# Instruction Manual


## PLB DIRECTA

Baldan Line Seeder

BALDAN

# IDENTIFICATION

We appreciate your purchase and congratulate you for the excellent choice you just made because you have purchased a product manufactured with technology from **BALDAN IMPLEMENTOS AGRÍCOLAS S/A.**

This instruction manual will guide you through the procedures that are necessary since its acquisition up to the operating procedures of use, security and maintenance.

**BALDAN** ensures that has delivered this farming implement to the dealer in perfect conditions.

The dealer is responsible for the custody and maintenance of this farming implement and also for the assemblage, retightening, lubrication and overhaul.

In the technical delivery, the dealer must advise the user on its maintenance, security, its obligations under any technical assistance, the strict observance of the guarantee and reading of the instruction manual.

Any request for technical assistance under warranty should be made to the dealer where it was purchased.

We reiterate the need for careful reading of the Warranty Certificate and observance of all items in this instruction manual, as doing so, the useful life of your farming implement will increase.

# 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**, warranties the normal operation of the implement to the dealer for a period of six (6) months from the date of delivery of the resale invoice to the first consumer.

During this period **BALDAN** undertakes to fix any defects in materials or workmanship of its responsibility, the labor, the freight and other expenses being of the dealer's liability.

During the warranty period, the request and the replacement of any defective parts must be made to the dealer of the region, which will send the defective part for analysis by **BALDAN**.

When such a procedure is not possible and the capacity of resolution by the dealer is exhausted, this one will request the **BALDAN** Technical Assistance support through a specic form distributed to the dealers.

After analyzing the items replaced by the **BALDAN** Technical Assistance, and if the conclusion is that it is not a case of warranty, then the costs related to the replacement will be supported by the dealer; as well as the material costs, travel including stays and meals, accessories, lubricant used and other expenses deriving from the request to the Technical Assistance, in this case, **BALDAN** is authorized to make the billing on behalf de dealer´s name.

Any repair done by the dealer on the product within the warranty period, will only be authorized by **BALDAN** upon prior presentation of the budget describing the parts and the works to be performed.

Is excluded from this warranty the product that is repaired or modied in workshops that do not belong to the **BALDAN** dealers network, as well as the application of non-genuine parts or components on the user product.

This warranty will become void if it is determined that the defect or damage is the result of misuse of the product, failure to follow the instructions or the inexperience of the operator.

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

Defects in workmanship and or material, object of this warranty shall not be, under any circumstances, grounds for the termination of the contract of sale, or for compensation of any nature.

**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.

## TO THE OWNER

**BALDAN IMPLEMENTOS AGRÍCOLAS S/A**, will not be responsible for any damage caused by an accident due to the use, transport or improper or incorrect storage of your implement, whether in case of negligence and/or inexperience of any person.

Only persons who have the full knowledge of the tractor and the implement must perform 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.***

**⚠ ATENTION**

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

***This Regulatory Standard has the purpose of stablishing precepts to be observed in the organization and work environment, compatible to the planting and development of agriculture, livestock, forest exploration and aquaculture with safety and health and work environment.***

**SR. PROPIETARIO U OPERADOR DEL EQUIPO.**

***Lea y cumpla atentamente lo dispuesto en la 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***

# GENERAL INFORMATION

# SAFETY RULES

*THIS SYMBOL INDICATES AN IMPORTANT SAFETY WARNING. WHENEVER YOU FIND IT IN THIS MANUAL CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURIES.*

## ⚠ ATTENTION

- *Read the instruction manual carefully, so you can learn the recommended safety practices.*

## ⚠ ATTENTION

- *Only begin operating the tractor when are properly accommodated and with the seat belt fastened.*

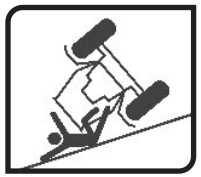
## ⚠ ATTENTION

- *Do not operate the tractor if the front is light. With a tendency to rise, add weights on the front of the tractor or front wheels.*

## ⚠ ATTENTION

- *Before performing any maintenance on your equipment, make sure it is turned off. Avoid getting hit.*

## ⚠ ATTENTION



- *There are risks of serious injury by tumbling when working on slopes.*
- *Do not use excessive speed.*

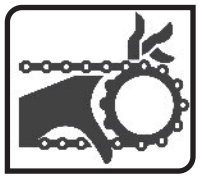
## ⚠ ATTENTION

- *Keep yourself away from the active elements of the machine (discs), they are sharp and can cause accidents.*
- *When carrying any service on discs, use safety gloves on hands.*

## ⚠ ATTENTION

- *Avoid accidents caused by intermittent action of rows mark*
- *Make sure if has anybody closer to the row mark.*

## ⚠ ATTENTION



- *Do not operate the planter if the transmission lids are not fixed. The lids must be taken out only when change is a need.*
- *Do not make any adjustments when the machine is in movement.*

**FOLLOW ALL RECOMENDATIONS, WARNINGS AND SAFE PRACTICES RECOMMENDED IN THIS MANUAL, UNDERSTAND THE IMPORTANCE OF YOUR SAFETY. ACCIDENTS MAY LEAD TO DISABILITY OR INCLUDING DEATH. REMENBER, ACCIDENTS CAN BE AVOIDED!**

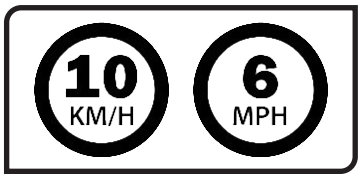
## ATTENTION

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

## ATTENTION

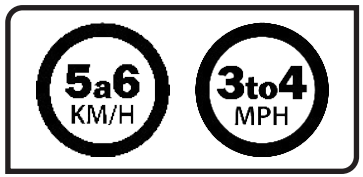
- *When operating PLB Directa, do not allow people remaining on top of it.*

## ATTENTION




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

## ATTENTION




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

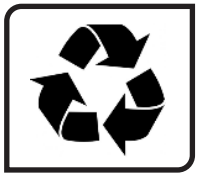
## ATTENTION

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

## ATTENTION

- *Do not perform adjustments while PLB Directa is running. When performing any service on PLB Directa, switch off the tractor first. Use appropriate tools.*

## ATTENTION



- *Dispose residues inappropriately aects the environment and the ecology since you will be polluting rivers, canals or the soil.*
- *Inform yourself about the proper way of recycling or disposing residues.*

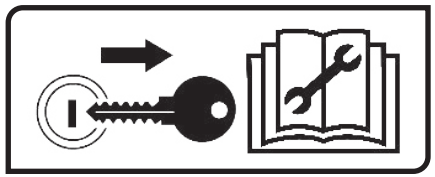
**PROTECT THE ENVIRONMENT!**

## SAFETY RULES

# SAFETY RULES

***ALCOHOLIC BEVERAGE OR SOME MEDICATIONS MAY CAUSE LOSS OF REFLEXES AND CHANGE THE OPERATOR'S PHYSICAL CONDITIONS. FOR THIS REASON, NEVER OPERATE THIS EQUIPMENT UNDER ANY OF THESE SUBSTANCES.***

## ⚠ ATTENTION



- *Remove the ignition key before performing any type of maintenance in PLB Directa.*
- *Protect yourself against possible injuries or death caused by PLB Directa unexpected start-up.*
- *Do not start the tractor up if PLB Directa is not properly engaged.*

## PPE EQUIPMENT

**⚠ ATTENTION** | **DO NOT WORK WITH PLB DIRECTA WITHOUT FIRST WEARING PPES (SAFETY EQUIPMENT). IGNORING THIS WARNING MAY CAUSE DAMAGES TO HEALTH, SEVERE ACCIDENTS OR DEATH.**

When performing certain procedures with **PLB DIRECTA,** wear the following Safety Equipament (PPE):



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

**IMPORTANT**

**The safety practice must be performed in all stages of working with the PLB DIRECTA, thus avoiding accidents such as impact of objects, fall, noise, cuts and ergonomics, ie the person responsible for operating the PLB DIRECTA is subject to internal and external damage to your body.**

## SAFETY RULES

## WARNINGS

01-When operating with the PLB Directa, do not let people stay close or on it.

02-When performing any maintenance service, use PPEs equipment.

03-Do not wear loose clothing, as they may get caught in the PLB Directa.

04-When operating the tractor engine, be properly seated in the operator's seat and be aware of the full knowledge of the correct and safe handling or both the tractor and the PLB Directa. Always put the gear shift in neutral position, unplug the power take-off gear switch and place the hydraulic controls in neutral position.

05-Do not start the motor in a closed environment or with no proper ventilation since th exhaust gases are harmful to health.

06-When maneuvering the tractor to the PLB Directa hitch, make sure you have adequate clearance and that are no people too close, always maneuver at idle and be prepared to brake in an emergency.

07-Do not make adjust the implement working.

08-When working in sloped terrains, proceed with precautions, always trying to maintain the required stability. In case of imbalance, reduce acceleration, turn the wheels to the slope side of the terrain and never lift the PLB Directa.

09-Always conduct the tractor in speeds compatible to the safety, especially during works in bumpy lands or slopes, keep the tractor always engaged.

10-When driving the tractor in highways, keep the brake pedals interconnected.

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

12-When leaving the tractor, put the gear lever in neutral position and apply the parking brake. Never leave the PLB Directa on the tractor in the raised position of the hydraylic system.

13-The PLB Directa must be turned off beffore any maintenance work.

14-Do not travel on highways especially at night. Use warning signs throughout the course.

15-If you need to travel with the PLB Directa on highways, consult traffic authorities.

16-The PLB Directa must not be operated by untrained people, i.e. people who do not know to properly operate it.

17-The transport of people and self-propelled machines and implements is prohibited.

18-Alterations to the original characteristics of PLB Directa are not authorized, as they may alter safety, functioning and affect its useful life.

19-Read all safety information contained in this manual and the PLB Directa carefully.

20-Only operate PLB Direct if all protections are installed and correctly.

21-Do not, under any circumstances, remove the protection components of PLB Directa.

22-Always check that the PLB Directa is in perfect condition. In the event of nay irregularity that may interfere with the operation of PLB Directa, ensure that it is properly maintained before carryinf out any work or transport.

23-Maintenance and especially inspection in PLB Directa risk areas should only be carried out by a qualified or trained worker, observaing all safety guidelines. Before maintenance, disconnect all drive system of the PLB Directa.

24-Periodically check all PLB Directa components before use.

25-Due to the equipament use and work conditions on field or in maintenance areas, precautions are required. Baldan has no direct control over precautions, so it the owner's responsibility to implement safety procedures while working with PLB Directa.

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

27-Fill the PLB Directa only at the work site to avoid overloading the hydraulic lift during transport.

28-When transporting the PLB Directa, travel at speeds compatible with the terrain and never exceed 10 km/h, as this reduces maintenance and consequenty increases the life of the PLB Directa.

29-Alcoholic beverage or some medications may cause loss of reflexes and change the operator's physical conditions. Therefore, never operate this PLB Directa under the influence of these substances.

30-Read or explain all the procedures of this manual to the operator who cannot read.

*If case of doubts, refer to After-sales.*
*Telephone: 0800-152577 / E-mail: posvenda@baldan.com.br*

## WARNINGS

# PLB Directa - BALDAN LINE SEEDER

*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

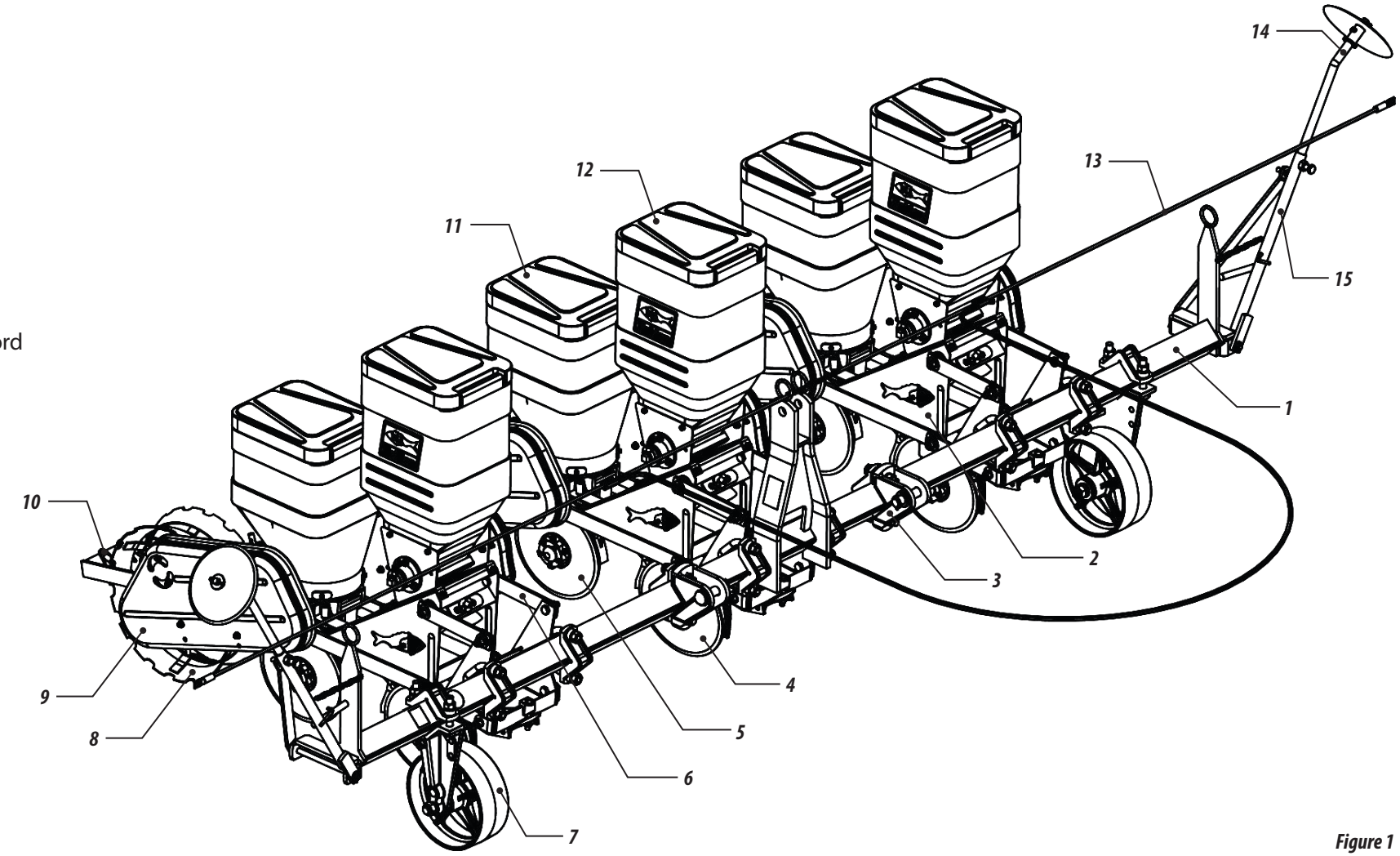



*Figure 1*

| Model | Nr of rows | Toolbar width (mm) | Useful width (mm) | Total width (mm) | Minimum row spacing (mm) | Working depth (mm) | Approximate weight (Kg) | Seed hooper capacity (L) | Fertilizer hooper capacity (L) | Tractor power (Hp) |
|---|---|---|---|---|---|---|---|---|---|---|
| PLB Directa | 2 | 1800 | 1400 | 2300 | 420 | 0 - 120 | 449 | 45 | 60 | 40 - 50 |
| PLB Directa | 2 | 2800 | 2400 | 3300 | 420 | 0 - 120 | 471 | 45 | 60 | 40 - 50 |
| PLB Directa | 2 | 3800 | 3400 | 4300 | 420 | 0 - 120 | 492 | 45 | 60 | 40 - 50 |
| PLB Directa | 3 | 1800 | 1400 | 2300 | 420 | 0 - 120 | 597 | 45 | 60 | 50 - 66 |
| PLB Directa | 3 | 2300 | 1900 | 2800 | 420 | 0 - 120 | 608 | 45 | 60 | 50 - 66 |
| PLB Directa | 3 | 2800 | 2400 | 3300 | 420 | 0 - 120 | 618 | 45 | 60 | 50 - 66 |
| PLB Directa | 3 | 3800 | 3400 | 4300 | 420 | 0 - 120 | 640 | 45 | 60 | 50 - 66 |
| PLB Directa | 4 | 2800 | 2400 | 3300 | 420 | 0 - 120 | 766 | 45 | 60 | 60 - 75 |
| PLB Directa | 4 | 3300 | 2900 | 3800 | 420 | 0 - 120 | 777 | 45 | 60 | 60 - 75 |
| PLB Directa | 4 | 3800 | 3400 | 4300 | 420 | 0 - 120 | 787 | 45 | 60 | 60 - 75 |
| PLB Directa | 4 | 4400 | 4000 | 4900 | 420 | 0 - 120 | 841 | 45 | 60 | 60 - 75 |
| PLB Directa | 5 | 2800 | 2400 | 3300 | 420 | 0 - 120 | 913 | 45 | 60 | 75 - 90 |
| PLB Directa | 5 | 3800 | 3400 | 4300 | 420 | 0 - 120 | 935 | 45 | 60 | 75 - 90 |
| PLB Directa | 5 | 4400 | 4000 | 4900 | 420 | 0 - 120 | 989 | 45 | 60 | 75 - 90 |
| PLB Directa | 6 | 2800 | 2400 | 3300 | 420 | 0 - 120 | 1014 | 45 | 60 | 85 - 95 |
| PLB Directa | 6 | 3800 | 3400 | 4300 | 420 | 0 - 120 | 1082 | 45 | 60 | 85 - 95 |
| PLB Directa | 6 | 4400 | 4000 | 4900 | 420 | 0 - 120 | 1136 | 45 | 60 | 85 - 95 |

*Table 1*

*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 be conducted and operator only by a properly instructed operator.

## UNPERMITTED 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 must NOT be used by an inexperienced operator who does not know all the driving, command and operation techniques.

# TECHNICAL SPECIFICATIONS

# ASSEMBLY

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

01 - The most practical method for assembling the **PLB** *Directa* is the use of trestles or similar.

## ASSEMBLING THE TOOL BAR HITCH

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

03 - Adjust the hitches according to the category of tractor that will operate the seeder.

