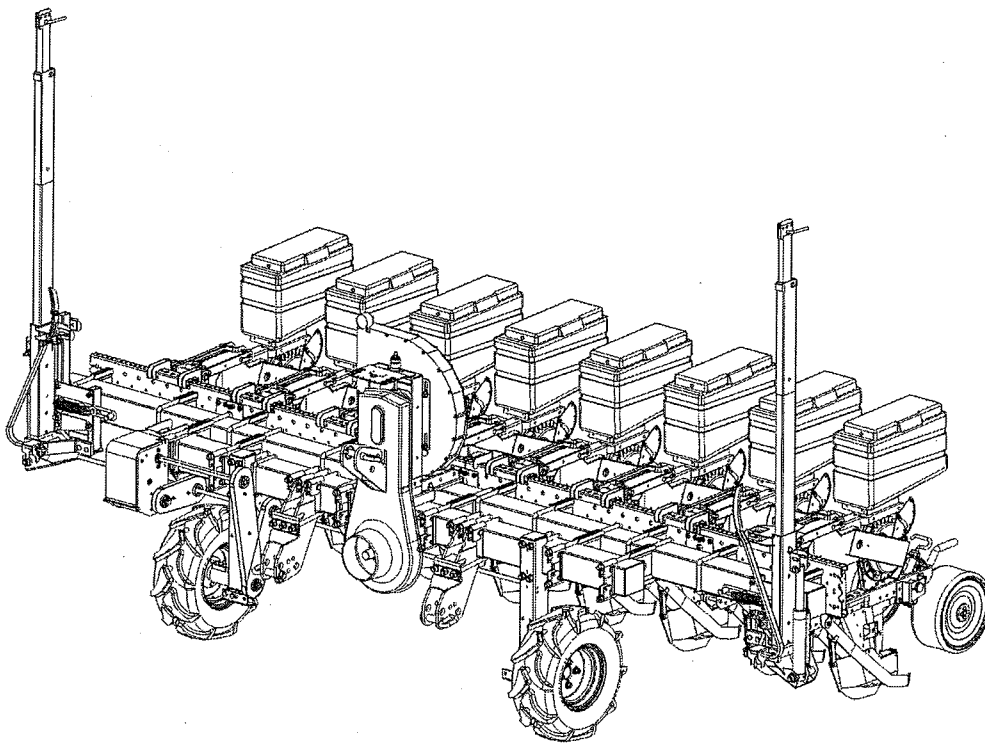


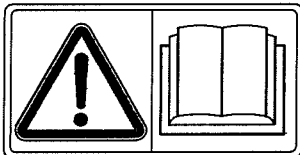


MaterMacc

VACUUM PRECISION PLANTER MS 4200



OPERATOR'S MANUAL



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Cod. 58312041



**INSTRUCTIONS FOR USE AND
MAINTENANCE**

Drawn up according to the directive of Encl. I - 1.7.4. of:

**EC DIRECTIVE no. 89/392
(MACHINE DIRECTIVE)
MODIFIED BY DIRECTIVE no. 91/368
and
D.P.R. No. 459/1996**

**EC-Directive no.. 89/392
published in the Official Gazette of the European Community no. L183 29 June 1989**

**EC-Directive no. 91/368
published in the Official Gazette of the European Community no. L.198 22 July 1991**

**D.P.R. No. 459/1996
published in the Official Gazette no. 209 of the European Community of 6 September**

CONGRATULATIONS FOR YOUR NEW PURCHASE

This manual has been drawn up to give you the information needed about safety, assembly, adjustments, use and maintenance of your new machine.


Please read this manual carefully before using your new machine

It is the user's responsibility to read and understand the instructions for use relevant to safety, use and maintenance of the machine before using it carefully.

Please duly note the machine data (model, serial number, type and year of construction), they will be useful for you to order any accessories, spare parts and in general whenever it would be necessary to get in touch with your dealer.

Any information, drawings and pictures contained in this manual are updated at the date of printing and correspond to the features of the machine they accompany.

Matermacc S.R.L. reserves the right of updating and/or modifying them without any prior notice.

In the whole manual the symbol  and the terms NOTE, CAREFUL, WARNING, DANGER, are used to draw your attention to the important piece of information contained in the frame.

The meaning of the terms is as follows:

NOTE: indicates a specific information.

CAREFUL: indicates that should the operation described not be carried out correctly, the machine or any of its devices may be damaged.

WARNING: indicates that if the operations described therein are not carried out correctly, this may cause serious accidents, death or long-term risks for your health.

DANGER: indicates that if the operations described therein are not carried out correctly, this may cause serious accidents, death or long-term risks for your health.

MAGICSEM MODEL 4000/8000 TYPE X230

MAGICSEM sowing machine type x230 is an agricultural machine particularly suitable for precision seeding (its operation is pneumatic).

It is made and sold in various versions and configurations, in order to adapt to the users' most various requirements.

In this manual, if not otherwise specified, a subject refers to all types of the series x230 and to all existing configurations; wherever important differences should make this impossible, the model or the configuration the instructions refer to will be clearly marked.

All MAGICSEM models type x230 have a three point II cat. connection to the hoist of the tractor and a PTO for cardan transmission.

MAGICSEM sowing machines type x230 in all their versions have been designed and made to sow on a tilled or partially tilled ground, only under specific conditions (no stones, etc.). They can also work on untilled ground.

Any use either than the one described herein can damage the machine and become a serious danger for the user.

Therefore, it is extremely important to follow what is described and prescribed in that the maker shall not be responsible for any carelessness or fault of compliance with such standards.

① *These data are found in the EC data plate fixed to the machine.*

② *By tilled ground we intend a piece of land that has been ploughed before sowing.*

GUARANTEE

- Upon delivery, make sure the equipment has not been damaged by transportation and that the accessories are in good conditions and complete.
- Any claim shall be submitted in writing within 8 days from receipt of the machine.
- The guarantee is valid against any material defects one year from date of delivery of the machine
- The guarantee does not include the shipment costs (the material travels at the consignee's risk).
- Any damages caused to people or property are excluded from the guarantee.
- The guarantee is limited to the repair or replacement of the defective part free of charge.
- The dealers and the users shall not be entitled to any compensation by the maker for any damage they might suffer (such as labour costs, transportation, defective work, direct or indirect accidents, gain loss on the harvest, etc.).

EXPIRY OF THE GUARANTEE

Besides what is mentioned in the contract of supply, the guarantee shall be null and void:

- whenever the limits mentioned in the table of the technical data or in other tables contained in the manual are exceeded.
- If the instructions described in this manual are not carefully followed;
- In case of improper use, defective maintenance or mistakes made by the customer;
- If any non-original spare parts are used.

Anyway the maker is at your complete disposal for ensuring an immediate and accurate technical service and for doing whatever may be necessary for a better operation and for the maximum output of the equipment.

1 SAFETY NORMS

The following pages describe the meanings of the safety signals (*prohibition, warning, prescription*) applied to your machine.

Carefully read the following pages.

They have been written for your safety and that of the people and property that may come in touch with the machine.

- **Try to memorize the meaning of each signal in order for it to become familiar to you.**
- **Instruct whoever will approach the machine about the meaning of the signals and the behaviour that should be adopted in their presence.**

All the safety signals are applied to the machine in a visible and easily interpretable way.

- **Keep them readable and clean at all times.**
- **Never cover them with any objects that make their reading difficult.**
- **Should they be damaged, replace them as soon as possible.**

Code 58280002

- 1) - **Accident**
- 2) - **Fall**
- 3) - **Crushing,
Trapping**

From the driver's seat, the driver has a limited vision over the tractor structures and the machine, therefore he may not see people or things located near the machine, endangering them seriously. The machine cannot transport or support anyone with the required safety. Any attempt to get on the machine or cling to it implies a serious risk of falling, slipping and trapping.

Before starting, the driver shall make sure that nobody is close to the tractor or to the sowing machine.

Whoever should approach the tractor for any reason, shall anyway

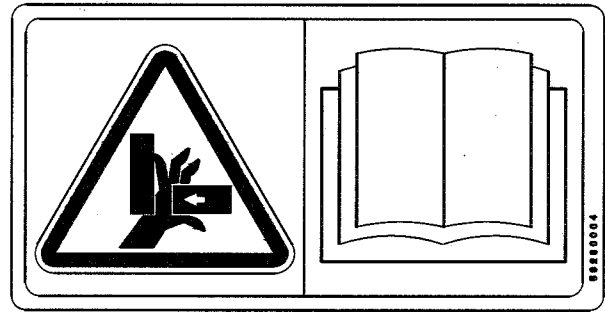
- **Make sure that the driver has seen him.**
- **He shall not get on or cling to the machine in motion.**
- **Keep at safety distance at all times.**
- **Follow the procedures described in this manual carefully.**



Code: 58280004

Hand and upper limbs crushing.

Some operations of use and/or maintenance, if incorrect, may cause serious crushing or cuts of the upper limbs and in particular of hands.



!!! IMPORTANT !!!

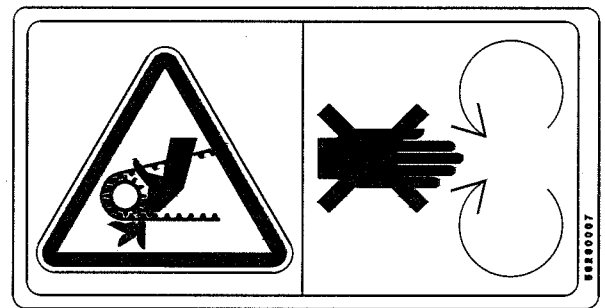
When you find this signal, read and follow the procedures described in this manual carefully and scrupulously before acting.

Code: 58280007

Cinematic devices (1) in motion

In particular chains, toothed gears, belts and pulleys. If you approach of them without the due precautions, the accident risk is high.

(1)- By cinematic device we intend any group of mechanical parts in motion.



!!! WARNING !!!

*Make sure all guards are in place and correctly fixed. Do not remove the guards when the tractor in motion.
Make sure it is impossible to make any involuntary movement. Keep at safety distance anyway, work with the adequate instruments and never directly with your bare hands.*

Code : 58280005

Danger opening

This signal indicates parts of the machine that open automatically. These movements can jeopardize the integrity of people and things close to the machine.



**!!! WARNING !!!**

**When you find this signal, keep at safety distance.
To work close or on the parts marked by this signal make sure that such parts cannot hurt you.**

Code: 58280006**Danger: rotating shafts.**

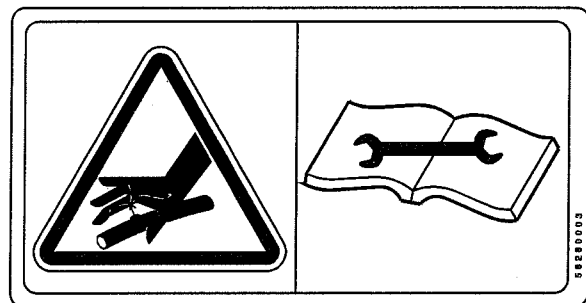
This signal indicates the presence of rotating shafts. Before setting the machine in motion, always make sure that the guards of these shafts are in perfect conditions..

**!!! WARNING !!!**

**Never enter the working area of the shafts in motion.
Do not wear any clothes with belts or parts that may hook to them.
Read the literature enclosed to the Cardan transmission**

Code: 58280003**Danger: high pressure tubes**

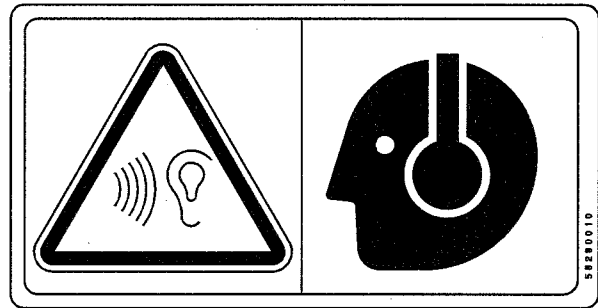
To be found next to the high pressure hydraulic installations. Should you need to work close to this signal, the hydraulic supply should be cut off. With the system cut off, periodically check that the tubes and connections are in good conditions.

**!!! WARNING !!!**

Should you find any leaks from the tubes or connections, never try to stop them with your hands in anyway.

Code: 58280010**Noisy area.**

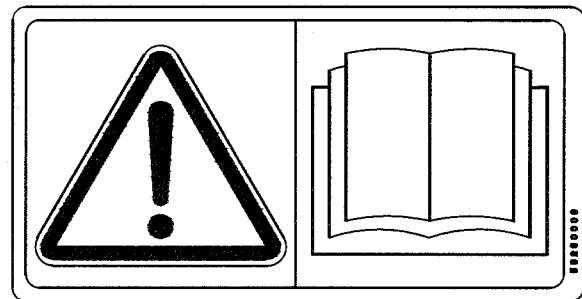
This signal marks some parts of the machine where the noise level can be such as to cause (even permanent) damage to ones hearing. If there is this signal, it is compulsory to use safety earphones as prescribed by the standards in force in your country.

**!!! IMPORTANT !!!**

Do not approach of the machine without the relevant guards.

Code: 58280009**Danger/general warning.**

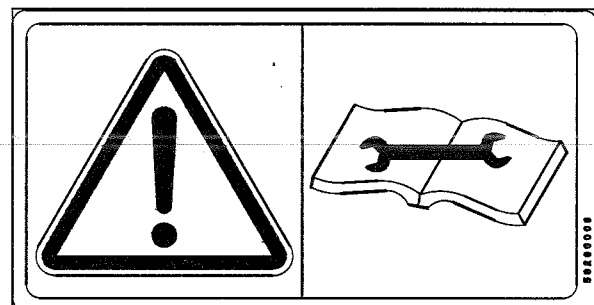
This signal is found wherever any dangerous situations may be found for specific conditions and situations or in case of the operator's incorrect behaviour.

**!!! IMPORTANT !!!**

When you find this signal, before acting, read and follow the procedures described in this manual carefully.

Code: 58280008**Danger/general warning.**


This signal has the same meaning as the previous one, but it is used when the specific situations and behaviours that might cause a risk, are due to maintenance.




Code: 58280001

This signal indicates a risk in handling chemical substances and biological products used in agriculture. It will be affixed to tanks and containers of the machine and its accessories. This signal does not indicate any danger of the tank or the container itself, but of the various substances contained in them.




!ALT!

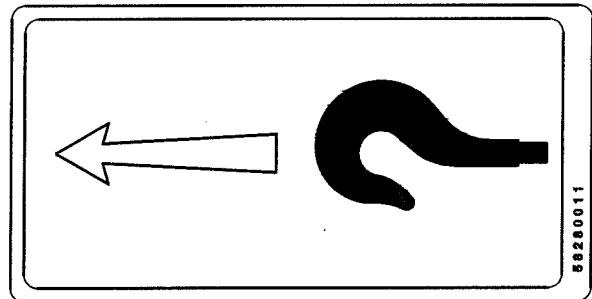
!!! IMPORTANT !!!


!ALT!

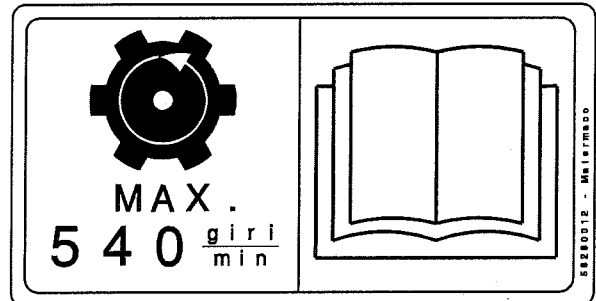
You are recommended to read the instructions for use of chemical/biological products used carefully. Adopt the behaviour and the individual safety means prescribed for such products.


Code: 58280011

Actually this signal is not an actual safety signal. It is used to indicate the only points admitted for hooking slings, for hoisting and fixing the machine during any operations of transportation and storage.



Code: 58280012
Max. RPM.

This signal indicates that the PTO and the cardan transmission must not rotate at a speed higher than 540 rpm.





!!! WARNING !!!



Do not let the PTO rotate over 540 rpm.

Code: 58213001
CE mark plate

It contains the essential data of MAGICSEM 4000 / 8000 sowing machines

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Modello :
 Serie Tipo Anno

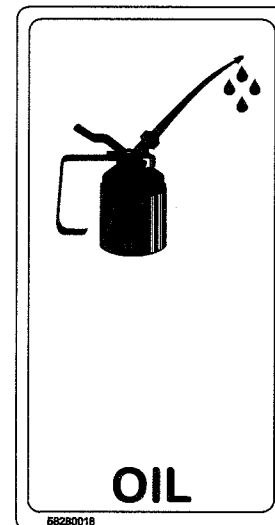
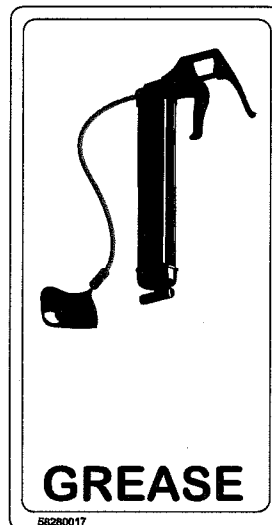


58213001

Code: **58280017 - 58280018**

These signals indicate the points of the machine to be lubricated in order to maintain your machine in good working conditions.

The frequency of such interventions is specified in the picture relevant to the part to be lubricated.

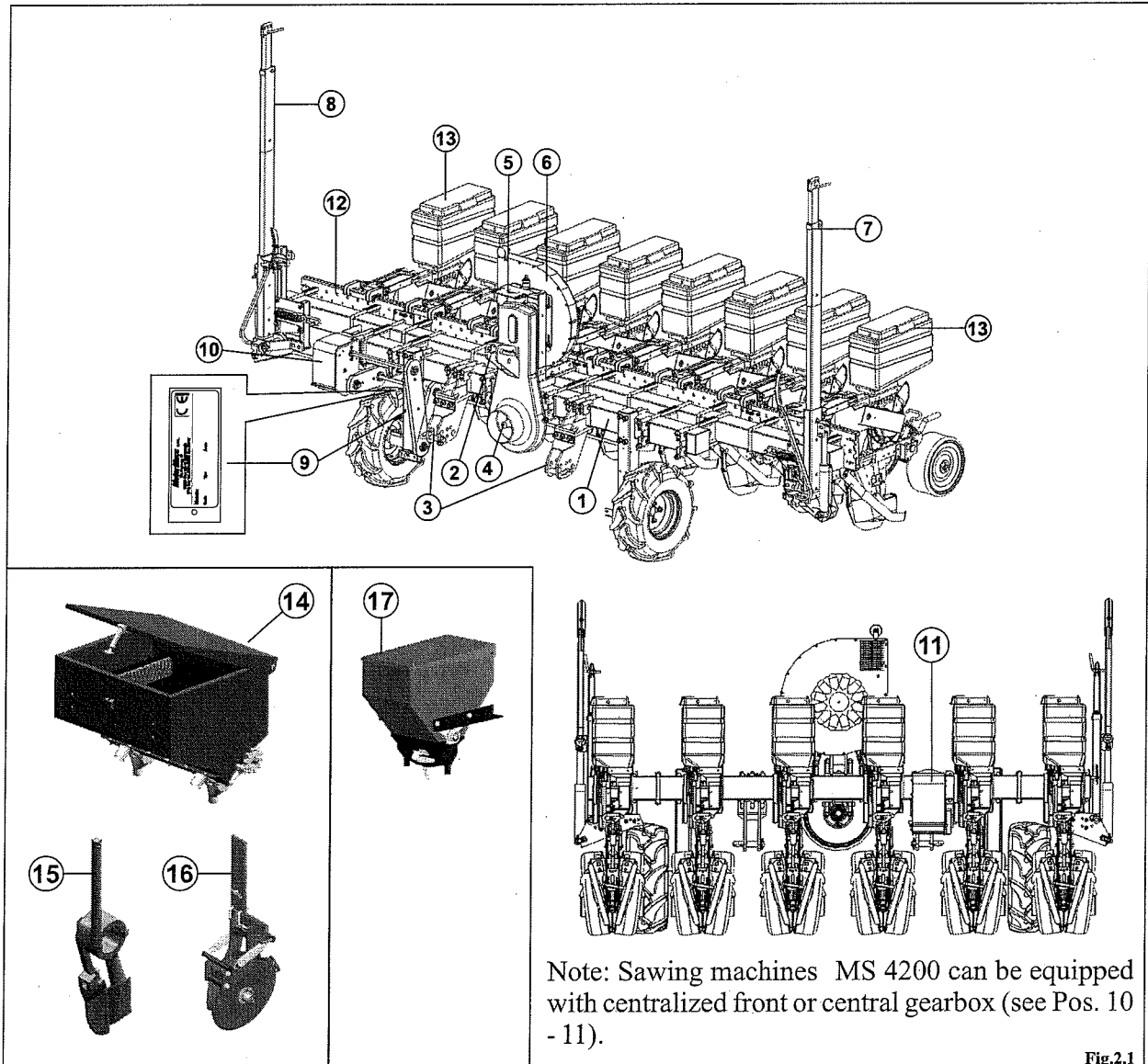


NOTE

The sowing machine will last longer and the operating costs will be lower if these signals are methodically and constantly complied with.

2 IDENTIFICATION OF THE MACHINE

2.1 LAYOUT



Note: Sowing machines MS 4200 can be equipped with centralized front or central gearbox (see Pos. 10 - 11).

Fig.2.1

- 1) = Main frame
- 2) = I and II point
- 3) = III point
- 4) = PTO
- 5) = Hydraulic connections
- 6) = Vacuum pump
- 7) = Row marker left
- 8) = Row marker right
- 9) = Identification plate
- 10) = Front Gear box
- 11) = Gear box

- 12) = Easy-Set
- 13) = Planting unit

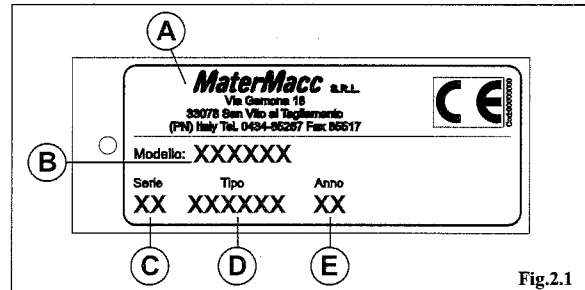
(ACCESSORIES)

- 14) = Fertilizer distribution tanks
(Mod. VarioVolumex)
- 15) = Sowing element
(STANDARD)
- 16) = Double disc fertilizer opener
(OPTIONAL)
- 17) = Microgranulator tanks

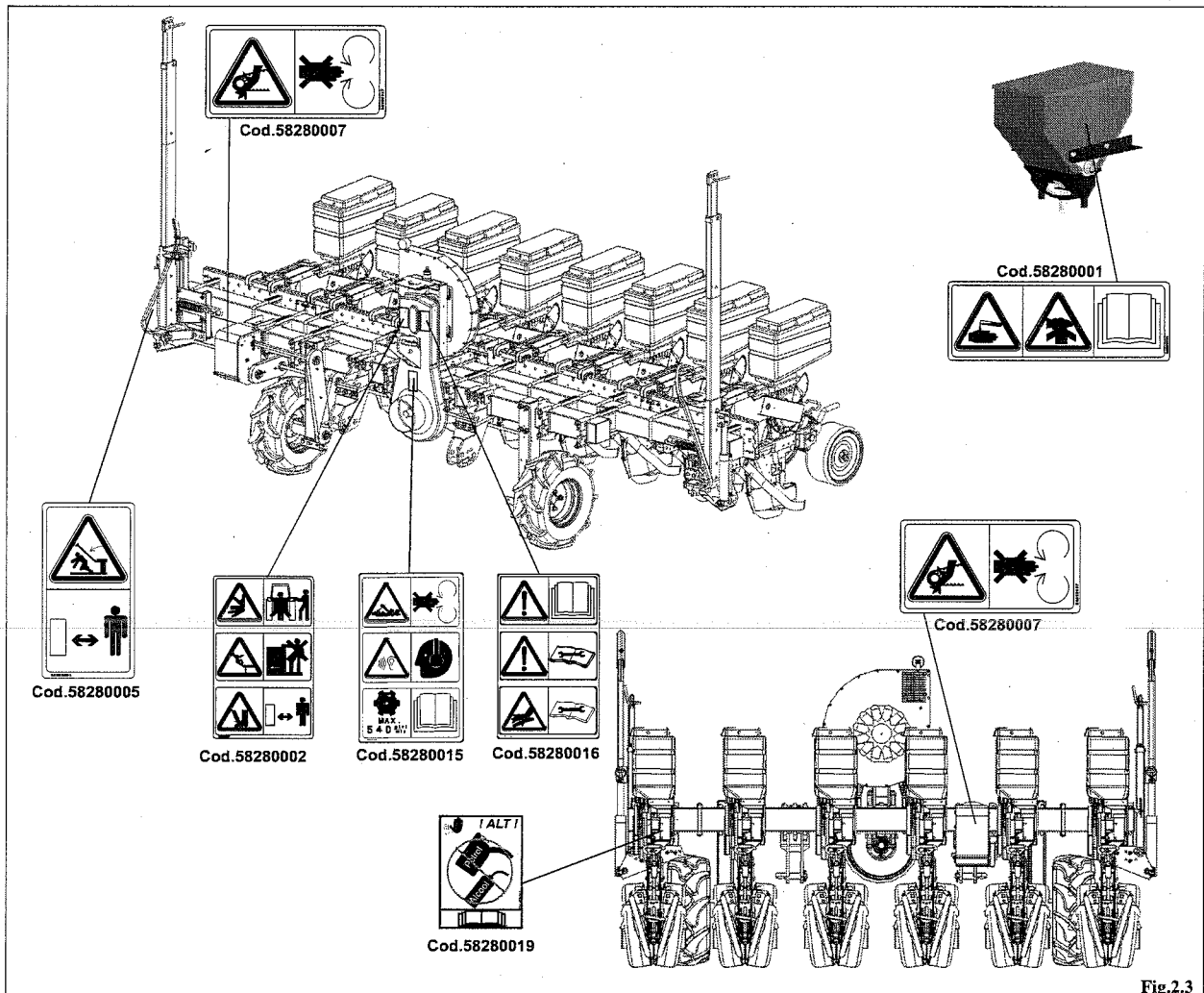
2.2 IDENTIFICATION DATA

Every single machine is equipped with an identification plate (Fig. 2.1), containing the following data:

- A) Name, company name and address of the Manufacturer.
- B) Machine model.
- C) Machine type.
- D) Machine serial nr.
- E) Year of manufacture.


Fig.2.1
NOTE

Whenever MAGICSEM sowing machines should require any spare parts or assistance, please refer to the data mentioned in the plate.

2.3 POSITION OF THE WARNING SIGNALS

Fig.2.3

2.4 TECHNICAL DATA TABLE

The technical data of table 2.1 refer to sowing machines model (MS 4200).

Model	N° of rows	Row spacing (cm)	Working width (cm)	Weight		Power Required (Hp)	Capacity		
				base	fertil.		seed	micro	fertil.
				(Kg)		(dmc)			
4200	4	75	254	580	790	40-60	140	24	340
	6	45	254	690	900	50-70	210	36	340
	6	75	410	730	940	60-80	210	36	430
	8	45	350	870	1080	70-90	280	48	430
	8	75	560	1110	1320	80-100	280	48	860
	12	45	530	1390	1600	90-110	420	72	860

NOTA

The technical data will not be binding on MATERMACC s.r.l. We reserve the right to modify them without any prior notice.

2.5 EQUIPMENT
2.5.1 STANDARD EQUIPMENT

Each sowing machine is supplied complete with the following material:

- Cardan
- Gear box, 21 ratios
- Hydraulic row marker
- 1 set of seed plate each machine
- Vacuum meter
- Seed emptying collector
- Fixed partition small seeds
- PTO kit for 540 RPM
- Spring attachment to lighten the planting units
- Planting unit shifting lever
- Farmflex press wheel

2.5.2 OPTIONAL EQUIPMENT:

Each Magicsem sowing machine can be equipped with the following:

- Fertilizer hoppers from 170 to 215 dmc.
- Fertilizer hoppers extension to 800 dmc.
- Pneumatic fertilizer with a single 1000 liter tank.
- Microgranulate hoppers 12 - 25 dmc.
- PTO kit for 1000 RPM.
- Seed plates for special seeds.
- Seeding monitor.
- Cur-off device for one or more planting rows
- Excluding rows with the control unit
- Hectare counter C.N.T.7
- Liquid fertilizer
- Liquid herbicide applicator
- Capacity of seed tank 70 liters

2.5 HANDLING AND TRANSPORTATION

Should the machine be carried or handled with means that do not have a three-point II cat. standard link the only hooking points allowed are the ones marked by the symbol.

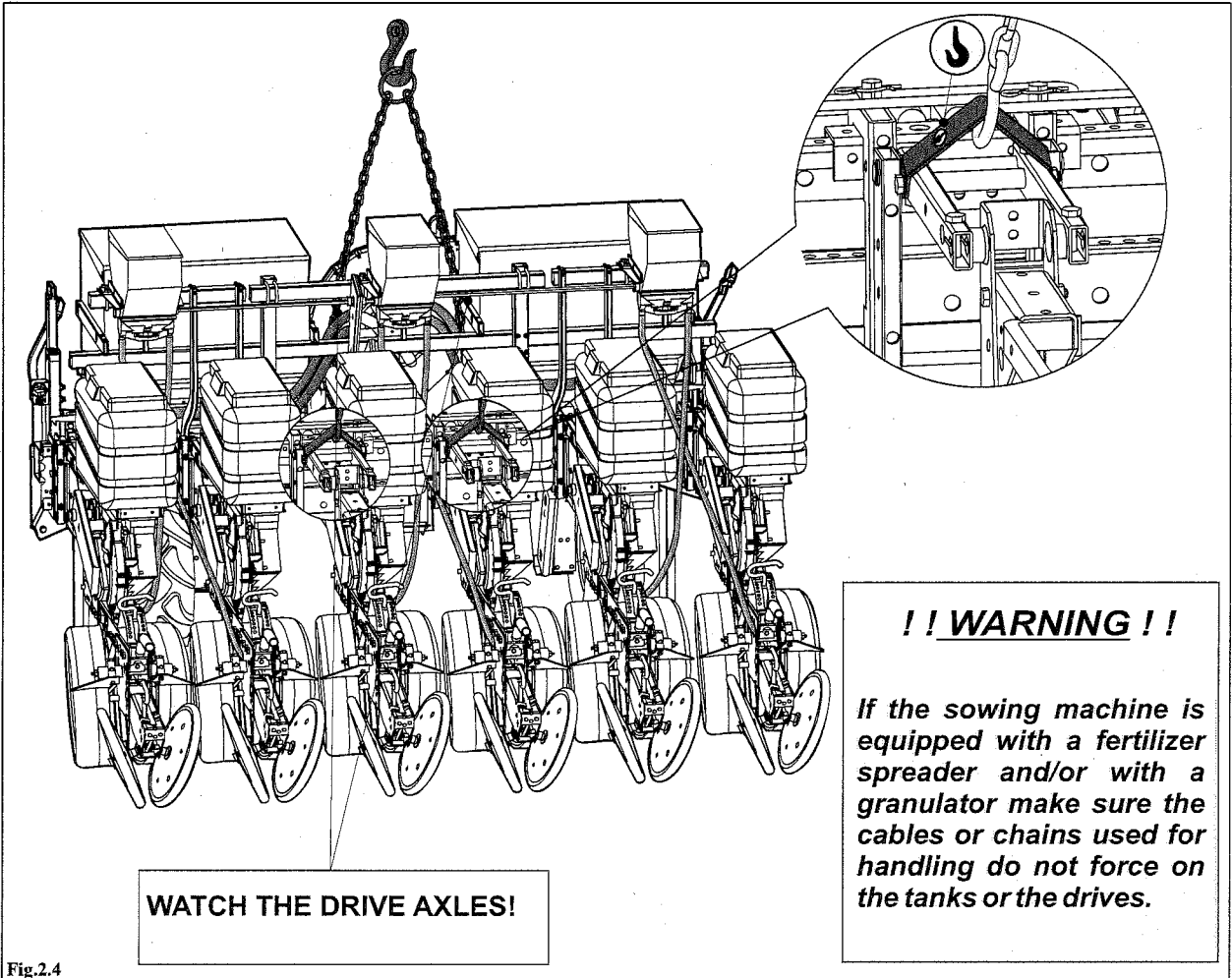


Fig.2.4

**!! WARNING !!**

The sowing machine must be hooked to ALL the points preset for handling in order to make sure it is stable enough.

