EN

VERGE MOWER MOD.:

TL18

TL31

TL33

Cod:	D11021/3		
da matr:	26820	**EN**	MANUAL OF USE AND MAINTENANCE
a matr:	-		

Consult this manual carefully before using the machine. Knowing in detail the machine is essential for safe usage. This manual should be kept for the whole working lifetime of the machine.

Thank you for choosing Alpego, you have purchased a top quality product that is guaranteed by a decade of experience.
Before leaving the factory, each machine is accurately inspected to guarantee that it is in perfect condition.
Should you however, find any faults in the material, kindly contact your retailer immediately.
Please do not hesitate to contact us should you need further information or assistance, our aim is to constantly improve the product, keeping it at top level.

LOOK OUT FOR THE TRIANGLE. IT INDICATES DANGER

THE TERM MACHINE REPLACES THE COMMERCIAL DESCRIPTION OF THE ITEM DESCRIBED IN THIS MANUAL.

ALL DATA AND DESCRIPTIONS REPORTED IN THIS MANUAL ARE TO BE CONSIDERED INFORMATIVE. THE PRODUCER IS NOT BOUND TO MAINTAIN THESE CHARACTERISTICS WHICH COULD BE VARIED WITHOUT FOREWARNING.

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INTRODUCTION

This machine is for professional use and it should be used only by specialised operators.

Use of this machine is forbidden to minors, illiterate people, or those in a poor physical and mental condition.

This machine cannot be used by people who do not have a suitable driving licence, or people who are not sufficiently informed and well trained. Users are responsible for controlling machine operations, as well as for replacing and repairing the parts that are subject to wear and which could be the cause of damage.

This equipment can only operate when a cardan joint is applied to the power takeoff of a tractor equipped with a lifting device and a three point hitch.

The correct operation of this equipment depends on its correct use and suitable maintenance.

Users are strongly advised to scrupulously observe the indications given, in order to prevent any inconvenience that could prejudice good machine operation and duration.

Users must follow the regulations given in this manual because the Manufacturer cannot be held responsible for any damage or injury caused by negligence and the non-observance of such instructions.

The Manufacturer assures complete assistance with regards to immediate and accurate technical assistance, as well as anything that may be necessary for better equipment operation and maximum machine performance.

ALPEGO®
La Migliore Tecnologia in Campo

INDEX

1 - GENERAL INFORMATION

1.1 PURPOSE OF THE MANUAL

This manual has been prepared by the machine manufacturer and it is an integral part of the documentation that comes with the machine.

In this manual you can find detailed and precise explanations regarding the correct use of the machine and it also establishes correct machine application and its limits.

To guarantee the safety of persons using the machine; working economy and longer duration, you must follow the indications given in this manual at all times.

The manual has been divided into various sections. Consulting the index makes searching for specific topics easier.

The illustrations in this manual are indicative. Even if you notice a difference with the machine you possess, safety and information are still fully guaranteed.

1.2 DOCUMENTS THAT COME WITH THE MACHINE

The following documents must be supplied with the machine:
- User and maintenance manual
- EC declaration of conformity
- User and maintenance manual of the cardan shaft

1.3 GUARANTEE

When delivered, make sure that the machine and its accessories have not been damaged during transportation, and that all accessories are integral and complete.

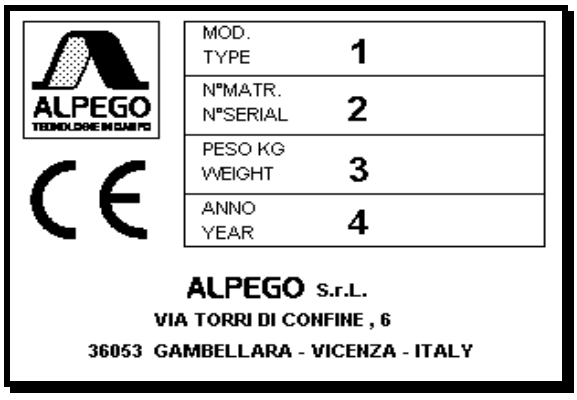
Any complaints should be made to the retailer in writing, within 8 days from delivery date.

GUARANTEE FORFEITURE

The guarantee is immediately rendered null and void:
- if there is a manoeuvring error
- if the power limit established by the manufacturer is exceeded (see chart 2.3)
- if the instructions described in this manual are not followed
- if original spare parts are not used
- if any modification is made to the machine without prior authorisation by the manufacturer

1.4 MACHINE IDENTIFICATION

The machine identification plate, with the following information, is positioned near the 3 hitch points:



1-Model of machine

2-Serial number

3-Maximum weight of the machine with roller

4-Manufacturing year

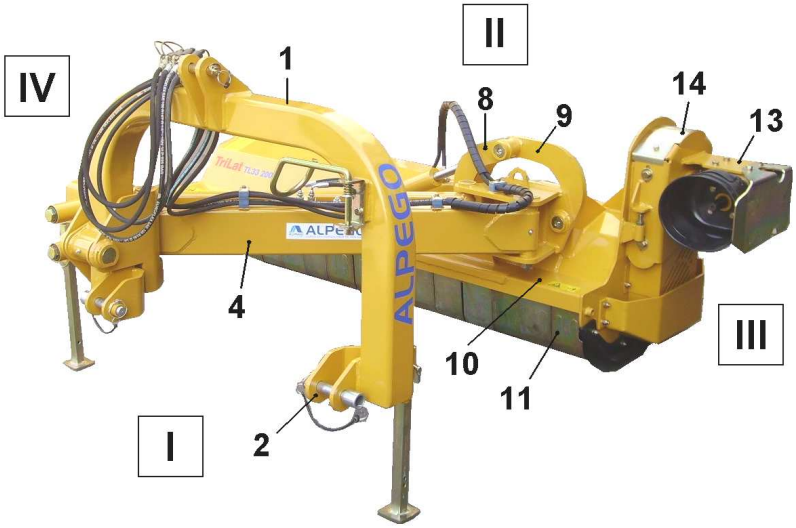
The indicated weight on the plate corresponds to the machine complete with the heaviest roller, without accessories.

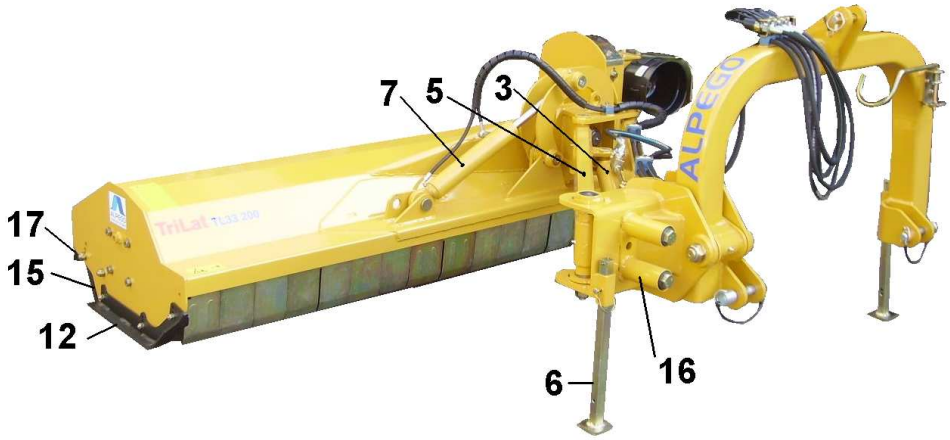
2 - TECHNICAL SPECIFICATIONS

2.1 MACHINE DESCRIPTION

Our verge mowers are machines equipped with a rotor that is driven by the tractor power takeoff by way of a cardan joint, a gearbox and side belt transmission. The verge mowers are used for a good maintenance of green areas, or to mulch directly on the ground by mincing organic cultivation residues (both grass and wood). The mulching quality depends on the high rotational speed of the rotor, which turns opposite to the forward movement of the tractor. Differently from other models, the **TL31-33 X** series mulchers all have a mechanical "**NO STOP"** safety system against obstacles that may present themselves during normal mulching operations.

