

Instruction Manual



PLB DIRECTA
Precision Row Seed Drill Baldan

 **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.



INDEX

WARRANTY	4
<i>Product Warranty</i>	<i>4</i>
GENERAL INFORMATION	5
<i>Owner</i>	<i>5</i>
SAFETY RULES	6-7
COMPONENTS	8
TECHNICAL SPECIFICATIONS	9
ASSEMBLY	10-13
HITCHING	14-15
ADJUSTMENTS	16-17
SEED ADJUSTMENTS	18-22
CALIBRATION	23
FERTILIZER DISTRIBUTION TABLE	24-30
FERTILIZER DISTRIBUTION	31-32
LUBRIFICATION	33-34
MAINTENANCE	35
CLEANING	36
OPERATION	37
IDENTIFICATION	38
CERTIFICATION OF GUARANTEE	39-40

PRODUCT WARRANTY

BALDAN IMPLEMENTOS AGRÍCOLAS S/A, warrants 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 specific 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 of the 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 modified 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.

WARRANTY

GENERAL INFORMATION

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 will not be responsible for any damage caused due to unpredictable situations or beyond the normal use of the implement.

The mishandling of this equipment can result in serious or fatal accidents. Before switching on the equipment, carefully read the instructions of this manual. Make sure that the person responsible for the operation is instructed on the proper and safe handling of the equipment. Also make sure that the operator has read and understood the product instructions manual.

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



02- This Regulatory Norm aims to establish the principles to be observed in the organization and the work environment, in a way consistent with the planning and development of the agriculture, livestock, forestry, forest exploitation and aquaculture activities regarding the safety and health and the working environment.

IF YOU ARE THE OWNER OR THE OPERATOR OF THE EQUIPMENT.
Read and carefully follow the NR-31 provisions.

For more information, visit the website and read the complete NR-31.
<http://portal.mte.gov.br/legislacao/normas-regulamentadoras-1.htm>



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



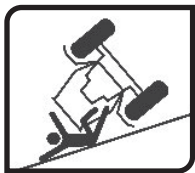
- Do not operate the tractor if the front is light. With a tendency to rise, add weights on the front of the tractor or front wheels.

! 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.

SAFETY RULES

SAFETY RULES

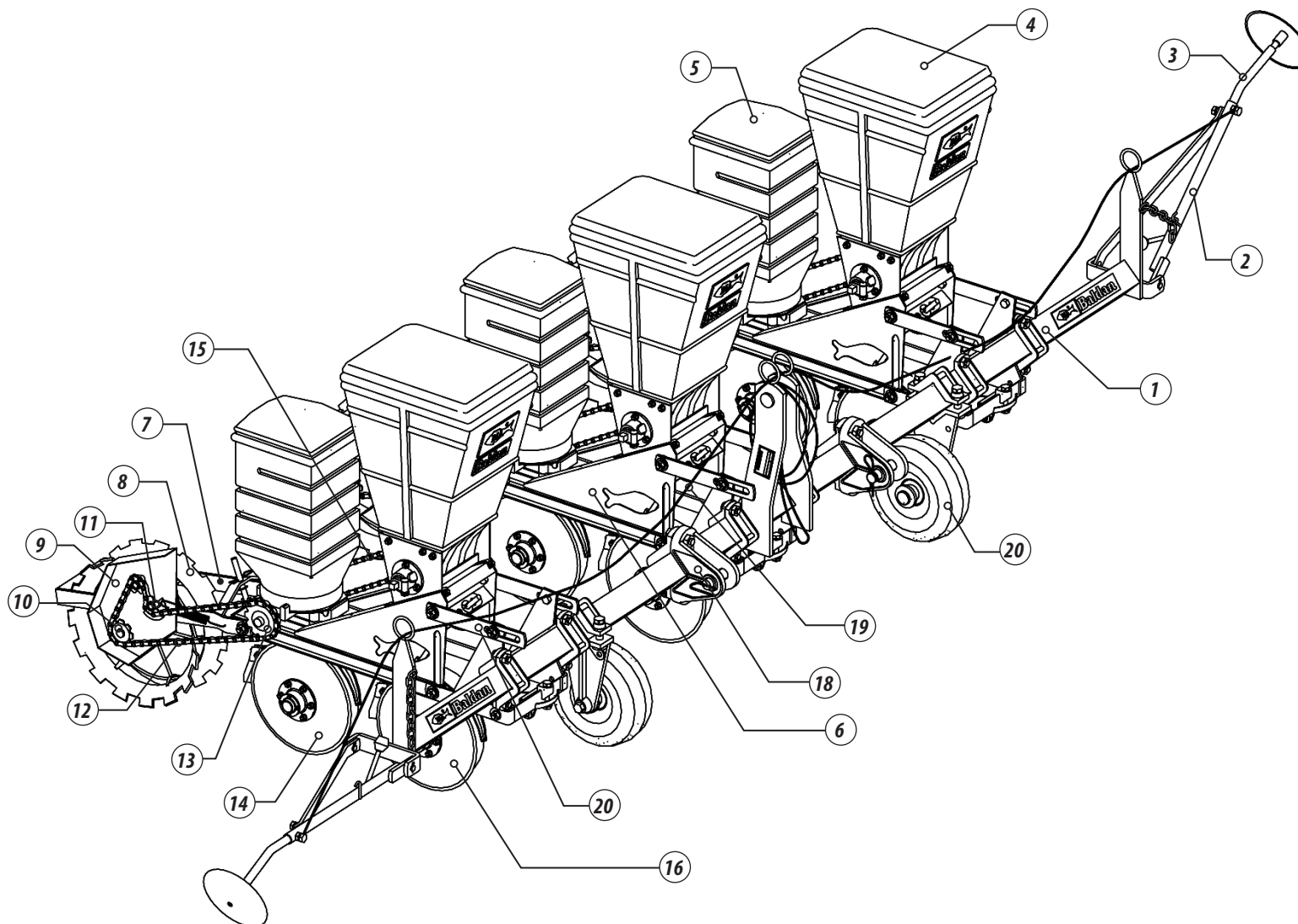
- 01-When operate with the implement, do not allow people to stay close or above the implement. (The platforms are used to supply the stores and not to transport people).
- 02-During assembly or disassembly the discs section use protection gloves.
- 03-Do not use much large clothes because they can fasten the implement.
- 04-Plutting in action the tractor, be correctly placed at the operator seat and aware about the correct and safety handling both tractor and implement. Place always the gear-shift crancck at the neutral position, turn off the gear of the power command and place the hydraulic commands at the neutral position.
- 05-Do not turn on the tractor in a closed place. without appropriate ventilation because the gas is bad for health.
- 06-While maneuver the tractor to clamp the implement be sure if there is space enough and nobody is too close, maneuver always in slow gear and be ready to brake in case of emergency.
- 07-Do not make adjust the implement working.
- 08-Working in inclined soil try to keep the necessary stability. In case of instability reduce the acceleration, turn the wheels to the inclined side of the soil and never lift the implement.
- 09-Conduct the tractor always in safety speeds, specially working in irregular or inclined soil, keep the tractor always geared.
- 10-In case of conducting the tractor on road, keep the brake pedal connected.
- 11-Do not work with the front of the tractor light. If there is trend to lift up add more weight in front and of the tractor at the front wheels.
- 12-To leave the tractor, place the gearshift at the neutral position and apply the park brake. Do never let clamped implements to hitched the tractor with the hydraulic system at the lifted position.

*If case of doubt, ask the After-sales.
Phone: 0800-152577 / E-mail: posvenda@baldan.com.br*

PRECISION ROW SEED DRILL BALDAN - PLB DIRECTA

Figure 1

- 1- Tool Bar
- 2- Row marker support
- 3- Row marker disc
- 4- Fertilizer hopper
- 5- Seed hopper
- 6- Row unit
- 7- Wheel support
- 8- Transmission/compactation wheel
- 9- Chain cover
- 10- Motor sprocket
- 11- Chain Stretcher
- 12- Transmission chain
- 13- Moved sprocket (seed)
- 14- Seed double discs
- 15- Transmission chain (Fertilizer)
- 16- Fertilizer double discs
- 17- Oscillating system support
- 18- Tool bar hitch
- 19- Row marker cable
- 20- Complete stabilizer wheel



COMPONENTS

TECHNICAL SPECIFICATIONS

Table 1

Model	No. 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	2	1800	1400	2300	420	0 - 120	449	45	60	40 - 50
PLB	2	2800	2400	3300	420	0 - 120	471	45	60	40 - 50
PLB	2	3800	3400	4300	420	0 - 120	492	45	60	40 - 50
PLB	3	1800	1400	2300	420	0 - 120	597	45	60	50 - 66
PLB	3	2300	1900	2800	420	0 - 120	608	45	60	50 - 66
PLB	3	2800	2400	3300	420	0 - 120	618	45	60	50 - 66
PLB	3	3800	3400	4300	420	0 - 120	640	45	60	50 - 66
PLB	4	2800	2400	3300	420	0 - 120	766	45	60	60 - 75
PLB	4	3300	2900	3800	420	0 - 120	777	45	60	60 - 75
PLB	4	3800	3400	4300	420	0 - 120	787	45	60	60 - 75
PLB	4	4400	4000	4900	420	0 - 120	841	45	60	60 - 75
PLB	5	2800	2400	3300	420	0 - 120	913	45	60	75 - 90
PLB	5	3800	3400	4300	420	0 - 120	935	45	60	75 - 90
PLB	5	4400	4000	4900	420	0 - 120	989	45	60	75 - 90
PLB	6	2800	2400	3300	420	0 - 120	1014	45	60	85 - 95
PLB	6	3800	3400	4300	420	0 - 120	1082	45	60	85 - 95
PLB	6	4400	4000	4900	420	0 - 120	1136	45	60	85 - 95

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

- The planter is shipped with the unit rows assembled, ready to be attached to the tool bar.
- Use supports to maintain the tool bar in a easy position to fix the row units.

