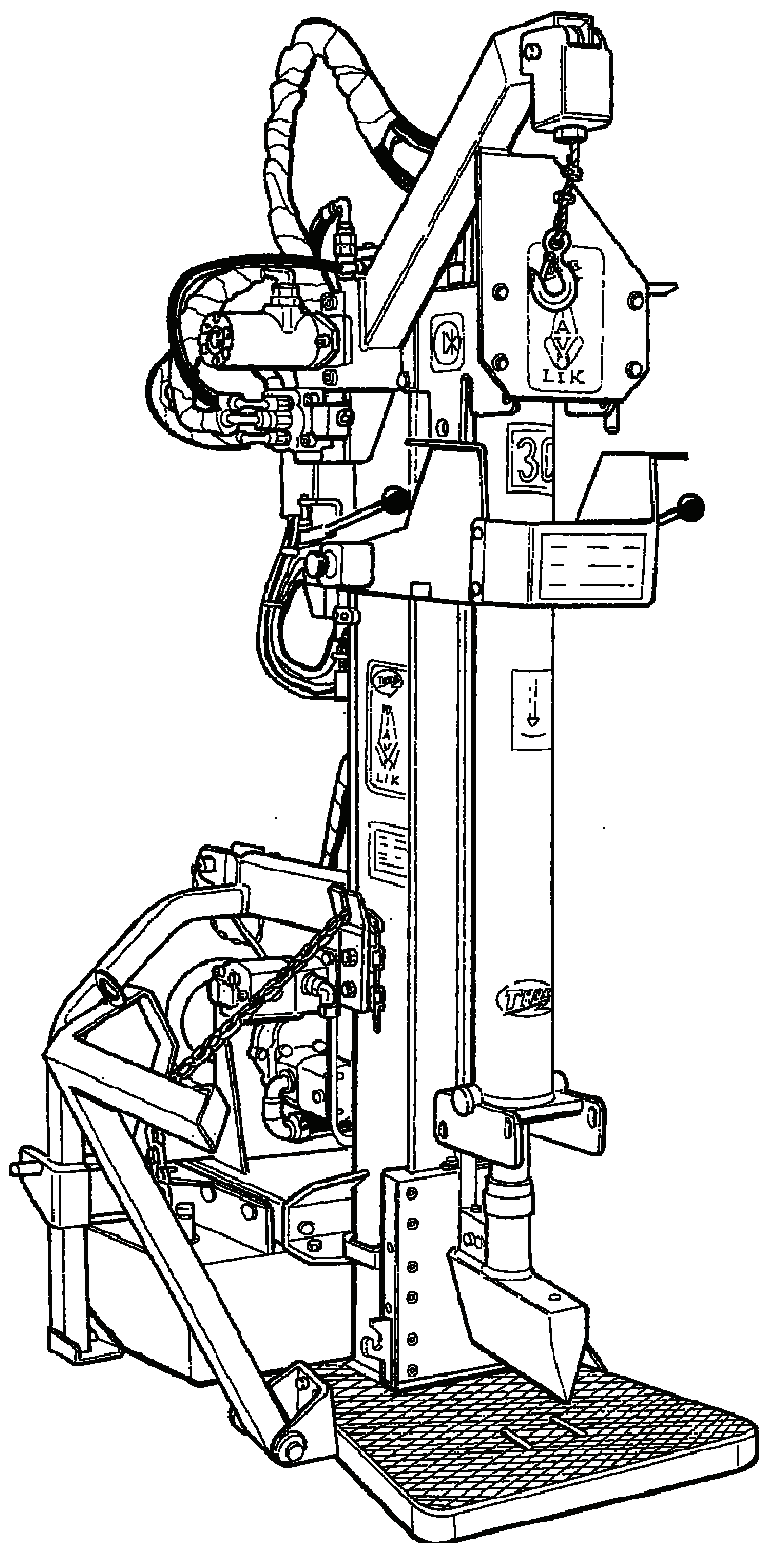


# GB

## Operator use and maintenance

*"Contains CE conformity declaration"*

*Original instructions*



***Serie:***

**45 - 47: Diabolik  
STANDARD**

***Mod.:***

**20 ton - 20000  
EL/ KOMBI**

***Mod.:***

**22 ton - 22000  
V.PF**

***Mod.:***

**30 ton - 30000  
EL/V.PF/ KOMBI**



Read this manual carefully before using the machine

# Index

INTRODUCTION.....	4
WARRANTY .....	5
1. MACHINE INFORMATION .....	7
2. SAFETY PLATES and SYMBOLS .....	10
3. TRANSPORT PROCEDURES .....	11
4. SAFETY INFORMATION.....	11
5. UTILIZATION PROCEDURES .....	14
6. RECOMMENDATIONS IN CASE OF INCONVENIENTS .....	17
7. INSTALLATION .....	18
8. BEFORE THE WORKING CYCLE .....	21
9. WORKING CYCLE.....	22
10. TRANSPORT ON THE ROAD .....	23
11. STORAGE .....	25
12. MAINTENANCE .....	26

**T**his manual provides you with all the necessary information for the use and maintenance of your machine. It will work well and last for a long time if it is maintained well and used carefully.

Before leaving the production plant, this specific model was subjected to rigorous testing so as to guarantee maximum reliability. However, it is necessary to check that the machine has not suffered any structural damage during transport that could jeopardize its functioning and safety.

This manual is to be considered an integral part of the machine and must accompany it until it is broken up.

If it is lost or damaged, ask **Ricca Andrea & Co.** for a replacement copy.

This manual was written in accordance with European Directive 2006/42/CE, a directive concerning machine safety, which substituted Machines Directive 98/37/CE and came into force in December 2009. These guidelines stipulate that the machine be equipped with all the necessary safety systems even in the planning phase, in order to avoid risky and dangerous situations for the users' health.

The technical information contained in this manual is the property of **Ricca Andrea & Co.** and must be considered confidential.

Reproduction of the graphics, text and diagrams, even in part, is forbidden by law.

Certain details shown in the diagrams in this manual could be different from those on your machine. Certain components might have been removed in order to make the diagrams clearer.

To make this manual easy to consult, it is divided into different sections, each one with a different symbol.

The topics discussed in this manual are those expressly required by the "EC Machine Directive 98/37" and subsequent modifications and the technical data given is that supplied by the manufacturer at the moment of writing.

This manual must be kept in a place which is accessible to all the staff in charge of operating and maintaining the machine.

In case of any dispute, the Cuneo Law Court in Italy will have jurisdiction.



**In case of any problems, our technicians are at your complete disposal.**

**Tel. 0039.0171.946709 - Fax 0039.0171.946719**



**If the machine is sold to another party, this manual must be given with it !**

## CONDITIONS AND LIMITATIONS

**A**ll our machines have been subjected to careful testing and are covered by a 24-month warranty for private and DIY use and a 12-month warranty for industrial use or for hiring from the date of production against manufacturing defects.

The warranty starts from the purchase date indicated on the guarantee card enclosed with the manual. When the card has been duly and completely filled in, it must be sent to the manufacturer within 10 days of the first use of the machine.

The warranty is not valid if the machine is repaired by unauthorized third parties or if equipment or accessories are used which have not been supplied by **“Ricca Andrea & Co.”**, or which have not been recommended or approved by the above, or if the serial number has been removed or altered during the warranty period.

**“Ricca Andrea & Co.”** undertakes to repay or replace free of charge any parts which, within the warranty period, prove to have manufacturing defects.

Repairs are carried out exclusively in our factory or in a Technical Service Centre that we indicate and must arrive free port (with transport costs paid by the user unless agreed otherwise).

The warranty does not provide for any cleaning of working parts.

Defects which are not clearly attributable to the material or manufacture will be examined in our factory or in a Technical Service Centre that we indicate.

If the claim should prove to be unjustified, all repair and/or replacement costs of parts will be charged to the purchaser.

The fiscal purchase document must be shown to the technical personnel carrying out the repairs or must accompany the machine if sent for repair.

The following are excluded from the warranty: accidental damage caused by transport, by negligence or inadequate treatment, by improper use not corresponding to the directions given in the instruction book and any phenomenon nondependent on the normal operation or use of the machine.

**“Ricca Andrea & Co.”** declines all responsibility for any damage to persons or things caused by wrong or improper use of the machine.

For any dispute, the Cuneo Law Court in Italy will have jurisdiction.



**Failure to send the card nullifies the warranty !!**

## DUPLICATION OF THE GUARANTEE CARD PROVIDED WITH THE MANUAL

### PART (A)

GUARANTEE CERTIFIED TO BE KEPT AND SHOWN TO THE AUTHORIZED TECHNICAL CENTRE

This certificate, together with the sales receipt, must be shown to the technicians carrying out the repair or must accompany the machine when it is sent for repair.

