Translation from the original version

INSTRUCTION MANUAL

SIDE-SHIFT ROTARY TILLERS

Mark: BERTI Macchine Agricole
Model:

	
SOLE	**MERCURIO**
	
MARTE	**STELLA**

Read this manual thoroughly before using the machine

06-2016

INDEX

INTRODUCTION

This instruction manual contains the description of operation and the instructions necessary for performing the main operations, routine and periodic maintenance of the rotary tiller correctly, which will hereon be called machine.
This manual is divided into identifiable chapters, for easy reference.
The indications contained in this manual are intended for a professional user, who must have specific knowledge regarding use of the machine and must be authorised, instructed and appropriately trained.
Use of original spare parts and accessories is recommended. As well as invalidating the warranty, use of non-original spare parts could be dangerous, reducing lifespan and duration of the machine and serious injury/damage to persons, animal and objects.
In the event of transfer or re-sale, this instruction manual must always accompany the machine. If it is damaged or lost, a copy must be requested from the Manufacturer of the machine or previous owner. The manual is considered an integral part of the machine.

For the USER: Before starting to work with the machine purchased, it is mandatory to read this instruction manual which states all of the operational technical indications relative to the correct use of the machine, paying particular attention to all provisions concerning safety. The abuse of performance and the failure to comply with the Safety Standards and use make the operator liable for damage/injury caused to the equipment, objects, persons and animals.
The machine manufacturer does not have direct control over application, method of use and maintenance and it is therefore the user's responsibility to use common sense in the operating areas, doing everything possible to safeguard his own safety and that of third parties, animals and objects, evaluating the hazard every time before starting to work.
Whenever the user delegates the use of the machine to another user, he is responsible for having this instruction manual read thoroughly and checking that it has been understood and implemented.
This instruction manual must be on hand for immediate consultation, if necessary.

For the DEALER, the RETAILER and the IMPORTER: the person assigned to delivering the machine to the final user must perform application to the tractor. Therefore he must read this instruction manual and understand the content before the machine is assigned definitively. He is also responsible for training the final user and making sure that he has understood everything stated in the instruction manual.

GLOSSARY

Machine	Side-shift rotary tiller
Tractor	Vehicle equipped with an engine that is used to tow other vehicles, especially agricultural machines.
User	The user is considered as the owner and/or staff, the operator/user assigned to running the machine, cleaning it, performing maintenance and repairs and that can recognise hazards deriving from use of the machine, and therefore prevent them.
Specialised staff	Those persons especially trained and enabled to perform maintenance interventions or repairs that require particular knowledge of the machine, its operation, safety devices and methods of intervention.
Safety staff	Staff assigned to moving persons away from the working range of the machine.
Manufacturer	Company that produces the → Berti Macchine Agricole S.p.A. machine
	**DANGER** - This sign indicates an imminent and real hazardous situation, which if not prevented, leads to serious injury and even death.
	**ATTENTION** - This sign indicates a potential hazardous situation which, if not prevented, could lead to serious injury and even death. Hazards identified by this sign therefore represent a smaller risk of serious injury or death with respect to those indicated by the DANGER sign.
	**CAUTION** - This sign indicates a potential hazardous situation which, if not prevented, could lead to slight injury or moderate wounds. The symbol is used to warn that determined practices can lead to consequential events that could cause wounds and personal damage.
	**NOTA BENE**

1 INFORMATION REGARDING THE INSTRUCTION MANUAL

This manual is an integral part of the machine and must accompany the same in the event of re-sale and until its demolition.

If the manual is lost or damaged, request a copy from the manufacturer ("BERTI Macchine Agricole S.p.A.", via Musi 1/A – 3, Caldiero – Vr. Tel. +39.045.6139711) or from the Dealer.

The presence of this symbol, in its three versions, indicates that maximum attention must be paid to the subject discussed.

Some devices described in the manual may not be present on your machine. This is due to the set-up selected and the market to which the machine is destined.

1.1 MANUAL UPDATES

The information, descriptions and illustrations contained in the manual correspond with the current technology at the time of marketing the machine.
The Manufacturer reserves the right to make modifications to the machine at any time for technical or marketing reasons. These modifications do not oblige the Manufacturer to intervene on machines marketed up to that time and do not invalidate this documentation.
Any subsequent supplements to the manual that the Manufacturer considers appropriate to supply, must be kept together with the manual and considered as an integral part of the same.

1.2 COPYRIGHT

The copyright for this manual belongs to the Manufacturer. This manual contains technical texts, drawings and illustrations, which must not be disclosed or transmitted to third parties in full or partially, without the written authorisation of the Manufacturer.

1.3 MACHINE IDENTIFICATION PLATE AND CE MARK

On the left side of the tractor's hitch of the machine there is the identification plate that gives the following information:

- "CE" Mark;
- Country of manufacturer;
- Name and address of the manufacturer;
- Model and type;
- Serial number with year of manufacturer;
- Weight.

The machine is supplied as per standard with:

- Machine use and maintenance manual;
- Manufacturer's "CE" Declaration of Conformity

1.4 MACHINE DECLARATION OF CONFORMITY

BERTI MACCHINE AGRICOLE S.p.A.
Via Musi 1/a - 3 - 37042 CALDIERO (Verona) - ITALY
Tel. +39.045.6139711 - Fax +39.045.6150251
info@bertima.it - www.bertima.it

Dichiarazione CE di Conformità ai sensi della direttiva 2006/42/CE e 2004/108/CE(*)
EC Certificate of Conformity - conforming to EEC Directions 2006/42/CE and 2004/108/CE(*)
EG Konformitätserklärung entsprechend der EU-Richtlinie 2006/42/CE und 2004/108/CE(*)
Déclaration de conformité pour la CEE conforme à la directive de la 2006/42/CE et 2004/108/CE(*)

La Ditta / We / Wir / Nous

BERTI Macchine Agricole S.p.A.
Via Musi 1/A-3
37042 CALDIERO - VERONA - ITALY

dichiara sotto la propria responsabilità, in qualità di costruttore, che la macchina a cui si applica questa dichiarazione, è conforme ai requisiti essenziali di sicurezza e di tutela della salute di cui alla **Direttiva 2006/42/CE** e 2004/108/CE(*). Per la verifica delle macchine sono state consultate le seguenti norme armonizzate:

declare in sole responsibility, that the product to which this certificate applies, conforms to the basic safety and health requirements of **EEC Directions 2006/42/CE** and 2004/108/CE(*), and according to the European harmonized standards:

erklären in alleiniger Verantwortung, dass das Produkt auf das sich diese Erklärung bezieht, mit den grundlegenden Sicherheits- und Gesundheitsschutzanforderungen der **EU-Richtlinie 2006/42/CE** und 2004/108/CE(*), und mit den Anforderungen der gemeinsamen EU-Richtlinien konform ist:

déclarons sous notre seule responsabilité que le produit faisant l'objet de la déclaration est conforme aux prescriptions fondamentales en matière de sécurité et de santé stipulées dans la **Directive de la 2006/42/CE** et 2004/108/CE(*). Nos déclarons que les normes harmonisées suivantes ont été appliqué:

UNI EN ISO 4254-3:2010
UNI EN ISO 4254-1:2010
UNI EN 15811:2010

Nonchè le seguenti specifiche tecniche:
And the following technical specifications:
Und die folgende technische Ausstellungen:
Et les spécifications téchniques suivantes:

ISO 11684:1995 **UNI EN ISO 3767-2:1998**(*)

(*)
Valido solo se la macchina è dotata di dispositivi e accessori soggetti alle direttive/norme armonizzate/specifiche tecniche ivi indicate.
Valid only if the machine is equipped with devices and accessories that are subjected to the directives/harmonized norms/technical terms here indicated.
Nur gueltig, wenn die Maschine mit Teilen und Zubehoer ausgestattet ist, die den hier angegebenen Richtlinien, Normen und Tecnischen Daten entsprechen.
Valable uniquement si la machine est équipée avec des dispositifs et accessoires assujettis aux directives/normes harmonisées/spécifications techniques indiquées ici.

BG Mat

MODELLO -- TYPE **XXXXXXXXXXXXXX**

MATRICOLA -- N° DE SERIE **XXXXXXX**

Custode del fascicolo tecnico
MARIO BERTI
C/o Ufficio Tecnico: BERTI MACCHINE AGRICOLE S.p.A.
Via Musi 1/a - 3 - 37042 CALDIERO (Verona) - ITALY

Caldiero, lì 16/03/2016

per la società / for the Company
für die Firma / pour la société

BERTI® Macchine Agricole S.p.A.
BERTI MARIO
Amministratore Unico

P.PRG_M06r00

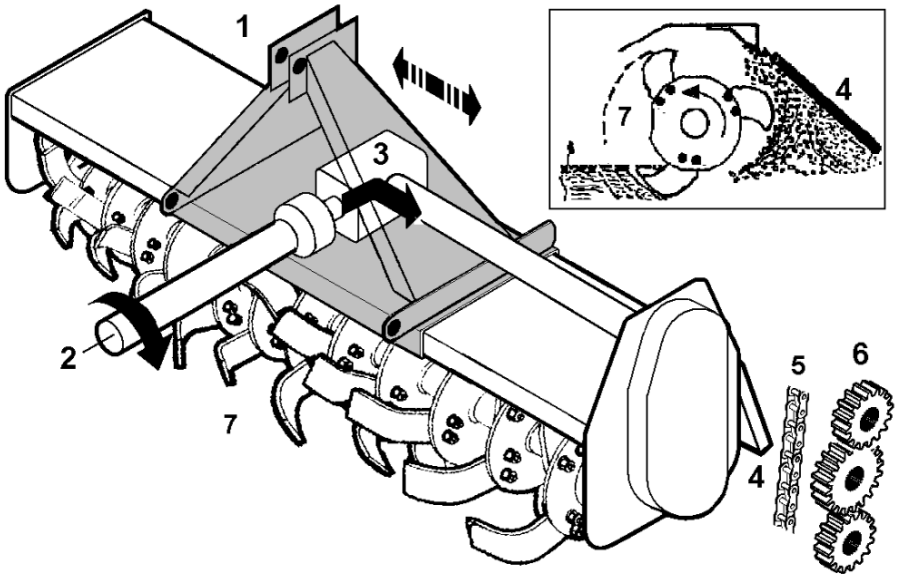
La presente certificazione è parte integrante della macchina
This EC certificate is an integral part of the unit
Die hier beigelegte Erklärung ist wesentlicher Bestandteil der Maschine
Cette déclaration de conformité est partie integrative de l'appareil

Cod. Fisc. e Reg.Impr. di VR n° 00068150234 - P.IVA : 00068150234 - R.E.A. VR 84849 - Cap. Soc. € 151.704,00 iv
Società soggetta a direzione e coordiamento da parte della società HB Holding Berti S.r.l. R.I. di VR03066950241

