



# PNEUMATIC PLANTER use & maintenance manual



PNEUMATIC PLANTER

***FUTURA***

***FUTURA*** *Maxi* CE



Prima di iniziare ad  
operare con la  
macchina, leggere le  
istruzioni per l'uso

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- Table:Customer's remarks
- Table: sowing (enclosed)
- Table: fertilizer (enclosed)
- Table: microgranulator (enclosed)

Details mentioned on the machine identification plate

Machine model

Serial number

Production year

Machine weight

Workshop authorized by **MASCAR**, where to address for further assistance interventions



MASCAR S.p.A.  
Via Roma, 82 – 36040 Grumolo delle Abbadesse (Vicenza) Italy  
Tel. **0444.380180**(r.a.) – Fax **0444.583831 – 380185**  
[www.mascar.it](http://www.mascar.it) – [info@mascar.it](mailto:info@mascar.it)

## SECTION 1

### Description and main characteristics

#### 1.1 INTRODUCTION

In this manual are described the information, the instructions and everything may be considered necessary for knowing, good use and normal maintenance of the pneumatic planter «FUTURA e FUTURA Maxi», here also called “machine”, produced by MASCAR di Grumolo delle Abbadesse (Vicenza) Italia, here called only Manufacturer.

Everything here mentioned has not to be considered as a detailed explanation of the different components and of the functioning, but the user will find, what is normally useful to know for the using in safety and for a good preservation of the machine. From the observance and the execution as described in this manual, also with a carefully maintenance, depends the right working, the duration in the time and the exercise economy of the same machine.

The non observance of what is described in this manual, the operative carelessness, the wrong use of the machine and the execution of modifications not authorized by the Manufacturer, can be cause of the warranty's cancellation by Manufacturer.



#### **CAREFUL**

Therefore, the Manufacturer declines every responsibility for damages due to carelessness and not observance as described in the present manual.



#### **DANGER**

The present manual is integral part of the machine and it must accompany it always and in its every moving or re-sale.

If it will be damaged or lost, it is necessary to ask immediately the Manufacturer for a copy.

#### 1.2 WARRANTY

The Manufacturer warrants his new products for a period of 12 (twelve) months from the purchase date, on the basis of the conditions reported in the price list and in the sale contract.

Verify at the delivery that any damage has occurred the machine, during the transport and that the fittings are integral and at complete.

Further claims should be presented in writing within 8 (eight) days from the machine reception.

### 1.2.1 EXCLUSION OF THE WARRANTY

The warranty decays (in addition to what is mentioned in the sale contract):

- Whether there should be a moving mistake due to the operator.
- Whether the damage should be caused for a not right maintenance. If after reparations made by the user without the permission of the Manufacturer or for the not original parts assembly, the machine should have variations and the damage should be due to these changes.
- Whether the instructions haven't been made according to this manual.

Warranty is void also in case of damages due to carelessness, negligence, bad use and not proper use of the machine.



#### **CAREFUL**

The removal of the safety devices, that the machine is equipped with, will cause the automatical decay of the warranty and of the responsibilities of the Manufacturer.

Moreover the warranty will decay if it has been used non-original spare parts.

The machine, or some of its parts, if returned also when under warranty, should be shipped with freight cost at user's charge.

### 1.3 IDENTIFICATION

Every machine, is equipped with a plate for the identification (20 pic. 1b), with the following details included:

- «CE» Marking
- Name and address of the Manufacturer;
  - a) Machine model;
  - b) Serial number;
  - c) Year of production;
  - d) Weight in kilos.

The details reported on the machine identification plate must be written down at page two of the present manual and must be always mentioned for further inquiries of spare parts and/or for assistance interventions.

The machine is standard supplied with:

- Use & maintenance manual of the machine;
- «CE» Declaration of Conformity .

### 1.4 USE OF THE MACHINE

The planter can work only through a PTO shaft (marked CE), applied to the rpm of a tractor, equipped with a lifting group, with universal three-points connection.

**The planter is a machine for agricultural works, for sowing on prepared soil.**

**Only one operator at the tractor driving is needed to make the different sowing operations.**

### 1.5 NOT EXPECTED USE OF THE MACHINE



#### **DANGER**

The operator should use the machine in conformity with what is reported in this manual.

**EVERY OTHER USE TO WHICH THE MACHINE COULD BE DESTINED, BUT NOT EXPECTED IN THIS MANUAL, EXEMPT THE MANUFACTURER FROM EVERY RESPONSIBILITY TO PERSONS, ANIMALS AND THINGS.**

### 1.6 SOUND LEVEL

The sound level (aerial noisy) has been recorded once the machine is in motion and at empty, the following levels are resulted:

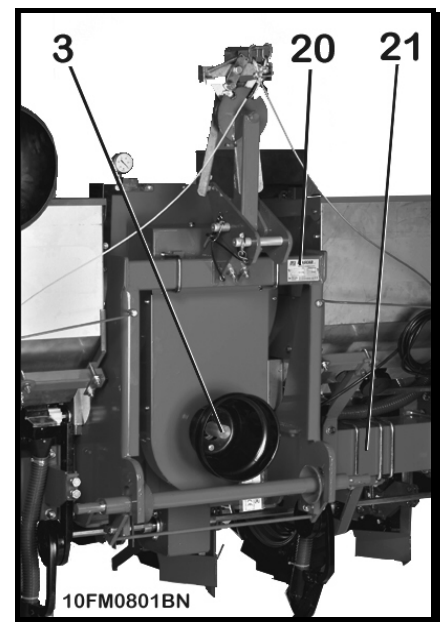
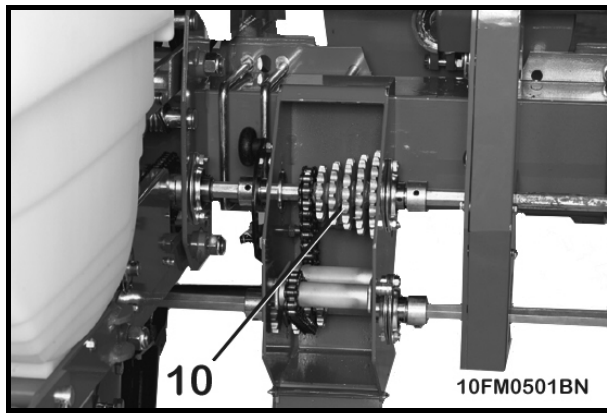
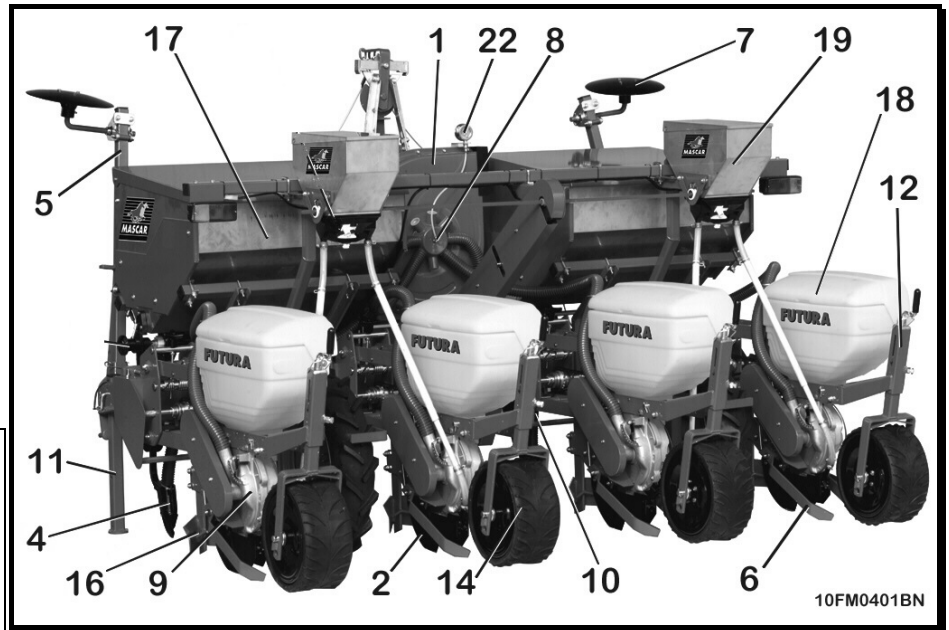
- Acoustic pressure (A).....83 dB
- Acoustic power (A)...98.7 dB



#### **CAREFUL**

From the values noticed the machine presents an high noise level. In the operative mode it is obligatory, for the operator to wear soundproofing protection devices, such as caps or proper plugs in order to avoid, also in time, damages to the auditory system.

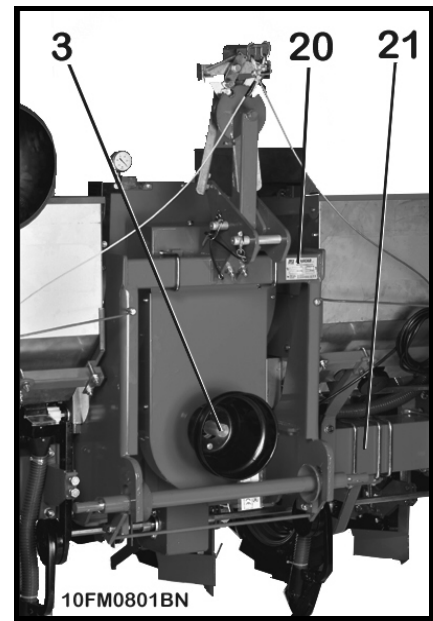
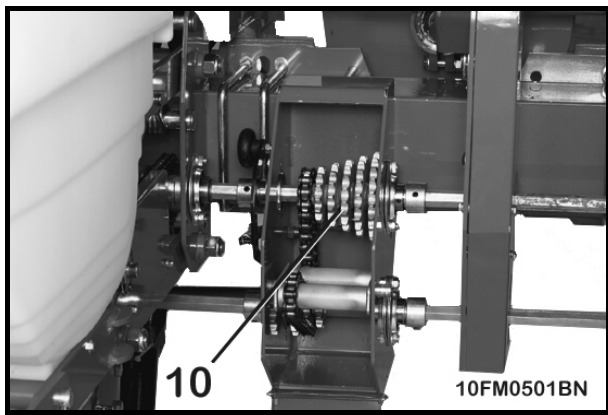
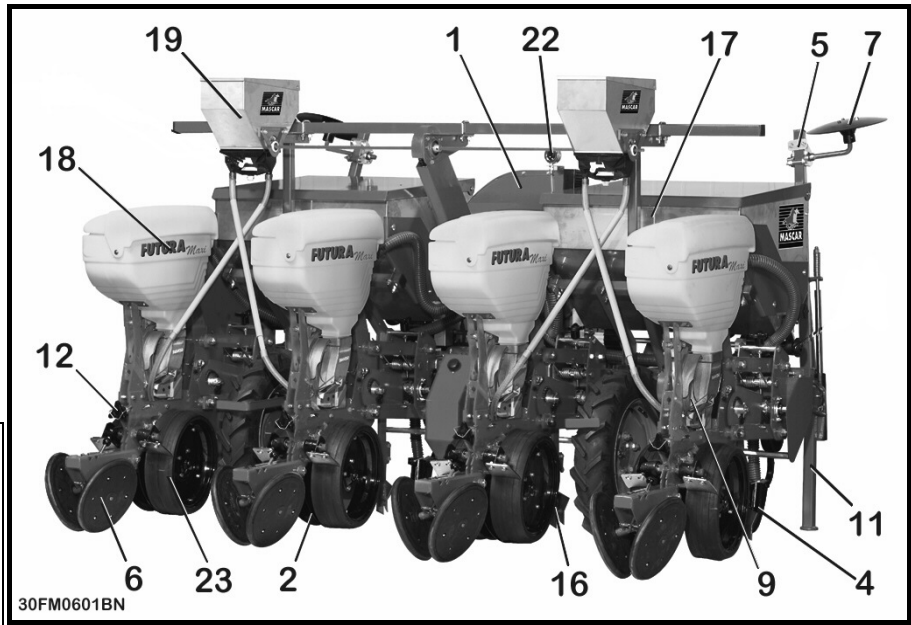
 <b>MASCAR</b> SpA Via Roma, 82 36040 Grumolo delle Abbadesse (VI) ITALY	
MODEL	CONSTRUCTION YEAR
a	c
SERIAL NUMBER	NET WEIGHT
b	d
Round - balers Agip BLASIA 220 Bale - Wrappers Agip SUPERTRACTOR UNIVERSAL 15W/40 Seed Drills Agip SUPERTRACTOR UNIVERSAL 15W/40	
	



Picture (1 – 1a – 1b) – Overall view of the machine with its main groups “FUTURA”

- |                             |                          |
|-----------------------------|--------------------------|
| 1) EXTRACTOR FAN            | 11) STANDING FOOT        |
| 2) SUFFOLK COULTER (FUTURA) | 12) SOWING DEPTH CONTROL |
| 3) CONNECTION PTO SHAFT     | 14) COMPRESSION WHEEL    |
| 4) FERTILIZER COULTER       | 16) SHARE-CLOUDS GROUP   |
| 5) ROW MARKER GROUP         | 17) FERTILIZER TANK      |
| 6) COVER-SEED               | 18) SEEDS TANK           |
| 7) ROW MARKER DISK          | 19) MICROGRANULATOR TANK |
| 8) AIR DISTRIBUTOR          | 20) IDENTIFICATION PLATE |
| 9) SEED DISTRIBUTOR         | 21) FRAME                |
| 10) GEAR GROUP              | 22) VACUOMETER           |





Picture (2 – 2a – 2b) – Overall view of the machine with its main groups “FUTURA Maxi”

- 1) EXTRACTOR FAN
- 2) SUFFOLK COULTER DISKS (*Maxi*)
- 3) CONNECTION PTO SHAFT
- 4) COULTER FERTILISER
- 5) ROW-MARKER GROUP
- 6) COVER-SEED WHEEL GROUP
- 7) ROW MARKER DISKS
- 8) AIR DISTRIBUTOR
- 9) SEEDS DISTRIBUTOR
- 10) GEAR GROUP
- 11) STANDING FOOT
- 16) SHARE-CLOUDS GROUP

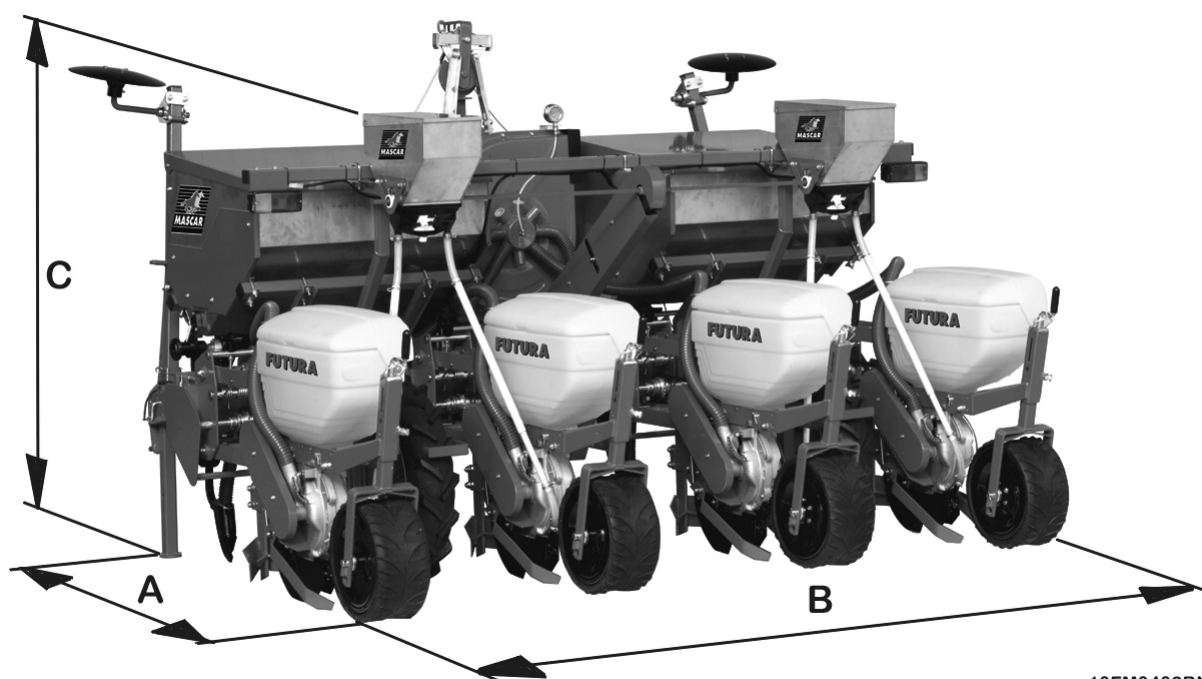
- 12) SOWING DEPTH CONTROLLER
- 17) FERTILISER TANK
- 18) SEEDS TANK
- 19) MICROGRANULATOR TANK
- 20) IDENTIFICATION PLATE
- 21) FRAME
- 22) VACUOMETER
- 23) DEPTH WHEELS (*Maxi*)

