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**Caution:**  
Operators must read and fully understand  
this manual before  
using the machine.

# FERRI

## USE AND MAINTENANCE MANUAL

MOD. **TFC/R TFC/F**  
**1600-1800-2000-2200**  
**TFC-DT/R TFC-DT/F**  
**2000-2200**



### FOREST SHREDDER

Type of Document:

**USE AND MAINTENANCE MANUAL**

Machine Model:

**FOREST SHREDDER**  
**TFC/R TFC/F 1600-1800-2000-2200**  
**TFC-DT/R TFC-DT/F 2000-2200**

Matriculation number/Year:

Manufacturer:

**FERRI srl**

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Customer:

## CAUTION!

This manual must be considered an integral part of the machine and must always be available for all the persons who interact with the machine; the manual must always be delivered with the machine, also when it is sold to another user.

The operators are obliged to read this manual and follow the instructions it contains, since **FERRI** cannot be held responsible for damage to persons and/or things or to the machine if the following conditions are not observed.



The Customer is obliged to protect the trade secret, therefore the following documentation and its enclosures cannot be tampered with or modified, reproduced or given to third parties without **FERRI's** approval.

## 1. FOREWORD

### WARRANTY AND SUPPLY CONDITIONS

The warranty conditions are valid if the Customer meets the obligations with **FERRI**. Any particular conditions making an exception to the following ones have to be specified in the purchase order.

**FERRI** declares that the machine is compliant with the provisions of the law in force in the countries of the European Economic Community and issues the enclosed DECLARATION OF CONFORMITY.

**FERRI** is only responsible for faults deriving from the normal use of the machine.

The warranty is not valid for parts that are subject to normal wear or if it is ascertained that the breaking or deterioration are due to the improper use of the machine.

**FERRI** is not responsible for faults or malfunctioning deriving from: improper use of the machine; alterations due to the transport or to particular environmental conditions; lacking or improper maintenance; tampering or precarious repairs; non qualified personnel or accessories that do not belong to the machine.

**FERRI** undertakes to repair at the Customer's site any manufacturing faults that should come up within 12 months starting from the delivery of the machine.

The Customer is fully responsible for any modifications to the machine and the manufacturer has no obligations in case of direct or indirect damages (to the Customer or to third parties) deriving from these modifications.

In no case is **FERRI** responsible for the non-production due to machine downtime, unless otherwise indicated in the purchase order.



## EXCLUSIONS FROM SUPPLY

**FERRI** declines all responsibility in case the rules for a correct installation are not observed and is also not responsible for upstream or downstream systems supplied by the machine.

**FERRI** is NOT responsible for damage to persons and/or things or to the machine itself deriving from use that is different from the one described in the documentation or if the guards of the machine are not used (disabled) or tampered with.

**FERRI** declines all responsibility for damages of any kind that should derive from inappropriate or imprudent operations carried out by inexperienced personnel or by skilled personnel carrying out operations on the machine that do not comply with what is described in this manual and in the enclosed documentation.

It is not possible to foresee the multitude of installations and environments in which the machine will be installed, therefore it is necessary to check:

- the possible and full compatibility with the machines on which this **FERRI** machine can be installed.
- the skills of the personnel in charge of the installation and/or use of the machine
- the work environment conditions in which the machine operates.
- the airborne noise produced during the working; this parameter should be checked while the machine is running.
- the equipment or accident prevention clothing of the personnel.

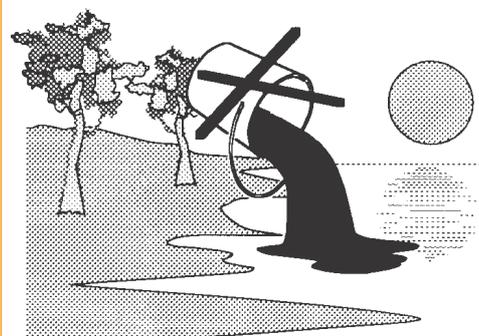
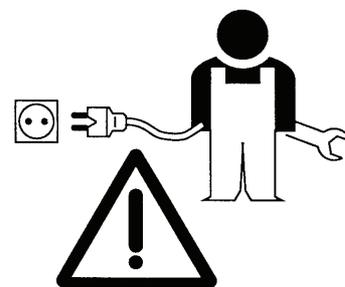
The Customer must use only original spare parts and install them according to their intended use.

**The liabilities deriving from commercial components are delegated to the respective manufacturers.**

**FERRI** is NOT responsible for damage to the machine or to the personnel when the machine is used for purposes other than the ones for which it was designed, nor for the use of unsuitable or damaged tools.

**FERRI** is not responsible for the disposal of the products that are necessary for the use of the machine: waste lubricant oil, batteries, accumulators or containers under pressure, flails, etc... Therefore it is necessary that the Customer provides for the disposal of these substances that are potentially hazardous for the environment, according to the regulations in force in the country of installation.

**The same precautions must be taken when scrapping the machine.**



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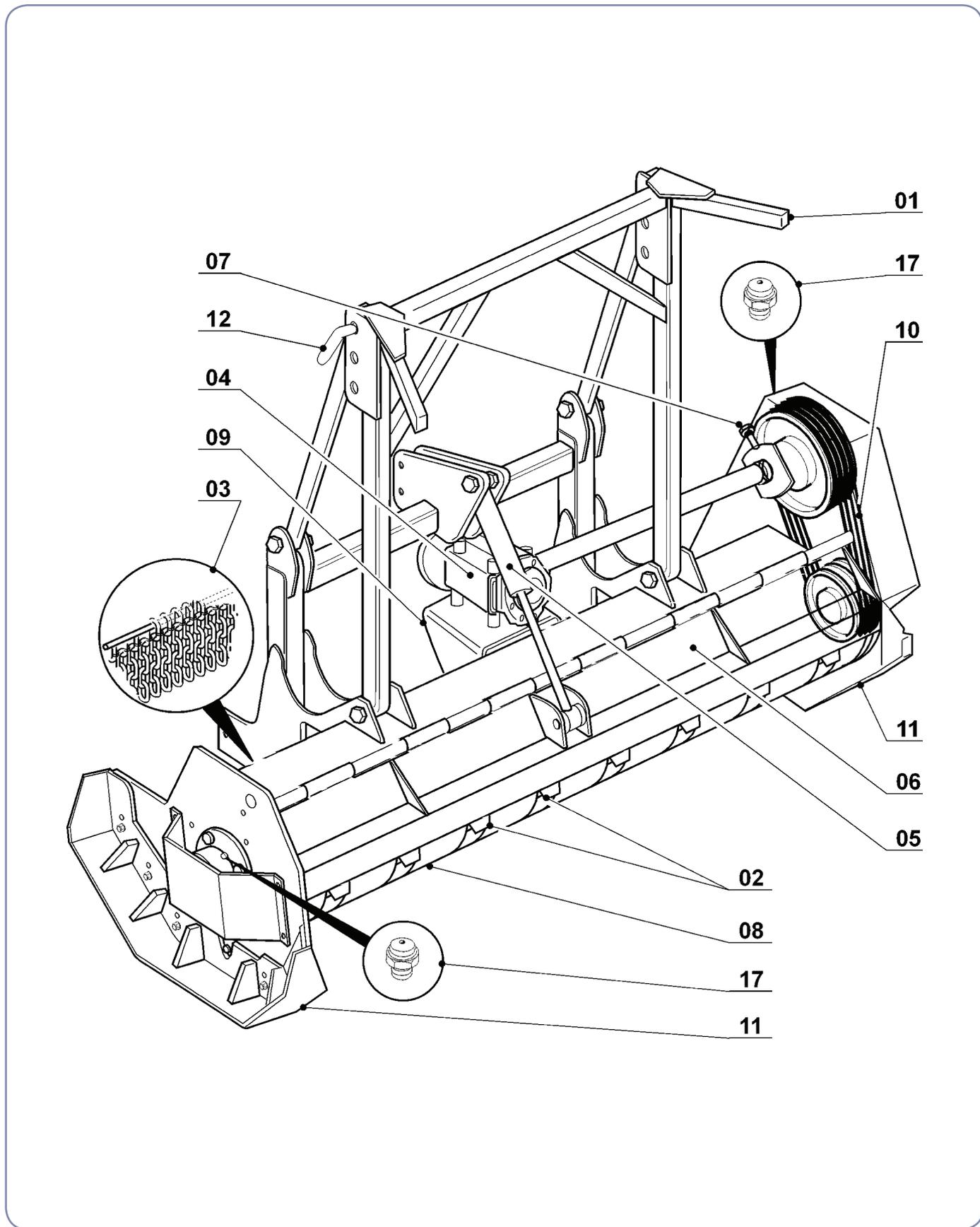


This manual and its enclosures cannot make up for the cultural and professional deficiencies of the operators, therefore the Customer must make sure that they are able to interpret the information contained in the documentation correctly.

