



INDUSTRIAL SHREDDER MODEL HDD GLADIATOR

INSTRUCTION MANUAL FOR USE AND MAINTENANCE

ORIGINAL INSTRUCTIONS

USE MINERAL OIL.
See table 5-1, page 59

It is compulsory for the personnel in charge of the installation, running and maintenance of the shredder to read the present text before starting whatever operation.

Intimus International GmbH declines any responsibility should the user make any alterations to the shredder or use it in ways other than those indicated in this manual.

A copy of this manual with all its enclosures should always be on hand for the personnel in charge of the machine to be consulted and therefore should be kept nearby the shredder in a clearly visible position and protected by a cover aimed at preventing it from deteriorating.

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This publication can be changed without advise unless the modifications are pertaining to the safety of the machinery (configurations and requirements) holding by the customer.

MANUFACTURER AND MACHINE IDENTIFICATION DATA

Table 1-1 – Technical data

Manufacturer	intimus International GmbH		
Address	Bergheimer Strasse 6 -16 88677 Markdorf – Germany Tel. +49 (0)7544 600 / Fax +49 (0)7544 60248 E-Mail: sales.de@intimus.com / web: www.intimus.com		
Machine	Industrial Shredder Model HDD GLADIATOR		
Serial No.			
Year of construction	See typeplate		
Blades assembly	5 blades, 1 hook, 28,5 mm thickness and 11 blades, 11 hooks, 12 mm thickness		
Motor speed	<input type="checkbox"/> 1.500 rpm (4 poles) ^[400V – 50 Hz] <input type="checkbox"/> 1.200 rpm (6 poles) ^[220V – 60 Hz]		
Shredding chamber General lay-out	S68-0010 S68-0013		
Blades scheme	I68-0033		
Shafts number	2		
Shredder inlet	305 x 300 mm		
Wiring Diagram	<input type="checkbox"/> SE68-0004-0 ^[400 V – 50 Hz] <input type="checkbox"/> SE68-0007-0 ^[220 V – 60 Hz]		
Electric Components List	SD68-0004-01 SD68-0007-01		
Power	3,00 kW		
Voltage	<input type="checkbox"/> 400 V – 50 Hz <input type="checkbox"/> 220 V – 60 Hz		
aM fuses	<input type="checkbox"/> 8 A <input type="checkbox"/> 20 A		
Electrical panel power cable section	4x2,50 mm ²	Motor cable section	2,50 mm ²
Intended use	Shredding of HARD DISCS, VHS videotapes, CDs, USB pens		

Table 1-2 – Objects to be supplied

Objects of this supply	
✓	Industrial shredder mod. HDD GLADIATOR s/n 5557xx
✓	Electric switchboard with control panel 2021
✓	Feeding hopper with loader drawer
✓	Support stand

LIST OF REVISIONS

Revisions	
0 09/05/2019	First issue.
A 31/03/2020	Add Chapter 2.8 - PERSONAL PROTECTION EQUIPMENT
B 23/09/2020	Updated all machine series names with HHD GLADIATOR
D 21/12/2020	Updated chapters 1, 2 and 4 related to the parts common to all series.
E 02/03/2021	Deleted Table 7.2 - Tightening torque.
E1 03/03/2021	Updated Chapter 1.9 - CERTIFICATION OF THE SHREDDER AND ITS COMPONENTS.
F 02/04/2021	Added Chapter 7.3.9 - Safety checks.

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1. GENERAL INFORMATION

1.1 INTRODUCTION

The manual provides a functional description and assembly instructions of the machine and all its parts, and the instructions for:

- correct handling of the machine (offloading, location);
- correct installation;
- suggestions for the completion of the machine (for partly completed machinery, see paragraph 1.1.1);
- set up and adjustments before start up and setting at work and running of the final machine (if partly completed machinery), as far as the machine is completed in accordance with these instructions;
- setting at work and running;
- routine maintenance;
- dismantling the machine.

All the information thus contained allows the personnel to work in safety during all the installation, use and maintenance and dismantling stages.

The manual also provides a table which sums up any possible operating problems which could occur according to the manufacturer's experience, and indications on how to reset the machine should such problems crop up.

It is not necessary to avail of skilled personnel to install and run the shredder, but for electrical connections.

When faults and operating problems which cannot be resolved using the instructions supplied in this manual occur, it is compulsory to contact the manufacturer's Technical Assistance Service according to the indications provided hereafter.

1.1.1 Partly completed machinery

The manual provides also the assembly instructions referred to a partly completed machinery according to the Machinery Directive 2006/42/EC. They include the description of the conditions to be observed for a correct incorporation into the final machinery, to assure safety and health.



CAUTION

In these instructions are described the components that intimus International GmbH uses for the setting of the standard machinery. Also the components not delivered are described as example and suggestion for a correct assembly.

1.2 GUARANTEE

Intimus International GmbH grants the Purchaser a warranty for defects of machinery which has a duration of twelve months from the date of initial start for use of the machinery not exceeding 8 (eight) hours per day for five (5) days per week or 1800 work hours of the machine and in any case not later than fifteen months from the date of delivery, depending on the case that occurs.

The guarantee includes the repair or replacement of components which result defective in material, project or manufacture, according to the exclusive judgment of the manufacturer, and in the case of replacement, they will be returned ex-works.

The guarantee does not cover the parts subject to wear during operation, i.e. blades, spacers and cleaning sectors. The guarantee is automatically cancelled and the manufacturer is relieved from whatever liability if the user operates any alteration to the machine which modifies the condition by which it is delivered and accepted.

The guarantee is cancelled also when the user carries out an improper use of the machine or does not follow the instructions for the assembly, correct use and maintenance written in this manual.

1.3 CUSTOMER'S RESPONSIBILITIES

Unless otherwise stated on the contract, the following should be carried out by the Customer:

- the completion of the machine with all components and systems necessary to the right operation of the machine;
- the construction and sizing of civil works such as the support base, any supporting structures, raised platform and access to the machinery;
- risk analysis and check of the conformity to the European Directives applicable to the final machine or to the set of machines included in the system in which the machine described in this manual is installed;
- Electrical preparation work, including the protection conductor commonly known as the "EARTHING" conductor;
- Hydraulic preparation work (if any);
- Pneumatic preparation work (if any);
- Tools and expendable materials;
- Necessary lubricating oils.

1.4 INSTRUCTIONS LANGUAGE

English is the official language chosen by the Manufacturer. No responsibility is assumed for translations in other languages differing from the original meaning.

1.5 TECHNICAL ASSISTANCE

Technical assistance can be provided exclusively by the manufacturer's personnel, or by personnel authorized by the manufacturer.

Requests for technical assistance should be sent in writing to the address of the manufacturer and must always state:

- the machine identification data;
- the description of the problems occurred for which the assistance is being requested.

1.6 SPARE PARTS

It is the customer's obligation to buy original spare parts. The dismantling and assembling operations must be carried out in compliance with the manufacturer's instructions.

1.7 CONVENTIONAL GRAPHICS AND GLOSSARY

The following graphic elements along with emphasized text are used in the manual to make important notices and instructions immediately visible:



DANGER

It means that if the described operations are carried out incorrectly they can lead to heavy injuries, death or long term risks for the health of the operator.



IMPORTANT NOTICE

It means that if the described operations are carried out incorrectly damage can occur to the machine and/or the operator can be exposed to risks.



CAUTION

It supplies useful instructions for the correct use of the machine on part of the operators.



IMPORTANT INFORMATION

This symbol indicates a diagram, a design or a table that are specific to the product supplied to the customer, unlike the configuration of the standard product or vice versa is not to be supplied.

To allow this manual to be fully understood, we hereby list the terms used:

- **HAZARDOUS AREA:** the area inside or near the machine, in which the presence of an exposed person puts the safety and health of the same at risk.
- **LOADING AREA:** the area near the machine where the material loading into the hopper takes place.
- **EXPOSED PERSON:** whoever should be completely or partly in a hazardous area.
- **OPERATOR:** whoever is in charge of installing, making function, adjusting, carrying out routine maintenance and cleaning the machine.
- **MAINTENANCE TECHNICIAN:** a skilled person specially trained and authorised to carry out extraordinary maintenance interventions or repairs which require a special knowledge of the machine, its functioning and safety devices, as well as of the relevant modes of intervention.
- **SHREDDING CHAMBER:** the area of the machine where the material cutting comes about.
- **BLADES:** discs with very sharp edges and one or more hooks of different thicknesses set on shafts located inside the shredding chamber.
- **HOOKS:** each blade is equipped with one or more spouts, located on the circumference and form an integral part of the blade, with the function of hooking the material and bringing it towards the centre of the shredding chamber. The hooks are of different heights according to the type of material to be treated.
- **SPACERS:** rings installed on blade shafts to space out the blades and of a similar thickness to the latter.
- **CLEANING SECTORS:** components that partially overlap each spacer inside the shredding chamber, with the function of cleaning the spacer itself and possible guiding of the material towards the inside of the shredding chamber.
- **CUTTING PLATES:** cutting tools mounted on the rotor in the single shaft shredders.
- **SCREEN:** screen with holes placed under the blades (or under the rotor in the single shaft shredders) for the selection of the shred materials during discharge.
- **ROTATING DRUM/SIEVE:** in the range of shredders fitted with a recirculation system, the rotating drum sorts the shredded material. The material passes through the selector grille only when it is smaller than the size of the holes in the grille.
- **WORK SURFACE:** surface on which the person feeding the machine is positioned.
- **LOADING SURFACE:** surface where the material to be inserted into the shredder is laid, and on which the person feeding the machine cannot stand.
- **CONTROL PANEL:** identifies on the electrical panel the surface that includes the buttons and command selectors of the machinery, the indicator light lamps and the HMI display of the PLC, where present.
- **OPERATOR PANEL:** this term refers to the HMI touch display of the command logic controller (PLC), where present, through which it is possible to monitor and set the configuration parameters of the machinery, but also view events and alarms.

1.8 TECHNICAL STANDARDS APPLIED

In the design and realization stages of this machine, reference was made to the following standards and documents:

- 2006/42 E.E.C. Directive for Machines
- UNI EN ISO 12100:2010: Safety of machinery - Basic concepts, general principles for design.
- UNI EN ISO 13857:2020: Safety of machinery. Safety distances to prevent hazard zones being reached by upper and lower limbs.
- CEI EN 60204/1: Safety of machinery. Electrical equipment of machines - Part 1: General requirements.
- UNI EN ISO 3744:2010: Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane.
- UNI EN ISO 11201:2010: Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at a work station and at other specified positions. Engineering method in an essentially free field over a reflecting plane.
- UNI EN 12012-3:2008: Rubber and plastics machines - Size reduction machines - Safety requirements for shredders.
- UNI EN ISO 14120:2015: Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards.
- UNI EN ISO 13849-1:2016: Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design.

1.9 CERTIFICATION OF THE SHREDDER AND ITS COMPONENTS

The *CE Declaration Conformity or Declaration of Incorporation of Partly Completed Machinery* comes along with the technical documentation of the machine, as also shown on the plate applied to the machine.

Moreover, copies of the declarations and conformity certificates of the components used for the machine manufacture which guarantee their quality and safety are also available.

Using non original manufacturer spare parts additionally voids the CE Certificate of Conformity for the shredder and its components.



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2. SAFETY AND ACCIDENT PREVENTION

2.1 GENERAL INFORMATION

- The manual must be read entirely and understood by all the operators, who, either full-time or occasionally, are in charge of installing, running and carrying out maintenance on the shredder or its dismantling.
- The employer must ensure the instruction of the personnel on accident risks, on the devices adopted for the operator's safety, on noise emission risks and on the general accident prevention regulations stated by international directions and the legislation of the Country where the machine is received.
- The behaviours of the personnel in charge of maintenance, cleaning, control work etc., must however strictly comply with the Accident Prevention Rules of the Country where the machine is received.
- The user is responsible for whatever operation carried out incorrectly because the instructions supplied in this manual were not followed properly and is therefore compelled to make certain that his personnel have read and understood the contents.
- The unauthorized tampering or substitution of one or more machine parts, the use of accessories, tools, or working materials different from those recommended by the manufacturer, may represent an accident hazard and relieve the manufacturer from any civil and penal responsibilities.
- The working area must never be encumbered, so that nothing might interfere with the operator's freedom of movement, nor prevent his immediate access to the control panel in the case of an emergency.
- The access to the work area is forbidden to people not directly responsible for the machine operation, to avoid hazards caused by imprudence or negligence during the accomplishment of a work. The user is therefore responsible for providing adequate prevention means such as barriers, warning and danger plates, etc.
- The maintenance technician, who has been given the responsibility of the machine maintenance, is therefore recommended to keep it always free of whatever tool and to prohibit access to unauthorized people, to be able to obtain the most ideal safety conditions for working on the machine.

2.2 INTENDED USE

Shredders are machines that can be used in many fields for different purposes: recycling, size reduction, destruction and disposing of industrial and urban waste.