### 1.7.1 TECHNICAL DETAILS “FUTURA”

MODEL (rows number)	2	4	5	6	6	8	8
Working width (mt)	1.80	2.5	3.25	2.5	4	4	5.5
Distance between the rows (cm)	75	75	75	45	75	45	75
Normal weight of the planter (kg)	400	540	590	620	660	910	950
Weight with fertil.+micro (kg)	600	870	940	1010	1000		1180
Seeds hopper capacity (lt)	2x45	4x45	5x45	6x45	6x45	8x45	8x45
Fertilizer hopper capacity (lt)	140x2	227x2	227x2	227x2	290x2		4x227
Micro hopper capacity (lt)	15	15x2	15x3	15x3	15x3	15x4	15x4

#### DIMENSIONS

Length «A» (cm)	190	190	190	190	190	190	190
Width «B» (cm)	200	250	325	250	400	400	550
Height «C» (cm)	153	153	153	153	153	153	153



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Picture 3 – Transport dimensions of the planter “FUTURA”

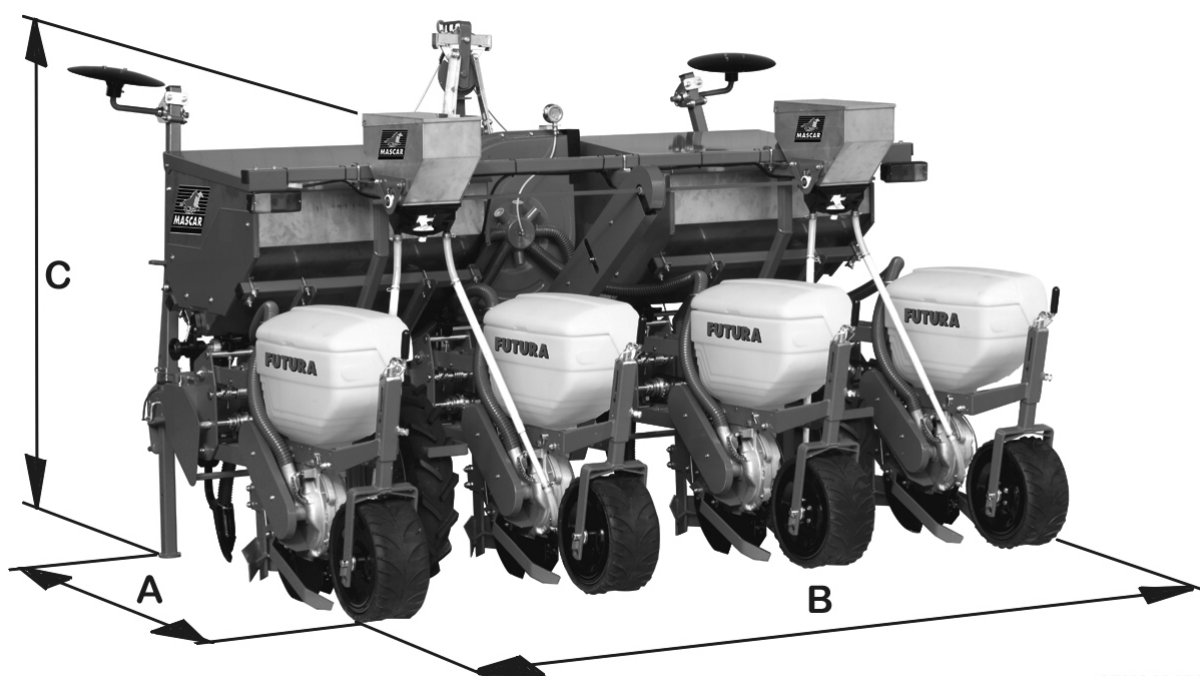
### 1.7.2 TECHNICAL DETAILS “FUTURA WITH TELESCOPIC FRAME”

#### Elements N°

MODEL	ST 6	DT 6
Working width (mt)	3.95	3.95
Distance between the rows (cm)	70	70
Normal weight of the planter (kg)	1005	1030
Weight with fertil.+micro (kg)	1250	1225
Seeds hopper capacity (lt)	6x45	6x45
Fertilizer hopper capacity (lt)	290x2	227x2
Micro hopper capacity (lt)	15x3	15x3

#### DIMENSIONS

Length «A» (cm)	190	190
Width «B» (cm)	300	250
Height «C» (cm)	153	153



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### 1.7.3 TECHNICAL DETAILS “FUTURA Maxi”

MODEL	4	5	6	6	8	8
Working width (mt)	2.5	3.25	2.5	4	4	5.5
Distance between the rows (cm)	75	75	45	75	45	75
Normal weight of the planter (kg)	810	900	990	1030	1180	1300
Weight with fertl+micro (kg)	870	940	1010	1000		1870
Seeds hopper capacity (lt)	4x45	5x45	6x45	6x45	8x45	8x45
Fertilizer hopper capacity (lt)	227x2	227x2	227x2	290x2		4x227
Micro hopper capacity (lt)	15x2	15x3	15x3	15x3	15x4	15x4

#### DIMENSIONS

Length «A» (cm)	190	190	190	190	190	190
Width «B» (cm)	260	320	260	400	350	560
Height «C» (cm)	153	153	153	153	153	153

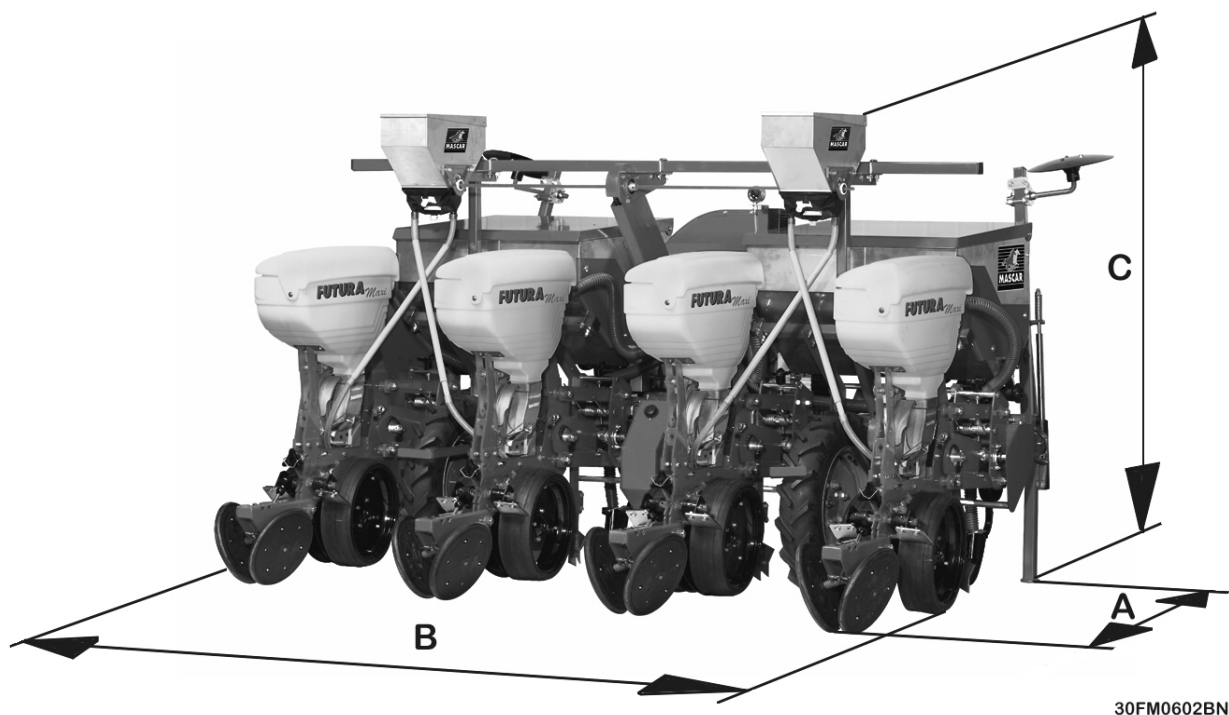


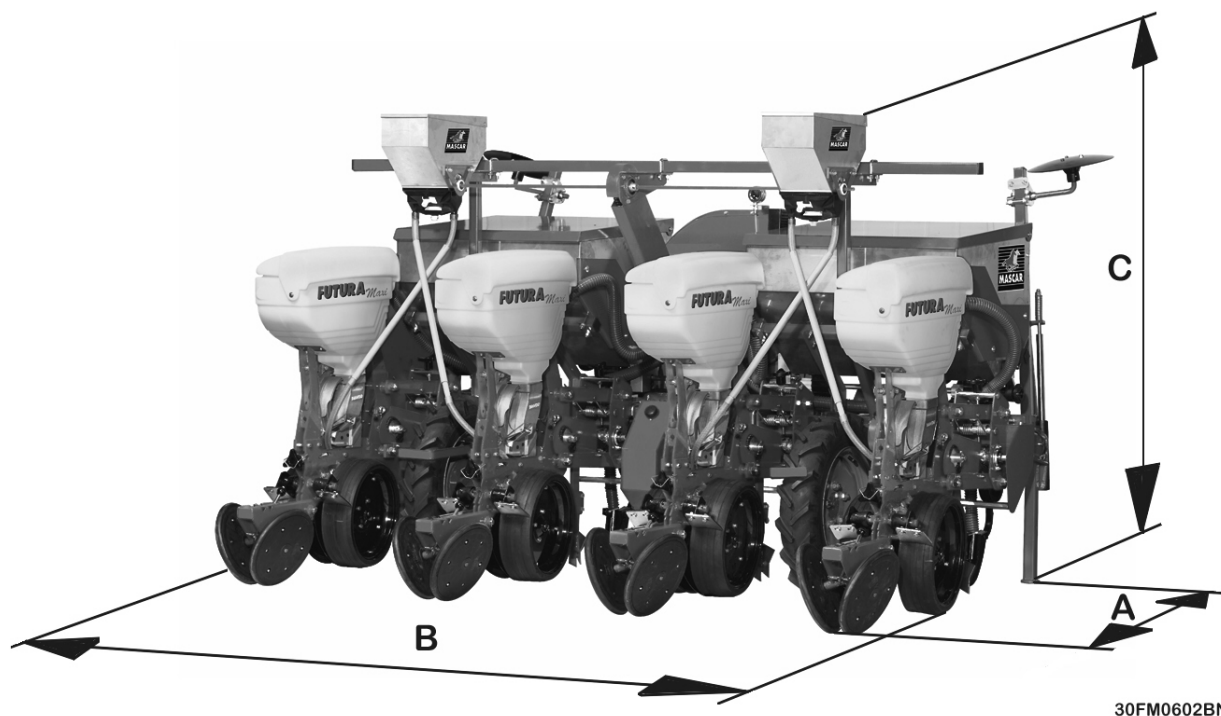
Fig.4 – Transport dimensions of the planter “FUTURA Maxi”

#### 1.7.4 TECHNICAL DETAILS “FUTURA Maxi TELESCOPIC”

MODEL	Elements N°	
	ST 6	DT 6
Working width (mt)	3.95	3.95
Distance between the rows (cm)	70	70
Normal weight of the planter (kg)	1090	1140
Weight with fert.+micro (kg)	1350	1406
Seeds hopper capacity (lt)	6x45	6x45
Fertilizer hopper capacity (lt)	290+290	290+290
Micro hopper capacity (lt)	15x3	15x3

#### DIMENSIONS

Length «A» (cm)	190	190
Width «B» (cm)	325	300
Height «C» (cm)	170	170



## SECTION 2

### Safety and prevention

#### 2.1 SAFETY

The user should give instructions to the persons about risks due to accidents, on devices predisposed for the operator's safety and on the general anti-accidents rules issued by the legislative executives of the Country where the machine is going to be used. Carelessness, thoughtlessness and too much reliance with the machine are often cause of accidents, as well as tiredness and sleepiness. Therefore is compulsory to read this manual very carefully and in specific the safety rules.



#### **DANGER**

The Manufacturer declines every responsibility for the not observance of the safety and prevention rules issued by the legislation of the Country, where the machine is going to be used and as written on the present manual.



#### **CAREFUL**

Pay attention to this symbol, where mentioned on the manual. It indicates a possible danger situation.

#### THERE ARE THREE DANGER LEVELS:



#### **DANGER**

The writing “DANGER” shows the maximum danger and warns that if the operations aren't perfectly made, there could be heavy lesions, death or risks at long terms for the health.



#### **CAREFUL**

The signal “CAREFUL” warns, that if the operations described aren't correctly performed, there could be serious injuries, death or risks at long terms for the health.



#### **CAUTION**

This signal warns that if the operation aren't correctly performed, there could be damages to the machine and/or to the person.

#### 2.1.1 TERMINOLOGY USED

- **USER:** The user is the person or body or company, that has bought it. The machine is under his own responsibility and it is to him the training of the persons, are going to work with it.
- **DANGER ZONE:** Every area inside and/or in proximity of the machine.
- **EXPOSED PERSON:** Every person, that is inside or partially inside the danger zone.
- **OPERATOR:** Description of the persons, in charge to make the transport operations of the machine.
- **SPECIALISED PERSON:** Persons, trained and qualified to make interventions or reparations on the machine.
- **AUTHORIZED ASSISTANCE CENTER:** The assistance center is the store legally authorized by the Manufacturer. It has persons, specialised and able to make assistance, maintenance and reparation operations.

#### 2.1.2 GENERAL SAFETY RULES



#### **CAREFUL**

The not observance of what is described on the “Section 2 – Safety and prevention”, tampering the safety devices, will release the Manufacturer from every responsibility in case of accidents, damages or misfunctionings of the machine.

#### General warnings:

- The user takes the engagement to commit the planter only to qualified and trained operators.
- The operator must absolutely respect what mentioned in the present manual and must conform himself to the general anti-accidents rules provided by the legislation of the Country, where the machine will be used.
- The user must inform the Manufacturer in case of defects or malfunctioning of the anti-accidents systems, and also of every supposed danger situation.
- The user or the operator must not make operations or interventions not at his charge.
- The assembly of non-original parts or further modifications may cause changing in the

characteristics of the machine and so cause the working safety.