## Numerical index of references

branch chopper .....	13, 16, 18, 32, 33
chains .....	12, 14, 18, 21, 25
transmission belts .....	18, 21, 35, 36
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Graphic representation of references



## THE DOCUMENT AND ITS RECIPIENTS

This document should be read by different persons who due to their experience or qualification know how to operate in accordance with the most common safety rules:

Handlers  
 Transporters  
 Installers  
 Users  
 Maintenance technicians  
 Repairers  
 Demolishers



*The Customer must make sure that the operator has the necessary skills and training to carry out his/her job.*

**It is obligatory that all the persons who interact with the machine read this manual;** they should also be informed of any residual risks that may derive from the use of the machine or of the products it deals with. This manual cannot make up for the cultural and intellectual deficiencies of the various operators who interact with the machine.

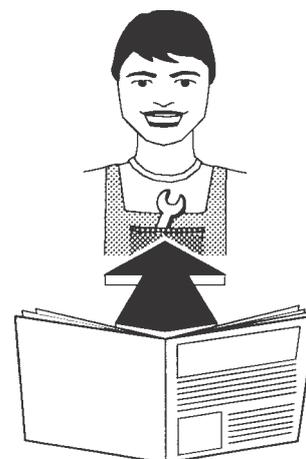
Since it is not possible to describe all the necessary information to carry out all the operations for which the machine has been designed, it is assumed that every person has the basic knowledge concerning his/her task.

**The personnel in charge of operation, maintenance and/or other operations concerning the machine must have a specific experience** with this type of machine or similar, or have a specific professional training.

If, at the moment of the installation or starting up, an appropriate training has not been carried out, the Customer must ask for it and/or make sure that all the conditions described in this manual are met.



*The Customer is responsible for all damages caused or suffered by the personnel that the Customer has authorised to use the machine.*



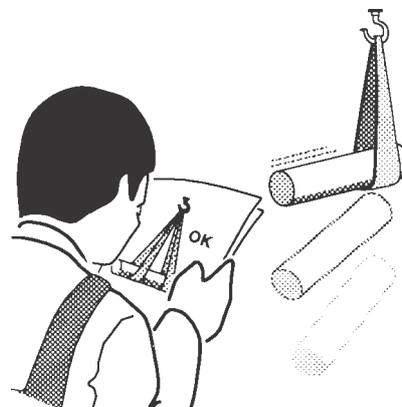
## Purpose and structure of the manual

The purpose of this document (USE AND MAINTENANCE MANUAL) is to represent a valid guide to enable the personnel to work safely and to carry out those operations that are necessary for the good maintenance of the machine. It also provides some useful suggestions for all workers who do not take part in the production cycle.

### All personnel interacting with the machine must read and understand the information contained in this manual.

This document was originally written in ITALIAN; therefore if inconsistencies or doubts should arise you should ask the manufacturer for the original document or for further explanation.

This manual contains the description of the machine, of the control systems and of the equipment, the basic principles for adjustment and operation, some practical arrangements for a better use of the machine and for a correct maintenance, as well as the safety systems and the necessary accident-prevention regulation.



*The information contained in this manual does not replace the safety instructions and the technical data for installation and operation which are directly applied to the product, nor the rules dictated by common sense and the safety regulations in force in the country of installation.*

This document is divided into **CHAPTERS** (FOREWORD, CHARACTERISTICS etc... ) as described in the TABLE OF CONTENTS. The chapters and the information contained are in order of priority.

Apart from the proper TABLE OF CONTENTS you can find:

### NUMERICAL INDEX OF REFERENCES

It contains all references to the components mentioned in the manual, listed in numerical order.

### GRAPHIC REPRESENTATION OF REFERENCES

All references are illustrated and summarized, in order to even out the technical terminology and improve the communication system.

### ANALYTICAL INDEX

All references concerning the components and the useful terms for an analysis and/or search in the document are listed in alphabetical order.

## Personnel characteristics

The person who is in charge of the machine operation must have received a professional training or have an appropriate experience gained with similar machines.

**If, for any reason, at the moment of the installation and/or starting up, an appropriate training has NOT been carried out, the Customer must ask for it and/or make sure that all the conditions described in this manual are met.**



*In order to prevent damage to persons or things, we advise the Customer to adequately inform the operators of any residual risks that may derive from the use of the machine.*

The personnel in charge of use and maintenance of the machine must be skilled, aware and trained in relation to the tasks described. It must be reliable for the correct interpretation of what is described in this manual and also be meticulous when carrying out inspections.

**It is strictly forbidden to employ UNQUALIFIED, handicapped, incapable, not sober or drug addicted personnel.**

The Customer is responsible for the qualification and the mental and physical condition of personnel.

The Customer, or the employer, is liable for all damages caused or suffered by the personnel that the Customer has authorised to use the machine.

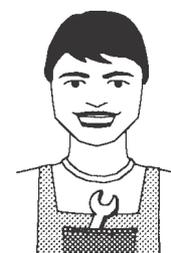
The personnel must meet the following requirements:

- full use of upper and lower limbs;
- individuation and knowledge of colours;
- good sight and hearing;
- know how to read and write;
- knowledge of the danger and warning signals on the machine;
- ability to operate in full autonomy on machinery that is similar to the one described in this manual;
- ability to drive the machine correcting or notifying irregularities when necessary;

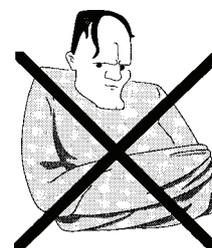


*The machine cannot be used by operators under the influence of alcohol or drugs.*

Personnel interacting with the machine must always wear personal protective equipment provided for by the national laws of the destination country and all that is provided by the employer, e.g. earmuffs, leather gloves, safety footwear, etc...



ok



no



## REFERENCE STANDARDS

This chapter contains the International Standards and the National Laws which have been taken into account during the design and the manufacture of the machine.

- **2006/42/EC** Implementation of the EU Directives 89/392/EEC, 91/368/EEC, 93/44/EEC and 93/68/EEC for CE marking.
- **2006/95/EC** Low voltage directive (ex 73/23/EEC).
- **2004/108/EC** Electromagnetic Compatibility, Legislative Decree 6/11/2007 no. 194.
- **Legislative decree no. 81, 9th April 2008** Implementation of the single text on safety (ex Legislative decree 626/94, 18th September 1994) directives for the improvement in the safety and health of workers at work
- **Presidential Decree 547** (27th April 1955) Regulations for the prevention of occupational accidents;
- **Presidential Decree 302** (19th March 1956) Additional regulations of Presidential Decree 547/55;
- **Presidential Decree 459** (24th July 1996) Implementing regulation for directives 89/392/EEC, 91/368/EEC, 93/44/EEC and 93/68/EEC on the approximation of the laws of the member states relating to machines;
- **EN 292-1** (November 1992) safety of machinery - basic concepts; general principles for design Part 1: Terminology, basic methodology (Harmonized standard)
- **EN 292-2** (November 1992) safety of machinery - basic concepts; general principles for design Part 2: Specifications and technical principles. (Harmonized standard)
- **UNI EN ISO 4254-1:2006** - farming machinery - safety - general requirements
- **UNI EN 13524** highway maintenance machines - safety requirements
- **EN 60204-1** (June 1998) safety of machinery - electrical equipment of machines Part 1: General rules. (Harmonized standard)
- **EN ISO 11202** (October 1997) acoustics - noise emitted by machinery and equipment. Measurement of emission sound pressure levels at a work station and at other specified positions - Survey method in situ (Harmonized standard)

### List of UNI, ISO, IEC standards:

- **IEC 446** (1989) identification of insulated and bar conductors by colour
- **UNI 10893** technical documentation of product - instructions for use
- **UNI - ISO 10015** guidelines for training
- **DIN 30600** graphical symbols - registration, designation
- **ISO 7000** graphical symbols for use on equipment



## SYMBOLS AND SIGNALS

In the manual and/or in some cases on the machine, the hazard zones are marked with signals, plates, symbols or icons which represent danger or obligation. For example the obligation to read the document, which has to be available for future use and must be kept in its entirety.

Operations and situations in which the personnel must be very cautious: generic danger, dangerous voltage, electromagnetic interferences;

Hot surfaces, crushing, cuts or excoriations, slipping or other dangers that could cause injuries to the operator.

Operations to be carried out by qualified and authorised personnel.

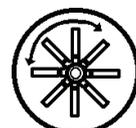
Generic prohibition: it indicates the prohibition to access the examined area or the prohibition to carry out the described operation, to remove the guards from the machine, to operate on running machine parts.

Obligation: it indicates the obligation to carry out the described operations using clothing and/or personal protective equipment provided by the employer (earmuffs, leather gloves, safety footwear, goggles, helmet, etc...).

Do not get near the machine while it is working; danger due to rotating machine parts and/or throwing of cut objects in spite of the protective chains.

Switch off the machine before carrying out any maintenance operations.