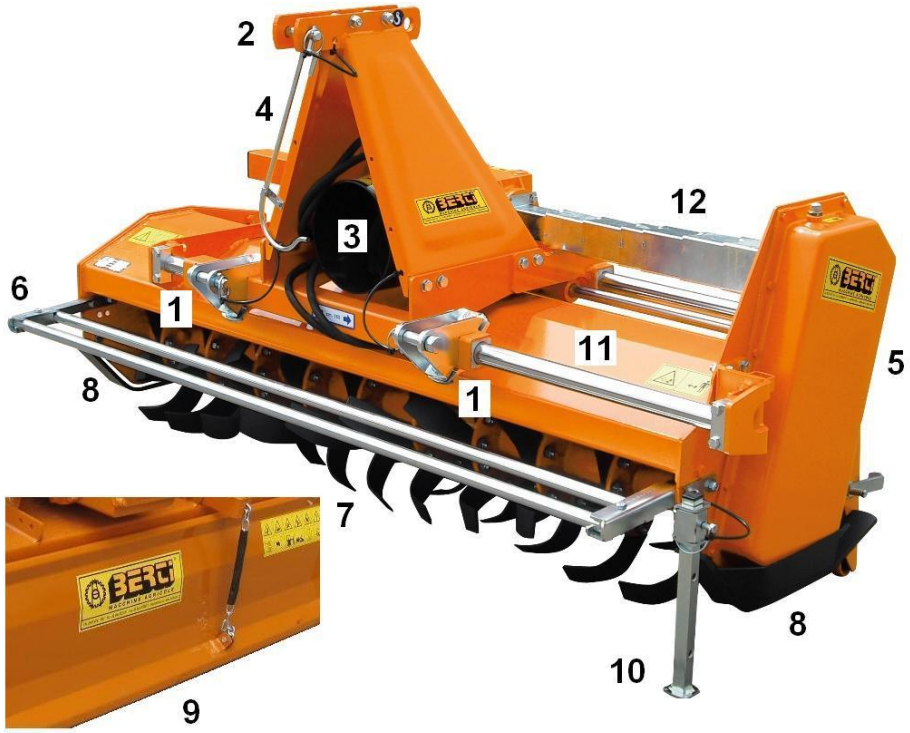
1.5 INFORMATION REGARDING THE MACHINE

1.5.1 DECLARED USE

The side-shift tiller is an agricultural machine designed and manufactured for agricultural use only in vineyards and orchards and for other crops; ideal for cleaning near to and under the foliage of plants thanks to the possibility of shifting.
Supplied with shiftable three-point hitch (1) in order to be hitched to the hydraulic lifting device on the tractors.
The machine is driven by the tractor PTO, via propeller shaft (2) connected to the reducer (3).
The reducer (3) transmits the movement to the lateral chain transmission (5) or to gears (6) on some models, which in turn make the rotor with the hoes rotate (7). Thanks to the work of the hoes (7), which cut the ground and make it hit the rear hood (4), excellent ploughing is obtained, thus guaranteeing the best bed for sowing. The degree of land ploughing depends on the tractor advancement speed.



1.5.2 SOLE AND MERCURIO MAIN COMPONENTS

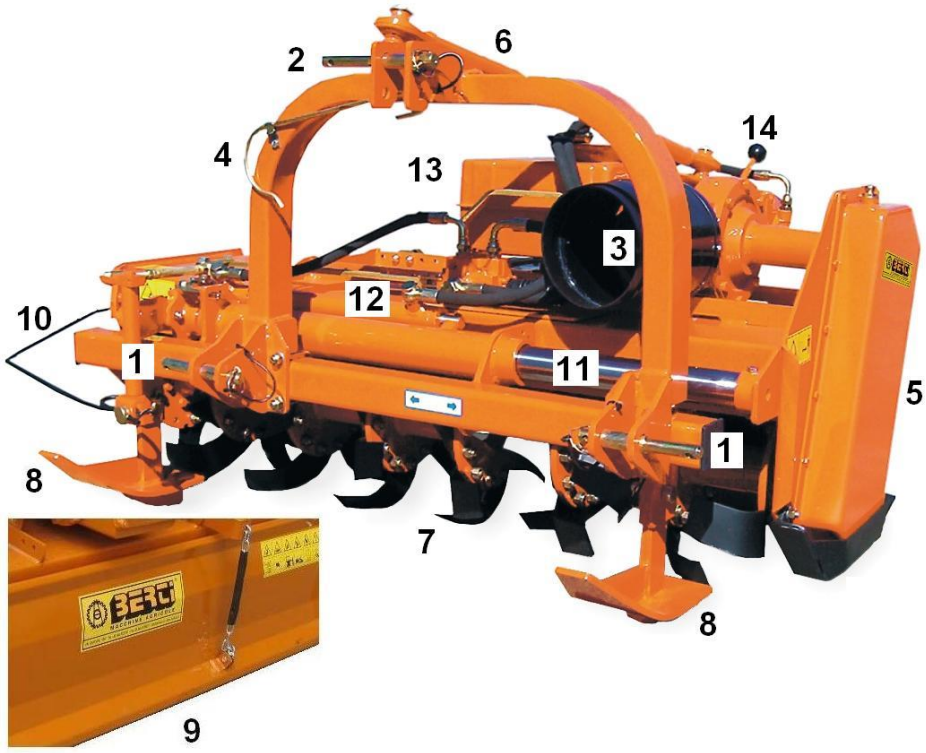


Pos.	Name
1	Lower arms hitch tractor lifting device 3 point hitch
2	3 point hitch tractor lifting device 3 point hitch
3	Speed reducer
4	Universal joint support
5	Lateral chain transmission
6	Front guard
7	Rotor with hoes
8	Work depth adjustment skids
9	Rear hood
10	Front support leg
11	Point hitch sliding guides
12	Transmission telescopic protection

1.5.3 MARTE MAIN COMPONENTS

Pos.	Name
1	Lower arms hitch tractor lifting device 3 point hitch
2	3 point hitch tractor lifting device 3 point hitch
3	Speed reducer
4	Universal joint support
5	Lateral gear transmission
6	3rd point reinforcement tie-rod
7	Rotor with hoes
8	Work depth adjustment skids
9	Rear hood
10	Front support leg
11	3 point hitch sliding guides
12	Shifting hydraulic hoses and cylinder

1.5.4 STELLA MAIN COMPONENTS

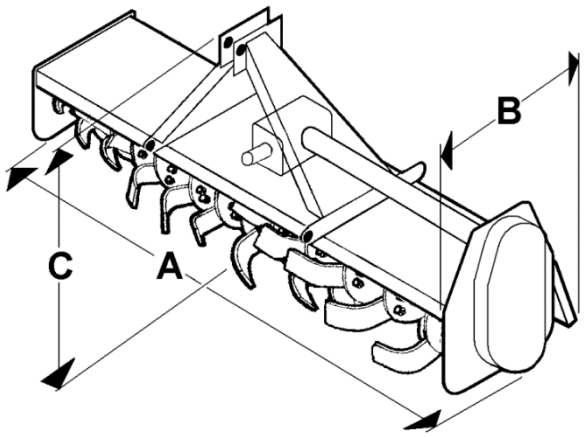


Pos.	Name
1	Lower arms hitch tractor lifting device 3 point hitch
2	3 point hitch tractor lifting device 3 point hitch
3	Speed reducer
4	Universal joint support
5	Lateral gear transmission
6	3rd point reinforcement tie-rod
7	Rotor with hoes
8	Work depth adjustment skids
9	Rear hood
10	Shifting control feeler
11	3-point hitch sliding guides
12	Shifting hydraulic hoses and cylinder
13	Hydraulic oil tank
14	Hydraulic engine engagement lever

1.5.5 DIMENSIONS AND WEIGHTS

The drawing and the following diagram state all maximum clearance dimensions of the complete machines. The weight is relative to the machine complete with PTO drive shaft, excluding any accessories.

Modello	Mis.	**A** cm	**B** cm	**C** cm	Kg
SOLE	**90**	92	75	80	105
	100	107	75	80	115
	120	127	75	80	125
MERCURIO	**100**	115	75	95	275
	120	135	75	95	290
	135	150	75	95	310
	150	165	75	95	325
	165	180	75	95	345
MARTE	**140**	158	95	95	465
	165	183	95	95	495
	185	203	95	95	525
	205	223	95	95	560
STELLA	**140**	158	95	95	515
	165	183	95	95	545
	185	203	95	95	575
	205	223	95	95	590
	230	248	95	95	600



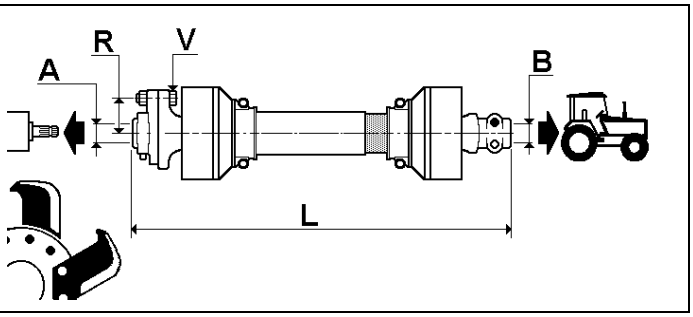
1.5.6 TECHNICAL DATA

Model	Size	Working width Cm.	Tractor hitches cat.	Power min/ max HP	n° PTO revs.	n° rotor revs.	n° hoes	Maximum working depth cm.	Side shift mm. A	Side shift mm. B	Side shift mm. C	Side shift mm. D
SOLE	**90**	85	0/1	10/22	540 1"3/8 Z=6	240	10+10	12	425	425	260	590
	100	100		15/22			12+12		505	505	260	750
	120	120		18/22			14+14		585	585	260	910
MERCURIO	**100**	100	1	20/40	540 1"3/8 Z=6	260	18+18	15	500	500	280	720
	120	120		20/40			21+21		585	585	280	890
	135	135		25/40			24+24		665	665	280	1050
	150	150		30/40			27+27		745	745	280	1210
	165	165		35/40			30+30		825	825	280	1370
MARTE	**140**	140	1/2	30/75	540 1"3/8 Z=6	220	18+18	15	670	740	320	1090
	165	165		40/75			21+21		810	820	410	1220
	185	185		50/75			24+24		920	930	520	1330
	205	205		60/75			27+27		1030	1040	630	1440
STELLA	**140**	140	1/2	30/75	540 1"3/8 Z=6	220	18+18	15	490	920	140	1270
	165	165		40/75			21+21		520	1110	120	1510
	185	185		50/75			24+24		520	1330	120	1730
	205	205		60/75			27+27		700	1370	300	1770
	230	230		60/75			30+30		700	1590	300	1990

1.5.7 PTO DRIVE SHAFT

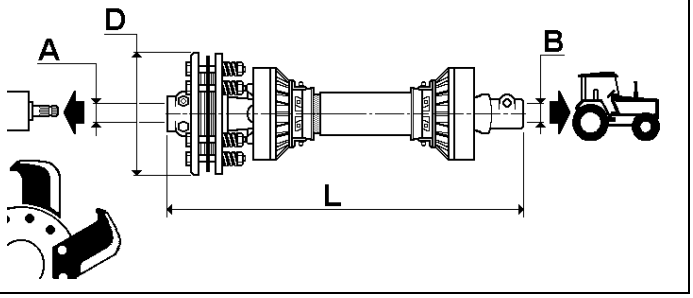
Every machine is supplied complete with «CE» marked universal joint, with safety device against overloads.
It is prohibited to exchange the supplied universal joint with joints different to the original as the correct margin of safety is no longer guaranteed.
The tables give the dimensions and features for recognition of the universal joint relative to each individual machine.
The PTO drive shaft guards must always be efficient, must be controlled periodically and fixed with the relative chains to prevent their rotation.
Read the instructions contained in the instruction book attached to each universal joint.