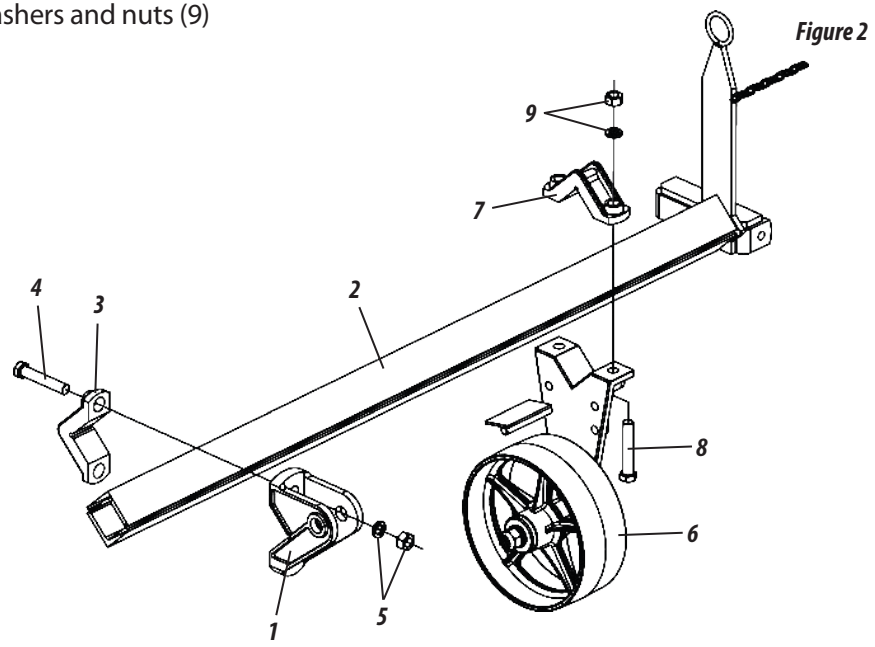
**Cat. I = 685 mm**

**Cat. II = 826 mm**

*Important : The minimum spacing between rows is 420 mm.*

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

*Figure 2*




## ASSEMBLY OF DOUBLE DISCS IN PLANTING LINES

### *Seed Double Disc*

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

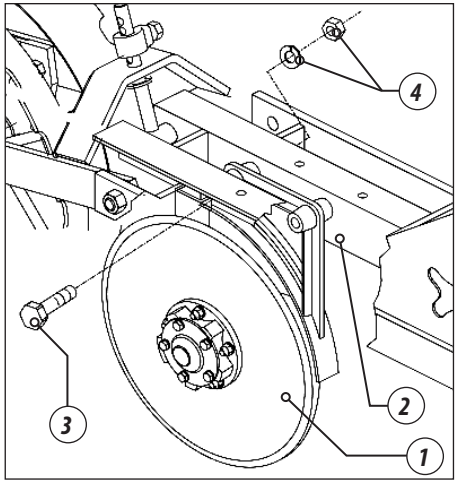



*Figure 3*

### *Fertilizer Double Disc*

01 - Attach the fertilizer double disc unit (1) to support (2) fixing with lock (3), bolt (4), washer and nut (6).

02 - Place the spring rod (7) on the support and lock with pin (8).

03 - Attach hose (9) to the entry tube of the double discs unit and lock with clamp (10).

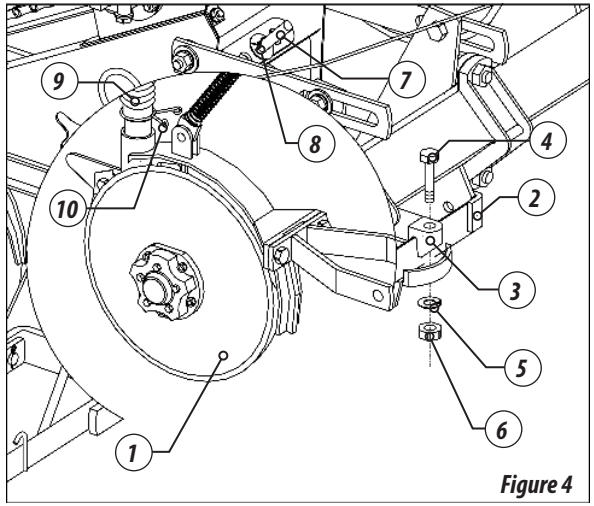



*Figure 4*

## ASSEMBLING THE FERTILIZER FURROWER FOR MAIZE (OPTIONAL)

01 - Attach the furrower unit (1) to support (2) fixing with lock (3), bolt (4), washer (5) and nut (6).

02 - Place spring rod (7) on the support and lock with pin (8).

03 - Attach hose (9), to the entry tube of the furrower unit fixing with clamp (10).

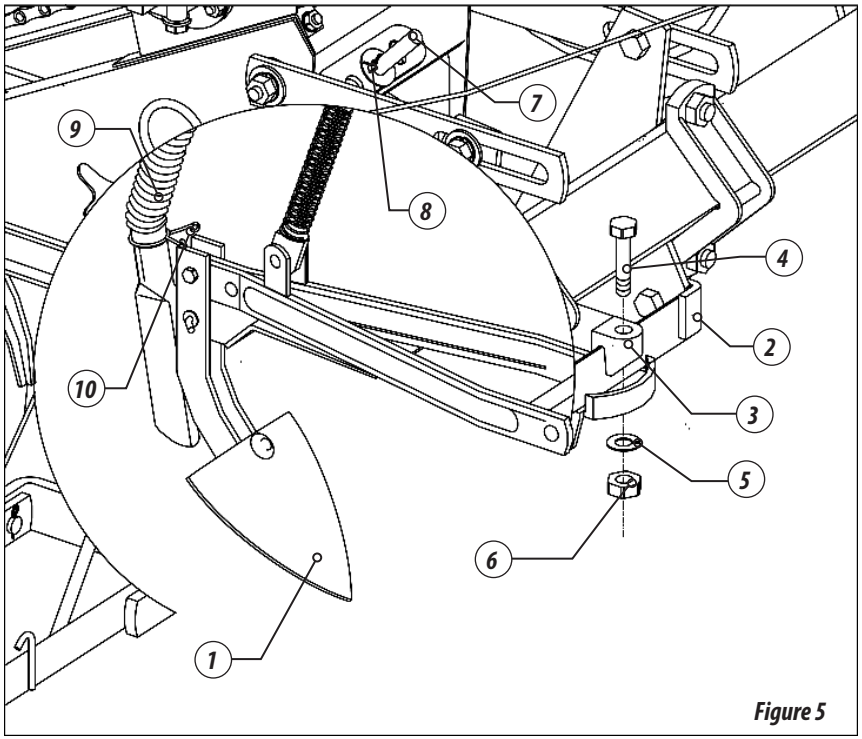
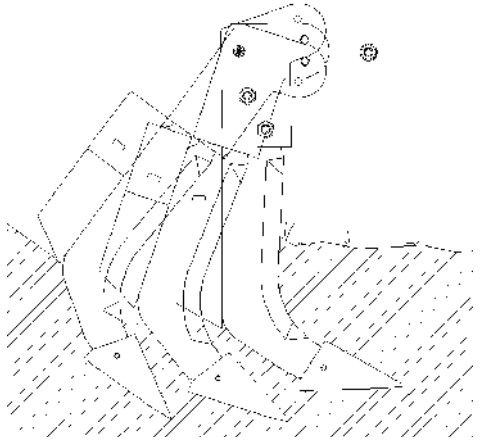



*Figure 5*

## POSITION OF THE FURROWER FOR DEEP FERTILIZING (OPTIONAL)

01 - 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).


*Figures 6*



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

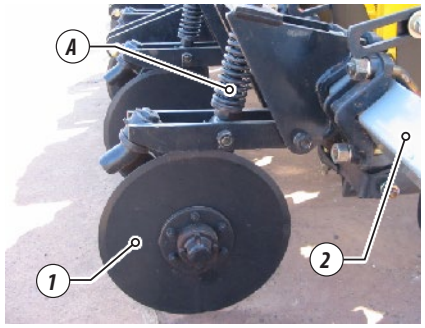
# ASSEMBLY

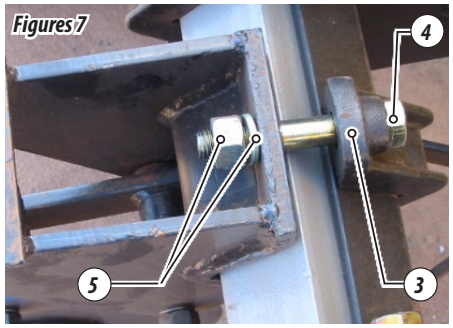
## ASSEMBLING THE CUTTING COULTER (OPTIONAL)

- 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 :

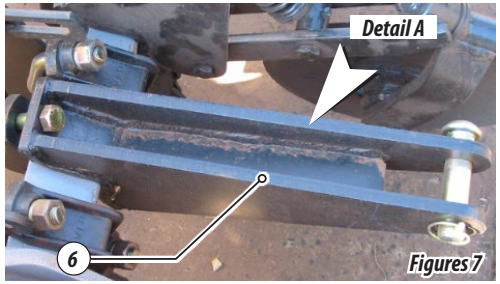
01 - Attach the cutting coulter (1) to the tool bar (2) fixing with bratchet (3), bolt (4), washers and nut (5).

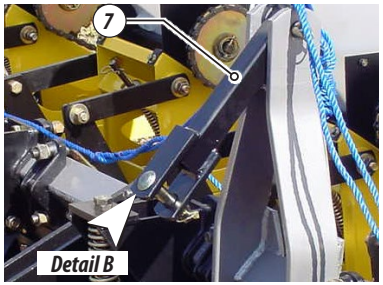
**NOTE** | *Spring "A" is preset by the factory. Do not increase the pressure, otherwise you will loose articulation on the coulter.*




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




**NOTE** | *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".*

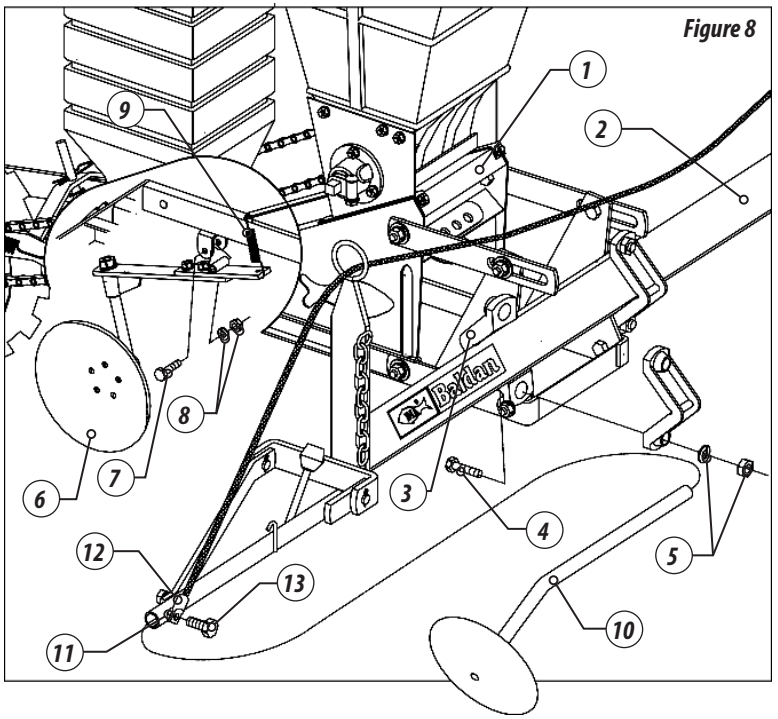
## ASSEMBLING THE PLANTING ROW UNIT

01 - Fix the row unit (1) on tool bar (2) by using bratchet (3), bolts (4) washers and nuts (5).

02 - Insert cover disc (6) between the frame, fixing with bolt (7), washer and nut (8), place spring (9) between disc support and row unit hitch.

## ASSEMBLING THE ROWS MARKERS

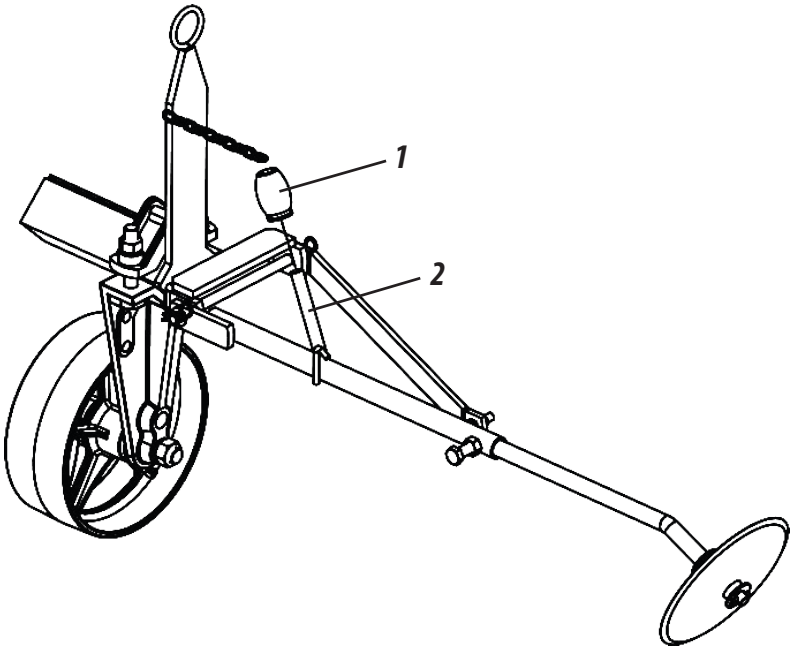
01 - Insert the line marker (10) into the goal (11). Place the rope terminal (12) and secure with the screw (13), passing it through the header rings, fixing the other end to the line marker on the opposite side.



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

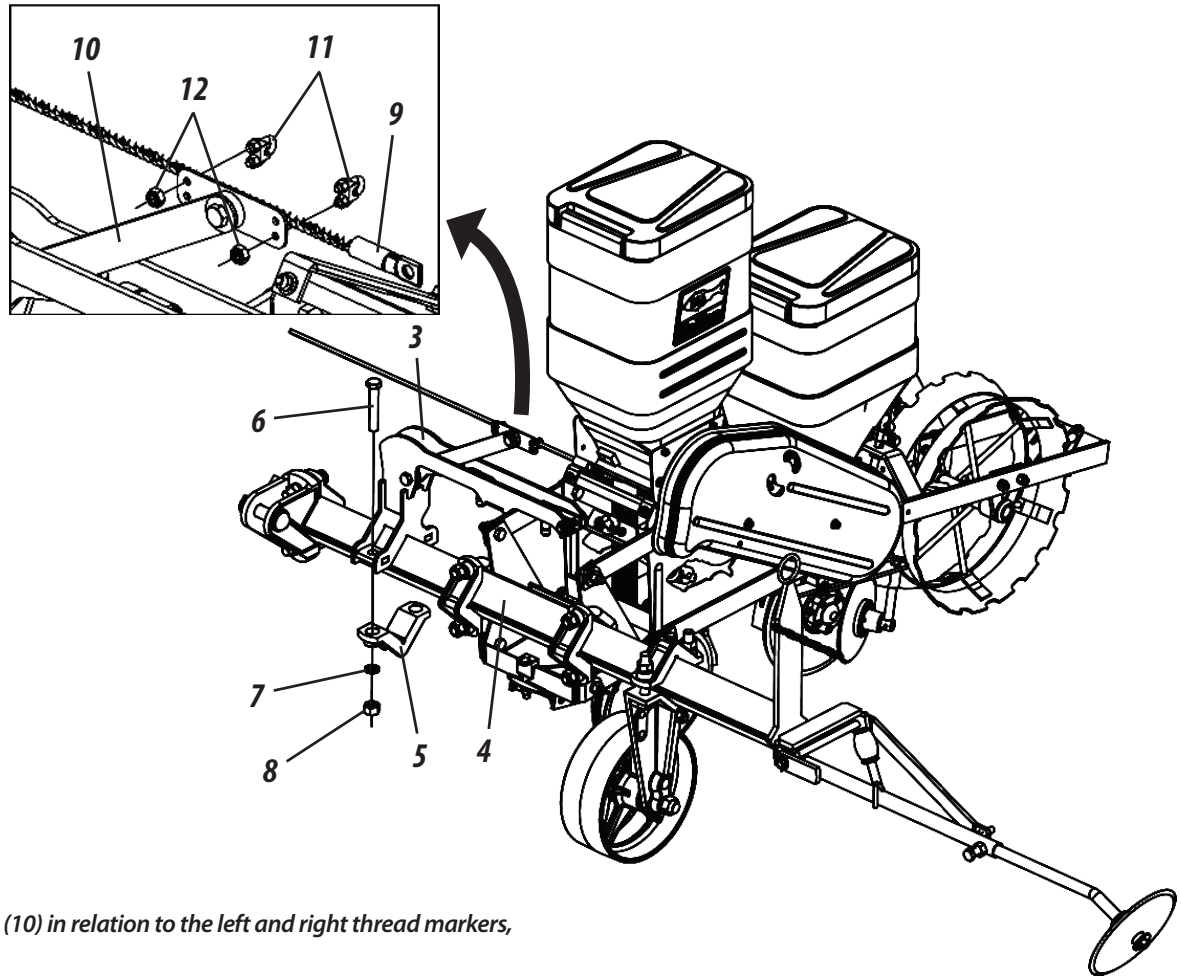
- The **PLB** *Directa* can be purchased optionally with a hydraulic system on the line marker. To assemble the hydraulic system, proceed as follows:

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).

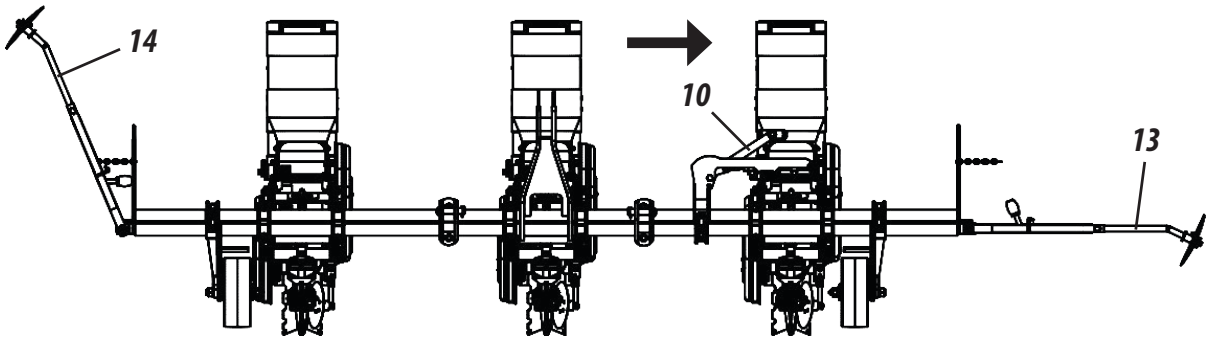
3 - Then, secure the rope (9) on the lever (10), through the clamps (11) and nuts (12).