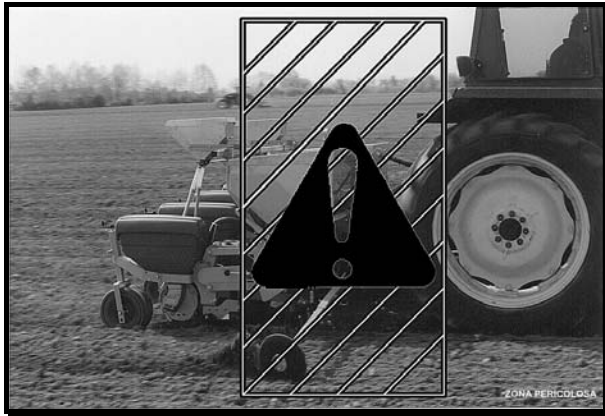
- Therefore the Manufacturer decline every responsibility for all the damages that should rise for using not original parts.
- The machine must be used only for the purposes it has been designed for, at the paragraph 1.4
- **The machine must not work with the protections disassembled.**



### **CAREFUL**

**It is strictly forbidden the machine to be actioned by who has not read the manual.**

- Pay attention to signals of danger reported in this manual and on the machine itself.
- Before to put the machine in function, check the full integrity of all the safety devices for the transport and use of the machine itself.
- Before to start working, look at the control devices and at their functions.
- When a person is **“exposed”** it means, that is in a **“danger zone”**, the operator must immediately operate to stop the machine and to send away the person in question.

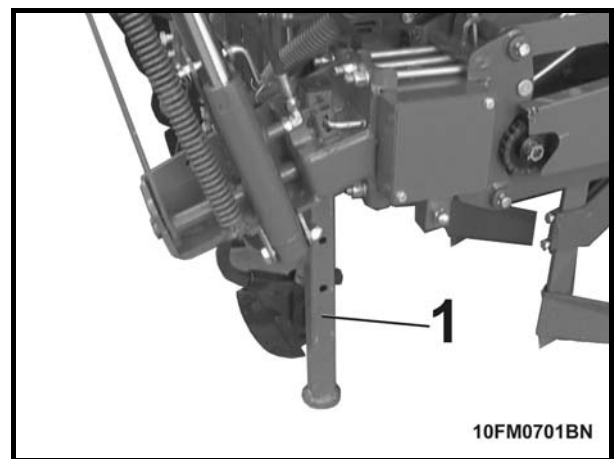


**Picture 5 – DANGER ZONE**

**During the machine functioning mode, it is absolutely forbidden to get near it, while the mechanic components are moving.**

- It is absolutely forbidden to transport persons or animals on the machine.
- It is absolutely forbidden to leave the driving place, when the tractor is working.
- It is absolutely forbidden to remove the safety devices.
- Suitable clothes are to be used, avoiding absolutely flapping dresses or borders. They could get caught into the rotating parts or into the components, while moving.

- It is absolutely forbidden to interpose yourself between the tractor and the equipment (picture 5), when the engine is on, and without actioning the stationary brake and putting a block of suitable dimensions under the wheels.
- Before leaving the tractor, the device connected to the lifting group is to be lowered down, the motor to be stopped, the stationary brake to be connected, and the switching key of the control board to be removed. Make sure nobody can approach to the chemical substances.
- The movements out of the working zone must be executed with the device in transport position.
- Before putting the machine on working mode, it is to be controlled, the standing feet (1 picture 11) have been taken off from the lower part of the machine and that the planter has been correctly installed and adjusted; it is to be checked, that all the components subjected to wear and to deterioration are efficient.



**Picture 6 – STANDING FEET**

**All the maintenance adjustments or working operations must be made absolutely with the machine on the soil and on standing feet, the tractor has been switched off and the key disengaged.**

- Pay attention to the PTO shaft in rotation phase. Read carefully also the included instruction manual of the PTO shaft.
- In order to mount and to dismount the PTO shaft, it is necessary to leave the protection cap placed on the planter, it is obligatory, after the assembly or the disassembly, always to re-put the cap.

- Assembly and disassembly of the PTO shaft must be always made, when the machine is switched off.
- Block the protection rotation of the PTO shaft with the chain in equipment.
- Pay much attention to the correct assembly of the PTO shaft to the tractor.
- Don't connect the power takeoff when the motor is switched off.
- Before connecting the power takeoff, it is to make sure that the rpm of the tractor power takeoff corresponds to the rpm expected for using the planter.
- The prescribed rpm to the PTO has never to be passed over.
- The power takeoff has always to be disengaged, when the PTO shaft performs an opener angle (never over 10÷15 degrees) and when it isn't used.
- Further fittings for the transport must be equipped with conformed signals and protections.
- For the transport phase, the chains of the lifting side arms of the tractor are to be adjusted and fixed. It is to be controlled, the covers tanks of seeds and fertilizer have been well closed, the control lever of the hydraulic lifting is to be put in block position.
- It is very important to take in consideration, that the roadholding and the direction and breaking capacity can be influenced, also in a remarkable way, by the presence of a device carried or trailed away.



### CAUTION

Periodically verify the tightening and the resistance of screws and nuts, and in case shut them again.

For this operation use a dynameter key and look at the following couple values (wring moment expressed in Nm) of tightening:

	class	
Ø	8.8	10.9
M4	3.0	4.4
M5	5.9	8.7
M6	10	15
M8	25	36
M10	49	72
M12	85	125
M14	135	200
M16	210	310
M18	300	430
M20	425	610

- In the assembly, maintenance, washing operations, for caution a proper supports has to be put on the equipment.

## 2.2 SAFETY SIGNALS

(PICTOGRAM)



### WARNING

Keep the labels cleaned and replace them immediately, when they appear taken off or damaged.

Look at picture 7, read carefully, what is here below described and remember its meaning.

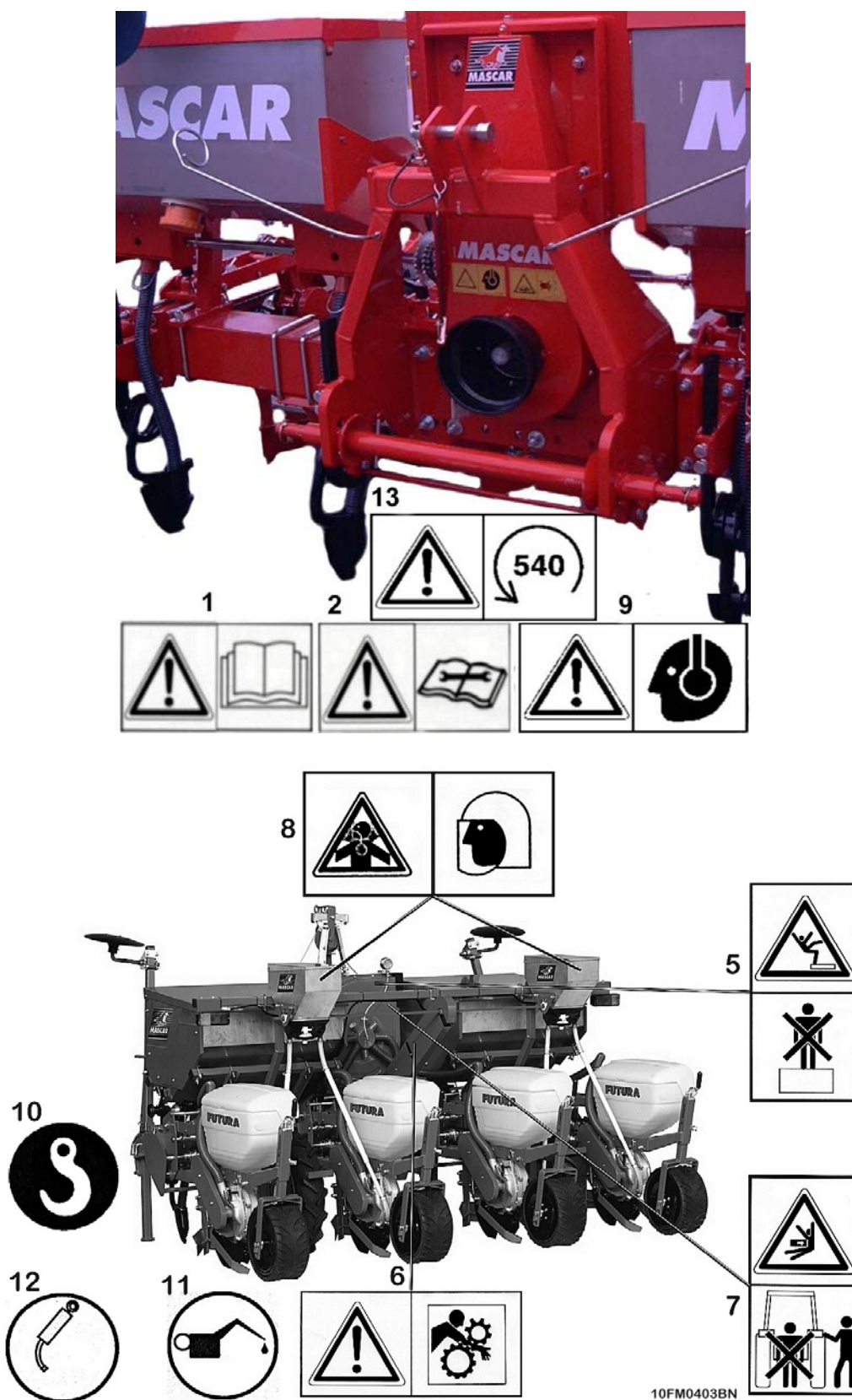


### WARNING

All the signals placed on a side of the machine and showed on picture 7, are mentioned exactly on the same position also on the other side.

- 1) Before starting to work, read carefully the instruction manual.
- 2) Before making cleaning and maintenance interventions, stop the machine and read the instruction manual.
- 3) Danger of fall. Don't mount on the machine.
- 4) Danger of trapment. Keep away from the components when moving.
- 5) Danger of crushing in closing phase. Keep at distance from the machine.
- 6) Danger of anticryptogamic products. When using anticryptogamic products, provide yourself of proper protections.
- 7) High sound level. Provide yourself of proper acoustic protections.
- 8) Connection points for the lifting of the machine. For the position look "Section 3" Transport and movement".
- 9) Introduction points of the oil.
- 10) Greasing points.
- 11) Tours PTO 540 rpm.





Pic. 7 – Safety signals and their position on the machine.

## SECTION 3

### Transport and moving

#### 3.1 TRANSPORT AND MOVING

##### 3.1.1 GENERAL WARNINGS



#### **DANGER**

The unloading operations, lifting and moving of the machine must be made by specialized persons.

Avoid more than one operator to work contemporaneously on the same machine, since you can have a risky situation.

Check the dimensions and the weight of the planter.

Check ropes before using them: they must not be damaged, there must not be broken twines or signs of wear.

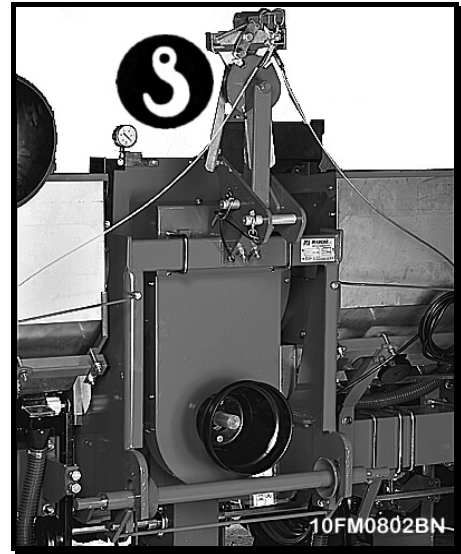


Picture 8 – LIFTING POINTS

Do not twist or knot the ropes and follow the instructions for usage, as indicated by the Manufacturer.

The transport must be performed with the unloaded planter.

To lift the machine from the soil to the loading plane level, use cranes with suitable capacity, connect the machine to the proper points of lifting, as indicated with the hook (Pictures 8-9).



Picture 9 – LIFTING POINTS



#### **WARNING**

Before proceeding with the lifting phase, be sure, the planter is completely empty.

Lift the machine carefully and move it slowly on the truck or on the truck-wagon.



#### **DANGER**

The lifting operations and transport can be very dangerous, if they are not made with the maximum attention: non-authorized persons are to be sent away; the transfer zone is to be clear and delimited. Verify the integrity and the qualification of the available equipments; do no touch the hanging loads. Keep the safety distance.

During the transport, the loads should not be lifted more than 20 centimeters from the soil.



#### **WARNING**

The platform, where you are loading the machine, must be perfectly in plane position in order to avoid a possible moving of the load.

Once the machine is loaded in the truck or wagon, make sure, it has been perfectly blocked.

The wheels must be blocked by using suitable stumps.

Fix the machine to the platform on which it is supported through ropes or chains, well tightened to the anchorage on the plate and suitable to the weight of the machine.

## SECTION 4

### Instruction for using

#### 4.1 BEFORE THE USE



##### **CAREFUL**

Before starting to work the user must be sure, that the operator has read, learnt and understood all the parts of this manual and in particular the “Section 2 – Safety and caution”.

The operator must verify, that the machine is complete and in order.



##### **DANGER**

The adjustment and preparation operations for working must be always made with stopped and blocked machine.

#### 4.1.1 WORKING POSITION



##### **DANGER**

Before going down from the driving place, the operator **MUST** stop the machine, insert the stationary brake and turn off the tractor.

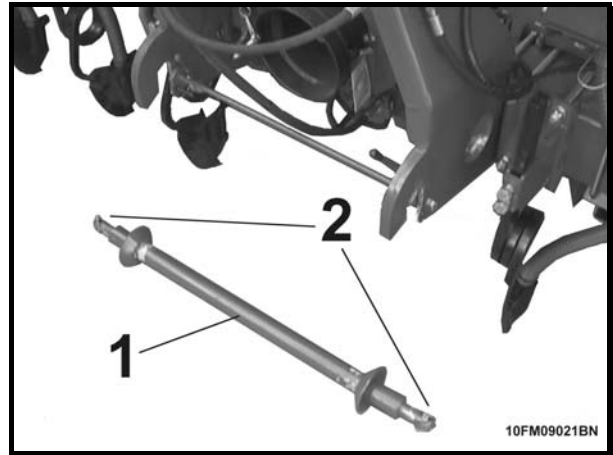
#### 4.1.2 CONNECTION OF THE PLANTER TO THE TRACTOR



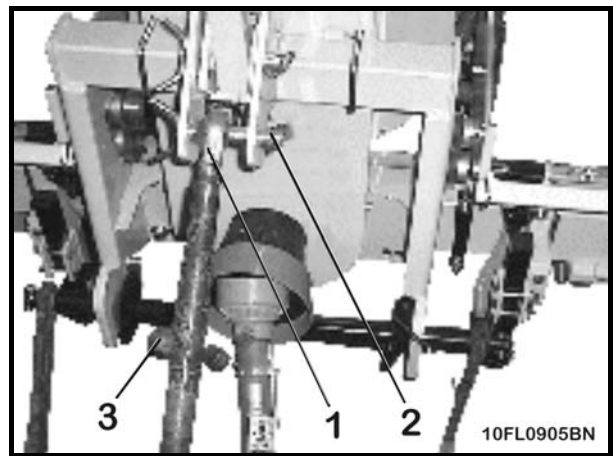
##### **DANGER**

The connection of the planter to the tractor is a potentially dangerous operation.

Pay attention to perform the whole operation by following the here below mentioned instructions.