Model	L mm	A	B	V	R mm
SOLE	700	1”3/8 Z=6	1”3/8 Z=6	6x40 8.8	50
MERCURIO	900	1”3/8 Z=6	1”3/8 Z=6	8x45	55



V= safety bolt R= working range

Modello	L mm	A	B	D mm
MARTE	1000	1”3/8 Z=6	1”3/8 Z=6	200
STELLA	1000	1”3/8 Z=6	1”3/8 Z=6	200



1.6 NOISE LEVEL AND VIBRATIONS

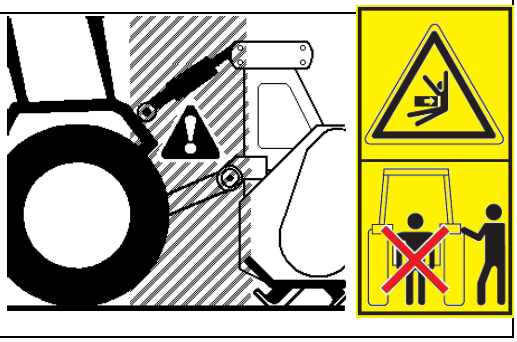
The machine exceeds 80 dB (A) also in idle running periods and hearing must be protected from the noise generated during work processes: use hearing protection or ear plugs.
It is mandatory for the user to measure sound emission from the tractor - mulcher unit following installation and always before commissioning the machine, in compliance with that envisioned by the Laws in force.
The noise level of the tractor - mulcher unit may increase through time due to wear: it is recommended to periodically evaluate the risk of exposure to noise.
The use of PPD is mandatory and they must guarantee the reduction of the noise level recorded in compliance with the Laws in force.

2 SAFETY AND ACCIDENT-PREVENTION STANDARDS

2.1 GENERAL SAFETY STANDARDS

Correct use of the machine, strict observance of the Standards indicated herein and the rigorous application of all precautions aimed at preventing dangerous situations, contribute to averting accidents or injuries, ensure better and longer operation of the machine and reduce faults to a minimum.
"BERTI MACCHINE AGRICOLE S.P.A." declines any objective and subjective liability in cases where the regulations indicated in this manual have not been applied and respected.

	The machine is not designed to be used in sectors other than the agricultural sector and any use different to that specified is considered improper.
	The machine must be used by a single operator driving the tractor. It is mandatory for the user to check the correct tractor - mulcher coupling.
	Before getting off the tractor and before any maintenance on the mulcher, engage the parking brake, switch off the engine, remove the keys from the dashboard.
	It is prohibited to abandon and/or leave the tractor-mulcher unit when the tractor is running.
	During use, the user must have sufficient visibility of the work areas deemed dangerous. Therefore it is good practice to keep the tractor mirrors and windows in an excellent state.
	The machine must only be used by authorised, educated and appropriately trained staff. As well as having read the instructions contained in this manual, the user assigned must have understood and assimilated the same, must have had sufficient preparation regarding the correct use of the machine, must have a driving license and be an adult. The operator must contact the manufacturer if in doubt regarding use of the machine and interpretation of this manual.
	Never use the machine without knowing its features.
PERICOLO	The manual must always be readily available so that it can be consulted when necessary. If it is lost or damaged, request a replacement copy from the manufacturer.
	The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine. 
	The machine may emit dusts during use with dry products (hay, straw, etc.). It is recommended to periodically check the cab ventilation system filter and to always use suitable protection systems for the respiratory tract, such as dust masks.
	The operator assigned to the machine must not wear clothing that can cause entanglement.
	It is prohibited to use the machine to lift persons, animals or objects.
	It is prohibited to use the flexible hoses as handholds. These components are mobile and are not a stable support.
	The work area must be inspected before using the machine, removing any stones, scrap iron, steel cables, manholes, stumps and all materials and obstacles without limits, which can constitute a source of danger, accident and serious injury/damage to the user, persons, animals and objects.
	The user must make sure that no person or animal stops within the machine work range during operation of the same. The user is responsible for stopping the machine immediately and clearing persons and animals from the work range. Never activate the machine near to persons or animals within or transiting through the machine working range.

PERICOLO	If the machine is to be used on roads and public areas, all precautions must be taken to protect persons, animals and objects, for example using safety staff, warning signs, positioning them at the limits of the machine working range, in compliance with the Laws in force in the country of use.
	Never work in areas with steep counterslopes, on slippery land and in areas/zones that reduce tractor adherence to the ground. Always pay great attention when changing direction.
	Use the machine during the day and with perfect visibility.
	It is prohibited to work in adverse weather conditions such as storms, snow, high winds, rain, fog etc..
	Do not operate the machine on muddy, sandy or soft ground.
	Pay attention to the risk of unintentional contact of the machine with high voltage overhead lines.
	Do not use the machine when ill, tired or under the influence of medication, drugs or alcohol..
	Carefully check the machine each time before starting it..
	Before using the machine, ensure that all the safety devices are correctly positioned and in good working order. If these are broken or damaged, replace them immediately.
	It is prohibited to remove or tamper with all guards and/or safety devices.
	Make sure that the safety pictograms are in good condition, legible and clean. If the pictograms have deteriorated, they must be replaced with other originals obtained from the manufacturer and placed in the position indicated in the instruction manual (paragraph 2.3). If dirty, clean them with a damp cloth.
	The signs applied to the machine provide a series of important instructions: comply with them for your own safety.
	It is prohibited to make any modification that alters the original state of the machine.
	Any arbitrary modification made to this machine relieves the manufacturer from any liability for damage or injury, which can happen to the operators, third parties and objects.
	Keep the machine clean, eliminating foreign materials (debris, tools, various objects), which may damage its functioning or harm the operator.
	The area between the tractor and the machine is very dangerous, before accessing the same, make sure: • that the propeller shaft rotation has stopped • that the machine rests stably on the ground • that the tractor is off • that the parking brake is engaged • that a wedge or stone is inserted under the wheels. 

	The following paragraphs list other very important Safety Standards. It is mandatory to read this instruction manual entirely before using the machine.

2.2 FIRE PREVENTION MEASURES

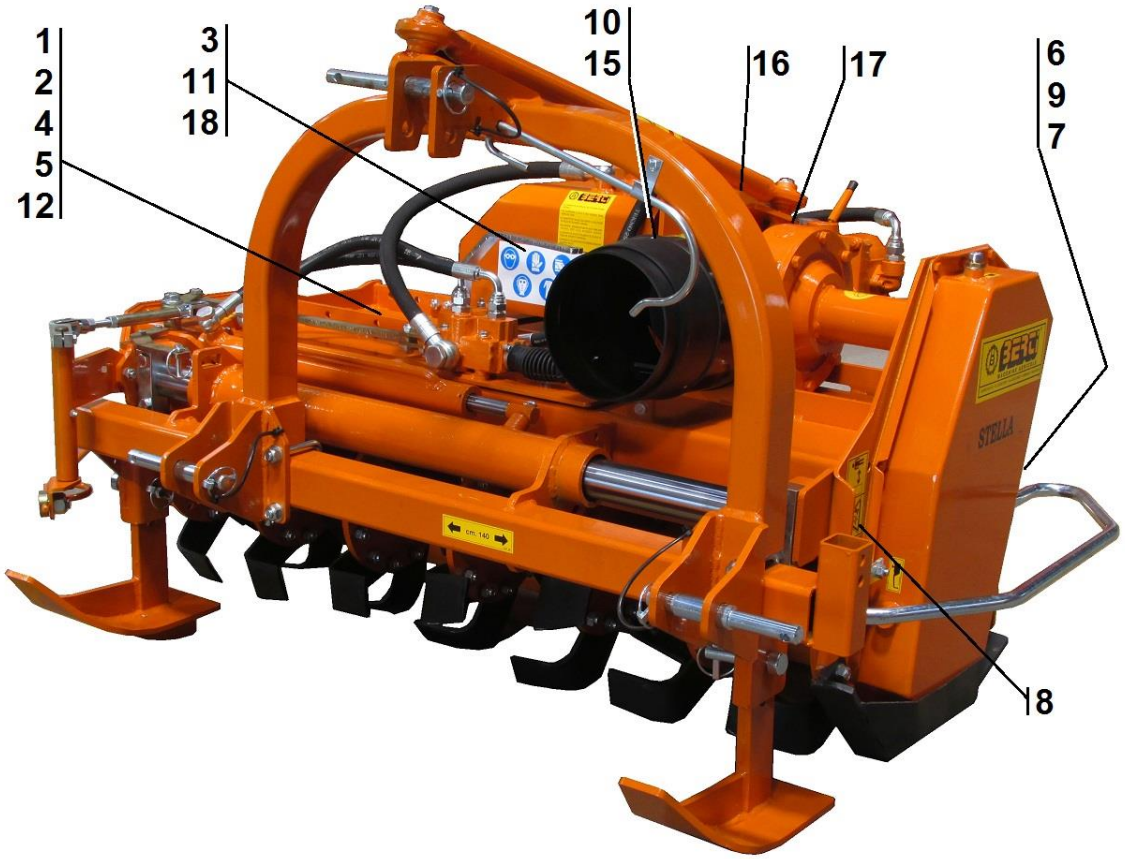
PERICOLO	Keep an extinguisher with suitable capacity on board the tractor and periodically service the same. The extinguisher must only be used by staff capable of operating it, therefore it is the user's responsibility to supply training courses.
	It is mandatory that staff assigned to operating the machine is informed regarding the principal procedures in the event of fire.
	Do not use the machine in areas with risk of explosions and/or fire.
	Maintenance residues, e.g. cloths or material replaced containing inflammable substances must be kept away from sources of ignition and disposed of in compliance with the Laws in force in the country of use.
	Use suitable extinguishing equipment: e.g. Carbon dioxide, foam, chemical powder.
	Do not weld in the proximity of tanks, pipes, cans, electrical cables or flammable materials in general.
	When welding protect flammable parts with appropriate guards.

2.3 SAFETY SIGNS

Make sure that the safety pictograms are in good condition. If the pictograms have deteriorated, replace them with originals obtained from the manufacturer and place them in the position indicated in the operating and maintenance manual. Make that all safety pictograms are legible. Clean them using a cloth, water and soap.