2.2 VERGE MOWER COMPONENTS





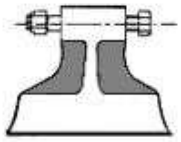
1 – SHIFTING 3 POINT HITCH, HYDRAULIC
2 – TRACTOR HITCH, CATEGORY 2
3 – SIDE SHIFTING JACK
4 – LEFT PARALLELOGRAM ARM
5 – RIGHT PARALLELOGRAM ARM
6 – SUPPORTING FEET
7 – FRAME TILTING JACK
8 – RIGHT CONNECTING ROD
9 – LEFT CONNECTING ROD
10 – FRAME
11 – PROTECTION PLATES
12 – SKIDS
13 – GEARBOX
14 – PROTECTION CASING
15 – REAR ROLLER
16 – ELASTIC SUPPORT
17 – REAR PROTECTION RUBBER

I	FRONT
II	BACK
III	LEFT SIDE
IV	RIGHT SIDE

2 - TECHNICAL SPECIFICATIONS

2.3 TECHNICAL INFORMATION CHART

MOD. TL18

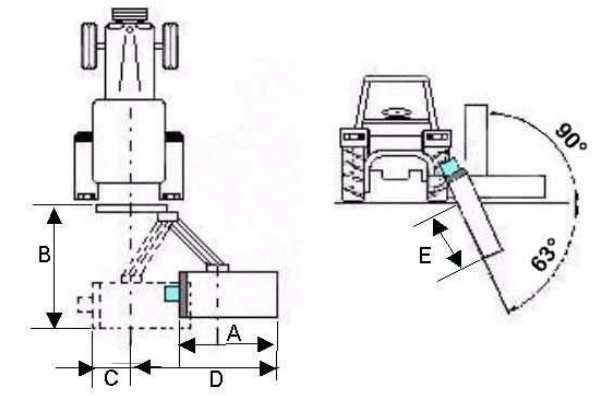


MAZZA

DESCRIZIONE TECNICA

Model		TL18 - 120-	TL18 - 140 -	TL18 - 160 -
Working width		120	140	160
Hectares/hour (theoretical)		1,7	1,9	1,9
Power required	(hp)	40/60	50/60	50/60
Hammers	(nº)	16	20	22
Overgear power with free wheel	(hp)	100	100	100
Transmission belt	(nº)	3	3	3
Width	(cm)	135	155	175
Depth	(cm)	150	150	150
Height	(cm)	100	100	100
Weight **	(Kg)**	390	415	440
Three point hitch (cat.)		I / II		
PTO speed	(g/min)	540		
Rotor surface speed	(m/s)	-		
Rotor speed	(g/min)	2.200		
Transport position		TAKEN TO LIFTER		
Primary transmission		CARDAN SHAFT		
Secondary transmission		BELT DRIVEN, SPB SECTION		
Cutting height regulation		MECHANICAL – MANUAL : REAR ROLLER		
Side movement regulation		HYDRAULIC		

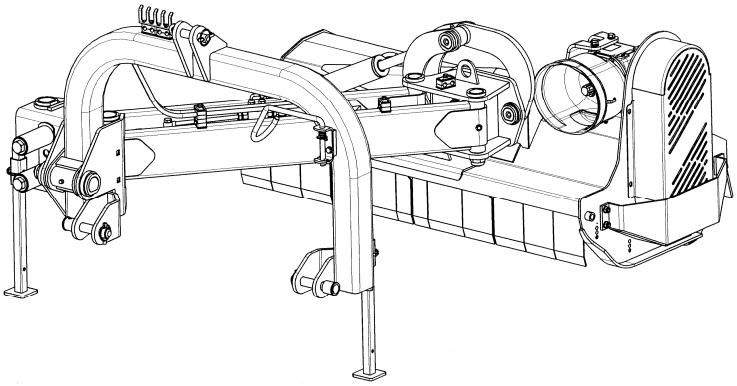
**** weight without cardan shaft**

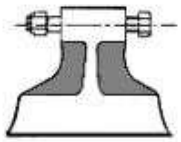


Mod.	**A** (mm)	**B** (mm)	**C** (mm)	**D** (mm)	**E** (mm)
TL18-120	**1200**	**1500**	**570**	**1810**	**900**
TL18-140	**1400**	**1500**	**570**	**2010**	**1100**
TL18-160	**1600**	**1500**	**570**	**2210**	**1300**

2 - TECHNICAL SPECIFICATIONS

MOD. TL31



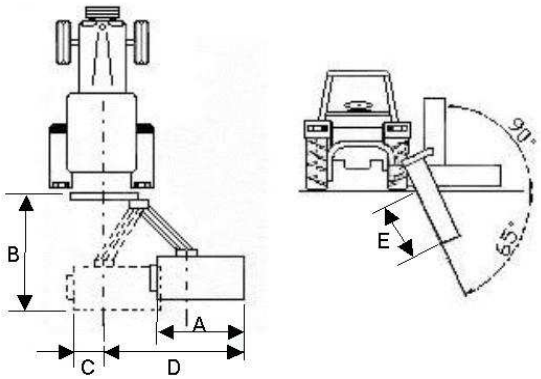


MAZZA

TECHNICAL DESCRIPTION

Model		TL31 - 140-	TL31 - 160 -	TL31 - 180 -	TL31 - 200 -
Working width		140	160	180	200
Hectares/hour (theoretical)		1,7	1,9	2,2	2,5
Power required	(hp)	40/45	50/60	65/75	80/100
Hammers	(nº)	12	14	16	16
Gearbox with free wheel	(hp)	100	100	100	100
Transmission belt	(nº)	4	4	4	4
Width	(cm)	160	180	200	220
Depth	(cm)	210	210	210	210
Height	(cm)	110	110	110	110
Weight **	(Kg)	640	670	710	730
Three-point hitch (cat.)		II			
PTO R.P.M.	(t/min)	540			
Rotor peripheral speed	(m/s)	45			
Rotor speed	(t/min)	2.200			
Transport position		TAKEN TO LIFTER			
Primary transmission		CARDAN SHAFT			
Secondary transmission		BELT DRIVEN, SPB SECTION			
Cutting height adjustment		MECHANICAL – MANUAL : REAR ROLLER			
Side movement adjustment		HYDRAULIC			

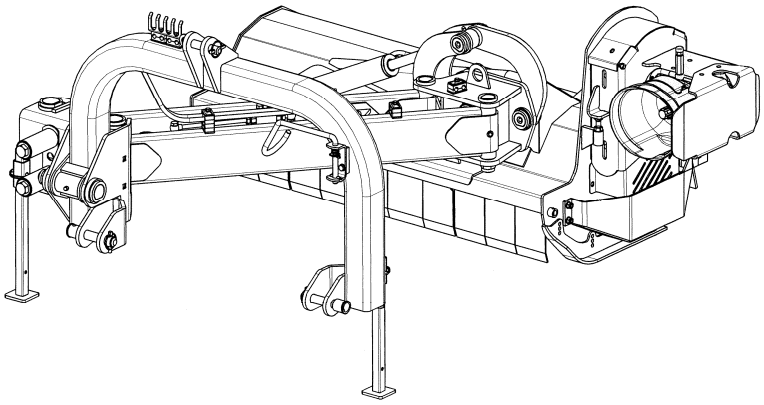
**** weight without cardan shaft**

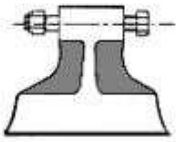


Model	A (cm)	B (cm)	C (cm)	D (cm)	E (cm)
TL31 - 140	140	180	77	215	73
TL31 - 160	160	180	77	235	93
TL31 - 180	180	185	77	255	113
TL31 - 200	200	185	77	275	133

2 - TECHNICAL SPECIFICATIONS

MOD. TL33



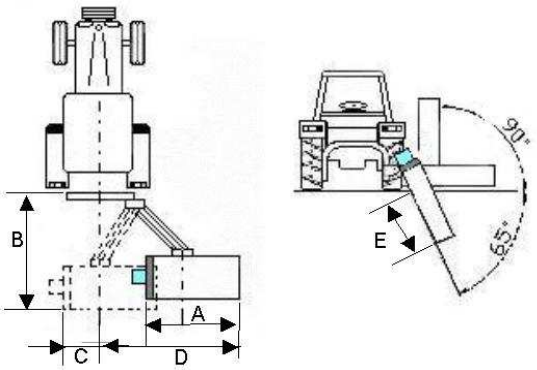


MAZZA

TECHNICAL DESCRIPTION

Model		TL33 - 140-	TL33 - 160 -	TL33 - 180 -	TL33 - 200 -
Working width		140	160	180	200
Hectares/hour (theoretical)		1,7	1,9	2,2	2,5
Power required	(hp)	40/45	50/60	65/75	80/100
Hammers	(nº)	12	14	16	16
Gearbox with free wheel	(hp)	100	100	100	100
Transmission belts	(nº)	4	4	4	4
Width		185	205	225	245
Depth	(cm)	210	210	210	210
Height	(cm)	110	110	110	110
Weight **	(Kg)	670	700	740	760
Three-point hitch (cat.)		II			
PTO r.p.m.	(t/min)	540			
Rotor surface speed	(m/s)	45			
Rotor r.p.m.	(t/min)	2.200			
Transport position		TAKEN TO LIFTER			
Primary transmission		CARDAN SHAFT			
Secondary transmission		BELT DRIVEN, SPB SECTION			
Cutting height adjustment		MECHANICAL – MANUAL : REAR ROLLER			
Side movement adjustment		HYDRAULIC			

**** weight without cardan shaft**

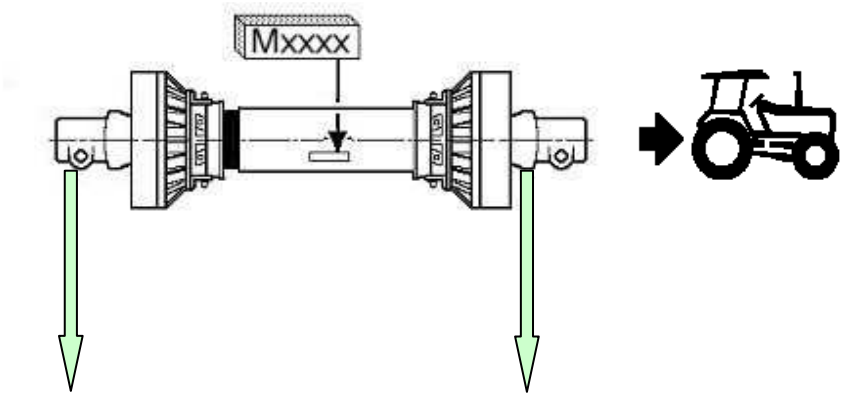


Model	A (cm)	B (cm)	C (cm)	D (cm)	E (cm)
TL33 - 140	140	180	58	234	90
TL33 - 160	160	180	58	254	110
TL33 - 180	180	185	58	274	130
TL33 - 200	200	185	58	294	150

2.4 IDENTIFYING THE CARDAN JOINT

The cardan shaft has to work at the smallest angle possible (do not exceed 25 degrees) in order to favour the duration of both the shaft and the machine.
Replace worn or broken shafts with ones marked “CE”.
Do not modify or adapt the cardan shaft, otherwise, balancing carried out during the testing phase will be disturbed.