The certificate must carry the dealer's stamp and the date of purchase.

N.B.: The guarantee is valid only if this card has been filled in completely.

DEALER or FINAL USER

Name

Address

Nr.

Post code

Town

Country

Tel.

Fax

e-mail

MODEL:

NUMBER:

1<sup>st</sup> DATE OF SALE  
(24 months)

2<sup>nd</sup> DATE OF SALE:

### PART (B)

#### GUARANTEE CERTIFICATE

All our machines have been subject to careful testing and are covered by a 24-month guarantee against manufacturing defects.

The guarantee starts from the Ricca Snc sales date after the card has been duly and completely filled in.

The sales date is that indicated on the back of this card.

"Ricca Andrea & Co." undertakes to repair and replace free of charge any parts which, within the guarantee period, prove to have manufacturing defects. Defect which are not clearly attributable to the material or to the manufacture, will be examined in our factory or in a Technical Service Centre that we indicate and charged according to the nature of the problem.

The following, however, are excluded from the warranty: accidental damage, damage caused by transport, carelessness or unsuitable treatment, improper use not complying with the warnings indicated in the manual and by phenomena not dependent on normal machine use and operation.

The warranty is void if the machine has been repaired or tampered with by unauthorized third parties. Repairs are to be carried out by one of our authorized Technical Assistance Centres, or in our production centre. Machines must be forwarded free port (the freight costs are to be paid by the user, unless agreed otherwise).

This warranty certificate **and the purchase receipt** must be exhibited to the technician who performs the repair, or must accompany the machine when it is sent for repair.

The warranty does not include the cleaning machine parts.

"Ricca Snc" declines any responsibility for any damage to objects or harm to people, caused by wrong or improper machine use and maintenance.

For any dispute, the Cuneo Law Court in Italy will have jurisdiction.

## 1. MACHINE INFORMATION

### 1.1 Machine description

This series of models, which are exclusively professional, is ideal for those who use wood for heating (fireplaces, stoves, wood-fired boilers).

The company has designed and built these models to guarantee a maximum safety.

The **DIAVOLIK** models with *STANDARD* system are described in this manual.

The various log-splitter models differ due to their power and feed-type which can be electrical (EL), with a piston motor (VS), with a cardan joint (V.PF) or combined (KOMBI).

Every model is supplied strictly following the regulations in force in the various international markets.

### 1.2 Manufacturer's identification data

Ricca Andrea & C. Snc  
Via Vecchia di Cuneo, 57  
12022 BUSCA (CN) - ITALY  
Tel. 0171.946709 - Fax 0171.946719

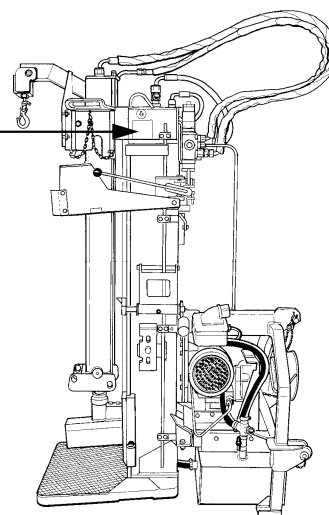
### 1.3 Machine's identification plates

For any contact with the manufacturer it is always necessary to quote the data given on the machine identification plate.

COSTRUTTORE <b>RICCA ANDREA &amp; C. Snc</b> 12022 Busca (CN) Italy		
Modello : Serie : Matricola : Pressione bar : P.s.i. : P.t.za n.le assorbita : Corrente n.le : 50 Hz Tensione n.le : <input type="checkbox"/> 230 <input type="checkbox"/> 400 Grado di protezione : IP <input type="checkbox"/> 54 <input type="checkbox"/> 44 P.t.o. max G/M : <input type="checkbox"/> 540 <input type="checkbox"/> 1000 Massa : Kg. <b>2001</b> Codice 100.029		

Model:  
Series:  
Serial nr.:  
Pressure (bar):  
Absorbed nominal power:  
Nominal electric current: 50 Hz  
Nominal voltage: 230 400  
Protection degree: 54 44  
PTO max. rpm.: 540 1000  
Weight: Kg.

Code: 100.029



### 1.4 Machine's identification data

Year of manufacture: 2007  
Series name: Diavolik  
Machine mass: 670 kg  
Rated electrical data: Protection cat. IP 54  
Absorbed power 7,5 kW  
Rated frequency 50 Hz  
Input voltage 400 V  
Rated p.d.p. frequency: 540

### 1.5 Designed use

These specific wood-splitter machine models have been designed, built and protected only for cutting fire-wood logs of various sizes depending on the model.



ATTENTION: The max. admissible log diameter and length are given in the summary table.

Furthermore the log splitter has been built only for breaking logs longitudinally with respect to the wood fibres.

Use of the machine other than that specified by the purchaser's order and/or by the manufacturer's technical specifications is considered to be IMPROPER.

"Ricca Andrea Snc" has 30 years' experience of the normal use of its machines. With this experience we have been able to identify certain common features of the wrong use of its machines.

In particular, improper use generally belongs to one of two different categories:

- The pieces of wood are cut crosswise and not parallel to the wood filaments
- Wrong cutter use, compared with the dimension of the log to be split.

The above represents a range of mistakes that could lead to serious hazards.

## 1.6 Permitted environmental conditions

So as to guarantee correct operation, the machine must be sheltered from atmospheric elements (rain, hail, snow, fog, suspended particles of dust, etc.) with a working environmental temperature between -15° and 45° and relative humidity no greater than 70%.

The working environment must be clean, sufficiently bright and in the absence of an explosive atmosphere.

## 1.7 Noise level

Noise meter trials carried out on these models show a continuous acoustic pressure of less than:

$L_{pa} < 80 \text{ dB}$ .

Although the noise levels are such that they do not disturb the hearing, when the operator activates the tractor's PTO it is advisable anyway to use the proper individual protection devices.

## 1.8 Qualitative characteristics

Approval by the most important European certification authorities.

Double-acting hydraulic cylinder with return safety block.

Retractable hydraulic cylinder.

Electric system with safety magnetothermal switch.

Long-lasting epoxy paint.

Interchangeable slide guides.

Anti-capsizing front and rear supports.

Very high quality materials and components.

Strict component and final quality testing.

## 1.9 Storage

Remove all foreign parts from the machine and clean the surfaces [exposed to dust](#).

Using a brush, coat all the mechanical parts, including the fastening devices, with a protective lubricant (grease or oil) to be removed in case of reinstallation with alkaline degreaser.

To move the machine follow the instructions written on page 23.

Protect the parts from the build-up of dust by covering them with a sheet.

Choose a flat and horizontal surface to store the machine, preferably near a sheltered wall or a corner and protected from weather conditions in order to guarantee a temperature between 0° and 40° C.

## 1.10 Scrapping

If the machine is to be scrapped, it must be disposed of in appropriate dumps, respecting the regulations in force.

Collect any used oil and dispose of it in the special oil collection centre (C.O.O.U. – Obligatory Agency for Used Oils – Free Phone 800 863 048). Do not dispose of the oil in the environment as, according to the laws in force, it is classified as dangerous refuse.

Before scrapping the machine, it is necessary to separate the plastic or rubber parts and the electric material.

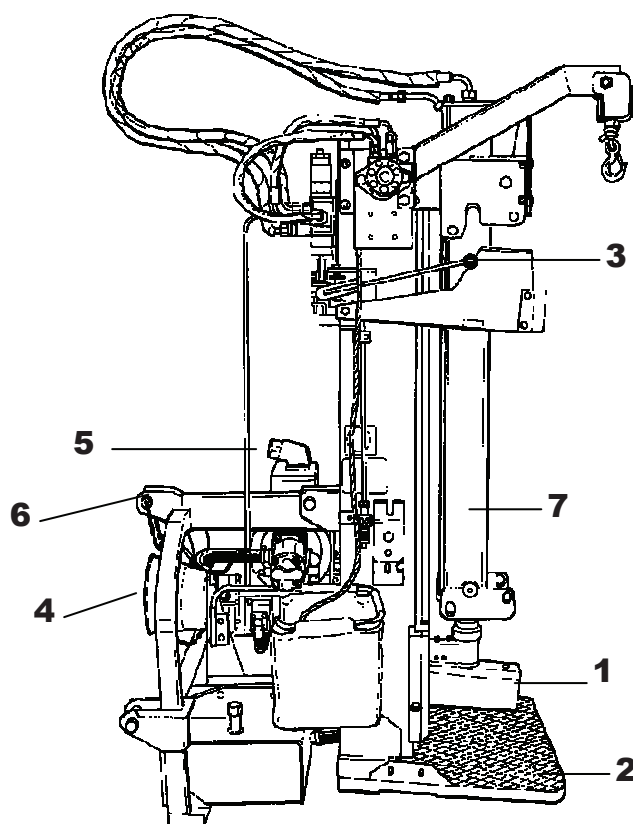
Those parts made solely of plastic, aluminium and steel can be recycled if taken to special collection centres.