1 	**ATTENTION:** Read the instruction book before starting to operate.	**2** 	Before any maintenance operation, stop the machine, rest it on the ground and consult the instruction book.
3 	**ATTENTION:** Pipes with fluids. In the event of breakage of high pressure flexible hoses, pay attention to the jet of oil.	**4** 	**ATTENTION**: it is prohibited to climb onto or be transported by the machine.
5 	Danger of crushing during the opening phase. Keep at a due distance from the machine.	**6** 	**ATTENTION - DANGER** shearing hands.
7 	**ATTENTION – DANGER** of projecting objects. Keep at a safe distance.	**8** 	**ATTENTION – DANGER** of of contact with rotating tools. Keep at a safe distance
9 	**ATTENTION - DANGER** never approach a working machine	**10** 	**ATTENTION - DANGER** of entanglement with the PTO drive shaft. Do not place hands near moving parts.
11 	**PERSONAL PROTECTION DEVICES**	**12** 	**ATTENTION – DANGER** Wait until all moving components have completely stopped
13 	**OIL LEVEL.**	**14** 	**GREASING POINTS.**
15 	540 or 1000 rpm, mandatory working speed and direction of rotation of the PTO; working speeds must not be changed	**16** 	**LIFTING POINT.**
17 	Risk of scalding, do not touch the indicated surfaces during and after use.	**18** 	Do not stand near the operator's platform with high-pressure flexible pipes unless protected by sheaths (Optional)

2.4 POSITION OF THE PICTOGRAMS ON THE MACHINE



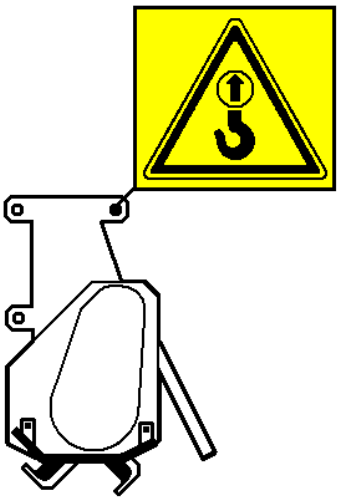
3 USE

3.1 INTRODUCTION

	Before using the machine, the manual must have been read thoroughly, understood and you must have familiarised with the machine. Use is recommended by skilled and suitable trained persons.
 PERICOLO	Before climbing down from the tractor and before any maintenance operation on the tillers, engage the parking brake, switch the engine off and remove the ignition keys from the dashboard.
	The safety of the user and the persons present in the vicinity depend on his capacity of judgement and caution when using the machine. It is therefore necessary to be fully aware of its functionality and all Safety Standards relative to its use.
	The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine. 
	The machine must always be in good working order and must only be repaired using original spare parts.

3.2 HANDLING AND TRANSPORT

Pay maximum attention to safety during loading and unloading operations, which must be performed by qualified staff. (slingers, forklift operators etc.). Check suitability of the lifting means by referring to the dimensions and weights table on page 8.
If the machine must be lifted, a suitable hook and lifting chain must be used, applied in the point indicated in the pictogram.
To transport the machine use a vehicle with adequate power and dimensions and appropriately fitted.
Once loaded, the machine and any detached parts (e.g. the propeller shaft), must be fastened down using anchoring ropes.



The operations stated can have dangerous situations; moreover, given the dimensions and weights of the parts, a suitable lifting means must be used.

3.3 MACHINES SUPPLIED PARTIALLY DISASSEMBLED

Due to clearance, machines may be supplied with units detached, **however contained and fixed inside the same packaging.** Normally they are the side and front guards.
Assemble these parts, also making reference to the spare parts catalogue tables.
In particular, respect the values of the coupling torques of the screws supplied, as indicated in the table on page 25

3.4 TRANSIT ON PUBLIC ROADS

ATTENZIONE

Before performing on-road travel make sure that all the machine's parts are whole and in good conditions. In case you have to travel a public road, you are expected to strictly comply with the Highway Code, paying particular attention to speed.
In case you have to travel a public road, you are expected to strictly comply with the Highway Code, paying particular attention to speed

Moreover, it is important to check the following before going onto public roads:

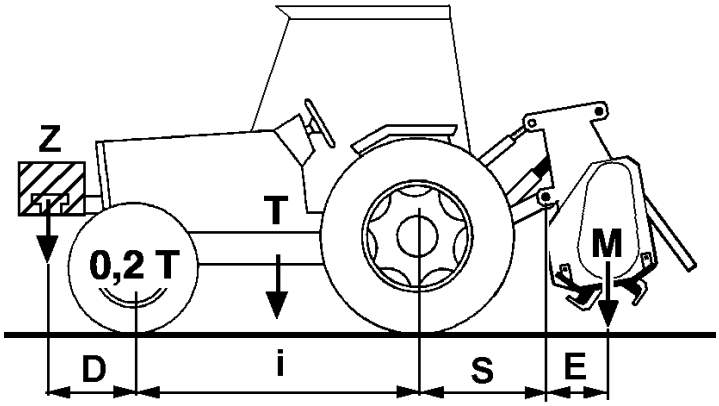
- It is mandatory to equip the vehicle with a flashing yellow or orange light.
- you must thoroughly clean the tractor tyres from mud residues
- the tractor PTO must be disconnected
- check that all machine parts are integral and in good working order
- that the machine is blocked and does not swing sideways, operate on the lifting device adjustment chains
- that the guards are present for the elements projected outside the clearance area
- if envisioned, clearance signs must be applied
- that load limits on the axles are respected. (see next chapter)
- the machine is high enough with respect to the ground, in order to prevent contact with the same
- the machine must be positioned in the centre of the tractor in order to guarantee maximum stability. Never travel with the machine in offset position.

3.5 MACHINE TRANSPORT PROCEDURE

ATTENZIONE

The weight of the machine modifies the stability of the tractor-tiller unit, affecting the ability to steer and brake, therefore you must travel at moderate speed.

In particular, remember that the front axle must always be burdened with a load equal to at least 20% of the tractor weight. Check the lifting capacity and stability of the tractor via the following formula and, if necessary, apply ballasts to the front..



M x (S+E) ≤ [0,2 x T x i] + [Z x (D + i)]

i = tractor wheel c/c distance
D = distance of the front axle from the ballasts
S = distance between the centre of the rear axle and the centre of the lower arms hitch spheres of the tractor lifting device
E* = distance from the plough barycentre to the lower arms hitch spheres of the tractor lifting device (see table below)
T = tractor mass + 75 kg (operator)
Z = ballast mass
M** = machine mass (see dimensions and weights of page 8)

Quota E mm	SOLE	MERCURIO	MARTE	STELLA
	350	**380**	**500**	**550**

If the machine is assembled onto tractors that were type-approved and registered before 6 May 1997, check that the following formula is respected: **M<0.3xT**

3.6 VISIBILITY

The work areas can be controlled with the tractor rear view mirrors and the operator's sight..

ATTENZIONE

When reversing dead spots may be created, which are not visible in the rear view mirrors

3.7 HITCHING THE MACHINE TO THE TRACTOR

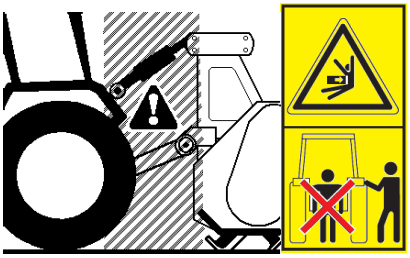
Before installing the machine, check that it is in perfect working order, resting on the ground and in a stable position. Check that the lubricants are at the correct level and that all parts subject to wear and/or deterioration are perfectly efficient and that the guards are integral and functioning.

ATTENZIONE

It is mandatory to check the correct tractor - mulcher coupling. The lifting capacity and the stability of the tractor must respect the parameters described in chapter 3.4

The area between the tractor and the machine is very dangerous, before accessing the same to make the connection:

- operate on flat and solid ground
- switch the tractor is off
- engage the parking brake
- move away all unauthorised persons from the machine working range



Before using the machine you need to familiarise with the controls and their operation.

Always keep all body parts inside the tractor cab in all circumstances, to minimise the possibility of exposure to any external dangers

Before getting off the tractor and before any maintenance on the mulcher, engage the parking brake, switch off the engine, remove the key from the dashboard.

3.7.1 HITCHING PROCEDURE

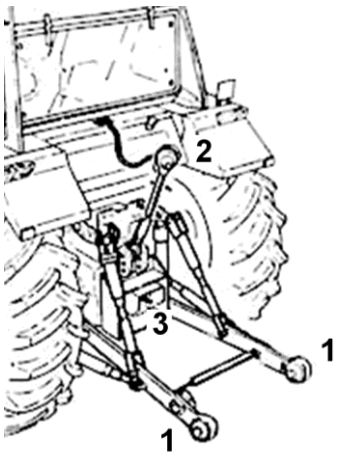
ATTENZIONE

Check the compatibility of the tractor with the machine to be connected (power, hitches category, PTO speed etc.), respecting the values stated in the technical data table on page 9.
Coupling to tractors with higher or lower power could cause dangers due to stability and unexpected breakage.

The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine
.

ATTENZIONE

These procedures are very hazardous.
Avoid standing in front of the machine when it is approached by the tractor. Avoid the presence of extraneous persons.
The P.T.O. must be disengaged during these installation procedures.



After having verified that previously described, connect the machine to the tractor, observing the following procedure:

- Remove the shear pins and the pins from the machine hitch ports 1
- With the tractor in reverse gear and by activating the lifting device, fit the lower arms 1 with the corresponding lower hitch ports 1 of the tiller
- Insert the pins and block them with the relative shear pins
- In the same way, connect the third point of the tractor 2 to the corresponding port 2 on the machine
- Adjust the third point in a way that the machine is horizontal to the ground
- Lift and fix any support feet with which the machine is supplied

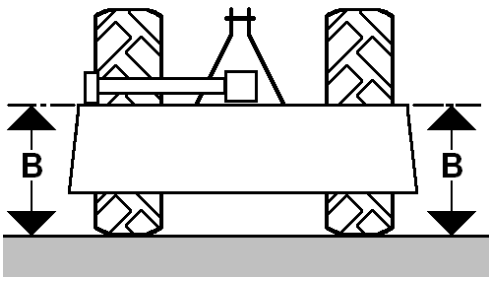
ATTENZIONE

ATTENTION: MAKE SURE THE SHEAR PINS HAVE BEEN INSERTED INTO THE PINS OF THE HITCH PORTS 1 AND 2

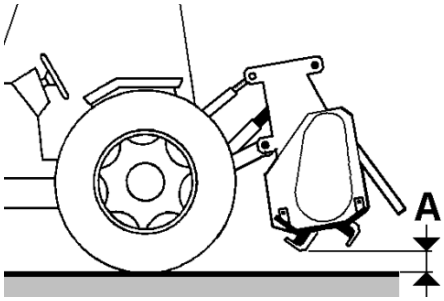
3.7.2 CHECKS AFTER CONNECTION

This operation must be performed on a flat floor.
Lift the machine from the floor and check:

- machine planarity with respect to the floor, in a way to obtain a same quote B. Also in this case, also operate on the adjustable arm of the tractor lifting device (see diag. 1)
- adjust the lifting device in a way that the machine cannot be lifted from the floor over quote A = 35 cm. in order to safeguard the propeller shaft (see diag. 2)