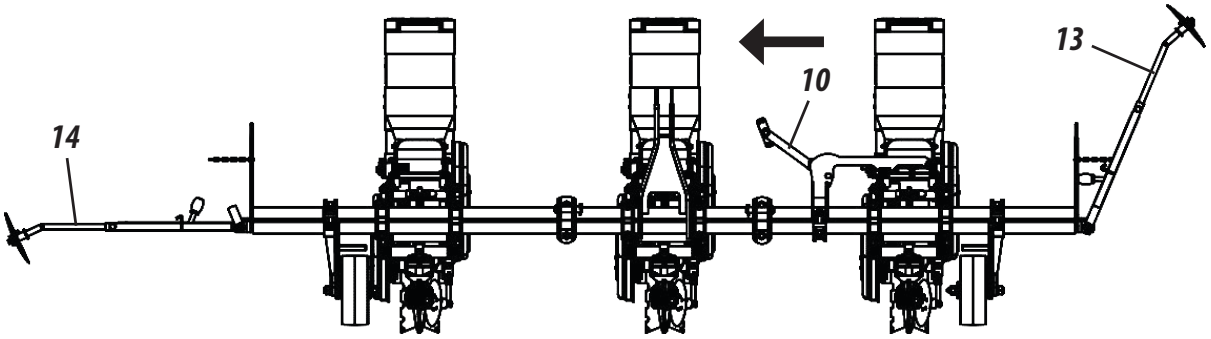

**ATTENTION** | ***Before attaching the rope (9), note the position of the lever (10) in relation to the left and right thread markers, as instructed on the following page.***

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

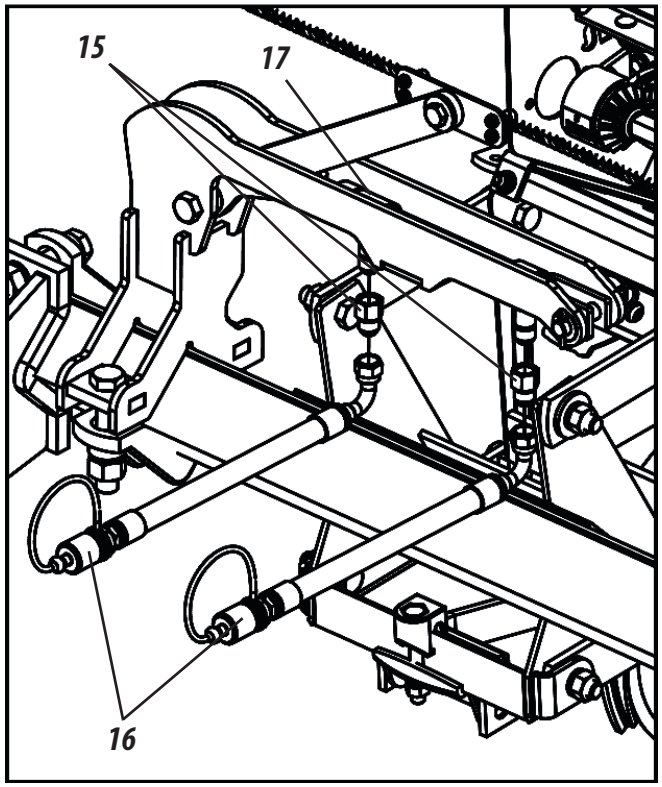
**- Lever (10) positioned to left:** Left marker (13) down and right marker (14) raised.




**- 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.*

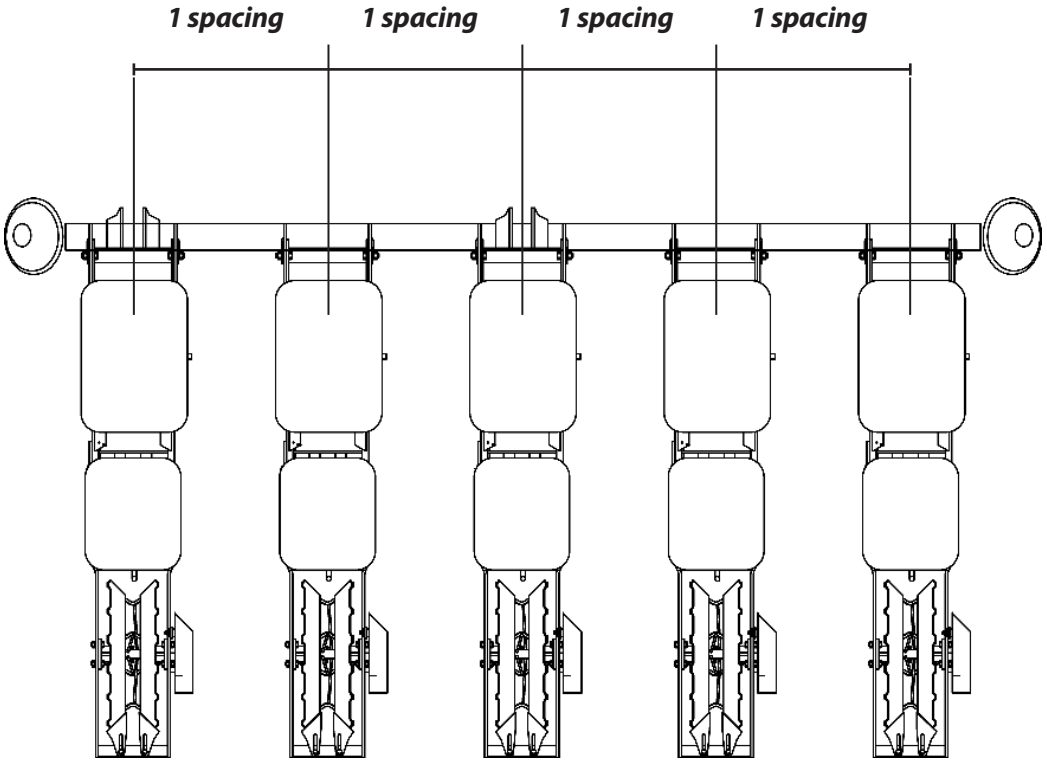
## SETTING THE CORRECT SPACINGS ACCORDING TO THE NUMBER OF ROWS

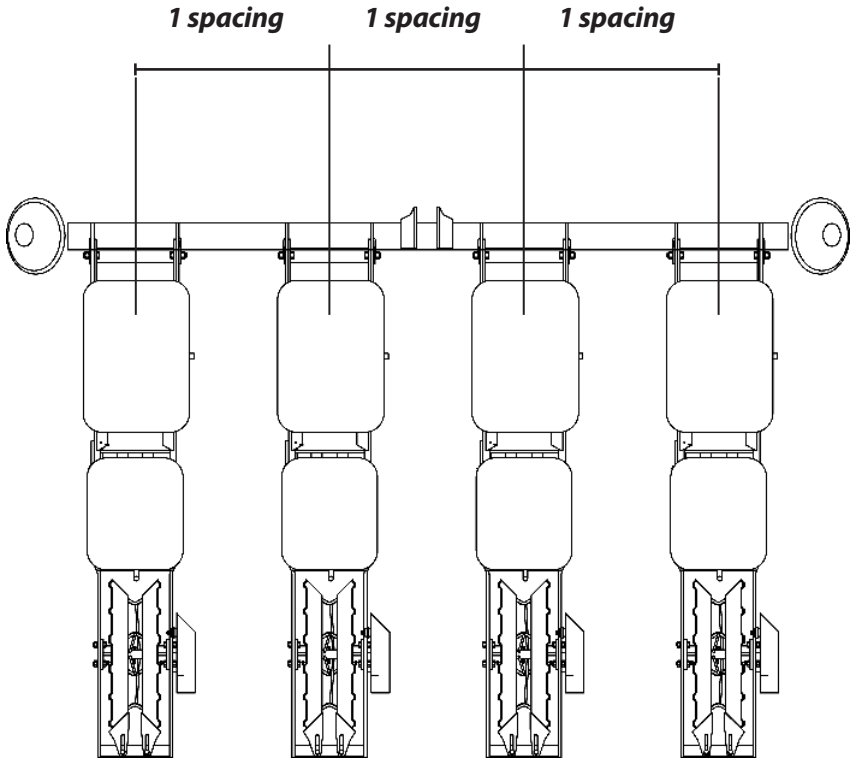
01 - First find and mark the exact middle of the tool bar. For odd number of rows, mark half spacing to each side, starting from the middle. After fixing the first two rows you can then consider the complete desired spacings (right side figure ).

02 - For even number of rows, start from the middle and mark the complete spacing to each side of the bar (left side figure).

03 - After finishing to set and tighten all row units, check if all tools are put away and there are no parts (nuts,bolts,washers ) inside the hoppers.

04 - Also check that all pins and lock pins are placed correctly.




*Figures 9*

# HITCHING

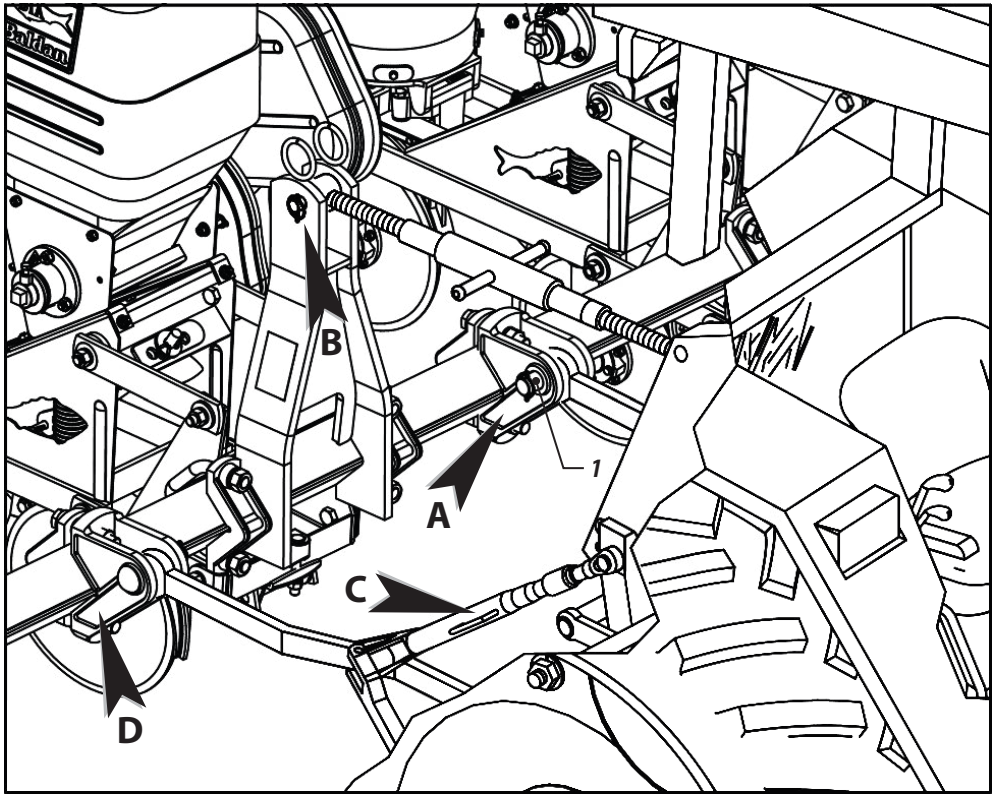
## HITCHING TO THE TRACTOR

01 - Hitch the left inferior arm of the tractor with the hitch pin (1) to the support **"A"** of the seed machine.

02 - Hitch the 3rd point arm to the **"B"** support of the machine.

03 - Finally with the height regulating lever **"C"** hitch the right inferior arm of the tractor to the support **"D"** of the planter.

*Figure 10*




## CENTRALIZATION

To centralize the **PLB** *Directa* in relation to the tractor's longitudinal axle, proceed as follows:

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

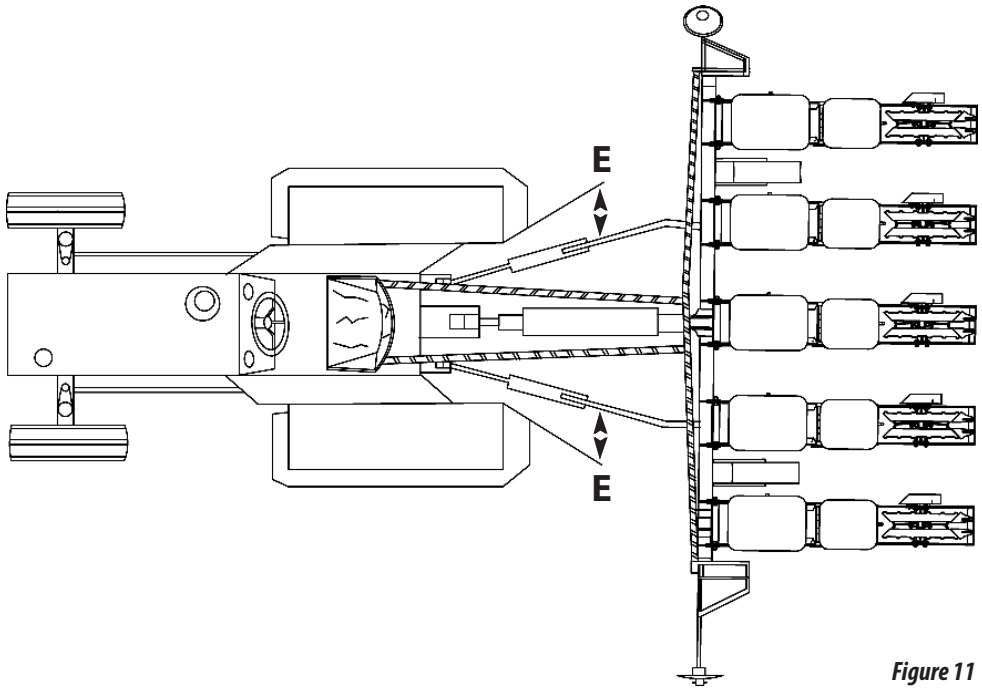



*Figure 11*

## LEVELING THE PLANTER

- In order to level the **PLB** *Directa*, proceed as follows:

01 - The tractor has to be parked on a plain surface; level the planter on both longitudinal and transversal positions. Notice that distance **"H"** has to be the same for both sides.

02 - The longitudinal leveling is done using the top link. Notice that the rows have to be leveled on the ground. (parallel)

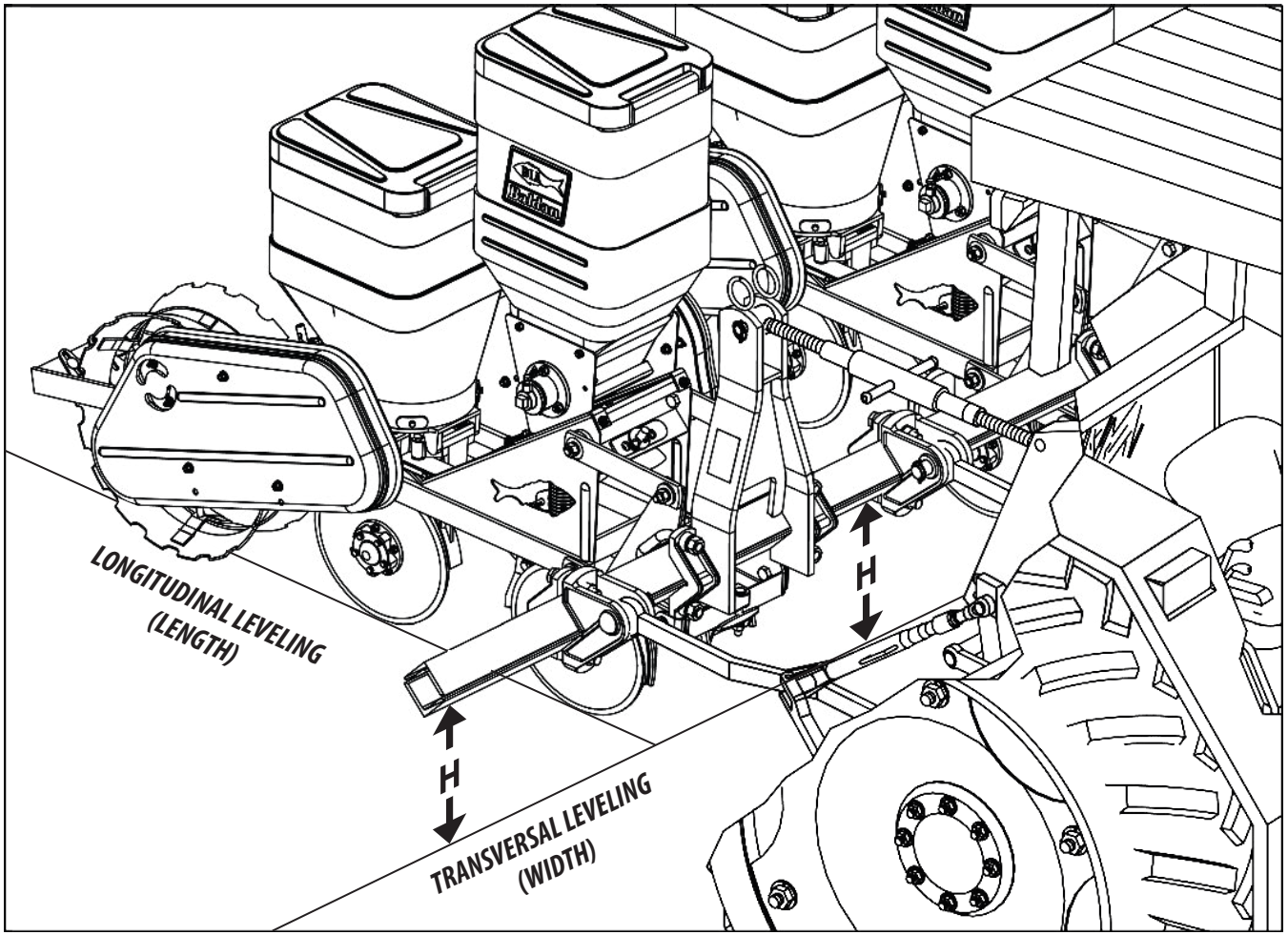



*Figure 12*

## HITCHING

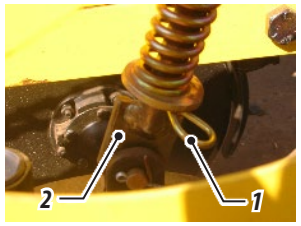
# ADJUSTMENTS

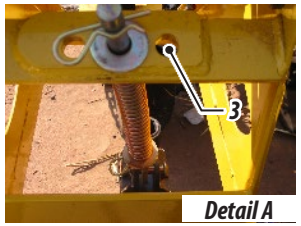
## FERTILIZER DEPTH CONTROL

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

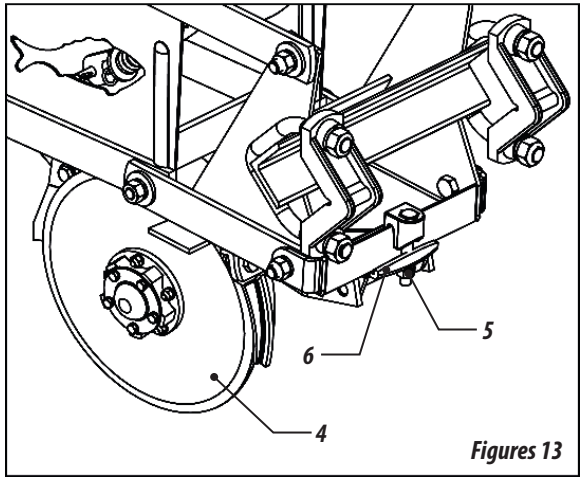
01 - To decrease the depth, place the lock (1) in the lower hole of the rod (2);

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




Detail A




Figures 13

## ADJUST SEED / FERTILIZER DISTANCE IN THE FURROW

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

03 - Loosen nut (5);

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

05 - 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 :

