

IDENTIFICATION

Owner:

.....

Address:

..... N°

Telephone:

City: State

Zip Code: -

Machine Model:

Serial Number:

Manufacturing Year:

Invoice N°:

Date / /

Authorized Dealer

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WARRANTY CERTIFICATE

1. **JUSTINO DE MORAIS, IRMÃOS S/A – JUMIL**, guarantees the agricultural equipments and its respective parts, of its manufacturing, hereinafter simply denominated **PRODUCT**, are free of workmanship defects, as in its construction as in the material quality.

2. The questions which are related to the Warranty Grant are ruled as per the following principles:

2.1. The constant warranty of this certificate will be valid:

a) By the 6 (six) months time counting from the date of the effective **PRODUCT** delivery to the agriculturist consumer;

b) Only for the **PRODUCT** that will be acquired, new, by the agriculturist consumer, directly from the Dealer or **JUMIL'S** Dealer, reserved and settled in the item 2.3.

2.2. Apart from the hypothesis in the sub-item, the Warranty to the consumer will be serviced by **JUMIL's** dealer.

2.3. If the **PRODUCT** is sold to the farmer by a dealer who is not **JUMIL's**, the right of Warranty will remain, but in this case, it must be made directly from **JUMIL**, in the terms of this Certificate.

2.4. The Warranty will not be granted if any damage to the **PRODUCT** or in its performance is caused by:

a) Negligence, imprudence or lack of operator's knowledge.

b) Non-observance of instructions and recommendations of use and maintenance cares, stated in this Instructions and Operator's Manual.

2.5. Likewise, the warranty shall not be granted if the **PRODUCT** undergoes suffer any transformation or modification after the sale, or if the purpose that destinies the product is altered.

2.6. The replaced or changed **PRODUCT** under this Warranty will be **JUMIL's** Property, it must be returned to the customer after legal applicable requirements are fulfilled.

2.7. In the accomplishment of its constant evolution, **JUMIL** makes, permanently, to its products the improvements or modification, without having the obligation of making the same ones in products or models previously sold.

2.8- **JUMIL** will not be responsible by the indemnity of any harvest damage, due to inappropriate adjustment of **PRODUCT** devices, relative to the fertilizer or seed distribution

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1 - INTRODUCTION

Congratulations, you have just purchased an equipment which is manufactured with the most modern process in technology and efficiency on the market, it is guaranteed by the well-known **JUMIL** Trade Mark.

This manual has the aim of instructing you in the correct use so that you can get the best performance and advantages the equipment has. For this reason, we recommend you to proceed with your attentive reading before working with the equipment.

Always keep it in a safe place in order to be easily checked whenever necessary.

JUMIL and its dealer network will always be at your service for information and technical explanations what is may be necessary for your product.

Fone: (16) 3660-1061

Fax: (16) 3660-1116

WebSite: www.jumil.com.br

2 - PRESENTATION

Your planter was developed to provide to the small and medium agriculturist the possibility of making the no-till planting.

The big agriculturist is also a usuary of this machine for begin the no-till planting system in small areas of his properties and to work in small stripes of land, where the use of the big machine becomes enviable. During its development it was tried to ally the practicability to the simplicity. So, the localization of the fertilizer distribution system joined with the furrower that besides to favoring the machine penetration also prepares the soil to facilitate the root penetration. The perfect design of the pantograph was tested in field together ell-known institutions and in farmers with exigent agriculturists. Everything giving to the buyer of this machine, the sure of a quality product that will go satisfy your needs, making the no-till planting in an easy way (it was eliminated the frontal bar) and without provoking problems of lack of weight in the frontal wheels of the tractor because the lever effect in the back.

The completely remodeled seed distribution system with new little box of dosage, new ring, new tube of seed discharge, makes possible a distribution with more precision.

The fertilizer distribution system that is also remodeled, allows a more uniform and precise distribution, placing this machine among one of the most precise of the market in the fertilizer distribution.

As it is equipment that allies quality with technology it is necessary that uses this manual to get its largest acting.

In case of doubt, contact our technical services.

Phone: (16) 3660-1061

Fax: (16)3660-1116

e-mail:vendasmaq@jumil.com.br

3 - NORMS OF SAFETY

When **JUMIL** manufactures its Agricultural Machines and Implements has the main objective to help the Man to develop a better LIVING STANDARD. However, in the use of these machines some cares must be RESPECTED:

DO NOT DESTROY THE UNIVERSAL BIOLOGICAL EQUILIBRIUM WITH INCORRECT AGRICULTURAL WORKS. NOR ALLOW THE MACHINE TO DESTROY IT. OBSERVE STRICTLY THE SAFETY STANDARDS. BE ATTENTIVE!

1) Always use the appropriate stairs and rails to get on or off the tractor.

2) When starting the motor, be correctly seated on tractor operator's seat and **ABSOLUTELY AWARE** of the complete knowledge of the use of tractor and equipment. Always use the tractor neutral gear, switch off the power takeoff and put the hydraulic command in a neutral position.

3) Do not use the tractor in closed rooms as the smoke from the exhaust pipes are toxic gases.

4) When maneuvering the tractor to be hitched to machine or implements, make sure there is enough room and there is nobody around, make the maneuvers in **SLOW GEAR** and be prepared to brake it in an emergency.

5) When using equipments **DRIVEN BY THE POWER TAKEOFF** (to hitch, to unhitch or to adjust) **STOP THE POWER TAKEOFF, STOP THE MOTOR AND REMOVE THE KEY FROM THE IGNITION. BE ATTENTIVE!**

6) When using loose clothes, always take care, do not get closer of the moving parts, your clothes can touch them and cause accidents.

7) Do not make any adjustment when the machine is being operated.

8) When working with implements or machines. **IT IS STRICTLY FORBIDDEN THE TRANSPORT OF ANY OTHER PERSON BEYOND THE OPERATOR, AS ON THE TRACTOR AS ON THE IMPLEMENT**, in case there is a seat or appropriate platform for this finality.

9) When working in steep areas, work with a total attention, always keep the necessary stability, in case of a lack of equilibrium, reduce the acceleration and keep the equipment on the soil then turn the tractor wheels to a descendant position.

10) On down the hills, always keep the tractor in geared position, the same you would use to go up.

11) When transporting the machine hitched to the tractor or turning it at the crop corners, we recommend you to take care, by reducing the speed to prevent force on the toolbar or drawbar.

12) Unless in specific occasion, the brake pedals must be connected on another (not independently).

13) If after hitching the implement to the hydraulic three points lift,

and you realize its front is too light and it can go up, add necessary weights on its front.

14) When leaving the tractor, put the gear in neutral position, lower the implements which are raised, put the hydraulic command system in a neutral position and action on the stop brake.

15) When the tractor is not used for a long period, besides the previous procedures, stop the tractor motor and use the first gear if you are on a steep road and rear gear if you are going down the hill.

16) ALWAYS FOLLOW CAREFULLY THE SAFTE STANDARDS MADE BY THE TRACTOR'S MANUFACTURER.

17) A MAXIMUM CARE WHEN USING SEEDS WITH CHEMICAL TREATMENT, YOU MAY ASK FOR AN AGRONOMIST ASSISTANCE. DONOT MANIPULATE CHEMICAL TREATED SEED WITH BARED-HANDS.

17.1) ALWAYS WASH YOUR HANDS AND BODY EXPOSED PARTS WITH A LOT OF WATER AND SOAP, AT THE END OF EVERY WORK SHIFT, MAINLY BEFORE EATING, DRINKING OPR SMOKING.

17.2) Do not throw rest of treated seeds and/or pesticide next to drinkable water well, stream, river and lakes.

17.3) Do not re-use empty container and flasks.

17.4) Always keep the genuine package and always closed and in a dry, air place and of a difficult access to children, irresponsible people and animals.

17.5) Avoid contact with the skin.

17.6) Before using pesticides, READ THE LABLE AND FOLLOW INSTRUCTIONS.

18) when driving the machine on roads, observe the following additional instructions:

a) if the machine is equipped with row markers, the row marker arms must be raise and held with their corresponding disc to inside position.

b) The equipments with an inferior or over 3m width can be transported on roads since they have suitable signs.

c) The equipments which cover the tractor rear signing lights must have alternative read signal light.

ATTENTION

When receiving your JUMIL equipment, check attentively its components which are delivered with the equipment and read carefully the warranty certificate in the first page of instruction manual.