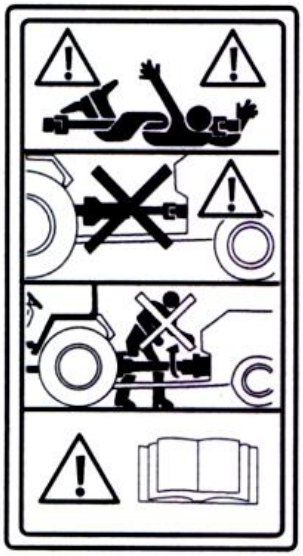
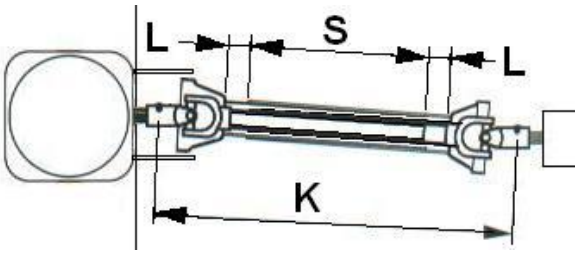
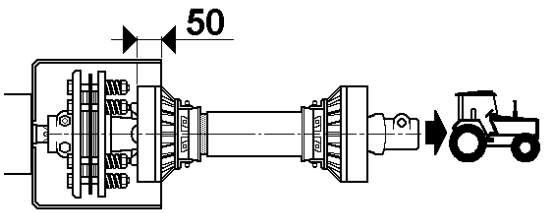
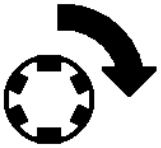


Dis.1



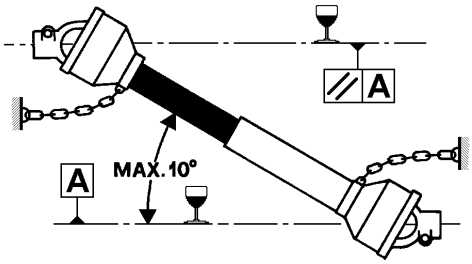
dis.2

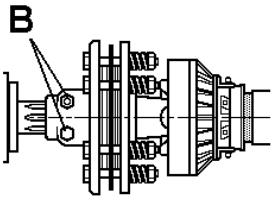
3.8 PTO DRIVE SHAFT CONNECTION

	During operation, the PTO drive shaft can cause risks and hazardous situations. Therefore: • read and keep the use and maintenance handbook attached to the PTO drive shaft; • check that the PTO drive shaft is suitable for transmitting the required power; • only use the PTO drive shaft supplied with the machine; • check that guards are properly installed, integral and effective; • replace worn, broken or missing guards; • switch the tractor motor off before working on the PTO drive shaft or on the machine itself; • never allow children or unauthorised persons come near to the machine when it is operating and/or undergoing maintenance; • when not in use, rest the PTO drive shaft on a relevant support; • wear suitable garments (that cannot be caught by the machine or pulled into it), especially close-fitting garments (e.g. work overalls with safety wrists and ankles).	
ATTENZIONE	On first installation of the PTO drive shaft, measure the distance K between the P.T.O. buttons grooves with the machine resting on the ground, level and with the overgear axially aligned with the tractor's P.T.O. If necessary, adapt the length of the PTO drive shaft, making sure that the telescopic tubes overlap for a length S that permits between 40 and 50 mm of play L at their ends. This operation must be carried out on commissioning, at every replacement and every time the machine is installed on another tractor. After assembly of the PTO drive shaft, fix the guard using the appropriate chains on both sides. When the machine is put to rest, house the PTO drive shaft on a relevant support, envisioned on the three-point drawbar. After installation of the propeller shaft, lift and lower the machine several times to check that the shaft pipes are free to slide without jamming and that the minimum overlapping distance **S is 150 mm**.	
	Check that there is overlap of at least 50 mm between the propeller shaft guard and the guard mounted on the machine PTO, as envisioned by the Safety Standards	
	Check the direction of rotation of the propeller shaft PTO. Looking from the rear of the tractor it must turn clockwise.	

3.8.1 USING THE PTO DRIVE SHAFT

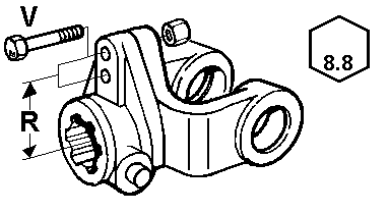
- Read the instruction book attached to the PTO drive shaft thoroughly. To guarantee correct use and long duration, the following Standards must be respected:
- Adjust the 3rd tie-rod in a way that, during the job, the power take-offs always work in parallel. Trunnion breakage is prevented in this way.
- Always disconnect the PTO when the PTO drive shaft makes an angle that is too wide (over 10 degrees) and when it is not used.
- Block the rotation of the PTO drive shaft guard using the chains supplied.
- Whenever the PTO drive shaft supplied has hub with bolts for blocking B, make sure that these are fastened tightly.





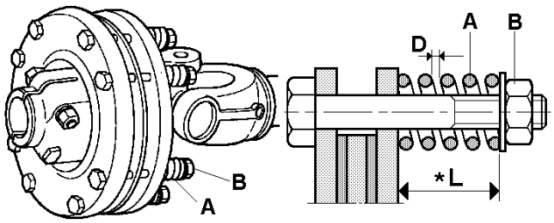
3.8.2 PTO DRIVE SHAFT WITH LIMITER

For the **SOLE and MERCURIO** tillers: the PTO drive shaft has safety bolt limiter V against overloads. If the safety bolt V should break, it must be replaced with a bolt V of the same size and material (read the value given on the bolt head).
Positioned in the exact hole indicated (quote R) for every type of machine.
See table 1.5.5. which gives the values of V and R.



3.8.3 PTO DRIVE SHAFT WITH CLUTCH

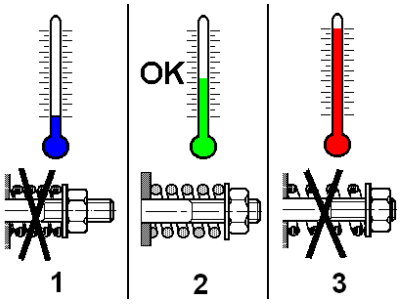
For the **MARTE and STELLA** models: the PTO drive shaft has safety clutch against overloads.
The springs A loaded by relevant screws B are used to keep the pressure on the friction plates constant. Tightening the screws increases the pressure on the friction plates, which will only intervene when the load is exceeded.
For correct operation of the clutch, the force exerted by the springs must not exceed certain values; otherwise it can be blocked, eliminating all safety devices. During use it may be necessary to uniformly tighten the bolts as brake lining wear makes the pressure reduce..



Never tighten the screws fully home, eliminating the gap D on the springs because the clutch will block, thus annulling every safety device.

3.8.4 CONTROL AND ADJUSTMENT OF THE CLUTCH

To make sure that the clutch operates correctly, just periodically check the **temperature.** When working in heavy duty conditions it must be **warm to the touch. (2)**
If it is cold (1), it means that it is blocked, therefore uniformly loosen all screws tightening the springs by half a turn.
If it is too hot (2), it means that the springs are too free, therefore uniformly tighten all screws tightening the springs by half a turn.
N.B.: If all of the nuts have been tightened and the clutch still slips, the friction plates must be replaced.



Grease the PTO drive shaft according to the recommendations envisioned in the instruction manual referring to the same.
Do not work with PTO drive shafts that have no protections.
Read the instruction handbook attached to the PTO drive shaft thoroughly.
Check that the safety pins are well inserted and efficient.
Make sure the restraining devices have been inserted inside the connection jack..

4 STARTING THE MACHINE

Before each start-up, follow that stated below

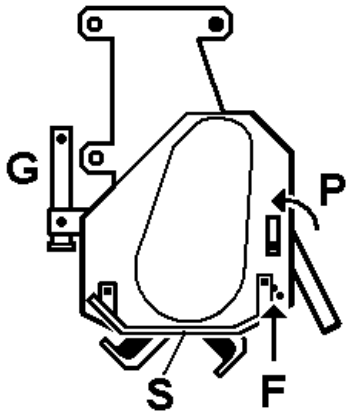
- Do not allow persons, animals or objects to approach or stop in the machine's work range.
- Before using the machine you need to familiarise with the controls and their work operation.
- Always keep the guards integral, in position and perfectly efficient.
- The tractor must have the engine off, the parking brake engaged, the power take-off disengaged, the ignition key removed from the dashboard and kept in a safe place by the user.
- Always inspect the machine, controlling tightness of all screws and nuts and the presence of damage which must be repaired before start-up, in order to take the machine back to its original state.
- Check that the position and the conditions of the ground in the work area do not jeopardise the stability of the tractor – tiller in any way..
- Make sure that the safety pictograms are in good condition. If the pictograms have deteriorated, replace them with originals obtained from the manufacturer and place them in the position indicated in the instruction manual. Make that all safety pictograms are legible. Clean them using a damp cloth.
- The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine.

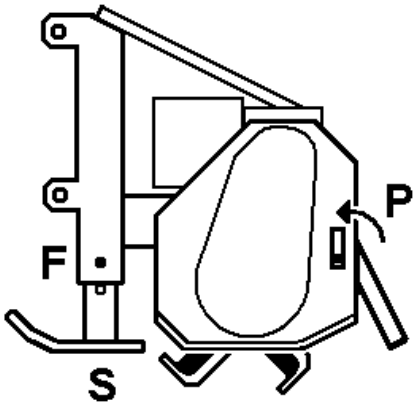
4.1 WORK STAGE

Make sure that all previously-described Standards are satisfied. With the machine correctly hitched to the tractor, move towards the working area and then proceed as follows:

1) Lift and block the support leg G (excluding Stella tiller)
2) Release the rear hood retainer P
3) Using the lifting device controls, lower the machine until the hoes are 5/10 cm from the ground;
4) Engage the PTO and gradually accelerate the tractor until reaching the working rotation speed of the tractor PTO;
5) Using the lifting device controls, sink the tiller slowly until it rests on the side skids, which adjust the work depth, engage the gear and start to work (the lifting device must remain in the floating position);
6) Travel a short tract, stop hoes rotation, switch the tractor off and then control:
   A. **working depth**: can be adjusted via the position of the 2 side or front skids S (Stella tiller only)
   B. **ploughing**: adjustable via the rear hood or with the tractor advancement speed.

(see chapter 5 for the adjustments).



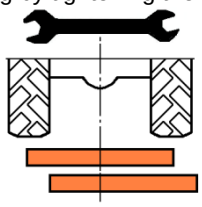


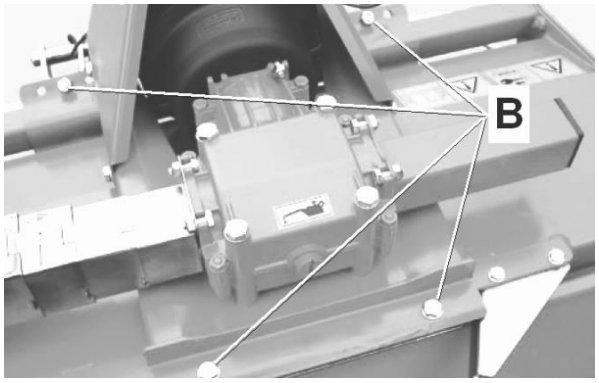
4.2 SHIFTING

The main feature of the side-shift tillers is that of being able to work also when shifted to the right side of the tractor, thus allowing to work in orchards and vineyards. Every machine has a different type of movement, as illustrated in the following chapters.

