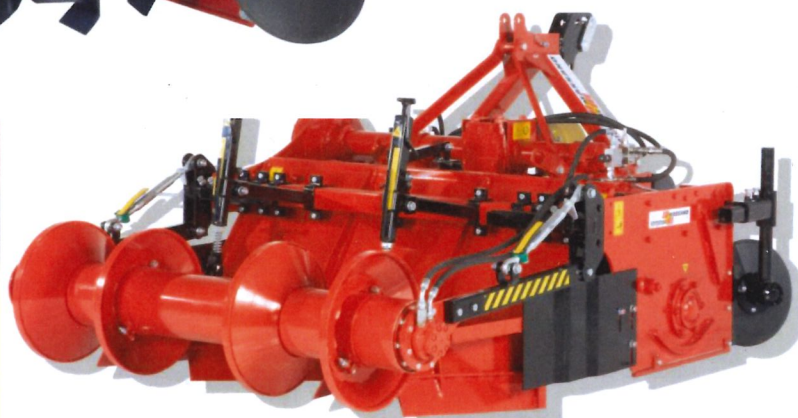


MASSANO **ROTOSTONE**



USE AND MAINTENANCE BOOK **STONE BURIER WITH BED FORMER** **Type: RSG - RSL - RSC - RSE - RSF** **RSE-PLUS**

Frazione Cavallotta – Via Costigliole, 4 – S.P. 156 – 12038 SAVIGLIANO (CN) - Italy

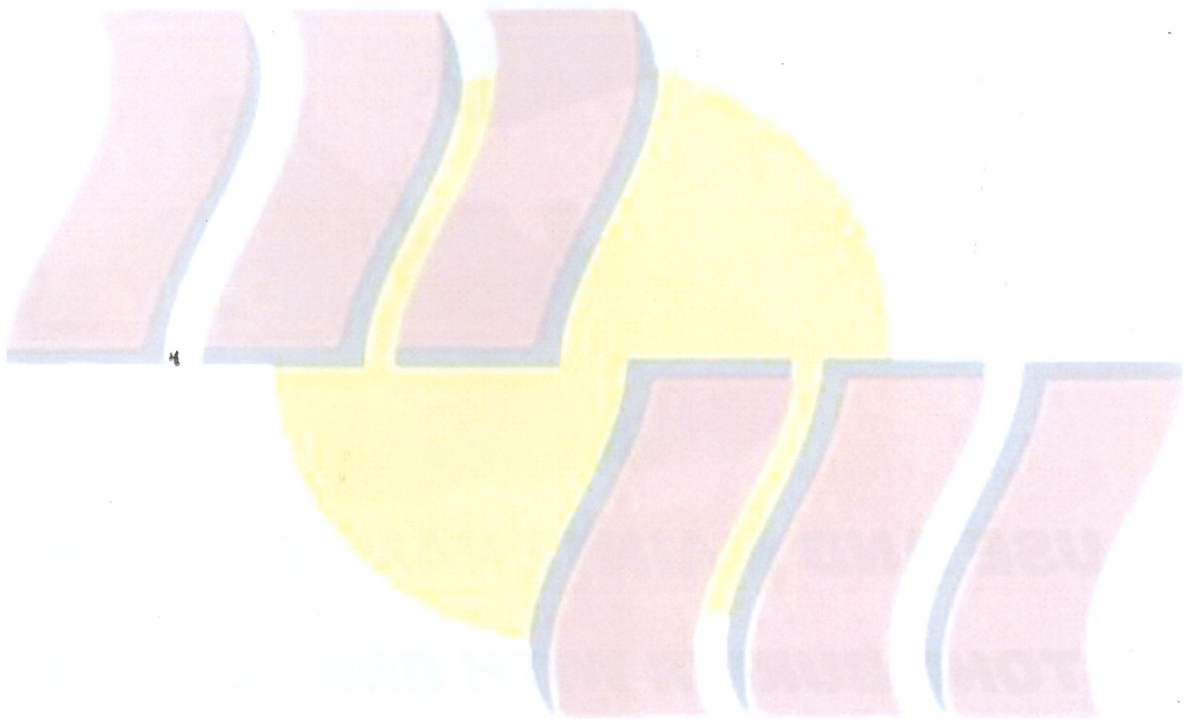
Tel (+39) 0172 – 377167 Fax (+39) 0172 – 377014

www.massanosnc.com E-mail: info@massanosnc.it

“With Declaration of Conformity “(CE)

 Carefully read the manual before using the machine 

Vers. 2015



DECLARATION OF CONFORMITY

MASSANO s.n.c.

Frazione Cavallotta – Via Costigliole 4 - 12038 SAVIGLIANO (CN) - Italy

Tel (+39) 0172 – 377167 Fax (+39) 0172 – 377014

www.massanosnc.com E-mail: info@massanosnc.it

Holder of the technical dossier at head office Company: *Diego Massano*

certifies under its responsibility that the machine:

STONE BURIER WITH BED FORMER

Type :

Serial n:

Year :

Complies with the following EU Directive:

2006/42/CE (New Directive machines)

To check the conformity of the machine refer to the following European Standards :

UNI EN ISO 4254-5:2010

UNI EN ISO 4254-1:2009

And the technical standard :

ISO 11684

1995

Savigliano (CN), _____

The lawyer representing

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Dear customer,

We thank you for choosing our ROTOSTONE Bed Former. This book provides you all the information necessary for the use and maintenance of your machine. The correct functioning and duration of the machine depend on the correct maintenance and attention in its use.

Massano snc and your dealer are available for any information regarding the running of the machine and also provide original spare parts to ensure its perfect fit in case of replacement.

In order to ensure the maximum reliability, this machine, has undergone strict tests.

The technical information contained in this document are property of MASSANO snc and must be considered confidential. Distribution and reproduction of this book, even if partially, are forbidden.

The technical data contained in this book are those provided by the manufacturer at the time of writing.

Any total or partial reproduction of this document or its content is forbidden by law.

You should therefore carefully read and understand each part of this USE AND MAINTENANCE BOOK.

The use of the machine for activities not foreseen in the project and not mentioned in this book releases MASSANO snc from any direct or indirect responsibility.

Any unauthorized modification to the machine releases MASSANO snc from any liability for damages or serious injuries, which may turn out the operators, third parties and things.

MASSANO s.n.c. declines all type of objective and subjective responsibility when the rules mentioned in this book are not applied and respected.

1 REMARKS

This book together with the Declaration of Conformity has to be considered as an integral part of the machine provided by Massano s.n.c. and it must be associated with the machine until its destruction.

If you don't receive the book or you lose it, we strongly suggest you to ask Massano snc for a copy. Our offices will send it as soon as possible.

This book includes operation rules, standard and special maintenance, rules for the research of problems for the machine produced by Massano snc.

We strongly suggest you to **read this use and maintenance book carefully**, and to follow scrupulously all the described instructions before using, checking and working with and on this machine.

If you run into problems with the comprehension of text/tables, or if illustrations/schemes are not clear, please contact immediately Massano snc to get further information from skilled technicians or from the book editor.

Massano snc is at disposal of users, sales managers and other interested people in order to establish an active collaboration to improve the understanding of this book.

In compliance with current laws, information concerning dangerous situations are pointed out in chapter 8.

This book has been filled in according to laws in force at the time of printing.

This book has to be considered as an integral part of the machine and, together with the *Conformity Declaration*, it must be associated with the machine until its *destruction*.

2 GENERAL INFORMATION

2.1 INFORMATION ABOUT THE BOOK

This book provides all the information for the use and maintenance of Stone Burier with bed former machine produced by MASSANO snc. The correct operation of the machine and its duration depend on its correct maintenance and use.

Please note that some details in the pictures may differ from the machine in your possession, some component could have been removed in order to ensure pictures' clarity.

This book deals with all the topics required by EEC "Directive 2006/42/CE" and pertinent technical rules.

According to EEC rules, the operator must keep the special pictograms on the machine in good conditions and replace them if illegible.

The instruction in this book are addressed to a skilled user with specific knowledge of tractor driving. The authorized user must be correctly trained.

The technical information contained in this book are property of Massano snc and they are strictly confidential.

We strongly suggest you to use only original spare parts and accessories.

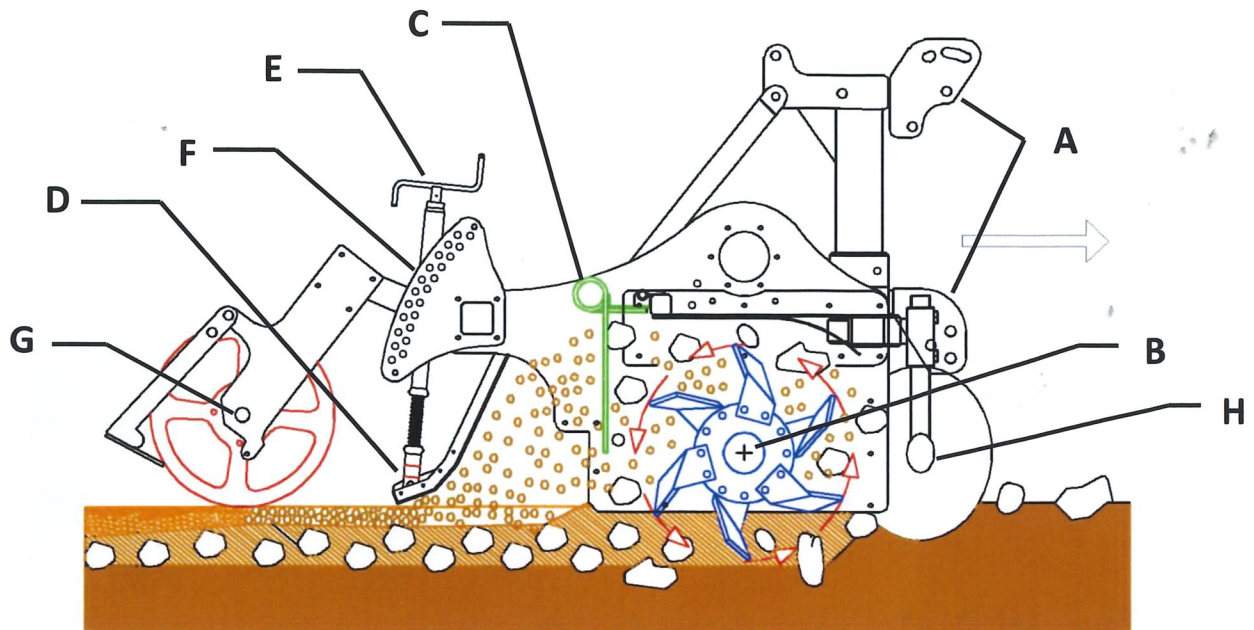
The use of non-original parts could invalidate the guarantee, be dangerous and risk life and reduce the performance of the machine.

2.2 INFORMATION ABOUT THE MACHINE

This book describes the operating principle of the stone burier for stones and vegetable residues type ROTOSTONE.

ROTOSTONE has the capability to work on a non- plough soil, for the following reasons:

- The rotor works in an anti clockwise direction, in comparison with traditional machines.
- This type of work develops a breakup of the soil from the bottom to the top without compacting the bottom layer, replicating the action of a spade, but with the difference of sifting out and burying, in one pass, clods, stones and vegetable residues, achieving a fine, loose top layer of soil that allows easier and more accurate seed planting and transplanting, and at the same time improving the ability of the soil to drain.
- This principle does not apply to the traditional tiller that works the soil in a downward direction, and at a working speed that results in a varying quality of finish. Therefore, in clay soils or those lacking in organic matter, there occurs a major compaction of the soil and reduction in the soil's ability to drain.
- The ROTOSTONE system, when used in agriculture, allows the improved management of the soil and direct seed or transplanted cultivation, substantially reducing the germination time (a reduction of three days in the harvest of lettuce) and an increase in production yields. These results were proven in test trials done in conjunction with the central research department of the agricultural university of Lyon France, where comparisons were done on the same test plots of land with other machines such as tiller, bedformers and power harrows.
- All these reasons have allowed our equipments to achieve a high level of quality in both the dependability during the working phase and the result obtained after planting or transplanting. For these valid reasons many farmers from many countries have chosen to come to the ROTOSTONE system, abandoning the earlier methods of plowing and tilling.



This three point (A) mounted machine, when hitched to a tractor of appropriate horsepower, has proven to be ideal for the elimination, in one pass, of stones and vegetable residues on the surface.

The heart of the machine is the blade rotor (B), composed of specifically designed blades. Whose counter-rotation, throw stones, dirt, weeds and debris against the selection grill (C). The coarse material that is stopped by the grill, falls in the trench made by the working depth of the rotor, and is covered by the fine earth that passed through the selection grill and it is lightly pressed by the edge of the trailing board (D), forming a perfect seed bed with pressure controlled by the crank handle (E).

The selection grill, in addition to having the function of sifting the soil, allows the operator to work in especially heavy conditions. The vibrating system guarantees the constant cleaning of the spring tines even in conditions of moist or wet soil, obtaining the continuous flow of dirt. Furthermore, the ability to change the working angle of the selection grill allows the operator to work more deeply with less power.

The working depth is adjustable from 5 to 35 cm (5-22 cm RSG, 5-22 cm RSL, 5-24 cm RSC, 5-30 cm RSE, 5-35 cm RSE Plus), using a special system of pins (F) that determine the position of the rear roller (G).

The side discs (H) are positioned in front of the machine to greatly facilitate the penetration and depth by opening a narrow trench that keeps the shield from the side chain drive from dragging before the rotor.

The large choice of accessories available for the stone burier allow the operator to work in diverse sectors: creation and maintenance of green areas, horticulture, flower nurseries, golf course development and maintenance, remediation and inter-row weeding: vineyards-orchards-nurseries.

The Stone burrier can mount two types of rotors :

1° TYPE - **ROTOSTONE** -

Used to bury stones, vegetables residues such as roots, harvest remains and small sticks by means of **specially designed tiller blades** that, in the soil, pull out the stones and throw them against the selection grill.

In the photograph below (Fig. 1) you can see the rotor with the special tiller blades mounted on double flanges.

Fig. 1

On request the machine can be equipped with double flanges like the photograph.



2° TYPE - **FRANGITER** -

Use to fracture and bury the hard clods present in especially dry soils with high clay content by means of **special tools called blades** which, in clay soils, break up the clods and throw them against the selection grill.

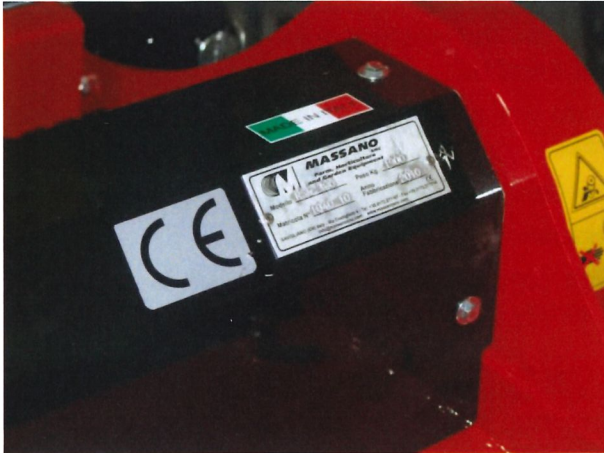
In the photograph below (Fig.2) you can see the rotor with the special blades mounted on the inclined flanges. Their particular arrangement along with the reverse rotation, creates satisfying results with just one pass without creating a work pan and guaranteeing excellent drainage of the worked ground.

