic arms are the same in relation to the tractor tires. The lower arms should be level with each other.

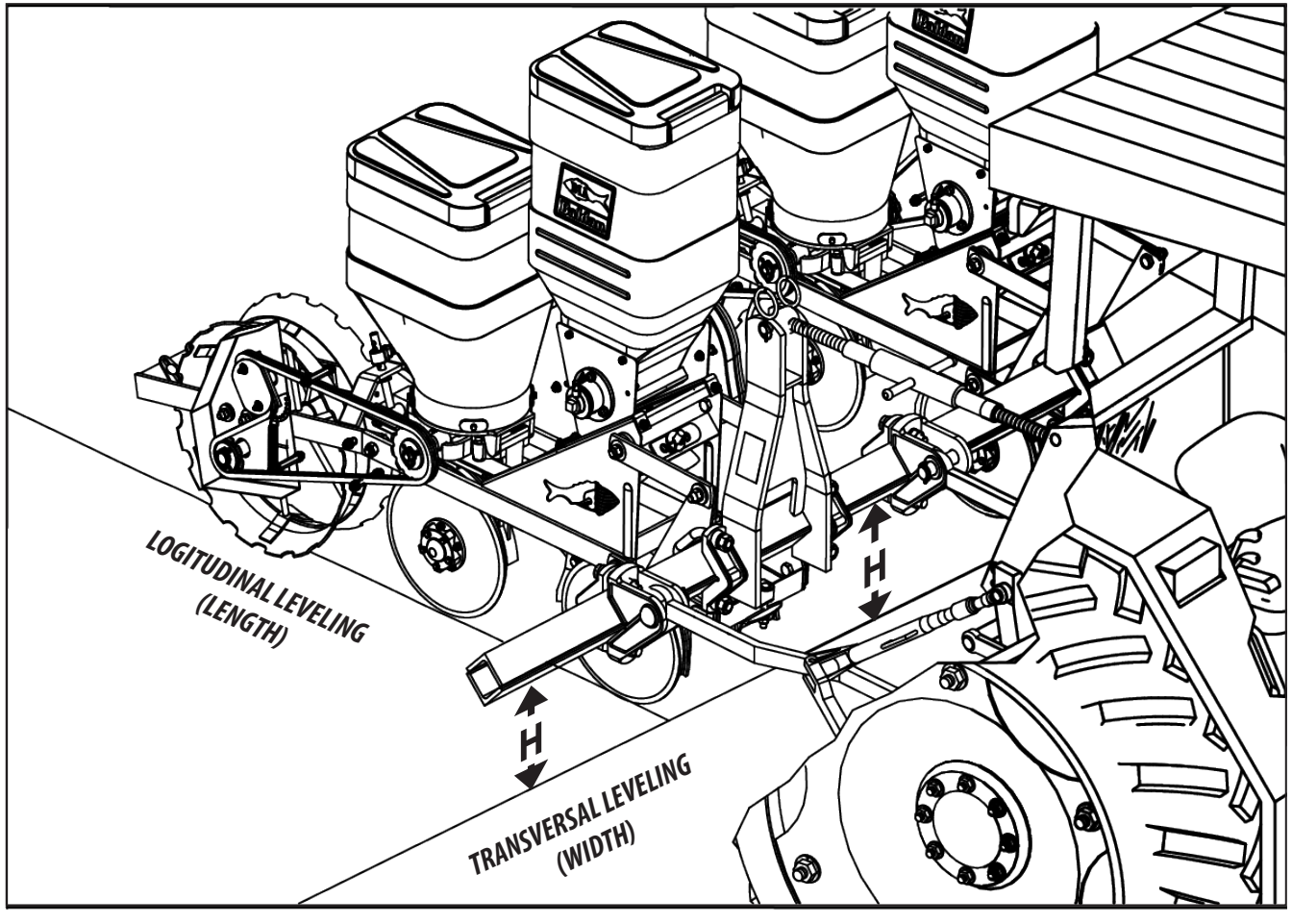


SEEDER LEVELING

5 - To level the **PLB** *Directa* proceed as follows:

6 - The tractor must be on level ground; then level the seeder in the transverse direction (width) through the crank of the lower right arm of the hydraulic hitch. Note the **"H"** measurements, which must be the same.

7 - The longitudinal leveling (length) is done through the arm of the 3rd point. Note that the lines must be parallel to the ground.



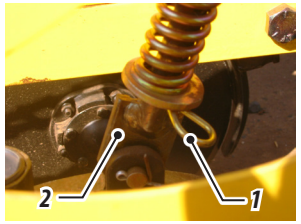
ADJUSTMENTS

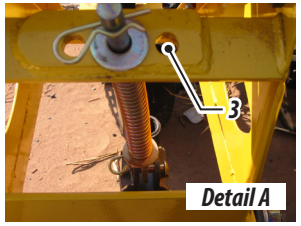
FERTILIZER DEPTH ADJUSTMENT

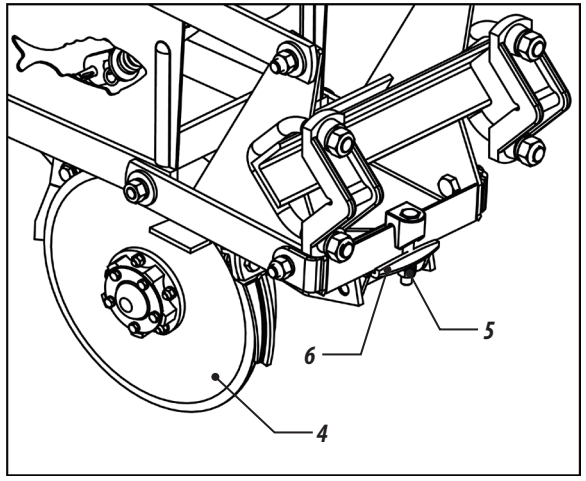
- The fertilizer depth adjustment is made through the spring pressure exerted on the disc carriage. For this adjustment, proceed as follows:

1 - To decrease the depth, place the lock (1) in the lower hole of the rod (2);

2 - To increase the depth, place the lock (1) in the upper hole of the bar (2).







ADJUSTMENT OF THE OPENING OF THE FURROW FOR FERTILIZER IN RELATION TO SEED

- The furrow opening is done by double discs (4). In order to adjust the distance between the fertilizer and seed forrow, proceed as follows:

3 - Loosen nut (5);

4 - Insert spring rod (2) into support hole (3); **detail "A".**

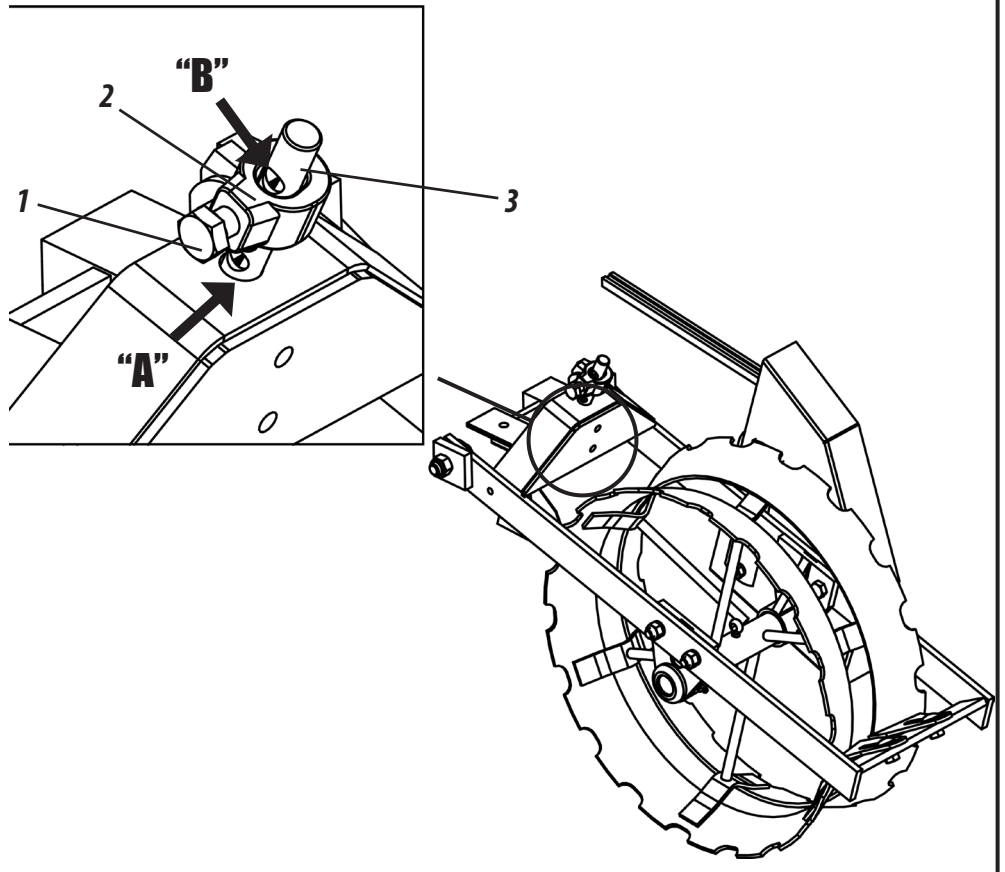
5 - Move the complete double disc unit (6) until you achieve the correct position.

SEED DEPTH ADJUSTMENT

- The seed depth adjustment is done by changing the pressure of the spring upon the double disc unit. To adjust the presure, proceed as follows:

6 - To reduce the depth, loosen bolt (1) and fix lock bushing (2) on the lower mark **"A"** of rod (3);

7 - To increase the depth, fix lock bushing (2) on a higher mark **"B"** of rod (3).

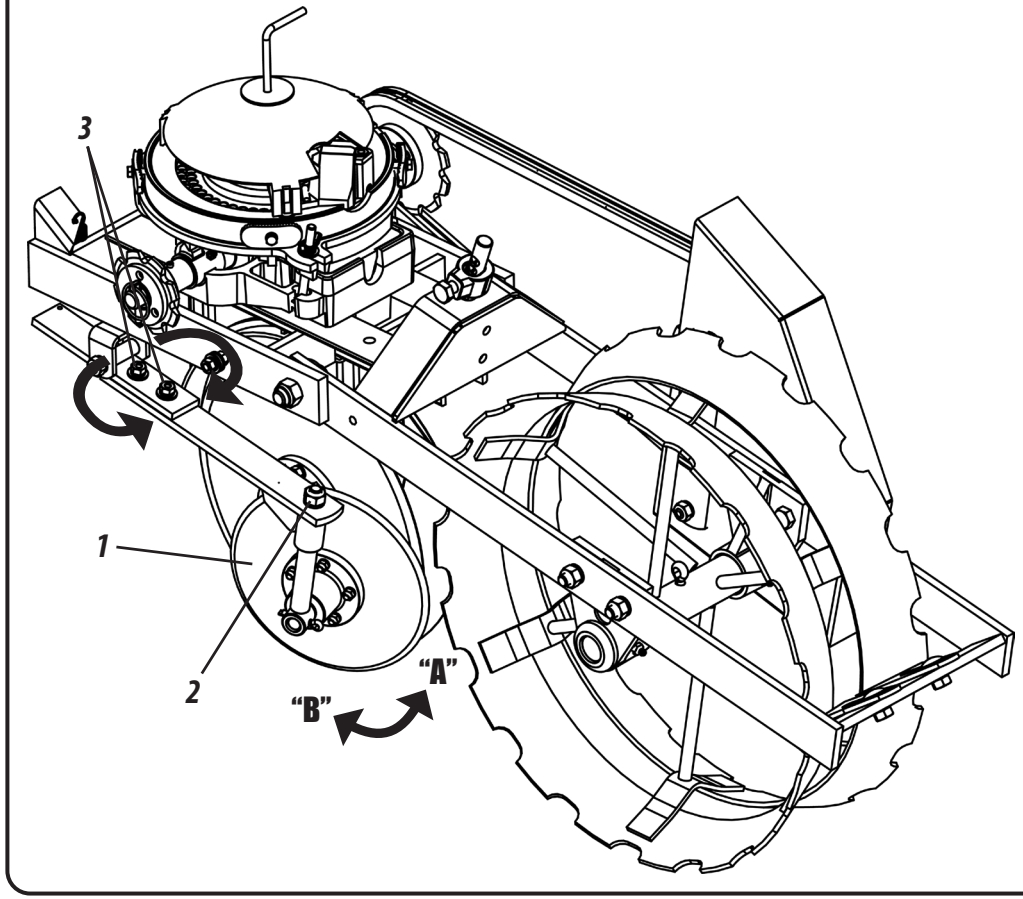


COVERAGE DISC ADJUSTMENT

8 - The covering of the seeds is done by disc (1). This disc should be adjusted (angle) according to the type of the soil.

9 - To adjust the disc, loosen nut (2) and turn disc (1) to direction **"A"** to more soil coverage over the seed. For less soil coverage, turn to direction **"B".**

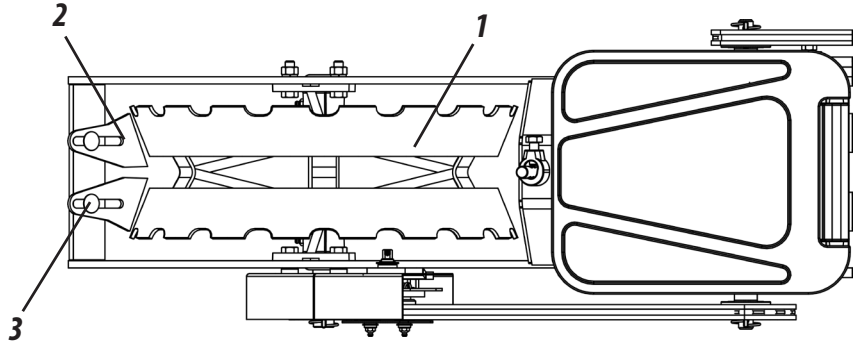
10 - If you need to place the disc closer to the furrow, loosen bolt (3) and find the desired position.



STEEL COMPACTATION WHEEL

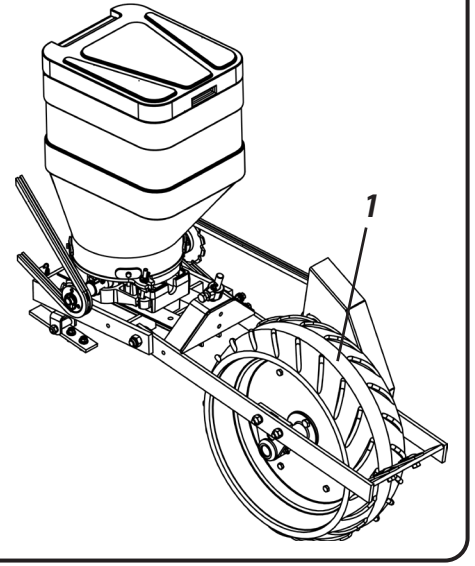
11 - The steel compactation wheel (1) is supplied in order to side press the soil uponthe seed, improving it's germination level.

12 - Cleaners (2) should be adjusted by bolts (3). The function is to keep the wheel always clean. This will also guarantee a constant and uniform depth control.



RUBBER COMPACTATION WHEEL

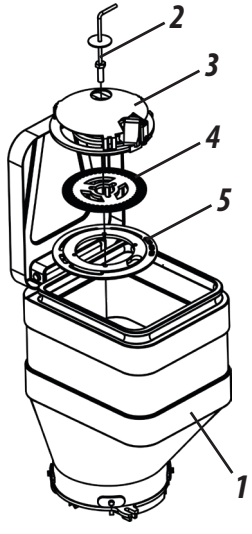
13 - The rubber compactation wheel (1) is normally used with seeds that do not need that much of side pressure.



SEED ADJUSTMENTS

SEED DISTRIBUTION DISCS

1 - To change or replace the distributor disks, open the seed box (1), remove the screw (2), the upper support with deflector (3) and the distributor disk (4) that will be replaced.

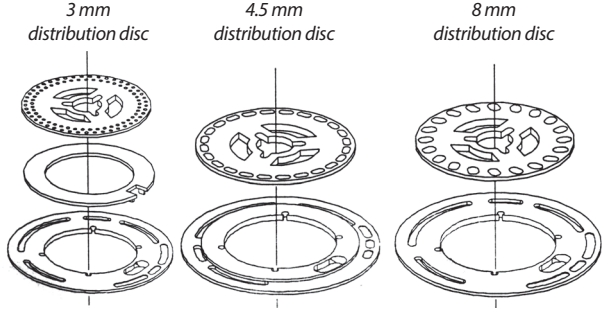


2 - Choose the desired distributor disk and mount it in the seed box. Check the placement of the rings (5) according to the seed distributor disc as follows:

- For 3 mm distribution disc use a plastic ring of 5 mm and a metal ring of 3.5 mm.
- For 4.5 mm distribution disc use two metal rings of 3.5 mm.
- For 5.5 mm distribution disc use a plastic ring of 2.5 mm and a metal ring of 3.5 mm.
- For 8 mm distributor disc use a metal ring of 3.5 mm.