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

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

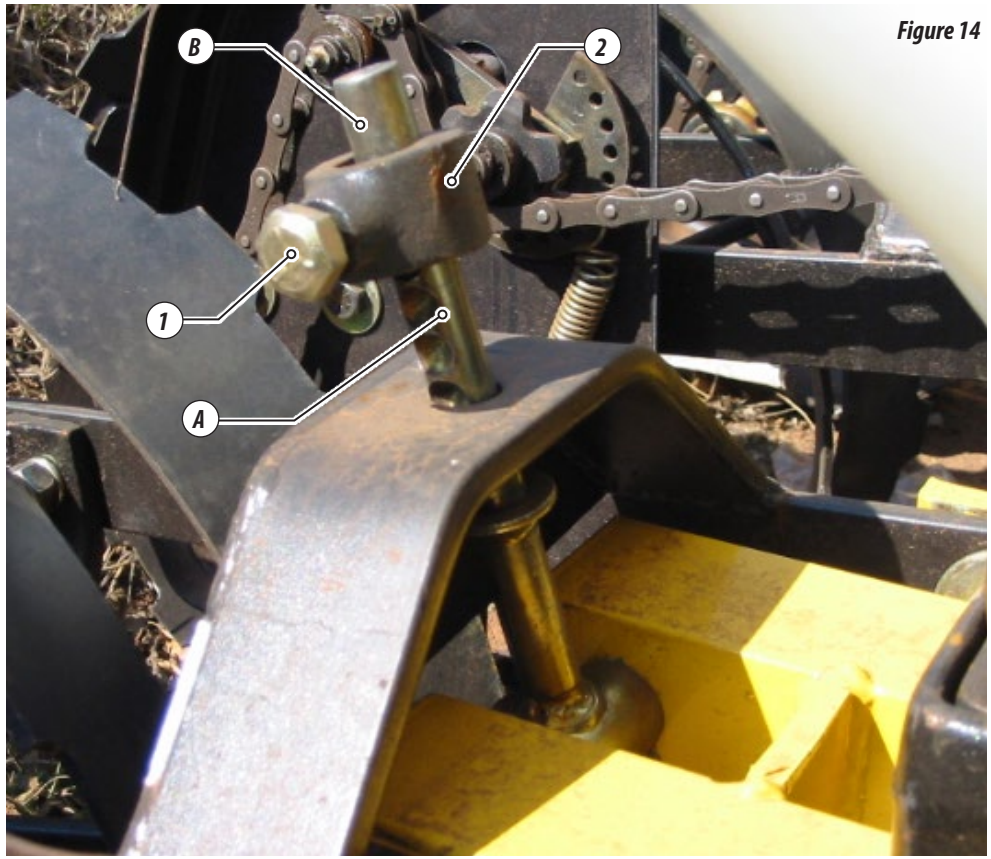



Figure 14

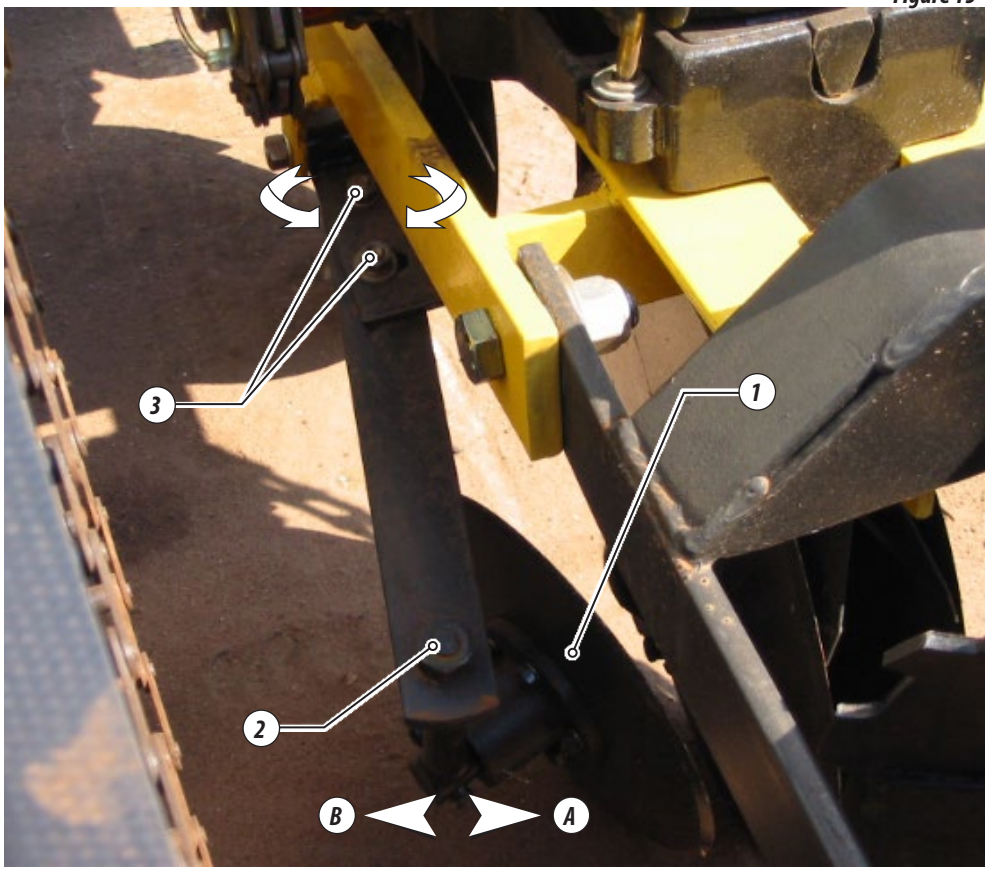
## ADJUSTING THE COVERING DISC

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

02 - 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".

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

*Figure 15*




## STEEL COMPACTATION WHEEL

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

02 - 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.

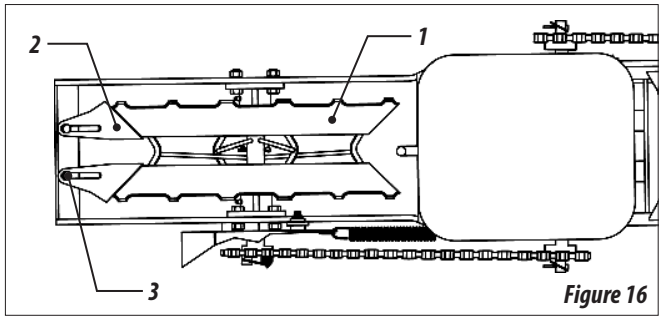



*Figure 16*

## RUBBER COMPACTATION WHEEL

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

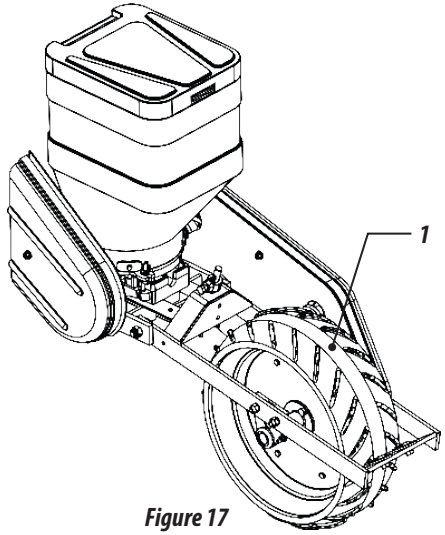



*Figure 17*

## SEED ADJUSTMENTS

# SEED DISTRIBUTION DISCS

01 - To make the exchange or replacement of distribution discs, open the seed box and remove the screw (1), the top bracket with baffle (2) and the distribution disc (3) to be replaced.

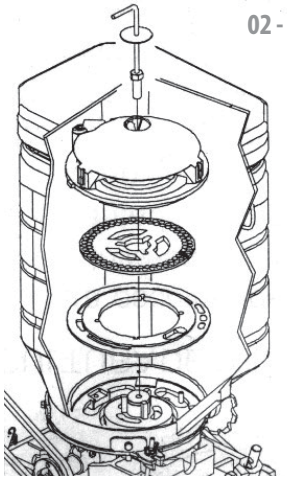


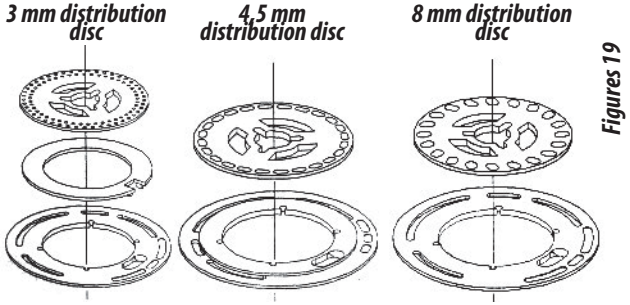
*Figure 18*

02 - Select the desired distribution disc and assemble it in the seed box. Check the placement of rings according to the distribution 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

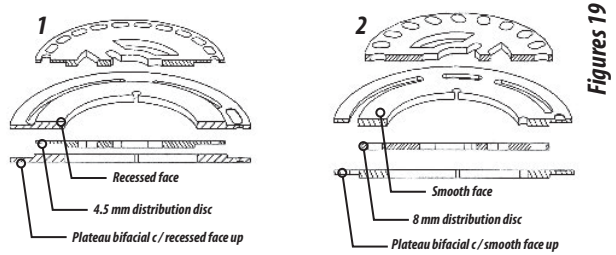
- For 4.5 mm disc, assemble the bifacial plateau with recessed face up as item 1, figure 19.
- For 8 mm disc, assemble the bifacial plateau with smooth face up as item 2, figure 19.




*Figures 19*

*The incorrect assemblage of distribution discs and bifacial plateau may damage the machine and planting, as shown in Figures 19.*

- 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.

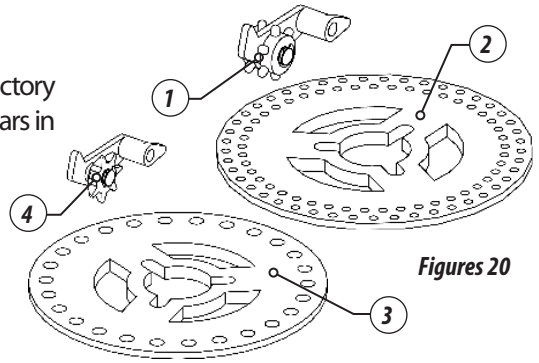



*Figures 19*

# SEED METERING STAR

03 - The seed distributor leaves the factory with trigger of two seed metering stars in discs of double row (2).

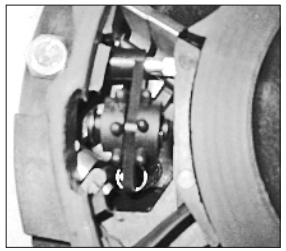
04 - Single row discs (3) use one metering trigger star (4). To replace the triggers, refer to FIGURES 21.

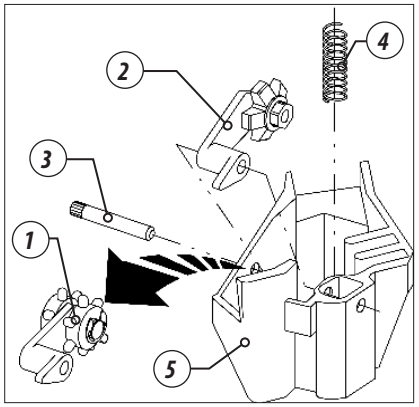



*Figures 20*

# 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).






*Figures 21*

## SEED DISTRIBUTION PLATES

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

| *Seeds* | *Standard plates* | |
|---|---|---|
| *Soya* | 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 |

*Table 2*

## *MAIZE

01 - In order to choose the correct distribution plate, we recommend you have in hands the seed sample that will be used. That way you can place the seeds into the plate holes and identify the best plate for that specific seed.Always consider one seed per hole. Notice that the seeds should fit the holes falling by gravity. The seeds should not stick in the holes. If this happens, it will damage the seed and compromise the germination. Double seeds are not recommended. If it happens, you should choose another plate.

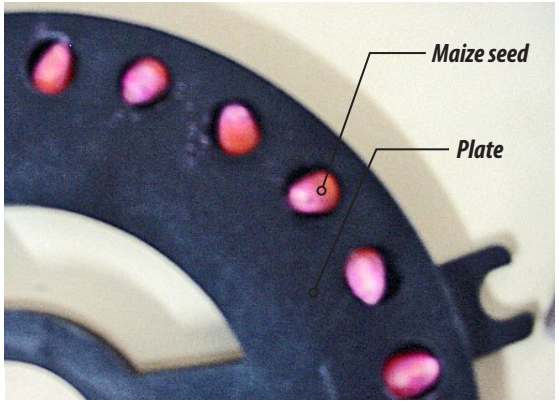



*Figure 22*

| Seeds | Optional plates | |
|---|---|---|
| Soya | 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 |
| Maize* | 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 |
| Peanuts** | 19 holes (19,0 mm) | x 6,0 mm |
| Sunflower | 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 |
| | Plates without holes | |

*Table 3*

### ⚠ ATTENTION

*The total width of the distribution plate + rings should be 11,5 mm. Whenever you work with a distribution plate with 8 mm or 4,5 mm, use the rings according to page 18.*

*The standard rings have 3,5 mm of thickness.*

## ** PEANUTS

01 - For Peanut seeds, use the special kit composed by a distribution plate with 19 holes 3/4" x 6 mm (1), internal flow limiter (2), seed scrapers (3), support (4), Bolt, washer and nut (5), Bolt and washer (6) and plate dual side ring (7). On the next pages we will show the seed distribution tables for several crops. The values indicated on the tables are only for your reference.

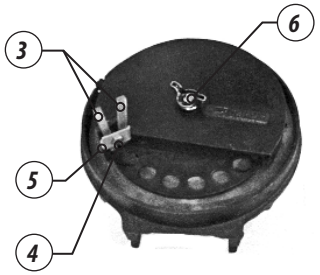
02 - They and change according to:

03 - Soil conditions

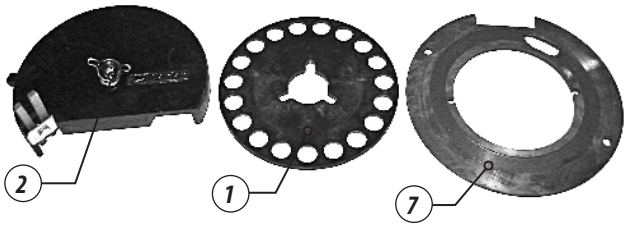
04 - Working speed

05 - Type and quality of seeds

06 - Others




*Figures 23*




## SOYA

01 - Seed distribution table for large size soya seeds:

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 38 holes<br>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<br>Thickness 8,0 mm | 8 | 8 | 38,0 |
| | 9 | 8 | 42,0 |
| | 10 | 8 | 46,0 |
| | 11 | 8 | 50,5 |
| | 12 | 8 | 55,0 |

*Table 4*

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 40 holes<br>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<br>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 |

*Table 5*

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 62 holes<br>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<br>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 |

*Table 6*

## MAIZE

01 - PLB Directa is supplied with 3 different types of plates for maize. Choose the best plate according to the maize seed that will be distributed.

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 26 holes<br>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 |

*Table 7*

## BEANS

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 20 holes<br>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 |

*Table 8*

## SORGHUM

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 50 holes<br>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<br>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 |

*Table 9*

# ADJUSTMENTS

# ADJUSTMENTS

## RICE

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 26 holes<br>Thickness 4,5 mm | 8 | 15 | 28 to 32 |
| | 8 | 13 | 32 to 35 |
| | 8 | 12 | 35 to 40 |
| | 8 | 11 | 40 to 45 |
| | 8 | 10 | 45 to 50 |
| | 8 | 9 | 50 to 53 |
| | 8 | 8 | 53 to 56 |
| | 9 | 8 | 65 to 75 |
| | 10 | 8 | 68 to 73 |

*Table 10*

## SUNFLOWER

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 20 holes<br>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 |

*Table 12*

## PEANUT

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 19 holes<br>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 |

*Table 11*

## COTTON WITHOUT LINTER

| Seed Plate | Sprocket size | | Qty of seed per linear meter |
|---|---|---|---|
| | Motor "A" | Moved "B" | |
| 26 holes<br>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 |

*Table 13*

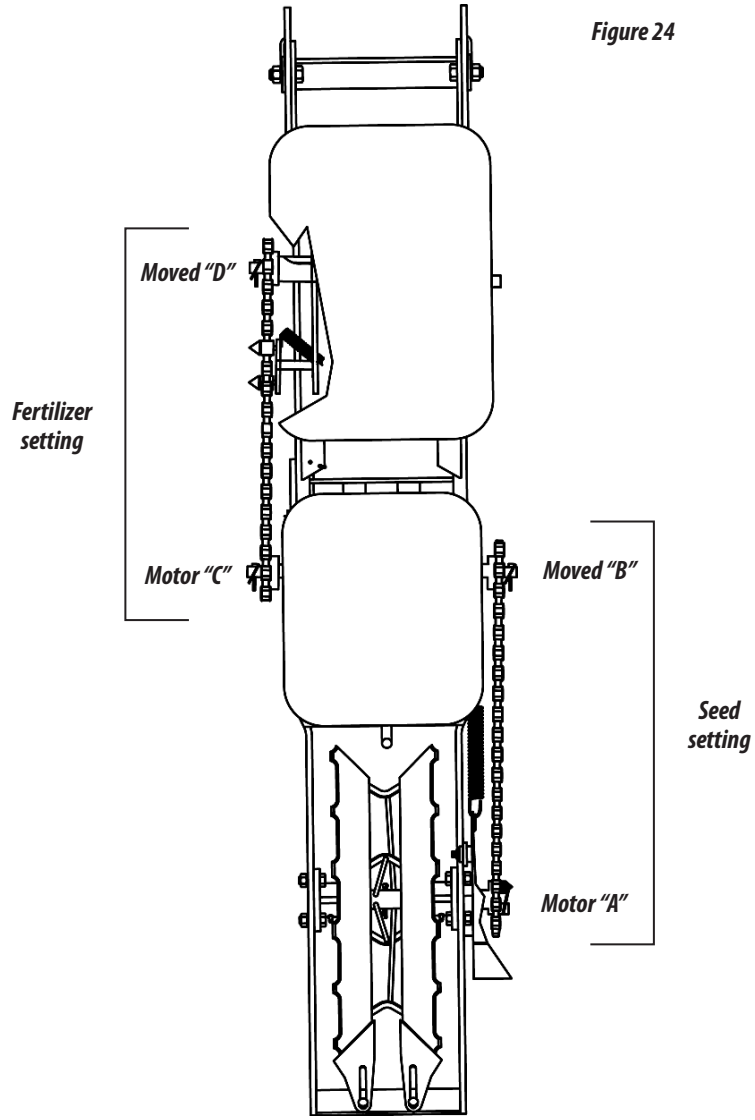
## SEED AND FERTILIZER CALIBRATION

01 - 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.

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

- ***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 28 to 30.