Fig. 2



2.2.1 Machine identification

On the frame of the machine are fixed the EEC brand and the identification label giving manufacturer's data, model, serial n., production year and weight of the machine.



Location of the EEC plate on the machines

	MASSANO snc Farm, Horticulture and Garden Equipment		
Modello Model	<input type="text"/>	Peso Kg. Weight	<input type="text"/>
Matricola N° Serial N°	<input type="text"/>	Anno Year	<input type="text"/>
SAVIGLIANO (CN) Italy - Via Costigliole 4 - Tel. +39.0172.377167 - Fax +39.0172.377014 info@massanosnc.com www.massanosnc.com			

The information shown on the identification plate are necessary to request spare parts.

It is absolutely forbidden to remove and/ or modify all or part of the data specified on the identification plate of the machine.

The machine can be used only for agriculture, as previously described.

	WARNING! The machine must be used by a single operator. Different uses will be consider incorrect.
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If some pictograms will be damaged or get lost, they should be requested specifying the identification data on the recognition plate.

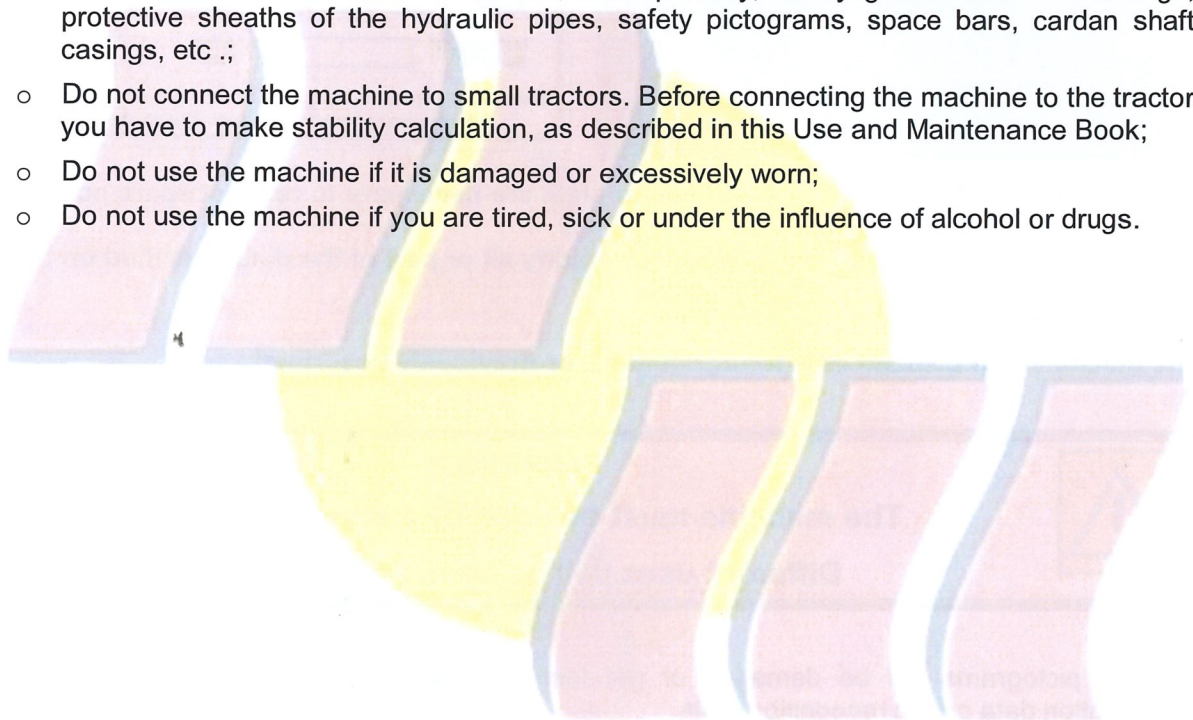
This machine is generally used during the day. If you want to use the machine by night or in conditions of reduce visibility, as an exception, you must use the lighting system of the tractor.

2.2.2 Use of the machine

Following the main rules for the use of the Stone Burier:

- Observe and apply carefully the instructions for adjusting the height of the machine from the ground. It is strictly forbidden to stop within the range of machine's working up to 50 meters.

- If there are grass or weeds, it is advisable to clean the ground before moving on with the Stone Burier, in order to identify if there are obstacles that could damage the parts of the machine;
- Before using the machine make sure that there are not, on the ground, foreign objects such as pieces of iron or glass bottles, big stones, logs and/ or any obstacle that could damage the machine during the use;
- Do not work at excessive speed, it could damage the machine as well as make the process ineffective and dangerous. In order to use the machine in the right way the speed of the Stone Burier must be between 0.5 and 4 km/ h;
- Do not go into reverse with the machine, do not make narrow turns with the lowered machine or anyway during the working process.
- Do not use the machine for the transport of people or things;
- Do not apply items such as weights to the machine;
- Do not use the machine if it has not, even partially, safety guards such as: casings, protective sheaths of the hydraulic pipes, safety pictograms, space bars, cardan shaft casings, etc .;
- Do not connect the machine to small tractors. Before connecting the machine to the tractor you have to make stability calculation, as described in this Use and Maintenance Book;
- Do not use the machine if it is damaged or excessively worn;
- Do not use the machine if you are tired, sick or under the influence of alcohol or drugs.



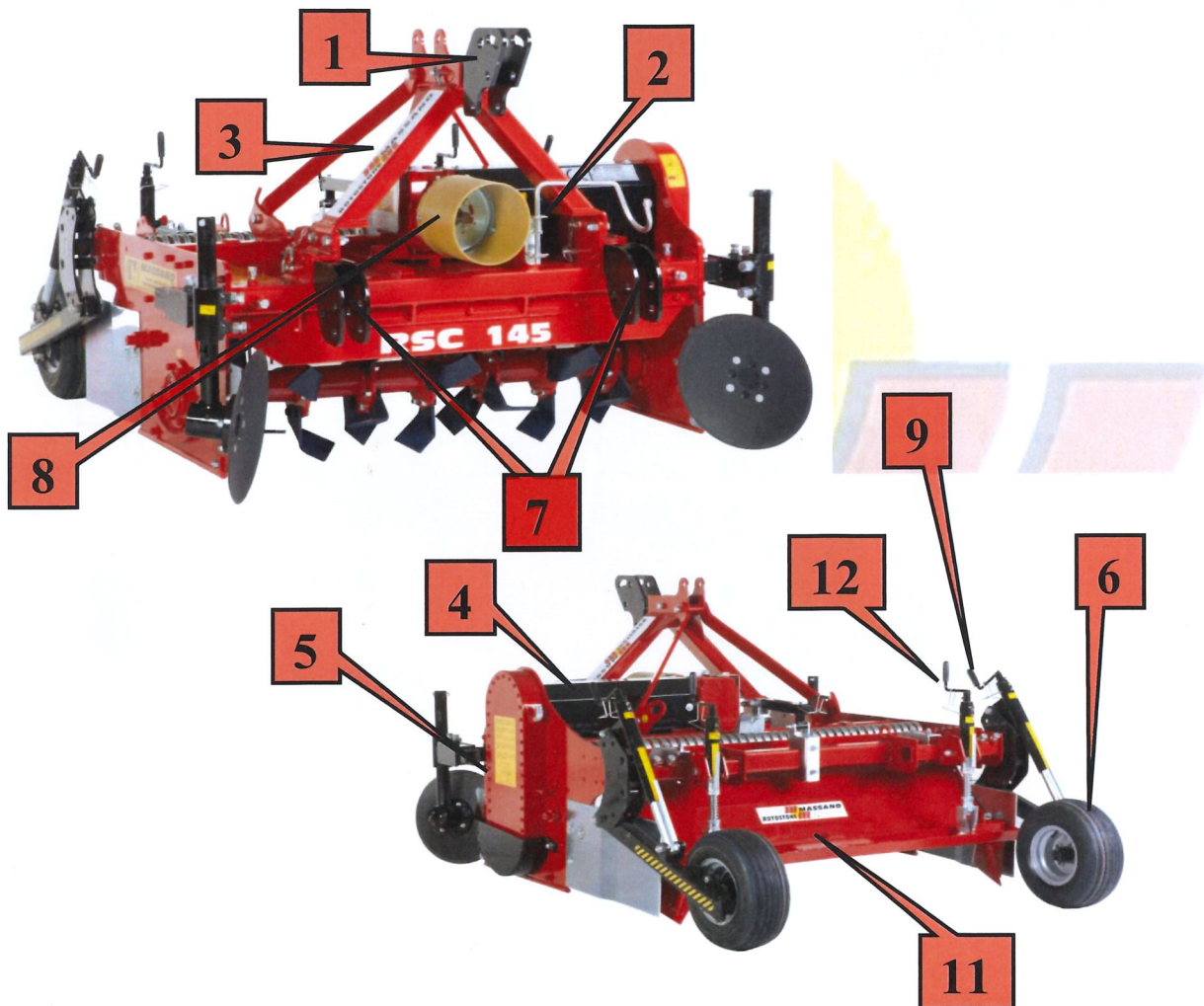
3 TECHNICAL FEATURES

The STONE BURIER BED FORMER, with different power features, has been designed to work in the heaviest conditions minimizing the possibility of damage and wear. This feature is guaranteed by the use of high quality materials during all stages of machine's construction and can reduce amortization costs to a minimum.

During production and construction stages we kept to all the necessary precautions in order to supply a high quality and reliable product in full compliance with in force laws , in particular with the prevention of injuries.

3.1 MACHINE COMPONENTS AND TECHNICAL DATA

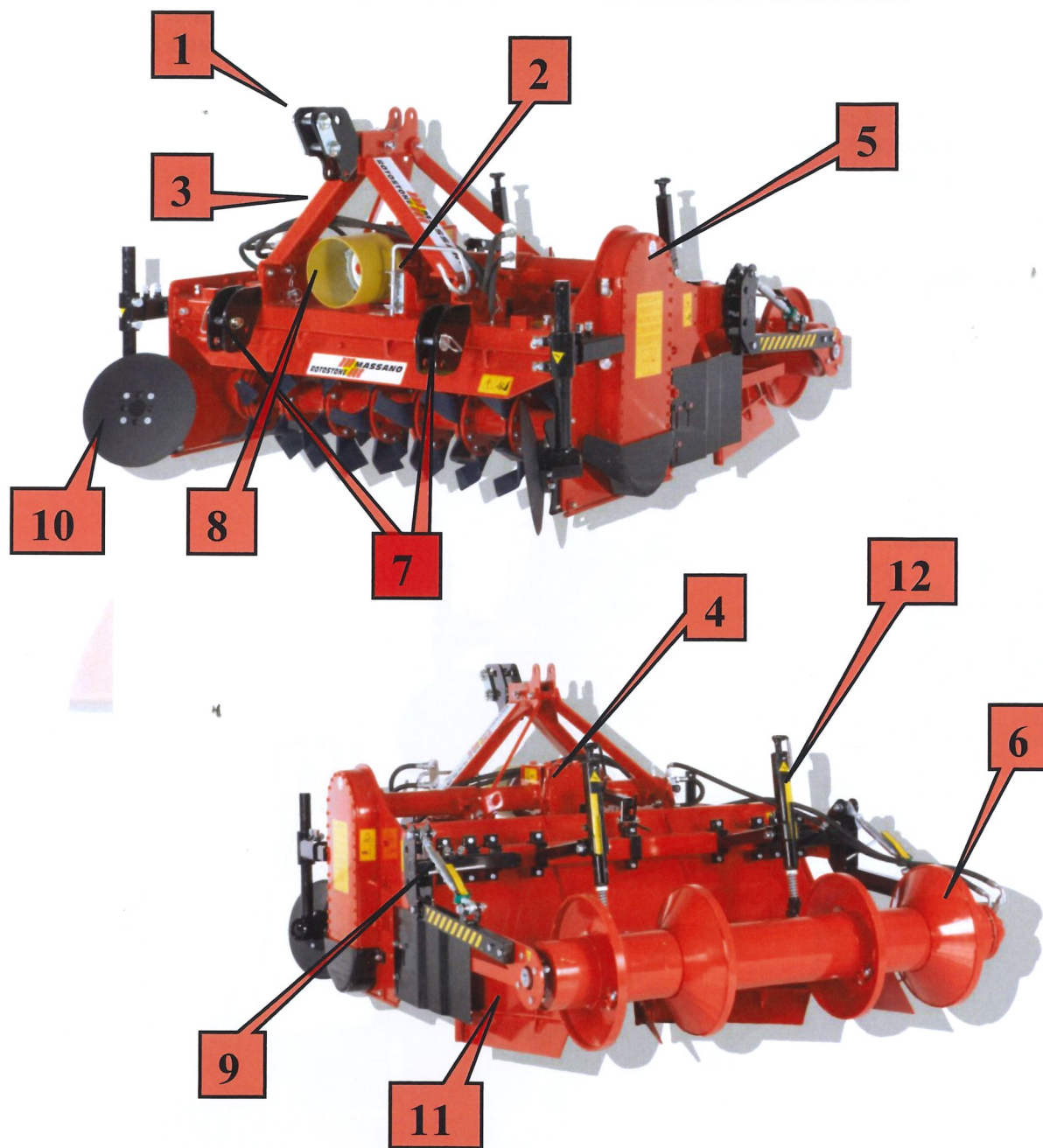
BED FORMER WITH REAR WHEELS



- 1 – Upper three point linkage
- 2 – Drive shaft support
- 3 – Three point linkage Frame
- 4 – Speed reducer unit (540 rpm)
- 5 – Side transmission
- 6 – Rear wheels

- 7 – Lower three point linkage
- 8 – P.T.O. and safety guard
- 9 – Wheels adjustment
- 10 – Lateral discs
- 11 – Bed former panel
- 12 – Bed former panel adjustment










BED FORMER WITH HYDRAULIC ROLLER












- 1 – Upper three point linkage
- 2 – Drive shaft support
- 3 – Three point linkage Frame
- 4 – Speed reducer unit (540 rpm)
- 5 – Side transmission
- 6 – Hydraulic rear roller

- 7 – Lower three point linkage
- 8 – P.T.O. and safety guard
- 9 – Cranks adjustment
- 10 – Lateral discs
- 11 – Bed former panel
- 12 – Bed former panel adjustment