Lubrication and/or greasing points; follow the specifications contained in the manual or on the plate.



## APPLICATION FIELD

**FERRI** declines all responsibility for any damage caused by the incorrect or incautious operations. The machine **CANNOT** be used neither by unskilled personnel nor by skilled personnel carrying out operations which do not comply with what is described in this manual and in the enclosed documentation.



*It is strictly forbidden to use the machine for purposes other than the ones specified in the application field.*

This machine has been built to carry out the following functions:  
**brushcutting, shredding, grinding and felling of bushes, trees and plants up to a maximum diameter of 7.8÷ 10 inches, on flat banks, roads, canals or grounds.**

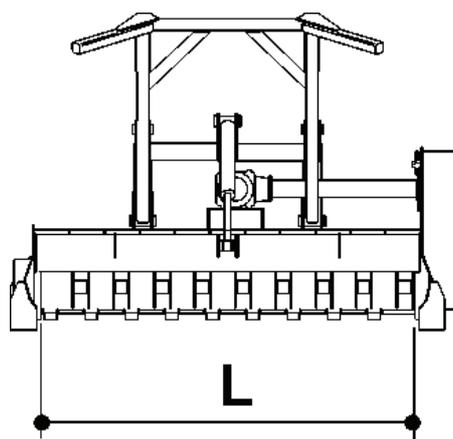
The application field of the machine has to keep to the limits set in the purchase contract and described in the “table: technical characteristics”, in the “table: application field limits” and throughout the whole manual.

Table: Application field limits

Model	Working width (L) ft.
TFC/R TFC/F 1600	5.25
TFC/R TFC/F 1800	5.90
TFC/R TFC/F 2000	6.56
TFC/R TFC/F 2200	7.22
TFC-DT/R TFC-DT/F 2000	2000
TFC-DT/R TFC-DT/F 2200	7.22

The machine can be provided with:

- tungsten reinforced hammers **02**
- branch chopper **01**.
- third hydraulic point: to facilitate attaching operations and to carry out particular shredding operations, putting the machine in the most open or closest work position.



## Non permitted use



*It is strictly forbidden to use the machine or parts of it for purposes other than the ones specified in the application field.*

### IT IS STRICTLY FORBIDDEN TO:



- use lubricants and/or caustic products that can corrode parts of the machine or aggravate the operator's health;
- change the work parameters which are not accessible to an ordinary operator because of the password protection;
- use the hydraulic control unit and/or the system (if available) by connecting them to other equipment;
- use the machine with not working or removed safety devices and without guards (casing, chains, anti-shock devices, covers, etc...);
- use devices and parts of the machine to move objects or foreign bodies;
- cut hedges and/or fronds of high trunk trees;
- cut and/or brush cut slanted surfaces other than the ones indicated in the application field;
- keep the machine running while suspended, that is to say not resting on a surface;



- warm up or let dry cloths or garments on warm parts. Apart from being dangerous, the ventilation and cooling down of components are compromised;
- use the machine or parts of it in environments that show particular conditions of inflammability.

N.B. FERRI is not responsible for any conditions of the work environment: stony grounds, large twigs, very dry grass or plants, climatic conditions, etc...

The working can cause FIRE risks due to sparks brought about by the flails, rotating hammers or sliding blocks screeching on the ground; therefore you must get ready to extinguish the fire.



- Make sure that while you are working there are no persons, animals and/or other obstacles near the operational area, 100 metres.

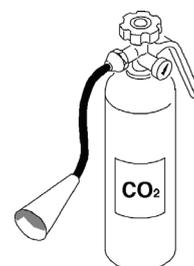


- Use the machine or parts of it without the authorisation of qualified personnel.



- Use the machine or parts of it without having read and correctly interpreted the contents of the use and maintenance manual.

FERRI declines all responsibility for any damage caused by the incorrect or unsafe operations.



## 2. CHARACTERISTICS

### GENERAL CONDITIONS

The description of the machine characteristics makes it possible to recognise its main components, in order to improve the technical terminology used in this manual.

The technical terminology is collected in the index of references and in the graphic representation of references of the chapter "TABLE OF CONTENTS AND INDEXES". This chapter contains information on the structure, characteristics, dimensions and identification of the machine. Adjustments, operation and maintenance are described later in the manual, assuming that the information of this chapter has been understood.

## ADJUSTMENTS AND MACHINE DESCRIPTION

### Technical characteristics

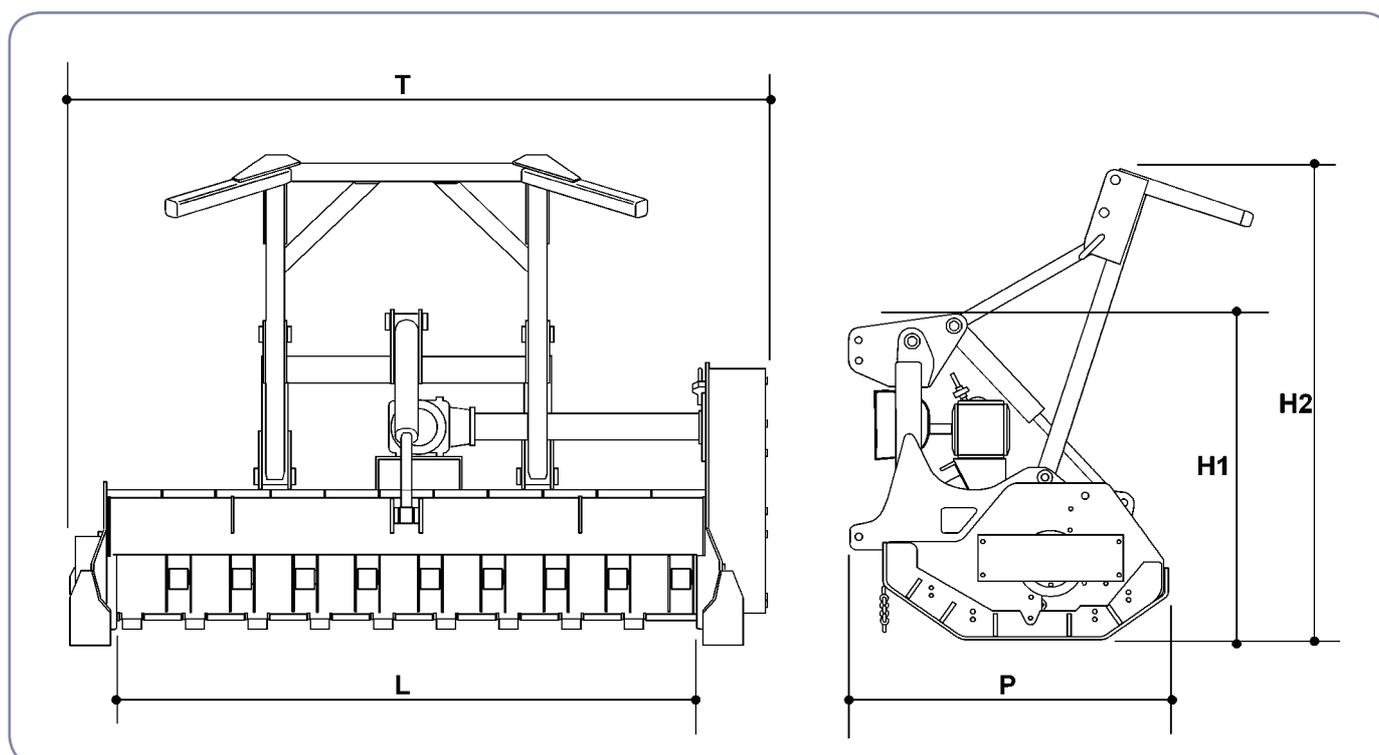
Technical characteristics		TFC/R TFC/F 1600	TFC/R TFC/F 1800	TFC/R TFC/F 2000	TFC/R TFC/F 2200	TFC-DT/R TFC-DT/F 2000	TFC-DT/R TFC-DT/F 2200
Working width	mm	1600	1800	2000	2200	2000	2200
Driving power	KW (HP)	52-65 (70-90)	58-88 (80-120)	73-95 (100-130)	88-103 (120-140)	88-110 (120-150)	103-132 (140-180)
No. transmission belts		3	4	5	5	5+5	5+5
Weight (R Flails)		1240	1380	1520	1660	1720	1930
(F Flails)	Kg	1390	1530	1670	1810	1870	2080
Overall width (T)	mm	1800	2000	2200	2400	2400	2600
Depth	mm	1010	1010	1010	1010	1010	1010
Height (H1)	mm	1040	1040	1040	1040	1040	1040
Height with branch chopper (H2)	mm	1500	1500	1500	1500	1500	1500

### Dimensional drawings

The measurements are expressed in mm.