4.2.1 SOLE TILLER SHIFTING

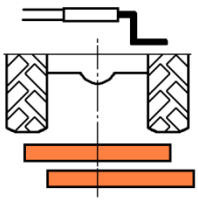
This model has simple manual movement.
To shift, loosen the four bolts B and shift the machine to the desired position. Block everything by tightening the 4 bolts B again

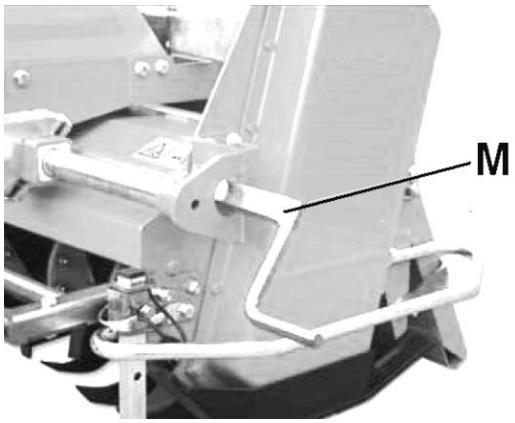




4.2.2 MERCURIO TILLER SHIFTING

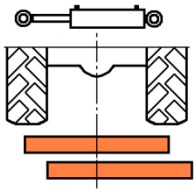
This model has simple manual crank movement.
To shift, operate on the crank M and shift the machine to the desired position.

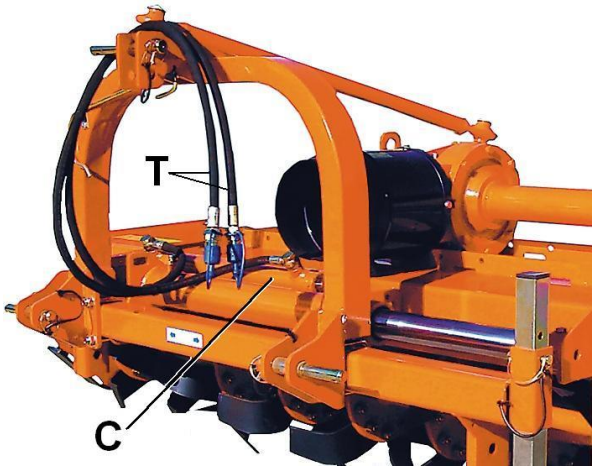




4.2.3 MARTE TILLER SHIFTING

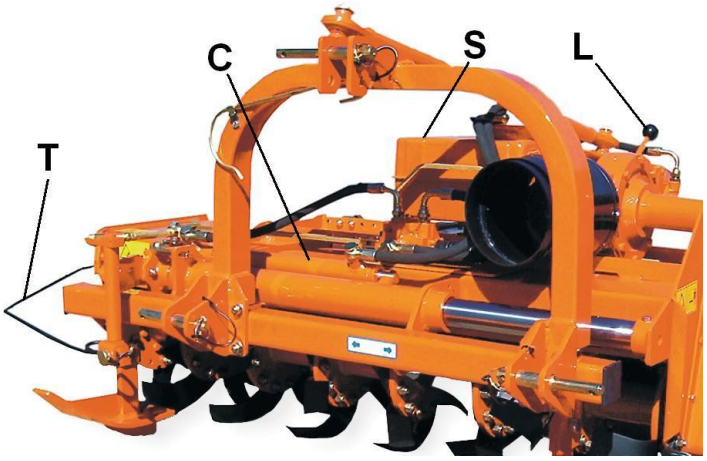
This model has hydraulic cylinder C shift, controlled via the two hydraulic hoses T from the tractor distributor. Therefore, connect the two hydraulic hoses T to the tractor distributor and use the relative control lever to shift the machine to the desired position.
N:B.: Perform shifting with the machine advancing in the ground or with the machine lifted out of the ground.





4.2.4 STELLA TILLER SHIFTING

This model has hydraulic cylinder C shift, activated by the relevant feeler T, which detects contact with the plants and controls shifting.
Everything is activated by an independent hydraulic plant made up from a hydraulic oil tank S and a hydraulic engine activated by the tractor PTO.
When using the machine without shifting, the hydraulic plant can be deactivated using the control lever L..



4.3 RECOMMENDATIONS FOR USE

- **Never curve or reverse with the work machine in the ground fig. 1 and fig. 2**
- **Adjust the tractor third point in a way that the machine always works slightly inclined backwards in a manner that angle A is always equal to 90° or slightly larger (2° or 3°). Entry into the ground to be worked is thus favoured Fig.3**
- **Working machine speed must never exceed 8 km/hour**
- **Always put the machine into the ground slowly, avoiding sudden downward movements**
- **Moderate speed on stony ground**
- **When working on hills, if possible proceed «by climbing» up the slope.**

Fig.1

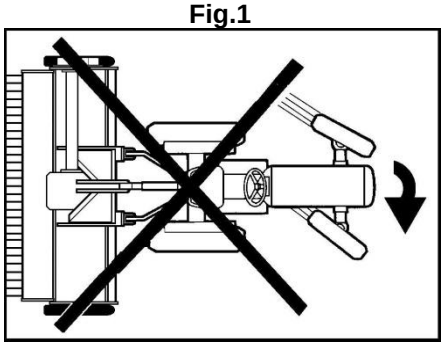


Fig.2

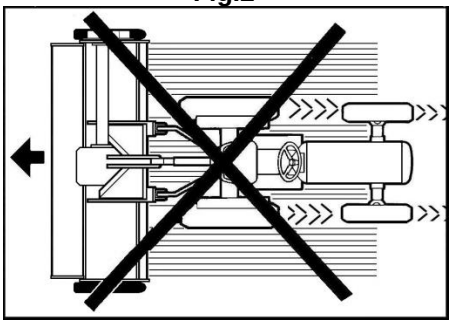
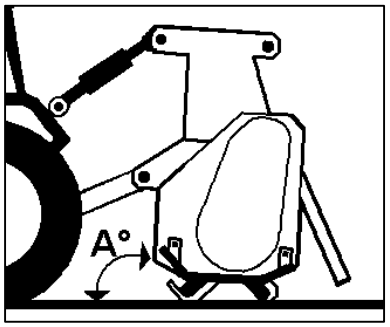


fig.3



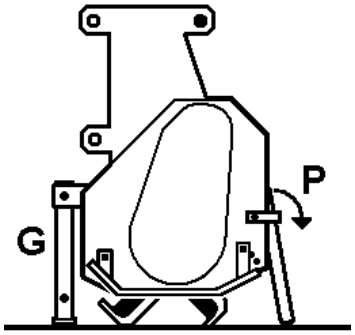

ATTENZIONE

**During the work phase, the rotating hoes may lift stones or sharp objects.
Therefore check that there are no persons or animals within the machine working range and that the operator is protected from any projected pieces.**

4.3 UNHITCHING THE MACHINE

The procedures described below can create danger situations: keep extraneous persons away from where the machine will be positioned and from its immediate vicinity.

Comply rigorously with the following instructions in order to unhook the machine from the tractor:



1. Make sure that the tractor is on flat, stable ground;;
2. Disengage the P.T.O.;
3. Put the tractor's brakes on;
4. lower the support leg G (excluding Stella mod.)
5. fasten the rear hood retainer P
6. rest the machine completely on the ground and switch the tractor off;
7. disconnect the third point fixing pin;
8. remove the pins from the lower arms and move the lifting device downwards
9. Disconnect the cardan shaft from the tractor and rest it on the bracket;
10. for the Marte model, disconnect the 2 hydraulic hoses from the tractor distributor

Put the connection pins and safety clip pins back in their housings on the drawbar so you will be sure to find them when you use the machine again.

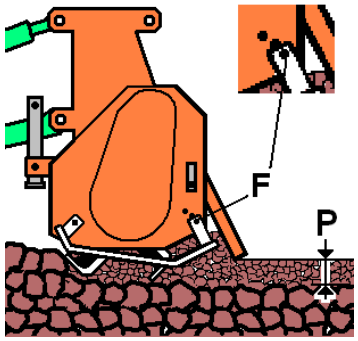
The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine.

5 ADJUSTMENTS

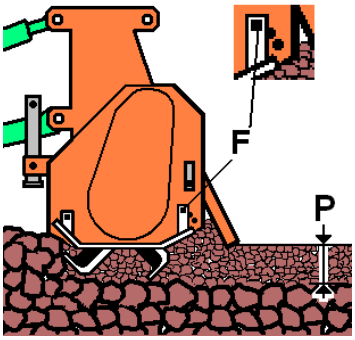
Attention: be sure that the P.T.O. is disengaged. The tractor must be braked and switched off or disconnected.

5.1 ADJUSTING WORK DEPTH

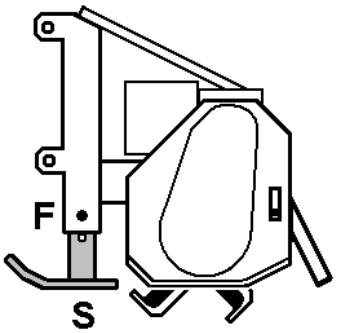
The adjustment of the work depth P of the machine is determined by the position of the skids.
Adjust the skids by loosening the screw F, positioning the skid on one of the other holes in the sides.
To decrease the depth, the skid must be positioned on a low hole and fixed using screw F see diag. 1.
To increase the depth, the skid must be positioned on a high hole and fixed using screw F see diag. 1.
For the Stella model, adjust the two front skids S by means of the pin, using one of the holes F see diag. 3



draw.1



draw.2



draw.3

The operations described above must be performed on both sides of the roller, respecting the same regulation

5.2 REAR HOOD

Depending on ploughing desired, adjust the hood via the chain C.
If the ground is to be well-ploughed, the hood must be kept low. The higher it is adjusted the less the land is ploughed.
On humid land it is advised to keep the hood high to prevent the rotor jamming.
It must also be kept high in the presence of stony ground in order to favour material discharge.
Use the lateral retainer to block the hood to prevent falling only when detached from the machine. The retainer must always be left free during the work phase.

Unblocked hood

Blocked hood

6 MAINTENANCE

In case of failure, the operator must switch off the PTO drive shaft rotaton, remove the ignition key, get off the tractor to assess the problem and intervene on the machine if needed.

This instruction manual must have been read and understood thoroughly before performing any maintenance on the machine.

Please note that all maintenance must be performed by qualified and trained personnel with the machine stopped.
It is prohibited to perform maintenance and repairs in the open and in places that are not suitably equipped..

The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine.

Used oil must be properly recovered and should not be released in the environment, since, according to the prevailing legislation, it is classified as hazardous waste and as such should be given to specialised collection sites. Therefore contact the nearest Used Oils Consortium.