ASSEMBLING THE DISTRIBUTION DISC

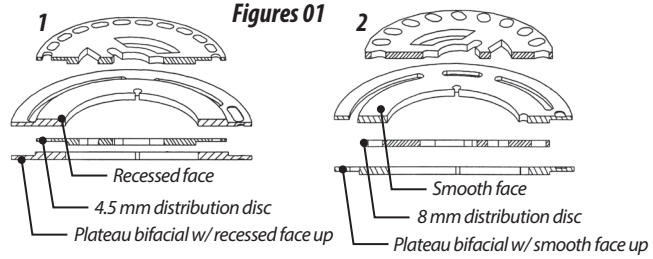
- For 4.5 mm disk, mount the bifacial plate with the recessed face upwards, according to item 1 figure 01.
- For 8 mm disc, mount the bifacial plateau with the smooth face upwards according to item 2 figure 01.



The incorrect assemblage of distribution discs and bifacial plateau may damage the machine and planting, as shown in Figures 01.

- Before filling the box with seeds, it is important to check the whole distribution system, mainly the operation of triggers of the metering seed box.

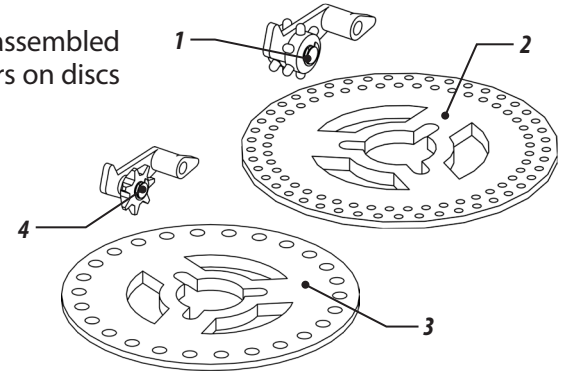
Figures 01



SEED METERING STAR

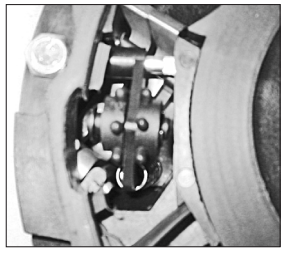
3 - The seed distributor is factory-assembled with a trigger of two dosing stars on discs with a double row of holes (2).

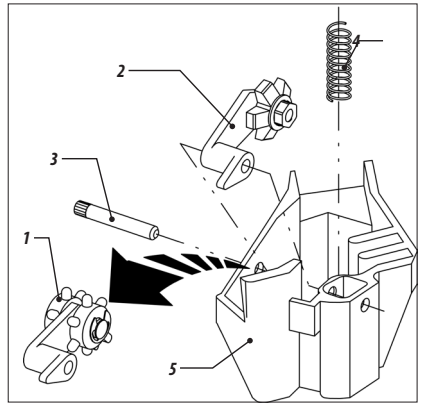
4 - The single-row discs (3) use a metering star trigger (4). To change the triggers, see the figures below.



REPLACEMENT OF DOUBLE TRIGGER BY SINGLE TRIGGER

- The seed distributor leaves the factory with trigger of two metering stars (1) for discs of double row of holes. To replace it by the single trigger star (2), remove the pin (3), the trigger (1), place the spring (4) in the socket, insert the trigger (2) in the box (5) and lock with the pin (3).





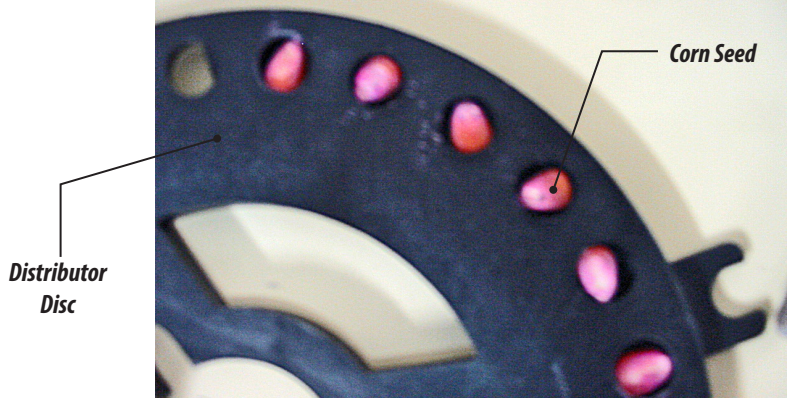
SEED DISTRIBUTOR DISCS FOR EACH CULTURE

- The machine leaves the factory with 6 different sets of discs (Standard Discs) and individual optional discs can be purchased or the 6 sets of discs can be combined as required by the customer.

Tipes of culture	Standards Discs	
Soybean	90 Holes (7,0 mm)	x 4,5 mm
Corn* / Rice	26 Holes (13,5 mm)	x 4,5 mm
	26 Holes (13,0 mm)	x 4,5 mm
	26 Holes (11,0 mm)	x 4,5 mm
Sorghum	90 Holes (5,0 mm)	x 3,0 mm
Blind	-	x 4,5 mm

CORN CULTURE

5 - For the ideal choice of the corn seed distributor disk, a seed sample must be collected from the lot that will be planted and verify that it fits perfectly in the disk drilling. The seed must pass through the hole without suffering friction or breakage (caused by the use of discs with small holes). In the case of large holes, two or more seeds may be lodged per hole, causing duplicate distribution.



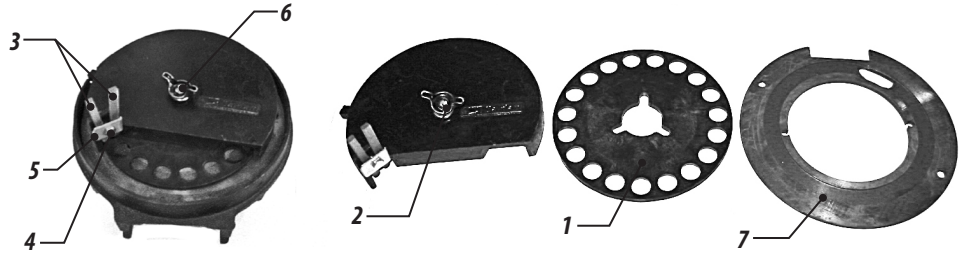
Types of Cultures	Optional Discs	
Soybean	38 Holes (7,5 x 18,0 mm)	x 4,5 mm
	38 Holes (8,0 x 18,0 mm)	x 4,5 mm
	62 Holes (8,5 x 9,0 mm)	x 4,5 mm
Corn*	24 Holes (9,0 x 14,0 mm)	x 4,5 mm
	24 Holes (10,0 x 15,0 mm)	x 4,5 mm
	24 Holes (11,0 x 15,0 mm)	x 4,5 mm
	42 Holes (9/32")	x 4,5 mm
Sorghum	50 Holes (4,8 mm)	x 3,0 mm
	90 Holes (5 x 5,5 mm)	x 3,0 mm
Bean	64 Holes (8,0 x 12,0 mm)	x 5,5 mm
Peanut**	19 Holes (19,0 mm)	x 6,0 mm
Sunflowers	20 Holes (7,0 x 16,0 mm)	x 4,5 mm
Cotton without linter	30 Holes (5,5 x 11,0 mm)	x 4,5 mm
	40 Holes (7,5 x 12,5 mm)	x 4,5 mm
Others	17 Holes (9/32")	x 3,0 mm
	18 Holes (9/32")	x 3,0 mm
	30 Holes (8,5 x 12,0 mm)	x 4,5 mm
	30 Holes (9,0 x 13,5 mm)	x 4,5 mm
	30 Holes (10,0 x 14,5 mm)	x 4,5 mm
	30 Holes (11,0 x 15,5 mm)	x 4,5 mm
	40 Holes (8,0 x 13,5 mm)	x 4,5 mm
	90 Holes (5,0 x 5,5 mm)	x 3,0 mm
	90 Holes (7,0 x 7,5 mm)	x 4,5 mm
	Blind disc for special holes	

ATTENTION

The distributor disc plus rings set must have a total thickness of 11.5 mm for a perfect adjustment of the system. So when the distributor disc has a thickness other than 4.5 mm or 8.0 mm, as in sorghum and bean crops, use special ring as shown on page 15. (Standard ring thickness: 3.5 mm each).

PEANUT CULTURE KIT

6 - For peanut cultivation, the kit is used, which consists of a distributor disk with 19 holes of 3/4" x 6 mm (1), internal flow regulator (2), seed droppers (3), clamp (4), screw, washer and nut (5), butterfly screw and washer (6) and bifacial plateau disc (7).



7 - Below we demonstrate the approximate seed distribution tables for different crops. The values indicated in the tables are collected under normal working conditions, and are subject to variations such as:

- Wheel slip index.
- Soil conditions.
- Seed irregularities.
- Operating speed.

SOYBEAN DISTRIBUTION TABLE

8 - Approximate tables for distribution of soybean seeds, larger size.

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
38 Holes Thickness 4,5 mm	8	15	11,0
	8	13	12,0
	8	12	13,0
	8	11	14,5
	8	10	16,0
	8	9	18,0
	8	8	20,0
	9	8	22,0
	10	8	25,0
	11	8	27,0
	12	8	30,0
	13	8	33,0
	15	8	37,0
38 Holes Thickness 8,0 mm	8	8	38,0
	9	8	42,0
	10	8	46,0
	11	8	50,5
	12	8	55,0

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
40 Holes Thickness 4,5 mm	8	15	10,2
	8	13	12,0
	8	12	13,5
	8	11	14,0
	8	10	16,0
	8	9	18,0
	8	8	19,5
	9	8	22,5
	10	8	24,0
	11	8	27,0
	12	8	29,0
	13	8	32,0
	15	8	37,0
40 Holes Thickness 8,0 mm	8	8	32,5
	9	8	36,1
	10	8	41,8
	11	8	43,0
	12	8	35,7
	13	8	53,7

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
62 Holes Thickness 4,5 mm	8	15	9,0
	8	13	10,0
	8	12	11,0
	8	11	12,0
	8	10	13,0
	8	9	14,5
	8	8	16,5
	9	8	18,0
	10	8	20,5
	11	8	22,0
	12	8	24,5
	13	8	27,0
	15	8	30,0
90 Holes Thickness 8,0 mm	8	15	13,5
	8	13	15,0
	8	12	16,5
	8	11	18,0
	8	10	19,5
	8	9	21,7
	8	8	24,5
	9	8	27,0
	10	8	30,0
	11	8	33,0
	12	8	36,5
	13	8	40,5
	15	8	45,0

CORN DISTRIBUTION TABLE

9 - Approximate table for corn seed distribution, flat format.

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
26 Holes Thickness 4,5 mm	8	15	3,5
	8	13	4,0
	8	12	4,5
	8	11	5,0
	8	10	5,5
	8	9	6,0
	8	8	6,5
	9	8	7,5
	10	8	8,5

A **PLB** Directa possui 3 discos distribuidores de milho, verificar em qual a semente melhor se encaixa. Os valores da tabela não variam.

BEANS DISTRIBUTION TABLE

10 - Approximate table for beans seed distribution.

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
20 Holes Thickness 4,5 mm	8	15	6,0
	8	12	7,0
	8	10	8,0
	8	8	9,0
	8	8	10,0
	9	8	11,0
	10	8	12,0
	11	8	14,0
	12	8	15,0
	13	8	16,0
	15	8	17,0

SORGHUM DISTRIBUTION TABLE

11 - Approximate table for sorghum seed distribution.

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
50 Holes Thickness 3 mm	8	17	6,0
	8	15	7,0
	8	13	8,0
	8	12	9,0
	8	11	10,0
	8	10	11,0
	8	9	12,0
	8	8	13,0
	9	8	15,0
	10	8	17,0
90 Holes Thickness 3 mm	8	17	10,8
	8	15	11,2
	8	13	14,4
	8	12	16,2
	8	11	18,0
	8	10	19,5
	8	9	21,6
	8	8	23,4
	9	8	27,0
	10	8	30,6

RICE DISTRIBUTION TABLE

12 - Approximate table for rice seed distribution.

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
26 Holes Thickness 4,5 mm	8	15	28 a 32
	8	13	32 a 35
	8	12	35 a 40
	8	11	40 a 45
	8	10	45 a 50
	8	9	50 a 53
	8	8	53 a 56
	9	8	65 a 75
	10	8	68 a 73

PEANUT DISTRIBUTION TABLE

13 - Approximate table for peanut seed distribution.

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
19 Holes Thickness 6 mm	8	8	10,0
	9	8	11,0
	10	8	12,0
	11	8	13,0
	12	8	14,0
	13	8	15,0
	15	8	17,0
	17	8	18,0

SUNFLOWER DISTRIBUTION TABLE

14 - Approximate table for sunflower seed distribution.

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
20 Holes Thickness 4,5 mm	8	15	2,7
	8	13	3,1
	8	12	3,5
	8	11	3,8
	8	10	4,3
	8	9	4,6
	8	8	5,0
	9	8	5,8
	10	8	6,5
	11	8	7,5
	12	8	8,5

COTTON WITHOUT LINTER DISTRIBUTION TABLE

15 - Approximate table for cotton without linter seed distribution.

Discs	Number of gear teeth		Quantity of seeds per linear meter
	Motor "A"	Moved "B"	
26 Holes Thickness 4,5 mm	8	17	4,6
	8	15	5,4
	8	13	6,2
	8	12	7,0
	8	11	7,7
	8	10	8,5
	8	9	9,3
	9	8	11,5
	10	8	13,0

BATCHER

TITANIUM BATCHER (OPTIONAL) - PART I

The **PLB** *Directa* can be purchased as an option with the **TITANIUM** seed meter.

TITANIUM is the mechanical metering unit that provides seed distribution with a high rate of reduction of double seeds and crop failures:

COTTON PEANUT CANOLA BEAN

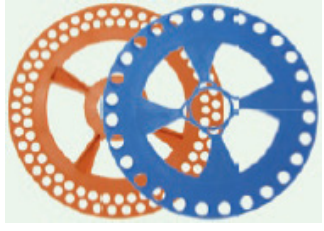
SUNFLOWERS CORN SOYBEAN SORGHUM

In order to ensure the **TITANIUM** batcher's full efficiency, use only the Apollo discs.

Front - Soybean Disc

APOLLO RAMPFLOW ®

(WAVY RAMP)



Apollo discs, of corn and soybean, with Rampflow technology.

Apollo Rings

When choosing the ring, it is also important to note that **TITANIUM** uses a unique ring, and no other type is compatible.

DISPLAY

It allows the viewing of the moving disk, assisting in the correct choice of disk and ring. In addition to allowing the monitoring of performance during planting.

TITANIUM BATCHER (OPTIONAL) - PART II

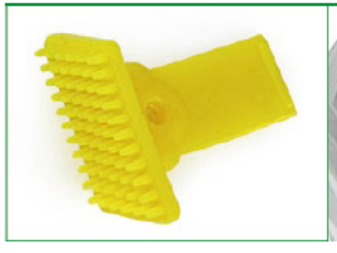
ESCOVAFLEX

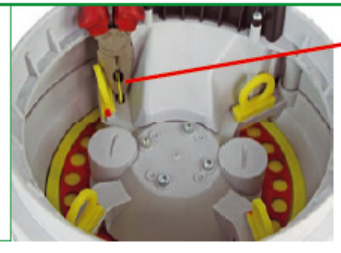
It expels the seeds that did not fall by gravity. Its contact is equal, providing less friction and less mechanical damage to the seed.

POLIFLOWS

Organizers that guide the seeds precisely into the disk holes provide reduced doubles, failures, and minimize mechanical damage.

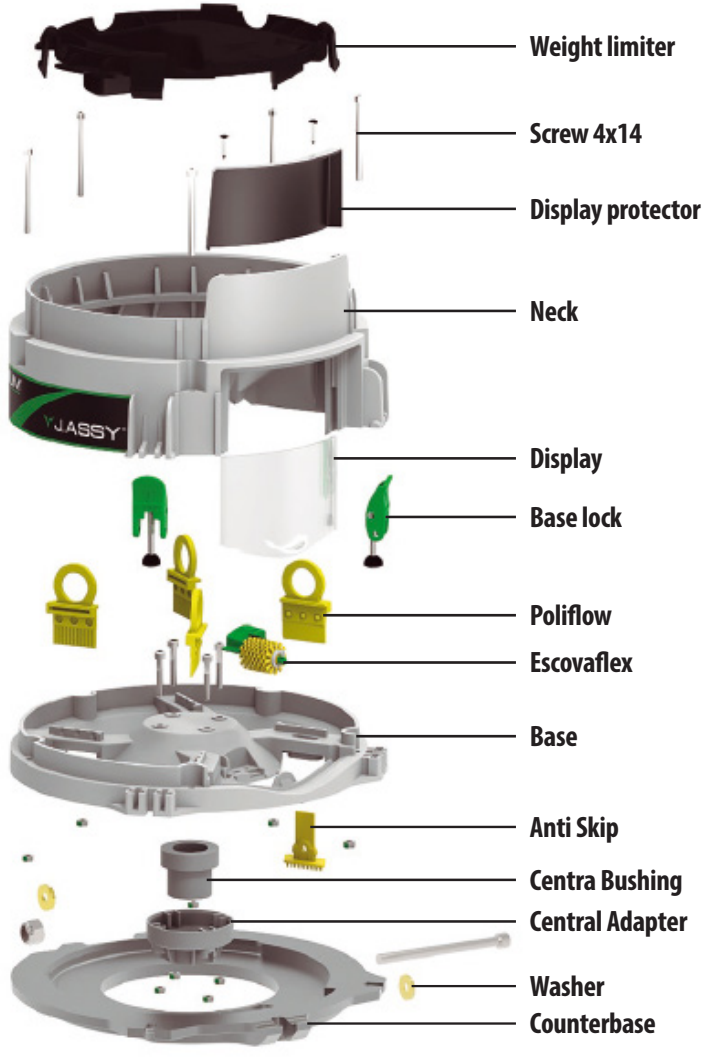
ANTI SKIP





It keeps the seeds in the holes after the last stage of the organization, in cases of skipping caused by the irregularity of the soil.