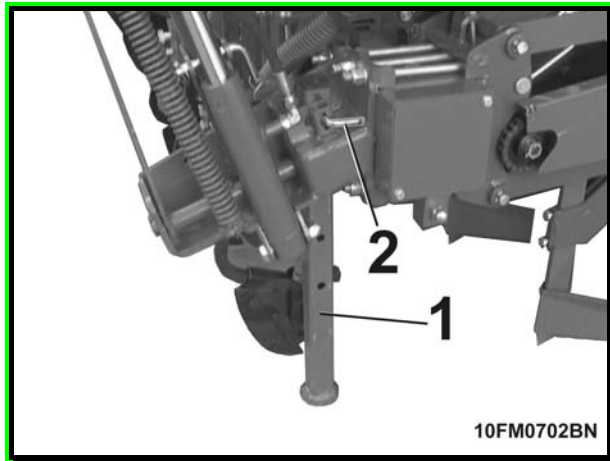
Picture 10 – CONNECTION TO THE TRACTOR



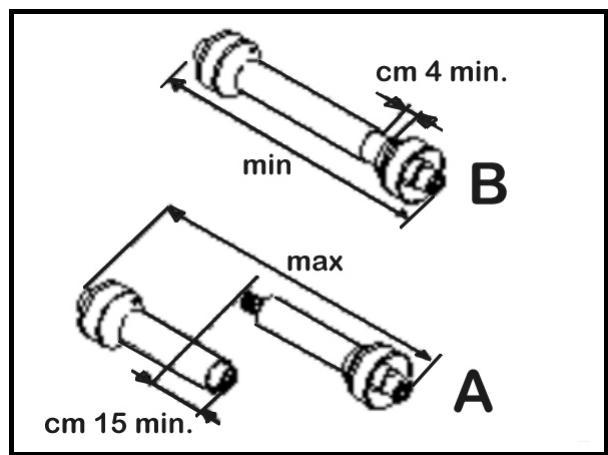
Picture11 – JOINTING TO THE TRACTOR

The planter can be jointed to every kind of tractor provided that this one has an universal three-points connection:

- This operation is much easier thanks to the rapid connection system. Remove from the planter the rapid connection (1 – pict.10) and proceed assembling it between the lifting bars. and blocking it with the respective spring split pin (2 - pict. 10).
- Go near the planter and joint it as in the picture (pict. 11). The right position of the tractor/planter will be determined by the position of the cardan joint, which must stay in a position of 5÷10 cm from the condition of maximum closing.
- Any horizontal moving of the lifter bars must be avoided by blocking them parallelly to the tractor through the suitable rod.
- Connect the third upper point (1 – pict. 11) by inserting the plug (2 - pict. 11) and by blocking it through the suitable split pin.
- Take the split pins (1 - pict.12), blocking the feet, off and lift them up. Block them again in the other loss (2 - pict.12).



Pict.12 – SUPPORT FOOT



Pict.13 – P.T.O. SHAFT

- Perform through the regulating rod (3 - Pict. 11) so that the planters units are parallel with the soil (Pict. 14).
- Insert the P.T.O. shaft and make sure it is well blocked on the power takeoff. Verify, the protection is able to rotate freely and secure it with the suitable small chain. The P.T.O. shaft supplied with the machine, has a standard length. Therefore it could be necessary to adjust it. In this case, before operating on the P.T.O. shaft, it is to contact the Manufacturer for an eventual adjustment.
- When the P.T.O. shaft has been taken off, the two pipes has to be put one on the other for at the least 15 cm. (A - Pict. 13). When it is inserted at the maximum, the minimum gap must be of 4 cm. (B - Pict. 13).
- When using the equipment on other tractors, verify, what is said in the above point and make sure the protection are covering entirely the rotating parts of the P.T.O. shaft.



Pict.14 – POSITION OF THE MACHINE

### **! DANGER**

Much attention has to be paid, when inserting the P.T.O. shaft. Check, it is well blocked in the tractor power takeoff and on the planter. In relation to this, you must follow also the recommendations in the instruction booklet enclosed to the P.T.O. shaft, which has compulsory to be marked «CE». Verify, that the P.T.O. shaft protection, which is blocked with the relative small chains, can rotate without drawbacks. In this contest, the protection caps on the tractor and on the planters has to be checked too. If they were not perfectly entire, you should substitute them immediately with new protections. It is much important, the protection caps on both sides of the tractor/planter, are putting themselves on the P.T.O. shaft protections for at least 5 cm.

## **4.2 INSTRUCTIONS FOR SOWING**

### **4.2.1 Sowing Disks**

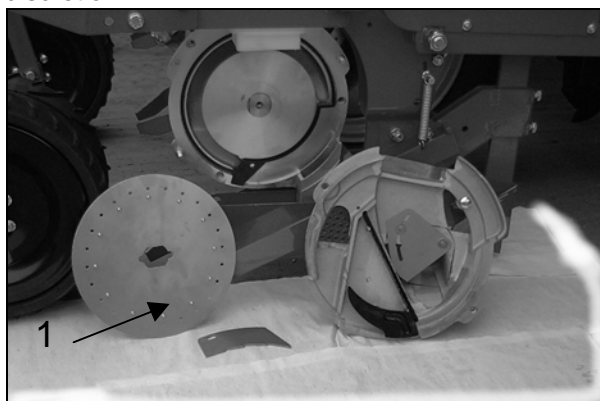
Depending on the sowing, a disk with suitable losses has to be inserted in the distributor (1 Pict. 15).



The undersigned Company prepares the planter with only one type of sowing disk, but it stays at disposal for realizing disks, in accordance with the user's requirements.

LOSSES N°	Ø LOSSES (mm)	TYPE OF SOWING
12	2.5	Sunflower
18	2.5	Sunflower
24	4.5	Maize
24	5.5	Big maize
36	2.5	Sugar beets
48	5.5	Beans
48	6	Kidney beans
72	4.5	Soya
72	2.5	Sorgho
72	1.5	Tomato comfit
72	1.1	Tomato
72	3.5	Beans, pea, cotton

N.B.: the Manufacturer suggests disks for any kind of sowing, but the definitive choice of the sowing disks is completely on the user's discretion.



**Pict. 15 – SOWING DISKS**

#### **4.2.2 SETTING OF THE SELECTOR (compulsory)**

**This setting has to be made by the operator each time, the type of seed is changed.**

The setting lever, one for each sowing element, can be put on 10 different positions (+ as many intermediate positions).

In the position 1 you have the maximum choking of the losses, provided in the distributor disk, while in the position 10 there is the maximum opening of the losses.

The lever position, which has to be the same for each element involved in the sowing, must be chosen in relation to the type of seed.

Here below, we give you some indicative values:

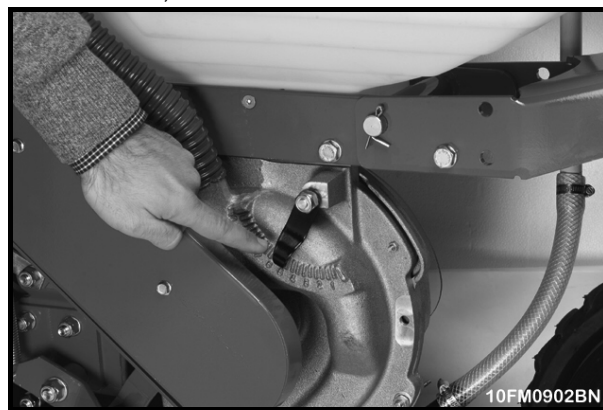
- position 1 ÷ 3.5 small seeds;
- position 3.5 ÷ 7 medium seeds;

- position 7 ÷ 10 big seeds.

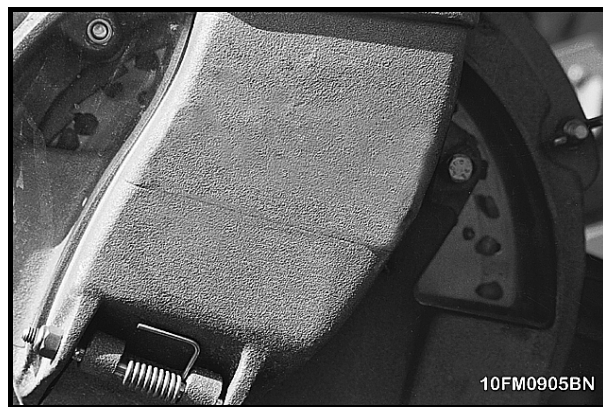
The selector setting has to be made, when the machine is not running, as follows:

- lift up the planter at about 10 cm. from the soil by using the tractor hydraulic lifter;
- disconnect all the elements by acting on the relative counter units, as mentioned in the paragraph 4.6.6, except for the one chosen for the test (par.4.6.6);
- make the P.T.O. shaft running at 540g/1' ;
- turn the tractor wheel by hands in forward gear;

move the selector lever (Pict.16) until, through the inspection door (Pict.17) you can find on the sowing disk only single seeds, it means: neither double seeds, nor free losses.



**Pict.16 – SELECTOR LEVER**



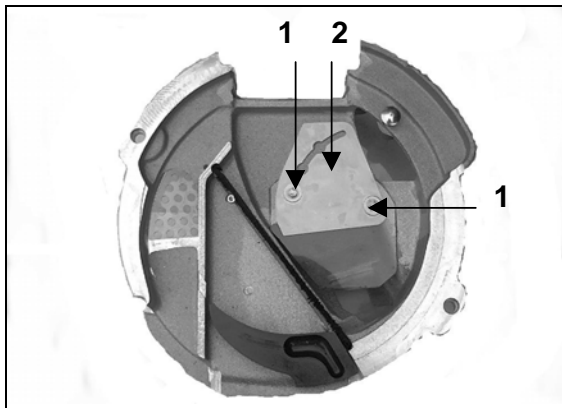
**Pict.17 – INSPECTION DOOR**



- In case of **DOUBLE SEEDS**, set the selector on lower positions
- In case of **FREE LOSSES** set the selector on higher positions

#### 4.2.3 SETTING THE ANTI-OVERFLOWING PLATE

The overflowing plate inside the distributor unit must be regulated in relation to the kind of seed. This plate serves to regulate the seeds to the hopper and ensures its constant and good level. Loosen the screws 1 (Fig.18), the plate 2 will be able to be set on a higher position for seeds such as maize "big" or on a lower one for seeds such as beet "small".



Pict.18 – ANTI-OVERFLOWING PLATE

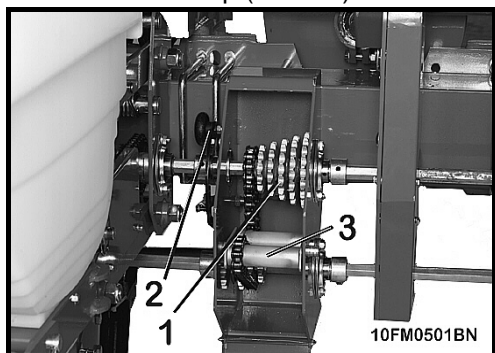
#### 4.2.4 SOWING DISTANCE

The sowing distance can be varied through the small chain 1 (Pict. 19) inside the change gear box.

In the following table (pag. 23) it is determined the gear ratio needed to get the sowing distance in relation to:

- Planter wheels diameter
- Type of disk in the distributor in relation to the kind of sowing.

Once determined the ratio, go to the change gear box and lift the cover up (Pict. 19).



Pict.19 – SETTING OF THE CHANGE GEAR

Unblock the lever (2 - Pict. 19) and set the chain (1 – Pict.19) in the wished gear.

Block the chain with the chain-tightener (3 - Pict. 19) through the lever (2 - Pict. 19) and close the door.

The distances on the table (pag.23) are theoretical and can vary from 5 to 10% in relation to the kind of soil.

#### 4.2.5 SUBSTITUTION SOWING DISKS

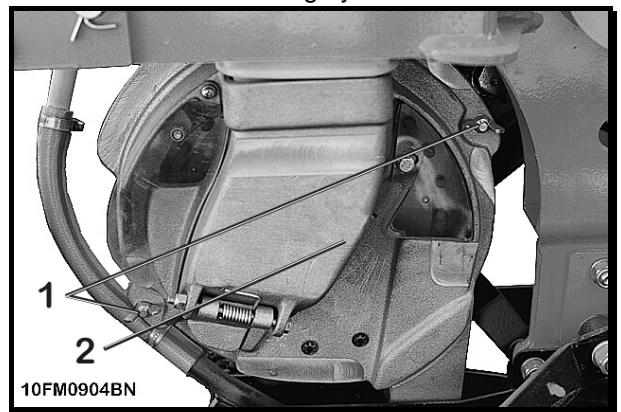


#### CAUTION

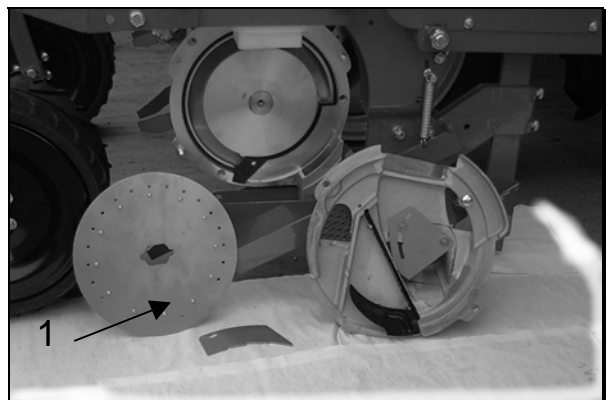
The operation described in this paragraph, must be performed avoiding dusty environment by experienced personel only, equipped with protection gloves:

- Proceed removing the two wing nut screws (1 - Pict. 20) and draw the cover out 2;
- Remove the selector;
- Remove the disk (1 – Pict.21).

Pay attention in mounting a new disk, make sure of its cleanliness and integrity.



Pict. 20 – REMOVING THE COVER



Pict. 21 – SUBSTITUTING THE SOWING DISKS

### 4.3 TABLE: DISTANCES OF SOWING

Diagram showing the layout of the planter with rows 1 to 6 and columns A, B, C. The planter has two rows of discs: z22 and z16.

**RUOTA 5.00 - 15**

N° FORI DISCO	1 C	1 B	3 C	2 B	1 A	4 C	3 B	2 A
12	18.5	21.5	24.5	25	25.5	28	29	30
18	12.5	14.5	16.5	17	17.5	18.5	19.5	20
24	9.5	11	12.5		13	14	14.5	15
36	6.5	7.5	8.5		9	9.5	10	
60	4	4.5	5		5.5	6		6.5
72	3.5	4	4.5			5		
96	2.5	3	3.5			4		

Diagram showing the layout of the planter with rows 1 to 6 and columns A, B, C. The planter has two rows of discs: z22 and z16.

**RUOTA 5.00 - 15**

N° FORI DISCO	5 C	4 B	3 A	5 B	4 A	6 B	5 A	6 A
12	31.5	32.5	34.5	36.5	39	40.5	44	48
18	21	22	23	24.5	26.5	27	29.5	32.5
24	16	16.5	17.5	18.5	19.5	20.5	22	24.5
36	10.5	11	12	12.5	13.5	14	15	16.5
60		7	7.5		8	8.5	9	10
72	5.5		6	6.5	7		7.5	8.5
96	4.5			5		5.5	6	6.5

MASCAR 1003984.0

Diagram showing the layout of the planter with rows 1 to 6 and columns A, B, C. The planter has two rows of discs: z22 and z16.

**RUOTA 6.5/80 - 15**

N° FORI DISCO	1 C	1 B	3 C	2 B	1 A	4 C	3 B	2 A
12	19	22	25.5	26	26.5	29	30	31
18	12.5	15	17	17.5	18	19.5	20	21
24	10	11.5	13		13.5	14.5	15	15.5
36	6.5	7.5	8.5	9	9.5	10		10.5
60	4	5	5.5		6		6.5	
72	3.5	4	4.5		5		5.5	
96	2.5	3	3.5			4		

Diagram showing the layout of the planter with rows 1 to 6 and columns A, B, C. The planter has two rows of discs: z22 and z16.