### 1.11 Overall dimensions / Technical data

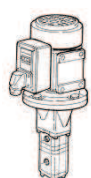
For overall dimensions and technical data, refer to the summary table.

### 1.12 Identification of the main components

1. CUTTER
2. LOG SUPPORT BASE (120 cm)
3. LEVER CONTROLS
4. POWER UNIT PTO
5. POWER UNIT EL
6. 3rd POINT 1st – 2nd CAT. JOINT
7. HYDRAULIC CYLINDER
8. REMOVABLE LOG SUPPORT BASE (cm 50)



NB: this diagram represents the Kombi model.



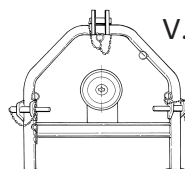
EL ✓



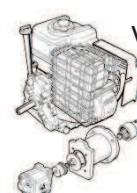
HV \*



HVP \*



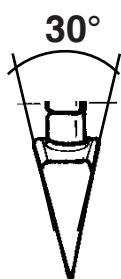
V.PF ✓



VS \*

✓ Standard power supply units    \* Power supply units available upon request

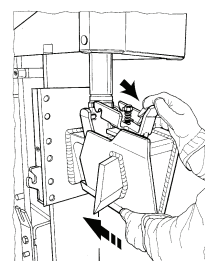
### 1.12 Optional accessories



Standard 30° fixed cutter



Log support base (cm 50) with side extensions  
**Code 891.017.K** for Diavolik *STANDARD*



Cross cutter  
**Code 891.006.K**

## 2. SAFETY PLATES and SYMBOLS

Self-sticking labels with safety symbols and/or messages are applied to the machine. The nature of the danger and the position of the labels on the machine are indicated in this chapter.



**ATTENTION:** Ensure that all safety messages are legible. Clean them using a cloth, soap and water. Do not use solvents, naphtha or petrol. Ask Ricca Andrea & C. Snc. for replacement labels if necessary and replace any damaged labels. If there is a label on a part which is to be replaced, ensure that a new label is affixed onto the new part.

*NB: for reasons of space, the warning and attention pictograms have been grouped into one single self-sticking label positioned in point (A).*

Plate (A)



Read the manual carefully before using the machine or before carrying out a maintenance operation.



Read the use and maintenance manual carefully before carrying out any operations on the hydraulic system.



Disconnect the power supply before carrying out any maintenance operation.



Electrocution hazard. Operate in dry places.



Shearing hazard. Do not approach the wedge when in motion.



Crushing hazard. Stand at safe distance.



Crushing hazard. Keep arms away.



Beware of hot surfaces (oil tank, engine, oil pump). Stand at safe distance.



Flying object hazard. Stand at a safe distance.



Power down the tractor before carrying out any maintenance operation.



Do not stand between the tractor and the machine.



Do not approach the PTO shaft if it is in motion.



Use safety gloves.



Use ear muffs.



Use safety glasses.



Use overalls.



Use safety shoes.



Plate (B)  
CE-label.



Plate (C)  
(for EL or Kombi models)  
Rotating sense for EL-models

(for HVP, V.PF or Kombi models)  
Beware of the PTO rotating sense.



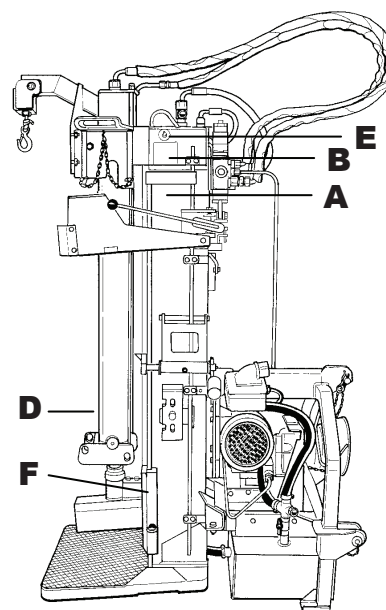
Plate (D)  
Two persons must not work on this machine together.



Plate (E)  
Coupler position for lifting.



Plate (F)  
Greasing point

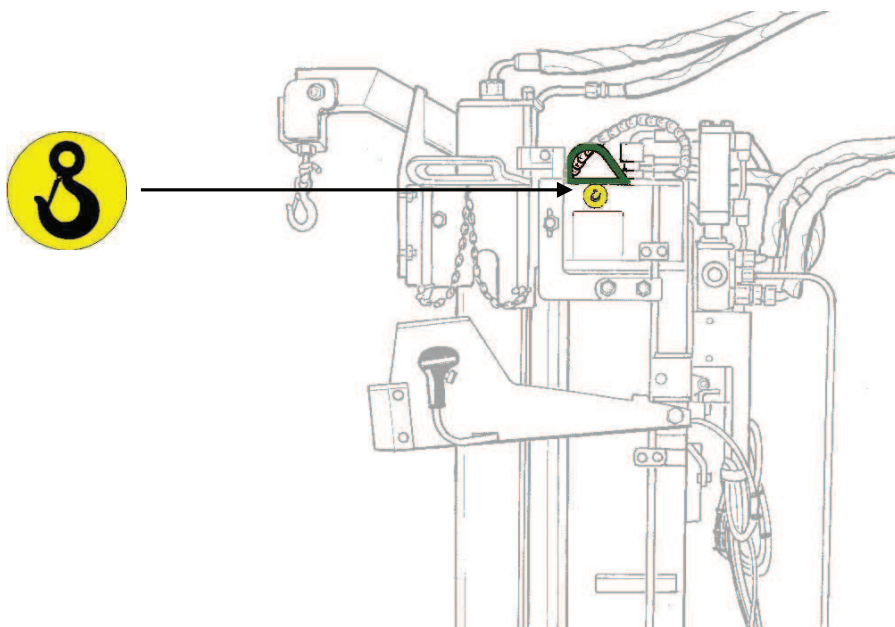


### 3. TRANSPORT PROCEDURES

---

Machine lifting must be carried out only by expert and properly trained operators, such as fork-lift and body-harness operators.

The machine must be lifted only using the lifting points designed by the manufacturer for this purpose and indicated on the machine with the appropriate pictogram.



Use only tools that are suitable for machine lifting and appropriate to its weight. Machine weight is 670 kg (without log). Pay very great attention to the safety of those involved in lifting and transport.

### 4. SAFETY INFORMATION

---

According to the Safety-at-Work Unified Code 81/2008 (which replaced Law 626/94), the company safety manager is obliged to inform workers about the risks connected with the use of the machine. Furthermore, he/she is obliged to provide workers' training so that they are able to guarantee their own safety and that of others.

Failure to observe the basic safety standards or precautions could lead to accidents during machine operation, maintenance and repair. An accident can often be avoided by recognizing potentially dangerous situations before they occur. The operator must be careful about the potential dangers and must have the training, expertise and instruments necessary to carry out these duties correctly.

**Ricca Andrea & Co.** cannot in any case be held responsible for accidents or damage resulting from machine use by personnel not suitably trained or personnel that used the machine in an inappropriate way. Nor can it be held responsible for the failure, even partially, to observe the safety standards and intervention procedures in this manual.

The safety precautions and warnings are indicated in this manual and on the product itself.

If attention is not given to these danger warnings and information, the operator may incur accidents with serious consequences for himself and other people.

The safety messages are indicated with the following symbols:



**ATTENTION:**

**If these messages are not observed, they could be harmful to the operator.**



**WARNING:**

**If these messages are not observed, they could cause damage to the machine.**

The warnings in this manual and on the products regard dangerous situations which are reasonably predictable and do not take into account any deliberate modifications or alterations to the safety devices and the correct working procedures.

If equipment, procedures, work methods or working techniques not expressly recommended by **Ricca Andrea & Co.** are used, it is necessary to ascertain that there is no danger for the operator and for others.

**Use original spare parts only**

**Ricca Andrea & C.** declines every responsibility for the use of non-original spare parts.

**Safety rules**



**ATTENTION:**

**The following indications cannot protect the operator from every danger that he can meet operating the machine. They must be supplemented by the operator's common sense and experience, the only indispensable measures for accident prevention.**

**Further safety rules specific to the various operations are listed in every section.**

Read this manual carefully before operating the machine.

If any instruction should not be clear, contact the dealer or the manufacturer immediately.

If this manual is damaged or lost, ask the dealer for a replacement copy.

The log-splitter is designed only for normal use in agricultural, domestic or forestry work. Any other use of the machine is to be considered unsuitable.

The manufacturer will not answer for damage resulting from improper use.