Should the sales contract establish the characteristics of the material to be shredded and the machine capacity; these information is specified on the cover of this manual.

IMPORTANT NOTICE



The use of the shredder for shredding other substances or obtaining increased capacity values that are not included in the specifications is considered as being "IMPROPER USE" and therefore the manufacturing company declines any responsibility for any damage arised to things or people and considers every type of guarantee on the machine cancelled.

The machine may only be used after:

- having carried out the correct installation and bolting to the floor.
- the wirings of the electric components to the main switchboard (when not already wired by the manufacturer).
- the check for correct operation of active safety devices (micro switches, interlocks, etc.).
- the check for consistency and correct positioning of the safety guards (protection plates, protection grids, etc.).

DANGER



The shredder cannot be installed on wobbly surfaces (e.g. vibrating dampers) or mobile surfaces (e.g. wheels or rollers). Loading must be done from the ground (that is to say from the work surface, for instance by means of a grab crane). A loading level higher than ground level cannot be used, nor should one use stairs, steps, platforms or operator-lifting platforms to ease the loading operations. If loading systems are used, they must not interfere with the safety devices installed on the machine.

IMPORTANT NOTICE



In particular, if continuous handling equipments are installed, they must comply with UNI EN 620 standards; in the event they interfere with the shredder by creating unforeseen access for the operators, the system composed by the shredder and the continuous handling equipment is subject to a new procedure for CE marking, otherwise it is forbidden to put the installation in service.

Same instructions and conformity procedures apply also for any continuous handling equipments that could be used as discharge systems, such as belt conveyors, screw conveyors, suction ducts).

2.3 INCORRECT AND/OR IMPROPER USE AND BEHAVIOUR

The shredder with new blades must not be put into operation without having previously fed it with material, except for the time that is strictly necessary to carry out the tests at the first starting.

It must not be operated also:

- without oil or with overused oil (see paragraph 5.1.6 - **Oil and grease lubrication before starting HDD GLADIATOR**).
- if blades are not perfectly tightened (see Chapter 7, **Tightening the blades' pack** for each series of shredder);
- if the reversals for overload occur frequently (see paragraph 6.5.1 - **Overload reverse**).

In these cases, the operator in charge of the running must ask for the intervention of the maintenance service to line up the machine. Should any doubt arise, it is advisable to contact the manufacturer's Technical Department.

The shredding of large size metal or tempered bodies (e.g. hammers, iron drawn pieces or similar) is not foreseen, and introducing them into the machine could cause damage to the blades or other mechanical parts. It is therefore necessary to remove any foreign bodies from the material to be shredded, before loading it into the hopper. This can be done through screening or using an iron separator.

DANGER



Material partially coming out of the hopper should not be let into the loading inlet (in particular filaments, tapes or films, partially engaged by the shredder and dragged from the external with risk of entanglement), nor should the entering material feeding be forced in any way by using manual means of whatever type (sticks, poles, bars or similar).

Do not use at the bottom side the removal device for shredded material (hooks, harpoons, etc.).

DANGER



If the operator deems that a malfunctioning exists, for no reason at all must he leans into the material feeding inlet while the shredder is in operation.

If one intends to carry out a visual inspection inside the machine, the intervention of the maintenance technician is required; in any case, before whatever intervention, it is compulsory to switch off the shredder and lock the main switch to prevent undesired start of the machine.

DANGER



Extra precautionary care must be observed when accessing also partial inside the feeding hopper since this is a high-risk operation, because of the blades and the probable presence of sharp cutting metallic parts. If this operation is absolutely necessary to restart the plant, it can be carried out only by a properly trained maintenance technician equipped with individual accident- prevention protections. Before any operations, the shredder must be stopped. The main switch disconnected and locked for safety against any accidental starting.

IMPORTANT NOTICE

Any use of the machine taking place without taking into consideration the previous notes is considered "improper use", and therefore intimus International GmbH declines any responsibility for damage or accidents caused by failure in complying with the instructions supplied, and will consider any guarantee on the machine cancelled in such cases.

**DANGER**

It's strictly prohibited getting near the screen with every part of the body during the machine working (single shaft shredders typically). Take care that no operator is in contact with the screen before starting the machine.

2.3.1 Explosive Atmosphere

The shredder cannot be used in an explosive environment or potential explosive and in no case it is allowed to introduce explosive or corrosive substances, or those which might cause the emission of flammable substances or gases harmful to people (e.g. spray cans, solvent and flammable liquids and gases containers etc.)

The Shredder is not suitable for work in explosive or classified environments. It is strictly prohibited to use it in a fully or partially explosive atmosphere. Therefore, the machine is not suitable for use in the following environments:

- classified as fully or partially explosive;
- where there are corrosive atmospheres and high concentrations of dust;
- where there are high suspended oily concentrations;
- risk of fire arising from any materials or source of ignition.

**DANGER**

It is strictly prohibited to use this shredder in all environments listed above.

2.4 WORK AND CONTROL AREAS

The shredder must be operated by a single person who will work in the loading area and will also provide for machine feeding and replacing the material collection vessel, if foreseen.

To carry out this replacement, the operator must operate anyhow remaining outside the supporting stand.

2.5 MAINTENANCE AREAS

The person in charge of maintenance may operate around and inside the machine only after having activated all the active and passive safety devices foreseen by the manufacturer to allow the maintenance operator to work in maximum safety conditions.

2.6 RISKS, PROTECTIONS, WARNINGS AND NOTICES

2.6.1 General Safety

The machine which has been installed by following the indications given in this manual (see Chapter 4 INSTRUCTIONS FOR INSTALLATION) and handled by operators according to these instructions cannot be the cause of accidents.

In order to prevent risks of accidents, machines are usually equipped with such safety devices (active and passive) as, for instance:

Feeding hopper

It prevents the operator from accidentally coming in contact with the moving mechanical parts inside the shredding chamber.

The shredder is supplied with a bolted cover and the feeding inlet is closed by a PVC protection (in case of standard hopper), which prevents material fly off caused by the shredding action in case of hard material to be treated.

Motor coupling protection guard

The motor coupling is completely enclosed by a plate guard for the operators' protection. It may be removed after loosening the fastening screws.

Supporting stand closing grids and door

The supporting stand is surrounded and closed by a protection grid, which is fixed on 3 sides and has openable doors on the fourth side (loading). The interlocked safety micro switches are installed on the doors, which interrupt the shredder operation when they are opened.

The safety micro switches are of the locking type.

Photocells for detection of the collection bin

When the material shredded is discharged in a movable collection bin and therefore the supporting frame cannot be equipped with safety fences, the supporting frame is equipped (or should be equipped at customer's charge) with photocells to detect the collection bin. In this case, the shredder is started only after the photocells detect the collection bin positioned under the frame. If not, the shredder will not start running.

Ladders and handrails

Access to the supporting frame is allowed through a ladder. The frame walkway is protected by handrails.

Table 2-1 shows a list of the main safety devices the machine is equipped with. End user is responsible to verify and complete all aspects in connection with equipment safety in case of partly completed machinery (almost machinery).

Table 2-1- Table of risks, dangers and protection measures present

Pos.	Description and protection from risks	Danger	Check
1	Feeding hopper with loading drawer: conveys the material to the shredding chamber and prevents access to an intrinsically dangerous area in compliance with safety distances.		✓
2	Load hopper cover with PVC sheeting: this prevents the projection of the material outwards during the shredding phase.		-
3	Support stand with panels and doors with protective grid: they prevent the shredded material from being projected and the dangerous area from being accessed unintentionally.		✓
4	Rotor protection casing: they prevent the access of limbs to an area with dangerous rotating parts (other series).		-
5	Motor joint protections: they prevent the access of limbs to an area with rotating parts (other series).		-
6	Motor joint protections (bell): they prevent the access of limbs to an area with rotating parts (hydraulic control units).		-
7	Grid protection of planetary gearbox: it protects from the potentially hot surface of the planetary gearbox (optional)		-
8	Key safety micro-switch: it stops operation of the machinery once the frame doors and the loading hopper inspection door are opened in order to determine the state of the shredding chamber (the latter where present).		✓
9	Cable safety micro-switch: it stops operation of the machinery when the operator is working on the cable (typical use on conveyor belts).		-
10	Copper braid: it ensures continuity of the equipotential protection circuit fixed between the components of the system.		✓
11	Motor belt cover: it protects against fast rotation parts such as motor pulleys and the corresponding motor drive belts (other series).		-
12	High pressure hose retaining system (metal cable): it prevents the violent leaking of the hydraulic oil in operation from the high pressure pipes on motors and hydraulic pumps, which causes hose whiplash.		-

Pos.	Description and protection from risks	Danger	Check
13	Belt sides: they protect operators from direct access to the moving belt surface.		-
14	Foot irons access ladder and railings: they protect operators during ascent and on the work platform from accidental and involuntary falls.		-
15	Bin detecting sensors: located on the frame legs, they arrest the machine in case no collection bin is in place.		-
16	Inspection panels bolted to the hopper: removal of internal inspection panels is subject to removal of fastening bolts.		✓
18	Protection grates around the moving parts: protect the operators by preventing access to the areas of the up and down movements of the load hopper and the pneumatical / hydraulical press.		-

With reference to **Table 1-2 – Objects to be supplied**, in case of supply of partly completed machines (almost machinery), end user should consider the following main risk areas and provide the necessary safety measures:

Table 2-2 – Table of main risks

Pos.	Risk	Danger	Check
A	Loading hopper: a zone that is intrinsically dangerous due to the projection of objects and rotation of the blades.		-
B	Loading hopper: blade shafts in rotation.		-
C	Discharge and/or connecting hopper: a hazardous material discharge area, blade shafts in rotation.		-
D	Shredded material discharge: area beneath the intrinsically dangerous shredder due to rotating blade shafts and the falling of material from a height.	 	-
E	Screen frame: dangerous zone at the phase of manual opening and closing of the screen frame for maintenance.		-
F	Conveyor belt drum: dangerous zone due to potential risk of entanglement and crushing.		-
H	Hydraulic unit: a dangerous area due to a pressurised hydraulic circuit during operation of the control unit.	 	-
I	Shredded material discharge through the screen: area beneath the intrinsically dangerous shredder due to rotating shaft of the shredder. Danger of rotating parts: keep hands away from the screen! (1-shaft series)		-

For further information, please refer to chapter **Required Measures relating to non-applied ESR standards (Essential Safety Requirements)** inside this manual, in case machinery is supplied with Declaration of Incorporation (partially completed machinery).

Regardless of the type of declaration, generally speaking always bear in mind the following risk zones, in particular during certain special maintenance works:

Table 2-3 – Table of general risks for maintenance

Pos.	Risk	Danger	Check
A	Electrical panel: dangerous area due to a live electrical panel.		✓
B	The grinding chamber is equipped with cutting edge profile blades. During maintenance operations always use adequate personal protection equipment (see Chapter 7.4 - BLADE SHARPENING).		✓

2.6.2 Risks in the environment where the shredder is installed

Should the shredder be used to process substances which, after working on, can cause a degradation in the environment in which the machine is installed (e.g. emission of dust in large quantities, harmful or irritating substances etc.) it will become necessary to carry out an adequate environment protection by using air suction or other suitable systems to do away with the polluting effects.

The most common cases that can threaten the environmental quality, even after a correct use of the shredder, are the following:

- an excessive emission of dust due to the type of material shredded;
- the emission of harmful substances following special materials being shredded (e.g. containers with toxic and harmful substance residues);
- very loud noise caused by materials of high mechanical rigidity;
- excessive wear of the machine and ensuing performance degradation due to highly abrasive material (e.g. fiber-glass compounds, high sand contents, emery grinding wheels etc.).

The presence of toxic substances in the material processed does introduce further risks in operating the machine, therefore in the above listed applications and in analogous ones, even if not detailed, it is up to the user to proceed with the necessary environmental protection carried out according to the rules in force and eventually intensify the number of extraordinary maintenance interventions.

The user must make sure that adequate protection (masks, gloves, protective clothing, eyes washer, etc.) is guaranteed to the operator and the people in charge of maintenance work and to supply, where necessary, a suction system in the area where the shredder is installed.



CAUTION

The user has the obligation of informing specifically and adequately the operators about codes of behaviour and about individual protection means to be used in these cases and must also make sure that the safety measures are effectively respected.

2.6.3 Residual risks

During the operations the shredder is all segregated with safety protections.

The warning plates applied on the shredder regarding the residual risks may not be removed.

2.6.3.1 During the normal running operations

Gear boxes

Occasionally, the surface temperature of these components can rise over 85°C due to malfunction of the power-train or cooling system. Even if in such a condition the control system will switch off the power transmission, the temperature will not decrease instantaneously and maintenance work must be performed with correct Personal Protective Equipment like, but not exclusively, gloves.

2.6.3.2 During the routine maintenance

Sharp edges – Cutting danger

The blades embodiment and the presence of sharp edges results in the danger of getting cuts or wounds for one who must intervene for maintenance or dismantling.