NOTA

Any slinging and hooking operations shall be reserved to people of proven ability and responsibility.

Before proceeding check the weight of the machine (in the Technical Data chapter)

Make sure the equipment used for hoisting and slinging the machine can stand such weights.

3 PREPARING THE EQUIPMENT

3.1 PREPARING THE TRACTOR

NOTE

The use of the MAGICSEM sowing machine must be reserved to skilled personel in compliance with all the lawful requirements for driving agricultural machinery.

Make sure that the power of the tractor you have, is enough to use the sowing machine you have purchased. Refer to the instructions for use of the tractor to look for all the data you need.

The application of an extra equipment to the tractor modifies the distribution of weight.

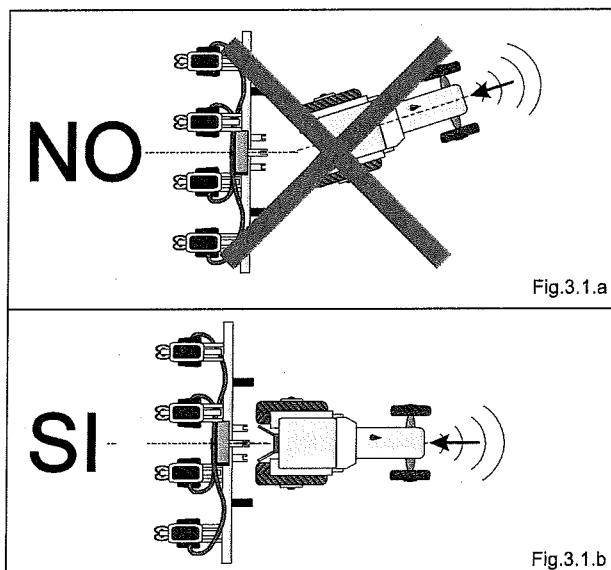
We recommend to add the specific ballasts to the front of the tractor to balance the weight.

3.1.1 HITCHING THE SOWING MACHINE TO YOUR TRACTOR

The sowing machine can be hitched to any tractor equipped with a universal three-point linkage. When the sowing machine is towed to the tractor, it shall rest on even ground.

The sowing machine must be supported by the parking device usually in the first and last sowing elements (see chapt. 9.7)

Bring the tractor close to the sowing machine so that the 2 longitudinal axes coincide. (Fig.3.1.b)



To a such a distance that the ends of the hoister arms are flush with the sowing machine connections. (1st and 2nd point).

Adjust the hoist to bring the arms to the necessary height.

If you have a standard connection, insert the relevant pins by making sure they have not been damaged.

NOTE

Before leaving the tractor, you must pull the parking brake and switch the engine off.

NEVER use pins/plugs different from the standard ones.

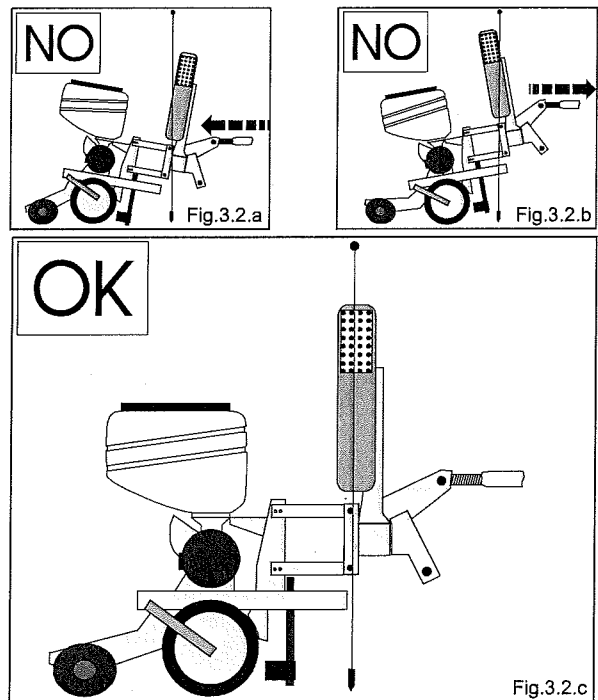
NEVER forget to lock the safety pins as required. (for example split pins, locking pins, ecc.).

Connect the third point of the hoist to the third point of the sowing machine by using the pin and locking it with the locking pin.

Adjust the sowing machine position by acting on the adjusting tie rod.


The vertical axis of the parallelogram must be perpendicular to the ground as shown by (Fig.3.2.c).

Figures (3.2.a e 3.2.b) show two incorrect adjustments




Once the sowing machine has been hitched to the tractor, adjust the hoist arm chain, by giving them the necessary tension to avoid any dangerous oscillations of the machine sideways. Then make sure the distance between a point of the sowing machine and the rear wheel of the tractor is identical for both wheels. (Fig.3.1.b).

If distance is not identical, adjust the tie rods of the hoist arms.


! ALT !

!! WARNING !!


! ALT !

Remember that the working zone of the hoist arms that is between the tractor and the sowing machine, is one of the most dangerous areas. (Fig.3.3). It is absolutely forbidden to stop or dwell in this area when the engine is on and the PTO is inserted.

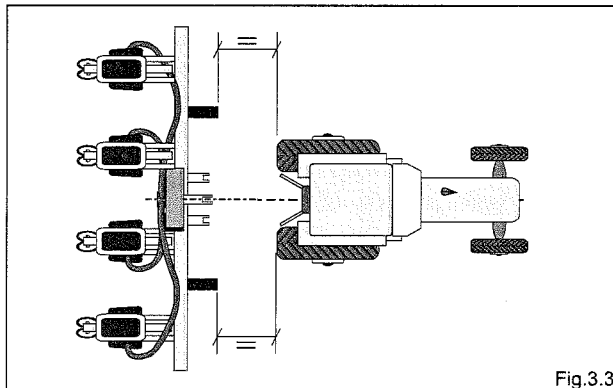


Fig.3.3

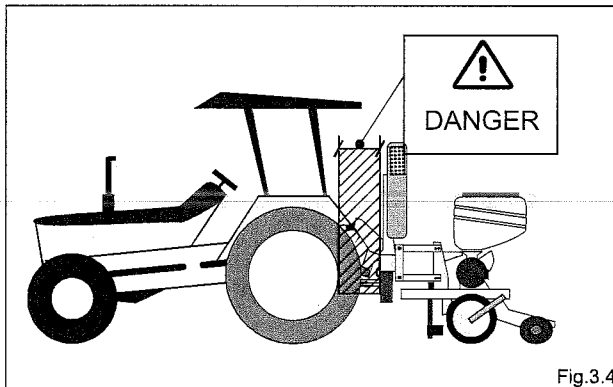


Fig.3.4

3.1.3 CARDAN SHAFT ASSEMBLY

NOTE

Before using the PTO transmission carefully read the instructions for use supplied with it.

The MAGICSEM sowing machine demands the application of a PTO transmission with the EC certificate.

It is forbidden to use PTO transmissions that are not certified.

Lack of compliance with this norm automatically makes the safety certificate of MAGICSEM sowing machines series 8000 null and void.

MATERMACC sowing machines must also work through a PTO shaft equipped with the necessary safety devices for overloads and the guards fixed with the relevant chain.

Before carrying out any connection of the PTO transmission shaft, switch the engine off and remove the key from the control panel.

Before and during work make sure that all transmission guards, tractor guards and sowing machine guards are mounted and in good order.

We recommend to grease the PTO of the tractor and the sowing machine connections before installing this transmission.

The end of the PTO transmission that must be clutched into the PTO shaft is marked by a tractor symbol. (Fig.3.5)

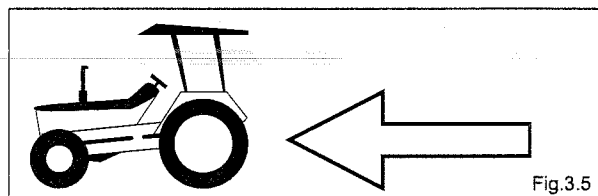


Fig.3.5

Before inserting the PTO, make sure the RPM correspond to the ones specified on the decal applied to the equipment.

It is forbidden to exceed the maximum RPM indicated.

Before inserting the PTO, make sure nobody and nothing are in the area of action of the machine and that the RPM that you have selected correspond to the admitted ones.

At work and during transportation, avoid any conditions of maximum stretch of the PTO transmission.

NOTE

Under any operating conditions the telescopic pipes must overlap for at least 1/3 of their length.

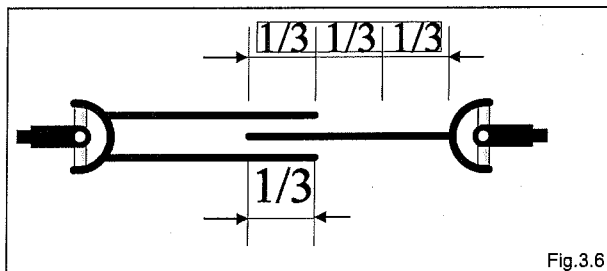


Fig.3.6

NOTE

*Work with limited and equal joint angles.
Disconnect the PTO during the manouvres where the joint angles would exceed 35°.
Always reduce the RPM when you exceed 10°*

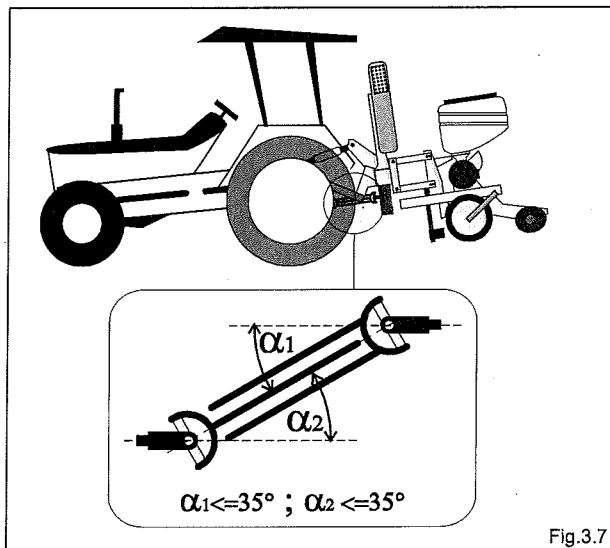


Fig.3.7

After disassembling the PTO shaft, put the safety cap back on the PTO shaft.

3.1.3 HYDRAULIC CONNECTIONS

The MATERMACC sowing machine is a highly automated machine.

Connect the tubes of the oleodynamic circuit to the take offs of the tractor by making sure the ends are clean.

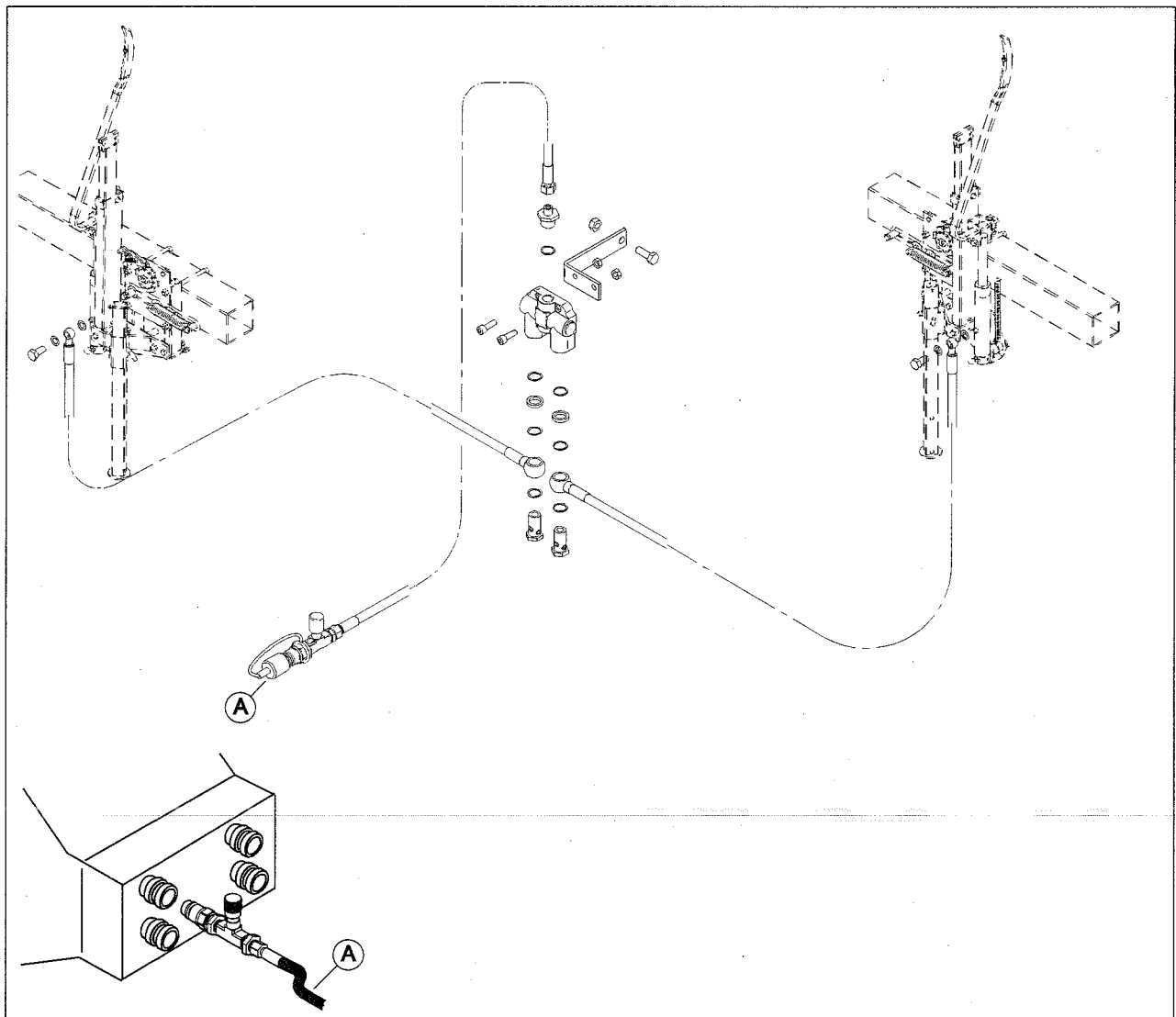


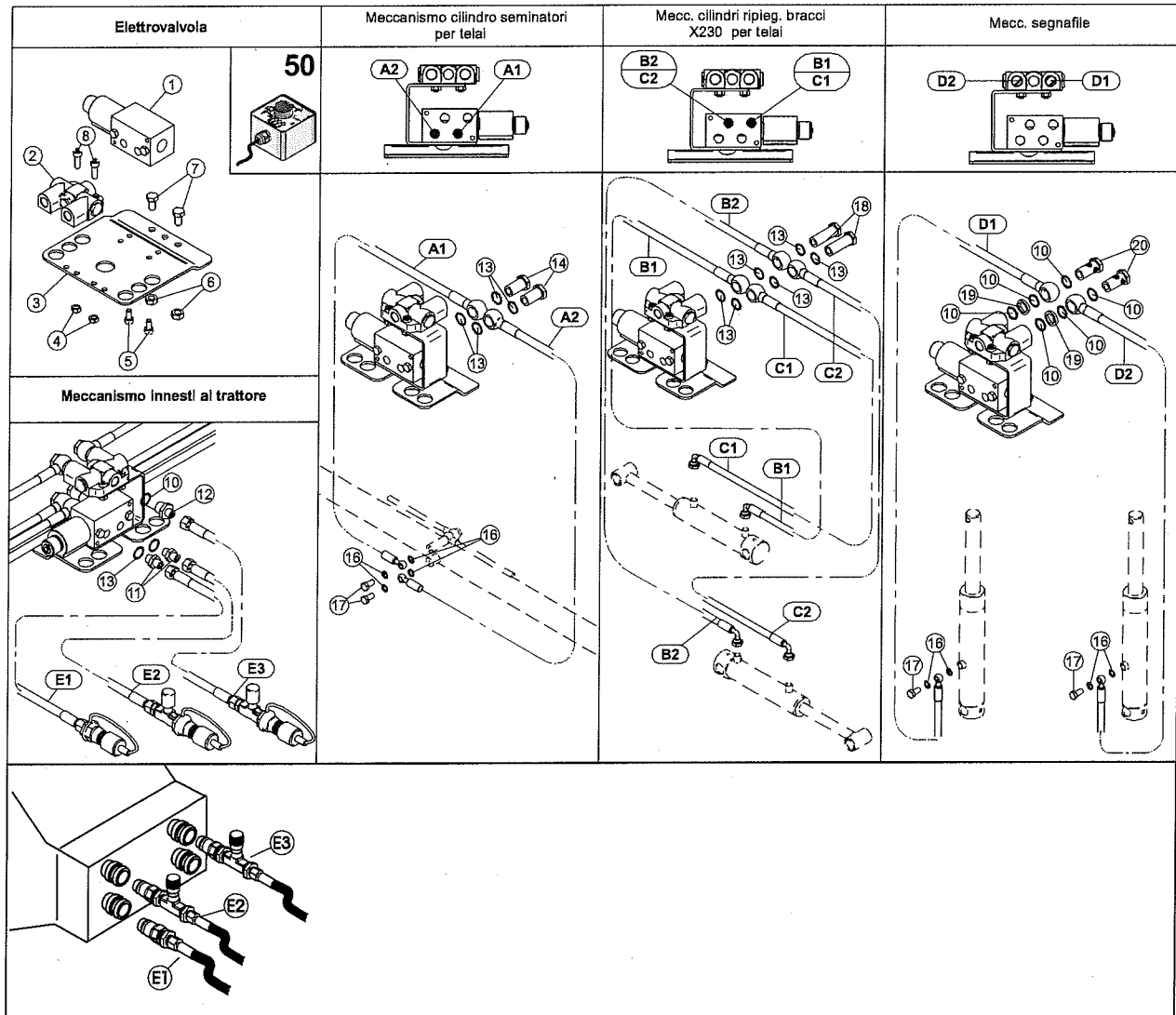
!! WARNING !!




Before putting the hydraulic system under pressure, make sure that all pipes are connected and not damaged. The fluid under pressure has enough force to penetrate the skin causing injuries or infections.

MODEL X100 - X200




MODEL X230

3.1.4 ELECTRICAL CONNECTIONS

Connect the BLUE and BROWN threads of the power supply cable at a voltage of 12VDC. No polarities must necessarily be complied with when connecting the BLUE and BROWN threads to (+) and (-) 12v.



! ALT !

!! WARNING !!



! ALT !

For your connection select a point of the electrical installation that assures a power capacity of at least 5A. Make sure the sections of the main cable and any connecting plugs are adequate and protected by fuses to assure the correct operation of the gearbox.

3.2 EXAMPLE OF A CORRECT HITCHING OF THE SOWING MACHINE

The compacting wheels are sometimes not aligned with the furrow left by the opening disks or by the ploughshare therefore they may not compact the ground well.

This is due to the fact that the sowing machine is not correctly adjusted at the hoist connections (Fig.3.1.a).

In this case it would be necessary to adjust them without fixing them rigidly, but leaving a few millimeters' play.

The sowing machine must anyway be hooked as shown in (Fig.3.1.a and 3.2.c).

4 ENTERING THE FIELD WITH YOUR SOWNG MACHINE

Once the sowing machine is correctly towed and connected with a tractor, you can prepare it for sowing.

4.1 PRELIMINARY OPERATIONS

Disconnect the safety devices during transportation, in particular:

- Free the side arms of the frame (x230)
- rest the machine on the ground and unlock the parking device (chap. 9.7).
- Free the row tracer arms.
- Open the machine and set the elements for sowing (x230)

4.2 CONFIGURATION

In view of the excellent versatility of the MAGICSEM sowing machine X230, make sure that :

- The set of end of stroke rings corresponds to the row spacing you are selecting.
- The safety device on element sliding is adjusted as to the set of end of stroke rings that you have mounted.
- The kit including the row tracer arms must be suitable to the type of row spacing and of row tracer (at the wheel or at the center) you intend to use.
- The set of seeding discs mounted must be suitable for the type of seed used.
- The gate must be suitable for the type of the seed and of ground. +
- The two gears for sowing interval adjustment you have chosen must be mounted on the gearbox and the chain tightener handle must be hooked correctly.
- All outlets must be closed before filling them.

NOTE

When filling the tanks make sure no foreign bodies can enter them, such as cords, paper, etc.

4.3 ADJUSTMENT

- adjust the row tracers.
- adjust the opening of the distributors of the fertilizer spreader and/ or microgranulator.
- adjust the height of the clod pusher.
- adjust the height of the fertilizing unit.
- adjust the sowing depth.
- adjust the furrow closing and compacting wheels.
- adjust the overflow gate.

Then you can start the PTO of the machine (with the machine lifted from ground) and proceed with the following operations:

4.4 SETTING-UP

- Progressively take your PTO to approximately 500 RPM.
- Make sure the vacuum meter indicates a vacuum value higher than or equal to 35 mB.
- Position the selector in an intermediate position (approximately around 6).
- Turn with your hands the wheel transmitting movement to the seed distributor in the direction of forward movement.
- Make sure all discs load the seeds.
- Make sure the seeding disc has a seed in each hole. If downstream the selector you should notice any double seeds, take the selector towards lower numbers and vice versa if you notice any voids take the selector towards higher numbers.
- Adjust all the selectors at the same value.

NOTE

The selector shall be adjusted whenever the variety of seed changes.

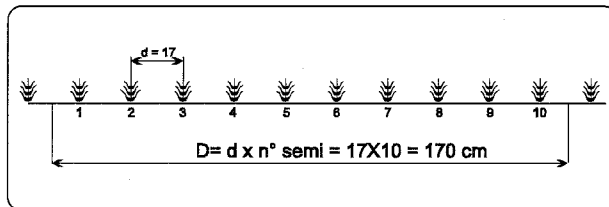
4.5 CHECKS WHILE SOWING

Once all the previously mentioned operations have been carried out, the sowing machine is ready for working. However we recommend you to run a few meters in both directions to make sure that you are sowing as required.

In particular:

- Make sure that the number of seeds per linear meter corresponds to the required one.

For example. If the set distance is $d=17\text{cm}$ it means that there should be 10 seeds in 170 cm, counted as shown in the figure below.



- Make sure that the various products are distributed evenly.
- At the end of each run, while changing direction or when stopping to check, do not stop the PTO, but keep it at RPM sufficient to keep the seeds attached to the disc.

NOTE

Avoid turning and driving in the reverse, when the machine is under ground. ALWAYS LIFT the machine to change direction and reverse gear.

Make sure the row tracer has been correctly adjusted by measuring the row spacing between the two outer rows.

Do not work with the PTO synchronized with the wheels.

4.6 FINISHING THE SURFACE

MATERMACC sowing machines have various systems to cut off one or more sowing rows.

It is better to cut them off, during the passage before the last and NOT during the last one. In this way you would go over a surface that has not been sowed yet. Therefore in the previous passage (to cut off one), you can use one of the systems that do not require the element being lifted.

MATERMACC sowing elements can be completed by an electromechanical kit for cutting off one or more sowing rows.

See chapter accessories paragraph 8.5 Air cut off.

4.7 FOLDING FOR ROW TRANSPORTATION

When you need to transport the sowing machine on the road, follow the norms of the highway code in force in your country.

Before driving on the road:

- stop the PTO
- compact the element at the center;
- fold the side arms of the frame;
- close the row tracers.

It is now necessary to insert or activate the safety devices in the following order:

- Fix the hook of the side arms to the frame (see chapter. 3.2);
- Remove the row tracer springs and stave them in their seat for transportation;
- Fix the locking pin of the row tracer arms;
- Lower the feet.

For what the tractor is concerned:

- fix and adjust the chains of the side arms for tractor lifting;
- lock the control lever of the hydraulic hoist;
- make sure the equipment does not reduce the visibility of the direction indicators and of the lights of the tractor.
- If this is the case, such devices must be repeated on the equipment following the rules specified by the current highway code in force in your country.

Always make sure that the light installation works perfectly well.

5 FRAMES 4100 AND 4200

5.1 FRAME 4100

This is a simple frame that does not require any maintenance or specific adjustments.

The main frame one is complete with (Fig. 5.1):

- Towing points I e II cat. from sowing machine to tractor **2**;
- A vacuum pump **3**;
- The supporting wheels **4**; the first stages of the transmission gears for the gearbox and any other accessories can then be mounted on them.
- The gearbox (only in case of sowing machines with a centralized gear box)
- A pair of hydraulic row tracers **5**.
- The sowing elements **6**;

NOTE

The sowing elements are mounted directly on the main frame (Fig. 5.2) with a row spacing specified upon order. However should you wish to modify the position of the sowing elements for any reason, please refer to the MAINTENANCE chapter.

Based on the length of the frame and on the row spacing, a different number of sowing elements can be mounted. This allows to comply even with the most exacting requirements.

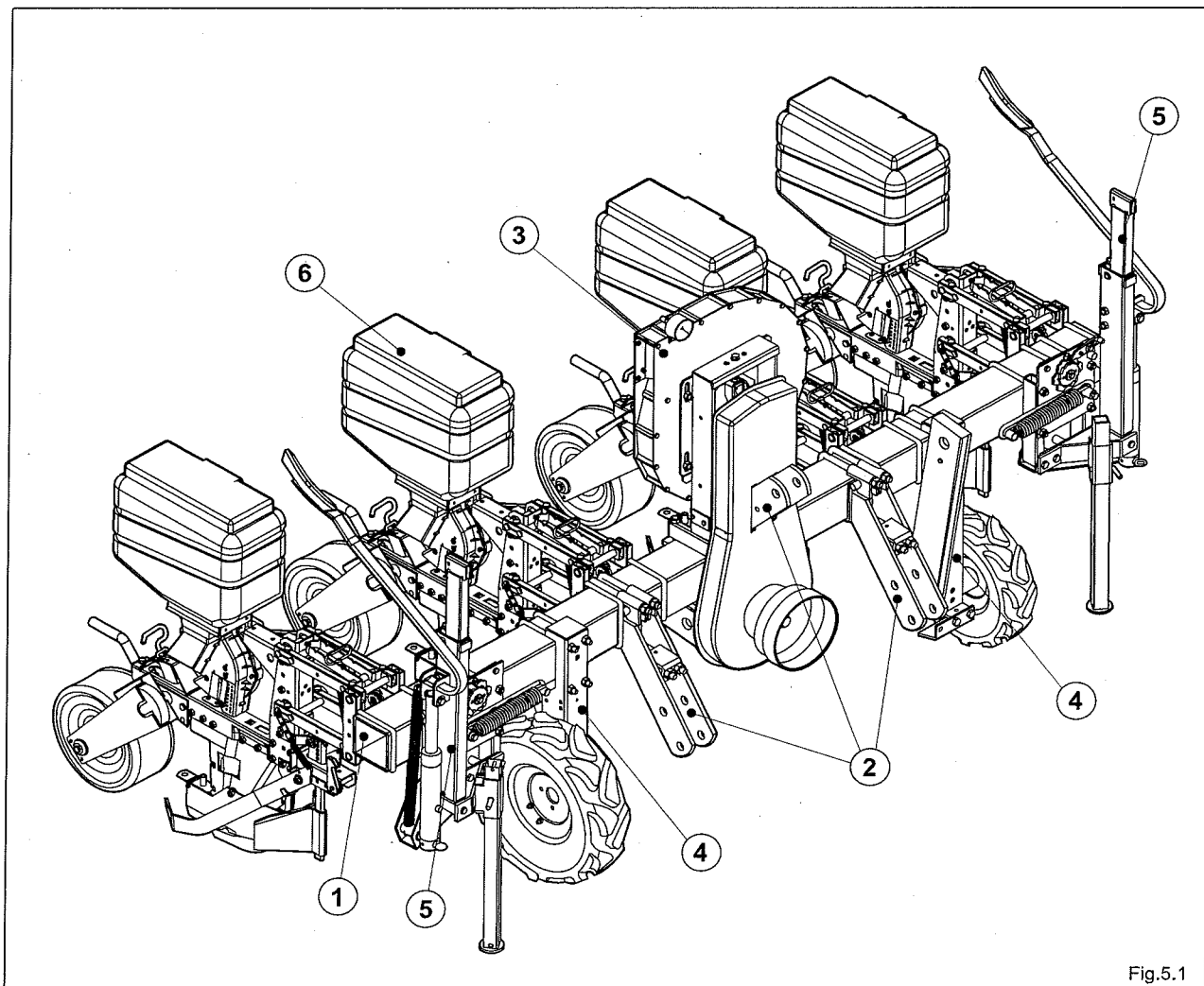


Fig.5.1

5.2 FRAME 4200

It has been made to make the adjustment of the sowing row spacing easier and faster thanks to the easy set system mounted on the main frame.

This system allows to let the sowing elements slide lengthwise on a guide mounted in parallel to the frame.

The distance between sowing elements can be adjusted quickly by the relevant positioning lever supplied standard with the sowing machine.

5.2.1 DESCRIPTION OF THE STRUCTURE

The frame consists of the following parts:

- The main frame **1**
- The EASY-SET system **2**

On the frame the following is then mounted:

- Towing points I e II cat. of sowing machine to tractor **3**;
- A vacuum pump **4**;
- The supporting wheels **5**; the first stages of the transmission gears for the gearbox and any other accessories can then be mounted on them.
- The gearbox (only in case of sowing machines with a centralized gearbox) a pair of hydraulic row tracers **6**.