ASSEMBLING THE TOOL BAR HITCH

- 01 - fix hitch (1), on tool bar(2), using clamp (3), bolts (4), washers and nuts (5).
- 02 - Adjust the hitch according to the category of the tractor that will work with the unit.

03 - Cat. I = 685 mm;

04 - Cat. II = 826 mm.

Important : The minimum spacing between rows is 420 mm.

- 05 - Fix the complete wheel (6) on tool bar (2), using support (7), bolt (8), washers and nuts (9).

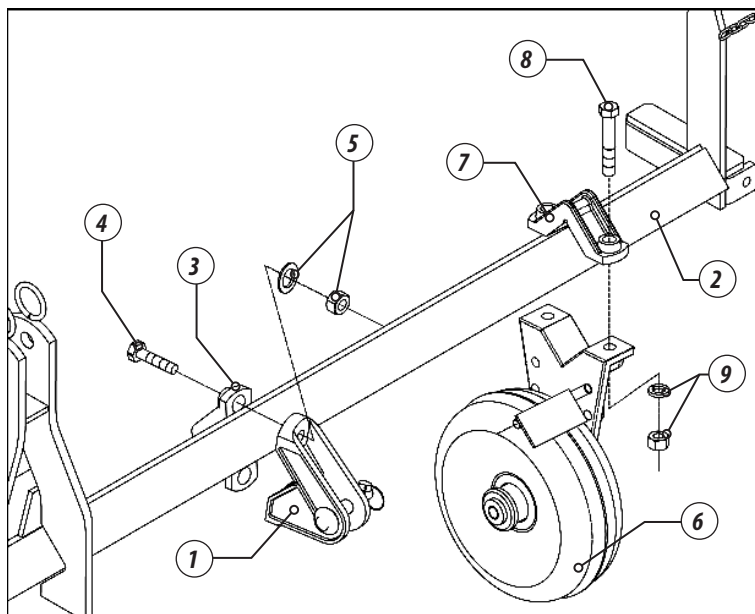


Figure 2

ASSEMBLY

ASSEMBLING THE SEED DOUBLE DISC

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

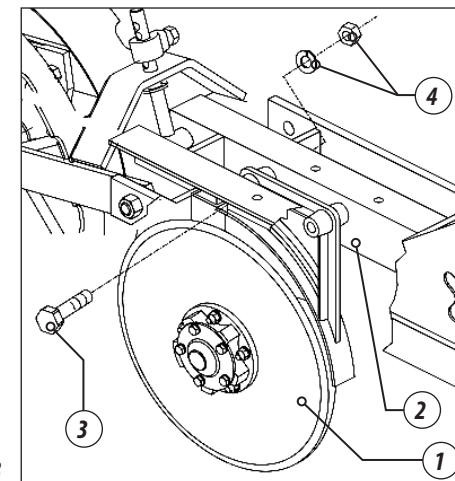


Figure 3

ASSEMBLING THE 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).

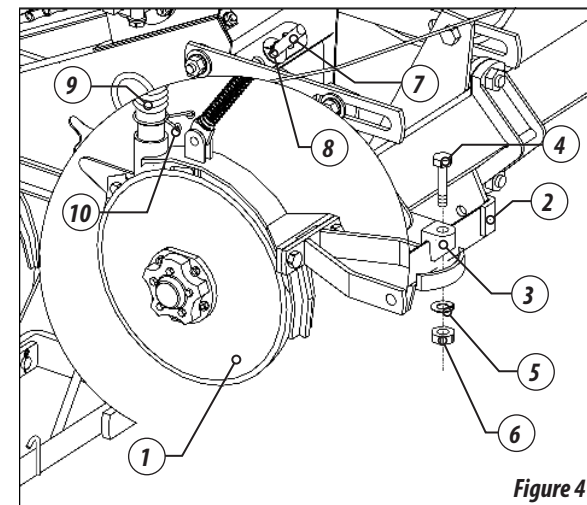


Figure 4

ASSEMBLY

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).

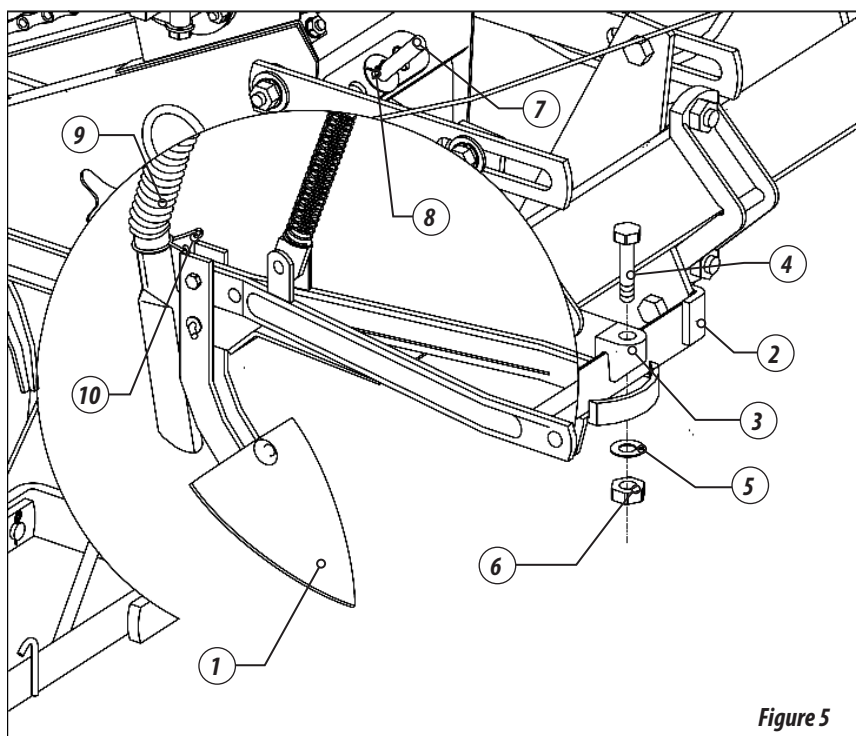


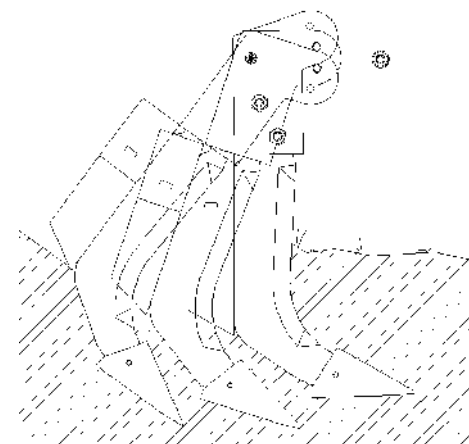
Figure 5

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



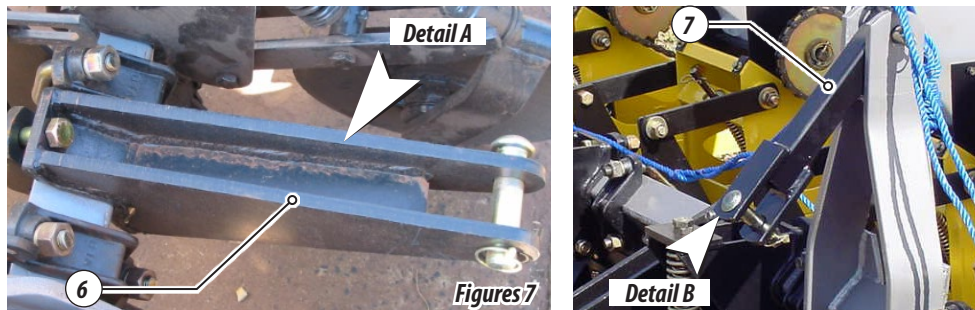
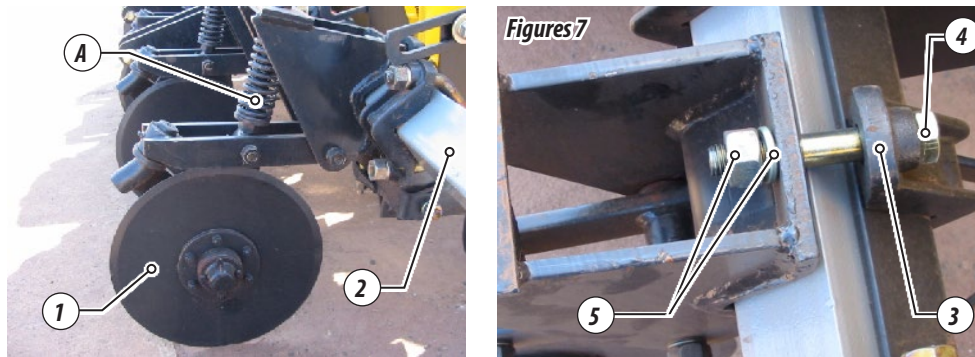
NOTE | Pin (1) also works as safety device. (hardness controled steel)

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 conditions by attaching the No-Till kit (cutting coulters). Please proceed as follows :

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

NOTE Spring "A" is preset by the factory. Do not increase the pressure, otherwise you will lose articulation on the coulters.