The machine comes with a cardan joint.
It is not possible to replace it with others that are different from the original.
Make sure you read the instructions in the manual supplied with the cardan joint.



CARDAN TECHNICAL INFORMATION:

Machine	Type		Code	
TL18 - 120	1”3/8 z = 6 - B06 L=1400	1”3/8 z = 6	M14048	
TL18 - 140	1”3/8 z = 6 - B06 L=1400	1”3/8 z = 6	M14048	
TL18 - 160	1”3/8 z = 6 - B06 L=1400	1”3/8 z = 6	M14048	
TL31 / 33 - 140	1”3/8 z = 6 - WWZ 1710	1”3/8 z = 6	M10260W	
TL31 / 33 - 160	1”3/8 z = 6 - WWZ 1710	1”3/8 z = 6	M10260W	
TL31 / 33 - 180	1”3/8 z = 6 - WWZ 1710	1”3/8 z = 6	M10260W	
TL31 / 33 - 200	1”3/8 z = 6 - WWZ 1710	1”3/8 z = 6	M10260W	

3 SAFETY REGULATIONS

3.1 USING THE MACHINE SAFELY

Read the owner's manual carefully before starting-up, before using the machine and before carrying out maintenance operations on the equipment.

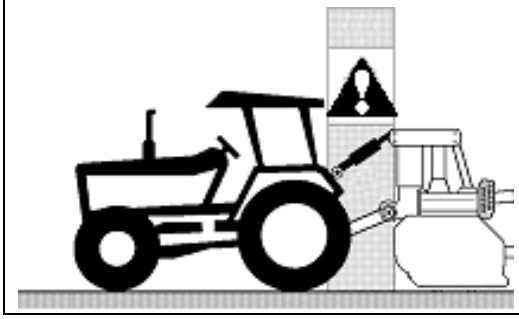
The manufacturer cannot be held responsible for injuries caused to people and animals, or damages caused because the safety regulations have not been observed by the user.

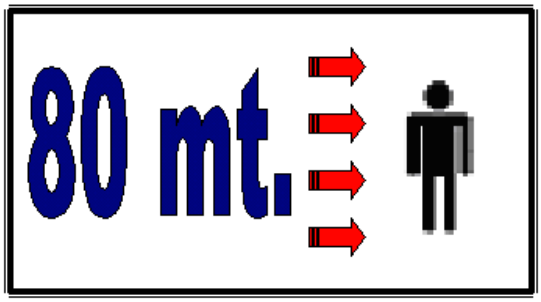
The machine cannot be used for purposes other than those expressly indicated in this manual.

It is forbidden for people to drive the tractor if they do not have an adequate driving licence, if they do not have the necessary experience, or if they are not in good health.

Examine carefully the adhesive labels on the machine and make sure you follow their indications.
Safety stickers should always be legible. They should be kept clean and they must be replaced when they cannot be read properly (if required, replacements can be requested from your dealer).

Keep a safety distance of 80 m. from the machine while it is working, or while the rotor is moving.
While working, do not allow people, animals and things to approach the working range of the sods and stones that are being thrown by the machine.
It is absolutely forbidden to enter the area between the tractor and the machine to reach the external controls of the hydraulic lift.





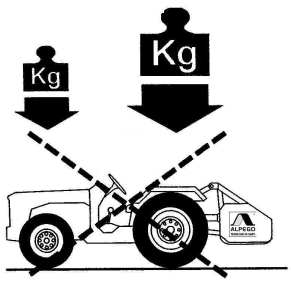
You must always remain seated in the tractor driving seat. You can only leave your driving seat when the tractor power takeoff has been disconnectd and the handbrake pulled up.

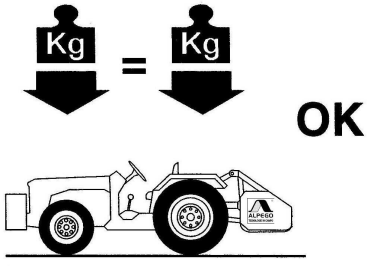
During working stops: switch off the engine, place the machine on the ground, disconnect the tractor power takeoff and pull the tractor handbrake.
Make sure you never work if protections have been removed.
Do not work on ground or in areas that could compromise machine stability.
Before working in a new area, you must become familiar with the ground before working in it.

Do not work in areas which could have obstacles such as stones, sticks or roots since these could ruin machine integrity.
Always use the rotating flash light when circulating on public roads.

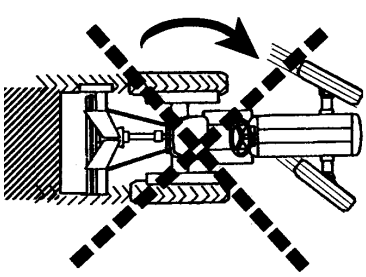
When circulating on the road, it is necessary to follow the traffic regulations of the country where the machine is being used.

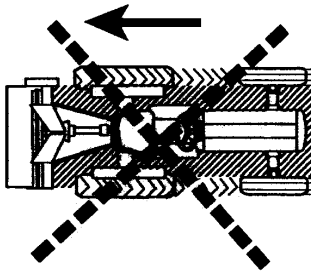
Always remember that roadholding, braking and changing direction could be influenced by the weight of the machine applied to the tractor lift. When taking turns, take into consideration the action of the centrifugal force that shifts the machine centre of gravity.





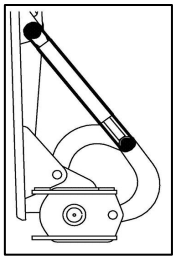
3 SAFETY REGULATIONS





Do not let the machine turn idle (out of the ground). Never work in reverse gear. Always lift the machine when changing directions or driving in reverse gear.

During transportation, or whenever it is necessary to lift the machine, the tractor lifting device should be regulated in such a manner as to keep the machine at a maximum distance of approx. **30 cm** from the ground. Do not circulate on roads if the machine is dirty with soil, grass or other things that could dirty the road and block normal traffic. Do not drop the machine abruptly to the ground, but lower it slowly to avoid damaging shocks. If you fail to do this, all the machine components would be heavily stressed, and this could compromise their integrity.

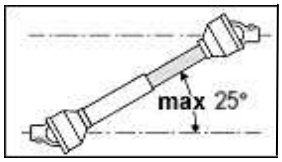


While transporting the implement on public roads and while performing maintenance operations set the control lever of the tractor hydraulic lift into its blocked position and position the safety bar as shown in the picture here at the side.
The machine can be used inside closed structures only if there is a suitable ventilation system.

Before activating the power takeoff, check the pre-set number of turns. Do not exchange the speed of 540 turns/min. with that of 1000 t/min.

Use only the cardan shaft indicated by the manufacturer. This shaft is equipped with safety devices against overloads.

The cardan shaft should only be installed and removed when the engine is switched off.



The cardan shaft protection should always be in perfect condition, it should be checked on a regular basis and it must be fixed with the chains to stop it from rotating. Disconnect the Power Takeoff whenever the cardan shaft angle is greater than 25°(see figure).
Make sure you read the instructions in the manual supplied with the cardan joint.

Check carefully the cardan shaft protection, both in the transport and in the working positions.
You should always assemble and remove the cardan shaft when the engine is switched off.
Make sure that the cardan shaft is assembled properly (to the machine PTO and the tractor PTO) and that all its safety guards are in place.
Before activating the power takeoff, make sure that there are no people and/or animals in the working range of the machine. Select the r.p.m. recommended by the manufacturer and DO NOT EXCEED the maximum r.p.m..
Do not touch the gearbox, or any parts of the hydraulic system after using the machine for long hours, these could be very hot and you could get burnt.
The side skids can also serve as protections since they make access to the rotor difficult. If there are no skids, the machine is supplied with two protection plates.
The machine cannot be used at night or in poor visibility conditions.

Before using the machine, it is very important that operators become familiar with all the controls and their functions.

Hitch the machine, as indicated, to a suitably powerful and configurated tractor using a device (lift), in accordance with the instructions given by the manufacturer.