3.2 TECHNICAL DATA

RSG									
Modello	cm	cm	mm	N°	g/min	Hp	Kg	Kg	cm
125 RSG	125	150	420	28/42	260	40/50	640	840	22
145 RSG	145	170	420	32/48	260	50/60	690	890	22
165 RSG	165	190	420	36/54	260	60/70	750	950	22
185 RSG	185	240	420	40/60	260	70/80	810	1010	22

 Peso con ruote  Peso con rullo motorizzato idraulico

RSL									
Modello	cm	cm	mm	N°	g/min	Hp	Kg	Kg	cm
125 RSL	125	140	420	28/42	260	60-70	690	890	22
145 RSL	145	160	420	32/48	260	70-80	740	940	22
165 RSL	165	180	420	36/54	260	70-80	800	1000	22
185 RSL	185	200	420	40/60	260	70-80	860	1060	22
210 RSL	210	225	420	44/66	260	80-100	960	1160	22
230 RSL	230	245	420	48/72	260	80-100	1070	1270	22
250 RSL	250	265	420	52/78	260	80-100	1180	1380	22





 Peso con ruote  Peso con rullo motorizzato idraulico

RSC									
Modello	cm	cm	mm	N°	g/min	Hp	Kg	Kg	cm
145 RSC	145	170	460	28	260	70-80	840	1040	24
165 RSC	165	190	460	32	260	70-80	900	1110	24
185 RSC	185	210	460	36	260	70-80	960	1170	24
210 RSC	210	235	460	40	260	80-100	1080	1190	24
230 RSC	230	255	460	44	260	80-100	1170	1360	24
250 RSC	250	275	460	48	260	90-120	1290	1490	24

 Peso con ruote  Peso con rullo motorizzato idraulico

RSE									
Modello	cm	cm	mm	N°	g/min	Hp	Kg	Kg	cm
145 RSE	145	170	540	28/42	240	80-100	1040	1240	28/30
165 RSE	165	190	540	32/48	240	80-100	1100	1310	28/30
185 RSE	185	210	540	36/54	240	90-100	1160	1370	28/30
210 RSE	210	235	540	40/60	240/280	100-120	1280	1390	28/30
230 RSE	230	255	540	44/66	240/280	110-130	1360	1560	28/30
250 RSE	250	275	540	48/72	240/280	120-140	1450	1650	28/30
270 RSE	270	295	540	52/78	240/280	130-150	1560	1760	28/30
300 RSE	300	325	540	60/90	240/280	130-160	1690	1890	28/30
320 RSE	320	345	540	64/96	240/280	130-160	1810	2010	28/30
360 RSE	360	385	540	72/108	240/280	130-160	1950	2150	28/30

 Peso con ruote  Peso con rullo motorizzato idraulico

RSE-PLUS									
Modello	cm	cm	mm	N°	g/min	Hp	Kg	Kg	cm
250 RSE-PLUS	250	275	540	48/72	240/280	140-160	1650	1850	28
270 RSE-PLUS	270	295	540	52/78	240/280	150-180	1760	1960	28
300 RSE-PLUS	300	325	540	60/90	240/280	160-180	1890	2090	28
320 RSE-PLUS	320	345	540	64/96	240/280	160-200	2010	2210	28
360 RSE-PLUS	360	385	540	72/108	240/280	180-220	2150	2350	28
400 RSE-PLUS	400	425	540	80/120	240/280	200-240	2350	2550	28

 Peso con ruote  Peso con rullo motorizzato idraulico

3.3 ACCESSORIES

- **Lateral discs:** allow the lowering of the machine in any condition. The side disc creates a tube that is lateral as to the machine and that allows the passage of the side chain transmission. After the casing passage the side tube is closed thanks to the lateral leak of the worked soil and it is adjusted by positioning the special casing.
- **Hydraulic seeder connection:** allows the mounting of any seeder to the Stone Burier very easily. The connection is hydraulic, it raises the equipment bringing it above the machine. MASSANO snc suggests to use seeder with a weight lower than 1200 kg and with a length lower than 220 cm.

Remember that traffic on public roads is permitted only with the single Stone Burier connected to the tractor. It is strictly FORBIDDEN to circulate on public roads with a second machine connected to the Stone Burier.

- **Hydraulic rear roller:** allows to increase the degree of the realized bed's finishing and guarantees its perfect geometry and a constant and homogeneous compressing.
- **Maintenance stands:** allow to carry out maintenance intervention or adjustment of the machine in conditions of greater security. They have special hooks on which you can set down with care the machine that will be completely stable. You have to put the machine in a lightly angled position in order to make the operations easier.
- **Anti-wear tools:** allow the use of the machine in particularly clayey soil, greatly reducing components' wear that are usually compromised when used on particular type of grounds.
- **Front subsoiler anchors:** allows to employ the Stone Burier directly on hard soils avoiding previous plowing.

4 NOISE LEVEL

All MASSANO snc machines underwent a severe noise level test.



ATTENTION!

The sound emission level is 82 dB(A) ± 1 Db, measured in open field at 3 metres from the machine and at 1.6 metres from the ground, when the machine continuously worked at the maximum speed allowed.

According to collected data it is prescribed using devices for hearing protection.

Although there is a correlation between the sound emission and exposure levels, this data cannot be used to determine if it is necessary to take precautions when using the machine. There are in fact other elements that may affect the sound exposure level, such as the working environment's features and the presence of other noise's sources. However, the information about the uttered noise level of the machine will help the user or the employer in the drawing up of the evaluation of dangers and risks.

5 PACKAGING AND DELIVERY

It is not necessary to pack the machine. It is usually supplied by MASSANO snc ready to be used previously adjusted for work and it is shipped in this condition.

ATTENTION!

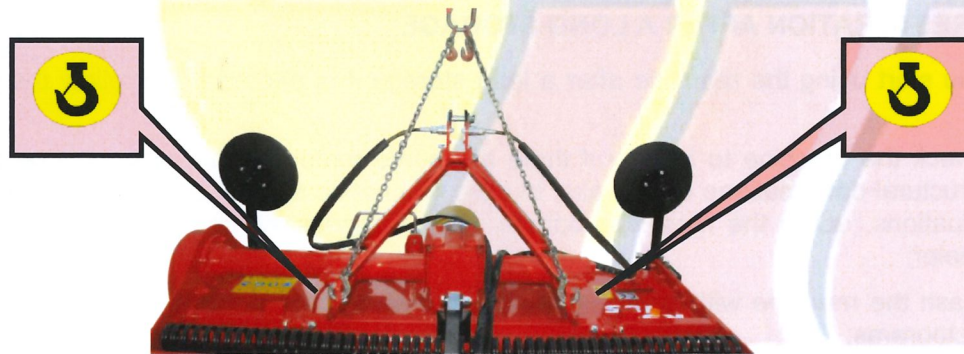


In order to lift the machine use safety hooks and ropes or chains of adequate capacity. They have to be put in the suitable points for lifting. They are appropriately pointed out on the pictograms on the machine. You can see them at the next pages.

Before lifting the machine it is necessary to control, using "Technical Data" schedule contained in this User and Maintenance Book, the mass of the machine, properly sizing the used lifting equipment.

For the transport by road of the machine that is not connected to a tractor by the rear lifting system, after lifting the machine by crane or bridge crane, it must be put down with care on the flatcar of a suitable means of transport, with sufficient capacity and it has to be fastened to the flatcar.

In order to carry out lifting operations, loading and transport of the machine it is strongly suggested to employ skilled trained staff (embarkers, forklift truck workers, etc.).



ATTENTION!



Before lifting the machine, make sure that the device used (crane, bridge crane, forklift truck, etc ..) is sufficiently sized in relation to the mass of the machine you have to move (Mass of the unit, see section 3.2 "Technical data")

Do not move the machine without checking its perfect stability during the operations you have to carry out.

6 STORAGE

If you do not use the machine for long periods, you need to store it in a dry environment, sheltered from the weather, and protect it with a tarpaulin piece of material (eg. fabric) to avoid dust accumulation and moisture formation that can damage the non-painted parts (front discs, tools, rear frame, rear ploughshares, etc.).

Before storing the machine, it is suggested to clean it with care using a pressurized water jet and/or compressed air, dry and grease all the sections described in this book. Grease adequately all non-painted mechanical parts in order to protect them from the rust.

Check: the wear of all tools, the tightening of the fixing screws, the presence of paint on the whole machine, the presence of all pictograms restoring them if missing, the presence of all protection and safety devices of the machine (eg. side chain transmission, p.t.o. casing, front spacer bars, support for the hydraulic pipes, support for the drive shaft, etc.), the chain tension of side transmission, the oil level within the gearbox, the oil level in the side chain transmission (see section 11.1.2).

- Position the machine in a safe and secluded place without slopes, in order to not hamper the transit of people and vehicles, make sure that this place cannot be reached by unauthorized people, especially children.
- Position the machine on the ground, switch off the tractor, disconnect the ignition key from the switchboard and start up the hand brake.
- Disconnect the machine from the tractor, as described in this book.
- Once the disconnection of the machine is ok, you have to put again the three-point pins into the suitable holes in order to avoid their loss.

6.1 RESTORATION AFTER A LONG STORAGE

Before you start using the machine after a long storage it is necessary to follow the instructions below:

- Check the machine to identify if there are some rusted metal parts, missing pictograms, structural deformations or oil leaks. In case you notice the presence of one or more of these situations, act in the most appropriate way. If necessary, contact MASSANO snc or its dealer;
- Wash the machine with care, grease the points highlighted in this book and on machine pictograms;
- Check that the pipes and the hydraulic packings are intact. In case you notice crackings, abrasions, cuts or cracks of pipes replace them immediately. Remember that every six (6) years from the manufacturing date of each pipe, it must be replaced.
- Check the presence of all the machine parts, in particular the protection devices (eg. side chain transmission, p.t.o. casing, front spacer bars, etc.) and the additional components (eg. drive shaft, connecting pins, support of pipes and drive shaft, etc ..).
- Check the oil level inside the gearbox
- Check the oil level inside the side chain transmission (See section 11.1.2)
- Check the tension of the side chain transmission, bringing attention to what is described on the sticker on the cover.
- Check the correct running of all the adjustment cranks of the machine greasing them if necessary.

- Connect the machine to the tractor as described in section 8.3 and operate it slowly, keeping the engine speed of the tractor to a minimum, operating repeatedly all devices connected to the different pipes of the machine and checking the right working of all parts.

6.2 DISPOSAL AND SCRAPPING

In case of scrapping the machine must be disposed of in suitable dumps, in accordance with current legislation.

Recover the exhausted oils and dispose them of in the suitable collection centres.

Before scrapping the machine it is necessary to separate plastic or rubber parts from the iron ones.

Plastic, rubber, aluminum and steel parts can be recycled, if collected separately from the suitable centres.

Exhausted oil must be appropriately recovered and should not be scattered into the environment, because, according to current legal regulations, it is classified as hazardous waste; for this reason you have to give it to a collection site. Then contact the closest Consortium of Exhausted Oils.

THE FOLLOWING RULES SAFEGUARD YOUR SAFETY. YOU MUST READ THEM CAREFULLY, MEMORIZE THEM AND APPLY THEM ALWAYS.

7 SAFETY REGULATIONS

Use the machine, perform periodic checks and maintenance intervention in compliance with the current safety rules.

The non-observance of rules or basic safety precautions may cause accidents during operation, maintenance and repairing.

Each use of the machine that differs from that described in this book, and for which the machine has been designed, is forbidden and its execution must be clearly authorized in writing by our Company.

Every change you bring the machine that is not previously authorized by the manufacturer (in writing) releases MASSANO snc from all civil and criminal liabilities towards people and/ or things.



WARNING!

MASSANO snc is not responsible for possible damages caused by a not foreseen or inadequate use of the machine.

Do not tamper with or remove protections and safety devices applied on the machine for operator, people and machine safety.

The machine must be exclusively used by authorized trained staff with driver's license which knows how the machine works and the dangers.

In case of doubts, please contact directly our technicians.

WARNING!




All the instructions below help in the operator and third parties' safety during the use of the machine.

They have to be respected in order to avoid unpleasant accidents.

7.1 SAFETY AND ANT-INDUSTRIAL INJURIES REGULATIONS

WARNING!





Check the machine before starting work.

The user can only do operations described in this Use and Maintenance Book. All the operations not described in this book have to be considered FORBIDDEN and their execution is only allowed to MASSANO snc authorized staff (manufacturer's technicians or dealer's mechanics)

Massano snc cannot foresee all possible circumstances that are able to cause dangers. Warnings contained in this book and on the machine are not complete.

- In addition to the warnings included in this book, please observe all general safety and anti-industrial injuries regulations.
- Use the machine carefully with common sense and responsibility.
- Do not use the machine or service it before reading and understanding the instructions contained in this book.
- The symbols on the machine give you important information and their observation keeps you safe.
- Make sure that all safety pictograms are readable. Clean and replace them, if necessary.



WARNING!

Before using the machine the user have to know all the devices, controls and workings. Read this book carefully and understand it.



- Before using the machine, make sure that all safety devices are correctly placed and in good conditions. If they are broken or damaged replace them exclusively with original Massano spare parts.

WARNING!	
	Before using the machine, make sure that there are no people or animals within 50 mt.
	Before getting off the tractor and before serving the machine, put it on the ground. Operator must pull the hand brake, switch off the tractor and remove the ignition key.

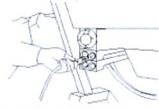
- This instructions' book must be always within reach of the user in order to check the working process of the machine during its use. If you lose this book or if it is damaged please ask MASSANO snc for a copy.
- **The machine must be used exclusively by authorized trained staff with driver's license for tractor. The machine is connected to a tractor.**
- **The machine is designed to be used by a single operator, who during all the operations must remain on the tractor.**
- Do not use the machine if you are tired, ill or under the influence of alcohol, drugs or medicines.
- **We suggests you not to wear clothes that could get caught (sleeves without closed cuff, belts, necklaces, bracelets, rings).**
- Make sure that the machine has not been damaged during the transport. If it has been damaged inform MASSANO snc immediately.

				
During work, maintenance, repairing, transport and storage of the machine, the operator must always wear a close-fitting overalls, safety shoes, safety gloves and, if it is necessary, anti-dust mask and casings for hearing protection.				

- While operating, the machine can raise dust, especially if the ground is dry. We suggest you to use tractors with booth, equipped with filters in the ventilation system or to use suitable protections for respiratory tract e.g. anti-dust masks or masks with filter .
- Keep the machine free from foreign materials (e.g. waste, tools, different type of objects) that may cause damages or injuries.

DANGER!	
	It is forbidden to get on the machine or to make oneself carried when it is moving.
	Check before, during and after the use of the machine that the drive shaft protections are intact and in good conditions.

- When connecting the machine to the tractor, make sure that the drive shaft is correctly engaged (see section 8.3)
- Disconnect the machine from the tractor only on a flat and firm ground, make sure that the machine is steady and stable.
- In case of breaking or deterioration of protections or machine's casings, replace them immediately with original MASSANO spare parts.