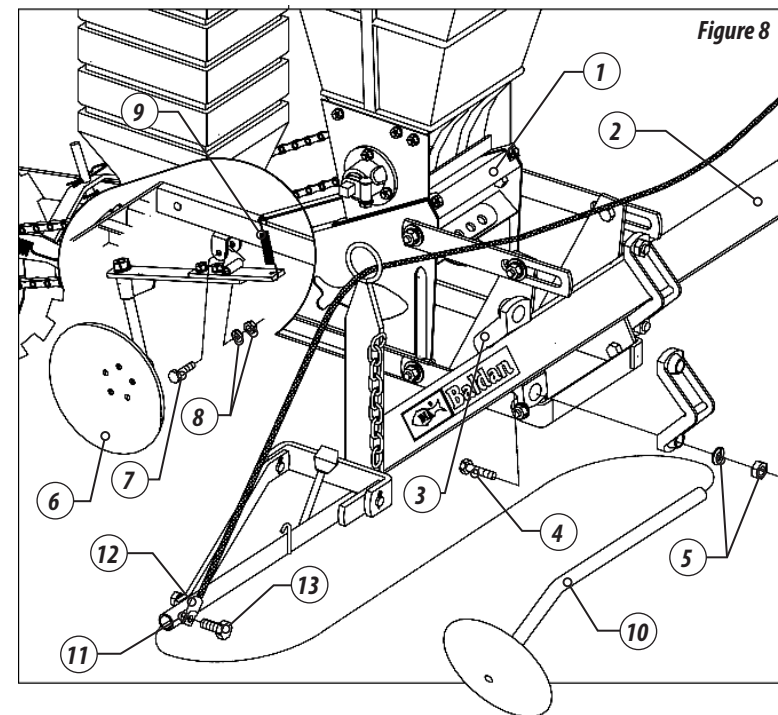
NOTE In order to fit the cutting coulters to the tool bar, you first have to change the lower hitch (6) and add the extension bar (7) as shown on details "A" and "B".

ASSEMBLING THE PLANTING ROW UNIT

- 01 - Fix the row unit (1) on tool bar (2) by using bracket (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

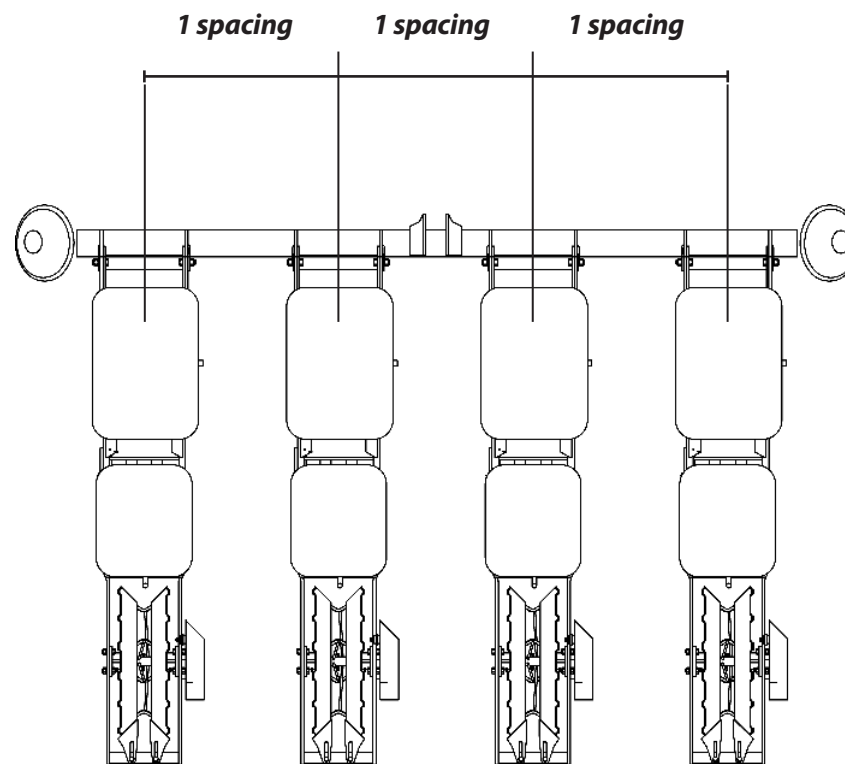
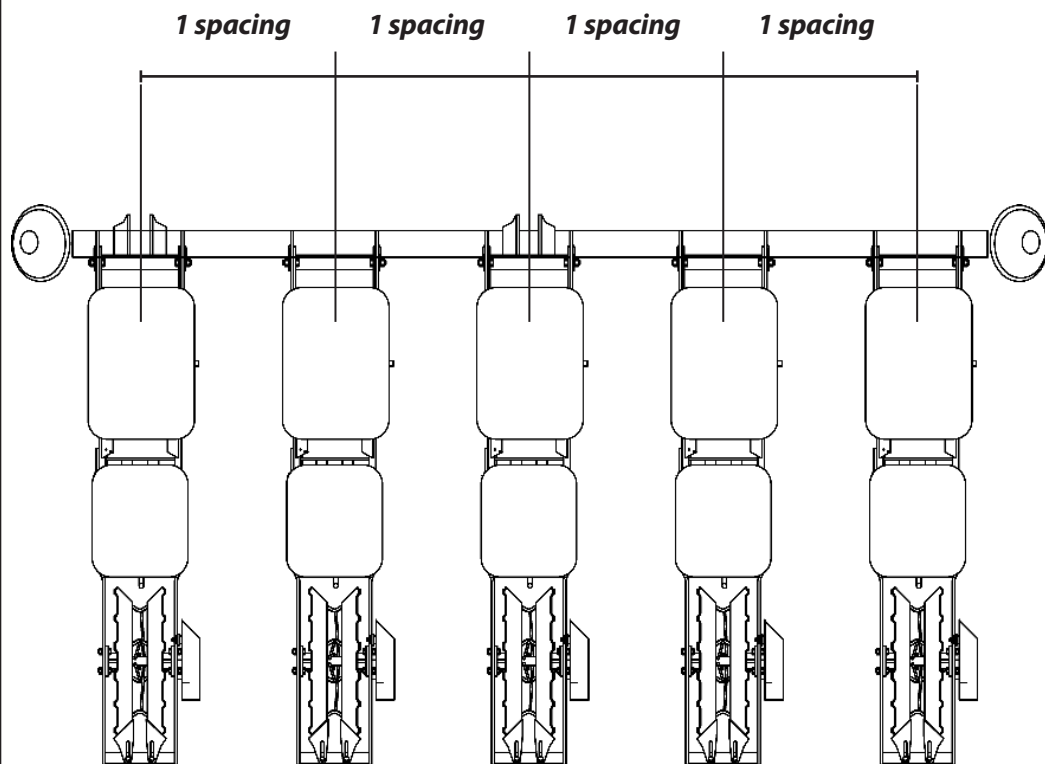
- 01 - Insert row marker (10) to base (11). Fix cable terminal (12) and fix with bolt (13), passing through rings located on the tool bar. Fix the other end on the opposite side.



ASSEMBLY

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 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 "D" hitch the right inferior arm of the tractor to the support "C" of the planter.

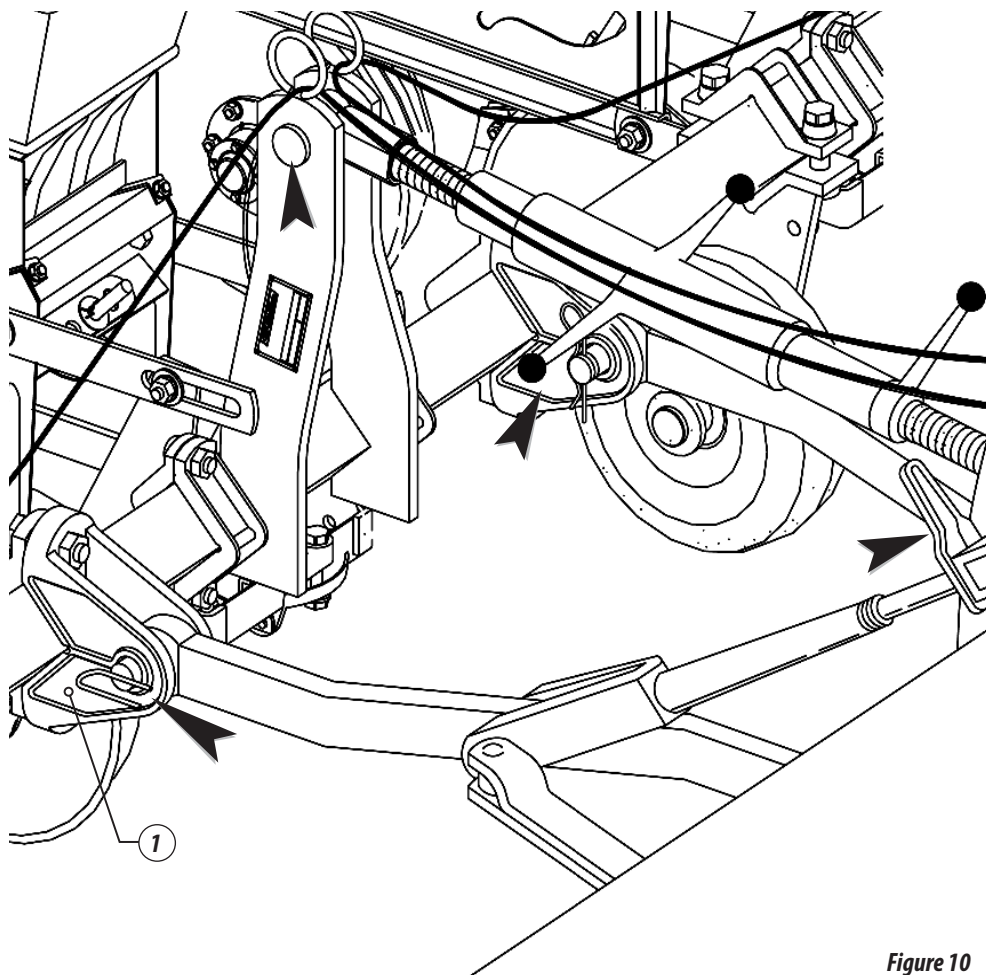


Figure 10

CENTRALIZATION

- 01 - To centralize the planter in relation to the tractor's longitudinal axle, proceed as follows:
- 02 - Line the superior hitch arm of the machine with the 3rd point of the tractor, checking if all the distances "D" of the inferior arms of the hydraulic are the same in relation to the tractor tyres, according to figures 10 and 11. To line up use the stabilizers. The inferior arms must be leveled.