4 - TECHNICAL SPECIFICATIONS - JM2040

MODEL	JM 2040PD			
<i>Toolbar</i>	<i>1,80 m</i>	<i>3,00 m</i>	<i>3,40 m</i>	<i>3,86 m</i>
<i>Maximum N° of Rows</i>	<i>03</i>	<i>05</i>	<i>06</i>	<i>08</i>
<i>Minimum Spacing Among Rows</i>	<i>400 mm</i>			
<i>Fertilizer Box Capacity</i>	<i>39 lt</i>			
<i>Seed Box Capacity</i>	<i>39 lt</i>			
<i>Fertilizer Flow</i>	<i>100 to 1000 kg / ha</i>			
<i>Required Minimum Power</i>	<i>50 hp</i>	<i>60 hp</i>	<i>70 hp</i>	<i>80 hp</i>
<i>Hitching Pins</i>	<i>II Category</i>			
<i>Hitching Type</i>	<i>Hydraulic 3 points</i>			
<i>Transport Width</i>	<i>0,45 m per row</i>			
<i>Approximate Weight.</i>	<i>136 kg per row</i>			

5 - OPTIONAL PARTS

DESCRIPTION	CODE
FRONTAL FURROWER COMPLETE SET FOR MAIZE	28.01.140-6
RIGHT/LEFT ROW MARKER COMPLETE SET	32.40.135-3
SET OF THE PRESS WHEEL BAND 7X18	27.11.020-6
17" GROOVED CUTTING DISC SET WITH SUPPORT	27.13.010-0
SEED DISTRIBUTION KIT (PARTIAL)	32.40.870-6
CONVENTIONAL SEED DISTRIBUTION KIT	32.40.860-9
KIT FOR COTTON PLANTING	32.40.800-5
KIT FOR PEANUT PLANTING	32.40.850-1
KIT PEANUT PLANTING-PARTIAL	32.40.855-2
NO-TILL PLANTING KIT JM-2040 TOOLBAR 1,80/2 ROWS	32.40.820-0
NO-TILL PLANTING KIT JM-2040 TOOLBAR 1,80/3 ROWS	32.40.821-8
NO-TILL PLANTING KIT JM-2040 TOOLBAR 3,00/3 ROWS	32.40.822-6
NO-TILL PLANTING KIT JM-2040 TOOLBAR 3,00/4 ROWS	32.40.823-4
NO-TILL PLANTING KIT JM-2040 TOOLBAR 3,00/5 ROWS	32.40.824-2
NO-TILL PLANTING KIT JM-2040 TOOLBAR 3,40/3 ROWS	32.40.825-0
NO-TILL PLANTING KIT JM-2040 TOOLBAR 3,40/4 ROWS	32.40.826-9
NO-TILL PLANTING KIT JM-2040 TOOLBAR 3,40/5 ROWS	32.40.827-7
TOOTHED PRESS WHEEL	32.40.810-2
13" PARALLEL DOUBLE DISC CONVENTIONAL SEED ROW UNIT	32.40.917-6

5.1 - Discs and Wedges

For the seed distribution Jumil uses the horizontal drilled disc system, of larger precision due to the unique characteristics of project.

JUMIL possesses several discs for be used in agreement with the type of culture and/or seed size to be used.

DESCRIPTION	CODE
COTTON DISC 64FXE4,5F6,5X11,5	27.10.058
COTTON DISC 64FXE4,5XF5,5X10,5	27.10.057
COTTON DISC WITHOUT LINTER 40FXE5,0	27.18.607
RICE DISC 22FXE4,0XF14,0	27.10.063
RICE DISC 22FXE5,5XF12,0	27.10.142
RICE DISC 22FXE5,5XF13,0	27.28.699
RICE DISC 24FXE4,5XF14,0	27.10.064
JALO BEAN DISC 36FSXE6,5XF9,5X16,5	**27.28.711
BEAN DISC 41FSXE5,5XF7,5X13,5	27.28.545
BEAN DISC 72FDXE5,5XF8,0X12,0	27.10.072
BEAN DISC 80FDXE4,5XF7,0X10,0	27.10.071
SUNFLOWER DISC 20FSXE3,5XF5,0X11	27.28.591
SUNFLOWER DISC 20FSXE3,5XF6,0X12	27.28.590
SUNFLOWER DISC 20FSXE4,0XF7,5X15	27.10.148
SUNFLOWER DISC 20FSXE4,0XF8,5X17	27.10.161
SUNFLOWER DISC 24FSXE3,5XF5,0X11	27.28.566
SUNFLOWER DISC 24FSXE3,5XF6,0X12	27.28.567
PLAIN DISC E4,5	27.28.701
PLAIN DISC FOR MAIZE 24FXE4,5	27.28.709
MAIZE DISC 22FXE4,0XF13,0	27.10.143
MAIZE DISC 22FXE4,0XF14,0	27.10.139
MAIZE DISC 22FXE7,5XF12,0	*27.10.141
MAIZE DISC 24FXE4,0XF10,5X15,0	27.28.596
MAIZE DISC 24FXE4,0XF11,0X16,0	27.28.595
MAIZE DISC 24FXE4,0XF9,0X13,8	27.28.577
MAIZE DISC 24FXE4,0XF9,5X14,0	27.28.597
MAIZE DISC 24FXE4,5XF10,5X14,0	27.28.578
MAIZE DISC 24FXE4,5XF13	27.28.694

DESCRIPTION	CODE
MAIZE DISC 24FXE4,5XF14,0	27.28.700
MAIZE DISC 24FXE7,5XF12,0	*27.28.693
MAIZE DISC 28FXE4,5XF10,5X15,0	27.10.054
MAIZE DISC 28FXE4,5XF11,0X16,0	27.10.055
MAIZE DISC 28FXE4,5XF13,0	27.10.051
MAIZE DISC 28FXE4,5XF8,5X11,5	27.10.053
MAIZE DISC 28FXE4,5XF9,0X13,8	27.10.052
MAIZE DISC 28FXE4,5XF12,0	27.10.061
SOYBEAN DISC 110FXE4,5XF7,0	27.10.062
SOYBEAN DISC 38FXE8,5XF9,0X22,0	*27.10.146
SOYBEAN DISC 39FXE5,5XF8,5X15,0	27.10.159
SOYBEAN DISC 39FXE5,5XF8,5X15,0	27.10.159
SOYBEAN DISC 40FXE5,5XF7,5X19,0	27.10.158
SOYBEAN DISC 41FXE5,5XF7,5X13,5	27.10.157
SOYBEAN DISC 90FXE5,5XF10,0	27.10.081
SOYBEAN DISC 90FXE5,5XF7,5	27.10.060
SOYBEAN DISC 90FXE5,5XF7,5	27.10.060
SOYBEAN DISC 90FXE5,5XF8,5	27.10.080
SORGHUM DISC 20FXE4,0XF4,8	27.10.168
SORGHUM DISC 22FXE3,5XF4,0	27.28.588
SORGHUM DISC 22FXE3,5XF5,0	27.28.589
SORGHUM DISC 22FXE4,0XF7,0	27.10.150
SORGHUM DISC 45FXE2,8XF4,2	27.10.180
SORGHUM DISC 45FXE3,5XF5,0	27.10.056
SORGHUM DISC 72DXE3,0XF3,5	27.10.074
SORGHUM DISC 72DXE3,0XF4,5	27.10.073
SORGHUM DISC 90FDXE2,5XF4,5	27.10.169
SORGHUM DISC 90FXE3,5XF5,0	27.10.059

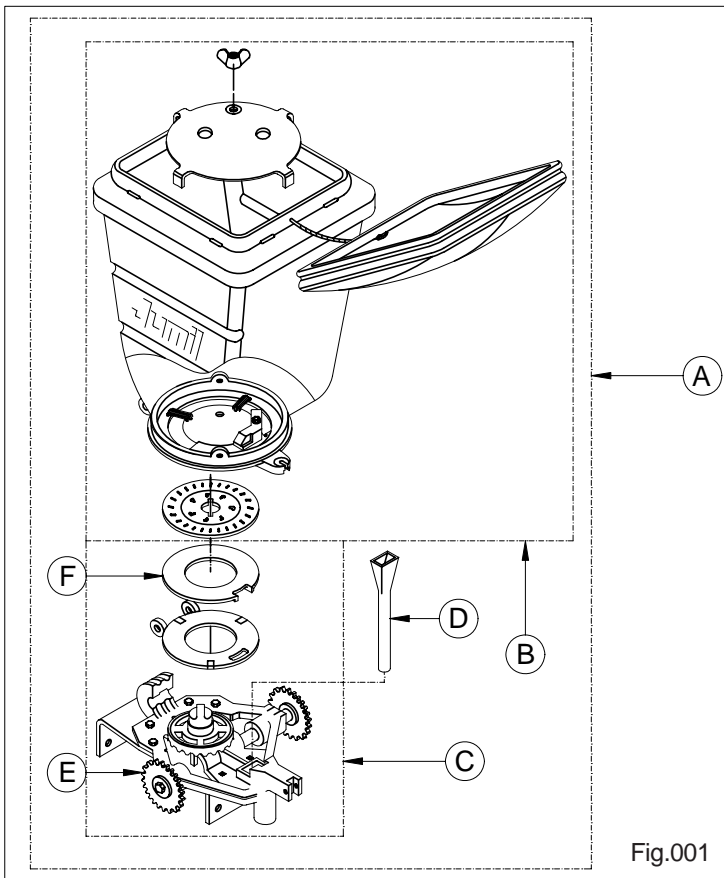
* Discs that do not use the wedge.