*Figure 24*



# FERTILIZER DISTRIBUTION TABLE

*Table 14*

| Motor "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 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 420 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
| 8 | 17 | 8 | 21 | 66 | 102,75 | 92 | 82 | 75 | 68 | 63 | 59 | 55 | 51 | 48 | 46 | 43 | 41 |
| 8 | 17 | 8 | 19 | 73 | 113,74 | 101 | 91 | 83 | 76 | 70 | 65 | 61 | 57 | 54 | 51 | 48 | 46 |
| 8 | 17 | 8 | 17 | 81 | 127,12 | 113 | 102 | 92 | 85 | 78 | 73 | 68 | 64 | 60 | 57 | 54 | 51 |
| 8 | 17 | 8 | 15 | 92 | 144,07 | 128 | 115 | 105 | 96 | 89 | 82 | 77 | 42 | 68 | 64 | 61 | 58 |
| 8 | 17 | 8 | 13 | 106 | 166,23 | 148 | 133 | 121 | 111 | 102 | 95 | 89 | 83 | 78 | 74 | 70 | 67 |
| 8 | 17 | 8 | 12 | 115 | 180,09 | 160 | 144 | 131 | 120 | 111 | 103 | 96 | 90 | 85 | 80 | 76 | 72 |
| 8 | 17 | 8 | 11 | 126 | 196,46 | 175 | 157 | 143 | 131 | 121 | 112 | 105 | 98 | 92 | 87 | 83 | 79 |
| 8 | 17 | 8 | 10 | 138 | 216,10 | 192 | 173 | 157 | 144 | 133 | 123 | 115 | 108 | 102 | 96 | 91 | 86 |
| 8 | 17 | 8 | 9 | 154 | 240,11 | 243 | 192 | 175 | 160 | 148 | 137 | 128 | 120 | 113 | 107 | 101 | 96 |
| 8 | 17 | 8 | 8 | 173 | 270,13 | 240 | 216 | 196 | 180 | 165 | 154 | 144 | 135 | 127 | 120 | 114 | 108 |
| 8 | 17 | 21 | 8 | 454 | 709,09 | 630 | 567 | 516 | 473 | 436 | 405 | 378 | 354 | 334 | 315 | 299 | 284 |
| 8 | 17 | 19 | 8 | 411 | 641,55 | 570 | 513 | 467 | 428 | 395 | 367 | 342 | 321 | 302 | 285 | 270 | 256 |
| 8 | 17 | 17 | 8 | 367 | 574,02 | 510 | 459 | 417 | 383 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 8 | 17 | 15 | 8 | 324 | 506,49 | 450 | 405 | 368 | 338 | 312 | 289 | 270 | 253 | 238 | 225 | 213 | 203 |
| 8 | 17 | 13 | 8 | 281 | 438,96 | 390 | 351 | 319 | 293 | 270 | 251 | 234 | 219 | 207 | 195 | 185 | 176 |
| 8 | 17 | 12 | 8 | 259 | 405,19 | 360 | 324 | 295 | 270 | 249 | 232 | 216 | 203 | 191 | 180 | 171 | 162 |
| 8 | 17 | 11 | 8 | 238 | 371,43 | 330 | 297 | 270 | 248 | 229 | 212 | 198 | 186 | 175 | 165 | 156 | 149 |
| 8 | 17 | 10 | 8 | 216 | 337,66 | 300 | 270 | 245 | 225 | 208 | 193 | 180 | 169 | 159 | 150 | 142 | 135 |
| 8 | 17 | 9 | 8 | 194 | 303,89 | 270 | 243 | 221 | 203 | 187 | 174 | 162 | 152 | 143 | 135 | 128 | 122 |
| 8 | 15 | 8 | 21 | 75 | 116,50 | 103 | 93 | 85 | 78 | 72 | 67 | 62 | 58 | 55 | 52 | 49 | 47 |
| 8 | 15 | 8 | 19 | 82 | 128,87 | 114 | 103 | 94 | 86 | 79 | 74 | 69 | 64 | 61 | 57 | 54 | 52 |
| 8 | 15 | 8 | 17 | 92 | 144,04 | 128 | 115 | 105 | 96 | 89 | 82 | 77 | 72 | 68 | 64 | 61 | 58 |
| 8 | 15 | 8 | 15 | 104 | 163,24 | 145 | 131 | 119 | 109 | 100 | 93 | 87 | 82 | 77 | 73 | 69 | 65 |
| 8 | 15 | 8 | 13 | 120 | 188,35 | 167 | 151 | 137 | 125 | 116 | 108 | 100 | 94 | 89 | 84 | 79 | 75 |
| 8 | 15 | 8 | 12 | 130 | 204,05 | 181 | 163 | 148 | 136 | 126 | 117 | 109 | 102 | 96 | 91 | 86 | 82 |
| 8 | 15 | 8 | 11 | 142 | 222,6 | 198 | 178 | 162 | 148 | 137 | 127 | 119 | 111 | 105 | 99 | 94 | 89 |
| 8 | 15 | 8 | 10 | 157 | 244,86 | 218 | 196 | 178 | 163 | 151 | 140 | 130 | 122 | 115 | 109 | 103 | 98 |
| 8 | 15 | 8 | 9 | 174 | 272,07 | 242 | 218 | 198 | 181 | 167 | 155 | 145 | 136 | 128 | 121 | 115 | 109 |
| 8 | 15 | 8 | 8 | 196 | 306,08 | 272 | 245 | 223 | 204 | 188 | 175 | 163 | 153 | 114 | 136 | 129 | 122 |
| 8 | 15 | 21 | 8 | 514 | 803,45 | 714 | 643 | 584 | 536 | 497 | 459 | 428 | 402 | 378 | 357 | 338 | 321 |
| 8 | 15 | 19 | 8 | 465 | 726,93 | 646 | 581 | 529 | 485 | 447 | 415 | 387 | 363 | 342 | 323 | 306 | 291 |
| 8 | 15 | 17 | 8 | 416 | 650,41 | 578 | 520 | 473 | 434 | 400 | 372 | 346 | 325 | 306 | 289 | 274 | 260 |
| 8 | 15 | 15 | 8 | 367 | 573,89 | 510 | 459 | 417 | 382 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 8 | 15 | 13 | 8 | 318 | 497,37 | 442 | 398 | 362 | 332 | 306 | 284 | 265 | 249 | 234 | 221 | 209 | 199 |
| 8 | 15 | 12 | 8 | 294 | 459,11 | 408 | 367 | 334 | 306 | 282 | 262 | 244 | 230 | 216 | 204 | 194 | 184 |
| 8 | 15 | 11 | 8 | 269 | 420,85 | 374 | 337 | 306 | 280 | 259 | 240 | 224 | 210 | 198 | 187 | 177 | 168 |
| 8 | 15 | 10 | 8 | 245 | 382,59 | 340 | 306 | 278 | 255 | 235 | 219 | 204 | 191 | 180 | 170 | 161 | 153 |
| 8 | 15 | 9 | 8 | 220 | 344,33 | 306 | 275 | 250 | 230 | 212 | 197 | 183 | 172 | 162 | 153 | 145 | 138 |

Table 15

| Motor "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 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 420 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
| 8 | 13 | 8 | 21 | 86 | 134 | 119 | 107 | 98 | 90 | 83 | 77 | 71 | 67 | 63 | 60 | 57 | 54 |
| 8 | 13 | 8 | 19 | 95 | 149 | 132 | 119 | 108 | 99 | 91 | 85 | 79 | 74 | 70 | 66 | 63 | 59 |
| 8 | 13 | 8 | 17 | 106 | 166 | 148 | 133 | 121 | 111 | 102 | 95 | 88 | 83 | 78 | 74 | 70 | 66 |
| 8 | 13 | 8 | 15 | 121 | 188 | 167 | 151 | 137 | 126 | 116 | 108 | 100 | 94 | 89 | 84 | 79 | 75 |
| 8 | 13 | 8 | 13 | 139 | 217 | 193 | 174 | 158 | 145 | 134 | 124 | 116 | 109 | 102 | 97 | 91 | 87 |
| 8 | 13 | 8 | 12 | 151 | 235 | 209 | 188 | 171 | 157 | 145 | 134 | 125 | 118 | 111 | 105 | 99 | 94 |
| 8 | 13 | 8 | 11 | 164 | 257 | 228 | 205 | 186 | 171 | 158 | 147 | 137 | 128 | 121 | 114 | 108 | 103 |
| 8 | 13 | 8 | 10 | 181 | 282 | 251 | 226 | 205 | 188 | 174 | 161 | 150 | 141 | 133 | 126 | 119 | 113 |
| 8 | 13 | 8 | 9 | 201 | 314 | 279 | 251 | 228 | 209 | 193 | 179 | 167 | 157 | 148 | 139 | 132 | 126 |
| 8 | 13 | 8 | 8 | 226 | 353 | 314 | 282 | 257 | 235 | 217 | 202 | 188 | 177 | 166 | 157 | 149 | 141 |
| 8 | 13 | 21 | 8 | 593 | 927 | 824 | 741 | 674 | 618 | 570 | 530 | 493 | 463 | 436 | 412 | 390 | 371 |
| 8 | 13 | 19 | 8 | 537 | 839 | 745 | 671 | 610 | 559 | 516 | 479 | 447 | 419 | 395 | 373 | 353 | 335 |
| 8 | 13 | 17 | 8 | 480 | 750 | 667 | 600 | 546 | 500 | 462 | 429 | 400 | 375 | 353 | 333 | 316 | 300 |
| 8 | 13 | 15 | 8 | 424 | 662 | 588 | 530 | 481 | 441 | 407 | 378 | 353 | 331 | 312 | 294 | 279 | 265 |
| 8 | 13 | 13 | 8 | 367 | 574 | 510 | 459 | 417 | 382 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 229 |
| 8 | 13 | 12 | 8 | 339 | 530 | 471 | 424 | 385 | 353 | 326 | 303 | 282 | 265 | 249 | 235 | 223 | 212 |
| 8 | 13 | 11 | 8 | 311 | 485 | 432 | 389 | 353 | 324 | 299 | 277 | 259 | 243 | 228 | 216 | 204 | 194 |
| 8 | 13 | 10 | 8 | 282 | 441 | 392 | 353 | 321 | 294 | 272 | 252 | 235 | 221 | 208 | 196 | 186 | 177 |
| 8 | 13 | 9 | 8 | 254 | 397 | 353 | 318 | 289 | 265 | 244 | 227 | 212 | 199 | 187 | 177 | 167 | 159 |
| 8 | 12 | 8 | 21 | 93 | 146 | 130 | 117 | 106 | 97 | 90 | 83 | 78 | 73 | 69 | 65 | 61 | 58 |
| 8 | 12 | 8 | 19 | 103 | 161 | 143 | 129 | 117 | 107 | 99 | 92 | 86 | 81 | 76 | 72 | 68 | 64 |
| 8 | 12 | 8 | 17 | 115 | 180 | 160 | 144 | 131 | 120 | 111 | 103 | 96 | 90 | 85 | 80 | 76 | 72 |
| 8 | 12 | 8 | 15 | 131 | 204 | 181 | 163 | 148 | 136 | 126 | 117 | 109 | 102 | 96 | 91 | 86 | 81 |
| 8 | 12 | 8 | 13 | 151 | 235 | 209 | 188 | 171 | 157 | 145 | 135 | 125 | 118 | 111 | 105 | 99 | 94 |
| 8 | 12 | 8 | 12 | 163 | 255 | 227 | 204 | 185 | 170 | 157 | 146 | 136 | 128 | 120 | 113 | 108 | 102 |
| 8 | 12 | 8 | 11 | 178 | 278 | 247 | 223 | 202 | 185 | 171 | 159 | 148 | 139 | 131 | 124 | 117 | 111 |
| 8 | 12 | 8 | 10 | 196 | 306 | 272 | 245 | 223 | 204 | 188 | 175 | 163 | 153 | 144 | 136 | 129 | 122 |
| 8 | 12 | 8 | 9 | 218 | 340 | 302 | 272 | 247 | 227 | 209 | 194 | 181 | 170 | 160 | 151 | 143 | 136 |
| 8 | 12 | 8 | 8 | 245 | 383 | 340 | 306 | 278 | 255 | 235 | 219 | 204 | 191 | 180 | 170 | 161 | 153 |
| 8 | 12 | 21 | 8 | 643 | 1004 | 893 | 803 | 730 | 669 | 618 | 574 | 535 | 502 | 472 | 446 | 423 | 402 |
| 8 | 12 | 19 | 8 | 581 | 909 | 808 | 727 | 661 | 606 | 559 | 519 | 484 | 454 | 428 | 404 | 383 | 363 |
| 8 | 12 | 17 | 8 | 520 | 813 | 723 | 650 | 591 | 542 | 500 | 464 | 433 | 406 | 383 | 361 | 342 | 325 |
| 8 | 12 | 15 | 8 | 459 | 717 | 638 | 574 | 522 | 478 | 441 | 409 | 382 | 359 | 338 | 319 | 302 | 287 |
| 8 | 12 | 13 | 8 | 398 | 622 | 553 | 497 | 452 | 414 | 383 | 355 | 331 | 311 | 293 | 276 | 262 | 249 |
| 8 | 12 | 12 | 8 | 367 | 574 | 510 | 459 | 417 | 383 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 8 | 12 | 11 | 8 | 337 | 526 | 467 | 421 | 383 | 651 | 324 | 301 | 208 | 263 | 248 | 234 | 221 | 210 |
| 8 | 12 | 10 | 8 | 306 | 478 | 425 | 383 | 348 | 319 | 294 | 273 | 255 | 239 | 225 | 213 | 201 | 191 |
| 8 | 12 | 9 | 8 | 275 | 430 | 383 | 344 | 313 | 287 | 265 | 246 | 229 | 215 | 203 | 191 | 181 | 172 |

## FERTILIZER DISTRIBUTION TABLE

# FERTILIZER DISTRIBUTION TABLE

| Motor "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 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 420 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
| 8 | 11 | 8 | 21 | 102 | 159 | 141 | 127 | 116 | 106 | 98 | 91 | 85 | 80 | 75 | 71 | 67 | 61 |
| 8 | 11 | 8 | 19 | 112 | 176 | 156 | 141 | 128 | 117 | 108 | 100 | 94 | 88 | 83 | 78 | 74 | 70 |
| 8 | 11 | 8 | 17 | 126 | 196 | 175 | 157 | 143 | 131 | 121 | 112 | 105 | 98 | 92 | 87 | 83 | 79 |
| 8 | 11 | 8 | 15 | 142 | 223 | 198 | 178 | 162 | 148 | 137 | 127 | 119 | 111 | 105 | 99 | 94 | 89 |
| 8 | 11 | 8 | 13 | 164 | 257 | 228 | 206 | 187 | 171 | 158 | 147 | 137 | 128 | 121 | 115 | 109 | 103 |
| 8 | 11 | 8 | 12 | 178 | 278 | 247 | 223 | 202 | 186 | 171 | 159 | 148 | 139 | 131 | 124 | 117 | 112 |
| 8 | 11 | 8 | 11 | 194 | 304 | 270 | 243 | 221 | 202 | 187 | 173 | 162 | 152 | 143 | 135 | 128 | 121 |
| 8 | 11 | 8 | 10 | 214 | 334 | 297 | 267 | 243 | 223 | 206 | 191 | 178 | 167 | 157 | 148 | 141 | 134 |
| 8 | 11 | 8 | 9 | 237 | 371 | 330 | 297 | 270 | 247 | 229 | 212 | 198 | 185 | 175 | 165 | 156 | 148 |
| 8 | 11 | 8 | 8 | 267 | 417 | 371 | 334 | 304 | 278 | 257 | 238 | 222 | 209 | 196 | 186 | 176 | 167 |
| 8 | 11 | 21 | 8 | 701 | 1096 | 974 | 877 | 795 | 731 | 674 | 626 | 584 | 548 | 516 | 487 | 461 | 438 |
| 8 | 11 | 19 | 8 | 635 | 91 | 881 | 793 | 721 | 661 | 610 | 567 | 528 | 496 | 466 | 441 | 417 | 397 |
| 8 | 11 | 17 | 8 | 568 | 887 | 789 | 710 | 645 | 591 | 546 | 507 | 472 | 444 | 417 | 394 | 374 | 355 |
| 8 | 11 | 15 | 8 | 501 | 783 | 696 | 626 | 569 | 522 | 482 | 447 | 417 | 391 | 368 | 348 | 330 | 313 |
| 8 | 11 | 13 | 8 | 534 | 378 | 603 | 543 | 493 | 452 | 417 | 688 | 361 | 339 | 319 | 302 | 286 | 271 |
| 8 | 11 | 12 | 8 | 401 | 626 | 557 | 501 | 455 | 417 | 385 | 358 | 333 | 313 | 295 | 278 | 264 | 250 |
| 8 | 11 | 11 | 8 | 367 | 574 | 510 | 459 | 417 | 383 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 8 | 11 | 10 | 8 | 334 | 522 | 464 | 417 | 380 | 348 | 321 | 298 | 278 | 261 | 245 | 232 | 220 | 209 |
| 8 | 11 | 9 | 8 | 301 | 470 | 417 | 376 | 341 | 313 | 289 | 268 | 250 | 235 | 221 | 209 | 198 | 188 |
| 8 | 10 | 8 | 21 | 112 | 175 | 155 | 140 | 127 | 116 | 108 | 100 | 93 | 88 | 82 | 78 | 74 | 70 |
| 8 | 10 | 8 | 19 | 124 | 193 | 172 | 155 | 148 | 129 | 119 | 110 | 103 | 97 | 91 | 86 | 81 | 77 |
| 8 | 10 | 8 | 17 | 138 | 216 | 192 | 173 | 157 | 144 | 133 | 123 | 115 | 108 | 102 | 96 | 91 | 86 |
| 8 | 10 | 8 | 15 | 157 | 245 | 218 | 196 | 178 | 163 | 151 | 140 | 130 | 122 | 115 | 109 | 103 | 98 |
| 8 | 10 | 8 | 13 | 181 | 282 | 251 | 226 | 205 | 188 | 174 | 161 | 150 | 141 | 133 | 125 | 119 | 113 |
| 8 | 10 | 8 | 12 | 196 | 306 | 272 | 245 | 223 | 204 | 188 | 175 | 163 | 153 | 144 | 136 | 129 | 122 |
| 8 | 10 | 8 | 11 | 214 | 334 | 297 | 267 | 243 | 223 | 205 | 191 | 178 | 167 | 157 | 148 | 141 | 134 |
| 8 | 10 | 8 | 10 | 235 | 367 | 326 | 294 | 267 | 245 | 226 | 210 | 196 | 184 | 173 | 163 | 155 | 147 |
| 8 | 10 | 8 | 9 | 261 | 408 | 363 | 326 | 297 | 272 | 251 | 233 | 217 | 204 | 192 | 181 | 172 | 163 |
| 8 | 10 | 8 | 8 | 294 | 459 | 408 | 367 | 334 | 306 | 282 | 262 | 244 | 229 | 216 | 204 | 193 | 184 |
| 8 | 10 | 21 | 8 | 771 | 1205 | 1071 | 964 | 876 | 803 | 742 | 689 | 642 | 602 | 567 | 532 | 507 | 482 |
| 8 | 10 | 19 | 8 | 698 | 1090 | 969 | 872 | 793 | 727 | 671 | 623 | 581 | 545 | 513 | 485 | 459 | 436 |
| 8 | 10 | 17 | 8 | 624 | 975 | 867 | 780 | 709 | 650 | 600 | 557 | 519 | 488 | 459 | 434 | 411 | 390 |
| 8 | 10 | 15 | 8 | 551 | 861 | 765 | 689 | 626 | 574 | 530 | 492 | 458 | 430 | 405 | 383 | 362 | 344 |
| 8 | 10 | 13 | 8 | 477 | 746 | 663 | 597 | 542 | 498 | 459 | 426 | 397 | 373 | 351 | 331 | 314 | 298 |
| 8 | 10 | 12 | 8 | 441 | 689 | 612 | 551 | 501 | 459 | 424 | 393 | 367 | 344 | 324 | 306 | 290 | 275 |
| 8 | 10 | 11 | 8 | 404 | 631 | 561 | 505 | 459 | 421 | 388 | 361 | 336 | 316 | 297 | 281 | 266 | 252 |
| 8 | 10 | 10 | 8 | 367 | 574 | 510 | 459 | 417 | 383 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 8 | 10 | 9 | 8 | 330 | 516 | 459 | 413 | 376 | 344 | 318 | 295 | 275 | 258 | 243 | 230 | 217 | 207 |