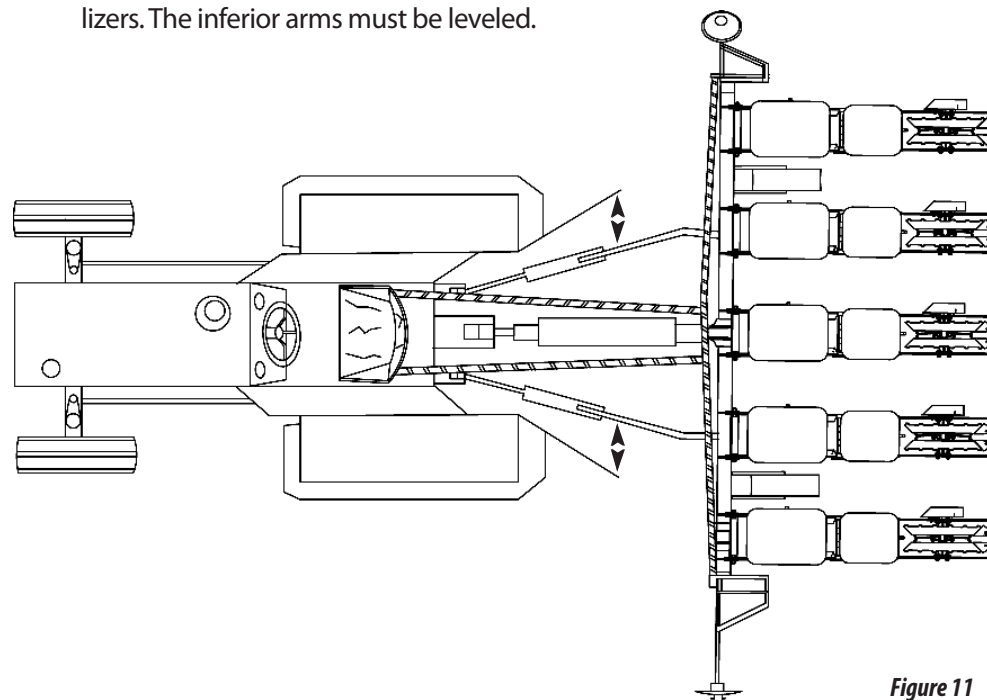


Figure 11

HITCHING

LEVELING THE PLANTER

- In order to level the planter, 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)

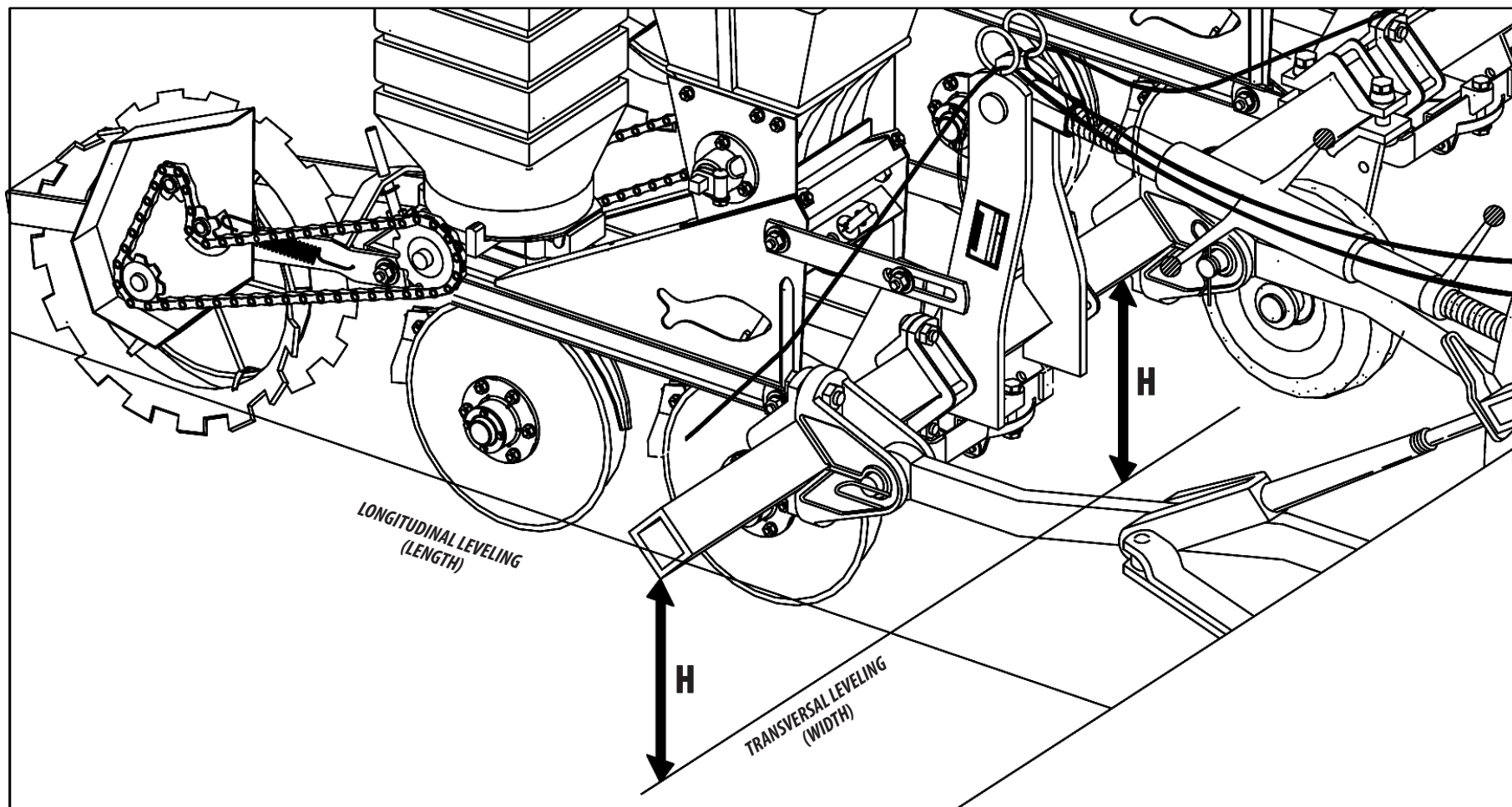
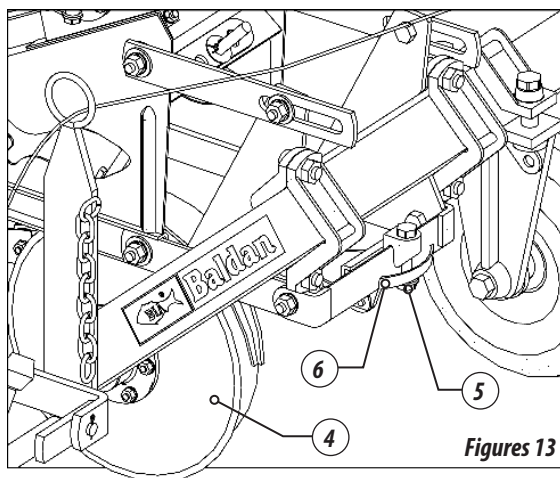
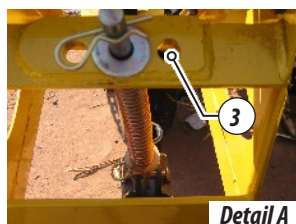
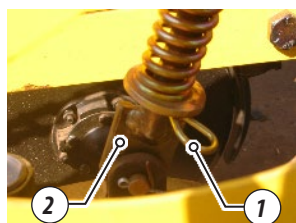


Figure 12

FERTILIZER DEPTH CONTROL

- The depth of the fertilizer can be adjusted by changing the spring pressure. To calibrate, proceed as follows:
 - 01 - The spring rod is supplied with several holes for pressure adjustment.
 - 02 - To reduce the pressure, place lock pin (1) in the lower hole of spring rod (2).
 - 03 - To increase the pressure, place lock pin (1) in a higher hole of spring rod (2).