**RUOTA 6.5/80 - 15**

N° FORI DISCO	5 C	4 B	3 A	5 B	4 A	6 B	5 A	6 A
12	32.5	34	36	37.5	40	41.5	45	50
18	21.5	22.5	24	25	27	28	30	33
24	16.5	17	18	19	20.5	21	22.5	25
36	11	11.5	12	12.5	13.5	14	15.5	17
60	7		7.5	8	8.5	9	9.5	10
72		6		6.5	7	7.5	8	8.5
96	4.5			5	5.5		6	6.5

MASCAR 1003984.5

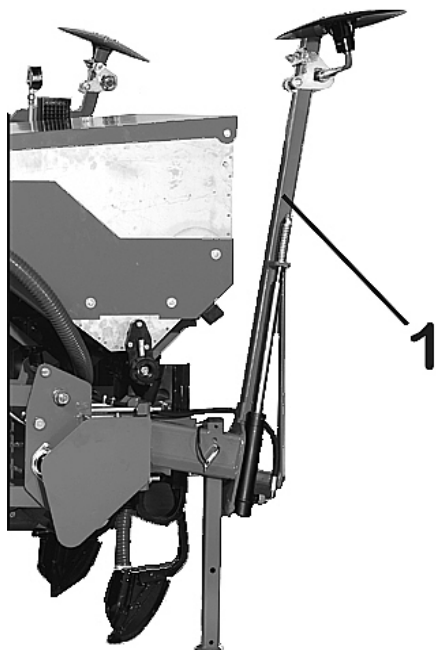
#### 4.3.1 TABLE: SEEDS INVESTMENT

Distanze tra i semi sulla fila																
Distance between seeds on the rows																
Distanza tra le file																
Distance between rows																
			80	75	70	65	60	56	50	45	40	35	30	25	am	
102	91	36						22						10	inches	am
217960	244200	277770	296230	317460	341880	370370	398820	444440	493820	555550	634920	740740	888880	1 3/4	4.5	
140050	156980	178570	190470	204080	219780	238090	255100	285710	317460	357140	408160	476190	571420	2 3/4	7	
99030	109890	125000	133330	142850	153840	166660	178570	200000	222220	250000	285710	333330	400000	4	10	
89120	99900	113630	121210	129870	139860	151510	162330	181810	202020	227270	259740	303030	363630	4 3/8	11	
81700	91570	104160	111110	119040	128200	138880	148810	166660	185180	208330	238090	277770	333330	4 3/4	12	
75410	84530	96150	102560	109890	118340	128200	137360	153840	170940	192300	219780	256410	307690	5 1/8	13	
70020	78490	89280	95230	102040	109890	119040	127550	142850	158730	178570	204080	238090	285710	5 1/2	14	
66360	73260	83330	88880	95230	102560	111110	119040	133330	148140	166660	190470	222220	266660	6 1/16	15	
61270	68680	78120	83330	89280	96150	104160	111600	125000	138880	156250	178570	208330	250000	6 5/16	16	
57670	64640	73630	78430	84030	90490	98040	105040	117640	130710	147050	168060	196070	236290	6 3/4	17	
54460	61050	69440	74070	79360	85470	92590	99200	111110	123450	138880	158730	185180	222220	7 1/16	18	
51600	57830	65790	70170	75180	80970	87720	93980	105260	116960	131570	150370	175430	210520	7 1/2	19	
49020	54940	62500	66660	71420	76920	83330	89280	100000	111110	125000	142850	166660	200000	8	20	
46680	52320	59520	63490	68020	73260	79360	85030	95230	105820	119040	136050	158730	190470	8 1/4	21	
44560	49950	56810	60600	64930	69930	75750	81160	90910	101010	113630	129870	151510	181810	8 5/8	22	
42620	47770	54340	57970	62110	66890	72460	77640	86950	96610	108690	124220	144920	173910	9	23	
40850	45780	52080	55550	59520	64100	69440	74400	83330	92590	104160	119040	138880	166660	9 1/2	24	
39210	43950	50000	53330	57140	61530	66660	71420	80000	88880	100000	114280	133330	160000	10	26	
37700	42260	48070	51280	54940	59170	64100	68680	76920	85470	96150	109890	128200	153840	10 1/4	26	

#### 4.4 ROW-MARKER DEVICE

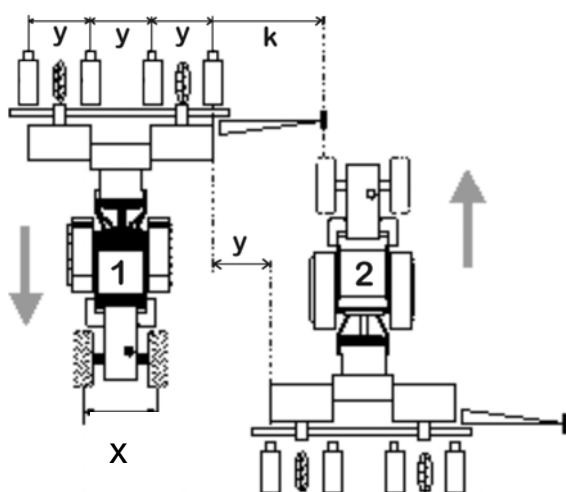
The row marker is a device (1 – Pict. 22), which draws a reference line on the soil, parallel to the running of the tractor.

The row marker in the going trip (pos. 1 – Pict. 23) draws a reference line, which has to be followed by the tractor on the return trip (pos.2 – Pict. 22), so that the sowing could be right and at the predefined distances.



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Pict. 22 – ROW MARKER DEVICE



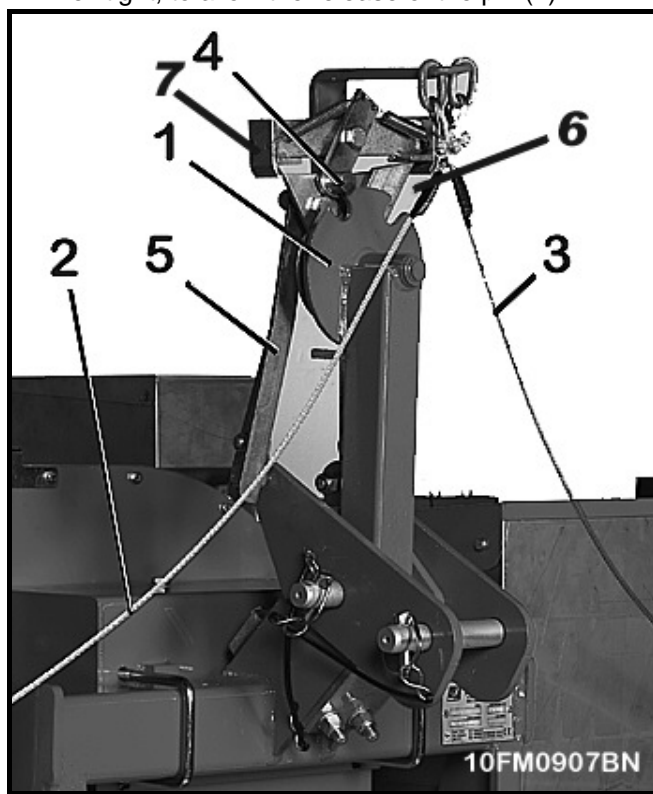
Pict. 23 – TRACTOR TRIP

#### 4.4.1 AUTOMATIC MECHANICAL ROW-MARKER

The row marker is able to the service on the right or on the left through a device (1 – Pict. 24) set on by the movement (high – low) of the tractor lifter. Make sure the ropes (2 / 3 – Pict. 24) are well regulated to allow the release of the pin (4 – Pict. 24).

##### REGULATIONS (Pict. 24):

- If the equalizer (7) does not couple up with the levers (6) or viceversa it does not uncouple from them, set the height of the arms (5).
- In working position, the ropes (2-3) have to be well tight, to allow the release of the pin (4)



Pict. 24 – AUTOMATIC MECHANICAL ROW-MARKER

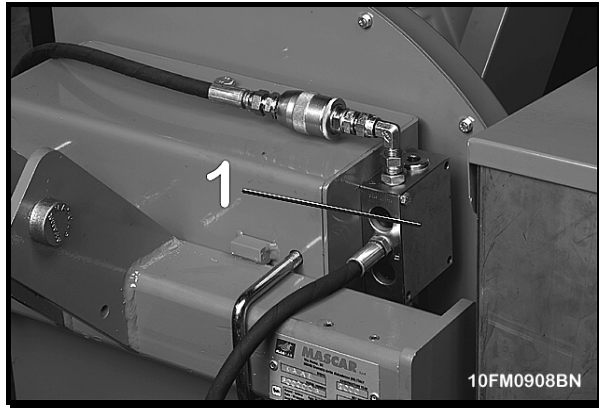
#### 4.4.2 HYDRAULIC ROW-MARKER

On user's request the planter can be equipped with an hydraulic row-marker. The planter will be prepared with a control valve (1 – Pict. 25) and the relative fittings, two hydraulic cylinders installed on the row-marker.

During the usage of the row-marker it is to avoid that:

- The pipes can interfere with mechanical parts under movement;
- Friction or accidental obstruction of the pipes;
- Pression of the oil-pression system higher than the previewed ones.





**Pict. 25 – REGULATING VALVE  
REGULATIONS (Pict. 25):**

- The speed of setting high/low of the arms of the row-marker is regulated during the testing by our factory, but there is the further possibility to make this regulation, by acting

on the valve (1 – Pict. 25) on the base of your own usage requirements.

#### 4.4.3 REGULATING THE ROW-MARKER

Hereby you find a table to determine the “K” distance of the row-marker disk from the center of the external planter group (Pict. 23) on the basis of the following parameters:

- Front rut “X” in cm;
- Number of rows “Z”;
- Sowing lane “Y” in cm;

The formula to determine the table is the following:

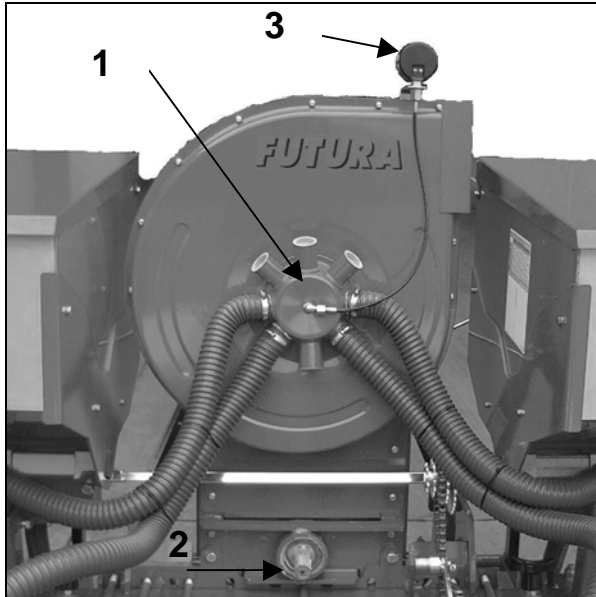
$$k = \frac{Y * (Z1+Z2+Z3+Z4+1) - X}{2}$$

X	Y	Rows number z				X	Y	Rows number z				X	Y	Rows number z			
		2	4	5	6			2	4	5	6			2	4	5	6
140	45		42	65	87	150	45		37	60	82	160	45		32	55	77
	50		55	80	105		50		50	75	100		50		45	70	95
	60	20	80	110	140		60	15	75	105	135		60	10	70	100	130
	65	27	92	125	157		65	22	87	120	152		65	17	82	115	147
	70	37	105	140	175		70	30	100	135	170		70	25	95	130	165
	75	42	117	155	192		75	32	112	150	187		75	32	107	145	182
	80	50	130	170	210		80	45	125	165	205		80	40	120	160	200
	85	57	142	185	227		85	52	137	180	222		85	47	132	175	217
145	45		40	62	85	155	45		35	57	80	165	45		30	52	75
	50		52	77	102		50		47	72	97		50		42	67	92
	60	17	77	107	137		60	12	72	102	132		60	7	67	97	127
	65	25	90	122	155		65	20	85	117	150		65	15	80	112	145
	70	33	102	137	172		70	28	97	132	167		70	23	92	127	162
	75	40	115	152	190		75	35	110	147	185		75	30	105	142	180
	80	48	127	167	207		80	43	122	162	202		80	38	117	157	197
	85	55	140	182	225		85	50	135	177	220		85	45	130	172	215
X	Y	Rows number z				X	Y	Rows number z				X	Y	Rows number z			
		2	4	5	6			2	4	5	6			2	4	5	6
170	45		27	50	72	180	45		22	45	67	190	45		17	40	62
	50		40	65	90		50		35	60	85		50		30	55	80
	60	5	65	95	125		60	0	60	90	120		60		55	85	115
	65	12	77	110	142		65	7	72	105	137		65	2	67	100	132
	70	20	90	125	160		70	15	85	120	155		70	10	80	115	150
	75	27	102	140	177		75	17	97	135	172		75	17	92	130	167
	80	35	115	155	195		80	30	110	150	190		80	25	105	145	185
	85	42	127	170	212		85	37	122		207		85	32	117	160	202
175	45		25	47	70	185	45		20	42	65	195	45		15	65	60
	50		37	62	87		50		32	57	82		50		27	80	77
	60	2	62	92	122		60		57	87	117		60		52	110	112
	65	10	75	107	140		65	5	70	102	135		65	0	55	125	130
	70	18	87	122	157		70	13	82	117	152		70	8	77	140	147
	75	25	100	137	175		75	20	95	132	170		75	15	90	155	165
	80	33	112	152	192		80	28	107	147	187		80	23	102	170	182
	85	40	125	167	210		85	35	120	162	205		85	30	115	185	200



## 4.5 ASPIRATOR

The aspirator (1 - Pict. 26) is set in motion, through the shaft, (2 - Pict. 26) by the Cardan joint and produce the vacuum, needed in the distributor group (1 – Pict. 26) for the aspiration of the sowings.

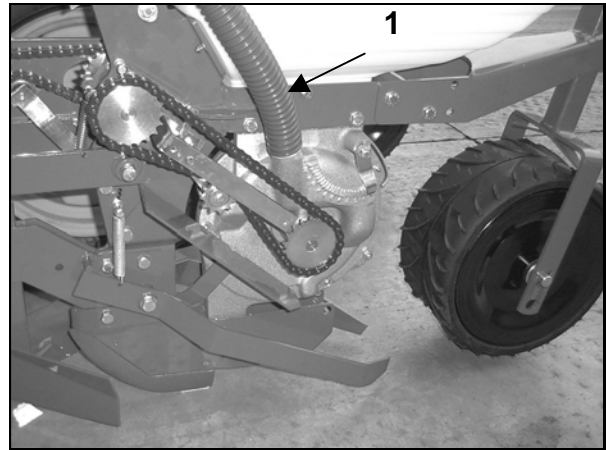


**Pict. 26 – ASPIRATOR**

The distributor is connected to the distributor through the pipes (1 - Pict. 27) and the vacuum value is indicated by the vacuometer (3 – Pict. 26) with a bottom of the scale from 0 ÷ 100 mbar. The medium values of aspiration, to be used, are the following:

- Small seed (sugar beet) 50 ÷ 60 mbar (16 ÷ 18 in H<sub>2</sub>O)
- Big seed (maize) 60 ÷ 80 mbar (22 ÷ 24 in H<sub>2</sub>O)

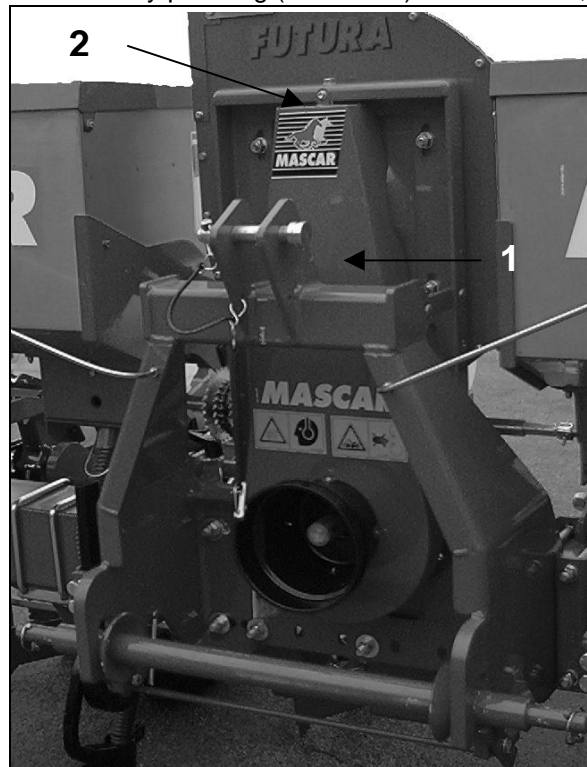
During the sowing, to keep stable the running of the aspirator, it is to be used the manual accelerator.