Be careful when hitching and unhitching the machine !

DO NOT leave your driving seat while the tractor engine is on.
Before getting off the tractor, lower to the ground the machine connected to the lift, turn off the engine, pull the handbrake and remove the ignition key from the control panel.
The category of the machine connecting pins must be the same as that of the lift arms.

During transportation, fix the side lifting arms by using the chains and screw couplings.

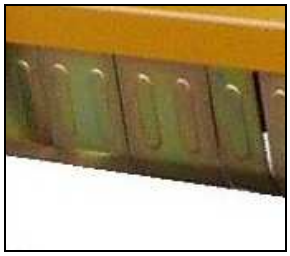
The operator must make use of the following protective tools when working with tractors without a soundproof and pressurized cabin:
Protective headset against the noise, if level of exposure exceeds regular levels;
Anti-dust mask, if the type of product you are working on raises a lot of dust, or if the soil is very dusty, or if an open tractor is being used.

3.2 SAFE MAINTENANCE

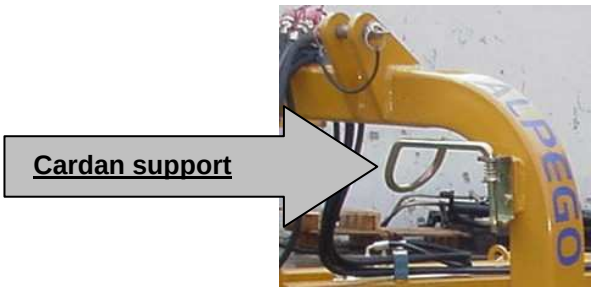
DO NOT allow unauthorised people to carry out maintenance operations or to tamper with the machine in any way.

It is forbidden to use the machine without protection plates.

Plates



Maintenance and repairs should be carried out in a suitable and well equipped workshop.
When carrying out maintenance operations on the machine, disconnect the hydraulic pipes from the tractor intakes.
ALWAYS use original accessories and spare parts as instructed by the manufacturer.
If you fail to do this, the guarantee will be rendered null and void, and you could risk operation irregularities that could prejudice the safety of the machine.
Use only oils with the characteristics recommended by the manufacturer.
When carrying out any kind of operation on the machine, disconnect the tractor power takeoff, pull the handbrake, remove the ignition key and make sure that nobody gets onto the tractor.
Before cleaning and greasing the cardan shaft, disconnect the Power Takeoff, switch off the engine, pull the handbrake and remove the ignition key.
Place the cardan shaft on its support (see figure) when not in use.



The tightness and hold of screws and bolts should be checked on a regular basis; tighten them properly if necessary.
When carrying out maintenance on blades, or when replacing the blades with the machine lifted up, place suitable supports under the equipment for safety.
Before working on the cutting tools disconnect the power takeoff, switch off the tractor engine, pull the handbrake and make sure that the tools are completely halted.
Use ONLY oils with the characteristics recommended by the manufacturer.
Follow the indications of the manufacturer when buying spare parts.
Use ONLY original spare parts.
The owner's manual should be kept for the whole working lifetime of the machine.

3 SAFETY REGULATIONS

3.3 CLOTHING

You should put on clothes protecting the body with no hanging parts that could get entangled in moving components. Remove watches, rings, necklaces, etc. that could cause dangerous situations. Tie long hair into a ponytail.

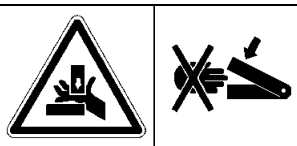
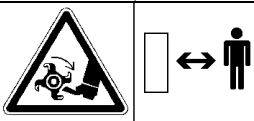
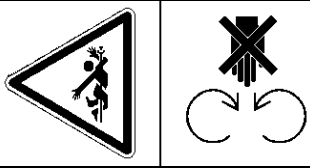
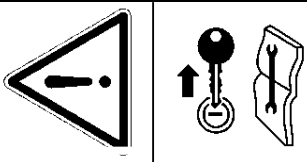
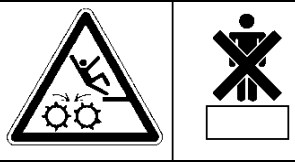
The machine operator may have to wear suitable safety-wear (glasses, gloves, mask, helmet, shoes, etc.).
Check and follow safety rules in your country.

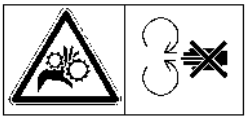
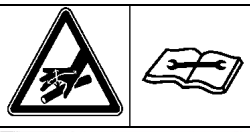
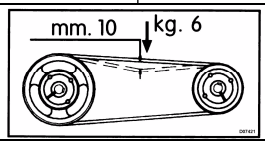
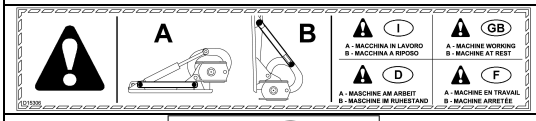
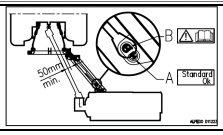
3.4 ECOLOGY

Regulations in your country regarding the use and disposal of lubricating products used for maintenance and cleaning operations on machine must be respected. Observe carefully the indications given on the packaging of the products used.
Follow current rules also for the scrapping of the machine.

3.5 SAFETY SIGNS

A good number of labels on the machine point out the sources of danger. Observe them carefully and follow the indications for a safe use of the machine. These stickers should be kept clean and legible; if damaged they should be replaced.

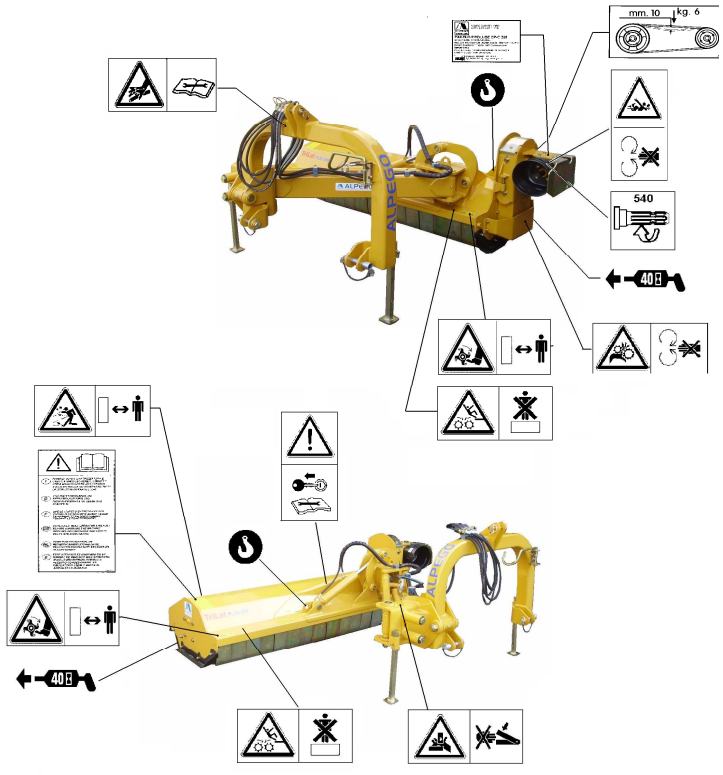
Figure	code	Indications
	**D02612**	It is a MUST to read the owner's manual and safety instructions before using the equipment. These must be followed during use.
	**D02627**	Indicates hooking points for machine transportation
	**D02613**	Indicates the danger of shearing while machine is working
	**D02618**	Indicates the danger of stones being ejected while working. Keep safety distance
	**D02619**	Indicates the danger of rotor rotation while working. Keep safety distance.
	**D02608**	Indicates the danger of entanglement while working on the cardan shaft. Do not approach the shaft while it is rotating.
	**D02615**	Indicates the need to switch off the tractor engine and to remove the ignition key during maintenance operations.
	**D02609**	Indicates that it is forbidden to climb on top of the machine while it is working.

	**D02614**	Indicates the danger of crushing on rotating belts and pulleys.
	**D02624**	Indicates danger caused by pressurised oil. If the hydraulic pipes break, read the owner's manual before repairing the hydraulic systems.
	**D07421**	Indicates how tight the belts should be; 10mm flexure with a 6 kg load
	**D05399**	Indicates the oil to be used in the gearbox
	**D15306**	Shows the correct positions of the safety bar during operation and when idle
	**D11223**	**Optional for TL33 only** Indicates the possible positions of the side shift: standard or increased 200. This is a special accessory only suitable for some types of tractor.

3.6 SOUND LEVEL

If the tractor is equipped with a soundproof cabin, the sound level depends on the kind of insulation of the cabin.
If the tractor does not have a cabin, or if you are working with the windows open, the use of headsets is recommended . Check the current safety rules of your country. (The noise level of the machine while it is working and when measured at a distance of 200 mm. from the rear window exceeds 85 dBa)

3.7 STICKERS INDICATING IMPORTANT POINTS TL X



Before starting-up the machine re-install the accident prevention devices if they have been removed for transportation purposes.