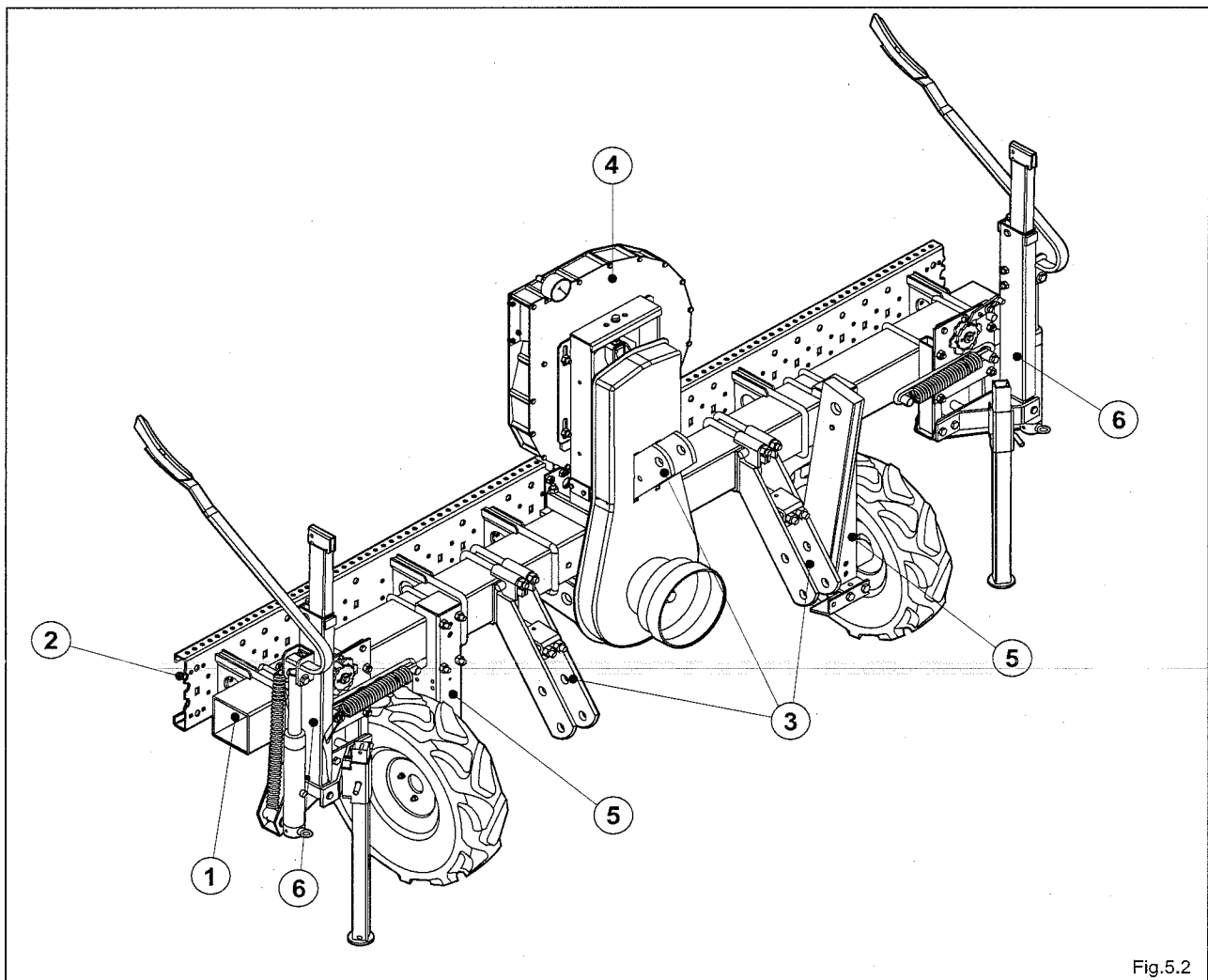


Fig.5.2

In view of the length of the supporting frame and all the EASY-SET guides different working widths can be obtained.


The most common ones are summarized in the table.

MODEL	N° OF ROWS	ROW SPACING	GUIDE E-S	TRANSPORT WIDTH
X200	4	75	250	254
	6	45	250	254
	6	75	400	400
	8	45	350	350
	8	75	560	560
	12	45	530	530
	12	75	860	860

Tab.5.1

5.2.2 POSITIONING THE SOWING ELEMENTS

The EASY_SET system mounted on MATERMACC sowing machines permits to modify the row spacing easily and quickly.



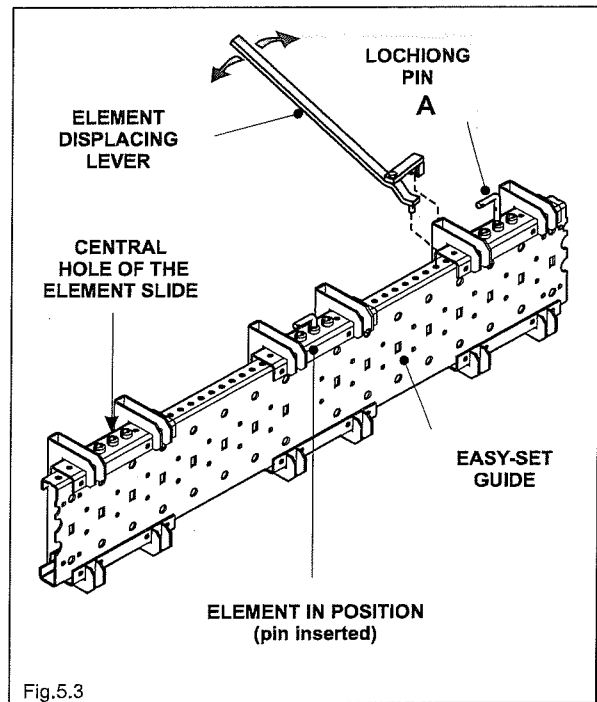
NOTE

The sowing machine is delivered with a number of sowing elements positioned at a row spacing corresponding to the one specified upon order.

5.2.2.1 HOW TO MODIFY THE ROW SPACING

To modify row spacing proceed as follows:

- 1) Lift the sowing machine from the ground.
- 2) Remove locking pin **(A)** that locks the elements in position (Fig.5.3).
- 3) By means of the lever displace the element to the required distance (to measure the distance see paragraph 5.2.2.2).
- 4) Lock the elements by inserting pin **(A)** again.



!! WARNING !!

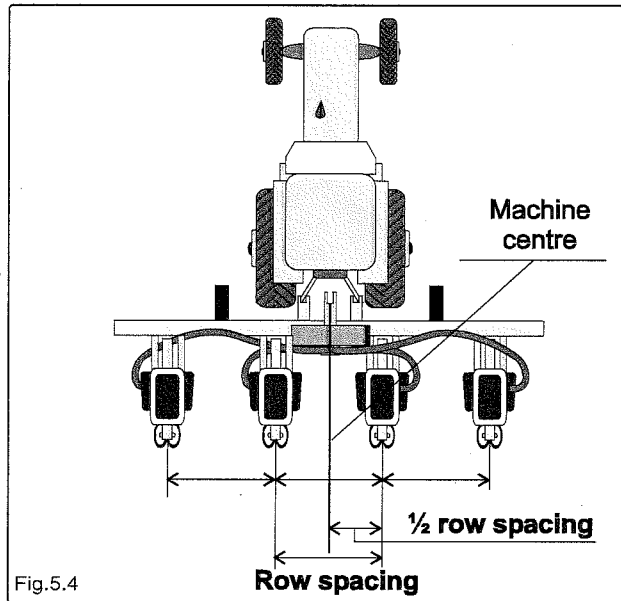
The sowing elements shall be displaced with the machine lifted from the ground. It is strictly forbidden to insert any part of your body under the machine or under the sowing element!

!! WARNING !!

Before displacing the sowing elements make sure the tractor is off with the parking brake pulled and nobody can start the hydraulic installation of the tractor.

5.2.2.2 HOW TO DETERMINE THE ROW SPACING

To position the sowing elements refer to the machine centre.



From the centre of the machine position the elements next to the center at a distance equal to half of the row spacing (the distance between them must obviously be equal to the total row spacing).

Starting from these elements position the remaining once.

After positioning make sure that the row spacing corresponds to the required one.

5.2.2.3 ROW SPACING ADJUSTMENT

The supporting guide of the EASY-SET system is equipped with positioning holes at a distance of 25 mm from one another.

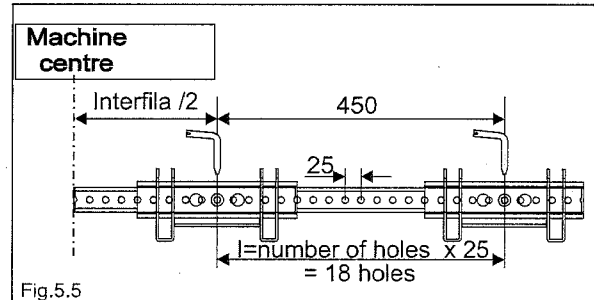
The element slide has 3 holes at a distance of 33 mm from one another.

The two devices can be combined to adjust the row spacing at a pitch of 25/3 cm.

This means that for row spacing multiple of 25 mm (therefore the most common ones such as 450, 500, 600, 750, 800) the number of holes between two elements will be a whole number as to the central hole of the element slide.

For example, if the distance between two elements should be 450 mm, the central hole of the reference element shall be 18 holes away from the central hole of the element to be positioned. (in fact $18 \times 25 = 450$).

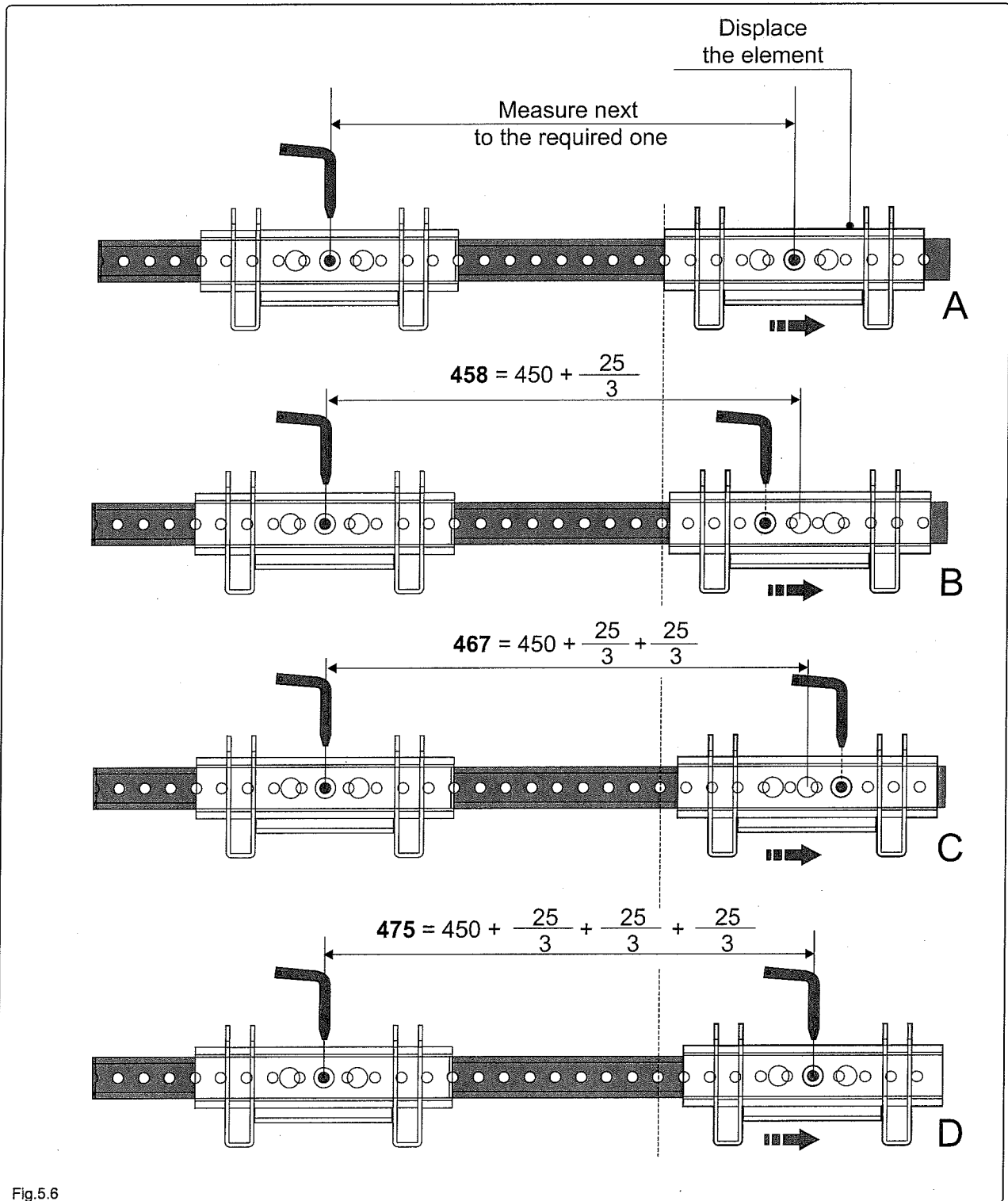
Then insert the locking pin of the element to be positioned in the hole corresponding to the one of the reference to that of a reference element.


NOTE

For row spacings multiple of 25 mm the locking pin should always be inserted in the central hole of the element slide.

If distance where the sowing element should be positioned is not an exact multiple of 25 mm, you can get very close to the row spacing required. For example, if the required distance is 460 mm proceed as follows:

- Displace the element in order to position its central hole as close as possible to the required size. (in this case 450 mm)
- (Fig.5.6 A);
- Then make one of the side holes of the element slide coincide with one of the holes of a slide to displace the element of approximately 10 mm.
- The element locking pin should be inserted in either lateral holes. (Fig.5.6 B).
- Make the other lateral hole coincide by displacing the element of approximately another centimeter (Fig. 5.6 C).
- Let the central hole of the tool bar slide with a hole of a guide coincide again. We have moved a hole pitch therefore 25 mm



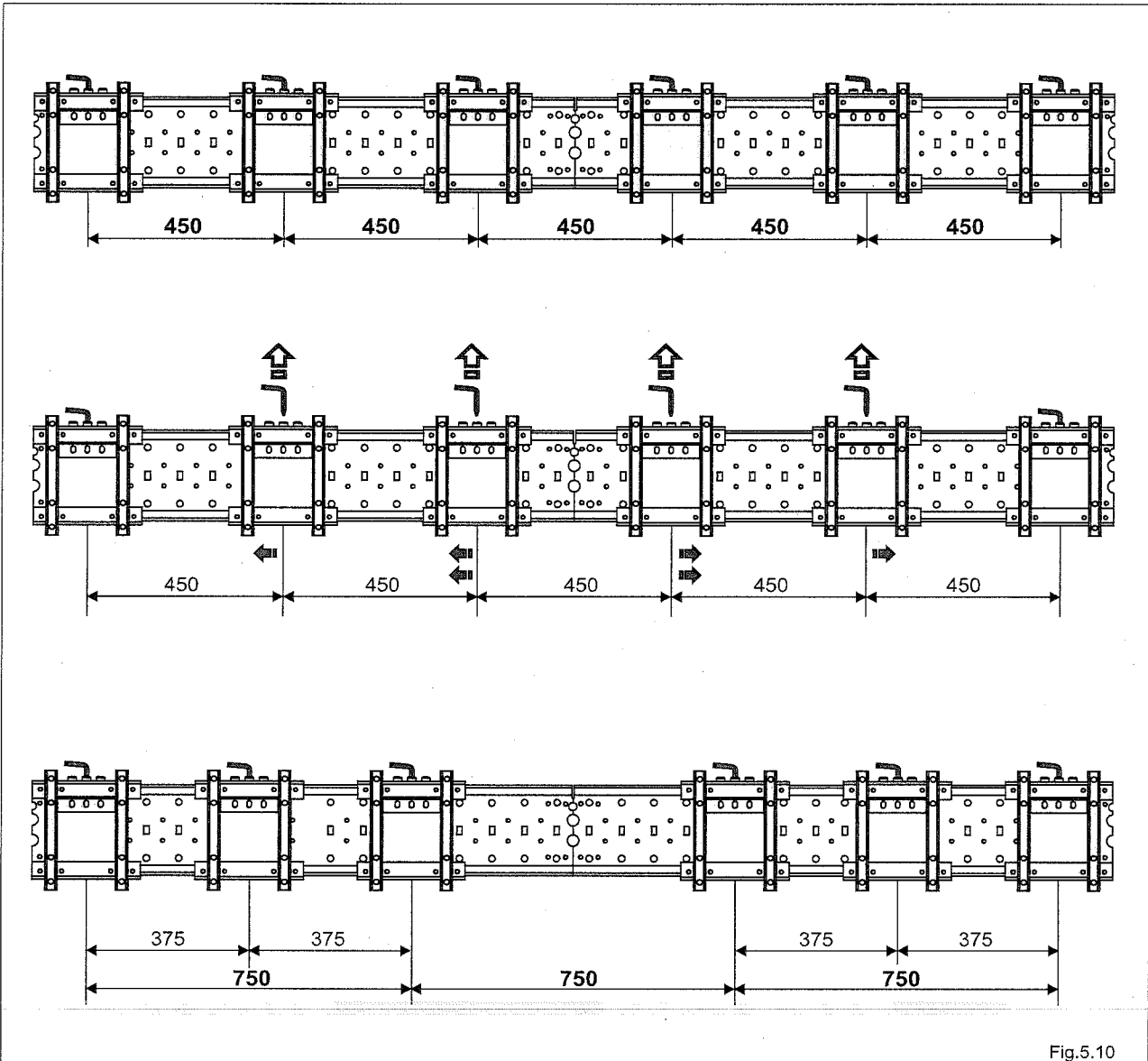
!! WARNING !!



After positioning all the elements at the required row spacing make sure that the elements are all set at the same distance.

5.3 QUICK CHANGE OF SOWING CONFIGURATION

Model X200 of MATERMACC sowing machines permits to change row spacing very quickly. For example you can transform a machine configured with 6 rows 450 into a 4 row machine 750. The user shall then decide how to cut off the two sowing elements from work.



6 VACUUM PUMP

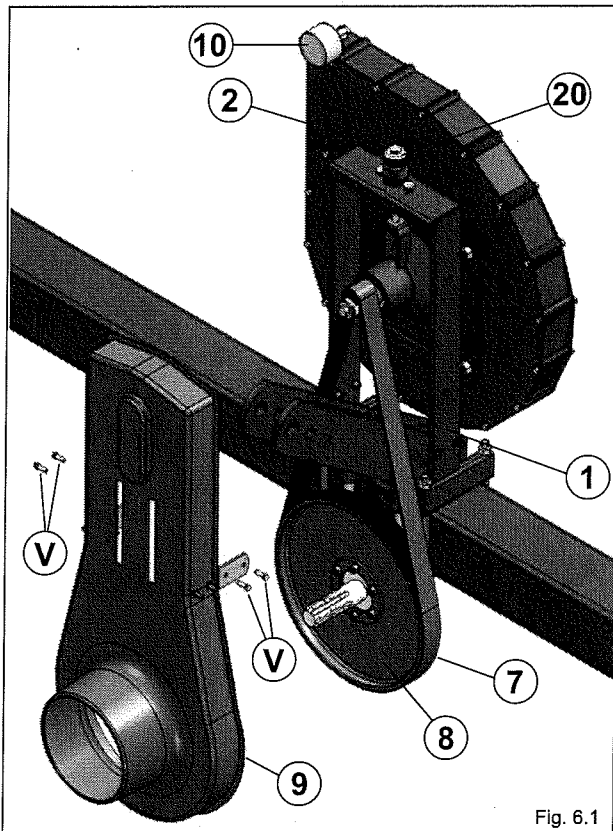


Fig. 6.1

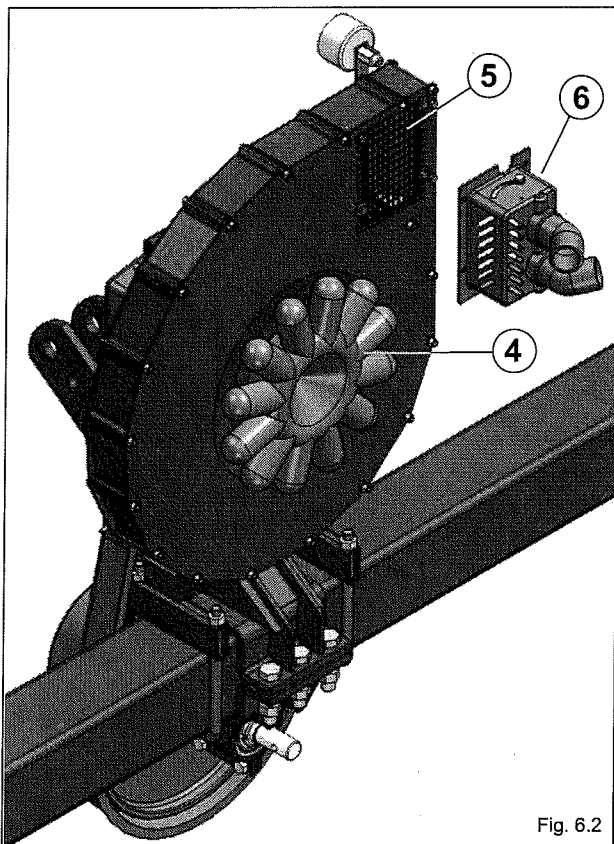


Fig. 6.2

6.1 PNEUMATIC VACUUM PUMP

The pneumatic vacuum pump (Fig.6.1) is used to create a vacuum inside the seed distributors. Such vacuum permits the distributor disc to load the seeds on the holes.

The vacuum pump (Fig.6.1) consists of a main frame 1 to which the following are fixed:

- A case 2, inside which the propeller turns, while outside the suction manifold 4 and the air discharge grid 5 are mounted;

Note: The sowing machines (of the series x230) equipped with a fertilizer distributor have an extra manifold 6 besides grid 5 where the air outlet is to convey the air expelled by the propeller towards the outer fertilizing elements.

- A bolt transmission 7 (Fig.6.2) consisting of a driving pulley 8 with connection to the PTO and of a crankcase 9.
- A vacuum meter 10 (Fig.6.1) that allows to measure the vacuum in the suction chamber of the seed distributor.
- A system for belt tension adjustment 20.

!! WARNING !!

Do not remove the safety guards on the vacuum pump for any reason whatsoever.

NOTE

All rotary parts of the vacuum pump are mounted on tight maintenance free bearings.

The machine has been preset for a 540 rpm PTO (STANDARD VERSION).

Should you need to increase the PTO rpm, two supplementary pulleys are available (UPON request), as specified in Fig.6.3.

RPM	STANDARD	OPTIONAL	
	540	700	1000
VERSION			

Fig. 6.3

!! WARNING !!

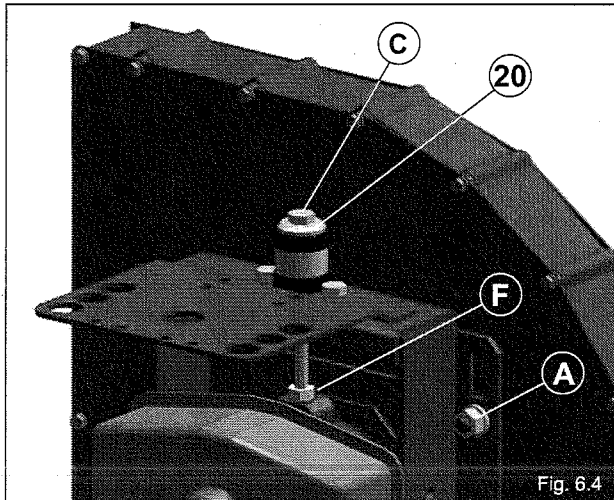
Do not exceed the number of revolutions specified for the PTO.

6.2 CHECK OF WEAR AND TENSION TENSION

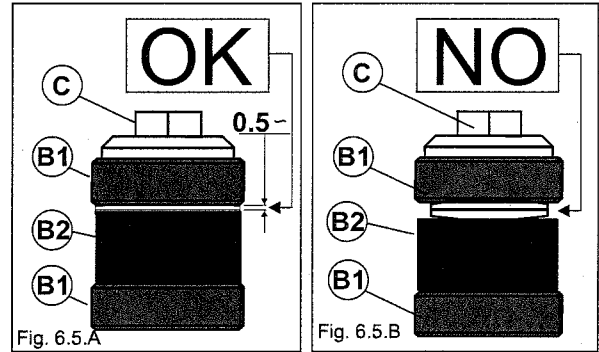
The vacuum pump performance is mostly connected with the level of wear and with the stretch of the belt. Therefore at the beginning of each sawing season it will be necessary to check the belt conditions.

The operations to be carried out are the following :

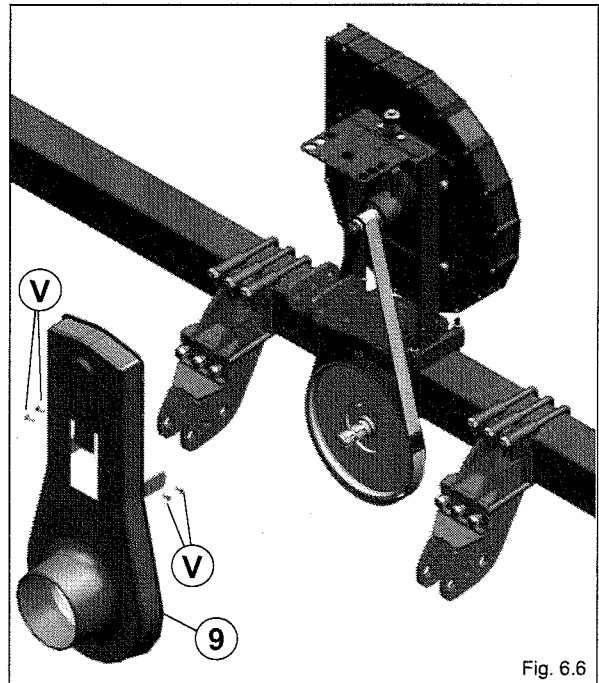
- **Note** The operations shall be carried out the machine at rest (detached from tractor).
- Remove crankcase **9** by loosening the four screws **V** (fig. 6.6);
- Check the state of the belt, if it is worn or damaged, replace it with a new one; to do so proceed as follows:
- Loosen nuts **A** (Fig.6.4).
- Loosen nut **F** (Fig.6.4).
- Loosen screw **C** of belt tensioning device **20** (Fig.6.4).



- Replace belt
- Stretch the belt by tightening screw **C** of Belt straightener **20** until sleeve **B2** is approx. 0.5 mm far from **B1** (See Fig.6.5.A).

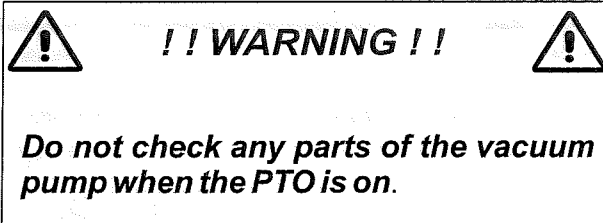


- To shut nut **A** (Fig.6.4).
- To shut nut **F** (Fig.6.4).
- Reassemble the crankcase **9**.



NOTE

A correctly stretched belt shall not give way when pressed manually.



6.3 PULLEY REPLACEMENT

Should you need to replace the pulley in order to increase or reduce the rpm, carry out the following operations:

- Switch off your tractor engine and pull hand brake.
- Remove crankcase **9** by loosening the four screws **V**); (Fig.6.4).
- Unscrew pulley **P** making sure the thread is left-handed.
- Replace pulley **P** by the one chosen by fixing it with the screw and the washers you have removed.
- Reassemble the crankcase **9**.

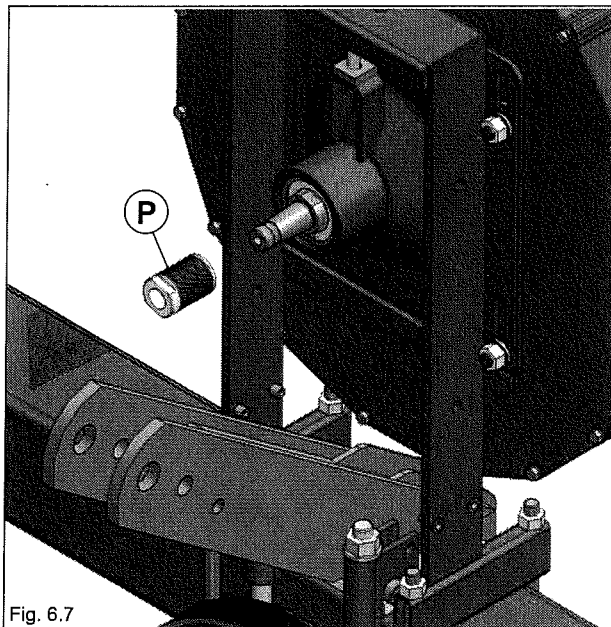


Fig. 6.7

6.4 SUCTION ADJUSTMENT

The adjustment and control of the suction and of the belt stretch are important operations for the good results of your sowing.

To adjust the suction proceed as follows:

start the PTO and increase the number of engine revolutions slowly by checking the suction value shown by the vacuum meter; in view of the seed size, the following values can indicatively be taken as correct:

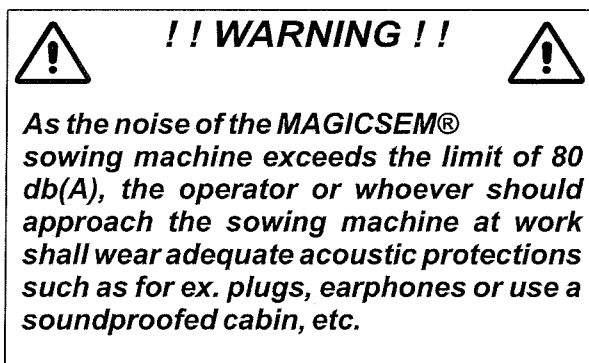
- ⇒ 30 ÷ 40 mBar for small and light seeds;
- ⇒ 35 ÷ 45 mBar for large and heavy seeds.

For a good success of your seeding, we recommend a vacuum of approx. 40 mBar corresponding to approx. 400 rev/min. of the PTO.

6.5 NOISE MADE BY THE VACUUM PUMP

The only noise made by the MAGICSEM® sowing machine, that does not depend on the interaction of the machine with outer factors, is the noise made by the vacuum pump in operation.

This noise has been measured and the value of the continuous equivalent weighted acoustic pressure exceeds 80 db(A).



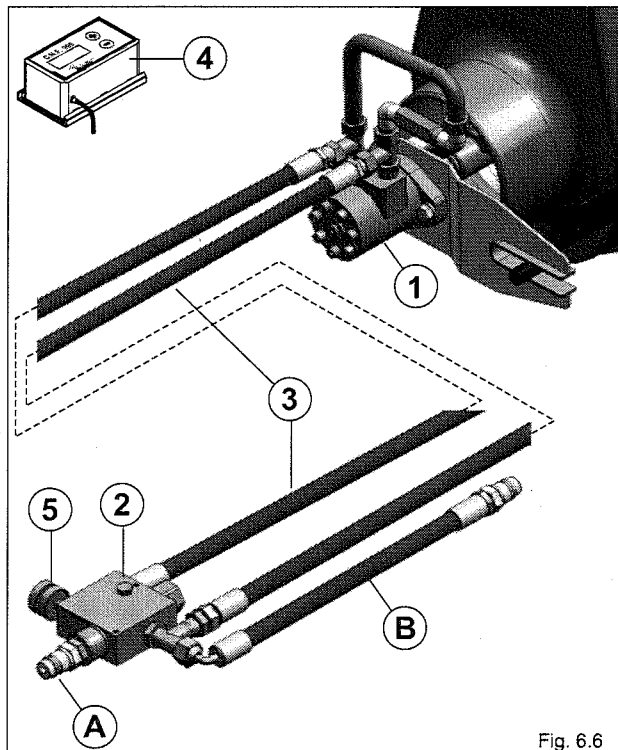
6.6 HYDRAULIC PTO


Fig. 6.6

The hydraulic PTO kit can be used instead of the cardan PTO. This kit includes the following parts:

- A hydraulic motor **1**.
- A valve for motor rotation speed adjustment **2** and a few hydraulic tubes **3**.
- A C.M.F. 999 **4** multipurpose timer to check the motor rpm (for its operation see PAR. 10.4).