*This manual contains the maximum measurements. The precise measurements are indicated on the enclosed layouts.*



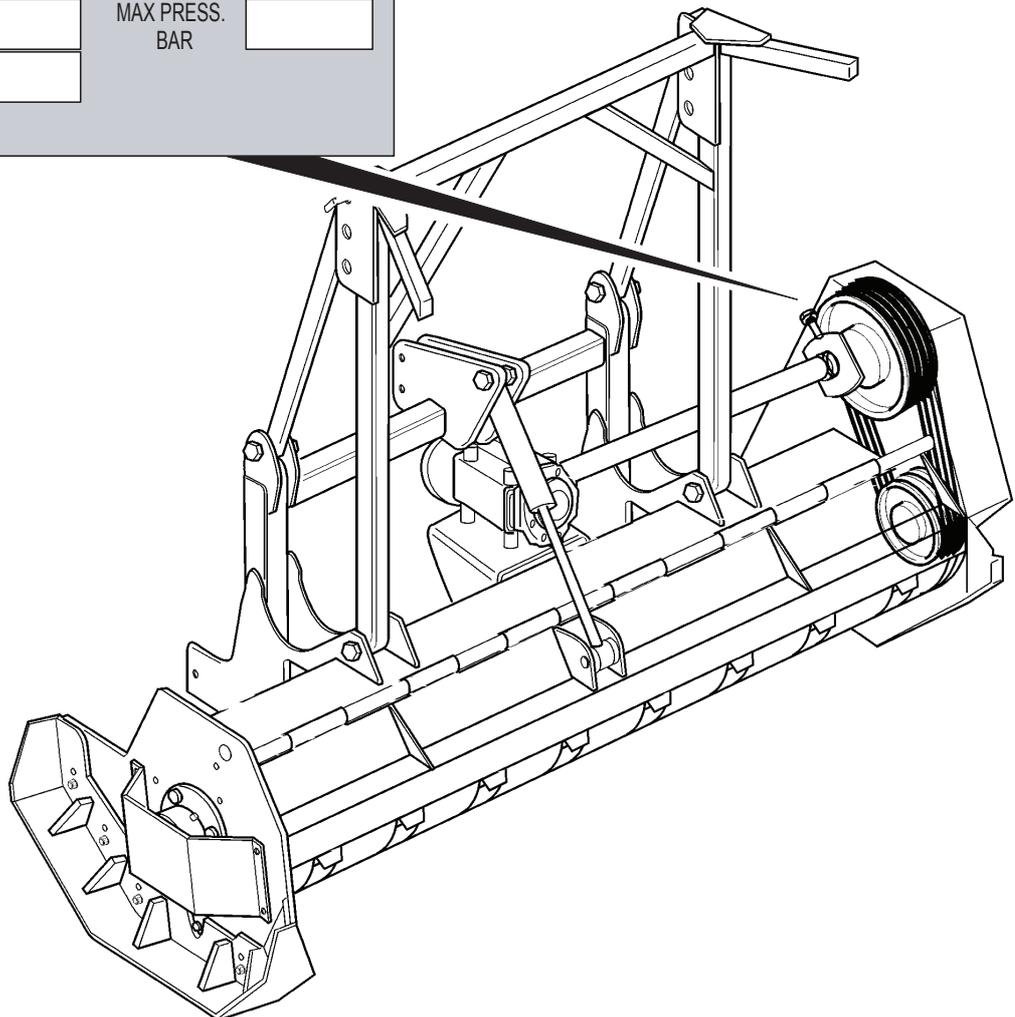
## Machine and manufacturer identification



The plates on the machine must NOT be removed, damaged, dirtied, hidden, etc.  
The plates must be cleaned regularly and must always be visible, i.e. they should not be hidden by foreign objects and pieces (cloths, boxes, equipment, etc...).

The technical data contained in this manual does not replace those contained in the plates on the machine.

<b>FERRI</b> S.R.L.		<b>CE</b>	
via GOVONI 30, 44030 TAMARA (FE) ITALY			
MOD.	<input type="text"/>		
MATR.	<input type="text"/>	YEAR	<input type="text"/> SERIE <input type="text"/>
MAX WEIGHT	<input type="text"/>	MAX PRESS.	<input type="text"/>
Kg	<input type="text"/>	BAR	<input type="text"/>
lbs	<input type="text"/>		



## General description

The forest shredder has been designed to meet different work requirements: brushcutting, shredding, grinding and felling of bushes, trees and plants up to a maximum diameter of 7.8 ÷ 10 inches on flat banks, roads, canals or grounds (see APPLICATION FIELD).

The shredder must be connected to a compatible tractor or machine that transmits the motion to the reducer **04** and supplies hydraulic oil to the cover **06** lifting piston **05** (see Table: technical characteristics).

The motion is supplied from the motor or tractor to the reducer **04**, which through an angular transmission and shaft reaches the upper pulley (motor); through a series of transmission belts **10** the motion reaches the rotor **08**. In order to tighten the belts it is necessary to proceed both on the stabiliser **07** and on the bracket **09**, loosening the adjacent fastening screws.

The hammers **02** are mounted on the rotor, in different numbers according to the model; you can also request special tungsten reinforced hammers (OPTIONAL) according to the ground conditions and/or the bushes.

On the front side (i.e. towards the tractor) chains **03** are mounted to protect the tractor from the throwing of stones and parts of bushes.



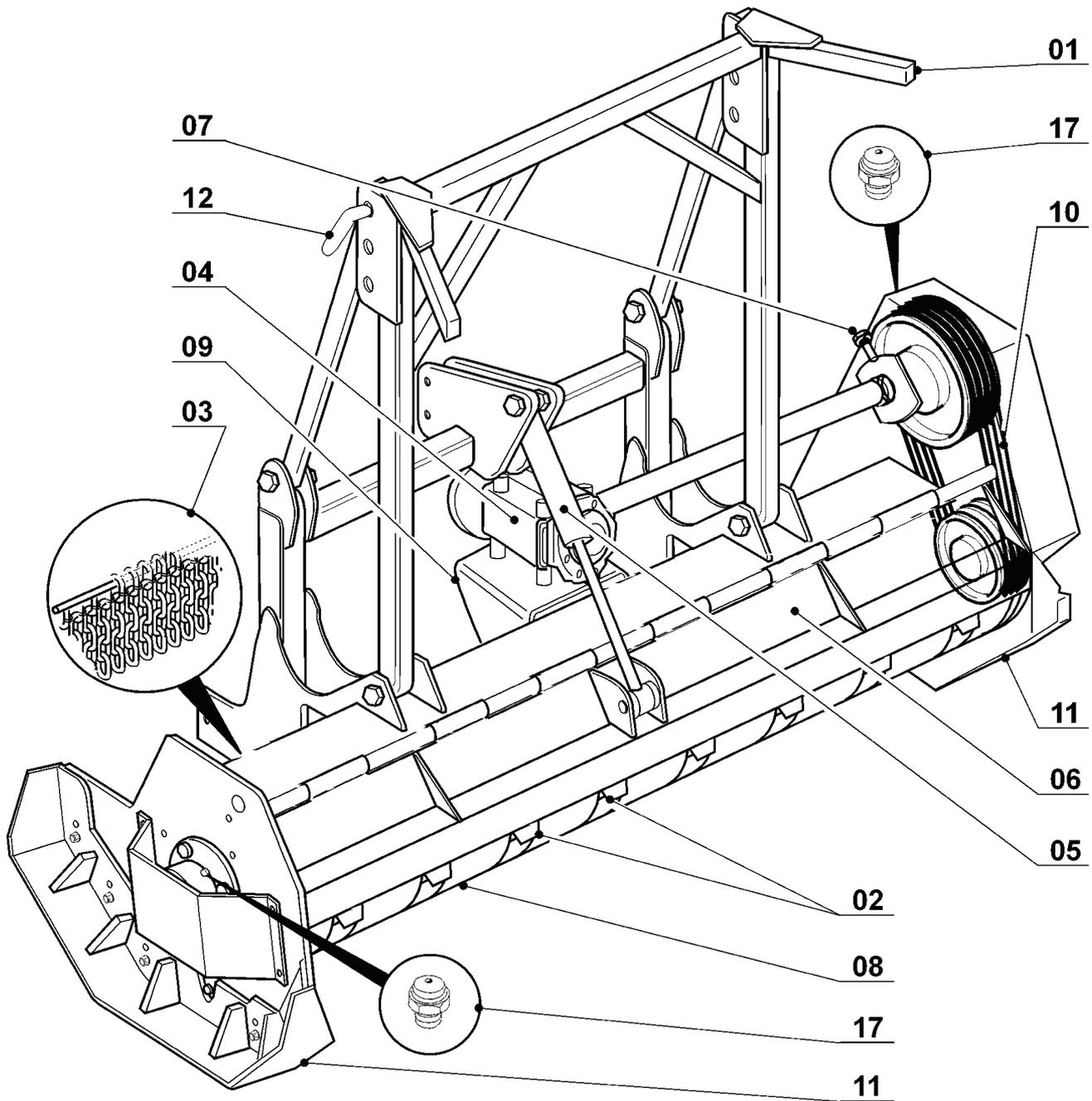
*CAUTION: On the rear side the cover 06 is provided, which must be closed in forward motion and can only be opened in reverse motion and only if necessary due to high and large bushes.*

On the upper part a branch chopper **01** is mounted (OPTIONAL) which can be adjusted to 3 positions by means of the pins **12**.