Check that hydraulic pipes are correctly connected, according to the recognition colour code. Remember that their reversal causes movements opposite than the usual ones .

- Check the hydraulic pipes wear. Replace them if they are deteriorated or at least every six years, contacting Massano Snc or one of its authorized dealer.
- When the machine is disconnected from P.t.o., put the hydraulic pipes and the drive shaft on the suitable provided supports.



WARNING!

When the engine and/or P.t.o. is running, do not interpose between the tractor and the Stone Burier.

In order to perform all the operations you have to switch off the tractor, pull the hand brake, remove the ignition key and, if possible, lower the machine on the ground.

- Every machine changes may cause safety problems. In this case the user is responsible for possible accidents.

Use MASSANO original spare parts only.

Massano snc is not responsible for:

- Incorrect use of the machine or employment by non-trained staff ;
- Heavy lacks in the expected maintenance;
- Non- authorized changes or interventions by Massano snc;
- Use of non-original spare parts or not specific spare parts for this type of machine;
- Total or partial non-observance of instructions contained in this book;
- Non- observance of common safety rules;
- Exceptional events.

7.2 SYMBOLS' GRAPHIC REPRESENTATION

The symbols below attract the operator's attention on dangerous situations that may occur and give you safety indications.

The following symbols, put on the machine, specify dangers or duties that the worker must keep to.

SYMBOL

DESCRIPTION



1. **ATTENTION** – Before working with the machine read and understand the use and maintenance book supplied with it.



2. **ATTENTION** - You can perform maintenance or adjustment's operations only if you have read the use and maintenance book, stopped the machine and removed the ignition key.



3. **ATTENTION- DANGER** of under pressure fluids. Read the book carefully before acting. In case of contact with harmful fluids, get in touch with a doctor immediately.



4. **ATTENTION** – Before connecting the drive shaft, check P.t.o. direction of rotation and number of revolutions (540 r.p.m.).



5. **ATTENTION** – Before connecting the drive shaft, check P.t.o. direction of rotation and number of revolutions (1000 r.p.m.). **RSE-PLUS models.**



6. **ATTENTION – DANGER** of contact with blades. Do not bring feet near to the machine.



7. **ATTENTION-** Because of possible dropping of flying materials/objects, **do not stop near the machine and do not come up to it.** Keep a minimum safety distance of 50 mt.



8. **ATTENTION-** Do not get on the machine.



9. **ATTENTION-** Danger of getting caught and dragging. Do not bring hands near the drive shaft when it is working.



10. **ATTENTION-** Do not stop between the tractor and the machine.



11. **ATTENTION-** Do not remove or open protection's casings until the chains are completely steady.



12. **ATTENTION-** Before bringing near the machine, wait for a complete stop of the rotating parts.



13. **ATTENTION – DANGER** of crushing and shearing. Do not place the hands near to the shear points.



14. **ATTENTION:** To lift the machine, hook it in the indicated points.



15. Use the required protection devices.



16. Greasing points.

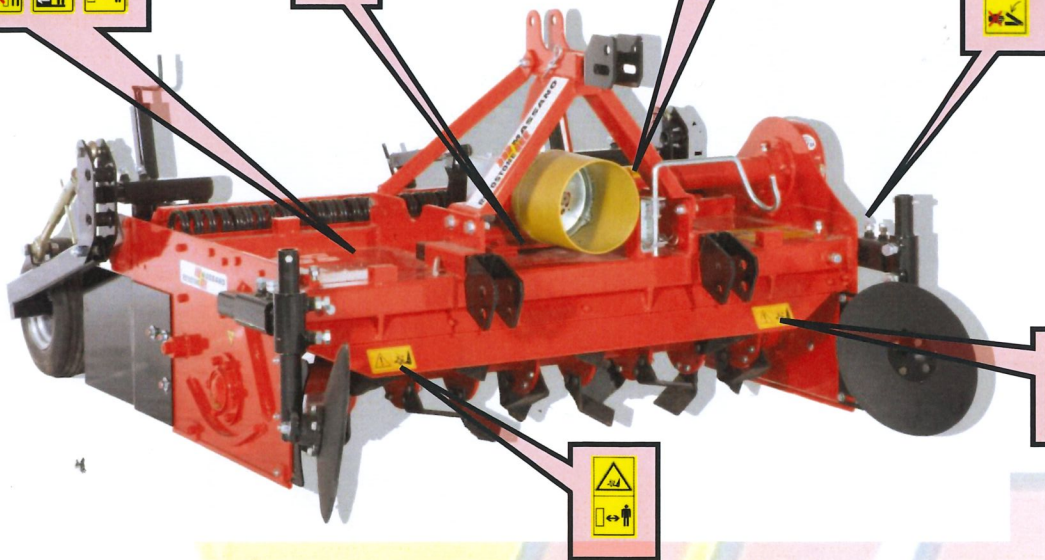
7.3 LOCATION OF PICTOGRAMS ON THE MACHINE



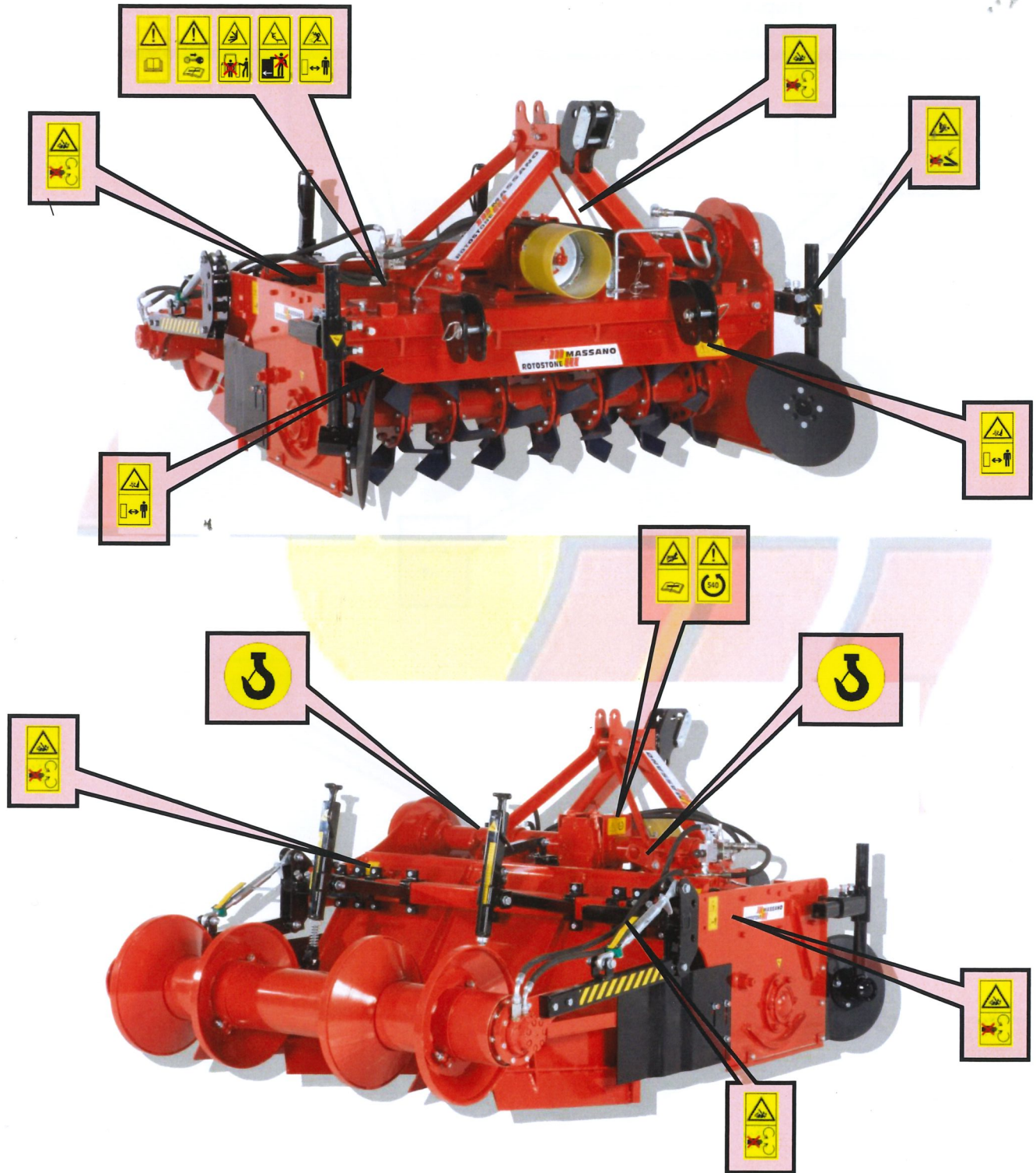
WARNING!

Make sure that the safety pictograms on the machine are readable. Clean them using a cloth, soap and water.

Replace damaged labels and stick on the new ones in the correct place, as shown below.







LOCATION OF PICTOGRAMS ON THE HYDRAULIC ROLLER VERSION



8 INSTALLATION AND ADJUSTMENTS

8.1 SAFETY RULES FOR THE CONNECTION TO THE TRACTOR

		WARNING! During work, maintenance, repairing, transport and storage of the machine, the user must always wear safety shoes, safety gloves, casing for hearing protection and anti- dust mask in order to protect himself from objects' dropping due to machine running.
		

Assembled tools affect tractor's behaviour on the road, its stability, its steering and its braking capacity when they are carried.

In order to avoid overbalancing, loss of stability and control of the tractor, go on always at a reasonable speed, particularly if there are uneven grounds or steep slopes.

Before connecting the tool to the three points hitch, position the tractor's safety device so that the lifting device cannot rise and lower itself involuntarily and/ or accidentally.

The three-points hitch of the tractor and of the machine must match perfectly or be adapted by contacting MASSANO snc.

In the area of the rear lift arms of the tractor there is a risk of injury due to crushing and cutting points: connect and disconnect the machine only on firm and flat surfaces. In order to do all the operations outside the control station of the tractor, you have to switch off the engine, pull the hand brake, remove the ignition key from the panel and keep it.

Use the external lift control following the information contained in the Use and Maintenance Book of the tractor operating with extreme caution.

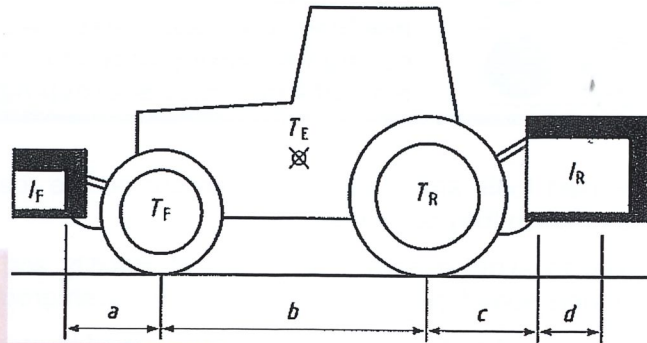
When transporting the machine, make sure that the linkage's lateral catch of the tractor's lower lifting arms is completely locked.

8.2 CHECK OF TRACTOR'S LIFTING CAPABILITY AND STABILITY

Before connecting the machine to the tractor, check the lifting capability and stability of the tractor, using the following formula and if it is necessary (and if it is possible) previously apply the ballasts.

In order to determine the total weight of the machine it is necessary to add the weight of all its components (see section 4).

$$I_{F,\min} = \frac{(I_R \times (c+d)) - (T_F \times b) + (0,2 \times T_E \times b)}{a+b}$$



Legend:

- T_E (kg) – Tractor mass.
- T_F (kg) – Front axle load of unladen tractor.
- T_R (kg) – Rear axle load of unladen tractor.
- I_R (kg) – Combined mass of rear equipment capacity/ rear ballast.
- I_F (kg) – Combined mass of front equipment capacity/ front ballast.
- a (m) – Distance from the barycentre of front equipment capacity / front ballast to front axle centre.
- b (m) – Tractor wheelbase.
- c (m) – Distance from the rear axle centre to the lower link ball.
- d (m) – Distance from the lower link ball centre to the barycentre of the rear equipment capacity/ rear ballast.

DISTANCE D WAS CALCULATED ON THE BASIS OF MACHINE'S MODEL. PLEASE NOTE TO THE FORMULA THE DISTANCE REGARDING THE STONE BURIER YOU PURCHASED.

RSG = 0,80 MT + 0,30 MT IN CASE OF MOTORIZED ROLLER.

RSL = 0,80 MT + 0,30 MT IN CASE OF MOTORIZED ROLLER.

RSC = 0,90 MT + 0,30 MT IN CASE OF MOTORIZED ROLLER.

RSE = 0,90 MT + 0,30 MT IN CASE OF MOTORIZED ROLLER.

RSE PLUS = 1,00 MT + 0,30 MT IN CASE OF MOTORIZED ROLLER.

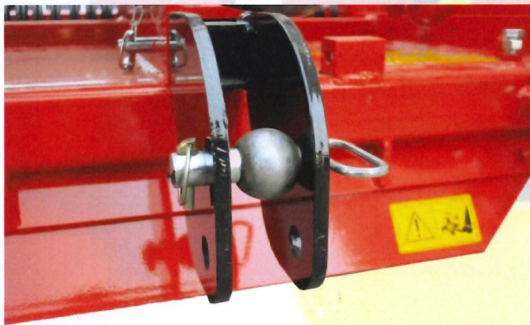
8.3 CONNECTION TO THE TRACTOR'S THREE-POINTS HITCH

The Stone Burier can be mounted on tractors equipped with three-points hitch.

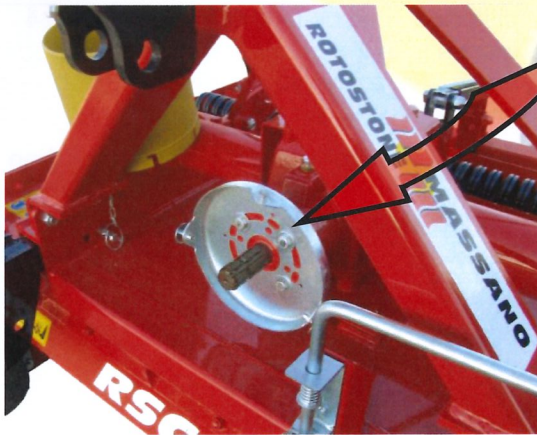
Light the working area in case of poor visibility and make sure that there are no people for 5 mt round from the hitching point.



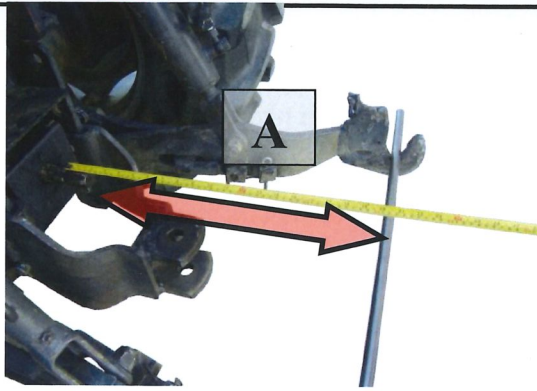
Arrange the lifting bars of the tractor by opening the hooks of system's connection, so you can be connected to the machine (See Use and Maintenance Book of the tractor used).