6.6.1 USING THE PTO KIT

Switch off your tractor engine and pull hand brake.

- Connect the tubes of the oil hydraulic circuit **A** and **B** to the takeoffs of the tractor by making sure the ends are clean.
- Set the adjusting valve **2** according to your needs and turn anticlockwise handle **5** on valve body in order to reduce the rotation speed. Tighten handle **5** to increase speed.

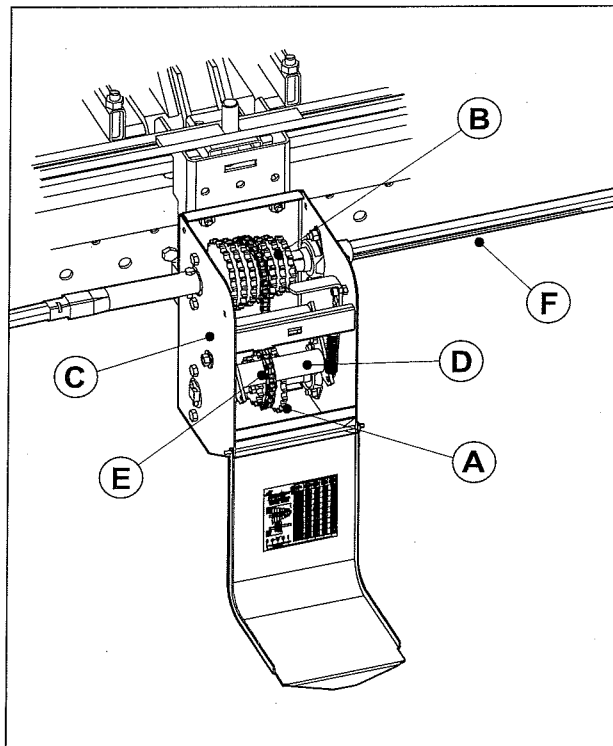

!! WARNING !!


For your connection select a point of the electrical installation that assures a power capacity of at least 5A. Make sure the sections of the main cable and any connecting plugs are adequate and protected by fuses to assure the correct operation of the gearbox.

7 MAIN GEARBOX

7.1 MAIN GEARBOX

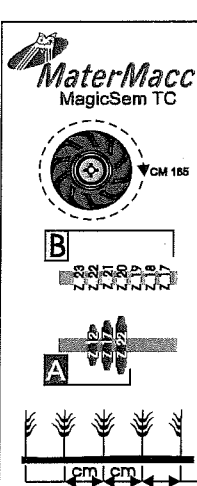
The main gearbox permits to change the sowing parameters (sowing interval) to all sowing devices by changing a single gear. Specific transmissions transmit the motion from one of the supporting wheels of the main frame to the gearbox. Inside the gearbox 21 different transmission ratios are available. The gears combined with the number of holes of the sowing disc permit to obtain the required sowing interval. The gearbox consists of: (Fig.7.1)



- A case to contain and protect the moving parts **C**.
- A series of three driving toothed gears **A**.
- A series of seven driven toothed gears **B**.
- A chain tightener **D**.
- A chain **E**.
- A series of small telescopic Cardan shafts **F** taking the motion from the gearbox to each element.

7.2 SETTING THE SOWING INTERVAL

A table equal to the one mentioned below can be found on the gearbox lid (see Table 7.1).



A - B	12	18	24	36	48
22-17	22,1	14,7	11,0	7,4	5,5
22-18	23,4	15,6	11,7	7,8	5,8
22-19	24,7	16,4	12,3	8,2	6,2
22-20	26,0	17,3	13,0	8,7	6,5
22-21	27,3	18,2	13,6	9,1	6,8
22-22	28,5	19,0	14,3	9,5	7,1
17-18	30,2	20,2	15,1	10,1	7,6
17-19	31,9	21,3	16,0	10,6	8,0
17-20	33,6	22,4	16,8	11,2	8,4
17-21	35,3	23,5	17,6	11,8	8,8
17-22	36,9	24,6	18,5	12,3	9,2
17-23	38,6	25,7	19,3	12,9	9,7
12-17	40,4	27,0	20,2	13,5	10,1
12-18	42,8	28,5	21,4	14,3	10,7
12-19	45,2	30,1	22,6	15,1	11,3
12-20	47,6	31,7	23,8	15,9	11,9
12-21	50,0	33,3	25,0	16,7	12,5
12-22	52,3	34,9	26,2	17,4	13,1
12-23	54,7	36,5	27,4	18,2	13,7

*Valori teorici *Theoretical values *Valeurs théoriques
 *Theoretische Werte *Valores teóricas

Tab.7.1

The table is divided as follows:

The first two columns contain

- the various combinations that can be obtained from the gears **A** and **B**.

The first line mentions

- a few types of discs that can be used.

The central part contains

- some numbers representing the sowing intervals that can be obtained.

Example: you wish to sow some corn at a distance of **25 cm** with a **24 hole** disc.

To find the gear pair to be used you should:

- Find the size closest to the required one in the column of the **24 hole** disc (in this case = **25 cm**)
Obtain the pair of gears to be used on the same
- line in the two columns marked (**A**) and (**B**) (in this case **A = 12** teeth and **B = 21** teeth)

!! WARNING !!

The data specified in the table are purely theoretical. They can change based on the conditions of the ground and of the wheels.

7.2.1 SETTING THE SELECTION RATIO

Table 7.1 permits to obtain the pair of gears to be used to find the required sowing interval.

To set the transmission ratio on the gearbox proceed as follows: (Fig. 7.2)

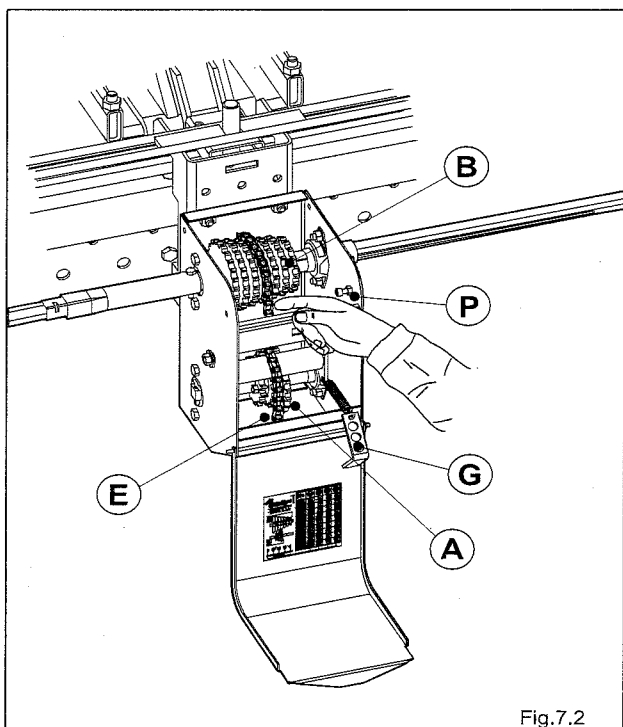


Fig.7.2

Open the gearbox and unhook the spring lever of chain tightener **G** from bolt **P**.

- Loosen chain **E** unhooking it from the toothed gear of driven axle unit **B** and hook it to the required gear (in the example it is the second one from the left)
- Keep the chain in position, unhook it from the toothed gear of driving unit **A**, then displace the unit until the selected gear is aligned with the previous gear.
- Hook the chain tightener spring to bolt **P** again.
- Turn the capstan manually to make sure the transmission works correctly. Close the gearbox.

NOTE

The three gears of driving axle (A) can slide axially.



!! WARNING !!



When working on gearboxes and anyway on any transmission gears, make sure the tractor engine is off and the parking brake is pulled. Furthermore make sure nobody can let the transmission gear turn, even accidentally, while you are setting the transmission ratio.

7.3 HOW TO CUT OFF A SOWING ELEMENT

This type of gearbox permits to cut off one or more elements from sowing; in fact the transmission includes a system to cut off each element from transmission (Fig. 7.4).

Just remove the pin and insert it in the outer hole of the hub to cut off the motion of the distributor disc.

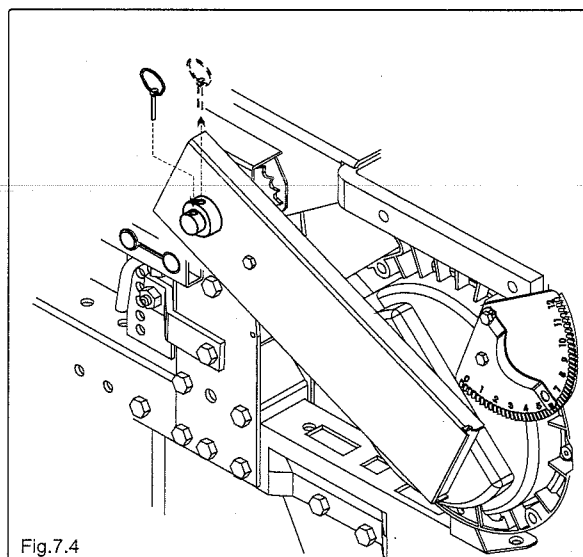




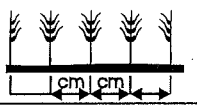




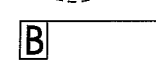


Fig.7.4

 58220120		A - B	4	6	12	18	24	36	48	60	72	96	120	144	160	180	240	288
22-17		66,2	44,1	22,1	14,7	11,0	7,4	5,5	4,4	3,7	2,8	2,2	1,8	1,7	1,5	1,1	0,9	
22-18		70,1	46,7	23,4	15,6	11,7	7,8	5,8	4,7	3,9	2,9	2,3	1,9	1,8	1,6	1,2	1,0	
22-19		74,0	49,3	24,7	16,4	12,3	8,2	6,2	4,9	4,1	3,1	2,5	2,1	1,8	1,6	1,2	1,0	
22-20		77,9	51,9	26,0	17,3	13,0	8,7	6,5	5,2	4,3	3,2	2,6	2,2	1,9	1,7	1,3	1,1	
22-21		81,8	54,5	27,3	18,2	13,6	9,1	6,8	5,5	4,5	3,4	2,7	2,3	2,0	1,8	1,4	1,1	
22-22		85,6	57,1	28,5	19,0	14,3	9,5	7,1	5,7	4,8	3,6	2,9	2,4	2,1	1,9	1,4	1,2	
17-18		90,7	60,5	30,2	20,2	15,1	10,1	7,6	6,0	5,0	3,8	3,0	2,5	2,3	2,0	1,5	1,3	
17-19		95,7	63,8	31,9	21,3	16,0	10,6	8,0	6,4	5,3	4,0	3,2	2,7	2,4	2,1	1,6	1,3	
17-20		100,8	67,2	33,6	22,4	16,8	11,2	8,4	6,7	5,6	4,2	3,4	2,8	2,5	2,2	1,7	1,4	
17-21		105,8	70,5	35,3	23,5	17,6	11,8	8,8	7,1	5,9	4,4	3,5	2,9	2,6	2,4	1,8	1,5	
17-22		110,8	73,9	36,9	24,6	18,5	12,3	9,2	7,4	6,2	4,6	3,7	3,1	2,8	2,5	1,8	1,5	
17-23		115,9	77,2	38,6	25,7	19,3	12,9	9,7	7,7	6,4	4,8	3,9	3,2	2,9	2,6	1,9	1,6	
12-17		121,3	80,9	40,4	27,0	20,2	13,5	10,1	8,1	6,7	5,1	4,0	3,4	3,0	2,7	2,0	1,7	
12-18		128,5	85,6	42,8	28,5	21,4	14,3	10,7	8,6	7,1	5,4	4,3	3,6	3,2	2,9	2,1	1,8	
12-19		135,6	90,4	45,2	30,1	22,6	15,1	11,3	9,0	7,5	5,7	4,5	3,8	3,4	3,0	2,3	1,9	
12-20		142,7	95,2	47,6	31,7	23,8	15,9	11,9	9,5	7,9	5,9	4,8	4,0	3,6	3,2	2,4	2,0	
12-21		149,9	99,9	50,0	33,3	25,0	16,7	12,5	10,0	8,3	6,2	5,0	4,2	3,7	3,3	2,5	2,1	
12-22		157,0	104,7	52,3	34,9	26,2	17,4	13,1	10,5	8,7	6,5	5,2	4,4	3,9	3,5	2,6	2,2	
12-23		164,2	109,4	54,7	36,5	27,4	18,2	13,7	10,9	9,1	6,8	5,5	4,6	4,1	3,6	2,7	2,3	

 CM 165




*Valori teorici *Theoretical values *Valeurs théoriques *Theoretische Werte *Valores teóricas

 58220126		A - B	4	6	12	18	24	36	48	60	72	96	120	144
22-17		74,0	49,3	24,7	16,4	12,3	8,2	6,2	4,9	4,1	3,1	2,5	2,1	
22-18		78,3	52,2	26,1	17,4	13,1	8,7	6,5	5,2	4,4	3,3	2,6	2,2	
22-19		82,7	55,1	27,6	18,4	13,8	9,2	6,9	5,5	4,6	3,4	2,8	2,3	
22-20		87,0	58,0	29,0	19,3	14,5	9,7	7,3	5,8	4,8	3,6	2,9	2,4	
22-21		91,4	60,9	30,5	20,3	15,2	10,2	7,6	6,1	5,1	3,8	3,0	2,5	
22-22		95,7	63,8	31,9	21,3	16,0	10,6	8,0	6,4	5,3	4,0	3,2	2,7	
17-18		101,4	67,6	33,8	22,5	16,9	11,3	8,4	6,8	5,6	4,2	3,4	2,8	
17-19		107,0	71,3	35,7	23,8	17,8	11,9	8,9	7,1	5,9	4,5	3,6	3,0	
17-20		112,6	75,1	37,5	25,0	18,8	12,5	9,4	7,5	6,3	4,7	3,8	3,1	
17-21		118,2	78,8	39,4	26,3	19,7	13,1	9,9	7,9	6,6	4,9	3,9	3,3	
17-22		123,9	82,6	41,3	27,5	20,6	13,8	10,3	8,3	6,9	5,2	4,1	3,4	
17-23		129,5	86,3	43,2	28,8	21,6	14,4	10,8	8,6	7,2	5,4	4,3	3,6	
12-17		135,6	90,4	45,2	30,1	22,6	15,1	11,3	9,0	7,5	5,7	4,5	3,8	
12-18		143,6	95,7	47,9	31,9	23,9	16,0	12,0	9,6	8,0	6,0	4,8	4,0	
12-19		151,6	101,0	50,5	33,7	25,3	16,8	12,6	10,1	8,4	6,3	5,1	4,2	
12-20		159,5	106,4	53,2	35,5	26,6	17,7	13,3	10,6	8,9	6,6	5,3	4,4	
12-21		167,5	111,7	55,8	37,2	27,9	18,6	14,0	11,2	9,3	7,0	5,6	4,7	
12-22		175,5	117,0	58,5	39,0	29,2	19,5	14,6	11,7	9,7	7,3	5,8	4,9	
12-23		183,5	122,3	61,2	40,8	30,6	20,4	15,3	12,2	10,2	7,6	6,1	5,1	

 CM 185




*Valori teorici *Theoretical values *Valeurs théoriques *Theoretische Werte *Valores teóricas

7 MAIN GEARBOX

7.1 MAIN GEARBOX

The main gearbox permits to change the sowing parameters (sowing interval) to all sowing devices by changing a single gear. Inside the gearbox 21 different transmission ratios are available. The gears combined with the number of holes of the sowing disc permit to obtain the required sowing interval. The gearbox consists of: (Fig.7.1)

- A case to contain and protect the moving parts **A**.
- A series of three driving toothed gears **B**.
- A series of seven driven toothed gears **C**.
- A chain tightener **D**.
- A chain **E**.
- A series of small telescopic Cardan shafts **F** taking the motion from the gearbox to each element.

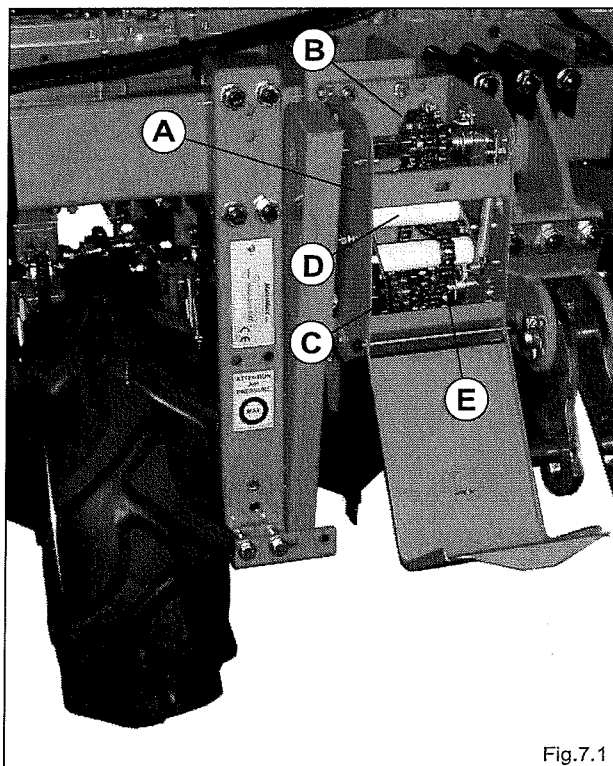
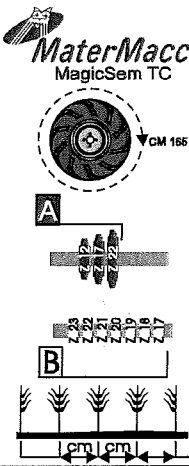


Fig.7.1

7.2 SETTING THE SOWING INTERVAL

A table equal to the one mentioned below can be found on the gearbox lid (see Table 7.1).



A - B	12	18	24	36	48
22-17	22,1	14,7	11,0	7,4	5,5
22-18	23,4	15,6	11,7	7,8	5,8
22-19	24,7	16,4	12,3	8,2	6,2
22-20	26,0	17,3	13,0	8,7	6,5
22-21	27,3	18,2	13,6	9,1	6,8
22-22	28,5	19,0	14,3	9,5	7,1
17-18	30,2	20,2	15,1	10,1	7,5
17-19	31,9	21,3	16,0	10,6	8,0
17-20	33,6	22,4	16,8	11,2	8,4
17-21	35,3	23,5	17,6	11,8	8,8
17-22	36,9	24,6	18,5	12,3	9,2
17-23	38,6	25,7	19,3	12,9	9,7
12-17	40,4	27,0	20,2	13,5	10,1
12-18	42,8	28,5	21,4	14,3	10,7
12-19	45,2	30,1	22,6	15,1	11,3
12-20	47,6	31,7	23,8	15,9	11,9
12-21	50,0	33,3	25,0	16,7	12,5
12-22	52,3	34,9	26,2	17,4	13,1
12-23	54,7	36,5	27,4	18,2	13,7

*Valori teorici *Theoretical values *Valeurs théoriques
 *Theoretische Werte *Valores teóricas

Tab.7.1

The table is divided as follows:

The first two columns contain

- the various combinations that can be obtained from the gears **A** and **B**.

The first line mentions

- a few types of discs that can be used.

The central part contains

- some numbers representing the sowing intervals that can be obtained.

Example: you wish to sow some corn at a distance of **25 cm** with a **24 hole** disc.

To find the gear pair to be used you should:

- Find the size closest to the required one in the column of the **24 hole** disc (in this case = **25 cm**)
- Obtain the pair of gears to be used on the same line in the two columns marked (**A**) and (**B**) (in this case **A = 12 teeth** and **B = 21 teeth**)



!! WARNING !!



The data specified in the table are purely theoretical. They can change based on the conditions of the ground and of the wheels.

7.2.1 SETTING THE SELECTION RATIO

Table 7.1 permits to obtain the pair of gears to be used to find the required sowing interval.

To set the transmission ratio on the gearbox proceed as follows: (Fig. 7.3-7.4)

Open the gearbox and unhook the spring lever of chain tightener **G** from bolt **P**.

- Loosen chain **E** unhooking it from the toothed gear of driven axle unit **C** and hook it to the required gear (in the example it is the second one from the left)
- Keep the chain in position, unhook it from the toothed gear of driving unit **B**, then displace the unit until the selected gear is aligned with the previous gear.
- Hook the chain tightener spring to bolt **P** again.
- Turn the capstan manually to make sure the transmission works correctly. Close the gearbox.

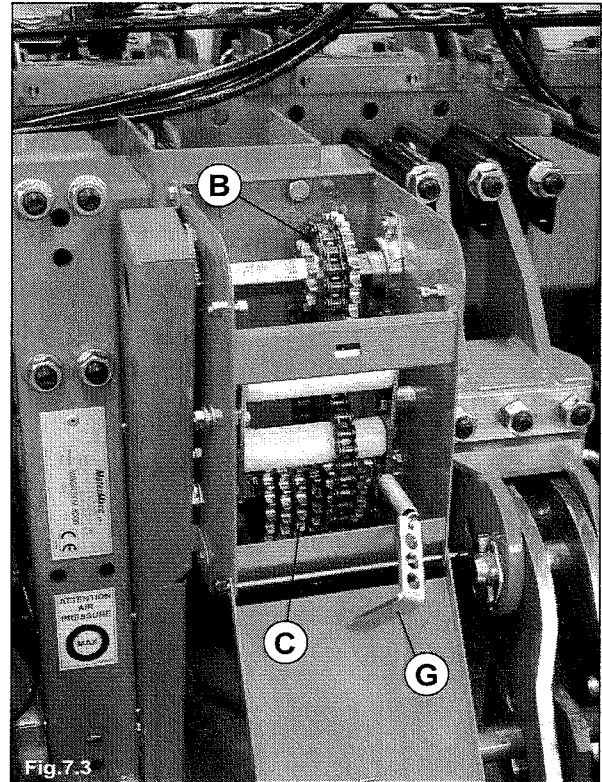
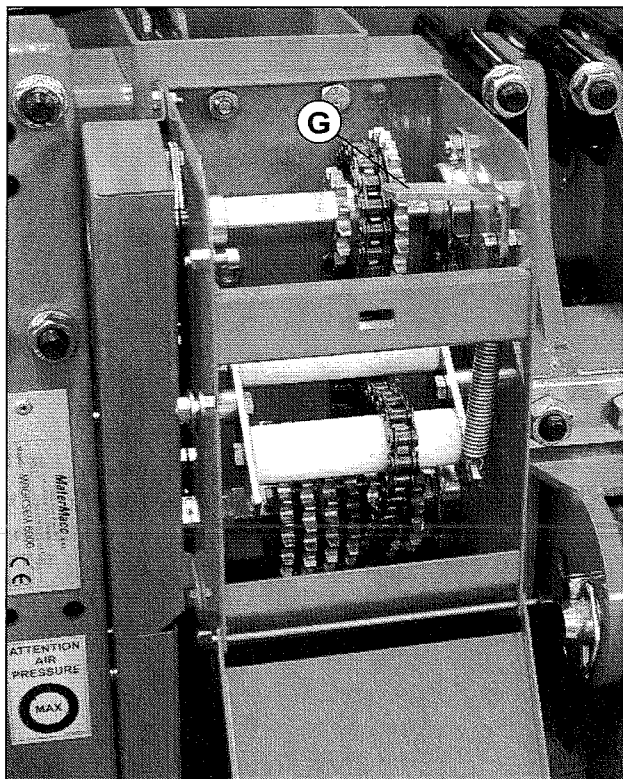


Fig.7.3


NOTE

The three gears of driving axle (A) can slide axially.



!! WARNING !!



When working on gearboxes and anyway on any transmission gears, make sure the tractor engine is off and the parking brake is pulled. Furthermore make sure nobody can let the transmission gear turn, even accidentally, while you are setting the transmission ratio.

7.2.2 HOW TO OBTAIN OTHER SOWING INTERVALS (UPON REQUEST)

If the required distance is not included in table 7.1, other distances can be obtained by replacing the pinions mounted on the first transmission stage (Fig. 7.3).

8 ROW TRACERS

8.1 TWO-STAGE ROW TRACERS

Every sowing machine is equipped with two hydraulic row tracers.

The device lets the row tracer operate alternatively and can be either mechanical (Fig.8.1) or hydraulic (sequential valve) (Fig.8.2).

In both cases, the row tracer arms are reversed by the control device of the hydraulic distributor of the tractor.

Connect the quick coupling of the hose to the hydraulic distributor of the tractor. All X100 and X200 models require only a simple-acting hydraulic distributor (connect the hose to the delivery side).

NOTE

Should the installation not be used, you are recommended to protect the quick coupling by means of the suitable cap.

The kit (Fig.8.1) includes a standard basic arm fixed to frame **A1**, two intermediate arms, an extension **B1** that, according to the configuration of the sowing machine (no. of elements and row spacing) can be of three different sizes and a spring hoe **Z** (if necessary a tracer disc can be supplied instead of the hoe).

8.2 INSTALLATION ADJUSTMENT

The hydraulic installation of the row tracer is equipped with a unidirectional flow regulator used to adjust the speed at which the row tracer arms go back up.

The regulator is mounted next to the quick coupling.

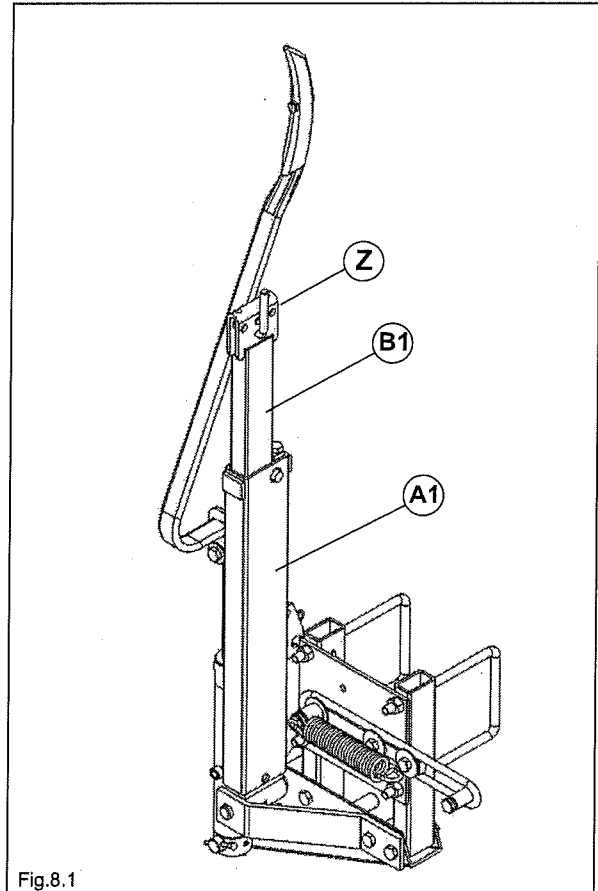


Fig.8.1

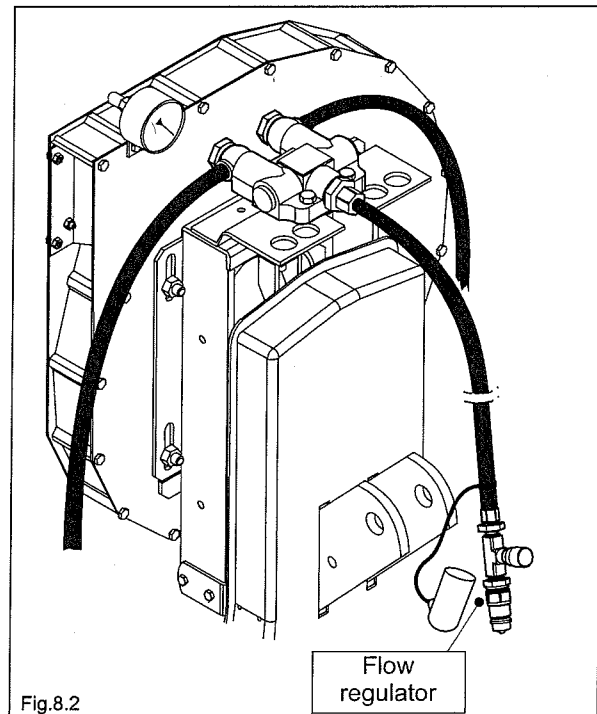


Fig.8.2

8.3 HOW TO DETERMINE THE SIZE OF THE ROW TRACERS

To calculate the distances where the row tracer spring should be fixed the following relations are used.

☞ Distance **Dc** for a trace having the centre of the tractor for reference:

$$Dc = I \times N$$

Where

Dc: distance from the centre of the machine to the trace.

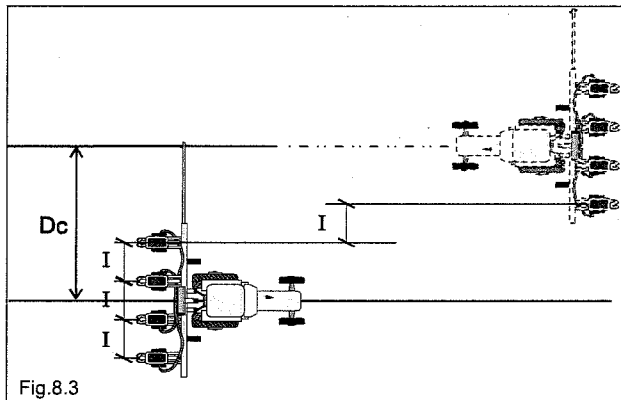
I: row distance

N: n° of active elements

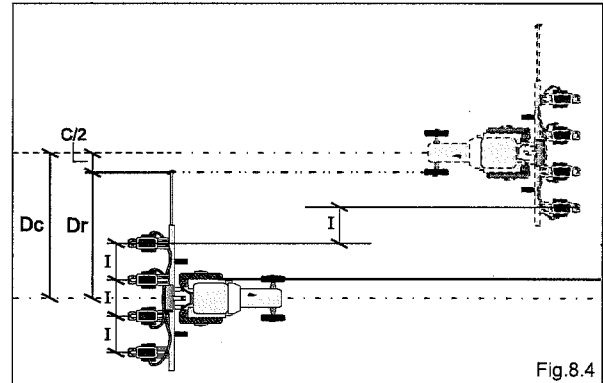
Example:

machine configuration with 6 rows 75

$$Dc = 75 \times 6 = 450 \text{ cm}$$



☞ Distance **Dr** for a trace having for reference the tractor wheel



$$Dr = I \times N - (C/2)$$

Where **Dr**: distance from the centre of the machine to the trace.