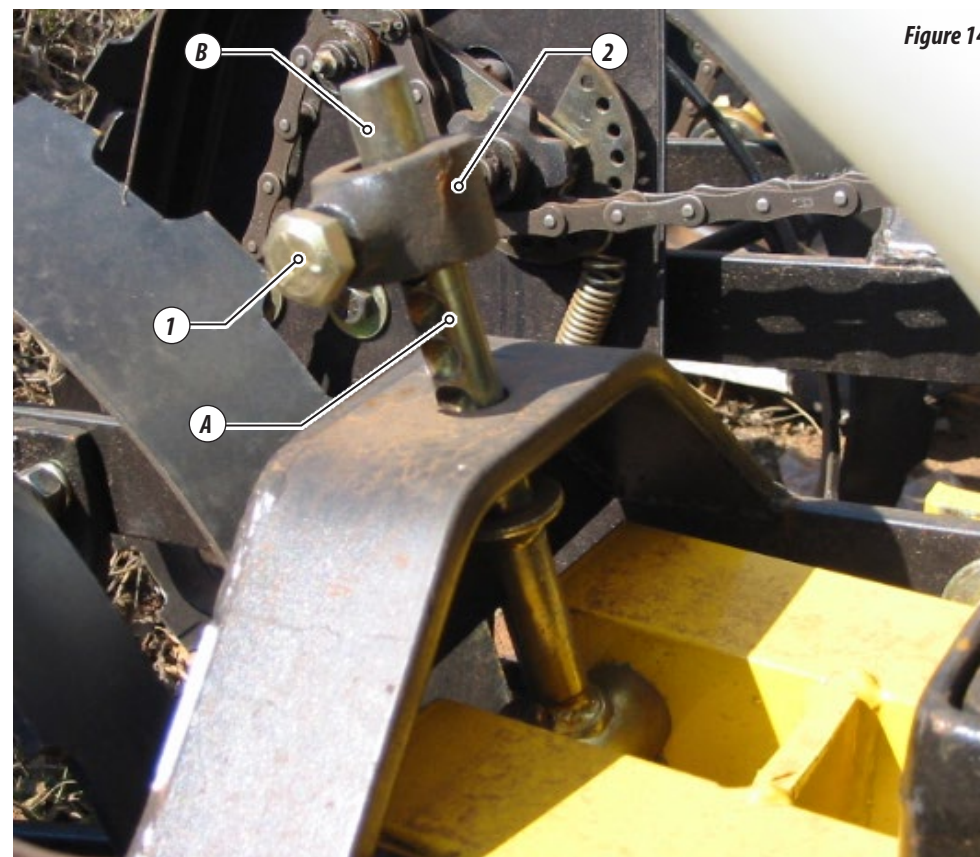


ADJUST SEED / FERTILIZER DISTANCE IN THE FURROW

- The furrow opening is done by double discs (4). In order to adjust the distance between the fertilizer and seed furrow, proceed as follows:
 - 01 - Loosen nut (5);
 - 02 - Insert spring rod (2) into support hole (3); detail "A".
 - 03 - Move the complete double disc unit (6) until you achieve the correct position.
 - 04 - Retighten nut (5).

SEED DEPTH ADJUSTMENT

- The seed depth adjustment is done by changing the pressure of the spring upon the double disc unit. To adjust the pressure, proceed as follows:
 - 01 - To reduce the depth, loosen bolt (1) and fix lock bushing (2) on the lower mark "A" of rod (3);
 - 02 - To increase the depth, fix lock bushing (2) on a higher mark "B" of rod (3).



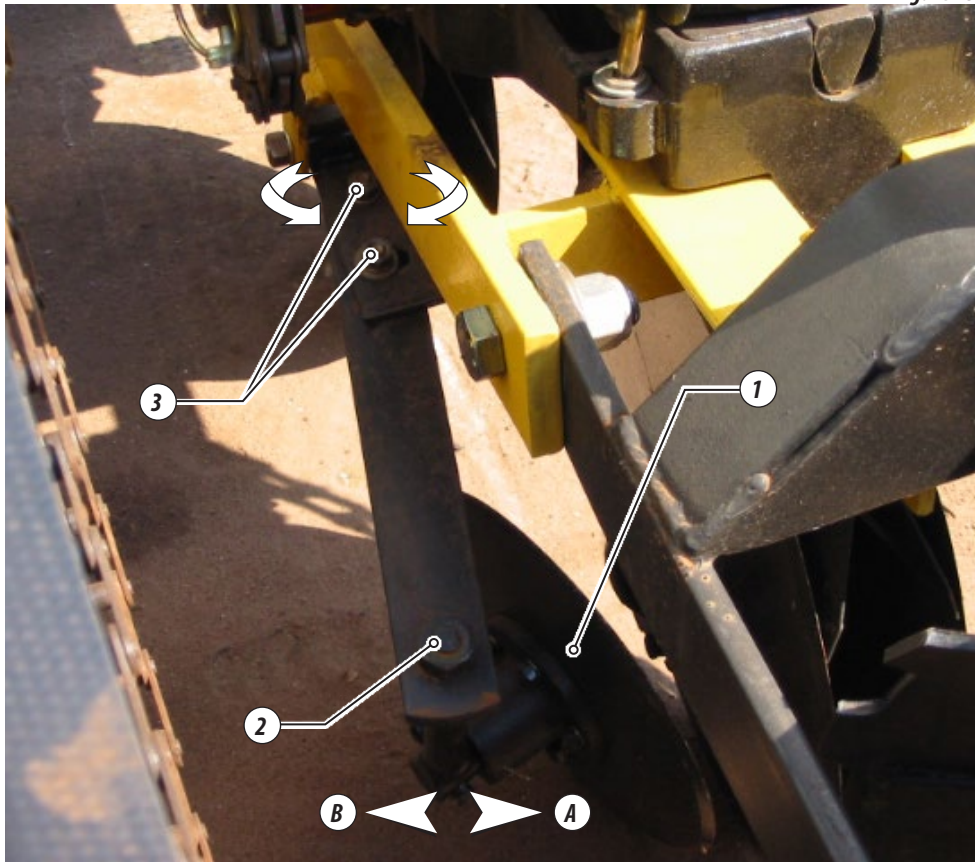
ADJUSTMENTS

ADJUSTMENTS

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 compaction wheel (1) is supplied in order to side press the soil upon the seed, improving its 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.

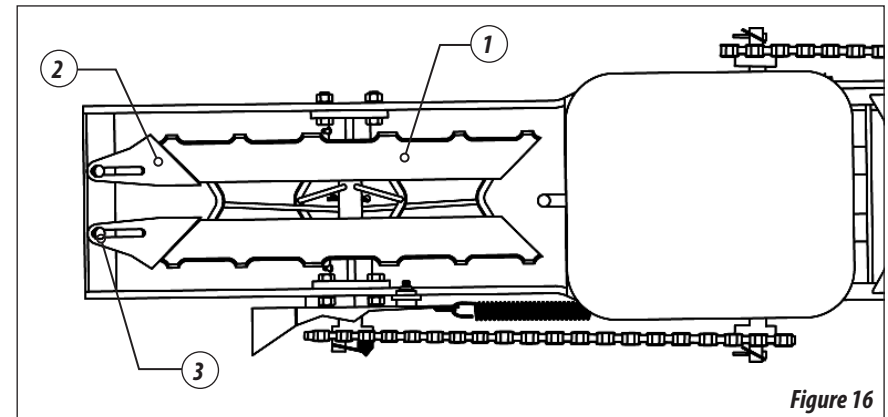


Figure 16

RUBBER COMPACTATION WHEEL

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

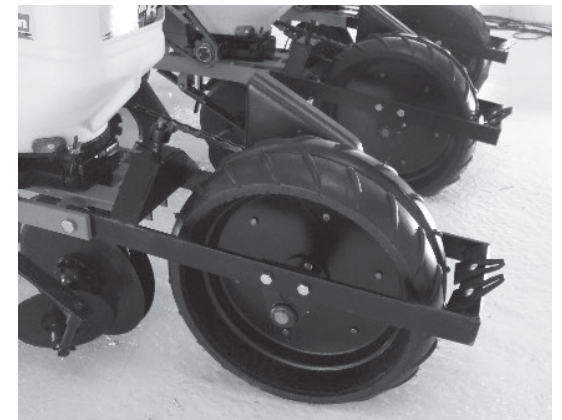
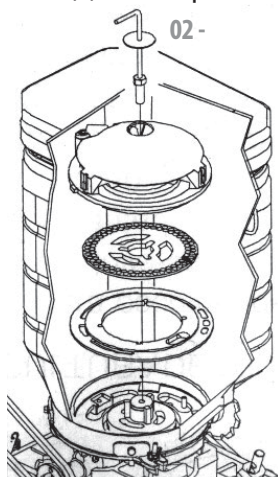


Figure 17

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.



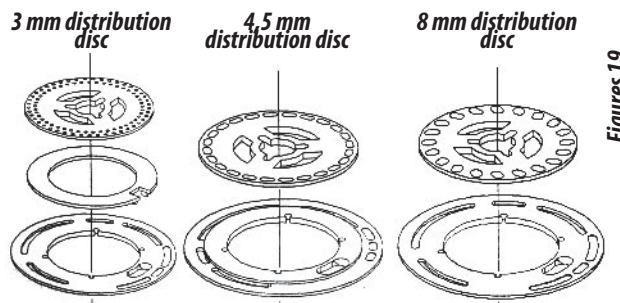
Select the desired distribution disc and assemble it in the seed box. Check the placement of rings according to the distribution disc as follows:

- 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.