TITANIUM COMPONENTS



TITANIUM BATCHER DISCS AND RINGS

DISCS AND RINGS - STANDARD (TITANIUM BATCHER)

The **PLB** *Directa* when purchased as an option with the **TITANIUM** seed meter, leaves the factory with some standard discs and rings.

CORN

1 DISC

28 Holes - ø12mm (Orange) - Thickness 4.0mm

4 RINGS

Yellow (Smooth) - Thickness 4.0mm
Green (Recess 1.0) - Thickness 4.0mm
Gray (Recess 1.6) - Thickness 4.0mm
Dark Blue (Recess 2.5) - Thickness 4.0mm

SOYBEAN

2 DISCS

90 Holes - ø8mm (Orange) - Thickness 4.5mm
90 Holes - ø9mm (Lilac) - Thickness 5.5mm

2 RINGS

Lilac (Smooth) - Thickness 3.0mm
Purple (Recess 0.8) - Thickness 3.0mm

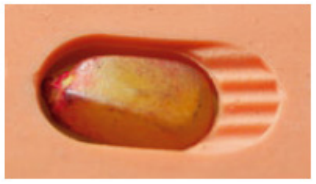
2 RINGS

Orange (Smooth) - Thickness 4.0mm
Light Orange (Recess 1.0) - Thickness 4.0mm

THE RIGHT CHOICE OF DISCS AND RINGS

Due to the diversity of shapes found in seeds, we have developed specific disc and ring models for each crop.

In order to guarantee the quality of the planting, in the choice of the disk is necessary to observe if the seeds:



It is well lodged in the hole of the disk, so that no two seeds fit in the same hole and **don't get stuck.**

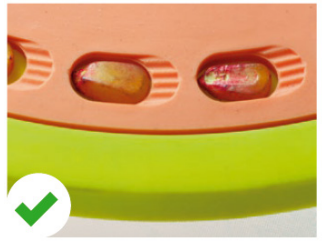
Don't get exposed above of the disk.

IMPORTANT:

By choosing the right disk, the seeds will be well lodged in the holes and will not be above the disk.

CORRECT CHOICE OF DISC

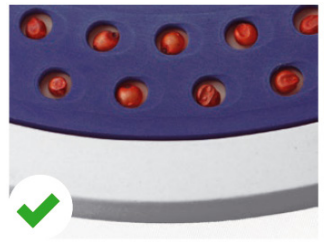
Example with the CORN DISK



Correctly housed seeds.

Seeds too tight or larger than the disk holes

Example with the SORGO DISK



Correctly housed seeds.

Loose seeds in the holes and occurrence of double.

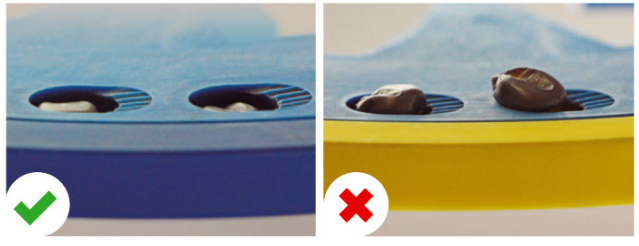
Example with the SOY DISK

Correctly housed seeds.

Loose seeds in the holes and occurrence of double.

CORRECT CHOICE OF RING

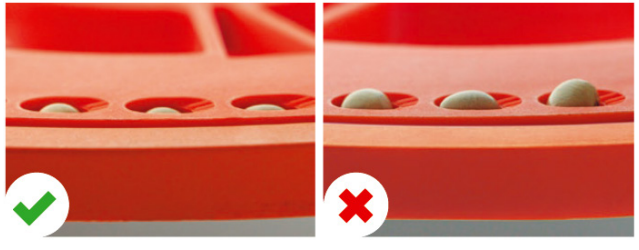
Example with the CORN RING



Seeds close to the edge of the set.

Exposed seeds.

Example with the SOY RING



Seeds close to the edge of the set.

Exposed seeds.

USE OF GRAPHITE

The **graphite is essential for the system to work and also for perfect seed distribution,** reducing doubles and failures, broken seeds, and system wear.

ATTENTION

If **PLB** *Directa* is equipped with a tank, never mix the graphite with the treatment, as the liquid treatment removes the lubricating function of the graphite.

Mix the graphite evenly, graphite evenly.

Do not sprinkle just on top of the seeds. Mix in all of them evenly.

IMPORTANT

Check with the manufacturer of your graphite to use the correct amount.

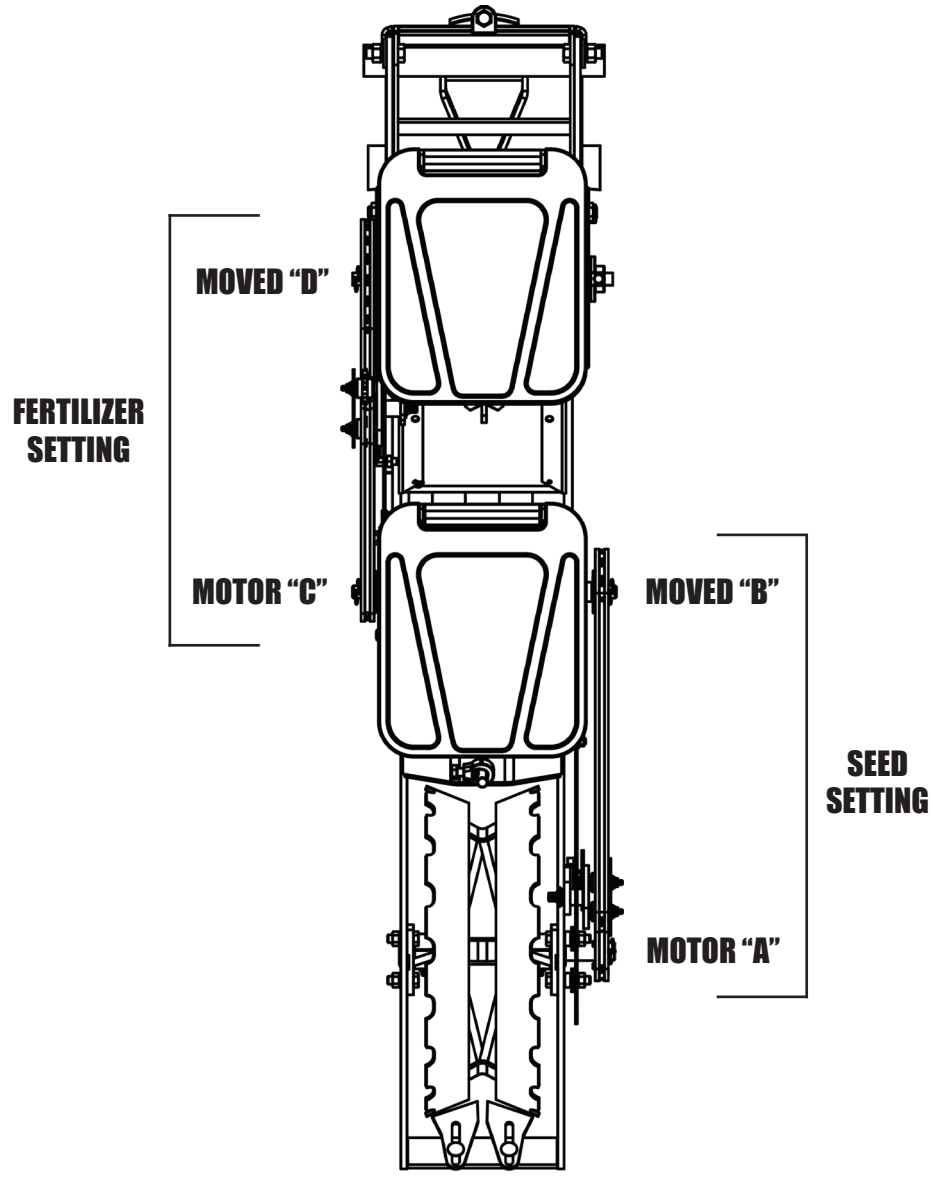
SEED AND FERTILIZER ADJUSTMENT

1 - The seed distrbution is done by horizontal plates. In order to increase or decrease the quantity of seeds to be distributed a a linear meter, you should change sprockets **"A"** (motor) and **"B"** (moved) until you find the desired combination.

2 - To adjust the fertilizer, you should change sprockets **"C"** and **"D"**. Notice that you first have to set the seed sprockets (A and B) before to set the fertilizer.

3 - The fertilizer distribution tables indicate different quantities of fertilizer to be distributed per hectare on spacings between 400 mm and 1000 mm.

4 - ***Example:*** To fertilize 450 Kg / Ha, with spacing of 450 mm, set sprockets **"A"** /8 - **"B"**/17 - **"C"**/15 - **"D"**/ 8, according to specification of tables on pages 38 to 44.



APPROXIMATE TABLE FOR FERTILIZER DISTRIBUTION

Motor seed "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m²) for the different spacings between rows											
					450	500	550	600	650	700	750	800	850	900	950	1000
8	17	8	21	66	92	82	75	68	63	59	55	51	48	46	43	41
8	17	8	19	73	101	91	83	76	70	65	61	57	54	51	48	46
8	17	8	17	81	113	102	92	85	78	73	68	64	60	57	54	51
8	17	8	15	92	128	115	105	96	89	82	77	42	68	64	61	58
8	17	8	13	106	148	133	121	111	102	95	89	83	78	74	70	67
8	17	8	12	115	160	144	131	120	111	103	96	90	85	80	76	72
8	17	8	11	126	175	157	143	131	121	112	105	98	92	87	83	79
8	17	8	10	138	192	173	157	144	133	123	115	108	102	96	91	86
8	17	8	9	154	243	192	175	160	148	137	128	120	113	107	101	96
8	17	8	8	173	240	216	196	180	165	154	144	135	127	120	114	108
8	17	21	8	454	630	567	516	473	436	405	378	354	334	315	299	284
8	17	19	8	411	570	513	467	428	395	367	342	321	302	285	270	256
8	17	17	8	367	510	459	417	383	353	328	306	287	270	255	242	230
8	17	15	8	324	450	405	368	338	312	289	270	253	238	225	213	203
8	17	13	8	281	390	351	319	293	270	251	234	219	207	195	185	176
8	17	12	8	259	360	324	295	270	249	232	216	203	191	180	171	162
8	17	11	8	238	330	297	270	248	229	212	198	186	175	165	156	149
8	17	10	8	216	300	270	245	225	208	193	180	169	159	150	142	135
8	17	9	8	194	270	243	221	203	187	174	162	152	143	135	128	122
8	15	8	21	75	103	93	85	78	72	67	62	58	55	52	49	47
8	15	8	19	82	114	103	94	86	79	74	69	64	61	57	54	52
8	15	8	17	92	128	115	105	96	89	82	77	72	68	64	61	58
8	15	8	15	104	145	131	119	109	100	93	87	82	77	73	69	65
8	15	8	13	120	167	151	137	125	116	108	100	94	89	84	79	75
8	15	8	12	130	181	163	148	136	126	117	109	102	96	91	86	82
8	15	8	11	142	198	178	162	148	137	127	119	111	105	99	94	89
8	15	8	10	157	218	196	178	163	151	140	130	122	115	109	103	98
8	15	8	9	174	242	218	198	181	167	155	145	136	128	121	115	109
8	15	8	8	196	272	245	223	204	188	175	163	153	114	136	129	122
8	15	21	8	514	714	643	584	536	497	459	428	402	378	357	338	321
8	15	19	8	465	646	581	529	485	447	415	387	363	342	323	306	291
8	15	17	8	416	578	520	473	434	400	372	346	325	306	289	274	260
8	15	15	8	367	510	459	417	382	353	328	306	287	270	255	242	230
8	15	13	8	318	442	398	362	332	306	284	265	249	234	221	209	199
8	15	12	8	294	408	367	334	306	282	262	244	230	216	204	194	184
8	15	11	8	269	374	337	306	280	259	240	224	210	198	187	177	168
8	15	10	8	245	340	306	278	255	235	219	204	191	180	170	161	153
8	15	9	8	220	306	275	250	230	212	197	183	172	162	153	145	138

APPROXIMATE TABLE FOR FERTILIZER DISTRIBUTION

Motor seed "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m²) for the different spacings between rows											
					450	500	550	600	650	700	750	800	850	900	950	1000
8	13	8	21	86	119	107	98	90	83	77	71	67	63	60	57	54
8	13	8	19	95	132	119	108	99	91	85	79	74	70	66	63	59
8	13	8	17	106	148	133	121	111	102	95	88	83	78	74	70	66
8	13	8	15	121	167	151	137	126	116	108	100	94	89	84	79	75
8	13	8	13	139	193	174	158	145	134	124	116	109	102	97	91	87
8	13	8	12	151	209	188	171	157	145	134	125	118	111	105	99	94
8	13	8	11	164	228	205	186	171	158	147	137	128	121	114	108	103
8	13	8	10	181	251	226	205	188	174	161	150	141	133	126	119	113
8	13	8	9	201	279	251	228	209	193	179	167	157	148	139	132	126
8	13	8	8	226	314	282	257	235	217	202	188	177	166	157	149	141
8	13	21	8	593	824	741	674	618	570	530	493	463	436	412	390	371
8	13	19	8	537	745	671	610	559	516	479	447	419	395	373	353	335
8	13	17	8	480	667	600	546	500	462	429	400	375	353	333	316	300
8	13	15	8	424	588	530	481	441	407	378	353	331	312	294	279	265
8	13	13	8	367	510	459	417	382	353	328	306	287	270	255	242	229
8	13	12	8	339	471	424	385	353	326	303	282	265	249	235	223	212
8	13	11	8	311	432	389	353	324	299	277	259	243	228	216	204	194
8	13	10	8	282	392	353	321	294	272	252	235	221	208	196	186	177
8	13	9	8	254	353	318	289	265	244	227	212	199	187	177	167	159
8	12	8	21	93	130	117	106	97	90	83	78	73	69	65	61	58
8	12	8	19	103	143	129	117	107	99	92	86	81	76	72	68	64
8	12	8	17	115	160	144	131	120	111	103	96	90	85	80	76	72
8	12	8	15	131	181	163	148	136	126	117	109	102	96	91	86	81
8	12	8	13	151	209	188	171	157	145	135	125	118	111	105	99	94
8	12	8	12	163	227	204	185	170	157	146	136	128	120	113	108	102
8	12	8	11	178	247	223	202	185	171	159	148	139	131	124	117	111
8	12	8	10	196	272	245	223	204	188	175	163	153	144	136	129	122
8	12	8	9	218	302	272	247	227	209	194	181	170	160	151	143	136
8	12	8	8	245	340	306	278	255	235	219	204	191	180	170	161	153
8	12	21	8	643	893	803	730	669	618	574	535	502	472	446	423	402
8	12	19	8	581	808	727	661	606	559	519	484	454	428	404	383	363
8	12	17	8	520	723	650	591	542	500	464	433	406	383	361	342	325
8	12	15	8	459	638	574	522	478	441	409	382	359	338	319	302	287
8	12	13	8	398	553	497	452	414	383	355	331	311	293	276	262	249
8	12	12	8	367	510	459	417	383	353	328	306	287	270	255	242	230
8	12	11	8	337	467	421	383	651	324	301	208	263	248	234	221	210
8	12	10	8	306	425	383	348	319	294	273	255	239	225	213	201	191
8	12	9	8	275	383	344	313	287	265	246	229	215	203	191	181	172

APPROXIMATE TABLE FOR FERTILIZER DISTRIBUTION

Motor seed "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m²) for the different spacings between rows											
					450	500	550	600	650	700	750	800	850	900	950	1000
8	11	8	21	102	141	127	116	106	98	91	85	80	75	71	67	61
8	11	8	19	112	156	141	128	117	108	100	94	88	83	78	74	70
8	11	8	17	126	175	157	143	131	121	112	105	98	92	87	83	79
8	11	8	15	142	198	178	162	148	137	127	119	111	105	99	94	89
8	11	8	13	164	228	206	187	171	158	147	137	128	121	115	109	103
8	11	8	12	178	247	223	202	186	171	159	148	139	131	124	117	112
8	11	8	11	194	270	243	221	202	187	173	162	152	143	135	128	121
8	11	8	10	214	297	267	243	223	206	191	178	167	157	148	141	134
8	11	8	9	237	330	297	270	247	229	212	198	185	175	165	156	148
8	11	8	8	267	371	334	304	278	257	238	222	209	196	186	176	167
8	11	21	8	701	974	877	795	731	674	626	584	548	516	487	461	438
8	11	19	8	635	881	793	721	661	610	567	528	496	466	441	417	397
8	11	17	8	568	789	710	645	591	546	507	472	444	417	394	374	355
8	11	15	8	501	696	626	569	522	482	447	417	391	368	348	330	313
8	11	13	8	534	603	543	493	452	417	688	361	339	319	302	286	271
8	11	12	8	401	557	501	455	417	385	358	333	313	295	278	264	250
8	11	11	8	367	510	459	417	383	353	328	306	287	270	255	242	230
8	11	10	8	334	464	417	380	348	321	298	278	261	245	232	220	209
8	11	9	8	301	417	376	341	313	289	268	250	235	221	209	198	188
8	10	8	21	112	155	140	127	116	108	100	93	88	82	78	74	70
8	10	8	19	124	172	155	148	129	119	110	103	97	91	86	81	77
8	10	8	17	138	192	173	157	144	133	123	115	108	102	96	91	86
8	10	8	15	157	218	196	178	163	151	140	130	122	115	109	103	98
8	10	8	13	181	251	226	205	188	174	161	150	141	133	125	119	113
8	10	8	12	196	272	245	223	204	188	175	163	153	144	136	129	122
8	10	8	11	214	297	267	243	223	205	191	178	167	157	148	141	134
8	10	8	10	235	326	294	267	245	226	210	196	184	173	163	155	147
8	10	8	9	261	363	326	297	272	251	233	217	204	192	181	172	163
8	10	8	8	294	408	367	334	306	282	262	244	229	216	204	193	184
8	10	21	8	771	1071	964	876	803	742	689	642	602	567	532	507	482
8	10	19	8	698	969	872	793	727	671	623	581	545	513	485	459	436
8	10	17	8	624	867	780	709	650	600	557	519	488	459	434	411	390
8	10	15	8	551	765	689	626	574	530	492	458	430	405	383	362	344
8	10	13	8	477	663	597	542	498	459	426	397	373	351	331	314	298
8	10	12	8	441	612	551	501	459	424	393	367	344	324	306	290	275
8	10	11	8	404	561	505	459	421	388	361	336	316	297	281	266	252
8	10	10	8	367	510	459	417	383	353	328	306	287	270	255	242	230
8	10	9	8	330	459	413	376	344	318	295	275	258	243	230	217	207