** Discs that use wedge of 2mm

5.2 - Kit for seeding (Optional Parts)**1 - Kit for seeding of Conventional Grains(Optional)**

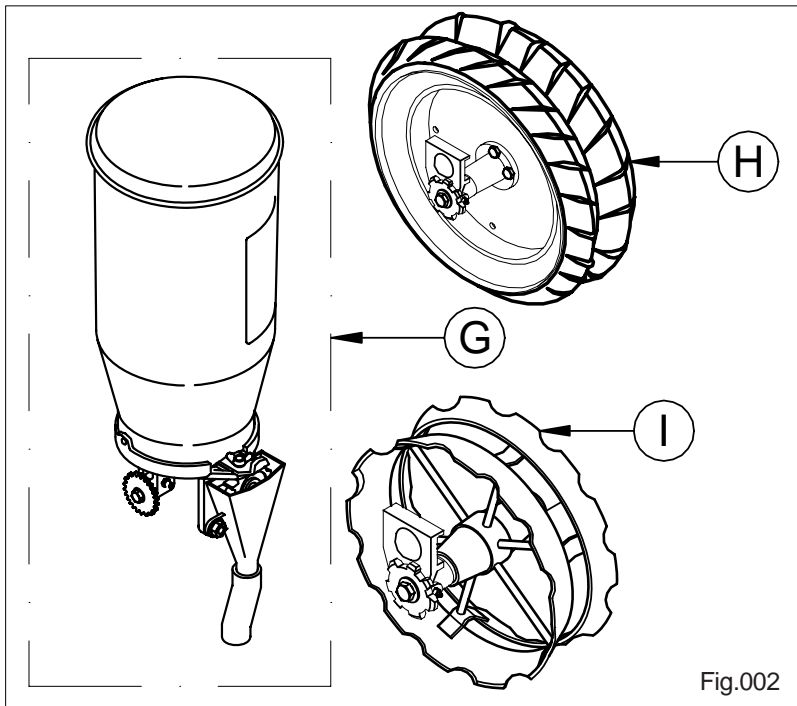
In case of acquisition of kits for assembly, come in the following way:

- 1-Remove the subset "K" (Fig.003) or the set "G" (Fig.002).
- 2-Set up the subset "B" (Fig.001) or the set "A" (Fig.001).
- 3-Remove the conductor "M" (Fig.003) from the subset "L".
- 4-Place the conductor "D" (Fig.001) from the subset "C" (Fig.001)
- 5-Remove the gear "N" and 05 links of the chain "O" (Fig.003) from the subset "L".
- 6-Place the gear "E" (Fig.001) from the subset "C".



2 - Kit for seeding of cotton with linter (Optional)

- 1- Remove the set "A" (Fig.001) or the set "K" (Fig.003).
- 2- Set up the set "G" (Fig.002).
- 3- In the case of requesting the wheel change, change the wheel "H" (Fig.002) by the wheel "I". (Fig.002).



3 - Kit for Peanut Seeding (Optional).

1- Remove the subset "B" (Fig.001) or the set "G" (Fig.002).

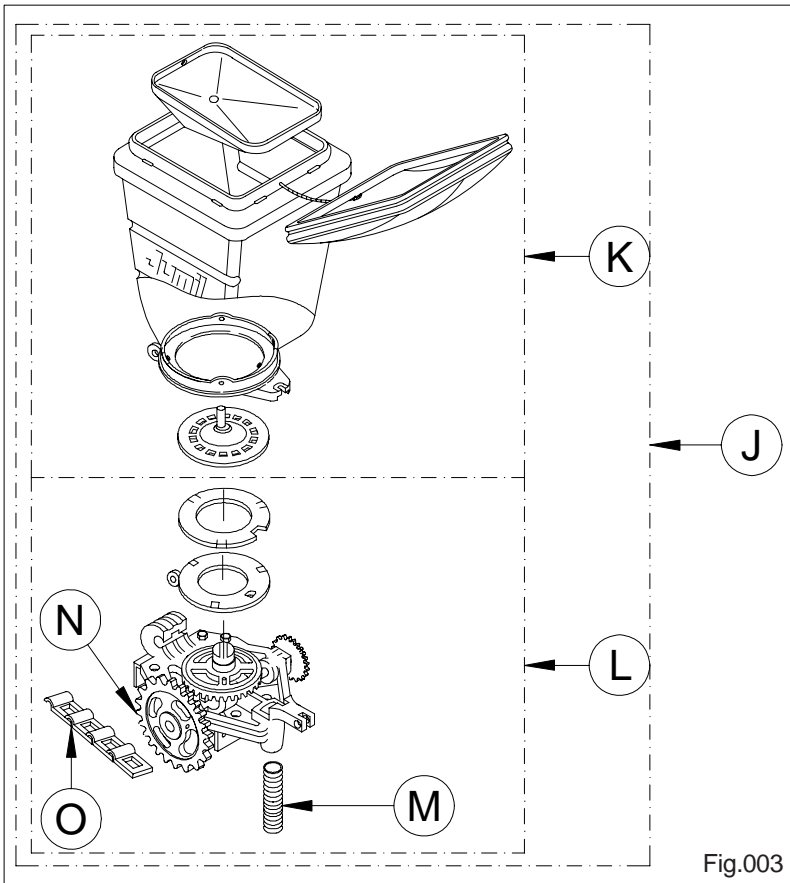
2- Set up the subset "K" (Fig.003) or the set "J" (Fig.003).

3- Remove the conductor "D" (Fig.001) from the subset "C" (Fig.001).

4- Set up the conductor "M" (Fig.003) from the subset "L".

5- Remove the gear "E" (Fig.001) from the subset "C".

6- Place the gear "N" and 05 links of the chain "O" (Fig.003) from the subset "L".



⚠ ATTENTION

Loose the screws “A” to remove the base of the seeding “C”. Remove the conductor “B”.

With the disassembled base of the seeding “C”, place the conductor “D” and force it against the base “C” doing the rotation movement in counterclockwise sense.

Set up the base “C” again, doing with that the inferior extremity of the conductor “D” that is introduced in the support “E”. Tighten the screws wheel. See (Fig.004).

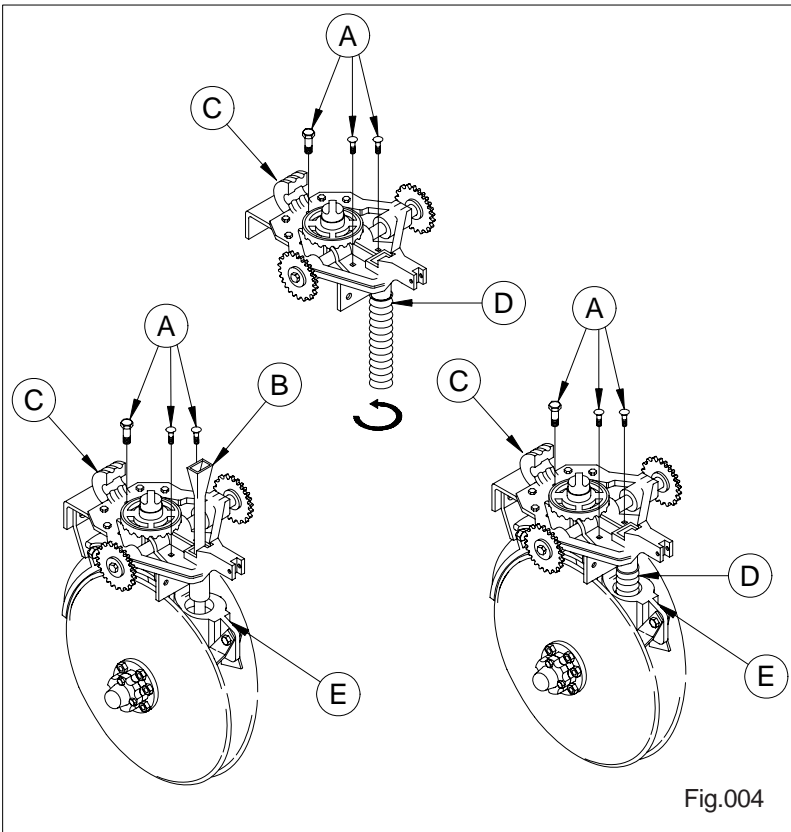


Fig.004

6 - PRODUCT COMPOSITION

Check the following items that accompany each row of your machine attentively:

DESCRIPTION	CODE	QUANT.
<i>GEAR Z-7</i>	<i>04.27.046-0</i>	<i>01</i>
<i>GEAR Z-8</i>	<i>04.27.047-9</i>	<i>02</i>
<i>GEAR Z-10</i>	<i>04.27.048-7</i>	<i>01</i>
<i>GEAR Z-15</i>	<i>04.32.015-8</i>	<i>01</i>
<i>GEAR Z-17</i>	<i>04.32.036-0</i>	<i>02</i>
<i>SET OF THE HOSE INFERIOR LOCK</i>	<i>27.08.005-6</i>	<i>02</i>
<i>MAIZE DISC SET 28FXE4,5XF9,0X13,8</i>	<i>27.10.052-9</i>	<i>01</i>
<i>SOYBEAN DISC SET 90FXE5,5XF7,5</i>	<i>27.10.060-0</i>	<i>01</i>
<i>SOYBEAN DISC SET 41FXE5,5XF7,5X13,5</i>	<i>27.10.157-6</i>	<i>01</i>
<i>GRASSHOPPER/SHEAVE SET Z4</i>	<i>27.10.174-6</i>	<i>01</i>
<i>HELICAL SHEAVE SET Z5</i>	<i>27.10.219-0</i>	<i>01</i>
<i>SET OF THE BRACE</i>	<i>32.30.080-8</i>	<i>01</i>
<i>HOSE SET N.2</i>	<i>32.50.088-2</i>	<i>01</i>

7 - PRODUCT ASSEMBLY

The machine leaves from the factory semi-assembled and it is necessary only to proceed with the assembly of the unities in agreement with the wanted spacing.

The spacing among rows is fundamental for any plant because it provides to them the same ideal conditions to their development and then they can produce the maximum of their potential.

For this, come in the following way: with the toolbar assembled in the tractor and lifted by the three-point hitch, determine and mark the center of the bar (with a tape measure or a thread with the length size that later will bend to the middle) and come in agreement the following specified:

1-) Working with odd number of rows – start from the correspondent point to the center of the bar, mark for each side (for the left and for the right) the half of the spacing that it will use, in other words, if will use the spacing of 0,80m should mark 0,40m for each side and so to get the foreseen spacing. Start from the obtained points and should mark the complete value of the spacing, in other words, 0,80m in this example.

Begin the fixation of the seeder units placing the first in the coincident point with the center.