Figure 18

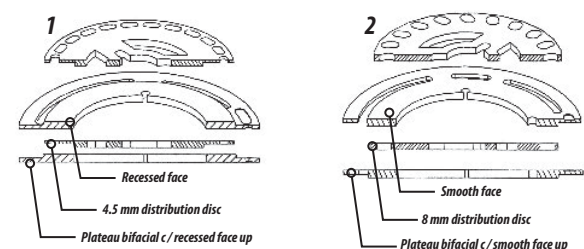
ASSEMBLING THE DISTRIBUTION DISC

- 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

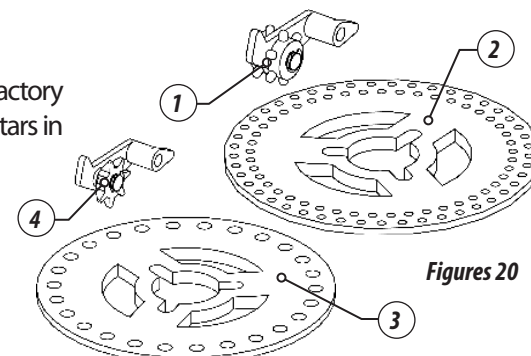
- Before filling the box with seeds, it is important to check the whole distribution system, mainly the operation of triggers of the metering seed box.



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.

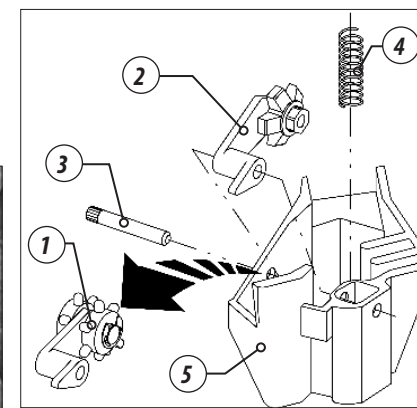
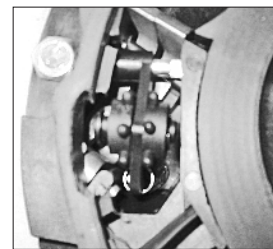


Figures 20

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



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

SEED ADJUSTMENTS

SEED ADJUSTMENTS

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.

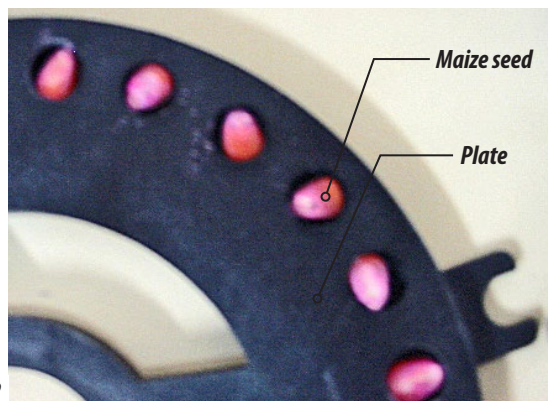


Figure 22

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	

! 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.

Table 3

** 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.

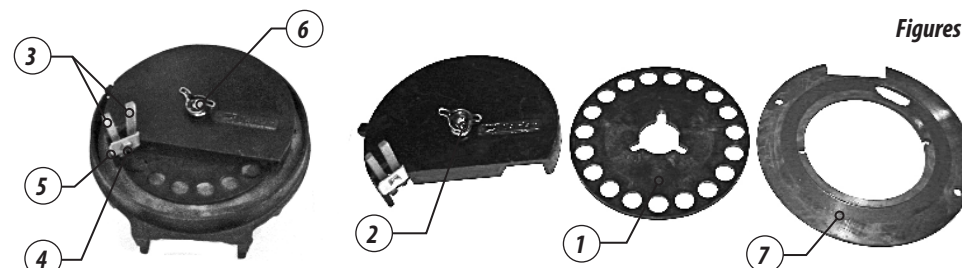
02 - They and change according to:

03 - Soil conditions

05 - Type and quality of seeds

04 - Working speed

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 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
38 holes Thickness 8,0 mm	15	8	37,0
	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 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
40 holes Thickness 8,0 mm	15	8	37,0
	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

Table 6

Seed Plate	Sprocket size		Qty of seed per linear meter
	Motor "A"	Moved "B"	
62 holes Thickness 4,5 mm	8	15	9,0
	8	13	10,0
	8	12	11,0
	8	11	12,0
	8	10	13,0
	8	9	14,5
	8	8	16,5
	9	8	18,0
	10	8	20,5
	11	8	22,0
	12	8	24,5
	13	8	27,0
90 holes Thickness 8,0 mm	15	8	30,0
	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

SEED ADJUSTMENTS

SEED ADJUSTMENTS

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	8	15	3,5
	8	13	4,0
	8	12	4,5
	8	11	5,0
	8	10	5,5
Thickness 4,5 mm	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	8	15	6,0
	8	12	7,0
	8	10	8,0
	8	8	9,0
	8	8	10,0
Thickness 4,5 mm	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	8	17	6,0
	8	15	7,0
	8	13	8,0
	8	12	9,0
	8	11	10,0
Thickness 3 mm	8	10	11,0
	8	9	12,0
	8	8	13,0
	9	8	15,0
	10	8	17,0
90 holes	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
Thickness 3 mm	8	8	23,4
	9	8	27,0
	10	8	30,6

Table 9

RICE

Seed Plate	Sprocket size		Qty of seed per linear meter
	Motor "A"	Moved "B"	
26 holes	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
Thickness 4,5 mm	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	8	15	2,7
	8	13	3,1
	8	12	3,5
	8	11	3,8
	8	10	4,3
Thickness 4,5 mm	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	8	8	10,0
	9	8	11,0
	10	8	12,0
	11	8	13,0
	12	8	14,0
Thickness 6 mm	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	8	17	4,6
	8	15	5,4
	8	13	6,2
	8	12	7,0
	8	11	7,7
Thickness 4,5 mm	8	10	8,5
	8	9	9,3
	9	8	11,5
	10	8	13,0

Table 13

SEED ADJUSTMENTS

CALIBRATION

SEED AND FERTILIZER CALIBRATION

- 01 - The seed distribution is done by horizontal plates. In order to increase or decrease the quantity of seeds to be distributed 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.
- Exemple : 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 21 a 27.

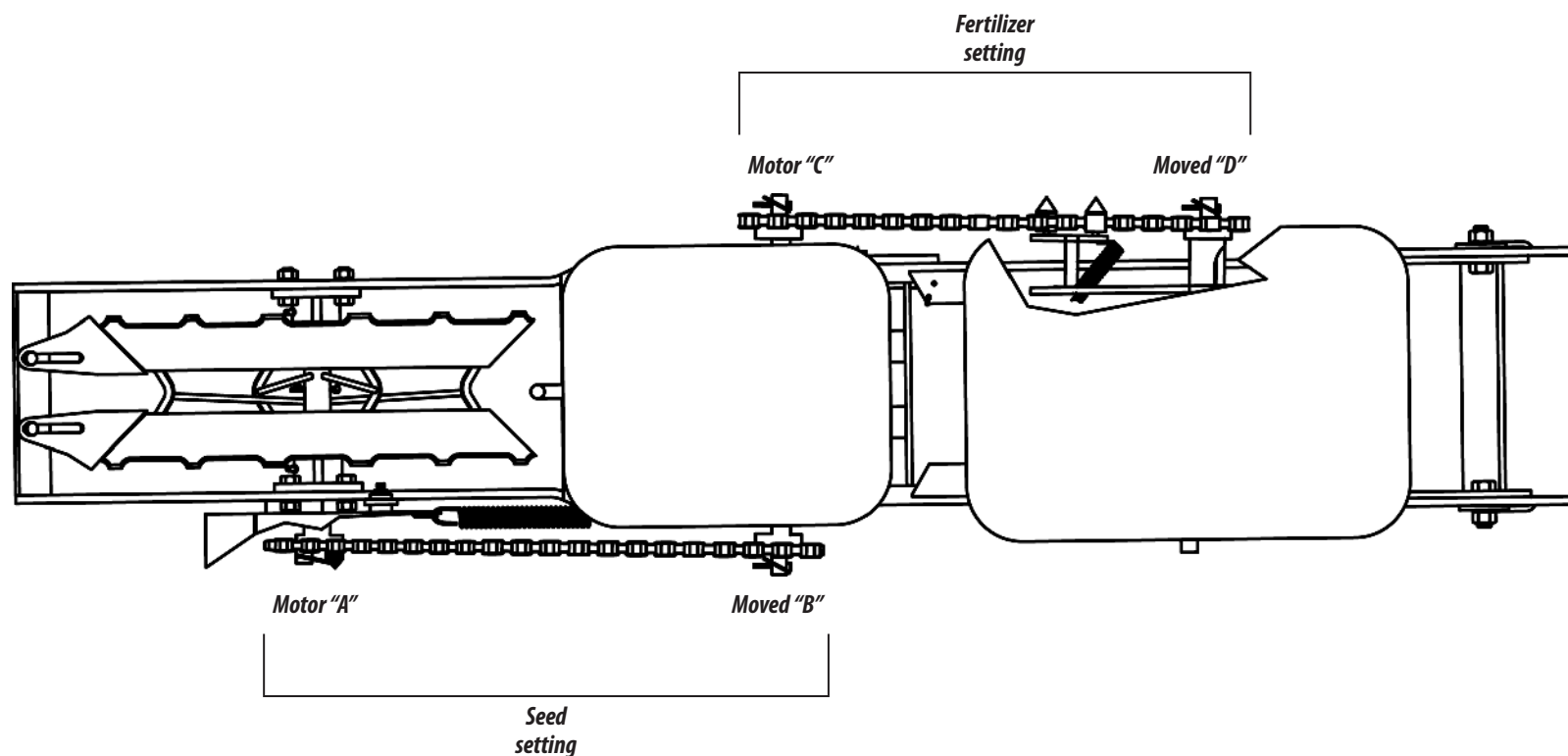


Figure 24

Motor "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m ²) for the different spacings between rows													Table 14
					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	144	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	

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												Table 15
					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	351	324	301	280	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

Motor "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m ²) 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

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 m ²) 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	619	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	612	556	510	471	437	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	678	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

Motor "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m ²) 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	507	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

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 m ²) 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

Motor "A"	Moved seed "B"	Motor fertilizer "C"	Moved fertilizer "D"	Grams / 16 linear meter	Kilograms per hectare (10.000 m ²) 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	242	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

FERTILIZER DISTRIBUTION TABLE

FERTILIZER DISTRIBUTION

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 with 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 (m²)

D = Distance of 16m for test (10 turns of the wheel)

D = Grams of fertilizer in 16m

$$X = 480 \text{ grams of 16 m/row}$$

- 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 distributors and the seeds distributors discs.
- 03 - Close the out lets and put the recipients at the fertilizer exits. Go through the marked 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;
- 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:

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

$$D = 1,09 \text{ metros}$$

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.