APPROXIMATE TABLE FOR FERTILIZER DISTRIBUTION

Motor seed "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m²) for the different spacings between rows											
					450	500	550	600	650	700	750	800	850	900	950	1000
8	9	8	21	124	173	156	141	130	120	111	104	97	92	86	82	78
8	9	8	19	137	191	173	156	143	132	123	114	107	101	95	90	86
8	9	8	17	154	213	192	175	160	148	137	128	120	113	107	101	96
8	9	8	15	174	242	218	198	181	167	155	145	136	128	121	115	109
8	9	8	13	201	279	251	228	209	193	179	167	157	148	139	131	126
8	9	8	12	218	302	272	247	227	209	194	181	170	160	151	143	136
8	9	8	11	237	330	297	270	274	228	212	198	185	175	165	156	149
8	9	8	10	261	363	326	297	272	251	233	217	204	192	181	172	163
8	9	8	9	290	403	363	330	302	279	259	241	227	231	201	191	181
8	9	8	8	326	453	408	371	340	314	291	272	255	240	227	215	204
8	9	21	8	857	1190	1080	974	893	824	765	713	669	630	595	564	535
8	9	19	8	775	1077	969	881	808	795	692	645	606	570	538	510	484
8	9	17	8	694	963	867	788	723	667	919	577	542	510	482	456	433
8	9	15	8	612	850	765	695	638	588	546	509	478	450	425	403	382
8	9	13	8	530	737	663	603	553	510	473	441	414	390	368	349	331
8	9	12	8	489	680	312	556	510	471	473	407	382	360	340	322	306
8	9	11	8	49	623	561	510	468	432	401	373	351	330	312	295	280
8	9	10	8	408	567	510	464	425	392	364	339	319	300	283	268	255
8	9	9	8	367	510	459	417	383	353	328	306	287	270	255	242	229
8	8	8	21	140	194	175	159	146	134	125	116	109	103	97	92	87
8	8	8	19	155	215	193	176	161	149	138	129	121	114	107	102	97
8	8	8	17	173	240	216	196	180	166	154	144	135	127	120	114	108
8	8	8	15	196	272	245	222	204	188	175	167	153	144	136	129	122
8	8	8	13	226	314	282	257	235	217	202	188	176	166	157	149	41
8	8	8	12	245	340	306	278	255	235	218	204	191	180	170	161	153
8	8	8	11	267	371	334	303	279	257	238	224	209	196	185	176	167
8	8	8	10	294	408	367	334	306	282	262	244	229	216	204	194	184
8	8	8	9	326	453	408	371	340	314	291	271	255	240	227	215	204
8	8	8	8	367	510	459	417	382	353	328	305	287	270	255	241	229
8	8	21	8	963	1338	1204	1095	1004	926	860	802	753	708	669	534	602
8	8	19	8	872	1213	1084	991	908	838	778	725	681	641	605	573	545
8	8	17	8	780	1083	975	886	812	750	696	649	609	574	542	513	487
8	8	15	8	688	956	860	782	717	662	614	573	538	506	478	453	430
8	8	13	8	596	828	746	978	621	574	532	496	466	439	414	392	373
8	8	12	8	551	764	688	626	574	529	491	458	430	405	382	362	344
8	8	11	8	505	701	631	574	526	485	451	420	394	371	350	332	315
8	8	10	8	459	637	573	521	478	441	410	382	358	337	319	302	287
8	8	9	8	413	574	516	469	430	397	369	343	323	304	287	272	258

APPROXIMATE TABLE FOR FERTILIZER DISTRIBUTION

Motor seed "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m²) for the different spacings between rows											
					450	500	550	600	650	700	750	800	850	900	950	1000
8	9	8	21	158	219	197	179	164	152	141	131	123	16	109	104	98
8	9	8	19	174	242	218	198	181	167	155	145	136	128	121	114	109
8	9	8	17	194	270	243	221	203	187	174	162	152	143	135	128	122
8	9	8	15	220	306	276	250	230	212	197	183	172	162	153	145	138
8	9	8	13	254	353	318	289	265	245	227	212	199	187	177	167	159
8	9	8	12	276	383	344	313	287	265	246	229	215	203	191	181	172
8	9	8	11	301	417	376	342	313	289	268	250	235	221	209	198	188
8	9	8	10	331	459	413	376	344	318	295	275	258	243	230	218	207
8	9	8	9	367	510	459	417	383	354	328	306	287	270	255	242	230
8	9	8	8	413	574	517	470	431	397	369	344	323	304	287	272	258
8	9	21	8	1085	1507	135 6	1233	1130	1043	969	903	855	798	753	714	678
8	9	19	8	982	1363	1227	1115	1022	944	876	817	767	722	682	646	613
8	9	17	8	878	1220	1098	998	915	844	784	731	686	646	610	578	549
8	9	15	8	775	1076	969	881	807	745	692	645	605	570	538	510	484
8	9	13	8	672	933	839	763	700	646	600	559	525	494	466	442	420
8	9	12	8	620	861	775	704	646	596	554	516	484	456	430	408	387
8	9	11	8	568	789	710	646	592	546	507	473	444	418	395	374	355
8	9	10	8	517	717	646	587	538	597	461	430	404	380	359	340	323
8	9	9	8	465	646	581	528	484	447	415	387	363	342	323	306	291
8	8	8	21	175	243	218	199	180	168	156	145	136	128	121	115	109
8	8	8	19	193	268	241	220	201	186	172	161	151	142	134	127	121
8	8	8	17	216	300	270	245	225	208	193	180	169	159	150	142	135
8	8	8	15	245	340	306	278	255	235	218	204	191	180	170	161	153
8	8	8	13	282	392	353	321	294	272	252	235	221	208	196	186	176
8	8	8	12	306	425	382	348	319	294	273	255	239	225	212	201	191
8	8	8	11	334	463	417	379	348	321	298	278	261	245	232	220	209
8	8	8	10	367	510	459	417	382	353	328	305	287	270	246	241	229
8	8	8	9	408	566	510	463	425	392	364	339	319	300	283	268	255
8	8	8	8	459	637	574	521	478	441	407	382	358	337	319	302	287
8	8	21	8	1204	1673	1506	1369	1255	1158	1075	1002	941	886	836	792	753
8	8	19	8	1090	1513	1363	1238	1135	1048	943	907	851	801	757	717	681
8	8	17	8	975	1354	1219	1108	1015	938	871	811	762	716	677	641	609
8	8	15	8	860	1195	1075	978	896	827	768	716	672	633	597	566	538
8	8	13	8	744	1036	932	847	776	717	666	620	582	548	518	490	466
8	8	12	8	688	956	860	782	717	662	615	573	538	506	478	453	430
8	8	11	8	631	876	789	717	657	607	563	525	493	464	438	415	394
8	8	10	8	574	797	717	652	597	551	512	477	448	422	398	377	358
8	8	9	8	516	717	645	587	538	496	461	429	403	380	358	340	323

APPROXIMATE TABLE FOR FERTILIZER DISTRIBUTION

Motor seed "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer"D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m²) for the different spacings between rows											
					450	500	550	600	650	700	750	800	850	900	950	1000
11	8	8	21	192	267	241	219	200	185	172	160	151	142	134	127	120
11	8	8	19	213	295	266	242	222	204	190	177	166	156	148	140	133
11	8	8	17	238	330	297	270	248	229	212	198	186	175	165	156	149
11	8	8	15	269	374	337	306	281	259	241	224	210	198	187	177	168
11	8	8	13	311	432	389	353	324	299	278	259	243	229	216	204	194
11	8	8	12	337	468	413	383	351	324	301	280	283	248	234	222	210
11	8	8	11	367	510	459	417	383	353	328	306	287	270	255	242	230
11	8	8	10	404	561	505	459	421	389	361	336	316	297	281	266	253
11	8	8	9	449	624	561	510	468	432	401	374	351	330	312	295	281
11	8	8	8	505	701	631	574	526	486	451	420	395	371	351	323	316
11	8	21	8	1326	1841	1657	1507	1381	1275	1184	1103	1036	975	921	872	829
11	8	19	8	1200	1666	1499	1363	1250	1153	1071	998	937	882	933	789	750
11	8	17	8	1073	1491	1342	1220	1118	1032	658	893	839	789	745	706	671
11	8	15	8	947	1315	1184	1076	986	911	846	788	740	696	657	623	592
11	8	13	8	821	1140	1026	933	855	789	733	683	641	604	570	540	513
11	8	12	8	758	1052	947	861	456	728	676	630	592	557	526	498	474
11	8	11	8	694	965	868	789	723	667	620	578	543	511	482	457	434
11	8	10	8	631	877	789	717	658	607	563	525	493	464	438	415	395
11	8	9	8	568	789	710	646	592	546	507	473	444	418	395	374	355
13	8	8	21	227	316	284	258	237	219	203	189	178	167	158	150	142
13	8	8	19	251	349	314	286	262	242	224	209	196	185	175	165	157
13	8	8	17	281	390	351	319	293	270	251	234	219	207	195	185	176
13	8	8	15	318	442	398	362	332	306	284	265	249	234	221	209	199
13	8	8	13	367	510	459	417	383	353	328	306	287	270	255	242	230
13	8	8	12	398	553	497	452	414	383	355	331	311	293	276	262	250
11	8	8	11	434	603	543	493	452	417	388	361	339	319	301	286	271
13	8	8	10	447	663	597	543	497	459	426	397	373	351	332	314	298
13	8	8	9	531	737	663	603	553	510	474	441	414	390	368	349	332
13	8	8	8	597	829	746	678	622	574	533	497	466	439	414	393	373
13	8	21	8	1567	2176	1958	1780	1632	1507	1399	1304	1224	1152	1088	1075	979
13	8	19	8	1418	1969	1772	1611	1477	1363	1266	1180	1107	1042	984	933	886
13	8	17	8	1268	1762	1585	1441	1321	1220	1132	1055	991	933	881	834	793
13	8	15	8	1119	1554	1399	1272	1166	1076	999	931	874	823	777	736	699
13	8	13	8	970	1347	1212	1102	1010	933	866	807	758	713	674	638	606
13	8	12	8	895	1243	1119	1017	933	861	799	745	699	658	622	589	560
13	8	11	8	821	1140	1026	933	855	789	732	683	641	603	570	540	513
13	8	10	8	746	1036	933	848	777	717	666	621	584	549	518	491	466
13	8	9	8	671	933	839	764	699	646	600	559	525	494	466	442	420

APPROXIMATE TABLE FOR FERTILIZER DISTRIBUTION

Motor seed "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m²) for the different spacings between rows											
					450	500	550	600	650	700	750	800	850	900	950	1000
15	8	8	21	262	364	328	298	273	252	234	218	205	193	182	173	164
15	8	8	19	290	403	362	329	302	279	259	241	277	213	201	191	181
15	8	8	17	324	450	405	368	338	312	289	270	253	238	225	213	203
15	8	8	15	367	510	459	417	383	353	328	306	287	270	255	242	230
15	8	8	13	424	589	530	482	441	407	378	353	331	312	294	279	265
15	8	8	12	459	638	574	522	478	441	410	382	359	338	319	302	287
15	8	8	11	501	696	626	569	522	482	447	417	391	368	348	329	313
15	8	8	10	551	765	689	626	574	530	492	458	430	405	383	362	344
15	8	8	9	612	850	765	696	638	589	547	509	478	450	425	403	383
15	8	8	8	689	956	861	783	717	662	615	573	538	506	478	453	430
15	8	21	8	1808	2511	2260	2054	1883	1783	1614	1504	1412	1329	1255	1189	1130
15	8	19	8	1635	2272	2044	1859	1704	1573	1460	1360	1278	1203	1136	1075	1022
15	8	17	8	1643	2032	1829	1663	1524	1407	1307	1218	1143	1076	1016	963	914
15	8	15	8	1291	1793	1614	1467	1345	1242	1153	1074	1009	949	897	849	807
15	8	13	8	1119	1554	1399	1272	1166	1076	999	931	874	823	777	736	699
15	8	12	8	1033	1435	1291	1174	1076	993	922	860	807	760	717	680	646
15	8	11	8	947	1315	1184	1076	986	910	845	788	740	696	658	623	592
15	8	10	8	861	1196	1076	978	897	828	769	716	673	633	598	566	538
15	8	9	8	775	1076	968	880	807	745	692	645	605	570	538	510	548
17	8	8	21	297	413	372	338	310	286	266	247	232	219	207	196	186
17	8	8	19	329	456	411	373	342	316	293	273	257	542	228	216	205
17	8	8	17	367	510	459	417	383	353	328	306	287	270	255	242	230
17	8	8	15	416	578	520	473	434	400	372	346	325	306	289	274	260
17	8	8	13	480	667	600	546	500	462	428	400	375	353	333	316	300
17	8	8	12	520	723	650	591	542	500	464	433	406	383	361	342	325
17	8	8	11	568	788	709	644	591	546	507	472	443	417	394	373	355
17	8	8	10	624	867	780	709	650	600	557	519	488	459	434	411	390
17	8	8	9	693	963	867	788	723	667	619	577	542	510	482	456	434
17	8	8	8	780	1084	975	887	913	750	697	649	610	574	542	513	488
17	8	21	8	2048	2845	2560	2328	2134	1970	1829	1704	1600	1506	1422	1348	1280
17	8	19	8	1853	2574	2317	2106	1931	1782	1655	1542	1448	1363	1287	1219	1158
17	8	17	8	1658	2303	2073	1884	1727	1594	1481	1380	1295	1219	1151	1091	1036
17	8	15	8	1643	2032	1829	1663	1524	1407	1306	1217	1143	1076	1016	963	914
17	8	13	8	1268	1761	1585	1441	1321	1219	1132	1055	991	932	881	834	793
17	8	12	8	1170	1626	1463	1331	1219	1125	1045	974	914	861	813	770	732
17	8	11	8	1073	1490	1341	1219	1118	1032	958	893	838	789	745	706	671
17	8	10	8	975	1355	1219	1108	1016	938	871	812	762	717	677	642	610
17	8	9	8	878	1219	1097	998	914	844	784	730	686	645	610	578	549

CALCULATION

PRATICAL CALCULATION FOR FERTILIZER DISTRIBUTION

- Determine the spacing between Rows and the amount of fertilizer to be distributed per bushel (Aa) or hectare (Ha).
- ***Example:*** **PLB** *Directa* with a spacing of 600 mm, to distribute 500 kg of fertilizer per Ha, use the formula below:

Formula:

$$X = \frac{E \times Q}{A} \times D$$

Resolve:

$$X = \frac{600 \times 500}{10.000} \times 16$$

$$X = 30 \times 16$$

Where:
- **E** = *Spacing between Rows (mm)*
- **Q** = *Amount of fertilizer to be distributed (Kg)*
- **A** = *Area to be fertilized (m^2)*
- **D** = *16 meters distance (test)*
- **X** = *Fertilizer grams to 16 meters*

X = 480 grams in 16 meters per line.

- If the calculation was done using Aa, divide it by 24.200 m2.
- Each turn of the wheel is equal to 1.60 m, for 10 turns it is equal to 16 meters.

PRATICAL TEST TO MEASURE THE AMOUNT OF FERTILIZER AND SEED DISPENSING

1- For greater precision in the distribution of fertilizer or seed, make the quantity test to be distributed at the planting site, because for each land there is a condition.

2- Mark the test distance. In the table, we opted for 16 linear meters, fill the seeder tanks at least halfway. Walk a few meters outside the testing area, so that the seeds and fertilizer fill the dispensers.

3- Seal the seed spouts outlet and place collection containers at the fertilizer outlets. Move the tractor in the demarcated area, always at the same speed that you will plant.

4- After going through the demarcated space, remove the container from the fertilizer outlet and weigh it, comparing with the fertilizer table, second column (grams per row in 16 meters). Remove the seal from the seed spout and collect them for counting. If necessary, retest, changing the gears.