4 INSTALLATION

4.1 LIFTING THE MACHINE

The machine should be lifted and transported with the right means, suitable for its weight, and by personnel trained in this kind of work.
Hook the machine in the two points indicated in the figure below and go ahead. The loads should not be raised by more than 200 mm from the ground while carrying out these operations.

4.2 MACHINES THAT ARE SUPPLIED PARTIALLY ASSEMBLED

Due to their large dimensions, some machines may be supplied with loose or separate parts (in the same packaging). You have to be very careful when assembling these parts: please follow the instructions given by the charts in the spare parts catalogue. In particular, respect the tightening torque values of the screws that come with the machine.

4.3 HITCHING TO THE THREE POINT HITCH OF THE TRACTOR

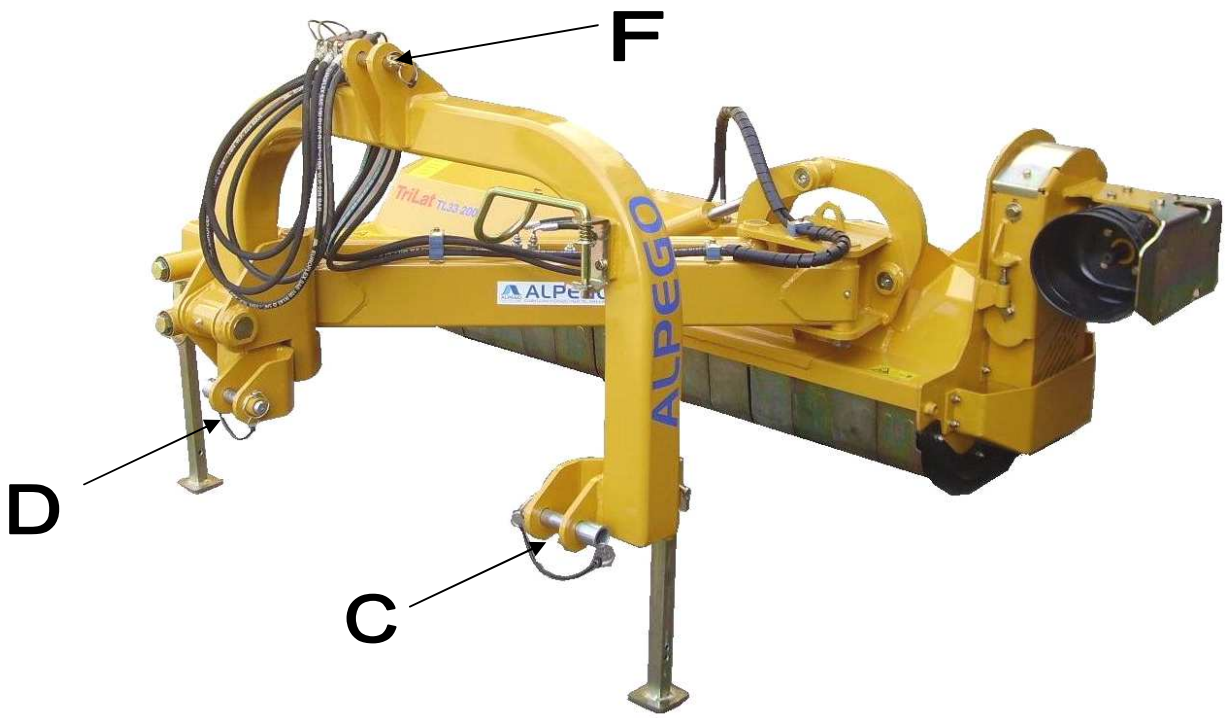
Connection to the tractor is a very dangerous phase, therefore you must follow carefully the instructions while carrying out this operation. The Manufacturer cannot be held responsible for any damage or breakage caused to people and/or things because the given indications have not been followed.

The correct tractor/machine position can be determined by placing the tractor at a distance from the machine where the cardan joint can be extended by 5-10 cm from its maximum closing position.
At this point, proceed as follows:

- The operator must carry out personally the machine-tractor coupling operations.
- Hook the tractor lifting arms to the lower hitching brackets C and D of the machine (see fig.)
- Hook the upper bracket (F) and regulate properly using the tension rod. Make sure that the upper surface of the machine is parallel to the ground.
  is very important , in order to obtain the parallelism between the axle of the p.t.o. shaft of the machine and the axle p.t.o. shaft of the tractor. Working in these conditions limits the stress on the power takeoff and it prolongs the life of both the cardan shaft, and the machine.
- Make sure that all the safety clip pins have been closed.
- To centre the lift arms use the tension rods and the chains supplied with the tractor, but leave some slack.

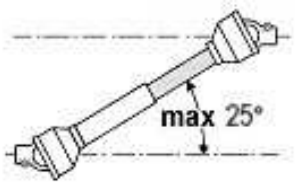
WARNING ! ELIMINATE THIS SLACK DURING TRANSPORTATION.

- Regulate the lift arms and the tension rod of the upper point of the hitch so that the machine power takeoff is parallel to the ground.
- Lift the machine from the ground and fix the supporting foot in the working position, i.e. upwards.
- When assembling the cardan shaft please refer to the instructions given in the owner's manual supplied by the manufacturer.
- The machine should be driven by a 540 r.p.m. p.t.o..
- It is forbidden to drive the machine if the number of r.p.m. of the power takeoff is higher.
- Insert the quick coupling of the hydraulic hoses into the tractor hydraulic intakes. It is advisable to always use the hydraulic intakes in the same position to make it easier for the operator to use the machine.



4.4 CONNECTING THE CARDAN JOINT

The working position angle of the cardan shaft should be as small as possible (not exceeding 25°). This favours longevity of both the shaft and the machine (see fig.)



Since the cardan shaft is a device that rotates at high speed, it is balanced during testing.
Any modification made to it could cause problems in the performance of the machine and to the integrity of the cardan shaft.
When the cardan shaft is extended to its maximum length, in every working condition the telescopic tubes should overlap by at least 330mm for the Models TL31-33 . Should it not be possible to obtain such measurements contact your supplier.
When pushed in as much as possible, the minimum slack should be 4cm.
If this is not possible, contact the Technical Assistance Dept. of the Manufacturer.
Before you start working, make sure that the safety chains are positioned on the protections to stop them from rotating together with the cardan shaft.

Also make sure that the chains are in a good working condition.

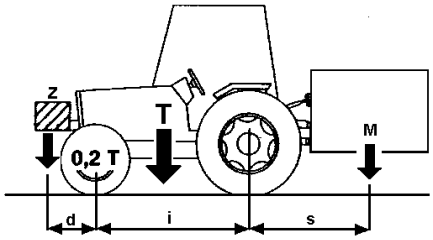
Read the owner's manual of the cardan shaft supplied by its manufacturer.
If the cardan shaft is worn out or broken, replace it with another shaft marked CE

The manufacturer of the cardan shaft strongly advises users not to modify it.
It is therefore forbidden to modify and/or adapt the cardan shaft in any way and for any reason.

4.5 TRACTOR STABILITY AND LIFTING CAPACITY CHECK

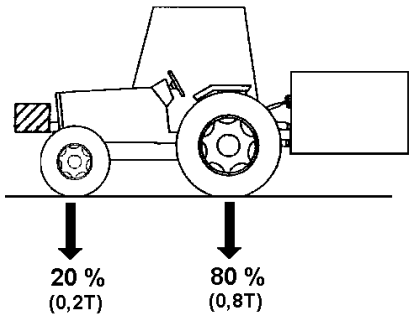
As far as road circulation is concerned, hitching equipment to the tractor to have a single unit, can alter stability and make it difficult to drive and work.

When you add a machine to the tractor, you will change the weight distribution over the axles . It is therefore recommended to add suitable ballast to the front of the tractor in order to properly distribute the weight over the axles. Calculate the ballast to be used with the following formula:



$$M \times s < 0{,}2\ T \times i + Z\ (d + I)$$

$$Z > \frac{(M \times s) - (0.2\ T \times i)}{(d + i)}$$



where:
i = tractor wheel inter-axis (m)
d = distance between the front axle and the front ballast (m)
s = projection of the piece of equipment from the rear axle (m)
T = tractor mass (kg)
Z = ballast mass (Kg)
M = equipment mass (Kg)

At least **20%** of the total tractor-equipment mass should rest on the front bridge of the tractor. It should be remembered, however, that stability can be improved with the right choice of tractor-equipment coupling and with the application of ballast at the front, in the limits and methods indicated by the tractor manufacturer. Moreover, when the tractor is stopped, the machine should be lowered onto the ground.
This also improves stability.