| Motor "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 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 420 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
| 8 | 9 | 8 | 21 | 124 | 195 | 173 | 156 | 141 | 130 | 120 | 111 | 104 | 97 | 92 | 86 | 82 | 78 |
| 8 | 9 | 8 | 19 | 137 | 215 | 191 | 173 | 156 | 143 | 132 | 123 | 114 | 107 | 101 | 95 | 90 | 86 |
| 8 | 9 | 8 | 17 | 154 | 240 | 213 | 192 | 175 | 160 | 148 | 137 | 128 | 120 | 113 | 107 | 101 | 96 |
| 8 | 9 | 8 | 15 | 174 | 272 | 242 | 218 | 198 | 181 | 167 | 155 | 145 | 136 | 128 | 121 | 115 | 109 |
| 8 | 9 | 8 | 13 | 201 | 314 | 279 | 251 | 228 | 209 | 193 | 179 | 167 | 157 | 148 | 139 | 131 | 126 |
| 8 | 9 | 8 | 12 | 218 | 340 | 302 | 272 | 247 | 227 | 209 | 194 | 181 | 170 | 160 | 151 | 143 | 136 |
| 8 | 9 | 8 | 11 | 237 | 370 | 330 | 297 | 270 | 274 | 228 | 212 | 198 | 185 | 175 | 165 | 156 | 149 |
| 8 | 9 | 8 | 10 | 261 | 408 | 363 | 326 | 297 | 272 | 251 | 233 | 217 | 204 | 192 | 181 | 172 | 163 |
| 8 | 9 | 8 | 9 | 290 | 453 | 403 | 363 | 330 | 302 | 279 | 259 | 241 | 227 | 231 | 201 | 191 | 181 |
| 8 | 9 | 8 | 8 | 326 | 510 | 453 | 408 | 371 | 340 | 314 | 291 | 272 | 255 | 240 | 227 | 215 | 204 |
| 8 | 9 | 21 | 8 | 857 | 1339 | 1190 | 1080 | 974 | 893 | 824 | 765 | 713 | 669 | 630 | 595 | 564 | 535 |
| 8 | 9 | 19 | 8 | 775 | 1211 | 1077 | 969 | 881 | 808 | 795 | 692 | 645 | 606 | 570 | 538 | 510 | 484 |
| 8 | 9 | 17 | 8 | 694 | 1084 | 963 | 867 | 788 | 723 | 667 | 919 | 577 | 542 | 510 | 482 | 456 | 433 |
| 8 | 9 | 15 | 8 | 612 | 956 | 850 | 765 | 695 | 638 | 588 | 546 | 509 | 478 | 450 | 425 | 403 | 382 |
| 8 | 9 | 13 | 8 | 530 | 829 | 737 | 663 | 603 | 553 | 510 | 473 | 441 | 414 | 390 | 368 | 349 | 331 |
| 8 | 9 | 12 | 8 | 489 | 765 | 680 | 312 | 556 | 510 | 471 | 473 | 407 | 382 | 360 | 340 | 322 | 306 |
| 8 | 9 | 11 | 8 | 49 | 701 | 623 | 561 | 510 | 468 | 432 | 401 | 373 | 351 | 330 | 312 | 295 | 280 |
| 8 | 9 | 10 | 8 | 408 | 638 | 567 | 510 | 464 | 425 | 392 | 364 | 339 | 319 | 300 | 283 | 268 | 255 |
| 8 | 9 | 9 | 8 | 367 | 574 | 510 | 459 | 417 | 383 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 229 |
| 8 | 8 | 8 | 21 | 140 | 219 | 194 | 175 | 159 | 146 | 134 | 125 | 116 | 109 | 103 | 97 | 92 | 87 |
| 8 | 8 | 8 | 19 | 155 | 241 | 215 | 193 | 176 | 161 | 149 | 138 | 129 | 121 | 114 | 107 | 102 | 97 |
| 8 | 8 | 8 | 17 | 173 | 270 | 240 | 216 | 196 | 180 | 166 | 154 | 144 | 135 | 127 | 120 | 114 | 108 |
| 8 | 8 | 8 | 15 | 196 | 306 | 272 | 245 | 222 | 204 | 188 | 175 | 167 | 153 | 144 | 136 | 129 | 122 |
| 8 | 8 | 8 | 13 | 226 | 353 | 314 | 282 | 257 | 235 | 217 | 202 | 188 | 176 | 166 | 157 | 149 | 41 |
| 8 | 8 | 8 | 12 | 245 | 382 | 340 | 306 | 278 | 255 | 235 | 218 | 204 | 191 | 180 | 170 | 161 | 153 |
| 8 | 8 | 8 | 11 | 267 | 417 | 371 | 334 | 303 | 279 | 257 | 238 | 224 | 209 | 196 | 185 | 176 | 167 |
| 8 | 8 | 8 | 10 | 294 | 459 | 408 | 367 | 334 | 306 | 282 | 262 | 244 | 229 | 216 | 204 | 194 | 184 |
| 8 | 8 | 8 | 9 | 326 | 510 | 453 | 408 | 371 | 340 | 314 | 291 | 271 | 255 | 240 | 227 | 215 | 204 |
| 8 | 8 | 8 | 8 | 367 | 573 | 510 | 459 | 417 | 382 | 353 | 328 | 305 | 287 | 270 | 255 | 241 | 229 |
| 8 | 8 | 21 | 8 | 963 | 1505 | 1338 | 1204 | 1095 | 1004 | 926 | 860 | 802 | 753 | 708 | 669 | 534 | 602 |
| 8 | 8 | 19 | 8 | 872 | 1362 | 1213 | 1084 | 991 | 908 | 838 | 778 | 725 | 681 | 641 | 605 | 573 | 545 |
| 8 | 8 | 17 | 8 | 780 | 1218 | 1083 | 975 | 886 | 812 | 750 | 696 | 649 | 609 | 574 | 542 | 513 | 487 |
| 8 | 8 | 15 | 8 | 688 | 1075 | 956 | 860 | 782 | 717 | 662 | 614 | 573 | 538 | 506 | 478 | 453 | 430 |
| 8 | 8 | 13 | 8 | 596 | 932 | 828 | 746 | 978 | 621 | 574 | 532 | 496 | 466 | 439 | 414 | 392 | 373 |
| 8 | 8 | 12 | 8 | 551 | 860 | 764 | 688 | 626 | 574 | 529 | 491 | 458 | 430 | 405 | 382 | 362 | 344 |
| 8 | 8 | 11 | 8 | 505 | 789 | 701 | 631 | 574 | 526 | 485 | 451 | 420 | 394 | 371 | 350 | 332 | 315 |
| 8 | 8 | 10 | 8 | 459 | 717 | 637 | 573 | 521 | 478 | 441 | 410 | 382 | 358 | 337 | 319 | 302 | 287 |
| 8 | 8 | 9 | 8 | 413 | 645 | 574 | 516 | 469 | 430 | 397 | 369 | 343 | 323 | 304 | 287 | 272 | 258 |

## FERTILIZER DISTRIBUTION TABLE

# FERTILIZER DISTRIBUTION TABLE

| Motor "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 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 420 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
| 8 | 9 | 8 | 21 | 158 | 246 | 219 | 197 | 179 | 164 | 152 | 141 | 131 | 123 | 16 | 109 | 104 | 98 |
| 8 | 9 | 8 | 19 | 174 | 272 | 242 | 218 | 198 | 181 | 167 | 155 | 145 | 136 | 128 | 121 | 114 | 109 |
| 8 | 9 | 8 | 17 | 194 | 304 | 270 | 243 | 221 | 203 | 187 | 174 | 162 | 152 | 143 | 135 | 128 | 122 |
| 8 | 9 | 8 | 15 | 220 | 344 | 306 | 276 | 250 | 230 | 212 | 197 | 183 | 172 | 162 | 153 | 145 | 138 |
| 8 | 9 | 8 | 13 | 254 | 398 | 353 | 318 | 289 | 265 | 245 | 227 | 212 | 199 | 187 | 177 | 167 | 159 |
| 8 | 9 | 8 | 12 | 276 | 431 | 383 | 344 | 313 | 287 | 265 | 246 | 229 | 215 | 203 | 191 | 181 | 172 |
| 8 | 9 | 8 | 11 | 301 | 470 | 417 | 376 | 342 | 313 | 289 | 268 | 250 | 235 | 221 | 209 | 198 | 188 |
| 8 | 9 | 8 | 10 | 331 | 517 | 459 | 413 | 376 | 344 | 318 | 295 | 275 | 258 | 243 | 230 | 218 | 207 |
| 8 | 9 | 8 | 9 | 367 | 574 | 510 | 459 | 417 | 383 | 354 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 8 | 9 | 8 | 8 | 413 | 646 | 574 | 517 | 470 | 431 | 397 | 369 | 344 | 323 | 304 | 287 | 272 | 258 |
| 8 | 9 | 21 | 8 | 1085 | 1695 | 1507 | 1356 | 1233 | 1130 | 1043 | 969 | 903 | 855 | 798 | 753 | 714 | 678 |
| 8 | 9 | 19 | 8 | 982 | 1534 | 1363 | 1227 | 1115 | 1022 | 944 | 876 | 817 | 767 | 722 | 682 | 646 | 613 |
| 8 | 9 | 17 | 8 | 878 | 1372 | 1220 | 1098 | 998 | 915 | 844 | 784 | 731 | 686 | 646 | 610 | 578 | 549 |
| 8 | 9 | 15 | 8 | 775 | 1211 | 1076 | 969 | 881 | 807 | 745 | 692 | 645 | 605 | 570 | 538 | 510 | 484 |
| 8 | 9 | 13 | 8 | 672 | 1049 | 933 | 839 | 763 | 700 | 646 | 600 | 559 | 525 | 494 | 466 | 442 | 420 |
| 8 | 9 | 12 | 8 | 620 | 967 | 861 | 775 | 704 | 646 | 596 | 554 | 516 | 484 | 456 | 430 | 408 | 387 |
| 8 | 9 | 11 | 8 | 568 | 888 | 789 | 710 | 646 | 592 | 546 | 507 | 473 | 444 | 418 | 395 | 374 | 355 |
| 8 | 9 | 10 | 8 | 517 | 807 | 717 | 646 | 587 | 538 | 597 | 461 | 430 | 404 | 380 | 359 | 340 | 323 |
| 8 | 9 | 9 | 8 | 465 | 726 | 646 | 581 | 528 | 484 | 447 | 415 | 387 | 363 | 342 | 323 | 306 | 291 |
| 8 | 8 | 8 | 21 | 175 | 273 | 243 | 218 | 199 | 180 | 168 | 156 | 145 | 136 | 128 | 121 | 115 | 109 |
| 8 | 8 | 8 | 19 | 193 | 302 | 268 | 241 | 220 | 201 | 186 | 172 | 161 | 151 | 142 | 134 | 127 | 121 |
| 8 | 8 | 8 | 17 | 216 | 337 | 300 | 270 | 245 | 225 | 208 | 193 | 180 | 169 | 159 | 150 | 142 | 135 |
| 8 | 8 | 8 | 15 | 245 | 382 | 340 | 306 | 278 | 255 | 235 | 218 | 204 | 191 | 180 | 170 | 161 | 153 |
| 8 | 8 | 8 | 13 | 282 | 441 | 392 | 353 | 321 | 294 | 272 | 252 | 235 | 221 | 208 | 196 | 186 | 176 |
| 8 | 8 | 8 | 12 | 306 | 478 | 425 | 382 | 348 | 319 | 294 | 273 | 255 | 239 | 225 | 212 | 201 | 191 |
| 8 | 8 | 8 | 11 | 334 | 521 | 463 | 417 | 379 | 348 | 321 | 298 | 278 | 261 | 245 | 232 | 220 | 209 |
| 8 | 8 | 8 | 10 | 367 | 574 | 510 | 459 | 417 | 382 | 353 | 328 | 305 | 287 | 270 | 246 | 241 | 229 |
| 8 | 8 | 8 | 9 | 408 | 637 | 566 | 510 | 463 | 425 | 392 | 364 | 339 | 319 | 300 | 283 | 268 | 255 |
| 8 | 8 | 8 | 8 | 459 | 717 | 637 | 574 | 521 | 478 | 441 | 407 | 382 | 358 | 337 | 319 | 302 | 287 |
| 8 | 8 | 21 | 8 | 1204 | 1882 | 1673 | 1506 | 1369 | 1255 | 1158 | 1075 | 1002 | 941 | 886 | 836 | 792 | 753 |
| 8 | 8 | 19 | 8 | 1090 | 1703 | 1513 | 1363 | 1238 | 1135 | 1048 | 943 | 907 | 851 | 801 | 757 | 717 | 681 |
| 8 | 8 | 17 | 8 | 975 | 1523 | 1354 | 1219 | 1108 | 1015 | 938 | 871 | 811 | 762 | 716 | 677 | 641 | 609 |
| 8 | 8 | 15 | 8 | 860 | 1344 | 1195 | 1075 | 978 | 896 | 827 | 768 | 716 | 672 | 633 | 597 | 566 | 538 |
| 8 | 8 | 13 | 8 | 744 | 1165 | 1036 | 932 | 847 | 776 | 717 | 666 | 620 | 582 | 548 | 518 | 490 | 466 |
| 8 | 8 | 12 | 8 | 688 | 1075 | 956 | 860 | 782 | 717 | 662 | 615 | 573 | 538 | 506 | 478 | 453 | 430 |
| 8 | 8 | 11 | 8 | 631 | 986 | 876 | 789 | 717 | 657 | 607 | 563 | 525 | 493 | 464 | 438 | 415 | 394 |
| 8 | 8 | 10 | 8 | 574 | 896 | 797 | 717 | 652 | 597 | 551 | 512 | 477 | 448 | 422 | 398 | 377 | 358 |
| 8 | 8 | 9 | 8 | 516 | 807 | 717 | 645 | 587 | 538 | 496 | 461 | 429 | 403 | 380 | 358 | 340 | 323 |

| Motor "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 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 420 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
| 11 | 8 | 8 | 21 | 192 | 301 | 267 | 241 | 219 | 200 | 185 | 172 | 160 | 151 | 142 | 134 | 127 | 120 |
| 11 | 8 | 8 | 19 | 213 | 332 | 295 | 266 | 242 | 222 | 204 | 190 | 177 | 166 | 156 | 148 | 140 | 133 |
| 11 | 8 | 8 | 17 | 238 | 371 | 330 | 297 | 270 | 248 | 229 | 212 | 198 | 186 | 175 | 165 | 156 | 149 |
| 11 | 8 | 8 | 15 | 269 | 421 | 374 | 337 | 306 | 281 | 259 | 241 | 224 | 210 | 198 | 187 | 177 | 168 |
| 11 | 8 | 8 | 13 | 311 | 486 | 432 | 389 | 353 | 324 | 299 | 278 | 259 | 243 | 229 | 216 | 204 | 194 |
| 11 | 8 | 8 | 12 | 337 | 526 | 468 | 413 | 383 | 351 | 324 | 301 | 280 | 283 | 248 | 234 | 222 | 210 |
| 11 | 8 | 8 | 11 | 367 | 574 | 510 | 459 | 417 | 383 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 11 | 8 | 8 | 10 | 404 | 631 | 561 | 505 | 459 | 421 | 389 | 361 | 336 | 316 | 297 | 281 | 266 | 253 |
| 11 | 8 | 8 | 9 | 449 | 701 | 624 | 561 | 510 | 468 | 432 | 401 | 374 | 351 | 330 | 312 | 295 | 281 |
| 11 | 8 | 8 | 8 | 505 | 798 | 701 | 631 | 574 | 526 | 486 | 451 | 420 | 395 | 371 | 351 | 323 | 316 |
| 11 | 8 | 21 | 8 | 1326 | 2072 | 1841 | 1657 | 1507 | 1381 | 1275 | 1184 | 1103 | 1036 | 975 | 921 | 872 | 829 |
| 11 | 8 | 19 | 8 | 1200 | 1874 | 1666 | 1499 | 1363 | 1250 | 1153 | 1071 | 998 | 937 | 882 | 933 | 789 | 750 |
| 11 | 8 | 17 | 8 | 1073 | 1677 | 1491 | 1342 | 1220 | 1118 | 1032 | 658 | 893 | 839 | 789 | 745 | 706 | 671 |
| 11 | 8 | 15 | 8 | 947 | 1480 | 1315 | 1184 | 1076 | 986 | 911 | 846 | 788 | 740 | 696 | 657 | 623 | 592 |
| 11 | 8 | 13 | 8 | 821 | 1282 | 1140 | 1026 | 933 | 855 | 789 | 733 | 683 | 641 | 604 | 570 | 540 | 513 |
| 11 | 8 | 12 | 8 | 758 | 1184 | 1052 | 947 | 861 | 456 | 728 | 676 | 630 | 592 | 557 | 526 | 498 | 474 |
| 11 | 8 | 11 | 8 | 694 | 1085 | 965 | 868 | 789 | 723 | 667 | 620 | 578 | 543 | 511 | 482 | 457 | 434 |
| 11 | 8 | 10 | 8 | 631 | 986 | 877 | 789 | 717 | 658 | 607 | 563 | 525 | 493 | 464 | 438 | 415 | 395 |
| 11 | 8 | 9 | 8 | 568 | 888 | 789 | 710 | 646 | 592 | 546 | 507 | 473 | 444 | 418 | 395 | 374 | 355 |
| 13 | 8 | 8 | 21 | 227 | 355 | 316 | 284 | 258 | 237 | 219 | 203 | 189 | 178 | 167 | 158 | 150 | 142 |
| 13 | 8 | 8 | 19 | 251 | 393 | 349 | 314 | 286 | 262 | 242 | 224 | 209 | 196 | 185 | 175 | 165 | 157 |
| 13 | 8 | 8 | 17 | 281 | 439 | 390 | 351 | 319 | 293 | 270 | 251 | 234 | 219 | 207 | 195 | 185 | 176 |
| 13 | 8 | 8 | 15 | 318 | 497 | 442 | 398 | 362 | 332 | 306 | 284 | 265 | 249 | 234 | 221 | 209 | 199 |
| 13 | 8 | 8 | 13 | 367 | 574 | 510 | 459 | 417 | 383 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 13 | 8 | 8 | 12 | 398 | 622 | 553 | 497 | 452 | 414 | 383 | 355 | 331 | 311 | 293 | 276 | 262 | 250 |
| 11 | 8 | 8 | 11 | 434 | 378 | 603 | 543 | 493 | 452 | 417 | 388 | 361 | 339 | 319 | 301 | 286 | 271 |
| 13 | 8 | 8 | 10 | 447 | 746 | 663 | 597 | 543 | 497 | 459 | 426 | 397 | 373 | 351 | 332 | 314 | 298 |
| 13 | 8 | 8 | 9 | 531 | 829 | 737 | 663 | 603 | 553 | 510 | 474 | 441 | 414 | 390 | 368 | 349 | 332 |
| 13 | 8 | 8 | 8 | 597 | 933 | 829 | 746 | 678 | 622 | 574 | 533 | 497 | 466 | 439 | 414 | 393 | 373 |
| 13 | 8 | 21 | 8 | 1567 | 2448 | 2176 | 1958 | 1780 | 1632 | 1507 | 1399 | 1304 | 1224 | 1152 | 1088 | 1075 | 979 |
| 13 | 8 | 19 | 8 | 1418 | 2215 | 1969 | 1772 | 1611 | 1477 | 1363 | 1266 | 1180 | 1107 | 1042 | 984 | 933 | 886 |
| 13 | 8 | 17 | 8 | 1268 | 1982 | 1762 | 1585 | 1441 | 1321 | 1220 | 1132 | 1055 | 991 | 933 | 881 | 834 | 793 |
| 13 | 8 | 15 | 8 | 1119 | 1749 | 1554 | 1399 | 1272 | 1166 | 1076 | 999 | 931 | 874 | 823 | 777 | 736 | 699 |
| 13 | 8 | 13 | 8 | 970 | 1515 | 1347 | 1212 | 1102 | 1010 | 933 | 866 | 807 | 758 | 713 | 674 | 638 | 606 |
| 13 | 8 | 12 | 8 | 895 | 1399 | 1243 | 1119 | 1017 | 933 | 861 | 799 | 745 | 699 | 658 | 622 | 589 | 560 |
| 13 | 8 | 11 | 8 | 821 | 1282 | 1140 | 1026 | 933 | 855 | 789 | 732 | 683 | 641 | 603 | 570 | 540 | 513 |
| 13 | 8 | 10 | 8 | 746 | 1166 | 1036 | 933 | 848 | 777 | 717 | 666 | 621 | 584 | 549 | 518 | 491 | 466 |
| 13 | 8 | 9 | 8 | 671 | 1049 | 933 | 839 | 764 | 699 | 646 | 600 | 559 | 525 | 494 | 466 | 442 | 420 |