**Structural damage, modifications, alterations or improper repairs can alter the machine's protection capability thus annulling this certification.**

Any modification operations must be carried out exclusively by technicians authorized by **Ricca Andrea & Co.**

Check that the machine is not damaged in any way.

Always keep the machine clean, and in particular the working board must always be clean and free from external materials, such as deposits from previous cutting operations.

Always stop the machine when cleaning, maintenance and transport operations are to be carried out. For electrical models, disconnect from the mains.

**The log-splitter must not be left unattended whilst it is running.**

The log-splitter must be used exclusively by expert operators who are aware of any possible dangers.

Strictly prevent under-age persons from using the machine.

**Two persons must never carry out cutting operations simultaneously.**

**Sudden distractions could cause physical harm to the person helping.**

Do not allow unauthorized personnel near the machine when it is being used.

Ensure that the operating area is well lit.

Do not use the machine in damp places or in adverse weather conditions (snow, rain, etc.).

Always use the log-splitter in places which are as level as possible and which are provided with appropriate safety footwear, working gloves and protective eye screens.

Do not wear loose-fitting clothing or protruding articles which might become entangled in the controls or moving parts of the machine.

### **For EL-Models**

The EL 230-volt models are supplied with a condenser. Any operation on the machine can be carried out by a specialized technician only approximately 1 minute after disconnecting the plug from the mains supply, in order to give the condenser enough time to discharge the residual current.

**Never open the electrical panel without first disconnecting the plug from the mains supply.**

Check the electrical wires and the flexible pipes of the machine periodically and, if they are damaged, have them replaced by a specialized technician.

Check your extension cables periodically and, if they are damaged, replace them.

Ensure that the switch is off when the plug is inserted into the socket.

Always observe the safety rules in order to avoid fire hazards, electric shocks and personal injury.

### **For tractor-connectable models**

Check that the cardan transmission shaft guards are in good condition.

In case of breakage or damage to the cardan shaft guards, replace them immediately.

When the machine is not coupled to the power unit, the cardan shaft must be positioned on the special support.

Detach the machine from the tractor only on a firm and level terrain and check that it is stationary and stable.

The cardan machine models can be used only if connected to the tractor's 3-point connector.

Make sure that the hydraulic tubes are connected correctly observing the IN-OUT direction arrows. It should be remembered that if the direction is reversed, this will cause actions opposite to those intended.

When the hydraulic tubes are disconnected from the tractor they must always be covered with their special protection.

### **For models powered by combustion motors**

Read the enclosed motor-related manual carefully, following all the instructions indicated in it.

Remember:

- Not to leave inflammable materials such as petrol, oils, etc. near the motor when it is running.
- **If any petrol spills out, clean the area completely and ensure that the fumes have completely dissipated before starting the motor.**
- **To fill the tank in well-ventilated areas and when the motor is off and cold.**
- Never use the machine in closed or badly ventilated rooms as the exhaust gases of the engine emit carbon monoxide, a gas which has no smell, no colour and is poisonous.

## 5. UTILIZATION PROCEDURES

### 1 Cutting cycle

The machine was designed and manufactured with a control system according to the UNI EN 609-1.2010 standard.

Moreover, the machine was designed to be used by a single operator at a time, who should always be standing in front of the log splitter's two control levers. (Fig. 3)

Before starting any work operation, check carefully that the control devices work correctly.

For the placing of the log to be split under the cutter observe the following procedures and instructions.

#### 1<sup>st</sup>: log placing (Example of machine usage with the centering pendulum)

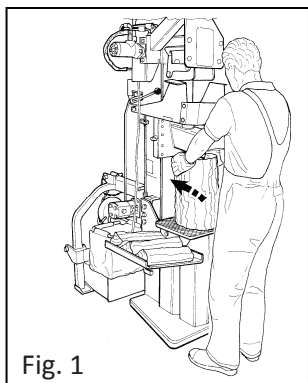


Fig. 1

If the short log board is fitted, hold the piece of wood still with both hands on the sides and push it until it is lodged into the pendulum tip with a quick movement. (Fig. 1)

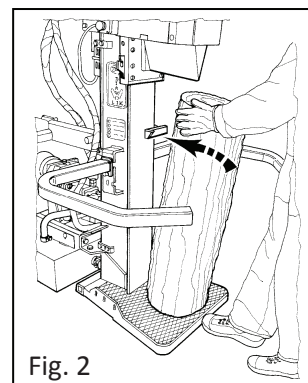


Fig. 2

If the machine is set up for cutting long logs, hold always the piece of wood still with both hands on the sides and proceed with the same movement described above in order to block it in the pendulum tip. (Fig. 2)

#### 2<sup>nd</sup>: cutting

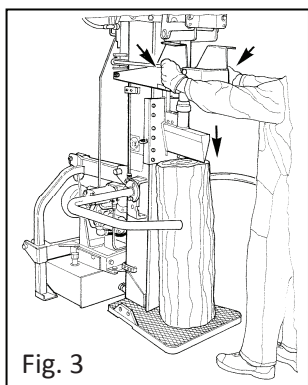


Fig. 3

Afterward, carry out the following operations:

If the wooden log does not move, operate on both levers at the same time and thus proceed immediately with the cutting cycle with all the cutting force the machine can develop. (Fig. 3)



#### ATTENTION:

To carry out the breaking cycle, the manual lever controls must both be operated. Releasing either leads to the blocking of the cutter-blade in its present position. Therefore, keep both controls held until the log breaking operation is finished or the blade reaches the bottom end-of-stroke.

**ATTENTION:**

Any tampering by third parties in the basic adjustment points of the various control lever mechanisms of the hydraulic system frees the manufacturing company of any responsibility in case of accident for the user!

**ATTENTION:**

In case of any emergency release one or both handles; the blade will stop immediately in its present position.

## 2 Return cycle

---

Once the breaking phase is finished and the broken pieces have been removed from the board, push both the control levers upward. The cutter will then rise again automatically to the high position ready for a new working cycle.

*NB:*

If any of the two controls remains held (operated) in its position, the cutter cannot rise again and therefore remains blocked in its present position.

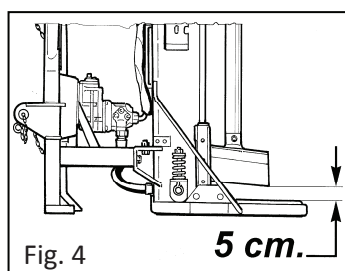


Fig. 4

For safety reasons, the lower end-of-stroke limit is 5 cm from the log support surface or from the removable board.

If accessories are assembled (60° or cross cutters) the distance is reduced to 2 – 3 cm.

The operator does not run any risk of injury. (Fig. 4)

The blade's cutting edge and the radius of the front corner are adjusted specifically for the required machine usage ensuring no risk for the operator.

**Do NOT modify the edge and the outside spokes of the 30° fixed cutter (see Fig. 6) with any kind of tool (such as a flexible pipe, see Fig. 5).**

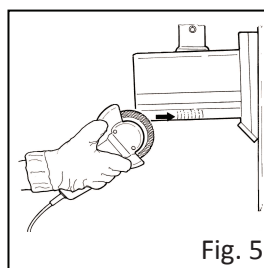


Fig. 5

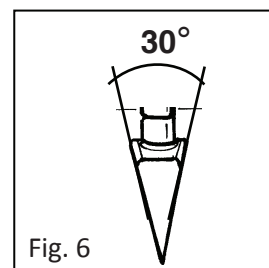


Fig. 6

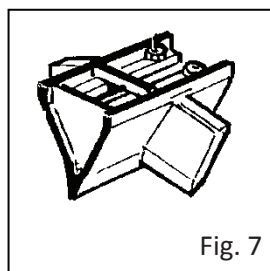


Fig. 7

**The same applies for any optional cutters that may be supplied upon request, such the cross cutter (see Fig. 7).**

The use of optional cutters (see page 9) must occur exclusively in situations of extreme necessity and they must be used by skilled and expert operators.

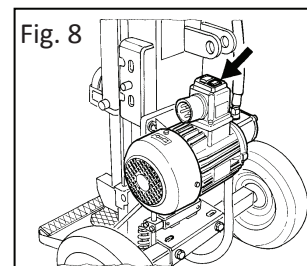
The cross cutter is used exclusively for small-sized straight-filament wood.

The different electrical models are equipped with a motor-protector temperature relay which operates if the motor overheats or if there is a sudden drop in input tension. The temperature relay has an intervention range of 0,03 A.

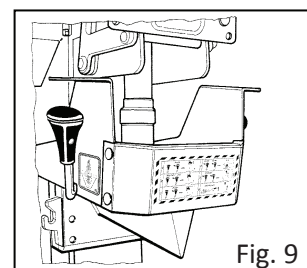
**NB: wait 3 - 5 minutes before resetting the ON button.**

If the safety device trips it's necessary to:

in the case of a 400 volt three-phase motor, press the green button as shown in fig. 8.