Insert (if required by the lifting of the tractor) the balls inside the three points of connection of the machine by pulling out the connecting pins and placing the balls. Now reattach the pins blocking them using the lynch pins.



Remove the protection of machine's P.t.o. using a hex wrench 13.

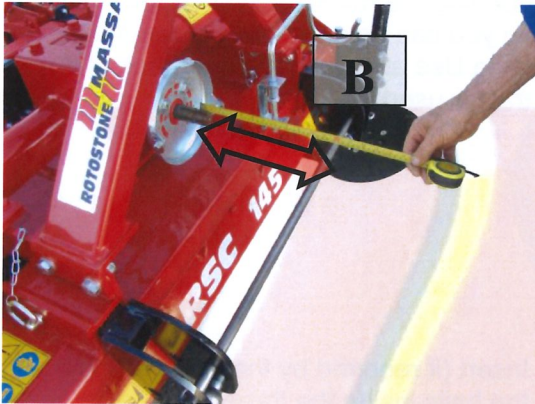


A Distance

Place the lifting bars of the tractor so as to obtain a distance from the ground equal to the distance of the P.t.o. exit.

Measure, with a bar, the distance between the centre of the lower bars' hooking point of the lifting and the final part of P.t.o. exit of the tractor.

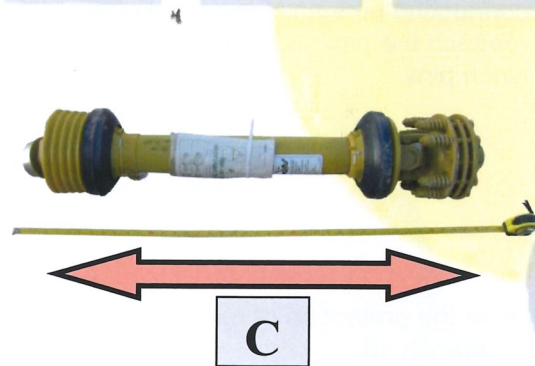
This measurement, indicated by the letter (A), changes depending on the type of tractor used.



B Distance

Measure, with a bar, the distance between the final part of P.t.o. exit of the machine and the hole of the connection point of the machine to the tractor.

The measurement of the distance must be calculated with the properly adjusted connection bars as reported in section 10.2.2 and according to the features of the tractor used.

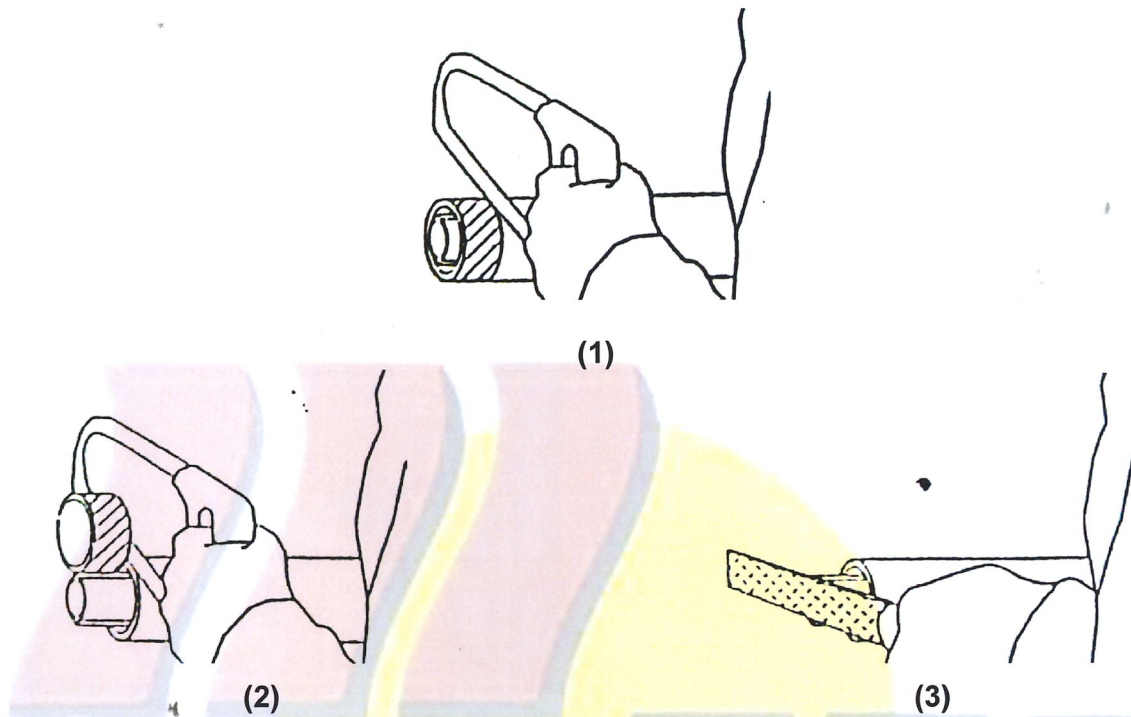


C Distance

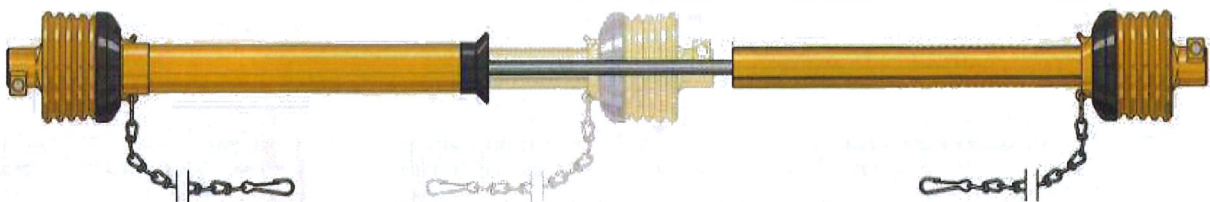
Do the addition between A distance the B distance. The obtained result must be 4 inches less than C distance, which is equivalent to the total length of the completely closed cardan shaft.

If the result of A+ B addition is more than the C distance, you have to shorten the cardan shaft according to the instructions below.

If the Pto shaft is too long, first the outer plastic protection tubes (1) and then the inner metal tubes (2) must be cut an equal amount. Then deburr and lubricate (3).



ATTENTION: when the cardan shaft is at maximum, the two tubes must overlap at least 1/3 of their length, while when it is in position of minimum length there must be present 10 cm of free light.

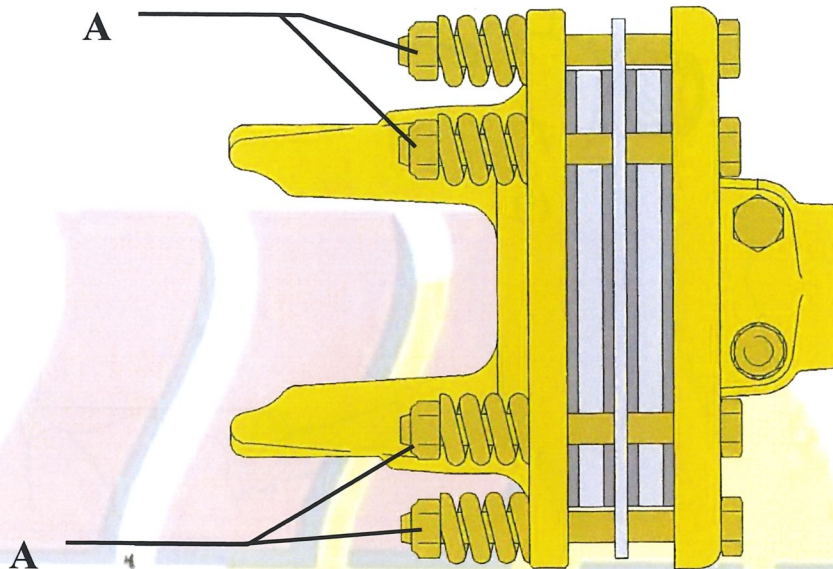


8.3.1 Regulation of cardan shaft with clutch

The cardan shaft can have a safety clutch so the machine during the use does not receive overloads or excessive efforts which are dangerous for the transmission components. The clutch is pre-adjusted to an average force.

If during use you notice an excessive skid of the device, you need to act by tightening of a turn at a time the nuts that hold the springs (see point A).

Adjust the nuts evenly by acting on all the nuts by turning them an equal amount.



ATTENTION: if despite this, the clutch slips even when using the machine it is necessary to replace the friction discs of the clutch.

If the clutch does not slip even in case of overload and excessive effort, unscrew evenly and gradually all nuts, ensuring the operation in case of overloads.

After you have adjusted A nuts, check the clutch after 300 meters of work. If necessary, repeat the operation, acting a turn at a time.

Do not tighten the nuts eliminating the clutch function. This operation subjects the components transmissions to a risk of breakage in case of overload.



WARNING!

For RSG- RSL- RSC- RSE :

Verify that the RPM of the P.t.o. of the tractor is 540 rpm, since the machine is designed for this speed.

After adjusting the drive shaft:



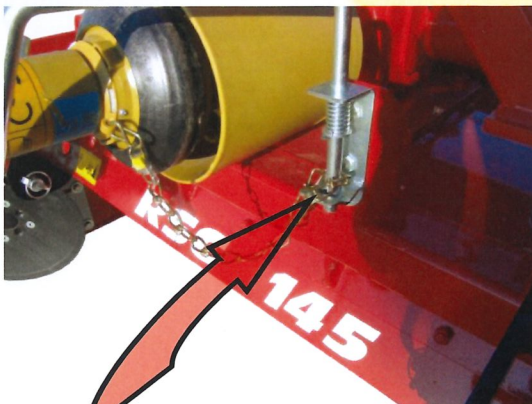
Check the direction of installation of the cardan shaft according to the information stamped on its protection and fix the universal joint ½ "side machine" connecting it to the p.t.o. gearbox of the bed former.

Check the right introduction of the locking screws. Tighten with a hexagonal wrench ensuring the two screws to the output shaft, thereby locking the drive shaft of the machine.



Remount the yellow plastic protection on the gearbox using the appropriate bolts and tighten them with a hexagonal wrench.

Insert the second half of the drive shaft and lean the complete P.t.o. on the support bracket mounted on the machine.



Fasten the plastic P.t.o. shield to the P.t.o. support bracket by means of the chain as shown in the foto on the left.



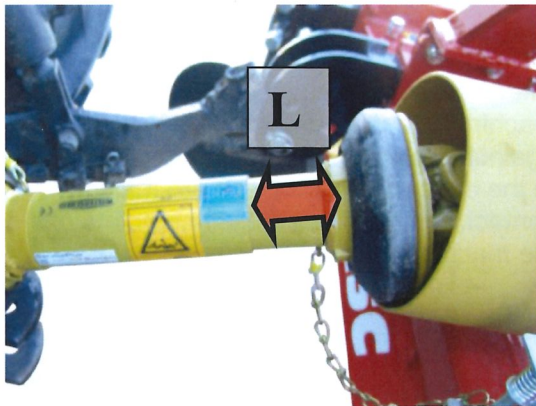
Mount the machine to the tractor using the lower arms linking the tractor with the connection points of the machine, then connect them and secure them (see use and maintenance book of the tractor).



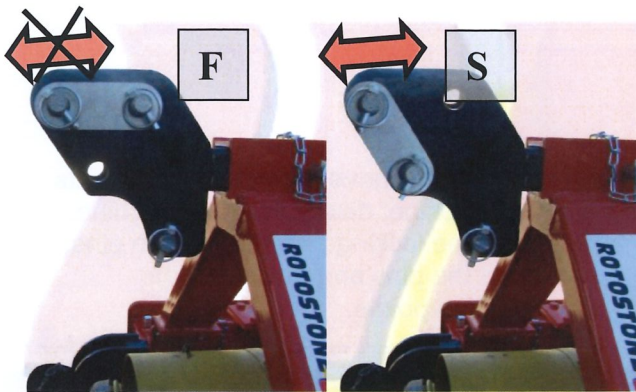
Remove the drive shaft from support hooking the drive shaft to the stub shafts of the tractor, carefully checking the correct coupling via push button or collar.



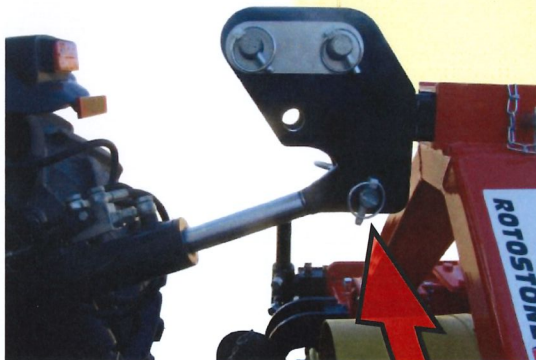
Connect the plastic shield to the tractor with the chain preventing in this way the rotation during use. This step will ensure long life to the protections that cover the cardan greatly reducing the risk of accidents with respect to operator or other people.



With the Stone Burier machine in a level position and the stub shafts of the tractor's P.t.o. and gearbox at the same height, verify that the complete P.t.o. shaft is extended 2"-4" from its closed length when connected to allow the P.t.o. halves to telescope in and out during lifting by the tractor.

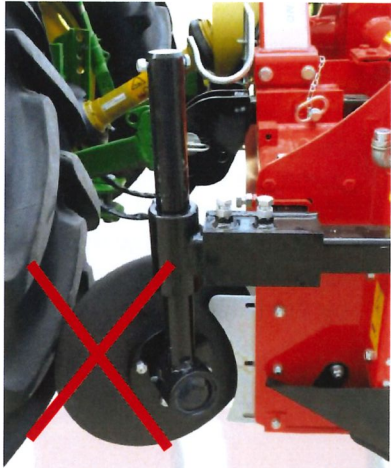


Connect the top link of the tractor to the machine choosing the float position (S) in the case of uneven ground or the fixed position (F) in which the machine will remain horizontal under all conditions.

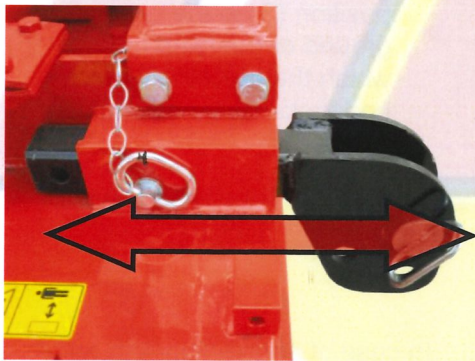


In case of connection with small tractors, use the connection point located in the lower part of the top link, in order to facilitate the lifting of the Stone Burier from the ground, while ensuring the correct angle of the machine.

Now insert all klik-pins to fix the hitch pins in place.