Laterally the machine is provided with two sliding blocks **11** with adjustable height in order to space the rotor from the ground according to the vegetation characteristics.

N.B. The machine is provided with special greasers **17**.





## 3. ACCIDENT PREVENTION AND SAFETY

### GENERAL CONDITIONS

The machine has been built in compliance with the strictest accident prevention regulations and equipped with safety devices suitable for the protection of components and operators.

It is clearly not possible to foresee all the different environments in which the machine will be working, therefore it is necessary that the Customer makes sure that the machine and the work conditions are suitable to the environment.

**FERRI** declines all responsibility deriving from failure to observe the regulations for the correct installation on the tractor and is not responsible for the upstream or downstream systems supplied by the machine.

The information contained in this manual do not replace the safety instructions and the technical data for installation and operation which are directly applied to the product, nor the safety regulations in force in the country of installation and the rules dictated by common sense.

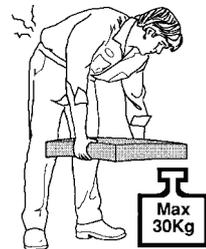


*It is essential to provide the operators with correct information.*

*It is therefore necessary that the operators read and abide by the technical information contained in the manual and attached in the documentation.*

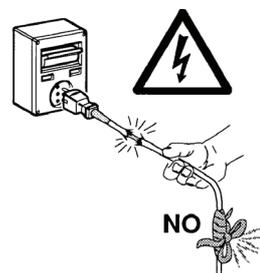
The manufacturer is at your disposal to carry out the training of the personnel, in situ, according to the conditions to be established by contract.

The handling and/or lifting of heavy pieces or equipment (more than 30 Kg) must be carried out using special lifting means.



*Do not use the machine if you notice any irregularities in its operation.*

*Avoid any precarious reparation. Use only original spare parts and install them according to their intended use. The liabilities deriving from commercial components are delegated to the respective manufacturers.*



## AREAS AND OPERATIONS AT RISK

### Environmental conditions and risks

The machine is usually used outdoor and exposed to sun, rain, snow and wind. It is however recommended not to use the machine if the environmental conditions are adverse and/or if the ground is sloping, unless expressly required and specified in the order confirmation.



*The same precautions must be taken when scrapping the machine.*

The machine has been designed in compliance with the regulations on energy conservation, so to avoid waste and useless dissipation. This means that the manufacturer has taken into account the current regulations on energy saving.

**FERRI** is not responsible for the disposal of materials necessary for the use of the machine: waste lubricant oil, hammers **02**, etc... It is therefore necessary that the Customer takes on the disposal of substances that are potentially hazardous to the environment according to the regulations in force in the country of installation.

### Safety devices and signals

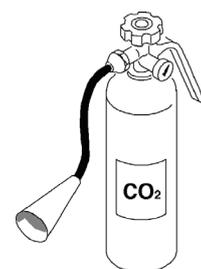
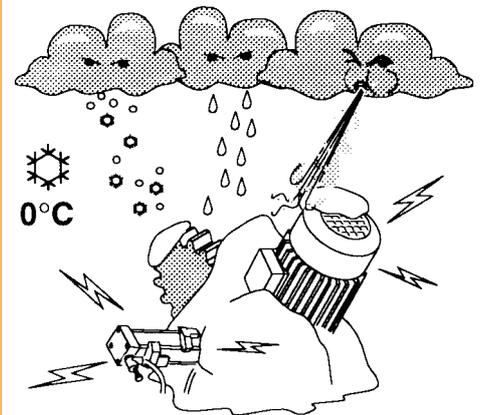
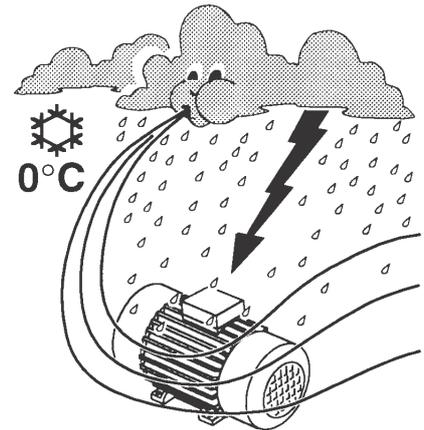
It is strictly forbidden to tamper with and/or disable the safety devices and/or the protective casings (e.g. chains **03**, transmission belts **10** casing, etc...) The manufacturer is NOT responsible for any damages to persons or things if the safety devices on the machine are tampered with or disabled.

The signals must always be visible and clean; the same applies to the equipment and in particular to all safety devices.

### Thermal hazard



*Some surfaces of the machine can be very hot due to overheating. It is therefore necessary to pay attention not to touch them and/or use specific personal protective equipment. While working the rotor 08 can produce sparks and cause fires. In case of fire use CO2 foam extinguishers.*



## Personnel clothing

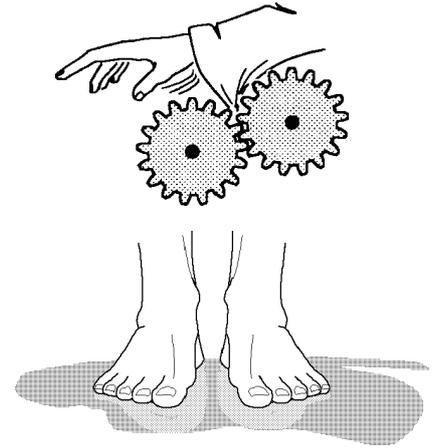
Personnel must not wear long-sleeve clothing, laces or belts since they can compromise personal safety.



Personnel should NOT access the machine or the equipment barefoot or with wet hands.



Personnel must wear the clothing and the personal protective equipment provided by the employer: earmuffs, gloves, footwear, goggles, helmet, etc...



## Maintenance rules

Maintenance operations must be carried out while the machine is not moving, according to the given frequency and the general conditions for maintenance. The maintenance technician must make sure that no other person can restore the machine or get it running during the maintenance process.



It is strictly forbidden to permanently remove protection devices or parts of them.  
The permanent removal of protection devices or parts of them invalidates the warranty and all responsibility.



The removal of protection devices or parts of them is only allowed for the purpose of maintenance interventions by specialised personnel while the machine is not moving. At the end of the intervention the person responsible must make sure that all protection devices are reassembled and work properly.



The maintenance technicians must notify any irregularity or deterioration due to wear or ageing, so to restore the correct safety conditions in time. The cleaning of the machine must be carried out with adequate means and detergents that do not corrode any of the components of the machine.

It is essential that the operator has a complete view of the work area and that the lighting is sufficient to work safely. It is forbidden to use the machine while it is dark.



## Moving machine

A moving machine represents a potential hazard, therefore it is strictly **FORBIDDEN to carry out maintenance operations, remove parts that fix the rotor 08 or clean the machine while it is on or running.**

Every foreign body which rests on moving parts and is not part of the machine, such as keys, screwdrivers and bolts, must be removed before starting the machine.

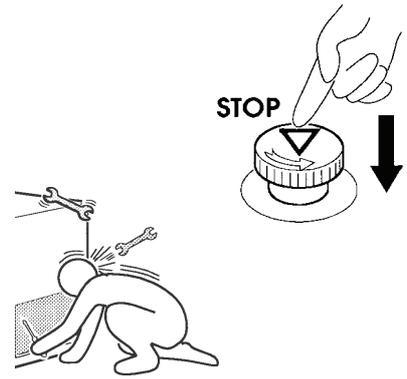
The operator must always pay attention to the surrounding work environment so to preserve a living space big enough to enable him/her to escape. In any case there should not be persons or animals near the work area. While the machine is running cut pieces can be thrown so it is necessary to make sure that no persons or animals are present within a radius of 100 metres.

## Machine stopped or off

The machine represents a danger also while it is off: traverses, casings, corners, hammers **02**, etc.. cannot be hidden. Therefore, we recommend you to be cautious while accessing the work area and while handling parts of the machine.

Avoid dangerous acrobatics to free or clean the machine and to carry out maintenance operations.

The correct cleaning can prevent accidents or unnecessary risks. A greased handle or a small oil leak can also be dangerous. N.B. The joint protection cowl or the PTO shafts are not stiff. It is forbidden to get on them or to damage them.



*Before carrying out any intervention on the machine disconnect the power from the tractor and wait until the rotor 08 has come to a complete stop. In any case, do not free or clean the machine with your hands without taking the appropriate precautions.*

**FERRI** removed sharp edges, but in some cases it was not possible to eliminate them, therefore we recommend that you use proper personal protective equipment (leather gloves).