2-) Working with even number of rows- proceed in agreement with the specified in the precious point. However do not place any unit in the coincident point with the center of the bar, but in the obtained points for each side. (Left and right from the center)

8 - PREPARATION FOR USE

The ***JM 2040 Fertilizer Planter*** makes possible the no-till planting and conventional planning.

In this phase you should already have made the planning of the culture to be planted, and so will have all the necessary elements to regulate the machine and to get to take advantage of whatever it can offer.

8.1 - Preparation of the seed distribution units.

The seed distribution is made through the horizontal drilled disc system. As there is a great variation in the size and format of the seed, there is need to check the disc with advance and to check if it is the most appropriated to the seed size that will use.

For that, place the disc in a plain surface and with a representative sample of the seeds; place the seeds in the holes of the disc.

The size adaptation of the holes to the seed size only will occur if fit the adequate number of the seeds per hole and should have take care if there is the possibility of the fitting of a superior number of seeds than the specified or because of the hole be very small it doesn't allow the fitting of the majority of the seeds. The valuation must be in a careful way because the perfect adaptation of the disc to the seed size is a primordial factor for a good seed distribution that is one of the conditions for a good productivity.

If the disc is not the more adequate because its size, shape and/or number of holes, consult our technical services.

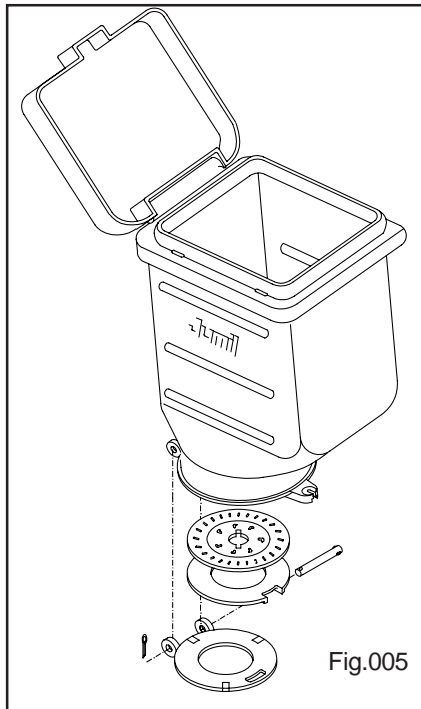
Jumil possess several discs to use in agreement with the culture type and/or seed type to be used.

Ps: consult the item optional parts of this manual.

8.2 - Change of the discs for seed

To make the assembly or change of the disc, loosen the butterfly, loosen the lock and after turn the deposit back. Remove the disc and in the same position place the wanted disc, observing the recording that indicates "THIS SIDE DOWN".

Ps: disc options: seed discs and wedges.



8.3 - Seed Distribution Box

To make the substitution of the grasshopper/sheave set, remove the seed distribution box that is fixed in the seeding block, after remove the shaft, substitute the grasshopper and sheave set and later remount the set.

Due to great variety of discs with several drillings, for each type and size of the seeds, it is necessary the use of specific sheaves. We related the existent models bellow and they should be used in agreement with the chart of the discs.

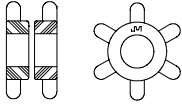
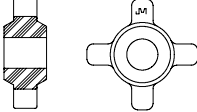
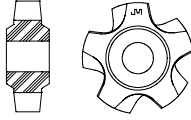
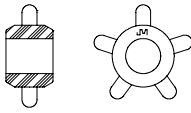
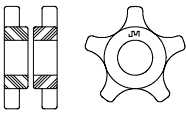
A-27.10.249- Straight sheave Z6 that is suitable for SOYBEAN AND SORGHUM culture. (It leaves assembled in the machine and two sheaves are used for each set).

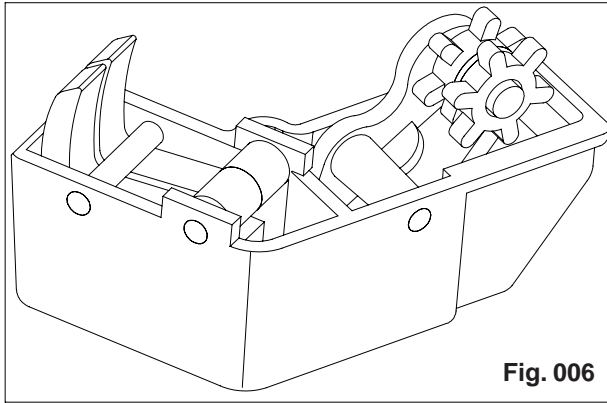
B-27.10.239- Straight sheave Z4 that is suitable for MAIZE culture. (It accompanies the machine).

C-27.10.219- Helical sheave Z5 that is suitable for BEAN and SOYBEAN culture. (It accompanies the machine).

D-27.10.248 – Straight sheave Z5 that is suitable for SORGHUM AND SUNFLOWER culture. (It is optionally supplied).

E- 27.10.219- Straight sheave Z5 that is suitable for BEAN AND SOYBEAN culture. (It is optionally supplied and two sheaves are used for each set).

27.10.249 - STRAIGHT SHEAVE Z6	27.10.239 - STRAIGHT SHEAVE Z4	27.10.219 - HELICAL SHEAVE Z5
<p style="text-align: center;">DOUBLE</p>  <p style="text-align: center;">* ASSEMBLED IN THE MACHINE</p>		
A	B	C
SOYBEAN - SORGHUM D-90 H	MAIZE	BEAN - SOYBEAN
27.10.248 - STRAIGHT SHEAVE Z5	27.10.218 - STRAIGHT SHEAVEZ5	
	<p style="text-align: center;">DOUBLE</p> 	
D	E	
SORGHUM - D-45 H SUNFLOWER	BEAN - SOYBEAN	



⚠ IMPORTANT

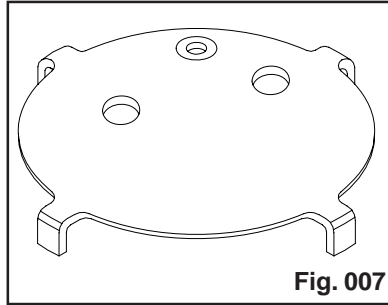
To improve the seed flow in the box and seed distribution, we recommended the use of lead powder in the mixture of the seeds. That care will avoid the obstructions and wastes of the components sensibly.

⚠ ATTENTION

Before place the seeds in the boxes it is important to check in the sets of seed distribution if the pawls are free because in the machine painting and it can happens the locking by the ink, hindering their movements and so provoking larger seed distribution. It is recommended scraping the ink excesses until that the pawl works freely.

8.4 - Deflector for Conventional Grains.

The deflector is a component used in the interior of the seed box to avoid the seed pressure on the limiter of the seed box, except for the rice planting. This system provides a more uniform distribution and also avoids damages to the seed.



8.5 - No-till or Coventional Planting

Your planter makes the no-till or conventional planting and in the no-till planting it is used the cutting disc set (optional) (Fig.008) and in the conventional planting the set can be removed.

8.6 - Cutting Disc of the no-till planting.

Destined to the cut of the soil and straw to make the planting with the respective fertilizer deposition, each row of the planter is equipped with a 17" cutting disc.

Your implement possess plain or grooved (optional) cutting disc system for the no-till planting (according to the soil conditions and agriculturist's option). The plain cutting disc has larger cut aptitude and penetration easiness, but in such soils and situations can provoke a "smoothing" in the walls of the furrow, what doesn't happen with the grooved disc. The cutting disc support possess pin that allows the lateral movement with the aim to facilitate the planting in soils with curves. The bearing possesses double conical roller bearings and protecting of dust protector and thread cleaner of the cutting disc.

The cutting disc adjustment is made through the nut that fasten the spring in the depth adjusting rod. When pressing the nut will give more penetration to the cutting disc. However, an excessive pressure in the spring will be able to difficult the penetration of the fertilizer and seed sets. So, the spring pressure should be regulated with the aim to make possible the cutting disc penetration. In this way, the straw is cut and it is made a quick cut in the soil.

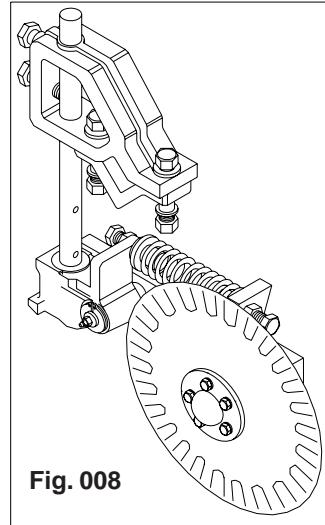


Fig. 008

ATTENTION

For the cutting disc to do a perfect work, it is necessary to always keep it sharp. For that, use the action of a file in the disc thread. As best is the disc thread, best is the cutting disc.

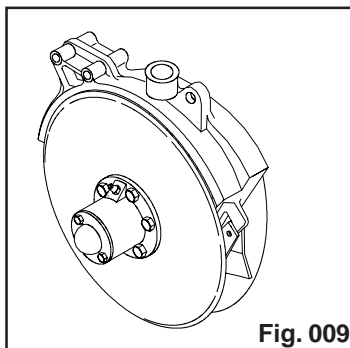
8.7 - Fertilizer Applicators

The fertilizer application is made through the offset double disc.

8.7.1 - Fertilizer Offset Double Disc

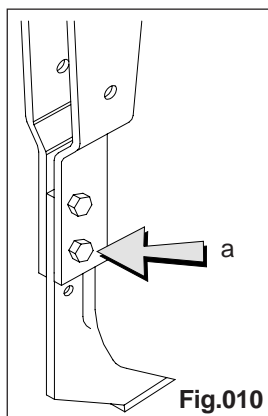
The fertilizer offset double disc (Fig.009) possesses in its interior a plastic fertilizer conductor with the aim of conduct the fertilizer in the ideal position for the germination and development of the plant. It is recommended the periodic cleaning of the same ones, because of the good condition it will depend on the regularity in the wanted distribution.