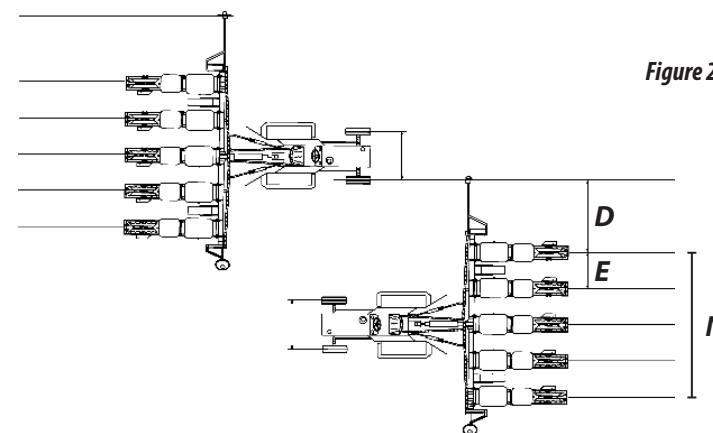
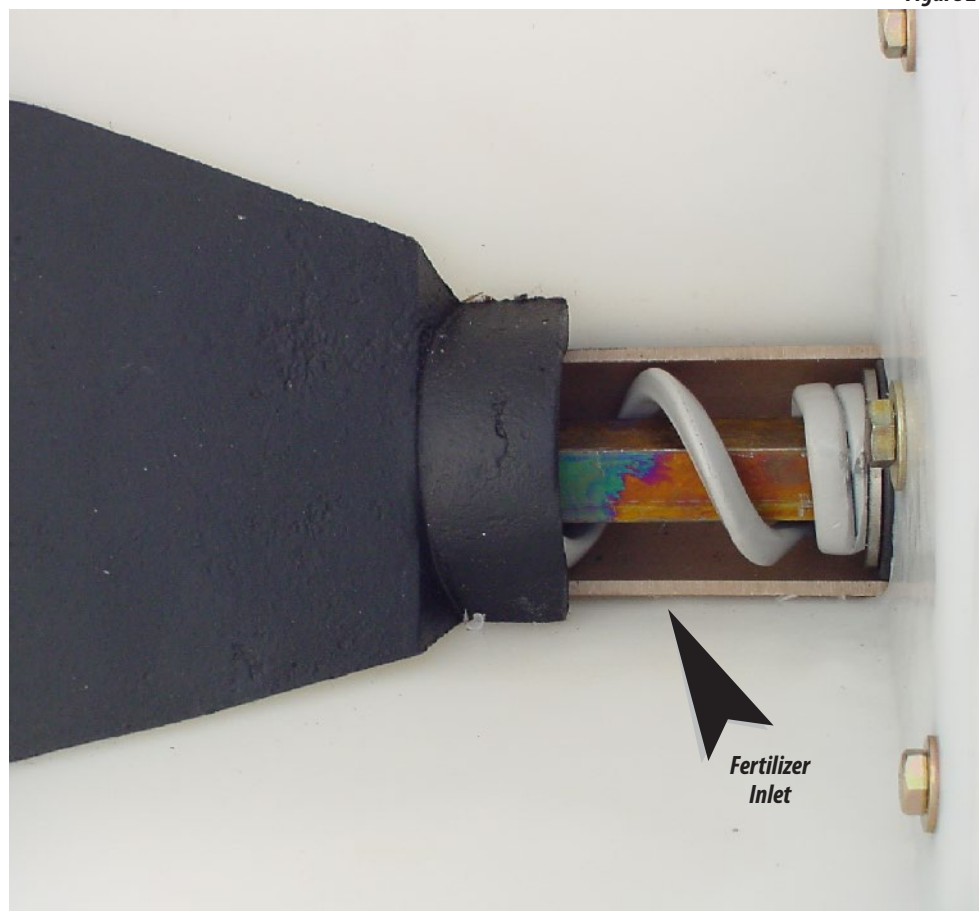


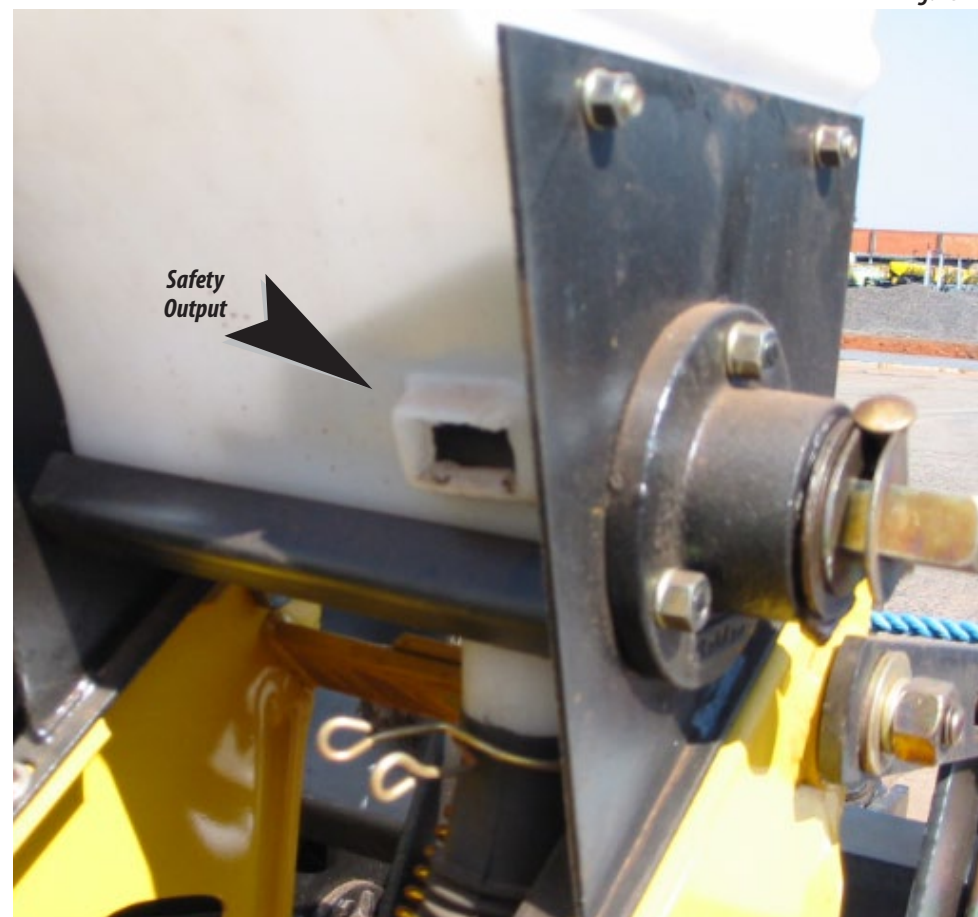
Figure 25

FERTILIZER DISTRIBUTION SYSTEM

01 - The fertilizer distribution system is composed by an helical floating 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.

Figure 26

01 - 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 27**FERTILIZER DISTRIBUTION**

LUBRICATION

- 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 32 and 33).

GREASE TYPES TABLE AND EQUIVALENTS

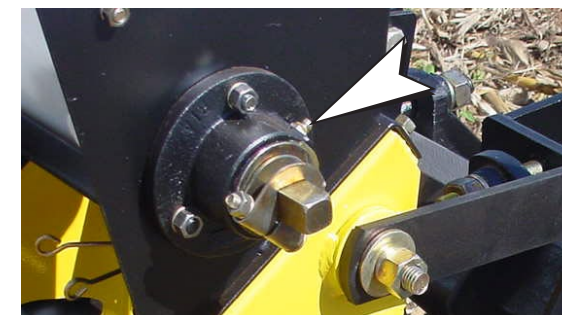
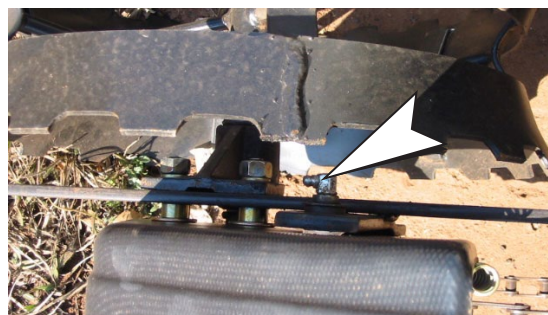
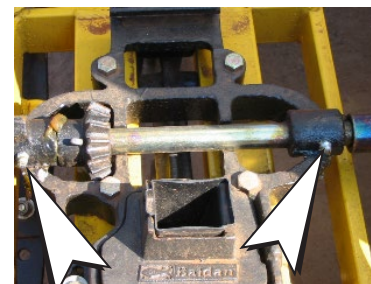
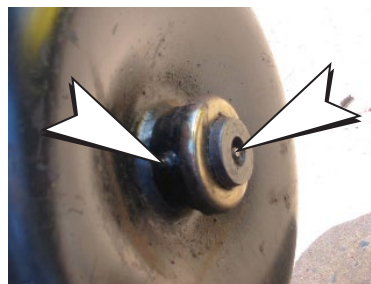
SUPPLIER	RECOMMENDED GREASE TYPE
Petrobrás	Lubrax GMA 2
Atlantic	Litholine MP 2
Ipiranga	Super Graxa Ipiranga Ipiranga Super Graxa 2 Ipiflex 2
Castrol	LM 2
Mobil	Mobilgrease MP 77
Texaco	Marfak 2 Agrotex 2
Shell	Retinax A Alvania EP 2
Esso	Multipurpose grease H Litholine MP 2
Bardahl	Maxlub APG 2 EP