### Pict. 27 – PIPES OF THE DISTRIBUTOR

#### 4.5.1 CHECK AND SUBSTITUTION OF THE BELT

For checking and substituting the belt, the guard has to be removed (1 - Pict. 28) by unscrewing the three screws (2 - Pict. 28). Verify the tension of the belt by pressing (2- Pict. 30) with the hand;

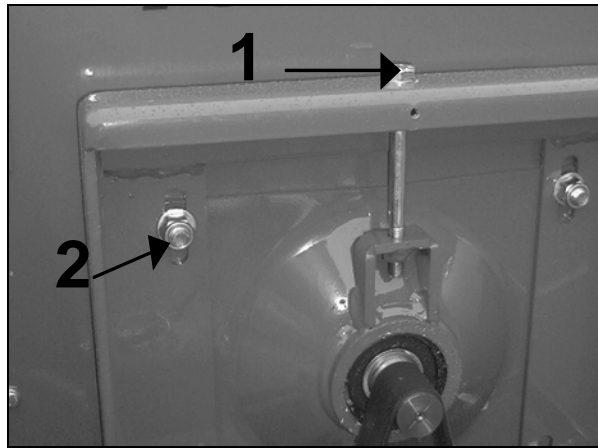


**Pict. 28 GUARD REMOVING**

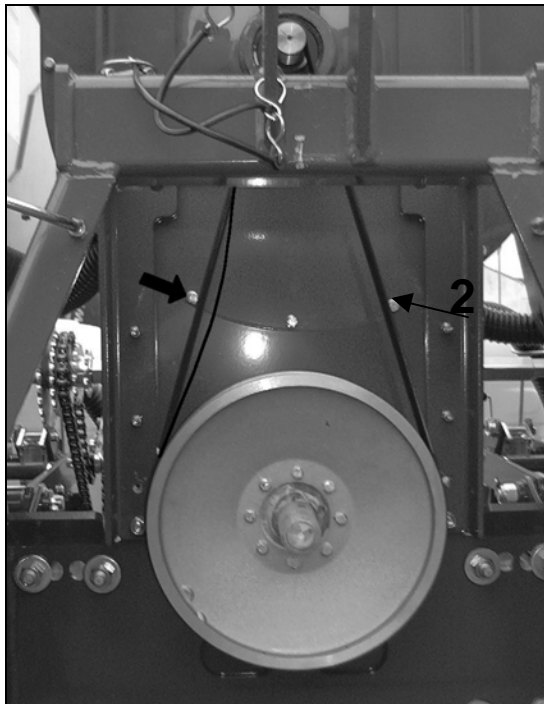
If the belt is slack, it is to unscrew the screws (2-Pict. 29) and through the screw (1- Pict. 29) the tension is newly set.

If the belt is worn out, proceed taking it off.

A good regulation of the belt allows its longer duration.



Pict. 29 – BELT REGULATING SCREW



Pict. 30 – CHECK BELT TENSION

## 4.6 PLANTER SETTINGS

For a good sowing, it is absolutely necessary, that the soil preparation, the seed placing, the distribution of fertilizer and pesticide are made in the right way, by paying particular attention to what is below mentioned.

### 4.6.1 REGULATING THE SOWING DEPTH

Mod. FUTURA:

By acting on the handle (1 - fig.31), you can regulate the height of the share and consequently the depth of furrows, where the seed will be laid down.

To regulate all the planter shares at the same height, there is a graduated scale (2 – Pict.31) as reference.



Pict. 31 – DEPTH REGULATION

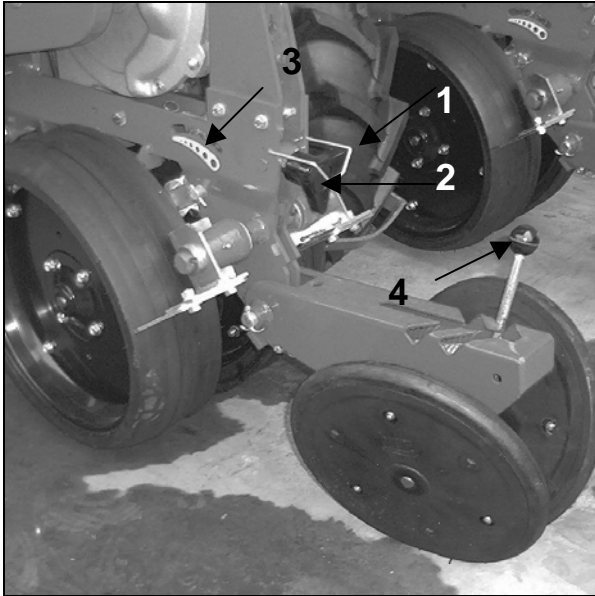
**Mod. FUTURA Maxi :**

Lift the lock up (1 – Pict. 32) and act on the handle (2 – Pict. 32) to regulate the depth of the furrows, where the seed will be laid down. To have the possibility of regulating at the same height all the planter shares (3 – Pict. 32) there is a graduated scale of reference.

### 4.6.2 REGULATING THE COVERSEED WHEELS (Maxi)

The sowing element of the planter Maxi is equipped with a coverseed device (6 – Pict. 32), which is designed for the covering of the furrow, made by the lister disks (2 – Pict. 32) after laying down the seed in the sowing bed. Depending on the kind of soil and the requirements of the sowing, it would be necessary to give more or less pression to this device by acting on the lever (4 – Pict. 32), setting it in the different insertions on the grooved profile of the support of the coverseed wheels.

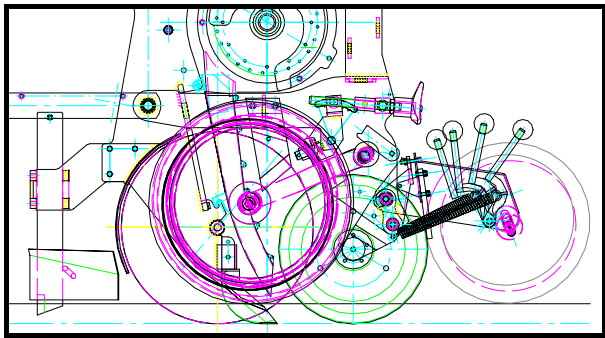
You can also mount wheels (4 – Pict. 32) with a different width, of 1' and of 2' ; the first ones are good for an hard soil.



Pict. 32 – REGULATING DISKS DEPTH

#### 4.6.3 PRESS-SEED WHEEL (Maxi EVOLUTION) (Pict.33)

MASCAR press-seed wheel located beside the pipe for the seed fall pipe, leads the seed in the sowing channel, in order to grant a better contacta between seed and soil.



Picture 33 – PRESS-SEED WHEEL

The press-seed wheel has been used for years in the crops and sugarbeet sowing. MASCAR has made this concept suitable also for the sowing element FUTURA **Maxi EVOLUTION** by inserting a press seed wheel with a big diameter. This sowing "concept" allows a better growing up, by avoiding air bubbles, which could come out after closure of the sowing channel. Moreover the "continuous" dynamic regulation of wheel allows to

set the seed at constant depth and to have better sowing conditions.

The use of the press seed wheel is suitable for sowing on very dry soils, because it grants a good contact between seed and soil along all the row. It is also possible to set up the press seed wheel pressure in combination with the width press seed wheel, as forecast in the paragraph 4.6.3.

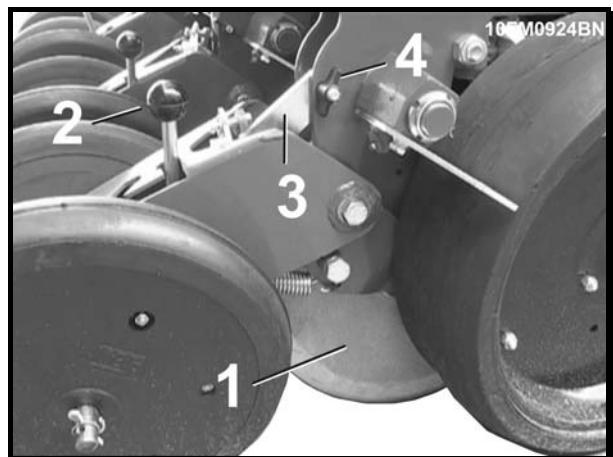
Advantages of sowing with the press seed wheel can be so shortly listed:

- "Constant" dynamic regulation of the wheel depth;
- Optimal growing up
- Better conditions of seed laying
- - Better contact "Soil – Seed".

It is also possible to exclude the press-seed wheel in conditions, where wetness, kind of soil (etc, etc..), could create conditions not suitable for its use.

#### 4.6.4 PRESS-SEED WHEEL REGULATION (Pict.34)

Concording with the kinds of soil and with the sowing needs, there could be the need of more or less pressure on the wheel in combination with the balancing system of the coverseeds wheels. Regulation of press-seed wheel depth is dynamic and "continuous" thanks to the balancing system actively adjustable with the channel edge, prepared by the depth disks, moreover the pressure of the press-seed wheel is actively regulated in combination with the coverseed wheels.



Picture 34 – PRESS-SEED WHEEL

The press-seed wheel pressure on the seed (1-fig.34) is adjustable by operating on the lever (2-fig. 34) setting it on the gear on the cover-seed wheels support.



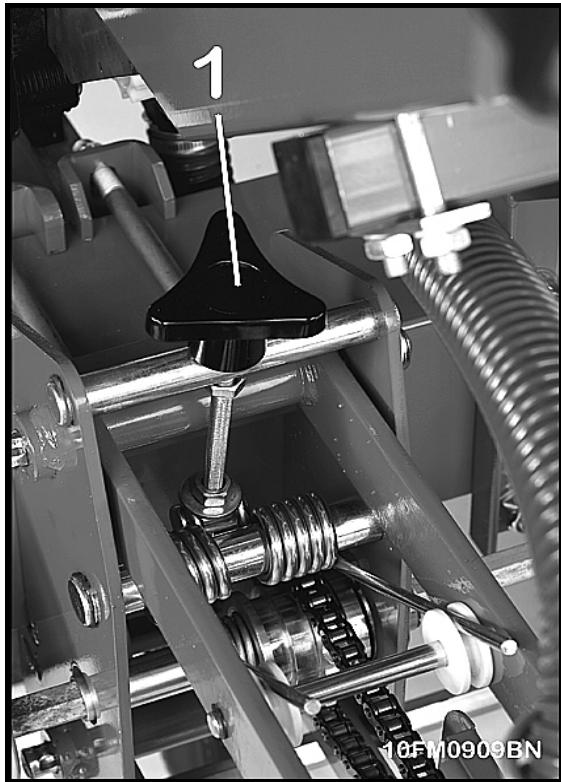
To exclude the press-seed wheel, the excluder plate is to be

Per escludere il ruotino premiseme posizionare il piattino di esclusione (3-fig.34) contro il bilanciere del ruotino premiseme e bloccarlo con il galletto M10 (4-fig.34).

#### **4.6.5 REGULATING THE LOAD PRESSURE**

Acting on the knob (1 – Pict. 35), you get a progressive regulation of the loading of the weight of the element on the soil, up to 100% of its weight and of the unloading, with a weight reduction up to 30%.

With the above mentioned system, you get a more or less incisive penetration of the share on the soil, depending on the spring loading on the base of the kind of soil.



**Pict. 35 – REGULATING LOAD PRESSURE**

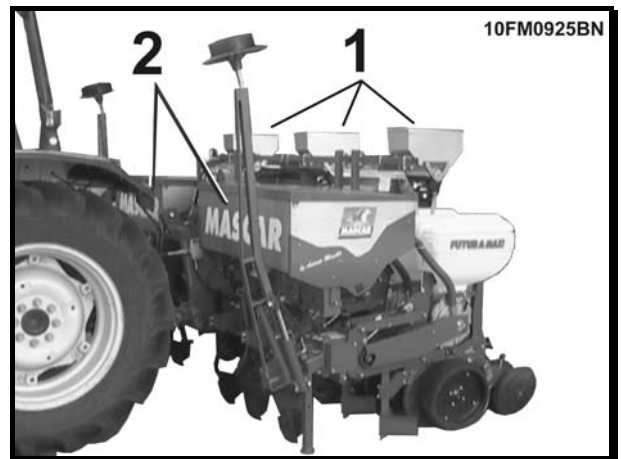
#### **4.6.4 REGULATING MICROGRANULATOR**

Pesticides contained in the tanks (2 Pict. 35), are measured during the sowing, through a gear system located on the relative tanks (1 - Pict. 37). Depending on the quantity of pesticide needed for each hectare of soil, by using the tables (pag. 35 )

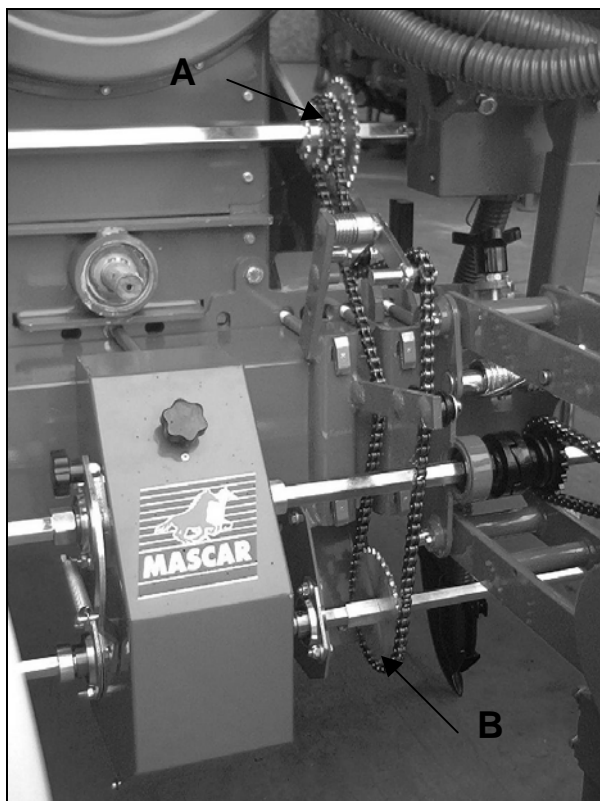
you can determine the position of the regulating gear.

It is suggested to verify, that inside the microgranulator tank, before putting the product, there will not be humidity due to condensate, to avoid obstruction or what else of the internal measuring devices.