Tractor wheel inter-axis
i =…… m

Distance between the front axle and the front ballasts
d =……m

Projection of the piece of equipment from the rear axle
s =…… ….m

Tractor mass
T =……Kg

Ballast mass
Z =……Kg

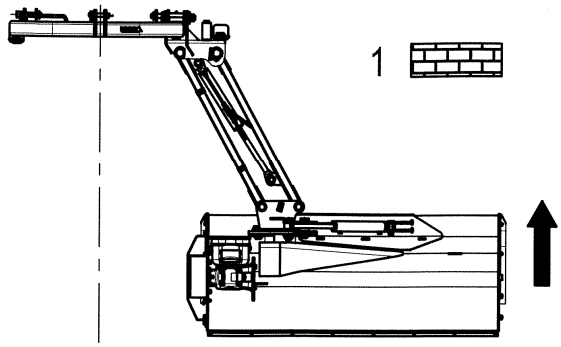
Equipment mass
M =……...Kg

5 – INSTRUCTIONS FOR USE

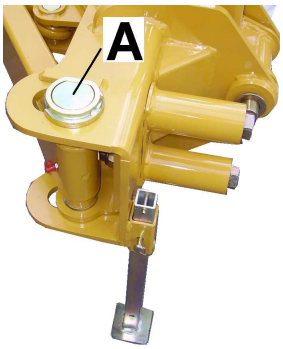
5.1 “NO STOP” SAFETY DEVICE

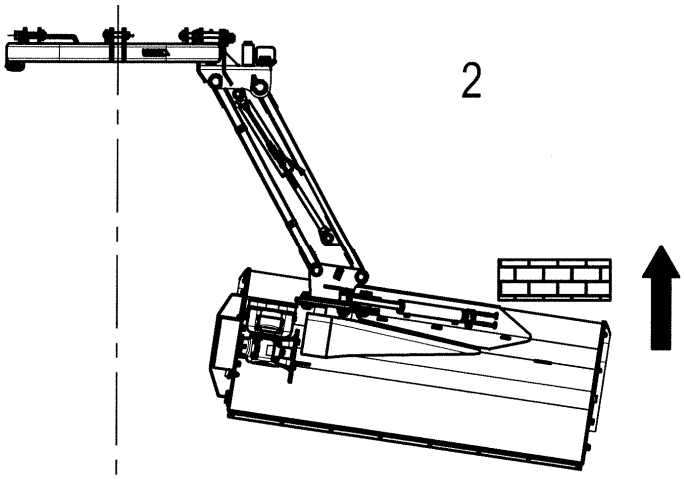
The **TL31-33** verge mowers have a **“NO STOP”** safety system that protects the integrity of the machine structure. The standard-fitted safety device absorbs the shock of the overload when the machine comes up against an obstacle that stops normal forward movement.
When you use the mulcher in areas where you are likely to run into several obstacles, do the following

1 Move forward carefully, even if you can see the obstacle



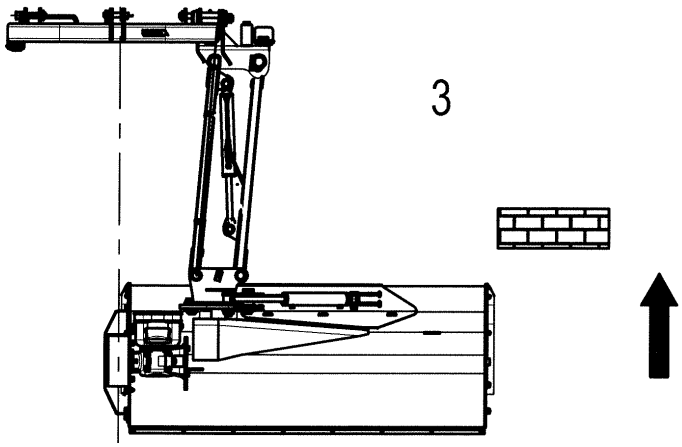
2 Even if you cannot see the obstacle the “NO STOP” device starts working as soon as the mulching head is blocked by an object. The device absorbs the blow immediately, and you can see when this happens because the mulching head rises and the pin (A) along the support guide moves.





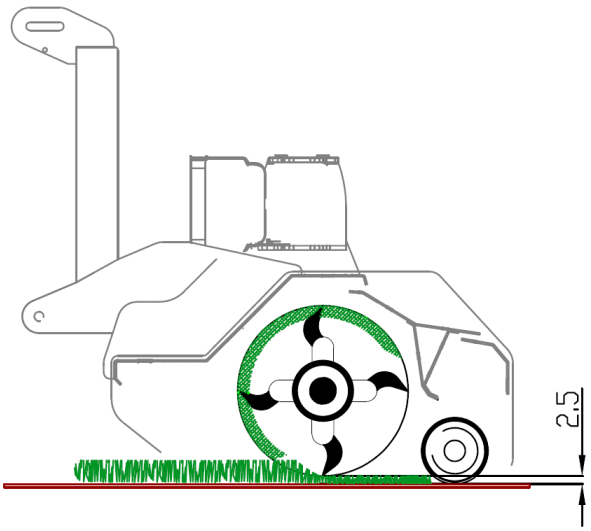
Do not compress the shock-absorbing device too much (never take it to its limit). Excessive compression seriously damages the machine structure.

3 Move the cylinder of the side-shift to overcome the obstacle, then return to the normal position immediately. The safety device automatically resets and you can resume working as before.



5 – INSTRUCTIONS FOR USE

5.1 ADJUSTING THE WORKING DEPTH



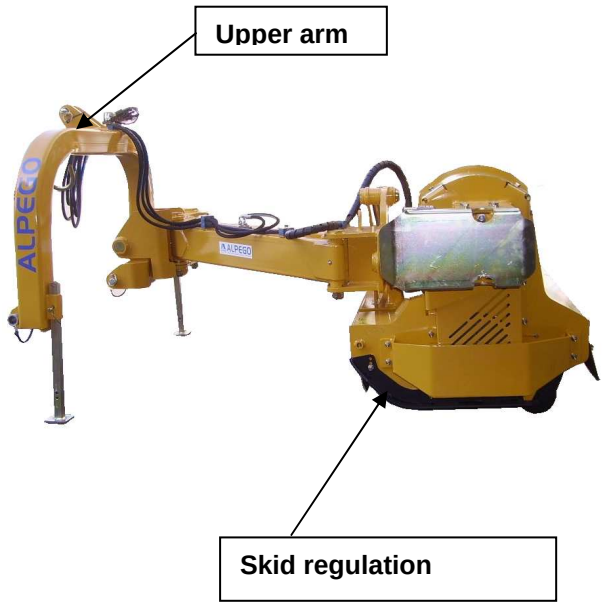
Lift the machine off the ground and set the cutting height.
Regulate the machine position using the tractor lift so that the machine is horizontal or slightly higher at the front to favour entrance of material.

To use the machine correctly, the blades should work at a minimum height of 2.5 cm from the ground. The cutting height can be regulated by acting on the skids, on the rear roller or on the tension rod of the upper arm of the tractor hitch. The higher the machine is lifted off the ground, the less the blades wear and the less power is absorbed.

a) to regulate the skids:
unscrew the skid fixing bolts on the sides of the verge mower, position the skids at the right height and tighten the bolts again;

b) to regulate the roller:
unscrew the roller fixing bolts, position the roller at the right height and tighten the bolts again;

c) to regulate the tension rod of the upper arm of the tractor hitch:
lengthen or shorten the tension rod of the upper arm of the tractor hitch to regulate the working height, then position the machine in parallel with the soil.



5.2 HAMMERS

The machine hammers are suitable for working in terrains having a normal profile.
Check their condition and integrity every day. If they break or deform while working, they should be replaced immediately. Make sure you place the new hammers in the right position. It is a good idea to dismantle and to replace the hammers one by one in order to avoid position errors.
Normal wear (wearing is faster in sandy soil or when working with machines that are too low) and bumping against obstacles can cause cracks or distort the hammers, and this can:

- increase vibrations, thus damaging the machine mechanically;
- worsen quality of work;
- break the hammers completely or in part, with subsequent ejection of fragments at high speed.

Replace hammers in pairs (the hammer, and the one facing it).

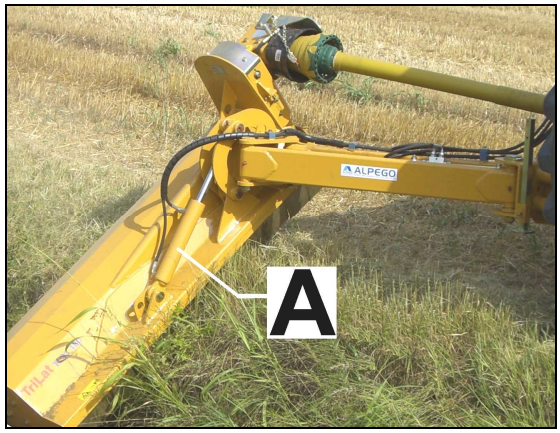
5.3 SIDE SHIFTING

The verge mower is equipped with hydraulic side-shift of the three point hitch frame.

* HYDRAULIC SIDE-SHIF WITH PARALLELOGRAM (movement controlled from tractor)

Check dimensions. Pay attention to the implement protruding in relation to the tractor. Side-shifting causes weight unbalance, so watch out for the increased overturn coefficient.

- ROTATION FOR WORKING ON SLOPES OR EMBANKMENTS



The 2nd cylinder **A** and the whole tilting mechanism for working on slopes or embankments are controlled from the tractor.