The use of proper protective gloves is therefore recommended.

Components weight – Danger of squashing

When it is necessary to dismantle the machine or a part of it to carry out maintenance work (e.g. to tighten the blade unit or remove material caught between the blades and spacers), one must be very careful to not let the dismantled parts fall, since their weight could cause falling down for gravity and consequently serious injuries to the operator.

In these cases, it is advisable that the operator is assisted by a second person who, if necessary, may give the necessary help to work safely.



ATTENTION

In order to handle the components, use proper lifting means and related accessories, such as eyebolts, straps and hookended chain slings.

2.6.4 Warning and accident prevention plates

The machine will be supplied with graphic elements placed by the manufacturer to indicate any danger, prohibition or warning.

The graphic symbols used and their explanation are listed hereafter.



DANGER

We remind and underline that it is absolutely forbidden to mishandle or remove the protections and the warning plates.

The manufacturer declines every responsibility for the safety of the machine if the prohibition is not respected.

Table 2-4 – Warning plates against potential hazards

SYMBOL	HAZARDS INVOLVED
	Hot surfaces, on the external surface of Moto reducer.
	Danger of moving parts and drive components. Do not operate on moving elements Do not tamper or remove the protections.
	Danger of entanglement
	Danger of shearing/cutting
	Danger of dangerous voltage. Electrical contact hazard. It is forbidden to work on live electrical equipment. Any derogation should be authorized by the department supervisor. In particularly dangerous conditions, another person should be present in addition to the skilled technician. Start working only after all safety measures have been taken.
	Danger of squashing. Risk of crushing limbs on the external surface of Feeding Hopper and safety protection gates. Do not operate on moving elements
	Access is forbidden for unauthorized persons

SYMBOL	HAZARDS INVOLVED
	<p>It is forbidden to direct jets of water at electrical equipments. Do not use water jets</p>
	<p>Ban on carrying out operations with live supply voltage for works in progress</p>
	<p>Do not go up or down the top side of Shredder inside the Segregated zone, Feeding Hopper</p>
	<p>Danger. Handling hazard. Handle with care.</p>
	<p>Stumbling hazard inside the Segregated zone, Feeding Hopper and safety protection gates.</p>
	<p>Danger. Machine with automatic start-up.</p>

2.7 PREARRANGEMENTS FOR INSTALLATION

2.7.1 Environmental conditions of storage and operation

Unless otherwise specifically requested, the machine is supplied with blades lubricated with protective oil. The protection has a limit lasting 30 days in environments where temperature is ranging from -20°C to +50°C. After this period, one can find progressive forming of rust on the blades and therefore, if the machine is not to be used for long lengths of time, it will be necessary to restore the protection to prevent aggression from external atmospheric or chemical agents.

Upon starting working again after a long period of inactivity, lubricate the blades with oil at the first starting, as specified in paragraph 5.2 FIRST START-UP (NO LOAD START-UP).

All intimus International GmbH shredders may work at room temperatures varying from 0°C to 50°C.



CAUTION

If ambient temperature read the indicates MAX and MIN do not touch the machinery surfaces without protection (gloves). Burnings could be caused by this operation!

2.7.2 Installation site

Before the machine's arrival, the user should arrange a suitable environment to receive it.

The shredder must be installed on a suitable site, such as to allow normal machine running operations and routine maintenance (see the enclosed drawing or lay-out).

Before starting assembly operations, make sure that the flooring can sustain the shredder's weight (see Table 3-1 – Weights) also considering the coefficient of security stated by the regulations in force.

The installation site must also foreseen:

- Rigged anti-slip flooring without projecting bumps;
- Adequate illumination complying with the standard in force;
- Earthing system complying with the standard in force;
- Electric system prearrangement complying with the standard in force;
- Water and pneumatic preparation work (if necessary);
- In case of special material treatment, be equipped with an air suction system (see paragraph notes in paragraph 2.6.2 Risks in the environment where the shredder is installed).

2.7.3 Lighting

For use in normal working conditions, the room where the shredder is installed must be lit in such a way as to make it possible to see the command panel without difficulty and, more in detail, the emergency push-button.

For maintenance operations, the lighting must be enough to allow for carrying out the operations in safety conditions, in particular on the shredding chamber and on the switchboard. As regards the lighting modes, the user is responsible for the prescriptions stated by the regulations in force and the EEC Directives.

2.7.4 Personnel in charge

Unloading and movement

- Driver of transport means – crane operator – sling operator.

Setting up and installation

- As regards mechanical parts and the structure: machinery assemblers.
- As regards electrical wirings and earthing: system installers.

Inspections, set up before starting

- Inspector.

Running

- Person in charge of system running.

Routine maintenance

- Mechanical maintenance operator; Maintenance electrician.

Extraordinary maintenance

- Mechanical maintenance operator; Maintenance electrician.

2.8 PERSONAL PROTECTION EQUIPMENT

The assigned operator, due to the nature of the loads to be treated, must be able to protect the body against the direct or indirect action carried out by any chemical substances (organic or otherwise). These substances can be harmful by contact, inhalation or contamination. Always use the appropriate means of protection (**Table 2-5** and/or **Table 2-6**) as appropriate.

Table 2-5 – Personal protection equipment for operators assigned to use

	Protective clothing and overalls		Use protective gloves for chemical and mechanical use
	Use safety footwear		Noise-protection headphones
	Protect eyes		Obligation to protect the respiratory tract
	Use of a safety helmet with a chin strap		

Table 2-6 – Personal protection equipment for maintenance technicians

	<p>Use of a safety helmet with a chin strap</p>		<p>Protective clothing and leather leggings</p>
	<p>Use protective anti-cut gloves for chemical and mechanical use</p>		<p>Use safety footwear for accident prevention</p>
	<p>Protect hearing</p>		<p>Obligation to use a seat belt, for operations at height, during maintenance</p>
	<p>Protect eyes</p>	 	<p>Obligation to protect the respiratory tract, during maintenance, against the risk of gas, vapours and dust</p>

The designated operator must work with garments that are able to offer adequate protection against potential risks (chemical, physical and/or microbiological) due to contact with a wide variety of materials including liquids and gases.

These means must be suitable, in terms of materials and structure, to prevent any danger of contact/contamination. It is the responsibility of the user to guarantee, in compliance with the regulations in force in the country where the machine is being used, the use of means with the highest degree of protection in relation to the type of processing material.

The protection means to be adopted must be able to allow sufficient freedom of movement to perform the envisaged operating manoeuvres. Regarding visual perception, these means must be able to preserve the widest angle with the least distortion.

Use only certified and approved protective equipment.

The protection means must be correctly used and maintained (e.g. correct wearing and tightening of closures, replacement of filters in masks, etc.)

Personal protection equipment is in some cases expressly recommended for the protection of processing material in order to avoid contamination (typically during loading and unloading operations).



DANGER

It is advisable not to wear bracelets, watches, rings, necklaces or other objects that could hinder the operator's movements and create mechanical risk conditions such as dragging and entrapment during work.



DANGER

The grinding chamber is equipped with cutting edge profile blades which can cause cuts and scratches in handling during certain maintenance activities. Maintenance workers are advised to use adequate personal protection equipment.



ATTENTION

The clothing of the person who uses or maintains the machine must meet the essential safety requirements in force in their country as indicated in the EU directives 89/656CE and 89/868/EC concerning the use of personal protection equipment.



ATTENTION

When carrying out work that could cause the projection of splinters or dangerous materials (during machine cleaning cycles) for oneself or for other persons working at close range, the designated person must prepare or request from the person overseeing the task screens or other appropriate safety measures.



ATTENTION

It is the specific responsibility of the end user to ensure that personnel are correctly instructed on the residual risks relating to the treatment process and that they use the PPE provided in addition to ASSESSING ANY NECESSARY ADDITIONS .



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3. DESCRIPTION OF SHREDDER AND TECHNICAL DETAILS

3.1 GENERAL DESCRIPTION OF SHREDDER

The typical shredder consists of a shredding chamber which contains two, three or four rotating shafts supplied with one or more hook circular blades of different thicknesses, depending on the material for which the shredder is used. Shredding chambers of 3-shaft and 4-shaft shredders are equipped with screens seated on movable screen-holders, that ensure controlled fraction size of the material processed.

The material is fed through a hopper placed above the shredding chamber.

The shafts are driven by the electric motor through a reduction stage (gear reducer and / or a straight-tooth gear reduction unit, in cascade connection, if installed).

The shredder is operated from the control panel on the switchboard. The control panel is supplied as a separate control box.

The shredder is mounted on a stand placed on the ground, closed by a protection grid inside which the collection vessel for the shredded material is placed, anchored to the floor.

The protection grid is fixed on 3 sides, on the front part there is a double or single door with protection grid and equipped with limit switch-operated safety interlock to allow for the replacement of the vessel.

3.2 OPERATING PRINCIPLE

The material to be treated is sent into the feeding hopper which conveys it to the shredding chamber. The two blade holding shafts, while rotating, take the material towards the centre, the blades catch onto the material with the beaks placed on their circumference and cut it. The material, passed through the blades, falls into the collection vessel located underneath.

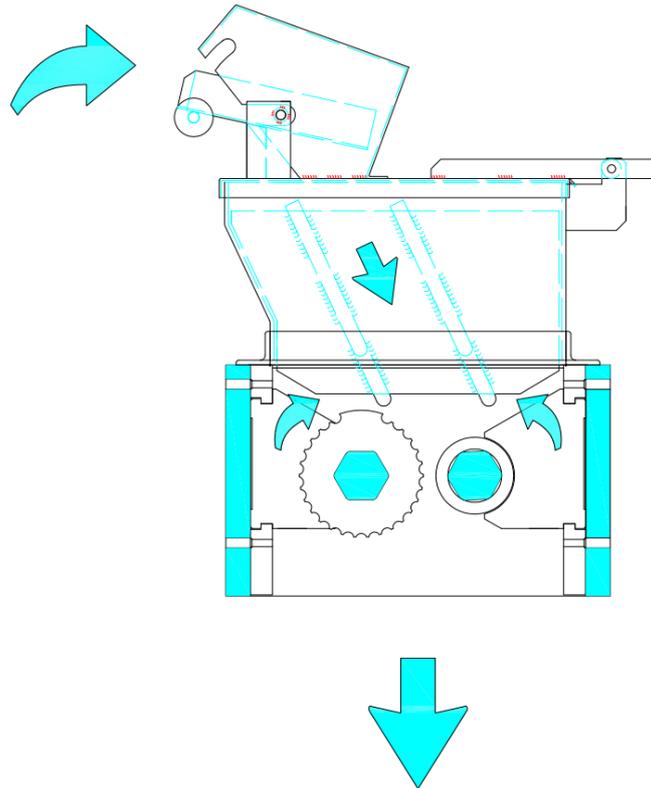


Figure 3-1 – Operating Principle – Typical

3.2.1 Electronic control

All the machine working stages are controlled by a P.C. board.

This controls the automatic reverse cycle if overloading occurs, and also allows for the activation of some special functions:

- Intermittent working;
- Automatic reverse;
- Reverse test;
- Automatic start and stop by remote operation (to be used only if other machines are connected to it in line);

To set these functions please refer to paragraph 5.3 ADJUSTMENTS ON BOARD OF THE SHREDDER.

CAUTION



The reversal motion of the shafts is actuated only after the shredder has been subject to overcharge: therefore, should any hard material be fed into the shredder (such as tempered steel pieces or similar) the reversal cannot guarantee that the blades are not damaged.