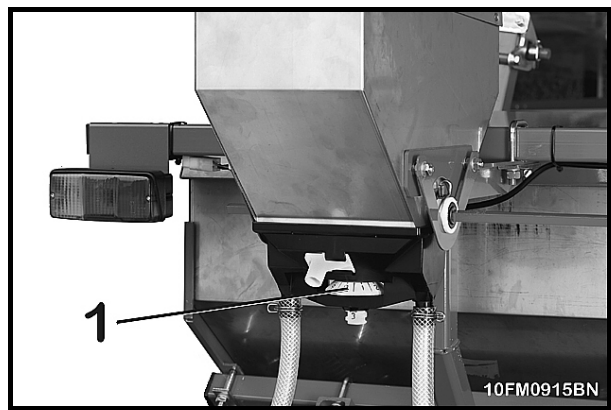
It is also suggested, once the sowing is finished, to empty the pesticide tanks and to go on with its careful cleaning with water, airing to dry them. While moving out the planter, it is suggested to empty the tanks of fertilizer and pesticide.



**Pict. 34 – FERTILIZER AND MICROGRANULATOR**



Pict. 38 – FERTILIZER REGULATION



Pict. 37 – MICRO REGULATION

#### 4.6.5 REGULATING THE FERTILIZER

The fertilizing products contained in the tanks (1Pict. 36) are measured during the sowing through a gear (Pict. 38). Depending on the quantity per hectare (see table pag 33), it is to set the gear ratio through the two pinions A and B. The planter can be equipped with two different augers, a red one (small loads) and a black one (big loads).

Because of the big difference in the fertilizers, in their variable density and in their irregular granulometry, it is impossible to give a precise regulation, suitable for every case: a reference regulation has to be made by consulting the table (pag. 34)

The fertilizer has to be laid down at about 5÷10 cm on the side of the row. Too narrow, you risk, the fertilizer eats the plants.

#### 4.6.6 REGULATING THE SHARE

In front of the hay-cutter, there is the share (16 – Pict. 1/2), having a double functionality: to remove from the sowing area clods and stones, and to ensure through a good levelling and an uniform sowing depth.

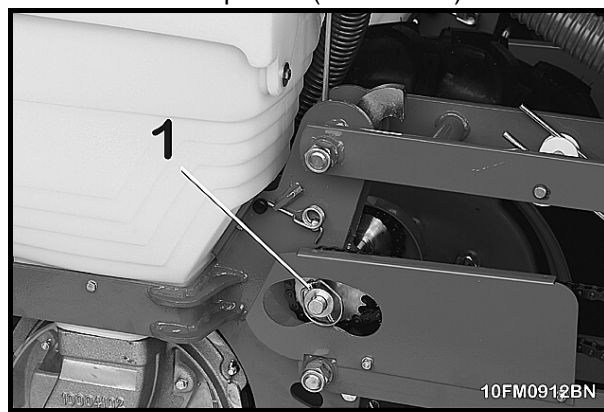
In general, it is advised to set the share at about 1 cm from the soil

#### 4.6.7 EXCLUDING THE SOWING ELEMENT

This operation must be performed, once the engine is off.

If during the sowing, it was necessary to exclude a sowing element, you should act as follows:

- Hook the element to the relative stopping ratchet gear.
- Disconnect the element from the transmission, by unplugging the pin, as showed in the picture (1 – Pict. 39)



Pict. 39 – EXCLUSION OF THE SOWING ELEMENT

#### 4.7 UNLOADING THE SEEDS FROM THE ELEMENTS

MOD: FUTURA

The seed is discharged from the hoppers, but also from the distributor by opening the door (1 – Pict. 40). At the end of this operation, it has to be closed again.





Pict. 40 – FUTURA SEEDS DISCHARGING

#### MOD: FUTURA MAXI

The seed is discharged as in the model Futura, but in addition, it is expected a seed-slide, supplied to install as in the picture 41

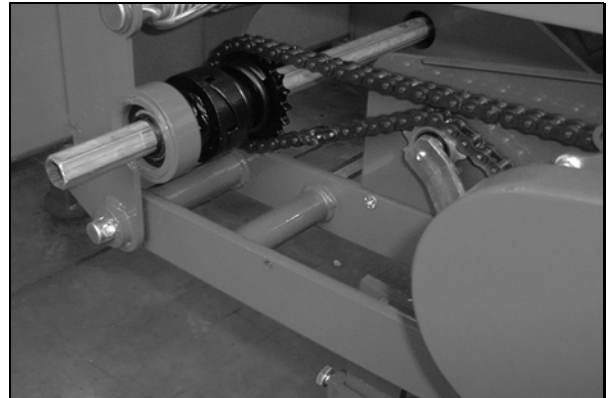


Pict. 41 – FUTURA MAXI SEED DISCHARGING

#### 4.8 TORQUE LIMITING DEVICE

Each shaft is supplied with a system, able to limit the transmitted torque. Many times, because of wrong manoeuvrings or for a bad functioning due to not suitable regulation, there could be an high quantity of torques, which could cause damages to the planter.

In this cases the torque limiting device excludes automatically the planter group from the transmission.

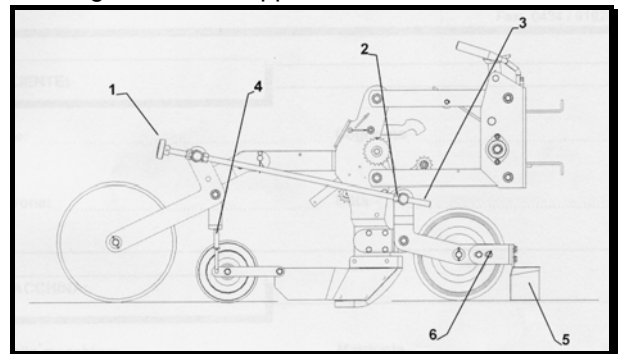


Pict. 42 – TORQUE LIMITING DEVICE

#### 4.9 REGULATING THE ELEMENT “SUGAR BEET”

##### SOWING DEPTH:

By acting on the back handle (1 – Pict. 43) you can regulate the sowing depth, from 0 to 5 cm (p.s.. unblock and block again the nut 2 – pict. 40 before and after this operation). The indicator (3 – Pict. 43) can be used to make uniform all the elements. The press-seed wheel must be regulated, by acting on the support handle (4 – Pict. 43), screwing and unscrewing the two nuts. Then through the support nuts, the height of the share can be regulated. In case it can be lined to the soil up through the two nuts (6 – Pict. 43) blocking the share-support.



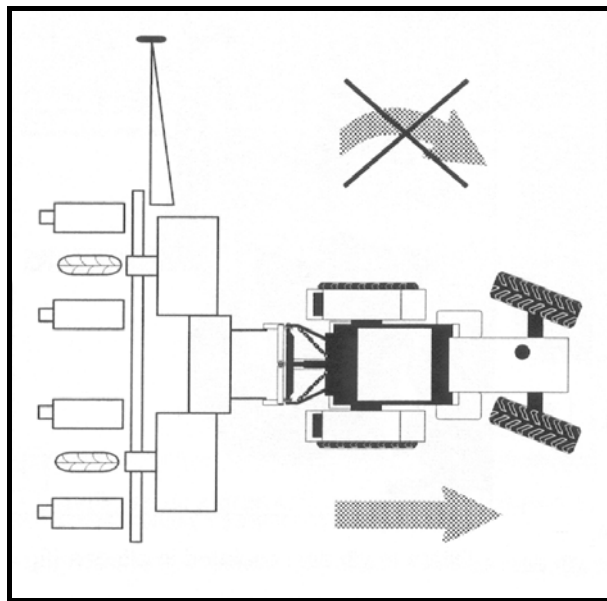
Pict. 43 – ELEMENT “SUGAR BEET”

#### 4.10 GENERAL NORMS FOR THE USE

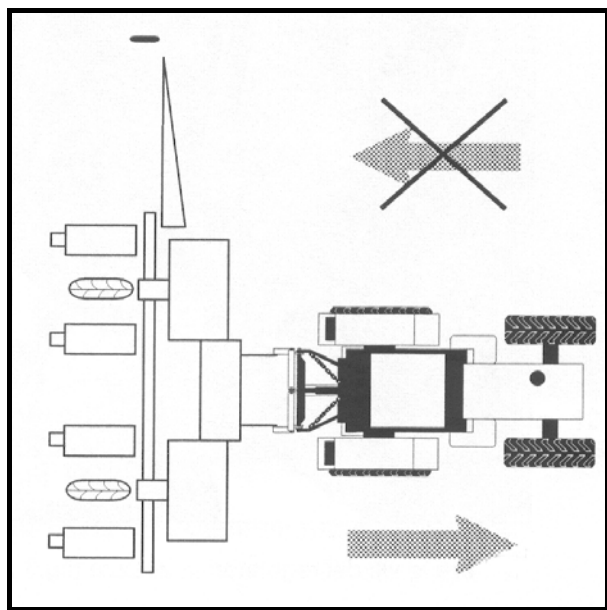
A correct use of the planter, in accordance with determined parameters, allows an high performance level in the time and avoids breakings.

Just for this reason, we are listing here below some norms to be followed.

- Start progressively the power takeoff, abrupt departures are damaging to the belt of the suction.
- Avoid turning, when the machine is in the soil, nor working in reverse motion (Fig.44 e Fig.45).
- Always lift it up, when changing direction in case of U-turn.
- Don't work with the power takeoff synchronized with the wheels. Don't exceed 500 r.p.m. of the power takeoff.
- Never put the engine to its limit.
- The tractor speed with the equipment on working should not exceed 8÷12 km/h to avoid breaks or damages.
- Never lower the planter, when the tractor is not running, in order to avoid obstruction or damages to the lister hay-cutter. For the same reason it is to be avoid the reverse motion, when the planter is in the soil.
- Pay attention, that loading the tanks of the seeds, of the fertilizers and of the pesticides, foreign matters will not get inside (twines, paper of the sack, etc.).
- At the end of the rut, during the reverse motion, the power takeoff has always to be set on a revolutions speed, enough to let the seed to remain in the distributor.
- During the sowing, the seeds distribution has often to be checked, when it is inaccurate, the selector has to be regulated.
- If the distribution is missing or getting lower, you should check, the pipes have not a loss or are not obstructed. In this cases they have to be substituted or cleaned. The aspirator belt has also to be checked.



Pict. 44 – MANOEUVRES TO BE AVOIDED



Pict. 45 – MANOEUVRES TO BE AVOIDED

## SECTION 5

### Maintenance

#### 5.1 MAINTENANCE

Here, you find described all the operations of ordinary maintenance.

It is good you to remember, that a lower working cost and a higher durability of the planters depend from the observance of these norms.

**If the maintenance operations are performed carefully, the advantage will be only on user's favour, while starting newly to work, you will find a machine in very good conditions.**

The intervention times, mentioned in this manual, are merely informative and are relative to normal conditions of use. At any case, they can change in relation to the kind of use, environment (more or less dusty), seasonal factors, etc.  
In bad working conditions, the maintenance interventions have to be increased.



#### **ATTENTION**

Before going on with each operation, make sure, the machine is on a flat ground and it is blocked with the suitable blocks under the wheels.

The maintenance operations, regulation and preparation to the work must be performed, when the tractor and the P.T.O. shaft are disconnected from the planter.



#### **CAUTION**

The points on the machine to be greased are indicated with the adhesive «greaser device» (pag. 11 Pict. 4). Before injecting the grease through the greaser devices, it is necessary to clean carefully the greasing connections to avoid that mud, dust or external bodies mixed themselves with the grease, and as a consequence reducing or canceling the effect of the lubrication. Avoid to put too much grease in the greaser devices. Too much grease on the greased points, with a high pressure, could damage the bearings protections. This operation must be performed carefully.

If necessary, spread a coat of anti-rust paint on the corroded parts.

#### 5.1.1 P.T.O. SHAFT

As regards as the maintenance of the P.T.O. shaft, it is absolutely necessary you follow carefully the instructions, given by the Manufacturer of the P.T.O. shaft, in the manual supplied with the shaft.

#### 5.1.2 AFTER THE FIRST 8 WORKING HOURS

After the first 8 working hours, you should verify:

- The general conditions of the machine.
- The tightening of nuts and bolts (par. 2.1.2).
- The lubrication of the transmission parts.

#### 5.1.3 EACH 8 WORKING HOURS

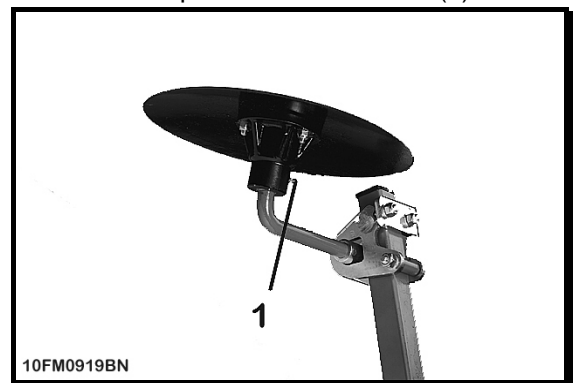
- Check the general conditions of the machine.
- Grease all the points with the adhesive "Greaser" and submitted to friction.

Repeat periodically the following controls, to be performed compulsory at the beginning of the season:

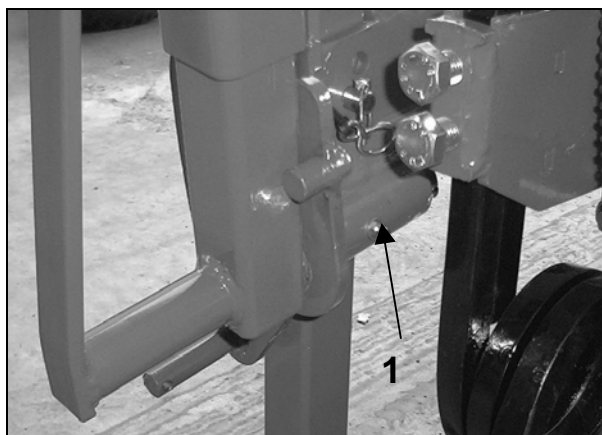
- Grease all the points with the adhesive "Greaser" and submitted to friction.
- Verify the tightening of nuts and bolts (par. 2.1.2).

#### 5.2 ORDINARY MAINTENANCE

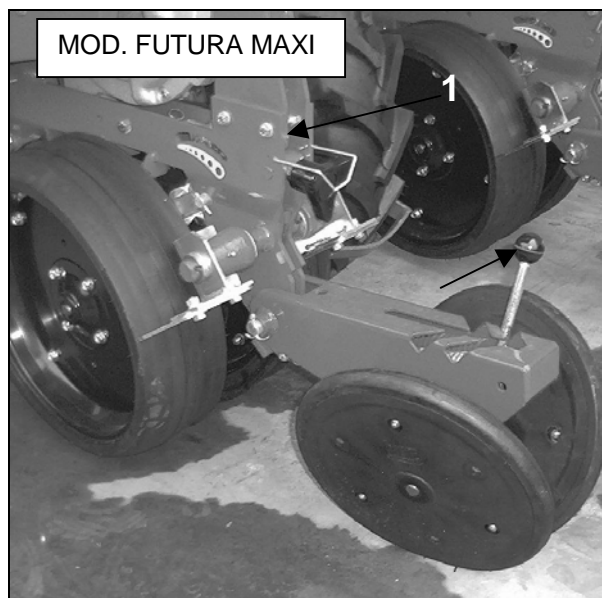
- Grease the pin of the row marker (1)



- Grease the pin of the row marker (1)



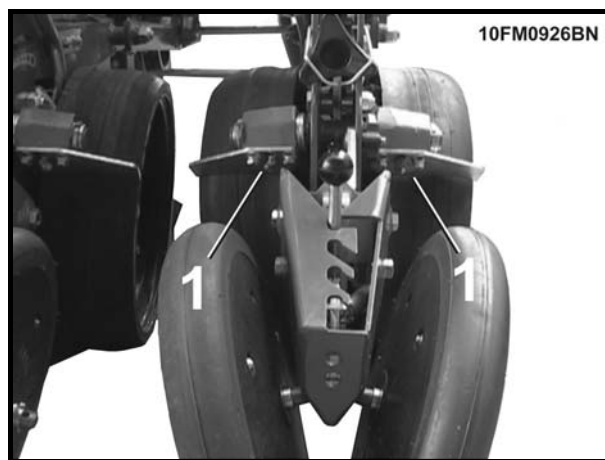
- Grease the pin of the row marker arms (1)



- Oil the screw of the height regulators (1)

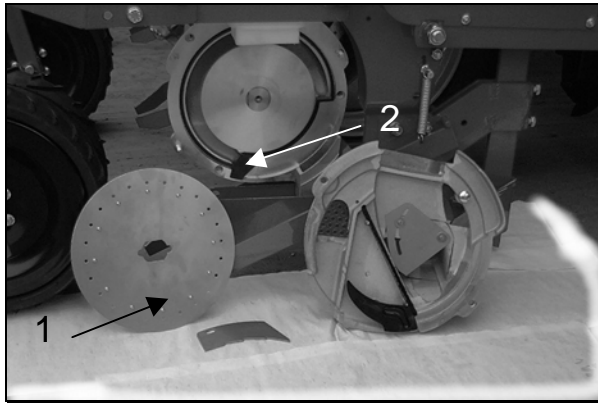


- Oil the screws of the height regulators (1).