ADJUSTMENT OF THE ROW MARKER

5- To adjust the row markers, it is important to obtain the number of rows to be used, ensuring that the end row of the seeder is at the same spacing as the last planted row, facilitating future operations.

6- To adjust the row markers, you must know the spacing between rows, the number of rows to be used in the operation and the tractor's front gauge.

7- Use the formula below followed by an example:

Example: For a planting with 5 rows in the seeder, spacing of 0.60 m and the front gauge of the tractor with 1.43 m, determine:

Formula:

$$D = \frac{E \times (N+1) - B}{2}$$

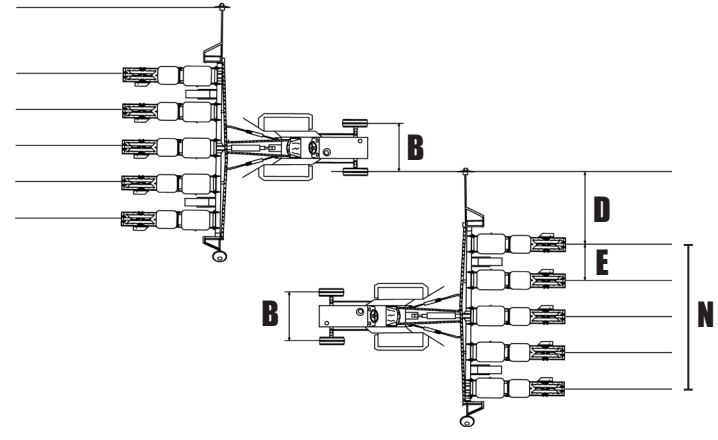
Resolve:

$$D = \frac{0.60 \times 6 - 1.43}{2}$$

D = 1.09 meters

Where:
- **E** = *Row spacing (mts)*
- **N** = *Number of seeder rows*
- **B** = *Front gauge of tractor*
- **D** = *Marker distance*

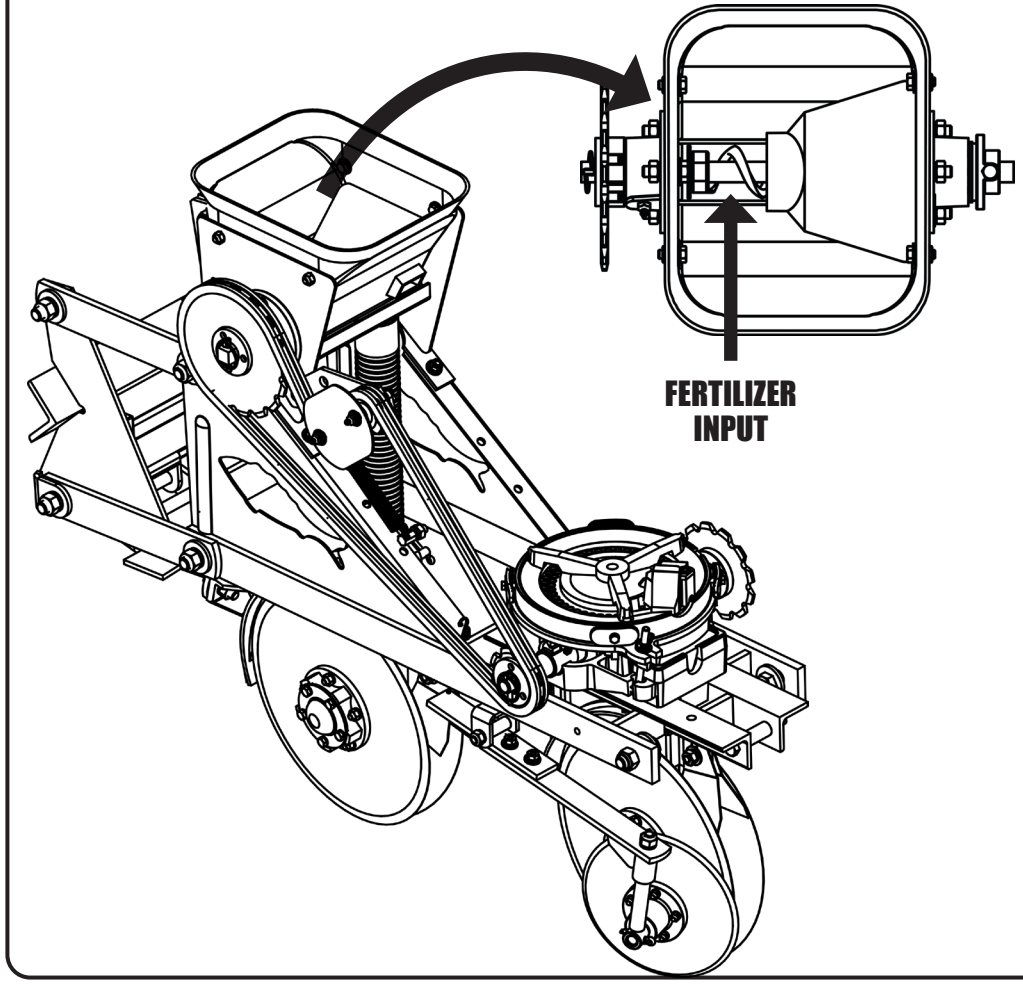
8- Set the row marker disc with 1.09 m to the center of the first planting row.



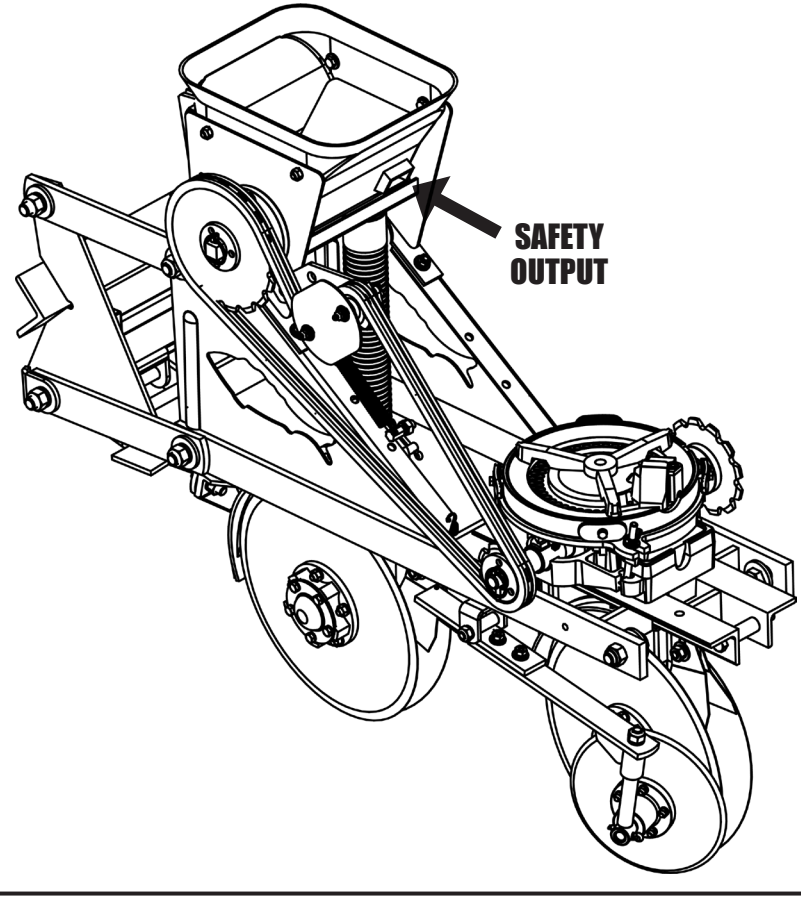
FERTILIZER DISTRIBUTION SYSTEM

FLOATING SPIRAL FERTILIZER DISTRIBUTION SYSTEM

1- The fertilizer distribution system is composed by an helical floting spring fixed to the square shaft. This system permits that the fertilizer runs through the channel until it reaches the outlet. This system also eliminates any kind of internal support.

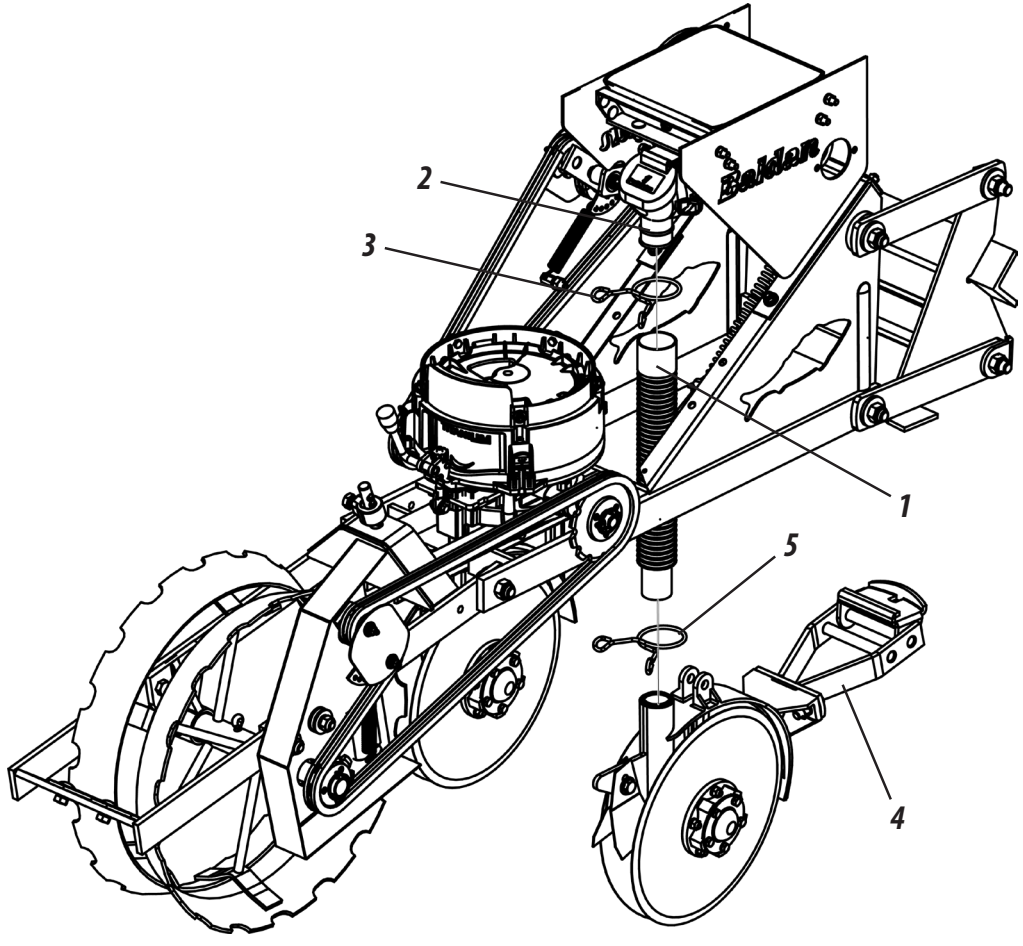


2- Each fertilizer hopper is supplied with a safety exit device. In case that any object blocks the outlet or even the tube, the fertilizer will start coming out through the safety device. In this case, we recommend to stop to work and clean the outlet completely until the system is normalized.

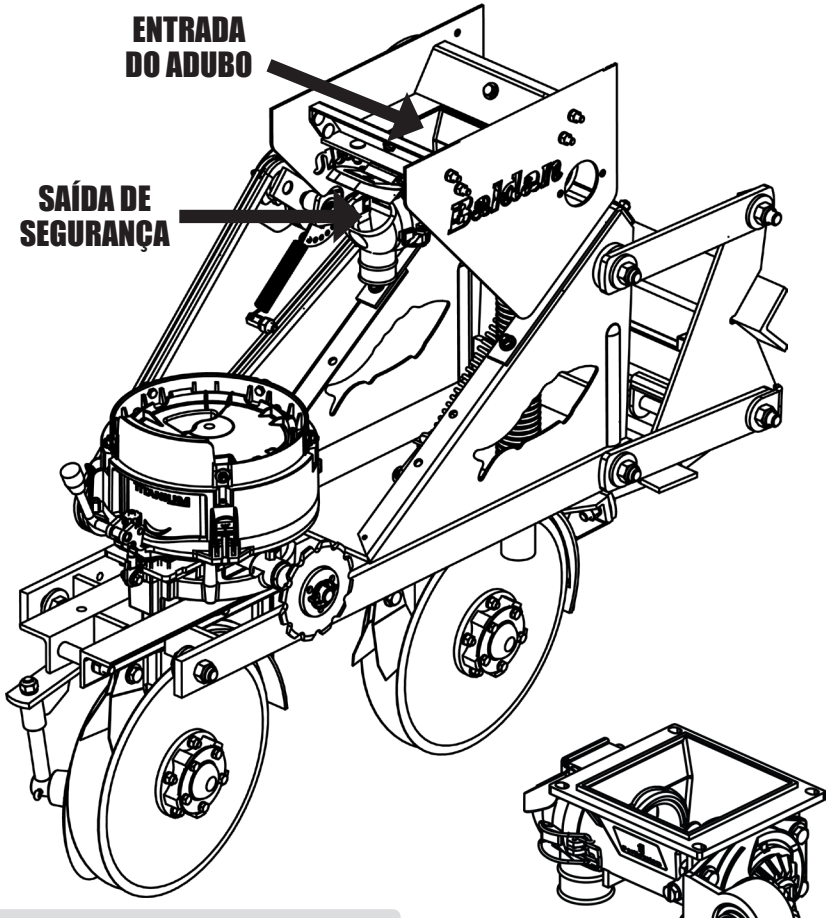


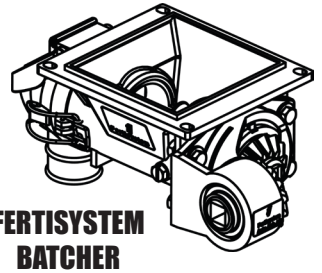
FERTISYSTEM FERTILIZER DISTRIBUTION SYSTEM (OPTIONAL)

To drive the fertilizer from the distributor to the ground, fit the hose (1) to the outlet of the fertisystem conductor (2) through the clip (3). Then fit the other end of the hose (1) to the double disc (4) through the clip (5).



The Fertisystem system has safety outputs that guarantee the proper functioning of the system without damaging it. In case of clogging of the hose and the doser, proceed to clean the doser until the end of the hose near the furrower rod or double disc, as the clogging of the system can occur by roots, pieces of plastic and other objects.





FERTISYSTEM
BATCHER

ATTENTION

Check the distributors and hoses daily and clean their outlets. When the fertilizer has impurities or is wet, clean it more often.

LUBRICATION

1- Lubrication is essential for the good performance and durability of the Seeder moving parts, contributing to savings in maintenance costs.

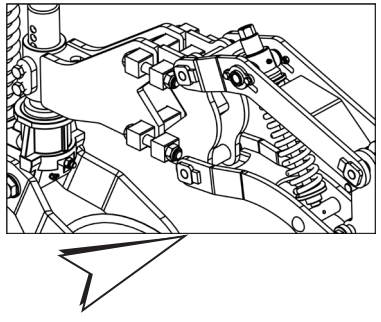
2- Before operating, carefully lubricate all grease fittings, always observing the lubrication intervals on the next page. Ensure the quality of the lubricant, regarding its efficiency and purity, avoiding using products contaminated by water, earth and other agents.

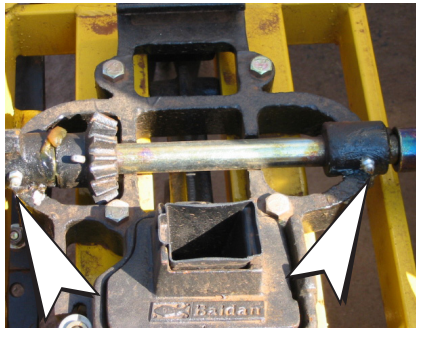
TABLE OF GREASES AND EQUIVALENTS

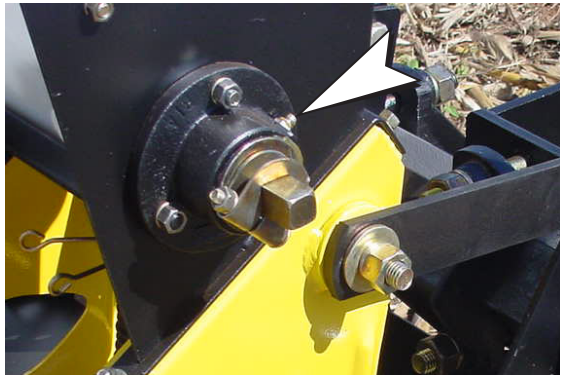
MANUFACTURE	*RECOMMENDED GREASE TYPES*
Petrobrás	Lubrax GMA-2
Atlantic	Litholine MP 2
Ipiranga	Ipiflex 2
Castrol	LM 2
Mobil	Grease MP
Texaco	Marfak 2
Shell	Alvania EP 2
Esso	Multi H
Bardahl	Maxlub APG-2EP
Valvoline	Palladium MP-2
Petronas	Tutela Jota MP 2 EP
	Tutela Alfa 2k
	Tutela KP 2K

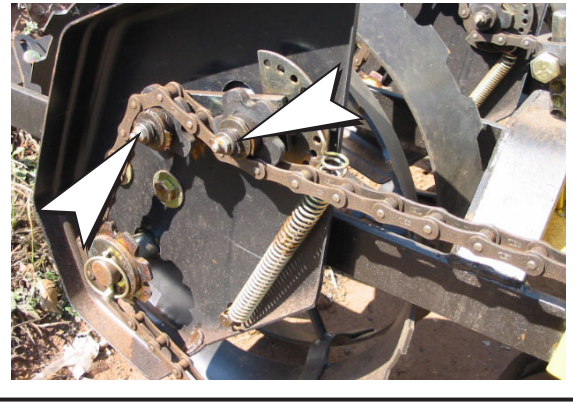
For manufacturers and/or equivalent brands not listed in the table, check the manufacturer's technical manual.