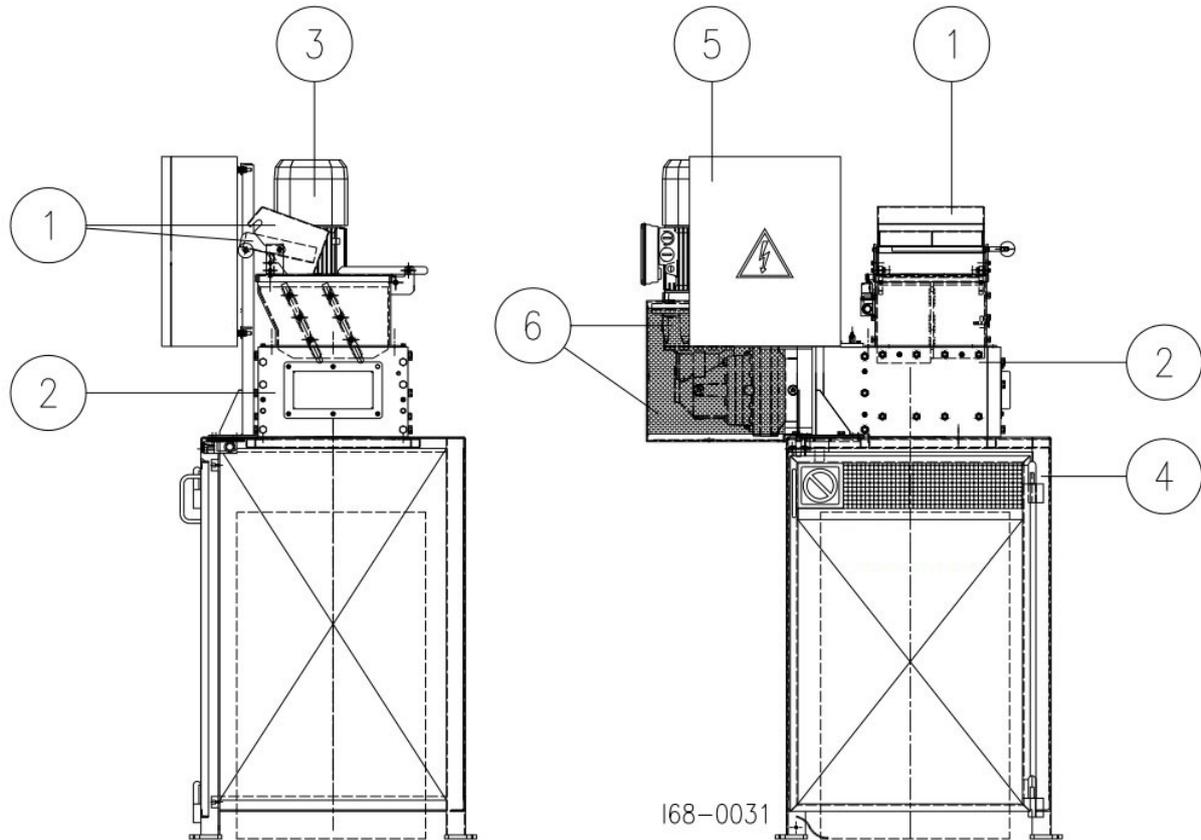
Moreover, the reverse run of the machine must not be considered as a regular working mode, but a random intervention aimed at ensuring a smooth working of the shredder.

Should the shredder reverse frequently and jam, it is compulsory to remove the cause of the overload and check that the working condition of the machine does not exceed the stated limit of capacity.

It is absolutely forbidden to let the shredder work when the reversals occur frequently, because the blade-holding shaft would be forced to an anomalous stress and seriously damaged.

3.3 MAIN UNITS OF THE SHREDDER

The shredder is made up of the parts enhanced in the drawing.



- 1. Feeding hopper with loading drawer
- 2. Shredding chamber
- 3. Electric motor – 3 Kw

- 4. Supporting stand
- 5. Switchboard and control panel
- 6. Planetary gearbox with grid protection (grid is optional)

Figure 3-2 - Main units for series HDD GLADIATOR



IMPORTANT INFORMATION

For the main components associated with the supply, see the attached general assembly drawing.

3.4 DESCRIPTION OF THE MAIN COMPONENTS

3.4.1 Supporting stand

The shredder rests on a stand made of electrically welded steel shaped plates. The stands are always closed on three sides by a fixed protection grid, whereas one side is furnished with grid doors with manual lever lock and safety micro switches. It is impossible for the operator to come in contact with the moving mechanical parts because prevented by the grid. The replacement of the vessel aimed at collecting the shredded material, through the doors furnished with micro switches, may be carried out in complete safety since the micro switches prevent the shredder from starting up when the doors are open. The stand's bearing plates on the floor are provided with holes so that they can be appropriately bolted to the floor, and ensure that the machine is stable and prevent it from overturning even in the case of accidental impact.

The holes for anchoring the shredding chamber are provided on the upper part of the stand.

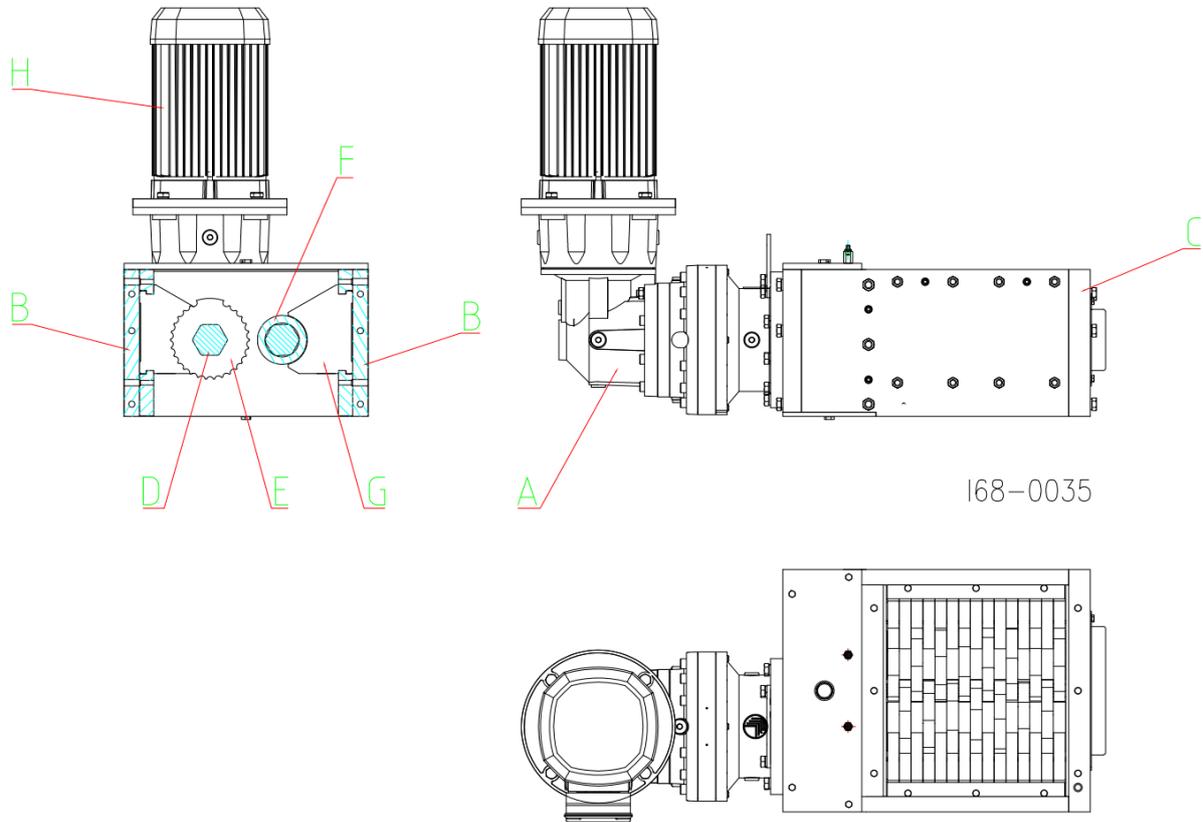
3.4.2 Feeding Hopper

The hopper for hard disks is fitted with a manual loading box with a handle. The operator opens the box and loads a single hard disk. While opening the box closes the access to the hopper inner area, in order to protect the operator. When the box is being closed the hard disk slides towards the shredding chamber. A vertical plate inside the hopper directs the material towards two different areas of the grinding chamber, equipped with different blades: one is for hard disks shredding, and the other one is for lighter electronic material shredding (light material). The hopper is fixed to the shredding chamber by a flange, bolted on the shredding body.

The hopper is completely closed and it does not allow to check the status of the blades and the shredding chamber. For checking the shredding chamber, please see paragraph **7.3.8 - Check and inspection of the blades pack HDD GLADIATOR series**.

3.4.3 Shredding chamber

It is a cast box consisting of the components as follows:

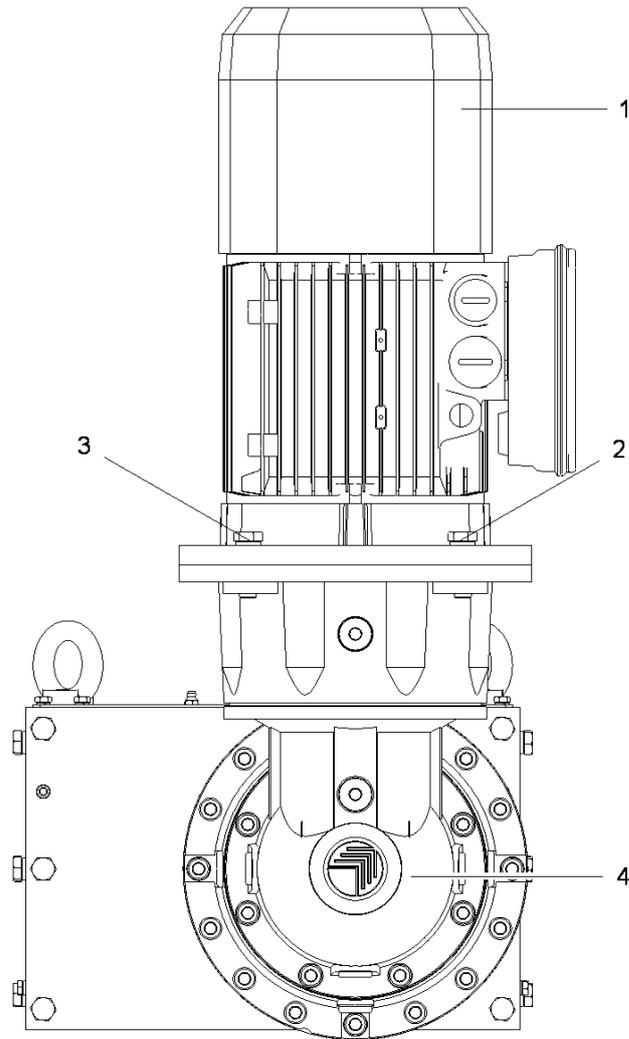


- | | |
|------------------------|---------------------|
| A. Reduction unit | E. Blades |
| B. Frames | F. Spacers |
| C. Front flange | G. Cleaning sectors |
| D. Blade-holding shaft | H. Electric motor |

Figure 3-3 – Chamber for series HDD GLADIATOR

3.4.4 Motor drive

The shredder is driven by an electric motor, which is coupled to the gear reduction unit.



1680011

1. Electric motor – 3 kW
2. Fixing bolts
3. Gearmotor

Figure 3-4 – Motor drive for series HDD GLADIATOR

3.4.5 Electric system (direct-on-line starting)

The electric system is set for star-delta starting. The electric system consists of:

- a main power switch;
- a thermal relay for the protection of the electric motor;
- a “forward running” contactor;
- a “reverse running” contactor.

The contactors are activated by a P.C. board, which checks the motor absorption through a current transformer, and their size suits the absorption indicated on the motor rating plate.



CAUTION

The shredder user has to protect the mains to the electric switchboard by means of fuses suitable to feed three-phases electric motors, rated as reported in the electric component list, enclosed in the present manual.

3.5 TECHNICAL FEATURES

3.5.1 Weights table

Table 3-1 – Weights [kg] (Typical)

Shredding chamber	300
Supporting stand	65
Feeding hopper	25
Electric motor (400 V)	28
Electric motor (UL compliance – 220 V)	39
Electric switchboard with control panel (400 V) ⁽¹⁾	24
Electric switchboard with control panel (UL compliance – 220 V) ⁽²⁾	34
120-liter bins	9

3.5.2 Dimensions table

Table 3-2 – Dimensions [cm] (Typical)

Shredding chamber	98x39x74
Supporting stand	76x76x107
Feeding hopper	36x64x35
Electric switchboard with control panel (400 V)	40x50x18
Electric switchboard with control panel (UL compliance – 220 V)	70x50x20
120-liter bins	50x50x90

Dimensions: length x width x height (depth) in cm

Notes:

(1) 400V Electric box without components plate= 15 Kg

(2) 220V Electric box without components plate= 23 Kg

3.6 DECLARATION OF THE SOUND EMISSION VALUES

The sound emission is considered with the shredder works without load in maximum nominal speed.

Table 3-3 – Level of average acoustic pressure

SHREDDER SERIES	SOUND PRESSURE dB(A)
HDD GLADIATOR	66,4

4. INSTRUCTIONS FOR INSTALLATION

4.1 PACKING, HANDLING, SHIPMENT AND TRANSPORT

4.1.1 Packing and shipment

The shredders of this series on shipment are typically fully assembled, given their small size. The machine, depending on the case, is delivered in one of the following arrangements:

1. For national transport normally sufficiently blocked and covered on a truck, unpacked.
2. In a normal crate internally lined with tarred paper and blocked on a pallet for transport by sea.
3. In a crate internally lined with polythene sheets for road transport in Europe.
4. In containers with antirolling internal stops.

The choice between the above listed solutions depends on the transport distance, the client's orders and the lying time of the packed machine.

For types 2-3 (step above), an adhesive label is stuck onto 2 sides of the packaging which shows the following data:

- Destination;
- Weights. net – gross – tare;
- Bulk: length – width – height;
- Packing list carrier label (copy of the Packing-List inside the crate fixed to the machine).