It is equipped with double conical roller bearing and individual cleaners in the discs.



8.7.2 - Retractable Furrowerl

The fertilizing furrower set possess system of fusible screw (Fig.010"a") that allows the disarmament of the furrower rod when finding any obstacle in the planting row.



9 - ADJUSTMENTS

9.1 - Quantity and Seed Distribution

The distribution and quantity of seeds are regulated by the change of drilled discs and by the exchange of the gears that accompany each seeding unit.

Next are presented the charts for the seed distribution and for seeding of several cultures. The suitable values are calculated and they are subject to variations, due to the factors of the skidding index of the driving wheel, soil conditions, seed irregularity and speed in the planting operation

1. SOYBEAN SEEDING

For the soybean seeding, each seeder unit accompanies 02 discs; one of 41 holes and the other of 90 holes. Both holes with drilling of diameter 7, 5.

2. MAIZE SEEDING

For the maize seeding, discs of 28 holes are used and being varied the dimensions of the holes according to the classification of the seeds.

3. RICE SEEDING

For the rice seeding is used the disc with round drilling. 27.10.064 (optional).

4. COTTON SEEDING WITH AND WITHOUT LINTER (OPTIONAL)

For the cotton seeding with linter the adjustment of the seed quantity to be distributed is made through the floodgate. (Fig.011 "a").

In relation to the gears of the traction wheel and of the seed distributor shaft we recommended to use the gear of 8 teeth in the traction wheel and the gear of 12 teeth in the seed distributor.

In the cotton seeding is not used the pressure alleviators. (deflectors).

There are several discs for cotton with linter that are supplied as optional.

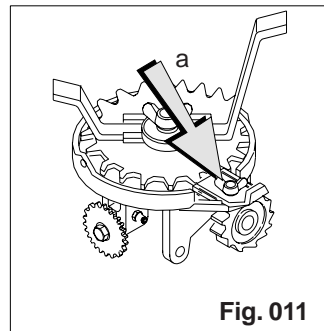


Fig. 011

5.SUNFLOWER SEEDING (OPTIONAL)

For sunflower seeding two discs are supplied as optional for be used according to the classification of the seeds.

6.SORGHUM SEEDING (OPTIONAL)

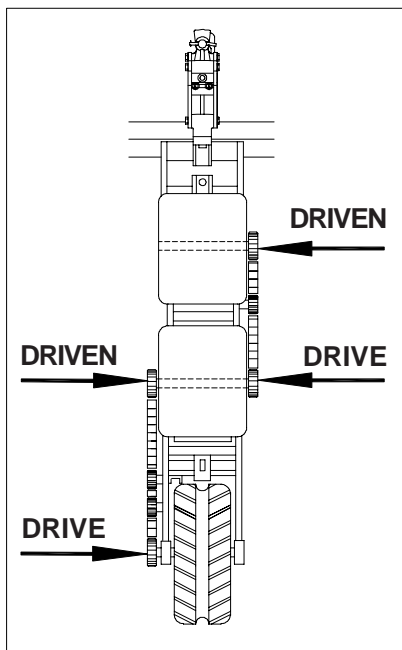
For sorghum seeding, there are several discs that are supplied as optional.

7.BEAN SEEDING (OPTIONAL)

For bean seeding should be used the discs in agreement with the bean variety, with the aim of reducing to the maximum breaks and other injuries that are suffered by the seeds.

⚠ ATTENTION

When beginning the planter adjustment, firstly adjust the seed and after the fertilizer



⚠ ATTENTION

After having placed the drilled discs and the gears in agreement with the charts, should be certified that the quantity distributed is really the wanted. For that to do practical tests before beginning the planting.

⚠ ATTENTION

To consult Jumil for the orientation on the seeding of other culture types.

 ATTENTION

When beginning the planter adjustment, firstly adjust the seed and after the fertilizer.

 ATTENTION

After having placed the drilled discs and the gears in agreement with the previous charts, should be certified that the quantity distributed is really the wanted. For that to do practical tests before beginning the planting.

 ATTENTION

To consult Jumil for the orientation on the seeding of other culture types.

 ATTENTION

There is a plain disc (model 27.28.701) that accompanies the row unit which can be holed by the costumer. This drilling can be made in agreement with the necessity with the exception of the rice planting. After the placement of the discs should be certified if the distributed quantity is really the wanted and it should be made through practical test, before beginning the planting.

9.2 - Drilling of the blind disc (thermoplastic)

The blind disc (27.28.701) that accompanies the machine can be drilled by the agriculturist being just enough to define the diameter and the quantity of holes.

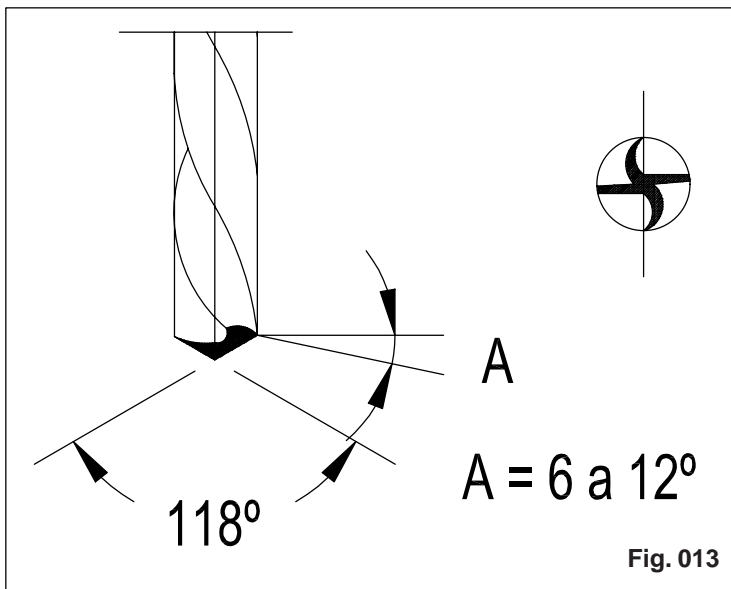
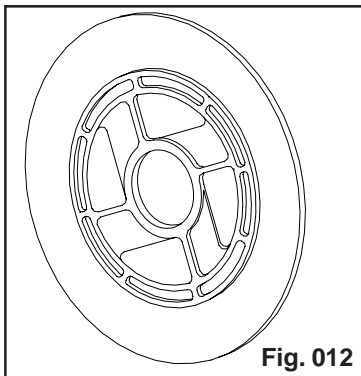
For to make the drilling, we recommended following the instructions below:

1-The disc should be very fixed and leaned in plain surface.

2-To use drill new or recently sharp preferably. (If the drill is not very sharp, the disc can be damaged).

3-The drill should be sharp with angles as it represents below.

4-After the drilling, ream the holes manually (stiletto) for eliminate the burrs.



9.3 - Preparation of the fertilizer distribution units

In your planter the fertilizer is distributed by a rotative plate and by a directional pawl that give a uniform distribution of the fertilizer quantity. The fertilizer quantity is regulated coming unfastened the butterfly (Fig.014 "a") from the regulator ring (Fig.014 "b") turning between 0 (close) and 8 (open) in agreement with the gradation scale.(Fig.014 "c"). The fertilizer is conducted by a rubber conductor that was specially developed to allow the fertilizer flow and the perfect fertilizer placement in the furrow.

The furrow openers for the fertilizer placement in the soil are of double disc with bearings of roller bearings and they have only one lubrication point for the bearings or furrowers with fertilizer conductor.

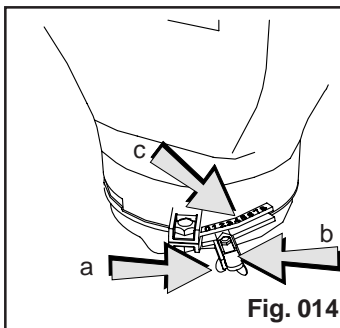


Fig. 014

For the easier adjustment of your planter, we presented to follow a very simple way to determine the fertilizer quantity.

For that it is just enough to use the formula that we presented, placing the real values that are the one of your farmer

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

In this case:

A- l s the area to be fertilized, expresses in m²;

B- l t is the spacing among the culture rows in millimeters;

C- t is the fertilizer quantity that wants to distribute in the area;

D- l t is the space to travel for the debit test of the fertilizer;

X- l t is the quantity in grams that should fall per row, after to travel the determined space.

Exemplifying if you want to distribute 350kg/Ha in a culture with spacing of 0,80m among rows should come in the following way:

$$X = \frac{B \times C}{A} \times D \qquad X = \frac{800 \times 350}{10000} \times 16 \qquad X = 448g$$

So, in 16 traveled meters will fall 448g/row.

If you wish to do a second test, come in the following way:

In a hectare, in other words in 10.000m²planted in 0,80m among rows, there are 12.500 lineal meters (10.000m²/0, 8m=12.500lineal meters). If in 16 traveled meters 448 g of fertilizer fell, in 12.500m will fall 350kg that is the intended dosage.