I: row distance

N: n° of active elements

C: front wheel base of the tractor

Example:

- machine configured with 6 rows 75 wheel base 170

$$Dr = 6 \times 75 - (170/2) = 365 \text{ cm}$$

- machine configured with 6 rows 45, wheel distance 170

$$Dr = 6 \times 45 - (170/2) = 185 \text{ cm}$$

- machine configured with 6 rows 80, with 7 elements

$$I = 80$$

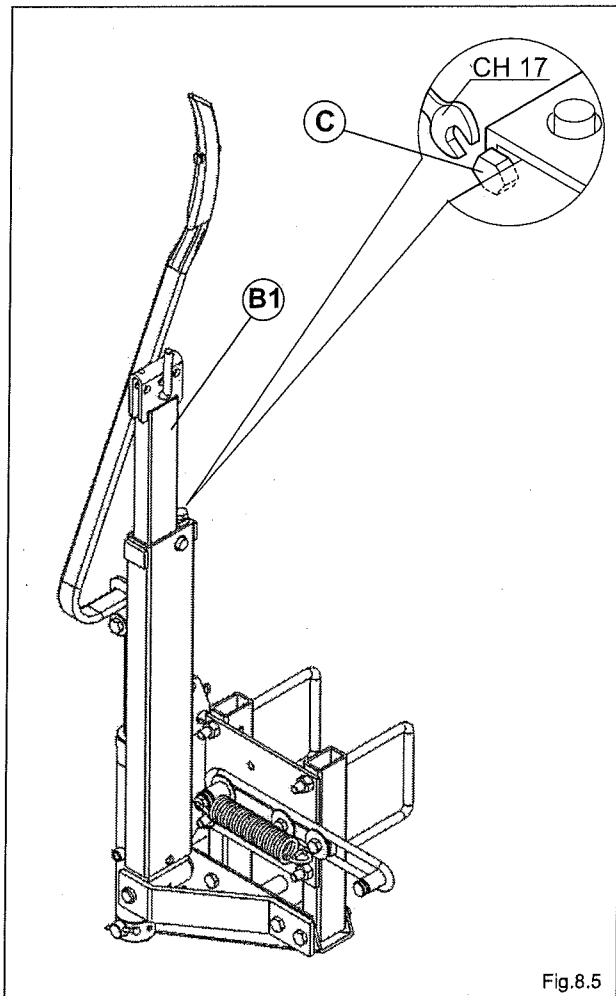
$$N = 6 \text{ active elements}$$

$$C = 170$$

$$Dr = 6 \times 80 - (170/2) = 395$$

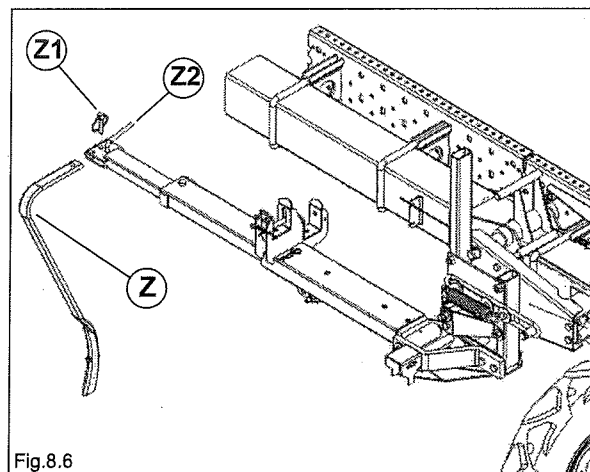
8.3.1 PREPARING THE ROW TRACER

When purchasing the machine or whenever you need to transport the machine the row tracer should be closed with the hoe inwards and with all safety pins inserted.


Fig.8.5

From this configuration (Fig. 8.5) proceed as follows:

- Stop your tractor on a flat horizontal ground, pull the parking brake, keep the sowing machine hoisted and switch your engine off.
- Loosen screw **C** as much as needed to let;
- Adjust the extension at the length you have previously calculated;
- Fix the extension by tightening screw **C**;
- Repeat the same operations on the other arm.


Fig.8.6

- Mount the T shaped blade **Z** by locking it with the spring pin **Z1** (Fig.8.6).
- Chiudere la maniglia **Z2** per fissare la zappetta **Z** (Fig.8.6).
- Repeat the same operations on the other arm.

8 ROW TRACER

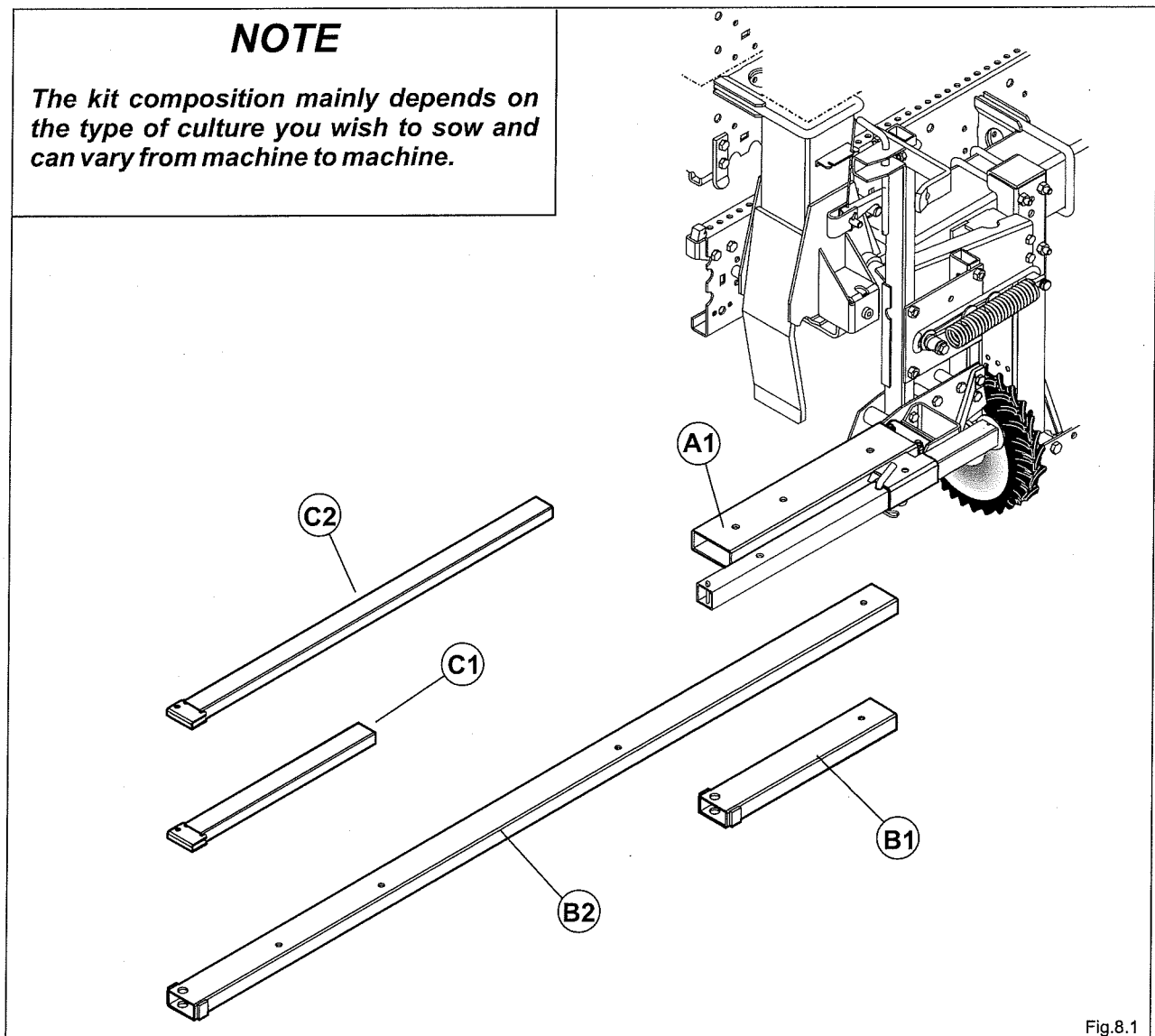
8.1 HYDRAULIC ROW TRACER

In view of the extreme variability of the configurations that can be obtained with the **MATERMACC** sowing machine and as it is impossible to know the operator's preference as to field tracing, the machine is equipped with a sectional row tracer.

The kit (Fig.8.1) includes a standard basic arm fixed to frame **A1**, two intermediate arms, a short one called **B1** and a long one called **B2**, two end pieces, a short one **C1** and a long one **C2** and a spring hoe (upon request a row tracer disc is available instead of the hoe).

The above pieces allow to obtain three different compositions represented in (Fig.8.2, 8.3, 8.4).

Next to each figure we have pointed out the sowing machine configurations the compositions adapt best to.



CONFIGURATION A

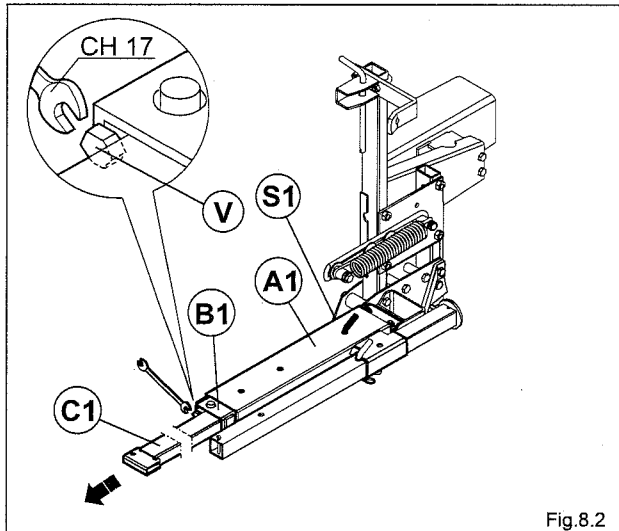


Fig.8.2

FOR A TRACE			
	TO THE WHEEL OF:	TO THE CENTRE OF:	
FRAME	254/430	6 x 45	
		6 x 50	
		7 x 45	
FRAME	300/445	6 x 45	
		6 x 50	
		7 x 45	

Tab. 8.1

CONFIGURATION B

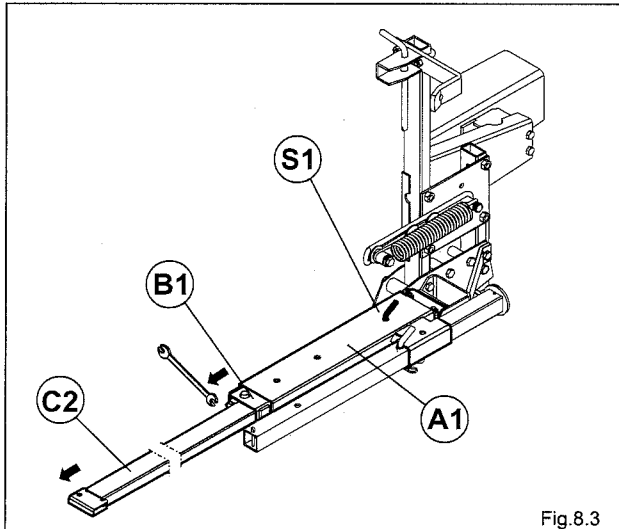


Fig.8.3

FOR A TRACE			
	TO THE WHEEL OF:	TO THE CENTRE OF:	
FRAME	254/430	7 x 60	6 x 45
		8 x 45	6 x 50
		8 x 50	7 x 45
FRAME	300/445		6 x 45
		7 x 60	6 x 50
		8 x 45	7 x 45
	8 x 50	8 x 45	

Tab. 8.2

CONFIGURATION C

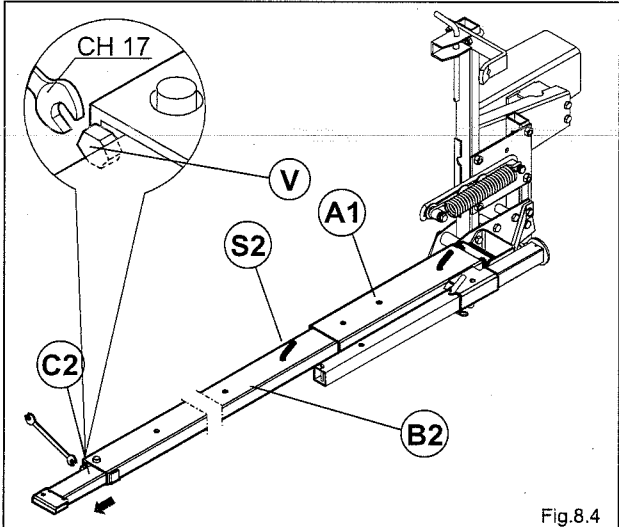


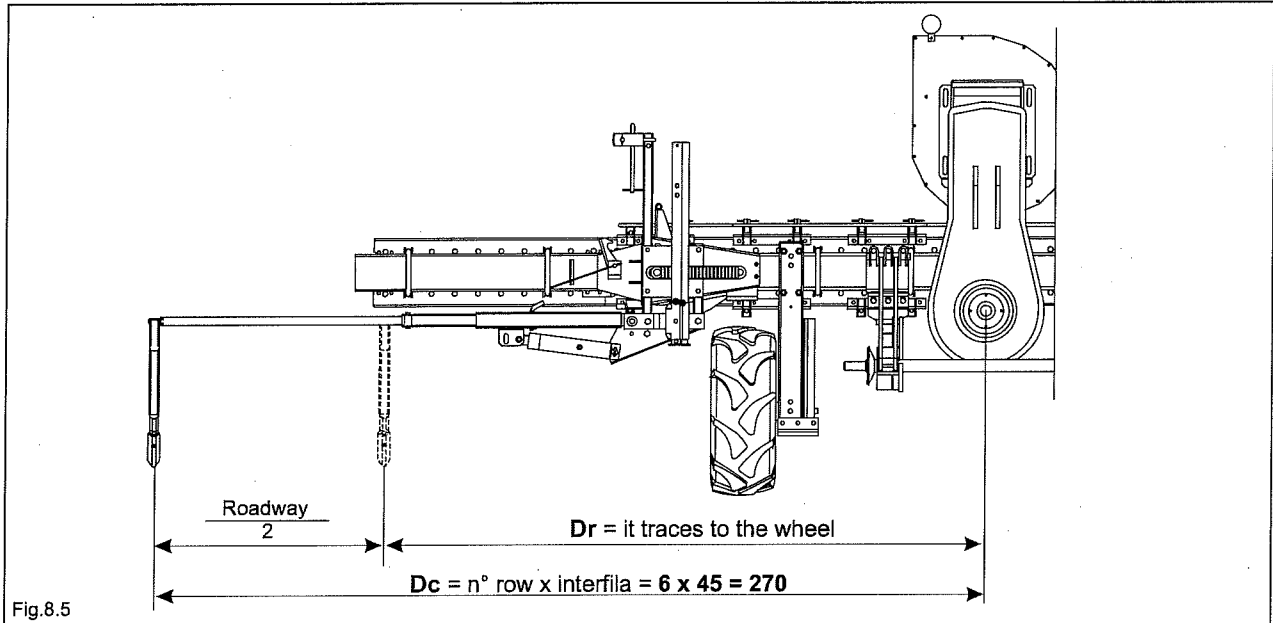
Fig.8.4

FOR A TRACE			
	TO THE WHEEL OF:	TO THE CENTRE OF:	
FRAME	254/430	6 x 75	6 x 75
		6 x 80	6 x 80
			7 x 60
FRAME	300/445		8 x 45
			8 x 50
		6 x 75	6 x 75
	6 x 80	6 x 80	
	8 x 60	7 x 60	
		8 x 50	

Tab. 8.3

8.2 HOW TO CHOOSE THE SIZE OF THE ROW TRACER

In view of the frame (254 or 300) of the number of rows, of the distance between rows and of the front wheel base of the tractor (fixed by hypothesis at 150 cm), table 8.1 recommends the most suitable configuration, the one that is closest to the one that will be used in the end.



To calculate the distance for fixing the row tracing spring the following relations should be used:

Distance **Dc** for a trace having the centre of the tractor for reference:

$$Dc = I \times N$$

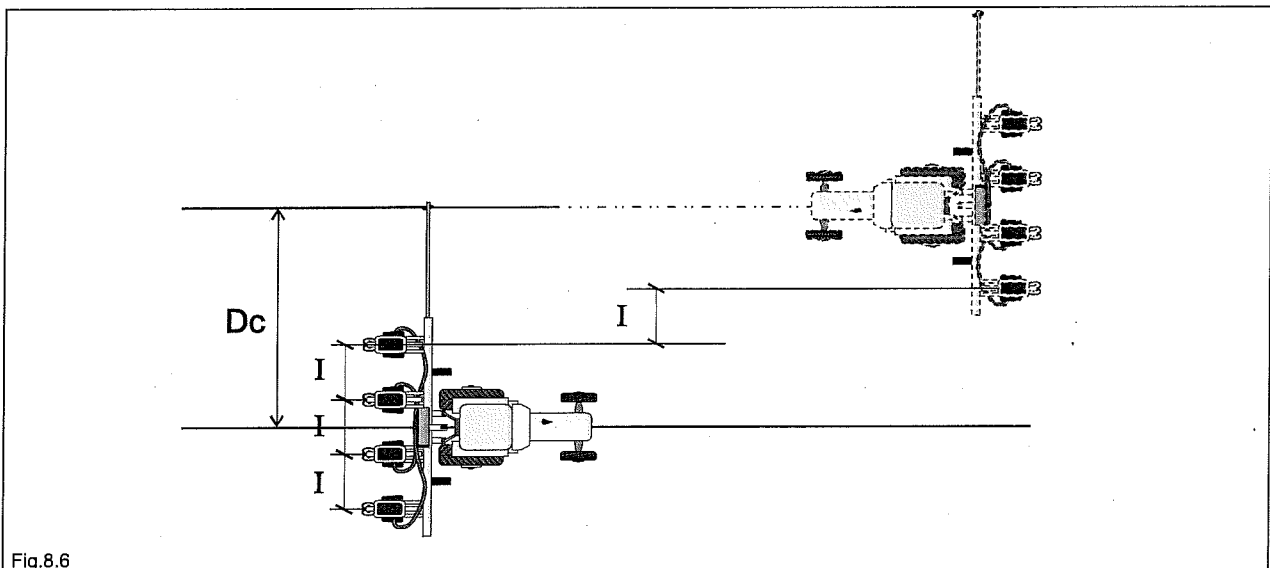
where **Dc**: distance from the centre of the machine to the trace.

I: distance

N: of active elements

Example: machine configured with **6 rows 75**

$$Dc = 75 \times 6 = 450 \text{ cm}$$



→ Distance **Dr** for a trace having the tractor wheel for reference

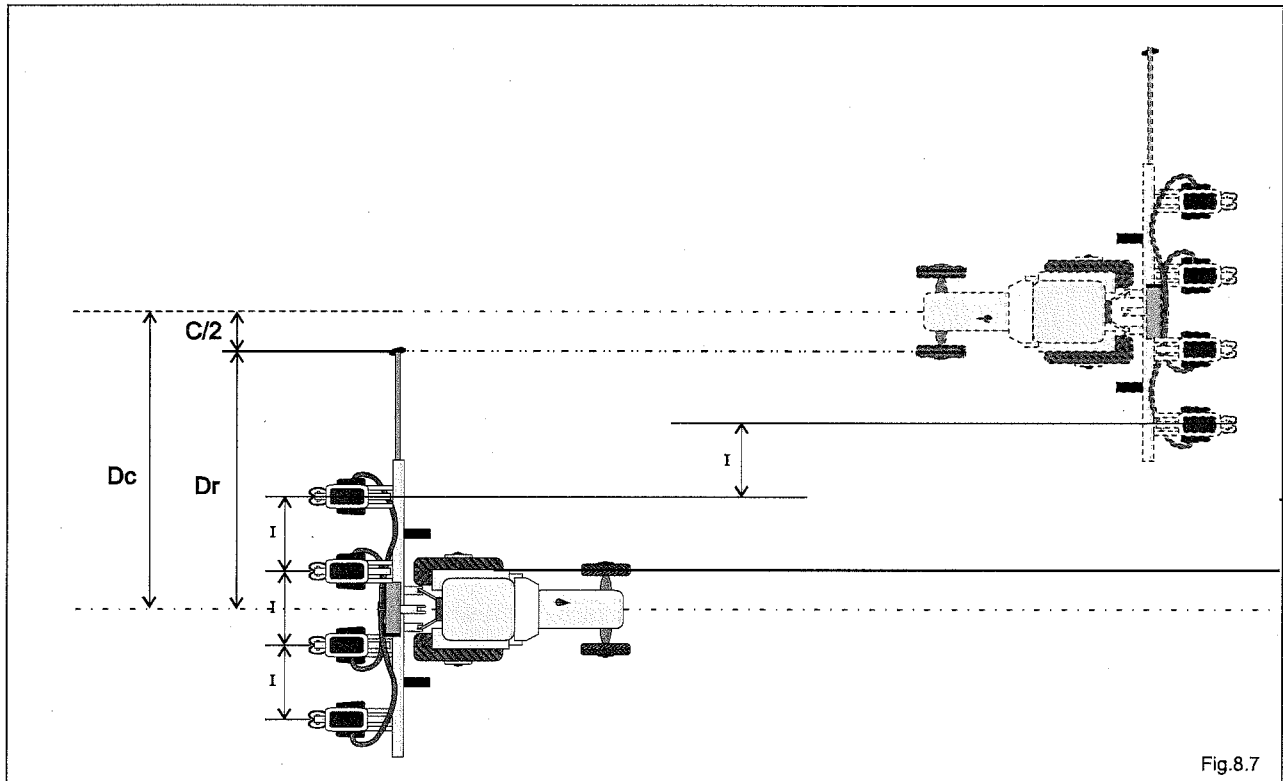


Fig.8.7

$$D_r = I \times N - (C/2)$$

Where

Dr: distance from the centre of the machine to the trace

I = row distance

N = n° of active elements

C: front wheel base of the tractor

Example:

Machine configured with 6 rows 75

$$D_r = 6 \times 75 - (170/2) = 365 \text{ cm}$$

machine configured with 6 rows 45, wheel distance 170

$$D_r = 6 \times 45 - (170/2) = 185 \text{ cm}$$

machine configured with 6 rows 80, with 7 elements

$$I = 80$$

$$N = 6 \text{ active elements}$$

$$C = 170$$

$$D_r = 6 \times 80 - (170/2) = 395$$

8.3 HOW TO PREPARE YOUR ROW TRACER

When purchasing the machine or whenever you need to transport the machine, the row tracer should be closed with the hoe inwards and with all safety pins inserted.

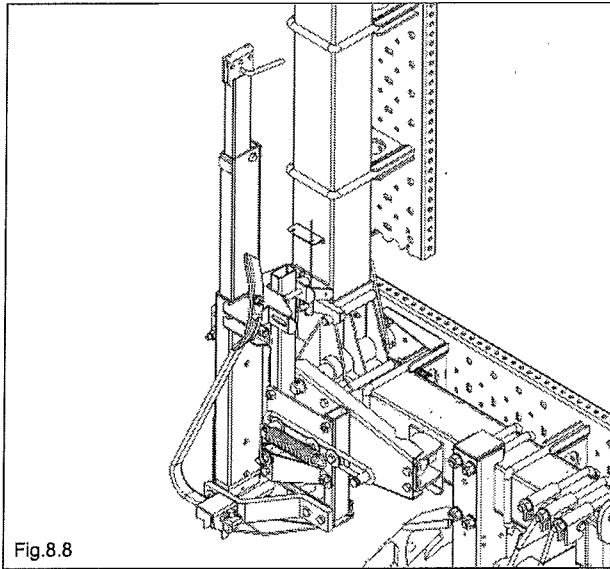


Fig. 8.8

From this configuration (Fig. 8.8) proceed as follows:

- Stop on level ground, apply the parking brake, keep the sowing machine raised from the ground then switch off the engine.
- Remove the safety pins **S1 - S2** (Fig. 8.9)
- Insert the removed pins in position **T** (Fig. 8.10).

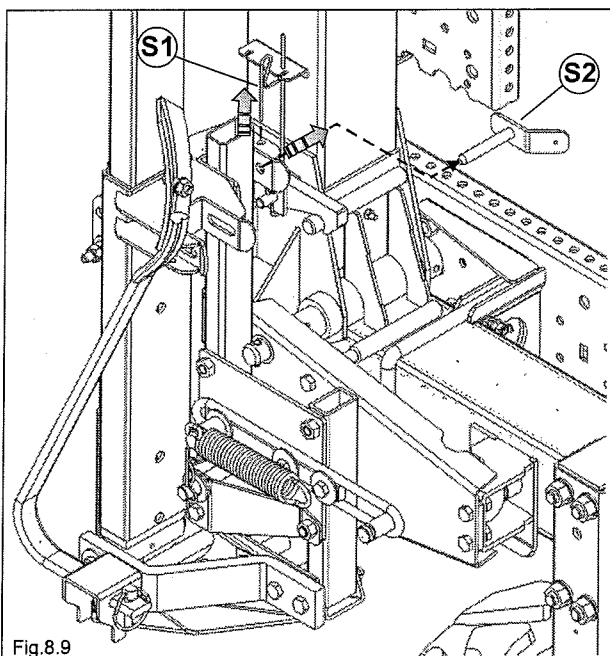


Fig. 8.9

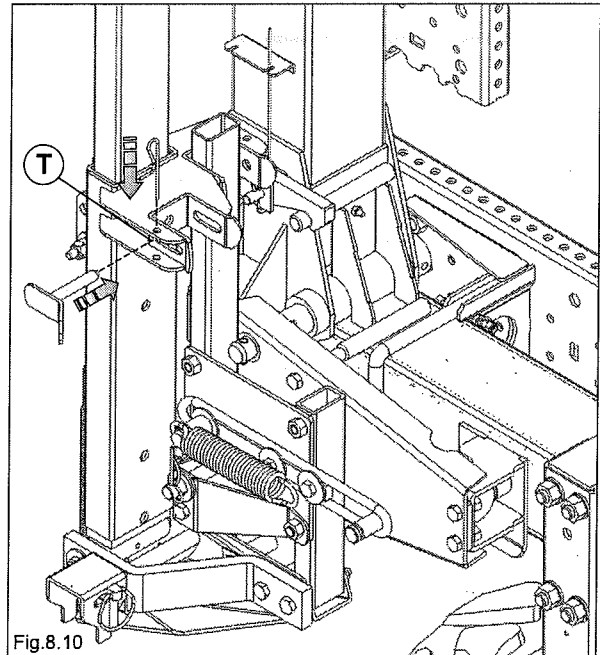


Fig. 8.10

- Connect the hydraulic system.
- Start the tractor.
- Open the arms on the body and then open the row marker arms operating the hydraulic drive of the tractor.
- Attach shaped blade **Z** to row-marker arm **A1** (Fig. 8.11)
- Adjust the distance at which to position the shaped blade (Fig. 8.11).

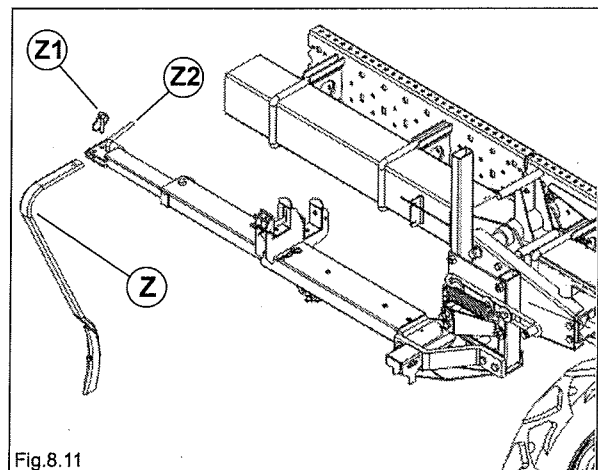


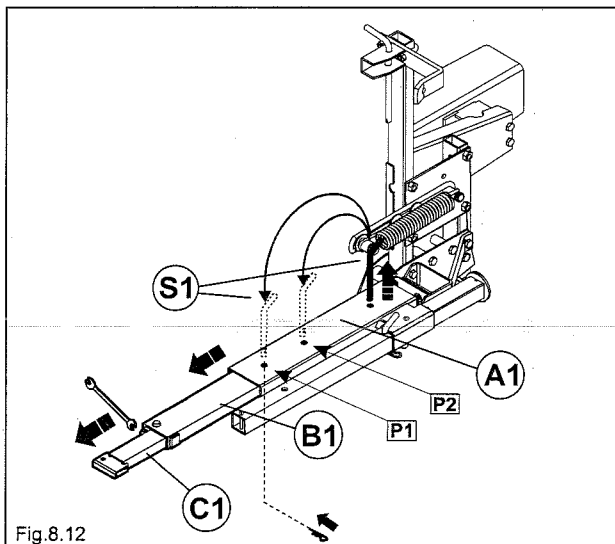
Fig. 8.11

8.3.1 SETTING THE POSITION OF THE HOE ROW TRACER.

- Tables 8.1, 8.2, 8.3 1 allow to obtain the type of configuration to be used.
- Make sure that the intermediate arm is correctly inserted and locked in place by safety pin **S1**.
- Loosen screw **V** (Fig.8.13) as much as needed to let the hoe holder extension slide.
- Let the extension slide to the length you have previously calculated.
- Tighten this hoe holding extension by tightening screw **V**.
- Repeat the same operation on the other arm.

NOTE

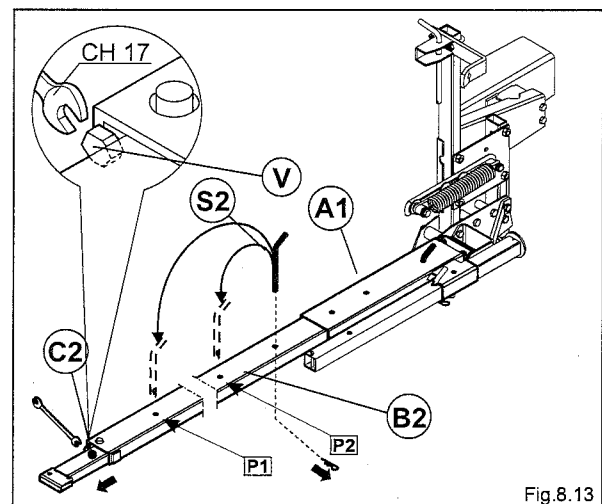
If your row tracer configuration type is A or B (Fig.8.2 and 8.3) the useful length of the row tracer can be extended further. To carry out this operation just remove safety pin S1 (Fig.8.12), take the intermediate arm B1 to either allowed position P1 or P2, then re-insert safety pin S1 in the holes. Finally position the hoe at the calculated distance.


NOTE

If your configuration is C (Fig.8.4) the intermediate arm B2 remain fixed and only the hoe holding extension C2 can be displaced.

NOTE

If you wish to trace with reference to the centre of the tractor, in configuration C (Fig. 8.4) for the most common row distances, you can determine your distance directly just insert safety pin S2 in hole A for 6 rows 75 and B for 6 rows 80 (Fig.8.13).



8.4 USE OF THE ROW TRACER WHILE SOWING

Every sowing machine is equipped with two hydraulic row tracers. The device that allows to operate the row tracers alternately is hydraulic (sequential valve) (Fig.8.14). The row tracer arms are reversed by the control device of the hydraulic distributor of the tractor. Connect the quick coupling of the hose to the hydraulic distributor of the tractor.

NOTE

Should the installation not be used, you are recommended to protect the quick coupling by applying the cap.

8.4.1 INSTALLATION ADJUSTMENT

The row tracer hydraulic installation is equipped with a unidirectional flow regulator used to adjust the speed by which the row tracer arms go back up. The regulator is mounted near the quick coupling.