- THE MACHINE IN ITS VARIOUS VERSIONS WAS EQUIPPED DURING THE TESTING STAGE WITH A PRESSURE RELIEF VALVE, SEALED WITH LEAD, WHICH GUARANTEES THE OPERATOR AND THE HYDRAULIC SYSTEM AGAINST RISK OF EXPLOSION!
- **DO NOT TAMPER WITH THE SETTING OF THE LEAD-SEALED HYDRAULIC VALVE AND THE SETTING OF THE THERMAL SWITCHES ON THE EL AND KOMBI MODELS.**
- **DO NOT TAMPER WITH THE DOUBLE SAFETY CONTROL SYSTEMS AND THE END-OF-STROKE SYSTEMS.**
- **THE MACHINE MUST NEVER BE USED WITH JUST ONE LATERAL SET SCREW THE HYDRAULIC CYLINDER.**
- THE MACHINE IS FITTED WITH A DEVICE WHICH STOPS THE CUTTING BLADE IN THE LIFTING PHASE ALWAYS IN THE HIGH END-OF-STROKE POSITION (Fig. 9).
- A FURTHER DEVICE (SENSOR) IS INSTALLED TO STOP THE RETURN PHASE OF THE CUTTER WHEN A LOG IS TRAPPED INTO THE CUTTER ITSELF. (Fig. 9)



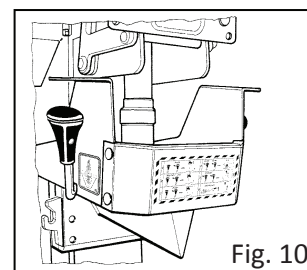
- NEVER STOP THE MOTORS WHEN THEY ARE AT THEIR MAXIMUM FORCE. THIS COULD DAMAGE THE HYDRAULIC SYSTEM IRREPARABLY.
- WITH THE **KOMBI MODEL**, DO NOT USE THE ELECTRIC MOTOR AND THE CARDAN JOINT SIMULTANEOUSLY.
- WITH THE **HV MODELS** BE CAREFUL NOT TO INVERT THE DELIVERY PIPE AND DRAIN PIPE WHEN CARRYING OUT CONNECTIONS TO THE QUICK PLUGS OF THE TRACTOR; FOLLOW THE IN-OUT HYDRAULIC FLOW ARROWS. WITH THE HV MODELS NEVER DISCONNECT THE HYDRAULIC PLUGS WHEN THE SYSTEM IS UNDER PRESSURE!
- WITH THE **HVP AND V.PF** MODELS DO NEVER STOP THE MACHINE WHEN IT IS UNDER STRESS OR PRESSURE.
- **WITH THE HVP AND V.PF MODELS: IT IS ADVISABLE TO USE THE 750-REVOLUTION POWER TAKE-OFF. (WITH 450/460 RPM.)**
- FOR FIRMNESS REASONS, NEVER USE **THE TRACTOR OR KOMBI MODELS** WITHOUT ENSURING THAT THE MACHINE HAS BEEN ATTACHED TO THE THREE-POINTED CONNECTIONS CORRECTLY.
- PAY GREAT ATTENTION TO THE LINKS MATCHING THE TRACTOR'S PTO AND FOLLOW THE INSTRUCTIONS INDICATED ON PAGE 19.
- FOR ROAD TRANSPORT AND POSITIONING DURING THE WORKING PHASE, FOLLOW THE INSTRUCTIONS INDICATED ON PAGE 23, 24 AND 28.
- **CHECK PERIODICALLY THAT THE SCREWS AND HYDRAULIC PIPE FITTINGS ARE TIGHT AND THE FLEXIBLE HYDRAULIC PIPES ARE IN A GOOD STATE.**
- **THE FLEXIBLE HYDRAULIC PIPES MUST BE REPLACED EVERY 5 YEARS !**

- IF THE CAST IRON CUTTER GUIDES ARE WORN OUT IT IS NECESSARY TO REPLACE THEM, OTHERWISE THE GUIDES THEMSELVES MIGHT WEAR OUT OR DAMAGE THE WELDED FRAME'S GUIDES!! **CONTACT THE COMPANY RICCA ANDREA & C.**
- DO NOT LEAVE THE MACHINE IN UNCOVERED AREAS EXPOSED TO RAIN AND SNOW AFTER FINISHING WORK.
- ALWAYS WEAR SUITABLE SAFETY FOOTWEAR, WORK GLOVES, PROTECTIVE GLASSES. FOR VS MODELS WITH COMBUSTION ENGINES USE EAR-PROTECTION PLUGS OR CUFFS.



## 6. RECOMMENDATIONS IN CASE OF INCONVENIENTS

The machine is equipped with an anti-crush sensor in the return phase which acts also as a hydraulic flow block for machine installation starting and finishing operations. (Fig. 10)



### 6.1 How to free a trapped piece of wood

**The log could be blocked in the cutter during or after the cutting operation.**

**During upward movement this will touch the sensor which will automatically block any movement.**

In order to release the blocked wood, the following operations must be carried out:

- Using the two control levers bring the cutter to the lowest position and then release the controls;
- Stop the hydraulic flow by releasing both control levers. At this point all cutter movements will be blocked;
- Use iron levers, sledges or hammers to release the log hitting hard downwards until it is completely freed.

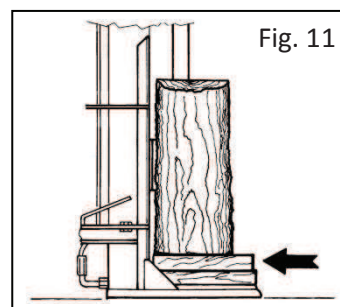


**WARNING:**

When the wooden piece gets unblocked it tends to fall on the ground with injury hazard for your feet. Operate as indicated hereafter.

### 6.2 Other useful tips to free a trapped piece of wood

- Being extremely careful, raise the blocked log together with the cutter by about 10 cm;
- Stop the feed source (tractor's PTO or EL motor);
- Insert one or more sturdy wooden boards between the base of the frame and the log!
- Use the two levers to lower the cutter until the log is completely cut. (Fig. 11)
- Continue with normal work operations.



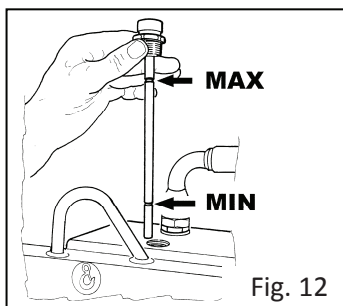
**WARNING:**

The cross cutter might become trapped in the main cutter because of the stress it is subjected to. In this case, after loosening and removing the safety screw, strike the cutter with a piece of wood or with a hammer so as to release it from its original position.

## 7. INSTALLATION

The machine does not require special assembly operations.

- Remove any packaging and transport residue. Clean the machine for aesthetic reasons.
- Check that the hydraulic pipes, the pipe fittings, the cables and electrical components are in a good state and have not been damaged during transport and handling.



- The oil tank is pre-filled by the manufacturer with Sae 46 hydraulic oil in the quantities shown in the technical data. Check the oil level periodically.  
(Fig. 12)

If there is a shortage in the oil level contact "Ricca Andrea & C." (or the nearest dealer) to refill it.

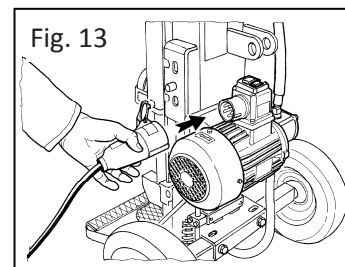
### 7.1 Electrical connection

Before making any electrical connection, make sure that the master switch is OFF.

All the machines powered by 400 Volt EL engines are equipped with a power relay and with a protection switch that prevents the machine from electrical absorption-overloads through the employment of a 0.03 A intervention value.

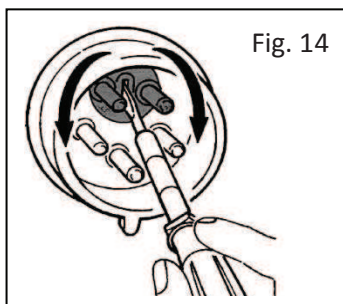
Ensure that the mains voltage corresponds to that indicated on the identification plate of the electric motor and the machine. Check that your electric system is fitted with an isolator (safety switch) and that the earth cable is functional.

The manufacturer supplies the machines already equipped with male connection plugs. It is necessary to connect an extension cable with a socket and then insert the plug into the socket. (Fig. 13)



#### ATTENTION:

**All operations must strictly be carried out by an electrician.**



For three-phase power supply (400 v), it is necessary to verify the exact rotation sense of the electric motor (see arrow on the motor) immediately.