9.3.1 - Fertilizer Distribution Chart

WEIGHT IN GRAMS FOR EACH 10 TURNS OF THE WHEEL OR 16 METERS OF THE FURROW													
FERT. QUANT KG/ha	SPACING AMONG ROWS												
	40	45	50	55	60	65	70	75	80	85	90	95	100
100	64	72	80	88	96	104	112	120	128	136	144	152	160
150	96	108	120	132	144	156	168	180	192	204	216	228	240
200	128	144	160	176	192	208	224	240	256	272	288	304	320
250	160	180	200	220	240	260	280	300	320	340	360	380	400
300	192	216	240	264	288	312	336	360	384	408	432	456	480
350	224	252	280	308	336	364	392	420	448	476	504	532	560
400	256	288	320	352	384	416	448	480	512	544	576	608	640
450	288	324	360	396	432	468	504	540	576	612	648	684	720
500	320	360	400	440	480	520	560	600	640	680	720	760	800
550	352	396	440	484	528	572	616	660	704	748	792	836	880
600	384	432	480	528	576	624	672	720	768	816	864	912	960
650	416	468	520	572	624	676	728	780	832	884	936	988	1040
700	448	504	560	616	672	728	784	840	896	952	1008	1064	1120
750	480	540	600	660	720	780	840	900	960	1020	1080	1140	1200
800	512	576	640	704	768	832	896	960	1024	1088	1152	1216	1280
850	544	612	680	748	816	884	952	1020	1088	1156	1224	1292	1360
900	576	648	720	792	864	936	1008	1080	1152	1224	1296	1368	1440
950	608	684	760	836	912	988	1064	1140	1216	1292	1368	1444	1520
1000	640	720	800	880	960	1040	1120	1200	1280	1360	1440	1520	1600

9.4 - Row Marker

It is **IMPORTANT AND NECESSARY** the use of Row markers with the aim of doing a complete use of the land and at the same time the plants can be distributed equally and so they can make a good use equally of the soil conditions, nutritious elements, luminosity, etc. In the same way for to do mechanical works in the farming, there is need to dispose of rows with spacing absolutely equal otherwise will take the risk of damage the plants completely. Besides if we are if the marker badly regulated, giving a larger spacing, we will be placing smaller quantity of plants per area, with the inherent damage for lack of plants.

The row markers have several work positions as shows a (Fig.015).

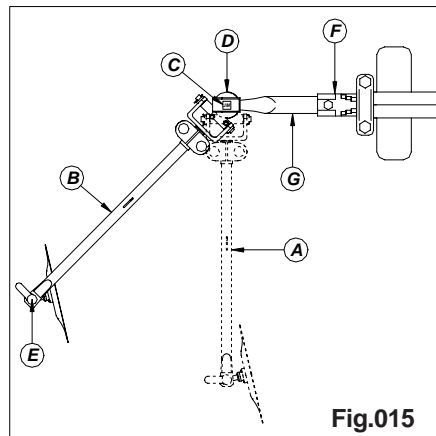
In the position "A" (Fig.0.15) the row marker is destined to lower spacing and the position "B" to higher spacing.

To change the row markers of position "A" to the position "B" it should loosen the "C" nut that ties the toothed jaw "D".

The second toothed jaw "E" of the set is destined to vary the work angle of the marker disc. The open furrow do not should be excessive; the disc position should be regulated until get a visible line in the soil that it is being worked.

The length of the support arm of the marker disc can be varied; coming unfastened the lock "F" being pulled or being pushed the telescopic tube "G", if wants to increase or decrease the arm length of the row marker.

Ps: This adjustment is so much valid for row marker of 10" as for the row marker with 13"fluted disc.

**Fig.015**

The arm total length of the row marker must be calculated by the formula:

$$D = \frac{e (n + 1) - b}{2} \quad \text{For the marking by the nearest tire from the sowed row}$$

$$D = \frac{e (n + 1) + b}{2} \quad \text{For the marking by the most distant tire from the sowed row}$$

Where :

D= Distance from the marker disc to the double disc center from the external seeding unit;

E= Number of rows;

n = Gauge of the tractor (in meters);

e = Spacing among rows.

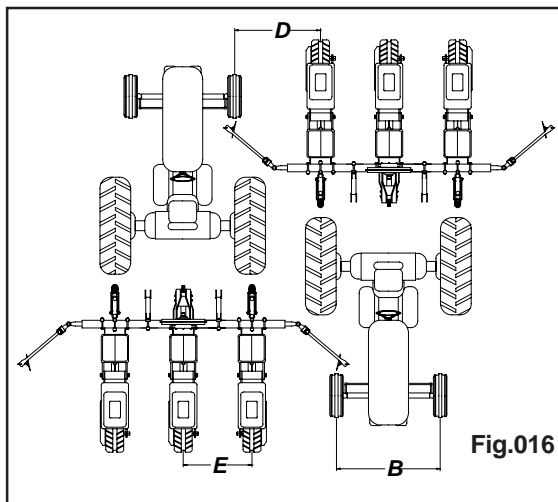
EXAMPLE:-

e = 0,70 n = 6

b = 1,42 m

$$D = \frac{0,70 (6 + 1) - 1,42}{2} = 1,74 \text{ m}$$

A (Fig.015) it illustrates the example above.

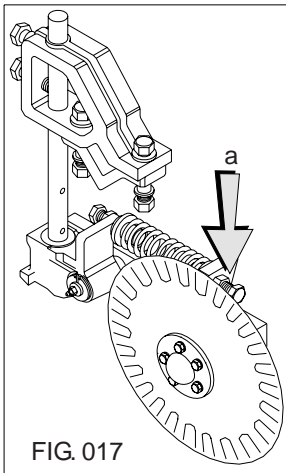


9.5 - Adjustments in the field

In this phase presumes that you already prepared your JM2040 to work, in other words, set up in agreement with the wanted spacing, regulated the quantity of fertilizer and seed in agreement with the soil and the culture and now it will beginning the planting. So, go with the tractor/planter machine for the field where will work. A practical way of getting a good adjustment is the following:

With the machine supplied with half load of fertilizer and seed and with a lower speed than the planting speed and without having made any adjustment type, in other words, as the machines leaves from the factory, drive the lever of the three-points hitch to low the machine and immediately will begin to fell and to analyze your work in relation to the situation (straw, type and soil condition, depth of the fertilizer placement, depth and number of seeds, meter, etc) then could proceed to corrections

9.6 - Cutting Disc Adjustment



The disc pressure on the soil and the force exercised by the thread of cut of the same on the straw is exercised by the action of the tensioning spring. However the action of this could be modified pressing or loosening the regulating nut. (FIG.017 "a").

If it is not having cut of the straw and if this is in good condition (degree of humid and maturation) loose the nut getting in this way to exercise a larger pressure of the disc on the straw. The exercised pressure by the spring should be controlled and tends the care of not exercising too much force, because if it is very hard, the tendency will be to lift the machine. However, normally in areas where it is planted the no-till planting system the soil does not present this characteristic and with a medium pressure of the spring, the disc makes a good cut of the straw and open the first furrow in the soil, and therefore it facilitates the double disc action of the fertilizer and seed.

9.7 - Furrower Adjustment

This accessory could be or not be used in your planter. In agreement with its function, its use is suitable when the soil is very hard (normally are soils where it is being planted the no-till planting system or where the system

is being badly conduct – rotation lack of the cultures, of straw or covering, etc) and the planter has difficult to penetrate. Its use is very simple, it leaves regulated from the factory and there is no need of another adjustment. For to work To work in a perfect way the cutting disc should cut the straw perfectly otherwise will lift the straw and it will cause the “stuffing” of the machine, hindering its operation. If happens the break of the fusible screw (Fig.018”a”) during the work, use commercial screw of the same measure.

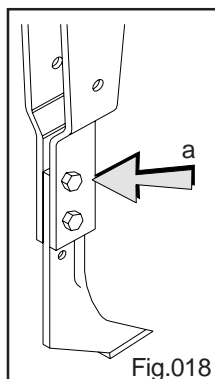


Fig.018

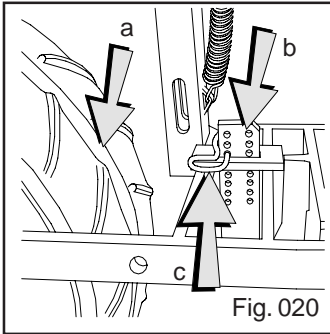
9.8 - Fertilizer Double Disc Adjustment

As we described the fertilizer is placed at an open furrow by the double disc. It is coupled to a pantograph (articulated parallelogram) that allows a perfect accompaniment of all the soil contours, in a way that the fertilizer is always positioned to the same depth, independently of the soil profile. Its work depth can be adjusted through the bush that will hinder a larger or smaller pressure to the spring. In the beginning, should use the adjustment that leaves from the factory and if it is need can give more pressure, alleviating the fixer screw of the bush, pressing it about 3cm from the base (a length of two fingers approximately) and pressing the screw again.

The double disc set and furrower can be aligned from the seed double disc being enough for that to alleviate the nuts from the clamps that secure the set and to move the set for the site pressing the nuts again.

9.9 - Depth adjustment and seed cover.

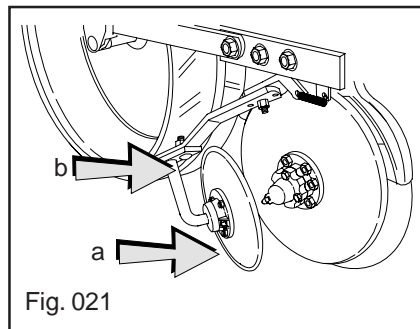
The seed depth placement in the soil is determined by the back press wheel ("a" Fig.020) through drilled sheet "b" of an exclusive design and of the locking pin "c".