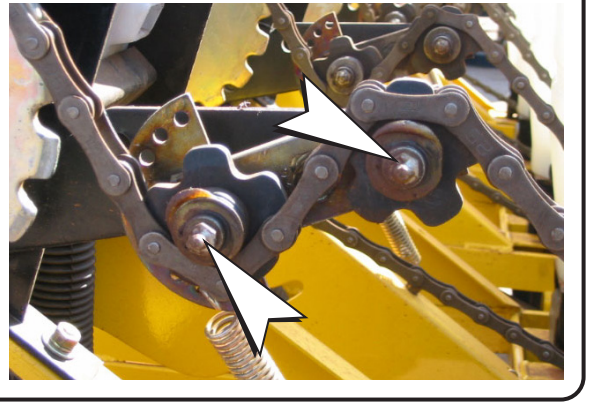
LUBRICATION EVERY 10 HOURS OF WORK











LUBRIFICATION EVERY 200 HOURS OF WORK

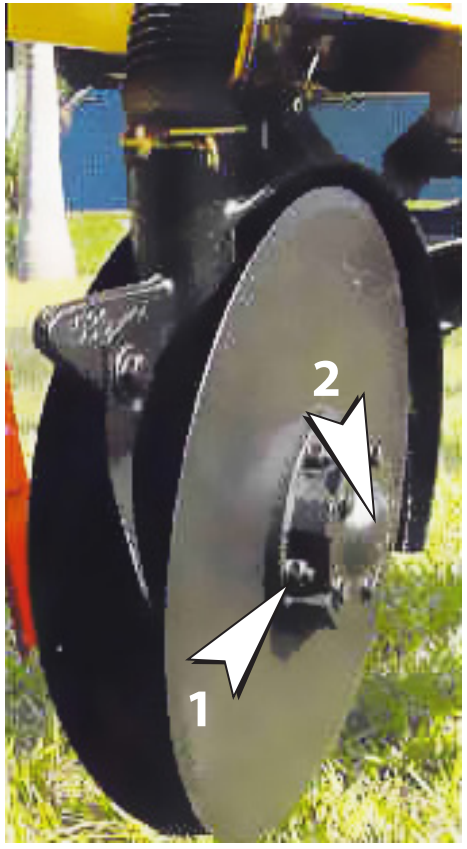
Periodically lubricate the dual disc hubs approximately every 200 hours and at the end of each season as follows:

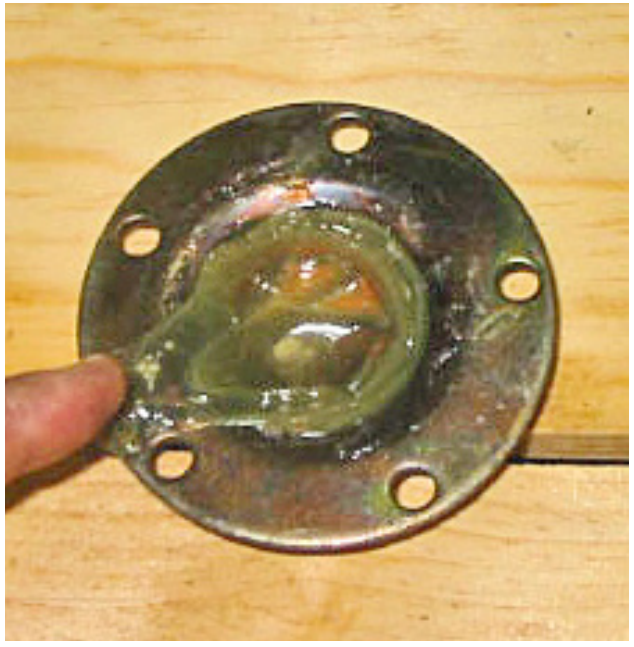
1 - Loosen the cap (2) screws (1);

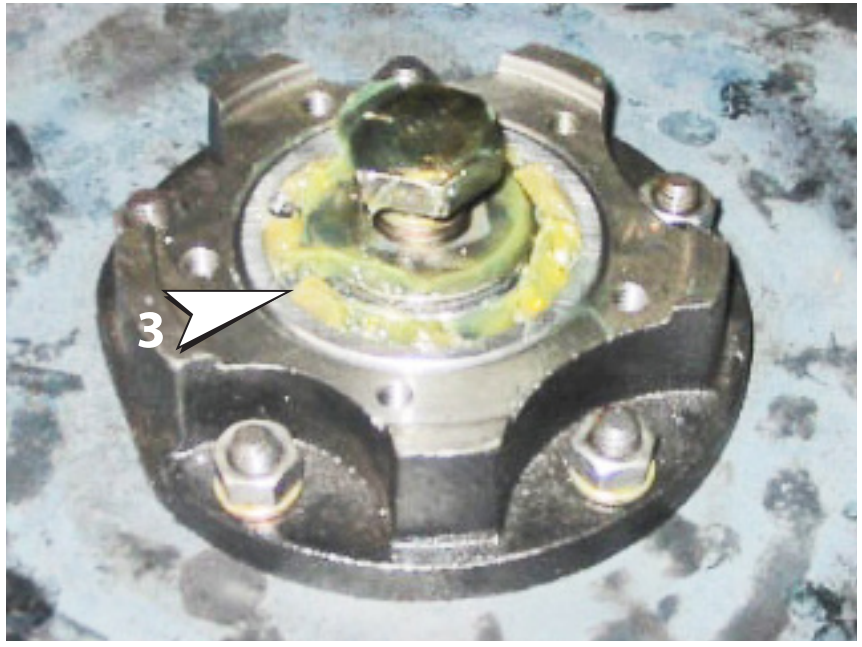
2 - Examine the bearings (3);

3 - Introduce new grease into the cap (2);

4 - Retighten the screws (1).







MAINTENANCE

MAINTENANCE OPERATIONAL

PROBLEMS	PROBABLE CAUSES	SOLUTIONS
During planting, fertilizer begins to leak through the safety outlets.	Clogged hoses or pieces of plastic in compost conductive spirals.	Unclog the hoses or remove the upper channel that gives access to the spiral, turn the shaft upside down until the foreign body that is screwed comes out.
Fertilizer hub shaft does not rotate.	Spiral blocked with wet fertilizer or excess fertilizer in the closed line.	Unclog the spirals, check if there is a loose gutter and the fertilizer may be entering through the sides of the spirals.
One planting row is shallower than the other.	Different pressure settings on the depth limiting wheels or line springs.	Adjust all the wheels of equal depth and the pressure of the springs of the lines.
The furrow is opening too much during planting.	Sticky soil and sticks to discs or excessive working speed.	Decrease working speed.
Broken seeds.	High planting speed.	Decrease working speed.
	Inadequate disc thickness.	Use suitable disc (thickness and diameter of holes).
	Disc incorrectly placed. The seed sieve is not suitable for the disc used.	Insert the disc properly (note the phrase: THIS SIDE DOWN).
	Be using wet seed.	Use dried seeds.
Tractor rears when lifting machine.	Lack of ballast at the front of the tractor.	Ballast the front of the tractor.
Machine leaves side during planting on sloping terrain.	Tractor hitch lower arms are loose with lateral displacement.	Fix the lower arms of the tractor hitch in order to eliminate the side shift.

FERTISYSTEM BATCHER ACCESSORIES (OPTIONAL)

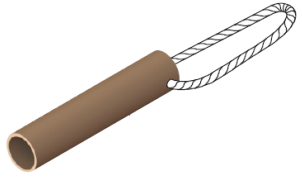
The Fertisystem feeder is assembled with a level regulator "cross cover" and a worm spring (step 2").

LEVEL REGULATOR
CROSS-LID

ENDLESS SPRING
(STEP 2")

The Fertisystem feeder includes the following accessories: maintenance tube, fixing tube e blocking tube.

MAINTENANCE
TUBE

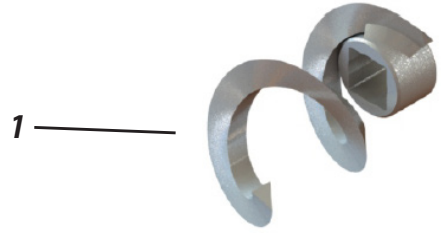


FIXING
TUBE

BLOCKING
TUBE

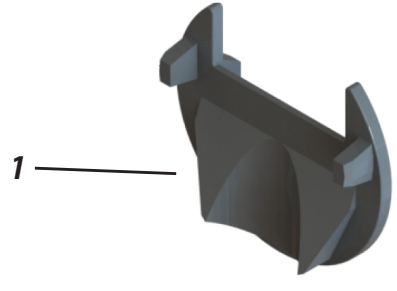
ENDLESS SPRING

At **PLB** *Directa* the Fertisystem batcher leaves the factory assembled with the endless spring 2" (1).



LEVEL REGULATOR "CROSS COVER"

The Fertisystem dispenser leaves the factory fitted with the "Cross-Lid" level regulator (1). The uniformity and precision in the distribution is due to the level regulator "Cross-Lid" (1), which has the function of canceling the pulsating effect of the endless spring cycle and also controlling the dosage.



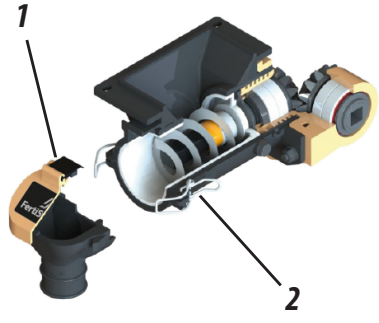
⚠ ATTENTION

Never operate without the "Cross-Lid" level regulator (1). Check that it is well positioned in the nozzle.

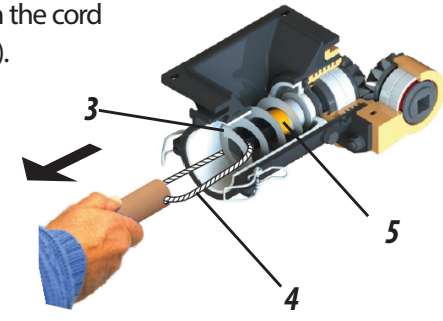
MAINTENANCE OR REPLACEMENT OF THE FERTISYSTEM DOSING SPRING

After planting, do not leave fertilizer in the tank. To maintain or replace the worm-spring or to clean or repair the internal part of the Fertisystem batcher, proceed as follows:

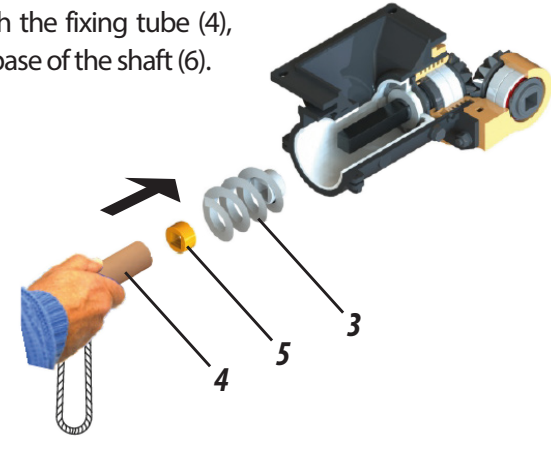
01 - Disengage the nozzle (1) through the stainless steel lock (2).

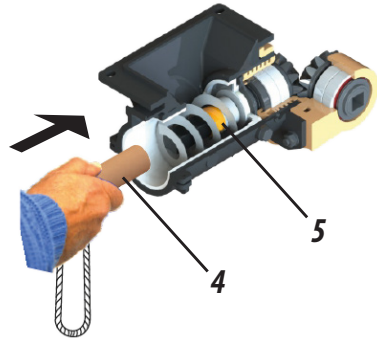


02 - Then, remove the endless spring (3), pulling it through the cord of the fixing tube (4), also removing the locking ring (5).



03 - After cleaning, replace the endless spring (3), together with the locking ring (5), through the fixing tube (4), making sure that the endless spring (3) and the locking ring (5) are well positioned at the base of the shaft (6).



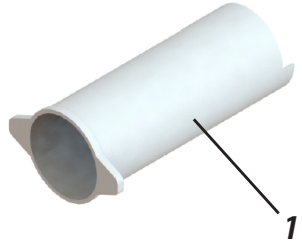


ATTENTION

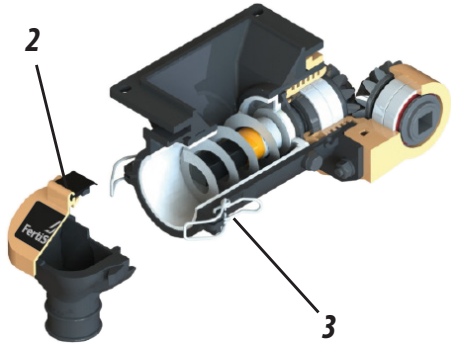
Keep the worm spring in place with the locking ring. This procedure will avoid damaging the cross cover when not using the seeder with the fertilizer or when transporting the seeder. In case of wear or lack of tightening "pressure" of the lock ring (5), replace it.

FERTISYSTEM BATCHER MAINTENANCE TUBE

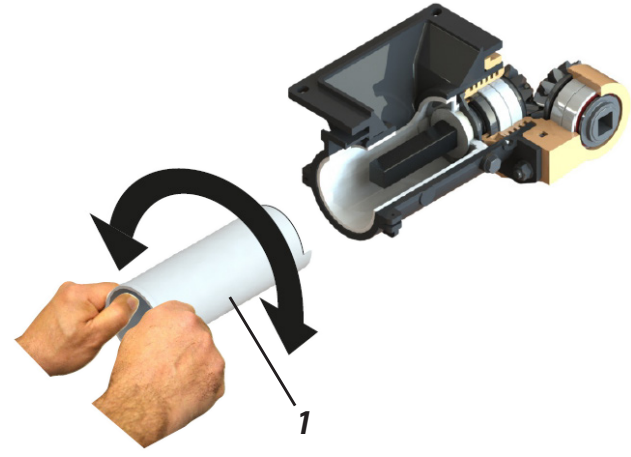
To maintain or change the endless springs in the Fertisystem feeder without the need to remove the fertilizer from the tank, use the maintenance tube (1), to do this, proceed as follows:



01 - Disengage the nozzle (2) through the stainless steel lock (3).



02 - Then, introduce the maintenance tube (1) in rotating movements, promoting the displacement of the fertilizer to the bottom of the batcher. Then perform the necessary maintenance.

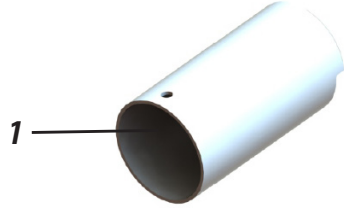


NOTE

The maintenance tube (1) has an end cut angle to facilitate this operation.

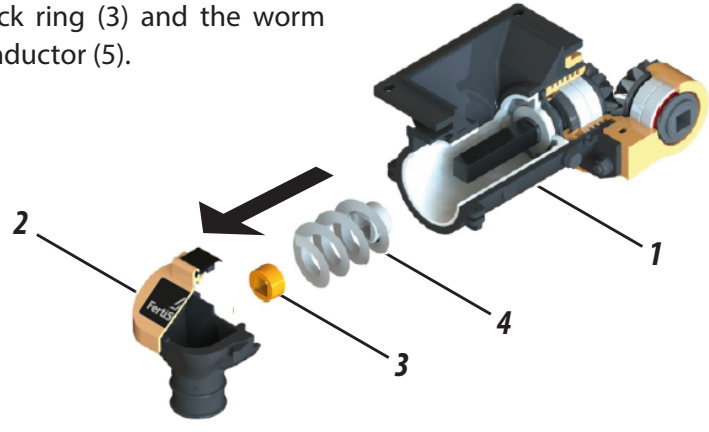
FERTISYSTEM BATCHER BLOCKER TUBE

PLB *Directa* comes with a blocking tube (1) so that when you need to isolate some planting Rows, fertilizer distribution does not occur.

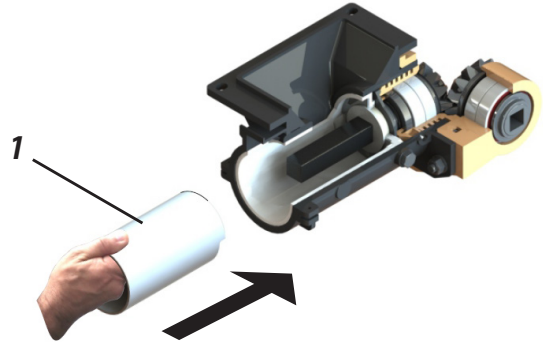


In order to place the blocking tube (1) into the Fertisystem doser, proceed as follows:

01 - Remove the nozzle (2), the lock ring (3) and the worm spring (4) of the fertisystem conductor (5).



02 - Then insert the locking tube (1).