Check carefully that, while lifting the machine, the front discs do not bump against the wheels of the tractor. In the case where the discs are making contact, remove the connection points of the machine.



To properly remove the connection points of the machine, disconnect the machine, remove the locking pins of the hitch pins, remove the pins and reposition the connection points.

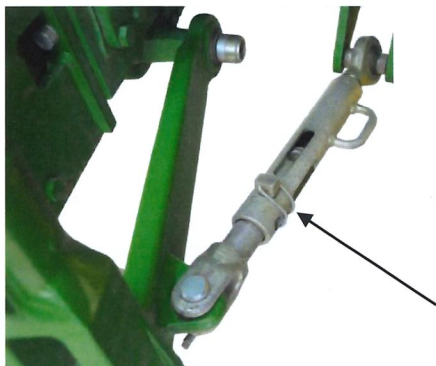
Once it has been adjusted replace the pins locking them using the click pins and connect the machine, proceeding with the operations described below.



When required. Connect hydraulic pipes to the tractor carefully checking the colour code on the tractor valves.

Remember that the wrong connection of the machine's hydraulic pipes could cause an inversion of the controls given by the tractor.

If the hydraulic pipes are not connected to the tractor, they must be placed on special supports on the machine.



Once you have finished to connect and adjust the machine, lock the horizontal movement of the bars of the lift acting on the special tighteners parallel to the tractor.

This arrangement should be put in place to prevent any crosswise movement of the machine, that is dangerous for the stability of the machine - tractor..



Adjust correctly the top link of the tractor to ensure that the top floor of the machine (A) is parallel to the plane of the ground (B).

This is very important in order to obtain a parallelism between the P.t.o. stub shaft of the machine and that of the tractor.

Work in these conditions means limit the stress on the P.t.o., extending the life of the cardan shaft and of the Stone Burier, while achieving a better quality and more profitable work.

9 TRANSPORT BY ROAD

ATTENTION!



For road transport it is necessary to:

- Make sure that the tractor used for road transport is properly certified and have all the documents to circulate on road.
- Have a valid driving license for the tractor used on road.
- Check the cleanliness of the tires before going on public roads.
- Follow carefully the highway code in force.
- Do not carry the machine and do not drive the tractor under the influence of alcohol, medicines or drugs.
- Install appropriate size warning signs for road traffic (in case the machine is larger than the tractor to which it is connected).

Do not lift the machine to high, the drive shaft must not exceed 30° tilt with the power take off. Check, however, that during transport, the machine cannot collide with the ground or dips on the road.

If the width of the machine cover the rear lights of the tractor you must install lights on the rear of the machine.

Check that the drive levers of the hydraulic lifting are locked, to avoid the fall of the machine during transport.

Together with the observance of the rules it is important to remember that when driving on public roads close attention must be paid to the choice of an appropriate speed, especially with the vehicle-led with strong overhangs front and/ or rear or when the road looks crowded, twisty, bumpy or sloping.

Coming out on the road after working, check the cleanliness of the tires and of the working parts, to avoid smearing with earth or other material the road surface.

Make sure that the lower links of the tractor's three point lifting are completely blocked by side tighteners, to avoid dangerous lateral swings of the machine during the transport.



10 BEFORE STARTING WORK

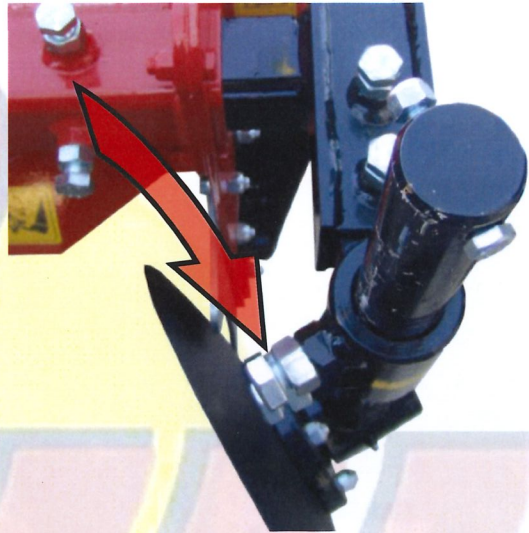
Before using the machine you must do some important operations in its regulation, thereby allowing a proper and productive use, improving the yield and quality of the work done by the machine.

10.1 SIDE DISCS ADJUSTMENT

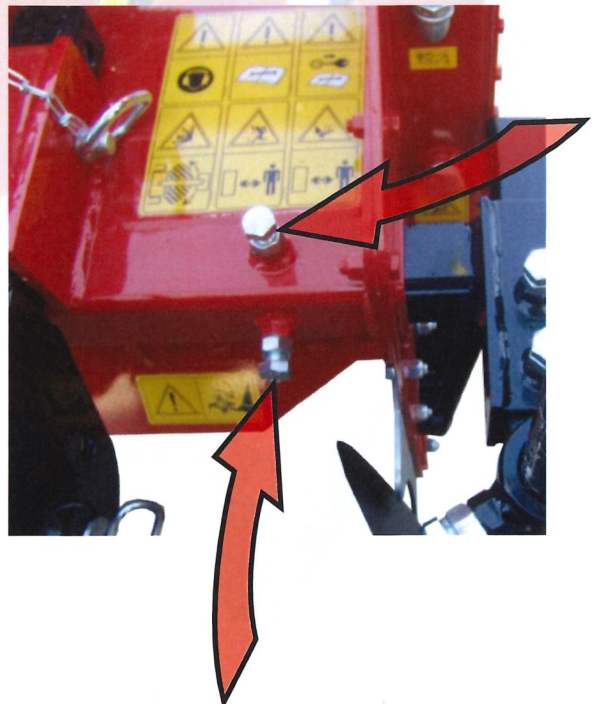
Follow the instructions below:

- Release of the lock nut,
- Loosening of the fixing bolt,
- Adjusting of the component set by the bolt (or bolts)
- Tightening the fixing bolt and the lock nut

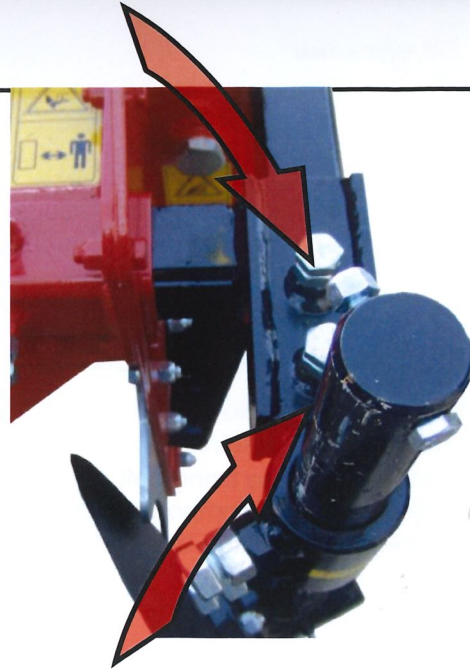
To adjust the lateral discs you must loosen the bolts for the vertical adjustment.



On the bolts for the lateral adjustment.



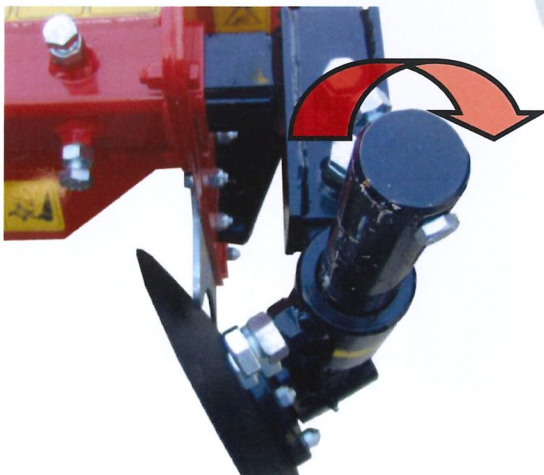
And on the bolts for the front adjustment.



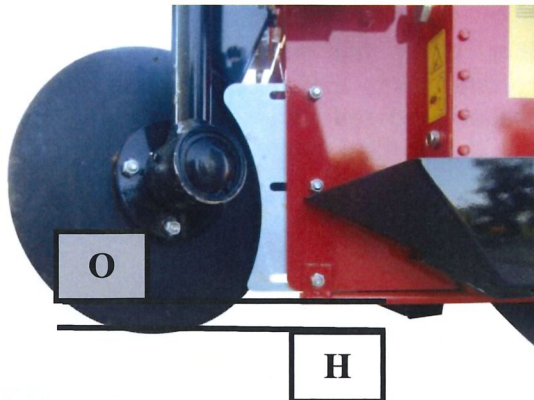
For a correct adjustment and side discs' use follow these basic rules:



Slide out, from the transmission side, the disc support arm about 5-6 cm, securing it subsequently through the tightening of bolts and clamping counter.



After loosening the bolts holding the vertical shift, rotate the disc in order to vary the angle and the depth of the tool.



To adjust properly set the side plate to a working depth (H) equal 1" inch lower than the line (O). During the start of work of the Stone Burier this distance may vary due to the desired result or the needs dictated by the type of work to accomplish.



Make sure that the disc is rotated so you can create a groove at least as wide as the width of the chain cover, illustrated with a letter (A).

This will guarantee the creation of a tube that ensures that the lower part of the casing does not touch the ground while work providing the machine with a greater depth of work and a better finish of the worked edges.



This photograph clearly represents the function of the disc, creating a groove with a width such as to allow the slide not to ride on the ground, it ensures a constant and greater depth of working.

10.2 GENERAL MACHINE ADJUSTMENT



Before using the machine check some important points that determine the correct operation and reduced stress on its parts during the working phases.

10.2.1 Adjustment of the parallelism with the ground

Lift the Stone Burier from the ground about 14 inches and verify that it is parallel to the tractor and, consequently, to the ground on which it operates.

In the situation shown, you can see how there is no alignment between the machine and the tractor, so it will be necessary to adjust the appropriate side arms of tractor's three points leveling the machine (check the user and maintenance book of the tractor used)

Adjust the lower arms of the three point hitch of the tractor until you get to a perfect alignment between the machines.

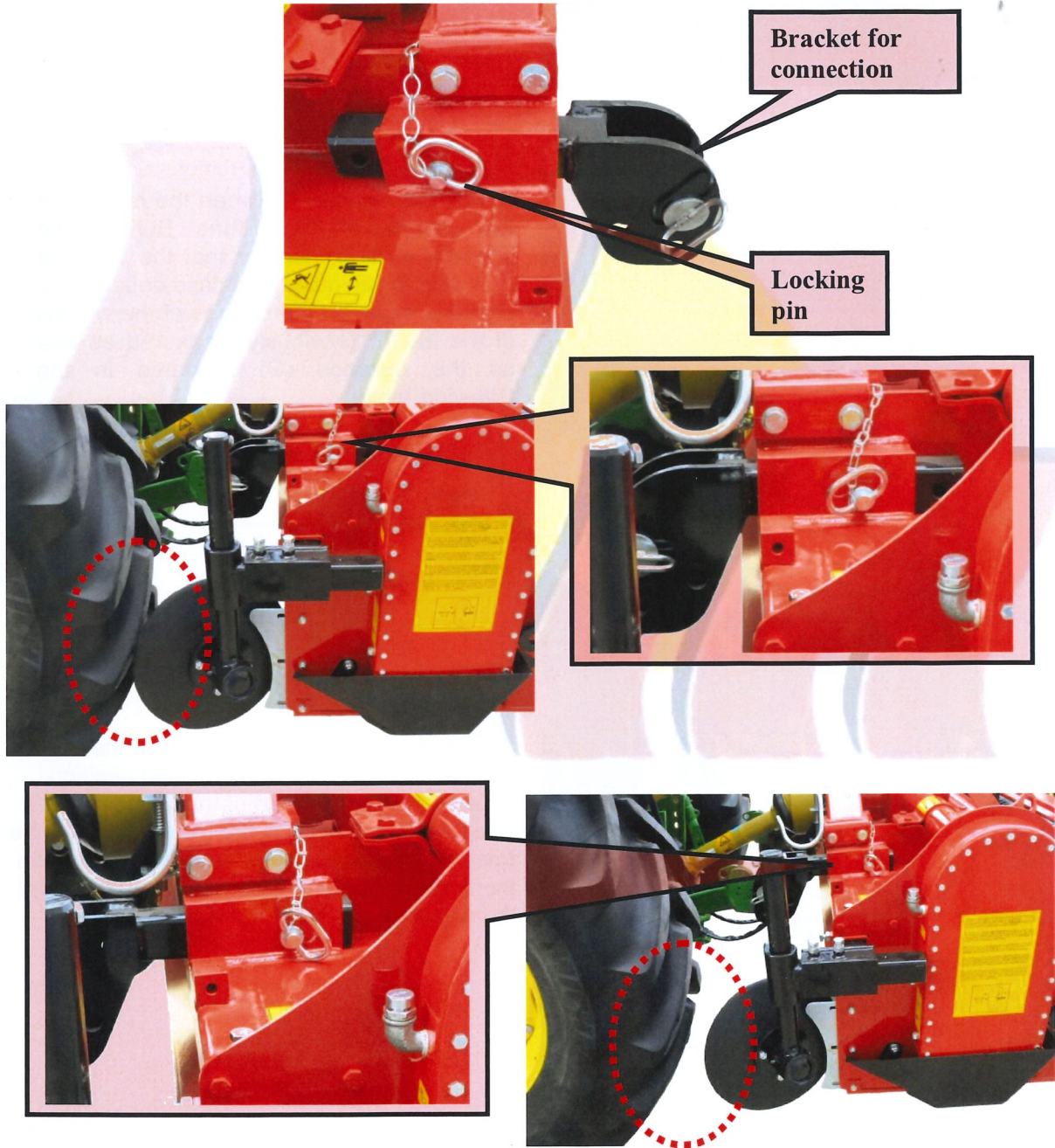


10.2.2 Adjustment of the distance from the tractor

The machine is equipped with special brackets for connection to the tractor that allow, through adjustment, to vary the distance between the machine and the wheels of the tractor, thus avoiding possible contacts during the lifting for the transport or during work.

The adjustment of the connecting brackets' position and of the machine, is accomplished through the removal of the safety pin and the locking pin, followed by repositioning of the bracket as necessary. Once you placed the bracket in the desired position, lock it positioning the locking pin and the safety pin.

The adjustment operations must be performed in a symmetrical manner on all three connecting brackets of the machine.