The following operations must be carried out before starting any maintenance operation

- during maintenance the machine must be placed on flat and compact ground;
- switch off the tractor engine, operate the parking brake and remove the key from the dashboard;
- Only perform any maintenance when the temperature of the oil has dropped below 60°C.;
- always use appropriate Personal Protection Equipment (safety shoes, overalls and work gloves, etc.…);
- provide all forms of accident prevention for the type of operation being conducted;
- if you use compressed air to clean the machine, you must protect yourself with special glasses;
- when maintenance operations lead to access machine parts that cannot be reached from the ground, and in all cases points higher than 1.50 m from the ground, use a ladder or platform in compliance with the Standards in force;
- do not carry out repairs that you do not know. Always follow instructions and if without these contact the dealer or experienced staff;
- attention: replace worn or cracked tubes every time they are damaged;
- Do not use lifting points different to those prescribed.
- Make sure that the lifting equipment is suitable to carry out the operations in compliance with Safety Standards in the country of use;

- do not keep the tractor engine running indoors and without a suitable ventilation system to dispose of harmful exhaust gases which are concentrated in the air .
- avoid prolonged or repeated skin contact with fuels/lubricants/fluids, as it may create skin disorders or other syndromes;
- do not ingest fuels/lubricants/fluids. In case of accidental contact with eyes, rinse the affected area thoroughly with clean water;
- operate with extreme caution because of the possible high-temperature of oil/fluid discharged;
- do not weld in closed or unsuitably ventilated environments;
- do not weld on or in proximity of painted surfaces, to prevent the development of toxic vapours. Remove paint with suitable products, then wash the surfaces and leave to dry.
- relieve pressure from the circuits before working;
- do not use your hands to detect leakage of fluids under pressure; leakage of fluid under pressure can penetrate the skin and eyes with very serious consequences.

6.1 MAINTENANCE OPERATIONS THAT CAN BE PERFORMED BY THE OPERATOR

The work described in the following paragraphs does not require any specialisation.
The operator must know and follow the directions exactly and decommission the machine (as described in paragraph 4.3).
Periodic inspections and maintenance must be performed in the times and manner prescribed and are the operator's responsibility.
Failure to comply with rules and maintenance schedules undermine the proper operation of the machine and its duration and thus voids the warranty.
Increasing the frequency of maintenance in harsh operating conditions (frequent stops and starts, prolonged winter season, etc ....).

To use and maintain the machine at best, follow the instructions (after the first 4 hours and then every 50 hours), check the fixing of all bolts, check fixing of all bolts, pins, plugs; respecting the coupling torques indicated in the following tables

6.1 .1 COUPLING TORQUE TABLES

Coupling torque table for 8.8 steel screws

Coarse thread screw	M8	M10	M12	M14	M16	M20	M24
Coupling torque Nm	**25**	**49**	**86**	**135**	**210**	**410**	**710**
Fine pitch screw	M8x1	M10x1.25	M12x1.25	M14x1.5	M16x1.5	M20x1.5	M24x2
Coupling torque Nm	**27**	**52**	**95**	**150**	**225**	**460**	**780**

Coupling torque table for 10.9 steel screws

Coarse thread screw	M8	M10	M12	M14	M16	M20	M24
Coupling torque Nm	**35**	**69**	**120**	**190**	**295**	**580**	**1000**
Fine pitch screw	M8x1	M10x1.25	M12x1.25	M14x1.5	M16x1.5	M20x1.5	M24x2
Coupling torque Nm	**38**	**73**	**135**	**210**	**315**	**640**	**1100**

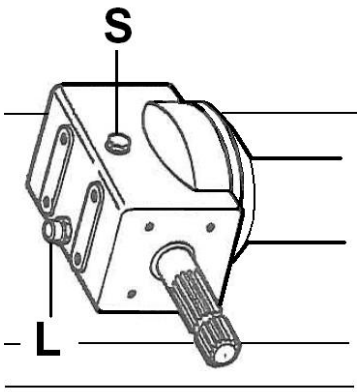
6.2 GREASING AND LUBRIFICATION

Periodic and systematic greasing and lubrication of the machine maintain its performance and increase its useful life span

6.2.1 GEARBOX LUBRICATION

Carefully clean components around plugs before working on transmission systems: this prevents dirt from penetrating into these systems, then proceed as follows:

1- check the oil level during the first 20 working hours: oil must come up to the level hole L. Add oil as required. Perform the next oil level checks at 50 hour intervals;
2- After the first 40 working hours totally replace the oil in the gearbox. Then repeat this every 250 working hours.



Check the level from cap L, introduce oil into the cap S. To prevent some pressures inside the transmission group, keep clean cap S, in case of damage, replace it only with a cap with the same characteristics.

Recommended lubricant: see table 6.2.5

6.2.2 LUBRICATION OF THE LATERAL TRANSMISSION

Carefully clean the parts around caps S and L before working on the transmission casing, this prevents dirt from penetrating inside the case itself.

- Remove the level cap L.
- With the machine perfectly level, check that the oil touches the lower part of the hole.
- If necessary, top-up with oil of the same type.
- Re-mount the level cap L.

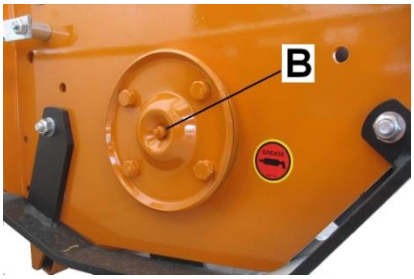
The vent cap S must always be kept clean in order to prevent pressures inside the transmission casing. In the event of damage of the same, it must be replaced only with a cap with the same features.
The check must be made periodically every 50 working hours

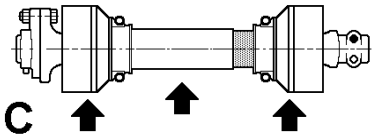
Recommended lubricant: see table 6.2.5

ATTENTION: <u>only for SOLE model</u>: the lubrication is made with grease type GREASE MU EP 2, one time every year, give some pumps of grease of the same type into the hole L. Don't add oil!!

6.2.3 GENERAL GREASING

Use a relevant greaser pump and lubricate all points fitted with a greaser and indicated with the sticker illustrated at the side.
Only use a manual greasing pump in order to prevent laceration of the bearing seals and the grease passage piping.
Lubricate the following points periodically:
B – ROTOR LATERAL SUPPORT BEARING: lubricate every 40 working hours with two pumpings per greaser
C – lubricate the propeller shaft every 8 hours as indicated in the relative use and maintenance manual, supplied by the propeller shaft manufacturer
-lubricate the sliding guides and any cranks.

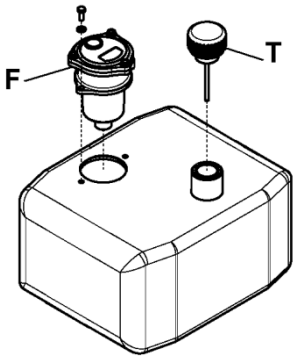




Recommended lubricant: see table 6.2.5

6.2.4 STELLA TILLER HYDRAULIC PLANT

The hydraulic circuit is tested and controlled by the Company before delivering the machine. The tank is equipped with a low pressure inlet filter to ensure oil filtering.
It is advised **NEVER TO MIX** different types of hydraulic oil; but if a different type of oil must be used to that contained in the tank, the oil selected must be compatible. (Check with the oil supplier).
If the filter F is excessively dirty, perform cleaning operations, which must be considered temporary as, in most cases, the filter F must be replaced (filtering capacity 30 µm).
VERY IMPORTANT!
THE OIL FILTER MUST BE REPLACED AFTER THE FIRST 50 WORKING HOURS AND SUCCESSIVELY EVERY 250 WORKING HOURS
The level of oil in the tank must be checked every day through the vent cap T using the dip stick (check that at least 10mm is submerged).
Contamination of the oil means it must be replaced: this can be identified by a darker colour of the oil and/or a burned smell.
Before control, top-up or replacement interventions, clean the parts surrounding the filling cap thoroughly.

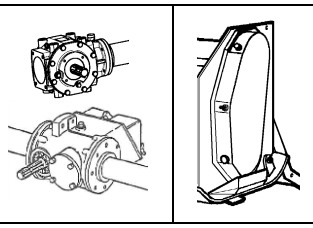


Recommended lubricant: see table 6.2.6

All level control operations must be performed with the machine at rest for at least 2 hours and resting on a perfectly level surface.
The oil used must be appropriately recovered and must not be disposed of in the environment, as, according to the Laws in force, it is classified as dangerous waste and as such, must be taken to relevant collection centres. The "Mandatory Consortium for Used Oils" must be contacted for the collection of waste oils.

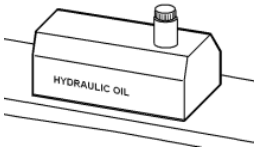
6.2.5 LUBRICANTS TABLE

The following table illustrates the sticker applied to the machine, the reference lubricant is highlighted with grey background

BERTI	LUBRIFICANTI RACCOMANDATI - recommended lubricant empfohlenen Schmiermittel - lubrifiant recommandé						
	AGIP	IP	ESSO	SHELL	MOBIL	BP	TOTAL
	ROTRA 85W-140	PONTIAX HD 85W/140	GEAR OIL GX 85W/140	SPIRAX A 85W/140	MOBILUBE HD 85W/140	ENERGEAR HYPO 85W/140	EP 85W/140
GREASE	GREASE MU EP 2	ATHESIA EP GREASE 2	BEACON EP 2	ALVANIA GR. EP 2	MOBILUX EP 2	GREASE LTX 2	MULTIS EP 2

6.2.6 OIL TABLE FOR HYDRAULIC PLANTS

The following table shows the sticker applied to the Stella mod. machine tank, the reference lubricant is highlighted with grey background

BERTI	OLIO IDRAULICO - Hydraulic oil Hydrauliköl - huile hydraulique						
	AGIP	IP	ESSO	SHELL	MOBIL	BP	TOTAL
	ARNICA S 46	HYDRUS OIL H.I. 46	UNIVIS N 46	TELLUS OIL S 46	DTE 15 M	ENERGOL SHF-HV 46	AZOLLA AF 46

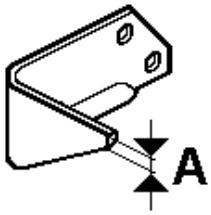
6.3 HOT POINTS OF THE MACHINE

Before any maintenance operations ensure that potentially hot parts have cooled.
Pay utmost attention to:

- Speed reducer or gear;
- Lateral transmission casing;
- Any hydraulic piping.

6.4 CHECKING WEAR OF TOOLS

The hoes with which the machine is fitted are suitable for working land with normal conformation. They are produced in high tensile toughened boron steel.
The hoes are subject to wear and must be replaced when quote A becomes smaller than 20 mm.
Check wear and integrity of the hoes and their fixing to the flanges every day.