The locking pin placement in a determined hole is what will determine as the wheel can arise, lowering in this way the set of the double disc. So, as more high the pin be placed higher will be depth and the more below the pin be placed, smaller will be the depth. There are two vertical lines of holes for your reference. The holes in the same line are distanced about 1, 0 cm (a centimeter). However as the lines are offset among a hole and another of a line for other, the distance is of 0, 5 cm. (half centimeter), what will allow to regulate the depth with a

lot of precision. However, should check in the field, opening the furrow, the real depth, the one that the seeds are placed.

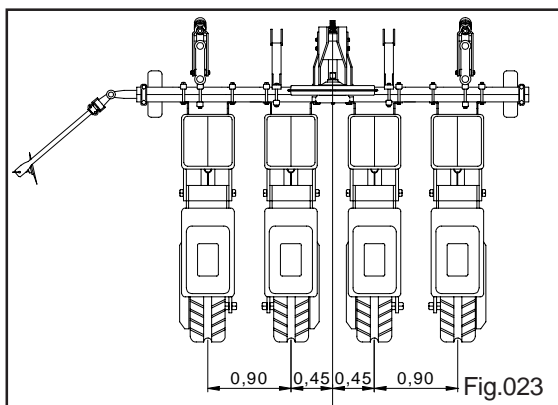
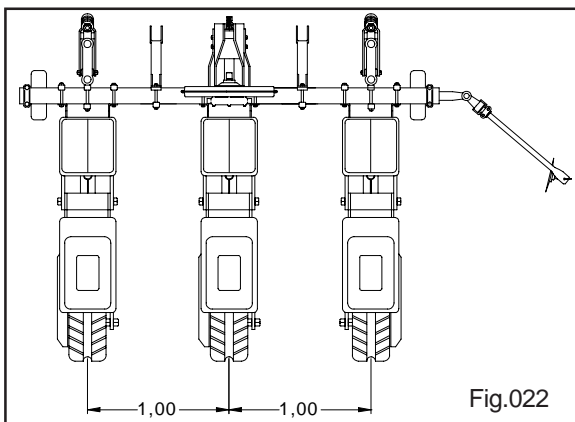
The seed cover is made by tow covering discs "a" (FIG.021) that are placed at the both sides. The contact angle of these discs can be regulated and so altering the quantity of earth that is placed above the seed. For that it is just being enough to alleviate the screws "b" and to modify the position of the discs. If we decrease the space among them, higher quantity of earth will be placed on the seed and it happen the inverse if we increase the distance among them.



9.10 - Spacing among rows

The spacing among rows or seeding units is made being marked firstly in the toolbar the wanted distances and is tended as reference the center of the same. So, for the spacing among rows it is used 3 seeding units in a toolbar and the two units of the extremity are distanced about 1,0m from the central unit. (Fig.022).

Another example would be the use of 4 seeding units, using the spacing of 0,90m in a toolbar of 3, 40 m. In this case it is measured starting from the center of 0,45m (half of the spacing) and a unit on the right side is placed and other on the left side to the center of the toolbar. The following units will be placed maintaining the spacing of 0,90m. (Fig.023)



10 - OPERATION

10.1 - Coupling to the tractor

The system of three points of the three-points hitch of the tractor makes possible that just an operator can make the coupling of the implement to the tractor; it is a quite practical system, being the system components (arms, tighter, threads of adjustment of the length of the arms, etc.,) are working well (see preparation of the tractor). For the coupling, choose a plane surface and with space for maneuver.

Align the back of the tractor with the area of coupler of the planter and reverse, (it should be with the motor in slow gear) getting close to the planter, until that the rotula of the left arm of the tractor is aligned with the left pin of the planter. Stop the tractor, maneuver the lever of the hydraulic system until the rotula to be in the same height, place the tractor in neutral point, drive the handbrake, leave the tractor and place the pin of the planter in the rotula of the tractor, fastening it with the respective parallel pin. After, tie the arm of the third point. For that, it is possible that there is need to modify the length of the same, acting on the nut of contrary threads. However, there is to be careful in fasten the tips, in way the one that the extremities stays halfway of the center, in other words, that a tip is not shorter than the other.

After tying the arm of the third point, if the pin of coupler of the planter is far away from the rotula of the arm of the tractor, acting on the arm of the third point (increasing or decreasing its length) we will get to move the planter to the perfect alignment with the rotula of the tractor.

If the distance to correct goes very big, that is sign that was not made a convenient alignment of the tractor with the implement. When aligning the pin with the rotula of the arm of the tractor, it can happen that the rotula is higher or lower than the pin. Like this, you will have to correct acting on the length of the arm. The support of the right arm always has possibility of modifying the size, usually with a driven lever of one device that acts on the thread. This possibility of the right arm to alter the size is that determines that the coupling always begins for the left side

10.1.1 - Tractor Preparation

Proceed to a general revision in the tractor, in way to make the planting without interruptions motivated by damages with the tractor - Remember that your period of planting is short, and it is dependent of climatic conditions, on which won't have influence. Like this, besides a revision in the motor and hydraulic system, proceed to a revision of the coupling system of three point, horizontal arms, vertical arms, tighter, threads of adjustment of the vertical arms, above all the right arm whose size is adjustable, thread of adjustment of the arm of the third point, ure of the tires, there is the necessity to do a ballasting with water in the tires to improve the traction, etc.

Verify and adjust the gauge of the tractor (center measure the center of the tires of the tractor), in agreement with the following rule:

SIMPLE TRACTION TRACTOR

Place the gauge (center to center of the tires) at an equivalent distance to twice the spacing used among rows.

DOUBLE WHEELED AND SIMPLE TRACTION TRACTOR

Place the gauge (center to center of the external wheels) as near as possible of an equivalent distance to four times the spacing used among rows.

SIMPLE WHEELED TRACTOR AND FOUR WHEELS TRACTION

Place the gauge (center to center of the tires) at a distance as near as possible of an equivalent to twice the spacing used among rows.

Verify the ure of the tires of the tractor in agreement with the recommended by the manufacturer, been able if necessary ballast the back tires with water, given that the traction effort in certain cases is big.

As the planter goes set up in the system of three points of the three-points hitch of the tractor, it is quite natural that the front of the tractor, in certain circumstances, tend to rise of the soil. To compensate that tendency, the tractor manufacturers place in the front of the same one a support destined to support weights, that are used to balance the tractor, should be retired when they are not necessary. A practical way of being determined the minimum quantity of weights to balance the tractor, is the following: in a scale, weigh just the wheeled of the front of the tractor, without the coupled implement.

After the coupling, place it in position of transport, in other words, with the implement in your higher position (completely raised by the hydraulic system) and weigh again the wheeled of the front.

It should place the necessary weights to obtain, at least, more of the half of the initial weight.

You should use the weights that they are supplied with the tractor, or to proceed to the acquisition of the same ones in an authorized resale, avoiding so much as possible, to place weights in the front wheels.

11 - LUBRICATION

11.1 - Lubrication Aims

The lubrication is the best warranty of the good operation and acting of the equipment. This practice prolongs the useful life of the parts and it helps in the economy of the maintenance costs.

Before beginning the work, be certified that the equipment is appropriately lubricated, following the orientations of the Plan of Lubrication.

In this Plan of Lubrication, we considered the equipment working in normal conditions of work; in severe services we recommended to reduce the lubrication intervals.

ATTENTION

Before beginning the lubrication, clean the greaser points and replace the damaged ones.

11.2 - Symbols of Lubrication



Lubricate with grease containing lithium soap, consistence NLGI-2 in intervals of recommended hours.



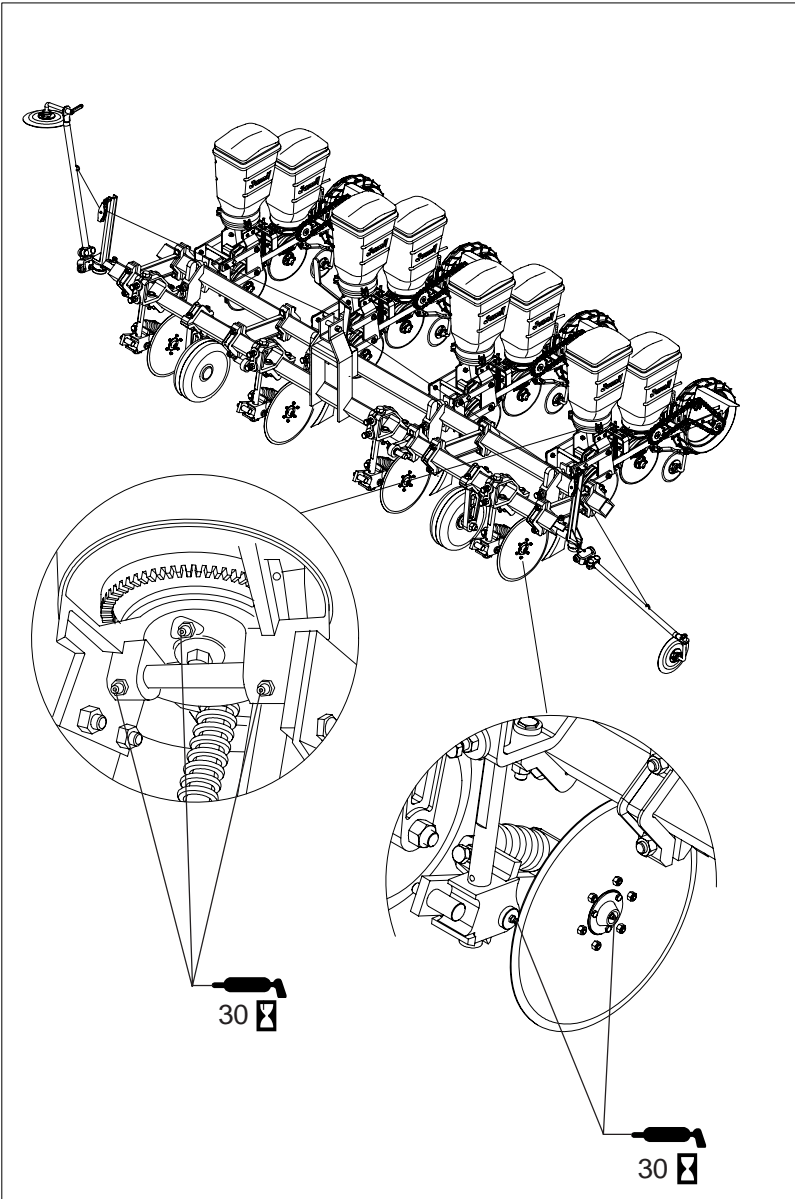
Lubricate with SAE 30 API-CD oil in intervals of recommended hours