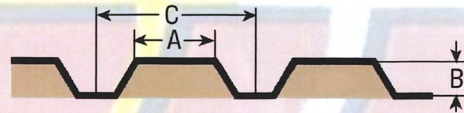
10.2.3 Adjustment of the track of the machine



Measure the distance between the centre of the wheels of the tractor (track) with a measuring tape



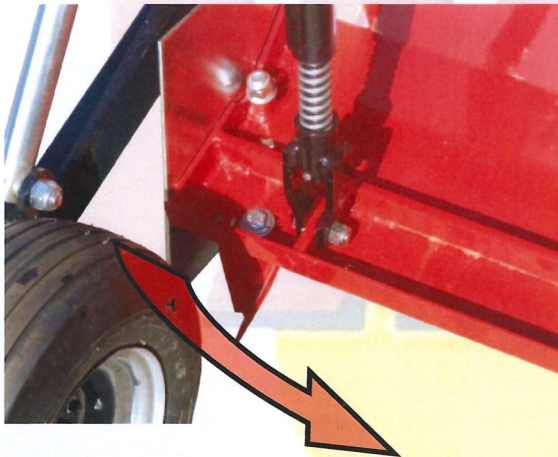
Check the distance between the centres of the wheels of the Stone Burier. The operator must remember that the distance (D) to be set is in the best case equal to the distance between the centres of the wheels of the tractor previously measured as well as the distance (C) indicated in the following table.



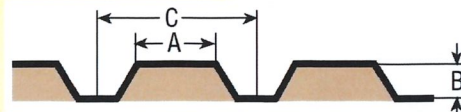
All Stone Buriers are delivered with the supporting wheels kit in the closed position. In case the track's width of the Stone Burier's wheels (D) is less than the track's width of the tractor's wheels, it will be necessary to loosen the indicated locking screws in order to adjust the distance.



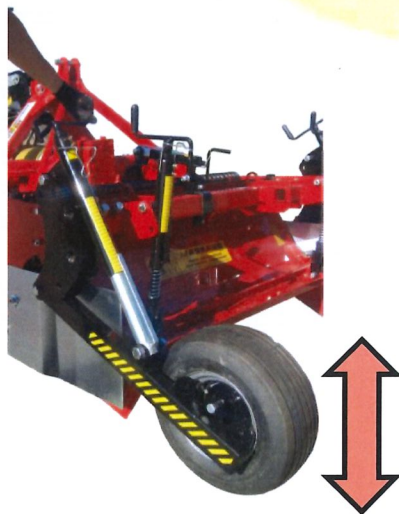
Vary the distance of the wheels in the direction shown by the arrow in the photograph equidistant between the parts (the right wheel and the left wheel). In this way the machine will work perfectly in the centre of the tractor.



According to the planting surface (A) that you want to achieve, adjust the plowshares placed laterally to the rear panel of the machine.



The operator must adjust equally the rear plowshares, in order to achieve a perfectly bed centered in relation to the position of the machine.



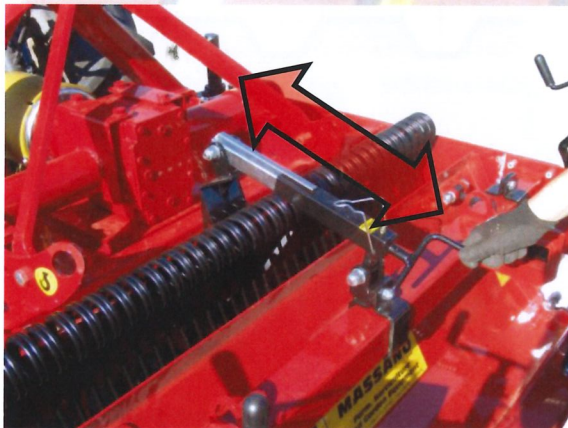
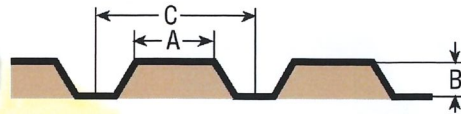
Adjust the height of the side wheels according to the working depth desired. The adjustment must be carried out necessarily in an equal manner, allowing the machine to achieve an uniform and flat processing. Shortening the screw placed laterally increases the working depth of the machine, while extending the screw decreases the depth.

The adjustment crank shown in photograph regulates the opening and closing of the Stone Burier's panel.

If you want to compact the planting surface (A) it will be necessary to lengthen the adjusting screw so as to approach the Stone Burier's hood to the soil, otherwise it will be sufficient to perform the opposite operation to determine a soft and less compact planting surface.

The adjustment crank has got a spring which, in case of uneven ground, allows the self-leveling of the panel.

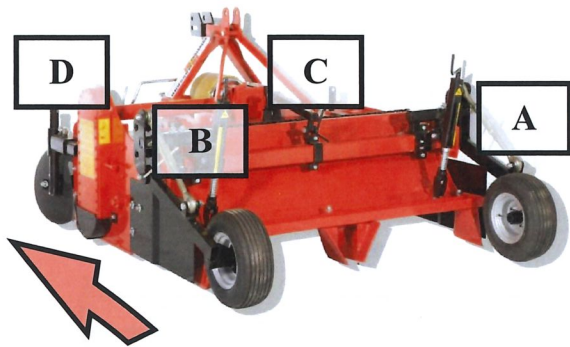
In the situation with the presence of a high amount of crop rests it is recommended not to overly compress the Stone Burier's panel.



The adjustment crank shown in photograph regulates the opening and closing of the rear selection grill.

This selection grill consists of a series of double loop springs type harrow that separates the large material from refined product ensuring a strong capacity of burying. The particular shape of the coil on each spring allows a continuous vibration during work, avoiding ground and debris' obstruction during work.

Only in presence of very wet ground or of a large amount of debris such as grass, roots and stalks it is necessary to increase the working angle of the selection grill allowing a more fluid and smoothly passage. In this way, as well as reducing the clogging between the rotor and the grill it also reduces the power absorption of the tractor.



The arrow indicates the direction of travel of the machine.

From this you can recognize the main adjustment points that enable proper operation of the Stone Burier.

A = Adjust the working depth.

B = Adjust the pressure on the planting surface.

C = Adjust the angle of inclination in the flow of land necessary to make a correct bed.

D = Adjust, according to the inclination angle, the flow of ground necessary for a correct bed.



Once in the field verify that the tractor's P.t.o. is set at 540 rpm and prepare to work following these signs:

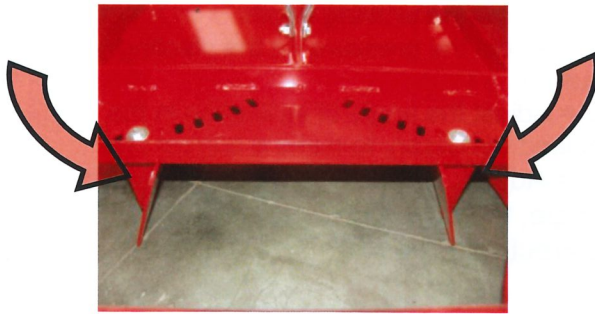
- Lower the machine up to 5 cm from the ground.
- Place a low gear for the first 100 feet of work, so as to control the result obtained and make any necessary adjustment.
- Operate P.t.o. increasing the engine speed to a value between 1500 and 2000 rpm.
- Verify that the hitch of the tractor is not in load sensing position (function used only for the plow).
- Lower totally the lever of the hitch of the tractor and at the same time moving forward so as to insert the Stone Burier in the ground avoiding abrupt maneuvers.
- During the first 100 feet act as needed on set points A-B-C since to reach an optimal level of work.
- It is very important for the user to turn off the tractor whenever it is necessary to dismount from the steering position, so as to be able to work in maximum safety.
- Familiarize with the machine in order to find the right speed and the correct engine speed to ensure the optimal operation of the machine.
- It is important to consider that greater working speed causes less burial capability.

- With particularly stony grounds it is suggested an engine speed between 1500 and 1800 rpm
- With clayey grounds without stones it is suggested an engine speed between 1800 and 2000 rpm in order to ensure the best results.

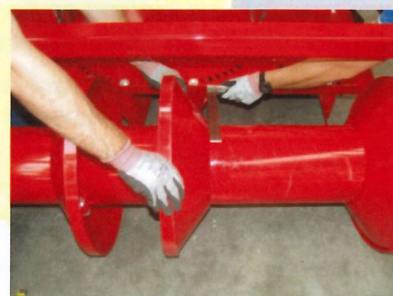
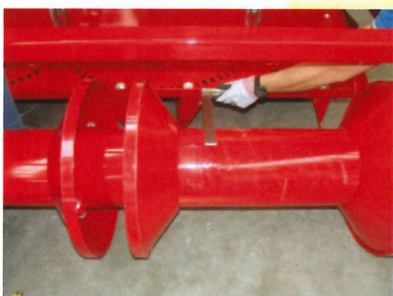
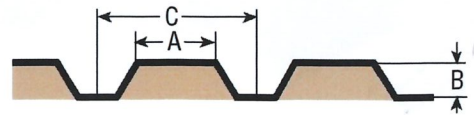
IF YOU FOLLOW THE PREVIOUS LIST YOU WILL OBTAIN A PERFECT RESULT IN ALL CONDITIONS.

10.2.4 Rear hydraulic roller

For all models equipped with motorized hydraulic roller you must follow these instructions for the correct functioning of the machine.

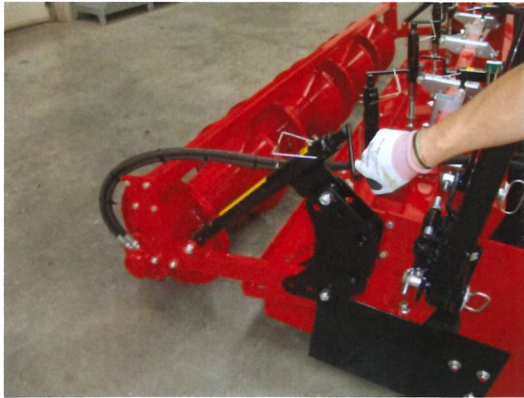


According to the planting surface (A) that you want, adjust plowshares placed laterally to the rear plate of the machine.

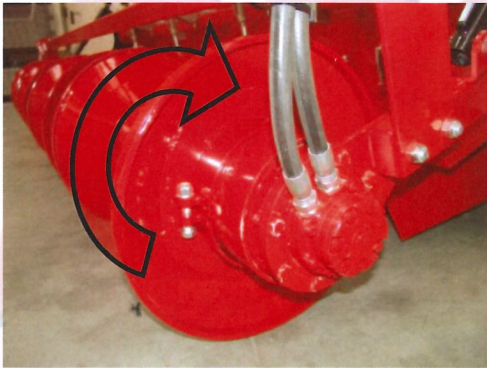


Use a square positioned on the top inner side of the plowshare and slide the cone bringing it in contact with the square. After doing this operation firmly tighten, using a ratchet wrench, the screws shown in figure (A) . Repeat the same operation for the opposite cone and for all other cones in case your machine has more than a single bed. At the end check with a rule the distance between two cones, it must be equal to the portion A.





Lift the roller from the floor and forward 20 meters without move the roller working. In this way you can correctly adjust the bed former following step by step what is described in part 10.2.4



Through the hydraulic distributor of the tractor set the roller's motor going, check that the rotation is equivalent to the direction then gradually lower the roller to the ground until the cones do not make a bed with the desired profile.



Acting on the knob indicated you can vary the speed rotation of the roller.

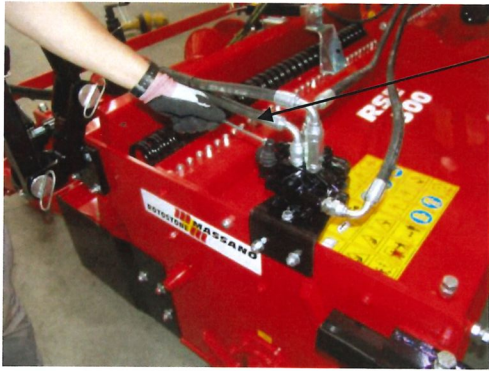
This function allows users to change the pressure applied by the roller on the ground in a uniform way across the surface.

It is a good practice to use roller speed faster or slower than the tractor's speed. In this way the roller cleans itself.

Below are two cases where a correct adjustment can make the difference.

1- If you have a wave effect on the soil it will be necessary reduce the speed rotation of the roller.

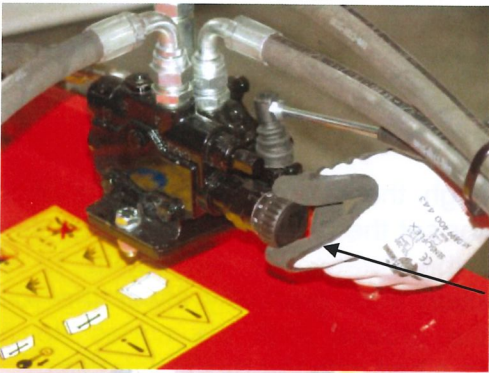
2- In case of a crack effect it will be necessary to increase the speed rotation of the roller.



A

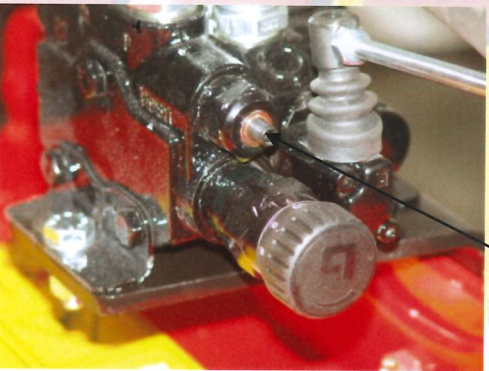
Professional distributor (Bucher) with relief valve and flow control incorporated.

For bed former equipped with Bucher valve it will be sufficient to adjust the lever to drive the roller in the desired direction of rotation.



B

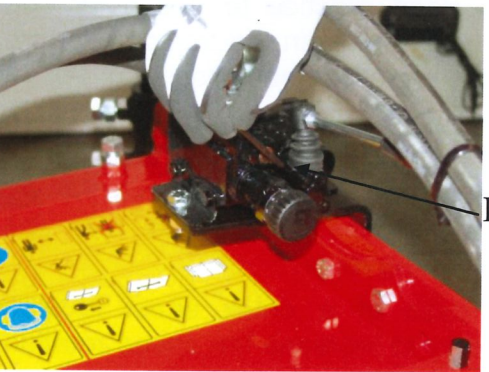
In case you want to increase the maximum speed of the roller, adjust the valve in this way.



C

Remove the cap C take a 5 mm wrench and adjust the screw D. Tightening the screw increases the relief valve setting with a major increase torque.

This operation is recommended only in a multiple bed former, 3-4 beds, where the torque necessary exceeds normal expectations. For all other cases is a good practice to contact Massano Snc to avoid irreversible damages to the system.