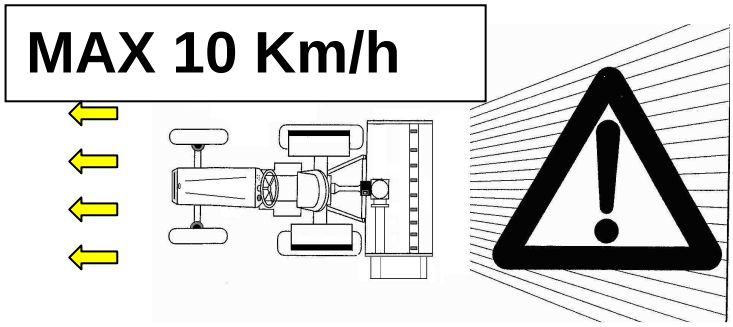
Moderate shifting and movements
Pay attention to the equipment that works outside the profile of the tractor.

When working on slopes or embankments the tractor distributor that controls the tilting cylinder (A) MUST be in the "FLOAT" position

5.4 HOW TO USE

After all the operations described above have been completed, start the tractor. Keep the machine slightly raised from the ground, and start the power takeoff with the engine at a low speed.
As you move forward with the tractor, progressively lower the machine to ground level and bring the engine to the working speed.

While the machine is working, the tractor speed should not exceed 10 km/hour in order to avoid breakage or damage (see figure).



5.5 USEFUL ADVICE

Stones or other dangerous objects can be ejected by the rotating hammers while the machine is working.

The operator should watch out for these objects, and he should constantly check that there are no people, children or animals within the working range of the machine.

Do not allow the machine to turn idle. Do not take turns while the machine is being lowered, and do not work in reverse gear.

Always raise the machine when changing direction and reversing. During transportation and whenever you need to lift the machine, it is a good idea to regulate the tractor lifting device so that the machine is not raised by more than approx. 30-35 cm. off the ground.

Do not circulate on public roads if the machine is dirty with soil, grass or other dirt that could hinder road circulation.

Do not drop the machine violently onto the ground, but lower it gently instead. If lowered violently, all machine components would become heavily stressed, and this could compromise their integrity.

5.6 UNHITCHING

To unhitch the machine from the tractor, proceed as follows:
- disconnect tractor power takeoff;
- lower the machine, placing it on firmly on the ground, then switch off the engine and pull the handbrake;
- disconnect the cardan shaft from the tractor power takeoff and place it in its supporting hook;
- position the supporting feet before unhitching the machine;
- disconnect the connections following the operations described in paragraph 4.3, but in reverse order.

5.7 STORING THE IMPLEMENT

If you do not use the machine for long periods of time, the following should be carried out in order to maintain its integrity:

a) Wash the machine accurately, in particular remove any manure or chemical products etc, then dry it.
b) Make sure that the machine is in perfect conditions.
It is an advantage to have the machine ready for use the next time you need it.
c) Protect all unpainted metal parts with lubricants, then cover the machine or move it into a dry area.

5.8 TROUBLESHOOTING

- If you hear strange noises while the machine is working, stop and make sure that you have set the correct working conditions.
- Using a machine which is not working properly could be dangerous to the user.

Working on slopes :
If possible, climb up in the direction of the slope. If this is not possible, avoid working along the sides of the hill. First move upwards and then downwards to reduce the “terrace” effect.
Practical observations:
The ground which has already been worked on should always be to the right of the driver. The best system is to work along alternate strips.

PROBLEMS AND CAUSES

Problem		***cause***	***Solution***
Excessive vibration	1	Blades or hammers broken or too worn out	Replace the worn out or damaged parts
	2	Blades or hammers stuck on supporting pin	Clean and grease the pins
	3	Rotor balance unsuitable	Check weight of the blade blocks
	4	Rotor bearings worn out	Dismantle and replace bearings and seals
Cut is not excellent, because of a rotor speed drop	1	Belt tension insufficient	Adjust tension
	2	Excessive belt wear	Replace belts
Belts overheat	1	Wrong belt tension	Check tension
	2	Working position too low	Check alignment
	3	Axle, return and rotor axle are poorly aligned	
Bevel gear unit overheats	1	Not enough oil	Reset level
	2	Oil is spent	Top up
Blades or hammers wear out too quickly	1	Work position too low	Regulate height between the rotor and the ground
Oil leaks from the belt side of the transmission	1	Oil seal worn and broken	Replace oil seal
Deformation of roller or wheel supports	1	The roller or wheel supports have been stressed on the sides	Lift machine off the ground when reversing
Deformation of protecting plates	1	The machine has been lowered from its raised position (transportation) over the material to be mulched	The machine should be placed in working position before reaching the material to be mulched
Excessive belt wear	1	Incorrect belt tension	Adjust tension
	2	Transmission pulley badly aligned	Check tension
Transmission organs broken	1	The machine has been driven or blocked too suddenly	Replace broken parts

5 – INSTRUCTIONS FOR USE

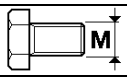
5.9 OTHER ADVICE FOR TRACTOR DRIVERS

problem		*Solution*
The mulched product is minced too fine	1	Lift machine slightly from the ground, adjust the height with the wheels (the verge mower hammers should not touch the ground)
	2	Increase driving speed of tractor
The mulched product is not minced enough	1	Lower the machine slightly to the ground
	2	Reduce speed of tractor
	3	Do not work on ground that is too wet
Material wraps around the rotor	1	The ground is too wet
	2	Lift the machine from the ground
	3	Reduce speed of tractor
	4	Do not work if the grass is very high
	5	If necessary clean side of rotor, remove any remains stuck on supports to avoid overheating
The machine bounces on the ground or vibrates	1	Strange objects stuck between hammers
	2	Hammers not mounted properly, i.e. not helicoidally, or with the rim penetrating into the ground
	3	Replace worn or broken hammers
	4	Rotor deformation caused by hits from strange objects in the central part while working
The machine does not work evenly over its whole width	1	If, for example, it mulches too much on the right side, shorten the right arm.

6 - MAINTENANCE

6.1 CHECKS AND CONTROLS

During the first 8 working hours it is important to check that all the bolts are perfectly tight, because the power generated while the machine is at work, causes the structure to settle. If necessary tighten bolts as indicated in the chart. Repeat this check every 50 working hours.

	**M 8**	**M 10**	**M 12**	**M 14**	**M16**	**M18**	**M20**	**M 22**	**M 24**
	**13**	**17**	**19**	**22**	**24**	**27**	**30**	**32**	**36**
driving torque Kgm	**3**	**6**	**10**	**14**	**21**	**24**	**40**	**54**	**70**
driving torque Nm	**30**	**59**	**98**	**137**	**205**	**250**	**390**	**530**	**685**

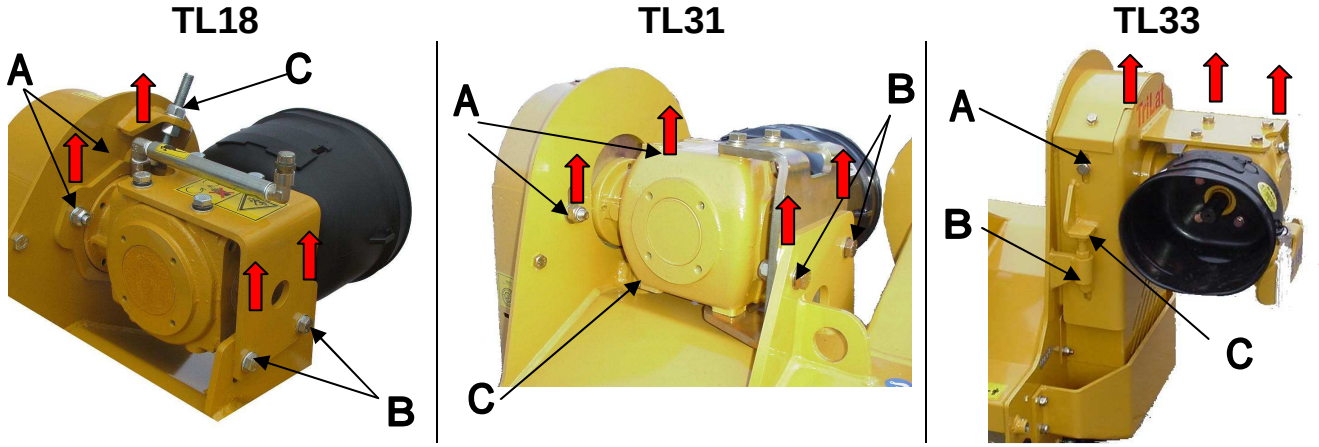
6.2 LATERAL TRANSMISSION TRANSMISSION

The driving force is transmitted to the rotor by belts with an adjustable pulley.
To avoid bad functioning or slipping of the belts, check the tension of the transmission belts on a regular basis.