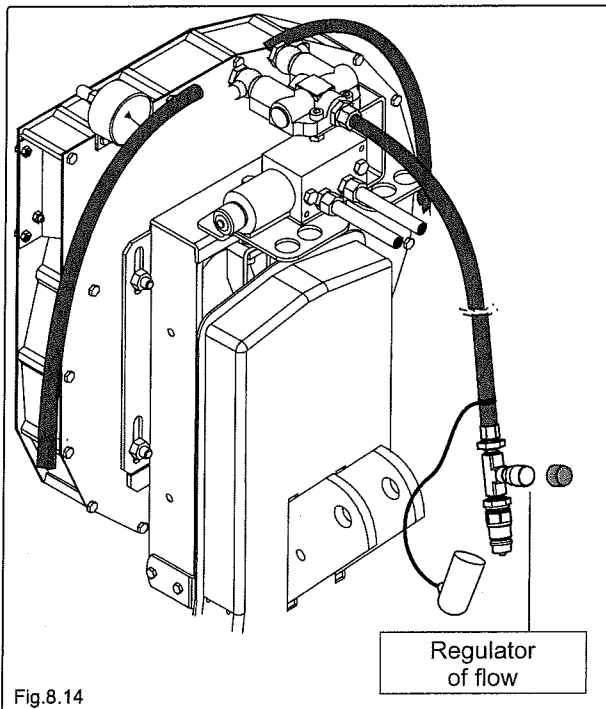


Fig.8.14

8.5 SEQUENCE VALVE WITH SWITCH (only to order)

The sequence valve with switch permits soil to be marked with both arms of the row marker as well as enabling the row markers to function alternately. In order to make the row markers function alternately move the lever found on top of the valve box to central position (Fig.8.13).

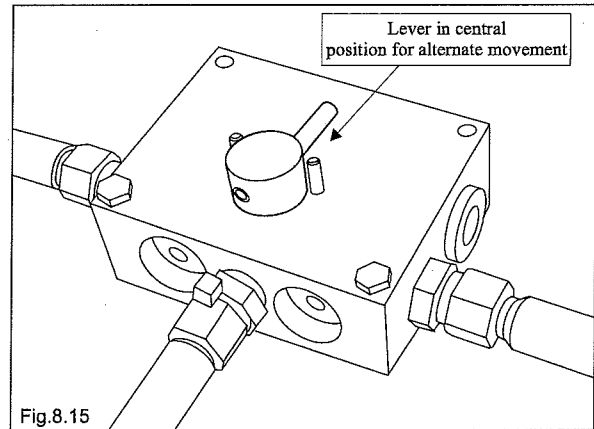


Fig.8.15

To lower both arms follow a two-fold procedure:

- 1) using the tractor hydraulic drive lower one arm (in this phase the position of the lever is not important).
- 2) move the lever to the opposite position compared with the position of the lowered arm (Fig.8.21), then still operating the tractor hydraulic drive, lower the arm.

Using the tractor hydraulic switch again lift the arm that was the last to be lowered.

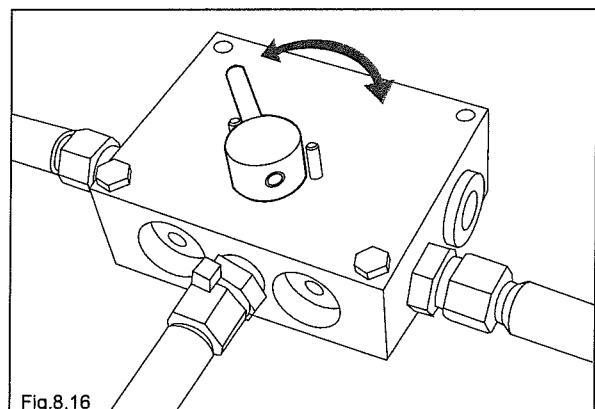


Fig.8.16



9 ELEMENT SERIES 4000

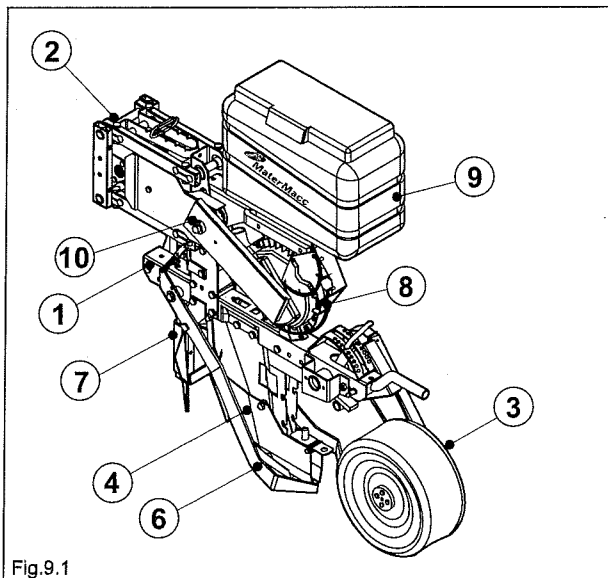


Fig.9.1

9.1 GENERAL DESCRIPTION

Each element (Fig.9.1) consists of a main frame **1** to which the following are fixed:

- a parallelogram structure **2** permitting the element to follow the ground configuration.
- a depth wheel **3** allowing to adjust the seeding depth and at the same time compacting the ground along the furrow.
- a system for burying the seed underground that can either be with shoe **4** (standard) or with double discs **5** (upon request) (Fig. 9.2).

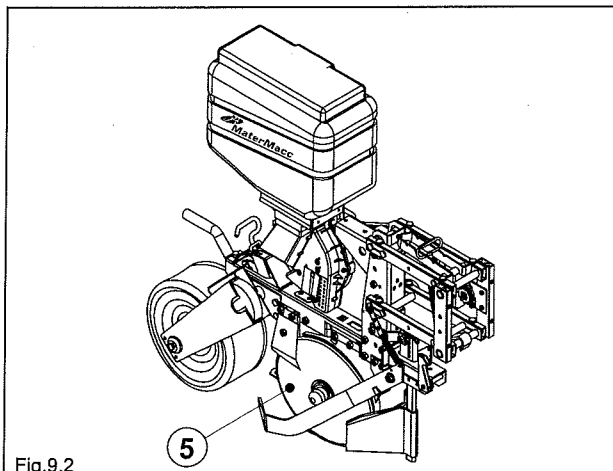


Fig.9.2

NOTE

Upon request one seed burying system can be converted into the other and vice versa.

- a pair of seed covering device **6**;
- the clod pusher unit **7**;
- the seed distributor **8** with relevant tank **9**;
- the elements for transmitting the motion to the seed distributor **10** (these elements vary depending on the type of gearbox mounted on the machine);
- the element hooking system;
- the adjustment parts;
- the fertilizer distributors if machine is so equipped.

9.2 SEED DISTRIBUTOR

The pneumatic seed distributor MAGICSEM model is made in such a way as to permit the even distribution of the seeds in the ground at a constant and easily adjustable sowing interval.

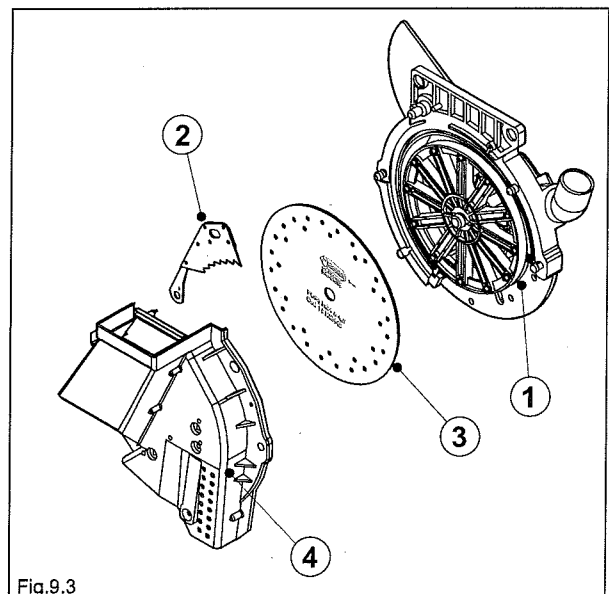


Fig.9.3

The distributor consists of (Fig. 9.3):

- A body **1** on which the following is mounted:
 - the disc plate that is also used as a seed agitator.
 - the pneumatic seals.
 - the fixing and adjusting system for the seed selector.
- A selector **2**
- A bored seeding disc **3** interchangeable in view of the type and size of the seed.
- A lid **4** to be used as a guide and contention for the seeds.

Inside the lid you'll find:

1. The outer gaskets;
2. The seed brush;
3. An adjustable partition (fixed in case of colza and any small-size seeds) which is used to adjust the seed level in special situations such as on sloping grounds or with small-size seeds. This partition adjusts the width of the seed mouth in order to prevent the seeds from coming out of the distributor in case of overflow. The partition is adjusted by means of a spring on the lid (Fig. 9.4);
4. The brush for seed detachment in case of bad weather conditions (high humidity, fog, etc);

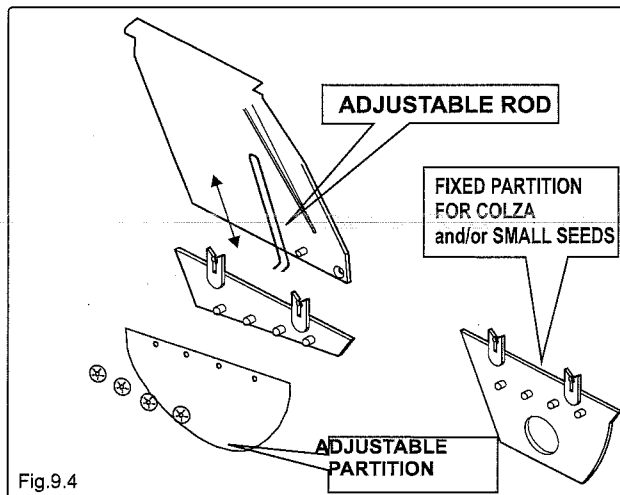


Fig.9.4

The lid is also equipped with:

6. A discharge hole for recovering the non-distributed seeds;
7. An inspection window to check the regularity of the distribution and therefore the adjustment of the selector.

NOTE:

Should the adjustable partition **NOT** be enough to prevent the overflow, it should be replaced by the fixed one after making an opening in it as shown by the picture below.

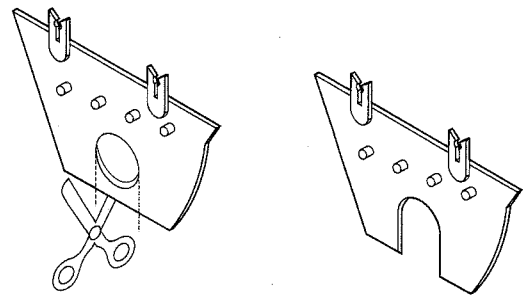


Fig.9.5

NOTE

For the correct operation of the distributor we recommend to keep all gaskets, seals, diaphragms, brushes, cylinder, bored disc and selector clean and in good working conditions.

The disc plate and bored disc are set in motion by a chain transmission that gets its motion in turn from the front wheel of a frame in case of centralized gearbox or from the rear wheel of the element in case of an independent gearbox (see Chapter 7).

NOTE

Periodically make sure that all the gaskets are in good conditions.

9.2.1 HOW TO SELECT THE SEED DISC MOUNTING THE DISC, THE HOLE DIAMETER AND THE NUMBER OF HOLES

The selection of the seed disc should be made in view of the type of seed, of the seed distance or with the specific transmission ratio mounted on the gearbox, diameter) according to the recommendation is the result of field tests and customs.

SEED TYPE	N° OF HOLES	HOLE DIAMETER	SELECTOR	CODE
SUNFLOWER	24	2,5	STANDARD	18122425
CORN	24	5,5	STANDARD	18122455
CHARDS	36	2,5	STANDARD	18123625
BEANS	36	5,5	STANDARD	18123655
PEANUTS				
CORN (fitto)				
TOMATO	72	1	STANDARD	18127210
FENNEL				
SORGHUM	72	2	STANDARD	18127220
COTTON	72	3,5	STANDARD	18127235
SOYA BEAN	72	4,5	STANDARD	18127245
FRENCH BEAN				
SOYA BEAN (spec.)	144	4,5	for double row	18128345

Table 9.1 - Disc to be used in view of the type of seed.

NOTE

*Every distributor is supplied with a disc suitable to the culture specified upon ordering the machine.
For discs either than the ones mounted on the machine please refer to your dealer or contact MATERMACC s.r.l. directly for information.*

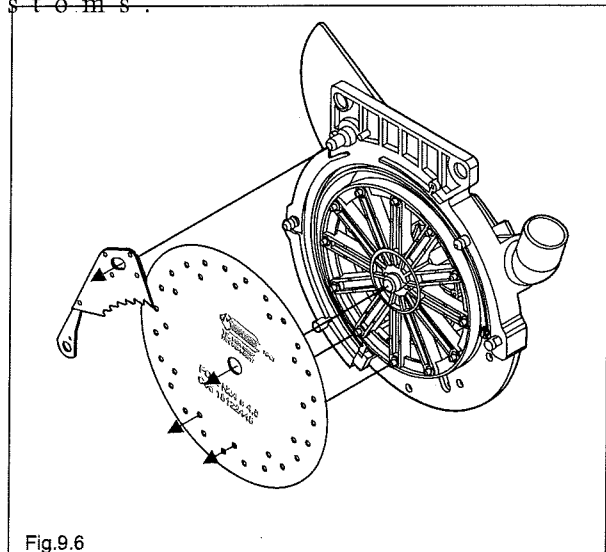


Fig.9.6

The assembly does not require any specific equipment. However it is important for the disc to be well inserted in the fixing bolts. Therefore the disc shall be rotated until all the bolts and reference pins are fully inserted. The disc will then rest on the disc wheel and on the seals completely.

The selector shall be mounted after the disc in the bolts (Fig.9.6.) and shall look as if it were attached to the disk.

The lid shall be mounted in the bolts making sure the cylinder presses against the selector and not against the disc. (Fig.9.7).

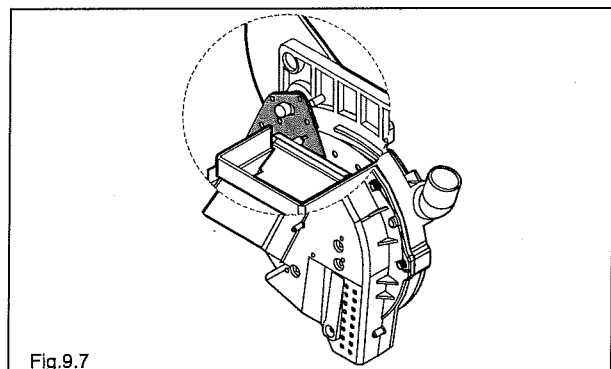
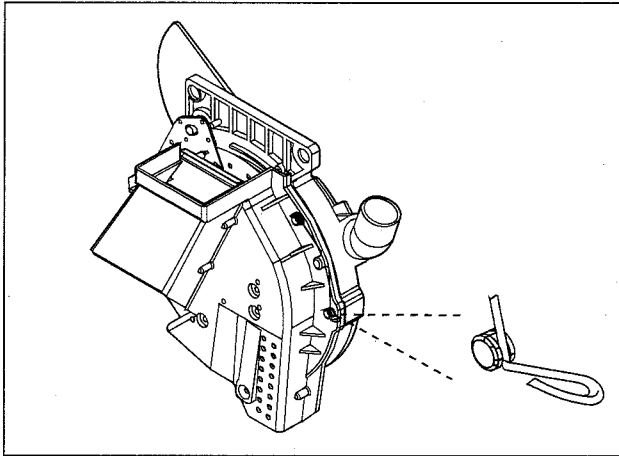


Fig.9.7

Close the distributor by inserting the springs on the lid in the relevant slots of the bolts. (Fig.9.8).



Move the selector adjusting lever to make sure that it can be free to move.

This lever acts on the selector and allows to adjust the distribution of the seeds on each disc hole.

Turn the pulling wheel manually to make sure that the disc turns freely.

Before filling the tank make sure the drain plug is closed.

NOTE

If possible carry out all these operations in a clean, dry and not dusty place.

Dust and humidity can damage the disc and the gaskets.

Make sure the sowing machine is positioned on solid ground.

If it is hooked to tractor make sure you are on even horizontal ground, the PTO disconnected and the parking brake pulled.

9.2.2.1 ADJUSTMENT OF SEED SELECTOR

The seed selector shall be adjusted after many other operations and adjustments concerning other parts of the machine among which:

- Mounting and closing the distributors;
- Loading the tanks;
- Starting the PTO
- Adjusting the suction
(see par. suction adjustment).

A questo punto è possibile regolare il selettore.

- 1) Adjust the levers of ALL the selectors in the intermediate position;
- 2) Rotate one or two full turns the distributor discs by means of the pulling wheel;
- 3) Check through the inspection window on the lid that the seeds are distributed on the disc.



!! WARNING !!



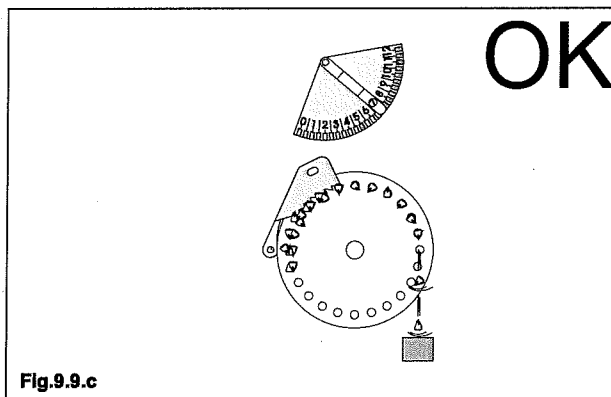
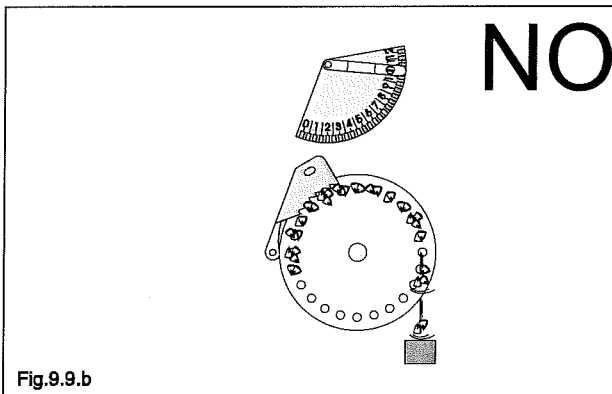
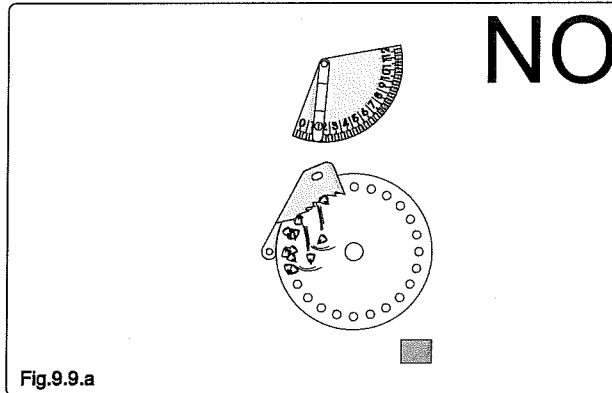
Mind the parts in motion.

Carry out the adjustments and the relevant checks carefully.

The check can point out three different situations:

- A) The holes in the seeding disc downstream the selector have no seeds or very little (Fig.9.9.a).
⇒ The selector is adjusted at too low a value, shift the lever towards higher values and start again from position 2).
- B) The holes on the distributor disc downstream the selector have more than one seed per hole (generally two or three) (Fig.9.9.b).
⇒ The selector is adjusted at too high a value, shift the lever towards lower values and start again from position 2).
- C) after acting on the selector each hole of the distributor disc only carries one seed (Fig.9.9.c).
⇒ The selector is correctly adjusted
However we recommend you displace the lever some notches in both.

directions to find the interval where the adjustment is satisfactory. Then position the lever in between.



A perfect regulation of the selector would demand to repeat such a procedure on each distributor. Normally it is just enough to find the adjustment value on a single distributor and adjust the other ones in a similar way. However check that the seeds are on all the distributors particularly after a short time working.



!! WARNING !!



It might happen, that independently from the position of the selector switch, no seeds can be found on the sowing disc holes. The cause might be lack of vacuum. Therefore adjust the suction before proceeding with the selector adjustment.

NOTE

The selector shall be adjusted whenever the seeding disc or the seed type is changed (type and average size). However we recommend to carry out the adjustment whether the sowing conditions change considerably.

9.3 CLOD PUSHER

The clod pusher unit (Fig.9.10) should remove any clods or stones that might be found in the sowing row.

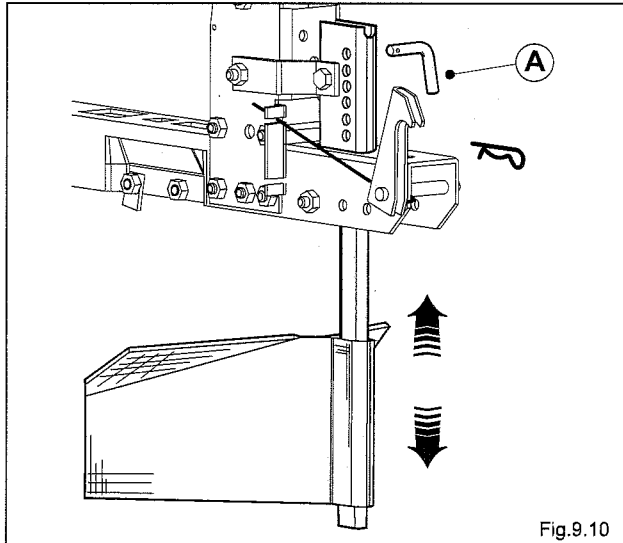


Fig.9.10

9.3.1 CLOD PUSHER ADJUSTMENT

To adjust the clod pusher position the sowing machine on a horizontal ground. Then remove fixing pin **A**, position the clod pusher at approximately 2-3 cm from the ground then reinsert the pin (Fig.9.10).

Screw **B** (Fig.9.11) permits to adjust the knife depth by maintaining the working height of the clod pusher unchanged.



!! WARNING !!



The clod pusher should not trace a furrow in the ground, but only skim it.

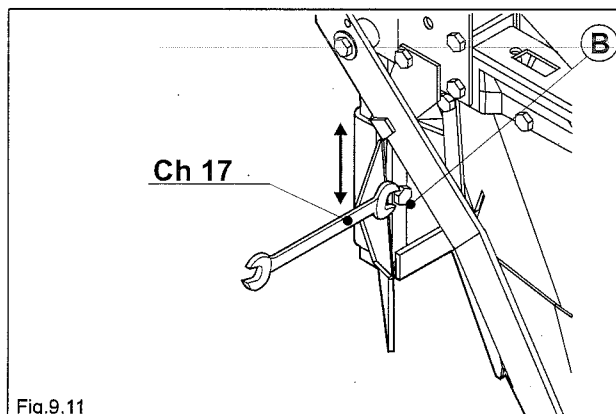


Fig.9.11

9.4 DEPTH WHEELS

The depth wheel allows to adjust the depth for burying the seed and at the same time compressing it (Fig. 9.12).

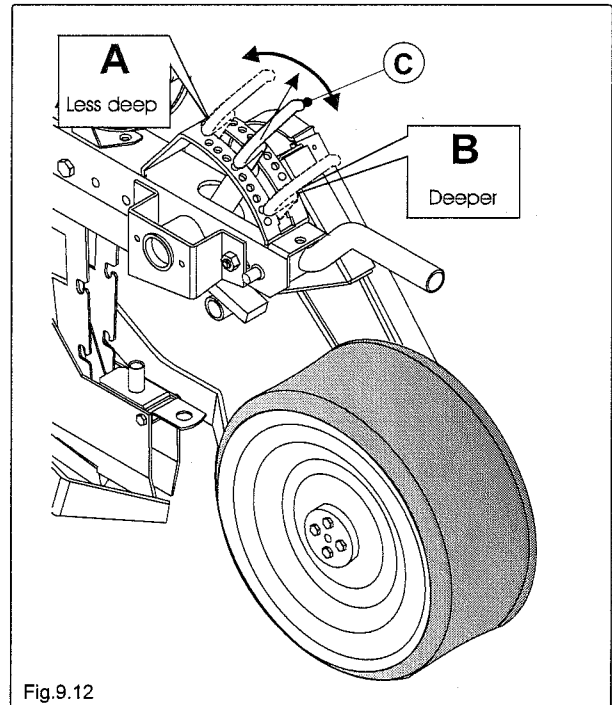


Fig.9.12

9.4.1 ADJUSTMENT OF THE SOWING DEPTH

To adjust the sowing depth act on handle **C** as follows:

1. Lift the handle **C** until the locking teeth are completely out of the holes;
2. Take the handle towards position **A** if you want to reduce the seeding depth or **B** to increase it; Release the handle so that the teeth enter the
3. most suitable holes.

NOTE

Periodically make sure that the seed is sown at the requested depth.

4. Adjust all the elements at the same sowing depth.

9.5 SEED COVERING DEVICE

The sowing element type 4000 is equipped with a pair of seed covering device.

The strength by which they mark the ground can be adjusted by means of spring **M**.

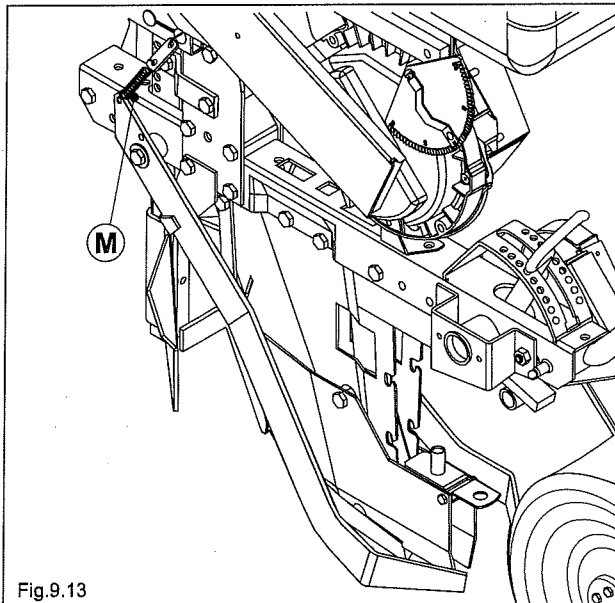


Fig.9.13

9.6 DEVICE FOR CUTTING OFF THE ELEMENT

Each element is equipped with a hooking system by which the parallelogram can be lock in the "high" position. (Fig.9.14). This permits to cut off the element from sowing quickly. (for example at the field edge) or anyway whenever it is necessary to disengage the sowing elements from the ground.

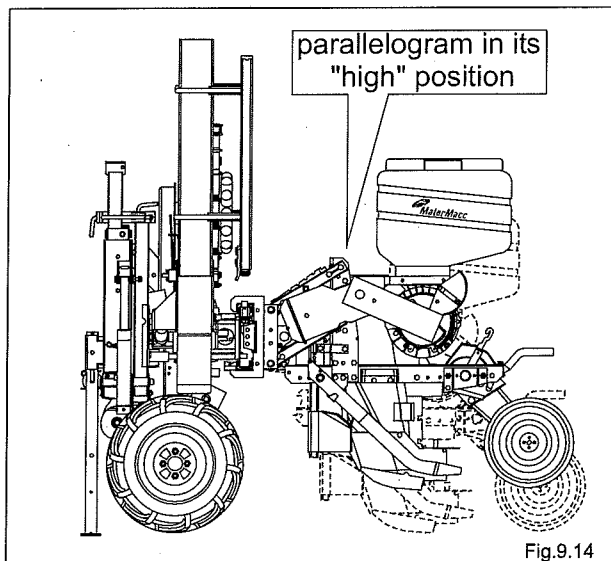


Fig.9.14

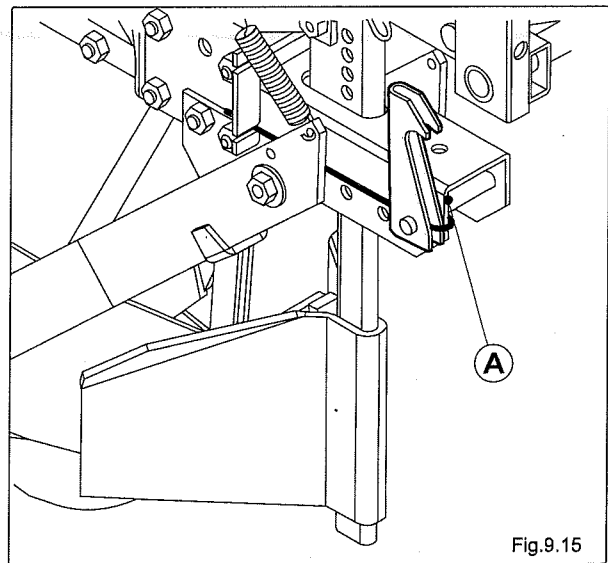


Fig.9.15

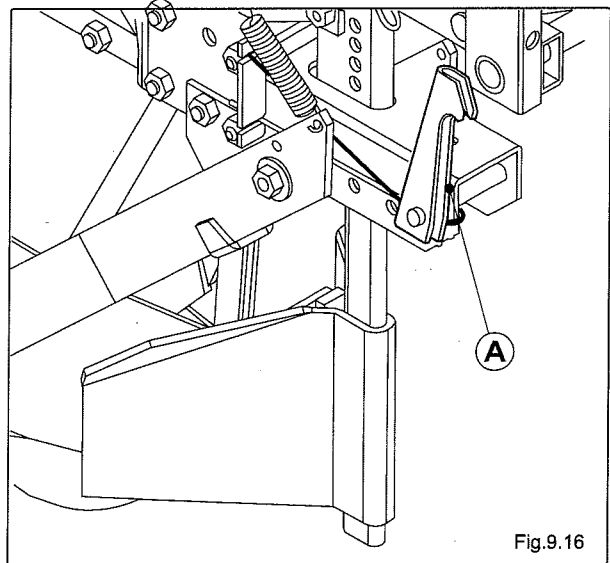


Fig.9.16



!! WARNING !!



The strength needed for lifting the element is higher than 80 Kg, therefore please be extremely careful!

To hook the element:

1. Position spring **A** in its "high" position (Fig.9.17);
2. Lift the element until the hook is heard or seen click on the locking pin;
3. Release the element slowly until it is totally supported by the hook.



!! WARNING !!



Never dwell under the lifted element or while it is going up, a wrong hooking might make the element fall back down.

NOTE

Make sure that the hook spring is in its "low" position on all active elements (Fig. 9.14).

While at work an element the hooking spring of which has been left in the high position, might hook up, thus remaining cut off from sowing.

9.7 DEVICE FOR MAKING THE ELEMENTS HEAVIER

This device is used to make the element heavier or lighter and guarantee a correct homogeneous seeding depth.

To make the element heavier proceed as follows:

- Insert tie rod **T** in ring **N** as shown in (Fig.9.17).

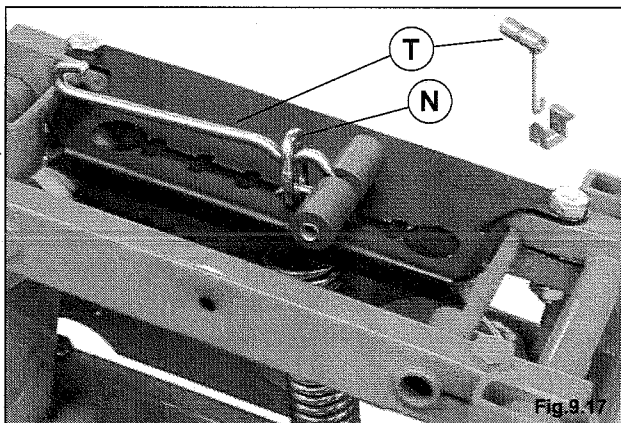


Fig.9.17

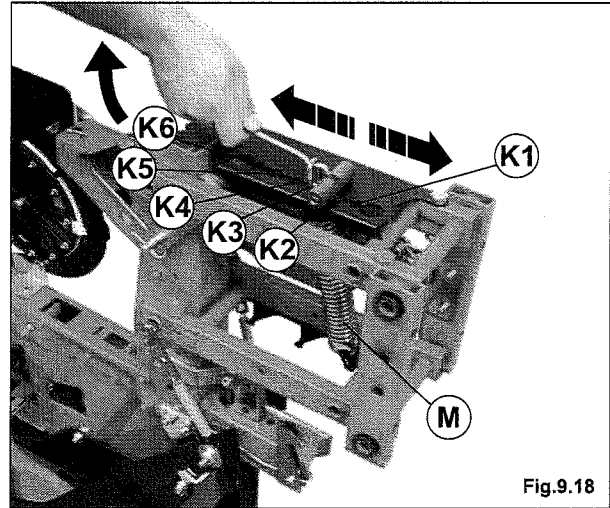


Fig.9.18

- Prize with tie rod **T** to move spring **M** to the required position (Fig.9.18).