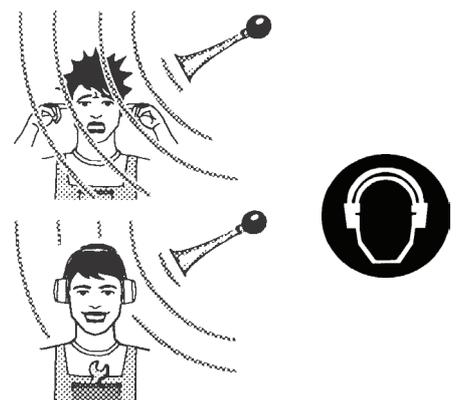
We also recommend that you do not use the machine with tractors without cabin; if you do, take the appropriate precautions.

## Noise

The machine at full capacity, separately evaluated and with the correct maintenance, generates a sound pressure level (Noise level) lower than 85 dBA. Nevertheless it is preferable that the operator is acoustically protected and that the operator pays a particular visual attention while working.



*Due to the great number of different work possibilities FERRI could not eliminate their noise, therefore it is necessary to protect the operator with adequate personal protective equipment ( earmuffs).*



## RESIDUAL RISKS

Despite the warnings and the safety devices that **FERRI** provides, some risks remain since they could not be removed.

These risks are listed in the following table together with some suggestions on how to prevent them.

**Table: residual risks**

<b>RISK ANALYSIS AND DESCRIPTION</b>	<b>SUGGESTED REMEDY</b>
Leaks or spillages with danger of slipping	Clean thoroughly
Environmental pollution due to leaks or spillages	Clean thoroughly and do not use excessive amounts of grease
Noise pollution due to the type of work environment	Change the work speed and use earmuffs
Excessive or anomalous noise: it indicates an unbalance of the rotor 08.	Restore balancing through specialised workshops or the manufacturer FERRI.
Aggressiveness and toxicity of fluids: hydraulic oil and greases can corrode the skin or mucosae.	Use personal protective equipment or immediately wash the parts that have come into contact.
Cutting parts hammers 02, presence of burrs, etc.....	Use personal protective equipment and handle with care.
Presence of obstacles or inaccessibility	Pay very careful attention
Hot surfaces: motors, hammers after work, hydraulic oil, etc...	Use personal protective equipment and handle with care.
Poor cleaning: it does not make it possible to see the controls and safety plates; it can cause dangerous situations.	Clean the equipment, plates and work environment thoroughly.
External atmospheric agents such as seepages of water, low temperatures, high humidity, etc...	Use only if the conditions of the environment are suitable for the system
Fire danger due to the type of working	Make sure that no fire is caused.
Crushing or falling, electric discharges, strokes or shocks.	Do not carry out any cleaning or maintenance operation while the machine is powered and/or running.
Excessive slopes on hilly grounds or capsizing of the tractor.	Check that the tractor is suitable for bearing a load of this type.
High moving speed	Reduce moving speed
Road transport is a potential hazard.	Highlight the hazard and be very careful.
Poor or absent lighting of the work station.	Light up correctly.
Poor training of personnel	Ask FERRI for a supplementary course.

## 4. LIFTING AND TRANSPORT

### GENERAL CONDITIONS

#### Lifting

**FERRI** usually stores and protects single components with special means (eyebolts, support feet, brackets, etc...) to make the transport and the following handling easier. On the whole it is necessary to contact specialised personnel in charge of the loading and unloading of components.

Where indicated and/or where available you can insert eyebolts; you can then anchor a hook (if suitable for the passing) or hook some shackles as shown in the image.



- *Lifting must be carried out only by specialised personnel (sling operators, crane operators, carriers, etc...).*



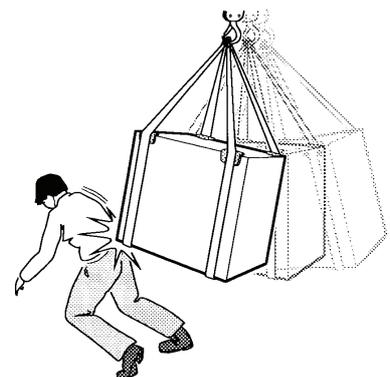
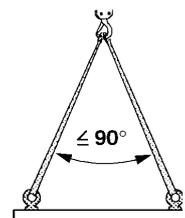
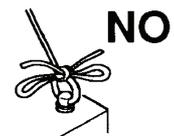
- *Do not lift more units or parts of the machine at the same time, unless otherwise indicated or appropriately stored.*

The means used for lifting (ropes, polyester bands, chains) must be suitable for bearing the load of the machines. The ropes must form an opening angle lower than or equal to 90°.

The lifting ropes must not damage or compromise the machine; you can protect it using cloths or pieces of cardboard.



- *While handling the machine it is necessary to check the correct distribution of loads on the ropes and not to make abrupt movements or quick displacements that may cause dangerous swingings.*



## Transport

- Transport must be carried out only by specialised personnel.
- Transport of the machine, especially on the road, must be carried out with suitable means to protect components from violent impacts, humidity, vibrations, etc...



*All the tanks are provided completely empty. For future handling remember to empty the tank first.*

## Cleaning and unpacking the components

- We remind you that the packaging elements (wood, nails, paper, cellophane, staples, sticky tape, straps, ropes) may cause cuts or injuries if they are not handled with care.

They must be removed with appropriate means and must not be left at the mercy of persons who are not responsible (e.g. children). The same applies to means used for the removal of the packaging (scissors, hammers, tongs, knives, etc...). Packaging components must be removed and disposed of in compliance with the regulations in force in the country of installation.

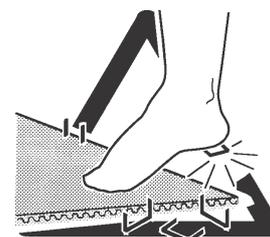
In some cases it is possible to find foreign elements (brackets, tie-rods, flanges, etc...) that serve for blocking the pieces ONLY for transport. These elements, which are not part of the machine, have to be removed during the installation of the machine.

While opening the packaging check that the machine is intact and that no parts or accessories have been removed.



*If you should notice faults or deteriorations interrupt the operations immediately, contact the carrier or transporter and inform FERRI in time.*

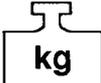
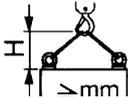
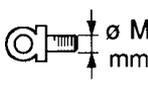
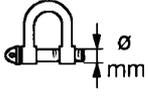
The first operation to perform once the packaging has been opened is a general check of the pieces and parts that make up the machine. Check that all the necessary components are present and in perfect condition.



## SPECIFIC LIFTING OF UNITS

Lifting must be carried out following the general conditions previously described and anchoring to the positions available on units or packagings.

TABLE: LIFTING POINTS

Model	Weight (Kg)  kg	No. of lifting points	 1500	 ∅ M mm	 ∅ mm
TFC/R 1600	1240	3	1500	16	16
TFC/F 1600	1390	3	1500	16	16
TFC/R 1800	1380	3	1500	16	16
TFC/F 1800	1530	3	1500	16	16
TFC/R 2000	1520	3	1500	16	16
TFC/F 2000	1670	3	1500	16	16
TFC/R 2200	1660	3	1500	16	16
TFC/F 2200	1810	3	1500	16	16
TFC-DT/R 2000	1720	3	1500	16	16
TFC-DT/F 2000	1870	3	1500	16	16
TFC-DT/R 2200	1930	3	1500	16	16
TFC-DT/F 2200	2080	3	1500	16	16

## 5. INSTALLATION

### GENERAL CONDITIONS

#### Installation

The machine is installed according to the Customer's needs and to the type of motor or tractor. It is therefore necessary that the Customer informs **FERRI** of any particular non-standardized situation. To that end **FERRI** supplies the detailed installation drawings and data concerning the specific connections before delivering the machine.

If the installation is not carried out by one of Our installers, the personnel that the Client authorises to install the machine must be specialised and expert in order to carry out this task: the person must have been trained adequately on machines of this kind.



*Installation must be carried out by specialised personnel; it is however right to observe what is contained in this manual and follow the schemes and the enclosed documentation.*

The installer must make sure of the integrity of the packaging/ machinery, checking that they did not undergo damages due to shocks or inappropriate handling.

It is necessary to carry out the mechanic installation first and then the hydraulic and electric connections (if present).

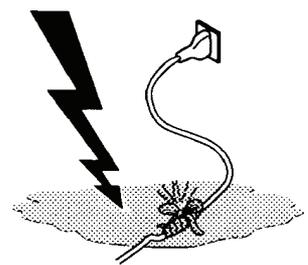
N.B. Keep at a safe distance while engaging a gear or powering the machine.



*During the installation process signs, barriers and "WORK IN PROGRESS" signals must be set out in order to keep other personnel at a distance.*

The installer must also simulate any situation of risk or emergency together with the personnel, checking that the personnel has understood all the information well.