How to tighten the transmission belts

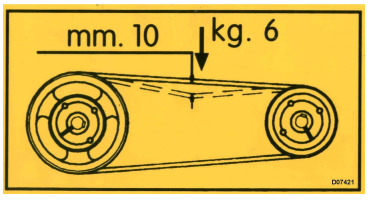
First make sure that the tractor engine has been turned off, then proceed as follows:
- Remove the screws that fix the protective casing, then open the casing by pulling it outwards;
- To check the tension, press each belt in its central area between the two pulleys using a 6 kg weight to cause it to bend by 1 cm;
- Loosen the screws that fix the gearbox to the frame;
- Work on the two adjusting screws until the belts reach the correct tension;
- With the belt correctly tensioned, check pulley alignment;
- Tighten all the loosened screws;
- Re-assemble the casing.

Belts should be checked regularly after the first 2 working hours and subsequently every 8 hours. A check should also be carried out if there is excessive slipping, indicated by smoke coming out of the protective casing. To guarantee a uniform tension and a correct power distribution, replace all belts even if only one is damaged.



Loosen screws A and B (see photo), increase or decrease the belt tension by working on screw C. When tensioning the belts check that the pulleys are well aligned.

Press on the belt in the central area between the two pulleys using a 6 kg weight to buckle the individual belts by 1 cm. You should be equipped with a suitably long metal ruler which touches all four edges when placed on the two pulleys.



6.3 REPLACING THE HAMMERS

To replace the hammers, proceed as follows:

- Position the machine with the tractor on a flat surface;
- With the tractor lifting unit, lift the machine as high as possible;
- Position suitable supporting stands under both sides of the machine;
- Stop the tractor and pull the handbrake;
- Replace the hammers, tighten properly the screws with their corresponding bolts.

The supporting pins can be secured with split pins or bolts, according to the machine model.
The driving torque is 250 Nm for M18 screws, and 205 Nm for M16 screws.

6.4 LUBRICATION

Read the warnings written on the containers carefully. ALWAYS keep oils and greases out of the reach of children. Avoid contact with the skin. After using the product, wash hands well. You have to follow the current anti-pollution laws when handling spent oil.
The intervention times given in this manual are just an indication, and concern normal working conditions. They can therefore change according to the type of workload, if the environment is more or less dusty, because of seasonal factors, etc.
When the machine is perform under severe working conditions, maintenance interventions should logically be increased.
- **Before injecting lubricant into the greasers, clean them carefully to prevent mud, dust or strange objects from mixing with the grease, which would decrease or even eliminate the lubricating effect.**
- **When changing or adding oil, use always the same type of oil.**

Check lubricant level when starting the machine for the first time. Clean well these parts or areas before checking, before adding and before replacing lubricants.
Before you start working, check the oil level in the gearbox (use gauge, or level rod). If necessary put more oil through the filling tap.
Oil should be changed after the first 30 working hours, and after that, every 400 hours, or at least once a year. This should be done in an equipped workshop with lifting systems suitable for the machine, and stabilised with suitable supports. To discharge oil, unscrew the discharge tap.

Every 8 hours :
- grease cardan cross shaft
- grease rotor bearings
- make sure that the bolts are tight
- check belt tension

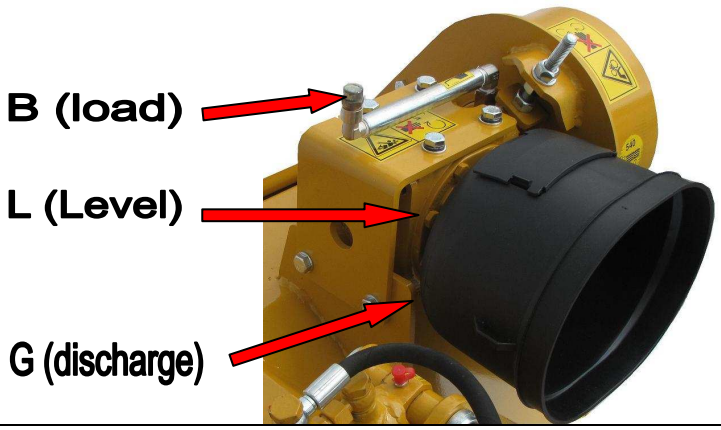
Every 50 hours :
- check oil level in the gearbox

Every 400 hours :
- change completely oil in the gearbox, discharging oil completely through the discharge tap positioned under the gearbox

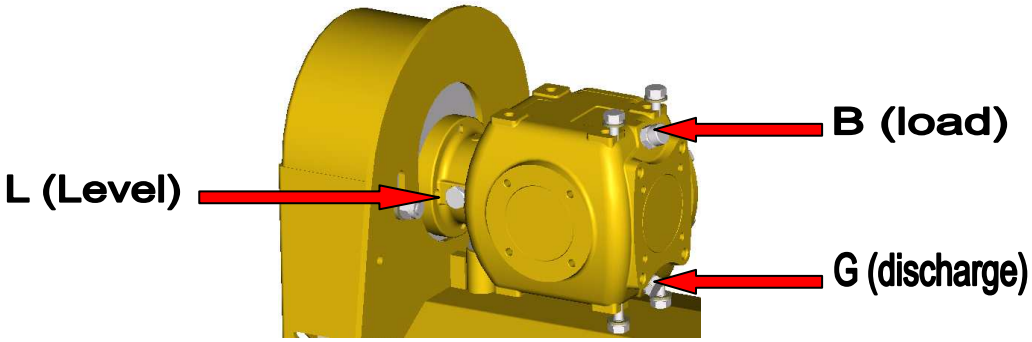
6.5 LUBRICATION PLAN

PERIOD	OPERATION	LUBRICATING POINTS
every **8/10** working hours	- GREASE (USE GREASING POINTS) - GREASE PIPES AND CARDAN CROSS SHAFT - CHECK OIL LEVEL. IF LOW, ADD MORE OIL	**E - B - G**
after the first **30** working hours	**CHANGE OIL IN** GEARBOX	**B - G**
every **400/450** working hours	- **CHANGE OIL** COMPLETELY IN THE GEARBOX AND CLEAN DISCHARGE TAPS IF MAGNETIC	**B - G**

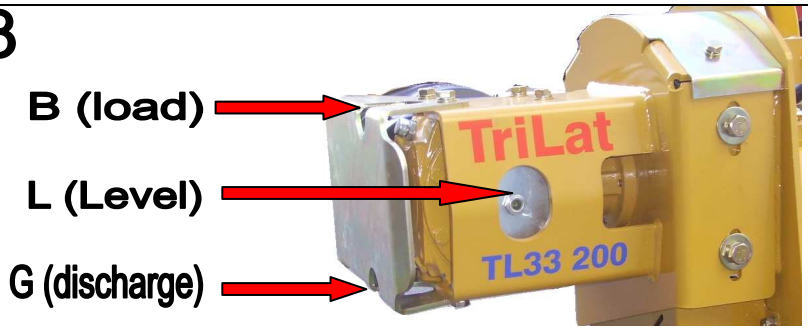
TL18

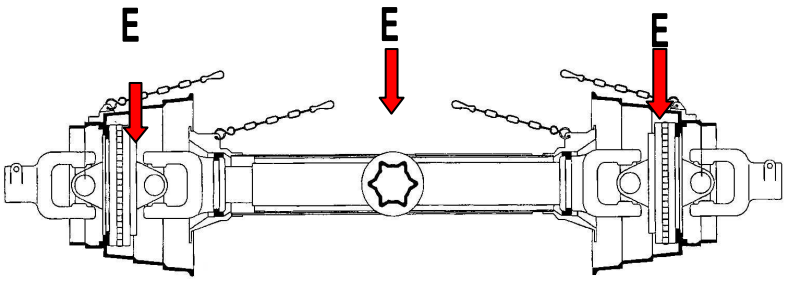


TL31



TL33





6.6 LUBRICANTS TO BE USED (L.= litres)

OIL:

lubrication point	Type (Quantity)	Reference (first fill from Alpego)	Oil viscosity index of alternative product	International specifics of alternative product
B	**TL18** (L. -)	Pakelo Erolube EP-C ISO 320 (-20 / +40℃)	ISO 320 (as per ISO 3448)	DIN 51517 Part 3 FZG Stage 13 Pass
	TL31-33 (L. 1,3)			

OIL: (for special working conditions)

Outside temperature	Working temperature	Oil viscosity index of alternative product	International specifics	Reference
-25 / +45℃	> 110 ℃	SAE 80W/140 (as per SAE J306) synthetic bases Group III /IV	API GL-5 API MT-1 SAE J2360	Pakelo Global Tranmission TS SAE 80W/140
-35 / +45℃		SAE 75W/140 (as per SAE J306) synthetic bases Group III /IV	API GL-5 API MT-1 SAE J2360	Pakelo Global Tranmission TS SAE 75W/140

GREASE:

lubrication point	Type (Quantity)	Reference (first fill from Alpego)	Alterntive product consistency	Note
E	Kg.0.01 for each greaser	Pakelo EP GREASE NLGI 2	NLGI 2	

USATE SEMPRE RICAMBI ORIGINALI
EMPLOYEZ TOUJOURS LES PIECES DE RECHANGE ORIGINALES
IMMER DIE ORIGINAL-ERSATZTEILE VERWENDEN
USE ORIGINAL SPARE PARTS ONLY

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