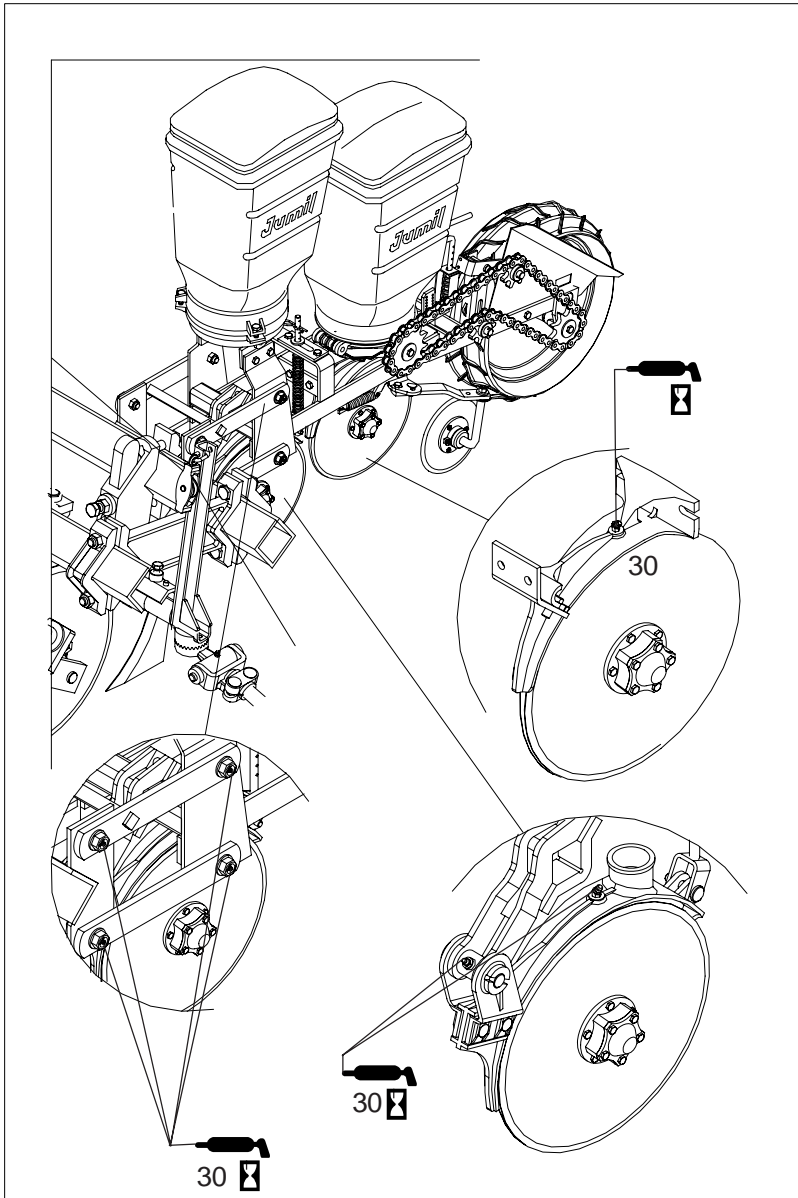


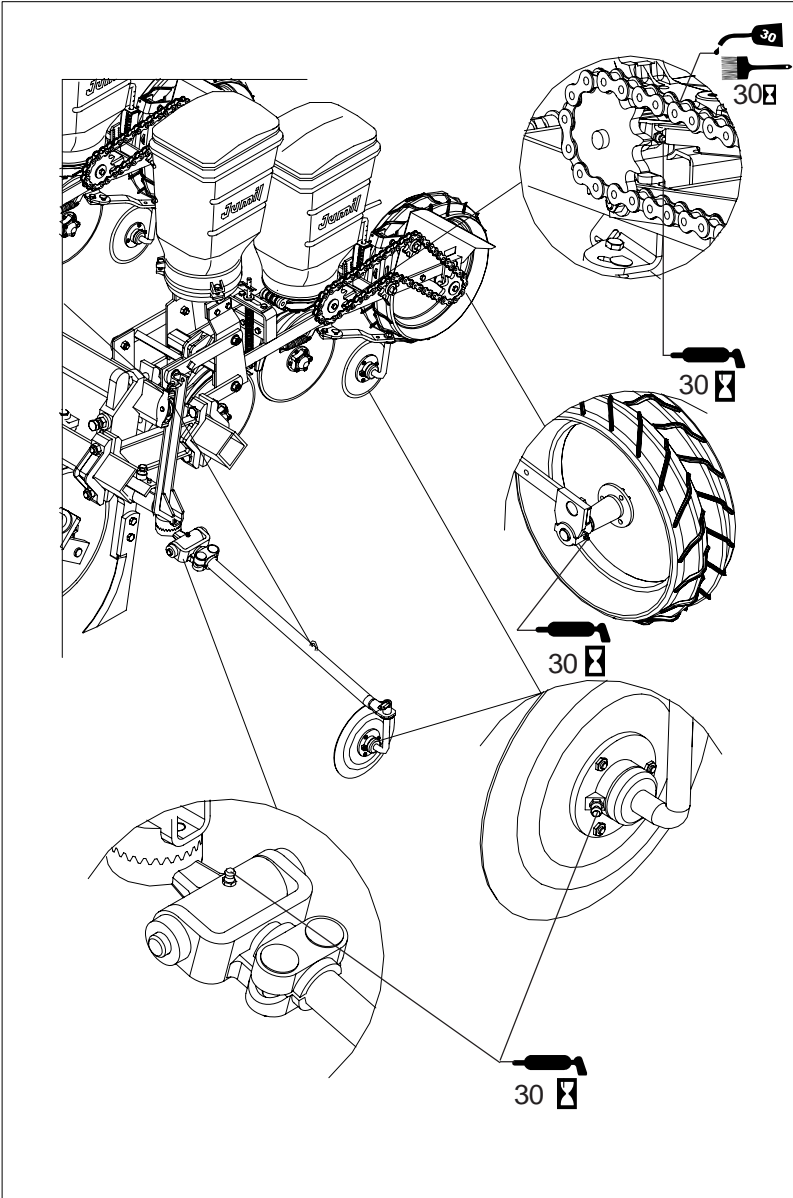
Cleaning with brush



Interval of lubrication in worked hours







12 - INCIDENTS, POSSIBLE CAUSES AND SOLUTIONS

ATTENTION

Before requesting the technical services, check the following items:

It is not distributing seed and fertilizer	
Possible Causes	Solutions
1- Empty boxes; 2- Obstructed exits;	1- Complete the boxes; 2-Check the pipelines. Do not reverse speed with the machine in work position;

Very irregular spacing between seeds	
Possible Causes	Solutions
1- High planting speed; 2- Driving wheels skidding; 3- Inadequate discs and/or rings. 4- Worn-out and or locked pawl and limiter of seeds; 5- Ratchet of the shaft sliding; 6-Tension lack in the chain.	1- To adjust the speed for 5 km/h; 2- To check the pressure and the condition of the tires, above all if it is working in no-till planting; 3-To select the recommended disc and ring; 4- To check the conservation state and cleaning, and if necessary to change; 5- To disassembly, to clean and if necessary to change; 6-To adjust the tensioner.

Fall of seed out of the furrower	
Possible Causes	Solutions
1- High planting speed; 2- Worn-out double discs; 3- Double discs out of the furrower.	1 - To adjust for 5 km/h; 2- To change and to align; 3- To level the machine, to adjust the depth and the pressure of the springs

Planting depth variation	
Possible Causes	Solutions
1- Badly prepared soil; 2- Pressure lack in the set; 3- High speed.	1 - To prepare the soil appropriately; 2- To adjust the pressure springs (the depth limiter wheels should exercise pressure on the soil, so that they can "copy and accompany" the soil profile); 3- To adjust for 5km/h.

Broken Seeds	
Possible Causes	Solutions
1- High planting speed; 2- Diameter of the disc holes is small; 3- Worn-out or locked pawl; 4- Inadequate thickness of the disc; 5- Badly placed disc; 6- Seeds not gauged; 7- Recently treated seeds (humid).	1- To adjust for 5km/h; 2- To use the adequate disc; 3- To unlock; to clean and/or to substitute; 4- To use the adequate disc; 5- To place the disc appropriately. (There is a mark marking: THIS SIDE DOWN). 6- To use the gauged seeds of good precedence; 7- To dry the seeds in the shadow. Sometimes the treatment alters the size seed, so the disc should be choose taking as base the treated seed. Use lead powder in the seed