6.5 TOOLS REPLACEMENT PROCEDURE

Whenever the hoes should accidentally bend (or break), they must be replaced immediately and the new hoes must be re-mounted in the identical position of those to be replaced.
If several hoes must be replaced, it is recommended to remove and re-mount one hoe at a time, in order to prevent positioning errors.
In all cases, always respect the assembly helix created by the hoes and supplied originally (see fig.1).
The sharp edge of the hoes must face the direction of rotation and advancement of the rotor, fig. 2 highlights the difference between the right and left hoes.
Always mount the screw from the hoe side, while the washer and nut must be mounted on the flange side (fig.3)

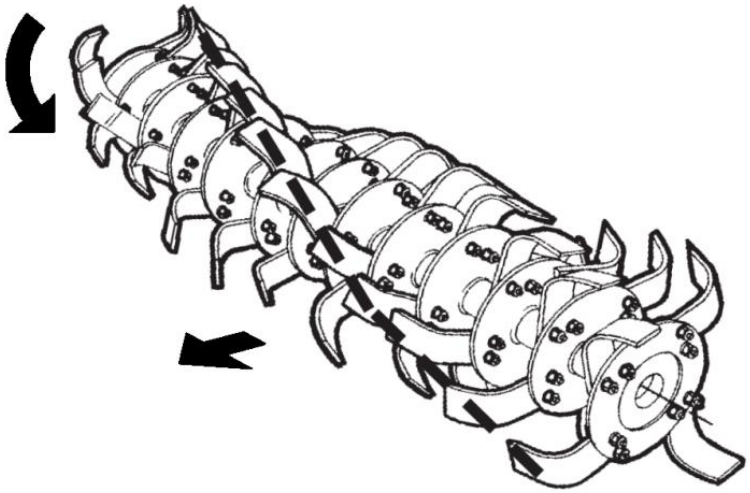


Fig.1

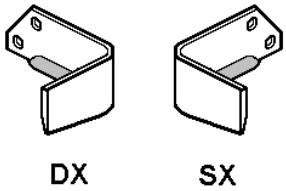


Fig.2

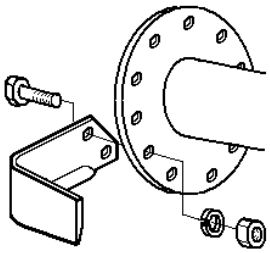
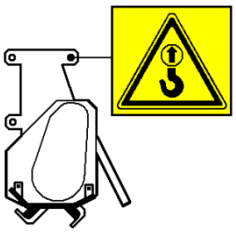


Fig.3

To replace worn or broken hoes, the tiller must be hitched to the third point and raised with a suitable lifting device and suspended at 2/3 cm. from two strong stands or supports that can sustain the weight in the event of unexpected failures, in order to work in complete safety during the entire operation.



ATTENTION: only mount original hoes and fixing screws.

6.6 PROCEDURE FOR REPLACING HYDRAULIC HOSE

For machines with hydraulic plant, if a hose should break, comply with the following:

1. Before removing a hydraulic pipe, be sure to release any residual pressure in the system;
2. Accurately identify the damaged pipe and loosen the two points of connection with a spanner, paying attention to potential leakage of hydraulic fluid;
3. Replace the damaged pipe with original spare parts only;
4. Ensure the perfect condition of connection points (threads, gaskets, etc....), before installing the new pipe;
5. With the appropriate tools, tighten the hydraulic fittings showing signs of leakage clockwise. Do not over tighten to avoid damaging the threads of the fittings.

Maintenance residues, e.g. cloths or material replaced containing inflammable substances must be kept away from sources of ignition and disposed of in compliance with the Laws in force in the country of use.
The oil collected must be disposed of in compliance with the Laws in force in the country of use,(see chapter 6.9).

6.7 STORAGE – RE-COMMISSIONING

If the machine is immobilised for long periods, store it in a place sheltered from the elements and protect it from damage. Prima del rimessaggio si consiglia di pulire accuratamente tutta la macchina e di lubrificare adeguatamente tutti gli organi meccanici per proteggerla dalla ruggine.

Before long periods of inactivity, ensure that the following is observed:

- clean the machine thoroughly;
- carry out a general visual check of the machine in order to identify any structural damage, detect any deep scratches in the paintwork, check that original safety pictograms are present in their positions and that they are integral and legible;
- grease all mechanical parts and locking pins;
- if possible, store the machine in a covered place, on a level and smooth surface.

For the collection of exhausted oil it is compulsory to contact the "**Mandatory Used Oils Consortium**".

Check that the storage temperature is between 0°C and 50°C.

6.8 INITIAL START-UP OR RECOMMISSIONING FOLLOWING A LONG PERIOD OF INACTIVITY

Before using the machine for the first time or after a long period of inactivity, perform the following:

- Check that the machine is not damaged;
- Check that the mechanical units are in satisfactory condition and not rusted;
- Check the wear of the tools;
- ingrassare accuratamente tutte le parti mobili;
- Accurately grease all mobile parts;
- Check that all protective devices are correctly positioned.
- check that original safety pictograms are present in their positions and that they are integral and legible;

6.9 SCRAPPING

In the event that the machine it scrapped, it must be discarded in the appropriate sites in accordance with the regulations in force.
Before scrapping, separate the plastic and rubber parts, electrical and electronic parts.
Recover any used oil and discard at the appropriate collection centres.

The used oil must be suitably recovered and not discarded into the environment since, according to legal regulations in force, it is classified as hazardous waste and as such must be delivered to the appropriate collection centre. For the collection of exhausted oil it is compulsory to contact the "Mandatory Used Oils Consortium"

Parts consisting only of plastic, aluminium or steel may be recycled if collected by the appropriate centres.

7 SCHEDULED MAINTENANCE TABLE

GENERAL MACHINE CHECKS	FREQUENCY
Cardan shaft greasing	Every 8 operating hours
Hoe-support shaft side bearing lubrication	Every 40 operating hours
Check bolt tightness	After the first 4 hours and then every 50 hours
Check wear of tools	Before every job
Replace tools	When damaged or shorter than 20 mm
GEARBOXES, CHANGING SPEED, TRANSMISSION COVER	**FREQUENCY**
Check oil level	Every 20 operating hours
Change oil	After the first 40 hours and then every 250 hours

8 TROUBLESHOOTING TABLE

FAULT	CAUSE	REMEDY
Noisy machine	• power take offs not parallel	• adjust the tractor lifting device arms and the third point in order to make the power take-offs parallel
Insufficient depth	• depth skids position • worn teeth • high advancement speed • ground too hard	• adjust the work depth • replace the tools • reduce speed, tractor with insufficient power • work with several passes
Excessive ploughing	• low advancement speed • n° high rotor revs. (versions with gear) • low rear hood	• increase the advancement speed • reduce rotor rotation speed • lift the rear hood
Poor ploughing	• high advancement speed • n° low rotor revs. (versions with gear) • high rear hood • ground too wet	• reduce the advancement speed • increase rotor rotation speed • lower the rear hood • do not work
Rotors jamming	• low rear hood • ground too wet • high advancement speed • machines with 6 hoes per flange	• lift the rear hood • do not work • reduce the speed • reduce the number of hoes to 4 per flange
The machine vibrates	• foreign bodies blocked • hoes mounted reversely • hoes worn or broken • propeller shaft PTO not parallel	• check and remove them • check and mount them correctly • replace • adjust the parallelism with the third point
The machine works from one side	• lifting device arm’s length • depth skids position	• check the length reduce lifting device swinging • check that the 2 adjustments are the same

9 SPARE PARTS

Repairs and replacements must be carried out using original spare parts, which must be requested from the Authorised Dealer. Please note that the presence of spare parts should be properly accompanied by the following indications:

• type of vehicle;
• serial number;
• spare part code that can be obtained from the Spare Parts Catalogue.

If it is a component that is part of a major unit (rotor, overgear unit, guards), you should also specify the model and serial number of the unit.

10 WARRANTY

On delivery, check that the machine has not been damaged during transport and that the accessories are complete.

WARRANTY CONDITIONS:

- The manufacturer guarantees its products for a period of 12 months from the date of delivery on the condition that the attached form is filled-in in full and sent to the manufacturer within 15 days of date of delivery (the delivery document acts as evidence).
- In accordance with the aforementioned terms, the manufacturer agrees to supply all components to be replaced under warranty according to its own evaluation or the opinion of its authorised representatives regarding parts that have material or manufacturing defects. Shipping and labour costs shall in any case be charged to the customer.
- The warranty does not include payment for damage caused by improper use of the machine by the operator and for parts normally subject to wear and tear and breakage such as: hammers, blades, belts, etc.
- The manufacturer is not liable for accidents involving the operator or third parties, deriving from improper use of the machine.
- This warranty is not valid in the case in which:
  a) the maintenance and repairs have been performed by unauthorised individuals or companies;
  b) the machine has been previously repaired or modified with non-original spare parts;
  c) in the event of an incorrect manoeuvre;
  d) due to insufficient maintenance and/or lubrication;
  e) when permissible power limits have been exceeded;
  f) whenever the instructions given in this manual are not followed;
  g) whenever unauthorised modifications have been made.
- Machine breakdowns during or after the warranty period shall not give rise to any right to interrupt payments for the goods that have already been delivered. No breakage or malfunction can be used as a pretext for delaying payment.
- The manufacturer reserves the right, at all times, to make any modifications in order to improve its own product and is not obliged to add these modifications to previously manufactured machines, which have already been delivered or are undergoing manufacture.
- These general warranty terms replace and cancel all previous explicit or implicit terms.

CERTIFICATO DI GARANZIA
GUARANTEE CERTIFICATE
GARANTIESCHEIN
CERTIFICAT DE GARANTIE
CERTIFICADO DE GARANTÍA
GARANTIBEVIS
GARANTIECERTIFICAAT

TÜV SÜD ISO 9001

BERTI

We confirm to have received the instructions manual and that we have acquired all the information of the Legislative Decree 196/03 about the treatment of personal information.

Wir bestätigen, dass wir das Betriebs- und Wartungshandbuch erhalten haben und dass wir alle Informationen über die Verarbeitung unserer persönlicher Daten (Verordnung 196/03) gelesen haben.

Nous confirmons d'avoir reçu la notice d'emploi et d'entretien de l'appareil et d'être informés notamment le traitement de nos coordonnées selon le décret législatif 196/2003.

Se confirma la recepción del manual de uso y mantenimiento y haber sido informado acerca del tratamiento de los datos personales en base al Decreto legislativo 196/03.

Undertecknad bekräftar mottagandet av användar- och underhållsmanualen och har informerats angående hantering av personuppgifter enligt lagdekret 196/03.

Ik bevestig de handleiding voor gebruik en onderhoud te hebben ontvangen en dat ik geïnformeerd werd betreffende de behandeling van mijn persoonlijke gegevens, krachtens het Wetsdecreet 196/03.

Nome / Name / Nom / Nombre / Namn / Naam

Indirizzo / Address / Anschrift / Adresse / Dirección / Adres / Adres

Firma dell'acquirente / Purchaser's signature / Unterschrift des Käufers / Signature de l'acheteur / Firma del comprador / Köparens underskrift / Handtekening van de koper

Data /Date/Datum/Fecha

FAC-SIMILE

RICHIEDETE SEMPRE RICAMBI ORIGINALI
USE GENUINE PARTS ONLY
BENUTZEN SIE NUR ORIGINALTEILE
EXIGEZ LES PIECES DE RECHANGE

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