4.1.2 Unloading and handling operations



DANGER

Carry out the unloading operation with a suitable forklift (with capacity suiting the packed machine weight indicated on the adhesive label).
AT LEAST TWO SKILLED WORKERS MUST BE PRESENT DURING THE UNLOADING STAGE (forklift operators, crane operators).



DANGER

Keep body and hands away while the machine is being lowered. Failure in complying with these instructions could cause serious injuries.

When the packages arrive, they must be unloaded, handled and installed by the Customer. When handling the machine, keep in mind the weight value indicated in the table in chapter 3.5 - **TECHNICAL FEATURES**. When lifting the machine, refer to paragraph 4.2 - **LIFTING AND ASSEMBLY OF THE SHREDDER**.

Should it be necessary to move the machine after it has been commissioned, the methods to be used are similar to those indicated for unloading and first installation.

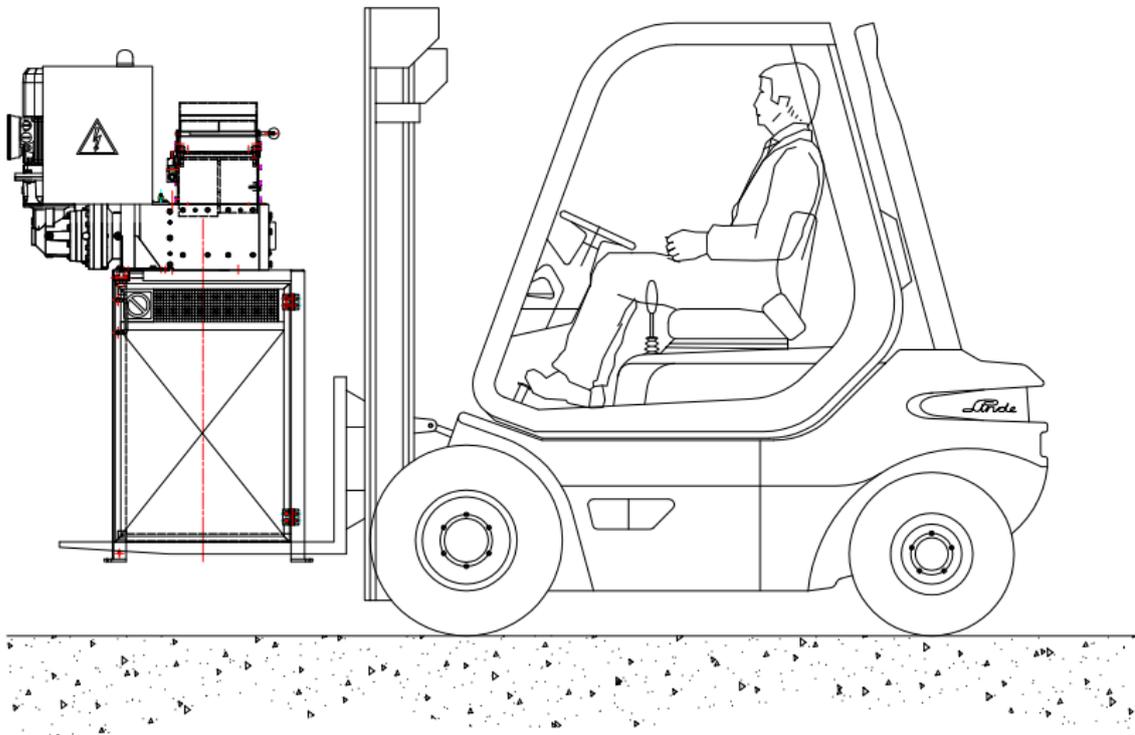


Figure 4-1 - Discharge from the machine

4.1.3 Unpacking

Open the packing, check the conformity of the components and verify their integrity.

The packaging material disposal is the addressee's responsibility and must be carried out according to the regulations in force in the Country where the shredder is used.

Once the packaging has been removed, no mishandling should be evident. If this is not the case, inform the Manufacturer's Assistance Service.

4.1.4 Prearrangements for installation

Before starting assembly operations, make sure that the flooring can sustain the shredder's weight (see Table 3-1 – Weights) also considering the coefficient of security stated by the regulations in force.

The shredder must be installed on a suitable site, such as to allow normal machine running operations and routine maintenance (see the attached drawing and paragraph 2.7.2 Installation site). A minimum room of 600 mm must be kept free all around the shredder.



CAUTION

The shredder user has to protect the mains to the electric switchboard by means of fuses suitable to feed three-phase electric motors, rated as reported in the electric component list enclosed in the present manual.



DANGER

To handle the shredder's components, use the following means: a fork lift truck or a trans pallet for the hopper and the supporting stand a crane for the shredding chamber. These lifting means must be in perfect working condition: the supplier declines any responsibility concerning the conditions and suitability of the handling means used. The load capacity of the above lifting means must suit the bulk to be moved. The movement should come about slowly, in sufficiently lit circumstances, with enough free space in the installation area.



DANGER

For no reason are the personnel allowed to pass under the load or nearby it. Not even the signalling operator, who must provide assistance during the handling operations. The supplier declines any responsibility concerning this stage, which must be carried out by personnel qualified for handling industrial machinery (forklift operators, sling operators), duly equipped with the necessary individual protection (overalls, accident prevention footwear, work gloves, safety helmet, glasses).

4.1.5 Storage

Should the machine not be used after delivery, it should be stored in a dry place away from possible impacts and covered with a protective cloth.

4.2 LIFTING AND ASSEMBLY OF THE SHREDDER



DANGER

It is forbidden to lift the entire already assembled machine hooking it to the loader, to the switchboard or to other parts of the machine.

The lifting and the handling of the machine are provided only using a proper forklift according to the indications from paragraph 4.1.2- Unloading and handling operations

Please refer to the enclosed drawing for details.

The HDD GLADIATOR series, unlike other series of shredders, is supplied already assembled and ready for positioning and commissioning (see **Figure 4-1**), except for the performance of necessary electrical connections. In every case:

- Position the machine making sure that it is well laid on the floor.
- Make sure that the support structure is laid on an actually flat and horizontal support surface.
- The support stand is designed for ground fixing.

4.2.1 Table of lifting chain

Table 4-1 – Assembly of the Shredder – Lifting Chain

SHREDDER MODEL	CHAIN REFERENCE	CHAIN LENGTH	CHAIN MIN. LOAD	REFER TO
HDD GLADIATOR	L1	550mm	700kg	Figure 4-2
	L2	630mm		
	L3	630mm		

4.2.2 Lifting of the shredding chamber for series HDD GLADIATOR

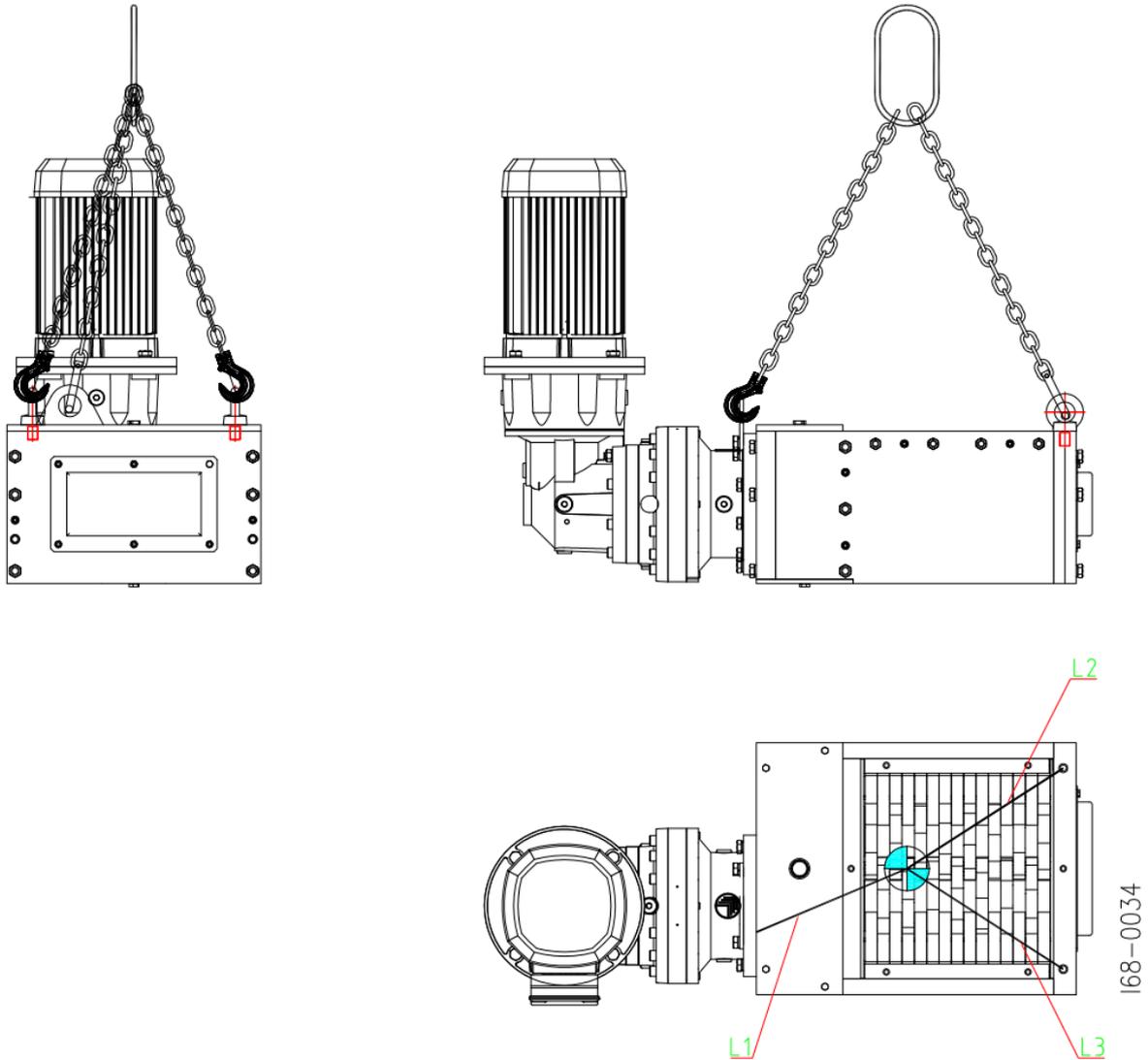


Figure 4-2 – How to lift the shredding chamber for series HDD GLADIATOR

4.3 ASSEMBLING NOTES

The manual includes an example of assembly layout showing shredding chamber with supporting frame, feeding hopper and control panel, that can be used as a guideline to set the machine in operation. The standard checklist "MANUFACTURING AND CONTROL PLAN" related to the assembly layout can be used as reference to complete the assembly step by step. Also consider the initial prescriptions in the chapter **2.7 PREARRANGEMENTS FOR INSTALLATION**.

4.4 WIRINGS TO THE MAINS



IMPORTANT NOTICE

This action must be carried out by a qualified technician (electrician) in full compliance with the Standard in force.

Before connecting the machine to the mains it is necessary to:

- check that mains voltage and frequency are correct;
- check the earthing plant for efficiency at the current socket;
- max. variation of mains voltage: $\pm 10\%$;
- max. variation of mains frequency: $\pm 2\%$;
- Use the feeding cable with the section indicated in the relevant table in the Electrical Equipment list;
- The feeding cable (three-phase + PE) is connected, according to the regulations in force in the user's Country, to the relevant clamp-box indicated in the electrical drawing;
- Check that the socket where the equipment must be plugged into has a higher or, however, a sufficient power compared to the maximum power absorbed by the machine;
- Check that the equipment does not lay on the feeding cable;
- Protect the power supply line from excess voltage (e.g. atmospheric electricity);
- Protect the power supply line from overcurrent with opportunely co-ordinated devices (e.g. automatic breakers);
- a neutral conductor is not required.

4.5 CONNECTION TO THE COMPRESSED AIR CIRCUIT

Unnecessary.

5. SETTING AND FIRST STARTING

5.1 PREPARATION, INSPECTIONS AND TESTS BEFORE START-UP.

Before starting work, carry out a first no-load running of the machine. Furthermore, proceed with the following controls:

5.1.1 Grid holder (if installed) or rotating screen (if installed)



CAUTION

Before starting the shredder always check that the bolts which secure the grid-holder to the shredding chamber are perfectly tightened.



WARNING

Before starting the shredder, always check if the bolts that secure and close the rotating screen to the shredding body are properly tighten.

5.1.2 Motor

Check that the motor is wired in accordance with the mains voltage. Specifically, check that the wirings inside the clamp box have been properly carried out according to the specifications given on the motor rating plate.

5.1.3 Transformer

Check that the transformer inside the switchboard is properly connected, in accordance with the mains voltage.

5.1.4 Thermal relay

Adjust the relay in accordance with the maximum current indicated on the motor rating plate.

5.1.5 Current transformer CT (except GLADIATOR series)

The primary winding is made up of an appropriate number of turns which pass through the magnetic core.

The correct number of turns for the motor power is in relation between the voltage, nominal current and frequency.