## FERTILIZER DISTRIBUTION TABLE

# FERTILIZER DISTRIBUTION TABLE

| Motor "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 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 420 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 |
| 15 | 8 | 8 | 21 | 262 | 410 | 364 | 328 | 298 | 273 | 252 | 234 | 218 | 205 | 193 | 182 | 173 | 164 |
| 15 | 8 | 8 | 19 | 290 | 453 | 403 | 362 | 329 | 302 | 279 | 259 | 241 | 277 | 213 | 201 | 191 | 181 |
| 15 | 8 | 8 | 17 | 324 | 506 | 450 | 405 | 368 | 338 | 312 | 289 | 270 | 253 | 238 | 225 | 213 | 203 |
| 15 | 8 | 8 | 15 | 367 | 574 | 510 | 459 | 417 | 383 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 15 | 8 | 8 | 13 | 424 | 662 | 589 | 530 | 482 | 441 | 407 | 378 | 353 | 331 | 312 | 294 | 279 | 265 |
| 15 | 8 | 8 | 12 | 459 | 717 | 638 | 574 | 522 | 478 | 441 | 410 | 382 | 359 | 338 | 319 | 302 | 287 |
| 15 | 8 | 8 | 11 | 501 | 783 | 696 | 626 | 569 | 522 | 482 | 447 | 417 | 391 | 368 | 348 | 329 | 313 |
| 15 | 8 | 8 | 10 | 551 | 861 | 765 | 689 | 626 | 574 | 530 | 492 | 458 | 430 | 405 | 383 | 362 | 344 |
| 15 | 8 | 8 | 9 | 612 | 956 | 850 | 765 | 696 | 638 | 589 | 547 | 509 | 478 | 450 | 425 | 403 | 383 |
| 15 | 8 | 8 | 8 | 689 | 1076 | 956 | 861 | 783 | 717 | 662 | 615 | 573 | 538 | 506 | 478 | 453 | 430 |
| 15 | 8 | 21 | 8 | 1808 | 2825 | 2511 | 2260 | 2054 | 1883 | 1783 | 1614 | 1504 | 1412 | 1329 | 1255 | 1189 | 1130 |
| 15 | 8 | 19 | 8 | 1635 | 2556 | 2272 | 2044 | 1859 | 1704 | 1573 | 1460 | 1360 | 1278 | 1203 | 1136 | 1075 | 1022 |
| 15 | 8 | 17 | 8 | 1643 | 2587 | 2032 | 1829 | 1663 | 1524 | 1407 | 1307 | 1218 | 1143 | 1076 | 1016 | 963 | 914 |
| 15 | 8 | 15 | 8 | 1291 | 2018 | 1793 | 1614 | 1467 | 1345 | 1242 | 1153 | 1074 | 1009 | 949 | 897 | 849 | 807 |
| 15 | 8 | 13 | 8 | 1119 | 1749 | 1554 | 1399 | 1272 | 1166 | 1076 | 999 | 931 | 874 | 823 | 777 | 736 | 699 |
| 15 | 8 | 12 | 8 | 1033 | 1614 | 1435 | 1291 | 1174 | 1076 | 993 | 922 | 860 | 807 | 760 | 717 | 680 | 646 |
| 15 | 8 | 11 | 8 | 947 | 1479 | 1315 | 1184 | 1076 | 986 | 910 | 845 | 788 | 740 | 696 | 658 | 623 | 592 |
| 15 | 8 | 10 | 8 | 861 | 1345 | 1196 | 1076 | 978 | 897 | 828 | 769 | 716 | 673 | 633 | 598 | 566 | 538 |
| 15 | 8 | 9 | 8 | 775 | 1211 | 1076 | 968 | 880 | 807 | 745 | 692 | 645 | 605 | 570 | 538 | 510 | 548 |
| 17 | 8 | 8 | 21 | 297 | 465 | 413 | 372 | 338 | 310 | 286 | 266 | 247 | 232 | 219 | 207 | 196 | 186 |
| 17 | 8 | 8 | 19 | 329 | 513 | 456 | 411 | 373 | 342 | 316 | 293 | 273 | 257 | 542 | 228 | 216 | 205 |
| 17 | 8 | 8 | 17 | 367 | 574 | 510 | 459 | 417 | 383 | 353 | 328 | 306 | 287 | 270 | 255 | 242 | 230 |
| 17 | 8 | 8 | 15 | 416 | 650 | 578 | 520 | 473 | 434 | 400 | 372 | 346 | 325 | 306 | 289 | 274 | 260 |
| 17 | 8 | 8 | 13 | 480 | 750 | 667 | 600 | 546 | 500 | 462 | 428 | 400 | 375 | 353 | 333 | 316 | 300 |
| 17 | 8 | 8 | 12 | 520 | 813 | 723 | 650 | 591 | 542 | 500 | 464 | 433 | 406 | 383 | 361 | 342 | 325 |
| 17 | 8 | 8 | 11 | 568 | 887 | 788 | 709 | 644 | 591 | 546 | 507 | 472 | 443 | 417 | 394 | 373 | 355 |
| 17 | 8 | 8 | 10 | 624 | 975 | 867 | 780 | 709 | 650 | 600 | 557 | 519 | 488 | 459 | 434 | 411 | 390 |
| 17 | 8 | 8 | 9 | 693 | 1084 | 963 | 867 | 788 | 723 | 667 | 619 | 577 | 542 | 510 | 482 | 456 | 434 |
| 17 | 8 | 8 | 8 | 780 | 1219 | 1084 | 975 | 887 | 913 | 750 | 697 | 649 | 610 | 574 | 542 | 513 | 488 |
| 17 | 8 | 21 | 8 | 2048 | 3201 | 2845 | 2560 | 2328 | 2134 | 1970 | 1829 | 1704 | 1600 | 1506 | 1422 | 1348 | 1280 |
| 17 | 8 | 19 | 8 | 1853 | 2896 | 2574 | 2317 | 2106 | 1931 | 1782 | 1655 | 1542 | 1448 | 1363 | 1287 | 1219 | 1158 |
| 17 | 8 | 17 | 8 | 1658 | 2591 | 2303 | 2073 | 1884 | 1727 | 1594 | 1481 | 1380 | 1295 | 1219 | 1151 | 1091 | 1036 |
| 17 | 8 | 15 | 8 | 1643 | 2286 | 2032 | 1829 | 1663 | 1524 | 1407 | 1306 | 1217 | 1143 | 1076 | 1016 | 963 | 914 |
| 17 | 8 | 13 | 8 | 1268 | 1981 | 1761 | 1585 | 1441 | 1321 | 1219 | 1132 | 1055 | 991 | 932 | 881 | 834 | 793 |
| 17 | 8 | 12 | 8 | 1170 | 1829 | 1626 | 1463 | 1331 | 1219 | 1125 | 1045 | 974 | 914 | 861 | 813 | 770 | 732 |
| 17 | 8 | 11 | 8 | 1073 | 1676 | 1490 | 1341 | 1219 | 1118 | 1032 | 958 | 893 | 838 | 789 | 745 | 706 | 671 |
| 17 | 8 | 10 | 8 | 975 | 1524 | 1355 | 1219 | 1108 | 1016 | 938 | 871 | 812 | 762 | 717 | 677 | 642 | 610 |
| 17 | 8 | 9 | 8 | 878 | 1372 | 1219 | 1097 | 998 | 914 | 844 | 784 | 730 | 686 | 645 | 610 | 578 | 549 |

## PRATICAL CALCULATION FOR FERTILIZER DISTIBUTION

- For fertilizer calculation proceed as follows:

01 - Establish the spacing between rows and the amount of fertilizer to be distributed per Ha.

- Example: A **PLB** *Directa* spacing of 600 mm, to distribute 500 kg of fertilizer per Ha, apply the formula bellow.

**Formula:**

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

**Solve:**

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

$$X = 30 \times 16$$

**Formula data:**
- **E** = *Spacing between rows (mm)*
- **Q** = *Amount of fertilizer to be distributed*
- **A** = *Area to be fertilized ($m^2$)*
- **D** = *Distance of 16m for test (10 turns of the wheel)*
- **D** = *Grams of fertilizer in 16m*

***X = 480 grams of 16 m/row***

01 - If the calculation was done using Ha, divide it by 10.000 m2.

02 - If the calculation was done using Aa, divide it by 24.200 m2.

03 - Each wheel lap is equal to 1,60 m, so 10 laps are equal to 16 m.

## TEST TO CHECK THE AMOUNT OF FERTILIZER AND SEED DISTRIBUTED

01 - For higher precision during the fertilizer and seed distribution check the amount to be distributed on the plant site, because for each soil type there is a condition.

02 - Mark the distance for test. From the table, we use as example 16 rows meters out of the test areas to fill the fertilizer distributorsand the seeds distributors discs.

03 - Close the out lets and put the recipents at the fertilizer exits. Go trhough the marcked area with the tractor, always keeping the same working speed.

04 - After going through the marked distance, remove the fertilizer recipient and weight it, comparing the figures with table ( table of fertilizer ) second column ( grams per rows in 16 meters ). Remove the closing from the seed conduit and collect them to count. If necessary run new test changing the gears.

## ADJUSTMENT OF THE ROW MARKER

01 - To adjust the row Marker proceed as follows:

- Determine the spacing between the rows;
- The number of rows to be used by the planter; and
- The distance between the tractors front tyres (center).

02 - Use the formula below:

- Example: For a 5 rows planting process using the planter, 0,60 m and the distance between the tires of the tractor the 1,43 m; determine.

**Formula:**

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

**Solve:**

$$D = \frac{0,60 \times 6 - 1,43}{2}$$

***D = 1,09 metros***

**Formula data:**
- **E** = *Spacing between rows (mm)*
- **N** = *Number of rows*
- **B** = *Distance between front tyres*
- **D** = *Distance of the row marker*

03 - Distance "D" is given by the 1st. Pass of the planting process. FIGURE 25.

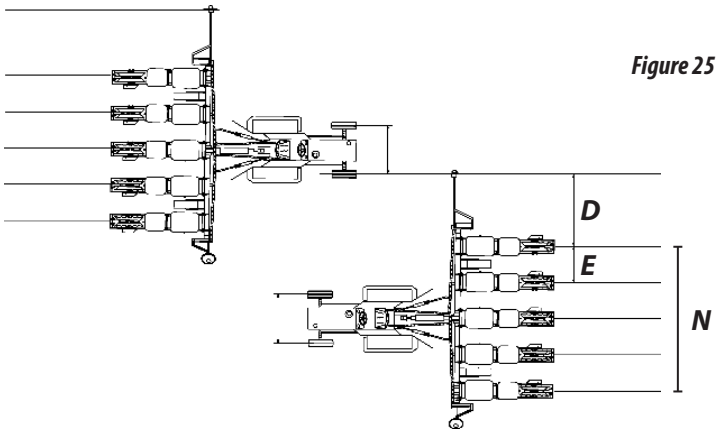



*Figure 25*

## CALCULATION

## FERTILIZER DISTRIBUTION SYSTEM

01 - 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.

02 - 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.

*Figure 26*

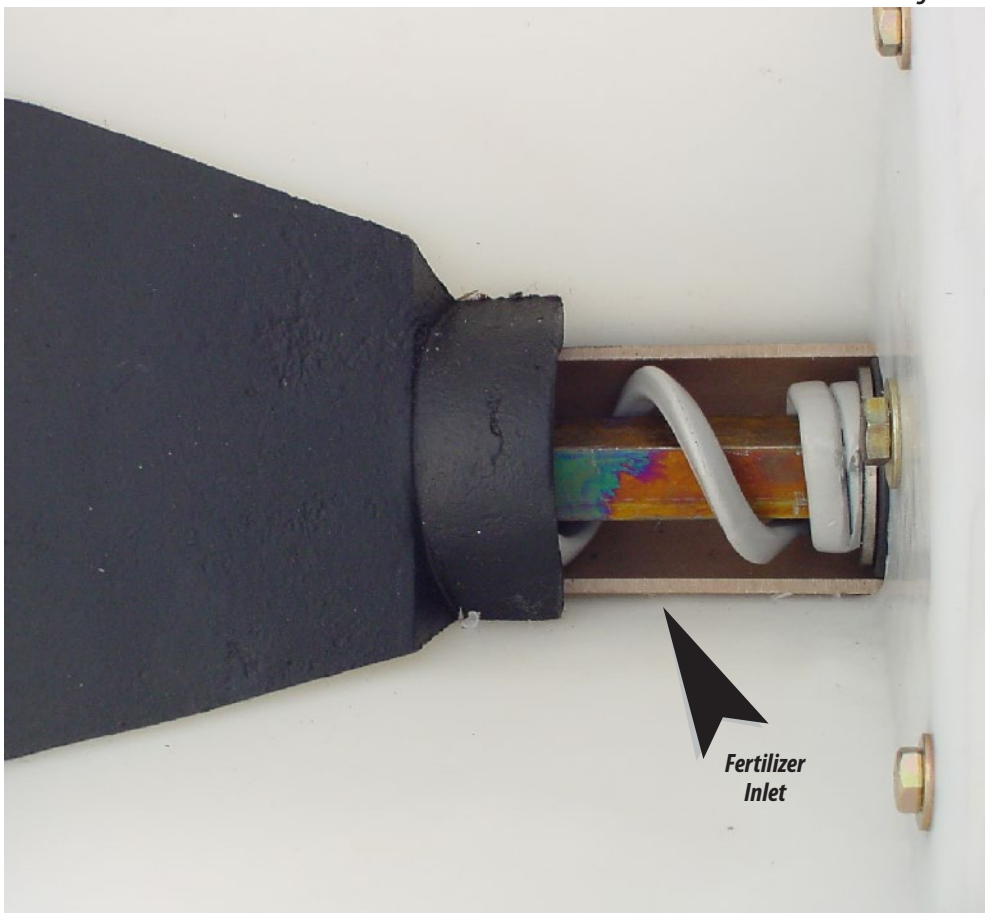
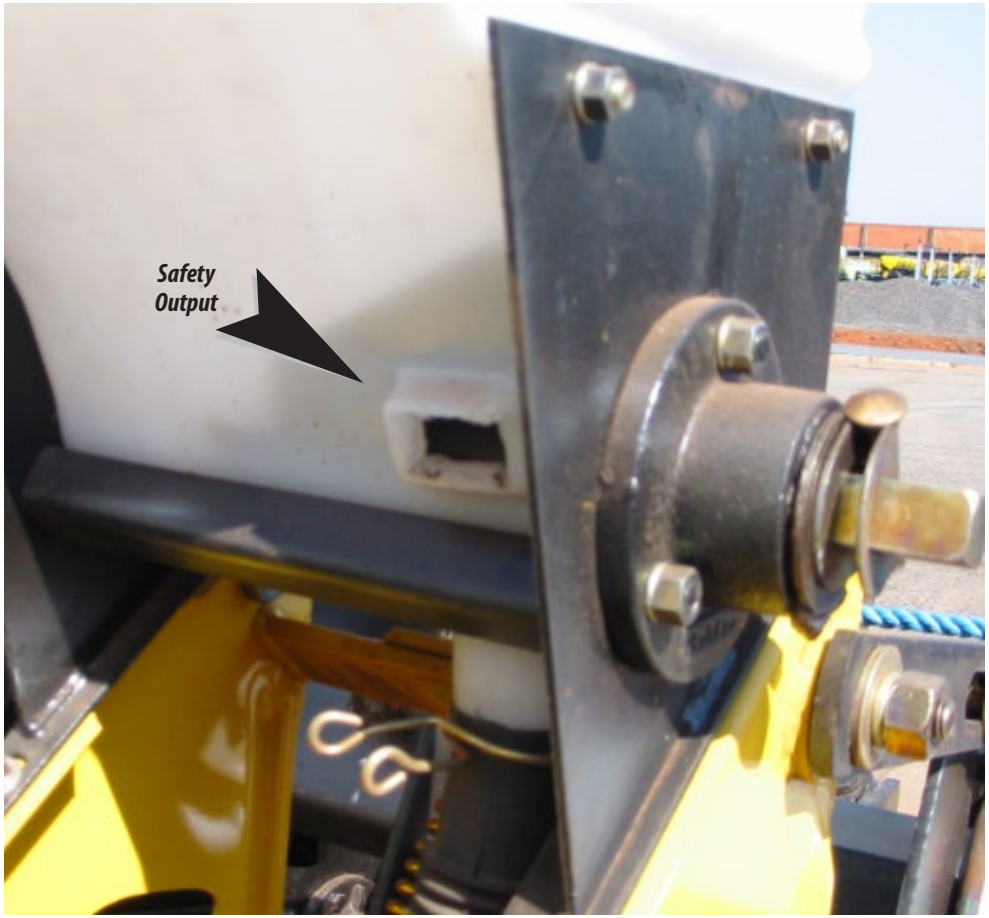



*Figure 27*



## LUBRIFICATION

01 - Lubrication is very important for the efficiency of the planting operation and also the life time of the planter.