03 - Then, replace the nozzle (2).

SPRING AND COVER (OPTIONAL) FERTISYSTEM BATCHER

PLB *Directa* leaves the factory with a 2" pitch worm spring and transversal cover (standard), but optionally the seeder can be supplied with a 1" pitch worm spring and a high-flow cover.

ENDLESS SPRING (STEP 1")

HIGH FLOW COVER

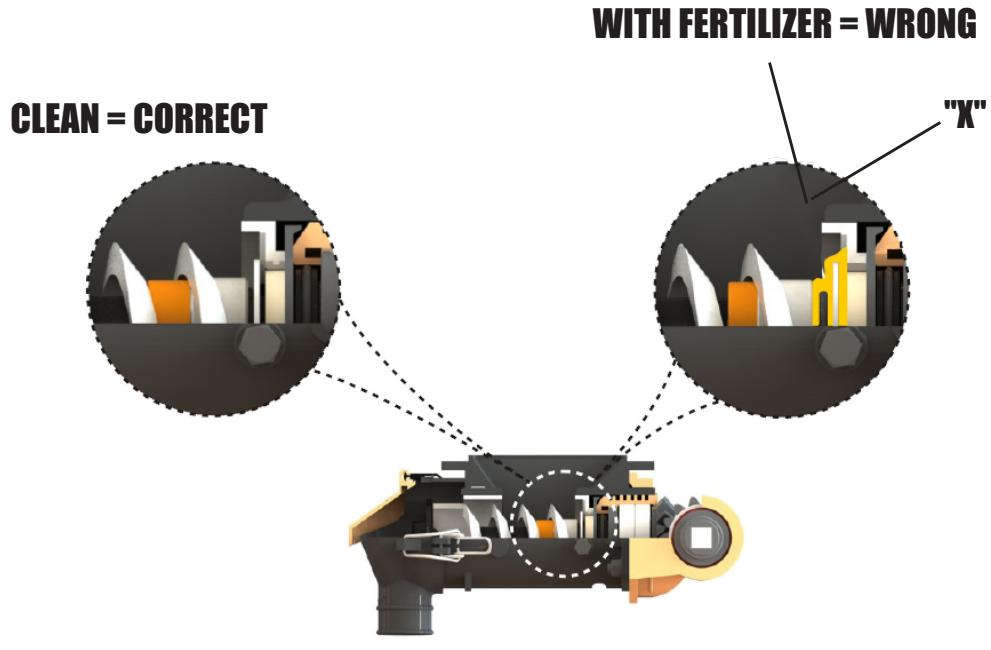
NOTE

Always fill the fertilizer tank at the work location.
Avoid any kind of impurity in the fertilizer tank.
Carry out a measurement of dosage daily.

CLEANING THE FERTISYSTEM BATCHER

We consider it mandatory to clean parts and components of the Fertisystem dispenser that maintain direct and indirect contact with fertilizers, since they are highly corrosive and abrasive, and can promote oxidation and destructible chemical reactions, through the effects of acidity, salinization and others, chemical fertilizers.

After planting is complete, disconnect the nozzle (1), the endless springs (2) and wash the sets thoroughly, keeping them free of fertilizers until new use, making the assemblies correctly.



⚠ ATTENTION

Make sure that there is no fertilizer in the "X" area between the washers and the sealing felt.
In case of extreme need to use the fertilizer out of specification and/or with excess moisture, perform daily cleaning of the endless springs and other components. Do not carry out maintenance or cleaning in the bearing area, in the endless springs and in the gears while the subsoiler is in motion.

TITANIUM (OPTIONAL) CLOSING CARE

If you are having difficulties closing the **TITANIUM** feeder, follow these steps:

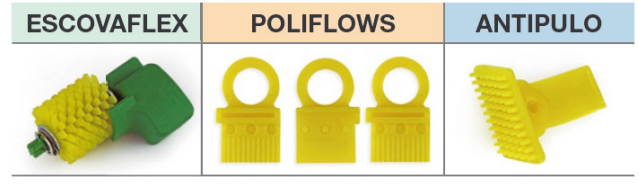
1 Check that the disk and ring are positioned correctly.

2 Check if there is dirt on the **TITANIUM** counter base, and if there is, clean it as indicated in the manual.

3 Make the adjustment of the latches, providing ease when opening the **TITANIUM** batcher and also providing a light grip when closing.

4 Never leave the locks loose, as this can directly influence plantability in cases of disc and ring looseness.

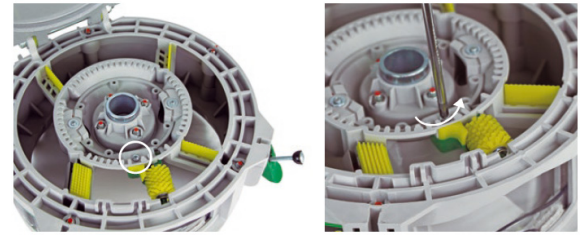
THE IMPORTANCE OF EXCHANGE AND HOW TO DO IT



It is important to reinforce that some factors contribute to the premature wear of the **ESCOVAFLEX**, the **POLYFLOWS**, and the **ANTI SKIP**, such as the lack of graphite and the incorrect choice of disc and ring. When damaged, they lose efficiency and can harm your planting.

HOW TO CHANGE THE ESCOVAFLEX

01 - The change must be made with a **Philips screwdriver N. 02.**



02 -Turn the **ESCOVAFLEX** counterclockwise as indicated. Lift the back diagonally.

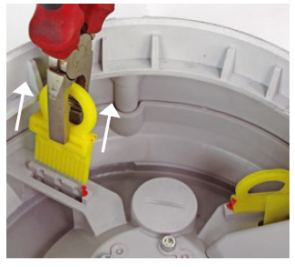
The side of the support must fit into the base.

Escovaflex with wear, need for replacement.

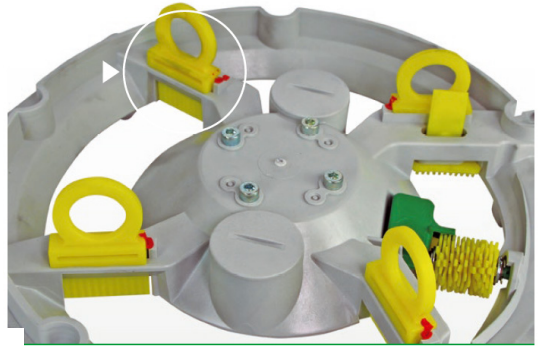
HOW TO CHANGE THE POLIFLOW

01 - The change can be done manually or with universal pliers. Remove the weight limiter.

Example of how to remove **POLIFLOW.**



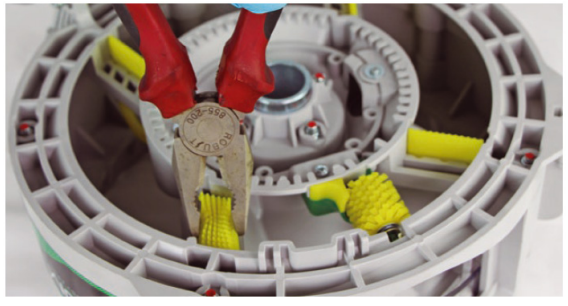
02 - Pull the **POLIFLOW** with your finger or with pliers. When fitting the **POLIFLOW,** make sure it is in the correct position. Insert it until the faces come together (yellow and gray), see below:



Poliflow com desgaste, necessidade de troca.

HOW TO CHANGE THE ANTI SKIP

01 - Use universal pliers to perform the change, as indicated in the image below:



02 - With pliers, fit the **ANTI SKIP** inside the base and pull until fully fit.

Anti Skip with wear, need to change.

CHANGING DISCS AND RINGS AT EACH NEW PLANTING

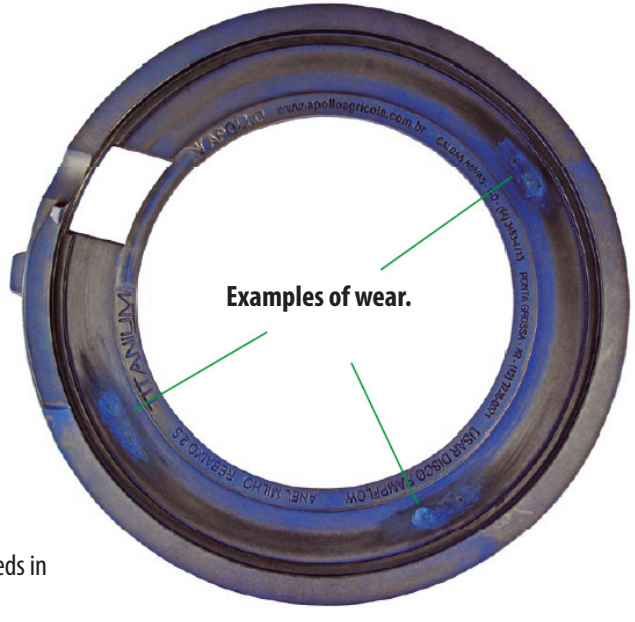
Not using graphite, choosing the wrong disc/ring, and **working hours** directly influence the wear of discs and rings.

IMPORTANT:

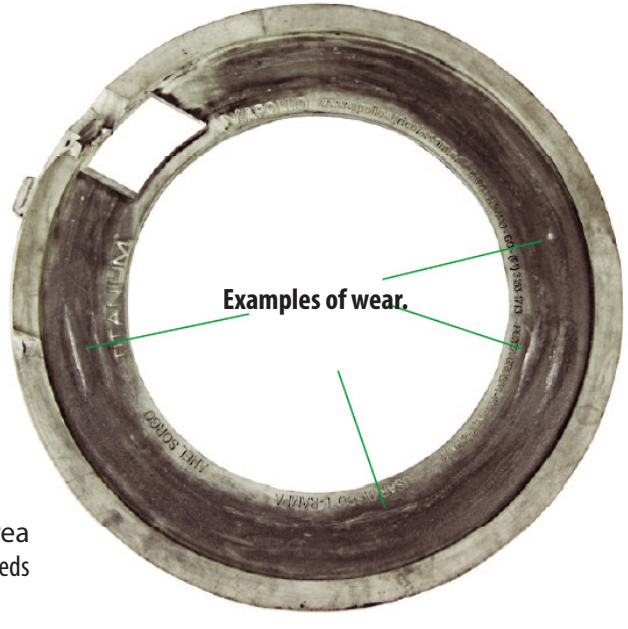
In order to maintain the excellence and efficiency of the **TITANIUM** batcher, change the disk and the ring at each new planting.

In tests performed, it was concluded that this wear can increase the number of double seeds in the same hole of the disk. **See the example below:**

The wear can cause doubles (two seeds in the same hole of the disk).



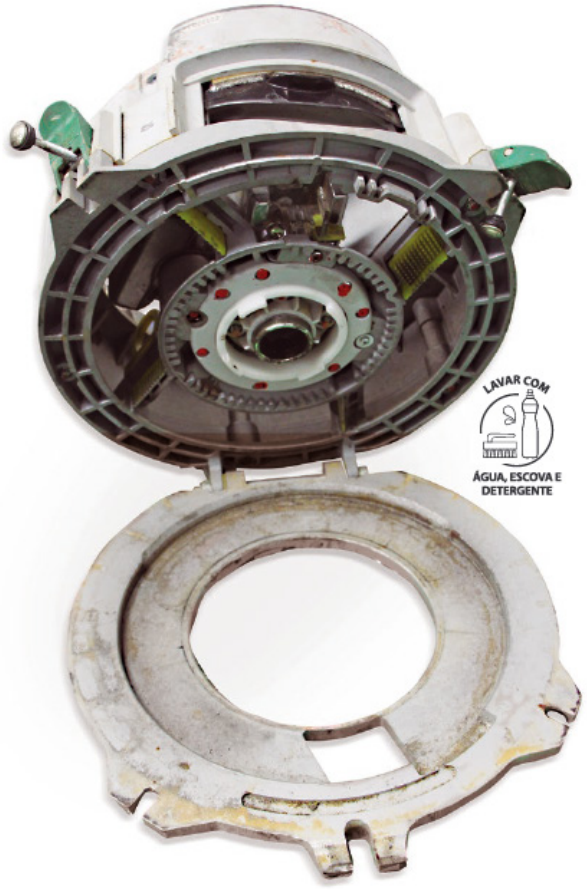
Very **evident wear** in this area that **can cause doubles** (two seeds in the same hole of the disk).



TITANIUM CLEANING

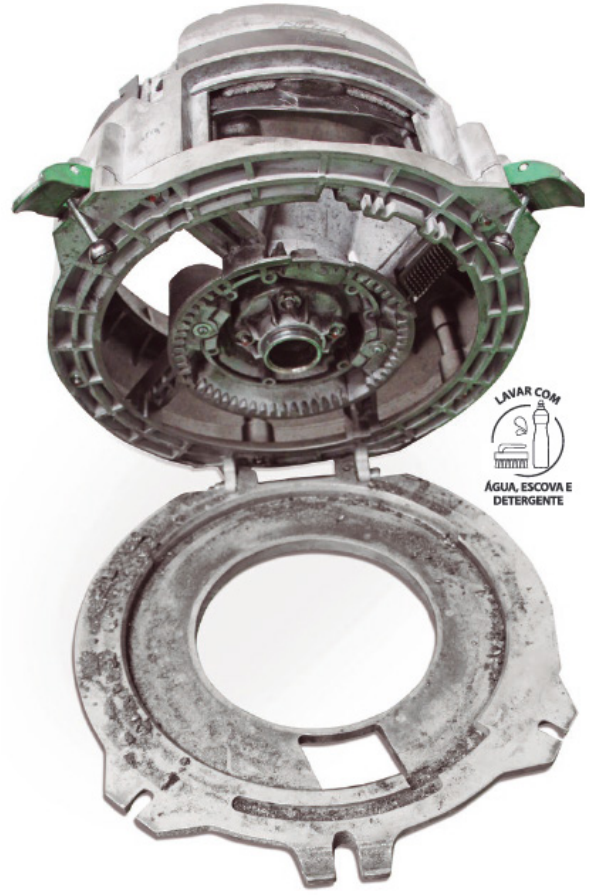
After the end of each planting, it is necessary to clean the **TITANIUM** Disk Housing and Batcher Ring. It must be washed with water, brush and neutral detergent.

Example of TITANIUM with land.



Counter base of the **TITANIUM** dosing pump dirty and crusted.

Example of TITANIUM with graphite.

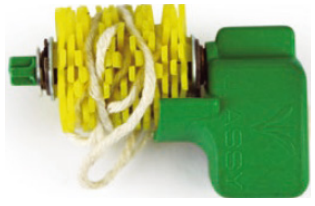


Counter-base of the **TITANIUM** batcher dirty with graphite.

SYSTEM

TROUBLESHOOTING - TITANIUM BATCHER

***01* - The ESCOVAFLEX stuck with a rolled up string, how can it be solved?**



In extreme cases the ESCOVAFLEX can lock up, so always check through the display that it is working properly. If a string gets stuck, (as shown in the picture beside), remove the string, check the conservation status of the ESCOVAFLEX and, if necessary, replace it with a new one before continuing planting.

***02* - Regarding seed treatment, do I have any limitations in using the TITANIUM batcher or not?**

Yes, oil treatments, liquid inoculants, directly in the box of seeds can greatly compromise the plantability of the system.

***03* - With the TITANIUM batcher can I plant at a higher speed?**

No, always use the speed recommended by the planter manufacturer. The batcher was developed to improve plantability, and one of the main factors compromising plantability is speed.

***04* - Can I plant without graphite?**

No, never do a planting without graphite. The graphite is responsible for lubricating the system, avoiding mechanical damage and reducing wear on the discs and rings.

***05* - Can I graffiti along with the treatment?**

Yes, oil treatments, liquid inoculants, directly in the box of seeds can greatly compromise the plantability of the system.

***06* - Can I replace the graphite (powder) with inert talc?**

No, graphite should never be replaced or used in smaller amounts than indicated, because it is responsible for lubricating the system and distributing the seeds well.

***07* - I started planting soybeans, I am noticing some broken seeds in the display, what to do?**

This is a symptom of missing graphite or incorrect choice of disc and ring.

***08* - Can I inoculate directly into the TITANIUM batcher seed box?**

No, liquid inoculant compromises the function of the distribution set.

***09* - Can I work without the weight limiter?**

No, the limiter prevents the overload of weight inside the tank to ensure a correct seed distribution. Work without the limiter only when using the Seeds Reservoir (Popcorn Maker) J.Assy.

CLEANING

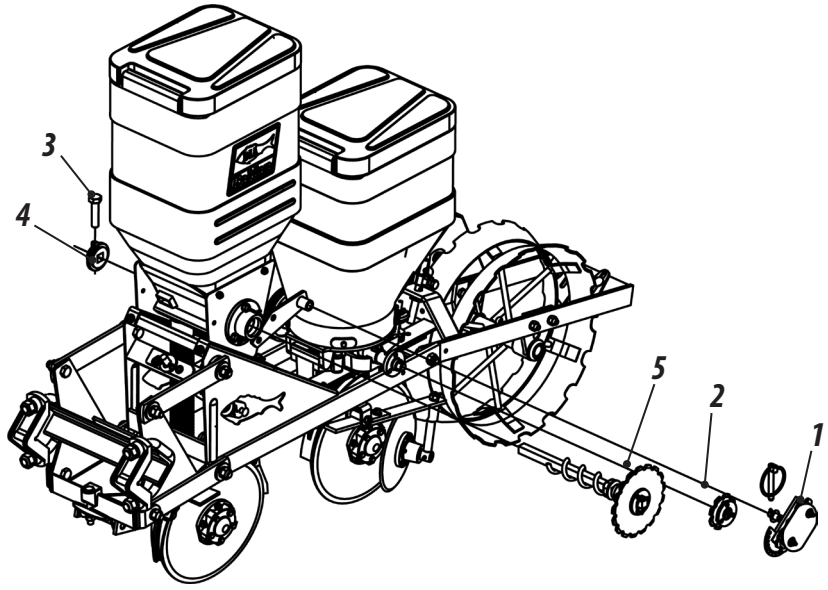
FERTILIZER SYSTEM

After planting, do not leave fertilizer in the deposits, clean them as follows:

1 - Remove the stretcher (1) and gear (2).