Refer to "MANUFACTURER AND MACHINE IDENTIFICATION DATA" in the front of this manual, for technical data sheet.



IMPORTANT NOTICE

To avoid mistakes, each time a conductor passes through the magnetic core, one turn must be counted.

5.1.6 Oil and grease lubrication before starting HDD GLADIATOR



CAUTION

The shredder can be supplied either with or without oils, depending on transport distances and specific agreement with the customer. The quantities reported in the following table are indicative; proceed always filling until the level indicators or level plugs is reached.

Check the presence of oils and grease and if necessary fill the epicycle and the gear reduction units with oil and the rear bearings with grease.

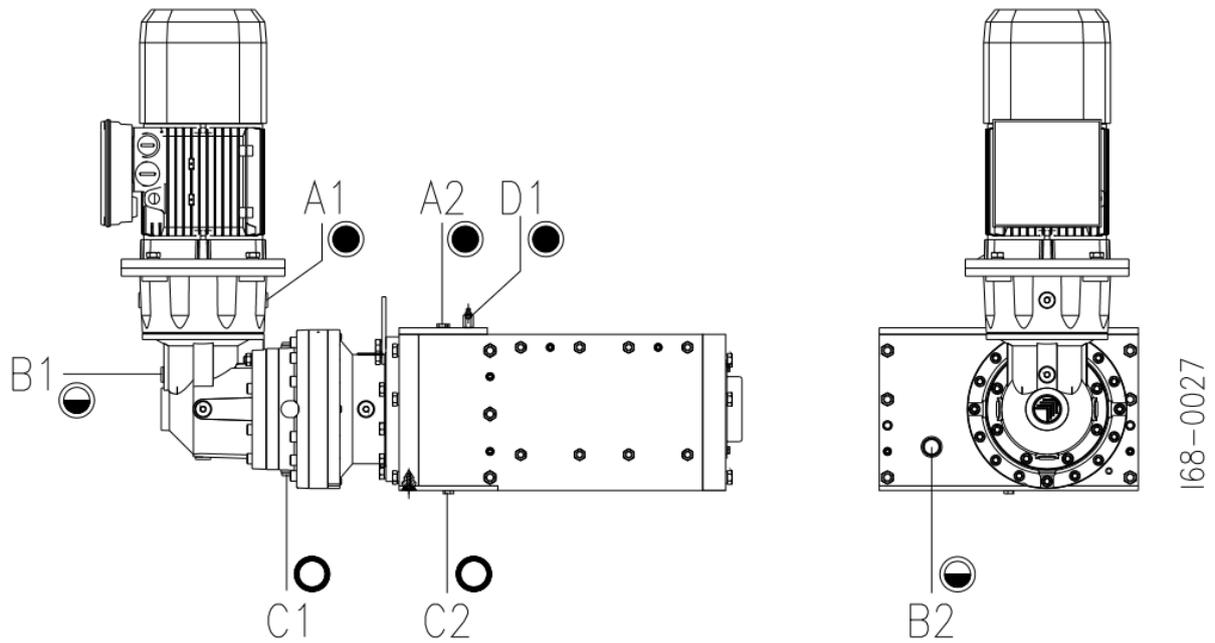
Table 5-1 - Oil filling – Type

MANUFAC.	OIL TYPE		GREASE TYPE
MOBIL	MOBILGEAR AR600 XP220	MOBILGEAR 634	AREXONS FIXATIVE GREASE TG 248
SHELL	OMALA EP 220	OMALA 460	LOCTITE GREASE 8101
AGIP	BLASIA 220	BLASIA 460	
ESSO	SPARTAN EP 220	SPARTAN EP 460	
MEXOIL		ROTOR 46	

Table 5-2 - Oil filling – Quantity

SHREDDER SERIES	LUBRICATION ZONES AND OIL QUANTITY		GREASE ZONE	
	PLANETARY GEARBOX	GEAR REDUCTION UNIT	HOUSING BEARINGS	
HDD GLADIATOR	A1 - 3l - 2,7 Kg	A2 – 1,5l – 1,35 Kg	//	Figure 5-1

5.1.6.1 Oils zones HDD GLADIATOR series



A= Oils filling plug, B= Oil Level indicators, C= Oil Draining taps, D= Grease filling plug

Figure 5-1 – Oil/grease lubrication zones for series HDD GLADIATOR

5.2 FIRST START-UP (NO LOAD START-UP)



CAUTION

The no-load running of the shredder with new blades must be limited to the few minutes that are deemed necessary to check the machine for proper operation, otherwise the possible friction in-between the new blades can overheat them endangering their life severely.



CAUTION

If the machine has been inactive for a long time, it is necessary to spread some lubricating oil on the blades at the first start-up, to avoid them being damaged by the friction caused by rust which may have formed.

5.2.1 Start-up and checks sequence

- Turn the main disconnecting switch onto position 1: the white signal lamp MAINS lights up.
- Pull the EMERGENCY push-button.
- Push the RESET button: the yellow signal lamp will start blinking. This means that the machine is ready to run and therefore the utmost care must be taken.
- Turn the selector switch FORWARD/REVERSE RUN 1-2 onto position 1 and release it: the machine will start the "forward running" and the green signal lamp BLADES WORK will light up.
- Check that the shafts turn towards the centre: if they turn the opposite way, exchange two phases to reverse the revolving direction.
- Check that the safety interlock designed for the operator's protection is correctly working, by opening the door and checking that the shredder stops immediately.
- After this check, close the door and push the RESET push-button.
- Also check that the EMERGENCY push-button designed for the operator's protection is correctly working, by pressing it and checking that the shredder stops immediately.
- After this check, release the EMERGENCY push-button and push the RESET push-button.

5.3 ADJUSTMENTS ON BOARD OF THE SHREDDER (EXCEPT SERIES WITH CONTROLLER PLC)



CAUTION

Since the adjustments on the electronic controls are particularly delicate they are carried out only by the manufacturer at the machine start-up. Should it be necessary to modify these adjustments, please contact our Technical Department before proceeding. Problems caused to adjustments not authorized by intimus International GmbH will cancel any guarantee on the machine.

All the machine working stages are controlled by a PC board, as shown in the figure. The machine overload signal is given by a saturable current transformer, whose primary winding consists of one of the motor's feeding phases.

When an overload occurs, an automatic reverse cycle of the blades begins (reverse rotation of shafts) whose tuning can be adjusted through the potentiometer P2 from a minimum of 6 to a maximum of 11 seconds.

The sensitivity of the reverse device is adjusted through the potentiometer P1: turning it in anticlockwise, sensitivity increases, i.e. the automatic reversal comes about at a lower load level. Vice versa, sensitivity decreases.

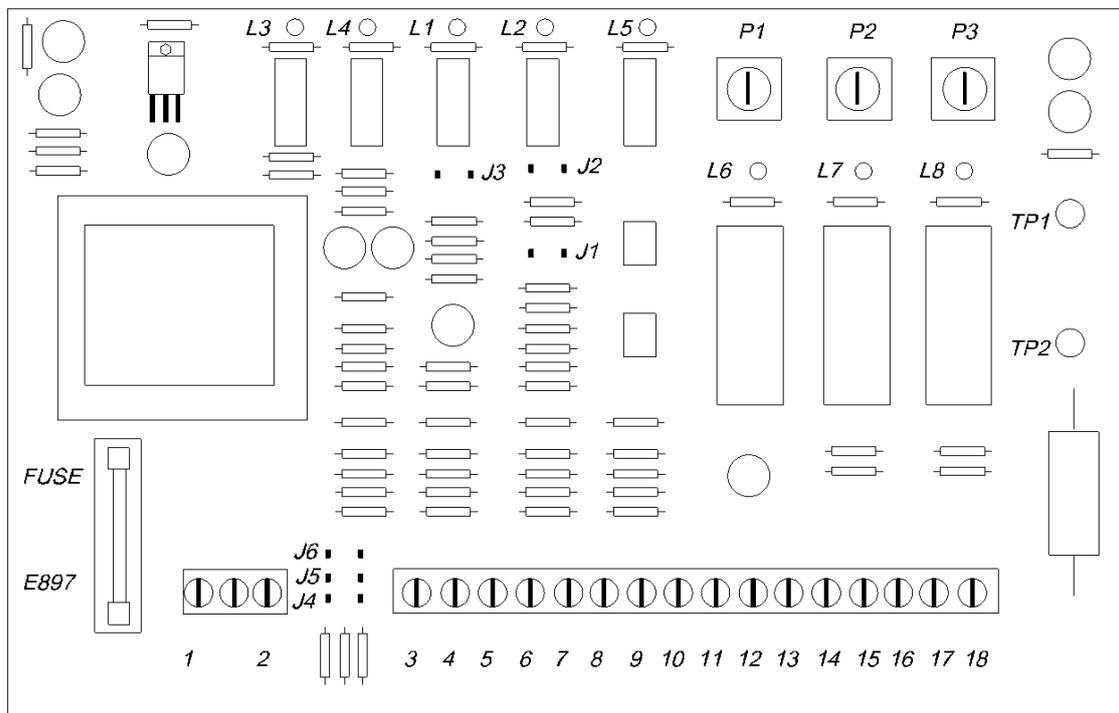


Figure 5-2 – P.C. Board E897

5.4 ELECTRICAL TESTS ON THE SHREDDER



CAUTION

If the shredding installation is done at Customer charge it will be necessary to execute the electrical tests on the machine as per the EN 60204.

The customer test results must be send to intimus International GmbH Technical Service.



CAUTION

If this data will be missing by the Customer intimus International GmbH will cancel any guarantee on the machine.



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6. SHREDDER OPERATION

At this point, once the first no-load run has been carried out and the relative checks and tests have been made, the shredder is ready to be put into service.



CAUTION

For a correct machine running, it is advisable that the operator has read and understood the instructions well. If doubts still exist, it is better to get in touch with our Customer Assistance Service.



DANGER

The working areas, where the operator must work, are those between the machine control panel, the material loading area and the unloading area. **ANY OTHER AREA IS OUTSIDE THE OPERATOR'S COMPETENCE.**



DANGER

The operator in charge of the machine must be a worker specially skilled to run it after having seen it or having been instructed on the modality of use of the machine. The operator **MUST NEVER INTERVENE** on the machine for inspection or maintenance operations which are the competence of qualified personnel. To carry out the vessel substitution, the operator must stay away from the supporting stand.

6.1 SHREDDER START

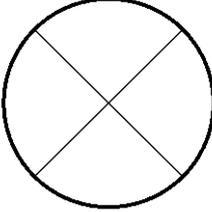
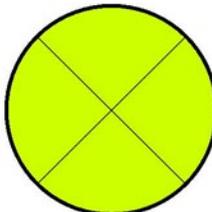
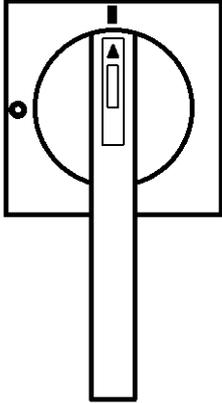
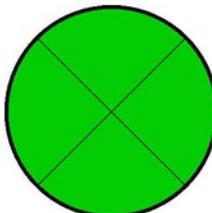
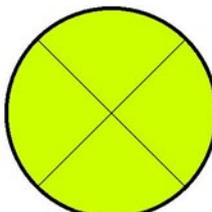
Check that the EMERGENCY push-button is released and that the shredded material collection vessel is present inside the supporting stand.

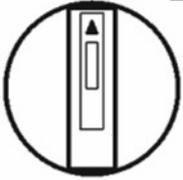
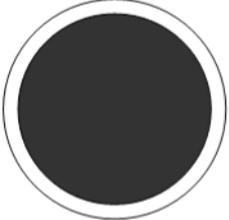
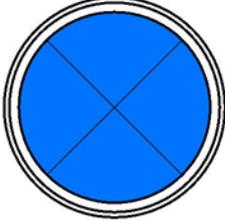
Check that the door is closed so that the micro switch allows the shredder to be started.

6.1.1 Operation and alarm controls and indicators

The starting, adjustment and stop operations of the machine, including the alarm and proper operation indicators, are controlled from the machine's switchboard. As regards the names of the components which appear in the switchboard and their relative function, see the drawing of the switchboard front and the table hereby shown.