If it rotates in the opposite sense to the sense indicated, it is necessary **(after disconnecting the power supply)** to invert the two power-supply phases using a screwdriver.

Push the housing inwards and rotate the poles. (Fig. 14)



#### WARNING:

The tests of motor rotation sense must be of short duration, otherwise the oil pump could get damaged.

## 7.2 Cardan model connections

*(please observe the following instructions with great care).*

### **7.2.1 Tractor lifting capability and stability check:**

Before carrying out connection between the machine and the tractor it is obligatory to check the lifting capability and the stability of the tractor so as to avoid overturning and/or loss of grip of the wheels used for steering.

Check the tractor's lifting capability and the stability by using the formula on page 28 and, if necessary, apply ballast at the front.

### **7.2.2 Connections to the tractor's 3-point connector:**

The V.PF and Kombi models can be used only if attached to the tractor's 3-point connector. The Kombi machines can be used even if disconnected from the tractor only if an electrical power supply is used.

There is a danger of injury from crushing and cutting in the tractor's rear power-lift arm linkage area. Do not use the external control for equipment lifting.

In the transport position block the side swinging movement of the hoist.

Bring the tractor near to the log splitter until the power-lift bars coincide with the machine's 3-point connector and connect them using the pivots supplied. Insert and lock the safety pins in the hole of the pivots and make sure that they are locked.

Connect the third point to the upper connector and adjust the length so as to position the log splitter perpendicular to the ground.

Insert and lock the safety pins. Lock the anti-unscrewing device of the third point.

### **7.2.3 Cardan shaft installation:**

After connecting the machine to the tractor, connect the cardan shaft to the tractor's power connector (this operation must be carried out when the engine is off and the key of the tractor is disconnected).

Insert the handbreak.

Before using the cardan shaft, read the accompanying use and maintenance booklet.

Should the cardan shaft supplied together with the machine not be used, check that the machine and tractor casings overlap the cardan shaft protection by at least the amount provided for by the laws in force (5 cm).

Clean and lubricate the power connector.

Grease the cardan shaft periodically following the instructions supplied by the cardan manufacturer. (See the cardan shaft manual).

The length of the cardan shaft must be suitable to the type of tractor used. Choose the length of the cardan joint which best links the machine and the tractor, thus overlapping the two stems for at least one third of the total length.

Couple the anti-rotation chains.

Make sure that the anti-release safety lock (switch and ring nut) is correctly inserted and locked in its housing.

Check the rotation direction and that the tractor's power connector speed adjustment is at 750 rev/min as the machine is designed for this speed.

For correct and safe machine use, use exclusively cardan shafts with the CE mark. Only use cardan transmission shafts with protection intact.

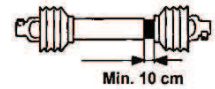
The cardan shaft must always be connected last to the tractor's power connector and disconnected first after use.

When the cardan shaft is detached from the tractor's power connector, it must always be placed so as to rest on the special support.

**Ricca Andrea & C.** accepts no liability for damage caused by an incorrect assembly and use of the cardan transmission.

**WARNING:**

- When the cardan shaft is inserted, it must have a minimum clearance of at least 10 cm in the shortest point of its articulation.
- In the longest point it must in any case have an overlap of at least one third of the total length.
- Fix the external protection of the Cardan joint with the special chains and make sure the protection does not rotate together with the internal shaft.
- Make sure that during operation the Cardan joint does not exceed rotation angles of 30°.
- After operation, couple the cardan shaft to the third point (B) with with the special coupler so that the articulated connections do not touch the ground while parked.

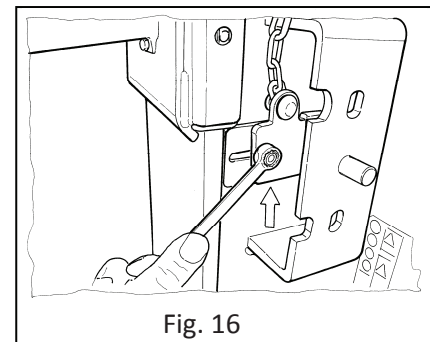
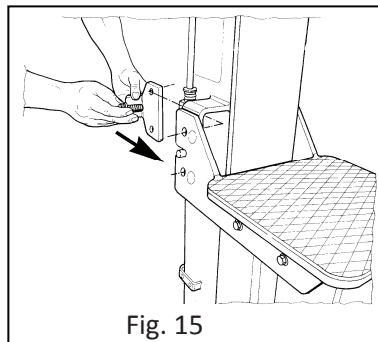
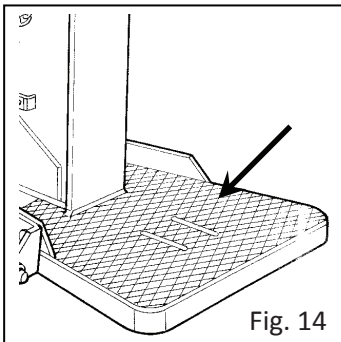
**7.3 Installation of the upper cutting board**

To insert the upper board carry out the following operations:

- Raise the blade to the highest stop point;
- Raise the board and fix it to the frame;
- First insert the two lower board slots in the base centering; (Fig. 14)
- Fix the board with the special screws supplied; (Fig. 15)

**N.B.** It must be fixed very firmly so as to avoid damaging movements while under stress.

- Ensure that the board stroke end is correctly shifted and blocked in front. (Fig. 16)
- When you remove the board repeat the same actions but with reversed order and apply the lock plates with the respective screws to the board itself.



## 8. BEFORE THE WORKING CYCLE

**After winter storage, and so before the working cycle and before any subsequent machine usage, comply with the following procedures.**

Before starting work, check every time that the flexible hydraulic pipes, the electrical wires and the extension cables are in a good state. If you are not sure about them, have them replaced by a specialized technician.

Besides before starting the working cycle, check the oil level using the special stick for the HVP, V.PF, EL, KOMBI and VS models. (See also the "Maintenance" section)

No oil reserve is scheduled for the HV models.

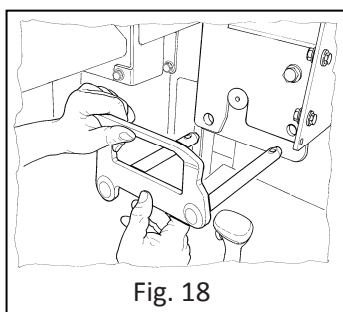
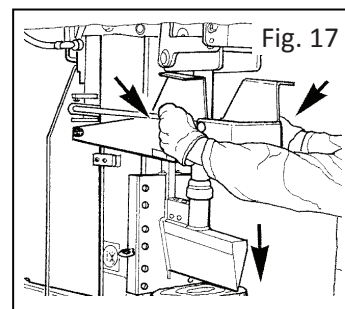
For the model powered by a piston motor (VS), check also that there is petrol and oil in the engine. Carry out also the periodical checks given in the motor manufacturer's manual.

After carrying out the operations described in the "Installation" section, proceed as follows in order to start the log-splitter:

- For the electrical models (EL) and petrol engine models (VS) block the front and rear wheels with broken pieces of wood.
- In the case of the piston motor (VS), follow the ignition instructions given in the motor manual.
- For electrical versions (EL) or Kombi versions it is sufficient to press the ON button on the magnetothermal switch, keeping one control lever pressed down.
- For the HV, HVP and V.PF models, lock the tractor with the parking handbrake, position the tractor's power take-off start lever at 750 revs./min. Run the machine for about a minute with the motor at half speed for function tests. Then take the motor revolutions to a higher speed using the hand accelerator.

**THE RECOMMENDED P.T.O. ROTATION SPEED IS 450 – 460 REVS./MIN.**

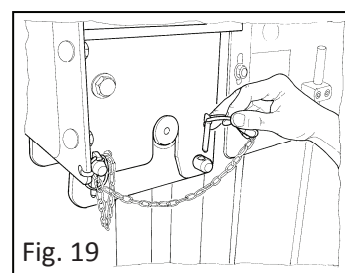
Operate the two levers at the same time (Fig. 17) until the blade is pressing against the log positioned crosswise between the blade and the frame base, then let the cylinder reach its correct upper position.



Release the control levers and insert the blocking U-bar in its special housing (Fig. 18).

Next block the hydraulic cylinder sideways with the special locking click wrist pins provided. (Fig. 19)

With this operation the hydraulic cylinder will position itself for the working phase.