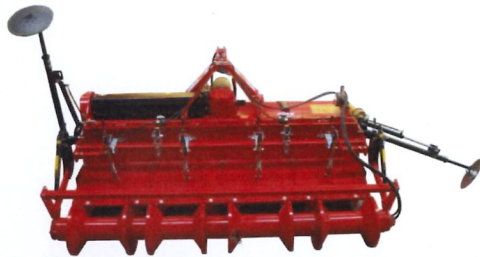
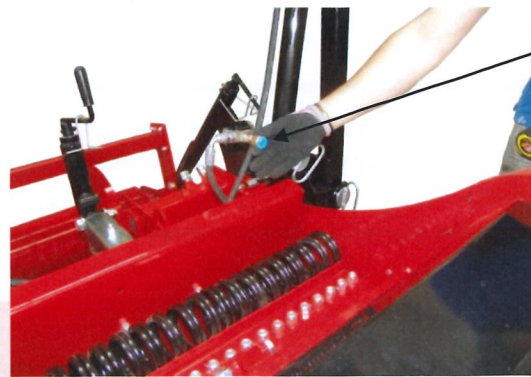
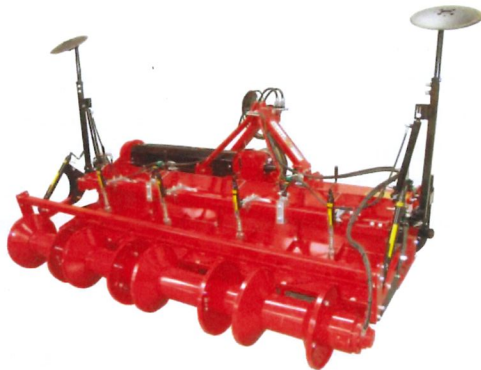


D

A maximum setting in no event should exceed 180 bar.

For bed former equipped with row marker discs

The stone burier bed former equipped with row marker discs is delivered with the track marker discs completely closed to reduce the overall dimensions during transportation. Once in the field the operator must check that there are no people or objects within a range of 20 metres before the start of use.



Check that valve A is closed.

After attaching the hydraulic hoses to the valve of the tractor, move the lever and wait for the descent of right arm as seen in the photograph on the side. Return to the valve A, turn the graduated knob a full circle and return to the cabin to move the lever in the reverse direction.

In this way the circuit is purged of the presence of air and you can note the descent of the left arm with subsequent ascent of the right arm all with the use of a single lever.



To return to the closed position it is only necessary once the left arm is raised, to close valve A and invoke the right arm, in this way the width will be again reduced to facilitate movements on streets and avenues.

11 MAINTENANCE

Follow you can find the suggested criteria for the routine maintenance of the machine, based on our business experience, advices and suggestions of our customers. These criteria are not exhaustive, they can be further integrated with the cooperation of customers we thank in advance. A good maintenance keeps down the cost of operation of the machine and allows to make the most of its potential.



In case of failure, stop immediately the P.t.o., remove the ignition key, get off the tractor to check the problem and eventually intervene on the machine.

Preliminary notes

Before using the nipples heads, you must previously clean them carefully from mud or other debris, in order to inject lubricating grease:

Before starting maintenance, you must do the following operations:

- Disconnect the tractor's P.t.o.;
- Turn off the tractor's engine, pull the hand brake and remove the ignition key from the dashboard;
- Use always the appropriate personal protective equipment (safety shoes, work gloves, eye protection);
- Prepare all accident prevention rules for the type of operation you are doing.
- Use suitable support systems correctly sized before operating below suspended parts taking into account their mass.

Every 10 - 15 hours carry out systematically the following checks and adjustments:

- The tightening of screws and nuts;
- The check of wear and tools entirety;
- The entirety of the guards;
- The tension and the efficiency of the transmission chain.
- Monitoring of lubricants levels;
- The greasing of the parts marked by the special sticker.



11.1 ORDINARY MAINTENANCE

To ensure a good operation of the machine, follow these rules.



ATTENTION!
Do maintenance on the machine while disconnected from the tractor, lying securely on supports.

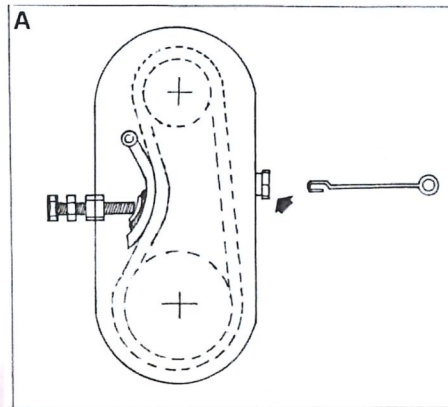
11.1.1 Every 8 hours work

- Check the tightness of the bolts securing the blades, the flanges and the rotor
- Grease the side support of the rotor

- Grease the roller bearings in case this is on your machine.
- Grease the side discs support (for machines that are equipped with)
- Grease the P.t.o.'s cross (look the cardan joint's book in)

11.1.2 Every 50 hours work

- Check the tension of the side chain of transmission.
 The adjustment operation of the chain takes place by rotating the adjusting screw. In case any excessive play is revealed, it will be enough to adjust the chain tensioning screw. To get the right tension simply unscrew the cap shown in Fig. A and with a dipstick check that the play is between 3/4 – 1 inches.



- Check the amount of oil in the gearbox and if necessary raise the level marked on the rod.
- Check the level of oil in the side chain transmission.

Recommended lubricant:

- Central gearbox SAE 80/90 and the side transmission: Oil OMALA EP 680 or equivalent.
- Greasing points: Grease SHELL RETIMAX WB2 or equivalent.

For technical specifications on lubricating oils and greases follow the table on the cover

Type	Central gearbox	Side Trasmission
RSG	2,5 Kg	2,5 Kg
RSL	2,5 Kg	2,5 Kg
RSC	2,5 Kg	3 Kg
RSE – DV 817	7 Kg	3 Kg
RSE – R 160	4,2 Kg	3 Kg
RSE – PLUS – CHAIN	9 Kg	3 Kg
RSE – PLUS - GEARS	4,2 Kg	8 Kg

11.1.3 Every 200 hours work

- Clean the gearbox with solvents or oil and replace the used oil with OMALA EP 680.
- Clean the side chain transmission with solvents or oil and replace the used oil with SHELL OMALA EP 680.
- Dismantle and clean the clutch discs of the cardan shaft (see drive shaft's book)

11.2 ROTOR WITH BLADES

The blades worn out or broken must be replaced using bolts and nuts Massano high strength. When replacing be careful to maintain the previous arrangement.

11.2.1 REPLACEMENT OF BLADES

The replacement of the blades must be made by placing the stone burier on two solid side supports correctly sized taking into account the mass of the machine reported on the rating plate and in this User and Maintenance Book in the section "Technical data".

The change must be done while keeping the machine and especially the drive shaft disconnected from the tractor.

To remove the tool, unscrew and remove the nut with a wrench, then remove the bolt, and the tool to be replaced.

Take the new tool and place it near the connection holes, insert the bolt, and the nut making a vigorous tightening.

Then block the nut and the block with the torque wrench specially adjusted according to the diameter of the screw.

Use the following table:

Screw diameter (*)	Type	Tightening torque
12mm	RSG	180N/m
14mm	RSL RSC	220N/m
16mm	RSE RSE PLUS	240N/m

Use only the bolts supplied by MASSANO snc.

11.3 GEARBOX (Type RSE – PLUS ONLY)

Gearboxes DV817 (RSE type- assembled until 2013) allow you to change the speed of the rotor simply reversing the gears from a pair or replacing the pair with others.

With the gearbox DV733 (RSE PLUS type) simply move the control lever.

The rotation speed of the rotor blades in RSE PLUS with P.t.o. at 1000 rpm is the following:

I gear 205 rpm
II gears 245 rpm



ATTENTION!

Run the gearbox only with the tractor turned off, the ignition key off and all parts of the machine arrested.

11.3.1 Replace gears DV 817 (Type RSE only)

Switch off tractor's engine and disconnect the drive shaft from tractor's P.t.o.

Inside the gearbox there is a pair of gears, you can remove the cover by unscrewing the bolts shown in photos with a hex wrench 17.



PAY ATTENTION TO THE LOSS OF OIL. IT IS ADVISABLE TO BEND THE MACHINE FORWARD PAYING ATTENTION TO THE PARTS THAT AFTER USE CAN BE VERY HOT.

To reverse the gears of the working pair, extract them from their position and exchange them checking that the hubs are next to the gearbox's bearings.

To replace the gears of the working pair with another, use the same procedure.

The current gears in this box are only two: **Z 27 and Z 29.**

Each machine is equipped with gear Z27 mounted on the shaft connected to tractor's P.t.o. With this configuration, the blades rotor will have the following rotation speed:

With P.t.o. to 540 rpm

Mode 27 / 29 = 187 rpm

Mode 29 / 27 = 215 rpm

With P.t.o. to 1000 rpm

Mode 27 / 29 = 346 rpm

Mode 29 / 27 = 390 rpm

To obtain other speed you can ask for other gears with different numbers of teeth. Do not hesitate to contact Massano snc.

11.3.2 Check the oil level

To check the correct level of oil inside the gearbox follow the pictures below.

Fig. A = Gearbox type DV 817: unscrew the breather, check the level with the dipstick (Remember to keep always the stone burrier bed former parallel to the ground).

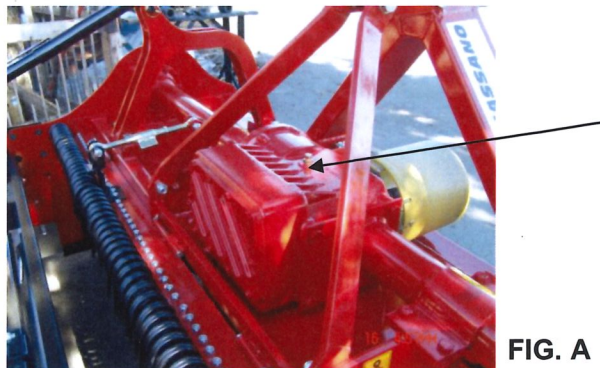


FIG. A

Fig. B = Gearbox type DV 733: unscrew the indicated plug that represents the minimum level (Remember to keep always the stone burrier bed former parallel to the ground).

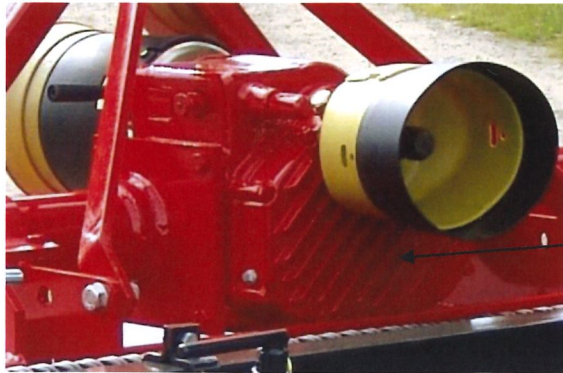


FIG. B

11.3.3 Replacement of oil

To properly replace the oil inside the gearbox it is necessary to:

- Completely drain the oil inside the gearbox by unscrewing and removing the drain plug.
- Tighten the plug you have previously removed and check the right placement of the seal.
- Pour the oil out in the gearbox referring to the table in par. 13.1.3 up to the right level (see par. 13.3.2)

11.4 GREASING OF MECHANICAL PARTS

Every 8 hours work, you have to grease all bearings, crosses and the drive shaft.

The machine is equipped with pictograms placed on each greasing point.



You have finished to grass a single part when there is a slight overflow of grease from the side junctions of the component. Now stop the grease injection avoiding damage seal parts.

Grease a component only after a thorough cleaning of debris and dirt. The presence of dirt in the injected grease would cause serious damages due to the great abrasive capacity.

11.5 ANALISYS OF THE PROBLEMS, TROUBLES SEARCH

PROBLEMS	CAUSES	SOLUTIONS
Uneven distribution	<ul style="list-style-type: none"> • Too damp ground • Incorrect placing of the tools • Uneven connection to the tractor 	<ul style="list-style-type: none"> • Wait for better conditions • Check the exact palcing of the tools • Check the connection to the tractor
Noise level of the gearbox	<ul style="list-style-type: none"> • Inner anomalies • Worn bearings or gears 	<ul style="list-style-type: none"> • Contact Massano snc or local dealer
Excessive vibrations	<ul style="list-style-type: none"> • Wrong placing of the tools • Foreign object trapped between the tools 	<ul style="list-style-type: none"> • Check the exact placing of the tools • Remove the foreign object
Clutch slip	<ul style="list-style-type: none"> • Foreign object trapped between the tools • Excessive working depth 	<ul style="list-style-type: none"> • Remove the foreign object • Reduce the working depth
Premature wear of the tools	<ul style="list-style-type: none"> • Too clayey ground 	<ul style="list-style-type: none"> • Replace standard tools with special anti wear tools
Presence of crop rests on the surface	<ul style="list-style-type: none"> • Too dense Vegetation • High pressure of the rear hood 	<ul style="list-style-type: none"> • Use a shredder to reduce vegetation • Reduce the rear hood pressure acting on the handle
For Stone Burier bed former with motorized roller	<ul style="list-style-type: none"> • High rotation speed of hydraulic motorized roller • High pressure on the screw that adjusts the roller's height 	<ul style="list-style-type: none"> • Reduce the rotation speed of the roller • Reduce the pressure of the screw that adjusts the roller
Presence of waves on the flat surface of bed		
For Stone Burier bed former with motorized roller	<ul style="list-style-type: none"> • Moderate rotation speed of hydraulic motorized roller • Moderate pressure on the screw that adjusts the roller's height 	<ul style="list-style-type: none"> • Increase the rotation speed of the roller • Increase the pressure of the screw that adjusts the roller
Presence of cracks on the flat surface of bed		
Excessive power demand	<ul style="list-style-type: none"> • High working depth • Undersizing of the tractor 	<ul style="list-style-type: none"> • Reduce the working depth • Use tractor of adequate power

12. GUARANTEE

12.1 DURATION OF THE GUARANTEE

The manufacturer guarantees that its products are free from material and manufacturing defects for twenty - four (24) months from the delivery date of the machine.

WARRANTY CONDITIONS

- 1) The obligation due to this warranty is limited to replacement and/ or repairing of components that, after inspection of one of our technicians, present material and manufacturing defects;
- 2) The damaged parts must not be changed, disassembled by unauthorized people, and also they must not have been subjected to misuse, negligence or accident;
- 3) The costs of manpower and transport for repairing or replacement of defective parts are not included in the guarantee;
- 4) No guarantee made by someone else than the manufacturer will be considered valid and binding;
- 5) The manufacturer reserves the right to make changes without warning, and, in this case, he does not assume any obligation to make such changes on products previously manufactured;
- 6) At delivery time check that the machine has not been damaged during transport and that it has got all parts, any claims must be done in writing within 8 days from the delivery date of the machine.

The warranty will be invalidated if:

- 1) The failure is due to a manoeuvre error;
- 2) The failure is due to repairings done by unauthorized staff or the use of non original parts;
- 3) The customer has not follow the instructions contained in this book.
- 4) The customer exceeds the maximum allowed power shown in the technical features table.
- 5) The customer has not done an adequate maintenance in the friction clutch of the drive shaft.

13. SPARE PARTS

Each machine is equipped with an identification plate affixed to the frame in the position shown in paragraph 2.2.1.

The data shown on the identification plate are absolutely necessary for each request of spare parts.