Table 6-1 – Controls and indicators – Typical

CONTROL	DEVICE	FUNCTION
	<p>1. MAINS Permanent white lamp</p>	<p>It signals switchboard energized.</p>
	<p>2. BLINKER Yellow Lamp</p>	<p>It signals that the shredder is ready for starting.</p>
	<p>3. MAIN SWITCH</p>	<p>It disconnects the power line inside the switchboard. The connecting conductors from the inlet clamps to the disconnecting switch remain energized.</p>
	<p>4. BLADES WORK Permanent green lamp</p>	<p>It signals that the shredder is running forward.</p>
	<p>5. JAM THERMAL Permanent yellow lamp</p>	<p>It signals the thermal relay has jammed and motor has stopped.</p>

CONTROL	DEVICE	FUNCTION
	<p>6. FORWARD/REVERSE RUN 1-2 Selector switch</p>	<p>On position "1" the machine starts the shredding operation; on position "2", holding the selector switch (hold to run), the blades run in reverse direction and as soon as the selector switch is released, the shredder stops.</p>
	<p>7. STOP BLADES Black push-button</p>	<p>It stops the motor rotation (blades rotation).</p>
	<p>8. EMERGENCY Push-button</p>	<p>Emergency stop function.</p>
	<p>9. RESET Blue push-button</p>	<p>It resets the electric control circuit. It must be pressed in case of voltage drop and after the intervention of a safety device (micro-switch, emergency push-button).</p>

6.2 STARTING SEQUENCE

The shredder start is manual-operated. Proceed as follows:

- Turn the MAIN SWITCH to position 1: the white signal lamp MAINS will light up.
- Push the RESET button: the yellow signal lamp will start blinking, thus signalling that the machine is ready to operate, and therefore the maximum attention must be paid.
- Turn the selector switch FORWARD/REVERSE RUN 1-2 onto position 1 and release it: the machine will start the “forward running” and the green signal lamp will light up.
- Keep the shredder in no-load running for 30÷40 seconds only.
- Feed the material into the feeding hopper.



IMPORTANT NOTICE

Do not let the blade-holding shafts run without material, to prevent them from overheating and the blades from possibly seizing.



IMPORTANT NOTICE

Should it be necessary to interrupt the work and, more in detail, if you envisage that the machine may remain unguarded, always disconnect the main switch.



IMPORTANT NOTICE

Do not start the shafts when the hopper is filled with material, but perform a gradual loading at the beginning of each shift, after setting the shafts in operation and from the recommended loading side. At the end of each shift, remove/discharge all the material remaining in the hopper.



IMPORTANT NOTICE

Do not load any material into the hopper that is not listed in Table 1-1 – Technical data and that is not mentioned in the Declaration and Warranty Certificate attached. Processing different materials may impact on performance and damage the machine.

6.2.1 Vessel substitution



DANGER

This operation must be carried out after having stopped the shredder and following the instructions given in chapter 7 MAINTENANCE.

When the collection vessel placed under the shredder must be substituted, the operator must:

- switch off the shredder by pressing the STOP BLADES button;
- open the grid doors and change the vessel.

The micro switch installed on the doors prevents the machine from restarting and allows the operator to work in safety conditions.

After having closed the doors again:

- push the RESET- button
- restart the shredder by turning the selector switch FORWARD/REVERSE RUN 1-2 to position 1: the machine will start running again and the green signal lamp BLADES WORK will light up.

6.3 SHREDDER STOP

6.3.1 Normal stop

To stop the shredder in normal work conditions, press the STOP BLADES-button and check that the green light BLADES WORK, which signals the shredder direction, extinguishes.

6.3.2 Stop at the end of work

To stop the shredder in normal work conditions, press the STOP BLADES-button and check that the green light BLADES WORK which signals the shredder direction, extinguishes.

Disconnect the MAIN SWITCH and lock it

6.3.3 Emergency stop

To stop the shredder in emergency work conditions, press the EMERGENCY push-button: the shredder will stop immediately.

6.3.4 Reset

To prepare the shredder for a new start:

- check that the material collection vessel is empty;
- For the series with the gates check that the doors are closed so that the safety micro switches allow the machine to be started;
- check that the emergency push-button is released;
- repeat the start operations already described.

6.4 ELECTRONIC CONTROLS (EXCEPT FOR SERIES WITH CONTROLLER PLC)

The shredder operation is controlled by an electronic board.



IMPORTANT NOTICE

The adjustments described hereby must be carried out by skilled electricians.

6.4.1 Intermittent working

Fit the jumper J1: the circuit makes the machine stop and restart automatically according to the timing pre-set through the trimmer P3. The whole cycle (work + stop) is 60 seconds long, by increasing the work times, the stop time decreases and vice versa.

This is used to limit the machine production when feeding other machines with lower capacity.

6.4.2 Automatic reverse (only when the machine is set for intermittent working)

Fit the jumper J3 (as well as J1).

This is used to provide an automatic reverse at the end of a working time to free the blades from any material which may remain trapped in excessive quantity in the lower part of the chamber.

6.4.3 Reverse test

Fit the jumper J2 or short-circuit the pins with a screwdriver: the machine will reverse its revolving direction.

This is used to check the P.C. board operation.

6.4.4 Automatic machine starting and stopping by remote operation

(Only if the shredder is connected to other machines).

Operating on terminal 6 of the P.C. board, through a clean contact which closes to ground terminal 3 or 4, it is possible to start or stop the machine.

This control is used when the machine is connected and operates in line with other machines that must give their permissive signal.

There are two possible solutions:

1. Terminal 6 becomes operative only after the operator has started the machine through selector switch. J4-J5 closed – J6 opened. From this moment on, the machine works when terminal 6 is closed with terminal 3 or 4 and stops when it is opened. Fit jumpers J4 and J5 and leave jumper J6 open.
2. Terminal 6 is continuously operating and the machine can be started even without the operator's intervention. In this case, the installer must take the necessary precautions to avoid whatever hazardous situation.
 - Fit jumper J6 and leave J4 and J5 open.
 - From this moment on, the machine works when terminal 6 is closed with terminal 3 or 4 and stops when it is opened.

6.5 ANOMALOUS SITUATIONS, EMERGENCIES, ALARMS



CAUTION

Should one of the anomalous operating conditions described in the troubleshooting table occur, remember that the operator is only allowed to stop the machine. He must then turn to skilled personnel for the removal of the cause of such anomalous condition.

6.5.1 Overload reverse

During the work, it may happen that the presence of non-shreddable material can cause overloading on the blades and therefore the shredder activates the reverse cycle described in Chapter 5 SETTING AND FIRST STARTING (5.3 ADJUSTMENTS ON BOARD OF THE SHREDDER). Should the reverse cycles be started too frequently, because the material is too hard or even non-shreddable, the thermal relay will stop the machine, and at the same time will switch on the red signal yellow JAM THERMAL.

In this case the electrical maintenance operator must intervene and proceed as follows:

- turn off the shredder and disconnect the main switch;
- open the switchboard;
- wait till the relay cools down (approx. 5 min.)
- reset the relay by pressing the relevant reset button;
- close the switchboard;
- push the RESET-button and turn the selector switch F 1-2 onto position 2; make the machine work in reverse run, to free the blades from the material which has caused the overloading

IMPORTANT NOTICE

If it is necessary to check that there are no foreign bodies inside the machine, the person in charge of maintenance must be called for intervention.



See also prescriptions on warning paragraph 2.3 INCORRECT AND/OR IMPROPER USE AND BEHAVIOUR.

If the overloading is caused by a too massive material feeding, it is necessary to batch it to obtain a more regular operation.

IMPORTANT NOTICE

The reverse run of the machine must not be considered as a regular working mode: should the shredder jam, it is compulsory to remove the cause of the overload and check that the working condition of the machine does not exceed the stated limit of capacity. It is absolutely forbidden to let the shredder work when the reversals occur frequently, because the blade-holding shaft would be forced to an anomalous stress and seriously damaged.



6.5.2 Reset after an emergency

To prepare the shredder for a new start:

- check that the material collection vessel is empty;
- check that the doors are closed so that the safety micro switches allow the machine to be started;
- check that the emergency push-button is released;
- repeat the start operations already described on paragraph 6.2 STARTING SEQUENCE.

6.6 CLEANING AND PUTTING THE MACHINE OUT OF SERVICE

6.6.1 Cleaning of the shredder

The shredder does not need particular cleaning operations when used for treating "clean" materials (e.g. plastic, wood, paper, aluminium etc. which do not contain polluting substances).

If on the contrary, sticky or resinous materials, or substances which could have a chemical reaction and corrode the shredder's mechanical parts are treated, it will be necessary to clean the machine at the end of each work shift.

To carry out this operation, it is necessary to run the machine and feeding it with inert material which, passing through the blades, removes the residues of the previous working cycle.

Rags, paper, and sawdust, possibly soaked in lubricating oil may be profitably used to this purpose.

By checking the state of material coming out, the operator may establish whether the cleaning operations have been sufficient or not.

6.6.2 Putting the machine out of service

Clean the machine, if necessary, as described above. At the end, disconnect the main switch, lock it and disconnect the machine from the power mains.

6.6.3 Shredder removal and/or reallocation



IMPORTANT NOTICE

The operations must be carried out by skilled technicians who avail themselves of the transport and handling means and systems already described in Chapter 4 INSTRUCTIONS FOR INSTALLATION.

If the shredder must be set aside in a place different from that of installation, proceed as follows:

- Disconnect the machine from the power mains.
- Disconnect the feeding cable from the switchboard terminals.
- Dismantle the hopper.
- Dismantle the shredding chamber from the stand and lubricate the blade surfaces with oil. Cover it suitably.

- Take out the bolts from the stand and remove it.

6.6.4 Reallocation and installation

Follow the instructions given in chapters:

- Chapter 4 INSTRUCTIONS FOR INSTALLATION.
- Chapter 5 SETTING AND FIRST STARTING.

7. MAINTENANCE



IMPORTANT NOTICE

Before proceeding with whatever type of intervention regarding machine maintenance, carefully read the instructions contained in this manual along with the notices present on the machine itself.

Maintenance interventions include a series of checks and periodical routine interventions to be carried out at previously established time intervals; other types of extraordinary interventions depend essentially on the work conditions and therefore on the grade of wear the shredder suffers.

7.1 TOOL SUPPLIED FOR INTERVENTIONS ON THE BLADES

7.1.1 Tools supplied table

For interventions on the blades, special equipment supplied along with the shredder and illustrated in the picture is required. The following table indicates the tools list and the use for which each tool is supplied.

Table 7-1 – Tools supplied for interventions on the blades

DESCRIPTION	CODE	Q.TY
Shredder series HDD GLADIATOR		
Galvanized Screw TCE M12X70 UNI 5931	94-01490	1
Galvanized wide flanged chamfered washer M12 UNI 6593	94-30225	1
Wrench for locknuts clamping KM7	S68-0007	1

7.2 CHECKS WHICH CAN BE MADE DURING SHREDDER NORMAL OPERATION

7.2.1 Oil levels

EVERY 250 WORKING HOURS



CAUTION

The shredder can be supplied either with or without oils, depending on transport distances and specific agreement with the customer. The quantities reported in the table are indicative; proceed always filling until the level sign or plug is reached.

Check the oil level in the reduction unit box and in the bearings housing through the level indicators shown in the paragraph **5.1.6**.

For oils/grease type, refer to **Table 5-1**.

7.3 CHECKS RESERVED TO THE MAINTENANCE TECHNICIAN



DANGER

All the described maintenance operations in this paragraph must be carried out with shredder stopped and with main switch disconnected and locked for safety against undesired starting.

7.3.1 Blades

EVERY 250 WORKING HOURS

It is extremely important to check that the blades are perfectly tightened because, otherwise, they could interfere with each other and be damaged or break.

To carry out this check – always with machine stopped and main switch disconnected and locked – first of all, the hopper must be dismantled:

- loosen the hopper fastening bolts;
- hook the hopper;
- lift it away from the shredding chamber and place it on the ground.

Carry out the following checks:

- Check there are no spaces between the blades and spacers to be seen.
- Check that the blades do not rotate on the shaft.

To carry out this check, give small blows to the blade circumferences with a nylon hammer



CAUTION

Do not use iron hammers or other iron tools because the blades could be damaged and metal splinters could fly off and put the operator at risk.

If it is found that the blade unit is not perfectly tightened, the threaded rings must be tightened – see the instructions in the following paragraphs.

7.3.2 Tightening the blades' pack for series HDD GLADIATOR

1. Remove the frontal protection cover
2. Free the threaded rings from the lock washer
3. With a sector key, screw the threaded ring back on (60daNm)
4. Restore the lock with the lock washer
5. Fit the frontal protection cover again

Should the threaded ring tightening be insufficient or, else, part of the shredded material remains trapped between the blades and the spacers, it will be necessary to dismantle the blade unit.

7.3.2.1 Dismantling the blades' pack

1. Remove the frontal protection cover
2. Push out the dowel pins and the fastening screws to remove the frontal flange
3. Unlock the lock washer and unscrew the threaded rings on the shafts

Hook onto the first blade with the extractor; pull out the first group of seals and the bearing together

4. Remove the blades, the spacers and the cleaning sectors



CAUTION

If the cleaning sector is not easily removed (e.g. there is some material stuck) it is still possible to hook onto the blade to pull out the second group of bearings. The operator must however pay extreme attention because the sector could free itself and fall during the operation.



CAUTION

The operator must use protective gloves while taking off the blade unit.