### ATTENTION:

**IT IS ABSOLUTELY NECESSARY THAT THE HYDRAULIC CYLINDER IS BLOCKED FROM BOTH SIDES.**



**ATTENTION: Before carrying out cutting operations, it is necessary to perform 4 – 5 cycles without any wooden log.**

## 9. WORKING CYCLE

To cut the log it is necessary to rotate it on the base of the lower frame (point **A**) or raise it (a small piece) onto the upper working board (point **B**). (Fig. 20)

Hold the log with both hands for centering in the pendulum, trying always to take maximum advantage of the direction of the filaments and the knots to make breaking easier and avoid excessive wearing out of the mechanical parts (Fig. 20). Push the log with a rapid and fast movement against the centering pendulum head and lock it safely.

### Afterward, proceed with the following operations:

If the wooden log is blocked release it and thus proceed immediately with the breaking stage as follows.



#### ATTENTION:

- It is recommended that the cross-blade cutter only be used for logs of approximately one meter in height and with straight-filament wood.
- Keep both hands on the sides of the log so as to avoid injury caused by the blade in the centering stage.

Take your hands off the wooden log (which is now kept centered by the cutter) and, using the two lever controls, operate the system for the breaking stage. (Fig. 21)

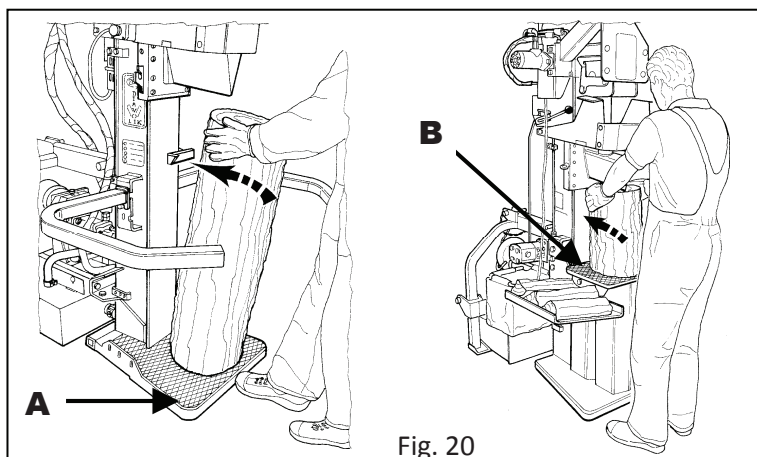


Fig. 20

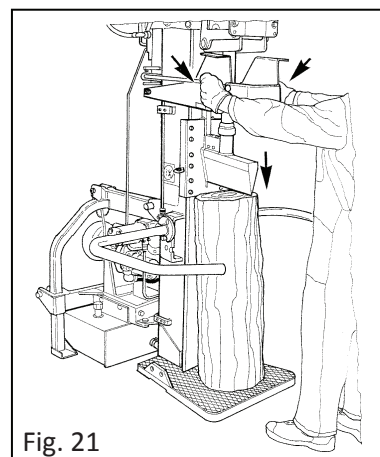


Fig. 21

The machine is pre-set with two cutting speeds and one return speed. The second descent speed represents approximately half the cutting force of the first speed (see the technical data tables).

The double cutting speed is ensured automatically by the hydraulic valve, which is installed as standard on the machine. (Fig. 22)

For the end-of-cycle stage push both levers upwards and the blade will return to the highest end-stroke position.

Before positioning a new log to be cut, ensure the support base is clean. (Fig. 23)

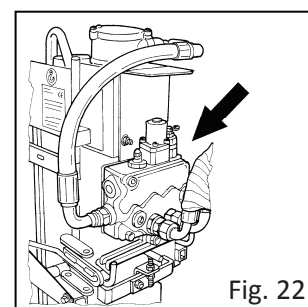


Fig. 22

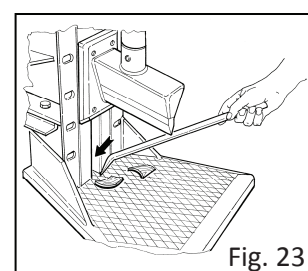
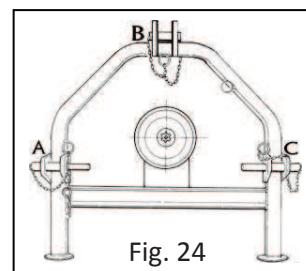


Fig. 23

## 10. TRANSPORT ON THE ROAD

Before moving from one place to another with the machine connected to the tractor it is necessary to ensure that the PTO is disconnected.

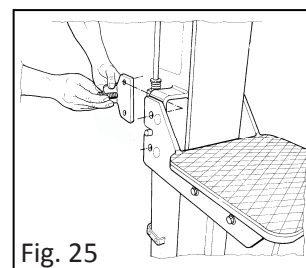
1. Attach the log splitter to the tractor at points **A – B – C** and lock it using the locking split pins provided. (Fig. 24)



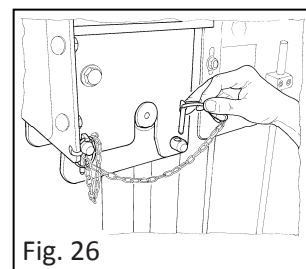
2. Block the lateral swinging movement of the hoist's bars.

3. Install the cardan shaft and verify its exact length.

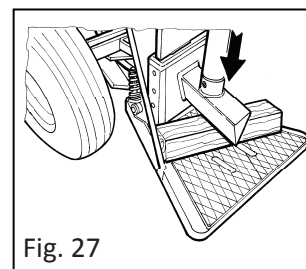
4. Remove the intermediate board if this is positioned and also the end-of-stroke slot for the board. (Fig. 25)



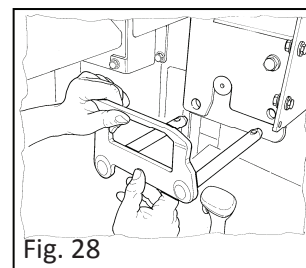
5. Extract the lock wrist pins of the hydraulic cylinder without extracting the U-bar. (Fig. 26)



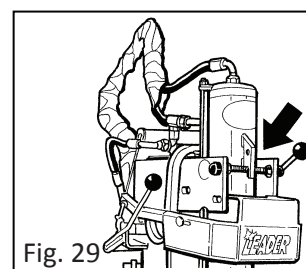
6. Lower the cutter to stroke end on the piece positioned crosswise between the blade and the base of the frame and put a slight pressure in the hydraulic system. (Fig. 27)



7. Extract the U-bar supporting the hydraulic cylinder. (Fig. 28)



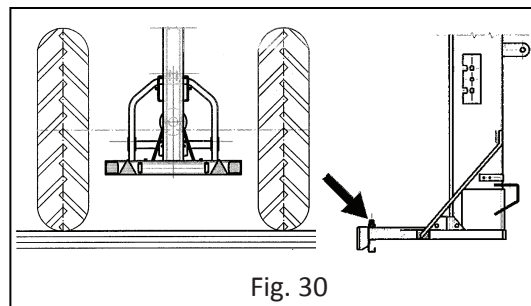
8. Push both levers upward and lower all the hydraulic cylinder until it touches the front clamp. (Fig. 29)



9. **In order to stop the hydraulic flow, raise the anti-crushing sensor with a single movement for few seconds.**
10. Stop the supply source EL, HV, HVP, V.PF or VS.
11. When starting again the assembly work for a new installation and positioning these operations must be carried out in the opposite sense and operate on both levers at the same moment for the hydraulic cylinder housing.
12. In order to prevent the hydraulic cylinder from being damaged during transport on bumpy roads and at high speed, it is necessary to move the **Diavolik** machine always with the hydraulic cylinder lowered and with the front clamp resting on the screws. (Fig. 29)
13. Furthermore for small tractors it is necessary to apply the calculation formula on page 28 (see picture).

**Note:** During road transport it is necessary to observe the following handling rules:

14. Moderate transport speed.
15. Pay great attention during the turning operations. Remember that the log splitter increases the length of the tractor.
16. Check if the shape of the log splitter doesn't cover the rear lights of your tractor and if necessary apply a protruding-load signaling panel with red and white refractive stripes, or a suitable signaling lights bar (code 400.097.K) provided as optional upon request by the manufacturer. Both signaling bars must be applied to the rear ends of the log splitter's support base. (See fig. 30)
17. The presence of a dragged machinery, such as the log splitter, can compromise or modify vehicle stability. Limit speed and pay attention to the sloping roads.



#### ATTENTION:

Failure to respect the maneuvers described above will release the manufacturing company from any commitment to replace parts under warranty and from any reimbursement for damage to persons and/or things.