At last the installer must provide all the information necessary for the correct cleaning and maintenance of the machine that the installer has installed, checking with the Customer's personnel that the manual and its enclosures are present.



## Connection to the tractor



*The connection to the tractor must be carried out by specialised personnel who is able to assess the compatibility between tractor and shredder.*

*Follow what is described in this manual and/or its enclosures in any case.*

*Check that the machine is in perfect condition.*

Check that the tractor is designed for bearing the load deriving from the weight of the shredder.

Make sure that the power (pressure and capacity) of the tractor is enough for the correct operation of the shredder.

It is also necessary to provide the tractor cabin with suitable guards (e.g. unbreakable glass) and shield the parts under the tractor with removable anti-shock plates.

## 6. EQUIPMENT

### GENERAL CONDITIONS

An exhaustive knowledge of the EQUIPMENT is one of the most important rules in order to avoid damages to the machine and to the operator. Therefore we suggest that you carefully read what is described in this manual. If uncertainty or discrepancies should arise ask **FERRI** for further information.

*Do NOT use the machine if:*

- *You do not have a proper qualification for this or similar machines;*
- *You do not understand the machine operation;*
- *You are not certain of the results of the manoeuvres to be carried out;*
- *You should notice any irregularity in the operation;*
- *Doubts or discrepancies arise among your personal experience, the manual and/or other operators.*



*The employer must make sure that the above conditions are observed and that the persons in charge of the operation of the machine are adequately trained.*

*FERRI is not responsible for any damages to the machine or to the operator resulting from incompetence, poor qualification or lack of training.*



## 7. OPERATION

### COMMISSIONING

#### General conditions

Before proceeding with checking the movements and functions of the machine, it is necessary to carry out a series of essential checks and thoroughly know the chapter EQUIPMENT and the functions that are activated by the controls as well as the positioning of the controls.



*In this regard consult the enclosed documentation and let qualified and authorised personnel help or train you.*

- Make sure of the correct operation of all devices; assess and analyse possible residual risks before proceeding with any manoeuvre.
- Ensure that no objects or unauthorised persons are present within the work area;



*When the machine is powered some unexpected movements may occur. It is therefore necessary to keep at a safe distance and to engage the gear only when all possibilities of collision can be excluded.*

## Danger of throwing objects



During the machine operation always pay attention to the surrounding environment in order to avoid any possible danger. Ensure that no persons or animals are present within a radius of 100 metres.

Before starting to work get familiar with the equipment avoiding abrupt movements or excessive accelerations.

For the selection of a suitable type of cutting or shredding it is necessary to consider the following:

- nature and type of the ground (grassy, gravelly, etc...)
- consistency of the material to be shredded (grass, hedges, thorns, plants, etc...)
- Even or variable height above ground (holes, obstacles, etc...)
- Moving speed (of the motor)
- Rotation speed of the rotor **08**
- Type of equipment (hammers **02**)

During the working the rotor **08** must not run idle.



**CAUTION:** Never leave the machine unsupervised while it is running.

Never get off the tractor while the rotor **08** is still rotating.



It is strictly forbidden to free or clean the machine without complying with the safety conditions contained in the manual.

## Adjustments

While working the hammers **02** must never touch the ground. Adjust symmetrically the position of the two sliding blocks **11** according to the ground conditions and/or the bushes to be cut. On the sliding blocks there are the holes for the 2 positions.

The branch chopper **01** (OPTIONAL) is provided with 3 manually adjustable positions. To position them it is necessary to remove the pins **12** and the corresponding blocking pin. Move the arms according to your needs and re-assemble the pins fixing them with the blocking pins.



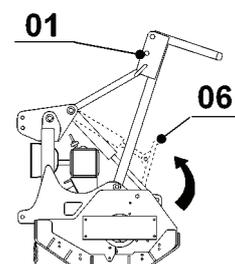
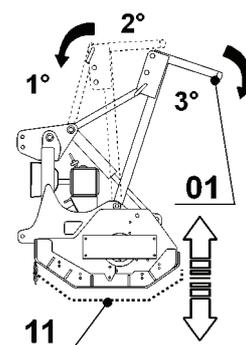
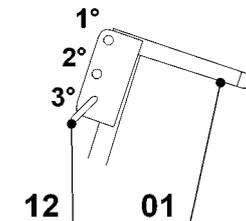
**CAUTION:** Maximum attention must be paid during the handling of the branch chopper arms. Danger of crushing.

The branch chopper must be adjusted depending on the high trunk plants that are present on the ground to work on. The purpose is to bend the tree and to keep it away from the motor or tractor cabin.

It is necessary to open the cover **06** when working in reverse motion.



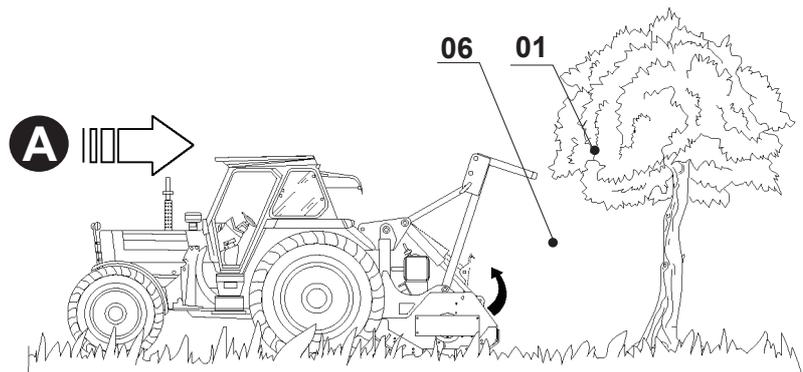
**CAUTION:** it is **ESSENTIAL** to keep the cover **06** lowered when working in forward motion.



## How to use the shredder

### A

First of all carry out the various adjustments according to the ground and/or bushes type. Open the cover **06** and move the tractor in reverse motion **VERY SLOWLY** getting near the plants that you want to fell or cut.



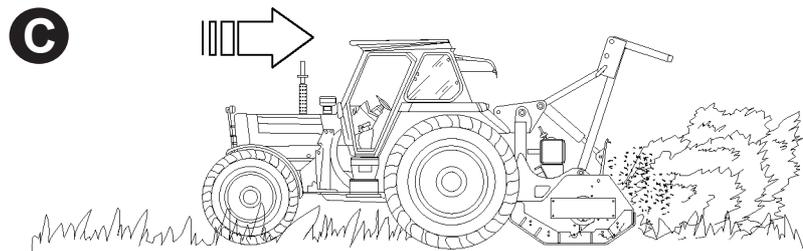
### B

Make sure that the branch chopper **01** works properly, keeping the plants away from the tractor cabin. For very large trees (with a maximum trunk diameter of 7.88 ÷ 15.76 inches) check that the trunk is pushed and falls opposite to the tractor.



### C

Go on in reverse motion chopping also the tree and/or the bushes that have fallen to the ground.

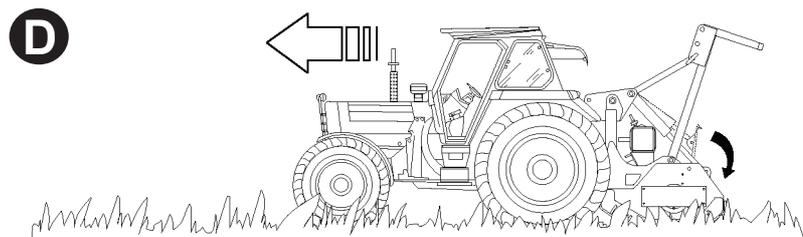


### D

Finally close the cover **06** and work again on the bushes in order to further chop the material that has already been cut.

You can work many times on the chopped material so to shred it and create a very fine and homogeneous biomass, thus speeding up its decomposition.

N.B. The shredder can also be used to shred and pulverize the residues of plants which have been previously cut.



## 8. MAINTENANCE:

### GENERAL CONDITIONS



*Maintenance and lubrication operations must be carried out by specialised personnel.*

**Maintenance and lubrication operations must be carried out while the machine is not moving, unless otherwise specified.**

Check that the quantity and/or type of oil used comply with the indications given;

Never mix oils of a different quality or brand;

Do NOT use frayed cloths or products that can pollute or alter the characteristics of the fluids.

Avoid any precarious repair. Any repair must be carried out using only original spare parts.

Always use personal protective equipment provided by the employer (gloves, overalls, footwear, goggles, helmets, etc...);

The maintenance technician has the obligation to notify any irregularity in time: drippings, abrasions, fraying, etc....



*FORBID the use of the machine if you should notice a problem of any kind and restore the normal conditions or, in any way, make sure that something is done to solve the problem.*

**FERRI** declines all responsibility if the maintenance cycles indicated in this manual and in the enclosed documentation are not observed correctly, if maintenance is carried out by non-qualified personnel or if procedures or lubricants with characteristics other than the ones indicated in the manual are used.