CAUTION

Should the blades be blocked, the operator must not use hammers or other iron tools to help himself with the extraction, because the blades could be damaged and also such tools could cause dangerous metals splinters flying off. If necessary, use a nylon hammer, or place a piece of aluminium between the hammer and the blade to be released.



CAUTION

It is prohibited to heat the blades or the spacers to extract them from the shaft because they could be damaged.

7.3.2.2 Reassembling the blades' pack

Reassemble the blades both shafts placing them as indicated in the attached blades schema, placing the spacers and cleaning sectors in between. Than:

- Reassemble the front flange.
- Fit the pins again.
- Screw back on the bolts and tighten them (torque 4daNm).
- Insert the group of seals.

- Reassemble the left shaft bearing, then the right.
- Reassemble the threaded ring on fast shaft and tighten it to 60daNm.
- Then set the threaded ring on slow shaft and tighten it to 60daNm, taking care of gaps between blades: the clearances must be uniform from the first to the last blade.

7.3.3 Motion tests

In order to verify that the full reassembling has been properly made it is advisable to run the machine shortly without hopper.



DANGER

The following operation is carried out with hopper dismantled, and therefore without any protection: therefore the operator must pay the maximum attention and ensure that there are no unauthorised persons in the work area. The operator must also ensure that no tools or foreign materials have remained on the blades. He must keep on distance when making the visual check and wear the proper protections (glasses, safety helmet).

- start the shredder and make it run in no-load conditions for a few minutes, checking no interference among the blades, nor seizures and clearances are present.
- switch off the shredder and disconnect it from the power supply mains once again.

7.3.4 Final settings

Re-tighten the first threaded ring on each shaft with the torque as follows and aligning one of the 4 insertion locations of the safety tab, and lock it.

To make the position of the location for tab insertion match, continue screwing up the threaded ring, not unscrewing it.

Reassemble and tighten the second threaded ring on each shaft and lock it with the safety tab.

Check and re-tighten the stuffing rings fixing screws (version with additional seals, if installed).

Replace and fix the front cover (If installed).

Assemble the feeding hopper.

If everything is working perfectly, close the shredder definitively.

7.3.5 Replacing lubricating oils

First replacement: after 200 working hours.

Maintenance replacements: every 2500 working hours from the previous replacement, anyhow not later than one year after the last replacement.



CAUTION

The shredder can be supplied either with or without oils, depending on transport distances and specific agreement with the customer. The quantities reported in the following table are indicative; proceed always filling until the level sign or plug is reached.

For the Oil refer to paragraph 5.1.6. Empty out the oil contained in the epicycle and gear reduction units and in the bearings housing completely through the drain taps:

- Wash out the gearboxes and the housing with clean oil;
- Refill them again through the loading plugs.

7.3.6 Gears lubrication for series HDD GLADIATOR

EVERY 100 WORKING HOURS

Lubricate the gears adding 100 g of grease E.P. from the greasing point on the cover or removing the cover (machine must be stopped). If it is too much, unloading the grease left on the box under the gears.



IMPORTANT NOTICE

Please be sure that both gears are completely lubricated.

For the grease refer to 5.1.6.

7.3.7 Lubrication with grease of the electric motors



IMPORTANTE NOTICE

Check if the electric motor has greasing points for the front and rear bearings, as shown in the picture below. For motors with greasing points, follow the maintenance instructions.

In case of greasing points on the electric motors in correspondence to the bearings it is necessary to carry out the greasing with **grease type SKF LGMT3** (Table 7-2) or similar, as indicated in the **Figure 7-1**.



Figure 7-1 – Greasing point electric motors

Table 7-2 – Grease for electric motors bearings for operating temperatures up to 70°C

FRAME SIZE	SHREDDER SERIES	WORKING HOURS	QUANTITY OF GREASE PER BEARING (gr)
100 (3 kW / 4 HP)	HDD GLADIATOR	//	//



CAUTION

Vertical electric motors should be greased twice as often as horizontal motors. Regreasing time should be reduced if bearing operating temperature is in excess of 70°C.



CAUTION

Motors up to size 132 have in their basic design, permanently lubricated bearings and from size 160 they are provided with built-in lubricators which enable the lubrication of bearings during the operation. Motors in frame size 56-132, are fitted with life-lubricated bearings.

7.3.8 Check and inspection of the blades pack HDD GLADIATOR series

Being the loading hopper completely closed, it will not be possible to check the blade set condition from the outside. For this reason the hopper is hinged so that it will be possible to tilt it. In this way it will be possible to reach the shredding chamber only after having removed the screws blocking it. The opening sequence follows:

	
<p>1. Remove the 6 M8 screws blocking the hopper.</p>	<p>2. Tilt the cover hopper.</p>
	
<p>3. Check the shredding chamber.</p>	<p>3. After the check close the cover hopper and tighten the hopper screws.</p>



IMPORTANT NOTICE

Above sentence can be carried on only by service and maintenance team.



DANGER

The hopper is equipped with a safety switch that stops the shredder when the hopper is opened. Anyway before opening the hopper turn the main switch.

7.3.9 Safety checks



WARNING

After maintenance operations or repairs, before starting the machine, the system manager must check that all operations have been completed, that all safety devices are working properly and that any unauthorised people have been sent away from the area.



WARNING

Shredders equipped with support frames with mesh gates feature a safety switch on the gate. Each time the gate is opened to replace the material collection container, make sure that the machine stops automatically.

EVERY 200 HOURS (in any case once a month)

Check the operation of all the safety devices and/or interlocks on the machine: safety switches, rope safety switches, emergency buttons, box presence photocells, etc.

Make sure that the activated device stops and blocks the operation of the machine instantaneously. To restore operation and restart the machine, see chapter **6.1**.

Usually, the most common points where the safety devices are located are listed in **Table 7-3**. Their set-up depends on the configuration of the machinery.

Table 7-3 – Position of the safety devices – Typical

Device	Example image
<p>Emergency mushroom button on the control board of the electrical panel.</p>	
<p>Safety microswitch for the mesh hatches of the support frame.</p>	
<p>Safety microswitch on the loading hopper inspection door.</p>	

7.4 BLADE SHARPENING

The blades perform their best service when their profile is perfectly sharp-edged and cutting. Obviously, their working capacity decreases as wear increases. It is therefore advisable to re-sharpen the blades when their hooks are rounded and worn.

"A" is the original thickness: if the difference between "A" and "B" is greater than 5mm, you must re-sharpen. To this purpose, please contact our Technical Service department.



IMPORTANT NOTICE

If the customer sharpens the blades themselves or replaces worn blades with new ones, pay attention to the cutting profile. During maintenance works, always use suitable personal protective equipment (see Chapter 2.8 - Table 2-6).

To check the condition of wear of the blades, take the measurement as the drawing.

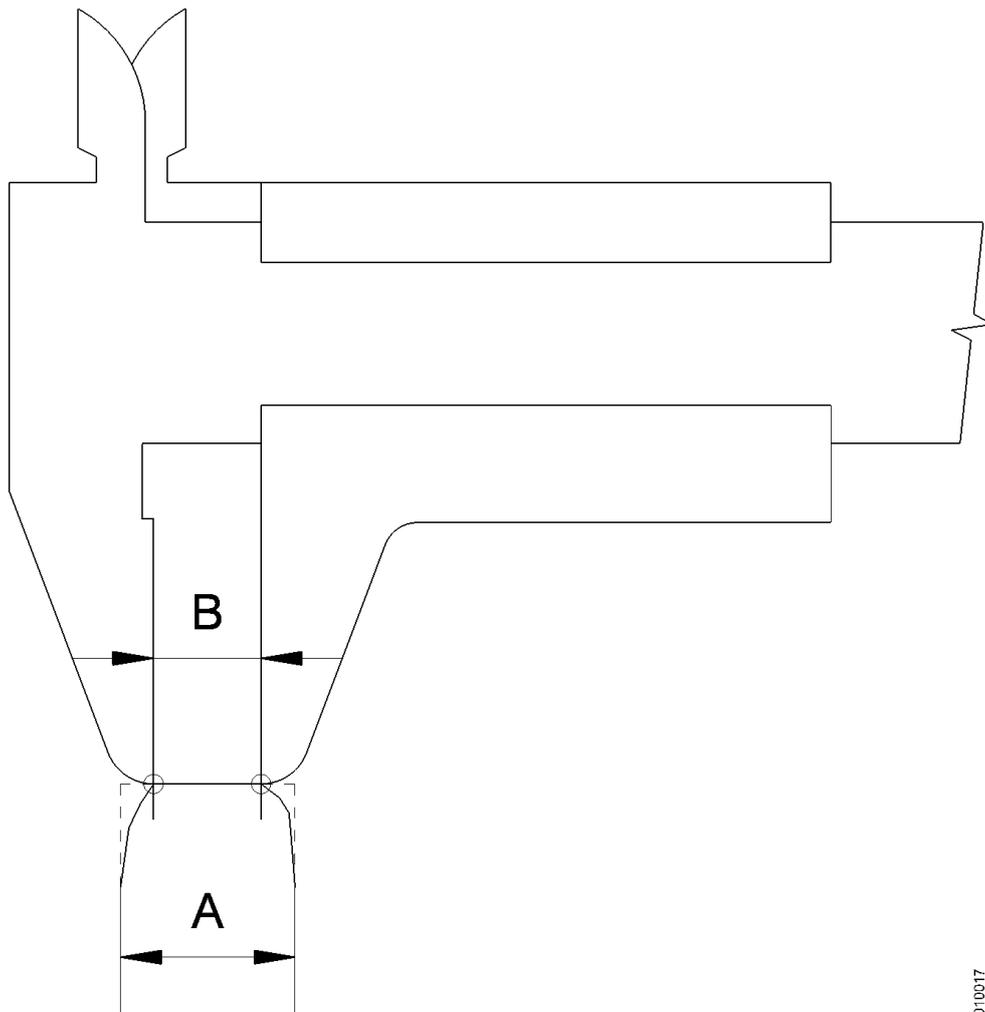


Figure 7-2 – Blade sharpening

1010017

7.5 SHREDDER DEMOLITION

Since there are different provisions in force in different countries, the laws and prescriptions imposed by the local government of the concerned country must be kept.



IMPORTANT NOTICE

The shredder demolition must be carried out by skilled personnel, both in the electrical and mechanical fields.

Before starting the dismantling, an area that is sufficiently large and tidy must be created around the machine, to allow movement without creating further risks due to the environment.

Proceed as follows:

- disconnect the machine from the electricity supply mains;
- disconnect the electric cables coming out of the disconnect switch;
- disconnect the switchboard feeding cables;
- empty out the oils from the gear units and the bearings housing;
- remove the motor;
- remove the hopper;
- open the shredding chamber and disassemble blades, spacers and cleaning sectors;
- remove shafts and gears;
- dismantle the supporting stand frames;
- separate the parts of the machine according to their type: (i.e. metal, plastic, etc.) and send them to the differentiated salvage dumps centres.



CAUTION

Where necessary, stick to the legal procedures in force in the concerned country for dismantling machinery.



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8. MAIN FAULTS AND FAILURES

1) THE MOTOR DOES NOT START

CAUSE	REMEDY
Emergency push-button pressed	Release the emergency push-button, see paragraph 6.2 STARTING SEQUENCE
Stand doors open	Close the doors, see paragraph 6.2 STARTING SEQUENCE
Thermal relay tripped	See paragraph 6.5.1 Overload reverse
Voltage drop or safety device intervention	Push the reset-button, see paragraph 6.2 STARTING SEQUENCE

2) THE SHAFTS ROTATE IN REVERSED DIRECTION

CAUSE	REMEDY
Motor is incorrectly connected	Exchange the two phases in the motor connection
Wrong move on direction selector switch	Turn the selector switch to forward running

3) THE MACHINE IS JAMMED BY AN OVERLOAD BUT IT DOES NOT REVERSE

CAUSE	REMEDY
Wrong system settings	Check the setting, see paragraph 5.3 ADJUSTMENTS ON BOARD OF THE SHREDDER
Faulty p.c. board	Replace the p.c. board

4) THE MACHINE CONTINUALLY REVERSES ITS DIRECTION OF REVOLUTION, AND STOPS BY EMERGENCY

CAUSE	REMEDY
Non-shreddable material in hopper	Take out the the non-shreddable pieces, see paragraph 6.5 ANOMALOUS SITUATIONS, EMERGENCIES, ALARMS
To massive feeding	Reduce the feeding of material

4) RAM BLOCKED (IF PRESENT)

CAUSE	REMEDY
Non-shreddable material in hopper	Take out the the non-shreddable pieces, see paragraph 6.5 ANOMALOUS SITUATIONS, EMERGENCIES, ALARMS



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9. ATTACHMENT

Code	Description
190035DC	Declaration of Incorporation
I68-0033	Blades schema
S68-0035	Shredding chamber drawing
S68-0036	General drawing
19032PQ0	Manufacturing and Control Plan
SE68-0004-0	Electric Diagram
SD68-0004-01	Electric Components List
T31-0042	Maintenance table