Table 21

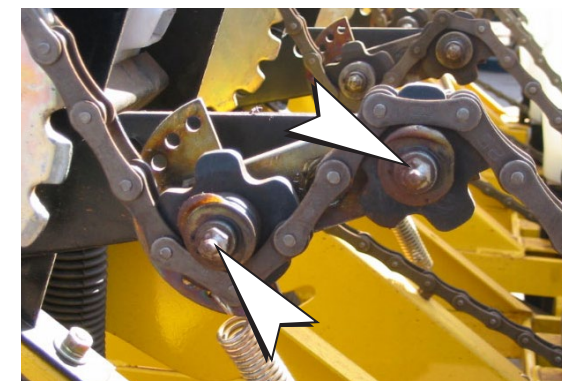
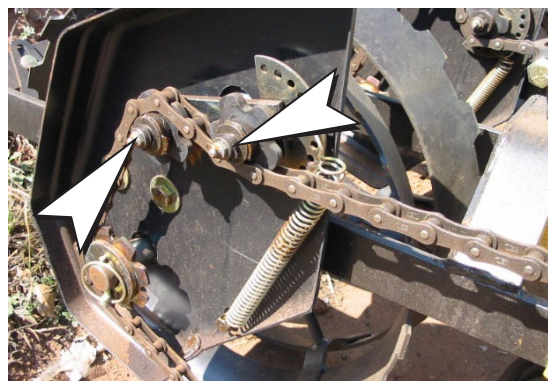


** You can also use other equivalent types of grease that are not specified on this table. (see manufacturers specifications)*

LUBRICATE AT EVERY 10 WORKING HOURS



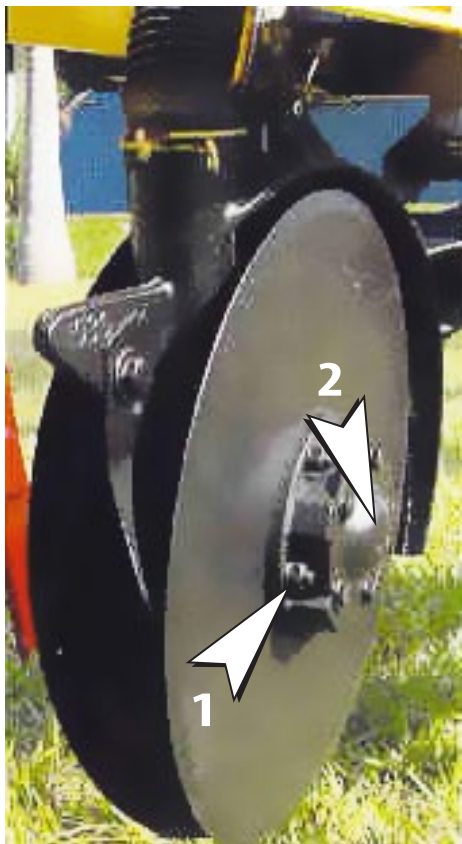
CHAIN STRETCHER



LUBRICATE AT EVERY 200 WORKING HOURS

• 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 retighten bolts (1).

**LUBRICATION**

MAINTENANCE

OPERATIONAL MAINTENANCE

PROBLEM	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. 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.

FERTILIZER SYSTEM

- 01 - Remove all fertilizer in the hoppers before machine storage. The hoppers can be cleaned as follows:
 - Remove lock (1), loosen nuts (2) and pull hub with sprocket and shaft (3).
 - Now you can clean the hopper and all other components. Assemble the unit, noticing the correct position of the parts. Failure on the assembling of any component can compromise fertilizer distribution.
- 02 - Before the storage of the planter, make sure it is completely clean. Replace all damaged or warred component. Keep unit out of rain and sun conditions.

IMPORTANT | While assembling the distribution shaft (3) make sure it is turning free, even when the fertilizer is in the hopper.

SEED SYSTEM

- 01 - Clean all seed hoppers, distribution system and plates on daily basis. This is very important in order to maintain a precise seed distribution.

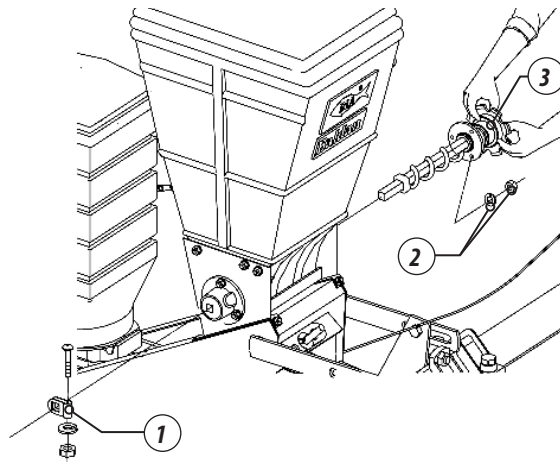


Figure 31

IMPORTANT | Whenever using chemicals for seed treatment, we recommend you clean the system twice a day, or at every hopper filling procedure.

GENERAL CLEANING

- 01 - Remove the transmission chains and keep them into oil until the next planting season.
- 02 - Lubricate the planter according to this instruction manual.
- 03 - Check all component and replace all damaged and warred part. Use only Baldan original parts.
- 04 - Store the planter under covered, keeping the unit away from rain and sun.
- 05 - 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.

CLEANING

OPERATION

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 - Quando trabalhar com máquinas hidráulicas como a PLB Directa, verificar se, com carga média até máxima (depósitos de adubo e semente da metade para cheio), o trator não apresenta tendência de empinamento quando levantar a mesma. Caso isso ocorra, é necessário lastear a frente do mesmo com carga em torno de 120kg a 150kg. Essa necessidade varia de acordo com modelo e marca do trator utilizado.
- 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

- 05 - In case you cannot achieve the exact distance, set it the closest to can get.

RESUME OF ADJUSTMENT AND OPERATION

- 01-Lubrication;
- 02-Hitching to the tractor;
- 03-Row markers;
- 04-Spacing between rows;
- 05-Seed calibration and distribution;
- 06-Fertilizer calibration and distribution;
- 07-Plactical test for seed and fertilizer calibration;
- 08-Position and depth of fertilizer in the soil;
- 09-Furrow opening and depth of seeds;
- 10-Cutting coulter (No-Till);
- 11-Covering and compactation;
- 12-Operations - Important tips.

PRODUCT IDENTIFICATION

- 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



01 points to the Model field.

02 points to the Serial Number field.

03 points to the Date field.

! 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.



PUBLICATIONS

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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

IDENTIFICATION

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.: _____

Invoice No.: _____

Date of Purchase: ____ / ____ / ____

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 responsibility.

At the guarantee 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 ability 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 which 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 which 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 become invalid when notice that the damage or defect is the result of incorrect use of the product, of instructions non-observance or operator's inexperience.

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

The material or manufacture defects, object of this certificate of guarantee, will not be, by any hypothesis, 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 accessing 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 manufacturer's prescription.
- **DELIVERY SERVICE:** The user was informed about the current guarantee terms and instructed about maintenance care and utilization.
- I confirm that I was informed about the current guarantee terms and instructed about the correct utilization and maintenance of this product.

Product: _____

Serial Number: _____

Date: _____ **Bill of sale:** _____

Store: _____ **City:** _____

State: _____ **Zip code:** _____

Owner: _____ **Phone:** _____

Address: _____ **Number:** _____

City: _____ **State:** _____

E-mail: _____

Date of sale: _____

Signature / Store's stamp: _____

1st page - Owner

CERTIFICATE OF GUARANTEE

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 manufacturer's prescription.
- **DELIVERY SERVICE:** The user was informed about the current guarantee terms and instructed about maintenance care and utilization.
- I confirm that I was informed about the current guarantee terms and instructed about the correct utilization and maintenance of this product.

Product: _____

Serial Number: _____

Date: _____ Bill of sale: _____

Store: _____ City: _____

State: _____ Zip code: _____

Owner: _____ Phone: _____

Address: _____ Number: _____

City: _____ State: _____

E-mail: _____

Date of sale: _____

Signature / Store's stamp: _____

2nd page - Store

CERTIFICATE OF INSPECTION AND DELIVERY

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

Product: _____

Serial Number: _____

Date: _____ Bill of sale: _____

Store: _____ City: _____

State: _____ Zip code: _____

Owner: _____ Phone: _____

Address: _____ Number: _____

City: _____ State: _____

E-mail: _____

Date of sale: _____

Signature / Store's stamp: _____

3rd page - Manufacturer



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