2 - Then loosen the bolt (3), lock (4) and pull the hub with gear and shaft (5), turning it for easy removal.

3 - Clean the tanks and also the axles, then rinse them under running water. Reassemble the shafts observing the correct assembly of the channel assembly, as the fertilizer exit holes of both the channel and the spout must coincide. Then, assemble all the other components



IMPORTANT

When assembling the shaft, it must rotate freely, even with the tank full.

4 - If storing the seeder, make a general cleaning and wash it. Check that the paint has not worn away, if this has happened, apply a general coat, apply protective oil and completely lubricate the seeder, also remove the fertilizer hoses, wash them with water and neutral soap, then replace them.

SEED SYSTEM

5 - At the end of each working day, we recommend emptying the seed tanks, removing the distribution discs and cleaning them. Observe the operation of the seed doser, checking the spring pressure of the triggers, thus ensuring maximum precision in seed distribution.

IMPORTANT

When using products for seed treatment (inoculants, insecticides, graphite, etc.) it is necessary to clean the system twice a day or with each supply of seed.

GENERAL CLEANING

6 - Remove the transmission chains and keep them into oil until the next planting season.

7 - Lubricate the planter according to this instruction manual.

8 - Check all component and replace all damaged and warred part. Use only Baldan original parts.

9 - Store the planter under covered, keeping the unit away from rain and sun.

10 - We recommend you wash the unit before starting the next planting season.

IMPORTANT

Never use chemicals detergents to wash the planter. It can damage the paint.

SEEDER CONSERVATION - PART I

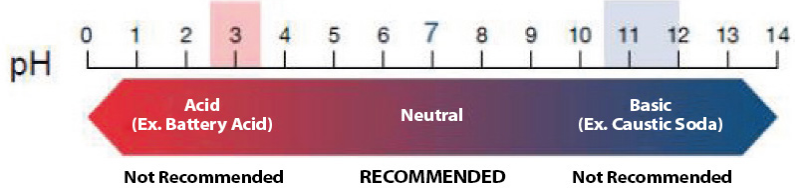
To prolong the life and appearance of the **PLB** *Directa* for longer, follow the instructions below:

01 - Fertilizers and their additives are highly corrosive and their formulation is increasingly aggressive to the seeder components.
02 - Use neutral products to clean the seeder, following the safety and handling guidelines provided by the manufaturer.
03 - Always carry out maintenance during the periods indicated this manual.

SEEDER CONSERVATION - PART II

The practices and care below if adopted by the owner or operator make a difference to the conservation of the **PLB** *Directa*.

01 - Be careful when performing high-pressure washing; do not direct the water jet directly into the connectors and electrical components. Isolate all electrical components;
02 - Use only NEUTRAL detergent and water (pH equal to 7);
03 - Apply the product, following the manufaturer's instructions strictly, on the wet surface and in the correct sequence, respecting the time of application and washing;
04 - Stains and dirt not remove with the products should be removed with the aid of a spong.
05 - Rinse the machine with clean water to remove any chemical residues.
06 - Do not use: - Detergents with a basic active ingredient (pH greater than 7), can attack/stain paint on the seeder.
- Detergents with acid active ingredient (pH less than a 7), act as stripper/remover of zinc coating (the protection of parts against oxidation).



07 - Let the machine dry in the shade so that water does not accumulate in its components. Drying too fast can stain your paint.
08 - After dryubg, lubricate all chains and greases according to the recommendations in the operator's manual.
09 - Spray all the machine, especially the zinc parts, with protective oil, following the manufacturer's application guidelines. The protective also prevents dirt from adhering to the machine, facilitating subsequent wasthings.
10 - Observe curing (absorption) time and application intervals as recommended by the manufacturer.

ATTENTION

Do not use any other type of oil to protect the seeder (used hydraulic oil, "burnt" oil, diesel castor oil, kerosene, etc.).

IMPORTANT

We recommend the following protective oils:
- Bardahl: Agro protective 200 or 300.
- ITWChemical: Zoxol DW - Series 4000.

NOTE

Ignoring the above conservation measures may result in the loss of warranty of painted or galvanized components that way be oxidized (rust).

PREPARING THE TRACTOR

PREPARING THE TRACTOR FOR PLANTING OPERATION

1 - In order to plant without problems and interruptions, revise the tractor completely including engine and hydraulic system.

2 - Also check the pressure of the tyres and calibrate according to manufactures recommendations. If necessary, add weight to the tyres (water).

3 - When working with hydraulic machines such as the **PLB** *Directa*, check that, with medium to maximum load (compost and seed deposits from half to full), the tractor does not show a tendency to warp when lifting it. If this occurs, it is necessary to weight the front of it with a load of around 120kg to 150kg. This need varies according to the model and brand of tractor used.

4 - Adjust the tractor gauge as follows:

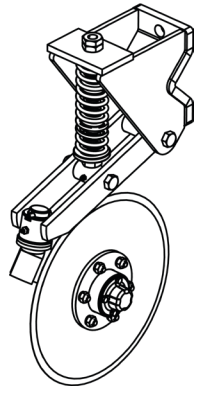
Tractor type		*Distance between front tyres*
Simple wheelset	4 x 2	2 x distance of the row spacing of the planter. (center to center).
Simple wheelset	4 x 4	2 x the distance of the row spacing of the planter.
Double wheelset	4 x 2	4 x the distance of the row placing of the planter.

In case you cannot achieve the exact distance, set in the closet to can get.

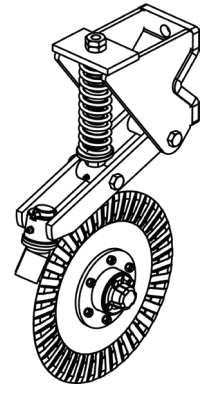
OPTIONAL

OPTIONAL ACCESSORIES - PART I

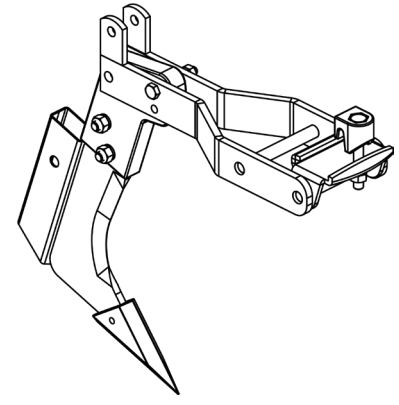
The **PLB** *Directa* has options that can be purchased according to the need for work.



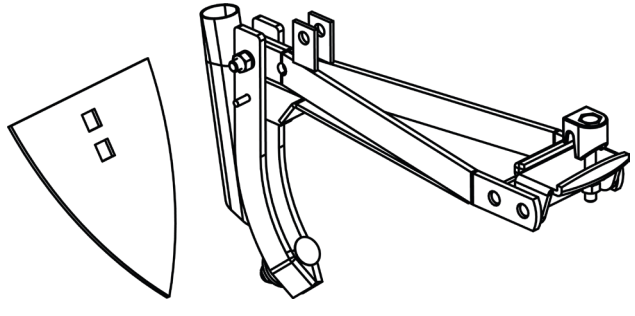
FLAT PLANE CUTTING DISC TROLLEY



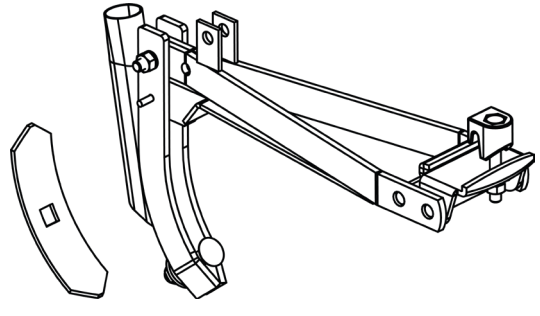
STRIPED PLANE CUTTING DISC TROLLEY



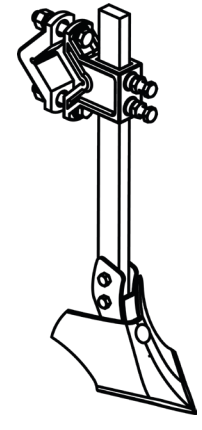
FURROWER WITH COMPLETE SUPPORT



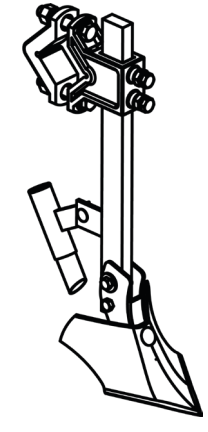
SUPPORT WITH FURROWER NOZZLE FOR CORN PLANTING



SUPPORT WITH SCRATCH NOZZLE FOR DEEP FERTILIZATION



FERTILIZER WITHOUT SUPPORT FOR FERTILIZER CONDUCTOR

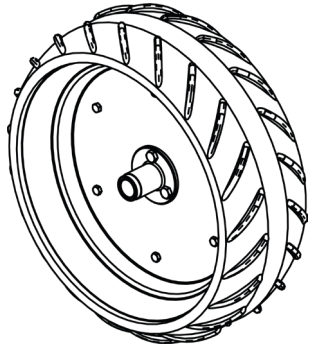


FERTILIZER WITH SUPPORT FOR FERTILIZER CONDUCTOR

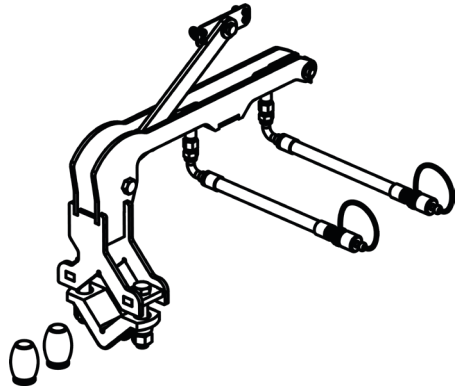
OPTIONAL

OPTIONAL ACCESSORIES - PART II

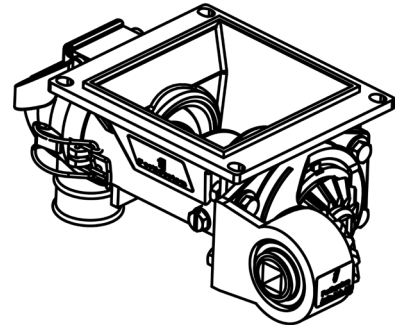
The **PLB** *Directa* has options that can be purchased according to the need for work.



RUBBER COMPRESSION WHEEL



HYDRAULIC SYSTEM FOR ROW MARKER



FERTISYSTEM BATCHER

TITANIUM BATCHER

IDENTIFICATION

IDENTIFICATION PLATE

1 - To see the parts catalog or to request technical assistance from Baldan, always inform model (01), serial number (02) and date of manufacture (03), which is on your **PLB** *Directa* nameplate.

2 - **ALWAYS REQUIRE BALDAN ORIGINAL PARTS**

PUBLICATIONS

Code: 60550200034
CPT: PLB10025A

CONTACT

In case of doubts, never operate or handle your PLB Directa without referring to Post-Sales.
Telephone: 0800-152577
e-mail: posvenda@baldan.com.br

PRODUCT IDENTIFICATION

3 - Please make the correct identification of the data below, to always have information about the service life of your **PLB** *Directa*.

Owner: _____

Dealer: _____

Property: _____

City: _____ *State:* _____

Certificate of warranty no.: _____

Implement: _____

Serial no: _____

Purchase date: _____ *Invoice:* _____

PEÇAS® ORIGINAIS BALDAN
ORIGINAL PARTS • PIEZAS ORIGINALES

The drawings in this Instruction Manual are merely illustrative. In order to provide a better view and detailed instruction, some drawings in this manual have been removed from parts and safety devices (covers, protections, etc.). Never operate PLB Directa without these devices.

NOTES

CERTIFICATE OF WARRANTY

BALDAN IMPLEMENTOS AGRÍCOLAS S/A ensures the dealer normal performance of the implement for a period of six (6) months as of the delivery date on the retail invoice to the first final consumer. During this period, **BALDAN** undertakes to repair defects in material and/or of manufacture of its liability, including labor, freight and other expenses of the dealer's liability.

In the warranty period, request and replacement of eventual defective parts shall be made to the dealer of the area, who will submit the faulty piece for **BALDAN** analysis.

When this procedure is not possible and the resolving capacity of the dealer is exhausted, the dealer will request the support of **BALDAN** Technical Assistance through a specific form distributed to dealers. After analyzing the replaced items by Baldan Technical Assistance, and concluding that it is not a warranty, then the dealer will be responsible for the costs related to the replacement; as well as material expenses, travel including accommodation and meals, accessories, lubricant used and other expenses arising from the call out to Technical Assistance, and **BALDAN** company is authorized to carry the respective invoice in the name of the resale.

Any repair carried in the product within the dealer warranty deadRow will only be authorized by **BALDAN** upon previous budget presentation describing parts and work to be performed.

The product is excluded from this term if it is repaired or modified by representatives not belonging to the **BALDAN** dealer network, as well as the application of non-genuine parts or components to the user's product. This warranty is void where it is found that the defect or damage is caused by improper use of the product, failure to follow instructions or inexperience of the operator.

It is agreed that this warranty does not cover tires, polyethylene tanks, cardan, hydraulic components, etc., which are equipment guaranteed by their manufacturers. Manufacturing and/or material defects, object of this warranty term, will not constitute, under any circumstances, grounds for termination of a purchase agreement, or for indentification of any nature.

BALDAN reserves the right to change and/or perfect the technical characteristics of its products, without previous notice, and without obligation to proceed in the same way with the products previously manufactured.

CERTIFICATE OF INSPECTION AND DELIVERY

- **SERVICE BEFORE THE DELIVERY:** This equipment was very carefully prepared by the dealer's organization, inspected in all its parts in agreement with the manufacture's prescription.
- **DELIVERY SERVICE:** The user was informed about the current guarantee terms and instructed about maintenance care and utilization.
- I confirm that I was informed about the current guarantee terms and instructed about the correct utilization and maintenance of this product.

Product: _____

Serial Number: _____

Date: _____ *Bill of sale:* _____

Store: _____ *City:* _____

State: _____ *Zip code:* _____

Owner: _____ *Phone:* _____

Address: _____ *Number:* _____

City: _____ *State:* _____

E-mail: _____

Date of sale: _____

Signature / Store's stamp: _____

1st page - Owner

CERTIFICATE OF INSPECTION AND DELIVERY

- **SERVICE BEFORE THE DELIVERY:** This equipment was very carefully prepared by the dealer's organization, inspected in all its parts in agreement with the manufacture's prescription.
- **DELIVERY SERVICE:** The user was informed about the current guarantee terms and instructed about maintenance care and utilization.
- I confirm that I was informed about the current guarantee terms and instructed about the correct utilization and maintenance of this product.

Product: _____

Serial Number: _____

Date: _____ *Bill of sale:* _____

Store: _____ *City:* _____

State: _____ *Zip code:* _____

Owner: _____ *Phone:* _____

Address: _____ *Number:* _____

City: _____ *State:* _____

E-mail: _____

Date of sale: _____

Signature / Store's stamp: _____

2nd page - Store

CERTIFICATE OF INSPECTION AND DELIVERY

- **SERVICE BEFORE THE DELIVERY:** This equipment was very carefully prepared by the dealer's organization, inspected in all its parts in agreement with the manufacture's prescription.
- **DELIVERY SERVICE:** The user was informed about the current guarantee terms and instructed about maintenance care and utilization.
- I confirm that I was informed about the current guarantee terms and instructed about the correct utilization and maintenance of this product.

Product: _____

Serial Number: _____

Date: _____ *Bill of sale:* _____

Store: _____ *City:* _____

State: _____ *Zip code:* _____

Owner: _____ *Phone:* _____

Address: _____ *Number:* _____

City: _____ *State:* _____

E-mail: _____

Date of sale: _____

Signature / Store's stamp: _____

3rd page - Manufacturer

1.74.05.0059-5

AC MATÃO
ECT/DR/SP

RESPONSE CARD

NO STAMPING IS REQUIRED

THE STAMP WILL BE PAID BY:

BALDAN

BALDAN IMPLEMENTOS AGRÍCOLAS S/A.

Av. Baldan, 1500 | Nova Matão | CEP: 15993-900 | Matão-SP | Brasil

Phone: (016) 3221-6500 | Fax: (0**16) 3382-6500**

Home Page: www.baldan.com.br | e-mail: sac@baldan.com.br

Export: Phone: 55 16 3321-6500 | Fax: 55 16 3382-4212 | 3382-2480

e-mail: export@baldan.com.br

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sac@baldan.com.br
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+55 16 3221 6500
baldan.com.br