- **K1 - K2** for light ground;
- **K3 - K4** for average ground;
- **K5 - K6** for heavy ground.



!! WARNING !!



If the element sows at the right depth with the spring adjusted on **K1** do not adjust spring **M** at any higher position: it is useless if not harmful.

- Should you wish to make the element lighter displace spring **M** from position **Z1** to position **Z2** or **Z3** (Fig.9.19).

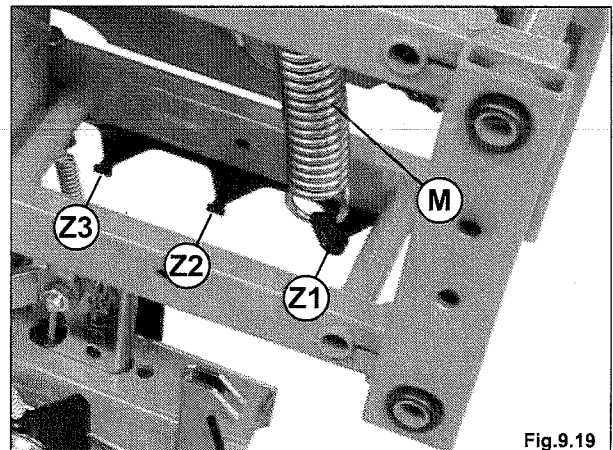




Fig.9.19

9.8 PARKING DEVICE OF THE SOWING MACHINE

The parking device (resting position) of the sowing machine is usually mounted in the first and last sowing elements.




!! WARNING !!




In case of 12-row sowing machines, this device is mounted on the first, fourth, eighth and twelfth sowing elements.

To activate the parking device of the sowing machine, proceed as follows:

- Displace spring **M** from position **A** (Fig.9.18) to position **B** (Fig.9.19).
- Lift the element until you hear or see hook **N** clicking in on bolt **P** (Fig. 9.20)



!! WARNING !!

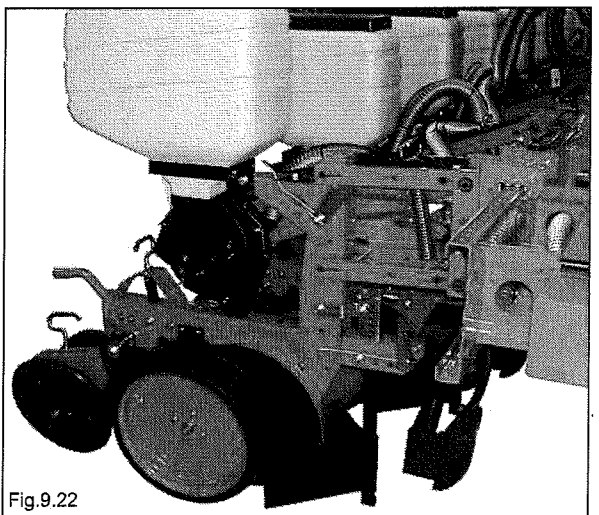
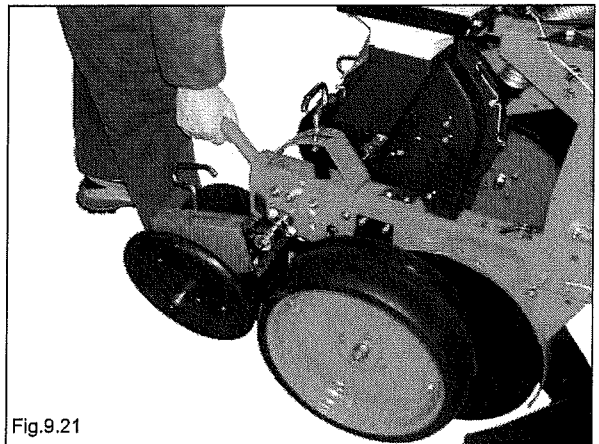
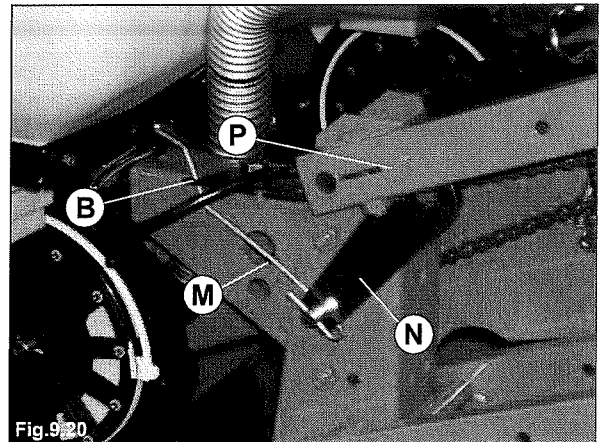
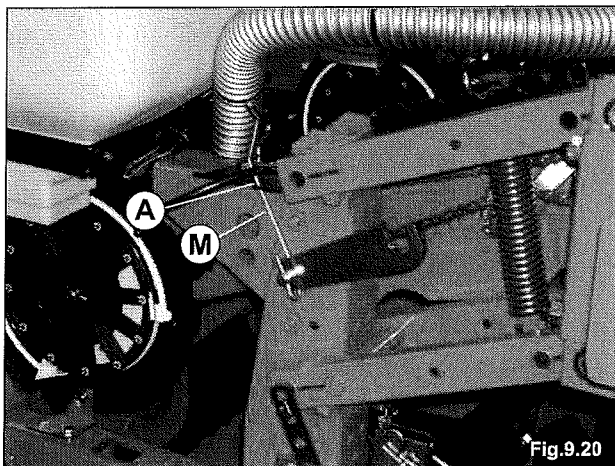


The strength needed for lifting the element is higher than 80 Kg, therefore please be extremely careful!

- Release the element slowly until it is totally supported by the hook.

Repeat these operations for all the elements mounted on the device.

To deactivate the device, carry out the operations above in the reverse order.



10 ACCESSORIES

MAGICSEM pneumatic precision sowing machines have been designed to work in the most various situations and to comply with the most exacting requirements of modern agriculture. The flexibility and the functional ability of these machines is improved thanks to optional accessory equipment which allow to use the machine in various ways and optimise the time invested in sowing.

The following accessories are available:

Fertilizer distributor (Mod. VarioVolumex) (Fig.10.1).

Fertilizer distributor (Mod. MIDI) (Fig.10.2).

Microgranulator (Mod. MicroVolumex) (Fig.10.3).

Sowing-hectare meter monitor control (Mod. (MSC 8000 / 12000) (Fig.10.4).

Electronic hectare meter (C.N.T. 7) (Fig.10.5).

Air-exclusion cutoff device (AE8X - AE12X) (Fig.10.6).

The first three help to improve and/or complete soil treatment while the monitor and the hectare counter enable the sowing process to be monitored both in qualitative (regularity and precision thanks to the monitor) and in quantitative terms (monitor and hectare counter).

L'air-esclusion è un dispositivo che permette l'esclusione di una o più file di semina direttamente dal posto di guida.

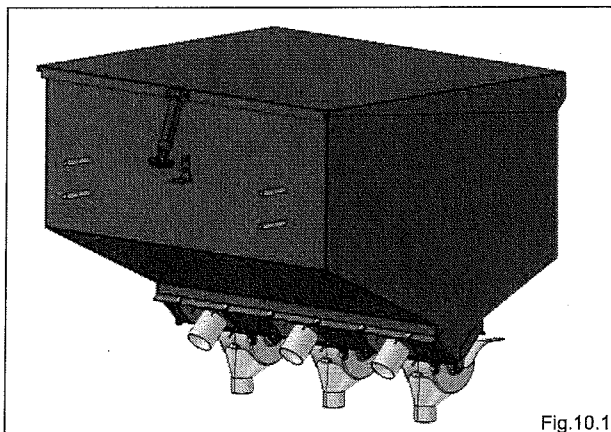


Fig.10.1

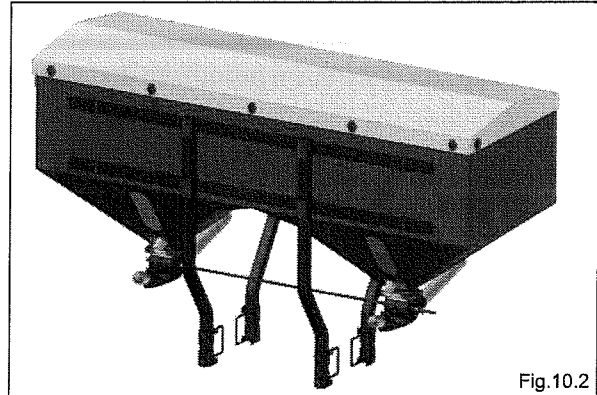


Fig.10.2

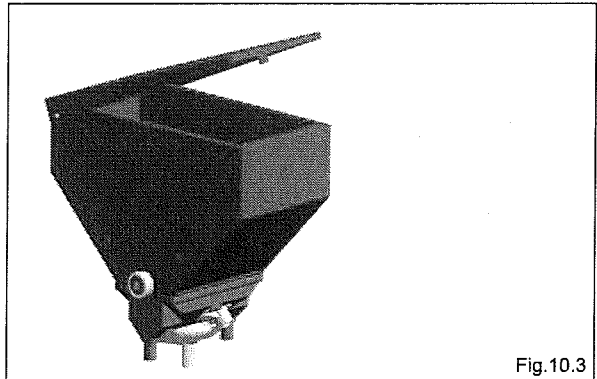


Fig.10.3

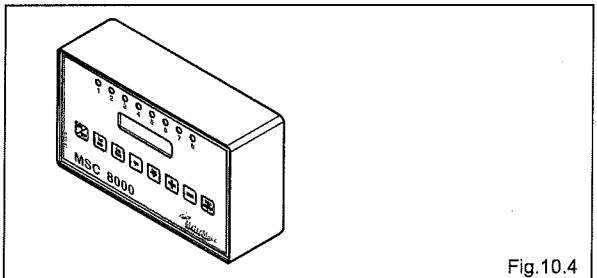


Fig.10.4

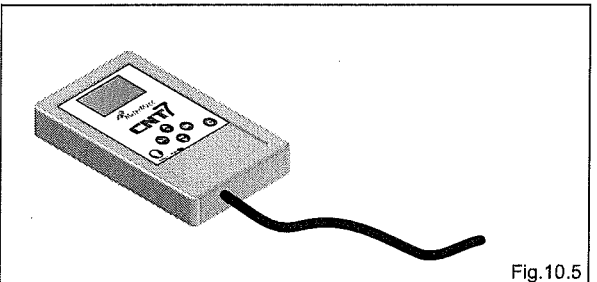


Fig.10.5

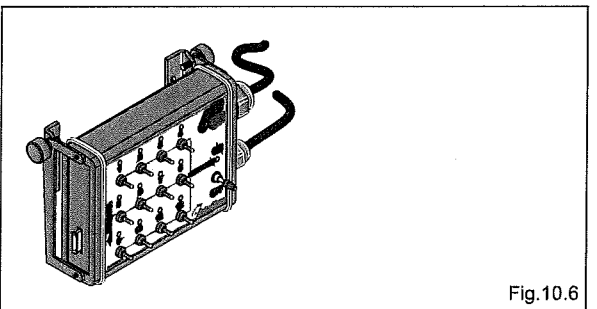


Fig.10.6

10.1 FERTILIZER DISTRIBUTOR

The fertilizer distributor permits to distribute fertilizers or granular products locally along the rows.

The fertilizer distributor consists of (Fig.10.2):

- One or more tanks: **1** mounted on a frame on the sowing machine, each tank has one or more volumetric proportioners **VARIOVOLUMEX 2** inside it.
- Multiple stage chain transmission (**3**) to drive the distributors.
- A spreading unit for fertilizer localization; each unit is connected with the outlet of the distributor by a spiral hose.

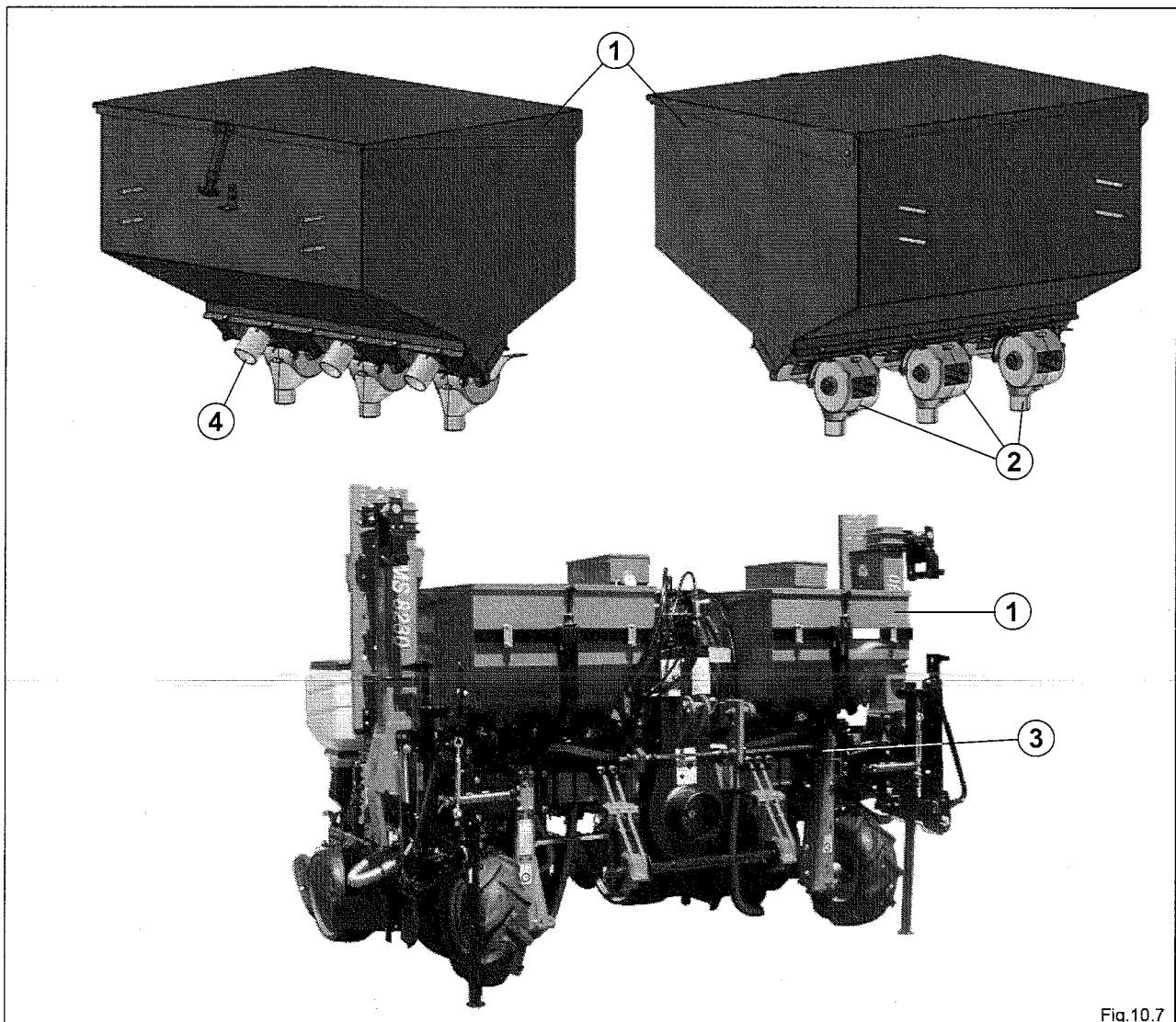


Fig.10.7

10.1.1 TANKS

Material	Capacity dmc	Length cm	Width cm	Height cm	
Painted steel	275	121	60	50	
	250	95	60	50	
	170	72	60	50	

Tab.10.1

Standard tanks are painted steel. Optionally they can be supplied in stainless steel; each version is available in various capacities as summarized in table 10.1.

10.1.2 VARIOVOLUMEX DISTRIBUTOR ADJUSTMENT

In every tank some volumetric distributors model VARIOVOLUMEX C (Fig.10.8) can be found.

VARIOVOLUMEX distributors allow to distribute a preset quantity of product independently from the speed of advance of the sawing machine.

Fertilizer is distributed by a conveyor belt fed through a slot **F**. The OPENING/CLOSING of the slot can be adjusted by turning ring **B**. Each full turn of ring **B** corresponds to a shift of indicator **A**.

You will find the instructions for adjustment in the adjusting table located on every tank and specified hereunder.

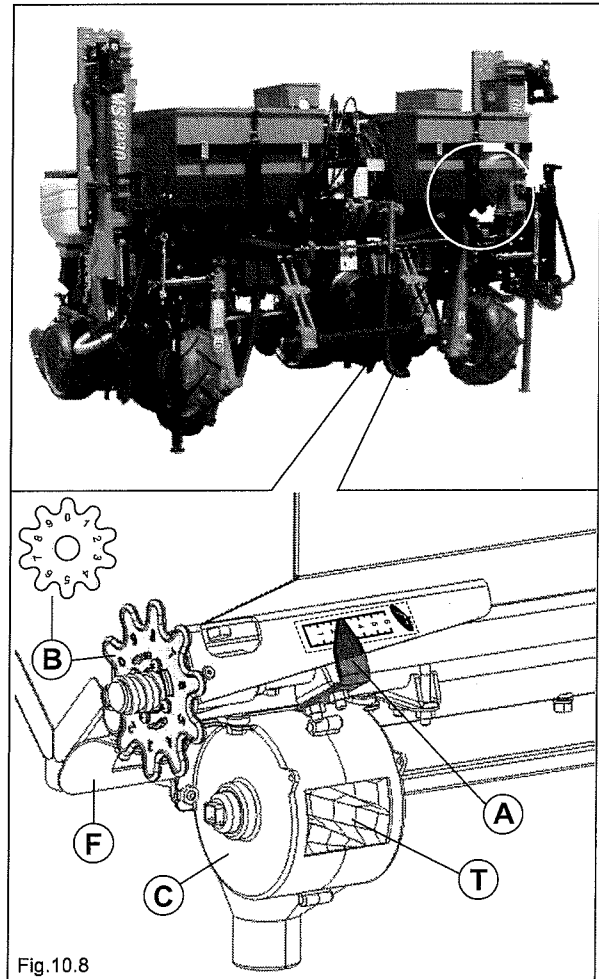


Fig.10.8

NOTE:

The number is an index of the level of opening of the feeding slot, the higher the number, the more the slot is open and the more fertilizer is distributed.

10.1.3 ADJUSTING TABLE

The adjusting table (Table 10.1) concerning VARIOVOLUMEX adjustments is divided into three parts. The first part of the table (Tab 10.1.A) concerns STANDARD transmission and shows the transmission stage before the last, set with gears (Z13 - Z18).

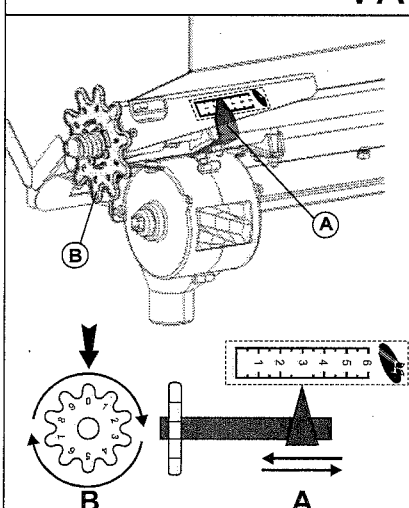
The second part of the table (Tab 10.1.B) shows transmission WITH stage before the last REVERSED (Z18 - Z13) to increase the quantities to be distributed.

The values of these two tables refer to a machine set for sowing on rows 75 or 95 cm apart.

The last table (Table 10.1.C) contains the values to apply to a machine set for sowing on rows 45 cm apart. In this case, it is very important to replace the last transmission stage (Z13 - Z18) with a stage (Z10 - Z25).

Every relevant table consists of 3 columns showing fertilizers in a different specific weight (0.8 - 1 - 1.2 kg/dm³), as well as the quantity of fertilizer to be distributed in kg/Ha, and two colour columns showing the relevant Vario Volumex adjustment.

VARIOVOLUMEX

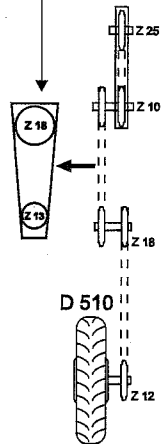


B

A

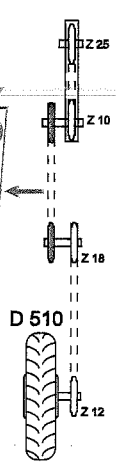
Z13 - Z18

		70 cm			75 cm		
		kg/dm ³			kg/dm ³		
A	B	0,8	1,0	1,2	0,8	1,0	1,2
2	0	126	158	190	118	148	177
2	5	150	187	225	140	175	210
3	0	173	216	260	162	202	242
3	5	202	253	303	189	236	283
4	0	231	289	346	216	269	323
5	0	238	298	358	223	278	334
MAX		246	308	369	230	287	344
		kg/ha			kg/ha		



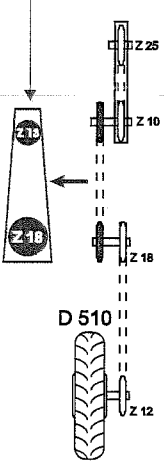
Z10 - Z25

		45 cm		
		kg/dm ³		
A	B	0,8	1,0	1,2
2	0	109	136	163
2	5	129	161	194
3	0	149	187	224
3	5	174	218	261
4	0	199	249	298
5	0	205	257	308
MAX		212	265	318
		kg/ha		



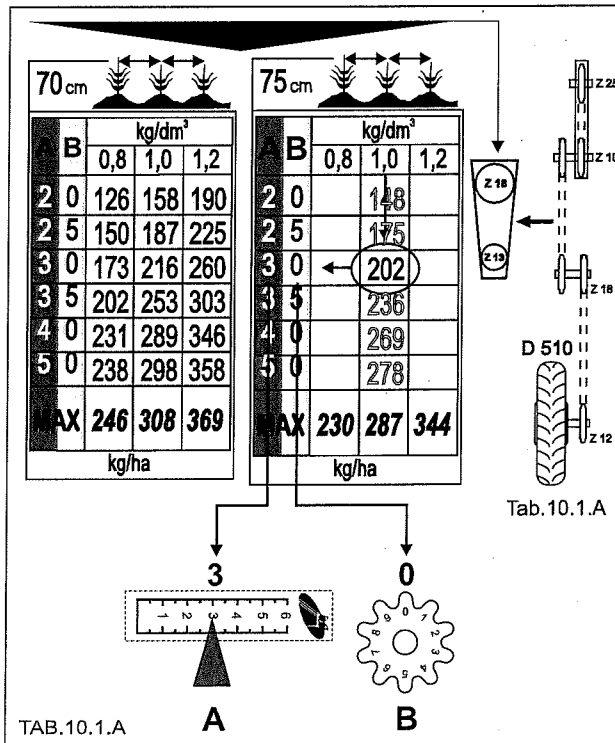
Z18 - Z13

		70 cm			75 cm		
		kg/dm ³			kg/dm ³		
A	B	0,8	1,0	1,2	0,8	1,0	1,2
2	0	242	303	364	226	283	339
2	5	287	359	431	268	335	402
3	0	332	415	498	310	387	465
3	5	387	484	581	362	452	542
4	0	443	553	664	413	516	620
5	0	457	571	686	427	533	640
MAX		472	590	708	440	550	660
		kg/ha			kg/ha		



10.1.4 ADJUSTING TABLE
Example 1 of table reading:

- The machine is prepared to sow on rows 75 cm apart.
- Specific weight of the fertilizer: 1 Kg/dmc.
- Select the column corresponding to 1Kg/dmc of specific weight (central column)
- You wish to distribute 200 kg/Ha.
- Look for the value closest to 200 kg/ha in the selected column (central column) that is 202 Kg/ha. This value finds a line corresponding to VarioVolumex adjusting value (colored columns), in the example our value is 30.



TAB.10.1.A

NOTE:

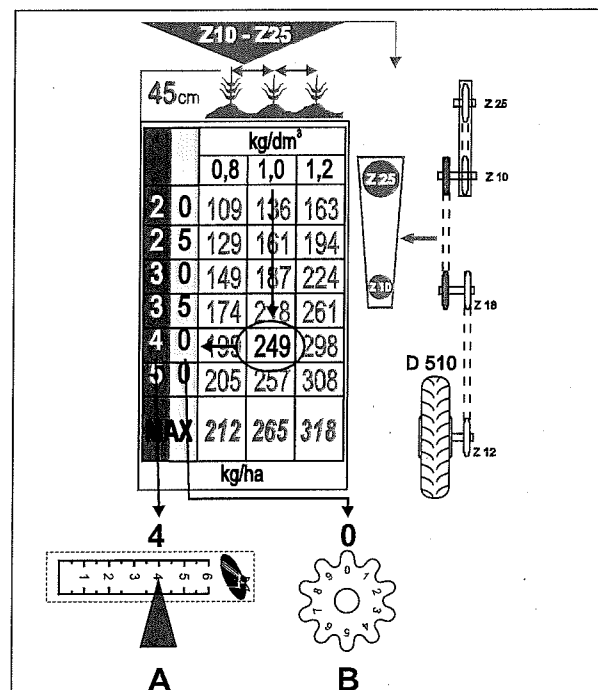
Should you wish to distribute 250 kg/ha under the same conditions, the spandivolumex device should be adjusted at a value between 32 and 34.


WARNING


In view of the variability of the physical state of the various fertilizers, the quantity of fertilizer actually distributed can be different from the one specified in the table. It is therefore absolutely necessary to check the quantity being distributed and if necessary correct the adjustment.

Example 2 of table reading:

- The machine is prepared to sow on rows 45 cm apart.
- Specific weight of the fertilizer: 1 Kg/dmc.
- Replace the transmission stage before the last (Z13 - Z18) with (Z10 - Z25).
- Select the column corresponding to 1Kg/dmc of specific weight (central column).
- You wish to distribute 250 kg/Ha.
- Look for the value closest to 250 kg/ha in the selected column (central column) that is 249 Kg/ha. This value finds a line corresponding to VarioVolumex adjusting value (colored columns), in the example our value is 40.



**10.1.5 LOCALIZING DEVICE ADJUSTMENT
FERTILIZER****NOTE**

The fertilizer spreader is only suitable for solid granular fertilizers.

We recommend to follow all the indications supplied by the maker concerning the use, handling and transportation of the fertilizers.

10.1.5.1 FILLING THE TANKS

The tanks should be filled once you have reached the field. We recommend you to carry out this operation on flat ground and with no hindrances. Lower the hoist completely and pull the emergency brake of the tractor. Make sure the plug of the discharge hose and the bottom of every distributor is closed, then fill the tanks.

10.1.5.2 DISCHARGING THE TANK CONTENTS

Once all operations are over, you should empty all tanks. To do so, position the opening of an empty sack under the tank discharging outlets.

Press plug holder **5** and displace plug **4** from position **A** to position **B** (Fig.10.9).

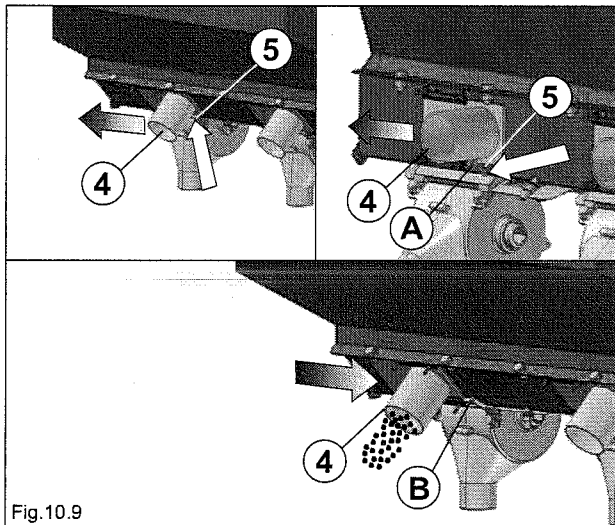


Fig.10.9

10.2 MIDI FERTILIZER DISTRIBUTOR

Localized pneumatic fertilizer distributor with single 800 - 1000 litre tank.
The fertilizing system consists of (Fig.10.10):

- One tank **1** fitted on a carrier.
- Two pneumatic distributors **2**.
- One transmission **3** to operate the distributors either with gearbox or with the stepless speed change gear (OPTIONAL).
- Fertilizing system for fertilizer sealing either **4** disk or sword runner opener (OPTIONAL).
- Fertilizer loading auger (OPTIONAL).