Please note that the hydraulic oil, greases and lubricants can cause dangerous situations (see Chapter ACCIDENT PREVENTION).



## ROUTINE MAINTENANCE

### Overall machine



The operations described can only be carried out if:

- the shredder unit (rotor 08) is resting on the ground;
- the motor is off, the key is removed from the control panel and the parking brake is engaged;
- the hydraulic system is not under pressure.

CHECKS AND MAINTENANCE DESCRIPTION	SYMBOLS AND FREQUENCY
<ul style="list-style-type: none"> <li>- Carry out <b>daily</b> the cleaning of the machine also to check the machine at the end of the work (e.g. a greasy or dirty handle can cause a dangerous situation); notify any spillages or irregularities noticed.</li> <li>- Remove all residues of cut material using preferably a compressed water cleaner in order to avoid any contact.</li> <li>- Clean also the plates, accident prevention protections and the signalling devices installed by the Customer.</li> </ul>	 <p style="text-align: right;"><b>24 h</b></p>
<ul style="list-style-type: none"> <li>- Check <b>daily</b> the wear status of the hammers <b>02</b> and replace them if necessary</li> </ul>	 <p style="text-align: right;"><b>24 h</b></p>
<ul style="list-style-type: none"> <li>- Check <b>daily</b> for any spillages of the hydraulic system and repair if necessary.</li> </ul>	 <p style="text-align: right;"><b>24 h</b></p>
<ul style="list-style-type: none"> <li>- <b>After the first 8 hours</b> of work and then <b>monthly</b> check the tensioning of the transmission belts <b>10</b>. The tensioning must be carried out operating symmetrically on the stabiliser <b>07</b> and on the bracket<b>09</b>.</li> </ul>	 <p style="text-align: right;"><b>8 h</b> <b>200 h</b></p>
<ul style="list-style-type: none"> <li>- Check <b>daily</b> or when needed the balancing of the rotor <b>08</b>; any imbalance is highlighted by the excessive noise during free rotation.</li> </ul>	 <p style="text-align: right;"><b>24 h</b></p>
<ul style="list-style-type: none"> <li>- Carry out a <b>three-monthly</b> check and a tightening of all the screws of the machine.</li> </ul>	 <p style="text-align: right;"><b>500 h</b></p>
<ul style="list-style-type: none"> <li>- Carry out the greasing of all the greasers <b>17 every 8 hours</b>. N.B. Clean the greasers thoroughly before greasing them.</li> </ul>	 <p style="text-align: right;"><b>8 h</b></p>
 <ul style="list-style-type: none"> <li>- Carry out the interventions recommended by manufacturers of third parts, accessories and/or equipment, consulting any enclosed documentation.</li> </ul>	
 <ul style="list-style-type: none"> <li>- After about five years of activity check the whole machine and carry out a complete and accurate overhaul. For this purpose contact <b>FERRI</b> or one of its assistance centres.</li> </ul>	 <p style="text-align: right;"><b>10,000 h</b></p>

## SCHEDULED MAINTENANCE

Table: scheduled maintenance

Intervention date:

Description of the operation		Intervention frequency
Check the tensioning of the transmission belts <b>10</b> by first start-up	<input type="checkbox"/>	<b>8 h</b>
Carry out the greasing of all the greasers <b>17</b> .	<input type="checkbox"/>	
Clean the whole machine, especially the plates on it	<input type="checkbox"/>	<b>24 h</b>
Check the wear status of the hammers <b>02</b>	<input type="checkbox"/>	
Check for any spillages	<input type="checkbox"/>	
Check the balancing of the rotor <b>08</b>	<input type="checkbox"/>	
Check the tensioning of the transmission belts	<input type="checkbox"/>	<b>200 h</b>
Check and/or tighten all the screws of the machine	<input type="checkbox"/>	<b>500 h</b>
Carry out a complete overhaul of the overall machine	<input type="checkbox"/>	<b>10000 h</b>

## LUBRICANTS AND SYMBOLS

Table: lubricants and symbols

DESCRIPTION	LUBRICANT	REF.	SYMBOL	
		UNI 7164 ISO 3498	DIN30600 ISO 7000	ICON
GREASE for general usage	AGIP GR MU EP 2	XBCEA 2	DIN 1102	
Hydraulic OIL also used for lubricating	AGIP ARNICA 68	VG 68		
CLEANING	ISO 423	DIN 484		
LEVEL CHECK		DIN 691 ISO 159		
CHECK FOR ANY LEAKS OR SPILLAGES		ISO 29	DIN 257	
GENERAL CHECK OF IRREGULARITIES AND FAULTS			DIN 1279 ISO 421	
BELT TENSIONING		ISO 13	DIN 849	
GENERIC DANGER		ISO 434	DIN 1008	
CAUTION: DO NOT REMOVE OR DAMAGE ANY OF THE PARTS OF THIS MANUAL	Maintenance must be carried out by the personnel in charge while the machine is off, unless otherwise specified <b>in the use and maintenance manual that must be consulted.</b>		DIN 1677 ISO 81	
PERSONAL PROTECTIVE EQUIPMENT OR PERSONNEL CLOTHING				

## DIAGNOSIS

Problem	Cause	Solution
Excessive noise	Rotor <b>08</b> unbalanced	Have the rotor be balanced
Irregular cuts	Breaking or loss of shredding hammers <b>02</b>	Replace the worn or broken flails
	Flails worn in a very irregular way	Replace all the flails and search for the cause of the irregular wear
	Adjustments of the machine not suitable for the work to be carried out	Adjust the machine according to the possibilities indicated in this manual
	Too high moving speed	Reduce moving speed checking the quality of the cut material worked by the machine until you get the desired result
The rotor <b>08</b> does not run at the right number of revolutions	Rotor blocked by pieces of wood or other foreign materials	Make the rotor turn in the opposite direction for some revolutions while freeing it. If this action is not enough, stop the machine and free it.
The machine gets stuck and works "by fits and starts"	Excessive amount of material to be shredded, too low position of the rotor or high moving speed	Adjust the cut height by means of the sliding blocks <b>11</b> and adapt the cut speed to the present conditions
Excessive strain on the motor	Material to be shredded very thick	Reduce moving speed of the motor
	The material to be shredded is too large	Stop the work and use a more suitable machine/model
	Excessive amount/height of the material to be shredded	Adjust the cut height and adapt the moving speed to the present conditions
The movements of the machine that are controlled hydraulically do not work	Lack of hydraulic oil in the motor control unit	Consult the instructions of the motor and fill the oil to level
	Broken connecting pipes	Replace the pipes with similar pipes
	Quick hitch inserted wrongly	Disconnect the quick hitch, clean it and insert it back correctly
	Leaks on the pistons of the shredder	Have them repaired in time

## STORAGE AND DEMOLITION

### Storage or prolonged stop of the machine



*If the machine is not used immediately or if it is stored for a long period check that it is correctly packed and ask FERRI for the storage instructions.*

The machine must be stored in a closed location with adequate ventilation and that does not show particular hazardous characteristics for the components of the machine, especially for the electric components (if present).

Protect non painted/varnished parts from corrosion with adequate greases or sprays. If necessary store the machine with dehydrating salts.

#### **Hydraulic and pneumatic system** (if present)

If the machine is not used for quite a long period, it is necessary to follow some indications: A short stop, lasting less than two months, does not require any particular precaution.

The piston rods of the cylinder must preferably be in backward position, otherwise they must be covered in anticorrosive products.

Restarting after a long stop requires checking the oil quantity and greasing of all points.



*N.B. FERRI declines all responsibility for damages to the environment and for the systems used for the disposal of materials: parts of the machine, lubricants and all that requires disposal according to law.*

## Decommissioning, demolition and scrapping of the machine



*If the machine is not demolished it is necessary to abide by the regulations in force in the destination country and to avoid producing any kind of pollution in any case while disposing of the products that make up the machine*

- Disconnect all the existing power supply lines.
- Empty the oil tank and/or the circuit making sure that they are completely empty.
- Empty any containers under pressure making sure that they are completely empty.
- Remove any voltage storage and/or high electrostatic charges or residual energy on springs or other mechanical devices (if present).



- *Dispose of the different materials that make up the parts of the machine bringing them to a suitable dumping.*

**Table: disposal of products**

COMPONENT	BUILDING MATERIAL
Frame	Electro welded FE510 steel
Casings/cabinet/tanks	Steel/treated and painted/varnished plate
Paint	RAL
Hydraulic motors and/or reducers	Steel/Cast iron
Pulleys	Aluminium/Cast iron/Steel
Belts	Rubber+teflon/Polyurethane
Chains	Steel
Pinions	Cast iron/Steel
Bearing brass	Bronze/Brass
Supports	Cast iron/Steel/FE52
Bearings	Steel
Seals	Rubber/teflon/Viton/Vulkolan/Kevlar
Electric cables	Copper/Rubber
Hoses	Steel/Rubber
Spiral hoses	Nylon/Plastic
Fan	Plastic