02 - Lubricate all grease nipples before you start to work with the planter. Also notice the lubrication periods for each nipple (pages to follow).

## GREASE TABLE AND EQUIVALENTS

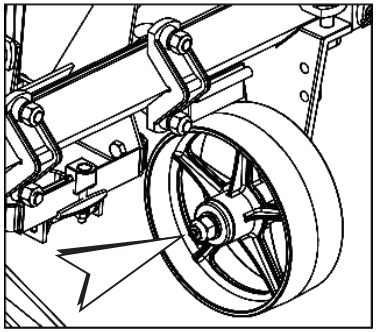
*Table 21*

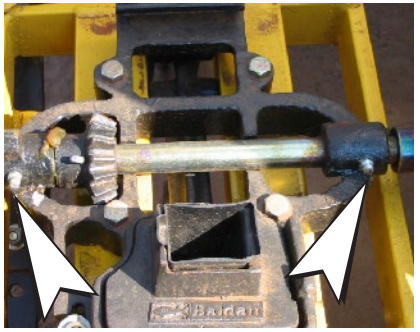
| MANUFACTURER | RECOMMENDED GREASE TYPES |
|---|---|
| Petrobrás | Lubrax GMA-2 |
| Atlantic | Litholine MP 2 |
| Ipiranga | Ipiflex 2 |
| Castrol | LM 2 |
| Mobil | Grease MP |
| Texaco | Marfak 2 |
| Shell | Alvania EP 2 |
| Esso | Multi H |
| Bardahl | Maxlub APG-2EP |
| Valvoline | Palladium MP-2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

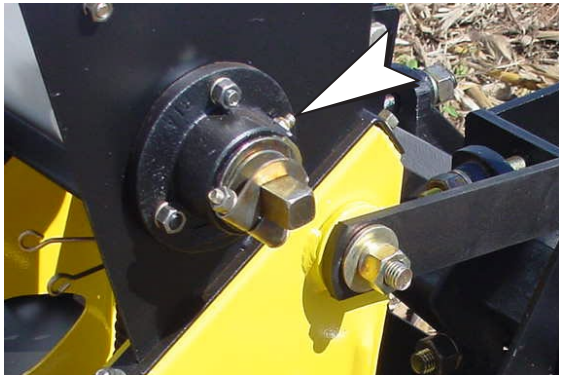
**⚠ ATTENTION**

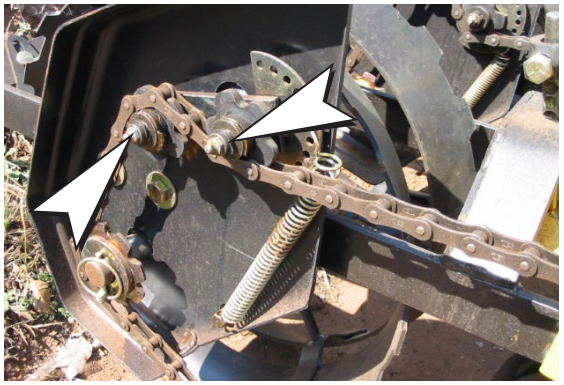
***For manufacturers and or equivalent brands not listed in the table, see the manufacturer's technical manual.***

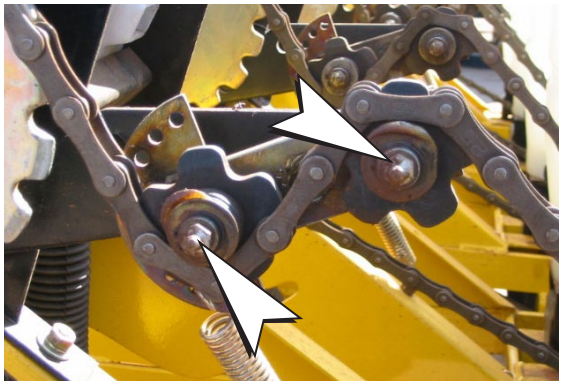
## LUBRICATION EVERY 10 HOURS OF WORK







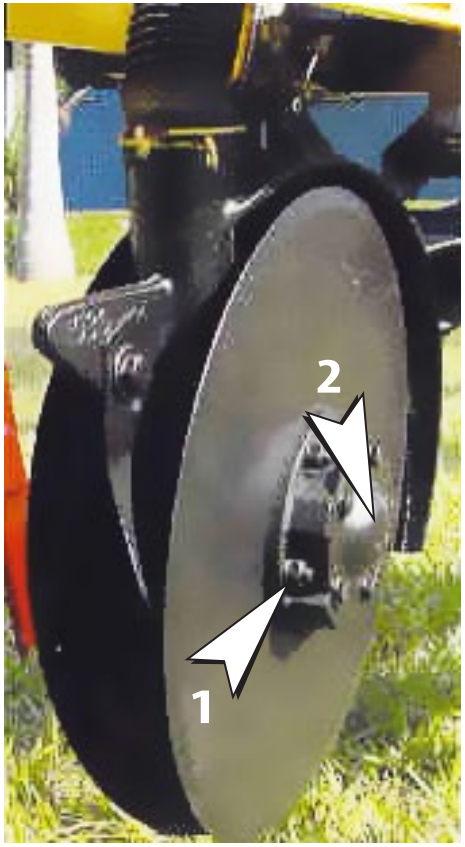




## LUBRICATION EVERY 200 HOURS OF WORK

- We recommend you lubricate the hubs of the double discs at every 200 working hours and also whenever you finish the planting season. Proceed as follows :

01 - Loosen bolts (1) of cover (2);
02 - Check the bearings and replace if necessary (3);
03 - Insert new grease into the cover (2);
04 - Place cover and retighen bolts (1).




## OPERATIONAL MAINTENANCE

| PROBLEMS | CAUSES | SOLUTIONS |
|---|---|---|
| Fertilizer starts dropping from the security outlets located on the hoppers. | Hoses or distribution springs should be blocked with plastic from the bags or any other object. | Clean the complete delivery system. ( hoses and springs ). |
| Fertilizer hub does not turn. | Spring spiral should be blocked with wet fertilizer. | Clear the outlets and replace the hoppers with dry fertilizer. |
| Row unit are planting at different depths. | Different pressures on the springs. | Ajust all planting rows with the same pressure. |
| The furrow is too wide. | Too much speed or the soil is too wet. | Reduce working speed and wait for the soil to dry out. |
| Seed breakage | High working speed. | Reduce working speed. |
| | Incorrect plate thickness. | Find the correct plate for the seed that will be used. |
| | Plate is placed incorrect.<br>Wrong plate for the seed size/form. | Place the plate corectly, according the instruction manual. Observe : THIS SIDE DOWN. |
| | Using wet seeds | Always use dry seeds. |
| Tractor is lifting the front with the weight of the planter. | Front weight are not being used. | Add front weight to the tractor |
| Planter is moving sideways during planting operation in declined surfaces. | Hitch arms of the tractor are working loose. | Tighten the tractors hitch arms in order to prevent lateral movement. |

# CLEANING

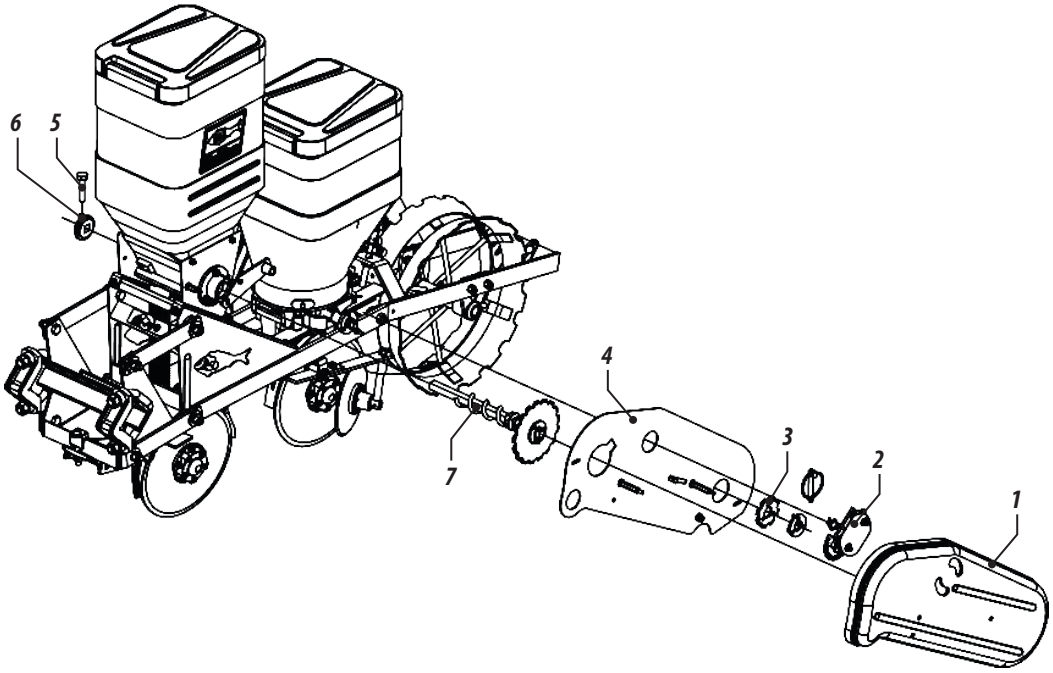
## FERTILIZER SYSTEM

Remove all fertilizer in the hoppers before machine storage. The hoppers can be cleaned as follows:

01 - Remove the protective cap (1), turnbuckle (2), gear (3) and protective plate (4).

02 - Then, loosen the screw (5), lock (6) and pull the hub with gear and shaft (7), turning it to facilitate removal.

03 - Clean the tanks and also the axles and then wash them with running water. Reassemble the axes observing the correct assembly of the channel assembly, as the fertilizer outlet 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.*

04 - 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

05 - 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

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

07 - Lubricate the planter according to this instruction manual.

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

09 - 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

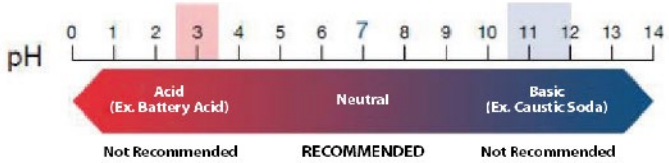
To prolong the life and appearance of the **PLB** *Directa* for longer, follow the instructions below:

***01 -*** Fertilizers and their additives are highly corrosive and their formulation is increasingly aggressive to the seeder components.
***02 -*** Wash and clean all seeder components during and at the end of the work season.
***03 -*** Use neutral products to clean the seeder, following the safety and handling guidelines provided by the manufaturer.
***04 -*** 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 FOR PLANTING OPERATION

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

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

03 - 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.

04 - Adjust the tractor gauge as follows:

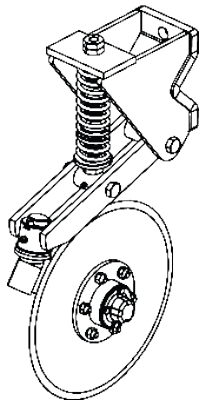
| Tractor type | | Distance between front tyres |
|---|---|---|
| Single | 4 x 2 | 2 x distance of the row spacing of the planter. (center to center) |
| Single | 4 x 4 | 2 x the distance of the row spacing of the planter |
| Dual | 4 x 2 | 4 x the distance of the row placing of the planter. |

***Table 23***

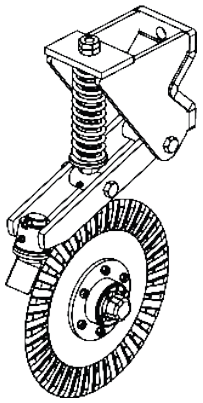
In case you cannot achieve the exact distance, set in the closet to can get.

## OPTIONAL ACCESSORIES

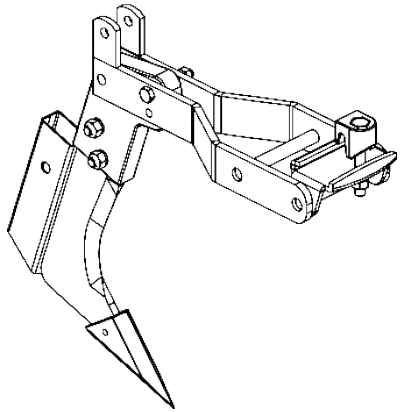
- **PLB** *Directa* has options that can be purchased according to the work need.



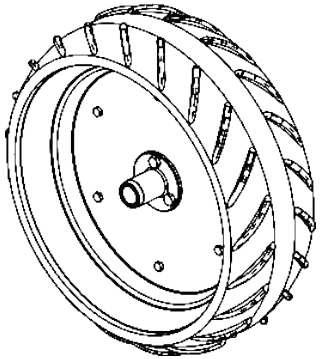
CARRINHO DISCO DE CORTE
PLANO LISO



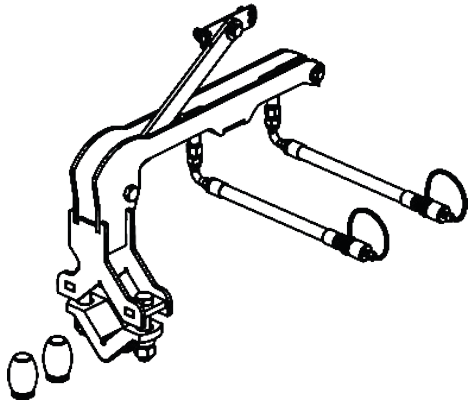
CARRINHO DISCO DE CORTE
PLANO ESTRIADO



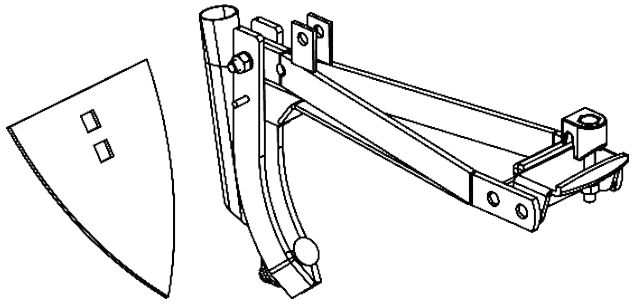
SULCADOR DA HASTE COM
SUPORTE COMPLETO



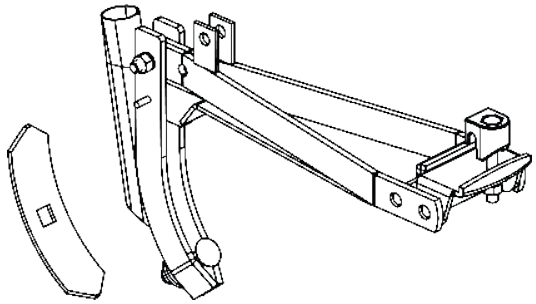
RODA COMPACTADORA
DE BORRACHA



SISTEMA HIDRÁULICO PARA
MARCADOR DE LINHA



SUPORTE COM BICO SULCADOR
PARA PLANTIO DE MILHO



SUPORTE COM BICO RISCADOR
PARA ADUBAÇÃO PROFUNDA

# IDENTIFICATION

## IDENTIFICATION PLATE

- To view the parts catalog or request technical assistance from Baldan, always indicate the model (1), serial number (2) and date of manufacture (3), which are on the identification label of your equipment.

## ALWAYS REQUIRE BALDAN ORIGINAL PARTS


## PUBLICATIONS

*Code: 6055020003-4 | CPT.: PLB04920A*

## CONTACT

*In case of doubt do not operate or handle the equipment, please contact our After-sales Service.*
*Phone: 0800-152577*
*E-mail: export@baldan.com.br*

## PRODUCT IDENTIFICATION

- Fill in the data below to always have the correct information about your equipment warranty.

*Owner:* _____

*Dealer:* _____

*Farm:* _____ *City:* _____

*Model:* _____

*Warranty:* _____ *Serial No.:* _____

*Inovice No.:* _____

*Date of Purchase:* _____/_____/_____

PEÇAS® ORIGINAIS BALDAN
ORIGINAL PARTS • PIEZAS ORIGINALES

## ATTENTION

*The drawings in this instructions manual are for illustrative purposes only. To enable a better overview and detailed instructions, on some drawings in this manual, safety devices (covers, shields, etc..) were removed. Never operate the agricultural wagon without these devices.*

NOTES

# CERTIFICATE OF GUARANTEE

**BALDAN IMPLEMENTOS AGRÍCOLAS S/A**, guarantee the normal operation of the product for a 6 (six) months period dated from the dealers's bill of sale to the first final customer.

During this period, **BALDAN** compromise itself to repair the material or manufacturing defects, but the labour,the freight and other expenses are the dealer's responsability.

At the garantee period, all the request and replacement of any defective part must be made to the dealer of the region, which will send the defective part for analysis at **BALDAN**.

When this procedure won't be possible and the dealer couldn't have the abiliy to solve the problem, the dealer can ask for **Baldan's Technical Assistance** using the specific form delivered to them.

After the analysis of the items replaced by **Baldan Technical Assistance** and if we conclude that it wasn't a guarantee problem, then the dealer will be the responsible for all costs related to the replacement; as well as material expenses, travel including accommodation and meals, also the accessories, lubricant used or any other expenses after having called the Technical Assistance. And, withal, the company **BALDAN** is authorized to issue the billing in name of the respective reseller.

Any repair made to the product wich is in warranty period by the dealer, will only be authorized by **BALDAN** after budget previous presentation describing pieces and labour to be accomplished.

It is out of this term the product wich has repairs or modifications not made by dealers from **BALDAN'S network**, as well as pieces applications or not authentic components to the product by the user.

This certificate of guarantee will became invalid when notice that the damage or defect is the result of incorrect use of the product, of instructions non-observance or operator's inexperiences.

It's stipulated that this guarantee don't cover tires, polyethylene deposits, universal joints, hydraulic components, etc, wich equipments are guarantee by their manufacturers.

The material or manufacture defects, object of this certificate of guarantee, will not be, by any hypotesis, reason for cancellation of the contract of sale, or indemnity of any kind.

For a warranty solicitation to the distributor, you have to proceed in the following manner:

Send the technical informe detailed telling the problem (technical assistance request form to the client), you can find it send us an email to **aftersales@baldan.com.br** or acessing our website **www.baldan.com.br**. If it's possible send films and photos from the requested spare parts.

To point at the form: serial number, manufacture year, etc, that is, all information asked at the form. The damage spare parts should be available for analysis of the the after sales department in a future visit (in case of requested).

**BALDAN** keeps the right of changing and or improve the technical characteristics of its products, without notice and without the obligation of act like this way with its previously manufactured products.

## 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*

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*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

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*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: (0**16) 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**

BALDAN

Avenida Baldan, 1500
Nova Matão
15.993-900
Matão/SP - Brasil
sac@baldan.com.br
export@baldan.com.br

**+55 16 3221 6500**
**baldan.com.br**