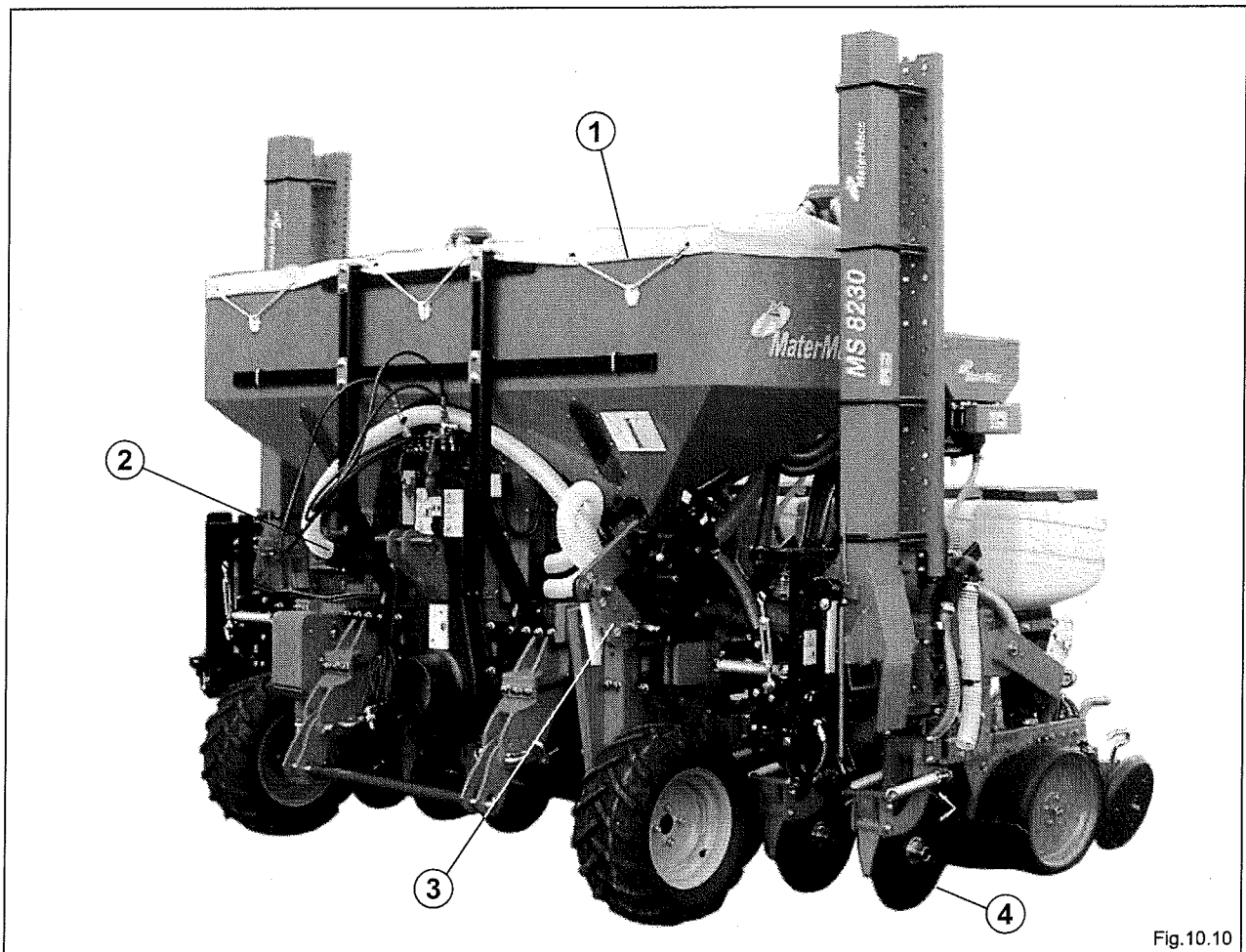


Fig.10.10

10.2.1 MIDI TANKS

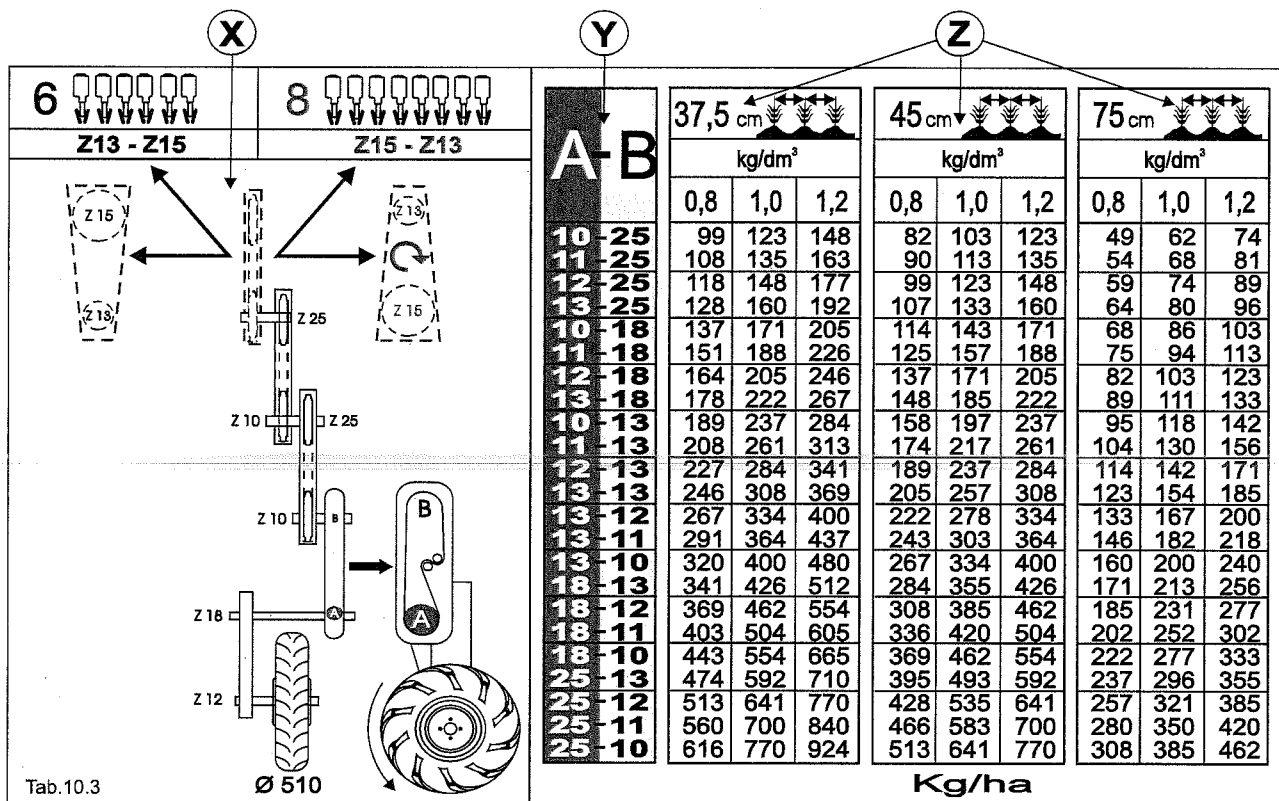
Material	Capacity dmc	Length cm	Width cm	Height cm	
Lamiera verniciata	1000 800	240 190	80 80	95 95	

Tab.10.2

10.2.2 SETTING OF FERTILIZER TO BE SPREAD WITH GEAR BOX
• PHASE 1 HOW TO READ THE REGULATION CHART

A specific regulation chart for fertilizer spreading is supplied according to the type of seed drill. Below is an example of a chart for a 6 or 8 row machine described as follows:

- a diagram **X** showing the sequence of mounted components (and consequently the ratio to be set for the fertilizer distribution).
- a column **Y** showing gears to be set.
- three columns **Z** that show the quantity of fertilizer to be distributed in kg / ha according to two parameters:
- the inter-row and the specific weight (**0.8 - 1 - 1.2 kg/dmc**).



Tab.10.3

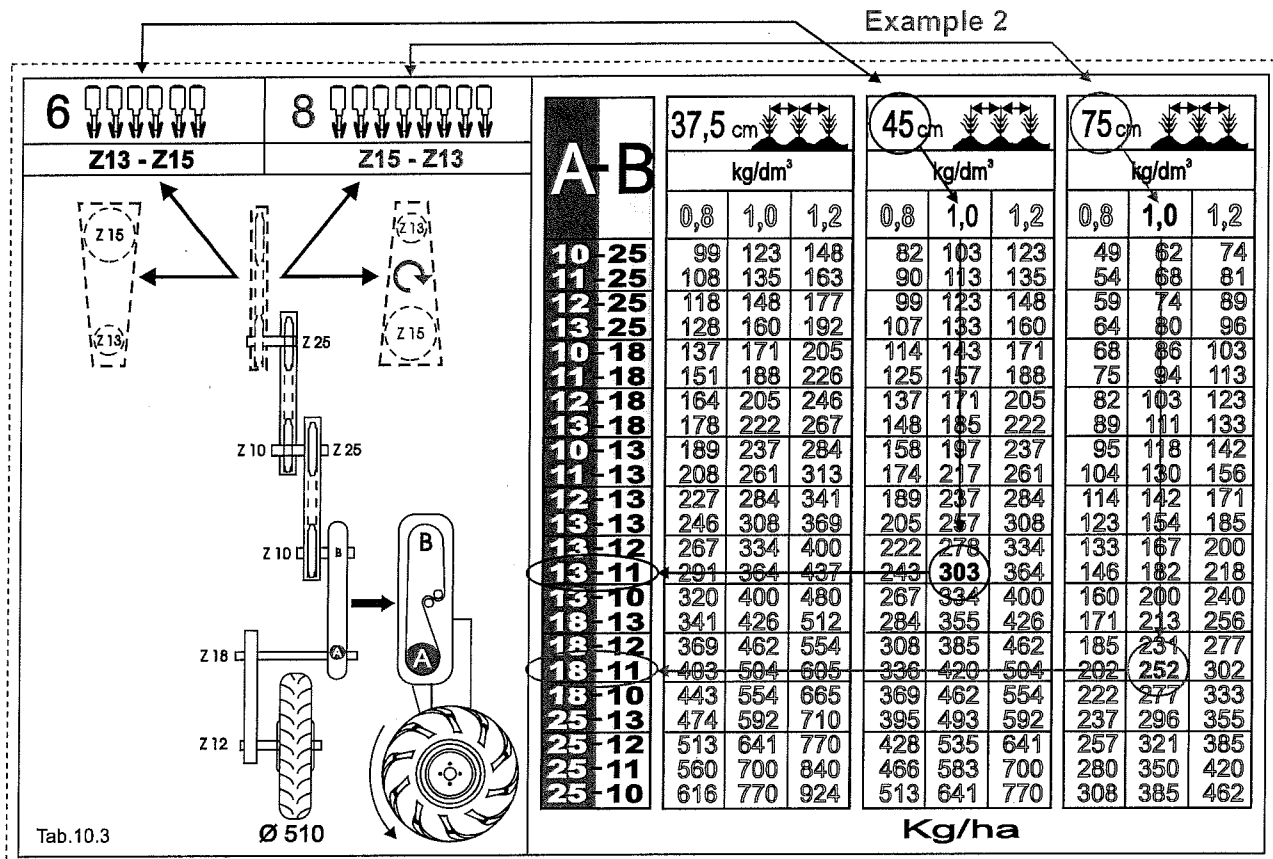
Examples of chart readings:

Example 1

- Machine prepared to sow **6 rows 45 cm** apart.
 - Specific weight of fertilizer **1Kg/dmc.**
 - You want to distribute **300 Kg/Ha.**
- Choose the column that corresponds to the desired inter-row specific weight of 1 Kg/dmc (centre column).
 - In the selected column search for the weight that is closest to **300 Kg/ha**, which is **303 Kg/ha**. Using this value identify a line which corresponds to a combination of gears to be mounted onto the box, in this case (**A=Z13 - B=Z11**).
 - Check that the last gear of the transmission is set at (**Z13-Z15**) see (Fig.10.13).

Example 2

- Machine prepared to sow **8 rows 75 cm** apart.
 - Specific weight of fertilizer **1Kg/dmc.**
 - You want to spread **250 Kg/Ha.**
- Choose the column that corresponds to the desired inter-row specific weight of 1 Kg/dmc (centre column).
 - In the selected column search for the weight that is closest to **250 Kg/ha**, which is **252 Kg/ha**. Using this value identify a line which corresponds to a combination of gears to be mounted onto the box, in this case (**A=Z18 - B=Z11**).
 - Check that the last gear of the transmission is set at (**Z15-Z13**) see (Fig.10.13).



!! WARNING !!

Since the physical weight of the various fertilizers may vary that actual quantity of fertilizer spread may differ from that shown on the chart. This is why it is vital to check the quantity actually spread and if necessary correct the regulation.

• FASE 2 SETTING THE INTERNAL GEARBOX RATIO

!! WARNING !!

When working on the gears make sure none of them can make the axles or wheels of the transmission turn.

- Remove the cover **C** by pressing the appropriate catch **M** with your fingers (Fig.10.11).

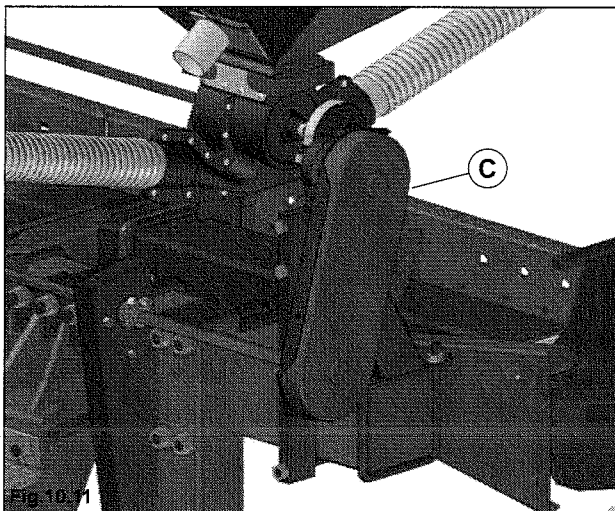


Fig. 10.11

- Slacken the chain tensioner **D** (Fig10.12).
- Slacken without removing the butterfly screws **G** that tighten gears **A** and **B**, then undo the gears themselves (Fig10.12.a).
- Remove the pair identified from the table from the gear store **E** and mount them.

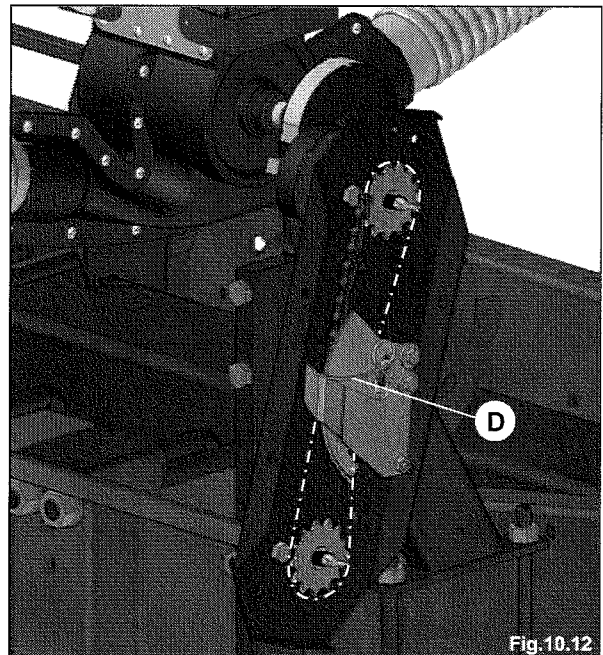


Fig.10.12

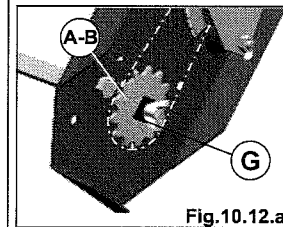
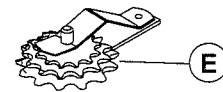


Fig.10.12.a

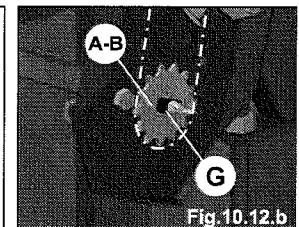


Fig.10.12.b

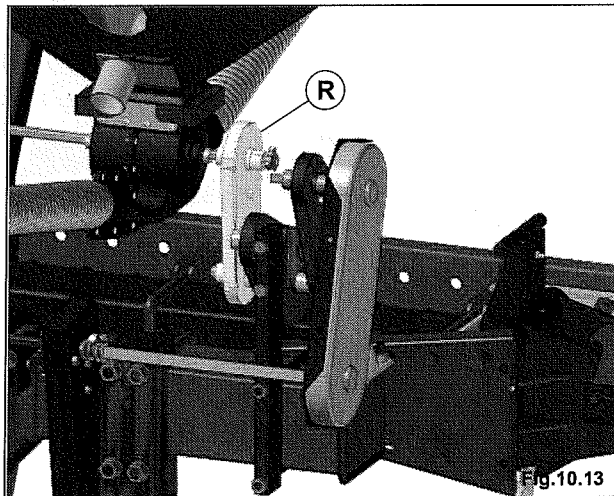
- Tighten the butterfly screws **G** being careful that the retainer is perpendicular to the gear slot (Fig10.12.b).
- Tighten the chain tensioner **D**.
- Make the wheel turn to check that the chain is nice and tight.
- Close the gear-box lid **C**.

- **FASE 3 FINAL PHASE TRANSMISSION SETTING**

The final phase of transmission (Fig.10.13) is set according to the number of elements that is used for the sowing.

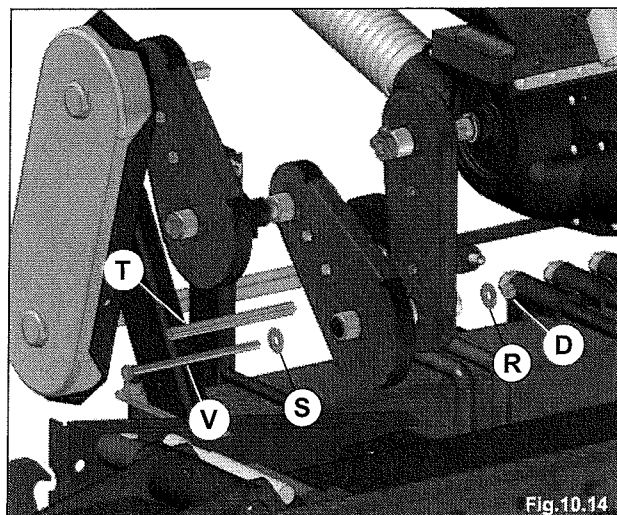
6 row seed drill TRANSMISSION (Z13 - Z15).

8 row seed drill TRANSMISSION (Z15 - Z13).

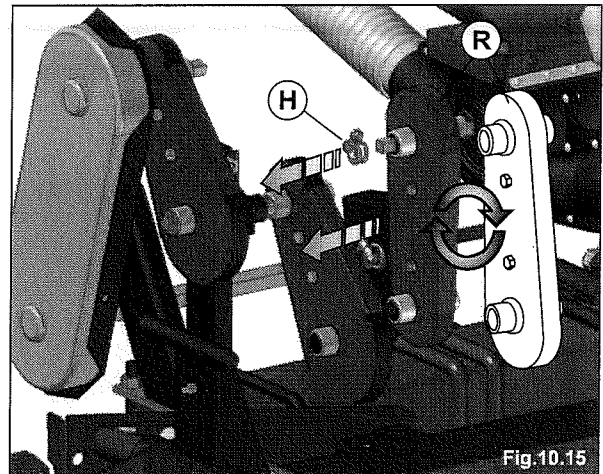


To set the transmission proceed as follows:

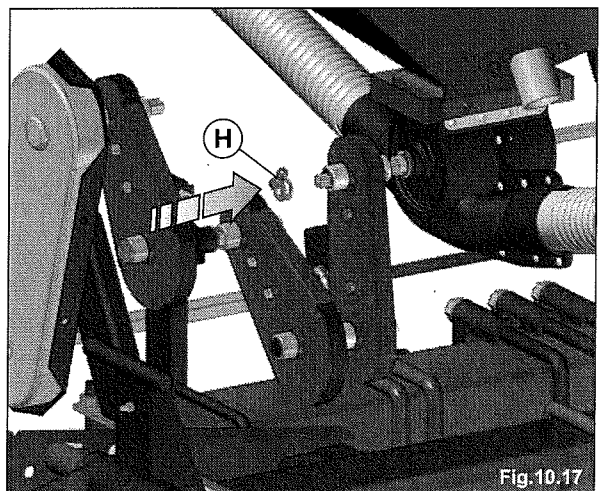
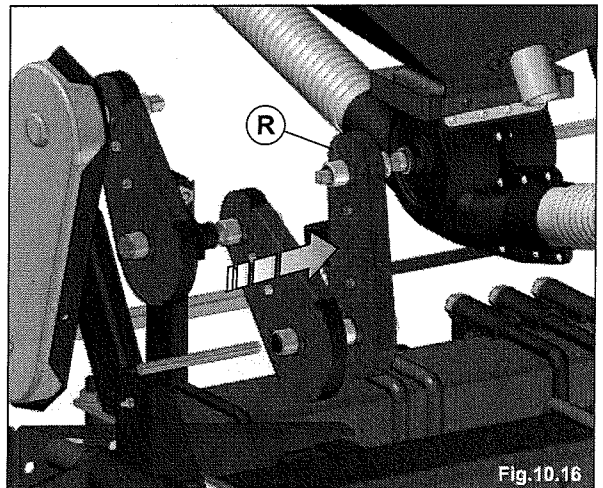
- Remove screw **V** and nut **D** then remove washers **S** and the axle **T**.



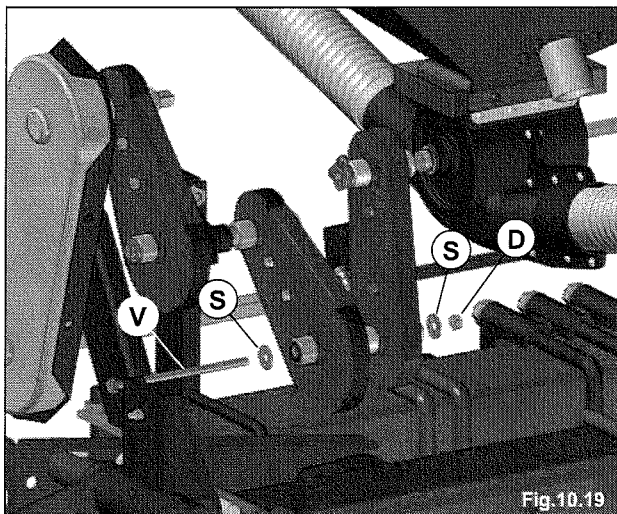
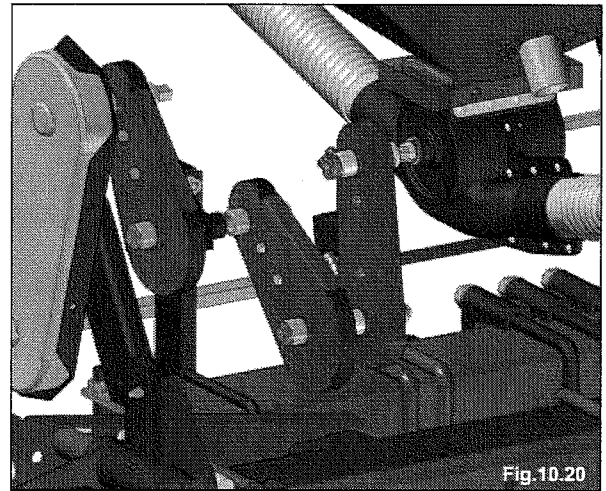
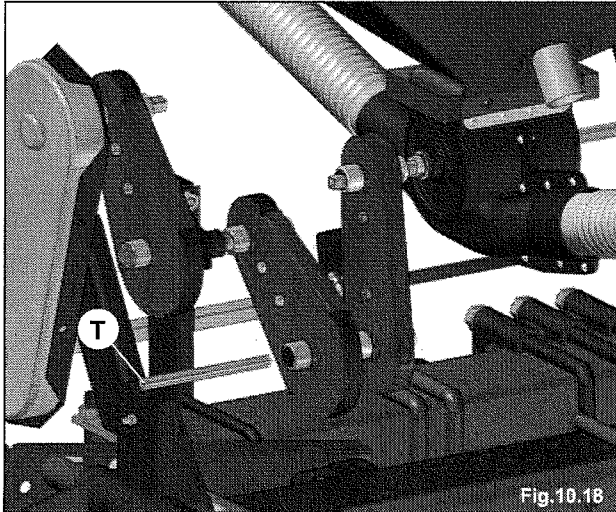
- Undo the axle retainer **H** (Fig.10.15).
- Remove the transmission **R** from the axle (Fig.10.16).



- Refit transmission **R** as desired (Fig.10.15).
- Insert the axle retainer **H** (Fig.10.17).



- Join the two transmissions with the axle **T** (Fig.10.18), fixing them with the washers **S** the screws **V** and the nut **D** (Fig.10.19).

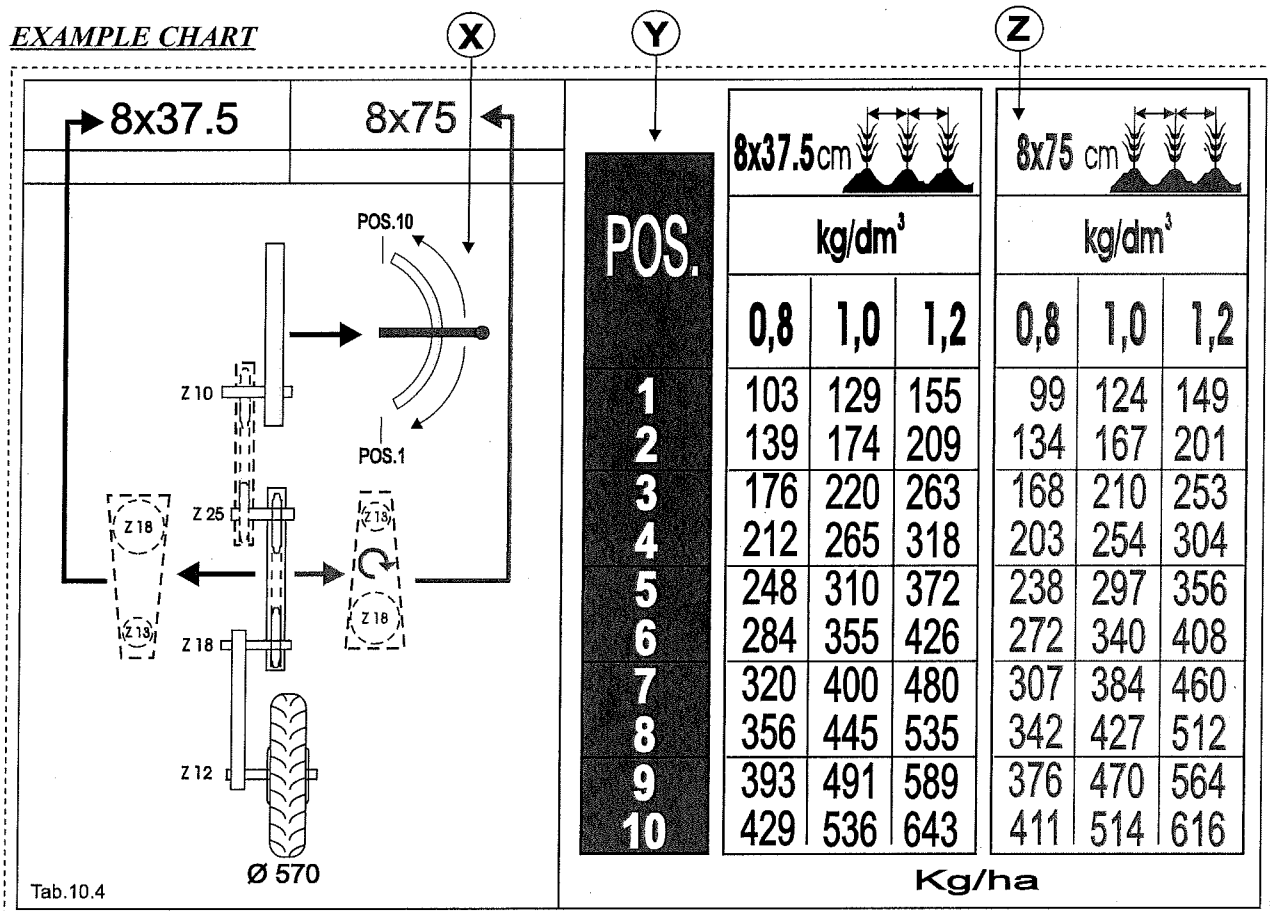


Inverted transmission (Fig.10.20).

10.2.3 SETTING OF FERTILIZER TO BE SPREAD WITH STEPLESS SPEED CHANGE GEAR.
HOW TO READ THE REGULATION CHART

IA specific regulation chart for fertilizer spreading is supplied according to the type of seed drill. Below is an example of a chart for an 8 row machine described as follows:

- a diagram **X** showing the sequence of mounted components
- a column **Y** showing gears to be set on the stepless speed change gear for fertilizer spreading.
- column **Z** that shows the quantity of fertilizer to be distributed in kg / ha according to two parameters:
the inter-row and the specific weight (0.8 - 1 - 1.2 kg/dmc).

EXAMPLE CHART


Tab.10.4

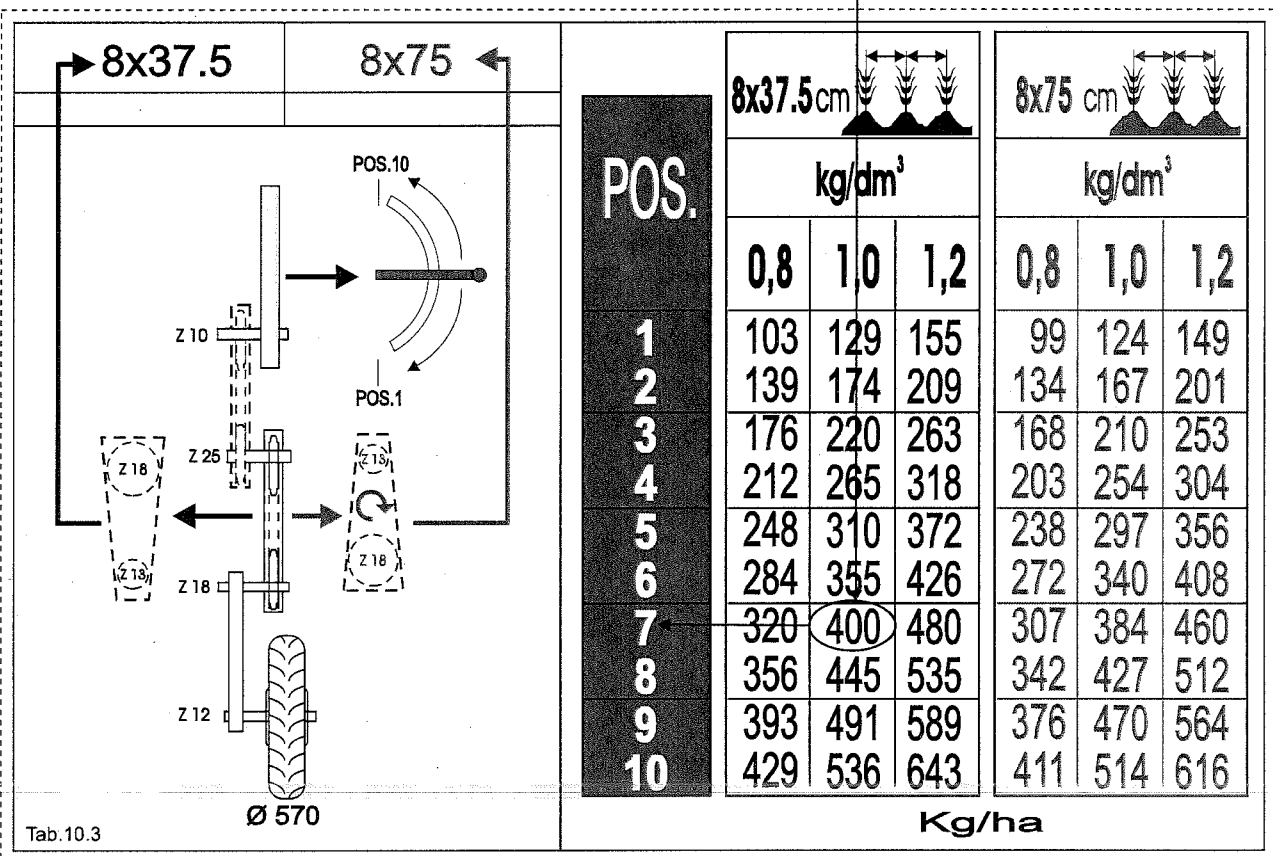
Examples of chart readings:

Example 1

- Machine prepared to sow **8 rows 37.5 cm** apart
 - Specific weight of fertilizer **1Kg/dmc.**
 - You want to spread **400 Kg/Ha.**
- Choose the column that corresponds to the desired inter-row specific weight of 1 Kg/dmc (centre column).
 - In the selected column search for the weight that is closest to **400 Kg/ha**, which in this case is **400 Kg/ha**. Using this value identify a line which corresponds to the value to use to set the stepless speed change gear.

EXAMPLE CHART

Example 1



Tab.10.3