## 11. STORAGE

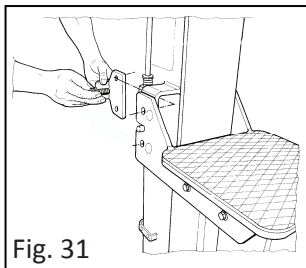


Fig. 31

1. Remove the intermediate board if this is positioned and also the end-of-stroke slot for the board. (Fig. 31)

2. Extract the locking wrist pins of the hydraulic cylinder without extracting the U-bar. (Fig. 32)

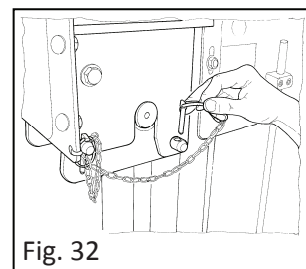


Fig. 32

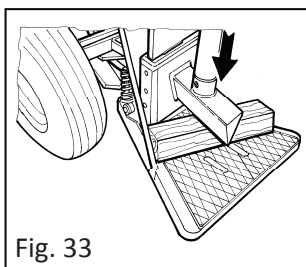


Fig. 33

2. Lower the cutter to stroke end on the piece positioned crosswise between the blade and the base of the frame and put a slight pressure in the hydraulic system. (Fig. 33)

3. Extract the U-bar supporting the hydraulic cylinder. (Fig. 34)

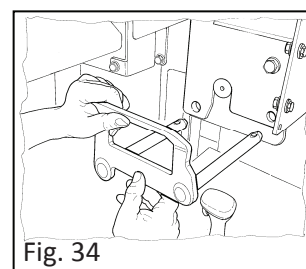


Fig. 34

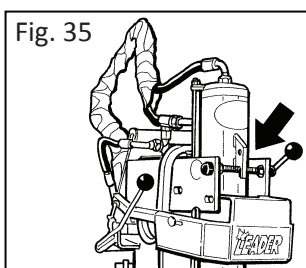


Fig. 35

4. Lower all the hydraulic cylinder until it touches the front clamp. (Fig. 35)

5. Bring both the control levers back to the central position.

6. **Attention: push the sensor upward for few seconds with a single movement.**

7. Stop the power supply sources EL, HV, HVP, V.PF or VS.

8. Clean the machine from any foreign part.

9. Inspect the machine and verify it doesn't have any abrasions or damage.

10. Replace the warning plates if damaged.

11. Check that the hydraulic pipes and electrical connections are in good condition.

12. Store the log splitter in a sheltered place and on a flat surface.

## 11.1 TEMPORARY STORAGE

In case the log splitter was used for a brief period of time, it is necessary to proceed as with a longer storage (described in the paragraph “storage”).



### ATTENTION:

**The log splitter must never be left unattended while operating or when it is connected to the electric current or to a moving tractor.**

Before leaving the log splitter it is strictly necessary to carry out the following operations:

1. Lower the cutter to stroke end on the piece positioned crosswise between the blade and the base of the frame and put a slight pressure in the hydraulic system.
2. Disconnect the log splitter from the mains electricity permanently. If the log splitter is powered by the tractor PTO it is necessary to stop the tractor's engine, disconnect the starter key, insert the hand brake and disconnect the PTO.
3. Never leave the log splitter with logs trapped in the blade.

## 12. MAINTENANCE



### ATTENTION:

**All maintenance operations must be carried out when the machine is off.**  
**With the electrical model, disconnect from the mains supply also.**

Due to its simplicity, the machine does not require special maintenance operations.

It is necessary periodically to:

- Grease the guide sliding surfaces periodically. (Fig. 36)
- Lubricate the articulated joints of the handles. (Fig. 36)

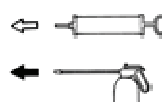
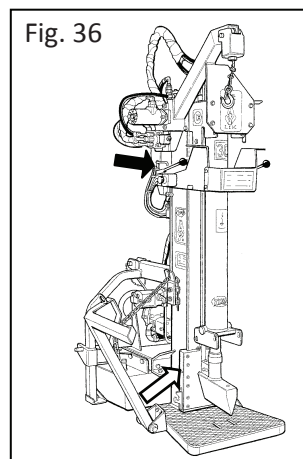


Fig. 36

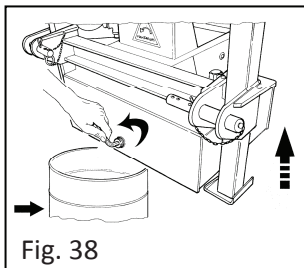
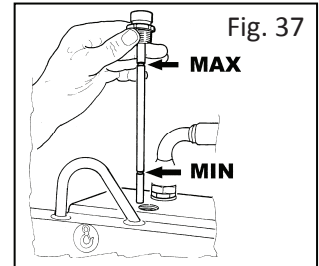


- Before starting work on the PTO models grease the crosses of the cardan joint itself and the other moving members. Subsequently carry out this operation every two working hours.
- Check that the electrical power supply extensions are in a good state.
- **Check the flexible pipes of the hydraulic system periodically and replace them every 5 years.**
- It is advisable to place the machine in the shade after use as the strong sunlight in summer damages the surface layer of rubber of the flexible pipes and limits its working life.

- Clean and wash the oil filter the first time after 50 hours of work. After this clean it approximately every 500 hours of work.
- Afterwards, replace the discharging filter's cartridge approximately every 1.000 working hours, together with the hydraulic oil.

N.B. Carry out the above described operations exclusively in a center authorized by the company Ricca Andrea & C. Snc., including the change of the hydraulic oil.

- Check the hydraulic oil level periodically using the special stick. (Fig. 37)  
**NB:** this operation must always be carried out when the blade (cutter) is at the lowest position. The oil level in this case must be near the lower minimum level about.



- Discharge the oil always from the lower plug, positioned on the lower tank (Fig. 38).

## HYDRAULIC OIL CHANGE



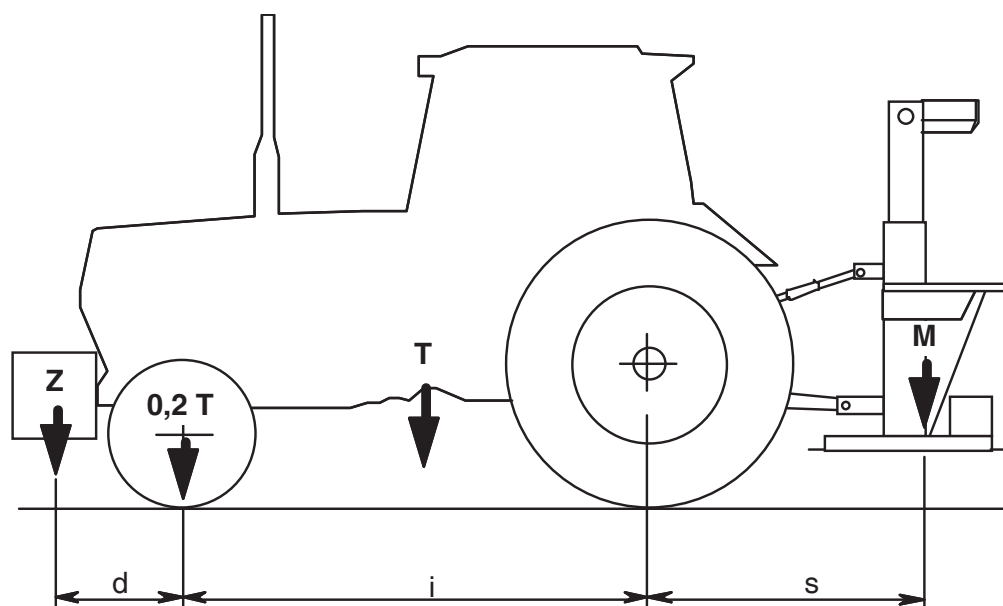
**WARNING:** For the periodic oil change it is obligatory to contact the manufacturer or an authorized dealer.

It is advisable to replace the oil after the first 1.000 working hours.

- Furthermore, replace the mechanical multiplier oil (positioned in front of the hydraulic pump) approximately every 1.000 working hours. Use SAE 90 oil for the oil change. The capacity of this mechanical machine part is approximately 0.2 liters.
- After the first 2 to 3 working hours check the hydraulic union tension and thereafter every 100 - 150 hours approximately.

**Note:** Used oil must be suitably collected and must not pollute the environment as, according to current regulations in force, it is classified as a dangerous waste and, as such, it is to be disposed of in special oil collection centres. Therefore, contact the nearest Used Oil Service.

# LIFTING CAPACITY AND STABILITY CHECK FOR TRACTORS COUPLED TO CARRYING EQUIPMENTS



$$M \times s \leq 0,2 \times T \times i + Z \times (d + i)$$

If the equipment is mounted on farm tractors type-tested and registered before 6 May 1997, it is also necessary to respect the following condition:

$$M \leq 0,3 \times T$$

**i** = tractor wheel wheel-base

**d** = distance of the front axle from the ballast

**s** = overhang of the rear axle of the operating machine

**T** = mass of the tractor + 75 kg (operator)

**Z** = mass of the ballast

**M** = mass of the operating machine