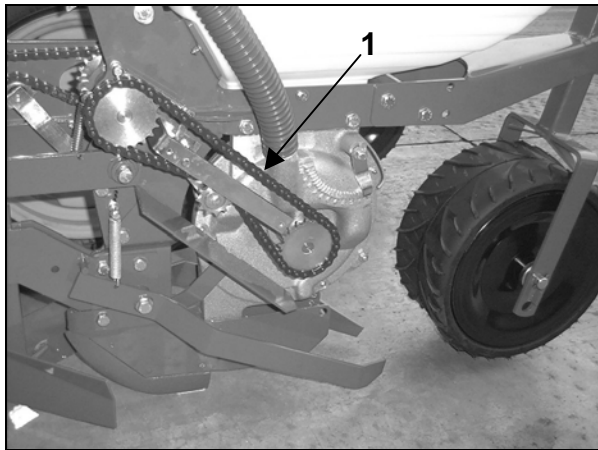


- Grease the pin of the wheels. Regulate depth (1).
- Avoid chemical substances in the tanks, when not using the appliance.

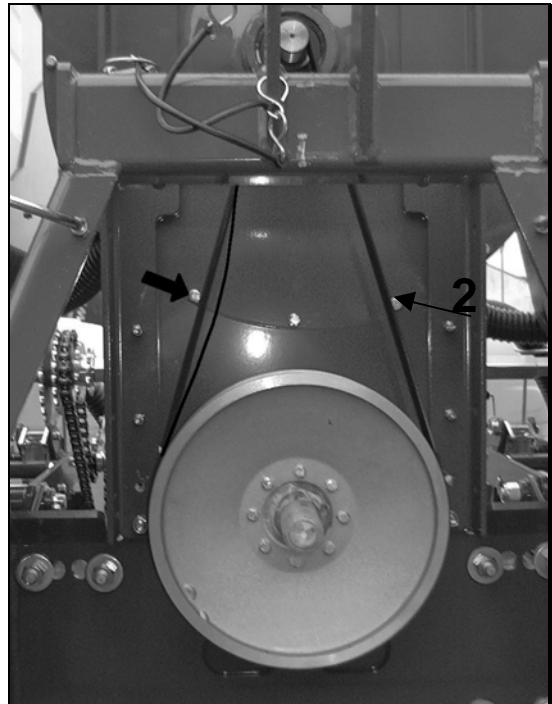




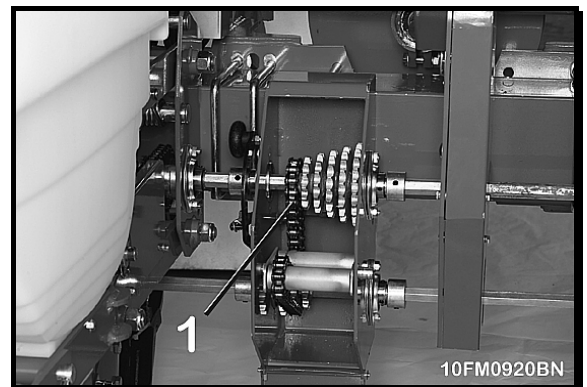
- Clean with water or benzene the internal surface of the seeds distributor (1). Check the conditions of the sowing disks and the wear of the gasket (2).



- Lubricate the transmission belts (1)



- Check the tension of aspirators belt (2)



- Lubricate the change gear (1).

### 5.3 EXTRAORDINARY MAINTENANCE



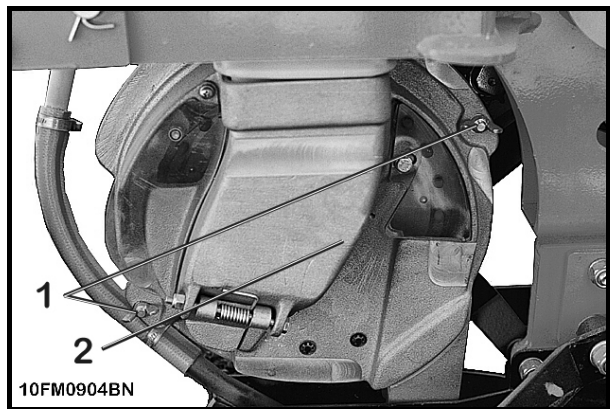
#### CAUTION

The operations described in this paragraph, have to be performed by specialized personnel only, equipped with protection glove and avoiding dusty places:

To substitute the gasket of the distributor (Pict. 43/44), proceed as follows:

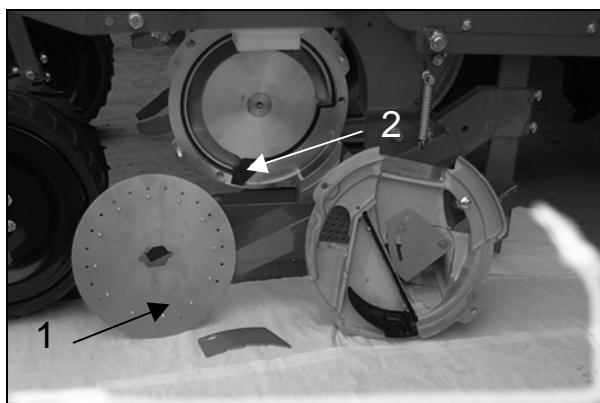
- Remove the two wing nuts (1 – Pict. 43) and draw the cover out 2;





**Pict. 47 – REMOVING THE COVER**

- Remove the selector;
- Remove the disk (1 – fig. 47);
- Remove the choke disk, if present, after loosening the nut, blocking the small cover with the pin;



**Pict. 48 – SUBSTITUTING THE GASKET**

- Remove and substitute the plastic gasket (2 – Pict. 48)
- Repeat the mounting operations in reverse order.

#### **5.4 PUTTING ON REST**

At the end of the season, or when you expect to put the machine on rest, it is necessary:

- To make sure, the product inside the machine has been completely discharged.
- To remove every mark of dirt from the equipment with plenty of water, with particular regard to tanks of chemical substances and then have it dried.
- To place the machine on a suitable and flat surface.
- To set suitable blocks under the machine wheels and make sure all the protections on the machine are in the right position.

- To make a careful check up and, if needed to substitute the damaged or worn out parts.
- To regulate the depressor belt and if needed, to substitute it.
- To tighten nuts and bolts.
- To lubricate carefully each point and the belts also.
- To spread a coat of anti-rust paint on the damaged and corroded parts.
- To protect the machine, by parking it in a dry and sheltered place.
- The planter has to be kept in a warehouse, with the pistons well closed and repaired from dust and dampness.

If these operations are well performed, it will be on user's own advantage, while at the beginning of the work he will find the equipment in optimum conditions.

In case of disassembling of the machine, the anti-pollution law are to be strictly observed and in particular, dispose the used lubricant and the various elements, in function of their different structure.



#### **ATTENTION**

If you expect not to use the machine for a long period, it is necessary to lubricate the parts submitted to wear and to rest it in a sheltered and dry place covering it with a plastic cloth. At the beginning of the new work, you will find in this way a machine in optimum conditions.

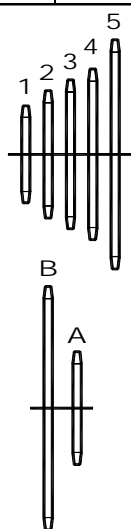
## 5.5 TABLE: FERTILIZER

### 5.5.1 TABLE. FERTILIZER – RED AUGER:

Reference table ( kg/hectare), using fertilizer with density of 1,2 kg/dm <sup>3</sup> and a medium grain diameter of 4 mm											
SMALL		DISTANCE BETWEEN THE ROWS									
AUGER		45 cm	50 cm	55 cm	60 cm	65 cm	70 cm	75 cm	80 cm	90 cm	100 cm
Transmission ratio	A-5	127	115	104	95	88	82	76	72	64	57
	A-4	172	155	141	129	119	111	103	97	86	77
	A-3	198	178	162	149	137	127	119	111	99	89
	A-2	234	210	191	175	162	150	140	131	117	105
	B-5	282	254	231	212	195	181	169	159	141	127
	A-1	307	276	251	230	212	197	184	173	153	138
	B-4	377	339	308	283	261	242	226	212	188	170
	B-3	431	388	353	323	298	277	259	242	216	194
	B-2	503	453	412	377	348	323	302	283	252	226
	B-1	646	582	529	485	448	416	388	364	323	291

### 5.5.2 TABLE. FERTILIZER – BLACK AUGER:

Reference table ( kg/hectare), using fertilizer with density of 1 kg/dm <sup>3</sup> and a medium grain diameter of 4 mm											
BIG		DISTANCE BETWEEN THE ROWS									
AUGER		45 cm	50 cm	55 cm	60 cm	65 cm	70 cm	75 cm	80 cm	90 cm	100 cm
Transmission ratio	A-5	188	170	154	141	130	121	113	106	94	85
	A-4	252	226	206	189	174	162	151	142	126	113
	A-3	289	260	237	217	200	186	173	163	145	130
	A-2	341	307	279	255	236	219	204	192	170	153
	B-5	412	371	337	309	285	265	247	232	206	185
	A-1	449	404	368	337	311	289	270	253	225	202
	B-4	557	501	455	418	385	358	334	313	278	251
	B-3	634	571	519	476	439	408	381	357	317	285
	B-2	741	667	606	556	513	476	445	417	371	334
	B-1	967	870	791	725	669	621	580	544	483	435



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NB: The values are to be considered merely indicative, while the quantities depend from the granulometry and the specific weight of the dung.

**5. 5.3 TABLE: FERTILIZER**

<b>QUANTITY OF DUNG in grams DISTRIBUTED each row on 100 meters (or 50 wheel turn)</b>																
		<b>WISHED EROGATION PER HECTARE</b>														
		<b>80</b>	<b>90</b>	<b>100</b>	<b>110</b>	<b>120</b>	<b>130</b>	<b>140</b>	<b>150</b>	<b>160</b>	<b>170</b>	<b>180</b>	<b>190</b>	<b>200</b>	<b>210</b>	<b>220</b>
		<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>	<b>Kg</b>
<b>DISTANCE BETWEEN THE ROWS</b>	<b>45 cm</b>	360	405	450	495	540	585	630	675	720	765	810	855	900	945	990
	<b>50 cm</b>	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
	<b>55 cm</b>	440	495	550	605	660	715	770	825	880	935	990	1045	1100	1155	1210
	<b>60 cm</b>	480	540	600	660	720	780	840	900	960	1020	1080	1140	1200	1260	1320
	<b>65 cm</b>	520	585	650	715	780	845	910	975	1040	1105	1170	1235	1300	1365	1430
	<b>70 cm</b>	560	630	700	770	840	910	980	1050	1120	1190	1260	1330	1400	1470	1540
	<b>75 cm</b>	600	675	750	825	900	975	1050	1125	1200	1275	1350	1425	1500	1575	1650
	<b>80 cm</b>	640	720	800	880	960	1040	1120	1200	1280	1360	1440	1520	1600	1680	1760
	<b>90 cm</b>	720	810	900	990	1080	1170	1260	1350	1440	1530	1620	1710	1800	1890	1980
	<b>100 cm</b>	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200

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## SECTION 6

### Spare parts

#### 6.0 SPARE PARTS

All the parts of the planter can be requested to the Manufacturer by specifying:

- **Machine model.**
- **Machine registration number.**
- **Year of production.**
- **Code number of the requested piece** (to be find in the catalogue for spare parts), description of the piece and quantity needed.
- **Means of transport.** If this entry is not specified, the Manufacturer, even giving particular care to this service, is not responsible for delays in delivering due to circumstances beyond their own control. The freight expenses are charged by the consignee. The goods are carried at the consignee's risk, even they are sold free domicile.

## SECTION 7

### 7.0 HITCHES AND CAUSES

HITCHES	CAUSES	REMEDIES
<b>Frequent anomalies</b>	Too low selector	Set on higher numbers
	Deformed selector	Check and replace
	Deformed or worn out distribution disk	Check and replace
	Selector encrusted with product for treating	Check and replace
	Deformed or worn out seal	Check and replace
	Too small disk losses	Change loss diameter
	Obstructed disk losses	Check and clean
	Excessive working speed	Slow down
	Defective aspiration pipes	Check and replace
	External body among the seeds (label, leaves, etc)	Check and clean
	Vacuum in the seed hopper (too damp treatment)	Check and prepare a lesser damp treatment
	Not tighten turbin belt	Check the tightening of the belt
<b>Frequent doubles</b>	Too high selector	Set on lower numbers
	Worn out selector	Check and replace
	Too big disk losses	Change the loss diameter
	Excessive speed of the power takeoff	Decrease the turns number
	Excessive working speed	Decrease the speed

<b>Irregular sowing</b> (anomalies-doubles-small heaps)	Ecessive working speed	Decrease the speed
	Too big disk losses	Change the loss diameter
	High soil slope	Close the anti-overflowing plate
	Not regulated anti-overflowing plate	See pag. 19
<b>Not respected sowing density</b>	Ecessive working speed	Decrease the speed
	Too wet soil, sticking to the tractor wheels	Check the mudscraper
	Not respected tyres pressure	Check the pressure
<b>Disconnection of the security device</b>	Obstructed or wore out lister	Check and replace
	Seizing up of the distributor	Check and replace
	External body among the seeds	Verify inside the seeds hopper, if there are external bodies
	Belts blocking	Verify their conditions
<b>Intermittent blocking of the transmission</b>	Hooking among mobile and fixed components	Check the screws of the axles and of frame wheels blocks
	Distances change	Check the tightener of the change gear is ok
<b>Different capacity among the outlets of the fertilizer</b>	External body in the dung	Keep eventual bodies away
	Dung clots	Sift the dung
	Obstruction of an outlet	Open the door and clear from the obstruction
	Obstruction of the outlet pipe	Clear from the obstruction
	Deformed auger	Check and replace
<b>Different load among the outlets of the fertilizer</b>	External body in the dung	Keep eventual bodies away
	Dampness in the product	Replace with dry product
	Obstructed pipe, because it is too long or bent	Release the pipe and avoid any bending
<b>The authomatic row marker does not work</b>	It is not set	Set it. See pag 21
<b>Hydraulic row marker does not work</b>	Dirty particles in the authomatic valve	Check the authomatic valve
	Strangler valve to be set	Set the valve
<b>The arms of the hydraulic row marker lift themselves up too speedy</b>	Strangler valve	Set the valve